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PATENT AND TRADEMARK OFFICE NOTICES

Trademark Manual of Examining Procedure (Revised Pages)

The first set of revised pages for insertion in the Trademark Manual of Examining Procedure (TMEP) is now being distributed to subscribers of the Manual by the Superintendent of Documents, United States Government Printing Office. These pages are identified as "Rev. 1, Jan. 1976."

This announcement is being made as a service to subscribers so that they will be aware that a revision of the Manual has been published. Inquiries concerning subscriptions, or the delivery of revision material, should be sent to the Superintendent of Documents, United States Government Printing Office, Customer Service Section SSOS, Washington, D.C. 20402.

The availability of the Trademark Manual of Examining Procedure, with instructions for ordering, was announced in the OFFICIAL GAZETTE of June 25, 1974 (923 O.G. TM 204). It continues to be available as described in that notice.

BERNARD A. MEANY,
Assistant Commissioner for Trademarks.

Apr. 26, 1976.

Board of Appeals Decisions Rendered in the Month of April 1976

Examiner affirmed	250
Examiner affirmed in part	39
Examiner reversed	94
Total	383

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,030,965, F. Labbe, TOBACCO MANIPULATING MACHINES; **3,030,966,** R. Lanore, FILLER FORMING MECHANISM; **3,032,041,** same, TOBACCO-MANIPULATING MACHINES; **3,088,467,** F. A. M. Labbe, TOBACCO MANIPULATING MACHINERY; **3,088,468,** same; **3,192,931,** R. Lanore, TOBACCO-MANIPULATING MACHINES; **3,306,305,** D. W. Molins, MANUFACTURE OF CIGARETTES, **filed** July 29, 1975, D.C., S.D.N.Y., Doc. 75–C–3697, *Hauni Werke Koerber & Co., K.G.* v. *Molins Ltd.*

3,030,966. (See 3,030,965.)

3,032,041. (See 3, 030,965.)

3,088,467. (See 3,030,965.)

3,088,468. (See 3,030,965.)

3,135,019, E. O. Aichele, MACHINE FOR APPLYING SEALING LINERS OF THERMOPLASTIC MATERIAL TO BOTTLE CAPS OR THE LIKE; **3,360,827,** same, PLASTIC DISPENSING MEANS, **filed** Nov. 12, 1969, D.C. Del. (Wilmington) Doc. 3804, *Zapata Industries, Inc. and Marie K. Aichele* v. *United States Crown Corporation.* Order, defendant permanently enjoined from infringing upon claims 1, 2 and 3 of Patent 3,135,019 and/or claims 1 and 3 of Patent 3,360,827. Counterclaims are dismissed for lack of prosecution, Oct. 21, 1974.

3,192,624, D. Gringer, KNIFE HANDLE WITH ADJUSTABLE BLADE, **filed** Aug. 22, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c2830, *Allway Tools, Inc.* v. *Industries Egana, S.A. and Great Neck Saw Manufacturers, Inc.* Consent judgment, patent is valid and defendant is enjoined from infringing upon said patent. Said second cause of action solely as against Great Neck is dismissed without prejudice, Dec. 3, 1975.

3,192,931. (See 3,030,965.)

3,197,710, H. C. Lin, COMPLEMENTARY TRANSISTOR STRUCTURE; **3,237,062,** B. T. Murphy, MONOLITHIC SEMICONDUCTOR DEVICES; **3,321,340,** B. T. Murphy, METHODS FOR FORMING MONOLITHIC SEMICONDUCTOR DEVICES; **3,412,460,** H. C. Lin, METHOD OF MAKING COMPLEMENTARY TRANSISTOR STRUCTURE, **filed** July 8, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c2230, *Westinghouse Electric Corporation* v. *Motorola, Inc. et al.* Case closed pursuant to Rule 41(a)(1) of the Federal Rules of Civil Procedure, Dec. 18, 1975.

3,197,731, H. C. Lin, COMPLEMENTARY TRANSISTOR STRUCTURE; **Re. 25,595,** Schwab, Beale and Anderson, PRINTED CIRCUIT BOARD FILE, **filed** Jan. 6, 1976, D.C., C.D. Calif. (Los Angeles) Doc. CV–76–0044, *Scanbe Manufacturing Corp.* v. *Jack Berman Company, Inc.*

3,237,062. (See 3,197,710.)

3,306,305. (See 3,030,965.)

3,321,340. (See 3,197,710.)

3,360,837. (See 3,135,019.)

3,388,009, W. J. King, METHOD OF FORMING A P-N JUNCTION BY AN IONIC BEAM; **3,395,292,** H. Z. Bogert, SHIFT REGISTER USING INSULATED GATE FIELD EFFECT TRANSISTORS; **3,406,346,** F. M. Wanlass, SHIFT REGISTER SYSTEM; **3,472,751,** W. J. King, METHOD AND APPARATUS FOR FORMING DEPOSITS ON A SUBSTRATE BY CATHODE SPUTTERING USING A FOCUSSED ION BEAM; **3,599,180,** RANDOM ACCESS READ-WRITE MEMORY SYSTEM HAVING DATA REFRESHING CAPABILITIES AND MEMORY CELL THEREFOR; **3,611,437,** Varadi and Rubinstein, READ-ONLY MEMORY WITH OPERATIVE AND INOPERATIVE DATA DEVICES LOCATED AT ADDRESS STATIONS AND WITH MEANS FOR CONTROLLABLY CHARGING AND DISCHARGING APPROPRIATE MODES OF THE ADDRESS STATIONS; **3,683,203,** K. F. Smith, ELECTRONIC SHIFT REGISTER SYSTEM; **3,765,003,** Paivinen, Rubinstein, Cohen and Baker, READ-WRITE RANDOM ACCESS MEMORY SYSTEM HAVING SINGLE DEVICE MEMORY CELLS WITH DATA REFRESH, **filed** Oct. 29, 1975, D.C. Del. (Wilmington) Doc. 75–336, *General Instrument Corporation* v. *Mostek Corporation.*

3,389,365, Matthews and Rhine, VARIABL RESISTOR WITH SWITCH; **Re. 26,781,** C. Frenzel, TRIGGER ACTUATED SWITCH DEVICE, **filed** June 24, 1970, D.C., N.D. Ill. (Chicago) Doc. 70c1523, *Skil Corporation* v. *Rockwell Mfg. Co.* Enter order on stipulation dismissing action, Apr. 4, 1975.

3,392,292. (See 3,388,009.)

3,406,346. (See 3,388,009.)

3,412,460. (See 3,197,710.)

3,472,751. (See 3,388,009.)

3,475,234, Kerwin, Klein and Sarace, METHOD FOR MAKING MIS STRUCTURES; **3,544,399,** H. G. Dill, INSULATED GATE FIELD-EFFECT TRANSISTOR (IGFET) WITH SEMICONDUCTOR GATE ELECTRODE; **3,576,478,** Watkins and Selser, IGFET COMPRISING N-TYPE SILICON SUBSTRATE, SILICON OXIDE GATE INSULATOR AND P-TYPE POLYCRYSTALLINE SILICON GATE ELECTRODE, **filed** Nov. 11, 1974, D.C. Del. (Wilmington) Doc. 74–238, *Bell Telephone Laboratories, Inc.* v. *Hughes Aircraft Company and General Instrument Corporation.*

3,519,163, R. V. Bardell, CONTAINER AND CLOSURE THEREFOR; **3,770,156,** G. Yates, Jr., TAMPER PROOF CLOSURE, **filed** July 17, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c2377, *Park Ohio Industries* v. *Vulcan Containers.* **Same, filed** July 18, 1975, D.C., C.D. Calif. (Los Angeles) Doc. 75–2462–DWW, *Park Ohio Industries, Inc. and Growth International Industries Corp.* v. *B. W. Norton Mfg. Co., Inc.*

3,544,399. (See 3,475,234.)

3,544,399, H. G. Dill, INSULATED GATE FIELD-EFFECT TRANSISTOR (IGFET) WITH SEMICONDUCTOR GATE ELECTRODE, **filed** May 12, 1972, D.C. Del. (Wilmington) Doc. 4379, *Hughes Aircraft Company* v. *General Instrument Corporation.* Final judgment, defendant acquired from plaintiff a license to practice the invention of the patent. All outstanding issues having been resolved, this action is hereby terminated, Apr. 29, 1975.

3,576,478. (See 3,475,234.)

3,599,180. (See 3,388,009.)

3,611,437. (See 3,388,009.)

3,683,203. (See 3,388,009.)

3,765,003. (See 3,388,009.)

3,770,156. (See 3,519,163.)

3,770,156, G. Yates, Jr., TAMPER PROOF CLOSURE, **filed** July 17, 1975, D.C., N.D. Ohio (Cleveland) Doc. C75–616, *Park Ohio Industries, Inc. and Growth International Industries Corp.* v. *Davies Can Co. and Van Dorn Co.* **Same, filed** July 17, 1975, D.C., N.D. Ohio (Cleveland) Doc. C75–617, *Park Ohio Industries, Inc. and Growth International Industries Corp.* v. *Cleveland Steel Container Corp.* **Same, filed** July 17, 1975, D.C., N.D. Ill. (Chicago) Doc. 75c2378, *Park Ohio Industries* v. *Growth International Industries.* **Same, filed** July 17, 1975, D.C., N.D. Tex (Dallas), Doc. CA3–75–0873–C, *Park Ohio Industries, Inc. and Growth International Industries, Inc.* v. *Plastic Industrial Containers, Inc.* **Same, filed** Aug. 7, 1975, D.C., E.D. Mich. (Detroit) Doc. 75–71490, *Park Ohio Industries, Inc. and Growth International Industries Corp.* v. *Letica Corporation.* **Same, filed** Aug. 13, 1975, D.C., E.D. Mich. (Detroit) Doc. 75–71534, *Letica Corporation* v. *Park-Ohio Industries, Inc.*

Re. 25,595. (See 3,197,131.)

Re. 26,781. (See 3,389,365.)

PATENT NOTICES

Certificates of Correction for the Week of June 1, 1976

Re. 27,740	3,895,058	3,922,934	3,935,947
Re. 28,485	3,895,716	3,923,486	3,935,984
Re. 28,553	3,896,303	3,923,501	3,936,245
Re. 28,699	3,898,217	3,923,702	3,936,460
D. 235,341	3,899,396	3,924,041	3,936,639
D. 237,901	3,899,916	3,924,643	3,936,849
D. 238,914	3,901,923	3,925,157	3,937,200
D. 239,165	3,903,048	3,925,446	3,937,692
3,566,160	3,904,997	3,927,089	3,937,877
3,671,224	3,905,908	3,927,157	3,938,036
3,727,188	3,906,007	3,927,186	3,938,659
3,772,184	3,906,970	3,927,858	3,938,771
3,772,350	3,910,077	3,928,101	3,938,882
3,780,668	3,910,531	3,928,120	3,939,131
3,781,306	3,910,784	3,928,863	3,939,146
3,792,034	3,911,070	3,929,049	3,939,768
3,793,747	3,911,159	3,929,213	3,939,922
3,803,176	3,911,202	3,929,528	3,940,211
3,803,272	3,912,726	3,929,637	3,940,256
3,806,757	3,912,783	3,929,751	3,940,413
3,807,904	3,913,617	3,929,791	3,940,469
3,813,025	3,914,577	3,930,401	3,940,853
3,813,936	3,915,267	3,930,498	3,940,871
3,815,737	3,915,802	3,930,532	3,941,300
3,834,438	3,915,803	3,930,974	3,941,400
3,843,167	3,917,173	3,931,168	3,941,576
3,849,092	3,917,442	3,931,247	3,941,638
3,853,164	3,917,550	3,931,325	3,941,641
3,855,144	3,917,599	3,931,407	3,941,872
3,856,772	3,917,875	3,931,476	3,942,455
3,857,927	3,918,968	3,931,783	3,942,819
3,858,002	3,918,975	3,932,092	3,942,936
3,862,069	3,919,026	3,932,871	3,943,241
3,869,360	3,919,292	3,933,328	3,943,313
3,871,408	3,920,284	3,933,759	3,944,083
3,871,833	3,920,398	3,933,780	3,944,200
3,874,402	3,920,634	3,934,444	3,944,485
3,874,618	3,920,689	3,934,618	3,945,668
3,877,238	3,920,719	3,935,154	3,946,051
3,878,962	3,920,911	3,935,175	3,946,130
3,880,812	3,921,539	3,935,219	3,946,315
3,880,972	3,921,798	3,935,263	3,946,521
3,881,011	3,922,267	3,935,265	3,947,157
3,885,297	3,922,274	3,935,470	
3,886,121	3,922,649	3,935,878	

Dedication

3,910,821.—*Robert Paul Corn*, La Grange, Ill. ENZYMATIC ISOMERIZATION PRODUCT. Patent dated Oct. 7, 1975. Dedication filed Apr. 29, 1976, by the assignee, *CPC International Inc.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

2,867,230.—*Ralph E. Bletcher* and *Irving A. Ward*, Los Angeles, Calif. DIVERTER VALVE FOR A SHOWER INSTALLATION. Patent dated Jan. 6, 1959. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

2,875,702.—*Ralph E. Bletcher* and *Irving A. Ward*, Los Angeles, Calif. COMBINATION FIXTURE. Patent dated Mar. 3, 1959. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

2,894,695.—*Ralph Edwin Bletcher* and *Irving A. Ward*, Los Angeles, Calif. SPOUT FITTING. Patent dated July 14, 1959. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

2,923,315.—*Ralph E. Bletcher, Irving A. Ward*, and *Ernest H. Bucknell*, Los Angeles, Calif. REMOVABLE VALVE. Patent dated Feb. 2, 1960. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

2,969,951.—*George W. Walton*, Dallas, Tex. PUMP VALVE. Patent dated Jan. 31, 1961. Disclaimer filed Mar. 22, 1976, by the assignee, *Dresser Industries, Inc.*

Hereby enters this disclaimer to claims 1–4 of said patent.

3,173,444.—*Ernest H. Bucknell* and *Irving A. Ward*, Los Angeles, Calif. REMOVABLE CARTRIDGE TYPE MIXING VALVE. Patent dated Mar. 16, 1965. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,176,716.—*Ernest H. Bucknell* and *Irving A. Ward*, Los Angeles, Calif. DETERGENT DISPENSER. Patent dated Apr. 6, 1965. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,336,935.—*Irving A. Ward* and *James H. Bletcher*, Los Angeles, Calif. DIVERTER. Patent dated Aug. 22, 1967. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,342,250.—*Helmut Treppschuh* and *Robert L. Hentrich*, Gelsweld, Germany. METHOD OF AND APPARATUS FOR VACUUM MELTING AND TEEMING STEEL AND STEEL-LIKE ALLOYS. Patent dated Sept. 19, 1967. Disclaimer filed Mar. 31, 1976, by the assignee, *Stahlwerke Südwestfalen Aktiengesellschaft.*

Hereby enters this disclaimer to claim 8 of said patent.

3,376,884.—*Ernest H. Bucknell* and *Irving A. Ward*, Los Angeles, Calif. ANTI-SIPHON DIVERTER UNIT. Patent dated Apr. 9, 1968. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,392,165.—*John A. Edwards*, Los Altos, Calif., and *Lawrence H. Knox*, deceased, late of Mexico City, Mexico, by *Anne A. Knox*, Mexico City, Mexico. ESTRA-1,3,5(10)-TRIENES SUBSTITUTED AT THE 17*a*-POSITION WITH A PROPADIENYL OR SUBSTITUTED PROPADIENYL RADICAL. Patent dated July 9, 1968. Disclaimer filed Apr. 9, 1976, by the assignee, *Syntex Corporation.*

Hereby enters this disclaimer to claims 6 and 18 of said patent.

3,392,166.—*John A. Edwards*, Los Altos, Calif., and *Lawrence H. Knox*, deceased, late of Mexico City, Mexico, by *Anne A. Knox*, Mexico City, Mexico. ANDROST-4-ENES AND ESTR-4-ENES HAVING A 17*a*-DIETHYLENICALLY UNSATURATED SIDE CHAIN. Patent dated July 9, 1968. Disclaimer filed Apr. 9, 1976, by the assignee, *Syntex Corporation.*

Hereby enters this disclaimer to claims 10, 12, 14, 15 and 19 of said patent.

3,415,279.—*Ernest H. Bucknell* and *Irving A. Ward*, Los Angeles, Calif. COAXIAL CONTROL VALVE. Patent dated Dec. 10, 1968. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,415,454.—*Ernest H. Bucknell*, Los Angeles, and *Jack K. Rauh* and *Irving A. Ward*, Hacienda Heights, Calif. SPRAY VALVE. Patent dated Dec. 10, 1968. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,461,901.—*Ernest H. Bucknell* and *Irving A. Ward*, Los Angeles, Calif. DIVERTING SPOUT. Patent dated Aug. 19, 1969. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,683,770.—*Edwin H. Land* and *Alfred H. Bellows*, Cambridge, Mass. FOLDING CAMERA. Patent dated Aug. 15, 1972. disclaimer filed Apr. 5, 1976, by the assignee, *Polaroid Corporation.*

Hereby enters this disclaimer to claims 1–4, 8, 11–18, 27, 30, 31 and 33 of said patent.

3,684,190.—*James H. Bletcher*, Pacific Palisades, and *Jack K. Rauh*, Hacienda Heights, Calif. QUICK DISCONNECT. Patent dated Aug. 15, 1972. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,722,798.—*James H. Bletcher*, Pacific Palisades, and *Jack K. Rauh*, Hacienda Heights, Calif. COMBINED AERATOR-SPRAY ASSEMBLY. Patent dated Mar. 27, 1973. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,739,806.—*Ernest H. Bucknell*, Los Angeles, *Jack K. Rauh*, Hacienda Heights, and *Tony Radecki*, Los Angeles, Calif. DIAPHRAGM SPOUT ASSEMBLY. Patent dated June 19, 1973. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher*, part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,787,068.—*Lester Miller*, Topeka, Ind. ARTICULATED TRAILER HITCH. Patent dated Jan. 22, 1974. Disclaimer filed Nov. 28, 1975, by the assignee, *Bangor Punta Operations, Inc.*

Hereby enters this disclaimer to the remaining term of said patent.

3,811,780.—*Max D. Liston*, Irvine, Calif. CHEMICAL ANALYSIS CUVETTE. Patent dated May 21, 1974. Disclaimer filed Apr. 12, 1976, by the assignee, *Abbott Laboratories.*

Hereby enters this disclaimer to claims 1, 3, 4, 5, 9 and 10 of said patent.

3,839,511.—*Shigeo Kishino*, Tokyo, and *Akio Kudamatsu* and *Kozo Shiokawa*, Kanagawa, Japan. O-ETHYL-S-n-PROPYL-O-(SUBSTITUTED PHENYL)-PHOSPHOROTHIOLATES. Patent dated Oct. 1, 1974. Disclaimer filed Apr. 22, 1976, by the assignee, *Bayer Aktiengesellschaft.*

Hereby enters this disclaimer to claims 2, 3 and 4 of said patent.

3,840,147.—*Wilbert O. O'Neal* and *Burford J. Page*, Independence, Mo., and *Charles E. Simek*, Overland Park, Kans. SHELF APPARATUS FOR HELIX TYPE PRODUCT DISPENSING MACHINES. Patent dated Oct. 8, 1974. Disclaimer filed Apr. 12, 1976, by the assignee, *The Vendo Company.*

Hereby enters this disclaimer to claim 1 of said patent.

3,874,719.—*Wynand M. J. M. Goyarts*, Battle Creek, Mich. EXTENSIBLE LOAD LIFTING FRAME. Patent dated Apr. 1, 1975. Disclaimer filed Apr. 2, 1976, by the assignee, *Clark Equipment Company.*

Hereby enters this disclaimer to claim 15 of said patent.

3,888,820.—*Irving Touval*, Fords, and *Morris Dunkel*, Paramus, N.J. NOVEL FLAME RETARDANT COMPOSITIONS OF MATTER. Patent dated June 10, 1975. Disclaimer filed July 18, 1975, by the assignee, *Universal Oil Products Company.*

Hereby enters this disclaimer to claim 7 of said patent.

3,903,533.—*Walter G. Lehmann*, Somerville, Mass. PHOTOGRAPHIC CAMERA AND FLASH LAMP SELECTION SYSTEM. Patent dated Sept. 2, 1975. Disclaimer filed Apr. 5, 1976, by the assignee, *Polaroid Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 12, 13, 17, 18, 19, 20, 28 and 29 of said patent.

3,904,685.—*Iraj Khatib Shahidi*, Florham Park, N.J., and *Jorge Alberto Blay*, Corpus Christi, Tex. POLYACRYLIC ACID HAVING HIGH CHELATION VALUE AND ITS PRODUCTION. Patent dated Sept. 9, 1975. Disclaimer filed Apr. 14, 1976, by the assignee, *Celanese Corporation.*

Hereby enters this disclaimer to the remaining term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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Copies of the patent applications, either paper copy (PC) or microfiche (MF), can be purchased at the prices cited from the National Technical Information Service (NTIS), Springfield, Va. 22161. Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 621,330. Fixed Skewed Wing Airborne Vehicle. Filed Oct. 10, 1975. PC $3.50/MF $2.25.

Patent application 629,467. Antinarcissus Reflector Assembly for Infrared Detector. Filed Nov. 6, 1975. PC $3.50/MF $2.25.

Patent application 631,280. Fuel Grain for Spherical Boost-Sustain Rocket Motor. Filed Nov. 12, 1975. PC $3.50/MF $2.25.

Patent 3,919,884. Horizontal Loading Fixture for Sustained Load Testing. Filed Apr. 17, 1974. Patented Nov. 18, 1975. Not available NTIS.

Patent 3,920,206. Non-Penetrating RIB-to-Surface Structural Clip Connector Assembly. Filed Aug. 5, 1974. Patented Nov. 18, 1975. Not available NTIS.

Patent 3,920,336. System for Intensification of Weak Absorption and Collection of Weak Light Emission. Filed May 21, 1974. Patented Nov. 18, 1975. Not available NTIS.

Patent 3,921,170. Method and System for Computing Altitude Over a Target and the Horizontal Range Thereof. Filed July 31, 1972. Patented Nov. 18, 1975. Not available NTIS.

Patent 3,921,499. Ammunition Cook-Off Sensing and Prevention System. Filed Feb. 4, 1974. Patented Nov. 25, 1975. Not available NTIS.

Patent 3,924,038. Fragment Suppression Configuration. Filed June 12, 1974. Patented Dec. 2, 1975. Not available NTIS.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 608,483. Rotating Launch Device for a Remotely Piloted Aircraft. Filed Aug. 28, 1975. PC $3.50/MF $2.25.

Patent application 623,188. Emergency Descent Device. Filed Oct. 16, 1975. PC $3.50/MF $2.25.

Patent application 629,456. Reel Safety Brake. Filed Nov. 6, 1975. PC $3.50/MF $2.25.

Patent application 629,457. Thermocouples of Tantalum and Rhenium Alloys for More Stable Vacuum-High Temperature Performance. Filed Nov. 6, 1975. PC $3.50/MF $2.25.

Patent application 629,458. Projection System for Display of Parallax and Perspective. Filed Nov. 6, 1975. PC $3.50/MF $2.25.

Patent application 630,579. Method for Making a Hot Wire Anemometer and Product Thereof. Filed Nov. 10, 1975. PC $3.50/MF $2.25.

Patent application 632,112. Amplifying Ribbon Extensometer. Filed Nov. 14, 1975. PC $3.50/MF $2.25.

Patent application 633,876. High Temperature Resistant Cermet and Ceramic Compositions. Filed Nov. 20, 1975. PC $4.00/MF $2.25.

Patent application 633,877. High Temperature Oxidation Resistant Cermet Composition. Filed Nov. 20, 1975. PC $3.50/MF $2.25.

Patent application 637,247. Focused Laser Doppler Velocimeter. Filed Dec. 3, 1975. PC $3.50/MF $2.25.

Patent application 637,268. Wind Measurement System. Filed Dec. 3, 1975. PC $3.50/MF $2.25.

Patent application 637,269. Snap-In Compressible Biomedical Electrode. Filed Dec. 8, 1975. PC $3.50/MF $2.25.

Patent application 641,801. Forward-Scatter Polarimeter for Determining the Gaseous Depolarization Factor in the Presence of Polluting Polydispersed Particles. Filed Dec. 18, 1975. PC $3.50/MF $2.25.

Patent application 641,803. Interferometer Mirror Tilt Correcting System. Filed Dec. 18, 1975. PC $3.50/MF $2.25.

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Patent 3,911,260. Shock Position Sensor for Supersonic Inlets. Patented Oct. 7, 1975. Not available NTIS.

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Patent 3,916,761. Two Stage Light Gas-Plasma Projectile Accelerator. Patented Nov. 4, 1975. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 633,041. Laser Mirror Cooling Means. Filed Nov. 18, 1975. PC $3.50/MF $2.25.

Patent application 633,070. Low Diffraction Loss-Low Spurious Response Substrate for Surface Acoustic Wave Devices. Filed Nov. 18, 1975. PC $3.50/MF $2.25.

Patent application 633,131. Surface Potential Stabilizing Circuit for Charge-Coupled Devices Radiation Hardening. Filed Nov. 18, 1975. PC $3.50/MF $2.25.

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Patent 3,920,966. Blended Manual-Automatic Control System. Filed Apr. 29, 1974. Patented Nov. 18, 1975. Not available NTIS.

Patent 3,923,675. Method for Preparing Lead Lanthanum Zirconate-Titanate Powders. Filed Aug. 9, 1973. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,038. Fragment Suppression Configuration. Filed June 12, 1974. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,614. Base Two Exponential Counter. Filed Oct. 17, 1973. Patented Dec. 9, 1975. Not available NTIS.

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Patent 3,926,029. Heated Die Assembly. Filed Apr. 30, 1974. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,926,520. System for Electronic Adjustment of Effective Contrast Ratio in Photographic Reproduction. Filed July 12, 1974. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,927,258. Compatible Scanning System. Filed Oct. 21, 1974. Patented Dec. 16, 1975. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Mgmt. Branch, General Services Division, Federal Bldg., Agricultural Research Service, Hyattsville, Md. 20782

Patent application 554,058. Degradable Starch-Based Agricultural Mulch Film. Filed Feb. 27, 1975. PC $3.50/MF $2.25.

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Patent 3,502,894. Angle Measuring Photoelectric Transducer With Two Photocells and Electroluminescent Source of Light. Filed May 16, 1968. Patented Mar. 24, 1970. Not available NTIS.

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Patent 3,830,914. Micro-Encapsulated Insecticide Feed-Additive for Control of Fly Larvae in Cow Manure. Filed June 28, 1971. Patented Aug. 20, 1974. Not available NTIS.

Patent 3,833,747. Process for Reducing the Hygroscopicity of Dehydrated Fruits. Filed Aug. 7, 1972. Patented Sept. 3, 1974. Not available NTIS.

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Patent 3,919,432. Detoxification of Jojoba Meal. Filed Aug. 16, 1974. Patented Nov. 11, 1975. Not available NTIS.

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Patent 3,930,038. Method for Coloring Fruits and Vegetables. Filed Oct. 9, 1974. Patented Dec. 30, 1975. Not available NTIS.

Patent 3,932,124. Process for Setting Textiles. Filed Sept. 9, 1974. Patented Jan. 13, 1976. Not available NTIS.

Patent 3,932,125. Preparation of Stretchable Wool Textiles. Filed Jan. 24, 1974. Patented Jan. 13, 1976. Not available NTIS.

Patent 3,932,338. Photodegradable Plastics Containing Alpha-Halophenyl Ketones. Filed Aug. 22, 1974. Patented Jan. 13, 1976. Not available NTIS.

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Patent 3,934,046. Water Leaching Pre-Fried Potato Slices. Filed Apr. 6, 1973. Patented Jan. 20, 1976. Not available NTIS.

Patent 3,936,267. Flameproofing Wool Textiles. Filed Feb. 27, 1975. Patented Feb. 3, 1976. Not available NTIS.

Patent 3,936,393. Antimicrobial Agents and Use Thereof. Filed Apr. 17, 1973. Patented Feb. 3, 1976. Not available NTIS.

U.S. DEPARTMENT OF COMMERCE
Assistant General Counsel for Administration
Washington, D.C. 20230

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U.S. DEPARTMENT OF TRANSPORTATION
Patent Counsel, 400 7th St. SW.
Washington, D.C. 20590

Patent 3,783,967. Focusing Protective Enclosure for Ultrasonic Transducer. Filed Feb. 24, 1972. Patented Jan. 8, 1974. Not available NTIS.

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20014

Patent application 582,373. Synthesis of Vinblastine, Vincristine and Related Compounds. Filed May 30, 1975. PC $3.50/MF $2.25.

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U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 512,273. AM/AGC Weighted Diversity Combiner/Selector. Filed Oct. 4, 1974. PC $4.00/MF $2.25.

Patent application 550,796. A Method of Obtaining Correlation Between Certain Selected Samples of a Sequence. Filed Feb. 18, 1975. PC $3.50/MF $2.25.

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Patent application 588,450. Hydraulic Fluidic Level Control System. Filed June 19, 1975. PC $3.50/MF $2.25.

Patent application 599,253. Multifrequency Oscillator Circuit. Filed July 25, 1975. PC $3.50/MF $2.25.

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Patent application 605,364. Impinging Jet Flow Controller. Filed Aug. 18, 1975. PC $3.50/MF $2.25.

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Patent application 608,436. Underwater Braking Apparatus. Filed Aug. 28, 1975. PC $3.50/MF $2.25.

Patent application 622,355. Overheated Journal Bearing Derailment Prevention System. Filed Oct. 14, 1975. PC $3.50/MF $2.25.

Patent application 623,139. Plug-Type Counterweight and Lock. Filed Oct. 16, 1975. PC $3.50/MF $2.25.

Patent application 624,148. Solar Collector Control System. Filed Oct. 20, 1975. PC $3.50/MF $2.25.

Patent application 625,393. Syringe Apparatus. Filed Oct. 24, 1975. PC $3.50/MF $2.25.

Patent application 628,706. Frequency Domain Discrimination and Counting Technique. Filed Nov. 4, 1975. PC $3.50/MF $2.25.

Patent application 630,558. Method and Apparatus for Large Volume Freezing and Thawing of Packed Erythrocytes. Filed Nov. 10, 1975. PC $4.00/MF $2.25.

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Patent application 633,150. Water-Soluble Paper and Water-Soluble Paper Treatments. Filed Nov. 18, 1975. PC $3.50/MF $2.25.

Patent application 635,009. Electrochemical Source for Rapid Generation of Heat and Hydrogen Gas. Filed Dec. 8, 1975. PC $4.00/MF $2.25.

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Patent 3,811,422. Chemical Heater Tube. Filed Oct. 5, 1972. Patented May 21, 1974. Not available NTIS.

Patent 3,833,298. Mechanical Masking Apparatus for Producing a Pattern on a Curved Surface. Filed Apr. 9, 1973. Patented Sept. 3, 1974. Not available NTIS.

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Patent 3,836,232. Multiple Channel Optical System. Filed Feb. 2, 1973. Patented Sept. 17, 1974. Not available NTIS.

Patent 3,840,844. Electron-Beam Analog Computer for Determining Coordinates of a Seafloor Point. Filed Sept. 24, 1973. Patented Oct. 8, 1974. Not available NTIS.

Patent 3,842,774. Remotely Controlled Mobile Seagoing Sensor Platform. Filed Sept. 14, 1973. Patented Oct. 22, 1974. Not available NTIS.

Patent 3,845,937. Helicopter Cargo Lifting System. Filed Dec. 14, 1973. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,846,493. Nitro Substituted Acrylic Acid Amides. Filed Jan. 28, 1971. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,846,770. Serial Access Memory Using Magnetic Domains in Thin Film Strips. Filed July 11, 1973. Patented Nov. 5, 1974. Not available NTIS.

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Patent 3,904,487. Anodic Stripping Voltammetry and Apparatus Therefor. Filed Oct. 29, 1974. Patented Sept. 9, 1975. Not available NTIS.

Patent 3,909,773. Underwater Teletype Communication System. Filed June 19, 1974. Patented Sept. 30, 1975. Not available NTIS.

TENNESSEE VALLEY AUTHORITY
Division of Law, Muscle Shoals, Ala. 35660

Patent 3,927,178. Sulfur Dioxide Removal From Stack Gases. Filed Nov. 8, 1974. Patented Dec. 16, 1975. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 641,802. An Improved Accumulator. Filed Dec. 18, 1975. PC $3.50/MF $2.25.

Patent 3,914,991. Strain Gage Mounting Assembly. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,914,997. Static Pressure Probe. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,915,482. Externally Supported Internally Stabilized Flexible Duct Joint. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,920,339. Strain Arrestor Plate for Fused Silica Tile. Patented Nov. 18, 1975. Not available NTIS.

Patent 3,920,413. Panel for Selectively Absorbing Solar Thermal Energy and the Method of Producing Said Panel. Patented Nov. 18, 1975. Not available NTIS.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 8, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry: Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-2-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones: Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-31-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-7-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products: Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions: Bleaching; Dyeing and Photography.	6-2-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-21-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures: Illumination: Horology; Acoustics; Recorders; Weighing Scales.	4-1-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-23-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-22-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	11-7-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	6-16-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-10-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists: Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-5-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-6-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-16-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-15-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures: Closure Operators; Bridges; Closures: Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	10-2-75

Expiration of patents: The patents within the range of numbers indicated below expire during May 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,884,634 to 2,888,678 inclusive
Plant Patents..... Numbers 1,829 to 1,837 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JUNE 1, 1976

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

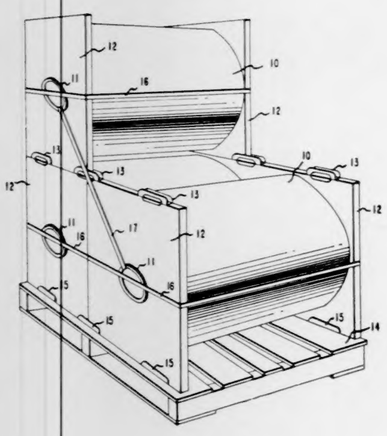
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T947,001
TIERED PACKAGE ASSEMBLY

Anthony Louis Mavredes, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 391,470, Aug. 24, 1973. This application May 2, 1975, Ser. No. 573,992

Int. Cl. B65d *21/00*
U.S. Cl. 206—504
2 Sheets Drawing. 6 Pages Specification



A tiered assembly of like packages horizontally supported between vertically positioned, flat end suspension panels is interlocked by means of clips engaging the panels of adjacent packages. Each clip has a planar central section with parallel lateral sides with at least one lip projecting upwardly from each side and at least one flap projecting downwardly from each side. The central section has at least one sharp projection extending from at least one of its surfaces adapted to engage the outermost edge surfaces of the end suspension panels upon which they bear.

T947,002
POLYVINYL CHLORIDE COMPOSITIONS

Don Rhea, Rte. 15, 421 Old Castle Road, Kingsport, Tenn. 37660

Continuation of abandoned application Ser. No. 446,872, Feb. 28, 1974. This application May 16, 1975, Ser. No. 578,234

Int. Cl. C08k *5/12*
U.S. Cl. 260—31.8 R
No Drawing. 9 Pages Specification

Iron oxide (Fe_2O_3) and potassium fluoride, when mixed together in approximately equal amounts and incorporated into plasticized polyvinyl chloride in small quantities, have a synergistic effect in reducing smoke from the polymer during burning.

T947,003
OVERBASED NONIONIC PLUS HIGH MOLECULAR WEIGHT SULFONATE WATERFLOOD ADDITIVE AND PROCESS OF USING SAME

Charles R. Clark and Oliver C. Kerfoot, Ponca City, Okla., and Delmar D. Krehbiel, Lubbock, Tex., assignors to Continental Oil Company, Ponca City, Okla.

Continuation of abandoned application Ser. No. 342,018, Mar. 16, 1973. This application May 14, 1975, Ser. No. 577,249

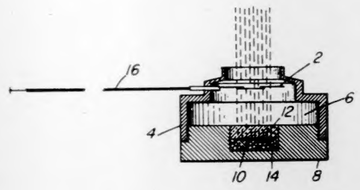
Int. Cl. E21b *43/20, 43/22*
U.S. Cl. 252—8.55 D
No Drawing. 23 Pages Specification

An overbased waterflood additive comprising a water-soluble nonionic surfactant (such as an ethoxylated alkanol) plus a water-insoluble high molecular weight hydrocarbon sulfonate having an equivalent weight of about 400 to about 600 plus an overbasing amount of a base component such as an alkali metal hydroxide, ammonium hydroxide, or an alkali metal carbonate is prepared and is injected into a petroliferous formation to improve a waterflood process. Sufficient overbasing base component is employed such that the ratio: "weight of excess base component/weight of sulfonate" is about 0.03 to about 5.0.

T947,004
APPARATUS FOR SEMI-QUANTITATIVE MEASUREMENT OF CHEMICAL RESPONSE TO U.V. RADIATION

George L. Collins, 44 The Fellsway, Murray Hill, N.J. 07974, and William V. Garruto, 331 W. Scott Ave., Rahway, N.J. 07065

Filed Jan. 30, 1975, Ser. No. 545,271
Int. Cl. G01n *21/06. 33/44*
U.S. Cl. 23—230 R
1 Sheet Drawing. 7 Pages Specification



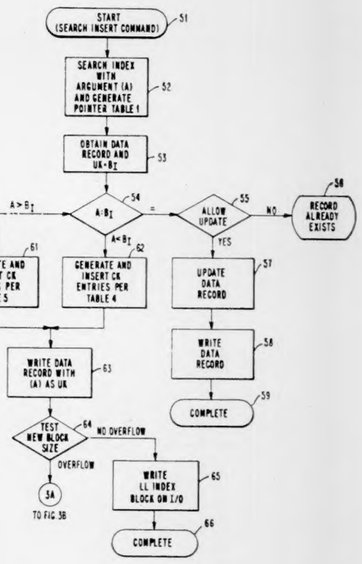
A device for semi-quantitative measurement of chemical response of photoinitiators and resin systems to U.V. radiation which comprises a shutter positioned on a housing having a cavity within. The housing is separable into an upper and lower portion giving access to the cavity. A U.V. curable resin is placed within the aluminum housing and the entire assembly is passed under a U.V. lamp where the shutter is activated. The rate and/or extent of reaction can be determined by analysis of the exposed sample

T947,005
MULTI-LEVEL COMPRESSED INDEX INSERTION AND DELETION METHOD AND MEANS

Edward Loizides, Poughkeepsie, and George F. Steigerwalt, Jr., Hyde Park, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 417,459, Nov. 19, 1973, which is a continuation of application Ser. No. 99,863, Dec. 21, 1970. This application Apr. 24, 1975, Ser. No. 573,494

Int. Cl. G06f *7/00*
U.S. Cl. 444—1
34 Sheets Drawing. 111 Pages Specification



To enable the maintenance on a real-time basis of a multi-level compressed index generated by the method and means disclosed in U.S. Pat. 3,603,937 issued Sept. 7, 1971. Such index can be searched by the method and means disclosed in US. Pat. 3,643,226 issued Feb. 15, 1972. Two types of operation on an existing multi-level compressed index structure are disclosed; they are (1) insertion of new compressed key entries, and (2) deletion of existing compressed key entries Both operations (1) and (2) begin at the lowest index level and proceed upward through the multi-level compressed index hierarchy until the operations are complete.

T947,006
MODIFIED CRACKING OF PARAFFINS

David V. Porchey, Dennis Jack Royer, and Charles M. Starks, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation of abandoned application Ser. No. 489,958, July 19, 1974. This application July 28, 1975, Ser. No. 599,564

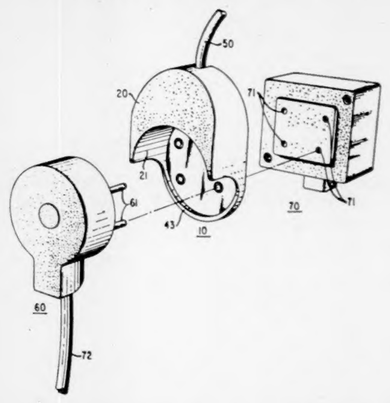
Int. Cl. C07c *3/30*
U.S. Cl. 260—683 R
No Drawing. 12 Pages Specification

In a process for cracking normal paraffins containing from about 2 to about 10 carbon atoms to alkenes, the instant invention relates to an improvement comprising admixing about 0.1 to about 70 percent by weight of H_2Se or H_2Te (or an amount of a compound which yields a SeH or a TeH radical in the cracking environment sufficient to yield that amount of SeH or TeH) based on the hydrocarbon stream containing the paraffins and the paraffin to be cracked and then passing the resulting mixture through a reactor maintained at a temperature of about 900° F. to about 2000° F. with a residence time of about 0.01 to about 20 seconds and a pressure of about 0 to about 5000 p.s.i.g. Steam is also employed.

T947,007
CONNECTOR BLOCK FOR BRIDGING BETWEEN A TELEPHONE WALL JACK AND PLUG

Charles Louis Krumreich and Robert Allen Spencer, Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 23, 1975, Ser. No. 543,258
Int. Cl. H01r *31/00*
U.S. Cl. 339—154 A
3 Sheets Drawing. 7 Pages Specification

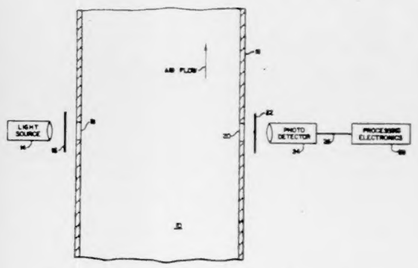


Connection of an auxiliary device to a telephone line at a customer's premises is easily and reliably made even by inexperienced personnel through a new adapter. The adapter consists basically of from two to four thin spring conductors mounted within a thin shelf and provided with oblong holes which accommodate around the prongs of a standard telephone plug. The plug then fits into a standard telephone wall jack, with more than sufficient penetration to assure adequate telephone connection.

T947,008
SODIUM OXIDE SMOKE DETECTION

Rolv Hundal, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 31, 1975, Ser. No. 546,151
Int. Cl. G01n *21/12, 21/40*
U.S. Cl. 356—114
1 Sheet Drawing. 8 Pages Specification



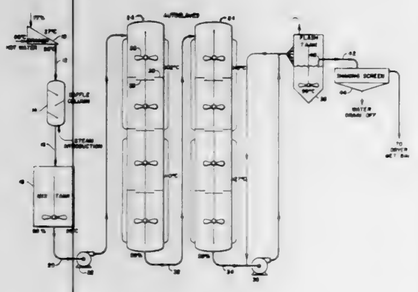
A method and apparatus for identifying the presence of sodium oxide smoke within a gas enclosure. In accordance therewith a source of light is polarized in a single plane and transmitted through the enclosure to a

photodetector screened to receive only incident light having substantially the same angle of polarization as the light initially transmitted through the enclosure. Attenuation in the incident light below a given threshold is identified as being indicative of the presence of sodium oxide smoke within the gas enclosure. Alternatively, the photodetector is screened to receive incident light disorientated from the transmitted angle of polarization and an increase in the photodetector's response will correspond to an increase in concentration of sodium oxide within the gas enclosure.

T947,009
METHOD FOR RELEASING ADHESIVE-BACKED EMBLEMS, LABELS AND THE LIKE FROM SUBSTRATES USING A CHEMICAL RELEASE AGENT
Robert L. Ammons, 2237 Charsley Road, Kingsport, Tenn. 37660
Filed Feb. 24, 1975, Ser. No. 552,478
Int. Cl. B08b *3/08;* **B32b** *35/00;* **C11d** *7/50;* **D01f** *11/00*
U.S. Cl. 156—344
No Drawing. 10 Pages Specification

Method for releasing polyester, polyamide, polyurethane, polyvinyl chloride adhesive-backed emblems, labels, and seam joinings, and cyclic trimer polymer deposits from substrates by applying thereto gamma-butyrolactone in an amount sufficient to wet the emblems, labels, seam joinings and polymer deposits. Gamma-butyrolactone may be used alone or at least 25% by volumne in solution with water, or at least 25% by volume in solution with perchloroethylene, water and a surfactant, or at least 25% by volume in solution with a petroleum solvent, water and a surfactant, and at a preferred temperature of 70° F. to 175° F.

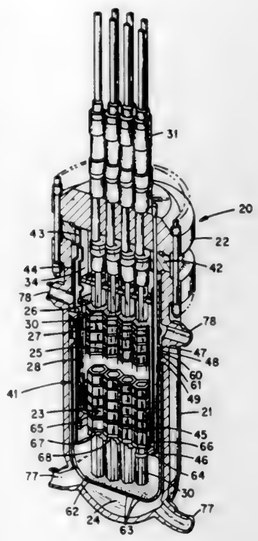
T947,010
PROCESS FOR PARTIAL DELIQUEFACTION OF CELLULOSE TRIACETATE PELLETS
Frank M. Volberg, 4409 Chickasaw Road, and Joe M. Mullins, Rte. 8, 5605 Old Island Road, both of Kingsport, Tenn. 37664
Filed Mar. 3, 1975, Ser. No. 554,375
Int. Cl. F26b *3/00*
U.S. Cl. 34—9
1 Sheet Drawing. 5 Pages Specification



Process for partially dewatering cellulose triacetate pellets by which the pellets in a water slurry form are preheated to about 99° C., and then are heated by gradually being increased in temperature at the rate of no more than about 3° to 5° C. per minute until reaching the temperature of about 120° C. to 127° C. The steps of preheating and heating include contacting the pellets with hot water. The step of gradually heating the pellets is accomplished above atmospheric pressure at about 25 to 40 p.s.i.g. The pellets shrink and exude moisture as they are treated and go from a moisture content of about 77–78% to a final partially dewatered moisture content of about 50%, and then are free drained or gravity drained for subsequent drying

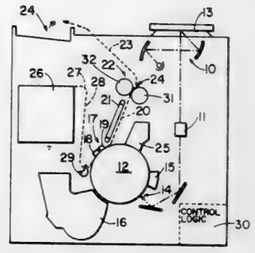
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T947,011
INCREASE IN BREEDING A THERMAL BREEDER REACTOR
Alvin Radkowsky, Tel Aviv, Israel, assignor to the United States of America as represented by the United States Atomic Energy Commission
Continuation of abandoned application Ser. No. 341,449, Mar. 15, 1973. This application Apr. 17, 1975, Ser. No. 568,963
Int. Cl. G21c *3/28*
U.S. Cl. 176—18
4 Sheets Drawing. 11 Pages Specification



A light water breeder reactor has a plurality of fuel modules and reflector assemblies defining a core. Each of the fuel modules comprises a seed assembly, surrounded by a blanket assembly. The blanket assembly contains uranium-233 fissile fuel and thorium-232 fertile fuel. A reflector assembly contains thorium-232 fertile fuel and surrounds the grouped seed and blanket assemblies. According to the present invention, the fuel modules each additionally comprise an elongated fuel control assembly disposed between the seed assembly and the blanket assembly. The fuel control assembly is disposed for longitudinal movement in relation to the seed and blanket assemblies and is divided into upper and lower fuel regions. Each fuel region has a length approximately equal to the length of the seed and blanket assemblies with the upper fuel region containing essentially uranium-238 and the lower fuel region containing from ninety-five to ninety-nine weight percent uranium-238 and from one to five weight percent uranium-233. The fuel control assemblies are moveable with respect to the seed and blanket assemblies, whereby the upper fuel region is positioned in the reactor core during a first portion of core life until at least one half the converted Pu-239 has on the average a chance to fission or absorb neutrons, and the lower fuel region is positioned in the core during the remainder of core life.

T947,012
DRY HOT ROLL FUSER HAVING EARLY FUSING NIP CLOSURE
Fred Y. Brandon and Jerrold F. Zimmer, Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 28, 1975, Ser. No. 572,374
Int. Cl. G03g *15/00;* **H05b** *1/00*
U.S. Cl. 219—216
1 Sheet Drawing. 14 Pages Specification



A dry release hot roll fuser wherein the hot roll is internally heated, the surface of the hot roll is deformable, and a rigid backup roll is force biased into the hot roll to form an axial depression in the hot roll, which depression comprises the fusing nip. The fusing nip is closed prior to the arrival of a sheet to be fused. The early closing time interval is such as to cause the hot roll to complete at least one revolution against the cooler backup roll, prior to arrival of the first sheet to be fused.

In the standby mode, the fusing nip is open, and the hot roll temperature is controlled to be at a temperature higher than the desired fusing temperature. This higher temperature is desirable since it is known that the thick deformable surface on the hot roll will cause the fusing temperature to drop during fusing. Since the hot roll's surface is relatively thick, and formed of a heat insulator, such as silicone rubber, the drop which occurs is a result of the cooling effect of the first sheets to be fused.

After the early closing interval, the hot roll's fusing temperature has dropped to the vicinity of the optimum fusing temperature and the automatic temperature control system thereafter supplies just enough additional internal heat energy to offset the cooling effect of the sheets. The probability of the first sheet sticking to the hot roll has been reduced as a result of this roll early closing.

To accommodate the high standby temperature, the fusing nip is closed early—i.e. before a sheet arrives at the fusing nip. The time period of this early closure is critical, and has been found to be such as will produce at least one revolution of the hot roll prior to the arrival of a sheet to be fused. It has been found that this early closing of the fusing nip causes a rapid drop in the fusing nip temperature to approximately the optimum fusing temperature prior to arrival of the first sheet to be fused, and thereafter the temperature control system maintains the optimum temperature. Thus, wrap of the sheets about the hot roll is minimized.

REISSUES

JUNE 1, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,834

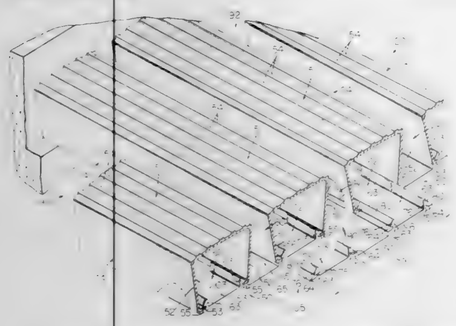
FLOOR CONSTRUCTION FOR AN ANIMAL ENCLOSURE AND METHOD OF MAKING SAME

Robert C. Johnson, Pikeville, Ky., assignor to Reynolds Metals Company, Richmond, Va.

Original No. 3,528,391, dated Sept. 15, 1970, Ser. No. 760,557, Sept. 18, 1968. Application for reissue May 29, 1975, Ser. No. 581,910

Int. Cl.² A01J *1/00*

U.S. Cl. 119—28 **26 Claims**



6. A floor construction [as set forth in claim 3] *for an animal enclosure comprising, a plurality of inverted substantially U-shaped channel members arranged in parallel spaced relation, each channel member having a bight defining a load-carrying surface and a pair of downwardly extending side walls terminating in inwardly directed fastening flanges, a plurality of connector clips fastening said channel members together, each connector clip having a base portion and sets of upwardly and outwardly extending fastening legs, each leg defining a laterally outwardly open recess which receives an associated fastening flange therewithin, and each given channel member having resilient means providing a normal resiliency therefor and holding its fastening flanges embraced within an associated set of recesses defined by the associated fastening legs and in grasping contact against the associated fastening legs so that each given channel member is fastened in position and supported by the fastening flanges at its lower end engaging said connector clips; in which floor construction said channel members are of substantially identical construction and the spacing between channel members is substantially less than the width of each load-carrying surface, and* in which each of said channel members has its downwardly extending side walls arranged in a converging manner so as to define a downwardly diverging passage between each immediately adjacent pair of channel members, each passage enabling animal wastes to be easily conveyed downwardly therethrough to provide a floor construction having optimum cleanliness.

Re. 28,835

WORK CABINET FOR SEWING MACHINE

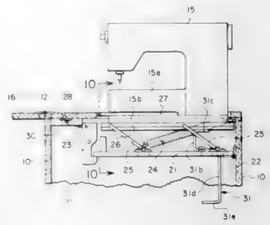
Kent S. Roberts, American Fork, Utah, and Stanley D. Roberts, Albuquerque, N. Mex., assignors to Roberts Mfg., Inc., American Fork, Utah

Original No. 3,788,716, dated Jan. 29, 1974, Ser. No. 278,222, Aug. 7, 1972. Application for reissue Aug. 15, 1975, Ser. No. 604,953

Int. Cl.² A47B *29/00*; **A47F** *05/08*

U.S. Cl. 312—29 **16 Claims**

1. A sewing machine cabinet, comprising walls defining a housing for receiving and storing a sewing machine, said walls including an apertured top wall providing a top work surface for the cabinet; a drop shelf spaced below said top wall under the aperture thereof and hingedly attached to a wall of the cabinet; latch means for normally holding said shelf in a substantially horizontal position; a sewing machine mount normally resting on said shelf and adapted to receive a sewing machine; link means attaching said mount to the shelf so as to permit raising of the mount, and of a sewing machine mounted thereon, from a lowered work position to a raised work position and vice versa relative to said shelf; and pivotally mounted lever means for raising and lowering said mount, said aperture in the top wall being sufficiently large to accommodate the sewing machine in its work positions and during the dropping thereof into storage position within the cabinet and the raising thereof from said storage position into a work position.



Re. 28,836

PROCESS FOR SIMULTANEOUSLY PRODUCING METHACRYLONITRILE AND BUTADIENE BY VAPOR-PHASE CATALYTIC OXIDATION OF MIXED BUTENES

Shigeru Saito, Fuchu; Jun Ishijura, and Yutaka Sasaki, both of Yokohama, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Original No. 3,859,326, dated Jan. 7, 1975, Ser. No. 273,282, July 19, 1972. Application for reissue July 24, 1975, Ser. No. 598,582

Claims priority, application Japan, July 23, 1971, 46-54660

Int. Cl.² C07C *121/02, 11/12*

U.S. Cl. 260—465.3 **4 Claims**

1. Process for simultaneously producing methacrylonitrile and butadiene which comprises contacting a mixture of butenes consisting essentially of isobutene and n-butene, oxygen and ammonia in vapor phase at a temperature of from about 350° to 500°C with a catalyst consisting of an oxide composition containing the elements in atomic ratio according to the formula

$$Fe_{10}W_aX_bMe_cO_d$$

wherein X is at least one element selected from the group consisting of phosphorus, boron and tellurium; Me is at least one element selected from the group consisting of vanadium and molybdenum; the subscripts denote atomic ratio and have the values:

a = 1–30
b = 0.01–15
c = 0.01–5;

and d is a value corresponding to the oxides formed from the above components by combination and is from 12 to 143, wherein said catalyst is produced by intimately mixing at least one compound of each of the respective elements in an aqueous system, heating to dryness and calcining at a temperature from about 400° to about 950°C for 2 to 48 hours.

Re. 28,837

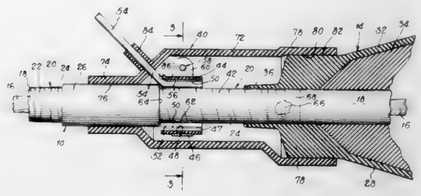
SHIELDING TAPE GROUNDING DEVICE FOR HIGH VOLTAGE CABLES

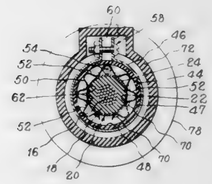
Frank A. Silva, Basking Ridge, N.J., assignor to Amerace Corporation, New York, N.Y.

Original No. 3,777,050, dated Dec. 4, 1973, Ser. No. 214,309, Dec. 30, 1971. Continuation of Ser. No. 112,146, Feb. 3, 1971, abandoned. Application for reissue Aug. 4, 1975, Ser. No. 601,810

Int. Cl.² H02G *15/02*; **H01R** *3/06, 11/10*

U.S. Cl. 174—78 **47 Claims**





1. A shielding tape grounding device for use in connection with a shielded high voltage power cable of the type having an inner conductor, insulation surrounding the conductor, a shielding system including a metallic tape shield surrounding the insulation, and an outer jacket surrounding the metallic tape shield, said grounding device comprising:

clamping means, said clamping means including a sleeve of elastomeric material defining an inner surface portion with an internal diameter substantially greater than the external diameter of the metallic shield, said clamping means including means selectively operable for decreasing the internal diameter of said inner surface portion;

electrical contact means including a band of conductive material disposed within said elastomeric sleeve in juxtaposed relation to said inner surface portion, said band being adapted to extend circumferentially around at least a portion of a bared portion of said metallic tape shield, said electrical contact means having flexure means for enabling resilient flexure of at least a portion of the band in a radial direction relative to said bared portion of said metallic tape shield in response to a decrease in the internal diameter of said inner surface portion by the action of said selectively operable means whereby said at least portion of said band is adapted to resiliently engage said metallic tape shield when said grounding device is located on said cable with said band extending circumferentially around said at least portion of said metallic tape shield; and

a grounding conductor electrically connected to the band and adapted to extend radially outward beyond the clamping means when said grounding device is located on said cable as hereinaforesaid.

45. For use in connection with a shielded high-voltage power cable of the type having an inner conductor, insulation surrounding the conductor, a shielding system including a metallic tape shield surrounding the insulation and an outer jacket surrounding the metallic tape shield, apparatus comprising:

an elastomeric sleeve, said sleeve being adapted to be disposed on said cable in position to enclose at least a bared portion of said metallic tape shield, said sleeve having one end portion adapted to resiliently engage in watertight sealing relation the jacket on said cable and having another end portion adapted to engage in watertight sealing relation insulation on said cable or a corresponding surface of a shielded electrical connector or terminator connected to said cable, said sleeve having an aperture disposed in the wall thereof between said end portions,

an electric contact member disposed within said sleeve for engaging said bared portion of said metallic tape shield when said sleeve is disposed on said cable in position to enclose said bared portion of said metallic tape shield, *said member including means for enabling resilient flexure of at least a portion of said member in both a radial and a circumferential direction relative to the outer periphery of said metallic tape shield*; and

a ground conductor electrically connected to said contact member within said sleeve and extending through said aperture in said sleeve and beyond said sleeve.

PLANT PATENTS

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

GRANTED JUNE 1, 1976

3,896

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William Erwin Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Apr. 16, 1975, Ser. No. 568,570

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—75 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant characterized as to uniqueness by the combined characteristics of orange bronze inflorescence color, flat inflorescence form, decorative inflorescence type, up to 2.25 inches diameter across face of inflorescence at maturity, medium plant height, compact, semi-upright general appearance of plant, average natural season flowering date of September 22, and its average controlled flowering response period of 6 weeks.

3,897

CHRYSANTHEMUM PLANT

Grace H. Mack, New Canaan, Conn., and Walter H. Jessel, Jr., Doylestown, and William Erwin Duffett, Akron, Ohio, assignors to Grace H. Mack, New Canaan, Conn.

Filed Apr. 25, 1975, Ser. No. 571,476

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—75 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant characterized particularly as to uniqueness by the combined characteristics of ivory white inflorescence color, flat inflorescence form, decorative inflorescence type, diameter of face of inflorescence up to 2.25 inches at maturity, short plant height, compact, semiupright growth habit, average natural season flowering date of Sept. 20, and its average controlled flowering response period of 6 weeks.

3,898

CHRYSANTHEMUM PLANT

Grace H. Mack, New Canaan, Conn., and Walter H. Jessel, Jr., Doylestown, and William Erwin Duffett, Akron, Ohio, assignors to Grace H. Mack, New Canaan, Conn.

Filed Apr. 25, 1975, Ser. No. 571,477

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—75 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant characterized particularly as to uniqueness by the combined characteristics of dark yellow inflorescene color, flat inflorescence form, decorative inflorescence type, medium plant height, semi-spreading plant growth habit, average natural season flower date of October 1, average controlled flowering response period of seven weeks, and diameter of face of inflorescence up to 2 inches at maturity.

3,899

ROSE PLANT

R. Merrell Graham, 507 Olustee Ave., Lake City, Fla. 32055

Filed Dec. 30, 1974, Ser. No. 537,997

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as described and shown herein, characterized particularly by its continuous blooming during the growing season and its abundance of unique blooms having petals which curl back at maturity with the outer petals quilled and the center petals generally randomly oriented.

3,900

RHODODENDRON PLANT

John Kraynak, Sr., John Kraynak, Jr., and George A. Kraynak, Sharon, Pa., assignors to Kraynak's, Inc., Sharon, Pa.

Filed June 26, 1974, Ser. No. 483,388

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—55 **1 Claim**

1. A new and distinct variety of rhododendron plant, substantially as shown and described, characterized by the distinctive color of its flower and foliage, and by its multiple blooming periods.

PATENTS

GRANTED JUNE 1, 1976

ERRATA

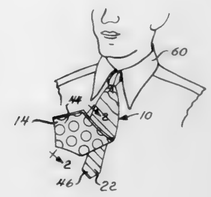
For CLASS	See PATENT NO.
063–015.65	3,959,989
092–160	3,960,057
112–228	3,960,089
339–145 R	3,960,278
062–002	3,960,322
254–067	3,960,359
254–139.1	3,960,360
254–168	3,960,362
351–176	3,960,442
030–346.54	3,960,608
202–185 R	3,960,668
206–534	3,960,713
260–112.5 R	3,960,720
526–237	3,960,823
526–085	3,960,824
526–206	3,960,825
526–103	3,960,826
424–273	3,960,882
252–465	3,960,975
357–040	3,961,340
356–244	3,961,346

PATENTS

GRANTED JUNE 1, 1976

GENERAL AND MECHANICAL

3,959,825
REVERSIBLE NECKTIE
John A. Hughes, 8031 S. Shore Drive, Chicago, Ill. 60617
Filed May 2, 1975, Ser. No. 573,881
Int. Cl.² A43D *25/06*
U.S. Cl. 2—146 **2 Claims**



1. A reversible four-in-hand necktie comprising: a first side, said first side having a first outside face bearing a first pattern, said first side having a first inwardly-curving hem formed integral with the outer periphery of the first outside face, said first outside face having a pair of relatively widened ends, said relatively widened ends being connected by a relatively narrow neck band; a second side symmetric with said first side, said second side having a second outside face symmetric with said first outside face, said second side having a second inwardly-curving hem formed integral with the outer periphery of the second outside face, said second side being connected to said first side with the first and second inwardly-curved hems adjacent to each other, said second outside face bearing a second pattern, said second outside face having a pair of relatively widened second ends, said relatively widened second ends being connected by a relatively narrow second neck band; and an interfacing having the same shape as said second outside face, said interfacing being positioned between said second outside face and said second inwardly-curving hem, said interfacing providing support and drape for said first side and said second side.

3,959,826
METHOD OF SKEWING TWILL FABRIC TO AVOID LEG TWIST
Karin Hakanson, San Francisco, Calif., assignor to Levi Strauss & Co., San Francisco, Calif.
Filed May 15, 1974, Ser. No. 470,075
Int. Cl.² A41D *1/10*
U.S. Cl. 2—227 **9 Claims**

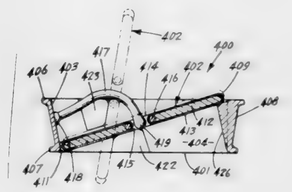
1. A method of preventing spiral twisting of long seams on denim garments made from twill fabrics comprising the steps of:

deliberately skewing the woven fabric in a direction to remove tension between warp and filling yarns in the twill, and maintaining the relatively tensionless relationship of the skewed fabric during the usual steps of finishing, cutting and sewing the fabric into garments whereby the relatively tensionless relationship between warp and



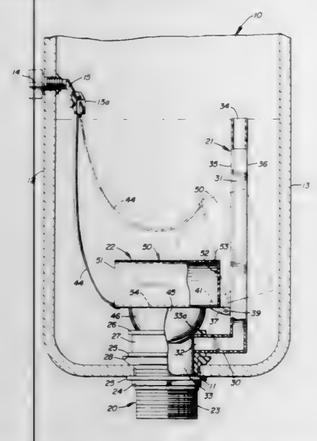
fill remoins substantially constant throughout the life of the garment.

3,959,827
HEART VALVE PROSTHESIS
Robert L. Kaster, 2730 Vagabond Lane, Wayzata, Minn. 55391
Continuation-in-part of Ser. No. 282,706, Aug. 8, 1972, Pat. No. 3,825,957. This application July 30, 1974, Ser. No. 493,022
Int. Cl.² A61F *1/22*
U.S. Cl. 3—1.5 **27 Claims**



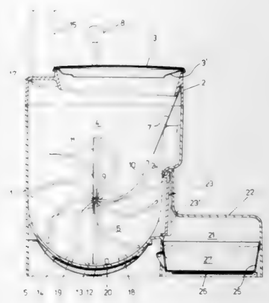
17. A heart valve prosthesis for controlling the flow of blood in a heart comprising: a base having a passage for carrying blood through the base and means for accommodating a suturing member used to secure the heart valve to heart tissue, valving means movable relative to the base to an open position to allow blood to flow through the passage in one direction and to a closed position to restrict the flow of blood in the opposite direction through the passage, means for holding the valving means in movable assembled relation with the base, and means associated with the valving means and means for holding the valving means for progressively moving the valving means from the open position to the closed position in response to a reduction of the pressure of the blood moving through said passage.

3,959,828
FLUSH VALVE AND OVERFLOW PIPE ASSEMBLY FOR A TOILET TANK
Ignacio Acevedo, 4066 Fenwick Road, Columbus, Ohio 43220
Filed Apr. 9, 1975, Ser. No. 566,215
Int. Cl.² E03D *1/34*
U.S. Cl. 4—57 P **9 Claims**



1. A flush valve and overflow pipe assembly for mounting in a liquid storage tank in cooperation with a downwardly-opening discharge outlet including:
a fitting adapted to be mounted in cooperation with said outlet and having an upwardly opening discharge passage provided with a valve seat at the upper end of said fitting;
an elongated, upstanding overflow pipe carried by said fitting in radially offset relationship to the discharge passage, said overflow pipe having a lower end in fluid communication with the discharge passage and an inlet at its upper end; and
a valve-carrying unit mounted on said overflow pipe for vertical swinging movement above said valve seat and comprising;
a valve member,
a valve-supporting member having said valve member mounted thereon for cooperation with said valve seat and having an inner end pivoted to said overflow pipe to permit swinging movement about a horizontal axis between a lower horizontal position where the valve member is closed on said valve seat and a substantially upright position where the valve member is spaced upwardly from said valve seat, said valve-supporting member having an axis extending outwardly from and substantially normal to said pivot axis and horizontally disposed when in said lower horizontal position, and a pair of counterbalancing, liquid receiving containers carried by said valve-supporting member at opposite sides of the axis thereof and spaced apart a distance greater than the width of said overflow pipe so as to receive said pipe therebetween when said valve-supporting member is swung to its upright position, said containers being of elongated tubular form having longitudinal axis disposed parallel to each other and to the axis of said valve-supporting member but in relatively offset relationship thereto at the side opposite to said valve member with a liquid capacity to provide a counterbalancing force when filled to maintain said valve-supporting member in an upright position,
each of said containers having the inner ends adjacent said pivot axis closed and the other ends open and having a relatively small liquid discharge opening formed therein at the closed end to permit discharge of liquid therefrom at a predetermined rate when said valve supporting member and container are in the upright position whereby enabling the valve-supporting member to return to the lower horizontal position as said containers become emptied.

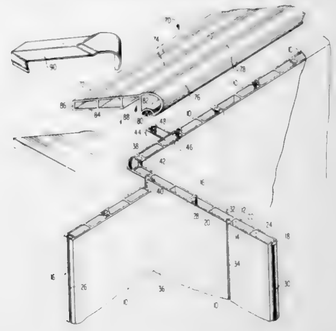
3,959,829
IMPROVEMENTS IN AND RELATING TO DRY CLOSETS
Peter Nordgren, Gustavsberg, Sweden, assignor to AB Gustavsbergs Fabriker, Gustavsberg, Sweden
Filed Feb. 14, 1975, Ser. No. 550,010
Claims priority, application Sweden, Feb. 19, 1974, 7402187-4
Int. Cl.² A47K *11/03*
U.S. Cl. 4—131 **9 Claims**



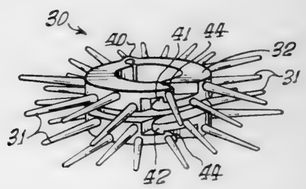
1. A closet for the biological decomposition of human feces and urine and for the pasteurization of the decomposition product thereof, which comprises: a collecting vessel having an elevatable lid; a primary chamber forming the lower part of said collecting vessel, said chamber having a wholly closed bottom and being adapted to contain a bed of material adapted to biologically disintegrate feces and urine therein; controllable means adapted to heat bed material in said chamber; means for ventilating said chamber; mechanical means within said chamber adapted to mix feces and urine with said bed material and for aerating and moving the resulting mixture towards a secondary chamber; a removable smaller secondary chamber adjacent to and at substantially the same level as said primary chamber; a normally closed but openable port between said chambers adapted to permit substantially horizontal transfer of bed material from said primary chamber to said secondary chamber; and independently controllable heating means in said secondary chamber adapted to heat bed material in said chamber to pasteurizing temperature.

3,959,830
SWIMMING POOL
William A. van den Broek, Doylestown, Pa., assignor to KDI Sylvan Pools, Inc., Doylestown, Pa.
Filed Apr. 28, 1975, Ser. No. 572,578
Int. Cl.² E04H *3/16, 3/18*; **F16L** *21/02*
U.S. Cl. 4—172.19 **19 Claims**

1. A swimming pool structure comprising a plurality of interconnected vertically disposed elongated wall panels of plastic material defining the wall portion of said pool, said panels having complementary interlocking tongue and groove connecting means along opposed longitudinal side edges to prevent lateral separation of said panels, said tongue and groove connecting means being additionally solvent bonded to prevent relative longitudinal movement of said panels relative to each other and to permanently join said panels into an integral one-piece wall assembly.



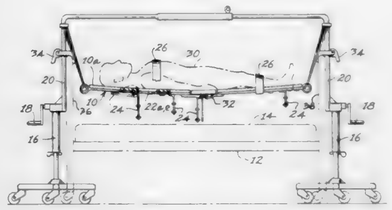
3,959,831
WASH BASIN DRAIN FILTER
Jon Michael Hendricks, 600 Church Hill Road, La Habra, Calif. 90631
Filed Dec. 16, 1974, Ser. No. 532,753
Int. Cl.² A47K *1/14*
U.S. Cl. 4—287 **13 Claims**



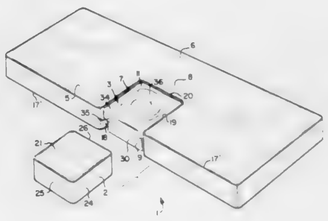
1. A wash basin drain filter for entrapping elongated flexible fibers such as hair while permitting the passage of relatively small particulate matter and water, said filter comprising:
a pop-up drain plug having an upper enlarged top for forming a water tight seal with a wash basin, said drain plug having an elongated shank with a lower enlarged bottom end portion;
a filter member having a generally cylindrical body having an axially aligned opening positioned about the shank of a pop-up drain plug said opening being smaller than said enlarged top and said enlarged bottom end portion so that said member is held onto said drain plug; and
a plurality of spikes affixed to said body and protruding outwardly therefrom, the outer extremities of said spikes being resiliently moveable from their relaxed position to a position closer to the longitudinal axis of said cylindrical body.

3,959,832
INVALID HAMMOCK
Vivian Parsons, Rte. No. 2, Box 277B, Shelbyville, Tenn. 37160
Filed June 25, 1974, Ser. No. 482,876
Int. Cl.² A47B *83/04*
U.S. Cl. 5—84 **14 Claims**

1. A bed for an invalid comprising a hammock suspended above the mattress of a bed, said hammock having a plurality of openings therein, said openings being positioned in the vicinity of contact points for shoulder blades, hip bones, end of spine and heels of a patient lying therein, said hammock being joined at each end thereof to adjustable members whereby said hammock may be raised and lowered, said hammock being adjustable to fit patients of different sizes.



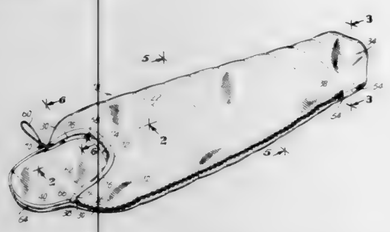
3,959,833
COMBINATION MATTRESS, MATTRESS INSERT, AND COMMODE
William Burke, Burke Incorporated, P.O. Box 1064, Mission, Kans. 66222
Filed June 4, 1975, Ser. No. 583,623
Int. Cl.² A61G *7/02*
U.S. Cl. 5—90 **6 Claims**



1. In combination:
a. a mattress formed of resilient material and having opposite side edge portions and opposite end portions and an intermediate portion, one of said side edge portions at said intermediate portion having walls extending therefrom transversely of the mattress, said transverse walls being connected by a longitudinal wall cooperating therewith and defining a laterally extending recess in the mattress for substantially one-half the width thereof;
b. a mattress insert formed of the same resilient material as the mattress and substantially corresponding in shape and size to said recess and removably received in said recess in said mattress and having side walls and an end wall frictionally engaged with the transverse walls and longitudinal wall defining said recess;
c. a utility insert interchangeable with said mattress insert and removably received in said recess in said mattress, said utility insert having a receptacle with side wall portions engaging the recess defining walls;
d. said utility insert having a removable cover supported on said side wall portions of said receptacle;
e. said side wall portions of said receptacle having an upper edge portion formed to define a rim;
f. said cover having a peripheral edge portion with a depending flange surrounding and in engagement with said upper edge portion of said receptacle side wall portions; and
g. said depending flange of said edge portion of said cover having an exterior surface adapted to be in frictional

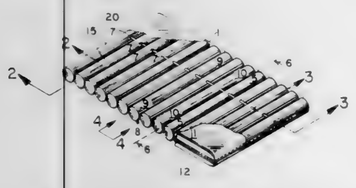
engagement with said walls defining said recess in said mattress.

3,959,834
SLEEPING BAG CONSTRUCTION
Harry Hunt, Boulder, Colo., assignor to Alpine Designs, Inc., Boulder, Colo.
Division of Ser. No. 362,497, May 21, 1973, Pat. No. 3,857,125. This application Dec. 27, 1974, Ser. No. 536,813
Int. Cl.² A47G 9/00
U.S. Cl. 5—343 **2 Claims**



1. In a sleeping bag comprising quilted front and back panels sewn together along a portion of a side edge and selectively fastenable together along at least an adjacent portion of said side edge, a baffle tube extending along said side edge entirely longitudinally of both said portions and secured with at least one of said front and back panels entirely longitudinally along both said portions.

3,959,835
INFLATABLE AIR MATTRESS
Rudolph Nos, Rock Forest, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Oct. 6, 1975, Ser. No. 620,170
Int. Cl.² A47C 27/08
U.S. Cl. 5—368 **8 Claims**

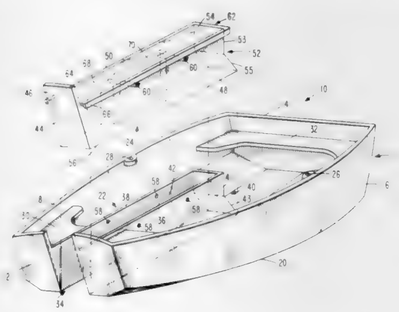


1. An air mattress comprising a plurality of rubber-like tubes, each having a longitudinal axis lying within a first plane, each of said tubes engaging neighboring said tubes along joining lines lying within said first plane, each of said tubes having the same length, the free ends of said rubber-like tubes forming two parallel planes transverse to said longitudinal axis and said first plane, a plurality of relatively shorter interconnecting hoses forming an air passage between adjoining said rubber-like tubes the axis of each lying in an air passage line transverse said longitudinal axis, an air valve fastened to one of said rubber-like tubes, the shaft of a solid metallic rivet cemented within a rubber-like ring, said ring cemented to the interior surface of the free end of each of said rubber-like tubes, an overall waterproof fabric-like casing enclosing said plurality of rubber-like tubes, said interconnecting hoses, said metallic rivets, said rubber-like rings, and said valve, a zipper closure device lying within said first plane adapted to fasten free edges of said casing to form a unitary enclosure, said casing providing parallel lateral second and third planes centrally between which lies said first plane in parallel relationship thereto.

3,959,836
PRINTING PROCESS
Eichiro Ueno, Wakayama; Hideo Kawasaki, Moriyama, and Syozo Shigita, Hirakata, all of Japan, assignors to American Cyanamid Company, Stamford, Conn.
Filed Dec. 13, 1973, Ser. No. 424,407
Int. Cl.² D06P 3/82
U.S. Cl. 8—21 A **6 Claims**

1. A process for printing a fiber assemblage comprising acrylic fibers dyeable with cationic dyes and blend fibers dyeable with anionic dyes with a printing paste containing a cationic dye and an anionic dye which process comprises preparing said printing paste so as to contain lignin sulfonic acid or a soluble salt thereof in an amount by weight greater than the total amounts by weight of cationic and anionic dyes present, printing said fiber assemblage with the thus-prepared printing past and thereafter steaming the thus-treated fiber assemblage to fix the dyes thereon.

3,959,837
DINGHY WITH MAST WELL
Robert W. Archibald, 1500 S. 20th Ave., Hollywood, Fla. 33020
Filed Apr. 28, 1975, Ser. No. 572,485
Int. Cl.² B63B 35/00
U.S. Cl. 9—2 R **10 Claims**

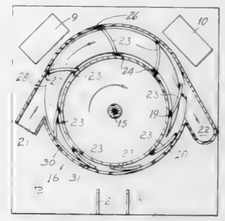


1. A dinghy adapted to be stowable aboard a masted boat, said dinghy comprising:
a hull having exterior sides and a bottom, said exterior sides including a bow, a stern, and side walls;
a mast receiving slot extending inwardly in said hull from one of said exterior sides of said hull; and
a plug removably securable in said mast slot whereby said dinghy with said plug removed is stowable aboard said boat with the mast being received in said mast slot.

3,959,838
UNDERWATER CLEANING
Harvey John Hannah, 514 Kensington Road, Wattle Park, Adelaide, South Australia, Australia (50666)
Filed Feb. 28, 1974, Ser. No. 446,722
Int. Cl.² E04H 3/20; A47L 9/04
U.S. Cl. 15—1.7 **2 Claims**

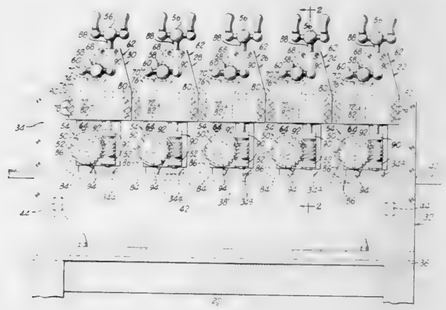
1. An underwater surface cleaning apparatus for swimming pools including a body adapted to be drawn across a surface to be cleaned, a brush rotatably supported with respect to the body so as to engage against a surface of the swimming pool, a water operable motor adapted to operate by reason of water drawn from that surrounding the apparatus and sucked through the motor whereby to effect rotation of the drive shaft of the motor, the drive shaft being coupled to the brush to effect the rotation of the brush and effect a cleaning action on the engaged underwater surface, the motor including a rotor and a housing, the rotor being within the housing and having

vanes acting therebetween and following the rotor, an inlet port and an outlet port being formed in the housing and the vanes being caused by engagement with the housing to adapt a sealing engagement between the rotor and the housing and



also being caused by engagement with a guiding track within the housing to take an extended position when moving between the inlet port and the said outlet port, and being caused to take a collapsed position when moving from a position adjacent said outlet port to adjacent said inlet port.

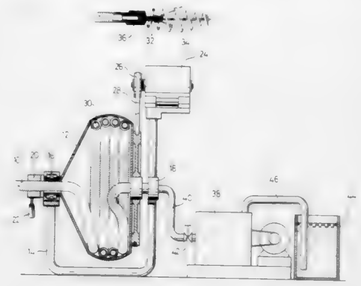
3,959,839
SCRAPING APPARATUS
Steven Y. Bradley, Geneva, Ill., assignor to Masonite Corporation, Chicago, Ill.
Filed June 23, 1975, Ser. No. 589,207
Int. Cl.² B23D 1/00
U.S. Cl. 15—93 R **14 Claims**



1. Apparatus for scraping a surface of a substrate comprising:
substrate support means for supporting a substrate and defining a path of travel of said substrate through said apparatus,
scraping blade support means for supporting a flexible scraping blade for contact against a surface of said substrate moving along said path,
a flexible scraping blade secured in said scraping blade support means to form an arcuately curved scraping edge in contact against said substrate, and
means for adjusting the contacting pressure of said arcuate scraping blade edge against said surface of said substrate.

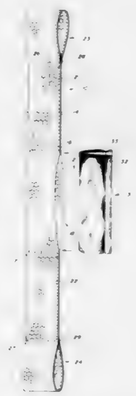
3,959,840
PIPE CLEANING APPARATUS
Tadayoshi Sato, No. 117, Mizumoto Koai Kamimachi, Katsushika, Tokyo, Japan
Filed Feb. 12, 1975, Ser. No. 549,378
Claims priority, application Japan, Feb. 13, 1974, 49-17358[U]
Int. Cl.² B08B 9/02
U.S. Cl. 15—104.3 SN **3 Claims**

1. A pipe cleaning apparatus comprising in combination: a rotatable and extensible cleaning member including a coil spring having the convolutions thereof in closely engaging relation and a flexible tube positioned concentrically therein; a source of high pressure water connected to one end of said flexible tube and a dischaerge nozzle mounted in and extending from the other end of said flexible tube; an auger having an outer diameter greater than that of said cleaning member



connected to and extending from the end of said spring in surrounding relation to said nozzle; said nozzle having at least two diverging discharge outlets whereby a divergent stream of said high pressure water is discharged directed towards the peripheral portion of said auger; and means for rotating and advancing said cleaning member into the pipe to be cleaned.

3,959,841
APPARATUS FOR APPLYING LIQUID PREPARATIONS TO THE BODY
Juliana S. Horne, c/o Hoopes - 24 Aragon Ave., Latham, N.Y. 12110
Filed June 23, 1975, Ser. No. 589,198
Int. Cl.² A47K 7/03
U.S. Cl. 15—104.94 **8 Claims**



1. Apparatus for use by a person for applying liquid preparations, such as lotions, creams, and the like, across portions of the body of said person, comprising
an integral elongated reticulated fabric folded along its major axis to form a body of double thickness so that one edge of said elongated fabric along its length is characterized by such fold and the opposite edge of said fabric along its length is characterized by overlapped bare terminations, said fabric having two spaced lines of transverse stitching centrally located so as to form a pocket therewithin, said fabric having longitudinal stitching along said bare terminations extending outwardly from said pocket, and loops formed on opposite ends of said

elongated fabric by transverse stitching of folded-over ends of said fabric; and

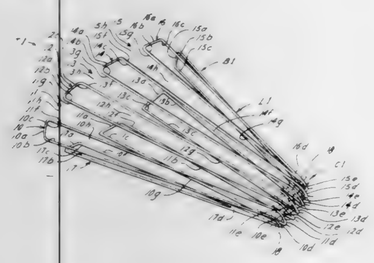
a disposable pad adapted to be inserted into said pocket.

3,959,842

TONGUE TOOTHBRUSH

David W. Alley, Houston, Tex., assignor to Pravel & Wilson and David W. Alley, both of Houston, Tex., part interest to each

Filed Apr. 18, 1975, Ser. No. 569,369
Int. Cl.[2] A46B *9/04*
U.S. Cl. 15—167 R **17 Claims**



1. A tongue toothbrush adapted to be mounted with a tongue for cleansing teeth, comprising:

a hollow flexible body member adapted to receive the tongue and adapted to releasably engage the exterior portion of the tongue when mounted therewith;

said body member including a plurality of adjacent, spaced, yieldable loops adapted to surround the tongue; and,

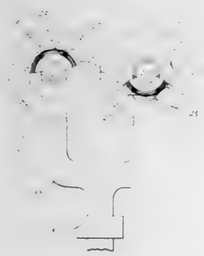
means for cleansing the teeth by appropriate movement of the tongue, said cleansing means mounted with said body member adjacent the tip of the tongue when said body member is mounted with the tongue.

3,959,843

APPARATUS FOR EXTRACTING LIQUID FROM CLOTH IN ROPE FORM

Rikizo Yokota, Kyoto, Japan, assignor to Uenoyama Kiko Co., Ltd., Kyoto, Japan

Filed Oct. 10, 1974, Ser. No. 513,560
Claims priority, application Japan, Oct. 10, 1974, 49-117526
Int. Cl.[2] A47L *5/38*
U.S. Cl. 15—306 A **5 Claims**



1. An apparatus for extracting liquid from cloth in rope form comprising

a rotary roller including a groove therein for receiving and guiding the rope form cloth which has liquid content absorbed therein and a predetermined maximum providing a first predetermined curvature;

said groove formed with an arcuate central inner section and two connected side sections, each side section connected respectively on opposite sides of said central section and extending outwardly and radially therefrom to provide a generally U-shape for said groove;

said arcuate section having a second predetermined curvature considerably larger than said first predetermined curvature of the rope form cloth to provide substantial spacing between each of said side sections and the rope form cloth;

said arcuate section having a plurality of small apertures radially extending therethrough around the entire circumference of said arcuate section;

a fixed hollow shaft having one end closed and the other end connected to a vacuum pump for applying a suction force to said shaft;

said shaft including an opening formed in a portion of its surface; and

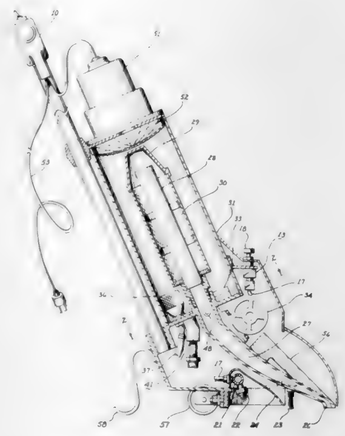
said roller mounted for rotation on said shaft in a location thereon providing for said plurality of apertures to pass over said opening during each revolution of said rotary roller whereby the liquid content of said rope form cloth is extracted therefrom.

3,959,844

CARPET SOIL EXTRACTOR

Gilbert G. Cyphert, Phoenix, Ariz., assignor to Chemko Industries, Inc., Phoenix, Ariz.

Filed Feb. 5, 1975, Ser. No. 547,139
Int. Cl.[2] A47L *7/00*
U.S. Cl. 15—320 **6 Claims**



1. In a manually propelled carpet cleaning apparatus having an upwardly extending handle and roller means for supporting said apparatus and for serving as a pivot point about which said apparatus is pivoted into and out of operative engagement with the carpet, said apparatus including a source of incoming water, a container for housing a cleaning agent, a mixer for metering the cleaning agent into the incoming water to produce a cleaning solution and means for generating a partial vacuum, the improvement comprising in combination:

a. a plurality of nozzles for directing the cleaning solution onto and into the carpet;

b. a shroud disposed about said nozzles for limiting splatter of the cleaning solution;

c. non-rotary agitator brush means disposed external to said shroud for engaging the pile of the carpet and stimulating penetration of the cleaning solution into the pile to loosen dirt contained in the carpet;

d. mouth means disposed in contacting relationship with the carpet, said mouth means being in fluid communication with the vacuum means for scavenging the cleaning solution and loosened dirt from the carpet;

e. weight means for urging pivotal movement of said apparatus about the roller means to bias said agitator brush means and said mouth means against the pile of the carpet;

f. filter means disposed intermediate the vacuum means and said mouth means for removing the dirt contained within the scavenged cleaning solution, said filter means including deflection means for deflecting the cleaning solution away from the vacuum means; and

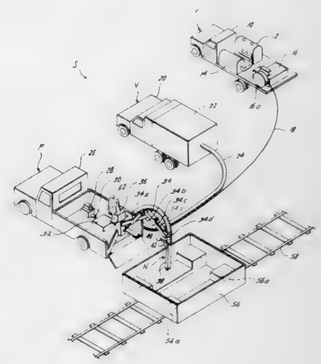
g. a tank for receiving the filtered cleaning solution flowing through said filter means.

3,959,845

APPARATUS AND METHOD FOR CLEANING MINING CARS

Robert R. Cradeur, Sulphur, La., and Ronald Webb Holloway, Dunbar, W. Va., assignors to Browning-Ferris Industries, Inc.

Filed Aug. 26, 1974, Ser. No. 500,289
Int. Cl.[2] A47L *7/00, 9/00*
U.S. Cl. 15—321 **3 Claims**



1. An apparatus for cleaning particulate matter from a mining car at a work site, comprising:

fluid means for providing high volume, positive pressure water including separate motor powered fluid means transport vehicle independently mobile and movable from one work site to another and having a fluid pump and fluid reservoir therewith and a high pressure water line extending from said fluid reservoir of said fluid vehicle to the mining car at the work site for loosening packed particles in the mining car;

vacuum means for providing high volume, negative pressure including a separate motor powered vacuum means transport vehicle independently mobile and movable from one work site to another and having a vacuum pump therewith and a vacuum tube extending from said vacuum pump of said vacuum vehicle to the mining car for withdrawing the loosened particles from the mining car at the work site;

nozzle means mounted with said high pressure water line and said vacuum tube for vacuum flow for directing said high pressure water against packed particles within the mining car to loosen said particles and for withdrawing said loosened particles and water from the mining car;

positioning means for positioning said nozzle means within the mining car, said positioning means including a separate motor powered positioning means transport vehicle being independently mobile and movable from one work site to another and having a support mechanism for movably supporting said nozzle means; and,

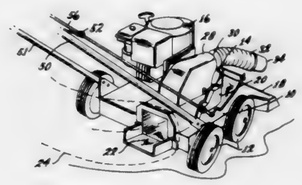
said fluid means and said vacuum means coacting simultaneously at said nozzle means for directing said high pressure water against packed particles within the mining car to loosen the same and simultaneously withdraw the packed particles and water from the mining car, and wherein said support mechanism of said positioning means is a hydraulically operated back-hoe type mechanism.

3,959,846

ROTARY VACUUM SWEEPER IMPROVEMENT

Haruma Yasuda, 219 N. Gage Ave., Los Angeles, Calif. 90063

Filed May 19, 1975, Ser. No. 578,607
Int. Cl.[2] A47L *5/14*
U.S. Cl. 15—331 **6 Claims**



1. In a rotary vacuum sweeper of the type adapted to be rolled over a sidewalk or other flat horizontal surface and to pick up grass cuttings, dirt and other forms of debris, such type of sweeper having a wheeled carriage body including a housing, a rotary blower mounted on said carriage body within said housing and having blower inlet means disposed below the carriage body and adjacent to, and directed against the surface on which the carriage body is disposed for rolling movement, and a blower outlet duct within said housing, said duct extending from said housing in a first direction and terminating in an opening serving as a discharge passage for debris picked up through the blower inlet means by the low pressure condition therein created upon the rotation of the blower, power means to rotate said blower at a sufficient speed of rotation to create such low pressure condition at the inlet means, and handle means extending upwardly and angularly from said carriage body whereby said wheeled carriage may be locomoted by a force provided by an operator of the sweeper, the improvement which comprises:

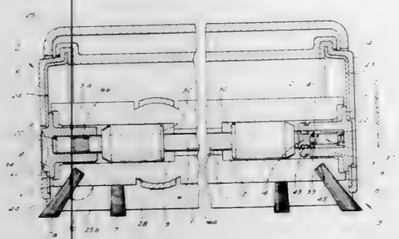
A. duct means mounted on said housing and having an outlet directed generally forwardly of said carriage body;

B. flexible hose means, said hose means having one end attached onto said outlet of between duct means and its other end pointed downwardly and adapted to be swung through a predetermined arc the radius of which is centered on said carriage body;

C. valve means disposed in said blower outlet duct, said valve means being movable betwee a first position wherein it provides substantially no interference with the flow of air from said blower to the discharge opening of said duct, and a second position wherein the flow of substantially all air through said outlet duct is diverted from said outlet opening to said duct means from whence it passes through said flexible hose means; and

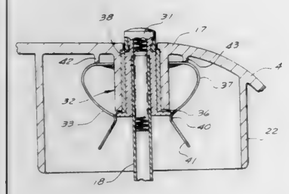
D. articulated control means including a rod extending upwardly from said carriage body and terminating in its upper extremity in a handle whereby the operator of said sweeper may, by grasping said handle and pushing the rod downwardly, first shift the said valve means between its first and second positions, and when said valve means is disposed in said second position, the operator may further direct said hose outlet in any direction within its said predetermined arc by rotating the rod by its handle.

3,959,847
FLOOR CLEANING APPARATUS
Heinz Kaulig, Wuppertal, and Gerhard Orth, Solingen, both of Germany, assignors to Vorwerk & Co. Elektrowerke KG, Wuppertal, Germany
Filed Apr. 2, 1974, Ser. No. 457,231
Claims priority, application Germany, Apr. 12, 1973, 2318425
Int. Cl.² A47L *9/06*
U.S. Cl. 15—368 **14 Claims**



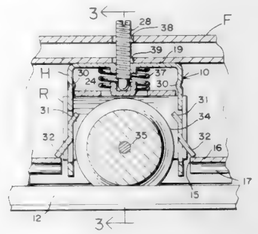
1. Floor cleaning apparatus of the vacuum cleaner type comprising a housing having a pair of side walls each provided with an aperture; a cylindrical brush in said housing extending between said side walls and turnable about a horizontal axis, said brush having a brush body provided with hollow end portions extending along said axis; and means for adjusting said brush body relative to said housing, said adjusting means having parts extending into said hollow end portions of said brush body, other parts mounted in said side walls of said housing and including eccentrics turnable in said apertures in said side walls, and means for arresting at least one of said eccentrics in a selected turned position, said arresting means including at least one detent projection on one of said one eccentric and the associated side wall, and a plurality of complementary detent recesses in the other of said associated side wall and said one eccentric for receiving said detent projection, and means in the other eccentric for resiliently biasing said one eccentric toward said associated side wall.

3,959,848
VACUUM CLEANER NOZZLE CONSTRUCTION
Eberhard Rother, Wuppertal, Germany, assignor to Vorwerk & Co. Elektrowerke, Wuppertal, Germany
Filed Jan. 25, 1974, Ser. No. 436,693
Claims priority, application Germany, Feb. 8, 1973, 2306101
Int. Cl.² A47L *9/06*
U.S. Cl. 15—372 **6 Claims**



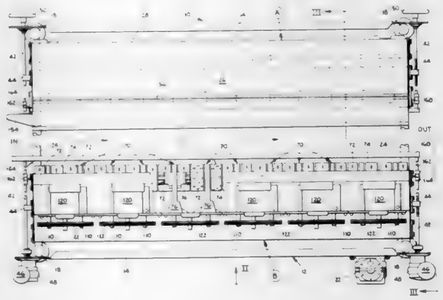
1. In a vacuum cleaner, a nozzle unit comprising a housing having an opening; a brush disk located in said opening and having bristles extending outwardly therefrom; a tubular socket on said housing; mounting means mounting said disk for rotation about an axis which extends substantially normal to the plane of said opening, including a journal pin extending to said brush disk and having a first end portion rotatably received in said socket and a second end portion, and a bearing ball between and in contact with said second end portion and said disk so as to form a single-point bearing; and brush-disk changing means in the region of said tubular socket for ejecting said mounting means from said socket, thereby disconnecting said disk from said housing and facilitating rapid installation and removal of said brush disk in said housing.

3,959,849
ROLLER ASSEMBLY FOR SLIDING DOORS
Robert J. Marquardt, Miami, Fla., assignor to Miller Industries, Inc., Miami, Fla.
Filed Aug. 8, 1975, Ser. No. 602,972
Int. Cl.² E05D *13/02*
U.S. Cl. 16—105 **3 Claims**



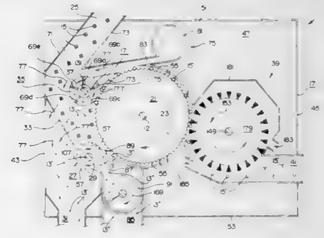
1. A roller assembly for sliding doors comprising a roller support member having a top wall and side walls in spaced relation to each other, a roller rotatably mounted between said side walls, a further support member, means telescopically mounting said further support member on said roller support member, spring means mounted between said members yieldingly urging said roller support member outwardly of said further support member, means mounted on said further support member frictionally engaging said roller support member and restraining the outward movement of said roller support member, a threaded bore mounted on said further support member and a threaded member mounted in said threaded bore engaging said roller support member whereby upon the threading of said threaded member in the direction of said support member, said roller support member is compelled to slide past said restraining means, and said spring means effecting an outward sliding movement of said roller support member.

3,959,850
COUNTER-ROTATING FOWL PICKER
Edward J. Crane, Ottumwa, Iowa, assignor to Barker International, Inc., Marietta, Ga.
Filed July 30, 1974, Ser. No. 493,023
Int. Cl.² A22C *21/02*
U.S. Cl. 17—11.1 R **31 Claims**



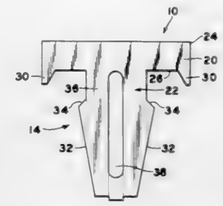
1. A fowl picking machine comprising a frame; a pair of horizontally spaced, longitudinally extending picking assemblies supported on said frame and defining a generally horizontally and longitudinally extending picking channel therebetween through which a fowl is moved for picking and cleaning feathers from the same; each picking assembly including a plurality of individual, axially aligned drum assemblies; each of said drum assemblies including a pair of counter-rotating, axially aligned drums which are immediately adjacent and side by side with one another and each rotate in a plane generally transverse to said longitudinally extending picking channel, each of said drum assemblies also including rotation support means for rotatably supporting each pair of drums separately from the next adjacent pair or pairs of drums such that said assemblies provide ease of access, maintenance and repair for each of said pairs of drums; said drums each including a plurality of radially extending, flexible, picking fingers, drive means for individually and separately driving each pair of counter-rotating drums including means for simultaneously rotating said drums in said pair in directions opposite one another; each of said drums in one of said picking assemblies being generally opposite to and rotating through said channel in the same direction as a corresponding drum in the other of said picking assemblies.

3,959,851
COTTON GINNING APPARATUS
Woodrow W. Bledsoe, 2775 Dalewood, Memphis, Tenn. 38127
Filed June 30, 1975, Ser. No. 592,067
Int. Cl.² D01B *1/04*
U.S. Cl. 19—48 A **12 Claims**



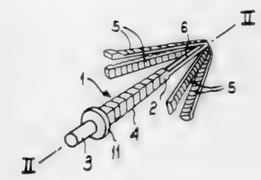
1. Apparatus for removing and segregating seeds from seed cotton, said apparatus comprising frame-like housing means, a prime mover for rotatably driving certain structure of said apparatus, a ginning saw cylinder for engaging and holding the fibers of the seed cotton, said ginning saw cylinder being journaled to said housing means and being coupled to said prime mover for rotation in a predetermined direction about a horizonatal axis, entry duct means disposed adjacent said ginning saw cylinder for admitting the seed cotton into said housing means, cylinder-like kicker means disposed within said housing means and extending across the path of the seed cotton being admitted therein for agitating and directing the seed cotton onto said ginning saw cylinder, said kicker means being journaled to said housing means and being coupled to said prime mover for rotation in a predetermined direction about a horizontal axis, first outlet duct means leading outwardly from said housing means for receiving and discharging at least a first portion of the seeds which have been removed from the seed cotton, grid means interposed between said entry duct means and said first outlet duct means for preventing passage into said first outlet duct means of the locks of cotton and for permitting passage therethrough of the segregated seeds, spiral shaped ginning roller means coacting with said ginning saw cylinder for engaging and removing the seeds from the seed cotton, said ginning roller means being journaled to said housing means and being coupled to said prime mover for rotation in a predetermined direction about a horizontal axis with the periphery thereof being a predetermined distance from the periphery of said ginning saw cylinder, doffing means for subsequently removing the lint cotton from said ginning saw cylinder, and lint cotton duct means leading outwardly from said housing means for receiving the lint cotton from said doffing means and for directing the lint cotton to further processing apparatus.

3,959,852
FASTENER FOR FENCE CONSTRUCTION
John J. Sasena, Parma, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Dec. 24, 1974, Ser. No. 536,146
Int. Cl.² A44B *21/00*
U.S. Cl. 24—73 B **12 Claims**



1. A one-piece spring fastener for mounting a wire having a given maximum diameter generally perpendicularly to a channel-shaped support, said wire mounted for movement relative to the support along the axis of the wire, said fastener comprising two substantially flat, spaced apart, generally parallel, T-shaped members joined along substantially the entire lengths of the tops thereof by a bight portion extending generally perpendicularly therebetween, each of said T-shaped members comprising a top portion having a first edge from which said bight portion extends and a second, generally parallel edge from which a base portion extends, said top portions and said bight portion defining a trough for receipt of said wire, said base portions being of generally dart configuration for forcable receipt inbetween and retention by the inturned flanges of said channel-shaped support.

3,959,853
FASTENING PEG AND METHOD OF MAKING SAME
Maryan Talan, 68 rue Bonaparte, 75006 Paris, France
Filed Feb. 3, 1975, Ser. No. 546,824
Claims priority, application France, Feb. 14, 1974, 74.04973
Int. Cl.² A44B *21/00;* **F16B** *13/04*
U.S. Cl. 24—73 PF **6 Claims**



1. A device for fastening an object to a support comprising an expansible peg adapted to be driven into a hole of the support; an expansion plug located centrally in said expansible peg and having a front end and a rear end, said expansion plug having a polygonal cross section and said expansible peg comprising a plurality of legs disposed about said expansion plug, the number of said legs corresponding to that of the faces of said plug; flexible connecting strips connecting the front end of each leg to the front end of said plug, said con-

necting strips are folded on themselves in such a manner that the rear ends of said legs are spaced from the rear end of said plug; and a flange provided on said plug adjacent the rear end thereof for limiting driving of said plug into the peg-forming portion of the device, said legs, said strips and at least a portion of said plug being integrally molded from plastic material and the lengths of said strips being such that they permit by the distortion thereof forward movement of said plug relative to said legs during driving of the device into the hole, the external faces of said legs having a substantially convex shape so that the device has a circular cross section when said legs are folded against said plug.

3,959,854

TABLE SKIRT MOUNTING

Edward M. Lewis, 151 S. Delaplaine Road, Riverside, Ill. 60546

Filed Feb. 6, 1975, Ser. No. 547,559
Int. Cl.² A44B *13/00*; **A47C** *21/00*
U.S. Cl. 24—84 B **4 Claims**



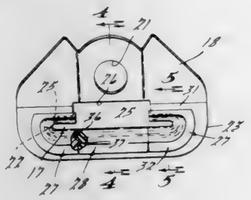
1. In combination with a skirt forming member having a top marginal portion providing downwardly opening pocket formations, a mounting clip for securing said skirt member to the edge portion of a support member in the form of a table top margin, which mounting clip comprises a base plate adapted to seat against the edge of said support member, clamp means extending from said base plate for frictionally securing the clip to the support member and an upwardly directed finger member adapted to seat in a downwardly opening pocket formation on the skirt, including spaced, resilient top and bottom support engaging finger members and said bottom finger member being connected to the bottom portion of said upwardly directed skirt engaging finger member so as to swing said skirt engaging finger member toward said base plate when said top and bottom support engaging finger members are urged apart.

3,959,855

SHOULDER STRAP BRACKET

Robert C. Fisher, 4210 N. Dixie, West Palm Beach, Fla. 33407

Filed Oct. 29, 1975, Ser. No. 626,656
Int. Cl.² B60R *21/10*; **A62B** *35/02*
U.S. Cl. 24—163 FC **9 Claims**



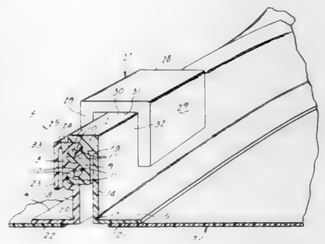
1. In a bracket for supporting a shoulder strap which extends through a slot therein, first and second plastic end elements in said slot, said elements being of U-shape and having a groove in the outer edge thereof for receiving the edge of the bracket slot, and a third plastic element having a grove along one edge insertable between said end elements to form a continuous plastic wall covering the outermost edge and ends of the slot.

3,959,856

INTERLOCKING SEPARABLE FASTENER

Steven Ausnit, 124 E. 61st St., New York, N.Y. 10021

Filed Mar. 6, 1975, Ser. No. 555,881
Int. Cl.² A44B *19/14*, *17/00*
U.S. Cl. 24—201 C **2 Claims**



1. A separable fastener especially suitable for heavy duty enclosures of sheet-like material, comprising:
a pair of resilient fastener strips of substantial width vertically having a plurality of parallel separably interlocking longitudinal complementary rib and groove formations;
one of said fastener strips having a substantially flat head portion forming a crown face;
a riser flange extending downwardly from a resilient hinged joint with the head portion of said one strip and such riser flange being otherwise free from and movable toward and away from said one closure strip and projecting to a substantial distance downwardly from said one strip;
a riser flange extending downwardly from the lower edge of said other of said closure strips;
each of said riser flanges having on its lower edge a respective foot flange resiliently hingedly connected thereto and the foot flanges extending in opposite directions for attachment to margins of a sheet-like enclosure toward one another whereby the interlocked fastener strips will normally act to retain the sheet margins adjacent to one another and the hinged connections will permit a range of pulling apart of the enclosure margins without interfering with the interlocking coaction of the rib and groove formations;
a pull flange for disengaging the fastener strips connected to the head portion of said other fastener strip and extending freely downwardly therealong; and
said riser flange extending from said head portion of said one strip and said pull flange providing parallel slider surfaces substantially normal to said flat head portion, whereby to accommodate a U-shaped slider having a flat surfaced body portion engageable with said head portion and downwardly extending flange legs engageable with said flat surfaces.

3,959,857

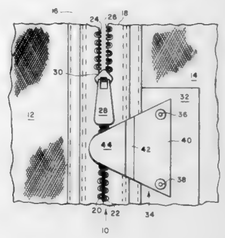
QUICK OPENING DEVICE FOR A SLIDE FASTENER

Milton L. Stephens, Meadville, Pa., assignor to Textron, Inc., Providence, R.I.

Filed June 4, 1975, Ser. No. 583,699
Int. Cl.² A44B *19/00*
U.S. Cl. 24—205 R **15 Claims**

1. A slide fastener installation comprising

a pair of carrier means, each having an edge portion,
said edge portions being oppositely disposed to each other,
interlocking elements on each edge portion,
the interlocking elements on one edge portion adapted to be engaged and disengaged with the interlocking elements on the other edge portion,



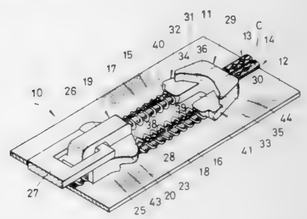
slider means movably disposed on said pair of carrier means for engaging and disengaging said interlocking elements whereby the slide fastener installation is actuated between closed and opened positions, respectively, and
emergency opening means mounted on said carrier means and including means movable in between engaged interlocking elements causing disengagement thereof whereby the slide fastener installation is rapidly actuated from its closed position to its opened position.

3,959,858

BRIDGE TOP STOP FOR SLIDE FASTENERS

Takeo Fukuroi, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

Filed Sept. 2, 1975, Ser. No. 609,796
Claims priority, application Japan, Sept. 4, 1974, 49-106333[U]
Int. Cl.² A44B *19/36*
U.S. Cl. 24—205.11 F **3 Claims**



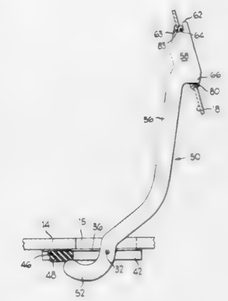
1. In a slide fastener of the type which comprises a pair of oppositely disposed stringer tapes each carrying along its one longitudinal edge a row of interlocking fastener elements and a slider having upper and lower wings which are inter-connected by a diamond, and side flanges which project inwardly from either one of the upper and lower wings or both and which together with the diamond form a guide channel including throats for the passage of the fastener elements therethrough, a bridge top end stop which comprises a body mounted astride said stringer tapes and having its rear end wall offset complementarily in shape to a front end face of the slider, a pair of spaced-apart tongues formed integral with said body and reduced in thickness so that their upper surfaces lie at a level below an upper surface of said body, and a pair of laterally projecting flange-seats formed on said tongues, said tongues being adapted to be inserted into said throats of the slider and between said slider wing and said stringer tapes with the diamond interposed between said tongues and with said projecting flange-seats of the tongues engaged with said flanges of the slider.

3,959,859

CASKET CAP BRACE

Joseph A. Stein, Jr., Greensburg, and Carl A. Wettering, Batesville, both of Ind., assignors to Batesville Casket Company, Batesville, Ind.

Filed Sept. 23, 1974, Ser. No. 508,412
Int. Cl.² A61G *17/00*
U.S. Cl. 27—18 **12 Claims**



1. An improved casket cap brace support for supporting the pivotally mounted cap of a casket body in its open position, said support comprising:
a. a support bracket adapted to be affixed to the casket body, said bracket having an aperture therethrough adapted to vertically receive a pivotal brace member;
b. an elongated slot in said casket cap positioned above said support bracket;
c. an elongated brace member extending through said aperture in said support bracket and attached thereto for pivotal movement in a vertical plane, said member extending through and slidable within said slot in said casket cap; and
d. said brace member having an enlarged section at its extended end defining a recess formed by two projections for engaging one end of said elongated slot and vertically supporting said cap in the open position, said section also defining a third projection simultaneously engaging the opposite end of said slot for camming said recess into receiving relation with said one end and for locking said cap against movement is either direction when the cap is raised to its open position.

3,959,860

METHOD OF MAKING NON-SHORTING PHOTOFLASH LAMP

Donald R. Schindler, Burton, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1974, Ser. No. 534,819
Int. Cl.² H01J *9/18*
U.S. Cl. 29—25.16 **13 Claims**

1. A method of beading and sheathing an elongated electrical conductor comprising the steps of sealing a bead of vitreous material around said conductor, providing a die having an opening therein, positioning said conductor into said opening so that said bead rests against a surface of the die, moving said conductor axially in said opening in a direction away from said bead, said opening being sufficiently greater in diameter than said conductor and said bead being sufficiently hot during said moving of the conductor so that material of said bead is drawn

only by said conductor into said opening thereby forming a sheath extending from a side of said bead and around a length



of said conductor, and removing said beaded and sheathed conductor from said die.

3,959,861

CLAMPING ARRANGEMENT FOR A CUTTING TOOL

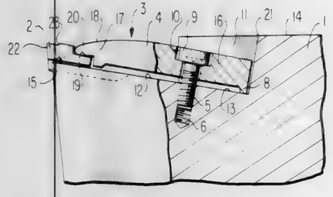
Wlajko Mihic, Tegnervagen 9, Gavle, Sweden

Continuation of Ser. No. 355,378, April 30, 1973, abandoned. This application Apr. 18, 1975, Ser. No. 569,426

Claims priority, application Sweden, Apr. 28, 1972, 5666/72

Int. Cl.² B26D *1/00*

U.S. Cl. 29—96 **2 Claims**



1. In a cut-off tool of the type wherein a narrow cutting bit having a V shaped protrusion on a bottom portion is clamped in a recess having a V shaped notch extending parallel to the longitudinal axis of the tool to engage the protrusion, at one end of a relatively narrow supporting portion extending from the upper surface of the tool holder, said supporting portion and said recess being defined by a lower wall extending inwardly and downwardly along the longitudinal axis of the tool holder at an acute angle with a plane defined by the top surface of said tool holder and a rear wall extending from said lower wall to the top surface of said tool holder approximately perpendicular to said lower wall, the improvements comprising:

a. a lever like body having a fulcrum point on one end, said fulcrum contacting said lower wall of said recess in said tool holder, and the opposite end engaging a notch in said cutting bit, said opposite end having substantially the same width as the cutting bit and said end having the fulcrum point having a greater width than said opposite end, said lever like body having a length of at least three times the width of said opposite end and is disposed in said recess such that its uppermost portion is below the upper most portion of said cutting bit and below the plane containing the upper surface of said tool holder, and

b. threaded means engaging said lever like body intermediate its fulcrum and opposite ends and threadingly engaged with said tool holder in said recess to cause said body to tend to pivot about its fulcrum point, thereby causing said opposite end to exert a normal force on said cutting bit and clamp said bit in the tool holder recess.

3,959,862

ROTARY CUTTING TOOL

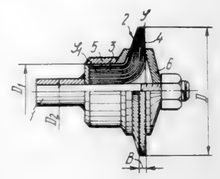
Viktor Samsonovich Salukvadze, 5 Parkovaya ulitsa, 42, kv. 53, Moscow, U.S.S.R.

Filed Aug. 5, 1975, Ser. No. 602,018

Claims priority, application U.S.S.R., Aug. 8, 1974, 2052050

Int. Cl.² B23D *71/00*; **B26D** *1/12*

U.S. Cl. 29—105 R **1 Claim**



1. A rotary cutting tool for working the surfaces of articles and materials, comprising: a mandrel; a plurality of resilient cutting members in the form of pieces of wire having substantially equal lengths, radially arranged on said mandrel, said resilient cutting members being secured together with their one ends adjoining which said cutting members have their side surfaces pressed to one another; the free ends of said resilient cutting members, opposite to said secured ends, defining the common cutting surface of the tool, shaped as a surface of rotation; the ratio of the sum total of the areas of the end faces of said free ends of said pieces of wire in the cutting surface of the tool to the entire area of said cutting surface being within a range from 0.10 to 0.99; a sleeve received about said mandrel; the portions of said resilient cutting members, adjoining the said secured ends thereof, being received within said sleeve; said free ends of said cutting members being bent in a radial direction and urged by a washer against the end face of said sleeve; the cutting effort at the end faces of said bent free ends of said cutting members being determined by the sum of the bending and twisting strain developed in the portions of said cutting members, the width of the cutting surface of the tool for one set of said resilient cutting members being determined from the expression:

$$B = \frac{(D_1^2 - D_2^2)\phi_1}{2D\phi},$$

where

D is the diameter of the cutting surface of the tool;

B is the width of the cutting surface of the tool;

D_1 is the external diameter of the set of said cutting members received in said sleeve;

D_2 is the internal diameter of the set of said cutting members, received in said sleeve;

ϕ is the ratio of the sum total of the areas of the end faces of the free ends of said cutting members in said cutting surface of the tool to the entire srea of said cutting surface;

ϕ_1 is the ratio of the sum total of the areas of the secured ends of said cutting members to the entire area of the internal surface of said sleeve.

3,959,863

MANUFACTURE OF AGRICULTURAL DISCS

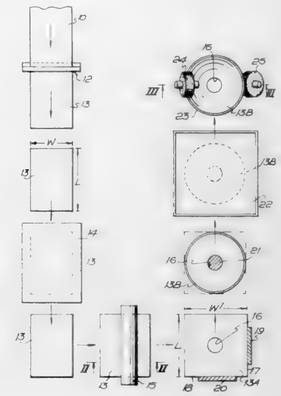
Walter Esmond Bruce, Crown Steel Works, Sheffield, England

Filed Jan. 22, 1974, Ser. No. 435,539

Int. Cl.² B21K *19/00*

U.S. Cl. 29—148.3 **8 Claims**

1. A method of manufacturing agricultural discs from rolled steel strip having a thickness greater than the thickness of the finished discs and a width less than the diameter of the finished discs, comprising the steps of cutting blanks having a length substantially equal to the diameter of the finished discs, said blanks having a width less than the diameter of the finished discs, heating the blanks, rolling each blank only in the



direction of its width until that dimension has increased to not less than the diameter of the finished discs, and blanking out from each rolled blank a disc with a diameter not less than the diameter of the finished discs and with a central hole.

3,959,864

METHOD FOR PRODUCING AN EJECTOR DEVICE

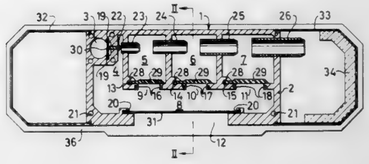
Peter Hans Tell, Akersberga, Sweden, assignor to Aktiebolaget Piab, Akersberga, Sweden

Filed Nov. 25, 1974, Ser. No. 526,845

Claims priority, application Sweden, Dec. 5, 1973, 7316404

Int. Cl.² B23P *15/00*; **F04F** *5/46, 5/22*

U.S. Cl. 29—156.4 R **7 Claims**



1. A method for producing an ejector device having a plurality of ejectors comprising,

A. forming in one step a generally tubular profile rail with

i. a substantially planar top wall,

ii. first and second side walls,

iii. a bottom wall with an inlet opening along the length thereof,

iv. an inlet channel in a corner between the top wall and the first side wall,

v. spaced intermediate walls disposed parallel to said side walls, the intermediate walls projecting from the top wall and having respective free ends terminating a short distance from said bottom wall, and

vi. suction openings between said free ends and the second side wall,

B. drilling holes in the formed rail along at least one straight line through said second side wall, said intermediate walls and a wall of the inlet channel,

C. inserting ejector nozzles in said drilled holes, the nozzles having respectively increasing widths progressing from the nozzle inserted in the inlet channel,

D. inserting a respective flap valve in each said suction opening, the flap valves being operable as non-return valves, and

E. closing the ends of the rail by attaching an end wall to each end of the formed rail.

3,959,865

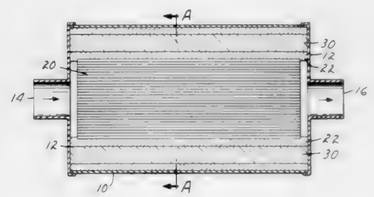
METHOD OF CONTAINING A RESILIENTLY SUPPORTED RIGID CERAMIC CATALYST SUPPORT

James R. Close, Roberts, Wis.; William P. Wood, Stillwater; Robert A. Hatch, St. Paul, and James R. Johnson, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 313,272, Dec. 8, 1972. This application Sept. 9, 1974, Ser. No. 504,297

Int. Cl.² F01N *3/15*; **B01J** *8/00*; **B21D** *53/00*

U.S. Cl. 29—157 R **5 Claims**



1. Process for mounting a rigid ceramic catalyst support in a metallic casing, said catalyst support and casing having different coefficients of thermal expansion, comprising,

1. interposing between said support and said casing at least one ply of thermally insulating, resilient, inorganic bonded refractory fiber sheet material so that there is open space on one side thereof,

2. providing a foamable inorganic composition in said open space, and thereafter

3. effecting foaming of said inorganic composition at elevated temperatures whereby said catalyst support is securely and resiliently retained in said casing.

3,959,866

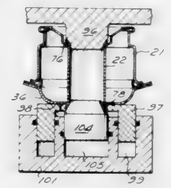
METHOD OF MAKING A GAS RANGE TOP BURNER

William P. Biddle, and John J. Tacker, both of Athens, Tenn., assignors to Athens Stove Works, Inc., Athens, Tenn.

Division of Ser. No. 498,303, Aug. 19, 1974, Pat. No. 3,922,138. This application June 6, 1975, Ser. No. 584,573

Int. Cl.² B21D *53/00*; **B21K** *29/00*; **B23P** *15/26*

U.S. Cl. 29—157 R **6 Claims**



1. A method of making a sheet metal burner assembly comprising the steps of providing a base plate of two joined, overlying sheet members of metal stock, said sheet members each being provided with an aligned aperture at a burner head location, portions of said sheet members forming the periphery of said apertures being spaced apart, assembling a burner head on said plate at said location by providing inner and outer shell members of uniform thin-walled metal stock, aligning one of said shell members with one of the apertures and

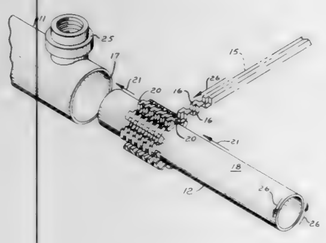
the other shell member with the other aperture, resiliently deflecting the apertured peripheral portion of a first of said sheet members relative to the second in a direction normal to the plane of the apertured peripheral portion, subsequently plastically deforming a peripheral flange of one of said shell members in a radial direction to lock said resiliently deflected apertured peripheral portion in its deflected position and to allow the stress in the resiliently deflected portion to maintain said sheets in gastight sealing engagement with their said apertures.

3,959,867

METHOD OF MAKING A HEAT EXCHANGER AND THE HEAT EXCHANGER

Donald J. Frost, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Oct. 15, 1974, Ser. No. 514,475
Int. Cl.² B23P *15/26*
U.S. Cl. 29—157.3 AH **2 Claims**



1. The method of making a heat exchanger having first inner and second outer conduits spaced apart to define a fluid flow space therebetween and a turbulator in said space, comprising: arranging said conduits in separated relationship with the outer surface of said first inner conduit exposed; and winding a narrow strip of said turbulator on the outer surface of said first conduit to provide successive coils of turbulator on said outer surface while simultaneously with said winding advancing the first conduit with the coils thereon longitudinally relative to said second outer conduit into the interior of said second outer conduit, said first inner and second outer conduits thereby being telescoped with said turbulator coils within said fluid flow space.

3,959,868

TOOL AND ADAPTER FOR ELECTRICAL CONNECTOR UNIT USING INSULATION PIERCING CONTACTS

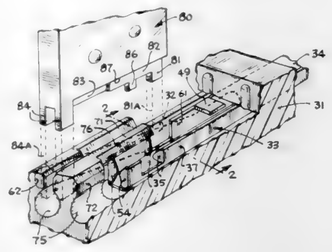
Istvan Mathe, Cicero, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 370,037, June 4, 1973, abandoned. This application June 24, 1974, Ser. No. 482,547
Int. Cl.² H01R *43/04*
U.S. Cl. 29—203 DT **22 Claims**

1. A tool for mounting an insulation-covered electrical conductor in a contact member of a connector unit, the contact member including a terminal element comprising an elongated channel having one end shaped to receive the conductor and including at least one terminal flange with an outwardly open insulation piercing notch for piercing the conductor insulation to complete an electrical connection to the conductor, the connector unit including a resilient outwardly open strain relief retainer for capturing the conductor at the other end of the terminal element, the tool comprising:

a holding lug for engaging the conductor and applying a holding pressure to the conductor to maintain the conductor engaged in said one end of the terminal element channel;

an insertion blade, aligned with the holding lug, for pressing the conductor into the terminal element channel, into the insulation piercing notch of the terminal flange, and into the strain relief retainer;



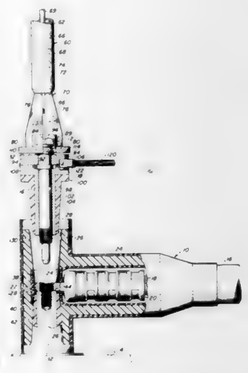
and a bifurcated insertion guide for embracing the conductor at a point immediately beyond the strain relief retainer to guide the conductor into the retainer.

3,959,869

APPARATUS FOR THE REMOTE GROUNDING, CONNECTION AND DISCONNECTION OF HIGH VOLTAGE ELECTRICAL CIRCUITS

Carl W. Wyman, Flanders, and Charles E. Andersen, Independence Township, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,428
Int. Cl.² H01R *43/00*
U.S. Cl. 29—203 H **24 Claims**



1. Apparatus for enabling manipulation of a high voltage electrical connector from a remote location by the use of an insulated tool, such as a hot-stick, to effect connection and disconnection of the connector and the terminal of an electrical apparatus, the connector having a contact affixed to the conductor of a high voltage cable for electrically connecting the conductor to the terminal, said apparatus comprising:

a housing;

a longitudinally extending shaft journaled for rotation in the housing, said shaft having opposite ends;

engaging means at one end of the shaft for engaging the shaft with the contact of the connector in response to rotation of the shaft;

conductive grounding means;

means in the housing for electrically connecting the grounding means to the contact when the shaft is engaged with the contact; and

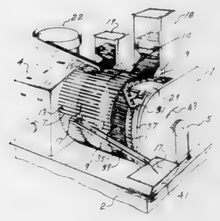
rotation means at the opposite end of the shaft for coupling the shaft for rotation with the insulated tool.

3,959,870

CONTINUOUS MOTION ASSEMBLY MACHINE

Edward I. Klein, Montreal, Canada, assignor to V-Mark Automation Ltd., Montreal, Canada

Filed Mar. 5, 1975, Ser. No. 555,638
Int. Cl.² B23P *19/04*
U.S. Cl. 29—208 R **4 Claims**



1. A continuous motion assembly apparatus for assembling devices, each said device comprising a main part and at least one further part to be assembled with said main part;

said apparatus comprising:

a first surface movable in a first direction and comprising a plurality of slots extending in a direction perpendicular to said first direction, said slots being adapted to convey said main parts to an assembly station on said apparatus, one at a time;

a second surface on one side of said first surface and movable in the same direction as said one surface, said second surface comprising a plurality of slots extending in a direction perpendicular to the direction of travel thereof, said slots being adapted to convey said one further part to said assembly station;

a third surface on the other side of said first surface and movable in the same direction as said first surface, said third surface comprising a plurality of carrier means on the side of said third surface remote from said first surface and extending in a direction perpendicular to the direction of travel of said third surface, each said carrier comprising a rod member extending perpendicular to the direction of travel of said third surface, and in the direction of said first surface;

said rod means having a direction of action perpendicular to the direction of travel of said third surface; and

cam means, acting in conjunction with said carriers and said rod means, to alter the direction of said carriers from the direction perpendicular to the direction of action of said rod means to the direction of action of said rod means by continuously variable amounts along the length of the cam means.

3,959,871

METHOD OF SELECTING REPLACEMENT VALVE STEMS

Richard L. Reback, 5649 Sorrento Drive, Long Beach, Calif. 90803

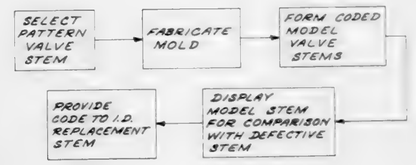
Filed Oct. 18, 1974, Ser. No. 515,917
Int. Cl.² B29C *5/00;* **B29G** *7/00*
U.S. Cl. 29—407 **5 Claims**

1. The method of making comparison models of valve stems, comprising:

screwing respective threaded ring members into ends of a plurality of threaded elongated pattern elements having shapes corresponding to various valve stem types;

placing said elements with said attached members into an open container;

successively casting curable mold-forming material in said container and about said elements and said members to form upper and lower mold halves;



removing said elements and said members from said mold halves, leaving plural cavities in said mold halves corresponding to the shapes of said valve stems and said attached ring members, placing said mold halves together and casting curable moldable material in said cavities;

curing said moldable material to form a plurality of valve stem models having integral ring-like portions by which said models may be suspended and displayed; and

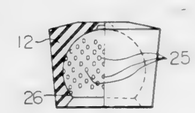
disposing each said model upon a support member of a display panel, such support member being inserted in at least one said ring.

3,959,872

METHOD FOR PRODUCING A CORE FORM TO BE EMPLOYED IN THE MOLDING OF A BALL JOINT BEARING

Michio Abe, Kasugai, Japan, assignor to Tokai TRW & Co. Limited, Kasugai, Japan

Filed Apr. 28, 1975, Ser. No. 572,529
Claims priority, application Japan, May 1, 1974, 49-49137
Int. Cl.² B22D *11/126*
U.S. Cl. 29—527.4 **5 Claims**



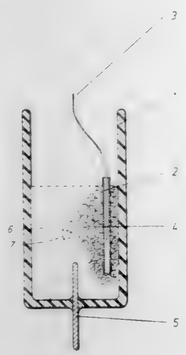
1. A method for producing a core form to be employed in the molding of a synthetic resin or rubber ball joint bearing which has a spherical bearing surface adapted to encircle the ball of a ball joint resiliently and a plurality of isolated oil retention recesses formed in said bearing surface, comprising the steps of forming and finishing a spherical portion corresponding to said bearing surface of the bearing on a core form blank, applying a lead layer onto said spherical portion, removing said lead layer from selected areas of said spherical portion which correspond to said oil retention recesses to be formed in the bearing surface of the bearing to expose said selected areas, applying a hard chrome plating layer on said exposed areas to form reliefs which are adapted to form said oil retention recesses in the bearing and removing the remaining portion of said lead layer from the spherical portion.

3,959,873

METHOD OF MANUFACTURING A SOLID ELECTROLYTIC CAPACITOR

Peter M. Hille, Nurnberg-Katzwang, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 20, 1974, Ser. No. 498,881
Claims priority, application Germany, Aug. 31, 1973, 2344073
Int. Cl.² B01J *17/00*
U.S. Cl. 29—570 **1 Claim**



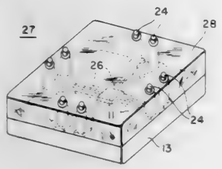
1. A method of manufacturing a solid electrolytic capacitor, comprising pouring a metal powder into a mold of insulating material having an anode lead wire sealed in one end, inserting a porous hollow tubule of insulating material into the metal powder, and heating and sintering the powder together in the mold, introducing a solution for forming a dielectric oxide layer through said tubule into said sintered powder, forming said oxide layer, removing said solution, adding a manganizing solution through said tubule into said sintered powder, forming a manganese oxide layer, inserting a cathode lead through said tubule to join said manganese oxide layer, and sealing the open end of said mold.

3,959,874

METHOD OF FORMING AN INTEGRATED CIRCUIT ASSEMBLY

Alexander Coucoulas, Bridgewater Township, Somerset County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 20, 1974, Ser. No. 534,919
Int. Cl.² H01L *21/56*
U.S. Cl. 29—577 **54 Claims**



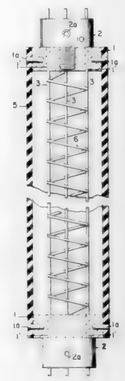
1. A method of forming an integrated circuit assembly, which comprises:
   a. selectively treating a surface of a carrier to delineate a pattern thereon capable of receiving a metal deposit;
   b. contacting said pattern with a conductive lead of an integrated circuit;
   c. contacting said contacted pattern with an external conductive element;
   d. depositing a metal on said pattern to form an assembly having a continuous conductive metal deposit joining said lead and said external element;
   e. partially encapsulating said metal-deposited assembly with a suitable encapsulant to form an encapsulated assembly on said carrier having at least a portion of said external element exposed; and
   f. removing said partially encapsulated assembly from said carrier.

3,959,875

METHOD AND FIXTURE FOR MANUFACTURING FUSES HAVING HELICALLY WOUND FUSIBLE ELEMENTS

Erwin Salzer, Waban, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed May 5, 1975, Ser. No. 574,542
Int. Cl.² H01H *69/02*
U.S. Cl. 29—623 **10 Claims**



1. A process for manufacturing fuses for elevated circuit voltages including the steps of
   a. arranging a pair of cylindrical plug terminals both having axial passageways open on both end surfaces thereof in coaxial spaced relation so that said passageways in one of said pair of plug terminals are in registry with said passageways in the other of said pair of plug terminals;
   b. threading a plurality of metal rods through said passageways in said pair of plug terminals in such a way that each of said plurality of rods projects with each end thereof beyond the axially outer end surface of each of said pair of plug terminals;
   c. arranging a pair of rod-clamping members having passageways in such a way that said passageways thereof are in registry with said passageways in said pair of plug terminals and that said rods project into said passageways in said pair of rod-clamping members;
   d. clamping said rods against said passageways in said rod-clamping members so as to preclude relative movement between said rods and said rod-clamping members;
   e. winding fusible element means substantially helically around said rods and conductively connecting the ends of said fusible element means to said pair of plug terminals;
   f. sliding a tubular casing over one of said pair of clamping members into press-fitting engagement with said pair of plug terminals and affixing said casing to said pair of plug terminals;
   g. filling said casing with a pulverulent arc-quenching filler through registering apertures in one of said pair of rod-clamping members and in one of said pair of plug terminals; and
   h. withdrawing said rods from said fusible element means and drawing said rods out of said casing at such point of time when said arc-quenching filler provides substantial and sufficient support for said fusible element means.

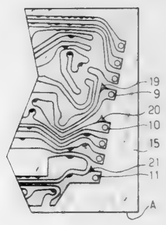
4. A fixture for manufacturing fuses having helically wound fusible elements including
   a. a pair of cylindrical plug terminals;
   b. a pair of rod-clamping members, at least one of said pair of rod-clamping members being arranged inside of the cylindrical space defined by the lateral surfaces of said pair of plug terminals;
   c. metal rods having non-screw-threaded surfaces projecting through registering passageways in said pair of plug terminals into registering passageways in said pair of rod-clamping members;
   d. fasteners affixing said pair of rod-clamping members to said rods to preclude relative movement between said pair of rod-clamping members and said rods;
   e. at least the fasteners affixing one of said pair of rod-clamping members to said rods being wholly arranged inside said cylindrical space defined by the lateral surfaces of said pair of plug terminals; and
   f. means for affixing the other of said pair of rod-clamping members to one of said pair of plug terminals positioned immediately adjacent thereto to preclude relative movement between said one of said pair of plug terminals and said rods.

3,959,876

METHOD OF FORMING A PRINTED CIRCUIT WITH MEANS FOR PREVENTING ACCUMULATION OF METAL ALLOY

Jean-Pierre Jouanneault, Versailles, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, France

Continuation of Ser. No. 425,555, Dec. 17, 1973, abandoned. This application July 14, 1975, Ser. No. 595,360
Claims priority, application France, Dec. 15, 1972, 72.44870
Int. Cl.² H05K *3/32*
U.S. Cl. 29—628 **5 Claims**



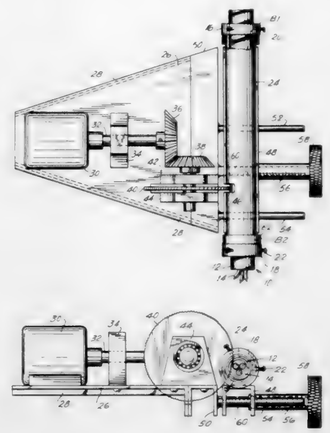
1. A method of disposing a film of metal alloy over a plurality of conductive strips disposed on at least one surface of an insulating planar support member forming a printed circuit, the method comprising forming means for preventing the accumulation of the metal alloy at selected connection points of the strips under the action of surface tension during the formation of the film, the accumulation preventing means being formed as sharp appendages of the strips, all of the appendages pointing in substantially the same direction and located proximate to the selected connection points, and applying a film of metal alloy over the conductive strips with the accumulation preventing means driving the excess metal alloy away from the selected connection points under the action of surface-tension during the formation of the film of metal alloy on the strips.

3,959,877

SHEATH CUTTING TOOL FOR FLEXIBLE ELECTRICAL CABLES

Peter Zorzenon, Main St., Northport, Long Island, N.Y. 11768

Continuation-in-part of Ser. No. 535,378, Jan. 3, 1975, abandoned. This application Oct. 14, 1975, Ser. No. 621,831
Int. Cl.² B21F *13/00*; **B26B** *27/00*
U.S. Cl. 30—90.3 **12 Claims**



1. A portable sheath cutting tool comprising two spaced means for engaging said sheath at longitudinally spaced positions and for stationarily holding said sheath in extended condition between said spaced positions, a support positioned between and rotatably attached to said two spaced means for turning about said sheath, cutting means on said support for turning therewith and effecting between said two spaced means a circumferential cut in and around said sheath, and power means on said support for driving said cutting means.

3,959,878

CONVERTIBLE PORTABLE ELECTRIC TOOL

Edward A. Irelan, Columbia, Mo.; David W. Dorheim, Baltimore, Md., and William Frederick Robotham, St. Charles, Ill., assignors to McGraw-Edison Company, Elgin, Ill.

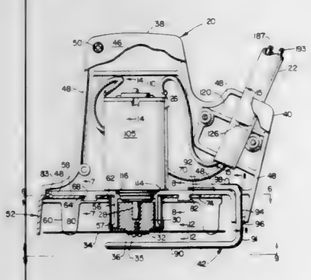
Filed Apr. 2, 1975, Ser. No. 564,280
Int. Cl.² B26B *19/02*, *19/06*
U.S. Cl. 30—220 **1 Claim**



1. In a portable electric tool having a power housing and a plurality of different tool output pieces, where each output piece has a stationary element and an element supported thereby to move relative to the former effective to define a specific tool output, and where the power housing has an exposed drive element, the improvement being means for

releasably securing, without the need of any tools, any such output piece operatively to the housing so that an operable drive connection is provided between the movable element and the drive element, the combination comprising positioning means including wall structures formed on the housing at locations spaced from and generally about the drive element, ledges outstanding from certain of the wall structures in approximate right angle relations thereto and disposed generally in a common plane offset laterally from the drive element, guide posts formed on the housing to project beyond the plane of the ledges in the direction remote from the drive element, and the stationary element being sized to cooperate with the housing to fit closely within the wall structures and against the ledges and with the guide posts fitted within corresponding guide openings on the stationary element and in generally snug relationship relative thereto so as to locate and stably support the stationary element and thus the output piece in proper position relative to the housing; and locking means for retaining the so positioned tool piece in place and including opposed finger actuated elements supported to move only along paths generally parallel to the plane of the ledges and having projections that are generally at right angles to the positioned stationary element which fit through corresponding lock openings in the stationary element, and outwardly facing locking shoulders formed on the projections adjacent the free ends thereof adapted upon movement of the finger engaging elements toward one another to clear the stationary element and likewise allow thereby the same to fit through the lock openings and further upon movement then of the finger actuated elements away from one another to overlie the stationary element on the side thereof remote from the drive element to preclude separation of the positioned stationary element from the housing, and means for resiliently biasing the finger actuated elements apart.

3,959,879
ELECTRICALLY POWERED GRASS TRIMMER
Jerry W. Sellers, Lexington, Tenn., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Division of Ser. No. 335,928, Feb. 26, 1973, Pat. No. 3,886,716. This application Dec. 6, 1974, Ser. No. 530,338
Int. Cl.² A01G *3/06*
U.S. Cl. 30—276 **2 Claims**



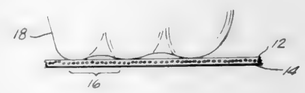
1. In an electrically powered lawn care tool, a split housing longitudinally divided into a pair of separately formed mating shells, means securing said shells together, an electric motor disposed in said housing and having a casing, a blade located exteriorly of said housing and drive connected to said motor for rotation about a pre-selected axis, an elongated handlebar extending from said housing, and handle grip means positioned on said handlebar remote from said housing, said shells having abutting bottom wall portions that define a bottom wall of said housing, said shells being integrally formed with opposed ears extending radially of the motor rotational axis and interfittingly seating against said casing on diametrically opposite side of said motor to confine said motor against lateral movement, one of said ears being formed with a lip, and said motor being axially confined between said lip and said bottom wall, and coacting means on one of said ears and said casing for preventing rotation of said casing relative to said housing.

3,959,880
SPRING-STRESSED ORTHODONTIC BRACKET
Lawrence F. Andrews, 2025 Chatsworth Blvd., San Diego, Calif. 92107
Filed Aug. 14, 1974, Ser. No. 497,281
Int. Cl.² A61C *7/00*
U.S. Cl. 32—14 A **6 Claims**



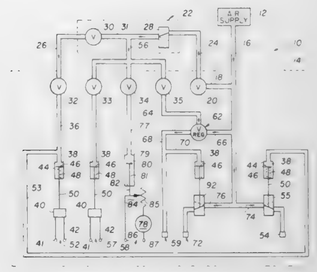
1. A spring-stressed orthodontic bracket comprising:
first and second jaw members;
a base member, said first and second jaw members being coupled to and carried by said base member, at least one of said first and second jaw members being in slidable relationship with the other of said first and second jaw members;
biasing means coupled to at least one of said first and second jaw members and operable for biasing said first and second jaw members toward each other for defining at least one arch wire groove;
at least one limit pin extending outwardly from said base member; and
at least one elongated groove in said at least one of said first and second jaw members geometrically disposed for receiving said at least one pin base member for limiting relative movement thereof.

3,959,881
BITE INTENSITY DETECTING ARTICULATING PAPER
August Kokal, Jr., 8710 Lone Star Road, Jacksonville, Fla. 32211
Filed Apr. 25, 1975, Ser. No. 571,691
Int. Cl.² A61C *9/00*
U.S. Cl. 32—19 **5 Claims**



1. Apparatus for marking tooth contact points in differing colors on occlusion, comprising:
a. carrier means for insertion between the teeth;
b. a plurality of rupturable marking means randomly dispersed in said carrier means for marking said contact points upon rupture, each of said marking means producing a different color; and
c. means for causing each of said marking means to rupture at a different biting pressure.

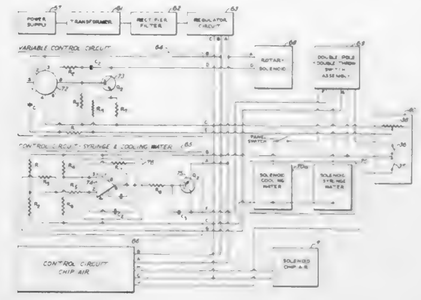
3,959,882
FLUID CONTROL APPARATUS
Chester B. Rackson, 22 Orchard Drive, Woodbury, N.Y. 11797
Filed June 17, 1974, Ser. No. 479,845
Int. Cl.² A61C *19/02*
U.S. Cl. 32—22 **9 Claims**



1. In a dental apparatus for controlling a dental workpiece,
a plurality of output couplings to which dental workpieces may be selectively connected,
a source of fluid under pressure for operating the workpieces connected to said couplings,
a hand held assembly having a portable valve that is hand operated to selectively vary the flow of fluid therethrough,
flexible fluid conduit means connecting said portable valve between said output couplings and said source of fluid to enable the unrestricted movement of said portable valve,
variable valve means connected with said portable valve and between certain selected ones of said plurality of output couplings and said fluid source to variably control the flow of fluid from said source to said selected output couplings in response to the selected hand operation of said portable valve,
and operable valve means between said variable valve means and at least one of said certain selected output couplings operable in response to the operation of said portable valve to control the operation of a workpiece connected with said one output coupling.

3,959,883
HAND CONTROL SYSTEM FOR POWER HAND TOOLS
Earl L. Walls, 6567 Avenida Manana, La Jolla, Calif. 92037, and Verl O. Olson, P.O. Box 2035, La Mesa, Calif. 92041
Filed July 23, 1973, Ser. No. 381,636
Int. Cl.² A61C *1/05, 1/08*
U.S. Cl. 32—27 **82 Claims**

1. A hand control system for power hand tools comprising:
a. means for actuating an operation of the power hand tool,
b. manually operated control means for activating a low current electric command signal maintained at up to about 10 micro amps and below the necessary current flow for operating said actuating means,
c. said command signal electrically flowing through said manually operated control means,
d. circuit means separate from the manually operated control means and including amplifying means for providing a higher current operational signal to said tool operation actuating means,
e. said amplifying means being responsive to the low current electric command signal when said command signal is activated by said control means to cause said higher current operational signal to operate said tool actuating means.



3,959,884
METHOD OF CLASSIFYING FINGERPRINTS
Gene M. Jordan; Robert G. Eisenhardt, and Dean Z. Douthat, all of Ann Arbor, Mich., assignors to First Ann Arbor Corporation, Ann Arbor, Mich.
Filed July 25, 1975, Ser. No. 599,143
Int. Cl.² G06K *9/00*
U.S. Cl. 33—1 BB **17 Claims**

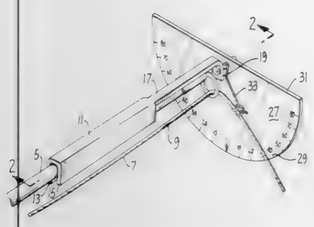


1. The method of classifying fingerprints comprising the steps of: making an impression of a fingerprint on a two-dimensional surface, transforming the two-dimensional surface representation of the fingerprint impression into a representation of a three-dimensional surface with a predetermined set of first and second coordinates and with a variable third coordinate for each set of first and second coordinates, the third coordinate having a value dependent upon the frequency of occurrence or ridge lines at a specific set of first and second coordinates when the origin of the first and second coordinates is taken at multiple positions over a prescribed part of the fingerprint impression, determining the values of local spatial derivatives of a plurality of different areas of the three-dimensional surface, and concatenating said values in a predetermined order to construct a descriptor code for the fingerprint.

3,959,885
TROLLING DEPTHOMETER
Glen P. Edmiston, P.O. Box 852, Alleghany, Calif. 95910
Filed Oct. 2, 1974, Ser. No. 511,423
Int. Cl.² G01B *5/18*
U.S. Cl. 33—126 **2 Claims**

1. A depthometer and fishing pole comprising in combination:
a. a fishing pole having the usual terminal end over which the line passes,
b. a U-shaped clip adapted to snap over said fishing pole near the terminal end thereon,
c. an extension arm extending from said clip generally parallel to said pole and terminating beyond the terminal end of said pole, said arm having a fixed, downturned end with a pin in said downturned end,

d. a semicircular protractor pivoted on said pin, and



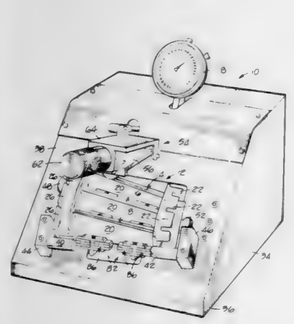
e. a line holder pivoted on said pin whereby said line holder can be snapped onto a line held by the pole and said protractor will indicate the angle at which the line extends.

3,959,886

CLASSIFICATION GAUGE FOR VANE CLUSTERS

Elmer L. Griggs, 1720 Toledo, Burlingame, Calif. 94010

Filed May 8, 1975, Ser. No. 575,501
Int. Cl.² G01B *5/20*
U.S. Cl. 33—174 C **15 Claims**



8. A classification gauge for a vane cluster including an integral or composite assembly of airfoil elements and combined mounting flange means for the airfoil elements, comprising

support means,

a precision jig in said support means adapted to receive the vane cluster, the precision jig including stop means for engaging the mounting flange means in order to accurately position the vane cluster in a predetermined plane on the precision jig,

movable contact means arranged upon the classification gauge for contact with each respective airfoil element,

indicating means to visually provide a throat area classification, and

linkage means providing an averaging connection between the output of the plurality of movable contact means and said indicating means, said linkage means and averaging connection causing said indicating means to register a throat area classification depending upon the angular position and effective length of the airfoil elements within the vane cluster.

3,959,887

DEVICE FOR PRECISION MEASUREMENT OF INTERNAL DIAMETERS

Karlheinz Seidel, Olching, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg AG, Germany

Filed July 10, 1974, Ser. No. 487,134
Claims priority, application Germany, July 10, 1973, 2334962
Int. Cl.² G01B *3/46*
U.S. Cl. 33—178 R **2 Claims**



1. Device for precision measurement of the diameter of thin-walled pipes comprising:

at least three jaw segments which together form a substantially cylindrical body having an outside diameter slightly less than the nominal internal diameter of a pipe to be measured,

jaw actuating means for centrically extending said jaw segments radially outwardly to clampingly engage the internal walls of said pipe while maintaining a circular configuration of the outer surface of said jaw segments, said at least three jaw segments are formed from a single cylindrically shaped body of three symmetically located radial slits, the diameter of said cylindrically shaped body being equal to the nominal internal diameter of the pipe to be measured

scale means connected to said jaw actuating means for accurately depicting the diametric extent of the outer surface of said jaw segments, wherein said scale means and said jaw actuating means are formed as a three-point inside micrometer with said jaw segments being detachably seated on each of the feeler points of said micrometer,

and wherein each of said jaw segments exhibit a plurality of arched outer surfaces in a stepped arrangment to accommodate measurement of pipes with a corresponding plurality of nominal inside diameter.

3,959,888

PRECISE INDEXING DETENT

Allister L. Baker, Denville, and J. Peter E. Kooi, Succasunna, both of N.J., assignors to Keuffel & Esser Company, Morristown, N.J.

Filed Mar. 3, 1975, Ser. No. 555,020
Int. Cl.² G01C *1/00*
U.S. Cl. 33—282 **2 Claims**

1. In a level-transit comprising an alidade including a telescope standard and means pivotally mounting a telescope for transit about a horizontal transverse axis, the improvement in means for arresting the transitary movement of the telescope in precise register with a fixed index, said improvement comprising:

a. a first grooved member affixed to the telescope standard to thereby establish said index location;

b. a second grooved member affixed to means mounting said telescope for transitary movement;

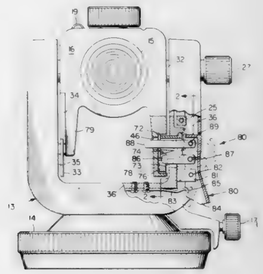
c. the respective grooves of said first and second members consisting essentially of a pair of intersecting plane surfaces;

d. said second member being situated so as to follow, during said telescope movement, a fixed path passing closely adjacent to said first member;

e. said first and second members being so oriented as to be in close juxtaposition at said index location with their respective groove faces combining to form at least a section of a quadrilateral pyramid within which section a sphere may be placed in simultaneous contact with said section faces;

f. selectably positionable toggle means pivotally mounted to one of said standard and said telescope mounting means;

g. detent means comprising an elongated element including a spherical zone surface at its distal end and being loosely



mounted by its proximal end to said toggle means for directing movement of said element along its longitudinal axis between a release mode wherein said element distal end is withdrawn from said pyramid section and an indexing mode wherein said element distal end is located within said pyramid section with said spherical surface in simultaneous contact with said section faces;

h. actuable means for urging said detent element in the direction of said distal end toward the vertex of said pyramid, thereby to effect and maintain said simultaneous contact between said spherical zone and section face surfaces, said urging means being actuated by selected positioning of said toggle means in said indexing mode; and

i. means preventing the actuation of said urging means whenever said first and second grooved members are other than juxtaposed substantially at said index location.

3,959,889

METHOD AND APPARATUS FOR DETERMINING A MEASURED DIRECTION RELATIVE TO AN EXTERNAL MAGNETIC DIRECTION

Samuel M. Thomas, 12 Beech Hill Road, Lloyd Harbor, N.Y. 11743

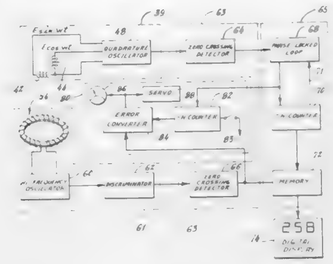
Filed Nov. 29, 1974, Ser. No. 528,428
Int. Cl.² G01C *17/30;* **G01R** *33/02*
U.S. Cl. 33—361 **19 Claims**

1. An apparatus for determining the orientation of an external magnetic field relative to a reference direction comprising:

means for producing a rotating magnetic field, the magnetic field vector of which bears a known angular relationship as a function of time to the reference direction; the rotating magnetic field being located to interact with the external magnetic field;

detector means, located in a stationary position relative to the rotating magnetic field to be influenced by the interacting rotating and external magnetic fields, for detecting the occurrence of a predetermined angular relationship between the rotating and external magnetic field vectors;

means for measuring the time between occurrence of the predetermined angular relationship between the rotating and external field vectors and occurrence of a preselected angular relationship between the rotating field vector and the reference direction, and



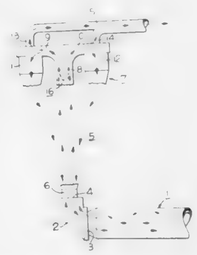
means for comparing the time between said occurrences with the period of said rotating magnetic field to determine the orientation of the external magnetic field relative to the reference direction.

3,959,890

METHOD AND APPARATUS FOR ADJUSTABLY FEEDING RAW MATERIAL TO A PREHEATER FOR A KILN

James L. Shy, East Troy, and Robert M. Bliemeister, Milwaukee, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 16, 1975, Ser. No. 578,363
Int. Cl.² F26B *3/08;* **F27B** *15/08*
U.S. Cl. 34—10 **5 Claims**



4. A method for feeding particulate raw material to a preheater for a rotary kiln or the like, with the preheater having a pair of gas-to-solids heat transfer devices for a first stage raw material preheating, and a gas supply conduit having a pair of gas discharge conduits therefrom for receiving gases from the kiln and conducting the gases upwardly and substantially equally to each of said first stage devices for preheating the raw material therein; said method comprising:

a. injecting a stream of raw material into the gas supply conduit along an entry axis transverse to a central axis of the supply conduit;

b. deflecting the stream of raw material within the supply conduit, along a second axis which intersects the entry axis to define an obtuse included angle; and

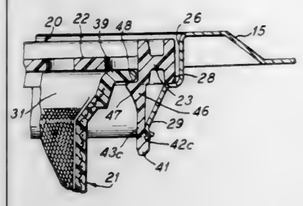
c. moving the intersection of the entry axis and the second axis along the entry axis and rotating the deflected portion of the stream around the entry axis until the temperature drop of gases passing through each of the heat transfer devices becomes substantially equal, to thereby operate the preheater with substantially balanced loading of raw material between the pair of heat transfer devices.

3,959,891

REMOVABLE LINT SCREEN ASSEMBLY FOR A DRYER

Alvin Edward Burkall, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 30, 1974, Ser. No. 537,075
Int. Cl.² F27B 21/06
U.S. Cl. 34—82 10 Claims



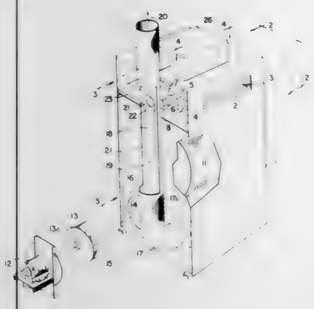
1. In an internal lint screen assembly comprising a cover and a separable lint filter for use in an automatic clothes dryer, a plurality of discrete elongate locking tabs spaced about the periphery of the cover and each having outwardly-extending projections removably securing the assembly to adjoining walls of an air exhaust aperture, at least two of said tabs being compound tabs also having inwardly-extending barbs releaseably engageable with a flange of the lint filter.

3,959,892

HEATED AIR RECYCLE ARRANGEMENT

Robert H. Cloud, Lexington, Ky., and Edward J. Hopton, Nashville, Tenn., assignors to A.M. Industries, Lousiville, Ky.

Continuation of Ser. No. 493,525, Aug. 1, 1974, abandoned.
This application June 20, 1975, Ser. No. 588,677
Int. Cl.² F26B 11/02
U.S. Cl. 34—131 7 Claims



1. A heated air recycle arrangement for use in a heated air clothes dryer including a cabinet means with air supply inlet means, and an air exhaust outlet; heater means to selectively heat air supplied through said air supply inlet means; a drying zone defined within said clothes dryer cabinet means; receptacle means disposed within said drying zone to receive clothes to be dried; blower means to pass air received from said air supply means to dry clothes received by said receptacle means and to exhaust said air stream received from said air supply inlet means from said dryer cabinet through said air exhaust outlet in a generally helical flow pattern; and exhaust conduit means communicating with said exhaust outlet wherein said recycle arrangement provides: a recycle air conduit means disposed generally concentrically within said air exhaust outlet and having an inlet with a mean diameter less than the mean diameter of said exhaust conduit means and an outlet communicating with said air supply means.

3,959,893

EDUCATIONAL GAMING APPARATUS

Theodore William Sigg, 601 S. Delphia, Park Ridge, Ill. 60068

Continuation of Ser. No. 483,221, June 26, 1974, abandoned.
This application Sept. 19, 1975, Ser. No. 614,840
Int. Cl.² G09B 19/02; A63F 9/04
U.S. Cl. 35—31 G 9 Claims



1. An educational gaming apparatus including:
a set of at least six number blocks each having the configuration of a regular hedron, each number block having at least twelve face sections bearing a numeral or its equivalent on each of said face sections with an unbiased distribution of said numerals on said set of number blocks;
a single operator block having the same configuration as said number blocks and having at least twelve face sections each bearing one or more of the basic mathematical symbols of addition, subtraction, multiplication or division or their equivalent such that at least one of said basic mathematical symbols or their equivalent is present on any uppermost face section of said operator block for any random position thereof;
said apparatus adapted for random toss of said number blocks and said operator block by one or more players and adapted for arrangement of said blocks after said toss in an order such that uppermost face sections of selected number blocks and said operator block indicate a mathematical problem and solution.

3,959,894

PERCEPTUAL CELLS WRITING GUIDE

Christina D. Hanson, 809 Vauclain Road, Bryn Mawr, Pa. 19010, and Gail E. Duchmann, 541 Calhoun St., New Orleans, La. 70118

Filed Dec. 30, 1974, Ser. No. 537,210
Int. Cl.² G09B 21/02
U.S. Cl. 35—38 12 Claims



1. A perceptual cells guide for persons requiring manual assistance in forming messages upon paper or the like, comprising:

a. support means arranged to hold the paper in a substantially flat plane,
b. retaining means connected to said support means, and
c. a substantially rigid guide sheet retained by said retaining means adjacent the face of said paper,
said guide sheet having a thickness greater than said paper and including a plurality of substantially equally spaced and intersecting horizontal and vertical strips of substantially rigid material arranged to form a plurality of regularly and symmetrically arranged perceptual cells arranged in a group, which cells are substantially identical to each other in height, width and shape throughout the group, all of said cells being substantially rectangular in shape, extending across and up and down said sheet, said cells being aligned with one another vertically and horizontally, and each said cell having a pair of spaced apart horizontal guide edges and a pair of spaced apart vertical guide edges, whereby a writing instrument may be inserted into said cells successively, and whereby written indicia may be applied to said paper in such a manner that guidance is provided for the writer by the thicknesses of the inner edges of both said horizontal and said vertical strips.

3,959,895

POLYVINYL CHLORIDE POLYBLEND MOLDING

Thor J. G. Lonning, Suffield, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed June 27, 1974, Ser. No. 483,864
Int. Cl.² A43B 13/04
U.S. Cl. 36—32 R 20 Claims

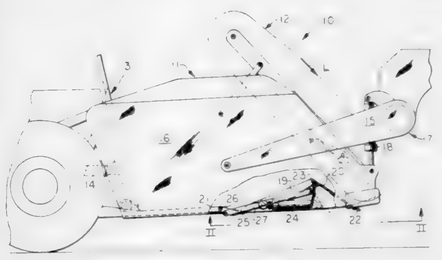
1. A molded unitary shoe sole and heel consisting of a molding having the size and shape of a shoe sole and heel, said molding being comprised of a fused admixture of:
A. from about 50 to 80 parts of a polyvinyl chloride polymer being characterized by having an inherent viscosity of from about 0.7 to 1.5 in a 0.2 weight percent cyclohexanone solution at about 25° to 30°C., said polyvinyl chloride polymer comprising a polymer selected from the group consisting of homopolyvinyl chloride and polyvinyl chloride copolymers having up to 25 weight percent of another ethylenically unsaturated comonomer polymerizable therewith,
B. a butadiene-styrene rubbery substrate having a butadiene content of 68 to 95 percent by weight and a styrene content of 5 to 32 percent by weight based on the total weight of the butadiene-styrene rubbery substrate which rubbery substrate is further characterized as having a particle size in the range of 0.06 to 0.2 micron, a gel content in the range of from 40 to 95 percent, a swelling index in the range of from 10 to 40, and a second order transition temperature (Tg) less than −40°C.
C. a superstrate grafted onto the rubber substrate which superstrate comprises:
1. the polymerization product of a first polymerizable monomer composition comprising:
a. from 0.1 to 2 percent by weight of a nonconjugated diolefin monomer,
b. from 20 to 30 percent by weight of an ethylenically unsaturated nitrile selected from the group consisting of acrylonitrile, and mixtures of acrylonitrile and methacrylonitrile which contain up to 20 percent by weight of methacrylonitrile,
c. from 40 to 60 percent by weight of a vinylidene aromatic hydrocarbon monomer selected from the group consisting of styrene and alpha methyl styrene,
d. from 20 to 50 percent by weight of methyl methacrylate, and
2. the polymerization product of a second polymerizable monomer composition comprising from 55 to 85 percent by weight of an ethylenically unsaturated nitrile monomer selected from the group consisting of acrylonitrile and mixtures of acrylonitrile and methacrylonitrile which contains up to 20 percent by weight of methacrylonitrile based on the total weight of acrylonitrile and methacrylonitrile and from 15 to 45 percent by weight of a monovinylidene aromatic hydrocarbon monomer wherein the percent by weight is based on the total weight of the monomers in the second polymerizable monomer mixture;
wherein the grafted superstrate contains a total of at least 40 percent by weight ethylenically unsaturated nitrile monomer and wherein the ratio of grafted superstrate to substrate is in the range of from 15–200:100 wherein (B) plus (C) are present in from about 20 to 50 parts by weight, the total parts by weight of (A), (B) and (C) being 100 parts,
D. a plasticizer system for said molding, said plasticizer system being present in a sufficient amount to produce in said molding after such is heat fused at a temperature of from about 120° to 215°C., a Shore A hardness value in the range of from about 45 to 95 at about 23°C.,
E. a stabilizer system for said molding, said stabilizer system being present in such amounts as to substantially prevent the thermal degradation of said admixture during heat fusion for 5 to 15 minutes at temperatures in the range of from about 120° to 215°C., and
F. a lubricant system for said molding present in such amounts as to permit the release of said molding from a heated solid surface after said polymeric composition has been heat fused at temperatures in the range of from about 120° to 215°C.

3,959,896

SELF-LOADING SCRAPER WITH PIVOTAL FLOOR PANEL

Ernest W. Wagner, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 7, 1975, Ser. No. 547,908
Int. Cl.² E02F 1/00; B60P 1/38
U.S. Cl. 37—8 11 Claims



1. In a self-loading scraper of the type comprising a bowl having a pair of upright sidewalls and a floor extending therebetween, an elevator assembly mounted on a forward end of said bowl, and an ejector assembly normally retracted rearwardly of said bowl, the improvement wherein said floor comprises
stationary first and second panels secured between said sidewalls in longitudinally spaced relationship thereon to define an opening therebetween,
a cutting edge secured on a forward end of said first panel, and
a movable panel having a forwardly disposed first end thereof pivotally mounted on said first panel for movement to a generally upright position adjacent to said elevator assembly and a second end thereof normally disposed adjacent to a forward end of said second panel to cover said opening, and
actuating means operatively interconnected between said movable panel and said bowl for selectively pivoting said movable panel forwardly and upwardly to its generally upright position adjacent to said elevator assembly and towards the forward end of said bowl to uncover said opening.

3,959,897

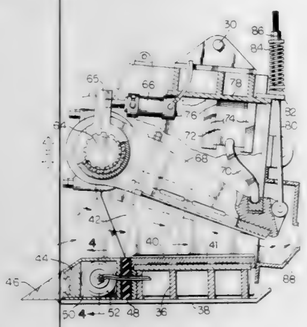
COMBINATION VIBRATING CUTTER HEAD AND CRUSHER

William P. May, 5601 S. Wayne Ave., Fort Wayne, Ind. 46807

Filed Dec. 9, 1974, Ser. No. 530,704

Int. Cl.² E02F *3/92*

U.S. Cl. 37—58 **14 Claims**



1. In an earthworking device comprising in combination, an excavatig bucket having a vibrating cutting head, said bucket having a bottom wall extending in the fore and aft direction and open on the forward end, said vibrating cutting head extending across the bottom edge of the bucket at the forward end, support means for connecting the cutting head to the bucket for vibratory movement of the cutting head with respect to the bucket, a vibrator connected to the cutting head and operable for vibrating the cutting head to facilitate penetration of the cutting head into an earth formation, said bucket having a top wall extending in the fore and aft direction, said bottom wall and said top wall being in the form of jaw members, said top wall being oscillatable toward and away from the bottom wall for crushing boulders, said top wall converging with said lower wall in the rearward direction, and said bucket having a rearward opening for removing material including any crushed boulders from the bucket.

3,959,898

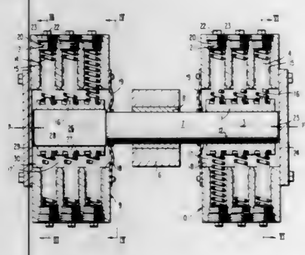
DREDGE LADDER SHOCK MOUNTING ARRANGEMENT

William Andrew McWatters, c/o P. E. Terry, Charlton Road, East Brookfield, Mass. 01506

Division of Ser. No. 195,674, Nov. 4, 1971, Pat. No. 3,821,859. This application May 21, 1974, Ser. No. 471,897. The term of this patent subsequent to July 2, 1991 has been disclaimed.

Int. Cl.² F02F *3/90*; **F16F** *9/00*

U.S. Cl. 37—72 **15 Claims**



1. A shock mounting arrangement for supporting a longitudinally extending pin comprising at least one housing means surrounding a portion of the pin, said housing means including a plurality of radially extending guide chambers, and resilient means arranged in each of said guide chambers for operatively resiliently supporting the pin for limited radial movement, characterized in that the housing means includes a first and a second housing structure, said first housing structure having a first movable support block radially supported by the resilient means, said first support block having an aperture for accepting a corresponding first portion of said pin, said second housing structure having a second movable support block resiliently supported by the resilient means, said second support block having a polygon shaped aperture for accepting a corresponding second polygon shaped portion of said pin, and characterized in that said first portion of said pin has a smaller maximum radial dimension than does the second portion of said pin, whereby the first portion can be sequentially passed through the aperture of the second support block and the first support block.

3,959,899

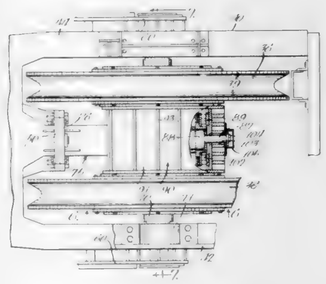
BOOM POINT ASSEMBLY FOR AN EXCAVATING MACHINE

Krishnaswamy Rangaswamy, Forest Park, Ill., assignor to Page Engineering Company, Chicago, Ill.

Filed Aug. 8, 1974, Ser. No. 495,645

Int. Cl.² E02F *3/48*

U.S. Cl. 37—116 **12 Claims**



1. A dragline excavating machine having a housing and a boom pivotally mounted at one end portion to said housing, a boom point assembly mounted on the other end portion of said boom and having a pair of side plates, a cross-shaft traversing the space between said pair of side plates, the end portions of said shaft being fixed in said plates, boom support lines running from said housing to said plates of said assembly, a bearing support connected to the end of the boom and to the cross-shaft and having bearing means thereon, said bearing support having an axis extending outwardly from the end of said boom, a saddle mounted on said bearing means for rotating movement about said axis of said bearing support, said saddle having a hub with an opening through which said cross-shaft extends, said opening in the hub being elongate in a vertical plane with the long axis of the opening extending vertically relative to the axis of the cross-shaft, a sheave rotatably mounted on said hub and saddle, a thrust bearing between said bearing support and said saddle for transmitting thrust loads from said saddle to said bearing support and to said boom, and a haul line running from the housing around the sheave and being connected to a bucket whereby side-to-side swing of the bucket cants the sheave, hub and saddle from side-to-side about the axis of the bearing support with said saddle rotating on said bearing means for keeping flanges on the sheave substantially in alignment with the haul line from the bucket.

3,959,900

IMPLEMENT ASSEMBLY FOR HYDRAULICALLY OPERATED EXCAVATORS

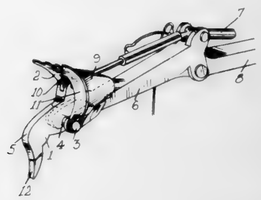
Dieter G. Luck, 147 Jacaranda Road, Kyalami, Extension 1, Transvaal, South Africa

Filed Apr. 2, 1975, Ser. No. 564,293

Claims priority, application South Africa, Apr. 3, 1974, 74/2115

Int. Cl.² E02F *3/46*

U.S. Cl. 37—117.5 **2 Claims**



1. An implement assembly for a hydraulically operated excavator including an excavator dipper arm, said assembly comprising:

a. ripper pivotally connected to the dipper arm,

b. a hydraulic operating piston and cylinder operatively connected between the dipper arm and the ripper,

c. a bucket pivotally supported on the ripper,

d. means for allowing a constrained relative longitudinal movement between the ripper and bucket,

e. said bucket having a slot through the bucket extending from the pivot towards a free end of bucker permitting passage of the ripper and its operating piston rod therethrough,

f. a hydraulic piston and cylinder means operatively connected between the excavator dipper arm and the bucket for moving the bucket between an inoperative position behind the ripper and an operating position wherein it aligns the ripper with the bucket to close the slot through the bucket.

3,959,901

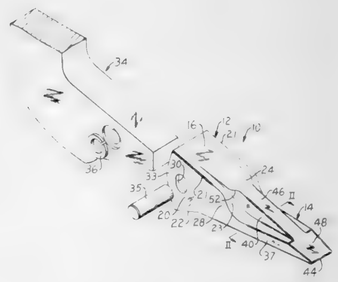
HIGH STRENGTH EARTH WORKING PENETRATION TOOTH

Gene Ralph Klett, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 30, 1975, Ser. No. 591,593

Int. Cl.² E02F *9/28*

U.S. Cl. 37—142 R **6 Claims**



1. A unitary high strength earth working tooth, comprising, integrally formed, a proximal end for attachment to an earth working machine and a distal end for penetrating soil;

said proximal end including a generally isosceles trapezoidal upper portion, a generally isosceles trapezoidal lower portion, and a pair of generally isosceles trapezoidal sides, each side extending from an edge of said upper portion to an edge of said lower portion, a closure interconnecting the shorter bases of said upper portion, said lower portion and said two sides, and a pair of aligned holes, one through each of said sides generally on the bisecting axis thereof;

said distal end including a generally flat isosceles trapezoidal member extending at an obtuse angle from said lower portion with the longer base of said member coextensive with the shorter base of said lower portion, said member extending generally parallel to a plane defined by the bisecting axes of said sides;

said tooth including a generally right triangularly shaped ridge upraised perpendicularly from the bisecting axis of said trapezoidal member and terminating at an acute angle short of the shorter base thereof, which shorter base comprises a soil penetrating portion of said distal end, the hypotenuse of said ridge extending from said acute angle towards and terminating at a point adjacent said closure, said ridge supportedly extending from said closure.

3,959,902

DISPLAY APPARATUS

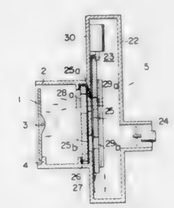
Kooji Suzuki, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed July 19, 1974, Ser. No. 490,194

Claims priority, application Japan, July 30, 1973, 48-84864; Oct. 24, 1973, 48-118983

Int. Cl.² G09F *11/00*

U.S. Cl. 40—28 R **13 Claims**

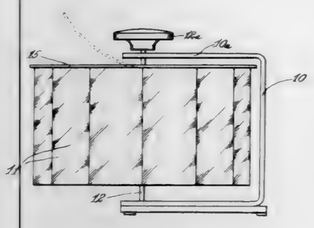


8. In a display apparatus for representation of graphic and alphanumeric matter comprising at least one elementary display unit, wherein each unit comprises a framework, an elementary plate member having an axis and being pivotally supported by said framework so as to be rotatable in two directions around said axis when a force is applied to said plate member at a predetermined location, said plate member having two opposed face sections, stop means on said framework for arresting the rotary motion of said elementary plate member about said axis upon completion of substantially 180° rotation in either of said two directions, and pneumatic actuating means disposed adjacent one of said face sections for selectively delivering a forced current of air against said plate member to cause the rotary motion thereof in either of said two directions;

the improvement wherein said pneumatic actuating means comprises air supply means having first and second air supply openings for delivering air against said elementary plate member, a slide valve disposed adjacent said air supply openings and movable transversely to said forced current of air between first and second operative positions and having a pair of spaced apart first and second ports therethrough, said first port coinciding with said first opening when said slide valve is in said first operative position and said second port coinciding with said second opening when said slide valve is in said second operative position, and valve means movable between first and second positions for concurrently opening and closing each of said air supply openings such that when said valve means is in said first position, said forced current is permitted to exit from said first port, and when said valve

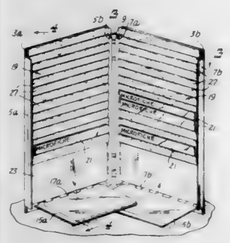
means is in said second position, said forced current of air is permitted to exit from said second port.

3,959,903
PROTECTORS FOR ROTARY DISPLAY STANDS
Aaron H. Shneider, 2835 N. Western Ave., Chicago, Ill. 60618
Filed Feb. 28, 1975, Ser. No. 553,925
Int. Cl.² G09F *11/02*
U.S. Cl. 40—68.6 **1 Claim**



1. In a stand for displaying a plurality of record cards or photographs inserted into flat, rectangular card-receiving pockets having at least one transparent surface, which pockets are mounted on a spindle rotatable in said stand, each of said pockets having one open side for said insertions, said open sides being perpendicular to said spindle, the improvement comprising a flat, circular cover for said open sides of said pockets, means for positioning said cover onto said spindle and maintaining it adjacent said open sides, said cover being of a transparent plastic material having flexibility to permit deflecting a portion thereof away from said open sides so that one or more cards or photographs may be inserted or removed, whereby said cover in cooperation with said open sides results in substantially enclosed pockets.

3,959,904
MICROFICHE STORAGE UNIT
Robert G. Holliday, Ann Arbor, Mich., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 4, 1974, Ser. No. 520,652
Int. Cl.² G09F *11/06*
U.S. Cl. 40—102 **8 Claims**



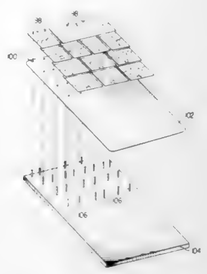
1. A storage unit for microfiche which unit comprises, in combination:

A. a pair of covers hingedly secured together for opening into a common plane formed by adjacent surfaces of the covers;

B. A plurality of terraced pockets having upper exposed edges secured to the adjacent surfaces of the covers forming the common plane for receiving and storing microfiche; and

C. cleaning means secured to the exposed edges of the terraced pockets for wiping contact with both sides of a microfiche simultaneously as it is inserted into and removed from any of the pockets.

3,959,905
APPARATUS FOR MOUNTING TAPE CONTAINING RECORDED INFORMATION
Arthur K. Thatcher, Box 392, Merritt Island, Fla. 32952
Division of Ser. No. 462,500, April 4, 1974, which is a division of Ser. No. 348,749, April 6, 1973, abandoned. This application Jan. 22, 1975, Ser. No. 543,122
Int. Cl.² G09F *1/00*
U.S. Cl. 40—124 **7 Claims**



7. Apparatus for mounting of segments of tape having information of significance thereon, of a nature such as ECG tapes and the like, in a manner providing for a maximum correlated display for interpretation of such significant information within a minimum amount of space on a single standardized mounting chart, and wherein the tape segments are selected and severed from an unedited tape of standard width, and having lengths in accordance with a predetermined set of prescribed dimensions, and with the upper margins of said tape segments being free from significantly informational recorded data to be interpreted, with the tape segments being each respectively of sufficient length to allow collectively for the full display of the information to be displayed for interpretation, and with at least one of the segment lengths being sufficiently long to permit identification of a particular identifying characteristic of the information to be displayed, the apparatus including a standardized base display chart for the type of information to be displayed and including multiple segment alignment and positional placement means, indicating appropriate areas for positional mounting of each respective tape segment with the information thereon, said segment alignment and placement means being used for facilitating arranging the segments in a plurality of successive laterally extending rows in segment end abutting relationship in accordance with a predetermined grouping arrangment, with the data free area of the upper margin of tape segments in each of the lower succeeding rows of segments being operatively visually negated by removing these margins prior to mounting on a standardized chart.

3,959,906
MESSAGE DISPLAY SYSTEM
J. Robert Norris, Jr., and Noa Wasserman, both of Dallas, Tex., assignors to J. Robert Norris, Jr. and Noa Wasserman, both of Dallas, Tex.
Continuation of Ser. No. 415,642, Nov. 14, 1973, abandoned, which is a continuation of Ser. No. 279,516, Aug. 10, 1972, abandoned. This application June 9, 1975, Ser. No. 585,296
Int. Cl.² G09F *3/10, 7/12*
U.S. Cl. 40—125 A **1 Claim**

1. A message display system comprising:

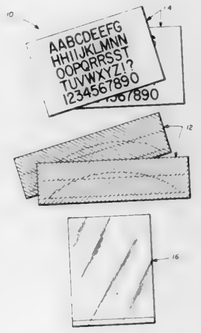
blank bumper sticker means including a front display surface having a predetermined area and a predetermined color and a back surface;

an adhesive layer extending over the entire back surface of the blank bumper sticker means;

said front display surface of the blank bumper sticker means comprising reference indicia including at least two spaced apart, longitudinally extending lines for parallel message display and at least one arcuate line overlapping the longitudinal lines for arcuate message display;

first backing sheet means substantially equal in size to the blank bumper sticker means and normally covering the back surface of the blank bumper sticker means and the adhesive layer formed thereon whereby upon removal of the first backing sheet means the blank bumper sticker means may be adhesively mounted on a surface;

a plurality of alpha/numeric display members each comprising a front display surface having a substantially smaller area and a contrasting color relative to the front display surface of the blank bumper sticker means and a back adhesive surface of a shape substantially identical to that of said front display surface;



said reference indicia on the front display surface of the back bumper sticker means being substantially smaller in size than the alpha/numeric display members so as to be substantially indistinguishable from the front display surface when observed from a substantial distance; and

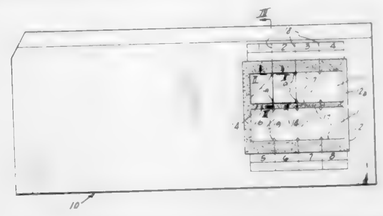
second backing sheet means normally extending over the back surfaces of all of the alpha/numeric display members and the adhesive layers formed thereon and thereby normally supporting the alpha/numeric display members whereby upon removal from the second backing sheet means the alpha/numeric display members may be selectively mounted on the front display surface of the blank bumper sticker means to form a desired message;

the front display surfaces of the alpha/numeric display indicia members being substantially smaller in area than the front display surface of the sheet means so that a substantial number of the alpha/numeric display indicia members may be simultaneously mounted on the front display surface of the sheet means to form the message;

both the blank bumper sticker means and the alpha/numeric display members comprising flexible, substantially weather-resistant materials.

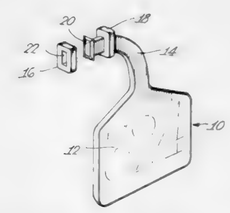
3,959,907
FILM RECORD CARD
Thomas P. Anderson, Hubbard Woods, Ill., assignor to Microseal Corporation
Continuation of Ser. No. 866,344, Oct. 14, 1969, abandoned. This application Dec. 9, 1971, Ser. No. 206,323
Int. Cl.² G09F *1/10*
U.S. Cl. 40—159 **7 Claims**

1. A film record card comprising a card means having at least a transparent portion with at least one generally elongated pocket means therein adapted to receive therein a film means including a plurality of frames of generally uniform width, said pocket means having generally parallel side edge portions and being of a length to receive a plurality of film means, and a plurality of discrete masses of non-setting adhesive means in said pocket means along at least one of said side edge portions spaced apart a distance generally conforming to said width of said film frames whereby said adhesive means



will act to locate the juncture areas between said film means and frames, said adhesive means extending inwardly of said pocket from a respective side edge portion for grippingly engaging said film means to restrain movement thereof and retain the engaged film means at a selected predetermined position within said pocket means.

3,959,908
LIVESTOCK IDENTIFICATION TAG
Robert R. Lowe, P.O. Box 518, Nanton, Alberta, Canada (T0L 1R0)
Continuation of Ser. No. 467,337, May 6, 1974, abandoned. This application May 23, 1975, Ser. No. 580,445
Int. Cl.² G09F *3/00*
U.S. Cl. 40—301 **2 Claims**

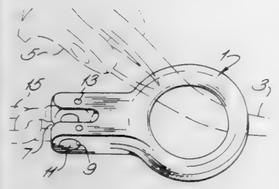


1. A livestock identification tag, comprising a planar member having a body and a curved neck extending outwardly from said body and terminating in a terminal end, the neck including a first shoulder member normal to said planar member and spaced from said terminal end and a second shoulder member normal to said planar member and of lesser dimensions than said first shoulder member located adjacent the neck terminal end, and an apertured tab member adapted to be force fitted over the said second shoulder member to lock about the tag neck.

3,959,909
KELLY'S EYE COMPONENT FOR A FISHING TRAWL
Anthony Alan Buschini, Fleetwood, and Douglas Edward Swarsbrick, Stourport-on-Severn, both of England, assignors to Parsons Controls Limited, Stourport-on-Severn, England
Filed Aug. 19, 1974, Ser. No. 498,765
Claims priority, application United Kingdom, Aug. 24, 1973, 40206/73
Int. Cl.² A01K *73/02*
U.S. Cl. 43—8 **2 Claims**

1. A Kelly's Eye component for use with trawling gear, the said component comprising a unitary metallic member, one end of which is in the form of a ring, the ring defining an aperture which is sufficiently large to allow passage of a trawl

rope, the cross-section of the ring, within the ring, being arcuate on a radius greater than one-half the ring thickness transversely to the general plane of the ring, the other end of said metallic member being slotted to provide two arms and to resemble a clevis, said metallic member being substantially flat with its two said ends being in the same plane, said two arms being closer together than the inside diameter of said ring and having a first aperture means normal to the slot

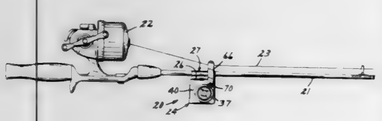


between said arms, at least one of said arms having a further aperture extending at right angles to the said first aperture means and being arranged tangential thereto, a connecting pin in said first aperture means spanning said slot and having a tangential slot in its outer surface, and a locking pin engaged in said further aperture and in said tangential slot in the connecting pin, said connecting pin being adapted to receive a link of a chain to thereby connect said chain to said other end of the member.

3,959,910
FISHING SIGNAL DEVICE

Theodore Montgomery, Frankfort, S. Dak., assignor to Wayne T. Wise, Frankfort, S. Dak., a part interest

Filed Mar. 24, 1975, Ser. No. 561,549
Int. Cl.² A01K *97/12*
U.S. Cl. 43—17 **7 Claims**

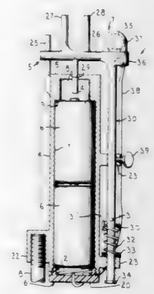


1. A fisherman's accessory comprising, in combination:
a housing;
means for removably mounting said housing on cylindrical members of different diameters, including a pair of spaced, resilient arms having pairs of aligned, cylindrical concavities with different radii of curvature and parallel axes;
a threaded bore in said housing extending orthogonally to the axes of said concavities;
a shaft threadedly engaging said bore in said housing, so that rotation of said shaft causes axial movement thereof;
a drum fixed to said shaft within said housing, having a cylindrical surface of which a first peripheral portion is electrically conductive and a second peripheral portion is electrically non-conductive;
electrically conductive contact means carried by said housing for engaging said surface;
a source of electrical energy, electrical signal means, and means completing a series electrical circuit including said source, said signal means, said contact means, and the electrically conductive surface of said drum, so that when the latter rotates to a position in which its electrically conductive surface engages said contact means, the circuit is completed and the signal means is operated;
a crank arm fixed to said shaft outside said housing at a location on said shaft spaced from said housing, so that rotation of said crank arm about the axis of said shaft causes rotation of said shaft and said drum;
compression spring means carried on said shaft between said housing and said crank arm and frictionally engaging the same at its respective ends, so that rotation of said shaft compresses or releases said spring to vary the frictional opposition exerted thereby against rotation of said crank arm;
and releasable line engaging means carried by said crank arm, so that force acting on the line is enabled to cause rotation of said arm.

3,959,911
LIGHT AND SIGNAL DEVICE

Ronnie R. Puckett, R.R. 2, Hamilton, Mo. 64644

Filed July 7, 1975, Ser. No. 593,634
Int. Cl.² A01K *97/10, 97/12*
U.S. Cl. 43—17 **8 Claims**

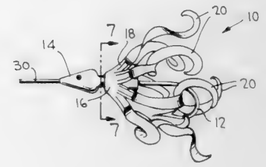


1. A fishing signal device comprising:
a. a housing having a side wall and opposite ends and a chamber therein;
b. said side wall of said housing has guide means extending therefrom;
c. a battery in the chamber in said housing;
d. a fishing rod holder mounted on said housing and movable toward and away from said housing, said fishing rod holder being adapted to support one end portion of a fishing rod thereon, said fishing rod holder having an electrical contact member movable therewith and into position making circuit with said battery in response to a force on the one end portion of the fishing rod;
e. said fishing rod holder is a generally L-shaped member having a first portion positioned in overlying relation with one of the opposite ends of said housing and a second portion positioned adjacent the side wall of said housing and extending through said guide means on said side wall of said housing;
f. said fishing rod holder has an abutment member thereon;
g. a signal member in electrical contact with said fishing rod holder and electrically connected to said battery;
h. resilient means positioned between and in engagement with said housing and said fishing rod holder for resiliently supporting said contact member in a circuit interrupting position with said battery until moved into position making circuit with said battery in response to a force on the one end of the fishing rod;
i. said resilient means is a coil spring having one end thereof in engagement with said abutment member and the other end thereof in engagement with said guide means; and
j. one of said abutment member and the one end of said resilient means is adjustable to selectively vary the force required to move said contact member into circuit making contact with said battery.

3,959,912
FISHING LURE

David C. Lee, Hot Springs, Ark., assignor to Charles D. Morehead, Paducah, Ky.

Filed Aug. 20, 1975, Ser. No. 606,096
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.02 **7 Claims**

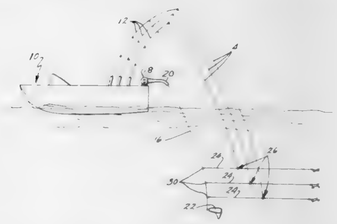


1. A lure for attachment to a fish hook, which comprises a pliable plastic central body, a pliable plastic skirt means extending outwardly from said central body, and a plurality of soft thin flexible plastic tails extending integrally from said skirt means, each of said flexible plastic tails comprising a substantially flat element having a connecting end and a free end, said connecting end being attached integrally to said skirt means, said flat element in repose being curled in a plane from its connecting end to said free end, said skirt means comprising a plurality of pliable plastic skirt members each of which is attached at one end thereof to said central body and at the other end thereof to said connecting end of one of said flat tail elements, and each of said skirt members being substantially thicker than said tail elements, and wherein said other end of said skirt member includes a portion tapered to terminate in said connecting end of said tail element.

3,959,913
RELEASABLE NON-SLIP ATTACHMENT MEANS FOR CONNECTING FISHING LINES TO DOWN-RIGGER CABLES

Claude J. Weber, 17332 Coles Park, Spring Lake, Mich. 49456

Filed Aug. 7, 1975, Ser. No. 602,568
Int. Cl.² A01K *91/00*
U.S. Cl. 43—43.12 **26 Claims**

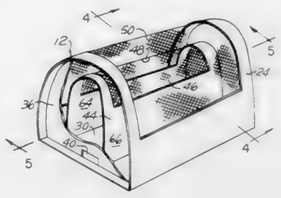


1. Apparatus for releasably and detachably securing a fishing line to a weighted depth-setting downrigger line, comprising:
an elongated body defining guide surfaces for a movable plunger and establishing an axis for plunger movement, said body also defining indexing surfaces for seating said downrigger line transversely of said guide surfaces;
tether line means for attaching a fishing line to said body;
a movable plunger carried with said body and disposed for movement along said guide surfaces, said plunger having a head portion for engaging said downrigger line and entrapping same upon said indexing surfaces;
means for urging said plunger into entrapping engagement with said line and for maintaining the plunger in such engagement to thereby attach said body to said downrigger line; and manually-operable means for releasing said plunger from its line-entrapping engagement to thereby enable release of said body from the downrigger line.

3,959,914
PREFABRICATED DISPOSABLE FLY TRAP

Robert J. Kaveloski, 39663 Balboa Drive, Sterling Heights, Mich. 48078

Filed May 23, 1975, Ser. No. 580,481
Int. Cl.² A01M *1/10*
U.S. Cl. 43—118 **10 Claims**



1. A prefabricated blank adapted to be folded into a disposable fly trap, said blank comprising
- an elongated approximately T-shaped member of flexible sheet material including
  - a longitudinal end panel adapted to be folded at a first predetermined fold location into an arch-shaped inner wall of the fly trap and thereby to define an inner fly trap chamber,
  - a bridge portion disposed adjacent said longitudinal end panel and adapted to be folded relatively thereto at a second predetermined fold location,
  - a longitudinal intermediate panel disposed adjacent said bridge portion and adapted to be folded relatively thereto at a third predetermined fold location into an arch-shaped outer wall of the fly trap disposed in outwardly-spaced relationship to the arch-shaped inner wall thereof and to define therebetween an outer fly trap chamber,
    - each of said panels having therein a light-transmitting area and a fly restrainer,
    - said longitudinal end panel having a fly exit port therein adapted in the arch-shaped folded positions of said panels to lead from the inner chamber to the outer chamber,
- and a transverse end panel disposed adjacent said longitudinal intermediate panel and adapted to be folded relatively thereto at a fourth predetermined fold location into a floor wall of the fly trap,
  - said transverse end panel having at its opposite ends arch-shaped wings adapted to be folded upward into end-closing relationship with the opposite ends of the inner and outer arch-shaped walls,
    - one of said wings having a fly entrance doorway therein adapted in the folded condition of the blank to lead from the exterior of the trap into the outer chamber thereof.

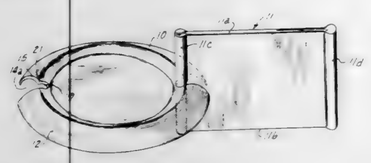
3,959,915
PROPELLED DISK COPTER TOY

John S. Kettlestrings, 434 Carriage Drive 3-B, West Chicago, Ill. 60185

Filed Jan. 16, 1975, Ser. No. 541,511
Int. Cl.² A63H *27/14*
U.S. Cl. 46—74 D **16 Claims**

1. A toy comprising:
a. an impeller means having a flat resilient elongated body, said body having a center portion having a substantially

rectangular cross-sectional configuration, and end portions being enlarged protrusions respectively, the intersection of said protrusion and said center portion defining an offset, and



b. a circular disk having a slot in the periphery thereof to receive the impeller means,

wherein said impeller means can be selectively deformed to impel the disk when said impeller is inserted in said disk slot.

3,959,916

WHISTLING SCALING TOY

Paul Meyer, East Norwalk, Conn., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Oct. 17, 1974, Ser. No. 515,476
Int. Cl.² A63H *33/18*
U.S. Cl. 46—74 D **3 Claims**



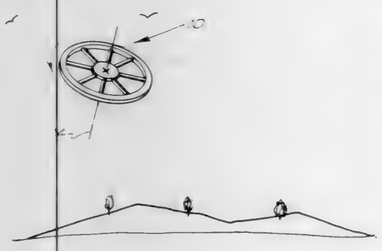
1. A scaling toy comprising: a generally circular disc having a flange depending generally perpendicularly about the periphery of said disc, and plural sound generation passageways extending generally radially through said flange in angularly spaced apart relationship, each of said passageways being generally of Y-shape communicating between a pair of angularly spaced apart openings on an outer side of said flange and an opening on an inner side of said flange.

3,959,917

FLYING TOY

Stanford Dawson, Brooklyn, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Aug. 20, 1975, Ser. No. 606,219
Int. Cl.² A63H *27/00*
U.S. Cl. 46—74 D **3 Claims**



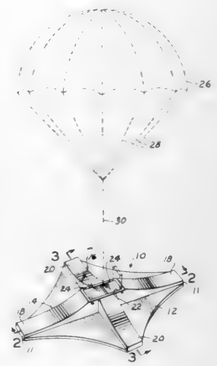
1. A flying toy comprising a generally circular air inflatable envelope for storing pressurized air, said envelope having a central geometric axis about which said envelope is adapted to spin, and jet means communicating from the interior to the exterior of said envelope for applying a lifting force to said envelope upon exhaust of air from the interior of said envelope therethrough.

3,959,918

AIRBORNE TOY

Nilson Ortiz, San Francisco, Calif., assignor to Niltec Corporation, San Francisco, Calif.

Filed Nov. 7, 1974, Ser. No. 521,824
Int. Cl.² A63H *33/20*
U.S. Cl. 46—86 R **1 Claim**



1. In an aerial toy in combination with a collapsible toy parachute having shroud lines secured to the toy, the improvement comprising:

a flat base having opposing end portions forming handles adapted for use in throwing said base into the air;

a longitudinal rib extending between said end portions and secured to said base;

a transverse rib intersecting said longitudinal rib,

said ribs each having a thickened portion at their point of intersection,

said longitudinal rib having a recess in its thickened portion forming a well for nesting said parachute when in a collapsed condition; and,

a normally closed flap door loosely connected with one of said ribs for opening the well and releasing said toy parachute while said toy is airborne.

3,959,919

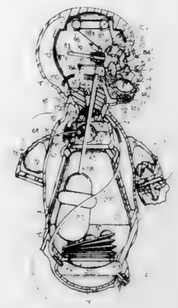
ANIMATED OBJECTS SUCH AS DOLLS, FIGURED PERSONAGES AND THE LIKE

Raymond Gerard Baulard-Cogan, Louveciennes, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine

Division of Ser. No. 443,505, Feb. 19, 1974, Pat. No. 3,881,275. This application Dec. 23, 1974, Ser. No. 535,665
Int. Cl.² A63H *13/02*
U.S. Cl. 46—135 R **4 Claims**

1. An animated doll comprisng a body including first and second hollow casings formed of substantially rigid, nondeformable material respectively generally defining head and trunk portions of the doll and an envelope of deformable flexible material fitted over said hollow casings and defining a lower jaw and mouth of the doll, an actuating member for the mouth of the doll comprising a lever mounted in said head portion of said first casing one end of which is connected in the deformable flexible part of said envelope forming said lower jaw of said doll, and actuating means operatively connected to the other end of said lever for moving said lever and thereby the mouth of the doll and simultaneously other movable parts of the doll, said actuating means comprising a rod mounted slidably and rotatably between said head and trunk portions within said first and second casings and a movable

ponderable ball-like member mounted for movement inside the hollow space of said trunk portion, said ball-like member being mounted as a counterweight at one end of said rod, the



end of said rod which moves within said head portion being connected to said lever for moving said mouth upon movement of said rod by said ponderable ball-like member.

3,959,920

BREAKAWAY STUNT CAR

Michael Ieda, Fort Solanga, Long Island City, N.Y., assignor to Ideal Toy Corporation, Hollis, N.Y.

Filed Jan. 8, 1975, Ser. No. 539,369
Int. Cl.² A63H *17/02, 29/20*
U.S. Cl. 46—201 **19 Claims**



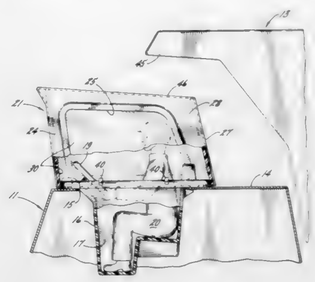
1. A toy vehicle comprising a chassis and a body removably mounted on said chassis, said body including a plurality of body elements each of which includes means for releasably connecting it to at least one other body element; and means on the vehicle responsive to an impact therewith for propelling one of said body elements away from said vehicle; said body elements being positioned in superimposed relation to one another with said one body element being positioned on top of the other body element in the assembled condition of the vehicle; said impact responsive means including releasable latch means for engaging said one body element and maintaining it in assembled relation to the other body elements; whereby said other body elements are held in assembled relation between the chassis and said one body element and propulsion of said one body element will cause a sequential break away of the body elements from the chassis as said one body element draws with it the body element to which it is connected and each body element then successively draws with it the body element to which it is connected.

3,959,921

TOY VEHICLE WITH OPERATOR-SIMULATING DOLL

Bernard C. Klint, Rockford, Ill., assignor to Nylint Corporation, Rockford, Ill.

Filed Dec. 4, 1974, Ser. No. 529,386
Int. Cl.² A63H *11/10*
U.S. Cl. 46—202 **5 Claims**



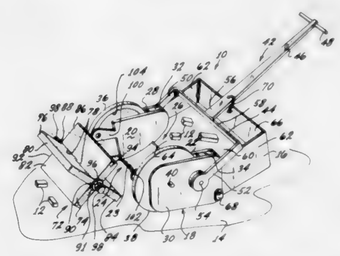
1. A toy vehicle having a cab with a generally horizontal top, a cavity opening upwardly from the top of said cab and defining a sunken operator's compartment, an operator-simulating doll seated removably in said compartment with its head extending upwardly beyond the top of said cab, a box-like cupola normally disposed in a closed position covering said compartment and enclosing said doll, the sides of said cupola having windows rigidly carried by the cupola to permit said doll to be seen from outside of the cupola, and a generally horizontal hinge between one lower edge of said cupola and the top of said cab and mounting said cupola for bodily swinging through approximately ninety degrees to an open position uncovering said doll and said compartment to enable the doll to be removed from the compartment.

3,959,922

PUSH TOY ADAPTED TO PICK UP THREE-DIMENSIONAL OBJECTS LYING ON A SUPPORTING SURFACE

Gerard K. Leistikow, San Pedro, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed May 16, 1975, Ser. No. 578,285
Int. Cl.² A63H *33/30*
U.S. Cl. 46—205 **4 Claims**



1. In a push toy adapted to pick up three-dimensional objects lying on a supporting surface and having means for receiving said objects after they have been picked up, means for propelling said objects into said receiving means, said propelling means being aligned with said receiving means, means for positioning said propelling means over said objects, and means connected to said propelling means for moving it into engagement with said objects with a propelling force, the improvement wherein said propelling means comprises an impeller consisting of unitary structure made only of soft, spongy mate-

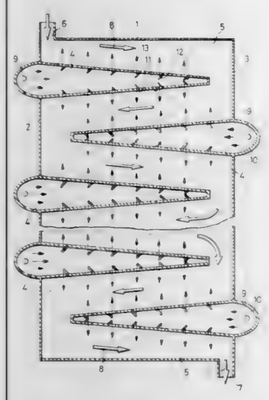
rial, said structure having first and second ends, said means for moving said propelling means including a respective attachment member connected to each of said ends as the only means directly connected to said impeller for moving it, whereby the need for a center shaft for said impeller is eliminated.

3,959,923

EQUIPMENT FOR GROWING ALGAE

Winfried Selke, Bremen, Germany, assignor to ERNO Raumfahrttechnik GmbH, Bremen, Germany

Filed Dec. 4, 1974, Ser. No. 529,453
Int. Cl.² A01G *33/00*
U.S. Cl. 47—1.4 **10 Claims**



1. Equipment for growing algae comprising, first means defining a flow duct for water containing algae and nutriants for promoting growth of the algae;

second means for establishing in the flow duct distinct zones of photochemically effective illumination alternating with zones of darkness in the flow duct, along and in the direction of flow, so that the water and growing algae therein pass through these zones in corresponding alternating sequence;

said zones of illumination being established from opposite sides of the flow duct in a significant portion of the flow duct; and

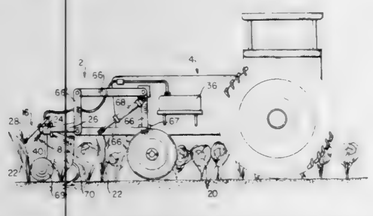
the zones of darkness being about ten times as long in the direction of flow as the zones of illumination.

3,959,924

AUTOMATIC SPOT SPRAYER

John Clarence Allen, Jr., Box 87, Indianola, Miss. 38751

Filed Oct. 24, 1974, Ser. No. 517,405
Int. Cl.² A01B *41/00*; **A01G** *13/00*
U.S. Cl. 47—1.43 **7 Claims**



1. Apparatus for treating individual plants growing in a row of crops, said plants being at least of a certain predetermined height comprising:

a frame movable relative to said plants;

selectively actuatable means mounted on said frame for dispensing treatment material on a plant upon being actuated by an electrical signal and for terminating the dispensing of treatment material upon termination of the signal;

sensor means mounted on said frame comprising an elongate probe arm disposed substantially parallel to the ground and extending transversely to the direction of intended movement of said frame and located at a height equal to or slightly less than said predetermined height, said probe arm having electrically conductive means disposed along its length, and circuit means for generating said electrical signal for a predetermined time duration substantially instantaneously upon said probe arm contacting one of said plants, said time duration being sufficiently long so as to insure adequate treatment of the contacted plant and also having an upper limit to prevent effective treatment of the crops in the vicinity of the treated plant; and

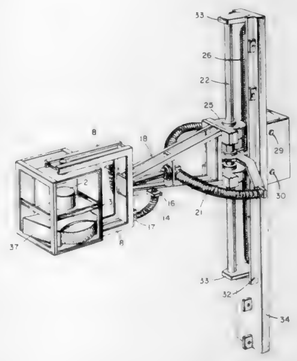
a container mounted on said frame fluidly communicating with said dispensing means for storing said treatment material.

3,959,925

MECHANIZED BARK HACK

Donald W. Sanders, Auburn, Ala., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 18, 1975, Ser. No. 569,530
Int. Cl.² A01G *23/10*
U.S. Cl. 47—12 **10 Claims**



1. An apparatus for abrading a selected area of bark from the trunk of a vital tree; said apparatus adapted to be mounted and operationally transported aboard a mobile, speed and direction controllable prime mover and said apparatus consisting of the integrated components recited infra in ordered sequence from the prime mover proximal principal apparatus support to the tree proximal, bark abrading, rotary cutter head:

principal apparatus support comprising a vertically disposed boom in the form of a rigid, unobstructed rod member of preselected length and with a journaled surface, said rod member secured top and bottom to one side of a prime mover about at the abeam location;

oscillatory horizontal boom with inboard end attached to the said vertical boom rod member via dual function slip and rotary bearings, the thus suspended horizontal boom afforded a horizontal oscillatory freedom of about ninety degrees abaft a normal abeam position relative the prime mover together with a vertical positioning capability within and journaled unobstructed andjournaled limits of the vertical boom rod member, said horizontal boom

comprising a first yoke and a second yoke, paired with the closed faces of the yokes opposed and attached through a journal and bearing pivot link, said pivot link adapted to afford relative pivotal rotation of the yokes within the approximate limits of ninety degrees to either side of a normal vertically parallel position of the paired and pivot linked yokes, the said first yoke proximal the vertical boom provided with two coaxial bearings, one each on either yoke arm end, the said bearings horizontally disposed with vertically coaxial bores journaled to the vertical boom rod member as recited above, the said second yoke provided with paired coaxial counterposed pivot bearings, one each on either yoke arm end, and carrying therebetween, journaled rectangulary symmetrical to the paired pivot bearings and within the yoke arms, with clearance provided for about one hundred and eighty degrees of free rotation around the pivot bearings, a first rectangular box-like receptacle and therewithin a second similar and sensibly smaller rectangular box-like receptacle, the said receptacles severally adapted by virtue of size and by virtue of location on internal rail and roller mounting means to afford reciprocal, sliding, unidirectional, telescopic extending and retracting movement of the said second receptacle within, but not beyond the confines of, the said first receptacle, the face of the said second receptacle open toward the direction of extending telescopic travel and the corresponding immediately adjacent face of the said first receptacle contour curved, vertically concave, thereby to provide an approximate matching surface for operational tree trunk contact, the curved face of said first receptacle provided with a horizontally disposed rectangular slot of dimensions sufficient to allow rotational clearance therethrough for an approximately ninety circular degree, peripheral, chord shaped portion of a horizontally disposed rotary cutter head of preselected size; bark abrading component in the form of a rotary cutter head, disc shaped with curved peripheral surface bladed or selectively abrasive, together with an associated driving motor, both cutter head and driving motor rigidly mounted within the said second receptacle, the rotary cutter head positioned axially vertical and with approximately ninety circular degrees of peripheral, chord shaped cutter head exposure extended beyond the open face confines of the said second receptacle and extended similarly through the afore-recited horizontally disposed, rectangular slot of the said first receptacle and beyond the contour curved face of the said first receptacle at such time as the said receptacles are at the position of maximum telescopic extension, there being substantially no exposure of the cutter head beyond the confines of the said first receptacle at the position of maximum telescopic retraction;

resilient restraining means interposed at all locations intervening adjacent components where relative motion, whether linear or rotational, of the components is required, said resilient restraining means severally adapted to apply a progressively increasing restraint related directly to the degree of relative motion of the adjacent components, said resilient restraining means severally characterized by a minimum degree of restraint that is at least the amount of restraint required to urge the operating rotary cutter head through the bark of a vital tree trunk down to the cambium layer;

means for vertically positioning the horizontal boom components along the rod member of the principal apparatus support in the form of a closed loop roller chain with one sector deployed via idler sprockets adjacently parallel the rod member of the vertical boom, the inboard end of the horizontal boom fixedly attached at one point along the vertical boom parallel deployed sector of said chain, said chain in its entirety actuated via a reversible driving motor and drive sprocket mounted stationary to act on a sector of the closed loop roller chain outside that sector deployed adjacent the vertical boom, operation of the reversible driving motor adapted, selectively to raise, to lower and to operatively position the horizontal boom components along the rod member of the vertical boom and thereby place the rotary cutter head at a preselected height location on the trunk of the tree to be abraded.

3,959,926

TILT WINDOW

Marshall V. Noecker, Grosse Pointe; Kenneth C. Thom, Birmingham, and Charles Harp, Jr., Farmington, all of Mich., assignors to Kaufmann Window and Door Corporation, Detroit, Mich.

Filed Oct. 2, 1974, Ser. No. 511,291
Int. Cl.² E06B *3/32*, *1/04*
U.S. Cl. 49—181 **13 Claims**



1. In a tilt-in-type window insertable in a window opening and having a metal frame and sash, the combination comprising:

a frame having a pair of upstanding stiles laterally opposed to each other in said window opening.

a said stile having a stepped transverse end wall, and uniformly spaced and parallel inside, middle and outside flanges extending laterally inboard from said end wall toward the other stile, said stepped end wall comprising an outside traverse web, an inside transverse web offset laterally outboard therefrom and a lateral step joining the adjacent ends thereof and formed by the laterally outer end portion of said middle flange, said flanges and end wall forming a pair of U-shaped sections opening laterally inboard with the legs of the U-shapes formed by said flanges, the interior one of said U-shaped sections being offset laterally outboard with respect to the exterior U-shaped section along a common leg formed by said middle flange;

said stile further comprising a pair of coplanar transverse flanges in each U-shaped section and spaced laterally inboard from said end wall by a common spacing and closing the outboard portion of the corresponding U-shaped section except for a slot between the opposed edges of such pair of transverse flanges, so as to define an undercut upstanding slideway in the outboard portion of each U-shaped section, said transverse flanges of said interior U-shaped section being offset laterally outboard of the transverse flanges of said exterior U-shaped section, the inboard edge of said inside flange carrying one said transverse flange, said middle flange carrying a second said transverse flange offset outboard of its laterally inboard edge by an interior facing sealing surface and carrying a third said transverse flange at its inboard edge, said outside flange carrying the fourth said transverse flange offset outboard from its laterally inboard edge by an interior facing sealing surface, the inboard faces of

said first and third transverse flanges being further sealing surfaces, such that said U-shaped sections each have a said interiorly facing sealing surface on the exterior-most leg thereof and a laterally inboard facing sealing surface on the interior-most transverse flange thereof, wherein said sealing surfaces are arranged in a stairstep-like series proceeding interiorly and laterally outboard on said stile;

double-hung interior and exterior sash units respectively disposed between the laterally opposed interior U-shaped sections and exterior U-shaped sections of said stiles, the sides of said sash units each having, in cross section, an interior leg terminating in a laterally outboard facing seal strip sealingly opposed to said interior sealing surface of said transverse flange of the corresponding U-shaped stile section, and an exterior leg terminating immediately laterally inboard of the exterior transverse flange of said U-shaped section and having an exterior facing sealing strip engaging the adjacent and overhanging interiorly facing seal surface of the corresponding said U-shaped stile section, said sash units carrying glazing of substantially the same width from which said legs extend laterally outboard, said legs of said interior sash unit being longer than said legs of said exterior sash unit, such that each sash unit is freely shiftable interiorly from between said stiles despite positive sealing of each sash unit edge at two spaced locations in two mutually orthogonal planes respectively extending parallel to and perpendicular to the plane of said window;

sash support means vertically slidably housed in said undercut upstanding sideway of a U-shaped stile section and means extending through the said slot and connecting the lower portion of a said sash to the adjacent support means, said support means including lock means permitting interior tilting of said sash unit while locking same against vertical sliding;

laterally slidable latch means at the upper portion of a said sash unit extensible through said slot and into engagement with the interior one of the transverse flanges of the opposed U-shaped stile section to limit said sash unit to vertical sliding motion and retractable from said slot inboard beyond said last mentioned transverse flange for free pivoting of said sash unit interiorly from said stile, wherein during said pivoting the exterior and interior seal strips of the sash respectively move away from and slidably along the opposed seal surfaces of the adjacent U-shaped section, said latch member holding said seal strips snugly in position against said seal surfaces of said stile in the normal upright condition of said sash, the exterior one of said sashes being freely tiltable interiorly in laterally spaced relation from said interior U-shaped stile section.

3,959,927

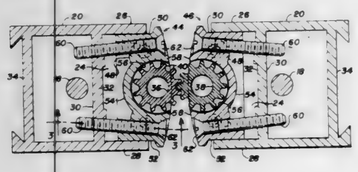
SEALING ASSEMBLY

Samuel William Good, Lancaster, assignor to Zephyr Aluminum, Incorporated, Lancaster, Pa.

Filed Dec. 4, 1974, Ser. No. 529,292

Int. Cl.² E06B *7/16*

U.S. Cl. 49—368 **6 Claims**



4. A door assembly adapted to be mounted within a door frame, said door assembly comprising:

a pair of adjacent swinging doors, each door having spaced apart hinge and swinging stiles, each of said swinging stiles being provided with a vertically extending recess open to the adjacent stile, the recess being defined by a pair of spaced apart side members and a recessed inner member which extends between the side members;

a pair of hinge means interconnecting said hinge stiles of said pair of doors to spaced apart portions of the frame in such a manner that each door swinges about a hinge line remote from the swinging stile with the swinging stiles of the pair of doors being disposed adjacent each other when said pair of doors are closed;

sealing means to seal the gaps between the adjacent swinging stiles, said sealing means including a pair of generally cylindrical substantially identical elements which are provided with a plurality of spaced apart teeth which extend radially outwardly from the axis of the associated elements; and

a pair of mounting means to mount the sealing means along the edges of the adjacent swinging stiles in such a manner that the elongated members interengage each other throughout their lengths, each of said pair of mounting means including structure for mounting an associated cylindrical element for rotational movement about its axis, said structure being received within the vertically extending recess of the associated swinging stile and said structure being provided with a channel which receives the elongated members, said channel having a cylindrical surface having an opening on one side, the extent of the cylindrical surface being sufficient to maintain the first element within the channel against lateral displacement, each of said mounting means further including fastener means to secure the associated structure to the swinging stile within said vertically extending recess, and said mounting means further including means to adjustably secure said structure to one of said adjacent stiles.

3,959,928

APPARATUS FOR MICRO-FINISH MACHINING OF COMPOUND, CIRCULAR ARC-SHAPED PROFILED SURFACES IN ANNULAR WORKPIECES

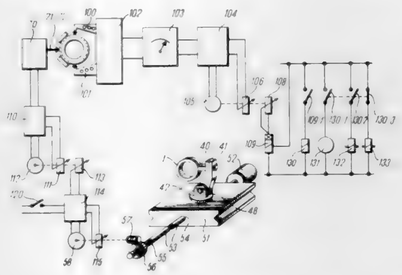
H. Günter Schmitz, Wermelskirchen, Germany, assignor to Supfina Maschinenfabrik Hentzen KG, Remscheid, Germany

Filed July 31, 1974, Ser. No. 493,467

Claims priority, application Germany, Aug. 6, 1973, 2339726

Int. Cl.² B24B *49/04*

U.S. Cl. 51—58 **6 Claims**



1. In an apparatus for micro-finish machining of circular arc-shaped profiles in annular workpieces in two phases including: means mounted the workpiece to the apparatus; a honing tool; means mounting the honing tool for pivotal movement about an axis which is perpendicular the longitudinal axis of the mounted workpiece; means for pressing the honing tool against the profiled surface to be machined; and means rotating the workpiece whose profiled surface is being machined relative to the honing tool, the improvement comprising:

a. displacement means for displacing the honing tool mounting means and consequently the honing tool in a direction parallel to the longitudinal axis of the mounted workpiece;

b. a measuring instrument which engages the workpiece prior to its engagement with the honing tool and measures the location of a plane containing the point of maximum curvature of the profiled surface with respect to a reference plane which coincides with the plane containing one end face of the workpiece profiled surface is to be machined, the measuring instrument including signal generating means indicative of the measurement made; and

c. control means including means for receiving the signal produced by the signal generating means and storing the signal, said control means being connected to the displacement means for effecting displacement of the honing tool mounting means and consequently the honing tool in the parallel direction as a function of the stored signal so that the position of the pivotal axis defined by the honing tool mounted means corresponds to the distance of the plane containing the point of maximum curvature from the reference plane.

3,959,929

DEVICE FOR PRECISION GRINDING AND POLISHING OF WORKPIECES

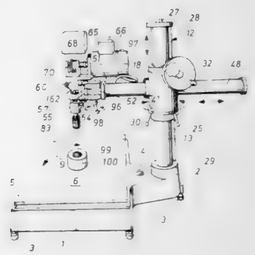
Johann R. Fleischmann; Willy Fechter, and Heinrich Schmidt, all of Nurnberg, Germany, assignors to Doll & Co., Nurnberg, Germany

Filed Apr. 18, 1974, Ser. No. 462,122

Claims priority, application Germany, Apr. 21, 1973, 2320349

Int. Cl.² B24B *7/02*

U.S. Cl. 51—68 **11 Claims**



1. A device for precision grinding and polishing the surfaces of a workpiece comprising a base means, a carrier for carrying said workpiece, operable means movably mounting said carrier on said base means such that said carrier and the workpiece carried thereon may be moved to desired positions relative to said base means, a post perpendicular to the general plane of said base means, a stand bushing adjustably mounted on said post for movement in a vertical and rotational direction relative to said post, a rack and pinion operably disposed between said post and said stand bushing, said rack being movably mounted about the circumference of said post, said stand bushing having a longitudinal groove in which said rack is slidable, said pinion being rotatably mounted on said stand bushing and meshing with said rack to provide for raising and lowering said stand bushing on said post, said stand bushing having means for adjustably supporting said carrying arm for longitudinal and angular movement, a carrying arm, means mounting said carrying arm on said stand bushing, a reciprocating device operable to reciprocate a tool, means mounting said reciprocating device on said carrying arm, said means for mounting said carrying arm being operable to provide for adjustability of said carrying arm in all three spacial coordinates, said tool being the carrier of a grinding or polishing medium for grinding or polishing said workpiece on said base means, said movable mounting of said carrier on said base means permitting said workpiece to be moved in the grinding and polishing process to thereby automatically align the workpiece with said tool.

3,959,930

APPARATUS FOR CUTTING OFF CAST PARTS FROM A RUNNER OF A CASTING BODY

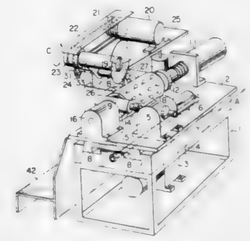
Masami Hatta, and Tetsusi Ohkawa, both of Yasugi, Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Oct. 23, 1974, Ser. No. 517,377

Claims priority, application Japan, Oct. 24, 1973, 48-118988

Int. Cl.² B24B *19/00, 23/08*

U.S. Cl. 51—92 ND **1 Claim**

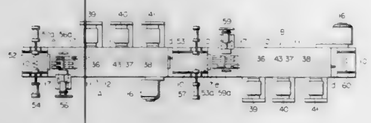


1. In an apparatus for cutting off cast parts from an outer periphery of a runner of a casting body comprising a bed, slidable mount means reciprocally movable on said bed, drive means for reciprocally moving said slidable mount means, holding means provided on said slidable mount means for rotatably carrying said casting body, means including a cutting grinder located laterally of said casting body and substantially parallel to the axis of said casting body for cutting off the cast parts from the runner, said cutting grinder being adapted to move on a grinder table supported on said bed, said grinder table being swingable about a line substantially normal to the axis of said casting body in plan view, and fluid operable cylinder means connected to said grinder table and said bed for moving and fixing said grinder table, wherein the improvement comprises a swingable lever having at an end a roller contacting with an outer periphery of the cutting grinder and a first actuator at the opposite end, first limit switches arranged along a locus of movement of said first actuator and spaced apart from each other for a predetermined distance so that the first limit switches may be operated by said first actuator, a second actuator secured to said grinder table, and second limit switches arranged along a locus of movement of said second actuator and spaced apart from each other for a predetermined distance so that the second limit switches may be operated by said second actuator, said first limit switches being adapted to operate said cylinder means to move said cutting grinder, said second limit switches being adapted to stop the operation of said cylinder means.

3,959,931
GRINDING MACHINE FOR COIL SPRINGS

Heijiro Shiguma, and Shigekazu Suzuki, both of Yokohama, Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed Oct. 21, 1974, Ser. No. 516,413
Claims priority, application Japan, Oct. 25, 1973, 48-120146
Int. Cl.² B24B *7/06, 7/16*
U.S. Cl. 51—112 **42 Claims**



1. A grinding machine for grinding the end face of a coil spring, comprising:

a machine frame having a substantially horizontally extending passageway therein;

a plurality of carrier means each for receiving a coil spring therein, and movable through said passageway of said machine frame in a state supporting the coil spring crosswise with respect to the longitudinal direction in which said passageway extends in said machine frame, each of said carrier means including a base plate and receptacle means mounted on said base plate, said receptacle means having concave surfaces for engagement with a coil spring;

conveying means for consecutively conveying said carrier means at prescribed intervals through said passageway from a coil spring feed-in end position at one end of said passageway to a coil spring feed-out end position at the other end of said passageway, said conveying means including an endless chain, said base plates being secured in series to said endless chain;

clamping means provided on each of said carrier means and swingable between a clamping position for clamping the coil spring received by said each carrier means by engagement therewith, and a coil spring releasing original position in which the clamping means is disengaged from the coil spring;

grinding means disposed at the side of said passageway for grinding the end face of the coil spring fed by said carrier means through said passageway; and

urging means for urging said clamping means to said clamping position, the urging action of said urging means being rendered effective at least during a period of time in which the end face of the coil spring is ground by said grinding means.

3,959,932
FINISHING SYSTEM WITH CYCLICALLY OPERABLE CLOSURE CONTROL

John F. Rampe, Mayfield Heights, Ohio, assignor to Rampe Research, Cleveland, Ohio

Continuation-in-part of Ser. No. 500,094, Aug. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 270,700, , Pat. No. 3,831,322, which is a continuation-in-part of Ser. No. 8,815, Feb. 5, 1970, Pat. No. 3,685,213. This application June 2, 1975, Ser. No. 582,712
Int. Cl.² B24B *31/06*
U.S. Cl. 51—163.1 **25 Claims**

1. A vibratory finishing machine comprising:

a. a supporting frame structure;

b. a tub structure carried on said frame structure but free to vibrate relative to said frame structure;

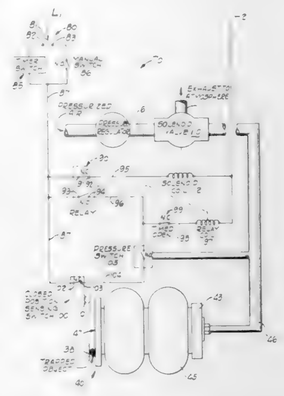
c. a vibration producing mechanism operably connected to said tub structure to vibrate said tub structure;

d. discharging means for controllably discharging materials from said tub structure, including:

i. opening means defining a discharge opening in communication with said tub structure;

ii. closure means movable toward and away from said opening means for selectively restricting the discharge of materials from said tub structure through said discharge opening to selectively retain and discharge materials in and from said tub structure;

iii. closure operator means connected to said closure means for moving said closure means toward and away



from said opening means to selectively restrict the discharge of materials from said tub structure through said discharge opening during the operation of said machine;

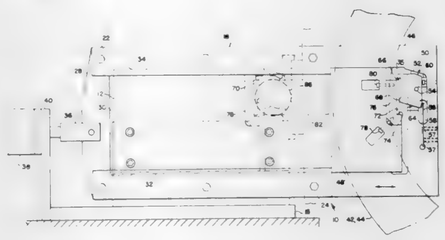
iv. sensor means for sensing an object trapped between said closure means and said opening means; and,

v. control means responsive to said sensing means and being connected to said closure operator means for reversing the movement of said closure means toward said opening means when an object is trapped between said closure means and said opening means to release such object.

3,959,933
CLAMPING FIXTURE FOR A DOUBLE DISC GRINDER

Herbert J. Fallon, Beloit, Wis., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 16, 1975, Ser. No. 568,537
Int. Cl.² B24B *41/06*
U.S. Cl. 51—217 R **7 Claims**



1. A workpiece clamping fixture for a double disc grinder comprising:

a support plate;

a moveable frame extending about the periphery of said support plate and mounted thereon for relative sliding movement with respect to said support plate with a clearance space between said support plate and said moveable frame accommodating said relative movement;

a workseat disposed in said clearance space and affixed to one of said support plate or said moveable frame;

clamping means also disposed in said clearance space and carried by the other of said support plate or said moveable frame adapted to clamp workpieces to said workseat by relative movement of said support plate and moveable frame in such a direction so as to reduce said clearance space; and

actuating means for relatively moving said support plate and said moveable frame so as to cause said clamping means to be activated.

3,959,934
COMPOSITION AND METHOD FOR REPAIRING SELENIUM PHOTORECEPTORS

John Frank Byrne, Worthington, Ohio, assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 4, 1974, Ser. No. 512,804
Int. Cl.² B24B *1/00*
U.S. Cl. 51—317 **8 Claims**

5. A method for repairing a damage area on a selenium photoreceptor comprising:

a. providing a polish composition including (i) zinc oxide, (ii) a secondary suspending agent selected from the group consisting of silica aerogels and colloidal silicas and an abrasive, all three materials being suspended in an organic liquid medium selected from the group consisting of liquid hydrocarbons, alcohols and mixtures thereof;

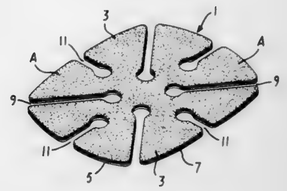
b. applying the polish composition to a physically damaged area of a selenium photoreceptor; and

c. rubbing the polish composition about the damaged area so as to effect a smoothing of the physically damaged area of the photoconductor.

3,959,935
ABRASIVE PAD FOR GRINDINC LENSES

Waldemar Stoppacher, Valhalla, N.Y., assignor to Interoptic Laboratories, Inc., Elmsford, N.Y.

Filed Mar. 18, 1975, Ser. No. 559,444
Int. Cl.² B24D *11/02*
U.S. Cl. 51—395 **2 Claims**

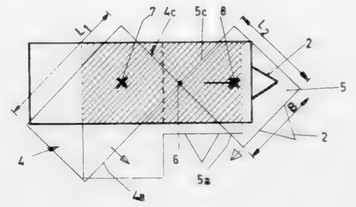


1. A pad for grinding lens blanks comprising a relatively porous and substantially water-resistant pliable sheet adapted to conform to the curved surface of a working tool, an adhesive coating on the underside of said pad for adhesively securing said pad to the surface of said tool and an abrasive surface on the other side thereof, a plurality of radially extending channels cut through the area of said pad, said radially extending channels being defined by parallel radial sides extending from the periphery of said pad toward the center thereof and an arched segment joining the inner ends of said radial sides.

3,959,936
TRANSPORTABLE HOUSE, PARTICULARLY OF THE CARAVAN-TYPE

Guus Lambooy, Meije 90, Gemeente Bodegraven, Netherlands

Filed Mar. 31, 1975, Ser. No. 563,720
Int. Cl.² E04B *1/346*
U.S. Cl. 52—65 **1 Claim**

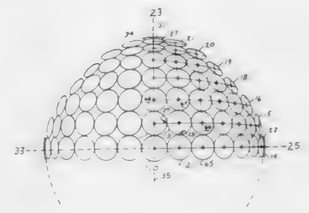


1. A mobile home comprising at least two sections arranged one behind another on a common integral substructure which is mounted on wheels, said sections being generally rectangular in plan and having vertical sides, characterized in that each of said sections is mounted on a pivot located in the central longitudinal plane of said common integral substructure, at least one of said pivots being longitudinally slidable in said substructure, two sections being hinged together at one corner of each section, and being movable on their pivots, from a transport position in which they are longitudinally aligned with one another and with said substructure, to a transverse position of use in which a side of one section and a side of the other section, formerly in alignment, are folded together on said hinge.

3,959,937
MODULAR DOME STRUCTURE

Leonard Spunt, 7809 McNulty St., Canoga Park, Calif. 91306

Filed June 17, 1974, Ser. No. 479,611
Int. Cl.² E04B *1/32*
U.S. Cl. 52—81 **7 Claims**



1. A dome structure comprising:

a multiplicity of elements with substantially circular peripheries, each of the same diameter, said elements disposed on the surface of an imaginary dome that has a predetermined pole location, and most of said elements fastened near their peripheries to the peripheries of only four other of said elements to form the frame of a dome;

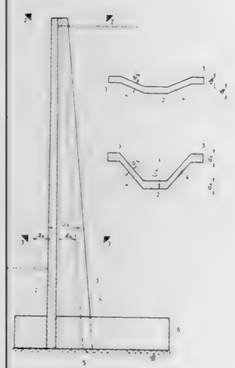
said elements including a first plurality of elements arranged along four imaginary meridian lines that pass through said pole location, and at least three sets of additional elements arranged in progressively lower rows, with an element in each row positioned with its upper end bridging the gap left between a pair of elements in the next higher row.

3,959,938

WALL SYSTEM OF CORRUGATED SECTIONS

John Zachariassen, 30 Krogshojvej, DK-2880 Bagsvaerd, Copenhagen, Denmark

Filed June 26, 1974, Ser. No. 483,443
Claims priority, application United Kingdom, July 2, 1973, 31395/73
Int. Cl.² E02D *27/30;* **E04C** *2/32*
U.S. Cl. 52—293 **7 Claims**



1. A corrugated wall system composed of prefabricated wall sections, each wall section having two distinct front portions and a rear portion, said front and rear portions spaced from each other by the dimension of corrugation of said wall section, and a connecting portion extending between each of said front portions and said rear portion, wherein the thickness of said front and rear portions increase from the top of each wall section to the bottom of the wall section while the thickness of said connecting portions is substantially constant from the top of each wall section to the bottom thereof, and wherein the dimension of corrugation increases from the top of each wall section to the bottom of the wall section.

3,959,939

BUILDING STRUCTURE

John S. Hodge, 2350 Westridge Court, Ferndale, Mich. 48220

Division of Ser. No. 340,595, March 12, 1973, Pat. No. 3,861,102. This application Nov. 20, 1974, Ser. No. 525,469
Int. Cl.² E04H *12/00;* **E04C** *3/30*
U.S. Cl. 52—301 **12 Claims**

1. Load bearing structural column capping means, comprising capping body means, said capping body means comprising generally lower disposed base means integrally formed with upper disposed wall-defining plate-like means, generally upwardly facing support surface means carried generally by said plate-like means and extending generally transversely of said body means and said plate-like means, said support surface means being effective for supporting thereon associated structure, said lower disposed base means having formed thereon at a lower end thereof downwardly facing mounting surface means extending generally transversely of said body means and said base means and parallel to said support surface means, said mounting surface means being effective when



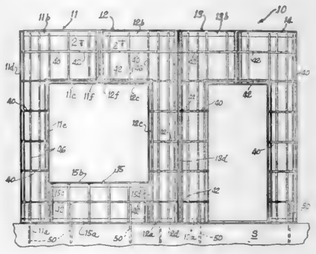
operatively placed atop associated structural column means for vertically supporting said capping body means.

3,959,940

REINFORCING ASSEMBLY AND REINFORCED CONCRETE BUILDING WALLS

Lawrence R. Ramberg, 2125 S. Tonne Road, Arlington Heights, Ill. 60005

Continuation-in-part of Ser. No. 324,316, Jan. 17, 1973, abandoned. This application Apr. 8, 1974, Ser. No. 458,991
Int. Cl.² E04B *1/16*
U.S. Cl. 52—348 **9 Claims**



1. A skeleton frame assembly for forming a reinforced concrete structural member, said frame assembly comprising:

1. a pair of adjacent frame sections, each frame section comprising a plurality of elongate frame members secured together to define a periphery for said frame section, an opposed pair of vertical frame members being generally J-shaped in end view and each of the legs of the J-shaped members defining a plurality of spaced openings along its length, at least one first elongate reinforcing rod, each of said rods being disposed in an opening in the shorter of the legs, at least one end of each of said first reinforcing rods lying within the periphery of its frame section, and at least one second elongate reinforcing rod secured to and crossing said first reinforcing rods to define therewith and with said frame section an open reinforcing network, the ends of each of said second rods lying within the periphery of its frame section, said pair of frame sections having a long leg of a J-shaped member of each in butting engagement;

2. a plurality of short reinforcing rods in openings in adjacent ones of the long legs of said butting frame members, whereby when concrete is applied to said adjacent pair of frame sections, the frame sections are tied together by said short reinforcing rods.

3,959,941

WEATHER STRIP WITH INSERTABLE COVER STRIP

Leonard W. Smith, Freemont, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 451,473, March 15, 1974, abandoned. This application Feb. 5, 1975, Ser. No. 547,108
Int. Cl.² B60J *1/00;* **E04F** *15/14*
U.S. Cl. 52—400 **3 Claims**



1. Mounting and trimming elements for a thin panel within an opening in a supporting structure having an inner liner, said elements embodying a resilient gasket having a first pair of oppositely outwardly presenting vertically disposed recesses for the acceptance of the edge portions of said panel and supporting structure respectively in substantially vertical aligned relation, a second pair of outwardly presenting recesses in substantially horizontal aligned relation disposed between said first pair of recesses located substantially normal thereto, a lock strip disposed in one of said second pair of recesses for exerting a closing bias on said first pair of recesses to pinch said gasket against said panel and supporting structure respectively, a cover strip having one edge extending into the other of said second pair of recesses which has an inner enlargement, and an enlargement along said one edge of said cover strip which is within said recess for extending into the enlargement provided therein.

3,959,942

COMBINED SPACER AND TRANSVERSE REINFORCING BEAM

Karol J. W. Merson, Mississauga, Canada, assignor to Wonder Steel Manufacturing International (Ontario) Limited, Mississauga, Canada

Filed July 2, 1975, Ser. No. 592,407
Int. Cl.² E04D *1/30;* **E04C** *2/32*
U.S. Cl. 52—551 **12 Claims**

1. A sheet metal structure comprising:

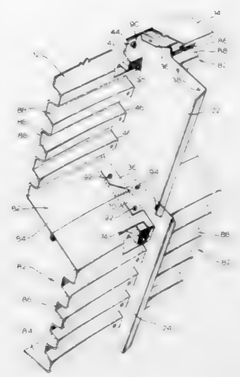
a. at least two panels of substantially the same cross section connected to one another by a lap joint at their outer ends,

b. each panel having at least one major U-shaped section which has a base wall and a pair of oppositely disposed side walls, said base wall being formed with a plurality of minor U-shaped longitudinally extending ribs, said ribs forming a plurality of alternately disposed minor crests and valleys,

c. the major U-shaped sections and the minor ribs of said panels nesting with one another at said lap joint.

d. a spacer panel having a body portion, said body portion having a spacer edge extending transversely across said major U-shaped section.

e. a plurality of spacer lugs at said spacer edge projecting outwardly from said body in a spaced relationship, said lugs having a thickness substantially equal to the thickness of said panels,



f. said lugs being located between overlapping base walls of said panels and spacing said base walls apart to permit nesting of the ends of said panels at the lap joint without requiring deformation of either nesting panel.

3,959,943

RIVETED CELLULAR PANEL ASSEMBLY

Yale R. Shea, Hales Corner; Arthur B. Thelen, and H. William Parsons, both of Milwaukee, all of Wis., assignors to INRYCO, Inc., Melrose Park, Ill.

Filed Jan. 23, 1975, Ser. No. 543,319
Int. Cl.² E04B *2/28;* **E04C** *2/32*
U.S. Cl. 52—618 **10 Claims**

1. A cellular floor panel assembly comprising:

a first plate and a second plate, at least one of said plates having a plurality of generally parallel troughs, the other of said plates covering the troughs of said one of said plates to define generally parallel enclosed cells, said plates having an electrically non-conductive protective coating on all surfaces,

one of said plates being provided with at least one stiffening rib parallel to said cells, said rib being in contact with the other of said plates along a line of juncture between said plates, and

fastening means holding said plates together comprising rivet-like fasteners passing through both of said plates in at least one area of contact therebetween.

3,959,944

MOUNTING AND/OR FIXING MEMBER FOR A REINFORCEMENT OR REINFORCING ELEMENT FOR USE IN REINFORCED CONCRETE STRUCTURES

Georgi Oroschakoff, Schutzengasse 27, Vienna III, Austria

Continuation of Ser. No. 263,105, June 15, 1972, abandoned. This application Mar. 27, 1974, Ser. No. 455,317
Claims priority, application Austria, June 16, 1971, 5221/71; July 8, 1971, 5963/71
Int. Cl.² E04C *5/04, 2/42*
U.S. Cl. 52—665 **3 Claims**

1. A concrete-reinforcement assembly comprising:

an array of transversely spaced mutually parallel reinforcing rods; and

a plurality of fixing members spaced apart along said reinforcing rods and extending transversely of said rod array, each of said fixing members comprising:

a pair of elongate mutually parallel spaced-apart longitudinal bars of smaller cross-section than that of said rods and extending transversely across said rod array,

a plurality of pairs of shorter mutually parallel crossbars connected to said longitudinal bars and extending parallel to said rods of said array, said crossbars being shorter than said rods and of smaller cross-section than that of said rods,



the crossbars of each pair having a spacing less than the diameter of a respective rod and cradling same between them,

each of said cross bars having both its ends projecting beyond respective ones of said longitudinal bars and bent over, across, partly around and embracing the respective rod and contoured to fit therearound whereby corresponding ends of a pair of crossbars laterally overlap atop the respective rod; and

a weld seam joining the overlapped ends of the respective transverse pairs of crossbars at each extremity of the respective pair.

3,959,945

ROOF TRUSS SPACER

David Allen, 1121 E. Fifth St., Berwick, Pa. 18603

Filed May 9, 1975, Ser. No. 576,216

Int. Cl.² E04C *3/11*

U.S. Cl. 52—690 **2 Claims**



1. A prefabricated truss comprising

a. a spacer pivotally attached to a chord of said truss and adapted to space said truss from a similar adjacent truss in a structure,

b. said spacer comprises an elongated member having an upper surface and a downwardly extending leg with a length equal to the desired space between said truss and said adjacent truss,

c. tabs located on either end of said upper surface which extend said upper surface beyond the extent of said downwardly extending leg,

d. connecting means for pivotally securing one of said tabs to said chord whereby said elongated member may extend parallel to said chord with the inside surface of said downwardly extending leg contacting said chord and may be rotated therefrom 90° to place an end of said downwardly extending leg in contact with said chord and to position said elongated member perpendicular to said chord, and

e. said connecting means comprises

i. a sole aperture in said one of said tabs located with its center positioned on said tab equidistant from said inside surface of said downwardly extending leg on an axis which is parallel thereto and from said end of said downwardly extending leg on an axis which is perpendicular to said inside surface, and

ii. a pin-like member passing through said aperture secured to said chord.

3,959,946

POLE STRUCTURE

Harold Edwin Holmes, Clovelly, and Enzo Oriolo, Darling Point, both of Australia, assignors to Electric Power Transmission Pty. Limited, Australia

Filed July 3, 1974, Ser. No. 485,530

Claims priority, application Australia, June 27, 1973, 3854/73

Int. Cl.² E04C *3/30, 3/34*

U.S. Cl. 52—731 **4 Claims**



1. A pole structure for supporting electrical power transmission lines or the like, said pole structure being at least four sided in cross section, one pair of opposing sides of the pole structure formed by substantially imperforate structural plates which extend continuously for substantially the entire height of the pole structure, the other pair of opposing sides of the pole structure being formed of open lattice-type bracing which extends continuously for substantially the entire height of the pole structure in interconnecting relationship with said one pair of sides, the improvement which comprises substantially imperforate shrouds hinged along corresponding longitudinal edges to at least one side of the pole structure in said one pair, said shrouds arranged in end-to-end relationship adjacent said other pair of sides and forming substantially continuous uninterrupted coverings for said other pair of sides for substantially the entire height of the pole structure, whereby said open latticetype bracing is fully concealed and the pole structure has an aesthetic appearance imparted to it.

3,959,947

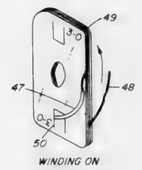
WINDING SUTURE REEL-LABELS

Mario Sonnino, New Canaan, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 386,672, Aug. 8, 1973, Pat. No. 3,876,068. This application Feb. 27, 1975, Ser. No. 553,392

Int. Cl.² B65B *25/00, 63/04*

U.S. Cl. 53—21 FW **3 Claims**





1. A method of loading and unloading a reel-label surgical suture combination,

in which the reel-label has:

two superimposed panels of stiff sterilizable label stock having a heat sealable facing on one side;

said panels being rectangular, with rounded corners, with the superimposed rounded corners having different radii;

accordion pleat folds joining the two panels on two parallel edges;

an infolded panel ear strengthening the top and bottom of each said panel;

cut-out tabs near the top and bottom of each panel, said tabs being heat sealed to tabs from the opposing panel, to hold said panels together;

said panels each having therein a hole, said holes being in registration, and forming a spin axis substantially at the center of said panels;

said tabs and said accordion pleat folds forming a suture holding groove, to frictionally hold a suture therein;

said groove being effectively continuous and operatively centered towards said spin axis;

at least one of said panels having therein at least one needle retaining cut-out adapted to hold the sharp end of at least one needle between panels in protective relationship;

comprising inserting a surgical needle attached to a suture into a needle retaining cut-out, and winding the suture in friction holding relationship into a suture holding groove around the periphery of said reel-label, with the free end being wound onto said reel-label last;

retaining the suture in the groove by friction of the pleats against the suture during shipment and storage;

and on serving at time of use, under sterile conditions, removing said needle first, and then unwinding the suture with the initial windings passing the later windings in said suture holding groove while retaining said later windings by friction in said groove, so that the free end is released from frictional retention in said suture holding groove in said reel-label last.

3,959,948

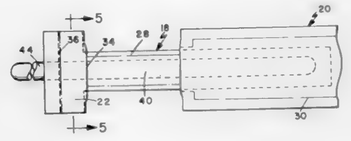
METHOD OF PLACING A STERILIZED SHEATH ON A PROBE

Charles F. Fowler, 5157 Park West Ave., San Diego, Calif. 92117, and Samuel G. Dawson, 1869 Hidden Mesa Road, El Cajon, Calif. 92020

Division of Ser. No. 409,926, Oct. 26, 1973, Pat. No. 3,850,084, which is a division of Ser. No. 230,790, March 1, 1972, which is a continuation-in-part of Ser. No. 85,388, Oct. 30, 1970, abandoned. This application Nov. 25, 1974, Ser. No. 526,464

Int. Cl.² B65B *5/00*

U.S. Cl. 53—35 **5 Claims**



1. A method of placing a sterilized cover over a probe comprising:

grasping the jacket of a probe cover at a first location, said probe cover being characterized by an elongated jacket of sheet material, said jacket enclosing an elongated sheath of sheet material, said jacket and said sheath each having an opening at a common end of said sheath and jacket,

inserting an elongated probe through said opening and into said sheath,

grasping said jacket at a second location spaced from said first location,

pulling in opposite directions on said jacket at said first and second locations to cause said jacket to part into at least two jacket portions,

removing at least one of said jacket portions from said sheath, exposing a substantial part of said sheath.

3,959,949

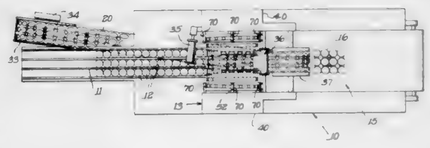
SYSTEM, MACHINE AND METHOD FOR MULTIPACKAGING CONTAINERS

Edward Leonard Benno, Grayslake; David Frederick Schlueter, and Lonnie Ray Seymour, both of Hoopeston, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed June 2, 1975, Ser. No. 583,079

Int. Cl.² B65B *27/04, 13/04*

U.S. Cl. 53—35 **9 Claims**



1. In combination, a resilient, stretchable plastic material strip comprising at least three rows of bands with said bands elongated in the longitudinal direction of said rows, web means integrally interconnecting said bands longitudinally in said rows and transversely between said rows, the shape of said bands and the interconnections of said web means between said bands producing bands apertures substantially complementary to the circumferential configuration of certain containers responsive to the application of transversely opposed stretching forces of a certain amount solely to the side marginal portions of said strip, a work station, means moving at least three adjacent rows of said certain containers through said work station, a series of pairs of opposed longitudinally

arranged stretching members, means for applying the side marginal portions of said strip onto said series of pairs of opposed stretching members, means for moving said series of pairs of opposed stretching members to apply opposed stretching forces of said certain amount to said side marginal portions of said strip and means for successively moving said series of pairs of opposed stretching members with said strip applied thereon and stretched said certain amount into said work station and in a direction relatively toward said moving rows of said certain containers to circumferentially apply said bands successively about said certain containers.

3. A packaging system for multipackaging three substantially adjacent rows of containers into packages of a selected number of containers in multiples of three containers, comprising the steps of:

providing a carrier strip from a resilient elastic plastics-material with the strip being substantially narrower than the width of the three rows of adjacently positioned containers with which said strip is to be associated and comprising three rows of bands having apertures which are substantially elongated longitudinally of said strip and with said three rows of bands being integrally interconnected transversely and longitudinally of said strip to stretch said apertures into substantially complementary shapes to those of said containers when the inner margins of the outboard band portions of the transversely outward bands are moved transversely apart a distance at least as great as the width of said three rows of substantially adjacently positioned containers,

moving said three rows of substantially adjacently positioned containers continuously in a substantially straight-line through a work station,

applying a series of pairs of force applicating elements which are spaced-apart a distance less than the width of said strip successively within the outboard apertures of said strip,

thereafter successively moving said force applicating elements apart to transversely stretch each transverse series of three bands in said three rows of bands,

successively moving said force applicating elements into said work station toward the tops of said three rows of moving containers, while continuing to successively move said pairs of force applicating elements apart,

thereafter successively moving said force applicating elements relatively toward and downwardly over the tops of said three rows of moving containers when said force applicating elements are moved apart sufficiently to clear the outboard containers in said three rows of substantially adjacently positioned containers,

thereafter successively moving said force applicating elements relatively upwardly from the tops of said three rows of adjacently positioned containers while continuing the straight-line movement of said three rows of adjacently positioned containers to successively withdraw said force applicating elements from said applied strip, and

thereafter severing said strip between selected longitudinally adjacent bands to form packages of a selected number of containers in multiples of three containers.

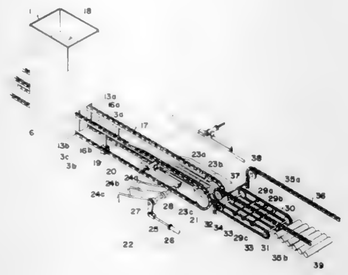
3,959,950

PACKAGING SYSTEM

Nobuyoshi Fukuda, 27-4 Betsusho 2 chome, Urawa, Saitama, Japan

Filed Mar. 17, 1975, Ser. No. 558,890
Int. Cl.² B65B *5/04, 7/20*
U.S. Cl. 53—37 **7 Claims**

1. A process for packaging an article within a rectangular foldable container while on a conveyor comprising the steps of: (a) introducing an article to be packaged onto a conveyor system having at least two elevated conveyor tracks which are spaced apart and extend parallel to each other for carrying the article thereon; (b) placing a container over and around the article on the conveyor system, said container having four walls defining a container space and pairs of upper and bottom end and side flaps which extend respectively from the opposed upper and lower extremities of said walls, each of said bottom end flaps having slots therein equal in number to the number of conveyor tracks to thereby subdivide said bottom end flaps into a plurality of separately foldable segments, said bottom flaps depending in coplanar relation from the respective con-



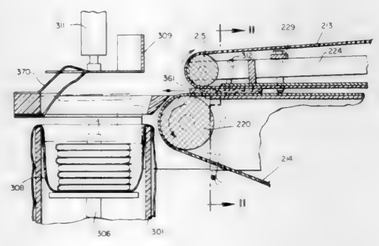
tainer walls, and said container being oriented such that the pair of bottom end flaps extend transversely of the conveyor tracks and the slots in the pair of bottom end flaps extend vertically and receive said tracks therewithin; (c) folding the pair of bottom end flaps of the container to a closed position while it is on the conveyor system; and (d) folding the remaining flaps to a closed position.

3,959,951

FOOD PACKAGING MACHINE

Eugene H. Paules, Red Lion, Pa., assignor to ExCel Engineering, Inc., Red Lion, Pa.

Division of Ser. No. 390,370, Aug. 22, 1973, Pat. No. 3,849,969. This application Aug. 22, 1974, Ser. No. 499,443
Int. Cl.² B65G *57/11*
U.S. Cl. 53—162 **7 Claims**



1. Receptacle means for collecting wrapped items of predetermined thickness from a motive conveyor comprising:

a. first piston means situated to collect items from said motive means, one on top of another;

b. plunger means located above said piston means; and

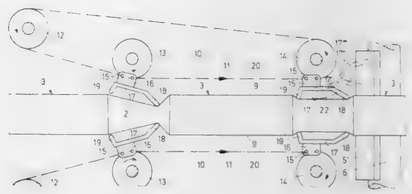
c. control means for operating said plunger automatically, tp drive said first piston means downward, when said item is positioned in proper relation to said receptacle means, by a predetermined distance, said plunger being adjustably regulated by said control means whereby said predetermined distance substantially equals said thickness of said items being received from said motive means.

3,959,952

PACKAGING APPARATUS USING HOSE-SHAPED WRAPPER

Gert Deutschlander, Neuhausen am Rheinfall, Switzerland, assignor to S I G Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Aug. 12, 1975, Ser. No. 603,508
Claims priority, application Switzerland, Aug. 27, 1974, 11682/74
Int. Cl.² B65B *9/06, 51/26*
U.S. Cl. 53—373 **2 Claims**



1. In a packaging apparatus using a hose-shaped wrapper, including a table on which the wrapper of indefinite length is advanced in the direction of its length, the wrapper containing uniformly spaced groups of articles to be packaged; cooperating rotating welding shoes disposed in the path of travel of the wrapper for transversely bonding together wall portions of the wrapper between two article groups; endless chains formed of jointed links and disposed above the table at both sides of the travelling path of the wrapper; each chain having a chain portion extending adjacent and parallel to the travelling path of the wrapper along a long portion positioned upstream of the welding shoes as viewed in the direction of wrapper feed; sprockets for driving and supporting the chains for effecting a travel of the pressing members that is codirectional with the wrapper feed along the chain portion; a plurality of pressing members secured to the chains at a predetermined distance; each pressing member on one chain cooperates with a pressing member on the other chain for pinching together the wrapper and supporting it laterally as it is fed through the welding shoes; each pressing member includes two pressing fingers; the improvement comprising a unitary holder provided for each pressing member; the pressing fingers of each pressing member being affixed to the unitary holder; said holder being pivotally secured to two successive chain joints, one of said successive chain joints being a leading joint and the other being a trailing joint; one of said two pressing fingers of each pressing member being a leading pressing finger and the other being a trailing pressing finger; said leading pressing finger projecting from the leading chain joint supporting the associated holder to such an extent in the direction of wrapper feed as admitted by the distance between the sprocket closest to the welding shoes and the travelling path of the welding shoes.

3,959,953

APPARATUS TO DETECT THE PASSAGE OF FERROUS MATERIAL IN CROP HARVESTING MACHINES

William L. Garrott, Gainesville, Fla., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Dec. 4, 1974, Ser. No. 529,305
Int. Cl.² A01D *75/18*
U.S. Cl. 56—10.2 **22 Claims**

1. A crop harvesting machine comprising:

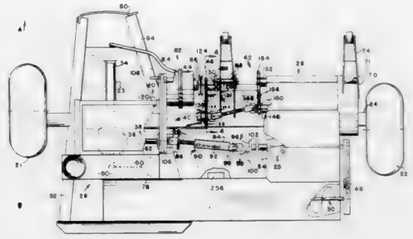
a. a frame adapted to travel across a field;

b. means mounted to the frame for delivering crop material from the field to said frame;

c. means positioned rearwardly of the delivering means and mounted on said frame for processing the crop material delivered to said frame;

d. means operably associated with the processing means and positioned between said delivering means and said processing means to compress said crop material;

e. means for detecting ferrous metal in the immediate vicinity of said compressing means between said delivery means and said processing means; and



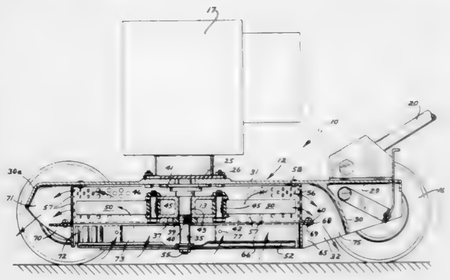
f. means for interrupting the operation of the harvesting machine, said interrupting means being responsive to the detection of ferrous metal in the vicinity of the comprising means by said detecting means.

3,959,954

GRASS CUTTING AND PULVERIZING ROTARY MOWER

Lawrence E. Halsten, 20165 Cottagewood Ave., Excelsior, Minn. 55331

Filed Feb. 20, 1975, Ser. No. 551,082
Int. Cl.² A01D *35/26*
U.S. Cl. 56—12.8 **5 Claims**



1. A pulverizing attachment for a rotary power mower, having in combination

a mower housing having a chamber therein,

power means carried by said housing,

a drive shaft from said power means disposed in said chamber,

a cutting blade mounted on said drive shaft adjacent the lower end portion thereof in the lower portion of said chamber,

a pulverizing member mounted on said drive shaft spaced upwardly of said cutting blade within the upper portion of said chamber,

the upper portion of said housing comprising a vertically disposed apertured plate member about said pulverizing member at the upper portion of said chamber, and

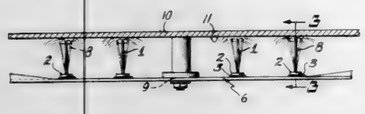
the lower portion of said housing comprising a vertically disposed imperforate plate member about said cutting blade within the lower portion of said housing.

3,959,955

SELF CLEANING ROTARY LAWN MOWER BLADE AND DECK ASSEMBLY

David M. Smith, 600 E. Third St., Hobart, Ind. 46342, and Frederick C. Mennen, 506 Clay St., La Porte, Ind. 46350

Filed Apr. 24, 1975, Ser. No. 571,490
Int. Cl.² A01D *35/262*
U.S. Cl. 56—17.5 **6 Claims**



1. A self cleaning power driven rotary lawn mower and deck assembly in which grass clippings and debris sticking to the underside of the deck assembly are removed solely by the rotating action of the lawn mower blade comprising:

a blade having a central mounting opening;

metal pins each having a head and a shank projecting towards said deck mounted on opposite sides of the central opening which mounts the blade on the power motor of the mower to permit balanced rotation of said blade;

flexible mounting means on said blade at the base of said pins for securing the pins to said blade;

said flexible mounting means including a cap surrounding said head, an elastic grommet in said cap, and an opening permitting whip movement of the shank to about 15° on each side of the normal perpendicular extension of said shank; and,

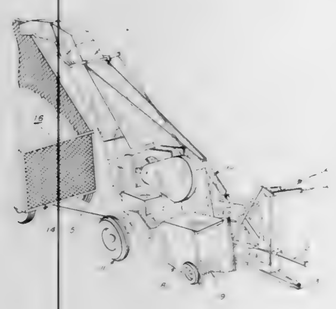
the tip of said shank extending to about ¼ inch from the underside of said deck whereby whipping movement at the shank ends removes the debris from the deck;

3,959,956

COTTON HARVESTING MACHINE

Lambuth G. Fowler, 2506 46th St., Lubbock, Tex. 79417

Filed Sept. 27, 1974, Ser. No. 509,788
Int. Cl.² A01D *46/10*
U.S. Cl. 56—30 **2 Claims**



1. A cotton harvesting machine comprising

a. a wheel bearing supporting frame embodying

1. a cotton stripping unit;

2. a main cotton discharging outlet duct for discharging cotton from the machine into a pick-up or loader wagon and including

a. an upper and outlet end portion; and

b. a downwardly extending lower end portion;

3. a first and primary high velocity air stream duct for discharging a first and primary high velocity air stream upwardly into the said lower end portion of the said main cotton discharging outlet duct and including a lower end portion;

4. a fan housing including a body having a portion opening upwardly into and having communication with the said lower end portion of the said first and primary high velocity air stream duct and including a downwardly extending portion opening downwardly from said body of the said fan housing;

5. a combination separation chamber and auxiliary high velocity air stream duct having

a. an upwardly extending portion extending upwardly and having communication with the said lower end portion of the said main cotton discharge outlet duct; and including

1. a downwardly extending lower end portion;

6. an auxiliary high velocity air stream duct including an upper end portion having communication with the said downwardly extending portion of the said body of the said fan housing and including a lower end portion having communication with the said downwardly extending lower end portion of the said combination separation chamber and auxiliary high velocity air duct for discharging an auxiliary high velocity air stream into the said combination separation chamber and auxiliary high velocity air duct;

7. a high velocity fan rotatably mounted in the said fan housing for creating a high velocity air stream therein for discharge in part into the said first and primary high velocity air stream duct through the said lower end portion thereof and in part downwardly through the said auxiliary high velocity air stream duct into the said combination separation chamber and auxiliary high velocity air stream duct and thence into the said lower end portion of the said main cotton discharge outlet duct;

8. means for conveying cotton from the said stripper units into the said combination separation chamber and auxiliary or secondary high velocity air stream duct; and

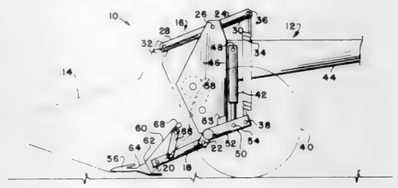
9. means for rotating the said high velocity air fan.

3,959,957

CROP HARVESTING MACHINE HEADER SUSPENSION SYSTEM

Lawrence M. Halls, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Jan. 24, 1975, Ser. No. 544,028
Int. Cl.² A01D *47/00*
U.S. Cl. 56—208 **11 Claims**



1. In a crop harvesting machine of the type which includes a mobile frame adapted to move across a field and an elongated crop material harvesting header, an improved pair of assemblies laterally spaced apart along said frame for suspending respective opposite lateral ends of said header from said frame, each of said assemblies comprising:

lower means pivotally mounting a lower portion of one of said opposite lateral ends of said header to a lower portion of said frame;

an elongated arm pivotally mounting an upper portion of one of said opposite lateral ends of said header to an upper portion of said frame, said arm being pivotally mounted at an intermediate portion thereof on said upper frame portion and having first and second portions on either side of said intermediate portion which respectively extend in general alignment with but in generally opposite directions from the location of pivotal mounting of said arm on said upper frame portion, said first portion of said arm being pivotally connected to said upper portion of said respective one of said opposite lateral ends of said header; and

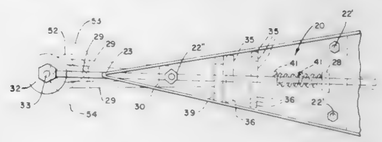
resilient means coupled to said second portion of said arm and extending therefrom generally downwardly and coupled to said lower frame portion so as to counterbalance the weight of said respective one of said opposite lateral ends of said header and thereby support said respective one header opposite lateral end in an operating position relative to the field, while at the same time enable said respective one header opposite lateral end to vertically move relative to the other header opposite lateral end and floatingly follow the contour of the field independently of said other opposite lateral end, as said mobile frame moves across the field.

3,959,958

DEFLECTOR ROLLER APPARATUS

Jacob Bontrager, 809 3rd Ave. N.E., Jamestown, N. Dak. 58401

Filed Apr. 9, 1975, Ser. No. 566,265
Int. Cl.² A01D *63/02*
U.S. Cl. 56—314 **5 Claims**



2. A roller deflector apparatus adapted to be mounted to each forward point of a divider of a header, said apparatus comprising a main plate to be mounted to the point of the divider, a movable rod, movable mounting means for movably mounting said rod to said main plate for permitting movement of said rod with respect to said main plate, spring means returning said rod to its position prior to its movement, said rod having an upwardly extending forward end with a roller rotatably mounted thereon so as to be positioned in front of the point of the divider in spaced relation whereby the header may be driven through a field of sunflower plants to cut and reel the plants with the roller engaging the stems of the sunflower plants as the stems approach engagement with the points, and with the roller movable upon engagement with the stem to cushion the engagement with the roller and to prevent the stem from engaging the point of the divider and to facilitate guiding the stem by the point along the side of the divider without abruptly engaging the stem.

3,959,959

MACHINE FOR VINTAGING GRAPES

Guy Louault, Lavau, and Gerard Louault, St. Fargue, both of France, assignors to S. A. Louault, Saint Fargeau, France

Filed Nov. 7, 1974, Ser. No. 521,613
Claims priority, application France, Nov. 7, 1973, 73.39515
Int. Cl.² A01D *46/00*
U.S. Cl. 56—330 **17 Claims**

1. A machine for vintaging grapes comprising:

a frame adapted to be moved along at least one row of grapevines,

two pairs of cylinders carried by said frame and arranged one pair behind the other with respect to the direction of movement of said frame, the axis of each cylinder being vertical, and the cylinders of each pair being arranged so that one cylinder of each pair is on each side of the row of grapevines when said frame is moved along the row,

support means carried by said frame and supporting said cylinders for free rotation about their axes, said support means permitting movement of the cylinders of each pair toward and away from each other,



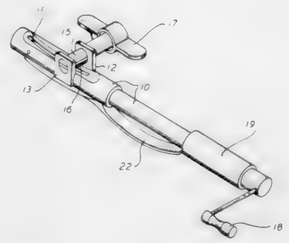
a plurality of substantially vertical rows of resilient rods projecting radially from each of said cylinders, the rods of each row being equidistantly spaced apart for the major portion of the length of each row, and rows of relatively closely spaced apart rods alternating with rows of relatively widely spaced apart rods around the periphery of each cylinder, and means for vibrating said cylinders.

3,959,960

TENSIONING, TWISTING AND CUTTING DEVICE FOR SUTURES

Manuel V. Santos, 126 Pulaski St., Newark, N.J. 07105

Filed Mar. 12, 1975, Ser. No. 557,461
Int. Cl.² B65H *69/06;* **A61B** *17/04*
U.S. Cl. 57—22 **19 Claims**



1. A tensioning, twisting and cutting device for sutures, comprising:

a. an elongate shaft having lumen means, at an end thereof, for passing the sutures through;

b. the shaft having a channel communicating with the lumen means;

c. rotatable spool means, proximate the channel, for winding up the sutures to provide an initial degree of tension;

d. the spool means having a slot to receive the sutures;

e. means for rotating the spool means to wind up the sutures on the spool means;

f. means for twisting the sutures together to provide fixation and a final degree of tension; and

g. cutting means, for cutting the sutures.

3,959,961
APPARATUS FOR REMOVING IMPURITIES FROM FIBROUS MATERIAL

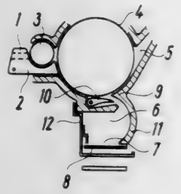
Fritz Stahlecker, Bad Uberkingen, Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Germany

Filed Oct. 25, 1974, Ser. No. 518,153

Claims priority, application Germany, Nov. 2, 1973, 2354967

Int. Cl.² D01H *11/00, 1/12*

U.S. Cl. 57—56 **5 Claims**



1. An apparatus for separating fibrous material supplied to a spinning rotor of an open-end spinning unit, having a path of travel for said separated fibers, in which is located an opening for removing impurities contained in said fibrous material, said opening having a wider area between its inlet and its outlet, and in which a conveying belt means travel past the outlet of said opening for carrying away the impurities.

3,959,962
METHOD OF FORMING A BULKED POLYESTER TEXTILE YARNS

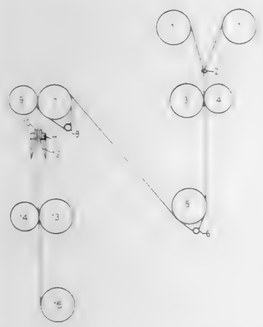
Frank Wilding, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 21, 1974, Ser. No. 444,598

Claims priority, application United Kingdom, Feb. 23, 1973, 8990/73

Int. Cl.² D02G *3/38, 3/04, 1/16*

U.S. Cl. 57—157 F **9 Claims**



1. A process for the production of a bulked polyester textile yarn comprising forming a bundle composed of 25–75% by weight of (A) potentially crimpable, drawn bicomponent polyester continuous filaments and 75–25% by weight of (B) drawn polyester continuous homofilaments, the filaments (A) having a greater potential shrinkage than filaments (B); and subjecting the filaments of the bundle to the action of an interlacer untilizing jets of heated gaseous medium at a temperature of from 170°C to 250°C while substantially simultaneously allowing the filaments of the bundle to relax.

3,959,963
SOLID-STATE DISPLAY FOR TIME-PIECE

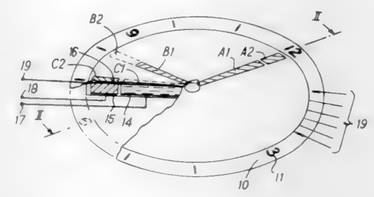
Nicholas John Murrell, 23, The Wynd, Dalgety Bay, Fife, Scotland

Filed Oct. 29, 1974, Ser. No. 518,835

Claims priority, application United Kingdom, Oct. 29, 1973, 50182/73

Int. Cl.² G04B *19/30, 19/06;* **H01J** *63/04*

U.S. Cl. 58—50 R **7 Claims**



1. A time-piece comprising:

a display having a display layer composed of electrooptical display elements disposed about a central point;

a plurality of bar electrodes on one face of the display layer radiating from the central point of the display and defining segmented radial bars of the display;

inner and outer concentric ring electrode means on the other face of the display layer, the inner ring electrode means being common to all of said bar electrodes and defining therewith inner segments of said radial bars, the outer ring electrode means being common to all of said bar electrodes and defining therewith outer segments of said radial bars; and

an electronic drive circuit connected to said electrodes and electrode means, the circuit comprising means for rendering the whole of each of the bars in turn visible by contrast with the other bars to simulate a minute hand, rendering each of the inner segments in turn visible by contrast with the other inner segments to simulate an hour hand, and rendering each of the outer segments in turn visible by contrast with the other segments to simulate a second hand.

3,959,964
MOUNTING ARRANGEMENT FOR TIMEPIECE COMPONENTS

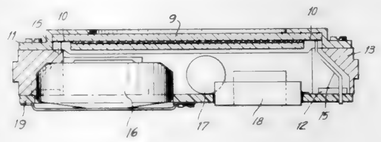
Satoshi Yamazaki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 384,870, Aug. 1, 1973, abandoned. This application Feb. 10, 1975, Ser. No. 548,714

Claims priority, application Japan, Aug. 3, 1972, 47-77800

Int. Cl.² C04B *19/30;* **G04B** *29/00, 37/00*

U.S. Cl. 58—50 R **3 Claims**



1. A mounting arrangement for components of an electronic timepiece of the type including, in operative combination, a liquid crystal display panel assembly provided with segments for selectively illuminating a digital display, a power source, a standard time high-frequency oscillator driven by the power source, a divider for dividing the high frequency signal transmitted thereto from the oscillator, and a decoder for translating the divided signals to output signals which are transmitted to the panel assembly for selectively illuminating segments thereof, the mounting comprising a housing including a cylindrical section having opposed ends and a continuous interior sidewall, a frame releasably connected to one end of the cylindrical section, and a cover connected to the other end thereof, the liquid crystal display panel assembly underlying and being supported by the frame for thereby exposing substantially the entire display surface of the panel assembly through an annulus defined by the frame; the battery, oscillator and decoder being substantially planarly mounted within the housing and on the cover thereof; a conductive plate mounted within the housing on the cover thereof; a plurality of connectors having respective ends mounted in the conductive plate and substantially upstanding thereon, the connectors having respective other ends connected to the panel assembly for transmitting an output signal from the decoder to the panel assembly for thereby illuminating a determined time display, said connectors being arranged between said decoder and the illuminable segments on the display panel; whereby the arrangement of components within the housing is non-overlapping and a flattened timepiece construction is obtained.

3,959,965
METHOD AND APPARATUS FOR WELDING A LINK CHAIN

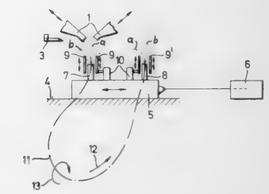
Toni Wüst, Cologne, Germany, assignor to Meyer, Roth & Pastor Maschinenfabrik GmbH, Cologne, Germany

Filed Feb. 20, 1975, Ser. No. 551,323

Claims priority, application Germany, Feb. 25, 1974, 2408930

Int. Cl.² B21L *3/00*

U.S. Cl. 59—31 **7 Claims**



1. A method of welding a link chain of indeterminate length formed of C-shaped, jointed, serially interconnected, alternating first and second links, comprising the following steps for completing the welding of the chain during a single pass:

a. guiding said chain to and through a first welding position;

b. orienting the first and the second chain links in the zone of said first welding position to assume, respectively, an edgewise upright and a flat-lying orientation;

c. successively welding the joint of said first links held in said first welding position;

d. subsequent to the welding of a first link held in said first welding position, advancing the just-welded first link to bring the successive first link into the first welding position;

e. guiding said chain from said first welding position in an arc in a reverse direction to a second welding position for obtaining two juxtapositioned, oppositely oriented chain portions;

f. orienting the first and the second chain links in the zone of said second welding position to assume, respectively, a flat-lying and an edgewise upright orientation;

g. alternately with step (c), successively welding the joint of said second links held in said second welding position;

h. subsequent to the welding of a second link held in said second welding position, advancing the just-welded second link to bring the successive second link into the second welding position; and

i. between two consecutive welding steps, displacing said chain portions transversely to the direction of chain advance for alternately bringing said first and second chain links in a sole welding station where steps (c) and (g) are performed.

3,959,966
GAS TURBINE ENGINE

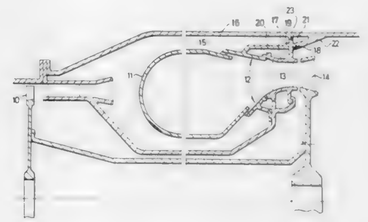
Bryan Robert Pearce, and Walter James Powell, both of Bristol, England, assignors to Rolls-Royce (1971) Limited, England

Filed Sept. 30, 1974, Ser. No. 510,766

Claims priority, application United Kingdom, Oct. 5, 1973, 46753/73

Int. Cl.² F02C *7/20;* **F01D** *25/28*

U.S. Cl. 60—39.32 **4 Claims**



1. A gas turbine engine, comprising: a combustion chamber having an annular outlet duct defined by

radially inner and outer chamber walls; an annular array of vanes having inner and outer shroud rings,

said outer shroud ring having an upstream extremity confronting a downstream extremity of said outer chamber wall;

an extension member extending radially outwardly and axially downstream from said outer chamber wall, said extension member being connected to said outer chamber wall at a junction upstream of said downstream extremity, said extension member having a downstream extremity adjacent a downstream end of said outer shroud ring;

a support structure;

means connecting the downstream end of said extension member and the downstream end of said outer shroud ring to said support structure;

a source of cooling air connected to the exterior of said combustion chamber;

a first set of openings provided in said outer chamber wall upstream of said junction to admit a flow of cooling air to the interior of said combustion chamber to form a cooling film at said junction; and

a second set of openings provided in said extension member to provide an air flow path to said vanes through a space defined between the interior surface of said extension member and the exterior surfaces of said outer chamber wall and said outer shroud ring.

3,959,967
RECIPROCATING APPARATUS PARTICULARLY FOR PUMP UNIT

Joël Chardonneau, Nantes, and Claude Sablé, Reze, both of France, assignors to Centre d'Etudes et de Realisations Industrielles de l'Atlantique C.E.R.I.A., Nantes, France

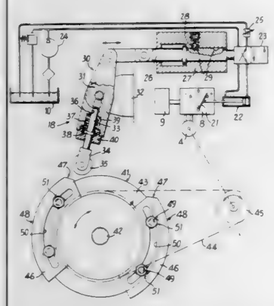
Filed June 6, 1975, Ser. No. 584,285

Int. Cl.² F16H *39/46*

U.S. Cl. 60—382 **13 Claims**

1. Apparatus for maintaining a permanent reciprocating movement of a mechanical arrangement, particularly a pump unit, comprising a wheel coupled to the mechanical arrange-

ment and fastened on the shaft of a hydraulic motor which is fed by a variable delivery pump provided with an adjusting element which, through a change of position, effects the reversal of delivery of the said pump control means operatively connected to said pump for effecting reversal of the pump delivery, the apparatus comprising in addition a drive mechanism for coupling the said adjusting element to the said wheel, the said drive mechanism comprising a mechanical transmission mechanism containing a rocking lever coupled to the said



control means, a cam carrier wheel rotationally fixed to the said wheel and carrying two cams angularly spaced on the periphery of the cam carrier wheel, each cam having an inclined surface for effecting rocking of the said lever respectively to one or the other of its positions, and a circular surface for maintaining the lever in its rocked position for a certain period of time after the rocking, a resilient device being provided which is connected between the said lever and the said cam carrier wheel in order to keep the lever and the cams coupled during the aforesaid period of time.

3,959,968

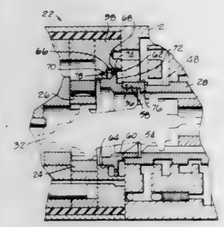
STEERING VALVE WITH LINEAR SPOOL DAMPENING

Jonny R. Greiner, Phoenix, Ariz., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 25, 1975, Ser. No. 571,871

Int. Cl.² F15B *9/08*

U.S. Cl. 60—384 **6 Claims**



1. In a fluid controller for a power steering system including a housing having a fluid inlet for connection to the discharge side of a fluid pump, an outlet for connection to the suction side of the fluid pump and a pair of ports for connection to the opposite sides of a dual acting hydraulic device such as a balanced cylinder of the power steering system for controlling the flow of pressurized fluid to the device, a gear set which serves as a fluid meter or as a manual pump, depending upon the operativeness of the fluid pump, a spool valve shiftable axially to control the flow through the inlet, the gear set, the cylinder ports and the outlet, a control shaft mounted for rotation on the housing responsive to movement of a steering wheel and coupled to the spool valve for effecting axial shifting of the spool valve in response to rotation of the control shaft, a wobble shaft passing from the interior of the spool valve to the gear set and a bearing plate through which the wobble shaft passes intermediate the gear set and the spool valve, the improvement comprising:

a member extending from an end of said spool valve adjacent said bearing plate;

a fluid filled cylindrical dash pot cavity formed in said bearing plate on a spool valve side thereof positioned to receive said member; and

restricted flow means through which said fluid is forced responsive to axial movement of said spool valve thereby preventing overshoot of said spool valve responsive to rotation of said control shaft and resulting vibratory instability by said power steering system.

3,959,969

APPARATUS FOR REGULATING THE PRESSURE AND RATE OF FLOW OF FLUID SUPPLIED BY A VARIABLE-DELIVERY PUMP

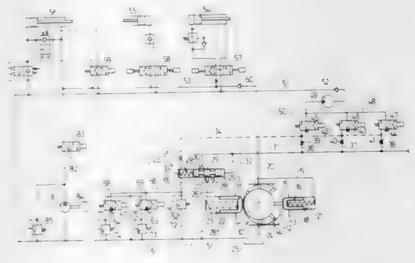
Egon Tittmann, Leonberg, and Heinz Walter, Rutesheim, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Mar. 17, 1975, Ser. No. 559,361

Claims priority, application Germany, Mar. 20, 1974, 2413295

Int. Cl.² F16H *39/46*; **F15B** *11/16*

U.S. Cl. 60—445 **22 Claims**



1. Apparatus for regulating the rate of flow and the pressure of fluid which is supplied by the outlet of a variable-delivery pump to at least one first and at least one second consumer and wherein the rate of delivery is adjustable by two fluid-operated motors one of which is controlled by an adjustable regulating valve connected with said outlet and having a valve member movable between a plurality of positions, comprising a plurality of normally closed pressure reducing pilot valves for said regulating valve, said pilot valves being arranged to control the pressure of fluid which is supplied to said first consumer and to open in response to different fluid pressures to thereby change the position of said valve member and the delivery rate of said pump through the medium of said motors; means for selectively connecting at least one of said pilot valves to said regulating valve; a plurality of flow restrictors each providing a discrete path of the flow of fluid from said outlet to said second consumer; and shutoff valves provided in said paths, each of said shutoff valves being actuatable to allow fluid to flow along the respective path to said second consumer via the associated flow restrictor.

3,959,970

HYDRAULIC JACK

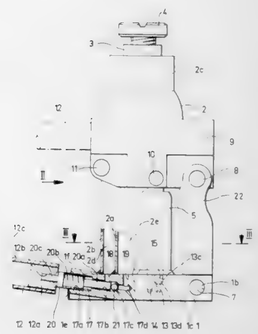
Karel Bos, Brasschaat, Belgium, and Hendrik Smit, Pretoria, South Africa, assignors to Scambia Industrial Developments AG, Liechtenstein

Filed Apr. 21, 1975, Ser. No. 569,768

Claims priority, application Switzerland, Apr. 25, 1974, 5664/74

Int. Cl.² F15B *15/18*

U.S. Cl. 60—477 **11 Claims**



1. A hydraulic jack with a base plate, on which are attached a pump cylinder, a jack cylinder, and a reservoir concentrically surrounding the jack cylinder, the reservoir being connected to the pump cylinder by means of a first passage, passing through the base plate, and a first nonreturn valve which enables hydraulic medium to flow from the reservoir on pumping, the pump cylinder being connected to the jack cylinder by means of a second passage, passing through the base plate, and a second nonreturn valve which enables hydraulic medium to flow from the pump cylinder on pumping, and the jack cylinder being connected to the reservoir by means of a relief passage and a blocking member including an adjustable bolt, wherein the adjustable bolt is guided in a blocking bore situated in the base plate, which bore has a section formed as blocking seat and which bore, on one side of this seat, has a section which is connected by means of a first connection bore to the reservoir and on the other side of this seat, has a section which is connected by means of a second connection bore to the jack cylinder, wherein the blocking bore rises towards the edge of the base plate, and wherein the base plate consists of a rolled material and, in the region of an outer end section of the blocking bore, has an indentation stretching substantially to the outer wall of the reservoir and produced by forming, whereby the rolled material in the region of the indentation is of substantially the same thickness as in the remainder of the base plate.

3,959,971

COOLING SYSTEM

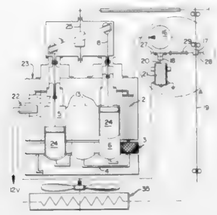
Milad H. Mekari, 17250 Raupp Road, Apt. 17B, Melvindale, Mich. 48122

Filed July 22, 1974, Ser. No. 490,224

Int. Cl.² F01K *13/92*

U.S. Cl. 60—517 **6 Claims**

1. The method of cooling the roll sock seals of a Stirling type external combustion engine having a main coolant system with a main water pump which comprises running the main water pump of the engine at a reduced rate of speed after the engine has stopped to force coolant in said main system to circulate in heat transfer relationship with said roll sock seals



until the temperature of the coolant in said main system drops to a preselected level.

3,959,972

POWER PLANT PROCESS

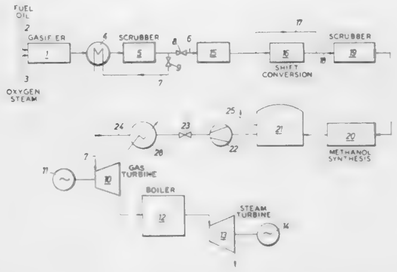
Paul Rudolph, Bad Homburg, and Emil Supp, Dietzenbach, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 10, 1975, Ser. No. 566,862

Claims priority, application Germany, May 30, 1974, 2425939

Int. Cl.² F01K *25/14*, *13/00*

U.S. Cl. 60—651 **4 Claims**



1. Power plant process which comprises gasifying fossil fuels by treatment under superatmospheric pressure with oxygen-containing gasifying agents to produce a primary gas which contains carbon monoxide and hydrogen, desulfurizing said primary gas, converting an increasing proportion of desulfurized primary gas into methanol for storage as the load on the power plant decreases, and utilizing an increasing proportion of stored methanol in addition to desulfurized primary gas in the power plant as the load on the power plant increases.

3,959,973

APPARATUS FOR CONTROLLING STEAM BLOCKING AT STUFFING BOXES FOR STEAM TURBINE SHAFTING

Pierre Meylan, Neuenhof, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Apr. 16, 1975, Ser. No. 568,571

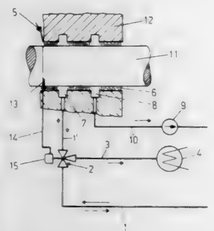
Claims priority, application Switzerland, May 22, 1974, 7037/74

Int. Cl.² F01K *13/00*

U.S. Cl. 60—657 **8 Claims**

1. In a steam turbine structure wherein a stuffing box is provided for the rotor shaft at the pass-through opening in the turbine casing and blocking steam is admitted to the stuffing box, the improvement where, in order to prevent thermal-shock damage to the shaft at the stuffing box during a re-start of the turbine while the shaft temperature is still at approximately its normal operating temperature and while the block-

ing steam is still in a wet state, means are provided for preventing the wet steam from reaching the stuffing box, said means including a controllable valve in the line of the blocking steam to the stuffing box for by-passing the wet steam to a con-



denser, said valve means being actuated after the blocking steam has reached its dry state to close off the by-pass to said condenser and open the blocking steam line to the stuffing box.

3,959,974

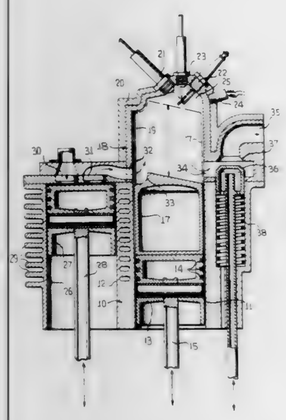
INTERNAL COMBUSTION ENGINE

Luther B. Thomas, 153 Herndon Ave., Shreveport, La. 71101

Filed Sept. 19, 1974, Ser. No. 507,555

Int. Cl.² F01B *29/04*

U.S. Cl. 60—712 **6 Claims**



1. An internal combustion engine comprising a power cylinder having an upper high temperature portion and a lower relatively low temperature portion, a power piston within the power cylinder including an upper displacement portion for operation in said upper high temperature cylinder portion and being ringless and sized for relatively large clearance within the power cylinder, said power piston also including a ringed portion below said upper displacement portion and operating within said lower relatively low temperature portion of the power cylinder, means for feeding charges of pressurized air to the interior of the power cylinder above said displacement portion of the power piston and for cyclically exhausting the power cylinder, fuel injection means on the top portion of the power cylinder to inject fuel therein when the displacement portion of the power piston is within said upper high temperature portion of the power cylinder, and water injection means on the power cylinder to inject water into the top of the upper high temperature cylinder portion alternately with injections of fuel therein when the combustion chamber is sufficiently hot to produce super-heated steam.

3,959,975

SOIL STABILIZATION BY ION DIFFUSION

Edward D. Graf, 1680 Bryant St., Daly City, Calif. 94015

Continuation-in-part of Ser. No. 75,749, Sept. 25, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 290,027

Int. Cl.² E02D *3/14*

U.S. Cl. 61—36 C **13 Claims**

1. In a process for stabilizing a clay containing soil wherein a chemical composition is distributed through said soil, the improvement comprising adding an aqueous concentrate to cavities in said soil, said concentrate containing about 15% or more on a weight basis of at least one water soluble, ionizable salt, the solubilized form of which provides soil strengthening ionic groups of the type that stabilize the soil particles by mechanisms including ion exchange with exchangeable ions naturally occurring in the soil, the active ion being present in an amount sufficient to stabilize soil being treated, the distribution of said ionic groups including diffusion through the soil by ionic migration through the bound water in said clay containing soil to stabilize the area of said migration.

3,959,976

EXCAVATION-ROOF SUPPORT

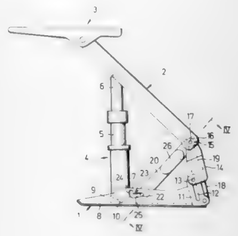
Günter Blumenthal, Westerholt, Germany, assignor to Bochumer Eisenhutte Heintzmann & Company, Bochum, Germany

Filed Jan. 23, 1975, Ser. No. 543,369

Claims priority, application Germany, Mar. 21, 1974, 2413538

Int. Cl.² E21D *15/44*

U.S. Cl. 61—45 D **10 Claims**



1. A roof support for use in underground excavations of different roof heights, comprising a base having one side facing towards and another side facing away from a face of the excavation; a shield having a first end portion spaced from and another end portion adjacent said other side, and extending upwardly of said base; a roof support cap mounted on said first end portion of said shield; means for connecting said second end portion of said shield to said base, including at least one guide member and at least one support member each having a first portion remote from and a second portion at said base, a pivot shaft mounted on said first portions of said members and articulating the same to one another, and means for mounting said second portions of said members on said base for pivoting about spaced axes, and at least one of said second portions for selective displacement relative to said base to thereby change the position of said pivot shaft with respect to said base, said second end portion of said shield being supported on said pivot shaft so that said displacement of the latter results in commensurate displacement of the former, and for pivoting about said pivot shaft; means for pivoting said shield about said pivot shaft and including a pit prop extending between and engaging said base and said shield; and means for selectively infinitely displacing said pivot shaft with respect to said base in dependence on the instantaneous roof height so as to maintain said cap in engagement with the roof close to the face of the excavation for each instantaneous roof height.

3,959,977

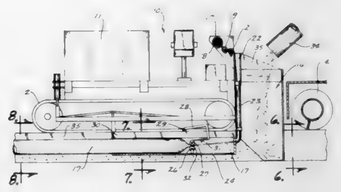
CONCRETE SLIP FORMING APPARATUS

Harold W. Godbersen, Ida Grove, Iowa 51445

Filed Oct. 21, 1974, Ser. No. 516,756

Int. Cl.² E03F *3/06*

U.S. Cl. 61—63 **11 Claims**



1. Apparatus for forming elongated hollow concrete structures comprising:

an elongated flexible tube;

a source of pressure sealingly connected to the interior of said tube;

means holding another portion of said tube substantially closed at all times to thereby cause a section of the tube to be inflated;

form means extending over a portion of said tube said form means including a tubular shaped section, said flexible tube having a portion of its inflated length disposed in said tubular shaped section and conforming to the interior shape of said tubular shaped section, said holding means being attached to said form means;

means connected to the form means for continuously supplying concrete in a plastic condition to said form means;

means connected to said form means for moving said form means along said tube to thereby shape the concrete; and

means connected to said concrete supplying means for providing a continuous supply of flexible tubing to said tubular shaped section of said form means including a roll of flattened flexible tubing and means for guiding said flattened flexible tubing to said holding means, said guiding means comprising a conduit connected at one end thereof to a funnelling means for funnelling said flattened flexible tubing into a rolled shape into said conduit, the other end of said conduit being connected to one end of said tubular shaped section of said form means to thereby guide said flexible material to said holding means.

3,959,978

SEPARATION PROCESS BY FRACTIONAL CRYSTALLIZATION

John Lindley, and Andrew John McLeod, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

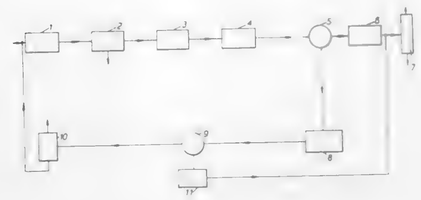
Filed Apr. 25, 1972, Ser. No. 247,304

Claims priority, application United Kingdom, Apr. 30, 1971, 12337/71

Int. Cl.² B01D *9/04*

U.S. Cl. 62—58 **9 Claims**

1. A process in which paraxylene is separated from a solution comprising paraxylene and at least one other xylene, ethyl benzene, or a mixture of at least one other xylene and ethyl benzene by chilling the solution to a temperature in the range of −30° to −10°C to crystallise part of the paraxylene, separating crystals of the paraxylene from the mother liquor, washing the separated crystals with a wash liquid, chilling the mother liquid in the presence of at least part of the wash liquid to a temperature in the range of −40° to −60°C to produce further crystals of the paraxylene, separating such further crystals of the paraxylene from the mother liquor, washing the crystals



thus separated with the wash liquid and separating wash liquid from the separated paraxylene.

3,959,979

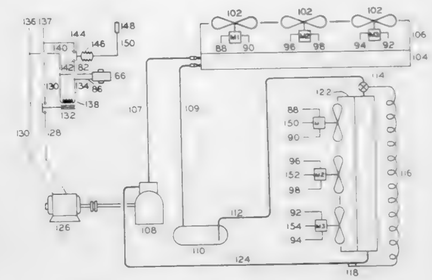
DUAL VOLTAGE FORCED AIR HEAT EXCHANGER

Daniel E. Kramer, 2009 Woodland Drive, Yardley, Pa. 19067

Continuation-in-part of Ser. Nos. 205,065, Dec. 6, 1971, Pat. No. 3,853,174, and Ser. No. 401,265, Sept. 27, 1973, Pat. No. 3,877,243. This application Dec. 9, 1974, Ser. No. 531,228

Int. Cl.² F25D *17/06*

U.S. Cl. 62—89 **5 Claims**



1. A method of achieving two speed operation of fans in a forced air heat exchanger, said heat exchanger having a heat exchange element; fans positioned to move air over said element; alternating current motors adapted to drive said fans, said motors being of the type which operate at higher voltage, higher-speed, lower voltage, lower speed; said motors having first power connection means and second power connection means; a common connection; multipole switch means having a first and a second position, said switch means being connected to the common connection, wherein the method comprises providing a poly-phase power supply having at least 3 conductors; connecting the conductors to the switch means; essentially equally distributing connection of first power connection means among at least two conductors; actuating the switch means to connect the second power connection means alternately to the conductors, causing the motors to operate at higher voltage, higher speed; and to the common, causing the motors to operate at lower voltage, lower speed.

3,959,980

REFRIGERANT MOISTURE DETECTION SYSTEM

Samuel L. Hamilton, 3800 NW. 22nd Ave., Miami, Fla. 33142

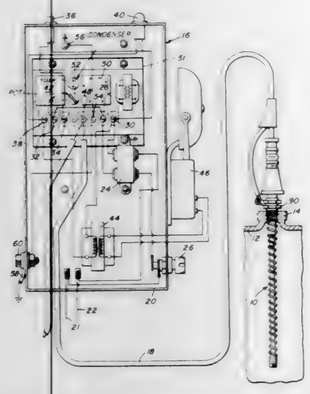
Continuation-in-part of Ser. No. 340,373, March 12, 1973, Pat. No. 3,846,730. This application Nov. 5, 1974, Ser. No. 521,234

Int. Cl.² F25B *49/00*

U.S. Cl. 62—126 **8 Claims**

1. A refrigerant moisture detection system comprising a visual signal means, an audio signal means and a sensing device positionable in a refrigerant flow path for detecting the

presence of absorbed moisture and moisture related contaminants in the refrigerant, said sensing device including an anode and cathode disposed in spaced relation in the flow path and electrically connected to a source of electrical energy, absorbent means disposed between the anode and cathode and in the flow path with the absorbent means including material



capable of change of electrical conductivity in response to moisture absorption, amplifier means and relay means electrically connected with the sensing device to sense the change in electric current flow through the sensing device to produce a signal and amplify the signal to operate a relay for energizing the visual signal means and audio signal means and shut down the refrigeration equipment prior to damage.

3,959,981

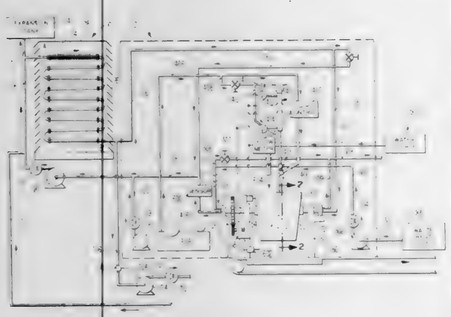
APPARATUS FOR PREPARING ICE

Luzon L. Anderson, 257 Merwin Drive, Norristown, Pa. 19401

Filed Aug. 8, 1974, Ser. No. 495,685

Int. Cl.² F25C *1/10*

U.S. Cl. 62—135 **4 Claims**



2. An apparatus for making ice under atmospheric conditions, comprising in combination:

a. refrigeration means exposed to the atmosphere and coacting therewith to utilize atmospheric conditions for reducing the temperature of a refrigerant to atmospheric temperature;

b. a container having a jacket and an opening for the discharge of ice formed within the container;

c. water input means for introducing water into the container at controlled conditions;

d. refrigerant circulation means connected to said refrigeration means and to said jacket for circulating refrigerant through the jacket to cause water in said container to freeze into ice; and

e. ice discharge means for effecting the discharge of ice from said container, comprising release means for releasing the ice from the container and positioning means for positioning the jacketed container so that the released ice will fall by gravity from the container, said positioning means comprising pivotal means attached to the container to allow it to be pivoted through an arc from an upright position to the position wherein the ice can be discharged by gravity; and motor means are provided for pivoting the container as aforesaid, said motor means being controlled automatically by sensor means which senses when the ice within the container is formed; said sensor means, motor means and positioning means coacting to return the container to an upright position for refilling by said water input means, said water input means and said sensor means coacting to introduce water into said container when said container is in the upright position, to stop the flow of water during the freezing thereof in the container and during the time when the ice is being discharged from the container, and to automatically introduce water into the container when it has again been moved to the upright position.

4. An apparatus for making ice under atmospheric conditions, comprising in combination:

a. refrigeration means exposed to the atmosphere and coacting therewith to utilize atmospheric conditions for reducing the temperature of a refrigerant to atmospheric temperature;

b. a container having a jacket and an opening for the discharge of ice formed within the container;

c. water input means for introducing water into the container at controlled conditions;

d. refrigerant circulation means connected to said refrigeration means and to said jacket for circulating refrigerant through the jacket to cause water in said container to freeze into ice; and

e. ice discharge means for effecting the discharge of ice from said container, comprising warm refrigerant means connected to the jacket of said container to introduce warm refrigerant under controlled conditions into said jacket and thereby cause the temperature of the container to rise to a point wherein the ice will part from the container so that it is released and can be discharged therefrom; and mounting means are provided connected to said container for supporting the container in an upright position with the opening at the top and for allowing the container to be pivoted to a position which will allow ice to be discharged therefrom under the influence of gravity; said mounting means having passages therethrough in fluid flow communication with said jacket; and said refrigeration means and said warm refrigerant means are connected to said passage means in said mounting means for introduction of refrigerant therethrough to the jacket of said container; said connections being such that refrigerant at atmospheric temperature can pass through said mounting means and said jacket in the upright position of said container and upon movement of said container to the position wherein said ice can be discharged therefrom by gravity, warm refrigerant can be introduced through said mounting means and into the jacekt of said container.

3,959,982

REFRIGERATION UNIT

Joseph Herbert Denis, 75 Lawrence Ave., Inwood, N.Y. 11696, and Abraham J. Rodolitz, 40 Neptune Ave., Woodmere, N.Y. 11598

Filed Nov. 1, 1974, Ser. No. 519,931

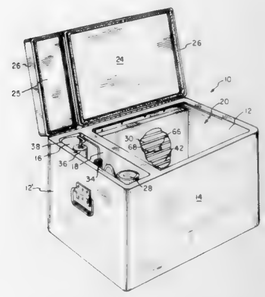
Int. Cl.² F25B *41/04*

U.S. Cl. 62—223 **8 Claims**

1. A portable unit including a compartment adapted to be used for refrigeration comprising:

a primary evaporator located within the compartment having an inlet and an outlet, said primary evaporator adapted to receive liquid refrigerant which at least partially evaporates therein and thereby withdraws heat from and cools the compartment;

conduit means including pressure reducing means, having one end connected to the inlet of said primary evaporator, the other end being connectable to a source of pressurized liquid refrigerant;



a secondary evaporator located within the same said compartment having an inlet and an outlet, said secondary evaporator adapted to receive liquid refrigerant which evaporates therein and thereby cools said compartment; and

phase separator means fluidly communicating with the outlet of said primary evaporator for receiving said at least partially evaporated refrigerant and venting the gaseous phase thereof to the atmosphere and fluidly communicating with the inlet of said secondary evaporator for directing the liquid phase of the refrigerant to the secondary evaporator.

3,959,983

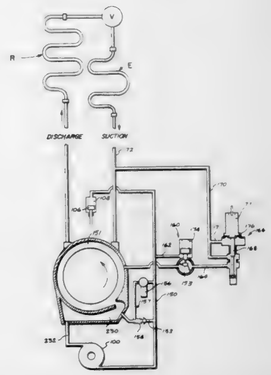
VARIABLE CAPACITY WOBBLE PLATE COMPRESSOR

Richard W. Roberts, Lombard, and Ralph D. Salle, Lake Zurich, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 347,759, April 4, 1973, Pat. No. 3,861,829. This application Nov. 5, 1974, Ser. No. 521,012

Int. Cl.² F25B *31/00*

U.S. Cl. 62—226 **6 Claims**



1. In an air conditioning apparatus of the type including a condenser, an evaporator and a compressor connected to provide a closed circuit, compression-condensing-evaporation refrigeration system, said compressor comprising means defining a plurality of refrigerant gas working spaces each having a piston cooperating with suction and discharge ports to compress a fluid therein; a drive shaft; a wobble plate driven by said drive shaft in a nutating path about the drive shaft axis; means operably connected between said wobble plate and the individual pistons to impart reciprocating drive to said pistons, the length of stroke being a function of the angle at which said wobble plate is supported relative to the drive axis; means for pivoting said wobble plate at a point spaced from said drive axis so as to permit said wobble plate to be inclined relative to a plane normal to said drive shaft axis, so that when the wobble plate is disposed in said normal plane, the pistons are located at top-dead-center within said gas working spaces; said pistons being enclosed in a fluid tight housing providing a crankcase which is pressurized by fluid bypassing said pistons from said gas working spaces; and means for controlling the pressure within said crankcase including means for sensing pressure of fluid in said evaporator.

3,959,984

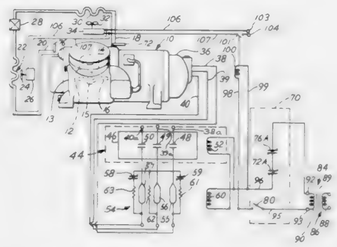
MOTOR PROTECTION APPARATUS USING FUSIBLE LINKS

Robert Vlasak, Toledo, Iowa, assignor to Lennox Industries Inc., Marshalltown, Iowa

Filed Nov. 29, 1974, Ser. No. 528,273

Int. Cl.² H02H *5/04*; **F25B** *49/00*

U.S. Cl. 62—229 **6 Claims**



1. In a refrigerant compressor of the type having a compression mechanism for receiving a refrigerant gas from a suction line, compressing the refrigerant gas and discharging the compressed refrigerant gas, a motor for operating the compression mechanism and conductor means comprising a first, second and third conductor for applying three-phase electrical power to the motor, improved apparatus for protecting the compressor motor comprising in combination:

first switch means comprising a magnetic contactor connected in series with the conductor means, said switch means being movable between an open position and a closed position;

fusible link means connected in series with the first switch means, said fusible link means being normally in a closed circuit condition and being switchable to an open circuit condition in response to a range of temperatures greater than a predetermined temperature, said fusible line means comprising a first link connected in series with the first conductor, a second link connected in series with the second conductor and a third link connected in series with the third conductor;

heater means comprising a first and second resistor connected in series between the first and second conductors and a third resistor operatively connected between the junction of the first and second resistors and the third conductor and being in heat transfer relationship with the fusible link means;

first operating means comprising first coil means for generating a magnetic field capable of operating the magnetic

contactor for moving the first switch means to the closed position in response to a pilot signal and for opening the first switch means in the absence of the pilot signal;

generating means for generating the pilot signal in response to a demand for operation of the compressor; and

second operating means responsive to the closed position of the first switch means and the absense of the pilot signal and comprising a relay responsive to the pilot signal for generating a magnetic field capable of opening normally closed relay contacts connected to the heater means for enabling the heating means to receive electrical power so that the fusible link means is heated to the predetermined temperature, whereby the motor is disconnected from the electrical power, said relay contacts comprising a first contact connected between the first and second resistors and a second contact connected between the second and third resistors.

3,959,985

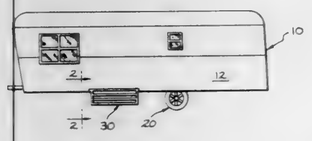
AIR CONDITIONING SYSTEM FOR A MOBILE HOME INCLUDING AN INTERLOCK

James L. Schulze, Sr., Middletown, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Feb. 18, 1975, Ser. No. 550,563

Int. Cl.² B60H *3/04*

U.S. Cl. 62—239 **7 Claims**



1. An air conditioning system including a mobile home having at least one zone to be air conditioned and a base structure, air distribution means associated with said base structure, said system comprising:

an air conditioning unit being adapted to be removably attached to said mobile home including a cabinet having air moving means, air delivery and air return outlets, and a service area adjacent said air return outlet;

said air distribution means including at least one air inlet for receiving air from said air conditioning unit and air outlet for delivering air into said mobile home zone;

mounting means attached to said base structure for removably receiving said air conditioning unit including a first opening aligned with said air conditioning air delivery outlet and a second opening in alignment with said unit's air return outlet when said unit is located in said mounting means;

air communicating means including a first passageway connecting said first opening and with said air distribution means for delivering air into said mobile home and a second passageway for connecting said second opening with said mobile home interior so that said air moving means recirculates air through said mobile home;

electric power supply means associated with said mobile home including electric plug connector means positioned in said second passageway;

electric receptacle connector means in said service area;

said mounting means including an opening arranged for access from said second passageway being in alignment with said electric receptacle connector when said air conditioner is located in said mounting means; and

said electric connector plug extending through said opening in said mounting means for insertion into said electric receptacle connector to prevent movement of said air conditioner relative to said mounting means.

3,959,986

HEAT-PUMP SYSTEM FOR HOT-WATER ROOM-HEATING

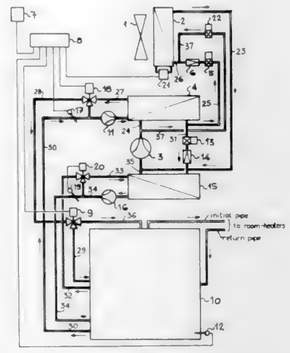
Hugo Ledermann, Glarnischstrasse 30, Stafa, Switzerland

Filed Oct. 15, 1974, Ser. No. 515,077

Claims priority, application Switzerland, Oct. 16, 1973, 14653/73

Int. Cl.² F25B *13/00*

U.S. Cl. 62—324 **8 Claims**



1. A heat-pump system for room heating by hot water, using the external atmospheric air as a source of heat, comprising an air cooler operating as an evaporator, a compressor connected to said air cooler, a condenser connected to said compressor, a hot-water storage vessel and room-heaters supplied thereby, and an evaporator operating as a water cooler for cooling water from said storage vessel, characterized in that the water in said storage vessel is heated, and that with heat, which is withdrawn from the external air by said air cooler, is supplied by said compressor and said condenser to the water, circulating through said storage vessel.

3,959,987

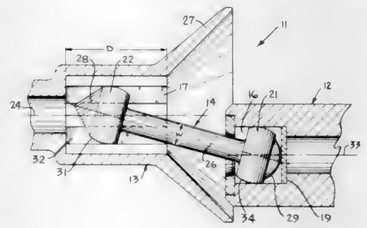
SELF-ENGAGING AND ALIGNING SHAFT COUPLING

Robert B. Garey, San Jose, Calif., assignor to Subsea Equipment Associates Limited, Hamilton, Bermuda

Filed May 8, 1974, Ser. No. 467,879

Int. Cl.² F16D *3/02*

U.S. Cl. 64—8 **10 Claims**



1. A coupling, for use in self-engaging and subsequently aligning two portions of a transmission for remote coupling of said portions,

comprising in combination;

a plug having a plug axis of rotation;

means establishing a socket, said socket having a socket axis of rotation; transmission means intermediate the front portion of said plug and said socket operable for interengaging said plug and socket for torque transmission therebetween when said front portion of said plug is disposed in said socket irrespective of whether said axes are aligned, or non-aligned at an acute angle relative to each other, and

guide means in the form of a guiding funnel extending beyond said socket operable for guiding the front portion of said plug towards the socket when there is a relatively large non-alignment between the plug and socket axes.

3,959,988

FLEXIBLE COUPLING

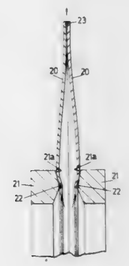
Anthony McNamee, 63, St. James Road, Prescot, Lancashire, England

Filed Nov. 8, 1974, Ser. No. 522,208

Claims priority, application United Kingdom, Nov. 8, 1973, 52091/73

Int. Cl.² F16D *3/52*

U.S. Cl. 64—15 B **20 Claims**



1. A flexible shaft coupling comprising a plurality of concave annular diaphragms of sheet metal, each of substantially constant and equal thickness in radial cross-section, arranged in series upon a common axis with their concavities alternately facing in opposite axial directions and with adjacent diaphragms joined together by substantially continuous circumferential electron beam welds at their radially inner and outer margins, respectively, and means joined by substantially continuous circumferential electron beam welds to the radially inner or outer margin, respectively, of those diaphragms which are at each axial end of the plurality for connecting the coupling to respective shafts.

3,959,989

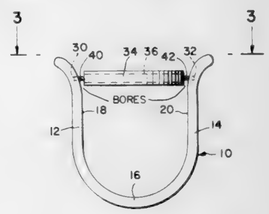
RING HAVING ADJUSTABLY MOUNTED RAPIDLY ROTATABLE INDICIA-BEARING MEMBER

B. S. Bhandia, Daly City, Calif., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Feb. 10, 1975, Ser. No. 548,261

Int. Cl.² A44C *9/02*

U.S. Cl. 63—15.65 **2 Claims**



1. An adjustable finger ring which comprises a member having two elongated legs joined by an intermediate arcuate section and forming a U-shape, each of said legs having a plurality of bores disposed therein, at ends thereof remote from said section, each said bore of one leg being disposed in coaxial relationship with a said bore of the other leg thereby forming a plurality of pairs of coaxial bores, an elongated pin having axial extremities removably disposed in one pair of said bores, a generally planar member having oppositely facing surfaces carried on said pin and mounted for rotation about the axis thereof, said generally planar member having indicia on both said surfaces, said indicia being apparently simultaneously visible when said generally planar member is rapidly rotated about the axis of said pin, said legs, section and planar member forming the finger receiving opening of said ring, said opening being adjustable in size by means of said plurality of bores.

3,959,990

ASSEMBLY FOR MOUNTING AN ELECTRIC MOTOR ON A GEARBOX

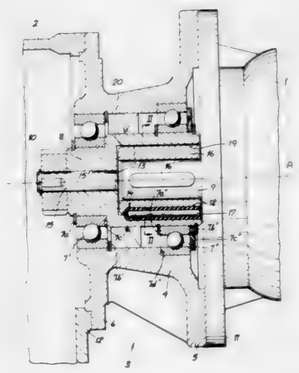
Friederich Gölitz, Wuppertal, Germany, assignor to Maschinenfabrik Ernst Thielenhaus, Wuppertal-Barmen, Germany

Filed Sept. 23, 1974, Ser. No. 508,694

Claims priority, application Germany, Sept. 21, 1973, 2347523; Jan. 17, 1974, 2402067

Int. Cl.² F16D *3/14*

U.S. Cl. 64—27 NM **7 Claims**



1. An assembly for connecting an output shaft of a motor or the like to the input of a gearbox or the like, said assembly comprising:

a rigid housing having on one side a motor flange securable to said motor and on the other side a gearbox flange securable to said gearbox;

a rigid connecting body journaled in said housing and rotatable therein about an axis extending between said sides, said connecting body having one end turned toward said gearbox and provided with a pinion connected to said input thereof and another end turned toward said motor and having an axial bore;

a sleeve keyed to said shaft and received with clearance in said bore, said sleeve and the wall of said bore being formed with angularly spaced pairs of mutually confronting axially extending recesses;

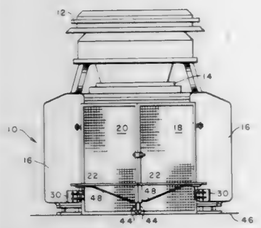
a respective elastically deformable pin received in each pair of recesses and bridging the recesses of each pair for rotataionally interconnecting said sleeve and said body, each of said pins including an elongated steel core received with clearance between the recesses of the respective pair and an elastomeric sheath covering the respective core; and

a respective device in said housing mechanically controlling relative displacement of said housing and said body, said device having respective parts connected to said housing and body.

3,959,991
CIRCULAR KNITTING MACHINE WITH CANTILEVERED, PIVOTALLY MOUNTED PLATFORM

Robert Saul Brown, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 16, 1975, Ser. No. 568,669
Int. Cl.² D04B *9/00*
U.S. Cl. 66—8 **4 Claims**

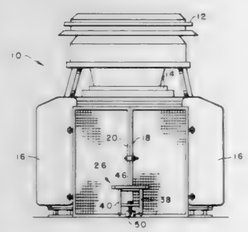


1. A circular knitting machine having a frame and a means to knit a circular fabric comprising: a platform pivotally mounted to said frame substantially perpendicular to the vertical axis of said knitting machine and means to allow horizontal pivotal movement of said platform, said platform including legs adapted to contact the surface on which said machine is mounted when said platform is adjacent said machine.

3,959,992
CIRCULAR KNITTING MACHINE WITH ATTACHED STOOL MEMBER

Paul W. Eschenbach, Inman, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 18, 1975, Ser. No. 569,207
Int. Cl.² D04B *9/003n*
U.S. Cl. 66—8 **7 Claims**



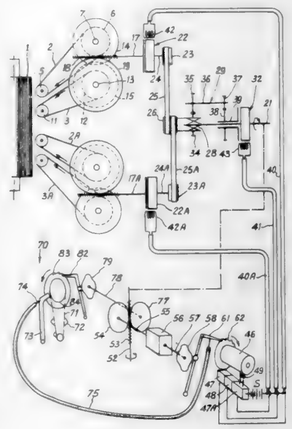
1. A circular knitting machine having a frame and a means to knit a fabric comprising: door means pivotally connected to said frame to permit access to the interior of said machine and a stool means connected to said door means which moves with said door means when said door means is pivoted.

3,959,993
CIRCULAR PILE FABRIC KNITTING MACHINES

Antoine Gabriel (dit Tony) Fegeat, Route de la Serra, Calvi, France (20)

Filed Dec. 9, 1974, Ser. No. 530,969
Claims priority, application France, Dec. 10, 1973, 73.43887
Int. Cl.² D04B *9/14*
U.S. Cl. 66—9 B **6 Claims**

1. Selective sliver feeding apparatus for use with a circular high pile fabric knitting machine of the type having a carding unit adapted to feed fibers derived from slivers to the needles of the machine, said apparatus comprising first rotary members to feed a first sliver to said carding unit, second rotary members to feed a second sliver to said carding unit, a rotary drive shaft, a first drive means including a first clutch operatively related to said shaft and to said first feeding members to rotate the latter to feed said first sliver to said carding unit when said first clutch is activated, a second drive means including a second clutch operatively related to said shaft and to said second feeding members to rotate the latter to feed said second sliver to said carding unit when said second clutch is activated, an over-running clutch operatively related to and interposed between said shaft and said first and said second drive means whereby the latter are driven by said shaft acting through said over-running clutch to rotate said first and said

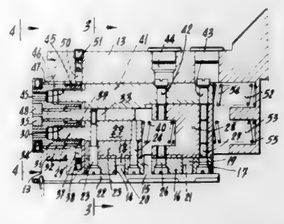


second feeding members at a predetermined speed when their respective first and second clutches are activated thereby to feed said first and said second slivers to said carding unit at a predetermined rate of feed, and additional drive means including an additional clutch operatively related to and interposed between said shaft and said over-running clutch whereby a predetermined one of said first and second drive means is driven by said shaft acting through said additional drive means and through said over-running clutch to rotate its corresponding feeding members at a speed greater than said predepermined speed thereof when its corresponding clutch and said additional clutch are activated thereby to feed the corresponding one of said slivers to said carding unit at a rate of feed greater than said predetermined rate of feed thereof.

3,959,994
CIRCULAR KNITTING MACHINE CAM ARRANGEMENT

Leopoldo Bertagnoli, Torino, Italy, assignor to Nuova San Giorgio S.p.A., Milan, Italy

Filed Nov. 18, 1974, Ser. No. 524,477
Claims priority, application Italy, Jan. 7, 1974, 19144/74
Int. Cl.² D04B *15/32*
U.S. Cl. 66—54 **10 Claims**



1. In a circular knitting machine of the type having a needle cylinder rotatable relative to a fixed base and wherein each needle includes one or more heels supported for sliding movement between respective pairs of guide cams which define respective guide tracks, means for adjusting the positions of a pair of the guide cams to thereby control the length of the stroke of the needles comprising a support member fixedly supported with respect to the fixed base and having a portion thereof defining a guide, a manually adjustable element having a first threaded portion, said support member having a threaded portion engaging said first threaded portion of said manually adjustable element, a slider means supported for sliding movement within said guide, means for fixedly securing said pair of guide cams to said slider means, said manually adjustable element having a second threaded portion, the direction of the threads of said second portion being opposite to the direction of the threads of said first threaded portion, said slider means having a threaded portion engaging said second threaded portion of said manually adjustable element, whereby rotation of said manually adjustable element provides a displacement of the cam carrying slider means which is equal to the sum of the displacement of the manually adjustable elememt relative to the fixed support member and of the slider means relative to the manually adjustable element.

3,959,995
SKI LOCK

Gerald William Fletcher, 568 Valley View Way, Ventura, Calif. 93003

Filed June 9, 1975, Ser. No. 585,184
Int. Cl.² E05B *73/00*
U.S. Cl. 70—18 **2 Claims**



1. A ski lock comprising, in combination:

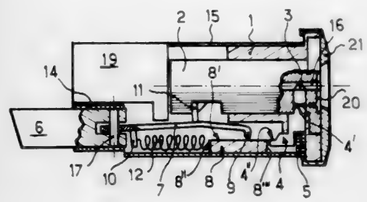
a. a series of five elongated rigid plates hinged together so that they can be formed into a perimeter defining a rectangle for placing about the central portions of a pair of skis positioned in bottom-to-bottom relationship, the longest of said plates having a ninety degree (90°) turned end portion for a distance equal to four times the thickness of the plates the main portion thereof defining one long side of said rectangle the other long side of said rectangle being defined by two of the five plates and the short sides being defined by the remaining two plates, the short sides of the rectangle extending across the opposite side edges of the skis respectively and the long sides of the rectangle extending transversely across the top width of the skis between the toe and heel portions of the ski bindings on each ski, respectively, the short sides having dimensions less than the combined thickness of the skis and bindings so that once in place, the rectangle cannot be slid off from the ends of the skis, the two plates making up said other long side together with the short side plate connecting to the end of said longest one of said plates opposite to its turned end being foldable in accordion style against said longest one of said plates, and the remaining plate hinged to the turned end portion of said longest one of said plates being foldable inwardly to provide a compact configuration which may be carried by a skier in his pocket; and

b. lock means for securing together the ends of the first and last plates in the series of plates when formed into the rectangle and for securing the rectangle to a permanent fixture so that said skis cannot be stolen.

3,959,996
ANTI-THEFT DEVICE FOR AUTOMOBILE VEHICLES

André Thirion, Dijon, France, assignor to Antivols Simplex S.A., Dijon-Saint-Apollinaire, France

Filed May 23, 1975, Ser. No. 580,410
Claims priority, application France, June 4, 1974, 74.19164
Int. Cl.² B60R *25/02*
U.S. Cl. 70—186 **3 Claims**



1. An anti-theft device for automobile vehicles of the type comprising a lock having a barrel actuated by a key, a locking bolt member extending longitudinally of the barrel, said barrel carrying a cam profile cooperating with the bolt member so as to shift the bolt member in a direction parallel to the axis of the barrel, wherein the bolt member is extended by a stem which is floatably mounted so as to be pivotable transversely of the axis of the bolt member, said stem being provided with a tab cooperating with a cam profile integral with said barrel which cam controls its transverse displacement, said stem having at the end thereof opposed to the bolt member a transverse nose portion adapted to be cooperable with a radial recess in the body of the anti-theft device, elastically yieldable means biasing said nose portion toward said recess, a radially movable push-member disposed in the bottom of said recess and elastically biased outwardly of the recess, and a key sensor radially mounted in the barrel and cooperating with said push-member.

3,959,997
PICK-PROOF LOCK SYSTEM AND METHOD FOR LOCKING A DOOR, WINDOW, OR OTHER CLOSURE

James E. Williams, Stamford, Conn., assignor to James E. Williams, Stamford and William A. Williams, Danbury, both of, Conn.

Continuation-in-part of Ser. No. 449,330, March 8, 1974, abandoned. This application Apr. 21, 1975, Ser. No. 569,869
Int. Cl.² E05B *63/00*
U.S. Cl. 70—419 **23 Claims**

1. A pick-proof method of locking and unlocking a closure including a movable barrier mounted to close and protect an inside region from an outside region, said method comprising the steps of:

providing a locking mechanism for locking said barrier closed,

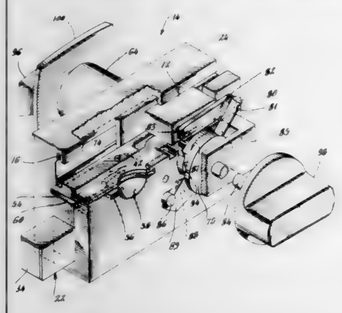
providing key responsive coded lock means for controlling said locking mechanism,

positioning said coded lock means remote from said outside region in a position which is inaccessible from said outside region when said barrier is closed,

providing a route for a transportable key beginning at said outside region and extending into said coded lock means,

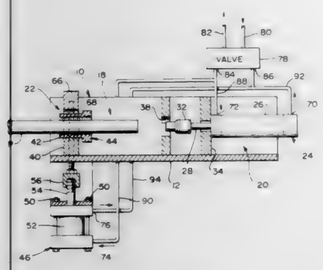
blocking said route to prevent access to said coded lock means from said outside region,

providing a transportable key adapted to travel said route and placing said key into the beginning of said route at said outside region,
progressively unblocking portions of said route,
moving said key along each progressively unblocked portion of said route into operative relationship with said coded lock means for unlocking said lock mechanism,



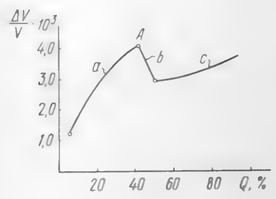
sequentially reblocking each portion of said route after said key has been moved through that portion,
thereby to deny access to said coded lock means from said outside region to prevent said coded lock means from being picked, while enabling said lock mechanism to be unlocked by moving a key along said route into engagement with said coded lock means.

3,959,998
PIPE SWAGING APPARATUS
Bernard D. Ross, 2710 Emmick Drive, Toledo, Ohio 43606
Continuation-in-part of Ser. No. 284,734, Aug. 30, 1972, Pat. No. 3,838,591. This application Aug. 16, 1974, Ser. No. 498,033
Int. Cl.² B21D *41/02*
U.S. Cl. 72—312 **1 Claim**



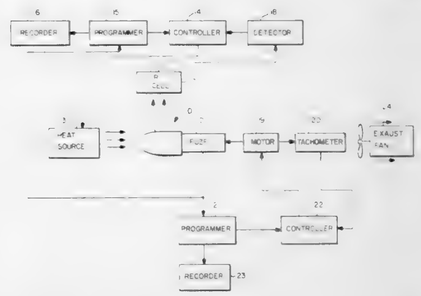
1. Pipe swaging apparatus comprising
swager support means having a pipe clamping area;
swaging fluid motor means supported on said swager support means and having a piston rod for moving a swage die toward said pipe clamping area;
pipe clamping means supported on said swager support means at said pipe clamping area including a stationary bottom clamping plate and a movable top clamping plate;
a U-shaped member secured to said swager support means at said pipe clamping area beneath said bottom clamping plate;
clamp operating fluid motor means mounted on said U-shaped member and having a piston rod extending from said fluid motor through said U-shaped member, a block positioned and movable within said U-shaped member and carried by said piston rod and a pair of parallel rods mounted on said block and extending through said bottom clamping plate to couple said piston rod with said top clamping plate for moving said top clamping plate relative to said bottom clamping plate whereby a pipe to be swaged can be held stationary during swaging by said clamp operating fluid motor means,
said swaging fluid motor means including a cylinder having an advance port and a retract port and said clamp operating fluid motor means including a cylinder having an advance port and a retract port; and
valve means having a first state for supplying fluid to said retract port of said swaging cylinder and said advance port of said clamp operating cylinder to retract said swaging piston rod and advance said clamp operating piston rod to move said top clamping plate away from said bottom clamping plate and a second state for supplying fluid to said advance port of said swaging cylinder and said retract port of said clamp operating cylinder to advance said swaging piston rod and retract said clamp operating piston rod to move said top clamping plate toward said bottom clamping plate whereby swaging and clamping of a pipe are provided simultaneously.

3,959,999
METHOD OF PRODUCING LONG-LENGTH ARTICLES FROM HOT-ROLLED CARBON STEEL AND ARTICLE PRODUCED THEREBY
Nikolai Grigorievich Filatov, Orel; Vitaly Nikiforovich Gridnev; Valentin Gennadievich Gavriljuk, both of Kiev; Jury Yakovlevich Meshkov, Kiev; Felix Isaakovich Mashlenko; Konstantin Vasilievich Mikhailov, both of Moscow; Valery Ionovich Fedorov; Vladimir Zakharovich Marchenko, both of Volgograd; Ivan Konstantinovich Lyskov, and Viktor Alexandrovich Budilovsky, both of Volgograd, all of U.S.S.R., assignors to Ivan Konstantinovich Lyskov and Viktor Alexandrovich Budilovsky, both of, U.S.S.R.
Filed Nov. 1, 1974, Ser. No. 520,215
Int. Cl.² B21C *9/00;* **B21D** *31/00;* **C21D** *7/02*
U.S. Cl. 72—364 **3 Claims**



1. A method of producing long-length articles from hot-rolled carbon steel, consisting essentially of the steps of:
a. descaling a wire rod of hot-rolled carbon steel;
b. applying a sublubricant coating to said descaled rod;
c. cold plastic deforming said rod within a range from a minimum effective amount to not more than 40–50% deformation whereby said deformation produces microstresses in said rod but is insufficient to cause microcracks in the surface of said rod;
d. warm plastic deforming said rod from (c) with concurrent heating of said rod to a temperature within the range 300°–600°C; and
e. repeating steps (c) and (d) at least once.

3,960,000
FLIGHT SIMULATOR FOR MISSILES
Charles W. H. Barnett, Falls Church, Va.; George K. Lucey, Jr., Greenbelt, Md., and Douglas R. Augustine, Virginia Beach, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 8, 1974, Ser. No. 522,166
Int. Cl.² G01N *25/00*
U.S. Cl. 73—15.4 **3 Claims**



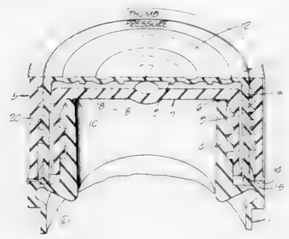
1. A flight simulator for missiles having a nose cone and a fuse body comprising: means for directing heat towards the nose cone of said missile; means for monitoring the temperature of said nose cone and providing a feedback signal to adjust the application of said heat to the desired level; means for imparting axial rotation to said missile simultaneously with the application of said heat; means for monitoring the spin rate of said fuse and providing a feedback signal to adjust the application of said rotation to the desired level; means for programming the cycle of simultaneous heat and rotation to conform to in-flight conditions; and means for monitoring the fuse function at any given time during the simulated flight.

3,960,001
BAG FILTER LEAK DETECTION
Jimmie R. Hayes, Franklin, La., assignor to Cabot Corporation, Boston, Mass.
Filed June 3, 1974, Ser. No. 475,749
Int. Cl.² G01M *3/20*
U.S. Cl. 73—40.7 **6 Claims**

1. In a method for detection of leaks in bag filter dust collector apparatus comprising visual inspection of the exhaust side of the bag filter dust collector, the improvement which comprises introducing a tracer composition into the collection side and flowing said composition through said bag filter dust collector during the course of said inspection and locating leak sites, said tracer composition comprising a gaseous dispersion of a finely-divided particulate solid tracer medium having an average ultimate particle diameter of less than about 100 millimicrons, an apparent density of less than about 10 lbs/ft³ and a color which contrasts substantially with the color of the dust normally collected in said bag filter apparatus.

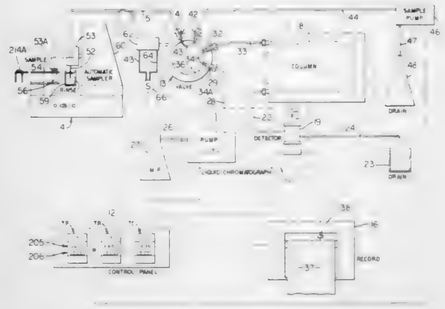
3,960,002
MEDICAL LIQUID CONTAINER WITH TACTILE STERILITY INDICATOR AND METHOD OF TESTING CONTAINER
Pradip V. Choksi, North Hollywood, and Roy B. Steidley, Seal Beach, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Division of Ser. No. 338,661, March 7, 1973, Pat. No. 3,923,179. This application Sept. 16, 1975, Ser. No. 613,636
Int. Cl.² G01M *3/32*
U.S. Cl. 73—52 **6 Claims**

1. A method of testing the sterile integrity of a medical liquid container having inner and outer closures with a sealed sterile air space therebetween comprising the steps of: manually pushing a section of the outer closure inwardly until it contacts the inner closure to compress the sterile air which is



encased between the two closures; and thereafter releasing the manual pressure from the outer closure to allow the outer closure to spring back away from the inner closure.

3,960,003
AUTOMATIC SYSTEM FOR HIGH PRESSURE LIQUID CHROMATOGRAPHY
William F. Beyer, Portage Township, Kalamazoo County, and David D. Gleason, Oshtemo Township, Kalamazoo County, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Nov. 11, 1974, Ser. No. 522,455
Int. Cl.² G01N *31/08*
U.S. Cl. 73—61.1 C **13 Claims**



1. An apparatus for carrying out automatic high pressure liquid chromatography on a plurality of test samples, one after the other, comprising:
a source of test samples and a source of rinse liquid and means for selectively connecting said sources to a first flow path;
means associated with said first flow path for moving said test samples and rinse liquid alternatively therealong;
a high pressure liquid chromatograph and means associated therewith for producing chromatograph test results;
a source of liquid mobile phase and a second flow path isolated from said first path and extending from said liquid mobile phase source to the chromatograph;
a movable valve core containing a double ended fixed volume passage and means which in a load position of said valve core connect said core passage in series within said first path for filling by sample liquid moving along said first path;
means for (1) shifting the filled fixed volume core passage entirely out of communication with said first path while closing both valve-connected ends of said first path and for (2) instead interposing said filled core passage serially in said second path such that mobile phase flow advances

to said chromatograph only the fixed quantity of sample liquid stored in said core;

timing control means for synchronizing and actuating said selectively connecting means, said means for moving and said means for shifting and interposing.

3,960,004

METHOD FOR MEASURING IMPEDANCE

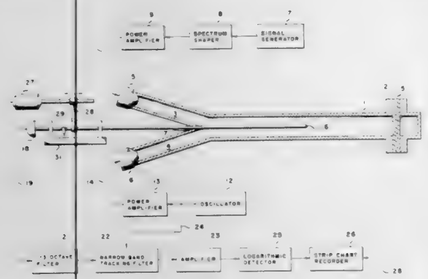
Leslie S. Wirt, Newhall, and Duane L. Morrow, Saugus, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Continuation-in-part of Ser. No. 245,776, April 20, 1972, Pat. No. 3,824,842. This application June 18, 1974, Ser. No. 480,555

The portion of the term of this patent subsequent to July 23, 1991, has been disclaimed.

Int. Cl.² G01N *29/00*

U.S. Cl. 73—67.1 **3 Claims**



1. The method of measuring a frequency dependent variable corresponding to the ratio of force (or root-mean-square voltage) to the normal component of the particle velocity (or root-mean-square current), appearing in a system element, at a particular frequency and in the presence of a given excitation spectrum, in a nonlinear oscillatory signal transmission system, comprising the steps of:

introducing a biasing oscillatory signal into said system at level sufficient to reach the nonlinear regime thereof;

superimposing a test oscillatory frequency signal onto said biasing signal, the amplitude level of said test frequency signal being lower than the level of said biasing signal; and

separating said test frequency signal from said biasing signal at the output of said system whereby the amplitude of the extracted test frequency signal corresponds to the frequency-dependent variable of said system.

3,960,005

ULTRASONIC TESTING DEVICE FOR INSPECTING THERMIT RAIL WELDS

Georges E. Vezina, Laval-des-Rapides, Canada, assignor to Canac Consultants Limited, Montreal, Canada

Filed Aug. 9, 1974, Ser. No. 496,310

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.7 **12 Claims**

1. Ultrasonic testing device for inspecting thermit rail welds in a track comprising

a longitudinal shoe adapted to be placed lengthwise along the top surface of a rail;

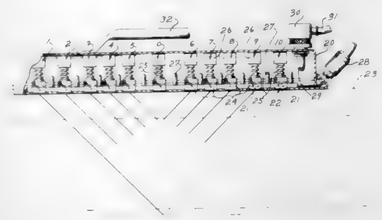
a first means for transmitting an ultrasonic energy pulse in a downwards path towards a location on the under surface of the rail;

a first means for receiving an ultrasonic energy pulse and for receiving an echo of the transmitted pulse reflecting from the location on the under surface of the rail, said first transmitting means and said first receiving means being spaced a predetermined distance apart along said shoe and said location on the under surface of the rail being below the midpoint between said first transmitting means and said receiving means said first transmitting and receiving means for detecting porosity and a lack of fusion in the rail weld;

a central transducer means positioned midway between said first transmitting means and said first receiving means for transmitting and receiving an ultrasonic energy pulse in and from a vertically downward direction, respectively for detecting the location of a rail weld;

a plurality of second transmitting means located between said first transmitting means and said central transducer means for transmitting and directing an ultrasonic energy pulse at an acute angle to the top surface of the rail to cover the height of a rail directly under said central transducer means;

a plurality of second receiving means for receiving ultrasonic energy pulses corresponding and equal in number to said second transmitting means and located between



said central transducer means and said first receiving means, each second receiving means having a combination of spacing from the other said second receiving means, of spacing from said corresponding transmitting means, and of receiving an ultrasonic energy pulse at predetermined angles such that the pulses that are received are those pulses transmitted by said corresponding transmitting means which have been reflected by an area of porosity located substantially under said central transducer means, said corresponding pairs of second transmitting and receiving means for detecting porosity of the weld and the height in the rail of any determined areas of porosity;

and means for indicating the transmission of each pulse, the receiving of the echos of the respective pulses, and the time interval for the pulses to pass downward through the rail and the echos of the respective pulses to pass upward through the rail.

3,960,006

NON-DESTRUCTIVE TEST APPARATUS AND METHOD FOR A MATERIAL HAVING A CAVITY THEREIN

Robert D. Smith, Elk Grove Village, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Dec. 3, 1973, Ser. No. 421,131

Int. Cl.² G01N *29/04*

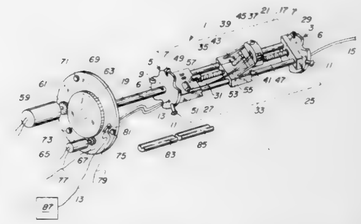
U.S. Cl. 73—67.8 S **13 Claims**

1. A non-destructive test apparatus for detecting and providing three-dimensional analysis of flaws in a horizontally positioned generally cylindrical rotor having a relatively large mass of material, a central bore with a diameter small in comparison to the diameter of the rotor and providing a test cavity being located in the rotor, comprising:

signal transmitting means to be inserted into the bore of the rotor, said signal transmitting means including at least two signal sources capable of simultaneously transmitting at least two ultrasonic signals from the bore into the mass of the rotor, said ultrasonic signals being selectively chosen from among the various ultrasonic modes;

pickup means to detect said ultrasonic signals as they are reflected from discontinuities throughout the mass of the rotor material, each of said reflected ultrasonic signals being identified with the corresponding transmitted ultrasonic signal and providing information regarding the discontinuities from which they are reflected;

position determining means providing for the direct correlation of the information content of a transmitted or reflected ultrasonic signal in one mode with the information content of reflected ultrasonic signals and unreflected transmitted ultrasonic signals in another mode, the information content of said transmitted and said reflected signals relating to discontinuity characteristics throughout the mass of the rotor material, by precisely locating



in a three-dimensional matrix the path through the rotor mass of each transmitted ultrasonic signal and the position of discontinuities in the rotor material evidenced by each reflected ultrasonic signal; and

recording means for preserving the information content of said transmitted and said reflected ultrasonic signals in a fashion that permits combining the individual information content of each of said transmitted and said reflected ultrasonic signals in the different modes to derive an accurate indication of the existence, position, nature size and shape of flaws in the rotor material.

3,960,007

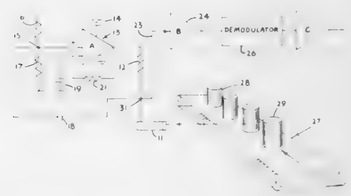
ULTRASONIC STANDING WAVE SENSOR

Eugene T. Swensen, 2400 W. 102nd St., Apt. 313, Minneapolis, Minn. 55431

Filed Sept. 27, 1974, Ser. No. 510,078

Int. Cl.² G06M *7/04*

U.S. Cl. 73—67.8 R **3 Claims**



1. An ultrasonic standing-wave sensor which comprises

a. an amplifier-oscillator,

b. a power source connected to said ammplifier-oscillator,

c. first and second resistive impedance devices connected in series between said power source and ground,

d. said first and second devices connected to said amplifier-oscillator to bias said amplifier-oscillator at the electrical midpoint between the said power source and ground,

e. an electrically driven ultrasonic transducer, and

f. capacitive impedance means interconnecting said first and second devices at said electrical midpoint and said transducer to establish a phase lag of greater than 90° between said transducer and the amplifier-oscillator input.

3,960,008

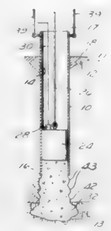
PILE CAPACITY TESTING MEANS

George G. Goble, 18908 Lomond Blvd., Shaker Heights, Ohio 44094, and Frank Rausche, 38320 North Lane, Willoughby, Ohio 44094

Filed Dec. 12, 1974, Ser. No. 532,050

Int. Cl.² G01N *3/34*

U.S. Cl. 73—84 **5 Claims**



1. A method of determining the static load capacity of a concrete pile during its construction comprising the steps of providing deceleration measuring means on a hammer of predetermined mass, charging a hole with a known mass of concrete, dropping the hammer on the charge of concrete to drive the concrete into a base of the hole, measuring the deceleration of the hammer with the decelerometer, integrating the deceleration to determine the velocity of the hammer, calculating the resistance of the soil by computing the product of the combined mass of the hammer and the charge of concrete and the value of the deceleration of the hammer substantially at the point of zero velocity, when a desirable resistance value is obtained after one or more hammer blows adding an additional charge or charges of concrete before said first-mentioned charge of concrete has set and performing the steps of determining the soil resistance set forth in relation to the first-mentioned charge with at least one successive charge.

3,960,009

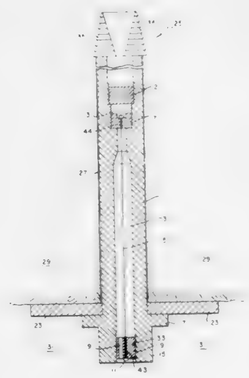
ROCKBOLT SAFETY GAGE

Wallace W. Roepke, 640 3rd Ave., Excelsior, Minn. 55331, and Patrick J. Cain, 15900 N. Lund Road, Eden Praire, Minn. 55343

Filed May 2, 1975, Ser. No. 574,165

Int. Cl.² G01B *17/04*

U.S. Cl. 73—88 F **8 Claims**



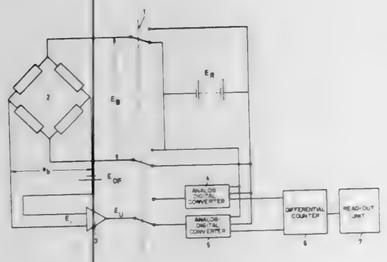
1. A vibrating wire gage for use with a mine rockbolt comprising:

an elongated cylindrical body having an internal cavity with an upper and lower end;
a taut vibratory wire anchored near its two ends and adapted to fit within said cavity and extend between the two cavity ends; means at the upper end of said body for attaching a rockbolt shaft thereto;
cavity access means located near the cavity's lower end for allowing the insertion of a plucking device into the cavity to provide for the mechanical plucking of said wire; and
adjustable anchoring means at the lower end of the cavity acting to adjustably retain the wire's lower end.

3,960,010
ANALOG-DIGITAL CONVERTER FOR A RESISTANCE BRIDGE

Jan Kenneth Gustafsson, Karlskoga, Sweden, assignor to AB Bofors, Bofors, Sweden

Filed Oct. 21, 1974, Ser. No. 516,845
Claims priority, application Sweden, Oct. 23, 1973, 7314340
Int. Cl.² G01B *7/16*
U.S. Cl. 73—88.5 R **4 Claims**



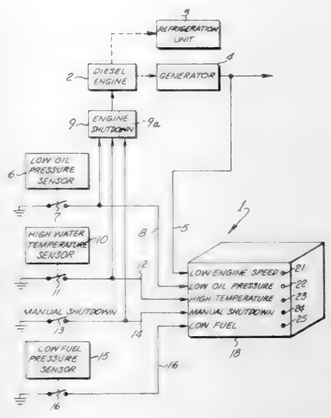
1. Apparatus for providing a digital signal representative of the unbalance of a resistance bridge comprising:
a resistance bridge having input means and output means,
means for applying first and second direct-current voltages of opposite polarity but equal amplitude alternately and repetitively to said input means,
amplifier means connected to said output means,
analog-to-digital converter means responsive to said amplifier means,
counting means controlled by said converter means,
and means controlling said counting means to count in one sense while said first voltage is applied to said input means and in the opposite sense while said second voltage is applied to said input means.

3,960,011
FIRST FAULT INDICATOR FOR ENGINES

Alfred C. Renz, Commack; Roy W. Spacie, Huntington, and Edward J. Fuller, Garden City, all of N.Y., assignors to Harris Corporation, Cleveland, Ohio

Filed Nov. 18, 1974, Ser. No. 524,489
Int. Cl.² G01M *15/00*
U.S. Cl. 73—116 **23 Claims**

1. A monitor for use with a system having a plurality of sensors for respectively providing fault signals in response to faults occurring at respective locations in said system and capable of causing system shut down, comprising:
a plurality of isolation means each having an input circuit adapted to respond to a respective one of said fault signals for providing a non-electrical signal representative of said fault signal, and an output circuit electrically isolated from said input circuit and having means responsive to said non-electrical signal to provide a second electrical fault signal, and,
indicating means connected to said output circuits of said plurality of isolation means and responsive to said second

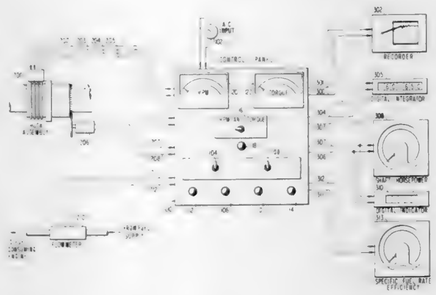


fault signals for indicating the first occurring fault in the monitored system.

3,960,012
SHAFT HORSEPOWER AND EFFICIENCY MONITORING SYSTEM

Maxwell Ingram, 15 Hamilton Ave., Dumont, N.J. 07628

Filed May 14, 1974, Ser. No. 469,900
Int. Cl.² G01L *3/24*
U.S. Cl. 73—136 A **33 Claims**

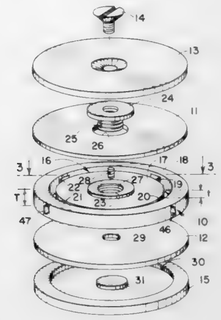


1. A system for determining the power being transmitted through a rotated shaft, comprising:
first means mounted on said shaft for generating a direct current signal having a magnitude proportional to torque transmitted through said shaft and a polarity corresponding to torque direction, said first means including a husk assembly clamped about said shaft;
second means coupled with said husk assembly for generating a direct current signal having a magnitude proportional to shaft rotational speed and a polarity corresponding to rotation direction; and
electronic circuit means having first and second inputs connected to receive said generated direct current signals from said first and second means, respectively and an output; said circuit means electronically multiplying said signals to produce a direct current signal at said output proportional in magnitude and polarity to the product of said first and second input signals whereby said direct current output signal is linearly representative of the horsepower being transmitted through said shaft in either forward or reverse directions.

3,960,013
PLATFORM LOAD CELL

Alfred Newman Ormond, 11969 E. Rivera Road, Santa Fe Springs, Calif. 90670

Filed Mar. 4, 1975, Ser. No. 555,141
Int. Cl.² G01L *1/22*
U.S. Cl. 73—141 A **5 Claims**



1. A platform load cell comprising, in combination:
a. a flat disc having an inner portion and outer ring integrally connected together by flexure webs at spaced circumferential points;
b. upper and lower flat diaphragms sandwiching said disc therebetween secured only to the top and bottom surfaces of the outer ring and top and bottom central areas of the inner portion;
c. a platform above the upper diaphragm and secured to a central portion thereof;
d. a circular base supporting the under peripheral portion of the lower diaphragm;
e. strain gauge means on said flexure webs, said diaphragms constraining movement of said inner portion relative to said outer ring to a vertical axial direction so that output signals from said strain gauges constitute a function only of the vertical load component of a load placed on said platform, side forces and moments resulting from off-center loading on said platform being isolated by said diaphragms; and,
f. means in said flat disc for equalizing the sensitivity of the several strain gauge means and associated flexure webs in the form of holes drilled into said outer ring to remove material adjacent to the points of connection of the flexure webs to the outer ring to thereby decrease the fixity of the webs at said points and thereby vary the sensitivity of the webs and associated strain gauges, the depth of said holes being adjusted to values at which the sensitivities of all the webs and associated strain gauges are equal.

3,960,014
METHOD OF OBTAINING PERMEABILITY INFORMATION FROM AN UNDERGROUND FORMATION PENETRATED BY A WELL

Stanley O. Hutchison, Bakersfield, and Glenn W. Anderson, Oildale, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 20, 1974, Ser. No. 534,954
Int. Cl.² E21B *49/00*
U.S. Cl. 73—151 **7 Claims**

1. A method of obtaining permeability information from an underground formation penetrated by a well having a tubular member with at least one flow opening therein and positioned under liquid in said well adjacent said formation comprising the steps of inserting into a well adjacent an opening in a tubular member positioned under liquid adjacent an underground formation an extrudable rubber like impression forming material, said impression forming material being capable of being at least partially extruded into said opening and retracted therefrom, contacting said tubular member adjacent said opening with said material for a period of time and at a pressure normally sufficient to extrude at least a portion of

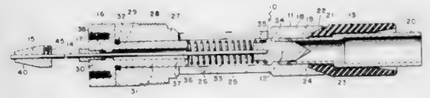


said material into said opening if said opening is connected to permeability, removing said material from contact with said tubular member, removing said material from said well and examining said material for extrusions to determine if said opening in said tubular member is effectively connected to permeability.

3,960,015
WELL FLOW SENSING APPARATUS

Marion Barney Jett, Dallas; Jay Warner Jackson, Arlington, and Richard Eugene Irby, Irving, all of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 558,871, March 17, 1975. This application June 4, 1975, Ser. No. 583,733
Int. Cl.² E21B *47/10*
U.S. Cl. 73—155 **18 Claims**

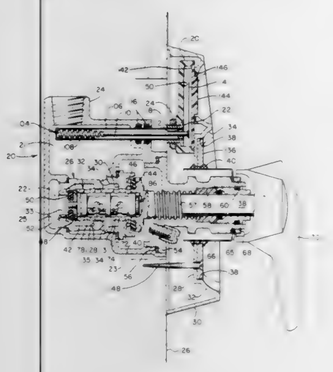


1. Flow sensing apparatus for generating a signal in response to a flow condition through a flow conduit comprising;
elongated tubular body means sized for close-fitting insertion into a flow conduit and adapted to force a substantial portion of the fluid flow in the conduit therethrough, and having elastomeric seal means thereon arranged to seal against the inner surface of a flow conduit;
a flow responsive member slidably located in said tubular body means and adapted to close the inner passage of said body means in one position of said member;
biasing means in said body means abutting said member and continuously urging said member against the fluid flow through said body means towards said closing position in said body means;
extension means attached to said member and extending slidably out of said body means; and,
switch means operably engaging said extension means and arranged to convert movements of said extension means into pulse signals.

3,960,016
WATER MIXING VALVE WITH TEMPERATURE INDICATOR

Paul C. Symmons, Duxbury, Mass., assignor to Symmons Industries, Inc., Braintree, Mass.

Filed Feb. 14, 1974, Ser. No. 442,327
Int. Cl.² G01K *1/14*; **G05D** *23/13*
U.S. Cl. 73—343 R **6 Claims**



1. A plumbing fixture comprising:

a mixing valve for mixing hot and cold water adapted for mounting in a wall, said valve including a valve body with hot and cold water inlets, a control member extending into said valve body for selecting the relative amounts of hot and cold water passing through said valve, and an outlet chamber in said valve body for discharging water mixed in said valve;

a water temperature sensor disposed in said outlet chamber in position to sense the temperature of water in said chamber;

temperature indicator means coupled to said sensor for indicating the water temperature in said outlet chamber, said temperature indicator means being disposed outside of said valve body and comprising a temperature scale and a movable pointer which is mechanically connected to said sensor so that said pointer will move relative to said scale in accordance with changes in the temperature of the water in said outlet chamber sensed by said sensor;

an escutcheon for concealing said valve when it is mounted in a wall;

means for attaching said escutcheon to said valve; and

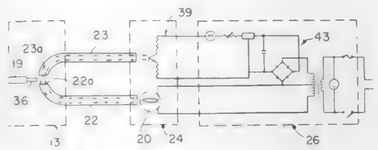
means mounting said indicator means to said escutcheon so that said indicator means may be be viewed by an observer.

3,960,017
THERMOMETER INSERTABLE IN WINDING OF FLUID COOLED TRANSFORMER

Robert F. Romanowski, Rochester, N.Y., assignor to Qualitrol Corporation, Fairport, N.Y.

Filed Feb. 10, 1975, Ser. No. 548,350
Int. Cl.² G01K *1/14*, *5/52*, *13/02*
U.S. Cl. 73—349 **5 Claims**

1. The combination comprising an electrical transformer apparatus having a tank containing cooling fluid in which the coils of a transformer winding are immersed, a thermometer having a body of ceramic dielectric material inserted in a space between the coils, a dielectric heat sensing rod of plastics material disposed within a channel internally of the body having one end fixed to the latter and the other end free, a pair of light pipes of fiber optic dielectric material each having one terminal end face disposed in the body in opposed spaced relation to that of the other proximate the free end of the sensing rod, the sensing rod being responsive to heat of a predetermined value developing within the cooling fluid to expand linearly relative to the channel to project its free end between the said terminal end faces of the light pipes, a light signal electrical converter device located externally of the

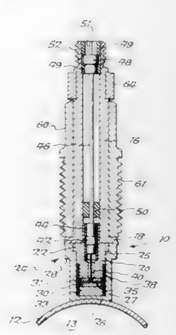


tank, each light pipe having a second terminal end extending externally of the tank, one of said second terminal ends being connected with a light source and the other being connected with a light signal responsive circuit in the converter, and a signal read-out unit connected with the light signal responsive circuit.

3,960,018
CONFORMAL PRESSURE TRANSDUCER

Nicholas D. Change, West Seneca, and Michael T. Riggs, Batavia, both of N.Y., assignors to PCB Piezotronics, Inc., Depew, N.Y.

Division of Ser. No. 381,700, July 23, 1973, Pat. No. 3,886,792, which is a continuation-in-part of Ser. No. 234,017, March 13, 1972, abandoned. This application Nov. 7, 1974, Ser. No. 521,687
Int. Cl.² G01L *9/08*
U.S. Cl. 73—398 R **9 Claims**



1. A transducer for converting pressure changes into electrical signals wherein the pressure changes act on one surface of a relatively thin wall, said transducer comprising:

a. a housing:

b. force transmitting means on one end of said housing and having a contoured end surface conforming to the other surface of said wall opposite the surface on which said pressure changes act;

c. piezoelectric means within said housing and mechanically connected to said force transmitting means;

d. electrical path defining means for connecting said piezoelectric means to means for deriving an electrical signal; and

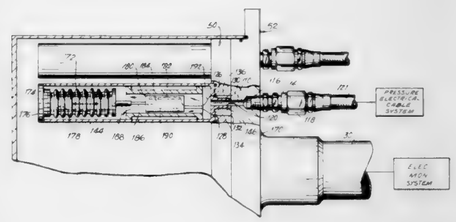
e. alignment guide means carried by said housing and extending from said housing and having a fixed alignment relative to said contoured end surface of said force transmitting means for engaging a body containing said wall at a location having a predetermined alignmemt with respect to said other surface of said wall to align said contoured end surface of said force transmitting means with said other surface of said wall;

f. whereby when said contoured end surface of said force transmitting means firmly contacts and conforms to the other surface of said wall, pressure applied through said wall to said contoured end surface deforms said piezoelectric means to generate an electrical output signal proportional to the applied pressure.

3,960,019
CANNISTER ARRANGEMENT OF TRANSDUCERS TO MONITOR PRESSURES

William J. Jakobsen, Farmingdale, N.Y., assignor to Lourdes Industries, Inc., Hauppauge, N.Y.

Filed June 28, 1974, Ser. No. 484,097
Int. Cl.² G01L *9/02*, *7/06*
U.S. Cl. 73—420 **30 Claims**



1. Transducer apparatus comprising a casing having an access opening, engaging means for holding said casing and closure together in sealed relation, said closure being provided with a bore extending therethrough, conduit means supplying to said bore a pressure medium to be monitored, electrical means including electrical contacts adjacent said bore within said casing, and transducer means supported on said closure within said casing,, said transducer means being coupled to said bore and contacts and responding to said pressure medium to produce a signal at said contacts, said closure being provided with a plurality of further bores in addition to the first said bore, said conduit means supplying pressure medium separately to each of said bores, said electrical means including further electrical contacts adjacent each of said further bores, said transducer means including transducer units in each of said bores.

3,960,020
LIQUID ASPIRATING PROBE ASSEMBLY OF A SUPPLY ANALYZER

Abraham Gordon, Teaneck, N.J., and Stanford L. Adler, Monsey, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,615
Int. Cl.² G01N *1/14*
U.S. Cl. 73—423 A **14 Claims**

1. A sample analyzer comprising an aspirating probe element having an inlet for immersion successively in liquids contained in a series of receptacles and for relative retraction to an upper position prior to immersion in the liquid of another receptacle, and means flushing a wash solution down the exterior of said probe element in said upper position and drawing off substantially all the flushed solution through said probe inlet.

3,960,021
SAMPLING APPARATUS

Calvin Jones, Marlboro, N.Y., assignor to Dairylea Cooperative Inc., Pearl River, N.Y.

Filed Oct. 4, 1973, Ser. No. 403,432
Int. Cl. G01n *1/12*; **B67b** *7/16*
U.S. Cl. 73—425.4 R **18 Claims**



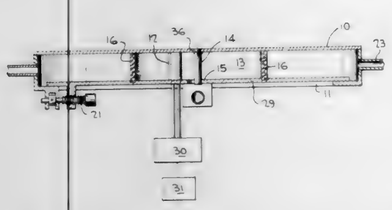
1. An apparatus for taking liquid samples from containers thereof under substantially sanitary conditions comprising:

a. an elongated shaft;

b. means for retaining a sample vial associated with the lower part of said elongated shaft; and

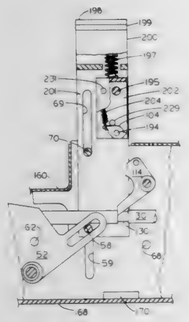
c. means for removing a vial cap from a sample vial, retaining said cap, and replacing said cap upon a sample vial, associated with the upper part of said elongated shaft.

3,960,022
NULL ADJUSTABLE VORTEX RATE SENSOR
Arthur J. Ostdiek, Wheaton, and Lyndon S. Cox, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 9, 1973, Ser. No. 358,421
Int. Cl.² G01P *9/00*
U.S. Cl. 73—505 **3 Claims**



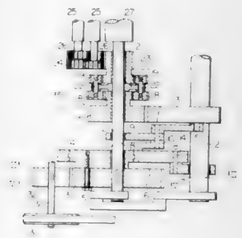
1. A null adjustable vortex rate sensor comprising a chamber, a drain centrally located within said chamber, a pickoff secured to the base of said chamber and extending into said chamber at a distance away from said drain, and means for adjusting the position of a fluid stream stagnation point on said pickoff.

3,960,023
STORED ENERGY EJECTOR MECHANISM
Edward Richard Gralinski, Andover, N.J., assignor to Donley, Miller & Nowikas, East Hanover, N.J.
Filed June 9, 1975, Ser. No. 584,953
Int. Cl.² G05G *17/00*
U.S. Cl. 74—2 **12 Claims**



1. A stored energy ejector mechanism adapted for mounting on a punch press, a conveyor support and like apparatus wherein workpieces are to be selectively removed by the ejector mechanism at selected times in the operation thereof, said ejector mechanism including: (a) a housing; (b) an ejector plunger reciprocably carried in guideways provided in said housing; (c) biasing means associated with the ejector plunger and adapted to move the ejector rapidly in one direction; (d) means for limiting the extent of movement of the plunger in said one direction; (e) at least one actuator lever carried by the housing and movable so as to engage the plunger and move the plunger counterflow to the bias urged direction and to a "loaded" biased position; (f) an energizer fork operatively connected to the actuator lever, said energizer fork operatively moved from the topmost position and toward the base of the housing by striking means associated with the apparatus and with which the ejector mechanism is associated; (g) spring means which include at least one spring carried by the housing and arranged to provide the necessary biasing means required to move the energizer fork to a determined upward position and during this upward movement of the fork to its upwardmost position to move the actuator lever to its loaded condition; (h) means for establishing the limit of said upward position of the energizer fork; (i) trigger means in association with the ejector plunger and adapted to engage and retain said ejector plunger in a "cocked" condition as and after the actuator lever has moved the plunger to its biased loaded condition, and (j) trigger release means associated with and moved by the energizer fork to and during the beginning portion of the upward movement of this fork, said trigger release means when actuated removing the retaining engagement of the trigger and permitting the released plunger under the influence of the bias means to move rapidly to its extent of movement.

3,960,024
APPARATUS FOR DRIVING DETACHING ROLLERS IN TEXTILE COMBING MACHINES
Mitsuo Mori, Toyota, and Kengo Ohashi, Takahama, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Tokyo, Japan
Filed July 9, 1975, Ser. No. 594,513
Claims priority, application Japan, July 13, 1974, 49-079737
Int. Cl.² F16H *37/12, 21/16, 35/02*
U.S. Cl. 74—52 **9 Claims**



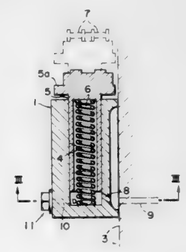
1. An apparatus for driving detaching rollers of a textile combing machine provided with a frame, a combing cylinder, a differential gear connected to said detaching rollers and a drive means connected to said differential gear for imparting a uniform rotary motion thereto, comprising a first link motion mechanism for creating a basic variable rotational motion cycle corresponding to a pilgrim step motion cycle of said detaching rollers in one complete rotation of said combing cylinder comprising a forward and rearward rotation thereof and a forward rotation thereof at a very slow speed and/or stopping rotation thereof, a second link motion mechanism for adjusting said basic motion cycle, said first link motion mechanism being driven by said drive means while said second link motion mechanism being driven by an output of said first link motion mechanism, an output of said second link motion mechanism being transmitted to said differential gear mechanism wherein said uniform rotary motion is superimposed with said output of said second link motion mechanism so that a predetermined pilgrim step motion cycle is imparted to said deteching rollers.

3,960,025
PUSH FLANGE CONSTRUCTION FOR A PIVOTAL ROLLER SYSTEM OF A SPEED CHANGE MECHANISM
Lucien Charles Hippolyte Juy, rue de la Breuchilliere, Zone Industrielle Nord, 21003 Dijon Cedex, Cote d'Or, France
Filed May 30, 1975, Ser. No. 582,424
Int. Cl.² F16H *11/00, 9/00, 11/08*
U.S. Cl. 74—217 B **11 Claims**



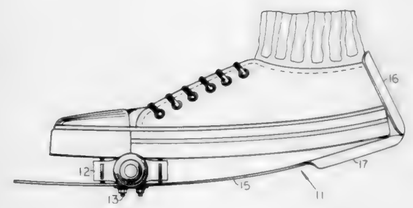
1. Push flange construction for a pivotal roller system for speed change mechanisms for bicycles, the pivotal roller system having a pair of spaced flanges with at least one rotatable sprocket mounted therebetween on which a chain passes and is wound on a pinion of a gear cluster on the hub of a wheel of the bicycle, one of the flanges being a push flange operative to push the chain onto pinions of increasing diameter in the course of speed change when the roller system is transversely displaced, the improvement wherein said one flange includes a peripheral prolongation at the extremity of the flange which is closest to the pinions of the gear cluster, said prolongation extending over a wide sector whose length is such as to allow contact with the chain and pushing thereof closest to the pinions whatever the angular position of the roller system, said prolongation having a surface facing the chain and being provided thereon along the length of said sector with a wide profiled chamfer for engaging the chain.

3,960,026
TIMING CHAIN TENSIONER
Masaru Hibino, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan
Filed Jan. 9, 1975, Ser. No. 539,788
Claims priority, application Japan, Jan. 25, 1974, 49-10908
Int. Cl.² F16H *7/12*
U.S. Cl. 74—242.11 S **3 Claims**



1. A timing chain tensioner for an internal combustion engine comprising a tensioner housing to be attached to an outer wall of the engine block, said housing being formed with a cylinder bore therein, a plunger slidably fitted in said cylinder bore and having at its exposed end a head adapted to engage a timing chain, a spring placed in said cylinder to bias said plunger headward, said housing also having a passage therein for communicating said cylinder bore with the atmosphere, a closure member for closing said passage, and an oil passage for introducing a pressurized lubricating oil thereinto from a lubricating system in the engine.

3,960,027
BICYCLE PEDAL ATTACHMENT
Leo D. Magnuson, 2928 Summit Hills Court, Bettendorf, Iowa 52722
Filed Oct. 8, 1975, Ser. No. 620,838
Int. Cl.² G05G *1/14*
U.S. Cl. 74—594.6 **4 Claims**

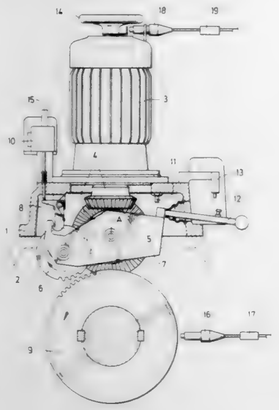


1. A bicycle pedal attachment having a heel member for engaging the back of a bicyclist's shoe comprising:
a supporting strip of sufficient length to extend rearwardly from a bicycle pedal below the sole of a bicyclist's shoe to the back thereof, means for attaching one end of said supporting strip to a pedal of a bicycle such that said strip extends rearwardly past that portion of a crossbar of a pedal that faces downwardly while said pedal attachment is being used, spring means for urging said rearwardly extending portion of said strip obliquely upwardly with respect to the face of a pedal against which the sole of a bicyclist's shoe is to be pressed, said heel member extending upwardly from the other end of said strip for engaging that portion of a shoe back of the upper portion of a bicyclist's heel, and said strip having sufficient freedom of motion and said spring means having sufficient spring tension to urge said strip and said heel member upwardly against the heel of a bicyclist's shoe for all normal inclinations of the heel during normal revolutions of a bicycle pedal to which said strip is attached.

3,960,028
ROTOR ALIGNMENT APPARATUS FOR A PROCESSING AND POWER GENERATING MACHINE
Rolf Martin, Sonthofen, Allgau, Germany, assignor to BHS-Bayerische Berg Hutten-und Salzwerke Aktiengesellschaft, Munich, Germany
Filed Feb. 6, 1975, Ser. No. 547,665
Claims priority, application Germany, Feb. 6, 1974, 2405721.
Int. Cl.² F16H *57/00*
U.S. Cl. 74—405 **6 Claims**

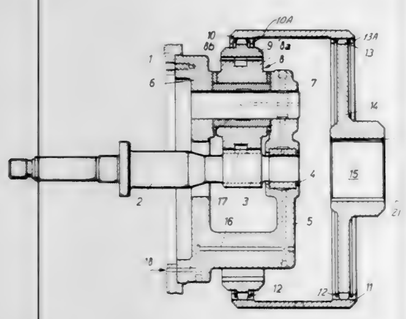
1. A rotor alignment apparatus for a processing and power generating machine comprising, a drive motor, a gear propelled by said drive motor, a pinion carried by a locking and unlocking pivoting apparatus arranged to move the pinion into and out of driving engagement with said gear, at least one revolution recorder associated with said machine, the locking and unlocking of said pivoting apparatus being controlled by the recorder through signals received from the machine, the machine including a toothed rim carried on a shaft thereof, a shutdown transmitter associated with said rim and a stroke

magnet associated with said pivoting apparatus, said shutdown transmitter being controllably connected with the stroke mag-



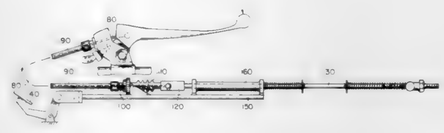
net and the drive motor for automatically starting and aligning the apparatus from a stopped condition.

3,960,029
GEAR DRIVE
Johann Eichinger, Putzbrunn, Germany, assignor to Carl Hurth, Maschinen- und Zahnradfabrik, Munich, Germany
Filed Mar. 25, 1975, Ser. No. 561,671
Claims priority, application Germany, Apr. 2, 1974, 7411435
Int. Cl.² F16H *1/06, 57/04;* **F01M** *9/10*
U.S. Cl. 74—413 **4 Claims**



1. A gear drive arrangement, comprising:
a first spur gear having a plurality of straight and parallel teeth thereon and first support means supporting said first spur gear for rotation about a first axis of rotation;
a second spur gear equal in width to said first spur gear and having a plurality of straight and parallel teeth thereon and second support means supporting said second spur gear for rotation about a second axis of rotation, said teeth on said second spur gear meshing with said teeth on said first spur gear only over a small zone of said diameters of said first and second spur gears so that a majority of teeth on said first and second spur gears are free of engagement with each other;
lubricant means for lubricating said first and second spur gears; and
annular groove means around the periphery of said second spur gear and in the center of the width thereof for receiving the axial flow of lubricant between the teeth in at least said zone of meshing engagement between said first and second spur gears to thereby minimize the power loss due to the presence of said lubricant, said groove being at least as deep as the tooth height, said teeth of said first spur gear being free of a peripheral groove.

3,960,030
MOTORCYCLE BRAKE SYSTEM
Stephen S. Williams, Woodinville, Wash., assignor to The Raymond Lee Organization, a part interest
Filed Oct. 3, 1974, Ser. No. 511,646
Int. Cl.² G05G *11/00*
U.S. Cl. 74—481 **3 Claims**

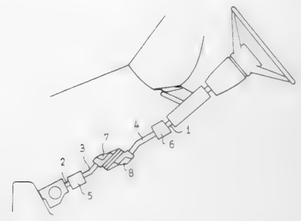


1. Apparatus for use with a motorcycle having handle bars, a front wheel brake and a rear wheel brake for providing a braking action that is properly balanced between front and rear brakes, said apparatus comprising:
a hand operated lever secured to the handle bars, said lever having a first position at which no braking action ensues and a second position at which both front and rear brakes are actuated;
a first cable connected between said lever and the front brake, said first cable causing the front brake to be actuated when the lever is in the second position, said front brake being deactuated when the lever is in the first position;
an elongated horizontal rod connected at its end to the rear brake and extending forwardly, said rod being slidable along its axis between a rear position at which the rear brake is deactuated and a forward position at which the rear brake is actuated; and
a second cable connected between the lever and the rod, said second cable placing the rod in its rear position when the lever is in its first position and placing said rod in its forward position when the lever is in its second position.

3,960,031
COLLAPSIBLE STEERING COLUMNS
Alain Chometon, and Georges Boquet, both of Boulogne-Billancourt, France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, and Automobiles Peugeot, Paris, both of France
Filed Sept. 5, 1975, Ser. No. 610,823
Claims priority, application France, Sept. 11, 1974, 74.30770
Int. Cl.² B62D *1/18*
U.S. Cl. 74—492 **8 Claims**

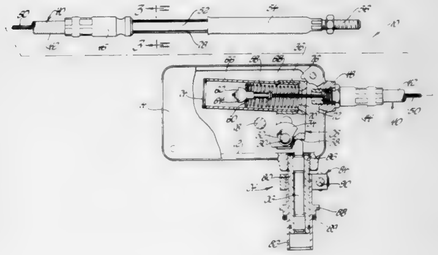
1. Collapsible device for the steering column of motor vehicles, adapted to be sunk when a sudden and strong pressure is exerted thereof, which comprises a pair of members having parallel sliding faces, wherein each one of said members comprises on its sliding face a locking contour, said locking contours being conjugate with each other and having a male and female configuration respectively, said members

being retained in their normal locked condition by an injection of plastic cement of calibrated strength, said members



further comprising means for securing same to relevant sections of a steering column.

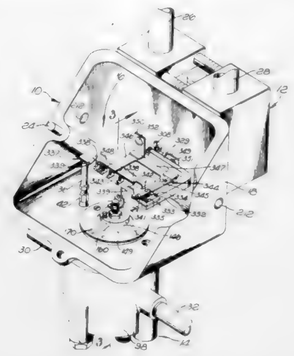
3,960,032
MOTION TRANSMITTING REMOTE CONTROL ASSEMBLY
Charles M. Schiff, Mentor, Ohio, assignor to Teleflex Incorporated, North Wales, Pa.
Filed Mar. 10, 1975, Ser. No. 557,078
Int. Cl.² F16C *1/10*
U.S. Cl. 74—501 R **17 Claims**



1. A motion transmitting assembly comprising: guide means having first and second ends; a flexible motion transmitting core element slidably supported in said guide means and having first and second ends extending from said ends of said guide means; control means including movable means, stop means for limiting the movement of said movable means, and spring means operatively interconnecting said movable means and said first end of said core element whereby movement of said core element is transmitted through said spring means to said movable means; and spacer means for reacting between said core element and said guide means to position said core element relative to said guide means for moving said movable means against said stop means and applying a predetermined force to said spring means.

3,960,033
FLOWMETER AND FUNCTION GENERATOR THEREFOR
Victor Nicholas Lawford, Pasadena; Richard Paul Granada, West Covina, and Peter Elderton, Fountain Valley, all of Calif., assignors to International Telephone and Telegraph Corporation, New york, N.Y.
Filed Aug. 8, 1974, Ser. No. 495,667
Int. Cl.² G05G *1/04*
U.S. Cl. 74—522 **2 Claims**

1. A function generator comprising: a base; an input member movable on said base; a lever pivoted about an axis from said input member; support means mounted on said base; at least one fulcrum, said lever being movable with said input member to a position engageable with said fulcrum, said fulcrum having an end portion engageable with said lever; and adaptive means mounting said fulcrum on said support means, said adaptive means being adjustable in a manner to move said



fulcrum end portion with at least one component of the movement thereof normal to the length of said lever and with at least another component of movement parallel to the length of said lever.

3,960,034
FLYWHEEL WITH ANTI-CRACKING SAFEGUARD FOR PROTECTION AGAINST OVERSPEED
Maximilian Hintergraber, Dietzenbach, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany
Filed July 16, 1974, Ser. No. 488,921
Claims priority, application Germany, July 27, 1973, 2338265; Feb. 6, 1974, 2405723
Int. Cl.² F16P *1/02*
U.S. Cl. 74—609 **10 Claims**

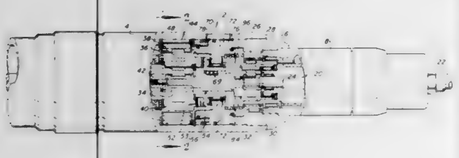


1. Flywheel assembly with anti-cracking safeguard for protection against overspeed, comprising a frusto-conical shaft portion, a flywheel mounted in a press-fitting engagement on said shaft portion and having a force applied thereto directed toward the end of the frusto-conical shaft portion having the smaller diameter, and a catching and centering device for said flywheel located adjacent said flywheel.

3,960,035
TORQUE RESPONSIVE SPEED SHIFTING MECHANISM FOR POWER TOOL
William Workman, Jr., and Joseph F. Carter, both of Spring Lake, Mich., assignors to Gardner-Denver Company, Dallas, Tex.
Filed Nov. 1, 1974, Ser. No. 519,975
Int. Cl.² F16D *25/00, 13/22, 43/20;* **F16H** *57/10*
U.S. Cl. 74—785 **11 Claims**

1. In a tool for tightening threaded fasteners and the like:

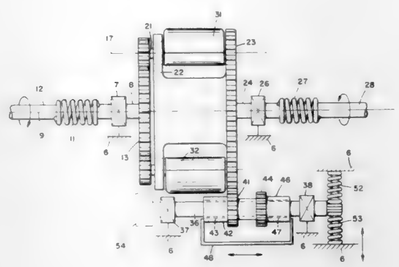
a housing;
a motor disposed in said housing;
a rotor member drivably connected to said motor;
a driven spindle;
a speed shift mechanism interconnecting said rotor member and said driven spindle and operable to reduce the speed of said driven spindle with respect to said rotor member, said mechanism including a torque responsive clutch having driving and driven members, one member being movable with respect to the other member for disengaging said clutch to cause said speed shift mechanism to reduce the speed of said driven spindle with respect to said rotor member;
said clutch including cooperable interfitting teeth disposed on said driving and driven members and responsive to torque transmitted from one member to the other to cause a separating force acting to move said one member with respect to said other member from a first engaged position to a second engaged position, said teeth being cooperable in said second engaged position to transmit



torque from said driving member to said driven member without causing further movement sufficient to disengage said clutch;
a piston connected to said one member for movement with said one member, said piston being disposed in said housing to form first and second expansible chambers;
means for conducting pressure fluid to said first chamber to act on said piston for biasing said one member into engagement with said other member;
first closure means responsive to movement of said one member to said second engaged position to vent said first chamber to reduce the pressure fluid force acting on said piston;
second closure means responsive to movement of said one member to said second engaged position for causing said second chamber to change from a vented condition to a substantially closed condition; and,
means for conducting pressure fluid to said second chambere to act on said piston for moving said one member to disengage said clutch when said second chamber is in a substantially closed condition.

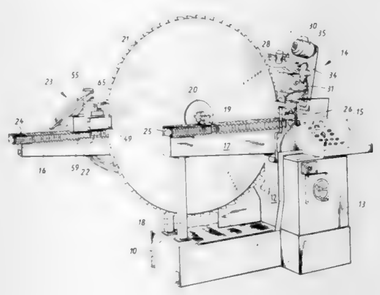
3,960,036
TORQUE CONVERTER
Paul S. Moller, Dixon, Calif., assignor to Discojet Corporation, Davis, Calif.
Filed Mar. 26, 1975, Ser. No. 562,014
Int. Cl.² F16H *1/28, 35/02*
U.S. Cl. 74—802 **8 Claims**

1. A torque converter comprising a driving gear rotatable about a primary axis, a driven gear rotatable about said primary axis, a first planetary shaft mounted on said driven gear coaxially with a secondary axis parallel to and radially spaced from said primary axis, a first planetary gear rotatable about said second axis and meshing with said driving gear, a first weight eccentric to and rotatable around said secondary axis, means for coupling said first weight and said first planetary gear for rotation together, a torque shaft, means for mounting said torque shaft for limited rotation, a first pinion engagable



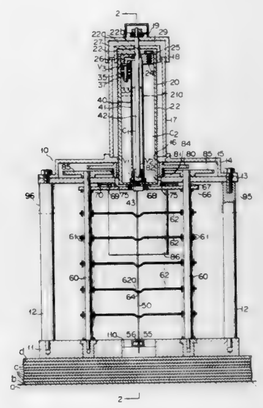
with said driven gear, and a first unidirectional clutch connectable to said torque shaft and said first pinion.

3,960,037
MACHINE FOR TREATING TEETH OF SAW BLADES
Otto Stier, Biberach an der Riss, Germany, assignor to Vollmer Werke Maschinenfabrik GmbH, Biberach an der Riss, Germany
Filed Mar. 18, 1975, Ser. No. 559,645
Claims priority, application Germany, Mar. 18, 1974, 2412938; Mar. 18, 1974, 2412939
Int. Cl.² B23D *63/12*
U.S. Cl. 76—43 **12 Claims**



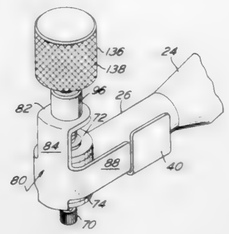
1. A machine for treating, in particular sharpening, the teeth of circular saw blades, comprising a base, bearing means for centrally mounting a circular saw blade, a feed means for turning the saw blade stepwise by a toothpitch or by a multiple of said tooth-pitch and treating means working in timed coordination with said feed means, said feed means being supported diametrically opposite from said treating means in relation to said bearing means, wherein said feed means and said bearing means are supported for displacement on common guide means, mounted on said base and extending diametrically to a circular saw blade mounted in said bearing means, and common setting drive means on said guide means for displacing said feed means and said bearing means along said guide means in the ratio of 2:1.

3,960,038
FABRIC-MARKING APPARATUS
Ichiro Okada, 7-1, 1-chome, Ookayama, Meguro, Tokyo, Japan
Filed Oct. 3, 1975, Ser. No. 619,380
Claims priority, application Japan, Oct. 8, 1974, 49-115936
Int. Cl.² B43K *5/00*
U.S. Cl. 81—9.22 **2 Claims**



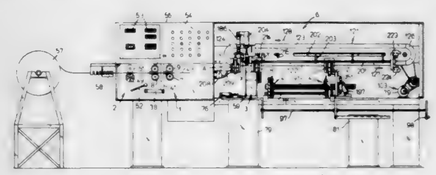
1. A fabric-marking apparatus having a frame, a cylindrical ink tank vertically supported on the frame and filled with marking ink, drive means for vertically reciprocating the ink tank in the axial direction, and an elongate hollow tubular piercing needle vertically reciprocated with the tank and bored with a lengthwise extending ink passage, characterized in that said apparatus further comprises an end block fitted to the upper end of the tank in airtightness; an elongate cylinder open at both ends, fixed to the end block in airtightness, received concentrically in the tank, and provided in the lower end side wall with communication aperture means for allowing the flow of marking ink between the interior spaces of the cylinder and tank; an elastic valve member provided with an integral cylindrical portion elastically pressed against the lower end inner wall of the cylinder normally to close the communication aperture means and fitted in a liquid-tight state between the lower open end of the cylinder and the bottom section of the tank; fine communication aperture means bored at the center of the elastic valve member, normally closed by its own elastic force, and, where required, designed to conduct marking ink held in the cylinder to the tubular needle through an ink discharge port formed in the bottom section of the tank; and an elongate plunger concentrically extending through the cylinder, the upper end of said plunger being supported on a frame and the lower end thereof penetrating the end block in airtightness, whereby, when the plunger is drawn out of the cylinder at its descent, the resultant decreased pressure in the cylinder causes the cylindrical portion of the elastic valve member to open the communication aperture means, allowing marking ink to flow into the cylinder, and, when the plunger is brought into the cylinder at its rise, the resultant increased pressure in the cylinder causes the fine communication aperture of the elastic valve member to be opened against its elastic force, allowing marking ink to be ejected.

3,960,039
COLLET WRENCH
John E. Nash, Downingtown, and Trevor D. Reader, King of Prussia, both of Pa., assignors to Star Dental Manufacturing Co., Inc., West Conshohocken, Pa.
Filed Aug. 12, 1974, Ser. No. 496,604
Int. Cl.² B25D *23/142*
U.S. Cl. 81—52.4 R **13 Claims**



1. A wrench adapted to be hand-held comprising a shaft, said shaft having one end configured to be received in a threaded, rotatable securing device, said end being adapted to cause the rotating of said securing device when said end is rotated, the other end of said shaft having a first disc secured thereto, said first disc having teeth formed in the upper surface thereof, a second disc overlying said first disc, and being rotatable relative to said shaft, said second disc having teeth which are complementary with the teeth in said first disc on the under surface thereof, spring means urging said second disc into contact with said first disc, and means for rotating said second disc, said rotating means comprising a cylinder, said cylinder having a plurality of legs projecting downwardly therefrom, said legs being engaged in slots in said second disc, said spring means having a force sufficient to cause the rotation of said first disc when said second disc is rotated, and said spring means permitting rotation of said second disc relative to said first disc when a predetermined rotational force has been applied to said securing device.

3,960,040
METHOD FOR PRODUCING ELECTRICAL CONDUCTORS OF MEASURED LENGTH
Ragnar Gudmestad, West Allis, and Sven O. Sandblom, Greendale, both of Wis., assignors to Artos Engineering Company, New Berlin, Wis.
Division of Ser. No. 513,937, Oct. 10, 1974, Pat. No. 3,927,590. This application Sept. 15, 1975, Ser. No. 613,351
Int. Cl.² B26D *7/14, 5/12*
U.S. Cl. 83—18 **3 Claims**



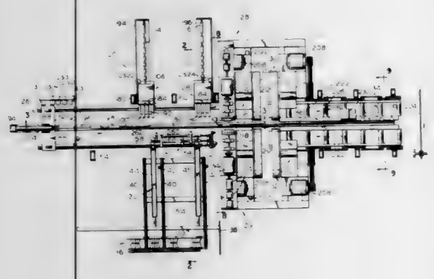
1. The method of producing electrical conductors of measured length from a continuous supply wire, which comprises the steps of:
feeding said supply wire through a cutting zone by pushing it lengthwise toward one side and simultaneously guiding it lengthwise away from the other side of said cutting zone;
stopping said supply wire from advancing and locking it against endwise displacement after a measured length thereof has been advanced through said cutting zone;

tensioning said measured length of said stopped supply wire;
clamping said tensioned measured length of supply wire to a propelling conveyor at said other side of said cutting zone;
severing said supply wire in said cutting zone; and
indexing said propelling conveyor so as to move the tensioned severed length of said supply wire sidewise at said other side of said cutting zone.

3,960,041
AUTOMATIC SAWMILL

Lyle D. Warren, 500 Birch St., Sweet Home, Oreg. 97386, and Robert W. Brewster, 5924 SE. McNary Road, Milwaukie, Oreg. 97222

Division of Ser. No. 190,589, Oct. 19, 1971, Pat. No. 3,811,487. This application Jan. 21, 1974, Ser. No. 434,903
Int. Cl.² B27B *15/08, 31/00*
U.S. Cl. 83—361 **7 Claims**

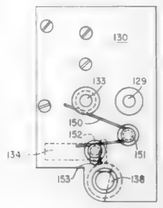


1. Sawmill apparatus comprising:
cutting means,
means for moving a tapered log substantially longitudinally into said cutting means for severing said log into one or more cants, boards, or slabs, with one side of said log substantially aligned with said direction of movement and with sides of said one or more cants, boards, or slabs, said means for moving comprising a carriage for receiving said log, and including backstand means for determining the transverse position of said log relative to said carriage, said backstand means maintaining the said one side of said log substantially aligned with the said direction of movement substantially longitudinally into said cutting means,
means for measuring the transverse size of said log,
and means responsive to said means for measuring the transverse size of the log for automatically determining, in accordance with said size measurement, instructions for a predetermined number and size of cants, boards, or slabs obtainable from said log starting at a datam plane proximate and parallel to said one side of said log and at an angle with respect to the other side of said log for efficiently utilizing the content of said log and for producing transverse relative movement between the transverse position of said log and the transverse position of said cutting means in response to said instructions to establish the relative position and symmetry of said log relative to said cutting means to produce said predetermined number and size of cants, boards, or slabs as said log is moved longitudinally into said cutting means.

3,960,042
MICROFICHE READER-PRINTER

Emil Tiger, Highland Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 414,064, Nov. 8, 1973, Pat. No. 3,899,248. This application Dec. 23, 1974, Ser. No. 535,478
Int. Cl.² B26D *7/26, 5/08*; **B23D** *15/04*
U.S. Cl. 83—583 **8 Claims**

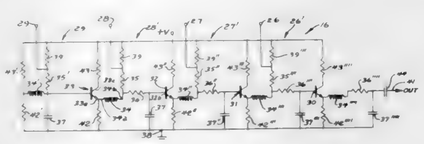


1. A rotary paper cutter for cutting a sheet of paper horizontally fed therethrough comprising:
a frame comprising a pair of end vertical sidewalls and a horizontal support member therebetween;
a rotary cutting blade having first and second ends and a traveler cam at each said end, one said cam being smaller in radius than the other and said blade mounted between said sidewalls for cutting engagement with the paper sheet above the paper sheet;
a cutting bar having a cutting edge on the near end thereof, said cutting edge being disposed beneath said cutting blade for cooperative engagement with said blade to cut a paper sheet therebetween, said bar having first and second ends, said first end being mounted to one said sidewall about a pivot at the far end of said bar and arranged for arcuate movement about said pivot, and said second end being mounted at the other said sidewall and arranged for horizontal movement only; and
means at each said bar end for urging said bar ends against said blade cams, said different cam radii causing said blade to overlap said bar by a desired amount;
whereby, the independent mounting of said bar ends assures the maintenance of said desired overlap notwithstanding inadvertent torsional forces applied to said frame.

3,960,043
FILTER CIRCUIT

John R. Brand, Mount Prospect, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed June 24, 1974, Ser. No. 482,063
Int. Cl.² G10H *1/00, 5/00*
U.S. Cl. 84—1.19 **11 Claims**

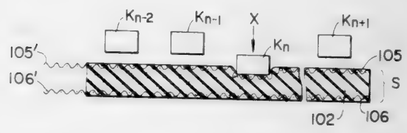


1. In an electronic musical instrument having a plurality of tone generators, keyers for keying signals generated by said tone generators, and an electromechanical transducer for producing output sounds corresponding to the keyed signals, circuit means for effectively eliminating undesirable keying transients introduced into said signals by the keying thereof, comprising a multistage bandpass filter connected between said keyers and said transducer wherein each stage is provided with a single inductive impedance element and provides a band width having substantially abrupt drop-off at the opposite ends thereof preselected to filter cleanly from the keyed signals delivered thereto from said keyer frequencies which are below and above the desired audio frequency spectrum of the output sound, the output impedance of each stage being lower than the input impedance of each stage, the band width being different for different stages, said filter stages respectively defining means for substantially equally attenuating high frequency components of said input keyed signals delivered to each of said input portions, and differently attenuating low frequency components thereof, each filter stage including a semiconductor device connected to the keyers, means for connecting one terminal of the inductive impedance element to said semiconductor device, and a capacitive impedance element connected to the other terminal of said inductance impedance and to the semiconductor device of the succeeding filter stage.

3,960,044
KEYBOARD ARRANGEMENT HAVING AFTER-CONTROL SIGNAL DETECTING SENSOR IN ELECTRONIC MUSICAL INSTRUMENT

Yohei Nagai, and Kiyoshi Kawamura, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 17, 1974, Ser. No. 515,541
Claims priority, application Japan, Nov. 2, 1973, 48-126553; Nov. 15, 1973, 48-131242; Oct. 18, 1973, 48-120990; Oct. 18, 1973, 48-120991; Dec. 10, 1973, 48-140780; Dec. 10, 1973, 48-140781; Dec. 10, 1973, 48-140782; Dec. 10, 1973, 48-140783
Int. Cl.² G10H *1/00*
U.S. Cl. 84—1.01 **7 Claims**

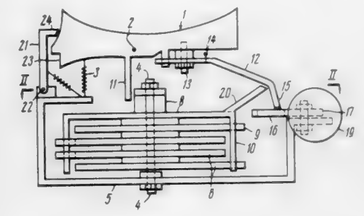


1. A keyboard arrangement in an electronic musical instrument, comprising:
a plurality of keys pivotably supported and arranged in juxtaposed relationship, said keys being manually movable toward and away from a sensor means, and
an after-control signal detecting sensor means positioned at a distance from said keys and extending in transverse direction of the direction of movement thereof keys to correspond to all of these keys,
said sensor means comprising a flexible conductive pressure transmitting member serving as a first electrode member facing the bottoms of said keys at said distance therefrom,
a conductive base member serving as a second electrode member, and
a conductive flexible and elastic member extending below a number of said keys, with said first and second electrode members embedded therein at positions close to opposite surfaces of said elastic member,
said conductive flexible and elastic member being made of a flexible and elastic material containing conductive particles dispersed therein and exhibiting a difference in electrical resistance between the state in which this member is compressed and deformed and the state in which it is not compressed and deformed,
said first electrode member being adapted to flex itself when pressed by at least one of said keys to transmit to the conductive flexible and elastic member the pressures received from said at least one key of the keyboard to cause compression and deformation of the conductive flexible and elastic member in proportion to the magnitude and amount of said pressure thereby varying its resistance,
said two electrode members being connected to input terminals of an electric circuitry of said instrument to input said varying resistance as an after-control signal.

3,960,045
REGISTER SWITCHING DEVICE FOR A REED MUSICAL INSTRUMENT

Georgy Sergeevich Petrushevsky, and Valentina Sergeevna Petrushevskava, both of Bulvar Karla Marxa, 13/3, kv. 74, Kishinev, U.S.S.R.

Filed Nov. 20, 1974, Ser. No. 525,652
Int. Cl.² G10D *11/00*
U.S. Cl. 84—376 SM **9 Claims**

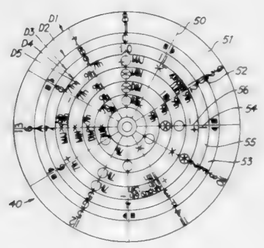


1. A register switching device for a reed musical instrument, said register switching device comprising a pivotal finger-actuated register key adapted to be set in first and second positions, a first pivotable lever, displaceable register strips positioned for engagement by said lever for movement thereby for control of the register of the musical instrument, said key including a pusher positioned to pivot said lever when the key is moved into said first position, a second lever displaceably mounted on said key and movable therewith as said key is pivotably moved, said second lever being in an initial position operatively juxtaposed with said first lever when said key is in said second position, an auxiliary key movable by an operator between operative and inoperative positions, said auxiliary key being positioned to displace said second lever as the auxiliary key moves from its inoperative to its operative position and when the second lever is in said initial position, said second lever under the action of the displacement thereof causing said first lever to pivotably move and displace said register strips.

3,960,046
MUSIC TEACHING DEVICE

Alan Chong Seong Choong, Flat 14, 2 Grattan St., Hawthorn, Victoria, Australia

Filed Dec. 16, 1974, Ser. No. 532,844
Claims priority, application Australia, Dec. 18, 1973, 6049/73; Apr. 8, 1974, 7185/74
Int. Cl.² G09B *15/02*
U.S. Cl. 84—471 R **18 Claims**



1. A music teaching device comprising:

a first plate member having at least one separate indicium at each of 12 regions, which regions are spaced substantially at a common radius from a common center and are positioned at locations corresponding to 12 equiangular divisions spaced 30° apart about the entire periphery of a circle defined about said center;

indicia at first, third, fifth, sixth, eighth, 10th and 12th ones of the regions, counted in one direction about said center, including numerals indicating respective degrees of a major musical scale;

a second plate member being provided having at least one separate indicium at each of 12 regions defined thereon, these regions being spaced substantially at a common radius from a common center and positioned at locations corresponding to 12 equiangular divisions spaced 30° apart about the entire periphery of a circle defined about the said center of the second plate member;

indicia on said second plate member at first, third, fifth, sixth, eighth, tenth and 12th regions, counted in the same direction as said one direction about said center of said second member, said indicia on said second plate member including alphabet letters respectively representing the notes of a C major scale beginning with the letter C; and

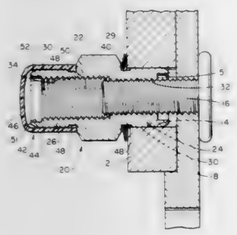
pivot means securing said two plate members together allowing relative rotational movement between the members about a common axis passing through their respective centers.

3,960,047

DUAL SIZE LUG NUT

Fenton A. Liffick, Granada Hills, Calif., assignor to Cragar Industries, Inc., Compton, Calif.

Filed Sept. 9, 1974, Ser. No. 504,208
Int. Cl.² F16B *27/00*
U.S. Cl. 85—32 R **5 Claims**



1. Dual size nut comprising:

a body having a central head portion and axially aligned opposite end portions,

said end portions having threaded, axial bores of different thread of the same direction

said central head portion extending radially beyond the end portions, and having flats on the exterior thereof circumjacent the axis,

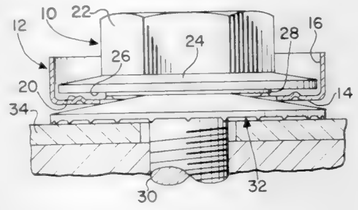
whereby the nut may be threaded onto a bolt, screw, or stud of either of two threads to secure a wheel to a hub wherein said end portions have external round surfaces adapted to fit within a bolt hole of said wheel.

3,960,048

FASTENER ASSEMBLY FOR CREATING ACCURATE TENSION INDICATING FASTENER AND METHOD OF CALIBRATING THE SAME

David Prugh Wagner, Geneva, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 28, 1975, Ser. No. 563,288
Int. Cl.² F16B *31/02, 39/24*
U.S. Cl. 85—62 **10 Claims**



1. An intermediate product relating to a fastener unit capable of accurately indicating a predetermined tension in a fastened joint, including a rotary fastener member having a central axis and predetermined radial dimension, a generally planar bearing surface beneath said fastener member, a conical-like spring washer preassembled to said fastener member and ring gauge member preassembled to the fastener member and spring washer with an inwardly extending flange interposed between the bearing surface of the fastener member and the upper surface of the spring member, the ring gauge further including upstanding side wall portions at the outer periphery thereof and surrounding the outer periphery of the bearing surface defined by the predetermined radial dimension so that the inner periphery of the ring gauge will be positioned and retained concentric to the central axis of the fastener member and outwardly of the inner periphery of the spring washer, the bearing surface of the fastener member being provided with a recess of predetermined height at the outer peripheral margin thereof and adapted to receive the flange of the gauge member therein, the ring gauge member being of a softer material than the material of the fastener member and the spring washer, the flange of the ring gauge including means capable of being compressed and permanently deformed, the compressible means providing a thickness dimension in that region of the flange which is greater than the predetermined height of the recess, whereby the intermediate product may be preloaded to a predetermined axial compression of the spring washer thereby creating a spring washer member capable of subsequent compression in direct relationship to load and eliminating, by permanent deformation of the means on the flange to a design thickness, any potential inaccuracies in the tension indicating capabilities of the unit due to variances from the design flange thickness.

3,960,049

REINFORCEMENT OF CAST OR PRESSED EXPLOSIVES

John H. Smith, Seaford, and George S. Rogers, Williamsburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

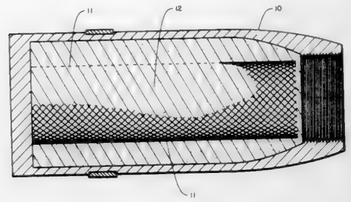
Filed Mar. 19, 1975, Ser. No. 559,858
Int. Cl.² F42B *13/00*
U.S. Cl. 86—20 B **2 Claims**

1. A method of reinforcing explosives against cracking comprising:

pouring a melted inert filler into a base of an ordnance item;

inserting one end of a pre-formed material of high strength and low stretch into said molten pool;

cooling said molten pool to fix the pre-form in its desired orientation;



pouring melted explosive into the ordnance item; and

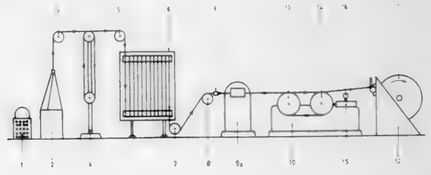
cooling said explosive.

3,960,050

METHOD OF MAKING IMPREGNATED BRAIDED ROPE

Robert Eisler, Montreuil, France, assignor to Cordes Europe France, France

Filed July 17, 1974, Ser. No. 489,300
Claims priority, application France, Aug. 1, 1973, 73.28247
Int. Cl.² D04C *1/12*
U.S. Cl. 87—1 **7 Claims**



1. A method of making braided ropes of aromatic polyamide fibers in a manner to provide high strength, little elongation and high flexibility and which are resistant to deterioration comprising the steps of: providing a plurality of strands of aromatic polyamide fibers, braiding said fibers together to form a rope, impregnating said braid with an aqueous dispersion of a flurocarbon resin, heating said rope to remove moisture therefrom, applying a predetermined tension on said rope, and removing said rope.

3,960,051

EJECTION LAUNCH MECHANISM

William E. Hunt, North Andover, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 7, 1974, Ser. No. 512,377
Int. Cl.² F41F *3/06, 5/02*
U.S. Cl. 89—1.8 **12 Claims**

1. A mechanism for use in an aircraft missile holding and ejecting system of the type comprising missile ejecting rams means operable by high pressure fluid, said mechanism comprising:

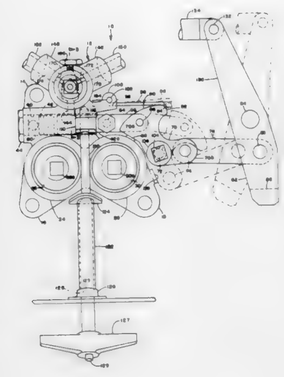
a body adapted to be fixed to missile support structure, said body defining a cylinder bore;

a piston reciprocable in said bore between first and second positions;

a bell crank lever having first and second legs and mounted for rotation with respect to said body about a first pivot, said first leg being connected to said piston so that movement of said piston effects said rotation of said bell crank lever;

a latch hook lever mounted for rotation with respect to said support structure about a second pivot spaced from said first pivot, said latch hook lever having a hook portion extending below said second pivot and presenting a load bearing surface;

a rigid link connected at one end by a third pivot to said second leg of said bell crank lever and connected at the other end by a fourth pivot to said hook portion of said hatch hook lever;



passage means, defined in said body, for conducting high pressure fluid into said bore to move said piston from said first to said second position, whereby said bell crank lever is rotated in a first direction to cause said link to pull said hook portion of said latch hook lever toward said body and out of engagement with a load on said load bearing surface.

3,960,052

WEAPON ARRANGEMENT

Matthew S. Smith, 4400 Sarah St. No. 29, Burbank, Calif. 91505, and Ernest A. Filippi, 18776 Kenya St., Northridge, Calif. 91324

Division of Ser. No. 307,444, Nov. 17, 1972. This application Oct. 18, 1974, Ser. No. 516,037
Int. Cl.² F41C *29/00*
U.S. Cl. 89—37 BA **3 Claims**

1. In a weapon system arrangement comprising a rocket boosted warhead round having a center of gravity, a center of pressure and a predetermined non-yawing frequency, and a launcher for launching the round, the improvement comprising, in combination:

a launcher comprising a tripod support, a barrell portion and means for firing a blank cartridge to direct the products of combustion from the fired blank cartridge through the barrel portion, and said tripod support comprising:

a body member;

a base leg having a first end coupled to said body member and a second end spaced a first preselected distance from said first end, and said base leg extending in a first direction from said body member for the condition of said base leg in a firing position;

a pair of forward legs and each of said forward legs having a first end pivotally coupled to said body member and a second end spaced a second preselected distance from said first end thereof, and said pair of forward legs in a predetermined spaced relationship to each other and to said base leg;

forward leg clamping means engaging each of said pair of forward legs and said body member for detachably clamping each of said forward legs in any of a plurality of firing positions on said body member;

launcher support means having a first end coupled to said

body member, and a second end spaced therefrom, and said launcher support means extending from said body member in a second direction;

launcher clamping means coupled to said second end of said launcher support means for detachably coupling said launcher thereto;

recoil energy dissipation means coupled to said launcher support means for dissipating at least a portion of recoil energy applied thereto;

position indicating means on said body member for providing a visual indication of each of said plurality of firing positions of said forward legs;

level means pivotally mounted on said body member and alignable thereon in a level condition for depicting a level condition of the tripod support for the condition of said forward legs clamped in any of said plurality of firing positions, and said level indicating means coupled to said body member for providing a visual indication of the level condition of said level means corresponding to said position indicating means for each of said plurality of firing positions of said pair of forward legs, and having two axis level indication means comprising a pair of bubble sight levels orthogonally aligned;



round for launching from said launcher and comprising:

a tubular tailpipe means having an aft end, a forward end, and internal walls defining a tubular passageway, and said tubular passageway at said aft end adapted to slidingly fit onto the end of the launcher barrel;

a rocket motor having an aft end coupled to said forward end of said tailpipe, and a forward end, and comprising a solid propellant rocket grain;

a warhead coupled to said forward end of said rocket motor, and said warhead having a predetermined ogive external configuration;

a delay means in said rocket motor for providing a predetermined delay to full thrust of said rocket motor,

aero-gyro stabilization means coupled to said aft end of said tubular tailpipe for spinning said round to provide aero-gyro stability, said aero-gyro stability comprising wherein said center of pressure is aft of said center of gravity and the round is spinning at a rate at least of one order of megnitude greater than said predetermined non-spinning yawing frequency.

3,960,053

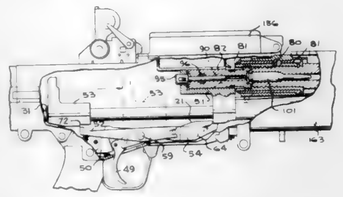
AUTOMATIC FIREARM HAVING ANTI-BOUNCE SEAR

James F. Conley, Kennebunk, Maine, assignor to Maremont Corporation, Saco, Maine

Filed Sept. 20, 1974, Ser. No. 507,997

Int. Cl.[2] F41D *11/02, 11/06*

U.S. Cl. 89—149 **4 Claims**



1. An anti-bounce mechanism for an automatic firearm having a receiver housing, a barrel having a breech end in said housing, a bolt carrier which advances along a path in the receiver housing to a firing position abutting the breech end of the barrel, a firing pin carried by the bolt carrier, and a striker which advances in the receiver housing toward the bolt carrier to impact the firing pin and fire a round of ammunition positioned in the barrel, said anti-bounce mechanism comprising an anti-bounce member movable into holding engagement with the bolt carrier immediately upon the latter abutting said breech end for holding the bolt carrier in the firing position against said breech end without bounce-back prior to releasing the striker to advance to impact the firing pin, means for biasing the anti-bounce member into such holding engagement with the bolt carrier, and disabling means on the striker for releasing the anti-bounce member from holding relation with the bolt carrier as the striker moves toward impact with the firing pin.

3,960,054

ANTI-TANK ROCKET LAUNCHER TELESCOPING TUBE LOCKING DEVICE

Lonnie L. Looger, Madison, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 23, 1974, Ser. No. 535,231

Int. Cl.[2] F41F *3/04*

U.S. Cl. 89—1.816 **4 Claims**



1. A lightweight man-transportable rocket launcher comprising:

a. first and second tubular sections connected to telescope between a shortened, inoperative position and an extended operative position, said second tubular section being mounted in said first tubular section;

b. a first sight carried on said first tubular section, and, a second sight carried on said second tubular section; and,

c. locking assembly means carried by said sections for securing said sections in said extended position and for preventing relative rotation therebetween whereby said sights will be maintained in alignment; said locking assembly means including a locking member carried on said second tubular section, said locking member having a dove-tail portion at one end thereof, and, a retaining ring secured to the aft end of said first tubular section, said retaining ring having a dove-tail groove on the inner surface thereof to receive said dove-tail portion of said locking member.

3,960,055

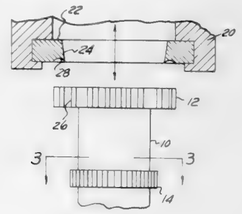
SHAVING CUTTER FOR FINISHING GEARS

Joseph A. Psenka, Bloomfield Hills, and Richard W. Tersch, Grosse Pointe Woods, both of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 270,678, July 11, 1972, Pat. No. 3,803,977. This application Jan. 28, 1974, Ser. No. 437,538

Int. Cl.[2] B23F *19/08*

U.S. Cl. 90—1.6 A **2 Claims**



1. A gear shaving cutter in the form of a unitary gear body designed simultaneously to perform a shaving action first at one side of all of the teeth of a gear simultaneously for substantially the full height thereof, and then to perform a shaving action at the other side of all the teeth of the gear simultaneously for substantially the full height thereof, said body having a complete circular series of teeth conforming in profile to the profile desired on the finished teeth of the gear, said teeth having a maximum thickness measured circumferentially of the cutter which is less than the circumferential spacing between adjacent gear teeth measured at the same radial distance from the centers of the gear and body, said cutter teeth having cutting edges only at one end thereof and at both sides of the teeth, both sides of the cutter teeth being inclined to provide cutting clearance behind both of the cutting edges, said cutter teeth accordingly being of diminishing thickness from the end thereof provided with said cutting edges to the other, whereby upon relative axial reciprocation between the shaving cutter and gear in coaxial relationship and in one direction only, shaving cuts may be taken from end to end of the gear teeth at one side thereof for substantially the full height thereof and by relative circumferential feed, shaving cuts may be taken at the other side of the gear teeth, the cutting edges of said cutter teeth being disposed at different axial spacings from a single reference plane perpendicular to the axis of the cutter to initiate cuts by different teeth at different times.

3,960,056

VERTICAL BROACHING MACHINE

Herbert Holstein, Solingen, and Armin Farrenkothen, Wuppertal, both of Germany, assignors to Oswald Forst Maschinenfabrik und Apparatebauanstalt GmbH, Solingen, Germany

Filed Dec. 24, 1974, Ser. No. 536,225

Claims priority, application Germany, Jan. 4, 1974, 2400236

Int. Cl.[2] B23D *37/10, 41/06*

U.S. Cl. 90—73 **6 Claims**

1. Vertical broaching machine, specifically an internal broaching machine, including:

at least one workpiece holder mounted on a machining table of the broaching machine;

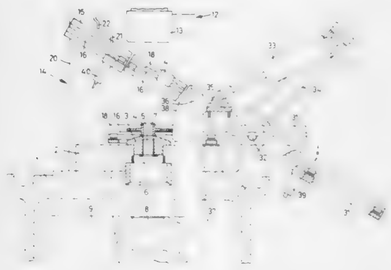
a vertically displaceable broaching slide mounted beneath said machining table for drawing a broach through a workpiece at the at least one workpiece holder;

a vertically displaceable broach feed slide mounted above the at least one workpiece holder;

at least one inclined feed channel for workpieces, said channel terminating in front of and above the at least one workpiece holder;

at least one mask extending up to one end of the at least one feed channel, said at least one mask being swivelable from the plane of said at least one feed channel to the at least one workpiece holder and back again by means of a swiveling drive means;

at least one ejection chute extending from the at least one mask;



at least one separating means mounted above the at least one feed channel, said at least one separating means being for moving between two end positions and releasing one workpiece to the at least one workpiece holder when the at least one mask in the raised position; and

at least one stop mounted on the broaching slide associated with each of the at least one each workpiece holders, said at least one stop projecting between the at least one mask and the at least one ejection chute, and, said at least one stop also blocking the at least one mask when the broaching slide is in the raised position and cutting the at least one mask off from the at least one discharge chute, and further said at least one stop releasing the at least one mask when the broaching slide is in the lowered position.

3,960,057

HYDRAULIC PUMP OR MOTOR

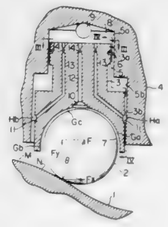
Eiji Kometani; Masaya Imai, both of Tokyo, and Eiichi Hazaki, Kashiwa, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Japan

Filed Jan. 23, 1974, Ser. No. 435,954

Claims priority, application Japan, Jan. 26, 1973, 48-10322

Int. Cl.[2] F01B *31/10*

U.S. Cl. 92—160 **6 Claims**



1. A hydraulic pump or motor comprising:

a casing having a cam surface thereon,
a cylinder block mounted in the casing and having at least one cylinder,
a piston arranged in said cylinder for reciprocating movement therein and formed with an internal partial-spherical surface on an end portion thereof,
roller means rotatably mounted on the partial-spherical surface of said piston for rolling movement on the cam surface,
a plurality of oil grooves on the internal partial-spherical surface,
a plurality of oil grooves on outer peripheral surfaces of a portion of said piston which portion is guided in said cylinder,
and small diameter passages extending through said piston for connecting the respective oil grooves with an oil chamber,
wherein said cylinder is of stepped configuration with an inner portion of small cross-section communicating with and forming a portion of said oil chamber and an outer portion of larger cross-section, wherein said piston is of stepped configuration with an inner portion of small cross-section slideably guided in the inner portion of the associated cylinder and an outer portion of larger cross-section guided in the outer portion of the associated cylinder, and wherein all of the oil grooves on the outer peripheral surface of said piston are on the outer portions of said piston,
wherein each of said internal partial-spherical surfaces are formed on the outer portions of the piston,
wherein a plurality of said oil grooves are provided spaced from one another in each of said internal partialspherical surfaces,
wherein separate oil passages are provided on said piston between said oil chamber and each of the oil grooves on said internal partial-spherical surfaces, these last-mentioned separate oil passages each including narrow throttling necked portions, and
wherein a plurality of said oil grooves are provided spaced from one another on the outer peripheral surface of said piston,
wherein separate oil passages are provided in said piston between said oil chamber and each of the oil grooves on said outer peripheral surfaces,
wherein all of said oil passages are disposed in said piston.

3,960,058

DEVICE AT HYDRAULIC MOTOR

Hans Berkelius, 36 Parkvagen, Taby, Sweden (S-18352)

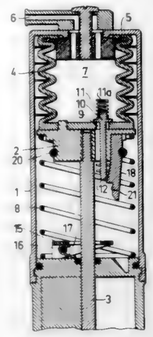
Filed Dec. 10, 1974, Ser. No. 531,401

Claims priority, application Sweden, Dec. 12, 1973, 7316784

Int. Cl.² F01L *15/12, 21/04*

U.S. Cl. 91—224 **2 Claims**

1. A hydraulic motor device comprising in combination:
a. a cylinder having an upper end and a lower end,
b. a piston mounted for reciprocating movement away from and toward the upper end of said cylinder,
c. a spring means positioned between the lower end of said cylinder and the piston and serving to bias said piston toward the upper end of said cylinder,
d. a source of fluid pressure for moving said piston toward the lower end of said cylinder,
e. a fluid inlet adjacent the upper end of said cylinder and a fluid outlet adjacent the lower end of said cylinder,
f. an overflow aperture extending from one side of the piston to the other,
g. a stop valve,
h. resilient mounting means on said piston for mounting said stop valve with respect to said overflow aperture so that the stop valve can only alternate between a first completely closed position and a second completely open position,
i. a swing lever projecting outwardly from said piston toward the lower end of the cylinder,
j. a spring loaded rocker arm mounted adjacent the lower end of said cylinder,
k. said swing lever being mounted so that as the piston moves downwardly toward the lower end of the cylinder



the swing lever will first compress said spring loaded rocker arm and then release it,
whereby when said spring loaded rocker arm is released it will impact against said stop valve and move it to the completely open position and said stop valve will not close until said spring means causes said stop valve to impact against the upper end of said piston.

3,960,059

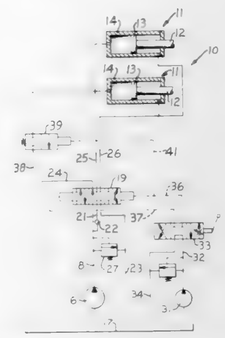
FAST EXHAUST CIRCUIT FOR HYDRAULIC JACKS

Lawrence F. Schexnayder, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 9, 1974, Ser. No. 530,621

Int. Cl.² F15B *11/04*

U.S. Cl. 91—443 **6 Claims**



1. A fast exhaust circuit for hydraulic jacks, comprising:
a hydraulic jack having a head end and a rod end;
a source of fluid including a fluid reservoir, a pump, and a conduit communicating the pump with said reservoir;
conduit means for communicating said hydraulic jack with said pump and said reservoir;
a control valve disposed in said conduit means for selectively directing pressurized fluid through said conduit means from said pump to the rod end of said hydraulic jack and transmitting fluid exhausted from the head end of said hydraulic jack to said reservoir;
a bypass conduit connecting said conduit means adjacent to said hydraulic jack with said reservoir; and
a fluid pressure actuated bypass valve disposed in said bypass conduit normally positioned for blocking fluid flow

therethrough so that all fluid exhausted from the head end of the hydraulic jack passes through and is modulatably controlled by said control valve, said bypass valve being selectively positionable by directing pressurized fluid thereto to establish communication through the bypass conduit for returning a portion of the fluid exhausted from the head end of the hydraulic jack through the bypass valve and the bypass conduit directly to said reservoir bypassing said control valve with said portion of the exhausted fluid passing through the bypass valve being larger than the portion passing through the control valve.

3,960,060

PRESSURE RESPONSIVE CONTROL BODY ARRANGEMENT

Karl Eickmann, 2420 Isshiki, Hayama, Kanagawa, Japan

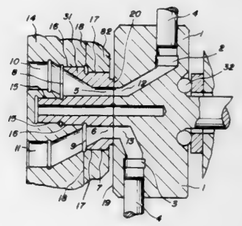
Continuation-in-part of Ser. No. 239,551, March 30, 1972, Pat. No. 3,831,496. This application July 10, 1974, Ser. No. 487,271

Claims priority, application Austria, Apr. 7, 1971, 2987/71

The portion of the term of this patent subsequent to Aug. 27, 1991, has been disclaimed.

Int. Cl.² F01B *1/00*

U.S. Cl. 91—487 **10 Claims**



1. In a fluid handling device, a combination comprising a housing having inlet and outlet ports for admission and evacuation of fluid and pressure chamber means communicating with said ports; a rotor mounted in said housing and provided at one axial end thereof with a first control face having a gravity center, said rotor also having a plurality of working chambers and passages extending between said working chambers and said control face; and a control body axially movably received in said pressure chamber means of said housing and having a second control face adjacent to and defining with said first control face a narrow control clearance, said second control face having a geometrical center and another gravity center said control body being urged toward said rotor by said fluid in said pressure chamber means and including at least one larger-diameter first at least partially cylindrical portion coaxial with said rotor and at least one smaller-diameter second cylindrical portion which is eccentric relative to the axis of said rotor, the distance between the gravity center of said first control face and the axis of the rotor being substantially equal to the distance between said gravity center of said second cylindrical portion and the axis of said rotor.

3,960,061

MOUNTING ARRANGEMENT FOR A HYDRAULIC MOTOR

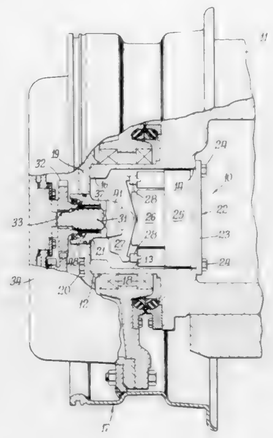
John J. Campbell, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 27, 1975, Ser. No. 562,612

Int. Cl.² F01B *13/04;* **B60K** *3/00*

U.S. Cl. 91—506 **8 Claims**

1. A mounting arrangement for a variable displacement hydraulic motor having a pivotal swash plate and an axially extending drive shaft, comprising:
a hollow support structure having a bore formed therein with said bore having an open end for receiving the hydraulic motor;
an end wall secured to said support structure at an opposite end of said bore and having a pilot bore extending therethrough;



a mounting bracket journalled to said drive shaft and having a pair of spaced apart lugs extending toward the hydraulic motor and pivotally engaging the swash plate, and an annular pilot portion disposed coaxial with said drive shaft and piloted into said pilot bore; and
means for securing said mounting bracket to said end wall.

3,960,062

METHOD OF MAKING A BAND OF PLASTIC BAGS

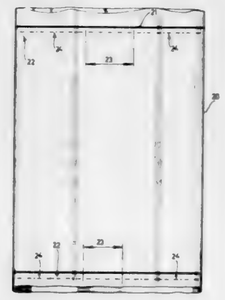
Arnoldus Willem Jan Leloux, Dedemsvaart, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Sept. 30, 1974, Ser. No. 510,684

Claims priority, application Netherlands, Sept. 29, 1973, 7313440

Int. Cl.² B31B *49/04*

U.S. Cl. 93—35 R **5 Claims**



1. A method of making an interconnected band of plastic bags, comprising the steps of:
a. providing an elongated band of thermoplastic foil, the band having two superposed walls,
b. sealing the walls of the band together along longitudinally spaced-apart transverse seal lines,

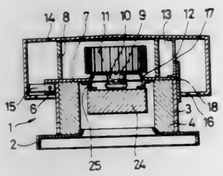
c. piercing the band with longitudinally spaced-apart transverse lines of perforations, each line comprising a series of first perforations all of which are formed simultaneously, and

d. thereafter piercing the band along each line of perforations to form second perforations between the first perforations, the second perforations being provided only in two side sections of each line between a central section of the line and the longitudinal side edges of the band, no second perforations being provided in the central section of each line.

3,960,063
ROOF FAN

Franz Siemes, Friedberg; Kraus, and Joachim Buhl, both of Neunkirchen, all of Germany, assignors to Blech- und Metallwarenfabrik Robert Fischbach KG, Neunkirchen, Germany

Filed July 18, 1974, Ser. No. 489,461
Int. Cl.² F24F *7/02*
U.S. Cl. 98—43 R **7 Claims**



1. A roof mounted fan, comprising:

a base having a first opening therein;

an upstanding casing mounted on said base and having a second opening therein communicating with said first opening;

a support plate having a third opening therein pivotally secured to said upstanding casing adjacent the upper end thereof for movement between a position across said open upper end of said casing perpendicular to an axis of said casing so that said third opening is aligned with said second opening and a position out of perpendicular alignment with said axis of said casing;

blower means and drive motor means therefor mounted on said support plate, said blower means having an axis of rotation coaxial with the axis of said third opening;

sound reducing means removably mounted in said upstanding casing between said base and said support plate for reducing the sound generated by said blower means and said drive motor means; and

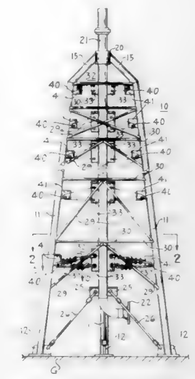
hood means pivotally secured to at least one of said support plate and said casing and pivotal independently of said support plate for overlying said blower means and defining a chamber having an outlet therefrom;

whereby a pivoting of said hood means exposes said support plate and at least said blower means mounted thereon and a pivoting of said support plate exposes said sound reducing means, said sound reducing means being accessible from above.

3,960,064
TALL STACK CONSTRUCTION

John F. Straitz, III, Jenkintown, and Hosein M. Shakiba, Philadelphia, both of Pa., assignors to National Airoil Burner Company, Inc., Philadelphia, Pa.

Filed July 10, 1975, Ser. No. 594,749
Int. Cl.³ E04H *12/20, 12/28*; **F23J** *11/12*
U.S. Cl. 98—60 **12 Claims**



1. A vertical discharge stack assembly for dispersal of gaseous products which comprises

a vertical stack pipe,

a derrick for supporting said pipe and having at least three legs,

rigid supporting means for vertically supporting said stack pipe at a predetermined location along its length in fixed relation to said derrick, and

flexible restraining means interposed in connecting relation between said derrick and said stack pipe for restraining horizontal movement of said stack pipe,

said restraining means including

mounting members secured to said stack pipe and to one of said derrick legs at predetermined elevations, and

a substantially u-shaped, flexible guy wire having substantially horizontally extending portions, the free ends of which are attached to one of said mounting members while the looped end of said guy wire is attached to the other of said mounting members.

3,960,065
AIR CONTROL APPARATUS

Francis J. McCabe, 239 Hastings Court, Doylestown, Pa. 18901

Filed Jan. 20, 1975, Ser. No. 542,210
Int. Cl.² F16K *13/04*
U.S. Cl. 98—40 D **5 Claims**

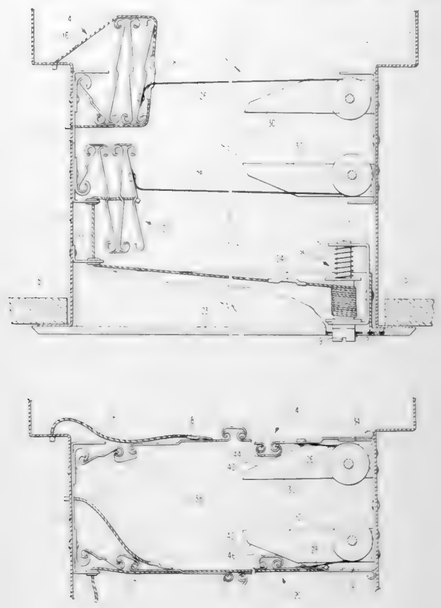
1. An air control apparatus comprising:

a. a frame having means providing a directed air passage therethrough;

b. a plurality of sets of blades, each set having a plurality of blades articulated with respect to one another, so that each set can be moved between an open folded condition which allows air to pass through said frame and a closed unfolded condition which substantially restricts the passage of air through said frame; said sets being spaced from one another in said frame in the direction of said air passage therethrough;

c. at least one set of blades having volume controller means for adjusting the position of said blades between fully unfolded and fully folded at a plurality of positions and retaining it once it is adjusted; and

d. each of said sets being retained in their respective folded conditions by means coacting with releasable link means to release the blades of said set upon appropriate predetermined temperature conditions and permit the blades to move to a fully unfolded condition, closing said frame to the passage of air therethrough, and providing thereby, in the fully closed condition, a space between said sets of blades which acts as an air buffer to reduce heat transfer

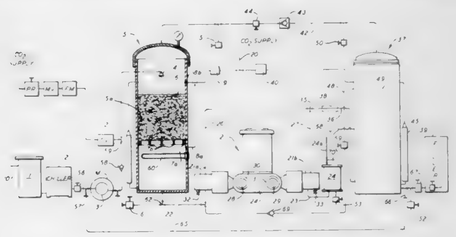


across said frame from a region of higher heat to a region of lower heat.

3,960,066
BEVERAGE PREPARATION APPARATUS

Thomas C. LaRocco, and Atlee M. Knorr, both of Apalachin, N.Y., assignors to Union Kol-Flo Corporation, Vestal, N.Y.

Filed June 19, 1975, Ser. No. 588,325
Int. Cl.² A23G *9/06*
U.S. Cl. 99—323.2 **12 Claims**



1. Apparatus for production of carbonated beverages, comprising, in combination: water chiller means connected to receive water from a supply line and operative to provide chilled water; carbonating means connected to receive chilled water from said water-chiller means and to carbonate the chilled water without further cooling it, said carbonating means comprising a first enclosed tank containing a filamentary metal mass and means for supplying carbon dioxide gas to said tank; a syrup supply reservoir; a second enclosed tank having an inlet conduit; and pumping means for simultaneously pumping metered amounts of chilled carbonated water from said first tank and syrup from said reservoir through said inlet conduit into said second tank, said second tank being adapted to be connected to a container-filling machine.

3,960,067
COUNTERBALANCE FOR ROTARY SPIT

Leslie G. Dutchburn, Toronto, Canada, assignor to Develpro Incorporated, Toronto, Canada

Filed Mar. 19, 1975, Ser. No. 559,958
Int. Cl.² A47J *37/04*
U.S. Cl. 99—421 H **5 Claims**



1. An adjustable counterbalance device for a rotatable spit of a rotisserie assembly, comprising

a yoke member having a substantially U-shaped cross section including a shorter leg, a longer leg and an integral transverse web, said shorter leg and said longer leg being spaced from and substantially parallel to each other,

said yoke member having a U-shaped brace portion formed by a short portion of said shorter leg and longer leg immediate said web, said yoke member being slidably and transversely securable in a straddle manner on said spit with said spit received in said brace portion,

a first opening formed in said shorter leg,

a second, third and fourth opening formed in said longer leg,

a rod member securable on said yoke member selectively in a first, second and third position, whereby in said first position said rod member extends through said first opening and said second opening and is substantially perpendicular to said shorter leg; and in said second position said rod member extends through said first opening and said third opening and is skewed at substantially 65 degrees from said shorter leg; and in said third position said rod member extends through said first opening and said fourth opening and is skewed at substantially 45 degrees from said shorter leg,

an adjustable set screw provided at said web, said set screw being operative to cause said rod member and said yoke member to clamp securely on said spit, and

a weight member slidably secured on said rod member, said weight member being adjustable to position at a selected position along the length of said rod member.

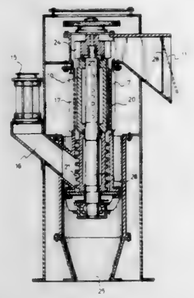
3,960,068
MACHINE FOR WHITENING, POLISHING OR PEARLING GRAINS AND CEREALS AND MORE PARTICULARLY RICE

Felipe Salete, Av. Ano de Juarez No. 198, Granjas San Antonio, Ixtapalapa, Mexico City 13, Mexico

Filed Jan. 29, 1975, Ser. No. 545,315
Int. Cl.² B02B *3/06*
U.S. Cl. 99—606 **8 Claims**

1. A whitening, polishing or pearling machine for grains and cereals and more particularly for rice, vertically disposed and within which are integrated the mobile system for polishing, transmissions, motors and ventilation system, comprising an integral chamber with a lateral inlet for the grain, which is continued into a conduit which empties into the bottom of a substantially cylindrical treatment chamber composed of a hollow shaft which at its lower end communicates with a passage for air coming from a blower; the said hollow shaft extends upward and its upper part is enlarged discharging into a treatment chamber surrounded by a screen within which the

hollow shaft supports a screw conveyor and a rotor for impelling the grain; the latter is thrown against the screen and its movement is broken by vertical knife intensifiers of the work



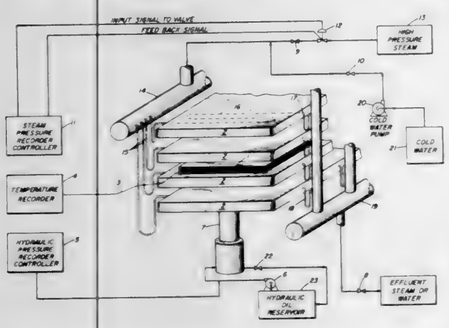
situated on the sides of the chamber; and an extractor disposed above the treatment chamber to discharge the grain elevated from the lower portion toward a lateral outlet in the upper right-hand of the machine.

3,960,069

METHOD AND APPARATUS FOR CONTROLLING A PRESS

Ralph Mitchell Bowyer, Cincinnati, Ohio, assignor to Formica Corporation, Cincinnati, Ohio

Filed Mar. 21, 1974, Ser. No. 453,449
Int. Cl.² B30B *15/34*
U.S. Cl. 100—38 **6 Claims**



1. A method of controlling the pressing of a laminate assembly wherein the assembly is placed between heatable platens of a press which is then closed subjecting the assembly to pressure comprising

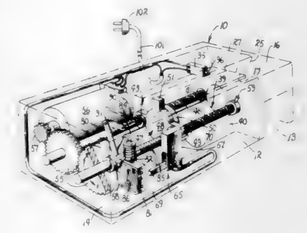
1. continually providing an output signal to a controller from a programmer in response to a desired time and temperature command profile,
2. continually measuring, solely at said assembly, the temperature of said laminate assembly being cured between the platens of the press,
3. continually providing said measured temperature to said controller,
4. continually determining the conformity of said measured temperature to the programmed temperature of said profile in conjunction with said time of said profile,
5. continually determining a need for a temperature change in said curing laminate assembly from said conformity determination,
6. continually providing first and second signals, each to one of a pair of relays and a third signal to a heat source from said programmer in accordance with said command profile which third signal energizes first means for introducing heating media to the platens and which first and second signals energize second means for removing heating media from said platens and third means for introducing cooling media to said platens, respectively, and
7. continually controlling the temperature of said curing laminate assembly in accordance with said need.

3,960,070

OBJECT COMPACTING DEVICE

David L. McClure, 2246 W. Palo Alto Ave., Fresno, Calif. 93705, and Jeffrey D. Tweedie, 4756 E. Harvard Ave., Fresno, Calif. 93703

Filed Oct. 30, 1974, Ser. No. 519,061
Int. Cl.² B30B *15/14*
U.S. Cl. 100—49 **11 Claims**



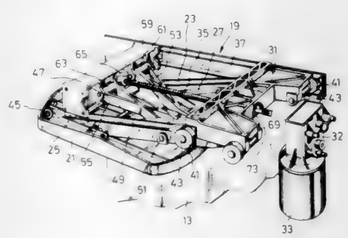
2. An object compacting device comprising a housing having a bearing plate at one end thereof and an entrance opening; a wall having an object receiving passage mounted in the housing in spaced relation to the bearing plate to divide the housing into an object receiving compartment communicating with the entrance opening and an object discharge compartment communicating with the receiving compartment through the receiving passage; a workbed secured on the housing in the receiving compartment in endward alignment with the receiving passage and in alignment with the entrance opening; a compression member; and means for transporting said compression member across the workbed to and from the receiving passage in response to the insertion of an object on to the workbed through the entrance opening.

3,960,071

REFUSE COMPACTOR

Rolf Mayer, Giengen, and Walter Menzel, Landshausen, both of Germany, assignors to Bosch-Siemens Hausgerate GmbH, Munich, Germany

Filed Feb. 26, 1975, Ser. No. 553,435
Claims priority, application Germany, Feb. 28, 1974, 2409491; Mar. 11, 1974, 2411543
Int. Cl.² B30B *1/18*
U.S. Cl. 100—229 A **10 Claims**



1. A refuse compactor, particularly for household refuse, comprising a supporting frame; an upwardly open container in said frame; a pressure platen movable into and out of said container; a parallellogram drive for said platen, including

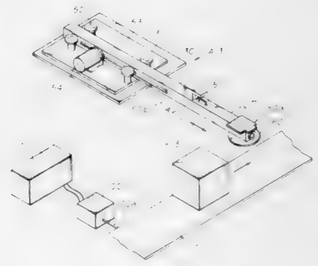
substantially horizontal guide means on said frame, a shiftable element movable along said guide means, at least two pair of levers mounted for pivoting about respective pivot axes and each having ends connected to said platen and to said shiftable element respectively, a screw spindle connected with said shiftable element and with a motor so as to effect shifting of said element upon being rotated by said motor, and reinforcing means connecting at least two of said levers to form a structural unit; a traverse member mounted in said frame above said platen; a pair of guide levers each having one end pivoted to one of said pairs of levers substantially midway of the same, and another end connected to said traverse member; and a bearing journalling one end of said screw spindle.

3,960,072

AUTOMATIC LABEL-PRINTING APPARATUS

Erick L. Ahlgren; Arthur H. McMorris; Jerry L. Miille, and Joseph L. Schweppe, all of Houston, Tex., assignors to Houston Engineering Research Corporation

Filed Feb. 24, 1975, Ser. No. 552,224
Int. Cl.² B41F *17/00*
U.S. Cl. 101—35 **17 Claims**



1. Apparatus for positioning a printing head for directly printing a label onto a package or the like, comprising:

a probe unit supporting a printing head for movement therewith;

probe mount means mounting said probe unit for movement along a first axis toward and away from a package;

a carriage assembly supporting said probe unit and said probe unit mount means;

second axis mount means mounting said carriage assembly for movement along a second axis orthogonal to said first axis;

third axis mount means mounting said carriage assembly for movement along a third axis orthogonal to said first and second axes;

said probe mount means including break-away means mounting said probe unit for release from movement along said first axis in response to said probe unit engaging an undesirable resistance; and

control means for coordinating the movement of said probe unit along said first, second and third axes for positioning said probe unit and printing head to print a label directly onto said package.

3,960,073

MACHINE FOR DECORATING TWO-PIECE CANS

John E. Rush, Geneva, N.Y., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 10, 1975, Ser. No. 557,006
Int. Cl.² B41F *17/08*
U.S. Cl. 101—40 **17 Claims**

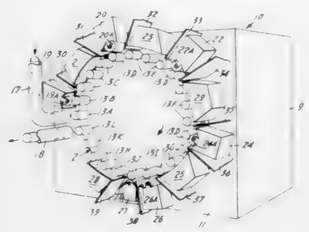
1. A machine for the decoration of cans and similar objects including a base

a circular index table substantially vertically aligned and rotatably mounted relative to said base;

a plurality of mandrels, means rotatably mounting each of said mandrels on said index table, a spur gear affixed to each of said rotatable mounting means;

an index means having an intermittently movable output shaft to index said index table in an intermittent repeated movement and dwell rotative movement, said index means being driven by motor means;

a ring gear independently rotatably mounted on said intermittently movable output shaft, said motor means mounted on said base and driving said index means and said ring gear;



wherein said ring gear drives said spur gears;

a plurality of work stations fixed to said base and arranged adjacent to the periphery of said index table;

at least two of said stations including coating or printing rollers for the application of a material onto said cans, said rollers being driven by said ring gear;

at least two of said work stations being drying stations to dry the material applied on the can at the coating and printing stations;

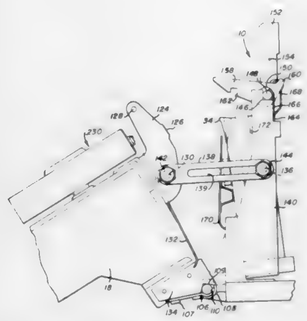
whereby said index table and mandrels are driven in synchronism under each work station to achieve precise can registration.

3,960,074

LINE PRINTER HAVING HAMMER WHICH SPANS THREE PRINT POSITIONS

Albert S. Chou, Monte Sereno, Calif., assignor to Shugart Associates, Sunnyvale, Calif.

Filed Sept. 16, 1974, Ser. No. 506,405
Int. Cl.² B41J *1/20*
U.S. Cl. 101—93.14 **13 Claims**



1. A line printer for printing lines of print characters on a continuous paper form comprising:

a band gate having a registration surface and having a latch pin;

a recirculating character belt rotatably carried by said band gate, said belt having a plurality of character slugs affixed thereto;

a frame including a hammer bank having a plurality of hammers, each of said hammers having a face and being movable between a cocked position and striking position, each said face being positioned to strike one of said character slugs when said hammer is in said striking position, means for pivotally mounting said band gate to said frame so that said band gate may be rotated between a printing position and a paper form loading position, and latching means affixed to said frame and including a latch plate for engaging said latch pin to hold said band gate in said printing position and means for allowing incremental adjustment of said latch plate to vary the disposition of said band gate relative to said frame when said band gate is in said printing position so that when said hammers are in said cocked position the distance between the faces thereof and the corresponding character slugs may be selectively adjusted to accommodate papers of different thicknesses; and

means for moving said hammers back and forth between said cocked and striking positions.

3,960,075

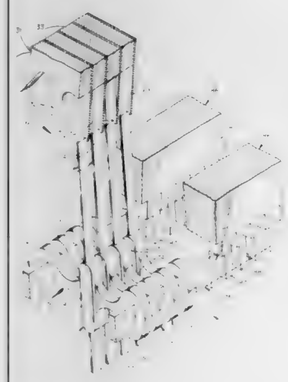
ELASTOMERIC MOUNTING MECHANISMS

Egon S. Babler, Northbrook, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Mar. 24, 1975, Ser. No. 561,580

Int. Cl.² B41J *9/02*

U.S. Cl. 101—93.48 **11 Claims**



1. In combination with a machine of the type having an elongated mechanical interponent mounted in a machine support frame for both axial and pivoting movements, an improved mounting and actuating mechanism for said interponent comprising:

a. a mounting element of elastomeric material having (1) a central section in which a mounting segment of the interponent is fixed so that the central section of the mounting element is constrained to follow movement of the mounting segment of the interponent, (2) a pair of end sections, and (3) a pair of stretchable webs of reduced cross section connecting the end sections to the central section;

b. means for securing the end sections of the mounting element in the machine support frame in positions spaced a distance such that the webs are longitudinally stretched predetermined amounts along a transverse mounting axis extending through the end sections, along the webs, and through the central section of the mounting element, so that the elastomeric material of the stretched webs mounts the interponent in a stable initial position and defines flexure joints on both sides of the interponent permitting both axial and pivoting movements of the interponent about the flexure joints and so that the material of the stretched webs exerts both linear and rotary spring forces tending to return the interponent to the initial position in the absence of external forces acting on the interponent; and

c. mechanical means for periodically engaging the interponent in the initial position and moving it axially and pivoting it about the flexure joints to an operated position and attitude and thereafter releasing the interponent, after which said spring forces return the interponent both axially and rotationally to the stable initial position.

3,960,076

ROTARY SCREEN PRINTING MACHINE WITH ANGLE AND PRESSURE ADJUSTABLE SQUEEGEE

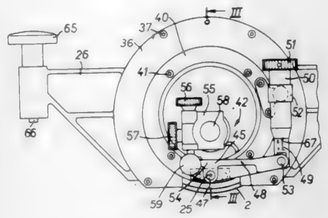
Karl Wick, Biberist, Switzerland, assignor to Fritz Buser AG Maschinenfabrik, Wiler near Utzenstorf, Switzerland

Filed Feb. 25, 1974, Ser. No. 445,132

Claims priority, application Switzerland, Feb. 27, 1973, 2826/73

Int. Cl.² B41F *15/42*

U.S. Cl. 101—119 **4 Claims**



1. A rotary screen printing machine having a frame, a cylindrical rotary screen stencil (**2**), a backup support (**15**) located to cooperate with the screen stencil (**2**) and to define a contact line therewith, a squeegee or doctor blade holder (**4, 6**) and a squeegee or doctor blade (**7**) attached thereto and located within the cylindrical screen;

bearing housings (**26, 27**) secured to the frame adjacent the respective ends of the screen stencil;

bearings (**31**) journalling the screen (**2**) located in the bearing housings;

and an adjustable blade support means (**42, 43**) supporting the blade holder (**4, 6**) and secured in the bearing housings at the respective ends of the screen for rotation independently of rotation of the screen, at least one of said adjustable blade support means comprising

a rotatable support ring (**40, 40′**) rotatably supported on the bearing housing (**26, 27**) for rotation independently of the screen;

a fulcrum pin (**47, 47′**) having a fulcrum axis (**25, 25′**) located above, and radially inwardly of the stencil (**2**), and closely adjacent to the contact line (**8**) of the screen (**2**) and the support (**15**);

a rocking lever (**45, 46**) swingably mounted on said fulcrum pin (**47, 47′**) to rock about said axis (**25, 25′**) and operatively connected to said blade holder (**4, 6**),

said fulcrum pin (**47, 47′**) being secured to the support ring (**40, 40′**) and supporting said rocking lever (**45, 46**) for rocking movement about the axis (**25, 25′**) of said fulcrum pin (**47, 47′**);

an adjustable spindle (**49, 67**) secured to the support ring (**40**) engaging the rocking lever (**45, 46**) and setting the position of the rocking lever (**45, 46**) with respect to the respective support ring (**40**);

a support block (**55, 61**) supporting said blade holder

height-adjustable means (**56, 62, 63, 64**) securing the blade holder support block (**55, 61**) to the rocking lever (**45, 46**) to adjust the distance of the support block (**55, 61**) and hence of the blade (**7**) from the contact line (**8**);

and wherein the rotatable support ring (**40, 40′**) is concentric with the cylindrical rotary screen stencil (**2**),

whereby said fulcrum pin, and said spindle, both secured to said rotatable support ring (**40, 40′**) will be rotatable with respect to the bearing housing (**26, 27**), and thus rotatable independently of the screen while defining a tilt axis for said blade holder (**4, 6**) and hence said blade above the contact line and closely adjacent thereto to locate said rotatable support ring, said fulcrum pin, and said rocking lever entirely above said contact line (**8**) and hence above said back up support (**15**).

3,960,077

PRINTING WITH BLANKET HAVING RECESSED PORTION

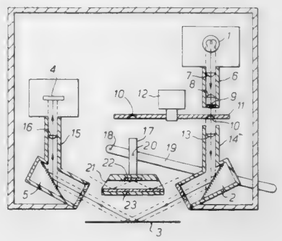
Frank Henry Aylett, Otley, England, assignor to Vickers Limited, London, England

Filed Nov. 26, 1974, Ser. No. 527,484

Claims priority, application United Kingdom, Nov. 29, 1973, 55519/73

Int. Cl.² B41F *9/00*

U.S. Cl. 101—142 **13 Claims**



1. A method of determining the amount of water present on the surface of a printing plate carried by a plate cylinder during offset lithographic printing, which method comprises:

a. applying water to the non-printing area of the printing plate,

b. applying ink to the printing area of the printing plate,

c. transferring ink from the printing area to an offset blanket which is carried by a blanket cylinder and which includes a recessed portion in its surface, said recessed portion being arranged to be in registry with a part of the non-printing area of the printing plate when at the nip between the plate cylinder and the blanket cylinder,

d. transferring ink from the blanket to a receiving member to be printed, and

e. determining the amount of water present on a monitoring zone constituted by said part of the non-printing area.

3,960,078

PRINTING PROCESSES

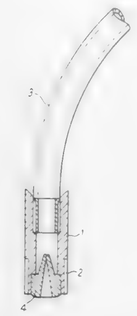
Harold Frederick Farrow, Hitchin, and Bernard Booth Rackstraw, High Wycombe, both of England, assignors to Encoline(Process)Limited, Slough, England

Filed Feb. 10, 1975, Ser. No. 548,176

Int. Cl.² B41N *1/06;* **B41F** *1/00*

U.S. Cl. 101—150 **7 Claims**

1. Intaglio printing apparatus for use in applying deposits of a viscous fluid on a nonporous substrate comprising an intaglio printing plate provided with at least one air-bleed passage communicating with an image engraved in the plate and provided with vent means for allowing air trapped in the engraved cavity of the image between the substrate and the plate to escape in response to increase in pressure by injection of said fluid into said cavity, together with any excess fluid injected into the cavity, so that the latter is not added to the deposit on withdrawal of the plate, said vent means comprising a nonreturn valve having surfaces acting to block flow of air and any excess fluid back into said cavity in response to reduction in the pressure in said cavity and enabling flow of air and any



excess fluid therepast during injection of said fluid into said cavity.

3,960,079

ROTARY PRINTING PRESS

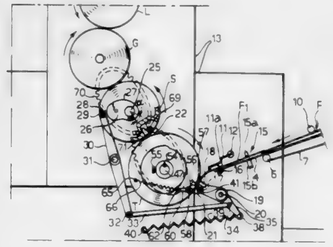
Federico Capetti, Turin, Italy, assignor to Societa' Nebiolo S.p.A., Turin, Italy

Filed July 15, 1974, Ser. No. 488,858

Claims priority, application Italy, July 25, 1973, 69231/73

Int. Cl.² B65H *5/10, 5/12*

U.S. Cl. 101—232 **4 Claims**



1. A rotary printing press for single sheets of the type comprising a rotary printing cylinder, means for driving the printing cylinder at a constant velocity, a feeder table onto which the sheets are fed partly overlapping, means on the feeder table for setting the sheets in register frontally and laterally, a rotary transfer drum having a diameter larger than the diameter of said cylinder, means driving the transfer drum at an angular velocity which varies periodically with a period equal to the time taken by the printing cylinder to make one complete revolution, oscillating transfer means having gripping means for transferring the sheets from the feeder table to the transfer drum and means for transferring the sheets from the transfer drum to said printing cylinder, wherein the improvement comprises elliptical gear means operatively disposed intermediate said printing cylinder and said transfer drum, said elliptical gear means being sized to impart to the transfer drum a peripheral velocity which varies from a minimum value substantially equal to the constant peripheral velocity of the printing cylinder to a maximum velocity which is higher than said minimum value and higher than the peripheral velocity of the printing cylinder, cam means mounted on the axis of said printing cylinder for driving said oscillating transfer means, said cam means being rotationally oriented relative to the printing cylinder such that the transfer means is moved from a stop position adjacent said feeder table, at which time said gripper means picks up a sheet from said feeder table, to

a velocity greater than the peripheral velocity of said printing cylinder adjacent to said transfer drum prior to the transfer drum reaching its maximum velocity and additional gripping means on said transfer drum for receiving a sheet from said oscillating transfer means when the velocities of said transfer drum and said oscillating transfer means are equal and means to render said means for transferring the sheets from said transfer drum to said printing cylinder operative when the peripheral velocity of said transfer drum is equal to the peripheral velocity of said printing cylinder.

3,960,080
COMBINATION ROTARY PAPER CUTTER AND LOGO PRINTER

Carmeli Adahan, Berkeley, Calif., assignor to The Singer Company, New York, N.Y.

Filed Feb. 12, 1975, Ser. No. 549,258
Int. Cl.² B41F *3/82, 13/60*
U.S. Cl. 101—291 **4 Claims**



3. The combination printer and cutter of record media comprising:

a cutter portion and a printer portion,

said cutter portion including a stationary knife blade and a rotary knife blade, each having a cutting edge which are engagable with each other and which upon rotation of said rotary knife blade cuts record media disposed therebetween,

said printing portion including a print head for printing upon said record media while said record media is being severed in said cutting portion and an inking means,

said print head being oscillatable from said inking means into engagement with record media disposed in contacting relationship on said stationary knife blade of said cutting portion for printing on said record media disposed in said cutting portion, and

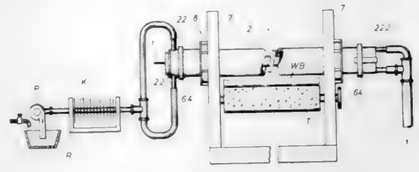
actuating means for oscillating said printing head and rotating said rotary knife concurrently about parallel axes.

3,960,081
DRYING ARRANGEMENT FOR DRYING INKS, ADHESIVES AND ANALOGOUS SUBSTANCES ON SHEET MATERIAL

Helmut Gustavs, Steinhagen, and Ernst Dudziak, Gutersloh, both of Germany, assignors to Mohndruck Reinhard Mohn OHG, Gutersloh, Germany

Filed May 10, 1974, Ser. No. 468,115
Claims priority, application Germany, May 11, 1973, 2323792; Feb. 19, 1974, 2407823
Int. Cl.² B41F *23/00*
U.S. Cl. 101—416 A **38 Claims**

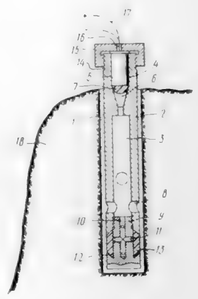
1. In an arrangement for drying inks, adhesives and analogous substances which polymerize when irradiated by UV radiation, particularly for use in printing machines in which as least one of the substances is applied to at least one major surface of a sheet material, a combination comprising guide means for guiding the sheet material in a path; drying means including a radiation source spaced from said path and adapted to emit UV radiation accompanied by incidental IR radiation at least toward the one major surface of the sheet material; and means for allowing UV radiation to reach the sheet material and for prohibiting the IR radiation from reaching the sheet material, said means comprising cooling means including a passage containing a cooling medium and located between said radiation source and at least the one major surface of the sheet material, said cooling means being permeable to the UV radiation but substantially impermeable to the IR radiation whereby the UV radiation passes through said cooling means and polymerizes the substance on the one major surface of the sheet material and the IR radiation is intercepted by said cooling means to prevent impingement upon the one major surface of the sheet material, the substance thereon, and parts of the arrangement, so that the same are protected from deleterious influences of the incidental IR radiation.



3,960,082
DOWN-THE-HOLE DEVICE FOR BREAKING ROCK, CONCRETE AND REINFORCED CONCRETE BY PULSEWISE HIGH LIQUID PRESSURE

Fedor Ignatievich Sloevsky, ulitsa Cheremushkinskaya, 32 korpus 2, kv. 4, Moscow; Naum Yakovlevich Orlov, ulitsa Klochkovskaya, 276-a, kv. 9, Kharkov; Petr Dmitrievich Gavrish, ulitsa 8 Siezda Sovetov, 7, kv. 38, Kharkov, and Anatoly Nikolaevich Rashevsky, ulitsa 23 Avgusta, 20, kv. 26, Kharkov, all of U.S.S.R.

Filed Jan. 29, 1974, Ser. No. 437,666
Int. Cl.² F42B *3/06*
U.S. Cl. 102—22 **3 Claims**

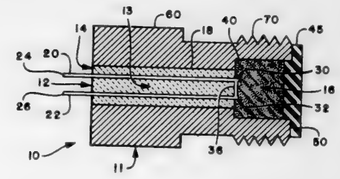


1. A down-the-hole device for breaking materials such as rock, concrete and reinforced concrete by pulsewise high liquid pressure, adapted to be lowered into a hole pre-drilled in the materials to be broken and pre-filled with a liquid, the device comprising: a hollow housing having a closed bottom; a closed chamber within the upper portion of said housing, to accommodate an explosive charge; a cavity defined within said housing below said chamber, communicating via lateral apertures made through the wall of said housing with the hole so that part of the liquid in the latter fills up said cavity when the device has been lowered into the hole; means for initiating the exposion of the charge; a partition made of an elastomeric material and sealingly positioned in said housing between said chamber and said cavity, first, to separate them prior to the explosion of the charge and, second, to establish communication therebetween after the explosion, resulting in destruction of said partition for gases produced by the explosion, to create a high-pressure pulse in the liquid in said cavity and for the liquid to act through said apertures upon the walls of the hole so as to break the materials; small-diameter passage means provided in the lower portion of said housing with openings therein, and having one end thereof communicating with said cavity and the other end thereof open on the external lateral surface of said housing; and a ring also made of an elastomeric material, received and secured about said lower housing portion below said apertures so that said ring closes off said openings of the passage means in said external laterial surface of the housing; said ring being expanded during the explosion of the charge by the high-pressure pulse and pressed thereby against the walls of the hole, below the destruction region, to sealingly close the hole and to retain the device therein.

3,960,083
IGNITER CONTAINING TITANIUM HYDRIDE AND POTASSIUM PERCHLORATE

Russel W. Dietzel, and William B. Leslie, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research & Development Administration, Washington, D.C.

Filed Mar. 6, 1975, Ser. No. 555,754
Int. Cl.² F42B *3/18;* **F42C** *19/12;* **C06B** *29/02*
U.S. Cl. 102—28 R **5 Claims**



1. An explosive device thermally safe against initiation at temperatures up to about 520°C. comprising a housing having a cavity therein, a pair of electrical conductors extending from the exterior of said housing into said cavity, a bridgewire in said cavity electrically connected with said conductors, an explosive charge in said cavity in close contact with said bridgewire consisting essentially of a mixture of from about 26 weight percent to about 33 weight percent titanium hydride particles blended with from about 74 weight percent to about 67 weight percent potassium perchlorate particles, said titanium hydride particles and potassium perchlorate particles being of size not greater than about 3 microns, with said explosive charge being directly ignitible by said bridgewire.

3,960,084
FUSE FOR RIFLE-GRENADE

Rene M. Chavee, Genk, Belgium, assignor to Fabrique Nationale Herstal S.A. en abrege FN, Liege, Belgium

Filed June 4, 1974, Ser. No. 476,194
Claims priority, application Belgium, Aug. 8, 1973, 803328
Int. Cl.² F42C *15/02*
U.S. Cl. 102—65.2 **3 Claims**

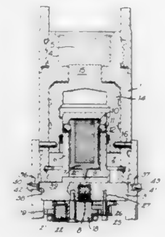
1. A fuse for a rifle grenade including:

a body (1) having an axial bore (2), said body being closed at one end of a holder (3) for a detonator (8) and terminating at its other end in a housing for a propellent charge (5), said detonator and said propellent charge forming part of a pyrotechnic chain;

a sleeve (6) mounted in said bore (2) and housing;

locking members (11) for locking said firing pin in its inactive position;

a control member (15) for said locking members (11), said control member being constituted by a slidable bolt part of which surrounds said sleeve and one end of which terminates in said housing, said slidable bolt being movable from an active position wherein it locks said locking members to an inactive position wherein it liberates said locking members;



shearable pins (16) securing said bolt (15) to said body (1);

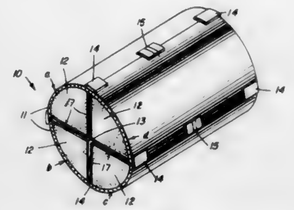
at least one passage (39) traversing said body and communicating with said axial bore;

and at least one plug (40, 41) mounted in the outer wall of the fuse and closing said passage, said plug being visible from the outside of the fuse and being expelled upon combustion of said detonator thus indicating this combustion.

3,960,085
VARIABLE GEOMETRY WARHEAD

David D. Abernathy, Fredericksburg, Va.; Herbert D. Adams, Ventura, Calif.; Warren L. Gilbertson, Fredericksburg, Va.; Isaac E. Leonard, III, Margate, N.J., and Denis A. Silvia, King George, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1967, Ser. No. 643,298
Int. Cl.² F42B *13/48*
U.S. Cl. 102—67 **10 Claims**



1. A warhead device comprising in combination

a plurality of initially closed interconnected equal segments forming a uniform geometric body;

booster means;

initiator means;

each of said segments comprising a kill mechanism means and a high explosive charge means in contact therewith; and

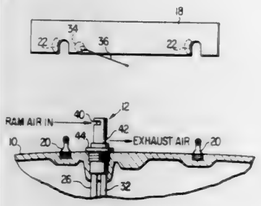
charge opening means disposed between said segments, whereby a firing of said charge opening means will separate a pair of said segments and expose said kill mechanism to the target at which time said initiator means is actuated for firing said detonator means for detonating said high explosive means and projecting said kill mechanism to the target.

3,960,086

AIR VALVE SAFETY DEVICE FOR BOMB FUZES

Evan D. Fisher, Chevy Chase, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 28, 1975, Ser. No. 554,339
Int. Cl.² F42C *5/00, 15/12*
U.S. Cl. 102—70.2 G **8 Claims**



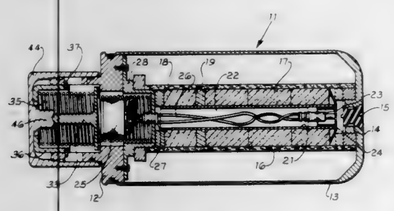
1. A safety device for a fuzed bomb, which comprises:
a fuzed bomb having a receptacle positioned along the longitudinal surface thereof, a nose plug covering the frontal portion thereof, and means located adjacent said receptacle for suspending said bomb from a bomb rack when in its stowed position;
an air-actuated fuzing device positioned within said frontal portion of said bomb behind said nose plug and including means for generating electrical energy in response to said slipstream air received from said air valve means;
air valve means positioned within said receptacle for admitting slipstream air to said fuzing device only after said bomb is released from said stowed position and has separated a predetermined minimum distance from said bomb rack; and conduit means connected between said air-valve means and said fuzing device for conducting said slipstream air towards said fuzing device and for conducting exhaust air towards said air-valve means.

3,960,087

SMOKE AND ILLUMINATION SIGNAL

Bobby D. Beatty, Bloomfield; Russell D. Daniel, Bloomington; Billy J. Humerickhouse, Odon, and Gary G. Norris, Burns City, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1974, Ser. No. 512,262
Int. Cl.² F42B *13/44*
U.S. Cl. 102—90 **8 Claims**



1. A smoke and illumination signal adapted to be launched in a body of sea water beneath the surface thereof comprising,
a base having a cavity therein,
a sea water battery positioned within said cavity,
a disc closing an opened end of said cavity,
a shell attached to one end of said base containing a smoke composition and a flare composition separated by a quantity of a starter composition, said smoke composition being comprised, by weight, of between 50 and 54 percent of yellow dye mix, between 10 and 16 percent of refined sugar, between 2 and 8 percent of baking soda and between 5 and 11 percent of diatomaceous earth and said flare composition being comprised by weight of between 17 and 21 percent of magnesium powder, between 12 and 22 percent of potassium perchlorate, between 24 and 34 percent of barium nitrate, between 23 and 31 percent of sodium oxalate, between 3 and 5 percent of asphaltum and between 3¾ and 4¼ percent of binder material,
an electric squib adjacent said smoke composition and electrically connected to said sea water battery,
an arming cup slidably and removably attached to said base,
a first compression spring in said arming cup biasing said disc in a closing relationship with respect to said cavity, and
a second compression spring within said cavity biasing said disc in an opening relationship with respect to said cavity whereby, upon launching of said signal, said first compression spring ejects said arming cup and said second compression spring ejects said disc.

5. A smoke and illumination signal adapted to be launched in a body of sea water beneath the surface thereof comprising,
a base having a cavity therein,
a sea water battery positioned within said cavity,
a disc closing an opened end of said cavity,
a shell attached to one end of said base containing a smoke composition and a flare composition separated by a quantity of a starter composition, said smoke composition being comprised, by weight, of between 45 and 51 percent of green dye mix, between 22 and 28 percent of potassium chlorate, between 17 and 23 percent of refined sugar, between 2 and 4 percent of baking soda and between 3 and 5 percent of diatomaceous earth, and said flare composition being comprised, by weight, of between 13.28 and 17.28 percent of magnesium powder, between 18.92 and 24.92 percent of potassium perchlorate, between 43.55 and 49.55 percent of barium nitrate, between 10.00 and 16.00 percent of polyvinyl chloride and between 2.25 and 4.25 percent of binder material,
an electric squib adjacent said smoke composition and electrically connected to said sea water battery,
an arming cup slidably and removably attached to said base,
a first compression spring in said arming cup biasing said disc in a closing relationship with respect to said cavity, and
a second compression spring within said cavity biasing said disc in an opening relationship with respect to said cavity whereby, upon launching of said signal, said first compression spring ejects said arming cup and said second compression spring ejects said disc.

3,960,088

CASE BONDING COMPOSITE FOR DOUBLE BASE PROPELLANTS

Willis L. Greever, LaVale, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 26, 1970, Ser. No. 18,024
Int. Cl.² F42B *1/00*
U.S. Cl. 102—103 **6 Claims**

1. A two layer case bonding composite for double base propellants comprising:
1. a first layer comprising neoprene, phenyl β-naphthalamine, zinc oxide, a neoprene stabilizer, an oil soluble phenolic resin and triphenylmethane triisocyanate, and
2. a second layer, bonded to said first layer, comprising polyvinyl formal and a curing agent selected from the group consisting of titanium acetylacetonate and 2,4-tolylene diisocyanate

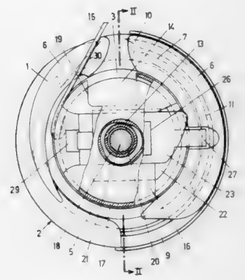
wherein both layers are in the cured state.

3,960,089

DEVICE FOR UNWINDING THREAD AND BOBBIN USED THEREWITH

Pieter Joseph Bogaert, Sint-Niklaas, Belgium, assignor to Manta, Waasmunster, Belgium

Filed Sept. 6, 1974, Ser. No. 503,572
Claims priority, application Belgium, Sept. 7, 1973, 804596
Int. Cl.² D05B *57/14;* **B65H** *49/18*
U.S. Cl. 112—228 **4 Claims**



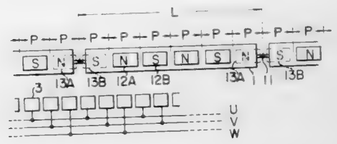
1. A device for unwinding thread comprisng a bobbin having a sleeve about which the thread is wound and a pin having a circular cross-section upon which the bobbin is rotatably mounted so that withdrawal of the thread will cause rotation of said bobbin around said pin, said sleeve having an internal cross-section of polygonal-shape which polygon is circumscribed about a circle the diameter of which is 4–15 percent greater than the diameter of said pin.

3,960,090

LINEAR SYNCHRONOUS MOTOR POWERED VEHICLE

Naoki Maki, Ibaraki, and Katsunori Suzuki, Takahagi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 2, 1974, Ser. No. 494,289
Claims priority, application Japan, Aug. 15, 1973, 48-90892
Int. Cl.² B61B *13/08*
U.S. Cl. 104—148 LM **17 Claims**



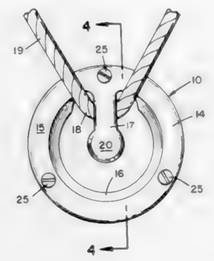
1. A linear synchronous motor powering system for vehicles comprising:
a magnetic means for developing a traveling magnetic field, said magnetic means being provided along a track;
a supporting means for supporting a vehicle body on the track, said supporting means being provided at each vehicle body;
a plurality of field poles corresponding to said magnetic means, said field poles being disposed with a predetermined pole pitch along the length of the vehicle body; and
at least one interval along the length of the vehicle body formed in the alignment of said plurality of field poles along the vehicle body, each said interval containing no field poles and being equal to an integer multiple of said pole pitch.

3,960,091

ROPE HOOK MOUNT FOR A VEHICLE OR THE LIKE

Delbert D. Ehlert, P.O. Box 762, Grass Valley, Calif. 95945

Continuation of Ser. No. 257,160, May 26, 1972, abandoned.
This application Nov. 1, 1974, Ser. No. 519,927
Int. Cl.² B60P *7/08;* **B61D** *45/00*
U.S. Cl. 105—475 **1 Claim**



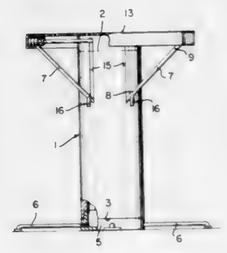
1. A rope hook mount for attachment to a generally vertical portion of the body of a vehicle or the like comprising: a unitary device of rigid material, said device being circular and generally planar with opposed major faces and a given maximum cross-sectional diameter, one of said major faces conforming to the contour of said portion of the body of the vehicle or the like to which said device is to be attached and the other of said major faces forming part of a given smoothly convex surface having a radius of curvature at least about equal to said given cross-sectional diameter, said device having a generally circular aperture of continuously increasing diameter extending from adjacent said one major surface toward said other major surface normally thereto, said aperture being interrupted adjacent said other major surface to leave intact a portion of said other major surface extending radially from about the center of said aperture to the periphery of said aperture providing an elongated integral lip member having said radius of curvature spaced from said one major surface of said device whereby a rope may be hooked about said lip member with no portion of said other major surface including said lip member projecting beyond said given smoothly curved convex surface, and
means for attaching said device to said portion of the body of the vehicle or the like.

3,960,092

COLLAPSIBLE STOOL

Nikola Levkovski, Forest Hills, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

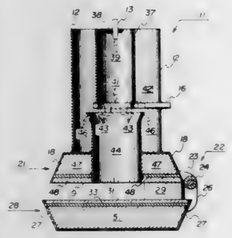
Filed Feb. 19, 1975, Ser. No. 551,035
Int. Cl.² A47B *3/00*
U.S. Cl. 108—41 **5 Claims**



1. A collapsible stool comprising:

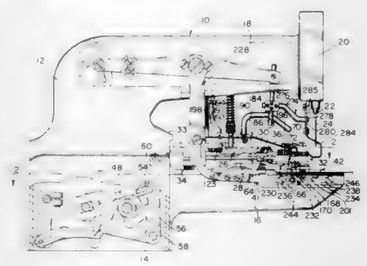
a. a tube having a first end and a second end;
b. a first cap detachably mounted to the first end of the tube;
c. a second cap detachably mounted to the second end of the tube;
d. a plurality of leg supports radially and detachably mounted to the second cap;
e. A plurality of support struts having first ends extending radially from the tube and extending above the first end of the tube, detachably mounted at the first ends to the tube between the first end of the tube and the second end of the tube;
f. a plurality of mounting means attached to the tube between the first end of the tube and the second end of the tube for detachably mounting the first ends of the support struts to the tube;
g. a plurality of connecting struts pivotally connected to the second ends of the support struts wherein a plane surface is formed; and
h. a plurality of radial connecting struts radially and pivotally mounted at one end to the first cap and pivotally connected at the second end of the support struts;
i. a seating surface attached to the plurality of connecting struts;
wherein the tube has an inside diameter and a length of sufficient size to enclose the plurality of leg supports, support struts, connecting struts and radial connecting struts and when the first cap is unmounted from the first end the support struts, connecting struts and radial connecting struts pivot below the first cap so that when the first cap is remounted on the first end, the support struts, connecting struts and radial connecting struts can be inserted in the tube.

3,960,093
PORTABLE FORGE
Donald R. Gregory, 669 S. Nardo T-4, Solana Beach, Calif. 92075
Continuation-in-part of Ser. No. 451,753, March 18, 1974, abandoned. This application Dec. 23, 1974, Ser. No. 535,183
Int. Cl.² F23D *13/26*
U.S. Cl. 110—3.5 **8 Claims**



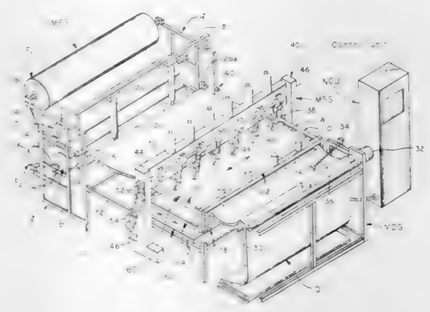
1. A portable forge comprising:
a forge base;
a forge top assembly spatially disposed above said forge base for receiving a work piece between said forge base and said forge top assembly;
said forge top assembly including a burner shield;
a burner tube vertically disposed within said burner shield in a top portion thereof;
a gas nipple disposed centrally at the top portion of said burner tube, said gas nipple having a jet orifice pointing downwardly therefrom;
an oxidizer ring tube horizontally disposed in proximity with said burner tube and having a plurality of oxidizer orifices therein pointed downwardly and towards the axis of said oxidizer ring tube;
an oxidizer nipple coupled to said oxidizer ring tube;
a mixing chamber disposed beneath said burner tube;
a slab surrounding at least the bottom of said mixing chamber and terminating in the bottom surface of said forge top assembly.

3,960,094
AUTOMATIC BUTTON POSITIONING APPARATUS
James C. Hsiao, Chicago, Ill., assignor to Union Special Corporation, Chicago, Ill.
Filed Nov. 6, 1974, Ser. No. 521,432
Int. Cl.² D05B *3/14*
U.S. Cl. 112—110 **15 Claims**



1. Apparatus for delivering buttons to and removing them from the sewing station of a button sewing machine comprising:
button conveyor means;
button loader means including a chute means for feeding buttons to said conveyor means;
button securing recess means located in said conveyor means for accepting buttons from said loader means;
indexing means moving said conveyor means through a series of predetermined steps;
orientating means operative to position a button for sewing; and
means operative to forceably remove a button from said recess means subsequent to its attachment to a fabric.

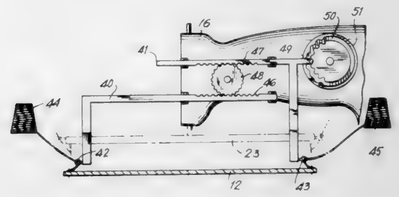
3,960,095
AUTOMATIC QUILTING MACHINE
Wayne G. Story, 7 Hickory Lane, Algonquin, Ill. 60102
Filed Mar. 14, 1975, Ser. No. 558,341
Int. Cl.² D05B *11/00*
U.S. Cl. 112—118 **13 Claims**



1. In an automatic quilting machine arrangement for continuously forming units of quilted fabric, such as bedspreads or the like, by sewing together a plurality of layers of different material from roll stock with a predetermined pattern design of stitching, the combination of:

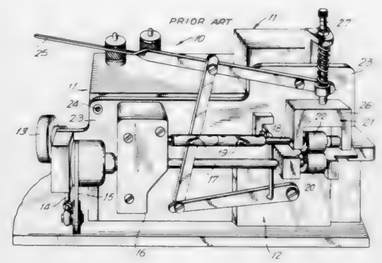
a. a frame including:
i. a material feed station;
ii. a material sewing station;
iii. a fabric discharge station;
b. material supporting means on said frame at said feed station for supporting a plurality of rolls of material to be quilted;
c. material feed means on said frame at said feed station for withdrawing from said rolls a predetermined length of material stock sufficient for forming one unit of quilted fabric and also for maintaining tension on said material rearwardly of said sewing station;
d. slack take-up means on said frame at said discharge station for maintaining tension on said material forwardly of said sewing station;
e. at least one sewing mechanism on said frame at said sewing station;
f. a material holding carriage mounted for universal movement on said frame at said sewing station adjacent said sewing mechanism and including:
i. a lower carriage section mounted on said frame for movement longitudinally thereof between said feed and discharge stations;
ii. an upper carriage section mounted on said lower carriage section for movement transversely thereof;
iii. said upper carriage section including means for clamping under tension a section of said material to be quilted;
g. separate motor drive means for moving each of said carriage sections relative to each other and to said frame;
h. control means for operating said motor drive means whereby the lower and upper sections of said carriage are moved longitudinally and transversely of the frame, respectively, so that said sewing mechanism will form a predetermined pattern of stitching.

3,960,096
APPARATUS AND METHOD FOR THE MANUFACTURE OF FACE MASKS
James W. Zobel, P.O. Box 125, Mount Kisco, N.Y. 10549
Filed Dec. 30, 1974, Ser. No. 537,262
Int. Cl.² D05B *19/00*
U.S. Cl. 112—121.11 **14 Claims**



1. Apparatus for producing face masks from a roll of porous material, said apparatus comprising means for rotatably supporting the roll of material to permit unwinding thereof, driven roller means for pulling the material to unwind the material from the roll in taut condition, a sewing machine for sewing a longitudinal line of stitches along each of the opposite side edges of the material while the material is taut, means for periodically interweaving a cord along each side edge with the line of stitches to form alternate interwoven cord portions and intervening free loops of said cord, and cutter means for cutting the material transversely thereof at successive spaced locations at which the cord is interwoven with the line of stitches whereby to separate successive sections of porous material, with said loops of cord attached thereto, constituting face masks.

3,960,097
HIGH SPEED GEARLESS FABRIC PULLER
Charles Block, North Bellmore, N.Y., assignor to Joseph Galkin Corporation, Hicksville, N.Y.
Continuation-in-part of Ser. No. 346,070, March 29, 1973, Pat. No. 3,886,878. This application June 3, 1974, Ser. No. 475,810
Int. Cl.² D05B *27/10*
U.S. Cl. 112—214 **15 Claims**



1. A puller attachment for use with fabric handling apparatus such as a sewing machine, or the like, comprising: roller means for receiving fabric sewn and discharged by the operation of said sewing machine and urging said fabric in a forward direction, said roller means including upper and lower cooperative rollers supported by upper and lower drive output shafts, respectively; drive means interconnecting a drive mechanism of said sewing machine and said upper and lower rollers, said drive means synchronously responsive to the operation of said sewing machine for causing substantially synchronous identical angular displacement of said upper and lower rollers substantially only during periods of sewing machine operation, said drive means including a linkage assembly disposed adjacent and cooperatively interconnected with said roller means, said drive means imparting one-way rotary movement to each of said upper and lower rollers during said periods of sewing machine operation, and clutch means interconnecting said linkage assembly and each of said upper and lower drive output shafts for permitting the angular displacement of each of said upper and lower rollers in one direction only during operation of said puller attachment, said clutch means including an upper clutch mounted upon said upper drive output shaft and a lower clutch mounted upon said lower drive output shaft; and lift means cooperatively connected to said upper drive output shaft for separating said upper and lower rollers from one another.

3,960,098
THREAD WIPER AND TENSION RELEASE MECHANISM FOR SECURING MACHINES
Reinhold Papajewski, Buchig, and Helmer Heinz Holl, Karlsruhe, both of Germany, assignors to The Singer Company, New York, N.Y.
Filed Dec. 18, 1974, Ser. No. 534,012
Int. Cl.² D05B *65/00*
U.S. Cl. 112—252 **4 Claims**

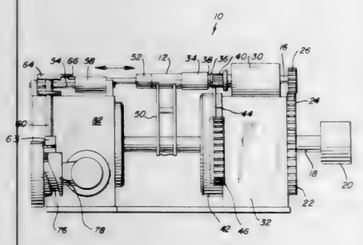
1. A needle thread tension release and wiping mechanism for sewing machines of the type including a sewing needle, actuating mechanism for reciprocating said needle, needle thread severing means, a needle thread wiper, and a needle thread tensioning device including a tension releasing means, the improvement comprising a control member, drive means associated with said actuating mechanism for influencing displacement of said control member, linkage operatively connecting both said needle thread wiper and said tension

releasing means to said control member for actuation in response to said displacement of said control member, and a



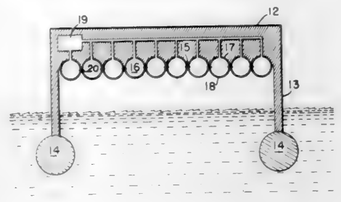
solenoid selectively effective to establish operative connection between said drive means and said control member.

3,960,099
CAN TRIMMING APPARATUS
Robert M. Dobias, San Jose; Tibor Kmetz, Santa Clara, and Walter C. Warnell, San Jose, all of Calif., assignors to National Can Corporation, Chicago, Ill.
Filed Jan. 20, 1975, Ser. No. 542,127
Int. Cl.² B21D *51/26*
U.S. Cl. 113—7 R **4 Claims**



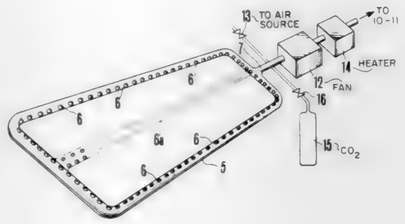
1. Apparatus for trimming a free edge portion off a container body comprising a frame; a mandrel rotated on said frame for receiving container bodies with cutting means associated with said mandrel for trimming a free edge from the container body; a driven tool shaft extending parallel to said mandrel with drive means between said tool shaft and mandrel to rotate said mandrel; and loading means for supplying container bodies to said mandrel, said loading means including supply means for positioning container bodies in axial alignment with said mandrel, a plunger axially aligned with said mandrel, guide means on said frame for guiding said plunger for movement axially towards and away from said mandrel, a loading shaft rotated about a fixed axis on said frame adjacent said guide means, an arm fixed to said loading shaft and extending radially therefrom, a link interconnecting said arm and said plunger, a continuously rotating member driven by said tool shaft and having a camming surface thereon, and a cam on said loading shaft in engagement with said camming surface for rotating said shaft a limited amount between angular extreme positions that are substantially less than 90° to oscillate said arm between positions and reciprocate said plunger towards and away from said mandrel.

3,960,100
PRESSURIZED SHIP STRUCTURE FOR SLAMMING LOADS
Richard B. Chapman, Reston, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 2, 1975, Ser. No. 583,083
Int. Cl.² B63B *1/10*
U.S. Cl. 114—61 **6 Claims**



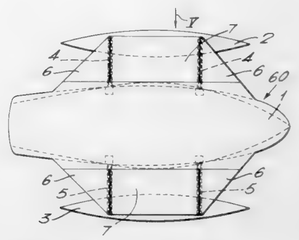
1. In a semisubmerged ship having a laterally extending platform supported above the water's surface by at least one water surface piercing strut member mounted on at least one elongate hull, an improvement therefor for reducing the effects of impacting waves is provided comprising:
- means carried on the underside of the laterally extending platform for resiliently absorbing the slamming loads of impacting waves;
- means carried on the underside of the laterally extending platform and upwardly of the resiliently absorbing means for pneumatically translating the slamming loads into tensile stresses; and
- means coupled between the resiliently absorbing means and the pneumatically translating means for transmitting the tensile stresses to the platform.

3,960,101
SHIPS FOR TRANSPORTING IRON ORE PELLETS
Hideo Suzuki, Mito, Japan, assignor to Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, Japan
Filed July 22, 1974, Ser. No. 490,646
Claims priority, application Japan, Aug. 27, 1973, 48-96024
Int. Cl.² B63B *25/04*
U.S. Cl. 114—73 **10 Claims**



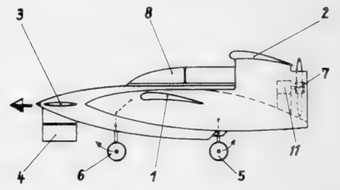
1. A ship for transporting iron ore pellets, and the like, said ship having holds for loading said pellets and a hardening system for drying and hardening the pellets loaded in the holds, said hardening system including a piping system formed from a network of perforated pipes arranged in said holds and means for connecting the exhaust gas pipe of the propulsion boiler and/or propulsion engine of said ship to said piping system for ejecting the exhaust gas through the perforations of the perforated pipes onto the pellets loaded in the holds.

3,960,102
TRIMARANS
Duncan Clement Davy, Spey House, Mayfield, East Sussex, England
Filed June 24, 1975, Ser. No. 589,848
Claims priority, application United Kingdom, July 8, 1974, 30123/74
Int. Cl.² B63B *43/14*
U.S. Cl. 114—123 **9 Claims**



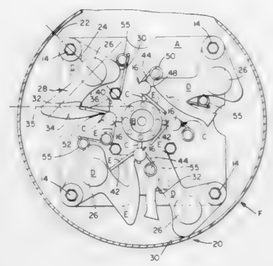
1. A trimaran having a central hull, a pair of floats, outriggers for supporting the floats on each side of the central hull, and inboard supports from which the floats can be suspended in an inboard position, the outriggers being pivotally mounted on the central hull, so that the floats can be moved bodily along the outriggers until they are supported from the inboard supports and then the outriggers can be pivoted so that they are positioned alongside the central hull.

3,960,103
MARINE SKIMMER CRAFT
Herbert Rey, Gretenrade 6, 2301 Schonkirchen, Germany
Filed Apr. 1, 1974, Ser. No. 456,667
Claims priority, application Germany, June 4, 1973, 2328293
Int. Cl.² B60F *3/00;* **B64C** *35/00*
U.S. Cl. 115—1 C **4 Claims**



1. A marine skimmer craft comprising an elongated body with anterior and posterior opposite ends thereof; a propulsion means for driving the body, mounted on said posterior end; at least two sets of wings mounted on the elongated body, each set having a wing extending laterally opposite from a remaining wing of the set extending in an opposite direction from an opposite side of the body, the wings of each set having upper and lower substantially flat surfaces positioned in substantially horizontal planes relative to the elongated body in a substantially horizontal plane, one set being mounted on the elongated body at an upper portion of the posterior end, a remaining other set being mounted substantially intermediately between said anterior and posterior opposite ends, in a different lower plane relative to said upper portion; and forward pivotable control-surface elements, one element mounted on each of opposite sides of the elongated body at said anterior end, each extending laterally in opposite directions from one-another each in a substantially horizontal plane laterally; and each wing comprising a plurality of panels elongated from front to back with each of lateral edges extending between the front and the back and being adapted for mating with a lateral edge of another panel, at least two panels for each wing being in a mated state.

3,960,104
BACK-UP ALARM WITH IMPROVED KEEPER
David H. Van Tuyl, Palo Alto, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.
Filed May 9, 1975, Ser. No. 576,134
Int. Cl.² B60Q *5/00*
U.S. Cl. 116—60 **21 Claims**

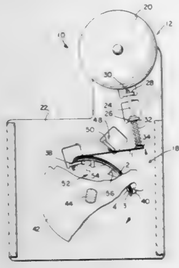


1. In a vehicle alarm for providing an audible alarm signal upon vehicle wheel rotation in a predetermined or so-called "ringing" direction, the alarm characterized in that it includes means for mounting the alarm at the hub of the vehicle wheel for mutual rotation therewith about common rotational axes; a bell having an interior surface; at least one clapper eccentrically mounted for reciprocal swinging movement of its striking surface along a path extending between a bell striking position and a cocked position, the striking position characterized by engagement of the clapper striking surface against the bell interior surface, the cocked position characterized by location of the striking surface at its furthest point of travel along the path from the bell striking position; the alarm further preferably including means for resiliently retracting the clapper from engagement with the bell as soon as the clapper strikes the bell to mitigate dampening of the bell by the clapper; and, the alarm further including a keeper for holding the clapper away from its bell striking position during alarm rotation in the opposite or so-called "non-ringing" direction,
- the improvement wherein the keeper maintains the clapper substantially immobile at its cocked position throughout repeated full revolutions of the alarm in the "non-ringing" direction.

3,960,105
SOUND MAKING SYSTEM
Thomas F. Ring, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Feb. 14, 1975, Ser. No. 549,873
Int. Cl.² G04B *23/00;* **G10K** *1/32*
U.S. Cl. 116—22 R **12 Claims**

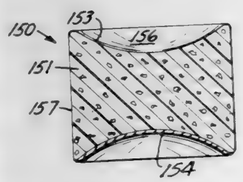
1. A sound making system comprising
a. a noise making device,
b. a spring loaded striker intermittently striking said noise making device,
c. at least two spring members, mounted juxtaposition one another, a distal end of said members intermittently engaging said spring loaded striker, and
d. means selectively engaging said members for slowly bending said spring members to store energy therein substantially simultaneously and for releasing said energy substantially instantaneously and individually, a first

spring member striking said spring loaded striker and the next succeeding spring member striking said first spring



member so as to provide individual sounds in a predetermined sequence.

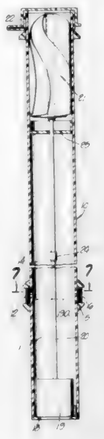
3,960,106
PARTICLE FLOW MONITOR
Robert J. De Brey, 1830 E. 42nd St., Minneapolis, Minn. 55407
Division of Ser. No. 268,538, July 3, 1972, Pat. No. 3,842,791, which is a continuation-in-part of Ser. No. 37,157, May 14, 1970, Pat. No. 3,674,316. This application Oct. 15, 1974, Ser. No. 514,644
Int. Cl.² G08B *3/02*
U.S. Cl. 116—67 R **32 Claims**



1. An apparatus for sensing particles moving with a flowing fluid comprising: a housing having an inside wall surrounding a chamber, an inlet opening open to the chamber, an outlet opening open to the chamber, and an open end opposite the inlet opening whereby fluid and particles can flow from the inlet opening through the chamber and out through the outlet opening, said inside wall of the housing generally increasing in size from the inlet opening toward the open end whereby the chamber increases in size from the inlet opening toward the open end, particle sensing means located across said open end of the chamber for producing audio signals related to the amount of particles which hit the sensing means during movement of particles through the chamber, said sensing means including a member comprising a foam body having a plurality of cells, and means adjacent the inside surface of the body for receiving the impaction forces of particles thereby producing audio signals, said body having a second surface spaced from the first surface exposed to the surrounding environment.

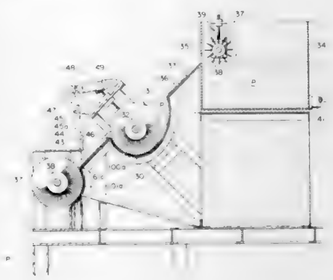
3,960,107
EXPANDABLE IRRIGATION SIGNAL
Edward W. McCloskey, 439-1/2 Riverside Drive, Burbank, Calif. 91506
Filed May 27, 1975, Ser. No. 580,662
Int. Cl.² G01F *23/08*
U.S. Cl. 116—118 A **6 Claims**

1. An irrigation signalling device comprising:
a. an elongated body providing a float chamber, said body being adapted to be installed in an irrigation ditch and having a lower portion which extends downwardly from the bottom of the ditch to form a well therebelow, and having an upwardly extending position which extends a distance above the upper boundary of the ditch;
b. an entrance opening means provided in said body which connects to the irrigation ditch and permits irrigation water to enter the float chamber of the body;
c. a float in said body positioned in the well formed in said elongated body, said float being adapted to be moved upwardly as said well fills with water;



d. a connection means connected to said float and extending upwardly within and to the upper end of said body; and
e. an expandable signal positioned within the upper end of said body and connected to said connection means, said signal being moved vertically upwardly by said connection means when water enters said well in order to vertically project said signal to a position above the upper end of said body, said signal expanding into expanded position thus signalling the presence of water in said ditch.

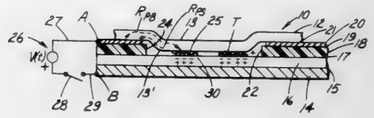
3,960,108
SPRAY COATING APPARATUS
Minoru Ichigo, Nagoya; Takeshi Suzuki, Inuyama, and Katsumasa Harada, Komaki, all of Japan, assignors to Kikusui Kagaku Kogyo Kabushiki Kaisha, Japan
Filed Mar. 7, 1974, Ser. No. 448,866
Claims priority, application Japan, Mar. 12, 1973, 48-28800; July 5, 1973, 48-76419; Sept. 14, 1973, 48-104239; Oct. 11, 1973, 48-114163
Int. Cl.² B05C *5/00*
U.S. Cl. 118—324 **8 Claims**



1. A spray coating apparatus comprising, in combination:

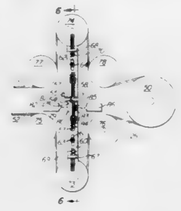
a supporting frame;
a first vessel fixedly mounted on said supporting frame, said vessel containing a coating agent in the form of a bulk liquid;
a second vessel also fixedly mounted on said supporting frame;
means for continuously supplying the coating agent from said frist to said second vessel at a prescribed rate;
a spray roll rotatably mounted over said supporting frame, said spray roll comprising a cylindrical core and a number of resilient elements of slender shape extending radially from the circumference of said cylindrical core;
a supply plate mounted along said spray roll, said supply plate comprising a slanting upper portion and a lower portion of arcuate cross section, said lower portion of said supply plate being disposed along the circumference of said spray roll in such a manner that said lower portion is held in substantial contact with said spray roll at least along its lower edge; and
delivery means for continuously delivering the coating agent from said second vessel onto said slanting upper portion of said supply plate wherein said delivery means comprises:
a slanting delivery plate onto which the coating agent is continuously supplied by overflow from said first vessel;
a receptacle of substantially arcuate cross section generally extending parallel to the axis of said spray roll and having one edge joined to the lower edge of said delivery plate and the opposite edge joined to the upper edge of said upper portion of said supply plate; and
a delivery roll rotatably mounted in said receptacle so as to extend parallel to the axis of said spray roll, said delivery roll also comprising a cylindrical core and a number of resilient elements of slender shape extending radially from the circumference of said cylindrical core;
whereby upon rotation of said delivery roll in a predetermined direction, the coating agent which has been delivered into said receptacle from said delivery plate is fed out onto said upper portion of said supply plate in the form of a layer of unvarying thickness;
whereby the coating agent is sprayed onto work away from said lower edge of said lower portion of said supply plate by said spray roll.

3,960,109
ELECTROSTATIC TONER TRANSFER
Phillip J. Stevko, Jr., Euclid, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio
Division of Ser. No. 457,071, April 1, 1974, Pat. No. 3,917,881. This application May 9, 1975, Ser. No. 576,124
Int. Cl.² B05B *5/02*
U.S. Cl. 118—637 **9 Claims**



1. A device for transferring a pattern of electrostatically charged developer particles, bound in an image pattern to an image surface of an insulating member by an electric field, to a transfer surface of a transfer member, said device comprising:
a conductive base interfacing with a non-image surface of the insulating member;
a dielectric member adapted to interface on one side thereof with the image surface of the insulating member;
a conductive layer disposed on the opposite side of said dielectric member and adapted to interface with a portion of the transfer surface of the transfer member;
said dielectric member and associated conductive layer each having an aperture in general alignment with the image pattern of developer particles on the insulating surface prior to transfer;
means for bringing the transfer surface into engagement with said conductive layer; and
means for causing reversal of the direction of the net electric field acting on the developer particles to effect an electrostatic bond between the developer particles and the transfer surface.

3,960,110
ANIMAL FACILITY EQUIPMENT
Frank R. Laurenz, P.O. Box 359, Eagle Butte, S. Dak. 57625
Filed Mar. 21, 1975, Ser. No. 560,601
Int. Cl.² A01K *1/00;* **B65G** *25/08*
U.S. Cl. 119—28 **28 Claims**



15. In an animal facility comprising a movable assembly and power train means for effecting automatic movement of said assembly along a direction of travel, the improvement characterized by the feature that said facility additionally includes means for emergency reversal of the direction of travel of said assembly, said emergency reversal means comprising
i. a stress balance means in said power train means, said stress balance means comprising an action member and means for biaing the same in a substantially balanced condition during normal movement of said assembly, said action member being responsively shifted into an increasingly unbalanced condition commensurate with any interference with said normal movement,
ii. primary sensing means for detecting a predetermined unbalanced condition for said action member, and
iii. actuating means responsive to said primary sensing means for actuating a reversal of the direction of travel of said assembly.

3,960,111
NESTING SUPPORT APPARATUS FOR FOWL
Barron M. Harris, Sr., Holiday, Fla., and Doyle F. Johnson, Lawrenceville, Ga., assignors to North American Culvert Corporation, Clearwater, Fla.
Filed May 22, 1975, Ser. No. 579,812
Int. Cl.² A01K *31/14*
U.S. Cl. 119—23 **8 Claims**

1. Apparatus providing a nesting support for waterfowl or the like, comprising:
nesting means defining an open upwardly facing receptacle to receive and support the nest of a waterfowl or the like;
drain means in communication with said receptacle to allow precipitation to flow by gravity from said nesting means;
at least one upright support means having an upper end attached to said nesting means and extending downwardly a predetermined distance therefrom to terminate at a lower end;
base means attached to said lower end of said support means and providing a downwardly directed surface support of area sufficient to rest on a surface while selfs-

upportively maintaining said support means and said attached nesting means in upstanding relation to said base means;

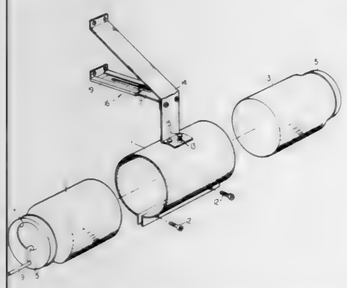
said nesting means comprising a length of hemicylindrical corrugated pipe attached to said support means to main-



tain the corrugated pipe in upwardly-facing concave position; and

said drain means being provided by a separate drain hole formed at the lowermost point in each corrugation of said upwardly-facing corrugated pipe.

3,960,112
BIRD FEEDER
Boyce C. Tiller, Blackbeard Harbor, Coles Point, Va. 22442
Filed Sept. 16, 1974, Ser. No. 506,018
Int. Cl.² A01K *5/00*
U.S. Cl. 119—51 R **2 Claims**



1. A bird feeder of the type in which at least one bird feed container is mounted to a first support and said first support is suspended by a vertical hanging means from a second support, said bird feeder being constructed such that:

said first support is freely aerially suspended by said hanging means away from surrounding objects and away from said second support, so that undesirable animals are inhibited from reaching said first support and said bird feed container;

said bird feed container being a substantially closed container having an opening through which birds are able to feed;

said first support being a cylinder adapted for at least partially enclosing said container, said cylinder being formed from a substantially rectangular sheet of flexible material and fasteners, opposite sides of said sheet being connected by said fasteners to shape said sheet into said cylinder so that said container is insertable in either end of said cylinder;

said fasteners being operative to draw opposite sides of said sheet closer to each other to reduce the diameter of said cylinder and thereby clamp said container into said cylinder, thereby permitting the use of various sized containers;

said bird feeder further comprising a stop member, said stop member protruding inside of said cylinder at substantially the longitudinal center thereof, thereby serving as a locating means for two of said containers inserted into either end of said cylinder.

3,960,113
ANIMAL RESTRAINT
Frank Kratky, Bellvue, Colo., assignor to Westguard Products, Inc., Fort Collins, Colo.
Filed Mar. 17, 1975, Ser. No. 558,668
Int. Cl.² A01K *1/06*
U.S. Cl. 119—99 **10 Claims**



1. An animal restraint comprising:

a pair of generally-upright elongated pipes spaced apart somewhat greater than the width of an animal to be restrained;

means for mounting said pipes to permit rotation of each pipe about its longitudinal axis;

a first spur gear mounted on one of said pipes near one end thereof;

a second spur gear mounted on the other of said pipes near one end thereof, with both of said gears being sized and aligned to intermesh so that each of said pipes is slaved to the other in rotation;

a pair of elongated tubes;

means for securing one of said tubes to one of said pipes in generally-parallel spaced relationship;

means for coupling the other of said tubes to the other of said pipes in generally-parallel spaced relationship and with the upper end portion of said other tube being movable toward and away from said other pipe;

means for urging said upper end away from said other pipe;

and means for releasably latching the assemblies of the other ends of said pipes and the adjacent ends of said tubes in a closed condition in which said tubes are positioned between said pipes.

3,960,114
HOG OILER
William P. Hovorak, 1023 W. 16th St., Wellington, Kans. 67152
Filed May 27, 1975, Ser. No. 580,908
Int. Cl.² A01K *13/00, 29/00*
U.S. Cl. 119—157 **10 Claims**

3. A livestock treater comprising:

a. a frame having an upright member mounted on a base;

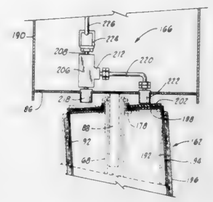
b. a reservoir mounted on an upper portion of said frame;

c. rubbing means for providing a rubbing surface for the livestock and dispensing fluid therefrom, said rubbing means having a drum mounted on an upper portion of said upright member by tiltable mounting means, said tiltable mounting means having a flange rigidly secured to the upper end portion of said upright member and extending outwardly therefrom and a ring rigidly secured

inside an upper end portion of said drum, said ring resting on top of said flange, said ring having the inner portion thereof substantially spaced from said upright member;

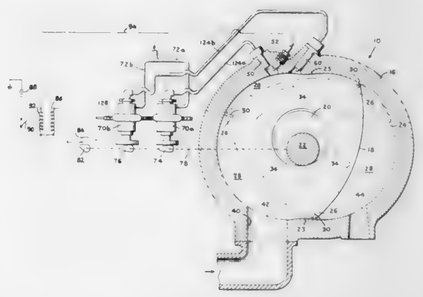
d. guide means attached to said rubbing means, said guide means supporting said rubbing means in an upright position;

e. conduit means communicably connecting said reservoir and said rubbing means;



f. normally closed valve means communicably connected to said conduit means, said valve means having a valve body mounted on a lower portion of said reservoir and a valve closure member rigidly mounted on an upper portion of said rubbing means, said valve body having an inlet in said reservoir and an outlet through said reservoir communicably connected to said valve closure member.

3,960,115
STRATIFIED CHARGE ROTARY ENGINE (METHOD OF OPERATION)
Harold D. Lamping, Oakland, and David M. Myers, Upper Saddle River, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.
Filed Oct. 4, 1974, Ser. No. 512,342
Int. Cl.² F02B *53/10*
U.S. Cl. 123—8.09 **2 Claims**



1. A rotary combustion engine comprising:

a. an outer body having an internal cavity, the peripheral surface of which has a multi-lobe profile, said outer body also having an air-intake passage and a combustion gas exhaust passage, said air-intake passage being characterized by the absence of any air throttling valve,

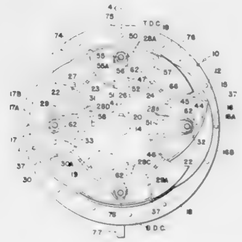
b. an inner body of generally polygonal profile mounted for relative rotation within said outer body, the apex portions of said inner body having sealing cooperation with said peripheral surface to define a plurality of working chambers which vary in volume in response to said relative rotation,

c. first and second fuel nozzles each mounted on said outer body for discharging fuel into each engine working chamber after the air charge therein has been substantially compressed,

d. mechanism for regulating the fuel discharged by said nozzles into each engine working chamber, said mechanism including a single engine power control member operable for adjusting said mechanism so that during a relatively low power range of movement of said member the quantity of fuel supplied by the second nozzle remains substantially constant at a relatively low value and the quantity of fuel supplied by the first nozzle progressively increases as said power control member is moved in a power increasing direction, while during a higher power range of movement of the power control member the quantity of fuel supplied by the second nozzle increases at a faster rate than that supplied by the first nozzle as the power control member is moved in a power increasing direction in said higher power portion of its range of movement, and

e. ignition means disposed immediately adjacent to said first fuel nozzle such that its electrodes are disposed in a recess in the outer body through which said first fuel nozzle discharges and such that said ignition means ignites fuel promptly as it discharges from said first fuel nozzle.

3,960,116
ROTARY ENGINE
Lawrence Allister Ingham, Box 112, Lanigan, Saskatchewan, Canada
Filed Sept. 16, 1974, Ser. No. 506,202
Int. Cl.² F02B *53/00*
U.S. Cl. 123—8.45 **19 Claims**

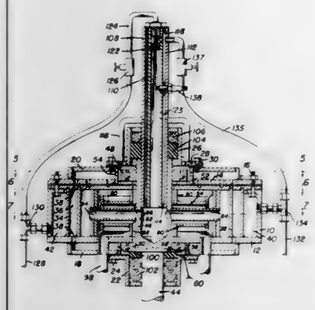


1. In a rotary engine which includes intake and exhaust means, fuel supply means and ignition means, said rotary engine comprising in combination a casing, said casing including a pair of spaced and parallel side walls and an annular ring therebetween having an inner surface and defining with said side walls, a substantially cylindrical chamber therewithin, a main shaft journalled for rotation within said side walls and extending transversely and axially through said casing, a rotor component secured to said shaft within said chamber, and a plurality of piston components pivotally mounted to said rotor around the periphery thereof, each of said pistons being in sealing engagement with said side walls and having a transverse contact strip in sealing engagement with the inner surface of said annular ring, said inner surface of said annular ring being contoured to form a compression lobe on one side thereof and an expansion lobe on the other side thereof substantially diametrically opposite to said compression lobe, each of said piston components including a pair of outer plates and an inner plate therebetween, the inner surface of said outer plates and the outer surfaces of said inner plate being inclined whereby engagement of said inner plate between said outer plates constitutes a circular wedging action, spring means operatively connected between said inner plate and said outer plates and means mounting said plates pivotally upon said rotor, said spring means uring rotative movement between said inner plate and said outer plates thereby urging said outer plates apart and into sealing contact with said side walls of said chamber.

3,960,117
ROTARY ENGINE

Edwin G. Kammerer, 7913 Wharton Ave., Lamont, Calif. 93241

Filed July 10, 1974, Ser. No. 487,318
Int. Cl.² F02B 53/00
U.S. Cl. 123—8.49 3 Claims



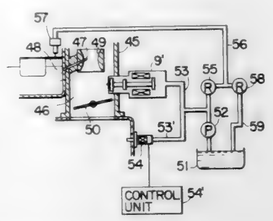
1. In a rotary engine, the combination of:
a casing having an inner cylindrical wall;
a rotor in the casing for power output from the engine,
said rotor having at least one pair of lobes in sliding contact with said inner cylindrical wall, said lobes being formed with opposite sloping shoulders;
a plurality of vanes extending inward from said cylindrical wall in pressure contact with the periphery of the rotor, said vanes being yieldingly urged inwardly to follow the configuration of the lobes,
whereby the trailing sides of the lobes with respect to the direction of rotation of the rotor cooperate with the vanes successively to form successive expanding chambers and the leading sides of the lobes cooperate with the vanes successively to form successive contracting chambers,
said rotor having a central interior chamber for a high pressure actuating fluid and a separate interior chamber for exhaust fluid surrounding said central chamber,
an axial end of said chamber for exhaust fluid communicating with stationary exhaust passage means;
stationary means including a fuel combustion chamber cooperative with the rotor to supply high pressure actuating fluid to the first mentioned central chamber in the rotor;
a first set of tubular passages in the rotor extending from said central chamber, through said separate chamber into communication with the trailing sides of the lobes respectively to deliver the actuating fluid to the successive expanding chambers; and
a second set of tubular passages in the rotor extending from said separate chamber into communication with the leading sides of the lobes respectively to exhaust the successive contracting chambers.

3,960,118
AIR-FUEL RATIO ADJUSTING DEVICE IN AN INTERNAL COMBUSTION ENGINE HAVING A CARBURETOR

Toshiaki Konomi, Susono, and Hiroshi Koide, Okazaki, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 15, 1974, Ser. No. 470,304
Claims priority, application Japan, May 16, 1973, 48-53525
Int. Cl.² F02B 3/00; F02D 1/06
U.S. Cl. 123—32 EA 1 Claim

1. An air-fuel ratio adjusting device for use in an internal combustion engine having a carburetor including a main fuel supply system, comprising:
an oxygen sensor provided in the exhaust system of said internal combustion engine for detecting oxygen concentration in the exhaust gas;
a control unit connected to said oxygen sensor including means for comparing the air-fuel ratio in the air-fuel mixture in the engine with the theoretical air-fuel ratio through the detected oxygen concentration and generating a control signal corresponding to the difference between the engine air-fuel ratio and the theoretical air-fuel ratio, and means for continuously generating a pulse signal with a time interval initiated in response to the engine rotation, the pulse width of said pulse signal being varied in response to said control signal;
an electromagnetic fuel injection system provided separately from said main fuel supply system in the carburetor, and having a solenoid valve means energized by said varied pulse signal of said control unit;

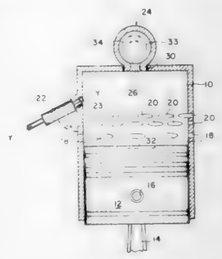


a first passage connected to said fuel injection system at its one end and connected to a fuel tank at its other end;
a second passage connected to said main fuel supply system at its one end and divided at its other end into two passages, one of which is connected to the fuel tank and the other of which is connected to said first passage;
a pump provided in said first passage at a position between the fuel tank and the point of connection of said first and second passages; and
regulator means including a first regulator provided in said divided passage of said second passage which is connected to said first passage, and
a second regulator provided in said divided passage of said second passage which is connected to the fuel tank, whereby said regulators cause said pump to deliver fuel at different pressure to said main fuel supply system and said fuel injection system.

3,960,119
INTERNAL COMBUSTION ENGINE

Panayotis C. Dimitracopoulos, Lyford Cay, P.O. Box N-7776, Nassau, Bahamas

Filed Dec. 17, 1974, Ser. No. 533,706
Int. Cl.² F02B 23/00
U.S. Cl. 123—32 C 8 Claims



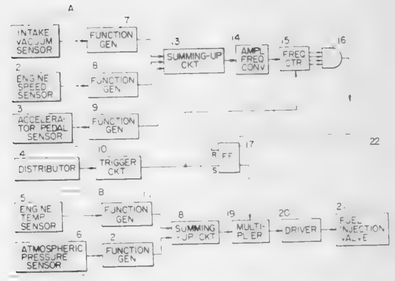
1. An internal combustion engine having a cylinder in which a piston is arranged to reciprocate, comprising:

a. said cylinder having a closed top formed with a passageway coaxial to the axis of said cylinder;
b. a blind and substantially spherical ignition chamber coaxial to said cylinder communicating with said cylinder through said passageway, said ignition chamber consisting of a continuously smooth, unbroken wall devoid of any mechanical elements or irregularities,
c. said passageway having a smoothly curved convex internal wall forming a throated restriction between said cylinder and said ignition chamber;
d. fuel-injection means disposed on the cylindrical wall of said cylinder, including means for injecting at low pressure substantially large droplets of fuel in said cylinder in the general direction of said passageway;
e. air-admission means and exhaust means arranged on the cylindrical wall of said cylinder.

3,960,120
ELECTRONIC FUEL INJECTION CONTROL CIRCUIT FOR AN INTERNAL COMBUSTION ENGINE

Shigeo Aono, Seki, and Makoto Anzai, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 21, 1975, Ser. No. 579,711
Claims priority, application Japan, June 21, 1974, 49-70289
Int. Cl.² F02B 3/00
U.S. Cl. 123—32 EA 10 Claims

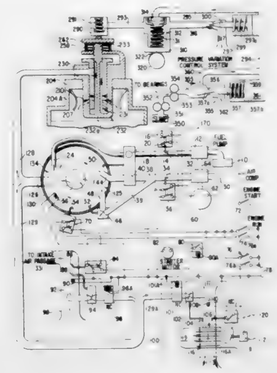


1. An electronic fuel injection control circuit for an internal combustion engine with means for producing a signal synchronized with the revolution of the engine, comprising:
a plurality of sensing devices for generating signals representative of operating conditions of said engine;
function generating means coupled to each said signal sensing device for rectilinearly relating each operating condition to the amount of fuel to be supplied to said engine;
means coupled to each said function generating means for summing up the outputs therefrom;
an amplitude-to-frequency converter to produce a train of pulses the pulse repetition frequency of which is exponentially inversely proportional to the input amplitude, said converter being coupled to said summing up means to remove the discontinuities of the rectilinear approximation; and
a pulse forming circuit including a counter coupled to said converter for counting the pulses therefrom to produce an output when a predetermined number is reached and arranged to be cleared by the synchronous signal, and a flip-flop arranged to be set by the output from said counter and reset by said synchronous signal.

3,960,121
ENGINE COMBUSTION SYSTEM

Harold Adams Backus, Wynnewood, Pa., assignor to Backus Devices, Incorporated, Pa.

Continuation of Ser. No. 153,584, June 16, 1971. This application May 30, 1974, Ser. No. 474,791
Int. Cl. F02b 3/00, 43/08; F02m 31/00
U.S. Cl. 123—34 A 17 Claims



1. A combustion system for an engine comprising air pressurizer means for providing pressurized air, fuel pressurizer means for providing pressurized fuel, preburner means connected to said air pressurizer means and fuel pressurizer means for producing a hot gaseous admixture of fuel vapor and products of combustion which is heated to the temperature for autoignition of said gaseous admixture in air, means defining a combustion space within said engine, fuel release valve means connected to the output of preburner for controlling the release of the said hot gaseous admixture into said combustion space, and means for supplying preheated air to said combustion space to provide burning of said admixture in said preheated air, said preburner means comprising a mixing chamber, at least one fuel nozzle for injecting pressurized fuel into said chamber, at least one air nozzle for injecting a jet of pressurized air into said chamber at least a portion of which jet effects turbulent motion within said chamber so as to cause mixing of said fuel and said air, heating means for aiding in igniting the pressurized fuel, and sensing means responsive to the temperature within said chamber for controlling the output of said fuel nozzle.

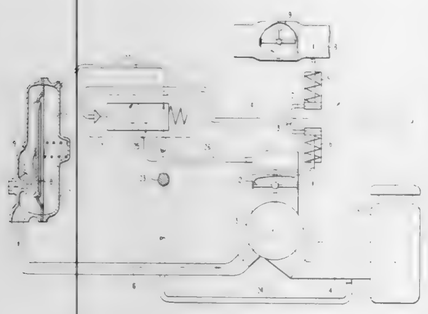
3,960,122
ENGINE EXHAUST BRAKE FOR OTTO-ENGINES OPERATED WITH GAS

Günter Perrin, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Mar. 29, 1974, Ser. No. 456,292
Claims priority, application Germany, Mar. 30, 1973, 2315947
Int. Cl.² F02D 31/00, 35/02
U.S. Cl. 123—97 B 19 Claims

1. An engine exhaust brake for a motor vehicle operated by a gas engine, which upon its engagement causes the closing of an exhaust gas line with the aid of an exhaust brake valve means and the opening of a throttle valve controlling the mixture supply, a gas-air mixer means arranged upstream of the throttle valve, and a diaphragm controlled gas regulator means including an output stage having a vented side operatively connected with the atmosphere by way of an air line, the gas supply of the gas-air mixer means being controlled by said output stage, characterized in that a control valve means is

connected in said air line which is controllable by engagement of the engine brake and which upon engagement of the engine brake is operable to connect the vented side of the output



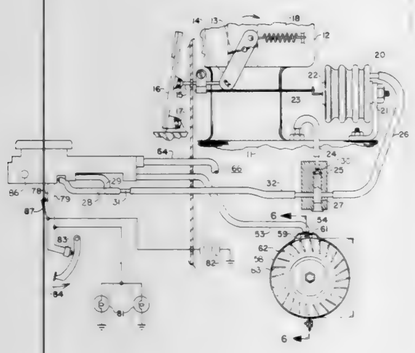
stage of the gas regulator means with a vacuum source whose vacuum causes the closing of the gas supply to the gas-air mixer means.

3,960,123

ENGINE SPEED MAINTAINING APPARATUS

Kenneth L. Berninger, 7225 N. Dearborn Ave., Indianapolis, Ind. 46240

Filed Oct. 4, 1974, Ser. No. 512,083
Int. Cl.² F02D *11/08*
U.S. Cl. 123—103 R **11 Claims**



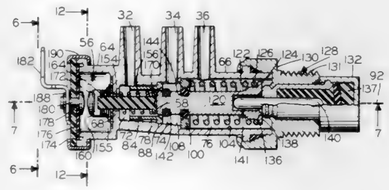
1. An engine speed responsive control for an internal combustion engine comprising:
- an engine fuel intake control;
- a fluid operated driver for said intake control;
- a pressure responsive control valve means coupled to said driver and operable upon sensing a pressure above a predetermined level to disable said driver,
- said control valve means including a first input for a source of pressure, a valve port, and a valve member operable to normally close said valve port but movable to open said valve port;
- an engine driven fan;
- a pressure pick-up at said fan to develop pressure in response to fan motion; and
- a conduit coupling said pick-up to said first input for transmitting to said input, pressure from said pick-up.

3,960,124

POLLUTANT EMISSION CONTROL SYSTEM AND A COMBINED ELECTRIC SWITCH AND TEMPERATURE RESPONSIVE VALVE THEREOF

Frank Payne, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 20, 1975, Ser. No. 542,633
Int. Cl.² F02P *5/04*; **F01P** *5/14*
U.S. Cl. 123—117 A **14 Claims**



1. A combined electric switch and temperature responsive valve for a pollutant emission control system of an internal combustion engine, said combined switch and valve comprising

a tubular body having a valve end and an electric switch end and a generally hollow interior between the ends of said body,

an intermediate wall means interposed between the ends of said body for partially dividing the hollow interior between the ends of said body, said intermediate wall means having an aperture that forms part of the hollow interior and that is in communication with the hollow interior between the ends of said body,

an internal combustion engine,

a thermo-responsive power element means connected to the valve end of said body and the internal combustion engine, said power element means having more than one controlling position for controlling the operation of said combined switch and valve during operation of the internal combustion engine,

an electic switch and valve actuating means connected to said power element means and extending in the hollow interior of said body from its valve end through the aperture of said wall means into its electric switch end, said electric switch and valve actuating means having an outer electric switch end portion at the electric switch end of said body,

the electric switch end of said body having spaced electric contact terminal means and an electric bridging means for electrically interconnecting said spaced electric contact terminal means,

said bridging means being slidably mounted on the outer electric switch end portion of said electric switch and valve actuating means at the electric switch end of said body,

means on the outer electric switch end portion of said electric switch and valve actuating means for retaining said bridging means on the outer electric switch end portion, and

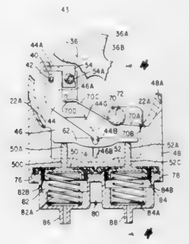
spring means interposed between said bridging means and said intermediate wall means and urging said bridging means into engagement with said spaced electric contact terminal means when said electric switch and valve actuating means is moved in a direction towards the electric switch end of said body upon actuation of said thermo-responsive power element means from one controlling position to another as said combined switch and valve is operated during operation of the internal combustion engine.

3,960,125

DUAL VACUUM ACTUATOR IGNITION TIMING

Richard W. Mattson, Rossford, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Dec. 17, 1973, Ser. No. 425,430
Int. Cl.² F02P *5/04*
U.S. Cl. 123—117 A **1 Claim**



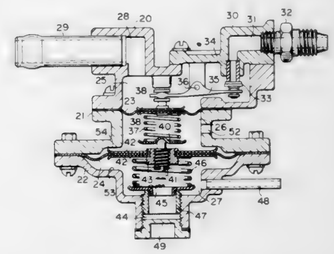
1. A dual vacuum advance distributor for an engine comprising a timing rotor, a movable member, a coil carried by said movable member, said movable member being adapted to move said coil generally tangentially relative to said rotor, first and second actuators which are independently operable and are disposed for generally parallel movement and a proportioning yoke, said first actuator engaging said yoke so that movement of said first actuator causes movement of said yoke, said second actuator engaging said yoke remotely from said first actuator so that movement of said second actuator causes movement of said yoke independently of the movement caused by said first actuator, said yoke engaging said movable member intermediate said actuator engagement points, whereby any movement of said actuators is summated and proportioned as it is transmitted to said movable member by said yoke.

3,960,126

PRESSURE REGULATOR OF LIQUEFIED-GAS FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Kazuo Shinoda, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 20, 1974, Ser. No. 471,193
Claims priority, application Japan, Jan. 12, 1974, 49-6793
Int. Cl.² F02M *21/02*
U.S. Cl. 123—120 **10 Claims**



1. A pressure regulator for a liquefied-gas fuel system in an internal combustion engine comprising:
- a. a regulator body forming a space partitioned into three chambers; namely,
- i. a pressure-regulating chamber communicating with a liquefied-gas fuel source and a carburetor, said pressure-regulating chamber having a fuel inlet passage communicating with said liquefied-gas fuel source, and a fuel outlet passage communicating with said carburetor;
- ii. a back-pressure chamber communicating with the atmosphere; and
- iii. a suction-pressure chamber communicating with an intake system of said engine by an intake port coupled to an intake manifold such that a vacuum is selectively formed in said suction-pressure chamber;
- b. a first diaphragm forming a boundary between said pressure-regulating chamber and said back-pressure chamber;
- c. a second diaphragm forming a boundary between said back-pressure chamber and said suction-pressure chamber;
- d. a first spring mounted in said suction-pressure chamber, said first spring disposed against said second diaphragm and said pressure-regulating body adjacent the bottom thereof;
- e. a screw adjustment means secured in said first diaphram for selectively engaging said second spring and limiting the downward movement thereof;
- f. a second spring mounted in said back-pressure chamber, said second spring disposed against said first and second diaphragms;
- g. a fuel regulating valve disposed in said fuel inlet passage of said pressure-regulating chamber; and
- h. an actuating lever having first and second ends, said first end operatively connected to said fuel regulating valve and said second end operatively coupled to said first diaphragm, said actuating lever disposed in said pressure-regulating chamber such that when said first diaphragm is disposed downward, said first end of said lever is caused to deactuate said regulating valve thereby decreasing the amount of fuel supplied to said pressure-regulating chamber, and when said first diaphragm is disposed upward, said first end of said lever is caused to actuate said regulating valve thereby increasing the amount of fuel supplied to said pressure-regulating chamber,

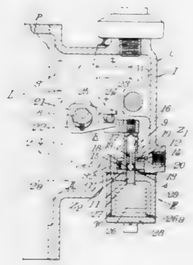
said first and second springs are arranged and configured in said pressure-regulator such that for predetermined pressures in three chambers, said actuating lever is caused to selectively regulate the fuel supplied to said pressure-regulating chamber.

3,960,127

DEVICE FOR REGULATING THE DELIVERY OF A FUEL INJECTION PUMP OF AN INTERNAL COMBUSTION ENGINE

Andre Vuaille, Lyon, France, assignor to Sigma Diesel, Ueniss-ieux, France

Filed Oct. 29, 1974, Ser. No. 519,013
Claims priority, application France, Oct. 30, 1973, 73.38636
Int. Cl.² F02D *1/04*, *1/06*
U.S. Cl. 123—140 MP **7 Claims**



1. A device for regulating the delivery of a fuel injection pump of an internal combustion engine, comprising:

a control member movable in dependence upon the speed of the engine;
a regulating member for adjusting the delivery of the injection pump;
a transmission lever for transmitting movement of said control member to said regulating member, said transmission lever having its ends pivotally connected to said control member and said regulating member respectively;
a casing housing said control member, said regulating member and said transmission lever;
a pivot having a geometric axis, said pivot being mounted on said casing for rotation about said geometric axis;
a spindle connected to said pivot for rotation with said pivot, said spindle being parallel to and eccentric with respect to the geometric axis of said pivot, said transmission lever being freely rotatably mounted on said spindle intermediate the ends of said transmission lever; and
actuating means sensitive to a controlling fluid pressure for rotating said pivot, thereby to move said regulating member to adjust the delivery of the injection pump in response to changes in said controlling fluid pressure;
in which device said actuating means comprise:
a differential piston having first and second working surfaces with said first surface of smaller area than said second surface;
a cylinder receiving said differential piston and defining with said first and second surfaces of said piston respective first and second chambers with said first chamber of smaller cross-sectional area than said second chamber, said first and second chambers being permanently connected together by a linking duct of small cross-section, said cylinder having an inlet for introducing working fluid to said first chamber;
a pilot valve defining with said differential piston a variable throttle section for connecting said second chamber to a low pressure region into which said working fluid is discharged; and
a deformable unit comprising a resilient metal bellows having an evacuated interior and sensitive to said controlling fluid pressure and operatively coupled to said pilot valve such that said pilot valve is rigidly and directly fixed on said deformable unit so as to adjust the position of said pilot valve in response to changes in said controlling fluid pressure, said differential piston comprising an axial bore having one end receiving said pilot valve and the other end provided with orifices in communication with said low pressure region, said pilot valve comprising a longitudinal blind bore opening into said axial bore adjacent to said orifices of said other end, said pilot valve comprising a cylindrical surface formed with at least one orifice communicating with said axial bore in said piston to form said variable throttle section.

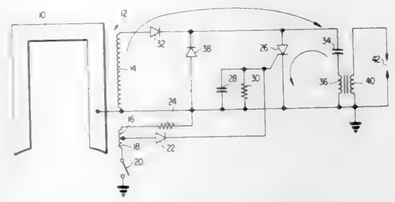
3,960,128

CAPACITOR DISCHARGE IGNITION SYSTEM

Harold E. Anderson, Los Angeles, and Gerald T. Kiner, Lawndale, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Filed Oct. 15, 1974, Ser. No. 514,603
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 E **7 Claims**

1. An ignition circuit for an internal combustion engine comprising:
a two-legged magnetic member;
a capacitor;
a charging circuit including a first coil for periodically applying a unidirectional charging current to said capacitor responsively to engine rotation;
a discharge circuit for said capacitor, said discharge circuit including the primary winding of an ignition transformer and an SCR connected in series;
a trigger circuit including a first plurality of turns of a second coil for periodically applying a triggering potential to the gate of said SCR responsively to engine rotation; and,
selectively operable means including a second plurality of turns of said second coil for periodically applying a trig-



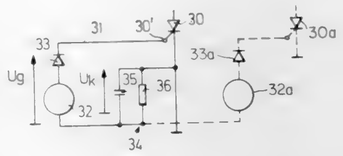
gering potential to the gate of said SCR in sufficient synchronism to prevent charging of said capacitor to ignition potential,
said first and second coils being unidirectionally wound on one leg of said two-legged magnetic member.

3,960,129

COMPENSATED SEMICONDUCTOR IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Walter Hofer, Schwabach; Georg Haubner, Berg, and Peter Schmaldienst, Nurnberg, all of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Division of Ser. No. 330,689, Feb. 8, 1973, abandoned. This application Feb. 3, 1975, Ser. No. 546,195
Claims priority, application Germany, Mar. 10, 1972, 2211534
Int. Cl.² F02P *5/04*
U.S. Cl. 123—148 CC **8 Claims**



1. Ignition system for a multi-cylinder internal combustion engine having
a main ignition circuit including an ignition coil (**14**), spark plug means (**17**) connected to the ignition coil, and controlled switching element means (**30, 30***a*, **40, 60, 80,** 80*a*) having main terminals and a control terminal, and controlling current flow through the coil;
a plurality of magnetic pulse source means (**32, 32***a*, **45, 68, 84, 84***a*) magnetically coupled to a rotating element of the system;
a plurality of diodes (**33, 33***a*, **47, 69, 85, 85***a*), each connected in series with a respective pulse source means to pass only pulses of one polarity, the pulse source means - diode circuit combinations being connected with one output terminal to the control terminal of the controlled switching element means to trigger said element and control switching action thereof;
a common resistor-capacitor (R/C) circuit (**35, 36; 42, 43, 44***a*; **66, 67, 87, 88**) forming a compensation circuit (**34, 41, 65, 86**) in which the resistance portion and the capacitance portion of the circuit are connected in parallel, connecting the other respective terminals of each of the pulse source means-diode combinations (**32–33; 32***a***–33***a*; **45–47; 68–69; 84–85; 84***a***–85***a*) to one of the main terminals of the controlled switching element means (**30, 30***a*, **40, 60, 80, 80***a*) whereby the common compensation circuit (**34, 41, 65, 86**) is connected in the circuit

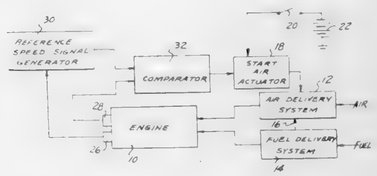
path between the main terminal of the controlled switching element means and said other terminal of the pulse source means.

3,960,130

START AIR CONTROL SYSTEM

William A. Peterson, Jr., Royal Oak, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 28, 1974, Ser. No. 473,621
Int. Cl.² F02N *17/00*
U.S. Cl. 123—179 A **22 Claims**



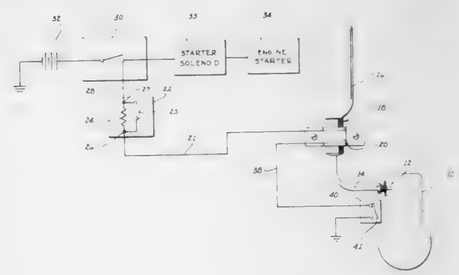
1. A start air control system for an internal combustion engine having an air delivery system including a throttle controlled air intake manifold and cranking means for starting the engine comprising:
means sensing engine operating conditions including engine speed and engine temperature for generating a start termination signal when engine speed exceeds a reference speed having a value determined by engine temperature; and
start air control means for generating an output signal operative to provide a predetermined engine input air flow during engine starting, said start air control means having a first state generating said output signal and switched to a second state terminating said output signal in response to said termination signal.

3,960,131

INTERNAL COMBUSTION ENGINE STARTING SYSTEM

Bill G. Davis, Phoenix, Ariz., assignor to Jetco, Inc., Phoenix, Ariz.

Filed Nov. 29, 1974, Ser. No. 528,561
Int. Cl.² F02M *1/16*
U.S. Cl. 123—187.5 R **1 Claim**



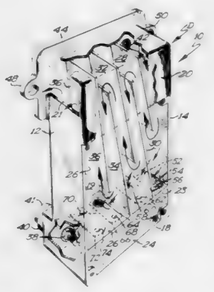
1. In an electrically actuated series connected starting system for a water jacket encased internal combustion engine having a starter switch connected to a battery, the improvement comprising in combination:
a. a container for storing a volatile starting fluid under pressure;
b. an electrically actuatable discharge means connected to said container for discharging the starting fluid from said container, said discharge means including an electrically actuated solenoid means for metering a predetermined quantity of the fluid upon electrical energization of said discharge means and for discharging the predetermined quantity of the starting fluid upon electrical de-energization of said discharge means;
c. conduit means extending from said discharge means to the engine for transmitting the discharged predetermined quantity of the starting fluid from said discharge means to the engine;
d. a timing switch electrically connected in series between the starter switch and said discharge means for periodically electrically energizing said discharge means, said timing switch including a current limiting heating element connected in parallel with a normally open bimetallic relay responsive to said heating element for periodically establishing a short circuit across said heating element;
e. a normally closed thermostatic switch mounted adjacent the water jacket of the engine for sensing the ambient temperature of the engine, said thermostatic switch being actuated in response to a predetermined ambient temperature of the engine;
f. electrical conductor means for electrically connecting said thermostatic switch to said discharge means; and
g. further electrical conductor means for electrically connecting said thermostatic switch to the battery; whereby, the starting fluid is continually periodically discharged into the engine until either the starting switch is turned off or until the engine reaches an ambient temperature, whichever occurs first.

3,960,132

DEVICE FOR LUBRICATING AN INTERNAL COMBUSTION ENGINE WITH POWDERED GRAPHITE

Chester O. Goserud, 3205 Woodbridge St., St. Paul, Minn. 55112

Filed Jan. 13, 1975, Ser. No. 549,395
Int. Cl.² F01M *1/00*
U.S. Cl. 123—196 CP **5 Claims**

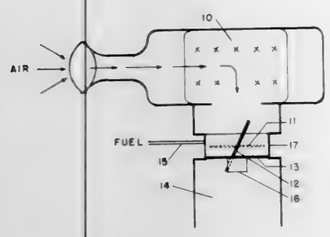


1. In combination with an internal combustion engine having a crankcase, a device for lubricating the internal combustion engine with powdered graphite comprising:
a. a housing connected to the crankcase of the internal combustion engine externally thereof and having
b. an inlet opening at one end of the housing for connection with an outlet opening in the crankcase of an internal combustion engine and
c. an outlet opening at the other end for connection with an inlet opening of the crankcase of an engine;
d. means for connecting said inlet opening of said housing to the outlet opening of a crankcase of an engine,
e. means connecting said outlet opening of the housing to the inlet opening of a crankcase,
f. a breather opening formed in said housing,
g. means in said housing for collecting graphite carried by airflow through the housing from the inlet opening to the outlet opening and prior to said outlet of said housing and said breather opening, and
h. valve means for causing the collected graphite in the housing to exit out said outlet of said housing.

3,960,133
FUEL SAVING APPARATUS

James W. Donovan, Washington, D.C., assignor to Barry J. Nace, Washington, D.C., a part interest

Filed Mar. 1, 1974, Ser. No. 447,277
Int. Cl.² F02B 77/00
U.S. Cl. 123—198 R 5 Claims

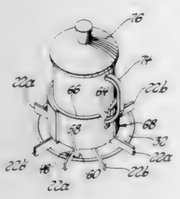


1. An improved gasket comprising a gasket body and a multiple-sided appendage securely fastened to said gasket body in combination with a carburetor containing a fuel flow control valve and an intake manifold wherein said improved gasket is disposed between said carburetor and said intake manifold whereby said appendage of said gasket controls the extent to which said fuel flow control valve can open when said valve contacts said appendage, said fuel flow control valve controlling the flow of fuel from said carburetor to said intake manifold.

3,960,134
UTENSIL HOLDER FOR STOVE

Elmira J. Scott, 8605 Longworth, Waterford, Mich. 48095

Filed Nov. 4, 1974, Ser. No. 520,473
Int. Cl.² F24C 15/10
U.S. Cl. 126—24 7 Claims

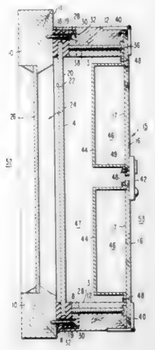


1. A device providing means for restraining an object such as a cylindrical cooking utensil from inadvertently or accidentally falling from a stove having a horizontally-disposed heating element and/or grate, said device comprising first means for restraining the utensil, said first means comprising a tubular, sheet metal or other body having upper and lower open ends, said body being split between said upper and lower ends to provide free ends at said split and adapted to receive utensils through said upper open end, said free ends of said body at said split being formed to overlap, whereby said body is resiliently expandable from its free-state overlapping configuration to substantially circumscribe utensils of varying diameters, and second means for removably securing said device to the stove, said second means comprising means extending from said lower open end and formed to have a side opening therein for receiving a portion of the stove heating element or grate upon horizontal movement of said second means.

3,960,135
SOLAR HEATER AND THERMAL BARRIER

Domenick J. Angilletta, 223 E. Knight Ave., Collingswood, N.J. 08108

Filed Nov. 26, 1974, Ser. No. 527,486
Int. Cl.² F24J 3/02
U.S. Cl. 126—270 7 Claims



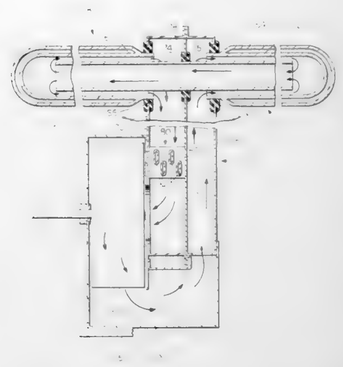
1. A solar heater for attachment to the inside of windows of buildings comprising:
- a box assembly having a rear panel member including heat exchanger means and top, bottom and spaced side panels forming a box enclosure with said rear panel and having air passages in at least one of said panels; and
- means for removably attaching said box enclosure to a window sash to enclose the sash and with said rear panel spaced from and projecting inside the associated building from the window of the associated sash;
- said heat exchanger means including a member of high thermal conductivity and having a surface of high heat absorptivity and being attached to said rear panel and spaced therefrom and from the sash for receiving solar radiation passing through the associated sash window and for heating air enclosed within said box assembly and passing on both sides thereof;
- said air passages being located at the top and bottom of said box assembly for passing air from inside the associated building through the bottom passage upwards on both sides of said heat exchanger and with convection heating thereof back into the associated building through the top passage.

3,960,136
SOLAR ENERGY COLLECTION SYSTEM

Kenneth L. Moan, and Yu Kun Pei, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 20, 1975, Ser. No. 551,345
Int. Cl.² F24J 3/02
U.S. Cl. 126—271 6 Claims

1. A solar energy collector which comprises:
- a manifold divided into at least a first and a second separate compartment;
- a connecting tube extending through said first and said second compartments, said connecting tube extending beyond both said first and said second compartments into the outside atmosphere;
- a first double wall transparent glass tube, the space between said double walls being sealed at a sub-atmospheric pressure, having a closed end, and an open end enveloping that portion of said connecting tube extending beyond said second compartment and in communication with said second compartment;
- a second double wall transparent glass tube, the space between said double walls being sealed at a sub-atmospheric pressure, having a closed end, and an open end enveloping that portion of said connecting tube extending beyond said first compartment and in communication with said first compartment;
- a gas, filling said manifold, connecting tube and said first and second double wall tubes;

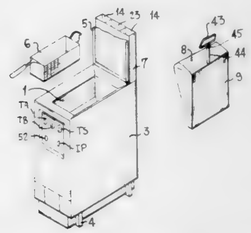


means for propelling said gas in an endless cycle from one compartment to the other, through said connecting tube, through both of said first and second double wall tubes in counter flow to the path of flow through said connecting tube and into the other compartment of said manifold; and
- a heat exchanger, mounted in the path of flow of said gas from said second compartment to said first compartment.

3,960,137
APPARATUS FOR FRYING FOOD BY IMMERSING IT IN BOILING OIL

Charles Schmid, 12 Chemin de Chantemerle, Orbe, Vaud, Switzerland

Filed Sept. 13, 1974, Ser. No. 505,985
Claims priority, application Switzerland, Sept. 25, 1973, 13813/73
Int. Cl.² A47J 21/02
U.S. Cl. 126—387 3 Claims



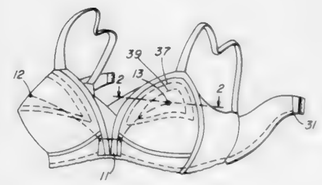
1. A deep-fryer for frying food in oil, comprising
1. a deep tank having two opposed side walls defining a central part of the tank therebetween, an upper part thereabove and a settling chamber therebelow,
2. a removable filling member mounted in the central part of the deep tank, the filling member having two opposed side walls adjacent respective ones of the tank side walls and an upper wall,
- a. the upper wall of the filling member delimiting a frying vat in the tank for an oil bath wherein the food is immersed for frying,
- b. one of the tank side walls and the adjacent filling member side wall defining an upstream oil circulation duct portion beginning at the upper filling member wall and in communication with the frying vat,
- c. the other tank side wall and the filling member side wall adjacent thereto defining a downstream oil circulation duct portion constituted by a narrow slit and ending at the upper filling member wall, the slit being in communication with the upstream duct portion and the frying vat, the upstream and downstream duct portions forming a looped circulation duct for the oil, and
- d. the settling chamber being in communication with the central part of the tank through a constricted passage arranged between the upstream and downstream duct portions,

3. means for heating the other tank side wall and thus to heat the oil ascending in the narrow slit into the frying vat while oil cooled in the frying vat descends through the upstream oil circulation duct, the descending oil depositing waste and water of condensation by gravity through the constricted passage into the settling chamber, and the cooled oil passing into the narrow slit to be heated therein, and
4. an emptying cock for discharging the waste and water of condensation from the settling chamber.

3,960,138
DIFFERENTIAL TEMPERATURE INTEGRATING DIAGNOSTIC METHOD AND APPARATUS

James D. Doss, and Charles W. McCabe, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 6, 1975, Ser. No. 539,130
Int. Cl.² A61B 5/00
U.S. Cl. 128—2 H 8 Claims



1. A method for detecting the presence of a tumor in a human breast comprising the steps of:
- placing a temperature sensing device in thermal contact with each breast;
- measuring the temperature of each breast individually;
- determining the temperature difference between said breasts measuring the time said temperature sensing devices are in thermal contact with said breasts;
- integrating the temperature difference with respect to time; and,
- indicating the integrated temperature difference.

3,960,139
SYRINGE DEVICE WITH MEANS FOR REMOVING CONTAMINATES WHEN DRAWING BLOOD SAMPLE

Donald L. Bailey, 11018 Muriel Place, Thornton, Colo. 80233

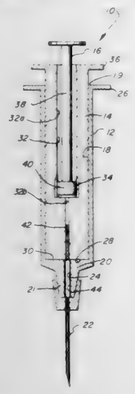
Filed Jan. 15, 1975, Ser. No. 541,150
Int. Cl.² A61B 5/14
U.S. Cl. 128—2 F 6 Claims

1. A syringe for drawing blood comprising:
- a tubular body having a leading end with an opening therethrough and connection means in communication with said opening at said leading end for connection to a needle adapted to be inserted into a donor's blood vessel to transfer blood from the blood vessel to the tubular body, and an open trailing end,

a needle connected to said tubular body by said connection means,

a first slide member slidably received in said tubular body in fluid tight relationship therewith, said first slide member having a passage therethrough in communication with said opening in the leading end of the tubular body, and

a second slide member slidably received in said passage in the first slide member in fluid tight relationship therewith, said second slide member having a relatively large portion



being in fluid tight relationship with at least a portion of said passage in the first slide member,

said passage having a notch in the inner wall thereof at the leading end of said portion of the passage in which the second slide member is disposed, said notch extending along a greater length of the passage than the large portion of the second slide member whereby when the large portion of the second slide member is aligned with said notch, fluid is allowed to flow through the passage.

3,960,140

PHYSIOLOGICAL MONITORING SYSTEM

Richard L. Buxton, 11406 Hillwood Dr., S.E., Huntsville, Ala. 35803

Filed Feb. 18, 1971, Ser. No. 116,588
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **1 Claim**



1. A physiological monitoring system comprising:

A. first, second and third electrodes adapted to be positioned on the body of a patient;

B. a first amplifier adapted to amplify the output of said first electrode and assecond amplifier adapted to amplify the output of said second electrode;

C. an electrical system ground potential point common to said amplifiers;

D. bias means adapted to apply a fixed bias to said third electrode and a patient with respect to said ground potential point of said system;

E. sample and hold means responsive to the outputs of said first and second amplifiers with respect to said third electrode for converting a balanced output to a single ended output of pulses of a predetermined rate and of an amplitude proportional to the input of said sample and hold means;

F. analog to digital conversion means for encoding output pulses of said sample and hold means into discrete binary encoded words;

G. transmission means for transmitting the output of said analog to digital conversion means for display at a remote location; and

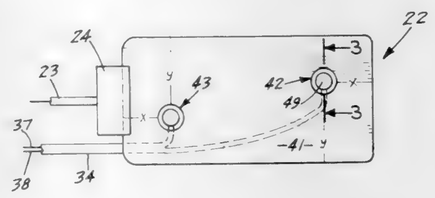
H. display means responsive to said output of said analog to digital conversion means for decoding electrical signals sensed by said first, second and third electrodes as physhological data and displaying said data.

3,960,141

ELECTROSURGICAL AND ECG MONITORING SYSTEM

Lee R. Bolduc, 4624 W. 28th St., Minneapolis, Minn. 55416

Filed Mar. 6, 1975, Ser. No. 556,158
Int. Cl.² A61B *5/04*; **A61N** *3/06*
U.S. Cl. 128—2.06 E **34 Claims**



1. An electrode for use with an electrosurgical apparatus to ground a patient and used with an ECG monitoring instrument to sense bioelectric cardiac signals of a patient comprising: an electrically insulative sheet member having a surface, first electrical conductor means attached to said surface providing a ground electrode adapted to be located in surface contact with the patient, said first electrical conductor means being connectable to the electrosurgical apparatus, second electrical conductor means providing a plurality of bioelectric signal pickup electrodes, means for electrically connectng each pickup electrode with the ECG monitoring instrument, and electrically insulative means mounting each pickup electrode on said surface of the sheet member and separating each pickup electrode from the first electrical conductor means, said pickup electrodes being equally spaced from each other, said first electrical conductor means completely surrounding said pickup electrodes so that the same amount of surface area of the first electrical conductor means completely surrounds each pickup electrode.

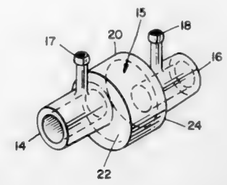
3,960,142

AIR FLOW TO PRESSURE DIFFERENTIAL TRANSDUCER FOR PNEUMOTACHOGRAPHY

Stanley E. Elliott, San Bruno, and Jack H. Shore, San Rafael, both of Calif., assignors to The Institutes of Medical Sciences, San Francisco, Calif.

Filed Dec. 2, 1974, Ser. No. 528,600
Int. Cl.² A61B *5/08*
U.S. Cl. 128—2.08 **8 Claims**

1. An improved air flow to pressure differential transducer adapted to be used by a patient comprising a chamber having at least one sidewall closed by two end walls and enclosing therein a predetermined volume, the distance between said end walls being such that the airflow to or from a patient is normal, said chamber defining an unobstructed volume therewithin; first and second air passages each transpiercing one of said end walls for the flow of air into and out of said chamber across said unobstructed volume, said air passages having axes of flow offset by an amount equal to or greater than their cross-section at said chamber and each having a unit area equal to or less than one quarter the cross-sectional area of



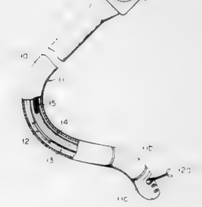
said chamber; and, first and second manometer taps for measuring the pressure differential of fluid flow between said passages across said chamber, said first manometer tap connected to said first passage and said second manometer tap connected to said second passage.

3,960,143

ENDOSCOPE WITH A TUBE FOR A MEDICAL TREATING INSTRUMENT

Masaaki Terada, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1974, Ser. No. 500,612
Claims priority, application Japan, Aug. 31, 1973, 48-102346[U]
Int. Cl.² A61B *1/00*
U.S. Cl. 128—4 **2 Claims**



1. In a tube disposed in a flexible sheath of an endoscope together with a fiber bundle, a suction tube adapted to receive therethrough a medical treating instrument including a biopsy forceps and a catheter, the improvement comprising constructing said tube of at least two layers superposed one upon the other, one of said layers being an inner layer made of a hard surfaced material having an inner surface of a small frictional coefficient, and the other layer being an outer layer made of a flexible material and thicker than said inner layer, thick enough to prevent the collapse of the inner layer, and as a whole having a thickness equal to 2–5 times the thickness of said inner layer.

3,960,144

EXERCISE AND MASSAGING APPARATUS

Luther G. Simjian, 7 Laurel Lane, Greenwich, Conn. 06830

Filed July 10, 1975, Ser. No. 594,640
Int. Cl.² A61H *11/00*, *7/00*
U.S. Cl. 128—58 **25 Claims**

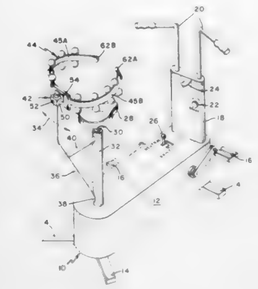
1. An exercise and massaging apparatus comprising in combination:

a stationary support;

pedal means including a rotatable pedal shaft mounted to said support;

a seat supported by said support;

an arm upstanding from said support and mounted for reciprocating rotational motion about a substantially vertical axis;



mounting means disposed at the upper portion of said arm for fastening thereto massaging massagng belt adapted to be secured about the torso of a person sitting on said seat, and

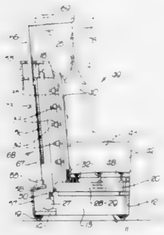
drive means coupled between said pedal shaft and said arm for causing responsive to rotation of said pedal shaft said arm to undergo reciprocating rotational motion and a belt fastened to said mounting means and secured about the torso of a person to undergo a cyclic side-to-side oscillating motion.

3,960,145

HEAT THERAPY AND SPINAL TRACTION CHAIR

Gilbert R. Scarbrough, 126 S. Olive St., Rialto, Calif. 92376

Filed July 7, 1975, Ser. No. 593,442
Int. Cl.² A61F *5/00*
U.S. Cl. 128—68.1 **3 Claims**



1. An upholstered arm chair, embodying:

seat supporting, arm supporting, and back supporting structures;

a water heating tank underlying and heating the seat supporting structure of the chair;

heating pads embodied in said back supporting and arm supporting structures of said chair and located near the surface thereof, said heating pads comprising watertight envelopes containing flow retarding fibrous packing material therein but permitting ready circulation of hot water through said pads;

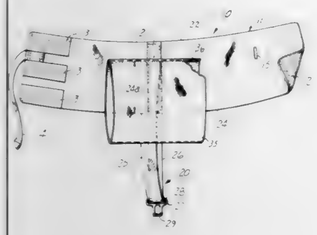
means for automatically circulating water from said heating tank through said heating pads and then returning said water to said tank; and

means for maintaining the water in said tank at a wide range of optional selected temperatures.

3,960,146
TRACTION BELT

Donald Albrecht, P.O. Box 1406, 831 Second St., Santa Monica, Calif. 90406

Filed Mar. 3, 1975, Ser. No. 554,644
Int. Cl.² A61H 1/02
U.S. Cl. 128—75 11 Claims

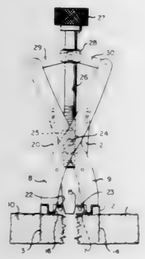


1. A traction belt for application to the torso of a patient comprising a flexible encircling element, fastener means for fastening the encircling element around the torso, a pull-strap having a pair of arms, each arm being attached to a point on the encircling element, said points being spaced apart from one another so that each arm lies adjacent each other for at least the entire length of the free portion of the shorter of the two arms and along a longitudinal dimension corresponding to the spine of the patient, and a connector link slidably fixed to said pull-strap for exerting a pull thereon and dividing the pull-strap into said pair of arms extending between the connector link and the respective points.

3,960,147
COMPRESSION BONE STAPLES AND METHODS OF COMPRESSING BONE SEGMENTS

William M. Murray, 109 Wynnwood Drive, Pittsburgh, Pa. 15215

Filed Mar. 10, 1975, Ser. No. 556,580
Int. Cl.² A61F 5/04
U.S. Cl. 128—92 B 8 Claims

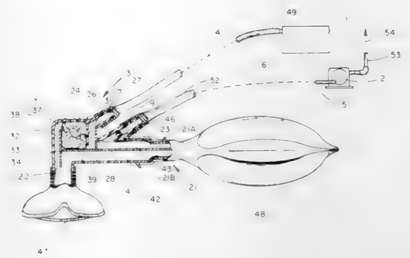


1. An apparatus for placing adjacent bone ends under end to end compression comprising in combination a staple having spaced apart prongs adapted to be forced into adjacent bone ends, said prongs connected by a head member having at least two spaced apart transverse ribs, drive means engaging said ribs to hold the staple during insertion of the prongs into the bone ends to be compressed and means on said drive means forcing said ribs toward one another after said staple is in place so as to urge the prongs together and toe them in.

3,960,148
APPARATUS FOR HIGH FLOW ANESTHESIA

Gale E. Dryden, 5835 N. Tacoma Ave., Indianapolis, Ind. 46220

Filed Oct. 15, 1974, Ser. No. 514,390
Int. Cl.² A61M 16/00
U.S. Cl. 128—188 12 Claims



1. A high flow anesthetic administration unit comprising:
a housing having therein first, second, third, and fourth connection means for connection thereto of gas handling devices, said first means being an inlet for reception of fresh anesthetic mixture, said second means being an outlet-inlet for direct connection to a breathing mask, said third means being an outlet for direct connection to a rebreathing bag, and said fouth means being an outlet for connection to a vacuum line, and said housing having partition means therein defining portions of a single gas flow path in said housing from said first connection means to said second connection means and from said second connection means to said third connection means;
a humidifier in the portion of said flow path from said first to said second connection means, to humidify fresh mixture during passage from said first connection means through said housing to said second connection means, said partition means further dividing said third connection means into first and second flow paths thereby providing a single gas flow path from said second connection means to said first flow path of said third connection means and another single gas flow path from said second flow path of said third connection means to said fourth connection means whereby, when a rebreathing bag is connected to said third connection means, a single gas flow path is established from said second connection means to said fourth connection means via the rebreathing bag.

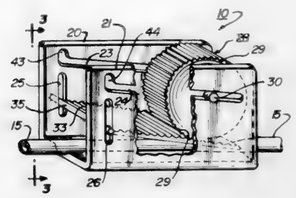
3,960,149
FLOW CONTROL DEVICE

Albert Frank Bujan, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Nov. 13, 1974, Ser. No. 523,294
Int. Cl.² A61M 5/14; F16K 7/06
U.S. Cl. 128—214 R 16 Claims

1. A tubing clamp for regulating flow of fluid through a length of flexible tubing comprising: a clamp body defining a surface for supporting a length of flexible tubing having a longitudinal axis, opposing walls extending from said surface and presenting a passage for said tubing, a platen pivotally mounted between said walls for contacting said tubing wherein the pivot axis is movable transversely to said tubing, guide surfaces arranged in said walls, a rotatable member positioned to be guided and rotated along said guide surfaces, said platen constructed and arranged to be movably positioned between said rotatable member and said tubing, said platen presenting a contact surface for said tubing substantially along and over the path of travel of said rotatable member, and cooperating with said rotatable member to exert an

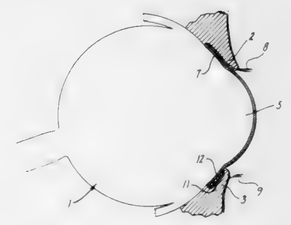
incremental compressive force on said tubing and by means of said platen to distribute the compressive force of said rotatable member over a wide area of said tubing including a substantial distance along its longitudinal axis.



3,960,150
BIOERODIBLE OCULAR DEVICE

Anwar A. Hussain, Lexington, Ky.; Takeru Higuchi, Lawrence, Kans., and John W. Shell, Los Altos, Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 179,129, Sept. 9, 1971, abandoned. This application Sept. 15, 1975, Ser. No. 613,384
Int. Cl.² A61M 31/00
U.S. Cl. 128—260 14 Claims



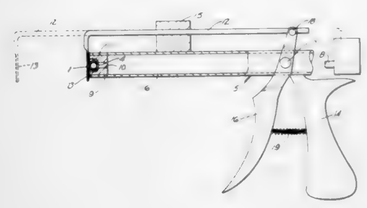
1. A bioerodible ocular device for the controlled continuous administration of a predetermined dosage of drug to the eye, comprising a body of hydrophobic bioerodible drug release rate controlling material containing a drug confined therein, the body being of an initial shape which is adapted for insertion in the sac of the eye bounded by the surfaces of the bulbar conjunctiva of the sclera of the eyeball and the palpebral conjunctiva of the lid and being further adapted for retention in said sac during said administration, the body continuously metering the administration of a therapeutically effective amount of drug to the eye at a controlled rate for at least 8 hours by permeation control release, erosion control release or a combination thereof and wherein the body bioerodes in the environment of the eye concurrently with the administration or at a point in time after the administration of the drug.

3,960,151
METHOD AND MEANS FOR THE REPAIR OF PERIPHERAL NERVES

William E. Kuhn, Lexington, Ky., assignor to Hemotec, Inc., Englewood, Colo.

Continuation-in-part of Ser. No. 414,246, Nov. 9, 1973, Pat. No. 3,916,905. This application Mar. 7, 1975, Ser. No. 556,485
Int. Cl.² A61B 17/12
U.S. Cl. 128—334 R 11 Claims

1. An applicator instrument for applying a tube to the ends of a severed nerve to hold said ends in abutment to effect a sutureless repair of said nerve, said applicator instrument comprising a hollow barrel having a forward end and a rearward end, said rearward end being connectable to a vacuum source, a transverse notch at said forward end of said barrel to receive said tube and serve as a seat therefor, an opening in the region of said seat communicating with the interior of said hollow barrel and with which an evacuation hole in the wall of said tube may be aligned whereby a pressure differential between the interior of said tube and the ambient atmosphere may be developed by means of said vacuum source to draw said nerve ends into said tube, and a retaining means to releasably maintain said tube in said seat.

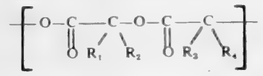


3,960,152
SURGICAL SUTURES OF UNSYMMETRICALLY SUBSTITUTED 1,4-DIOXANE-2,5-DIONES

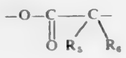
Thomas Anthony Augurt, Stamford, Conn.; Michael Norman Rosensaft, Monsey, and Vincent Anthony Perciaccante, Long Island City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 435,365, Jan. 21, 1974, abandoned. This application Mar. 14, 1975, Ser. No. 558,529
Int. Cl.² A61L 17/00
U.S. Cl. 128—335.5 6 Claims

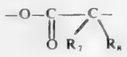
1. A method of closing a wound of living tissue which comprises:
sewing the edges of the wound with a surgical suture consisting of at least one filament of polymer containing more than 2% by weight of recurring units of the formula:



and the remaining units are

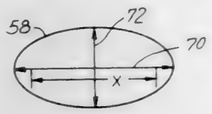


and



wherein R_1 and R_2 are not the same as R_3 and R_4, R_1 has at least one carbon atom, and R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are separately selected from the group consisting of hydrogen, and the radicals methyl, ethyl, propyl, isopropyl, butyl, isobutyl, cyclohexyl, and phenyl,
embedding the suture in living tissue and
leaving the suture in said tissue until said suture is absorbed by the tissue during the healing process.

3,960,153
APPARATUS FOR THE PALLIATIVE TREATMENT OF PLEURAL EFFUSIONS
Jane Towne Carey, 1161 York Ave., New York, and Alfred Andrew Fracchia, 440 E. 63 St., Plandome, both of N.Y. 10021
Continuation-in-part of Ser. No. 862,434, Sept. 30, 1969, abandoned. This application Feb. 22, 1972, Ser. No. 227,713
Int. Cl.[2] A61B *17/34;* **A61M** *27/00*
U.S. Cl. 128—347 **12 Claims**



1. Apparatus for removing fluid from a body cavity comprising an elongated flexible tube including distal and proximal ends and having at the distal end a closed chamber, said proximal end being adapted for being coupled to a suction source, the tube including a generally cylindrical wall provided with a bore extending substantially throughout the tube from adjacent said chamber to said proximal end, said wall being provided with elliptical openings distributed longitudinally along said wall from adjacent the chamber toward said proximal end along a length of the tube which is less than one-third the total length thereof, and a weight in said chamber, the elliptical openings being substantially the same size and having a major axis of about 8.0 to 10.0 mm., a minor axis of about 4.0 – 50 mm., a distance between foci of about 7.0 to 8.8 mm. and an area of about 0.215 to 0.393 sq. cm.

4. Apparatus as claimed in claim 1 comprising trocar means to insert the tube into said cavity, said trocar means including a tapered sleeve and a obturator detachably extending through and conforming to the shape of the sleeve, said obturator having a pointed end extending from the sleeve and adapted for penetrating into said cavity.

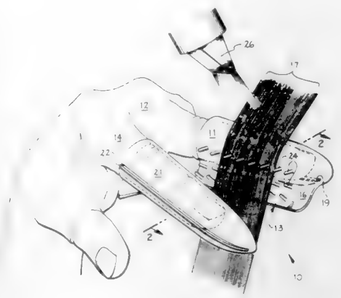
3,960,154
NOVEL HAIR GROOMING COMPOSITION, AND A METHOD AND AN INSTRUMENT EMPLOYING THE SAME
Eula Mae Pollard, Rte. 6, Box 713-A, Hot Springs, Ark. 71901
Filed Sept. 16, 1975, Ser. No. 613,893
Int. Cl.[2] A45D *1/00*
U.S. Cl. 132—9 **10 Claims**



1. A solid composition for use in grooming the hair consisting of as active ingredients about 5–15% by volume of bees wax and about 95–85% by volume of paraffin wax.

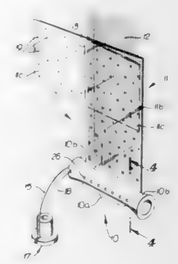
3,960,155
HAIR STYLING DEVICE
Albert Wall, 515 S. Crescent Ave., Lodi, Calif. 95240
Filed Sept. 19, 1975, Ser. No. 614,915
Int. Cl.[2] A45D *1/00*
U.S. Cl. 132—9 **11 Claims**

1. A hair styling device comprising an elongate finger covering semi-rigid material adapted to be disposed onto a finger of a person's hand, said finger covering being formed to include an elongate curling lip carried to protrude alongside said covering while partially underlying another finger of said hand, said lip including a concave surface disposed and adapted to face said outer finger in generally parallel spaced relation flanking a shock of hair when disposed therebetween,



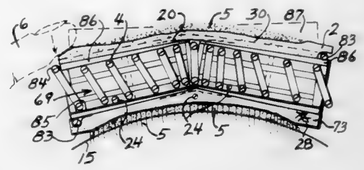
and means interposed between said other finger and said surface serving to positively establish and maintain said spaced relation.

3,960,156
QUICK HAIR END WRAP FOR PERMANENT WAVE
Russell L. Thompson, 2900 Alta Vista Drive, Newport Beach, Calif. 92660
Filed Sept. 9, 1974, Ser. No. 504,196
Int. Cl.[2] A45D *2/00*
U.S. Cl. 132—31 R **7 Claims**



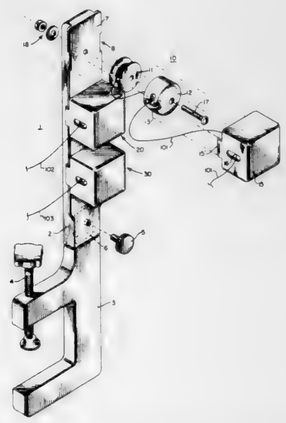
1. In apparatus for retaining human hair to be waved,
a. a tubular roller, having a side wall containing through perforations, and
b. a flexible re-usable, plastic sheet having film thickness, one end-band portion of the sheet permanently attached to and integral with the roller along the major length thereof to wind the remainder of the sheet onto the roller upon turning thereof, the length of said band portion being less than the length of the roller,
c. said sheet remainder including sections sized to receive hair strands to be retained therebetween and curled as the sections are wrapped in face to face relation about the roller in response to said turning,
d. at least one section containing through perforations distributed substantially uniformly thereover to pass hair treating agent into contact with the hair retained between the sections, and
e. an elastic cord extending in stretched condition between opposite ends of the roller and parallel to said end band, the roller being elongated and cylindrical, and a plug telescopically fitting one end of the roller and one end of said cord attached to the plug.

3,960,157
HAIR ROLLERS
Ann Andrews, and Peter Andrews, both of 190 Gebhardt Road, Penfield, N.Y. 14526
Continuation-in-part of Ser. No. 432,576, Feb. 15, 1965. This application June 1, 1970, Ser. No. 42,506
Int. Cl.[2] A45D *2/00*
U.S. Cl. 132—40 **14 Claims**



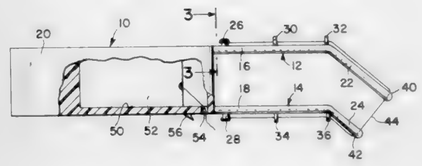
1. A hair roller having an elongated generally tubular-like configuration and comprising in combination: a first body member which is coaxially universally resilient and flexible in at least one portion of its generally elongated tubular-like longitudinal length and being substantially rigid diametrically and round in at lease one portion of its said length, said member having a soft, resilient, flexible and air permeable tubular-like cushioning pad member means substantially embraced around at least one outer diametrical portion of said member for substantially protective cushioning of at least one outer diametrical portion of said length of said member from a person's scalp and for substantially protecting at least one portion of a person's strand of hair which is substantially rolled around at least one portion of said pad member means, said roller is so constructed and arranged that at least one portion of a person's scalp is substantially prevented from becoming numb; balding of a person's scalp is substantially reduced; sleep is enhanced; at least one strand of hair is substantially protected; stiff necks are substantially reduced; especially when a person is sleeping on at least one portion of said roller dressed in their hair.

3,960,158
HAIR WEAVING TENSION SYSTEM
Pansy Simmons, 328 Huey P. Long Ave., Gretna, La. 70053
Filed May 24, 1974, Ser. No. 472,457
Int. Cl.[2] A41G *3/00*
U.S. Cl. 132—56 **9 Claims**



1. A hair weaving tension system for weaving hair wherein said system includes a source of a multiple number of threads, said source comprising:
a support member which is immobile during use:
thread supply means, each including a rotatable spool with thread thereon, mounted on said support member; and
tension applying means also mounted on said support member for applying controlled resistance to the threads coming from said thread supply means when they are pulled by an operator, rotating the spools, in using the threads to weave hair, allowing the operator to secure the threads while weaving under controlled resistance without having to move the position of the thread supply means.

3,960,159
DENTAL FLOSS HOLDER AND APPLICATOR
Allan V. Tesberg, Daly City, Calif., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Nov. 11, 1974, Ser. No. 522,737
Int. Cl.[2] A61C *15/00*
U.S. Cl. 132—90 **3 Claims**



1. Apparatus for dispensing and holding dental floss which comprises: an elongated handle configured for carrying a supply of dental floss, a pair of bent co-planar arms extending fixedly from said handle in spaced apart relationship; said arms respectively formed of elongated generally parallel first sections fixedly joined to said handle and elongated generally parallel second sections fixedly joined to said first sections and making an included angle with said first sections of greater than 90° but less than 180°, means for anchoring opposite ends of a length of said dental floss to said arms comprising generally cylindrical bosses extending substantially perpendicular to the first sections of said arms, each of said bosses having a slot extending along a diameter of said boss, said slot being configured for capturing said dental floss, and means carried by said arms for guiding said length of floss from said anchoring means along said arms and between the free ends thereof, said guiding means including slots formed at the free ends of said arms.

3,960,160
HAIR TREATMENT APPLIANCE
Gary LaDon Hogan, North Augusta, S.C., assignor to LaDon Corporation, North Augusta, S.C.
Filed Aug. 15, 1974, Ser. No. 497,680
Int. Cl.[2] A45D *24/22*
U.S. Cl. 132—112 **6 Claims**

1. A hair treatment appliance comprising:
a. an elongated body, said body having a hollow compartment longitudinally thereof, said body having a pair of oppositely positioned slots adjacent an end thereof;
b. a trigger lever pivotally secured within said compartment and extending outwardly through one of said slots in said body, and changing direction outside said body to provide an area for engagement of said trigger;
c. a closure cap secureable at an end of said body opposite said slots, said closure cap having a plurality of elongated hair lifter elements secured thereto and extending outwardly therefrom in a generally parallel arrangement; and
d. an aerosol container receivable in said compartment, said container having a dispensing valve engageable with said

trigger lever, said valve being directed through a slot opposite the slot through which said trigger lever extends

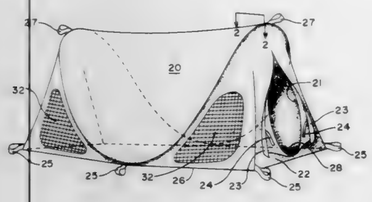


to expel an aerosol spray through said opposite slot when said trigger lever is depressed.

3,960,161
PORTABLE STRUCTURE

Lowell R. Norman, 4902 Secor, Apt. 20, Toledo, Ohio 43623

Filed Nov. 5, 1974, Ser. No. 520,961
Int. Cl.² A45F *1/00, 1/16*
U.S. Cl. 135—1 R **5 Claims**



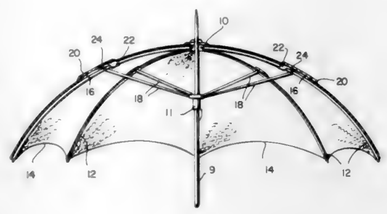
1. A tent comprising a body of flexible, sheet-like material, a closed loop of a flexible, coilable, springy material as a frame member therefor, said frame member being secured to the periphery of said body in a generally saddle-shaped configuration including two opposed smoothly curved upper ends and opposed smoothly curved lower ends spaced therebetween said lower ends being adapted to be supported by the ground along a limited length thereof, said frame including said length being insufficient to provide stable support to the tent, end panels affixed to said body at each end thereof to form therewith a closed structure said end panels extending beyond the horizontal extent of said body and ties at the lower corners of the end panels adapted to secure the tent to the ground and thereby stably support and tension the tent and hold the frame in the saddle-shaped configuration in use.

3,960,162
VENTED UMBRELLA

Francois Gilbert Noel, 1719 Nostrand Ave., Brooklyn, N.Y. 11226

Filed Mar. 19, 1975, Ser. No. 559,905
Int. Cl.² A45B *25/22, 25/26*
U.S. Cl. 135—35 V **1 Claim**

1. An umbrella comprising a handle and extension member, ribs secured to and radiating from said member, a cover made of flexible material disposed over said ribs, pivotal struts connected to the ribs and slidably mounted on said member, said cover having at least one opening located below the peak of said umbrella, said opening being located over the pivotal connection of one of said ribs and struts, a clamp embracing said one rib at one end of said opening, a vent adapted to cover said opening, and a flexible arm connecting said clamp and said vent whereby on the outward flexing of said rib below said vent the rib will be flexed downwardly above said vent

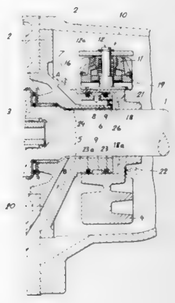


and cause said arm to automatically open the vent and relieve the pressure on the pivotal connection of said rib and strut.

3,960,163
HYDRAULIC PRESSURE REGULATOR

Karl-Heinz Bordowsky, Friedrichshafen; Uwe Brendel, Kressbronn, and Manfred Bucksch, Friedrichshafen, all of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed Feb. 14, 1975, Ser. No. 550,015
Int. Cl.² G05D *13/38*
U.S. Cl. 137—56 **7 Claims**

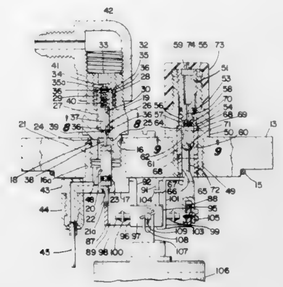


1. A hydraulic pressure regulator responsive to the speed of a rotating shaft, comprising:
- a stationary structure forming a bearing for a shaft whose rotary speed is to be translated into a variable pressure of a hydraulic fluid;
- a hub on said structure surrounding said shaft;
- a mounting secured to said shaft, said mounting having a central bore with a diameter larger than that of said shaft, said hub extending into said bore;
- a centrifugal governor radially displaceable in said mounting against an inwardly directed biasing force; and
- valve means in said mounting controlled by said governor, said valve means having an inlet port communicating with a source of said fluid through a first passage formed by said hub and an outlet port communicating with a receiver for said fluid through a second passage formed by said hub, said valve means throttling the flow of said fluid from said inlet port to said outlet port to an extent determined by the outward displacement of said governor;
- one of said passages including an eccentric hole in said hub, the other of said passages including a clearance between said hub and said shaft.

3,960,164
DEVICE FOR MIXING GASES WITH LIQUIDS

Zar W. Kelley, 8438 Broadview Road, Cleveland, Ohio 44141

Filed May 22, 1974, Ser. No. 472,218
Int. Cl.² B67D *5/34*
U.S. Cl. 137—202 **2 Claims**



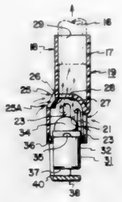
1. In a device of the character described, a closed-bottom tank for containing a liquid, a cover plate for said tank removably secured to said tank, means mounted on said plate for admitting liquid into said tank, a normally-closed valve unit mounted on said plate for admitting a gas under pressure through said valve unit and into said tank for charging said liquid with said gas, a second normally-open valve unit mounted on said plate for venting excess gas from the upper end of said tank into the atmosphere, means mounted on said cover plate for dispensing the gas charged liquid from said tank, a completely enclosed float disposed in said tank, said float movable upwardly in the tank in response to filling of the tank with said liquid, means for simultaneously opening said first valve unit and closing said second valve unit in response to said upward movement of said float, said last-named means comprising a shaft supported by said plate, a first member of U-shaped configuration having arms pivotally connected to said shaft, a pin supported by said plate, a second member of U-shaped configuration having arms extending in a direction opposite to that of the arms of said first member and pivotally connected to said pin, a second pin extending through the arms of said second member and parallel with said shaft and first pin, and extension coil springs interconnecting said second pin with the base of said first-named member, and means interconnecting said float with the base of said second member, said first valve unit including a plunger supported by one of the arms of said first member, and said second valve unit including a lever pivotally connected to the other arm of said first member.

3,960,165
FLUID COLLECTION BOTTLE WITH IMPROVED AIR FLOW VALVE MEANS

Legrand K. Holbrook, Salt Lake City, and Gary F. Sturdevant, Sandy, both of Utah, assignors to Medical Development Corporation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 407,298, Oct. 17, 1974, abandoned. This application Nov. 7, 1974, Ser. No. 521,560
Int. Cl.² A61M *1/00;* **F16K** *31/22*
U.S. Cl. 137—202 **1 Claim**

1. An air-passage closure float valve device including, in combination, an elongate float valve; guide structure housing said float valve for vertical movement of the latter, said float valve and said guide structure having mutually inter cooperable means for enabling and also limiting the downward protrusion of said float valve beneath said guide structure; and a baffle support member having an upper portion secured to said structure, a baffle, and means depending from said upper portion for supporting said baffle in spaced relationship beneath said float valve for all dispositions of the latter, and wherein said guide structure is provided with a downwardly

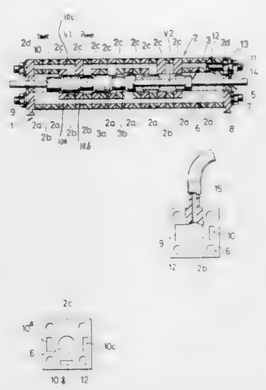


facing recessed seat, said upper portion comprising a ring being secured in said recessed seat.

3,960,166
VALVE ASSEMBLY KIT

Jörg Linser, Heuback-Lautern, Germany, assignor to Artur Fischer, Tumlingen, Germany

Filed July 18, 1974, Ser. No. 489,949
Claims priority, application Germany, July 20, 1973, 2336989
Int. Cl.² F16K *11/00;* **G09B** *23/06*
U.S. Cl. 137—271 **12 Claims**



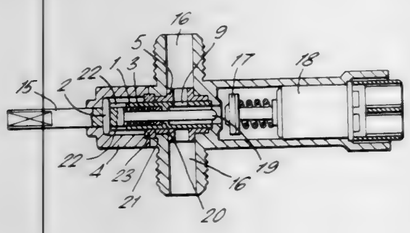
1. A valve assembly kit for assembling a plurality of different slide valves, comprising a plurality of diverse interchangeable housing components wherefrom an elongated housing element may be assembled, a plurality of spool components wherefrom a valve spool element may be assembled and connecting means; said housing components being of identical contour and each of them being formed with an axially extending main passage portion configurated and dimensioned identically with those of the other of these housing components, so that, when said housing components are coaxially assembled in different sequence and orientation to obtain a selectable configuration of said housing element, an axial main fluid passage is formed from said main passage portions for channeling the flow of fluid in a predetermined path; some of said housing components including fluid ports opening outwardly and also communicating with the main fluid passage portion of the housing components wherein they are formed; one group of said housing components containing one single axially extending lateral fluid passage portion and the other group of said housing components containing several axially extending lateral fluid passage portions, all these lateral fluid passage portions being equally shaped and distributed about, and spacedly from, the periphery of said housing components, so that different positioning and orientation of said housing components in the assembled elongated housing ele-

ment provide therein axially extending lateral fluid passages selectably interconnecting said fluid ports and communicating with said main fluid passage; the spool components wherefrom the elongated valve spool element can be assembled being elongate in form and having in one series thereof a diameter smaller than that of said main fluid passage in the assembled housing element and having the other series thereof shaped and dimensioned to be in the assembled housing element engageable with the interior wall of said main fluid passage and slidable therein, so that said assembled spool element, in dependence on the respective shapes and location therein of said spool components, when the latter is shifted, either blocks or frees the fluid passage through said main fluid passage to or from the one and the other of said ports; and said connecting means being formed to be engageable with the housing components for coaxially connecting the same and securing them in respective desired sequencies.

3,960,167
GAS COCK

Bonifacio Echavarri Ros, Cordovilla (Pamplona), Spain, assignor to Orbaiceta, S.A., Spain

Filed June 7, 1974, Ser. No. 477,357
Claims priority, application Spain, June 8, 1973, 415709
Int. Cl.² F16K *11/085*
U.S. Cl. 137—375 **4 Claims**



1. A fluid cock comprising, a valve body having an inlet passageway, an outlet and an axial bore in communication with said inlet passage and said outlet, a plug having an axial portion rotational in said bore for allowing fluid flow from said inlet to said outlet and for closing off the fluid flow, a single elastic inner sleeve solely in said bore circumferentially of a part of said axial portion of said plug in said bore controlling said fluid flow, said valve body having an undercut in said bore within which said sleeve is housed, said sleeve providing a fluid-tight seal between said bore and said sleeve without bonding thereto and between said portion of said plug and the interior of said sleeve, said sleeve extending transversely of said inlet passage, said sleeve having a lateral opening disposed in registry with said inlet passageway for allowing fluid flow through said opening under control of said part of said portion of said plug therein, and a lateral, annular boss on said sleeve intermediate opposite ends of said sleeve defining said lateral opening extending axially into said inlet passageway.

3,960,168
VALVE LOCKING DEVICE

Michael R. Plympton, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

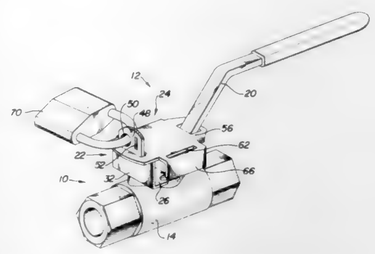
Filed Sept. 4, 1975, Ser. No. 610,475
Int. Cl.² F16K *35/00*
U.S. Cl. 137—385 **12 Claims**

1. A stem locking device for a valve having a body, a rotatable stem and a handle secured to the stem for manual rotation of same between two positions, said locking device comprising:

a. a fixed locking member and a movable locking member;

b. said fixed locking member being mountable on a valve body;

c. said movable locking member being mountable on a handle for relative movement outwardly and inwardly relative to said valve body, and

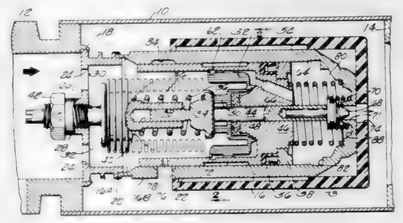


d. interfitting cooperating means on said fixed locking member and said movable locking member engageable at one position upon inward movement of said movable locking member relative to said fixed locking members to prevent rotation of said handle.

3,960,169
PILOT OPERATED EVAPORATOR PRESSURE REGULATOR

Charles D. Orth, Cedarburg, and Charles F. Treder, Brookfield, both of Wis., assignors to Controls Company of America, Schiller Park, Ill.

Continuation of Ser. No. 437,850, Jan. 30, 1974, abandoned. This application Feb. 3, 1975, Ser. No. 546,527
Int. Cl.² F16K *17/10*
U.S. Cl. 137—491 **2 Claims**



1. A pilot operated valve assembly comprising a cylindrical housing,

a piston in the housing with sufficient clearance to allow the piston to move axially in the housing while dividing it into inlet and pilot chambers,

a pilot valve in the housing end wall,

a sealed bellows fixed on the other end wall and projecting towards the pilot valve,

an actuating pin extending between the bellows and the pilot valve and passing through the piston head,

a spring inside the bellows urging the free end of the bellows towards the pilot valve with a force which, when combined with the internal pressure in the bellows and the force exerted by the bellows, acts to seat the pilot valve when the pressure in the inlet chamber outside the bellows is below a predetermined value,

a bleed hole through the piston head providing flow from the inlet chamber to the pilot chamber at a rate less than the flow rate through the pilot valve when the pilot valve is open a substantial amount and sufficient to equalize the pressures in the two chambers when the pilot valve is closed,

a seal mounted on the piston near the piston head and frictionally engaging the interior of the cylindrical housing to prevent flow from the pilot chamber into the clearance space between the piston and housing, said seal being U-shaped plastic having low friction and being fixed relative to the piston with the open part of the seal facing the pilot chamber,

a spring inside the seal forcing the outer lip of the seal outwardly and imposing frictional resistance to movement of the piston,

a filter screen between the inlet chamber and the bleed hole to keep foreign matter therefrom,

an inlet in said other end wall of the housing,

an outlet in the side wall of the housing,

the clearance between the piston and the housing from said housing outlet to said seal being exposed to said housing outlet only so there is not flow from the inlet chamber into the clearance,

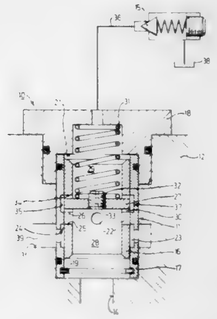
a second spring acting on the piston to move it to a position in which it closes off the outlet when the pilot valve is closed and the chamber pressures are equalized but which is overcome by the pressure differential across the piston head when the pilot valve is opened by reason of pressure in the inlet chamber exceeding said predetermined value and causing the bellows to collapse,

said piston moving to uncover the outlet when the second spring has been overcome.

3,960,170
PRESSURE REGULATING VALVE

Werner Schuhmacher, Asperg, and Karl-Heinz Rothenstein, Hochdorf, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Mar. 18, 1975, Ser. No. 559,642
Claims priority, application Germany, Mar. 20, 1974, 2413273
Int. Cl.² G05D *16/00*
U.S. Cl. 137—491 **7 Claims**

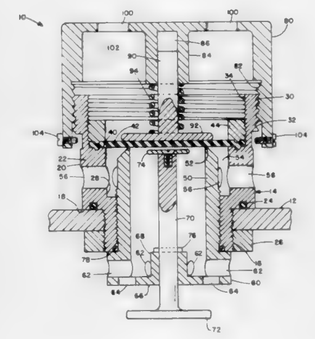


1. A pressure regulating valve, comprising a main valve having a housing, a valve member slidable in said housing and defining at its opposite ends two pressure chambers, a high-pressure port and a low-pressure port of which one communicates with one of said chambers, a throttle connecting said chambers, and a spring acting in the other chamber upon one of said valve member and urging the same from a blocking position in which it interrupts communication between said ports towards a rest position in which it permits communication between said ports; a control valve having a fluid line communicating with the other of said chambers for selecting a mainvalve response pressure; first passage means connecting said ports with one another via said one chamber when said valve member approaches said rest position; and second passage means parallel to said throttle and connecting said chambers with one another when said valve member approaches said blocking position.

3,960,171
HELMET EXHAUST VALVE

Steven F. Segrest, and Josef M. Gardner, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 27, 1975, Ser. No. 544,467
Int. Cl.² F16K *17/06, 17/18*
U.S. Cl. 137—495 **3 Claims**



1. A diver's exhaust valve comprising:

a hollow valve body including stepped first, second, and third cylindrical wall portions, the respective inside diameters of which increase progressively from one end of said body to the other end thereof;

a tubular valve seat member fixed to said first wall portion and extending coaxially into said valve body in spaced concentric relation with said second wall portion so as to define therewith an annular space, said valve seat member presenting an annular valve seat lying in a transverse plane between said second and third wall portions;

a flexible, imperforate diaphragm lying in said plane and having its periphery fixed in sealed relation to said valve body, said diaphragm being adapted to move into and out of engagement with said annular valve seat;

a cup-shaped knob having an internally threaded side wall portion adjustably engaged with threads on said third cylindrical wall portion of said valve body;

a plunger having a head portion bearing against said diaphragm;

a compression spring disposed between said plunger head portion and said knob, and operative to urge said diaphragm toward said annular seat with a spring exerted biasing force selected by adjustment of said knob;

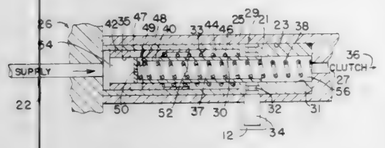
said knob including at least one port for admitting ambient water pressue to said diaphagm so as to urge said diaphragm toward said seat; and

said second cylindrical wall portion having a plurality of radially extending ports communicating between said annular space and the exterior of said valve so that a portion of said diaphragm overlying said annular space is subjected to ambient water pressure acting in a direction away from said seat, whereby when exhaust gas pressure in said tubular valve member acts on said diaphragm with a force that exceeds said spring exerted biasing force, said diaphragm is moved from said seat to permit gas to pass between said seat and said diaphragm, through said annular space, and out said radially extending ports.

3,960,172
CARTRIDGE MODULATING VALVE

William W. Blake, Kewanee, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 14, 1975, Ser. No. 541,038
Int. Cl.² F16K *31/122, 31/383*
U.S. Cl. 137—504 6 Claims



1. In a hydraulic system, modulating valve means for communicating fluid pressure from a source at a modulated rate to a load, the modulating valve means comprising:

a valve housing defining an axial bore;

first conduit means for communicating fluid pressure from said source to a first end to said axial bore;

second conduit means for communicating fluid pressure from the other second end of said axial bore to said load;

a first spool slidably contained within said axial bore and defining an internal first axial spool bore;

a second spool slidably disposed within said first axial spool bore and defining an axial well and further defining an axial orifice communicating said first end to said second end;

resilient means urging said first and second spools toward said first end;

said first and second spools adapting a first relative position upon communication of fluid pressure to said first end, said first and second spools defining passage means associated with said first and second spools, said passage means for communicating fluid between said first end and said second end only while said first and second spools are in said first relative position;

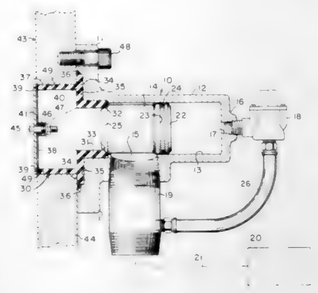
means responsive to fluid pressure communicated to said second end to cooperate with said resilient means for providing said first and second spools adopt a second relative position upon a predetermined fluid pressure build up in said second end, said second relative position blocking said passage means and allowing communication of said fluid pressure from said first end to said second end only through said axial orifice.

3,960,173
EXHAUST VALVE FOR A MOLD AND CORE BLOWING MACHINE

Fredrick Allen Bickers, Neponset, Ill., assignor to Martin Engineering Co., Neponset, Ill.

Filed Mar. 27, 1975, Ser. No. 562,432
Int. Cl.² B01D *35/02*
U.S. Cl. 137—550 7 Claims

1. An exhaust valve for a molding machine apparatus adapted to be mounted on a wall of a sand magazine and to exhaust air under pressure from the magazine to atmosphere, said exhaust valve including a housing member having a central bore, a piston reciprocable in said bore, an exhaust port in communication with the central bore adapted to be closed off by said piston, a screen housing extending into said wall and having an annular piston seat projecting into said central bore of said housing member, a screen mounted in said screen housing, means to secure the assembled housing member and screen housing to said wall, and a fluid port in communication with said central bore at one side of said piston whereby said piston is actuated to move away from said seat and uncover said exhaust port, said screen housing being of larger size than said annular piston seat requiring an opening in said wall larger than the diameter of said central bore, said screen housing and annular piston seat being fabricated integrally and a flange on the screen housing clamped between said housing member and said wall by said securing means, said

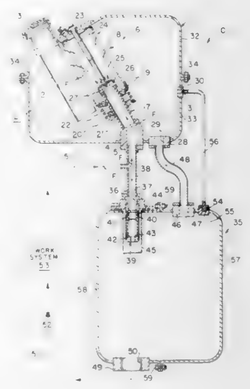


screen housing projecting through said wall into said magazine, and said screen is mounted in said screen housing in a position substantially coincident with a face of said wall.

3,960,174
HYDRAULIC CIRCUIT WITH DUAL TANK SYSTEM AND METHOD FOR USING THE SAME

Eugene E. Latimer, Wilmington, and Larry W. Lorimor, Crest Hill, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 3, 1974, Ser. No. 502,826
Int. Cl.² E03B *7/07*
U.S. Cl. 137—563 20 Claims



1. In a hydraulic circuit comprising a first tank and a second tank having an upper end thereof disposed at an elevation below said first tank the improvement comprising

first means communicating pressurized hydraulic fluid in closed communication from an outlet from said second tank, through a work system means for translating energy of said hydraulic fluid into mechanical energy and to an inlet to said first tank directly,

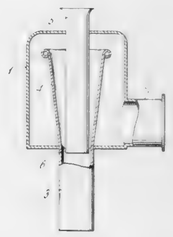
second means openly communicating an unobstructed flow of hydraulic fluid in closed communication from an outlet of said first tank to an inlet to said second tank to continuously maintain said second tank at its full capacity with said hydraulic fluid and

third means, including valve means disposed at another inlet to said second tank, for bypassing said first tank by communicating hydraulic fluid from said first means and into said second tank directly when the pressure level of hydraulic fluid at the inlet to said first tank exceeds a predetermined level.

3,960,175
INSTALLATION FOR CHARGING LIQUIDS, PARTICULARLY FERMENTATION LIQUIDS, WITH GAS

Friedrich Liepe; Gerhard Langhans, both of Dresden; Leonhard Jagusch, Leipzig; Klaus Richter, and Güenter Schlaf, both of Dresden, all of Germany, assignors to VEB Chemieanlagenbau und Montagekombinat Leipzig, Leipzig, Germany

Filed Aug. 16, 1974, Ser. No. 497,974
Int. Cl.² F16K *19/00*
U.S. Cl. 137—604 9 Claims



1. Pressure jet apparatus for charging a liquid with gas comprising a generally circular sectioned vessel disposed with its axis substantially vertical and having a top and bottom wall, a liquid inlet connection opening to said vessel adjacent the bottom wall thereof, a generally circular sectioned jet pipe leading downwardly from the bottom of the vessel for conducting liquid charged with gas from the vessel, an upwardly diverging, generally vertically disposed, conical insert secured to the upper end of said jet pipe and extending upwardly toward the top wall of said vessel, the lower end of said insert being of similar diameter to that of the upper end of said jet pipe, a vertically disposed gas inlet pipe arranged concentrically with said jet pipe and extending through the top wall and terminating close to the upper end of said jet pipe and defining there with an annular gap, that gap constituting means accelerating liquid passing therethrough, said jet pipe being free of diverging portions and the ratio of the cross sectional areas of said gas inlet pipe and said gap being directly related to the ratio of flows of gas and liquid through said pipe and said gap respectively.

3,960,176
FLUID LOADING DEVICE

Shigeru Chino; Nobuto Miyazaki, and Tadaya Takahashi, all of Ageo, Japan, assignors to Nigata Engineering Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 476,498, June 5, 1974, abandoned. This application June 3, 1975, Ser. No. 583,483
Claims priority, application Japan, June 6, 1973, 48-64087
Int. Cl.² B67D *5/00*
U.S. Cl. 137—615 3 Claims

1. In a fluid loading device of the type including a vertical hollow supporting member pivotably supporting at its upper end for rotation about a first horizontal axis, an inner hollow arm which in turn has pivotably supported at one end thereof, for rotation about a second horizontal axis, an outer hollow arm, the improvement comprising:

a first equilateral polygonal cam plate mounted to said outer hollow arm, for rotation about said second horizontal axis with said outer hollow arm;

a second similar equilateral polygonal cam plate mounted to said inner balancing arm for pivoting freely about a horizontal axis;

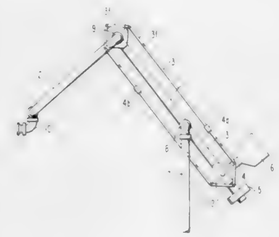
a balancing weight mounted to said second polygonal cam plate radially outward of its pivot axis and in a circumferential position related to the circumferential position of said outer hollow arm relative to said first polygonal cam plate;

a first plurality of linked rods trained about said first polygonal cam plate such that, in each instance, the point of connection of adjacent rods which overlie adjacent cam plate sides fall on a line bisecting the apex of said first cam plate formed by said adjacent cam plate sides, each of said first plurality of rods having a length equal to 1/n times the length of one side of the associated cam plate where n is an integer;

a second plurality of linked rods trained about said second polygonal cam plate such that, in each instance, the point of connection of adjacent rods which overlie adjacent cam plate sides fall on a line bisecting the apex of said second cam plate formed by said adjacent cam plate sides, each of said second plurality of rods having a length equal to 1/n times the length of one side of the associated cam plate where n is an integer;

a single linked rod connecting the driven end of said first plurality of linked rods to the driving end of said second plurality of linked rods, said single linked rod being longer in length than the sides of said first and second cam plates; and

a single linked rod connecting the driven end of said second plurality of linked rods to the driving end of said first plurality of linked rods, said single linked rod being longer in length than the sides of said first and second cam plates.



3,960,177
LOW TORQUE AND LOW NOISE BUTTERFLY VALVE DISC

Hans D. Baumann, P.O. Box 92, Manville, R.I. 02838

Filed Mar. 12, 1975, Ser. No. 557,799
Int. Cl.² F16K *1/22, 47/04*
U.S. Cl. 137—625.31 4 Claims



1. A low torque and low noise butterfly valve disc comprising:

a. an oval shaped disc, the outer periphery being angularly off-set from the perpendicular axis of a straight, cylindrical bore of a butterfly valve and fitting closely within said

cylindrical bore when in the closed valve position, one side of said disc facing up-stream, the other to the downstream side of said butterfly valve;

b. a central, perpendicular hub section straddling the shortest width of said oval shaped disc and containing within a bore to receive a supporting valve shaft;

c. a series of ribs protruding out of each side of said disc near the outer periphery of said disc and extending generally parallel to the longitudinal axis of said cylindrical bore of a butterfly valve, when viewed in the closed valve position, and forming two semi-circular rows, the protruding lenght of said ribs diminishing towards said hub section, one of said rows of ribs being located on the upstream side of said disc, while the other is located on the downstream side; said series of ribs forming substantial fluid impediments by extending into the path of fluid passing parallel to each side of said disc when in the open valve position;

d. a number of fluid conducting passages formed between adjoining ribs.

3,960,178

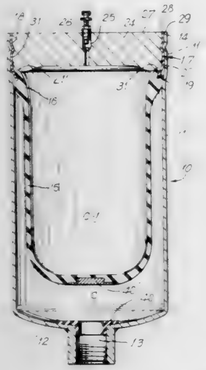
PRESSURE VESSEL

Jacques H. Mercier, 14, rue des Sablons, 75116 Paris, France

Filed Sept. 25, 1974, Ser. No. 509,251

Int. Cl.² F16L *55/04*

U.S. Cl. 138—30 **5 Claims**



1. In a pressure vessel comprising a container having a cylindrical wall portion having an inner surface, said cylindrical wall portion being closed at one end and defining a mouth at its other end, said closed end having a port, a deformable partition of resilient deformable material in said container having an annular rim for defining a first and a second fluid chamber, an annular supporting member having a cylindrical upper portion positioned in the cylindrical wall portion of the container adjacent its mouth, and having an annular lower portion having an inner and outer surface to which the rim of said partition is bonded, a cover member having a port and fixed in said cylindrical upper portion of said container with said supporting member therebetween, the improvement comprising said cover member having a cylindrical side wall portion having a rounded inner edge and having an annular groove in said side wall portion defining a locking conformation, said wall portion of said container and the cylindrical upper portion of said supporting member having complementary engaging locking conformations formed integrally therewith complementary to the locking conformation in said cover member and which coact therewith to retain said cover member and said supporting member in fixed position in said container with the lower edge of said supporting member projecting downwardly of the inner edge of said cover member, means for sealing said first and said second chamber relative to said cylindrical wall portion and said cover member, said sealing means comprising the rim of said partition including deformable layers covering at least a portion of said inner and outer surface of the annular lower portion of said supporting member, the outer surface of the lower portion of the supporting member being compressed against said inner surface of said cylindrical wall of the container, the inner rounded edge of the side wall of the cover member abutting against the layer on said inner surface of the annular lower portion of said supporting member and wherein said wall portion of the container adjacent its mouth is of enlarged diameter defining an annular shoulder, the outer surface of the layer of bladder material on the outer surface of the lower portion of the annular supporting member abutting against said annular shoulder, and said rounded inner edge of said cover and said annular shoulder cooperating to sealingly compress said annular rim of said deformable partition whereby said first fluid chamber and said second fluid chamber are sealed independently of the locking conformations retaining said cover member and said supporting member in fixed position in said container.

3,960,179

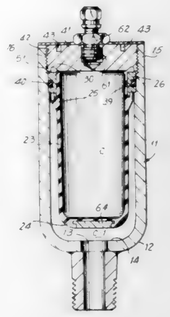
REPAIRABLE PRESSSURE VESSELS

Abduz Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed Apr. 14, 1975, Ser. No. 567,644

Int. Cl.² F16L *55/04*

U.S. Cl. 138—30 **4 Claims**



1. A pressure vessel comprising a rigid hollow container having a cylindrical opening at one end defining the mouth of the container and having a port at its other end, a bladder of resilient deformable material in said container, said bladder having a mouth at one end and being closed at its other end and intervening between said opening and said port, annular shoulder means in said container wall, an annular supporting member of rigid material contacting said shoulder means and having a cylindrical outer periphery with an annular groove therein and a bottom surface to which the mouth of the bladder is bonded, said annular shoulder means releasably supporting said annular supporting member, an O-ring positioned in said annular groove to define a seal with respect to the adjacent wall surface of the container, the mouth of said bladder having a portion at the outer end thereof bonded to and extending longitudinally outward from the top surface of said annular supporting member and defining an annular sealing portion, a cover member having a port, said cover member being positioned in the cylindrical opening of said container, said cover member having an inner surface with an annular groove positioned slightly inwardly from the outer periphery of said cover member, the portion of the inner surface of said cover member between its outer periphery and said annular groove defining an annular rim, means releasably to retain said cover member in fixed position in said cylindrical opening with the annular rim abutting against the portion of the top surface of said annular supporting member outwardly of the sealing portion of the mouth of the bladder to retain said annular supporting member against said annular shoulder means, said sealing portion of said bladder being compressed between said supporting member and said cover member and accommodated in the annular groove in said cover member to define an annular seal, the entirety of said sealing portion of said bladder being located radially inwardly of said rim.

3,960,180

PROTECTION COVER FOR PIPE BENDS

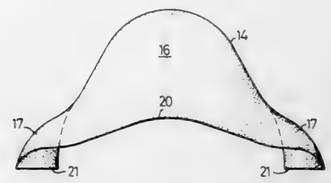
Frans Gunnar Seved Andersson, Djarved, Sweden, assignor to Aktiebolaget M. Anderssons Isolering, Ornskoldsvik, Sweden

Filed Jan. 14, 1974, Ser. No. 433,302

Claims priority, application Sweden, Mar. 1, 1973, 7302888

Int. Cl.² F16L *57/00*

U.S. Cl. 138—110 **5 Claims**



1. An elongate protection cover for pipe bends, each such pipe bend defining a curvature plane and having an exterior side and an interior side; said cover comprised of a deformable material that has been deep drawn into a shape which is similar to the shape which could be obtained if an integral and complete cover installed on a pipe bend had been cut along the interior generatrics line of the pipe bend and spread apart and opened up, said cover before being installed on a pipe bend having longitudinal and transverse planes of symmetry and comprising a cup-shaped portion elongated along said longitudinal plane of said cover and having long sides and short sides, said cup-shaped part being rounded in transverse cross-section; and a tail section located at each short side of said cup-shaped part, each said tail section having a concave bend therein such that when said cover is applied to a pipe bend with said longitudinal plane of said cover perpendicular to the curvature plane of the pipe bend, each said tail section can be folded at least to an edge line located along the interior generatrics line of the pipe bend; said cup-shaped part having a first curvature radius in the transverse direction determining the curvature of said cover, when applied to a pipe bend, on the exterior side of the pipe bend; and said cover further having, when applied to the pipe bend, a second curvature radius determining the curvature of the cover on the interior side of the pipe bend, said first and second radii respectively having first and second mutually different centers, said first center being located closer to the exterior side of the pipe bend than said second center, said second curvature radius being greater than said first curvature radius; said two tail sections, before said cover is applied over the pipe bend, having the free edges thereof in the same plane, said same plane being perpendicular to both said transverse and longitudinal planes of said cover, and the connecting edges connecting said two tail sections and defining the lower edges of said long sides of said cup-shaped part being curved upward and above said same plane.

3,960,181

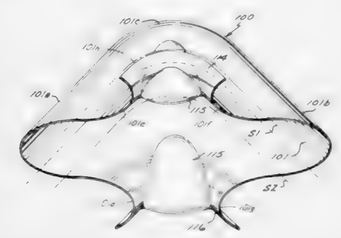
ARTICLE FOR COVERING VARIOUS PIPEFITTINGS

Charles B. Baur, 7302 Ocean Front Walk, Newport Beach, Calif. 92660, and Roland P. Schultz, 2241 Raleigh St., Costa Mesa, Calif. 92627

Continuation-in-part of Ser. No. 143,464, May 14, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,634

Int. Cl.² F16L *57/00*

U.S. Cl. 138—178 **4 Claims**



1. An elbow cover formed from a flexible, thin-sheet structure, comprising:

first and second cylindrical surface sections, each conformed transversely to approximate a peripheral arc of a first semicircle, said first and second surface sections each further including first longitudinally extending joining edges formed on either side thereof;

a first toroidal arc section conformed radially to approximate said peripheral arc of said first semicircle connected between the adjacent transverse ends of said first and second cylindrical surface sections;

third, fourth, fifth and sixth cylindrical surface sections conformed transversely to approximate peripheral arc of a second semicircle, each said third, fourth, fifth and sixth surface sections including second longitudinal joining edges joined to the respective longitudinal joining edges of said first and second surface sections; and

second and third toroidal oppositely disposed arc sections conformed radially to approximate the peripheral arc of said second semicircle, connected between the respective adjacent transverse ends of said third and fourth, and fifth and sixth surface sections and including an elliptic deformation formed over the central section thereof.

3,960,182

HEDDLES FOR WEAVING MACHINES HAVING HEDDLE FRAME BARS FOR SEVERAL HEDDLES, WHICH BARS ARE MOVED BY A SHED-FORMING DEVICE

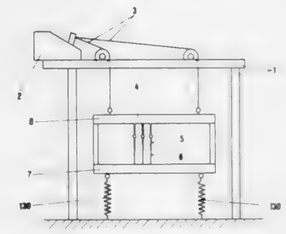
Rudolf Schwarz, Horgen-Zurich, Switzerland, assignor to Staeubli, Ltd., Horgen-Zurich, Switzerland

Filed Apr. 7, 1975, Ser. No. 565,395

Claims priority, application Switzerland, Apr. 9, 1974, 4975/74

Int. Cl.² D03C *9/00, 9/02*

U.S. Cl. 139—91 **11 Claims**



1. In a weaving machine having a heddle frame composed of at least vertically spaced upper and lower frame members

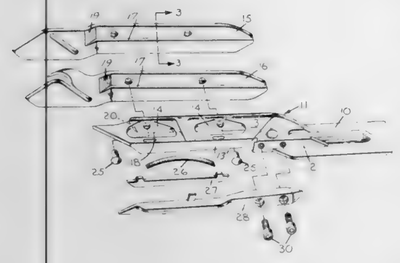
and a plurality of heddle means having eyelets therein extending between said upper and lower frame members, the improvement comprising wherein said heddle means consists of one single cord of flexible, practically nonelastic, nonmetallic material having a plurality of said eyelets formed therein and along the length thereof, said single cord being looped around at least said upper frame member a plurality of times with said eyelets being horizontally aligned and elastic band means secured to said nonelastic, nonmetallic material and engaging said lower frame member for keeping said nonelastic, nonmetallic material taut.

3,960,183

INTERCHANGEABLE WEFT CARRIER

Maurice Flamand, Cumberland, R.I., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 3, 1975, Ser. No. 546,215
Int. Cl.² D03D 47/22
U.S. Cl. 139—447 **2 Claims**



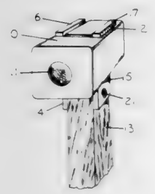
1. An improved carrier for inserting weft yarn into the shed formed between warp yarns on a loom of the type in which the weft yarn is supplied from a source located outside of the warp and is inserted into the shed by a carrier which is attached to a reciprocating inserter, said improved carrier comprising a main body portion including (a) a shank portion for attached to the inserter, (b) a generally horizonally extending upper wall and (c) at least one additional wall which extends substantially vertically, a weft yarn guiding backplate disposed adjacent said vertically extending wall of said main body portion, fastening means for securing said backplate to said vertically extending wall, and gripping means assembled on said main body portion for holding the end of the weft yarn being inserted.

3,960,184

LOOM PICKER RETAINER

Eugene N. Phillips, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Apr. 28, 1975, Ser. No. 572,060
Int. Cl.² D03D 49/36
U.S. Cl. 139—159 **1 Claim**



1. In combination with a picker stick of a loom and a loop picker carried thereon having a substantially rectangular opening defined by inner side walls and end walls of comparably shorter length than the inner side walls to receive the end of the picker stick, a picker retaining device comprising:

a. a plate-like retaining member interposed between each of the inner side walls of the picker and the adjoining surface of the picker stick, said plate-like retaining members including a portion which extends downwardly beyond the lowermost portion of the picker;

b. a laterally extending lip integrally formed on the upper end of each said plate-like retaining member and extending therefrom into engagement with the picker defining a vertical location of the picker on the picker stick; and

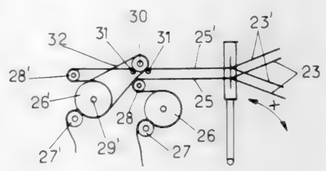
c. a pin member extending through the picker stick below the picker with the ends thereof connected to said plate-like retaining member for locking the latter at a preselected location on the picker stick so that the location of the picker cannot change during loom operation.

3,960,185

RIBBON WEAVING LOOM CONSTRUCTION

Erich Bühler, Eichsel, Germany, assignor to Jacob Muller, Frick, Switzerland

Filed Dec. 11, 1973, Ser. No. 422,941
Claims priority, application Switzerland, Dec. 11, 1972, 17988/72
Int. Cl.² D03D 49/20, 35/00
U.S. Cl. 139—307 **9 Claims**



1. In a ribbon-weaving loom, in which at least two ribbons are being woven simultaneously and from which the ribbons must be withdrawn in substantial parallelism, a combination comprising at least one withdrawing roller for each of said ribbons, and about which the respective ribbon is trained so that the roller is located beneath the ribbon, one of said withdrawing rollers being located at a level lower than the other withdrawing roller; a spacing roller for the ribbon on said other withdrawing roller, said spacing roller being located at a level above said one withdrawing roller; drive means for rotating the respective withdrawing rollers; and means for driving said spacing roller in rotation so that the density of weave of both of said ribbons is substantially identical.

3,960,186

WEFT YARN CONTROL DEVICE

Claude A. Wheeler, South Grafton, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

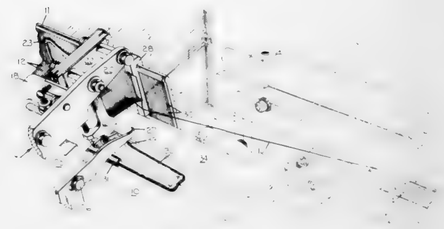
Filed Apr. 7, 1975, Ser. No. 565,539
Int. Cl.² D03D 47/34
U.S. Cl. 139—450 **1 Claim**

1. In a loom of the single pick insertion type having a reciprocating lay, a reed, and inserting and extending carrier by means of which weft yarn from an outside source is introduced into sheds formed by warp threads and a selvage forming device for inserting the ends of a pick into a warp shed after beat-up by the reed, a weft yarn control device comprising:

a. means carried by the reed for positioning that portion of a pick adjacent the warp forwardly of the reed during the latter's movement toward beat-up position;

b. means carried by the loom for receiving the pick from said positioning means and holding it in a location for reception by the selvage forming device; and

c. means defining a rod member operatively associated with said receiving means having a camming surface formed on one end thereof for engaging the weft and guiding the same to a position on the upper surface of said rod member to effect its reception into the weft gripping portion



of the inserting carrier during movement of the reed away from beat-up position.

3,960,187

METHOD AND DEVICE FOR METERING AND DISPERSING FLUID MATERIALS

Heinz Stock, Oberursel, Germany, and Hans W. Rebentisch, deceased, late of Frankfurt, Germany (by Waltraud Rebentisch, heir at law), assignors to USM Corporation, Boston, Mass.

Filed July 9, 1975, Ser. No. 594,573
Claims priority, application Germany, July 23, 1974, 2435431; July 23, 1974, 2435410
Int. Cl.² B65B 3/26
U.S. Cl. 141—1 R **16 Claims**



1. A method of metering and dispensing fluids which comprises progressing at a substantially constant rate a column of the fluid through a tube, injecting at timed intervals successive portions of gas seriatim into successive portions of said column of fluid to form bubbles spaced along the length of said columm so that fluid flows from an outlet opening of the tube as separated portions of uniform magnitude determined by said rate and said intervals.

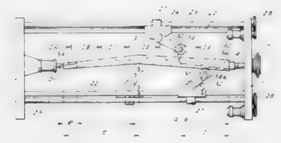
10. A device for metering and dispensing fluids comprising a tube through which a fluid is progressed, an outlet at the end of the tube through which the fluid may be dispensed, means for progressing a column of fluid through the tube to establish a substantially constant rate of flow to the outlet and means for injecting at timed intervals successive portions of gas into the tube to form bubbles spaced along the length of said column to separate the fluid dispensed from the outlet of the tube into metered portions determined by said rate and said intervals.

3,960,188

PROGRAMMED CONTOUR COPYING MACHINE

Erich Schmidt, Mauerbach, Austria, assignor to Maschinenfabrik Zuckermann Komm. Ges. Wien, Vienna, Austria

Filed Dec. 19, 1974, Ser. No. 534,276
Claims priority, application Austria, Dec. 19, 1973, 10649/73
Int. Cl.² B23B 3/28; B27C 5/00
U.S. Cl. 142—7 **10 Claims**



1. A method of reproducing in an elongated workpiece the contours of an elongated pattern having at least one substantially planar and longitudinally extending surface, said method comprising the steps of:

suspending said workpiece and said pattern rotatably about respective parallel longitudinal workpiece and pattern axes;

continuously urging a feeler into engagement with said pattern and urging a shaping tool linked to said feeler into engagement with said workpiece;

restraining said workpiece and said pattern from rotation temporarily while displacing said feeler longitudinally along said surface to cut into said workpiece with said tool a facet similar to said surface; and

synchronously rotating said workpiece and said pattern while displacing said feeler and said tool along said pattern and said workpiece to cut the remainder of the contours of said pattern into said workpiece, said workpiece and said pattern being restrained from rotating at predetermined angular positions each corresponding to a respective planar surface of said pattern.

8. An apparatus for shaping an elongated workpiece, said apparatus comprising:

an elongated pattern having at least one substantially planar and longitudinally extending surface;

means for suspending said workpiece and said pattern rotatably about respective parallel longitudinal workpiece and pattern axes;

a slider displaceable axially along said workpiece and said pattern;

a feeler on said slider engageable with said pattern and a tool on said slider engageable with said workpiece and linked to said feeler;

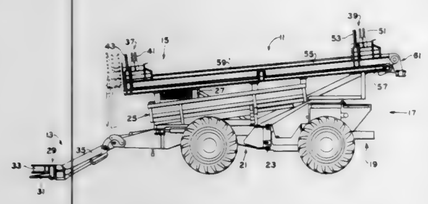
means for restraining rotation of said workpiece and said pattern about said axes and for simultaneously displacing said slider axially with said feeler riding along said surface and said tool cutting a corresponding facet in said workpiece; and

means for synchronously rotating said workpiece and said pattern to cut the remainder of the contours of said pattern into said workpiece with said tool.

3,960,189
METHOD FOR PROCESSING TREES AND APPARATUS USED THEREIN

Robert N. Windsor, Brisbane, Australia, and Stanley C. Jasinski, Woodstock, Canada, assignors to Eaton Yale Ltd., Canada

Filed Mar. 20, 1975, Ser. No. 560,662
Int. Cl.² A01G 23/08
U.S. Cl. 144—3 D 7 Claims

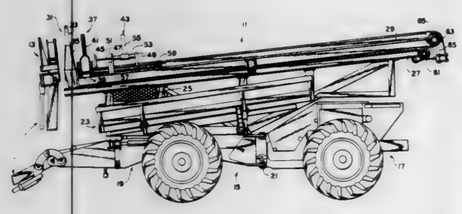


1. A method of processing a sheared tree comprising:
a. holding the trunk of the tree, by a holding means, adjacent the butt end of the sheared tree;
b. delimbing a first portion of the trunk, said first portion being defined by said butt end and a first predetermined point along the trunk of the tree;
c. gripping the tree trunk at a gripping point intermediate said butt end and said first predetermined point;
d. releasing the hold on the trunk adjacent said butt end;
e. severing a first bolt defined generally by said butt end and said gripping point;
f. subsequent to step (e), moving the tree trunk minus said first bolt relative to and past a set of delimbing blades in a direction towards said holding means to delimb a second portion of the trunk; and
g. severing a second bolt.

3,960,190
METHOD AND APPARATUS FOR HARVESTING SHEARED TREES

John Gerald Smith, Woodstock, Canada, assignor to Eaton Yale Ltd., Canada

Filed June 4, 1975, Ser. No. 583,734
Int. Cl.² A01G 23/08
U.S. Cl. 144—3 D 11 Claims

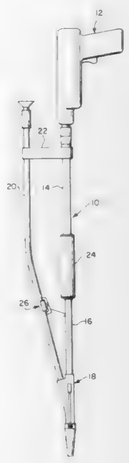


1. A method of processing a sheared tree utilizing a processing apparatus including a gripping means adjacent the forward end of the apparatus, delimber blades and a shear, the method comprising:
a. gripping the trunk of the tree adjacent its butt end to maintain the tree trunk longitudinally fixed relative to the apparatus;
b. positioning the delimber blades and the shear at a starting position with the delimber blades at a distance X rearward of the gripping means, the shear being disposed adjacent the delimber blades and between the gripping means and the delimber blades;
c. moving the shear and the delimber blades rearward a predetermined distance to delimb a portion of the tree trunk;
d. moving the delimber blades a distance Y rearward of the shear, the distance Y being at least equal to the distance X;
e. actuating the shear to sever a bolt;
f. releasing the grip on the bolt adjacent its butt end;
g. gripping the tree trunk with the delimber blades, and at generally the same time, opening the shear;
h. moving the shear and the delimber blades, gripping the tree trunk, forward to said starting position, the delimber blades moving forward relative to the shear.

3,960,191
FASTENER FEEDING AND DRIVING ATTACHMENT

Pierre Charles Murray, DeKalb, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed June 17, 1975, Ser. No. 587,796
Int. Cl.² B27B 17/00
U.S. Cl. 144—32 R 11 Claims

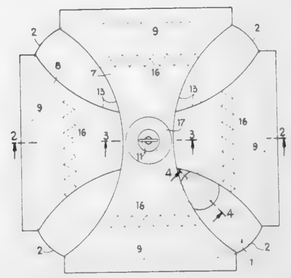


1. A portable power fastener driving tool including a driving spindle located within tubular means for axial and rotative movement therein, a feed tube associated with and connected to the tubular means for supplying fasteners to be driven by the spindle, a nose portion adapted to abut a workpiece and including a Y connection including a pair of upper arm sections and merging to a common bore section for coupling the tubular means to the feed tube at the lowermost extremity of the tool, the tubular means including an upper tube member coupled to suitable power supply means and a lower tube member at one of the said upper arm sections of the nose portion, the upper and lower tube members being mounted for relative reciprocating telescopic movement, spring means associated with the tubular means to bias the spindle and upper tube element upwardly from the Y connection, the upper tube element including a cam of predetermined axial dimension fixedly mounted thereon, a two position, pivotable escapement device mounted on the feed tube including means for selective activation to one of the two positions by the cam so that the spindle may be moved downwardly to an operative position within the nosepiece while the escapement controls the feeding of fasteners thereto.

3,960,192
TANK CAPABLE OF BEING CARRIED BY A HELICOPTER

Michel Convain, Bondues, France, assignor to S. A. Pronal, Roubaix, France

Filed Sept. 5, 1975, Ser. No. 610,855
Claims priority, application France, Sept. 26, 1974, 74.32461
Int. Cl.² B65D 33/14
U.S. Cl. 150—1 10 Claims

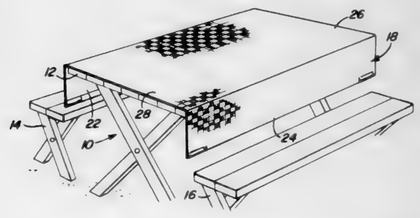


1. A tank for being suspended from a helicopter and comprising a bag which has a flexible wall and has in plan in a flat condition substantially the shape of a regular polygon, suspension means for the bag, the suspension means being constituted by straps which cross in a region and are fixed by their respective ends to two opposed edges of the bag and are interconnected in the crossing region of the straps where there is provided a hooking means, the length of the straps being slightly greater than the distance between the corresponding opposed edges in the flat state of the bag and each strap widening from the crossing region so that the two straps when viewed in plan have substantially the shape of a Maltese Cross.

3,960,193
WEIGHTED PICNIC TABLE CLOTH

Lyle W. Davis, P.O. Box 347, Kerrville, Tex. 78028

Filed Mar. 10, 1975, Ser. No. 556,863
Int. Cl.² A47B 97/00
U.S. Cl. 150—52 R 1 Claim

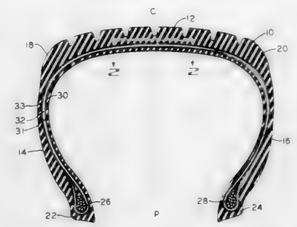


1. A table cloth for use over an elongated generally rectangular table top, said cloth comprising a rectangular flexible panel including opposite side and end marginal edge portions, said side marginal edge portions each including weight members supported from the opposite ends thereof, whereby said marginal edge portions, when hanging downwardly from corresponding edge portions of a table over which said panel is draped, will resist shifting of said panel relative to said table and lifting of said marginal portions of said panel from which said weight members are supported, said side marginal edge portions of said panel from which said weight members are supported including elongated hem portions extending longitudinally thereof, said weight members being enclosed within the opposite ends of said hem portions, said weight members comprising closed ended elongated flexible tubular members having heavy fluent material enclosed therein and extending longitudinally of the corresponding hem portion, said hem portions being closed on opposite sides of each of said weight members, each of said hem portions being free of weight members intermediate the weight members disposed in the opposite ends thereof.

3,960,194
BALANCED THREE-PLY BIAS TIRE

Patrick S. Neale, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 30, 1975, Ser. No. 591,373
Int. Cl.² B60C 9/10
U.S. Cl. 152—355 5 Claims

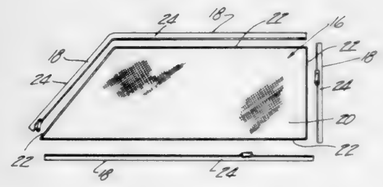


1. A pneumatic tire comprising a ground-contacting tread portion, a pair of sidewalls extending radially inwardly of the axially outer edges of said tread portion and terminating at their radially inner extremities in a pair of annular inextensible bead portions and having a carcass reinforcing structure of continuous cords extending from one bead portion to the other bead portion, said reinforcing carcass structure consisting of three plies of bias tire cord fabric extending at an angle of between 25° and 40° with respect to the centerplane of the tire at the centerplane, said three plies being characterized by two of said plies being comprised of cords of a first denier and extending in the same general direction with respect to said centerplane and a third ply of said three plies being sandwiched between said first two mentioned plies and having cords of substantially greater denier than that of the first two plies and extending in an opposite direction with respect to said centerplane.

3,960,195
VENTILATED SCREEN FOR MOTOR VEHICLE PASSENGER COMPARTMENT WINDOW OPENINGS

Clandes B. Marchbanks, 52 Karen, Pontiac, Mich. 48055

Filed Dec. 13, 1973, Ser. No. 424,195
Int. Cl.² A47G 5/00; A47H 1/00
U.S. Cl. 160—105 1 Claim



1. A ventilation screen removably installed in a window opening of a passenger compartment of a motor vehicle, comprising:
a reticulated member having a peripheral shape generally corresponding to the shape of the window opening;

one chain of a slide fastener connected to the periphery of said reticulated member; and,

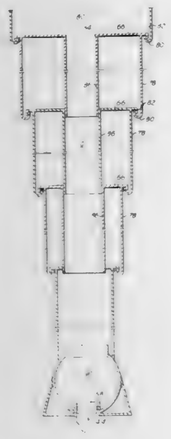
a mating chain of the slide fastener inserted between a weather strip immediately bordering the window opening and a motor vehicle body structure defining the window opening which weather strip and body structure being disposed toward the interior of the passenger compartment relative to a passenger compartment window which opens and closes in the window opening, said chain inserted between the weather strip and body structure engaging said chain connected to said reticulated member thereby removably fastening said reticulated member across the window opening on the interior side of the passenger compartment relative to the window so that the window can be opened and closed when said reticulated member is fastened across the window opening, and so said reticulated member can be removed from the window opening when the window is closed.

3,960,196

DOOR CLOSURE

Erling Berner, Loretohohe 5, CH-6300, Zug, Switzerland

Division of Ser. No. 339,774, March 14, 1973, Continuation-in-part of Ser. No. 241,925, April 7, 1972, Pat. No. 3,886,851.
This application May 13, 1974, Ser. No. 469,229
Int. Cl.² E06B *3/12, 9/00*
U.S. Cl. 160—222 **9 Claims**



1. A telescopic door with spaced apart wall sections consisting of a series of equal parallel side panels, each panel being bent outward on the upper edge and inward in the opposing lower edge in such a way that each side panel easily can be caught by a superposed panel and in turn can catch the next adjoining lower panel when the door is being closed, and forming fixed connections between said side panels maintaining the same at an exact distance from each other, said outward edge bends on the panels being larger than the inward bends of the panels on their opposite edges, whereby the larger bends are supported to glide against the inner side of the adjacent superposed panels, inhibiting scratching by the inward bends against the outer side of the adjoining panels.

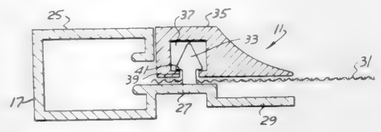
4. A door closure comprising parallel spaced apart inner and outer walls enclosing an open central air space, each wall being formed of a vertical tier of parallel horizontal panels separably secured edge to edge to be telescopically nestable, one beside the next in an upper plenum chamber, means for raising each wall section for telescopic storage of separated panels within said plenum and lowering as a door closure edge to edge assembly of said panels into parallel walls while maintaining said open central air space.

3,960,197

SCREEN AND STORM SASH CONSTRUCTION

Phillip D. Daniels, 40200 Grand River Ave., Novi, Mich. 48050

Filed Nov. 8, 1974, Ser. No. 522,027
Int. Cl.² A47G *5/00*
U.S. Cl. 160—371 **2 Claims**



1. A storm window assembly comprising a hollow frame including interconnected pairs of side and end sections;

said sections including a formed, elongated channel portion,

a continuous screen ledge projecting laterally inward of said channel portion intermedidate its opposite sides providing a peripheral support;

a series of longitudinally spaced projections on and along said screen ledge;

a continuous glass support ledge laterally offset from and projecting inwardly of said screen ledge;

a rectangular glass within said frame spanning and overlying said glass support ledge; and

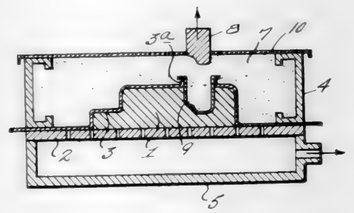
a removable trim strip of channel form overlying said screen ledge and glass support ledge retainingly engaging said projections and overlying and retainingly engaging peripheral portions of said glass.

3,960,198

REDUCED PRESSURE MOULD PRODUCTION METHOD

Hiroshi Matsuura; Kazuo Ishimoto, and Takashi Yasukuni, all of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1975, Ser. No. 571,558
Int. Cl.² B22D *7/04, 9/02*
U.S. Cl. 164—7 **1 Claim**



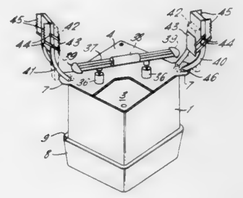
1. A reduced pressure mould production method, characterized by the steps of inserting into a recess of a main pattern (1) having a protrusion and a recess an auxiliary pattern (8) having the same shape as said recess and having an air-tight film (9) tightly adhered on its outer peripheral surface, thereafter placing said main pattern (1) fixedly on a surface plate (2) provided with evacuating means, covering the surface of the main pattern (1) including the upper surface of said surface plate but excluding the upper surface of said auxiliary pattern (8) with an air-tight film (3), then tightly adhering said air-tight film (3) onto the surface of the main pattern (1) excluding the upper surface of said auxiliary pattern (8) and onto the upper surface of the surface plate (2) with the evacuating means of the surface plate (2), thereafter extracting said auxiliary pattern (8) from the main pattern (1), subsequently placing a casting frame (4) provided with pressure reduction means on the surface plate (2), thereafter filling said casting frame (4) with solid particles (7), further covering the entire top surface of said casting frame (4) and the solid particles (7) with an air-tight film (10), thereafter adhering said air-tight films (3) and (9) onto the side of the solid particles (7) by reducing the pressure within said casting frame (4) with said pressure reduction means and by recovering an atmospheric pressure within the surface plate (2), and then separating the main pattern (1) as well as the surface plate (2) from the casting frame (4).

3,960,199

EXPANSIBLE FRAME HOT TOPPING APPARATUS WITH WEDGE INSERTION MEANS

Roger Fieldhouse, Birmingham, England, assignor to Foseco Trading A.G., Chur, Switzerland

Filed Dec. 13, 1974, Ser. No. 532,690
Claims priority, application United Kingdom, Dec. 21, 1973, 59555/73
Int. Cl.² B22D *33/00, 45/00*
U.S. Cl. 164—339 **7 Claims**



1. In an apparatus for applying a hot top lining in an ingot mould or ingot mould head box which comprises a pair of slab support members each having two faces adapted to support an L-shaped slab of hot top lining material such that the L-shaped slabs are supported outside the members in the form of a rectangle, means for moving the members towards one another and apart to decrease or increase the size of the rectangle, supports for corner wedges located above the gap between supported L-shaped slabs when the members are in their most separated position, and means for applying pressure to the tops of the corner wedges to urge them into the gaps between the L-shaped slabs, the improvement which comprises said corner wedge supports being mounted on two opposed corners of one of the slab support members, means for releasing a corner wedge held in a said corner wedge support to allow it to drop with gravity, and providing, mounted on the said one of the slab support members, a bar outwardly extendable, pressure plates on the ends of the bar, and piston/cylinder means adapted to draw the bar downwardly with the pressure plates extended to force wedges dropped from their supports downwards into the gaps between the L-shaped slabs.

3,960,200

APPARATUS FOR LIQUID QUENCHING OF FREE JET SPUN METAL

Sheldon Kavesh, Whippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

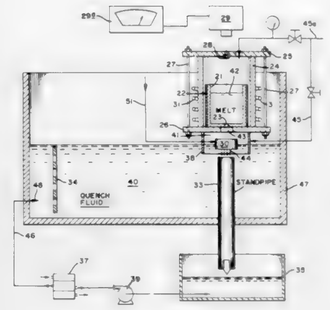
Division of Ser. No. 306,472, Nov. 14, 1972, Pat. No. 3,845,805. This application Aug. 21, 1974, Ser. No. 499,386
Int. Cl.² B22D *11/12*
U.S. Cl. 164—281 **6 Claims**

1. An apparatus for the production of filament from a melt of normally solid material comprising:

a. a melting chamber adapted to receive said material, said chamber including means to melt said material and means to control the environment therein;

b. an extrusion orifice in the bottom of said melting chamber, adapted for extruding a filament of molten material;

c. an interface chamber below said orifice through which said filament is adapted to pass, said interface chamber including means for providing an evacuated space or controlled gaseous atmosphere therein; and



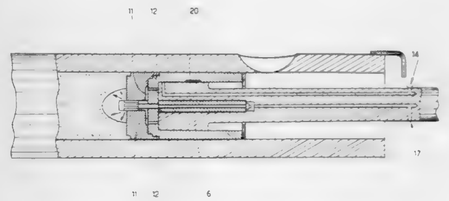
d. reservoir disposed below said interface chamber into which filament is adapted to be introduced, said reservoir comprising a liquid quenching medium adapted to move cocurrently with the molten filament introduced therein.

3,960,201

INJECTION DEVICE FOR MOLDING MACHINES

Robert Portalier, Ville d'Avray, France, assignor to Societe de Vente de l'Aluminium Pechiney, Paris, France

Filed Dec. 13, 1974, Ser. No. 532,641
Int. Cl.² B22D *17/30*
U.S. Cl. 164—312 **4 Claims**

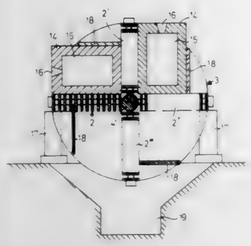


1. An improved injection device for pressurized machines having a cooling chamber for casting nonferrous metals and alloys adapted to cause an effective counter effect on the still liquid metal comprising, an injection piston (6) to receive the compression effort of the casting machine but remaining out of contact with the metal, a compressing piston (5) to transmit the compression force to the metal to be cast, said injection piston sliding freely and coaxially within the compressing piston, a container (3) to receive the metal to be cast, a variable volume chamber (7) within the compressing piston, said chamber having one wall face defined by the end of the injection piston adapted to receive a gas which is inert with respect to the metal to be cast, an orifice in said compressing piston allowing communication between said chamber and said container, and a stop pin coaxial with said injection piston and received within said orifice to normally block gas flow through said orifice.

3,960,202
FOUNDRY EQUIPMENT

Hemming Kristian Jorgensen, Klampenborg, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

Filed June 11, 1974, Ser. No. 478,254
Claims priority, application Denmark, June 19, 1973, 3383/73
Int. Cl.² B22C *17/08*
U.S. Cl. 164—325 **3 Claims**

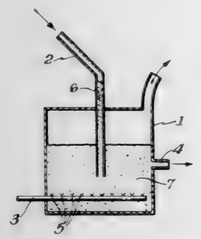


1. In a casting apparatus handling casting molds consisting of a plurality of uniform mold parts which are piled closely together to form a horizontal series presenting at least one casting cavity at each joint between successive mold parts, the improvement comprising: a frame that is journalled for rotation around a horizontal axis and includes at least two rigidly interconnected mold supports extending parallel to said axis and regularly angularly spaced around the same, means to stepwise and unidirectionally rotate said frame so as to tiltably move each of said mold supports successively through a substantially horizontal mold receiving position, a substantially vertical pouring position, and a mold discharge position, and means to hold a mold firmly against each of said supports during the tilting thereof until said mold discharge position has been reached.

3,960,203
FLUIDIZED BED COOLER

Wendell E. Dunn, Jr., Sydney, Australia, assignor to Titanium Technology N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 138,461, April 29, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,255
Int. Cl.² F28D *13/00*
U.S. Cl. 165—1 **5 Claims**

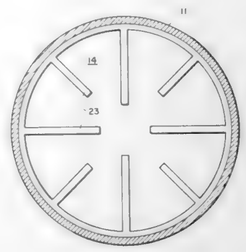


1. A process for cooling to a temperature of 200°C., a fluidized bed of finely divided partially beneficiated titaniferous ore heated to a temperature in the range of 350° to 1100°C., in a gas-solids reactor, comprising (a) injecting into the bed of ore a stream of liquid having a boiling point at least 100°C. below the temperature of the bed of ore whereby volatilization of the stream of liquid maintains the bed of ore in a fluidized state and (b) removing said volatilized liquid from the gas-solids reactor.

3,960,204
LOW VOID VOLUME REGENERATOR FOR VUILLEUMIER CRYOGENIC COOLER

Stuart B. Horn, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 253,742, May 16, 1972, abandoned. This application Feb. 12, 1974, Ser. No. 441,914
Int. Cl.² F28D *17/00*
U.S. Cl. 165—4 **7 Claims**

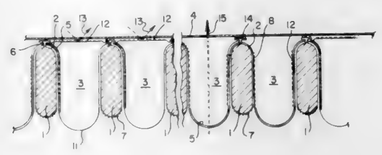


1. A low void volume regenerator for use in a Vuilleumier cooler and comprising:
a plurality of joined disc-like members forming an elongated body;
said disc-like members being made of heat insulating and heat conducting materials and being arranged to promote heat conduction radially of the regenerator body and to inhibit heat conduction longitudinally of the regenerator body; and
a plurality of substantially radial slots in said regenerator body providing a low void volume for the passage of gas longitudinally therethrough.

3,960,205
STORAGE BODY WITH LATENT STORAGE SUBSTANCES FOR TEMPERATURE EQUILIZATION

Nikolaus Laing, Hofener Weg 35 bis 37, 7141 Aldingen near Stuttgart, Germany

Filed Feb. 21, 1973, Ser. No. 334,445
Claims priority, application Germany, Feb. 24, 1972, 2208712
Int. Cl.² F24J *3/02*
U.S. Cl. 165—48 **9 Claims**

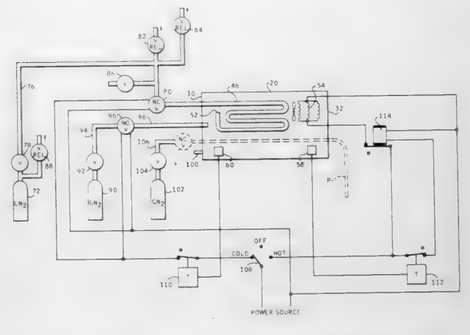


1. Wall structure for reducing temperature change within a building where said structure has optical transparent regions and control devices for controlling transmission of heat waves through the optical transparent regions, the improvement comprising having in addition foil hoses forming chambers which are sealed from each other at short intervals and a crystalline heat storage substance in said chambers having a melting temperature which is closer to the mean inside temperature to be maintained within a building than the mean ambient temperature outside the building.

3,960,206
REFRIGERATED HOPPER EQUIPMENT FOR AUTOMATIC RIVETING MACHINES

George I. Baxter; Clarence P. Rolla, both of San Diego, and Charles L. Holland, Escondido, all of Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Continuation of Ser. No. 461,827, April 18, 1974, which is a division of Ser. No. 277,438, Aug. 2, 1972, Pat. No. 3,837,176. This application Jan. 2, 1975, Ser. No. 538,058
Int. Cl.² F25B *29/00*
U.S. Cl. 165—61 **3 Claims**



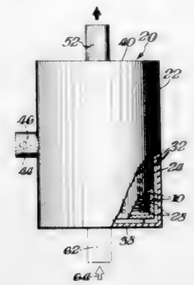
1. A refrigeration apparatus for an automatic riveting machine comprising:
at least one hopper adapted to store and dispense rivets;
an insulated enclosure in which said hoppers are mounted;
refrigeration coils mounted in said enclosure;
said coils connected to a supply source of a vaporizable liquid refrigerant;
said coils having an opening for discharging said refrigerant into said enclosure in its dry gaseous state;
a vent in said enclosure to vent said gaseous refrigerant to the exterior thereof;
means to conduct a moisture inhibiting gas into said enclosure;
a normally closed valve between said source of vaporizable liquid refrigerant and said enclosure;
a normally open valve between the source of moisture inhibiting gas and said enclosure;
means to open and close said normally closed valve concurrently with the closing and opening, respectively, of said normally open valve; and
a heater positioned within said enclosure for rapidly increasing the temperature of said hoppers for servicing thereof;
said normally closed valve being closed and said normally open valve being open during operation of said heater.

3,960,207
HEAT EXCHANGE APPARATUS

Karl W. Boer, R.D. No. 3, Kennett Square, Pa. 19348

Filed Nov. 28, 1973, Ser. No. 419,799
Int. Cl.² F28D *21/00*
U.S. Cl. 165—104 R **15 Claims**

1. Heat exchange apparatus comprising in combination:
a plurality of ring-like, disc-shaped closed containers each adapted to hold a first material, said containers being disposed in a stacked array with each container being spaced from an adjacent container, to form a first passageway between adjacent containers,
the center portion of each said ring-like container defining a conduit generally perpendicular to the plane of the disc in conduit relationship with said first passageway to form thereby a continuous passage of a fluid through said apparatus, and in conduit relationship with each of the other said perpendicular conduits in said other discs to form a second passageway therewith and with each said first passageway, and bonnet means for directing said fluid radially and inwardly through said passageways and then out of said apparatus,

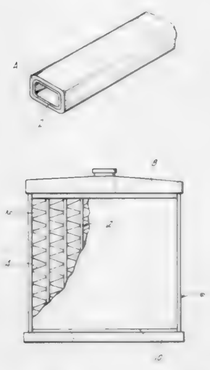


thereby to achieve an efficient heat transfer between said fluid and said first material, there being in said containers heat storage material as said first material.

3,960,208
PROCESS FOR PROVIDING HEAT TRANSFER WITH RESISTANCE TO EROSION-CORROSION IN AQUEOUS ENVIRONMENT

William H. Anthony, and James M. Popplewell, both of Guilford, Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 439,335, Feb. 4, 1974, Pat. No. 3,872,921, which is a division of Ser. No. 222,795, Feb. 2, 1972, Pat. No. 3,809,155. This application Dec. 13, 1974, Ser. No. 532,335
Int. Cl.² F28F *19/06, 21/08*
U.S. Cl. 165—1 **8 Claims**

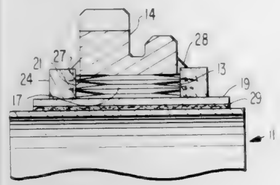


1. A process for providing heat transfer with resistance to erosion corrosion in an aqueous environment which comprises:
A. providing metal tubing comprising an aluminum base alloy cladding consisting essentially of 0.8 to 1.3% zinc, 0.7% maximum silicon plus iron, 0.10% maximum copper, 0.10% maximum manganese, 0.10% maximum magnesium, balance essentially aluminum bonded to at least one side of an aluminum base alloy core consisting essentially of manganese from 1.0 to 1.5%, chromium from 0.1 to 0.4%, copper from 0.05 to 0.4%, balance essentially aluminum, said metal tubing having entrance and exits ends having a wall thickness no larger than 0.1 inch;
B. affixing the said entrance and exit ends to two tube sheets;
C. passing a first aqueous liquid through the tubing;
D. contacting the external surface of said tubing with a fluid in heat exchange relationship with said fluid.

3,960,209
REGENERATIVE HEAT EXCHANGER OF A GAS TURBINE

Franz Neubrand, Unterwilzingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Apr. 18, 1975, Ser. No. 569,294
Claims priority, application Germany, Apr. 22, 1974, 2419376
Int. Cl.² F28D *19/00*
U.S. Cl. 165—8 **7 Claims**

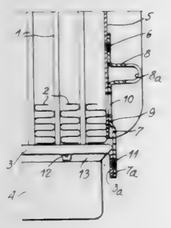


1. A regenerative heat-exchanger of a gas turbine, comprising a ceramic heat-exchanger disk, a metallic toothed rim substantially coaxially surrounding the heat-exchanger disk while forming an annular space, spring means arranged within the annular space which are supported under prestress, on the one hand, at entrainment plate means abutting at the circumference of the heat-exchanger disk and, on the other, against the inside of the toothed rim, characterized in that the spring means are formed by spring packets of cup springs which are guided on both sides in concave recess means provided in two webs arranged in the circumferential direction on the entrainment plate means, said webs surrounding the lateral surfaces of the toothed rim and being non-rotatably connected therewith.

3,960,210
DEVICE FOR FIXING TUBE PLATES AND LATERAL FLANGES OF HEAT EXCHANGERS

André Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Apr. 30, 1973, Ser. No. 355,438
Claims priority, application France, May 4, 1972, 72.15961
Int. Cl.² F28D *1/00*
U.S. Cl. 165—149 **11 Claims**



1. A heat exchanger core comprising a plurality of spaced substantially parallel tubes, two tube plates respectively secured to opposite ends of said tubes, and lateral flanges for mutual connection of said tube plates, said lateral flanges having movable end portions connected therewith through distortable substantially U-shaped members having a plurality of cuts extending longitudinally therethrough, said movable end portions being rigidly connected to said tube plates whereby said distortable members compensate through distortion thereof for differential heat expansion occurring between said tubes and said lateral flanges during brazing.

3,960,211
GAS OPERATED HYDRAULICALLY ACTUATED WIRE LINE PACKER

Stanley O. Hutchison, Bakersfield, and Neal L. Mitchell, Taft, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sept. 30, 1974, Ser. No. 510,264
Int. Cl.² E21B *33/127, 23/04*
U.S. Cl. 166—187 **10 Claims**



1. A wire line inflatable packer comprising an elongated body including a tubing section; means for connecting a wire line to the upper end of said elongated body; an elongated resilient sleeve positioned over at least a portion of said tubing section; means connecting the ends of said resilient sleeve in fluid-tight relationship with said tubing section to form an annular chamber between said tubing section and said resilient sleeve; port means providing a passageway for flowing fluid to said annular chamber; gas chamber means for storing high pressure gas in said elongated body for use in inflating said resilient sleeve; pressure sink means forming a pressure sink for use in deflating said resilient sleeve; conduit means connected between said gas chamber means and said port means and between said port means and said pressure sink means for use in inflating and deflating said sleeve; valve means connected to said conduit means for selectively controlling flow of high pressure gas between said port means and said gas chamber means through said conduit means to inflate said resilient sleeve and between said port means and said pressure sink means through said conduit means to deflate said resilient sleeve; and sequencing timer actuating means connected to said valve means for sequentially operating said valve means after passage of a predeterminable time interval to first inflate said resilient sleeve and then after passage of a second predeterminable time interval to deflate said resilient sleeve, said sequencing timer actuating means comprising means defining an orifice, a supply of noncompressible liquid for flow through said orifice, operating gas means for driving said liquid through said orifice and operating means responsive to liquid driven through said orifice for operating said valve means.

3,960,212
METHOD OF OBTAINING IMPRESSION INFORMATION FROM A WELL

Stanley O. Hutchison, Bakersfield, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 510,265, Sept. 30, 1974. This application May 8, 1975, Ser. No. 575,751
Int. Cl.² E21B *47/00, 47/10*
U.S. Cl. 166—250 **1 Claim**

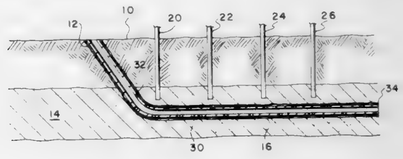


1. The method of obtaining impression information from a well comprising activating at the earth's surface a sequencing timer means contained in a wire line packer for inflating and deflating said packer, running into a well said wire line packer having an impression sleeve connected to the outside of an inflatable sleeve of said packer, lowering said inflatable packer down said well before the elapse of a predetermined time to position the impression sleeve at a predetermined depth in said well, automatically inflating said inflatable sleeve of said packer in response to said sequencing timer means to press said impression sleeve against the wall of said well, maintaining said inflatable sleeve in inflated condition for a predetermined time, then automatically deflating the inflatable sleeve of said packer in response to said sequencing timer means to remove said impression sleeve from said well wall, and removing said inflatable packer from said well.

3,960,213
PRODUCTION OF BITUMEN BY STEAM INJECTION

John Howard Striegler, Richardson, and Eddie Paul Howell, Plano, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed June 6, 1975, Ser. No. 584,516
Int. Cl.² E21B *43/24*
U.S. Cl. 166—272 **6 Claims**

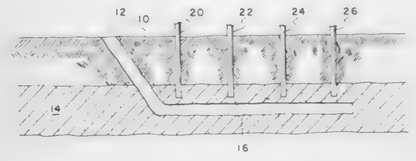


1. Method of recovering bitumen from a subterranean tar sand formation containing bitumen which comprises:
drilling an injection well to said formation and extending same into said formation;
inserting a perforated liner within said injection well which extends the entire length thereof, said perforations positioned in the portion of said injection well in contact with said formation;
drilling and completing a plurality of production wells into said formation positioned above and along the length of said injection well;
circulating a heated fluid through said injection well contacting said formation via said perforations and thereby reducing the viscosity of said bitumen contained therein;
recovering said bitumen of reduced viscosity via said production wells.

3,960,214
RECOVERY OF BITUMEN BY STEAM INJECTION

John Howard Striegler, Richardson, and Eddie Paul Howell, Plano, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed June 6, 1975, Ser. No. 584,518
Int. Cl.² E21B *43/24, 33/138*
U.S. Cl. 166—272 **6 Claims**



1. Method of recovering bitumen from a subterranean tar sand formation containing bitumen which comprises:
drilling and completing an injection well to said formation and extending same into said formation, casing said injection well;
drilling and completing a plurality of production wells into said formation positioned above and along the length of said injection well;
perforating the portion of said cased injection well in contact with said formation, circulating a heated fluid through said injection well contacting said formation via said perforations and thereby reducing the viscosity of said bitumen contaned therein;
recovering said bitumen of reduced viscosity via said production wells.

3,960,215
METHOD AND APPARATUS FOR PERFORMING SEQUENTIALLY TIMED OPERATIONS IN A WELL

Neal L. Mitchell, Taft, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 510,260, Sept. 30, 1974. This application May 9, 1975, Ser. No. 575,886
Int. Cl.² E21B *43/00, 47/00*
U.S. Cl. 166—315 **2 Claims**

1. In a wire line device for use in performing sequentially timed operations in a well comprising:
operating means for performing sequential operations in a well and sequencing timer actuating means for operating said operating means, said sequencing timer actuating means comprising a cylinder, an orifice in said cylinder, a noncompressible liquid in said cylinder upstream of said orifice, means for applying pressure on said liquid upstream of said orifice to move said liquid through said orifice and stem means downstream of said orifice, said stem means connected to said operating means to operate said operating means on movement of said stem means, said stem means being moved in response to flow through said orifice.

2. The method of performing sequential operations in a well comprising:
flowing a noncompressible liquid through an orifice,

running into a well a wire line device capable of having a performing timed sequential operation,

lowering said device down said well before the elapse of a predetermined time as determined by flow of said liquid through said orifice to position said device in said well,



operating a series of timed sequential operations of said device in response to said flow of liquid through said orifice.

3,960,216
FIRE-EXTINGUSHING EQUIPMENT

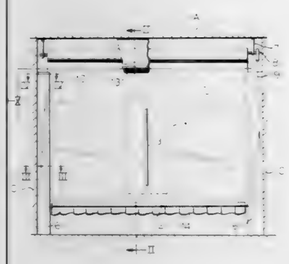
Mineo Isobe, No. 1111, Sanyso-cho, Suzuka, Mie, Japan

Filed Jan. 28, 1975, Ser. No. 544,917

Claims priority, application Japan, Jan. 28, 1974, 49-11653; Mar. 4, 1974, 49-25408; May 21, 1974, 49-57529; Aug. 14, 1974, 49-93599

Int. Cl.² E06B *5/16*

U.S. Cl. 169—48 **31 Claims**



1. A fire preventing and extinguishing apparatus for use inside buildings, said apparatus comprising:

roller-mounted curtain means for separating a burning area from a non-burning area;

support means attached to the upper portion of said curtain means for suspending and rolling up said curtain means;

water feed means adjacent the upper portion of said curtain means and said support means for continuously supplying water to the surface of said curtain means, whereby water flows from the upper portion of said curtain means downward over the entire surface thereof; and

reservoir means along the bottom portion of said curtain means for receiving and containing therein the water flowing downward over the surface of said curtain means.

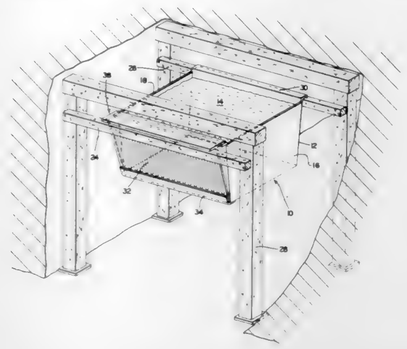
3,960,217
PASSIVE EXPLOSION BARRIER

Israel Liebman, Library, and John Corry, Elrama, both of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 14, 1975, Ser. No. 622,343

Int. Cl.² A62C *35/04*

U.S. Cl. 169—64 **12 Claims**



1. Apparatus mountable to first and second spaced apart beams adjacent a mine roof for suppressing explosions, comprising:

a receptacle for storing an explosion suppressing substance, one side of said receptacle having a first support flange for mounting said one side on said first beam;

a face plate pivotally attached to the opposite side of said receptacle, said plate having a second support flange for mounting said opposite side on said second beam;

said face plate being pivotable from a first position to a second position in response to wind forces of an explosion;

said face plate forming a first angle with a horizontal plane in said first position, wherein said first and second support flanges are separated from each other by a first distance sufficient for mounting said flanges respectively on said first and second beams; and

said face plate forming a second angle with the horizontal plane in said second position, said second angle being larger than said first angle, wherein said first and second support flanges are separated from each other by a second distance insufficient for mounting said flanges respectively on said first and second beams, said receptacle spilling said suppressing substance in the path of the explosion.

3,960,218
GRASS-CLEARING DEVICE FOR LAWN-SPRINKLER HEADS

Fenimore Edward Atchley, 23333 Ridge Route Drive, No. 37, and Betty Lou Gilliam, 24562 Blackfoot Drive, both of El Toro, Calif. 92630

Filed July 2, 1975, Ser. No. 592,548

Int. Cl.² A01G *3/06*

U.S. Cl. 172—13 **2 Claims**

1. A grass-clearing device for sprinkler heads related to underground water systems, wherein the device comprises:

a main-support body having holes disposed adjacent the free ends thereof;

a pair of cutting blades slidably attached to each of said free ends of said main-support body, wherein said cutting blade comprises:

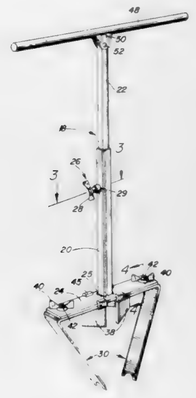
a horizontal arm member having an elongated slot disposed therein and a free end, said elongated slot being arranged to be aligned with respective holes of said main-support body;

a depending, cutting, leg member formed as an integral part of said horizontal arm member, and bent inwardly thereof, having dual-cutting edges formed thereon, said leg member terminating with a free end;

wherein said cutting, leg member includes a lateral, cutting edge disposed at the free end of said cutting leg member, and wherein a semi-circular notch is formed therein;

a pair of tabs integrally formed as part of each said horizontal arm member said tabs being inwardly bent to slidably receive said main-support body therethrough, thereby preventing lateral movement of said cutting blades:

a pair of V-shaped, jaw members, each being secured adjacent said free end of each said horizontal arm member, wherein the jaw members are positioned opposite to each other, to receive one of said sprinkler heads therebetween;



means for adjusting said cutting blades to the proper distance apart with respect to the size of said sprinkler head, said means for adjusting said cutting blades being received in said elongated slots of said horizontal arm members and said holes disposed in said main-support body;

a handle shaft having a first tubular shaft, one end of which is affixed to said main body, and a second shaft adapted to be received in said first tubular shaft, said first and second shafts having matching cross-sectional configurations, whereby said second shaft is prevented from rotation therein;

a handle grip moveably attached to one end of said second shaft thereof, whereby said handle grip can be folded for storage; and

locking means mounted to said telescoping, handle shaft, whereby said handle shaft can be positioned at a predetermined length.

3,960,219
SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

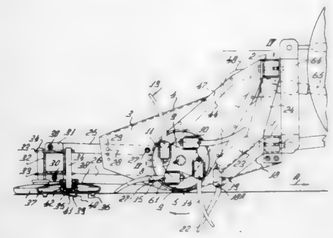
Filed Apr. 22, 1974, Ser. No. 462,942

Claims priority, application Netherlands, Apr. 26, 1973, 7305802

Int. Cl.² A01B *33/02, 49/02*

U.S. Cl. 172—39 **18 Claims**

1. A soil cultivating implement comprising a frame movable over the ground and at least one rotor supported on said frame, said rotor being mounted for rotation about a substantially horizontal axis and having a plurality of elongated soil-working tines, driving means connected to said rotor and said tines, said driving means driving the tines through the soil in a direction generally parallel to the direction of travel of said implement, said tines each having a lower free end that is orientated rearwardly with respect to the normal direction of rotation of said rotor, said tines each having a fastening portion mounted in a corresponding holder on support means of said rotor and said holder having a longitudinal axis, said



longitudinal axis of the holder and said fastening portion extending substantially tangentially with respect to a circle concentric with said axis of rotation.

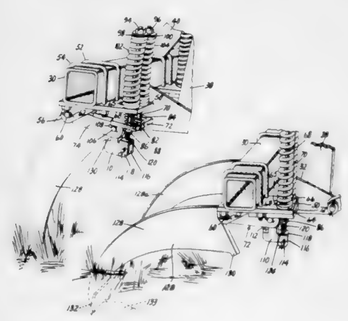
3,960,220
SUBSOIL PLOW

Veikko A. Laitala, Rte. 6, Box 215, Rochester, Ind. 46975

Filed Dec. 9, 1974, Ser. No. 530,663

Int. Cl.² A01B *61/00, 13/08*

U.S. Cl. 172—261 **7 Claims**



1. Plow apparatus comprising a supporting frame having front and rear sides, a plow element mounted on said frame for pivotal movement about a horizontal axis in a direction fore and aft of said frame,

holding means for releasably holding said plow element generally upright in plowing position,

means for yieldably pivoting said plow element and holding means forwardly whereby forward movement of said plow element through the soil will be accompanied by vibratory pivotal motion thereof,

said yieldable pivoting means including a reaction member mounted on said frame for pivotal movement about said horizontal axis, said holding means being carried by said reaction member whereby said plow element and said reaction member may pivotally vibrate in unison.

3,960,221
TILLAGE TOOL TRANSPORT ARRANGEMENT

Calvin B. Blair, P.O. Box 76, and John W. Blair, P.O. Box 47, both of Barnard, Kans. 67418

Filed Sept. 18, 1974, Ser. No. 506,957

Int. Cl.² A01B *73/00*

U.S. Cl. 172—311 **6 Claims**

3. In an agricultural tillage implement having a drawn tongue and a foldable wing frame member, said implement being movable in a substantially horizontal plane, said wing

frame member being operably connected to said tongue and normally projecting laterally therefrom, and a cable for resisting the rearward deflection of said wing frame member, the improvement comprising:

a. an arm normally projecting laterally of said tongue in front of said wing frame member, mounting means movably mounting said arm on said tongue for unfolding of said arm away from said tongue when said arm is moved forwardly in said substantially horizontal plane and folding thereof toward said tongue when said arm is moved



rearwardly in said substantially horizontal plane, said mounting means movably mounting said arm for unfolding and folding thereof with the unfolding and folding of said wing frame member respectively; and

b. said cable extending between and cooperating with said arm and said wing frame member, said cable being supported by a portion of said arm which is outwardly projecting when said wing frame member is in said laterally projecting position to provide selective support for said wing frame member.

3,960,222

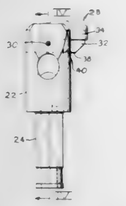
TOOL FOR CUTTING GROOVE IN HOLE

Donald L. Leibee, Bedford; Seibert S. Oaks, Everett, and R. Douglas Evans, Jr., Bedford, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Aug. 29, 1974, Ser. No. 501,803

Int. Cl.² E21B *9/26*

U.S. Cl. 175—263 **10 Claims**



1. A tool for forming at least one groove in the wall of a hole, especially in a hole in an earth formation, said tool comprising; a block-like body having a longitudinal axis, said body having a forward end and a rearward end, means at the rearward end of said body adapted for engagement by a driver for moving the tool axially and for driving the tool in rotation on the axis thereof, said body being freely receivable in and movable axially along the hole to be grooved, pivot means located near said central axis on the forward end of said body, a cutting element having one end pivotally mounted thereon and having a first pivotal position on said body wherein the other end of said cutting element protrudes radially from the body for forming a groove, cooperating elements of abutment means on said cutting element and said body to support said cutting element in said first position on said body during the forming of a groove, the length of said cutting element which protrudes radially from said body when said cutting element is in said first position thereof on said body being no greater than the length of the cutting element within the envelope of the body, said cutting element having a second position on said body wherein it is disposed entirely within the envelope of said body to permit free axial movement of the tool in the hole, said cutter element being freely movable between said first and second positions thereof and the position of said cutting element on said body being determined by the direction of movement of said body in the hole.

3,960,223

DRILL FOR ROCK

Werner Kleine, Bremen, Germany, assignor to Gebrueder Heller, Uphusen, Germany

Filed Mar. 12, 1975, Ser. No. 557,779

Claims priority, application Germany, Mar. 26, 1974, 2414354

Int. Cl.² E21C *13/08*

U.S. Cl. 175—385 **20 Claims**

1. A drill for boring rock in a boring direction comprising a boring head body arranged on one end of a drill shank and having a central axis and at least two wings radially extending in different radial directions and having surfaces pointing in said boring direction,

an axial centering projection having an end which projects in said boring direction in front of said wings,

said wings and said centering projection constituting carriers of cutter bodies having cutting edges, said cutter bodies being arranged eccentrically on radial outer ends of said surfaces of said wings, and on the end of said centering projection, respectively, said centering cutter body on said centering projection projecting radially from said central axis and having a centering point on said central axis pointing in said boring direction, said eccentrically arranged cutter bodies having radial inner ends disposed from said centering cutter body at radial distances such that parts of said surfaces of said wings located radially between said inner ends and said centering cutter body form breaker surfaces serving during drilling to break annular surfaces, unworked by said cutter bodies, of rock to be bored,

said boring head having channel type surfaces positioned between said wings,

said centering projection having an outer surface defining centering projection jacket lines,

each of said channel type surfaces having at least one bottom jacket line extending longitudinally to the longitudinal axis of said boring head body and directly joining one of said centering projection jacket lines, and said bottom jacket line forming at least at its joining end an obtuse angle with respect to said one centering projection jacket line.

3,960,224

PRECISION CUT-OFF WEIGHING APPARATUS

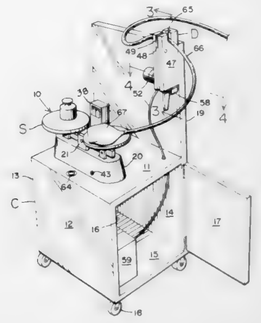
Charles Silvers, 6500 N. Bay Road, Miami Beach, Fla. 33141

Filed June 6, 1975, Ser. No. 584,572

Int. Cl.² A61B *5/14*; **G01G** *13/30*

U.S. Cl. 177—47 **5 Claims**

1. A precision cut-off weighing apparatus comprising a balance having arm portions, means pivoting said arm portions for weighing articles placed thereon, a magnet mounted on one of said arms, reed switch means mounted in proximity of said magnet but out of the influence of the magnetic attraction of said magnet when said arm portions are in an unbalanced condition, a support, a lever pivotally mounted on said support, tubular member support means mounted on said support in the path of movement of said pivoted lever, restraining means mounted on said support preventing the pivotal movement of said lever, further means connected to said lever urging the pivotal movement of said lever, power operated means connected to said reed switch means and said restraining means whereby upon the swinging of said one arm



portion in an unbalanced condition and said magnetic attraction causing said reed switch means to become closed, said restraining means is released and said further means effects the pivotal movement of said lever to swing in the direction of said tubular support means.

3,960,225

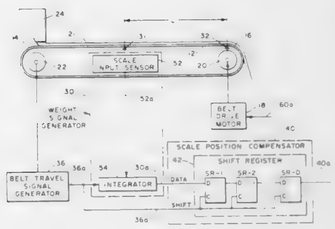
CONVEYOR BELT SYSTEM WITH POSITIONAL TRANSFORMATION OF WEIGHT DATA

Frank S. Hyer, Duxbury, and Raymond Karosas, Quincy, both of Mass., assignors to Hyer Industries, Inc., Pembroke, Mass.

Continuation of Ser. No. 418,088, Nov. 21, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 495,068

Int. Cl.² G01G *13/04*

U.S. Cl. 177—121 **35 Claims**



1. Apparatus for a belt conveying a stream of material thereon, said apparatus having, in combination,

means to generate, at a time when a portion of the belt is adjacent a first reference point, a first weight signal associated with said portion,

means to convert said signal to a stream of substantially uniform pulses including means to delay said pulse stream relative to said first weight signal for the time interval required for said portion to reach a position adjacent a second reference point downstream of the first reference point, said delayed pulse stream having an instantaneous pulse repetition rate proportional to the weight rate of flow of material associated with the portion of the belt adjacent the second reference point.

3,960,226

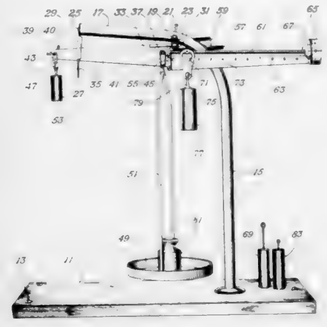
WEIGHING SCALE WITH TEN TIMES SENSITIVITY INCREASE

Daniel R. Wood, Fort Worth, Tex.

Division of Ser. No. 561,043, March 24, 1975. This application Aug. 13, 1975, Ser. No. 604,357

Int. Cl.² G01G *23/14*, *1/18*

U.S. Cl. 177—164 **3 Claims**



1. A weighing machine comprising:

a stand;

a fulcrum carried by the stand in a selected vertical plane;

a lever carried by and located below the fulcrum;

a weight pan carried by the lever on a first hanging means;

a tare poise equal to the weight of the pan carried by the lever on a second hanging means, said second hanging means being located at an even multiple of the distance from the fulcrum to the first hanging means, whereby exchanging the tare poise with the weight pan changes sensitivity by an even factor;

a graduated scale secured to the lever by a bracket, said scale being adjacent said lever in a different plane and laterally disposed generally parallel to the longitudinal axis of the lever, said scale having its zero in the vertical plane of the fulcrum;

a rotatable rod secured to the bracket and extending parallel to the scale, said rod containing a selected number of threads for each major division of the scale;

a detachable poise carried on the rod by a hanger, said hanger capable of being manually slid along the rod and also mating with the threads of the rod for advancement by rotating the rod;

an adjusting weight attached to the lever for adjusting the resultant moment on one side of the fulcrum to equal the resultant moment on the other side of the fulcrum while the poise is at zero and in the vertical plane of the fulcrum.

3,960,227

HIGH SPEED WEIGHING SCALE

Fredric E. Zucker, Stamford, Conn.; Anthony Storace, Tarrytown, N.Y., and Paul R. Sette, Hamden, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Division of Ser. No. 522,712, Nov. 11, 1974, which is a division of Ser. No. 476,655, June 5, 1974. This application Mar. 28, 1975, Ser. No. 563,192

Int. Cl.² G01G *3/14*, *3/08*, *21/22*

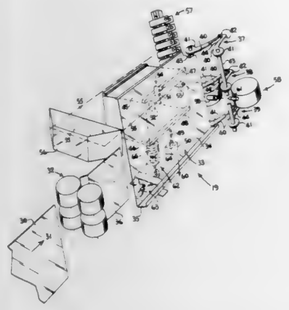
U.S. Cl. 177—210 **10 Claims**

1. A weighing scale for weighing a piece of mail supported on its edge, comprising:

a weighing tray physically constructed to receive and support a piece of mail upon an edge thereof, said tray being movably supportable for movement through a weighing range, said tray comprising a horizontally disposed base section and at least one wall member extending from said

base section, an edge of a piece of mail to be weighed being received and supported upon said base section, and said wall member lending additional support to the piece of mail for maintaining said piece of mail upon said edge;

supporting means supporting said weighing tray for movement through a weighing range; and



measuring means operatively associated with the weighing tray for measuring the degree to which the weighing tray moves through said weighing range when supporting a piece of mail, whereby a weight determination may be made for said piece of mail.

3,960,228

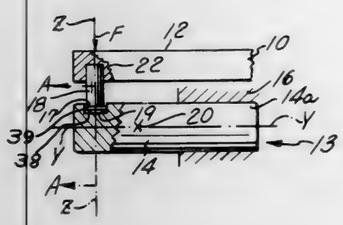
SHEAR BEAM LOAD CELL

Kjell Helge Nordstrom, Vasteras, Sweden, assignor to Transearch AB, Vasteras, Sweden

Filed May 31, 1974, Ser. No. 475,060

Int. Cl.² G01G *3/14*

U.S. Cl. 177—211 **17 Claims**



1. Apparatus comprising a carrier for receiving a load thereon, a load cell operative to sense forces applied thereto in a load-measuring direction, said load cell comprising a beam and shear-sensing transducer means carried by said beam, means for retaining said carrier in place relative to said load-sensing means and for applying at least a portion of a load supported by the carrier to said load cell in said load-measuring direction upon positioning of the load on said carrier, said last mentioned means comprising a carrier support member connected to said carrier and adapted to limit relative movement therebetween in directions transverse to said load measuring direction, means defining a radially oriented recess in said beam, said radially oriented recess including an inward end surface defining a load receiving surface, said carrier support member extending into said radially oriented recess and being effective to transmit a force proportional to at least a portion of said load to said load receiving surface in the load measuring direction, said radially oriented recess defining means for resisting relative movement of said carrier support member in directions transverse to said load measuring direction.

3,960,229

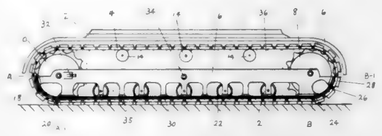
ELECTROMAGNETIC VEHICLE

Cheng Shio, 145-34 34th Ave., New York, N.Y. 11354

Filed Mar. 31, 1975, Ser. No. 563,724

Int. Cl.² B62D *63/02*

U.S. Cl. 180—1 VS **15 Claims**



1. A movable vehicle adapted to move on inclined steel surfaces, such as the hull of a ship, said vehicle comprising a frame, a pair of belts with each belt located on a respective side of said frame and forming a loop, said loop extending substantially the length of said vehicle, motor means for driving said belts, said belts comprising cooperating means for engaging said motor means to be driven thereby, each of said belts comprising a plurality of electromagnetic shoes attached to the outer face of said belts, each of said electromagnetic shoes comprising a wire wound core adapted to provide a magnetic force when energized to enable said vehicle to adhere to said surfaces, electrical conductor means attached to the bottom portion of said vehicle for delivering electrical current, each of said elecromagnetic shoes comprising electrical contact means for contacting said electrical conductor means and carrying electrical current to said electromagnetic shoe as said shoe passes along the bottom of said vehicle.

3,960,230

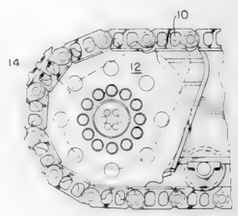
MOTOR DISCONNECT MEANS

Charles M. G. Van Wuytswinkel, Thimeon, Belgium, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 23, 1975, Ser. No. 543,575

Int. Cl.² B60K *17/10*

U.S. Cl. 180—9.62 **11 Claims**



1. Final drive means for a machine having first and second oppositely disposed traction means, said final drive means including interchangeable housing means for use on the final drive means for either said first or second traction means, said housing means being interchangeable without modification, said housing means having removable cover plate means, said cover plate means having an opening located centrally of said cover plate means, said housing means further includng cap member means for selectively removable disposition over said opening to substantially close off said opening, said cap member means including first aperture means for providing access to internal components of said final drive means for selectively rendering said final drive inoperative, said first aperture means being located concurrently centrally of said cap member means and said opening, first plug means normally removably disposed within said first aperture means to close said first aperture means.

3,960,231

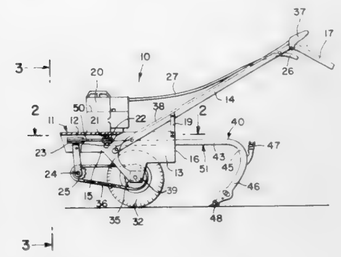
GARDEN TRACTOR

John B. McCormick, Lake City, Fla., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Oct. 23, 1974, Ser. No. 517,256

Int. Cl.² B62D *51/04*

U.S. Cl. 180—19 R **3 Claims**



1. A garden tractor, which comprises:

a. a support frame;

b. an engine having a vertical drive shaft mounted onto said support frame;

c. a drive pulley mounted onto said vertical drive shaft;

d. a worm reduction gear box;

e. a downwardly extending V belt slip clutch assembly communicating with said worm gear reduction box;

f. a V belt communicating with said drive pulley and V belt slip clutch assembly;

g. a small sprocket wheel communicating with said worm gear reduction box;

h. a horizontal axle rod rotatably affixed to said support frame;

i. a tire having a center hub mounted onto said horizontal axle;

j. second means for communicating said small sprocket wheel to said horizontal axle;

k. a clutch control assembly;

l. a rearwardly extending elongated rectangularly shaped flat bar member pivotally mounted to said support frame;

m. a horizontally placed spring affixed to said support frame and frictionally engaging said elongated flat bar member, said bar member having a downwardly extending rear hooked end; and

n. an adjustable foot member affixed to said hooked rear end, said foot member adapted to engage the ground.

3,960,232

EXHAUST SYSTEM MOUNTING

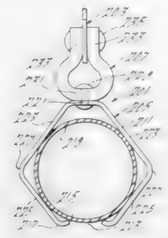
Franklin R. Hubbell, III, Brookyln, Mich., assignor to Tenneco Inc., Racine, Wis.

Continuation-in-part of Ser. No. 211,585, Dec. 23, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 398,540

Int. Cl.² B60K *13/04*

U.S. Cl. 180—64 A **7 Claims**

1. In an exhaust system for motor vehicles having a frame and an internal combustion engine discharging exhaust gases into the system, said system including a silencing member and at least one exhaust gas conducting conduit connected to the silencing member, mounting means each comprising a single vertically extending hanger strap for supporting the system on the engine and frame at a plurality of points spaced apart lengthwise of the system, said mounting means each including a vertically extending post element and at least one conduit snap-in clamp member attached to the post element and simultaneously engaging top and bottom parts of the conduit and having a pair of laterally resilient jaws shaped to fit around at least a major portion of the periphery of said conduit and resiliently hold the conduit in the clamp member between the jaws, said jaws having ends spaced apart by less than the width of the conduit to define an expandable resilient mouth for snap-in insertion and removal of the conduit, said clamp member being formed of a single piece spring metal strip so that the jaws are inherently resilient, said strip beng shaped to have two pais of substantially straight sides and a holding side



between each pair of sides, said holding side being substantially horizontal and fitting on said post element and said pairs of sides extending from said holding section and being substantially V-shaped to form said jaws and a connector securing said post to opposite sides of said strap.

3,960,233

SPEED CONTROL MECHANISMS FOR VEHICLES

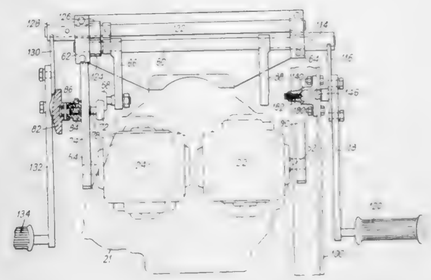
Edward John Aldred, Ipswich, England, assignor to Ransomes Sims & Jefferies Limited, Ipswich, England

Filed Mar. 18, 1974, Ser. No. 452,427

Claims priority, application United Kingdom, Mar. 23, 1973, 14238/73

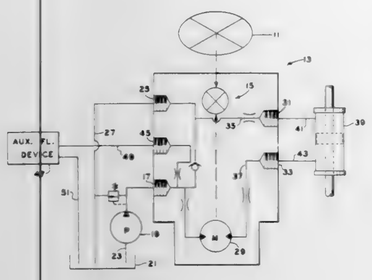
Int. Cl.² B60K *26/00*

U.S. Cl. 180—77 R **13 Claims**



1. A speed control mechanism for controlling the supply of driving power to traction means of a vehicle, comprising means for supplying power to the traction means, a control member movably mounted on the vehicle and operable by the driver of the vehicle, said control member being movable continuously over a range of positions for varying the speed of the traction means or varying the supply of power to the traction means, and a selector means for limiting the movement of said control member, said selector means being movable between a plurality of different positions for limiting the range of movement of the control member to thereby limit the range over which the speed of the traction means can be varied, or the range of power which can be supplied to the traction means, in response to movement of the control member, in which the selector means and control member are interconnected, said control member having a neutral position in which said selector means and said control member are not inter-connected, said selector means being movable from any one of its positions to another only when said control member is in its neutral position.

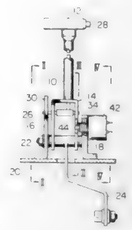
3,960,234
CONTROLLER FOR FLUID PRESSURE OPERATED DEVICES PROVIDING HIGH PRESSURE TO AN AUXILIARY DEVICE
David Frederick Morgan, Minnetonka, Minn., assignor to Eaton Corporation, Cleveland, Ohio
Filed Sept. 18, 1974, Ser. No. 507,041
Int. Cl.² B62D *5/08*
U.S. Cl. 180—132 **5 Claims**



5. A vehicle hydraulic power steering system including a power steering cylinder, an auxiliary fluid pressure device, a fluid pump capable of supplying a system fluid flow and a controller for directing the system fluid flow to said power steering cylinder or said auxiliary fluid pressure device in response to the rotational position of a steering wheel, said controller comprising:

a. a housing having an inlet for receiving said system fluid flow, a pair of cylinder ports for connection to said power steering cylinder and an auxiliary fluid port for connection to said auxiliary fluid pressure device;
b. valve means rotatably disposed within said housing and defining a neutral position;
c. a fluid meter associated with said housing and including a movable member operable to measure the volume of fluid passing through said fluid meter;
d. said valve means cooperating with said housing to define first and second supply passages in continuous open communication with said inlet and a first flow path including said inlet, one of said cylinder ports, said fluid meter, the other of said cylinder ports, and said outlet when said valve means is rotatably displaced from said neutral position;
e. said valve means cooperating with said housing to further define a second flow path communicating between said inlet and said auxiliary fluid port when said valve means is in said neutral position, said valve means defining first and second auxiliary passages communicating between said auxiliary fluid port and said first and second supply passages, respectively, when said valve means is in said neutral position, said first and second supply passages and said first and second auxiliary passages being oppositely and approximately equally disposed about said auxiliary flow port; and
f. said first and second flow paths each being capable of communicating substantially all of said system fluid flow, said first flow path having priority over said second flow path.

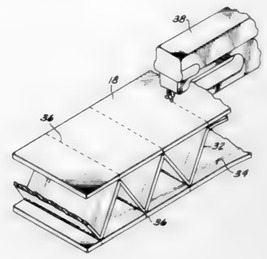
3,960,235
TRANSMISSION LOCKING SYSTEM
Tetsuya Iijima, Tokyo, Japan, assignor to Nisan Motor Co., Ltd., Yokohama, Japan
Filed Dec. 23, 1974, Ser. No. 535,682
Claims priority, application Japan, Dec. 24, 1973, 48-143579
Int. Cl.² B60R *21/10, 25/06*
U.S. Cl. 180—82 A **6 Claims**



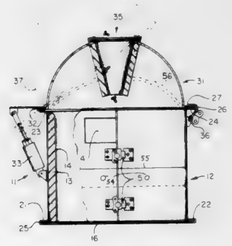
1. A transmission locking system for a motor vehicle, comprising electric locking means movable between a rest position to allow a transmission of the vehicle to be shifted into a driving gear and a locking position to lock said transmission in a neutral position in which the vehicle is unable to start to move, first sensing means sensing that the driver sits down on his seat of the vehicle to produce a first output signal and sensing that the driver is absent from his seat to produce a second output signal, second sensing means sensing that the driver fails to carry out a precautionary procedure for his safety and protection when said first sensing means produces said first output signal to produce an output signal, and an electric control circuit connected to said first and second sensing means and to said electric locking means and responsive to said output signal of said second sensing means to produce an output signal to move said electric locking means said rest position into said locking position, in which said electric control circuit comprises a first bistable memory circuit which is set by said second output signal of said first sensing means to produce an output signal and which is reset by said output signal of said second sensing means to cease to produce said output signal, a first AND gate circuit for producing an output signal only when said first output signal of said first sensing means and said output signal of said bistable memory circuit are concurrently present, and an OR gate circuit for producing an output signal when only one of said output signal of said second sensing means and said output signal of said AND gate circuit is present, said electrical locking means being moved from said rest position into said locking position to lock said transmission in said neutral position when said output signal of said OR gate circuit is present.

3,960,236
LOCK CORE PANEL
Richard N. Holmes, Laguna Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.
Filed June 17, 1974, Ser. No. 479,842
Int. Cl.² E04B *1/99*
U.S. Cl. 181—33 G **4 Claims**

1. A lock core panel comprising: layers of strands forming a face sheet, said face sheet having openings therein through which acoustic energy may pass into said panel; a base sheet spaced from said face sheet and impervious to sound waves; and a corrugated core sheet, said core sheet being connected alternately by means of stitching to said base sheet and to said face sheet.



3,960,237
SOUND REDUCING ENCLOSING
David P. Sleeper, Waltham, Mass., assignor to Ecology Controls, Inc., Waltham, Mass.
Filed Mar. 10, 1975, Ser. No. 556,813
Int. Cl.² F02F *7/00*; **F01N** *1/10*
U.S. Cl. 181—33 K **10 Claims**



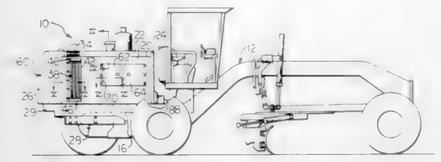
1. Sound reducing enclosing apparatus comprising,

cylindrical means internally lined with sound absorbing material for surrounding a machine and absorbing noise therefrom,
base means for supporting said cylindrical means and formed with an opening for accommodating a machine to be enclosed,
and cover means securable to said cylindrical means for coacting with the latter and said base means for enclosing a machine internally thereof and reducing the sound transmitted outside said enclosure while providing visible access to the enclosed machine,
said cover means comprising transparent solid material and having depending sound absorbing means for absorbing sound energy produced by an enclosed machine.

3,960,238
SOUND ATTENUATING ENGINE ENCLOSURE
Randall D. McClure, and Jerry G. Marques, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 30, 1975, Ser. No. 573,216
Int. Cl.² G10K *11/04*
U.S. Cl. 181—33 K **5 Claims**

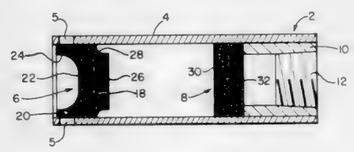
1. A sound attenuating engine enclosure comprising:

two side panels, front and rear portions, a hood member and a belly cover, said components defining generally an engine compartment and an engine heat exchanger and fan compartment;
sealing means about the periphery of said side panels for forming a substantially airtight barrier therearound;
said hood member being formed with a multiplicity of apertures formed therein substantially adjacent the fan compartment;
air passage means in each of said side panels adjacent the fan compartment to permit air flow therethrough and access to the fan compartment;



means in said side panels to permit access to the engine compartment;
said front portion having air passage means therethrough;
sound attenuating means secured to the inside surfaces of said side panels and front portion; and
a belly cover seal supported by said belly cover, said seal being complementally formed to the shape of the belly area wherein said seal engages the belly housing when said belly cover is installed in place.

3,960,239
NOISE-REDUCING FLUID-FLOW DEVICES
Alain Frochaux, Boston, and Charles M. Salerno, Wayland, both of Mass., assignors to Barry Wright Corporation, Watertown, Mass.
Filed Aug. 15, 1973, Ser. No. 388,636
Int. Cl.² F01N *1/10*; **B21D** *53/00*
U.S. Cl. 181—49 **19 Claims**



1. A noise-reducing fluid flow device comprising an elongate housing having an inlet at one end thereof, an outlet at an opposite end thereof, and a passageway for carrying a stream of pressurized fluid from said inlet to said outlet, said one end being adapted for connecting said inlet to a source of pressurized fluid and said outlet being open to the atmosphere exterior of said housing; and a noise-silencing element for reducing the noise level of said stream of pressurized fluid passing out of said passageway via said outlet, said noise-silencing element being positioned wholly within said housing and extending fuly across said passageway at said outlet, at least a portion of said passageway commencing at the upstream side of said noise-silencing element and extending toward said inlet being unobstructed to flow of pressurized fluid, said noise-silencing element being frictionally gripped by the internal surface of said housing and being made of a knitted metal wire mesh fabric that has been rolled up and compressed and molded into a self-supporting, dense, porous mass with the wire threads of said fabric intermingled and forming a myriad of relatively short length spring wire spans that are oriented randomly in said mass, said fabric being made of metal wire with a substantially round cross-section.

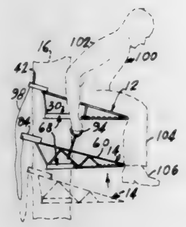
said housing being made of a material with a hardness less than that of the metal wire threads of said wire mesh fabric;

3,960,240

TREE CLIMBING DEVICE

C. W. Cotton, Rte. No. 11, Central Church Road, Douglasville, Ga. 30134

Filed Sept. 16, 1974, Ser. No. 506,034
Int. Cl.² A63B *27/00;* **E04G** *3/10*
U.S. Cl. 182—20 **6 Claims**



1. In a tree climbing device:

a top platform having an occupant seat thereon which extends near the front outer edge of said platform and on which an occupant sits facing outwardly from the tree during part of the time that the tree climbing device is being raised to a higher level, a bottom platform mounted on the same side of the tree below said top platform and extending in the same direction in spaced relation thereto, each of said top and bottom platforms projecting substantially coextensively outwardly and each having tree engaging means thereon comprising a means on each side of said tree engageable with the tree by means of the weight of the person to retain said platform thereon, said tree engaging means on each platform being disengageable from the tree by tilting the projecting platform upwardly after relieving the weight thereon, grasping means on each side of said bottom platform for grasping by a person sitting on the top platform on the seat thereon with the person's knees extending around the outer edge of said seat and his feet adjacent the bottom platform thereby causing said platform to engage the tree and remain firmly in place while said person reaches below to the bottom platform and grasps the grasping means to lift the bottom platform and disengage said same from the tree and raise same to a position closer to the top platform, said top platform being raised by said person rising from the edge of said seat on said top platform by straightening the body from a substantially seated position to rise off the top platform seat and thereby relieve the amount of weight of the person on the top platform which is located behind the person between the person and the tree being climbed and then reaching behind to tilt said platform to release same from engagement with said tree and to raise same behind the person's back while the person continues to arch forward with his weight substantially placed upon the bottom platform thereby raising the top platform behind a person's back at a higher level than previously and thereafter again sitting on said seat on top platform to engage same with the tree and repeating the previous operation of raising the lower platform, first one and then the other until the desired height has been attained.

3,960,241

FURNITURE FOLDABLE STRUCTURE

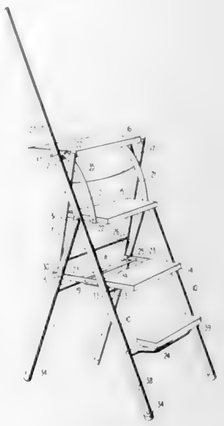
Anibal Aguirre Arias, Cali, Colombia, assignor to Escalesilla Tresses Ltd., Cali, Colombia

Filed Nov. 19, 1975, Ser. No. 633,506
Int. Cl.² A47C *13/00*
U.S. Cl. 182—33.3 **6 Claims**

1. Furniture foldable structure, unfoldable to provide either a chair having a seat or ladder structure, which foldable structure comprises the combination of,

a pair of side straight spaced parallel poles, said poles being rigidly connected together by a first top transverse member and by a second intermediate transverse member; a pair of straight spaced parallel legs the top ends of which are pivot connected at opposed points of said pair of poles, said opposed points being located between the points where said first and second transverse members are joined to said pair of poles, said pair of parallel legs being rigidly connected together by a transverse member located just beneath underside of the said seat when said foldable structure is unfolded as a chair;

a pair of side arms laterally and swingingly arranged between both said pair of poles and said pair of legs with each of said side arms having their rear ends pivotally joined to each of said legs on opposed points thereof located at a plane just beneath the underside of the said seat when said foldable structure is unfolded as a chair, the front end of said pair of side arms rigidly embracing therebetween the side edges of a rectangular board, said pair of side arms being articulated together by a fitting member oscillably linking the same to said second transverse member so that when said pair of side arms together with its board rigidly associated therebetween is turned around their pivot connecting means, the movement is applied to move near or away said pair of poles toward or from said pair of legs;



a pair of parallel elongated side members laterally and swingingly arranged between both said pair of poles and said pair of legs with each of said elongated members having their rear ends pivotally connected to each of said legs on opposed points thereof, said parallel elongated members being rigidly connected together toward their rear end by a cross member, said elongated members being provided at their intermediate portion with inwardly extended stop lugs;

a said seat comprising first rectangular board section being pivotally joined between the front length of said pair of elongated members by opposed pivot connecting means located toward the front side edges of said first board section, and a second rectangular board section, with its front edge arranged in proximity to the rear edge of said first board section, being pivotally joined between the rear length of said pair of elongated members by opposed connecting means located toward the front side edges of said second board section;

rigid articulating means swingingly linking the side edges of said first and second board sections at opposed points toward the front end edges of said first board section and at opposed points toward the rear end edges of said second board; and

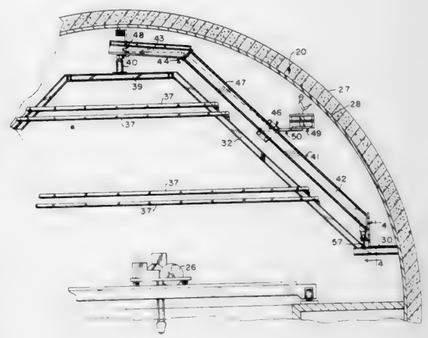
a lower horizontal board removably arranged on the lower length of said pair of poles, slidingly engaged thereto by channeled assembling means.

3,960,242

ORBITAL SERVICE BRIDGE

Wallace J. Saxonmeyer, Chicago Heights, Ill., assignor to Whiting Corporation, Harvey, Ill.

Filed Dec. 1, 1972, Ser. No. 311,312
Int. Cl.² E04G *3/14*
U.S. Cl. 182—36 **7 Claims**



1. An orbital service bridge for positioning a work platform at a desired work location within an overlying dome-shaped structure, comprising,

a pair of parallel spaced-apart inclined leg members;

a pair of parallel spaced-apart substantially horizontal span members attached at one end to respective ones of said leg members;

a cross member extending between said span member;

a pivotal support member for centrally supporting said cross member at the top of said dome-shaped structure;

wheeled support means extending between the other ends of said leg members for positioning said other ends of said leg members along a track extending along at least a portion of the circumference of the base of said dome-shaped structure;

means comprising a carriage slidably mounted on said leg members for positioning said work platform at the height of said desired work location; and

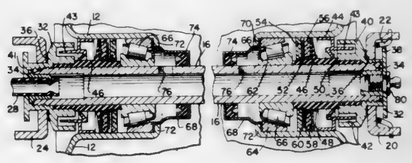
means for extending said work platform away from said inclined leg members in a substantially horizontal direction toward said desired work location.

3,960,243

ADAPTER BUSHING FOR LUBRICATION SYSTEM

Daniel Joseph Di Antonio, Nutley, N.J., assignor to Litton Systems, Inc., Passaic, N.J.

Filed May 7, 1975, Ser. No. 575,254
Int. Cl.² F16N *7/24*
U.S. Cl. 184—6 **8 Claims**



1. A lubrication system for an idler roll, comprising, in combination:

a. an idler roll, having an outer housing and a hollow shaft extending axially therethrough,

b. bearings mounting the housing of said idler roll for rotational movement about its hollow shaft,

c. said hollow shaft having radial ports adjacent to the bearings,

d. end caps secured to the exterior surface of the hollow shaft at opposite ends, each end cap having a centrally located annular opening extending therethrough,

e. plastic adapter bushings, each bushing inserted into the interior of the hollow shaft, and in alignment with the opening in the end cap,

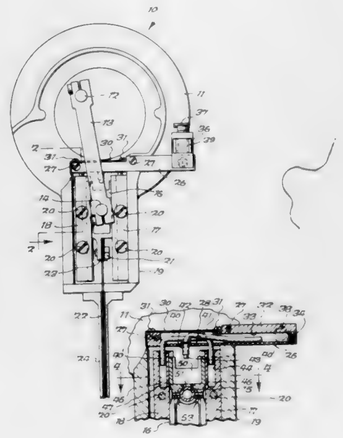
f. said plastic adapter bushings being formed to receive either a grease fitting when inserted through said end cap and into the adapter bushings or a resilient lubrication tube when inserted through the end caps into the adapter bushings, so that lubricant may be introduced under pressure through the grease fittings or so that lubricant once inserted will be forced through the radial ports to lubricate the bearings and will travel from the roll via the lubrication tube secured to the adapter bushing.

3,960,244

CLOTH CUTTING MACHINE WITH WICK LUBRICATOR

Frederick G. Clark, Naples, Fla., assignor to Eastman Machine Company, Buffalo, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,013
Int. Cl.² F01M *1/00*
U.S. Cl. 184—6.14 **7 Claims**



1. A cloth cutting machine comprising a housing, motor means on said housing, a crosshead, a pair of spaced crosshead guide means for supporting said crosshead for reciprocatory movement, link means coupled to said motor means, wrist pin means coupled between said link means and said crosshead, knife means coupled to said crosshead, a lubricant reservoir positioned above said crosshead, and wick means in communication with said lubricant reservoir functioning as conduit means for simultaneously conducting lubricant to both said crosshead guide means and said wrist pin means by gravity feed without any relative sliding contact between said wick means and said crosshead guide means and said wrist pin means which are to receive lubricant from said wick means.

3,960,245

LUBRICATING AND SEALING LIQUID FOR A HIGH PRESSURE COMPRESSOR

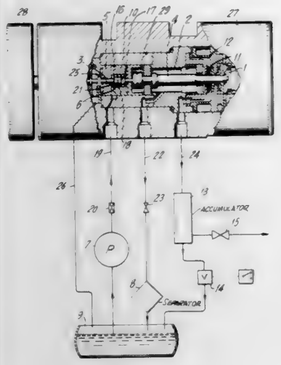
Hellmut Weinrich, Konigsbronn-Zang, Germany, assignor to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Germany

Filed Jan. 29, 1975, Ser. No. 545,205

Claims priority, application Germany, Jan. 30, 1974, 2404270

Int. Cl.² F01B *35/00*

U.S. Cl. 184—6.16 **9 Claims**



1. In a high-pressure compressor including a housing defining a pressure space including chambers and passages connected thereto for conveying sealing and lubricating liquid to and from an impeller shaft rotatably mounted in the housing, the improvement comprising, in combination, a stepped impeller shaft mounted in said pressure space for limited radial movement; said shaft comprising, from its power input end, an elastically bendable torsion shaft portion having the minimum diameter effective to support only the torsional stresses impressed thereon, a relieving piston carried by said torsion shaft portion, a main compressor shaft portion, and at least one impeller carried by said main compressor shaft portion; a torsion shaft sealing surrounding said torsion shaft portion and serving as the main sealing forming a shield between the pressure within said pressure space and atmospheric pressure; a sleeve surrounding said relieving piston and formed with axially spaced grooves in its inner surface facing said relieving piston; annular discs mounted on said relieving piston and facing said grooves, said discs compensating the axial thrust; a chamber defined, on the one hand, by said torsion shaft portion and said torsion shaft sealing and, on the other hand, by said relieving piston, said sleeve and said housing; a supply conduit connected to said last-named chamber and supplying sealing and lubricating liquid thereto serving to absorb the internal pressure within said housing; a bearing body surrounding the major portion of said main compressor shaft portion; a sealing and lubricating liquid-receiving tank; a draining conduit connecting the inner space of said bearing body to said tank; and a pressure-control valve and a liquid separator connected in series in said draining conduit.

3,960,246

SPRING POWER DEVICE

Elliott Fisher, 732 S. Lorraine Blvd., Los Angeles, Calif. 90005

Filed July 22, 1974, Ser. No. 490,676

Int. Cl.² F03G *1/00*; **H01H** *3/16*

U.S. Cl. 185—40 H **5 Claims**

1. A spring power device comprising:

support means having a shaft rotatably mounted thereon,

a main drive gear freely journaled on said shaft,

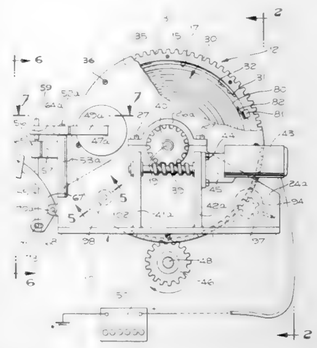
a multiturn coil spring having its inner end anchored to said shaft and having its outer end anchored to said gear,

brake means for preventing said main drive gear from rotating until released,

an electric motor connected to rotate said shaft when energized,

a battery,

an electrical circuit including switch means automatically operable to connect said battery to energize said motor to wind up said coil spring whenever it winds down below a predetermined point, said switch means including a microswitch near the outer rim of said main drive gear, said battery being connected to energize said electric motor



when the outermost turn of said coil spring moves radially outwardly to contact said microswitch, a holding circuit for keeping said electric motor energized after the outermost turn of said coil spring moves inwardly out of contact with said microswitch, and a time delay switch which opens said electrical circuit after a predetermined period of time to disconnect said battery and thereby terminate the winding of said coil spring by said motor, and

means for releasing said brake means to enable said main drive gear to be driven by the energy stored in said coil spring.

3,960,247

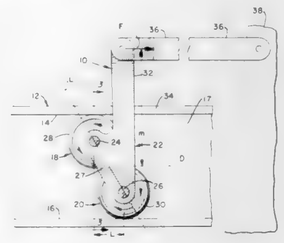
MOTION DAMPER

Donald F. Wilkes, Albuquerque, N. Mex., assignor to Hosmer/-Dorrance Corporation, Campbell, Calif.

Filed June 20, 1975, Ser. No. 588,626

Int. Cl.² F16F *7/06*

U.S. Cl. 188—1 B **26 Claims**



1. A motion dampening system comprising:

a movable body whose motion is to be dampened;

a guide surface arrangement including a pair of guide surfaces;

a damper roller arrangement including a pair of rollers mounted for free rotation about axes that are in fixed spaced relation to one another, said rollers each having resilient peripheral surfaces;

said body being connected to one of said guide surface arrangement and said roller arrangement;

means responsive to the application of a motion-inducing force to said body for moving said body relative to the other of said guide surface arrangement and said roller arrangement, and simultaneously urging each guide surface and the resilient periphery of an associated roller into compressive engagement at an intensity which progresses in relation to the magnitude of said motion-inducing force as said rollers rotatingly engage said guide surfaces, to retard motion of said body.

3,960,248

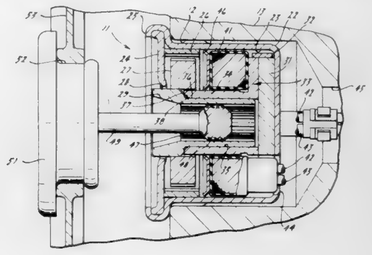
SPEED SENSING DEVICE

Leonard T. Tribe, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed July 16, 1975, Ser. No. 596,400

Int. Cl.² B60T *8/02*

U.S. Cl. 188—181 R **15 Claims**



1. A speed sensing device for a wheeled vehicle or the like and adapted to be fitted in a cavity at the outer end of an axle, said speed sensing device comprising an outer housing adapted to be supported at least in part in the axle cavity, a stator carried by said housing, a rotor journaled in said housing for rotation relative to said stator, electromagnetic means for providing an electronic signal indicative of speed upon relative rotation between said rotor and said stator, and splines formed on said rotor for providing a sliding drive connection from the associated wheel to said rotor for driving said rotor in timed relation to the wheel and for permitting axial variations in spacing between the wheel and axle without exerting axial forces on said rotor.

3,960,249

VEHICLE RETARDERS

Walter Robert Stirling, Buxton, England, assignor to Ferodo Limited, Manchester, England

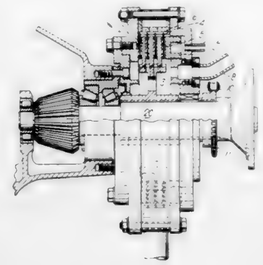
Continuation of Ser. No. 58,940, July 28, 1970, abandoned. This application Apr. 17, 1972, Ser. No. 244,914

Claims priority, application United Kingdom, July 29, 1969, 38077/69

Int. Cl.² F16D *65/853*

U.S. Cl. 188—264 F **5 Claims**

1. In a vehicle retarder system comprising a frictional retarder including hydraulic pressure-operated control means for controlling the retarding torque applied by said retarder and circulating means for circulating cooling liquid through said retarder, the improvement wherein said circulating means comprises a positive displacement pump having an outlet, means operatively connecting said pump to said vehicle for operation at a speed directly related to the speed of said vehicle, means including an adjustable throttle valve connecting said outlet with said retarder, said throttle valve controlling the resistance to flow of said cooling liquid from said pump to said retarder wherein the opening of said throttle valve is not responsive to changes in pressure of the cooling liquid whereby the delivery pressure of said cooling liquid from said pump upstream of said throttle valve is controlled, said throttle valve including means preventing total closure thereof, and means connecting said pump outlet upstream of said throttle valve with said control means, said control means being responsive to the pressure differential between the pressure of said cooling liquid in said retarder downstream of said throttle valve and the pressure in said control means,



whereby when said throttle valve is fully opened, said pressure differential is such that said control means causes said retarder to be inoperative, but when said throttle valve is partially closed and throttles said flow of cooling liquid to said retarder, said pressure differential is dependent on the speed of said pump and hence on the speed of said vehicle, thereby increasing said retarding torque as said vehicle speed is increased.

3,960,250

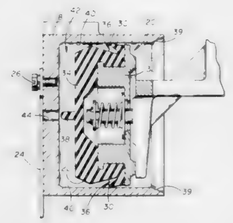
SKIRTED DASHPOT PISTON

Kenneth Walter Wiater, Palatine, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Apr. 14, 1975, Ser. No. 567,976

Int. Cl.² F16F *9/48*

U.S. Cl. 188—281 **2 Claims**



1. An apparatus for damping the return shock between a pair of first and second elements that are moved out of engagement and returned into engagement comprising:

a dash pot cylinder carried on the first element having an internal cylindrical surface of a predetermined diameter,

a dash pot piston on said second element having an annular sealing member projecting in a cantilever fashion generally outwardly from said piston and toward said cylinder, said sealing member displaying a first surface toward said cylinder,

said cylinder defining an outwardly tapered camming surface continuous with the inner surface of said cylinder and extending outwardly therefrom and disposed toward said piston sealing member, the maximum diameter of said tapered surface being more than the maximum diameter of said sealing member so as to facilitate entrance of said piston into said cylinder and serving to cam said piston and cylinder into mutual axial alignment,

said sealing member being constructed of a material exhibiting sufficient rigidity to retain said cantilever portion

relatively close to the sides of said piston and exhibiting sufficient flexibility to permit entrance of said sealing member into said cylinder and deflect outwardly so as to seal a gap between the piston and the cylinder,

said cylinder containing an operative fluid reacting upon said sealing member first surface to force said cantilever portion away from said piston thereby insuring contact of said sealing member with the walls of said cylinder,

said cylinder including a fluid exit orifice and said piston having a projection extending from the end thereof oriented to enter said orifice near the terminal end of the piston entrance to said cylinder so as to increase the constriction of said fluid.

3,960,251

HYDRAULIC TELESCOPIC SHOCK ABSORBER PROVIDING A DAMPING EFFECT WHICH IS DEPENDENT UPON THE POSITION OF THE PISTON IN THE CYLINDER

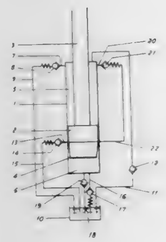
Adrianus Marinus Johannes Gorissen, Oud-Beijerland, Netherlands, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 497,889, Aug. 16, 1974, abandoned. This application July 31, 1975, Ser. No. 600,287

Claims priority, application Netherlands, Aug. 20, 1973, 7311434

Int. Cl.² F16F *9/48*

U.S. Cl. 188—286 **6 Claims**



1. A hydraulic telescopic shock absorber comprising a cylinder, a piston positioned to move within said cylinder, a piston rod extending through one end of the cylinder to engage said piston, the piston dividing the cylinder into two chambers, a plurality of passages through the walls of the cylinder, conduits coupled to a plurality of the passages to permit the flow of dampening fluid between the cylinder chambers, conduits coupled to a plurality of the passages to permit the flow of dampening fluid between the cylinder chambers and a dampening fluid reservoir, valve means in said conduits for effecting dampening forces during strokes of the piston, the passages being positioned in such a way that during at least a portion of an in-going stroke as well as during at least a portion of an out-going stroke of the piston at least one communication of the passages with the cylinder is closed by the piston to increase the dampening effect of the shock absorber, and including an arrangement such that during a complete in-going stroke as well as during a complete out-going stroke at least two valve means operate successively, that during the last portion of the in-going stroke valve means having the lowest resistance that is effective during said stroke is put out of action by the piston while valve means having a higher resistance is put into action and that during the first portion of the out-going stroke valve means having the lowest resistance that is effective during said stroke is kept out of action by the piston while valve means having the higher resistance is kept in action.

3,960,252

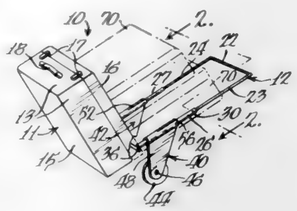
COLLAPSIBLE TROLLEY AND PORTABLE CASE

Khalil Ahmad Ibrahim Cassimally, 210-Third St. West, Roundup, Mont. 59072

Filed May 31, 1974, Ser. No. 474,546

Int. Cl.² B65D *5/14*

U.S. Cl. 190—18 A **16 Claims**



1. In a combined collapsible trolley and portable case having a collapsible framework which can be extended from the case to form a wheeled trolley which is adapted to retain luggage placed between the extended framework and the case, the improvement comprising:

an extendable element pivotally attached to one face of the case for storage flat against the one face and for pivotal rotation outward to retain luggage placed between the extendable element and the one face,

a wheel assembly storable against the one face of the case and with a sleeve slidable on the extendable element between a stored position when the extendable element is stored flat against the one face and a trolley position which provides additional clearnace above the ground, and

a recess located on the one face for storing the wheel assembly and the entire collapsible framework.

3,960,253

POSITIVE ENGAGEMENT CLUTCH

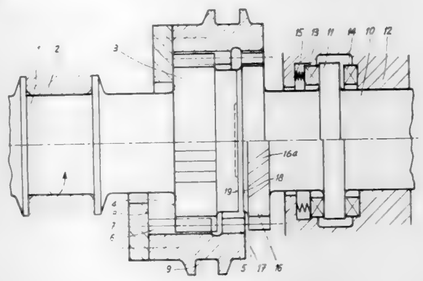
Hans Sigg, Mutschellen, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Filed Feb. 28, 1974, Ser. No. 447,018

Claims priority, application Switzerland, Mar. 2, 1973, 3080/73

Int. Cl.² F16D *13/22, 43/00*

U.S. Cl. 192—67 A **9 Claims**



1. A positive engagement clutch comprising co-axial first and second shafts displaceable axially relative to each other and an intermediate member displaceable axially of said shafts to connect and disconnect them, first and second series of teeth on the intermediate member, teeth on the first shaft maintained in engagement with said first series of teeth of the intermediate member, teeth on the second shaft being engageable and disengageable with said second series of teeth of the intermediate member as a result of said axial displacement of the member to drivingly connect and disconnect the first and second shafts, respective elements of a first pair of co-operating abutment elements on said intermediate member and said first shaft to limit movement of said intermediate member relative to said first shaft, said second series of teeth of the intermediate member being of helical formation such that, dependent upon the torque applied to said clutch with said second series of tetth of said intermediate member engaging the teeth of said second shaft, an axial force is generated by said torque to act between said helical series of teeth and the engaged teeth of said second shaft to urge them further into engagement, a second pair of co-operating abutment elements between the shafts being brought into engagement by a relative displacement of the shafts caused by said axial force to lock the shafts together against said axial force.

3,960,254

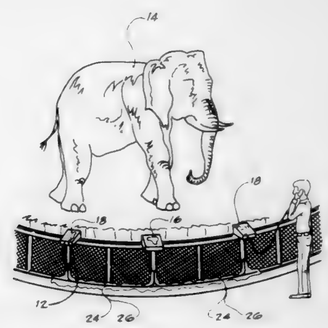
AUDIO INFORMATION DEVICE

Ronald Augustine Fial, Milwaukie, and Hal Markowtiz, Portland, both of Oreg., assignors to Portland Zoological Society, Portland, Oreg.

Filed Apr. 3, 1975, Ser. No. 564,634

Int. Cl.² G07F *5/10*

U.S. Cl. 194—9 T **4 Claims**



1. An audio information device comprising: a recording tape play back unit adapted to play a tape having messages and start-stop signals recorded thereon, said start-stop signals indicating the beginning and end of the messages, a read out head in said play back unit adapted to read off the messages and start-stop signals recorded on the recording tape, a multiple of control units electronically connected to the read out head to receive the messages and start-stop signals on the tape, an audio receiver electronically connected to each control unit and each control unit including transmission control means to connect and disconnect the transmission of the messages being received from the play back unit to the audio receiver, and a switch electronically connected to each control unit that is available to a user of the device to signal the control unit to transmit said messages, and said transmission control means of each control unit being responsive to the sequential transmit signal received from the switch and the start signal received from the play back unit to connect transmission of the messages to the audio receiver, and said transmission control means of each control unit being subsequently responsive to the stop signals received from the play back unit to disconnect the transmission of the messages to the audio receiver, said transmission of the messages and start-stop signals from the play back unit to the control units being continuous during the connect and disconnect operations of the transmission control means of any one control unit whereby the control units connected to the play back unit can operate independent of each other.

3,960,255

MOUNTING MECHANISM FOR A NON-IMPACT DOTS-MATRIX PRINT HEAD

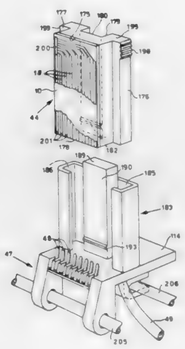
Flavio Bisson, Montalto Dora (Turin), and Armando Aprato, Lugnacco (Turin), both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Dec. 10, 1974, Ser. No. 531,256

Claims priority, application Italy, May 10, 1974, 68469/74

Int. Cl.² G01D *15/10*

U.S. Cl. 197—1 R **6 Claims**



1. In a non-impact printer of the type having a planar print head carrying on plane surface thereof a plurality of printing elements and a pattern of conductors for selectively effecting energization of said printing elements, a support member having a first planar surface upon which head is fixed and a base member upon which this support is mounted, the improvement comprising:

guide means defining a rectilinear slide path along which said support member is slidably movable with respect to said base member between a free position and a working position wherein said print head is operable;

means for releasably latching said support member in said working position comprising a first latch member disposed along said slide path and on said base member, a second latch member on said support member and cooperative with said first latch member when in a latching position to fix said support member along said slide path with respect to said base member;

biasing means for biasing said second latch member into said latching position when said support member is moved into said working position; and

means disposed on said base member for preventing any movement of said support in a direction perpendicular to the surface of said head and to the rectilinear guide path, whereby the head is fixed with respect to any pressure which is exerted onto the plane surface of the head during the printing operation.

3,960,256

ADJUSTABLE CARRIAGE APPARATUS

Charles Bickoff, Acton, and St. John Merrill Hall, Jr., Sharon, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 21, 1974, Ser. No. 516,513

Int. Cl.² B41J *3/04*

U.S. Cl. 197—1 R **12 Claims**

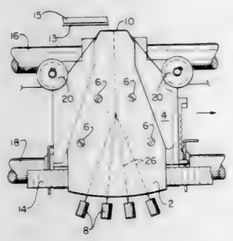
1. Apparatus for supporting a printing mechanism adjacent to the paper being printed upon, said apparatus comprising:

A. movable carriage means supporting said printing mechanism, said carriage means having at least one first bore extending substantially parallel to said paper;

B. at least one first bearing member rotatably located in said first bore, said first bearing member containing a second

bore whose center-line is substantially parallel to and offset from said first bore's center line;

C. a first shaft, fixed with respect to said paper, closely fitting within said second bore; and



D. means for rotating said first bearing about said shaft, whereby said printing mechanism may be selectively positioned toward and away from said paper by rotation of said bearing.

3,960,257

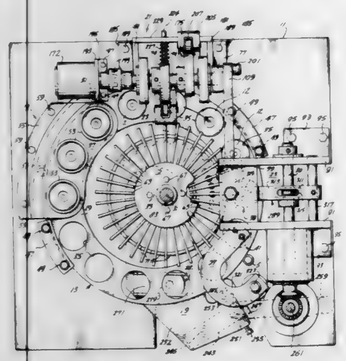
APPARATUS FOR CONVEYING AND ENGRAVING TOKENS

Cliff R. High, and Morley Brotman, both of Tacoma, Wash., assignors to Morley Studios, Tacoma, Wash.

Filed Apr. 26, 1974, Ser. No. 464,649

Int. Cl.² B41J *1/30*; **B41F** *17/36*

U.S. Cl. 197—6.7 **17 Claims**



1. A token engraving apparatus for selectively engraving a sequence of characters onto the surface of a token, said token engraving apparatus comprising:

a multiple apertured turret mechanism suitable for supporting a plurality of tokens in a plurality of apertures and moving said plurality of tokens sequentially along a generally horizontal path of travel through a token supply station, a token engraving station and a token ejecting station, said multiple apertured turret mechanism comprising a flat, ring-shaped plate movable about a turret axis centrally located with respect to said flat ring-shaped plate;

a token supply mechanism located at said token supply station for supplying tokens downwardly, under the force of gravity, such that said tokens fall sequentially into said plurality of apertures in said multiple apertured turret mechanism;

a printing mechanism suitable for selectively positioning character type at said engraving station in a manner such that said character type can be pressed into a surface of tokens located at said engraving station in a sequential manner so as to engrave a selective sequence of characters therein, said printing mechanism comprising a printing head having a generally circular outer periphery and suitable for rotation about a print axis, said character type being located about the outer periphery of said print head and said print axis being located inside of said ring-shaped plate forming said multiple apertured turret mechanism, but offset with respect to said turret axis, said print head being rotatable independently of movement of said multiple apertured turret mechanism;

a locking mechanism suitable for locking said print head in position during the period of time that a character type is being pressed into a surface of a token located at said engraving station;

an engraving mechanism located at said token engraving station for pressing type brought to said station by said print head into engraving contact with a surface of a token located at said engraving station;

token indexing mechanism lcoated at said engraving station for indexing a token located at said engraving station subsequent to a character being engraved therein;

an ejection mechanism located at said ejection station for ejecting tokens downwardly from said ring-shaped plate forming said multiple apertured turret mechanism subsequent to said tokens being engraved at said engraving station;

electromechanical indexing means mechanically connected to said ring-shaped plate for indexing said ring-shaped plate a predetermined amount each time said electromechanical indexing means is energized; and,

electromechanical control means connected to said engraving mechanism for controlling the operation of said engraving mechanism including the operation of said locking mechanism and the operation of said token indexing mechanism.

3,960,258

TYPEWRITER MECHANISM FOR AUTOMATICALLY LOADING AND EJECTING PAPER

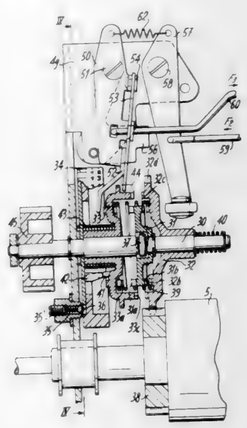
Otto Aebi, Yverdon, Switzerland, assignor to Hermes Precisa International S.A., Yverdon, Switzerland

Filed Nov. 20, 1974, Ser. No. 525,627

Claims priority, application Switzerland, Nov. 22, 1973, 16451/73

Int. Cl.² B41J *13/03*

U.S. Cl. 197—127 R **11 Claims**



11. In a mechanism for automatically loading paper into and ejecting paper from a typewriter, said typewriter having an electric motor, a platen, means for rotating said platen, adjusting means under control of the typist for setting the amount of angular movement of said platen depending on the length of paper that is to be loaded into the typewriter, and a paper bail, the improvement wherein said means for rotating said platen comprises a first control means for continuously rotating said platen to eject paper from the typewriter, and a second control means for rotating said platen for a limited period of time depending on the setting of said adjusting means so as to automatically introduce the desired length of paper into the typewriter for typing, means cooperating with said second control means and controlled thereby for opening said paper bail whenever said second control means is operative, actuating means for selectively rendering said first or second control means operative, said means for rotating said platen further including first toothed wheel means, a rotatable shaft on which said first toothed wheel means is rotationally rigidly mounted, said electric motor including a drive shaft, means for drivingly coupling said drive shaft to said rotatable shaft to rotate the latter whenever said first or second control means is operative, said first control means including second toothed wheel means, said second control means including third toothed wheel means, said first control means including connecting means for meshing said first and second toothed wheel means whenever said first control means is operative, said second control means including connecting means for meshing said first, second and third toothed wheel means whenever said second control means is operative, said second toothed wheel means being drivingly connected to said platen to rotate the latter, said first and second control means capable of functioning independently of each other.

3,960,259

RIBBON CARTRIDGE FOR TYPEWRITER, CALCULATING, ACCOUNTING OR LIKE OFFICE MACHINES

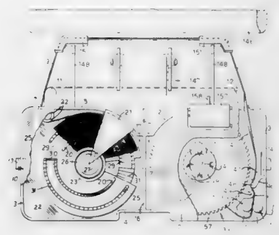
Gian Paolo Guerrini, Ivrea (Turin), and Giuseppe Oddicini, Banchette (Turin), both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Continuation-in-part of Ser. No. 292,597, Sept. 27, 1972, Pat. No. 3,877,561. This application Aug. 23, 1974, Ser. No. 499,964

Claims priority, application Italy, Oct. 4, 1971, 70243/71

Int. Cl.² B41J *33/14*

U.S. Cl. 197—151 **3 Claims**



1. A ribbon cartridge removably mountable on a feed device of a typewriter, calculating machine, accounting machine or other office machines having a platen, a type head opposite said platen and carrying a plurality of characters, a support opposite said head for mounting said cartridge and a ribbon lift guide including a pair of supports embracing the type head and located between the platen and type head for guiding the ribbon in front of a typing point of said platen, said supports being spaced a predetermined distance therebetween, and a manually operable member for lifting the ribbon guide,

said ribbon cartridge comprising:

a single container having substantially parallelepipedal configuration having a top portion, a rear portion and two lateral portions;

a pair of rotatable spools having a ribbon wound thereon;

means for rotatably mounting said pair of spools in said container at a reciprocally fixed distance; and

means for guiding the portion of said ribbon external to said container to space said portion of said ribbon from the rear portion of said container and enabling said external portion of said ribbon to be further spaced from said rear portion when engaged with the ribbon lift guide in the lifted position thereof, the guide means comprising

means defining a pair of apertures in said rear portion adjacent to said lateral portions, a part of said ribbon extending through one of said pair of apertures to the external of said container and returning into the interior of said container through other of said pair of apertures and

a pair of arm members fixed to said container adjacent to said pair of apertures and projecting from said rear portion towards the exterior of said container, said pair of arm members being spaced therebetween more than the predetermined distance of said pair of supports and supporting said external portion of said ribbon away from said rear portion of said container when said container is to be mounted in said feed device for facilitating the insertion or the removal of said ribbon with respect to said pair of supports of said lift ribbon guide by only moving the single container upon mounting or removing said cartridge with respect to said support.

3,960,260

APPARATUS FOR AND METHOD OF CONVEYING AND HANDLING TIRE BEAD WIRES

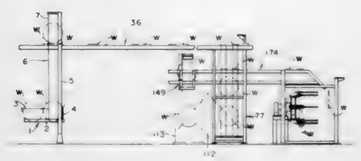
Tosio Azuma, Higashimurayama, and Hisashi Yonekawa, Kuroiso, both of Japan, assignors to Bridgestone Tire Company Limited, Kyoba, Japan

Filed Aug. 7, 1975, Ser. No. 602,741

Claims priority, application Japan, Aug. 8, 1974, 49-91018

Int. Cl.² B65G *47/00*

U.S. Cl. 198—19 **16 Claims**

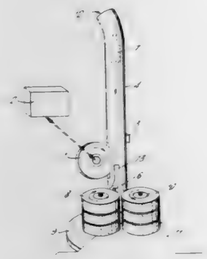


16. A method of conveying and handling a tire bead wire, comprising transferring said tire bead wire one by one from a tire bead wire waiting position to a first conveyor mechanism disposed above said tire bead wire waiting position, temporally stopping said tire bead wire on said feed conveyor mechanism for adjusting the timing of feeding said tire bead wire to a following process, transferring said tire bead wire on said first conveyor mechanism to a gripping position, holding said tire bead wire conveyed to the gripping position and transferring it to a receiving portion of a tire bead wire working machine for appropriately working said tire bead wire, receiving said tire bead wire from said working machine and transferring it to a second conveyor mechanism, conveying said tire bead wire to the end of said second conveyor mechanism by intermittently driving said second conveyor mechanism, collecting a predetermined number of tire bead wires conveyed to the end of said second conveyor mechanism onto a collector actuating correspondingly to said second conveyor mechanism, and carrying said tire bead wires collected on said collector to a following process.

3,960,261
APPARATUS FOR CONVEYING ARTICLES

Tore Planke, 3180 Nykirke, Norway

Filed Aug. 12, 1974, Ser. No. 496,613
Claims priority, application Norway, Aug. 14, 1973, 3232/73
Int. Cl.² B65G *47/00*
U.S. Cl. 198—26 **5 Claims**

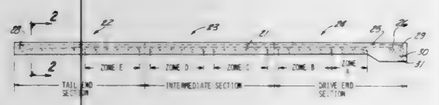


1. Apparatus for conveying articles of different physical characteristics comprising, in combination, tubular guide means for guiding said articles along a path, speed, retarding means disposed to act upon articles passing through said tubular guide means for reducing the speed of said articles, article receiving means, shock absorbing means associated with said said article receiving means for absorbing shock from articles delivered to said article receiving means, and ejector means for receiving articles from said shock absorbing means and feeding said articles to an article receiving station, wherein said speed retarding means comprises a rotating roller formed of a porous resilient material and having a surface with a high friction coefficient, said roller projecting into said tubular guide means, and speed regulating means connected to said rotating roller, and wherein said article receiving means includes a conveyor belt, said ejector means comprising a pair of coacting rotating rollers, said rollers being formed with a resilient surface having a high coefficient of friction and wherein said rollers of said ejector means are disposed for rotation about vertical axes and wherein said article receiving means includes a horizontally disposed rotating disc.

3,960,262
ACCUMULATING CONVEYOR

Seymour Henig, Kensington, Md., assignor to American Chain & Cable Company, Inc., Bridgeport, Conn.

Filed Nov. 29, 1974, Ser. No. 528,214
Int. Cl.² B65G *13/02*
U.S. Cl. 198—127 R **29 Claims**

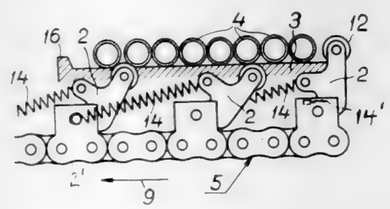


1. In a roller conveyor, the combination comprising
a plurality of transversely extending rollers,
means for rotatably supporting said rollers in parallel longitudinally spaced transversely extending relation to one another,
endless chain means for engaging at least some of said rollers and rotating said rollers,
said rollers comprising a first tail end section comprising a plurality of said rollers,
a second accumulating section comprising a plurality of rollers,
and a third drive section comprising a plurality of rollers,
at least some of said rollers in said accumulating section including a self-energizing clutch associated therewith including an input member rotatable about the axis of the roller and driven by said chain means, an output member fixed to said roller, and spring means normally interengaging said input and output members and actuatable to disengage the input and output members,
a sensor projecting upwardly normally into the path of an article moving along said rollers in said accumulating section,
said sensor being movable downwardly upon movement of an article thereover,
and means mechanically connected to said clutches and operable upon depression of said sensor directly to engage said spring means and to cause disengagement of said clutches.

3,960,263
TRANSPORT DEVICE FOR REACTOR FUEL ROD CLADDING TUBES

Conny Isaksson, Vallingby; Lars-Erik Nordin, Taby; Curt Olsson, Bandhagen, and Thorbjorn Sahlin, Vasteras, all of Sweden, assignors to Aktiebolaget ASEA-ATOM, Vasteras, Sweden

Filed Dec. 24, 1974, Ser. No. 536,230
Claims priority, application Sweden, Dec. 31, 1973, 7317617
Int. Cl.² B65G *19/00*
U.S. Cl. 198—170 **3 Claims**

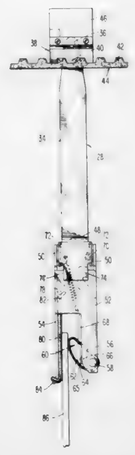


1. Transport device for transporting reactor fuel rod cladding tubes (4) of circular cross-section transversely along a production line, comprising at least one member (3) provided with a travel surface for said cladding tubes and a transport chain (5) running in the direction of transport and parallel to the travel surface, said transport chain (5) having a plurality of carriers arranged one after the other in the direction of transportation, each carrier comprising a carrier arm (2) which is attached by its inner end to the transport chain (5) and which is rotatable around a shaft (2') directed transversely to the chain; and spring means for keeping the carrier arm (2) in gripping position at least as long as the carrier arm is only affected by the spring means, said spring means including means to exert a force of such a value that the carrier arm by contact with a movable group of tubes arranged adjacent to each other on the travel surface and of a number greater than a predetermined number is turned so far back that its carrier effect ceases, and of such a value that the carrier arm (2) after having passed all of said group of tubes with the exception of such predetermined number of tubes in front of the carrier is pulled by the spring means (14) into a gripping position between two cladding tubes of said group.

3,960,264
ITEM TRANSPORT APPARATUS

Joseph C. Carbine, Wyncote, and Robert S. Bradshaw, Broomall, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 28, 1975, Ser. No. 544,926
Int. Cl.² B65G *17/12*
U.S. Cl. 198—179 **7 Claims**



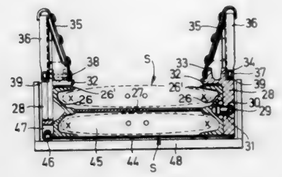
1. A carrier mechanism for transporting objects such as mail items from place to place for disposition at an intermediate or ultimate distination comprising,
an irregularly shaped member having transport engaging means at one end thereof and object engaging means at the opposite end thereof,
said object engaging means including oppositely disposed orthogonally arranged pivot support means and a backup anvil adjacent one of said support means,
a plurality of item gripping (means) levers having a resilient surface portion disposed on (one of) said support means movable into and out of engagement with an item disposed between said item gripping means and said backup anvil, each of said item gripping means being capable of independent relative motion with respect to the other of said gripping means, and
release means on the other of said support means including means engagable with the transport apparatus for resiliently causing said gripping means to engage an item for transport thereby and subsequently to release said item at the intermediate or ultimate destination thereof, said item gripping means being capable of relative movement with respect to said item whereby any pendulum tilt or rocking movement of said item causes one of said gripping means to hold said item while the item moves with respect to the other of said gripping means so that the (latter) item (to further engage) moves into tighter engagement with said gripping means.

3,960,265
MINING INSTALLATIONS

Helmut Temme, Waltrop; Werner Hageneier, Altlunen, and Hans-Dieter Schneider, Lunen, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Jan. 16, 1975, Ser. No. 541,553
Claims priority, application Germany, Jan. 16, 1974, 2401833
Int. Cl.² B65G *15/60*
U.S. Cl. 198—204 **7 Claims**

3. For use in a mineral mining installation the combination of a scraper-chain conveyor and a shifting apparatus for displacing the conveyor longitudinally; the conveyor comprising a series of channel sections arranged end-to-end, each channel section being composed of two side walls each with a generally sigma-shaped cross-section and a floor connected between the walls, a scraper-chain assembly for movement along the channel sections to effect transference of material and reinforcement means for the channel sections, said reinforcement means being in the form of stiffening members attached to the exteriors of the side walls of each channel section, each stiffening member having an L-shaped profile in cross-section with a main portion substantially covering the exterior of the associated channel section side wall and a further portion

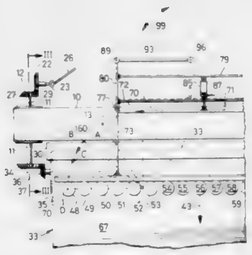


extending over said side wall, the upper side of said further portion of each stiffening member being provided with at least two upstanding webs serving to receive and connect with further plates which extend upwardly beyond the side walls of the channel sections and are inclined away from the longitudinal center of the conveyor in a vertical direction when installed whereby to increase the capacity of the conveyor, coupling means interconnecting the stiffening members and supports for the further plates, said supports being located outwardly of the further plates relative to the longitudinal center of the conveyor and spaced apart longitudinally of the conveyor, the supports being engaged on and connected to the further portions of the stiffening members.

3,960,266
APPARATUS FOR SIMULTANEOUSLY TRANSFERRING A PLURALITY OF ARTICLES FROM ONE CONVEYOR TO ANOTHER

Kurt Becker, Obernkirchen, Germany, assignor to Hermann Heye, Obernkirchen, Germany

Filed Mar. 19, 1974, Ser. No. 452,551
Claims priority, application Germany, Apr. 3, 1973, 2316467
Int. Cl.² B65G *47/24*
U.S. Cl. 198—235 **10 Claims**



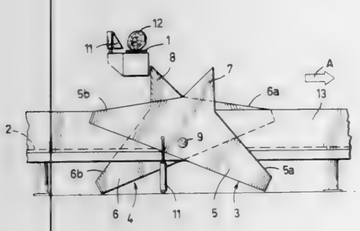
1. An apparatus for simultaneously transferring a plurality of articles from one position in which they travel on a first conveyor is a first direction to another position in which they travel on a second conveyor at a slower speed in a second direction transversely of said first direction, said apparatus comprising a frame; pusher means including an elongated pusher bar extending parallel to said first direction; mounting

means, including mounting links spaced from each other in siad first direction and each having a first portion pivotally connected to said pusher means and a second portion spaced from said first portion and directly pivotally connected to said frame, said mounting links being operative for pivotally mounting said pusher means on said frame for displacement across said first conveyor toward said second conveyor in a direction having one component of movement in said second direction and another superimposed component of movement in said first direction; a crank drive mounted on said frame and spaced from said pusher means; and connecting means including a connecting rod actuated by said crank drive and so connected with one of said mounting and pusher means as to include an angle with said mounting links in all of its positions relative to the latter.

3,960,267
TURNING DEVICE FOR LOGS AND SIMILAR

Antti Tapani Valo, Lohja 10, Finland

Filed Oct. 3, 1974, Ser. No. 511,815
Claims priority, application Finland, Sept. 18, 1974, 2721/74
Int. Cl.² B65G *47/24*
U.S. Cl. 198—278 **6 Claims**



1. Apparatus for transporting logs, comprising a first longitudinal conveyor, a second longitudinal conveyor positioned underneath and transversely to said first conveyor, and transfer means for receiving a log displaced transversely from the first conveyor and transferring it onto said second conveyor, said transfer means comprising:

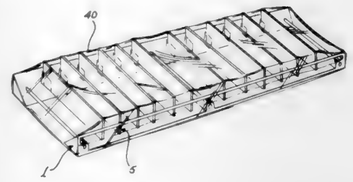
means at each side of the second conveyor defining two inclined surfaces which slope downwardly away from each other in opposite directions along the second conveyor; and

a guide member at each side of the second conveyor extending above the inclined surfaces and pivotable towards and away from the first conveyor about an axis which extends transversely to said second conveyor, whereby when one of said guide members is pivoted towards said first conveyor and the other guide member is pivoted away from said first conveyor a log that is displaced from the first conveyor and is received by the transfer means is guided by the guide members so that a first region of the log engages that inclined surface on one side of the second conveyor which slopes in the direction of movement of the second conveyor and a second region of the log engages that inclined surface on the other side of the conveyor which slopes in the opposite direction, and the log slides down the inclined surfaces which it engages and is finally received on the second conveyor with said first region of the log leading the second region of the log in the direction of movement of the second conveyor.

3,960,268
FRAME FOR SUPPORTING FRANGIBLE SHEET MATERIALS

Richard W. Davis, Tempe, and Thomas L. Muir, Phoenix, both of Ariz., assignors to Villa Precision, Inc., Phoenix, Ariz.

Filed Sept. 15, 1975, Ser. No. 613,359
Int. Cl.² B65D *75/30, 65/38, 85/48;* **A47G** *29/00*
U.S. Cl. 206—45.33 **14 Claims**



1. A frame for supporting and retaining sheet materials, said frame comprising in combination:

a. a pair of racks positioned adjacent one another in an opposed relationship for receiving and engaging portions of the sheet materials, each rack of said pair of racks including a base, a sloping side and at least a pair of passageways extending transversely through said rack in general planar alignment with said base;

b. a plurality of apertures disposed within said sloping side of each said rack for receivingly engaging penetrating portions of the sheet materials, each said aperture being diamond shaped and having the major axis transverse to said rack and the minor axis in general alignment with said rack;

c. at least two rods for interconnecting said racks of said pair of racks and maintaining said racks spaced apart from one another with the sloping sides thereof facing one another, each of said rods engaging a passageway within each of said racks; and

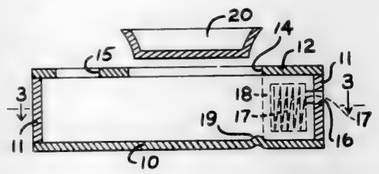
d. interference means disposed intermediate said rods and the respective ones of said passageways for establishing an interference fit therebetween to restrain inadvertent change in spacing intermediate said racks of said pair of racks.

12. The frame as set forth in claim 1 including a removable envelope for sealingly enclosing said frame and the sheet materials mounted thereon.

3,960,269
COMBINATION ASH TRAY AND CHEWED GUM DISPOSAL PACKAGE

Garry W. Jenkins, 4218 Lewis St., P.O. Box 777, Oceanside, Calif. 92054

Filed Apr. 7, 1975, Ser. No. 565,817
Int. Cl.² A45C *11/00;* **B65D** *85/67*
U.S. Cl. 206—233 **2 Claims**

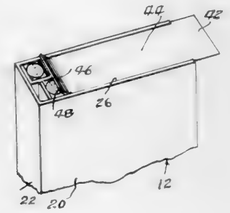


1. A combination ash tray and chewed gum disposal package which comprises a receptacle defined by a bottom plate, a top plate and a peripheral side wall, said top plate having a relatively small opening therethrough to receive wrapped gum to be deposited in the receptacle, said top plate also having a relatively large opening therethrough for discharging wrapped gum from the receptacle interior, and a removable ash tray fitting in said large opening to serve as a closure and shield the wrapped gum from view, said large opening being spaced from the front face of the side wall to provide an interior area at the front of the receptacle to receive a tissue supply, said front face having a slot therethrough for withdrawal of tissue.

3,960,270
CIGARETTE CASE

Bob May, 414 Clinton Place, River Forest, Ill. 60305

Filed Apr. 23, 1975, Ser. No. 570,787
Int. Cl.² B65D *1/24, 43/12, 85/10*
U.S. Cl. 206—256 **4 Claims**



1. A cigarette case including a case body defining an interior space and having an open upper end for receiving cigarettes of predetermined length therethrough into the case body and withdrawing out of it,

the case body having a length equivalent to the length of the cigarettes, a width less than the length, and a thickness substantially equivalent to the thickness of two cigarettes fitted side-by-side,

an insert in the case body and including a central wall dimensioned substantially equivalent to the length and width of the case body, and side vanes extending laterally from each of opposite sides of the central wall, the side vanes being spaced apart in the direction of the width of the central wall and extending longitudinally in the direction of the length thereof, and terminating at the open upper end of the case body, the side vanes and central wall defining cells between adjacent side vanes, and the cells thereby terminating at the open upper end of the case body, and

a closure member mounted in the case body in position closing the open upper end thereof and slidable therein in the direction of the width of the case body for sequentially exposing cigarettes which are in the cells to the open upper end, the closure member being so positioned in the case body and the case being otherwise so dimensioned and proportioned that the closure member when in closing position is effective for confining cigarettes in the case against movement lengthwise but without compacting them.

3,960,271
CARRYING CASE FOR DARTS

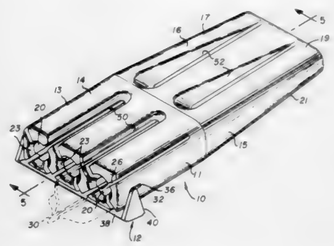
Thomas N. Nelson, 443 Avenida Del Roble, San Jose, Calif. 95123

Filed Feb. 21, 1975, Ser. No. 551,596
Int. Cl.² B65D *85/00;* **A63D** *65/02;* **B65D** *43/16*
U.S. Cl. 206—315 R **6 Claims**

1. A carrying case for darts, comprising:

an elongated unitary body including a plurality of parallel, spaced apart bores extending through the top surface of said body longitudinally thereinto to form dart receiving chambers, diagonal slots extending radially from said bores along a portion of the length thereof to form dart feathers receiving passages, and longitudinally extending elongated pivot slots formed in opposite side walls of said body proximate said top surface, said pivot slots each having an upper recess and a lower recess formed in spaced apart relationship along the length thereof; and

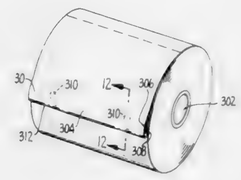
a closure member including a rotatable into portion slightly longer than the width of said body and a pair of side portions extending from the ends thereof normal to said cover portion, said side portions each having a pivot tab extending inwardly toward the opposite side portion, said tabs being received by said pivot slots and moveable from engagement with one of said recesses along the slot and into engagement with the other recess, said closure member being rotatableinto a bore exposing position when said tabs are in engagement with said upper recesses and being locked in a bore closing position when said tabs are in engagement with said lower recesses.



3,960,272
ROLL PRODUCT WITH MANUALLY GRASPABLE TAIL END AND MANUFACTURE THEREOF

Ellsworth A. Hartbauer, Concord, and Henry W. Rehr, Clayton, both of Calif., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Division of Ser. No. 476,017, June 3, 1974. This application May 5, 1975, Ser. No. 574,843
Int. Cl.² B65D *85/67*
U.S. Cl. 206—389 **21 Claims**



15. A roll product comprising:

an elongated sheet of flexible material wound to provide a plurality of convolutions and having a tail portion;

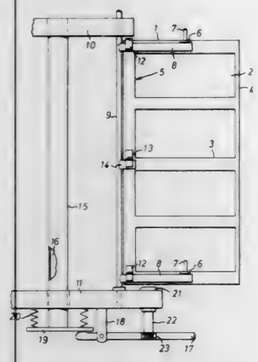
a fold formed at the end of said tail portion, said fold comprising at least two tail portion segments connected along a fold line and disposed in substantially parallel relationship with one of said segments terminating with a free end, said fold being in abutting engagement with an underlying convolution of said sheet material and said roll product terminating at said fold line; and

means releasably securing said fold to said underlying convolution, said releasably secured fold being adapted for manual grasping by the user of the roll product whereby release of said secured fold and unwinding of said roll product are facilitated.

3,960,273
DISPLAY DEVICE

Roy Bernard Weston, 9 Dingle Dell, Leighton Buzzard, England

Filed Feb. 14, 1975, Ser. No. 550,880
Int. Cl.² E05B *73/00;* **A47F** *5/12*
U.S. Cl. 211—4 **6 Claims**



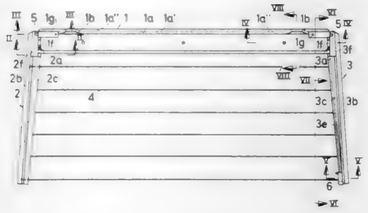
1. A display device comprising a vertically disposed wing-like member for receiving articles to be displayed; an arm; a vertically disposed rod to which the arm is fixed by one end; a pin extending vertically from the other end of the arm; means cooperating with said pin and pivotally mounting the wing-like member on said arm about a first axis which is provided by said pin and which is substantially parallel to the plane of said wing-like member; means mounting said rod for rotary movement enabling pivoting said arm about a further axis which is an axis of said rod and which is parallel to said first axis; releasable locking means comprising a hook formation provided on the wing-like member at a region thereof close to the rod, the hook formation cooperating with a portion of the arm, to maintain said wing-like member fixed relative to said arm, the action of the locking means being releasable by lifting the wing-like member to an extent sufficient to clear the hook formation from the arm, while maintaining the engagement of the wing-like member with said pin; said wing-like member being in the form of a frame structure with means defining an opening through which the said articles can be inserted and removed; and blocking means effectively blocking said opening when the said locking means are operative, said rod mounting means allowing swinging of the said wing-like member jointly with said arm about said further axis for inspection of the display articles, without the articles being free for removal, the articles being removable only after release of the locking means and swinging of the wing-like member about the said first axis relative to said arm, whereby to move the said opening away from said blocking means.

3,960,274
WALL-MOUNTED LAUNDRY DRIERS

Victor Trueb, Oberhelfenschwil, Switzerland, assignor to Heinz Hermann Weick, Geneva, Switzerland

Filed July 9, 1973, Ser. No. 377,834
Claims priority, application Switzerland, July 8, 1972, 10331/72
Int. Cl.² A47B *53/00*
U.S. Cl. 211—1.3 **10 Claims**

1. A laundry drier for mounting on a vertical wall comprising: an elongated housing of U-shaped cross-section having an end wall at each end to leave an open face and means for attaching the housing to said vertical wall with said open face upwards, two support arms mounted by hinge means one at each end of said housing and movable between a closed position each to form a half cover for said open face of the housing, and an open position to extend outwardly from the respective end of the housing in a plane generally parallel with said open face of the housing, and a plurality of rows of flexible line extending between respective spaced points on said support arms to be taut and parallel when said arms are in said

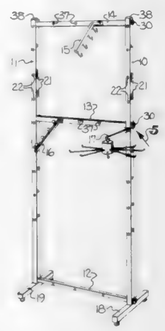


open position and to lie within said housing when said arms are in said closed position, said hinge means being arranged to provide pivotal movement between the respective arm and said housing about a first axis which is longitudinal of said housing and about a second axis which is transverse to said first axis.

3,960,275
MODULAR DISPLAY SYSTEM WITH INTERLOCKING FRAME MEMBERS

Paul F. Haughton, Troutman, and Thomas E. McCoy, Mooresville, both of N.C., assignors to Romac Metals, Inc., Troutman, N.C.

Filed Nov. 12, 1975, Ser. No. 631,107
Int. Cl.² A47F *5/14;* **A47B** *3/00;* **F16B** *9/00*
U.S. Cl. 211—182 **7 Claims**



1. In a modular display system with interlocking frame members including at least a pair of tubular frame members with one of said frame members extending outwardly at a right angle from the other of said frame members, the combination therewith of connector means for rigidly interlocking said one frame member to said other frame member, said connector means comprising

a. said other frame member having a first multi-sided opening in one wall and a secnd multi-sided opening in the opposite wall thereof, said first and second openings being of the same size and shape and being aligned perpendicular to the longitudinal axis of said other frame member,

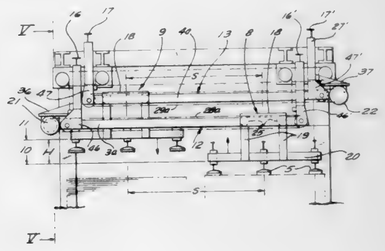
b. said one frame member including a multi-sided stud extending outwardly from the end of said one frame member and having a size and shape sufficient to provide a close fit of said stud in said first and second multi-sided openings in said other frame member, said predetermined size and shape of said stud being smaller than the size and shape of the adjacent end of said one frame member, and the length of said multi-sided stud being at least equal to the distance between the outer surfaces of said opposite walls of said other frame member, and

c. means for removably locking said multi-sided stud of said one frame member in position in said first and second multi-sided openings in said other frame member to maintain the adjacent end of said one frame member against said one wall of said other frame member and in right angular and non-rotating relationship thereto.

3,960,276
TRANSPORTER FOR FLAT WORKPIECES

Klaus Gerhardt, Rheurdt, Germany, assignor to G. Siempelkamp and Co., Krefeld, Germany

Filed Mar. 10, 1976, Ser. No. 556,966
Claims priority, application Germany, Mar. 9, 1974, 2411299
Int. Cl.² B65G *59/04*
U.S. Cl. 214—1 BT **10 Claims**



1. A machine for carrying flat workpieces along a predetermined path, comprising:

a rack extending from a loading station to an unloading station;

a first and a second track structure mounted on said rack for independent vertical displacement, each of said track structures including a plurality of substantially horizontal rails interleaved with those of the other track structure;

a first transport unit including a plurality of parallel carriages movable along respective rails of said first track structure;

a second transport unit including a plurality of parallel carriages movable along respective rails of said second track structure;

workpiece-engaging means on each of said transport units;

first and second lifting means for respectively displacing said first and second track structures together with their transport units between a lower working level and an upper return level; and

drive means correlated with said first and second lifting means for moving either of said transport units on said working level from said loading station to said unloading station while moving the other transport unit on said return level from said unloading station to said loading station.

3,960,277
MASK PLATE HANDLING APPARATUS

Alan G. Flint, 6821 Lenwood Way, San Jose, Calif. 95120

Filed Sept. 30, 1974, Ser. No. 510,284
Int. Cl.² B65G *51/02*
U.S. Cl. 214—1 BH **13 Claims**

1. Apparatus for handling polygonal masks comprising

A. an infeed station including

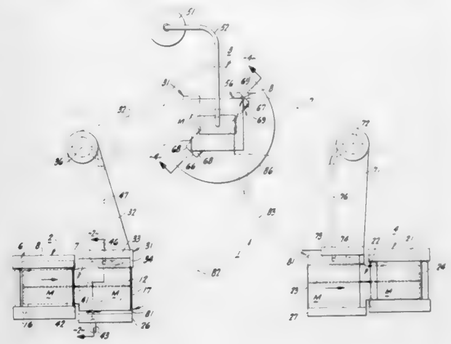
1. an indexable infeed magazine for a plurality of masks,

2. a fluid bearing track structure in conjunction with said infeed magazine for receiving masks in sequence therefrom and moving the same toward stop means for precisely positioning each such mask,

3. a vacuum transfer arm selectively positionable adjacent said track structure and carrying said stop means thereon,

4. such stop means including a stop shoulder contoured in accordance with the corner configuration of said masks mounted upon and movable with said transfer arm, and

5. means for urging each said mask laterally against said stop shoulder on said transfer arm to precisely locate



each such mask with its corner in engagement with said stop shoulder when said transfer arm is positioned adjacent said track structure,

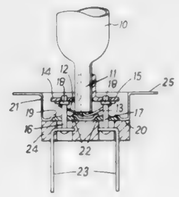
B. a treating station to which said masks are transferred in sequence by said transfer arm from said stop shoulder following precise orientation thereof, and

C. means for effecting movement of said transfer arm with said precisely oriented masks carried thereby in sequence from said track structure to said treating station and for transferring such masks in sequence to said treating station without disturbing the orientation thereof.

3,960,278
LAMP CAP ASSEMBLY

Arthur Samuel Vause, London, England, assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 7, 1974, Ser. No. 521,572
Int. Cl.² H01J *5/50*
U.S. Cl. 339—145 R **4 Claims**



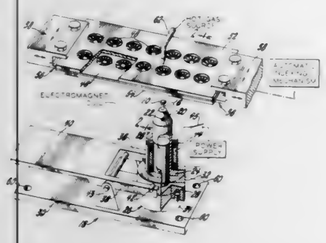
1. An electric lamp comprising an envelope containing a light source and having a seal through which electrical leads pass and a lamp cap in which the seal is mounted, in which the cap has electrically-conductive terminal pins to which the electrical leads are connected and on which the envelope seal is mechanically supported, the terminal pins pass through the cap and are hermetically sealed thereto and the lamp cap has a peripheral flange lying in a predetermined position relative to an internal reference point of the envelope and in which the envelope is supported on the terminal pins by way of brackets embedded in the material of the seal and attached to the pins.

3,960,279

MAGNETIC ALIGNMENT FOR SEMICONDUCTOR DEVICE BONDING

Ronald J. Hartleroad, Twelve Mile; James C. Krajewski, and Ronald G. Rayon, both of Kokomo, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 414,274, Nov. 9, 1973, Pat. No. 3,887,997.
This application Mar. 28, 1975, Ser. No. 563,092
Int. Cl.² B01J *17/00*
U.S. Cl. 214—1 BV **2 Claims**



1. Apparatus for electromagnetically transferring integrally leaded semiconductor device chips to an overlying conductive lead frame structure and for automatically precisely aligning the chips therewith for producing a uniform low stress bond between integral chip leads and corresponding fingers of said lead frame, said apparatus comprising:

a probe for supporting an integrally leaded semiconductor device chip, said probe being of a soft ferromagnetic material so as to concentrate magnetic lines of flux in the area of the integral chip leads located thereon, said probe having an end portion upon which the chip can be supported, said end portion having a flat surface portion which is slightly smaller than a major face of the chip, a soft ferromagnetic support member for holding said probe vertically, a coil of electrically conductive wire surrounding said probe support member and being longitudinally spaced from said probe but coaxial therewith, means connected to said coil for passing current through said coil for a desired time period so that the coil produces magnetic flux lines which flow longitudinally through said probe and perpendicular to said chip for magnetically raising the chip from the probe and transferring it to the lead frame finger set in precisely aligned engagement therewith and means for vertically moving said probe, said support means and said coil as a unit to position said chip in closely spaced relation beneath an overlying set of lead frame fingers.

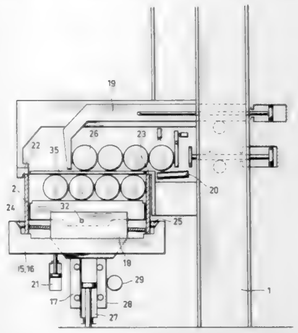
3,960,280

STORAGE SYSTEM

Paul Stolzer, Achern, Germany, assignor to Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft, Achern, Germany

Filed Mar. 17, 1975, Ser. No. 559,022
Claims priority, application Germany, Mar. 15, 1974, 2412380
Int. Cl.² B65G *59/00*
U.S. Cl. 214—8.5 A **7 Claims**

1. In a storage system for storing and retrieving rod-shaped material, including a plurality of pallets for accommodating material, each pallet having a material-supporting bottom; storing means for storing the pallets; withdrawal means for retrieving a selected one of the pallets from the storing means; positioning means in the withdrawal means for adjusting the longitudinal and transverse position of the pallet and for lifting the pallet against stops in the withdrawal means; an apparatus for lifting the material out of, and lowering it into a pallet disposed in the withdrawal means; the apparatus having at least two lifters arranged serially with respect to the length of the pallet disposed in the withdrawal means; means for moving the lifters in unison vertically through apertures provided in the bottom of the pallet for engaging and moving the material with respect to the pallet; abutment means projecting from a side of the pallet inwardly thereof for cooperating with the lifters to arrest their upward motion when the lifted material has reached, above the pallet, a predetermined position from which it is displaceable transversely to the length of the pallet onto a conveyor leading to a cutting machine; the improvement wherein each pallet bottom is inclined transversely to



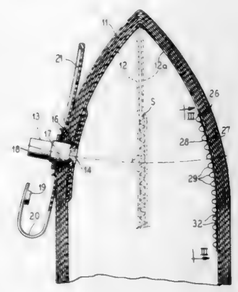
the length dimension of the pallet; further comprising a rocker pivotally attached to an upper end of each lifter; each rocker being arranged for a swinging motion about an axis extending parallel to the length of the pallet disposed in the withdrawal means; said axis being situated eccentrically with respect to the width of the pallet; in the direction of the higher-lying side of the pallet bottom; said abutment means including abutments situated on either side of said pallet disposed in said withdrawal means for cooperating with each rocker; said abutments having identical height positions.

3,960,281

MEANS FOR PREVENTING DRY BURN IN A PAPER PLASTIC DUNNAGE BAG

Robert L. Reeves, Pinecrest Circle Drive, Sheridan, Ark. 72105

Filed Nov. 1, 1974, Ser. No. 520,014
Int. Cl.² B60P *7/14*
U.S. Cl. 214—10.5 D **6 Claims**



1. An inflatable dunnage bag comprising

multiple outer plies of paper and an inner ply of plastic formed as a closed inflatable baldder,

a one-way inflation valve having an inlet end disposed in an accessible location outside of said bag on a wall thereof and having an outlet end projecting inwardly of said plasitc inner ply through said wall to admit air under pressure inside of said bladder,

means to prevent dry burn when charging said bag with air comprising

a baffle positioned in register with said outlet end of said valve and being disposed between the confronting surfaces of said plastic inner ply when said bag is in deflated condition,

said baffle comprising a flat member of sufficient included area to baffle substantially all of the air projected through said valve into the interior of said bag,

said baffle having an effective expanded thickness at least in an area in register with said outlet end of said valve sufficient to separate said confronting surfaces of said plastic inner ply by a discrete distance when said bag is in deflated condition,

said baffle further having formed therein laterally and transversely disposed air passage means diffusing the air stream directed through said valve transversely of said valve and said plastic inner ply thereby to dissipate any vibratory forces tending to produce a dry burn effect on the surfaces of said plastic inner ply adjacent said outlet end of said valve,

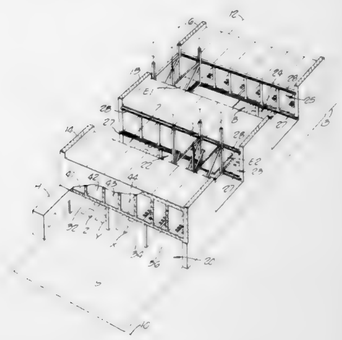
and fastening means securing said baffle adjacent to said plastic inner ply on the inner wall confronting surface thereof opposed to that through which said outlet end of said valve so projects.

3,960,282

CAR PARKING STRUCTURE WITH A CAR LIFT AT THE ENTRANCE THEREOF

Carlisle F. Manaugh, 522 Abramar Ave., Pacific Palisades, Calif. 90272

Filed July 15, 1974, Ser. No. 488,571
Int. Cl.² E04H *6/06*
U.S. Cl. 214—16.1 CB **4 Claims**



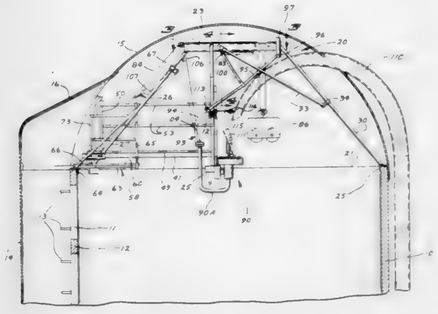
1. In a multiple story car parking system for storing cars, the combination of: at least one multiple story structural unit having rows of adjacent storage stalls on its stories opening to an adjacent craneway; an elevator mechanism mounted in said craneway for movement along the craneway across the face of the structural unit, and including an elevator platform mounted for vertical movement to each of the stores of the unit; a self-propelled dolly with retractable transverse forks supported on said elevator platform for carrying a car from the elevator platform and for depositing the car in one of the storage stalls on one of the stories of the unit; and at least one lift platform assembly mounted in a pit on the ground floor of the structural unit adjacent the craneway, said pit having two spaced and parallel longitudinal channels aligned with the elevator platform and further having a central interconnecting portion to provide the pit with an H-shaped configuration, said lift platform assembly comprising: a plurality of beams extending transversely across the central portion of the pit and across the parallel channels; a pair of beams mounted at each end of the first-named beam and extending longitudinally along the channel at each side of the pit; a first plurality of spaced transverse elongated cleats mounted on the forward end of each of the longitudinally-extending beams and extending partially across each of the aforesaid longitudinal channels for receiving the front wheels of a car to be deposited in a storage stall; a second plurality of spaced transverse elongated cleats mounted on the rear end of each of the longitudinally extending beams and extending partially across each of the corresponding longitudinal channels for receiving the rear wheels of the car; said cleats defining spaces therebetween for receiving the forks of the dolly, and said longitudinal side channels defining a central runway therebetween for receiving the dolly when the forks thereof are retracted; and a jack mechanism mounted in the central portion of the pit and having first and second shaft respectively extending along the longitudinal channels with means at the end of each shaft for engaging each end of each of the longitudinally extending beams to move the lift platform assembly between a lower position in which a car may be driven over the cleats of the first and second pluralities, and an upper position in which the dolly may move along the central runway under the car and lift the car up from the cleats.

3,960,283

SUPPORT FOR SILO UNLOADER, SILO SAFETY PLATFORM, AND SILAGE DISTRIBUTOR

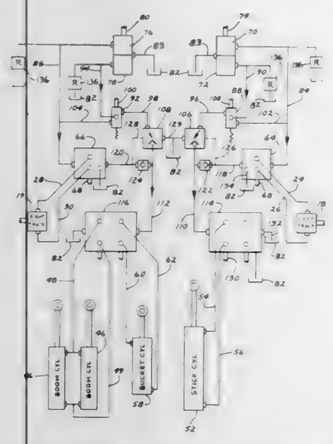
Frederick E. Van Dusen, Hopkins, Minn., assignor to Van Dusen & Co., Inc., Wayzata, Minn.

Filed Jan. 2, 1975, Ser. No. 538,171
Int. Cl.² B65G *65/32*; **E04G** *1/36*
U.S. Cl. 214—17 CB **19 Claims**



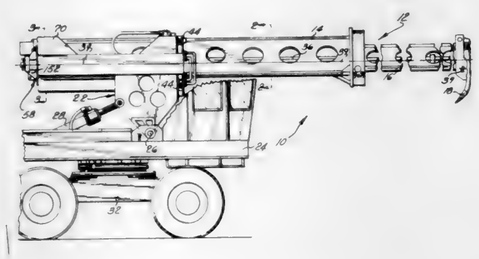
1. In combination for a silo having generally upright side walls, a support for a silo unloader mounted fixedly to the top of said silo walls including a plurality of support legs, means to fixedly join said legs to each other at a location generally overlying the center portions of said silo, said legs extending outwardly and downwardly from said means to fixedly join and being nonmovably supported to the upper edges of said silo walls, means to support a silo unloader mounted to said means to fixedly join, a nonmovable operator's platform mounted adjacent the upper edges of said silo comprising first support means fixedly supported to the upper edges of the side walls of the silo, and comprising members extending generally horizontally into the interior of said silo area below the level of said means to join said legs and offset from the center of the silo sufficiently to permit a silo unloader to be supported from said legs to operate in the silo, a platform attached to said first support means and being of size to accommodate and support a person thereon, and second support means for the interior end portions of said horizontal members comprising generally vertically extending support members fixedly attached to at least some of said legs.

3,960,284
HYDRAULIC BACKHOE CIRCUITRY
Emerl R. Carpenter, Edina, Minn., assignor to American Hoist & Derrick Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 293,819, Oct. 2, 1972, abandoned. This application Apr. 7, 1975, Ser. No. 565,381
Int. Cl.² E02F *3/32*
U.S. Cl. 214—138 R **16 Claims**



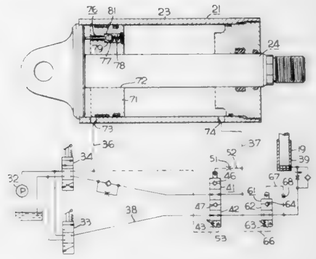
13. In combination with a backhoe excavator having right and left crawler tracks, a driveable boom, stick and bucket, a first function motor for driving a first of said tracks, separate function motors for driving each of said boom, stick and bucket, and means for driving a second of said tracks; a hydraulic circuit including:
a first hydraulic pump;
said first track function motor;
a first hydraulic path from said pump to said motor to carry fluid to drive said motor;
said first path including a first track function control valve;
a second hydraulic pump;
at least one second function motor for driving one of said boom, stick and bucket;
a second hydraulic path from said second pump to said second function motor to carry fluid to drive said second motor;
said second path including in order from said second pump toward said second motor:
a first function speed selector valve,
an unloading valve, and
a second function control valve;
said speed selector valve being selectively operable:
A. to form a part of said second path, and
B. to block flow in said second path to divert it to said first path to augment the output from said first pump to said first function traction control valve;
said first function control valve being selectively operable:
A. to form a part of said first path to permit fluid therein to pass to said first function motor to perform said first function, and
B. to block flow in said first path to said first function motor and to divert it to a first function control valve outlet line;
said first function control valve outlet line opening to a one way check valve;
said check valve opening to said second path between said unloading valve and said second function control valve;
there being a pressure control line open from said first function control valve outlet passageway to said unloading valve;
said unloading valve being operable responsive to the presence of at least a predetermined pressure in said pressure control line to divert flow from said second motor away from said second path; and
said second function control valve being selectively operable:
A. to form a part of the second path to permit the passage of fluid therealong to operate said second function motor, and
B. to block said second passageay to divert said hydraulic fluid from said second motor.

3,960,285
MATERIAL HANDLING APPARATUS
John W. Gano, New Philadelphia, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Oct. 4, 1974, Ser. No. 512,249
Int. Cl.² E02F *3/38*
U.S. Cl. 214—141 **21 Claims**



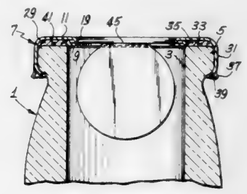
1. A material handling apparatus comprising a base, a longitudinally extending first boom section having axially inner and outer end portions, said inner end portion of said first boom section having an end wall which defines a first opening, a longitudinally extending second boom section telescopically disposed within said first boom section and extending through said axially outer end portion of said first boom section, cradle means connected with said base for supporting said first and second boom sections, first motor means for effecting axial movement between said first and second boom sections to vary the telescopic relationship between said boom sections, second motor means for effecting rotational movement of said first and second boom sections about their longitudinally extending axes, and force transmitting means for transmitting rotational drive forces from said second motor means to said first boom section and for retaining said first boom section against axial movement relative to said cradle means, said cradle means including a longitudinally extending body which at least partially defines a cavity for receiving said first boom section and an end portion connected with said body and extending transversely to the longitudinal axis of said body to at least partially define one end of said cavity, said inner end portion of said first boom section including an end wall disposed adjacent to said end portion of said cradle means, said force transmitting means including gear means disposed within said cavity between said end wall of said first boom section and said end portion of said cradle means, said gear means being connected to said first boom section and to said cradle means and including at least one gear disposed in a coaxial relationship with said first opening and having surface means defining a second opening in said one gear which is coaxial with said first opening, said first motor means including a first end portion extending through said first opening in said end wall of said first boom section and through said second opening in said one gear, said first motor means being spaced apart from said end wall of said first boom section and from said surface means defining said second opening in said one gear, said force transmitting means further including means for connecting said end portion of said first motor means to said end portion of said cradle means to transmit thrust forces from said first motor means to said end portion of said cradle means independently of said first boom section.

3,960,286
AUTOMATIC OVERLOAD CONTROL FOR A COUNTERBALANCED LIFT TRUCK
Ronald E. Spooner, Richton Park, and Terry R. Downing, Matteson, both of Ill., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Dec. 19, 1974, Ser. No. 534,454
Int. Cl.² B66F *9/20*
U.S. Cl. 214—674 **9 Claims**



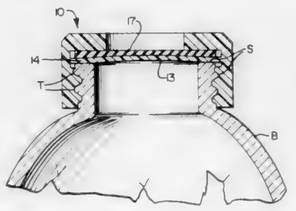
1. An overload protection system for a counterbalanced vehicle having a frame, a mast tiltable on the frame about a horizontal axis, a load support elevatable on the mast by a hydraulic lift jack and a double acting tilt jack having its opposite ends connected to the mast and the frame and operable to control the tilt of the mast, said system comprising:
a source of pressurized hydraulic fluid,
a tilt control valve connected to said source,
a lift control valve connected to said source,
a pair of tilt jack supply passages connected to said tilt control valve and extended to and connected with opposite ends, respectively, of said tilt jack,
a lift jack supply passage interconnecting said lift control valve and said lift jack,
automatic differential pressure operated valve means in one of said tilt jack supply passages and in said lift jack supply passage having pilot connections with opposite sides of said tilt jack and operative to prevent expanstion of said tilt and lift jacks when the pressure differential across said tilt jack exceeds a predetermined value,
a piston in said tilt jack, and
an unloading valve in said piston automatically placing opposite axial sides thereof in fluid communication at the end of its retraction stroke.

3,960,287
EASY-OPEN ECOLOGY CROWN CAP
Charles T. Baker, Rutland, Vt., assignor to Vermont Marble Company, Proctor, Vt.
Filed May 5, 1975, Ser. No. 574,703
Int. Cl.² B65D *41/42*
U.S. Cl. 215—253 **4 Claims**



1. An integral bottle cap for a bottle having a circular outlet opening and an annular bead extending around the mouth of said opening, comprising: a depressed, substantially planer, circular central dome portion; an annular ring portion extending inwardly from the periphery of said dome portion with its lower surface in abutment with the opposed surface of said dome portion; an annular top wall portion extending outwardly from the inner edge of said annular ring portion with the upper surface of said ring portion in abutment with the lower opposed surface of said top wall portion, and an annular flange portion depending from the outer periphery of said top wall portion with its lower edge adapted to be crimped under the bead at the mouth of the bottle, said dome portion being scored only part way through the thickness of the material thereof from its top surface downwardly and in vertical alignment with the inner edge of said ring portion, the score forming a line extending around the dome portion and being interrupted to provide an unscored hinge portion, the depth of said score being sufficient to allow downward finger pressure on the center of said dome portion to break the cap material along the score line and permit the center of the dome portion to move downwardly about the hinge portion and into the upper end of the neck of the bottle.

3,960,288
BOTTLE CAP WITH MEANS TO EFFECT SEAL WITH IRREGULAR BOTTLE ENDS
Edwin D. Phillips, 170 Albert St., North Plainfield, N.J. 07060
Filed Mar. 5, 1975, Ser. No. 555,533
Int. Cl.² B65D *41/04*
U.S. Cl. 215—329 **10 Claims**

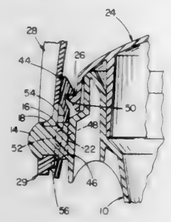


10. In combination, a bottle having an externally threaded, open ended top portion presenting an annular, axially facing end surface; and a synthetic plastic bottle cap threadably engaged on the threaded top of the bottle, said cap comprising a body having a depending annular skirt with internal threads therein cooperably engaged with the threads on the bottle top; said cap including a relatively thin, yieldable end closure portion sealingly engaged with the end surface of the bottle; an annular back-up flange on the cap spaced axially from a peripheral, marginal portion of the closure portion; and a resilient insert between the marginal portion of the closure portion and the back-up flange; and the externally threaded portion and annular end surface of the bottle top being roughened to effect a secure, non-slip threaded engagement with the cap, and whereby when the cap is tightened on the bottle the end closure portion resiliently and yieldably engages the end surface of the bottle to effect a tight seal therewith even if the end surface has irregularities therein.

3,960,289
LATCHING RECEPTACLE LID
Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Avon, Mass.
Filed Apr. 9, 1975, Ser. No. 566,179
Int. Cl.² B65D *25/28, 45/00*
U.S. Cl. 220—318 **23 Claims**

1. A receptacle having an opening, a bail pivotally mounted thereon for rotation from one side of said receptacle, over said opening and to the other side of said receptacle, a lid for covering said opening and cooperating means on said receptacle, said bail and said lid for locking said lid on said receptacle

with said bail on one side and over said opening and for unlocking said lid with said bail on said other side, said means on said receptacle movable inwardly toward and outwardly away from said opening for respectively engaging and disengaging for locking and unlocking said means on said lid, and said



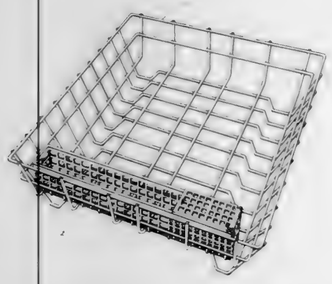
means on said bail engaging said means on said receptacle and adapted to move said means on said receptacle inwardly for engagement with said means on said lid with said bail on said one side and over said opening and adapted to move said means on said receptacle outwardly for disengaging said means on said lid with said bail on said other side.

3,960,290

UTILITY BASKET FOR A DISHWASHER

William H. Yake, and Donald G. Wallace, both of Connersville, Ind., assignors to Design and Manufacturing Corporation, Connersville, Ind.

Filed May 8, 1974, Ser. No. 468,001
Int. Cl.² B65D *51/04, 25/06*
U.S. Cl. 220—338 **5 Claims**



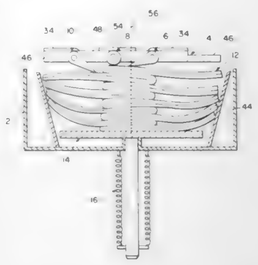
1. A utility basket for use in the upper or lower rack of a dishwashing machine, said utility basket comprising a structure having side walls, end walls and a bottom, said side walls being made up of a plurality of vertical and horizontal ribs joined together and defining a plurality of rectangular openings, said utility basket bottom comprising a plurality of longitudinal and transverse ribs joined together and defining a plurality of rectangular openings, a foraminous gate, said gate having a pair of spaced hinge lugs on one side edge thereof engaging a selected one of said vertical ribs of one of said utility basket side walls with a pivotal snap fit, said gate being swingable between first and second positions, said gate in said first position lying against said side wall to which it is hinged rendering the entire utility basket available for the receipt of tableware, said gate in said second position extending transversely of said utility basket to divide said utility basket into first and second portions, means to maintain said gate in said first position comprising a latch lug so located on said gate as to engage with a releasable snap fit another of said vertical ribs of said same utility basket side wall to which said gate is hinged, means to maintain said gate in said second position comprising a lug on the opposite side edge of said gate from said hinge lugs and a notch on the other of said utility basket side walls to receive said last mentioned lug, a lid, means for hingedly affixing said lid to said utility basket, said lid being swingable between an open position and a closed position wherein said lid covers said second portion of said utility basket, said lid being of foraminous construction.

3,960,291

FOLDED ARTICLE DISPENSING MACHINE

Menashe Navi, Lebanon, N.J., assignor to ANPA Research Institute, Easton, Pa.

Filed Sept. 23, 1975, Ser. No. 615,859
Int. Cl.² B65H *3/00*
U.S. Cl. 221—36 **9 Claims**



1. A sheet dispenser for dispensing a single newspaper, magazine or the like from the top of a stack, comprising in combination:

A. a frame means comprising a hopper means for holding a stack of folded paper articles in a partial overlapping vertical relation wherein the folded edges lie horizontally and overlap the folded edge immediately therebeneath, each folded edge being substantially parallel to a vertical plane of symmetry, and;

B. platform means operable to raise said stack of partially overlapped folded articles, and;

C. a horizontally movable stripper assembly positioned on said frame proximate the top of said stack, said stripper assembly further including wedge and roller means operable to successively strip the topmost folded article in both a horizontal movement from left to right and in a return horizontal movement from right to left.

3,960,292

APPARATUS FOR SINGULATING AND DEPOSITING SEEDS

Philip B. Knapp, Lynbrook, N.Y., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

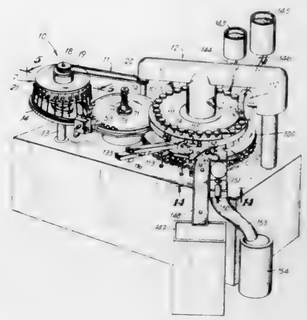
Division of Ser. No. 355,701, April 30, 1973, Pat. No. 3,849,041. This application Oct. 23, 1974, Ser. No. 517,204
Int. Cl.² B65G *29/00*
U.S. Cl. 221—211 **5 Claims**

1. Apparatus for singulating individual seeds from a bulk supply and depositing the seeds in a tableting apparatus, comprising

singulating means including a rotatable distributor tray having an annular receiver channel to support said bulk supply, a shaft, means supporting said tray for rotation about an axis angularly oriented relative to the axis of said shaft, a turret rotatable about the axis of said shaft and having a vacuum manifold therein, a plurality of fingers extending from said turret toward said channel to scan said bulk supply during part of the rotation of said fingers, said fingers having an internal bore portion connected with said manifold, seed receiving apertures formed in said fingers and communicating with said bore portions, said apertures being of lesser size than the seeds to be used therewith, drive means for rotating said turret for

sequentially moving said seed receiving apertures of said fingers through said tray and said bulk supply to support individual seeds over said apertures responsive to the subatmospheric pressure in said bores, a discharge station in the path of said fingers for receiving singulated seeds released at said station, vibrator means interposed between said bulk supply and said discharge station for engaging and oscillating said seed carrier fingers in the course of said movement, to detach excess seeds from said fingers, and means for increasing the pressure in said bores of said fingers when said fingers are in registry with said discharge station to effect said seed release, and

transfer means for feeding a seed to a mold cavity of a tableting apparatus, said transfer means comprising



a tubular conduit at said discharge station having an entrance end for admitting a seed and an exit end, means for inducing an air flow through said conduit adjacent said entrance end, thereby to impart a velocity to said seed in accordance with the velocity of said air flow, said conduit, at a portion intermediate said entrance and exit ends, including a curved conformation having air bleed portions of a size to preclude the passage therethrough of said seed, the area of said bleed portions being sufficient to permit substantially the entirety of said air stream to pass through said bleed portions, said seed being discharged at said exit end under inertia imparted by said air stream, and substantially the entirety of said air stream flows through said bleed portions whereby the air at said exit end is essentially quiescent.

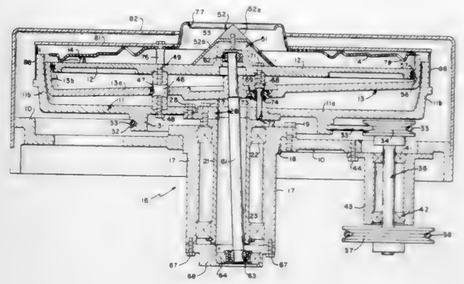
3,960,293

CENTRIFUGAL ARRANGING AND FEEDING APPARATUS

John R. Sweet, II, Sunnyvale, and Kingsley Chan, Saratoga, both of Calif., assignors to Acurex Corporation, Mountain View, Calif.

Filed Feb. 13, 1975, Ser. No. 549,691
Int. Cl.² B65G *59/00*
U.S. Cl. 221—258 **15 Claims**

1. In apparatus for delivering articles single file in a predetermined direction: a disk mounted for rotation about a vertical axis and adapted to receive articles to be delivered toward the center thereof, said articles being urged outwardly toward the periphery of the disk by centrifugal force as the disk rotates, means forming a retaining ring adjacent to the surface of the disk for limiting outward movement of the articles a predetermined distance from the center of the disk, a delivery ring adjacent to the periphery of the disk and constrained for rotation with the disk, means for lifting the retaining ring away from the disk in a first region of disk travel to permit the articles to move to the periphery of the disk in that region and effecting a transfer of the articles from the periphery of the disk to the delivery ring in a second region of travel, and guide means for retaining the articles on the delivery ring between the second region and a discharge region where the articles



are released for delivery along a line extending generally tangentially of the delivery ring in the predetermined direction.

3,960,294

VISCOUS MATERIAL DISPENSER

Rodolphe J. Bernard, 16330 Sandalwood, Fountain Valley, Calif. 92708

Filed June 18, 1975, Ser. No. 587,909
Int. Cl.² B65D *35/28, 5/64*
U.S. Cl. 222—103 **8 Claims**



1. A dispensing device for viscous materials comprising:

a housing having a pair of hinged walls;

a container means wherein the viscous material is stored therein, said container being removably disposed in said housing;

hinge means positioned along the lower portion of said walls for pressure engagement with said container means;

a discharge tube operably connected at one end thereof to said container means, whereby said viscous material can flow therefrom;

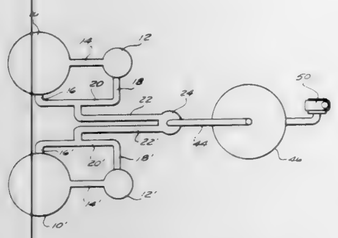
a compression means attached to each of said walls, imparting an inward compression force thereto;

wherein said compression means includes a take-up mechanism, said compression means being hingedly attached to one wall of said housing, and said take-up mechanism being operably accuated by the compression means and removably attached to said opposite wall whereby the viscous material is continuously and automatically placed under discharge pressure;

a control-valve means mounted to said discharge tube, whereby the flow of material is controlled from said container; and

coupling means formed in the free end of said discharge tube.

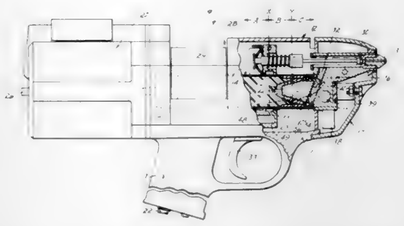
3,960,295
CONTINUOUS LIQUID PROPORTIONING SYSTEM
Vladimir Horak, 353 High St., Closter, N.J. 07624
Filed Aug. 19, 1974, Ser. No. 498,793
Int. Cl.² B67D *5/60*
U.S. Cl. 222—145 **10 Claims**



1. A liquid proportioning system comprising:
first and second groups of positive metering tanks, both connected to a mixer and arranged for alternate feeding to said mixer, each of said groups including a plurality of positive metering tanks, each containing a supply of liquid component to be mixed, and each being connected to a supply source of liquid component for filling said tank,
means connecting the tanks in each of said groups for maintaining a uniform pressure in said tanks above the liquid component therein,
each positive metering tank including adjustable outlet means for feeding a selected volume of the contained liquid component from the tank per unit of time and in constant selected proportion to the liquid components fed from the other metering tanks in its group,
a single conduit connecting the outlet means of each metering tank in one group to said mixing tank, whereby the liquid components fed from said metering tanks flow continuously in exact measured proportions through said conduit to said mixer,
a reservoir tank connected to the outlet of said mixer,
means connecting the outlet of said reservoir tank to a point of use,
and control means for closing the outlet means of the metering tanks of one group when said one group of tanks becomes depleted, opening the outlet means of the other group of metering tanks, and causing said one group of tanks to be refilled from said supply source while said other group of tanks is feeding liquid to said mixer.

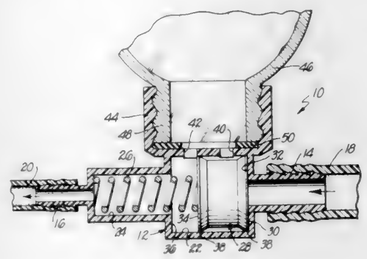
3,960,296
THERMOPLASTIC DISPENSER
Eric T. Nord, Oberlin, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Filed Sept. 9, 1974, Ser. No. 504,378
Int. Cl.² B67D *5/62*
U.S. Cl. 222—146 HE **14 Claims**

1. A dispensing device for translating solid slugs of thermoplastic feedstock material from a solid state to a molten state and for dispensing said feedstock while in the molten state, said dispensing device comprising
a barrel having an input end and a discharge end,
a ram movable within said barrel to effect movement of a solid slug of thermoplastic feedstock material from the input end of said barrel toward the discharge end,
a heater located adjacent the discharge end of said barrel for heating said feedstock and converting it from the solid to the molten state, said heater including a heater block located within said barrel and projecting rearwardly from the discharge end of the barrel and having a peripheral surface radially spaced inwadly from the inside surface of said barrel
said barrel having successive zones defined therein comprising a solid feedstock feed zone, a feedstock softening zone, and a feedstock melt zone, said feedstock melt zone being located adjacent the discharge end of said barrel and in close proximity to said heater block, and
a tubular forming die at least partially located within said feedstock softening zone of said barrel, said forming die having at least one portion of a lesser inside diameter than the solid feedstock feed section of said barrel,



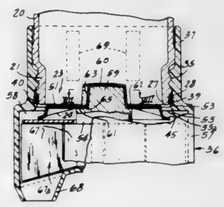
said forming die having a tapered throat located adjacent the rearward end of said heater block and within said softening zone for receiving a solid slug of feedstock material and guiding it into said one portion of said forming die in which said solid slug is sized by said forming die so that surface contact is maintained between said solid slug of feedstock material and said forming die substantially all the way around the periphery of said solid slug of feedstock material, said surface contact being operative as a physical dam to prevent rearward flow of molten feedstock material past said one portion of said forming die.

3,960,297
LIQUID MEASURING DEVICES
James B. Stephens, La Crescenta, and Frank R. Anderson, Hacienda Heights, both of Calif., assignors to Westates Space-Era Products, Inc., So. El Monte, Calif.
Filed June 24, 1974, Ser. No. 482,227
Int. Cl.² G01F *11/38*
U.S. Cl. 222—449 **9 Claims**



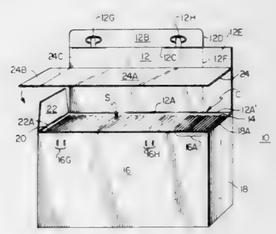
1. A liquid measuring device which comprises:
a housing having an inlet and an outlet, said inlet and said outlet being in communication with the interior of said housing,
accumulator means including a completely enclosed vessel for storing liquid at approximately the pressure of liquid supplied to said inlet, the interior of said vessel being closed off from the exterior of said vessel, said accumulator means being connected to the interior of said housing,
inlet valve means for controlling the flow of liquid into said housing associated with said inlet,
outlet valve means for controlling the flow of liquid from said housing associated with said outlet,
both of said valve means are capable of being opened and closed in response to the pressure of liquid supplied to said inlet, said inlet valve means being opened and said outlet valve means being closed when liquid is supplied to said inlet at an elevated pressure, said outlet valve means being open and said inlet valve means being closed when the liquid at said inlet is at a lower pressure,
said accumulator means being capable of receiving liquid flowing into said housing through said inlet valve means when said inlet valve means is open and being capable of discharging liquid located therein through said outlet valve means when said outlet valve means is open.

3,960,298
CONTAINER ASSEMBLY FOR USE WITH A SEPARATOR DISPENSER
Peter Leslie Birrell, Delta, Canada, assignor to The Cornelius Company
Division of Ser. No. 300,505, Oct. 25, 1972, Pat. No. 3,828,973. This application Apr. 19, 1974, Ser. No. 462,420
Int. Cl.² B65D *47/10*
U.S. Cl. 222—541 **11 Claims**



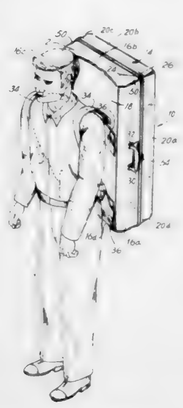
1. A container assembly for use with a separate dispenser, comprising: a container initially filled with flowable particulate material; mounting means on the container at its discharge end adapted for detachably making said container coactive with structure on the dispenser; and a unitary diaphragm closure initially closing the discharge end of the container and having a rupturable circular line of weakness defining a prospective relatively axially displaceable body portion having the physical properties enabling it to be used in the dispenser to modulate an annular flow of the material through said discharge end.

3,960,299
INDUSTRIAL STRAW DISPENSING CARTON
Paul Hollinger, Randallstown, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.
Filed June 12, 1975, Ser. No. 586,246
Int. Cl.² B65D *47/00*
U.S. Cl. 222—559 **2 Claims**



1. Container means for dispensing a plurality of elongated objects in a common orientation and at a preselected rate of egress comprising:
a substantially rectangular cavity defined by first and second opposed side walls, first and second opposed end walls, a bottom wall and a foldable closure lid coextensive with the top edge of said first sidewall;
an interior flap coextensive with the top edge of said second end wall and foldable inwardly beneath said closure lid;
a slide member substantially coextensive with the top edges of said side walls and said end walls overlying said inwardly folded interior flap beneath said closure lid and extending outwardly of said second end wall in the provision of a retaining tab foldable downwardly into juxtaposition with the outer surface of said second end wall;
a score line on said closure lid coextensive with a portion of the top edge of said sidewall commencing at a point closely adjacent said second end wall in the provision of a closure flap foldable downwardly into juxtaposition with a portion of the outer surface of said second sidewall; and
a removable section on said closure lid extending from the termination of said closure flap to said first end wall to define a maximum dispensing opening with the top edges of said first end wall and said first and second sidewalls;
said slide member being slidably retained beneath said closure lid and adjustably positionable to selectively vary the size of said dispensing opening between a fully closed condition and said maximum.

3,960,300
TAMPER-PROOF BACKPACK
Paul J. Dickler, 37 W. 8th St., New York, N.Y. 10011
Filed Jan. 25, 1974, Ser. No. 436,491
Int. Cl.² A45F *3/00*
U.S. Cl. 224—8 R **2 Claims**



1. A tamper-proof backpack adapted to be carried on the back of a user and comprising a backpack body having side walls and a concave-shaped rear wall defining a space for storing material, a backpack cover hingedly connected to one of said side walls and adapted to swing from an open position providing access to said storage space to a closed position sealing said storage space, said backpack body and backpack cover formed of a plastic resilient material, locking means for securing said backpack cover to said backpack body in its closed position, means cooperating with said concave-shaped rear wall for enabling said backpack to be carried on the back of a user, with the concave-shaped rear wall facing the user's back, and means for securing said backpack to a stationary object, said securing means including a cable having a first end connected within the storage space of the backpack and a second end adapted to be withdrawn from said storage space, wrapped around said stationary object and thereafter inserted back into said storage space and means for preventing said

second end of the cable from being withdrawn from said storage space after the cable has been wrapped around said stationary object.

3,960,301

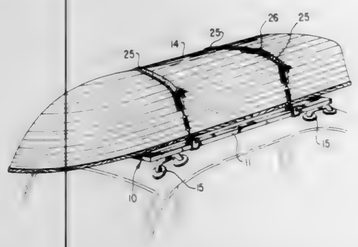
BOAT TRANSPORT ANCHORING MEANS

Thomas J. Miller, 800 Lombard Ave., Evansville, Ind. 47715

Division of Ser. No. 365,709, May 31, 1973. This application Nov. 18, 1974, Ser. No. 524,886

Int. Cl.² B60R *9/08*

U.S. Cl. 224—42.1 R **3 Claims**



1. For use with a boat supporting car top rack, a boat transport anchoring device comprising
   a. at least a pair of anchoring means secured along the car top rack at opposed positions,
   b. a threaded shank secured to each of said anchoring means,
   c. a pair of hooks each having a threaded shank,
   d. a pair of turnbuckle means, each turnbuckle receiving the threaded shanks of one of the hooks and one of the anchoring means,
   e. a strip of belting long enough to extend around the bottom of a boat to be gripped,
   f. a right angled pressure bracket affixed adjacent each of the ends of the belting with the upper portion of each bracket being angled outwardly of the boat and apertured for receiving said hooks respectively, whereby tensioning of the device by tightening said turnbuckle means, when the hooks are engaged, causes the belting to tighten and the pressure brackets to hug the boat thereby preventing slippage of the boat relative to the carrier.

3,960,302

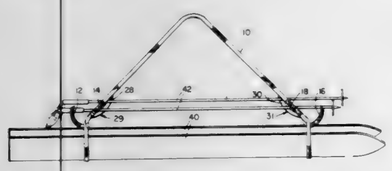
SKI CARRYING STRAP

Albert H. Mazzoni, Jr., 3910 Mission St., San Francisco, Calif. 94112

Continuation-in-part of Ser. No. 384,560, Aug. 1, 1973, abandoned. This application Nov. 25, 1974, Ser. No. 527,102

Int. Cl.² B65D *71/00*

U.S. Cl. 224—45 S **4 Claims**



1. Apparatus for hand-carrying a pair of skis and ski poles comprising a strap adapted to be placed over the shoulder of the carrier, a first end of said strap adapted to be loosely tied to the forward portion of the skis to form a first tied portion, the second end of said strap adapted to be loosely tied to the rearward portion of the skis to form a second tied portion; spaced strips of mutually engageable fastening material attached to the strap adjacent the first end thereof on opposite sides of the first tied portion and engageable to inhibit untying of the first end of the strap, at least one of said spaced strips of fastening material adjacent the first end of the strap having a loose flap section unattached to the strap; and spaced strips of mutually engageable fastening material attached to the strap adjacent the second end thereof on opposite sides of the second tied portion and engageable to inhibit untying of the second end of said strap, at least one of said spaced strips of fastening material attached to the strap adjacent the second end having a loose flap section unattached to the strap, whereby disengagement of the corresponding strips of fastening material due to tension in the strap is inhibited.

3,960,303

METHOD AND APPARATUS FOR STABILIZING A LONGITUDINALLY MOVING WEB OF MATERIAL

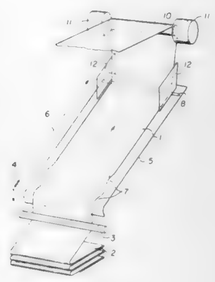
Raimondo Gatti, Gallarate, Italy, and Franz Josef Gierse, Wickrathberg, Germany, assignors to Franz Muller Maschinenfabrik, Monchen-Gladbach, Germany

Filed Oct. 4, 1973, Ser. No. 403,430

Claims priority, application Germany, Nov. 18, 1972, 2256638

Int. Cl.² B65H *23/04*

U.S. Cl. 226—1 **3 Claims**



1. A method for stabilizing a web of textile material moving unstably in longitudinal direction thereof comprising:
   guiding the web onto a smooth, rigid and flat surface defined by means formed of electrostatically chargeable material; and
   moving the web along the surface at a velocity exceeding 200 meters per minute at which an underpressure is created between the web of textile material and the smooth, rigid and flat surface, and the web is electrostatically attracted to said surface, whereby the moving web of material is stabilized on the smooth, rigid and flat surface.

3,960,304

DEVICE FOR HOLDING DOWN SHEET MATERIAL

Güenter Holland-Letz, Paderborn-Wewer, Germany, assignor to Nixdorf Computer AG, Paderborn, Germany

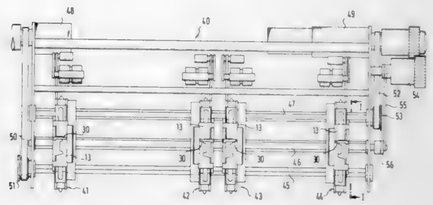
Filed Apr. 23, 1975, Ser. No. 570,771

Claims priority, application Germany, Apr. 23, 1974, 2419571

Int. Cl.² G03B *1/30*

U.S. Cl. 226—74 **7 Claims**

1. A device for holding down sheet material on a conveyor, which device comprises a pivotally mounted flap member which is spring-biased to move from a holding down position towards an open position, and a locking device for locking the flap in the holding down position, the locking device comprising a locking arm mounted on a shaft, the arm being pivotable between a locking position in which it engages over a part of the flap to lock it in the holding down position, and an unlocked position in which the flap is free to move to its open position, the pivotal axis of the flap being perpendicular to the axis of the shaft.



3,960,305

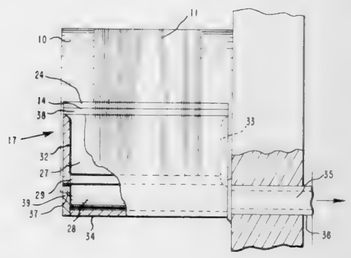
SLOT VACUUM JET

Edward Michael Joseph Boyle, Park Forest, Ill., and Melvin Harry Johnson, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 11, 1974, Ser. No. 487,817

Int. Cl.² B65H *17/32*

U.S. Cl. 226—95 **2 Claims**



1. In an aspirating apparatus that includes a suction nozzle coupled to an elongated manifold having a source of suction connected at one end, the improvement comprising: said nozzle having a slot shaped intake passage in continuous lengthwise communication with said manifold; and said manifold having an orifice continuously open to atmosphere located at its other end to assist in the development of parallel fluid flow along the length of the manifold.

3,960,306

DRIVING MECHANISM FOR ENDLESS SENSITIVE MEMBER

Hiroshi Hamaguchi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

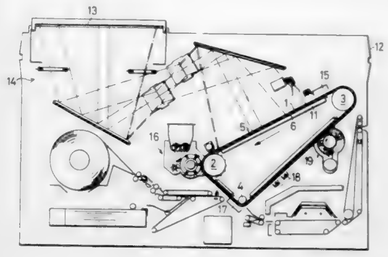
Filed Oct. 18, 1974, Ser. No. 516,245

Claims priority, application Japan, Oct. 31, 1973, 48-123023

Int. Cl.² B65H *17/28*

U.S. Cl. 226—96 **7 Claims**

1. In an electrophotographic duplicator having an endless photosensitive member made of a wide sheet material with a photosensitized surface, said sheet material having a discrete elasticity, an improved driving mechanism for the photosensitive member comprising a pair of endless belts mounted on a plurality of parallel-axis rollers with adjacent borders thereof spaced less than the width of said sheet material, said belts being of a material having an elasticity substantially equal to said discrete elasticity and at least one of the belts having non-slip means engaging a driven one of the rollers for movement therewith, the longitudinal edges of the photosensitive member being mounted along said adjacent borders of the belts in superposed relation therewith and means fixing said photosensitive material to each said belt and being thereby driven conjointly with said belts.



3,960,307

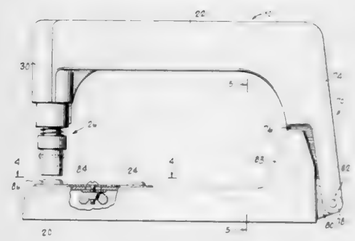
APPARATUS FOR ATTACHING ORNAMENTS TO SHEET MATERIAL

John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Continuation-in-part of Ser. No. 479,522, June 14, 1974, abandoned. This application June 16, 1975, Ser. No. 587,282

Int. Cl.² B25C *1/00*

U.S. Cl. 227—144 **4 Claims**



1. Apparatus for attaching a pronged ornament to sheet material comprising:
   a base and a head, and means for connecting the base and the head for movement toward and away from each other;
   an anvil and means for connecting the anvil to the base for rotation in a plane transverse to the direction of relative movement between the base and the head and for movement along said plane with respect to the base, said anvil having a free surface facing the head;
   a plunger and means for releasably connecting the plunger to the head, with the plunger extending from the head toward the anvil, said plunger comprising:
      a sleeve having a pair of axially extending slots which are diametrically opposite each other and are open at the axially bottom end of the sleeve but terminate prior to the axially upper end of the sleeve;
      a hollow, tubular punch having a axially lower portion closed at the axially bottom end of the punch and fitting slidably within said sleeve for axial movement with respect thereto, said lower portion of the punch having a pair of axially extending slots which are diametrically opposite each other and are open at the axially top end of said lower portion of the punch but terminate prior to the axially bottom end of the punch;
   an elongated retainer pin extending through all four of the slots and having heads at the longitudinally spaced ends thereof which are slightly larger than the slots, to thereby retain the pin in place when the heads thereof are radially outwardly of the slots;

biasing means engaging said sleeve and punch and urging said sleeve and punch axially away from each other, toward a relative axial position in which the pin engages the terminating ends of the slots and the bottom end of the punch is spaced axially upwardly from the bottom end of the sleeve by a selected distance, and

means for limiting the relative movement of the punch and the sleeve toward each other to prevent the bottom end of the punch from protruding from the bottom end of the sleeve;

whereby when the material is supported on the free surface of the anvil facing the head and the pronged ornament is frictionally inserted in the sleeve from below, with the prongs thereof pointing toward the anvil, the head and the base can be moved toward each other to engage the material with the prongs and the bottom end of the sleeve and to thence move the punch axially downwardly with respect to the sleeve to force the prongs through the sheet material and against the anvil and thereby deform the prongs and secure the ornament to the sheet material.

3,960,308

APPARATUS FOR AFFIXING SURFACE ENLARGING MEMBERS IN THE FORM OF COHERENT TRANSVERSALLY CORRUGATED METAL STRIPS TO ELONGATE METAL BASIC PROFILES

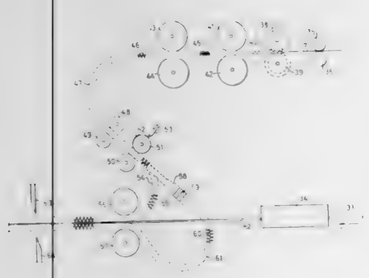
Karl Gunnar Jonason, Grindstuvagen 13, 724 62 Vasteras, Sweden

Division of Ser. No. 435,993, Jan. 23, 1974. This application Dec. 3, 1974, Ser. No. 529,130

Claims priority, application Sweden, Jan. 29, 1973, 012114

Int. Cl.² B23K *1/12*

U.S. Cl. 228—5.1 **5 Claims**



1. Apparatus comprising means for continuously advancing a metal basic profile in a movement path at a substantially constant speed, heating means arranged in said movement path for heating said basic metal profile to an elevated temperature, means for continuously feeding corrugated strip material in a movement path arranged to guide said strip material into side-by-side contact with the basic profile at a location downstream of the heating means, and means arranged in the movement path of the strip material upstream of its point of contact with the basic profile for applying solder to the crests of the corrugations of said corrugated strip material, at least on one side of said material, said solder being solidified at said crests as the corrugated strip material approaches the location of contact with the basic profile, said basic profile at said location of contact having a temperature sufficiently high to melt said solder and effect joinder of the corrugated strip material at said crests to said basic profile.

3,960,309

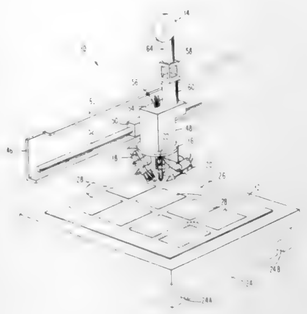
FINE WIRE TWISTED PAIR ROUTING AND CONNECTING SYSTEM

Herbert Kenneth Hazel, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 31, 1974, Ser. No. 493,371

Int. Cl.² B23K *1/20*

U.S. Cl. 228—5.1 **3 Claims**



1. In combination with a positioning mechanism for positioning a workpiece, an automatic bonding and routing apparatus for bonding pre-twisted wires to a bond site on said workpiece and routing said pre-twisted wires for bonding on a subsequent bond site on said workpiece, thereby forming a net, said apparatus comprising:

a turret-head;

wire supply means mounted to said turret-head for supplying said pre-twisted wires;

wire feeding means operable connected to said turret-head for feeding said pre-twisted wires from said wire supply means and forming a loop for bonding in said pre-twisted wires;

bonding means operably connected to said turret-head and lying in a plane orthogonal thereto, having a center line parallel to a reference line passing through the center line of said formed loop for engaging said formed loop and bonding said pre-twisted wires to said bond site on said workpiece; and

clamping means operably connected to said turret-head for receiving said pre-twisted wires from said wire feeding means and breaking said pre-twisted wires at a point beyond said bond site after bonding thereof, said clamping means comprising a housing support having guide rods affixed to said turret-head and sleeves slidably connected to said guide rods for positioning said clamping means towards or away from said bond site, a pair of receiving jaws operably connected to said housing means for receiving anad clamping said pre-twisted wires, first means operably connected to said receiving jaws for opening said receiving jaws so as to partially release, but yet, retain said pre-twisted wires, second means operably connected to said receiving jaws for opening thereof so as to completely release said pre-twisted wires, and third means attached to said slidable sleeves for controlling the position thereof on said guide rods so as to position said receiving jaws towards or away from said workpiece.

3,960,310

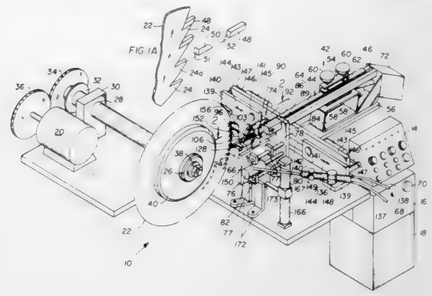
APPARATUS FOR BRAZING HARDENED TIPS TO SURFACES

Lucian Nussbaum, 423 Berrywood Court, West Hempstead, N.Y. 11552

Filed May 20, 1974, Ser. No. 471,450

Int. Cl.² B23K *1/04*

U.S. Cl. 228—6 R **11 Claims**



1. In an apparatus for brazing a hardened tip to a tooth of a toothed member having meltable brazing material therebetween, the invention comprising means movably mounting said toothed member to present a tooth thereof to a brazing position,

means for feeding and applying a force to the tip to hold the same to the tooth in the brazing position to be brazed thereto,

heating means for applying heat to the toothed member and to the held tip to melt the brazing material therebetween,

means for moving the tip relative to said force applying means and to the tooth and for holding the tip in brazing position on the tooth until the braze is completed,

said means being operable in a selected sequence,

and means on said apparatus connected with each of said means for automatically controlling their sequence of operation.

3,960,311

BACKING RING ASSEMBLY FOR PIPES

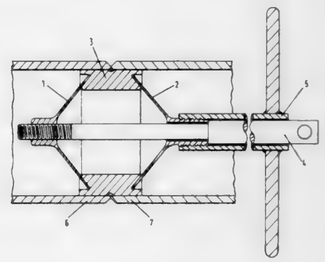
Raymond Paul Griffiths, Melton Nowbray, England, assignor to Welding Controls Limited, Northampton, England

Filed Nov. 25, 1974, Ser. No. 526,839

Claims priority, application United Kingdom, Nov. 27, 1973, 55038/73

Int. Cl.² B23K *5/22*

U.S. Cl. 228—49 **17 Claims**



1. A backing and alignment ring assembly comprising a segmented backing ring having a cylindrical external surface for engagement in a pipe bore the segments of said ring being provided with inter-engaging and overlapping lips and recesses on said surface, a pair of spaced hub members located substantially on the axis of the ring, axially extending actuating means connected to the hub members for providing relative axial movement of the hub members, and radially and axially extending connecting means attaching each hub member to the ring whereby said relative axial movement of the hub members produces radial expansion or contraction of the ring.

3,960,312

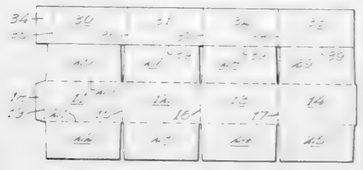
DIE CUT CONTAINER

Jack C. Gorham, Keokuk, Iowa, assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Aug. 25, 1975, Ser. No. 607,715

Int. Cl.² B65D *5/02*

U.S. Cl. 229—37 R **2 Claims**



1. A die-cut blank made from foldable sheet material, said blank adapted to be folded into a rigid sided container having top closure flaps and a liner around the inside of the walls of the container, said liner formed as a removable portion of said blank, said blank comprising:

four substantially rectangular side wall panels arranged in side-by-side relationship and hingedly connected to one another along three vertically oriented fold lines;

a manufacturer's glue flap hingedly attached along a vertical fold line to a first lateral edge of a first of said side walls;

top closure flaps arranged along the top edge of said side wall panels, each of said top cover flaps being hingedly attached to the respective adjacent side wall panel along a horizontal fold line defining the top edges of said side wall panels;

four liner panels hingedly attached to one another and located along the top edge of said top closure flaps, a first of said liner panels positioned said first side wall being unconnected to the top closure flap adjacent said first side wall, each of the remaining three of said liner panels being removably attached to the respective adjacent top closure flap.

3,960,313

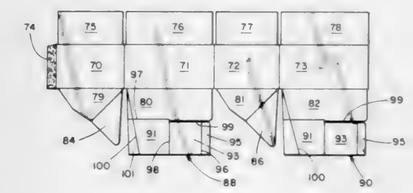
AUTOMATIC SETUP CARTON CONSTRUCTIONS

Alan M. Sax, Chicago, and Walter J. Stolkin, Schaumburg, both of Ill., assignors to Stolmar Corporation, Chicago, Ill.

Filed Nov. 15, 1974, Ser. No. 523,996

Int. Cl.² B65D *5/10, 5/48*

U.S. Cl. 229—41 B **10 Claims**



1. An automatic setup carton formed from a precut corrugated paper blank comprising

a. four side panels including two outer panels and two inner panels disposed on said blank defined by score lines between adjacent panels,

b. four bottom panels each extending downwardly from one of said side panels and defined by a score line therebetween, and

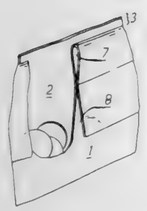
c. glue flaps defined by score lines on the two bottom panels extending downwardly from said inner panels to adhesively secure the remaining bottom panels thereto, one of said inner bottom panels and one of said outer bottom panels being secured in over and under relationship wherein one end thereof is over one of the adjacent panels while the other end thereof is under the other adjacent bottom panel, said carton being maintained in a flat condition prior to setup with the bottom panels folded onto the side panels and upon setup the side panels are spread apart to form a rectangular configuration causing the interconnected bottom panels to automatically deploy in said over and under relationship to form the bottom of said carton.

3,960,314

COIN BAGS WITH FLIP TOP CLOSURES

John Alan Faiers, London, England, assignor to Decoflex Limited, London, England

Filed Feb. 22, 1974, Ser. No. 444,901
Int. Cl.² B65D *33/16*
U.S. Cl. 229—62 **4 Claims**



1. A bag formed of a pliable material, comprising:

front and back panels joined along a fold defining the bottom of the bag and sealed together along respective adjoining side margins with an open mouth opposite said bottom;

said front panel being folded upon itself along a fold horizontal to said mouth and sealed along the side portions to form an external pouch, said flap being joined with said front panel by a seal extending transversely across said front panel between said mouth defining fold and the end of said pouch to form an enclosed portion; and

said bag being adapted to be closed by folding said pouch about said transverse seal to form a hood over said mouth whereby said enclosed portion engages and deforms said back panel to form a barrier inside said hood.

3,960,315

CARTON WITH INSPECTION FLAP AND BLANK THEREFOR

Thomas Edward Dobbins, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 27, 1975, Ser. No. 562,913
Int. Cl.² B65D *65/12, 65/14, 65/18, 65/32*
U.S. Cl. 229—87 F **11 Claims**

1. A carton blank for constructing a carton for displaying a product such as bacon, said blank comprising:

a. a top panel having a cut-out viewing area,

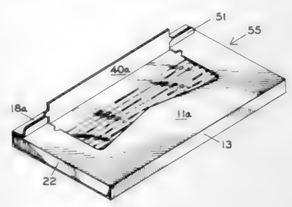
b. a bottom panel,

c. a glue flap,

d. an edge section of the top panel being located between the cut-out viewing area and one edge of the top panel adjacent the cut-out viewing area and having substantially the same width as the glue flap,

e. a first side wall hingedly connected along fold lines at opposite edges to the top and bottom panels, said first side wall being connected to said top panel at the edge opposite said edge section of said top panel,

f. a second side wall hingedly connected along fold lines at opposite edges to the bottom panel at the edge of the bottom panel opposite the edge thereof to which said first side wall is connected and to the glue flap,



g. an inspection flap covering at least a portion of the cut-out viewing area and hingedly connected to the edge section of the top panel along a hinge line and having sides connected to the top panel by lines of weakness, and

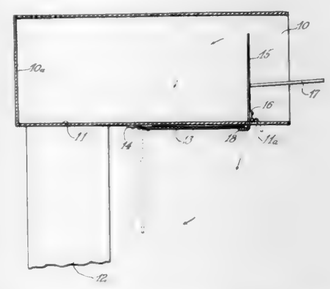
h. end flaps hingedly connected along fold lines to the side edges of the top and bottom panels.

3,960,316

NEWSPAPER ARRIVAL INDICATORS

Hubert H. Echterling, 12802 W. 129th Ave., Cedar Lake, Ind. 46303

Filed Apr. 12, 1974, Ser. No. 460,491
Int. Cl.² B65D *91/00*
U.S. Cl. 232—1 C **1 Claim**



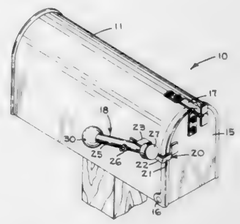
1. In a box-like receptacle having an open end for insertion of printed matter such as newspapers and other printed matter, an assembly to visually indicate the presence of such printed matter within said receptacle comprising movable visual indicator means held in an unseen position when said receptacle is empty and means within said receptacle which coacts with said indicator means and which is responsive to the insertion of said printed matter into said receptacle to cause said indicator means to move from said unseen position to a visible position; said indicator means comprising a gravity-movable, rectangular first plate having first pivotal means attached to one end thereof, said pivotal means being secured to the outer surface of the bottom of said receptacle with the axis of the pivotal means being perpendicular to the length of said receptacle and positioned on said outer surface a distance from said open end which is greater than the length of said first plate when said first plate is in said unseen position; said insertion responsive means comprising a rectangular second plate having second pivotal means to pivotally mount said second plate on the inner surface of said bottom in an upstanding position within, and cross-wise of, said receptacle adjacent the open end of said receptacle when same is empty, said pivotal means providing for rotational movement of said second plate only toward the interior of said receptacle to the inner surface of said bottom, at least one portion of said second plate extending through at least one opening in said bottom, the said at least one portion having its terminal edge formed as a rearwardly extending support means for the other end of said first plate in said unseen position when said second plate is in said upstanding position, the weight of said first plate acting on said support means to hold said second plate in said upstanding position when said receptacle is empty, the rearward rotational movement of said upstanding second plate upon the insertion of said printed matter against the portion of the second plate within said receptacle rotatably removing said support means from said other end of said first plate whereby the weight of said first plate rotates said first plate about its pivotal axis to a pendant visible position.

3,960,317

MAIL BOX WITH SIGNAL ATTACHMENT

James H. Clement, 1635 Rocky Mountain Ave., Milpitas, Calif. 95035

Filed Feb. 18, 1975, Ser. No. 550,833
Int. Cl.² B65D *91/00*
U.S. Cl. 232—35 **11 Claims**



10. A mail box comprising:

a. a receptacle in which mail is deposited, said receptacle being formed with an opening through which mail is deposited into said receptacle;

b. a door pivotally mounted on said receptacle, said door being movable between a position to close said opening and a position to open said opening;

c. a bracket fixed to said door for movement therewith;

d. a tubular signal arm carried by said bracket for pivotal movement and movable by said bracket in response to said door being moved between said positions, said bracket including a pivot support for freely supporting said tubular signal arm, said pivot support being disposed intermediate the ends of said tubular signal arm and extending radially through said tubular arm for pivotally mounting said tubular signal arm to said bracket; and

e. a spheroid located on each side of said pivot support for free movement in said tubular signal arm,

said bracket including a stop for limiting the pivotal movement of said tubular signal arm in one direction,

said door being hinged to said receptacle along the lower edge of said door for pivotal movement,

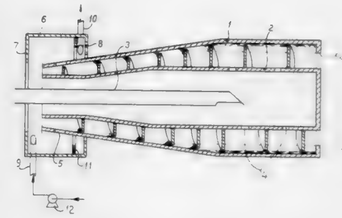
said spheroids urge said tubular signal arm in said one direction into engagement with said stop when said door is closed and said tubular signal arm is initially at an inclined position from its signal end portion to its opposite end, said stop being in the vicinity of said opposite end of said tubular signal arm, said movement of said door from said closed position to said open position moves said bracket to carry said tubular signal arm into a horizontal position and the continued movement of said door to said opened position moves said spheroids to urge said tubular signal arm to move in an opposite direction into a declining position from said signal end of said tubular signal arm to said opposite end of said tubular signal arm and thence into said generally upright signal position, said spheroids maintaining said tubular signal arm in said generally upright position after said door is returned to its closed position.

3,960,318

CENTRIFUGAL SEPARATOR

Bengt Ingmar Dahlberg, Uttran, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Sept. 30, 1974, Ser. No. 510,469
Claims priority, application Sweden, Oct. 1, 1973, 7313303
Int. Cl.² B04B *7/04, 11/02*
U.S. Cl. 233—4 **2 Claims**



1. A centrifugal separator comprising a rotor for receiving a mixture of liquid and solids and having outlets for discharging separated solids during operation of the rotor, a stationary chute extending around the rotor and positioned in front of said outlets to receive and convey the discharged solids, means for supplying flushing liquid to the chute, and means forming an overflow outlet of the chute and coacting with said supply means to provide in the chute a layer of liquid of a thickness determined by said overflow outlet and rotating around said rotor, said supply means being operable to supply liquid to the chute in an amount sufficient to cause said discharged solids to be dispersed in the liquid and to depart together with the liquid over said overflow outlet, said chute being formed by a cylindrical housing having annular end walls, the housing also having an annular partition wall located between said end walls and having less radial extension than one of said end walls, the chute being located between said one end wall and the annular partition wall, the housing having an outlet between said partition wall and the other end wall.

3,960,319

CENTRIFUGAL SEPARATOR

Francis B. Brown, La Crescenta, and John W. Erickson, Huntington Beach, both of Calif., assignors to Kobe Inc., Huntington Park, Calif.

Filed Oct. 21, 1974, Ser. No. 516,380
Int. Cl.² B04B *1/12, 7/04, 11/02*
U.S. Cl. 233—19 R **16 Claims**

1. In a centrifugal separator for a mixture which may include oil, water, gas and/or solids, the combination of:

a. housing means;

b. a rotor rotatable in said housing means and having an inner rotor chamber and an outer rotor chamber encircling said inner rotor chamber;

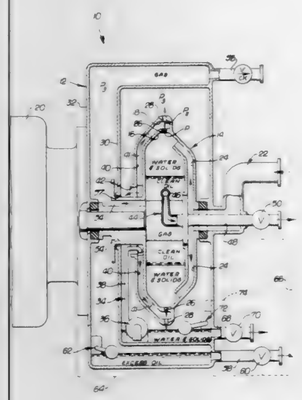
c. mixture delivery means for delivering the mixture to said inner rotor chamber;

d. the periphery of said inner rotor chamber having discharge ports communicating with said outer rotor chamber;

e. the periphery of said outer rotor chamber having discharge ports communicating with said housing means;

f. water supply means for delivering water to said outer rotor chamber at a rate at least equal to the discharge capacity of said discharge ports in said outer rotor chamber at a given rotor speed;

g. an annular weir on the outer rotor chamber for discharging excess water from the outer rotor chamber so that the



outer rotor chamber remains filled to the radius of the weir so as to maintain a substantially constant pressure in said outer rotor chamber adjacent said discharge ports at said given rotor speed; and

g. oil discharge means for removing oil from said inner rotor chamber under pressure.

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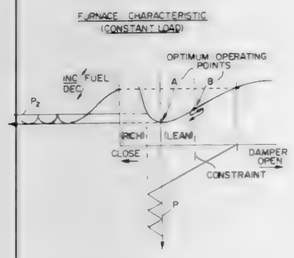
COMBUSTION OPTIMIZER

Billy Ray Slater, Richardson, Tex., assignor to Forney Engineering Company, Carrollton, Tex.

Filed Apr. 30, 1975, Ser. No. 573,279

Int. Cl.² G05D *23/20*; **G05B** *24/02*; **F23N** *1/02*, *5/24*

U.S. Cl. 236—15 B **12 Claims**



1. An improved process control and optimizer for regulating at least one parameter for the process relative to optimal utilization of available energy wherein temperature responsive open loop control means regulates fuel flow and the optimizer is operatively responsive to the fuel flow for regulating air flow for combustion thereof such that the fuel air mixture is minimized in accordance with optimum operating characteristics for a selected temperature of the process wherein the improvement comprises:

means for delivering digital output representative of the change of fuel flow for governing the air mixture in accordance with said optimum characteristic of the process, and means responsive to said output for decreasing air at a selected first relatively slow rate and increasing air at a relatively faster second rate, corresponding to respective reductions and increases in fuel flow about a selected optimum operating point.

3,960,321

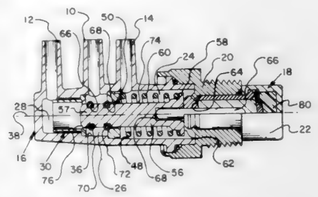
TEMPERATURE RESPONSIVE VALVE

Everett T. Steele, Jr., Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 20, 1975, Ser. No. 542,622

Int. Cl.² G05D *23/12*

U.S. Cl. 236—100 **4 Claims**



1. A temperature responsive valve comprising:

a valve body having open and closed ends, the interior surface means of the valve body defining a chamber between its ends in open communication with the open end of the valve body,

a series of three spaced ports connected to said valve body between its ends, each one of said ports of said series being in communication through the chamber of said valve body with the other ports of said series,

a thermostatic power element secured to the open end of said valve body and having more than one position at predetermined temperature levels for controlling the operation of said valve,

a first valve seat means having an opening and being affixed to certain surface means of the interior surface means of said valve body adjacent its closed end and in the chamber thereof,

a second valve seat means having an opening and being affixed to other surface means of the interior surface means of said valve body in the chamber thereof, said second valve seat means being interposed between and spaced from said first valve seat means and the open end of said valve body,

a valve stem means one end of which is connected to said thermostatic power element and the free end of which protrudes through the opening of said second valve seat means and into the opening of said first valve seat means,

the outer peripheral surface portions of said valve stem means at its free end including first and second annular groove means spaced from each other and interposed between and spaced from said first and second valve seat means,

first and second rings of resilient material disposed in said first and second groove means and being arranged to extend in a direction radially outward of both the outer peripheral surface portions of said valve stem means and the outer radial extent of either one of the openings of said first and second valve means,

one end of said first valve seat means having an annular beveled surface facing in a direction towards the open end of said valve body, and beveled surface being sealingly engaged by said first ring when said power element is in another position at another predetermined temperature level for controlling the operation of said valve, and

spring means interposed between said valve stem means and said second valve seat means for urging said valve stem means in a direction towards the open end of said valve body in order to effect positive sealing engagement between said second ring and said second valve seat means while at the same time to effect disengagement between said first ring and said first valve seat means thereby

establishing open flow intercommunication between one and another ports of said series when said power element is in one position at a predetermined temperature level for controlling the operation of said valve.

3,960,322

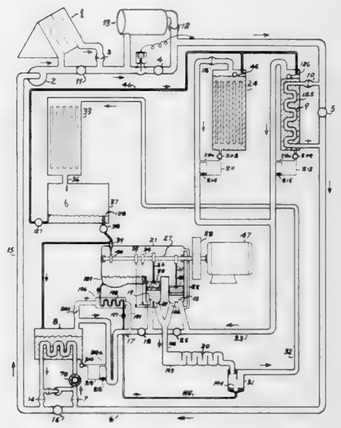
SOLAR HEAT PUMP

John D. Ruff, 206 Birch St., and Phillip R. Wheeler, 209 Pine St., both of Alexandria, Va. 22305

Filed Dec. 17, 1974, Ser. No. 533,630

Int. Cl.² F25B *27/00*

U.S. Cl. 62—2 **13 Claims**



1. In combination, means of circulating a primary flow of circulating liquid, and means of heating the said primary flow of circulating liquid by solar radiation to a sensible temperature greater than the sensible temperature of the outside heat sink, and a boiler means of causing liquid refrigerant to boil to a vapor, and means of controlling the said primary flow of circulating liquid to heat the said boiler means, and means of introducing the said vapor into a cylinder, and the said means of introducing including an inlet valve, and a piston which is moved in the said cylinder by pressure from the said vapor when the said pressure is adequate to cause this movement, and means of connecting the said piston to a crankshaft so that the movement of the said piston under the influence of the said pressure causes rotation of the said crankshaft in the function of a heat engine, and means of exhausting the said vapor from the said cylinder to a condenser cooled by the outside heat sink, and means of injecting liquid refrigerant from the said condenser into the said boiler, and an evaporator in which refrigerant liquid evaporates at a sensible temperature lower than the sensible temperature of the outside heat sink, and means of introducing liquid refrigerant into the said evaporator from the said condenser, and means of coupling the said crankshaft to drive a positive displacement compressor means of drawing refrigerant vapor from the said evaporator, and means of discharging the vapor compressed by the said positive displacement compressor means into the said condenser, and means of circulating a fluid medium to contact the said evaporator so that the said fluid medium receives a cooling effect from the said evaporator, and means of circulating the said fluid medium to cool the inside of a building, and an electric motor means of driving the said crankshaft, and means of automatically controlling the said electric motor means to provide motive power to start the motion of the said function of a heat engine, and means of automatically controlling the said electric motor means to provide motive power to drive the said positive displacement compressor means when the said cooling effect is required to cause cooling of the said inside of a building during times when the sensible temperature in the said boiler means is too low for the said function of a heat engine to provide sufficient power to drive the said compressor means fast enough to provide the said cooling effect in sufficient quantity to keep the said inside of a building cooled to a pre-determined sensible temperature, and valve means of shutting off flow of vapor from the said boiler means to the said cylinder during the said times when the sensible temperature in the said boiler means is too low, and valve means of conducting vapor flow from the said evaporator through the said inlet valve into the said cylinder during the said times when the sensible temperature in the said boiler means is too low, so that the said piston is driven by the said crankshaft to move in the said cylinder in the alternate function of a compressor which assists the said positive displacement compressor means.

7. In combination, means of circulating a primary flow of circulating liquid, and means of heating the said primary flow of circulating liquid by solar radiation to a sensible temperature greater than the sensible temperature of the outside heat sink, and a boiler means of causing liquid refrigerant to boil to a vapor, and means of controlling the said primary flow of circulating liquid to heat the said boiler means, and means of introducing the said vapor into a cylinder, and the said means of introducing including an inlet valve, and a piston which is moved in the said cylinder by pressure from the said vapor when the said pressure is adequate to cause this movement, and means of connecting the said piston to a crankshaft so that the movement of the said piston under the influence of the said pressure causes rotation of the said crankshaft in the function of a heat engine, and the inside of a building maintained at a sensible temperature higher than the sensible temperature of the outside heat sink, and a condenser in which condensing occurs at a sensible temperature higher than the sensible temperature of the said inside of a building, and means of exhausting the said vapor from the said cylinder to the said condenser, and means of injecting liquid refrigerant from the said condenser into the said boiler means, and an evaporator in which refrigerant liquid evaporates at a sensible temperature lower than the sensible temperature of the outside heat sink, and means of transferring heat from the outside heat sink to the said evaporator to provide latent heat of vaporization, and means of introducing liquid refrigerant into the said evaporator from the said condenser, and means of coupling the said crankshaft to drive a positive displacement compressor means of drawing refrigerant vapor from the said evaporator, and means of discharging the vapor compressed by the said positive displacement compressor means into the said condenser, and means of circulating a fluid medium to contact the said condenser so that the said fluid medium receives a heating effect from the said condenser, and means of circulating the said fluid medium to heat the said inside of a building, and an electric motor means of driving the said crankshaft, and means of automatically controlling the said electric motor means to provide motive power to start the motion of the said function of a heat engine, and means of automatically controlling the said electric motor means to provide motive power to drive the said positive displacement compressor means when the said heating effect is required to cause heating of the said inside of a building during times when the sensible temperature in the said boiler means is too low for the said function of a heat engine to provide sufficient power to drive the said compressor means fast enough to provide the said heating effect in sufficient quantity to keep the said inside of a building heated to a pre-determined sensible temperature, and valve means of conducting vapor flow from the said evaporator through the said inlet valve into the said cylinder during the said times when the sensible temperature in the said boiler means is too low, so that the said piston is driven by the said crankshaft to move in the said cylinder in the alternate function of a compressor which assists the said positive displacement compressor means.

3,960,323

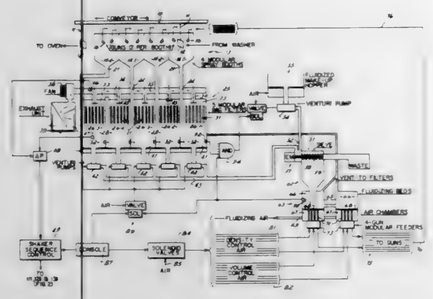
POWDER SPRAY SYSTEM

Lane S. Ducan, Elyria; Simon Z. Tamny, Lorain, and Charles H. Riedy, Lakewood, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Division of Ser. No. 259,591, June 6, 1972, Pat. No. 3,870,375, Continuation-in-part of Ser. No. 194,830, Nov. 2, 1971, Pat. No. 3,746,254. This application Oct. 24, 1974, Ser. No. 517,445

Int. Cl.² B05B *5/02*

U.S. Cl. 239—3 **5 Claims**



1. In an electrostatic powder spray system having an electrostatic spray device which electrostatically charges the powder being sprayed therefrom and having a powder feeder for supplying an air-powder mixture to said spray device, said feeder having an output line connected to said spray device through which said mixture is so supplied, the improvement for removing from the particles of powder electrostatic charge which is opposite from that imposed by said spray device comprising:

an electrical conductor means 75 positioned upstream of said electrostatic spray device adjacent said powder feeder to contact powder passing through said line and electrically biased with respect to said electrostatic spray device so as to discharge said powder with respect to said device before said powder is electrostatically charged at said device.

3,960,324

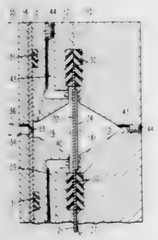
METHOD FOR GENERATION OF MULTIPLE UNIFORM FLUID FILAMENTS

Donald E. Titus, Endicott, and Sherman H. M. Tsao, Apalachin, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 432,260, Jan. 10, 1974, Pat. No. 3,900,162. This application May 29, 1975, Ser. No. 582,065

Int. Cl.² B05B *17/06*

U.S. Cl. 239—4 **6 Claims**



1. The method of generating droplets of fluid comprising the steps of:

producing a set of fluid filaments by forcing a fluid simultaneously through an array of orifices spaced along a fixed plate in a cavity; and

breaking said filaments up into droplets by successively generating a single uniform drop stimulating pressure wave by simultaneous actuation of a plurality of bending elements on a bending member in said cavity.

3,960,325

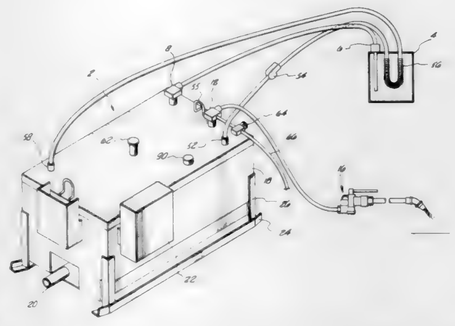
PORTABLE HEATING AND SPRAYING APPARATUS AND METHOD FOR APPLYING HIGHLY VISCOUS COATING MATERIAL

James O. Nienow, West Covina, and Deryl S. Yundt, La Canada, both of Calif., assignors to Roofmaster Inc., Monterey Park, Calif.

Filed Mar. 24, 1975, Ser. No. 561,090

Int. Cl.² B05B *1/24;* **F28F** *7/00, 1/10*

U.S. Cl. 239—13 **23 Claims**



1. A spraying system for spraying cold processing roofing material from a reservoir comprising:

a tank adapted to hold a fluidic heat transfer medium;

means for supplying heat to the tank to heat the heat transfer medium;

a serrated finned heat transfer coil mounted within the tank including a plurality of loop sets of tubing, at least a pair of tubing sets positioned apart by at least one spacer member, the spacer member attached to only one of the set of loops to permit relative movement between the pair of tubing sets;

a pump connected to the reservoir and to one end of the serrated finned heat transfer coil; and

spraying means connected to the other end of the heat transfer coil for distributing the cold processing roofing material to a surface to be coated, the fluidic heat transfer medium substantially surrounding the serrated finned heat transfer coil to effectuate a controlled, even heat transfer to the cold processing roofing material as it is pumped from the reservoir through the serrated finned heat transfer coil to the spraying means.

3,960,326

APPARATUS FOR PAINT APPLICATION

Yoshio Nishiumi, Tokyo, and Yukio Nagasaka, Kawagoe, both of Japan, assignors to Atom Chemical Paint Co., Ltd., Tokyo, Japan

Filed Jan. 6, 1975, Ser. No. 538,966

Claims priority, application Japan, Sept. 5, 1974, 49-106090

Int. Cl.² B05B *3/02*

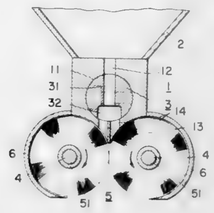
U.S. Cl. 239—214 **5 Claims**

1. An apparatus for applying paint, comprising:

a tank for holding paint;

an elongated paint supply means having inlet passage means at its upper end for receiving paint from said tank, two elongated parallel rows of longitudinally spaced-apart discharge orifices at the lower end of said paint supply means for discharging paint therefrom, said rows being transversely spaced from each other and extending in the longitudinal direction of said paint supply means, and a movable valve located between said inlet passage means and said rows of discharge orifices for controlling flow of paint from said inlet passage means to said discharge orifices;

a pair of parallel, elongated, rotatable, cylindrical, wire brushes disposed directly below and whose axes of rotation extend longitudinally of said paint supply means and said rows of discharge orifices, said brushes being disposed in radially opposed, adjacent relationship and being adapted to be rotated in opposite circumferential directions, the downwardly moving peripheral portions of the brushes being disposed in confronting relationship



and defining a nip between the brushes, said rows of orifices being disposed above said nip and in closely spaced relation to the brushes so that the brushes move circumferentially downwardly and across the orifices whereby paint can be supplied from the orifices to the downwardly moving peripheral portions of the brushes as they are about to enter the nip and thence applied to a surface disposed below said nip;

and a pair of arcuate cover members extending downwardly from said paint supply means and respectively covering the mutually remote, upwardly movable peripheral portions of the brushes, each of said cover members having a sharp edge at the inner lower end thereof, said edge being disposed directly under the lowermost point on its associated brush and in substantially touching relationship therewith to remove paint that sticks to the periphery of its associated wire brush.

3,960,327

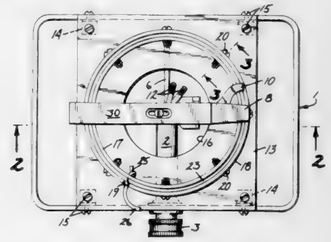
LAWN SPRINKLER PROGRAMMER

Richard A. Olson, 3641 Larchwood Circle, Minnetonka, Minn. 55343

Filed Feb. 6, 1975, Ser. No. 547,486

Int. Cl.² B05B *3/08;* **F16H** *53/00*

U.S. Cl. 239—236 **7 Claims**



1. A programmer for a sprinkler, said sprinkler including, support means, a body rotatively mounted on said support means on a generally vertical axis and having a discharge nozzle, mechanism effecting turning of said body, and a movable discharge guide element mounted on the body for turning movement therewith and movable relative to the body for controlling the elevation of discharge of water from said nozzle; said programmer comprising:

a. a circumferentially extended stationary cam of flexible material having a variable cam surface contour;

b. cam mounting means for mounting said cam on said support means in encompassing relationship to said body and supporting said cam in selected contours of said variable cam surface thereof, said cam mounting means defining an annular channel for reception of said cam, said channel having side walls frictionally engaging and holding said cam therebetween;

c. and a cam follower adapted to be connected to said discharge guide element for movements therewith and engaging said cam to impart elevation control movements to said guide element responsive to turning movements of said body, said cam follower being freely movable in said channel in engagement with said cam.

3,960,328

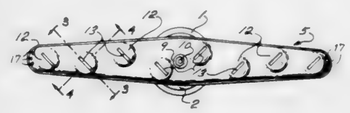
DISHWASHING MACHINE AND ROTARY SPRAYER THEREFOR

Jean Archambault, 500 Francois St., Apt. 207, Nuns' Island, Quebec, Canada

Filed Nov. 18, 1974, Ser. No. 525,029

Int. Cl.² B05B *3/00*

U.S. Cl. 239—264 **7 Claims**



1. A rotary sprayer, for use in a dishwashing machine and the like, comprising a hollow bar rotatable about a rotation axis extending through the longitudinal center thereof, defining a pair of axial walls relative to said rotation axis, said bar having a longitudinal axis extending transversely of said rotation axis, outwardly projecting bulges formed by one of said axial walls, staggered one from the next and in disalignment one from another in the direction of said longitudinal axis, each bulge having a slot at the outer portion thereof, the slots extending substantially parallel one to another on each side of said rotation axis.

3,960,329

METHOD AND APPARATUS FOR PURIFYING AND SEPARATING BEE GLUE

Karl Lund Aagaard, Vestergade 63, 3200 Helsinge, Denmark

Filed Dec. 16, 1974, Ser. No. 532,935

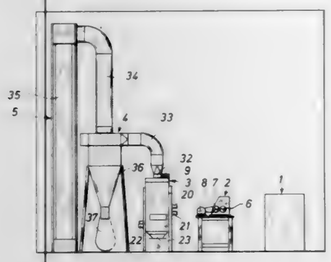
Claims priority, application Luxembourg, Jan. 3, 1974, 69108

Int. Cl.² B02C *21/00*

U.S. Cl. 241—23 **5 Claims**

1. A method for purifying and separating bee glue (propolis) which is derived from beehives, comprising providing raw propolis and storing said propolis at temperatures below −10°C for a period of time sufficient to substantially destroy living organisms and larvae contained in said propolis; allowing the propolis to defrost at temperatures of about 20°C and maintaining said propolis at said temperature to allow the development of viable eggs of said larvae; refreezing said propolis for a period of time sufficient to destroy all viable organisms; crushing said propolis, wherein said propolis is

maintained at a temperature of about 0° during said crushing, to produce grains of propolis having a maximum diameter of



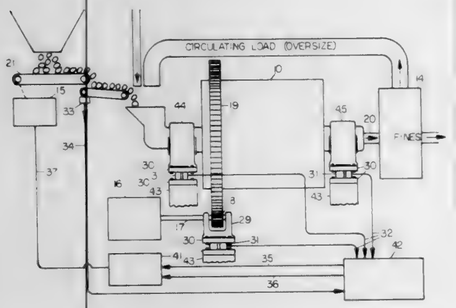
6 mm; sorting and fractionating said crushed propolis, which is maintained at 0°C, according to grain size.

3,960,330

METHOD FOR MAXIMIZING THROUGHPUT IN AN ORE GRINDING SYSTEM

Howard K. Henson, 1134 E. Lester, Tucson, Ariz. 85719

Filed June 21, 1974, Ser. No. 481,539
Int. Cl.² B02C *25/00*
U.S. Cl. 241—30 **5 Claims**



1. A process for maximizing ore throughput and optimizing performance in an ore grinding system comprising the steps of weighing the ore grinding system including the drive means, weighing the new ore input to the ore grinding system, determining an optimum maximum set point weight for the ore grinding system by comparing the weight of the ore grinding system over a plurality of time periods, comparing the weight of the new ore input over a plurality of time periods, determining the ore grinding system weight set point in accordance with the difference in the ore grinding system weights and the new ore feed weights over the plurality of time periods, and regulating said new ore input such as to maintain the ore grinding system at said optimum set point weight.

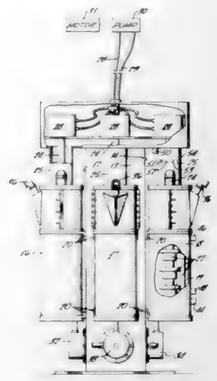
3,960,331

SANDMILL

Edward J. Szkaradek, Santa Ana, Calif., assignor to Morehouse, Industries, Inc., Fullerton, Calif.

Filed Dec. 4, 1974, Ser. No. 529,409
Int. Cl.² B02C *17/02*
U.S. Cl. 241—43 **3 Claims**

1. Sandmilling apparatus comprising:
a central support column having a hollow interior;
a plurality of separate, cylindrical sandmill processing vessels each having an interior cylindrical wall and each separately supported respectively on one of a plurality of sides of the exterior of the column spaced around the column with one side having no vessel thereon and being available for access to the hollow interior of the column;
each said vessel having an inlet and an outlet;
means for continuously pumping material to be processed in the inlet of each vessel, through the vessel, and out the outlet;



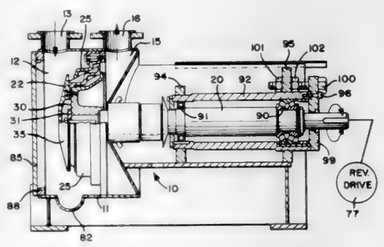
a rotor in each of said vessels with a drive shaft extending outwardly from the vessel; and
means supported on said column for independently driving each of said rotor drive shafts.

3,960,332

DEFIBERING APPARATUS FOR PAPER MAKING STOCK

Peter Seifert, Middletown, Ohio, assignor to The Black Clawson Company, Middletown, Ohio

Filed Oct. 23, 1974, Ser. No. 517,330
Int. Cl.² B02C *7/06, 7/12*
U.S. Cl. 241—46.06 **23 Claims**



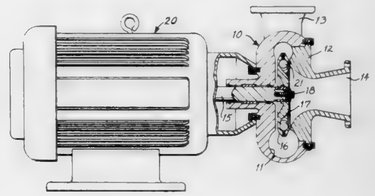
1. Apparatus for defibering liquid slurry stocks, comprising:
a. a housing defining a chamber having an inlet port and an outlet port adjacent opposite ends thereof,
b. an annular stator mounted within said chamber between said ports and having a frusto-conical internal working face with the smaller end thereof adjacent said inlet port,
c. a rotor mounted in said housing for rotation within said stator and having a frusto-conical working face complementary to and aligned within said stator face,
d. each of said working faces having therein at least one circumferential row of angularly spaced pockets separated by axially extending land areas,
e. each of said pockets in said rotor having generally axially extending side walls and a generally radially extending back wall cooperating with portions of said land areas on said rotor face to form a circumferential land,
f. each of said pockets in said stator having generally axially extending side walls and a generally radially extending front wall cooperating with portions of said land areas on said stator face to form a circumferential land, and
g. the axial dimensions of said pockets and of said rotor and stator being of predetermined relationship locating said circumferential lands thereon in axially staggered relation with each other and in radially opposed relation with said stator and rotor pockets respectively to force the stock to travel back and forth between said pockets in flowing from said inlet port to said outlet port.

3,960,333

FLUIDIC MILL

Verle W. Woods, and Jay A. Woods, both of P.O. Box 1016, Yakima, Wash. 98907

Continuation-in-part of Ser. No. 387,795, Aug. 13, 1973, abandoned. This application Dec. 12, 1974, Ser. No. 532,019
Int. Cl.² B02C *15/08*
U.S. Cl. 241—46.15 **9 Claims**



1. A fluidic mill for pumping a fluid material carrying solid particles through the mill and grinding the solid particles as the material is pumped through the mill, comprising:
an annular outer race rotatable about a center axis;
said outer race having two axially spaced annular grinding surfaces inwardly facing the center axis;
a plurality of grinding ball means arranged about the outer race in rolling contact with said grinding surfaces;
means operatively connected to the outer race for rotating the outer race in a desired rotational direction about the center axis;
each of said ball means being mounted to freely rotate in the same direction as the outer race about the center axis;
operative means in open communication through the annular race intermediate the grinding surfaces for permitting passage of material radially outward through the race;
means for directing said fluid material into the mill and directing the fluid material centrifugally outward against the ball means and between the ball means and the grinding surfaces and through the aperture means, thereby retarding the rotational movement of the ball means in the desired rotational direction about the center axis in proportion to the flow rate of the material through the mill, with the centrifugal pressure of the ball means against the grinding surfaces being inversely proportioned to the flow rate of the material through the mill.

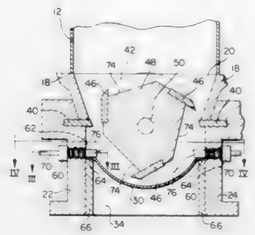
3,960,334

SIZE REDUCTION APPARATUS

Joseph Paul Wudyka, Cumberland, R.I., assignor to Cumberland Engineering Company, Inc., South Attleboro, R.I.

Filed Feb. 24, 1975, Ser. No. 552,662
Int. Cl.² B02C *23/20*
U.S. Cl. 241—60 **10 Claims**

1. Size reduction apparatus comprising, a chamber, a rotor mounted within said chamber for rotation about an axis, means for driving said rotor about said axis, cutting means affixed on said rotor, bed knife means situated for cooperative cutting relationship with said cutting means as said rotor is driven to effect size reduction of material fed into said chamber, screen means forming at least a portion of a boundary of said chamber, said screen means serving to permit discharge from said chamber of said material after reduction thereof to a predetermined size, and means positioned below the axis of



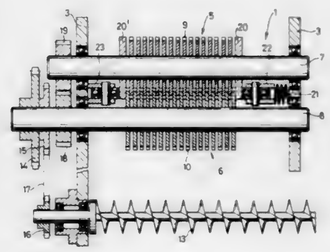
rotation of said rotor for producing a positive fluid flow in said chamber.

3,960,335

COMMINUTION DEVICE FOR SCRAP PLASTICS

Wilhelm Häberle, Industriegelande, Scheer, Wurttemberg, Germany

Continuation of Ser. No. 316,442, Dec. 19, 1972, abandoned. This application Nov. 5, 1974, Ser. No. 520,930
Claims priority, application Germany, Dec. 24, 1971, 2164566
Int. Cl.² B02C *18/14, 18/26*
U.S. Cl. 241—236 **4 Claims**

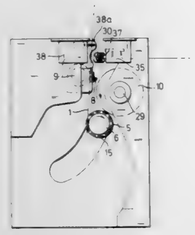


1. A comminution device for the conversion of scraps of plastic such as thermoplastically moldable foils or blow mold particles into a free-flowing, granulated material, said scraps being fed into said device in one direction, said device comprising:
a housing;
a knife and driving shaft assembly including a first shaft journalled for rotation in said housing, and
a first plurality of axially spaced apart knives mounted on said first shaft for rotation together therewith; and
a counterknife assembly including
a second shaft journalled for rotation in said housing, and
a second plurality of axially spaced apart knives mounted on said second shaft for rotation together therewith, the periphery of said first plurality of knives being disposed between and radially inward of the periphery of said second plurality of knives whereby said first and said second plurality of knives are cooperatively associated with each other for cutting the plastic; and
further including a cutting tool and
an impact knife cooperating therewith, said cutting tool and said impact knife being rotatable about an axis that is perpendicular to the feed direction of the foil or blow mold particles.

3,960,336
APPARATUS FOR FORMING A WASTE WINDING ADJACENT A RESERVE WINDING WHEN WINDING A THREAD ONTO A SPOOL

Alfred Tschentscher, Cologne, Germany, assignor to FMN Schuster & Co., Hurth-Efferen, Germany

Filed Apr. 22, 1975, Ser. No. 570,312
Claims priority, application Germany, Apr. 27, 1974, 2420564
Int. Cl.² B65H *54/02*; **D02G** *1/16*
U.S. Cl. 242—18 PW **6 Claims**



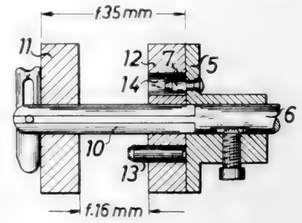
1. An apparatus for initially winding a thread onto a spool core having a thread package winding area, said apparatus comprising:
   a. means for forming a waste winding at an end location of the spool core,
   b. means for forming a reserve winding at said end location adjacent said waste winding, and
   c. a traversing device for directing the thread from the reserve winding to the winding area along the spool core to form a thread package,
   d. said winding forming means including a rotatably mounted worm disposed between the end location and the traversing device and a drive means for rotating said worm,
   e. said worm being disposed for tangential contact with the thread and being effective to move the thread from an inlet side of the worm to an outlet side thereof,
   f. said worm including a predetermined number of circumferential grooves having a relatively small pitch extending from the inlet side toward the outlet side and immediately thereafter at least one further circumferential groove having a larger pitch,
   g. said small pitch circumferential grooves being effective to form said waste winding immediately preceding the formation of said reserve winding formed while the thread moves through the larger pitch circumferential groove until the thread runs off the outlet side of the worm body.

3,960,337
OFFSET DRIVE PIN ADAPTORS FOR FILM PROJECTORS, FILM SPOOLS, AND 35MM TO 16MM CONVERTERS

Karl-Heinz Schroeder, Selent, and Herbert Tuemmel, Kiel, both of Germany, assignors to Zeiss Ikon AG, Germany

Filed Oct. 1, 1974, Ser. No. 510,895
Claims priority, application Germany, Nov. 22, 1973, 2358224
Int. Cl.² B65H *17/02*, *75/18*
U.S. Cl. 242—68.3 **8 Claims**

1. A motion picture film spool drive comprising:
   a substantially-square spindle having an axis, four corners, four sides, and an end;
   a flange affixed to said spindle at said end;
   a first drive pin aperture in said flange parallel to but offset from said spindle axis on a radius of the flange passing through one of said spindle corners;
   a second drive pin aperture in said flange parallel to but offset from said spindle axis on a radius of the flange passing normal to one of said spindle sides; and

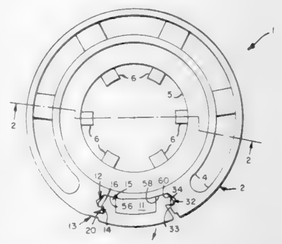


   a drive pin selectively mountable in either of said first or second drive pin apertures and projecting from said flange parallel to said spindle for driving a spool mounted on said spindle whether said spool has a drive pin receptacle adjacent a corner of its spindle receptacle or adjacent a side thereof.

3,960,338
MAGNETIC TAPE CASSETTE HUB WITH TAPE RETENTION MEANS

Bruce D. Shapley, Cupertino, Calif., assignor to K/Tronic Inc., Santa Clara, Calif.

Filed Feb. 7, 1975, Ser. No. 547,967
Int. Cl.² B65H *75/28*
U.S. Cl. 242—74.1 **7 Claims**



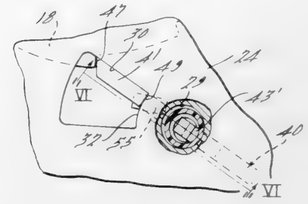
1. In a tape hub having a hub body member and a latching member with means for latching the latching member to said body member for securing tape in a cavity in said body member, the improvement comprising:
   a first member having a facing surface protruding from said body member;
   a second member having a facing surface protruding from said latching member;
   a means for positioning said first and said second members in an overlapping relationship; and
   a means applying a tensile force to said second member protruding from said latching member for drawing together said facing surface of said second member and said facing surface of said first member when said members are in said overlapping relationship, said drawing together serving to retain tape between said facing surfaces.

3,960,339
SEAT BELT RETRACTOR

Robert C. Fisher, 580 E. Long Lake Road, Bloomfield, Mich. 48013

Filed Aug. 26, 1974, Ser. No. 500,582
Int. Cl.² A62B *35/00*
U.S. Cl. 242—107.4 R **8 Claims**

1. A safety belt retractor of the type having a frame, a spool rotatable in the frame, a ratchet wheel rotatable with the spool, a pawl having a tooth portion engageable with but biased away from the ratchet wheel, and bearing means rockably supporting the pawl in the frame, characterized by portions forming a part of said bearing means yieldable in a direction radial to the axis of rocking movement of the pawl to

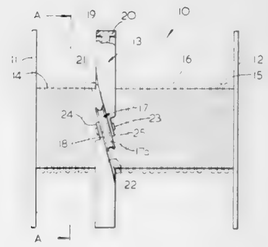


permit movement of the pawl in such radial direction, and cooperating abutment portions on the pawl and frame spaced from the bearing means and engageable with each other in response to such radial movement of the pawl to limit such movement and transmit to the frame radial loading imposed on the pawl by the ratchet wheel.

3,960,340
WINCH DRUM PROVIDED WITH SIDE FLANGES AND A SEPARATE FLANGE

Erling Naas, Brattvag, Norway, assignor to A/S Hydraulik Brattvaag, Norway

Filed Nov. 13, 1974, Ser. No. 523,457
Claims priority, application Norway, Nov. 13, 1973, 4342/73
Int. Cl.² B65H *75/18*
U.S. Cl. 242—117 **3 Claims**

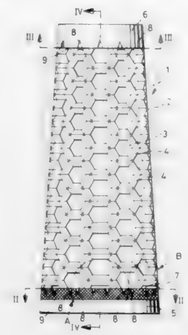


1. In an elongated winch drum having flanges at opposite ends thereof, and a further flange at a location intermediate said opposite ends for separating said drum into two drum segments, a device for guiding hawser during the transfer thereof from one drum segment to the other, said device comprising a disc member mounted on said further flange, there being a slot formed in said further flange at an angle with respect to the main plane of the separating flange, said disc member being received in said slot, said disc member having a grooved edge in which the hawser moves during the transfer thereof.

3,960,341
SPOOL CORE FOR THE WET TREATMENT OF THREADS AND YARNS

Adam Thelen, Laurensberg, Germany, assignor to Plastic-Fabrik Elbenia GmbH & Co., Inc., Pontsheide, Germany

Filed Oct. 17, 1974, Ser. No. 515,441
Claims priority, application Germany, Dec. 1, 1973, 2360042
Int. Cl.² B65H *75/20*
U.S. Cl. 242—118.1 **4 Claims**



1. A spool core of unitary construction, manufactured, for example, from injection-molded thermoplastic or thermosetting synthetic material, and adapted for the wet treatment, especially the dyeing, of thread or yarn spools, the spool core comprising:
   a hollow tubular elongated shell constituting a major central length portion of the spool core;
   a foot collar and a head collar adjoining said shell on both axial ends and constituting respective upper and lower axial end portions of the spool core;
   a series of radial perforations or cell openings extending through the wall of said shell in a honeycomb pattern so as to reduce the remaining intermediate shell wall portions to a series of intersecting ribs, the intersecting ribs of the spool core shell having a generally triangular cross section, the triangle of said cross section having its base oriented to face radially inwardly, so that its tip faces outwardly, thereby defining the outer diameter of the shell with a honeycomb pattern of narrow ridges; said cell openings widening radially outwardly toward the outer diameter of the spool core shell; and
   on at least its axially extending constituent ribs near a collar, means for axially positioning the innermost yarn layers wound thereonto.

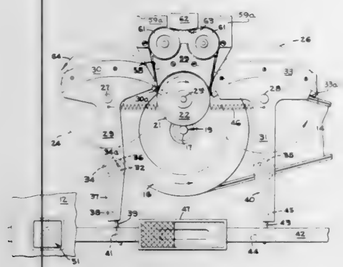
3,960,342
TAPE TRANSPORT APPARATUS

Marcel Furst, Sunnyvale, Calif., assignor to American Videonetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 297,499, Oct. 13, 1972, abandoned. This application Oct. 24, 1974, Ser. No. 517,497
Int. Cl.² G03B *1/04*; **G11B** *15/32*
U.S. Cl. 242—192 **2 Claims**

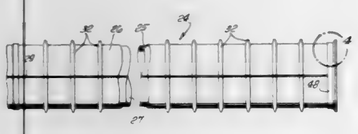
2. In a tape transport apparatus of the type employing a length of pliable record tape wrapped to form supply and take-up rolls, a resilient annular rotating drive body disposed to ride against and drive both the take-up roll and the supply roll, first and second carriage means serving to respectively support said supply and take-up rolls to advance and retreat relative to said body, spring means coupled between and common to both said first and second carriages to draw said carriages together toward the drive body with substantially equal forces applied to each carriage, a first force differential spring of variable force disposed to engage a portion of said

first carriage to directly add its own force to that force of the first named spring means acting upon said first carriage and the roll when feeding the tape in a first direction, a second force differential spring of variable force disposed to engage a portion of said second carriage to directly add its own force to that force of the first named spring means acting upon said second carriage and the roll thereof when feeding the tape in



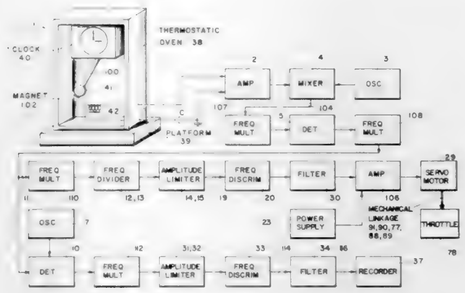
a second direction, and a movable control member selectively translatable between advanced and retracted positions to engage one or the other of said first and second force differential springs in a manner to inhibit the applied force thereof from acting upon its associated carriage and the roll thereof to cause one or the other of said rolls to be urged against said body with a force different from that force urging the other roll against said body.

3,960,343
DOUBLE WALL DUCTING
Harold R. Thompson, Simi Valley, and Ralph A. Anderson, Burbank, both of Calif., assignors to SSP Products, Inc., Burbank, Calif.
Filed Oct. 29, 1974, Ser. No. 518,377
Int. Cl.² B64D *47/00*
U.S. Cl. 244—1 R **18 Claims**



1. For use in jet aircraft, a lightweight, high-strength duct comprising:
two thin annular sheet metal tubes, the tube metals being equivalents, one of said tubes being snugly fitted within the other,
said tubes having substantially continuous cylindrical wall surfaces,
the inner surface of the outer tube being in substantially coextensive contact with the outer surface of the inner tube,
longitudinally spaced stiffening members on the outer tube, said stiffening members being spaced by relatively long expanses of cylindrical wall surface, and
venting means in one of the tubes to prevent pressure differentials between the two tubes at various altitudes and temperatures,
said duct having approximately the same strength as a single wall tube of an equivalent metal weighing twice as much.

3,960,344
PRECISION MOBILE GRAVITY SURVEY AND GUIDANCE SYSTEM
Virgil H. Dugan, 1614 E. 47th St., Chattanooga, Tenn. 37407
Filed July 29, 1974, Ser. No. 492,789
Int. Cl.² B64C *13/18*
U.S. Cl. 244—182 **8 Claims**

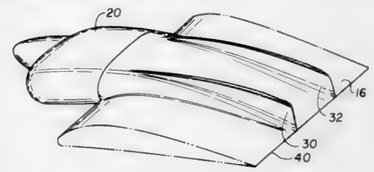


1. An apparatus to precision gauge the resultant velocity between the earth spin velocity and an airplane's in air ground speed and to cause a servo- induction motor to automatically vary a speed control for the airplane to maintain said essentially constant the resultant velocity, said airplane being maintained at a practically fixed radial distance to the center of the earth, once the airplane has been positioned in flight; ensuring that the Coriolis force limitation on precision mobile gravity surveys will be substantially overcome; the apparatus further comprising a powered pendulum clock mounted on a stabilized platform and being temperature stabilized, for driving a series of cascaded frequency multipliers being interspersed with amplifiers; said pendulum oscillating at a clock frequency dependent upon said resultant velocity; the apparatus further comprising a guidance channel discriminator having an input connected to said series of cascaded frequency multipliers, to synthesize an error signal in response to variations in said clock frequency due to variations in said resultant velocity, to cause a servo-amplifier to control a servo-induction motor so that said motor manipulates said airplane speed control to hold said resultant velocity substantially constant; said apparatus furthur including a power supply having a power output connected to a two-triode push-pull amplifier, which triodes are biased to current cutoff; a first output of said guidance channel discriminator being connected to the grid of a first one of said triodes and a second output of said guidance channel discriminator being connected to the grid of a second one of said triodes; a signal output from said guidance channel discriminator to one of said triode grids causing the generation of an error signal to said induction motor to correct for a variation in said resultant velocity of the airplane.

3,960,345
MEANS TO REDUCE AND/OR ELIMINATE VORTICES, CAUSED BY WING BODY COMBINATIONS
Joseph Lippert, Jr., Locust Valley, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed May 16, 1975, Ser. No. 578,199
Int. Cl.² B64C *3/58, 7/02*
U.S. Cl. 244—130 **10 Claims**

5. A wing-body combination comprising:
a wing;
a body attached to said wing, said body having a forward portion extending ahead of said wing; and

channel forming means on an upper surface of said body beginning at the leading edge of said wing and ending at



a trailing edge of said wing, said means being along spaced sides of said body.

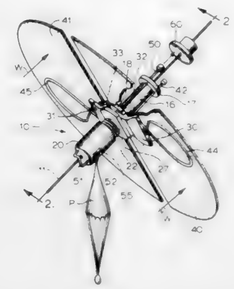
3,960,346
KITE
Jin Sul Cho, G-3040 W. Bristol Road, Flint, Mich. 48507
Filed Jan. 27, 1975, Ser. No. 544,046
Int. Cl.² B64C *31/06*
U.S. Cl. 244—155 A **8 Claims**



1. A kite, comprising:
a. a lightweight sheet material,
b. a support member having the sheet material secured thereto, wherein the support member has a string retaining slot formed at at least one end thereof and
c. means for balancing the weight of the kite comprising a threaded member threadably rotatable positionable on the support member.

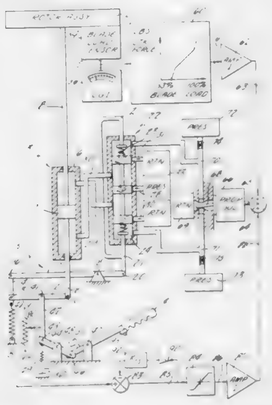
3,960,347
ATTACHMENT FOR KITES AND THE LIKE
Gerd O. Stritzke, 15 W. 473 Jefferson St., Bensenville, Ill. 60106
Continuation of Ser. No. 423,276, Dec. 10, 1973, abandoned. This application Apr. 3, 1975, Ser. No. 564,844
Int. Cl.² B64C *31/06*
U.S. Cl. 244—155 R **2 Claims**

1. A device for climbing a kite string and for subsequently descending the string, comprising in combination:
a longitudinally extending member having a longitudinal opening therethrough adapted to receive a kite string;
a pair of wings hingedly secured on said member;
said wings adapted to be releasably secured in a position substantially transverse to the axis of the string and to be folded to a position substantially parallel to the axis of the string;
means for releasably locking said wings in said transverse position during ascent of the device on the kite string;
means for inhibiting the rotation of said device about the kite string during ascent, said means comprising each of said wings being formed in a semi-circular shape whereby together in the transverse position they form a substantially aerodynamically stable circular wing area;
means for releasing said wings from said transverse position upon the engagement of a stop on the kite string; and



means including a spring member mounted substantially coaxial to said longitudinal opening for holding said wings in said transverse position during the ascent and in said parallel folded position during the descent of the device on the kite string.

3,960,348
AERODYNAMIC SURFACE CONTROL FEEL AUGMENTATION SYSTEM
Donald W. Fowler, West Haven, and Sean J. O'Connor, Bristol, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Aug. 4, 1975, Ser. No. 601,815
Int. Cl.² B64C *13/46*
U.S. Cl. 244—83 D **3 Claims**



1. A system for positioning a control surface of an aircraft comprising:
means for sensing the aerodynamic loading of at least one control surface and providing a load signal in response thereto;
a hydraulic actuator, including a piston for positioning the control surface, and having a servo valve for positioning said piston in response to fluid pressure;
a control lever;
mechanical linkage interconnected between said control lever, said servo valve and said piston in a fashion such that the motion of said control lever to a given position causes said mechanical linkage to actuate said servo valve which drives said piston to reposition the control surface, and to return said mechanical linkage to a null position to deactivate said servo;

auxiliary valve means responsive to said load signal for actuating said servo valve independently of said mechanical linkage; and

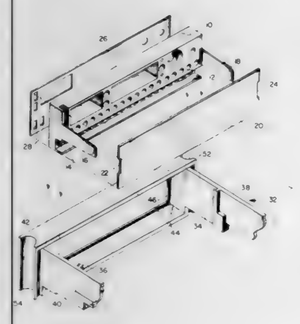
means connected to said mechanical linkage to induce a force into said mechanical linkage in response to motion of said piston actuated by said auxiliary valve, said force being imparted to said control lever in such a manner as to move said control lever in a direction to reduce the aerodynamic loading of the control surface and thereby to reduce the magnitude of said load signal.

3,960,349

INTEGRAL, SELF RETAINING READ-OUT BLOCK

Edward A. Schierholz, Littleton, and Frank Nardi, Englewood, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 3, 1975, Ser. No. 592,772
Int. Cl.² H05K *5/00*; **H02B** *1/62*
U.S. Cl. 248—27 R **5 Claims**



1. A self retaining read-out block for effecting a secure mounting of said block and its associated front panel on a module chassis, comprising two flexible strips each forming a separate integral extendable rear side portion of said block, a front portion of said chassis having a wall surface that forms a recess therein and a marginal end portion extending inwardly from said surface, a stop formed on each one of two opposite side portions of said chassis, each of said flexible strips being adapted for movement into a bowed shaped position and into spring biased engagement with a different one of said stops to thereby force said front panel and block into stacked spring biased mounting engagement with said marginal end portion of said chassis.

3,960,350

SHOCK-RESISTING HANGER SYSTEMS AND SUSPENDED ASSEMBLIES

Louis V. Tardoskegyi, Montreal, Canada, assignor to Electrovert Ltd., Montreal, Canada

Filed Nov. 27, 1973, Ser. No. 419,376
Int. Cl.² F16L *3/00*
U.S. Cl. 248—54 R **9 Claims**

1. A shock-resisting hanger system which comprises:

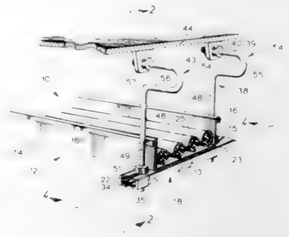
a support member intended to be disposed in supporting relationship to a structure to be suspended by said hanger system and including a terminally slotted web including mutually spaced apart flanges defining an open ended slot, opposed edges of said mutually spaced apart flanges at an end of said support member being terminally and upwardly upset; and

a hanger in turn comprising a rod having:

a substantially straight leg removably received in said slot inwardly of said end portions of said flanges and having an upper end and a lower free end;

upper and lower mutually spaced apart locking members on said leg adjacent the free end thereof and receiving said support member therebetween, at least one of said locking members being axially movable along said leg to detachably secure said support member to said leg;

an intermediate shock-resisting portion comprising a generally horizontal U-shaped element having a lower limb extending annularly away from the upper end of said leg,



an upper limb spaced from said lower limb and a curved base web merging smoothly into said upper and lower limbs;

an arm comprising an integral extension of the upper limb of the intermediate portion and adapted to be received in an opening in an overhead support; and

means on said upper arm for detachably securing said arm to said overhead support.

3,960,351

REFUSE DEVICES

Chris Coetzee, 199 Riverton Ave., Clubview, Verwoerdburg 0140, South Africa

Continuation-in-part of Ser. No. 411,256, Oct. 31, 1973, abandoned. This application Oct. 10, 1974, Ser. No. 513,589
Int. Cl.² A47G *29/06*; **B65F** *1/06*
U.S. Cl. 248—101 **4 Claims**

1. Supporting device for a disposable refuse pocket of a flexible material having an open mouth, said supporting device comprising a supporting frame adapted for the releasable attachment of the edge of the mouth of the pocket, said supporting frame comprising a first, stationary supporting member and a second movable supporting member, each of the supporting members comprises a pair of arms and an interconnecting cross strut, said cross struts being adapted for the attachment thereto of a part of the mouth of the pocket, corresponding arms of the two supporting members being hinged to one another about a common hinge axis remote from and parallel to the cross struts, said movable supporting member being movable towards and away from the stationary supporting member between an open and a closed position, such that in the closed position the struts are generally parallel and in engagement, and in the open position they are generally parallel and spaced apart, the cross struts respectively connecting the upper ends of the arms of both the stationary and the movable supporting members, a third cross strut interconnecting the arms of the movable supporting member to provide a pedal for the movable supporting member, a foot member affixed to each of the arms of the stationary supporting member, a fourth cross strut interconnecting the foot members to provide a base, a substantially rectilinear elongate spring element fixed to the fourth cross strut and bearing against the third cross strut to provide a spring bias against movement of the movable supporting member towards its open position, each supporting member including at least one clamp adapted to clamp portion of the mouth of the pocket when that portion of the mouth has been folded over the cross strut of the supporting member, the arms of the movable supporting member each being elbow shaped and pivoted at one end with the stationary supporting member, the third

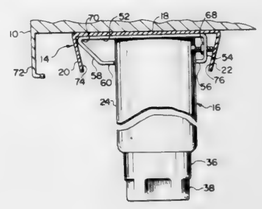
cross strut being fixed to the arms of the movable member near the apexes of the elbows.

3,960,352

LEG ASSEMBLIES FOR CABINETS

Robert F. Plattner, Spring Lake; Raymond J. Arend, and John A. Verberkmoes, both of Grand Haven, all of Mich., assignors to Bastian-Blessing, Grand Haven, Mich.

Filed June 10, 1974, Ser. No. 477,618
Int. Cl.² F16M *13/00*
U.S. Cl. 248—188 **4 Claims**



1. A leg support assembly for cabinets and the like comprising:

an elongated channel member secured on the underside of said cabinet;

said channel member having a planar top wall and inwardly inclined depending edge flanges therealong defining camming surfaces along a downwardly facing channel opening that is narrower than said top wall;

said edge flanges of said channel member defining opposing camming surfaces and opposing inside oblique acute angle corners along the junctures of the edge flanges with said top inside wall;

a leg assembly having a tubular leg member with a planar top end plate affixed thereto;

said top end plate being wider than said tubular leg member and defining an opposite pair of edges of a greater width between them than the opening between the edge flanges of said channel member;

one of said edges of said top end plate being disposed within said channel opening engaging in the inside acute angle corner defined by one of said edge flanges within said channel opening;

the other of said edges of said top end plate having a depending flange therealong

positioned in laterally spaced relationship from the other inside acute angle corner with said leg assembly having an overall width of less than the distance between one inside acute angle corner and the edge of said opening remote therefrom and further positioned with said top end plate flush against the top inside wall of said channel member; and

adjustable locking means disposed at an acute angle to the camming surface of the other edge flange adjusted towards said other acute angle corner to lock said leg assembly within said channel opening.

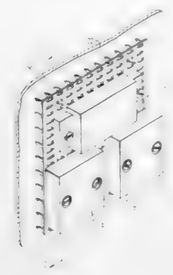
3,960,353

ELECTRICAL COMPONENT MOUNTING PANEL

Roy B. Leutwyler, Miami, Fla., assignor to Automated Building Components, Inc., Miami, Fla.

Filed Feb. 10, 1975, Ser. No. 548,730
Int. Cl.² A47F *5/00*
U.S. Cl. 248—309 R **4 Claims**

1. An assemblage comprising an electrical component mounting panel of sheet metal having a plurality of teeth struck therefrom to extend in a generally normal direction to one side of the plate and leaving a plurality of slots in said plate from which said teeth are struck, an electrical component, and means for securing said electrical component to said plate including a screw engaging said component and threadedly received in one of the slots in said plate, a backing panel,



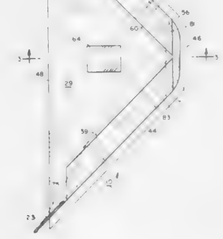
said plate being disposed against said backing panel with the tips of said teeth bearing against said backing panel, and means for securing said plate to said backing panel including screws threadedly engageable in said slots.

3,960,354

CORNER PROTECTOR

Wayne L. Simikoski, 3504 S. Mozart, Chicago, Ill. 60632

Filed Jan. 6, 1975, Ser. No. 538,620
Int. Cl.² A47B *95/00*
U.S. Cl. 248—345.1 **7 Claims**

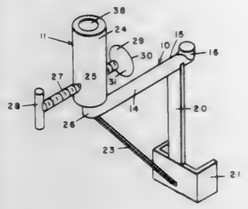


1. A corner protector adapted to extend over a corner portion of an object having upper and vertical surfaces, comprising: an upper plate composed of impact-absorbing material and a depending skirt portion composed of impact-absorbing material for overlying respectively the upper and vertical surfaces of the corner portion of the object for protection purposes, said skirt portion having a pair of side walls and having a smoothly contoured front wall joining said pair of side walls, said side walls having inner portions adapted to engage said vertical surfaces, said skirt portion having an inner front wall portion joining the side wall inner portions, said inner front wall portion being disposed substantially rearwardly of an imaginary intersection of the planes of said side walls to accommodate said corner portion, means for attaching releasably said plate and said skirt to the object to be protected, and a pair of elongated blocks fixed to the plate and extending along and engaging the inner portions of the side walls to serve as spacers for accommodating other differently-shaped corner portions.

3,960,355
SCAFFOLD SUPPORTING WALER BRACKET

Harry A. Prichard, Jr., deceased, late of King County, Wash., and by Amelia A. Prichard, 29621 - 20th Ave., South, Federal Way, Wash.

Filed July 11, 1974, Ser. No. 487,675
Int. Cl.² E04G *17/14*
U.S. Cl. 249—189 **3 Claims**



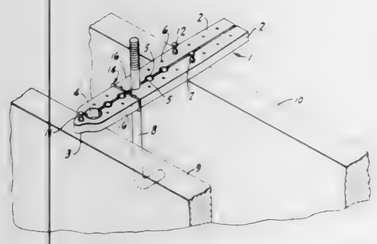
1. In a form structure for concrete having a plurality of spaced, aligned vertical prismoidal metal studs, each with holes spaced along its vertical medial centerline, ascaffold supporting waler bracket configured to be releasably supported by a metal stud, comprising, in combination:

an elongate U-shaped support arm having a shorter perpendicularly projecting fastening arm at the inner stud end and a longer perpendicularly projecting cylindrical upright at the outer end with a bracket arm structurally depending from the support arm at a spaced distance from the shorter fastening arm, the bracket arm having a U-shaped bracket in its lowermost portion to fit about the body of a supporting stud when the fastening arm is fastened thereon, and an angle support communicating between the bracket and the outer part of the support arm, the cylindrical upright defining a medial threaded hole aligned parallel with the support arm and threadedly carrying a clamp rod, having handle means at its outer end and engaging means on its inner end to engage scaffold boards carried on the support arm to fasten them against the outer surface of a supporting stud, the cylindrical upright having a vertical medial hole extending above said clamp rod a distance sufficient to releasably receive and support vertical elements adapted to aid in forming a guard rail.

3,960,356
ANCHOR BOLT HOLDER

John H. Adams, 1801 21st Ave., Kingsburg, Calif. 93631

Filed Oct. 24, 1974, Ser. No. 517,586
Int. Cl.² B28B *23/00*
U.S. Cl. 249—205 **3 Claims**

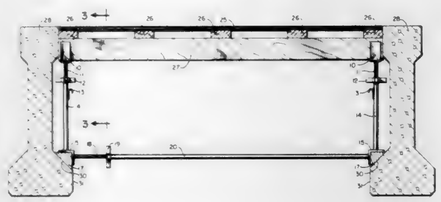


1. A holder for a structural element to be partially embedded in a fixed position in concrete during pouring of concrete in a pre-erected form comprising at least spaced-apart form boards; the holder comprising a generally fork-shaped body having a pair of elongated side-by-side legs dimensioned so as to span a space between spaced-apart form boards and adapted for the reception of a structural element therebetween, means connecting the legs at one end for movement of the legs toward each other whereby to clampingly engage and support a structural element therebetween, and means including at least a pre-formed hole in each of said legs for removably securing the legs of the body in fixed spanning relation to at least spaced-apart form boards with the legs maintained in clamping engagement with a structural element to be embedded whereby said securing means maintains said holder normally fixed against significant movement relative to at least spaced-apart form boards; said connecting means being a head integral with the legs; and said securing means comprising a form-penetrating nail extending through a pre-formed hole in the head and form-penetrating nails extending through pre-formed holes in the legs.

3,960,357
FORM SUPPORT MEANS FOR USE WITH PERFORMED GIRDERS

William S. Honea, Jr., Kenner, La., assignor to T. L. James Company, Inc., Kenner, La.

Filed Feb. 20, 1974, Ser. No. 444,142
Int. Cl.² E04G *17/18*
U.S. Cl. 249—211 **7 Claims**



1. A deck form supporting system component for use with a deck forming system including horizontally disposed forming members and floor forms placed above the forming members located between two supporting girders, each of the girders having a lower portion which has a horizontal component to it by being either slanted or horizontally disposed, said component comprising:

two opposed, vertical support assemblies including vertical length means for varying their length to a distance of the order of the distance from the top of one of such supporting girders to its lower portion;

a horizontal support assembly disposed between and in juxtaposition to said opposed vertical support assemblies including horizontal length means for varying its length to a distance of the order of the separation distance between the lower portions of such supportng girders;

two "L" shaped bracket means, one each interconnected between the bottoms of each of said vertical support assemblies and the adjacent end of said horizontal support assembly, for connecting them together at right angles;

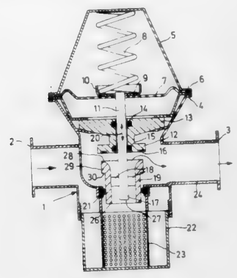
dual wedge means placed at the apex of said "L" shaped bracket means for supporting and positioning said "L" shaped bracket means on such horizontal component of such lower portion of such two supporting girders; and

bracing means for supporting at opposite ends thereof one of such horizontally disposed forming members, said bracing means being connected to the top of each of said vertical support assemblies, whereby the deck forming system can be supported between the supporting girders by being supported on their lower portions by said bracing means through said vertical support assemblies, said bracket means and said wedge means, which are held apart by said horizontal support assembly.

3,960,358
PRESSURE REDUCER

Rudolf Vollmer, 23 Friedrich Holderlinstrasse, and Bernhard W. Braukmann, 1 Am Rosenberg, both of Mosbach 695, Germany

Filed Feb. 11, 1975, Ser. No. 548,909
Int. Cl.² F16K *31/145*
U.S. Cl. 251—61.5 **7 Claims**



1. A pressure reducer for fluid flow consisting of a housing having an inlet and an outlet, said housing having an internal valve disc, a biased resilient diaphragm exterior of said valve disc, a movable valve stem extending into said housing through said valve disc in sealed relationship thereto, one end of said valve stem being secured to said diaphragm opposed to the bias, the other end being located in said inlet, a movable tubular member having one end engageable with said valve disc, the other end of said tubular member extending into said inlet in sealing engagement thereto, said other end of said tubular member being secured to said other end of said valve stem, the surface of said one end of said tubular member which is subjected to fluid pressure being equivalent to the combined surfaces of said other end of said tubular member and connected valve stem which are subjected to the opposed fluid pressure caused by flow into said inlet.

3,960,359
STRETCHING SCREW

Bo Knut Lennart Svahn, Partille, and Lars Gustav Vilhelm Wersen, Goteborg, both of Sweden, assignors to J. Mustad AB, Sweden

Filed Feb. 1, 1974, Ser. No. 438,764
Claims priority, application Sweden, July 11, 1973, 7309714
Int. Cl.² B66F *3/08*; **F16B** *7/06*; **F16G** *11/12*
U.S. Cl. 254—67 **1 Claim**

1. A turnbuckle comprising a first attachment section which comprises a tube having a non-round cross-sectional configuration;

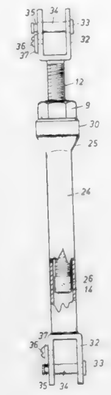
a second attachment section;

a threaded element disposed to enable displacing said sections relative to said element and thereby relative to one another, said threaded element being rotationally mounted in said first attachment section and having a threaded aperture passing through said threaded element, said second attachment section having a threaded portion engaged in said threaded aperture;

stop means on said second attachment section for preventing turning movement of said second attachment section relative to said first attachment section upon displacement of said first and said second attachment sections relative to one another, said stop means having a length essentially agreeing with a maximum internal width dimension of said tube; and

a U-shaped loop on an end of said tube, said loop having legs and having apertures across the legs of said loop;

a bolt passing through said apertures and having a free, generally cylindrical end portion with a flat recess thereon;



a non-round locking disc, and

a screw securing said locking disc to said U-shaped loop adjacent said bolt, said locking disc engaging said recess on said bolt, said locking disc being turnable around said screw and displaceable from its engagement with said recess upon loosening of said screw.

3,960,360
INTERNALLY PRESSURIZED LOAD SUPPORTING MAST

Thomas L. Elliston, Hurst, Tex., assignor to Thomas L. Elliston, Fort Worth, Tex.

Filed June 27, 1972, Ser. No. 266,630
Int. Cl.² B66C *23/60*
U.S. Cl. 254—139.1 **58 Claims**



21. A workover rig comprising:

a mast structure having at least a pair of vertical leg members,

a cross head supported on said leg members at a predetermined elevation,

first and second crown pulleys supported on the upper part of said mast structure,

first and second base pulleys supported on the lower part of said mast structure,

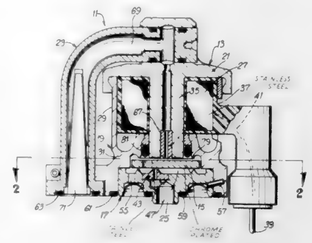
a traveling block adapted to lower or raise a load, said block being vertically reciprocable along said leg members,
a hydraulic actuator having a piston rod rigidly secured at the cross head and arranged such that the cylinder housing will be moved downwardly along the mast when pressurized to place the piston rod in compression,
a first pair of traveling pulleys rotatable about a first trunnion mounted on the cylinder housing adjacent the bearing end of the cylinder,
a second pair of traveling pulleys rotatable about a second trunnion oppositely aligned with said first trunnion,
a first cable system cooperating with said first base, crown, and pair of traveling pulleys in a double purchase arrangement and being secured to said traveling block,
a second cable system parallel to said first system cooperating with said second base, crown, and pair of traveling pulleys in a double purchase arrangement and being secured to said traveling block, whereby said actuator may be selectively pressurized to operate said hoist means and whereby part of the lift load imposed on the mast is opposed by the reaction load from said actuator at said cross head.

33. A hoist apparatus comprising:
a mast structure;
traveling sheave means movable along the mast structure;
crown sheave means mounted on the upper end of the mast structure;
cable means secured at one end to the upper end of the mast structure and passing first around the traveling sheave means and then around the crown sheave means;
lift means secured to the other end of the cable means; and
a linear actuator interconnecting the upper end of the mast structure and the traveling sheave means for applying a force between the upper end of the mast structure and the traveling sheave means for forcing the traveling sheave means downwardly to thereby raise the lift means.

48. A system for applying a variable force to an object comprising:
a support structure;
means associated with the support structure for applying the force to the object with a variable resulting force applied to the support structure;
the support structure having at least one hollow structural member which is subjected to a compressive load by the variable resulting force, the hollow structural member being capable of confining hydraulic fluid; and
means for applying hydraulic fluid to the hollow structural member having a pressure proportional to the variable resulting force whereby the hydraulic fluid will produce a tension force in the hollow structural member tending to at least partially reduce the compressive load on the hollow structural member.

3,960,361
SOLENOID VALVE
Ray A. York, Villa Park, Calif., assignor to Bertea Corporation, Irvine, Calif.
Filed Mar. 14, 1975, Ser. No. 558,441
Int. Cl.² F16K *11/02, 31/06*
U.S. Cl. 251—141 **13 Claims**

1. A valve comprising:
a valve body having a chamber therein;
first and second passages in said valve body leading to said chamber;
means defining a valve seat in said chamber, said first passage terminating in a first port substantially at said valve seat;
first means in said chamber substantially circumscribing said valve seat for protecting the valve seat;
a valve member having a first position in which it engages the valve seat to block flow through said first port, said valve member including magnetic material;
said first and second passages being adapted to lead to regions of first and second fluid pressures, respectively, with said second pressure being greater than said first pressure whereby a resultant differential fluid force can act on said valve member and tend to maintain said valve member in said first position;
electromagnetic means carried by said valve body and energizable to apply a resultant electromagnetic force to the valve member, said resultant electromagnetic force acting in a direction to move the valve member out of said first position;



means defining a first fulcrum in said chamber;
said valve member being pivotable on said first fulcrum out of said first position in a first stage pivoting movement whereby communication between said chamber and said passage through said first port is established;
the resultant electromagnetic force being further from said first fulcrum than the resultant fluid force whereby said first stage pivoting movement is carried out with mechanical advantage; and
said valve member having a surface engageable with said valve seat, said surface being of nonmagnetic material and being harder than the magnetic material of said valve member.

3,960,362
HOIST CONTROL WITH LIMIT SWITCHES
Thomas C. Griffiths, Forrest City, and Albert L. Slack, Little Rock, both of Ark., assignors to Eaton Corporation, Cleveland, Ohio
Filed Oct. 8, 1974, Ser. No. 513,013
Int. Cl.² B66D *1/00*
U.S. Cl. 254—168 **7 Claims**



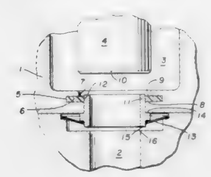
1. A limit switch actuated control valve assembly for supplying power to the air motor of an air motor driven hoist comprising:
a housing forming a main chamber communicating with an exhaust port for venting the main chamber, a supply inlet port for providing supply air to the main chamber, and an outlet port for supplying supply air from the main chamber to the air motor;
piston means slidably mounted within the main chamber to seal the exhaust port and connect the supply inlet port to the outlet port in a first position and to seal the air supply port and connect the outlet port to the exhaust port in a second position;
a biasing pressure chamber formed in said housing on one side of said piston means
limit switch means for moving said piston means between said first and second positions in response to a control signal, said limit switch means including a normally open valve connected to the biasing pressure chamber to supply air to the pressure chamber and maintain said piston means in said first position until said control signal is provided; and
means for providing a control signal to said limit switch means upon the hoist reaching a predetermined hoisting position.

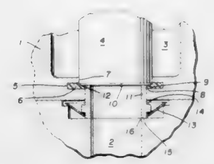
3,960,363
BALL VALVE
Frank F. Domyan, Studio City, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 372,203, June 21, 1973, abandoned. This application July 24, 1974, Ser. No. 491,404
Int. Cl.² F16K *25/00*
U.S. Cl. 251—174 **1 Claim**



1. Fluid control apparatus comprising: a valve body having first and second ends with first and second openings respectively, extending completely therethrough, said valve body having internal circumferential wall means substantially defining a chamber intermediate of said first and second valve body ends, said first valve body end having a reentrant hollow cylinder extending into said chamber, said cylinder having internal and external surfaces approximately concentric about a single first axis of symmetry, said cylinder having an O-ring groove in the external surface thereof substantially concentric with said first axis; a resilient O-ring trapped in said groove and immobile relative to said cylinder; a seal assembly having an approximately cylindrical internal surface approximately concentric with said first axis engaging and compressing said O-ring, said seal assembly internal surface having an inside diameter greater than that of said cylinder outside diameter to permit said seal assembly to rock and to swivel on said O-ring; a ball mounted on said wall means in a manner to rotate about a second axis substantially normal to said first axis, said ball having spherical surface portions around a cylindrical hole, extending completely therethrough defined by an internal surface alignable with and of approximately the same inside diameter as that of said cylinder internal surface, said alignment being made possible by the rotatability of said ball, said ball internal surface being concentric with said first axis during said alignment, said seal assembly including an annular seal extending around said hole at a diameter greater than that of said hole with said alignment occurs, said seal and said O-ring preventing fluid from entering said chamber by passing between said seal assembly and said O-ring or by passing between said seal assembly and said ball; and bias means mounted between said valve body and said seal assembly to hold said seal into fluid tight engagement with said ball, said cylinder external surface being spaced radially from said wall means in a radial direction from said first axis forming an annular pocket in which said seal assembly is located, said cylinder having an inner end terminating contiguous to said ball leaving a very small gap therebetween so as to minimize any leaks which might develop in the vicinity of said O-ring and said seal by providing a constriction between said ball and said cylinder, said first valve body end including said cylinder having a wall and being substantially rigid, fluid tight and effectively isotropic so as to prevent any fluid from entering said pocket through the wall of said valve body first end and said cylinder, said first and second openings being in communication with each other during said alignment, said ball being rotatable to a position cutting off all communication between said first and second openings.

3,960,364
HIGH PRESSURE TIGHT SHUTOFF VALVE SEAL
Michael E. Hargrave, Union Grove Lake, Iowa, assignor to Fisher Controls Company, Marshalltown, Iowa
Filed Aug. 1, 1974, Ser. No. 494,012
Int. Cl.² F16K *25/00*
U.S. Cl. 251—210 **6 Claims**

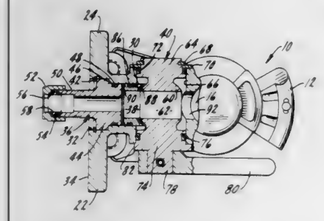




1. A tight-shutoff valve seal, comprising:
a deformable seal member having an inner periphery, an outer periphery, and first and second generally annular faces, said second face having first and second concentric portions;
a first valve member including an annular groove and a cylindrical surface adjacent said groove, said groove receiving said seal member and having faces abutting one of said peripheries, said first face, and said first portion of said second face of said seal member, and said cylindrical surface being of substantially the same diameter as the other of said peripheries of said seal member;
a seal retaining member having a first surface slidable on said cylindrical surface of said first valve member and on the other of said peripheries of said seal member, and enclosing said other periphery and having a second surface perpendicular to said first surface;
a second valve member having an annular surface facing toward said second portion of said second face of said

seal member and said second surface of said retaining member;
resilient means for biasing said retaining member toward said second valve member; and
mechanical stop means on said retaining member for abutting a portion of said first valve member after said retaining member slides a predetermined distance on said first valve member to prevent excessive deformation and damage to said seal member,
one of said first and second valve members being moveable toward the other of said valve members to a valve-closing position, wherein said second surface of said retaining member abuts said annular surface of said second valve member, said retaining member slides on said first valve member compressing said resilient means, and said second portion of said second face of said seal member sealingly engages said annular surface of said second valve member.

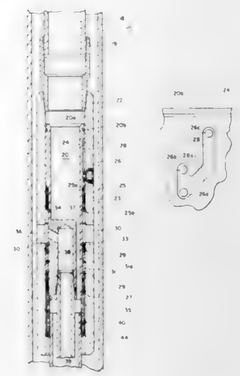
3,960,365
GLADHAND WITH SHUTOFF COCK
Charles Horowitz, Niles, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.
Filed May 7, 1975, Ser. No. 575,467
Int. Cl.² F16K *51/00*
U.S. Cl. 251—286 **10 Claims**



1. In a combination gladhand and shutoff cock, a gladhand body, mounting means formed on said body, an air chamber in said body and an outlet therefor, seal means surrounding said gladhand body air outlet,
passage means connecting said chamber and said mounting means, a fitting positioned within said passage means and having an end extending outwardly from said body and mounting means, said outward end of said fitting including means for connecting said fitting to a conduit,
a rotatable valve member positioned in said passage means intermediate said fitting and chamber, and a handle for said valve member positioned exteriorly of said body.
9. The structure of claim **1** further characterized by and including cooperating stop means on said body and valve member for limiting rotation of said valve member.

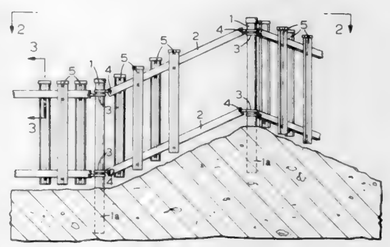
3,960,366
REVERSE ACTING LOCK OPEN CROSSOVER VALVE
Dave L. Abney; Robert C. Williams, both of Dallas, Tex., and Horace E. Gilbert, Gretna, La., assignors to Dresser Industries, Inc., Dallas, Tex.
Division of Ser. No. 194,228, Nov. 1, 1971, Pat. No. 3,818,986.
This application Mar. 18, 1974, Ser. No. 452,233
Int. Cl.² E21B *43/04*
U.S. Cl. 251—341 **1 Claim**

1. A crossover valve apparatus adapted for use in a well bore having a first tubing string and a second tubing string inside a portion of the first tubing string comprising:
a housing operably connectable to the first tubing string and having a pair of axially spaced apart seal bores and at least one lateral opening in the wall of said housing located intermediate said seal bores; and,
a mandrel operably connectable to the first tubing string, within said housing, said mandrel being movable axially between a first position and a second position relative to said housing and having a first seal engaging one of said seal bores in both of said positions,
a second seal spaced axially from said first seal and engaging one of said seal bores in said first position and engaging the other said seal bore in said second position,
at least one side port in the wall of said mandrel located between said first and second seals,



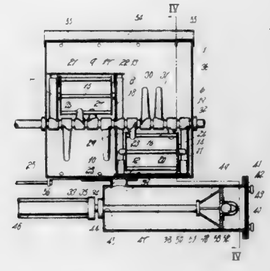
a crossover defining a first passage communicating said at least one side port and the second tubing string and a second passage communicating said mandrel above said crossover and said mandrel below said crossover, and
releasable means for locking said mandrel and said housing in one of said first or second positions and for allowing said mandrel and said housing to move the other of said first or second positions,
wherein said releasable means comprises a jay-slot and a cooperating jay-pin.

3,960,367
FENCE WITH ADJUSTABLE VERTICAL PANELS
Alan Francis Rogers, Mississauga, Canada, assignor to Spacemaker (Products) Limited, Mississauga, Canada
Filed May 12, 1975, Ser. No. 576,871
Int. Cl.² B21F *27/00*
U.S. Cl. 256—21 **10 Claims**



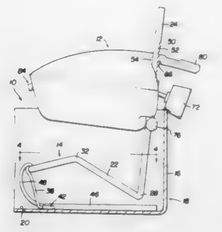
1. A fence comprising longitudinal rails defining continuous longitudinally extending channels, panels that can be erected vertically, parallel to one another and transversely to the rails, and clamps for affixing the panels to the rails, the clamps being slidably engageable in the channels of the rails for adjustment of positions of the panels therealong, the clamps being of narrower width than the panels so that if desired the panels can be arranged in edge to edge contact with one another, and releasable means for securing the clamps in fixed relationship with the panels and the rails.

3,960,368
HIGH VISCOUS DYEING SIZING MATERIAL PRODUCING MACHINE
Tozo Kishimoto, 5, Nishinokyo, Hinokuchi-cho, Nakagyo, Kyoto, Japan
Filed Nov. 8, 1974, Ser. No. 522,270
Int. Cl.² B01F *7/04, 15/02*
U.S. Cl. 259—10 **5 Claims**



1. An apparatus connnected to a steam source for producing highly viscous dyeing sizing from starch solutions, said apparatus comprising:
boiling means for mixing together, heating, and steam boiling said starch solutions into sizing paste, said boiler means having a plurality of steam inlets through the lower portion thereof connected to said steam source and also have a first discharge port through the bottom thereof;
stirring means within said boiler means for stirring said starch solution inside said boiler means;
slidable cover means fitted over said first discharge port for opening and closing said discharge port;
cylinder means positioned beneath and connected at the rear thereof to said first discharge means for receiving the steam boiled sizing paste mixture discharged from the boiler means through said first discharge port;
straining screening means in the end of said cylinder means opposite the end connected to said first discharge port for straining therethrough the sizing paste contained in said cylinder means, whereby the mixture is strained to a uniform consistency;
hydraulic piston means reciprocally movable within said cylinder means for forcing said sizing paste in said cylinder means through said screening means, said piston means further having a second discharge port therethrough; and
valve means positioned over said second discharge port for controlling the flow of sizing paste through said second discharge port in said piston means in relation to the direction of movement of the piston means, whereby movement of the piston means toward said screening means causes said valve means to close, thereby forcing all of the sizing mixture between said piston means and said screening means outward through said screening means, and whereby withdrawing said piston means from the screening means causes said valve means to open and causes the sizing paste drawn into the cylinder means through said first discharge port during the forcing of the sizing mixture through said screening means to flow from one side of said piston means to the other side of said piston means through said second discharge port.

3,960,369
STIRRING MECHANISM
Warren T. Sommer, 17130 Sunset, Detroit, Mich. 48212
Filed June 20, 1974, Ser. No. 481,028
Int. Cl.² B01F *7/20;* **A47J** *43/04, 43/07*
U.S. Cl. 259—111 **13 Claims**



9. A mechanical stirring device for mixing fluids in a container having a bottom surface and a side wall terminating in a rim, including a drive unit having a rotary drive member engaging the rim of the container to impart motion to the stirring device within the container, wherein the improvement comprises:
a stirrer releasably attachable to the drive unit and projecting downwardly from the drive unit into the container for mixing fluids, said stirrer including a pair of spaced, parallel uprights releasably attached to the drive unit and a mixing frame extending generally radially from a bottom portion of the uprights toward the center of the container, said mixing frame being spaced from the bottom surface of the container, and said stirrer being formed of a unitary rod, said rod forming said pair of uprights, said uprights terminating at their lower ends in elbows and said rod forming a generally U-shaped mixing section interconnecting said two elbows and defining said mixing frame, said U-shaped section having different vertical elevations with respect to the container bottom surface to provide mixing at different vertical levels within fluids.

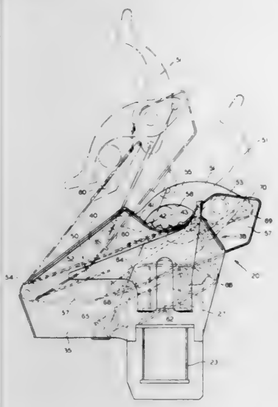
3,960,370
ELECTRIC FOOD MIXER SPATTER GUARD
Adele Lorraine Bewley, 399 Getzville Road, Amherst, N.Y. 14226
Filed Nov. 13, 1974, Ser. No. 507,579
Int. Cl.² B01F *7/16*
U.S. Cl. 259—118 **1 Claim**



1. A spatter guard in combination with a portable electric food mixer comprising;
a. a portable electric food mixer having a pair of beaters connected thereto by a pair of beater shafts;
b. a mixing bowl, independent of and unconnected to said portable mixer, having a rim,

c. a generally circular thin disc having an upper and a lower surface, said lower surface resting on said rim,
d. a pair of openings between said upper and lower surfaces with said shafts passing therethrough,
e. each of said openings being defined by a pair of opposed circular edges connected by substantially linear edges to provide clearances for said beater shafts whereby the same can be easily moved with respect to said disc, and
f. a radial sieve on said lower surface extending from the center to the periphery thereof, said sieve being so sized as to permit liquid to pass therethrough but to prevent solids from passing therethrough.

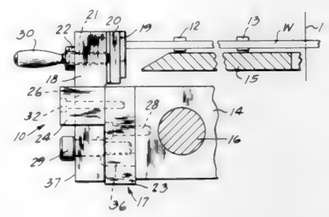
3,960,371
COMPACT TREE CLAMP
Ian McKenzie, Lambeth, Canada, assignor to Clark Equipment Company, Buchanan, Mich.
Division of Ser. No. 452,171, March 18, 1974, Pat. No. 3,924,667. This application Mar. 6, 1975, Ser. No. 556,062
Int. Cl.² A01G *23/08*; **B23Q** *1/04*
U.S. Cl. 269—55 **5 Claims**



1. A clamp for elongated objects having a longitudinal axis of substantially greater length than the largest transverse dimension comprising a fixed jaw, a movable jaw closable on the fixed jaw, said movable jaw having separate pivotally mounted elements, one being pivoted on one side of the longitudinal axis of said object and the other being pivotally mounted on the opposite side and extending transversely below the object to pivotally connect the said one element, and means causing said elements to pivot on the said one side of the axis and thereafter pivot the one element on the other side.

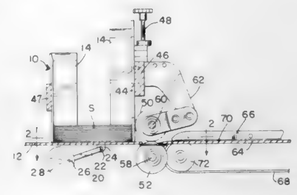
3,960,372
PUNCH PRESS
James A. Mc Elwain, Niagara Falls, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Aug. 27, 1974, Ser. No. 500,874
Int. Cl.² B26D *7/16*
U.S. Cl. 269—320 **11 Claims**

1. In a punch press having a vertical punching axis, the combination comprising:
a. means adapted to be clamped to a workpiece for moving the workpiece in the X and Y axes in a horizontal plane intersecting the punching axis;
b. a side gage member carried on said moving means and movable between an upper extended position intersecting said horizontal plane and a retracted position below said plane, said side gage member having a gaging surface which, in at least said extended position, is horizontally spaced by a predetermined distance in the X-axis from a vertical plane, extending through the punching axis and



parallel to the Y-axis, for precisely positioning an edge of the workpiece, at said predetermined distance for the workpiece then being clamped to said moving means.

3,960,373
SHUTTLE GUARD FOR SIGNATURE FEEDER
Jaroslaw Pacholok, Downers Grove, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Jan. 15, 1975, Ser. No. 541,375
Int. Cl.² B65H *3/12*
U.S. Cl. 271—10 **7 Claims**

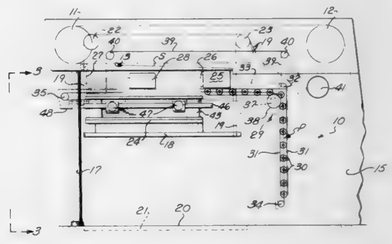


1. A signature feeding apparatus comprising means forming a magazine for holding a stack of signature pieces, a shuttle plate mounted for reciprocation in the bottom of said magazine forming means and constituting the floor of said magazine, said shuttle plate having means for gripping the lowermost signature in the stack so as to advance the signatures one-by-one to a transport system, means forming a gate at the bottom of said magazine for passage of successive signatures, a signature transport system having a signature receiving end adjacent said gate and having means for advancing successive signatures through said gate, said transport system having floor forming means with the signature receiving end thereof spaced relative to the path traversed by the leading end of said shuttle plate so as to leave a gap when the shuttle plate retracts with portions thereof exposed, and means bridging said exposed portions of said gap so as to prevent any foreign object from lodging in said gap and minimizing the risk of damage to the machine or the object by movement of the shuttle plate.

3,960,374
SHEET DELIVERY SYSTEM
John Marshall Gaffney, Cleveland, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed June 15, 1972, Ser. No. 262,982
Int. Cl.² B65H *29/04, 29/34, 31/03*
U.S. Cl. 271—189 **6 Claims**

1. A continuous sheet delivery for racking individual small sheet piles on a pile platform wherein the piles are built from the bottom up by delivering sheets to a skid on said platform to form a pile of sheets on the skid, placing a relatively stiff board above the pile, supporting the board from the skid outside the edges of the pile thereon and building subsequent small piles in the same fashion with additional boards serving

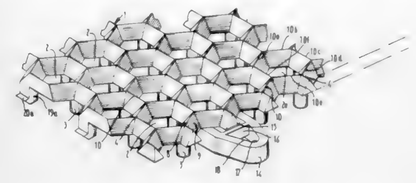
to support the small piles independently of one another, said delivery comprising:
a pair of side frames,
a delivery conveyor mounted in said side frames for delivering sheets individually in a horizontal direction,
a main hoist for supporting said skid for vertical movement between a sheet-receiving position immediately below said conveyor and a lower pile-unloading position,
an auxiliary hoist having frame means at the outer sides of said piles,
means for raising and lowering said frame means between an upper sheet-receiving position immediately below said conveyor and a lower limit sufficiently below said upper position to allow for build-up of sheets on said auxiliary hoist while a full pile is being removed from said platform,
a pile supporting member carried by said auxiliary hoist and movable between an inoperative position clear of the pile



at one side thereof to an operative, horizontal sheet-intercepting position,
board-supporting members carried by the frame means of the auxiliary hoist at the sides of the pile, said board-supporting members comprising horizontal ledges on which boards may be slid below said pile supporting member when the latter is in its operative position, the relationship of said ledges and pile supporting member being such that the top of a board on said ledges is out of contact with but is closely adjacent the bottom of said pile supporting member,
and means for moving said ledges toward each other to an operative position in which the ledges receive and support the sides of a board and away from each other to an inoperative position spaced beyond the edges of a board, whereby said board and a small pile of sheets received from said pile supporting member may be transferred to said main hoist and lowered past said ledges.

3,960,375
ELEMENT FOR USE IN MAKING A PLAYING SURFACE
Albert Bibi-Roubi, and Robert Bibi-Roubi, both of 24 rue de l'Ourcq, 77 Fresnes-sur-Marne, France
Filed Apr. 14, 1975, Ser. No. 567,888
Claims priority, application France, Apr. 18, 1974, 74.13560
Int. Cl.² A63B *61/00, 71/02*
U.S. Cl. 272—3 **11 Claims**

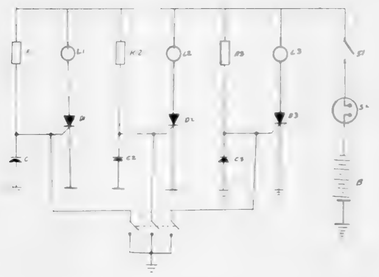
2. An element for use in making a playing surface, said element comprising an upper face which forms the general plane of the facing and a plurality of side faces; coupling means on each of said side faces, said coupling means comprising male parts and female parts arranged with a male part on some of said side faces and a female part on the others of said side faces whereby a plurality of adjacent elements can be coupled together by connection of adjacent male and female parts; each male part comprising a downwardly extending hook having a shank and a curved part projecting laterally therefrom; each female part comprising a loop projecting laterally from the respective side face and defining an opening the axis of which is perpendicular to the plane of the facing, wherein the loop has an elastic membrane located adjacent to the side face and substantially perpendicular to the plane of



the facing, said curved part of the hook being adapted to elastically deform the membrane during entry and engage below said membrane when adjacent elements are coupled.

3,960,376
BALANCING SKILL GAME
Evan H. Berlin, 119 Dunn Ave., Lake City, Pa. 16423
Continuation-in-part of Ser. No. 274,707, July 24, 1972, Pat. No. 3,784,196. This application Aug. 31, 1973, Ser. No. 393,312
The portion of the term of this patent subsequent to Jan. 8, 1991, has been disclaimed.
Int. Cl.² A61B *5/16*; **A63F** *9/06*
U.S. Cl. 273—1 E **8 Claims**

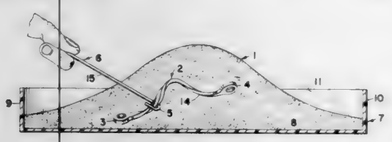




1. A toy comprising,
an elongated hollow body made in a first half and a second half and fixed together,
an electrical circuit contained by said body,
said circuit comprising a plurality of lamps, a source of electrical energy in series with each of said lamps, time delay means in circuit with said source of electrical energy and said lamps for causing said lamps to become illuminated sequentially and inclination sensitive means in series circuit between said source of electrical energy and said lamps for controlling current through said cir-

cuit, and breaking said circuit when said body is inclined beyond a certain angle.

3,960,377
GAME APPARATUS
Natividad F. Doyle, 6202 E. 150th St., Grandview, Mo. 64030
Filed June 4, 1975, Ser. No. 583,625
Int. Cl.² A63F *9/00*
U.S. Cl. 273—1 R **4 Claims**

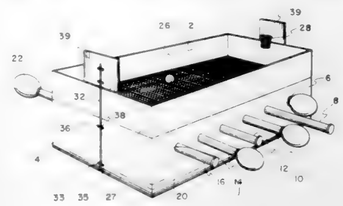


1. A game device comprising in combination:
a. a quantity in depth of granular material:
b. a plurality of game members each having an elongated resilient intermediate portion extending between and connected to enlarged opposite end portions which are held by a player during stretching thereof to an extended condition and held in the extended condition during insertion thereof into said granular material, said game members each moving within said granular material upon release of at least one of the opposite end portions thereof to reposition same in said granular material, said intermediate portion of each of said game members being twistable in either direction by a player prior to being inserted into said granular material, said intermediate portion of each of said game members untwisting upon release to further aid in repositioning said respective game member within said granular material; and
c. at least one retrieving member having one end thereof formed to define a hook for for receiving therein said intermediate portion of one of said game members, said one end being insertable into said granular material by a player to remove one of said game members upon engagement therewith during withdrawal of said retrieving member from said granular material whereby players may position said game members in said granular material and insert a respective one of said retrieving members into said granular material in an attempt to remove one of said game members upon withdrawal of said respective retrieving member, said hook being substantially U-shaped.

2. A method of playing a game comprising the steps of:
a.. arranging granular material in a pile;
b. holding opposite end portions of a respective one of a plurality of game members and stretching same;
c. inserting each stretched game member into the pile of granular material;
d. releasing the opposite end portions of the stretched game member thereby positioning same within the pile of granular material;
e. inserting one end of a respective one of a plurality of retrieving members into the pile of granular material;
f. maneuvering the respective retrieving member during inserting the one end thereof to move same into engagement with one of the game members; and
g. withdrawing the retrieving member and the game member therewith.

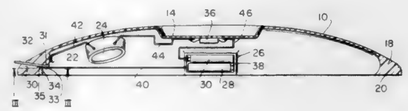
3,960,378
TARGET AND AIR ACTUATED PROJECTORS
William J. Bahr, 4101 Sandpiper Lane, Great Bend, Kans. 67530
Filed Mar. 12, 1975, Ser. No. 557,794
Int. Cl.² A63F *7/06*
U.S. Cl. 273—85 H **4 Claims**

1. An airball game comprising: a game piece; a base; a mesh screen removeably mounted on said base allowing passage of air through its mesh, a border wall removeably mounted around said screen; a plurality of playing tubes retractably and rotatably mounted in the base to underlie the screen and extending the entire transverse length of the base; said tubes having an air bulb on one end and a cap at the second end; a



nozzle spaced intermediate the ends of the tubes; and at least one goal positioned within the playing area defined by the screen and the border wall whereby the game piece is moved toward the goal in the direction of air flow through the nozzle when the air bulbs are squeezed and the tubes manipulated.

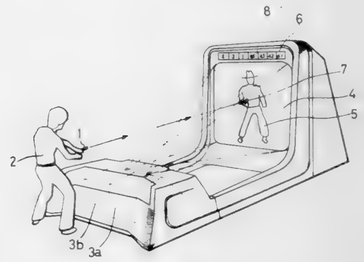
3,960,379
CHILDREN'S GAME
Joseph V. Maloney, 3381 Lufberry Ave., Wantagh, N.Y. 11793; Ronald J. Geigel, 4 Alpine Drive, Morristown, N.J. 07960, and Peter R. Zidek, Horseshoe Road, Rte. 2, Box 87, Millbrook, N.Y. 12545
Filed Feb. 24, 1975, Ser. No. 552,693
Int. Cl.² A63B *71/00*; **G08B** *21/00*
U.S. Cl. 273—95 R **6 Claims**



1. A game comprising, in combination:
a base; and
a kickable object;
said base comprising:
ground-gripping means;
an enclosure having a depression for receiving said kickable object on its upper surface;
said base containing interior thereof battery means, first and second switch means, audible signal producing means and circuitry means capable of connecting said signal means across said battery means for the generation of an audible signal upon closure of both said first and second switch means;
said first switch means being manually closeable; and
magnet means positioned within said kickable object so as to be adjacent said depression, said second switch means being adjacent said depression and magnetically held in the open position by said magnet means when said object is placed in said depression.

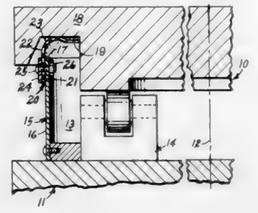
3,960,380
LIGHT RAY GUN AND TARGET CHANGING PROJECTORS
Gunpei Yokoi, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan
Filed Jan. 27, 1975, Ser. No. 544,342
Claims priority, application Japan, Sept. 16, 1974, 49-106237; Dec. 1, 1974, 49-138658; Dec. 31, 1974, 50-1752
Int. Cl.² A63F *9/02*
U.S. Cl. 273—101.1 **5 Claims**

1. In a rapid firing game machine including a shooting system having a screen means, a weapon and a shooting detection means having a target area on said screen, a first motion picture projector for projecting an image showing an object to be shot at onto said screen, and a second picture projector for projecting an image showing said object in a defeated condition upon successful firing of said weapon at said object, the improvement comprising, in combination, employing a light-emitting gun as said weapon and at least one photo-sensor element which emits a signal when struck by light as said shooting detection means, the area on the screen, which when struck by light from said weapon will activate said photo-sensor, being the target area at least including a life-size image of each object to be shot as projected onto said screen, a single first film mounted on said projector having a plurality of scenes including at least a corresponding number of objects to be shot at, the first portion of each of said scenes showing the object in the scene to be shot at in a challenging position and a next portion thereof showing the same object in a triumphant position, a single second film mounted on said second projector having the same number of scenes showing the respective objects in defeated condition in the sequence corresponding to the sequence of appearance of said objects on said first film, said second film having a view-blocking image in an initial part of each scene and having a changeover mark at the boundary between adjacent scenes, detecting means in said second projector for detecting said changeover mark, shooting effective signal generating means in said first projector for generating from said first projector a signal to indicate



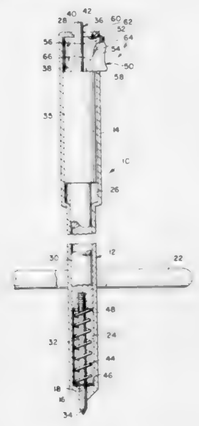
when a portion of the scene corresponding to a time during which shooting will be effective for each of the scenes is displayed by said first film on said first projector, projector driving means coupled to said projectors for driving said first projector throughout the operation of the machine and for driving said second projector, control circuit means having inputs coupled to said shooting effective signal generating means, said sensor element, and said detecting means and having outputs coupled to said projector driving means for driving said second projector in the intervals in which a signal is received from said photo-sensor element and a shooting effective signal is received at the same time from said shooting effective signal generating means or when said shooting effective signal has disappeared without generation of a signal from said photo-sensor element, and for stopping said second projector when a changeover mark on said second film has been detected by said detecting means, and means coupled to said control circuit means for effectively directing the light projected from the second projector onto the screen only when a signal is received from said photo-sensor element and a shooting effective signal is simultaneously received from said shooting effective signal generating means and for continuing to direct the light from the second motion picture projector onto the screen until a changeover mark is detected, and for effectively directing the light from the first motion picture projector onto the screen when light from the second motion picture projector is not directed onto the screen.

3,960,381
SEAL METHOD AND APPARATUS
Tadeusz Wiktor Piotrowski, Cincinnati, Ohio, assignor to Cincinnati Milacron, Inc., Cincinnati, Ohio
Filed Oct. 30, 1975, Ser. No. 627,147
Int. Cl.² F16J *15/34*; **B23P** *11/00*
U.S. Cl. 277—1 **4 Claims**



1. An environmental seal assembly, comprising in combination:
a. a base member, having a chamber formed therein which is bounded by a continuous peripheral exterior surface on said base member;
b. a plate, rotatably carried with respect to said base member, having a seal surface in the plane of rotation disposed towards said base member so as to provide a surface for enclosing said chamber; and
c. an elastomeric band, having a continuous band length which, when relaxed, is of lesser dimension than said peripheral surface, and further having a band width comprising a first portion and a second portion, wherein said first portion is stressed and fitted over said peripheral surface, and said second portion is free of restraint, said second portion tending to curl and form a stable smooth annular bight, and further wherein said plate seal surface is in contact with said bight, thereby forming a sealed chamber bounded by said base member, said band, and said plate.

3,960,382
SKI POLE WITH RETRACTABLE POINT
Tom Reynolds, Islip, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Sept. 8, 1975, Ser. No. 611,560
Int. Cl.³ A63C *11/22*
U.S. Cl. 280—11.37 P **4 Claims**



1. A ski pole comprising an elongated tubular shaft having a cylindrical hand grip portion at one end, a rod means slide-

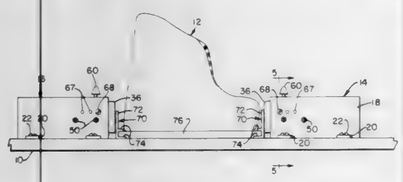
ably mounted in said shaft, said rod means having a generally pointed end adapted to be deployed from the opposite end of said tubular shaft, spring means within said shaft for urging said rod means to a position with said pointed end retracted inside said tubular shaft, actuating button means projecting from said rod means axially through said hand grip portion for deploying said pointed end upon depression of said button means, and means carried by said hand grip portion, and movable radially, for lockably engaging said rod when positioned by said button means with said pointed end deployed.

3,960,383

MAGNETIC SKI BINDING

Bryan L. O'Neil, General Delivery, West Bridgewater, Vt. 05034

Filed Aug. 28, 1974, Ser. No. 501,057
Int. Cl.² A63C 9/08
U.S. Cl. 280—612 **7 Claims**



1. A ski binding unit for binding a ski to a ski boot that is equipped with magnetically conductive means, said unit comprising:
- a housing having first and second ends and means for attaching said housing to said ski so that said first and second ends are aligned lengthwise of said ski;
- two magnetically conductive pole pieces disposed within and mounted to said housing so that an end surface of each pole piece projects out of said first end of said housing for engagement by said ski boot;
- a permanent magnet disposed within said housing between and proximate to said pole pieces so as to induce a magnetic field in said pole pieces for magnetically binding said magnetically conductive means to said pole piece end surfaces;
- said magnet being movable relative to said housing and said pole pieces so as to permit adjustment of the intensity of the magnetic field at said pole piece end surfaces; and
- means for moving said magnet relative to said housing and said pole pieces.

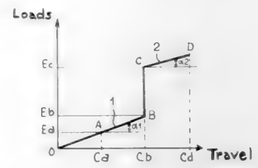
3,960,384

METHOD FOR PROVIDING RECOIL IN A SAFETY BINDING FOR SKIS AND DEVICE FOR THE SAME

Georges Pierre Joseph Salomon, Annecy, France, assignor to Etablissements Francois Salomon et Fils, Annecy, France

Filed Mar. 6, 1975, Ser. No. 555,865
Claims priority, application France, Mar. 8, 1974, 74.07967
Int. Cl.² A63C 9/08
U.S. Cl. 280—623 **15 Claims**

1. In a binding device having a base plate fixed to a ski and a binding assembly mounted on said base plate for maintaining a boot against said ski by its front and rear extremities, a method for absorbing without altering the characteristics of safety release, the parasitic stress caused, for example, by the flexion of the ski and acting between said boot and the binding assembly, said method comprising the steps of
- providing partly said binding assembly slidably movable on said base plate in the longitudinal direction of the ski,
- keeping at least one part of said partly slidably binding free to be displaced on said base plate against the action of a first resilient means for a first resilient displacement of said one part corresponding to a first series of load values, said first resilient means being interposed between said one part movable during said first resilient displacement and a stop part which is at least temporarily immobilized relative to said base plate during said first resilient displacement,
- temporarily immobilizing relative to said base plate said at least one part by means of the stop part for a second series of load values higher than the first series



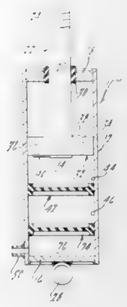
- and keeping at least one part of said partly slidably binding free to be displaced on said base plate against the action of a second resilient means for a second resilient displacement of said one part corresponding to a third series of load values, said second resilient means being interposed between said one part of the binding movable during said second resilient displacement and a stop part which is immobilized relative to said base plate during said second resilient displacement.

3,960,385

LEVELING SYSTEM

Johan H. Keijzer, Hasselt; Willy R. J. Pierle, Tienen, and G. Van de Voorde, Sint-Martent-Latem, all of Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium

Division of Ser. No. 261,608, June 12, 1972, Pat. No. 3,847,410. This application Oct. 24, 1974, Ser. No. 517,606
Int. Cl.² B60G 11/26
U.S. Cl. 280—692 **32 Claims**



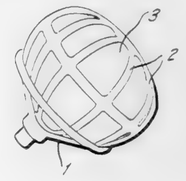
1. In a leveling system for a vehicle having sprung and unsprung portions,
- at least one level strut comprising a cylinder connected at one end to one of the vehicle portions,
- a piston reciprocally mounted within said cylinder,
- a piston rod connected to said piston and projecting from one end of said cylinder and adapted for connection to the other of the vehicle portions,
- a quantity of damping fluid within said cylinder for damping reciprocal movement of said piston,
- means defining a gas chamber containing a quantity of a compressible gas,
- first separating means for separating said gas from said damping fluid,
- means for varying the pressure of said gas to control the relative attitude between the sprung and unsprung vehicle portions, and
- second separating means separating said quantity of gas from said last mentioned means.

3,960,386

MEANS FOR EXPANDABLE OBJECTS, PREFERABLY SHOCK-ABSORBING PROTECTIVE MEANS FOR PASSENGERS IN VEHICLES

Hans Ivar Wallsten, Saffle, Sweden, assignor to AB Inventing, Saffle, Sweden

Filed July 20, 1973, Ser. No. 381,145
Claims priority, application Sweden, Feb. 12, 1973, 7301928
Int. Cl.² B60R 21/08
U.S. Cl. 280—731 **8 Claims**



1. Expandable means adapted for use as shock-absorbing protective means and the like for passengers in vehicles, said means comprising: a normally folded compact enclosure adapted to be expanded to a predetermined three-dimensional configuration from its folded state and having a similarly folded and expandable system of branched gas receiving channels interconnected and communicating with each other and extending along the walls of the enclosure, in which the enclosure is expanded by supplying compressed gas to said channels so that the ambient air at least partially fills the hollow interior of the expanded enclosure, said channels comprising an inflatable inner space whose inflation is limited by a thin, flexible, elastic and substantially gastight inner wall, said inner wall comprising a pair of branched continuous flat strips of material arranged one upon the other and joined along their long sides, said inner wall being surrounded by a flexible outer wall arranged, when the inner space is inflated, to entirely surround the inner wall and limit its expansion, and which becomes relatively stiff and assumes a substantially circular cross section upon expansion, said outer wall being a material which is strong enough to withstand the pressure prevailing in the inner space; said outer wall comprising two strips of material arranged one upon the other and joined along their long sides, joining means between the strips of material being sufficiently strong to withstand the pressure prevailing in the inner space and thereby limit the expansion of the inner wall.

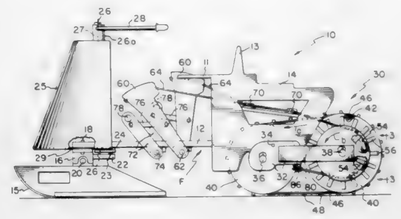
3,960,387

MANUALLY PROPELLED TOY SNOW VEHICLE

Arnif G. Nerio, 2223 Cumberland St., Saginaw, Mich. 48601

Filed Sept. 10, 1973, Ser. No. 395,959
Int. Cl.² B62B 13/16
U.S. Cl. 280—12.14 **14 Claims**

1. A manually propelled toy vehicle such as a snowmobile, comprising:
- a chassis;
- propelling means mounted on said chassis for engagement with a surface to be traversed and movable in a forwardly propelling path of travel;
- first and second drive means mounted on said chassis for movement in independent, to-and-fro paths of travel between start and finish positions for alternately driving at least a portion of said propelling means to alternately move said propelling means in said propelling path of travel;
- first and second manually actuable means on said chassis for alternately moving said first and second drive means from said start positions to said finish positions;
- line means, having opposite ends anchored to said actuable means and to said drive means for alternately drawing said first and second drive means from said start positions to said finish positions as said first and second actuable means alternately move from said start positions to said finish positions; and further line means having opposite ends connected to said first and second drive means independent of said actuable means for alternately returning said first and second drive means to said start positions on said second and first actuable means, respectively, alternately move to said finish positions.

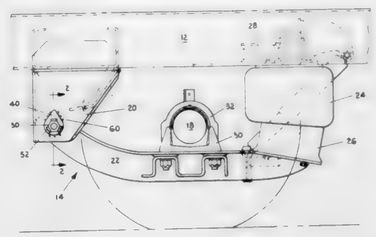


3,960,388

VEHICLE SUSPENSION SYSTEM AND ALIGNMENT MECHANISM THEREFOR

Don S. Strader; Lloyd G. Masser, both of Muskegon, and Robert J. Lundwall, Roosevelt Park, all of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Mar. 27, 1975, Ser. No. 562,444
Int. Cl.² B60G 3/26
U.S. Cl. 280—693 **19 Claims**



1. A vehicle suspension system wherein the vehicle has a frame, an axle for mounting ground-engaging wheels, frame brackets laterally disposed at opposite sides of the frame, rigid axle control arm means with means at one end for pivotably connecting the control arm means to the frame brackets, means coupling said control arm means to said axle, at least one of said pivotable connecting means and said coupling means including a connecting plate means and adjusting means permitting fore or aft adjustment of the axle relative to the frame brackets, means for resiliently transmitting a load disposed between the vehicle frame and said axle, the improvement in said adjusting means comprising:
- a mounting plate;
- means for pivotably connecting the axle control arm means to the mounting plate;
- means pivotably supporting the mounting plate on the connecting plate means for rotation of the mounting plate to impart precise fore or aft movement of the axle relative to the frame bracket;

means releasably locking the mounting plate to the connecting plate to fix the axle relative to the frame bracket subsequent to adjustment; and

retaining means on the mounting plate for gripping a portion of the releasable locking means to prevent relative movement between the releasable locking means and the mounting plate regardless of whether the locking means is in a locked or released condition, whereby the mounting plate can be rotated by gripping and rotating the releasable locking means when the locking means is in released condition.

3,960,389

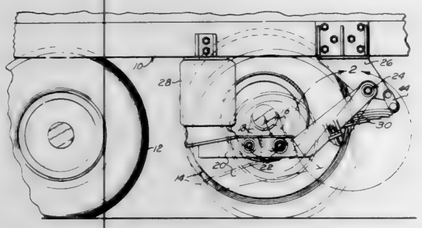
WHEEL SUSPENSION SYSTEM

Gattu Narahari, Marion, Ohio, assignor to Sycon Corporation, Marion, Ohio

Continuation of Ser. No. 365,997, June 4, 1973, abandoned, which is a division of Ser. No. 176,911, Sept. 1, 1971, Pat. No. 3,751,066. This application June 4, 1975, Ser. No. 583,669

Int. Cl.² B60G *11/46*

U.S. Cl. 280—697 **4 Claims**



1. A wheel suspension system for a wheeled vehicle having a frame, an axle and a wheel supported on said axle, said system including,

rigid arm means supporting said axle,

means pivotedly supporting one end of said arm means on said frame whereby said arm means is supported for pivotal movement toward and away from said frame,

air spring means supported on said frame and operatively connected to said arm means,

biasing means acting between said frame means and said arm means and normally acting to bias said arm means toward said frame, said biasing means comprises leaf spring means rigidly connected at one end to said arm means, and

means movably supporting the other end of said spring means on said frame, said latter means comprising roller means on said frame in engagement with said other end of said spring means.

3,960,390

INFLATOR

George W. Goetz, Detroit, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 17, 1974, Ser. No. 461,663

Int. Cl.² B60R *21/08*

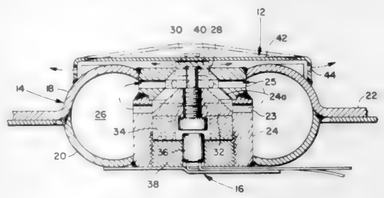
U.S. Cl. 280—731 **18 Claims**

1. An inflator for inflating an expandable confinement for restraining a vehicle occupant in response to a collision signal, said inflator comprising:

a. structure defining a source of pressurized fluid;

b. means operable upon receipt of said collision signal to activate said fluid source and permit pressurized fluid to flow therefrom;

c. outlet means for directing said fluid flow from said source including diffuser means having a member formed of generally rigid material with a plurality of exit ports disposed about the periphery thereof for directing fluid flow generally radially therefrom, said member having a central portion of substantially planar configuration with the periphery thereof secured to the structure of said fluid source, said member being deformable in the direction of flow from said fluid source in response to activation of



said fluid source from an initial generally flat position substantially restricting fluid flow to a deformed curved open position permitting substantially less restricted fluid flow to said exit ports.

3,960,391

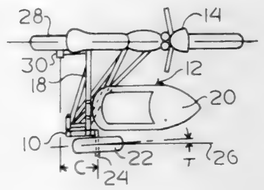
TOE-IN AND OFFSET ADJUSTMENT APPARATUS

Craig W. Vetter; John R. Doyle, both of Rantoul, and Henry P. Tate, Armstrong, all of Ill., assignors to Vetter Design Works, Inc., Rantoul, Ill.

Filed Jan. 15, 1975, Ser. No. 541,223

Int. Cl.² B62K *27/00*

U.S. Cl. 280—203 **23 Claims**



1. Apparatus for adjustably mounting a wheel to a motorcycle sidecar, comprising:

a substantially horizontal elongate rigid member secured to the sidecar and extending in the general direction of sidecar travel;

toe-in adjustment means for securing said wheel to the elongate member at different fixed angular positions relative thereto corresponding to different wheel toe-in positions; and

offset adjustment means for securing said wheel to said elongate member at different fixed positions therealong corresponding to different wheel offset positions.

3,960,392

CHILDREN'S RUNABOUT

Donald E. Read, Milwaukee, Wis., assignor to Garton Company, Sheboygan, Wis.

Filed Feb. 3, 1975, Ser. No. 546,205

Int. Cl.² B62K *9/02*

U.S. Cl. 280—282 **5 Claims**

1. In a vehicle, the combination comprising:

a frame having a pair of longitudinal side members spaced from one another and front and rear transverse members extending between the side members to form an open center cockpit area, said side members having a downward and forward incline;

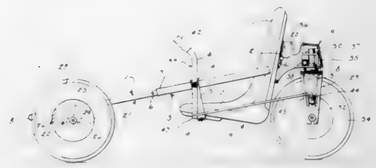
a front axle secured to said frame;

a pair of spaced front wheels mounted by said front axle that are outboard of said open center cockpit area;

a mounting member connected to said rear transverse frame member;

a pivoted rear wheel support connected to said mounting member with a wheel receiving yoke depending from said mounting member;

rear wheel means mounted by said wheel receiving yoke;



a seat in said open center cockpit area having (i) a back portion braced on said mounting member which is disposed between and straddled by said frame side members, and (ii) a cushion portion at a height beneath the run of said frame side members that is located between said front axle and said mounting member; and

steering levers mounted by said frame side members alongside said seat which are connected to said pivoted rear wheel support for steering control thereof.

3,960,393

HOSE CONNECTOR

Hiroyuki Hosokawa, Obu; Shiro Maeda, Toyohashi, and Kenji Yamada, Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 4, 1975, Ser. No. 555,270

Claims priority, application Japan, Apr. 16, 1974, 49-43065

Int. Cl.² F16L *39/00*

U.S. Cl. 285—137 R **2 Claims**



1. A hose connector comprising:

a couple of connecting plates each of which has a plurality of pipes integrally formed on one side thereof for connection to a plurality of hoses and a plurality of endless projections formed on the other side thereof, inner passages of said pipes running through said plate, said endless projections enclosing openings of said inner passages;

a gasket between said connecting plates and having a plurality of apertures corresponding to said pipes, circumferential portions of said apertures being pressed by said endless projections for a perfect seal;

a couple of plate retainers located on said connecting plates opposite to said gasket, each plate retainer having a plurality of apertures corresponding to said pipes to pass said pipes therethrough and having slight curvature for permitting the pressing of said connecting plates to said gasket by spring action; and

means for pressing and flattening said plate retainers thereby fixing said connecting plates, gasket and plate retainers all together to connect said inner passages of said connecting plates to each other through said apertures of said gasket.

3,960,394

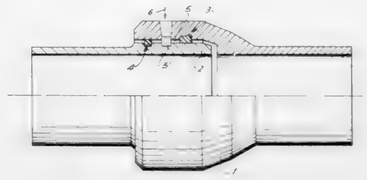
PIPE UNION

Wolfgang Hübner, Leipzig, and Wilhelm Fasshauer, Halle, both of Germany, assignors to Deutsches Brennstoffinstitut Freiberg, Freiberg, Germany

Filed Aug. 16, 1973, Ser. No. 388,977

Int. Cl.² F16L *13/00*

U.S. Cl. 285—297 **13 Claims**



1. A rigid pipe union, particularly for large-diameter pipes which are subject to high interior pressures, comprising a pair of pipes having respective male and female end portions, the male end portion being of a substantially smaller outer diameter than the inner diameter of said female portion and being received within said female portion and defining therewith a relatively large annular clearance; a pair of sealing elements sealingly accommodated in said clearance and being spaced from one another in axial direction of said clearance; passage means communicating with said clearance intermediate said sealing elements; and a rigid body of hardened material admitted in flowable state via said passage means, accommodated in and filling said clearance intermediate said sealing elements and thereby rigidly uniting said pipes in stress-transmitting contact with said end portions thereof.

3,960,395

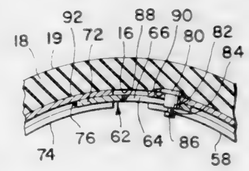
EXPANSION CLAMP

Fred M. Cirule, Parsippany, and Joseph R. Preziosi, Clark, both of N.J., assignors to Amerace Corporation, New York, N.Y.

Filed June 17, 1974, Ser. No. 480,268

Int. Cl.² F16L *17/00*

U.S. Cl. 285—370 **2 Claims**



1. An expansion clamp for use with a resilient tubular gasket having radially spaced axially extending inner and outer surfaces, the outer surface of said gasket adapted to engage the inner surface of a tubular body at an opening therein, said clamp comprising:

a. a circumferentially extending member adapted to be maintained in compressive relation with said radially spaced inner surface of said tubular gasket and said inner surface of said tubular body, said member having a substantially C-shaped transverse cross-section to define a channel with the opening thereof extending radially inwardly;

b. one circumferential end of said channel terminating in an end portion adapted to be received within the other circumferential end of said channel, said other circumferential end including an inwardly axially extending lip on said channel to prevent radial displacement of said one end portion; and

c. means for slidably engaging and locking said one circumferential end portion within said other circumferential end in a predetermined fixed position to maintain said compressive relation, said means including a transverse aperture contained on said circumferentially extending member disposed proximate to said one end thereof and said other end terminating in a relatively flat circumferentially extending portion having at its free end a hook-shaped part adapted to engage said transverse aperture in said predetermined fixed position.

3,960,396

HANDLE FOR OPENING AND CLOSING A DOOR

Kingo Miyahara, Tokyo, Japan, assignor to Dowa Co., Ltd., Tokyo, Japan

Filed Sept. 11, 1974, Ser. No. 504,978

Claims priority, application Japan, June 17, 1974, 49-70584[U]

Int. Cl.² E05C *21/00*

U.S. Cl. 292—347 **3 Claims**



1. A handle to be attached to a door-knob for opening and closing a door, comprising a planar main body portion which is flat in shape and extending outwardly therefrom so as to enable a finger tip to be positively applied thereto, a semicylindrical mounting seat having inner and outer surfaces extending medially and centrally relative to the outer surface of said main body portion and integral therewith so that the main body portion is attached to the outer surface of said mounting seat and extends from the middle of the mounting seat in a direction substantially normal to the axis of the mounting seat, said mounting seat being flexible so as to enable the mounting seat to be brought into intimate contact with the outer periphery of door-knobs having different sizes and shapes, and double-faced adhesive tape attached to the concave inner surface of said mounting seat for attaching said handle to the door-knob.

3,960,397

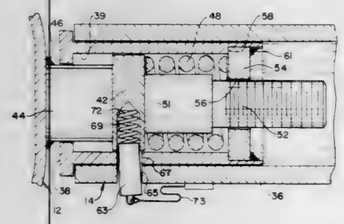
ENERGY-ABSORBING BUMPER SYSTEM

John Janci, 1125 N. Karlov, Chicago, Ill. 60651

Continuation of Ser. No. 352,580, April 19, 1973, abandoned. This application Jan. 27, 1975, Ser. No. 544,131

Int. Cl.² B60R *19/08*

U.S. Cl. 293—86 **7 Claims**



1. An energy-absorbing bumper system adapted to be mounted on a support structure, comprising:

a deformable hollow longitudinally extending bumper member;

means defining an elongated chamber adapted to be fixedly mounted on the support structure, said chamber having a fixed member disposed therein;

a piston head reciprocatively mounted within said chamber and adapted to move forwardly toward and rearwardly away from said structure;

mounting means fixedly connecting said head and said bumper member;

spring means extending between said fixed member and said piston head for urging resiliently said head toward said bumper member;

head retaining means for maintaining releasably said head against the force of said spring means to compress it between said head and said fixed member to store energy in said spring means and for releasing said head in response to at least a predetermined amount of impact acting toward said head on said hollow member to enable said spring means to exert said energy forwardly;

releasing means for causing said head retaining means to release said head upon said predetermined amount of impact being applied to said head in opposition to said force of said spring means via said bumper member and said mounting means to commence moving said head toward said fixed member;

said bumper member including an elongated gas-tight chamber extending the length of said bumper member and being oval-shaped in cross-section, said chamber being filled with a gas under pressure;

said means defining a chamber including a hole communicating with said chamber, said head including an opening therein, said head retaining means including a pin extending through said hole in said means defining a chamber and into said opening; and

said releasing means further including second spring means for ejecting said pin from said opening.

3,960,398

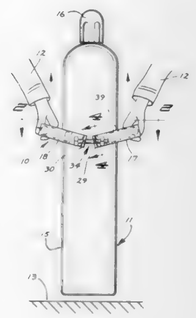
CARRIER APPARATUS

Hiram K. Johnson, 1220 Timbershore Lane, Eagan, Minn. 55123

Filed Jan. 22, 1975, Ser. No. 543,143

Int. Cl.² B66C *1/44*

U.S. Cl. 294—16 **6 Claims**



1. A carrier apparatus for manual transport of a generally cylindrical object of the type having a side wall disposed about a longitudinal axis, said carrier apparatus comprising:

a first jaw member having a first arcuate yoke contoured to substantially conform to the shape of a first segment of the side wall of the object, said first yoke having ends located generally on opposite sides of the object, an outwardly directed end flange extending from each end of the first yoke; a second jaw member having a second arcuate yoke contoured to substantially conform to the shape of the second segment of the side wall of the object,

said second yoke having ends located adjacent the ends of the first yoke and having an outwardly directed end flange extending from each end in facing relationship to the end flanges on the first yoke;

said end flanges on adjacent ends of the first and second yokes having relatively aligned holes;

coupling means coupling the adjacent outwardly directed end flanges of the first yoke and second yoke to asemble the first jaw member and second jaw member about the side wall and permit relative pivotal movement of the first and second yokes about an axis perpendicular to the longitudinal axis of the side wall ;

said outwardly directed end flanges being parallel to the pivotal axis of the first and second yokes;

said coupling means including linear coupling link assemblies coupling facing end flanges on adjacent ends of said first and second yokes, each coupling link assembly including a linear shank passing through the relatively aligned holes on an end flange of the first yoke and a corresponding end flange on the second yoke, means on the ends of the shank to prevent disengagement of the shank from the holes of the end flanges;

said first yoke having a gripping edge located adjacent the first segment of the wall means;

said second yoke having a gripping edge located adjacent the second segment of the wall means and located opposite the gripping edge of the first yoke;

each linear shank having a diameter sufficiently less than the diameter of the holes in the end flanges through which it passes to permit variance of the space defined between the first and second yokes and to permit relative pivotal movement of the first and second yokes to bring the gripping edges of the first and second yokes into engagement with the side wall of the object for lifting of the object; and

handle means rigidly secured on said jaw members adapted to be manually grasped and lifted to effect relative rotation of said first and second yokes about said axis whereby said gripping means engage the wall means to permit the lifting of the object.

3,960,399

SETTING AND RETRIEVAL DEVICE FOR DOWN-HOLE EQUIPMENT

Alex Dufrene, P.O. Box 194, Des Allemands, La. 70030

Filed Dec. 16, 1974, Ser. No. 532,996

Int. Cl.² E21B *31/02*

U.S. Cl. 294—86.25 **9 Claims**

1. A wire line supported running tool for down-hole equipment manipulation, comprising:

an elongate tapered mandrel;

a set of collet fingers encircling said mandrel, said fingers flexing radially inwardly and outwardly dependent on their relative position adjacent to said tapered mandrel;

incorporating an exposed seating surface for grasping collectively and releasing a tool to be manipulated in a well;

and collectively mounted on and movable with a slidable collar about said mandrel to positions along said mandrel where the taper thereof deflects them to grasp and release a tool;

a first cylindrical member relatively fixed to said mandrel;

a second cylindrical member relatively fixed to said collet fingers and slidably positioned relatively to said first member; and,

jar operated means cooperative with said first and second cylindrical members which selectively maintains said first



and second cylindrical members axially at a fixed relationship to grasp or release a tool.

3,960,400

LIGHTWEIGHT RAILWAY WHEEL

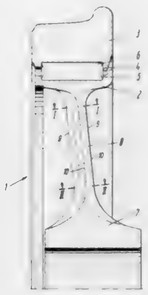
Helmut Licht, Bochum, and Willi Kasper, Wattenscheid-Hontrop, both of Germany, assignors to Fried. Krupp Huttenwerke AG, Bochum, Germany

Filed May 6, 1974, Ser. No. 467,308

Claims priority, application Germany, May 12, 1973, 2324117

Int. Cl.² B60B *3/02, 9/14, 17/00, 19/14*

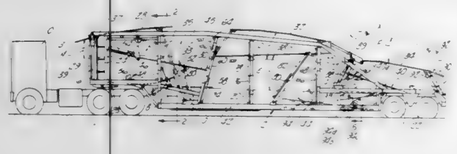
U.S. Cl. 295—11 **3 Claims**



1. In a railway wheel of lightweight construction including a wheel disc body having a radially outer wheel rim and a radially inner hub; an annular constant radius outer groove being formed in said wheel rim; a wheel tire being mounted on said wheel rim; an annular constant radius inner groove being formed in said wheel tire; annularly spaced prestressed rubber insert means being inserted between said grooves for mounting said wheel tire on the wheel rim of said disc body under a tension force; and said wheel disc body being a wheel disc of an essential flat conical basic configuration being linear in the radial direction thereof and undulated between two parallel planes in the radial direction by radially extending crests and troughs, the improvement comprising: said wheel disc and said hub being of unitary stressed steel construction, the crests of the undulations being displaced relative to the troughs to increase the rigidity of said wheel disc; and said prestressed

rubber insert means being a plurality of rectangular rubber block inserts in adjacent spaced relationship to each other.

3,960,401
VEHICLE TRANSPORT TRAILER
Billy E. Harold, 6869 Oldham, Taylor, Mich. 48180
Filed July 25, 1974, Ser. No. 491,811
Int. Cl.² B60P *3/08*
U.S. Cl. 296—1 A **11 Claims**



1. A tractor and a vehicle transport trailer for transporting ten vehicles of the sub-compact type thereon, said trailer having

four upper vehicle supporting tracks longitudinally arrayed along the length of said trailer;

three intermediate vehicle supporting tracks further aligned longitudinally along the length of said trailer;

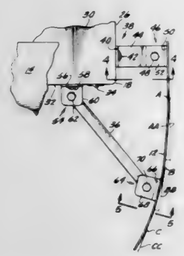
a pair of lower tracks, one fixed and one pivotably mounted on said trailer;

a further rearward lower pivotal track intermediate said first mentioned lower track pair;

the forwardmost of said upper tracks being slanted forwardly and operable to support a rearwardly facing sub-compact car, the remaining three of the upper tracks each being successively slanted more rearwardly and operable to support a forward facing sub-compact car, the forwardmost of the intermediate tracks being substantially horizontal and operable to support a rearward facing sub-compact car, the rearward two intermediate tracks each being slanted forwardly and operable to support a different forward facing subcompact car, the forwardmost of the lower tracks being substantially horizontal and operable to support a rearward facing subcompact car, and the remaining lower tracks each slanted rearwardly and operable to support a different forward facing sub-compact car

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3,960,402
VEHICLE FLOW DIRECTION VANES
Jack L. Keck, 9665 Oakmount, Cypress, Calif. 90630
Filed Sept. 30, 1974, Ser. No. 510,443
Int. Cl.² B62C *1/00*
U.S. Cl. 296—1 S **4 Claims**



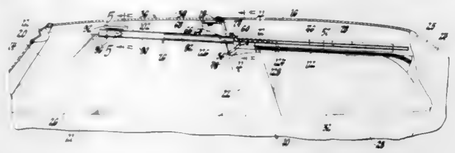
1. A vehicle flow direction vane for mounting onto rear side-to-back corners of vehicles having large substantially flat rear surfaces creating drag behind moving vehicles,

said vane having a leading edge and a trailing edge,

brackets on said vane for attaching to the side surface of said vehicle to maintain said leading edge spaced from said side surface,

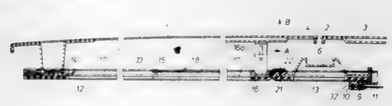
brackets on said vane for attaching to the rear surface of said vehicle to maintain said trailing edge within 30° of a line extending rearwardly from said leading edge said vane having a vane surface extending from said leading edge straight and parallel to the main airstream for about 20% of the vane chord, said vane surface thereafter progressively curving inwardly as it extends rearwardly of said leading edge up to and not exceeding a 30° curvature of said vane surface relative to the main airstream.

3,960,403
RETRACTABLE ROOF CLOSURE
Richard F. Carella, Mount Clemens; Edward G. Podolan, and Francis C. Przybysz, both of Utica, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 9, 1974, Ser. No. 504,040
Int. Cl.² B60J *7/04*
U.S. Cl. 296—137 B **3 Claims**



1. In a vehicle body having a passenger compartment, a fixed roof panel supported at its forward edge by roof pillars, and a windshield header spaced from the fixed roof panel to provide an unobstructed roof opening, a retractable closure for selectively opening and closing the roof opening comprising: a one-piece rigid closure panel, a guide track mounted on the fixed roof panel on each side of the vehicle body, roller means mounted on the rear end of the closure panel and movable within the guide track means to guide and support the rear end of the closure panel, a telescopable extension device on each side of the vehicle body for guiding and supporting the front end of the closure panel, said telescopable extension device including a first member mounted along the fixed roof panel, a second member having its forward end connected to the closure panel, and a third member telescopably connecting the first and second members and permitting movement of the second member between a forwardly extended position supporting the front end of the closure panel in position closing the roof opening and a rearwardly retracted position in which the closure panel is supported in stored position beneath the fixed roof panel to open the roof opening.

3,960,404
SLIDING ROOF STRUCTURE WITH TWO-WAY OPENABLE ROOF PANEL
Horst Bienert, Gauting, Germany, assignor to Webasto-Werk W. Baier KG, Munich, Germany
Filed July 22, 1975, Ser. No. 598,077
Claims priority, application Germany, July 24, 1974, 2435551
Int. Cl.² B60J *7/04*
U.S. Cl. 296—137 F **7 Claims**



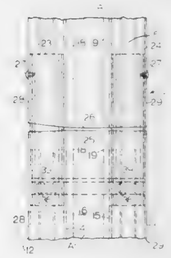
1. A sliding roof structure for automobiles, having a generally rectangular sliding roof panel which is movable out of a

matching outer roof opening in two modes, by pivoting the rear portion of the panel upwardly out of the outer opening in a venting mode, and by pivoting it downwardly and thereupon retracting the panel along lateral roof guides under the rearwardly adjacent stationary roof panel in a retracting mode, and where a downwardly offset roof frame surrounds the outer roof opening, defining at least three sides of a generally rectangular inner roof opening, and a roof canopy covers the inner roof area at the level of the inner roof opening, within and around said inner roof opening, the improvement comprising:

a transversely extending movable rain channel in operative connection with the sliding roof panel and guided for horizontal motion therewith, said rain channel being positioned vertically between the levels of the inner and outer roof openings, its normal horizontal position being underneath the rear edge of the outer roof opening, except when the sliding roof panel is opened in the retracting mode; and

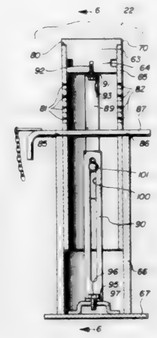
a movable canopy portion covering, as part of said roof canopy, the area located within the inner roof opening when the sliding roof panel is in its closed position; said movable canopy portion including a panel canopy connected to the sliding roof panel, an a separate rear canopy portion connected to the movable rain channel.

3,960,405
BENCH SEAT WITH END ALIGNING AND REINFORCING INSERT
David C. DeLong, 1221 Broad St., Grinnell, Iowa 50112
Continuation of Ser. No. 326,600, Jan. 26, 1973, abandoned. This application Oct. 31, 1974, Ser. No. 519,601
Int. Cl.² A47C *11/00*
U.S. Cl. 297—248 **5 Claims**



1. Mass seating equipment comprising, end-to-end positioned, multi-channeled, elongate support planks with a support surface; a front channel and a rear channel in each of said elongate support planks; channel inserts sized to be snug sliding fits inserted in the respective front and rear channels; anchor means for each of said channel inserts anchoring said inserts in an insert-receiving channel of one of each end-to-end pair of said support planks; said front and rear channels being spaced apart with a further channel means included in said elongate support planks between the front and rear channels, said further channel means being partially open to the bottom; said front and rear channels of said elongate support planks being partially open to the bottom between web lips extended from channel side walls; said channel inserts being channel-shaped with two sides and an interconnecting top, and open to the bottom by an extent greater than that defined by said channel web lips, and with the bottom extremes thereof being space-separated from the end extremes of said web lips; said channel inserts being of adequate length to extend into end-to-end positioned channels of said elongate support planks, with overlap in each giving structural alignment and mutual support to end-to-end positioned ones of said support planks; and mount means for said end-to-end positioned planks, said mount means including bolt-clip assemblies and fixed mounting flanges, said bolt-clip assemblies engaging only said web lips in a clamping action to said fixed mounting flanges through both areas of channel insert overlap and outside of channel insert overlap without bolt-clip assembly interference with said channel inserts, said end-to-end positioned support planks mountable both as seat benches and as footboards; and with said end-to-end positioned planks positioned with an expansion gap between planks ends.

3,960,406
SEAT WITH ANTI-THEFT STRUCTURE
Edward Buker, Lake Forest, Ill., assignor to Coach & Car Equipment Corporation, Elk Grove Village, Ill.
Filed Jan. 13, 1975, Ser. No. 540,515
Int. Cl.² A47C *3/00*
U.S. Cl. 297—345 **9 Claims**



1. A seat assembly comprising:

a vertically disposed base member;

a vertically disposed trunnion member including means for supporting a seat;

a vertically disposed intermediate member;

means mounting said intermediate member for vertical adjustment relative to said base member;

means mounting said trunnion member for rotation about a vertical axis relative to said intermediate member and for vertical adjustment with said intermediate member;

a plurality of securing elements for securing all three of said members together;

means for preventing the removal of said trunnion member from said assembly without the removal of at least one of said securing elements;

said plurality of securing elements including at least one detachably engaged first securing element removable from a securing disposition;

and means, including said members, for preventing access to all of the detachably engageable securing elements.

3,960,407
CUTTERS AND METHODS OF CUTTING
Carl Anders Noren, Saltsjo-Boo, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Sept. 26, 1973, Ser. No. 400,824
Claims priority, application South Africa, Oct. 3, 1972, 72/7054; Oct. 3, 1972, 72/7055
Int. Cl.² E21C *25/60*
U.S. Cl. 299—17 **8 Claims**

1. A method of cutting grooves in spallable material using high pressure fluid jets comprising:

directing at least two fluid jets towards the material,

causing the jets to traverse the material to form narrow slit-like cuts in the material,

mutually spacing the jets during their traverse movement in a manner to cause material portions intermediate the slit-like cuts to spall away forming a groove and

directing at least the jets forming slit-like cuts adjacent side walls of the groove in a manner such that the jets diverge relative to one another towards the base of the groove and such that each jet does not contact the side walls of



the groove so that drag on the jet by the side walls is substantially eliminated, and

advancing the jets toward the material as the cutting proceeds thereby maintaining the divergence.

3,960,408

TUNNEL LAYOUT FOR LONGWALL MINING USING SHIELDS

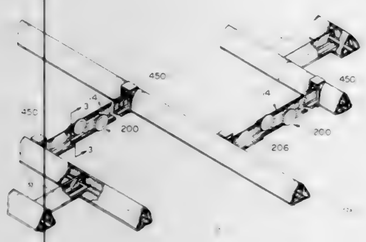
Robert W. Johns, Calgary, Canada, assignor to World Oil Mining Ltd., Calgary, Canada

Division of Ser. No. 509,489, Sept. 26, 1974. This application Oct. 28, 1975, Ser. No. 625,888

Claims priority, application Canada, Mar. 18, 1974, 195228

Int. Cl.² E21C *27/24*

U.S. Cl. 299—19 **6 Claims**



1. A mining system comprising:

a. a pair of operating tunnels horizontally spaced in parallel relationship adjacent the base of a working block of mineral deposits,

b. a mining shield comprising a plurality of arch sections arranged in side-by-side relationship and free of any permanent interconnection, each of said arch sections comprising a base portion forming a floor and a cantilever portion extending upwardly from said base portion at a generally acute angle and forming a roof, said mining shield extending between said operating tunnels such that the open side of the shield faces a mining wall,

c. an operator's pulpit positioned in each of said operating tunnels at the end of said mining shield,

c. mining equipment within said mining shield and movable along the length of said mining shield for making a mining cut while moving,

e. means in said mining shield for conveying mine material to one of said operating tunnels,

f. means for advancing said mining shield behind said mining equipment as said mining equipment progresses into the cut made by said mining equipment, and

g. means for removing detrital from the mining space into which said mining shield is to be advanced.

3,960,409

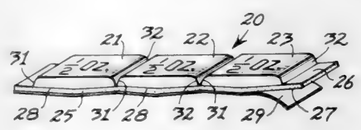
WHEEL BALANCING WEIGHT

Hubert D. Songer, Murfreesboro, Tenn., assignor to Perfect Equipment Corporation, Murfreesboro, Tenn.

Filed Nov. 25, 1974, Ser. No. 526,891

Int. Cl.² B60B *13/00*

U.S. Cl. 301—5 B **6 Claims**



1. A wheel balancing device for a vehicle having a substantially cylindrical rim portion coaxial of the wheel, comprising:

a. a plurality of pre-formed, unitary balancing weights of uniform weight and length, each weight having opposite free ends, a bottom surface and a top surface,

b. an elongated tape having a top surface and a bottom surface,

c. means securing the bottom surfaces of said weights to the top surface of said tape, said weights being in proximate end-to-end relationship longitudinally of said tape,

d. at least portions of each adjacent pair of free ends of said weights adjacent the top surfaces of said weights being proximately spaced from each other,

e. said tape being easily severable transversely of said tape between each adjacent pair of said free ends,

f. adhesive means on the bottom surface of said tape for securing said tape longitudinally circumferentially of the rim portion of said wheel,

g. the bottom surface of each unitary weight comprising at least three longitudinally spaced transverse line portions against which greater pressure is exerted through the corresponding portions of said tape by the opposing rim portions of said wheel than against any other portions of the bottom surface of said weight.

3,960,410

SYSTEM FOR ACHIEVING A MAXIMUM BRAKING EFFECT

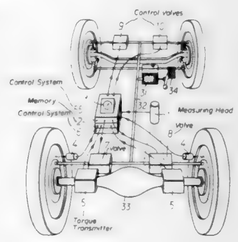
Ludwig Leitz, and Knut Heitman, both of Wetzlar, Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany

Filed Oct. 7, 1974, Ser. No. 512,706

Claims priority, application Germany, Oct. 31, 1973, 2354491

Int. Cl.² B60T *8/02*

U.S. Cl. 303—21 A **15 Claims**



9. A method for determining the maximum tractive and braking effect in a vehicle provided with rubber-tired elements controllable to provide braking effort in contact with a road surface, the method comprising the steps of:

measuring previous to applied braking operation and during the normal travel of said vehicle and in consequence of said road surface any change in speed of said vehicle and braking effort applied to said controllable elements within a predetermined time interval;

measuring simultaneously within said time interval and generating magnitude signals and sign signals of any slippage of at least one of said controllable elements;

comparing said signals received from said measurements to generate signals having characteristic values; and

applying said signals having characteristic values to indicating means and to controlling means for displaying said maximum braking effect to be expected at full braking of said vehicle and for affecting the braking operation of said controllable elements respectively.

14. An apparatus for determining the maximum braking effect at a vehicle provided with rubber-tired elements controllable to provide braking effort in contact with a road surface, the improvement comprising:

torque and rotation indicators (**4, 5**) for measuring the effective torque and wheel rpm between wheel and road previous to any braking operation and during the normal travel of said vehicle and in consequence of the changing properties of said road surface;

a speed indicator (**1**) for measuring the actual vehicle speed with respect to ground;

a comparison logic with memory (**2**) and display (**3**) for determining the maximum braking effort in response to signals from said torque and rotation indicators and said speed indicator and indicating the maximum braking effect to be expected at full braking of said vehicle; and

a control system (**6**) with braking control valves (**7, 8, 9,** 10) for acting on the vehicle brakes, when the measured values indicate an imminent collision.

3,960,411

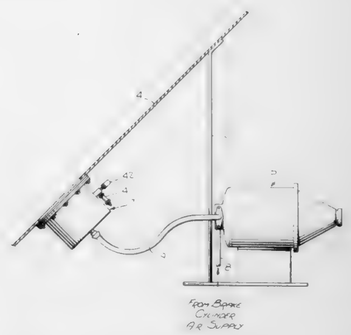
EMPTY-LOAD BRAKE WITH LADING CONTROLLED RESERVOIR

Robert G. Beacon, Sparta, N.J., assignor to Ellcon-National, Inc., Totowa, N.J.

Continuation-in-part of Ser. No. 541,266, Jan. 15, 1975, abandoned. This application July 28, 1975, Ser. No. 599,827

Int. Cl.² B60T *8/20*

U.S. Cl. 303—23 R **29 Claims**



1. A load compensating reservoir assembly for controlling the fluid pressure in a car brake cylinder and piston assembly operable by said fluid, said compensating reservoir assembly comprising a multi-walled reservoir, one of said walls being movable and in fluid-tight relationship with said reservoir and being adapted to form part of a wall of said car, a fluid valve on a wall of said reservoir, said valve having an inlet for receiving said fluid from externally of said reservoir, having an outlet opening into said reservoir and having control means for alternately opening and closing said valve and thereby permitting and preventing passage of fluid therethrough, and means internally of said reservoir interconnecting said movable wall and said control means for opening and closing said valve dependent upon the position of said movable wall.

3,960,412

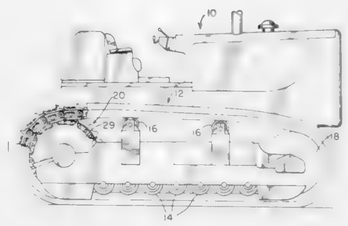
WEAR-COMPENSATING REPLACEMENT SPROCKET

James R. Shuler, Eureka, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 10, 1975, Ser. No. 556,851

Int. Cl.² B62D *55/20*

U.S. Cl. 305—57 **6 Claims**



1. A method of compensating for wear in chain and sprocket drive arrangements by maintaining a substantially matched pitch diameter of said chain and sprocket as said wear takes place, said method comprising the steps of:

constructing a sprocket of a first set of replaceable tooth segments having a predetermined pitch diameter and root diameter for adjusting the pitch diameter of said sprocket;

constructing a chain having rotatable pin bushings with at least a first wear portion engaging said first root diameter of said sprocket for adjusting the pitch diameter of said chain;

adjusting the pitch diameter of one of said sprocket and said chain to thereby maintain a matched pitch diameter of said sprocket and chain drive arrangement;

including the step of replacing said tooth segments with tooth segments having a root diameter greater than said first root diameter as said bushings wear; and,

wherein the step of constructing said chain includes constructing said pin bushings to have two wear areas, and the step of maintaining said matched pitch diameter includes rotating said pin to said second wear area when said first area becomes too worn to maintain said pitch diameter.

3,960,413

SERIES ROLL BODY CONVEYANCE

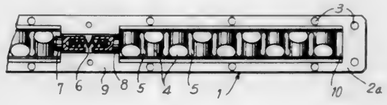
Hermann Abbuhl, Steffisburg, and Hans Tanner, Heimberg, both of Switzerland, assignors to Hydrel A.G., Romanshorn and W. Schneeberger AG, Roggwill, both of, Switzerland

Continuation-in-part of Ser. No. 416,942, Nov. 19, 1973, abandoned. This application July 7, 1975, Ser. No. 593,862

Claims priority, application Switzerland, Nov. 17, 1972, 16899/72

Int. Cl.² F16C *21/00*

U.S. Cl. 308—3 A **3 Claims**



1. In a roller bearing cage for the support of linearly conveyed machine elements, such as machine tool carriages and the like; including elongate cage rails; and a series of roller

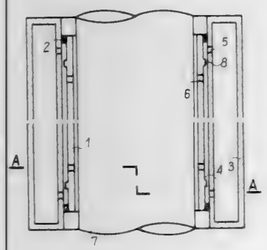
bodies being supported between said rails, the improvement comprising: spacer means in said cage positioned intermediate each of said roller bodies; said spacer means being in contact with said roller bodies, said series of roller bodies and spacer means being positioned so as to generate a frictional force responsive to relative rotation between said spacer means and said roller bodies; and at least one prestressed spring means in said cage for exerting a constant compressive spring force on said roller bodies and spacer means in the longitudinal direction of said cage.

3,960,414

GAS-LUBRICATED BEARING

Lech Andrzej Brzeski; Zbyszko Kazimierz Kazimierski; Jan Eugeniusz Krysinski, and Andrzej Witold Siwek, all of Lodz, Poland, assignors to Politechnika Lodzke, Lodz, Poland

Filed Dec. 24, 1974, Ser. No. 537,364
Claims priority, application Poland, Dec. 30, 1973, 167778
Int. Cl.² F16C *17/16*
U.S. Cl. 308—9 **1 Claim**



1. A gas-lubricated bearing comprising, in combination, a housing, elastic rings with side surfaces, a cylindrical bushing mounted in a hole in said housing by said elastic rings, chamber means formed by the outer surface of said bushing and surface of said hole as well as the side surfaces of said elastic rings; said housing having outlet holes for feeding gas into said chamber means, said bushing having inlet holes for feeding gas to the surface of the shaft to be held in said bearing, throttling elements located on the periphery of said bushing between said outlet holes and said inlet holes, and elastic baffles in said chamber means along the longitudinal axis of said bushing.

3,960,415

BEARING STRUCTURE WITH IMPROVED SEAL ARRANGEMENT

Ralph Westervelt, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

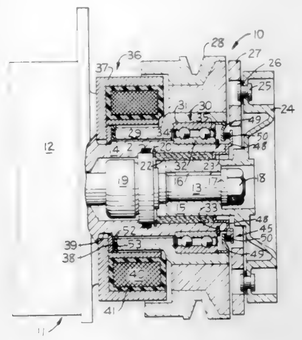
Filed Feb. 7, 1975, Ser. No. 548,110
Int. Cl.² F16C *1/24*
U.S. Cl. 308—36.1 **10 Claims**

1. In a drive mechanism including a spindle rigidly mounted at one end and a rotating member mounted for rotation about the longitudinal axis of said spindle by a bearing means; a seal comprising:

a. a first annular seal support member mounted at the free end of said spindle and extending radially outward thereof on the opposite side of said bearing means from said one end of said spindle;

b. a second annular seal support member mounted on said rotating member and extending radially inward thereof into radially overlapping relation with said first seal support member whereby an annular peripheral surface portion only of said first seal support member is disposed in opposition to an annular peripheral surface portion only of said second seal support member to define an annular volume therebetween; and

c. an annular seal member positioned within said annular volume, said annular seal member extending between said opposed surfaces of said first and second seal support



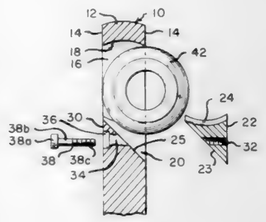
members and being bonded to one of said opposed surfaces and in rotary sealing engagement with the other of said opposed surfaces.

3,960,416

SPHERICAL BEARING HAVING ADJUSTABLE KEY

Albert R. McCloskey, Fairfield, Conn., assignor to Heim Universal Corporation, Fairfield, Conn.

Filed Jan. 20, 1975, Ser. No. 542,517
Int. Cl.² F16C *9/06, 11/06, 23/04, 25/04*
U.S. Cl. 308—72 **7 Claims**



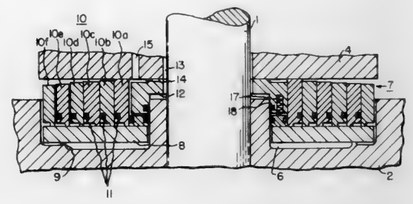
1. A spherical bearing comprising an outer member having a hole extending from side to side, the surface of the hole being concave and spherical so that the outer member has constricted portions at each side, said outer member also having a ramped keyway extending diagonally downward from said hole; a ramped removable key in said keyway whose ramp is complementary with the ramp defining said keyway in said outer member, said key also having a concave and spherical top surface corresponding to the surface of said hole so that said key has shoulder portions corresponding to the constricted portions of said outer member; and a partially spherical inner member, said inner member being held in said outer member by impingement of said spherical surface of said inner member against the constricted portions of said outer member and said key being held in said outer member by impingement of the shoulder portions of said key against said spherical surface of said inner member, adjusting and securing means to move said key along the respective ramps of said key and said keyway varying the bearing tolerance between said inner and outer member and to secure said key to said outer member.

3,960,417

HYDROSTATIC AXIAL THRUST BEARING

Charles Edward Kraus, Austin, Tex., assignor to Excelermatic, Inc., Austin, Tex.

Filed June 16, 1975, Ser. No. 587,032
Int. Cl.² F16C *1/24*
U.S. Cl. 308—170 **10 Claims**



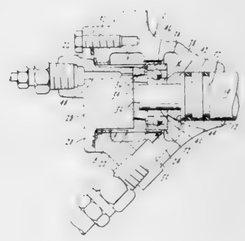
1. In a hydrostatic axial thrust bearing including: a support member; a load member disposed adjacent said support member, said load and support members having a support cavity formed therebetween; and means for admitting pressurized fluid to said support cavity for supporting said load member on said support member; the improvement comprising means for varying the effective bearing area of said support cavity in response to the load carried by said load member, thereby to permit the bearing to adjust to large load differences.

3,960,418

CANTILEVER MOUNTING

Joseph W. Bracken, Redford Township, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 7, 1974, Ser. No. 521,717
Int. Cl.² F16C *35/04*
U.S. Cl. 308—184 R **10 Claims**



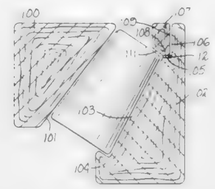
1. In a device having: a housing; an axially extending shaft, bearings journalling the shaft for rotation; and a cantilever mounting having a fixed end portion connected to the housing, a free end portion axially spaced from the fixed end and supporting one of the bearings, and an annular cage portion having a plurality of circumferentially spaced axially extending ribs connected at their opposite ends respectively to the fixed and free end portions and delimiting therebetween a plurality of slots, the ribs being operative to change the normal critial frequencies of the shaft and remove them from the normal operating range of the shaft: the improvement wherein, in at least one longitudinal section, the opposite longitudinal edges of the ribs diverge from a location intermediate the fixed and free end portions toward the fixed and free end portions.

3,960,419

BEARING COMPONENT

Thomas Scott Brawley, 3013 Mayfield Drive, Johnson City, Tenn. 37601

Filed Mar. 29, 1974, Ser. No. 456,139
Int. Cl.² F16C *33/58*
U.S. Cl. 308—216 **5 Claims**



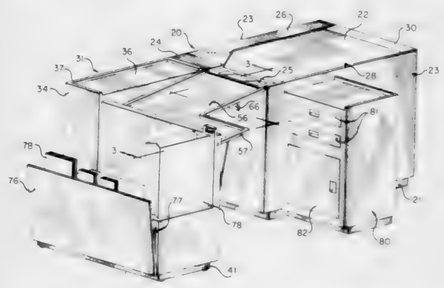
1. A channeled anti-friction bearing component comprising a generally cylindrical body portion, a frusto-conic bearing surface on said body portion constituting the bottom of a channel, a separately constructed annular rib having a surface defining the smaller end of said channel, the body portion being formed with an annular recess adjacent said smaller end and the annular rib being fitted in said recess and fused to said body by a weldment spaced from the end of said bearing surface, and an integrally formed rib having a surface defining the larger end of the channel, the metal flow in said body and said integrally formed rib running in directions which lie substantially parallel to the corresponding sides of the axial cross-section of the channel and being substantially uninterrupted.

3,960,420

CHECKOUT SYSTEM

Floyd G. Speraw, Cambridge; Thomas M. Hess, St. Clairsville, and Harold J. Sampson, Cambridge, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed May 8, 1974, Ser. No. 468,120
Int. Cl.² A47B *46/00, 96/18;* **A47F** *9/02, 10/00*
U.S. Cl. 312—140.1 **6 Claims**



1. A checkout system including

a. a checkout counter having an entrance portion at one end and a support portion at the other end, said counter having a recessed area located intermediate the ends of said counter, said recessed area defining a discharge end;

b. a cart comprising a box-like structure having a top surface extending in a horizontal direction for supporting a bag in an open position;

c. means for supporting said cart for movement;

d. a wall member secured to said structure and having a pair of side edge portions and a top edge portion located generally in the plane of said discharge end;

e. means for rotatably mounting a side edge portion of said wall member to said support portion for movement around a vertical axis to allow the cart to be moved to a

nested position in said recessed area wherein the top surface of the box-like structure is positioned adjacent the discharge end of the checkout counter and to a second position perpendicular to said nested position wherein the top surface is aligned perpendicular to the first position of the top surface;

f. a shelf member;

g. means for rotatably mounting the shelf member to the top edge portion of the wall member for movement around a horizontal axis between a first position adjacent said wall member when the cart is in said nested position and an extended position engaging the discharge end of the checkout counter when the cart is in said second position to permit the movement of articles thereover from said discharge end to said cart;

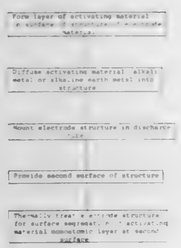
h. and means for supporting the shelf member in said extended position.

3,960,421

METHOD OF MANUFACTURING A NON-THERMALLY EMITTING ELECTRODE FOR AN ELECTRIC DISCHARGE TUBE

Michel Lagues, Sceaux, and Jean-Louis Domange, Antony, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 344,264, March 23, 1973, abandoned. This application Jan. 3, 1975, Ser. No. 538,326
Claims priority, application France, Mar. 27, 1972, 72.10659; Mar. 27, 1972, 72.10660
Int. Cl.² H01J *9/02*
U.S. Cl. 316—17 **12 Claims**



1. A method of manufacturing a non-thermally emitting activated electrode for an electric discharge tube, comprising the steps of:

a. providing a structure of electrode material, said structure having a first surface for electron emission and a layer disposed at said first surface and comprising an activating material;

b. diffusing said activating material into said structure, said activating material consisting essentially of a member selected from the group consisting of an alkali metal and an alkaline earth metal;

c. mounting said electrode in the discharge tube; then,

d. providing a second surface of said structure substantially not polluted by said activating material; and

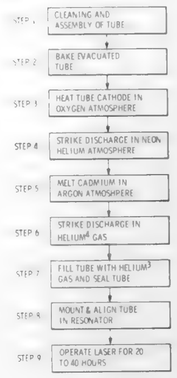
e. thermally treating at a first temperature the structure thus produced to achieve surface segregation of said activating material at said second surface as a monoatomic layer thereon.

3,960,422

PROCESS FOR MANUFACTURING A HELIUM METAL VAPOR LASER TUBE

William A. Shull, Portola Valley, Calif., assignor to Liconix, Mountain View, Calif.

Filed Aug. 5, 1974, Ser. No. 494,892
Int. Cl.² H01J *9/18*
U.S. Cl. 316—19 **17 Claims**



1. A process for manufacturing a helium metal vapor laser comprising the steps of:

providing a laser tube having a cathode, Brewster windows and a metal reservoir intermediate its ends;

filling the metal reservoir with metal;

evacuating said tube;

baking said tube at a temperature of approximately 100°C for at least 10 hours;

backfilling said tube with argon;

melting the metal in the metal reservoir;

backfilling said tube with helium gas;

sealing said tube;

mounting said tube in a resonator to form a laser; and

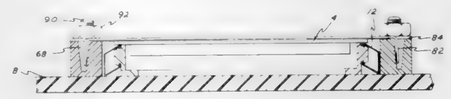
aligning said tube in said resonator for lasing operation.

3,960,423

MULTI-CONTACT CONNECTOR FOR SUBSTRATE-TO-BOARD CONNECTIONS

Lawrence Paul Weisenburger, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 2, 1974, Ser. No. 511,881
Int. Cl.² H05K *1/12*
U.S. Cl. 339—17 CF **17 Claims**



1. A multi-contact electrical connector for connecting corresponding terminal pads on a first panel-like member to terminal pads on a second panel-like member, said second panel-like member extending parallel to said first panel-like member, said connector comprising:

a contact terminal strip, said terminal strip comprising an elongated strip of relatively thin insulating film and a plurality of conductors of resilient spring metal adhered to said film, said conductors extending in parallel side-by-side relationship across said strip,

said conductors being reversely formed with respect to the axis of said film through an angle of substantially 180° with said conductors on the external surface thereof, each

of said conductors constituting a resilient conductor spring, each of said conductors having first and second contact zones on said external surface and intermediate the ends of said conductors, said first and second contact zones facing in opposite directions for engagement with corresponding terminal pads on said first and second panel-like members,

insulating supporting means, said supporting means having parallel oppositely directed faces for supporting said first and second panel-like members in fixed spaced-apart relation,

said contact terminal strip being mounted on said insulating supporting means between said parallel oppositely directed faces with the planes defined by said oppositely directed faces normally extending between said first and second contact zones, whereby

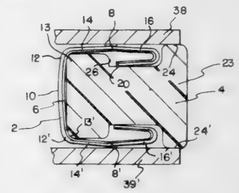
upon mounting said first and second panel-like members on said parallel oppositely directed faces, said terminal pads initially engage said first and second contact zones and force said first and second contact zones towards each other thereby flexing said resilient spring metal conductors and generating sufficient contact force between said terminal pads and said contact zones to form an electrical connection between corresponding terminal pads on said first and second panel-like members.

3,960,424

MULTI-CONTACT SPRING CONNECTOR FOR BOARD TO BOARD CONNECTIONS

Lawrence Paul Weisenburger, Winston-Salem, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 511,881, Oct. 2, 1974. This application Dec. 19, 1974, Ser. No. 534,387
Int. Cl.² H05K *1/12*
U.S. Cl. 339—17 M **20 Claims**



1. A multi-contact electrical connector for connecting corresponding terminal pads on a first panel-like member to terminal pads on a second panel-like member, said second panel-line member extending parallel to said first panel-like member, said connector comprising:

a contact terminal strip, said terminal strip comprising an elongated strip of insulating film having parallel side edges, a plurality of conductors, being of resilient spring metal, adhered to said film, and extending in parallel side-by-side relationship between said side edges with the opposite ends of said conductors being aligned along said parallel side edges,

said conductors being reversely formed with respect to the axis of said film through an angle of substantially 180° so that said terminal strip is generally U-shaped having a central web and opposed sidewalls, with said conductors on the external surface thereof, each of said conductors forming a resilient conductor spring, each of said conductors having first and second contact zones on said external surface, said first and second contact zones facing in opposite directions for engagement with corresponding terminal pads on said first and second panel-like members, and

insulating supporting means, said supporting means having first means for supporting said first and second panel-like members in fixed spaced-apart relation at a distance less than the separation of said first and second contact zones when said conductor springs are relaxed and second means for supporting said terminal strip between said panel-like members, said second means comprising multiple pivot means located adjacent to locations intermediate said edges of said strip, said pivot means comprising spaced-apart corners on said supporting means, said conductors abutting one of said corners at each juncture between each of said sidewalls and said web, and restraining means for restraining said opposite ends of said conductors against movement of said ends towards each other when said terminal strip is compressed between said panel-like members, each of said conductors being free to flex between said corners, whereby

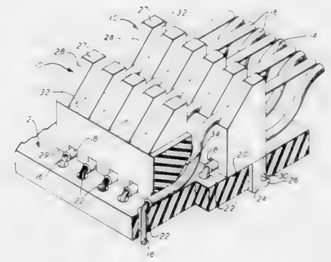
upon supporting said first and second panel-like members on said first means, said conductors will be resiliently deformed and said contact zones will be engaged with corresponding terminal pads on said first and second panel-like members.

3,960,425

HARNESS CABLE CONNECTOR

Donald C. Kirk, Jr., Naugatuck, and Otto Morin, Newtown, both of Conn., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Feb. 25, 1975, Ser. No. 552,753
Int. Cl.² H01R *13/58*
U.S. Cl. 339—17 R **11 Claims**



1. A cable connector for connecting a plurality of conductive elements to a planar substrate and to conductive paths on the surface thereof, comprising:

a housing having first and second housing surfaces joined at a common edge, said first housing surface having a plurality of equally spaced slots across its full width for individually mounting said plurality of conductive elements therein;

said planar substrate having a plurality of equally spaced apertures which receive said conductive elements mounted in said slots as said second housing surface is positioned against said planar surface;

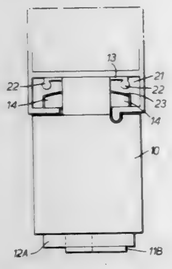
means for rolling said housing about said common edge to remove said second housing surface from its position against said planar surface and instead position said first housing surface against said planar surface for bending said plurality of conductive elements received by said planar surface apertures; and

means for locking said housing in said position with said first housing surface against said planar surface.

3,960,426
ELECTRICAL INSTALLATION

Robert Heritage, Mortlake, England, assignor to Rotaflex (Great Britain) Limited, London, England

Filed Sept. 24, 1975, Ser. No. 616,506
Claims priority, application United Kingdom, Oct. 2, 1974, 42797/74
Int. Cl.² H01R *13/60*
U.S. Cl. 339—21 R **3 Claims**

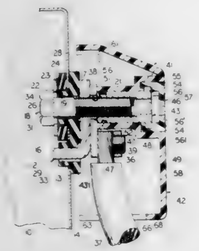


1. For use with an electrical current supply installation of the continuous outlet type comprising a channel-section track member having spaced parallel conductors extending longitudinally within said track member; a power take off adaptor comprising a housing, contact finger means movably mounted on said housing for movement between operative and inoperative positions, mechanical fixing means mounted on said housing operable to secure said housing to said track member, first and second rotary members independently and manually rotatable to operate said contact finger means and said mechanical fixing means respectively, and respective mutually interengageable portions on said first and second rotary members which interlock to prevent rotation of said first rotary member when said second rotary member is in an inoperative position.

3,960,427
RETAINER FOR AN END FITTING OF A WELDING CABLE

Robert E. Piaget, and Charles W. Clyburn, both of Cincinnati, Ohio, assignors to I.C.M. Industries, Inc., Blue Ash, Ohio, a part interest

Filed Oct. 31, 1974, Ser. No. 519,577
Int. Cl.² H01R *13/44*
U.S. Cl. 339—39 **8 Claims**

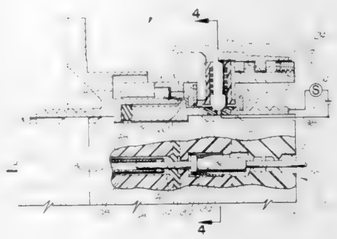


1. An end fitting retainer for welding equipment including a cabinet and a stud extending outwardly of the cabinet which comprises a nut for threadably engaging the stud, said nut having a head end, means on said head end for cooperation with a wrench, an insulative housing rotatably supporting the nut, there being a socket in the housing surrounding said head end of the nut, a flange on said head end of the nut extending radially outwardly thereof, guard means mounted in the socket, there being an opening in the guard means overlying the head end of the nut of a sufficient size to permit entry of a wrench to contact said means on said head end without permitting entry of a finger, flange means on the guard means underlying the flange of the nut to hold the guard means on the nut and in the socket, and means on the housing cooperating with means on the nut for retaining the nut in the housing.

3,960,428
ELECTRICAL CONNECTOR

Hubert W. Naus, Monrovia, and John L. Hawkins, Jr., Pasadena, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 7, 1975, Ser. No. 565,344
Int. Cl.² H01R *13/54*
U.S. Cl. 339—90 R **9 Claims**

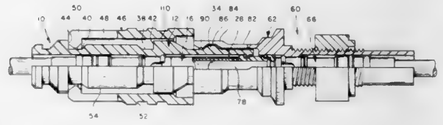


1. An electrical connector comprising:
mating receptacle and plug connector members, each said connector member comprising a shell containing an insulator;
a plurality of pairs of axially aligned contacts mounted in said insulators, respectively, the axially aligned contacts of each pair being in an electrically coupled condition when said connector members are mated;
a rotatable coupling ring on one of said shells engageable with the other shell for mating said connector members;
at least one detent pin slidably mounted in a radially extending bore in said coupling ring;
a recess in the outer surface of said one shell aligned with said pin when said connector members are mated;
means biasing said pin radially inwardly in said bore to engage said recess;
releasable means positively locking said detent pin into engagement with said recess when said connector members are mated;
said releasable locking means comprising a lock ring surrounding said coupling ring, means mounting said lock ring on said coupling ring for axial movement thereon between first and second positions, said lock ring having an inner surface adjacent to said pin dimensioned to extend over the outer end of said pin when said pin engages said recess, in said first position of said lock ring said inner surface being located at one side of said pin, in said second position of said lock ring said inner surface extending over said outer end of said pin to lock said pin in said recess, means biasing said lock ring from said first position toward said second position, and
said mounting means preventing rotation between said lock ring and said coupling ring when said lock ring is in said first position and allowing rotation between said lock ring and said coupling ring when said lock ring is in said second position.

3,960,429
CONNECTOR ASSEMBLY WITH AXIALLY OPERABLE ENGAGEMENT MEANS

Norbert L. Moulin, Placentia, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 29, 1974, Ser. No. 501,553
Int. Cl.² H01R *13/54, 13/64*
U.S. Cl. 339—91 R **7 Claims**

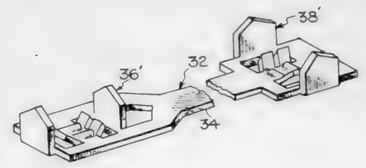


1. An electrical connector assembly comprising:
a receptacle connector having means for defining an integral molded body entirely of plastic dielectric material of generally tubular construction having front and rear ends and inner and outer surfaces for receiving and securing within said inner surface at least one electrical contact with a contact engaging end thereof positioned at said front end of said receptacle connector;
a plug connector having means for defining an integral molded body entirely of plastic dielectric material of generally tubular construction having front and rear ends and inner and outer surfaces for receiving and securing within said inner surface at least one electrical contact with a contact engaging end thereof positioned at said front end of said plug connector, and being matable with said receptacle connector for electrically coupling said contact engaging ends of said respective electrical contacts of said plug and receptacle connectors;
a first of said body means of one of said plug and receptacle connectors including a shroud integrally formed with said first body means and positioned at said front end thereof for enclosing and mechanically protecting a first of said contact engaging ends, said first body shroud comprising a plurality of fingers separated from one another by means therebetween for defining slots and secured integrally at one end of said fingers to said first body for forming a plurality of cantilevers deflectable at a second end of said fingers towards and away from said first contact engaging end, said fingers having adjacent said second ends thereof means for defining reliefs undercut into said inner surface of said first body facing towards said first contact engaging end;
a second of said body means of the other of said plug and receptacle connectors including a shroud integrally formed with said second body means and positioned at said front end thereof for enclosing and mechanically protecting a second of said second contact engaging ends, said shroud having an enlarged ring section formed on said outer surface of said second body means and facing away from said second contact engaging end for latching and engaging with said undercut relief means of said first shroud fingers, said second body means further including means for defining a pair of spaced forward and rearward annular grooves formed in said outer surface of said second body means and spaced rearwardly from said first end thereof and towards said rear end thereof, said spaced annular groove means each having an annular abutment shoulder with said abutment shoulders facing one another; and
an integral molded coupling ring entirely of plastic dielectric material and of generally tubular construction having front and rear ends and positioned on said second body means for moving along said outer surface thereof, said coupling ring including a plurality of arms separated from one another by means therebetween for defining slots and integrally secured at one end thereof to said coupling ring for forming a plurality of cantilevers deflectable at a second end of said coupling ring arms towards and away from said second body means, said coupling ring arms having adjacent said second ends thereof detents facing towards said second body means for latching and engaging respectively with said spaced annular groove means and thereby for establishing a forward latching engagement with said second body means in said forward annular groove means and for aligning of said front ends of both said coupling ring and said second body means and thereby for establishing a rearward latching engagement with said second body means in said rearward annular groove means and for retracting of said coupling ring front end from said front end of said second body means;
whereby, when said plug and receptacle connectors are mated for said electrically coupling of said contact engaging ends of said respective electrical contacts, and where said coupling ring is in said rearward latching engagement of said arm detents with said second body means in said rearward annular groove means, said enlarged ring section of said second body means is in engagement with said undercut relief means of said first body means, said coupling ring being thereby moveable towards said forward latching engagement of said arm detents with said second body means in said forward annular groove means for maintaining the engagement of said enlarged ring section and said undercut relief means and thereby for preventing disengagement between said plug and receptacle connectors and uncoupling of said contact engaging ends.

3,960,430
FLAT WIRING SYSTEM AND CRIMPED CONNECTION

Edward Dennman Bunnell, Palm Harbor; James Earl Fleischhacker, Clearwater, and Robert John Tennant, Seminole, all of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 29, 1974, Ser. No. 518,422
Int. Cl.² H01R *11/20*
U.S. Cl. 339—97 C **17 Claims**



1. A crimped electrical connection between a connecting device and a ribbon-like conductor, said conductor being contained in a thin film of insulating material:
said connecting device comprising a sheet metal member having a flat web and having sidewalls extending from two opposite edges of said web, said conductor extending across said web, said conductor having its longitudinal axis extending parallel to, and between, said sidewalls,
said sidewalls extending through said film on each side of said conductor and being bent inwardly towards each other and against said film, side sidewalls having free end portions which extend substantially parallel to said web and said film so that said crimped connection is substantially flat,
at least one contact lance struck from said web, said lance being on the same side of said web as said sidewalls and extending transversely with respect to said longitudinal axis of said conductor and towards one of said sidewalls, said lance having a leading edge which extends parallel to said axis of said conductor and which is proximate to one of said sidewalls,
said lance being flexed towards said web and being held in a flexed condition by one of said sidewalls,
portions of said insulating film on the side of said film which is against said lance being scraped from said conductor,

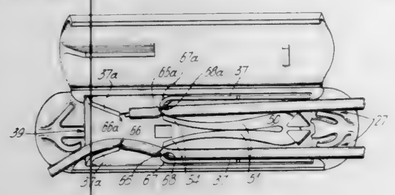
portions of said lance being against exposed areas of said conductor and in electrical contact therewith whereby, said conductor is clamped between said sidewall and said lance and electrical contact is maintained by the pressure exerted against said conductor.

3,960,431

ELECTRICAL CONNECTOR

Morley Scott MacKenzie, Ottawa; Louis Donald Charron, Greely; Andrew Philip Charles Dooley, Ottawa, and John Davidson Lee, Manotick, all of Canada, assignors to Nothern Electric Company Limited, Montreal, Canada

Filed July 21, 1975, Ser. No. 597,500
Int. Cl.² H01R *9/08*
U.S. Cl. 339—98 **9 Claims**



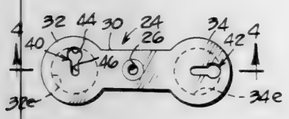
1. An electrical connector, comprising:
a housing having a base and a cover to define a hollow interior;
a holding member in said housing and including a base and flange members extending from a plane including said base;
a spring in said holding member, said spring retained in said holding member in a preloaded condition;
a first insulation cutting edge on said spring and a second insulation cutting edge on said holding member;
said second cutting edge positioned in opposition to said first cutting edge, the cutting edges positioned on opposite sides of a conductor path in said housing;
the arrangement such that on release of said spring said first cutting edge is moved toward said second cutting edge with said cutting edges piercing insulation of a conductor and in contact with said conductor.

3,960,432

STRAIN RELIEVER FOR ELECTRIC PLUG-SOCKET CONNECTION

Raymond Francis Wilbur, 3329 Quesada Drive, San Jose, Calif. 95122

Filed July 2, 1975, Ser. No. 592,559
Int. Cl.² H01R *13/58*
U.S. Cl. 339—103 R **6 Claims**



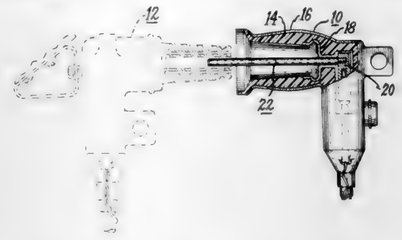
1. Strain relieving apparatus for an electrical plug on the end of an electrical cord that is plugged into an electrical receptacle having a cover plate during use of the appliance connected to the cord, said apparatus comprising a rigid body, screw means for attaching said cover plate and said body to said receptacle, said body defining at least one keyhole shaped aperture, said aperture having an upper relatively large diameter portion and a slot depending downward from said large diameter portion, said slot being bounded by a margin of reduced thickness, a ball chain having a plurality of balls joined together by a plurality of rods, said rods having a diameter sized for entry into said slot, said balls having a diameter sized for entry into said aperture and engageable on said margins to removably retain said ball chain in said slot and means for attaching the ball chain to the cord adjacent the plug.

3,960,433

SHIELDED POWER CABLE SEPARABLE CONNECTOR MODULE HAVING CONDUCTING CONTACT ROD WITH A BEVELED SHOULDER OVERLAPPED BY INSULATING FOLLOWER MATERIAL

Vincent J. Boliver, Pittsfield, Mass., assignor to General Electric Company

Filed Sept. 5, 1975, Ser. No. 610,624
Int. Cl.² H01R *13/52*
U.S. Cl. 339—111 **1 Claim**



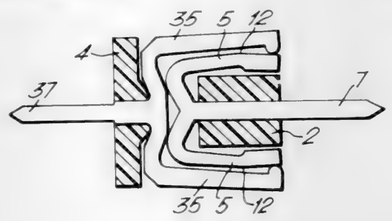
1. Apparatus for connecting electrical power cable, the apparatus being of the type having a rod contact to be received by a bore contact, the rod contact having an insulating arc follower fixed to the end for insertion into the bore, wherein the improvement comprises:
a beveled shoulder on said contact rod adjacent said follower and overlapped by the material of said follower.

3,960,434

ELECTRICAL CONNECTOR ASSEMBLY

Lucas Soes, Vught, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 6, 1975, Ser. No. 547,678
Claims priority, application Netherlands, Feb. 14, 1974, 7402028
Int. Cl.² H01R *11/22*
U.S. Cl. 339—176 M **5 Claims**



1. An electrical connector assembly comprising a forked female contact having a pair of spaced cantilever contact springs extending from a yoke portion with inwardly directed lobes at their free ends receiving a complementary male contact, the male contact including a forward yoke portion with a pair of rearwardly directed, spaced cantilever contact springs diverging rearwardly from the yoke portion towards their free ends, the male contact entering the female contact by outward flexure of the contact springs of the female contact and inward flexure of the contact springs of the male contact, the flexure of the contact springs of the male contact being such that they extend rearwardly from the male yoke portion in divergent manner to an outer position and then

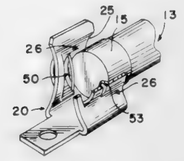
extend inwardly in convergent manner to be engaged by the lobes of the contact springs of the female contact.

3,960,435

CARTRIDGE FUSE CLIP WITH REJECTION MEANS

William R. Bailey, Chicago, Ill.; Stephen H. Krumm, Kenosha, Wis., and David R. Marach, Sleepy Hollow, Ill., assignors to Underwriters Safety Device Company, Chicago, Ill.

Filed Feb. 6, 1975, Ser. No. 547,480
Int. Cl.² H01R *13/64*
U.S. Cl. 339—186 R **4 Claims**



1. In a ferrule cartridge fuse clip including
a central base portion having means thereon for aiding in mounting said clip to an external member;
a terminal connector portion in communication with said base portion;
and a pair of fuse grasping arm members spaced apart and extending in like direction from opposing sides of said base portion for accepting and retaining an end cap portion of a ferrule cartridge fuse,
each said grasping arm member including a concave semicylindrical portion facing inwardly of said clip for providing a surface contact with the end cap of a ferrule cartridge fuse;
the improvement comprising
ridge means on each said arm member for accepting one classification of ferrule cartridge fuse and rejecting other classifications of ferrule cartridge fuses, said ridge means including an elongate segment of each said concave portion located mediate a first and a second end of said clip, and oriented generally parallel therewith, said segment extending inwardly of the remainder of said concave portion, and being stretched and stress hardened along at least one of its elongate parameters.

3,960,436

ELECTRICAL CONNECTOR

Werner Minks, Kleingeschaidt, and Manfred W. Zebisch, Georgensgmund, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 5, 1974, Ser. No. 503,395
Claims priority, application Germany, Sept. 10, 1973, 2345583
Int. Cl.² H01R *9/16*
U.S. Cl. 339—221 M **7 Claims**

1. In an electrical connector comprising an insulator and sheetmetal contacts of substantially rectangular cross-section tight-fittingly inserted into curved recesses in said insulator, each said contact having parallel flat broad sides, the improvement which comprises:
each said recess in said insulator having a semicircular configuration providing a straight inside wall and a curved inside wall; and
the contact in each said recess being positioned with one of its broad sides adjacent to said straight inside wall and the





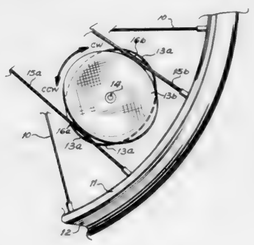
corners thereof opposite to said one side pressed into said curved inside wall.

3,960,437

QUICK ATTACHING BIKE WHEEL REFLECTOR

Robert Von Heck, P.O. Box 597, La Jolla, San Diego, Calif. 92038

Filed May 16, 1974, Ser. No. 470,634
Int. Cl.² G02B *5/12*
U.S. Cl. 350—99 **13 Claims**



1. A cyclodial type of bicycle-wheel safety retro-reflector assembly, comprising: a pair of similarly formed and oppositely lateral facing wafer like elements, each element respectively displaying a like optical-reflex area with a central visual axis through which visual axis said elements are physically united by a transverse joining means; the said assembly thereby achieving instant positive spoke retension means by virtue of capturing any two adjacent wheel spokes between said united elements; thus producing secure attachment and orientation so as to serve an essentially lateral mode of visual reflectivity relative to the attendant wheel.

3,960,438

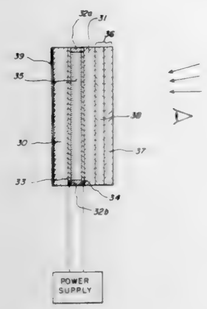
REFLECTIVE DISPLAYS

Ulrich Bonne, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 1, 1972, Ser. No. 311,184
Int. Cl.² G02F *1/26*
U.S. Cl. 350—160 LC **13 Claims**

1. A reflective display utilizing ambient light and having a wide angle of view, the reflective display comprising:
an optical medium having an electrically controllable optical property,
electrode means for applying an electric field to selected regions of the optical medium to vary the electrically controllable optical property of the selected regions, and

diffuse reflector means positioned proximate one surface of the optical medium, the diffuse reflector means comprising a roughened surface and a thin reflective metal layer deposited on the roughened surface.

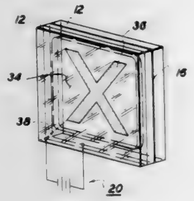


3,960,439

TEXTURE TRANSFORMATIONS IN OPTICALLY NEGATIVE LIQUID CRYSTALS

James H. Becker, Denton, Tex., and Joseph J. Wysocki, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 16, 1974, Ser. No. 506,141
Int. Cl.² G02F 1/16
U.S. Cl. 350—160 LC **24 Claims**



1. A method for transforming an optically negative liquid crystalline composition from the focal-conic texture state to the Grandjean texture state comprising the steps of:

a. providing a layer of an optically negative liquid crystalline composition comprising optically negative liquid crystalline material and an additive, said additive comprising a material selected from the group consisting of electrophoretic materials, dielectrophoretic materials, dipolar materials and mixtures thereof and providing said composition in the focal-conic texture state; and

b. applying a D.C. electrical field across said liquid crystalline layer above the Grandjean to focal-conic texture transformation electrical field strength range of said composition and sufficient to transform said liquid crystalline composition to the Grandjean texture state.

3,960,440

LIGHT OPTIC DATA HANDLING SYSTEM

Joseph T. McNaney, 8548 Boulder Drive, La Mesa, Calif. 92041

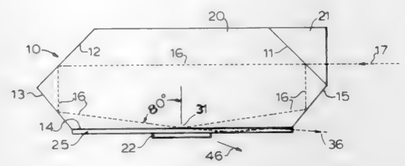
Filed May 27, 1975, Ser. No. 580,586
Int. Cl.² G02F 1/34
U.S. Cl. 350—161 **10 Claims**

1. A piezoelectric optical material light guide and light beam distributor means, comprising:

a. said light guide presenting a light admitting surface;

b. means for directing light incident upon said admitting surface along a primary optical path within said light guide while undergoing a series of reflections therein to establish an availability of light at a plurality of predetermined light output positions of said light guide for an optically controlled redirecting of light along a selected one of a plurality of secondary optical paths stemming from said positions;

c. said light guide having an array of light reflecting interfaces of first and second light conducting media presenting, respectively, first and second indices of refraction, each of said interfaces presenting a length dimension;



d. said light reflecting interfaces each angularly oriented so as to establish an optical relationship one with respect to the other and to said admitting surface for providing a series of 360° primary optical paths for said light, each said 360° path displaced one with respect to the other in a side-by-side relationship in the direction of said length dimension;

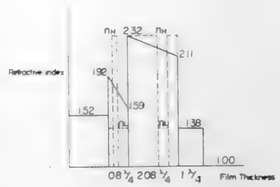
e. a plurality of light reflection control means for establishing, selectively, periodic strains in said piezoelectric material coincident with the interface of said first and second media at each of said light output positions and producing thereat a spatially varying change in the index of refraction of the material for effecting a passing of light through the interface at a selected one of said output positions and along a secondary optical path stemming from said position.

3,960,441

ANTI-REFLECTION COATING HAVING PSEUDO-INHOMOGENEOUS LAYERS

Osamu Kamiya, Yokohama, and Susumu Itoh, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 402,909, Oct. 3, 1973, abandoned. This application June 5, 1975, Ser. No. 583,969
Claims priority, application Japan, Oct. 6, 1972, 47-100388
Int. Cl.² G02B 5/28
U.S. Cl. 350—164 **4 Claims**



1. An anti-refraction coating for use in reducing light reflection off the surface of a transparent substrate, said coating comprising seven sub-layers which are superposed on each other by vacuum evaporation, said sub-layers being designated from **1** to **7** in consecutive numerical order from the substrate, respectively; the odd-numbered sub-layers **1, 3, 5** and **7** being composed of a material having a low refractive index, the even-numbered sub-layers **2, 4,** and **6** being composed of a material having a high refractive index, each sub-layer having an associated optical thickness value as follows:

first sub-layer	=	$(0.04 \pm 0.004)\ \lambda/4$
second sub-layer	=	$(0.23 \pm 0.15)\ \lambda/4$
third sub-layer	=	$(0.37 \pm 0.15)\ \lambda/4$
fourth sub-layer	=	$(0.69 \pm 0.15)\ \lambda/4$
fifth sub-layer	=	$(0.22 \pm 0.15)\ \lambda/4$
sixth sub-layer	=	$(0.59 \pm 0.15)\ \lambda/4$

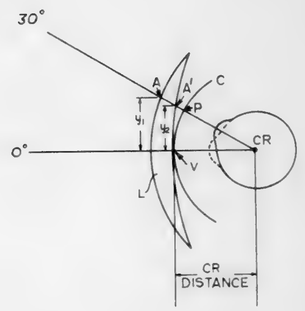
and the seventh sub-layer = $\lambda/4$, whereby said first, second and third sub-layer behave as a single inhomogeneous layer and said fourth, fifth and sixth layers behave as a single inhomogeneous layer.

3,960,442

OPHTHALMIC LENS SERIES

John King Davis, East Woodstock, Conn., and Henry Grant Fernald, Winchester, Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Aug. 5, 1974, Ser. No. 494,784
Int. Cl.² G02C 7/02
U.S. Cl. 351—176 **19 Claims**



1. A general purpose ophthalmic lens series comprising lenses formed of a transparent material of known refractive index and providing a plurality of predetermined spherical prescriptive powers within a range of +10.00 diopters to −10.00 diopters combined with cylindrical prescriptive powers within a range of 0.00 diopters to at least −3.00 diopters, each of said lenses having disposed upon one surface thereof a concave base curve having at the lens axis a spherical dioptric power value as indicated for each combination of spherical and cylindrical prescriptive powers in the table of FIGS. **8A** and **8B**, nominal convex front curves being conventionally calculable, each lens further having on its combined front and back surfaces an aspheric correction E of net asphericity at an intercept of a 20° angle of view for a 30mm center of rotation distance such that residual tangential power errors are between +0.1 diopter and −0.2 diopter for spherical prescriptions and for both meridians of spherical prescriptions combined with cylinders of values from 0 to −4.00 diopters, said aspheric correction E being determined according to the formula E =

$$\left(\frac{n-1}{Do\ Y}\right)^2 \left[1-\left(\frac{Do}{Do+asph}\right)^{2/3}\right]$$

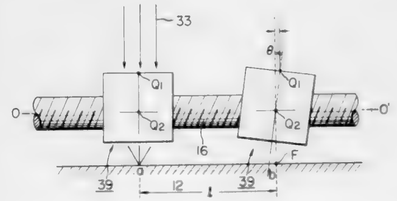
wherein n is said known refractive index, Do is the diopter value of the curve of a surface under consideration taken at the lens axis, Y is the height from the lens axis of the intercept of said angle of view and asph is a value opposite in sign to the tangential power error requiring aspheric correction at said intercept as may be determined by standard ophthalmic lens ray trace procedure.

3,960,443

OPTICAL HEAD MOVING DEVICE

Takeshi Goshima, Tokyo; Yoshinori Sugiura, Kawasaki; Kiyonobu Endo; Hideaki Sato, both of Yokohama; Kimio Kono, and Takao Tsuji, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 11, 1975, Ser. No. 585,822
Claims priority, application Japan, June 21, 1974, 49-71000
Int. Cl.² G02B 7/02; G11B 7/08
U.S. Cl. 350—247 **11 Claims**



1. An optical head moving device comprising:

a pair of parallel, spaced apart guide members having the axes thereof lying on a common plane;

a movable member having engaging portions engaged with said pair of guide members and a connecting portion connecting together said engaging portions;

an optical head for focusing an introduced light beam securely mounted on said movable member in such a manner that a principal point at the projection-side of said optical head lies on the plane containing the axes of said pair of guide members;

means for introducing a light beam into said optical head; and

means for moving said optical head by moving said movable member in a state of said engaging portions being in engagement with said guide members.

3,960,444

ELECTROPHOTOGRAPHIC PRINTING MACHINE

Robert W. Gundlach, Victor; Charles A. Whited, and Thomas W. Pike, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 14, 1974, Ser. No. 497,547
Int. Cl.² G03G 15/09, 15/00
U.S. Cl. 355—3 DD **22 Claims**

1. An electrophotographic printing machine, including:

a photoconductive member;

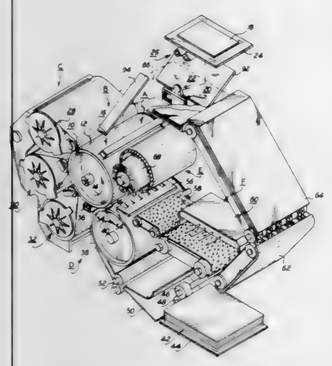
means for charging said photoconductive member to a substantially uniform level;

means for exposing said charged photoconductive member to a light image recording an electrostatic latent image thereon, said exposing means forming successive light images of differing predetermined intensities from the same original document;

means for developing the successive electrostatic latent images recorded on said photoconductive member by

contacting the latent images with a developer mix of carrier granules and toner particles, said developing means comprising a plurality of developer units comprising developer mixes having the same color toner particles with concentrations thereof being different in each developer unit;

means for electrically biasing each developer unit of said developer means to differing preselected levels;



means for regulating the toner particle concentration within the developer mix of each developer unit of said developer means to differing preselected levels; and

means for transferring successive developed images from said photoconductive member to a sheet of support material in superimposed registration with one another to form a mono-color copy of the original document being reproduced.

3,960,445

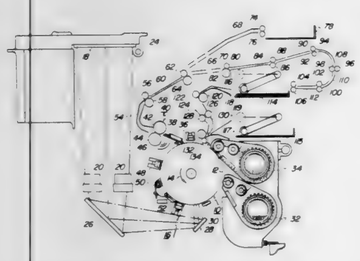
COLOR HIGHLIGHTING ELECTROPHOTOGRAPHIC PRINTING MACHINE

William A. Drawe, Penfield, N.J., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 13, 1974, Ser. No. 442,037

Int. Cl.² G03G *15/22*

U.S. Cl. 355—4 **7 Claims**



1. An electrostatographic printing machine of the type having successive differently colored powder images deposited on an image bearing member and means for transferring the differently colored powder images from the image bearing member to different portions of a sheet of support material, wherein the improvement includes:

a receiving station;

a supply station;

a plurality of transport members connecting said supply station with said receiving station defining a plurality of paths therebetween;

means for advancing the sheet of support material along one of said plurality of transport members from said supply station to said receiving station with a first one of said transport members moving the sheet of support material to said receiving station after the transfer of a single powder image to a first surface thereof, and a second one of said transport members recirculating the sheet of support material so that successive differently colored powder images are transferred to different portions of the first surface thereof as the sheet of support material advances from said supply station to said receiving station;

means operatively associated with said advancing means, for selecting one of said plurality of transport members for moving the sheet of support material therealong; and

means for inverting the sheet of support material so that said advancing means moves the sheet of support material along one of said transport members, thereby transferring at least one powder image to a second surface opposed from the first surface of the sheet of support material.

3,960,446

ELECTROSTATIC COPYING APPARATUS

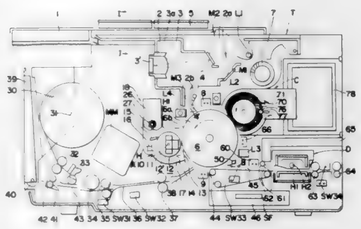
Masaya Ogawa; Kenichi Wada, both of Sakai, and Yoshihiko Yasue, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Azuchi, Japan

Filed Apr. 30, 1974, Ser. No. 465,674

Claims priority, application Japan, May 8, 1973, 48-50869

Int. Cl.² G03G *15/00*

U.S. Cl. 355—13 **3 Claims**



1. In a slit exposure type electrostatic copying apparatus which comprises a horizontally, reciprocating movable transparent platform to place an original to be copied thereon, a photoreceptor drum rotatably provided under said platform and having the surface thereof movable along a path relative to a plurality of processing stations, such as preliminary charging, exposing, developing, transferring, residual toner removing and discharging stations disposed along said path, each of said stations being actuable in timed relation to the rotation of said drum, means for feeding copy paper sheets, a main light source operatively positioned for illuminating an original to be copied, means for fixing toner powder images on said copy paper sheet and means for carrying said fixed copy paper sheets out of said copying apparatus, an improvement thereof for erasing the preliminary charge from said photoreceptor surface which comprises a supplementary light source for illuminating the portion of the surface of said photoreceptor drum on which no latent image is formed so as to remove unnecessary charge from said photoreceptor surface, said supplementary source being provided in the vicinity of said exposing station, a switch being operatively coupled to said main light source and said supplementary light source for turning said supplementary light source on only when said main light source is off as said photoreceptor drum rotates, said supplementary light source being directed toward approximately the same point along the path of movement of the surface of the photoreceptor drum as the point at which the light rays from said original are directed, said supplementary light source illuminating said photoreceptor surface only when it is turned on to remove unnecessary charge from the portion of the photoreceptor surface on which no latent image is formed, and said photoreceptor drum being adapted to complete one copying cycle per two revolutions thereof with said drum stopping at its starting position at every copying cycle.

3,960,447

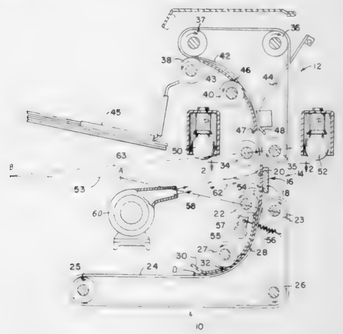
LOCATING AND LOCKING MECHANISM FOR GLASS FLAT

Eugene Sather, Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 15, 1974, Ser. No. 524,301

Int. Cl.² G03B *27/62*

U.S. Cl. 355—75 **15 Claims**



1. In a microfilm recording machine of the type which makes a photographic reproduction of documents processed therethrough and which includes a document input feed mechanism, a document exit and a scanning zone between the input feed mechanism and exit wherein each document is scanned and photographed and in which there is disposed a single glass plate member with a flat glass face against which each document is caused to lie as it is transported through the scanning zone, a mounting means for said glass plate member which enables ready removal and replacement of said glass plate member, said mounting means including a support member in the form of a block mounted at one side of the machine and constructed to provide horizontally disposed upwardly opening guideway forming means for cooperation with portions of said glass plate member in supporting in sliding relation therein and glass plate member while it is moved into and/or out of operative position in the scanning zone.

3,960,448

HOLOGRAPHIC INSTRUMENT FOR MEASURING STRESS IN A BOREHOLE WALL

James L. Schmidt, Redondo Beach; Jerold L. Jacoby, Long Beach; Garrett D. Shaw, Rancho Palos Verdes, and Pravin G. Bhuta, Torrance, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed June 9, 1975, Ser. No. 585,269

Int. Cl.² G01B *11/16;* **E21B** *49/00*

U.S. Cl. 356—32 **13 Claims**

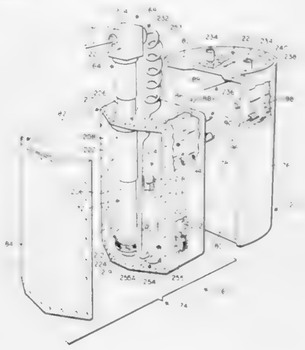
1. A holographic instrument to be positioned within a borehole for determining the stress in the borehole wall, comprising:

an elongate body which extends lengthwise of the borehole in which the instrument is positioned;

said body having separable body sections;

a holographic recording system in one body section including means for holding a holographic recording medium having a field of view in a transverse direction of said body, whereby when the instrument is positioned in a borehole, a surface region of the borehole wall is situated in said field of view, and means for recording first and second holograms of said wall region in succession on said recording medium to produce on said medium a double exposure hologram of said wall region;

means on the other body section for cutting a stress relief in the borehole wall in stress relieving relation to said wall region in the interval between recording of said first and second holograms, whereby said double exposure hologram contains information representing the stress in said wall region;



means for anchoring said body sections in the borehole; and

coupling means releasably joining said body sections, whereby said sections may be joined for introduction into and removal from the borehole, and said coupling means may be released when said sections are anchored in the borehole to mechanically isolate said sections from one another and thereby permit operation of said stress relief forming means without disturbing said holographic system.

3,960,449

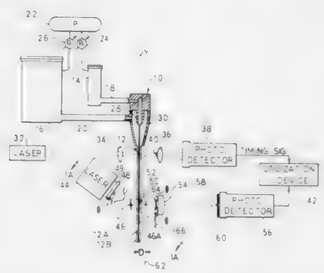
MEASUREMENT OF ANGULAR DEPENDENCE OF SCATTERED LIGHT IN A FLOWING STREAM

Joseph G. Carleton, and Richard G. Sweet, both of Palo Alto, Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Conn.

Filed June 5, 1975, Ser. No. 583,883

Int. Cl.² G01N *21/00*

U.S. Cl. 356—103 **22 Claims**



1. A particle scattering system employing radiation scattering wherein there is relative movement between the particle and analyzing system comprising,

means for moving the particle along a scatter line,

means including a radiation source arranged to project a beam of radiation onto said scatter line,

detector means having a radiation acceptance geometry whose projection intercepts said beam along the scatter line,

said projected acceptance geometry including aperture means located adjacent the scatter line and having a dimension in the direction of travel of the particle along

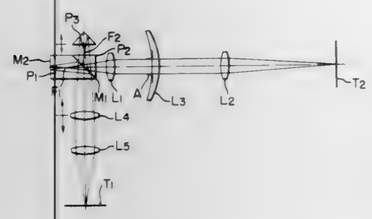
the scatter line substantially less than the length of the scatter line such that the angle of scatter radiation detectable by the detector means from said particle varies according to the position of the particle along the scatter line.

3,960,450

LENS METER WITH TARGET ORTHOGONALIZER

Masao Nohda, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed June 24, 1975, Ser. No. 589,751
Claims priority, application Japan, June 28, 1974, 49-73971
Int. Cl.² G01B *9/00*; **A61B** *3/10*
U.S. Cl. 356—126 **5 Claims**



1. A lens meter for measuring the focal length of a sample lens with the sample lens disposed in a collimated light beam, comprising:
a target;
a first lens for forming an image of the target;
light beam splitter means in the light beam on the image forming side of the first lens for splitting the light beam to form a first and a second target image;
a second lens having its focal points on the first and second target images through the light beam splitter means;
target orthogonalizing means provided between the first and second lenses for making the first and second target images orthogonal to each other;
a third lens for focusing the orthogonal target images collimated by said second lens; and
target viewing means at the focal point of the third lens.

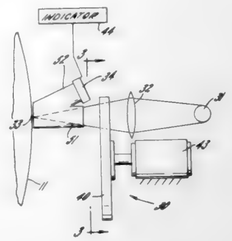
3,960,451

DAMPENING SYSTEM ON AN OFFSET PRINTING PRESS WITH A DEVICE FOR REGULATING THE AMOUNT OF WATER ON THE PLATE

Burkhardt Wirz, and Peter Decker, Munich, both of Germany, assignors to Grapho Metronic GmbH & Co. and Roland Offsetmaschinenfabrik Faber & Schleicher AG., Germany

Filed Mar. 14, 1975, Ser. No. 558,307
Claims priority, application Germany, Mar. 14, 1974, 2412234
Int. Cl.² G01B *11/00*
U.S. Cl. 356—161 **2 Claims**

1. In a dampening system for a printing plate of an offset printing press, means for measuring the thickness of a film of water on the moving plate comprising, in combination, a light source forming a beam of light directed at the water film to form a spot of light thereon, light pick-up means including a photocell having a pick-up axis directed at the spot of light so as to produce an output signal responsive to the remitted light, a first band pass filter passing a wavelength (slightly) separated from a maximum light absorption band of water by a difference in wavelength lying within the range of 0.05 and 0.25 micron, a second band pass filter passing a wavelength which is (well) separated from the maximum light absorption band of water by at least about 0.5 micron and which lies in a region of minimum change of absorption with film thickness, means for interposing the filters in time sequence in the path of the light reaching the photocell so that the photocell is subjected to an alternative series of measuring light pulses and reference light pulses through the respective filters, and means responsive to the pulsating output of the photocell for providing a direct indication of film thickness, the degree of separation of the first band pass filter from the maximum light absorption band of water being such as to provide improved linearity of the photocell output signal extending into the range of maximum film thickness.

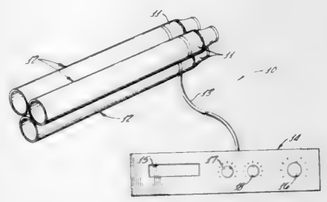


3,960,452

COLOR MONITOR UTILIZING AMBIENT LIGHT ILLUMINATION

Victor R. Huebner, Fullerton, Calif., assignor to Technical Hardware, Inc., Fullerton, Calif.

Filed Mar. 5, 1975, Ser. No. 555,357
Int. Cl.² G01J *3/50*
U.S. Cl. 356—173 **7 Claims**



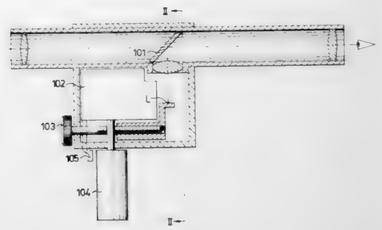
1. A color analyzer simultaneously responsive to light intensity at multiple wavelength regions emitted by or reflected from a specimen illuminated by existing ambient light for instantaneously determining relative ratios of said wavelength regions comprising:
a plurality of photodetectors having different spectral response characteristics;
a separate optical probe for each photodetector for imaging the light emitted by or reflected from said specimen onto its associated photodetector, said optical probes having identical dimensions and imaging characteristics and being arranged in side-by-side, parallel relationship in order to permit each optical probe to be affected equally by ambient light changes; and
means responsive to the outputs of said photodetectors for ratioing said outputs and providing the resultant ratio signals for utilization.

3,960,453

ELECTRONIC TELESCOPIC SIGHT

Sven Torsten Arnold Svensson, and Sven William Bjelvert, both of Eskilstuna, Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Dec. 16, 1974, Ser. No. 533,132
Claims priority, application Sweden, Dec. 20, 1973, 7317195
Int. Cl.² G02B *23/10*
U.S. Cl. 356—252 **10 Claims**



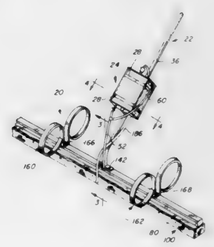
1. A sight comprising a telescope having:
at least one horizontal row of luminescence diodes;
means coupled to said diodes for successively lighting the diodes for generating a travelling light point in the field of view of the telescope;
means coupled to said generating means for manually adjusting the travelling speed of said light point so as to cause said light point to follow a target;
means for manually setting the distance to the target;
means coupled to said diodes for manually extinguishing the travelling light point when it has been caused to follow the target and when the distance is set; and
means for lighting one of said diodes in response to the adjusted travelling speed of the light point and to said setting of the distance, said lit diode corresponding to correct lead and correct superelevation so as to serve as an aiming point.

3,960,454

APPARATUS FOR CLEANING BOWLING LANES

Kenneth K. Schroeder, Jr., Rte. 3 Box 56, Antioch, Ill. 60002

Filed June 5, 1975, Ser. No. 583,957
Int. Cl.² A47L *13/46*
U.S. Cl. 401—140 **2 Claims**



1. In apparatus for cleaning and treating bowling alley lanes and similar floor surfaces, said apparatus including, in combination, handle means for propelling and manipulating said apparatus along a work surface to be treated,
a reservoir adapted to contain a supply of liquid for application to the surface to be treated,
applicator means including means adapted for sliding frictional engagement with a work surface to be treated to apply treating liquid thereto across a substantial lateral expanse thereof,
securement means interattaching said handle means, said reservoir, and said applicator means to provide a composite functional assembly, and
fluid conducting means communicating between said reservoir and said applicator means for delivery of treating liquid from said reservoir to said applicator means, and fluid flow control means for regulating the rate of fluid delivery from said reservoir to said applicator means, the improvement wherein said fluid flow control means comprises selectively adjustable air bleeder vent means in communication with said reservoir for limiting and regulating air admission into said reservoir thereby to facilitate controlled discharge of fluid therefrom, said air bleeder vent means including a valve connected to said reservoir for providing a manually regulable air passage between ambient atmosphere and said reservoir at an interior zone thereof above a level of liquid contained in said reservoir.

3,960,455

FLEXIBLE DOUBLE BALL-POINT PEN

Max Balassiano, 98-01 67th Ave., Forest Hills, N.Y. 11374

Filed July 7, 1975, Ser. No. 593,323
Int. Cl.² B43K *7/00*, *7/10*
U.S. Cl. 401—209 **4 Claims**



1. A flexible double ball-point pen comprising an aligned body portion and writing portion, the body portion and writing portion being constructed to be movable out of alignment by flexing in response to pressure and direction of movement of a user's hand by an intermediate ring of compressible and expandable flexible material interfitted between and connected into the body portion and writing portion by means of oppositely extending projections on said ring which fit into complementary recesses in the body portion and writing portion and the writing portion having a pair of ball-point balls held together against disassembly in a sleeve at the lower end of the writing portion and said sleeve being provided with a supply of ink.

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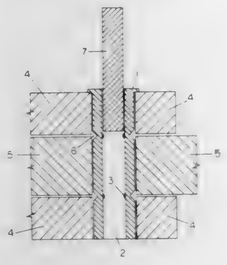
INCIPIENT SHEAR PIN FAILURE INDICATING MEANS

Kenneth Edward Norris, Somerset, Colo. 81434

Filed Nov. 25, 1974, Ser. No. 527,126
Int. Cl.² B25G *3/00*; **F16D** *1/00*; **F16G** *11/00*
U.S. Cl. 403—27 **1 Claim**

1. A shear pin pending failure detection means comprising in combination a hollow, permanently deformable shear pin

and a plug gauge gauging member which is slidably receivable in said hollow shear pin, said shear pin having a smooth, cylindrical bore of a substantially constant, predetermined, first diameter extending coaxially therethrough; said plug gauge being cylindrical and having a second predetermined diameter which is slightly less than said first predetermined



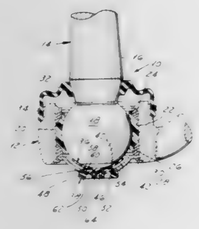
diameter, said gauge being receivable through said bore with a slip fit when said shear pin is undeformed; and an at least partially circumferential internal deformation on the internal surface of said shear pin which decreases the effective diameter of said bore within said shear pin, whereby full insertion of said gauge through said shear pin is prevented and possible incipient failure of said shear pin is indicated.

3,960,457

WEAR INDICATOR FOR BALL JOINTS

Donald R. Gaines, Farmington, and Bronko F. Jelenic, Ann Arbor, all of Mich., assignors to Gulf & Western Manufacturing Company (Michigan), Southfield, Mich.

Filed Dec. 20, 1974, Ser. No. 535,015
Int. Cl.² G01D *11/02*; **F16C** *11/06*
U.S. Cl. 403—27 **11 Claims**



1. A ball joint wear indicator comprising, a housing member having a cavity extending generally axially therethrough, a ball stud member having a stud with an integral ball thereon mounted in said cavity of said housing member with said stud projecting generally axially beyond said cavity to the exterior of said housing member for movement of said ball stud member with respect to said housing member, an end cover adjacent the other end of said cavity and also adjacent a generally polar region of said ball and being fixedly carried by said housing member, an actuator bearing on the generally polar region of said ball adjacent said cover, and a one-piece indicator body having a first portion fixedly carried by said cover, a second portion operably connected with said actuator, and a membrane portion homogeneously integral with said first and second portions and yieldably biasing said actuator into engagement with said ball, a reference surface on said first portion of said indicator body, said reference surface being accessible from the exterior of and in fixed relation to said housing member, an indicator surface on said second portion of said one-piece indicator body, said indicator surface being accessible from the exterior of said housing member and operably associated with said actuator for generally axial movement relative to said reference surface in response to generally axial movement of said ball relative to said housing member, and said indicator and reference surfaces of said one-piece body being constructed and arranged to lie in the same plane prior to any in-service wear of the ball joint such that thereafter the extent of any displacement of said reference and indicator surfaces relative to each other provides an indication of the extent of in-service wear of the ball joint.

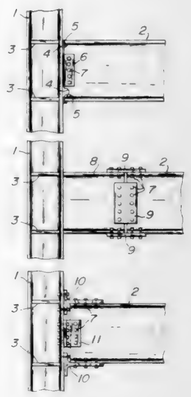
2. The wear indicator of claim 1 wherein said indicator body is carried by said cover such that said indicator body communicates with both said cavity in said housing member and the exterior of said housing member, and also comprises sealing means providing a seal between said one-piece indicator body and said cover.

3,960,458

FITTINGS FOR CONNECTING COLUMNS AND BEAMS OF STEEL FRAME CONSTRUCTION

Kuniaki Sato, Hiratsuka; Kozo Toyama, Tokyo; Toshio Saheki, Kodaira; Kaoru Mizukoshi, Hino, and Shuei Suzuki, Machida, all of Japan, assignors to Kajima Corporation and Hitachi Metals Ltd., both of Tokyo, Japan

Filed Feb. 26, 1975, Ser. No. 552,969
Claims priority, application Japan, Mar. 1, 1974, 49-23975
Int. Cl.² F16B *7/08*
U.S. Cl. 403—189 **6 Claims**



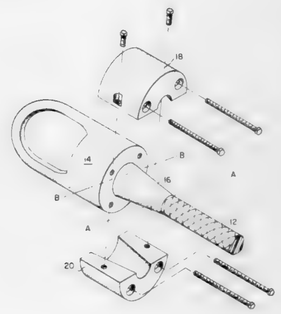
1. A unitary fitting for connecting columns and beams of steel construction, each fitting comprising a base plate having a flat surface for substantially uniform face-to-face contact with said column and for connecting a beam with said column, said fitting including an outwardly extending protrusion formed substantially centrally on its opposite surface, said fitting further including a flat plate in connecting facial contact with the flange of said beam, said beam contacting plate forming a generally T-shaped section with said base plate and being thicker than said beam flange.

3,960,459

REDUCED SHEAR STRESS END FITTING

Frederic S. Hering, Chesapeake, Va.; Robert H. Ohlbaum, Silver Spring, and Joseph R. Crisci, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 239,478, March 30, 1972, abandoned. This application June 6, 1974, Ser. No. 476,821
Int. Cl.² B25G *3/34*; **F16B** *11/00*, *12/04*; **F16L** *13/00*
U.S. Cl. 403—267 **5 Claims**



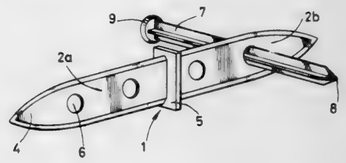
1. A stranded cable tensile member; a regular truncated conical member molded to one end of said tensile member coaxial with said tensile member and integrally joined thereto; and a separable force-transmitting member having a mating interior conical surface surrounding said conical member for less than the total axial length of said conical member starting at the maximum diameter of said conical member, said force transmitting member having a minimum inner diameter greater than the minimum outer diameter of the tensile member said tensile force being applied over approximately half of the length of the conical member.

3,960,460

CONNECTOR FOR ELEMENTS MADE OF STRUCTURAL FOAM

Artur Fischer, Altheimer Strasse 219, D-7241 Tumlingen, Germany

Filed July 11, 1974, Ser. No. 487,806
Claims priority, application Germany, July 14, 1973, 2335908
Int. Cl.² F16B *7/00*, *5/00*, *12/24*, *13/12*
U.S. Cl. 403—292 **6 Claims**



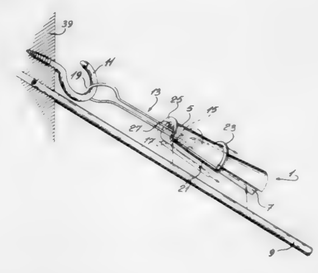
1. A connector for elements made of structural foam, comprising a first and a second elongated planar blade-shaped connecting portion having tips, each of said connecting portions having cutting edges adapted to cut a slit-like incision into the structural foam elements as said connecting portions penetrate therein, said connecting portions being connected with one another and each having at least one hole extending transversely of its elongation; a pair of elongated locking members each adapted to be driven into one of said structural foam elements and through one of said holes, so as to extend transverse of the respective connecting portion and lock the same to the structural foam element; and an intermediate portion located between and connected with said correcting portions and forming an abutment flange for said structural foam elements, said cutting edges diverging continuously from said tips to said intermediate portion so that said connecting portions can penetrate and be extracted from said structural foam elements via said slit-like incision without causing crumbling of the latter.

3,960,461

DROP WIRE CLAMPS

Isaac Sachs, 2685 Kent Ave., Montreal, H33 1M8, Quebec, Canada

Filed Apr. 7, 1975, Ser. No. 565,687
Int. Cl.² F16G *11/04*
U.S. Cl. 403—368 **17 Claims**



1. A wedge clamp for securing a cable to a support, said clamp comprising:

an inner member having a generally conical outer surface configuration and a longitudinal groove formed in the outer surface for receiving the cable, the depth of said groove being less than the thickness of the cable to be received therein, and further having a means for securing said inner member to the support; and

an outer sleeve mounted over said inner member, said outer sleeve having an inner surface configuration corresponding generally to the conical outer surface configuration of said inner member, said inner surface having a dented portion for receiving said cable, and further having a longitudinal slot of sufficient width for passing into said outer sleeve the cable to be received in said groove;

the inner surface of said outer sleeve slidably engaging the outer surface of said inner member along its longitudinal length in a close fitting relationship, the space between said longitudinal groove and said dented portion of said sleeve constituting a cable securing opening; and

said outer sleeve being rotatable around said inner member when said outer sleeve is disengaged from said inner member.

3,960,462

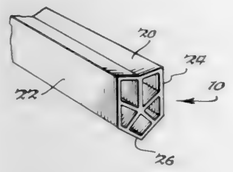
SEALING MEMBER

James J. Kerschner, Tonawanda, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.

Filed July 21, 1975, Ser. No. 597,458
Int. Cl.² E04C *11/10*
U.S. Cl. 404—64 **11 Claims**

1. A sealing member comprising: a resiliently yieldable tubular body having a top wall, a bottom wall and opposite sidewalls, an internal truss structure including a pair of crossbars extending downwardly at an angle from said sidewalls at points spaced below the upper ends thereof to said bottom wall at points spaced from the opposite ends thereof, said crossbars intersecting intermediate their opposite ends, and a generally vertically disposed compression bar extending from

the midportion of said top wall to a termination with the intersection of said crossbars for reducing and equalizing the



pressure along said sidewalls during compression of said member.

3,960,463

METHOD OF STARTING OPERATION FOR A PUMP OR A PUMP TURBINE

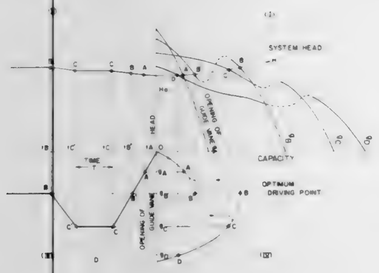
Masayasu Okada, and Hisao Inoue, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 11, 1974, Ser. No. 531,700

Claims priority, application Japan, Dec. 12, 1973, 48-137712

Int. Cl.² F01D *17/00*; **F03B** *15/20*

U.S. Cl. 415—1 **5 Claims**



1. A method of starting pump operation for a rotary machine that has adjustable guide vanes circumferencially arranged around a runner and a range of guide vane openings wherein there is discontinuity in head-capacity curves for a system head, which comprises the steps of: opening the adjustable guide vanes to a predetermined opening position beyond an optimum opening position where the pump operates under an optimum driving condition without reverse flow in the runner so that no reverse flow in the runner appears, and thereafter closing the adjustable guide vanes to (a reclosed position) said optimum opening position.

3,960,464

IMPROVEMENTS IN AND RELATING TO FANS

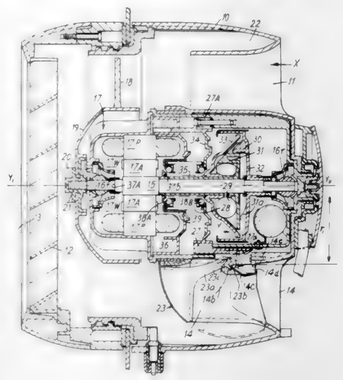
John Kenneth Downing, Cuckfield, England, assignor to Vent Axia Limited, Crawley, England

Filed Mar. 25, 1975, Ser. No. 561,983

Int. Cl.² F01D *17/06*

U.S. Cl. 415—146 **4 Claims**

1. An axial fan comprising a housing with a drive assembly positioned therein to define therewith an annular air passage, said drive assembly including a shaft co-axially arranged with respect to said air passage and a prime mover for rotating said shaft, said shaft being adapted to drive an air impeller, shutter means positioned within said air passage an carried by said drive assembly for pivotal movement with respect thereto, said shutter means including shutter plates having their pivotal axis tangential to a common circle lying in a plane substantially normal to the axis of said shaft with said circle having its center substantially coincident with the axis of said shaft, said shutter plates being movable by shutter operating means responsive to rotation of the shaft to move the shutter means to a position that opens said air passage when the impeller is rotating and to a position that closes said air passage when the impeller is not rotating.



3,960,465

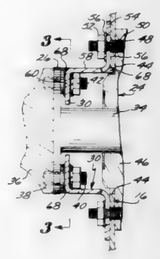
AUTOMOTIVE FAN CLUTCH LOCK

Howard A. Robison, 3429 Lewis Ave., Long Beach, Calif. 90807

Filed Dec. 19, 1974, Ser. No. 534,464

Int. Cl.² F04D *29/32*

U.S. Cl. 416—169 R **11 Claims**



1. In an automotive cooling fan and hub assembly wherein said fan is coupled to its drive shaft by clutch means including a fan drive shaft bearing a flange at one end with cooperative screw fasteners for securing said shaft in driven relationship to an engine; a clutch housing on the opposite end of said shaft and clutch means mounted therein for providing a modulated interconnection between said shaft and said fan; a cooling fan comprising a spider plate having a central aperture receiving said clutch housing and dependent fan plates carried on the clutch housing and secured thereto by screw fasteners; the improvement comprising:

mechanical lock means detachably secured to one member of said shaft flange and spider plate members and bearing slot means for detachable engagement with said screw fasteners carried on said one member;

arms means dependent on said base and extending into engagement with the other member of said shaft flange and spider plate members, and interlock means carried on said arm for securing said arm to said other member.

3,960,466

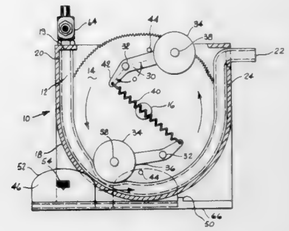
DOUCHE-ENEMA PUMP

Edward J. Taylor, 201 Pecan Grove Court, San Jose, Calif. 95123

Filed Feb. 10, 1975, Ser. No. 548,676

Int. Cl.² F04B *21/00, 43/12*

U.S. Cl. 417—234 **6 Claims**



1. A peristaltic action pump useful for douche and enema purposes and capable of delivering a uniform flow of liquid, comprising:

a flexible tube affixed in a hemicircular shape and having a fluid input port at one end thereof and a fluid exit port at the other end thereof;

a rotatable member adjacent said tube and generally parallel to the plane of said hemicircle, said rotatable member being rotatable about an axis in line with the axis of said hemicircle;

means coupled with said rotatable member for rotatingly driving it;

a pair of levers pivotally mounted intermediate thereof to said member, each at an equal and non-zero distance from the rotational axis of said member, a line from the mounting of one of said pair of levers to the mounting of the other of said pair of levers passing through said rotational axis of said member;

a pair of rollers, one of said rollers being pivotally attached to one of the ends of each of said levers, at least one of said pair of rollers including a shaft extending from the pivotal axis thereof and beyond said tube, said rollers extending sufficiently from said one end of said lever to press upon and temporarily deform said flexible tube, a line from the attachment of one of said pair of rollers to the attachment of the other of said pair of rollers passing generally through said rotational axis of said member;

a pair of pins, said pins being upraised from said rotatable members sufficiently to stop said levers from rotating about their pivotal mounting beyond said pins, said pins being further removed from the rotational axis of said member then are said levers, said pins being located generally intermediate the pivotal mounting of said levers and the rollers mounted to the one end of each of said levers;

spring means between the other ends of said pair of levers biasing said other ends of said pair of levers towards one another, a line from said other end of one of said levers to said other end of the other of said levers passing generally through said rotational axis;

a cam fixable in place adjacent said tube on an opposite side of said tube from said rotatable member, said shaft of each of said rollers extending sufficiently so as to ride upon said cam when fixed in place, said cam serving to keep one of said rollers from pressing upon and temporarily deforming said flexible tube during a portion of said rollers rotation about the rotational axis of said member whereby a pulsating flow of fluid can be selected by fixing said cam in place;

means for fixing said cam in place adjacent said tube; and means for fixing said cam out of place away from said shaft.

3,960,467

COOLING DEVICE FOR A PUMP MOTOR

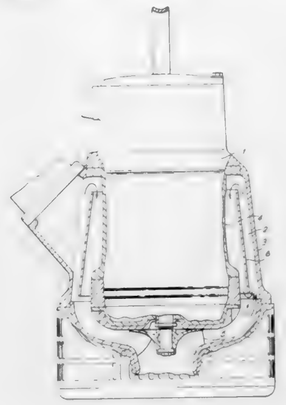
Miklos Zsuppan, Ekero, Sweden, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 338,980, March 7, 1973, abandoned.

This application Sept. 16, 1974, Ser. No. 506,511

Int. Cl.² F04B *39/06*

U.S. Cl. 417—366 **5 Claims**



1. A cooling device for an electric pump motor to insure continued cooling when a liquid medium being pumped is exhausted comprising a cooling jacket at least partially surrounding an electric motor, said jacket providing a chamber and an outlet portion through which a liquid medium being pumped is forced to flow through action of a pump impeller coupled to the motor, and an open ended partition wall encircling the motor and dividing the chamber into two open-ended chamber parts formed as concentric inner and outer chamber parts, said pump impeller being positioned relative to said chamber parts to force air to circulate through the two chamber parts when the liquid medium is exhausted, whereby the air circulates to carry heat from hot portions of the jacket to be dissipated through cooler portions of the jacket, said pump impeller forcing air successively through the outer chamber part and the inner chamber part to carry heat from the electric motor to be absorbed by the cooling jacket when said outlet portion is effectively closed.

3,960,468

FLUID LUBRICATED BEARING ASSEMBLY

Henry A. Boorse, Leonia, N.J.; Gilbert F. Boeker, and John R. Menke, both of New York, N.Y., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

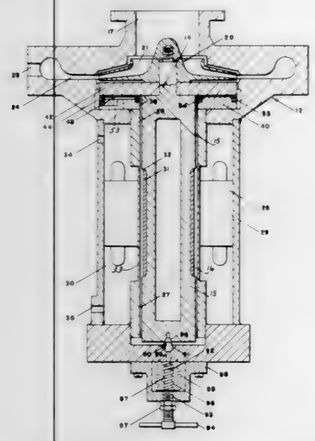
Filed July 16, 1946, Ser. No. 683,871

Int. Cl.² F04B *17/00*

U.S. Cl. 417—424 **13 Claims**

1. A support for a loaded rotatable shaft comprising in combination a housing having a fluid-tight cavity encasing an end portion of said shaft, a thrust bearing near the open end of said cavity for supporting the axial thrust of said shaft, said thrust bearing comprising a thrust plate mounted in said housing and a thrust collar mounted on said shaft, said thrust plate having a central opening the peripheral portion of which is hermetically sealed to said housing at the open end of said cavity, and means for supplying a fluid lubricant to said thrust bearing, said thrust bearing having a lubricant-conducting path connecting said lubricant supplying means with the space between said thrust plate and collar intermediate the peripheries thereof, the surfaces of said plate and collar being constructed and arranged to inhibit radical flow of lubricant and,

on rotation of said thrust collar, to draw lubricant through said path between the bearing surfaces and to increase the pressure



therebetween and in said cavity and thereby exert a supporting force on said end portion of said shaft.

3,960,469

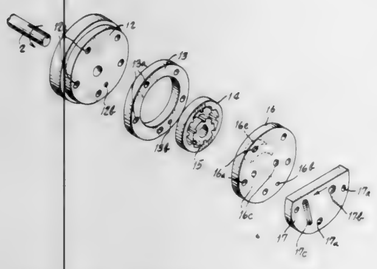
REVERSIBLE PUMP

Herbert E. Lindtveit, Wheaton, Ill., assignor to Sid Harvey, Inc., Valley Stream, N.Y.

Filed Oct. 23, 1975, Ser. No. 624,760

Int. Cl.² F01C *13/00, 21/12;* **F04C** *15/02*

U.S. Cl. 418—39 **6 Claims**



1. A rotary pump, comprising:

a. a shaft adapted to be driven in either direction;

b. a reversible pump rotor driven by the shaft;

c. a fixed member facing the side of the rotor opposite the shaft and having first and second reversible flow passages extending therethrough and aligned with the points of intake and discharge from the rotor, said points being reversed as to function when the direction of rotation of the rotor is reversed, and an outlet port opening in the face of the fixed member opposite the rotor;

d. a reversible plate having an inlet port extending therethrough, a recess in one surface adapted, when that surface is facing the fixed member, to provide fluid communication between one of said first and second reversible flow passages and the outlet port, and a recess in the opposite surface adapted, when the opposite surface is facing the fixed member, to provide fluid communication between the other of said first and second reversible flow passages and the outlet port; and

e. means holding said reversible plate against the fixed member, said pump being adaptable to maintain the same direction of flow through its inlet and outlet ports when the direction of rotation of the rotor is reversed, by removing the holding means and the reversible plate, turning the plate over and replacing the holding means.

3,960,470

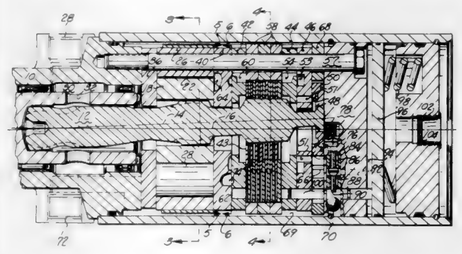
HYDRAULIC MOTOR BRAKE

Mark Russell Kinder, Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Mar. 17, 1975, Ser. No. 558,792

Int. Cl.² F01C *1/02;* **F03C** *3/00;* **F16D** *65/24;* **F01C** *13/00*

U.S. Cl. 418—61 B **13 Claims**



1. A hydraulic device comprising a first shaft rotatable about its longitudinal axis, a second shaft rotatable about its longitudinal axis, means for joining said second shaft to said first shaft for rotation therewith, said second shaft being oriented with its longitudinal axis angularly disposed relative to the longitudinal axis of said first shaft, so that said first and second shafts are adapted for joint rotation and said second shaft is adapted for both orbital and rotational motion, a hydraulic motor for rotating said shafts, means for applying a braking torque to said first and second shafts tending to retard motion of said first and second shafts, said braking means being separate from said hydraulic motor comprising one or more braking members fixedly secured to said second shaft for rotational and orbital motion therewith and means for frictionally resisting the orbital and rotational movement of said braking members.

3,960,471

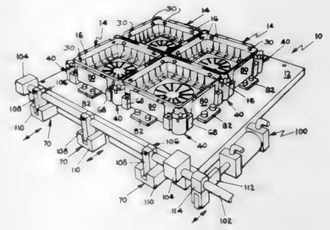
CONTAINER MOLDING APPARATUS

Roger L. Medendorp, Grand Rapids, Mich., assignor to Kirkhof Manufacturing Corporation, Grand Rapids, Mich.

Filed Dec. 23, 1974, Ser. No. 535,179

Int. Cl.² B29C *17/03*

U.S. Cl. 425—388 **23 Claims**



1. Molding apparatus for vacuum forming an article from sheet material comprising a base; at least one mold mounted on said base, said mold having upstanding side walls and a bottom defining a mold cavity, means defining an aperture in one of said side walls, a vacuum chamber, and a plurality of fluid passageways connecting said vacuum chamber with said mold cavity; said base including fluid passageways communicating with said vacuum chamber for evacuating said chamber and mold cavity when a sheet to be molded is laid across the

top of said mold; a molding projection; insertion means adjacent said aperture for inserting said projection through said aperture to form the sheet material therearound including plate means supporting said projection for moving said projection through said side wall, sealing means for sealing said aperture around said projection to prevent fluid flow through said aperture when said projection is inserted therein, and camming means for moving said plate means to insert and remove said projection from said aperture.

3,960,472

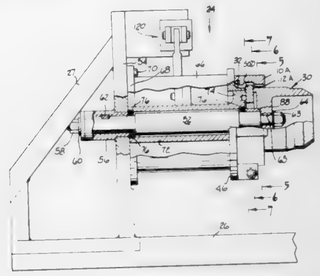
BELLING ASSEMBLY AND METHOD OF FORMING A BELL END

John Vincent O'Connor, Englewood, and Edmund Joseph Zolnick, Perry Park, Larkspur, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Division of Ser. No. 386,120, Aug. 6, 1973, abandoned. This application Oct. 3, 1974, Ser. No. 511,874

Int. Cl.² B29C *17/00*

U.S. Cl. 425—393 **7 Claims**



1. An assembly for use in forming an inner circumferential groove in a heat deformable pipe, said assembly comprising:

a. a core section having a longitudinal axis and a predetermined outer circumferential surface configuration;

b. a plurality of core segments located adjacent said core section;

c. means supporting said core segments for cooperative movement in a predetermined plane perpendicular to said axis, said segments being movable in said plane between an expanded position such that together said segments have an outer circumferential surface configuration which at all points is located outwardly from the outer surface configuration of said core section and a collapsed position inwardly of said expanded position, said supporting means supporting predetermined ones of said segments for pivotal movement about respective axes parallel with said longitudinal axis during movement of said segments between said expanded and collapsed positions, and supporting predetermined ones of said segments for straight line movement in said predetermined plane; and

d. means for moving said core segments between said expanded position and said collapsed position.

3,960,473

DIE STRUCTURE FOR FORMING A SERRATED ROD

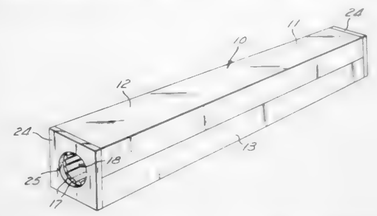
Thomas Harris, Chesterland, Ohio, assignor to The Glastic Corporation, South Euclid, Ohio

Filed Feb. 6, 1975, Ser. No. 547,550

Int. Cl.² B29C *23/00*

U.S. Cl. 425—467 **4 Claims**

1. A pultrusion die for forming serrated, fiber-reinforced plastic articles, comprising a die block having a cylindrical cavity defined by a wall extending therethrough, a plurality of cylindrical rods arranged about the cavity wall with substantially all of said rods being in contact with circumferentially adjacent rods so that said rods lock each other in place against inward radial displacement and are fixed in place so that the



inner peripheral portions of said rods define a serrated die cavity.

3,960,474

APPARATUS FOR MANUFACTURING REINFORCED PLASTIC CONTAINERS BY BLOW MOLDING

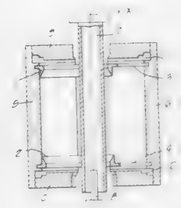
Reiner Kader, St. Augustin, Germany, assignor to Mauser Kommanditgesellschaft, Cologne, Germany

Filed May 20, 1974, Ser. No. 471,642

Claims priority, application Germany, May 24, 1973, 2326477

Int. Cl.² B29D *3/02;* **B29C** *17/07*

U.S. Cl. 425—503 **6 Claims**



1. In a molding apparatus for blow molding thermoplastic containers having their opposite ends reinforced by reinforcing hoops bonded to the outer peripheral end edges thereof, the improvement comprising:

a mold divided into two halves which are movable between an extended position wherein said mold halves are spaced from one another and a closed position wherein said mold halves engage one another to form a continuous, circumferential, interior surface;

each of said mold halves having an upper end and a lower end;

each of said mold halves having an upper groove in its interior surface adjacent to said upper end thereof and a lower groove in its interior surface adjacent to said lower end thereof;

said upper grooves in each of said mold halves being aligned with one another so as to form a continuous upper groove when said mold halves are in their closed position;

said lower grooves in said mold halves being aligned with one another so as to form a continuous lower groove when said mold halves are in their closed position;

said continuous upper and lower grooves being adapted to receive and retain the outer peripheral edges of reinforcing hoops;

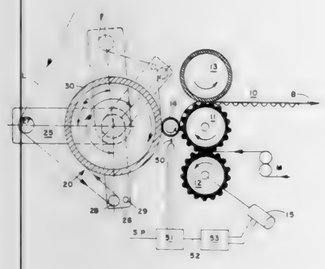
an upper end plate half overlying said upper end of each of said mold halves; and a lower end plate half underlying said lower end of each of said mold halves;

said end plate halves being movable with said mold halves between their said extended position and their said closed position;

said end plates being movable toward one another when said mold halves are in their said closed position to en-

gage and retain portions of upper and lower reinforcing hoops in place.

3,960,475
ANGULAR INDEXING MECHANISM
John DeLigt, and Willem A. Nikkel, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.
Filed July 8, 1975, Ser. No. 593,990
Int. Cl.² B29C *3/00, 27/00*
U.S. Cl. 425—505 **12 Claims**



1. In combination with a single-face corrugating machine comprising a pair of corrugating rolls, a web heating roll, a fusion roll running simultaneously in nip relation with said heating roll and flute crests on said corrugating rolls, said heating roll having an axis of rotation and a wrap control roll rotatably secured to the distal end of a pair of radius arms rotatably mounted about said heating roll axis, said wrap control roll being angularly positioned about said heating roll axis by rotational power transmission means, the improvement comprising:

A. Electric motor means for driving said transmission means; and

B. Motor control means for regulating the operation of said motor means to set said wrap control roll at a desired one of a predetermined number of arcuately spaced set positions about said heating roll axis over an adjustment arc of less than 360°, said motor control means comprising a rotary selector switch means, drive follower means, and polarity reversing switch means for controlling the flow of electric drive energy from a supply source to said motor means, said rotary selector switch means having a number of first stationary contacts corresponding to the predetermined number of control roll set positions and a rotary contact means for selectively connecting said energy source to one of said first stationary contacts, said drive follower means having a number of second stationary contact units corresponding to said number of control roll set positions, said second stationary contact units being positioned about a follower means axis by an arcuate spacing proportional to the arcuate spacing between respective control roll set positions, energy flow circuit continuity means between said second stationary contact units and respective polarity reversing elements of said reversing switch means, breaker element means rotatable about said follower means axis for interrupting energy flow continuity between at least one of said second stationary contact units and said polarity reversing elements and drive follower transmission means driven by said power transmission means to rotate said breaker element at an angular displacement rate proportional to the angular displacement rate of said control roll for interrupting the circuit continuity of a second stationary contact unit respective to the positional alignment of said control roll with a respective one of said predetermined set positions.

3,960,476
LYOPHILIZED AND SPRAY DRIED DYES
Giuliana Ghilardi, 52, Rue Michel-Ange, Paris; Pierre Boré, 197. Avenue Daniel Perdrige, 93 Montfermeil, and Jean-Francois Grollier, 19, Rue de Dantzig, Paris, all of France
Continuation of Ser. No. 120,353, March 2, 1971, abandoned. This application Apr. 15, 1974, Ser. No. 461,261
Claims priority, application Luxemburg, Oct. 19, 1970, 60449; Feb. 15, 1971, 61890
Int. Cl.² A61K *7/12, 7/13*
U.S. Cl. 8—10.1 **17 Claims**

1. A process for producing a lyophilized dyestuff comprising reacting with a molar excess of hydrogen peroxide an oxidation base in an aqueous alkaline solution open to ambient atmosphere and having a pH ranging from 8 to 13 at a temperature between about 15°–30°C for a period of about 5 minutes to 30 hours and lyophilizing said raction mixture, said oxidation base being selected from the group consisting of paratoluylene diamine, paraphenylene diamine, N,N-dimethyl paraphenylene diamine, chloroparaphenylene diamine, 2-methoxy-5-methyl paraphenylene diamine, 2,6-dimethyl-3methoxy paraphenylene diamine, tetramethyl paraphenylene diamine, 2-methoxy paraphenylene diamine, para aminophenol, 2,6-dimethyl para aminophenol, 2,4-diamino anisole, 2-methyl para aminophenol, the hydrochlorides thereof, and mixtures thereof, wherein lyophilizing said reaction mixture comprises freezing said reaction mixture at a temperature of about −200°C to −60°C and subliming said frozen mixture at a temperature of about −50°C to −30°C at a pressure of about 0.01 mm Hg to 0.1 mm Hg.

3,960,477
CROSSDYED COTTON FABRICS
Robert J. Harper, Jr., Metairie; Eugene J. Blanchard, New Orleans; John T. Lofton, and Gloria A. Gautreaux, both of Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Jan. 11, 1974, Ser. No. 432,800
Int. Cl.² D06P *1/38, 3/60, 5/12*
U.S. Cl. 8—15 **2 Claims**

1. A process for producing crossdyed cotton fabrics comprising:

a. crosslinking a cotton yarn with a hydrolyzable crosslinking agent selected from the group consisting of dimethylolethyleneurea and dimethylolpropyleneurea thereby imparting dye resistance to said yarn;

b. combining said crosslinked yarn with an uncrosslinked yarn to form a fabric;

c. dyeing said fabric with a first reactive cotton dye;

d. hydrolyzing the said crosslinking agent in said crosslinked yarn, rendering said yarn dye reactive; and

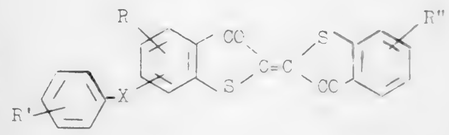
e. dyeing said fabric with a second reactive cotton dye.

3,960,478
SYNTHETIC CHINCHILLA FUR PRODUCTION BY REVERSE SIDE APPLICATION OF DYE SOLUTION
Georges Pouille, 2, Rue de Linselles, 59 Halluin, France
Division of Ser. No. 319,240, Dec. 29, 1972, Pat. No. 3,915,629. This application May 15, 1975, Ser. No. 577,670
The portion of the term of this patent subsequent to Oct. 28, 1992, has been disclaimed.
Int. Cl.² D06P *50/00*
U.S. Cl. 8—14 **1 Claim**

1. In a process for the production of synthetic fur imitation of chinchilla fur, wherein a long pile is provided upon a surface of a fabric backing, the improvement which comprises dyeing the pile by forcing a dye over only limited areas of the fabric backing through the latter at a pressure of the order of several tens of bars from the side of the fabric backing opposite that from which the pile extends and sufficient to effect diffusion of the dye along the pile over only a limited length thereof.

3,960,479
COLORING OF ORGANIC MATERIALS WITH ASYMMETRIC THIOINDIGOID COMPOUNDS
Michihiro Tsujimoto, Tachikawa; Tsutomu Nishizawa, Kamakura, and Ichiro Okubo, Hachioji, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
Filed Apr. 30, 1975, Ser. No. 573,102
Claims priority, application Japan, May 9, 1974, 49-50686
Int. Cl.² D06P *1/22*
U.S. Cl. 8—36 **8 Claims**

1. A method for dyeing synthetic or semi-synthetic polymeric fibres with an asymmetric thioindigoid compound having the formula:



wherein
R is a hydrogen atom or lower alkyl group;
R′ is a member selected from the group consisting of
1. a hydrogen atom,
2. halogen atoms,
3. lower alkyl groups,
4. lower alkoxy groups,
5. a sulfonamide group the amide group of which may be substituted with a member selected from the group consisting of
i. lower alkyl groups which may be substituted with
a. a hydroxyl group,
b. lower alkoxy group or
c. cyano group,
ii. a cyclohexyl group,
iii. aralkyl groups and
iv. a phenyl group which may be substituted with
a. a lower alkyl group,
b. chlorine atom or
c. lower alkoxy group, and
6. aryl sulfonate groups the aryl group of which may be substituted with
i. a halogen atom,
ii. lower alkyl group or
iii. lower alkoxy group;
R″ is a hydrogen atom or methyl group; and
X is an oxygen atom or sulfur atom.

3,960,480
BISAZO DYESTUFFS OF THE 2,6-DIAMINOPYRIDINE SERIES

Ernst Heinrich; Konrad Mix, both of Frankfurt am Main, and Joachim Ribka, Offenbach, (Main)-Burgel, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany

Division of Ser. No. 438,616, Feb. 1, 1974. This application Oct. 30, 1974, Ser. No. 519,111

Claims priority, application Germany, Feb. 10, 1973, 2306673

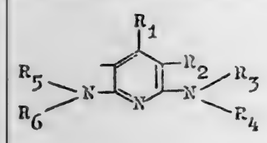
Int. Cl.² C09B *2/00*

U.S. Cl. 8—41 R **3 Claims**

1. In the process of dyeing or printing synthetic materials with a pigment, the improvement which comprises employing a bisazo dyestuff of the formula

$$Q-N=N-A-N=N-Q_1$$

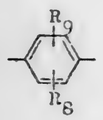
wherein each of Q and Q_1 is a radical of the formula



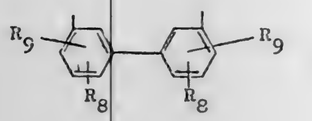
A is a radical of the formulae



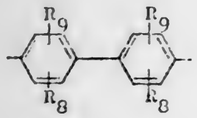
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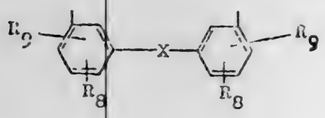
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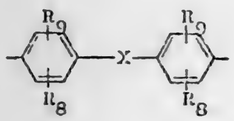
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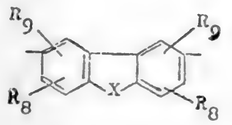
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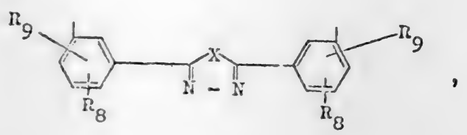
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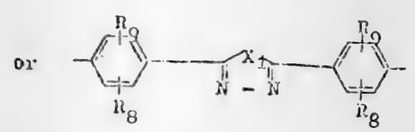
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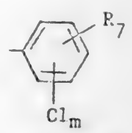
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or

;

R_1 is alkyl having 1 to 3 carbon atoms; R_2 is cyano or $-CONH_2$; each of R_3 and R_5 is hydrogen, methyl, $-C_2H_4OH$, $-CH_2CH(OH)CH_3$, $-CH_2CH_2CH_2OH$, $-C_2H_4CONH_2$, benzyl, phenethyl, cyclopentyl, cyclohexyl or



each of R_4 and R_6 is hydrogen, alkyl having 1 to 3 carbon atoms, $-C_2H_4OH$, $-CH_2CH(OH)CH_3$ or $-CH_2CH_2CH_2OH$; R_7 is hydrogen, methyl, methoxy, $-NHCOCH_3$, $-C_2H_4CN$ or $-NHCOC_6H_5$; *m* is 0, 1, 2, or 3; each of R_8 and R_9 is hydrogen, halogen, nitro, methyl or methoxy; X is —O—, —S—,



or $-SO_2-O$ and X_1 is —O—, —S— or —NH—.

3,960,481
PROCESS FOR TANNING LEATHER

Gerald M. Cote, Holland, Pa., assignor to Thermanil Chemical Company, Incorporated, Croyden, Pa.

Division of Ser. No. 292,710, Sept. 27, 1972, Pat. No. 3,901,929. This application Apr. 18, 1975, Ser. No. 569,247

Int. Cl.² C14C *3/08, 3/06*

U.S. Cl. 8—94.26 **12 Claims**

1. In a process for the chrome tanning of leather the improvement comprising adding to the leather while it is in the tanning wheel a tanning agent comprising an organic salt of a phosphorated ethoxylated saturated fatty acid ester, the saturated fatty acid having from 12 to 20 carbon atoms and said salt being the neutralization product of said ester with an organic base.

3,960,482
DURABLE PRESS PROCESS EMPLOYING HIGH MOISTURE CONTENT FABRICS

George Louis Payet, Cincinnati, Ohio, assignor to The Strike Corporation, Cincinnati, Ohio

Filed July 5, 1974, Ser. No. 486,168

Int. Cl.² B05D *3/04*

U.S. Cl. 8—116.4 **20 Claims**

1. A durable-press process for cellulosic fiber-containing fabrics, comprising, impregnating a cellulosic fiber-containing fabric with an aqueous solution containing a water soluble normally solid catalyst selected from the group consisting of acids, acid salts and mixtures thereof which are capable of catalyzing the cross-linking reaction between formaldehyde and cellulose, to provide from 0.1 to about 10.0 percent of said catalyst in said fabric on a dry weight basis, then exposing said impregnated fabric, while said fabric has a moisture content of about 20 percent by weight where the cellulose fibers are substantially completely swollen, to formaldehyde vapors and curing under conditions at which formaldehyde reacts with cellulose in the presence of the catalyst to improve the wrinkle resistance of the fabric.

3,960,483
DURABLE PRESS PROCESS EMPLOYING ALKYL-SULFONIC OR SULFURIC ACID

George Louis Payet, Cincinnati, Ohio, assignor to The Strike Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 486,168, July 5, 1974. This application Nov. 18, 1974, Ser. No. 524,770

Int. Cl.² B05D *3/04*

U.S. Cl. 8—116.4 **10 Claims**

1. A durable-press process for cellulosic fiber-containing fabrics, comprising: impregnating a cellulosic fiber-containing fabric with an aqueous solution of an alkylsulfonic acid or a low concentration of sulfuric acid which is capable of catalyzing the cross-linking reaction between formaldehyde and cellulose, to provide from 0.1 to about 0.5 percent of said catalyst in said fabric on a dry weight basis, then exposing said impregnated fabric, while said fabric has a moisture content of above 20 percent by weight where the cellulose fibers are substantially completely swollen, to formaldehyde vapors and curing under conditions at which formaldehyde reacts with cellulose in the presence of the catalyst to improve the wrinkle resistance of the fabric.

3,960,484
PROCESS AND APPARATUS FOR IMPROVING THE FIBER STRUCTURE OF TEXTILE MATERIAL CONTAINING CELLULOSE FIBERS

Erwin Leimbacher, Wattwil; Walter Marte, Ulisbach, and Ferdinand Buchele, Wattwil, all of Switzerland, assignors to Herberlein Textildruck AG, Wattwil, Switzerland

Filed Feb. 12, 1974, Ser. No. 441,839

Claims priority, application Switzerland, Feb. 14, 1973, 2170/73

Int. Cl.² D06M *1/02*

U.S. Cl. 8—125 **20 Claims**

1. Process for improving the fiber structure of textile materials containing cellulose fibers in which the textile material is impregnated with an alkali hydroxide solution heated to a temperature of at least 50°C for a period of between 4 and 10 seconds, thereupon cooled to a temperature less than 25°C, stretched and washed, said alkali hydroxide solution being selected from the group consisting of a sodium hydroxide solution of a concentration between about 15° and 30° Be and a lithium hydroxide solution of a concentration of between approximately 5 and 10 percent.

3,960,485
PROCESS FOR RECOVERY AND REUSE OF TEXTILE SIZE

Joel Fantl, Springfield, and Joseph G. Martins, Ludlow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed June 19, 1974, Ser. No. 480,670

Int. Cl.² B01D *23/00;* **D06L** *1/14, 1/16*

U.S. Cl. 8—138 **31 Claims**

1. A process for recovery of a warp size from a woven cloth sized with an interpolymer or an alkali metal salt of an interpolymer of a vinyl ester and an α, β-unsaturated acid which comprises:

A. desizing the cloth by contacting it with an aqueous scouring solvent containing from 0 to 400 milliequivalents of an alkali metal hydroxide or carbonate per 100 parts by weight of interpolymer at a temperature of 45° to 100°C. to yield a desize liquor of pH in the range of 6 to 10, containing from 0.70 to 7.5 parts by weight of the interpolymer per 100 parts by weight of the desize liquor,

B. adding alkali metal ion to the desize liquor to provide a total concentration from 125 to 600 milliequivalents per 100 g. of interpolymer,

C. adding an acid of pK_a at least 4.8 and a water solubility of at least 20 parts by weight per hundred parts of water, to the desize liquor at a temperature in the range of 40°–90°C. to reduce the pH of the desize liquor to from 1 to 3, thereby precipitating the interpolymer, and

D. isolating the precipitated interpolymer from the supernatant solution,

wherein the interpolymer comprises 90 to 97 parts by weight of a vinyl ester containing 4 to 7 carbon atoms and 3 to 10 parts by weight of an α,β-unsaturated acid selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, isocrotonic acid, and the monoalkyl esters of maleic acid, fumaric acid, citraconic acid, and itaconic acid in which the alkyl group contains from 1 to 4 carbon atoms and the specific viscosity of the interpolymer is in the range from 1.2 to 12, determined in a dimethyl sulfoxide solution containing 1 gram of interpolymer per 100 ml of solution at 25°C.

3,960,486
POWDERED, HIGHLY CONCENTRATED AND STABLY DISPERSIBLE DYE FORMULATIONS

Ewald Daubach, Ludwigshafen; Heinz Saukel, Friedelsheim, and Leonhard Von Rambach, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 16, 1974, Ser. No. 506,560

Claims priority, application Germany, Sept. 27, 1973, 2348518

Int. Cl.² D06P *1/68*

U.S. Cl. 8—79 **8 Claims**

1. A powdered, highly concentrated and stably dispersible dye formulation which is practically devoid of dye agglomerate and which consists essentially of:

A. at least one water-insoluble dye;

B. at least one anion-active dispersing agent in an amount sufficient to disperse said dye in water; and

C. as a stabilizing agent from 2 to 30% by weight, with reference to said dye, of an oxyalkylation product which is (C.1) a reaction product of

a. a saturated fatty alcohol or unsaturated fatty alcohol, each of 6 to 20 carbon atoms, or a mixture thereof;

b. an alkylphenol of 4 to 12 carbon atoms in the alkyl;

c. a saturated fatty amine or unsaturated fatty amine, each of 14 to 20 carbon atoms, or a mixture thereof;

d. castor oil or hydrogenated castor oil;

e. a saturated fatty acid or unsaturated fatty acid, each of 14 to 20 carbon atoms, or a mixture thereof; or

f. a natural resin acid, with from 2 to 80 moles of ethylene oxide per mole of hydroxyl or amino groups reactive with ethylene oxide;

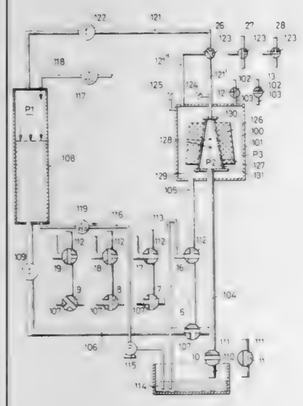
(C.2) a reaction product of
g. an alkylenediamine of 2 to 5 carbon atoms with from 25 to 120 moles of propylene oxide and ethylene oxide per mole of amino groups, at least 20 moles of ethylene oxide being used per mole of amino groups;
(C.3) a polyethylene oxide of a molecular weight of from 200 to 1,000; or
(C.4) a mixture of two or more of the oxyalkylation products designated above as (C.1), (C.2) and (C.3).

3,960,487

LIQUID-TREATING OF FILAMENTARY MATERIALS

Vilem Stritzko, Strengelbach, Switzerland, assignor to Bleiche A.G., Zofingen, Switzerland

Filed Jan. 9, 1975, Ser. No. 539,738
Claims priority, application Switzerland, Jan. 16, 1974, 561/74
Int. Cl.² D06B *5/18*
U.S. Cl. 8—155.1 **15 Claims**



1. A method of liquid-treating filamentary materials, such as threads, yarn and textiles, comprising the steps of confining a hollow package of filamentary material within a vessel so that the package subdivides the interior of the vessel into an inner and a separate outer chamber which communicate only through the thickness of the filamentary material; admitting a foamable treating liquid in unfoamed state into only one of said chambers; pressing an amount of said liquid from said one chamber into the filamentary material sufficient to wet the filamentary material without substantially any of said liquid entering the other chamber; discharging the residual, unfoamed liquid from said one chamber; and forcing a pressurized gaseous fluid through said package from one chamber into the other chamber to thereby foam the liquid within the filamentary material and evenly distribute it throughout said package.

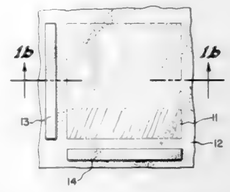
3,960,488

METHOD AND APPARATUS FOR QUANTITATIVE SURFACE INHIBITION TEST

Ivar Giaever, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1974, Ser. No. 457,091
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230 B **40 Claims**

1. Apparatus for determining the concentration of immunologically reactive biological particles in a test solution, comprising in combination:
a solid substrate member having a metallized major surface,
a layer of first immunologically reactive biological particles adsorbed over at least a portion of said metallized surface,
means in substantially complete contact with the outer surface of said layer of first biological particles for holding a quantity of moisture in the immobile state whereby the moisture can function as a diffusing medium,



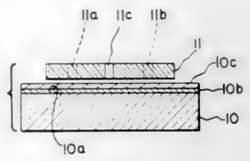
means for placing a first straight longitudinally-extending deposit of solution into contact with said moisture along the length of said first deposit, and
means for placing a second straight longitudinally-extending deposit of solution into contact with said moisture along the length of said second deposit, said first and second deposits extending in a particular orientation relative to each other whereby the solutions of said first and second depposits will diffuse through said moisture toward each other and toward said layer of first biological particles.

3,960,489

METHOD AND APPARATUS FOR DETERMINATION OF CONCENTRATION OF IMMUNOLOGICALLY REACTIVE BIOLOGICAL PARTICLES

Ivar Giaever, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1974, Ser. No. 457,092
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230 B **36 Claims**



1. Apparatus for determining the presence or absence of select biological particles in a biological sample and the concentration of said select biological particles, if present, comprising in combination
a solid substrate member having metallized surface area,
a first monomolecular layer of biological particles immunologically specific to said select biological particles adsorbed on said metallized surface area and
means for locating a stationary region of an aqueous liquid on and in contact with said first monomolecular layer.

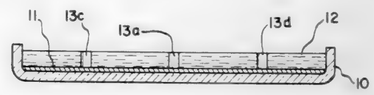
3,960,490

METHOD AND APPARATUS FOR DETECTING IMMUNOLOGIC REACTIONS BY DIFFUSION IN GEL

Ivar Giaever, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1974, Ser. No. 457,093
Int. Cl.² G01N *33/16, 31/02*; **C12K** *1/00*
U.S. Cl. 23—230 B **29 Claims**

1. Apparatus for determining the presence or absence of select biological particles in a biological sample, comprising in combination
a solid substrate member having a metallized surface area thereon and



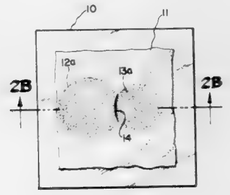
a gel layer on and in direct contact with said metallized surface area, said gel layer having a plurality of holes therethrough exposing metallized surface area at the bottom of said holes, said gel layer being substantially free of biological particles.

3,960,491

METHOD AND APPARATUS FOR DETECTING IMMUNOLOGICALLY REACTIVE BIOLOGICAL PARTICLES

Ivar Giaever, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1974, Ser. No. 457,094
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230 B **23 Claims**



1. Apparatus for determining the presence or absence of select biological particles in a biological sample, comprising in combination
a solid substrate member having a metallized surface area thereon and
means for locating a layer of immobilized liquid on and in direct contact with said metallized surface area, said locating means being a porous membrane of a material selected from the group consisting of cellulose and cellulose derivatives, said porous membrane containing said liquid.

3,960,492

METHOD FOR DETERMINING AN INDEX OF BINDING PROTEIN CONTENT OF BLOOD

Walter DiGiulio, Grosse Pointe Woods, Mich., assignor to Nuclear Diagnostics, Inc., Troy, Mich.

Filed May 31, 1974, Ser. No. 475,213
Int. Cl.² G01N *33/16*
U.S. Cl. 23—230 B **24 Claims**

1. A method for determining an index of binding proteins in a blood sample comprising the steps of:
1. Forming a mixture of a) the blood sample, having ligand binding sites, b) a known quantity of a radioactive ligand and c) a known amount of nonradioactive ligand wherein the total amount of the ligand is in excess of the ligand binding sites available in the blood sample;
2. Contacting the mixture with a quantity of a binder having a preferential affinity for the ligand; and
3. Thereafter, determining the radioactive distribution of the ligand.

3,960,493

METHOD OF MEASURING THE FAT AND PROTEIN CONTENT IN FLUIDS

Donald C. Beitz, Ames, and Mitchell E. Phillips, West Des Moines, both of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Nov. 18, 1974, Ser. No. 524,739
Int. Cl.² G01N *31/02, 33/06, 33/16*
U.S. Cl. 23—230 B **10 Claims**

1. A nephelometric method for the sequential determination of protein and fat in a biological fluid sample containing protein and fat comprising the steps of (1) adding to the sample a first reagent solution which is substantially anhydrous and is effective to dissolve the fat content of the sample and to substantially denature the protein therein to thereby provide a colloid protein dispersion, (2) taking a nephelometric reading of the colloidally dispersed protein in the sample, (3) adding to the sample prepared in step (1) a second solution comprised predominantly of water which precipitates the fat in the sample so as to form a colloidal fat dispersion and which dissolves the protein, and (4) taking a nephelometric reading of the colloidally dispersed fat.

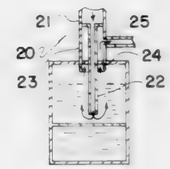
8. A reagent solution, useful for the nephelometric determination of protein in a milk sample, said solution containing para-toluene sulfonic acid, acetic anhydride, and acetic acid, the para-toluene sulfonic acid being present in an amount of less than about 1 gram per 100 milliliters of solution and the acetic anhydride being present in about 5–20 percent by volume, the balance of the solution consisting essentially of acetic acid.

3,960,494

COLORIMETRIC ODORANT LEVEL TEST IN NATURAL, SYNTHETIC AND L.P. GAS AND THE LIKE

Arun Verma, Regina, and Arthur R. Knight, Saskatoon, both of Canada, assignors to Saskatchewan Power Corporation, Regina, Canada

Filed Nov. 11, 1974, Ser. No. 522,331
Int. Cl.² B65D *25/08*; **G01N** *31/22, 33/22*
U.S. Cl. 23—232 R **7 Claims**

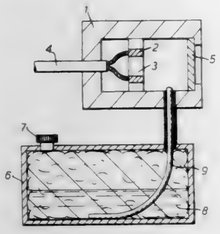


1. A method of measuring the quantity of mercaptan-based odorants in a gas stream comprising the steps of bubbling a sample of the gas through a first chemical reagent in a first compartment of a reagent carrying tube by piercing a membrane covering said first compartment, and then mixing the chemical reagent with at least one further chemical reagent in a second compartment of said tube and being separated from said first compartment by a further membrane spanning said tube, by piercing said second membrane, the mixing of said reagents producing a color in said mixture and then comparing the resulting color in said mixed reagents with a color shade standard.

3,960,495
DETECTION OF COMBUSTIBLE GASES

Anthony Desmond Shand Tantram, 50 Downs Way, Great Bookham, near Leatherhead, Surrey, England

Continuation-in-part of Ser. No. 330,454, Feb. 7, 1973, abandoned. This application Feb. 21, 1975, Ser. No. 551,849
Claims priority, application United Kingdom, Feb. 15, 1972, 7035/72; July 26, 1972, 35050/72
Int. Cl.² G01N *27/16, 31/10, 31/12*
U.S. Cl. 23—232 E **7 Claims**

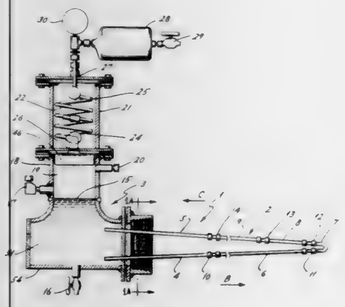


1. In a method of continuously monitoring an atmosphere to detect the presence of a combustible gas or vapour in the atmosphere comprising testing the atmosphere with a detector including a transducer which responds to the presence of the combustible gas or vapour in the atmosphere, the improvement comprising the steps of continuously supplying to the vicinity of the transducer a controlled known small amount of a known combustible gas or vapour to which the transducer responds so that the detector normally indicates the presence of at least the said controlled amount of combustible gas or vapour, said detector indicating malfunctioning of said transducer by not giving a reading for the known combustible gas or vapor.

3,960,496
CORROSION PROBE DEVICE FOR BOILER GASES

John R. Schieber, Holland, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Oct. 30, 1975, Ser. No. 627,171
Int. Cl.² G01N *17/00*
U.S. Cl. 23—253 C **28 Claims**

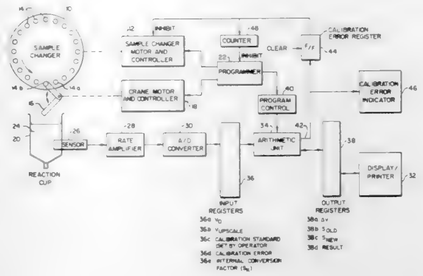


1. A constant temperature cold-end corrosion probe device for the flue gas stream of a boiler, said device comprising:
- constant temperature probe means for insertion into said flue gas stream, and
- temperature maintaining means for maintaining the temperature of said probe means substantially constant,
- wherein said temperature maintaining means includes condenser means having a variable tube side heat transfer area.

3,960,497
CHEMICAL ANALYZER WITH AUTOMATIC CALIBRATION

William A. Acord, Claremont, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 19, 1975, Ser. No. 605,947
Int. Cl.² G01N *33/16;* **G06F** *15/42*
U.S. Cl. 23—253 R **3 Claims**



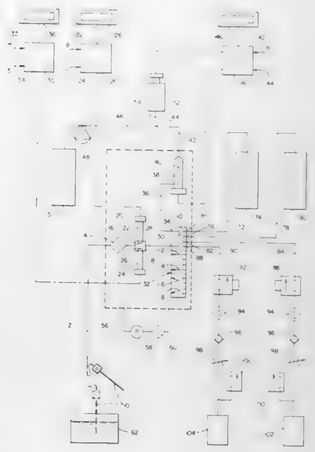
1. Improved calibration apparatus for use in an automatic analyzer of the type which measures a characteristic of a plurality of samples and includes sample changer means adapted to advance said samples in sequential fashion into position for analysis, the sample changer means further adapted to intermittently position for analysis calibration standards having a known predetermined value of said characteristic, the improved calibration apparatus comprising:
- measuring means for measuring said characteristic of said calibration standards and generating electrical signals indicative thereof,
- conversion means responsive to each measurement of a calibration standard for generating a conversion factor which converts each electrical signal to said predetermined value of said calibration standards,
- storage means for storing said conversion factor,
- verification means for verifying the calibration of said analyzer upon each analysis of a calibration standard including means for comparing the conversion factor generated for the calibrated standard being measured with the stored conversion factor for the previously analyzed calibration standard and for generating a control signal if the compared conversion factors differ by more than a predetermined amount,
- sample changer control means responsive to said control signal for halting advancement of the sample changer means to maintain the calibration standard being measured in position for remeasurement, and
- means for energizing said measuring means to remeasure the calibration standard.

3,960,498
ELECTROCHEMICAL ANALYSIS SYSTEM

Jerrold Zindler, Boston, and Gustav H. Dreier, Acton, both of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed Aug. 1, 1974, Ser. No. 493,786
Int. Cl.² E03B *11/00;* **F17D** *1/00;* **G01N** *27/26, 33/16*
U.S. Cl. 23—253 R **17 Claims**

1. An electrochemical analysis system comprising a plurality of flow through measuring chambers, a measuring electrode system connected in measuring relation to each said chamber,
- system inlet port structure, conduit connecting said system inlet port structure to said chambers, calibrating fluid inlet port structure, and
- a fluid control having a first (analysis) mode in which said measuring chambers are in fluid communication with the system inlet port structure so that fluid from the same sample may be concurrently flowed into said measuring chambers for concurrent sensing by said measuring electrode systems, and a second mode in which one measuring chamber is in fluid communication with said calibrating fluid inlet port structure and said measuring chambers are in fluid isolation from one another so that the electrode systems may be calibrated concurrently and independently of one another.



3,960,499
BIOLOGICAL TEST APPARATUS

Fred K. White, Glen Ellyn, Ill., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Feb. 18, 1975, Ser. No. 550,603
Int. Cl.² B01R *5/00*
U.S. Cl. 23—253 R **8 Claims**

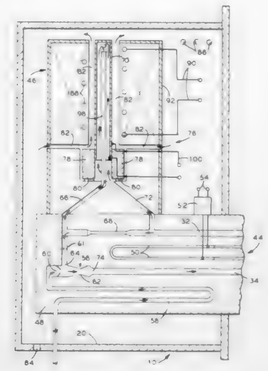
1. Biological test apparatus comprising an organoplastic support surface which has been treated to become hydrophilic and an aqueous gel in uniform close adherent contact with said hydrophilic surface.

3,960,500
GAS SAMPLING ANALYZING SYSTEM

David F. Ross, Euclid, and Robert E. Pocock, Highland Heights, both of Ohio, assignors to Bailey Meter Company, Wickliffe, Ohio

Filed Jan. 9, 1975, Ser. No. 539,764
Int. Cl.² B01K *1/00;* **G01M** *27/26*
U.S. Cl. 23—254 E **14 Claims**

1. A gas sampling analyzing system for analyzing gases within a duct comprising:
- probe means, mountable within the duct, to draw a sample of the gases therein;
- an analyzer assembly mounted outside of the duct and being connected to said probe means to analyze said sample;
- an exhaust line connected to said analyzer assembly for exhausting the analyzed gas from said analyzer assembly back to the duct; and
- aspirator means mounted externally of the duct for inducing a substantially constant flow of sample gas from the duct

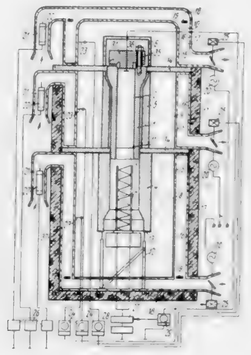


to said probe means to said analyzer assembly and through said exhaust line back to the duct.

3,960,501
APPARATUS FOR GROWING CRYSTALS FROM HYDROTHERMAL SOLUTIONS

Vladimir Petrovich Butuzov, Sirenevy bulvar 45, kv. 55, Moscow; Evgeny Konstantinovich Vatolkin, Vokzalnaya ulitsa 20, kv. 6, Alexandrov Vladimirskoi oblasti; Leonid Alexandrovich Gordienko, Bolshaya Semenovskaya ulitsa 21, kv. 87, Moscow; Ernst Borisovich Feldman, Snaiperskaya ulitsa 5, kv. 20, Moscow; Valentin Evstafievich Khadzhi, ulitsa Institutskaya 14, kv. 8, Alexandrov Vladimirskoi oblasti, and Anatoly Alexandrovich Shaposhnikov, 5 Vatutinsky pereulok 31, kv. 10, Moscow, all of U.S.S.R.

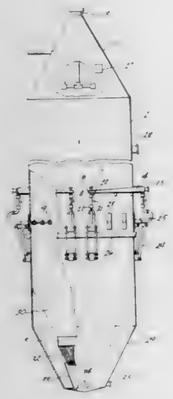
Filed Jan. 15, 1974, Ser. No. 433,495
Int. Cl.² B01D *9/02;* **B01J** *17/04*
U.S. Cl. 23—273 H **2 Claims**



1. Apparatus for growing crystals from hydrothermal solution, comprising: a vertically elongated autoclave; a crystallization zone in the top portion of said autoclave; a dissolution zone in the bottom portion of said autoclave; a heat insulation coating of said autoclave; a system of heating elements of said autoclave; a temperature controlled chamber accommodating said autoclave, said chamber being divided into three sections disposed one above another along the vertical extent of said chamber; a heating and temperature control system of each of said sections which ensures the maintenance of constant and different temperature values in each of said sections required for creation and maintenance of the desired temperature

fields in said crystallization and dissolution zones of said autoclave, said sections of the temperature controlled chamber each having double walls including an inner and outer walls with a space defined therebetween; and means for maintaining a constant temperature in said space and of said inner wall and comprising said heating and temperature control system.

3,960,502
ABSORBER-CRYSTALLIZER TOWER INCLUDING SPRAY MEANS AND SCALE TRAP
Walter C. Saeman, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.
Division of Ser. No. 445,188, Feb. 25, 1974, and a continuation-in-part of Ser. No. 213,639, Dec. 12, 1971, abandoned. This application Nov. 11, 1974, Ser. No. 522,600
Int. Cl.² B01D *9/02*
U.S. Cl. 23—273 R **6 Claims**

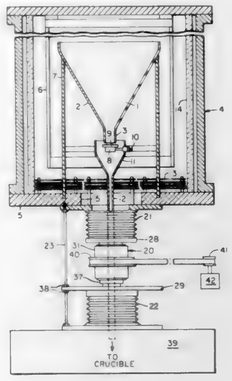


1. In a substantially vertical absorber-crystallizer tower having an upper portion comprising a gas absorption zone, a lower liquid containing portion below said gas absorption zone comprising a classification and crystallization zone, the improvement which comprises:

a false downwardly and inwardly extending imperforate bottom in said liquid containing portion being open at its upper and lower ends and sealingly affixed at its upper end to the walls of said tower, said false bottom defining a crystallization zone thereabove and a classification zone between said inclined wall and the walls of said tower, an outlet from said classification zone,

a foraminous screen open at its upper and lower ends communicating between said crystallization zone and said classification zone, said screen appended to the lower end of said false bottom and extending therebelow and having apertures of a size selected to restrict passage of oversized material therethrough into said classification zone, the lower opening of said screen communicating with a scale trap positioned therebeneath, said scale trap being provided with a cleanout port to permit accumulated scale to be removed from the tower, plural opposed nozzles spaced horizontally about the lower perimeter of said gas absorption zone, said nozzles being arranged and adapted to direct sprays of gas absorbing liquid upwardly and inwardly into said gas absorption zone, and to avoid spray contact with said tower walls and to substantially maximize midair collision with said sprays eminating from said plural opposed nozzles, gas inlet and outlet means connected to said gas absorption zone.

3,960,503
PARTICULATE MATERIAL FEEDER FOR HIGH TEMPERATURE VACUUM SYSTEM
Dale W. Rice, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Dec. 27, 1974, Ser. No. 537,042
Int. Cl.² B01J *17/18;* **G01F** *11/20*
U.S. Cl. 23—273 SP **5 Claims**



1. In an apparatus for growing single crystals from the melt including a gas-tight crystal growing furnace and a crucible therein for containing the melt, a feeder system for replenishing batch raw material to the crucible comprising:

A. an independent pre-heat furnace structure adjacent the crystal growing furnace including heating means and having an opening at the bottom thereof but otherwise being gas-tight,

B. a raw material hopper fixed within the pre-heat furnace and having an outlet opening at the bottom thereof positioned above the opening at the bottom of the preheat furnace,

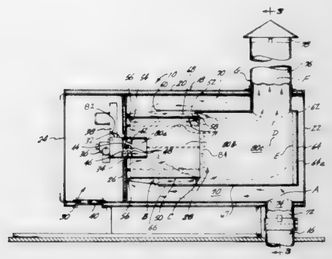
C. a funnel means located within said preheat furnace and substantially axially beneath the hopper outlet opening for receiving raw material discharged therefrom, and including a conduit means extending downwardly from the funnel and extending into the crystal growing furnace, for transporting discharged raw material to the crucible in the crystal growing furnace,

D. metering means mounted for rotation relative to the hopper outlet opening and being positioned substantially axially below the outlet opening and above the conduit means, and having a flat upper surface positioned at such a distance below the hopper outlet opening and being of such size relative thereto that when stationary, the raw material falls from the hopper and accumulates on the flat upper surface, and when rotating, the raw material falls from the hopper to the flat upper surface and steadily flows to an edge thereof, thence constantly to the funnel,

E. means located outside the pre-heat furnace structure for rotating the metering means, and

F. means for providing gas-tight seals on the opening at the bottom of the pre-heat furnace, between the pre-heat furnace and the conduit means, and between the crystal growing furnace and the conduit means.

3,960,504
POLLUTED AIR EFFLUENT INCINERATING APPARATUS
Lawrence C. Griffin, Seattle, Wash., assignor to Griffin Research & Development, Inc., Miami, Fla.
Filed Sept. 17, 1973, Ser. No. 397,947
Int. Cl.² F23G *7/06*
U.S. Cl. 23—277 C **18 Claims**



1. An incinerating apparatus adapted to accomplish substantially complete combustion of an effluent such as a polluted air effluent, said apparatus comprising:

a. a housing having a rear end, a forward end, a containing side wall and a longitudinal axis extending from the rear to the forward end of the housing,

b. a longitudinally aligned shell means located within said housing and spaced radially inwardly therefrom, said shell means defining a combustion area for incineration of said effluent,

c. said shell means defining with said housing a generally annular heat exchange passageway for flow of effluent therethrough, with the effluent in the passageway being in heat exchange relationship with said shell means so as to become heated from the shell means and cooling the shell means,

d. an effluent inlet to direct effluent into the forward end of said heat exchange passageway for flow rearwardly through said heat exchange passageway,

e. fuel inlet means at the rear of said housing and arranged to direct fuel forwardly into said combustion area to react with said effluent,

f. means defining a primary air inlet proximate said fuel inlet to provide a primary air inflow to react with said fuel at an initial combustion zone at the rear of said combustion area,

g. said shell means comprising an outer shell means defining a final combustion zone at a forward location of said combustion area,

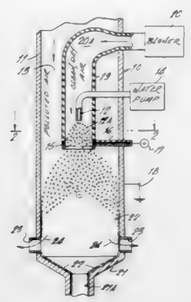
h. said shell means further comprising another shell means spaced inwardly and rearwardly of said outer shell means and defining an intermediate combustion zone between said initial and final combustion zones,

i. means defining a secondary inlet at the rear portion of said other shell means communicating with said heat exchange passageway to provide a secondary flow of effluent into said intermediate combustion zone,

j. means defining a tertiary inlet between said outer and other shell means communicating with said heat exchange passageway to provide a tertiary flow of effluent into said final combustion zone, and

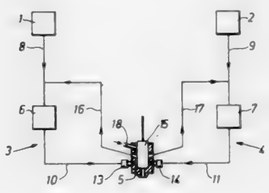
k. means defining an outlet from said combustion area to discharge the combustion products from said combustion area.

3,960,505
ELECTROSTATIC AIR PURIFIER USING CHARGED DROPLETS
Alvin M. Marks, 153-16 10th Ave., Whitestone, N.Y. 11357
Continuation-in-part of Ser. No. 211,350, Dec. 23, 1971, abandoned. This application Feb. 4, 1974, Ser. No. 439,264
Int. Cl.² C01B *17/82*
U.S. Cl. 23—284 **1 Claim**



1. A gas purifier for removing noxious gases and particulates from a stream of gases comprising a first conduit to receive and direct the stream of gases therethrough, a source of water comprising a fluid bearing line containing water under positive pressure disposed within the conduit, a reactant for the noxious gases in said water, a second conduit within the first conduit around said water source and in communication with a source of clean air under pressure, an apertured charging electrode mounted in the second conduit downstream of the water source and within the clean air duct, a source of electrical potential connected between the charging electrode and the water source for creating an intense electric field between the water source and the charging electrode to simultaneously charge and sub-divide the water and reactant into submicron charged droplets as they move into the stream of gases within the first conduit and means downstream of the charging electrode to collect and discharge the charged water and reactant droplets together with the gases and particulates entrained thereby.

3,960,506
APPARATUS FOR PRODUCING HOMOGENEOUS MATERIALS OR FOAM FROM AT LEAST TWO INTERREACTING COMPONENTS
Willi Schmitzer, Birlinghoven, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of Ser. No. 146,373, May 24, 1971, abandoned. This application July 9, 1973, Ser. No. 377,490
Claims priority, application Germany, June 20, 1970, 2030516
Int. Cl.² B01F *5/10;* **C08G** *69/04*
U.S. Cl. 23—285 **14 Claims**



1. An apparatus for the production of homogeneous materials or foams from a plurality of components comprising:

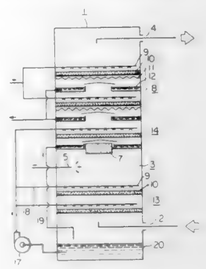
a. a pipe system for each component, each pipe system including a delivery pipe having a pump operatively connected therein for providing the component under high pressure, and a return pipe connected to the delivery pipe at the intake side of the pump, for return of the component from the discharge side to the intake side of the pump,
b. a nozzle at the high pressure discharge end of each delivery pipe,
c. a three-way valve to which each of the nozzles and return pipes is connected for continuously receiving the components from the nozzles and, alternatively, mixing and discharging the mixed components, or delivering them unmixed to the return pipes for return of the components, unmixed, to the intake side of the pumps,
d. said three-way valve comprising:
1. a housing,
2. a movable member in said housing movable between a first position for said mixing of the components, and a second position for said return of the components,
3. a mixing chamber in the movable member for simultaneously receiving the components from the nozzles with the movable member in said first position, an outlet communicating with the mixing chamber for discharge of the mixed comonents components the mixing chamber and from the housing with the movable member in said first position, said mixing chamber being sealed from the nozzles with the movable member in said second position,
4. a return duct for each component in the movable member for receiving the components from the nozzles, and returning them independently to the return lines, with the valve in said second position, said return ducts being sealed from the nozzles with the valve in said first position,
e. said valve having:
1. inlet passageways in said housing leading from nozzles to the movable member,
2. housing outlet passageways leading from the movable member to the return pipes,
3. movable member inlets in the movable member positioned for communicating the housing inlet passageways with the mixing chamber with the movable member in said first position and further positioned so that the movable member inlets are sealed with respect to the housing inlet passageways with the movable member in said second position,
4. movable member return passageways in the movable member position for communicating the housing inlet passageways with the housing outlet passageways with the movable member in said second position for said delivery of the components to the return pipes and further positioned so that the housing inlet passageways are sealed with respect to the housing outlet passageways with the movable member in said first position.

3,960,507
APPARATUS FOR REMOVING NITROGEN OXIDES FROM A CONTAMINATED GAS CONTAINING THE SAME

Masahiro Tsujikawa, Izumiotsu; Minoru Ozasa; Fumio Takagi, both of Kyoto; Katsumi Hirai, Hirakata; Akio Iwasaki, Osaka; Hiroshi Imamura, and Testuhiro Ueda, both of Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 313,372, Dec. 8, 1972, abandoned. This application July 12, 1974, Ser. No. 488,118
Claims priority, application Japan, Dec. 9, 1971, 9942; Aug. 22, 1972, 47-84292
Int. Cl.² B01J *8/02*
U.S. Cl. 23—288 K **3 Claims**

1. In an apparatus for removing nitrogen oxides from a gas contaminated therewith, comprising a reactor vessel; an inlet port for supplying the contaminated gas to said vessel; a first reaction chamber in said vessel for receiving said contaminated gas; means for partially processing said contaminated gas comprising means for supplying high temperature steam to said first reaction chamber to convert at least a portion of the original nitrogen oxides in the contaminated gas to more soluble forms of nitrogen oxide; a second reaction chamber in said vessel for receiving the partially processed contaminated gas containing the converted nitrogen oxides; a gas passage between said first and second reaction chambers; means in said second reaction chamber for dispersing therein a liquid absorbent for absorbing the soluble nitrogen oxides; means for removing the resulting purified, relatively uncontaminated gas; and means for removing the liquid absorbent containing the absorbed nitrogen oxides: the improvement comprising a heat barrier located in the gas passage between said first and



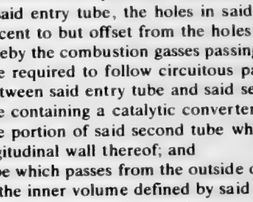
second reaction chambers, said heat barrier comprising a layer of porous catalyst extending across substantially the entire cross sectional area of said passage which catalyst enhances the conversion of said nitrogen oxides to more soluble forms, a first preliminary reaction chamber in said vessel having means for preheating the contaminated gas before it enters said first reaction chamber, a second preliminary reaction chamber in said vessel located between said layer of porous catalyst and said second reaction chamber for providing additional thermal isolation between the first and second reaction chambers, and said second reaction chamber being provided with a corrugated plate located beneath the liquid absorbent dispersing means, said plate having a plurality of small holes in the troughs of the corrugations through which the liquid absorbent drips to obtain more uniform contact between the ascending gas containing the converted nitrogen oxides and the liquid absorbent.

3,960,508
TROUGH-TYPE SCALE TRAPS

Glyndwr A. R. Bessant, Morristown; Paul D. Eichamer, Ironia; Robert M. Koros, Westfield, and Steven R. Schieni, Morristown, all of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Nov. 4, 1974, Ser. No. 520,485
Int. Cl.² B01J *8/00;* **B01D** *50/00*
U.S. Cl. 23—288 R **10 Claims**

1. An array of scale traps disposed normal to the direction of flow of incoming feed entering catalyst beds in a reactor vessel for filtering particles contained in said feed and preventing them from entering said catalyst beds which are subject to plugging by said particles comprising:
a. a plurality of interlocked parallel scale traps, each of said traps disposed in a chordal direction across the cross-section of said reactor vessel and including a support frame which has a troughlike configuration in the direction of incoming feed flow, said frame including a flat elongated rectangular top having an opening normal to said incoming feed and a flat elongated rectangular bottom having an opening parallel to and downstream of said top opening, said frame having sides connecting said top to said bottom, said traps transversely spaced apart a sufficient distance along the longer side of said top so that plugging of said beds is minimized;
b. screen wire mesh fastened only to said frame of each of said traps and covering only said sides and said bottom whereby fluid entering said top opening is filtered by said

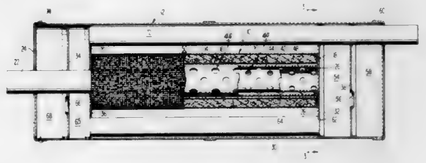


trap and passes out of said trap through said wire mesh; and
c. removable means for directly interconnecting adjacent ones of said scale traps in said array so that each of said traps is removable from said array upon disconnection of said removable means therefrom.

3,960,509
CATALYTIC MUFFLER

Raymond R. Abriany, 3840 Valley Brink, Los Angeles, Calif. 90039

Filed Dec. 30, 1974, Ser. No. 537,520
Int. Cl.² F01N *3/15*
U.S. Cl. 23—288 F **9 Claims**

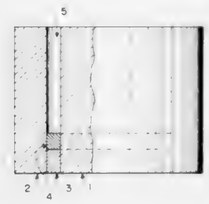


1. A catalytic muffler comprising:
a. muffler walls defining an inner volume which is gas-tight except for entry and exit tubes recited hereinafter;
b. an entry tube which passes from the outside of the muffler walls into the inner volume defined by said muffler walls, said entry tube having a plurality of holes in the longitudinal wall thereof in the portion of said entry tube within the inner volume defined by said muffler walls;
c. a second tube at least a portion of which surrounds at least a portion of the portion of said entry tube within the inner volume defined by said muffler walls, said second tube likewise having a plurality of holes in the longitudinal wall thereof in the portion of said second tube surrounding said entry tube, the holes in said second tube being adjacent to but offset from the holes in said entry tube, whereby the combustion gasses passing through the muffler are required to follow circuitous paths in a first volume between said entry tube and said second tube;
d. a cartridge containing a catalytic converter surrounding at least the portion of said second tube which has holes in the longitudinal wall thereof; and
e. an exit tube which passes from the outside of the muffler walls into the inner volume defined by said muffler walls and which opens into that inner volume at a point on the side of said cartridge remote from said second tube;
said entry tube, said second tube, and said cartridge all extend into the muffler at least approximately the same distance, and
f. a first partition
i. extending transversely of the muffler at the inner ends of said entry tube, said second tube; and said cartridge,
ii. butting against the inner ends of said entry tube, said second tube, and said cartridge, and
iii. having at least three holes therethrough radially outside said cartridge;
g. a second partition
i. extending transversely of the muffler between said first partition and the point where said entry tube passes through said muffler walls,
ii. engaging the inside of said muffler walls, the outside of said entry tube, and the outer end of said second tube, and
iii. having at least two holes therethrough radially outside said cartridge; and
h. a third tube which extends from a hole in said first partition to a hole in said second partition,
and wherein said exit tube extends from a hole in said second partition, through a hole in said first partition, and through said muffler walls at a point on the side of said first partition remote from said second partition, whereby the combustion gasses passing through the muffler pass through the holes in said entry tube into the first volume, then through said second tube and said cartridge into a second volume defined by said muffler walls, the outer surface of said cartridge, and said first and second partition, then through one or more holes in said first partion into a third volume defined at least in part by said muffler walls and said first partition, then through said third tube into a fourth volume defined at least in part by said muffler walls and said second partition, and then through said exit tube to the outside of the muffler.

3,960,510
HONEYCOMB STRUCTURE FOR COUNTERCURRENT GAS FLOW

Francis John Sergeys, Kensington, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed May 21, 1973, Ser. No. 362,622
Int. Cl.² B01J *8/02, 35/04;* **F01N** *3/15*
U.S. Cl. 23—288 FB **1 Claim**



1. A two stage converter for treating engine exhaust gases which comprises in combination a housing having end walls and a center tubular wall section, an exhaust gas inlet at one end of said housing, an elongated ceramic monolithic structure contained within said housing, said monolithic space having an inner longitudinally channelled section and an outer longitudinally channelled section, said exhaust gas inlet being connected to and in communication with the inner section of said monolithic structure whereby exhaust gases will pass directly from said inlet into said inner section, said sections being concentrically located within said housing and being annularly separated from each other to form an annular space therebetween along most of their lengths, said space preventing mechanical contact and thereby direct heat transfer contact of said sections along the length of said space, said sections being connected by a honeycomb bridge, said annular sapce being sealed by a ceramic plug to prevent exhaust gas backflow therethrough, an air inlet located at the end wall of said housing opposite said exhaust gas inlet, a baffle positioned perpendicular to said air inlet and said exhaust gas flow and an outlet plenum at the end of said housing opposite said

air inlet and communicating with an outlet port said outlet plenum being defined by the end wall of said housing nearest said inlet, a portion of said center tubular wall abutting said end wall, the outer wall of said inlet and an end face of the outer longitudinally channeled section, said outlet plenum communicating the gases flowing through said outer section with the outlet port.

3,960,511
ZONE MELTING PROCESS

Wilhelm H. Kuhlmann-Schäfer, Hannover, Germany, assignor to Preussag Aktiengesellschaft, Germany

Continuation of Ser. No. 270,695, July 11, 1972, abandoned. This application Aug. 5, 1974, Ser. No. 494,979
Claims priority, application Germany, July 15, 1971, 2135306
Int. Cl.² B01J *17/18*
U.S. Cl. 23—301 SP **7 Claims**

1. A Process of zone melting a charge utilizing at least a pair of solid, spaced electrodes each having a tapered end and means for producing a current in said electrodes, said charge and electrode tapered ends being of substantially the same material, comprising the steps of:
placing said tapered ends of said pair of electrodes in lateral, waxial, direct physical contact with the perimeter of said charge, said charge separating said electrodes;
then passing said current between said electrodes and transversely through said charge to resistantly heat said charge and melt a zone therein, said current passing solely through said zone between said electrodes;
enclosing at least a portion of said charge with said electrodes to support and maintain said zone; and
moving said charge relative to said electrodes at a predetermined velocity, said zone migrating longitudinally through said charge at said predetermined velocity.

3,960,512
FERRITE TO METAL BOND FOR HIGH-POWER MICROWAVE APPLICATIONS

Victor A. Vaguine, Palo Alto, and Dennis R. Nichols, San Jose, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Division of Ser. No. 337,059, March 1, 1973, Pat. No. 3,873,944. This application Oct. 8, 1974, Ser. No. 513,030
Int. Cl.² B32B *15/04*
U.S. Cl. 29—195 **9 Claims**

1. A seal for bonding a gyromagnetic ferrite member to a metal member, said seal comprising at least three metallic layers, a first one of said layers adhering to said gyromagnetic ferrite member and comprising a metal selected from the group consisting of nichrome, molybdenum and chromium, a second one of said layers adhering to said first layer and comprising copper, and a third one of said layers adhering to said second layer and comprising gold, said third layer being bonded to said metal member by solder.

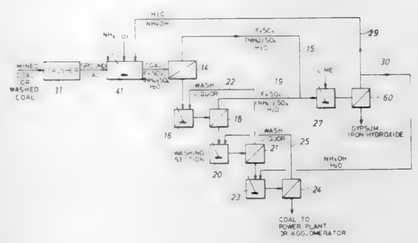
3,960,513
METHOD FOR REMOVAL OF SULFUR FROM COAL

Jagdish Chandra Agarwal, Concord; Richard Andre Giberti, Waltham, and Louis John Petrovic, Sudbury, all of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,047
Int. Cl.² C10L *9/00*; **C10B** *17/00*
U.S. Cl. 44—1 R **23 Claims**

1. A process for reducing the amount of free and combined sulfur in coal and removing of same from coal comprising the steps of:
introducing a crushed coal into a reaction zone in an aqueous medium in the presence of oxygen whereby the ratio of coal to oxygen to water based on weight percent is from 1.0:0.085:99 to 1.0:0.18:0.667;
reacting oxygen with said sulfur in said coal for a period sufficient to convert said sulfur in said coal to a soluble species thereof, or elemental sulfur;
separating said liquid reaction medium from said coal;
working up said coal whereby sulfur of elemental, pyritic or organic origin is removed;
neutralizing said reaction medium with a neutralizing liquor whereby iron and a sulfate is precipitated from the neutralized, liquid reaction medium;
and reintroducing a portion of said neutralizing liquor into the reaction zone.

16. A process for reducing the amount of sulfur present in coal, including pyritic sulfur, organic sulfur and sulfate sulfur comprising the steps of:
introducing crushed coal into a reaction zone as a slurry of 1–60 parts of coal to 40–99 parts of water, the water in the reaction zone containing up to 3.0 molar ammonium hydroxide;
introducing an oxygen containing gas into said reaction zone at a pressure from 0 to 1000 psig;
maintaining said pressure in said reaction zone for a period of 15 minutes to 24 hours;
maintaining the reaction zone within said period at a temperature from 50° to 450°F;



discharging said coal and a reaction liquor rich in iron sulfate and ammonium sulfate;
separating said coal and said reaction liquor from each other; and
washing said separated coal with a wash liquor including wash liquor containing ammonium hydroxide.

19. A process for reducing the amount of sulfur present in coal, including pyritic sulfur, organic sulfur and sulfate sulfur comprising the steps of:
introducing a crushed coal into a reaction zone as a slurry of 1–60 parts of coal to 40–99 parts of water, adding to said aqueous slurry sufficient acid to maintain an acid concentration of from .001 to 1.0 molar acid;
introducing an oxygen containing gas into said reaction zone at a pressure from 0 to 1000 psig;
maintaining said pressure in said reaction zone for a period of 15 minutes to 24 hours;
maintaining the reaction zone within said period at a temperature from 50° to 450°F;
discharging said coal and elemental sulfur and a reaction liquor rich in iron sulfate and said acid;
separating said coal and said reaction liquor from each other; and
washing said coal with a wash liquor.

3,960,514
SYNERGISTIC ORGANIC SOLVENT GELLANT

James Teng, St. Louis County, and Marcella C. Stubits, St. Louis, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Apr. 1, 1974, Ser. No. 456,795
Int. Cl.² C10L *7/00*; **B01J** *13/00*
U.S. Cl. 44—7 B **15 Claims**

1. A gelled hydrocarbon or non-polar solvent comprising an amount of hydroxypropyl cellulose laurate sufficient to gel said hydrocarbon or non-polar solvent, said hydroxypropyl cellulose laurate having a degree of molecular substitution of hydroxypropyl groups of 2–6 and a degree of substitution of laurate groups between about 2 and 3 and an amount of an additive to synergistically affect the viscosity of the gel, said additive being an elastomer of the polybutadiene or butadiene-styrene copolymer type.

3,960,515
HYDROCARBYL AMINE ADDITIVES FOR DISTILLATE FUELS

Lewis R. Honnen, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 405,707, Oct. 11, 1973, Pat. No. 3,898,056, which is a continuation-in-part of Ser. No. 318,064, Dec. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 318,063, Dec. 26, 1972, abandoned. This application Feb. 19, 1974, Ser. No. 443,939
The portion of the term of this patent subsequent to Aug. 5, 1992, has been disclaimed.
Int. Cl.² C10L *1/22*
U.S. Cl. 44—58 **16 Claims**

1. A composition of matter comprising a mixture of a high molecular weight hydrocarbyl amines and a low molecular weight hydrocarbyl amines wherein a weight ratio of low to high molecular weight amines present within said mixture is between about 0.5 and 5:1; said high molecular weight hydrocarbyl amines being prepared by reacting a first hydrocarbyl halide having a number average molecular weight in the hydrocarbyl portion of 1,900 to 5,000 with a mono- or polyamine having from 1 to 10 amine nitrogens and from 2 to 40 carbons with a carbon to nitrogen atomic ratio between about 1 and 10:1; and said low molecular weight hydrocarbyl amines being prepared by reacting a second hydrocarbyl halide having a number average molecular weight in said second hydrocarbyl portion of 300 to 600 with a mono- or polyamine having from 1 to 10 amine nitrogens and from 2 to 40 carbons with a carbon to nitrogen atomic ratio between about 1 and 10:1.

3,960,516
GRINDING WHEEL MANUFACTURE

Giuseppe Biardi, Corsico (Milan), Italy, assignor to Norton Company, Worcester, Mass.

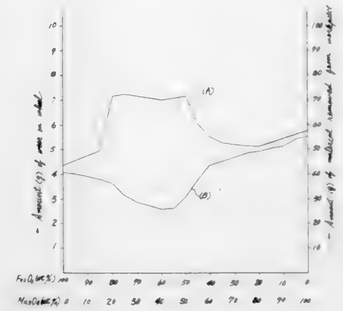
Filed May 10, 1974, Ser. No. 468,721
Claims priority, application Italy, May 29, 1973, 24692/73
Int. Cl.² B24B *5/04*; **C09K** *3/14*
U.S. Cl. 51—293 **1 Claim**

1. In the process of manufacturing a generally cylindrical cup shaped grinding wheel formed of a thin hollow cylindrical grinding element having a radial thickness much less than its axial length, and a plastic element on one end of the cylinder for supporting the grinding wheel on a spindle, the improvement which comprises positioning the cylindrical grinding element in a mold with said end extending into a cavity in the mold with both the inner and outer surfaces of the cylinder at said end being exposed to said cavity, forming said plastic element onto said end by filling said cavity with liquid injection molding plastic under pressure, whereby said cylinder is subjected to equalized radial forces resulting from the injection molding pressure, solidifying said plastic, and removing the finished grinding wheel from the mold.

3,960,517
RESINOID WHEEL CONTAINING A MIXTURE OF TRIMANGANESE TETRAOXIDE AND FERROXIDE AND FERRIC OXIDE FILLERS

Junichi Ukita, Sennan, Japan, assignor to The New Registon Company, Limited, Japan

Filed Jan. 14, 1975, Ser. No. 540,959
Claims priority, application Japan, Oct. 23, 1974, 49-122067
Int. Cl.² C09K *3/14*
U.S. Cl. 51—298 R **4 Claims**

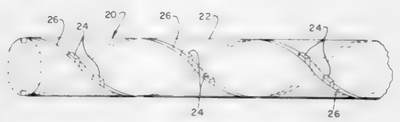


1. In a resinoid wheel containing abrasive grains, a thermoset resin binder and a filler, the filler being present in an amount of 1 to 20 parts by weight of abrasive grains, the improvement which is characterized in that of the total amount filler in the wheel, 30% to 70% is a mixture of 20 to 55 weight % of trimanganese tetraoxide and 80 to 45 weight % of ferric oxide.

3,960,518
METHOD OF FORMING A CUTTING TOOL

George H. Hall, P.O. Box 244, Westford, Mass. 01886

Division of Ser. No. 380,831, July 19, 1973, Pat. No. 3,886,926. This application Dec. 30, 1974, Ser. No. 537,675
Int. Cl.² B24D *3/02*
U.S. Cl. 51—309 R **5 Claims**

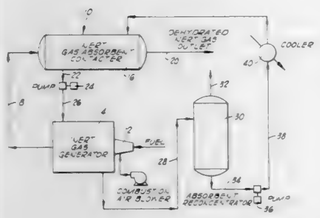


1. A method of forming a flexible, endless wire saw which has distributed on its cutting surface a plurality of spaced-apart blocks of composite material formed of comminuted abrasive in a bonding matrix comprising the step of
placing under pressure and between said blocks and said surface, a braze comprising a metallic copper-containing layer sandwiched between metallic silver-containing layers,
heating said braze to melt said silver-containing layers, and cooling said melted layers to hardness.

3,960,519
METHOD AND SYSTEM FOR GENERATING A DEHYDRATED INERT GAS STREAM

Harold O. Ebeling, Tulsa, Okla., and Robert E. McMinn, Spring, Tex., assignors to Black, Sivalls & Bryson, Inc., Houston, Tex.

Filed Apr. 18, 1975, Ser. No. 569,274
Int. Cl.² B01D *47/00*
U.S. Cl. 55—31 **24 Claims**



1. A method of generating a stream of dehydrated inert gases comprising the steps of:

a. combusting a fuel-air mixture to generate a stream of hot inert gases containing water vapor;

b. removing heat from said stream of hot inert gases so that said gases are cooled;

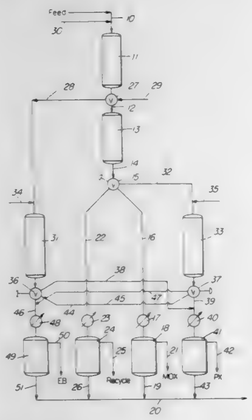
c. intimately contacting said cooled stream of inert gases with a stream of liquid absorbent having an affinity for water vapor thereby dehydrating said stream of inert gases; and

d. utilizing heat removed from said stream of hot inert gases in step (b) to reconcentrate said stream of liquid absorbent.

3,960,520
SEPARATION OF ISOMERS

Paul T. Allen, Beaumont, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,842
Int. Cl.² B01D *53/04, 15/08*
U.S. Cl. 55—59 **10 Claims**



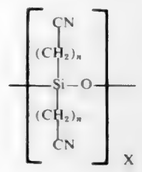
1. In a method for the separation and recovery of the isomers contained in an aromatic mixture comprising para-xylene, meta-xylene, ortho-xylene and ethyl-benzene to separate this mixture into one stream comprising meta-xylene and ortho-xylene and a second stream comprising para-xylene and ethyl benzene, by a process which includes conducting said mixture through an elongated bed of zeolite adsorbent contained in a column whereby paraxylene and ethyl benzene are substantially adsorbed and meta-xylene and ortho-xylene are substantially not adsorbed, the improvement which comprises contacting said mixture in vapor phase with said zeolite adsorbent to effect adsorption of at least a major amount of the para-xylene and ethyl benzene and separately desorbing the adsorbed para-xylene and ethyl benzene simultaneously from each of a plurality of portions of said bed.

3,960,521
HIGH TEMPERATURE POLAR STATIONARY PHASE FOR GAS CHROMATOGRAHY

Richard F. Kruppa, State College, Pa., and Arthur Edward Coleman, Troy, N.Y., assignors to Applied Science Laboratories, Inc., State College, Pa. and Silar Laboratories, Inc., Watervliet, N.Y.

Filed Mar. 1, 1974, Ser. No. 447,335
Int. Cl.² B01D *15/08*
U.S. Cl. 55—67 **8 Claims**

1. In the gas-liquid chromatographic separations of chemical compounds the method which comprises: passing a mixture of chemical compounds and a carrier gas through an elongated mass of supporting material maintained in the temperature range of 20°C to 275°C having thereon a stationary phase consisting of the silicone having recurring units of the formula:



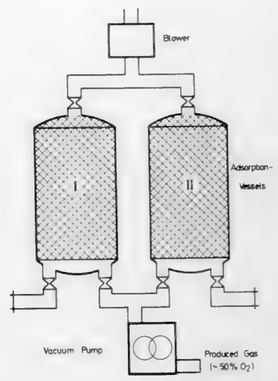
which results in a separation of the chemical compounds.

3,960,522
CARBON-CONTAINING MOLECULAR SIEVES

Heinrich Munzner, Essen-Kray; Heinrich Heimbach, Bochum; Werner Korbacher, Essen-Borbeck; Werner Peters, Wattenscheid; Harald Juntgen, Essen-Heisingen; Karl Knoblauch, Essen, and Dieter Zundorf, Essen-Heisingen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Division of Ser. No. 161,211, July 9, 1971, Pat. No. 3,801,513.
This application Feb. 21, 1974, Ser. No. 444,383
Claims priority, application Germany, Apr. 23, 1971, 2119829
The portion of the term of this patent subsequent to Apr. 2, 1991, has been disclaimed.
Int. Cl.² B01D *53/14*
U.S. Cl. 55—68 **17 Claims**

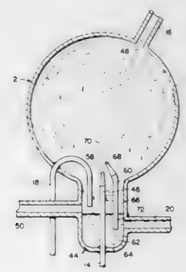
1. A method of separating oxygen from gas mixtures containing oxygen and nitrogen, comprising passing a gas mixture which contains oxygen and nitrogen through a carbon containing molecular sieve prepared by heating in a closed oven in the absence of air at a coking temperature of at least 600°C, particles of a cokable substance having a size between 0.1 and 20 millimeters until the content of volatile components in the resulting coke is not more than 5% by weight and thereafter subjecting the resulting coke to heating in an inert atmosphere at a temperature between 600° and 900°C while a gaseous stream of a carbonaceous substance which splits off carbon at said temperature is passed into contact with the said coke for such a period between 1 and 60 minutes that the carbon that is thus split off is deposited in the pores of the coke and reduces the effective average size of the pores to less than about 0.3 millimicron, whereby the oxygen in said gas mixture is more rapidly adsorbed by said molecular sieve than the nitrogen in said gas mixture.



3,960,523
EFFLUENT GAS MONITOR

James R. Ryan, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 21, 1975, Ser. No. 570,271
Int. Cl.² B01D *47/06*
U.S. Cl. 55—84 **8 Claims**



1. An apparatus for removing effluent from an effluent-bearing gas comprising:

a generally spherical main chamber having an effluent-bearing gas inlet for introducing said gas into said main chamber,

a reservoir in communication with said main chamber for providing vaporized liquid to said main chamber and for receiving condensed liquid from said main chamber,

a conduit having an inlet in said reservoir and an outlet adjacent said gas inlet for drawing liquid from said reservoir and vaporizing said liquid into said effluent-bearing gas by action of said gas passing from said gas inlet,

said main chamber having means for removing processed gas from said main chamber,

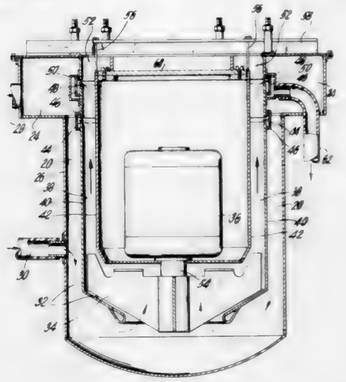
liquid supply means for providing liquid to at least one of said main chamber and said reservoir, and

means for withdrawing liquid from said reservoir.

3,960,524
AIR SCRUBBER

Edward H. Cumpston, Jr., 43 Monument Ave., Old Bennington, Vt. 05201

Continuation-in-part of Ser. No. 429,214, Dec. 28, 1973, abandoned, which is a continuation-in-part of Ser. No. 280,950, Aug. 16, 1972, abandoned. This application Oct. 29, 1974, Ser. No. 518,467
Int. Cl.² B01D *47/16*
U.S. Cl. 55—86 **39 Claims**



1. An air scrubber comprising:

a. means forming inner and outer concentric annular chambers separated by a fixed cylindrical common wall;

a fan arranged in one end region of said inner chamber for drawing from substantially the entire annular extent of said outer chamber and outputting into substantially the entire annular extent of said inner chamber;

c. said inner chamber being substantially unobstructed;

d. the inside of said cylindrical wall being substantially smooth and radially uniform to produce a substantially even flow of air and liquid all around any radial extent of said cylindrical wall;

e. means forming a clean air outlet from the end of said inner chamber opposite said fan;

f. a quantity of liquid in said scrubber;

g. said cylindrical wall having a circulation opening arranged between said inner chamber downstream of said fan and said outer chamber upstream of said fan;

h. said circulation opening intercepting the entire path of said output from said fan;

i. means forming a contaminated air inlet into said outer chamber upstream of said circulation opening;

j. said cylindrical wall having a plurality of bore-hole size aerosol eliminator openings extending through said cylindrical wall throughout a region between said circulation opening and said outlet;

k. the outside of said aerosol eliminator openings being in communication with said air inlet in said outer chamber; and

l. means for turning said fan fast enough to:

1. produce a substantial pressure drop from said inner chamber to said outer chamber to force a portion of said air and substantially all of said liquid through said circulation opening into said outer chamber in a high-velocity spray of liquid particles directed into incoming air from said inlet and to draw a portion of said air and substantially all aerosol particles through said aerosol eliminator openings and back into said outer chamber;

2. continuously move all of said quantity of liquid along with rapidly moving air and to break said liquid into finely divided particles; and

3. drive said liquid particles and air in a high-velocity helical path in said inner chamber to subject said air

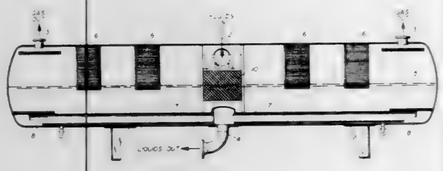
and said liquid particles to a very high centrifugal force centrifugally concentrating said liquid particles near said cylindrical wall and helping to force said liquid through said circulation opening and to draw said aerosol through said aerosol eliminator openings.

3,960,525

OIL-GAS SEPARATOR HAVING DEFOAMING STRUCTURE

Robert W. Coggins, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 9, 1975, Ser. No. 575,914
Int. Cl.² B01D *19/02*
U.S. Cl. 55—178 **2 Claims**



1. An oil and gas separator, including,
a shell into which the fluids of an oil well are conducted for separation,
an inlet connected through the wall of the shell and sized to conduct the mixture of fluids into the shell,
an outlet connected through the upper wall of the shell and remotely spaced from the inlet to conduct separated gas from the shell,
an outlet connected through the lower wall of the shell and remotely spaced from the inlet to conduct separated liquids from the shell,
a plurality of multi-surfaced packing structures held in a body with a foraminous structure mounted at a fixed location within the shell and below the inlet so as to receive the fluid mixture to liquid pack the interstices of the body, whereby the gaseous bubbles will not be fragmented and additional foam developed as the liquids are deenergized and flow to the lower portion of the shell while the gas separates from the mixture and flows to the upper portion of the shell, and a diverting structure mounted at the inlet formed and arranged to direct the liquid downward over the packing body.

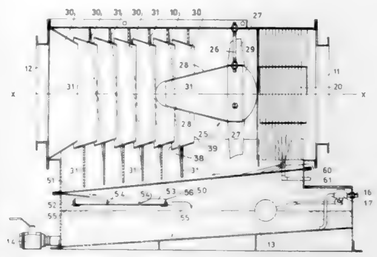
3,960,526

PARTICLE SEPARATING APPARATUS

John S. Andrews, Barry, Wales, assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Dec. 20, 1974, Ser. No. 534,821
Claims priority, application United Kingdom, Jan. 29, 1974, 4081/74
Int. Cl.² B01D *50/00*
U.S. Cl. 55—227 **9 Claims**

1. Apparatus for separating particulate matter entrained in a gaseous stream, said apparatus including a casing having an inlet opening, an outlet opening and a longitudinal axis passing through the inlet and outlet openings; an impingement screen disposed across said inlet opening, said impingement screen comprising a plurality of impingement elements supported in spaced-apart parallel relation, normal to said longitudinal axis, each of said impingement elements having a V-shaped transverse profile including an apex confronting said inlet opening and arms diverging from said apex away from said inlet opening; a series of radially extending vanes positioned between said impingement screen and said outlet opening and arranged to impart swirl to said gaseous stream; a series of frustoconical rings positioned between said vanes and said outlet opening; support means positioned between said casing and said rings and supporting said frustoconical rings in coaxially aligned overlapping relation, said support means comprising a helix;



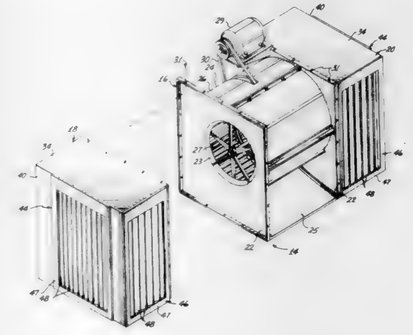
and a sump positioned below said support means for receiving particulate matter removed from said gaseous stream.

3,960,527

AIR DELIVERY AND TREATMENT APPARATUS

Adam D. Goettl, 4960 E. Palomino Road, Phoenix, Ariz. 85018

Filed Nov. 22, 1974, Ser. No. 526,392
Int. Cl.² B01D *51/10*
U.S. Cl. 55—269 **6 Claims**



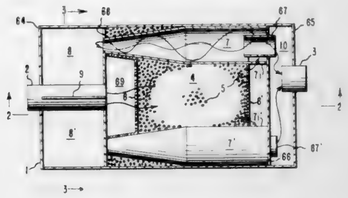
5. An air handling apparatus comprising:
a. a centrifugal blower assembly having a motor driven air moving blower wheel impeller rotatably mounted between a pair of spaced substantially parallel side walls at least one of which has an axial air inlet opening formed therein, the side walls interconnected with a spiral shaped member to provide a chamber around the impeller and to form a centrifugal air outlet from the chamber; and
b. an enclosed cabinet affixed to the one side wall of said centrifugal blower assembly which has the axial air inlet opening formed therein, said cabinet having an interior compartment which is in communication with the axial air inlet formed in the one side wall of said centrifugal blower assembly, said cabinet having an air supply opening formed therein through which air is supplied to the interior compartment of said cabinet, the air supply opening of said cabinet being disposed in a wall thereof which is substantially in the same plane as the centrifugal air outlet of said centrifugal blower assembly and is disposed laterally adjacent thereto.

3,960,528

MUFFLER PARTICULATE TRAP FOR INTERNAL COMBUSTION ENGINES

Emmett Smith Jacobs, Wilmington, Del., and Vincent Edward Liberi, Newark, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 339,127, March 8, 1973, abandoned. This application Feb. 25, 1975, Ser. No. 552,866
Int. Cl.² B01D *45/12*
U.S. Cl. 55—346 **4 Claims**



1. An exhaust muffler particulate trap for attenuating the sound and removing solid particles from the exhaust of an internal combustion engine that is operated on fuel containing tetraalkyllead compounds and lead-scavenging compounds, said trap comprising
i. an elongated housing having an inlet port at one end for connection with the exhaust gas stream of said engine, and an outlet port at the other end communicating with the atmosphere, said housing also having an agglomerating chamber and an inertial cyclone separator communicating with a particulate collection chamber, said agglomerating chamber, cyclone separator and collection chamber being located within said housing, said agglomerating chamber being in communication with said inlet port through a plenum located between the collection chamber and the agglomerating chamber, said collection chamber located at the inlet port end of the housing;
ii. said agglomerating chamber containing refractory alumina pellets having a pore volume in the range of 0.1 to 0.9 cc per gram and a surface area in the range of 50 to 700 square meters per gram, said alumina being nonreactive with the exhaust gas constituents;
iii. said cyclone separator having an inlet, a particulate outlet and a gas outlet, and being in communication with said agglomerating chamber through the cyclone separator inlet, the cyclone separator also communicating with said particulate collection chamber wherein particulates are collected and retained, communication with the collection chamber being through the particulate outlet of the cyclone separator, the cyclone separator also being in communication with the outlet port of the housing through the cyclone separator gas outlet.

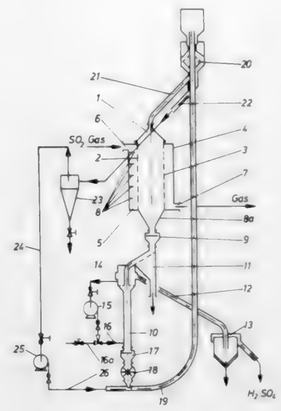
3,960,529

APPARATUS FOR REMOVING SULFUR OXIDE FROM EXHAUST GASES

Harald Juntgen, Essen-Heisingen; Karl Knoblauch, Essen; Gunther Gappa, Gelsenkirchen-Buer, and Jurgen Schwarte, Essen-Rellinghausen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Division of Ser. No. 81,350, Oct. 16, 1970. This application Feb. 17, 1972, Ser. No. 227,100
Int. Cl.² B01D *53/06*
U.S. Cl. 55—390 **9 Claims**

1. Apparatus for the treatment of exhaust gases containing water vapor, oxygen and sulfur oxide, comprising, in combination, an elongated adsorption vessel having an adsorbent inlet and an adsorbent outlet spaced in the direction of the elongation of said vessel from said adsorbent inlet so as to form between said inlet and said outlet an elongated adsorption zone through which a stream of granular carbon containing adsorbent is adapted to move from said inlet to said outlet; and means for moving exhaust gases containing vapor, oxygen and sulfur oxide transversely through said elongated adsorption zone, said moving means being constructed and arranged



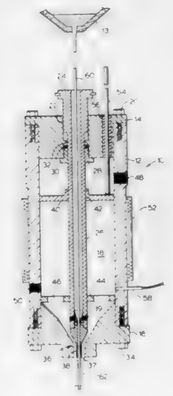
in such a manner that in the region of said elongated adsorption zone nearer to said adsorbent inlet each volume unit of said adsorbent stream is traversed by a greater amount of exhaust gases per unit of time than in the region of said adsorbent zone nearer to said adsorbent outlet.

3,960,530

METHOD OF COATING A GLASS FIBER FILAMENT

Rama Iyengar, Dollard des Ormeaux, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

Filed July 29, 1975, Ser. No. 599,996
Int. Cl.² C03C *25/02*
U.S. Cl. 65—3 C **5 Claims**



1. A method of coating a continuous glass fiber filament by the extrusion of plastic, comprising the steps of:
charging with plastic coating material a closed vertical cylinder having a die aperture in the lower end thereof and an axial core tube terminating in the die aperture to form an annular orifice, the plastic being liquified to pass through the die orifice;

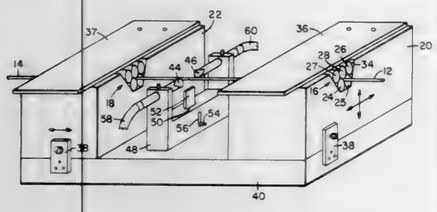
drawing the filament, from a source of molten glass coaxial with the core tube, continuously through the core tube; and

introducing pressurized gas into the upper portion of the cylinder to force the liquified plastic through the annular orifice and onto the filament.

3,960,531
METHOD AND APPARATUS FOR SPLICING OPTICAL FIBERS

Youssef Kohanzadeh, Corning, and Roy E. Smith, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed July 28, 1975, Ser. No. 599,854
Int. Cl.² C03B *23/20*
U.S. Cl. 65—4 B **12 Claims**



1. A method of splicing glass optical fibers comprising the steps of

aligning the end portions of said fibers so that the axes thereof are substantially parallel and the endfaces thereof are in contact,

generating an electric field at the junction between said fibers which is of sufficient magnitude to create an electric arc, said arc producing a sufficient amount of heat to melt the endfaces of said fibers, thereby causing said fibers to fuse, and

generating a magnetic field in the vicinity of said fiber junction, said magnetic field having a component parallel to the axes of said fibers, one of said electric field and said magnetic field varying with respect to time, the other being invariable with respect to time said magnetic field deflecting said arc back and forth along said fiber junction.

3,960,532
PREPARING ALKALI METAL SILICATE GLASS WITH BUBBLES

Frank J. Lazet, Media, Pa., assignor to Philadelphia Quartz Company, Valley Forge, Pa.

Continuation-in-part of Ser. No. 448,105, March 4, 1974, abandoned. This application May 29, 1975, Ser. No. 582,070
Int. Cl.² C03B *19/08*; **C01B** *33/32*; **C03C** *3/00*
U.S. Cl. 65—22 **8 Claims**

1. The process for producing alkali metal silicate glass having a mol ratio of 1.5 to 4.5 parts of SiO_2 per part of M_2O wherein M is selected from the group consisting of sodium, potassium and mixtures of sodium and potassium and containing 0.05 to 2% water and sufficient bubbles to promote fracturing, comprising the steps of:

a. charging raw materials, sources of alkali selected from the group consisting of sodium carbonate, potassium carbonate and mixtures of sodium carbonate and potassium carbonate, and a source of silica such as sand into an open hearth furnace with a bed area for fusion reactions, equipped with a draw hole and charging ports;

b. maintaining the temperature within said furnace above 1093°C so that a bed of molten silicate glass is formed and the unreacted raw materials float on said molten glass bed;

c. introducing dry saturated steam under pressure into the molten glass through bubbling means located in the furnace bed area so that bubbles of steam pass from the bottom of said molten glass bed to the top, the pressure of said steam being regulated to produce bubbles 8 to 18 inches (20.3 to 45.7 cm) in diameter breaking the surface of the molten blass at a rate of 5 to 20 bubbles per second; and

d. withdrawing said molten glass from the furnace.

3,960,533
LAMP HAVING CRYSTALLIZABLE LIGHT DIFFUSING ENVELOPE

Gordon P. K. Chu, Danvers, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

No Drawing. Division of Ser. No. 399,10ʊ, Sept. 20, 1974, Pat. No. 3,885,182. This application Sept. 23, 1974, Ser. No. 508,497
Int. Cl.² C03B *32/00*
U.S. Cl. 65—33 **2 Claims**

1. The method of making an incandescent lamp having a light diffusing glass envelope comprising the steps of: forming an incandescent lamp envelope from a crystallizable glass having the following composition:

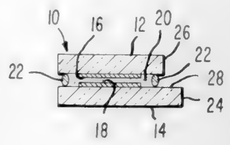
Li_2O	8 to 20%
Na_2O and/or K_2O	1 to 7%
SiO_2	45 to 72%
Al_2O_3	4 to 20%
CaO and/or SrO and/or BaO and/or MgO	0.6 to 7%
B_2O_3	1 to 4%
As_2O_3 and/or Sb_2O_3 and/or P_2O_5 and/or MoO_3	2 to 7%;

crystallizing said envelope in two steps by heating the envelope to a first stage crystallization temperature of about 500° to 565°C for a period about **10** minutes and then to a second stage crystallization temperature of about 750° to 800°C for a period between 10 to 20 minutes; and heat sealing said crystallized envelope to the flare of a stem pressed glass mount made of low temperature soft glass.

3,960,534
METHOD OF ASSEMBLING A LIQUID CRYSTAL CELL

William Lee Oates, Bernardsville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 29, 1974, Ser. No. 464,762
Int. Cl.² B32B *3/02*; **C03C** *27/00*; **E06B** *3/24*
U.S. Cl. 65—43 **2 Claims**



1. A method of assembling a liquid crystal cell comprising:

disposing on a first glass substrate having a conductive layer thereon a narrow glass frit strip on said conductive layer substantially parallel to the edges of said first substrate but spaced therefrom and having at least three reentrant portions at intervals which extend to a greater distance from the edges of said first substrate than do the remaining portions of said strip,

mounting three or more spacer plates in overlapped relation with a portion of said first substrate between the edges of said substrate and said strip at the reentrant portions thereof thereby avoiding contact between said spacer plates and said strip,

disposing a second glass substrate having a conductive layer thereon on said first substrate such that said conductive layers face each other and said second substrate rests on said glass frit such that all of its edges extend beyond said frit,

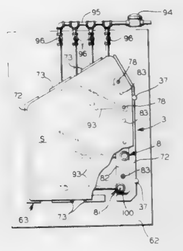
heating the resultant assembly under pressure to melt the frit, thereby forcing the second substrate against the first substrate until both substrates contact said spacer plates to thereby establish a predetermined spacing between said substrates, and

cooling to provide a rigid seal between said substrates for maintaining said predetermined spacing.

3,960,535
METHOD OF AND APPARATUS FOR BENDING GLASS SHEETS

Harold E. Hamilton, Toledo, and Waldemar W. Oelke, Rossford, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Sept. 13, 1974, Ser. No. 505,550
Int. Cl.² C03B *23/02*, *27/00*
U.S. Cl. 65—104 **11 Claims**



1. A method of bending and heat treating a sheet of glass comprising: heating a sheet of glass having at least one opening therethrough to the softening point of the glass, supporting the heated sheet on a shaping surface of a press member, moving said press member toward a complemental shaping surface of a second press member during a bending cycle to press said sheet therebetween and impart the desired curvature to said sheet, and applying supplemental heat to at least one surface of said sheet in the region of said opening only while said sheet is supported on said shaping surface during said bending cycle to condition said sheet for subsequent tempering.

5. In apparatus for bending a heat softened glass sheet having at least one opening therethrough by pressing the same between opposed complemental shaping surfaces formed on opposed press members at least one of which is movable toward and away from the other during the bending cycle and includes a base member and a shaping rail mounted on said base member; the improvement in which means are mounted on said one press member for applying localized heat to at least one opposite surface of said sheet in the region of said opening while supported on said shaping surface of said one press member during said bending cycle.

3,960,536
ANTICHLOROSIS COMPOSITIONS FOR PLANTS

Louis Claude Dumont, Chaponost; René Antoine Paris, Lyon, and Claude Mathilde Scharff, Villeurbanne, all of France, assignors to PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiques, Lyon, France

Filed Sept. 12, 1974, Ser. No. 505,510
Claims priority, application France, Sept. 25, 1973, 73.35083
Int. Cl.² C05C *13/00*
U.S. Cl. 71—1 **5 Claims**

1. Compositions suitable for use in controlling hypoferric chlorosis in plants, characterized in that they contain an effective quantity of at least one mixed chelate with at least two co-ordinates selected from the group consisting of

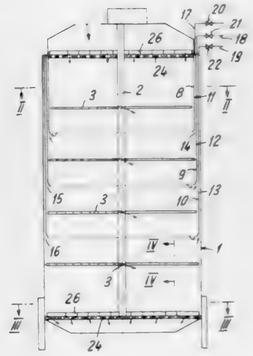
Co-ordinates	Molar ratios
[DHB] dihydro-2,4-benzoic acid: [EN] ethylene diamine: Fe	10:10:1
[DHB] dihydro-2,4-benzoic acid: dipicolic acid: Fe	5:2.5:1
[DHB] dihydro-2,4-benzoic acid: [NTA] nitrilo triacetic acid: Fe	2:2:1
[DHB] dihydro-2,4-benzoic acid: [NTA] nitrilo triacetic acid: Fe	10:10:1
[SSA] sulpho-5-salicylic acid: [EN] ethylene diamine: Fe	10:10:1
[SSA] sulpho-5-salicylic acid: dipicolic acid: Fe	10:5:1
Sodium pyrocatechol-3,5-disulphonate: [EDDA] ethylene diamine diacetic acid: Fe	1:2.4-1
Sodium pyrocatechol-3,5-disulphonate: [EDTA] ethylene diamine triacetic acid: Fe	1:1:1
Sodium pyrocatechol-3,5-disulphonate: [PAS] p-amino-salicylic acid: Fe	2:4:1
Sodium pyrocatechol-3,5-disulphonate: dipicolic acid: Fe	2:2:1
Sodium pyrocatechol-3,5-disulphonate: [EN] ethylene diamine: Fe	2:2:1
Sodium pyrocatechol-3,5-disulphonate: [NTA] nitrilo triacetic acid: Fe	1:2:1
Sodium pyrocatechol-3,5-disulphonate: tartaric acid: Fe	1:1:1
[NTA] nitrilo triacetic acid: dipicolic acid: Fe	2:2:1
[DHSN] Sodium dihydroxy naphthalene disulphonate: [NTA] nitrilo triacetic acid: Fe	2:2:1
[DHSN] Sodium dihydroxy naphthalene disulphonate: dipicolic acid: Fe	2:4:1
Sodium pyrocatechol-3,5-disulphonate: citric acid: Fe	1:1:1
[SSA] Sulpho-5-salicylic acid: citric acid: Fe	4:2:1

in which Fe represents iron in ionized form.

3,960,537
METHOD OF PROCESSING REFUSE AND/OR SLUDGE AND A PLANT FOR CARRYING OUT THE METHOD

Joseph Richard Kaelin, Villa Seeburg, CH-6374 Buochs, Switzerland

Filed Nov. 22, 1974, Ser. No. 526,227
Int. Cl.² C05F *11/08*; **F26B** *17/12*; **C05F** *9/04*, *3/06*
U.S. Cl. 71—9 **9 Claims**



1. A biological conversion process for processing refuse or thickened sludge to form compost in a single continuous treatment chamber comprising the steps of:

filling the material to be treated from above into the top of said treatment chamber,

continuously permeating the material to be treated with a gas mixture to assist the biological conversion,

delivering the permeating gas mixture under elevated pressure into the material to be treated by means of a plurality of gas distributor blades vertically spaced apart from one another in the treatment chamber and covered by the material to be treated,

rotating the distributor blades about an axis which is parallel to the direction in which the material passes through the treatment chamber, each gas distributor blade being associated with at least one suction outlet for the gas current, said outlets being situated in the side wall of said single treatment chamber above and below said distributor blades,

exhausting said gas mixture by means of said suction outlets, and

discharging the treated material at the bottom of said treatment chamber,

whereby the material being treated is automatically passed in coherent form in the vertical direction from top to bottom through the single continuous treatment chamber and currents of gas mixture are formed in the material being treated and flow outwards in a radial direction from the gas distributor blades.

5. An apparatus for converting refuse or thickened sludge into compost by treatment with a gas, said apparatus comprising:

a treatment chamber for receiving material to be treated, said chamber having a vertical axis, an inlet aperture, and an outlet aperture, said material passing through said chamber from top to bottom,

a plurality of gas distributor blades mounted on a shaft in the treatment chamber for rotation about an axis which is parallel to the direction of material passage, said blades having gas outlet apertures connected to a pressure blower,

a plurality of hollow cylindrical exhaust ducts disposed concentrically to one another, the walls of said ducts forming a part of the side wall of said treatment chamber, each of said ducts having an axial length differing from the others extending from the top towards the bottom of said treatment chamber,

a plurality of annular exhaust apertures formed by the ends of said exhaust ducts, said apertures being directed towards the bottom of said treatment chamber and being spaced from one another in an axial direction, and

a suction blower connected to said exhaust apertures,

said pressure blower, distributor blades, exhaust apertures, exhaust ducts, and suction blower causing, through the material to be treated, a plurality of currents of treatment gas flowing radially outwards from said distributor blades towards said exhaust apertures.

3,960,538

AMINO DERIVATIVES OF TETRASUBSTITUTED BENZENE COMPOUNDS

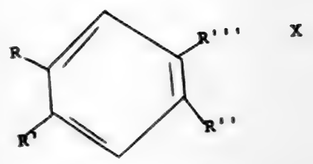
John J. Merianos, Jersey City, and Phillip Adams, Murray Hill, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Division of Ser. No. 360,448, May 15, 1974, Pat. No. 3,886,284, which is a continuation of Ser. No. 298,759, Oct. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 291,824, Sept. 25, 1972, Pat. No. 3,838,197, which is a continuation-in-part of Ser. No. 130,783, April 2, 1971, Pat. No. 3,821,407. This application Feb. 12, 1975, Ser. No. 549,170

Int. Cl.² A01N *9/20*

U.S. Cl. 71—67 **5 Claims**

1. A method of inhibiting algae which comprises applying to said algae an effective amount of a compound having the structure:



X

wherein R and R′ are either methyl, or a halogen when R‴ is —CH_2—; or R and R′, taken together, are methylene dioxy; R″ is either methyl or nitro; R‴ is either absent or is —CH_2— or —CH═; and X is the residue of a lower alkyl, mono- or polyamino, or alkanolamino radical.

3,960,539

LIMONENE DERIVATIVES USED IN GROWTH INHIBITION AND PLANT ABSCISSION PROCESSES

William F. Newhall, Winter Haven, Fla., assignor to Amchem Products, Inc., Ambler, Pa.

Division of Ser. No. 825,437, May 16, 1969, Pat. No. 3,564,046, which is a continuation-in-part of Ser. No. 604,622, Dec. 27, 1966, abandoned. This application Aug. 3, 1970, Ser. No. 60,717

Int. Cl.² A01N *9/24*

U.S. Cl. 71—76 **4 Claims**

1. A method of inhibiting plant growth and promoting fruit abscission which comprises applying to the locus to be treated a plant growth regulating amount of the quaternary ammonium compound (2,4-dichlorobenzyl) dimethyl (1-hydroxy-p-menth-2-yl) ammonium .X wherein X is an acid anion selected from the group consisting of halides, sulfates, phosphates, phosphonates, sulfonates and alkanoates of from 1 to 8 total carbon atoms.

3,960,540

GROWTH REGULATION IN LAWN CARE

Wayne Howard Crosby, Irvington, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 265,077, June 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 216,833, Jan. 10, 1972, abandoned. This application Dec. 23, 1974, Ser. No. 535,472

Int. Cl.² A01N *5/00*

U.S. Cl. 71—76 **3 Claims**

1. A composition of synergistically inhibiting the vertical growth of temperate turf grasses and concomitantly promoting the lateral growth of said grasses which consists essentially of a uniform blend of:

a. about 2 parts by weight of 3-trichloromethyl sulfonamido-p-acetotoluidide, and

b. about 3 parts by weight of 2-chloroethyl phosphonic acid, said blend incorporated in a quantity of inert carrier sufficient to effect dispersibility in application of the blend to said temperature turf grasses at a dosage level equivalent to about five pounds of blend of active ingredients per acre, said blend having no appreciable deleterious effect on the natural texture and appearance of said grasses.

3,960,541

PROCESS FOR REGULATING OR INFLUENCING THE GROWTH AND METABOLISM OF PLANTS

Hubert Mayr, Leonding near Linz; Elfriede Presoly; Ferdinand Weinrotter, both of Linz; Walter Müller, Leonding near Linz; Gerhard Stern, Linz, all of Austria, and Walter Mizzi Frohner, deceased, late of Pasching near Linz, Austria (by Maria Frohner), assignors to Chemie Linz Aktiengesellschaft, Austria

Division of Ser. No. 232,973, March 8, 1972, Pat. No. 3,877,923. This application Jan. 3, 1975, Ser. No. 539,434

Claims priority, application Austria, Mar. 8, 1971, 2000/71

Int. Cl.² A01N *9/28*

U.S. Cl. 71—88 **10 Claims**

1. A process for increasing the resistance of plants to drought, which comprises treating their seeds before sowing with an active compound selected from the group consisting of aliphatic epoxymonocarboxylic acids containing one to three epoxy groups and 6 to 22 carbon atoms and the salts lower alkyl esters, lower polyhydroxyalkyl ester, amides, monoalkylamides and dialkylamides thereof.

5. A process for increasing the resistance of plants to drought, which comprises treating the surrounding soil, before or after emergence of the plants, with an active compound selected from the group consisting of aliphatic epoxymonocarboxylic acids containing one to three epoxy groups and 6 to 22 carbon atoms and the salts, lower alkyl esters, lower polyhydroxyalkyl ester, amides, monoalkylamides and dialkylamides thereof.

3,960,542

HERBICIDAL 2-SULFINYL AND 2-SULFONYL PYRIDINE N-OXIDE DERIVATIVES

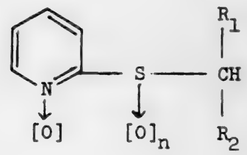
Howard L. Plant, Milford, and Allyn R. Bell, Cheshire, both of Conn., assignors to Uniroyal Inc., New York, N.Y.

Filed Mar. 17, 1975, Ser. No. 559,196

Int. Cl.² A01N *17/08*

U.S. Cl. 71—94 **16 Claims**

1. A 2-sulfinyl or 2-sulfonyl pyridine N-oxide compound of the formula:



where

n is 1 or 2;

R_1 is hydrogen or methyl;

R_2 has one of the following values when R_1 is hydrogen;

2,2-dichlorocyclopropyl, 2,2-dichloro-1-methylcyclopropyl, cyano, naphthyl, methylnaphthyl, monosubstituted phenyl wherein the substituent is in the ortho position and is selected from alkyl having 1 to 2 carbon atoms, halogen, nitro, or polysubstituted phenyl having from 2 to 5 substituents which may be the same or different and are selected from alkyl having 1 or 2 carbon atoms, halogen, nitro, methoxy, ethyoxy and methylenedioxy; and

R_2 has one of the following values when R_1 is methyl:

phenyl, naphthyl, or phenyl substituted with 1 to 3 substituents which may be the same or different and are selected from alkyl having 1 or 2 carbon atoms, halogen and nitro.

3,960,543

PROCESS OF PRODUCING SELF-SUPPORTING BRIQUETTES FOR USE IN METALLURGICAL PROCESSES

Paul Schmalfeld, Bad Homburg; Dieter Sauter, Frankfurt am Main, and Fred Erich Cappel, Sprendlingen, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 1, 1974, Ser. No. 485,050

Claims priority, application Germany, July 13, 1973, 2335669

Int. Cl.² C21B *1/08*

U.S. Cl. 75—3 **12 Claims**

1. Process for preparing self-supporting briquettes containing fine-grained metal oxide and caking coal for use in a metallurgical process to reduce said metal oxide which comprises the steps of:

a. forming a premixture of the fine-grained caking coal and tar pitch or petroleum bitumen having a temperature less than the temperature of the mixture to be briquetted formed in step (b), said tar pitch or petroleum bitumen being added in an amount of 2–20 percent by weight based on the mixture briquetted;

b. mixing the premixture from (a) with fine-grained materials containing metal oxide, said materials having a temperature in the range of 600°–900°C thereby forming a mixture to be briquetted having a temperature in the range of 350° to 550°C;

c. feeding said mixture to a briquetting press and forming briquettes from said mixture.

3,960,544

PROCESS FOR THE PRODUCTION OF IRON-CONTAINING TITANIFEROUS PARTICLES

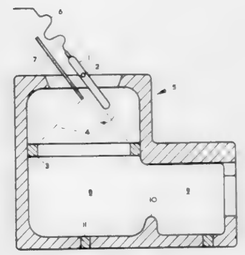
Jozef Kazimierz Tylko, Faringdon, England, assignor to British Titan Limited, Billingham, England

Division of Ser. No. 407,810, Oct. 19, 1973, Pat. No. 3,853,536. This application July 12, 1974, Ser. No. 487,994

Claims priority, application United Kingdom, Nov. 29, 1972, 55049/72

Int. Cl.² C22B *1/08*

U.S. Cl. 75—3 **14 Claims**



1. Free-flowing, particulate material comprising iron-contaning titaniferous particles coated with a carbonaceous, non-gaseous reductant and having an average particle size less than 500μ.

3,960,545

CERMET PLASMA FLAME SPRAY POWDER, METHOD FOR PRODUCING SAME AND ARTICLES PRODUCED THEREFROM

David J. Port, Athens; William D. Lafferty, and Richard F. Cheney, both of Towanda, all of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 24, 1975, Ser. No. 561,638
Int. Cl.² B22F 9/00
U.S. Cl. 75—.5 R 9 Claims

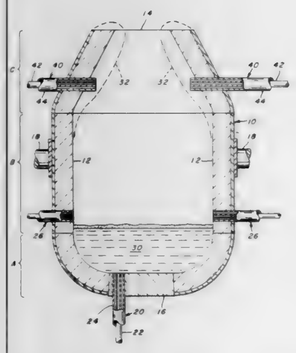
1. A free flowing flame spray powder comprising agglomerates of powder particles, said agglomerates consisting essentially of subparticles of a metallic component selected from the group consisting of molybdenum and its alloys and from 1 to 50 weight percent of subparticles of an alumina component.

3,960,546

METHOD FOR ELIMINATING NOSE-SKULLS FROM STEELMAKING VESSELS

Franklin E. Rote, Peoria, Ill., and Karl Brotzmann, Sulzbach-Rosenberg, Germany, assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 22, 1974, Ser. No. 472,245
Int. Cl.² C21C 5/32, 5/34
U.S. Cl. 75—60 28 Claims



1. In a metal refining vessel having a hearth section to contain a molten metal charge and a nose section thereabove, wherein an oxygen containing gas is introduced into the vessel hearth section to oxidize impurities from a molten metal charge therein thereby refining the metal charge and forming gases containing carbon monoxide which pass from the vessel hearth section into the vessel nose section; the method of eliminating at least substantial nose-skull build-up in the vessel nose section comprising, injecting a second oxygen containing gas into the vessel nose section at a rate sufficient to therein oxidize at least a portion of said carbon monoxide gases and heat the vessel nose section sufficiently to melt any significant accumulated nose-skull build-up and prevent further molten particles of metal and slag from solidifying on the vessel nose section walls.

3,960,547

STEELMAKING PROCESS

James W. Kirkpatrick, Poland Township, Mahoning County; W. Fergus Porter, Poland, and William E. Shepherd, Youngstown, all of Ohio, assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio

Filed Dec. 18, 1972, Ser. No. 316,294
Int. Cl.² C21C 7/00
U.S. Cl. 75—60 4 Claims

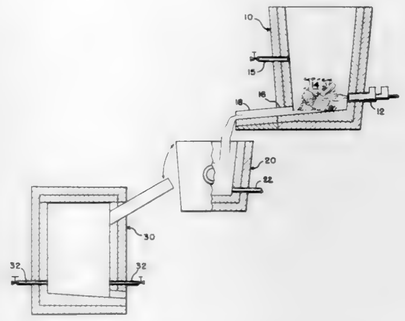
1. A process for producing refined steel which comprises:

a. providing a supply of molten iron bearing material, having a composition comprising, in percent by weight:

.5 – 2.0	Silicon
2.0 min.	Carbon
.4 – 1.5	Manganese

and the balance being essentially iron

b. adding, to said molten iron, molten steel having a carbon content less than 2%, by weight, to provide a molten mix comprising 40–75% molten steel and 60–25% molten iron;



c. adding, to said molten mix, unmolten iron bearing material in an amount where the unmolten material comprises approximately 5–15%, by weight, of the resultant mixture comprised of said molten mix and the added unmolten material; and

d. blowing essentially pure oxygen through the resultant mixture to refine the same.

3,960,548

PROCESS FOR THE SEPARATION OF COMPONENTS IN MULTICOMPONENT MIXTURES, FOR THE CASE WHEREIN THE DIAGRAM OF BINARY PHASES OF THE TWO MAJOR COMPONENTS PRESENTS A MONOTECTIC AND THEIR DENSITIES ARE DIFFERENT

Conrado F. Varotto; Miguel Angel Audero; Daniel I. Vasallo; Roberto Pascual, and Hector J. Ruffo, all of San Carlos de Bariloche, Argentina, assignors to Comision Nacional de Energia Atomica and Compania Metalurgica Austral Argentina, both of Buenos Aires, Argentina

Filed Mar. 25, 1974, Ser. No. 454,696
Claims priority, application Argentina, Mar. 27, 1973, 247269
Int. Cl.² C22B 13/06
U.S. Cl. 75—78 7 Claims

1. A process for the separation of components in multicomponent mixtures, for the case where the diagram of binary phases of the two major components to be separated presents a monotectic and their densities are different, said process comprising the steps of (a) melting the mixture and heating it to a temperature above the temperature of the monotectic and/or of the solid/liquid transformation depending on the composition of the mixture; (b) cooling the mixture from the maximum temperature, controlling the rate of cooling until a temperature about that of the temperature of the monotectic transformation is reached; (c) maintaining the mixture at the temperature of the monotectic transformation for a preestablished period of time; (d) cooling the mixture down to a temperature below the temperature of the monotectic transformation the cooling being made at a controlled rate; (e) heating the material from the lower temperature reached, up to the temperature of the monotectic transformation controlling the heating rate; (f) maintaining the mixture at the temperature of the monotectic for a preestablished period of time; (g) heating the mixture up to a maximum temperature, above the temperature of the monotectic and/or of the solid/liquid transformation depending on the composition of the mixture, the heating being conducted at a controlled rate, wherein the new higher maximum temperature may be higher, the same or lower than the maximum starting temperature; and (h) separating from said mixture liquid rich in said denser component.

3,960,549

PROCESS FOR THE SEPARATION AND PURIFICATION OF PLATINUM, RHODIUM AND IRIDIUM

John James MacGregor, London, England, assignor to Matthey Rustenburg Refiners (Proprietary), Limited, Johannesburg, South Africa

Filed Dec. 3, 1974, Ser. No. 529,245
Claims priority, application United Kingdom, Dec. 7, 1973, 56826/73
Int. Cl.² C22B 11/04; C01G 55/00
U.S. Cl. 75—108 49 Claims

1. A process for the separation and purification of platinum, rhodium and iridium present as salts dissolved in aqueous solution comprising the steps of:

a. contacting the solution at acid pH with a reducing agent to effect the reduction of iridium present as Ir(IV) to Ir(III);

b. contacting the reduced solution with a nitrogen containing organic compound selected from the group consisting of secondary amines of the formula R_2NH, tertiary amines of the formula R_3N and quaternary ammonium compounds of the formula R_4NX wherein at least one R is an alkyl group, the remainder being alkyl or aryl, and X is a halide or hydroxide ion;

c. removing from contact with the solution an organic phase containing substantially all of the platinum present in association with the nitrogen-containing organic compound used in step (b);

d. re-oxidising iridium which with the rhodium remains in the aqueous phase from Ir(III) to Ir(IV);

e. again contacting the oxidised solution with a fresh quantity of a nitrogen-containing organic compound selected from the group consisting of secondary amines of the formula R_2NH, tertiary amines of the formula R_3N and quaternary ammonium compounds of the formula R_4NX wherein at least one R is an alkyl group, the remainder being alkyl or aryl, and X is a halide or hydroxide ion;

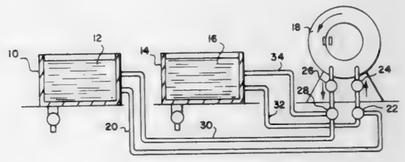
f. removing from contact with the reoxidised solution the organic phase containing substantially all of the iridium present in association with the nitrogen-containing organic compound used in step (e).

3,960,550

SILVER RECOVERY PROCESS

William L. Dusenberry, 7046 E. Paradise Drive, Scottsdale, Ariz. 85218

Filed Feb. 24, 1975, Ser. No. 552,411
Int. Cl.² C22B 11/04
U.S. Cl. 75—118 P 14 Claims



1. A method for reclaiming silver from photographic substrates; comprising: immersing and washing silver emulsion coated substrates in a dilute solution of sodium hypochlorite until the silver bearing emulsion is removed from said substrates and disposed in said solution; then introducing sodium hydroxide into said solution to precipitate said silver into a lower strata of said solution and introducing a flocculating agent into said solution and allowing said silver to settle to said lower strata in the form of sludge in said solution; then removing the diluted solution from an area above said lower strata; then placing the silver sludge from said lower strata into fabric bags wherein the flocculating agent tends to retain the silver sludge in the bags and allows the remainder of said solution to drain from the silver sludge until a substantial amount of moisture has escaped from the sludge and it is in a partially dried condition; and then placing the partially dried sludge in containers and thus subjecting it to a baking process until the sludge is in a dried cake condition.

3,960,551

ALUMINIUM BASED ALLOY

Iosif Naumovich Fridlyander, Volokolamskoe shosse, 15/22, kv. 66, Moscow; Konstantin Petrovich Yatsenko, 15 Parkovaya ulitsa, 44, kv. 47, Moscow; Galina Anatolievna Nekrasova, 1 Mosfilmovsky pereulok, 14, kv. 76, Moscow; Alexandr Nikolaevich Gulin, Belovezhskaya ulitsa, 31, kv. 32, Moscow; Zoya Grigorievna Semenova, B. Cherkizovskaya ulitsa, 5, korpus 4, kv. 8, Moscow; Nikolai Grigorievich Sidorov, prospekt Koroleva, 1, kv. 150, Kaliningrad Moskovskoi oblasti; Boris Sergeevich Morozov, ulitsa Tikhomirova, 1, kv. 12, Moscow; Efrem Julievich Krichevsky, ulitsa Borisa Galushkina, 17, kv. 280, Moscow; Tatyana Alexandrovna Zakharova, Shmitovsky Proezd, 13, kv. 34, Moscow, and Raisa Grigorievna Sarycheva, B. Cherkizovskaya ulitsa, 8, korpus 11, kv. 70, Moscow, all of U.S.S.R.

Filed Oct. 21, 1974, Ser. No. 516,874
Int. Cl.² C22C 21/06
U.S. Cl. 75—147 1 Claim

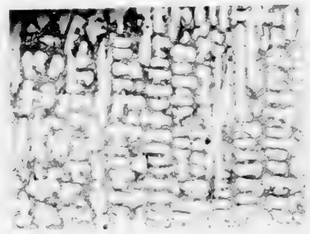
1. An alloy consisting essentially of between 9.5 and 30 wt % of beryllium, between 0.5 and 10.0 wt % of magnesium, between 0.05 and 0.5 wt % of titanium, between 0.05 and 0.5 wt % of zirconium, the balance being aluminium.

3,960,552

COBALT ALLOY

Michael J. Woulds, 1200 E. Ocean Blvd., Long Beach, Calif. 90802

Filed Oct. 21, 1974, Ser. No. 516,649
Int. Cl.² C22C 19/07
U.S. Cl. 75—171 8 Claims



1. A cobalt-base alloy free of zirconium as an alloy element and consisting essentially of from 20 to 27 percent chromium, 9 to 11 percent nickel, 6 to 8 percent tungsten, 2.5 to 4.5 percent tantalum, 0.2 to 0.6 percent titanium, 0.5 to 0.7 percent carbon, 0.25 to 3.0 percent aluminum and the balance being cobalt, said aluminum being present in the aforesaid amount, sufficient to impart improved strength chracteristics to said alloy.

3,960,553
ELECTRICAL CONTACT MATERIALS AND METHODS OF MAKING THE SAME

Terrence Ardern Davies, Horton, England, assignor to Square D Company, Park Ridge, Ill.

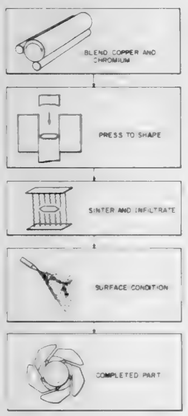
Division of Ser. No. 384,157, July 30, 1973, Pat. No. 3,857,706. This application Nov. 25, 1974, Ser. No. 526,762
Claims priority, application United Kingdom, Aug. 25, 1972, 39666/72
Int. Cl.² C22C *5/06*
U.S. Cl. 75—173 R **1 Claim**

1. A method of producing an electrical contact material including the steps of providing a silver-mercury master alloy of a desired composition; adding the master alloy to molten silver under an inert atmosphere to provide a silver-based molten alloy having a mercury concentration of not more than 3.0 weight per cent; and casting the molten alloy to form an ingot.

3,960,554
POWDERED METALLURGICAL PROCESS FOR FORMING VACUUM INTERRUPTER CONTACTS

Robert E. Gainer, Jr., Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 3, 1974, Ser. No. 476,177
Int. Cl.² B22F *3/00, 1/00, 1/02, 1/04*
U.S. Cl. 75—200 **7 Claims**

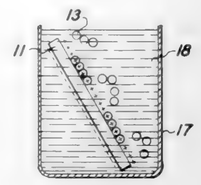


1. A method of forming a chromium copper contact for a vacuum circuit interrupter wherein the chromium content is between 40 to 60 weight percent comprising the steps of:
blending a minor addition of copper powder with a chromium powder;
pressing the blended powder in a die with a pressure of less than 20 tons per square inch to the shape desired, so that the desired chromium porosity is produced in the compact whereby the chromium content of the finished contact is between 40 to 60 weight percent;
removing the pressed compact shape from the die;
vacuum sintering for a predetermined time to form a porous chromium matrix which is preferably infiltrated with the minor addition of copper; and
final sintering and fully infiltrating the chromium matrix with copper to fill the chromium matrix.

3,960,555
PHOTOGRAPHIC CHARGING AND IMAGING PROCESS

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 460,377, June 1, 1965, Pat. No. 3,908,177, which is a continuation-in-part of Ser. No. 403,002, Oct. 12, 1964, abandoned. This application Apr. 3, 1967, Ser. No. 628,029
The portion of the term of this patent subsequent to July 14, 1987, has been disclaimed.
Int. Cl.² G03G *5/04*
U.S. Cl. 96—1 PS **17 Claims**



1. An imaging method comprising:
providing an imaging member comprising a dielectric substrate, an overlayer of substantially electrically insulating softenable material and a fracturable layer of particulate material embedded at the surface of the softenable overlayer spaced apart from the substrate, said softenable material capable of having its resistance to migration of said particulate material decreased sufficiently to allow migration of the particulate material through the softenable material toward said substrate,
placing the dielectric substrate of said member in contact with an electrical ground,
forming an electrostatic latent image on said member,
developing said imaging member after the forming of the electrostatic latent image by decreasing the resistance of the softenable material to migration of the particulate material at least sufficient to allow migration of the particulate material through the softenable material whereby selected portions of the particulate material migrate in image configuration toward said substrate.

10. An imaging method comprising:
providing an imaging member comprising a dielectric substrate, an overlayer of substantially electrically insulating softenable material and a fracturable layer of particulate material embedded at the surface of the softenable overlayer spaced apart from the substrate, said softenable material capable of having its resistance to migration of said particulate material decreased sufficiently to allow migration of the particulate material through the softenable material toward said substrate,
forming an electrostatic latent image on said imaging member by steps including electrostatically charging the substrate surface of said imaging member with electrical charges of opposite polarity to the electrical charges comprising said electrostatic latent image on the non-substrate surface of said imaging member; and
developing said imaging member after the formation of the electrostatic latent image by decreasing the resistance of the softenable material to migration of the particulate material at least sufficient to allow migration of the particulate material through the softenable material whereby selected portions of the particulate material migrate in image configuration toward said substrate.

3,960,556
CONSTANT CURRENT TONER TRANSFER

Jerome J. Griesmer, Mentor, Ohio, assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

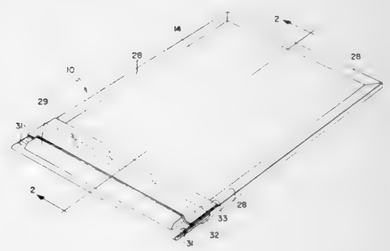
Filed Mar. 1, 1973, Ser. No. 336,993
Int. Cl.² G03G *13/14*
U.S. Cl. 96—1.4 **2 Claims**

1. The method of electrostatic printing by transferring an image of electrically charged particles between an original support and a transfer support, comprising:
developing a latent image on a surface of said original support by means of toner particles;
bringing a surface of said transfer support into virtual contact with the developed image; and
applying a source of charge migration to all areas of said surface of the transfer support by bringing said surface to an electric potential resulting in a substantially uniform current density value,
whereby the developed image on said surface of the original support is caused to be transferred to said surface of the transfer support.

3,960,557
POLYDISPERSED SILVER HALIDE EMULSIONS WITH IODIDE FOR USE IN DIFFUSION TRANSFER

William J. Timson, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 3, 1972, Ser. No. 303,474
The portion of the term of this patent subsequent to Oct. 10, 1989, has been disclaimed.
Int. Cl.² G03C *7/00, 5/54, 1/48, 1/10*
U.S. Cl. 96—3 **25 Claims**

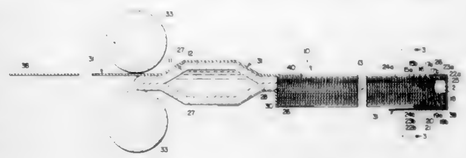


1. A photographic diffusion transfer color process film unit which comprises a plurality of layers including a photosensitive layer comprising a particulate dispersion of polydisperse photosensitive silver iodochlorobromide polydisperse, silver iodochloride and/or polydisperse silver iodobromide grains which possess in terms of the iodide thereof a mean iodide concentration within the range of about 0.5 to 15 mole %, and in which dispersion not in excess of about 20%, by weight, of the silver iodochlorobromide, silver iodochloride or silver iodobromide grains deviate from the mean iodide concentration by in excess of about ± 25%, by weight, iodide, having associated therewith diffusion transfer process dye image-forming material and a layer adapted to receive diffusion transfer process dye image-forming material diffusing thereto as a function of the point-to-point degree of said photosensitive layer's exposure to incident actinic radiation.

3,960,558
DYE FREE, SPECTRALLY SENSITIVE SILVER HALIDE LAYERS IN DIFFUSION TRANSFER FILMS

Paul A. Cardone, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 29, 1974, Ser. No. 464,818
Int. Cl.² G03C *7/00, 1/40, 5/54, 3/00*
U.S. Cl. 96—3 **34 Claims**



1. A composite photographic diffusion transfer process film unit which comprises a plurality of sequential layers including, in combination, a first dimentionally stable transparent layer; a first dyeable layer adapted to receive diffusion transfer process dye image-forming material diffusing thereto; an opaque layer; a first photosensitive silver halide layer comprising a dispersion of silver halide grains possessing a first mean particle size, having associated therewith a diffusion transfer process dye image-forming material possessing spectral absorption within the spectral range to which the silver halide grains are sensitive; a second photosensitive silver halide layer substantially free of diffusion transfer process dye image-forming material comprising a dispersion of silver halide grains possessing a second mean particle size and substantially spectrally sensitive within said spectral range; said second mean particle size being less than said first particle size; a second dimensionally stable transparent layer; means for providing a processing composition intermediate the second dimensionally stable transparent layer and the next adjacent silver halide layer; means for providing opacifying agent intermediate the second dimensionally stable layer and the next adjacent silver halide layer in a quantity effective to prevent exposure of the photosensitive silver halide layers during processing of the film unit in the presence of radiation actinic to the photosensitive layers and incident on said second dimensionally stable transparent layer and the opaque layer is effective to prevent exposure of said photosensitive layers during processing of said film unit in the presence of radiation actinic to the photosensitive layer and incident on said first dimensionally stable layer; means for maintaining the composite unit intact subsequent to diffusion transfer processing; said second silver halide layer possessing a sensitivity to incident radiation at wavelengths to which it has been sensitized greater than the sensitivity exhibited by said first photosensitive silver halide layer to said radiation at said wavelengths; said layers arranged in substantially parallel planar relationship; and said dimensionally stable layers being externally disposed with respect to the other of said layers.

3,960,559
METHOD OF MAKING A SEMICONDUCTOR DEVICE UTILIZING A LIGHT-SENSITIVE ETCHING AGENT

Gyoji Suzuki; Masayoshi Nagata; Takeshi Tomotsu, and Hisatake Ono, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 16, 1973, Ser. No. 406,986
Claims priority, application Japan, Oct. 19, 1972, 47-104751
Int. Cl.² C09K *13/08*
U.S. Cl. 96—36 **14 Claims**

1. A method of making a semiconductor device, which comprises
applying to a silicon containing film provided on a semiconductor substrate a light-sensitive etching agent comprising (a) a photodecomposable compound forming upon

decomposition a material capable of etching said film in presence of water, (b) a material capable of forming water upon irradiation with light, (c) a binder inert to compounds (a), (b) and (d) and (d) a solvent inert to components (a) and (b), and then image-wise exposing said light sensitive etching agent to irradiation capable of decomposing said photodecomposable compound and said material capable of forming water to thereby selectively said film.

3,960,560

METHOD FOR PRODUCING A PHOTOMASK

Masamichi Sato, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 9, 1974, Ser. No. 513,434

Claims priority, application Japan, Oct. 9, 1973, 48-113631

Int. Cl.² G03C *5/00*; **C09K** *13/08*; **G03B** *27/00*; **G03C** *11/00*

U.S. Cl. 96—36 **15 Claims**

1. A method for producing a photomask, which comprises exposing and development-processing a photographic material comprising a transparent support having thereon a masking layer and a silver halide emulsion layer to thereby form a silver image, etch-bleaching said silver halide emulsion layer to thereby remove the silver image areas, baking the remaining non-silver image areas to thereby decompose the binder contained therein, to prevent being swollen, dissolved or penetrated by an etching solution which would otherwise swell, dissolve or pentrate the unbaked binder, subjecting the support, masking layer and decomposed binder to said etching solution to thereby remove the masking layer located at the areas corresponding to the silver image, and removing the decomposed binder to thereby uncover the masking layer at the areas corresponding to the non-silver image areas.

3,960,561

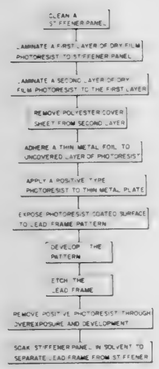
METHOD FOR MAKING ELECTRICAL LEAD FRAME DEVICES

Frank W. Haining, Binghamton; Joseph M. Kolly, and Thomas E. Lynch, Jr., both of Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 10, 1975, Ser. No. 566,856

Int. Cl.² H05K *1/00*

U.S. Cl. 96—36.2 **7 Claims**



5. A method for making thin lead frame devices with land areas thereon comprising the steps of:

a. cleaning a stiffener panel,

b. laminating a first layer of dry film photoresist having a polyester cover sheet thereon to one side of the stiffener panel,

c. laminating a second layer of dry film photoresist having a polyester cover sheet thereon on said first layer of dry film photoresist,

d. removing the polyester cover sheet from the second layer of dry film photoresist,

e. adhering a thin metal foil to the uncovered second layer of dry film photoresist,

f. applying a positive type photoresist to the thin metal foil,

g. exposing the photoresist coated surface to a lead frame etch pattern,

h. developing the exposed pattern,

i. etching the lead frame to remove the positive photoresist by overexposing the surface minus a pattern and developing same,

j. applying a negative photoresist to the surface,

k. exposing to a land area plating pattern,

l. developing the land area plating pattern,

m. plating up metallic composition according to the plating pattern to develop lands at the lead frame ends, and

n. soaking the stiffener panel assembly in solvent to remove the lead frame from the stiffener panel.

3,960,562

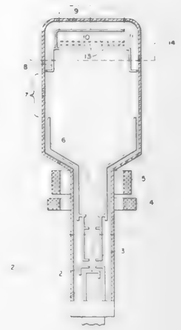
THIN FILM DIELECTRIC STORAGE TARGET AND METHOD FOR MAKING SAME

Wolfgang M. Feist, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 355,855, April 30, 1973, which is a division of Ser. No. 208,494, Dec. 15, 1971, abandoned, which is a division of Ser. No. 210,095, Dec. 20, 1971, abandoned, which is a continuation of Ser. No. 12,566, Feb. 19, 1970, abandoned, and a continuation-in-part of Ser. No. 806,534, March 12, 1969, abandoned. This application Nov. 27, 1973, Ser. No. 419,302

Int. Cl.² H01J *31/48*

U.S. Cl. 96—38 **7 Claims**



5. A method for fabricating a dielectric storage target comprising the steps of:

coating a non-reactive conductive metal mesh with a lacquer layer;

depositing a thin substantially transparent refractory dielectric film on said lacquer layer;

evaporating the lacquer layer by applying heat to the film covered mesh;

immersing the film covered mesh in a plating solution preferably of copper or gold; and

applying a negative potential to the mesh whereby the plating material exudes through the pre-existing fine cracks and pores in the dielectric film in the area of the mesh wires.

3,960,563

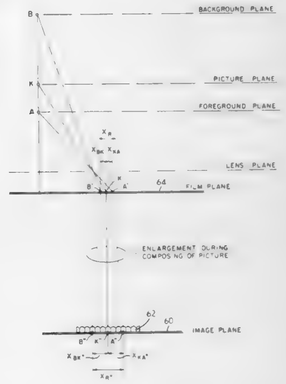
METHODS AND APPARATUS FOR TAKING AND COMPOSING STEREOSCOPIC PICTURES

Allen Kwok Wah Lo, Atlanta, and Jerry Curtis Nims, Dunwoody, both of Ga., assignors to Dimensional Development Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 398,990, Sept. 20, 1973, abandoned, which is a continuation-in-part of Ser. No. 292,796, Sept. 27, 1972, abandoned. This application Sept. 24, 1974, Ser. No. 508,810

Int. Cl.² G03C *9/00*

U.S. Cl. 96—40 **31 Claims**



1. The method of producing a stereoscopic picture which comprises the steps of:

a. sequentially photographing a scene with a single camera at a series of substantially equidistantly spaced points lying in a plane parallel to the object plane of the scene;

b. composing a stereoscopic picture from the negatives obtained in step (a) by means of a lenticular composing screen of lenticule width W; and

c. controlling the spacing between the points of step (a) in accordance with a selected one of a finite number possible spacings, which selected one establishes a maximum total parallax value ($X_{T\pi}$) during the composition of step (b) which lies with a predetermined range of multiples of said lenticule width W.

3,960,564

PHYSICAL DEVELOPMENT PROCESS UTILIZING A PHYSICAL DEVELOPER CONTAINING A SPECIFIC REDUCING AGENT, A THIOL COMPOUND

Arian Molenaar, and Hendrik Jonker, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 369,750, June 13, 1973. This application Oct. 24, 1974, Ser. No. 517,782

Claims priority, application Netherlands, June 21, 1972, 7208453

Int. Cl.² G03C *5/24*

U.S. Cl. 96—48 PD **2 Claims**

1. In the method of producing a carrier with a silver coating by first providing physically developable metal nuclei image produced by selective exposure of a photo-sensitive layer on a carrier and then physically developing said metal nuclei image with an aqueous solution of a silver salt an a reducing agent therefor, the improvement where after formation of the metal nuclei image the carrier is rinsed with a solution comprising ammonium hydroxide or a soluble pyrophosphate and the carrier is then treated with an electroless silver plating composition comprising an aqueous solution of a silver salt, ammonium hydroxide as a complexing compound for silver ions, a reducing agent selected from the group consisting of soluble tartrates, formaldehyde and hydrazine and in addition an organic compound containing at least one —SH group and at least one cyclic or polar aliphatic group in a concentration of between 10^{-7} and 10^{-2} mol/liter.

3,960,565

SILVER BLEACHING SOLUTIONS

Richard S. Fisch, and Norman Newman, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 12, 1973, Ser. No. 414,890

Int. Cl.² G03C *5/32*, *7/00*; **C22B** *11/00*

U.S. Cl. 96—60 R **16 Claims**

1. An aqueous non-fixing, ferricyanide free, oxidizing solution comprising

1. at least one water-soluble ferric compound which makes ferric ion available for the oxidation of silver,

2. halide ion, and

3. at least one water-soluble compound which releases an inorganic ion in aqueous solution which raises the redox potential of the solution comprising (1) and (2) at constant pH by at least 50 millivolts when present in a concentration not exceeding 50 g/liter, said water-soluble compound which releases an inorganic ion being selected from the class of chlorates, persulfates, perchlorates, iodates, periodates and hypochlorates.

3,960,566

METHOD FOR DRY STABILIZATION OF SILVER HALIDE PHOTOGRAPHIC MATERIAL

Shinpei Ikenoue, and Takao Masuda, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

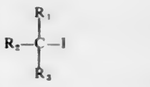
Filed Dec. 6, 1973, Ser. No. 422,387

Claims priority, application Japan, Dec. 8, 1972, 47-123212

Int. Cl.² G03C *5/38*

U.S. Cl. 96—61 R **12 Claims**

1. A method for stabilizing a silver halide photographic print out material in the dry state, which material contains an organic compound having an iodine atom connected to a carbon atom and which is capable of releasing an iodine atom or iodine ion when heated to a temperature of at least 80°C, said organic compound being a member selected from the group consisting of compounds having the following formula (I)



(I)

wherein each of R_1, R_2 and R_3 is a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aryl group, a halogen atom, an acylalkoxy group, a carboxy group, a nitro group, an amino group, a substituted amino group, formyl group, an oxo group, a cyano group, or a mercapto group, said alkyl, alkenyl, alkynyl and aryl groups being either unsubstituted or substituted with a substituent selected from the group consisting of a halogen atom, a nitro group, an amino group, a formyl group, a carbonyl group, a cyano group, a mercapto group, an acyl group, and an alkoxy group, and compounds expressed by the following formula (II) I)



(II)

wherein Z is C, O, N, S, or Se and forms a 5- or 6-membered unsubstituted or substituted ring, said substituents being selected from the group consisting of alkyl groups, alkenyl groups, aryl groups, halogen atoms, acyl groups, alkoxy groups, aralkyl groups, carboxy groups, nitro groups, substituted amino groups, amino groups, formyl groups, carbonyl groups, cyano groups and oxo groups; said method comprising forming a print-out image on said material by exposure to actinic radiation and then heating said material to a temperature of at least 80°C.

3,960,567

PROCESS AND COMPOSITION FOR PRODUCING PHOTOLITHOGRAPHIC PLATE FOR THE GRAPHIC ARTS

Katsumi Hayashi, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 281,094, Aug. 16, 1972, abandoned. This application Oct. 7, 1974, Ser. No. 512,658

Claims priority, application Japan, Aug. 21, 1971, 46-63928

Int. Cl.² G03C *5/30*

U.S. Cl. 96—66.5 **9 Claims**

1. In a process for producing a photolithographic plate for the graphic arts which comprises imagewise exposing and then developing a silver halide photographic material with an infectious developer composition having a pH higher than 8 and comprising (a) at least one member selected from the group consisting of hydroquinone and hydroquinone derivatives wherein said at least one member is the sole developing agent in said infectious developer composition, (b) an aldehyde-bisulfite addition product, (c) an alkai agent and (d) free sulfite ions, the improvement which comprises including a viscosity increasing agent selected from the group consisting of carboxymethyl cellulose, hydroxyethyl cellulose, sodium alginate, methyl cellulose, polyvinyl alcohol and methylvinyl ether-maleic anhydride copolymer; said developer composition having a viscosity of from about 1,000 to 200,000 centipoises at 25°C.

3,960,568

PHOTOGRAPHIC MATERIAL CONTAINING FINE SILVER HALIDE PARTICLES AND HYDROXYLAMINO SUBSTITUTED TRIAZINE OR PYRIMIDINE SENSITIZERS

Tohru Sueyoshi; Yoshiyuki Nakazawa; Yoshuhara Nakamura; Reiichi Ohi, and Tokiharu Kondo, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

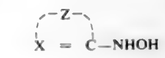
Filed Nov. 18, 1975, Ser. No. 524,859

Claims priority, application Japan, July 17, 1971, 46-53318

Int. Cl.² G03C *1/48, 1/28, 1/40, 1/02*

U.S. Cl. 96—76 R **18 Claims**

1. A silver halide photographic material comprising a support having thereon at least one photographic emulsion layer comprising silver halide particles having an average particle diameter not in excess of 0.35 micron or in which at least 90% of the total particles have a particle diameter not in excess of 0.4 micron, or having thereon at least one of said silver halide emulsion layers and at least one photographic emulsion layer comprising a hydrophilic polymeric material, wherein at least one of said photographic emulsion layers or said emulsion layer of a hydrophilic polymeric material contains a sensitizing amount of a heterocyclic organic compound represented by the formula (I):



wherein X represents a nitrogen atom or a methine group and Z represents an atomic group necessary for forming a triazine ring which is part of a fused ring system, a pyrimidine ring or a pyrimidine ring which is part of a fused ring system.

3,960,569

DIFFUSION TRANSFER COLOR FILM UNIT WITH HYDROXY SUBSTITUTED ALKYLENE AMINO DEVELOPMENT ACCELERATORS

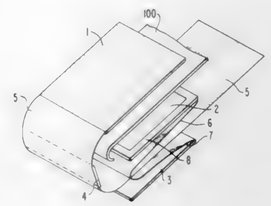
Yoshiaki Ono, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 20, 1974, Ser. No. 525,431

Claims priority, application Japan, Nov. 20, 1973, 48-130379

Int. Cl.² G03C *1/40, 7/00, 5/54, 1/48*

U.S. Cl. 96—77 **27 Claims**



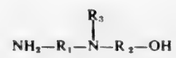
1. A diffusion transfer color film unit for the dissolution-physical development system,

A. which comprises:

1. a light-sensitive element comprising a support having thereon at least one light-sensitive layer unit comprising
   - i. a negative-type light-sensitive silver halide emulsion layer containing a ballasted compound capable of reacting with an oxidation product of an aromatic primary amino color developing agent to provide a non-diffusible compound and
   - ii. an adjacent layer containing physical development nuclei and a ballasted coupler capable of reacting with an oxidation product of an aromatic primary amino color developing agent to provide a diffusible dye;
2. an image-receiving element comprising a support having thereon an image-receiving layer capable of fixing diffusible dyes released from the light-sensitive element;
3. a rupturable container which retains an alkaline processing composition and which is capable of releasing an alkaline processing composition by the action of pressure-applying members for spreading between the light-sensitive element and the image-receiving element; and
4. an aromatic primary amino color developing agent in the processing composition or a precursor thereof which provides, upon hyrolysis with the processing composition, said developing agent in the light-sensitive element, and a solvent for silver halide, and

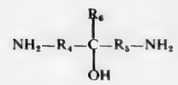
B. which is adapted to be processed, after imagewise exposure of said light-sensitive element, by spreading the processing composition as a layer between the light-sensitive element and the image-receiving element through the action of pressure-applying members,

said diffusion transfer color film unit containing at least one compound represented by the following general formula (I)



(I)

wherein R_1 and R_2 each represents an alkylene group having 1 to 4 carbon atoms; and R_3 represents a hydrogen atom, an amino group, an alkyl group having 1 to 4 carbon atoms or an aminoalkyl group having 1 to 4 carbon atoms; or represented by the following general formula (II)



(II)

wherein R_4 and R_5 each represents an alkylene group having 1 to 4 carbon atoms; and R_6 represents a hydrogen atom, an amino group, an alkyl group having 1 to 4 carbon atoms or an aminoalkyl group having 1 to 4 carbon atoms.

3,960,570

COLOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIALS

Yasushi Oishi; Reiichi Ohi, and Yoshio Kosuge, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

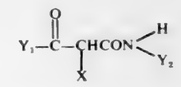
Filed Feb. 11, 1974, Ser. No. 441,522

Claims priority, application Japan, Feb. 9, 1973, 48-16255

Int. Cl.² G03C *1/40*

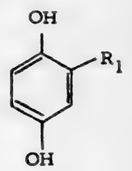
U.S. Cl. 96—100 **17 Claims**

1. A color photographic silver halide light-sensitive material comprising a support having coated thereon at least one hydrophilic colloid silver halide emulsion layer containing a non-diffusible alpha-acylacetoamide dye-forming coupler represented by the forumula (II):



wherein Y_1 is an aliphatic group, an aromatic group or a heterocyclic group, Y_2 is an aromatic group or a heterocyclic group and X is a member selected from the group consisting of a fluorine atom, an acyloxy group, an aryloxy group, a heterocyclic oxy group, a cyclic acylamino group or a cyclic acysulfonylamino group,

said emulsion layer or a hydrophillic colloid layer adjacent thereto containing a monoalkylhydroquinone represented by formula (I) or a compound capable of releasing said monoalkylhydroquinone by hydrolysis in aqueous alkaline solution:



(I)

wherein R_1 is an alkyl group having at least 4 carbon atoms.

3,960,571

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Akio Okumura; Yukio Yokota; Kozo Inouye; Keisuke Shiba, and Minoru Yamada, all of Minami-ashigara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

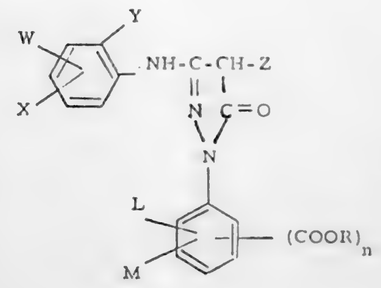
Filed Sept. 27, 1974, Ser. No. 509,889

Claims priority, application Japan, Sept. 27, 1973, 48-108798

Int. Cl.² G03C *1/40*

U.S. Cl. 96—100 **9 Claims**

1. A color photographic light-sensitive material having a silver halide emulsion layer containing a magenta color-forming coupler represented by the general formula (II)



(II)

wherein n represents 1 or 2, R represents a straight-chain or branched chain alkyl group, an alkenyl group or an aralkyl group and when n is 1, R has about 8 to 26 carbon atoms and when n is 2, each R group has about 4 to 18 carbon atoms; L and M each represent a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a cyano group, a hydroxy group, an amido group or a carboxy group; Z represents a hydrogen atom or a group which is released on coupling with the oxidation product of an aromatic primary amino color developing agent; W, X and Y each represent an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an amino group, an amido group, a halogen atom, a hydroxy group, a cyano group, a carboxy group, an alkoxy carbonyl group, a carbamoyl group or a sulfamoyl group, and W and X each further represent a hydrogen atom.

3,960,572

PHOTOSENSITIVE COMPOSITIONS COMPRISING A POLYESTER-POLYETHER BLOCK POLYMER

Jyoji Ibata; Hidehiko Kobayashi; Kazuo Toyomoto; Kazuhiro Suzuoki; Yoshio Hayashi, and Masakazu Kurihara, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1974, Ser. No. 441,547

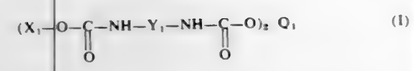
Claims priority, application Japan, Feb. 21, 1973, 48-21033; Apr. 21, 1973, 48-44646; May 21, 1973, 48-55510; Oct. 23, 1973, 48-118501

Int. Cl.² G03C *1/68, 5/00*

U.S. Cl. 96—115 P **12 Claims**

1. A photosensitive composition comprising

1. about 100 parts by weight of at least one prepolymer having a number average molecular weight of about 800 to 20,000 of the formula

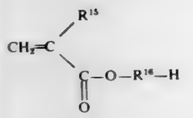


(I)

wherein

X_1 represents a residue of an alcohol having one to three ethylenically unsaturated bonds and selected from the group consisting of

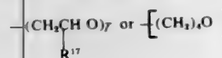
a. a compound selected from the group consisting of



wherein

R^{15} represents a hydrogen atom or methyl group,

R^{16} represents anoxyalkylene group of the formula



wherein

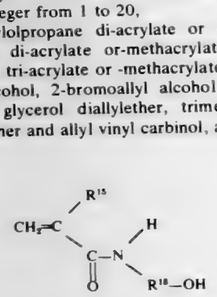
R^{17} represents a hydrogen atom, methyl, monochloromethyl or monobromomethyl group; and *f* represents an integer from 1 to 20,

b. trimethylolpropane di-acrylate or -methacrylate, glycerine di-acrylate or-methacrylate and pentaerythritol tri-acrylate or -methacrylate,

c. allyl alcohol, 2-bromoallyl alcohol 2-chloroalkyl alcohol, glycerol diallylether, trimethylolpropane diallyl ether and allyl vinyl carbinol, and

d.

(d)



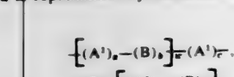
wherein

R^{18} represents a hydrogen atom or methyl group, and

R^{19} represents an alkylene having 1 to 12 carbon atoms,

Y_1 represents a residue of a diisocyanate selected from the group consisting of 2,4-tolylene diisocyanate, 2,6-tolylene diisocyanate, a mixture of 2,4-tolylene diisocyanate and 2,6-tolylene disocyanate, 4,4-diphenylmethane diisocyanate, m-xylylene diisocyanate and 1,6-hexamethylene diisocyanate.

Q_1 is a residue of a hydroxy terminated block polymer and is represented by the formula

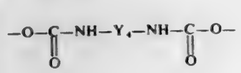


i.

A^1 represents a residue of a polyetherdiol having a number average molecular weight of about 200 to 5,000,

B represents a residue of a saturated polyesterdiol having a number average molecular weight of about 200 to 5,000,

ii. A^1 is linked to B; A^1 is linked to A^1; and B is linked to B with a group having the formula



wherein

Y_4 represents a residue of a diisocyanate selected from the group consisting of 2,4-tolylene diisocyanate, 2,6-tolylene diisocyanate, a mixture of 2,4-tolylene diisocyanate and 2,6-tolylene diisocyanate, 4,4-diphenylmethane diisocyanate, m-xylylene diisocyanate and 1,6-hexamethylene diisocyanate,

iii. the weight ratio of the total weight of A^1 to B is in the range of from about 1:4 to 4:1,

(iv) a is an integer from 1 to 4; b is an integer from 1 to 4; *c* is an integer from 0 to 4; $2 \leqq (a+b)w + c \leqq 20$,

2. 0 to about 120 parts by weight of at least one polymerizable ethylenically unsaturated monomeric compound; and

3. a photopolymerization initiator in an amont of about 0.001 to 10 eight percent of the total weight of the prepolymer (1) and the polymerizable ethylenically unsaturated monomeric compound (2).

3,960,573

NOVEL PRECIOUS METAL SENSITIZING SOLUTIONS

Rudolph J. Zeblisky, Hauppauge, N.Y., assignor to Photocircuits Division of Kollmorgan Corporation, Glen Cove, N.Y.

Continuation of Ser. No. 278,429, Aug. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 9,060, Feb. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 801,167, Feb. 20, 1969, Pat. No. 3,672,938, which is a continuation-in-part of Ser. No. 712,575, March 12, 1968, abandoned, which is a continuation of Ser. No. 551,249, May 19, 1966, abandoned, which is a continuation of Ser. No. 285,889, June 6, 1963, abandoned, which is a continuation of Ser. No. 53,352, Sept. 1, 1960, abandoned. This application Dec. 11, 1974, Ser. No. 531,724

Int. Cl.² C23C *3/02*

U.S. Cl. 106—1 **16 Claims**

1. An acidic aqueous solution for the sensitization of conductive and non-conductive surfaces to the reception of adherent electroless metal which comprises from about 0.01 grams to about 5.0 grams per liter of precious metal ions; an excess of a stoichiometric amount of an ion of a Group IV metal which is capable of two valence states; and a stabilizing amount, at least sufficient to prevent separation from said solution of said precious metal as a metallic film or precipitate, of a Lewis Base selected from the group consisting of hydroxylamine, ammonia and aniline.

3,960,574

DETERGENT RESISTANT AUTO POLISH

Kenneth M. Lee, Bay City, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 13, 1974, Ser. No. 469,255

Int. Cl.² C09G *1/08, 1/02*

U.S. Cl. 106—3 **12 Claims**

1. In a polish formulation containing as components thereof a wax and/or an abrasive and optionally at least one member selected from the group consisting of solvents, surfactants, thickening agents, dyes, odorants, and other ingredients normally used in making polishes, the improvement which consists of incorporating therein 1 to 10% by weight of a carboxyfunctional siloxane composed of from 0.1 to 50 mole percent of $R_aR'_bSiO_{(4-a-b/2)}$ units and from 50 to 99.9 mole percent of $R''_cSiO_{(4-c/2)}$ units wherein

R is a carboxyfunctional radical attached to the silicon atom via a silicon-to-carbon bond,

a has an average value from 1 to 3.

R′ is a hydrocarbon or halogenated hydrocarbon radical containing from 1 to 18 carbon atoms,

b has an average value from 0 to 2, the sum of $a + b$ is from 1 to 3,

R″ is a hydrocarbon or halogenated hydrocarbon radical containing from 1 to 18 carbon atoms, and

c has an average value from 0 to 3.

3,960,575

DETERGENT RESISTANT POLISH COMPOSITIONS

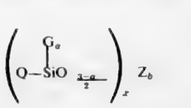
Eugene Ray Martin, Onsted, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Filed Nov. 11, 1974, Ser. No. 522,661

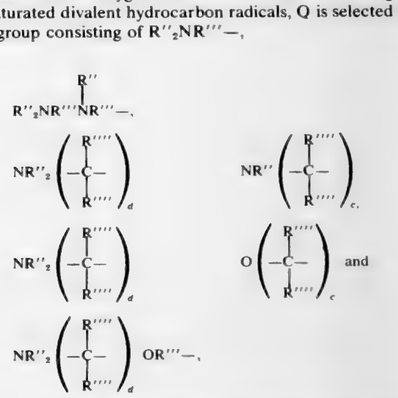
Int. Cl.² C09G *1/08*

U.S. Cl. 106—10 **11 Claims**

1. In a polish composition comprising wax and a dispersing vehicle, the improvement which comprises incorporating therein at least 1 percent by weight of an aminofunctional silicon fluid, said aminofunctional silicon fluid is prepared by equilibrating at a temperature of from 25° C. to 200° C. a cyclic organopolysiloxane in which the organo groups are selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals having up to 18 carbon atoms and an aminofunctional silicon compound represented by the formula



wherein G is selected from the group consisting of R, OR″, $OSiR_3$ and OR‴NR''_2 in which R is selected from the group consisting of movalent hydrocarbon radicals having from 1 to 18 carbon atoms and halogenated monovalent hydrocarbon radicals, R″ is selected from the group consisting of hydrogen and monovalent hydrocarbon radicals having from 1 to 18 carbon atoms, R‴ is selected from the group consisting of divalent hydrocarbon radicals, divalent hydrocarbonoxy radicals in which the oxygen is in the form of an ether linkage and unsaturated divalent hydrocarbon radicals, Q is selected from the group consisting of R''_2NR'''—,



R⁗ is selected from the group consisting of R and hydrogen, Z is selected from the class consisting of $R''O_{0.5}$, $R_3SiO_{0.5}$ and $R''NR'''O_{0.5}$, *a* is a number of from 0 to 2, *b* is a number of from 0 to 3, *c* is a number of from 1 to 10, *d* is a number of from 1 to 10 and *x* is a number of from 1 to 20,000 in the presence of a basic catalyst.

3,960,576

SILICATE-BASED CORROSION INHIBITOR

David A. Carter, Warminster, and Frederick G. Vogt, Philadelphia, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed June 25, 1973, Ser. No. 372,878

Int. Cl.² C09D *5/08;* **C02B** *5/00;* **C23F** *11/16*

U.S. Cl. 106—14 **19 Claims**

1. A composition of matter which is useful for inhibiting corrosion of the metal surfaces exposed to an aqueous system and preventing the deposition of scale thereon, consisting essentially of in parts by weight: 5 to 1,500 parts of a water-soluble alkaline oxide silicate having a ratio of SiO_2 to the alkaline oxide of from 1 to 3.5; 0.1 to 500 parts of an organic phosphonate as PO_3 wherein the organo-phosphonate has a carbon to phosphorus bond as in the formula



where M is a water soluble cation or hydrogen; and 1 to 750 parts of a carboxy methyl cellulose.

3,960,577

DENSE POLYCRYSTALLINE SILICON CARBIDE

Svante Prochazka, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 8, 1974, Ser. No. 431,611

Int. Cl.² C04B *35/56, 35/58*

U.S. Cl. 106—44 **3 Claims**

1. A dense hot pressed electrically conducting silicon carbide ceramic body consisting essentially of silicon carbide, a boron additive selected from the group consisting of boron and boron carbide wherein the amount of the boron additive is equivalent to 0.3–3.0% by weight of boron, and sufficient nitrogen atoms accommodated in the lattice of said silicon carbide making said body electrically conducting with a room temperature resistivity ranging up to about 50 ohm centimeters, said boron additive being in solid solution with the silicon carbide, said ceramic body consisting of a fine grained substantially uniform microstructure, being substantially pore free, and having a density of at least 98% of the theoretical density for silicon carbide.

3,960,578

ARSENIC PENTOXIDE GLASSES

Georg Krolla, Mainz-Mombach, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Filed Jan. 19, 1973, Ser. No. 324,992

Claims priority, application Germany, Jan. 20, 1972, 2202652

Int. Cl.² C03C *3/12, 3/18, 3/30*

U.S. Cl. 106—47 Q **25 Claims**

1. In an optical glass formed from a mixture of 8–60 wt. % arsenic pentoxide and correspondingly 92–40 wt. % of one or more simple or complex inorganic polyvalent metal fluorides, said mixture having a melting temperature of not more than 1,000°C., the improvement in said glass which comprises a partial exchange in said mixture of at least 0.5 wt. % of at least one member selected from the group consisting of

a. 0.5–6 wt. % of LiBr, NaBr, KBr, RbBr, CsBr and/or 1–12 wt. % of a rare earth bromide,

b. a chloride of an alkali metal, an alkaline earth metal, In, Pb, Bi, Zn, Cd, Y, a lanthanide, Nb, Ta, Zr or Th, the proportion of alkali metal chloride being up to 8 wt. %,

c. sulfate of an alkaline earth metal, alkali metal, Zn, Cd, Al, In, La, a lanthanide, Pb or Tl, and

d. an oxide of a polyvalent metal selected from the group consisting of In, Ga, B, Pb, Bi, W, Te, Tl, Cd and mixtures thereof,

provided that the metal oxide content of said glass is greater than 7.5 wt. % when the glass contains no bromide, chloride or sulfate, and the partial exchange being such that the bromide and chloride are exchanged for the polyvalent metal fluoride, the maximum amount of bromide being 12 wt. % and the maximum amount of chloride being 55 wt. %; and the sulfate and the polyvalent metal oxide are exchanged for the arsenic pentoxide, the maximum amount of sulfate being 9 wt. % and the maximum amount of polyvalent metal oxide being 25 wt. %, the sum of the arsenic pentoxide, polyvalent metal oxide, sulfate and bromide in the glass being 12–60 wt %, and that the partial

exchange is such that the maximum melting temperature of 1,000°C. is not exceeded, whereby said partial exchange results in a reduction of the devitrification tendency and in a flattening of the temperature viscosity curve of said glass.

3,960,579

TITANIUM DIOXIDE CONTAINING GLASSES HAVING A HIGH INDEX OF REFRACTION AND A HIGH DISPERSION AND PROCESS OF PRODUCING SAME

Heinz Broemer, Hermannstein; Norbert Meinert, and Johann Spincic, both of Wetzlar, all of Germany, assignors to Ernst Leitz GmbH, Optische Werke, Wetzlar, Germany

Continuation of Ser. No. 308,696, Nov. 22, 1972, abandoned. This application Apr. 9, 1975, Ser. No. 566,306

Claims priority, application Germany, Dec. 13, 1971, 2161701

Int. Cl.² C03C *3/04, 3/08, 3/10, 3/30*

U.S. Cl. 106—52 **6 Claims**

1. An optical glass having an index of refraction n_e between 1.7784 and 1.8753 and an Abbe number ν_e between 25.8 and 30.8, said glass consisting essentially of:

between about 5 and 9.9%, by weight, of silicon dioxide SiO_2;

between about 30 and 50%, by weight, of barium oxide BaO;

between about 18 and 24%, by weight, of aluminum oxide Al_2O_3; and

between about 21 and 30%, by weight, of titanium dioxide TiO_2.

3,960,580

MAGNESIUM PHOSPHATE CONCRETE COMPOSITIONS

Robert F. Stierli, Lexington; Clayton C. Tarver, Everett, both of Mass., and James M. Gaidis, Columbia, Md., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Nov. 21, 1974, Ser. No. 525,687

Int. Cl.² C04B *9/04, 35/04*

U.S. Cl. 106—58 **20 Claims**

1. A dry, quick setting cementitious composition capable of setting to a hardened mass in less than one-half hour at 70°F following the addition of water alone thereto, and containing magnesium oxide and from about 25 to about 200 weight % based on said oxide of a dry, solid monoammonium phosphate component reactive therewith as the essential binding components, and, as a retarder of the normal quick-setting time of the composition, from about 0.1 to about 20 percent by weight, based on the said binding components, of an oxyboron compound selected from the group consisting of oxyacids of boron, salts or esters thereof, or mixtures of such.

3,960,581

PROCESS FOR PRODUCING A SOLID SOLUTION OF ALUMINUM OXIDE IN SILICON NITRIDE

Ivan B. Cutler, Salt Lake City, Utah, assignor to The University of Utah, Salt Lake City, Utah

Filed Apr. 29, 1974, Ser. No. 465,222

Int. Cl.² C04D *35/58*

U.S. Cl. 106—65 **4 Claims**

1. A method of producing a refractory material consisting essentially of a solid solution of aluminum oxide in silicon nitride, the composition by weight percent being 15% to 70% aluminum oxide and 85% to 30% silicon nitride, the method comprising the steps of:

obtaining silicon dioxide and aluminum oxide reactants selected from the group consisting of:

clay having a composition by weight percent of 40% to 20% aluminum oxide and 46% to 70% silicon dioxide;

a coked mixture of rice hulls and an aluminum source, the aluminum source being selected from the group consisting of clays formed by the geologic decomposition of aluminum compounds, oxides and salts of aluminum and aluminum metal, the concentration of aluminum not exceeding 20% by weight; and

a precipitate having a composition by weight percent of 10% to 65% aluminum oxide and 35% to 90% silicon dioxide; placing the reactants in an enclosure; and

heating the reactants to a temperature within the range on the order of about 1200°C to 1600°C in the presence of carbon and nitrogen until a solid solution of aluminum oxide in silicon nitride is produced.

3,960,582

LOW POROSITY CEMENT AND PROCESS FOR PRODUCING SAME

Frank J. Ball, Charleston; David V. Braddon, Charleston Heights, and Lynden J. Stryker, Mount Pleasant, all of S.C., assignors to Westvaco Corporation, New York, N.Y.

Filed Apr. 21, 1975, Ser. No. 569,986

Int. Cl.² C04B *7/35*

U.S. Cl. 106—90 **11 Claims**

1. A method of making a free-flowing cement paste which comprises;

a. combining ground hydraulic cement without gypsum with from 0.1 to about 1.5% of alkali or alkaline earth lignosulfonate or sulfonated lignin and from 0.1 to about 2.0% of an alkali bicarbonate, and

b. mixing the combined materials from (a) with 20 to 40% of water, all percentages based on the dry weight of ground cement.

3,960,583

METHOD OF PREPARING MODIFIED HOLLOW, LARGELY SPHERICAL PARTICLES BY SPRAY DRYING

David I. Netting, Springfield, Pa., and Elliot P. Hertzenberg, Wilmington, Del., assignors to Philadelphia Quartz Company, Valley Forge, Pa.

Filed May 2, 1974, Ser. No. 466,326

Int. Cl.² C08J *9/16*

U.S. Cl. 106—122 **23 Claims**

1. The process for producing hollow spherical products of 1 to 500 microns with particulate matter imbedded in the walls, comprising the steps of;

a. forming a solution of 5 to 50% film-forming substance consisting of sodium silicate and a polysalt selected from the group consisting of ammonium pentaborate, sodium pentaborate and sodium hexametaphosphate and 50 to 95% water, wherein the ratio of polysalt to silicate solids is between 0.02:1 and 3:1;

b. introducing into said solution a particulate matter having a particle size of 0.05 to 10 microns which is substantially unreactive and insoluble in the solution;

c. agitating said solution and particulate matter to produce a homogeneous suspension-solution, the amount of said particulate solids being sufficient to provide 0.5 to 75% of the solids contained in said suspension-solution;

d. spray drying the suspension-solution at an inlet temperature of 200° to 500°C and an outlet temperature of 100° to 300°C;

e. collecting the product having a true particle density of 20 to 200 lbs/ft³.

3,960,584

WATER-DISPERSIBLE, HIGH MOLECULAR WEIGHT POLYMER COMPOSITIONS

Albert B. Savage, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 2, 1973, Ser. No. 328,952

Int. Cl.² C08L *1/26*

U.S. Cl. 106—178 **21 Claims**

1. A composition of matter comprising a finely divided, water-soluble cellulose ether, hereinafter polymeric material, of about 50,000 to about 10,000,000 average molecular weight, of a particle size predominantly larger than about 0.06

millimeter and less than about 1.7 millimeter, in intimate mixture with components A, B, C and D, the combined weight of said components being from a small effective amount to about 10% of the weight of the polymeric material, wherein:

Component A is a water-soluble polyol selected from the group consisting of lower aliphatic polyols of less than about 200 average molecular weight and lower polyalkylene glycols of from about 400 to about 9,000 average molecular weight, added in an amount of about 2% to about 8% of the weight of the polymeric material;

Component B is a surface-active agent of from about 15 to about 40 HLB, added in an amount of about 0.1% to about 2% of the weight of the polymeric material, and is selected from the group consisting of:

a. potassium and sodium salt of fatty acids,

b. potassium and sodium salts of aryl- and alkaryl-carboxylic acids,

c. potassium and sodium sulfonates of fatty acids and of fatty acid higher esters,

d. potassium and sodium salts of aryl- and alkaryl-sulfonates and -disulfonates,

e. potassium and sodium salts of higher alkanol and hydroxyalkaryl sulfates, and

f. potassium and sodium salts of carboxylic acid substituted quaternary amines;

Component C is a surface-active agent of about 15 to about 18 HLB, added in an amount of about 0.1% to about 2% of the weight of the polymeric material, and is selected from the group consisting of lower oxyalkylene ethers and polyesters of aliphatic polyols and polyol anhydrides and has an average molecular weight of about 200 to about 6,000;

Component D is a nonionic surface-active agent of less than about 10 HLB, added in an amount of about 0.1% to about 2% of the weight of the polymeric material;

provided that when the polymeric material is composed of more than about 90% of a material which hydrates with rapidity about equal to or less than that of polyacrylamide, then components C and D or either of them may be omitted and when so omitted said composition consists essentially of said water-soluble cellulose ether, Component A and Component B.

3,960,585

REDUCING H_2S-EMISSION FROM HOT CAST SULFUR-ASPHALT MIXTURES

William Gaw, Burlington, Canada, assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 4, 1974, Ser. No. 529,429

Claims priority, application United Kingdom, Dec. 17, 1973, 58278/73

Int. Cl.² C08L *95/00;* **E01C** *7/00*

U.S. Cl. 106—274 **17 Claims**

1. In the process for casting sulfur-asphalt compositions by mixing and/or heating mixtures comprising sulfur and asphalt in a weight ratio of at least 1:1 sulfur to asphalt, said mixing and/or heating being carried out at elevated temperatures not exceeding 175°C, the improvement which comprises: carrying out the mixing and/or heating step in the presence of a hydrogen sulfide suppressant selected from the class consisting of free radical inhibitors, redox catalysts and mixtures thereof.



3,960,586

AMORPHOUS PRECIPITATED SILICEOUS PIGMENTS AND IMPROVED PROCESS FOR PRODUCING SUCH PIGMENTS

Satish K. Wason, Havre de Grace, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Oct. 3, 1973, Ser. No. 402,928

The portion of the term of this patent subsequent to July 8, 1992, has been disclaimed.

Int. Cl.² C09C *1/28*

U.S. Cl. 106—288 B **2 Claims**

1. A method for producing amorphous, precipitated silicic acid pigments having a surface area of from 30 m^2/g to 340 m^2/g and improved chemical and physical properties including low structure, a wet cake moisture less than 75%, high abrasiveness with a valley abrasion wire loss of from 10 mg to 168 mg, high pack density in excess of 25 pounds per cubic foot, low oil absorption less than 110 cc/100 g and high cleaning action when employed in dentifrice compositions, said method comprising the steps of: providing an aqueous reaction medium containing an electrolyte comprising a salt selected from the group consisting of the sodium, potassium or lithium salts of an acid selected from the group consisting of sulfuric, nitric or hydrochloric acid, said electrolyte being present in said aqueous reaction medium in an amount in the range of from 3 to 15% by weight based on the weight of the said reaction medium; adjusting the pH of the said aqueous medium to a predetermined value in the range of from 8.0 to 10.4 and equal to that pH at which the said pigment is to be precipitated; simultaneously introducing an acidic solution and a solution of an alkali metal silicate into said aqueous reaction, said acidic solution comprising from 10 to 25% by weight based on the total weight of the said acidic solution of an acid selected from the group consisting of sulfuric acid, nitric acid and hydrochloric acid, said solution comprising a pre-polymerized alkali metal silicate having a concentration in the range of from 1.0 to 2.5 pounds per gallon of an alkali metal silicate and an SiO_2/X_2O mol ratio in the range of from about 2.0 to 3.3 wherein X is selected from the group consisting of sodium, potassium, and lithium and wherein said alkali metal silicate is selected from the group consisting of sodium silicate, potassium silicate, and lithium silicate; continuing the addition of the said acid and the said silicate to the said aqueous reaction medium in a manner such that a substantially constant pH in the range of from 8 to 10.4 is maintained and such that a substantially constant temperature in the range of from 150° to 180°F is maintained and until the precipitation of said pigment is substantially complete; adjusting the pH to provide a slurry pH of from 5.4 to 6.5; digesting the reaction

slurry at a temperature in the range of from 170° to 203°F for a period of time on the order of about 20 minutes; filtering said slurry to recover the precipitated pigment from the aqueous reaction medium, washing said pigment substantially free of salts an drying said pigment for subsequent milling and incorporation in dentifrice compositions.

3,960,587

PHTHALOCYANINES, COMPOSITIONS DERIVED THEREFROM AND PROCESSES FOR THEIR PREPARATION

Michel Ernest Antoine Huille, Creil, and Louis Antoine Cabut, Nogent-sur-Oise, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

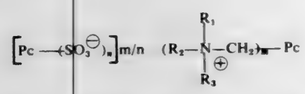
Filed Feb. 19, 1974, Ser. No. 443,600

Claims priority, application France, Feb. 21, 1973, 73.06040

Int. Cl.² C08K *5/34*

U.S. Cl. 106—288 Q **11 Claims**

1. Mixture of phthalocyanine pigments which comprises a phthalocyanine pigment unstable to flocculation or sedimentation and 1% to 20% of at least one compound of the formula:



(II)

in which Pc represents the residue of a phthalocyanine, R_1 represents an alkyl group of low molecular weight or a cycloalkyl group, R_2 represents a hydrogen atom, an alkyl group of low molecular weight or a cycloalkyl group, R_3 represents a hydrogen atom or an alkyl group of low molecular weight, R_1 and R_2 or R_1, R_2 and R_3 may also form a heterocyclic residue with the nitrogen atom and *m* and *n* each represent a whole or fractional number from 1 to 4.

3,960,588

REINFORCING PIGMENTS

Thomas D. Thompson, Flemington, and Robert W. Bradshaw, Hillsborough, both of N.J., assignors to Yara Engineering Corporation, Elizabeth, N.J.

Filed Nov. 11, 1974, Ser. No. 522,522

Int. Cl.² C08K *9/06*; **C04B** *33/13*

U.S. Cl. 106—288 Q **2 Claims**

1. A white reinforcing pigment for elastomers comprising kaolin containing an organic acid having a functional group selected from the group consisting of $-NH_2$, $-SO_3H$ and -SH.

3,960,589

STABILIZED PIGMENT AND METHOD FOR PRODUCING THE SAME

Stanley Roy Morrison, Los Altos, Calif., and Thomas Freund, Rochester, N.Y., assignors to Stanford Research Institute, Menlo Park, Calif.

Continuation-in-part of Ser. No. 323,523, Jan. 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 82,539, Oct. 20, 1970, abandoned. This application May 27, 1975, Ser. No. 580,894

Claims priority, application Italy, Oct. 13, 1971, 29833/71

Int. Cl.² C09C *1/00, 1/04, 1/36*

U.S. Cl. 106—296 **8 Claims**

1. An inorganic pigment which produces electrons and holes upon exposure to ultraviolet radiation and which is coated with a chemical species in two stable oxidation states which differ from each other by one equivalent, one of said states being capable of capturing said holes and the other of said states being capable of capturing said electrons, said chemical species being present in amounts effective to stabilize the pigment against change in color or exposure to ultraviolet light.

3,960,590

MODIFIED CHROMIUM OXIDE PIGMENT

Birger Knickel, Meerbusch-Lank; Siegfried Keifer, Krefeld; Hermann Perrey, Krefeld; Hans Rudolph, Krefeld; Hans Jurgen Rosenkranz, Krefeld, and Reinhold Rudisch, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

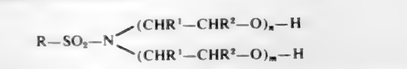
Filed Nov. 14, 1974, Ser. No. 523,879

Claims priority, application Germany, Nov. 21, 1973, 2358016

Int. Cl.² C09C *1/34*

U.S. Cl. 106—302 **5 Claims**

1. A modified chromium oxide pigment comprising chromium oxide pigment intimately admixed with 0.01 to 30% by weight, based on said pure chromium oxide pigment, of a compound of the formula



wherein R is straight or branched chain alkyl 8 to 30 carbon atoms; said alkyl substituted by fluorine, chlorine or bromine, alkaryl having up to 30 carbon atoms or phenyl; R^1 and R^2 are each, independently of the other, hydrogen, methyl, chloromethyl, ethyl or phenyl; n is a number from 1 to 100 and m is a number between 0 and 100.

3,960,591

PROCESS FOR THE PREPARATION OF PIGMENT COMPOSITIONS FOR THE DOPE DYEING OF POLYACRYLONITRILE

Reinhold Deubel, Altenhain, Taunus; Volker Hemmerling, Kelkheim, Taunus; Werner Reitz, Frankfurt am Main, and Wolfgang Teige, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 292,416, Sept. 26, 1972, abandoned. This application Feb. 13, 1974, Ser. No. 441,936

Claims priority, application Germany, Sept. 28, 1971, 2148347

Int. Cl.² C09C *3/10*

U.S. Cl. 106—308 M **2 Claims**

1. A process for the preparation or formation of pigment compositions consisting of 20 to 80% of a pigment and 80 to 20% of a polyacrylonitrile polymer or copolymer wherein a suspension of solid polymer or copolymer in water is added to an aqueous mixture containing a pigment, said mixture having been formed in the process of preparing or forming said pigment, prior to any recovery of the pigment from said aqueous mixture; and thereafter the preparation or formation of the pigment is completed.

3,960,592

PHOSPHATES

James Derek Birchall, and John Edward Cassidy, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 274,964, July 25, 1972, Pat. No. 3,870,737, which is a continuation of Ser. No. 42,499, June 1, 1970, abandoned. This application Oct. 21, 1974, Ser. No. 517,236

Claims priority, application United Kingdom, June 12, 1969, 29862/69

The portion of the term of this patent subsequent to Apr. 30, 1991, has been disclaimed.

Int. Cl.² C09C *3/10*

U.S. Cl. 106—308 Q **8 Claims**

1. A composition suitable for use as a coating composition comprising a halogen-containing complex phosphate of aluminium other than a phosphate ester dissolved in an organic solvent, in which the complex contains at least one chemically-bound molecule of an alcohol containing from one to 10 carbon atoms and in which the complex has been prepared by interacting an aluminium compound selected from the group consisting essentially of aluminium halides, aluminium oxyhalides, aluminium alkoxyhalides and aluminium alkoxides with an alcohol containing one to 10 carbon atoms and with phosphoric acid, and when the aluminium compound is an alkoxide, with a halogen acid.

3,960,593

METHOD OF INCREASING THE LONG-TERM STABILITY OF A MEASURING ELEMENT OF TEXTILE TESTERS

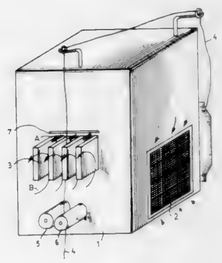
Eduard Heusser, Uster, Switzerland, assignor to Zellweger, Ltd., Switzerland

Filed Sept. 23, 1974, Ser. No. 508,624

Claims priority, application Switzerland, Sept. 26, 1973, 13805/73

Int. Cl.² B08B *5/00*

U.S. Cl. 134—37 **5 Claims**



1. A method of increasing the long-term stability of a measuring element for a textile testing apparatus, said measuring element having a plurality of parallel plate-like components arranged outside of a housing which form at least one passage between adjacent components, which comprises forming a secondary air convection which maintains constant ambient conditions in the vicinity of the measuring element by causing an artificial airstream to sweep over the top of the measuring element, said airstream promoting said secondary air convection in the form of eddy currents within said passage.

3,960,594

PRIMARY OR SECONDARY ELECTROCHEMICAL CELL

Heinz Peter Fritz, Munich, and Jürgen Besenhard, Neusaess, both of Germany, assignors to Rheinisch-Westfalisches Elektrizitatswerk Aktiengesellschaft, Essen, Germany

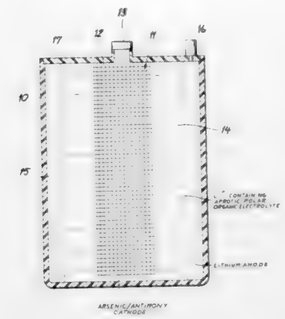
Filed Nov. 5, 1973, Ser. No. 412,678

Claims priority, application Germany, Nov. 9, 1972, 2254870

Int. Cl.² H01M *10/00*

U.S. Cl. 136—6 LN **5 Claims**

1. An electrochemical cell comprising a first electrode consisting at least in major part of lithium; a nonaqueous aprotic polar organic-solvent electrolyte containing ions of dissolved lithium in contact with said first electrode; and a solid second electrode in contact with said electrolyte and consisting at least in major part of arsenic or antimony electrochemically reacting with lithium to form a lithium-arsenic or lithium-antimony intermetallic compound upon cathodic liberation of lithium.



3,960,595

ELECTROCHEMICAL GENERATOR

Gerard Lehmann, Liguge, and Therese Rassinoux, Neuville-de-Poitue, both of France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Roumainville, France

Continuation of Ser. No. 328,029, Jan. 30, 1973, abandoned. This application Sept. 19, 1974, Ser. No. 507,573

Claims priority, application France, Jan. 31, 1972, 72.03141; Mar. 23, 1972, 72.10278; Oct. 30, 1972, 72.38413

Int. Cl.² H01M *43/06*

U.S. Cl. 136—6 LN **18 Claims**

1. Electrochemical cell with a negative electrode, the active material of which is lithium, with a positive electrode, the active material of which is selected from the group consisting of copper oxide and monovalent silver chromate and with an electrolyte in said cell comprising a solute and at least one solvent consisting of an ether selected from the group consisting of 1-3 dioxane, dioxolane and propylene oxide.

3,960,596

BATTERY CASING AND HERMETICALLY SEALED SODIUM-SULFUR BATTERY

Stephan P. Mitoff, Elnora; Robert W. Powers, and Manfred W. Breiter, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

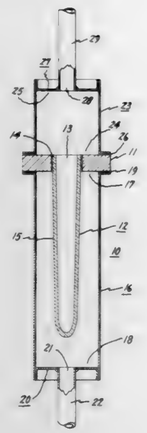
Filed Mar. 4, 1974, Ser. No. 447,850

Int. Cl.² H01M *1/02*

U.S. Cl. 136—6 FS **5 Claims**

1. A battery casing comprising a ceramic ring, an inner casing of a solid sodium ion-conductive material with one open end, a glass seal sealing a portion of the outer wall of the inner casing adjacent its open end within and to the ceramic ring, a first outer metallic casing with opposite open ends and a flange at one open end, the first outer metallic casing surrounding the inner casing and spaced therefrom, the flange of the first outer metallic casing adjacent the ceramic ring, a glass seal sealing the flange of the first outer metallic casing to one surface of the ceramic ring, the first outer metallic casing and the inner casing defining a completely open chamber between the exterior surface of the inner casing and the interior surface of the outer casing, a removable metallic closed end for the opposite open end of the first outer casing, a second outer metallic casing with opposite open ends and a flange at one open end positioned with the flange adjacent the ceramic ring whereby the second outer metallic casing is spaced from and extends in an opposite direction to the first

outer metallic casing portion, a glass seal sealing the flange of the second outer metallic casing to the opposite surface of the



ceramic ring, and a second removable metallic closed end for the opposite open end of the second outer metallic casing.

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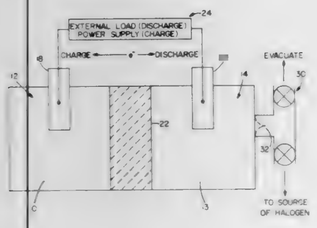
METHOD FOR FABRICATING ELECTROCHEMICAL CELLS

John Werth, Princeton, N.J.; Dell A. Crouch, Langhorne, Pa., and Jack C. Sklarchuk, Trenton, N.J., assignors to ESB Incorporated, Philadelphia, Pa.

Filed June 9, 1975, Ser. No. 585,022

Int. Cl.² H01M *10/00*

U.S. Cl. 136—6 FS **11 Claims**



1. A method for fabricating a high-temperature secondary cell in which the electrolyte, the positive reactant or the negative reactant thereof is capable of reacting with moisture or oxygen contained in the atmosphere comprising the steps of:

A. preparing a first mixture comprising carbon, aluminum metal powder and an alkali metal halide;

B. reacting a halogen with the mixture of step (A) while simultaneously heating the mixture of step (A) to cause an aluminum halide to be formed which will in turn react with the alkali metal halide in the first mixture of step (A) to form an alkali metal haloaluminate;

C. adding aluminum metal powder and one or more materials which will form the positive reactant of the cell to the resulting product of step (B) to form a second mixture, said one or more materials consisting essentially of a material selected from the group consisting of metals at least as noble as aluminum, metal-like elements, sulfur and mixtures thereof;

D. providing a cell container having positive and negative reactant compartments, a solid member separating the cell compartments which is selectively-ionically conductive with respect to cations of the negative reactant material of the cell, and current collectors for each cell compartment;

E. providing an electrical contact between the solid member and the current collector in the negative reactant compartment;

F. while maintaining the cell at its operating temperture, electrically charging the second mixture of step (C) in the positive reactant compartment of the cell container whereby the negative reactant of the cell comprising a molten alkali metal is provided in the negative reactant compartment of the cell container and a positive reactant-electrolyte melt is provided in the positive reactant compartment of the cell container.

3,960,598

FILTER PRESS-TYPE FUEL CELL BATTERY

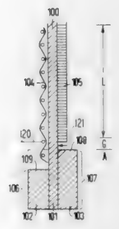
Hans Kohlmüller, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 21, 1974, Ser. No. 453,396

Claims priority, application Germany, Mar. 30, 1973, 2316067

Int. Cl.² H01M *8/02*

U.S. Cl. 136—86 R **7 Claims**



1. In a fuel cell battery of the filter press type which uses a liquid electrolyte and at least one gaseous reactant comprising:

a. a plurality of individual fuel cells each having:

1. a gas chamber containing an electrode;
2. an electrolyte chamber containing at least one of a support frame and a support frame and an electrode;
3. an asbestos diaphragm separating said gas chamber and electrolyte chamber;
4. separator sheets separating individual fuel cells from each other;
5. each asbestos diaphragm having electrolyte impermeable gas-tight outer zones of increased thickness, which outer zones are compressed and contain supply ducts therein for supplying materials to the gas and electrolyte chambers, both said electrodes and support frames extending in all directions substantially to meet said impermeable gas-tight outer zones of increased thickness, the improvement comprising:

b. the part of the outer zone of increased thickness on the electrolyte side of the asbestos diaphragm having a width smaller than the part of the outer zone of increased thickness on the gas side and at least one of a support frame and an electrode in the electrolyte chamber extending beyond the inner edge of the part of the outer zone of increased thickness of the gas side.

3,960,599

BUTTON TYPE CELL AND BATTERY

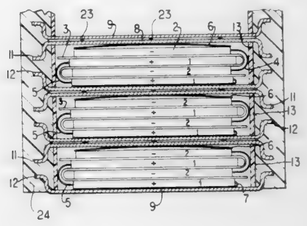
Jacques Reynier, Eymet, and Michel Guglier, Bassens, both of France, assignors to SAFT-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Continuation of Ser. No. 386,438, Aug. 7, 1973, abandoned. This application Feb. 6, 1975, Ser. No. 547,443

Claims priority, application France, Aug. 10, 1972, 72.28941

Int. Cl.² H01M *31/00*

U.S. Cl. 136—111 **6 Claims**



1. A method of manufacturing an electrochemical cell comprising providing a stack of alternately disposed positive plates and negative plates separated by separator sheets, surrounding said stack by an insulative ring, electrically linking the endmost plates of opposite polarity to a pair of collectors disposed respectively at each end of the stack, impregnating the said stack with an electrolyte and then molding an electrically insulative plastic material in form of a frame around and over the peripheral rims of the collectors, said ring limiting the penetration of the said material during molding to prevent it from reaching said stack.

3,960,600

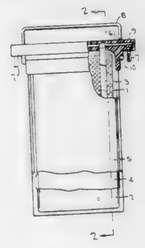
ANODE CONSTRUCTION

Stewart M. Chodosh, Lake Success, N.Y., assignor to Leesona Corporation, Warwick, R.I.

Continuation-in-part of Ser. No. 627,194, March 30, 1967, abandoned. This application Mar. 9, 1971, Ser. No. 122,489

Int. Cl.² H01M *3/00*

U.S. Cl. 136—120 R **10 Claims**



1. An anode for an electrochemical cell comprising a porous anodic metal body wrapped in first and second layers of different and distinct materials, said first layer being gas-impermeable when in contact with an aqueous electrolyte, hydrophilic, and ion-permeable; and said second layer being gas-permeable when in contact with an aqueous electrolyte, hydrophilic, dimensionally stable, and heat sealable.

3,960,601

FUEL CELL ELECTRODE

David Arthur Schulz, Fairview Park, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 27, 1974, Ser. No. 509,970

Int. Cl.² H01M *4/06, 4/08*

U.S. Cl. 136—120 FC **28 Claims**

1. In a thin web of non-woven carbon fibers suitable for use as a substrate in fuel cell electrodes, the improvement wherein the web is impregnated with from 0.05 kg. to 0.5 kg. of a fused hydrophobic resin per square meter of web, which resin serves to increase the structural integrity and hydrophobicity of the web, and the web has been produced by spinning carbonaceous pitch fiber having a mesophase content of from 40 percent by weight to 90 percent by weight from a nonthixotropic carbonaceous pitch having a mesophase content of from 40 percent by weight to 90 percent by weight and which, under quiescent conditions, forms a homogeneous bulk mesophase having large coalesced domains, disposing staple lengths of the spun fiber in intimately contacting relationship with each other in a non-woven fibrous web, heating the web produced in this manner in an oxidizing atmosphere to thermoset the fibers to an extent which will allow the fibers to maintain their shape upon heating to more elevated tepmperatures, and further heating the web containing the thermoset fibers to a carbonizing temperature in an oxygen-free atmosphere so as to expel hydrogen and other volatiles.

3,960,602

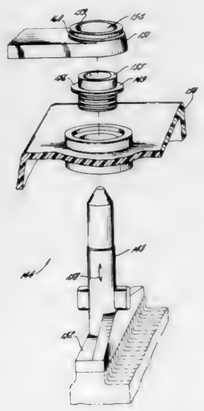
INTERCELL CONNECTOR ASSEMBLY FOR POSITIVE DISPLACEMENT CASTING SYSTEM

Raymond L. Schenk, Jr., Doylestown, Pa.; John A. Bruzas, Trenton, N.J., and William E. Coville, Morrisville, Pa., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Jan. 21, 1974, Ser. No. 435,182

Int. Cl.² H01M *2/26*

U.S. Cl. 136—134 R **1 Claim**



1. An improved intercell connector assembly comprising, in combination, an intercell connector having a vertically disposed opening formed in each end thereof and an upstanding annular collar formed on each end of said connector in coaxial surrounding relation to each of said openings, an annular cover bushing having an outwardly projecting radial flange and an upwardly extending cylindrical flange, and upstanding battery post passing coaxially through said bushing and projecting vertically above the upper end of said cylindrical flange, said intercell connector being seated on said radial flange with one of the openings formed therein being coaxial with said upwardly extending cylindrical flange and said post and defining an annular cavity between said post and said

coaxial annular collar, said annular collar projecting upwardly above the level of said cylindrical flange and terminating below the upper end of said post for forming a dam to initially confine the molten lead upon melting of the upper end of said post, the inner peripheral surface of said annular collar and upper end of said cylindrical flange whereby the molten material formed will completely fill said annular cavity between said post and said connector at the upper end of said cylindrical flange to a level substantially equal to the upper surface of said annular collar.

3,960,603

ALKALINE BATTERY

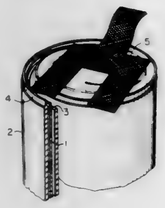
Yuji Morioka, and Shigeo Dejima, both of Sumoto, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 13, 1974, Ser. No. 532,397

Claims priority, application Japan, Apr. 15, 1974, 49-42507; Nov. 29, 1974, 49-38592

Int. Cl.² H01M *2/30*

U.S. Cl. 136—135 R **5 Claims**



1. An alkaline battery comprising an electrode assembly of a positive and a negative electrode separated by a separator, one of said electrodes having a bare conductive portion at one end of said assembly and the other electrode having a bare conductive portion at the other end of said assembly, a first current collector means having a current collector tab and a current collector welded to said positive electrode and covering substantially all of said positive electrode and a second current collector means welded to said negative electrode, said first and second current collector means each comprising a thin flexible metal plate having a plurality of non-circular holes with the longer diameter thereof aligned in the same direction and a plurality of projections formed on each said current collector means, said projections being welded to each said conductive portion with a pair of spot welding poles disposed on the outer surface of said current collector, wherein said current collector tab extends from said current collector in the same direction as the longer diameter of said holes, and wherein said projections form welded conductive points with said conductive portions of said assembly.

3,960,604

DEVICE FOR TEMPERATURE MEASUREMENTS

Friedrich Heitzinger, and Wilhelm Lechleitner, both of Reutte, Austria, assignors to Schwarzkopf Development Corporation, New York, N.Y.

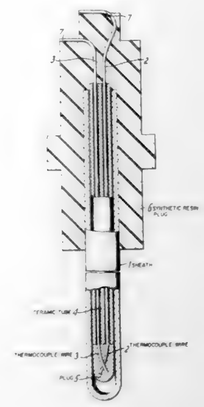
Filed Apr. 15, 1974, Ser. No. 461,211

Claims priority, application Austria, Apr. 20, 1973, 3588/73; Jan. 18, 1974, 433/74

Int. Cl.² H01L *35/10*

U.S. Cl. 136—233 **23 Claims**

1. In a thermocouple measuring device for the measurement of temperature, an improved thermocouple sensor comprising a pair of thermocouple wires formed from tungsten-rhenium or molybdenum-rhenium alloys and terminating in ends adapted for thermocouple application, and a metal mass of tungsten or molybdenum intimately contacting said terminal wire ends so as to form an electrical connection therebetween at the measuring end of the device.



3,960,605

METHOD OF IMPLANTATION OF BORON IONS UTILIZING A BORON OXIDE ION SOURCE

Siegfried Beck; Karl Brack, and Peter Gansauge, all of Boeblingen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 23, 1975, Ser. No. 543,214

Int. Cl.² H01L *21/265*

U.S. Cl. 148—1.5 **12 Claims**

1. In an ion implantation process comprising

vaporizing a material comprising boron oxide,

introducing the resulting vapor into a gas discharge ion generation source,

extracting and separating boron ions generated by said source, and

injecting said boron ions into a semiconductor substrate.

3,960,606

ALUMINUM SILICON ALLOY AND METHOD OF PREPARATION THEREOF

E. Henry Chia, and Kenneth E. Chadwick, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Mar. 12, 1975, Ser. No. 557,847

Int. Cl.² C22F *1/04*

U.S. Cl. 148—2 **8 Claims**

1. A method of preparing a heat resistant aluminum alloy electrical conductor having a minimum electrical conductivity of 61percent IACS and having evenly dispersed therein iron-aluminum-silicon intermetallic particles having a particle diameter of less than one micron when measured along the transverse axis of said particles comprising the steps of:

a. Alloying from about 0.4 to about 1.00 weight percent silicon, no more than about 0.30 **weight percent iron and the balance of aluminum containing trace elements selected from the group consisting of copper, manganese, magnesium, titanium, vanadium and zinc wherein the individual concentrations of said trace elements do not exceed** 0.05 weight percent and the total concentration of said trace elements does not exceed 0.15 weight percent;

b. Casting the alloy in a moving mold formed between a groove in the periphery of a rotating casting wheel and a metal belt adjacent to said groove for a portion of its length to form a continuous bar; and

c. Hot-rolling the continuous bar substantially immediately after casting while the continuous bar is in substantially that condition as cast to form a continuous rod.

2. The method of claim 1 further including the steps of drawing said continuous rod through a series of wire-drawing dies without intermediate anneals to form a wire; and annealing or partially annealing said wire.

3,960,607

NOVEL ALUMINUM ALLOY, CONTINUOUSLY CAST ALUMINUM ALLOY SHAPES, METHOD OF PREPARING SEMIRIGID CONTAINER STOCK THEREFROM, AND CONTAINER STOCK THUS PREPARED

Carmen C. Manzonelli, Weirton, W. Va., and Robert G. Blossey, Coraopolis, Pa., assignors to National Steel Corporation, Pittsburgh, Pa.

Filed Mar. 8, 1974, Ser. No. 449,392

Int. Cl.² C22F *1/04*

U.S. Cl. 148—2 **34 Claims**

17. A method of preparing an aluminum alloy semirigid container stock comprising the steps of continuously casting an aluminum alloy casting consisting essentially of 0.30–0.50% of copper, 0.35–0.60% of magnesium, up to 0.50% of zinc, residual silicon in an amount up to 0.40%, residual iron in an amount up to 0.70%, residual manganese in an amount up to 0.10%, residual chromium in an amount up to 0.10%, residual sodium in an amount up to 0.0006%, other residual elements in a total amount up to 0.15% and in an amount up to 0.05% for each of said other residual elements and the remainder aluminum, cold rolling the said continuously cast aluminum alloy casting in strip form having a thickness not greater than about one inch in a plurality of cold rolling passes including first and last cold rolling passes and in the absence of a homogenizing thermal treatment to a final thickness of about 0.001–0.01 inch, and annealing the said strip at least once intermediate the said first and last cold rolling passes at an annealing temperature of 600°–800°F. for a period of 1–6 hours.

3,960,608

MEMBERS HAVING A CUTTING EDGE

William L. Cole, Camberley, England, assignor to Wilkinson Sword Limited, England

Filed Aug. 2, 1973, Ser. No. 384,943

Claims priority, application United Kingdom, Aug. 5, 1972, 36646/72

Int. Cl.² C23C *13/00*; B26B *21/54*

U.S. Cl. 30—346.54 **13 Claims**

1. A ferrous member having a cutting edge with a distinct boron coating thereon, the coating being from 50 to 600 Angstroms thick.

4. A razor blade having a cutting edge, said cutting edge having a distinct boron coating thereon, the coating being from 50 to 600 Angstroms thick.

12. A method of manufacturing a ferrous member having a cutting edge which includes the step of coating the cutting edge with boron to a thickness of from 50 to 600 Angstroms.

3,960,609

PROCESS FOR HYDRIDING MAGNESIUM BASED ALLOYS

William Unsworth, Swinton, Manchester, and Gordon Arthur Fowler, Whitefield, Manchester, both of England, assignors to Magnesium Elektron Limited, Manchester, England

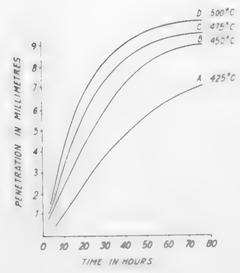
Filed Sept. 13, 1974, Ser. No. 505,539

Claims priority, application United Kingdom, Sept. 13, 1973, 43032/73

Int. Cl.² C23C *11/00*

U.S. Cl. 148—6.3 **10 Claims**

1. A process for hydriding magnesium alloys containing at least 80% by weight of magnesium, in two stages, comprising exposing the alloy at a temperature from 400°C to the solidus temperature of th alloy to a wet atmosphere of hydrogen having a dew point of at least −20°C for a period at least sufficient to effect activation of the alloy surface not exceeding 6 hours and



then exposing the so treated alloy at a temperature from 400°C to the solidus temperature of the alloy to a dry atmosphere of hydrogen having a dew point not exceeding −40°C for a period sufficient to achieve the desired degree of hydriding.

3,960,610

PROCESS FOR COATING METALS

Lester Steinbrecher, Southampton, and Wilbur S. Hall, Plymouth Meeting, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 113,685, Feb. 8, 1971, abandoned, which is a division of Ser. No. 791,801, Jan. 16, 1969, Pat. No. 3,585,084, which is a continuation-in-part of Ser. No. 554,336, June 1, 1966, abandoned, which is a continuation-in-part of Ser. No. 152,992, June 14, 1971, Pat. No. 3,776,848, which is a continuation-in-part of Ser. No. 791,801, Jan. 16, 1969. This application June 14, 1972, Ser. No. 262,833

Int. Cl.² B05D *1/18*; B32B *15/08*

U.S. Cl. 148—6.14 R **12 Claims**

1. A method for coating a metallic surface comprising applying to said surface an organic-inorganic coating by immersing said surface in a coating composition comprising an acidic aqueous solution of an oxidizing agent and solid particles of a preformed organic coating-forming polymeric resinous material dispersed throughout the composition wherein the ingredients of said composition are present in amounts such that said composition will chemically attack, in the absence of an external electrical potential, a metallic surface immersed therein to dissolve therefrom metal ions in an amount sufficient to cause said resinous material to deposit on said surface a resinous coating which increases in thickness or weight during at least a portion of the time said surface is immersed in said composition and to form on said surface an inorganic coating sandwiched between said surface and said resinous coating, thereby forming an organic-inorganic coating on said surface as set forth, withdrawing the coated surface from said composition, and thereafter applying to said coated metallic surface a coating-forming material which forms an overlying coating having functional or decorative properties, and wherein said inorganic coating is an inorganic metal oxide coating which is an oxide of the metal of the metallic surface being coated and wherein said composition is free of ingredients which form on said surface an inorganic coating other than said metal oxide coating.

3,960,611
COATING COMPOSITIONS WITH MAGNESIUM PHOSPHATE PIGMENT

Ralph Lawrence Walker, Blyth, and John Richard Stockdale, Birmingham, both of England, assignors to Albright & Wilson Limited, Oldbury, England

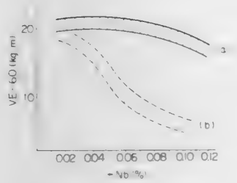
Filed Dec. 9, 1974, Ser. No. 531,201
Claims priority, application United Kingdom, Dec. 13, 1973, 57871/73; Sept. 24, 1974, 41484/74
Int. Cl.² C09D *5/08*
U.S. Cl. 148—6.15 R **13 Claims**

1. A non-liquid anti-corrosion paint composition comprising a binder and a pigment, said pigment being in a pigment volume concentration of from 20 to 30%, and said pigment containing at last 20% by weight of a magnesium phosphate.

3,960,612
METHOD FOR PRODUCING A LOW TEMPERATURE HIGH STRENGTH TOUGH STEEL

Katsuo Kaku; Hirofumi Yoshimura; Hiroshi Yada, and Naoomi Yamada, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 7, 1974, Ser. No. 495,332
Claims priority, application Japan, Aug. 15, 1973, 48-90871
Int. Cl.² C21D *7/14*
U.S. Cl. 148—12 F **6 Claims**



1. A method for producing a low temperature high strength tough steel which comprises steps of; providing a steel material as hot-rolled which comprises in addition to iron and unavoidable impurities, the following essential ingredients 0.03 – 0.15% C 0.05 – 0.04% Si, 0.2 – 2.0% Mn, 1.0 – 4.5% Ni, 0.1 – 0.5% Mo, 0.005 – 0.050% Nb, up to and including 0.02% N, and 0.005 – 0.070% Al; quenching said steel material after heating at a temperature between 660°C and 750°C; and then tempering the same after heating at a temperature of 650°C or less.

3,960,613
WAX-FLUX COMPOSITION CONTAINING AMINE SALTS OF CARBOXYLIC ACIDS FOR SOLDERING

Robert A. Stayner, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 31, 1975, Ser. No. 545,870
Int. Cl.² B23K *35/34*
U.S. Cl. 148—23 **20 Claims**

1. A wax-flux composition for use in a low-temperature soldering process, comprising:
A. a major amount of a wax having an AMP of between 40°C and 100°C, and
B. an amount effective to cause fluxing, at or below the soldering temperature of the piece to be soldered in said process of an amine salt of an alpha-bromo aliphatic carboxylic acid.

3,960,614
WAX-FLUX COMPOSITION CONTAINING A DIESTER OF SULFOMALEIC ACID FOR SOLDERING

Robert A. Stayner, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 31, 1975, Ser. No. 545,943
Int. Cl.² B23K *35/34*
U.S. Cl. 148—23 **12 Claims**

1. A wax-flux composition for use in a low-temperature soldering process, comprising:
A. a major amount of a wax having an average melting point between 40°C and 100°C, and
B. an amount effective to cause fluxing, at or below the soldering temperature, of the piece to be soldered in said process of a wax-soluble dialkyl ester of sulfomaleic acid.

3,960,615
WELDABLE BAR, ESPECIALLY FOR USE IN REINFORCING CONCRETE

Theo Breedijk, Heemskerk, Netherlands, assignor to Hoogovens Ijmuiden, B.V., Ijmuiden, Netherlands

Filed Apr. 11, 1974, Ser. No. 459,933
Claims priority, application Netherlands, Apr. 16, 1973, 7305262
Int. Cl.² C22C *39/26, 39/54*
U.S. Cl. 148—36 **5 Claims**

1. A hot rolled air cooled weldable bar, consisting of a Si-semi-killed BOF-steel containing not less than 0.18% and not more than 0.29% C, not less than 1.20% and not more than 1.50% Mn, less than 0.1% Si, less than 0.01% Al, less than 0.005% N, less than 0.05% P, less than 0.05% S, in total less than 0.15% Cr, Ni, Mo, Cu and Sn, and at least some but less than 0.04% Nb.

3,960,616
RARE EARTH METAL TREATED COLD ROLLED, NON-ORIENTED SILICON STEEL AND METHOD OF MAKING IT

James D. Evans, Middletown, Ohio, and William R. Long, Jr., Renfrew, Pa., assignors to Armco Steel Corporation, Cincinnati, Ohio

Filed June 19, 1975, Ser. No. 588,295
Int. Cl.² H01F *1/04*
U.S. Cl. 148—111 **15 Claims**

1. A refined melt composition for a cold rolled, non-oriented silicon steel comprising in per cent by weight from about 0.5 to about 4% silicon, up to about 0.8% aluminum, from about 0.05 to about 0.5% manganese, about 0.012% maximum sulfur, up to about 0.1% maximum carbon and a positive amount of up to about 400 ppm. cerium, the balance being iron.

3,960,617
METHOD OF PRODUCING METAL PARTS HAVING MAGNETIC AND NON-MAGNETIC PORTIONS

Felix Lvovich Levin, Nova-Khoroshevskoe shosse, 26, korpus 3, kv. 29; Sergei Alexandrovich Golovanenko, 9 Parkovaya ulitsa, 57, korpus 3-a, kv. 12; Mikhail Vasilievich Pridantsev, ulitsa Krasnokazarmennaya, 3, kv. 299, and Vladimir Alexandrovich Dmitriev, Lesnaya ulitsa 1/2, kv. 26, all of Moscow, U.S.S.R.

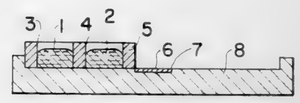
Continuation of Ser. No. 346,884, April 2, 1973, abandoned. This application Dec. 11, 1974, Ser. No. 531,778
Int. Cl.² H01F *1/00*
U.S. Cl. 148—121 **19 Claims**

1. A method of producing an integral metal part having both magnetic and non-magnetic portions comprising the steps of: selecting a metal part made of an alloy comprising, by weight, not more than 1% carbon, at least one element selected from the group consisting of nickel in an amount of from 0.5–25% and cobalt in an amount of from 20–60%, 9–30% of at least one element selected from the group consisting of chromium and vanadium, and the balance being iron; heating portions of the part intended to form a magnetic structure to a temperature of from 450°–980°C; soaking the portions at the temperature until the magnetic structure is formed; and cooling the portions having the magnetic structure; heating portions of the part intended to form a non-magnetic structure to a temperature of from 1000°C to the melting point of the alloy until the non-magnetic structure is formed; and cooling the portions having the non-magnetic structure in water to prevent the formation of the magnetic structure.

3,960,618
EPITAXIAL GROWTH PROCESS FOR COMPOUND SEMICONDUCTOR CRYSTALS IN LIQUID PHASE

Masao Kawamura, Fuchu; Kazuhiro Ito, Tokyo; Makoto Morioka, Tokyo; Yuichi Ono, Tokyo; Sachio Ishioka, Tokyo, and Kazuhiro Kurata, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 25, 1975, Ser. No. 561,795
Claims priority, application Japan, Mar. 27, 1974, 49-33547
Int. Cl.² H01L *7/38*
U.S. Cl. 148—171 **5 Claims**



1. An epitaxial growth process for compound semiconductor crystals of III–V and II–VI compounds in liquid phase comprising:
preparing a substrate crystal of a compound semiconductor,
preparing an etching solution containing the constituent elements of said compound semiconductor, which is unsaturated with respect to the solute at a temperature at the beginning of crystal growth,
preparing a solution for crystal growth containing a III–V or II–VI compound to be grown,
heating said substrate crystal, said etching solution and said solution for crystal growth to the temperature at the beginning of crystal growth,
bringing said substrate in contact with said etching solution,
bringing said substrate in contact with said solution for crystal growth just after having removed said substrate crystal from said etching solution, and
growing epitaxially a crystal of said compound semiconductor on said substrate crystal.

3,960,619
PROCESS FOR PREPARING LAYERS OF SILICON CARBIDE ON A SILICON SUBSTRATE

Hartmut Seiter, Munich, Germany, assignor to Consortium fur Elecktrochemische Industrie GmbH, Munich, Germany

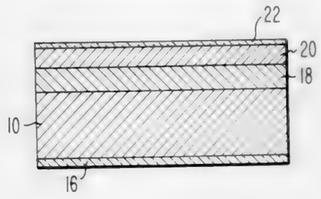
Filed Nov. 29, 1974, Ser. No. 528,050
Claims priority, application Germany, Dec. 28, 1973, 2364989
Int. Cl.² H01L *21/205;* **C01B** *31/36*
U.S. Cl. 148—175 **5 Claims**

1. In a process for producing an epitaxial layer of hexagonal silicon carbide on a silicon monocrystal substrate by simultaneous reduction or thermal decomposition of a gas mixture containing silicon halides and organosilanes, mixtures of the two, hydrocarbons, and hydrogen on said substrate, the improvement, which consists of having water present in said gas mixture.

3,960,620
METHOD OF MAKING A TRANSMISSION MODE SEMICONDUCTOR PHOTOCATHODE

Michael Ettenberg, Freehold, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1975, Ser. No. 569,850
Int. Cl.² H01L *21/20, 21/31, 31/00*
U.S. Cl. 148—175 **6 Claims**



1. A method of making a transmission semiconductor photocathode comprising the steps of
a. coating a surface of a flat body of a single crystalline semiconductor compound which is capable of becoming disassociated when subjected to a specific temperature with a layer of an optically transparent material at a temperature below said specific temperature, said optically transparent material being capable of preventing disassociation of the material of the body when the body is heated to the specific temperature, then
b. epitaxially depositing at least one layer of a single crystalline semiconductor material on another surface of said body, and
c. coating said semiconductor material layer with a layer of a work-function-reducing material.

3,960,621
PROPELLENTS

Edward Whitworth, West Kilbride, Scotland; Stuart Gordon, Kidderminster, England, and Stephen Harry Hayes, West Kilbride, Scotland, assignors to Imperial Chemical Industries Limited, London, England

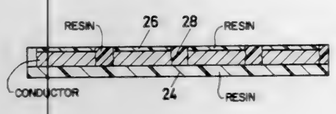
Continuation-in-part of Ser. No. 645,642, March 12, 1957, abandoned. This application June 12, 1959, Ser. No. 820,058
Claims priority, application United Kingdom, Nov. 5, 1958, 35605/58
Int. Cl.² C06B *31/26, 29/20, 29/08, 25/34*
U.S. Cl. 149—65 **5 Claims**

1. A process for the production of a cast propellent which consists in blending a colloided nitrocellulose smokeless powder composition containing a platonisation agent selected from the group consisting of lead stearate, lead citrate, lead salicylate, lead 2:4 dihydroxybenzoate, lead sulphite, lead oxide, copper oxalate, copper salicylate, copper 2:4 dihydroxy-benzoate and cupric oxide, with a colloided nitrocellulose smokeless powder composition containing a secondary flash suppressing potassium salt in the proportion by weight of at least three parts of the first mentioned nitrocellulose composition to each one part of the second mentioned nitrocellulose composition, adding to the blended nitrocellulose compositions a casting liquid consisting essentially of nitroglycerine in an amount sufficient to fill the interstices in the blended nitrocellulose compositions, and heating the resulting mixture.

3,960,622
METHOD OF MAKING STRIP-SHAPED MULTIPLE CONDUCTOR

Erich Höfling, and Hanspeter Breu, both of Kreuzlingen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed June 14, 1973, Ser. No. 369,797
Claims priority, application Switzerland, June 16, 1972, 9105/72
Int. Cl.² C23F 1/02
U.S. Cl. 156—3 8 Claims



1. A method of making a strip-shaped multiple electric conductor having very small breadths and cross-sections, comprising the steps of, providing a strip of electrically conducting material, applying a first layer of a first insulating material to one wide side of the strip and a second layer of a second insulating material to the other wide side of the strip, mechanically removing the first insulating material of the first layer above the strip to define at least one groove penetrating so far as to expose the conducting material, removing the exposed conducting material throughout its thickness to the top of the second layer, so as to form at least one longitudinal cavity in the strip, and filling the cavity and the groove with a third insulating material.

3,960,623
MEMBRANE MASK FOR SELECTIVE SEMICONDUCTOR ETCHING

Francis C. Gantley, Fulton, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Mar. 14, 1974, Ser. No. 451,222
Int. Cl.² H01L 7/50
U.S. Cl. 156—16 9 Claims

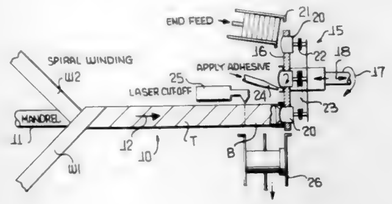


1. Method of selectively etching wafers of semiconductor material, said method comprising the steps of:
- supplying a wafer of semiconductor material, wherein one side of said wafer is not to be etched;
- covering said side and at least a part of the peripheral edge therearound with a sheet of pliable plastic membrane such that said membrane conforms to the shape of said side and part of said edge and forms a seal therewith and said membrane does not contact the side of said wafer opposite said one side, said step of covering comprising the substeps of:
- placing said membrane on said one side;
- heating said membrane to enhance conformity and drawing a vacuum between said membrane and said wafer;
- applying mechanical pressure to said membrane to further promote uniformity; and
- cooling said membrane; and
- exposing the combination of said wafer and said membrane to an etchant so that said wafer, where exposed, is etched and said side of said wafer is not etched, and wherein said membrane and said etchant are selected so that said membrane is nonreactive with said etchant.

3,960,624
METHOD OF FABRICATING TUBULAR BODIES

Paul M. Erlandson, Palos Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 13, 1974, Ser. No. 523,480
Int. Cl.² B29C 27/14
U.S. Cl. 156—69 18 Claims

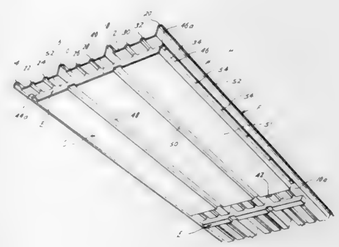


1. A method of fabricating tubular bodies having at least one closed end comprising the steps of advancing material along a predetermined path of travel in a predetermined direction, forming the material into a tube during its advancement, disposing a closure in-line with the advancement of the tube, and utilizing the motion of the advancing tube to assemble the latter with the closure.

3,960,625
HEAT INSULATING ASSEMBLY AND METHOD FOR MAKING SAME

Robert Scott Simpson, Houston, Tex., assignor to Reichhold Chemicals, Inc.

Filed Dec. 23, 1974, Ser. No. 535,997
Int. Cl.² B29D 9/00
U.S. Cl. 156—79 1 Claim



1. A method of forming heat insulating skylight assemblies using a first panel of fiberglass reinforced polyester having a plurality of corrugations and a second panel of fiberglass reinforced polyester having a plurality of corrugations, comprising the steps of:
- forming the second panel by initially forming a continuous strip of the fiberglass reinforced polyester corrugated panel material including the basic stages of paying off a bottom sheet of cellophane or other film;
- pumping a layer of polyester resin blended with various monomers, pigments, promoters, catalysts and other additives onto the moving sheet of film with the thickness and uniformity of the resin layer being controlled by a doctor blade;
- feeding glass fiber roving into rotary choppers and depositing the chopped strands by gravity on the resin layer;
- forcing the glass into the resin with chain saturators;
- placing a top sheet of cellophane or other film on top of the moving laminate in such a way as to prevent entrapment of air;

- heating and passing the moving laminate through forms or dies to give it the desired cross-sectional shape;
- further heating to cause gelling of the resin;
- moving the laminate through temperature controlled ovens where the resin cures;
- trimming the edges of the moving sheet with saws; and
- stripping away the film and cutting the material panels with a moving end-cut saw to proper desired length to provide a panel of uniform cross-section throughout its length;
- disposing the second panel having a base, upstanding longitudinal sides, and open ends, with its corrugations spaced from the corrugations of a first panel with its longitudinal side edges on a surface of the first panel;
- securing the longitudinal side edges of the second panel to the first panel with mechanical fasteners with sealing of the longitudinal edges between the second panel with the first panel to prevent fluid migration therebetween with double coated foam tape to provide a continuous open gap between the second panel and the first panel at each open end thereof;
- closing the continuous open gap adjacent each of the open ends of the second panel by filling the continuous open gap with unitary foam rubber end closures to form a substantially fully enclosed area between said panels for providing an insulating air-space between said panels and each of said foam rubber end closures including a unitary seal with first and second surfaces which substantially conforms to the contacted surfaces of the first and second panels to extend into said corrugations formed in the first and second panels and into contact with the opposed surfaces of the first and second panels; and
- securing the first and second end closures to the first and second panels with contact-type adhesive.

3,960,626
METHOD OF MAKING HIGH PERFORMANCE ABLATIVE TAPE

James L. Casadevall, Orlando, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.

Division of Ser. No. 105,135, Jan. 8, 1971, Pat. No. 3,726,751, which is a continuation-in-part of Ser. No. 672,673, Oct. 2, 1967, abandoned. This application Apr. 9, 1973, Ser. No. 349,906
Int. Cl.² B32B 7/08
U.S. Cl. 156—93 26 Claims

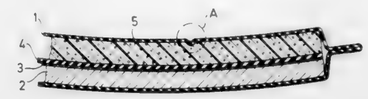


1. A method for fabricating a nonwoven tape of high temperature fibers for use in high temperature applications comprising the steps of forming a plurality of elongate carrier fibers into an essentially aligned array, securing thereon in a nonwoven manner, a large plurality of cross fibers disposed essentially perpendicularly to said carrier fibers, with said cross fibers extending beyond said carrier fibers on at least one side to form a fringe, thus to create a pliable high temperature tape which can thereafter be wrapped for a number of turns about an item to be protected, with the fringe of cross fibers extending beyond the confines of the carrier fibers being available to provide a covering for one or more previous turns of such tape, and wrapping the tape, with the fringe intact, around a generally circular means.

3,960,627
MANUFACTURE OF GLAZING

Friedrich Halberschmidt; Helmut Paulus, both of Herzogenrath, and Karl-Josef Feiten, Wuerselen, all of Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Sept. 30, 1974, Ser. No. 510,421
Claims priority, application France,
Int. Cl.² B32B 17/00, 31/00
U.S. Cl. 156—104 12 Claims

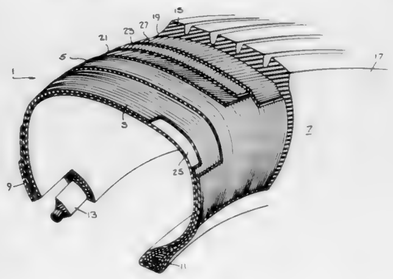


1. A method of manufacturing a laminated glazing including a sheet of glass and a sheet of plastic adhered thereto which method comprises assembling into a stack in successive superposed relation the sheet of glass, the sheet of plastic, an elastic protective sheet and a cushion sheet of deformable material inserting the stack into a bag, reducing the pressure within the bag to a value below atmospheric, sealing the bag about the stack, thereafter raising the pressure outside the bag to a level above atmospheric and raising the temperature within the bag to a level above ambient, removing the stack from the bag, and separating the protective sheet and cushion sheet from the remainder of the stack.

3,960,628
STEEL-BELTED RADIAL PLY TIRES WITH 0° TEXTILE CAP BAND

Robert H. Snyder, Grosse Pointe Park, Mich., assignor to Uniroyal Inc., New York, N.Y.

Division of Ser. No. 334,198, Feb. 21, 1973, Pat. No. 3,850,219, which is a continuation-in-part of Ser. No. 281,890, Aug. 18, 1972, abandoned. This application Mar. 12, 1974, Ser. No. 450,506
Int. Cl.² B29H 17/02, 17/14
U.S. Cl. 156—123 5 Claims



1. In the method of making a radial ply tire having between the crown region of the carcass thereof and the surrounding tread a belt composed of at least two superposed plies of high modulus belt cords oriented at an angle of between about 16° and about 30° with respect to the median equatorial plane of the tire, with the belt cords being parallel to each other within each belt ply and being crossed with respect to cords in each next adjacent belt ply, wherein the carcass is built in substantially cylindrical form, said carcass is then shaped to toroidal form, and the belt and the tread are thereafter applied to the crown region of the shaped carcass preparatory to the placing

of the raw tire into the mold for curing; the improvement comprising the steps of incorporating between the radially outwardmost belt ply and the tread during the building operation a cap band having at least one layer which is at least as wide as the widest of said belt plies and has incorporated therein a plurality of textile cords oriented substantially parallel to one another and to said median equatorial plane, with said cap band in direct contact with the radially outwardmost one of said belt plies, placing said raw tire into a two-piece mold, and applying internal fluid pressure to said raw tire upon closing of the mold for expanding said raw tire fully into the mold contours and concurrently stressing said textile cords in said cap band to elongate by between about 1% and about 5% from their unstressed condition, said textile cords thereby exerting a restraining force on said belt plies to ensure substantially uniform pantographing of said belt cords during said expansion.

3,960,629

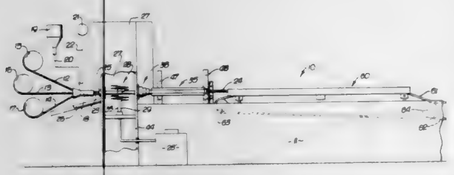
METHOD FOR INDUCTIVE HEAT CURING OF CONDUCTIVE FIBER STOCK

William Brandt Goldsworthy, 2504 Novato Place, Palos Verdes Estates, Calif. 90274

Filed Jan. 31, 1975, Ser. No. 545,924

Int. Cl.² B32B *31/26*; **H05B** *5/00*

U.S. Cl. 156—180 **7 Claims**



1. A method for the curing of stock consisting of a fiber strand of at least partially conductive material impregnated with thermosetting resin of nonconductive material by use of an inductive heating coil having loops extending around a longitudinal axis and productive of an inductive field, said method comprising initially continuously mixing a synthetic thermosetting liquid dielectric resin material with hardener material at a composing stage to form a catalyzed mixture, bringing together a mass of individual conductive fiber elements into a composite strand wherein the individual fibers are of a relatively small diameter such that when subjected to induction heating the heating effect is substantially uniform throughout the cross-sectional area of each fiber, saturating said strand with said mixture whereby to coat the exterior of the individual fibers with said resin material, orienting the longitudinal axes of said fibers in a selected direction, forming the saturated strand to a preselected cross-sectional shape and size, energizing said coil with an electric current, and passing the saturated strand through said inductive field with the axes of said fibers perpendicular to the axis of said coil, said current being one of a frequency of between about 60 Hertz and about 10 Megahertz the exact frequency chosen being dependent on work material size, shape and electrical properties and engineering considerations whereby to heat said fibers and pass heat from said fibers to said catalyzed mixture and initiate curing of said catalyzed mixture by heat generated in said fibers.

3,960,630

PROCESS AND APPARATUS FOR THE PRODUCTION OF WOUND SANDWICH STRUCTURES

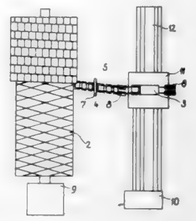
Zsuzsa Pataki, nee Nagy; Ferenc Windisch; Jozsef Nagy; Geza Kecskemethy, and Gyorgy Virag, all of Budapest, Hungary, assignors to Muanyagipari Kutato Intezet and Fovarosi Muanyagipari Vallalat, both of Budapest, Hungary

Filed July 22, 1974, Ser. No. 490,884

Claims priority, application Hungary, July 25, 1973, MU 505

Int. Cl.² B65H *81/00*; **B31C** *9/00*

U.S. Cl. 156—190 **7 Claims**



1. In a process for the production of wound sandwich structures from glass fiber-reinforced plastic, wherein an inner glass fiber-reinforced plastic layer is wound onto an annular shaping mandrel, and then a central core, and an outer glass fiber-reinforced layer are wound in succession thereover, and wherein the outer layer is subsequently cured, the improvement which comprises attaching a plurality of individual prefabricated nonfilamentary block-like core elements to a continuous carrier to form a continuous succession of said elements before the application thereof over the inner layer by helically winding said core elements over said inner layer.

3,960,631

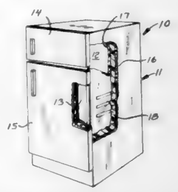
METHOD OF MAKING A LINER CONSTRUCTION

Leonard E. Weiss, and Kenneth L. Hortin, both of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 30, 1974, Ser. No. 502,006

Int. Cl.² B29F *3/00*; **B32B** *31/30*; **C09J** *7/00*; **F25D** *23/08*

U.S. Cl. 156—244 **9 Claims**



1. The method of fabricating a liner for a refrigeration appliance insulated cabinet wherein the insulation is foamed-in-place, comprising the steps of: providing a liner sheet having a surface portion to which foamed-in-place insulation adheres; adhering a foam release layer on said surface portion of said liner sheet, said release layer being preselected to permit only limited adhesion thereto of insulation foamed-in-place thereagainst; and forming said sheet with said layer thereon into a refrigerator liner configuration with said layer disposed outwardly to provide for a breakable bond between the liner sheet and insulation subsequently foamed-in-place about the formed liner configuration and thereby prevent stress cracking of the liner as a result of different thermal expansion characteristics of said insulation and said liner sheet material.

3,960,632

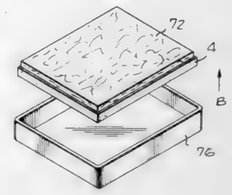
METHOD OF PREPARING A DISPENSING PAD FOR FINGERPRINTING REAGENTS

Jerome Gaines, Van Nuys, and Herbert M. Conrad, Santa Monica, both of Calif., assignors to Veriprint Systems Corporation, Chatsworth, Calif.

Filed Sept. 26, 1974, Ser. No. 509,326

Int. Cl.² B29C *5/00*

U.S. Cl. 156—245 **10 Claims**



1. The method of preparing a dispensing pad for fingerprinting reagents, comprising the steps of:

preparing a plaster of Paris slurry;

dispersing sawdust in said slurry;

charging the slurry into a mold, and floating a layer of felt thereon;

allowing the slurry to set in said mold;

removing the hardened plaster matrix with the felt layer adhering thereto from said mold;

drying said matrix at an elevated temperature for a predetermined period;

preparing a reagent with metallic ions dispersed in a suitable solvent;

submerging said plaster matrix with the felt layer adhering thereto in said reagent to saturate said matrix and said felt layer therewith; and

inserting said pad into a fluid-tight pan with said plaster matrix exposed upwardly and said felt layer depending downwardly therefrom.

3,960,633

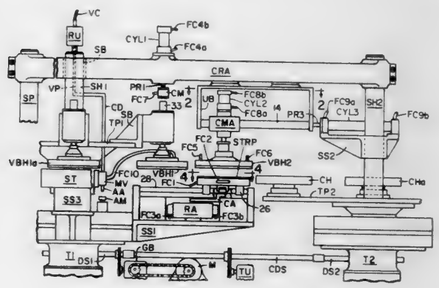
DECAL APPLYING

Mijo A. Gossie, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 12, 1975, Ser. No. 586,241

Int. Cl.² B44C *1/16*

U.S. Cl. 156—247 **7 Claims**



1. A method of stripping the backing paper of water-soaked water-release slide-off decal from the transfer film of the decal and applying such film to a surface of a dish-like article, such soaked decal being initially supported by vacuum applied to said transfer film through the face of a first depending and vertically movable vacuum and blow head assembly located above and downwardly facing a decal stripping plate at a first position in a horizontal path of travel of such plate, such method comprising the steps of;

I. lowering said vacuum and blow head assembly towards said stripping plate and said decal into close proximity to the upper surface of such plate;

II. supplying vacuum through suitable slots provided in said upper surface of said stripping plate and thereby to said backing paper of said decal while terminating said vacuum to said vacuum and blow head assembly and supplying compressed air through such head to such decal, said vacuum supplied through said stripping plate and said air supplied through said head acting to transfer the decal to said upper surface of the stripping plate;

III. raising said vacuum and blow head assembly and terminating said compressed air and leaving said decal remaining on said upper surface of said stripping plate and held thereon by said vacuum supplied through said slots in such plate;

IV. moving said stripping plate to a second position in said path of travel thereof and under the face of a second depending and vertically movable vacuum and blow head assembly moving through a second horizontal path of travel toward said second position and downwardly facing such second path of travel;

V. supplying vacuum to said second vacuum and blow head assembly and lowering such head to move said face thereof into contact with said transfer film of said decal on said upper surface of said stripping plate to draw such transfer film towards said face of such second assembly while continuing to supply vacuum through such stripping plate to said backing paper of the decal to hold such backing paper to the plate;

VI. moving said stripping plate towards its said first position in said first path of travel and raising and moving said second vacuum and blow head assembly through said second horizontal path of travel towards a third position located above a chuck holding a dish-like article upon whose upper surface said transfer film is to be applied, such movements stripping such transfer film and said backing paper from each other;

VII. continuing the movement of said stripping plate to said first position in said path of travel thereof while terminating said supply of vacuum to such plate and supplying compressed air through suitable orifices in said upper surface of the plate to aid in removal of said backing paper of said decal from said stripping plate;

VIII. continuing the movement of said second vacuum and blow head assembly and said transfer film carried thereby through said second horizontal path of travel to said third position;

IX. lowering said second vacuum and blow head assembly adjacent to said surface of said dish-like article and then terminating the vacuum and supplying compressed air through said face of such head to said transfer film to aid in applying, in conjunction with a vertically movable center plug member of the second vacuum and blow head assembly, such transfer film to the upper surface of said dish-like article;

X. raising said second vacuum and blow head assembly and terminating said compressed air supplied thereto; and

XI. repeating steps I through III while moving said second vacuum and blow head assembly through said second path of travel towards said second position for subsequent receipt of the transfer film of another decal from said stripping plate moving through said first path of travel from said first position to such second position as in step IV.

2. In an apparatus including a first turret machine having a vertically actuable and rotatable tool plate carrying a first vacuum and blow head assembly for supporting on the bottom thereof, by vacuum supplied thereto, a water-soaked, water-release, slide-off decal, and a second rotatable turret machine having a tool plate carrying a chuck holding a dish-like article upon whose upper surface the transfer film of said decal is to

be applied, such turret machines being spaced from each other a predetermined distance and driven in synchronization with each other; the combination comprising;

I. first actuable valve means for supplying vacuum through the bottom of said first assembly for supporting said decal when said tool plate of said first turret machine is in its raised position;

II. means for actuating said first valve means to terminate said vacuum when said tool plate of said first machine is in its lowered position;

III. second actuable valve means for at times supplying compressed air to said first assembly and through the bottom thereof to said decal;

IV. a decal stripping plate having in its upper surface a plurality of vacuum slots and a plurality of compressed air orifices;

V. third and fourth actuable valve means for at different times supplying vacuum and compressed air through said slots and said orifices, respectively, of said stripping plate;

VI. first motor means for at times moving said stripping plate through a first horizontal path of travel extending between a first position below said first vacuum and blow head assembly and a second position;

VII. a second vacuum and blow head assembly movable through a second horizontal path of travel between said second position and above said stripping plate when at such position, and a third position above said chuck carried by said tool plate of said second turret machine;

VIII. second motor means for at times moving said second assembly between said second and third positions in said second horizontal path of travel;

IX. third motor means for at times raising and lowering said second assembly;

X. fifth and sixth actuable valve means for at different times supplying vacuum and compressed air, respectively, through the bottom of said second assembly; and

XI. a control system for selectively actuating said valve means and said motor means in synchronism with said turret machines to;

A. move said stripping plate to said first position and below said first vacuum and blow head assembly prior to a downward actuation of said tool plate of said first turret machine;

B. supply compressed air through the bottom of said first assembly when such assembly is moved to its lowered position by said tool plate of said first turret machine and simultaneously supply vacuum through said slots of said stripping plate, said decal being transferred to the upper surface of such plate by said compressed air and vacuum;

C. move said stripping plate to said second position and below said second vacuum and blow head assembly;

D. lower said second assembly into light contact with the transfer film of the decal on the upper surface of said stripping plate;

E. supply vacuum through the bottom of said second assembly and to the transfer film of the decal on said stripping plate;

F. move said stripping plate towards said first position and strip the backing paper of the decal from the transfer film thereof while leaving such transfer film supported on the bottom of said second assembly;

G. terminate the vacuum supplied to said slots in the upper surface of the stripping plate and supply compressed air through said orifices in such upper surface to raise said backing paper and permit such paper to be removed from the stripping plate;

H. raise said second vacuum and blow head assembly and moving such assembly through its horizontal path of travel to said third position above said chuck;

I. lower said second assembly to said chuck;

J. terminate the vacuum to said second assembly and supply compressed air through the bottom thereof to said decal to transfer said transfer film of the decal to the upper surface of said dish-like article carried by said chuck; and

K. raise said second assembly and move it through its horizontal path of travel towards said second position in preparation for receipt of the transfer film of another decal being moved to such second position by said stripping plate.

3,960,634

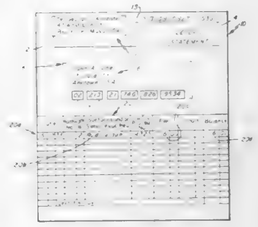
METHOD OF MAKING RECORDS

George A. Kempster, 47 W. Elm St., Brockton, Mass. 02401

Continuation of Ser. No. 380,058, July 17, 1973, abandoned. This application June 19, 1975, Ser. No. 588,419

Int. Cl.² B42D *12/02*

U.S. Cl. 156—277 **1 Claim**



1. A method of making records that consists of the steps of providing a master sheet including a top portion having permanent indicia identifying a doctor and a patient and a bottom section having an area of permanent indicia establishing lengthwise columns for use in recording services performed by the doctor, photocopying said master sheet after performed services are recorded thereon, providing an extension sheet of the size and shape as said area and having identical indicia on its face for recording services subsequently performed by the doctor for the identified patient, and then, before the recording of said subsequent services, adhesively securing said extension sheet on said bottom portion in a position in which its indicia is an exact replacement of the now covered area, and thereafter photocopying the modified master sheet with the copy appearing as that of a first used master sheet.

3,960,635

METHOD FOR THE FABRICATION OF PRINTED CIRCUITS

Dick La Roy, and Erik Adriaan Willem Van Ebbenhorst Tengbergen, both of Hengelo, Netherlands, assignors to N.V. Hollandse Signaalapparaten, Hengelo, Netherlands

Continuation of Ser. No. 259,005, June 2, 1972, abandoned. This application July 10, 1974, Ser. No. 486,976

Claims priority, application Netherlands, June 7, 1971, 7107750

Int. Cl.² C09J *5/06*

U.S. Cl. 156—286 **2 Claims**

1. A method of fabricating printed circuits composed of multiple layers, each of said layers formed by a carrier provided with a conductor pattern on at least one side, said layers being interleaved by adhesive layers, comprising the steps of:

stacking said layers onto each other;

interleaving adhesive layers between said layers to form a laminate;

clamping the laminate together;

evacuating the air from the space where the laminate is situated;

maintaining evacuation of the air during a first period of time such that moisture and air are extracted from the laminate;

pressing the laminate together under a first pressure while maintaining said evacuation during a second period of time, and increasing the temperature of the laminate during said second period, a rate of increase of temperature and duration of the second period being such that the adhesive melts and fills any voids between the layers and that during said second period said temperature remains below a value at which components of the adhesive required for hardening will be extracted, during said second period said first pressure being below a value at which the adhesive layers are pressed out of the laminate;

then admitting air into the space where the laminate is situated; and

pressing the laminate under a further increase in pressure for a third period of time while increasing the temperature of the laminate to a predetermined maximum value such that said adhesive hardens.

3,960,637

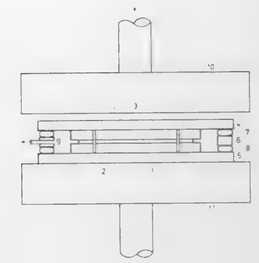
COMPOSITE STRUCTURAL MEMBER

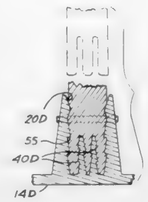
Paul F. Ostrow, 3170 SW. Fairmount Blvd., Portland, Oreg. 97201

Filed July 23, 1973, Ser. No. 381,912

Int. Cl.² E04C *3/292*

U.S. Cl. 156—293 R **3 Claims**





1. A method of making an elongate building component comprising a web element and an elongate flange element united to an edge margin of said web element, the method comprising

providing a flange element with an elongate channel defined along a side thereof, said channel, progressing toward the base of the channel from the top thereof having sides that converge on each other to form opposed pads in one elongate zone extending the length of the channel and that thence diverge in a region spaced toward the base of the channel from said zone,

providing a web element with an edge margin which is compressible in a direction normal to the sides thereof, which edge margin is of lesser thickness than the width at the top of the channel but has a greater thickness than the width of the channel in said zone of opposed pads,

introducing adhesive to one of said elements whereby such will reside in said channel with said edge margin seated in said channel,

inserting said edge margin into said channel by forcing such laterally into the channel to seat the edge margin with such extending past said zone of said pads, and

as a result of said insertion, and with the edge margin so seated, permanently compressing the edge margin of said flange element with said pads, where the edge margin extends across the zone of said pads, to a thickness which is less than the original thickness of said edge margin and less than the thickness of the edge margin on either side of said pads.

3,960,636

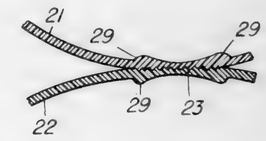
METHOD AND APPARATUS FOR THE PRODUCTION OF SHEAR SEALS IN THERMOPLASTIC MATERIALS

Myron L. Moffitt, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed June 19, 1974, Ser. No. 480,994

Int. Cl.² B32B *31/00*

U.S. Cl. 156—290 **2 Claims**



1. In a method for heat sealing together multiple superposed layers of thermoplastic material comprising bringing a heat sealing element into sealing engagement with said layers to effect sealing, the improvement which comprises laterally displacing a portion of said thermoplastic material in the heatseal area with said heat seal element while said element is in sealing engagement with said layers, said lateral displacement of material being achieved by lateral displacement of said sealing element.

2. Heat sealing apparatus comprising a resilient support surface, a heat sealing element adapted for sealing engagement in a seal area, multiple layers of thermoplastic supported on said support surface and displacement means to laterally displace molten portions of said layers in said seal area during sealing engagement of said sealing element, said displacement means comprising means to laterally displace said heat-seal element.

3,960,638

PROCESS FOR SEPARATING A NUMBER OF SHEETS INTO GROUPS

Yasuhiro Ogata, and Takao Hayashi, both of Fujimiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

No Drawing. Filed Dec. 11, 1974, Ser. No. 531,497

Claims priority, application Japan, Dec. 28, 1973, 49-506

Int. Cl.² B41L *1/24*

U.S. Cl. 156—305 **11 Claims**

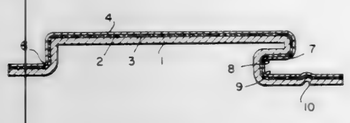
1. A process for separating a number of pressure sensitive copying papers into groups which comprises (1) coating an adhesive composition comprising a naphthalene sulfonic acid-formaldehyde condensation product, a water-soluble polymer material, and a water-soluble metal salt, on an edge of a stack assembly of said copying papers and then (2) fanning said copying papers; said naphthalene sulfonic acid-formaldehyde condensation product comprising about 5 to 40% by weight of the adhesive composition, said water-soluble polymer, which is selected from the group consisting of a natural polymer, a semi-systhetic polymer and a synthetic polymer, comprising about 0.1 to 20% by weight of the adhesive composition, and said water-soluble metal salt, which consists of a salt of a metal

selected from the group consisting of a univalent metal, a divalent metal and a trivalent metal, comprising about 0.1 to 6% by weight of the adhesive composition.

3,960,639
METHOD OF MAKING A LAMINATED METAL-BASED FACING

Shinji Kudo, Osaka, Japan, assignor to Yodogawa Steel Works, Limited, Japan

Division of Ser. No. 279,930, Aug. 11, 1972, Pat. No. 3,870,594. This application May 16, 1974, Ser. No. 470,364
Claims priority, application Japan, Aug. 16, 1971, 46-62219; Mar. 24, 1972, 47-30151
Int. Cl.² B32B *5/00, 15/14, 21/08*
U.S. Cl. 156—222 **5 Claims**

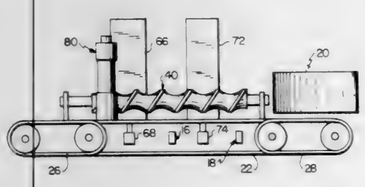


1. A method of manufacture of a laminated metal-based facing capable of being bent without cracking or separating due to the bending and useful as an interior finishing or building material, said method comprising the steps of laying a resin adhesive layer on at least one side of a metal sheet having a thickness of 0.4–1.0 mm as base and subsequently laying a veneer of natural wood of 4–10% by weight of moisture content and a thickness of 0.1–0.9 mm over the surface of said resin adhesive layer, said adhesive layer being non-woven cloth of non-binder construction obtained from synthetic resin fiber and impregnated with a thermoplastic phenol resin adhesive having less than 60 mol % of phenol resin groups and which is flexible and adheres to the metal sheet, forming said laminated materials into one body by heating at a temperature of 100°–160°C under a pressure of 8–20 kg/cm² to bond the veneer to the metal sheet, and bending portions of the resulting laminate into desired configuration without causing the laminations to crack or separate.

3,960,640
BOTTOM LABELING APPARATUS

Paul R. Mort, Jr., and Robert A. Cleary, both of Yonkers, N.Y., assignors to Syncro-Motion Corporation, Yonkers, N.Y.

Filed May 13, 1974, Ser. No. 469,549
Int. Cl.² B65C *9/06*
U.S. Cl. 156—351 **8 Claims**

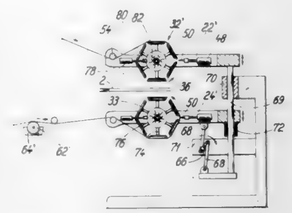


1. An apparatus for bottom labeling a product, comprising:
feeding means for conducting a product along a predetermined feeding path;
said feeding means including means supporting the product with the bottom surface thereof movable along said feeding path;
first labeling means, located along the feeding path, for applying a label to said bottom surface of said product fed past said first labeling means;
second labeling means for applying a label to said bottom surface of said product, said second labeling means being spaced downstream from said first labeling means along the feeding path;
first scanning means, located between said first and second labeling means along the feeding path, for detecting whether a label has been applied to said bottom surface of said product at the first labeling means and for actuating said second labeling means if the label has not been applied;
diverting means, located along the feeding path downstream of the first scanning means, for diverting a product from the feeding path; and
second scanning means, located along the feeding path between said second labeling means and said diverting means, for detecting whether a label has been applied to said bottom surface of said product and for actuating said diverting means to divert said product if no label has been applied to the bottom surface of said product.

3,960,641
MEANS FOR APPLYING LABELS TO A SHEET MATERIAL LENGTH

Henning Kristen Pedersen, Vejle, Denmark, assignor to Gert Oestergaard, Vejle Plastic, Denmark

Filed Nov. 7, 1972, Ser. No. 304,409
Claims priority, application United Kingdom, Nov. 11, 1971, 52412/71
Int. Cl.² B65C *9/42*
U.S. Cl. 156—362 **29 Claims**

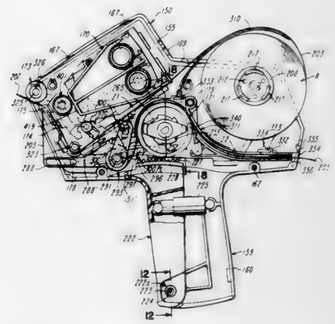


21. A machine for consecutively applying pieces of sheet material to a moving sheet length comprising means for advancing a sheet length past a sheet piece applying station, applicator means located in said applying station and comprising a rotary carrier body having a peripheral row of sheet piece carrying surface portions operable to temporarily hold a front end portion of a sheet piece material strip and wind said material strip partly onto said carrier body in response to rotation thereof, cutting means for consecutively cutting the strip material between two successive of said surface portions so as to consecutively form a cut off sheet piece held by the leading one of said two successive surface portions, means for reciprocating said carrier body between a position in which said carrier body is spaced from the surface of said sheet material length and an applicator position in which the leading surface portion of said carrier body is pressed against the surface of the material length to transfer the sheet piece temporarily held by said leading surface portion to the surface of the sheet material length, and means for rotating said carrier body step-wise so that a successive surface portion of said carrier body is pressed against the surface of said material length each time said carrier body is moved to said applicator position, said means for advancing the sheet material length being controlled so as to advance the sheet material length during at least a part of the time interval when the carrier body is out of pressing contact with the surface of the material length.

3,960,642
APPARATUS FOR PRINTING AND APPLYING PRESSURE SENSITIVE LABELS

Paul H. Hamisch, Jr., Franklin, and James A. Makley, West Carrollton, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed June 5, 1974, Ser. No. 476,649
Int. Cl.² B32B *31/00*
U.S. Cl. 156—384 **6 Claims**

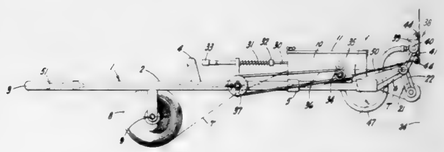


1. Apparatus for printing and applying pressure sensitive labels carried on a web of supporting material, comprising: a frame, a platen and a cooperable print head mounted for relative movement on the frame, a delaminator for delaminating printed labels carried on the supporting material web, an applicator for applying the printed labels, means in contact with the web for feeding the labels successively into printing cooperation with the platen and the print head and to effect delamination of the printed labels, means for driving the print head and the feeding means including first and second meshing gear sections, and a selectively positionable eccentric support for the first gear section to enable precise meshing of the gear sections.

3,960,643
DRY WALL TAPING DEVICE

Arthur Z. Dargitz, 965 McClatchy Way, Sacramento, Calif. 95815, and Lawrence A. Dargitz, 21161 S. Wagner Road, Ripon, Calif. 95366

Filed Jan. 13, 1975, Ser. No. 540,662
Int. Cl.² B32B *31/00*; **B44C** *7/04, 7/08*
U.S. Cl. 156—390 **12 Claims**

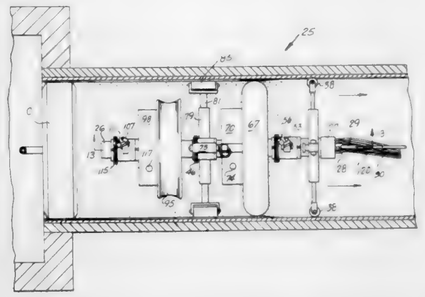


1. A dry wall taping device, comprising a hand-supported and manipulated frame having a handle portion at a first end and a tape applying end portion at a second opposite end for projection by an operator into close proximity to a dry wall having a seam, for applying glue to a dry wall tape, securing the glued tape to a dry wall and plastering over the secured tape in generally immediate succession, and including means to support a roll of tape in position for the tape to pay out and run to the tape applying end of the frame, means intermediate the tape roll support and the tape applying end to apply glue to at least one side of said run of tape, a transverse axis tape applying roller at the tape applying end of the frame, means mounting the roller in position to engage said run of tape to roller-pressure glue-affix the tape over a seam upon dry wall traversing motion imparted to the frame by said operator and attendant paying out of said tape, a plaster extruding and smoothing head means for applying a layer of plaster of a predetermined controlled thickness at the tape applying end of the frame, means mounting said head means in connection with the frame whereby said head—when pressure-fed with plaster, and upon traversing motion of the frame—applies and smooths, in trailing relation to the tape applying roller, a finish layer of plaster over the glue-affixed tape, and means in part on the frame to feed plaster under pressure to said head.

3,960,644
PIPE LINING APPARATUS

Eldon C. McFadden, 4107 Norris Ave., Sacramento, Calif. 95821

Filed Sept. 25, 1974, Ser. No. 509,222
Int. Cl.² B05B *3/12*; **B32B** *1/08, 1/10*
U.S. Cl. 156—390 **9 Claims**



1. A pipe lining apparatus for applying a lining to a pipe comprising a longitudinal non-rotating shaft, means for moving said shaft longitudinally through a liner in a pipe, a plurality of radially adjustable rollers mounted on said shaft with the axis of each of said rollers extending perpendicularly to the line of movement of said apparatus through said pipe for guiding said shaft through said pipe, spray means journalled on said shaft adjacent said rollers for spraying resin and catalyst onto said liner, means mounted on said shaft for rotating said spray means about said shaft, inflatable means mounted on said shaft adjacent said spray means for forcing the resin and catalyst into said liner, and a plurality of compression rollers, means mounting said compression rollers for rotation about said shaft with the axis of said compression rollers parallel to the axis of said pipe for compressing said liner against said pipe.

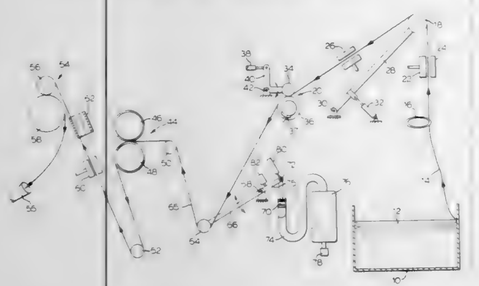
3,960,645
METHOD AND APPARATUS FOR THE OPENING OF TOW

Warren A. Brackmann, Cooksville, and Daniel Dilanni, Toronto, both of Canada, assignors to Rothmans of Pall Mall Canada Limited, Toronto, Canada

Filed Jan. 21, 1975, Ser. No. 542,715
Claims priority, application United Kingdom, Jan. 28, 1974, 3927/74
Int. Cl.² A24C *5/50*
U.S. Cl. 156—441 **11 Claims**

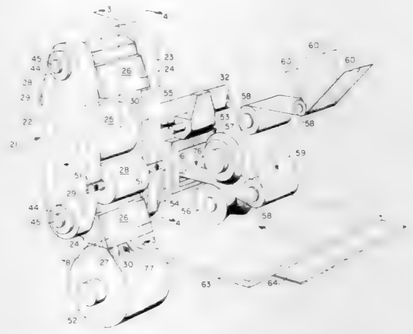
1. A tow opening mechanism comprising
differential gripping means for gripping selected portions only of the width of a band of tow material composed of a plurality of longitudinally-extending crimped fibres to achieve relative longitudinal shifting of adjacent fibres of the tow under the application of tension to the tow band upstream of said differential gripping means,

drag means located upstream of said differential gripping means and arranged to apply tension to the tow between said drag means and said differential gripping means,
said drag means comprising a first pair of upper and lower rollers mounted for free-wheeling rotation and arranged to grip tow passing through the nip between the rollers,
brake means operatively associated with at least one of said upper and lower rollers for applying a variable braking force to said at least one roller,
brake actuation means operatively connected to said brake means for actuation of said brake means,
means for controlling the pressure of one of said pair of rollers on the other to control the force applied to the tow passing through the nip between the rollers,



means establishing a flow path of said band of tow between said drag means and said differential gripping means including a generally U-shaped portion when viewed in side elevation,
said brake means controlling the rate of flow of tow from said drag means into said flow path in accordance with the speed of rotation of said upper and lower rollers,
an elongate substantially inertialess cylindrical member having its axis extending generally horizontally with said cylindrical member engaging the upper surface of the tow band in the trough of said generally U-shaped portion of said flow path whereby the axis of said cylindrical member extends laterally of said tow band, said cylindrical member forming part of said means establishing a flow path,
substantially inertialess lever arm means including a pair of arm members of substantially equal length passing one each side of the lateral edges of said tow band in said U-shaped portion,
means mounting said cylindrical member to said pair of lever arm members adjacent one end of said lever arm means,
pivot means located to the underside of one of the arms of the U-shaped tow band portion when viewed in side elevation and pivotally mounting said pair of lever arm members at a location remote from said one end thereof for arcuate movement of said pair of lever arm members about a substantially horizontal axis parallel to the axis of said cylindrical member,
force-producing means connected to said lever arm means at a position closer to said pivot means than said cylindrical member on the side of said pivot opposite said cylinder member for providing constant downward force on said tow band in said generally U-shaped portion through said cylindrical member, and
arcuate position sensing means including means engaging said lever arm means to detect the arcuate position of said lever arm means and thereby arranged to sense arcuate movement of said lever arm means,
variable output means actuated by said engagement means for producing an output signal corresponding in strength to the positions of said engagement means and hence corresponding to the arcuate position of said lever arm means,
said variable output means being inactive for predetermined positions of said engagement means corresponding to small angular displacements of said lever arm means and active for positions of said engagement means other than said predetermined positions corresponding to larger angular displacements of said lever arm means, and
means operatively connecting said variable output means to said brake actuation means for activation of said brake means to apply said braking force to said at least one roller corresponding to the strength of said output signal and achieve said control of said rate of flow of tow from said drag means into said flow path.

3,960,646
TAPE TAB CUTTER AND APPLICATOR
Karl Edward Wiedamann, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sept. 18, 1972, Ser. No. 289,898
Int. Cl.[2] B32B *31/00;* **B31F** *1/00*
U.S. Cl. 156—518 **11 Claims**



1. An apparatus for applying tape tabs at spaced intervals on the surface of a continuously moving web as the web passes through a tape tab applying station, comprising:
a. an orbitable, rotatable, tape tab handling member having a generally flat tape tab carrying surface;
b. grip means associated with the carrying surface for holding the tape tab in contact with said carrying surface;
c. orbit means operatively associated with said member for moving said member through an orbital path which approximates the plane and the velocity of the web at the applying station; and
d. orienting means operatively associated with said member for orienting said carrying surface parallel the surface of the web as said member approaches and moves through the applying station, whereby said tape tab and the surface of the web in the applying station are substantially parallel when they approximate and contact and wherein said orienting means comprises a planetary gear and a stationary sun gear, the planetary gear being attached to said member, and the planetary gear being operatively associated with the sun gear.

3,960,647
METHOD OF GROWING SINGLE CRYSTALS
Jacqueline Faure, Jarrie; Yves Malmejac, St-Egreve, and Bernard Schaub, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed May 30, 1974, Ser. No. 474,647
Claims priority, application France, May 30, 1973, 73.19849
Int. Cl.[2] B01J *17/02*
U.S. Cl. 156—603 **5 Claims**

1. A method of growing single crystals of a metal which exhibits an allotropic change of state at a temperature below its melting point to produce single crystals which are practically free from misorientation, comprising:
single crystals of the raw metal which has undergone an unidirectional solidification to a first temperature between the allotropic transformation point and the melting point of the metal,
maintaining the single crystals for a predetermined period of time in the vicinity of said first temperature,
cooling the single crystals to a second temperture below the allotropic transformation point,
annealing said single crystals by maintaining them at said second temperature for a period of time sufficient to obtain complete recrystalization of the metal, and
cooling the recrystalized metal to room temperature.

3,960,648
METHOD FOR TREATING PULP-CONTAINING WASTE LIQUORS
Mikio Nakajima, Fujisawa, and Kiyoaki Kuwabara, Yokohama, both of Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 7, 1975, Ser. No. 548,073
Claims priority, application Japan, Feb. 13, 1974, 49-16763
Int. Cl.[2] D21F *1/82*
U.S. Cl. 162—29 **8 Claims**

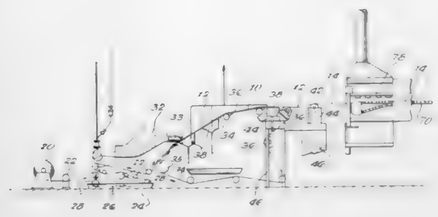
1. A process for flocculating and removing turbid components of pulp-containing waste liquor from paper-making processes comprising:
A. adjusting the pH of the waste liquor so that it has an acid pH; then
B. adding and mixing from about 1 to about 50 parts by weight per 1,000 parts by weight of turbid components in the waste liquor of a dicyandiamide-formaldehyde resin with the waste liquor; and then
C. adding and mixing at least about 100 parts by weight per 1,000 parts by weight of turbid components in the waste liquor of aluminum sulfate whereby the turbid components of the waste liquor are flocculated; and then
D. separating and removing the resultant flocculated material.

3,960,649
WOOD PULP BLEACHING COMPOSITION CONTAINING SODIUM HYDROSULFITE AND HEXAMETHYLENETETRAMINE
Edward A. Sullivan, Beverly, Mass., assignor to Ventron Corporation, Beverly, Mass.
Division of Ser. No. 511,940, Oct. 3, 1974, abandoned. This application Apr. 18, 1975, Ser. No. 569,241
Int. Cl.[2] D21C *9/10*
U.S. Cl. 162—72 **8 Claims**

1. A wood pulp bleaching composition which comprises an aqueous solution for sodium hydrosulfite, and at least 2 weight percent hexamethylenetetramine based upon the weight of sodium hydrosulfite, said solution having a pH between about 5.0 and about 11.0 and said weight percent of hexamethylenetetramine being effective to prevent formation of hydrogen sulfide during sodium hydrosulfite bleaching of wood pulp.

3,960,650
MACHINE AND METHOD FOR MAKING A LAMINATE STRUCTURE
Dewey P. Parks, Orange City, Fla., and Charles R. Scott, Sugar Grove, Va., assignors to Brunswick Corporation, Skokie, Ill.
Filed Jan. 13, 1975, Ser. No. 540,494
Int. Cl.[2] D21D *3/00*
U.S. Cl. 162—103 **12 Claims**

1. A method of making a laminated sheet comprising the steps of:
a. providing a roll of foraminous material mounted on a spool;
b. unwinding the material from the spool in a first direction;
c. pre-moisturizing the material with a liquid solution;
d. backing the pre-moistened material with a fourdrinier screen;
e. feeding the pre-moistened material to a fourdrinier head box;
f. depositing at a preselected controlled rate a slurry of liquid and fibers onto the material;
g. withdrawing by suction the liquid through the material and the screen leaving a substantially two dimensional randomly dispersed array of fibers on the upper side of the material;
h. impregnating, from underneath, the material and the fibers on the upper side of the material with a liquid



dispersible resin thereby not disturbing the orientation of the dispersed fiber;
i. continuously stretching the material at approximately 90° to its first direction of travel;
j. preheating the fiber coated resin impregnated laminate material to a temperature sufficient to remove part of the liquid;
k. heating the laminate material to a sufficient temperature to remove the remaining liquid and cure the resin;
l. compressing the laminate to a desired thickness with heat rollers;
m. inspecting the cured laminate with a feedback arrangement to control the rate of fiber deposition; and,
n. respooling the laminate.

3,960,651
REINFORCED AIR-PERVIOUS POLYTETRAFLUOROETHYLENE SHEET
Yutaka Kometani; Shun Koizumi, both of Toyonaka; Kazuo Kubota, Sulin, and Takeaki Nawazima, Toyonaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan
Continuation of Ser. No. 154,606, June 18, 1971, abandoned, which is a division of Ser. No. 35,285, May 6, 1970, Pat. No. 3,629,383, which is a continuation-in-part of Ser. No. 403,367, Oct. 12, 1964, Pat. No. 3,528,879. This application Aug. 16, 1973, Ser. No. 388,724
The portion of the term of this patent subsequent to Sept. 15, 1987, has been disclaimed.
Int. Cl.[2] B32B *15/02*
U.S. Cl. 162—105 **1 Claim**

1. A reinforced air-pervious sheet consisting predominantly of a polytetrafluoroethylene fibrous powder having an average fiber length of 100 to 5000 microns, an average shape factor of not less than 10, and an anisotropic expansion factor of 1.30 to 7.00 adhered by means of molten polytetrafluoroethylene to a liquid-pervious member selected from the group consisting of wire net and metallic wool web, said liquid-pervious member being capable of retaining its original form even when heated to a temperature of 270° to 380°C.

3,960,652

PROCESS OF FORMING WET LAID TUFTED NONWOVEN FIBROUS WEB AND TUFTED PRODUCT

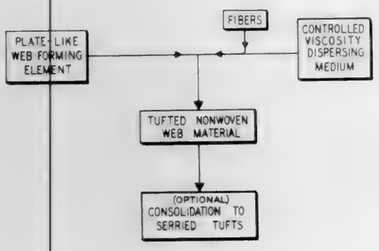
Bernard W. Conway, Holyoke, Mass., and James Moran, Simsbury, Conn., assignors to The Dexter Corporation, Windsor Locks, Conn.

Continuation-in-part of Ser. No. 341,699, March 15, 1973, Pat. No. 3,834,983. This application July 17, 1974, Ser. No. 489,411

The portion of the term of this patent subsequent to Sept. 10, 1991, has been disclaimed.

Int. Cl.[2] D21H 5/02, 5/26

U.S. Cl. 162—108 20 Claims



1. A process from producing a tufted nonwoven waterlaid fibrous web material comprising the steps of providing a plate-like, fiber-collecting element having a smooth fiber collecting surface and a multitude of apertures extending from said surface continuously through said element, each of said apertures having a lip portion at said surface and a generally tubular configuration through said element, providing a dispersion of fibers suited for being dispersed in an aqueous medium at a fiber concentration of at least about 0.01 percent by weight and depositing the fibers from said dispersion on the fiber collecting element to promote laminar flow of the aqueous fiber dispersing medium through the tubular apertures in said plate-like element and thereby form a tufted nonwoven fibrous web material on said element, said web having integral tufts formed from bundles of closely associated individual fibers extending over said lip portion and into the apertures in said element but not more than a minor portion of said tufts extending beyond the bottom of said element thereby preventing entanglement of adjacent tufts.

19. A process for producing a tufted nonwoven fibrous web material comprising the steps of providing a plate-like, fiber-collecting element having a smooth fiber collecting surface and a multitude of apertures extending from said surface continuously through said element, each of said apertures having a lip portion at said surface and a generally tubular configuration through said element, providing a fluid dispersion of fibers and depositing the fibers from said dispersion on the fiber collecting element to promote laminar flow of the fluid fiber dispensing medium through the tubular apertures in said plate-like element and thereby form a tufted nonwoven fibrous web material on said element, said web having integral tufts formed from bundles of closely associated individual fibers extending over said lip portion and into the apertures in said element but not more than a minor portion of said tufts extending beyond the bottom of said element thereby preventing entanglement of adjacent tufts.

3,960,653

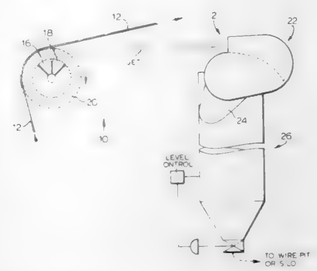
DOWNFLOW CONTROL SYSTEM FOR WEB MAKING MACHINES

Ralph James Futcher, Beaconsfield, and Alexander Malashenko, Dollard des Ormeaux, both of Canada, assignors to Dominion Engineering Works, Limited, Lachine, Canada

Continuation-in-part of Ser. No. 362,083, May 21, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,749

Int. Cl.[2] D21F 1/68

U.S. Cl. 162—264 1 Claim



1. A downspout device in combination with a paper machine for transferring to a white water tank at a lower level liquid flowing as a high velocity liquid jet at substantially atmospheric pressure together with significant quantities of air and vapourous components in partially separated relation therewith, said jet being directed by the machine substantially horizontally out of the machine towards the device at a first level for subsequent flow of the liquid in a substantially non-cascaded condition at a second level below said first level, comprising a tube having an upper end, a lower end, and a substantially unobstructed interior extending between said first and second levels, having water entry means at said first level spaced from said upper end of the tube to provide an air space within the tube extending above said entry means, and to receive said liquid and air, said entry means having a downwardly sloping lower surface to impart a downward component of liquid flow velocity, said entry means being located in off-centered relation to the main longitudinal axis of said tube, to provide in operation a tangential flow component to liquid entering the downspout device and to permit unobstructed up draft of said air and vaporous components entering through said entry means, a first outlet from said tube, located at said second level and a second substantially unrestricted outlet in said tube, located above said entry and connecting with said air space, to receive in operation an air and water vapour up-draft at substantially atmospheric pressure, including air separated from said liquid by the centrifuge effect of high velocity rotation of said liquid flowing over the inner surface of the tube and downwardly along the downspout device.

3,960,654

SHEAR PUMP HEADBOX

Girard L. Calehuff, Hollidaysburg, Pa., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 19, 1974, Ser. No. 498,559

Int. Cl.[2] D21F 1/18

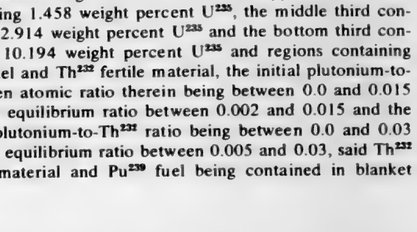
U.S. Cl. 162—342 4 Claims

1. In a papermachine, a headbox for delivering paper making stock to said papermachine, said headbox having a top wall, bottom wall and side walls, an inlet manifold connected to one side of said headbox and a discharge manifold connected to another side of said headbox the improvement comprising:

a. a positive displacement shear pump means mounted for rotation and enclosed within a walled housing located in said headbox and extending between the side walls of said headbox, said shear pump means further comprising a pair of meshed lobed rotors the lobes of which pass in close proximity to the walls of said housing with a substantially uniform clearance from said housing walls so as to provide when rotating travelling cavities bounded by individual adjacent lobes and the walls of said housing;

b. means at the inlet manifold side of said headbox forming a stock receiving chamber bounded at two sides by the tangent points formed by the lobes of the rotors and the housing and at the other two sides by the nip point formed by the interface between the lobed rotors and the inlet manifold;

c. means at the discharge manifold side of said headbox forming a stock distributing chamber bounded at two sides by the tangent points formed by the lobes of the rotors and the housing and at two other sides by the nip



point formed by the interface between the lobed rotors and the discharge manifold; and,

d. means for driving said positive displacement shear pump to pump paper making stock from the inlet manifold of the headbox to the discharge manifold of headbox through the stock receiving chamber and stock distributing chamber by producing a difference in pressure between the stock receiving chamber and the stock distributing chamber when individual lobes of said lobed rotors separate from their meshed condition at the stock receiving side of said housing to accept papermaking stock and form travelling cavities of stock, which cavities are subsequently voided when the lobes later intermesh to discharge the stock contained therein into the discharge chamber.

3,960,655

NUCLEAR REACTOR FOR BREEDING U^{233}

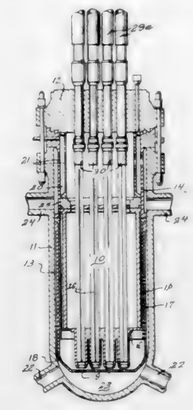
Charles S. Bohanan, Raleigh, N.C.; David H. Jones, Pittsburgh, Pa.; Harry F. Raab, Jr., Annandale, Va., and Alvin Radkowsky, Tel Aviv, Israel, assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 9, 1974, Ser. No. 486,786

Int. Cl.[2] G21C 1/00, 19/00

U.S. Cl. 176—18 1 Claim

1. A light-water-cooled nuclear reactor for use in breeding U^{233} for use in a light-water breeder reactor comprising a core incorporating regions containing U^{235} fuel and U^{238} fertile material, the initial hydrogen-to-U^{235} atomic ratio therein being between 10.0 and 150.0 and the initial U^{235} to U^{238} ratio being between 0.005 and 0.20, said U^{235} fuel and U^{238} fertile material being contained in longitudinally movable seed assemblies, said seed assemblies consisting of hexagonal clusters of rods containing uranium dioxide, the upper third thereof containing 1.458 weight percent U^{235}, the middle third containing 2.914 weight percent U^{235} and the bottom third containing 10.194 weight percent U^{235} and regions containing Pu^{239} fuel and Th^{232} fertile material, the initial plutonium-to-hydrogen atomic ratio therein being between 0.0 and 0.015 with an equilibrium ratio between 0.002 and 0.015 and the initial plutonium-to-Th^{232} ratio being between 0.0 and 0.03 with an equilibrium ratio between 0.005 and 0.03, said Th^{232} fertile material and Pu^{239} fuel being contained in blanket assemblies consisting of a hexagonal array of rods containing ThO_2 and PuO_2 arranged in six concentric rows around a seed assembly, the innermost row containing in the active portion thereof 0.473 weight percent Pu^{239}, the next row containing in the active portion thereof 0.947 weight percent Pu^{239} in the upper five-sixths thereof and 0.473 weight percent Pu^{239} in the lower one-sixth thereof and the remaining four rows containing in the upper one-third of the active portion thereof 2.362 weight percent Pu^{239}, in the next one-sixth thereof 1.655 weight percent Pu^{239}, in the next one-third thereof 0.447 weight percent Pu^{239} and in the bottom one-sixth thereof 0.473 weight percent Pu^{239}, the seed rods being capped with natural uranium dioxide and the blanket rods being capped with ThO_2.



3,960,656

PEBBLE-BED REACTOR

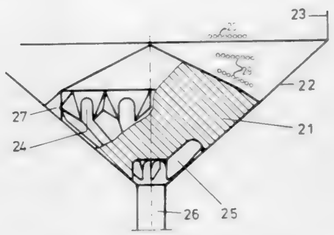
Günter Lohnert; Ulrich Müller-Frank, both of Bensberg, and Jürgen Heil, Bensberg-Moitzfeld, all of Germany, assignors to Interatom, Internationale Atomreaktrobau GmbH, Bensberg, Cologne, Germany

Filed Feb. 13, 1975, Ser. No. 549,779

Claims priority, application Germany, Nov. 29, 1974, 2456405

Int. Cl.[2] G21C 3/44

U.S. Cl. 176—58 PB 2 Claims



1. A pebble-bed nuclear reactor or large power rating, comprising a container have a funnel-shaped bottom forming a pebble run-out having a centrally positioned outlet, a bed of downwardly-flowing substantially spherical nuclear fuel pebbles in said container and forming a reactive nuclear core maintained by feeding said pebbles to the bed's top surface while used pebbles run out down said bottom forming said run-out and discharge through said outlet, a substantial conical body having a periphery of less extent than that of said container, and means for positioning said body in said run-out with the body's apex pointing upwardly and the body's said

periphery horizontally spaced from said container's periphery and so as to permit said pebbles to flow under said body on said funnel-shaped bottom to and through said outlet, said means being formed by a plurality of mutually interspaced columns extending from said bottom upwardly to said body and said columns being radially elongated to form webs converging towards said outlet, said webs being shaped to define groups of radial passages extending from said peripheries to said outlet and converging to join together to form a single common passage while approaching said outlet.

3,960,657

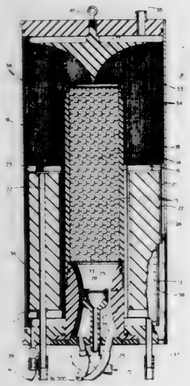
METHOD FOR OXYGENATING BLOOD

Wallace W. Bowley, Stafford Springs, Conn., assignor to Intech, Inc., Manchester, Conn.

Division of Ser. No. 295,724, Oct. 6, 1972, Pat. No. 3,898,045. This application July 24, 1975, Ser. No. 598,630

Int. Cl.[2] A61M *1/03*

U.S. Cl. 195—1.8 6 Claims



1. A method for oxygenating blood employing an elongated lattice chamber having a multiplicity of immovable rounded surfaces disposed throughout its volume thereby creating a plurality of tortuous paths through said lattice chamber, said method comprising the steps of:

flowing a supply of venous blood into a receptacle adjacent one end of said lattice chamber;

introducing oxygen bubbles into the blood in said receptacle;

mixing the blood and oxygen bubbles together to form a blood foam comprising bubbles formed of a blood surface surrounding a volume of oxygen;

flowing the blood foam substantially unidirectionally through said lattice chamber whereby said blood surfaces of said blood foam bubbles collide with a multiplicity of said rounded surfaces in moving, frictional, wiping contact therewith, thereby resulting in the transfer of oxygen to said blood surfaces from the oxygen contained within said blood foam bubbles, whereby oxygenation of the venous blood is achieved; and

breaking down the oxygenated blood foam into oxygenated fluid blood and gases.

3,960,658

MULTI-MEDIA PETRI DISH

Souren Avakian, Westport, Conn., and Harry Seneca, Fort Lee, N.J., assignors to Centaur Chemical Co., Stamford, Conn.

Filed Sept. 23, 1974, Ser. No. 508,182

Int. Cl.[2] C12K *1/04, 1/10*

U.S. Cl. 195—103.5 R 3 Claims

1. As an article of manufacture, a diagnostic kit for the rapid identification of uropathogenic bacteria which comprises a Petri-type dish which is structurally divided and contains in separate compartments culture media consisting of medium (1) comprising peptone, saccharose, lactose, dipotassium phosphate, eosin, methylene blue, agar, distilled water; medium (2) comprising peptone, beef extract, peptonized iron, sodium thiosulfate, DL-phenylalanine, agar, distilled water; medium (3) comprising magnesium sulfate, ammonium dihydrogen phosphate, disodium phosphate, sodium citrate, sodium chloride, Brom thymol blue, agar, distilled water; and medium (4) comprising urea, dextrose, sodium chloride, peptone, monosodium phosphate, phenol red, agar and distilled water.

3,960,659

TREATMENT OF PROTEINACEOUS MATERIAL

Stanley Fazakerley, Dollar, Scotland, assignor to The British Petroleum Company Limited, London, England

Filed Sept. 20, 1974, Ser. No. 507,716

Claims priority, application United Kingdom, Sept. 26, 1973, 45099/73

Int. Cl.[2] C12B *1/00*

U.S. Cl. 195—5 5 Claims

1. A process for reducing the nucleic acid content of a yeast grown by submerged aerated fermentation in a broth containing a hydrocarbon substrate which process comprises the steps of:

a. separating a product stream containing the grown yeast to obtain (1) a yeast cell fraction and (2) an aqueous fraction having ribo-nuclease activity,

b. precipitating protein from said yeast cell fraction and,

c. contacting said precipitated protein with said aqueous fraction of step (a) (2) at a pH of 4.5 to 6 and a temperature of 50° to 60°C. to reduce the nucleic acid content of the protein.

3,960,660

METHOD OF PRODUCING GUANOSINE BY FERMENTATION

Hitoshi Enei, Zushi; Katsuaki Sato, Kawasaki, and Yoshio Hirose, Fujisawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 27, 1975, Ser. No. 562,402

Claims priority, application Japan, Mar. 30, 1974, 49-36371

Int. Cl.[2] C12D *13/06*

U.S. Cl. 195—28 N 4 Claims

1. A method for producing guanosine, which comprises culturing a guanosine-producing mutant of the genus Bacillus, which requires adenine for growth and is resistant to 1,000γ/ml of psicofuramine or 500γ/ml of decoyinine under aerobic conditions in an aqueous culture medium until guanosine accumulates in the medium, and recovering accumulated guanosine from culture medium.

3,960,661

METHOD FOR PRODUCING INOSINE BY FERMENTATION

Hitoshi Enei, Zushi; Katsuaki Sato, Kawasaki; Morikatsu Ishii, Chigasaki, and Yoshio Hirose, Fujisawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 27, 1975, Ser. No. 562,401

Claims priority, application Japan, Mar. 30, 1974, 49-36370

Int. Cl.[2] C12D *13/06*

U.S. Cl. 195—28 N 7 Claims

1. A method for producing inosine, which comprises culturing an inosine-producing mutant of the genus Bacillus, which requires adenine for growth and which is more resistant to at least one sulfa drug than the parent strain from which it is derived and has a resistance at a concentration of 100γ/ml to sulfaguanidine, sulfadiazine or sulfathiazole, under aerobic conditions in an aqueous culture medium until inosine accumulates in the medium, and recovering accumulated inosine from culture medium.

3,960,662

PROCESS FOR THE PRODUCTION OF 7-AMINO-CEPHEM COMPOUNDS

Tetsuo Matsuda; Tsutomu Yamaguchi, both of Tagata; Tadashiro Fujii; Kunio Matsumoto, both of Mishima; Masataka Morishita, Tagata; Mitsuru Fukushima, Shizuoka, and Yuzo Shibuya, Tagata, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Japan

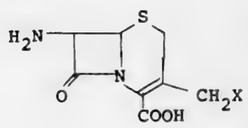
Filed Jan. 23, 1975, Ser. No. 543,639

Claims priority, application Japan, Jan. 23, 1974, 49-10471

Int. Cl.[2] C12D *13/06*

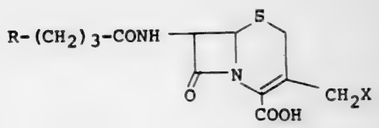
U.S. Cl. 195—29 1 Claim

1. A process for the production of 7-amino-cephem compounds of the formula



[I]

wherein X represents hydrogen, hydroxy, acetoxy or a nucelophilic residual group, which comprises contacting a 7-acylamino-cephem compound of the formula



[II]

wherein R represents —COOH or —COCOOH and X has the same meaning as above with a microbial culture or preparation thereof containing deacylating enzyme derived from *Comamonas sp.* NRRL B-8070 in an aqueous medium.

3,960,663

PROCESS FOR THE CONTINUOUS ISOMERIZATION OF DEXTROSE

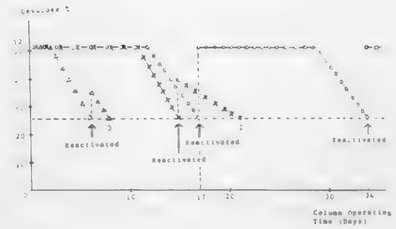
Masaki Tamura, Machida; Soichiro Ushiro, Kokubunji, and Shiro Hasagawa, Tama, all of Japan, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Sept. 13, 1974, Ser. No. 505,823

Claims priority, application Japan, Sept. 13, 1973, 48-102748

Int. Cl.[2] C12D *13/00*

U.S. Cl. 195—31 F 6 Claims



1. A process for the continuous isomerization of dextrose to levulose comprising:

passing a solution containing dextrose, at a pH of from about 7.0 to about 8.5, through a bed of immobilized dextrose isomerase prepared by bringing a solution of dextrose isomerase into contact with a porous or macroreticulated strongly basic anion exchange resin having $-N-(CH_3)_3-X$ as the ion exchange group;

removing a levulose-bearing solution from the bed until a decrease in enzyme activity occurs, then passing additional dextrose isomerase through the bed to reactivate said bed,

continuing to pass the solution containing dextrose through the reactivated bed, and

recovering additional levulose-bearing solution therefrom.

3,960,664

BACTERIAL PRODUCT USEFUL FOR MAKING SAUSAGE

Ronald H. Olsen, Ann Arbor, and Harold Rothchild, Kalamazoo, both of Mich., assignors to Microlife Technics, Inc., Sarasota, Fla.

Continuation of Ser. No. 870,992, Oct. 6, 1969, abandoned, which is a division of Ser. No. 620,643, March 6, 1967, Pat. No. 3,561,977. This application July 10, 1975, Ser. No. 594,797

Int. Cl.[2] C12K *1/08*

U.S. Cl. 195—59 4 Claims

1. A bacterial product useful for fermenting comminuted meat containing sausage making ingredients consisting essentially of a substantially neutralized concentrate of live cells of *Pediococcus cerevisiae*, said concentrate being stabilized against rapid loss of viability by being in admixture with a freezing stabilizing agent and a nutrient medium, the concentrate being frozen so that it can be stored for a long time without major loss in the viability of the bacteria, the concentrate containing at least about 10^9 cells per ml and wherein the growth of *Pediococcus cerevisiae* when the concentrate is admixed with comminuted meat containing sausage making ingredients inhibits the growth of indigenous bacteria in the meat.

3,960,665

PRODUCTION OF PROTEOLYTIC ENZYMES

Karl Johan Stampe Villadsen, Brabrand, and Karin Pinholt Vestberg, Arhus, both of Denmark, assignors to Karl Johan Stampe Villadsen, Brabrand, Denmark

Filed July 2, 1973, Ser. No. 376,050

Claims priority, application United Kingdom, July 7, 1972, 31865/72

Int. Cl.² C12D *13/10*

U.S. Cl. 195—66 R **7 Claims**

1. Process for the production of proteolytic enzymes by aerobic fermentation of a medium containing cabohydrates, comprising using *Bacillus firmus* var. *arosia*, strain NCIB 10557, for the fermentation, and recovering the produced enzymes from the resulting fermentation liquid.

3,960,666

PREPARATION OF AN ENZYME-CELLULOSE COMPLEX

Jean Paul Bourdeau; Jean Louis Seris, both of Pau, and Rene Pornin, Arthez-de-Bearn, all of France, assignors to Societe Nationale des Petroles d'Aquitaine, Paris, France

Filed Oct. 8, 1974, Ser. No. 513,048

Claims priority, application France, Oct. 12, 1973, 73.36428

Int. Cl.² A23C *19/02*; **C07G** *7/02*

U.S. Cl. 195—68 **5 Claims**

1. The method of producing an enzymatic solid composition consisting of cellulose pieces having fixed thereto an enzyme, which comprises: (a) comminuting a cellulose material having 5 to 25 percent by weight of lignin, with respect to dry cellulose, into pieces having dimensions of about 0.2 to about 10 mm; (b) treating the pieces with an alkaline aqueous solution until the surface of the pieces is substantially free of lignin; (c) washing the treated pieces with water; (d) introducing the pieces into an excess of pyridine, adding a chlorinating agent from the group consisting of thionyl chloride, sulfuryl chloride, phosphorus trichloride and phosphorus pentachloride, to the pyridine, and allowing the mixture to stand until a proportion of sulfur of 0 to 6 percent of dry cellulose and a proportion of chlorine of 0 to 3.2 percent of dry cellulose is combined with the cellulose, at least one of the two proportions being more than 0; (e) separating the pieces from the pyridine and the chlorination agent, washing them with water and with an acid, and then introducing them into an aqueous buffer solution having a pH at which the given enzyme is not stable; (f) mixing the buffer solutions with enzyme and stirring the mixture until enzyme is bound to said pieces, and (g) separating the pieces from the solution and washing them.

3,960,667

ANTIBIOTIC A-23187 AND PROCESS FOR PREPARATION THEREOF

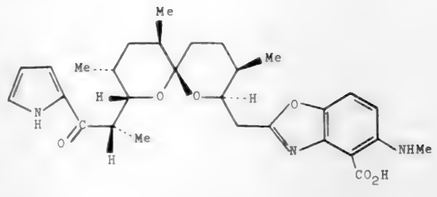
Richard M. Gale; Calvin E. Higgens, and Marvin M. Hoehn, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 237,532, March 23, 1972, abandoned, Division of Ser. No. 434,312, Jan. 17, 1974. This application July 8, 1975, Ser. No. 594,157

Int. Cl.² C12D *9/00*

U.S. Cl. 195—80 R **2 Claims**

1. The method for producing the antibiotic A-23187 of the formula



which comprises cultivating Streptomyces chartreusis NRRL 3882 in a culture medium containing assimilable sources of carbon, nitrogen and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of antibiotic A-23187 is produced by said organism in said culture medium.

3,960,668

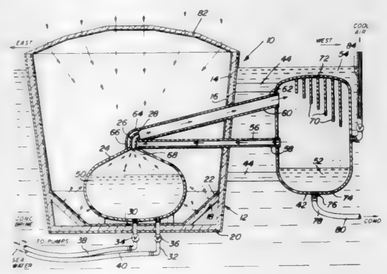
SOLAR POWERED SEA WATER EVAPORATING AND CONDENSING UNIT

Martin A. Rush, 2501 Cincinnati-Dayton Road, Middletown, Ohio 45042

Filed July 3, 1974, Ser. No. 485,577

Int. Cl.² B01D *3/00*

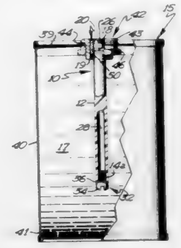
U.S. Cl. 202—185 R **8 Claims**



1. A solar still including side-by-side first and second hollow housings, rigid connecting means extending between and interconnecting said housings, said first housing having a boiler disposed therein and including light collecting and concentrating means over its upper end for collecting sunlight rays incident thereon and concentrating said light rays on said boiler, said boiler including an upper heated water vapor outlet, an upwardly inclined heated vapor discharge tube extending from said outlet through the wall of said first housing adjacent said second housing and opening into an upper portion of said second housing, heat conducting baffle means supported within the upper portion of said second housing in good heat transfer relation with said second housing, said second housing including cooled air outlet means opening outwardly of said second housing below the discharge end of said discharge tube and discharging to atmosphere via a vent tube, a cool air inlet pipe for said first housing passing through its wall and opening into said discharge tube adjacent the lower end thereof, said still having a total weight somewhat less than the total volume of water displaceable thereby whereby said still may be floated in a body of salt water, the elevation of said second housing relative to said first housing being such that said second housing is at least substantjally fully submerged when said still is floating, thereby enabling the ambient water to shield the second housing against direct rays of the sun incident thereon, said still being positionable with the first housing disposed to the east and the second housing disposed to the west, whereby the still may tilt from east to west, during vaporization of a batch of water from said boiler and its condensation in said second housing, to thereby increase the efficiency of the light collecting and concentrating means.

6. A method for quantitatively measuring the effectiveness of a sterilization cycle on the contents of a container, said method comprising the steps of:

hermetically sealing a predetermined quantity of a sterilization sensitive agent within a reservoir provided in a rod;



rigidly fastening said rod to an end of said container whereby said rod extends interiorly of said container and rigidly positions and maintaining said reservoir within the slowest heating zone in the container;

conventionally filling and sealing said container;

subjecting said container to said sterilization cycle; and

analyzing said sterilization sensitive agent to determine the effects of the sterilization process thereon.

3,960,669

URINE DIAGNOSTIC TEST FOR FIBRINOLYTIC ACTIVITY

Irving Innerfield, Tenafly, N.J., assignor to Association for Pharmacologic Research, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 323,603, Jan. 15, 1973, abandoned. This application Feb. 11, 1975, Ser. No. 549,113

The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.

Int. Cl.² G01N *31/14*

U.S. Cl. 195—103.5 R **6 Claims**

1. A method of detecting an abnormal concentration of fibrinolytic enzymes and fibrinogen degradation products in the blood of an individual, such an abnormal concentration being characteristic of certain pathologic states, comprising the steps of determining the average and the range of clotting times of standardized saline solutions of buffered thrombin, fibrinogen and urine from healthy subjects combined in selected proportions at a selected temperature, and determining the individual clotting time at the same selected temperature of the same standardized saline solutions of buffered thrombin and fibrinogen with a urine specimen from said individual combined in said selected proportions, an individual clotting time deviating by a selected amount from said average being taken as indicative of an abnormal concentration of fibrinolytic enzymes and fibrinogen degradation products in the blood and certain characteristic pathologic states.

3,960,670

METHOD AND APPARATUS FOR STERILITY MONITORING

Irving J. Pflug, 10 E. Oaks, St. Paul, Minn. 55110

Filed Sept. 2, 1975, Ser. No. 609,700

Int. Cl.² C12K *1/04*

U.S. Cl. 195—103.5 R **10 Claims**

1. Apparatus for monitoring the effectiveness of a sterilization cycle on the contents of a container, said apparatus comprising:

an elongated rod portion adapted to extend interiorly of said container into the contents thereof;

said rod including an internal reservoir portion adapted to receive a sterilization sensitive agent;

closure means for hermetically sealing said reservoir portion thereby isolating said heatsensitive agent from said container contents; and

attachment means for rigidly fastening said apparatus to said container, said attachment means adapted to maintain said container in a sealed condition, and operable to positively maintain said rod in a predetermined position within said container.

3,960,671

QUINONES AS CORROSION INHIBITOR IN DISTILLING ALKANOIC ACIDS

James S. Clovis, Morrisville, and Jerome Dohling, Huntingdon Valley, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed June 17, 1974, Ser. No. 480,063

Int. Cl.² C23F *14/02*

U.S. Cl. 203—7 **21 Claims**

1. In the process for distilling corrosive lower chain alkanoic acids in corrodible metallic distillation apparatus the steps of introducing a crude dilute solution of said corrosive acid into the distillation zone, distilling said acid in the presence of an amount of p-benzoquinone or 1,4-naphthoquinone effective to prevent or reduce to an acceptable limit the corrosion of said metallic distillation apparatus by said corrosive acid, and recovering the purified corrosive acid outside the distillation zone.

3,960,672

CONTINUOUS DISTILLATION PROCESS FOR PURIFYING ALKANOLS

Wilhelm Ester, deceased, late of Herne; by Margarete Ester, nee Berkemann, heir, Herne; by Brigitte Lovis, nee Ester, heir, Munster; by Wolfgang Ester, heir, Herne and Wilhelm Heitmann, Herne, all of Germany, assignors to Veba-Chemie AG, Gelsenkirchen-Buer, Germany

Continuation of Ser. No. 223,345, Feb. 3, 1972, abandoned. This application June 21, 1974, Ser. No. 481,943

Claims priority, application Germany, Feb. 9, 1971, 2106073

Int. Cl.² B01D *3/34*

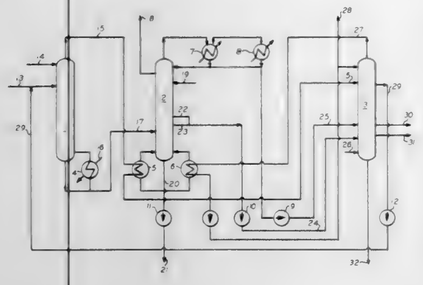
U.S. Cl. 203—37 **8 Claims**

1. In a continuous distillation process for preparing pure C_1–C_3 alkanols from crude water-containing alkanols wherein:

a. crude alkanols containing water and impurities which are lower and higher boiling relative to said alkanols, are introduced to the middle section of an extractive distillation zone and a stream containing said impurities is withdrawn overhead and a dilute aqueous alkanol stream is withdrawn from the bottom of said extractive distillation zone;

b. the dilute alkanol stream from the bottom of said extractive distillation zone is introduced to the lower section of an alkanol distillation zone from which are withdrawn a pure concentrated alkanol stream from an upper section, a stream containing low boiling impurities from a middle section and a stream containing high boiling impurities overhead;

c. the overhead stream from said extractive distillation zone and said streams containing high and low boiling impurities from said alkanol distillation zone are introduced into a zone for distilling said impurities from which are withdrawn a stream containing high boiling impurities from a lower section, a stream containing low boiling impurities overhead and a stream containing alkanols from a middle section, the latter being recycled to said extractive distillation zone with said crude alkanols, the improvement which consists of introducing aqueous alkali hydroxide solution into said alkanol distillation zone at a single point which is above the point from which the stream containing high boiling impurities is withdrawn and below the point from which pure concentrated alkanols are withdrawn.



3,960,673

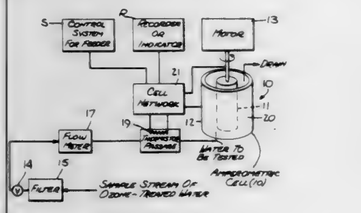
TECHNIQUE FOR CONTINUOUSLY ANALYZING THE CONCENTRATION OF OZONE DISSOLVED IN WATER

James J. Morrow, Norristown, and Leo L. Dailey, Philadelphia, both of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Continuation-in-part of Ser. No. 44,800, June 9, 1970, abandoned. This application Sept. 27, 1974, Ser. No. 509,829

Int. Cl.² G01N *27/46*

U.S. Cl. 204—1 R **5 Claims**



1. A technique for continuously analyzing the concentration of ozone in an ozone-treated water supply without the use of chemicals, said technique comprising the steps of:

A. conducting a sample of water from said supply at a predetermined flow rate into the annular space which exists in an amperometric cell formed by a cathode disposed within a tubular anode;

B. rotating said cathode at a speed at which polarization and depolarization actions are uniformly distributed on the cathode surface, said cathode being polarized in the absence of ozone in the sample to produce substantially no current flow in said cell and being directly depolarized by ozone to produce a current flow therein which depends on the concentration of ozone;

C. maintaining a potential on said cathode at a level resulting in a proportional relationship between the concentration of ozone and the resultant current flow; and

D. measuring said current flow to indicate the concentration of ozone.

3,960,674

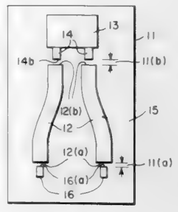
METHOD OF DEPOSITING A METAL ON A SURFACE COMPRISING AN ELECTRICALLY NON-CONDUCTIVE FERRITE

Alexander Coucoulas, Bridgewater Township, Somerset County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 20, 1974, Ser. No. 534,920

Int. Cl.² C25D *5/02*

U.S. Cl. 204—16 **19 Claims**



1. A method of depositing a metal on an exposed surface comprising an electrically non-conductive ferrite, having a resistivity of at least 10^4 ohm-cm, which comprises:

directly contacting the exposed ferrite surface with a cathodically charged element, and

electroplating said element to deposit a metal thereon and on an adjoining portion of said contacted exposed ferrite surface.

3,960,675

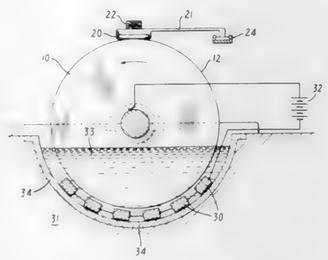
METHOD FOR DEPLATING AND REPLATING ROTOGRAVURE CYLINDERS

John C. Motter, York, Pa., assignor to Motter Printing Press Co., York, Pa.

Filed Apr. 17, 1975, Ser. No. 569,003

Int. Cl.² C25D *7/04*; **C25F** *3/00*

U.S. Cl. 204—25 **9 Claims**



1. A method for producing a new printing surface from an intaglio printing surface previously etched for printing use, comprising the steps of:

a. filling the etched wells of said printing surface with an insulative material;

b. deplating metal from said printing surface, while simultaneously scrubbing the insulative material high points even with the deplating surface, until the deplating surface is reduced below the level of the etched wells, thereby obtaining a smooth metal surface; and

c. replating metal on said smooth surface to the desired thickness.

3,960,676

COATING PROCESS FOR ALUMINUM AND ALUMINUM ALLOY

Yoshiaki Miyosawa, and Sueo Umemoto, both of Hiratsuka, Japan, assignors to Kansai Paint Company, Ltd., Japan

Filed Sept. 24, 1973, Ser. No. 400,171

Claims priority, application Japan, Oct. 4, 1972, 47-98943

Int. Cl.² C25D *5/00, 13/06, 9/02*

U.S. Cl. 204—38 A **8 Claims**

6. The coating process of claim **1** wherein said hydrophilic coating is deposited by applying a direct current of 30–120 volts or an alternating current of 10–40 volts between said article and a counter electrode.

3,960,677

ACID ZINC ELECTROPLATING

Roelof Hildering, Vianen, Netherlands, and Anton Mudrak, Broadview Heights, Ohio, assignors to The Harshaw Chemical Company, Cleveland, Ohio

Filed Sept. 27, 1974, Ser. No. 510,090

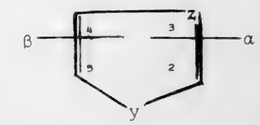
Int. Cl.² C25D *3/22*

U.S. Cl. 204—55 R **7 Claims**

1. A bright acid zinc aqueous electroplating bath containing an inorganic zinc salt, and improved by the inclusion of:

a. between about 5 and about 25 grams per liter of a carboxy terminated alkyl phenol polyglycol ether wetting agent, and

b. between about 0.1 and about 10 g/l of a heterocyclic compound having the following structural formula:



Wherein

y is either S, O, or SO_2,

Z is either —C or N when *y* is S, or is —C when *y* is SO_2, or O,

α is a saturated or unsaturated aliphatic chain further substituted by a carbonyl, hydroxy, or cyano group when *z* is —C, or is a mercapto group or hydrazino group when *z* is N, or is H when *y* is SO_2, and is attached to any available carbon atom on the heterocyclic nucleus at the 2 or 3 position, provided, however, that when α is hydrogen or an aliphatic chain attached at the 2 position, the compound also includes a hydrogen atom attached to —C at the 3 position, and β is H or a halogen selected from the group consisting of Cl and Br, and is attached to any available carbon atom in the heterocyclic nucleus, or is a phenylene group attached to the heterocyclic ring at the 4 and 5 positions.

3,960,678

ELECTROLYSIS OF A MOLTEN CHARGE USING INCOMSUMABLE ELECTRODES

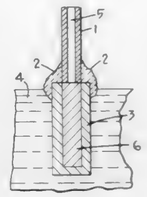
Hanspeter Alder, Flurlingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed May 15, 1974, Ser. No. 470,198

Claims priority, application Switzerland, May 25, 1973, 7522/73

Int. Cl.² C25C *3/06, 3/12*; **C05B** *35/00*

U.S. Cl. 204—67 **10 Claims**



1. In a process for operating a cell for the electrolysis of a molten charge containing aluminum oxide, the cell being of the type including at least one anode,

the steps comprising:

using a non-consumable anode having a working surface of ceramic oxide material to be at least partially in contact with the molten charge, and

maintaining a current density above a predetermined minimum value over that part of the anode surface in contact with the molten charge.

7. In a process as claimed in claim **1**, and providing the anode, at least in the three phase interface region where the atmosphere and the molten charge surface are in contact, with a protective layer of an electrically insulating material resistant to attack by the molten charge.

3,960,679

PROCESS FOR HYDRODIMERIZING OLEFINIC COMPOUNDS

Charles R. Campbell; Donald E. Danly, both of Pensacola, Fla., and Werner H. Mueller, Kelkheim Hornau, Taunus, Germany, assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 497,807, Aug. 15, 1974, abandoned, which is a continuation-in-part of Ser. No. 284,373, Aug. 28, 1972, Pat. No. 3,830,712. This application June 27, 1975, Ser. No. 591,181

Int. Cl.² C25B *3/10*; **C07C** *121/26, 103/147, 69/34*

U.S. Cl. 204—73 A **15 Claims**

1. A process for hydrodimerizing an olefinic compound having the formula $R_2C{=}CR{-}X$ wherein —X is —CN, —$CONR_2$ or —COOR′, R is hydrogen or R′, R′ is C_1–C_4 alkyl and at least one R directly attached to either of the two carbon atoms joined by the double bond in said formula is hydrogen which comprises electrolyzing an aqueous solution having dissolved therein at least about 0.5% but less than about 5% by weight of said olefinic compound, at least about 1% by weight of sodium or potassium salt selected from the group consisting of phosphate, borate, perchlorate, carbonate and sulfate sufficient to provide sodium or potassium ions constituting more than half of the total weight of all cations in the solution and from about 10^{-5} to about 0.5 gram mol per liter of C_{17}–C_{36} polymethylenebis(trialkylammonium) ions in which each trialkylammonium radical contains at least two C_3–C_6 alkyl groups and the polymethylene radical is C_3–C_8 in contact with a cathodic surface having a cathode potential sufficient for hydrodimerization of said olefinic compound and consisting essentially of cadmium with a current density between about 0.01 and about 1.5 amps per square centimeter of said cathodic surface and at a temperature between about 5° and about 75°C.

3,960,680
TREATMENT OF CATALYTIC ANODES

Nicholas William James Pumphrey, and William Laurence Woods, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, Millbank, England

Filed Apr. 18, 1974, Ser. No. 462,116

Claims priority, application United Kingdom, Apr. 25, 1973, 19574/73

Int. Cl.² B01D *3/00*

U.S. Cl. 204—98 **11 Claims**

1. A process for removing a barium containing scale from an anode which comprises a film-forming metal carrying an electrocatalytically active coating of a mixture of (1) an oxide of titanium and (2) ruthenium oxide, said process comprising treating the said anode with sulphuric acid containing not more than 10 percent by weight of water thereby removing the scale without removing the active coating.

3,960,681
METHOD FOR PRODUCING ELECTROLYTIC HIGH PURITY LEAD USING LARGE-SIZED ELECTRODES

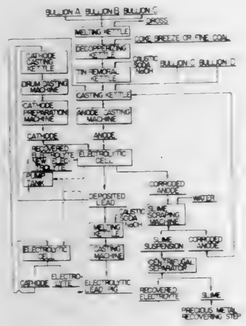
Etsuji Nomura, Tokyo; Masaharu Aramaki, Takehara, and Yuji Nishimura, Omuta, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1975, Ser. No. 545,125

Claims priority, application Japan, Feb. 21, 1974, 49-20838; Feb. 22, 1974, 49-21164

Int. Cl.² C25C *1/18;* **C25B** *11/04*

U.S. Cl. 204—114 **5 Claims**



1. In a method for the electrolytical production of lead according to the Betts process, the improvement comprising using anodes of crude lead, containing as impurities 0.8 to 1.3% by weight of antimony, 0.6% by weight or less of bismuth, 0.1% by weight or less of copper, 0.05% by weight or less of tin, and arsenic, the ratio of the sum of the contents of antimony and arsenic to the content of bismuth being 2.0 or more, whereby there is produced electrolytically deposited lead which is feasible for being refined into a purity of 99.999% or more in the Harris process.

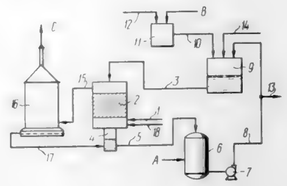
3,960,682
METHOD OF PROCESSING WASTE GASES CONTAINING SULPHUROUS-ACID ANHYDRIDE

Rimma Bronislavovna Baranova; Vladimir Ilich Lazarev; Nikolai Petrovich Mironov; Viktor Alexandrovich Pinaev; Lenar Timofeevich Bugaenko; Evgeny Petrovich Kalyazin; Alexandra Timofeevna Panferova; Vsevolod Mikhailovich Byakov; Jury Nikolaevich Nikeshichev, all of Moscow, and Petrovich Evgeny Petryaev, Minsk, all of U.S.S.R., assignors to Jury Nikolaevich Nikeshichev and Evgeny Petrovich Petryoev, 2, U.S.S.R.

Filed Sept. 6, 1974, Ser. No. 503,952

Int. Cl.² B01J *1/10*

U.S. Cl. 204—157.1 H **13 Claims**



1. A method of processing waste gases containing sulphurous-acid anhydride comprising the steps of contacting said waste gases with an aqueous solution of sulphuric acid in the presence of a gas selected from the group consisting of oxygen and air and a catalyst selected from the group of inorganic manganese salts consisting of manganese sulphate, manganese perchlorate, manganese chloride, manganese nitrate and manganese phosphate used in an amount of 0.0003–0.03 wt.% based on manganese ion to obtain an aqueous solution of sulphuric acid containing sulphurous-acid anhydride, subjecting the resulting solution to the action of ionizing radiation for initiating the oxidation of sulphurous-acid anhydride to obtain an aqueous solution of sulphuric acid substantially free of sulphurous-acid anhydride, removing a part of the sulphuric acid in the form of the resulting solution in an amount equivalent to the amount of the oxidized sulphurous-acid anhydride, and feeding the remaining part of the aqueous solution of sulphuric acid for contacting with said waste gases.

3,960,683
PROCESS FOR THE DESULFURIZATION OF LIGHT OILS

Yoshio Baba, Kawaguchi, Japan, assignor to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed July 23, 1974, Ser. No. 491,103

Claims priority, application Japan, July 24, 1973, 48-83318

Int. Cl.² B01J *1/10*

U.S. Cl. 204—158 R **4 Claims**

1. A process for desulfurizing light oils, characterized by irradiating a light oil containing sulfur compounds such as mercaptans and sulfides with ultraviolet rays in the presence of oxygen to decompose said sulfur compounds into water-soluble compounds and thereafter, washing said light oil with water to remove said water-soluble compounds.

3,960,684
SULFONES AS SOLVENTS IN CATALYSTS OF U.V. CURABLE SYSTEMS

Jacob Howard Feinberg, Hightstown, N.J., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 355,882, April 30, 1973, abandoned. This application Sept. 30, 1974, Ser. No. 510,176

Int. Cl.² B01J *1/10;* **C08G** *51/46*

U.S. Cl. 204—159.11 **13 Claims**

1. A polymerizable composition, capable of being shipped and stored as a two-package system, consisting essentially of

(1) a monomeric or prepolymeric epoxide material or mixture thereof with a monomer selected from the group consisting of lactones and vinyl-containing compounds, said material being polymerizable to higher molecular weights through the action of a cationic catalyst and (2) a radiation-sensitive aromatic diazonium salt of a complex halogenide, which decomposes upon application of energy to release a Lewis Acid effective to initiate polymerization of said epoxide material, dissolved in an organic sulfone, said organic sulfone being substantially inert to said diazonium salt and to said epoxide material.

3,960,685
PHOTOSENSITIVE RESIN COMPOSITION CONTAINING PULLULAN OR ESTERS THEREOF

Takezo Sano, Takatsuki; Yukikazu Uemura, Amagasaki, and Akihiro Furuta, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Hayashibara Biochemical Laboratories, Incorporated, Okayama, both of, Japan

Filed Nov. 5, 1974, Ser. No. 521,151

Claims priority, application Japan, Nov. 12, 1973, 48-127505; Nov. 12, 1973, 48-127506

Int. Cl.² C08L *1/00, 3/00*

U.S. Cl. 204—159.12 **21 Claims**

1. A photosensitive resin composition comprising

30 to 90 parts by weight of at least one member selected from the group consisting of pullulan, an acetylation product of pullulan, an ester of pullulan with an unsaturated organic acid and a cinnamoylated ester of pullulan,

70 to 10 parts by weight of a photopolymerizable monomer,

0.5 to 5 parts by weight of a photosensitizer and

0.1 to 1 part by weight of a thermal polymerization inhibitor per 100 parts by weight of said polymerizable monomer.

3,960,686
METHOD FOR PREPARING LOW PILLING EFFECT POLYESTER FIBER PRODUCTS

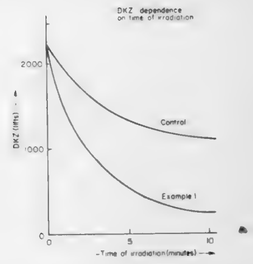
Karl Heinz Magosch; Roland Feinauer, and Jorn Ruter, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Dec. 27, 1974, Ser. No. 536,987

Claims priority, application Germany, Jan. 4, 1974, 2400317

Int. Cl.² C08G *18/00*

U.S. Cl. 204—159.19 **8 Claims**



1. An improvement in the process of melt spinning ethylene terephthalate polyester to produce textile fibers having substantially decreased pilling in fabrics containing the fibers comprising melt polymerizing ethylene terephthalate in the presence of a condensation catalyst to a final temperature of about 250° to 300°C and a final pressure of less than 10 mm of mercury to form an anhydrous melt, the improvement comprising:

conducting said melt polymerizing in the presence of about 0.05 to 5.0 mole percent of a substituted cyclobutanedimethanol;

melt spinning said anhydrous melt; and

exposing said melt spun fibers to irradiation with high energy light.

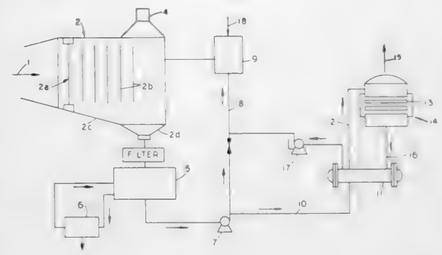
3,960,687
ELECTROSTATICALLY ENHANCED REMOVAL OF SULFUR DIOXIDE FROM GASEOUS CARRIERS

Even Bakke, New Providence; Michael Witte, Chatham, and Manankumar S. Mehta, Parsippany, all of N.J., assignors to U.S. Filter Corporation, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,447

Int. Cl.² C01B *17/60;* **B01K** *1/00*

U.S. Cl. 204—164 **4 Claims**



1. In the removal of sulfur dioxide values from a sulfur dioxide bearing industrial waste gas stream,

the steps of

passing a water vapor saturated sulfur dioxide bearing gas stream through a charging zone to apply electrical charge to at least some of the constituent components thereof,

introducing said charged sulfur dioxide bearing gas stream into absorbent contact with a concentrated solution of monoammonium phosphate and diammonium phosphate in a deposition zone wherein the weight basis proportion of mono to diammonium phosphate in said solution is in the range of about 4 to 1 to about 10 to 1 to effect removal of sulfur dioxide values from said gas stream,

and maintaining an electrostatic force field between said charging zone and said deposition zone to electrostatically induce the directed displacement of the charged constituent components of said gas stream into absorbent contact with said solution.

3,960,688
PROCESS FOR ELECTRODEPOSITING COATINGS ON METAL

Leonard Joseph Calbo, Jr., Ardsley, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 4, 1974, Ser. No. 512,282

Int. Cl.² C25D *13/06*

U.S. Cl. 204—181 **10 Claims**

1. A process for electrodepositing films on electroconductive metal comprising immersing said metal in an aqueous dispersion of a mixture of from about 5% to about 40%, by weight, of (A) a substantially water-insoluble, substantially fully etherified, substantially fully methylolated melamine; a substantially water-insoluble, substantially fully etherified, substantially fully methylolated guanamine or a substantially water-insoluble, substantially fully butylated urea-formaldehyde reaction product and correspondingly from about 95% to about 60%, by weight, of (B) a water dispersible non-gelled polymeric material carrying an ionic charge which polymeric material contains at least one class of reactive groups selected from the group consisting of carboxyl groups, alcoholic hydroxy groups, amine groups and amide groups, wherein the amount of said groups is at least 3%, by weight, and not more than about 30%, by weight, based on the total weight of said polymeric material; wherein said groups are heat reactive with

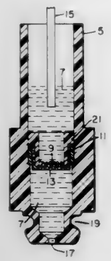
(A); and as a curing catalyst for (A) and (B) from about 0.2% to about 10%, by weight, of (C) an aromatic sulfonic acid compound having an equivalent weight of at least 250 and subjecting the aqueous dispersion to electrophoresis in order to deposit the catalyzed mixture of (A) and (B) on the metal as an adherent film; wherein the percentages of (A) and (B), by weight, total 100% and are based on the total solids weight of (A) and (B) and the percentage weight of (C) is also based on the total solids weight of (A) and (B).

3,960,689

pH REFERENCE ELECTRODE

Terry O. Lanier, Northboro, and Nunna Ramanaiah, Framingham, both of Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 28, 1974, Ser. No. 437,170
Int. Cl.² G01N *27/56, 27/30*
U.S. Cl. 204—195 F **5 Claims**



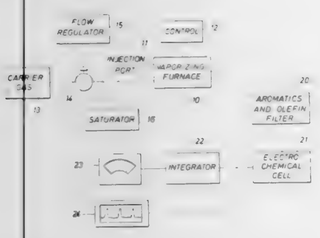
1. In a pH reference electrode comprising an electrode housing containing a concentrated KCl solution, an internal reference electrode in electrical contact with the solution, and means in the electrode housing defining a passageway for electrochemical contact between the solution and a fluid, the pH of which is to be determined, the improvement which comprises providing KCl crystals in the solution, the crystals being held in place by an inert foraminous material disposed intermediate the internal reference electrode and the passageway and the foraminous material being a screen having orifaces smaller than the passageway.

3,960,690

ELECTROCHEMICAL DETECTOR FOR LEAD ALKYLS

Donald C. Olson, Florissant, Mo., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 29, 1974, Ser. No. 501,513
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 R **7 Claims**



1. An apparatus for measuring trace amounts of lead alkyls in gasoline comprising:

a vaporizer including means for supplying a sample of the gasoline containing the trace alkyls thereto;

a filter, said filter being in communication with said vaporizer and designed to separate the aromatic and olefin components from the lead alkyls in the vaporized sample;

an electrochemical cell having spaced counter and indicator electrodes separated by a liquid electrolyte containing a metal salt, said filter being in communication with said electrochemical cell; and

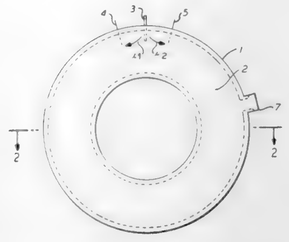
means for measuring the current produced by said cell when the vaporized sample is introduced therein.

3,960,691

TACTICAL RATE SENSOR

Bart J. Zoltan, Emerson, and John L. Evans, Oakland, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jan. 31, 1975, Ser. No. 545,995
Int. Cl.² G01N *27/46*; **G01P** *15/00, 15/08*
U.S. Cl. 204—195 R **6 Claims**



1. A rotational rate sensor for a vehicle capable of rotation about at least one axis comprising:

a. a closed container affixed to the vehicle where rotational rate is to be measured;

b. a low viscosity electrolytic fluid filling said container;

c. a set of three electrodes comprising two output electrodes and a central electrode placed between said output electrodes inserted through the wall of said container and extending into said electrolytic fluid, said electrodes lying in a plane perpendicular to the axis about which rotational rate is to be measured;

d. means for applying a voltage to said electrodes to establish an electron current flow therebetween coupled to said electrodes outside said container; and

e. means for measuring the rate of electron flow between said electrodes thereby permitting a measurement of angular rate to be obtained.

3,960,692

ELECTRO-CHEMICAL SENSOR CONSTRUCTION

Helmut Weyl, Schwieberdingen, and Bodo Ziegler, Stuttgart, both of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed July 29, 1974, Ser. No. 492,520
Claims priority, application Germany, Oct. 6, 1973, 2350252
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 S **14 Claims**

1. Electro-chemical sensor construction having a tubular housing (**13**) with an opening therein (**30**);

an ion conductive solid electrolyte tubular body (**10, 110**), closed at one end, and seated in the housing;

an outer electrical conductor (**11**) located on the outer surface of the tubular body;

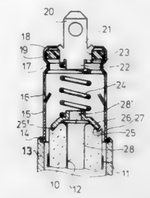
an inner electrical conductor (**12**) located on the inner surface of the tubular body;

a terminal (**20**) insulatingly secured to the housing (**13, 15**);

an insulating disk (**19**) mechanically secured across the tubular housing (**13, 15**), the terminal (**20**) being attached to said disk and having a portion passing there-

through and facing the open end of the electrolyte body (**19, 110**);

and a stressed helical compression spring (**24**) of electrically conductive material under compressive force extending axially within the housing, compressed between the tubular body (**10, 110**) and the terminal (**20**) forming at least a portion of the sole electrical connection between the terminal (**20**) and the inner conductor (**12**), as well as a mechanically reliable, yet resilient connection between the terminal and the tubular body (**10, 110**) on which the conductor (**12**) is located, the compressive force of the compression spring (**24**) being transferred to the housing (**13, 15**) by the tubular body (**10, 110**) and by the terminal (**20**) and the insulating disk (**19**).

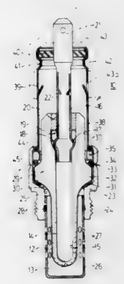


3,960,693

DEVICE FOR ELECTROCHEMICALLY MEASURING THE CONCENTRATION OF OXYGEN IN COMBUSTION GASES

Helmut Weyl, Schwieberdingen, and Leo Steinke, Hegnach, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 1, 1974, Ser. No. 447,330
Claims priority, application Germany, Mar. 28, 1973, 2315444
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 S **16 Claims**



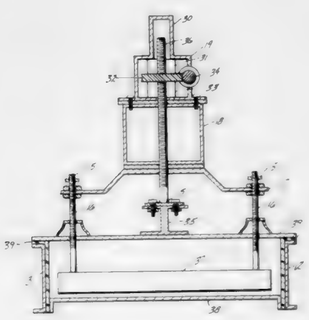
1. A device for electro-chemically measuring the concentration of oxygen in combustion gases, particularly those of internal combustion engines, comprising a housing having a passage which is formed with two spaced open ends with an inner circumferential shoulder intermediate said ends; a tubular member of ion-conducting solid electrolyte material having a closed-ended first portion which projects from one of said open ends, and a second portion which extends through said passage and is formed with an outer circumferential flange one axial end face of which faces towards said one open end and is supported by said shoulder and another axial end face of which faces away from said one open end, the interior of said tubular member being in communication with the ambient atmosphere and the exterior of said first portion being adapted for exposure to a flow of combustion gases, and the materials of said housing and said tubular member having differential coefficients of thermal expansion and contraction; an electron-conductive inner electrode on an inner surface of said tubular member and being conductively connected with an outside terminal portion; an electron-conductive outer electrode on an outer surface of said tubular member and being conductively connected with said housing; and compensating means in said housing fixed with reference thereto and engaging said second portion of said tubular member, said compensating means being operative to compensate for said differential coefficients so as to prevent development of cracks or loosening of the seal between said housing and tubular member, said compensating means being an annular member surrounding said second portion and being of a material having a coefficient of thermal expansion and contraction which compensates for said difference, said annular member being confined between said flange of said tubular member and a radially inwardly extending rim of said housing which is located in the region of the other of said open ends; and a pair of rings of relatively soft material accommodated between said axial end faces and said shoulder and annular member, respectively.

3,960,694

NOVEL ANODE ADJUSTMENT APPARATUS

Fred Champion, Pine Hill, and Thomas W. Kern, Fairhope, both of Ala., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 8, 1974, Ser. No. 522,403
Int. Cl.² C01D *1/14*
U.S. Cl. 204—219 **6 Claims**



1. In a mercury cell comprised of a cell body, a cell cover, anodes positioned within said cell body having anode posts extending through openings in said cell cover, and an anode adjustment means positioned on the top of said cell cover to adjust the distance between said anodes and said mercury, the improvement which comprises employing as said anode adjustment means an apparatus comprised of:

a. a central base member positioned on top of said cell cover substantially parallel to the sides of said cell body,

b. at least two threaded upright posts having the bottom of each secured at spaced intervals to the top of said central base member,

c. a worm gear adjuster secured to the top of each of said threaded posts, said worm gear adjuster being comprised of:

1. a worm gear housing secured to a central anode support member positioned above said central base member and spaced apart therefrom,

2. a worm gear having a threaded central opening adapted to rotate about the top of said threaded post,

3. a threaded worm adapted to mesh with threads on the circumference of said worm gear, said worm being positioned substantially parallel to said central anode support member,

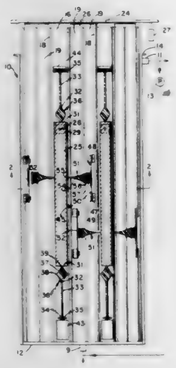
4. a rod secured to and joining each of said worms,
5. a plurality of anode support arms secured at spaced intervals along said central anode support member,
6. a plurality of anodes secured to opposite sides of each of said anode arms, and
7. means for rotating said rod, whereby said worms are rotated, said worm gears are rotated, and said central anode support member, said anode arms and all of said anodes secured to said arms are raised or lowered in the direction of movement of said worm gear on said threaded posts.

3,960,695

APPARATUS FOR THE ELECTROLYTIC PRODUCTION OF INSOLUBLE METAL HYDROXIDE

Paul S. Roller, 1440 N St., NW., Apt. 208, Washington, D.C. 20005

Filed Feb. 22, 1974, Ser. No. 444,790
Int. Cl.² C25D *17/00*
U.S. Cl. 204—227 **14 Claims**



1. An electrolytic apparatus for producing insoluble metal hydroxide in water from electrodes of the metal, which comprises a plurality of electrode plates of the metal; electrolytic current lead-ins for said plates; a binary wiping structure intermediate successive said plates, which is comprised of similar components, the wipers of which are at different wiping levels and reversely directed to the opposite surfaces of successive said plates; reciprocating wiper drive members intermediate successive said plates; as to each said component, connected to said wiper drive members a wiper backing adjacent a plate surface; a plurality of bilateral springs along said backing and connected thereto at both spring ends; and connected to said plurality of bilateral springs a wiper, which is urged by said springs against a plate surface opposite that to which said backing is adjacent.

3,960,696

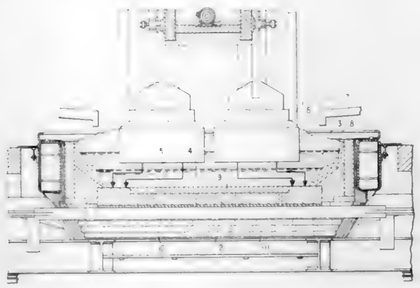
ALUMINUM ELECTROLYSIS FURNACE

Hubert Wittner, Ludwigshafen (Rhine), Germany, assignor to Gebr. Giulini GmbH, Ludwigshafen (Rhine), Germany

Filed June 18, 1974, Ser. No. 480,926
Int. Cl.² C25C *3/08, 7/00*
U.S. Cl. 204—245 **8 Claims**

1. In an aluminum electrolysis furnace arranged to be filled with a mass of electrolyte and having a plurality of anodes each presenting a surface through which current flows and a cathode presenting a surface through which current flows, which faces the anode surfaces, and which is located to underlie the region to be occupied by the electrolyte, with at least part of the cathode surface being coextensive with the anode surfaces, the cathode being composed of a plurality of carbon blocks all having the same electrical conductance, the improvement comprising a layer of an electrically nonconductive material covering a portion of the surface of said cathode which faces said anode surfaces, said layer being located to underlie the region to be occupied by the electrolyte and being at least partially coextensive with said anode surfaces and being disposed for creating a current distribution between said anode and cathode which promotes formation of a hardened electrolyte layer at the sides of said furnace.

8. In an aluminum electrolysis furnace arranged to be filled with a mass of electrolyte and having a plurality of anodes, a



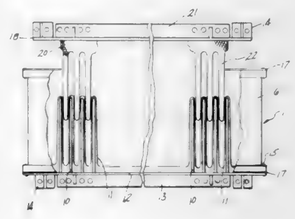
cathode composed of a plurality of carbon blocks all having the same electrical conductance, and means for introducing charges of aluminum oxide at a selected location of the furnace, the improvement comprising means for causing electric current flowing between said cathode and anodes to present a higher current density at such location than at a second location spaced from such location, said means comprising a layer of an electrically nonconductive material covering a portion of the surface of said cathode which faces said anodes in the region of such second location and which underlies the region to be occupied by the mass of electrolyte.

3,960,697

DIAPHRAGM CELL HAVING UNIFORM AND MINIMUM SPACING BETWEEN THE ANODES AND CATHODES

Morton S. Kircher, Oakville, Canada, and Maynard F. Engler, Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 4, 1975, Ser. No. 547,062
Int. Cl.² C25B *1/10, 1/26, 9/00*
U.S. Cl. 204—252 **18 Claims**



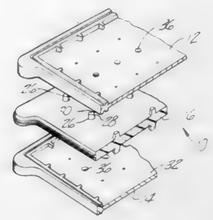
1. A diaphragm cell comprising a cell body, a cathode plate having a plurality of cathodes attached, a diaphragm deposited on said cathodes, an anode plate having a plurality of foraminous metal anodes attached, said cathode plate and said anode plate being sealingly attached to said cell body, and a continuous net interposed between and contacting said anodes and said diaphragm, said net spacing apart said anodes from said diaphragm by a uniform distance.

3,960,698

ELECTRODE SUPPORT FOR FILTER PRESS CELLS

John J. Bortak, Plymouth, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 23, 1974, Ser. No. 535,939
Int. Cl.² B01K *1/00;* **C25B** *9/02*
U.S. Cl. 204—267 **3 Claims**



1. In an electrolytic filter press cell of the type having a central barrier between the electrodes of adjacent cells, the improvement which comprises:

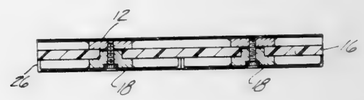
means for supporting the electrodes formed on the central barrier wherein said means for supporting the electrodes comprises a plurality of solid projections formed on the central barrier and wherein the projections abut and engage the electrodes on a first surface thereof.

3,960,699

SELF SUPPORTING ELECTRODES FOR CHLOR-ALKALI CELL

John J. Bortak, Plymouth; Edward N. Balko, Riverview; Albert J. Schweickart, Southgate, and Stephen M. Collins, Trenton, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 23, 1974, Ser. No. 535,321
Int. Cl.² C25C *7/04, 7/00*
U.S. Cl. 204—268 **8 Claims**



1. In a bipolar filter press cell of the type having an anode and a cathode separated by a central barrier and being electrically-mechanically connected through a boss, the improvement which comprises:

the cathode comprising a plurality of segments, each segment having at least two bosses associated therewith,

the anode comprising a plurality of segments, each segment having at least two bosses associated therewith, and

wherein the segments are oriented such that at least one boss of each one electrode segment is connected to a boss of a different electrode segment than the other bosses on the one electrode segment.

3,960,700

COAL HYDROGENATION TO PRODUCE LIQUIDS

Bernard H. Rosen, Little Silver; Arnold H. Pelofsky, East Brunswick, and Marvin Greene, Somerset, all of N.J., assignors to Cities Service Company, Tulsa, Okla.

Filed Jan. 13, 1975, Ser. No. 540,489
Int. Cl.² C10G *1/06*
U.S. Cl. 208—8 **7 Claims**

1. A process of treating carbonaceous material with hydrogen, in the absence of added catalyst, comprising in serial combination,

a. adding liquid or crushed solid carbonaceous material to a reactor,

b. adding hot hydrogen to the stream of carbonaceous material, with the hydrogen/carbonaceous material ratio varying from about 0.05 to about 4,

c. reacting the hydrogen and the carbonaceous material at a temperature of from about 400°C. to about 2,000°C., and a pressure of from about 500 to about 5,000 psig., and

d. quenching the mixture, with the total residence time varying from about 2 milliseconds to about 2 seconds.

3,960,701

HYDROGENATION OF COAL TO PRODUCE COKE, PITCH AND ELECTRODE CARBON

Wilburn C. Schroeder, 7316 Radcliffe Drive, College Park, Md. 20740

Continuation-in-part of Ser. No. 476,105, June 3, 1974. This application Dec. 2, 1974, Ser. No. 528,629
The portion of the term of this patent subsequent to Nov. 4, 1992, has been disclaimed.
Int. Cl.² C10G *1/04*
U.S. Cl. 208—8 **11 Claims**

1. A method for preparation of low sulfur pitch, coke and aromatic oils from sulfur-containing coal comprising introducing said coal in the absence of a pasting oil into a hydrogenation zone of a closed cyclic system having hydrogenation, purifying and oxygen-steam reforming zones, said system being maintained at a pressure in the range of about 500 to 4000 psi, hydrogenating said coal in the hydrogenation zone at a temperature in the range of about 820° to 1000°F with hot hydrogencontaining gases from the reforming zone, said gases also containing carbon monoxide and excess steam, to provide an effluent stream containing excess hydrogen, gaseous hydrocarbons, a heavy carbonaceous liquid and solids fraction, and gaseous impurities including sulfur compounds, removing the heavy, carbonaceous liquid and solids fraction from said effluent stream without substantial reduction in system pressure, removing sulfur compounds from the resulting gaseous stream without substantial reduction in system pressure, introducing the resulting purified gaseous stream, steam and oxygen into said reforming zone to provide the hot hydrogen-containing gases for introduction into said hydrogenation zone, and removing distillable oils from said carbonaceous liquid fraction to produce pitch or coke and aromatic oils.

3,960,702

VAPOR PHASE WATER PROCESS FOR RETORTING OIL SHALE

Victor D. Allred, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Aug. 8, 1974, Ser. No. 495,483
Int. Cl.² C10G *1/02*
U.S. Cl. 208—11 R **6 Claims**

1. In a process for the recovery of organic values from oil shale by contacting said oil shale with superheated water vapor, the improvement comprising enhancing the recovery of said hydrocarbon values by, in combination,

a. contacting particles of said oil shale with said superheated water vapor at a surperficial gas velocity of at least 20 feet per minute and at a pressure in the range of from about 1 to about 150 p.s.i.a.,

b. providing said contact with said superheated water vapor at a temperature of from about 850° to 950°F., to produce an effluent stream comprising superheated water vapor, hydrocarbon vapors, hydrogen, and carbon oxides.

3,960,703

PROCESS FOR THE PURIFICATION OF SLACK WAXES

Maximilian Dielacher, Hamburg, and Uwe Hansen, Jesteburg, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed Dec. 20, 1974, Ser. No. 534,962

Claims priority, application Germany, Dec. 22, 1973, 2364333

Int. Cl.² C10G *43/02*

U.S. Cl. 208—26 **16 Claims**

1. A process for the purification of slack wax containing aromatic compounds which comprises the following steps:

a. contacting an aromatic-containing slack wax in the liquid phase with a macroporous, metal ion loaded, cationic exchange resin at a temperature above the melting point of the slack wax whereby aromatics are adsorbed by the resin,

b. contacting the resin with a paraffinic hydrocarbon whereby residual quantities of the slack wax charge are displaced,

c. contacting the resin with a polar organic solvent whereby the adsorbed aromatics are desorbed, and

d. contacting the resin with a paraffinic hydrocarbon whereby residual quantities of the polar organic solvent are displaced.

3,960,704

MANUFACTURE OF ISOTROPIC DELAYED PETROLEUM COKE

William H. Kegler, Ponca City, Okla., and Marvin E. Huyser, Houston, Tex., assignors to Continental Oil Company, Ponca City, Okla.

Filed Aug. 27, 1974, Ser. No. 500,985

Int. Cl.² C10G *9/14*

U.S. Cl. 208—50 **2 Claims**

1. A process for producing isotropic coke having a CTE ratio of less than 1.5 from reduced virgin crude oil comprising:

a. air blowing said reduced virgin crude oil to a softening point of from 120° to 240°F;

b. heating the air blown reduced virgin crude oil to a temperature of from 850° to 950°F;

c. charging the heated reduced virgin crude oil to a delayed coking drum at a pressure of from 20 to 250 psig with a recycle ratio of from 1.0 to 5.0 to produce isotropic coke therein; and

d. recovering isotropic coke having a CTE ratio of less than 1.5 from the coking drum.

3,960,705

CONVERSION OF FOOTS OIL TO LUBE BASE STOCKS

William E. Garwood, Haddonfield, N.J., and John J. Wise, Media, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 453,246, March 21, 1974, Pat. No. 3,893,906, and a continuation-in-part of Ser. No. 391,380, Aug. 24, 1973, Pat. No. 3,894,939. This application June 17, 1975, Ser. No. 587,760

Int. Cl.² C10G *13/02, 41/00;* **C10L** *1/04*

U.S. Cl. 208—111 **2 Claims**

1. In the process of producing a lubricant base stock and wax from a distillate fraction boiling in the range of about 650° to 1100°F by the sequnce of processing comprising dearomatizing such distillate by solvent extraction, dewaxing said dearomatized distillate by ketone extraction to produce a first product comprising wax and a second product comprising lubricant base stock, and deoiling said first product to produce a hard wax and Foots oil; the improvement which comprises contacting said Foots oil with a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least about 15, a constraint index of 1 to 12, a crystal density of not substantially below about 1.6 grams per cubic centimeter and a hydrogenation/dehydrogenation component in a proportion of up to about 10 weight percent, said contact being carried out at about 500° to 800°F, about 0.5 to 20 LHSV, under a hydrogen pressure of about 250 to 750 psig, and at a hydrogen circulation rate of about 500 to 2,500 SCFB and resolving the product of such contact into at least a lubricant base stock fraction and a light fraction comprising LPG and naphtha.

3,960,706

PROCESS FOR UPGRADING A HYDROCARBON FRACTION

John D. McCollum, Munster, Ind., and Leonard M. Quick, Park Forest South, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed May 31, 1974, Ser. No. 474,927

Int. Cl.² C10G *13/06, 17/00, 23/00*

U.S. Cl. 208—112 **22 Claims**

1. A process for cracking, hydrogenating, desulfurizing, demetalating, and denitrifying a hydrocarbon fraction containing paraffins, olefins, olefin-equivalents, or acetylenes, as such or as substituents on ring compounds, and sulfurous, metallic and nitrogenous components: comprising cracking hydrogenating, desulfurizing, demetalating, and denitrifying said hydrocarbon fraction by contacting said hydrocarbon fraction with a water-containing fluid at a temperature in the range of from about 600° to about 900°F., under super-atmospheric pressure, in the absence of externally supplied hydrogen, and in the presence of an externally supplied catalyst system containing a sulfur- and nitrogen-resistant catalyst selected from the group consisting of at least one soluble or insoluble transition metal compound and transition metal deposited on a support, said transition metal in said catalyst being selected from the group consisting of ruthenium, rhodium, iridium, osmium, and combinations thereof, wherein sufficient water is present in the water-containing fluid and said pressure is sufficiently high so that the water in the water-containing fluid has a density of at least 0.10 gram per milliliter and serves as an effective solvent for the hydrocarbon fraction, and wherein hydrogen is generated in situ; and lowering said temperature or pressure or both to thereby make the water in the water-containing fluid a less effective solvent for the hydrocarbon fraction and to thereby form separate phases, wherein essentially all the sulfur separated from the hydrocarbon fraction is in the form of elemental sulfur.

3,960,707

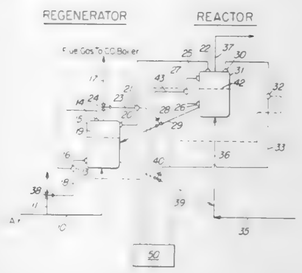
SIMULATION OF CATALYTIC CRACKING PROCESS

Benjamin Gross; Solomon M. Jacob, both of Cherry Hill; Donald M. Nace, Woodbury, all of N.J., and Sterling E. Voltz, Media, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 472,525, May 23, 1974, which is a continuation of Ser. No. 148,051, May 28, 1971, abandoned. This application Dec. 3, 1974, Ser. No. 529,055

Int. Cl.² C10G *9/32*

U.S. Cl. 208—113 **6 Claims**



1. In the catalytic cracking of a feed stream having a multiplicity of hydrocarbons having various boiling ranges by contacting such hydrocarbons with an active hydrocarbon cracking catalyst under catalytic cracking conditions to convert said hydrocarbons to cracked product and to contaminate said catalyst with coke deposited thereon; and controlling the product produced responsive to the boiling range of said multiplicity of hydrocarbons; the improvement which comprises lumping said hydrocarbons both kinetically and according to boiling range as:

P_l = Wt. % paraffinic molecules, (mass spec analysis), 430°–650°F

N_l = Wt. % naphthenic molecules, (mass spec analysis), 430°–650°F

C_{Al} = Wt. % carbon atoms among aromatic rings, (n-d-M method), 430°–650°F

A_l = Wt. % aromatic substituent groups (430°–650°F)

P_h = Wt. % paraffinic molecules, (mass spec analysis), 650°F⁺

N_h = Wt. % naphthenic molecules, (mass spec analysis), 650°F⁺

C_{Ah} = Wt. % carbon atoms among aromatic rings, n-d-M method, 650°F⁺

A_h = Wt. % aromatic substituent groups (650°F⁺) and wherein the yields of said products are lumped as:

G = G lump (C_5 + − 430°F)

C = C lump (C_1–C_4 + coke) and controlling the reaction conditions of said catalytic cracking reaction responsive to the invariant predetermined simultaneous and consecutive reactions characteristic of said proportions in said lumps to maximize yields therefrom.

3,960,708

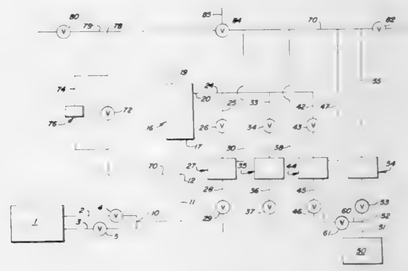
PROCESS FOR UPGRADING A HYDROCARBON FRACTION

John D. McCollum, Munster, Ind., and Leonard M. Quick, Park Forest South, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed May 31, 1974, Ser. No. 474,913

Int. Cl.² C01G *11/02, 17/00*

U.S. Cl. 208—121 **17 Claims**



1. A process for cracking, desulfurizing, and demetalating a hydrocarbon fraction containing paraffins, olefins, olefin-equivalents, or acetylenes, as such or as substituents on ring compounds, and sulfurous and metallic components: comprising cracking, desulfurizing, and demetalating said hydrocarbon fraction by contacting said hydrocarbon fraction with a water-containing fluid at a temperature in the range of from about 600°F. to about 900°F., under super-atmospheric pressure, in the absence of externally supplied hydrogen, and in the presence of an externally supplied sulfur-resistant catalyst selected from the group consisting of at least one basic metal carbonate, basic metal hydroxide, transition metal oxide, oxide-forming transition metal salt, and combinations thereof, wherein the metal in the basic metal carbonate and hydroxide is selected from the group consisting of alkali metals, wherein the transition metal in the oxide and salt is selected from the group consisting of a transition metal of Group IVB, VB, VIB, and VIIB of the Periodic Chart, and wherein sufficient water is present in the water-containing fluid and said pressure is sufficiently high so that the water in the water-containing fluid has a density of at least 0.10 gram per milliliter and serves as an effective solvent for the hydrocarbon fraction; and lowering said temperature or pressure or both to thereby make the water in the water-containing fluid a less effective solvent for the hydrocarbon fraction and to thereby form separate phases, wherein essentially all the sulfur separated from the hydrocarbon fraction is in the form of elemental sulfur.

3,960,709

HYDROCARBON CONVERSION WITH A TRIMETALLIC CATALYTIC COMPOSITE

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 391,428, Aug. 24, 1973, abandoned, which is a division of Ser. No. 225,634, Feb. 11, 1973, Pat. No. 3,775,301, which is a division of Ser. No. 839,086, July 3, 1969, abandoned. This application June 3, 1974, Ser. No. 475,691

Int. Cl.² C10G *35/08*

U.S. Cl. 208—139 **12 Claims**

1. A process for reforming a gasoline fraction to produce a high octane reformate which comprises contacting the gasoline fraction at reforming conditions in the presence of hydrogen with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum or palladium, about 0.01 to about 2 wt. % rhodium, about 0.01 to about 5 wt. % germanium and about 0.1 to about 3.5 wt. % halogen, wherein the platinum or palladium, rhodium and germanium are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium and rhodium are present in the corresponding elemental metallic states and wherein substantially all of the germanium is present in an oxidation state above that of the elemental metal.

3,960,710

HYDROCARBON CONVERSION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

Ernest L. Pollitzer, Skokie, and John C. Hayes, Palatine, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 8, 1974, Ser. No. 522,209

Int. Cl.² C10G *35/08*

U.S. Cl. 208—139 **18 Claims**

1. A process for producing a high octane reformate which comprises contacting a gasoline fraction at reforming conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.5 to about 5 wt. % cobalt, about 0.01 to about 5 wt. % tin and about 0.1 to about 3.5 wt. % halogen, wherein the platinum group metal, cobalt and tin are uniformly dispersed throughout the porous carrier material, wherein the average crystallite size of the cobalt and tin is less than 100 Angstroms in maximum dimension, wherein substantially all of the platinum group metal is present in the elemental metallic state, wherein substantially all of the tin is present in an oxidation state above that of the elemental metal, and wherein substantially all of the cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under reforming conditions.

3,960,711
HYDROCARBON CONVERSION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights; John C. Hayes, Palatine, and Ernest L. Pollitzer, Skokie, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

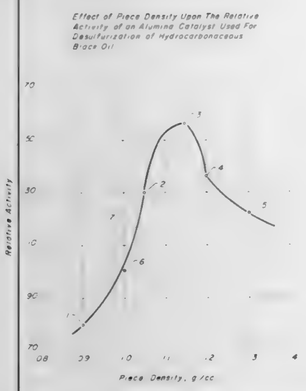
Filed Apr. 2, 1975, Ser. No. 564,386
Int. Cl.² C10G *35/08*, *13/10*; C07C *5/30*
U.S. Cl. 208—139 23 Claims

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.01 to about 2 wt. % rhenium, about 0.05 to about 5 wt. % cobalt, about 0.01 to about 5 wt. % tin, and about 0.1 to about 3.5 wt. % halogen, wherein the platinum group metal, rhenium, cobalt, and tin are uniformly dispersed throughout the porous carrier material, wherein the average crystallite size of the cobalt and tin is less than 100 Angstroms in maximum dimension wherein substantially all of the platinum group metal is present in the elemental metallic state, wherein substantially all of the tin is present in an oxidation state above that of the elemental metal, and wherein substantially all of the cobalt and rhenium are present in the corresponding elemental metallic state or in a state which is reducible to the corresponding elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states.

3,960,712
HYDRODESULFURIZATION OF ASPHALTENE-CONTAINING BLACK OIL WITH A GAMMA-ALUMINA COMPOSITE CATALYST OF SPECIFIED PARTICLE DENSITY

John E. Conway, La Grange, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 356,013, April 30, 1973, abandoned. This application Jan. 8, 1975, Ser. No. 539,466
Int. Cl.² C10G *23/02*
U.S. Cl. 208—216 8 Claims

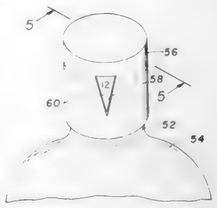


1. In a process for the catalytic hydrodesulfurization of an asphaltene-containing hydrocarbonaceous charge stock in which said charge stock and hydrogen are reacted with a sulfided catalytic particle composite of alumina having combined therewith a metal from Group VI-B and a metal from Group VIII in a reaction zone, the improvement which comprises said catalytic composite particle having a density of from about 1.05 to about 1.24 grams per cubic centimeter wherein the alumina support of said catalyst is gamma-alumina which has an average pore diameter of about 20 to about 300 Angstroms, a pore volume of about 0.1 to about 1 ml./gm., and a surface area of about 100 to about 500 m^2/gm.

3,960,713
MEDICATION TIMING SEALING DEVICE

Helen L. Carey, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Aug. 16, 1974, Ser. No. 497,927
Int. Cl.² B65D *51/24*, *85/56*; G09F *9/00*
U.S. Cl. 206—534 2 Claims



1. A medication timing sealing device for a container of medicine having an open neck having an outer thread, said device comprising:

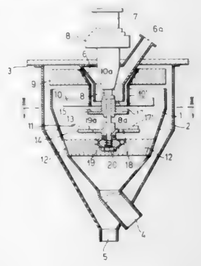
a first vertical hollow cylinder closed at its top end and open at its bottom end, said first cylinder having a thread on its inner cylindrical wall, said first cylinder being threadedly and removably screwed into said neck, said first cylinder having peripherally positioned equidistantly separated numbers from one to twelve disposed along a horizontal circle on the outer cylindrical surface of the first cylinder; and

a second vertical hollow cylinder closed at its top end and open at its bottom end, the second cylinder being snap fitted over the first cylinder, the second cylinder having a viewing window in its cylindrical surface which is aligned with and exposes to view any selected one of said numbers.

3,960,714
CENTRIFUGAL SEPARATOR WITH ROTARY DISTRIBUTOR

Werner Strauss, Bochum, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Dec. 23, 1974, Ser. No. 536,934
Claims priority, application Germany, Dec. 24, 1973, 2364568
Int. Cl.² B07B *7/10*
U.S. Cl. 209—139 A 15 Claims



1. A centrifugal separator including a separating chamber, means for charging material into the separating chamber, a rotary distributor in the chamber provided with coaxial rotating distributor disks one of which is smaller than the other of the disks and spaced thereabove, and means for rotatably driving the disks, said smaller disk being located adjacently below and at a fixed elevation relative to said charging means, and air circulation means for separating material in said chamber the improvement comprising:

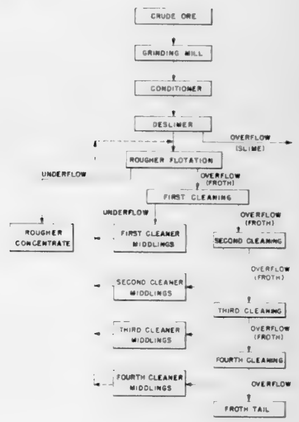
means mounting the larger of the disks for vertical movement toward and away from said smaller disk; and

means for effecting said vertical movements of the larger disk.

3,960,715
CATIONIC FROTH FLOTATION PROCESS

Mason L. Dicks, Keewatin, and James B. Morrow, Hibbing, both of Minn., assignors to The Hanna Mining Company, Cleveland, Ohio

Filed Jan. 7, 1974, Ser. No. 431,292
Int. Cl.² B03D *1/02*
U.S. Cl. 209—166 6 Claims



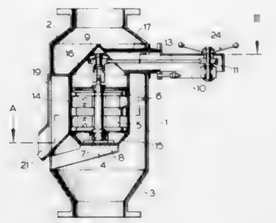
1. In the method of beneficiating silicious iron ore by cationic froth flotation of the silicious gangue particles from the iron mineral particles in an aqueous pulp of such ore comprising the steps of desliming an aqueous slurry of said ore and thereafter subjecting an aqueous pulp of such ore to a froth-flotation treatment in the presence of a starch depressant, a cationic collector, and a frother, the improvement consisting essentially of the incorporation of a small amount of a Group II metal compound which is a halide, sulfate, or or, nitrate, salt into the pulp after the desliming step and prior to the froth-flotation treatment.

3,960,716
MAGNETIC SEPARATOR

Heinrich Spodig, Netteberge 84, 4711 Bork, Westphalia, Germany

Filed Dec. 6, 1973, Ser. No. 422,573
Claims priority, application Germany, Dec. 12, 1972, 2260709
Int. Cl.² B03C *1/12*
U.S. Cl. 209—220 16 Claims

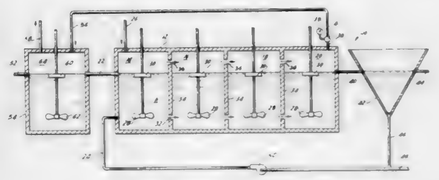
1. A magnetic separator for materials containing magnetically attractable particles, comprising a jacket having an inlet and an outlet; a housing having an axis and an outer surface and so mounted within the confines of said jacket as to be stationary with respect thereto and defining therewith a passage between said inlet and said outlet for gravity movement of the material to be separated in a path; connecting means located in said passage and establishing communication between the interior of said housing and the exterior of said jacket; a shaft mounted in said housing for rotation about said axis; drive means for rotating said shaft and including a drive, and a transmission in said connecting means between said shaft and said drive; and magnetic means mounted on said shaft for shared rotation therewith adjacent said housing, including a plurality of magnet disks and a plurality of pole disks alternating with said magnet disks in the axial direction of said housing, and generating a rotating magnetic field which penetrates through said housing into said path whereby the magnetically attractable particles of the material are attracted to said outer surface and dragged along the same circumferentially of said housing to a predetermined location during the rotation of said magnetic means.



3,960,717
PROCESS FOR TREATING WASTE WATER

Kenneth Wyatt, Oswestry, England, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 323,227, Jan. 12, 1973, abandoned. This application June 7, 1974, Ser. No. 477,526
Claims priority, application United Kingdom, Jan. 20, 1972, 2852/72
Int. Cl.² C02C *1/06*
U.S. Cl. 210—6 8 Claims

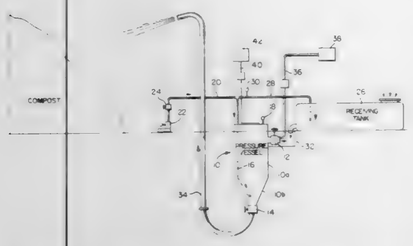


1. An activated sludge process for treating wastewater containing organic matter and dissolved nitrogen gas which comprises the steps of: pretreating said wastewater without the addition of activated sludge in an enclosed wastewater pretreatment zone by contacting said wastewater with an oxygen enriched stripping gas having an oxygen content in excess of the oxygen content of air and having a partial pressure of nitrogen less than the partial pressure of nitrogen in ambient air, stripping at least 25% by weight of said dissolved nitrogen gas from said wastewater by contact with said oxygen enriched stripping gas, venting said stripped nitrogen gas from said pretreatment zone, thereafter feeding said pretreated wastewater and recirculated activated sludge to an enclosed aeration zone to form a mixed liquor in said enclosed aeration zone, introducing an oxygen enriched aeration gas into said enclosed mixed liquor aeration zone, biologically degrading the organic matter contained in said wastewater in contact with oxygen enriched aeration gas in said enclosed mixed liquor aeration zone, discharging said mixed liquor from said mixed liquor aeration zone, separating activated sludge from said discharge mixed liquor, and recirculating separated activated sludge downstream of said pretreatment zone to said mixed liquor aeration zone as said recirculated activated sludge, said oxygen enriched stripping gas comprising at least some oxygen enriched aeration gas withdrawn from said mixed liquor aeration zone.

3,960,718
METHOD AND APPARATUS FOR TREATING LIQUID SEWAGE AND WASTE

Willis R. Lebo, 6510 21st Ave., NE., Tacoma, Wash.

Filed Aug. 5, 1974, Ser. No. 494,742
Int. Cl.² C02C 1/08
U.S. Cl. 210—14 3 Claims



1. A method of treating liquid material consisting essentially of sewage and/or manures having solids therein to make the liquid material usable as a plant nutrient and soil conditioner, comprising:

feeding the liquid material into a cone-shaped pressure vessel,

injecting a stream of pressurized oxygen-containing gas into the pressure vessel near the lower end thereof and tangential to the side walls of the conical portion of the vessel to impart a centrifugal motion to the liquid material and impinge the pressurized gas against the solids in the liquid material with sufficient force to break the solids into small particles, the gas thoroughly aerating the material and pressurizing the vessel with the oxygen-containing gas to a pressure ranging from 4 to 15 psi above the liquid level in the pressure vessel,

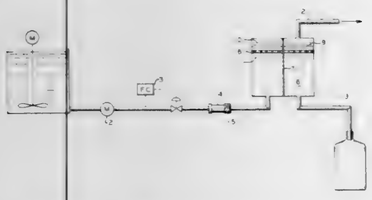
injecting sulfuric acid into the liquid material in an amount sufficient to adjust the pH of the liquid material to a pH of 3.0 or less for sterilization thereof, and readjusting the pH to approximately 6 to 7, and

discharging the liquid material from the vessel by the gas pressure formed above the liquid level in the vessel onto a compost material selected from the group consisting of sawdust, ground bark, peat-moss, straw and wood chips.

3,960,719
COALESCENCE FILTER FOR OIL-WATER DISPERSIONS

Clarence R. Bresson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 6, 1973, Ser. No. 422,317
Int. Cl.² B01D 13/00
U.S. Cl. 210—23 R 6 Claims

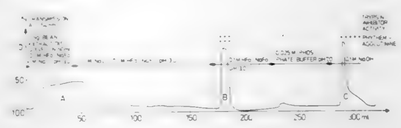


1. A method for agglomerating oil dispersed in water, said method comprising passing a mixture of oil dispersed in water through a coalescing filter, said filter comprising from about three to about 25 strata of about 30 to about 100 mils in thickness for a total thickness of at least 0.5 inch of polypropylene fibers needled to produce a coherent fabric fused on one side only and capcoated with an additional layer of polypropylene fibers needle punched into the unfused side.

3,960,720
GEL PRODUCT FOR SEPARATION PURPOSES AND METHOD OF USING THE PRODUCT FOR HYDROPHOBIC SALTING OUT ADSORPTION

Jerker Olof Porath, and Jan Gunnar Rosengren, both of Uppsala, Sweden, assignors to Exploaterings Aktiebolaget T.B.F., Uppsala, Sweden

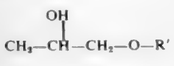
Filed Mar. 19, 1974, Ser. No. 452,519
Claims priority, application Sweden, Mar. 23, 1973, 7304148
Int. Cl.² B01D 15/08
U.S. Cl. 260—112.5 R 4 Claims



1. Method of separating proteins containing both hydrophilic groups such as OH, NH_2, COOH and hydrophobic groups such as alkyl, phenyl, indyl, comprising adsorbing the proteins from a solvent onto a gel packed in a column and consisting essentially of agarose to which neutral hydrophobic groups which do not form ions are covalently bonded and having the formula

$$P—O(CO)_{n'}—R$$

where P is the agarose residue and R is a hydrophobic radical selected from the group consisting of hydrocarbon and ether residues, n' being no greater than 1, the hydrophobic group having the formula C_nH_{2n+1} unsubstituted or substituted with halogen or hydroxy, C_nH_{2n-1}, $X_mC_6H_{5-m}$—, $X_mC_6H_{5-m}CY$—, $X_mC_6H_{5-m}CY—CZ$—, $X_mC_{10}H_{7-m}$—, $X_mC_{10}H_{7-m}CY$—, $X_mC_{10}H_{7-m}CY—CZ$— or



where

X is H, C_pH_{2p+1}, CH_3, C_2H_5, OC_pH_{2p+1}, halogen or NO_2,

n is an integer from 1 to 20,

Y and Z are O or H_2,

m is an integer from 0 to 5,

p is an integer from 1 to 10 and

R′ is alkyl, alkenyl, aryl, aralkyl, aralkoxy, alkaryl, unsubstituted or substituted with hydroxy, halogen or nitro, the alkyl portions of R′ containing 1–20 carbon atoms, and desorbing the adsorbed material by lowering of the ion strength and/or changing the pH and/or lowering the polarity of the solvent.

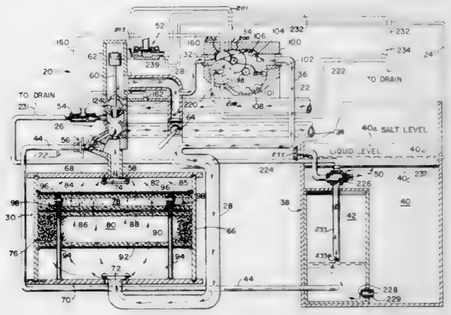
3,960,721
FLUID TREATING APPARATUS AND METHOD

Don E. Heskett, Villa Park, Ill., assignor to Fluid Power Research, Inc., Villa Park, Ill.

Filed June 15, 1973, Ser. No. 370,235
Int. Cl.² B01D 15/04, 15/06
U.S. Cl. 210—25 40 Claims

1. A fluid treating apparatus comprising, in combination, apparatus inlet means connecting said apparatus to a supply of line pressure fluid to be treated therewith, chamber means containing a bed of fine mesh surface active fluid treating particles to be contacted by said fluid for providing a desired treatment to said fluid during a treating mode, the treating capacity of said particles becoming exhausted during use and being restorable by contacting said particles with a regenerating fluid, said fine mesh particles in said bed having a particle size of 50 mesh or smaller, measured on a dry basis, fluid inlet and outlet passages communicating with said chamber means,

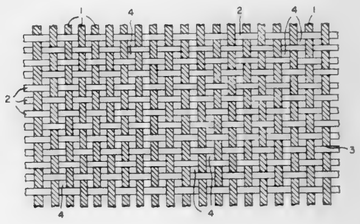
said chamber means being constructed and arranged to permit flow of fluid through said bed of fine mesh surface active fluid treating particles and to prevent the escape of said fine mesh surface active fluid treating particles therefrom, means for storing a body of a regenerating fluid for regenerating said fine mesh surface active fluid treating particles, said regenerating fluid storage means including an inlet and outlet between which said body of regenerating fluid is interposed, means communicating said line pressure fluid with the inlet to said regenerating fluid storage means to charge said regeneration fluid storage means with line pressure during a regeneration mode, means communicating the outlet of said regenerating fluid storage means with said chamber means for feeding regenerating fluid to said fine mesh surface active fluid treating particles during the regeneration mode, meter means responsive to the cumulative volume of fluid supplied to said bed of fine mesh surface active fluid treating particles in said chamber means, and switching means directing line pressure fluid in the treating mode from said apparatus inlet means to said chamber means and in the regeneration mode directing said line pressure fluid to the inlet of said regenerating fluid storage means for charging said regenerating fluid under the direct driving force of said line pressure fluid to said bed of fine mesh surface active fluid treating particles in said chamber means, said switching means being responsive to said meter means, whereby said apparatus will be switched from a treating mode to a regenerating mode after treatment of a predetermined volume of said fluid.



3,960,722
OIL ADSORBENT

Masami Tomikawa; Akiji Tsunoda; Kazuhisa Kaneda; Hideo Ohkawa, and Yutaka Mugino, all of Chiba, Japan, assignors to Idemitsu, Kosan Kabushiki Kaisha (Idemitsu Kosan Co., Ltd.), Japan

Continuation of Ser. No. 363,389, May 24, 1973, abandoned. This application Jan. 27, 1975, Ser. No. 544,301
Int. Cl.² C02B 9/02
U.S. Cl. 210—36 6 Claims



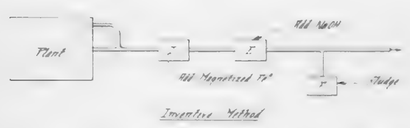
1. A material for absorbing oil from oil-contaminated water comprising an openwork assembly of elongated strands in intimate contact, said strands having a diameter of about 1–5 mm and being formed of a flexible foam comprising a physically foamed mixture consisting essentially of about 20–70% of a non-crosslinked polyethylene resin and distributed uniformly through said resin about 80–30% of inorganic calcium compound particles, said percentages being by weight.

6. A method of removing oil from oil-contaminated water comprising the step of contacting said water with the absorbent material of claim 1.

3,960,723
MAGNETIZATION OF IRON CHROMIUM SYSTEM

James W. Butler, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 26, 1972, Ser. No. 317,919
Int. Cl.² C02B 1/20
U.S. Cl. 210—42 S 7 Claims



1. A method of treating waste water containing solutes from the group consisting of chromium, copper, nickel, lead and tin, and a complexing agent for said solute, the method comprising:

a. introducing magnetized ferrous particles to said waste water,

b. adjusting the pH of said water at least above 6.3 whereby compounds formed from said solute are optimally precipitated to produce a water purity characterized by a copper concentration less than 1 ppm, a trivalent chromium concentration less than 2.1 ppm, and a nickel concentration less than 1.0 ppm.

3,960,724
PROCESS FOR THE SEPARATION OF NATURAL WATER-SOLUBLE ALUMINUM HYDROSILICATE ORGANO-COMPLEXES

Janos Barna, Budapest, Hungary, assignor to Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt., Budapest, Hungary

Filed May 22, 1974, Ser. No. 472,508
Int. Cl.² B01D 43/00
U.S. Cl. 210—49 4 Claims

1. A mechano-chemical activation process for the separation of peptisable natural aluminium hydrosilicate organo-complex from brown coal, characterized by milling brown coal to a size smaller than 60 microns, admixing the milled brown coal with water, vigorously mechanically agitating the mixture of brown coal and water at 60 to 120°C. so as to dissociate to the colloidal state, in the course of which the hydrophilic binding positions of the materials are loosened by hydration, and finally separating the thus-formed peptised solution from insoluble material.

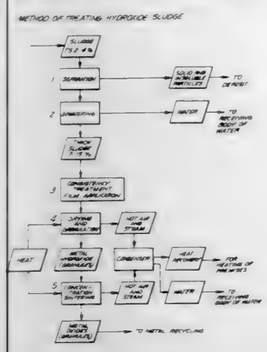
3,960,725
METHOD FOR SLUDGE TREATMENT

Gote Herbert Egard Bjermo, and Paul Einar Tresjo, both of Vasteras, Sweden, assignors to System AB Infoteknik, Vasteras, Sweden

Filed Oct. 31, 1974, Ser. No. 519,559
Claims priority, application Sweden, Nov. 5, 1973, 7314962-7
Int. Cl.² C02C 5/06
U.S. Cl. 210—67 4 Claims

1. A method of converting metal hydroxides in sludge to a non-polluting product comprising: separating the sludge from waste water containing the metal hydroxide therein; dewatering said sludge to a thixotropic consistency; conveying the thixotropic sludge to a heating device; applying the thixo-

tropic sludge in a thin layer having a thickness between about 1 mm. and 5 mm. onto a conveyor; conveying the thin layer of thixotropic sludge through the heating device and applying heat therein to thereby form small particles of metal hydroxide; scraping the small particles of metal hydroxide from the conveyor and transferring the small particles to a sintering



device; compacting the small particles of metal hydroxide before sintering; and conveying the compacted metal hydroxide through the sintering device and applying heat therein to form a metal oxide in powder or granular form, said step of dewatering the sludge to a thixotropic consistency comprising forming a sludge having a water content greater than 85% by weight of the sludge.

3,960,726

AUTOMATIC FILTER LEVEL CONTROL BY DILUTION WITH FILTRATE

C. Lynn Peterson, Salt Lake City, Utah, assignor to Peterson Filters and Engineering Co., Salt Lake City, Utah

Filed July 28, 1971, Ser. No. 166,806
Int. Cl.² B01D *33/02*
U.S. Cl. 210—77 **9 Claims**



9. The method of maintaining a predetermined slurry level in a slurry tank of a vacuum filter unit in a range between a predetermined low level and a predetermined high level comprising:

providing a slurry source and connecting the slurry source to the slurry tank by passage means therebetween,

removing filtrate from the filter unit and delivering at least a portion of the filtrate to the passage means and mixing the filtrate with the source slurry to vary slurry level in the slurry tank, and

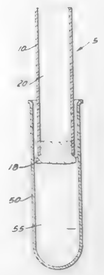
automatically controlling the amount of filtrate delivered to and mixed with the source slurry by control signal responsive means in accordance with the level of slurry in the slurry tank continuously operable during filter unit operation providing continuous control signals for the control signal responsive means.

3,960,727

APPARATUS AND METHOD FOR ISOLATING SOLUBLE BLOOD COMPONENTS

Harry T. Hochstrasser, 47 Summit Drive, Hastings-on-Hudson, N.Y. 10706

Filed Aug. 9, 1974, Ser. No. 496,030
Int. Cl.² B01D *33/00*
U.S. Cl. 210—78 **11 Claims**



1. An assembly for isolating the soluble components from the insoluble components of blood mixtures selected from coagulated whole blood and mixtures of whole blood with anti-coagulants which comprises:

i. a blood collection container for holding a blood specimen to be separated and having an opening therein; and

ii. a separating apparatus inserted in the opening of said container, having a diameter less than the width of said collection chamber so that said apparatus fits loosely within said collection container and does not form an interference fit with the inner walls of said container; said apparatus comprising:

an elongate body defining a central bore which has an upper portion and a lower portion; said body having a first end which is open and communicates freely between the exterior and the upper portion of said bore and a second end which is open and communicates between the exterior and the lower portion of said bore;

a filter member located adjacent to said second end and being interposed between the body exterior and the lower portion of said bore, said filter member having pore sizes which permit the passage of soluble blood components but prevent passage of insoluble blood components; and

said apparatus having a specific gravity of between 0.3–1.3.

8. A method of isolating the soluble components from the insoluble components of a blood mixture held in a blood collection container and which is selected from coagulated whole blood and mixtures of whole blood with anti-coagulants which consists of placing in said blood mixture an apparatus which comprises;

an elongate body defining a central bore which has an upper portion and a lower portion; said body having a first end which is open and communicates freely between the exterior and the upper portion of said bore and a second end which is open and communicates between the exterior and the lower portion of said bore;

a filter member located adjacent to said second end and being interposed between the body exterior and the lower portion of said bore, said filter member having pore sizes which permit the passage of soluble blood components but prevent passage of insoluble blood components;

said apparatus having a specific gravity of between about 0.3 and 1.3; said apparatus having a diameter which is

less than the width of said collection container so that said apparatus is loosely disposed within said blood collection container when emplaced in said blood mixture and does not form an interference fit with the inner walls of said container; and

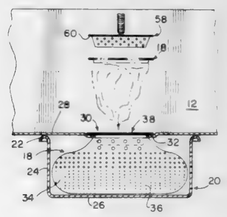
centrifuging said blood mixture with said apparatus emplaced thereon.

3,960,728

DISPOSABLE FILTER APPARATUS

Karl G. Otzen, Brookfield, Wis., assignor to Safety-Kleen Corporation, Elgin, Ill.

Filed Mar. 12, 1975, Ser. No. 557,499
Int. Cl.² B01D *23/04*; **B65D** *29/04*
U.S. Cl. 210—167 **5 Claims**



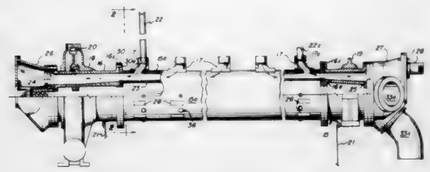
1. A parts washer apparatus comprising in combination a receptacle for receiving a solvent and having means therein for accommodating the parts to be washed and a reservoir for containing a quantity of the solvent, means for circulating the solvent from said reservoir to said receptacle, said receptacle having an opening providing communication for passage of said solvent between said receptacle and said reservoir, and a filter unit disposed within said opening, said filter unit including a collar element in the form of a ring substantially rigid material for locating said filter unit within said opening, and a filter bag portion formed of an impermeable and softenable plastic material, said filter bag having a neck portion secured to said collar element and enlarged upper and lower body portions depending therefrom, said neck portion having solvent by-pass openings therein and said upper and lower body portion having openings therein which are of smaller size than said solvent by-pass openings, said filter bag having openings of the smallest size in said lower body portion which openings are sufficiently small to retain in said bag very fine particles of solid material which are suspended in said solvent, said openings in said upper body portion being of size sufficient to retain in said bag larger particles of said material which are carried by said solvent, said openings being adapted to be reduced in size by particles of said solid material lodging therein, whereby to provide a further effective subdivision of said openings by said particles of material so that said filter mesh size is effectively reduced as filtered particles are trapped therein, and the rate of solvent passage through the lower body of said filter is reduced sufficiently to enable said filter to separate said material by sedimentation.

3,960,729

FLOW CONDUCTING CONNECTORS FOR DISC FILTER SECTORS AND INTERNAL PASSAGES OF FILTER SHAFT

C. Lynn Peterson, and Clarence J. Peterson, both of Salt Lake City, Utah, assignors to Peterson Filters and Engineering Co., Salt Lake City, Utah

Continuation of Ser. No. 185,707, Oct. 1, 1971, abandoned, which is a division of Ser. No. 863,947, Oct. 6, 1969, Pat. No. 3,659,716. This application Sept. 24, 1973, Ser. No. 400,128
Int. Cl.² B01D *33/38, 33/26*
U.S. Cl. 210—232 **22 Claims**



1. In a disc type filter unit in which a plurality of filter segment assemblies are mounted on a common shaft means for rotation therewith to form a cake on the filter segment assemblies and to remove filtrate therefrom through radially extending passage means in said filter segment assemblies and through axially extending passage means in said shaft means, the improvement of passage connecting means for each of said filter segment assemblies mounted on the outer periphery of said shaft means and comprising:

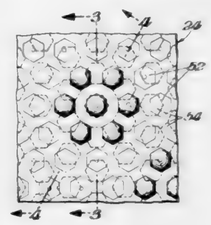
a filtrate passage having an inlet opening connected to said radially extending passage means and an outlet opening connected to said axially extending passage means, and filtrate flow direction changing means in said filtrate passage to change the radial direction of filtrate flow from said radially extending passage means to an axial direction of flow in said axially extending passage means.

3,960,730

EMBOSSED SUPPORT FOR DIALYZER MEMBRANE

Frederick W. Miller, III, Glenmore, Pa., assignor to Extracorporeal Medical Specialties Inc., King of Prussia, Pa.

Filed Sept. 26, 1974, Ser. No. 509,671
Int. Cl.² B01D *31/00*
U.S. Cl. 210—321 A **9 Claims**



1. A mass transfer device comprising a first section of membrane material and a second section of membrane material positioned in close opposition to each other to provide between their inner surfaces a passage for one fluid, a first section of support material adjacent the first section of membrane material and a second section of support material adjacent the second section of membrane material to define the passage for the one fluid between the inner surfaces of the sections of membrane material and to provide passage for another fluid against the outer surfaces of the sections of membrane material, the first section of support material including a plurality of embossments the summits of which

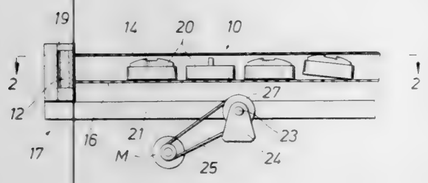
engage the outer surface of the first section of membrane material and the second section of support material including a plurality of opposed embossments the summits of which engage the outer surface of the second section of membrane material to produce contact between the first and second sections of membrane material at spaced intervals within the passage for the one fluid for controlling the thickness dimension of the passage for the one fluid and to permit multi-axial distention of the sections of membrane material into the passage for the other fluid surrounding each embossment for controlling the effective permeability of the sections of membrane material, the improvement being characterized in that the embossments of the first section of support material and the embossments of the second section of support material are constructed and arranged in predetermined patterns so that the embossments of the first section of support material are spaced apart differently along any given directional line than the directly opposed embossments of the second section of support material whereby to avoid interdigitation of the opposed summits which would substantially occlude the passage for the one fluid.

3,960,731

SELF CLEANING SCREEN ASSEMBLY

Louis K. Brandt, 6300 Milvale, Houston, Tex. 77017

Filed Nov. 29, 1974, Ser. No. 528,463
Int. Cl.² B07B *1/48;* **B01D** *29/04*
U.S. Cl. 210—332 **18 Claims**



1. An orbital oscillating separator mechanism having screen support means and means for imparting orbital oscillation to said screen support means, said screen support means retaining a self cleaning screen assembly, said screen assembly comprising:

a screen framework;

a separator screen being secured at the periphery thereof to said screen framework;

a support element being secured at the periphery thereof to said screen framework and being disposed in spaced generally parallel relation to said screen, said support element being formed to define a plurality of openings for passage of material therethrough;

a plurality of screen cleaning devices being disposed in the space between said upper and lower screens, each of said screen cleaning devices having a body portion, the height of said body portion being less than the spacing of said screen and support plate and the width of said body portion being greater than the spacing of said screen and support plate; and

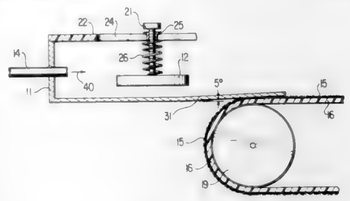
scraper blade means being connected to said body portion of said screen cleaning device with the upper portion of said scraper blade means being disposed above the upper portion of said body portion, said scraper blade means defining at least one elongated scraping surface for scraping engagement with the lower surface of said screen as said mechanical separator is operated with a scraping action that removes material from the underside of said screen.

3,960,732

SYSTEM FOR DEWATERING DILUTE SLURRIES

Thomas E. Lippert, Monroeville, and Michael C. Skriba, Pittsburgh, both of Pa., assignors to The United States of America as represented by the Administrator of the Environmental Protection Agency, Washington, D.C.

Filed Nov. 1, 1974, Ser. No. 520,218
Int. Cl.² B01D *33/36, 33/38*
U.S. Cl. 210—386 **10 Claims**



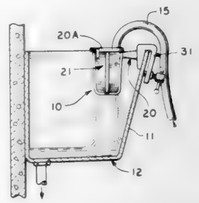
1. An apparatus for dewatering a dilute slurry, including a base support having side walls and opposite ends, at least one endless belt mounted in the base support for movement longitudinally thereof and with which the slurry makes contact for removal of water, a feed tray having side walls, a bottom wall and a mouth end, means fixing the feed tray to one end of the base support at a location within the base support so that the mouth end of the tray extends at least partially over the endless belt whereby the slurry received by the feed tray is fed into the endless belt, a flow splitter means for spreading the slurry across the width of the tray, supporting means secured to the side walls of the base support, means mounting the flow splitter means on the supporting means for adjustment longitudinally of the tray and toward and away from the bottom wall of the tray, respectively, to accommodate varying flow rates or types of slurry, and the flow splitter means being constituted by a disclike body having a substantially planar lower surface arranged in parallelism to the bottom wall of the tray.

3,960,733

FILTER UNIT FOR WASHING MACHINE

Harry M. Van Dieren, 3137 W. 100th St., Evergreen Park, Ill. 60622

Filed Jan. 29, 1975, Ser. No. 545,098
Int. Cl.² B01D *23/00*
U.S. Cl. 210—460 **2 Claims**



1. A filter unit for filtering the lint from liquid washing machine effluent, comprising:

a. a substantially rigid frame,

b. said frame including a generally horizontal upper rim,

c. said frame further including a plurality of vertically extending, horizontally spaced frame elements depending from said rim,

d. said frame also including horizontally disposed frame elements or portions thereof forming a bottom of the frame,

e. a filter screen comprising a wire mesh having predetermined size openings and disposed in said frame so as to depend from said rim,

f. said filter screen extending between and supported by said frame elements whereby an open mouth is defined by said rim,

g. said frame adapted to be seated in a drain tub on one side thereof whereby liquid effluent introduced to said open mouth through a drain hose passes into the tub leaving particulate matter which is entrained in it on the screen within the filter unit,

h. a removable splash cap seated on said frame rim over said open mouth,

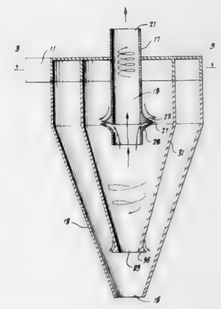
i. said splash cap having an elongated opening formed therein for receiving the end of a drain hose.

3,960,734

HIGH EFFICIENCY CYCLONE SEPARATOR

Antoni Zagorski, 9431 Julie Beth St., Cypress, Calif. 90630

Continuation-in-part of Ser. No. 295,947, Oct. 10, 1972, abandoned. This application July 8, 1974, Ser. No. 486,307
Int. Cl.² B01D *21/26, 33/02*
U.S. Cl. 210—512 M **11 Claims**



11. An improved cyclone separator of the type having a fluid deflector comprising means adapted to receive a fluid and impart circular motion thereto, and wherein the fluid deflector is attached to and closes the base of a conical container, which container has an outlet at the apex thereof from which unwanted materials and substances of a mass and density greater than the fluid may exit and be removed from the fluid and wherein a fluid conduit is located along the center line of the conical container and passes through the fluid deflector which conduit has one end centrally located within the conical container and the other end located external thereto, and wherein an axial vortex of fluid separated from the unwanted materials and substances is formed in the container, which vortex spirals into the one end of the fluid conduit and exits from the other end, the improvement comprising:

an interceptor ring having outer and inner circumferences, the inner circumference mating with and being circumferentially attached externally to the fluid conduit near the one end of the fluid conduit centrally located within the conical container, said ring extending radially outward from said inner circumference to said outer circumference to intercept fluid which flows longitudinally along the outer surface of the conduit and deflect the longitudinal flow radially outward from the center surface of the conduit whereby unwanted materials and substances are impinged against the conical container interior surface and exit through the apex opening therein; and

a diffuser collar substantially uniformly spaced from the fluid conduit and surrounding the one end of the fluid conduit, said diffuser collar having two ends, one end being attached to said outer circumference of said interceptor ring and having spiral vanes which spiral radially inwardly from said outer circumference to contact and connect to the outer surface of the fluid conduit adjacent said interceptor ring, the other end of the diffuser collar being open, whereby the vortex of fluid which spirals toward the one end of the fluid conduit has the outer layer skimmed therefrom by the uniform space between the fluid conduit and said diffuser collar, which skimmed layer spirals between said diffuser collar and the fluid conduit and is intercepted by said spiral vanes and ejected outwardly into the conical container.

3,960,735

CORROSION-INHIBITED POLYPHOSPHATE COMPOSITIONS

Kathleen P. Lacey, Phoenix, Ariz., assignor to Early California Industries, Inc., Phoenix, Ariz.

Filed Aug. 15, 1974, Ser. No. 497,699
Int. Cl.² A62D *1/00;* **C23F** *11/04, 11/08, 11/10*
U.S. Cl. 252—2 **8 Claims**

1. A composition consisting essentially of

a. ammonium polyphosphate liquid, and

b. an iron cyanide blue,

said iron cyanide blue being present in a minor amount effective to substantially reduce the corrosiveness of said composition to aluminum to less than or equal to 1 mil per year as determined by the "Uniform Corrosion" test set forth in Section 4.3.4 of the "Interim Specification" 5100-00302*a* (June 1972), entitled "Specification for Retardant, Forest Fire, Liquid Chemical, Unthickened for Aircraft or Ground Application," issued by the United States Department of Agriculture, Forest Service.

4. A process for preparing an ammonium polyphosphate liquid having reduced tendency to corrode aluminum, comprising incorporating into said ammonium polyphosphate liquid compounds which react in situ to form a minor effective amount of an iron cyanide blue.

3,960,736

SELF-BREAKING VISCOUS AQUEOUS SOLUTIONS AND THE USE THEREOF IN FRACTURING SUBTERRANEAN FORMATIONS

Dustin L. Free, Tulsa, Okla.; Karl L. Krumel, Midland, Mich., and Travis C. Snyder, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 3, 1974, Ser. No. 475,702
Int. Cl.² E21B *43/26*
U.S. Cl. 252—8.55 R **18 Claims**

1. A viscous aqueous well treating composition which has a certain viscosity for a predetermined period of time at a certain temperature and which subsequently breaks to form a lower viscosity fluid within a short period of time, which comprises:

a viscous aqueous solution containing a sufficient quantity of a polysaccharide-thickening agent, containing acetal linkages and which, in an aqueous solution is degraded by an acid to provide a solution having a desired viscosity at the temperature of use and an effective quantity of a $C_1 - C_{12}$ organic ester of a carboxylic acid, which hydrolyzes in said aqueous solution at said temperature of use to produce an acid which degrades the polysaccharide and causes the viscosity of the aqueous composition to be lowered to a desired lower level.

3,960,737
NEGATIVELY CHARGED LIQUID DEVELOPER FOR USE IN ELECTROSTATIC PHOTOGRAPHY

Toshiyuki Kawanishi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Aug. 13, 1973, Ser. No. 387,773

Claims priority, application Japan, Aug. 17, 1972, 47-81832

Int. Cl.² G03G *9/12*

U.S. Cl. 252—62.1 L **20 Claims**

1. A negatively charged liquid developer for use in electrostatic photography which comprises a highly insulating carrier liquid and, dispersed therein, a toner comprising colored particles coated with a synthetic polymer composition comprising:

1. a mixture, A, of a copolymer (a) comprising the reaction product of a heteropolymer selected from the group consisting of styrene-butadiene heteropolymers and vinyltoluene-butadiene heteropolymers with an ester monomer selected from the group consisting of alkyl acrylates and methacrylates, wherein the alkyl group contains 6 to 18 carbon atoms; together with
2. a copolymer (b) having a molecular weight of from 5,000 to 30,000 comprising the reaction product of a monomer selected from the group consisting of acrylic and methacrylic acid with an ester monomer selected from the group consisting of alkyl acrylates and methacrylates

wherein the alkyl group contains 6 to 18 carbon atoms: the mixing weight ratio of copolymer (a) to copolymer (b) being from 1:2 to 15:1, the molecular weight of a heteropolymer being from 50,000 to 300,000 and the weight ratio of styrene or vinyltoluene to butadiene being from 1:1 to 9:1 the weight ratio of ester monomer to heteropolymer being from about 0.5:1 to 3:1, the weight ratio of acrylic or methacrylic acid to acid ester being from about 0.05:1 to 0.3:1.

3,960,738
METHOD FOR PRODUCING IMPROVED ELECTROGRAPHIC DEVELOPER

Robert J. O'Brien; Stanley Lelewski, Jr., and Bob A. LaFleur, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1975, Ser. No. 538,062

Int. Cl.² G03G *9/08*; **B03C** *7/00*

U.S. Cl. 252—62.1 P **10 Claims**



1. A method for preconditioning an electrographic developer comprising an unconsolidated mass of discrete particles of a carrier and of a toner which carries a charge control agent of a first polarity, said method comprising repeatedly passing a flowing stream of such developer through an electrostatic field between a positive or negative first electrode and a grounded electrode of opposite polarity, and attracting part of said toner particles to the first electrode having polarity opposite the polarity of said charge control agent thereby altering the particle size distribution of the toner and yielding a preconditioned electrographic developer.

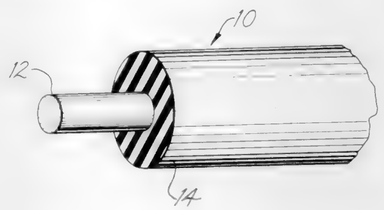
3,960,739
METHOD OF STABILIZING THE DIELECTRIC STRENGTH OF POLYOLEFIN POLYMERS, AND THE STABILIZED COMPOSITIONS AND PRODUCTS THEREOF

Burton Thornley MacKenzie, Jr., Monroe, Conn., assignor to General Electric Company, New York, N.Y.

Filed June 21, 1973, Ser. No. 372,083

Int. Cl.² H01B *3/00*, *3/02*, *3/24*

U.S. Cl. 252—63.2 **21 Claims**



1. A method of stabilizing the dielectric strength of polyolefin compositions under wet conditions, comprising dispersing through a polyolefin of at least one polymer composition containing ethylene selected from the group consisting of polyethylene and copolymers of ethylene and other halogen free polymerizable materials, at least about 0.5 parts by weight of lead stearate per 100 parts by weight of the polymer containing ethylene.

3,960,740
ANTIFREEZE COMPOSITION

William Lawrence Truett, Blackwood, N.J., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 4, 1974, Ser. No. 430,755

Int. Cl.² C09K *50/00*, *3/00*

U.S. Cl. 252—73 **3 Claims**

1. In an undiluted antifreeze solution containing polyhydric alcohol selected from the group consisting of ethylene glycol, propylene glycols, butylene glycols and glycerol, an effective amount of corrosion inhibitor and a dye, the improvement which comprises using as the dye, 1,2-diamino anthraquinone, said dye being present in said antifreeze solution in an amount that is sufficient to give a deep color when said solution is diluted with water to a polyhydric alcohol-water solution of 50-50 volume percent.

3,960,741
ETCHANT FOR REMOVING METALS FROM GLASS SUBSTRATES

Sami I. Gabrail, Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Aug. 28, 1974, Ser. No. 501,161

Int. Cl.² C09K *13/08*

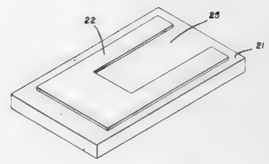
U.S. Cl. 252—79.3 **4 Claims**

1. An etchant for removing metal from a glass substrate comprising:

hydrofluoric acid for oxidizing said metal to form a metal oxide;

nitric acid for reducing said metal oxide; and

lactic acid for protectively coating said glass substrate and inhibiting attack thereof by said hydrofluoric acid and nitric acid.



2. An etchant according to claim 1 further comprising acetic acid for diluting said hydrofluoric acid and nitric acid.

3,960,742
WATER-DISPERSABLE SOLVENT EMULSION TYPE CLEANER CONCENTRATE

Edward O. Leonard, Northlake, Ill., assignor to Chemical Cleaning Composition Trust, Chicago, Ill.

Filed June 29, 1973, Ser. No. 375,119

Int. Cl.² C11D *17/00*

U.S. Cl. 252—90 **13 Claims**

1. A water-dispersible solvent emulsion type cleaner concentrate comprising:

a. about 30–60 parts by weight of an ethylene glycol mono(-lower)alkyl ether solvent,

b. about 17–24.5 parts of an alkali hydroxide,

c. about 9–15 parts of a member of the group ammonium and alkali metal metasilicates,

d. a small amount of a nonionic ampholyte selected from the (higher)alkyl betaines and the alkali salts of N-(higher)alkyl beta aminodipropionates, said(higher)alkyl groups having more than 4 and up to about 22 carbon atoms, and

e. a small amount of an anionic hydrotrope selected from the alkali salts of benzene and (lower) alkyl benzene sulfonates, said amounts of (d) and (e) being sufficient to maintain the inorganic ingredients in a stable suspension.

3,960,743
BLEACHING COMPOSITION

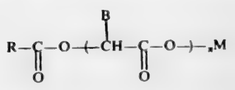
Yunosuke Nakagawa, Koshigaya, and Koitsu Sato, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1974, Ser. No. 463,384

Int. Cl.² C11D *7/54*

U.S. Cl. 252—99 **7 Claims**

1. A bleaching composition capable of being dissolved in water, consisting essentially of from 0.1 to 60 percent by weight of an inorganic peroxide capable of releasing hydrogen peroxide in aqueous solution, and from 0.1 to 50 percent by weight of an activating agent having the formula



wherein R is $ClCH_2$—, CH_3—, $HOCH_2$—, $CH_3CH(OH)$—, phenyl or methoxycarbonyl-substituted phenyl; B is hydrogen or alkyl having one to 3 carbon atoms; M is hydrogen, alkyl having 1 to 4 carbon atoms, or an alkali metal; and n is an integer from 1 to 100, with the proviso that when M is hydrogen or alkali metal, n is at least 2;

the weight ratio of said activating agent to said inorganic peroxide being in the range of 1:9 to 9:1;

the balance of said composition is water-soluble anionic surfactant, or water-soluble nonionic surfactant, or water-soluble neutral inorganic detergent builder salt, or water-soluble alkaline inorganic detergent builder salt, or mixtures thereof.

3,960,744
POWDER DETERGENT COMPOSITION

Itomi Homma, Funabashi; Junryo Mino, Kamagaya, and Kenzo Kunikawa, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1974, Ser. No. 527,878

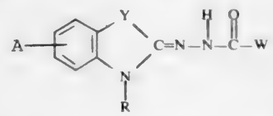
Claims priority, application Japan, Nov. 29, 1973, 48-134511

Int. Cl.² C11D *7/54*

U.S. Cl. 252—102 **6 Claims**

1. A powder detergent composition for washing fabrics consisting essentially of

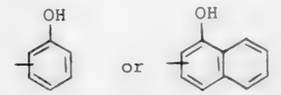
a. from 0.001 to 0.5 percent by weight, based on the total weight of the detergent composition, of at least one bluing dye precursor having the formula



wherein A is hydrogen, chlorine, $-CH_3$, $-OCH_3$, $-SO_3H$ or $-SO_3Na$; Y is -S-, -O-,



or -C=C-; R is methyl or ethyl; and W is



and

b. the balance is water-soluble clothes-washing organic surfactant and water-soluble detergent builders.

3,960,745
CLEANSING COMPOSITIONS

Michael Royston Billany; Arthur Raymond Longworth, and John Shatwell, all of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 253,102, May 15, 1972, Pat. No. 3,855,140. This application Oct. 4, 1974, Ser. No. 512,483
Claims priority, application United Kingdom, June 18, 1971, 28764/71
The portion of the term of this patent subsequent to Dec. 17, 1991, has been disclaimed.
Int. Cl.² C11D *3/48, 1/72*
U.S. Cl. 252—106 **4 Claims**

1. A skin cleansing composition consisting essentially of from 0.5 to 10.0% w/v of a salt of chlorhexidine which is soluble to the extent of at least 0.5% w/v in water at ambient temperature, selected from the group consisting of the gluconate, isethionate, formate, acetate, glutamate, succinamate, mono-diglycollate, dimethanesulphonate, lactate, diisobutyrate and glucoheptonate salts, between 10 and 30% of a polyoxyethylene-polyoxypropylene block copolymer of the formula:

$$HO-(CH_2CH_2O)_a(\underset{CH_3}{CH}CH_2O)_b(CH_2CH_2O)_cH$$

wherein *a*, *b* and *c* are integers, such that said copolymer consists of 40 to 70% of polyoxyethylene and wherein the molecular weight of the polyoxypropylene content is between 2000 and 2500, and water.

3,960,746
AZEOTROPE-LIKE COMPOSITIONS OF METHANOL, NITROMETHANE AND TRICHLOROTRIFLUOROETHANE

Robert Alexander Gorski, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 25, 1974, Ser. No. 491,684
Int. Cl.² C11D *7/50*
U.S. Cl. 252—171 **2 Claims**

1. An azeotrope-like composition consisting essentially of from 5.0 to 6.3 weight percent of methanol, from 0.05 to 0.6 weight percent of nitromethane and from 93.1 to 94.95 weight percent of 1,1,2-trichloro-1,2,2-trifluoroethane.

3,960,747
PROCESS FOR THE PRODUCTION OF AN ACIDIC AQUEOUS SOLUTION OF SILICO-FORMIC ACID

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Filed June 10, 1974, Ser. No. 477,861
Int. Cl.² C01B *33/12, 33/18, 33/00*
U.S. Cl. 252—182 **5 Claims**

1. The process for preparing an acidic solution of silico-formic acid by the following steps:

a. Mixing 1 mol of silico-formic acid and from 0.4 to 1 mol of sodium hydroxide;
b. Adding an amount of water to said mixture to produce a 1 to 10 percent solution by weight of sodium silico-formate;
c. Heating said mixture to 50° to 100°C., while stirring for 1 to 3 minutes, or until the mixture goes into solution, thereby producing a sodium silico-formate solution;
d. Adding said sodium silico-formate solution slowly, over a period of 5 to 20 minutes, to a dilute acid solution until the pH is 4.5, while stirring to keep the temperature between 30° and 75°C., thereby producing an acidic solution of silico-formic acid.

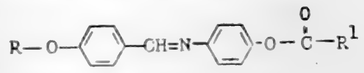
3,960,748
NEMATIC LIQUID CRYSTAL COMPOSITIONS

Bruce H. Klanderman, and Richard T. Klingbiel, Rochester, both of, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 300,007, Oct. 24, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 415,197
The portion of the term of this patent subsequent to Mar. 18, 1992, has been disclaimed.
Int. Cl.² C09K *3/34;* **G02F** *1/13*
U.S. Cl. 252—299 **7 Claims**

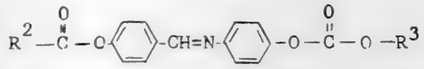
1. In a nematic liquid crystal composition having a resistivity of about 1×10^8 to 1×10^{10} ohm-cm, the improvement wherein said composition comprises predominantly by weight a mixture resulting from the transiminization reaction between at least one Schiff base of the formula:

I.



and at least one Schiff base of the formula:

II.

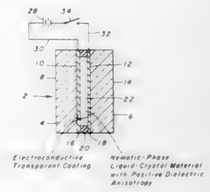


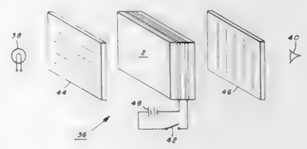
wherein R, R^1, R^2 and R^3 are alkyl radicals having 1 to 18 carbon atoms.

3,960,749
LIQUID-CRYSTAL MIXTURES FOR USE IN LIQUID-CRYSTAL DISPLAYS

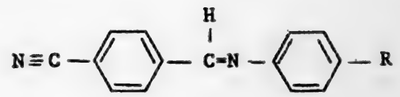
James L. Fergason, Kent, Ohio, assignor to International Liquid Xtal Company, Cleveland, Ohio

Division of Ser. No. 113,948, Feb. 9, 1971, abandoned. This application Jan. 23, 1974, Ser. No. 435,668
Int. Cl.² C09K *3/34;* **G02F** *1/13, 1/16, 1/18*
U.S. Cl. 252—299 **2 Claims**





1. A nematic liquid crystal composition, for use in a liquid-crystal display of the type in which a layer of liquid-crystal material of positive dielectric anisotropy is sandwiched between transparent conductive electrodes, which comprises a mixture of 20 to 80 parts by weight of bis (4-n-octyloxybenzal)-2-chlorophenylenediamine and 20 to 80 parts by weight of p-methyl-p′-n-butylaniline, said compounds comprising 60 to 97 weight percent of the total composition, and 3 to 40 weight percent of an agent for imparting positive dielectric anisotropy having the formula:



where R is a saturated aliphatic radical containing 1 to 12 carbon atoms.

3,960,750
ELECTRO-OPTICAL DISPLAY

Akio Moriyama, Katano; Masakazu Fukai, Nishinomiya, and Komei Asai, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 15, 1974, Ser. No. 460,876
Claims priority, application Japan, Apr. 16, 1973, 48-43418
Int. Cl.² G02F *1/16;* **C09K** *3/34;* **G02F** *1/13*
U.S. Cl. 252—299 **6 Claims**



1. An electro-optical display containg a color switching liquid crystal composition comprising:

a nematic liquid crystal mixture with net positive dielectric anisotropy which is formed of a nematic liquid crystal material with positive dielectric anisotropy and a nematic liquid crystal material with negative dielectric anisotropy and exhibits in the absence of an electric field a homogeneous or twisted type arrangement

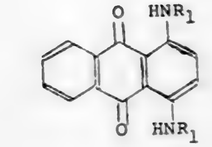
and at least two kinds of dyes different in light absorption, at least one of said dyes being a pleochroic dye and at least two of said dyes having mutually different display performance characteristics with respect to the application of an electric field with a means for applying an electric field to said liquid crystal composition.

3,960,751
ELECTRO-OPTICAL DISPLAY ELEMENT

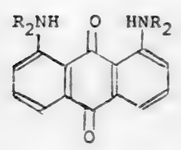
Akio Moriyama, Katano; Masakazu Fukai, Nishinomiya; Hiroshi Tatsuta, Katano, and Hiroaki Takahashi, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sept. 16, 1974, Ser. No. 506,056
Claims priority, application Japan, Sept. 19, 1973, 48-106310; Oct. 31, 1973, 48-123161
Int. Cl.² G02F *1/16;* **C09K** *3/34;* **G02F** *1/13*
U.S. Cl. 252—299 **8 Claims**

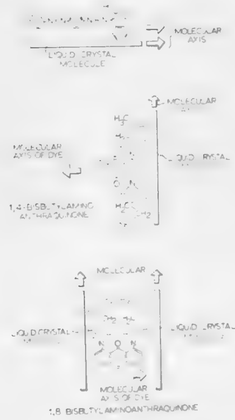
7. An electro-optical display device comprising two parallel transparent members whose inner surfaces have been coated with transparent electrodes; an electro-optical element comprising a nematic liquid crystal composition and at least one compound represented by the formula



or



wherein R_1 is an n-alkyl radical having from 5 to 20 carbon atoms and R_2 is an n-alkyl radical having from 4 to 20 carbon atoms, said electro-optical element being interposed between said electrodes and having all its molecules in their quiescent



state, nonelectrically aligned perpendicular or parallel to such facing surfaces, and means for selectively applying an electric field across said electro-optical element through said electrodes to exceed a threshold electric field.

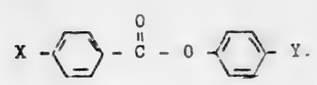
3,960,752
LIQUID CRYSTAL COMPOSITIONS

Bruce H. Klanderman, and David P. Maier, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

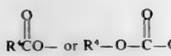
Continuation-in-part of Ser. No. 300,008, Oct. 24, 1972, abandoned. This application Nov. 12, 1973, Ser. No. 415,196
Int. Cl.² C09K *3/34;* **G02F** *1/03, 1/13, 1/16*
U.S. Cl. 252—299 **10 Claims**

1. A nematic liquid crystal composition comprising a mixture of:

I. Compound I,



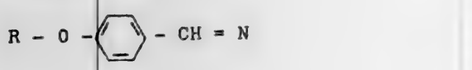
wherein one of X and Y is a strong electronegative group and the other of X and Y is R^4, R^4O-,

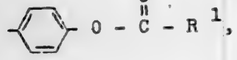


R^4 being an alkyl radical having 1 to 18 carbon atoms; with

II. a mixture resulting from the transiminization reaction of at least one Schiff base of the formula

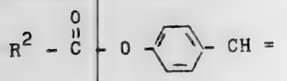
Compound II,

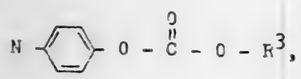




with at least one Schiff base of the formula:

Compound III,





wherein R, R^1, R^2, and R^3 are alkyl radicals having 1 to 18 carbon atoms,

said composition being characterized by a positive dielectric anisotropy $\Delta\epsilon$ of about +1 or greater.

3,960,753

FLUORESCENT LIQUID CRYSTALS

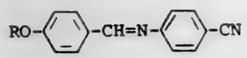
Roberi Dean Larrabee, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 30, 1974, Ser. No. 474,600

Int. Cl.² C09K *3/34*; **C02F** *1/16*

U.S. Cl. 252—299 **5 Claims**

1. A composition which exhibits fluorescent intensity variations at its solid to mesomorphic or mesomorphic to isotropic phase transition comprising a solution of one or a mixture of liquid crystal compounds of the formula



wherein R is C_nH_{2n+1}— or $C_nH_{2n+1}CO$— and *n* is an integer from 1–10 and an amount of 2, 4, 6-trimethylpyridinium tetrakis [1, 1, 1-trifluoro-4-(p-trifluoromethylphenyl)-2, 4-butenedioto] europium III effective to induce said variations.

3,960,754

MULTI-WAVELENGTH OPTICAL FILTER

Richard Forrest Woodcock, South Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed Aug. 1, 1974, Ser. No. 493,587

Int. Cl.² G02B *5/22*

U.S. Cl. 252—300 **5 Claims**

1. A multi-wavelength optical filter for protection against laser radiation comprising at least one base glass composition, all percentages on an oxide basis, containing from 0.1–5 weight percent of a compound producing Ce^{3+} ions, 25–75 weight percent of a compound producing Er^{3+} ions and 0.5–10 weight percent of a compound producing Cu^{2+} ions, said compounds being soluble in at least a melt of a base glass composition so as to be uniformly distributed throughout the base composition.

3,960,755

DETECTING COMPOSITIONS AND METHOD OF USING SAME

Michael Thomas Beachem, Somerset, and Mary Ellen Nichols, Highland Park, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 8, 1967, Ser. No. 638,697

Int. Cl.² C09K *11/00*

U.S. Cl. 252—301.16 **4 Claims**

1. A slightly wood permeable, covert composition of matter for the marking and identification of wooden water craft comprising (A) an aliphatic or aromatic hydrocarbon solvent, (B) from about 0.1% to about 5.0%, by weight, based on the total weight of said composition, of a hydroxyphenyl benzothiazole, (C) from about 5% to about 60%, by weight, based on the total weight of said composition, of a water-insoluble, odorless, tacky, amorphous polyurethane resin having a density less than about 1.0 and being substantially colorless when spread as a film on the surface of water and (D) from about 0.1% to about 5.0%, by weight, based on the total weight of said composition, of sodium dioctyl sulfosuccinate, said composition having a viscosity of from about 5 to about 2000 seconds in a No. 4 Ford Cup.

3,960,756

HIGH EFFICIENCY SCINTILLATION DETECTORS

John E. Noakes, Athens, Ga., assignor to Bicron Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 257,755, May 30, 1972, abandoned. This application Aug. 16, 1974, Ser. No. 497,915

Int. Cl.² C09K *11/12*; **G01T** *1/20*

U.S. Cl. 252—301.18 **8 Claims**



1. A high efficiency scintillation detector composition especially suitable for use as an integral component of a scintillation counter consisting essentially of the combination of

a. a multiplicity of crystal pieces of an alkali metal halide activated with thallium, and

b. a liquid organic benzene-ring compound having molecular ring structures favorable to energy transfer selected from the group consisting of benzene, toluene, o-xylene, m-xylene, p-xylene, phenyl cyclohexane, ethyl benzene, triethylbenzene, n-butylbenzene, anisole, mesitylene, p-cymene, and dimethoxybenzene,

the crystal pieces of (a) being broken or whole crystals in the size range of from a millimeter to over an inch in their longest dimensions and being indiscriminately incorporated in said organic compound, the quantity of said crystals being at least fifty percent by volume of the whole, and the quantity of organic compound being less than fifty percent by volume of the whole being sufficient to cover the inorganic crystal pieces so as to effect an energy transfer interaction between the organic molecules and the crystal pieces whereby incident radiation is resolved into a single composite spectrum in proportion to the amount and intensity of incident radiation energy impinging thereupon.

3,960,757

PROCESS FOR ENCAPSULATION OF MEDICAMENTS

Masataka Morishita; Yoshihito Inaba; Mitsuru Fukushima; Yoshinori Hattori; Sadami Kobari, and Tetsuo Matsuda, all of Shizuoka, Japan, assignors to Toyo Jozo Co., Ltd., Japan

Filed June 29, 1973, Ser. No. 375,027

Int. Cl.² B01J *13/02*

U.S. Cl. 252—316 **16 Claims**

1. A process for preparing encapsulated medicines, characterized by dissolving a gastric-soluble, enteric soluble or semi-permeable hydrophobic wall material in at least one organic solvent immiscible with water which has a boiling point of not more than 100°C., a vapor pressure higher than that of water and a dielectric constant of not more than 10, dissolving or dispersing in the resulting solution a water-insoluble or slightly water-soluble medicament, dispersing the resulting solution or dispersion to the form of fine drops into a vehicle consisting of a hydrophilic colloid or a surface active agent in water, and then evaporating the organic solvent.

3,960,758

NON-DISCOLORING STABILIZERS

Josef Witte, Cologne; Dieter Theisen, Remscheid; Ernst Roos, Cologne, and Karl Nützel, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed June 28, 1974, Ser. No. 484,115

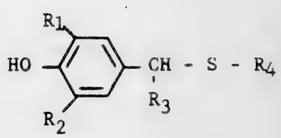
Claims priority, application Germany, July 5, 1973, 2334163

Int. Cl.² C08K *15/08*

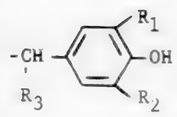
U.S. Cl. 252—404 **3 Claims**

1. A stabilizer consisting essentially of a mixture of

a. a compound of the formula

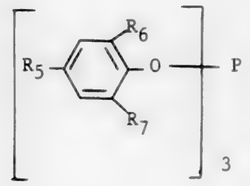


wherein R_1 and R_2 each individually are alkyl having 1 to 8 carbon atoms, aralkyl having 7 to 9 carbon atoms or cycloalkyl having from 5 to 7 carbon atoms; R_3 is hydrogen, alkyl having 1 to 8 carbon atoms, cyclohexyl, cyclohexenyl or methylcyclohexenyl and R_4 is alkyl having 1 to 8 carbon atoms or



wherein R_1, R_2, and R_3 are as aforesaid and

b. compound of the formula



wherein R_5 is alkyl or cycloalkyl having from 5 to 10 carbon atoms and R_6 and R_7 are each individually hydrogen, alkyl having 1 to 7 carbon atoms or cycloalkyl having up to 7 carbon atoms, the weight ratio of (a) to (b) being 4:1 to 1:4.

3,960,759

LIQUID VESICANT DIFFERENTIATING PAINT

James N. Mallis, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 24, 1965, Ser. No. 510,166

Int. Cl.² C09K *3/00*

U.S. Cl. 252—408 **4 Claims**

1. A liquid vesicant paint, light in color, for use in detecting the presence of toxic agents, selected from the group consisting of mustard and nerve gases, in the air or on vehicle surfaces, which paint when in use reacts to the presence of said agents by displaying a particular color which is a definitely observable reaction distinct to at least one or more of the different ones of said agents, said paint containing essentially:

a mixture of a latex base, two dyestuffs present in formulation at concentration of approximately 1% each, by weight, celite, titanium dioxide and water, wherein;

said dyestuff materials are 2, 5, 2', 5'-tetramethyl triphenylmethane-4, 4'-diazo-bis-B-hydroxynaphthoic anilide; and, ethyl-bis-(2, 4-dinitrophenyl)-acetate.

3,960,760

SEWER WASTE WATER TREATING AGENT PRODUCED FROM WASTE CRACKING CATALYST

Seiji Sanga, Toyonaka, and Yoichi Nishimura, Komae, both of Japan, assignors to Catalysts and Chemicals Industries Co., Ltd., Tokyo, Japan

Filed June 28, 1974, Ser. No. 483,922

Claims priority, application Japan, Nov. 2, 1973, 48-122895

Int. Cl.² B01J *29/06*

U.S. Cl. 252—412 **2 Claims**

1. A method of treating waste silica-alumina catalyst particles previously used in a fluid-bed type catalytic cracking process, which consists essentially of the steps of: soaking said waste catalyst particles in an aqueous sodium hydroxide solution having a concentration of from 0.2N to 5N, at a temperature in the range of 70° to 105°C, for from 2 to 48 hours, employing a ratio of from 50 to 100 ml of said aqueous sodium hydroxide solution per 10 grams of said waste catalyst parti-

cles; removing the catalyst particles from said aqueous sodium hydroxide solution, washing said particles and drying them to obtain a powder useful for removing ammonium ions and heavy metal ions from waste water.

3,960,761

PRODUCTION OF STRONG ACTIVE CARBON MOLDINGS

Alex Bürger, Cologne; Hermann Kaiser, Leverkusen, and Werner Ludovici, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 23, 1974, Ser. No. 463,641

Claims priority, application Germany, May 5, 1973, 2322706

Int. Cl.² B01J *21/18*

U.S. Cl. 252—421 **5 Claims**

1. In the production of break-resistant and abrasion-resistant shaped structures of active carbon, comprising the steps of molding a finely divided, carbon-containing starting material with a binder, hardening the molding, eliminating volatile constituents therefrom and activating the molding at a temperature of about 700° to 1200°C with at least one of steam and carbon dioxide, the improvement which comprises molding a carbon-containing material selected from the group consisting of mineral coal, brown coal coke, charcoal, coconut shell coke, peat coke, petroleum coke, acid-sludge coke, a coke-like residue from the thermal decomposition of a synthetic resin and mixtures of these substances, with a binder comprising a mixture of a phenol and an aldehyde or a water soluble pre-condensed resin thereof, the phenol being at least one member selected from the group consisting of phenol, cresol, xylenol and naphthol, and the aldehyde being at least one member selected from the group consisting of formaldehyde, metaldehyde, paraldehyde, acetaldehyde and benzaldehyde, the moldings being stored for about 1 to 24 hours prior to hardening.

3,960,762

PRODUCTION OF ABSORBENTS

Reinhard Kroebel, Kaarst, and Alfred Meyer, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation of Ser. No. 314,754, Dec. 13, 1972, abandoned. This application Aug. 9, 1974, Ser. No. 496,107

Claims priority, application Germany, Dec. 18, 1971, 2162951

Int. Cl.² B01D *15/08*

U.S. Cl. 252—426 **33 Claims**

1. A process for the production of an absorbent based on a synthetic resin which comprises (1) adding an extractant, a mixture of extractants or a solution of an extractant in a solution promoter to a mixture comprising a monomeric monovinyl compound and a monomeric polyvinyl compound, (2) polymerizing the resulting mixture in the presence of a free radical catalyst; the extractant, the mixture of extractants and the solution of the extractant in the solution promoter being solvents for the monomeric monovinyl or polyvinyl compound but not for the resulting polymer, and (3) recovering a copolymer in which the extractant or extractant mixture is included in the polymer, said extractant, mixture of extractants or the solution of the extractant in the solution promoter being used in a quantity of from 10 to 90% by weight, based on the total quantity of absorbent and said polyvinyl compound being employed in a quantity of from 5 to 70% by weight, based on the total quantity of monomers.

3,960,763

AGRICULTURAL FOAMS AS CARRIERS FOR ACTIVATED CHARCOAL

Madeline G. Lambou; James J. Spadaro, both of New Orleans, and Eunice M. Rusch, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 17, 1974, Ser. No. 489,797

Int. Cl.² B01J *31/02*

U.S. Cl. 252—428 **6 Claims**

1. An aqueous foam-precursor composition containing:
   a. about from 1% to 6% by weight of activated charcoal,
   b. about 2% by weight of a spumific material selected from the group consisting of:
      proteinaceous-carbohydrate whey solids,
      proteinaceous animal hide glue, and
      a mixture of the whey solids and the animal hide glue,
   c. not more than about 0.1% by weight of a viscosity builder polysaccharide of about 1,000,000 molecular weight, and
   d. about from 1% to 2% by weight of a surfactant mixture consisting of equal parts of dodecyl ether of polyethylene glycol and an ammonium alkyl sulfate in which the carbon chain ranges from C_{12} to C_{18}, said surfactant mixture used in an amount equivalent to 0.5% of the weight with respect to said activated charcoal, and
   d. sufficient water to make 100% by weight.

3,960,764

CATALYTIC COMPOSITION FOR THE CONVERSION OF HYDROCARBONS

Jean René Bernard, St-Symphorien D'ozon; Daniel Elie Brunel, Montpellier; Auguste André Commeyras, Clapiers; Camille Michel Coste, Amelie-les-Bains; Jean Joseph Itier, Montpellier, and Hubert Wilhelm Knoche, Meyzieu, all of France, assignors to Entreprise de Recherches et d'Activites Petrolieres Elf, Paris, France

Filed Sept. 26, 1974, Ser. No. 509,608

Claims priority, application France, Sept. 26, 1973, 73.34561

Int. Cl.² B01J *31/12*

U.S. Cl. 252—429 R **6 Claims**

1. A catalytic composition for the conversion of hydrocarbons under conditions suited to the desired conversion, wherein said composition is constituted by a mixture of Lewis acid corresponding to the formula M X m in which:
   M is an atom of a metal belonging to Groups IV, V and VI of the Periodic Table of Elements,
   X is a halogen
   m is within the range of 3 to 6
   and a sulphonic acid corresponding to the general formula $RF(SO_3H)_p$ where RF represents a perfluorinated alkyl or cycloalkyl hydrocarbon radical having a number of carbon atoms ranging from 2 to 8 and *p* is 1 or 2.

3,960,765

CATALYST FOR POLYMERIZATION OF OLEFINS AND PROCESS FOR PREPARING THE SAME

Akinobu Shiga; Yoshiharu Fukui; Kazuhiro Matsumura, and Satoru Uchida, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 4, 1974, Ser. No. 520,817

Claims priority, application Japan, Nov. 2, 1973, 48-123781

Int. Cl.² C08F *4/16*

U.S. Cl. 252—429 B **9 Claims**

1. A process for preparing a solid catalyst for the polymerization of olefins which comprises the steps of (1) reducing titanium tetrachloride with an organoaluminum compound represented by the formula

$$R_nAlX_{3-n} \qquad (I)$$

wherein R represents a straight chain or branched chain alkyl group having 1 to 18 carbon atoms, an alicyclic hydrocarbon group or an aromatic hydrocarbon group, X represents a halogen atom, and *n* is a value of from 1 to 3, inclusive, (2) reacting the resulting β - type titanium trichloride with a complexing agent, (3) reacting the solid catalyst thus obtained with an organoaluminum compound represented by the formula

$$R'_mAlX_{3-m} \qquad (II)$$

wherein R′ represents a straight chain or branched chain alkyl group having 1 to 18 carbon atoms, an alicyclic hydrocarbon group or an aromatic hydrocarbon group, X represents a halogen atom, and *m* is a value of $0<m<1.5$, and (4) reacting the resulting solid catalyst with a complexing agent wherein said complexing agent is selected from the group consisting of N,N-dimethylformamide, N,N-dimethylacetamide, N,N-dimethylpropionamide, N,N,N′,N′-tetramethylurea, diethyl ether, di-n-propyl ether, diisopropyl ether, di-n-butyl ether, diisobutyl ether, di-tert-butyl ether, di-n-amyl ether, diisoamyl ether, dineopentyl ether, di-n-hexyl ether, di-n-octyl ether, diphenyl ether, di-o-tolyl ether, di-p-tolyl ether, dicyclohexyl ether, diethyl sulfide, di-n-propyl sulfide, di-n-butyl sulfide, di-tert-butyl sulfide, diphenyl sulfide, trimethylamine, triethylamine, tri-n-butylamine, triphenylamine, pyridine, quinoline, symtriazine, N,N-dimethylaniline, N,N-diethylaniline and ′,N′-tetramethylethylenediamine.

3,960,766

CATALYST FOR THE PRODUCTION OF PYRIDINE AND 3-METHYLPYRIDINE

Helmut Beschke; Hans Schaefer; Gerd Schreyer, all of Grossauheim; Wilhelm Alfons Schuler, Bad Homburg, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed May 17, 1973, Ser. No. 361,331

Claims priority, application Germany, May 18, 1972, 2224160

Int. Cl.² B01J *27/06*

U.S. Cl. 252—437 **19 Claims**

1. A catalyst suitable for the reaction of acrolein with ammonia to form pyridine and 3-methylpyridine consisting essentially of the product obtained by treating with oxygen at a temperature of 550° to 1200°C. compounds of the elements Al, F and O and at least two other elements selected from the second, fourth, fifth and sixth groups of the periodic system, said two other elements being selected from the group consisting of Mg, Ba, Zr, Sn, Ti, P, Ta, Sb and S, the ratios of the elements being Al to F of between 1,000 to 10 and 1,000 to 800 and of Al to the elements of the second, fourth, fifth and sixth groups being between 1,000 to 5 and 1,000 to 200.

3,960,767

MODIFIED ZINC FERRITE OXIDATIVE DEHYDROGENATION CATALYSTS

Harold F. Christmann, Seabrook, and Edward J. Miklas, Conroe, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Sept. 3, 1974, Ser. No. 502,305

Int. Cl.² B01J *27/18*; **C07C** *5/48*

U.S. Cl. 252—437 **2 Claims**

1. A novel catalyst composition suitable for oxidative dehydrogenation of organic compounds produced by the process consisting essentially of mixing a powder of a preformed zinc ferrite composition having the empirical formula

$$Zn_xFe_yO_z$$

wherein *x* is from about 0.1 to about 2, *y* is from about 0.3 to about 12 and *z* is from about 3 to about 18 wherein the ratio of *y* to *x* is from about 2:1 to 5:1 with powdered zinc carbonate as a promoter in an amount of from about 0.1 to about 25 wt. % determined on the basis of zinc oxide and based on the weight of the preformed zinc ferrite composition and aqueous phosphoric acid being added in an amount to dampen the powder mixture of zinc ferrite and zinc carbonate.

3,960,768

PRODUCTION OF CARBON BY ELIMINATING HYDROGEN HALIDE FROM POLYMERIZED HALOHYDROCARBONS

Willi Ripperger; Willi Oettinger, both of Ludwigshafen; Rudolf Kaiser, Bad Durkheim; Klaus Pfitzner, and Richard Adolf Palm, both of Ludwigshafen, all of Germany, assignors to Sirmac Ltd., Dusseldorfer, Germany

Continuation of Ser. No. 221,658, Jan. 28, 1972, abandoned. This application July 5, 1974, Ser. No. 486,059

Int. Cl.² B01J *21/18*, *31/10*

U.S. Cl. 252—444 **6 Claims**

1. A process for producing hard, abrasion-resistant spherical carbon from beads of polyvinylidene chloride produced directly by bead polymerization consisting essentially of heating said beads of polyvinylidene chloride to a temperature of from about 140° to about 250°C in a first stage under flowing nitrogen for from about 1 hour to about 10 hours whereby from 30 to 45% of the hydrogen chloride that is capable of being removed is eliminated and thereafter raising the treatment temperature very slowly from about 250° to about 350°C in the transition stage between the first and a second stage, and further heating said beads in said second stage to a temperature within the range of about 600° to about 950°C in the presence of an inert or reducing gas, wherein carbon-containing compounds selected from the group consisting of methane, homologs of methane, acetylene, benzene and carbon tetrachloride are mixed with the inert or reducing gas of said second stage in concentrations of from about 0.05 to about 20% by volume to decompose and deposit pyrocarbon on the surface and in the pores of said beads, said heating being continued until the residual chlorine content of the beads has been reduced to less than 250 ppm, said beads undergoing linear shrinkage during said heating stages of up to 50%.

3,960,769

CARBON-CONTAINING MOLECULAR SIEVES

Heinrich Munzner, Essen-Kray; Heinrich Heimbach, Bochum; Werner Korbacher, Essen-Borbeck; Werner Peters, Wattenscheid; Harald Juntgen, Essen-Heisingen; Karl Knoblauch, Essen, and Dieter Zundorf, Essen-Heisingen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Division of Ser. No. 161,211, July 9, 1971, Pat. No. 3,801,513. This application Feb. 21, 1974, Ser. No. 444,382

Claims priority, application Germany, Apr. 23, 1971, 2119829

The portion of the term of this patent subsequent to Apr. 2, 1991, has been disclaimed.

Int. Cl.² C01B *13/00*

U.S. Cl. 252—444 **7 Claims**

1. A molecular sieve which adsorbs a gas of a first atomic or molecular size more readily than a gas of a larger second atomic or molecular size, said molecular sieve comprising coke having carbon deposited in the pores to reduce the pore size to an effective size less than about 0.3 millimicrons, and said molecular sieve being capable of adsorbing oxygen so much more readily than nitrogen that when air is passed through a confining space, having a volume of substantially 1 liter and substantially filled with said molecular sieve, for a period of about 1 minute and at a velocity of about 30 centimeters per second, subsequent desorption of the thus-adsorbed gas from said molecular sieve yields a gas containing a minimum of about 35 volume percent of oxygen.

3,960,770

PROCESS FOR PREPARING MACROPOROUS OPEN-CELL CARBON FOAM FROM NORMALLY CRYSTALLINE VINYLIDENE CHLORIDE POLYMER

Charles F. Raley, Jr., and Delman R. Asher, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 385,493, Aug. 3, 1973, abandoned, which is a continuation of Ser. No. 179,194, Sept. 7, 1971, abandoned. This application July 25, 1974, Ser. No. 491,894

Int. Cl.² B01J *21/18, 31/10*

U.S. Cl. 252—444 **4 Claims**

1. A process for preparing substantially open-cell, macroporous foamed activated carbon said process consisting essentially of (1) contacting, at a temperature of about 25°C. to about 100°C., a normally crystalline vinylidene chloride polymer in substantially open-cell, macroporous foam form with ammonia in liquid form as the sole reactant until at least about 50 percent of theoretical Cl^- is removed, then (2) water extracting the reaction product of step (1) to recover a foamed activated carbon, and (3) heating said foamed activated carbon to a temperature up to about 350°C. sufficient to remove residual ammonium chloride.

4. A substantially open-cell activated carbon foam wherein the average cell diameter is at least about 0.01 millimeter, said carbon foam being prepared by the process of Claim 1.

3,960,771

COMPOSITE ADSORBENT

Hiroshi Tanaka; Takuo Tanaka, and Takeshi Tanaka, all of Nagahama, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1974, Ser. No. 461,484

Claims priority, application Japan, Apr. 20, 1973, 48-45508

Int. Cl.² B01J *21/18*

U.S. Cl. 252—446 **4 Claims**



1. A composite adsorbent for the adsorption of gases comprising particles of activated clay and fine powder of active carbon randomly adhered to the surface of said particles, said particles of activated clay having a particle size of 70μ–150μ and said powder having a size of 10μ–40μ, the pore size of the activated clay being greater than the pore size of the active carbon.

3,960,772

AGGLOMERATED ALUMINA-BASED SPHERICAL GRAINS

Jean-Paul Fort, Antony, and Max Michel, Yerres, both of France, assignors to Rhone-Progil, Courbevoie, France

Filed Mar. 27, 1974, Ser. No. 455,233

Claims priority, application France, Mar. 27, 1973, 73.10899

Int. Cl.² B01J *21/04, 29/06*

U.S. Cl. 252—455 R **10 Claims**

1. A method of producing spherical members of alumina-based grains formed primarily of particles of alumina selected from the group consisting of alumina hydrate and alumina produced by partial dehydration of gels or crystals of alumina hydrates in a stream of hot gases, characterized by moistening said alumina-based particles with water to form a paste of the alumina-based particles, forming said pastes into grains of any shape, introducing said grains into a substantially immiscible liquid, subjecting the liquid to mechanical vibrations while the grains are contained therein whereby the grains form into spherical members, separating the spherical members from the liquid, hydrothermally treating, drying and calcining the spherical members.

3,960,773

CATALYST COMPOSITIONS AND THEIR PREPARATION

Brent J. Bertus; Floyd Farha, Jr., and Harlin D. Johnston, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 327,722, Jan. 29, 1973, abandoned, which is a division of Ser. No. 81,599, Oct. 16, 1970, Pat. No. 3,745,194. This application Nov. 7, 1974, Ser. No. 521,772

Int. Cl.² B01J *23/82, 23/84*

U.S. Cl. 252—455 R **17 Claims**

1. A catalyst composition consisting of tin, nickel, at least one metal selected from the group consisting of arsenic and antimony and, optionally, at least one metal selected from the group consisting of Group I*a* and Group II*a* metals, said elements in combination with sufficient oxygen to form one or more neutral compounds, said composition formed by dry mixing a tin compound and a nickel compound in amounts sufficient to provide an atomic ratio of tin to nickel in the finished catalyst in the range of 1:3 to 3:1, said tin and nickel compounds being selected from the group consisting of their respective oxides and salts, a quantity of an antimony compound, an arsenic compound or a combination thereof sufficient to provide from about 0.1 to about 10 weight percent of said antimony or said arsenic based upon the combined weight of said tin and nickel and oxygen combined therewith, said arsenic compound selected from the group consisting of the oxides, salts and acids thereof, said antimony compound selected from the group consisting of the oxides and salts thereof, and, optionally, a quantity of a Group I*a* metal salt, a Group II*a* metal salt or combination thereof sufficient to provide from about 0.1 to about 10 weight percent of said Group I*a* metal or said Group II*a* metal based upon the combined weight of said tin and nickel and oxygen combined therewith, and thereafter calcining said composition.

3,960,774

ZEOLITIC ADSORBENT FOR XYLENE SEPARATION

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation of Ser. No. 356,666, May 2, 1973, Pat. No. 3,878,127. This application Jan. 24, 1975, Ser. No. 543,845

The portion of the term of this patent subsequent to Apr. 15, 1992, has been disclaimed.

Int. Cl.² B01J *29/06;* **C07C** *7/00*

U.S. Cl. 252—455 Z **6 Claims**

1. A solid adsorbent produced by the steps of:
   a. contacting a precursor mass comprising a X or Y structured zeolite having a Na_2O/Al_2O_3 ratio less than about 0.7 with an aqueous sodium hydroxide solution at first ion-exchange conditions to increase the sodium cations content to a Na_2O/Al_2O_3 ratio of greater than about 0.7;
   b. treating the sodium-exchanged mass at second ionexchange conditions to effect the essentially complete exchange of sodium cations; and,
   c. drying the resulting exchanged mass at conditions sufficient to reduce the LOI at 900° C. to less than about 10 wt. %.

3,960,775

CATALYST FOR THE PRODUCTION OF ETHYLENE OXIDE

Carlo Piccinini; Morello Morelli, and Pierluigi Rebora, all of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Division of Ser. No. 67,025, Aug. 26, 1970, abandoned. This application Aug. 1, 1973, Ser. No. 384,692

Claims priority, application Italy, Aug. 26, 1969, 21262

Int. Cl.² B01J *23/08*

U.S. Cl. 252—463 **6 Claims**

1. A catalyst for the oxidation of ethylene to ethylene oxide, said catalyst comprising silver, calcium and barium in a gram atomic ratio of 15/2.5/1.

2. The catalyst of claim 1 wherein said catalyst includes a ceramic carrier.

3,960,776

LITHIUM PROMOTED MAGNESIUM CHROMITE DEHYDROGENATION CATALYSTS

Michael C. Ellis, and Harold E. Manning, both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed July 1, 1974, Ser. No. 484,576

Int. Cl.² B01J *21/10;* **C01C** *5/38*

U.S. Cl. 252—465 **2 Claims**

1. A catalyst for use in cyclic dehydrogenation consisting essentially of magnesium chromite having the general formula $MeCr_2O_4$ wherein Me is Mg or Mg and one or more of the divalent ions of Ca, Sr, Ba, Fe, Mn, Co, Ni, Cu, Zn or Cd, provided that Mg comprises at least 50 atomic percent of said Me ions and from 2 to 8 mol percent of Li based on said magnesium chromite.

3,960,777

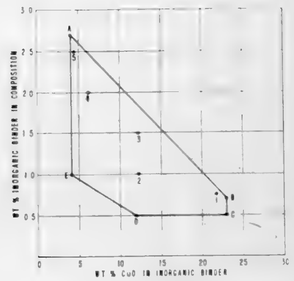
GOLD COMPOSITIONS

Roy Thomas Coyle, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 23, 1975, Ser. No. 589,548

Int. Cl.² H01B *1/02*

U.S. Cl. 252—514 **9 Claims**



1. In a composition of finely divided gold particles and finely divided inorganic binder particles dispersed in an inert liquid vehicle, improved compositions of, by weight, 85–92% gold particles, 0.5–2.7% inorganic binder particles, and 7–14% vehicle; the inorganic binder being
   a. 4–23% CuO
   b. 13–36% CdO or mixtures thereof with CaO, provided that at least 13% of the binder is CdO,
   c. 30–60% of one or more of B_2O_3, SiO_2, P_2O_5, V_2O_5, Al_2O_3, and GeO_2, provided that said binder comprises at least 5% of one or more of B_2O_3, SiO_2, P_2O_5, and GeO_2, and
   d. 0–20% of one or more of PbO and Bi_2O_3;

said compositions being further characterized in that the weight percentage of CuO in said inorganic binder and the weight percentage of inorganic binder present in the total composition are chosen together from a point which lies within the straight lines connecting points A, B, C, D, and E in the graph of the drawing.

3,960,778

PYROCHLORE-BASED THERMISTORS

Robert Joseph Bouchard, and Donald Burl Rogers, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 15, 1974, Ser. No. 442,904

Int. Cl.² H01B *1/06;* **H01C** *1/06*

U.S. Cl. 252—519 **32 Claims**

1. Powder compositions useful for making thermistors, said compositions comprising
   a. 50–98% of a crystalline powder which is a solid solution of pyrochlore-related oxides, one such oxide being highly conductive and another such oxide being semiconductive, and
   b. 2–50% of a glass powder as a binder.

3,960,779

SEMICONDUCTING GLAZE COMPOSITION

Gordon Rosenblatt, Toronto, Canada, assignor to Canadian Porcelain Company Limited, Hamilton, Canada

Filed Apr. 21, 1975, Ser. No. 569,991

Int. Cl.² H01B *1/08*

U.S. Cl. 252—521 **13 Claims**

1. In a semiconducting glaze composition for use on electrical insulators containing a base glaze and a semiconducting phase, the improvement which comprises employing as the semiconducting phase, a mixture of an alkali metal or alkaline earth metal stannate and an antimony oxide, the stannate being about 60–95% by weight of the semiconducting phase and the remainder of said phase being antimony oxide, said semi-conducting phase being about 3.5–20% of the total weight of dry solids in the semi-conducting phase and the base glaze, the glaze when fired exhibiting a surface resistivity of about 10–200 MΩ/square and a low temperature coefficient of resistivity.

3,960,780

NON-CAKING ALKYL ETHER SULFATE-CONTAINING DETERGENT COMPOSITION

Moriyasu Murata, Chiba; Makoto Yamanaka, Koganei, and Fumio Sai, Funabashi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

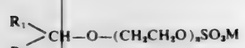
Filed Oct. 31, 1975, Ser. No. 627,701

Claims priority, application Japan, Oct. 31, 1974, 49-125810

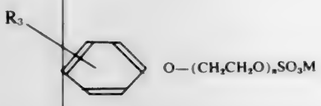
Int. Cl.² C11D *1/14, 17/06*

U.S. Cl. 252—532 **5 Claims**

1. A granular or powdery detergent composition consisting essentially of from 3 to 25 percent by weight of an ether sulfate surfactant selected from the group consisting of compounds having the formulae



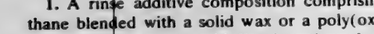
and



and mixtures thereof,
wherein
R_1 and R_2, which are the same or different, are hydrogen, alkyl having one to 21 carbon atoms, or alkenyl having one to 21 carbon atoms, provided that the sum of the number of carbon atoms of R_1 plus R_2 is 11 to 21, R_3 is alkyl having 8 to 16 carbon atoms,
n is a number from 1 to 10, and
M is an alkali metal or an alkaline earth metal,
from 10 to 100 percent by weight, based on the weight of said ether sulfate surfactant, of polyethylene glycol having a molecular weight of 2,000 to 50,000,
and the balance is water-soluble, synthetic anionic clothes-washing surfactant, different from said ether sulfate, or water-soluble, synthetic nonionic clothes washing surfactant, or water-soluble alkaline inorganic builder salt, or water-soluble organic builder, or water-soluble neutral salt, or mixtures thereof,
said detergent composition having been prepared by mixing the above-named components thereof with water to form a uniform slurry, and then removing water from the slurry to obtain the powdery detergent composition having the polyethylene glycol uniformly distributed on the detergent particles.

3,960,781
ISOCYANATE-CAPPED SURFACE ACTIVE COMPOSITIONS AND METHODS OF USING THEM
Richard E. Freis, Minneapolis, and Larry M. Rue, Inver Grove Heights, both of Minn., assignors to Economic Laboratories, Inc., St. Paul, Minn.
Division of Ser. No. 350,004, April 11, 1973, Pat. No. 3,899,387. This application May 12, 1975, Ser. No. 576,348
Int. Cl.² B01F *17/16;* **C11D** *3/33, 1/72*
U.S. Cl. 252—541 **7 Claims**

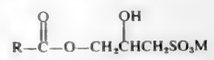
1. A rinse additive composition comprising a diaryl urethane blended with a solid wax or a poly(oxyalkylene)-containing wetting agent, said diaryl urethane having the following structural formula:



wherein
Ar and Ar′ are monovalent aryl groups free of —NCO radicals,
A is an alkylene group containing 2–4 carbon atoms, at least some of said alkylene groups containing 2 carbon atoms, and *n* is a number greater than 3 selected such that the divalent radical $+AO+_n$ has a molecular weight less than 12,000.

3,960,782
SHAMPOO COMPOSITIONS WHICH IMPART HIGH LUSTER AND MANAGEABILITY TO HAIR
Edwin W. Daley, Cincinnati, and M. Pauline Yowler, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sept. 27, 1974, Ser. No. 509,995
Int. Cl.² C11D *1/30, 3/26*
U.S. Cl. 252—544 **6 Claims**

1. A shampoo composition comprising:
A. from about 8 to about 22 percent of a surfactant selected from the group consisting of
1. water-soluble salts of a fatty acid monoglyceride sulfonate of the formula



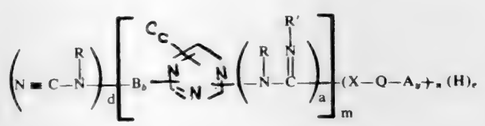
wherein



is a fatty acid moiety containing from about 8 to 22 carbon atoms and wherein M is a salt-forming cation; and
2. water-soluble salts of an alkyl sulfate wherein the alkyl group contains from about 8 to about 22 carbon atoms;
B. from about 2 to about 15 percent urea;
C. from about 1 to about 10 percent of guanidine or a water-soluble salt thereof; and
D. from about 0.2 to about 2.0 percent of dodecyl alcohol;
said composition having a pH of from about 5 to about 8.

3,960,783
NOVEL POLYMERS FROM S-TRIAZINE CYANAMIDE COMPOUNDS
Raymond Seltzer, New City, and Paul D. Sherman, Shrub Oak, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed Apr. 1, 1974, Ser. No. 456,916
Int. Cl.² C08G *73/06*
U.S. Cl. 260—2 R **37 Claims**

1. A polymer represented by the following formula



wherein
y = 0, 1, 2, 3 or 4
a = 1, 2 or 3
b = 0, 1 or 2
c = 0, 1 or 2
a+b+c = 3
m = 1 to 100
n = 0 to 100, provided that when b+c=0, *n* is a positive number and when *n* is 0, at least one of C and B must be "X—Q—A_y"
X = nil, —O—, —S—, —NH—, —NR—, H
A = —O—, —S—, —NH—, —NR—
Q = an organic radical, e.g., arylene, alkyl and/or heterocyclic
R = alkyl, aryl or heterocyclic
R′ = a recurring amidinotriazinyl moiety (s-triazine—NR—C(=N—)—) derived from the triazine starting material) or H
B = —X—Q—A_y—, X or —NR—C(=N—)—
C = —X—Q—A_y—, X, XH or —NR—C(=N—)—
d = number of unreacted R—N—CN groups
e = number of unreacted hydrogen containing functional groups

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3,960,784
BODIES OF EXPANDABLE SYNTHETIC RESINS AND METHOD OF PREPARATION
Louis C. Rubens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Nov. 17, 1971, Ser. No. 199,772
Int. Cl.² C08J *9/18*
U.S. Cl. 260—2.5 B **15 Claims**

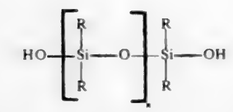
1. A method for the preparation of thermocollapse resistant synthetic resinous foamable bodies, the steps of the method comprising subjecting a crosslinkable linear uncrosslinked thermoplastic synthetic resinous body to an atmosphere of a volatile fluid expanding agent at a temperature and pressure which swells but does not dissolve the body, the pressure and temperature being sufficient to cause impregnation of the body by the expanding agent, while introducing crosslinking means into the body to provide a desired degree of crosslinking within the resinous body.

3,960,785
COMPOSITION AND METHOD FOR INHIBITING CURING SHRINKAGE IN ORGANIC PLASTIC SYSTEMS
Henry Nash Babcock, Old Greenwich, Conn., assignor to Construction Products Research, Inc., Old Greenwich, Conn.
Filed Mar. 13, 1972, Ser. No. 234,369
Int. Cl.² C08K *7/24;* **C08J** *9/30, 9/00*
U.S. Cl. 260—2.5 R **22 Claims**

1. A method for inhibiting curing shrinkage in an organic fluidic plastic system comprising selecting a porous particulate solid material gas carrier inert to the system having a volume of releasable entrapped gas within its pores, incorporating the particulate solid material in the fluidic plastic system and controllably releasing the gas entrapped within the particulate solid material during curing of the system, without essentially altering the essential properties of the system, in such manner as to cause expansion of the system sufficient to offset the shrinkage tendency of the organic plastic system, said gas release being achievable without the application of heat.

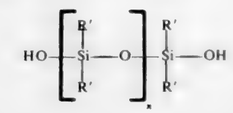
3,960,786
PROCESS FOR PREPARING GRANULAR POROUS SILICONE RUBBERS
Taichiro Akiyama, 19-23, Shimoochiai 2-Chome, Shinjuku, Tokyo, Japan
Filed May 30, 1974, Ser. No. 474,850
Claims priority, application Japan, June 6, 1973, 48-62890
Int. Cl.² C08J *09/00*
U.S. Cl. 260—2.5 S **6 Claims**

1. A process for preparing granular porous silicone rubbers comprising the steps of preparing a composition containing a siloxanediol composition expressed by a formula



(1)

wherein R respectively represents a methyl radical, a phenyl radical or a vinyl radical and n is an integer of from 500 to 50,000, from 0.5 to 5% by weight based on the weight of the compound expressed by formula (1) of a siloxanediol hydride compound expressed by a formula

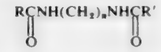


(2)

wherein R′ respectively represents a hydrogen radical or a methyl radical but at least one of the R′ radicals is a hydrogen radical, and n is an integer of from 2 to 1,000, a vulcanization catalyst, and an emulsifying agent, dispersing from 3 to 10% by weight of said composition in water based on the weight of the water, the amount of said emulsifying agent being 2 to 10% by weight based on the weight of said water, and vulcanizing the resulting emulsion while stirring same.

3,960,787
PROCESS FOR PREPARING FOAMABLE SYNTHETIC RESIN GRANULES
Hiroji Isukamoto, Osaka; Hisashi Morikawa, Takasago; Masao Nakagawa, Takasago; Shinji Kato, Takasago; Masaki Miyamoto, Yokohama; Toichiro Yoda, and Katsuhiko Yoshihara, both of Ibaragi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 299,902, Oct. 24, 1972, abandoned. This application June 6, 1974, Ser. No. 476,823
Claims priority, application Japan, Oct. 25, 1971, 46-84903
Int. Cl.² C08J *9/02;* **C08K** *5/20;* **C08L** *25/06*
U.S. Cl. 260—2.5 B **13 Claims**

1. Process for preparing foamable synthetic resin comprising the steps of
suspension polymerizing styrene, styrene derivative or monomer mixtures of 50% by weight or more of styrene,
adding fatty acid bisamide of the formula



where R and R′ are alkyl group, and *n* is an integer from 1 to 6, to the polymerization system prior to polymerization or before the polymerization has proceded 15% of said polymerization step in the presence of a suspension agent, an initiator and inorganic salt selected from the group consisting of sodium tripolyphosphate, potassium sulfate and sodium sulfate, and
adding at least a normally gaseous foaming agent to said polymerization system at a late stage of polymerization or after completion of polymerization.

3,960,788
MODIFIED ISOCYANATE FOAMS
Michael Cuscurida, and Thomas Howard Austin, both of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.
Filed Sept. 23, 1974, Ser. No. 508,454
Int. Cl.² C08G *18/76*
U.S. Cl. 260—2.5 AW **5 Claims**

1. A modified cellular isocyanurate comprised of the reaction product, formed by bringing together in the presence of an inert blowing agent and an isocyanurate group formation catalyst, of:

a. a mixture of methylene-bridged polyphenylpolyisocyanates having an average functionality of about 2.1 to about 2.4 consisting essentially of from about 60% to about 75% by weight methylene diphenylisocyanate and from about 40% to about 25% by weight higher functionality methylene-bridged polyphenylpolyisocyanates, said methylene diphenylisocyanate having an isomer content consisting essentially of about 60% to about 80% by weight 4,4'-, about 18% to about 33% by weight 2,4'-, and about 2% to about 7% by weight 2,2'-isomers based on the total weight of said methylene diphenylisocyanate, and

b. about 0.1 to about 0.5 equivalents, per equivalent of said methylene-bridged polyphenylpolyisocyanate mixture, of a polyether or polyester polyol having a hydroxyl number of from about 100 to about 500 and a molecular weight of about 100 to about 1,000.

3,960,789

AQUEOUS COATING COMPOSITIONS COMPRISING FILM-FORMING POLYHYDROXY COMPONENT AND POLYVALENT FILM-FORMING RESIN WITHOUT POLYELECTROLYTE CHARACTER

Wolfgang Daimer, and Gert Dworak, both of Graz, Austria, assignors to Vianova-Kunstharz A. G., Vienna, Austria

Filed Aug. 19, 1974, Ser. No. 499,334

Claims priority, application Belgium, Aug. 20, 1973, 7217

Int. Cl.² C09D *3/52, 3/56, 3/66*

U.S. Cl. 260—21 **16 Claims**

9. An aqueous coating composition having a maximum of 40 percent of organic solvents based on the total solvents of said composition exhibiting viscosity characteristics upon dilution with water suitable for application by brushing, dipping, or spraying, comprising a resinous component (A) which includes a water-insoluble film-forming polyhydroxy component having an acid value below about 10 mg KOH/g and a hydroxyl number of from about 50 to 650 mg KOH/g, and a film-forming polycarboxy component having an acid value of from about 30 to 280 mg KOH/g, the ratio of carboxy group to hydroxy group in said resinous component (A) being from 1 : 2 to 1 : 25 and the carboxy groups being at least partially neutralized with a nitrogen base, and a polyvalent film-forming resin (B) without polyelectrolyte character and reactive with hydroxyl groups selected from the group consisting of condensation products of formaldehyde with urea, melamine, benzoguanamine, and phenol, and said condensation products esterified with a monohydric alcohol, the ratio of (A) and (B) being selected to provide an aqueous coating composition calculated as resin solids of 60 to 90 percent by weight of said resin component (A) and 10 to 40 percent of said polyvalent film-forming resin (B), said composition being diluted with water to provide a composition having a resin solids content of from about 35 to 60 percent.

3,960,790

DISC RECORD AND METHOD OF COMPOUNDING DISC RECORD COMPOSITION

Sarwan Kumar Khanna, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 25, 1974, Ser. No. 454,156

Int. Cl.² C08L *9/00*

U.S. Cl. 260—23 XA **1 Claim**

1. A method of compounding a composition suitable for molding high quality disc records, all proportions of ingredients being expressed as % by weight of the final product, said method consisting essentially of:

in a mixer, compounding about 60–70% of a copolymer of vinyl chloride-vinyl acetate resin suspension or solution containing about 12–16% vinyl acetate, about 26.2–36.2% of a suspension or solution type homopolymer of vinyl chloride having an inherent viscosity of about 0.65 and 0.2% of carbon black having a fineness of 181 Angstroms, and raising the temperature of the composition to about 115°–120° F,

adding 1.2% of a 50% solution of N,N-bis(2-hydroxyethyl)-N-(3'-dodecyloxy-2'hydroxypropyl)methyl-ammonium methosulfate, and raising the temperature of the composition to about 125°–130° F,

adding to the mixture about 1.6% of a sulfur-free organotin stabilizer compound containing about 16% by wt. of tin, and about 1% of a soybean oil epoxide having a molecular wt. of about 1000 and raising the temperature of the composition to about 135°–140° F,

adding to the mixture about 0.4% of an esterified montan wax and raising the temperature of the composition to about 150°–155° F, and removing moisture and other volatiles from the mixture,

rapidly cooling the composition to a temperature of about 100° F,

mixing the cooled, dry blend of ingredients such that they are homogeneously fused into a melted mass, and

cooling the melted mass.

3,960,791

POWDER COATING COMPOSITION FOR ELECTRODEPOSITION

Taizo Kondo; Komaharu Matsui, and Kunio Yamamoto, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Ltd., Japan

Division of Ser. No. 211,660, Dec. 23, 1971, abandoned. This application Apr. 29, 1974, Ser. No. 465,078

Int. Cl.² C08L *33/06;* **C25D** *13/06, 13/10*

U.S. Cl. 260—23 AR **9 Claims**

1. A powder coating composition for electrodeposition which comprises powdery particles of an acrylic resin powder coating composition having 0.1–50 microns particle size wet with an organic liquid which does not dissolve the powdery particles and is nearly insoluble in aqueous medium and which has a boiling point of 50°14 250° C. in the range of 5–100 parts by weight per 100 parts by weight of the powdery particel, said wet powdery particles dispersed in an aqueous medium containing 0.05–5 parts by weight per 100 parts by weight of the powdery particles of an ionic surface active agent.

3,960,792

PLASTIC FOAM

Masao Nakamura, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 743,639, July 10, 1968, abandoned, which is a continuation-in-part of Ser. No. 519,190, Jan. 7, 1966, abandoned, which is a continuation-in-part of Ser. No. 251,765, Jan. 16, 1963, abandoned. This application Sept. 2, 1971, Ser. No. 177,456

Int. Cl.² C08J *9/30*

U.S. Cl. 260—2.5 E **5 Claims**

1. In a process for the preparation of an expanded closed cell polystyrene resin which includes incorporated within said polystyrene resin a volatile fluid foaming agent which is a non-solvent for the polystyrene resin, subsequently expanding the polystyrene resin containing the fluid foaming agent by subjecting the expandable resin containing the fluid foaming agent to a pressure sufficiently low to permit the polystyrene resin to expand when the polystyrene resin containing the fluid foaming agent is in a heat plastified condition, and subsequently cooling the expanded polystyrene resin to form a closed cell polystyrene resin body, the improvement which comprises

preparing a dimensionally stable expanded closed cell body by employing as the fluid foaming agent a volatile material which has a diffusion rate through the polystyrene resin which is about 0.75 to 6 times the diffusion rate of air through polystyrene resin, and the foaming agent consisting essentially of a mixture of at least two compounds having carbon chemically combined therein.

3,960,793

ADHESIVE COMPOSITIONS AND METHODS

David S. Bosniack, Baytown, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 388,707, Aug. 15, 1973, Pat. No. 3,887,422, which is a continuation-in-part of Ser. No. 245,389, April 19, 1972, abandoned. This application Dec. 11, 1974, Ser. No. 531,513

Int. Cl.² C08L *91/00, 95/00*

U.S. Cl. 260—28.5 AS **5 Claims**

1. A composition comprising (i) from about 20 to about 80 weight percent of a reject polypropylene containing, on a dry basis, from about 5 to about 95 weight percent of atactic polypropylene, from about 95 to about 5 weight percent of isotactic polypropylene, and from about 1 to about 20 weight percent of inorganic salts from the polypropylene manufacturing process and (ii) from about 80 to about 20 weight percent of asphalt.

3,960,794

MANUFACTURE OF AQUEOUS SUSPENSIONS OF POLYOLEFIN FIBRIDS

Bruno Sander, Ludwigshafen; Heinz Berbner, Moerlenbach, and Manfred Hoffmann, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 3, 1974, Ser. No. 502,665

Claims priority, application Germany, Sept. 13, 1973, 2346081

Int. Cl.² D21D *3/00;* **C08L** *23/06, 61/32*

U.S. Cl. 260—17.3 **2 Claims**

1. A process for the manufacture of aqueous suspensions of polyolefin fibrids by dispersing polyolefin fibrids in water in the presence of a dispersing agent, wherein the dispersing agent used is 0.1 to 2% by weight, based on the dry weight of said fibrids, of a melamine/formaldehyde/aminocarboxylic acid alkali metal salt polycondensate produced by polycondensation of monomers consisting of melamine, formaldehyde and an alkali metal salt of an aminocarboxylic acid in aqueous solution in a molar ratio of melamine to formaldehyde of from 1:1.8 to 1:3 and 0.1 to 0.5 mole of said alkali metal salt per mole of melamine, which polycondensate has a viscosity of from 10 to 120 centipoise at 20°C in 30% w/w aqueous solution.

2. A process as claimed in claim **1**, wherein the aqueous suspensions of polyolefin fibrids additionally contain cellulose fibers.

3,960,795

HYDROLYZED REACTION PRODUCT OF A POLYEPOXIDE WITH A PHENOLIC COMPOUND HAVING A GROUP HYDROLYZABLE TO CARBOXYL

Rostyslaw Dowbenko, Gibsonia, and Joseph R. Marchetti, Greensburg, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 13, 1974, Ser. No. 497,004

Int. Cl.² C08G *59/16;* **C08J** *3/06;* **C25D** *13/06*

U.S. Cl. 260—29.2 EP **18 Claims**

1. A solubilized aqueous composition formed from reacting and then subsequently hydrolyzing

A. a polyepoxide having an epoxy equivalency greater than 1.0; and

B. a compound containing at least one phenolic hydroxyl group and containing at least one group hydrolyzable to a carboxyl group and having the following structural formula:

$$(HO)_n R-(W)_m$$

wherein *n* and *m* are integers of at least 1 and preferably 1 to 4, wherein R is an organic radical containing at least one aryl group, and wherein at least one of the hydroxyl groups is attached to at least one of the aryl groups of R; W is a group hydrolyzable to a carboxyl group selected from the group consisting of —COOR', —CON(R'')₂ and —CN, where R' is a lower alkyl group of from 1 to 4 carbon atoms, and R'' is selected from the group consisting of hydrogen, lower alkyl and mixtures thereof or wherein (B) is phenolphthalein.

3,960,796

RUBBERY VINYL PYRIDINE LATEX AND CHLOROPHENOLIC COMPOSITION FOR POLYESTER TIRE CORD DIP

Richard M. Wise, Uniontown, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 310,525, Nov. 29, 1972, Pat. No. 3,861,980. This application Sept. 20, 1974, Ser. No. 507,829

Int. Cl.² C08L *9/08, 39/08*

U.S. Cl. 260—29.3 **5 Claims**

1. An aqueous alkaline dispersion useful as a polyester tire cord dip, the solids of the dispersion consisting essentially of a major amount by weight of a rubbery vinyl pyridine copolymer and an minor amount by weight of a heat reactable 2,6-bis(2,4-dihydroxy phenyl methyl)-4-chlorophenol composition made by the process of first reacting about 2 mols of formaldehyde with 1 mol of parachloro phenol to provide 2,6-dimethylol-4-chlorophenol which then is reacted with about 2 mols of resorcinol to give the heat reactable bis(dihydroxy phenylmethyl) chlorophenol composition.

3,960,797

WATER-IN-OIL EMULSIONS OF FLUOROALKYL POLYMER, CHLORINATED ALKANE SOLVENT AND NON-IONIC SURFACTANT

Charles Edward Inman, Glenside, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 28, 1973, Ser. No. 429,465

Int. Cl.² C08L *27/12*

U.S. Cl. 260—29.6 F **10 Claims**

1. A composition in the form of an emulsion, or which can readily be converted into an emulsion by shaking, consisting essentially of a major proportion of chlorinated alkane solvent having one to three carbon atoms and minor proportions of water and finely-dispersed fluoroalkyl polymer solids containing pendant C_6 to C_{16} fluoroalkyl groups and having oil and water repellent properties, said fluoroalkyl polymer solids being present in a minimum amount of about 0.05 parts per 100 parts by weight of emulsion, and an emulsion-stabilizing amount of nonionic surfactant having an HLB value of from 8 to about 20 and which is selected from the group consisting of the polyoxyethylene adducts of sorbitan fatty acid ester, glycerol fatty acid esters, fatty acids, and fatty alcohols, wherein there are 16 to 18 carbon atoms in the fatty acid or fatty alcohol moiety.

3,960,798

PROCESS FOR REGULATING HARDENING SPEED OF SELF-HARDENING MOLD

Tetsuo Nakazawa, Tokyo, and Osamu Nishida, Saitama, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 26, 1974, Ser. No. 500,693

Int. Cl.² C08L *29/00*

U.S. Cl. 260—29.6 BM **14 Claims**

1. A process for regulating the hardening speed of a self-hardening mold which comprises adding 0.1 to 3 parts by weight of an aliphatic alcohol as a hardening speed regulating agent when a mold is formed with a molding sand prepared by adding 1 to 10 parts by weight of a polyvinyl alcohol solution having a concentration of 5 to 30% by weight and from 0.01 to 2.1 parts by weight of a boron compound to 100 parts by weight of refractory particles and then kneading the mixture.

3,960,799

HEAT-RESISTANT ADHESIVE LACQUERS AS WIRE COATINGS

Hans Mosimann, Breitenbach; Peter Heim, Basel, and Charles Borer, Grindel, all of Switzerland, assignors to Schweizerische Isola-Werke, Switzerland

Filed Sept. 12, 1974, Ser. No. 505,498

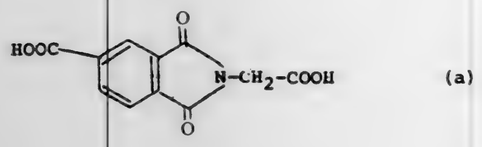
Claims priority, application Switzerland, Sept. 13, 1973, 13135/73

Int. Cl.² C08G *45/12, 51/44*

U.S. Cl. 260—30.2 **6 Claims**

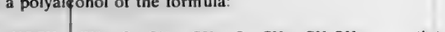
1. A heat-curable adhesive lacquer for coating electrically insulated wires consisting essentially of:

1. a polyurethane-ester-imide having terminal isocyanate groups blocked by a monohydric phenol, said polyurethane-ester-imide being derived from (A) an ester-imide containing hydroxyl groups obtained from a dicarboxylic acid of the formula:



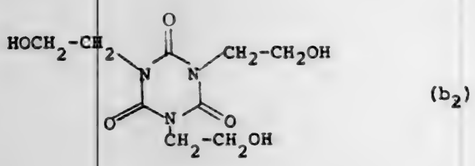
(a)

and a polyalcohol of the formula:



(b₁)

and of the formula:



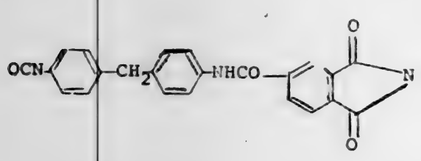
(b₂)

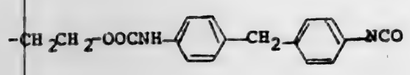
in the molar ratios:

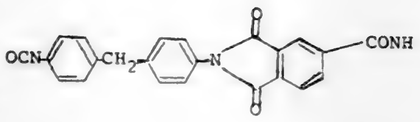
a : $(b_1 + b_2) = 1 : 1.2$ to $1 : 2$

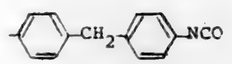
$b_1 : b_2 = 1 : 1$ to $10 : 1$

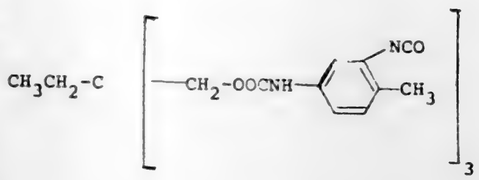
and (B) a polyisocyanate of the formula:



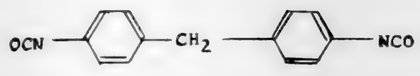








or



or a mixture of two or more thereof and the ratio of the hydroxyl groups to the isocyanate groups is from 1 : 1 to 1 : 1.5 and

2. an essentially linear epoxide resin having secondary hydroxyl groups and a molecular weight of at least 30,000,

the lacquer, on drying, being a storage-stable at room temperature and being in a non-adhesive state such that the lacquer softens on further heating to give a thermoset, adhesive, heat-stable resin.

3,960,800

ACETOXYSILOXANE ADHESION PROMOTER AND PRIMER COMPOSITION

Charles F. Kohl, Jr., Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

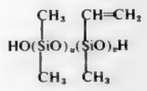
Filed Dec. 16, 1974, Ser. No. 533,102

Int. Cl.² C08K *5/07*

U.S. Cl. 260—32.8 SB **12 Claims**

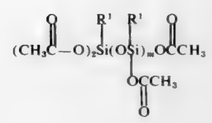
1. A composition consisting essentially of a reaction product obtained by mixing essentially anhydrous conditions

1. an organosiloxane of the formula



in which u has an average value of from 0 to 15, v has an average value of from 0 to 7 and the total of $u + v$ has an average of from 1 to 15 inclusive where the organosiloxane species having values of $u + v$ above 15, if present, are in no more than minor amounts and

2. an acetoxysilicon compound of the formula



where R^1 is methyl, ethyl or vinyl and m has an average value of from 0 to 5 inclusive, (1) and (2) being mixed in proportions to provide a ratio of acetoxy in (2) to hydroxyl in (1) of from 3/1 to 10/1, said reaction product containing at least one silicon-bonded vinyl radical.

3,960,801

PUMPABLE EPOXY RESIN COMPOSITION

Robert Clay Cole; Ronney R. Koch, and Joseph Ramos, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 371,100, June 18, 1973. This application Apr. 4, 1974, Ser. No. 457,946

Int. Cl.² C08K *5/01*; **E02D** *3/12*; **E21B** *33/13*

U.S. Cl. 260—33.6 EP **13 Claims**

1. An epoxy resin composition for sealing a subterranean zone penetrated by a well bore containing about 20–40 parts by volume of an aromatic diluent selected to provide a pumpable epoxy resin composition wherein said aromatic diluent is selected to prevent premature setting by absorbing heat and to provide a cured epoxy resin composition occupying substantially the same volume as said pumpable epoxy resin; wherein said pumpable epoxy resin composition is curable to a high strength, impermeable matrix with a weight loss of less than about 20 parts per 100 parts by weight of said pumpable epoxy resin composition; said pumpable epoxy resin composition comprising an epoxy resin, a curing agent and said selected aromatic diluent; wherein said selected aromatic diluent is at least one or a mixture contaning an aromatic hydrocarbon of the general formual $C_6(R_1)_6$ wherein R_1 is hydrogen, a straight or branched chain alkyl radical, a cycloparaffin radical or a mixture thereof; wherein each alkyl and cycloparaffin radical has about 1–10 carbon atoms; and further wherein at least one R_1 group is radical.

3,960,802

PROCESS FOR THE MANUFACTURE OF A ONE-COMPONENT ROOM-TEMPERATURE VULCANIZABLE SILICONE COMPOSITION

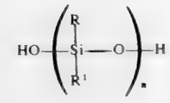
Melvin Dale Beers, Elnora; Harold Chura, Waterford, and Robert Joseph Robillard, Troy, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Nov. 27, 1974, Ser. No. 527,689

Int. Cl.² C08L *83/04*

U.S. Cl. 260—37 SB **28 Claims**

1. A process for the preparation of a fluid composition that is stable under substantially anhydrous conditions and curable to a self-bonding elastic solid in the presence of moisture, said process comprising passing 100 parts by weight of a silanol chain stopped polydiorganosiloxane of the formula:



wherein R and R^1 are each, independently, organic radicals of up to 8 carbon atoms selected from hydrocarbyl, halohydrocarbyl and cyano lower alkyl and n is an average number of from about 10 to 15,000, from 0.01 to 5.0 parts by weight of a crosslinking silane of the formula:

$$R_m^2 Si(OR^3)_{4-m}$$

wherein R^2 and R^3 have the values defined for R and R^1 hereinabove and m has a value of 0 to 3 and an average value based on the total amount of silane in the composition of 0 to 1.99, and a silanol reactive organometallic ester compound of a metal, said compound having radicals attached to the metal atom, at least one of said radicals being a hydrocarbonoxy radical or a substituted hydrocarbonoxy radical, said radicals being attached to the metal atoms through M—O—C linkages wherein M is the metal and any remaining valences of the metal are satisfied by substituents selected from organic radicals which are attached to the metal atom through M—O—C linkages, —OH and —O— of a M—O—M linkage, the weight ratio of the silanol reactive organometallic ester compound to the cross-linking silane always being at least unity, through a devolatilizing extruder to form a vulcanizable fluid composition that is curable to a self-bonding elastic solid in the presence of moisture.

3,960,803

FLEXIBLE NONTACKY PREPREG FOR BONDING COILS IN HIGH VOLTAGE DEVICES AND METHOD OF MAKING SAID PREPREG

James D. B. Smith, Turtle Creek, and Robert N. Kauffman, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

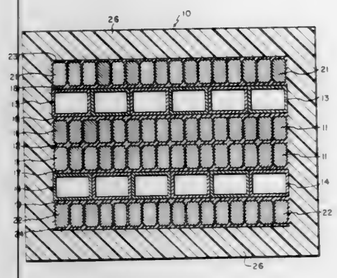
Filed June 22, 1973, Ser. No. 372,719

Int. Cl.² B32B *27/38*; **H01B** *13/06*; **C08F** *18/14*; **H01F** *27/32*

U.S. Cl. 260—37 EP **8 Claims**

1. A flexible nontacky prepreg, containing uncured resin, for bonding coils in high voltage devices comprising a fibrous mat material containing a substantially unreacted resinous mixture consisting essentially of an unreacted epoxy resin having an epoxy equivalent weight of between about 360 to about 400 and at least one sterically hindered anhydride

which is substantially unreactive with the epoxy resin at ambient temperatures, said mixture comprising 25 to 400% by



weight of said prepreg, said prepreg having a shelf life of at least six months and a power factor below 10% at 150°C.

3,960,804

METHOD OF MAKING SILICONE POLYMER WITH FILLERS DISPERSED THEREIN AND USING SAME TO MAKE SILICONE RUBBER

Maurice A. Minuto, 15 Hemmingway Drive, Huntington, N.Y. 11746

Continuation-in-part of Ser. No. 460,366, April 12, 1974, abandoned. This application Sept. 25, 1974, Ser. No. 509,275

Int. Cl.² C08L *83/04*

U.S. Cl. 260—37 SB **9 Claims**

1. A process for producing a homogeneous mass of silicone polymer having filler particles dispersed therein, which process comprises mixing said silicone polymer with said filler at elevated temperatures between about 0°F. and about 350°F., in a high-intensity mixer, said mixing being carried out for a period of time sufficient to disperse said filler particles in said silicone polymer such that said polymer becomes a continuous phase with said filler particles dispersed therethrough as the discontinuous phase.

3,960,805

DIRECT SYNTHESIS OF ORGANIC POLYMER-INORGANIC OXIDE COMPOSITES

Lynn Johnston Taylor, 3704 Dewlawn Drive, Toledo, Ohio 43614

Continuation-in-part of Ser. No. 462,321, April 19, 1974, Pat. No. 3,891,594, which is a continuation of Ser. No. 242,132, April 7, 1972, Pat. No. 3,817,911. This application May 19, 1975, Ser. No. 579,323

Int. Cl.² C08L *79/00, 67/00*

U.S. Cl. 260—37 N **11 Claims**

1. A process for preparation of a composite material of at least one organic polymer having at least one inorganic oxide dispersed therein, which process comprises:

a. mixing together at least one non-polymeric organic precursor and at least one inorganic-oxide hydrolyzable precursor in the presence of water;

b. synthesizing the inorganic oxide from the hydrolyzable precursor;

c. polymerizing the non-polymeric organic precursor so as to prepare the organic polymer in situ of the previously synthesized inorganic oxide; and

d. recovering the resulting composite material.

3,960,806

FLAME RESISTANT LINEAR POLYESTERS

Gerald Costa Najour, and Peter Ray Witt, both of Kinston, N.C., assignors to Emery Industries, Inc., Cincinnati, Ohio

Continuation of Ser. No. 449,780, March 11, 1974, Pat. No. 3,909,482, which is a continuation-in-part of Ser. No. 301,812, Oct. 30, 1972, abandoned. This application July 7, 1975, Ser. No. 591,918

Int. Cl.² C08J *3/20;* **C08G** *63/46*

U.S. Cl. 260—40 P **4 Claims**

1. A fiber-forming copolyester having excellent whiteness and increased flame retardance derived from dimethyl terephthalate, ethylene glycol and about 4 to 5 mol percent 2,2-bis-[4-(2-hydroxyethoxy)-3,5-dibromophenyl]propane based on glycol terephthalate structural units present in the copolyester product and containing 1 to 2 percent antimony oxide based on the weight of the copolyester.

3,960,807

THERMOFORMED POLYESTER ARTICLES HAVING IMPACT RESISTANCE AND HIGH TEMPERATURE DIMENSIONAL STABILITY

Larry S. McTaggart, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 30, 1974, Ser. No. 510,451

Int. Cl.² C08L *67/02*

U.S. Cl. 260—40 R **9 Claims**

1. A shaped, thin-walled, thermoformed, heat-set polyester article the composition of which comprises:

A. a thermoplastic, crystallizable, polyester having a glass transition temperature of at least 50°C and a melting point of at least 149°C and an intrinsic viscosity of at least 0.75,

B. from 2–16% of a polymeric crack stopping agent, and

C. from 0.01% to 20% by weight of a nucleating agent.

3,960,808

POLYPHENYLENE ETHER COMPOSITION

Arthur Katchman, Delmar, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 8, 1974, Ser. No. 440,727

Int. Cl.² C08K *7/14;* **C08L** *53/02*

U.S. Cl. 260—42.18 **10 Claims**

1. A thermoplastic composition which comprises a polyphenylene ether resin, a rubber modified, high impact styrene resin and a homopolystyrene having a number average molecular weight between 30,000 and 60,000.

9. A composition as defined in claim 1 wherein said composition includes from 1 to 80% by weight of a filamentous glass filler.

3,960,809

COMPOSITIONS STABILIZED WITH HINDERED PIPERIDINE CARBOXYLIC ACIDS

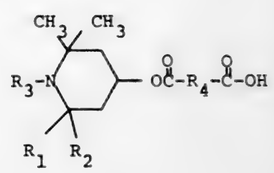
Chester R. Ramey, Spring Valley, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,231

Int. Cl.² C08K *5/13, 5/34*

U.S. Cl. 260—45.75 N **14 Claims**

1. A composition of matter comprising a synthetic organic polymer normally subject to deterioration stabilized with 0.005 to 5% of a stabilizer having the formula



wherein

R_1 and R_2 independently of each other are straight or branched-chain alkyl having from 1 to 6 carbon atoms, or together with the carbon to which they are bound form a cyclopentyl or cyclohexyl ring, which is unsubstituted or substituted with a methyl group.

R_3 is hydrogen, alkyl having 1 to 12 carbon atoms, β-methoxyethyl, alkenyl having 3 to 4 carbon atoms, propargyl, benzyl or alkyl substituted benzyl, and

R_4 is straight- or branched-chain alkylene having 1 to 4 carbon atoms, and

wherein the reactants from which the synthetic organic polymer is derived are substantially free of chemical groups which would react by condensation with the carboxylic acid group of the stabilizer.

3,960,810

COATING PROCESS

Grish Chandra, Glamorgan, Wales, and Colin Mostyn Rowland, Brussels, Belgium , assignors to Dow Corning Limited, Barry Glamorgan, Wales

Division of Ser. No. 479,245, June 14, 1974, Pat. No. 3,928,629. This application Apr. 10, 1975, Ser. No. 566,857

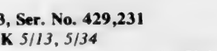
Int. Cl.² C08G *77/04*

U.S. Cl. 260—46.5 UA **4 Claims**

1. A composition having a viscosity not exceeding 4,000 cS at 25°C and comprising (1) a polydiorganosiloxane having a viscosity in the range from 50 to 4,000 cS at 25°C wherein from 0.1 to 15 per cent of the total silicon-bonded radicals are vinyl radicals, there being at least two vinyl radicals per molecule and at least 80 per cent of the remaining silicon-bonded radicals being methyl radicals (2) an organohydrogenpolysiloxane having therein silicon-bonded hydrogen atoms and silicon-bonded organic radicals selected from methyl, ethyl and phenyl radicals, there being in the molecule on average at least three silicon-bonded hydrogen atoms, and no more than 20 molar per cent of copolymeric diorganosiloxane units, and (3) a catalyst for the addition of SiH groups to silicon-bonded vinyl groups, said catalyst comprising one or more complexes of rhodium having the general formula

(i)

or



(ii)

wherein each X represents a halogen atom and each R represents an alkyl, aryl, aralkyl or alkaryl radical having from 1 to 8 inclusive carbon atoms or the R'_3SiQ- group in which Q represents a divalent aliphatic hydrocarbon radical having from 1 to 6 inclusive carbon atoms or a $(CH_3)_3Si$— group not more than one R' per molecule being $(CH_3)_3Si$—, the ratio of silicon-bonded hydrogen atoms provided by (2) to silicon-bonded vinyl radicals provided by (1) being at least 0.5:1.

3,960,811

PROCESS FOR THE PREPARATION OF AN AMORPHOUS POLYPHENYLENE OXIDE

James G. Bennett, Menands, and Glenn D. Cooper, Delmar, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Aug. 19, 1970, Ser. No. 65,286

Int. Cl.² C08G *65/44, 65/46, 65/48*

U.S. Cl. 260—47 ET **5 Claims**

1. A process for the preparation of a completely amorphous polyphenylene oxide having a degree of polymerization of at least 100 from a polyphenylene oxide with 30 to 40% crystallinity which comprises providing a solution of said polyphenylene oxide with 30 to 40% crystallinity in toluene and adding said solution to methanol until the precipitation of said amorphous polyphenylene oxide is substantially complete and recovering said amorphous polyphenylene oxide.

3,960,812

COMPOSITIONS OF NEW IMIDES OF UNSATURATED DICARBOXYLIC ACIDS AND AZOMETHINES

Alfred Renner, Munchenstein , and Theobald Haug, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 20, 1973, Ser. No. 381,328

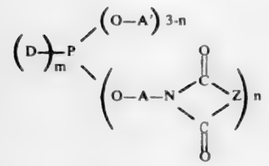
Claims priority, application Switzerland, Oct. 10, 1972, 14887/72

Int. Cl.² C08G *73/12*

U.S. Cl. 260—47 UA **8 Claims**

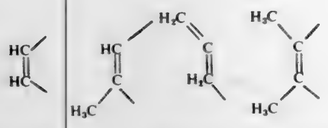
1. A storage-stable, heat-curable composition of matter, which comprises

a. a bis-imide, a tris-imide or a mixture thereof of the general formula



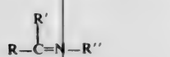
(I)

wherein A and A' are aromatic radicals, aromatic radicals which are substituted by alkyl radicals with 1–4 carbon atoms, halogen atoms, the nitro group, the tertiary amino group, the alkoxy group, the carbalkoxy group or the carbamide group or aromatic radicals which are bridged by an oxygen atom, an alkylene group or a sulphonyl group, Z is a radical of the formulae

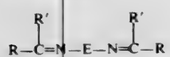


D denotes an oxygen or sulphur atom, *m* denotes the number 1 or 0 and *n* denotes the number 2 or 3, and

b. an azomethine of the general formula

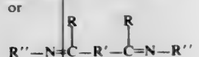


(VI)



(VII)

or



(VIII)

wherein, in the formulae, R denotes a hydrogen atom, a linear or branched aliphatic hydrocarbon radical with up to 12 carbon atoms, a cycloaliphatic or cycloaliphatic-aliphatic hydrocarbon radical with up to 12 carbon atoms, an aromatic radical with 6–12 carbon atoms, or an araliphatic hydrocarbon radical with up to 20 carbon atoms, R′ and R″, with the exception of the meaning of a hydrogen atom, have the same meaning as R, and R′ together with R and with the inclusion of the carbon atoms carrying the two substituents can also denote a cycloaliphatic ring system, and E denotes a divalent organic radical with at least 2 and at most 30 carbon atoms and wherein the molar ratio of imides of the formula I to the azomethines of the formula VI is from 1:1.5 to 3:1.5 and the molar ratio of imides of the formula I to the azomethines of the formula VII or VIII is from 1.3:1 to 4:1.

3,960,813

ZINC CHLORIDE AS CATALYST FOR EPOXY/ADNC BLENDS

Donald H. Russell, Cherry Hill, N.J., and R. Warren Lenton, Glenolden, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

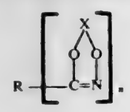
Filed Feb. 13, 1974, Ser. No. 442,275

Int. Cl.² C08G *30/10*

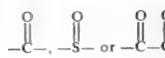
U.S. Cl. 260—47 EP **18 Claims**

1. A storage-stable polyoxazolidone-forming composition comprised of

A. A cyclic nitrile compound having the structural formula



wherein X is



R is an organic radical free of reactive hydrogens as determined by the Zerewitinoff Test and n is at least 2,

B. An oxirons epoxide, and

C. About 0.1 to 5% based on the total weight of (A) and (B) of a halide of a metal of Groups II*b*, III*a*, IV*a*, and VIII of the Periodic Table,

the cyclic nitrile compound and the epoxide being present in amounts such that the ratio of cyclic nitrile groups to epoxy groups is about 0.7 to 10:1.

3,960,814

POLY (PERFLUOROALKYLENE OXIDE) OXADIAZOLES AND THEIR SYNTHESIS

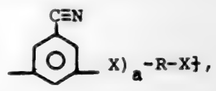
Robert E. Cochoy, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 27, 1975, Ser. No. 553,701

Int. Cl.² C08G *73/06*

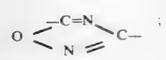
U.S. Cl. 260—47 R **14 Claims**

1. A poly(perfluoroalkylene oxide)oxadiazole consisting essentially of repeating units having the following structural formula $\{R_f\text{-}X\text{-}R\text{-}X\text{-}R_f\text{-}x(\text{-}R\text{-}X$

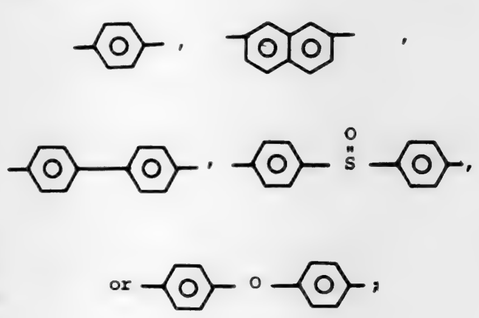


$X)_a\text{-}R\text{-}X\}$,

where R_f is $-CF_2(OCF_2CF_2)_m-O-(CF_2)_5-O-(CF_2CF_2O)_n-CF_2-$, in which *m* and *n* are each an integer equal to at least 1 and the sum of *m* and *n* is in the range of 2 to 12, inclusive; where x is



where R is



and where *a* is in the range of 0.04 to 1.0.

7. A process for synthesizing a poly(perfluoroalkylenes oxide)oxadiazole which comprises the steps of (1) adding to a reaction zone an aromatic dinitrile N-oxide; a perfluoroalkylene oxide dinitrile; 1,3,5-tricyanobenzene; and a fluorinated solvent in which the 1,3,5-tricyanobenzene is insoluble; (2) after the aromatic dinitrile N-oxide and the perfluoroalkylene oxide dinitrile have reacted with one another to form a polymeric material, adding to the reaction zone a solvent, misicible with the fluorinated solvent, in which the 1,3,5-tricyanobenzene is soluble; and (3) reacting the 1,3,5-tricyanobenzene with the polymeric material, thereby forming a terpolymer product.

3,960,815

BRANCHED AROMATIC POLYARYL-ETHER SULPHONES

Gerhard Darsow; Paul Schiller, both of Krefeld-Urdingen; Eckart Reese, Dormagen; Ludwig Bottenbruch, Krefeld-Bockum; Rudolph Binsack; Hugo Vernaleken, both of Krefeld, and Joachim Wank, Zons, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

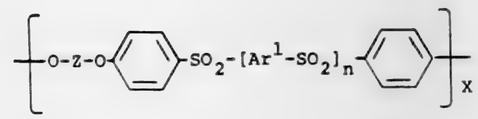
Filed Jan. 29, 1974, Ser. No. 437,643

Claims priority, application Germany, Feb. 3, 1973, 2305413

Int. Cl.² C08G *75/23*

U.S. Cl. 260—49 **6 Claims**

1. A branched, high-molecular weight, thermoplastic polyaryl-ether sulphone consisting essentially of bivalent structural elements of the formula

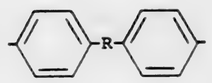


where

Ar^1 is a biphenylene radical or an oxybiphenylene radical,

n is 0 or 1,

Z is a p-phenylene radical, an m-phenylene radical or a bivalent radical of the formula V



(V)

where

R is a bivalent C_1–C_{12} alkylene or alkylidene radical, a C_3–C_{12} cycloalkylene or cycloalkylidene radical, a C_7–C_{12} aralkylene or aralkylidene radical or a C_6–C_{12} arylene-bisalkylidene radical or the group —O—, —S—, —SO—, —SO_2—, —CO— or a simple bond and wherein

X is an integer between about 10 and 120,

and trivalent structural elements derived from an aromatic compound having at least three aromatically linked alkali metal hydroxylate substituents and/or from a halogenaryl compound having at least three aryl-linked halogen substituents, said halogenaryl compound containing an electron-attracting group; and which is the condensation reaction product of approximately equimolar amounts of an aromatic dialkali metal bishydroxylate and a bis-(4-halogenaryl) compound, whose aryl nuclei are linked by sulphonyl groups, and about 0.01 to about 2 mol %, based on the bishydroxylate or bis-(4-halogenaryl) compound, of an aromatic compound having at least three aromatically linked alkali metal hydroxylate substitutents and/or of a halogenaryl compound having at least three aryl-linked halogen substitutents, said halogenaryl compound containing an electron-attracting group.

3,960,816

PROCESS FOR THE PREPARATION OF A NO-BAKE SAND CORE FROM AN OXAZOLINE CONDENSATE AS BINDER

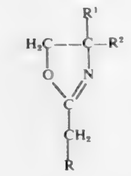
Louis A. Jurisch, Marengo, Ill., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Division of Ser. No. 378,366, July 11, 1973, Pat. No. 3,919,135. This application Jan. 6, 1975, Ser. No. 538,646

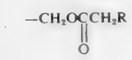
Int. Cl.² C08G *12/44*

U.S. Cl. 260—73 L **9 Claims**

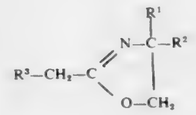
1. In the foundry process of mixing foundry sand with a binding amount of up to 10% by weight based on said sand of a no-bake binder to thereby form a foundry mix, said no-bake binder being (a) as a first part, a synthetic drying oil , and (b) as a second part, polyisocyanate; from 10–50 weight percent polyisocyanate being present based on the weight of drying oil, the improvement consisting of using as said drying oil a mono-oxazoline corresponding to the formula



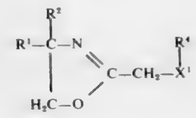
wherein R^1 and R^2 are methyl, ethyl, hydroxymethyl or acyloxymethyl corresponding to the formula



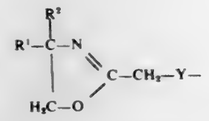
and are the same or different, R is hydrogen or an alkyl or alkenyl group of from 1 to 18 carbon atoms, or a bis- or trisoxazoline corresponding to the formula



where R^3 is the group



wherein X^1 is any divalent or trivalent saturated or unsaturated aliphatic hydrocarbon group of from 0 to 32 carbon atoms, and when X^1 is divalent, R^4 is hydrogen and when X^1 is trivalent, R^4 is the group



wherein Y is a saturated or unsaturated hydrocarbon of 16 carbon atoms.

3,960,817

SOLID PHASE POLYESTER POLYCONDENSATION

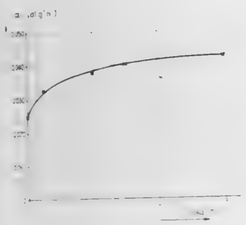
Gottfried Morawetz, and Lothar Buxbaum, both of Kufstein, Austria, assignors to Ciba-Geigy AG, Switzerland

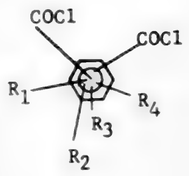
Continuation of Ser. No. 192,048, Oct. 26, 1971, abandoned. This application Aug. 30, 1973, Ser. No. 392,934

Claims priority, application Austria, Oct. 23, 1970, 9574/70

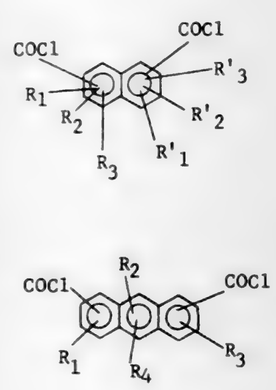
Int. Cl.² C08G *17/003*

U.S. Cl. 260—75 M **15 Claims**





or



1. A process for solid phase polycondensation of particles of thermoplastic polyester melt precondensate at an essentially constant temperature of from 5° to 50° C below the melting point of the precondensate and under vacuum and streaming inert gas and wherein intrinsic viscosity of the precondensate is increased, the process comprising effecting solid phase polycondensation under a vacuum of less than 1 torr, with the precondensate in contact with an inert gas stream, and with the inert gas maintained at a streaming rate which is less than 2 liters per hour per kilogram of the precondensate during the polycondensation.

3,960,818

ORDERED AROMATIC COPOLYAMIDE UREA POLYMER

John W. Spiewak, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 29, 1974, Ser. No. 528,307

Int. Cl.² C08G *71/02, 63/62*

U.S. Cl. 260—77.5 C **6 Claims**

1. An ordered copolymer having the formula

---NH—Ar—NH—C:O—NH—Ar'—NH-C:O-Ar''—C:O---

in which Ar and Ar' are of the class consisting of (a) arylene and (b) diarylene X groups in which X may be a covalent bond or a group from the class consisting of sulfonyl, oxygen, alkylene of 1 to 10 carbon atoms, and Ar'' is the residue of diacid chloride after removal of the chlorine atoms of the formula

in which Y is from the class consisting of sulfonyl, oxygen, carbonyl, carbonate, sulfide, disulfide, sulfinyl, azo, $(CH_2)_n$ in which n may be 1 to 50 and $(CH_2)_n$ is representative of an alkylene or unsaturated moiety in which the unsaturation may be isolated or the carbon groups may be conjugated with each other and R_1, R_2, R_3, R_4, R'_1, R'_2, R'_3 and R'_4 are from the class consisting of hydrogen, alkyl, aryl, heteroalkyl, heteroaryl, alkenyl and alkynyl.

3,960,819

CATALYTIC PREPARATION OF POLYAMIDES FROM BIS(AMINOPHENYL)SULPHONE

Eileen Jones; Arthur Morris; Ieuan Thomas, and James Rodney Traynor, all of Runcorn, England, assignors to Imperial Chemical Industries, Inc., London, England

Continuation of Ser. No. 177,831, Sept. 3, 1971, abandoned. This application Mar. 4, 1974, Ser. No. 447,992

Claims priority, application United Kingdom, Sept. 3, 1970, 42220/70

Int. Cl.² C08G *69/28*

U.S. Cl. 260—78 R **4 Claims**

1. A process for the production of a moldable or film- or fiber-forming polyamide in which at least one bis(aminophenyl)sulfone, or amide-forming derivative thereof, and at least one dicarboxylic acid, or amide-forming derivative thereof, in substantially equimolar proportions are heated together at 160° to 330°C under an inert atmosphere in the presence of a catalyst selected from the group consisting of at least one compound having the formula $(RO)_2R$ E=O and a product of mixing at least one compound having the formula $(RO)_2R$ E=O with at least one metal salt, said metal salt being a member of the group consisting of oxides, acetates, acetyl acetonates, halides and hydroxides of zinc, manganese, lanthanum, calcium, aluminum, magnesium, cobalt, cadmium, nickel, chromium, titanium, cerium, zirconium, thorium, and alkali metals, where R is selected from the group consisting of alkyl groups and phenyl groups and E is an element of Group VB of the periodic table of the elements having an atomic number greater than 7.

3,960,820

REGULATING THE FLOW OF MOLTEN POLYAMIDES IN A CONTINUOUS PROCESS FOR THE PREPARATION THEREOF

Baden McDowall Pinney, Kingston, Canada, assignor to Du Pont of Canada Limited, Montreal, Canada

Filed Nov. 8, 1974, Ser. No. 522,111

Claims priority, application Canada, Feb. 27, 1974, 193616

Int. Cl.² C08G *69/16, 69/28*

U.S. Cl. 260—78 R **9 Claims**

1. In a process for the continuous preparation of aliphatic polycarbonamide from an aqueous solution of aliphatic polycarbonamide -forming reactants that includes the steps of, feeding continuously the aqueous solution of aliphatic polycarbonamide -forming reactants to an elongated tubular zone having an inlet pressure of from about 60 lb./sq. in. absolute to about 250 lb./sq. in. absolute, passing the solution through the elongated tubular zone and gradually reducing the pressure along the zone to progressively flash water into steam while supplying sufficient heat to maintain the temperature of the solution above the melting point of the resultant aliphatic polycarbonamide, said pressure in said zone cycling above and below a set point, and passing the molten aliphatic polycarbonamide from the elongated tubular zone into a vessel, the improvement for maintaining a substantially constant level in said vessel comprising: injecting steam at an intermediate point in the tubular zone according to the pressure in said tubular zone with respect to said set point whereby said cycling above and below said set point is substantially eliminated thus regulating the flow of molten aliphatic polycarbonamide from the tubular zone.

3,960,821

CHLORONITROSYLATED, CHLOROSULFONATED HYDROCARBON POLYMERS AND A PROCESS FOR THE PREPARATION THEREOF

Herwart C. Vogt, Grosse Ile; Charles F. Deck, Trenton, and Pauls Davis, Gibraltar, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Dec. 13, 1974, Ser. No. 532,323

Int. Cl.² C08F *28/02*; **C08G** *75/24*; **C08K** *5/02, 5/36*

U.S. Cl. 260—79.3 A **11 Claims**

1. A process for the preparation of a hydrocarbon polymer containing chlorosulfonic and chloronitroso groups which comprises contacting in the presence of a catalyst said polymer with sulfonyl chloride or sulfur dioxide and chlorine and nitrosyl chloride or chlorine and nitric oxide.

3,960,822

CROSSLINKING POLYMERS WITH CHLORONITROSO COMPOUNDS

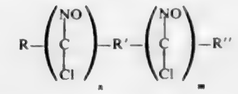
Pauls Davis, Gibraltar; Herwart C Vogt, Grosse Ile, and Charles F. Deck, Trenton, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 10, 1974, Ser. No. 513,647

Int. Cl.² C08C *19/12, 19/32*; **C08F** *28/00*

U.S. Cl. 260—79.5 P **6 Claims**

1. A process for crosslinking a polymer which is selected from the group consisting of polyethylene, polypropylene, polystyrene, styrene-butadiene rubber, butyl rubber, natural rubber, polybutadiene, polyisobutylene, ethylenepropylene copolymers, 1,4-polyisoprene, ethylene-propylene dichloropentadiene terpolymer, polyvinyl chloride polymer, vinyl chloride-vinyl acetate copolymers, vinyl chloride-vinylidene chloride copolymers, chlorinated natural rubber, sulfochlorinated polyethylene, chloroprene, chlorinated butyl rubber, chlorinated polyethylene, chlorinated polypropylene, perfluoropropylene vinylidene fluoride and copolymers thereof which comprises reacting said polymer with a chloronitroso compound having the general formula



wherein R, R', R'' are selected from the group consisting of hydrogen, methyl, ethyl, propyl, linear or cyclic butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, and tridecyl, n is an integer from 1 to 10, m is an integer from 0 to 10 and the amount of said chloronitroso compound is from about 0.01 to about 50 weight percent of the polymer.

3,960,823

HYDROCARBON RESINS AND COMPOSITIONS THEREOF

Hisataka Komai, and Atsuo Ishikawa, both of Kawasaki, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 308,920, Nov. 22, 1972, abandoned. This application Apr. 18, 1974, Ser. No. 461,826

Claims priority, application Japan, Nov. 24, 1972, 46-94259; Feb. 16, 1972, 47-16252; Feb. 16, 1972, 47-16253

Int. Cl.² C08F *232/04, 2/06*

U.S. Cl. 526—237 **1 Claim**

1. Hydrocarbon resins having a softening point of 60°–140°C and a Gardner color of 6 or less and being soluble in a hydrocarbon solvent, prepared by polymerizing a monomeric mixture composed substantially of, based on the weight of the monomeric mixture, (A) 40–90% by weight of 1,3-pentadiene, (B) 10–60% by weight of cyclopentene and (C) 0–15% by weight of 1,3-butadiene or isobutene, the monomeric mixture being allowed to contain not more than 2% by weight of each of (D) isoprene, (E) cyclopentadiene and (F) dicyclopentadiene together with other C_4 - C_6 olefins in such amounts that the total of said three diolefins (D)-(F) and the other C_4 - C_6 olefins is not more than 5% by weight, in 20–1000 parts by weight per 100 parts by weight of the monomeric mixture, of a solvent containing not less than 50% by weight of aromatic hydrocarbons at temperatures of 0°–80°C in the presence of aluminum chloride as the catalyst.

3,960,824

MERCAPTAN INITIATED POLYMERIZATION PROCESS CARRIED OUT IN THE PRESENCE OF OXYGEN

Darrell D. Hicks, Jeffersontown, Ky., assignor to Celanese Coatings & Specialties Company, Louisville, Ky.

Filed July 9, 1971, Ser. No. 161,331

Int. Cl.² C08F *218/02, 220/06*

U.S. Cl. 526—85 **9 Claims**

1. A polymerization process which consists essentially of contacting polymerizable ethylenically unsaturated monomers with from about 0.01 to about 0.3 equivalent per mole of monomers of an organic aliphatic, cycloaliphatic, or aromatic mercaptan having from 1 up to about 4 thiol groups per molecule and from 1 to about 12 carbon atoms per thiol group in the presence of oxygen introduced below the surface of the monomers in an amount sufficient to keep a stream of bubbles containing oxygen in contact with the monomers at a temperature of from about 20°C. to about 200°C. for a time sufficient to obtain substantially complete conversion of the monomers to polymer, wherein the monomers are selected from at least one member of the group consisting of (a) polymerizable organic compounds containing a single ethylenic double bond

conjugated with a carbon oxygen double bond, (b) polymerizable organic compounds containing a single ethylenic double bond conjugated with a carbon to nitrogen triple bond, and (c) polymerizable organic compounds containing a single ethylenic double bond conjugated with a carbon atom in an aromatic nucleus.

3,960,825

HIGH-MODULUS THERMOPLASTIC ETHYLENE-TETRAFLUOROETHYLENE HEXAFLUOROPROPENE TERPOLYMERS

Donald Nellis Robinson, Collegeville, and Charles Benjamin Welsh, Blue Bell, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 15, 1973, Ser. No. 406,753
Int. Cl.² C08F *210/02, 214/24*
U.S. Cl. 526—206 **16 Claims**

1. A high-modulus, nonelastic, tough, flexible, thermally stable, solvent resistant, high molecular weight, thermoplastic terpolymer composed of copolymerized units of, in mole percent, from 45% to 55% ethylene, from 40% to 50% tetrafluoroethylene, and 3% to 9% hexafluoropropylene, said terpolymer being obtained by the copolymerization of the monomers in aqueous medium containing in admixture 0.3 to 1%, based on monomers weight, of dialkyl peroxy dicarbonate as initiator and 10% to 150%, based on monomers weight, of 1,1,2-trichloro-1,2,2-trifluoroethane as reaction accelerator.

3,960,826

OLEFIN POLYMERIZATION PROCESS

Henri A. Aboutboul, Brussels, Belgium; William Kirch, Clinton, Iowa, and Jerome H. Krekeler, Cincinnati, Ohio, assignors to National Petro Chemicals Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 383,203, July 27, 1973, abandoned, which is a continuation of Ser. No. 122,503, March 9, 1971, abandoned, which is a division of Ser. No. 750,467, Aug. 6, 1968, abandoned, and a continuation-in-part of Ser. No. 294,270, Oct. 10, 1972, abandoned, Continuation of Ser. No. 70,622, Aug. 14, 1970, which is a continuation-in-part of Ser. No. 750,733, Aug. 6, 1968, Pat. No. 3,652,214, and a continuation-in-part of Ser. No. 750,734, Aug. 6, 1968, Pat. No. 3,652,215, and a continuation-in-part of Ser. No. 766,693, Oct. 11, 1968, Pat. No. 3,652,216, and a continuation-in-part of Ser. No. 326,645, Jan. 26, 1973, abandoned, which is a continuation of Ser. No. 148,117, May 28, 1971, abandoned, which is a continuation-in-part of Ser. No. 750,734, Aug. 6, 1968, Pat. No. 3,652,215. This application Aug. 12, 1974, Ser. No. 496,780
Int. Cl.² C08F *4/02, 4/24, 10/02, 10/00*
U.S. Cl. 526—103 **6 Claims**

1. A particle form polymerization process for the polymerization of an olefin, which comprises contacting a 1-olefin monomer, said 1-olefin having a maximum of 8 carbon atoms and no branching nearer the double bond than the 4-position, with a supported catalyst comprising a metal-containing catalytic material deposited on a silica xerogel support, said silica xerogel having

a. a nitrogen pore volume greater than 1.96 cc/g and up to 2.90 cc/g, said pore volume being equal to the volume of the pores in said gel having pore diameters of up to 600 A and being determined as that volume of nitrogen adsorbed by and condensed in the pores of said gel per gram of the dry gel at the normal boiling point of liquid nitrogen and at a relative pressure P/Po equal to 0.967 wherein P is the pressure of the nitrogen vapor over the gel and Po is the vapor pressure of liquid nitrogen;
b. the major portion of said nitrogen pore volume being provided by pores having pore diameters within the range of from 300–600 A; and
c. a surface area within the range of from 200–500 m^2/g; and maintaining the reaction mixture containing the monomer and catalyst in slurry form and under temperature and pressure conditions effective for polymerization.

3,960,827

CANCER ASSOCIATED POLYPEPTIDE ANTIGEN, PROCESS FOR ITS PREPARATION, PROCESS FOR PREPARING ANTIBODIES, PROCESS OF CANCER DIAGNOSIS AND COMPOSITION USEFUL AS AN IMMUNIZING AGENT

Knut Bertil Björklund, Appelviksvagen 26, 161 36 Bromma, Sweden

Continuation-in-part of Ser. No. 270,273, July 10, 1972, abandoned. This application June 25, 1973, Ser. No. 373,004
Int. Cl.² C07G *7/00*
U.S. Cl. 260—112 R **19 Claims**

1. A process for the isolation of a cancer associated polypeptide antigen (CAPA) comprising the steps:

a. homogenizing CAPA-containing material in a liquid at a temperature not above about 0°C.
b. separating solids from the mixture of liquid homogenate and solids results from step a)
c. extracting said solids with an alkaline aqueous solution;
c'. heat-stabilizing the product by rapidly heating to a temperature range between about 95° and about 100° C. to destroy enzymes destructive to the CAPA;
d. filtering the extract resulting from step c') on a filtration gel of the molecular sieve type in bead form permitting fractionation of the compounds having a molecular weight range including $10 \cdot 10^6$ to $20 \cdot 10^6$, especially about $15 \cdot 10^6$, eluting the gel and recovering the $10 \cdot 10^6$ to $15 \cdot 10^6$ to $15 \cdot 10^6$ fraction, especially the fraction of about $15 \cdot 10^6$
d'. dissolving the sedimented active fractions from the gel filtration in a buffer of pH about 7;
e. subjecting the fraction resulting from step d') to chromatography on a weak ion exchanger equilibrated with a buffer of pH about 7 to adsorb thereon impurities and recovering the first fraction leaving said exchanger;
f. subjecting said first fraction to isoelectric precipitation,
f'. subjecting the fractions from the isoelectric precipitation to active-substance precipitation from aqueous solution at pH about 5, and dissolving the powder in water at pH about 8.5 and acidifying the clear solution with formic acid to produce a precipitate, and thereafter
g. mixing the resulting precipitate with a molecular sieve type gel and layering the mixture on top of a column of an identical molecular sieve type gel of the same isoelectric pH and subjecting said gel to pH gradient elution under gradually decreasing pH; and
h. while decreasing the pH, recovering the eluate fraction down to pH about 3 containing CAPA therein having a spectrophotometric absorption peak wave length at 229–233 nm and a molecular weight within the range of about 20,000 – 27,000.

3,960,828

CATALYTIC HYDROGENOLYSIS OF PROTECTED SULFUR CONTAINING PEPTIDES

Johannes Arnold Meienhofer, Upper Montclair, N.J., assignor to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Filed Mar. 20, 1974, Ser. No. 453,141
Int. Cl.² C07C *103/52*; **C07G** *7/00*
U.S. Cl. 260—112.5 R **6 Claims**

1. A process for the catalytic hydrogenolysis of sulfur containing peptide compounds also containing a benzyloxycarbonyl protective group labile to hydrogenolysis and additionally containing one or more protective groups which are stable to hydrogenolysis which process comprises reacting said sulfur compounds with hydrogen in the presence of palladium catalyst in a liquid ammonia solvent medium.

3,960,829

PROCESS FOR ACYLATION OF AMINO, IMINO AND HYDROXYL GROUPS USING PYRIMIDINE DERIVATIVES

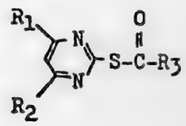
Takeshi Nagasawa; Katumasa Kuroiwa, and Kouichi Narita, all of Koriyama, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Division of Ser. No. 290,575, Sept. 20, 1972, Pat. No. 3,904,612. This application Sept. 25, 1974, Ser. No. 509,221
Claims priority, application Japan, Sept. 22, 1971, 46-74041; Sept. 23, 1971, 46-74237; Oct. 19, 1971, 46-82663
Int. Cl.² C07C *103/52, 69/00, 125/00*
U.S. Cl. 260—112.5 R **7 Claims**

1. A process for the acylation of a compound having amino and/or imino and/or hydroxyl groups, comprising

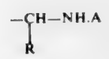
reacting (1) a compound selected from the group consisting of aliphatic and alicyclic primary and secondary amines having up to about 12 carbons; nuclear unsubstituted or chlorine, nitro or methoxy nuclear substituted phenyl-C_{1-3} alkyl primary or secondary amines; nuclear unsubstituted or methyl, hydroxy, carbomethyl or ethoxy nuclear substituted phenyl or naphthyl primary or secondary amines; heterocyclic primary and secondary amines of 3–6 membered rings containing one or two nitrogens and which may contain fused benzene rings; hydrazine, N-phenyl and/or N-lower alkyl-substituted hydrazines wherein at least one hydrogen of the phenyl may be substituted by nitro; amino acids of natural occurrence having free amino and/or imino groups and protected carboxyl groups; α-methylalanine; oligopeptides obtained by coupling reaction of two or more said amino acids; saccharides and steroids having amino and/or imino and/or hydroxyl groups; aliphatic alcohols having 1–12 carbons, phenol, cathechol, naphthol, benzyl alcohol and cyclohexanol,

with (2) pyrimidine derivative of the formula,

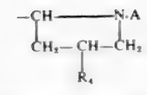


(I)

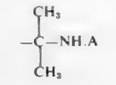
wherein R_1 and R_2 are individually a hydrogen atom or a methyl group; and R_3 is C_{1-17} alkyl which may contain one or more halogens or hydroxyls, C_{2-17} alkenyl, phenyl which may contain hydroxyl, nitro, amino, dimethylamino or methyl, naphthyl, anthryl, 5- or 6-membered hetrocyclic ring which may contain one or more hetero atoms of O, N or S, phenyl-C_{1-5} alkyl which may contain methoxy, halogen, nitro or C_{1-2} alkyl on the benzene nucleus, phenyl-C_{2-5} alkenyl, a group of the formula



wherein R is a substituent at the α-carbon of an α-amino acid and A is hydrogen or an amine protective group for an amino acid,



wherein R_4 is hydrogen or hydroxyl and A is as defined above, $-CH_2CH_2NH.A$ wherein A is as defined above,



wherein A is as defined above or $-CH_2-(CH_2)_3-CH_2-NH.A$ wherein A is as defined above,

in an inert solvent in the presence or absence of a base at a temperature of from −50° to +100°C.

3,960,830

POLYALKYLENE GLYCOLS USED FOR THE PREPARATION OF PEPTIDES

Ernst Bayer, and Manfred Mutter, both of Tubingen, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 4, 1974, Ser. No. 529,519
Claims priority, application Germany, Dec. 6, 1973, 2360794
Int. Cl.² C07C *103/52*
U.S. Cl. 260—112.5 R **2 Claims**

1. In a process for synthesizing a peptide in a liquid phase by at least once forming a peptide bond between a carboxy group of an amino acid or peptide and an amino group of an amino acid or peptide, which latter amino acid or peptide has a carboxy group bound by an ester bond to an hydroxy group of a polymer which is

a. a polyalkylene glycol, the alkylene group of which has 2 or 3 carbon atoms, or
b. such a polyalkylene glycol which has been mono-esterified or mono-etherified, whereby a new polymer-bonded peptide is formed, and then cleaving said ester bond at the conclusion of the synthesis, the improvement wherein said polymer has a molecular weight between 2000 and 40000 and wherein, prior to cleavage of said ester bond, said polymer-bound peptide is crystallized at least once during the synthesis to separate it from said liquid phase.

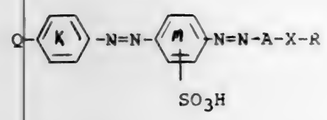
3,960,831

DISAZO DYESTUFFS CONTAINING AMINO AZO BENZENE SULFONIC ACID AND PHENOLIC OR NAPHTHOLIC COUPLERS

Horst Nickel and Fritz Suckfull, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 1, 1970, Ser. No. 33,940
Claims priority, application Germany, May 9, 1969, 1923680
Int. Cl.² C09B *31/04, 31/06*; **D06P** *3/04, 3/24*
U.S. Cl. 260—186 **1 Claim**

1. Disazo dyestuff which in the form of the free acid corresponds to the formula



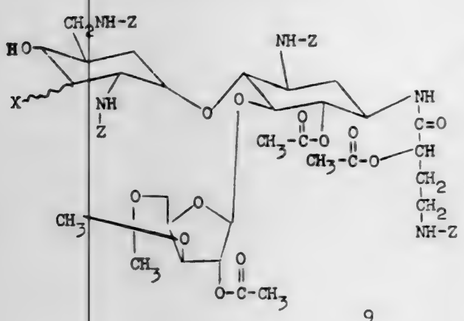
where Q is OH, alkoxy with 1–7 carbon atoms, hydroxy alkoxy with 1–7 carbon atoms, or benzyloxy; R is H;
where A is phenylene;
X is —O— or —NH—;
and wherein M is unsubstituted or substituted by a member of the group Cl, alkyl with 1–7 carbon atoms, benzyl, chlorobenzyl, alkoxy with 1–7 carbon atoms, hydroxy alkoxy with 1–7 carbon atoms or benzyloxy; and
wherein A and K independently are unsubstituted or substituted by a member of the group F, Cl, Br, NO_2, OH, cyclohexyl, alkyl with 1–7 carbon atoms, alkoxy with 1–4 carbon atoms, alkoxy carbonyl with 1–5 carbon atoms, phenyl, or chlorophenyl.

3,960,832
POLYSACCHARIDE AND BACTERIAL FERMENTATION PROCESS FOR ITS PREPARATION
Kenneth Suk Kang, 6808 Rockglen Ave., San Diego, Calif. 92111, and William H. McNeely, 5382 Hewlett Drive, San Diego, Calif. 92115
Division of Ser. No. 403,748, Oct. 5, 1973, Pat. No. 3,915,800, which is a continuation-in-part of Ser. No. 239,819, March 30, 1972, abandoned, which is a continuation of Ser. No. 854,322, Aug. 29, 1969, abandoned. This application Jan. 30, 1975, Ser. No. 545,454
Int. Cl.² C08B *37/00*; **C12D** *13/04*
U.S. Cl. 260—209 R **1 Claim**

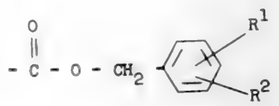
1. The compound Heteropolysaccharide-7, said heteropolysaccharide having an acetyl content of about 8–10%, and the carbohydrate portion thereof consisting of about 73% glucose, about 16% rhamnose and about 11% of a uronic acid, said heteropolysaccharide being soluble in water.

3,960,833
BUTIROSIN A 3'',5''-O-ISOPROPYLIDENE DERIVATIVES
Takayuki Naito; Susumu Nakagawa, both of Tokyo, and Soichiro Toda, Koshigaya, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.
Continuation-in-part of Ser. No. 527,983, Nov. 29, 1974, abandoned. This application Jan. 29, 1975, Ser. No. 544,994
Int. Cl.² C07H *15/22*
U.S. Cl. 260—210 AB **2 Claims**

1. The compound having the formula

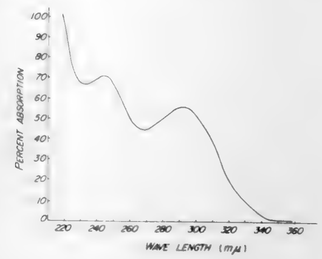


in which Z is a radical having the formula



in which R^1 and R^2 are alike or different and each are hydrogen, chloro, bromo, fluoro, hydroxy, nitro, CF_3, SO_3H, (lower-)alkyl of 1 to 3 carbon atoms or (lower)alkoxy of 1 to 3 carbon atoms and X is iodo, bromo or acylthio.

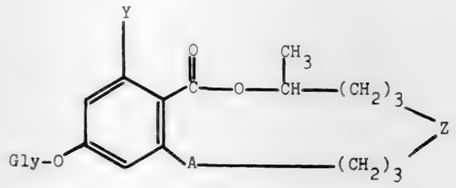
3,960,834
METHOD FOR PREPARING 3-(METHYLMERCAPTO) PROPYLAMINOBLEOMYCIN
Hamao Umezawa, Tokyo; Tomohisa Takita, Asaka; Akio Fujii, and Hiroko Ito, both of Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan
Continuation-in-part of Ser. No. 177,332, Sept. 2, 1971, abandoned. This application Nov. 2, 1973, Ser. No. 412,128
Int. Cl.² C07H *7/06*
U.S. Cl. 260—210 AB **4 Claims**



1. 3-(Methylmercapto)propylaminobleomycin.

3,960,835
ZEARALINE GLYCOSIDE COMPOUNDS
Donald E. Robertson, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.
Filed Jan. 18, 1974, Ser. No. 434,405
Int. Cl.² C07H *15/00*
U.S. Cl. 260—210 R **16 Claims**

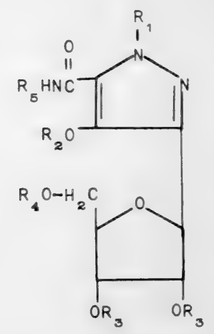
1. A compound of the formula



wherein —A— is either $—CH_2—CH_2—$ or —CH=CH—; >Z is either $>CH_2$, >C=O or >CH—OH; Y is —H or —OR' wherein R' is hydrogen, lower alkyl, lower alkanoyl, or monocyclic aryl lower-alkyl of about 7 to 15 carbon atoms; and Gly is a glycosyl group having about 4 to 5 ring carbon atoms.

3,960,836
ACYLATED DERIVATIVES OF PYRAZOFURIN AND PROCESS FOR THEIR PREPARATION
Gerald E. Gutowski, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed July 22, 1974, Ser. No. 490,627
Int. Cl.² C07H *7/06*
U.S. Cl. 260—210 AB **21 Claims**

1. The compound having the formula



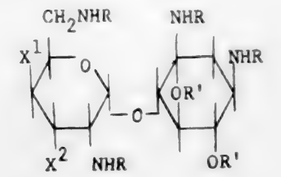
wherein:
R_1, R_2, R_3, and R_5 independently are hydrogen or C_1–C_6 alkanoyl;
R_4 is hydrogen, C_1–C_6 alkanoyl, palmitoyl, benzoyl, or adamantoyl;
with the limitations that at least one of R_1, R_2, R_3, R_4, or R_5 is a group other than hydrogen, that R_2 is alkanoyl only when R_1 is alkanoyl, that R_3 is alkanoyl only when R_4 is alkanoyl, and that R_5 is alkanoyl only when R_3 and R_4 are both alkanoyl.

3,960,837
POLYAMINE COMPOUNDS AND METHODS FOR THEIR PRODUCTION
Peter W. K. Woo, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.
Filed Sept. 6, 1974, Ser. No. 503,991
Int. Cl.² C07H *5/06*, *15/22*
U.S. Cl. 260—210 AB **3 Claims**

1. A member of the class consisting of O-2,6-diamino-2,3,4,6-tetradeoxy-α-D-erythro-hexopyranosyl-(1 → 4)-O-[5-amino-5-deoxy-β-D-xylofuranosyl-(1 → 5)]-N^1-[(S)-4-amino-2-hydroxy-1-oxobutyl]-2-deoxystreptamine and pharmaceutically acceptable salts thereof.

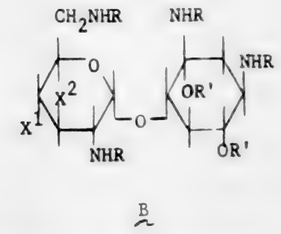
3,960,838
MERCAPTOPSEUDODISACCHARIDES
David J. Cooper, Downingtown; John R. E. Hoover, Glenside, both of Pa., and Jerry A. Weisbach, Cherry Hill, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.
Filed Oct. 29, 1974, Ser. No. 518,428
Int. Cl.² C07H *15/00*
U.S. Cl. 260—210 AB **16 Claims**

1. A compound of the formula



A

or



B

where
X^1 and X^2 are each SR'' or OR'' but are not the same;
R is hydrogen or an amino protecting group;
R' is hydrogen or a hydroxy protecting group; and
R'' is hydrogen or a mercapto protecting group.

3,960,839
PROCESS FOR RECOVERING AND ISOLATING SOLASODINE AND GLYCOSIDES THEREOF
Milton Guerrero, Quito, Ecuador, assignor to Escuela Politecnica Nacional, Quito, Ecuador
Continuation of Ser. No. 331,004, Feb. 9, 1973, abandoned. This application June 4, 1974, Ser. No. 476,278
Int. Cl.² C07J *21/00*
U.S. Cl. 260—210.5 **30 Claims**

1. A process of obtaining a solution of glycosides of solasodine comprising:
a. extracting in either the fresh or dried state the cut or broken fruit of a plant of the stellate Leptostemonum group with a mixture of water and an alcohol selected from the group consisting of methanol, ethanol, isopropanol, and mixtures thereof;
b. removing substantially all of the alcohol from the resulting aqueous-alcoholic extract by distillation;
c. adjusting the weight of the resulting aqueous extract so that the weight of the adjusted aqueous extract is at least about 0.2, if said fruit was dried before said extraction, or about 0.3, if said fuit was not dried before extraction, times the wet weight of said fruit; and
d. removing the precipitate from said adjusted aqueous extract.

10. A process for recovering and isolating solasodine comprising:
a. extracting in either the fresh or dried state the cut or broken fruit of a plant of the stellate Leptostemonum

group with a mixture of water and alcohol selected from the group consisting of methanol, ethanol, isopropanol, and mixtures thereof;

b. removing substantially all of the alcohol from the resulting aqueous-alcoholic extract by distillation;

c. adjusting the weight of the resulting aqueous extract so that the weight of the adjusted aqueous extract is not less than about 0.2, if said fruit was dried before extraction, or about 0.3, if said fruit was not dried before extraction, times the wet weight of said fruit;

d. removing the precipitated impurities from said adjusted aqueous extract;

e. precipitating crude glycosides from said adjusted aqueous extract sans impurities by alkalization;

f. removing the precipitated crude glycosides;

g. heating a mixture consisting essentially of said crude glycosides, up to 16 parts by weight, isopropanol about 55 to 72 parts by weight, hydrogen chloride 4 to 8 parts by weight, and water to make 100 parts by weight for a length of time sufficient to bring about substantially complete hydrolysis of the glycosides;

h. adding to said mixture concentrated aqueous alkali selected from the group consisting of sodium hydroxide, potassium hydroxide, sodium carbonate, and potassium carbonate until the pH of said mixture is between about 9 and about 10;

i. separating the precipitated solasodine from said alkalized mixture;

j. washing said precipitated solasodine with water.

3,960,840

FLUORESCENT DERIVATIVES OF ADENINE-CONTAINING COMPOUNDS

John A. Secrist, III, Cambridge, Mass.; Jorge R. Barrio; Nelson J. Leonard, both of Urbana, and Gregorio Weber, Urbana, all of Ill., assignors to University of Illinois Foundaton, Urbana, Ill.

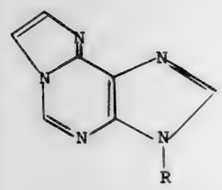
Filed Dec. 29, 1972, Ser. No. 319,744

Int. Cl.² C07H *19/16, 19/20*

U.S. Cl. 260—211.5 R **6 Claims**

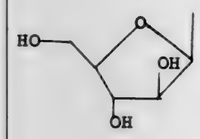
1. A biologically active coenzyme which is fluorescent within the visible spectrum, said coenzyme being selected from the group consisting of:

A. compounds having the formula

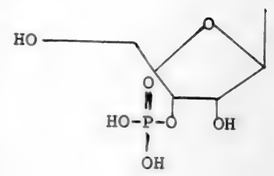


wherein R has any of the following formulas:

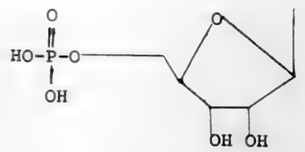
(1)



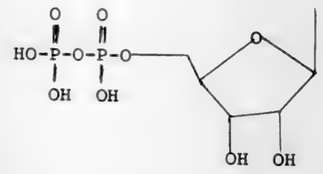
(2)



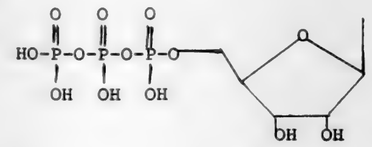
(3)



(4)



(5)



B. anhydrides of A(3) above with nicotinamide mononucleotide or flavin mononucleotide, and

C. salts of any of the compounds of Groups A(2)–A(5) or (B) above with inorganic bases.

3,960,841

3,17,18-TRIHYDROXY-1,3,5(10)-ESTRATRIENES

Klaus Engel; Klaus Prezewowsky; Henry Laurent, and Yukishige Nishino, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berin & Bergkamen, Germany

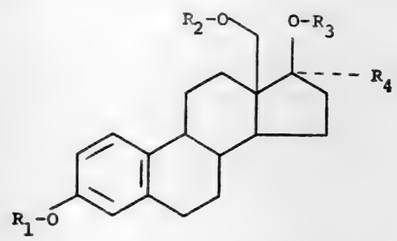
Filed July 12, 1974, Ser. No. 487,969

Claims priority, application Germany, July 13, 1973, 2336432

Int. Cl.² C07J *1/00*

U.S. Cl. 260—239.55 R **17 Claims**

1. A 3,17,18-trihydroxy-1,3,5(10)-estratriene or ester or ether thereof of the formula



wherein

R_1, R_2 and R_3 each are a hydrogen atom, hydrocarbon acyl of 1–15 carbon atoms, alkyl of 1–5 carbon atoms, cycloalkyl of 3–8 ring atoms or tetrahydropyranyl, and

R_4 is a monounsaturated aliphatic hydrocarbon of 1–6 carbon atoms.

3,960,842

PROCESS FOR THE PREPARATION OF 17β-OXALYL STEROIDS

Gregor Haffer; Ulrich Eder; Henry Laurent; Jürgen Ruppert; Gerhard Sauer, and Rudolf Wiechert, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

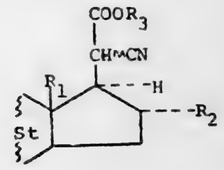
Filed July 12, 1974, Ser. No. 487,987

Claims priority, application Germany, July 14, 1973, 2336438

Int. Cl.² C07J *7/00*

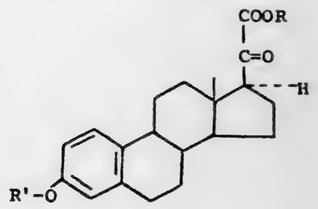
U.S. Cl. 260—239.55 C **17 Claims**

1. A process for the production of a 17β-oxalyl-17α-H steroid having as its 17-position substituent an oxalyl group of the formula —CO—COOR wherein R is H, alkyl of 1–8 carbon atoms or benzyl, having a 13-methyl or 13-ethyl group and whose 16-position is unsubstituted or substituted by α-CH_3, which comprises the steps of deprotonating in an aprotic solvent a corresponding 20-cyano-17α-H compound of the formula



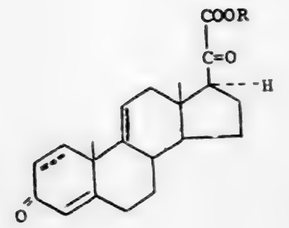
wherein R_1 is a methyl or ethyl, R_2 is a hydrogen atom or methyl, R_3 is a hydrogen atom, alkyl of 1–8 carbon atoms or benzyl, and St is the remainder of the steroid molecule, by reaction with an alkali metal, alkaline earth metal, copper(I) or thallium(I) deprotonating agent, and oxidatively slitting the deprotonated compound with oxygen.

7. A 3-oxy-1,3,5(10)-pregnatriene-21-oic acid of the formula



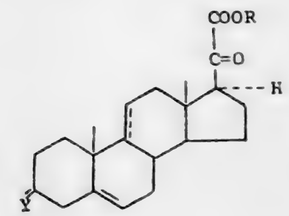
wherein R and R′ each are alkyl of 1–8 carbon atoms.

8. A 3,20-dioxo-4-pregnen-21-oic acid alkyl ester of the formula



wherein R is alkyl of 1–8 carbon atoms and ⎓ is a single or double bond.

9. A 20-oxo-5-pregnen-21-oic acid alkyl ester of the formula



wherein R is alkyl of 1–8 carbon atoms, Y is β-OH,α-H, β-AcO,α-H wherein Ac is alkanoyl of 1–8 carbon atoms or benzoyl, or alkylenedioxy of 2–8 carbon atoms forming with the 3-position carbon atom a 5 or 6 membered ring, and ⎓ is a single or double bond.

3,960,843

PROCESS FOR THE PREPARATION OF ESTERS OF N-BLOCKED PENICILLIN ACIDS WHICH COMPRISES REACTING THE ACID OR A SALT THEREOF WITH A PRIMARY AMINE AND A NITROSATING AGENT

Alan Gibson Long, Greenford; Derek Walker, Windermere; David Thomas Eastlick, Scotforth, and Harry Carson Stables, Ulverston, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

Filed July 9, 1973, Ser. No. 377,268

Int. Cl.² C07D *499/08, 501/02*

U.S. Cl. 260—239.1 **6 Claims**

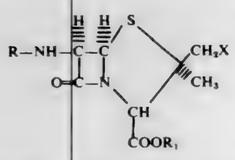
1. In a process for the preparation of an ester of an N-blocked amino acid, wherein said N-blocked amino acid is a penicillin, the improvement which comprises reacting an N-blocked penicillin acid, or a salt thereof formed from an alkali metal with an amine of the formla RNH_2, where R is a member selected from the group consisting of a C_{5-7} cycloalkyl, benzyl, diphenylmethyl, triphenylmethyl, fluoroenyl, xanthydryl, thienylmethyl and furylmethyl and such a group substituted by at least one of chloro, bromo, cyano, nitro, C_{1-6} alkyl, C_{1-6} alkoxy, C_{2-7} alkoxycarbonyl and C_{1-6} alkylsulphonyl, and a nitrosating agent selected from the group consisting of C_{2-7} alkanoyl nitrites, nitrosyl chloride, nitrosyl bromide, nitrosyl sulphate, nitrosyl hydroxide, nitrosyl sulphonate, nitrosyl borofluoride, nitrous acid, potassium nitrosyldisulphonate and C_{1-8} alkyl nitrites, to yield an N-blocked amino acid ester in which the ester group has the formula —COOR where R is as defined above.

3,960,844
PREPARATION OF 6-ACYLAMINO-2-METHYL-2-HALOMETHYL PENAMS

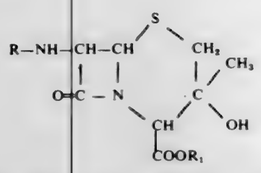
Stjepan Kukolja, Indianapolis, and Steven R. Lammert, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 465,778, May 1, 1974, abandoned. This application Feb. 11, 1975, Ser. No. 548,953
Int. Cl.² C07C 499/44
U.S. Cl. 260—239.1 13 Claims

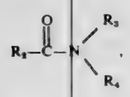
1. The process of preparing a compound of the formula



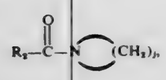
by reacting a 3-hydroxy-3-methylcepham compound of the formula



and at least 1 molar equivalent of a halogenating agent selected from the group consisting of $CO(X)_2$, $SO(X)_2$, and $P(X)_3$ in the presence of at least 1 molar equivalent (with respect to the halogenating agent) of a tertiary carboxamide selected from the group consisting of



and



and



at a temperature between about 50° and 120°C., wherein in the above formulae, R is C_2–C_8 alkanoyl, benzoyl or a group represented by the formula

$$P-(O)_q-(CH_2)_m-C(O)-$$

wherein P is 2-thienyl, 3-thienyl, 2furyl, phenyl or phenyl substituted by C_1–C_3 alkyl, C_1–C_3 alkoxy, nitro, fluoro, chloro, bromo, iodo, cyano, or trifluoromethyl; *n* is 0 or 1, and *m* is 0, 1, 2, or 3; with the limitation that when *n* is 1, *m* is not 0, and P is phenyl or phenyl substituted by C_1–C_3 alkyl, C_1–C_3 alkoxy, nitro, fluoro, chloro, bromo, iodo, cyano, or trifluoromethyl;

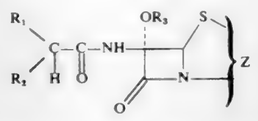
R_1 is a conventional carboxylic acid protecting group; R_2 is hydrogen or C_1–C_6 alkyl, and each of R_3 and R_4 is independently C_1–C_6 alkyl, phenyl, tolyl or xylyl such that R_3 and R_4 together contain no more than 11 carbon atoms; R_5 is C_1–C_6 alkyl, phenyl, tolyl, or xylyl; *j* is an integer from 3 to 6 inclusive; *k* is an integer from 3 to 6 inclusive; and X is chlorine or bromine.

3,960,845
PROCESS FOR PREPARING 7β-ACYLAMINO-7α-ALKOXYCEPHALOSPORINS OR 6β-ACYLAMINO-6α-ALKOXYPENICILLINS

Tetsuo Hiraoka, and Yukio Sugimura, both of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

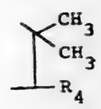
Filed Mar. 4, 1975, Ser. No. 555,195
Claims priority, application Japan, Mar. 22, 1974, 49-32391; Mar. 22, 1974, 49-32392; Apr. 8, 1974, 49-39730; Apr. 13, 1974, 49-41530
Int. Cl.² C07D 499/44, 501/20
U.S. Cl. 260—239.1 27 Claims

1. A process for the preparation of a compound having the formula

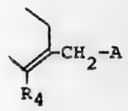


(I)

wherein R_1 is a hydrogen atom, a halogen atom, an alkyl group having from 1 to 4 carbon atoms, or an aryl group; R_2 is a hydrogen atom, a halogen atom, an alkyl group having from 1 to 4 carbon atoms, an aryl group, an alkylthio group having from 2 to 4 carbon atoms, an arylthio group, an azidoalkylthio group having from 1 to 4 carbon atoms, a cyanoalkylthio group having from 1 to 4 carbon atoms in the alkyl moiety, an alkylsulfonyl group having from 1 to 4 carbon atoms, a 5- or 6-membered heterocyclic group, a 5- or 6-membered heterocyclic oxy group or a 5- or 6-membered heterocyclic thio group; R_3 is an alkyl group having from 1 to 4 carbon atoms; Z is a fragment of the formula



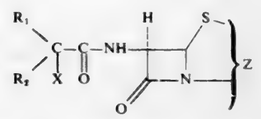
or



where R_4 is a carboxyl group or a conventional protected carboxyl group;

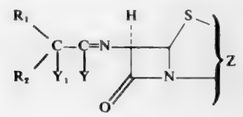
A is a hydrogen atom, an azido group or the formula -B-E in which B is oxygen or sulfur and E is an acyl group, an alkyl group having from 1 to 4 carbon atoms, optionally substituted-carbamoyl, -thiocarbamoyl or -heterocyclic group;

which comprises reacting an acylamino compound having the formula



(II)

wherein R_1, R_2 and Z are the same as above and X is a hydroxy group or a halogen atom with a halogenating agent to give a halogenoimine having the formula

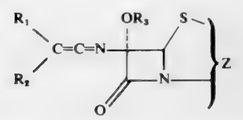


(III)

wherein R_1, R_2 and Z are the same as above and Y_1 and Y may be the same or different and each is a halogen atom, reacting the latter compound (III) with an equimolar amount of an alkali metal alkoxide having the formula

$$R_3OM \quad \text{(IV)}$$

wherein R_3 is the same as above and M is an alkali metal in the presence of one equivalent amount of a base to give an alkoxyketeneimine having the formula



(V)

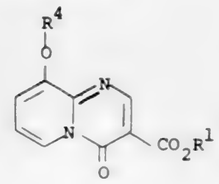
wherein R_1, R_2, R_3 and Z are the same as above and subjecting the later compound (V) to hydration.

3,960,847
9-SUBSTITUTED-4-OXOPYRIDO(1,2-α)PYRIMIDINE-3-CARBOXYLIC ACIDS AND DERIVATIVES THEREOF

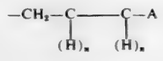
Harry Louis Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 244,955, April 17, 1972, abandoned. This application May 28, 1974, Ser. No. 473,637
Int. Cl.² C07D 471/04
U.S. Cl. 260—240 K 15 Claims

1. A compound of the formula:



wherein R^1 is selected from the group consisting of hydrogen and straight or branched chain alkyl of from 1 to 4 carbon atoms; and R^4 is selected from the group consisting of benzyl, phenethyl, substituted benzyl or phenethyl, and



wherein *n* is zero or one, ———— represents a triple bond ≡ when *n* is zero and a double bond = when *n* is one, A is hydrogen, phenyl, or substituted phenyl, and said phenyl, benzyl and phenethyl substituent is selected from the group consisting of mono (halogen), di(halogen), mono(carboethoxy), mono(trifluoromethyl), mono(alkyl) of 1 to 4 carbon atoms, mono(alkoxy) of 1 to 4 carbon atoms, and mono(NC); and a pharmaceutically acceptable salt thereof.

3,960,846
METHOD FOR PURIFYING LACTAMS

Philippe Potin, and Michel Biensan, both of Billere, France, assignors to Ato Chimie, Courbevoie, France

Filed Sept. 20, 1974, Ser. No. 508,020
Claims priority, application France, Sept. 24, 1973, 73.34103
Int. Cl.² C07D 201/14
U.S. Cl. 260—239.3 A 21 Claims

1. A method of purifying a lactam obtained by the Beckmann transposition of the corresponding alicyclic oximes, comprising the steps of:

a. contacting said lactam to be purified in the fused state with at least one inorganic adsorbent selected from the group consisting of alumina, silica, and an apatite, said adsorbent having been impregnated with at least one compound selected from the group consisting of an acid and the corresponding alkali metal salts thereof which are thermally stable and non-reactive with the lactam at a temperature lower than 250°C, and

b. separating the purified lactam from the adsorbent, the aforesaid steps being carried out at a temperature which is at least equal to the melting point of the lactam and said lactam is maintained in the fused state during the purification procedure.

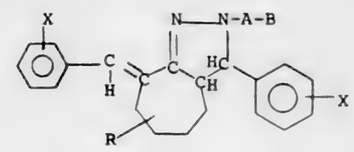
21. A method according to claim 1 wherein said lactam to be purified is lauryl-lactam.

3,960,848
2-AMINOALKYL-3A,4,5,6,7,8-HEXAHYDRO-3-PHENYL-8-(PHENYLMETHYLENE)-CYCLOPENTA[C-]PYRAZOLES

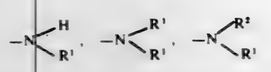
John Krapcho, Somerset, and Chester Frank Turk, Kendall Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 469,171, May 13, 1974, abandoned. This application June 30, 1975, Ser. No. 591,544
Int. Cl.² C07D 231/54
U.S. Cl. 260—240 F 6 Claims

1. A compound of the formula:



wherein X is selected from the group consisting of hydrogen, chloro, fluoro, lower alkyl, lower alkoxy, and trifluoromethyl; R is selected from the group consisting of hydrogen and lower alkyl; A is straight or branched chain alkylene of 1 to 8 carbons; B is selected from the group consisting of $—NH_2$,



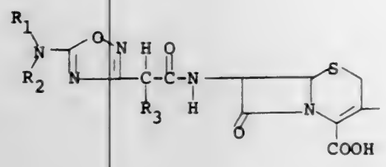
wherein R^1 is lower alkyl and R^2 is phenyl or phenyl-lower alkyl; and an acid addition or quaternary salt or N-oxide thereof.

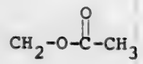
3,960,849
AMINO-1,2,4-OXADIAZOLYL-3-ACETYL CEPHALOSPORINS

Hermann Breuer, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 13, 1974, Ser. No. 450,928
Int. Cl.² C07D *499/44, 501/20*
U.S. Cl. 260—243 C **5 Claims**

1. A compound of the formula:





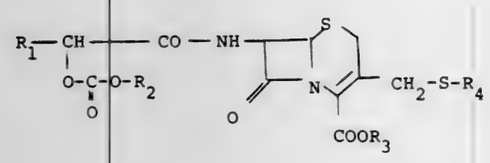
wherein R_1 and R_2 are independently selected from the group consisting of hydrogen and methyl; R_3 is phenyl or 2-thienyl; or a physiologically acceptable salt thereof.

3,960,850
3-HETEROTHIO DERIVATIVES OF [(ALKOXYCARBONYL)OXYACETYL]CEPHALOSPORINS

Uwe D. Treuner, and Hermann Breuer, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 10, 1974, Ser. No. 468,716
Int. Cl.² C07D *501/20*
U.S. Cl. 260—243 C **9 Claims**

1. A compound of the formula



wherein

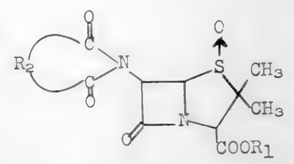
R_1 is phenyl or pyridyl;
R_2 is lower alkyl;
R_3 is hydrogen, lower alkyl, tri(lower alkyl)silyl, tri(lower alkyl)stannyl, alkali metal, alkaline earth metal or (lower alkyl)amine;
R_4 is isoxazole, isothiazole, oxadiazole, thiadiazole, tetrazole and their lower alkyl derivatives.

3,960,851
PREPARATION OF DESACETOXY-CEPHALOSPORIN SULFOXIDES FROM PENICILLIN SULFOXIDES

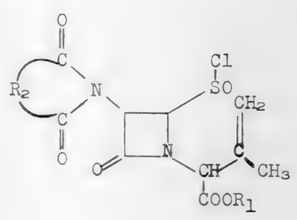
Stjephan P. Kukolja, Indianapolis, and Steven R. Lammert, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 253,385, May 15, 1972, Pat. No. 3,843,682. This application July 11, 1974, Ser. No. 487,681
Int. Cl.² C07D *501/10*
U.S. Cl. 260—243 C **6 Claims**

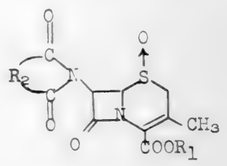
1. A process for preparing a desacetoxycephalosporin sulfoxide which comprises reacting a penicillin sulfoxide having the formula



with from about 0.9 to about 1.5 moles of sulfuryl chloride per mole of the penicillin sulfoxide at a temperature of from about 75°C. to about 120°C. to produce a sulfinyl chloride having the formula



and reacting the resulting sulfinyl chloride with at least an equimolar amount of a tertiary amine containing alkyl groups having from 1 to 5 carbon atoms each to produce a desacetoxycephalosporin sulfoxide having the formula



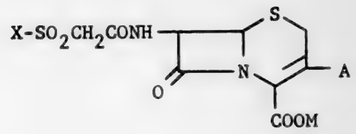
in which, in the above formulae,
R_1 is the residue of an ester group which is removable by hydrogenation or acid treatment; and
R_2 is the residue of an imide derived from a dicarboxylic acid.

3,960,852
SUBSTITUTED SULFONYLACETAMIDO CEPHALOSPORINS

Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 249,858, May 3, 1972, Pat. No. 3,865,819. This application Dec. 3, 1974, Ser. No. 529,162
Int. Cl.² C07D *501/50*
U.S. Cl. 260—243 C **5 Claims**

1. A compound of the structure:



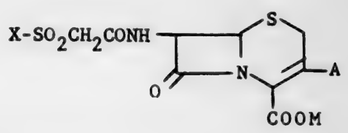
where:
X is CF_3;
A is CH_2S-Het;
Het is tetrazolyl, thiadiazolyl, triazolyl, oxadiazolyl, pyrimidyl, pyrazinyl or pyridyl, unsubstituted or substituted with one or two groups selected from the group consisting of lower alkyl, cycloalkyl, or alkenyl, each having one to four carbon atoms; lower alkoxy or alkoxyalkyl, each alkyl or alkoxy having one to four carbon atoms; hydroxy; CF_3; NHR; NR_2; SR; or bromine;
R is hydrogen or lower alkyl (C_1–C_4); and
M is hydrogen, alkali metal cation, or nontoxic ammonium cation.

3,960,853
SUBSTITUTED SULFONYLACETAMIDO CEPHALOSPORINS

Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 249,858, May 3, 1972, Pat. No. 3,865,819. This application Dec. 3, 1974, Ser. No. 529,165
Int. Cl.² C07D *501/50*
U.S. Cl. 260—243 C **5 Claims**

1. A compound of the structure:



where:
X is phenyl;
A is CH_2S-Het;
Het is tetrazolyl, thiadiazolyl, triazolyl, oxadiazolyl, pyrimidyl, pyrazinyl or pyridyl, unsubstituted or substituted with one or two groups selected from the group consisting of lower alkyl, cycloalkyl, or alkenyl, each having one to four carbon atoms; lower alkoxy or alkoxyalkyl, each alkyl or alkoxy having one to four carbon atoms; hydroxy; CF_3; NHR; NR_2; SR; or bromine;
R is hydrogen or lower alkyl (C_1–C_4); and
M is hydrogen, alkali metal cation, or nontoxic ammonium cation.

3,960,854
7-MERCAPTO(OR THIO)-BENZOTHIADIAZINE PRODUCTS

Frederick C. Novello, Berwyn, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 236,244, March 20, 1972, Pat. No. 3,892,738. This application Dec. 19, 1974, Ser. No. 534,404
Int. Cl.² C07D *285/22*
U.S. Cl. 260—243 D **7 Claims**

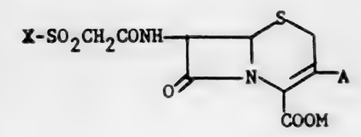
1. A 3-R^1-6-X-7-RS-1,2,4-benzothiadiazine-1,1-dioxide and pharmacologically acceptable salts thereof wherein X represents C_1–C_3 alkyl, chloro and trifluoromethyl; R^1 represents hydrogen, C_1–C_8 lower alkyl, monohalo-C_1–C_8 lower alkyl, dihalo-C_1–C_5-lower alkyl, phenyl-C_1–C_5-lower alkyl, —CO_2-C_1–C_5-lower alkyl and —$CONR^2R^3$ wherein R^2 represents hydrogen and lower C_1–C_5-alkyl and R^3 represents hydrogen, lower-C_1–C_5-alkyl and hydroxy substituted-C_1–C_5-lower alkyl; and R represents hydrogen, C_1–C_6-lower alkyl and phenyl-C_1–C_3-lower alkyl.

3,960,855
SUBSTITUTED SULFONYLACETAMIDO CEPHALOSPORINS

Robert M. De Marinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 249,858, May 3, 1972, Pat. No. 3,865,819. This application Dec. 3, 1974, Ser. No. 529,161
Int. Cl.² C07D *501/50*
U.S. Cl. 260—243 C **7 Claims**

1. A compound of the structure:



where:
X is NH_2, or mono or dialkylamino, each alkyl from C_1–C_4;
A is CH_2S-Het;
Het is tetrazolyl, thiadiazolyl, triazolyl, oxadiazolyl, pyrimidyl, pyrazinyl or pyridyl, unsubstituted or substituted with one or two groups selected from the group consisting of lower alkyl, cycloalkyl, or alkenyl, each having one to four carbon atoms; lower alkoxy or alkoxyalkyl, each alkyl or alkoxy having one to four carbon atoms; hydroxy; CF_3; NHR; NR_2; SR; or bromine;
R is hydrogen or lower alkyl (C_1–C_4); and
M is hydrogen, alkali metal cation, or nontoxic ammonium cation.

3,960,856
PROCESS FOR THE PREPARATION OF 4-HYDROXY-3-(5-METHYL-3-ISOXAZOLYLCARBAMOYL)-2-METHYL-2H-1,2-BENZOTHIAZINE 1,1-DIOXIDE

Jerome D. Genzer, Livingston, and Francisco Carrio Fontsere, Pasippany, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed June 20, 1975, Ser. No. 588,752
Int. Cl.² C07D *279/02*
U.S. Cl. 260—243 R **14 Claims**

1. An improved process for preparing 4-hydroxy-3-(5-methyl-3-isoxazolylcarbamoyl)-2-methyl-2H-1,2-benzothiazine 1,1-dioxide (1) which comprises the following steps:
A. suspending more than two but less than six moles of an alkali metal alkoxide of a lower alcohol in dimethylformamide;

B. dissolving one mole of alkyl 2,3-dihydro-3-oxo-1,2-benzisothiazole-2-acetate 1,1-dioxide (II) in dimethylformamide;

C. combining the suspension of (A) and the solution of (B) rapidly, with stirring, while maintaining the internal reaction temperature at from about 15° to about 30°C.;

D. continuing the stirring of the reaction mixture of (C) and then acidifying, with the total time from initial reactant combination to acidification being from about 20 minutes to about 60 minutes;

E. precipitating from (D) substantially pure alkyl 4-hydroxy-2H-1,2-benzothiazine-3-carboxylate 1,1-dioxide (III) in high yield without recrystallization;

F. methylating the precipitate of (E) on the sulfonamide nitrogen;

G. refluxing the alkyl 4-hydroxy-2-methyl-2H-1,2-benzothiazine-3-carboxylate 1,1-dioxide (IV) obtained in (F) with 3-amino-5-methylisoxazole in an inert solvent to obtain crude 4-hydroxy-3-(5-methyl-3-isoxazolylcarbamoyl)-2-methyl-2H-1,2-benzothiazine 1,1-dioxide (I);

H. forming a slurry of crude compound I in an organic solvent;

I. stirring the slurry at room temperature for at least 15 minutes;

J. filtering the slurry of (I) and washing the filter cake obtained with water to remove the solvent;

K. suspending the solid cake of (J) in an excess of water and adding a sufficient amount of dilute alkali metal or alkaline earth metal hydroxide to form a solution;

L. adding a charcoal decolorizing agent to (K) and heating to below the boiling point of the solution for a sufficient time to achieve decolorization;

M. filtering the heated solution of (L) to remove the charcoal decolorizing agent; and

N. acidifying the decolorized solution of (M) with a mineral acid, cooling to room temperature, and filtering out substantially pure 4-hydroxy-3-(5-methyl-3-isoxazolylcarbamoyl)-2-methyl-2H-1,2-benzothiazine 1,1-dioxide (I) in high yield.

3,960,857

UREA ADDITIVES FOR SULFUR VULCANIZABLE POLYMERS

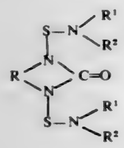
John P. Lawrence, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 26, 1972, Ser. No. 266,040

Int. Cl.² C07D *413/14*

U.S. Cl. 260—246 B **5 Claims**

1. A urea having the following structural formula



wherein R is selected from the group consisting of saturated and olefinic divalent aliphatic radicals having 1 to 7 carbon atoms, saturated and olefinic divalent cyclic aliphatic radicals having 5 to 7 carbon atoms, arylene radicals having 6 to 10 carbon atoms and the radical



which together with the



radical forms a hydantoin ring wherein R^3 and R^4 are selected from the group consisting of hydrogen, alkyl radicals having 1 to 4 carbon atoms, cycloalkyl radicals having 5 to 6 carbon atoms, aralkyl radicals having 7 to 10 carbon atoms and aryl radicals having 6 to 10 carbon atoms or R^3 and R^4 can be joined to form with the attached carbon atom a hydrocarbon ring containing 5 to 6 carbon atoms, and wherein R^1 and R^2 are selected from the group consisting of alkyl radicals having 1 to 20 carbon atoms, cyanoalkyl radicals having 2 to 21 carbon atoms, cycloalkyl radicals having 5 to 20 carbon atoms, aralkyl radicals having 7 to 20 carbon atoms and aryl radicals having 6 to 20 carbon atoms and wherein R^1 and R^2 can be joined through a member of the group consisting of $-CH_2-$ and, -O-, to constitute with the attached nitrogen atom a heterocyclic ring.

3,960,858

3-HETERO ACYL-2,3-BENZOXAZEPINES

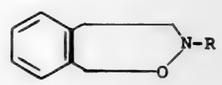
Giorgio Pifferi, Milan; Amedeo Omodei-Sale', Pavia, and Pietro Consonni, Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 236,222, March 20, 1972, abandoned. This application Nov. 14, 1974, Ser. No. 523,789

Int. Cl.² C07D *413/06*

U.S. Cl. 260—247.2 B **6 Claims**

1. A 1,3,4,5-tetrahydro-2,3-benzoxazepine represented by the formula



wherein R represents 1-pyrrolidinylcarbonyl, 4-morpholinylcarbonyl, 4-methyl-1-piperazinylcarbonyl, 4-phenyl-1-piperazinylcarbonyl or 4-phenyl-1-piperazinylacetyl.

3,960,859

21-DEOXYDIHYDROAJMALINE DERIVATIVES

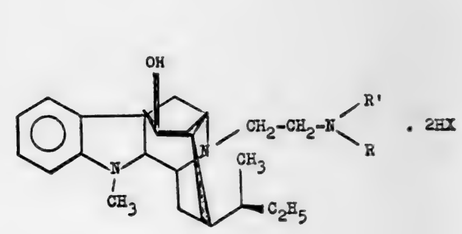
Klaus Braun; Günther Gabsch, both of Radebeul; Werner Förster, Halle; Rolf Ertel, Dresden, and Klaus Femmer, Radebeul, all of Germany, assignors to VEB Arzneimittelwerk Dresden, Radebeul, Germany

Continuation of Ser. No. 373,557, June 25, 1973, abandoned, which is a continuation of Ser. No. 90,472, Nov. 17, 1970, abandoned. This application Mar. 20, 1975, Ser. No. 560,270

Int. Cl.² C07D *471/08*

U.S. Cl. 260—247.5 FP **10 Claims**

1. A 21-deoxydihydroajmaline derivative having the formula



wherein R and R′ are each the same ethyl, isopropyl or isobutyl group or R and R′ together with the N atom with which they are associated form a morpholino, piperidino or pyrrolidino ring; X is the anion of a physiologically acceptable inorganic or organic acid.

3,960,860

2-METHYL-5,7-DIHYDROTHIENO-[3,4d]-PYRIMIDINE

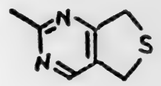
Ira Katz, West Long Branch; Richard A. Wilson, Westfield; William J. Evers, Middletown; Manfred H. Vock, Locust, all of N.J., and Gerrit W. Verhoeve, Feucherolles, France, assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 321,973, Jan. 8, 1973, abandoned, which is a division of Ser. No. 66,110, Aug. 21, 1970, Pat. No. 3,726,692. This application Jan. 15, 1975, Ser. No. 541,259

Int. Cl.² C07D *495/04*

U.S. Cl. 260—251 A **1 Claim**

1. 2-methyl-5,7-dihydrothieno-(3,4d)-pyrimidine having the structure:



3,960,861

2 (OR 4) AMINO 4 (OR 2) N-HETERO QUINAZOLINES

John Christopher Danilewicz, Ash; John Edward Glyn Kemp, Canterbury, and James Robert Wright, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

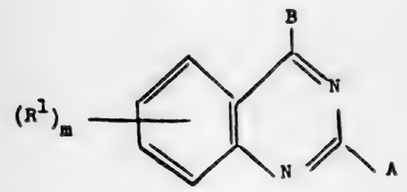
Filed Sept. 5, 1973, Ser. No. 394,491

Claims priority, application United Kingdom, Sept. 9, 1972, 41992/72

Int. Cl.² C07D *239/95*

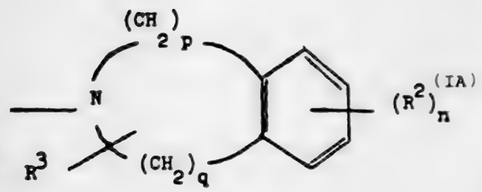
U.S. Cl. 260—256.4 Q **20 Claims**

1. A compound of the formula:



(I)

and the pharmaceutically-acceptiable acid addition salts thereof, wherein $(R^1)_m$ represents from one to three substituents, each R^1 being hydroxyl, benzyloxy or lower alkoxy and *m* being an integer of from 1 to 3, or two of the moieties R^1 when taken together form lower alkylenedioxy directly attached to adjacent positions of the benzene-ring portion of the quinazoline nucleus; and one of A and B represents amino, while the other represents benzo-fused heterocyclic ring moiety of the formula:



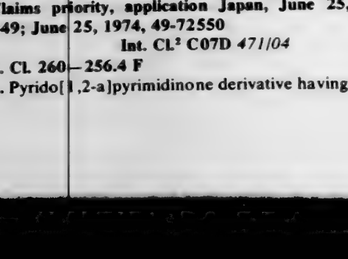
(IA)

wherein $(R^2)_n$ represents from one to three substituents, each R^2 being hydroxyl, lower alkoxy, lower alkenoxy, phenoxy, pyridyloxy, amino, lower alkanoamido, benzenesulfonamido, furoamido or lower alkoxycarbonylamino, *n* being an integer of from 1 to 3, with the proviso that *n* can only be 1 when R^2 is amino, lower alkanoamido, benzenesulfonamido, furoamido or lower alkoxycarbonylamino; two of the moieties R^2 when taken together form lower alkylenedioxy directly attached to adjacent positions of the benzene-ring portion of the benzo-fused heterocyclic ring moiety; R^3 is hydrogen or lower alkyl directly attached to any one of the substitutable carbon atoms of the heterocyclic portion of the benzo-fused heterocyclic ring moiety; and p and q are each 0 to 3 with the proviso that p plus q equals 3.

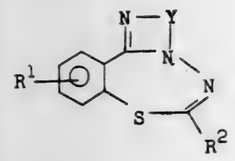
3,960,862
1,3-DIAZACYCLOALKENO-[1,2,D]-BENZO-[F-]-1,3,4-THIADIAZEPINES

Helmut Hagen, Frankenthal, and Juergen Niemeyer, Gruenstadt, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 23, 1974, Ser. No. 508,579
Claims priority, application Germany, Sept. 29, 1973, 2349064
Int. Cl.² C07D *239/00*
U.S. Cl. 260—256.5 R **6 Claims**



1. A compound of the formula (I)



in which:

R^1 is hydrogen, halogen, nitro or alkyl of 1 to 7 carbon atoms;

Y is $—CH_2—CH_2—CH_2—$ in which a hydrogen atom on one or more of the carbon atoms may be replaced by lower alkyl of one to four carbon atoms; and

R^2 is phenyl or benzoyl in which the benzene ring may be substituted by 1 to 2 substituents selected from the group consisting of fluorine, chlorine, bromine, iodine, nitro, hydroxy, cyano, alkoxy of 1 to 4 carbon atoms and alkyl of 1 to 4 carbon atoms,

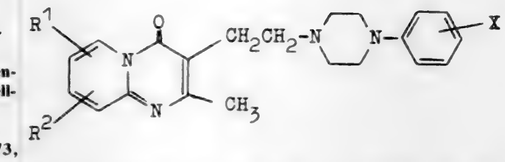
or an acid addition salt of said compound.

3,960,863
PYRIDO [1,2-a]PYRIMIDINONE DERIVATIVES

Yasunobu Sato; Hiroshi Fujita; Takagi, and Katsuo Kamoshita, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed June 5, 1975, Ser. No. 583,864
Claims priority, application Japan, June 25, 1974, 49-72549; June 25, 1974, 49-72550
Int. Cl.² C07D *471/04*
U.S. Cl. 260—256.4 F **8 Claims**

1. Pyrido[1,2-a]pyrimidinone derivative having the formula



wherein R^1 and R^2 may be the same or different and each represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms or a halogen atom and X represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, an alkoxy group having from 1 to 4 carbon atoms, trifluoromethyl group or a halogen atom and a pharmaceutically acceptable acid addition salt thereof.

3,960,864
METHOD OF SYNTHESIZING 1-(TETRAHYDRO-2-FURANYL)-5-FLUOROURACIL

Leroy B. Townsend; Robert A. Earl, both of Salt Lake City, and Steven J. Manning, Bountiful, all of Utah, assignors to The University of Utah, Salt Lake City, Utah

Filed May 6, 1974, Ser. No. 467,538
Int. Cl.² C07D *239/54*
U.S. Cl. 260—260 **8 Claims**

1. An improved method for synthesizing 1-(tetrahydro-2-furanyl-5-fluorouracil comprising the steps of:

reacting a solution of the bis-trimethylsilyl derivative of 5-fluorouracil with 2-chlorotetrahydrofuran in a reaction vessel in the presence of a solvent comprising methylene chloride and 4 A molecular sieves;

removing water and HCl from the reaction solution with the molecular sieves and thereafter removing the molecular sieves from the reaction solution;

precipitating 1-(tetrahydro-2-furanyl)-5-fluorouracil from the solution by suitably maintaining the pH of the solution above at least 7.5;

separating the precipitate from the solution; and

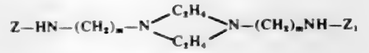
concentrating and purifying the precipitate.

3,960,865
MONO OR BIS 3-(POLYPROPYL OR BUTYL-PROPENYL)-AMINO ALKYL PIPERAZINES

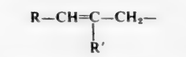
George S. Culbertson, Downers Grove, Ill., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 391,590, Aug. 27, 1973, which is a continuation-in-part of Ser. No. 116,722, Feb. 11, 1971, abandoned. This application Apr. 17, 1975, Ser. No. 568,848
Int. Cl.² C07D *295/12*
U.S. Cl. 260—268 PL **3 Claims**

1. An N-hydrocarbyl-substituted bis-(aminoalkyl) piperazine product having the formula



wherein *m* is an integer from 1 to 10, Z is



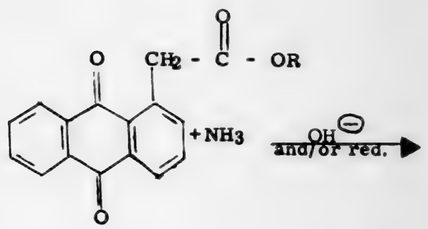
wherein R′ is hydrogen or methyl and R consists of propyl or butyl units and the total carbon content of Z is in the range from about 25 to about 180 carbon atoms and wherein Z_1 is hydrogen or Z.

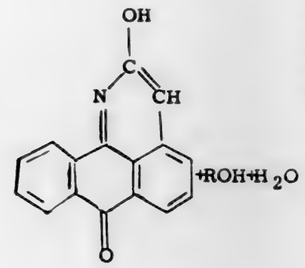
3,960,866
PROCESS FOR PREPARING 1-AZA-2-HYDROXYBENZANTHRONE

Giuseppe Ribaldone, Gallarate; Giampiero Borsotti, Novara, and Franco Gonzati, Saronno, all of Italy, assignors to Montedison S.p.A. and Aziende Colori Nazionali Affini ACNA S.p.A., both of Milan, Italy

Filed July 17, 1974, Ser. No. 489,351
Claims priority, application Italy, July 18, 1973, 26722/73
Int. Cl.² C07D *217/24*
U.S. Cl. 260—278 **5 Claims**

1. Process for preparing 1-aza-2-hydroxybenzanthrone, comprising reacting an ester of anthraquinone-1-acetic acid with ammonia in a hydroxylated solvent and in the presence of at least the stoichiometric amount of a strong base and/or of a catalytic amount of a reducing substance, according to the scheme:





wherein: R = Cl –C_5 alkyl, and "red." means reducing agent,

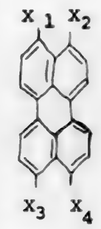
the hydroxylated solvent being selected from the group consisting of water, methanol, ethanol, isobutanol and ethylene glycol; the strong base being selected from the group consisting of NAOH, KOH, $Ba(OH)_2$, Na_2O, CH_3ONa, and CH_3OK; the reducing substance being selected from the group consisting of sodium hydrosulphite, formaldehyde, sodium sulphoxylate, zinc, iron, aluminum and tin; and the reaction being carried out at a temperature comprised between 20° and 80°C.

3,960,867
METHOD OF PRODUCING PERYLENETETRACARBOXYLIC ACID DERIVATIVES

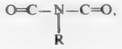
Nikolai Stepanovich Dokunikhin, Presnensky val, 42, kv. 23, and Georgy Nikolaevich Vorozhtsov, Sadovaya-Spasskaya ulitsa, 21, kv. 268, both of Moscow, U.S.S.R.

Division of Ser. No. 246,521, April 24, 1972, Pat. No. 3,959,285. This application Dec. 17, 1973, Ser. No. 425,547
Claims priority, application U.S.S.R., Apr. 28, 1971, 1646220; Feb. 9, 1971, 1614455
Int. Cl.² C07D *471/06*
U.S. Cl. 260—281 P **10 Claims**

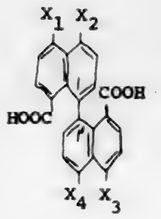
1. A method of producing a perylenetetra-carboxylic acid derivative of the formula:



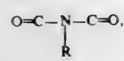
where X_1, X_2 and X_3, X_4 represents the group,



wherein R is selected from the group consisting of hydrogen, lower alkyl, cycloalkyl of ring size 4 to 8 carbons, phenyl, phenyl substituted with one or two of the groups chloro or methoxy, and pyridyl; or one X of the pair X_1, X_2 and one X of the pair X_3, X_4 represent the group —C=O, the other X then being in the benzimidazole or perinone cycle, the method comprising the steps of subjecting to cyclization a dinaphthyl compound of the formula:



wherein X_1, X_2 and X_3, X_4 represent the group



wherein R is selected from the group consisting of hydrogen, lower alkyl, cycloalkyl of ring size 4 to 8 carbons, phenyl, phenyl substituted with one or two of the groups chloro or methoxy, and pyridyl; or one X of the pair X_1, X_2 and one X of the pair X_3, X_4 represent the group $-C=O$, the other X then being in the benzimidazole or perinone cycle, said dinaphthyl compound being either symmetrical or non-symmetrical with respect to the 1, 1′ bond, by treating said dinaphthyl compound with a reducing agent selected from the group consisting of hydrosulphite, Rongalite and other reducing agents capable of reducing vat dyes to leuco compounds in an aqueous alkaline medium, followed by oxidation with an oxidant selected from the group consisting of atmospheric oxygen, solutions of hydrogen peroxide, $Na_2Cr_2O_7$ or $K_2Cr_2O_7$, and other oxidants capable of oxidizing the leuco compounds of vat dyes to the corresponding vat dyes.

3,960,868

DERIVATIVES OF 6,7 OR 8 CYCLOALKYL 4-OXO QUINOLINE 3 CARBOXYLIC ACID

Pier Giorgio Ferrini, Binningen; Georges Haas, and Alberto Rossi, both of Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

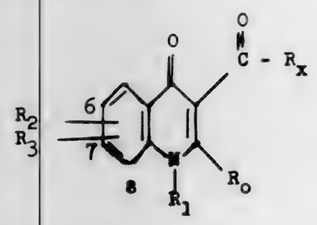
Filed May 6, 1974, Ser. No. 467,166

Claims priority, application Switzerland, May 11, 1973, 6722/73; Mar. 21, 1974, 3935/74

Int. Cl.² C07D *215/56*

U.S. Cl. 260—287 AN **11 Claims**

1. A product of the formula



wherein R_a denotes hydrogen or hydroxy, R_1 denotes hydrogen, alkyl, alkenyl or phenyl-alkyl having up to 8 carbon atoms R_2 is bound in the positions 6, 7 or 8 of the quinoline moiety and represents cycloalkyl or cycloalkenyl with 5–8 ring members, or 1-adamantyl, R_3 denotes lower alkyl, halogen or hydrogen and R_x denotes hydroxy, alkoxy with up to 8 carbon atoms, amino, N-mono-lower alkylamino, N,N-di-lower alkylamino or anilino, wherein the term "lower" denotes said moieties having up to 4 carbon atoms; or a tautomeric form thereof, or a therapeutically acceptable salt thereof.

3,960,869

PREPARATION OF 2-CHLOROPYRIDINE BY HYDROGENOLYSIS

Roland R. Kyl, North Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 4, 1974, Ser. No. 447,611

Int. Cl.² C07D *213/89*

U.S. Cl. 260—290 HL **8 Claims**

1. A process for preparing 2-chloropyridine comprising reacting hydrogen with 2,6-dichloropyridine at a temperature at −10° to 100°C by feeding hydrogen into a solution of said 2,6-dichloropyridine at least partially dissolved in a solvent selected from the group consisting of benzene, xylene, toluene, carbon tetrachloride and pyridine in the presence of at least 0.1 part by weight per part by weight 2,6-dichloropyridine of a base selected from the group consisting of an alkali or alkaline earth metal hydroxide and an alkyl amine of the formula R_xNH_{3-x} wherein R is alkyl of 1 to 4 carbon atoms, and x is 1–3, said base being provided as an aqueous solution having a concentration of up to about 75 percent by weight of said base and in the presence of a catalytic amount of a transition metal catalyst selected from the group consisting of palladium, platinum and nickel.

3,960,870

ALKANESULFONIC ACID SALTS OF DECININE

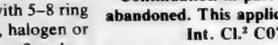
Dale W. Blackburn, Moorestown, N.J., and Henry Cecil Caldwell, Ambler, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 351,702, April 16, 1973, abandoned. This application Aug. 2, 1974, Ser. No. 494,142

Int. Cl.² C07D *221/18*

U.S. Cl. 260—293.53 **4 Claims**

1. An alkanesulfonate salt of decinine of the formula:



in which:
n is 1 and R is H or CH_3 or
n is 2 and R is SO_3H or CH_2SO_3H.

3,960,871

ESTERS OF THIENOBENZOPYRANS AND THIOPYRANOBENZOPYRANS

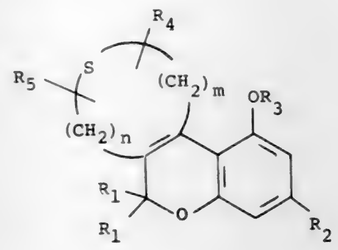
Louis Selig Harris, Richmond, Va.; Harry George Pars, Lexington, Mass.; Raj Kumar Razdan, Belmont, Mass., and John Clark Sheehan, Lexington, Mass., assignors to Sharps Associates, Cambridge, Mass.

Continuation-in-part of Ser. No. 212,820, Dec. 27, 1971, abandoned. This application Mar. 5, 1974, Ser. No. 448,401

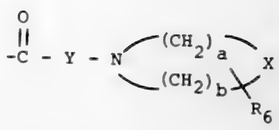
Int. Cl.² C07D *333/50, 335/04, 495/08*

U.S. Cl. 260—293.57 **27 Claims**

1. A compound of the formula



wherein n is 0 to 3, and m is 0 to 3 and $m + n = 2$ or 3, R_1 is lower alkyl, R_2 is a C_1 to C_{20} alkyl or a C_3 to C_8 cycloalkyl- C_1 to C_8 loweralkyl, R_4 is hydrogen or lower alkyl, R_5 is hydrogen or lower alkyl, and R_3 is



wherein Y is a straight or branched chain C_1 to C_8 alkylene, R_6 is hydrogen or lower alkyl, a is an integer from 1 to 4, b is an integer from 1 to 4, X is CH_2, S or NR_7 wherein R_7 is hydrogen or lower alkyl, with the limitation that when X is S or NR_7, a and b each must be 2; or a pharmaceutically acceptable acid addition salt thereof.

3,960,872

1 ALKYL-4-(10:OXO OR HYDROXY-10,11-DIHYDRO-5H-DIBENZO[a,d]CYCLOHEPTEN-5-YLIDENE)-PIPERIDINE COMPOUNDS

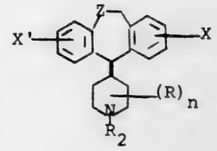
John D. Prugh, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 9,049, Feb. 5, 1970, abandoned, and a continuation-in-part of Ser. No. 4,123, Jan. 19, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,685

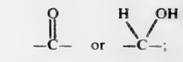
Int. Cl.² C07D *211/32*

U.S. Cl. 260—293.62 **5 Claims**

1. A 10-oxygenated 10,11-dihydro-5H-dibenzo[a,d]-cycloheptene compound of the formula



wherein
Z is either



R_2 is a lower alkyl or a lower alkenyl substituent;
R is methyl or ethyl and replaces one or more of the hydrogens in position 2, 3, 5 or 6 of the piperidine ring, provided that only one of positions 3 and 5 is substituted in any one compound;
n is 0, 1 or 2;
X and X′ are similar or dissimilar and are selected from hydrogen, an alkyl group having up to 6 carbon atoms, a perfluoroalkyl group having up to 4 carbon atoms, phenyl, amino, an alkylamino group having up to 4 carbon atoms, a dialkylamino group having up to 8 carbon atoms, an alkylsulfonylamino group having up to 4 carbon atoms, halogen (fluorine, chlorine, bromine or iodine), hydroxyl, an alkoxy group having up to 4 carbon atoms, a perfluoroalkoxyl group having up to 4 carbon atoms, cyano, carboxy, carbamoyl, an alkylcarbamoyl group having up to 5 carbon atoms, a dialkylcarbamoyl group having up to 9 carbon atoms, a carbalkoxy group having up to 6 carbon atoms, mercapto, an alkylmercapto group having up to 4 carbon atoms, a perfluoroalkylmercapto group having up to 4 carbon atoms, an alkylsulfonyl group having up to 4 carbon atoms, a perfluoroalkylsulfonyl group having up to 4 carbon atoms, sulfamoyl, an alkylsulfamoyl group having up to 4 carbon atoms, or a dialkylsulfamoyl group having up to 8 carbon atoms.

3,960,873

1-PHENYLTHIOPROPYL-4-HYDROXY-4-PHENYL PIPERIDINES

Isamu Maruyama, Minoo; Hisao Yamamoto, Nishinomiya; Masaru Nakao, Toyonaka; Shigeru Sakai, Toyonaka; Kikuo Sasajima, Toyonaka; Sumio Kitagawa, Moriguchi, and Shigeho Inaba, Takarasuka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

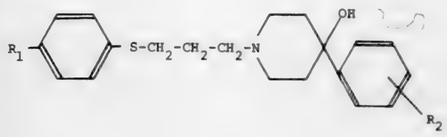
Division of Ser. No. 145,065, May 19, 1971, Pat. No. 3,845,057. This application June 21, 1974, Ser. No. 481,796

Claims priority, application Japan, May 20, 1970, 45-43555; May 20, 1970, 45-43556; May 22, 1970, 45-44303; May 23, 1970, 45-44289; May 29, 1970, 45-46668; June 15, 1970, 45-52254; June 18, 1970, 45-53276; June 26, 1970, 45-56305; June 29, 1970, 45-57541; July 6, 1970, 45-59300; July 17, 1970, 45-63091

Int. Cl.² C07D *211/52*

U.S. Cl. 260—293.73 **3 Claims**

1. A compound of the formula,



wherein R_1 is halogen and R_2 is hydrogen, halogen, nitro, trifluoromethyl, C_1-C_7 alkoxy or C_1-C_7 alkyl, or its non-toxic, pharmaceutically acceptable salt.

3,960,874

2-PHENOXY-ALKANOIC ACIDS

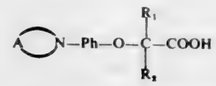
Richard William James Carney, New Providence, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 336,668, Feb. 28, 1973, Pat. No. 3,895,032. This application June 20, 1974, Ser. No. 481,281

Int. Cl.² C07D *295/14*

U.S. Cl. 260—293.82 **8 Claims**

1. A compound of the formula



in which each of R_1 and R_2 is hydrogen or lower alkyl, pH is unsubstituted phenylene or phenylene substituted by one or two members of the group consisting of lower alkyl, lower alkoxy, halogeno, trifluoromethyl or nitro and



is 5 to 7-ring-membered lower alkyleneimino or a lower alkyl ester, (lower alkoxy, di-lower alkylamino or lower alkyleneimino)-lower alkyl ester or a therapeutically useful ammonium, alkali metal, alkaline earth metal, aluminum or acid addition salt thereof.

3,960,875
PROCESS FOR THE PREPARATION OF 2,2,6,6-TETRAMETHYL-4-OXOPIPERIDINE

Ivan Orban, Basel; Hanns Lind, Liestal; Heimo Brunetti, Reinach, and Jean Rody, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 21, 1974, Ser. No. 481,935

Claims priority, application Switzerland, June 29, 1973, 9506/73; Apr. 19, 1974, 5540/74; May 22, 1974, 7019/74

Int. Cl.² C07D *211/74*

U.S. Cl. 260—293.89 **19 Claims**

1. Process for the preparation of 2,2,6,6-tetramethyl-4-oxopiperidine from 2,2,4,4,6-pentamethyl-2,3,4,5-tetrahydropyrimidine (acetonine), wherein acetonine is heated

a. without water or with less than the equimolar amount of water, relative to the acetonine, and in the presence of acetone and/or diacetone alcohol, or

b. with at least the equimolar amount of water, relative to acetonine.

3,960,876
CERTAIN 1-CARBOTHIOAMIDES OF 1,8-NAPHTHYRIDINES, PYRROLO(2,3-b)PYRIDINES AND PYRIDO(2,3-b)AZEPINES

Adrian Charles Ward Curran, Newcastle-upon-Tyne, England, assignor to John Wyeth & Brother, Ltd., Maidenhead, England

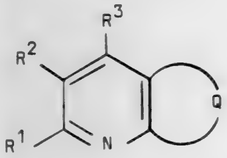
Filed Feb. 28, 1975, Ser. No. 553,964

Claims priority, application United Kingdom, Mar. 5, 1974, 9764/74; July 12, 1974, 30935/74

Int. Cl.² C07D *213/83*

U.S. Cl. 260—294.8 C **9 Claims**

1. A compound of formula (I)



(I)

or a pharmaceutically acceptable acid addition salt thereof wherein R^1, R^2 and R^3 are the same or different and represent a hydrogen atom or a lower alkyl, phenyl lower alkyl or, phenyl radical, any of which radicals may be substituted by lower alkyl, lower alkoxy, halogen, nitro or trifluoromethyl, Q is the group



wherein N of said group is directly attached to the alpha carbon of pyridine ring, *m* is 1, 2 or 3, and the group Q may be substituted by lower alkyl, phenyl lower alkyl, or phenyl radicals any of which radicals may be substituted by lower alkyl, lower alkoxy, halogen, nitro or trifluoromethyl and R^4 is hydrogen or alkyl of 1–3 carbon atoms.

3,960,877
N-MONOSUBSTITUTED-2,3-PYRIDINEDICARBOXAMIDES, AND RELATED COMPOUNDS

Richard L. Jacobs, Perrysburg, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

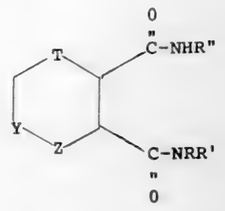
Continuation of Ser. No. 381,770, July 23, 1973, abandoned, which is a continuation of Ser. No. 82,804, Oct. 21, 1970, abandoned, which is a continuation of Ser. No. 740,046, June 26, 1968, abandoned. This application Dec. 23, 1974, Ser. No. 536,947

Int. Cl.² C07D *213/56*

U.S. Cl. 260—295.5 A **3 Claims**

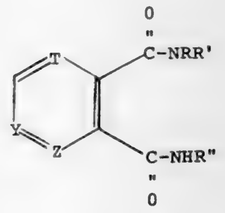
1. A compound of the formula

a)



and

b)



wherein each of T, Y and Z is nitrogen or CH and at least one is CH and at least one is nitrogen, and wherein when Y is nitrogen, T and Z are CH; and wherein one of R and R′ is hydrogen and the other is a branched chain alkyl group having from 3 to 8 carbon atoms.

3,960,878
PHENOXYALKYLAMINE CONTAINING PYRIDINES

Rudolf Theodor Petersen, Wohltorf, and Wolfgang Fleck, Hamburg, both of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

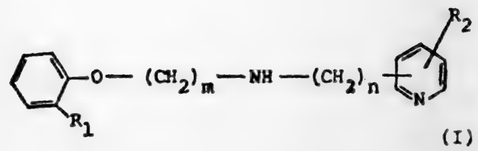
Filed Dec. 13, 1974, Ser. No. 532,673

Claims priority, application Germany, Dec. 27, 1973, 2364685

Int. Cl.² C07D *213/38*

U.S. Cl. 260—296 AE **11 Claims**

1. Compounds of the formula I:



(I)

wherein

R_1 represents a chlorine atom or a methoxy group;

R_2 represents a hydrogen atom or a methyl or hydroxy group;

m is 2, 3 or 4; and

n is 1 or 2

and their physiologically acceptable acid addition salts.

3,960,879
NON-TOXIC ADL ANTIHYPERTENSIVES

Charles Sylvester Fake, Harlow, England, assignor to Beecham Group Limited, Brentford, England

Filed July 8, 1974, Ser. No. 486,366

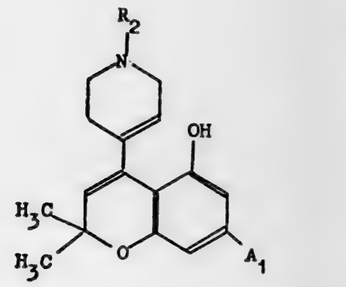
Claims priority, application United Kingdom, July 7, 1973, 32462/73

The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.

Int. Cl.² C07D *211/68*

U.S. Cl. 260—297 B **13 Claims**

1. A compound of the formula



wherein R is alkyl of 4–8 carbon atoms, R_2 is naphthylmethyl, an ester or ether thereof wherein the phenolic hydroxyl moiety is substituted by R_3 or COR_3 wherein R_3 is methyl, ethyl, propyl, dimethylamino, diethylamino, dimethylaminopropyl, diethylaminopropyl, or N-piperidylethyl, or a pharmaceutically acceptable non-toxic salt thereof.

3,960,880
TETRAHYDROPYRID-4-YL-CHROMAN-5-OL DERIVATIVES

Charles Sylvester Fake, Harlow, England, assignor to Beecham Group Limited, England

Continuation-in-part of Ser. No. 324,222, Jan. 16, 1973, Pat. No. 3,853,899. This application Sept. 9, 1974, Ser. No. 504,087

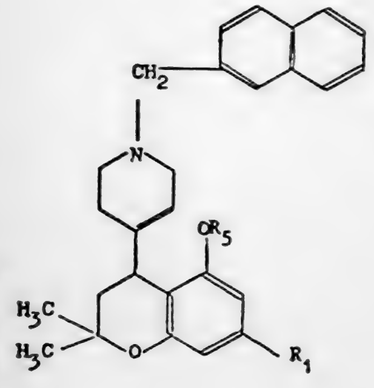
Claims priority, application United Kingdom, Mar. 26, 1974, 13231/74; July 4, 1974, 29638/74

The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.

Int. Cl.² C07D *211/68*

U.S. Cl. 260—295 F **14 Claims**

1. A compound of the formula:



(I)

and their pharmaceutically acceptable non-toxic salts, wherein R_1 is alkyl of 5 to 8 carbon atoms which is straight chained or α-substituted by a methyl group or α,α-disubstituted by methyl groups and R_5 is hydrogen, R_6 or $CO.R_6$ wherein R_6 is alkyl of 1 to 4 carbon atoms or alkyl of 1 to 6 carbon atoms substituted by NR_7R_8 wherein R_7 and R_8 are each hydrogen or alkyl of 1 to 4 carbon atoms or NR_7R_8 is pyrrolidino, piperidino or morpholino.

3,960,881
METHOD FOR PREPARING 4-CARBOXYTHIAZOLIDINE-2-THIONE

Jack E. Reece, Willernie, Minn., and George B. Fozzard, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 246,588, April 24, 1972, abandoned, which is a division of Ser. No. 82,175, Oct. 19, 1970, Pat. No. 3,697,516. This application Feb. 12, 1974, Ser. No. 441,834

Int. Cl.² C07D *277/16*

U.S. Cl. 260—306.7 C **4 Claims**

1. A method for preparing 4-carboxythiazolidine-2-thione which consists of reacting an alkali metal hydroxide selected from hydroxides of sodium, potassium, rubidium, cesium, and lithium, or mixtures thereof, cysteine hydrochloride hydrate, and carbon disulfide in an aqueous reaction mixture of said reactants under reaction conditions which produce 4-carboxythiazolidine-2-thione, and recovering 4-carboxythiazolidine-2-thione from the resulting reaction mixture.

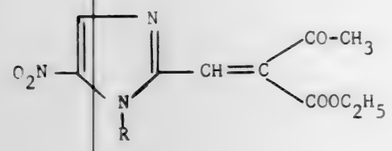
3,960,882

CHEMICAL COMPOUNDS FOR TRICHOMONIASIS AND CANDIDIOSIS TREATMENT

Roberto Montanari, Viale Bianca Maria 2, 20122 Milan, Italy

Filed Feb. 10, 1975, Ser. No. 548,739
Claims priority, application Italy, Mar. 4, 1974, 48930/74; Nov. 19, 1974, 29577/74
Int. Cl.² C07D 233/94
U.S. Cl. 424—273 5 Claims

1. A chemical compound characterized by having the following structural formula (I):



(I)

wherein R can be $-CH_3$ or $-H$.

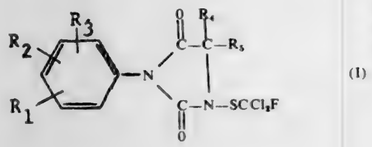
3,960,883

IMIDAZOLIDINE-2,4-DIONE DERIVATIVES AND THEIR USE AS PESTICIDES

Adolf Hubele, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 27, 1974, Ser. No. 500,983
Claims priority, application Switzerland, Sept. 3, 1973, 12605/73; Mar. 14, 1974, 3567/74
Int. Cl.² C07D 49/32
U.S. Cl. 260—309.5 9 Claims

1. An imidazolidine-2,4-dione derivative of the formula



(I)

wherein
R_1 and R_2 each independently represent hydrogen, halogen, C_1-C_3-alkyl, nitro, C_1-C_3-haloalkyl or C_1-C_3-alkoxy,
R_3 represents hydrogen, halogen or methyl, and
R_4 and R_5 each independently represent hydrogen or C_1-C_3-alkyl, whereby if one of the symbols R_1, R_2 or R_3 is hydrogen the two others cannot simultaneously be halogen atoms in the meta-position with respect to the amino group.

3,960,884

METHOD OF PREPARING RACEMIC BIOTIN

Sergei Ivanovich Zavyalov, ulitsa Garibaldi, 23/56, korpus 4, kv. 54; Natalya Alexandrovna Rodionova, ulitsa Volochaevskaya, 17a, kv. 50; Zinaida Naumovna Parnes, Novo-Alexeevskaya ulitsa 1, kv. 30; Galina Ilinichna Bolestova, Flotskaya ulitsa, 7, korpus 2, kv. 7, all of Moscow; Vladimir Vasilievich Filippov, ulitsa Mira, 40, kv. 41, Vladimir, and Lidia Lvovna Zheleznaya, Leninsky prospekt, 60/2 kv. 5ii, Moscow, all of U.S.S.R.

Filed Apr. 24, 1974, Ser. No. 463,842
Int. Cl.² C07D 49/34
U.S. Cl. 260—309.7 3 Claims

1. A method of preparing racemic biotin, which comprises reacting 2,3,8,9-tetradehydrobiotin with triethylsilane and trifluoroacetic acid, followed by isolation off the racemic biotin.

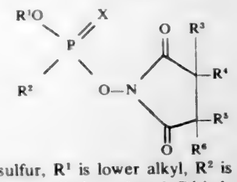
3,960,885

SUCCINIC ACID OXIMIDOPHOSPHORIC ESTERS

Karl Keihs, Lampertheim; Heinrich Adolphi, Limburgerhof, and Rolf Huber, Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 14, 1974, Ser. No. 523,665
Claims priority, application Germany, Dec. 5, 1973, 2360493
Int. Cl.² C07F 9/65
U.S. Cl. 260—326.5 A 8 Claims

1. A succinic acid oximidophosphoric ester of the formula



where X is sulfur, R^1 is lower alkyl, R^2 is lower alkoxy or phenyl, R^3 is lower alkyl or phenyl, R^4 is hydrogen or lower alkyl, R^5 and R^6 are hydrogen and R^3 and R^4 when taken together form a hydrocarbon ring of five or six members.

3,960,886

SUBSTITUTED N-ARYLANILINES

John W. Schulenberg, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 742,161, July 3, 1968, Pat. No. 3,625,972.
This application Nov. 20, 1970, Ser. No. 91,515
Int. Cl.² C07D 295/12
U.S. Cl. 260—326.5 L 5 Claims

1. A compound of the formula



wherein R is lower-alkoxyphenyl; *m* is an integer from 1 to 4; Ar and Ar′ are phenyl, Ar being substituted in the meta or para position by the grouping -O-Y-N=Z, wherein Y is lower -alkylene of at least two and not more than five carbon atoms, and -N=Z is NH_2; alkylamino; cycloalkylamino in which the cycloalkyl has from 5 to 6 ring members and a total of from five to nine carbon atoms and is selected from the group consisting of unsubstituted cycloalkyl and alkylsubstituted cycloalkyl; dialkylamino; dicycloalkylamino in which the cycloalkyl has from 5 to 6 ring members and a total of from five to nine carbon atoms and is selected from the group consisting of unsubstituted cycloalkyl and alkyl-substituted cycloalkyl; N-(cycloalkyl) alkylamino in which the cycloalkyl has from 5 to 6 ring members and a total of from five to nine carbon atoms and is selected from the group consisting of unsubstituted cycloalkyl and alkyl-substituted cycloalkyl; polymethylenimino having from 5 to 7 ring members and a total of from four to nine carbon atoms selected from the group consisting of unsubstituted polymethylenimino and alkyl-substituted polymethylenimino; 4-morpholinyl; 1-piperazinyl; 4-alkyl-1-piperazinyl; 4-phenyl-1-piperazinyl; di(phenylalkyl)amino; or N-(phenylalkyl) alkylamino, alkyl in each instance having from one to six carbon atoms; and wherein the phenyl rings of Ar and Ar′ can be further substituted by from one to three groups selected from the group consisting of lower-alkyl, lower-alkoxy, halogen, nitro and amino.

3,960,887

CONTINUOUS PROCESS FOR THE PREPARATION OF MALEIMIDES

Pierre Renard, Villeurbanne, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Nov. 13, 1973, Ser. No. 415,409
Claims priority, application France, Nov. 16, 1972, 72.40700
Int. Cl.² C07D 207/44
U.S. Cl. 260—326.5 FM 11 Claims

1. In a process for the preparation of an N-substituted maleimide which comprises preparing the corresponding maleamic acid from maleic anhydride and a primary amine and reacting said acid with a carboxylic acid anhydride and a tertiary amine selected from a trialkylamine and an N,N-dialkylaniline, in which the akyl radicals have 1 to 12 carbon atoms in the presence of a nickel catalyst, the improvement which comprises carrying out the process continuously by:

a. reacting in a first vessel, maleic anhydride and a primary amine in a solvent for the anhydride and amine, under a pressure from about 1 to 5 bars and at a temperature from about 40° to 130°C.,
b. circulating the mixture thus produced through a closed circuit equipped with a condenser, while introducing the carboxylic acid anhydride, tertiary amine and catalyst into said circuit,
c. continuously removing part of the reaction mixture which is circulating in the circuit, and
d. isolating the maleimide from the mixture thus removed.

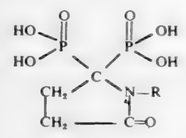
3,960,888

PYRROLIDONE-5,5-DIPHOSPHONIC ACIDS

Walter Plöger, Hilden Rhineland; Manfred Schmidt-Dunker, Dusseldorf, and Christian Gloxhuber, Haan Rhineland, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

Filed Aug. 20, 1974, Ser. No. 498,997
Claims priority, application Germany, Aug. 27, 1973, 2343147
Int. Cl.² C07D 207/24
U.S. Cl. 260—326.5 A 9 Claims

1. Pyrrolidone-5,5-diphosphonic acid compound of the formula



wherein R is a member selected from the group consisting of hydrogen, alkyl having from 1 to 6 arbon atoms, and non-toxic, pharmaceutically acceptable water-soluble salt thereof.

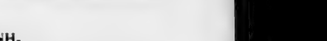
3,960,889

DEHYDROHALOGENATED POLYALKENE-MALEIC ANHYDRIDE REACTION PRODUCT

William P. Cullen, Fishkill; Harry Chafetz, Poughkeepsie, and Edward F. Miller, Wappingers Fall, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 377,474, July 9, 1973, Pat. No. 3,864,270.
This application Sept. 9, 1974, Ser. No. 504,214
Int. Cl.² C07D 207/40
U.S. Cl. 260—326.5 E 3 Claims

1. A nitrogenous dispersant derivative of a reaction product of dehydrohalogenated polyalkene-maleic anhydride and alkylene polyamine prepared by contacting polyalkene of from 30 to 300 carbons with a halogen selected from the group consisting of chlorine or bromine at a temperature of between about 20° and 150°C. utilizing a mole ratio of said polyalkene to said halogen of between about 1:0.5 and 1:3 to form a halogenated polyalkene, heating said halogenated polyalkene at a temperature of between 150° and 250°C. and recovering dehydrohalogenated polyalkene from the reaction mixture, contacting said dehydrohalogenated polyalkene with maleic anyhydride at a temperature of between about 100° and 250°C. utilizing a mole ratio of dehydrohalogenated polyalkene to maleic anhydride of between about 1:0.5 and 1:5 to form the dehydrohalogenatedmaleic anhydride reaction product, contacting said dehydrohalogenated polyalkene-maleic anhydride reaction product with an alkylene polyamine of the formula



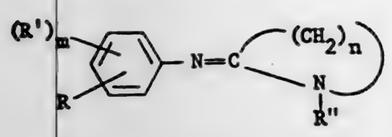
where *x* is an integer of from 1 to 6, *y* is an integer of from 2 to 6, and *z* is an integer of from 0 to 4 at a temperature of between about 100° and 200°C. utilizing a mole ratio of dehydrohalogenated polyalkene-maleic anhydride reaction product to alkylene polyamine of between about 1:0.5 and 1:5 to form said nitrogenous dispersant derivative.

3,960,890
FLUOROALKYLPHENYLCYCLOAMIDINES AND THEIR PRODUCTION

Hartmund Wollweber, Wuppertal-Elberfeld; Edgar Enders, Cologne, and Wilhelm Stendel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

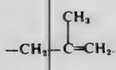
Division of Ser. No. 117,709, Feb. 22, 1971, Pat. No. 3,852,304. This application Dec. 28, 1973, Ser. No. 429,191
Claims priority, application Germany, Feb. 26, 1970, 2009019
The portion of the term of this patent subsequent to Apr. 24, 1992, has been disclaimed.
Int. Cl.² C07D *207/50*
U.S. Cl. 260—326.85 13 Claims

1. A compound of the formula:



or a pharmaceutically acceptable non-toxic salt thereof, wherein

n is 3, 4 or 5,
m is 1,
R is trifluoromethyl or difluoromethyl
R′ is fluorine, chlorine or bromine, alkyl of 1 to 4 carbon atoms or alkenyl of 2 to 4 carbon atoms and
R″ is $-CH_2-CH=CH_2$; $-CH_2-CH=CH-CH_3$; or

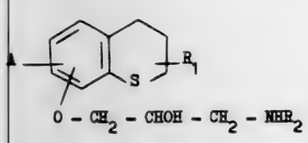


3,960,891
THIOCHROMAN COMPOUNDS

Charles Malen, Fresnes, and Michel Laubie, Vaucresson, both of France, assignors to Science-Union et Cie, France

Filed Mar. 31, 1971, Ser. No. 130,010
Claims priority, application United Kingdom, Apr. 6, 1970, 16118/70
Int. Cl.² C07D *335/06*
U.S. Cl. 260—327 TH 6 Claims

1. A compound selected from the group consisting of:
a. (3-amino-2-hydroxy propyloxy) thiochromans of the formula



wherein:

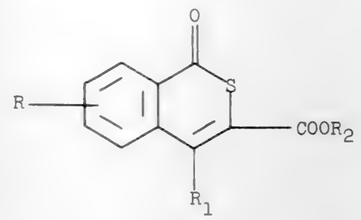
A is selected from the group consisting of hydrogen and halogen;
R_1 is selected from the group consisting of hydrogen and lower alkyl containing from 1 to 5 carbon atoms inclusive; and
R_2 is selected from the group consisting of linear and branched lower alkyl containing from 1 to 5 carbon atoms inclusive and cyclo lower alkyl containing from 3 to 6 carbon atoms inclusive; and having the (3-amino-2-hydroxy propyloxy) group bonded to the thiochroman in the 6,7, or 8 position and
b. Physiologically tolerable acid addition salts thereof.

3,960,892
1-OXO-1H-2-BENZOTHIOPYRAN-3-CARBOXYLIC ACID DERIVATIVES

Thomas M. Bare, Milwaukee, and John T. Shu, Mequon, both of Wis., assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed July 3, 1974, Ser. No. 485,378
Int. Cl.² C07D *335/06*
U.S. Cl. 260—327 TH 2 Claims

1. A compound of the formula



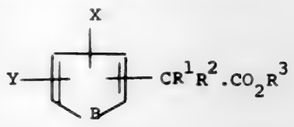
in which R is lower alkoxy of 1 to 4 carbon atoms, R_1 is hydrogen or lower alkyl of 1 to 4 carbon atoms, and R_2 is hydrogen or sodium.

3,960,893
PHENYL-THIENYL-ALKANOIC ACID DERIVATIVES AND PHENYL-FURYL-ALKANOIC ACID DERIVATIVES

Derrick Michael O'Mant, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 53,007, July 7, 1970, abandoned, which is a division of Ser. No. 812,358, April 1, 1969, abandoned. This application June 28, 1973, Ser. No. 374,782
Claims priority, application United Kingdom, Apr. 16, 1968, 17895/68; Oct. 25, 1968, 50788/68; Dec. 10, 1968, 58666/68
The portion of the term of this patent subsequent to Nov. 11, 1991, has been disclaimed.
Int. Cl.² C07D *333/24*
U.S. Cl. 260—332.2 A 3 Claims

1. A heterocyclic compound of the formula:



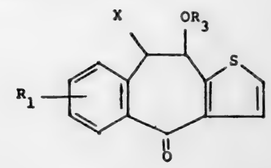
wherein B stands for an oxygen or sulphur atom, X stands for hydrogen or a chlorine or bromine atom, Y stands for phenyl or phenyl substituted by fluorine, chlorine or bromine atom, and R^1 and R^2 are the same or different and either stands for hydrogen or a methyl radical, and R^3 stands for hydrogen or a C_{1-5} alkyl, benzyl or phenyl radical, and Y and $-CR^1R^2.CO_2R^3$ and linked to non-adjacent carbon atoms of the heterocyclic nucleus, and when X stands for hydrogen, R^1 stands for a methyl radical, and non-toxic pharmaceutically-acceptable salts of said compounds wherein R^3 stands for hydrogen.

3,960,894
9-BROMO-OR CHLORO-9,10-DIHYDRO-10-DIHYDRO-10-ALKOXY-4H-BENZO[4,5]CYCLO-HEPTA[1,2-B]THIOPHEN-4-ONES

Jean-Pierre Bourquin, Magden; Gustav Schwarb, Allschwil, and Erwin Waldvogel, Aesch, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 324,999, Jan. 19, 1973, abandoned. This application July 26, 1974, Ser. No. 492,008
Claims priority, application Switzerland, Jan. 24, 1972, 985/72
Int. Cl.² C07D *333/80*
U.S. Cl. 260—332.3 P 11 Claims

1. A compound of the formula:



wherein

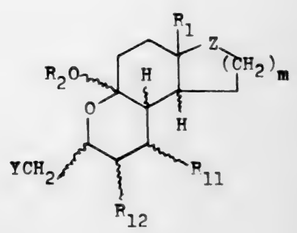
R_1 is in the 6 or 7 position of the benzocycloheptathiophene nucleus and is hydrogen, chlorine, bromine or alkoxy of 1 to 4 carbon atoms,
R_3 is alkyl of 1 to 4 carbon atoms, and
X is chlorine or bromine.

3,960,895
ARYL KETALS OF POLYCYCLIC OXO COMPOUNDS AND PROCESSES

Michael Rosenberger, Caldwell, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 363,443, May 24, 1973, Pat. No. 3,907,827, which is a division of Ser. No. 74,519, Sept. 22, 1970, Pat. No. 3,758,509, which is a continuation-in-part of Ser. No. 11,023, Feb. 12, 1970, Pat. No. 3,708,500, which is a continuation-in-part of Ser. No. 824,319, May 13, 1969, Pat. No. 3,544,600, and a continuation-in-part of Ser. No. 825,389, May 16, 1969, abandoned. This application June 9, 1975, Ser. No. 584,799
Int. Cl.² C07D *317/44*
U.S. Cl. 260—340.5 1 Claim

1. A process for the preparation of a compound of the formula

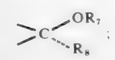


wherein Y is

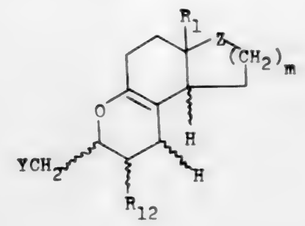


$R_5CH_2CCH(R_{14})CH(R_{15})$-;

B is the remaining residue of a phenylene, 4,5-dimethylphenylene or 2,3-naphthalene moiety; R_1 is a primary alkyl group of from 1 to 5 carbon atoms; R_2 is hydrogen, lower primary alkyl or lower alkanoyl; R_5, R_{11}, R_{12}, R_{14} and R_{15} are each independently hydrogen or lower alkyl; Z is carbonyl or a group of the formula



R_7 is hydrogen or lower alkanoyl;
R_8 is
hydrogen or lower aliphatic hydrocarbyl and *m* is an integer having a a value of 1 to 2
which comprises reacting a compound of the formula



wherein R_1, R_{11}, R_{12}, Y, Z and m have the same meaning as above with a compound of the formula

R_2OH

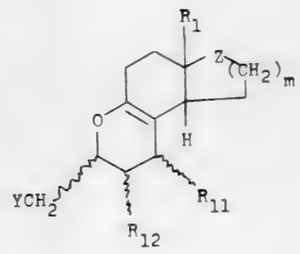
wherein R_2 has the same meaning as above in the presence of an acid catalyst and a cosolvent wherein R_2 is hydrogen.

3,960,896
ARYL KETALS OF POLYCYCLIC OXO COMPOUNDS AND PROCESSES

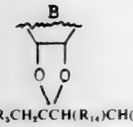
Michael Rosenberger, Caldwell, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 363,443, May 24, 1973, Pat. No. 3,907,827, which is a division of Ser. No. 74,519, Sept. 22, 1970, Pat. No. 3,758,509, which is a continuation-in-part of Ser. No. 11,023, Feb. 12, 1970, Pat. No. 3,708,500, which is a continuation-in-part of Ser. No. 824,319, May 13, 1969, Pat. No. 3,544,600, and a continuation-in-part of Ser. No. 825,389, May 16, 1969, abandoned. This application June 9, 1975, Ser. No. 585,145
Int. Cl.² C07D *317/44*
U.S. Cl. 260—340.5 2 Claims

1. A process for the preparation of a compound of the formula

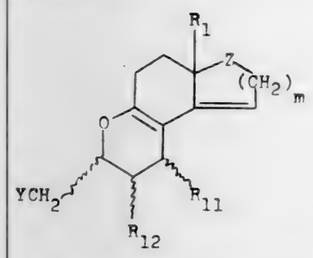


wherein Y is



$R_3CH_2CCH(R_{14})CH(R_{15})$-;

B is the remaining residue of a phenylene, 4,5-dimethylphenylene or 2,3-naphthalene moiety; R_1 is a primary alkyl group of from 1 to 5 carbon atoms; R_3, R_{11}, R_{12}, R_{14} and R_{15} are each independently hydrogen or lower alkyl; Z is carbonyl; m is an integer having a value of 1 to 2 and the C/D-ring fusion is cis which comprises contacting under basic conditions a compound of the formula



wherein R_1, R_{11}, R_{12}, Y, Z and m have the same meaning as above with hydrogen in the presence of a hydrogenation catalyst and an inert solvent.

3,960,897

METHOD FOR THE PREPARATION OF MACROCYCLIC COMPOUND

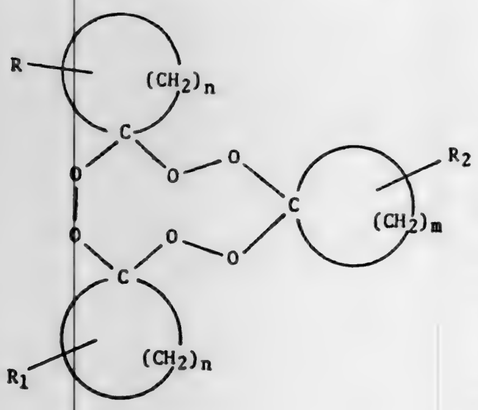
Paul Richard Story, Athens, Ga.; Peter Busch, Willich, Germany; Donald Derby Denson, Kettering, Ohio, and Carl Edward Wright, Athens, Ga., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 238,936, March 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 842,739, July 17, 1969, abandoned, which is a continuation-in-part of Ser. No. 697,593, Jan. 15, 1968, Pat. No. 3,528,898. This application Mar. 29, 1974, Ser. No. 456,315

Int. Cl.² C07D *313/00*

U.S. Cl. 260—343 **9 Claims**

1. A method for the preparation of a product consisting essentially of a mixture of a macrocyclic hydrocarbon and a macrocyclic lactone consisting essentially of heating a mixture of (1) a peroxide having the structural formula:



wherein n is a positive integer in the range of from 4 to 17 inclusive; m is a positive integer in the range of from 4 to 17 inclusive; and R, R_1 and R_2 may be the same or different and are hydrogen or methyl; and (2) an alkane which is a solvent for said peroxide at a temperature of from about 100°C to about 350°C for a time sufficient to decompose said peroxide to said macrocyclic compounds; the weight ratio of said alkane to said peroxide being at least about 1:1.

3,960,898

ZEARALANONE-ZEARALANOL PRODUCT

Edward B. Hodge, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed Feb. 5, 1974, Ser. No. 439,961

Int. Cl.² C07D *313/00*

U.S. Cl. 260—343.2 F **16 Claims**

1. A method for producing a mixture of zearalanone or its derivatives and corresponding low melting and high melting diastereoisomers of zearalanol or its derivatives comprising dehydrogenating the corresponding low melting diastereoisomer under dehydrogenating conditions, including elevated temperature, in a reaction medium, including dehydrogenating amounts of Raney nickel.

3,960,899

PROCESS FOR THE PREPARATION OF 8,14-CEDRANOXIDE

Edouard Giraudi, La-Roquette-sur-Siagne, and Paul José Teisseire, Grasse, both of France, assignors to Societe Anonyme des Etablissements Roure-Bertrand Fils and Justin, Dupont, Paris, France

Filed Aug. 22, 1972, Ser. No. 282,764

Claims priority, application France, Sept. 3, 1971, 71.31875

Int. Cl.² C07D *307/00*

U.S. Cl. 260—346.2 M **10 Claims**

1. A process for preparing 8,14-cedranoxide starting from cedrol, which comprises the following steps, taken in sequence:

a. treating cedrol with nitrous acid to form cedryl nitrite,
b. subjecting cedryl nitrite prepared according to step (a) to photolysis to form 14-nitroso-cedran-8-ol,
c. heating the 14-nitroso-cedran-8-ol prepared according to step (b) to form 14-oximino-cedran-8-ol,
d. converting 14-oximino-cedran-8-ol prepared according to step (c) to 8,14-cedrandiol, and
e. cyclizing said 8,14-cedranediol with dimethyl sulfoxide to form 8,14-cedranoxide.

3,960,900

POLYBUTENYLSUCCINIC ANHYDRIDE PRODUCTION

Imre Puskas, Glen Ellyn, and John A. Cengel, Wheaton, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed May 10, 1973, Ser. No. 358,915

Int. Cl.² C07D *307/60*

U.S. Cl. 260—346.8 R **4 Claims**

1. The method of preparing polybutenylsuccinic anhydride which comprises reacting at a temperature in the range of 150° to 300°C from 0.85 to 5.0 moles maleic anhydride per mole of polybutene in the composition comprising a viscous polybutene having a $\overline{M}_n$ in the range of about 300 to about 3000 and based on said polybutene from 5 to 200 ppm of a 40° to 225°C boiling bromo- or chlorobromo-substituted aliphatic hydrocarbon.

3,960,901

PREPARATION OF CITRACONIC ACID

Rudolph G. Berg, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 396,872, Sept. 12, 1973, abandoned. This application Apr. 7, 1975, Ser. No. 565,432

Int. Cl.² C07D *307/60*; **C07C** *51/00*

U.S. Cl. 260—346.8 R **10 Claims**

1. A process for the preparation of citraconic anhydride or acid which comprises heating in an inert atmosphere at a temperature of 220°–280°C at a contact time of 0.2 – 1 second and under a pressure of 15–100mm of mercury a five-carbon acid selected from the group consisting of citramalic acid, mesaconic acid, paraconic acid, 3-methylmalic acid, or mixtures thereof, in the presence of a catalyst selected from the group consisting of an alkali or alkaline earth metal salt of a phosphoric acid selected from the group consisting of potassium pyrophosphate, sodium pyrophosphate, calcium pyrophosphate, strontium pyrophosphate, rubidium phosphate, cesium phosphate, barium phosphate, calcium phosphate, sodium tripolyphosphate and potassium metaphosphate, removing formed gaseous product from the reaction zone and recovering said product as citraconic acid or anhydride.

3,960,902

SYNTHETIC HORMONES FOR INSECT CONTROL

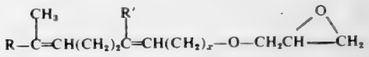
William S. Bowers, Bowie, Md., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 363,294, May 23, 1973, which is a division of Ser. No. 78,577, Oct. 6, 1970, abandoned. This application July 2, 1975, Ser. No. 592,688

Int. Cl.² C07D *303/22*

U.S. Cl. 260—348 R **1 Claim**

1. A compound of the general formula



wherein R and R′ are selected from the group consisting of methyl and ethyl; and *x* is a number from 1 to 2.

3,960,903

PROCESS FOR PREPARING 1-NITRO-ANTHRAQUINONE

Karl Linhart, Leverkusen, and Reinold Schmitz, Blecher, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 27, 1974, Ser. No. 501,017

Claims priority, application Germany, Sept. 5, 1973, 2344736

Int. Cl.² C07C *49/68*

U.S. Cl. 260—369 **10 Claims**

1. Process for separating 1-nitro-anthraquinone from an anthraquinone nitration mixture in concentrated nitric acid which comprises adding sulpholan to the nitration mixture and separating the insoluble 1-nitro-anthraquinone.

3,960,904

6-AMINOMETHYLATED 3-OXYGENATED CHOLEST-5-ENES

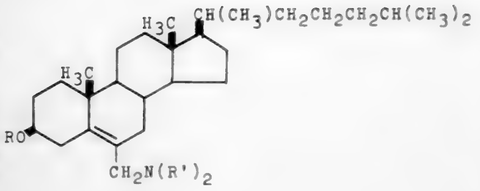
Leonard N. Nysted, Highland Park, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed June 6, 1975, Ser. No. 584,512

Int. Cl.² C07J *9/00*

U.S. Cl. 260—397.2 **14 Claims**

1. A compound of the formula



wherein R represents hydrogen, alkanoyl of the formula

$C_aH_{2a+1}CO$—

in which *a* represents a positive integer less than 8, or methanesulphonyl and R′ represents hydrogen, alkyl of the formula

C_bH_{2b+1}—

in which *b* represents a positive integer less than 8, hydroxyalkyl of the formula

HOC_cH_{2c}—

in which *c* represents a positive integer more than 1 and less than 5, or alkoxyalkyl of the formula

$C_dH_{2d+1}OC_eH_{2e}$—

in which *d* represents a positive integer greater than 1 and less than 5 and *e* represents a positive integer greater than 1 and less than 4.

3,960,905

DIACYLGLYCEROPHOSPHORIC ACID ESTERS OF AMINOETHANOL AND METHYLAMINOETHANOL AND METHOD OF PREPARING THE SAME

Hansjorg Eibl, Bovenden, and Alfar Nicksch, Goettingen-Nikolausberg, both of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V., Goettingen, Germany

Filed Aug. 28, 1974, Ser. No. 501,258

Claims priority, application Germany, Sept. 6, 1973, 2345059

Int. Cl.² C07F *9/09*

U.S. Cl. 260—403 **3 Claims**

1. A method of preparing a diacyl-glycerophosphoric acid ester of β-amino-ethanol or N-methyl-β-amino-ethanol which comprises reacting a diacyl-glycerophosphoric acid ester of β-bromoethanol with a base of the formula NH_3R in a liquid solvent medium until said ester of β-amino-ethanol or N-methyl-β-amino-ethanol is formed, in said formula R being hydrogen or methyl, acyl in said diacyl being alkanoyl or alkenoyl having 10 to 22 carbon atoms.

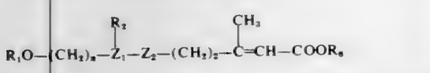
3,960,906

ω-ALIPHATIC AND CYCLOALIPHATIC HYDROCARBONOXY-2,6-ALKADIENOATES AND 2-ALKENOATES

Hans-Peter Schelling, Oberwil, and Fritz Schaub, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 257,671, May 30, 1972, abandoned.
This application July 31, 1974, Ser. No. 493,412
Claims priority, application Switzerland, June 2, 1971, 8036/71
Int. Cl.² C11C *3/02*
U.S. Cl. 260—410.9 R **8 Claims**

1. A compound of the formula:

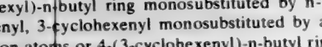


wherein R_1 is alkyl of 1 to 6 carbon atoms, cyclohexyl, cyclohexyl monosubstituted by alkyl of 1 to 4 carbon atoms, 4-(cyclohexyl)-n-butyl ring monosubstituted by n-butyl, 2-cyclohexenyl, 3-cyclohexenyl monosubstituted by alkyl of 1 to 4 carbon atoms or 4-(3-cyclohexenyl)-n-butyl ring monosubstituted by n-butyl,

R_2 is hydrogen or alkyl of 1 to 4 carbon atoms,

R_6 is alkyl of 1 to 5 carbon atoms,

Z_1-Z_2 is



and n is 2 or 3.

3,960,907

ESTERS OF CYCLOPROPYL SUBSTITUTED CARBOXYLIC ACIDS

Clive A. Henrick, and Gerardus B. Staal, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed July 17, 1974, Ser. No. 489,207
Int. Cl.² C11C *3/02*
U.S. Cl. 260—410.9 R **10 Claims**

1. Compounds of the formula I



(I)

wherein n is an even integer of 6 to 14 and R is alkyl of one to 16 carbon atoms, with the proviso that the total number of carbon atoms in the molecule is at least 15 but not more than 26 carbon atoms.

3,960,908

PROCESS FOR PREPARING ORGANOSILVER CARBOXYLATES

Shinpei Ikenoue, and Takao Masuda, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 21, 1974, Ser. No. 435,127
Claims priority, application Japan, Jan. 22, 1973, 48-9362
Int. Cl.² C07F *1/10*; **C07C** *51/00*
U.S. Cl. 260—414 **20 Claims**

1. A process for preparing organosilver carboxylates comprising mixing:

a. an emulsion of a solvent having a solubility at 20°C of less than two parts by weight in 100 parts of water, which solvent is selected from the group consisting of the esters of alcohols or phenols with phosphoric acid, phthalic acid or a carboxylic acid, which are liquid at normal temperatures, aliphatic hydrocarbons and aromatic hydrocarbons, with an aqueous solution of an organic carboxylate selected from the group consisting of alkali metal, alkaline earth metal, and ammonium salts of long chain aliphatic carboxylic acids having 10 or more carbon atoms whose silver salt is relatively stable to light, and

b. an aqueous solution of a silver salt having a solubility at 20°C of at least 0.2 g per 100 g of water;

said mixing taking place at a temperature below the boiling point of said solvent.

3,960,909

PROCESS FOR PREPARING PALLADIUM(II)ACETYLACETONATE

Gerhard Kunstle, Raitenhaslach, and Herbert Siegl, Haiming, both of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Jan. 7, 1975, Ser. No. 539,123
Claims priority, application Germany, Jan. 18, 1974, 2402383
Int. Cl.² C07F *15/08*
U.S. Cl. 260—429 J **6 Claims**

1. A process for preparing palladium(II)acetylacetonate having a low content in organically linked chlorine by reaction of acetylacetone with palladium dichloride or an alkalitetrachloropalladinate selected from the group consisting of potassium and sodium tetrachloropalladinate, which comprises dissolving the starting palladium compound in 1½ to 2½ times the amount by weight of concentrated hydrochloric acid, adding to the solution at least the stoichiometric amount and up to 10 molar % of acetylacetone, stirring until the solution has become clear, adjusting the solution to a pH value between 7 and 8 by drop-wise addition of an aqueous alkalihydroxide solution, separating the precipitated palladium(II)-acetylacetonate from the solution, rinsing with water to free the precipitate from inorganic chloride, and drying.

3,960,910

PROCESS FOR THE PURIFICATION OF GAS STREAMS

Jerome R. Sudduth, Pasadena, and Donald A. Keyworth, Houston, both of Tex., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Jan. 6, 1975, Ser. No. 538,616
Int. Cl.² C07F *1/08*
U.S. Cl. 260—438.1 **5 Claims**

1. In the process for the separation of a complexible ligand selected from the group consisting of olefins having 2 to 20 carbon atoms, acetylenes having 2 to 6 carbon atoms, aromatics have 6 to 12 carbon atoms, carbon monoxide and mixtures thereof from a gas stream that contains said complexible ligand and reactive impurities selected from the group consisting of water, alcohols, ammonia, amines, hydrogen cyanide, hydrogen sulfide, alkyl mercaptans, alkyl sulfides, and mixtures thereof, wherein the gas stream is contacted with a liquid sorbent that is a solution in an aromatic hydrocarbon of a bimetallic salt complex having the formula $CuAlCl_4$.Aromatic, wherein Aromatic is a monocyclic aromatic hydrocarbon having 6 to 12 carbon atoms, thereby forming a reaction mixture comprising a solution of a complex of the bimetallic salt complex and the ligand in the liquid sorbent, the reaction mixture is separated from the gas stream, the ligand is separated from the reaction mixture, and the reaction mixture is recycled, the improvement that comprises removing said reactive impurities from the gas stream before the gas stream is contacted with said liquid sorbent by

a. contacting the gas stream that contains said complexible ligand and up to 3 mole percent of said impurities with siad liquid sorbent, thereby forming a purification medium that comprises the bimetallic salt complex $CuAlCl_4$.Aromatic, at least one product of the reaction of the reactive impurities with the bimetallic salt complex $CuAlCl_4$.Aromatic, and the aromatic hydrocarbon;

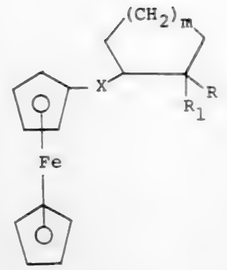
b. separating a purified gas stream that contains the complexible ligand and less than 1 ppm of the reactive impurities from said purification medium;

c. contacting said purification medium with the gas stream that contains the complexible ligand and up to 3 mole percent of reactive impurities;

d. seperating a purified gas stream that contains the complexible ligand and less than 1 ppm of reactive impurities from the purification medium;

e. repeating steps c) and d) until the purification medium contains an amount of solid reaction products that interferes with the passage of the gas stream through said medium; and

f. recovering the complexible ligand from the purified gas stream that is separated from the purification medium in steps b) and d).



(1)

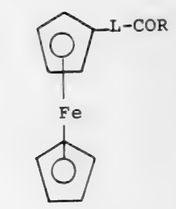
3,960,911

FERROCENE COMPOUNDS AND PREPARATION

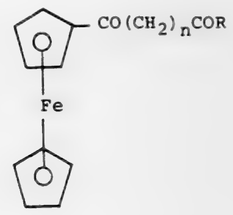
John Louis Suschitzky, and David Rutherford, both of Loughborough, England, assignors to Frisons Limited, London, England

Filed Nov. 11, 1974, Ser. No. 522,591
Claims priority, application United Kingdom, Nov. 21, 1973, 54002/73; July 17, 1974, 31609/74
Int. Cl.² C07F *15/02*
U.S. Cl. 260—439 CY **12 Claims**

1. A process for the production of a compound of the formula

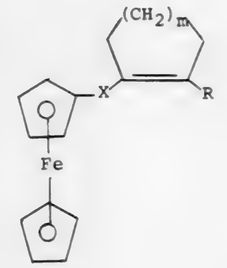


which comprises cyclizing and dehydrating a compound of the formula

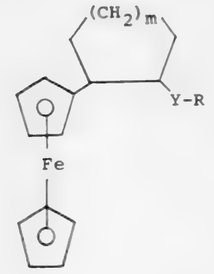


in which formula L is an unsubstituted cycloalkene group containing 5, 6 or 7 carbon atoms with the sole double bond therein being connected to the carbon atoms which is directly connected to the ferrocenyl radical, n is one of the integers 4, 5 or 6 and R is alkyl, chlorine, bromine, phenyl, or phenyl substituted by one or more halogen or alkyl groups.

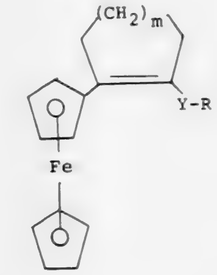
2. A compound of the formulas



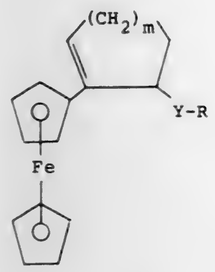
(2)



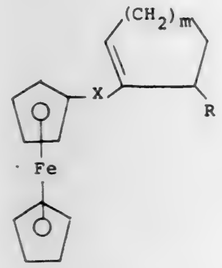
(3)



(4)



(5)



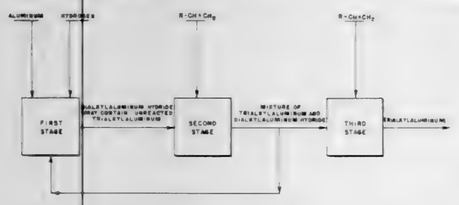
in which R is alkyl, chlorine, bromine, phenyl, or phenyl substituted by one or more halogen or alkyl groups,
X is a group —CO—, —CHOH or —CH_2—,
Y is a group —CO—, —CHOH or —CH_2—,
m is an integer from 1 to 3, and
R_1 is hydrogen, or is hydrogen or —OH when X is -CO-.

3,960,912

PROCESS FOR THE PREPARATION OF TRIALKYL ALUMINUM COMPOUNDS

Karl Heinz Mueller, Werne, and Hans-Juergen Hubert, Hamm, both of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed Dec. 11, 1974, Ser. No. 531,738
Claims priority, application Germany, Dec. 13, 1973, 2361988
Int. Cl.² C07F *5/06*
U.S. Cl. 260—448 A **2 Claims**



1. In a process for the preparation of a trialkyl aluminum compound of the formula $(R\text{-}CH_2\text{-}CH_2)_3$ Al, wherein R is hydrogen or alkyl having up to 18 carbon atoms, by reacting aluminum and hydrogen, in the presence of said trialkyl aluminum compound, in a first stage at a temperature from 80°C. to 180°C. and at a pressure from 50 to 250 atmospheres to form the corresponding dialkyl aluminum hydride, decompressing the dialkyl aluminum hydride product and reacting it in a second stage with an olefin of the formula $R\text{-}CH{=}CH_2$ at a temperature from 60°C. to 140°C. and at a pressure from 1 to 20 atmospheres to form said trialkyl aluminum compound, and recycling a portion of said trialkyl aluminum compound to said first stage, the improvement wherein
1. said aluminum and hydrogen are reacted in said first stage in the presence of a mixture of said trialkyl aluminum and of the corresponding dialkyl aluminum hydride, which mixture contains from 3 to 50 mol percent of said dialkyl aluminum hydride, to form a reaction product which is said dialkyl aluminum hydride alone or in admixture with unreacted trialkyl aluminum;
2. this product from the first stage is partially reacted in said second stage with an olefin of the formula $R\text{-}CH{=}CH_2$ to form a mixture of trialkyl aluminum hydride and the corresponding dialkyl aluminum hydride, which mixture contains from 3 to 50 mol percent of dialkyl aluminum hydride;
3. a portion of the reaction product from this second stage is recycled to said first stage; and
4. the remainder of the reaction product from this second stage is reacted, also at a temperature from 60°C. to 140°C. and at a pressure from 1 to 20 atmospheres, in a third stage with further olefin of the formula $R\text{-}CH{=}CH_2$ to form said trialkyl aluminum, whereby a highly pure trialkyl aluminum product is obtained.

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(6)

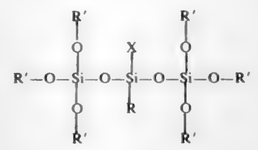
3,960,913

HALOGENATED ALKOXYSILANE INTERMEDIATE COMPOUNDS AND THEIR PREPARATION

Karl O. Knollmueller, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Sept. 24, 1975, Ser. No. 616,437
Int. Cl.² C07F *7/04, 7/18*
U.S. Cl. 260—448.8 R **15 Claims**

1. A compound of the formula:



wherein X is a halogen, R is hydrogen, an alkyl, alkenyl, aryl or aralkyl, and each R′ is independently selected from the same group as R with the proviso that at least a majority of R′ radicals are sterically hindered alkyl groups having at least 3 carbon atoms.

3,960,914

CONVERSION OF FORMAMIDES TO ISOCYANATES

James E. Lyons, Wallingford, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

Filed May 6, 1975, Ser. No. 575,096
Int. Cl.² C07C *118/04*
U.S. Cl. 260—453 P **6 Claims**

1. A process for the preparation of isocyanate which comprises contacting an amide of the formula

R—NHCHO

wherein R is lower alkyl, cycloalkyl, aryl or aralkyl, with a dehydrogenation catalyst selected from the group consisting of palladium black, palladium on suitable supports, ruthenium black, ruthenium on suitable supports, platinum black, and platinum on suitable supports, at a temperature of from about 50°–300°C, under substantially anhydrous conditions, to form the corresponding isocyanate of the formula

R—N=C=O

wherein R is as defined above.

3,960,915

PROCESS FOR THE PREPARATION OF ISOPROPENYL ISOCYANATE

Dieter Arlt, and Josef Bremen, both of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 9, 1975, Ser. No. 621,175
Claims priority, application Germany, Oct. 23, 1974, 2450285
Int. Cl.² C07C *118/00*
U.S. Cl. 260—453 P **2 Claims**

1. A process for the preparation of isopropenyl isocyanate comprising pyrolyzing 5-isopropenyl-1,3,4-dioxazolinone-2 in the gaseous phase at a temperature of above 200°C.

3,960,916

MANUFACTURE OF ORGANIC ISOCYANATES

Werner Fuchs, Ludwigshafen; Rolf Platz, Mannheim, and Volker Vogt, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Jan. 24, 1975, Ser. No. 543,693
Claims priority, application Germany, Feb. 1, 1974, 2404774
Int. Cl.² C07C *118/02*
U.S. Cl. 260—453 PH **8 Claims**

1. A method of preparing organic isocyanates which comprises:
a. mixing a primary amine with at least one mole of hydrogen chloride per amino group of said primary amine in the absence of an organic solvent and simultaneously grinding the reaction mixture to an average particle size of from about 1 to about 100μ and
b. reacting the resulting suspension of amine hydrochloride in hydrogen chloride with at least 2 moles of phosgene per amine hydrochloride group in the absence of an organic solvent at a temperature of from about 100° to about 180°C and at a pressure of from about 14 to about 55 bar to form the corresponding isocyanate.

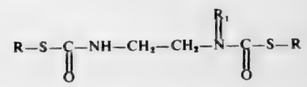
3,960,917

BIS-CYCLOALKYLTHIOCARBAMATES

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 5, 1975, Ser. No. 574,472
Int. Cl.² C07C *155/03*
U.S. Cl. 260—455 A **7 Claims**

1. A compound having the formula



wherein R is cycloalkyl having from 3 to 7 carbon atoms, and R_1 is lower alkyl.

3,960,918

PREPARATION OF ESTERS OF AMIDOALKANESULFONIC ACIDS

Calvin William Schroeck, Eastlake, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 373,698, June 26, 1973, abandoned. This application Apr. 15, 1974, Ser. No. 461,205
Int. Cl.² C07C *143/68*
U.S. Cl. 260—456 A **13 Claims**

1. A method for the preparation of an ester of an amidoalkanesulfonic acid which comprises bringing into contact, at a temperature between about −10° and 50°C., said acid and sulfur trioxide as fuming sulfuric acid or as a solution or dispersion in a diluent which is inert to the reagents used, and subsequently contacting the reaction mass thus obtained, at a temperature of about 0°–50°C., with an organic hydroxy compound of the formula ROH, wherein R is a hydrocarbon or substituted hydrocarbon radical; with the proviso that the substituents on said substituted radical do not alter significantly its character or reactivity, and no more than about three such substituents are present for each 10 carbon atoms in the radical.

3,960,919

SUBSTITUTED SULFONYLGLYCOLIC ACID ANILIDES

Wolfgang Rohr, Mannheim, and Adolf Fischer, Mutterstadt, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Division of Ser. No. 310,640, Nov. 29, 1972, Pat. No. 3,865,860. This application Oct. 7, 1974, Ser. No. 512,670
Claims priority, application Germany, Dec. 6, 1971, 2160380
Int. Cl.² C07C *143/38*
U.S. Cl. 260—456 A **6 Claims**

1. O-methylsulfonylglycolic acid-(N-isopropyl)-anilide.
6. O-isopropylsulfonylglycolic acid-(N-isopropyl)-anilide.

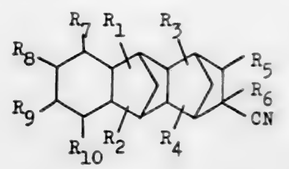
3,960,920

PROCESS FOR THE PREPARATION OF A SATURATED POLYCYCLIC CARBOXYLIC ACID

Junichirow Ohotsubo, Izumi, Japan, assignor to Nard Institute, Ltd., Osaka, Japan

Filed Feb. 13, 1975, Ser. No. 549,798
Claims priority, application Japan, Feb. 15, 1974, 49-18983
Int. Cl.² C07C *120/00, 121/46*
U.S. Cl. 260—464 **2 Claims**

1. A compound of the formula:



wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9 and R_{10} are each hydrogen or methyl.

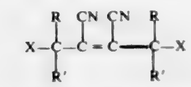
3,960,921

DIHALODICYANO ALKENES

Van C. Vives, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 451,474, March 15, 1974, abandoned. This application Apr. 14, 1975, Ser. No. 567,828
Int. Cl.² C07C *121/30, 121/48, 121/70*
U.S. Cl. 260—464 **5 Claims**

1. An isomirsic mixture of a dihalodicyano alkene of the formula



having from 6 to 38 carbon atoms per molecule, wherein X is a halogen selected from the group consisting of chlorine and bromine; each R is individually selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms and aryl having from 6 to 10 carbon atoms; and each R′ is individually selected from the group consisting of hydrogen, alkyl having from 1 to 4 carbon atoms and cycloalkyl having from 3 to 6 carbon atoms.

3,960,922
N-CYANOMETHYL-N-METHYL-3,5-DIMETHYLBENZAMIDE

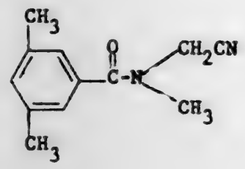
Don R. Baker, Orinda; Francis H. Walker, Mill Valley, and Peter E. Letchworth, Cupertino, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 417,306, Nov. 19, 1973, abandoned. This application Dec. 24, 1974, Ser. No. 536,275

Int. Cl.² C07C *121/78*

U.S. Cl. 260—465 D **1 Claim**

1. The compound



3,960,923
PROCESS FOR THE PREPARATION OF α,β-UNSATURATED NITRILES

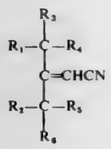
Robert S. DeSimone, Willingboro, N.J., assignor to Rhodia, Inc., New York, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,200

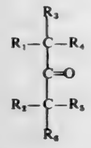
Int. Cl.² C07C *120/00*

U.S. Cl. 260—465.9 **28 Claims**

1. A process for preparing α, β-unsaturated nitriles having the formula:



which comprises reacting an aliphatic ketone having the formula:



wherein R_1 and R_2 are selected from the group consisting of hydrogen and alkyl and alkenyl groups having from one to about 20 carbon atoms, and R_3, R_4, R_5, and R_6 are selected from the group consisting of hydrogen and alkyl groups having from one to about 20 carbon atoms, with acetonitrile at a temperature within the range from about 20° to about 200°C in the presence of a strong base selected from the group consisting of alkali metal hydroxides, barium hydroxide, and quaternary ammonium hydroxides having the formula:



wherein R_1, R_2, R_3, and R_4 are organic radicals having from one to about thirty carbon atoms and selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, aryl, and aryl substituted with alkyl, hydroxyalkyl and halogen, thereby inserting a = CHCN group at the keto carbon atom of the ketone, displacing the oxygen atom, with the formation of an unsatured bond at the α, β-position between the methylene carbon of the acetonitrile and the keto carbon of the ketone.

3,960,924
PROCESS FOR THE PREPARATION OF UNSATURATED CYANOCARBONYL COMPOUNDS

Gerrit E. Beekhuis, Geleen, and Leonardus H. Geurts, Sittard, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

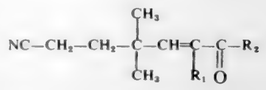
Filed Mar. 11, 1975, Ser. No. 557,380

Claims priority, application Netherlands, Mar. 11, 1974, 7403200

Int. Cl.² C07C *120/00*

U.S. Cl. 260—465.9 **7 Claims**

1. A process for the preparation of unsaturated cyanocarbonyl compounds of the general formula



where, independently of each other, R_1 and R_2 represent hydrogen, an alkyl group with 1 to 5 carbon atoms, a cycloalkyl group with 5 to 10 carbon atoms, or, together with two adjacent carbon atoms, a saturated ring structure of 5 to 12 carbon atoms,

comprising step (a) reacting acrylonitrile with isobutyraldehyde in the liquid phase to form 2,2-dimethyl-4-cyanobutyraldehyde and step (b) reacting 2,2-dimethyl-4-cyanobutyraldehyde with a compound of the formula



wherein, R_1 and R_2 are as defined above, wherein step (a) and step (b) are carried out in the presence of a catalyst which is piperidine, a primary amine, a Schiff base or mixtures thereof, and in the presence of an acid or an acidic compound,

wherein each of step (a) and step (b) is carried out at a temperature of from 75° to 250°C. and

wherein 0.01–0.25 mole of catalyst per mole of aldehyde to be converted is used in each of step (a) and step (b).

3,960,925
PRODUCTION OF ACRYLONITRILE BY AMMOXIDATION OF PROPYLENE

Edward James Gasson, Dollar; Thomas Charles Krosnar, Polmont, and Stanley Frederic Marrian, Aberdour, all of Scotland, assignors to BP Chemicals International Limited, London, England

Filed Aug. 22, 1974, Ser. No. 499,440

Claims priority, application United Kingdom, Sept. 7, 1973, 42130/73

Int. Cl.² C07C *120/14*

U.S. Cl. 260—465.3 **14 Claims**

1. A process for the production of acrylonitrile which comprises reacting at an elevated temperature in the vapor phase propylene, molecular oxygen, and ammonia over an oxide composition containing as the sole catalytic materials a mixture of oxides of the metals or oxygen containing compounds of the metals antimony, uranium, titanium and a metal selected from the group consisting of copper, iron, vanadium and mixtures thereof wherein the atomic ratio of antimony to each of copper, iron and vanadium is in the range 2:1 to 15:1, and wherein the uranium content of the composition is in the range of 1 to 10% of the total metal content of the composition.

3,960,926
PROCESS FOR PREPARING AZASULFONIUM HALIDE SALTS

Paul G. Gassman, and Gordon D. Gruetzmacher, both of Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

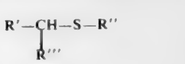
Division of Ser. No. 429,050, Dec. 28, 1973. This application Apr. 30, 1975, Ser. No. 573,059

Int. Cl.² C07C *145/02*

U.S. Cl. 260—470 **19 Claims**

1. Process for preparing an azasulfonium halide salt which comprises

a. reacting halogen with an organic sulfide compound having a formula selected from the group consisting of



I

wherein

R′ is hydrogen, lower alkyl or phenyl;

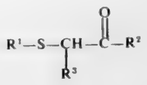
R″, taken separately is lower alkyl or phenyl;

R‴, taken separately, is hydrogen, lower alkyl or phenyl; and

R″ and R‴, when taken together with the

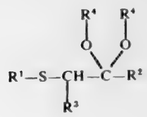


moiety denote a ring containing 3 to 5 methylene carbon atoms;



II(a)

and



II(b)

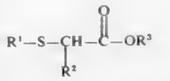
wherein

R^1 is lower alkyl or phenyl;

R^2 is hydrogen, lower alkyl or phenyl;

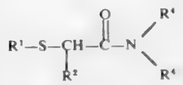
R^3 is hydrogen, lower alkyl; phenyl or benzyl R^2 can be attached to R^3 as part of a cyclic ring system containing 5 to 8 carbon atoms;

each R^4 is lower alkyl or the two R^4 radicals are taken together with the —O—C—O— moiety to complete a cyclic ketal or acetal having from 3 to 4 carbon atoms in the ring;



III(a)

and



III(b)

wherein

R^1 is lower alkyl, phenyl or benzyl;

R^2 is hydrogen, lower alkyl, phenyl or benzyl;

R^3 is lower alkyl, phenyl or benzyl;

each R^4 is hydrogen or lower alkyl, or the two R^4 groups are taken together with the nitrogen to form a ring containing from 4 to 5 methylene carbon atoms and up to one ring oxygen atom; to form a halogen:sulfur compound complex;

(b) reacting the halogen:sulfur compound complex from step (a) with an aniline or aminopyridine to form the azasulfonium halide aniline derivative.

3,960,927
OLEFINIC DERIVATIVES OF AMINO ACIDS

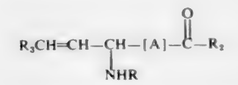
Brian Walter Metcalf, Strasbourg, and Michel Jung, Illkirch, both of France, assignors to Richardson-Merrell Inc., Wilton, Conn.

Filed Mar. 18, 1975, Ser. No. 559,544

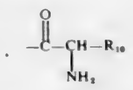
Int. Cl.² C07C *101/00, 101/28*

U.S. Cl. 260—471 A **6 Claims**

1. A compound of the formula:



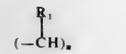
wherein R is hydrogen, alkylcarbonyl wherein the alkyl moiety contains from 1 to 4 carbon atoms, alkoxycarbonyl wherein the alkoxy moiety contains from 1 to 4 carbon atoms and may be straight or branched or



wherein R_{10} is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxybenzyl; R_2 is hydroxy, a straight or branched alkoxy group of from 1 to 8 carbon atoms, a lower alkyl amino group wherein the alkyl moiety contains from 1 to 4 carbon atoms or



wherein R_4 is hydrogen, or a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or p-hydroxyphenyl with the proviso that when R_2 is a lower alkylamino group, R is alkoxycarbonyl; R_3 is hydrogen, chlorine, bromine and iodine; [A] is —CH=CH— or



wherein R_1 is hydrogen, lower alkyl of from 1 to 4 carbon atoms, phenyl or substituted phenyl wherein the substituents on the substituted phenyl may be attached at the ortho, meta or para positions of the phenyl ring and are halogen, lower alkoxy of from 1 to 4 carbon atoms or lower alkyl of from 1 to 4 carbon atoms; n is an integer of from 1 to 5; pharmaceutically acceptable salts and individual optical isomers thereof.

3,960,928

PROCESS FOR THE MANUFACTURE OF CONDENSATION PRODUCTS FROM PHENOLS AND POLYACETOACETIC ACID ESTERS

Otto Mauz, Niederhofheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 402,753, Oct. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 82,810, Oct. 21, 1970, abandoned. This application Mar. 7, 1975, Ser. No. 556,219

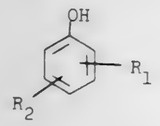
Claims priority, application Germany, Oct. 23, 1969, 1953333

The portion of the term of this patent subsequent to June 1, 1993, has been disclaimed.

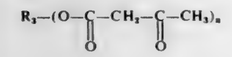
Int. Cl.² C07C *69/76*

U.S. Cl. 260—473 S **1 Claim**

1. In a process for the manufacture of a polyphenol-carboxylic acid ester from phenols of general formula I



and polyacetoacetic acid esters of general formula II



in which formulae R_1 and R_2 each stand for hydrogen atoms, identical or different alkyl radicals having 1 to 4 carbon atoms, R_3 represents a saturated, straight chain or branched aliphatic, cycloaliphatic hydrocarbon radical having from 2 to 12 carbon atoms or R_3 is p-phenylene, m-phenylene, or a naphthylene and *n* is 2 to 4, the improvement of which comprises condensing the reaction components I and II at a temperature of from −10° to +15°C in the presence of gaseous hydrogen chloride and 0.05 to 0.5 % by weight of ethyl mercaptan, calculated on the polyacetoacetic acid ester.

3,960,929

PROCESS FOR MANUFACTURE OF CONDENSATION PRODUCTS FROM PHENOLS AND ACETOACETIC ACID ESTERS

Otto Mauz, Niederhofheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 402,752, Oct. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 82,791, Oct. 21, 1970, abandoned. This application Mar. 7, 1975, Ser. No. 556,220

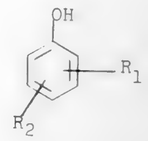
Claims priority, application Germany, Oct. 23, 1969, 1953332

The portion of the term of this patent subsequent to June 1, 1993, has been disclaimed.

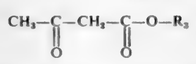
Int. Cl.² C07C *69/76*

U.S. Cl. 260—473 S **1 Claim**

1. In a process for the manufacture of bisphenolcarboxylic acid esters from phenols of general formula I



and acetoacetic acid esters of general formula II



in which formulae R_1 and R_2 each represent a hydrogen atom, identical or different alkyl radicals having 1 to 4 carbon atoms and R_3 stands for an alkyl radical having 1 to 31 carbon atoms, an allyl radical, the cyclohexyl radical, phenyl, napthyl, benzyl, or phenethyl, the improvement of which comprises condensing I and II in the presence of gaseous hydrogen chloride at a temperature of from −10° to +15°C using 0.05 to 0.5 % by weight of ethyl mercaptan, calculated on the acetoacetic acid ester, as catalyst.

3,960,930

PRODUCTION OF ESTERS

Duncan Clark, Norton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 505,745, Oct. 29, 1965, abandoned, which is a continuation-in-part of Ser. Nos. 139,835, Sept. 22, 1961, abandoned, Ser. No. 139,836, Sept. 22, 1961, abandoned, Ser. No. 296,435, July 22, 1963, abandoned, and Ser. No. 296,438, Ser. No. 622,905

July 22, 1963, abandoned. This application Mar. 14, 1967,

Claims priority, application United Kingdom, Sept. 28, 1960, 33285/60; Feb. 23, 1961, 6693/61; Mar. 23, 1961, 10688/61; Aug. 30, 1961, 31223/61; Aug. 30, 1961, 31224/61; July 25, 1962, 28590/62; July 25, 1962, 28591/62

Int. Cl.² C07C *67/05*

U.S. Cl. 260—475 N **6 Claims**

1. A process for producing an ester of a carboxylic acid which comprises reacting in the liquid phase, an olefinically unsaturated hydrocarbon with a carboxylic acid in the presence of an alkali metal salt of a carboxylic acid, a palladous salt, a redox system and molecular oxygen under substantially anhydrous conditions.

3,960,931

1,2-DIPHENYL-ETHANE DERIVATIVES

Rosalind Po-Kuen Chan, Hong Kong, Hong Kong, assignor to Biorex Laboratories, Limited, England

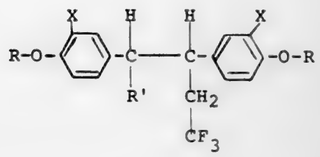
Filed Mar. 11, 1974, Ser. No. 450,242

Claims priority, application United Kingdom, Mar. 23, 1973, 14048/73

Int. Cl.² C07C *39/16, 43/20, 69/14*

U.S. Cl. 260—479 R **16 Claims**

1. A compound of the formula:



wherein R is a hydrogen or alkyl of up to 3 carbon atoms or alkanoyl of up to 3 carbon atoms, X is hydrogen, fluorine, chlorine or bromine and R′ is alkyl of up to 3 carbon atoms.

3,960,932

PROCESS FOR THE PREPARATION OF ALDEHYDES FROM ORGANIC HALIDES

Richard F. Heck, Wilmington, Del., assignor to The University of Delaware, Newark, Del.

Filed Oct. 10, 1974, Ser. No. 513,529

Int. Cl.² C07C *45/00*

U.S. Cl. 260—479 R **9 Claims**

1. A process for the preparation of aldehydes which comprises contacting aryl, vinylic and heterocyclic halides with carbon monoxide and hydrogen at about 0.1 to 1.0 to about 1.0 to 0.1 ratios under pressures of at least one atmosphere at temperatures in the range of 50° to about 175°, in the presence of a palladium catalyst and a basic tertiary amine or other basic material inert to the catalytic function of the catalyst that will readily react with acids.

3,960,933

AMINO CITRIC ACID DERIVATIVES

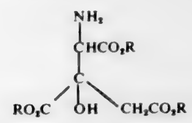
Robert William Guthrie, Fairfield, and Richard Wightman Kierstead, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 435,146, Jan. 21, 1974, Pat. No. 3,869,407, which is a division of Ser. No. 204,290, Dec. 2, 1971, Pat. No. 3,799,951. This application Dec. 16, 1974, Ser. No. 533,095

Int. Cl.² C07C *101/20*

U.S. Cl. 260—482 P **5 Claims**

1. A compound of the formula



wherein all R groups are the same lower alkyl and the stereoisomers, optical antipodes and pharmaceutically acceptable salts thereof.

3,960,934

METHOD FOR THE OXYCARBONYLATION OF ETHYLENE AND PROPYLENE

Wolfgang Gaenzler, Darmstadt-Arheilgen; Klaus Kabs, Seeheim, and Guenter Schroeder, Ober-Ramstadt, all of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed Mar. 24, 1975, Ser. No. 561,633

Claims priority, application Germany, Apr. 1, 1974, 2415742

Int. Cl.² C07C *69/54, 69/66*

U.S. Cl. 260—484 R **34 Claims**

1. In a method for the oxycarbonylation of ethylene or propylene by reacting ethylene or propylene, in methanol or ethanol as the reaction medium, at an elevated temperature and under pressure, with carbon monoxide and oxygen in the presence of a catalyst, the improvement wherein said catalyst consists essentially of a compound, soluble in the reaction medium under the reaction conditions, of a metal selected from the group consisting of vanadium, chromium, iron, cobalt, nickel, and copper, and of a chloride, bromide, or iodide of some other non-catalytic metal, or of hydrogen, if said compound is not a chloride, bromide, or iodide.

3,960,935

NONIONIC MONOMERIC EMULSION STABILIZERS

Carlos M. Samour, Wellesley, Mass., assignor to The Kendall Company, Walpole, Mass.

Filed June 22, 1972, Ser. No. 265,244

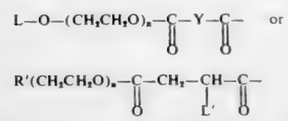
Int. Cl.² C07C *69/40, 69/54*

U.S. Cl. 260—485 G **13 Claims**

1. A compound having the formula

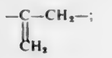
R-O-V

wherein V is 2-acryloyloxyethyl, methacryloyloxyethyl, 3-acryloyloxy-2-hydroxypropyl, 3-methacryloyloxy-2-hydroxypropyl, allyl methallyl, 3-allyloxy-2-hydroxypropyl or 3-methallyloxy-2-hydroxypropyl and R is

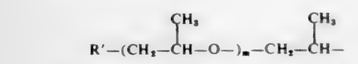


or

wherein Y is alkylene having 2 or 3 carbon atoms, —CH=CH or



n is an integer from 9 to 50; L is an aliphatic hydrocarbon chain having from 8 to 28 carbon atoms which is linked to the oxygen directly or covalently linked thereto through a phenylene linkage or is



wherein R′ is methoxy, ethoxy, acetoxy, propionoxy or hydroxyl and m is an integer from 9 to 29, L′ is an aliphatic hydrocarbon chain having from 8 to 28 carbon atoms and R′ is methoxy, ethoxy, acetoxy, propionoxy or hydroxyl.

3,960,936
NAPHTHYL ACETALDEHYDE DERIVATIVES

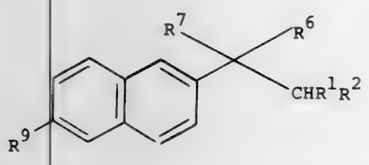
John H. Fried, and Ian T. Harrison, both of Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

Division of Ser. No. 222,278, Jan. 31, 1972, which is a division of Ser. No. 814,855, April 9, 1969, Pat. No. 3,663,713, which is a continuation-in-part of Ser. No. 741,900, July 2, 1968, Pat. No. 3,626,012. This application Apr. 25, 1974, Ser. No. 464,028

Int. Cl.² C07C *69/02*

U.S. Cl. 260—488 CD **11 Claims**

1. A compound selected from the group of compounds represented by the formula:



wherein R^1 and R^2 are alkanoyloxy having from 1 to 12 carbons or cycloalkanoyloxy having from 4 to 8 carbons; one of R^6 and R^7 is hydrogen and the other is hydrogen, methyl, ethyl or difluoromethyl; or R^6 and R^7 taken together are methylene, ethylene, or halomethylene; R^9 is alkyl having up to 6 carbons, cycloalkyl having from 3 to 7 carbons, hydroxymethyl, alkoxymethyl having up to 7 carbons, trifluoromethyl, vinyl, ethynyl, fluoro, chloro, hydroxy, alkoxy having up to 6 carbons, difluoroethoxy, alkoxymethyloxy having up to 7 carbons, alkylthio having up to 6 carbons, difluoromethylthio, alkoxymethylthio having up to 7 carbons, formyl, acetyl, or phenyl optionally substituted with one or two methyl, ethyl, isopropyl, methoxy, hydroxy, fluoro or chloro groups.

3,960,937
ASHLESS ADDITIVES FOR LUBRICATING COMPOSITIONS

Sidney Schiff, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 160,499, July 7, 1971, abandoned. This application May 4, 1972, Ser. No. 250,292

Int. Cl.² C07C *87/14, 87/20*

U.S. Cl. 260—501.2 **11 Claims**

1. A process for the preparation of an ashless lubricant additive which comprises the steps:

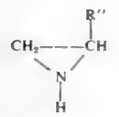
1. first introducing into a reaction zone a petroleum sulfonic acid formed by sulfonating a high molecular weight, refined petroleum fraction having a viscosity of at least 50 to about 720 SUS at 210°F with a sulfonating agent selected from fuming sulfuric acid and liquid sulfur trioxide under sulfonation conditions and a polyamine selected from the group consisting of

a. amines of the formula

$$H_2N[(CH_2)_xNH]_yH$$

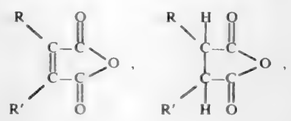
wherein x equals 2–6 and y equals 1–100, and

b. a polymer of a 1,2-alkylene imine of the formula

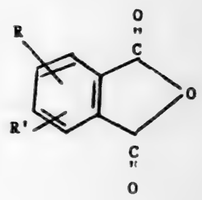


wherein R'' is selected from hydrogen and alkyl radicals having 1–14 carbon atoms, wherein the equivalents of petroleum sulfonic acid employed varies from 1 equivalent of petroleum sulfonic acid per mole of polyamine to 0.75A and the equivalents of the cyclic anhydride employed varies from 0.25 (A–E) to A–E, wherein A is the total equivalents of primary and secondary amines in the quantity of polyamine employed and E is the equivalents of petroleum sulfonic acid employed and allowing said petroleum sulfonic acid and said polyamine to interact,

2. then introducing to the reaction zone a cyclic anhydride of a dicarboxylic acid and allowing it to interact with the product of the interaction between said petroleum sulfonic acid and said polyamine, said cyclic anhydride being represented by the formulas:



or



wherein R and R' can be the same or different and are selected from the group consisting of a hydrogen atom and cyclic, acyclic and aromatic hydrocarbyl groups having 1 to 6 carbon atoms to form said ashless lubricant additive.

3,960,938
EXTRACTION OF SULFURIC ACID FROM SULFURIC ACID-SULFONIC ACID MIXTURES

Henry Shuttleworth, Trinidad, British W. Indies, assignor to Texaco Trinidad, Inc., Trinidad, British W. Indies

Filed Mar. 1, 1971, Ser. No. 120,068

Int. Cl.² C07C *139/00*

U.S. Cl. 260—504 S **7 Claims**

1. Process for removing sulfuric acid from a paraffin sulfoxidation reaction mixture of mono- and di-sulfonic acids, sulfuric acid, unreacted paraffin hydrocarbons, acetic acid, water and sulfur dioxide, comprising the steps of:

repeatedly contacting said mixture with concentrated hydrochloric acid to form a raffinate phase containing sulfuric acid and a heavy product phase containing unreacted paraffin hydrocarbons, sulfonic acids, some hydrochloric acid solvent; separating said phases;

removing said hydrochloric acid from said heavy product phase; neutralizing said sulfonic acids; and steam distilling said unreacted paraffin hydrocarbons.

3,960,939
METHOD FOR PREPARING SORBIC ACID

Kunihiko Sekiyama, Kashihara; Yasuyoshi Taga, Ogaki, and Shigemi Fujita, Kaizu, all of Japan, assignors to Nippon Gohsei Kagaku Kabushiki Kaisha, Osaka, Japan

Filed June 3, 1975, Ser. No. 583,270

Int. Cl.² C07C *51/00*

U.S. Cl. 260—526 N **6 Claims**

1. In a method for preparing sorbic acid by heating a polyester prepared by the reaction of crotonaldehyde with ketene, in a reaction medium in the presence of hydrochloric acid to convert the polyester to sorbic acid and then recovering the sorbic acid from the reaction mixture, the improvement which comprises the steps of

a. dispersing the polyester and hydrochloric acid into a saturated aliphatic hydrocarbon having a boiling point at atmospheric pressure of 150° to 260°C.,

b. heating the dispersed reaction mixture at a temperature of 80° to 135°C. to convert the polyester to sorbic acid,

c. allowing the reaction mixture to separate into an upper layer being hydrocarbon solution of sorbic acid and an under layer containing hydrochloric acid,

d. evaporating sorbic acid together with the hydrocarbon from the upper layer by a centrifugal thin film type evaporator, and

e. recovering sorbic acid from the evaporated sorbic acid-hydrocarbon mixture.

3,960,940
PROCESS FOR THE PREPARATION OF D(−)-PENICILLAMINE AND SALTS THEREOF

Joseph Elks; Niall Galbraith Weir, both of London; Timothy Larry Gane, Harrow, and Brian Burton, Ruislip, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

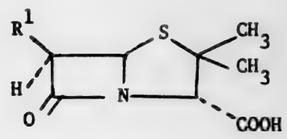
Filed Aug. 14, 1974, Ser. No. 497,250

Claims priority, application United Kingdom, Aug. 22, 1973, 39855/73

Int. Cl.² C07C *149/243*

U.S. Cl. 260—534 S **15 Claims**

1. A process for the preparation of D(−)-penicillamine and salts thereof wherein a penicillin of formula



or a salt or solvate thereof, in which R^1 is selected from the group consisting of an amino group and a blocked amino group, is reacted with a hydrazine having two —NH-groups, or a salt or solvate thereof followed by isolation of the product.

3,960,941
3-HYDROXY-3,4-DICARBAMOYLBUTYRIC ACID AND SALTS

Karl E. Wiegand, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 347,822, April 4, 1973, Pat. No. 3,911,002, which is a division of Ser. No. 172,627, Aug. 18, 1971, Pat. No. 3,769,337. This application Jan. 20, 1975, Ser. No. 542,347

Int. Cl.² C07C *101/24*

U.S. Cl. 260—534 E **5 Claims**

1. 3-hydroxy-3,4-dicarbamoylbutyric acid and the alkali metal, alkaline earth metal and ammonium salts thereof.

3,960,942
LEUCINE ISOLEUCINE SEPARATION

Pierre Hirsbrunner, Corseaux, and Raymond Bertholet, Aigle, both of Switzerland, assignors to Societe D'Assistance Technique pour Produits, Lausanne, Switzerland

Filed Jan. 20, 1975, Ser. No. 542,572

Claims priority, application Switzerland, Jan. 21, 1974, 745/74

Int. Cl.² C07C *99/12*

U.S. Cl. 260—534 R **7 Claims**

7. A process for separating leucine and isoleucine from an aqueous solution thereof, said process comprising the steps of

adding a metal salt selected from the group consisting of copper salts and nickel salts to an aqueous solution containing leucine and isoleucine to form a resultant solution having a pH-value of between 1.0 and 1.8;

thereafter adjusting the pH-value of the resultant solution to a value from 2 to 3.8;

fractionating the resultant solution into a first crystallized fraction consisting of a metal leucinate and a first filtrate;

neutralizing the first filtrate;

obtaining a second crystallized fraction consisting of metal leucinate and isoleucinate from the first filtrate;

forming a second aqueous solution of the second crystallized fraction with a pH-value of between 1.3 and 2.2;

thereafter adjusting the pH-value of the second aqueous solution to a pH-value of from 2.7 to 3.8;

fractionating the resultant second solution into a third crystallized fraction consisting mostly of metal leucinate and to a lesser amount of metal isoleucinate and a second filtrate;

neutralizing the second filtrate;

thereafter collecting a fourth crystallized fraction consisting mostly of metal isoleucinate and to a lesser amount of metal leucinate from the second filtrate; and

separating the metal ions from each of the first and fourth fractions to obtain leucine and isoleucine respectively.

3,960,943
N-CYCLOALKYLDITHIO-N'-FLUOROPHENYL UREAS

Melancthon S. Brown, deceased, late of Berkeley, Calif. (by Gustave K. Kohn, special administrator), Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 526,494, Nov. 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 250,907, May 8, 1972, Pat. No. 3,853,966, which is a continuation-in-part of Ser. Nos. 88,212, Nov. 9, 1970, Pat. No. 3,755,437, and Ser. No. 189,732, Oct. 15, 1971, abandoned. This application Jan. 6, 1975, Ser. No. 538,829

Int. Cl.² C07C *119/00*

U.S. Cl. 260—453 R **1 Claim**

1. N-methyl-N-cyclohexyldithio-N'-2-fluorophenyl urea.

3,960,944
8-CARBOXAMIDE DIBENZOBICYCLO(3.2.1)OCTADIENES

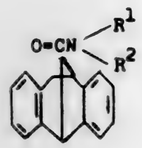
Walton James Hammar, St. Paul, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Division of Ser. No. 194,056, Oct. 29, 1971, Pat. No. 3,860,652. This application Dec. 9, 1974, Ser. No. 530,670

Int. Cl.² C07C *103/22*

U.S. Cl. 260—558 R **3 Claims**

1. A compound of the formula



wherein R^1 is hydrogen or lower alkyl and R^2 is lower alkyl.

3,960,945

4-[-(ALKOXY OR POLYHALOALKOXY)-BENZAMIDO]CYCLOHEXANONES

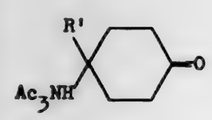
George Y. Lesher, Rensselaer; Karl O. Gelotte, Nassau, and Alexander R. Surrey, Albany, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 462,388, April 19, 1974, Pat. No. 3,901,920. This application Feb. 24, 1975, Ser. No. 552,162

Int. Cl.² C07C *103/26*

U.S. Cl. 260—559 R **4 Claims**

1. A compound of the formula



where R' is hydrogen or lower-alkyl, Ac_3 is 4-Q_1-benzoyl and Q_1 is lower-alkoxy or polyhalo-lower-alkoxy.

3,960,946

PROCESS FOR THE MANUFACTURE OF OXALYL DIHYDRAZIDE AND THE USE OF SAME AS A COOLANT IN GAS GENERATING COMPOSITIONS

Ivan L. Dewitt, and Eugene Pacanowsky, both of Elkton, Md., assignors to Thiokol Corporation, Newtown, Pa.

Division of Ser. No. 233,790, March 10, 1972, Pat. No. 3,839,105. This application Sept. 10, 1974, Ser. No. 504,784

Int. Cl.² C07C *97/16;* **C01B** *21/16;* **C06B** *45/10*

U.S. Cl. 260—561 H **5 Claims**

1. A process for the preparation of oxalyl dihydrazide which comprises reacting diethyloxalate and hydrazine at a temperature between about 30°C and about 70°C in a medium consisting substantially of distilled water.

3,960,947

CONDENSATION PRODUCTS

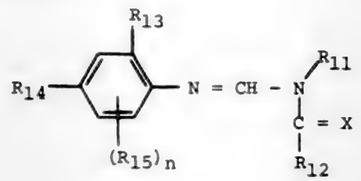
Dieter Duerr, Bottmingen, Switzerland, and Georg Pissiotas, Loerrach, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 218,536, Jan. 17, 1972. This application May 14, 1975, Ser. No. 577,389

Int. Cl.² C07C *103/34*

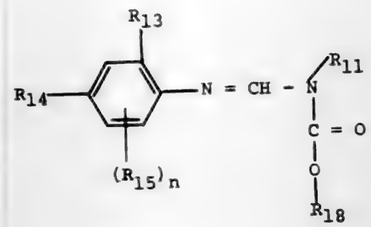
U.S. Cl. 260—561 R **4 Claims**

1. A compound of the formula



(III)

or



(V)

wherein R_{11} represents alkyl containing from 1 to 4 carbon atoms or alkenyl containing from 3 to 4 carbon atoms, R_{12} represents hydrogen, alkyl containing from 1 to 12 carbon atoms, alkenyl containing from 3 to 4 carbon atoms, phenyl or naphthyl, R_{13} represents hydrogen, alkyl containing from 1 to 4 carbon atoms, $—CF_3$ or halogen, R_{14} represents hydrogen, alkyl or alkoxy each containing from 1 to 4 carbon atoms, alkenyloxy or alkinyloxy each containing from 3 to 4 carbon atoms or halogen, R_{15} represents hydrogen, halogen, alkyl containing from 1 to 4 carbon atoms, $—NO_2$ or $—CF_3$, R_{18} represents alkyl containing from 1 to 4 carbon atoms, phenyl or 2-methyl-4-chlorophenyl, X represents oxygen or sulphur, and n represents the numbers 1, 2, or 3.

3,960,948

SUBSTITUTED CHLOROACYLANILIDES

Frank Shackleton, Rochdale, and Donald Butler, Salford, both of England, assignors to Lankro Chemicals Group Limited, England

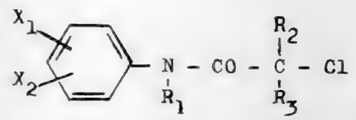
Filed Feb. 10, 1975, Ser. No. 548,577

Claims priority, application United Kingdom, Feb. 14, 1974, 6701/74

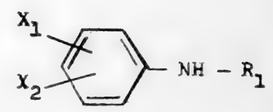
Int. Cl.² C07C *103/32*

U.S. Cl. 260—562 B **9 Claims**

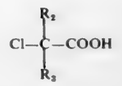
1. A process for the preparation of substituted chloroacylanilides of the general formula:



wherein R_1 is a group selected from alkyl groups having from 1 to 4 carbon atoms and a phenyl group; R_2 is an atom selected from the group consisting of a hydrogen atom and halogen atoms; R_3 is selected from the group consisting a hydrogen atom and alkyl groups having from 1 to 4 carbon atoms, and X_1 and X_2 are independently selected from the group consisting of a hydrogen atom, a halogen atom, a methyl group and an ethyl group, which process comprises acylating a substituted aniline of the general formula:



wherein R_1, X_1 and X_2 are as above defined, in the presence of phosphoryl chloride under substantially anhydrous conditions with a chlorocarboxylic acid of the general formula:



wherein R_2 and R_3 are as above defined.

3,960,949

1,2-BIGUANIDES

Hanns Ahrens; Clemens Rufer; Helmut Biere; Eberhard Schröder; Wolfgang Losert; Olaf Loge, and Ekkehard Schillinger, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

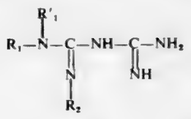
Continuation of Ser. No. 239,923, March 31, 1972, abandoned. This application July 9, 1974, Ser. No. 486,758

Claims priority, application Germany, Apr. 2, 1971, 2117015

Int. Cl.² C07C *129/16*

U.S. Cl. 260—564 B **7 Claims**

1. A substituted biguanide of the formula



wherein R_1 is alkyl of 1–8 carbon atoms, R'_1 is hydrogen or alkyl of 1–8 carbon atoms and R_2 is alkoxyalkyl of 2–12 carbon atoms, and pharmaceutically acceptable acid addition salts thereof.

3,960,950

PROCESS FOR CARBODIIOMIDE SYNTHESIS

Robert L. Hansen, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 368,355, June 8, 1973, Pat. No. 3,862,989. This application Sept. 9, 1974, Ser. No. 504,296

Int. Cl.² C07C *119/04*

U.S. Cl. 260—566 R **3 Claims**

1. In the process for the formation of organic carbodiimides from organic mono- or di-isocyanates or mixtures thereof with each other or with up to one organic tri-isocyanate per average molecule of organic carbodiimide formed, said organic mono-, di- and tri-isocyanates having no active hydrogen-containing substituents which are reactive with isocyanate groups, the step comprising treating each 100 parts by weight of said organic isocyanates with from about 0.01 to 10.0 parts by weight of bicyclic terpene alkyl or hydrocarbyl aryl phosphine oxide wherein alkyl is of 1 to 10 carbon atoms and hydrocarbyl aryl is of 6 to 10 carbon atoms.

3,960,951

CERTAIN OXIME ESTERS

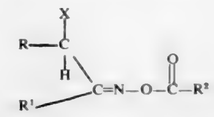
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 275,601, July 27, 1972, abandoned, which is a continuation of Ser. No. 882,336, Dec. 4, 1969, abandoned, which is a continuation-in-part of Ser. No. 649,024, June 26, 1967, abandoned. This application Aug. 5, 1974, Ser. No. 494,932

Int. Cl.² C07C *131/00*

U.S. Cl. 260—566 AC **2 Claims**

1. A compound having the formula



in which X is chlorine; R is hydrogen; R^1 is chloromethyl; R^2 is alkyl having from 1 to 6 carbon atoms.

3,960,952

ANHYDROUS BASES AND SALTS OF DYESTUFFS OF THE AURAMINE SERIES, PROCESS FOR THEIR PREPARATION AND THEIR USE

Jean-Claude Henri Raoul Hardouin, Chantilly, and Maurice Rene Jean Vallette, Precy-sur-Oise, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Aug. 6, 1974, Ser. No. 495,719

Claims priority, application France, Aug. 10, 1973, 73.29331

Int. Cl.² C07C *119/00*

U.S. Cl. 260—566 R **13 Claims**

1. Process for the preparation of an anhydrous base or salt of a dyestuff of the Auramine series, which comprises isolating the base or salt in acetone, methylethylketone or diethylketone, the salt being a hydrobromide, hydrofluoride, phosphate, formate, acetate, propionate, lactate, monochloroacetate, dichloroacetate, bromoacetate or cyanoacetate.

3,960,953

PREPARATION OF ACYLHYDROXIMYL HALIDES

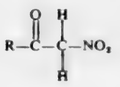
Roger G. Duranleau, Ardonia, and John M. Larkin, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 532,421

Int. Cl.² C07C *131/00*

U.S. Cl. 260—566 A **20 Claims**

1. A method of preparing acylhydroximyl halides which comprises contacting a nitroketone corresponding to the formula:



where R is an alkyl group of from 1 to 50 carbon atoms with a halogen acid in the presence of a polar protic organic solvent selected from the group consisting of alkanoic acids of up to 16 carbon atoms and alkanols having from 2-16 carbon atoms.

3,960,954
PROCESS FOR PREPARING OXIMES AND HYDROXYLAMINES

Joseph Lee Russell, Ridgewood, and John Kollar, Wyckoff, both of N.J., assignors to Halcon International, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 732,079, May 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 434,089, Feb. 19, 1965, abandoned, which is a continuation-in-part of Ser. No. 355,485, March 27, 1964, abandoned. This application May 11, 1970, Ser. No. 36,378

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 A 4 Claims

1. A process for preparing an oxime and a hydroxylamine from the corresponding primary amine selected from the group consisting of alkyl amines having 3 to 6 carbon atoms, cycloalkyl amines having from 6 to 12 carbon atoms, and benzylamine, the amine group of which is attached to a carbon atom of the class consisting of primary and secondary carbon atoms, which process comprises treating in the substantial absence of water the amine in the presence of a dissolved catalyst which is a compound of titanium, vanadium, chromium, selenium, zirconium, niobium, molybdenum, tellurium, tantalum, tungsten, rhenium and uranium and an organic hydroperoxide as the oxidizing agent.

3,960,955
PURIFICATION PROCESS

Lawrence F. Kuntschik, Nederland, and Orville W. Rigdon, Groves, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 15, 1974, Ser. No. 524,109

Int. Cl.² C07C *131/00*

U.S. Cl. 260—566 A 8 Claims

1. A process for purifying crude paraffinone oximes containing from 5 to 30 carbon atoms, from impurities consisting essentially of from about 0 to 20% by weight of carbonyl compounds and from about 0 to 4% by weight of organic chlorine impurities, said precentage of impurities based upon the weight of oxime, by:

a. forming a reaction mixture by mixing each part by weight of paraffinone oxime to be purified with from about 0.01 to 0.2 parts by weight of water, from about 0.02 to 0.5 parts by weight of a lower alkanol containing from 1 to 5 carbon atoms, and with from about 0.1 to 1 parts by weight of a complexing reagent selected from the group consisting of urea and thiourea, the urea or thiourea being added in the presence of water,

b. heating said reaction mixture between about 25° to 200°C until the organic chlorine impurities are decomposed and an insoluble carbonyl complex is formed,

c. cooling said reaction mixture to between about −10° and +10°C, and

d. removing the insoluble carbonyl complex from the purified oxime contained therein.

3,960,956
ANTIDEPRESSANT 1,1A,6,10B-TETRAHYDRODIBENZO(A,E)-CYCLOPROPA(C) CYCLOHEPTEN-6-SUBSTITUTED OXIMES

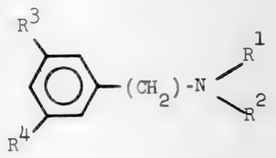
Roy Teruyuki Uyeda, Newark, Del., assignor to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 525,877, Nov. 21, 1974, abandoned. This application Sept. 26, 1975, Ser. No. 616,483

Int. Cl.² C07C *131/08*

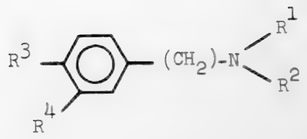
U.S. Cl. 260—566 AE 6 Claims

1. A compound of the formula



I

and



II

and the pharmaceutically acceptable acid addition salts thereof, wherein

R^1 is H, methyl or hydroxyalkyl of from 2 to 6 carbon atoms;

R^2 is H, alkyl of from 1 to 6 carbon atoms, or hydroxyalkyl from 2 to 6 carbon atoms, and

R^3 and R^4 are each alkoxy of from 12 to 20 carbon atoms, provided that

when R^3 is ortho to R^4, one of R^1 and R^2 is hydroxyalkyl of from 2 to 6 carbon atoms and the other is hydrogen.

3,960,957
2-(6′-METHOXYNAPHTH-2′YL) PROPIONALDOXIME AND 5′-HALO DERIVATIVES THEREOF

Francisco Sanchez Alvarez, Sunnyvale, Calif., assignor to Syntex Corporation, Panama, Panama

Division of Ser. No. 354,537, April 26, 1973, Pat. No. 3,873,594, which is a division of Ser. No. 151,921, June 10, 1971, Pat. No. 3,758,544, which is a division of Ser. No. 748,603, July 30, 1968, Pat. No. 3,637,767. This application Jan. 10, 1975, Ser. No. 540,011

Int. Cl.² C07C *131/00*

U.S. Cl. 260—566 A 1 Claim

1. A 2-(6′-methoxynaphth-2′-yl)propionaldoxime having at the C-5′ position, hydrogen or a halo group.

3,960,958
3,4- AND 3,5-DIALKOXYBENZYLAMINES

Kenneth Richardson, Canterbury, England, assignor to Pfizer Inc., New York, N.Y.

Filed Aug. 26, 1974, Ser. No. 500,377

Int. Cl.² C07C *87/29*

U.S. Cl. 260—570.9 9 Claims

1. A compound selected from those of the formulae:

I

where

X or Y = H, F, Cl, Br, C_1–C_4 alkyl, C_1–C_4 alkoxy, CF_3, CH_3S, CH_3SO_2, $SO_2N(CH_3)_2$, provided that one is H;

Z = C_2–C_3 alkylene;

R_1 and R_2 independently = H, C_1–C_4 alkyl

and its pharmaceutically suitable salts.

3,960,960
1,1-DIPHENYL-1-LOWER ALKOXY-AMINO-ALKANES AND THE SALTS THEREOF

Roderich Höllinger, Leonding near Linz; Wolf Wendtlandt, Linz, and Gerda Schneider, Linz, Dornach, all of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

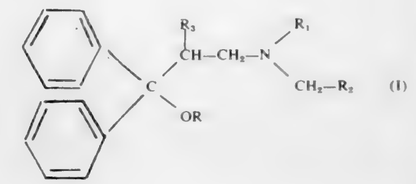
Continuation-in-part of Ser. No. 395,447, Sept. 10, 1973, abandoned. This application July 10, 1975, Ser. No. 594,673

Claims priority, application Austria, Sept. 11, 1972, 7764/72

Int. Cl.² C07C *93/00*

U.S. Cl. 260—570 R 8 Claims

1. A member selected from the group consisting of compounds of the formula



(I)

in which R is alkyl with up to four carbon atoms, R_1 is selected from the group consisting of hydrogen, alkyl containing up to four carbon atoms and benzyl, R_2 is selected from the group consisting of alkenyl containing up to six carbon atoms, aralkenyl, and aralkenyl substituted by a lower alkoxy group, both aralkenyls with the alkenyl group containing up to four carbon atoms, alkinyl containing up to three carbon atoms, cycloalkyl containing up to six carbon atoms and cycloalkylidenemethyl containing up to seven carbon atoms and R_3 is selected from the group consisting of hydrogen and methyl, and a salt thereof.

3,960,959
N,N′-BIS 6-[(3,4-DIHYDROXYPHENYL)ALKYLAMINO]-HEXYL HEXAMETHYLENEDIAMINES AND THE SALTS THEREOF

Janos Pless, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

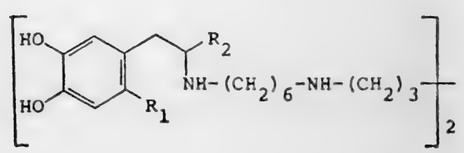
Filed Dec. 13, 1974, Ser. No. 532,465

Claims priority, application Switzerland, Dec. 19, 1973, 17769/73; Oct. 23, 1974, 14174/74; Sweden, Oct. 23, 1974, 7414173

Int. Cl.² C07C *91/32*

U.S. Cl. 260—570.5 P 5 Claims

1. A compound of formula I,



I

wherein R_1 and R_2 are hydrogen or lower alkyl, or a pharmaceutically acceptable acid addition salt thereof.

3,960,961
4′-FLUORO-4- [4-(PHENYL)CYCLOHEXY]-AMINO BUTYROPHENONES AND THE SALTS THEREOF

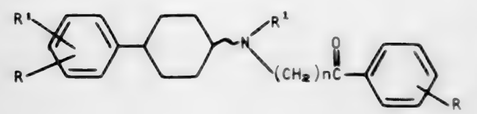
Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 194,544, Nov. 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 68,573, Aug. 31, 1970, abandoned. This application Feb. 2, 1973, Ser. No. 329,044

Int. Cl.² C07C *97/10*

U.S. Cl. 260—570.5 CA 33 Claims

1. A compound of the formula



wherein ~ is a generic expression denoting cis and trans stereoconfiguration and mixtures thereof,

R′ and R are selected from the group consisting of hydrogen, alkyl of from one through four carbon atoms, fluo-

rine, chlorine, bromine, trifluoromethyl, nitro and alkoxy of from one through four carbon atoms,

R^1 is selected from the group consisting of hydrogen and alkyl of from one through four carbon atoms and *n* is an integer of from one through six, and acid addition salts thereof.

3,960,962

PROCESS FOR REPLACING THE HYDROXY GROUP OF AN AROMATIC HYDROXY COMPOUND WITH AN AMINE GROUP

Ronald L. Shubkin, West Bloomfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed May 31, 1974, Ser. No. 474,944

Int. Cl.² C07C *85/06*

U.S. Cl. 260—581 **2 Claims**

1. In a process for replacing the hydroxy group of an aromatic hydroxy compound with a $-NH_2$ group, said process comprising reacting said aromatic hydroxy compound with ammonia in the presence of a cyclohexanone promoter and a catalyst at a temperature of about 200°–400°C, the improvement wherein said catalyst is palladium, said palladium being reduced by hydrazine to a metallic state and being bonded to a phosphinated polystyrene resin, said resin being characterized by having the group $-CH_2-P(R)_2$ bonded to phenyl groups in said polystyrene resin wherein R is selected from the group consisting of alkyl, cycloalkyl, aralkyl, alkaryl and aryl.

3,960,963

SEPARATION OF 3,4-DIAMINOTOLUENE FROM A MIXTURE OF o-TOLUENEDIAMINE ISOMERS

David F. Gavin, Chesire, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 417,008, Nov. 19, 1973, abandoned. This application July 29, 1974, Ser. No. 492,648

Int. Cl.² C07C *85/26*

U.S. Cl. 260—582 **5 Claims**

1. A process for separating 3,4-toluenediamine from a mixture of 80–100% o-toluenediamine isomers of which 40-70% is 3,4-toluenediamine and 30-60% is 2,3-toluenediamine comprising: dissolving 10 to 40 grams of said mixture in each 100 cc of a solvent selected from the group consisting of benzene, toluene and xylene at a temperature not above the boiling point of the selected solvent, cooling the resulting solution to a temperature at which precipitation begins, continuing cooling until a desired amount of precipitate is formed, and separating said precipitate to provide a purified 3,4-toluenediamine.

3,960,964

HYDROCARBON UPGRADING PROCESS

Robert M. Suggitt, Wappingers Falls; Walter C. Gates, Jr., Newburgh, and Ralph B. Hudson, Jr., Beacon, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 428,508, Dec. 26, 1973. This application Dec. 13, 1974, Ser. No. 532,354

Int. Cl.² C07C *85/11*

U.S. Cl. 260—583 M **11 Claims**

1. In a process for producing secondary alkyl primary amines from n-paraffins wherein a portion of said n-paraffin is nitrated to form a nitroparaffin along with nitrated and oxygenated by-products, wherein said nitroparaffin is essentially completely hydrogenated to said amine and where said amine is separated from a mixture of unreacted paraffin and oxygenated by-products, the improvement which comprises:

a. catalytically hydrogenating said mixture at a temperature of from about 600° to 750°F. in the presence of a catalyst composed of alumina and a Group VIII metal and from about 10 to 5000 parts per million of nitrogen introduced as ammonia or an organonitrogen compound selected from the group consisting of monoalkylamines, dialkylamines, trialkylamines, nitriles and alkenylpolyamines basis said paraffin mixture; and

b. recycling said hydrogenated product of (a) for nitration with said n-paraffin.

3,960,965

GASOLINE COMPOSITION

John Battersby, Frimley, and Eric Simon Forbes, Lightwater, both of England, assignors to The British Petroleum Company Limited, London, England

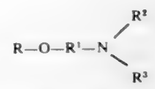
Filed Oct. 23, 1973, Ser. No. 408,575

Claims priority, application United Kingdom, Oct. 27, 1972, 49573/72

Int. Cl.² C07C *87/14*

U.S. Cl. 260—584 R **9 Claims**

1. A compound of the formula:



wherein R is a hydrocarbyl group containing from 20 to 500 carbon atoms and derived from the polymerization of isobutylene, R^1 is a polymethylene group containing 2 to 6 carbon atoms interrupted by an imino group, and R^2 and R^3, which may be the same or different are hydrogen atoms or alkyl groups.

3,960,966

KETOISOPHORONE MANUFACTURE

Erich Widmer, Munchenstein, Switzerland, and Marcel Seuret, East Brighton, Victoria, Australia, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed June 19, 1975, Ser. No. 588,274

Claims priority, application Switzerland, June 28, 1974, 8927/74; May 27, 1975, 6747/75

Int. Cl.² C07C *45/00*

U.S. Cl. 260—586 P **10 Claims**

1. A process for the preparation of ketoisophorone which process comprises oxidizing α-isophorone with an oxygen-containing gas in the presence of from about 0.1 to about 10 wt. percent based on the weight of said α-isophorone, of a catalyst selected from the group consisting of phosphomolybdic acid of or salt thereof, silicomolybdic acid or a salt thereof, molybdenum VI dioxybisacetylacetonate, vanadium IV dichlorobisacetylacetonate or vanadium V oxy-dichloromonoacetylacetonate, said oxidation being carried out in the presence or absence of solvent at a temperature of from about 50°C. to 150°C.

3,960,967

PROCESS FOR PRODUCING A SULFONE DERIVATIVE OF VITAMIN A ALCOHOL

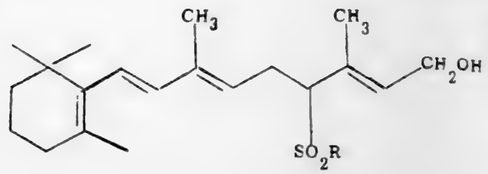
Gary Lee Olson, Westfield, and Gabriel Saucy, Essex Fells, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 398,713, Sept. 14, 1973, abandoned. This application July 19, 1974, Ser. No. 486,145

Int. Cl.² C07C *147/02*

U.S. Cl. 260—607 R **2 Claims**

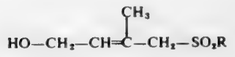
1. A process for producing a compound of the formula:



wherein

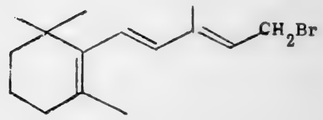
R is unsubstituted aryl, or aryl substituted with an electron donating group;

comprising condensing a sulfone of the formula:



wherein

R is as above; with a derivative of the formula:



in an inert polar organic solvent medium in the presence of a compound of the formula:



wherein

M is an alkali metal and

R_{10} and R_{11} are independently lower alkyl.

3,960,968

METHOD FOR THE CONTINUOUS PRODUCTION OF AQUEOUS DIALKALI SALT SOLUTIONS OF AROMATIC DIHYDROXY COMPOUNDS

Hugo Vernaleken, Krefeld; Ludwig Bottenbruch, Krefeld-Bockum; Gerhard Emmer, Krefeld, and Uwe Hucks, Duisburg, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 27, 1974, Ser. No. 483,738

Claims priority, application Germany, July 13, 1973, 2335687

Int. Cl.² C07C *37/00*

U.S. Cl. 260—619 R **12 Claims**

1. A process for continuously producing solutions of dialkali or dialkaline earth metal salts of aromatic dihydroxy compounds, wherein an aromatic dihydroxy compound is sprayed in the form of a melt onto a turbulent liquid film containing the alkali or alkaline earth metal hydroxide in aqueous solution.

3,960,969

METHOD FOR PREPARING AN IMPROVED CREOSOTE WOOD PRESERVATIVE FROM A COAL TAR CREOSOTE BY THE USE OF CAUSTIC COMPOUNDS

Nicholas P. Greco, Pittsburgh, and David A. Webb, Valencia, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Feb. 7, 1975, Ser. No. 547,860

Int. Cl.² C07C *39/06, 37/28*

U.S. Cl. 260—627 H **17 Claims**

1. A method of preparing an improved creosote wood preservative, having a lighter color and reduced tendency for formation of a crud deposit on treated wood, from a coal tar creosote comprising:

a. distilling the coal tar creosote to an end temperature equivalent to a temperature in the range of 395° – 410°C at atmospheric pressure to produce a distillate and a pitch residue, and

b. contacting the distillate with at least 1% by weight of a caustic compound selected from the group consisting of alkali metal alcoholates and alkali metal hydroxides and mixtures of alkali metal alcoholates and hydroxides at a temperature in the range from the melting temperature to the boiling temperature of the creosote whereby an improved creosote wood preservative is produced.

3,960,970

MANUFACTURE OF d,l-METHOL

Heinrich Pasedach, Ludwigshafen, and Albrecht Friederang, Mannheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Division of Ser. No. 272,147, July 17, 1972, Pat. No. 3,870,761. This application Feb. 19, 1974, Ser. No. 443,412

Claims priority, application Germany, July 23, 1971, 2136885; Jan. 27, 1972, 2203807

Int. Cl.² C07C *35/12*

U.S. Cl. 260—631 H **7 Claims**

1. In the process for manufacture of d,l-menthol wherein crude piperitenone prepared by reaction of methyl vinyl ketone with mesityl oxide in the presence of a basic catalyst, in which methyl vinyl ketone is slowly introduced into a mixture consisting essentially of excess mesityl oxide and, as the catalyst, 10 to 70% w/w aqueous potassium hydroxide solution, the mixture is brought to a temperature of between 20°C and the reflux temperature, the potassium hydroxide is used in an amount of 0.05 mole to 1.5 mole per mole of methyl vinyl ketone, and the methyl vinyl ketone is introduced into said mixture at said temperature, the steps which comprise hydrogenating the crude mixture of piperitenone and by-products so obtained in the presence of a nickel containing catalyst at a temperature of from 100° to 260°C to give a mixture of d,l-menthol, the menthol isomers neo-menthol, neo-iso-menthol and iso-menthol and hydrogenated by-products of the piperi-

tenone manufacture, separating the resulting hydrogenated mixture by fractional distillation into d,l-menthol said menthol isomers and said hydrogenated by-products, and recovery substantially pure d,l-menthol.

3,960,971

PROCESS FOR PREPARING ALLYLIC ALCOHOLS

William E. Smith, Schenectady, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Mar. 13, 1974, Ser. No. 450,586
Int. Cl.² C07C 29/00
U.S. Cl. 260—638 R 4 Claims

1. A vapor phase process for preparing an allylic alcohol which comprises reacting an allylic ester of a lower carboxylic acid selected from the group consisting of allyl acetate, methallyl acetate or crotyl acetate with a lower alkanol in the presence of a transesterification catalyst which is a mixture of magnesium oxide, magnesium hydroxide and manganese oxide at a temperature of from about 100°C to about 250°C.

3,960,972

ALKENOL PRODUCTION

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

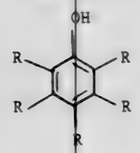
Filed Feb. 14, 1975, Ser. No. 549,889
Int. Cl.² C07C 29/00
U.S. Cl. 260—638 R 6 Claims

1. A process for the production of alkenols or cycloalkenols which comprises reacting

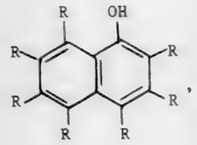
a. at least one olefinic compound selected from the group consisting of alkenes and cycloalkenes having from 3 to 20 carbon atoms per molecule and at least one allylic hydrogen with

b. formaldehyde in the presence of

c. a yield-promoting amount ranging from about 0.5 to about 50 percent by weight based on formaldehyde charged to the reaction of at least one phenolic compound selected from the group consisting of phenols, 1-naphthols, and 2-naphthols having the general formula

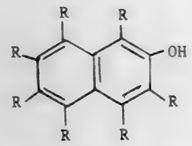


,



,

and



wherein R is selected from hydrogen, halogen, alkyl, and alkoxy radicals having 1 to 10 carbon atoms, with the further proviso that the phenol contain a total of from 6 to 36 carbon atoms per molecule and that positions 2-, 4-, and 6- on the ring must be occupied by a substituent other than hydrogen, said reacting being effected under reaction conditions including an elevated temperature and pressure sufficient to produce alkenols or cycloalkenols.

3,960,973

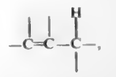
ALKENOL PRODUCTION

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 28, 1974, Ser. No. 484,261
Int. Cl.² C07C 29/00
U.S. Cl. 260—638 R 11 Claims

1. A process for the production of alkenols and cycloalkenols which comprises reacting:

a. at least one alkene or cycloalkene having at least one allylic hydrogen having the basic structure



and having from 3 to 20 carbon atoms per molecule with

b. formaldehyde in the presence of

c. a Group VIB metal carbonyl catalyst selected from the group consisting of chromium, molybdenum, and tungsten metals under reaction conditions including an elevated temperature and pressure sufficient to produce alkenols and cycloalkenols.

3,960,974

4-HALO-2,3,5,6-DIBENZOBICYCLO[5.1.0]OCTANE

Edward L. Engelhardt, Gwynedd Valley, and David C. Remy, North Wales, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 310,188, Nov. 28, 1972, which is a continuation-in-part of Ser. No. 93,494, Nov. 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 834,601, June 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 662,881, Aug. 24, 1967, abandoned, said Ser. No. 310,188, is a continuation-in-part of Ser. No. 59,671, July 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 662,882, Aug. 24, 1967, abandoned. This application Jan. 14, 1975, Ser. No. 540,912
Int. Cl.² C07C 25/18
U.S. Cl. 260—649 R 1 Claim

1. 4-chloro-2,3,5,6-dibenzobicyclo[5.1.0]octane.

3,960,975

MAGNESIUM CHROMITE DEHYDROGENATION CATALYST

Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed June 3, 1974, Ser. No. 475,608
Int. Cl.² B01J 23/26
U.S. Cl. 252—465 2 Claims

1. A catalyst for use in cyclic dehydrogenation consisting of a compound of the formula, $MeAl_xCr_{2-x}O_4$, where Me is Mg or Mg and one or more of the divalent ions of Ca, Sr, Ba, Fe, Mn, Co, Ni, Cu, Zn, or Cd, provided that Mg comprises at least 50 atomic percent of said Me ions and x is a number of from more than 0 up to less than 1 and the atomic ratio of Al:Cr is 0.04 to 0.8.

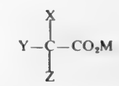
3,960,976

METHOD FOR THE SEPARATION OF HYDROCARBONS

Yoshiaki Suzuki, Machida; Hajime Mori, and Takemi Nakanome, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed June 5, 1973, Ser. No. 367,295
Claims priority, application Japan, June 5, 1972, 47-55745; June 26, 1972, 47-63780; July 6, 1972, 47-67737; July 13, 1972, 47-70253; Aug. 2, 1972, 47-77400
Int. Cl.² C07C 7/01
U.S. Cl. 260—674 R 42 Claims

1. A method for separating hydrocarbons which comprises reacting a mixture containing hydrocarbons under substantially anhydrous conditions with a trihalogenoacetate of the formula



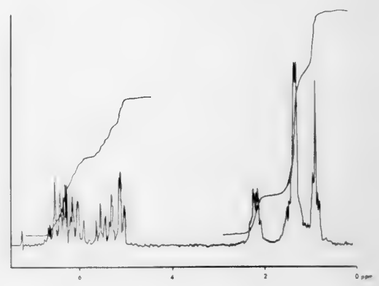
wherein X, Y and Z each represents a halogen atom and M represents a monovalent metal of Group Ib to form complexes, separating the formed complexes as a solid from the mixture which also contains non-complexed hydrocarbons by distillation, and then decomposing the solid complexes by bringing the same into contact with water to separate the desired hydrocarbons, wherein said hydrocarbons are selected from the group consisting of aromatic hydrocarbons substituted by hydrocarbyl groups and condensed polycyclic hydrocarbons.

3,960,977

PROCESS FOR THE PREPARATION OF POLY-UNSATURATED HYDROCARBONS

Ferdinand Naf, Geneva; Gunther Ohloff, Bernex-Geneva, and Albert Eschenmoser, Kusnacht, all of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Filed May 24, 1974, Ser. No. 473,087
Claims priority, application Switzerland, June 7, 1973, 8247/73
Int. Cl.² C07C 11/21
U.S. Cl. 260—677 R 3 Claims



1. Process for the preparation of undeca-1,3trans,5cis-triene, which comprises

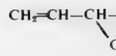
a. adding an organo-metallic compound of formula

$$CH_3-(CH_2)_4-\overset{cis}{CH=CH}-Me \qquad VI$$

wherein Me represents

1. an alkali metal; or
2. a radical consisting essentially of a transition metal and an univalent cation

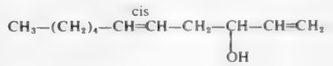
to a compound of formula



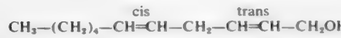
VII;

at a temperature below about room temperature,

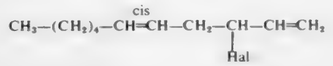
b. halogenating the thus obtained alcohols of formula



and of formula



to obtain a halo-derivative of formula



and of formula



and subsequently

(c) dehydrohalogenating the thus obtained halo-derivatives to give pure undeca-1,3trans,5cis-triene.

3,960,978

CONVERTING LOW MOLECULAR WEIGHT OLEFINS OVER ZEOLITES

Edwin N. Givens, Pitman; Charles J. Plank, Woodbury, and Edward J. Rosinski, Deptford, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sept. 5, 1974, Ser. No. 503,420
The portion of the term of this patent subsequent to Aug. 6, 1991, has been disclaimed.
Int. Cl.² C07C 3/20
U.S. Cl. 260—683.15 R 12 Claims

1. A process for producing a gasoline fraction having therein no more than about 20% by weight of aromatics, said process comprising contacting a C_2-C_5 olefin, mixtures thereof or mixtures thereof with paraffins having from 1 to 5 carbon atoms with a crystalline aluminosilicate zeolite selected from the group consisting of ZSM-5 and ZSM-11 and having an α-value of from about 0.1 to about 120, at a WHSV of from about 0.1 to about 25 and at a temperature of from about 500°F to about 900°F, whereby said gasoline fraction containing predominantly higher olefins is obtained.

3,960,979

HIGH SOLIDS CAN COATING COMPOSITIONS BASED ON EPOXY RESIN CROSSLINKING AGENT, FLEXIBILIZING POLYOL, CO-REACTIVE ACID CATALYST, AND SURFACE MODIFIER

Ram Tirth Khanna, Linden Heath, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 24, 1974, Ser. No. 536,323
Int. Cl.² C08L 63/00
U.S. Cl. 260—834 14 Claims

1. A high solids coating composition consisting essentially of

A. 30–65 parts by weight, based on the components (A), (B), (C), (D), and (E), of an epoxy resin containing at least two epoxy groups per molecule and having a molecular weight not exceeding 2,500;

B. 10–35 parts by weight, based on components (A), (B), (C), (D), and (E), of a nitrogen resin crosslinking agent;

C. 20–40 parts by weight, based on the components (A), (B), (C), (D), and (E), of a polyol, selected from the group consisting of: polyester polyol and polyether

polyol, having a minimum of two hydroxyl groups per molecule, a molecular weight range of 100–4000, and a hydroxyl number range of 15–560;

D. 0.5–10 parts by weight, based on the components (A), (B), (C), (D), and (E), of at least one acid catalyst capable of co-reacting with and becoming permanently bound to components (A) and/or (C) of said coating composition selected from the group consisting of

1. phosphoric acid;
2. an alkyl, cycloalkyl or aryl mono-ester containing up to and including 7 carbon atoms, of phosphoric acid; and
3. a mono-adduct of phosphoric acid and an epoxy resin containing at least two epoxy groups per molecule and having a molecular weight not exceeding 2,500; and

E. 0–2 parts by weight, based on the components (A), (B), (C), (D), and (E), of an acrylic polymer surface modifier containing 0.5–10% by weight, based on the weight of the polymer, of acrylic acid, methacrylic acid or itaconic acid.

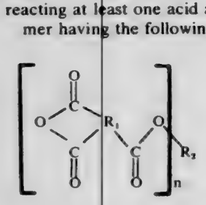
3,960,980
METHOD OF PRODUCING ELASTOMER RESINS

Toshio Yukuta; Takashi Ohashi, both of Kodaira; Yoshiko Taniguchi, Higashi-Murayama, and Masumi Saito, Tanashi, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 307,408, Nov. 17, 1972, abandoned. This application Dec. 16, 1974, Ser. No. 533,220
Claims priority, application Japan, Nov. 22, 1971, 46-93785
Int. Cl.² C08G *45/06, 45/12*
U.S. Cl. 260—835 **7 Claims**

1. A method for producing elastomer resins which comprises

reacting at least one acid anhydride group functional polymer having the following formula



wherein R_1 is a trivalent group having at least two carbon atoms, R_2 is a hydroxyl group functional polymer residue and n is an integer of at least 2, which is prepared by reacting a hydroxyl group functional polymer having a number average molecular weight of 400 to 10,000 and containing at least two hydroxyl groups at the ends or the side chains with a tricarboxylic acid anhydride monohalide,

with at least one bifunctional nitrogen compound having primary amino groups as a chain extender at an equivalent ratio of said acid anhydride group to nitrogen group of 1:1

at a temperature of 40°–200°C to form a carboxyl-functional polymer and

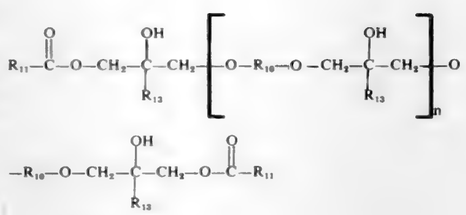
then reacting said carboxyl-functional polymer with at least one epoxy resin having at least two epoxy groups.

3,960,981
MIXTURES OF VINYL ESTER RESINS

Silvio Vargiu, Sesto S. Giovanni (Milan); Edoardo Carpaneti, Genoa Bolzaneto, and Beppino Passalenti, Milan, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Dec. 27, 1974, Ser. No. 536,737
Claims priority, application Italy, Dec. 28, 1973, 32341/73
Int. Cl.² C08L *63/10*
U.S. Cl. 260—837 R **5 Claims**

1. An unsaturated organic solvent solution of a mixture of polyesters comprising a first polyester of the formula:



wherein:

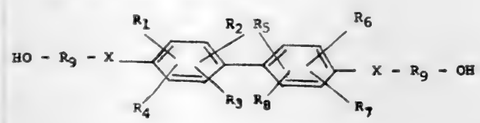
n is an integer from 0 to 15,

R_{13} is a radical selected from the group consisting of H and CH_3,

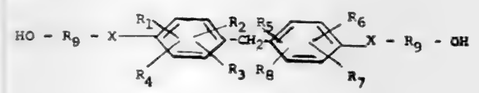


is a member of the group consisting of ethylenically unsaturated monocarboxylic acids and monoesters ethylenically unsaturated dicarboxylic acids,

R_{10} is the organic radical of a glycol HO-R_{10}-OH selected from the group consisting of:



and



wherein:

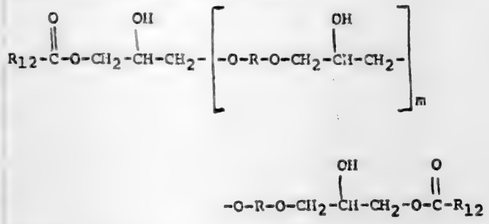
R_1 is chlorine or bromine;

R_2, R_3, R_4, R_5, R_6, R_7, R_8 are radicals selected from the group consisting of hydrogen, bromine and chlorine radicals,

X is selected from the group consisting of the NH radical and oxygen,

R_9 is a radical selected from the group consisting of alkyl and oxyalkyl radicals containing 2 to 8 carbon atoms;

and a second polyester of the formula:



wherein:

m is an integer from 0 to 20

R is the bisphenyl radical corresponding to the bisphenol A



is a member of the group consisting of ethylenically unsaturated monocarboxylic acids and monoesters of ethylenically unsaturated dicarboxylic acids

said first polyester being present in the solution in a weight ratio of said first polyester to said second polyester of from 1:100 to 30:100.

3,960,982
THERMOSETTING RESINS

Shunichi Numata, Hitachi; Hitoshi Yokono, Katsuta; Junji Mukai, Hitachi; Tadashi Muroi, Kokubunji; Mineo Nakano, and Mikio Manabe, both of Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., both of Japan

Filed June 18, 1974, Ser. No. 480,474
Claims priority, application Japan, June 21, 1973, 48-70596
Int. Cl.² C08L *61/34, 61/08*
U.S. Cl. 260—838 **9 Claims**

1. A thermosetting resin mixture composition which comprises a first thermosetting resin prepared by reacting with a formaldehyde source selected from the group consisting of formaldehyde, paraformaldehyde, trioxane, and polyoxymethylene in the presence of a basic catalyst a modified novolak-type resin obtained by reacting a mono or multi-valent phenolic compound having at least two active hydrogen atoms with an aralkyl ether or alcohol represented by the general formula $R(CH_2OR')_n$ or an aralkyl halide represented by the general formula $R(CH_2X)_n$, wherein R is a group selected from phenyl, diphenyl ether, diphenyl methane, diphenyl ketone, diphenyl sulfone and naphthalene groups and substituted groups thereof, R′ is a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, X is a halogen atom, and n is 2 to 3, and a second thermosetting resin prepared by blending the above-mentioned modified novolak-type resin with hexamethylenetetramine, the amount of said first resin being 20 to 80 parts by weight, and the amount of said second resin being 80 to 20 parts by weight.

3,960,983
COMPOSITION OF MATTER COMPRISING A BLEND OF A POLYETHER POLYOL AND AN AMINOPLAST CROSS-LINKING AGENT

Werner Josef Blank, Wilton, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 331,406, Feb. 12, 1973, abandoned. This application Dec. 6, 1974, Ser. No. 530,459
Int. Cl.² C08L *61/28*
U.S. Cl. 260—839 **15 Claims**

1. A composition of matter comprising a water-dilutable blend of (A) from about 10% to about 90% of a water-dilutable, polyether polyol resin, containing only carbon, hydrogen and oxygen atoms and optionally a halogen atom, having an average molecular weight between about 250 and about 2,000, having at least two alcoholic hydroxy groups, having from about 80% to about 20%, by weight, of hydrophobic moieties derived at least in part from aromatic or cycloaliphatic materials and correspondingly from about 20% to about 80%, by weight, of hydrophilic moieties consisting of $-(CH_2CH_2-O-)$ units and (B) correspondingly from about 90% to about 10%, by weight, of a compatible aminoplast cross-linking agent having an average molecular weight not greater than 1,000.

3,960,984
COMPOSITION OF OXYMETHYLENE POLYMER AND AMIDE OLIGOMERS

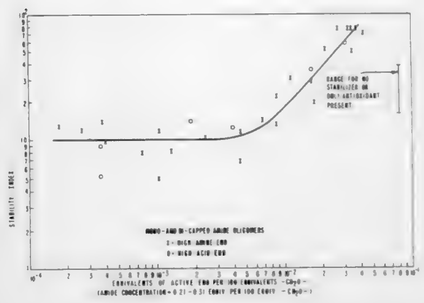
Melvin Ira Kohan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 16, 1974, Ser. No. 461,388
Int. Cl.² C08L *77/02*
U.S. Cl. 260—857 F **19 Claims**

1. A composition of matter comprising

A. 90% to 99.99% by weight of an oxymethylene homopolymer or copolymer comprised of at least 60% by weight of oxymethylene segments, and

B. 10 to 0.01% by weight a dicapped amide oligomer having a molecular weight of between 800 to 10,000 wherein the active ends of said oligomer constitute no more than 0.02



mole percent of the formaldehyde segments in said homopolymer or copolymer.

3,960,985
POLYPHENYLENE ETHER-RESIN COMPOSITIONS WITH ORGANOPOLYSILOXANES HAVING SILICON-H-BONDS

Glenn D. Cooper, Delmar, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Feb. 8, 1974, Ser. No. 440,759
Int. Cl.² C08L *71/04, 25/06, 83/06*
U.S. Cl. 260—874 **16 Claims**

1. A thermoplastic molding composition which comprises:

A. from 20 to 80 parts by weight of a polyphenylene ether resin;

B. from 80 to 20 parts by weight of an alkenyl aromatic resin; and

C. from 0.25 to 2 parts by weight of an organopolysiloxane of the formula

$$(R')_a(H)_bSiO_{\frac{4-a-b}{2}}$$

wherein R′ is an organic radical attached to silicon through silicon-carbon linkages, a has a value of 1.0 to 2.5, inclusive; b has a value of from 0.005 to 2.0, inclusive; and the sum of a plus b is equal to from 1.005 to 3.0, inclusive.

3,960,986
IMPACT-RESISTANT MOLDING COMPOSITIONS CONTAINING POLYVINYL CHLORIDE

Friedrich Heichele; Georg Vojtechovsky; Georg Hollenbach; Klaus Adler, and Johann Bauer, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed July 3, 1974, Ser. No. 485,325
Claims priority, application Germany, July 13, 1973, 2335734
Int. Cl.² C08L *51/00, 23/00, 91/06*
U.S. Cl. 260—876 R **3 Claims**

1. A molding composition giving a homogenous molded form having a high resistance to impact consisting essentially of

A. from 40% to 70% by weight of a polyvinyl chloride having a K-value of from 55 to 70,

B. from 26% to 56% by weight of a vinyl chloride grafted copolymer of ethylene and vinyl acetate, said copolymer having a content of from 30% to 55% by weight of vinyl acetate units and a Mooney viscosity of from 20 to 50, said vinyl chloride grafted copolymer having a content of from 5% to 15% by weight of said copolymer units and a K-value of from 55 to 70, and

C. from 1% to 4% by weight of a copolymer of ethylene and vinyl acetate having a content of from 60% to 70% by

weight of vinyl acetate units and a Mooney viscosity of 10 to 70.

3,960,987

PROCESS FOR PRODUCING HIGH MELT FLOW POLYOLEFIN POLYMERS

Joseph M. Kelley, Westfield, and John J. Miskel, Jr., Mendham, both of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 376,264, July 3, 1973, abandoned, which is a continuation of Ser. No. 684,594, Nov. 13, 1967, abandoned, which is a continuation-in-part of Ser. No. 369,417, May 22, 1964, abandoned. This application Sept. 23, 1974, Ser. No. 508,137

Int. Cl.² C08F *2/02, 2/06, 2/38, 297/08*

U.S. Cl. 260—878 B **3 Claims**

1. A polymerization process for preparing a waxy block copolymer of propylene which consists essentially in polymerizing (said) propylene in liquid form employing as a catalyst a crystalline titanium trichloride cocrystallized with aluminum chloride and diethylaluminum monochloride as a cocatalyst, said polymerization being carried out at a rate of at least 300 pounds of polymer per pound of catalyst per hour based on the titanium trichloride and in the presence of a hydrogen partial pressure of about (300) 150 psia to about 1000 psia and at a reaction pressure of about 375 psia to about 5000 psia sufficient to maintain said propylene in liquid form during said polymerization to produce a homopolymer having an inherent viscosity of from 0.05 to 0.7 in decalin at 145°C and a melt flow of from 1000 to 5000 gms/10 min. as determined by ASTM D-1238-62T at 230°C using a load of 2160 grams, contacting said homopolymer which still contains active catalyst residues with at least one additional alpha-olefin monomer to form a subsequent polymer block attached to said homopolymer selected from the group of polyethylene (or) and a random ethylene-propylene copolymer and recovering from said polymerization a waxy block copolymer having a melt flow ranging from 40 to 400 gms/10 min. as determined by ASTM-D-1238-62T at 230°C using a load of 2160 grams.

3,960,988

VULCANIZATION OF BROMOBUTYL

Eric George Kent, and John Walker, both of Sarnia, Canada, assignors to Polysar Limited, Ontario, Canada

Continuation-in-part of Ser. No. 396,146, Sept. 11, 1973. This application Nov. 22, 1974, Ser. No. 526,254

Int. Cl.² C08L *9/00, 47/00*

U.S. Cl. 260—879 **7 Claims**

1. A composition vulcanizable by the action of heat which comprises 100 parts by weight of a halogenated polymer of an isoolefin, from about 5 to about 50 parts by weight of a monomeric organic compound and 0.1 to 5 parts by weight of a free radical organic peroxidic curing agent, said halogenated polymer of an isoolefin being a polymer containing, based on hydrocarbon content, from 85 to 99.5 weight percent of an isoolefin having from 4 to 8 carbon atoms and from 0.5 to 15 weight percent of a conjugated diolefin having from 4 to 8 carbon atoms, and having been treated to contain a halogen selected from chlorine and bromine, said halogen being present in said polymer up to 1 atom of chlorine or up to 3 atoms of bromine per carbon-carbon double bond in said polymer, said monomeric organic compound having at least two polymerizable ethylenically unsaturated groups and being curable by said curing agent.

3,960,989

COLLOIDAL SOL ANTIMONY PENTAOXIDE FLAMEPROOFING COMPOSITIONS

Henry G. Petrow, 33 Concord Ave., Cambridge, Mass. 02138, and Robert J. Allen, 130 Adams Ave., Saugus, Mass. 01906

Division of Ser. No. 212,375, Dec. 27, 1971, Pat. No. 3,860,523. This application Nov. 21, 1974, Ser. No. 526,058

Int. Cl.² C08J *3/20*

U.S. Cl. 260—884 **6 Claims**

1. A flame retardant comprising a colloidal sol of Sb_2O_5 having colloidal particle size ranging from substantially 20 Angstroms to 1/10 micron and in which an effective amount of a halogen is added.

2. A flame-retardant as claimed in claim 1 and in which the ratio of halogen-to-antimony lies within the range of from substantially 1–4 to 20–1.

3. A flame-retardant as claimed in claim 2 and in which the halogen is chlorine.

4. A flame-retardant as claimed in claim 3 and in which the chlorine is contained in a compound selected from the group consisting of polyvinyl chloride, polyvinylidene chloride, and copolymers and mixtures of the same.

3,960,990

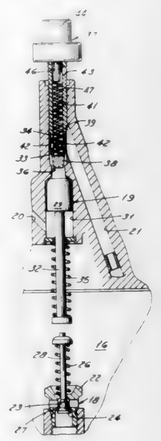
CARBURETOR POWER VALVE CONTROL APPARATUS

Gerald B. Bishop, Dearborn, and David J. Gladden, Garden City, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 5, 1974, Ser. No. 490,161

Int. Cl.² F02M *1/10*

U.S. Cl. 261—39 A **1 Claim**



1. Power valve control apparatus for a carburetor having an induction passage, a fuel bowl, fuel passage means interconnecting said fuel bowl and said induction passage, an air cleaner positioned on said carburetor over said induction passage,

power valve means opening into said fuel passage from said fuel bowl,

said power valve means having an element movable to open and close said fuel passage,

a vacuum motor for displacing said movable element in response to changes in intake manifold vacuum,

said vacuum motor comprising a first bore formed in the carburetor housing,

a piston slidably received within said first bore,

said piston having one side subject to a vacuum signal and the other side subject to more nearly atmospheric pressure,

said piston being constructed to permit air flow from the atmospheric side of the piston to the vacuum side,

said piston including an element extending into said fuel bowl and being engageable with the movable element of said power valve means,

a variable volume chamber within said first bore on one side of said piston,

a second bore axially aligned with said first bore leading from said chamber,

said second bore and said first bore separated by a reduced diameter portion,

a thermostatic valve assembly including a stem portion received within said second bore,

the end of said stem portion being tapered and received within said reduced diameter portion,

said stem portion being axially displaceable relative to said reduced diameter portion to vary the effective opening between said first bore and said second bore,

an air bleed passage axially formed within said stem portion in communication with said second bore,

a port formed in said stem portion communicating the air bleed passage and the interior of the air cleaner,

said port, air bleed passage and bore communicating said chamber with the interior of said air cleaner,

said valve assembly including a temperature sensitive power means having a movable element axially slidable within said air bleed passage to progressively open and close said port in response to changes in air temperature within the air cleaner.

3,960,991

ROTARY AERATOR

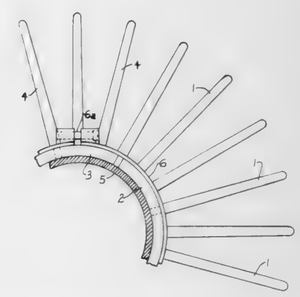
Walti Schmitt, Wiesbaden-Biebrich, and Philipp Kreiner, Taunusstein-Hahn, both of Germany, assignors to Passavant-Werke Michelbacher Hutte, Germany

Filed June 3, 1974, Ser. No. 475,953

Claims priority, application Germany, July 25, 1973, 2337804

Int. Cl.² F24F *5/00;* **B05B** *3/12*

U.S. Cl. 261—92 **16 Claims**



1. An elongated horizontal rotor for introducing gases into fluids comprising:

a. a plurality of axially arranged hub members mounted in close sequence along the axial length of the rotor and extending transversely of the axis of rotation of the rotor and being formed of a synthetic plastic material with each hub member comprising segments of a cylindrical sleeve-like member connected to each other,

b. a plurality of radially extending, synthetic plastic agitator elements molded integrally with each said hub member to form an integral star-shaped unit,

c. means detachably interlocking adjacent vertical faces of said hub members to each other, and

d. clamping means detachably connecting said hub members to said rotor.

3,960,992

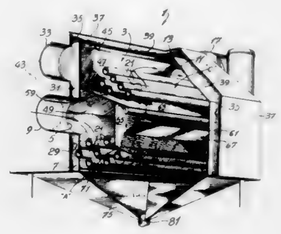
COMBINATION FLUE GAS SCRUBBER AND HEAT EXCHANGER UNIT

Henri-Paul Cyrenne, 34, Boulevard de l'Artisan, Victoriaville, Quebec, Canada

Filed Aug. 22, 1974, Ser. No. 499,526

Int. Cl.² B01D *47/06;* **B01F** *3/04*

U.S. Cl. 261—152 **7 Claims**



1. A combination flue gas scrubber and heat exchanger unit comprising:

a. an inner closed casing having a flue gas inlet end wall and a flue gas outlet end wall spaced from one another; side walls between said end walls; a top wall joining said side and end walls and a bottom wall shaped as a water collecting basin and joining said side and end walls;

b. chamber defining means in said casing comprising: lateral walls extending fully between said end walls in inwardly spaced relationship with said casing side walls and terminating short of said top and bottom walls to define flue gas lateral passages communicating at the lower ends thereof with said water collecting basin; an upper wall over and joining said lateral walls and said end walls to define an upper chamber in communication with the upper ends of said lateral passages and an open-bottom inner chamber in communication with said water collecting basin and the lower ends of said lateral passages;

c. flue gas inlet means at said flue gas inlet end wall feeding hot flue gases into said inner chamber and flue gas outlet means at said flue gas outlet wall drawing cooled flue gases out of said upper chamber;

d. baffle members mounted in succession in said lateral passages to force said flue gases to follow a tortuous path between said lower and upper chambers, each baffle having a free outer edge overlapping the outer edges of adjacent baffle members;

e. water sprinkling means mounted, in each lateral passage, on the upper one of said successive baffle members therein beneath the outer edge thereof sprinkling water over the outer edges of the succeeding baffle members whereby to form water curtains in said passages for the scrubbing of said flue gases, the water from said curtains dripping into said water collecting basin;

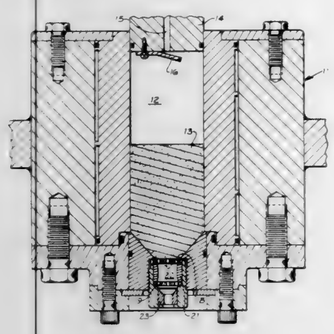
f. water feed means joining said basin and said sprinkling means to supply water to said sprinkling means, and

g. air conduit means including air conduits extending across said lower and upper chambers for heat exchange between air flowing therethrough and flue gases passing through said chambers and around said conduits.

3,960,993
METHOD FOR EXTRUDING SOLVENTLESS GUN POWDER

Craig E. Johnson, Indian Head, and John R. Luense, Marlow Heights, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 27, 1975, Ser. No. 553,719
Int. Cl.² C06B 21/00
U.S. Cl. 264—3 B **4 Claims**



1. A process for increasing the tensile strength of solventless gun powder comprised, by weight, of about 46 percent nitrocellulose, about 38 percent metriol tri-nitrate, and about 3 percent of tri-ethylene glycol di-nitrate, with the balance being plasticizers and stabilizers, which process comprises the steps of

first extruding said solventless gun powder through a multi-hole plate,

then reforming said solventless gun powder into a mass,

then again extruding said solventless gun powder through a multi-hole plate,

then again reforming said solventless gun powder into a mass, and

finally extruding said solventless gun powder through a single hole die to form a single strand of solventless gun powder having increased tensile strength wherein said steps are carried out in a vacuum press under a vacuum condition.

3,960,994
PREPARATION OF HIGH TEMPERATURE GAS-COOLED REACTOR FUEL ELEMENT

Ronnie A. Bradley, Oak Ridge, and John D. Sease, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

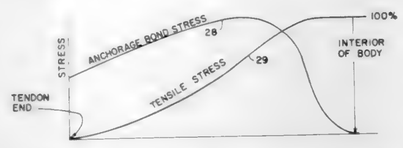
Filed Nov. 26, 1974, Ser. No. 527,470
Int. Cl.² G21C 21/00
U.S. Cl. 264—.5 **2 Claims**

1. An improved method for making nuclear fuel composites comprising the steps of loading a plurality of respective graphite tubes with a plurality of respective green compacts consisting of a dispersion of a nuclear fuel oxide or carbide microspheres coated with pyrolytic carbon within a pitch matrix, inserting graphite plugs into both ends of each respective graphite tube after said loading step, placing said tubes in an open container, inserting said container into an autoclave, after which the pressure within said autoclave is raised to a selected pressure in the range 5,000–15,000 psi at room temperature using argon gas, heating said autoclave after the selected pressure has been reached at about 100°C/hour to a temperature of 700°C while at the same time venting said gas to maintain said selected pressure, maintaining said 700°C temperature and said selected pressure for about 2 hours to assure equilibrium temperature in the tubes and to allow carbonization of the matrix pitch to reach completion, then cooling said autoclave under pressure to room temperature, removing said pressure and then removing said container from said autoclave, placing said container in a furnace where the tubes in said container are heated in an argon atmosphere to 1800°C, and finally, after cooling, removing the heat-treated fuel compacts from the graphite tubes.

3,960,995
METHOD FOR PRESTRESSING A BODY OF CERAMIC MATERIAL

Jacques P. Kourkene, 27057 Horseshoe Lane, Los Altos Hills, Calif. 94022

Continuation of Ser. No. 37,417, May 13, 1970, abandoned, which is a continuation of Ser. No. 639,532, May 18, 1967, abandoned. This application Apr. 17, 1972, Ser. No. 244,977
Int. Cl. B28b 23/04
U.S. Cl. 264—27 **33 Claims**



1. A method for producing a prestressed ceramic body with an elongate tendon, comprising the steps of:

a. positioning said tendon in said body, said tendon having a greater coefficient of linear thermal expansion than the material of said body,

b. elevating the temperature of said tendon and the region of said body immediately surrounding said tendon to at least the softening temperature of the material of the body so that said tendon elongates and undergoes differential thermal expansion with respect to said body,

c. lowering the temperature of said tendon and the region of said body immediately surrounding said tendon so that said tendon contracts with a minimum degree of slippage with respect to said body during and after the resolidification of said region to thereby generate a bond stress anchorage between said tendon and said body to prestress said ceramic body, said tendon seeking to contract with respect to said body as a result of its greater coefficient of linear thermal expansion as respects said body, said bond stress anchorage developing the entire tensile force in said tendon.

3,960,996
METHOD OF INJECTION MOLDING A THERMOPLASTIC ARTICLE HAVING A CELLULAR CORE AND INTEGRAL SKIN INVOLVING USE OF RECLAIMED MATERIAL

Anguel Tonchev Balevski; Ivan Dimov Nikolov; Asparuh Mihailov Antonov, and Stefan Georgiev Semerdjiev, all of Sofia, Bulgaria, assignors to Institut po Metaloznanie i Technologia na Metalite, Sofia, Bulgaria

Filed Sept. 21, 1973, Ser. No. 399,512
Int. Cl.² B29D 27/00; B29F 1/04
U.S. Cl. 264—37 **2 Claims**

1. A method of producing thermoplastic bodies with a cellular core and an integral skin, comprising the steps of:

a. forcing a plasticated foamable non-expanded thermoplastic material in a liquid state into a vertical cylinder at a pressure sufficiently high to prevent foaming;

b. then injecting said foamable non-expanded thermoplastic material in a liquid state into a closed mold cavity against a gas counter-pressure sufficiently high to prevent foaming;

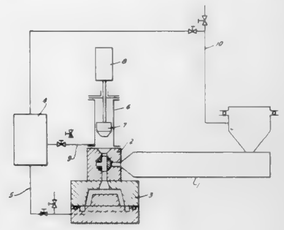
c. allowing a surface portion only of said foamable non-expanded thermoplastic material injected in step (b) to solidify under pressure so as to take on the shape of said mold cavity and form a compact skin;

d. relieving the pressure from said foamable thermoplastic material subsequent to step (c) so as to allow the foaming of the still unsolidified remainder of said material in the interior of the mold cavity, releasing an excess of the foaming material out of said mold cavity into said vertical cylinder, and thereby completing the formation of a molded body in said mold cavity;

e. removing the molded body from said mold cavity;

f. recompressing said excess foamed material within said vertical cylinder for use as a second charge in a next subsequent molding cycle;

g. forcing a further quantity of plasticated foamable but non-expanded thermoplastic material into said vertical cylinder against the recompressed material of step (f) at a pressure sufficiently high to prevent foaming;



h. injecting the material stored in said vertical cylinder into said closed mold cavity against a gas counterpressure sufficiently high to prevent foaming by first introducing into the mold cavity fresh non-expanded material from the lower part of the vertical cylinder and finally filling the body so that cavity with the recompressed foamed material from the previous molding and as stored in the upper part of the vertical cylinder, the latter filling only part of the interior of the molded body causing no damage to its surface;

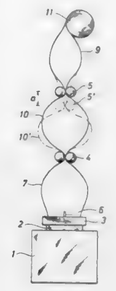
i. repeating the steps from (c) to (h) to produce a succession of molded bodies, said mold cavity being charged with 50 to 90 percent of its volume with plasticated unfoamed thermoplastic material for each of said bodies, the remainder of the volume of said mold cavity being filled up with recompressed excess foamed material from the previous molded body.

3,960,997
METHOD OF MANUFACTURING BIAXIALLY STRETCHED SHRINK FOILS AND AN APPARATUS FOR CARRYING THE METHOD INTO EFFECT

Leif Brunswig Sorensen, Horsens, Denmark, assignor to Horsens Plastic A/S, Horsens, Denmark

Continuation-in-part of Ser. No. 284,542, Aug. 29, 1972, abandoned. This application June 24, 1974, Ser. No. 482,673
Claims priority, application Denmark, Aug. 31, 1971, 4263/71
Int. Cl.² B29D 7/24, 23/04
U.S. Cl. 264—40 **10 Claims**

1. A method of biaxially orienting plastic material comprising the steps of extruding a length of molten orientable plastic material in tubular form from the orifice of an extruder and passing the extruded length between opposing rollers of each of a first set and a second set of roller pairs of which the opposing rollers of at least said first pair are sufficiently separated that the tubing length is not pinched closed by the separated rollers, said first and second sets of roller pairs being spaced-apart and movable relative to the extruder orifice in the direction of the extruded tubing length with said first set being nearest said extruder orifice, introducing gas under pressure into the interior of said extruded length of tubing from within the orifice of said extruder and directing cooling air toward said first set of roller pairs along the exterior wall of the molten tubing leaving said extruder orifice to cool the tubing to an orientable temperature, clamping together the separated, opposing rollers and pinch closed the gas filled tubular length at the respective spaced-apart roller set locations to form a plurality of bubbles in the length of tubing of which a first bubble lies between said extruder orifice and the first set of said roller pairs and a second bubble lies between said two sets of roller pairs, rotating the rollers of each set of roller pairs at different velocities with the rollers of the second set of roller pairs rotating at a sufficiently higher velocity than the rollers of said first set that the tubing between said two sets of rollers is stretched in its lengthwise dimension a predetermined amount, adjusting the distance between said first set of



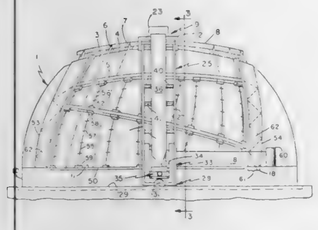
roller pairs and said extruder orifice such that said first bubble is cooled an amount to establish said second bubble at an optimum temperature for orientation stretching and decreasing the distance between said two sets of roller pairs to a shortened optimum spacing as will increase the pressure of the gas within said second bubble an amount to expand the bubble to that predetermined diameter as will stretch the tube an amount in its transverse dimension to create a predetermined ratio between the amount of stretch established in the lengthwise and in the transverse dimensions of the fully stretched tube, and maintaining that optimum spacing between said first set of roller pairs and said extruder orifice and between said two sets of roller pairs as will maintain said second bubble optimum orientation temperature and will maintain said predetermined second bubble diameter while continuing to extrude said length of tubing passing through said sets of rollers clamped thereon.

7. An apparatus for biaxially orienting plastic material comprising an extruder from the orifice of which a length of molten orientable plastic tubing is extruded, two sets of pairs of rollers spaced from said extruder orifice at different distances in line with said tubing length, each said set of rollers including a pair of opposing rollers mounted for movement toward and away from each other between a retracted position at which a sufficient space exists between the rollers of said tubing length to pass therethrough without being pinched closed and a clamped position in which the rollers are tightly pressed together to pinch closed the tubing length therebetween, means within the orifice of said extruder for introducing a gas under pressure into the interior of the length of tubing extruded therefrom, means circumscribing said tubing immediately adjacent said extruder orifice for blowing cooling air along the exterior surface of said tubing in the direction of said first set of roller pairs, means for rotating the rollers of each set of rollers at a predetermined and different velocity, the rollers of the set of rollers most remote from said orifice rotating at a higher velocity than the other set of rollers nearest the extruder, and means supporting each of said roller sets for movement of each said set along the length of the tubing toward or away from said extruder orifice and adjusting the location of said roller sets to give optimum orientation of the

tubing being drawn into a film between the rollers of said sets, said support means supporting at least one of said roller sets within a cut-out in a platform supported for movement relative to the other roller set by a plurality of threaded rods extending through holes in said platform.

3,960,998
METHOD FOR PRODUCING LARGE RIGID FOAM PANELS

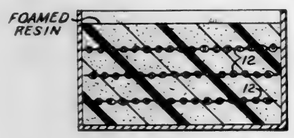
Samuel B. Allen, B-2 Gypsy Hill Road, Landenberg, Pa. 19350
Division of Ser. No. 879,802, Nov. 25, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 186,190
Int. Cl. B29D *27/04*
U.S. Cl. 264—45.1 **2 Claims**



1. A method for making relatively large rigid foam panels comprising, the steps of:
providing a form surface which defines the shape of the panel,
feeding frothing urethane foam onto a ribbon,
laying down a first length of the ribbon on the form surface with the foam coated side of the ribbon against the form surface,
laying additional lengths of the ribbon on the form surface in the same manner alongside the first length and side by side in courses sufficiently close in order that the foam coatings flow between the courses and cohere together while still tacky,
causing the foam to cure so that the courses of foam form an integral layer of rigid material and
removing the cured foam panel from the form surface.

3,960,999
METHOD OF PRODUCING REINFORCED FOAMED STRUCTURES

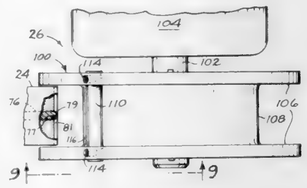
Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Nov. 11, 1974, Ser. No. 522,673
Int. Cl.² B29D *27/04*
U.S. Cl. 264—45.3 **6 Claims**



1. Method of producing a foamed thermosetting resinous structure having a plurality of layers of spaced reinforcement material positioned within its thickness comprising the steps of:
providing mesh-like reinforcement material;
covering the mesh-like reinforcement material with an absorbent covering material capable of absorbing the resin used to form the foamed structure so as to define a plurality of openings through the covered reinforcement material;
placing a plurality of layers of said absorbent covered reinforcement material in the bottom of a mold, the reinforcement material in each of said layers being positioned so that a liquid resin composition may pass through said openings;
adding sufficient quantity of a foamable liquid thermosetting resin composition to the mold for forming the desired foamed thermosetting resin structure;
allowing sufficient time for the absorbent covering material to become completely wetted by said liquid resin composition material; and
foaming and curing said liquid resin composition in the mold to cause it to lift said layers of reinforcement material and cause them to move away from each other and become embedded in spaced apart relationship in the foamed thermosetting resin structure.

3,961,000
METHOD OF MANUFACTURING A NESTING OR INTERLOCKING LOOSE-FILL CELLULAR PACKING MATERIAL

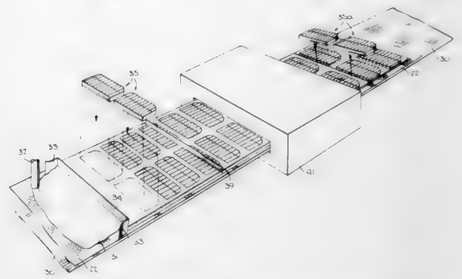
Richard L. Ropiequet, Portland, Oreg., assignor to Altainer Incorporated, Pico Rivera, Calif.
Continuation of Ser. No. 310,151, Nov. 28, 1972, abandoned. This application June 7, 1974, Ser. No. 477,298
Int. Cl.² B29D *27/00;* **; B29C** *17/10*
U.S. Cl. 264—45.5 **7 Claims**



1. A method of making low bulk density loose-fill packing material having a nesting or interlocking configuration from a molten expandable synthetic plastic composition, comprising the sequential steps of
a. continuously extruding said composition at a pressure exceeding atmospheric pressure through a die orifice into a region of atmospheric pressure with a lesser flow velocity adjacent the walls of the die bore leading to said die orifice and with such extrusion producing at said orifice, where it faces said region of atmospheric pressure, a protruding mass of said molten material bounded by a convex surface that extends from the perimeter of the orifice in a partial spherical sweep,
b. repetitively cutting off said protruding mass at said orifice as it continuously extruded and while the material is still substantially molten, with said cutting being along a path which is substantially linear as compared to said convex surface and at a rate sufficiently high relative to the average extrusion velocity to produce a plurality of thin severed sections each section having a thickness substantially less than the width thereof, said severed sections being bounded by said convex surface and an edge extending in a plane subtending said convex surface,
c. permitting said cut sections to expand under said atmospheric pressure and to cool and form foam plastic bodies having substantially continuous outer integral skins and hollow, substantially hemispherical configurations.

3,961,001
METHODS OF MAKING FOAMED POLYMER TRIM PADS FOR VEHICLE SEATS

Eugene J. Bethe, Mishawaka, Ind., assignor to Uniroyal Inc., New York, N.Y.
Filed July 12, 1974, Ser. No. 487,909
Int. Cl.² B29D *27/04*
U.S. Cl. 264—46.4 **15 Claims**

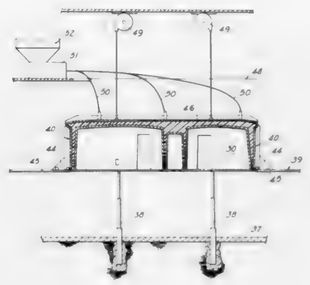


1. A process of producing a cured polymer foam articles having a crowned top surface free of congealed polymer skin, comprising the steps of:
a. laying a backing fabric onto a previous supporting surface;
b. depositing uncured no-gel polymer latex foam onto said backing fabric to at least a selected minimum height and over an area at least equal in size to that of the article to be produced;
c. placing into the deposited mass of said latex foam an open-top open-bottom peripherally closed frame having a height not greater than said selected minimum height of said deposited mass of latex foam;
d. scraping all excess amounts of said latex foam protruding above the top of said frame off the latter so as to make the top surface of that portion of said latex foam remaining within the confines of said frame coplanar with the top surface of the latter;
e. subjecting said remaining portion of said latex foam at both the top and the bottom surfaces thereof to dry heat at elevated temperatures for rapidly dehydrating and curing said latex foam; and
f. removing said frame from the cured body of latex foam.

3,961,002
METHOD OF BUILDING CONSTRUCTION USING SYNTHETIC FOAM MATERIAL

Clarence Eugene Brown, 211 Watson Blvd., Centerville, Ga. 31093
Continuation of Ser. No. 90,988, Nov. 19, 1970, abandoned. This application Jan. 31, 1973, Ser. No. 328,379
Int. Cl.² B29D *7/04;* **E04B** *5/32, 1/16*
U.S. Cl. 264—46.5 **1 Claim**

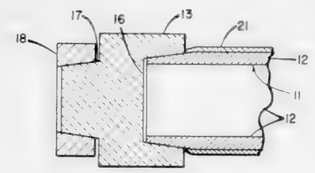
1. A method of constructing a building, wherein the building is formed as an integral unit of synthetic material, comprising the steps of:
forming a mold unit according to a pre-determined design by positioning separate rigid, one-piece room units relative to one another so as to define a first set of cavities therebetween, said room units including tapered wall portions for facilitating easy removal of said building, and a first set of openings within said wall portions adjacent said cavities;
positioning door frame means within said first set of cavities adjacent said first set of openings within said wall portions, said door frame means including flange means which is provided with a series of openings;
positioning additional door frame means adjacent a second set of openings within exterior wall portions of said room units, said additional door frame means having flange means which is provided with a series of openings;
positioning window frame means adjacent a third set of openings within exterior wall portions of said room units, said window frame means having flange means which is provided with a series of openings;
positioning additional mold structures adjacent to said mold unit so as to form a second set of cavities between said structures and said unit, in which are disposed said additional door frame means and said window frame means;
filling said first and second set of cavities with a synthetic polyurethane foam building material such that said material respectively envelops said flange means, and respectively penetrates said openings within said flange means



of said door frame means, said additional door frame means, and said window frame means, whereby said door frame means, said additional door frame means, and said window frame means will be securely anchored within said synthetic material when said material sets;
allowing said synthetic material to set; and
removing said mold unit and said mold structures from said set synthetic material so as to expose a building which includes interior wall portions and interior door openings formed within said first set of cavities, and exterior wall portions, exterior door openings, window openings, and a roof portion formed within said second set of cavities.

3,961,003
METHOD AND APPARATUS FOR MAKING ELONGATED SI AND SIC STRUCTURES

David L. Parsels, Carrollton, Ky., assignor to Dow Corning Corporation, Midland, Mich.
Continuation of Ser. No. 254,183, May 17, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,165
Int. Cl.² B29C *13/00;* **B28B** *7/28*
U.S. Cl. 264—81 **8 Claims**



1. A method of making a one-piece elongated structure of vapor deposited silicon or silicon carbide, said structure having at least one flat side in the direction of elongation, which method comprises
Forming a graphite mandrel having an axis by forming mating surfaces on the edges of a plurality of elongated graphite elements having equal lengths and having end portions at each end thereof, said end portions being transverse to the edges having said mating surfaces, at

least one of said elements being a flat slab all of the elements having an external surface facing away from the axis of the mandrel; placing the elements in the configuration of the structure desired with said mating surfaces in mated relationship, and securing the mated elements in mated position by a pair of collars surrounding and in intimate contact with the end portions of said mated elements,

Heating of the graphite mandrel to the range of 1,000°-2,000°C.

Depositing said silicon or silicon carbide on said external surface of said heated mandrel from the vapor phase, and

Removing the mandrel from the deposited material.

3,961,004

METHOD OF TABLETTING USING GLUCONOLACTONE AS THE DIRECT COMPRESSION DILUENT

Syed Shahid Nasir, Lahore, Pakistan, and Leon Otto Wilken, Jr., Auburn, Ala., assignors to Auburn Research Foundation, Auburn, Ala.

Filed Apr. 11, 1974, Ser. No. 459,961

Int. Cl.² B29B *1/032;* **A61K** *31/365*

U.S. Cl. 264—115 **11 Claims**

1. In a method for producing a tablet selected from the group consisting of pharmaceutical, confectionary, and lozenge by the direct compression method consisting essentially of mixing the ingredients with a compression diluent and compressing said ingredients and diluent directly on a tablet press without any modification in the particle size after mixing wherein the improvement is using gluconolactone in an amount sufficient to act as the direct compression diluent by itself.

3,961,005

SPHERICAL AGGLOMERATION OF ILMENITE

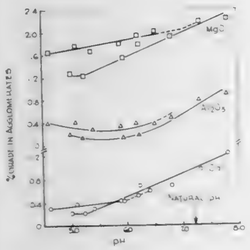
Bryan D. Sparks, Ottawa, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Aug. 28, 1972, Ser. No. 284,384

Claims priority, application Canada, Sept. 1, 1971, 121904

Int. Cl.² B01J *2/28*

U.S. Cl. 264—117 **13 Claims**



1. An agglomeration process for selective recovery of ilmenite from an aqueous suspension containing particulate ilmenite and siliceous gangue materials comprising

a. adding an acid to said suspension to lower the pH to about 4–5.5,

b. mixing in said suspension at least 10 lb/ton of said particulate materials of a hydrophobic organic collector containing polar groups which are selectively adsorbed by ilmenite, thereby rendering said particulate ilmenite hydrophobic,

c. adding a water-immiscible binder liquid to the mixture in an amount of about **100-200** lb/ton of said particulate materials,

d. agitating said mixture to cause said hydrophobic ilmenite solids to adsorb said binder liquid and thereafter form spherical ilmenite agglomerates, and

e. separating said ilmenite agglomerates from a residual aqueous suspension containing said siliceous materials.

3,961,006

PRODUCTION OF FLATS FOR CARDING MACHINES

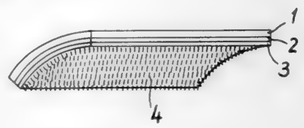
Curt Brandis, Bremen-St. Magnus, and Peter Müller, Bremen-Lesum, both of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Nov. 12, 1974, Ser. No. 523,152

Claims priority, application Germany, Dec. 14, 1973, 2362206

Int. Cl.² B29C *17/08;* **B29D** *3/00, 31/00*

U.S. Cl. 264—138 **4 Claims**



1. A method for producing a flat for use in carding machines, the flat being composed of a rigid support body with a flexible covering fastened thereto, the covering having one side facing the body and the covering further having a plurality of card wires projecting from the covering at a side thereof directed away from the rigid body and distributed across the covering, said method comprising the steps of: disposing a flexible covering, having plural projecting wires, adjacent a convex cylindrical surface with the projecting wires directed toward the surface, the convex surface being shaped to define the desired contour of the card wire tips; pressing the flexible covering toward the cylindrical surface to cause the tip of each of the card wires to touch the cylindrical surface; disposing an associated rigid support body radially spaced from a surface of the covering which is directed away from the cylindrical surface; filling the space between the flexible covering and the rigid body with a hardenable plastic mass, causing said mass to harden and causing said mass to become firmly attached to said rigid body and to said covering, while the flexible covering is being pressed against the cylindrical surface; and then removing the resulting flat from the cylindrical surface.

3,961,007

CONTINUOUS PROCESS FOR MAKING FIBROUS CELLULOSE ACETATE FILTER MATERIAL

Arthur Caputi, Jr., and Thomas C. Wong, both of Modesto, Calif., assignors to E & J Gallo Winery, Modesto, Calif.

Filed Oct. 23, 1973, Ser. No. 408,296

Int. Cl.² D01D *5/26;* **D01F** *2/28*

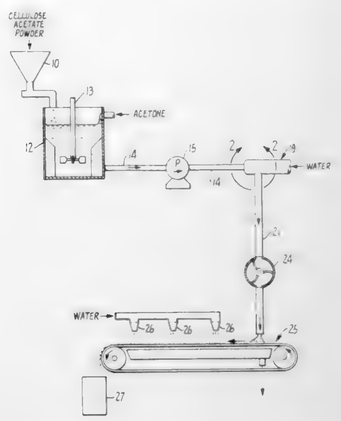
U.S. Cl. 264—140 **11 Claims**

1. A continuous process for making fibrous cellulose acetate resembling asbestos in fibrous structure and filtering properties, comprising rod-shaped fibers intermingled with fluffy filaments and having a surface area of about 35 m^2/g to about 55 m^2/g comprising:

a. generating a solution of cellulose acetate in an organic solvent of intermediate polarity, the viscosity of said cellulose acetate being in the range of about 25 secs. to about 45 secs. and the concentration of said cellulose acetate in said solution being from about 2% to about 4% by weight;

b. simultaneously introducing into a precipitation zone a stream of said solution and a stream of a cellulose acetate precipitant in a manner yielding turbulence and head on collision of said streams in said zone, the volume ratio of said precipitant to said solution being in the range of about 4:1 to about 20:1;

c. continuously withdrawing the resulting slurry from said precipitation zone and passing said slurry through a shearing means whereby the precipitate portion of said slurry is sheared to a surface area in the range of about 35 m^2/g to about 55 m^2/g;



d. continuously depositing the sheared slurry onto a porous support whereby the liquid portion of the slurry is drained from the precipitate portion thereof; and

e. washing said precipitate portion with a nonsolvent for cellulose acetate.

3,961,008

PROCESS FOR PREPARING POLYESTER SHAPED ARTICLES

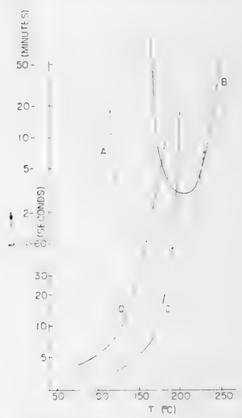
Takatoshi Kuratsuji; Shoji Kawase; Takeo Shima, all of Iwakuni; Sakae Shimotsuma, Atsugi, and Masahiro Hosoi, Sagamihara, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 26, 1974, Ser. No. 500,503

Claims priority, application Japan, Aug. 29, 1973, 48-96229

Int. Cl.² B29C *25/00;* **B29D** *23/04*

U.S. Cl. 264—178 R **4 Claims**



2. A process for preparing a transparent sheet or film by melt-extruding a polyester containing tetramethylene naphthalene-2,6-dicarboxylate or hexamethylene naphthalene-2,6-dicarboxylate, comprising intimately contacting the extrudate with the surface of a casting drum kept at a temperature ranging from 75°C. to a point lower than the melting point of the polyester for 5 to 180 seconds immediately after extrusion to thereby solidify the extrudate without any substantial crystallization and thereafter quenching said solidified extrudate to produce a transparent polyester sheet or film wherein said intimate contacting and quenching steps are carried out prior to any stretching of said transparent sheet or film.

3. A process for preparing a transparent tube by melt-extruding a polyester containing tetramethylene naphthalene-2,6-dicarboxylate, comprising passing the extrudate through and in contact with a gaseous atmosphere kept at a temperature of 150° to 450°C. for 1 to 30 seconds immediately after extrusion to thereby solidify said extrudate without any substantial crystallization and thereafter quenching said solidified extrudate to produce a transparent polyester tube wherein said extrudate is passed through the gaseous atmosphere and quenched prior to any stretching of said transparent tube.

3,961,009

PROCESS FOR THE PRODUCTION OF A SHAPED ARTICLE OF A HEAT RESISTANT POLYMER

Naoya Yoda; Toshiya Yoshi-i; Saburo Fujita; Hiroshi Mochizuki; Hirosuke Yumoto; Masaru Kurihara; Takashi Kubota; Noriaki Dokoshi, and Chiaki Tanaka, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 30,952, April 22, 1970, abandoned. This application Aug. 1, 1973, Ser. No. 384,514

Int. Cl.² D01F *6/78*

U.S. Cl. 264—205 **7 Claims**

1. The process for the manufacture of heat resistant polymeric film comprising the steps of:

1. extruding into film at high temperature a flowable polymer composition containing solvent, which composition may be handled as a solid at room temperature, said composition being comprised of (a) a polymer having in the repeating units thereof, a member selected from the group consisting of precursor units which on heat curing form heterocyclic rings, and a mixture of said precursor units and heterocyclic rings formed from such precursor units, said polymer being selected from the group consisting of polyamide-imide, polyimide, and polyamide-acid and containing at least 15% of said heterocyclic rings by weight of said polymer and (b) 25–130% by weight of an organic solvent based on the weight of said polymer, said solvent being selected from the group consisting of N-methyl-2-pyrrolidone (NMP), N,N-dimethylacetamide (DMAC), N,N-dimethylformamide (DMF), N,N-dimethylmethoxy acetamide, N-methylcaprolactam, dimethyl sulfoxide, tetramethyl urea, pyridine, dimethylsulfone, hexamethylphosphoramide, tetramethylene sulfone, formamide, butyrolactam, N-acetylpyrrolidone, m-cresol and P-cresol, said polymer composition being normally solid at room temperature, said extrusion being carried out to form film at a temperature above room temperature and below the curing temperature of said polymer, immersing said extruded film in a liquid which is miscible with the solvent in said film, said polymer being insoluble in said liquid, said liquid being selected from the group consisting of water, aliphatic and aromatic hydrocarbons, hydrocarbon halides and ketones, and

2. thereafter curing said uncured film with an effective amount of heat sufficient to causes ring closure of said precursor units, hereby forming said heat resistant polymeric film.

3,961,010

METHOD OF MANUFACTURING HEAT EXCHANGERS

Robert Taylor Holmes, Cheltenham, England, assignor to Serck Industries Limited, Birmingham, England

Filed June 28, 1973, Ser. No. 374,322

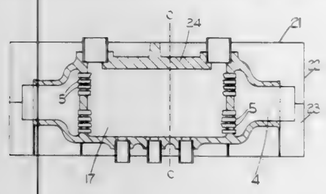
Claims priority, application United Kingdom, June 28, 1972, 30244/72

Int. Cl.² B29C *1/08;* **B29D** *31/00*

U.S. Cl. 264—221 **14 Claims**

1. A method of manufacturing a heat exchanger comprising the steps of: temporarily supporting a plurality of tubes by means including at least one removable, fugitive tube plate;

inserting at least a portion of the temporarily supported tubes into a first mould which defines the internal form of at least a portion of a shell and channel of a heat exchanger; feeding a flowable, solidifiable, fugitive material into the first mould so as to abut both sides of at least one fugitive tube plate and be moulded to said internal form; allowing said solidifiable material to solidify so that the tubes are held in position by said material, the material covering and filling spaces between the tubes; removing the tubes and solid material from the first mould; removing said at least one fugitive tube plate while leaving said solid material intact; inserting at least a portion of



the tubes and solid material into a second mould which defines the external form of a portion of a shell and at least one channel of the heat exchanger; feeding a settable material into the second mould so as to occupy space previously occupied by the fugitive tube plate and also be moulded to said external form in a cavity between the surfaces of said second mould and said fugitive material; allowing the settable material to set; removing the tubes; set material and solid, fugitive material from the second mould; and removing the solid, fugitive material from the set material to leave the tubes supported by the set material.

3,961,011

METHOD OF MAKING NETTING BY MOLDING PLASTIC ABOUT STRAND CROSSINGS

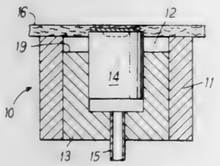
Anthony Bramley, Gosford House, Gosford, Kidlington Oxfordshire, England

Filed Apr. 9, 1974, Ser. No. 459,339

Claims priority, application United Kingdom, Apr. 13, 1973, 18006/73

Int. Cl.² B29C *5/00*; **B29D** *3/00*; **B29F** *1/00*

U.S. Cl. 264—251 **9 Claims**



1. A method of making netting comprising the steps of:
providing braided strands composed of synthetic thermoplastic fibres or filaments;
forming a plurality of such braided strands into an array of spaced, generally parallel longitudinal strands;
drawing further such braided strands transversely across said array of longitudinal strands at least singly to form strand crossings where respective transverse strands cross respective lontitudinal strands;
enclosing a plurality of said strand crossings in a corresponding plurality of die cavities;
mechanically compressing said strands together within said cavities sufficiently to laterally expand the strands at the strand crossing, by advancement of a pressure member into the die cavity and into compressively deforming relation with said crossing strands
releasing said mechanical compression by retracting said pressure member;
and, not earlier than said releasing, introducing thermoplastic material into said cavities to mould therein individual masses of said material bonding said strands together at said crossings.

3,961,012

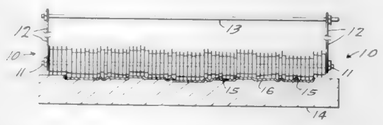
METHOD OF MAKING RESIN IMPREGNATED GLASS FIBER ARTICLE

Vincent DiMaio, Toledo, Ohio, assignor to Structural Plastics Incorporated, Toledo, Ohio

Filed Jan. 6, 1975, Ser. No. 539,022

Int. Cl.² B29D *3/02*; **B32B** *5/02, 5/16*

U.S. Cl. 264—257 **2 Claims**



1. In a method of molding a glass fiber reinforced polyester article including applying a liquid polyester resin and chopped glass fibers to a glass fiber mat on a mold surface and rolling said resin and chopped fibers into the mat and curing said resin, the improvement comprising: performing said rolling step with a roller having plural side-by-side roller segments disposed on a common shaft, each said segment being adapted to allow individual radial displacement of each said segments under rolling conditions, each said segment including a flange portion and a leveling surface portion adjacent to said flange portion, said leveling surface portion having a lesser diameter than said flange portion, said flange portion having a peripheral outer surface, said improvement further comprising contacting said resin and said glass fiber mat with the peripheral surface of each said flange and separately leveling lateral increments of said resin with said leveling surfaces and further permitting each said roller segment to be displaced individually in a direction perpendicular to said mat during rolling.

3,961,013

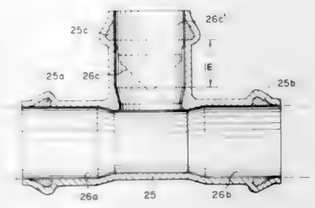
PROCESS AND APPARATUS FOR MANUFACTURING FITTINGS, PREFERABLY PRESSURE PIPE INSERTION FITTINGS OF SYNTHETIC RESIN

Johann Gütlhuber, Irlbach; Karl Mühlner, and Peter Klenk, both of Munich, all of Germany, assignors to Kunststoffwerk Gerbruder Anger GmbH & Co., Munich, Germany

Filed Aug. 21, 1973, Ser. No. 390,206

Int. Cl.² B29C *25/00*

U.S. Cl. 264—297 **6 Claims**



1. In a process for molding stress-free thick-walled pressure pipe fittings of relatively large dimensions and where the wall thickness must be proportionally increased from a synthetic plastic material, the steps of movably positioning a core unit in a divided injection mold for a fitting having a branch portion extending from a main portion and cores are placed in both portions, injecting a synthetic plastic molding material into the mold around the core to form a casting, cooling the wall outer zones of the casting sufficiently to enable the casting to maintain its shape, opening the divided mold at the beginning of the shrinking of the casting which sets in because of the material dependent co-efficient of expansion and while the wall inner zones of the casting are still in the plastic state but before any stresses are set up in the casting, maintaining the casting upon the core unit and removing the casting and core unit from the mold, withdrawing the core from said branch portion a distance sufficient to permit unrestricted shrinkage in a longitudinal direction with respect to the branch portion, thereafter rapidly cooling the casting, and then withdrawing all the cores after the shrinking of the castings in both axial and radial directions has been completed.

3,961,014

TRANSFER MOLDING METHOD

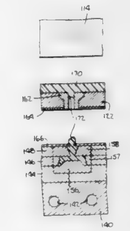
Lambert Pasch, Nutheim, and Heinz Wagemann, Aachen, both of Germany, assignors to Uniroyal A.G., Aachen, Germany

Division of Ser. No. 316,165, Dec. 18, 1972, Pat. No. 3,859,024. This application Aug. 21, 1974, Ser. No. 499,347

Claims priority, application Germany, Dec. 23, 1971, 2164219

Int. Cl.² B29G *3/00*

U.S. Cl. 264—297 **6 Claims**



1. A method of molding elastomeric stock, said method comprising interposing a multi-apertured, heat-resistant, flexible, insulation plate between a heated mold and an elastomeric stock injection unit, said mold having mold cavities aligned with corresponding ones of said apertures of said insulation plate, said elastomeric stock injection unit including a chamber in which pressure can be exerted against a quantity of elastomeric stock therein at least sufficient to fill said mold cavities, one side surface of said insulation plate confronting said injection unit, the other side surface of said insulation plate confronting and forming a parting line with said mold; deforming said insulation plate axially by moving said mold and said injection unit relative to one another such that each presses against the other through the intermediary of said insulation plate thereby causing said insulation plate to flexibly conform to, and tightly seal, varying surface irregularities of said mold pressing thereagainst along said parting line at each of said apertures; expelling and transferring a portion of said elastomeric stock under pressure from said chamber concurrently through each of said plurality of apertures in said insulation plate into said mold cavities to fill the latter under substantially uniform fluid pressure without seepage of said elastomeric between said mold and said injection unit at said parting line; and curing the transferred portion of elastomeric stock in said mold cavities, without separating said mold or said injection unit from said insulation plate or relaxing said fluid pressure, said insulation plate serving to thermally insulate the remaining portion of elastomeric stock in said chamber from said heated mold in order to prevent the curing of said remaining portion of stock with the curing of said transferred portion of stock.

3,961,015

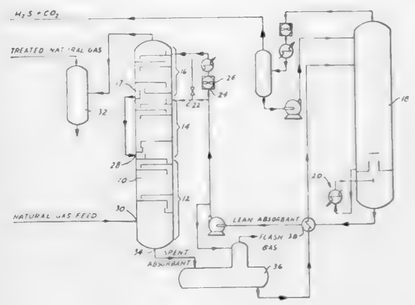
COMBINED HYDROLYSIS AND ABSORPTION PROCESS AND APPARATUS THEREFOR

Lawrence W. Dailey, Los Angeles, Calif., assignor to Societe Nationale des Petroles d'Aquitaine, Paris, France

Filed Aug. 21, 1969, Ser. No. 851,926

Int. Cl. B01d *53/34*

U.S. Cl. 423—229 **6 Claims**



1. A continuous process for treating natural gas streams containing hydrogen sulfide, carbon dioxide and carbonyl sulfide which comprises:
a. contacting the gas stream in a countercurrent flow with an aqueous ethanolamine solution as an absorbent for carbon dioxide and hydrogen sulfide in a first absorption zone at a net temperature at which the capacity of the absorbent for hydrogen sulfide and carbon dioxide per unit volume is high;
b. passing the gas stream from said first absorption zone to a second absorption-reaction zone where it is brought in countercurrent contact with an aqueous ethanolamine solution maintained at a temperature at which carbonyl sulfide will hydrolyze in the presence of water to hydrogen sulfide and carbon dioxide;
c. passing said gas stream through a third absorption zone where it is brought into countercurrent contact with a cooled, lean aqueous ethanolamine solution for absorption of formed hydrogen sulfide and carbon dioxide and any carbon dioxide and hydrogen sulfide not absorbed in said first zone and second absorption-reaction zone; and
d. combining the aqueous solution from said third absorption zone with the aqueous solution from said second absorption-reaction zone and passing said combined streams to said first absorption zone.

3,961,016

METHOD OF REMOVING CARBON MONOXIDE FROM GASES

Bernard C. Gerstein, Ames, Iowa, and David B. Macaulay, Arlington Heights, Ill., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 26, 1974, Ser. No. 464,428

Int. Cl.² B01D *53/34*

U.S. Cl. 423—247 **4 Claims**

1. A method of purifying an atmosphere, containing oxygen, of carbon monoxide which may be contained therein comprising: passing the atmosphere through a bed of a catalyst of terbium oxide heated to activation temperature, whereby the carbon monoxide is oxidized to carbon dioxide thereby purifying the atmosphere of carbon monoxide.

3,961,017
PRODUCTION OF DODECAHYDRODODECABORATE (2-)

William Vernon Hough, Evans City; Clarence Robert Guibert, Mars, and Gerald Thomas Hefferan, Butler, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

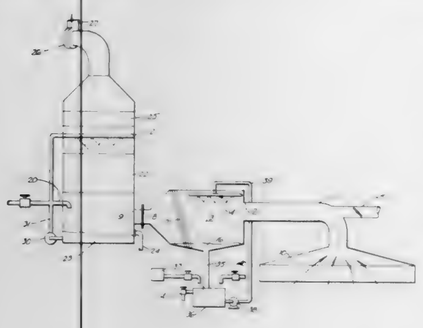
Filed Mar. 24, 1975, Ser. No. 561,283
Int. Cl.² C01B *35/18*
U.S. Cl. 423—286 **10 Claims**

1. A process for preparing an alkali metal dodecahydrododecaborate which comprises reacting at a temperature between about 90°C and about 200°C, in an inert atmosphere and at substantially atmospheric pressure, an alkali metal borohydride or alkali metal hydride with dimethylsulfideborane for a time and at a temperature sufficient to form alkali metal dodecahydrododecaborate and removing hydrogen and dimethylsulfide from said reaction as they are formed.

3,961,018
METHOD FOR PURIFICATION OF GAS STREAMS BY REMOVAL OF ACIDIC GASES

Walter H. Williamson, Cincinnati, Ohio, assignor to United Air Specialists, Inc., Cincinnati, Ohio

Filed Dec. 6, 1973, Ser. No. 422,210
Int. Cl.² C01B *17/16*
U.S. Cl. 423—228 **11 Claims**



9. A continuous process for purifying a moving gas stream by removal of acidic gases therefrom chosen from the group consisting of nitrogen oxides, carbon dioxide, hydrogen sulfide, sulfur dioxide, halogen gases, formic acid gases, acetic acid gases, and mixtures thereof, which comprises passing said gas stream into a reaction zone, continuously admitting a vapor of an amine chosen from the group consisting of water-soluble primary, secondary, and tertiary aliphatic and aralkyl amines, and mixtures thereof, into said zone in an amount sufficient to produce a partial vapor pressure of said amine of at least 5 percent of the total pressure within said reaction zone, commingling said gas stream and said amine vapor whereby to effect a vapor phase reaction of said amine vapor with said acidic gases, separating the reaction products of said amine vapor and acidic gases from said gas stream and discharging the so-purified gas stream to atmosphere.

3,961,019
METHOD FOR PURIFICATION OF EXHAUST GASES

Shinobu Satoh, No. 1-51, Hizumi 1-chome, Kashiwazaki, Niigata, Japan

Filed Mar. 21, 1974, Ser. No. 453,192
Claims priority, application Japan, Mar. 30, 1973, 48-36992
Int. Cl.² C01B *21/00*
U.S. Cl. 423—235 **3 Claims**

1. A method for the purification of hot exhaust gas which contains as impurities NO_x, SO_x, CO_2 and CO from a combustion operation, which comprises the steps of: in a first purification stage, flowing the exhaust gas in an overall horizontal direction through one or a plurality of sinuous conduits arranged in a substantially vertical plane with the conduit or conduits having upper reversely curved bends connected by intermediate upright sections to lower reversely curved bends, injecting an aqueous solution of alkaline material having a pH of 7.5-12 into the flowing exhaust gas stream at a plurality of locations inside the upright sections of said conduit with said aqueous alkaline solution being directed longitudinally in the conduit in the same direction as the direction of flow of the exhaust gas so as to precipitate the reaction products of said alkaline material with said impurities in said exhaust gas, and removing said aqueous alkaline solution and precipitates contained therein from the lower bends of the conduit or conduits; and then, in a second purification stage, flowing the exhaust gas that exits from the first purification stage horizontally through a zone containing a plurality of upright, horizontally spaced-apart, glass fiber mats so that the exhaust gas passes in series through the glass fiber mats, and simultaneously injecting into the zone, at locations between the glass fiber mats, streams of an aqueous solution of oxygen-generating material effective to generate oxygen by thermal decomposition in said zone by contact with said hot exhaust gas, said streams of said aqueous solution of oxygen-generating material being injected horizontally toward the mats and in the same direction as the direction of flow of the exhaust gas whereby an additional quantity of the remaining impurities in said exhaust gas adhere to or are adsorbed by the glass fiber mats and oxygen is generated in the exhaust gas, and removing from the bottom of said zone the spent aqueous solution of oxygen-generating material; and then discharging the exhaust gas leaving said zone.

3,961,020
PROCESS FOR REMOVING SULFUR OXIDES AND NITROGEN OXIDES FROM FLUE GASES USING HALOGEN-IMPREGNATED ACTUATED CARBON WITH SIMULTANEOUS INJECTION OF AMMONIA

Michiharu Seki, Fuchu, Japan, assignor to Hitachi, Ltd., Japan

Filed Oct. 5, 1973, Ser. No. 403,832
Claims priority, application Japan, Oct. 9, 1972, 47-100685; Oct. 23, 1972, 47-105301; Nov. 13, 1972, 47-113005
Int. Cl.² B01J *8/00;* **C01B** *21/00;* **B01D** *53/34*
U.S. Cl. 423—239 **28 Claims**

1. A process for removing at least one nitrogen oxide or sulfur oxide from a flue gas comprising contacting the flue gas in the presence of oxygen with a bed of carbonaceous material selected from the group consisting of activated carbon, graphite, carbonized char and amorphous carbon, said carbonaceous material being impregnated with a halogen or halogen compound selected from the group consisting of iodine, bromine, chlorine, ammonium iodide, ammonium bromide, ammonium chloride, hydrogen iodide, hydrogen bromide and hydrogen chloride, said bed containing at least 0.01 gram of said halogen or at least 0.01 gram of said halogen compound measured in terms of the halogen content of said halogen compound per kilogram of said carbonaceous material, said flue gas being contacted with said bed at a temperature at which the ammonium salt of said halogen or the ammonium salt of the halogen component of said halogen compound can be adsorbed by said carbonaceous material, and simultaneously feeding to said bed ammonia or a compound capable of liberating ammonia at the temperature at which the flue gas contacts said bed so that ammonia contacts said carbonaceous material as said flue gas contacts said carbonaceous material, thereby removing said at least one nitrogen oxide or sulfur oxide from said flue gas.

3,961,021
METHOD FOR REMOVING SULFUR DIOXIDE FROM COMBUSTION EXHAUST GAS

Tomijiro Morita; Akio Kobayashi; Isao Funahashi; Toshiharu Matsuda; Makoto Naoki, all of Iwaki; Naoyuki Kawamata, Kobe, and Jun Fukui, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 17, 1974, Ser. No. 506,721
Claims priority, application Japan, Sept. 25, 1973, 48-107807; Jan. 8, 1974, 49-5431
Int. Cl.² C01F *11/46;* **B01D** *53/34*
U.S. Cl. 423—242 **18 Claims**

1. A method for removing sulfur dioxide from combustion exhaust gas and converting the sulfur dioxide to gypsum, said process comprising:

contacting the sulfur dioxide containing combustion exhaust gas with an aqueous solution containing an alkali sulfite to absorb the SO_2 as bisulfite;

reacting said alkali bisulfite in solution with a calcium compound containing metallic impurities to form a mixture of calcium sulfite, metallic sulfite impurities, and an aqueous solution containing alkali sulfite;

separating at least a portion of the alkali sulfite solution from said mixture and returning said portion to the sulfur dioxide contacting step, thereby forming a sulfite circulation loop;

forming an aqueous slurry of said calcium sulfite and metallic sulfites;

oxidizing said slurry to form gypsum and an aqueous solution containing the metallic impurities dissolved in the form of sulfates;

separating said gypsum from solution to leave a first effluent containing the dissolved metallic sulfate impurities;

mixing at least a portion of said first effluent with alkali sulfite for reaction to form a precipitate of metallic sulfites and soluble alkali sulfate; and

separating said precipitate of metallic sulfites from solution and returning the remaining solution to the sulfite circulation loop.

3,961,022
SILICATE DISSOLVING

Richard H. Pierce, Broomall, Pa., assignor to Philadelphia Quartz Company, Valley Forge, Pa.

Division of Ser. No. 415,899, Nov. 14, 1973, Pat. No. 3,898,318. This application Dec. 12, 1974, Ser. No. 533,440
Int. Cl.² B01D *11/02;* **C01B** *33/32*
U.S. Cl. 423—332 **4 Claims**

1. In the known process of dissolving alkali metal silicate glass in water at elevated temperatures to form alkali metal silicate solutions, the improvement allowing the formation of homogeneous and sparkling clear alkali metal silicate solutions and comprising:

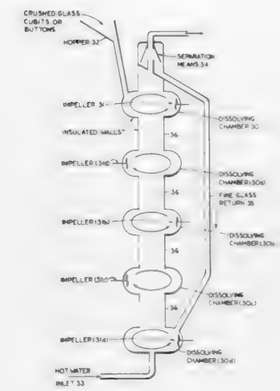
a. contacting particles of said alkali metal silicate glass with water and alkali metal silicate solution at temperatures between 80°C and the boiling point of the solution formed and at atmospheric pressure in a vertical stack of connected dissolving chambers each having an impeller of independent speed and pitch;

b. introducing hot water into the bottom chamber of said vertical stack so that the flow of liquid and entrained particles of silicate glass finer than 325 mesh is upward through said vertical stack of chambers;

c. operating said impellers of each successively lower chamber at an increased speed;

d. introducing said particles of alkali metal silicate to the uppermost chamber so that the flow of alkali metal silicate particles larger than 325 mesh is downward through the vertically stacked chambers;

e. discharging alkali metal silicate solution from the uppermost chamber to a centrifuge; and

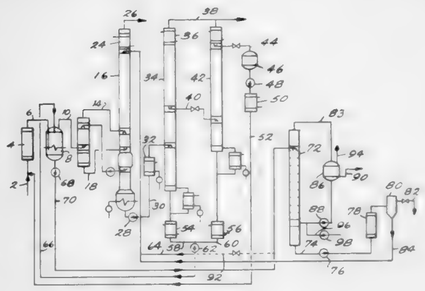


f. returning the fine particles from the centrifuge to the bottom chamber of said vertical stack.

3,961,023
PROCESS FOR THE PRODUCTION OF CYANOGEN CHLORIDE AND HYDROGEN CHLORIDE

Friedhelm Geiger; Werner Heimberger; Gerd Schreyer, all of Hanau, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed Jan. 13, 1975, Ser. No. 540,706
Claims priority, application Germany, Jan. 12, 1974, 2401412
Int. Cl.² C01B *21/18*
U.S. Cl. 423—383 **18 Claims**



1. In a process for producing cyanogen chloride and hydrogen chloride by reacting hydrogen cyanide and chlorine, separating from the gaseous mixture (1) hydrogen chloride and (2) either cyanogen chloride or a mixture of cyanogen chloride and chlorine by absorbing (2) in a halohydrocarbon solvent which has a boiling point between that of cyanogen chloride and cyanuric chloride, separating the dissolved (2) from the solvent by distillation of (2) in a column and returning the solvent to the absorption apparatus the improvement comprising employing as the solvent for the absorption a trifluoromethyl aromatic hydrocarbon or trifluoromethyl haloaromatic hydrocarbon.

3,961,024
FLUORO COMPOUND PRODUCTION

Richard K. Vitek, Florham Park, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed June 18, 1963, Ser. No. 289,778
Int. Cl.² C01B *21/52*
U.S. Cl. 423—406 **14 Claims**

1. The process for cleaving substituted ammonia compounds containing nitrogen-hydrogen bonds selected from the group consisting of alkali metal amides, urea, biuret, sulfamide, formamide, hydrazine, ethylenediamine, cyanoguanidine and melamine and fluorinating the resulting cleavage products, which comprises in combination the steps of:

a. introducing into a reaction zone one or more of the aforementioned substituted ammonia compounds as starting material and a fluoride catalyst, said fluoride catalyst being a fluoride of a metal which forms an acid salt with hydrogen fluoride,
b. subjecting said starting material to the action of elemental fluorine while in the presence of said catalyst,
c. maintaining temperatures in the reaction zone substantially in the range of 0°–300°C. but not above the phase change temperature of the starting material if a liquid, or not above the decomposition temperature of the starting material if a solid, and
d. collecting from the reaction zone the volatile off-gases containing fluorinated cleavage products.

3,961,025
METHOD OF CARBONIZING A SUBSTANCE COMPRISING CELLULOSE

Alfred J. Harendza-Harinxma, 50 Merion Place, Lawrenceville, N.J. 08648

Filed Dec. 19, 1974, Ser. No. 534,642
Int. Cl.² C01B *31/00*
U.S. Cl. 423—415 R **12 Claims**

7. A method for treating solid waste material containing cellulose which comprises:

treating the solid waste material with an aqueous solution comprising a dissolved alkali metal meta aluminate;
heating said treated solid waste material to carbonize the material comprising cellulose to form carbon; and
separating said formed carbon from remaining solid waste material.

8. The method as defined in claim 7 which further comprises heating said formed carbon in an oxygen containing ambient to form a gaseous oxidation product.

3,961,026
METHOD OF PRODUCING BASIC ZIRCONIUM CARBONATE

Vladimir Nikiforovich Pokhodenko, ulitsa Tereshkovoi, 2, kv. 37, and Ivan Nikiforovich Tselik, ulitsa Ostrovidova, 30, kv. 4, both of Odessa, U.S.S.R.

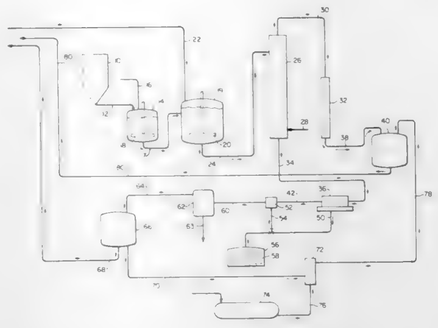
Continuation of Ser. No. 295,267, Oct. 5, 1972, abandoned, which is a continuation of Ser. No. 71,342, Sept. 11, 1970, abandoned. This application Aug. 12, 1974, Ser. No. 497,149
Int. Cl.² C01G *25/00*
U.S. Cl. 423—419 **6 Claims**

1. A method of producing crystalline basic zirconium carbonate which approximately corresponds to the formula $4ZrO_2.CO_2.11H_2O$ comprising reacting basic zirconium sulfate with a carbonate selected from the group consisting of ammonium carbonate and an alkali carbonate in an aqueous medium at room temperature and pressure wherein the quantity of said reacting carbonate is 0.8 mole per mole of ZrO_2 contained in the basic zirconium sulfate.

3,961,027
CYCLIC PROCESS FOR RE-USE OF WASTE WATER GENERATED DURING THE PRODUCTION OF UO_2

Thomas J. Crossley, Chapin, S.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 18, 1973, Ser. No. 407,722
Int. Cl.² C01G *43/02;* **C02B** *1/46*
U.S. Cl. 423—6 **7 Claims**



2. In the process of producing ammonium diuranate (ADU) from an aqueous solution containing UF_6 dissolved therein and wherein an excess of ammonium hydroxide is admixed with the aqueous solution of UF_6 to precipitate ADU which is thereafter separated from the aqueous solution leaving a large volume of waste water containing NH_4F, NH_4OH and small amounts of uranium, the improvement of steps comprising adding a slight stoichiometric excess of an alkaline earth metal compound which is capable of reacting to form alkali earth metal fluoride precipitate of low solubility in the treated waste water, distilling the aqueous waste water to volatilize the ammonium hydroxide therefrom and condensing the distillate for reuse in treating more aqueous UF_6 solutions, separating the alkali earth metal fluoride precipitate from the waste water in one or more steps, contacting the aqueous residue with an cationic ion exchange resin to remove the alkali earth metal and other cationic metal impurities from the added alkaline earth compound therefrom, and recirculating the so treated water, said treated water being suitable for recycle, including dissolving more UF_6 and producing more ammonium hydroxide solution.

3,961,028
METHOD OF PRODUCING CUPROUS SULFATE AND BISULFATE SOLUTIONS

Alan James Parker; Winfield Earle Waghorne, both of Canberra; Dion Ewing Giles; John Howard Sharp, both of Sydney; Robert Alexander, and David Michael Muir, both of Canberra, all of Australia, assignors to Anumin Pty. Limited, Canberra, Australia

Division of Ser. No. 237,061, March 22, 1972, Pat. No. 3,865,744. This application Dec. 17, 1974, Ser. No. 533,725
Claims priority, application Australia, Apr. 2, 1971, 4500/71; Apr. 2, 1971, 4501/71; Apr. 2, 1971, 4502/71; Apr. 28, 1971, 4735/71; June 4, 1971, 5/10/71; Sept. 14, 1971, 6281/71; Sept. 24, 1971, 6411/71; Jan. 26, 1972, 7776/72; Oct. 20, 1971, 6718/71; Oct. 26, 1971, 6798/71; Dec. 14, 1971, 7383/71
Int. Cl.² C01G *3/10;* **C22B** *15/00, 15/08*
U.S. Cl. 423—41 **5 Claims**

1. A method of preparing a solution containing cuprous sulfate, cuprous bisulfate or mixtures thereof which comprises mixing a homogeneous solution containing at least 15% by volume water, at least 0.1% by weight cupric ion as cupric sulfate, at least 0.5% by volume sulfuric acid and at least 4% by volume of an organic nitrile selected from the group consisting of acetonitrile, acrylonitrile and 2-hydroxycyanoethane with particulate solids containing metallic copper and substances insoluble in the said homogeneous composition at a temperature within the range of 10°C to 75°C, allowing said copper and said solution to react and thus to form a solution containing cuprous sulfate, cuprous bisulfate or mixtures thereof and separating the solution from the unreacted substances.

3. A method of leaching copper as a solution containing cuprous sulfate, cuprous bisulfate or mixtures thereof from a substance selected from the group consisting of copper sulfides and materials containing copper and sulfide ions, comprising mixing said substance in particulate form at 10°C to 75°C with a homogeneous solution containing at least 0.5% by volume sulfuric acid, at least 15% by volume water, at least 0.5% by weight cupric ion as cupric sulfate and at least 20% by volume of an organic nitrile selected from the group consisting of acetonitrile, acrylonitrile and 2-hydroxycyanoethane until a solution containing cuprous sulfate, cuprous bisulfate or mixtures thereof is produced, and then separating said solution from any residual solids.

3,961,029
PROCESS FOR RECOVERING CHROMIC ACID SOLUTION FROM A WASTE LIQUOR CONTAINING CHROMIC IONS

Yoshio Senoo, Tokyo, Japan, assignor to Tokico Ltd., Tokyo, Japan

Filed May 6, 1974, Ser. No. 467,612
Claims priority, application Japan, May 21, 1973, 48-56549; Dec. 20, 1973, 48-143322
Int. Cl.² C01G *37/12*
U.S. Cl. 423—54 **7 Claims**

1. A process for recovering chromic acid solution from an aqueous waste liquor containing chromate ions, comprising:

a. adding to said waste liquor a reducing agent capable of reducing chromate ions to chromium (III) ions at an acidic pH;
b. reducing said chromate ions in said waste liquor at an acidic pH until substantially all of said chromate ions are converted to chromium (III) ions;
c. adding an alkaline reagent providing hydroxyl ions to the liquor containing said chromium (III) ions to make the pH of said liquor alkaline and to precipitate said chromium (III) ions as chromium (III) hydroxide;
d. separating the precipitated chromium (III) hydroxide from the supernatant liquor which is substantially free of chromium ions;
e. adding an alkali and aqueous hydrogen peroxide to the precipitated chromium (III) hydroxide in an amount sufficient to convert substantially all of said precipitate to a chromate ion-containing aqueous solution; and
f. passing the resulting aqueous solution containing said chromate ions through an H form acidic cation-exchange resin to produce a chromic acid solution.

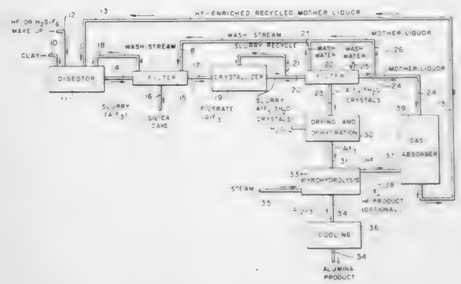
3,961,030
PRODUCTION OF ALUMINA FROM ORES

Tadeusz K. Wiewiorowski, New Orleans, and David J. Miller, Gretna, both of La., assignors to Freeport Minerals Company, New York, N.Y.

Filed Aug. 12, 1974, Ser. No. 496,577
Int. Cl.² C01F *7/22*
U.S. Cl. 423—126 **8 Claims**

1. A process which comprises:

a. reacting an aluminum-containing ore with hydrofluoric acid, fluosilicic acid or a mixture of hydrofluoric and fluosilicic acid, at a 0 to about 10% stoichiometric excess of acid and at a temperature of about 122° to about 212°F, to form a slurry containing aluminum fluoride in its liquid phase;
b. separating the liquid phase containing the aluminum fluoride from the solid phase of the slurry;
c. subjecting the separated liquid phase to crystallization to produce crystals of hydrated aluminum fluoride;
d. separating the crystals from the crystallization mother liquor;
e. drying and dehydrating the separate crystals, at a temperature of about 200°F to about 1400°F, to produce aluminum fluoride;
f. pyrohydrolyzing the aluminum fluoride, at a temperature of about 1500°F to about 2500°F, to produce alumina and hydrofluoric acid;



g. absorbing the hydrofluoric acid produced in step (f) in a first portion of the separated crystallization mother liquor, and recycling the fluorine enriched mother liquor to step (a) of the process;
h. washing the separated crystals produced in step (d) and the separated solid phase of the slurry produced in step (b) with water, and recycling the water to step (a) of the process; and
i. washing the separated solid phase of the slurry produced in step (b) with a second portion of the separated crystallization mother liquor, and recycling the mother liquor to step (a) of the process.

3,961,031
METHOD FOR REMOVAL OF MERCURY IN SULFUR DIOXIDE-CONTAINING GAS

Hiroshi Yasui, Tanashi; Iwao Kyono, Urawa; Hideo Aoki, Ageo, and Haruo Manabe, Isuruga, all of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Nov. 11, 1974, Ser. No. 522,832
Claims priority, application Japan, Nov. 9, 1973, 48-125514; Apr. 17, 1974, 49-42200
Int. Cl.² B01D *53/34*
U.S. Cl. 423—210 **7 Claims**



1. A method for the removal of mercury vapor contained in a sulfur dioxide-containing gas containing at least 0.1% by volume sulfur dioxide which comprises contacting the sulfur dioxide-containing gas with an aqueous thiourea solution having a pH below 0.5.

3,961,032

METHOD FOR CLEANING GASES AND VAPORS

Jacobus Cornelis Vermeulen, Arnhem, and Eric Jan Stuart, Heemskerk, both of Netherlands, assignors to Hoogovens Ijmuiden, B.V., Ijmuiden, Netherlands

Filed Dec. 11, 1974, Ser. No. 531,560

Claims priority, application Netherlands, Dec. 11, 1973, 7316907

Int. Cl.² B01D *53/34*

U.S. Cl. 423—210 5 Claims

1. Method of continuous treatment of CaO-carrying gas or vapour produced in steel-making by washing the gas or vapour with water, wherein the washing water is acidified by addition of a solution which contains from 0.5 to 2% by weight HCl and from 100 to 150 g. Fe^{++} ions per liter, the rate of addition of the solution being such that H^+ and Fe^{++} ions are supplied to the water in constant amounts per unit time.

3,961,033

PREPARATION OF BROMINE

Joseph P. Kleiman, Birmingham, and Kestutis A. Keblys, Southfield, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Mar. 6, 1975, Ser. No. 555,801

Int. Cl.² C01B *7/00*

U.S. Cl. 423—502 14 Claims

1. Process for preparing bromine comprising reacting chlorine with ethylene dibromide in the presence of a catalytic quantity of aluminum halide selected from aluminum chloride, aluminum bromide, and aluminum chlorobromides.

3,961,034

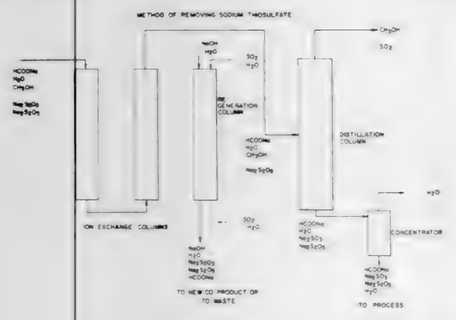
METHOD OF REMOVING SODIUM THIOSULFATE FROM A HYDROSULFITE REACTION MIXTURE

Logan C. Bostian, Virginia Beach, and Charles E. Winslow, Norfolk, both of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Filed Sept. 25, 1974, Ser. No. 509,160

Int. Cl.² C01B *17/64*

U.S. Cl. 423—181 4 Claims



1. A method for purifying filtrate from a formate-sodium hydrosulfite process by removal of thiosulfate ions therefrom, comprising:

A. providing three beds of an ion exchange resin having exchangable anions selected from the group consisting of formate and bisulfite ions, said beds being sequentially interconnected;

B. passing said filtrate sequentially through two of said beds;

C. feeding effluent from a second of said two beds to a distillation column and removing methanol therefrom as overhead;

D. feeding bottoms from said distillation column to a concentrator and removing excess water therefrom; and

E. when thiosulfate in effluent from the first of said two beds is found by analysis to be substantially equal to said thiosulfate in said filtrate, regenerating said first of said two beds by feeding a dilute solution of sodium hydroxide therethrough while passing said filtrate sequentially through the second and third of said three beds.

3,961,035

PROCESS FOR PREPARING HYDROGEN SULFIDE

Harold S. Mickley, Westport, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 27, 1974, Ser. No. 455,462

Int. Cl.² C01B *17/16*

U.S. Cl. 423—563 10 Claims

1. A process for preparing hydrogen sulfide which comprises:

a. providing a gas mixture containing carbon monoxide;

b. heating said gas mixture to a temperature above about 500°F. by direct heat exchange with a heated material whereby the heated material is cooled in a first zone;

c. introducing sulfur into the gas mixture and reacting the gas mixture with the sulfur at a temperature between about 500° and 1300°F. to form a gas mixture containing carbonyl sulfide in a second zone;

d. reacting the gas mixture containing carbonyl sulfide with water, in the vapor phase, at a temperature between about 400°F. and about 1300°F. to form a reacted gas mixture containing hydrogen sulfide in a third zone; and

e. cooling said reacted gas mixture by direct heat exchange with a cooled material whereby said cooled material is heated to be used as the heated material in said first zone.

3,961,036

ALUMINA SYNTHESIS

Glen P. Hamner, and William J. Mattox, both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Jan. 4, 1974, Ser. No. 430,776

Int. Cl.² C01F *7/02*

U.S. Cl. 423—628 5 Claims

1. A method for preparing an alumina having a surface area ranging from about 375 to 580 m^2/gm (BET) which comprises reacting ethylene oxide with aluminum chloride, aluminum hydroxychloride or mixtures thereof to obtain a raw alumina product comprised of alumina monohydrate, alumina trihydrate or mixtures thereof, and heating said raw alumina, prior to calcination at temperatures in excess of 450°F, from 500°F to at least 800°F in the presence of excess elemental halogen.

3,961,037

PROCESS FOR FORMING HYDROGEN AND CARBON DIOXIDE USING A CATALYST CONSISTING ESSENTIALLY OF OXIDES OF COPPER, ZINC AND ALUMINUM OR MAGNESIUM

Phineas Davies, and Alan James Hall, both of Norton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 483, Jan. 2, 1970, abandoned, which is a continuation of Ser. No. 513,112, Dec. 10, 1965, abandoned. This application Nov. 27, 1973, Ser. No. 419,298

Claims priority, application United Kingdom, Jan. 5, 1965, 482/65

Int. Cl.² C01B *1/02, 1/08, 2/06, 31/20*

U.S. Cl. 423—656 5 Claims

1. In a process wherein carbon monoxide and steam are reacted by contacting the same with a catalyst at a temperature below 300°C to form hydrogen and carbon dioxide, the improvement which comprises carrying out said reaction with a catalyst consisting essentially of the reduced co-precipitated oxides of copper, zinc and at least one metal selected from the group consisting of aluminum and magnesium, said co-precipitated oxides being obtained by reacting a mixture of non-halides, sulphur-free, water-soluble salts of copper, zinc and the other metal in aqueous solution with a compound of the group consisting of ammonium carbonate, ammonium bicarbonate, an alkali metal carbonate and an alkali metal bicarbonate whereby the copper, zinc and other metal are co-precipitated after which the resulting co-precipitate is washed substantially free of soluble salts, dried and calcined; said catalyst containing, on the basis of the total number of metal atoms present, from 10 – 70% copper, 4 – 20% other metal, balance essentially zinc in an amount of at least 20%, and the amount of oxide of said other metal being such that the activity of the catalyst is stabilized so that said activity is maintained at an increased level for a longer period of time than for a similar catalyst without said oxide of other metal.

3,961,038

PROCESS FOR THE MANUFACTURE OF INJECTABLE PREPARATIONS OF TC99M AND/OR IN113M AND APPARATUS FOR CARRYING OUT THE PROCESS

Ivan Benes, Greifensee, Switzerland, assignor to Solco Basel AG, Basel, Switzerland

Filed May 7, 1973, Ser. No. 357,701

Claims priority, application Switzerland, May 8, 1972, 6881/72; Feb. 8, 1973, 1810/73

Int. Cl.² A61K *43/00*

U.S. Cl. 424—1 14 Claims

1. Process for preparing an injectable preparation of a radionuclide selected from the group consisting of technetium-99m and indium-113m of high specific activity per volume, which comprises contacting an aqueous solution of the radionuclide of low specific activity per volume with a sparingly water-soluble metal hydroxide precipitate, separating the metal hydroxide precipitate, with the radionuclide concentrated therein, from the aqueous solution, and dissolving said metal hydroxide precipitate in an aqueous solution containing a dissolved compound capable of forming a stable and physiologically acceptable chelate with the metal ions of the metal hydroxide to form a chelate of the metal.

3,961,039

URINARY SEDIMENT STAIN

Richard Sternheimer, 1765 East 55th St., Chicago, Ill. 60615

Continuation-in-part of Ser. No. 410,917, Oct. 29, 1973, abandoned. This application Apr. 24, 1975, Ser. No. 571,067

Int. Cl.² G01N *1/30, 33/16*

U.S. Cl. 424—3 5 Claims

1. A stain for unfixed, wet urinary sediment and cellular elements of serous effusions comprising an aqueous solution having a ph of from about 2 to about 5 including in combination a copper phthalocyanin dye, and a red xanthene dye, wherein the ratio by weight of the copper phthalocyanin dye to the red xanthene dye is in the range of from about 5 to 1 to about 1 to 5, whereby the copper phthalocyanin dye stains the nucleus of damaged cells present in the sediment or serous effusions a blue color and the red xanthene dye stains the cytoplasm of the cells present in the sediment or serous effusions a red color and the mucoproteins present in the sediment or serous effusions are distinctly stained blue to permit differentiation between cellular nuclear material and cellular cytoplasmic material and mucoprotein material.

3,961,040

INSECTICIDAL EVAPORATOR HAVING A DIFFUSION LAYER OF OLEFIN POLYMERIZATE

Bernard Rabussier, Aventon, and Jean-Pierre Mandon, Poitiers, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Filed Mar. 13, 1974, Ser. No. 450,935

Claims priority, application Luxemburg, Mar. 16, 1973, 67231

Int. Cl.² A01N *17/00, 9/36*

U.S. Cl. 424—33 8 Claims

1. In an insecticidal evaporator comprising

I an absorbent fibrous mass substrate impregnated with a liquid composition comprising

a. from about 40 to 90% by weight of the total liquid composition of 2,2-dichlorovinyldimethylphosphate

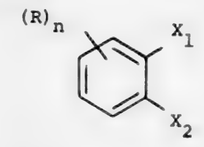
b. an epoxidised organic liquid compound having a maximum vapor pressure no greater than the vapor pressure of 2,2-dichlorovinyldimethylphosphate; and

c. an organic compound which is miscible with or soluble in the mixture of 2,2-dichlorovinyldimethylphosphate and said epoxidised organic compound; and

II a non-porous, olefin polymer diffusion layer covering at least part of said impregnated fibrous mass, the remaining surface of said fibrous mass being covered by an envelope impermeable to said liquid composition;

said epoxidised organic compound promoting the exudation of 2,2-dichlorovinyldimethylphosphate at the exterior surface of said diffusion layer,

the improvement comprising a method of reducing exudation of 2,2-dichlorovinyldimethylphosphate at the exterior surface position, by incorporating into the liquid composition as the organic compound (c), from about 1 to about 40% by weight of said composition, of an exudation-reducing agent selected from the group consisting of (1) a compound of the formula



in which

X_1 represents hydrogen,

X_2 represents hydrogen or one of the substituents defined for $(R)_n$, or

X_1 and X_2 jointly represent a divalent bridge of the formula

$$-CH=CH-CH=CH-$$

and

$(R)_n$ represents substitution on the nucleus of members selected from the group consisting of

(α) 2 or 3 hydroxyl groups,

(β) from 1 to 3 alkyl groups each having from 1 to 4 carbon atoms,

(γ) 1 or 2 alkyl groups each having from 1 to 4 carbon atoms, conjointly with a hydroxyl group, and

(δ) an alkoxy group having from 1 to 4 carbon atoms, one of which members may occupy the X_2 position,

and (2) di-(2-chloroethoxy)-methane.

3,961,041

EFFERVESCENT ENTERIC COATED L-DOPA FORMULATION AND METHOD OF USING THE SAME

Kenji Nishimura; Mikio Arai; Kunihiro Sasahara, and Takashi Nitanai, all of Tokyo, Japan, assignors to Interx Research Corporation, Lawrence, Kans.

Filed Apr. 10, 1975, Ser. No. 566,745

Claims priority, application Japan, Nov. 14, 1974, 49-131304

Int. Cl.² A61K *9/22, 9/46, 9/30*

U.S. Cl. 424—35 8 Claims

1. A pharmaceutical effervescent enteric-coated tablet for oral administration to a warm-blooded animal which permits release and absorption of L-DOPA in the area of the upper portion of the small intestine thereof comprising a tableted admixture of:

a. a member selected from the group consisting of L-DOPA, 3,4-diacetyloxy-L-phenylalanine or a pharmaceutically acceptable acid addition salt thereof, 3,4-dipivalyloxy-L-phenylalanine or a pharmaceutically acceptable acid addition salt thereof, 3,4-dihydroxy-L-phenylalanine

methyl ester or a pharmaceutically acceptable acid addition salt thereof, 3,4-diacetyloxy-L-phenylalanine methyl ester or a pharmaceutically acceptable acid addition salt thereof, 3,4-dihydroxy-L-phenylalanine benzyl ester or a pharmaceutically acceptable acid addition salt thereof, 3,4-diacetyloxy-L-phenylalanine benzyl ester or a pharmaceutically acceptable acid addition salt thereof, glycyl-3,4-diacetyloxy-L-phenylalanine methyl ester or a pharmaceutically acceptable acid addition salt thereof, 3,4-dipivalyloxy-N(1-methyl-2-acetylvinyl)-L-phenylalanine pivalyloxy methyl ester, the alkali metal salt of 3,4-dipivalyloxy-N(1-methyl-2-acetylvinyl)-L-phenylalanine, the alkali metal salt of 3,4-diacetyloxy-N(1-methyl-2-acetylvinyl)-L-phenylalanine, N-formyl-3,4-dipivalyloxy-L-phenylalanine, N-formyl-3,4-dipivalyloxy-L-phenylalanine-pivalyloxymethyl ester, N-formyl-3,4-diacetyloxy-L-phenylalanine, the alkali metal salt of N-formyl-3,4-diacetyloxy-L-phenylalanine, glycyl-3,4-diacetyloxy-L-phenylalanine or a pharmaceutically acceptable acid addition salt thereof, 3,4-diacetyloxy-L-phenylalanylglycine or a pharmaceutically acceptable acid addition salt thereof, 3,4-dihydroxy-L-phenylalanyl-3,4-dihydroxy-L-phenylalanine or a pharmaceutically acceptable acid addition salt thereof, 3,4-diacetyloxy-L-phenylalanyl-3,4-diacetyloxy-L-phenylalanine methyl ester or a pharmaceutically acceptable acid addition salt thereof, and 3,4-diacetyloxy-L-phenylalanyl-3,4-diacetyloxy-L-phenylalanine benzyl ester or a pharmaceutically acceptable acid addition salt thereof,

b. a non-toxic pharmaceutically acceptable inert diluent,

c. a non-toxic pharmaceutically acceptable effervescent couple acid and base, and

d. a non-toxic pharmaceutically acceptable enteric coating over said entire tableted admixture.

3,961,042

QUATERNARY AMMONIUM CO-POLYMERS FOR CONTROLLING THE PROLIFERATION OF BACTERIA

Harold A. Green, Havertown, Pa.; John J. Merianos, Jersey City, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Division of Ser. No. 511,759, Oct. 3, 1974, Pat. No. 3,928,328, which is a continuation-in-part of Ser. No. 425,931, Dec. 18, 1973, Pat. No. 3,874,870. This application July 7, 1975, Ser. No. 593,734

Int. Cl.² A61K *31/495, 31/535, 31/155*

U.S. Cl. 424—78 **2 Claims**

1. A method of controlling the proliferation of bacteria which comprises applying to said bacteria an effective amount sufficient to inhibit their growth, of a product formed by the condensation of a mixture of difunctional tertiary amines and a molar quantity of 1,4-dichloro-2-butene that is substantially equal to the molar sum of the mixture of the difunctional tertiary amines, said mixture of difunctional tertiary amines being selected from the group consisting of (a) 1,4-bis-(morpholino)-2-butene and N,N′-di-lower alkyl piperazine, (b) 1,4-bis-(dimethylamino)-2-butene and 1,4-bis-(N-morpholino)-2-butene, and (c) 1,4-bis-(dimethylamino)-2-butene, N,N′-di-lower alkyl piperazine and 1,4-bis-(N-morpholino)-2-butene.

3,961,043

DEODORIZED PESTICIDAL ORGANOTHIOPHOSPHORUS COMPOUNDS

Arthur J. Huvar, Richmond, Va., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 12, 1970, Ser. No. 63,293

Int. Cl.² A01N *9/36*

U.S. Cl. 424—76 **11 Claims**

1. A pesticidal composition comprising (1) from about 0.0001 to about 80% by weight of a malodorous compound selected from the group consisting of S,S-dipropyl O-ethyl phosphorodithioate and S-(1,2-dicarbethoxyethyl)O,O-dimethyldithiophosphate, (2) an amount sufficient to deodorize said malodorous compound comprising from about 5 to about 40% by weight of the malodorous compound of a material selected from the group consisting of linoleic acid, linolenic acid and linseed oil, and (3) a liquid or solid carrier.

3,961,044

SKIN PROTECTIVE COMPOSITIONS

Ralph Kelly, Cincinnati, and Edmond Jean Ritter, Loveland, both of Ohio, assignors to Cincinnati Milacron, Inc., Cincinnati, Ohio

Division of Ser. No. 46,561, June 15, 1970, which is a continuation-in-part of Ser. No. 696,509, Jan. 9, 1968, Pat. No. 3,630,934, which is a continuation-in-part of Ser. No. 613,095, Feb. 1, 1967, Pat. No. 3,538,009. This application Feb. 4, 1974, Ser. No. 439,081

Int. Cl.² A61K *31/74*

U.S. Cl. 424—78 **9 Claims**

1. A skin protective lotion or creme consisting essentially of a skin irritation reducing effective amount of a protective agent and a non-aqueous emollient, humectant or surfactant; said lotion or creme capable of reducing skin irritation compared to said lotion or creme without protective agent when applied to the skin prior to contact with a skin irritant; said protective agent being dispersible in said lotion or creme; said protective agent selected from the group consisting of esters and polyesters of polycarboxylic acids and hydroxy containing polyoxyalkylene ethers in which said polycarboxylic acids contain one cycloaliphatic or aromatic ring of 5 to 7 carbon atoms or a naphthalene ring; and said hydroxy containing polyoxylalkylene ethers contain to 30 oxyalkylene units in which the alkylene radical contains 2 to 4 carbon atoms containing two polar groups which are separated by a chain of at least 15 atoms a majority of which are carbon; said protective agent containing polar groups selected from the groups consisting of hydroxyl and carboxyl.

3,961,045

METHOD OF TREATING ULCER

Otto B. Wurzburg, Whitehouse Station; Chester D. Szymanski, Martinsville, and Leo Kruger, Kendall Park, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Division of Ser. No. 408,317, Oct. 23, 1973, Pat. No. 3,893,890. This application Mar. 17, 1975, Ser. No. 558,913

Int. Cl.² A61K *31/74*

U.S. Cl. 424—78 **1 Claim**

1. A method for treating gastric or duodenal ulcers in humans in need of such treatment comprising administering orally thereto an effective amount within the range of from 0.020 to 1.000 grams of a water-soluble polymer selected from the group consisting of sulfonated homo- and copolymers of styrene and salts thereof having a degree of substitution from about 0.7 to about 1.3 sulfonate groups per unit of styrene and an average molecular weight within the range of 600 to 7,000,000.

3,961,046

MUMPS VACCINE AND PREPARATION THEREOF

Costantino Peter Cerini, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 2, 1974, Ser. No. 528,752

Int. Cl.² A61K *39/12*; **C12K** *5/00, 7/00*

U.S. Cl. 424—89 **7 Claims**

1. A mumps vaccine comprising:

A. as its essential ingredient an immunologically effective amount of an attenuated mumps virus characterized by

a. when injected into humans

i. being free of clinical manifestatins of the disease and

ii. invoking in man an antibody response to a virulent virus;

b. being capable of inducing its own replication in living cells; and

c. having been attenuated from virulent mumps virus by three serial passages in primary human amnionic cell monolayers at 34°C. to 37°C., followed by one passage in embryonated chicken eggs at 34°C. to 37°C., followed by replication in chick embryo tissue at 32°C. to 37°C. for from 8 through 28 passages; and

B. a stabilizer.

6. A process of preparing a live mumps virus useful as an antigen in a vaccine which will evoke in man an antibody response against a virulent mumps virus without causing the severe clinical manifestations of the disease which comprises growing the virulent virus by three serial passages in primary human amnionic cell monolayers at 34°C. to 37°C., followed by one passage in embryonated chicken eggs at 34°C. to 37°C., followed by replication in chick embryo tissue at 32°C. to 37°C. for from 8 through 28 passages.

3,961,047

ESTERS OF PARTRICIN DERIVATIVES

Tiberio Bruzzese, and Giuseppe Ghielmetti, both of Milan, Italy, assignors to SPA-Societa Prodotti Antibiotici S.p.A., Italy

Filed Feb. 13, 1974, Ser. No. 441,988

Claims priority, application United Kingdom, Feb. 15, 1973, 7488/73

Int. Cl.² A61K *35/74*

U.S. Cl. 424—122 **3 Claims**

1. The C_{1-6} alkyl esters of N-substituted partricin wherein the N-substituents are C_{1-6} alkyl or C_{1-6} carboxylic acyl.

3,961,048

WATER-SOLUBILIZED ANTIBIOTICS

Ernani Dell'Acqua, and Rodolfo Ferrari, both of Milan, Italy, assignors to SPA-Societa prodotti Antibiotici S.p.A., Milan, Italy

Filed May 14, 1974, Ser. No. 469,889

Claims priority, application United Kingdom, May 14, 1973, 22848/73

Int. Cl.² A61K *35/74*

U.S. Cl. 424—122 **3 Claims**

1. A water-soluble pharmaceutical complex obtained by dissolving an antibiotic selected from the group consisting of partricin and partricin methyl ester in an aqueous solution containing a surfactant selected from the group consisting of benzalkonium chloride, sodium lauryl sulphate and sodium tetradecyl sulphate wherein the weight ratio of the antibiotic to the surfactant is 1 to 10, stirring the mixture thus-obtained to form a complex and isolating the complex by lyophilisation or precipitation.

3,961,049

METHOD FOR CONTROLLING MITES AND THIOUREIDOBENZENE PHOSPHATES

Tetsuo Horii; Isao Chiyomaru, both of Shimizu; Seigo Kawada, Fujieda, and Kiyoshi Takita, Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

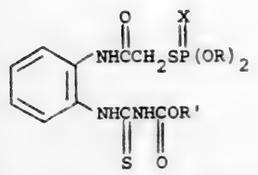
Division of Ser. No. 349,175, April 9, 1973, Pat. No. 3,903,271. This application Jan. 10, 1975, Ser. No. 540,227

Claims priority, application Japan, Apr. 18, 1972, 47-39020

Int. Cl.² C07F *9/165*; **A01N** *9/36*

U.S. Cl. 424—211 **8 Claims**

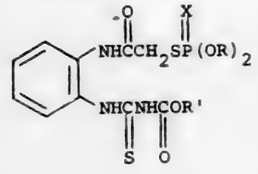
1. A method of controlling mites which comprises applying a miticidally effective amount of a thioureidobenzene compound having the formula



wherein R and R′ are lower alkyl groups and X is oxygen or sulfur atom

to plants.

2. A thioureidobenzene compound having the formula



wherein R is an alkyl group having 1 to 4 carbon atoms, R′ is methyl or ethyl and X represents oxygen or sulfur atom.

3,961,050

INSECTICIDAL COMPOSITIONS AND METHODS OF KILLING INSECTS USING BENZYLTHIOMETHYLENEPHOSPHONAMIDATES AND PHOSPHORAMIDATES

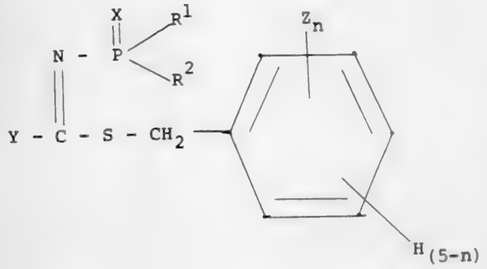
Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 485,190, July 1, 1974, Pat. No. 3,911,057. This application May 16, 1975, Ser. No. 578,059

Int. Cl.² A01N *9/36*

U.S. Cl. 424—216 **2 Claims**

1. An insecticidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to insects, a compound of the formula



wherein Y is selected from the group consisting of hydrogen and alkyl of from 1 to 3 carbon atoms; X is selected from the group consisting of oxygen and sulfur; R^1 and R^2 are independently selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, provided a maximum of one of R^1 and

R^2 is lower alkyl; and Z is selected from the group consisting of lower alkyl, halogen, lower haloalkyl and nitro.

3,961,051

JUVENILE HORMONES STABILIZED WITH ACRYLONITRILE U.V. ABSORBERS

Alexander Emodi, West Orange, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

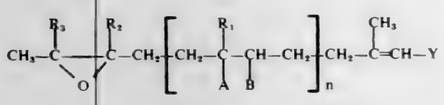
Continuation-in-part of Ser. No. 323,494, Jan. 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 180,100, Sept. 13, 1971, abandoned. This application Sept. 20, 1974, Ser. No. 508,015

Int. Cl.² A01N *9/28*

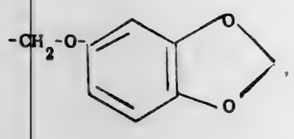
U.S. Cl. 424—174 **12 Claims**

1. A stabilized insecticide composition comprising;

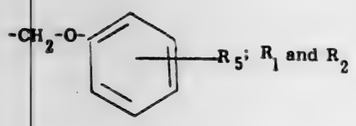
a. from about 10 to 75 weight percent of a juvenile hormone of the formula:



wherein Y is $-COOR_4$, $-CH_2-O-C\equiv CH$,



or



are hydrogen, methyl or ethyl; R_3 is methyl or ethyl; R_4 and R_5 are hydrogen or lower alkyl; n is an integer of from 0 to 1; and A and B are hydrogen or are taken together to form a carbon to carbon bond;

b. from about 1% to 25% by weight of a phenolic anti-oxidant; and

c. from about 1 to 20% by weight of an acrylonitrile u.v. absorber selected from the group consisting of ethyl-2-cyano-3,3-diphenyl acrylate and 2-ethyl-hexyl-2-cyano-3,3-diphenyl acrylate.

3,961,052

FUNGICIDAL COMPOSITIONS

Helmut Stingl, Hofheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

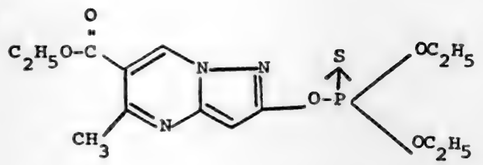
Continuation-in-part of Ser. No. 356,404, May 2, 1973, abandoned. This application Dec. 3, 1974, Ser. No. 529,119

Claims priority, application Germany, May 5, 1972, 2222133

Int. Cl.² A01N *9/02, 9/22, 9/36*

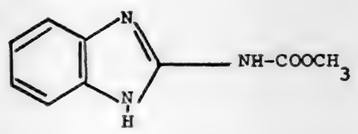
U.S. Cl. 424—200 **11 Claims**

1. A fungicidal composition comprising synergistic proportions of a mixture of active ingredients and carrier, said active ingredients comprising 2 to 70% by weight of said composition, said synergistic proportions of active ingredients consisting of a ratio of 10:1 to 1:10 of 2-(O,O-diethyl-thionophosphoryl)-5-methyl-6-carbethoxy-pyrazolo-(1,5*a*)-pyrimidine of the formula



I

in admixture with 2-methoxycarbonylamino-benzimidazole of the formula



II

3,961,053

SUBSTITUTED CARBINOL DERIVATIVES

Eugene E. Galantay, Liestal, Switzerland, and Dietmar A. Habeck, Heidelberg, Germany, assignors to Sandoz, Inc., E. Hanover, N.J.

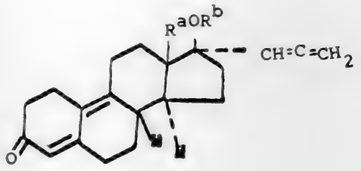
Continuation of Ser. No. 358,345, May 8, 1973, abandoned, which is a continuation-in-part of Ser. No. 314,833, Dec. 13, 1972, abandoned, which is a division of Ser. No. 71,279, Sept. 10, 1970, Pat. No. 3,719,670, which is a continuation-in-part of Ser. No. 778,777, Nov. 25, 1968, abandoned. This application Nov. 18, 1974, Ser. No. 524,620

The portion of the term of this patent subsequent to Mar. 6, 1990, has been disclaimed.

Int. Cl.² C07J *1/00*

U.S. Cl. 424—243 **14 Claims**

1. A pharmaceutical composition suitable for internal administration comprising an amount of a compound of the formula



wherein

R^a is alkyl having 1 to 3 carbon atoms; and

R^b is a hydrogen atom, methyl, acetoacetyl or lower alkanoyl having 2 to 4 carbon atoms effective in controlling fertility in a mammal and a pharmaceutical carrier.

3,961,054

COMBATTING DANDRUFF WITH MERCAPTO QUINOLINE N-OXIDES

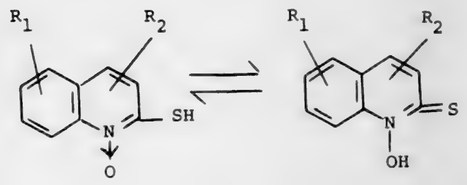
Thomas E. Furia, Hartsdale, and David H. Steinberg, Bronx, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 325,712, Jan. 22, 1973, Pat. No. 3,862,151, which is a division of Ser. No. 842,377, July 16, 1969, Pat. No. 3,723,435. This application Dec. 27, 1974, Ser. No. 536,771

Int. Cl.² A61K *31/47*

U.S. Cl. 424—245 **12 Claims**

1. An anti-dandruff shampoo comprising an aqueous detergent base in liquid or paste form and an amount sufficient to provide effective anti-dandruff control on the hair and scalp of a salt or complex of a metal selected from the group consisting of lithium, sodium, potassium, zinc, calcium, tin, copper, antimony, lead, manganese, and aluminum of a compound having the following structural formula in tautomeric form:



wherein R_1 and R_2 are each independently selected from the group consisting of hydrogen, alkyl of one to 24 carbon atoms, phenyl, phenyl substituted with chlorine or methyl, halogen, trifluoromethyl and alkoxy of one to four carbon atoms.

3,961,055

HYDROXY AND ETHER CONTAINING PHENOTHIAZINE DERIVATIVES

Jean Baget, Sceaux, France, assignor to Rhone-Poulenc Industries, Paris, France

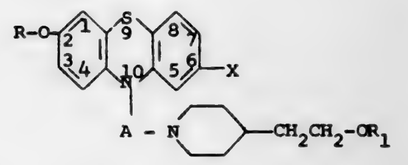
Filed Jan. 21, 1975, Ser. No. 542,799

Claims priority, application France, Jan. 22, 1974, 74.02101; Nov. 12, 1974, 74.37295

Int. Cl.² A61K *27/00;* **C07D** *279/28*

U.S. Cl. 424—247 **12 Claims**

1. A phenothiazine derivative of the formula:



wherein X represents methylthio, methylsulphonyl or dimethylsulphamoyl, R represents hydrogen, alkyl of 1 through 10 carbon atoms, phenylalkyl containing 1 through 4 carbon atoms in the alkyl part, or tetrahydropyranyl, A represents $-(CH_2)_3-$ or $-CH_2-CH(CH_3)-CH_2-$, and R_1 represents hydrogen, alkanoyl containing 1 through 16 carbon atoms in the alkyl part, or alkenoyl containing 2 to 16 carbon atoms in the alkenyl part, and non-toxic pharmaceutically acceptable acid addition salts thereof.

12. A pharmaceutical composition having anti-emetic activity which comprises as active ingredient, an effective amount of a phenothiazine derivative as claimed in claim 1, or a non-toxic pharmaceutically acceptable acid addition salt thereof, in association with a significant amount of a pharmaceutical carrier.

3,961,056

SUBSTITUTED MORPHOLINE GUANIDINES FOR THE TREATMENT OF ARRHYTHMIC CONDITIONS

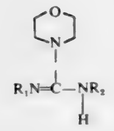
Donald W. DuCharme, Cooper Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 11, 1974, Ser. No. 441,399

Int. Cl.² A61K *31/535*

U.S. Cl. 424—248 **11 Claims**

1. A method for the treatment of arrhythmic conditions in mammals which comprises administering to said mammal an anti-arrhythmic effective amount of a compound of the formula



wherein R_1 and R_2 are the same or different and are selected from the group consisting of alkyl of from four to seven carbon atoms, inclusive cycloalkyl of from five to seven carbon atoms, inclusive, phenyl, phenalkyl with alkyl of from one to three carbon atoms, inclusive, and mono-substituted phenyl and phenyl moiety of the phenalkyl wherein the substituent is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, alkoxy of from one to three carbon atoms, inclusive, halogen, and trifluoromethyl; and pharmaceutically acceptable acid addition salts thereof in association with a pharmaceutical carrier.

3,961,057

BENZOPYRANO(3,4-C)PYRIDINE BRONCHODILATORS

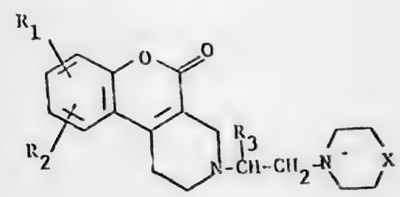
Richard E. Brown, Hanover, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 343,613, March 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 122,498, March 9, 1971, abandoned. This application Jan. 3, 1975, Ser. No. 538,424

Int. Cl.² A61K *31/535*

U.S. Cl. 424—248 **10 Claims**

1. A method for producing bronchodilation in a mammal in need thereof which comprises the administration of an effective amount of a compound of the formula:



wherein R_1 and R_2 are hydrogen, hydroxyl or lower alkoxyl of from 1 to 6 carbon atoms; R_3 is hydrogen or lower alkyl of 1

to 6 carbon atoms and *x* is oxygen, sulfur, methylene or nitrogen substituted by hydrogen, lower alkyl of 1 to 6 carbon atoms or lower alkanoyl of 1 to 6 carbon atoms, to said mammal.

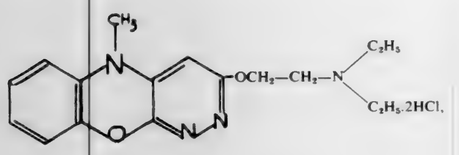
3,961,058

ANTIDEPRESSANT MEDICINAL PREPARATION

Tatyana Vladimirovna Gortinskaya, proezd Serova, 3, kv. 47; Mikhail Davidovich Mashkovsky, Leningradsky prospekt, 75a, kv. 55; Antonina Ivanovna Polezhaeva, 13 Parkovaya ulitsa, 25, korpus 1, kv. 44; Valentina Georgievna Nyrkova, Khersonskaya ulitsa, 7, korpus 1, kv. 20; Larisa Nikolaevna Bondar, ulitsa Gorkogo, 53, kv. 42; Galina Nikolaevna Litova, Novo-Khoroshevskoe shosse, 53, kv. 31, all of Moscow, U.S.S.R.; Maria Nikolaevna Schukina, deceased, late of Moscow, U.S.S.R., and Maria Nikolaevna Preobrazhenskaya, administrator, Rostovskaya naberezhnaya, 3, kv. 105, Moscow, U.S.S.R.

Filed Apr. 22, 1974, Ser. No. 463,169
Int. Cl.² A61K *31/535*
U.S. Cl. 424—248 **6 Claims**

1. An antidepressant medicinal composition, consisting essentially of an effective amount of the compound dihydrochloride 2-(2'-diethylaminoethoxy)-10-methyl-3,4-diazaphenoxazine of the following formula:



combined with a pharmaceutical carrier.

3,961,059

6-(SUBSTITUTED PHENOXY)TETRAZOLO(1,5-b)PYRIDAZINES AND A METHOD OF USE FOR CONTROL OF SOIL-BORNE PLANT DISEASES

Fred Y. Edamura, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 451,667, March 14, 1974, Pat. No. 3,914,228. This application May 1, 1975, Ser. No. 573,707
Int. Cl.² A01N *9/22*
U.S. Cl. 424—250 **8 Claims**

1. A method for controlling plant diseases selected from the group consisting of Verticillium, Rhizoctonia, Phytophthora, Pythium, and Thielaviopsis on plants or soil thereof which comprises applying to said plants or soil an effective amount for controlling plant diseases of a 6-(substituted phenoxy) tetrazolo (1, 5-b)-pyridazine compound wherein said substituted phenoxy moiety is selected from the group consisting of 4-nitrophenoxy, 4-chlorophenoxy and 4-chloro-2-nitrophenoxy.

3,961,060

METHOD AND COMPOSITIONS FOR THE TREATMENT OF NEUROLOGICAL DISORDERS

Kjell Gunnar Fuxe, Sollentuna, Sweden, assignor to Astra Lakemedal Aktiebolag, Sodertalje, Sweden

Filed May 15, 1974, Ser. No. 469,954
Claims priority, application Sweden, May 17, 1973, 73069601
Int. Cl.² A61K *31/52, 31/195*
U.S. Cl. 424—253 **26 Claims**

1. A method for alleviating depression and ailments which are related to a decreased activity of the dopamine system in the brain, comprising concurrently administering to a host in need of such treatment dopa and a dopa-potentiating amount of caffeine, the relative proportions of dopa and caffeine, calculated on a basis of the total weight of dopa and caffeine, being between about twenty to eighty percent by weight of dopa and about eighty to twenty percent by weight of caffeine.

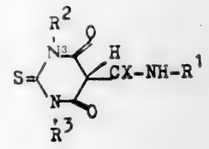
3,961,061

PESTICIDAL 2-AMIDOCARBONYLTHIOBARBITURIC ACIDS

Wolfgang Krämer; Wilfried Draber, both of Wuppertal; Ingeborg Hammann, Cologne, and Hans Scheinpflug, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 5, 1975, Ser. No. 547,421
Claims priority, application Germany, Feb. 7, 1974, 2405733
Int. Cl.² A01N *9/22*; **C07D** *239/00*
U.S. Cl. 424—254 **10 Claims**

1. A 2-amidocarbonylthiobarbituric acid of the formula



in which

R^1 is alkyl with 1 to 12 carbon atoms, alkoxyalkyl with 1 to 12 carbon atoms in the alkyl moiety and 1 to 3 carbon atoms in the alkoxy moiety, alkylthioalkyl with 1 to 6 carbon atoms in the alkyl moiety and 1 to 3 carbon atoms in the alkylthio moiety, haloalkyl with 1 to 12 carbon atoms in the alkyl moiety and 1 to 3 halogen atoms, cyclopentylmethyl, cyclohexylmethyl, alkenyl with 2 to 6 carbon atoms, cyclopentyl, cyclohexyl, cyclopentenyl, cyclohexenyl, haloalkenyl with 2 to 6 carbon atoms and 1 to 3 halogen atoms, alkylthiocarbonyl or alkoxycarbonyl with 1 to 4 carbon atoms in the alkyl moiety, aryl or aralkyl with 6 to 10 carbon atoms, or aryl or aralkyl with 6 to 10 carbon atoms and substituted with at least one member selected from the group consisting of halogen, haloalkyl or haloalkoxy with 1 or 2 carbon atoms and 2 to 5 halogen atoms, straightchain or branched alkyl with 1 to 4 carbon atoms, alkoxy or alkylthio with 1 to 4 carbon atoms, alkylsulfonyl with 1 to 4 carbon atoms and nitro,

R^2 and R^3 each independently is alkyl with 1 to 6 carbon atoms, alkenyl with 2 to 6 carbon atoms, cyclopentyl, cyclohexyl, phenyl, benzyl or hydrogen, provided that not more than one R^2 and R^3 is hydrogen, and

X is oxygen or sulfur.

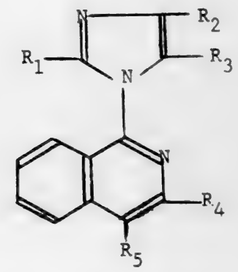
3,961,062

PHARMACEUTICAL COMPOSITION CONTAINING 1-(IMIDAZOLE-1-YL)-ISOQUINOLINES AND METHOD OF TREATING HYPERLIPEMIA

Ulrich Lerch, Hofheim, Taunus, and Ernold Granzer, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 454,713, March 25, 1974, Pat. No. 3,914,236. This application Mar. 26, 1975, Ser. No. 562,048
Claims priority, application Germany, Mar. 26, 1973, 231498
Int. Cl.² A61K *31/47*
U.S. Cl. 424—258 **18 Claims**

1. A pharmaceutical composition having hypolipemic and hypoglycemic activity consisting essentially of a physiologically tolerable carrier and, as the essential active compound, about 3 to 200 mg/kg per daily dosage unit of a 1-(1 -imidazolyl)-isoquinoline of the formula



or a physicologically tolerated salt thereof, wherein R_1, R_2, and R_3, which may be the same or different, are hydrogen, alkyl of 1 to 4 carbon atoms, or phenyl, but R_2 and R_3 are not both alkyl; R_4 is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl, or chlorine; and R_5 is hydrogen, alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, phenyl, or chlorine, but R_4 and R_5 are not both t-alkyl.

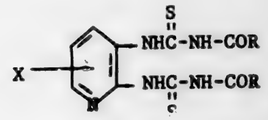
3,961,063

2,3-BIS-(3-ACYL-2-THIOUREIDO)-PYRIDINES

Roger C. Parish, King of Prussia, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Apr. 3, 1975, Ser. No. 565,026
Int. Cl.² C07D *213/53*
U.S. Cl. 424—263 **9 Claims**

1. A compound of the formula:



in which R is lower alkoxy; and X is hydrogen, lower alkyl, trifluoromethyl, halo, lower alkoxy, benzoyl, lower alkylthio, lower alkylsulfonyl, phenyloxy or phenylthio.

9. An anthelmintic composition comprising an anthelmintically effective but nontoxic quantity of a compound as claimed in claim **1**, dispersed uniformly throughout an inert carrier in amounts selected from the range of 1 to 300 mg./kg. per dosage unit.

3,961,064

PHARMACEUTICAL COMPOSITION FOR REMEDY OF HYPERAMMONIEMIA

Toji Konishi, Tokyo; Masanori Kayano, Honjo, and Yoshio Tanabe, Fujimi, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1974, Ser. No. 525,744
Claims priority, application Japan, Nov. 21, 1973, 48-130123
Int. Cl.² A61K *31/455*
U.S. Cl. 424—266 **6 Claims**

1. A method of lowering the blood-ammonia level in humans suffering from liver disease and having hyperammoniemia as a consequence thereof, which comprises:

administering to such a human from 200 to 2400 mg per day of nicotinohydroxamic acid in the form of divided doses of a therapeutic composition containing nicotinohydroxamic acid with a pharmaceutically acceptable carrier, diluent or vehicle.

3,961,065

BENZENESULFONYLUREA DERIVATIVES

Donald E. Kuhla, Gales Ferry, and Reinhard Sarges, Mystic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 357,466, May 4, 1973, Pat. No. 3,879,403. This application Jan. 30, 1975, Ser. No. 545,741
Int. Cl.² A61K *31/455*
U.S. Cl. 424—266 **14 Claims**

1. A method for lowering blood sugar in the treatment of a diabetic animal, which comprises orally administering to said animal an effective blood sugar lowering amount of a compound selected from the group consisting of benzenesulfonylureas of the formula:



and the base salts thereof with pharmacologically acceptable cations, wherein R is 2-methoxy-3-pyridyl, 5-chloro-2-methoxy-3-pyridyl or 5-bromo-2-methoxy-3-pyridyl, and R' is bicyclo-[2.2.1]hept-5-en-2-yl-endo-methyl, cyclohexyl or 4-chlorocyclohexyl.

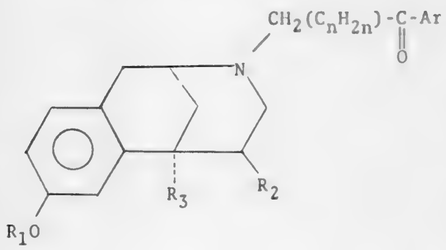
3,961,066

6,7-BENZOMORPHAN DERIVATIVES

Toshitsugu Fukumaru, Kyoto; Kenji Kobayashi, Takarazuka; Hiroyuki Mizote, Takarazuka; Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Mar. 29, 1974, Ser. No. 456,268
Claims priority, application Japan, Mar. 31, 1973, 48-37333
Int. Cl.² C07D *221/26*
U.S. Cl. 424—267 **16 Claims**

1. A 6,7-benzomorphan of the formula:



and non-toxic, pharmaceutically acceptable acid addition salts thereof, wherein R_1 is a hydrogen atom, a lower alkyl group, C_2-C_6 alkanoyl, benzoyl or nicotinoyl, R_2 and R_3 are each a lower alkyl group, Ar is a phenyl group, a halophenyl group or a lower alkoxyphenyl group and n is an integer of 1 or 2.

3,961,067

COMPOSITION COMPRISING A BENZENESULFONYLUREA HYPOGLYCEMIC AGENT AND METHOD OF TREATMENT

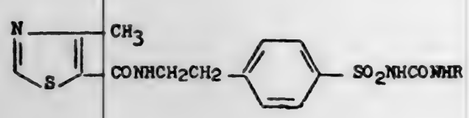
Donald E. Kuhla, Gales Ferry; Reinhard Sarges, Mystic, and Hans E. Wiedermann, Niantic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 338,965, March 7, 1973, Pat. No. 3,856,806. This application Oct. 21, 1974, Ser. No. 516,372

Int. Cl.² A61K *31/425*

U.S. Cl. 424—270 **7 Claims**

1. A method for lowering blood sugar in the treatment of a diabetic animal, which comprises orally administering to said animal an effective blood sugar lowering amount of a compound selected from the group consisting of a benzenesulfonylurea of the formula:



and a base salt thereof with a pharmacologically acceptable cation, wherein R is bicyclo [2.2.1]hept-5-en-2-yl-endomethyl or cycloalkyl of from five to seven carbon atoms.

3,961,068

USE OF IPRONIDAZOLE IN COMBATTING *SPHAEROPHORUS NECROPHORUS* INFECTIONS

Gian Paolo Maestrone, Staten Island, N.Y., and Milan Mitrovic, Nutley, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sept. 30, 1974, Ser. No. 503,560

Int. Cl.² A61K *31/415*

U.S. Cl. 424—273 **7 Claims**

1. A method for the treatment of infections in domestic animals wherein the causative organism is *Sphaerophorus necrophorus* which comprises orally administering to an animal afflicted therewith feed or drinking water containing from about 0.005% by weight to about 0.03% by weight of a substance selected from the group consisting of ipronidazole and pharmaceutically acceptable acid addition salts thereof.

3,961,069

AKENYL(OR ALKYNYL) 9-XANTHENYL ETHER COMPOUNDS

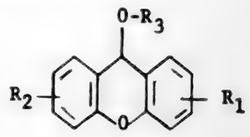
Paul E. Bender, Willingboro, N.J., and Bernard Loev, Broomall, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Apr. 23, 1975, Ser. No. 570,905

Int. Cl.² C07D *311/84*

U.S. Cl. 424—283 **7 Claims**

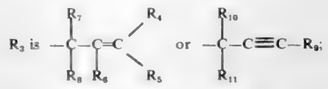
1. A compound of the formula:



in which:

R_1 is hydrogen, halogen hydroxy, lower alkyl or lower alkoxy;

R_2 is hydrogen, hydroxy, lower alkyl or lower alkoxy;



R_4, R_5, R_6 and R_9, being the same or different, are hydrogen, methyl or ethyl; and

R_7, R_8, R_{10} and R_{11}, being the same or different, are hydrogen or methyl.

3,961,070

PESTICIDAL DIHALOVINYL-SPIROALKANECYCLOPROPANE DERIVATIVES

Royston H. Davis, Rainham, and Robert J. G. Searle, Rodmersham Green near Sittingbourne, both of England, assignors to Shell Oil Company, Houston, Tex.

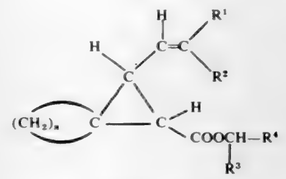
Filed Mar. 24, 1975, Ser. No. 561,573

Claims priority, application United Kingdom, Dec. 3, 1974, 52224/74

Int. Cl.² A01N *9/20, 9/24*; **C07C** *121/75*

U.S. Cl. 424—304 **7 Claims**

1. A dihalovinyl-spiroalkanecyclopropane derivative of the formula



wherein R^1 and R^2 independently each represents a halogen atom; R^3 represents a cyano group; R^4 represents phenyl substituted by phenoxy and *n* is an integer of from 2 to 5.

7. A method of combating pests at a locus which comprises applying to the locus a pesticidally active amount of a dihalovinyl-spiroalkanecyclopropane derivative as claimed in claim 1 or a composition thereof.

3,961,071

THERAPEUTIC COMPOSITIONS AND METHOD

Herbert Koppe, Ingelheim am Rhein; Albrecht Engelhardt, Mainz, Rhine, and Karl Zeile, Ingelheim am Rhein, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

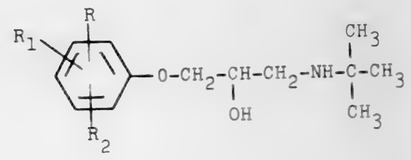
Division of Ser. No. 502,634, Sept. 3, 1974, which is a division of Ser. No. 408,743, Oct. 23, 1973, Pat. No. 3,868,460, which is a division of Ser. No. 294,226, Oct. 2, 1972, which is a division of Ser. No. 36,676, May 12, 1970, Pat. No. 3,740,444, which is a continuation-in-part of Ser. No. 700,376, Jan. 25, 1968, Pat. No. 3,541,130. This application Apr. 2, 1975, Ser. No. 564,308

Claims priority, application Germany, Feb. 6, 1967, 91070; June 15, 1967, 93025; July 25, 1967, 93645; June 15, 1967, 27645

Int. Cl.² A61K *31/195*

U.S. Cl. 424—319 **6 Claims**

1. A composition having bradycardia and isoproterenol antagonistic activity comprising a small but effective amount of at least one active compound selected from the group consisting of racemates of 1-phenoxy-2-hydroxy-3-tert.-butylamino propanes of the formula



wherein R is COOH; R_1 is selected from the group consisting of hydrogen, alkoxy and alkylthio of 1 to 4 carbon atoms and alkenyl and alkynyl of 2 to 4 carbon atoms and R_2 is selected from the group consisting of hydrogen, halogen and alkyl and alkoxy of 1 to 4 carbon atoms, their optically active isomers and their non-toxic, pharmaceutically acceptable acid addition salts of said racemates and said optically active isomers and a major amount of a pharmaceutical carrier.

3,961,072

PHENOXYPROPANOLAMINE THERAPEUTIC AGENTS

David Alexander Cox, Canterbury; John Christopher Danilewicz, Sandwich; Allan Leslie Ham, Broadstairs; John Edward Glyn Kemp, Canterbury, and Michael Snarey, Sandwich, all of England, assignors to Pfizer Inc., New York, N.Y.

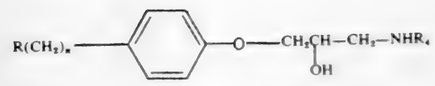
Division of Ser. No. 345,726, March 28, 1973, Pat. No. 3,845,123, which is a continuation of Ser. No. 98,168, Dec. 14, 1970, abandoned. This application Aug. 9, 1974, Ser. No. 496,288

Claims priority, application United Kingdom, Dec. 17, 1969, 61414/69; May 20, 1970, 24360/70

Int. Cl.² A61K *31/165*

U.S. Cl. 424—324 **6 Claims**

1. A method for effecting anti-anginal action in the treatment of a cardiac-afflicted subject, which comprises administering to said subject an effective anti-anginal amount of a compound selected from the group consisting of phenoxypropanolamine bases of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein R of $R(CH_2)_n$ is alkanoylamino having from one to six carbon atoms when n is zero and is alkanoylamino having from one to three carbon atoms when n is one, said *n* being an integer of from 0 to 1, inclusive; R_1 is hydrogen, allyl or methyl, and R_4 is alkanoylaminophenoxyethyl having from one to six carbon atoms in the alkanoyl moiety.

3,961,073

ANTIDEPRESSANT

Solomon H. Snyder, Baltimore, Md., assignor to Nelson Research & Development Company, Irvine, Calif.

Continuation-in-part of Ser. No. 454,243, May 17, 1974, abandoned. This application July 1, 1975, Ser. No. 592,101

Int. Cl.² A61K *31/13*

U.S. Cl. 424—325 **10 Claims**

1. A method for temporarily alleviating the symptoms of depression in humans comprising internally administering to humans suffering from depression a composition comprising an effective amount of a compound selected from the group consisting of (−) trans-2-phenylcyclopropylamine and a non-toxic pharmaceutically acceptable acid addition salt thereof, said composition being substantially free of (+) trans-2-phenylcyclopropylamine.

3,961,074

KETO-QUATERNARY COMPOSITIONS

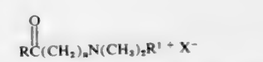
Robert Andrew Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 445,542, Feb. 25, 1974, Pat. No. 3,907,895, which is a continuation-in-part of Ser. No. 400,097, Sept. 24, 1973, which is a continuation of Ser. No. 39,536, May 21, 1970, abandoned. This application May 9, 1975, Ser. No. 576,082

Int. Cl.² A61K *7/22*

U.S. Cl. 424—54 **6 Claims**

1. A pharmaceutical composition comprising about 0.1–10% by weight of a chemical compound having the structural formula:



wherein R is 1-adamantyl, R^1 is a long chain alkyl group of 10 to 18 carbon atoms, n is an integer from 1 to 3, and X is a compatible anion selected from the group consisting of chloride, bromide, iodide, methyl sulfate, nitrite and arylsulfonates.

3,961,075

ETHER-LINKED QUATERNARY AMMONIUM COMPOSITIONS

Robert Andrew Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 445,714, Feb. 25, 1974, Pat. No. 3,898,284, which is a continuation-in-part of Ser. No. 400,097, Sept. 24, 1973, which is a continuation of Ser. No. 39,536, May 21, 1970, abandoned. This application May 9, 1975, Ser. No. 576,084

Int. Cl.² A61K *7/22*

U.S. Cl. 424—54 **6 Claims**

1. A pharmaceutical composition comprising about 0.1–10% by weight of a chemical compound having the structural formula: $RO(CH_2)_nN(CH_3)_2R^1 + X^-$ wherein R is 1-adamantyl, R^1 is a long chain alkyl group of 10 to 18 carbon

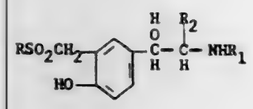
atoms, n is an integer from 1 to 3, and X is a compatible anion selected from the group consisting of chloride, bromide, iodide, methyl sulfate, nitrate and arylsulfonates.

3,961,076
α-AMINOALKYL-4-HYDROXY-3-ALKYLSULFONYL-METHYLBENZYL ALCOHOLS HAVING β-ADRENERGIC STIMULANT ACTIVITY

Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 359,063, May 10, 1973, which is a continuation-in-part of Ser. No. 236,177, March 20, 1972, abandoned. This application July 18, 1975, Ser. No. 596,940
Int. Cl.² A61K *31/135*
U.S. Cl. 424—330 **10 Claims**

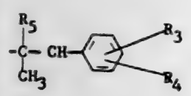
1. A pharmaceutical composition having β-adrenergic stimulant activity in dosage unit form comprising a pharmaceutical carrier and an effective amount of a chemical compound of the formula:



or a pharmaceutically acceptable acid addition salt of said compound, wherein:

R is straight or branched chain lower alkyl of from 1 to 5 carbon atoms;

R_1 is branched chain lower alkyl of from 3 to 5 carbon atoms, cycloalkyl or cycloalkylmethyl, the cycloalkyl moiety having from 3 to 6 carbon atoms, or

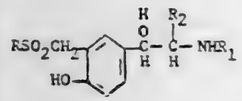


R_2 is hydrogen, methyl or ethyl;

R_3 and R_4 are hydrogen, hydroxy, or methoxy, and

R_5 is hydrogen or methyl.

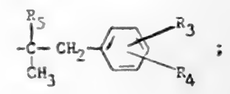
6. The method of producing β-adrenergic stimulant activity which comprises administering internally to animals requiring bronchodilation an amount sufficient to produce said activity a chemical compound of the formula:



or a pharmaceutically acceptable acid addition salt of said compound, wherein:

R is straight or branched chain lower alkyl of from 1 to 5 carbon atoms;

R_1 is branched chain lower alkyl of from 3 to 5 carbon atoms, cycloalkyl or cycloalkylmethyl, the cycloalkyl moiety having from 3 to 6 carbon atoms, or



R_2 is hydrogen, methyl or ethyl;

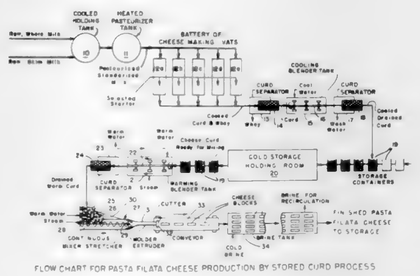
R_3 and R_4 are hydrogen, hydroxy, or methoxy, and

R_5 is hydrogen or methyl.

3,961,077
PASTA FILATA CHEESE PRODUCTION BY STORED CURD PROCESS

Lester O. Kielsmeier, Wheatridge, Colo., assignor to Leprino Cheese Manufacturing Company, Denver, Colo.

Continuation-in-part of Ser. No. 407,808, Oct. 19, 1973, abandoned. This application Apr. 10, 1975, Ser. No. 566,708
Int. Cl.² A23C *19/02*
U.S. Cl. 426—36 **17 Claims**



FLOW CHART FOR PASTA FILATA CHEESE PRODUCTION BY STORED CURD PROCESS

1. A process for preparing pasta filata cheese curd ready for mixing, comprising:

a. inoculating a batch of pasteurized cow's milk with a pasta filata starter culture providing an effective amount of *S. thermophilus* together with at least one high-temperature-growing *Lactobacillus;*

b. converting the milk batch to a mixture of curd and whey;

c. cooking the curd-whey mixture at a temperature of 100° to 125°F. favorable to the growth of said *S. thermophilus* and said *Lactobacillus;*

d. separating the resulting warm granular curd from the whey, said warm curd having an average internal pH of 5.5 to 6.2;

e. contacting the warm curd with water having a lower temperature than the curd until the curd is cooled to below 80°F.; and

f. holding the cooled granular curd in a cold storage room having an ambient air temperature above the freezing temperature of the curd and below 65°F. until the average internal pH of the curd has decreased to a pH of 5.1 to 5.4 suitable for mixing and stretching the curd to obtain pasta filata stringiness.

3,961,078
SOLUBLE WASTE CONVERSION PROCESS AND PASTEURIZED PROTEINACEOUS PRODUCTS

Paul A. Stitt, 1318 S. Eighth St., Manitowoc, Wis. 54220

Continuation of Ser. No. 326,228, Jan. 24, 1973, abandoned. This application Mar. 21, 1975, Ser. No. 560,748
Int. Cl.² A23C *5/00*; A23K *1/08*; A23J *1/20*; C02C *1/02*
U.S. Cl. 426—41 **18 Claims**

1. A process for treating soluble biodegradable organic waste material which comprises:

a. preparing a reaction mixture consisting essentially of soluble biodegradable organic waste material and a microorganism culture consisting of thermophilic aerobic bacteria capable of digesting such soluble material and containing soluble sources of manganese, magnesium, phosphorus, iron and nitrogen in a liquid medium at a pH ranging from about 5.5 to 9, the soluble organic material content being in excess of 1 gram per liter;

b. introducing an oxygenating gas into the mixture so as to maintain the dissolved oxygen content at least 0.01 mg per liter of said mixture while

c. maintaining said mixture at a temperature of from 45° to 70°C for a time sufficient to convert the organic waste material into cellular proteinaceous material, and

d. separating the cellular proteinaceous material produced.

3,961,079
ENSILING OF GREEN FODDER WITH HEXAMETHYLENE TETRAMINE AND SODIUM NITRITE

Arvid Emanuel Hellberg, Uppsala, Sweden, assignor to Plate Kofasil Gesellschaft mit beschrankter Haftung, Bonn, Germany

Continuation of Ser. No. 309,151, Nov. 24, 1972, which is a continuation of Ser. No. 99,265, Dec. 17, 1970, which is a continuation of Ser. No. 667,358, Sept. 13, 1967, abandoned. This application Feb. 28, 1974, Ser. No. 446,762
Int. Cl.² A23K *3/03*
U.S. Cl. 426—54 **5 Claims**

1. A method of ensiling green fodder, which comprises adding to the green fodder about 0.1 to 1.0% by weight of a dry pulverulent mixture of hexamethylene tetramine and sodium nitrite in a ratio of from 9:1 to 1:3, and allowing the fodder to ferment.

3,961,080
PROCESS FOR AUTOLYSIS OF YEAST

Hiroshi Sugimoto; Hiroyuki Takeuchi, both of Noda, and Tamotsu Yokotsuka, Nagareyama, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda, Japan

Filed Oct. 3, 1973, Ser. No. 403,262
Claims priority, application Japan, Oct. 17, 1972, 47-103868
Int. Cl.² A23L *1/28*; C12C *11/34*
U.S. Cl. 426—60 **8 Claims**

2. A process for producing a yeast extract food for humans having good flavour, palatability, and no bitterness comprising adding sodium chloride and ethanol to active yeast selected from the group consisting of *Candia utilis, Saccharomyces disastaticus, Saccharomyces fragilis, Mycotorula japonica, Torulopsis xylinus, Debaryomyces hansenii, Debaryomyces kloeckeri, Pichia scolyti* and *Candia guilliermondii* and subjecting the resulting mixture to autolysis, said sodium chloride and ethanol being added in amounts such that the concentrations become about 2–10% (w/v) and about 1–9% (v/v) of the total volume of the autolytic reaction system, respectively, said active yeast and said concentrations of said sodium chloride and ethanol being selected such that the resultant autolysate is suitable for human consumption, palatable, and has no bitterness.

3. A process for producing a yeast extract food for humans having good flavour, palatability, and no bitterness comprising adding sodium chloride and ethanol to active yeast and subjecting the resultant mixture to autolysis, said sodium chloride and ethanol being added in amounts such that their concentrations become about 2–10% (w/v) and about 5–9% (v/v) of the total volume of the autolytic reaction system, respectively, said active yeast and said concentrations of said sodium chloride and ethanol being selected such that the resultant autolysate is suitable for human consumption, palatable, and has no bitterness.

3,961,081
MOLASSES FEED BLOCK FOR ANIMALS AND METHOD OF MAKING SAME

Carl O. McKenzie, 251 Altura Drive, Fullerton, Calif. 92632

Continuation of Ser. No. 259,533, June 5, 1972, which is a continuation-in-part of Ser. No. 850,226, Aug. 14, 1969, abandoned. This application Mar. 12, 1974, Ser. No. 450,410
Int. Cl.² C13F *3/00*
U.S. Cl. 426—658 **16 Claims**

1. The method of making generally non-porous, hard, vitreous feed blocks for animals which comprises the steps of providing a fluid feed composition having a molasses content in the range of from about 50% to 100% of the total composition, heating said fluid composition at substantially ambient pressure and without substantial foaming in the composition to a temperature within a range of from about 225°F. to about 300°F. so as to drive off the major portion of the water content of the molasses in the composition, subjecting substantially all portions of said heated, fluid composition to a substantial vacuum without substantial further temperature increase so as to further substantially reduce the water content of the molasses in the composition, forming said composition into blocks of about 20 to 100 pounds weight while it is still sufficiently hot to be formable, and allowing the composition to cool until it hardens into formed blocks.

3,961,082
EDIBLE FOOD CASING PRINTED WITH WATER-RESISTANT INK

Bruno Winkler, Am Hummelberg 9, 6941 Oberflockenbach, Germany

Filed Mar. 7, 1973, Ser. No. 338,710
Claims priority, application Germany, Mar. 15, 1972, 2212398
Int. Cl.² A22C *13/00*; A23L *1/275*
U.S. Cl. 426—87 **31 Claims**

1. A process for the manufacture of edible collagen food casings bearing a water-resistant printed mark, which comprises printing a dry collagen tube with an edible ink comprising:

a. at least one pigment dyestuff in an amount of 10 to 60% by wt.;

b. at least one liquid suspending medium for the pigment dyestuff selected from the group consisting of water and plasticizer alcohols, in an amount of 30 – 80% by wt.; and

c. at least one substance that is cross-linkable by heating alone or in combination with a tanning treatment selected from the group consisting of proteins, cellulose, cellulose derivatives, pectins, gum arabic and alginates, in an amount of 2 – 30 wt.%;

and thereafter subjecting the printed tube to the condition which causes cross-linking of the cross-linkable substance to render the printed mark water-resistant.

3,961,083
MEAT FLAVORED VEGETABLE PROTEIN PRODUCT

Henry Evans Coleman, Salt Lake City, Utah, assignor to Marian Berkley, Salt Lake City, Utah, a part interest

Filed Oct. 24, 1974, Ser. No. 517,549
Int. Cl.² A23L *1/22*; A23D *5/00*
U.S. Cl. 426—92 **15 Claims**

1. A textured vegetable protein product having a meat flavor comprising a major amount of hydrated deflavored textured vegetable protein which has been subjected to partial

dehydration and has then had absorbed thereon, as a flavoring material, a minor amount of a rendered animal fat.

12. A process for producing a meat flavored textured vegetable protein product comprising the steps of

a. treating a textured vegetable protein having an average particle diameter of ½ inch or larger by covering said textured vegetable protein with water in a vessel and heating said vessel until the water boils;
b. rinsing the textured vegetable protein from step (*a*) with water;
c. rinsing the textured vegetable protein from step (*b*) with a dilute solution of sodium bicarbonate;
d. partially dehydrating the textured vegetable protein from step (*c*) to remove the loosely held water;
e. comminuting the textured vegetable protein from step (*d*) into smaller sizes; and
f. mixing the textured vegetable protein from step (*e*) with a minor amount of a hot animal fat until the fat is absorbed on the textured vegetable protein.

3,961,084

RICE-TREATING METHOD AND RICE PRODUCTS

James Patrick Cox, and Jeanne Marie Cox, both of Lynden, Wash., assignors to Martin, Robertson & Bain Ltd., Vancouver, Canada

Continuation-in-part of Ser. No. 131,423, April 5, 1971, Pat. No. 3,879,566. This application Oct. 10, 1974, Ser. No. 513,709

Int. Cl.² A23B *9/00*

U.S. Cl. 426—93 **4 Claims**

1. The method of deterring loss of moisture from rice grains and thereby reducing weight loss of the rice during storage which comprises supplying calcium chloride to threshed rice grain prior to storage, for such calcium chloride to be carried by the grains of the rice during storage.

3. A rice product comprising rice grains carrying calcium chloride for deterring escape of moisture from the rice grains which would cause weight loss of the rice during storage.

3,961,085

EDIBLE FOOD CASING DYED WITH AN EDIBLE DYESTUFF AND PROCESS FOR ITS MANUFACTURE

Bruno Winkler, Am Hummelberg 9, 6941 Oberflockenbach, and Dieter Fritz, Konrad-Adenauer-Str. 1, 6940 Weinheim, both of Germany

Continuation of Ser. No. 340,776, March 13, 1973, abandoned. This application Feb. 11, 1975, Ser. No. 549,121

Claims priority, application Germany, Mar. 15, 1972, 2212399

Int. Cl.² A22C *13/00*; **A23L** *1/275*

U.S. Cl. 426—138 **12 Claims**

1. An unfilled edible food casing suitable for use as a casing for sausage comprising an edible casing material dyed with an edible dyestuff which is contained in the casing, the dyestuff being encapsulated by a hydrophobic substance selected from the group consisting of edible oils, fats, waxes, and mixtures of these substances, so that the dyestuff is fixed in the casing in a water-resistant manner.

11. A process for the manufacture of a dyed, unfilled, edible food casing which is dyed with a dye in a water resistant manner and is suitable for use as a casing for sausage, comprising encapsulating the dyestuff in finely divided form with a hydrophobic substance to render the dye water resistant, and combining the encapsulated dye with the casing for said dyeing.

3,961,086

PROCESS FOR IMPROVING STORAGE LIFE OF MEAT

Albin F. Turbak, Convent Station, N.J., assignor to Tee-pak, Inc., Chicago, Ill.

Filed Mar. 12, 1974, Ser. No. 450,525

Int. Cl.² A23B *4/14*

U.S. Cl. 426—240 **7 Claims**

1. A process for improving the storage life of fresh meat primal cuts normally subjected to deterioration which comprises the steps:

wrapping said meat primal cuts in a first film which is permeable to a sterilizing agent but impermeable to bacteria, then

diffusing a sterilizing agent inwardly through said first film for killing substantially all of the bacteria on the surface of said meat primal cuts, and then

enclosing said sterilized wrapped meat primal cuts in a second film which is substantially impermeable to oxygen for retarding aerobic bacterial growth.

3,961,087

PROCESS FOR PREPARING COOKED RICE

Harold W. Zukerman, Skokie, Ill., assignor to American Frozen Foods Corporation, Wichita, Kans.

Filed Mar. 28, 1974, Ser. No. 455,606

Int. Cl.² A23L *1/168*

U.S. Cl. 426—262 **12 Claims**

1. A process for preparing a cooked rice product having its grains or particles joined together and having a portion of its amylose and amylopectin modified which comprises:

a. mixing rice grains or particles with water which contains a starch complexing agent wherein the ratio of complexing agent to dry rice is about 1 lb. of complexing agent to about 100 lbs. of dry rice;
b. heating the mixture at about 190°F to about 210°F for a period of time sufficient for the rice grains or particles to absorb from 1 to 4.0 pounds of water per pound of said grains or particles;
c. forming the rice grains or particles into units of a given shape; and
d. heating said units to provide a product having an exterior that is harder than the interior of said product.

3,961,088

METHOD OF PACKAGING FRUIT DRINKS

Roy T. Besand, Manchester; Paul L. Carey, St. Louis, and David J. Armstrong, Oakville, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed June 24, 1974, Ser. No. 482,108

Int. Cl.² A23L *2/00*

U.S. Cl. 426—262 **7 Claims**

1. A method of packaging an unbuffered fruit drink which contains an alkali metal bisulfite and residual sulfur dioxide, said method comprising packaging the product at a pH of from about 2.6 to about 3.0 in a substantially gas permeable container having an oxygen barrier of at least 450 cc mils per 100 square inches.

3,961,089

METHOD OF MANUFACTURE OF HOLLOW CHOCOLATE ARTICLES

Amilcare Dogliotti, Neive, Italy, assignor to P. Ferrero & C. S.p.A., Alba, Cuneo, Italy

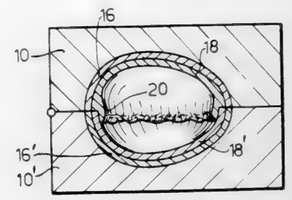
Filed July 24, 1974, Ser. No. 491,576

Claims priority, application Italy, July 30, 1973, 69289/73

Int. Cl.² A23G *1/00*

U.S. Cl. 426—274 **2 Claims**

1. A method of manufacturing hollow chocolate articles comprising forming two chocolate shells in complementary mold halves, coating each of said shells on the inside with a molten layer of edible material, cooling the layer in one of said shells to set, inverting the other shell while the layer is still flowable into complementary mating relation on top of the shell having the set layer therein, allowing the flowable layer



to flow over the edge of the set layer and cooling both shells to set and secure together the overlapping inner layers and thereby hold said shells together.

3,961,090

METHOD OF PREPARING RARE ROAST BEEF

Philip D. Weiner, and Jasper J. Kermans, both of Cincinnati, Ohio, assignors to The E. Kahn's Sons Company, Cincinnati, Ohio

Filed Feb. 28, 1975, Ser. No. 554,159

Int. Cl.² A23L *1/31*

U.S. Cl. 426—281 **12 Claims**

1. A process of preparing rare roast beef which is safe for human consumption comprising the steps of:

a. pumping an aqueous solution of water, salt dextrose, and monosodium glutamate into a 10–15.4 pound piece of uncooked beef;
b. subjecting the pumped beef to deep fat frying to brown and seal the outer surface thereof;
c. placing the beef within an oven-ready bag;
d. producing a vacuum within the bag to cause it to adhere to the outer surface of the beef, and thereafter sealing the bag;
e. cooling the bag-encased beef until it attains an internal temperature of 35°–40°F;
f. placing the cooled, bag-encased beef in a closed chamber and there subjecting it to live-steam-induced temperatures of 162°–165°F until the internal temperature of the beef attains an intermediate temperature of 128°–134°F;
g. discontinuing the addition of heat to said chamber without raising the internal temperature beyond the 128°–134°F range;
h. lowering the temperature of the outer surface of the meat within the bag about 10°F as an intermediate cooling step;
i. removing the bag-encased meat when, but not before, the internal temperature thereof reaches a final temperature of from 134°–140°F due to the dissipation of residual heat within the bag; and
j. subjecting the bag-encased product to rapid chilling for reducing the internal temperature of the beef from the range of 134°–140°F.

3,961,091

PROCESS FOR PRODUCING FLAVORED POPCORN

John L. Caccavale, 1812 Baxter St.; Victor J. Pierce, 2040 Vestal Ave., both of Los Angeles, Calif. 90026; Robert W. Young, 10 Gracie Square, New York, N.Y. 10028, and Samuel B. Prussin, 2126 Banyan Drive, Los Angeles, Calif. 90049

Continuation-in-part of Ser. No. 369,516, June 13, 1973. This application May 1, 1974, Ser. No. 465,842

Int. Cl.² A23L *1/18*

U.S. Cl. 426—307 **4 Claims**

1. The method of producing flavored popcorn consisting essentially of:

a. combining popcorn kernels, a cooking medium for said popcorn kernels selected from the group consisting of oils, semi-solid fats or solid fats, encapsulated flavoring substances in particulate form and lecithin in an amount sufficient to disperse and prevent agglomeration or clumping of the flavoring substances, but below an amount which will produce excessive foaming and introducing same into a cooking vessel; and,
b. heating said combined materials for a period of time sufficient to pop said popcorn kernels.

3,961,092

METHOD FOR PRESERVING HIGH MOISTURE CONTENT AGRICULTURAL GRAINS

Joseph G. Forest, P.O. Box 367, Waverly, N.Y. 14892, and Edward J. Czarnetzky, P.O. Box 330, Chazy, N.Y. 12921

Continuation-in-part of Ser. No. 466,778, May 3, 1974, abandoned. This application Apr. 3, 1975, Ser. No. 564,818

Int. Cl.² A21D *4/00*

U.S. Cl. 426—331 **1 Claim**

1. A method for preserving high moisture content agricultural grain from bacterial degradation which comprises: applying to said grain, an antibacterial effective amount of a composition consisting essentially of:

1. water,
2. an acid member selected from the group consisting of formic acid, acetic acid, propionic acid, and phosphoric acid, and
3. a synthetic organic cationic or anionic surfactant selected from the group consisting of sodium alkylsulfonethanolamine, ammonium alkylarylpolyethersulfonate, sodium alkylarylpolyethersulfonate, and a sulfonated fatty acid,

whereby said surfactant enhances the penetration of said acid member of (2) into and throughout said high moisture content grain.

3,961,093

NOVEL FLAVORING COMPOSITIONS AND PRODUCTS CONTAINING 2-METHYL-3-THIO-(2-METHYLBUTYRYL)-FURAN

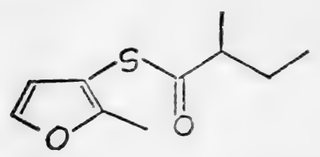
William J. Evers, Red Bank; Howard H. Heinsohn, Jr., Hazlet; Bernard J. Mayers, Cliffwood Beach, and Elizabeth A. Karoll, Old Bridge, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 478,369, June 11, 1974, Pat. No. 3,917,869, which is a continuation-in-part of Ser. No. 386,451, Aug. 7, 1973, Pat. No. 3,873,731. This application Aug. 12, 1975, Ser. No. 603,934

Int. Cl.² A23L *1/226*

U.S. Cl. 426—535 **2 Claims**

1. A process for altering modifying or enhancing the roasted, nutty or hazelnut flavor of a foodstuff which comprises adding thereto 2-methyl-3-thio-(2-methylbutyryl)-furan having the structure:



in an amount of from 0.1 parts per billion to about 35 parts per million based on the total weight of the foodstuff.

3,961,094
FLAVORING AGENTS COMPRISING UNSATURATED BUTYROLACTONE DERIVATIVES AND PRECURSORS THEREOF

Paul Dietrich, and Erling Sundt, both of Geneva, Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

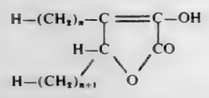
Division of Ser. No. 312,031, Dec. 4, 1972, Pat. No. 3,884,247, which is a division of Ser. No. 115,122, Feb. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 768,896, Oct. 18, 1968, abandoned. This application Jan. 22, 1975, Ser. No. 543,061

Claims priority, application Switzerland, Oct. 18, 1967, 14559/67; Oct. 12, 1968, 15191/68

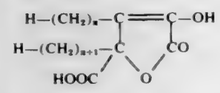
Int. Cl.² A23L *1/226*

U.S. Cl. 426—536 **8 Claims**

1. A product selected from among heatable and non-heatable foodstuffs, animal feeds and beverages containing at least one compound of the formula



or from heatable foodstuffs, animal feeds and beverages containing at least one compound of the formula



wherein *n* can be 0 or 1, said compound being present in an amount of between 0.1 and 50 parts per million by weight.

3,961,095
FLAVORING AGENT

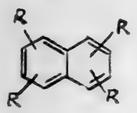
Max Winter, Petit-Lancy; Fritz Gautschi, Commugny; Ivon Flament; Max Stoll, both of Petit-Lancy, all of Switzerland, and Irving M. Goldman, Niantic, Conn., assignors to Firmenich & Cie, Geneva, Switzerland

Division of Ser. No. 243,866, April 13, 1972, abandoned, which is a division of Ser. No. 70,560, Sept. 8, 1970, Pat. No. 3,702,253, which is a continuation of Ser. No. 543,069, April 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 452,342, April 30, 1965, abandoned. This application June 24, 1974, Ser. No. 482,817

Int. Cl.² A23L *1/234*

U.S. Cl. 426—538 **68 Claims**

52. A process for the modification of the flavor of a composition selected from the group consisting of foodstuffs and beverages which comprises adding thereto a minor, but flavor-modifying amount of a compound selected from those represented by the general formula:



wherein R is hydrogen or methyl or ethyl, at least one of the R's being methyl or ethyl.

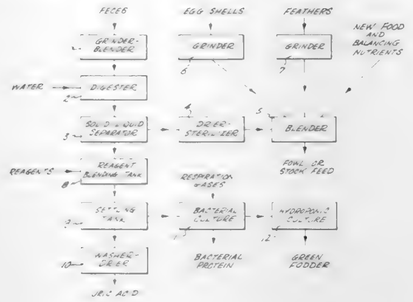
3,961,096
CONSERVATION AND CONVERSION OF POULTRY WASTE PRODUCTS

Mary Victoria Emanuel, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 207,488, Dec. 13, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 313,788

Int. Cl.² A23J *1/00*

U.S. Cl. 426—644 **6 Claims**



1. The method of producing a composite fowl or stock feed which comprises comminuting poultry feces, mixing aqueous base liquid with the comminuted poultry feces for dissolving from the feces components soluble in such aqueous base liquid, separating the solid phase and the liquid phase of the resulting material, and blending with other food components such solid phase of the material containing food undigested by the poultry.

3,961,097
METHOD OF PREPARING TISSUE FOR MICROSCOPIC EXAMINATION

Joseph F. Gravlee, Jr., 2921 Balmoral Road, Birmingham, Ala. 25223

Filed Oct. 28, 1971, Ser. No. 193,563

Int. Cl.² A01N *1/00*; **B05D** *3/12*

U.S. Cl. 427—2 **6 Claims**

1. In a method of preparing a specimen of tissue for microscopic examination including the steps of: immersing a specimen in a bath of dehydrating agent; immersing the dehydrated specimen in a bath of clearing agent; and immersing the cleared specimen in a bath of paraffin, the improvement comprising: the step of applying ultrasonic energy to said specimen during each of said steps, whereby the time required to prepare said specimen is reduced.

3,961,098
COATED ARTICLE AND METHOD AND MATERIAL OF COATING

Irwin I. Bessen, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 23, 1973, Ser. No. 353,764

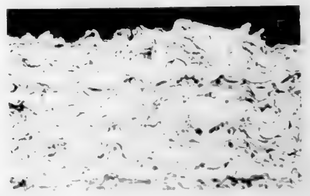
Int. Cl.² C23C *9/00*

U.S. Cl. 427—34 **12 Claims**

1. In a method for coating a metal surface, the surface based on an element selected from the group consisting of Fe, Co and Ni, the steps of:

impinging on the metal surface a plurality of heated, substantially non-molten MCr-base alloy particles in which the element M is selected from the group consisting of Fe, Co and Ni, the particles deforming, fusing and cooling upon contact with the surface and with other applied particles to deposit on and bond to the surface a fused coating matrix having a matrix outer surface and including voids, lattice vacancies and retained deformation structure;

diffusing into the matrix and into the metal surface through the matrix outer surface a filler metal deposited from a halide vapor produced from a powder including a metal selected from the group consisting of Al and alloys including Al, filling the voids and recrystallizing the matrix



to produce from the matrix a dense, ductile coating layer metallurgically bonded with the metal surface through a diffusion portion, the coating layer having an average aluminum content in the range of about 8–20 weight percent aluminum.

3,961,099
THERMALLY STABLE POSITIVE POLYCARBONATE ELECTRON BEAM RESISTS

Edward Gipstein, Saratoga, Calif.; Wayne M. Moreau, Wappingers Falls, N.Y., and Omar U. Need, III, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 26, 1974, Ser. No. 509,593

Int. Cl.² B05D *3/06*

U.S. Cl. 427—43 **3 Claims**

1. A process for forming an image with a high resolution radiation sensitive thermally stable positive resist comprising the steps of:

1. forming on a substrate a film comprising a propanebis-4-phenyl polycarbonate,
2. exposing said film in a predetermined pattern to radiation, and
3. removing the radiation exposed position of said film with a solvent.

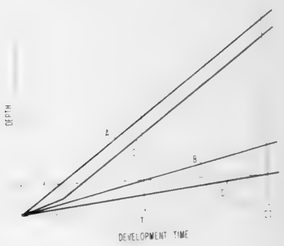
3,961,100
METHOD FOR DEVELOPING ELECTRON BEAM SENSITIVE RESIST FILMS

David Isaac Harris, Kendall Park, and Loren Bainum Johnston, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,445

Int. Cl.² B05D *3/06*; **G03F** *1/02*

U.S. Cl. 427—43 **3 Claims**



1. A process for developing a positive light and electron beam-sensitive resist film of a naphthoquinone-(1,2-)diazide sulfonic acid ester admixed with an alkali soluble resin on a support to form a surface relief pattern which consists essentially of the following steps in sequence

a. contacting the unexposed resist film with an aqueous alkaline developer solution,
b. washing the resist film with water,
c. drying the film to remove the water,
d. exposing the film to a modulated electron beam, and
e. contacting the exposed film with the developer solution until the exposed portions of the film are partially dissolved, thereby improving the effective sensitivity of the resist.

3,961,101
PROCESS FOR IMPROVED DEVELOPMENT OF ELECTRON-BEAM-SENSITIVE RESIST FILMS

Lucian Anthony Barton, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,444

Int. Cl.² B05D *3/06*; **G03F** *1/02*

U.S. Cl. 427—43 **2 Claims**

1. A process for developing a supported electron beam sensitive resist film which has been exposed to a modulated electron beam, said resist film comprising an admixture of a naphthoquinone (1,2-)diazide sulfonic acid ester and an alkali soluble resin to form a surface relief pattern which consists essentially of

a. contacting the exposed resist film with an aqueous alkaline developer solution to form only a partially developed relief pattern,
b. washing the partially developed resist film with water,
c. drying to remove the water, and
d. contacting the partially developed and washed resist film with the developer solution for sufficient time to increase the effective sensitivity of said film which thereby improves the resolution of said pattern as compared to a single development step.

3,961,102
SCANNING ELECTRON MICROSCOPE FABRICATION OF OPTICAL GRATINGS

Joseph M. Ballantyne; Chung L. Tang; Lawrence Bryce Rhodes; John J. Turner, and Ji Liang Yang, all of Ithaca, N.Y., assignors to Cornwell Research Foundation, Inc., Ithaca, N.Y.

Filed Sept. 13, 1974, Ser. No. 505,642

Int. Cl.² B05D *3/06*

U.S. Cl. 427—43 **15 Claims**

1. In the method of making optical gratings which includes the steps of (1) providing a structure having a substrate with a film of electron resist material thereon, (2) exposing adjacent areas by electron dosage, and (3) developing the electron resist; the improvement which comprises:

a. determining the electron scattering characteristics of said substrate and said film as an inverse function of their densities, and
b. selecting values for resist thickness and electron dosage such that, for a given grating period, the total energy deposited by the electron beam (including scattered as well as unscattered electrons) will cause the resist in the areas of the grating lines and the resist in the areas between grating lines to react differently to a substantial degree during development, the electron beam penetration being such that when the depth of the groove produced when the resist is exposed and developed is at its maximum dimension, the width of the groove at its maximum dimension is less than one-half of the period of the grating.

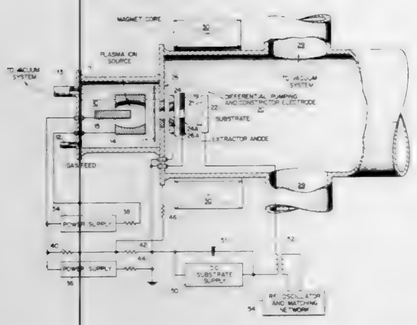
3,961,103
FILM DEPOSITION

Sol Aisenberg, Natick, Mass., assignor to Space Sciences, Inc., Waltham, Mass.

Division of Ser. No. 271,014, July 12, 1972, Pat. No. 3,909,505, which is a continuation of Ser. No. 21,282, March 20, 1970, abandoned. This application Nov. 7, 1974, Ser. No. 521,838

Int. Cl.² C23C *11/00*

U.S. Cl. 427—39 **22 Claims**



1. A method for depositing a film on a substrate comprising the steps of:

a. generating an energetic beam of gaseous ions, which may be of the same material as the film to be deposited, by means of a glow discharge ion source;

b. producing a pressure differential between said glow discharge ion source and a deposition chamber containing therein the substrate on which the film is to be deposited together with a source of deposition atoms of the same material as the film to be deposited; and,

c. directing said energetic beam of gaseous ions into said deposition chamber such that the beam of ions impinges concurrently upon the substrate and said source of deposition atoms and thereby deposits a film of the deposition material on the substrate.

3,961,104
INTERNAL CYLINDRICAL BEARING SURFACES

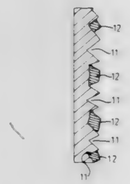
John Ernest Tanner, Dixon St., Wolverhampton, WV2 2BU Staffordshire, England

Filed June 11, 1973, Ser. No. 368,874

Claims priority, application United Kingdom, Oct. 25, 1972, 49150/72

Int. Cl.² B44C *1/08*

U.S. Cl. 427—198 **18 Claims**



1. A method of producing a hard wearing swept bearing surface on a machine part that is to run in contact with another machine part without wear, which method consists in utilising a slurry of hard grit screened accurately and in pressing the said slurry into engagement with said surface on a helical path from one end of said surface to the other repetitionally with a pressure such that grooves on criss-cross helical paths are cut out in the surface and particles of the grit are deliberately embedded in the surface.

3,961,105
METHOD FOR THE MANUFACTURE OF COATED CALCIUM SULFATE WHISKER FIBERS

James Joseph Eberl, Moylan; Edmund Thelen, Strafford, and Harold L. Heller, Narberth, all of Pa., assignors to Certain-teed Products Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 238,048, March 27, 1972, Pat. No. 3,822,340. This application July 1, 1974, Ser. No. 484,695

Int. Cl.² B05D *3/02*; **D02G** *3/00*

U.S. Cl. 427—220 **9 Claims**

1. The method of manufacturing the coated calcium sulfate hemihydrate whisker fiber having a diameter-to-length ratio of at least about 1 to 6 comprising the steps of:

a. heating an aqueous solution of calcium sulfate dihydrate to a temperature of about 110°C to 150°C until calcium sulfate hemihydrate whisker fibers are formed;

b. recovering said calcium sulfate hemihydrate whisker fibers from said aqueous solution; and

c. applying an inert waterproofing material to said dried calcium sulfate hemihydrate whisker fibers to form a protective coating thereon.

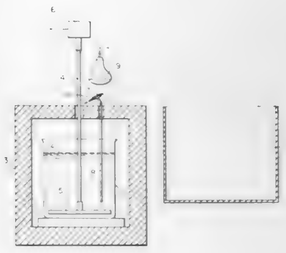
3,961,106
METHOD FOR APPLYING WAX OR PLASTIC COATINGS TO GRANULAR MATERIALS

Herman R. Heytmeijer, Whippany, and Elmer S. Panaccione, North Arlington, both of N.J., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 3, 1975, Ser. No. 554,834

Int. Cl.² B05D *7/00*

U.S. Cl. 427—221 **7 Claims**



1. A method for coating phosphor grains with a molten coating material, said coating material comprising at least one member of the group consisting of paraffin wax, microcrystalline wax, carnauba wax, and low molecular weight polyethylene, which comprises:

a. forming a slurry of the phosphor grains and the molten coating material;

b. heating the slurry to about 120°–130°C;

c. stirring the slurry to prevent settling of the phosphor grains;

d. spraying the slurry through a venturi nozzle whereby droplets are formed of grains encapsulated in coating material:

e. permitting the droplets to solidify during free fall through air;

f. collecting the coated phosphor grains.

3,961,107
FIBER FLEECE CONTAINING A POLYMERIC REINFORCING MATERIAL, AND PROCESS FOR THE PRODUCTION OF SUCH FLEECE

Klaus-Dieter Hammer, Kettelerstrasse 8, 6501 Finthen; Herbert Porrmann, Imkerweg 10, 6272 Niedernhausen, and Ludwig Klenk, Am Rebhang, Jungfernweg 10, 6229 Hallgarten, all of Germany

Continuation of Ser. No. 312,686, Dec. 6, 1972, abandoned, which is a division of Ser. No. 192,899, Oct. 27, 1971, Pat. No. 3,811,923. This application Nov. 11, 1974, Ser. No. 522,743

Claims priority, application Germany, Oct. 30, 1970, 2053497; Oct. 30, 1970, 2053442

Int. Cl.² D06M *1/00*; **B05D** *5/00*, *3/02*

U.S. Cl. 427—246 **23 Claims**



1. A process for the production of a reinforced fiber fleece, comprising:

a. impregnating a non-woven fiber fleece with an impregnating liquid containing a synthetic coating substance, capable of forming a wash-proof union with the surfaces of said fibers, in an amount sufficient to coat said fibers, and an organic, non-elastic swelling agent, capable of swelling said fibers, in an amount sufficient to swell said fibers,

b. rinsing the impregnated fibers to remove excess impregnating liquid,

c. drying the rinsed, impregnated fibers for a period sufficient to evaporate that portion of the volatile components of said impregnating liquid within the pores between the coated fibers and form a wash-proof coating of said synthetic coating substance on said fibers,

d. submerging the coated fibers in a liquid solution of an organic, polymeric elastic reinforcing material, having substantially no cohesion to said coating of said synthetic coating substance, in an amount sufficient to form a coherent structure essentially filling the pores between said coated fibers,

e. coagulating said polymeric elastic reinforcing material to form a coherent, impregnated, reinforced fiber fleece,

f. removing excess polymeric elastic reinforcing material, and

g. heating said impregnated, reinforced fiber fleece at a temperature and for a period sufficient to evaporate the remainder of said volatile components of said impregnating liquid and substantially completely de-swell said impregnated fibers.

3,961,108
METHOD FOR TREATING SURFACES OF WOOD PANELS

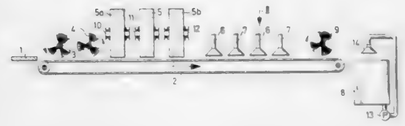
Wolfgang Rosner, Hosefsburgstrasse 73a, 8000 Munich 80, and Georg Drose, Hauptstrasse 29, 8136 Percha, both of Germany

Filed Mar. 11, 1974, Ser. No. 449,653

Claims priority, application Germany, Dec. 13, 1973, 2362028

Int. Cl.² B05D *3/00*, *3/12*

U.S. Cl. 427—275 **9 Claims**



1. A method for treating a surface of a wood panel in which the panel surface is treated with brushes to develop a relief and subsequently is stained comprising: brushing the panel surface by means of first brush means rotating about a generally horizontal axis extending substantially transverse to the longitudinal extension of the panel to develop a relief in the longitudinal direction of the panel surface, then brushing the panel surface by second brush means rotating about an axis extending in a direction generally perpendicular to the direction of extension of the first mentioned axis, to apply relief producing brushing generally transverse of said longitudinal extension of the panel, then flooding the panel surface with liquid stain and brushing wax into the panel surface whereby said panel surface is smoothed.

3,961,109
SENSITIZERS AND PROCESS FOR ELECTROLESS METAL DEPOSITION

Richard K. Kremer, Glen Oaks, and Rudolph J. Zeblisky, Hauppauge, both of N.Y., assignors to Photocircuits Division of Kollmorgen Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 384,691, Aug. 1, 1973, abandoned. This application July 11, 1974, Ser. No. 487,738

Int. Cl.² C23C *3/02*

U.S. Cl. 427—304 **24 Claims**

1. A clear solution for sensitizing a surface to the deposition of adherent electroless metal, said solution consisting essentially of a liquid medium and the reaction product of admixing and heating A, D, E and G, wherein:

A is an ion of a precious metal selected from those of the fifth and sixth periods of Groups VIII and IB of the Periodic Table of Elements:

D is an ion of a Group IV metal of the Periodic Table of Elements which is capable of two valence states;

E is an anion capable of forming a stable complex with components A and D; and

G is a hydroxyl group-containing aromatic organic compound capable of forming a stable, soluble complex with the precious metal ion A or the Group IV metal ion D;

said admixing comprising the steps:

1. forming a first solution comprising A and E and a second solution comprising D and E, with at least one of said solutions also comprising G; and

2. adding said first solution to said second solution.

3,961,110
TREATMENT OF ORGANIC TEXTILES WITH ADDUCT POLYMERS AND PHENOLS

Donald J. Daigle, New Orleans; Armand B. Pepperman, Jr., Metairie, and Sidney L. Vail, River Ridge, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 22, 1974, Ser. No. 499,806
Int. Cl.² C09D *5/18;* **C09K** *3/28*
U.S. Cl. 427—390 **2 Claims**

1. A process for preparing flame resistant organic textiles, comprising:

wetting an organic textile with a solution comprising (1) an adduct polymer prepared by,

reacting a hydroxymethylphosphorus compound with a nitrogenous compound to form an insoluble polymeric precipitate, and

dissolving said precipitate in formalin and a hydroxymethylphosphonium compound with a mole ratio of 1:4 to 4:1 of formaldehyde to phosphorus contained in the precipitate and a 1:10 to 2:1 ratio of phosphonium compound to phosphorus contained in the precipitate and (2) a phenolic compound containing at least one hydrogen atom ortho or para to the phenolic hydroxylic group; and

drying and heating the treated textile at a temperature of from 90° to 170°C. until the adduct polymer and phenolic compound have reacted.

3,961,111
METHOD OF INCREASING CORROSION RESISTANCE OF ANODIZED ALUMINUM

Harold Vernon Smith, deceased, late of Philadelphia, Pa. (by Jean E. Smith, administrator), assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 18, 1975, Ser. No. 559,614
Int. Cl.² C25D *11/18*
U.S. Cl. 427—419 **3 Claims**

1. The process for sealing anodized aluminum comprising contacting the anodized aluminum with deionized or distilled water containing at least 0.001% by weight of one or more sealing additives selected from the group consisting of

(N-methyl-N-(3-dimethylaminopropyl)-n-perfluorooctylsulfonamide) methylammonium iodide, and

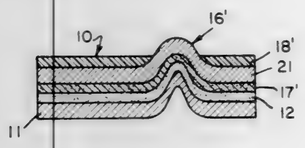
(N-ethyl-n-perfluorooctylsulfonamido tridecaethyleneoxy)ethanol

for a period of time ranging from ten minutes to 1 hour and at a temperature within the range of about 160° to 212°F. and thereafter drying the sealed aluminum.

3,961,112
LUMINOUS EMBOSSABLE TAPE

Roberta L. Genevitz; Joseph R. Genevitz, both of 2613 Chinchilla Drive, Wilmington, Del. 19810, and John B. Sowell, 182 Midfield Road, Ardmore, Pa. 19003

Filed Aug. 2, 1974, Ser. No. 494,351
Int. Cl.² B44F *1/10*
U.S. Cl. 428—29 **11 Claims**



1. An embossable tape comprising:

an embossable base layer of rigid synthetic organic resin embossable material having a front and a rear face, said material having a structure and composition which takes a permanent flow deformation upon being embossed,

a luminous layer comprising luminous material parallel to and supported by said embossable layer and which takes the shape of said embossable base layer upon being embossed, whereby

said tape is embossable to provide light emitting areas and light absorbing areas defining luminous indicia on the front face of said tape.

3. An embossable tape as set forth in claim **2** which further comprises a strippable backing layer selected from the group consisting of paper, cardboard or plastic attached to said adhesive layer.

7. An embossable tape as set forth in claim **1** which further comprises a plasticizer layer supported on the front face of said embossable base layer, said plasticizer layer comprising an elastic material selected from the group consisting of natural rubber or synthetic material which ruptures and exposes the raised embossments in said tape.

3,961,113
THERMOPLASTIC PREFORM AND HEATED MANDREL CONSTRUCTIONS

Leslie Stephan Marco, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 3, 1975, Ser. No. 554,992
Int. Cl.² B65D *21/00*
U.S. Cl. 428—35 **5 Claims**



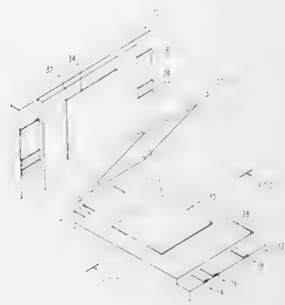
1. A plastic preform for application to a complementally shaped smooth surfaced heated mandrel of the type used in plastic molding machines for reshaping the preform under heat and applied differential pressure; and comprising a body portion of generally conical configuration from an open upper end to a closed smaller end and with a major smooth interior surface from the closed end to an area adjacent the open end, said area having internal spaced surface portions providing passages therealong for upward withdrawal of air from between the mandrel surface and the smooth interior surface of the preform body portion for uniform conformation of the smooth interior surface of the preform to the mandrel surface, and said preform body portion having an internal surface portion around the open end and close to the passaged area for contacting an adjacent remnant surface of the mandrel with permissive relative sliding movement therebetween under continued application of heat and differential pressure without reactive tendency for the major portion of the body portion to separate from the mandrel surface.

3,961,114
GLASS COMPOSITION

Melvin Berkenblit, Yorktown Heights; Robert O. Lussow, Hopewell Junction, and Arnold Reisman, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 353,026, April 20, 1973. This application Aug. 7, 1974, Ser. No. 495,352
Int. Cl.² B32B *9/00;* **B44C** *5/08;* **B06B** *3/24*
U.S. Cl. 428—38 **1 Claim**

1. In a structure comprising a plurality of conductive lines supported on a dielectric glass substrate, a layer of admixed glass covering said conductive lines and supported by said substrate wherein said admixed glass is a composition G consisting of a first composition A composed of 14.1%, SiO_2, 72.8% PbO, 12.5% B_2O_3, 0.2% Al_2O_3, 0.1% CaO, 0.2% Na_2O, and 0.1% MgO and a second composition B composed of 71.11% SiO_2, 2.38% Al_2O_3, 7.13% CaO, 14.45% Na_2O, 3.76%

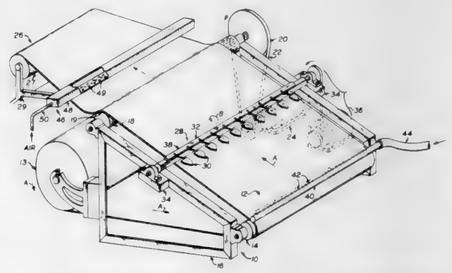


MgO, 0.30% of K_2O, 0.13% B_2O_3, and 0.74% Pbo with said percentages being approximate percentages by weight and with the composition G being determined according to the relationship $G = F(A) + (1-F)B$, where G is the whole composition and F is the fractional part less than one by weight that Glass A is of G and A and B are said first and second compositions.

3,961,115
METHOD FOR TEXTURIZING FLOCKED FABRIC AND FABRIC PRODUCED THEREBY

Charles Klein, Mexico City, Mexico, assignor to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed Oct. 24, 1972, Ser. No. 299,910
Int. Cl.² D06C *23/00*
U.S. Cl. 428—88 **6 Claims**



1. A continuous method for texturizing a flocked fabric comprising:

a. continuously feeding said flocked fabric from a source of supply, such that, the flocked fabric lies in a single plane;

b. wetting the flocked portion of the moving fabric with a liquid;

c. orienting the wet flock in a predetermined design pattern by continuously and rapidly contacting the flocked side of the moving planar fabric in a whip like manner with a plurality of flexible beaters having preselected shapes; and then

d. drying the moving fabric to set said flock in said predetermined design pattern.

6. A texturized flocked fabric obtained by the process of claim **1.**

3,961,116
NOVEL FLOCKED FABRIC

Charles Klein, Mexico City, Mexico, assignor to United Merchants and Manufacturers, Inc., New York, N.Y.

Continuation of Ser. No. 351,096, April 13, 1973, Pat. No. 3,903,331
This application May 27, 1975, Ser. No. 581,252
Int. Cl.² B05D *1/14, 1/16;* **B32B** *33/00*
U.S. Cl. 428—90 **2 Claims**



1. An air permeable flock fabric comprising:

a. a backing layer of a loosely interlaced fabric having a non-continuous, permeable coating of an adhesive binder thereon which permeates the spaces therein;

b. a substantially continuous top layer of upstanding flock fibers secured to the fabric by said binder; and

c. a substantially continuous bottom layer of flock fibers secured to said backing layer by said binder

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3,961,117
ANTISTATIC CARPET AND METHOD FOR MANUFACTURING SAME

Agis F. Kydonieus, Kendall Park, and Inja Smith, Montclair, both of N.J., assignors to Herculite Protective Fabrics Corporation, New York, N.Y.

Filed Nov. 21, 1973, Ser. No. 417,833
Int. Cl.² D03D *27/00;* **D04H** *11/00;* **D05C** *17/00*
U.S. Cl. 428—96 **10 Claims**

1. A carpet exhibiting antistatic properties comprising

a primary carpet backing,

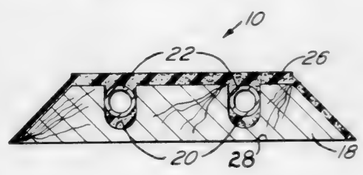
carpet fibers, the bases of which are locked in said primary backing, said fibers being selected from the group consisting of wool, acrylic, nylon, polyester, and lower polyolefin fibers, and

a coating of polymeric composition on the surface of said primary backing opposite the carpet pile, but in contact with the bases of said fibers, said coating containing an antistatic agent which is present in an amount of at least about four ounces per square yard of carpet surface area, and is capable of migrating into and throughout the length of said carpet fibers to render the fibers themselves antistatic to the extent that static buildup is maintained below 3,000 volts.

3,961,118
SIMULATED WOOD PANEL

David E. Michaelis, Warminster, Pa., assignor to Plastics Development Corporation of America, Philadelphia, Pa.

Division of Ser. No. 291,100, Sept. 21, 1972, Pat. No. 3,896,199. This application May 7, 1975, Ser. No. 575,330
Int. Cl.² B32B *3/00, 3/20*
U.S. Cl. 428—151 **7 Claims**



1. A simulated wood panel which resists warpage and bending comprising a substrate formed of a water absorbing fibrous material, said substrate having at least one elongated groove on one surface thereof, a rigid elongated reinforcing means in

said groove, a foamed polymer covering said surface of said substrate and anchoring said rigid elongated reinforcing means to said substrate, said polymer at least substantially surrounding said elongated reinforcing means and sealing said substrate against moisture, the outside surface of said foamed polymer having a simulated wood grain finish thereon.

3,961,119

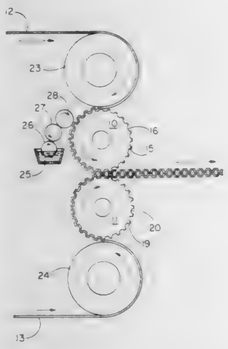
EMBOSSED PAPER TOWELING AND METHOD OF PRODUCTION

Gordon D. Thomas, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 341,464, March 15, 1973, Pat. No. 3,868,205. This application Aug. 15, 1974, Ser. No. 497,578

Int. Cl.² B32B *3/12*

U.S. Cl. 428—178 **5 Claims**



1. A multi-ply absorbent paper sheet comprising embossed, opposed, creped outer webs each having a series of laterally extending continuous ribs and grooves, said ribs of each web projecting toward and crossing ribs of the other web and each rib bridging grooves of the other web, adhesive securing the ribs of one web to ribs of the other web, said adhesive being disposed in a pattern consisting of individual adhesive zones and constituting about 10% to about 50% of the rib surface area of one of the webs, said ribs and grooves being otherwise substantially free of adhesive and said adhesive zones being defined by slight recesses in the ribs which break up the continuity of the ribs providing a patterned appearance.

3,961,120

COATING GLASS SHEETS ON BOTH SURFACES

Ralph E. Hearn, and Clarence McMillen, both of Galion, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 13, 1974, Ser. No. 442,285

Int. Cl.² B32B *9/00, 17/06*

U.S. Cl. 428—210 **12 Claims**



1. A method of coating both major surfaces of a ceramic substrate comprising coating a first major surface of said substrate with a ceramic frit and maturing said frit at a first elevated temperature with its second major surface free of said frit, said matured ceramic frit being prone to damage when contacted with a solid means at an elevated temperature approaching its maturing temperature, orienting said substrate so that its first major surface faces downward and said second major surface faces upward, applying ceramic frit to the second major surface of said substrate at a temperature below which said matured ceramic frit would be prone to said damage while said substrate is so oriented, subjecting said substrate to a thermal treatment that comprises heating said substrate while so oriented to a temperature above said first elevated temperature and cooling said substrate to below a temperature at which said frit hardens and fuses to said second major surface, and initiating the application of a bed of gas against said matured frit coating to support said substrate in said orientation on said gas bed with said matured frit coating spaced from solid means before the substrate reaches a temperature at which said matured frit is prone to said damage on contacting solid means during said heating and continuing to support said substrate on said gas bed during said thermal treatment at least as long as the substrate is at a temperature at or above which said matured ceramic frit is prone to said damage on contacting solid means.

3,961,121

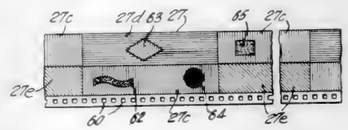
TRANSFER TAPE FOR SURFACE DECORATING AN ARTICLE

Rubin Warsager, 72 Luddington Road, W. Orange, Newark, N.J. 07052

Filed Dec. 14, 1973, Ser. No. 424,869

Int. Cl.² B32B *3/18, 7/06;* **C09J** *7/02*

U.S. Cl. 428—200 **8 Claims**



1. A transfer tape for use in decorating the surface of articles with a design, comprising a base, a heat release material applied to said base, at least two sequentially arranged color zones transversely dividing said tape and applied to said heat release material so that said color zones do not include said design which is to be applied to said article, said color zones comprising pigment, each of said color zones including only a single pigment layer, whereby upon the application of a die to said color zones the characteristics of said die determine the characteristics of said design to be imparted to said articles, and an adhesive coating.

3,961,122

THIN POLYMER FILMS AND METHOD

George L. Gaines, Jr., Scotia, and Donald G. LeGrand, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 298,471, Oct. 18, 1972, abandoned, which is a division of Ser. No. 164,847, July 26, 1971, abandoned, which is a continuation of Ser. No. 839,272, July 7, 1969, abandoned. This application Feb. 24, 1975, Ser. No. 552,554

The portion of the term of this patent subsequent to Aug. 22, 1989, has been disclaimed.

Int. Cl.² B32B *25/20;* **C08F** *293/00*

U.S. Cl. 428—220 **6 Claims**

1. A continuous, stable, substantially uniform, self-supporting polymer film having smooth surfaces and a thickness of less than 50 microns, said film consisting essentially of a synthetic aromatic base homopolymer and a synthetic surface-active block copolymer additive compatible therewith, said additive ranging in amount from 0.1 to 99% by weight of said base homopolymer, said additive consisting essentially of substantially uniform repeating blocks of a first polymerized aromatic comonomer and a second polymerized organosiloxane comonomer, said first polymerized aromatic comonomer being characterized by an average block length of at least three monomer units and being compatible and substantially miscible with said base homopolymer to substantially stabilize said block copolymer therein, said second polymerized comonomer being characterized by an average block length of at least five monomer units and a surface activity sufficient to depress the surface tension of a solution of said base homopolymer to at least about 24.7 dynes/cm. or lower, said polymer film being produced by dissolving said aromatic base homopolymer and said block copolymer additive in a solvent to form a solution having a surface tension of about 24.7 dynes/cm. or lower, contacting the resulting solution with film-forming means which supports said solution to allow said solvent to evaporate without impairing the smooth surfaces of the resulting film, allowing said solvent to evaporate and recovering the resulting film.

3,961,123

RADIATION SHIELDING PHENOLIC FIBERS AND METHOD OF PRODUCING SAME

Koichiro Ohtomo, Takatsuki, Japan, assignor to Kanebo, Ltd., Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 428,127

Claims priority, application Japan, Dec. 29, 1972, 48-2322

Int. Cl.² C08G *8/18*

U.S. Cl. 428—224 **11 Claims**

1. A radiation shielding phenolic fiber comprising (A) a filamentary phenolic polymer consisting predominantly of a sulfonic acid group-containing cured novolak resin wherein said novolak resin contains 0.1–4.0 meq/g-fiber of the sulfonic acid group and is cured to a curing degree of 5–30% and (B) 0.1-3.5 meq/g-fiber of a metallic atom having a great radiation shielding capacity, said metallic atom having an atomic number of at least 13 and being incorporated in said polymer by being chemically bound in the ionic state in said novolak resin.

3,961,124

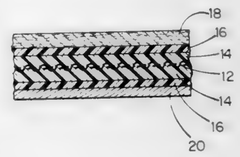
SHOE-STIFFENER MATERIAL OF LATEX SATURATED FLEXIBLE FABRIC

George Matton, 528 Broadway, Lowell, Mass. 01854

Filed Nov. 4, 1974, Ser. No. 520,725

Int. Cl.² B32B *25/04*

U.S. Cl. 428—250 **12 Claims**



1. A shoe-stiffening material which comprises an absorbent fibrous flexible sheet material impregnated with:

a. a natural or synthetic elastomer subject to cross-linking to a thermosetting condition by a peroxide cross-linking agent;

b. a cross-linking amount of a peroxide-curing system which comprises

i. a peroxide cross-linking agent having an activation temperature of above 150°C, and which has no toxic residue products on activation,

ii. a metal oxide selected from the group consisting of sodium oxide, potassium oxide, barium oxide, calcium oxide and magnesium oxide in an amount of from 0.01 to 1.0 phr to lower the activation temperature of the peroxide to below 150°C and more than 70°C, and

iii. a thermoplastic vinyl polymer is an amount of from 0.001 to 0.1 phr to promote the efficiency of the peroxide on activation; and

c. the material being soft, limp, ductile and flexible, but which material is converted on heating to a stiff and resilient material in a shoe mold having a temperature of from about 135° to 150°C for a period of time for about 5 to 30 seconds.

12. A shoe-stiffening material which comprises:

a. an absorbent woven cotton sheet material having a moisture level of less than about 10% and impregnated with an amount of from about 20 to 50% by weight of a styrene butadiene peroxide cross-linkable elastomer which contains a cross-linking amount of a peroxide-curing system which comprises:

i. from about 0.5 to 10 parts per hundred parts of elastomer of dicumyl peroxide,

ii. from about 0.01 to 1.0 phr of calcium oxide, and

iii. from about 0.01 to 0.1 phr of polyvinyl acetate or ethylene vinyl acetate,

b. the cotton sheet material having on one or both surfaces a thermoplastic adhesive layer which comprises polyvinyl acetate, ethylene vinyl acetate, hydrocarbon resin and wax or combinations thereof; and

c. the material being soft, limp, ductile and flexible, but which material is converted on heating to a stiff and resilient material when heated in a shoe mold having a temperature of from about 135° to 150°C for a period of time for about 5 to 30 seconds.

3,961,125

TEMPORARY INTERLINING COATED WITH FOAMED ADHESIVE

Toshihiko Suminokura; Yojuro Kyogoku, and Noboru Yasumoto, all of Neyagawa, Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 315,830, Dec. 18, 1972, which is a continuation of Ser. No. 70,542, Sept. 18, 1970, which is a continuation of Ser. No. 692,134, Dec. 20, 1967. This application Feb. 28, 1975, Ser. No. 554,328

Int. Cl.² B44D *1/44*

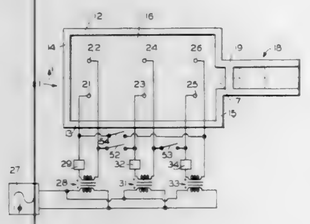
U.S. Cl. 428—261 **7 Claims**

1. In an interlining of temporary adhesiveness comprising a fabric base material and a dry layer of an adhesive thereon, the improvement which comprises using said adhesive in the form of a foam having a viscosity of from about 10,000 to about 200,000 c.p.s. as measured at 50°C., providing a continuous coating layer of said foam on one surface of the fabric base material, and drying said continuous coating layer, said adhesive being soluble in water and sticky on moistening and being a member or a combination of members selected from the group consisting of water-soluble cellulose derivatives, water-soluble starch derivatives, water-soluble natural gums, water-soluble alginic acid derivatives, water-soluble acrylic polymers having an intrinsic viscosity of about 0.1 to about 2.0, polyvinyl alcohol or partially hydrolyzed polyvinyl acetate having an average degree of polymerization of about 300 to about 3,000 and a degree of hydrolysis of about 60 to about 100 mol percent, water-soluble copolymers of styrene and maleic acid, gelatin, agar and high molecular weight polyethylene oxides having an average molecular weight of about 30,000 to about 2,000,000.

3,961,126
APPARATUS AND METHOD FOR INCREASING ELECTRIC POWER IN AN ELECTRIC GLASS-MELTING FURNACE

John F. Maddux, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 475,674, June 3, 1974, abandoned. This application Feb. 24, 1975, Ser. No. 552,083
Int. Cl.² C03B *5/02*
U.S. Cl. 13—6 **25 Claims**



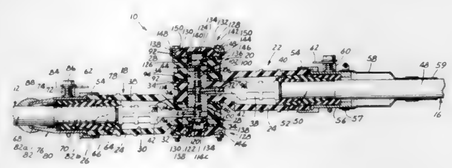
1. A system for heating molten glass by the Joule effect, comprising:
- a chamber for containing glass constituents;
- a first group of electrodes within said chamber;
- means applying an alternating voltage across said first group of electrodes;
- a second group of electrodes within said chamber;
- means applying an alternating voltage across said second group of electrodes, whereby instantaneous voltage differences exist between certain electrodes of said second group and certain electrodes of said first groups; and
- means for concentrating an increase of electrical power dissipation in a path between at least one of said certain electrodes of each of said first and second groups by selectively connecting a low impedance current path between an other certain electrode of said first group and an other certain electrode of said second group which is at a different instantaneous voltage than said electrode of said first group a preponderance of the time alternating voltage is applied across said first and second electrode groups during those periods said low impedance current path is disconnected, whereby the algebraic sum of the instantaneous voltage applied across said first group and the instantaneous voltage applied across said second group is imposed across said path and the voltage difference across said glass between said other certain electrodes during those periods said low impedance current path is disconnected is effectively imposed across said path by said connecting means.

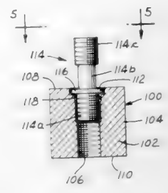
3,961,127
UNIVERSAL POWER CABLE JOINT FOR USE WITH POWER CABLES HAVING VARIOUS INSULATIONS

Robert B. Gear, Jr., Hinsdale, Ill., and John C. Masepohl, Munster, Ind., assignors to G & W Electric Specialty Company, Blue Island, Ill.

Filed June 11, 1975, Ser. No. 586,067
Int. Cl.² H02G *15/08, 15/24*
U.S. Cl. 174—22 R **14 Claims**

1. A cable joining device for connecting the ends of a plurality of power cables at least one of which may comprise an impregnated insulation type power cable, comprising, in combination, a spade terminal adapted to be secured on a bared conductor end of each of said power cables, each of said spade terminals having a transverse bore therethrough, a tubular splice housing adapted for cooperation with each of said spade terminals, each tubular splice housing having a transverse bore therethrough and being adapted to receive its associated spade terminal therein in a manner to expose the transverse bore of said spade terminal through said transverse bore in said splice housing, an electrically conductive spacer block having opposite end surfaces receivable within the transverse bores of two splice housings positioned in adjacent relation with their said transverse bores in substantially axial alignment, means securing the exposed spade terminals within said axially aligned bores to said end surfaces of said spacer block in electrical conducting relation therewith, said securing means including a stud shaft sealingly secured within a longitudinal bore formed in said spacer block so as to extend sub-



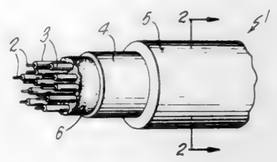


stantially axially from one end surface thereof for receipt through the exposed transverse bore in the spade terminal within one of said adjacent splice housings, said securing means further including connector means mountable on the outer end of said stud shaft so as to secure said spade terminal against said one end surface of said spacer block, seal means disposed between said adjacent splice housings and sealingly engaging the periphery of said spacer block, and means for securing said adjacent splice housings in said adjacent relation with said sealing means therebetween in a manner to prevent migration of impregnate between said splice housings and their associated spade terminals.

3,961,128
COMPOSITION FOR FILLING CABLES

Shirley Beach, North Vancouver, Canada, assignor to Phillips Cables Limited, Brockville, Canada

Filed Dec. 27, 1973, Ser. No. 428,757
Claims priority, application Canada, Dec. 29, 1972, 160290
Int. Cl.² H02G *15/20*
U.S. Cl. 174—23 C **21 Claims**

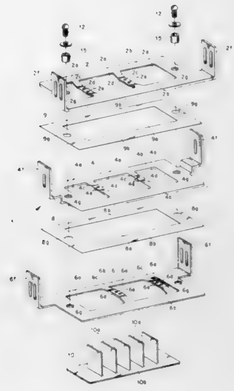


1. A communication cable comprising a plurality of conductors enclosed within a sheath; interstices between individual conductors and between the conductors and the sheath being filled with a composition comprising petroleum jelly and siliceous material in an amount effective to render the petroleum jelly viscous at elevated temperatures, the siliceous material having a relatively large surface area to mass ratio and being substantially uniformly distributed throughout the petroleum jelly.

3,961,129
ELECTRICAL BUSSING AND JUMPER ASSEMBLY

Donald F. Gehrs, Affton, and David T. Higgins, Imperial, both of Mo., assignors to Zinsco Electrical Products, St. Louis, Mo.

Filed Dec. 11, 1975, Ser. No. 639,655
Int. Cl.² H02B *1/20*; **H02G** *5/00*
U.S. Cl. 174—72 B **14 Claims**



1. An electrical bussing and jumper assembly for use with electrical switching devices, said assembly comprising:
- a plurality of bus plates stacked together in a sandwich-like array, said bus plates having openings therein defining pairs of side portions and defining a plurality of jumper portions between the openings and bridging the side portions for connection with electrical switching devices, the jumper portions of each bus plate being staggered with respect to the jumper portions of the other bus plates and the jumper portions of all of the bus plates being spaced from each other in a ladder-like fashion in the sandwich-like array, said jumper portions being of different physical configurations;
- insulation means electrically insulating the bus plates from each other; and
- electrical connection means connected to the plurality of bus plates for establishing electrical current paths through said bus plates to the jumper portions of the bus plates.

3,961,130
MEMORY DIAL FOR TELETYPEWRITER SUBSCRIBERS

Pedro Brown, Jr., San Jose, Calif., assignor to RCA Corporation, New York, N.Y.

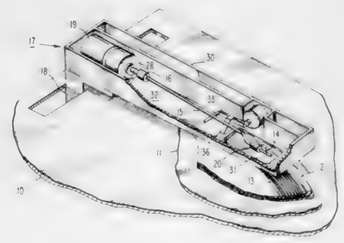
Filed June 10, 1971, Ser. No. 151,802
Int. Cl.² H04L *15/00*
U.S. Cl. 178—2 E **4 Claims**

1. In a switching system for a plurality of teletypewriter stations, a switching exchange, and a plurality of communication paths extending from said exchange to said stations, the combination comprising:
- a. control means responsive to calling information establishing connections from one of said stations through said switching exchange to selected ones of said paths to another station corresponding to the calling information;
- b. a plurality of manually operable key means for generating calling information;
- c. said manually operable key means being located at each of said stations;
- d. electrical circuit means for encoding the calling information produced by said manually operable key means to a desired code form;
- e. electrical circuit memory means for storing the coded form of the calling information;
- f. electrical circuit means responsive to the operation of said key means for processing the data stored in said memory to said exchange and electrical circuit means for retaining said data in said memory until new calling information is generated by said manually operable key means; and
- g. manually operable electrical circuit means including a repertory key for processing said stored data from said memory to one of said paths automatically with the operation only of said repertory key.

3,961,131
DISC RECORD LOCKED GROOVE ESCAPE APPARATUS

Byron Kent Taylor, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1975, Ser. No. 562,730
Claims priority, application United Kingdom, Feb. 28, 1975, 8405/75
Int. Cl.² H04N *5/76*; **G11B** *3/10, 3/38, 17/00*
U.S. Cl. 178—6.6 R **5 Claims**



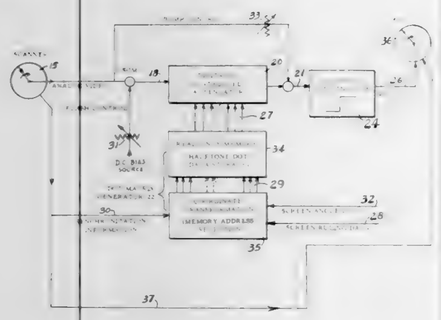
1. In a system for playing back prerecorded signals from a spirally grooved disc record by a groove-engaging signal pickup secured to a pickup arm when relative speed is established therebetween, the playback system including a base; a locked groove skipper comprising:
- a carriage mounted on the base for movement between a playback mode and a standby mode;
- means for driving the carriage radially inward in synchronization with rotation of the disc record during playback independent of radial motion of the signal pickup due to the spiral groove;
- means for pivotally supporting the pickup arm in the carriage;
- means for lowering the pickup arm in order to effect the engagement of the signal pickup with the spiral groove of the disc record for playback; and
- a steering member secured to the carriage adjacent the pickup arm such that the steering member and the disc record center are on the opposite sides of the pickup arm, wherein the location of the steering member relative to the lowered position of the pickup arm is such that a minimum clearance is developed between the steering member and the pickup arm upon initial lowering of the pickup arm for playback due to the disc record lateral eccentricity; and such that when the signal pickup encounters a locked groove, the advancing steering member engages the pickup arm to effect radially inward move-

ment thereof, whereby the signal pickup is relieved from the locked groove.

3,961,132
SEQUENTIAL IMAGE-MODULATED DOT-AREA RECORDING

Robert M. Landsman, Norwalk, Conn., assignor to Log Etronics Inc., Springfield, Va.

Filed July 15, 1974, Ser. No. 488,389
Int. Cl.² H04N *1/40, 5/84, 3/00*
U.S. Cl. 178—6.7 R **12 Claims**

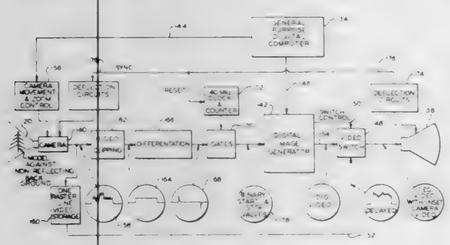


1. A method of producing from original continuous tone subject-matter a halftone reproduction made up of dots which in turn are composed of a plurality of dot imaging scan elements, comprising the steps of scanning said subject-matter with a beam of radiation, deriving from said scanning a first signal in the form of a video energy function, repeatedly selecting stored information in accordance with the coordinates of image points of the subject-matter represented by the video energy function to produce a second signal which varies according to the desired dot imaging scan elements of the halftone dots, continuously weighting said first signal with said second signal to produce a resulting convoluted signal, quantizing the resulting colvoluted signal, and applying the quantized signal, in a synchronized scanning mode, to produce the halftone reproduction made up of dots that are comprised of dot imaging scan elements, said scanning proceeding at a rate sufficiently in excess of the desired halftone screen rate to enable production of the aforesaid halftone reproduction.

3,961,133
METHOD AND APPARATUS FOR COMBINING VIDEO IMAGES WITH PROPER OCCLUSION

William S. Bennett, Chenango Bridge, N.Y., assignor to The Singer Company, New York, N.Y.

Filed May 24, 1974, Ser. No. 472,971
Int. Cl.² H04N *7/18*
U.S. Cl. 178—6.8 **12 Claims**



1. A method of producing a composite image on a display device from a combination of digitally generated video signals representative of selected objects and camera generated video signals representative of other selected objects not suitable for digital generation, said composite image providing a two-dimensional presentation of a three-dimensional scene as seen from a selectively variable eyepoint, said method comprising the steps of:

providing raster formatted camera generated video signals representative of a two-dimensional presentation of an assumed image plane of a first object not suitable for digital generation included in said three-dimensional scene as viewed from a selected eyepoint;

providing raster formatted digitally generated video signals representative of a two-dimensional presentation on said assumed image plane of a second object included in said three-dimensional scene as viewed from said selected eyepoint;

synchronizing said camera and digitally generated raster formatted video signals with the generation of raster lines on a display device;

determining, at selected edges of said first and second objects two-dimensional presentation on said assumed image plane, which of said first and second objects pierced by a ray from said selected eyepoint passing through said assumed three-dimensional scene and said two-dimensional presentation is closest to said eyepoint;

applying said raster formatted camera video signals to said display device when said first object is closest to said eyepoint;

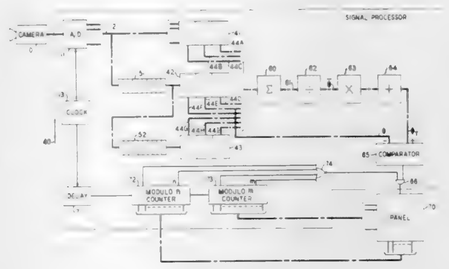
applying said raster formatted digitally generated video signals to said display device when said second object is closest to said eyepoint; and

modulating in response to said applied camera and digitally generated raster formatted video signals said raster lines of said display device to generate a two-dimensional display of said three-dimensional scene as seen from said selected eyepoint wherein those portions of said first object not occluded by said second object are displayed and those portions of said second object not occluded by said first object are displayed.

3,961,134
BI-LEVEL DISPLAY SYSTEM

John Frederick Jarvis, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 9, 1975, Ser. No. 576,163
Int. Cl.² H04N *5/66*
U.S. Cl. 178—7.3 D **41 Claims**



1. A system for displaying a continuous tone image on a panel of selectively energizable display cells, comprising:

means for dividing an image to be displayed into a plurality of picture elements each corresponding to one of said display cells,

means for determining the intensity of ϕ of each of said picture elements, the maximum intensity of any picture element being designated ϕ_{max}

means for computing the average intensity $\bar{\phi}$ to in the neighborhood of each of said picture elements,

means for computing constrained averages ϕ_T from said neighborhood averages in accordance with the relationship

$$\phi_T = \gamma + \left(1 - \left(\frac{2\gamma}{\phi_{max}}\right)\right) \bar{\phi}$$

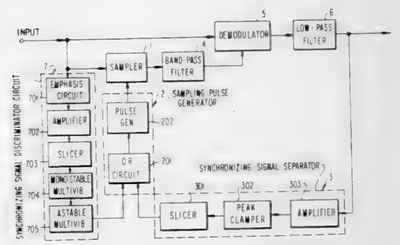
wherein γ is a constant, and

means for energizing a particular one of said display cells corresponding to a particular one of said picture elements if said intensity ϕ of said picture element bears a predetermined relationship to said constrained average ϕ_T computed for said picture element neighborhood.

3,961,135
SYNCHRONIZED DEMODULATION SYSTEM

Miyoji Ohyama; Yushi Uchida, and Tateo Onodera, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Dec. 27, 1973, Ser. No. 429,016
Claims priority, application Japan, Dec. 29, 1972, 48-1295
Int. Cl.² H04N *3/16;* **H03D** *3/18;* **H04B** *1/68*
U.S. Cl. 178—7.3 R **7 Claims**



1. In a synchronized demodulation system including means for receiving a modulated carrier wave modulated by a composite signal containing first and second synchronizing signals having different time periods, said second synchronizing signal containing substantially no frequency components of said first synchronizing signal, the excess carrier ratio of said modulated carrier wave being smaller than unity but not smaller than 0.5, means for demodulating said modulated carrier wave by means of an internal carrier wave synchronized with the carrier rrequency component of said modulated carrier wave, thereby to regenerate said composite signal, means for separating said first synchronizing signal from said regenerated composite signal, means for generating sampling pulses upon reception of said separated first synchronizing signal, means for sampling said modulated carrier wave by said sampling pulses to derive a carrier burst signal, and means for selecting the carrier frequency component from said carrier burst signal to deliver said internal carrier wave for demodulation in said demodulating means, the improvement comprising:

means responsive to said modulated carrier wave for generating a gate pulse in the time period of said second synchronizing signal;

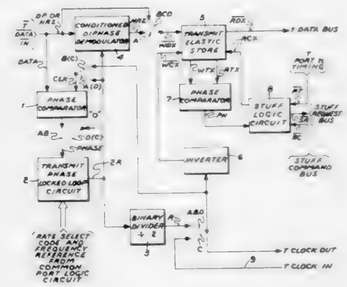
means responsive to said gate pulse for generating self-running synchronizing pulses with a repetition rate substantially equal to that of said first synchronizing signal during the time period of said gate pulse; and

means responsive to said self-running synchronzing signal for generating addition sampling pulses to be applied to said sampling means during the time period of said gate pulse.

3,961,136
DIGITAL DATA TRANSMIT AND RECEIVE CHANNEL MODEM

Stuart Barry Cohen, Nutley; James Monroe Clark, Cedar Grove, and Arthur Howard Magnus, Succasunna, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 25, 1975, Ser. No. 571,677
Int. Cl.² H04L *27/18*
U.S. Cl. 178—67 **20 Claims**



1. A digital data transmit and receive channel modem comprising:

a first source of data to be transmitted having a bit rate equal to a first given one of a predetermined number of different bit rates;

a transmit phase locked loop coupled to said first source;

a diphase demodulator coupled to said first source and said transmit phase locked loop to provide output data for transmission;

a second source of received data having a bit rate equal to a second given one of said predetermined number of different bit rates,

a third source of a receive write timing signal;

a fourth source of a receive read timing signal;

a receive phase locked loop coupled to said third and fourth sources; and

a diphase modulator coupled to said second source and said receive phase locked loop to provide output data for utilization.

3,961,137
BIPHASE DIGITAL TELEVISION SYSTEMS

Peter Richard Hutt, Richmond; Alan Ronald Blake, London; Gunter von Cavallar, South Wonston, near Winchester; Brian Neil Douglas, London, and Philip John Dodds, Southampton, all of England, assignors to Independent Broadcasting Authority, London, England

Filed July 30, 1974, Ser. No. 493,111
Claims priority, application United Kingdom, July 30, 1973, 36205/73
Int. Cl.² H04L *7/08, 17/02;* **H04N** *7/00*
U.S. Cl. 178—68 **1 Claim**

1. Apparatus for processing groups of binary digital information, each group consisting of a series of binary digits for transmission, which apparatus comprises a bi-phase generator for converting the digits of the groups to a bi-phase digital form in which each digit is represented by a transition from a first signal level to a second signal level and the digits of the group are accordingly all represented by signals of the first level complemented by signals of the second level, a start code generator operable to provide repeatedly a binary digital start code of said bi-phase digital form but with a break of said complementation, a run-in signal generator operable to provide a run-in signal and means for feeding trains of output signals to an output from the apparatus at spaced-apart inter-

vals of time each train of output signals having a run-in signal from the run-in signal generator followed by a start code, from



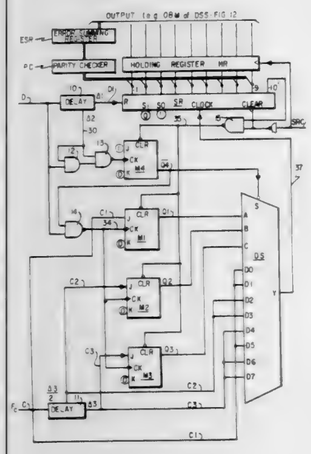
said start code generator, with said break of complementation and then by one of said groups in said bi-phase digital form.

3,961,138

ASYNCHRONOUS BIT-SERIAL DATA RECEIVER

Frank Fellinger, Delaware, Ohio, assignor to North Electric Company, Galion, Ohio

Filed Dec. 18, 1974, Ser. No. 533,767
Int. Cl.² H04L *5/24, 7/00*
U.S. Cl. 178—69.5 R **18 Claims**



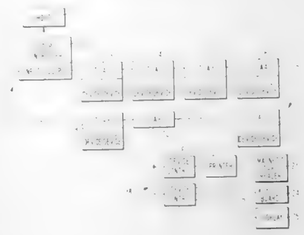
1. A data receiver for receiving data from a data line, said data being in asynchronous bit serial form at a predetermined bit frequency in groups of N bits, the leading bit of each group being a start bit of one logic state; said data receiver comprising an N-stage shift register operative to clock data in from said data line under the control of said leading bit and synchronizing means, both said register and said synchronizing means being coupled to said data line, and with a clock connection from said synchronizing means to said shift register; means responsive to said leading bit to start said synchronizing means in order to select a phase relation to supply a train of clock pulses to said shift register at said given bit frequency via said clock connection in order to shift one of said groups from said data line into said shift register in accordance with the phase relation selected.

3,961,139

TIME DIVISION MULTIPLEXED LOOP COMMUNICATION SYSTEM WITH DYNAMIC ALLOCATION OF CHANNELS

Robert A. Bowman, San Jose; Guenther Keith Machol, Saratoga, both of Calif., and Rene Henri Terlet, Romsey, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 14, 1975, Ser. No. 577,507
Int. Cl.² H04J *6/02*
U.S. Cl. 179—15 AL **11 Claims**



9. A method for selectively dedicating a channel in a time multiplexed serial loop transmission system to a selected terminal, such that a plurality of terminals may share the same channel, each said terminal performing the method comprising the steps of:

sensing the presence of a command message in a shared channel;

inhibiting further communication in said shared channels if said command is addressed to a different terminal assigned to share said channel until a subsequent command message addressed to said terminal or a leave pass mode command is received in an assigned channel;

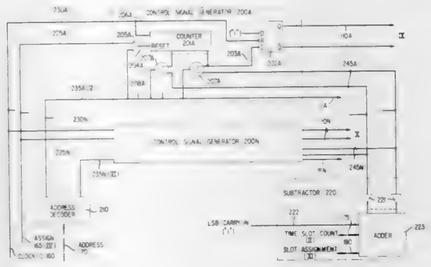
initiating communication in its shared channels if communication is not inhibited by transmitting in an available shared channel a command message including its own address.

3,961,140

LINE SWITCH CONTROLLER FOR A TIME-DIVISION SWITCHING SYSTEM

Robert Lawrence Carbrey, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 21, 1975, Ser. No. 560,331
Int. Cl.² H04J *3/02*
U.S. Cl. 179—15 AT **8 Claims**



1. In a time division switching system capable of accommodating a plurality of calls, each among a different plurality of parties, said system including a time division bus, a plurality of line switches each operative, upon closure, to connect a different one of said parties to said time division bus and means for repetitively producing a signal having a sequence of distinct values defining a sequence of time slots during each

of which a different one of said calls is accommodated, the improvement comprising:

a plurality of means, each dedicated to one of said line switches, for generating a control signal having a selectable phase of said producing means signal, a predetermined value of said control signal being effective to close the corresponding line switch, and

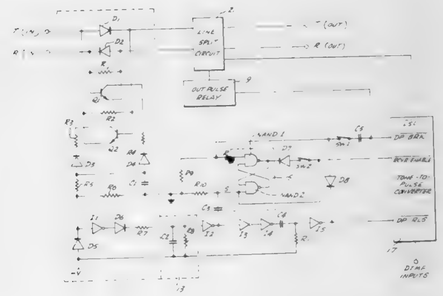
means for subtracting from said producing means signal the control signal corresponding to the line switch of a particular party, the resulting difference corresponding to the time slot during which said party is accommodated.

3,961,141

STOP TIME-OUT UNTIL AFTER FIRST DTMF DIGIT DIALED CIRCUIT

Raymond Ma, Seattle, Wash., assignor to Tel-Tone Corporation, Kirkland, Wash.

Filed Dec. 19, 1974, Ser. No. 534,195
Int. Cl.² H04Q *1/50*
U.S. Cl. 179—16 EC **8 Claims**



1. A stop time-out until after first DTMF digit dialed circuit for a telephone tone-to-pulse converter that includes a time-out circuit that is normally enabled when said tone-to-pulse converter is enabled, said stop time-out until after first DTMF digit dialed circuit comprising:

a current sensing circuit for detecting when a telephone connected to said sensing circuit goes OFF HOOK;

a latch circuit connected to said current sensing circuit in a manner such that said latch circuit is set when said current sensing circuit senses that a subscriber has gone OFF HOOK;

connecting means for connecting said latch circuit to a tone-to-pulse converter in a manner such that said latch circuit prevents the time-out circuit of said tone-to-pulse converter from disabling the operation of said tone-to-pulse converter when said latch circuit is set; and,

primary resetting means for resetting said latch circuit, said primary resetting means being connected between the pulse output of said tone-to-pulse converter and the reset input of said latch circuit in a manner such that said latch circuit is reset when said tone-to-pulse converter generates an output pulse.

3,961,142

METHOD AND APPARATUS FOR AUTOMATICALLY ANNUNCIATING THE COMPLETION OF A TELEPHONE CALL HOLD INTERVAL

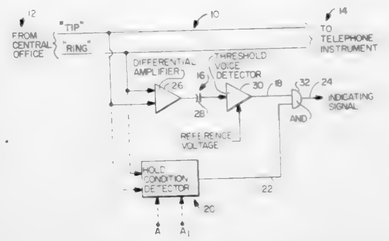
George S. Caffine, 11212 Valley View Ave., Kensington, Md. 20795

Filed Oct. 24, 1974, Ser. No. 517,627
Int. Cl.² H04M *1/00, 3/22*
U.S. Cl. 179—81 R **13 Claims**

1. An apparatus for annunciating the completion of a call hold interval in a telephone communication system, said apparatus comprising in combination:

hold detector circuit means automatically responsive to the presence of a call hold condition on a telephone communication line for providing a first audio detection signal;

voice frequency detector circuit means responsive to the presence of an audio signal on said telephone communication line for providing a second detection signal; and



logic circuit means for generating an annunciation signal only upon the concurrence of both said first and second detection signals;

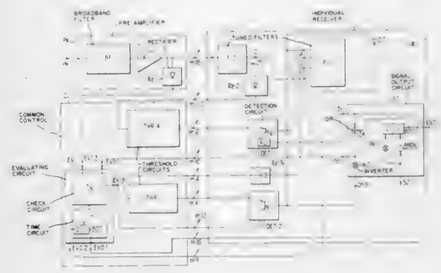
whereby the return of one party during a call hold condition of the telephone line to thus complete a call hold interval can be signalled to another party to the call.

3,961,143

MULTI-FREQUENCY SIGNALLING SYSTEM

Guido Maria Josepha Benedikt Thyssens, Wilrijk, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 11, 1974, Ser. No. 505,014
Claims priority, application Netherlands, Sept. 12, 1973, 7312548
Int. Cl.² H04M *1/50*
U.S. Cl. 179—84 VF **19 Claims**



1. A multiple-frequency signalling system including multiple-frequency receiver means coupled to receive a plurality of alternating signals having different frequencies, said receiver means including an evaluating circuit to evaluate the presence of a predetermined number of said signals received by said receiver means, said receiver means further including a plurality of channel paths each including a first tuned filter responsive to signals of a selected frequency and each including inhibiting means which render said channel paths ineffective upon spurious signals being applied to them, a said channel path being rendered effective when simultaneously said channel path receives a signal having a frequency equal to that to which the filter included in this channel path is tuned and said evaluating circuit determines that a said predetermined number of signals is present, the inhibiting means included in each of said channel paths including a detection circuit coupled between a second tuned filter included in this path and said evaluating circuit, the detection circuit including means for

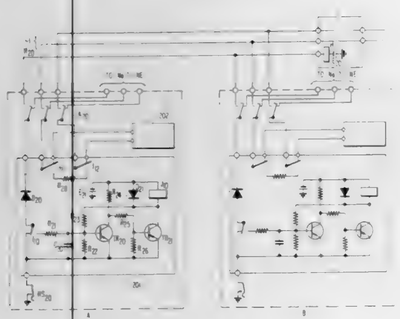
comparing a voltage value provided by the second filter with a threshold voltage value, said detection circuit providing an output when the difference between the compared voltages reaches a predetermined value, and the operation of said evaluating circuit being prevented by the output of said detection circuit, thus rendering said channel paths ineffective.

3,961,144

EXCLUSION CIRCUIT IN KEY TELEPHONE SYSTEM

Masao Hirate, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed May 30, 1974, Ser. No. 474,648
Claims priority, application Japan, May 31, 1973, 48-60230
Int. Cl.² H04M *1/68*
U.S. Cl. 179—99 **2 Claims**



1. In a telephone set of the type having, an off-hook switch, and a key operated control for selecting a line circuit in common with other such telephone sets, said line circuit having a control wire corresponding thereto, the improvement being an exclusion circuit comprising:

a. a bistable circuit comprising a pair of transistors having their input and output terminals cross-coupled to provide feedback for holding said bistable circuit in a stable state, and a capacitor connected across the input of a first of said transistors, said bistable circuit being connected via said off-hook switch to a source of power whereby said capacitor causes said bistable circuit to always assume upon initial application of power thereto a first stable state wherein said second transistor conducts and said first transistor is cut off,

b. switch control means comprising a relay connected in the output circuit of said second transistor and responsive thereto for controlling first and second switches to cause said first and second switches to switch from their respective normal positions to their respective alternate positions when said bistable circuit is in said first stable state,

c. said first switch means in its normal position being connected between said control wire and a reference potential via said off-hook switch, and in its alternate position being connected between said control wire and a trigger input to said bistable circuit, and

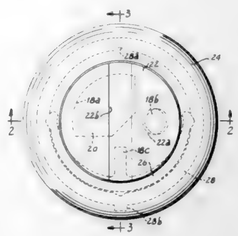
d. said second switch means in its normal position being connected between said line circuit via said key operated control and a speech network for said set, and in its alternate position disconnecting said line circuit via said key operated control, whereby a non-reference potential on said control wire at the time of switching of said first switch causes said bistable circuit to assume its second stable state, and whereby a reference potential on said control wire at the time of switching of said first switch keeps said bistable circuit in its first stable state thereby to disconnect said speech network of the telephone set from said line circuit.

3,961,145

MINIATURE ELECTRONIC WATCH SWITCH

Werner B. Halbeck, Mequon, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Dec. 12, 1974, Ser. No. 532,155
Int. Cl.² H01H *19/58*
U.S. Cl. 200—155 A **10 Claims**



1. A miniature switch adapted to be mounted in a hole in an electric or electronic watch case comprising:

a thin insulating base;

a plurality of stationary contacts mounted in said base and having terminals extending outside said base;

a thin insulating contact carrier;

a flat movable contact carried in a recess in the lower surface of and movable with said contact carrier to selectively engage said stationary contacts in several operating positions;

a thin metal knob secured to said contact carrier for moving the latter;

a frame securely holding said base, said contact carrier and said knob together in assembled relation to afford actuation of said knob and said contact carrier and said movable contact therewith while said base and said stationary contacts remain immobile;

and detent means affording a good feel for stopping said switch in each of its operating position when said knob is actuated comprising:

a detent ring member clamped between said frame and the peripheral portion of said base;

a detent spring member having a pair of arms biased in opposite directions against said detent ring member;

means locking said detent spring member to said contact carrier for movement therewith;

and bumps on one of said members and notches on the other member defining said operating positions of the switch, said bumps entering said notches to provide a good feel enabling accurate stopping of the switch in any one of its operating positions when said knob is actuated.

3,961,146

PRETRAVEL SWITCH FOR PORTABLE TOOLS

Merlin R. Dummer, Arab, Ala., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 9, 1974, Ser. No. 513,249
Int. Cl.² H01H *13/08*
U.S. Cl. 200—157 **11 Claims**

1. A self-enclosed electric switch comprising:

a switch housing including an insulating base;

stationary contact means mounted in said base;

a movable contact arranged to be moved into and out of contact with said stationary contact means;

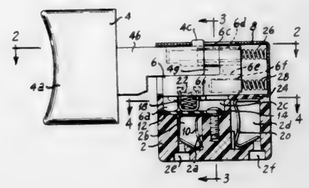
a contact carrier having a normal off position and being coupled to said movable contact;

a switch operator having a normal off position and being actuatable to move said contact carrier into an on position wherein said movable contact engages said stationary contact means;

means in said switch housing mounting said switch operator and said contact carrier for limited movements on said base;

first biasing means biasing said contact carrier with respect to said housing into its off position;

second biasing means biasing said switch operator with respect to said housing into its off position;



and pretravel coupling means between said switch operator and said contact carrier affording substantial pretravel of said switch operator before applying closing force to said contact carrier when said switch operator is actuated toward its on position.

3,961,147

KEYING CONTACT ASSEMBLY

Kay Alonas, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Apr. 10, 1974, Ser. No. 459,826
Int. Cl.² H01H *3/12*
U.S. Cl. 200—159 B **12 Claims**



1. A keying contact assembly for moving one contact of a contact pair into engagement with the other contact of the contact pair and for developing a subsequent signal providing valid assurance of closure of the contact pair which comprises:

resilient feedback means aligned to bear directly upon the one contact of the contact pair for forcing the one contact into engagement with the other contact and, subsequent to closure of the contact pair, for exhibiting a negative force displacement characteristic which provides indications of the closure of the contact pair;

moveable means aligned with and spaced from the contact pair and coupled to the resilient feedback means for moving the resilient feedback means to force the one contact into engagement with the other contact; and

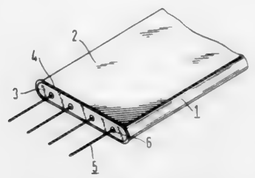
means for mounting the moveable means for movement toward the contact pair to close the contact pair.

3,961,148

DRY-REED CONTACT CONSTRUCTION

Rolf Abele, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 23, 1974, Ser. No. 517,238
Claims priority, application Germany, Oct. 23, 1973, 2353124
Int. Cl.² H01H *1/02*; C25D *5/50*
U.S. Cl. 200—268 **4 Claims**



1. A dry-reed contact electric switch having terminal elements constructed of a metal core having a nickel and copper covering, which terminal elements extend from a housing for said switch in an airtight manner through fusible glass beads, said metal core having a coefficient of expansion matched to that of said glass forming said fusible beads, wherein said terminal elements are formed in accordance with the following steps:

covering said metal core in sequence with a sheath of copper and then with a sheath of nickel in a quantity ratio equal to or slightly less than 1 part nickel to 5 parts copper and

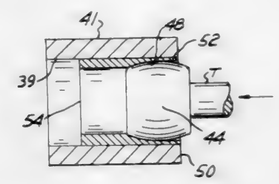
exposing said terminal elements, so covered, to a temperature of from 750° to 980° C. during a melting period of such duration that at least 85 percent of said nickel sheath is diffused into said copper sheath.

3,961,149

APPARATUS FOR APPLICATION OF BEARING MATERIAL

John M. Robertson, Northville, Mich., and Wilbur E. Wyatt, Greensburg, Ind., assignors to Gulf & Western Metals Forming Company, Southfield, Mich.

Continuation-in-part of Ser. No. 174,885, Aug. 25, 1971, Pat. No. 3,786,555. This application Sept. 21, 1973, Ser. No. 399,392
Int. Cl.² B23K *13/00*
U.S. Cl. 219—9.5 **18 Claims**



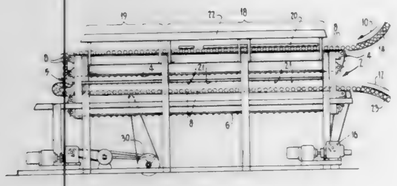
1. Apparatus for applying bearing material to a cylindrical opening in a body and producing a metallurgical bond between the body and the bearing material which comprises a substantially sealed housing, an induction heater in said housing, a support within said housing for said body, means for relatively moving said support and heater to cause said heater to enter the cylindrical opening in said body to heat the surface of the opening, a tubular anvil associated with said housing, means for advancing the body to overlie said anvil with its opening in alignment with the opening in said tubular anvil, a ram having a portion movable toward and away from said anvil, a circular tool connected to said ram for movement therewith and dimensioned to move through the opening in

the body with a clearance which determines the thickness of the bearing material deposited on and bonded to the inner surface thereof, said tool having a tapered leading edge effective to apply radial pressure to a sleeve of bearing material within said opening to spread and bond the bearing material to the surface of the opening.

3,961,150
STERILIZATION APPARATUS

Peter Sydney Lewis, Murrumbeena, and Franklin Marius Lohning, North Balwyn, both of Australia, assignors to Tarax Pty. Limited, Huntingdale, Australia

Filed Mar. 13, 1974, Ser. No. 450,922
Claims priority, application Australia, Mar. 14, 1973, 2597/73
Int. Cl.² H05B *5/04*
U.S. Cl. 219—10.49 **28 Claims**

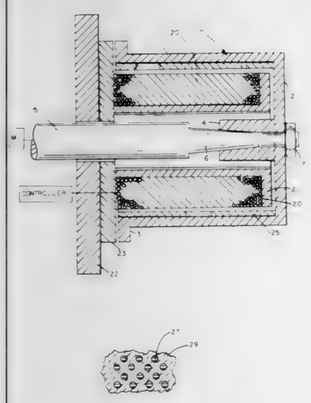


1. Apparatus for sterilizing the contents of sealed containers which containers comprise electrically conductive material, the apparatus comprising support means to support containers and to rotate them first in one sense and then in the opposite sense to impart substantial relative motion between the containers and their contents, and induction heating means disposed in close proximity to said rotating containers to heat the rotating containers to rapidly heat the contents of the containers to the heat of sterilization.

3,961,151
HEATED ROLL INDUCTIVE HEATER CONSTRUCTION

Kenneth H. Danner, Nashville, Tenn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed June 3, 1974, Ser. No. 475,457
Int. Cl.² H05B *5/08*
U.S. Cl. 219—10.49 **3 Claims**

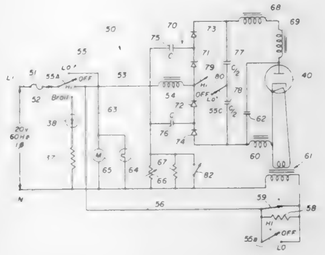


1. A heated roll construction for processing synthetic fibers and the like comprising a rotatable shaft, a synthetic fiber processing roll member mounted on said shaft and rotatable therewith, a stationary coil carrier mounted on the interior of said roll, an induction heating coil comprising a length of wire wrapped on said coil carrier in helical fashion forming a plurality of loops of wire positioned side by side in an inner layer on the coil carrier and wrapped to form a plurality of subsequent layers of wire loops wrapped over said inner layer, said length of wire having a loose woven inorganic insulation material thereon when wrapped on said coil carrier, and a ceramic support material spacing each of the loops of wire from the other loops and substantially filling all voids between the loops of wire in each of said layers and between the layers of wire loops to form a coil carrier and having a homogeneity obtainable only when the ceramic material is forced between the loops of wires forming each layer after each layer is wrapped and before the next subsequent layer is wrapped, said ceramic material thereby preventing substantial movement between adjacent portions of each of said wire loops during rotation and alternate heating and cooling of said roll.

3,961,152
MAGNETRON POWER SUPPLY AND CONTROL CIRCUIT

James E. Staats, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Division of Ser. No. 430,730, Jan. 4, 1974, Pat. No. 3,855,440.
This application Nov. 21, 1974, Ser. No. 525,856
Int. Cl.² H05B *9/06*
U.S. Cl. 219—10.55 B **2 Claims**

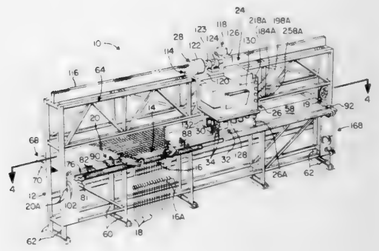


1. Electronic heating apparatus comprising metal wall structure defining a heating cavity, an antenna galvanically insulated from said wall structure and arranged to radiate microwaves into said heating cavity, a crossed-field discharge device including a pair of input terminals and a pair of output terminals, said device being characterized by the production of an a.c. voltage of ultra-high frequency across the output terminals thereof in response to the application of a d.c. voltage across the input terminals thereof, means capacitively coupling said output terminals respectively to said metal wall structure and to said antenna, a voltage converter including a pair of input terminals adapted to be connected to an associated low frequency a.c. supply source having a voltage in the general range of 110 to 125 volts and a pair of output terminals respectively connected to the input terminals of said device, said voltage converter further including four series-connected rectifiers, two input capacitors connected in parallel with the inner two of said rectifiers, two output capacitors connected in parallel with said four rectifiers, the capacitance of each of said input capacitors being twice the capacitance of each of said output capacitors, and a choke coil having an input terminal adapted for connection to the associated source of low voltage a.c. power and an output terminal adapted for connection to a first junction between said two inner rectifiers and to a second junction between said two output capacitors, said converter being characterized by the production of a d.c. output voltage across the output terminals thereof in response to the application of a low frequency a.c. input voltage across the input terminals thereof, the maximum amplitude of the d.c. output voltage from said converter being approximately four times the peak value of the a.c. input voltage to said converter.

3,961,153
MACHINE FOR FABRICATING A WIRE NETWORK

Elmer O. Smith, Compton, and Samuel Weinstein, Culver City, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed May 24, 1974, Ser. No. 473,109
Int. Cl.² B23K *11/10*
U.S. Cl. 219—56 **8 Claims**



1. A welding machine for fabricating a wire network comprising:

a frame having a welding station;

first wire holding means on said frame for supporting a group of first wires in side by side fixed relation within said welding station;

second wire holding means on said frame for supporting at least one second wire in fixed welding position within said station wherein the latter wire extends in a transverse direction of said first wires, whereby said first and second wires cross one another;

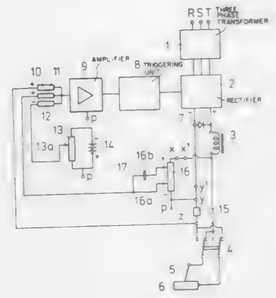
welding means on said frame for welding said first and second wires to one another at their crossing points, said welding means comprising a carriage mounted on said frame for movement through said welding station in said transverse direction, a welding electrode on said carriage, means for driving said carriage through said station in a manner such that movement of said electrode occurs along the second wire in welding position and across said wire crossing points in succesion, means on said carriage for sensing the successive wire crossing points during movement of said carriage through said welding station and producing a stop signal in response to sensing of each crossing point, control means for activating said drive means to drive said carriage in the absence of a stop signal and inactivating said drive means to arrest said carriage for a predetermined time interval in response to each stop signal and in a position wherein said electrode is aligned with the corresponding wire crossing point, and means for retracting said electrode from contact with said wires during movement of said carriage from one wire crossing point to the next and extending said electrode into contact with the aligned wire crossing point each time the carriage is arrested at a wire crossing point; and

said first wire holding means including means for intermittently advancing said first wires endwise through said welding station, whereby second wires may be welded to said first wires at positions spaced along the first wires to form a wire network.

3,961,154
DIRECT CURRENT POWER SUPPLY FOR MANUAL ARC WELDING

Rolf Ericsson, Laxa, Sweden, assignor to Elektriska Svetsningsaktiebolaget, Goteburg, Sweden

Continuation of Ser. No. 352,446, April 18, 1973, abandoned.
This application Oct. 16, 1974, Ser. No. 515,415
Claims priority, application Sweden, Apr. 18, 1972, 4964/72
Int. Cl.² B23K *9/10*
U.S. Cl. 219—135 **3 Claims**



1. A direct current power supply for manual arc welding having a steeply drooping, adjustable volt-ampere characteristic comprising

a polyphase transformer having a plurality of secondary output leads carrying mutually phase displaced voltages, a polyphase rectifier system connecting said secondary output leads to a pair of D. C. welding current conductors, said rectifier system comprising a set of triggered rectifier valves connected one in series with each of said secondary output leads, said triggered rectifier valves having each a trigger terminal for initiating current flow through the valve,

means for periodically supplying igniting pulses to each of said trigger terminals, including means for causing the angular position of said pulses to vary in response to a direct current control signal, and,

means for producing said direct current control signal comprising the following means, to wit,

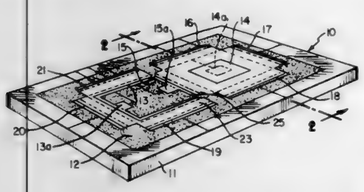
a. means for producing an adjustable direct current reference signal,

b. means including a welding current sensing means for producing a welding current feed-back direct current signal bearing a substantially fixed proportion to the welding current carried by the pair of welding current conductors,

c. means including a welding voltage sensing means for producing a welding voltage feed-back direct current signal proportional to the welding voltage between said welding current conductors,

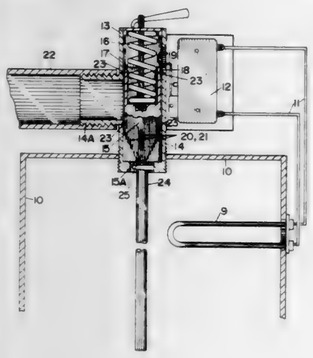
d. summing means for combining said reference signal, said welding current feed-back signal and said welding voltage feed-back signal into a compound signal constituting the control signal aforementioned, both of said feed-back signals being supplied to said summing means in opposing relationship to said reference signal, said means for producing a welding voltage feed-back signal including means for adjustment of the slope of the volt-ampere characteristic of the power supply through adjustment of the ratio of said welding voltage feed-back signal to the welding voltage independently of the ratio of the welding current feed-back signal to the welding current.

3,961,155
THERMAL PRINTING ELEMENT ARRAYS
Lawrence A. Weldon, Harleysville, Pa., and Peter Bokalo, Metuchen, N.J., assignors to Gulton Industries, Inc., Metuchen, N.J.
Filed June 24, 1974, Ser. No. 482,003
Int. Cl.² H05B 1/00
U.S. Cl. 219—216 12 Claims



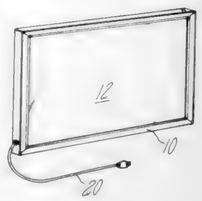
1. A thermal printing element array for printing selected symbols on a thermographic recording medium comprising:
a substrate member;
a plurality of elongated resistive elements supported by said substrate member, said resistive elements being arranged in a pattern so that selective electrical energization of said resistive elements will cause selected symbols to be thermally printed on a thermographic recording medium placed in cooperative relation with said resistive elements; and
a plurality of electrical conductors supported by said substrate member, each of said resistive elements being electrically connected to a pair of said electrical conductors, and each of said electrical conductors being connected along the long dimension of a respective one of said elongated resistive elements so that electrical current path between said conductors is across the short dimensions of said resistive elements.

3,961,156
COMBINATION TEMPERATURE AND PRESSURE RELIEF VALVE WITH ENERGY CUTOFF SWITCH
Thayer E. Patton, 223 Raintree Lane, Chattanooga, Tenn. 37421
Continuation-in-part of Ser. No. 478,901, June 13, 1974, Pat. No. 3,873,808. This application Mar. 24, 1975, Ser. No. 561,067
Int. Cl.² F24H 1/00
U.S. Cl. 219—331 4 Claims



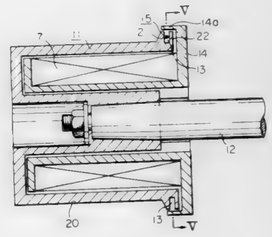
1. A device for limiting the temperature and pressure of a fluid by controlling the electric current to an element (9) for heating the fluid which comprises a tank (10), a support assembly (13) for the device adapted to be inserted through a wall of the tank, the assembly including a cylinder (14) having a discharge opening (14A), a pressure responsive piston (15) having a somewhat pointed lower end (15A) movable within the cylinder, a compression spring (16) opposing movement of the piston, an actuator (19) extending within the cylinder through the support assembly and adapted to be operated by movement of the piston, a microswitch (12) operable by the actuator to break an electric circuit (11) to the heating element, a discharge pipe (22) having an internally threaded end for attachment to external threads on the discharge opening (14A) of the cylinder, and a temperature responsive element (24) mounted within the tank, the element being connected to the piston to push the piston against the actuator of the microswitch to break the electric circuit to the heating element and a discharge conduit (20) for the overflow of fluid from the cylinder.

3,961,157
ELECTRICAL RADIANT HEATER PANEL
Robert C. Miller, Madison, and Barrie H. Hackett, Haddam Neck, both of Conn., assignors to Safeway Products Inc., Middletown, Conn.
Filed Jan. 6, 1975, Ser. No. 538,642
Int. Cl.² H05B 3/28; F24H 9/00; B32B 3/12
U.S. Cl. 219—345 3 Claims



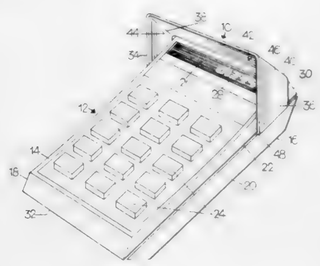
1. A radiant heater comprising:
a planar front panel formed of an electrically non-conductive material, said front panel having a first radiation emitting surface and a second interior surface;
heating element means adhesively bonded to said second surface of said front panel, said heating element means including a resistance heater, thermal energy radiated by said resistance heater being transferred to said front panel by conductance;
heat reflector means adhesively bonded to said heating element means on the opposite side of said heating element means from said front panel, said heat reflector means being an integral unit comprised of:
a first planar layer of electrically non-conductive flame retardant material, said first layer being disposed adjacent to said heating element means and being oriented parallel to the plane of said front panel;
a honeycomb cell defining member, said cell defining member being formed from an electrically non-conductive flame retardant material, a first forwardly facing side of said cell defining member being bonded to the rearwardly facing side of said reflector means first layer whereby open cells of said member are exposed to and oriented generally perpendicular to said first layer; and
a planar laminate including a layer of electrically conductive material and a layer of electrically non-conductive flame retardant material, said laminate being positioned at the rearwardly disposed side of said honeycomb cell defining member, said layer of electrically conductive material of said laminate facing and being exposed to the interior of the honeycomb cells whereby heat radiated rearwardly from said heating element means will be incident on said layer of conductive material in a substantially perpendicular direction, the material and surface characteristics of said electrically conductive layer being selected to provide a high degree of reflectivity of the incident thermal radiation;
a rear panel comprised of an electrically non-conductive material, said rear panel being bonded to the layer of electrically non-conductive material of said heat reflector means planar laminate; and
over temperature protection means for said heater, said protection means including a temperature sensitive element connected in series with said heating element means resistance heater, said protection means being positioned entirely within said honeycomb cell defining member between said first and electrically conductive layers of said heat reflector means, said protection means being spaced from said electrically conductive layer and being separated from said heating element means only by said first layer of non-conductive material.

3,961,158
HEATING ROLLER APPARATUS WITH PRECISE TEMPERATURE MEASUREMENT
Muneharu Tabuchi, Otsu; Shosen Bando, Kyoto; Tadashi Tabei, and Yasuhiro Asai, both of Mishima, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Apr. 5, 1973, Ser. No. 348,032
Claims priority, application Japan, Apr. 14, 1972, 47-36973
Int. Cl. H05b 1/02
U.S. Cl. 219—471 18 Claims



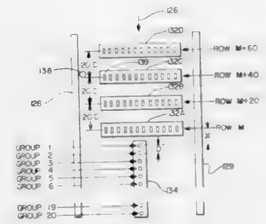
1. A heating roller apparatus comprising: a roller member having a cylindrical wall and defining a space in the inside thereof and an annular groove in said cylindrical wall; a rotatably supported drive shaft, means rigidly and concentrically supporting one end of the roller member on an end of the drive shaft; heat source means stationarily positioned in the inner space of the roller member for heating the cylindrical wall, stationary flange means having a support extending into said inner space for supporting said heat source means, said flange means being positioned adjacent the other end of said roller member,; and a temperature sensor having a measuring probe stationarily positioned in the annular groove of the cylindrical wall for measuring a temperature of the cylindrical wall of the roller member, said annular groove being located at a position adjacent to said other end of said roller member and having an opening on the outer surface of said cylindrical wall, and two adjacent circumferentially extending wall faces which penetrate into said cylindrical wall and are substantially perpendicular to the axis of said roller member, said wall faces being spaced from said measuring probe of said temperature sensor; and a metal covering of low thermal capacity and high thermal conductivity extending from said flange means over said opening of said annular groove, said covering facing said opening at a determined distance therefrom and being exposed thereto.

3,961,159
LIGHT SHIELD/SUPPORT DEVICE
Martin E. Hursey, 5 Pimlico Road, Greenville, S.C. 29601
Filed June 5, 1975, Ser. No. 584,064
Int. Cl.² G06C 29/00
U.S. Cl. 235—1 D 10 Claims



1. A light shield device for reducing glare on the display window of a portable numerical calculator having a housing defined by vertically spaced upper and lower surfaces joined by spaced opposed upright sidewalls, a plurality of numbered and operational keys carried on said upper surface, said display window located on said upper surface for displaying lighted numbers produced by carrying out numerical operations with said keys, said light shield comprising:
a pair of spaced shank members;
attachment means including an inwardly extending flange carried adjacent a lower portion of each said shank member for being received over the exterior surface of said spaced opposed sidewalls of said housing for removably securing said shank members to said exterior surface of said sidewalls; and
an upper hood member integral with said shank members extending substantially above and across said display window for shielding said window and the lighted numbers displayed there from oncoming light effectively reducing the glare thereon so that the lighted numbers are more easily and accurately readable.

3,961,160
CARD READER
Richard A. Gorgens, Bedford, Mass., assignor to Incoterm Corporation, Natick, Mass.
Filed Mar. 28, 1974, Ser. No. 455,928
Int. Cl.² G06K 7/14, 19/06
U.S. Cl. 235—61.11 E 24 Claims



1. Apparatus for reading the information stored on a card in a plurality of information positions forming a data matrix, said matrix having M rows by N columns with each information position being characterized by one of two states representing a binary zero or a binary 1, comprising,
guide means for accepting a manually inserted card and guiding said card in a first direction along a predeter-

mined path as said card is inserted in said guide means at an arbitrary speed,

a first linear array of data detection elements extending in said first direction and positioned adjacent to said guide means, said elements being spaced apart in a fixed relation to the spacing between rows of information positions on said card, the number of said data detection elements being less than M,

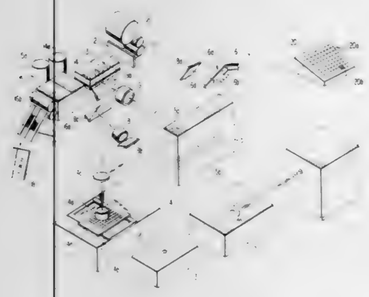
a second array of data detection elements having N columns comprising at least two spaced apart rows, each of said rows extending in a direction perpendicular to said first direction, said second array being positioned to underlie said matrix of information positions when said card is passed in a first direction along said guide means, said rows of detection elements being spaced apart in said first direction by a distance related to the spacing between said rows of information positions on said cards, and

circuit means coupled to the elements of said first and second arrays and providing, as the leading edge of a card passes over each detection element in said first array at said arbitrary speed, that the detection elements of said second array are read out to provide output signals indicating the binary value of each information position for predetermined ones of the rows of said data matrix on said card overlying said second array.

3,961,161
SYSTEM FOR PREPARING COMMUTATION TICKET AND THE LIKE

Hiroyuki Ueda, and Yukio Sawano, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 24, 1974, Ser. No. 463,720
Claims priority, application Japan, Apr. 24, 1973, 48-46401
Int. Cl.² G06K *1/14, 7/10*; G03G *16/00*; G09F *11/06*
U.S. Cl. 235—61.11 F **4 Claims**

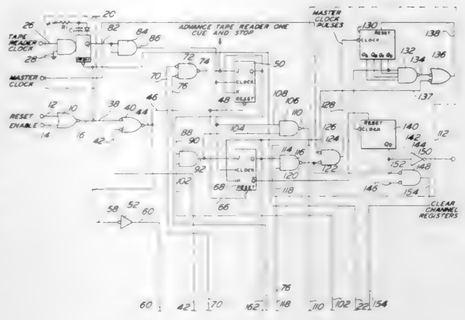


1. A system for preparing commutation tickets and the like comprising means for generating indicia required for providing a commutation ticket and the like, means for optically recording the indicia on a photosensitive material, means for optically recording data required for the preparation of the commutation ticket on the photosensitive material as machine readable digital marks, means for reading the digital marks recorded on an issued commutation ticket and the like for utilizing the optically recorded data therein in the preparation of a new ticket, means for transcribing the name and age of a commuter from a commuter ticket request card, means for feeding said photosensitive material through an exposing device, a developing device, and an image stabilizing device, and a keyboard for introducing all the data required for preparing a commutation ticket and the like into a minicomputer, wherein said means for generating indicia comprises an ultramicrofiche and a display panel controlled by said minicomputer.

3,961,162
METHOD AND APPARATUS FOR INTERRUPTING A DEVICE FOR A PRESELECTED INTERVAL OF TIME

William R. Wells, Linwood, N.J., assignor to United Audio Visual Corporation, Mays Landing, N.J.

Filed Dec. 31, 1974, Ser. No. 537,750
Int. Cl.² G06K *7/10*; H01H *43/08*
U.S. Cl. 235—61.11 E **13 Claims**



1. Apparatus for interrupting a device for a preselected interval of time in response to information in a storage medium, comprising:

means for generating a first digital signal in response to a first portion of said stored information for interrupting said device;

means for generating a second digital signal in response to said first digital signal and a second portion of said stored information;

means for generating a series of clock pulses having a predetermined pulse repetition frequency in response to said second digital signal;

means for digitally counting a preselected number of said clock pulses, said preselected number being determined by said second portion of stored information; and

means for generating a third digital signal for starting said device in response to said counting means, whereby said device is interrupted for a preselected time period determined by the pulse repetition frequency of said clock pulses.

3,961,163
PROGRAMMABLE DIGITAL/ANALOG MEMORY SYSTEM

Clarence H. Stevenson, III, 303 W. Glenoaks Blvd., Glendale, Calif. 91202

Division of Ser. No. 407,433, Oct. 18, 1973, Pat. No. 3,915,851, which is a continuation of Ser. No. 334,210, Feb. 21, 1973, abandoned. This application Apr. 10, 1975, Ser. No. 566,669
Int. Cl.² G06K *7/06*
U.S. Cl. 235—61.11 A **12 Claims**

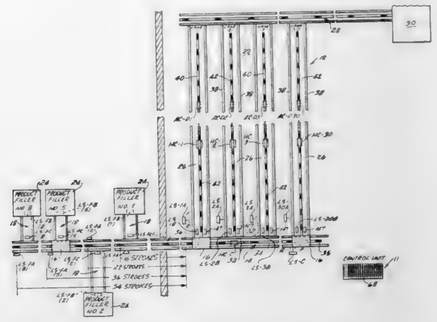
1. A digital memory system comprising

a. a plurality of movable memory bands;

b. means for coding each memory band with information bits representing a predetermined memory condition for each memory band;

c. a series of separate decoding circuits, each circuit being activated for decoding the memory condition of a selected coded memory band; and

d. a programming unit for associating each decoding circuit with information bits in a selected one of any of the memory bands, the programming unit including a matrix of circuit input means arranged to provide a separate series of said input means in circuit connection with each decoding circuit, the several input means in each series being associated with corresponding ones of the memory bands; and a series of separate movable circuit elements, each circuit element being in circuit connection with a separate one of the decoding circuits, each circuit element also being removably connectible to any one of the several input means associated with the decoding circuit to which the circuit element is connected for selectively decoding any of the memory bands, the information bits

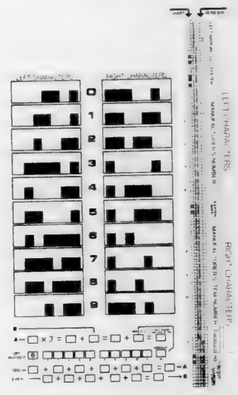


traveling on a selected memory band cooperating with the circuit element being connected to the input means associated with the selected memory band to activate the decoding circuit which thereby decodes the memory band.

3,961,164
UPC ENCODATION VERIFIER

George T. Reed, and Laura Seidler-Gordon, both of Newark, Del., assignors to Westvaco Corporation, New York, N.Y.

Filed Sept. 13, 1974, Ser. No. 505,906
Int. Cl.² G06K *19/02*; G09C *1/04*; G06K *5/00*
U.S. Cl. 235—61.12 N **1 Claim**



1. A method for verifying the accuracy of an encoded linear bar code symbol comprising in combination a template and an encodation worksheet, said template comprising a substantially rigid and transparent planar sheet having an image printed thereon, said image consisting of a plurality of equally spaced dark bars and intervening light spaces corresponding to the modules of a linear bar code symbol, said encodation worksheet comprising a printed sheet including a character chart of the module representation of the numeric equivalents of a linear bar code symbol, a formula for determining the check character of said bar code symbol and a bar chart consisting of two columns divided into equally sized spaces corresponding to the modules of said bar code symbol, said columns comprising a chart column and a verifier column, said method comprising the steps:

a. translating the numeric equivalent of an encoded linear bar code symbol into its graphic representation with the aid of the character chart on said encodation worksheet;

b. entering the graphic representation of the translation made in step (a) in the chart column of the bar chart on said encodation worksheet;

c. orienting the template in superimposed relation to said encoded linear bar code symbol and comparing the image on said template with the modules of said bar code symbol;

d. entering the graphic representation of the comparison made in step (c) in the verifier column of the bar chart on said encodation worksheet; and,

e. correlating the graphic representations of the encoded bar code symbol as entered in the chart and verifier columns of said encodation worksheet in order to verify the accuracy of said encoded symbol.

3,961,165
IMAGE INFORMATION TRANSFER DEVICE

Kenji Fukuoka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed June 20, 1974, Ser. No. 481,400
Claims priority, application Japan, June 21, 1973, 48-69145
Int. Cl.² H04N *1/02*
U.S. Cl. 235—92 SH **3 Claims**



1. An image information transfer device comprising:

first means comprising a shift register **1** including a plurality of stages arranged in sequential order for memorizing input image information data;

second means comprising a shift register **2** having a plurality of stages which are the same in number as said stages of said first means and are arranged in sequential order for memorizing data representing a memorized condition in each stage of said first means;

means for causing the first of said stages of said second means to memorize data representing that data is present in a first of the stages of said first means when said input image information data is memorized in said first stage of said first means and memorize data representing that said input image information data is absent in said first stage of said first means when said input image information data is not memorized in said first stage of said first means (first clock pulse generating source **7**, AND1 and connections);

comparing means for periodically comparing data representing a memorized condition of a given stage of said second means with data representing a memorized condition of a stage arranged next to said given stage (AND2, AND3, AND4... and connections);

means for transferring input image information data memorized at that stage of said first means which corresponds to said given stage of said second means to a stage next to that stage of said first means when said comparing means detects that said data representing said memorized condition of said stage arranged next to said given stage of said second means represents that data is absent and

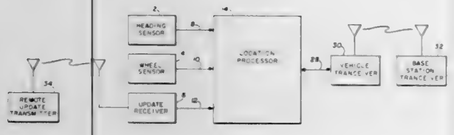
simultaneously transferring said data representing said memorized condition of said given stage of said second means to said stage arranged next to said given stage (second clock pulse generating source 8, AND2, AND3, AND4 and connections); and

means for reading out an input image information data memorized at the final stage of said first means when data representing a memorized condition in the final stage of said second means is data representing that a data is present in the final stage (third clock pulse generating source 9, AND5, FF5 and connections).

3,961,166
VEHICLE LOCATING APPARATUS

Charles R. Stobart, Richardson, Tex., assignor to E-Systems, Inc., Dallas, Tex.

Filed Jan. 24, 1975, Ser. No. 543,883
Int. Cl.² G06F *15/50*
U.S. Cl. 235—150.27 **8 Claims**



1. A vehicle locating apparatus arranged to be carried by a vehicle for determining the location of the vehicle, the apparatus comprising: heading means operable to provide an orientation signal indicative of an angle of orientation of said compass means with respect to magnetic north;

distance detecting means operable to provide a distance signal representative of the distance traveled by the vehicle;

processor means responsive to said orientation signal and said distance signal for providing location signals representative of the location of the vehicle;

storage means for storing said location signals, said processor means being operable to update said stored location signals whenever the vehicle has traveled a predetermined distance; and

receiving means operable when the vehicle is within predetermined areas, for receiving predetermined position signals corresponding to the predetermined areas, said processor means being responsive to said position signals for updating said stored location signals in accordance with said received position signals.

3,961,167
PCM TONE RECEIVER USING OPTIMUM STATISTICAL TECHNIQUE

Jeffrey P. Mills, Forest Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

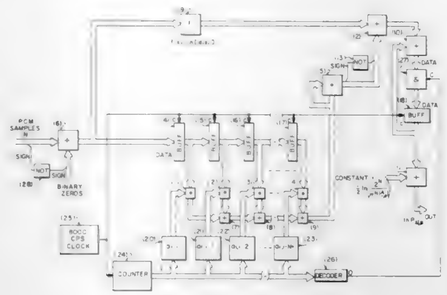
Filed July 22, 1974, Ser. No. 490,450
Int. Cl.² G06F *15/36*; **H04Q** *11/00*
U.S. Cl. 235—152 **8 Claims**

1. A pulse code modulation (PCM) tone receiver for determining the probability that a particular combination of audio frequencies was transmitted by monitoring PCM samples, said PCM tone receiver comprising:

means for storing N PCM samples as received, where N is an integer, c_1 through c_N representing a quantization of the analog voltage waveform sampled;

first means for multiplying said N samples represented by c_1 through c_N by a set of fixed predetermined constants a_{i1} through a_{iN}, where i is a fixed point binary number ranging from 1 to N and where a_{i1} through a_{iN} are determined from the covariance matrix of the process represented by the particular tone combination to be detected, said first multiplying means including means for storing said fixed predetermined constants a_{i1} through a_{iN}, said first multiplier means operating on said stored output of said storage means;

means for combining said multiplied products of samples c_1 through c_N and constants a_{i1} through a_{iN} according to the equation



$$w_i = \sum_{k=1}^{i} a_{ik} c_k;$$

means for squaring said resulting combined w_i term;

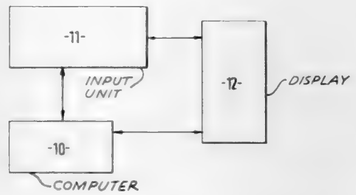
means for accumulating the resulting w_i^2 term as each of said N PCM samples are received;

second means for multiplying said accumulated samples by a set of fixed constants related to the covariance matrix with the resulting product representing the probability that the specific combination of audio frequencies was transmitted.

3,961,168
COMPUTER WITH MANUAL PARAMETER ENTRY MEANS

Thomas David Gaffney, Dundalk, Ireland, assignor to Oeleq Limited, Dundalk, Ireland

Filed Dec. 4, 1974, Ser. No. 529,635
Int. Cl.² G06F *3/02*, *15/46*
U.S. Cl. 235—152 **3 Claims**

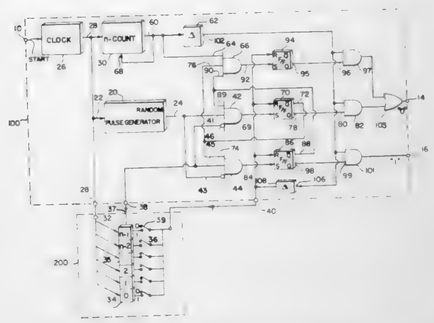


1. A computing system having a computing section for computing according to a predetermined programme, an input unit coupled to feed information into said computing section and a display unit coupled to said computing section to display information contained therein, and wherein said input unit includes means to apply to said computing section quantities representative of the initial conditions of variables of said information, manually-actuable means for varying the value of the quantity representing a designated variable from its initial condition, electronic circuitry for generating a train of pulses, said manually-actuable means comprising a manually rotatable element arranged to operate said electronic circuitry to generate a train of pulses to vary said value, and an up/down counter arranged to receive said train of pulses and the value of said designated variable and to output an altered value thereof.

3,961,169
BIASED-BIT GENERATOR

Walton B. Bishop, and John M. Hovey, both of Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1975, Ser. No. 561,967
Int. Cl.² G06F *7/38*
U.S. Cl. 235—152 **5 Claims**



1. A biased-bit generator comprising:

means for generating a series of random n-bit binary numbers Y;

means for generating a series of desired n-bit fixed-value binary numbers B, the value of B being indicative of a desired probability value and the binary Y and B groups being synchronized;

means connected to the outputs of both aforesaid means for determining the relative magnitude between said numbers B and Y in each time-corresponding set, and for generating a relative magnitude indication signal;

means connected to said relative magnitude determining and indicating means for generating a binary 1 when said indication signal indicates that a number Y is less that its associated set-number B, and for generating a binary 0 when said indication signal indicates that a number Y is greater than or equal to its associated set-number B,

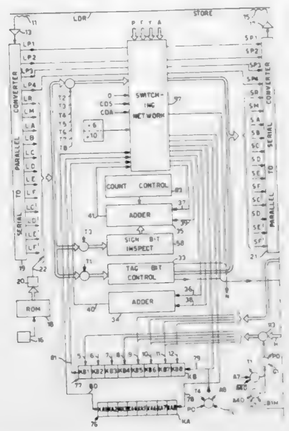
whereby said binary 1 s and 0 s are generated so that on the average the ratio of the number of 1 s to 0 s + 1 s is essentially equal to (B/2ⁿ).

3,961,170
FIXED POINT TO FLOATING POINT CONVERSION IN AN ELECTRONIC COMPUTER

Giovanni De Sandre, Brugherio (Milan); Angelo Subrizi, Ivrea (Turin), and Franco Bretti, Are' Di Caluso (Turin), all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Continuation of Ser. No. 246,735, April 24, 1972, Pat. No. 3,828,322. This application Apr. 17, 1974, Ser. No. 461,558
Claims priority, application Italy, Apr. 22, 1971, 68336/71
Int. Cl.² G06F *5/02*
U.S. Cl. 235—154 **1 Claim**

1. In a digital electronic computer comprising: a memory including a first and a second register, the first register receptive of a number to be converted from fixed to floating point notation, the second register receptive of a significant zero digit associated with a decimal point; shifting means selectively operable too shift the contents of either of said registers; aligning means operable to control said shifting means to first shift the content of said second register until the decimal point stored therein is aligned with the decimal point stored in said first register; indicating means for indicating whether the number stored in said first register is greater or less than one; and control means responsive to said indicating means to control said shifting means to next shift the contents of one of said registers when said number is greater than one and alternatively to shift the contents of the other of said registers when said number is less than one, said control means including means for detecting the highest significant digit of the digits of said first register to stop said shifting means when the decimal point of said second register is aligned with the location of the next higher order with respect to the highest significant digit

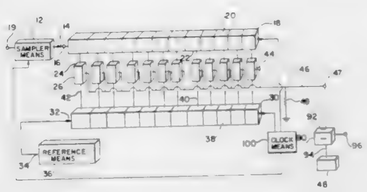


of said first register, and counting means responsive to said shifting means to effect said second register to be incremented or decremented by one in dependence upon the direction for each shifting, whereby the first register contains the mantissa and the second register contains the exponent of the floating point notation.

3,961,171
METHOD OF OBTAINING CORRELATION BETWEEN CERTAIN SELECTED SAMPLES OF A SEQUENCE

Jacob J. Freeman, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 18, 1975, Ser. No. 550,796
Int. Cl.² G06F *15/34*
U.S. Cl. 235—181 **8 Claims**



1. A method for detecting, from among an input-sequence of information-values, a class of input information-value sequences comprising the steps of:

first, creating a reference information-sequence comprising a series of reference-values, each said reference value being contained in either a significant sequence-position or a non-significant sequence-position, and having a desired information content in each of said significant sequence-positions, and an arbitrary information content in each of said non-significant sequence-positions;

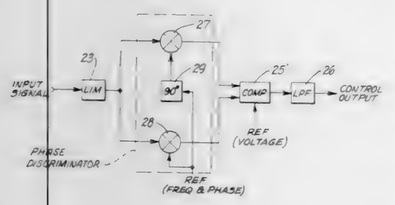
second, coding said reference information-sequence with a pair of identical binary ones for each sequence-position if said desired information content is greater than a predetermined threshold, a pair of binary zeroes for each sequence position if said desired information content is less than a predetermined threshold, and coding said arbitrary information content with a pair of complemen-

tary binary values for each sequence position, thereby forming a coded reference-sequence corresponding to said reference information sequence;
third, coding each said input information-value with a pair of binary ones for each sequence position if said information-value is greater than a predetermined threshold, a pair of binary zeroes for each sequence position if said information-value is less than a predetermined threshold, thereby forming a coded input-sequence corresponding to said input information-value sequence;
fourth, comparing binary values of said coded input-sequence with correspondingly spaced binary values of said coded reference-sequence;
fifth, summing the number of said comparisons in which said compared binary values are of the same value,
whereby said summed number is indicative of the occurrence, in said input-signal sequence, of said desired class of sequences; and
sixth, supplying a cancelling signal equal in value to the bias value resulting from the comparisons of coded signals in non-significant sequence positions and subtracting the cancelling from the summed signal.

3,961,172
REAL-TIME CROSS-CORRELATION SIGNAL PROCESSOR

Robert Stewart Hutcheon, 6548 Covington Way, Goleta, Calif. 93017

Continuation-in-part of Ser. No. 421,502, Dec. 3, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,759
Int. Cl.² G06G *7/19*; **H04B** *1/10*
U.S. Cl. 235—181 **40 Claims**



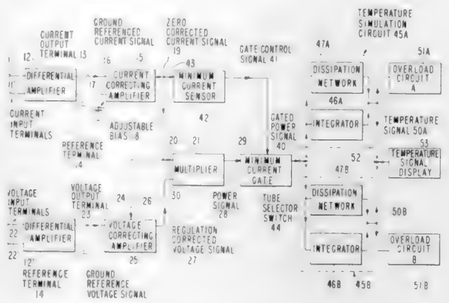
32. In a real time signal processing system of the cross correlation type, the combination of:
a frequency multiplier providing an output varying in amplitude in accordance with the input thereto and varying in frequency as a multiple of the frequency variations of the input thereto;
a frequency multiplexer comprising a plurality of parallel connected channels each having a pass band with a different center frequency; and
means for connecting an input signal to said multiplier and for connecting said multiplier and said multiplexer in series.

3,961,173
HEAT UNIT INTEGRATOR FOR X-RAY TUBES

John T. Perry, Salt Lake City, Utah, and Joel J. Schmutzer, Oak Park, Ill., assignors to Varian Associates, Palo Alto, Calif.

Filed Nov. 20, 1974, Ser. No. 525,423
Int. Cl.² G06G *7/56*; **H02H** *5/04*
U.S. Cl. 235—184 **11 Claims**

1. In apparatus for indicating the temperature of the target of an X-ray tube having a target and a cathode comprising;
means for generating a power signal indicative of instantaneous power input to said target,
means for integrating said power signal with respect to time to generate a temperature signal indicative of the heat energy storage in said target,
means to dissipate said temperature signal simulating heat loss from said target,
said means for generating said power signal comprising a pair of input terminals for receiving therebetween an input voltage signal proportional to the target voltage between said cathode and said target,
a pair of input terminals for receiving an input current signal therebetween proportional to the electron current from said cathode to said target,

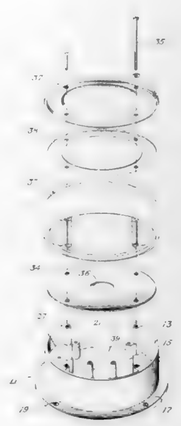


means for combining said input voltage and current signals to produce a power signal indicative of the product of said voltage and said current;
the improvement comprising differential amplifier means connected between at least one of said input terminals and said combining means, for converting said input signals to signals between a common reference terminal and single voltage and current terminals whereby errors in combining said signals are reduced.

3,961,174
WARNING LIGHT APPARATUS FOR INDUSTRIAL VEHICLE USE

Arnold O. Blaylock, Fort Worth, Tex., assignor to Lectric Lite Company, Fort Worth, Tex.

Filed June 9, 1975, Ser. No. 585,089
Int. Cl.² B60Q *1/26*, *3/02*; **F21S** *1/02*
U.S. Cl. 240—8.18 **5 Claims**



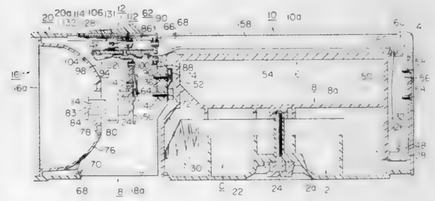
1. An improved warning light apparatus for industrial vehicle use having an intermittently flashing high intensity light and circuit means enclosed within a lens, the improvement comprising:

a transverse bottom plate;
a sidewall extending from the plate, for providing a support for the lens;
an annular flange adjacent the sidewall and plate for direct rigid coupling to the industrial vehicle; and
mounting means extending from the plate for mounting the high intensity light and circuit means;
said bottom plate, sidewall, mounting means and annular flange being formed in a solid integral piece.

3,961,175
PORTABLE BATTERY OPERATED ELECTRIC LIGHT

Hitoshi Otagoshi, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka and Aoki Electric Industrial Co., Ltd., Tokyo, both of, Japan

Filed Jan. 23, 1975, Ser. No. 543,344
Claims priority, application Japan, Feb. 4, 1974, 49-13865[U]; Feb. 6, 1974, 49-14678[U]; Feb. 7, 1974, 49-15101[U]
Int. Cl.² F21L *5/00*, *7/00*
U.S. Cl. 240—10.63 **14 Claims**



1. In a battery operated flashlight having a main body adapted to be gripped by an operator and to receive batteries therein and having contact means for engaging the terminals of batteries received therein, said main body having first and second ends, a head section including a socket for receiving a lamp, and interconnecting means interconnecting said main body and said head section; the improvement wherein said interconnecting means comprises arm means having one end pivoted to one end of said main body and another end pivoted to said head section whereby said head section may be moved to a position adjacent said other end of said body, said head section comprising:
a. a housing,
b. a first light transmitting window in said housing,
c. a substantially dome shaped reflector having a center hole, said reflector being in position in said housing behind said first window to reflect light out of said first window,
d. a second light transmitting window in said housing in a position behind said reflector,
e. externally controllable slide control means on said housing and having first and second end positions,
f. means connected to said slide control means for mounting said socket internally of said housing and aligned with said center hole of said reflector and behind said reflector, whereby said socket means moves in a direction axially of said reflector upon movement of said slide control means,
g. a light shielding cap substantially the same size as said central hole of said reflector,
h. means mounting said cap member for axial movement of said reflector with said socket, whereby said cap is positioned in said hole for blocking passage of light in said first end position of said control means and is positioned within said reflector in the second end position of said control means, and
i. switch means in said housing connected to said socket, and circuit means connecting said switch means to said contact means.

3,961,176
ADJUSTABLE LAMP STAND

Lawrence E. Gleason, 140 Hackberry Hill, Long Lake, Minn. 55356

Filed Apr. 26, 1972, Ser. No. 247,784
Int. Cl.² F21S *1/12*; **F16M** *11/38*
U.S. Cl. 240—81 BC **9 Claims**



1. A lamp stand including:
an elongated column;
lamp retaining means disposed on said column adapted to retain a lamp;
base means disposed on one end of said column to support the column;
said base means including a plurality of outwardly extended legs, each said leg being independently and individually pivotally connected at one end thereof to said column by a continuous brake friction joint, each leg being frictionally restrained in an outwardly extended position to support the column and pivotally movable relative to the column upon application of manual force whereby the column is adjustable to any preselected angular position relative to the base;
said column including a shaft member and a hollow tubular pole member having a first open end;
said shaft member telescopically engageable with the pole member in the first open end thereof;
said lamp retaining means disposed on said shaft member adapted to releasably retain a portable lamp;
said base means disposed on said pole member;
first releasable securing means to secure the shaft member in telescopic engagement with the pole member;
said pole member having a second open end opposite the first open end to telescopically receive the shaft member, said shaft member being removable from the first open end and insertable in the second open end; and including second releasable securing means to secure the shaft member in telescopic engagement in the second open end of the pole member.

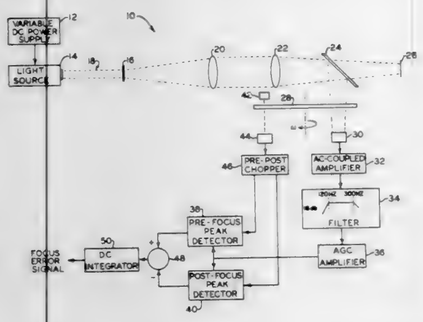
3,961,177
AUTOMATIC FOCUSING OF OPTICAL IMAGES

Jerry L. Hatchett, Xenia, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed July 31, 1974, Ser. No. 493,282
Int. Cl.² G01J *1/36*
U.S. Cl. 250—201 **7 Claims**

1. In an image projection system having a light source for projecting an image bearing beam upon an image plane, the improvement of an automatic focusing device, comprising:
a beam splitter interposed within said image bearing beam and deflecting a portion of said beam;
a photoconductor receiving the deflected portion of said beam and creating signals indicative of image clarity;
a transparent rotating disk divided into at least two sections of different focus delay characteristics interposed between the beam splitter and the photoconductor; and
first and second signal detector circuits receiving circuits from the photoconductor, the first signal detector receiving the signals when light incident to the photoconductor

is received through a first section of the rotating disk and the second signal detector receiving the signals when light incident to the photoconductor is received through a second section of the rotating disk, the detector circuits being connected to a summing circuit producing an output indicative of the relative amplitudes of the signals incident to the signal detector circuits, the transmission of signals to the respective signal detectors being controlled by a chopper circuit receiving signals from synchronized pulse markers on the rotating disk.



3,961,178

IMAGE SHARPNESS DETECTING SYSTEM AND APPARATUS UTILIZING THE SAME

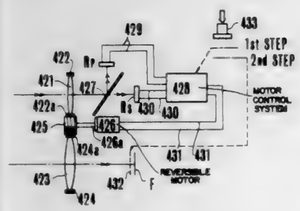
Kazuya Hosoe; Hiroshi Aizawa, both of Machida; Seiichi Matsumoto, Yokohama, and Hideo Yokota, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1974, Ser. No. 515,849

Claims priority, application Japan, Oct. 23, 1973, 48-119281

Int. Cl.² G01J *1/20;* **H01J** *39/12*

U.S. Cl. 250—201 **16 Claims**



1. An image sharpness detecting system cooperating with an image-forming optical system to detect an optimum degree of sharpness of an image projected thereby from an object comprising:

light-to-electrical signal converting means positioned at a point of substantial focus of said optical system;

detecting means connected to the output of said light-to-electrical signal converting means upon variation of the electrical output signal for detecting an optimum degree of sharpness of an image of the object;

said light-to-electrical signal converting means including:

first photoconductive means having an electrical characteristic associated therewith, said means having at least a pair of electrodes and a photoconductive element of such a geometry as to establish a current path of wide width and short length with the photoconductive material sandwiched in between said electrodes along the respective entire wide widths of said element,

second conductive means having an electrical characteristic associated therewith, said means having at least a pair of electrodes and a photoconductive element of such a geometry as to establish a current path of narrow width and long length with the photoconductive material sandwiched in between said electrodes along the respective entire narrow widths of said element; said electrical characteristic of both first and second photoconductive means having a peak value when the sharpness of the image to be formed thereon becomes maximum; and

optical means arranged between said first and second photoconductive means for adjusting the ratio of total incident light intensities on the surface of said two means so as to compensate for differences between the resulting lightresponsive characteristics of said first and second photoconductive means, whereby the optimum degree of sharpness of the image of the object which may be encountered can be detected with high accuracy even at low light levels.

3,961,179

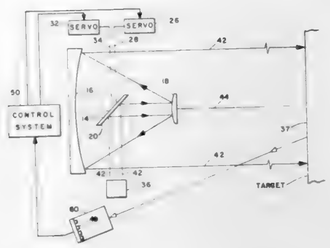
BEAM DIRECTING SYSTEM HAVING A MOVEABLE LOW MASS INERTIA BEAM FOLDING OPTICAL ELEMENT

Fernand Bannie Kuffer, Brea, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Feb. 7, 1975, Ser. No. 547,901

Int. Cl.² G01J *1/20*

U.S. Cl. 250—203 R **8 Claims**



1. A low mass inertia optical system for accurately directing a radiation beam in a given direction which comprises:

optical beam folding means for diverting and folding incident radiation beams about a primary optic axis of the system,

said means including a secondary optical member disposed generally perpendicular to said primary optic axis and operative to divert incoming radiation beams to generally parallel to said primary optic axis and outgoing radiation beams away from said primary optic axis,

a primary optical member disposed generally perpendicular to said primary optic axis and in a radiation beam exchanging relation with respect to said secondary optical member and operative to divert incoming radiation beams toward said secondary optical member and outgoing radiation beams to generally parallel to said primary optic axis,

and a beam director member mounted for pivotal and rotational movement about associated axes to accommodate radiation beam direction changes, said beam director is disposed between said primary and secondary optical members in a radiation beam exchanging relationship with said secondary optical member to fold incoming and outgoing radiation beams, said beam director is adapted to divert outgoing radiation beams parallel to said primary optical axis for interception by said secondary optical member, and said beam director member diverting incoming radiation beams to generally perpendicular to said primary optical axis.

3,961,180

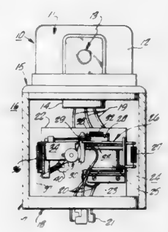
LUMINAIRE DURATION CONTROL

Frank H. Schultz, 329 Knight Way, La Canada, Calif. 91011

Filed Feb. 4, 1974, Ser. No. 439,447

Int. Cl.² H01J *39/12*

U.S. Cl. 250—206 **18 Claims**



8. A luminaire duration control device for a luminaire having a photoelectric actuating device comprising:

a housing mechanically connected to the photoelectric actuating device and providing an electrical connection therefor at a first portion, and providing an electrical connection to the luminaire at a second portion;

duration control means mounted in said housing and including a carriage member which, in a first position electrically activates the luminaire and initiates a delay mechanism coupled therewith, all in response to a predetermined amount of radiation received by the photocell, and after a predetermined delay provided by said delay mechanism, in a second position electrically deactivates the luminaire and said delay mechanism; and

first means disposed in said housing, and electrically coupled to the actuating device for positioning said carriage member in the first position in response to a predetermined amount of radiation received by the photocell.

3,961,181

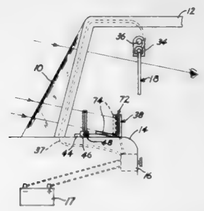
EYE-SHADING MEANS FOR AUTOMOTIVE VEHICLE OPERATORS

Eddie R. Golden, 12812 Erwin St., North Hollywood, Calif. 91606

Filed Feb. 18, 1975, Ser. No. 550,213

Int. Cl.² G02F *1/13;* **H01J** *39/12*

U.S. Cl. 250—208 **8 Claims**



1. A structure for individually but simultaneously shading the eyes of a vehicle driver against the blinding effect of the sun and of approaching vehicle headlights, consisting of

a. a linear eye-shading screen composed of a series of contiguous, normally transparent but electrically darkenable zones adapted to be situated between the driver's eyes and the sun, each such zone being wide enough when darkened, effectively to obviate the glaring effect of the sun upon one eye of the driver,

b. a linear array of contiguous photosensitive sensor cells equal in number to the number of electrically darkenable zones of the eye-shading screen and disposed physically in parallelism with the eye-shading screen and in positions in which they may be exposed to the sun and to approaching headlights,

c. sensor shielding means located in front of the array of sensor cells in position selectively to differentiate uniformly spaced sensor cells and uniformly spaced pairs of adjacent sensor cells from the remainder of the sensor cells as to shading, and

d. electrical control means electrically cross-associating individual sensor cells of the sensor cell array and individual electrically darkenable zones of the eye-shading screen in such manner that the differentiated electrically darkenable zones of the eye-shading screen will be selectively darkened to shade the respective eyes of the driver.

3,961,182

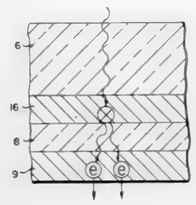
PICK UP SCREENS FOR X-RAY IMAGE INTENSIFIER TUBES EMPLOYING EVAPORATED ACTIVATED SCINTILLATOR LAYER

William E. Spicer, Stanford, Calif., assignor to Varian Associates, Palo Alto, Calif.

Division of Ser. No. 7,358, Feb. 3, 1970, Pat. No. 3,795,531, which is a continuation of Ser. No. 606,514, Dec. 22, 1966, abandoned. This application Aug. 18, 1972, Ser. No. 281,905

Int. Cl.² H01J *31/50*

U.S. Cl. 250—213 VT **7 Claims**



1. An evacuated x-ray image intensifier tube of improved conversion efficiency and resolution comprising:

evacuated envelope means;

an x-ray pick-up screen disposed within said evacuated envelope means for receiving an x-ray image and converting said x-ray image by scintillation into an optical photon image corresponding to the received x-ray image,

said x-ray pick-up screen comprising a vacuum vapor deposited polycrystalline layer of alkali metal halide scintillator material, said scintillator material including an activator so as to be x-ray sensitive and selected from the group consisting of CsI, NaI, LiI, KI, CsBr, and RbI, having a density of alkali metal halide material approximately equal to that of the bulk alkali halide material, and having a thickness greater than 0.0005 inch; and

a photocathode layer behind said x-ray pick-up screen for converting said photon image to a corresponding electron image for emission into said evacuated envelope.

3,961,183

LIGHT-RESPONSIVE ELECTRIC SWITCH

Guy Dubot, and Jacques Lemercier, both of Saverne (Bas-Rhine), France, assignors to Fabrique d'Horlogerie la Vedette S.A., Saverne, France

Filed Feb. 3, 1975, Ser. No. 546,751

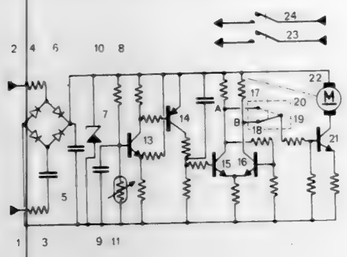
Claims priority, application France, Feb. 8, 1974, 74.04759

Int. Cl.² H01J *39/12;* **H05B** *37/02;* **H01H** *47/24*

U.S. Cl. 250—214 R **5 Claims**

1. A light-responsive electric switch, comprising an electronic circuit, means to supply direct current to said circuit, said circuit comprising a voltage divider comprising a fixed resistor and a variable resistor forming a photo-conductive cell, transistors which are blocked or rendered conductive according to the illumination of the photo-conductive cell, a

further transistor, a changeover switch transmitting voltage from the first-mentioned transistors to said further transistor, said further transistor having a collector circuit, a motor connected in the collector circuit of said further transistor, said



motor having an output shaft having a pinion fixed thereon, step-down gearing meshing with said pinion, cam means rotatable with the final pinion of said step-down gearing, and at least one contact engageable with said cam means for opening and closing at least one lighting circuit.

3,961,184

DEVICE FOR PHOTOELECTRIC MEASUREMENTS OF MOVING PARTS

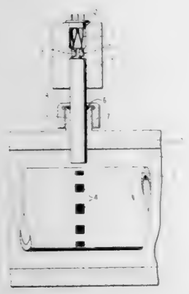
Josef Schurrer, Munich-Karlsfeld, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg AG, Germany

Filed Mar. 3, 1972, Ser. No. 231,489

Claims priority, application Germany, Mar. 3, 1971, 2110017

Int. Cl.² G01D *5/30*

U.S. Cl. 250—231 R **19 Claims**



1. Apparatus for photoelectrical measurements of a movable part having contrast marks provided thereon comprising a photoelectric scanning means having a housing, said scanning means including a light source means and a light detecting means arranged within the housing, and a single light conductive means having said scanning means arranged at one end face thereof and another end face thereof being arranged in the region of the contrast marks on the movable part, said single light conductive means forming a beam path for directing light from the light source to the movable part and for directing reflected light from the movable part to the light detector, said single light conductive means including at least one light conducting member having a center line extending between opposite end faces of said member, substantially all parts of said member being arranged for simultaneously transmitting light from the light source to the movable part and reflected light from the movable part to the light detector in respective opposite directions through said member and the opposite end faces thereof.

3,961,185

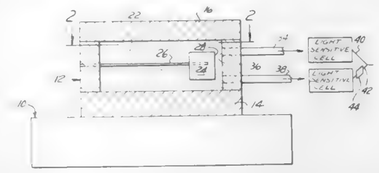
FIBER OPTIC DISPLACEMENT TRANSDUCER

Robert E. Brokenshire, Troy, and Robert G. Pratt, Farmington Hills, both of Mich., assignors to The Detroit Edison Company, Detroit, Mich.

Filed Nov. 11, 1974, Ser. No. 522,418

Int. Cl.² G01D *5/34*

U.S. Cl. 250—231 R **25 Claims**



1. A fiber optic vibration displacement transducer for use in a hazardous area comprising a support, a body, seismically isolating means mounting said body on said support for movement relative thereto, said seismically isolating means being effective to provide for vibratory movement of said support while preventing movement of said body to provide relative movement between said support and body substantially equal in magnitude and frequency to vibratory movement of said support, a light reflecting target surface on said body, a first non-coherent fiber optic bundle fixedly mounted on said support for vibratory movement therewith and having a light emitting end adjacent and confronting at least a part of said reflecting surface, a second non-coherent fiber optic bundle also fixedly mounted on said support for vibratory movement therewith and having a light receiving end positioned adjacent the light emitting end of said first bundle, and adjacent and confronting at least a part of said reflecting surface to receive from said surface an amount of reflected light variable in accordance with the position of said target surface relative to said bundle ends, a light source for directing light into said first bundle, and light sensing means positioned to receive light from said second bundle and to produce a signal indicative of a characteristic of the vibration.

3,961,186

METHOD AND APPARATUS FOR THE DETERMINATION OF ELECTRON DENSITY IN A PART VOLUME OF A BODY

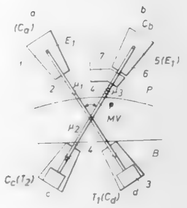
Ib Leunbach, Birkholmvej 29, 2720 Vanlose, Denmark

Filed Sept. 26, 1974, Ser. No. 509,514

Claims priority, application Denmark, Oct. 9, 1973, 5473/73

Int. Cl.² G01N *23/20*

U.S. Cl. 250—272 **9 Claims**



1. A method for the determination of the electron density of desired small volumes, called the measuring volume, of a body comprising the steps of directing a first beam of ionizing radiation through said measuring volume to penetrate said volume in a first direction, said first beam having an intensity I_0; measuring extra-corporally the intensity of the primary radiation and the intensity of scattered radiation in a second direction of the radiation of said first beam transmitted through said volume, said second direction forming an angle ϕ to said first direction; directing a second beam of ionizing radiation substantially of said intensity I_0 through said volume in said second direction; measuring extra-corporally the intensity of the primary radiation and the scattered radiation in said first direction of the radiation of said second beam transmitted through said volume in said second direction, employing such high energy radiation that the Compton effect will be the wholly dominant absorption phenomenon in said volume and in the radiation paths in said first and second direction, and that the change in the absorption cross-section from primary to secondary radiation caused by the Compton shift will be substantial; and employing the values of said measured intensities to calculate the electron density of said measuring volume in accordance with the formula:

$$n = K\left[C_c \cdot C_d\right]^{\frac{\mu_1+\mu_3}{2(\mu_2+\mu_3)}} \left[\frac{A_0^2}{T_1 \cdot T_2}\right]^{\frac{\mu_2(\mu_1+\mu_3)}{2\mu_1(\mu_2+\mu_3)}} \left[A_0\right]^{-1}$$

where

n = electron density
K = a calibration constant
μ_1 = the total linear attenuation coefficient for primary radiation
μ_2 = the total linear attenuation coefficient for Compton radiation "forwards"
μ_3 = the total linear attenuation coefficient for compton radiation "backwards"
A_o = arbitrary expression for the power of the radiation source
C_c = measure of Compton radiation
C_d = measure of Compton radiation
T_1 = measure of Transmitted Radiation
T_2 = measure of Transmitted Radiation.

3,961,187

REMOTE SENSING OF MARINE HYDROCARBON SEEPS

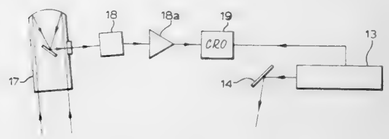
Anthony Rene Barringer, Willowdale, Canada, assignor to Barringer Research Limited, Rexdale, Canada

Filed Nov. 1, 1974, Ser. No. 520,527

Claims priority, application United Kingdom, Nov. 6, 1973, 51428/73

Int. Cl.² G01N *21/38*

U.S. Cl. 250—301 **5 Claims**



1. A method of determining the presence of hydrocarbon seeps in the sea, comprising:

a. traversing an area of the sea in a moving vehicle,
b. generating a beam of primary light radiation and directing said light beam towards the sea, said beam being of sufficient intensity and of such wavelength composition to produce secondary light radiation in subsurface zones of the sea, said secondary radiation being observable in the vehicle, said zones being located near the surface of the sea,
c. receiving secondary light radiation emanating from said zones, and separating said received secondary light radiation into a first component attributable to radiation emanating from beneath the surface of the sea and a second component comprising the remainder of the received radiation,
d. determining the intensity of said first component of said received secondary light radiation,
e. observing the positions in said area wherein said secondary light radiation was received, and
f. repeating the aforesaid steps (*b*) – (*e*).

3,961,188

HIGH INTENSITY RADIATION IMAGING SYSTEM

Harrison H. Barrett, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 250,224, May 4, 1972, Pat. No. 3,829,688. This application July 29, 1974, Ser. No. 492,815

Int. Cl.² G01T *1/161*

U.S. Cl. 250—303 **5 Claims**



1. The method of forming an image of the locations of a radiopharmaceutical introduced into a body of living tissue comprising the steps of:

introducing said radiopharmaceutical into said body of living tissue;
deriving informational signals from said high energy particles which are indicative of the location of emission of said particles from said body which have a spatial reference code having a varying periodicity portion and a substantially constant periodicity portion; and
deriving from said signals an image of the points in said body of living tissue from which said high energy particles have emanated.

3,961,189

DEVICE FOR MONITORING ACTIVITY OF GASES

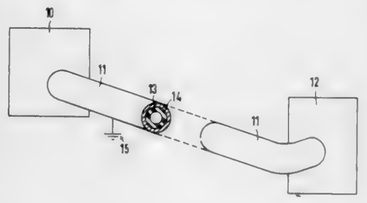
Sigwart Hiller, Lauf, and Harald Schad, Furth, both of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed June 3, 1974, Ser. No. 475,930

Claims priority, application Germany, June 19, 1973, 2331209

Int. Cl.² G01N *31/00*

U.S. Cl. 250—304 **1 Claim**



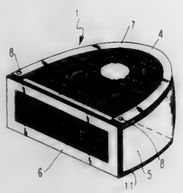
1. Device for monitoring activity of gases in nuclear engineering installations, especially for metrologically registering iodine contained in exhaust air, the device comprising gas-withdrawing lines, and a common measuring and evaluating station to which said gas-withdrawing lines are connected, said gas-withdrawing lines being formed of polytetrafluorethylene

and being surrounded by a grounded metal jacket to prevent deposition of radioactive material from said gases on the inner surface of said gas-withdrawing lines.

3,961,190
VOLTAGE CONTRAST DETECTOR FOR A SCANNING ELECTRON BEAM INSTRUMENT

George V. Lukianoff, Hopewell Junction, and Theodore R. Touw, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1975, Ser. No. 556,044
Int. Cl.² G01M *23/03*
U.S. Cl. 250—310 **17 Claims**



1. In a directionally sensitive detector comprising a first major surface which includes an upper grid having an aperture for admitting a primary beam of electrons, a second major surface having a second aperture axially aligned with said first aperture for admitting secondary electrons from a specimen and a front grid partially defined the enclosure between said major surfaces, the improvement wherein:

at least the portion of said major surfaces containing said apertures are in non-parallel arrangement with each other.

3,961,191
CODED IMAGING SYSTEMS

William W. Stoner, Watertown; David T. Wilson, Billerica, and Harrison H. Barrett, Lexington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed June 26, 1974, Ser. No. 483,273
Int. Cl.² G03C *9/00*
U.S. Cl. 250—312 **15 Claims**



1. A method of obtaining imaging data of a subject emitting radiant energy comprising the steps of:

detecting said radiant energy by means of a detector of radiant energy;

modulating said radiant energy by means of a modulator having a pattern comprising regions relatively opaque to said radiant energy arranged in a pattern with regions relatively transparent to said radiant energy, said modulator facing a predetermined region of said subject and being positioned between said subject and said detector, each of said regions of said modulator being sufficiently thin relative to the distance between said subject and said detector to permit radiant energy emanating from spaced apart points of said subject to cast overlapping shadows of one of said opaque regions upon said detector;

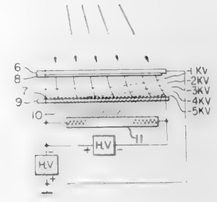
positioning said opaque regions in a plurality of locations within said modulator while facing said predetermined region of said subject, said detector providing arrays of values of detected radiant energy wherein one of said arrays of values differs from a second of said arrays of values in accordance with the locations of said opaque regions; and

combining one of said arrays of values with a second of said arrays of values to obtain said imaging data.

3,961,192
IMAGE FORMATION METHOD

Yujiro Ando, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1974, Ser. No. 522,456
Claims priority, application Japan, Nov. 14, 1973, 48-128057
Int. Cl.² G03B *41/16*
U.S. Cl. 250—315 R **8 Claims**



1. An image forming process which comprises, filling a space formed between two electrodes with a gas, at least one of said two electrodes including a plurality of circular electrode members disposed concentrically and electrically isolated from each other and also including a support member for supporting said electrode members, radially applying a radiation to said gas through an object to be imaged to form an image of the object on a plate disposed within said space, and applying during the radiation application, different voltages between said electrode members of said one electrode and the other electrode to form across said space an electric field whose electric field lines extend substantially in the direction of the radiation passing through said space.

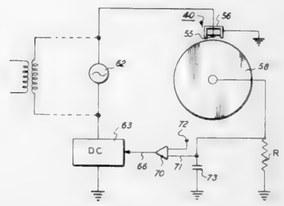
3,961,193
SELF ADJUSTING CORONA DEVICE

Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 27, 1975, Ser. No. 581,382
Int. Cl.² H01T *19/24*
U.S. Cl. 250—324 **2 Claims**

1. An arrangement for regulating the charging current deposited by a corona discharge device onto an imaging surface wherein said device includes a coronode, partially surrounded by a conductive shield comprising energizing means for applying corona generating A.C. signal to said coronode, bias means for superimposing a D.C. bias onto said coronode, control means for generating a signal representative of the

difference between said charging current delivered to said surface and a reference current, and bias control means for

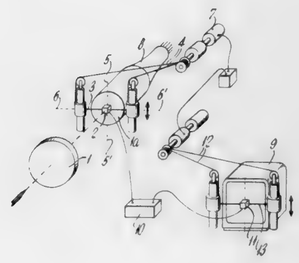


varying said D.C. bias to thereby vary said charging current in response to said control signal.

3,961,194
TRACKING AND DISPLAY APPARATUS FOR HEAT-DETECTING SYSTEMS

Karl-Heinz Simon, Oberkochen, and Hans-Richard Weinheimer, Koningsbronn, both of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Germany

Filed Nov. 30, 1972, Ser. No. 311,904
Int. Cl.² H01J *31/49*
U.S. Cl. 250—334 **17 Claims**

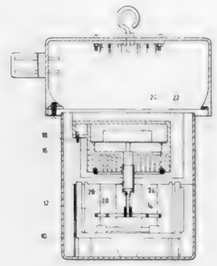


1. Apparatus for the quantitative and/or qualitative detection and display of infrared radiation for daytime and nighttime use, wherein separate responses in a visible waveband and in an infrared waveband are used simultaneously in a single display, comprising optical means for imaging a field of view at an image surface; first means including a visible-waveband detector at said surface for visually displaying the visible-waveband response to said field at a display surface; second means including a scanning system with an infrared-sensitive detector element responsive to a part of said field near said image surface, for generating an electrical signal in accordance with scan action in said image surface; scan-tracking means tracking instantaneous scan action within the image surface; said display means including means responsive to said electrical signal for locally enhancing the visible character of the visible-waveband display at the display surface in accordance with the instantaneous magnitude of infrared response; and a synchronizing connection from said scan-tracking means and coordinated with the field display at said display surface for effectively superposing, upon said visible-waveband display, the infrared-responsive local visually enhanced modulation in accordance with instantaneous scan location within said image surface.

3,961,195
FIRE DETECTOR HAVING MEANS FOR HEATING THE SUPPORT MEMBER OF AN ELECTRODE TO PREVENT FORMATION OF MOISTURE THEREON

Timothy John Newington, 70 Greenfield Road, Greenside, Johannesburg, Transvaal, and Nicolaas Tjaart van der Walt, 33 Thomas St., Meredale, Johannesburg, Transvaal, both of South Africa

Filed Dec. 10, 1974, Ser. No. 531,346
Claims priority, application South Africa, Aug. 26, 1974, 74/5354
Int. Cl.² G01N *23/12*
U.S. Cl. 250—385 **2 Claims**



1. In a fire detector having a housing defining an ionization chamber, a support member of an electrically insulating material, an electrode supported in the ionization chamber by said support member and an electronic circuit to apply a voltage between the housing and the electrode and to detect variations in the resulting electrical current flowing through the ionization chamber, an improvement comprising a heat generating component of the electronic circuit, means mounting said heat generating component in a cavity formed in the support member between the electrode and the housing to heat that part of the support member surrounding the component in order to prevent the formation of moisture on that part thereby to prevent leakage currents flowing between the electrode and the housing via the support member.

3,961,196
MINIATURE IONIZATION CHAMBER

Viktor Ivanovich Alexeev, ulitsa Verkhnyaya Krasnoselskaya, 34, kv. 87; Ivan Yakovlevich Emelyanov, Kutuzovsky prospekt, 2/1, kv. 110; Vladimir Maximovich Ivanov, Golyanovskaya ulitsa, 7, korpus 1, kv. 12; Leonard Vasilievich Konstantinov, ulitsa Boitsovaya, 17, korpus 1, kv. 30; Boris Vasilievich Lysikov, Universitetsky prospekt, 21, korpus 1, kv. 8; Viktor Viktorovich Postnikov, ulitsa Perovskaya, 22, korpus 4, kv. 32, and Jury Viktorovich Rybakov, ulitsa Goncharova, 7, kv. 58, all of Moscow, U.S.S.R.

Filed July 30, 1974, Ser. No. 493,663
Claims priority, application U.S.S.R., Aug. 3, 1973, 1949732
Int. Cl.² G01T *1/18, 1/185*
U.S. Cl. 250—385 **6 Claims**

1. A miniature ionization chamber comprising, in combination: a grounded housing; a gas filling said housing; a lead-in to the housing made in the form of a triaxial cable secured in said housing, the triaxial cable including an intermediate and an outer coaxial conductor; a guard electrode for reducing ionization chamber leakage currents, the guard electrode accommodated in said housing and made in the form of a hollow cylinder electrically associated with said intermediate coaxial conductor of said triaxial cable; holes provided in said hollow cylinder; the triaxial cable further including a centre conductor; a collecting electrode accommodated in said housing; a metal rod forming part of said collecting electrode and disposed internally of said hollow cylinder and insulated there-

from, said rod being electrically connected to said centre conductor of said triaxial cable; tubular members also forming part of said collecting electrode, the surface whereof serves as the working surface of the collecting electrode, said tubular members embracing said hollow cylinder, being insulated therefrom, and spaced a certain distance apart along the

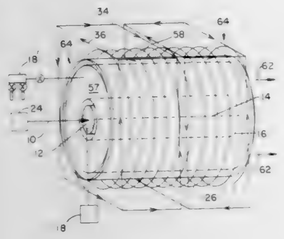


entire length of said hollow cylinder; jumpers passing through said holes made in said hollow cylinder and electrically interconnecting said tubular members and metal rod forming part of said collecting electrode; and spacers arranged intermediate of said tubular members, secured to said hollow cylinder, and affixing said collecting electrode with respect to said housing.

3,961,197
X-RAY GENERATOR

John M. Dawson, Los Angeles, Calif., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Aug. 21, 1974, Ser. No. 499,221
Int. Cl.² H01S 4/00; G21G 4/00
U.S. Cl. 250—493 **10 Claims**



1. Apparatus in combination with spark means for producing x-rays, consisting of:

a. a system of coaxial closed, inner and outer container means having concentric walls terminating in opposite ends along an equilibrium axis of rotation for gases having an atomic number Z greater and less than 10;

b. a first gas means in the inner container means having an atomic number Z less than 10;

c. a second gas mixture in the outer container means having respective atomic numbers Z greater and less than 10;

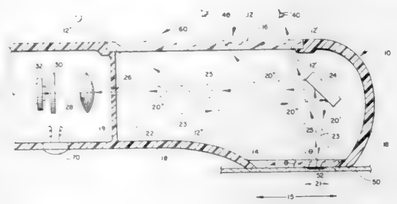
d. electromagnetic spark generating means for selectively producing an ionizing discharge of electromagnetic radiation in the form of a pulse of laser light in the gas in the inner container means to produce x-rays that pass axially through the inner container wall into the gas mixture in the outer container means for selectively ionizing one of the gases therein so as to produce a mixture of highly stripped and neutral atoms along the equilibrium axis in the outer container means for producing secondary x-rays along the equilibrium axis by an atomic process; and

e. means for transmitting the secondary x-rays along the equilibrium axis from the ends of the container means.

3,961,198
VISUALLY ALIGNABLE SENSOR WAND WHICH EXCLUDES UNWANTED LIGHT FROM A SENSOR SYSTEM

Jack D. Aungst, Corona, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 28, 1975, Ser. No. 572,679
Int. Cl.² G06H 7/10
U.S. Cl. 250—566 **10 Claims**



1. A data collection wand comprising:

data-collection optical-channel means aligned to sense data within a data sensing field of view;

visual-alignment optical-channel means for providing an operator with a view of said data sensing field of view;

a source of data-sensing-radiation for illuminating said data to be sensed;

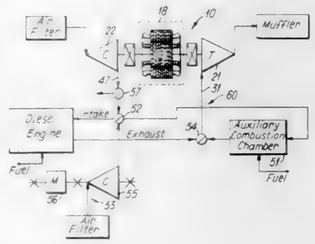
sensor means in said data-collection optical-channel means responsive to radiation of a restricted range of wavelengths for sensing radiation returned from data in said data sensing field of view; and

filter means in said visual-alignment optical-channel means for excluding radiation in said restricted range of wavelengths from entering said data-collection optical-channel means from said visual-alignment optical-channel means.

3,961,199
SUPERCHARGER SYSTEM FOR COMBUSTION ENGINE

Lucien Y. Bronicki, Rehovot, Israel, assignor to Ormat Turbines (1965) Ltd., Yavne, Israel

Filed Apr. 8, 1974, Ser. No. 453,043
Int. Cl.² F02B 37/00
U.S. Cl. 290—52 **4 Claims**



1. A supercharger system for a vehicle having an internal combustion engine comprising:

a shaft carrying a gas turbine rotor at one axial end and a centrifugal air compressor rotor at the other axial end; a pair of bearings mounting the shaft for rotation in a housing adapted to be attached to the vehicle;

the housing having at one axial end a turbine nozzle ring and a turbine exhaust ring cooperable with the turbine rotor, and having at the other axial end an axially located compressor inlet member and a radially located compressor outlet member cooperable with the compressor rotor;

the turbine nozzle ring adapted to be connected to the exhaust manifold of the engine and the compressor outlet member adapted to be connected to the intake manifold of the engine thereby supercharging the same;

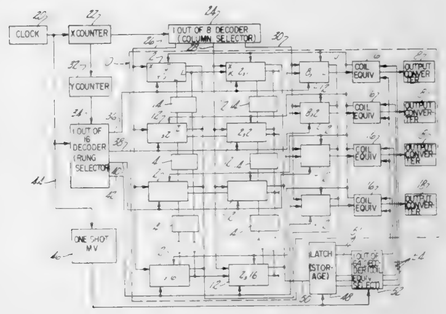
an electrical generator integrally incorporated into the housing for generating electrical power when the shaft is rotating, the generator comprising a generator rotor mounted on the shaft between the bearings, and a generator stator mounted in the housing in cooperative relationship with the generator rotor; and

an auxiliary combustion chamber whose output is selectively connectable to the turbine nozzle ring for furnishing combustion gases to the turbine rotor when the engine is idle, an intake valve for selectively connecting the output of the compressor to either the inlet of the combustion chamber when the engine is idle or to the intake manifold of the engine when the latter is running, and an auxiliary compressor for supplying start-up compressed air to the inlet of the combustion chamber until the main compressor produces a sufficient quantity of air to sustain operation of the turbine.

3,961,200
APPARATUS FOR CONSTRUCTING CONTROL CIRCUITS HAVING RELAY CIRCUIT FUNCTIONAL CHARACTERISTICS

John C Duté, 455 Hilldale Drive, Ann Arbor, Mich. 48105

Filed Sept. 6, 1973, Ser. No. 394,930
Int. Cl.² H03K 19/12
U.S. Cl. 307—112 **23 Claims**

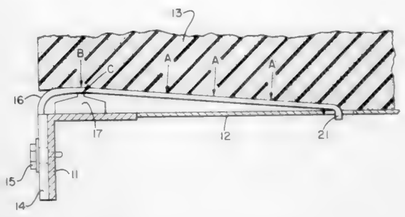


1. Apparatus for constructing relay-type control circuit equivalents comprising: at least a first solid-state, logic-level modular device representing a relay coil in circuit response; at least a second solid-state, logic level modular device representing relay contacts in circuit response; a prewired panel having terminal means for receiving said modular devices in selected patterns to establish continuous electrical circuits therethrough; input means for interfacing external signal devices, such as switches, with said modular devices so as to operatively connect said external signal devices in said continuous electrical circuits; output means for interfacing external power consuming devices with said modular devices so as to operatively connect said power consuming devices in said continuous electrical circuits whereby the conductive or non-conductive state of a given one of said continuous electrical circuits controls the application of power to a power consuming device, and controller means for selectively interconnecting first and second modular devices in said panel to provide a periodically updated master-slave relationship therebetween whereby the conductive state of contact equivalents in a given continuous electrical circuit may be controlled by the coil equivalent in another continuous electrical circuit.

3,961,201
PATIENT MONITORING

Morris H. Rosenthal, 182 Pond St., Sharon, Mass. 02067

Filed Sept. 6, 1974, Ser. No. 503,805
Int. Cl.² H01H 35/00
U.S. Cl. 307—116 **10 Claims**



1. Patient monitoring apparatus comprising,

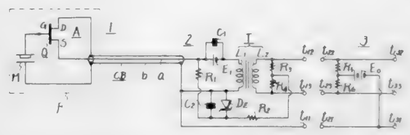
actuable contact means located near the edge of a bed frame beneath the mattress for actuation when a patient approaches the edge of the bed,

and switch arm means for actuating said contact means located between said mattress and said contact means for actuating said contact means when a patient approaches the edge of the bed while preventing said contact means from being actuated when the patient is away from the edge of the bed.

3,961,202
POWER SUPPLY CIRCUIT FOR USE WITH AN ELECTROSTATIC TRANSDUCER

Osamu Kono, Tokyo; Noboru Tsuchiya, Yokohama; Atsushi Matsuda, Tokyo, and Kiichi Yoshida, Warabi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 13, 1974, Ser. No. 523,366
Claims priority, application Japan, Nov. 15, 1973, 48-131983[U]
Int. Cl.² H02J 7/00
U.S. Cl. 307—150 **8 Claims**



1. A power supply and output circuit for use with an electrostatic transducer having an amplifier, comprising:

a. an electrostatic transducer;

b. an amplifying device connected to said transducer;

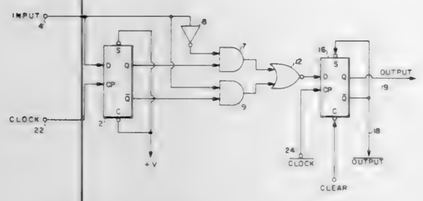
c. a first circuit serving both as a power supply and an output circuit comprising first portable power means for supplying DC power to said amplifiying device, an output transformer for receiving a signal derived from said amplifier through said first power means, said transformer having primary and secondary windings, said primary winding being connected to said first power means and said secondary winding being connected to output terminals of said transformer;

d. a coaxial cable having a single central conductor and an outer conductor, said cable being connected between said amplifier and said first circuit;

e. a second circuit serving both as a power supply and output circuit to be connected to said first circuit; and

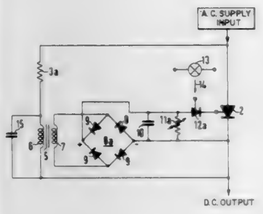
f. resistor means connected between one of the conductors of said coaxial cable and output terminals of said transformer for serving as a DC power path when said second circuit is connected to said first circuit.

3,961,203
SIGNAL CORRELATOR
Frederick Hutch, Warminster, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 9, 1975, Ser. No. 539,857
Int. Cl.² H03K *5/18*
U.S. Cl. 307—236 **5 Claims**



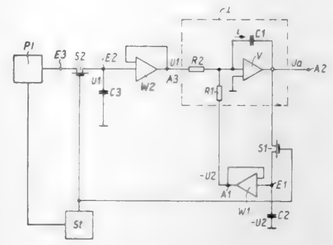
1. A correlator comprising:
an input signal receiving means for receiving pulse pair data signals,
flip-flop means for storing a first pulse of said pulse pairs, and
means for comparing a second pulse of said pulse pairs with said stored first pulse of said pulse pairs to detect the presence of an error in the received pulse pairs.

3,961,204
FIRING CIRCUIT FOR AN ELECTRIC VALVE
Karl-Friedrich Leowald, Weiher, and Jakob Schenk, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Nov. 29, 1974, Ser. No. 528,486
Claims priority, application Germany, Dec. 3, 1973, 2360173
Int. Cl.² H03K *17/60*
U.S. Cl. 307—252 N **10 Claims**



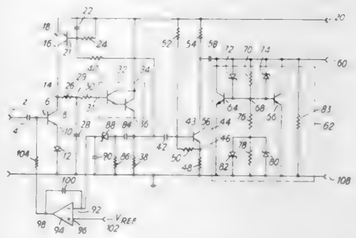
1. A firing circuit for an electric valve with at least three electrodes including an anode, a cathode and a control electrode, the control electrode along with one of the other electrodes forming a control path, said valve having an a.c. voltage at its anode-cathode path, comprising,
a series connected resistor and primary winding of a transformer in parallel with the anode-cathode path of said electric valve, so as to have an a.c. voltage impressed thereacross,
a rectifier connected to the secondary winding of said transformer, said rectifier having output terminals wherein a first terminal is at positive d.c. potential with respect to a second terminal, and where said second terminal is connected to the cathode of said electric valve,
a pulse capacitor connected in parallel across said first and second terminals of said rectifier,
switching means for discharging said capacitor through the control path of said electric valve, and
an auxiliary capacitor coupled in parallel across said primary winding of said transformer.

3,961,205
METHOD AND APPARATUS FOR OBTAINING A SIGNAL HAVING A LOW HARMONIC CONTENT
Gerd Kuligowski, and Eckart Cattien, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Feb. 20, 1974, Ser. No. 444,124
Claims priority, application Germany, Feb. 23, 1973, 2309809
Int. Cl.² H03K *5/00*
U.S. Cl. 307—261 **10 Claims**



1. A method of obtaining a final signal of low harmonic content from a waveform approximating an original signal such as a measurement quantity or the like, the waveform consisting of individual amplitude steps one following the other, the method comprising: applying the waveform to a circuit arrangement including: an integrator, first storage means connected to the input of said integrator, first switch means for connecting and disconnecting the first storage means to the output of the integrator, second storage means connected to the input of said integrator, and second switch means for connecting and disconnecting the second storage means for receiving the waveform of the individual amplitude steps; and, successively actuating said first and second switch means for successively interpolating in said integrator between the values of each two mutually adjacent ones of the individual amplitude steps over a period of time defined by the time spacing between corresponding points of said mutually adjacent steps.

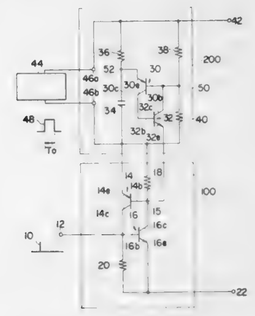
3,961,206
NON LINEAR NETWORK CONVERTING BIPOLAR SAWTOOTH SIGNAL INTO SINEWAVE SIGNAL
Hung Wah Anthony Lau, Fleet, England, assignor to The Solartron Electronic Group Limited, Farnborough, England
Filed Aug. 19, 1974, Ser. No. 498,814
Claims priority, application United Kingdom, Aug. 21, 1973, 39386/73
Int. Cl.² H03K *6/04*
U.S. Cl. 307—261 **11 Claims**



1. A symmetrical non-linear two-terminal network for use in a function generator to convert a bipolar triangular wave of

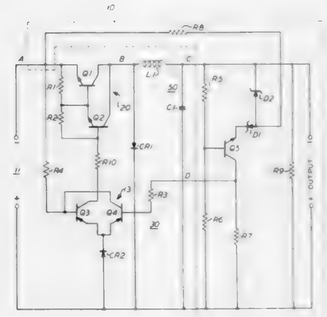
predetermined amplitude into a sine wave, the network comprising
a first terminal,
a second terminal, first and second transistors each having an emitter, a collector and a base, the respective emitter-collector paths of the two transistors being connected in parallel with each other between the first terminal and the second terminal.
a first non-linear circuit coupled between the base and the collector of the first transistor, and
a second non-linear circuit coupled between the base and the collector of the second transistor, whereby one of the transistors becomes progressively more conductive as input signals of one polarity applied between the two terminals exceed a predetermined magnitude, and the other transistor becomes progressively more conductive as input signals of the other polarity applied between the two terminals exceed said predetermined magnitude,
each non-linear circuit comprises a respective diode adapted to conduct at a lower forward voltage than that of the base emitter junction of the respective transistor.

3,961,207
OUTPUT RETAINING ELECTRONIC CIRCUIT
Hiroshi Minakuchi, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan
Filed Sept. 20, 1974, Ser. No. 507,805
Claims priority, application Japan, Sept. 25, 1973, 48-108170
Int. Cl.² H03K *3/284, 5/04, 1/18*
U.S. Cl. 307—273 **4 Claims**



1. An electronic circuit, for generating an output pulse having a predetermined duration in response to an input trigger pulse applied thereto, comprising:
an electronic switch comprised of a pair of complementary transistors wherein the base of each of said transistors is connected to the collector of the respective other one of said transistors, the base of a first of said transistors receiving in operation a trigger pulse to render said first transistor conductive to flow a collector current therethrough and thereby bias a second of said transistors to conduct and flow a collector current therethrough to bias said first transistor and maintain said first transistor in a conductive state after the termination of the trigger pulse; and
a pulse generator comprising a bridge circuit comprised of three resistors and a capacitor and having four nodes including a first node defined by the junction of said capacitor with a first of said resistors, a second node defined by the junction of said first resistor with a second of said resitors, a third node defined by the junction of said second resistor with the third of said resistors, and a fourth node defined by the junction of said capacitor and said third resistor, and a normally non-conductive control circuit having a pair of principal conduction electrodes and a control electrode, wherein a first of said conduction electrodes is connected to said first node, the second of said conduction electrodes is connected to the base of said second transistor in said electronic switch, and said control electrode is connected to said third node, and said fourth node is connected to the base and emitter of said second transistor in said electronic switch; whereby
a potential difference applied across said second node and the emitter of said first transistor is ineffective to develop a current through said electronic switch and said pulse generator when said first and said second transistors are nonconductive, a trigger pulse applied to the base of said first transistor rendering said first and said second transistors conductive and thereby completing conductive paths respectively defined by said second and said third resistors and said first transistor, and said first resistor, said capacitor and said second transistor to develop an output voltage between said second and said fourth nodes and to charge said capacitor, said capacitor charging to a certain potential value relative to the third node potential value thereby rendering said control circuit conductive between said pair of principal conduction electrodes to bias said second transistor to render said second and said first transistors non-conductive to terminate the current flow through said electronic switch and said pulse generator to reduce the output voltage to zero a predetermined time after the trigger pulse was applied.

3,961,208
TEMPERATURE COMPENSATION FOR REGULATOR CIRCUIT
Rakesh Khanna, Parsippany, N.J., assignor to Litton Business Systems, Inc., Morris Plains, N.J.
Filed Feb. 11, 1974, Ser. No. 441,436
Int. Cl.² H03K *17/00, 1/12*
U.S. Cl. 307—297 **6 Claims**



1. A temperature compensation circuit adapted to be inserted between a source of input voltage and a load comprising:
transistor means having a predetermined value of voltage temperature coefficient between first and second electrodes thereof;
zener diode means connected in series to said first electrode;
said zener diode means having a value of zener breakdown voltage in a relatively low range;
said transistor means and zener diode means being coupled to said source;
said zener diode means comprising a pair of zener diodes connected in a back-to-back configuration to thereby provide a net voltage temperature coefficient value being the difference between the temperature coefficients of each of said diodes and to thereby also provide said zener

breakdown voltage value being the difference between the zener breakdown voltage values of each of said diodes;

said net temperature coefficient value also being opposite in algebraic sign and of the same magnitude as said transistor means voltage temperature coefficient value whereby, temperature compensation is achieved along the circuit path between said transistor means second electrode and including said zener diode means as a result of said net temperature coefficient value having the effect of cancelling said transistor means voltage temperature coefficient value during circuit operation, while permitting a value of zener breakdown voltage in said relatively low range.

3,961,209

OSCILLATOR FOR TIME MEASUREMENT

Karl Adler, Grenchen; Georges Ducommun, Feldbrunnen, and Charles A. Wantz, Grenchen, all of Switzerland, assignors to Biviator S.A., Grenchen, Switzerland

Continuation of Ser. No. 375,007, June 29, 1973, abandoned. This application Oct. 24, 1974, Ser. No. 517,760

Claims priority, application Switzerland, July 20, 1972, 10886/72

Int. Cl.² H02N *1/00*

U.S. Cl. 310—6 **18 Claims**



1. An oscillator for time measurement, comprising a source of direct current operating potential; an electrostatic oscillator including at least one fixed electrode connected to said source, and a movable driving member disposed adjacent said fixed electrode and periodically contacting said fixed electrode for reciprocal, oscillatory movement under electrostatic forces generated by such periodic contact; resonator means in the form of a balance wheel assembly having a natural resonant frequency; and means loosely coupling said electrostatic driving member to said balance wheel assembly for sustaining osciallation of said resonator means without substantially disturbing the natural frequency accuracy thereof.

3,961,210

PIEZOELECTRIC DOT RESONATOR DRIVEN AT A HARMONIC OVERTONE

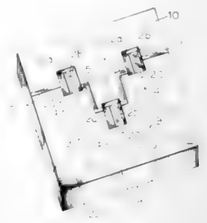
Takashi Nagata, Ikeda, Japan, and Raymond David Mindlin, Ridgefield, Conn., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 352,646, April 19, 1973. This application Dec. 2, 1974, Ser. No. 528,869

Int. Cl.² H01L *41/04, 41/18*

U.S. Cl. 310—9.5 **6 Claims**

1. A piezoelectric device comprising a thin plate of piezoelectric material having electrode regions and non-electrode regions on the major surfaces thereof and at least one pair of electrodes provided on said electrode region, said electrode regions having a thickness so as to vibrate in one of the harmonic overtones of the thickness-extensional mode at a preselected frequency when an electrical signal is applied to said pair of electrodes, the thickness of said non-electrode regions being greater than that of said electrode regions, the cut-off frequency of said harmonic overtone at said non-electrode regions being lower than the cut-off frequency of said harmonic overtone at said electrode regions, and the relation of said piezoelectric material and said harmonic overtone represented by $\{(\pi p/4)+4/k^3)\cot(\pi kp/2)\}$ being negative, where π



is a circular constant, p is a number of a harmonic overtone of the thickness-extensional mode (p=3,5 . . .), and k is a function of Poisson's ratio σ and is represented by $k=\{2(1-\sigma)/(1-2\sigma)\}^{1/2}$

3,961,211

GYROSCOPE MOTOR

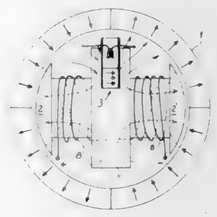
Jacques Vergues, Valence, France, assignor to Crouzet, Paris, France

Filed Dec. 31, 1974, Ser. No. 537,770

Claims priority, application France, Jan. 15, 1974, 74.01366

Int. Cl.² H02K *11/00*

U.S. Cl. 310—68 C **1 Claim**



1. Gyroscope motor of the type comprising a magnetized rotor constituted by a permanent magnet in the shape of a toroid, within which are disposed the stator windings, the commutation being ensured by means of a static detector operating by variation of the impedance of a winding placed in the magnetic circuit, the saturation of said magnetic circuit being obtained directly by means of the field of the rotor; said detector comprising a miniature ferrite core circuit containing a coil, a rectangular-sided magnet of oriented ferrite, an armature of high permeability material comprising two rectangular strips connecting the magnet to the core circuit; said detector being disposed in such manner that its armatures are perpendicular to the surface of the rotor so as to act as a collector of the lines of force, and being in intimate contact with the driving coils of the motor, and the Curie point of its magnetic circuit being in the neighbourhood of 120°C so that it may serve as a safety thermostat.

3,961,212

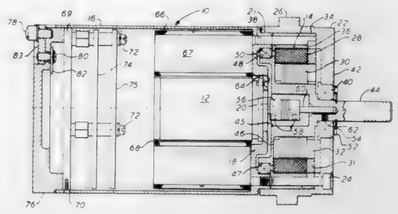
INTEGRAL SERVOMECHANISM

Hugh P. McAdams, Jr., Drexel Hill, Pa., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 23, 1974, Ser. No. 535,825

Int. Cl.² G05B *11/12*; H02K *11/00*

U.S. Cl. 310—68 R **9 Claims**



1. An integral servomechanism comprising:

a tubular cylindrical housing having a mounting flange partially closing one end;

control transformer means mounted within said housing on said mounting flange and having an output shaft extending through said partially closed end;

torque motor means including frame means externally mounted on said mounting flange and having stator means, rotor means and shaft means;

said shaft means having a bell-shaped cross section forming an internal hollow chamber; and

flexible coupling means mounted in said internal hollow chamber of said torque motor shaft means for joining said shaft to said control transformer output shaft.

3,961,213

MOTION TRANSFORMER

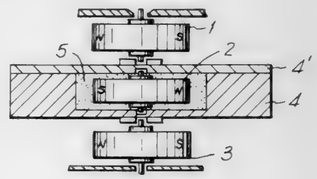
Kenichi Koike, and Yoshikazu Kawamura, both of Shimosuwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed June 7, 1974, Ser. No. 477,239

Claims priority, application Japan, June 7, 1973, 48-64079

Int. Cl.² H02K *49/10*

U.S. Cl. 310—104 **1 Claim**



1. A rotary motion transformer comprising a permanent magnet driving member having two opposite polarity poles; a permanent magnet rotatable driven member having two opposite polarity poles, said driven member and driving member being disposed to define a flux field therebetween and rotate about the same axis; and a viscous damping means, said driven member being rotatably disposed in said viscous damping means, said driven member being continuously rotated in response to the intermittent rotation of said driving member and a rotatable following permanent magnet having two opposite polarity poles axially aligned with said driven magnet to define a flux field therebetween, said following magnet being continuously rotated in response to the rotation of said driven magnet.

3,961,214

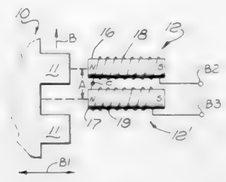
VELOCITY PICK-OFF WITH NOISE CANCELLATION

Hendricus Johannes Lokkart, Arleta, Calif., assignor to International Telephone & Telegram Corporation, New York, N.Y.

Filed June 18, 1975, Ser. No. 588,015

Int. Cl.² H02K *21/38*

U.S. Cl. 310—155 **10 Claims**



1. Apparatus for producing pulses at a repetition rate directly proportional to angular velocity, said apparatus comprising: a base; first and second magnetic pick-ups mounted in a fixed position relative to said base; a member, said member being rotatably mounted relative to said base about a first axis; a magnetic rotor fixed relative to said movable member in a position to move therewith contiguously past said pick-ups, said rotor having a set of equally and angularly spaced teeth separated by valleys, all of said teeth being located a predetermined distance from the rotational axis of said rotor, said first and second pick-ups including a set of first and second cores, respectively, the axes of said cores being approximately parallel to each other and to said first axis, said teeth projecting toward said cores in a direction approximately parallel to said first axis, said first and second cores having first and second coils therearound, the ends of said cores closest to said teeth being spaced apart in the direction of movement thereof a distance approximately equal to nd, where n is any positive odd integer and d is one-half the distance between any two immediately adjacent teeth, one of said sets including permanent magnets, one end of said first coil being connected to one end of said second coil at a junction adjacent to each, said permanent magnets being poled, and said coils having other ends and being wound in predetermined directions such that voltages induced in said coils at said other ends relative to said junction solely by rotation of said rotor are approximately out of phase, voltages induced in said coils at said other ends relative to said junction by vibration of said rotor back and forth in opposite directions along the said first axis being approximately in phase with each other.

3,961,215

ROTOR FOR WHEEL SPEED SENSOR ASSEMBLY

Thomas A. Gee, Allen Park; Gerald L. Jacobs, Southfield, and Gunnar Baltare, Livonia, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

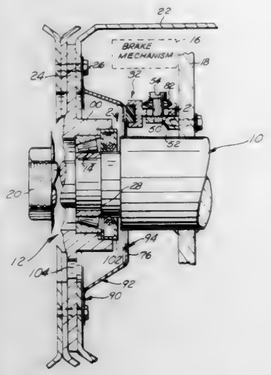
Continuation of Ser. No. 427,562, Dec. 26, 1973. This application Feb. 3, 1975, Ser. No. 546,375

Int. Cl.² H02K *19/20*

U.S. Cl. 310—168 **3 Claims**

1. A rotor for use in a wheel speed sensor for sensing angular rotation of a wheel support, said rotor having an axis of rotation and comprising a wall portion and a rotor face portion wherein said wall portion extends in an axial direction coaxially about said axis and said rotor face portion extends generally radially inward from said second edge portion, said wall portion further extending coaxially about said axis from a first annular edge portion to a second annular portion, said rotor face portion being cantilevered from said second edge portion and extending at an angle therefrom and terminating in a peripheral edge which coaxially surrounds said axis and which is axially spaced from said first annular edge portion, said rotor face portion having undulations formed therein

defining an annular array of equally spaced apart lands wherein adjacent lands are spaced apart from each other by a recess, said undulations being formed such that said lands and recesses extend for at least substantially the entire distance from said second annular edge to said peripheral edge, said recesses and lands extend toward said peripheral edge and terminate short thereof to define relatively a smooth



peripheral edge coaxial about said axis, said wall portion and said rotor face portion are integral and formed from material having a generally uniform thickness T, said recesses in said rotor face portion having a depth H, where H is on the order of T, the distance between said peripheral edge and said second edge portion is substantially greater than said material thickness T, and said wheel is provided with an axially extending escape hole for trapped oil and grease.

3,961,216

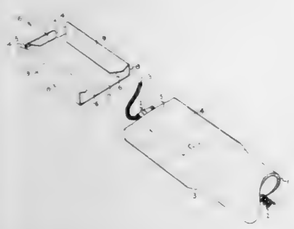
SHEET METAL BASE FOR PINCH SEALED ELECTRIC LAMP

Preston G. Edwards, Sagamore Hills, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 2, 1975, Ser. No. 537,856

Int. Cl.² H01J *5/48*

U.S. Cl. 313—51 **10 Claims**



1. A sheet metal base for a vitreous lamp envelope containing electric energy translation means and having a flat pinch seal at one end through which an inlead conductor connected to said translation means has a portion projecting externally, said base comprising:

a flat portion corresponding approximately in size to the flat side of said pinch seal,

longitudinally extending side wall portions exceeding in height the thickness of said pinch seal and having inwardly turned and downwardly inclined extensions adapted to resiliently engage the pinch seal,

and a distal end wall adapted to overlie the externally projecting portion of said inlead.

3,961,217

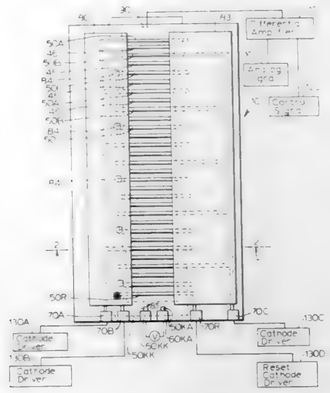
GASEOUS DISCHARGE DISPLAY PANEL HAVING TWO COLOR BAR DISPLAY

Myles E. Frischer, Hillsborough, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 24, 1975, Ser. No. 552,450

Int. Cl.² H01J *61/067, 61/30, 61/40*

U.S. Cl. 313—188 **19 Claims**



1. A display panel comprising an envelope having a viewing window,

first light-emitting means in said envelope adapted to emit light of one color, and second light-emitting means associated with said first means for generating light of a second color,

said first and second means together being able to generate a bar of light of predetermined length, the bar being made up of a first portion having said one color, determined by the energization of said first means, and a second portion of the second color,

said first portion of said one color and said portion of said second color together having said predetermined length.

3,961,218

SPACER FOR A DISCHARGE DISPLAY DEVICE

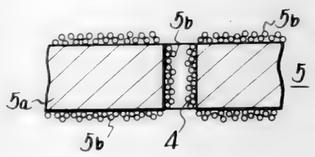
Satoshi Watanabe, Gyoda, Japan, assignor to Okaya Denki Sangyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1975, Ser. No. 561,299

Claims priority, application Japan, Mar. 25, 1974, 49-33808[U]

Int. Cl.² H01J *61/30*

U.S. Cl. 313—220 **5 Claims**



1. A discharge promotion member for discharge display device having spaced anodes and cathodes mounted within an envelope comprising:

a conductor plate mounted between said anodes and cathodes;

a plurality of apertures bored through said conductor plate;

an insulating layer formed on the surface of said conductor plate;

said insulating layer being porous to electrons and ions, and an ionizing gas within said envelope so that the conductor plate with said insulating layer is located in a plasma space.

3,961,219

ELECTRON OPTICAL SYSTEM WITH A MAGNETIC FOCUSING AND ELECTROMAGNETIC DEFLECTION SYSTEM OF UNIT DESIGN

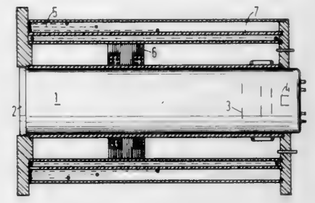
Martin Bechteler, Unterfoehring; Rolf Stock, Hohenschaeftlarn, and Wolfgang Welsch, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 15, 1974, Ser. No. 514,616

Claims priority, application Germany, Oct. 17, 1973, 2352119

Int. Cl.² H01J *31/48;* **H01H** *1/00*

U.S. Cl. 313—389 **9 Claims**



1. In an electron-optical system of the type having a magnetic focusing coil and an electromagnetic deflection system of unit design with a screening means between the focusing and deflection systems, and having a target for scanning by an electron beam and a fine-mesh field net arranged in front of the target and an aperture diaphragm spaced from the target adjacent the tube electron beam generating system, the improvement wherein:

the focusing coil has an increasing winding density in the direction from the aperture diaphragm toward the target, the deflection coils are of a length shorter than the focusing coil and adapted to be energized to provide a deflection field of less than about half the usual extent in the axial direction, whereby in association with the increasing focusing field strength toward the target and the deflection field, the electron beam experiences a rotation of less than 90° in the deflection field while achieving reducing reproduction at low impact errors.

3,961,220

SNUBBER MEANS FOR POSITIONING A GUN STRUCTURE IN AN ELECTRON DISCHARGE DEVICE

Donald LeRoy Say, Waterloo, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

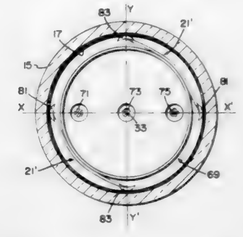
Filed May 16, 1975, Ser. No. 578,181

Int. Cl.² H01J *29/02, 29/51, 29/92*

U.S. Cl. 313—417 **10 Claims**

1. In a cathode ray tube utilizing a multielectrode electron beam generating means employing a substantially cylindrical snubber positioning electrode accommodating the traversal of at least one electron beam and having a longitudinal axis therethrough, said generating means being oriented within a substantially cylindrical encompassing neck portion of the envelopic enclosure having minimum and maximum internal dimensions, means for effecting concentric positioning of said beam generating means within said neck portion comprising:

at least two electrical conductive snubber means in the form of similar longitudinal resilient metallic members fabricated of flat material and spatially positioned on said snubber positioning electrode, each of said snubber members having a central attachment portion formed in an arcuate manner to substantially conform to the circumferential surface of said positioning electrode whereon it is affixed in an orientation normal to said longitudinal axis, said attachment portion of each snubber means having like transition portions formed at each end thereof to provide like fulcra wherefrom similar first and second resilient lever arm portions extend in an opposed longitudinal manner, each of said lever portions having an integral contact element terminally formed thereon as a substantially spoon-shaped configuration having a convex



exterior surface oriented to make contact with said neck portion, each of said lever arms being positionally flexed from an as-formed relaxed position to a compressed position within said neck portion in a manner tangential to said cylindrical electrode to provide a like accommodating fulcrum therewith and thence effect similar increased pressured placement of each respective integral contact element against the interior surface of the encompassing neck portion.

3,961,221

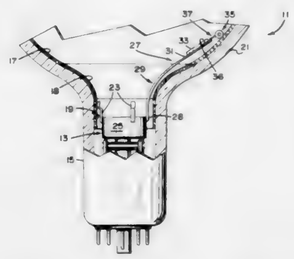
ELONGATED GETTER SUPPORT FOR CATHODE RAY TUBE HAVING ROTATABLE MEMBER AT END

David Benda, Geneva, and Charles Alfred Davis, Auburn, both of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 12, 1975, Ser. No. 586,194

Int. Cl.² H01J *29/94;* **H01K** *1/52*

U.S. Cl. 313—481 **8 Claims**



1. In a cathode ray tube having an envelopic enclosure formed of an integration of neck, funnel and panel portions and incorporating an electron gun structure within said neck portion in a manner oriented to beam electrons to a cathodoluminescent screen disposed on said panel portion, means for supporting a container of effusive material within substantially the funnel portion of said envelope comprising:

an antenna-type longitudinal positioning member having first and second ends, said first end being attached to said electron gun structure with the second end thereof having said container located thereat;

at least one support placement means projecting forwardly from said container as a directional continuation of said positioning member, said placement means having a rod-like axle portion formed normal to the directional

orientation of said positioning member being in a plane related to the bottom of said container; and

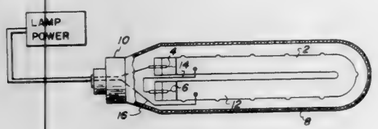
container support means in the form of a rotatable member having opposed faces positioned on said axle portion in a manner to turn freely thereon and track in a direction common with the directional trend of said positioning member, said rotatable member providing facile non-abrasive movement during tube fabrication of said container through said neck portion and into said funnel portion to effect positive and spatial supportive placement of said container relative to the wall of said funnel portion.

3,961,222

SODIUM VAPOR LAMP CONFIGURATION

Charles F. Gallo, Jr., Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1974, Ser. No. 533,050
Int. Cl.² H01J *17/34*
U.S. Cl. 315—49 **2 Claims**



1. A sodium vapor lamp comprising a sodium vapor discharge tube disposed within an outer transparent envelope, said discharge tube being substantially surrounded by a transparent coating of electrically conductive material being sufficiently resistive to the flow of electrical current to effect ohmic heating of said discharge tube when current is applied to said coating,

a first and a second lamp electrode electrically connected to said discharge tube,

a third and a fourth electrode electrically connected to said conductive coating,

said first, second, third, and fourth electrodes being electrically in series with said first and fourth electrodes being connected to a source of electrical power,

said conductive coating providing positive resistance in the circuit and heat to said discharge tube when energized.

3,961,223

ASTIGMATIC FOCUS CORRECTION CIRCUIT

Thomas J. Ray, Yonkers, N.Y., and Thomas J. Rebeschi, North Haven, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 4, 1975, Ser. No. 555,319
Int. Cl.² H01J *29/56, 29/66*
U.S. Cl. 315—371 **2 Claims**

1. In a display system having a source of horizontal and vertical deflection signals, apparatus for correction of the image distortion produced by the astigmatism error generated within a cathode ray tube (CRT), comprising:

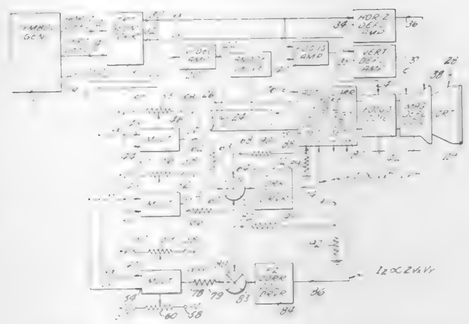
a CRT, having an electron gun for generating an electron beam;

means including a magnetic deflection coil assembly disposed around the outside perimeter of said CRT for deflecting the electron beam in directions radial to the beam axis in response to deflection signals provided thereto by the horizontal and vertical deflection signal source;

an annular magnetic core disposed around the outside perimeter of said CRT between said electron gun and said magnetic deflection coil assembly;

a set of four coils evenly disposed upon said annular core with their geometric centers along the circumference of said core displaced by an arc angle of 90° from the centers of adjacent coils in the same set, and wound upon said core in an electrical series such that adjacent coils in the same set induce mutually opposing magnetic flux lines in said core;

a second set of four coils evenly disposed upon said annular core in the same manner as said first set of coils and interposed with the coils of said first set, with the axes formed by the four coils of said second set being in alignment with the horizontal and vertical axes formed by said



deflection coils, and being displaced by an arc angle of 45° from the axes formed by the four coils of said first set;

means for providing current excitation for said first set of coils in proportion to the difference between the square of the horizontal deflection signal and the square of the vertical deflection signal; and

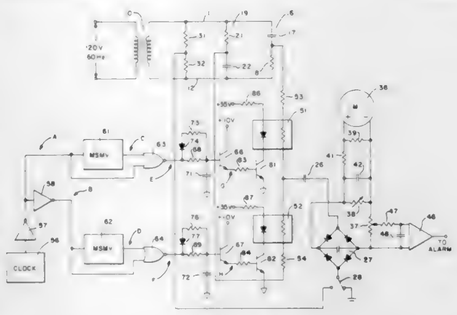
means for providing current excitation to said second set of coils in proportion to the product of said horizontal and vertical deflection signals.

3,961,224

TRANSIENT-FREE ISOLATION MONITOR

Robert W. Vreeland, San Francisco, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Jan. 30, 1975, Ser. No. 545,492
Int. Cl.² H02H *3/26*
U.S. Cl. 317—18 R **5 Claims**



1. In a line isolation monitor for detecting the existence of ground faults on power conductors normally isolated from ground: first and second phase-shift networks connected between the conductors for providing first and second signals to be monitored, signal monitoring means responsive to a current flowing between the input of the monitoring means and ground, a first photoisolator connected between the first phase-shift network and the input of the monitoring means, a second photoisolator connected between the second phase-shift network and the input of the monitoring means, means for providing first and second generally rectangular timing signals of predetermined frequency and opposite phase,

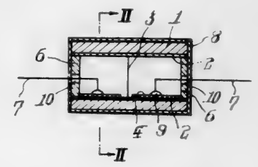
means including a delay network responsive to the timing signals for delivering generally rectangular control signals which rise gradually from a first level to a second level a predetermined time after a transistion of predetermined polarity in the timing signals, and means for applying the generally rectangular control signals to the photoisolators to alternately condition the photoisolators to pass the first and second signals to the monitoring means, the photoisolators being conditioned to pass the first and second signals to the indicator means when the respective control signals are at the second level.

3,961,225

SURGE ABSORBER

Kan-ichi Tachibana; Michihiro Nishioka; Akio Uchida, and Mikiya Ono, all of Saitama, Japan, assignors to Mitsubishi Mining & Cement Company, Ltd., Tokyo, Japan

Filed Feb. 10, 1975, Ser. No. 548,663
Claims priority, application Japan, Feb. 26, 1974, 49-22679; Apr. 24, 1974, 49-46234
Int. Cl.² H02H *3/22*
U.S. Cl. 317—61 **1 Claim**



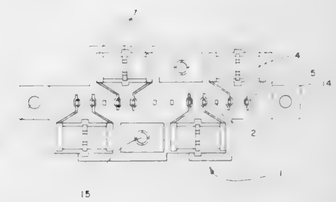
1. A surge absorber comprising a plurality of carbon thin films isolated from each other respectively at a distance of $10\mu - 100\mu$ attached to the surface of an insulating body and a material selected from the group consisting of a metal, an alloy and a conductive adhesive as an electrode directly fixed to each of said plurality of carbon thin films respectively, said metal and alloy being both highly anticorrosive and having a high electric conductivity.

3,961,226

MULTI-TERMINAL ARRESTOR HOLDER AND CONNECTOR MODULE

Bruce E. Hoffman, and S. Thomas Berkley, both of Raleigh, N.C., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Sept. 5, 1974, Ser. No. 503,403
Int. Cl.² H02H *3/22*
U.S. Cl. 317—61.5 **11 Claims**



1. A multi-terminal holder for high voltage surge arrestors and printed circuit boards comprising:

a base member;

a plurality of electrical contact members extending through said base member for providing electrical contact to a circuit board;

a plurality of contact means within said base member for retaining a plurality of voltage surge arrestors and for providing electrical contact between said voltage surge arrestors and said electrical contact members in connection therewith; and

a plurality of ground-arrestor contact means within said base member for removably retaining and electrically connecting said arrestors to a ground terminal in connection therewith;

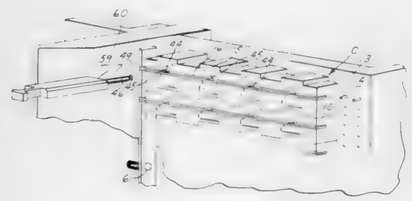
whereby each of said arrestors makes simultaneous electrical connection between a pair of said contact means and an associated ground-arrestor means when each of said arrestors is individually inserted between said pair of contact means.

3,961,227

TELEPHONE CONNECTOR BLOCK

Paul V. DeLuca, Port Washington, and William V. Carney, Valley Stream, both of N.Y., assignors to Porta Systems Corporation, Syosset, N.Y.

Filed Feb. 13, 1975, Ser. No. 549,671
Int. Cl.² H02B *1/16*
U.S. Cl. 317—101 R **3 Claims**



1. An improved grounding means for use in conjunction with a telephone connector block and a grounding type protector module comprising: a molded body element having means thereon for electrical and mechanical interconnection with a surface of said telephone connector block, said body element defining a plurality of terminals corresponding in configuration to those of said protector module, and defining an elongated groove in an exposed surface thereof; a grounding strip element disposed within said groove and extending to one end of said molded body element, an electrically conductive grounding bar means communicating with said ground strip element and a source of ground potential; said protective module having a grounding prong, said body element having an opening selectively accommodating said prong, said grounding strip element bordering a portion of said opening and establishing communication therewith upon insertion of said prong therein; said grounding strip element including a first strip member having a plurality of planar segments interconnected by a corresponding plurality of arched segments defining an opening, and a second generally planar strip member abutting said first strip member at spaced intervals; said second strip member having detent means thereon in the area of said arched portions of said first strip member.

3,961,228

PRINTED CIRCUIT BOARD ARRANGEMENT

Glenn E. Briggs; Edmund E. Beach, both of Fort Lauderdale, and Walter P. Chase, Sunrise, all of Fla., assignors to Motorola, Inc., Chicago, Ill.

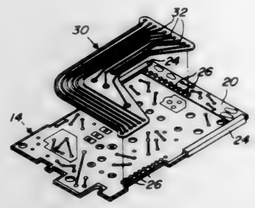
Filed Mar. 28, 1975, Ser. No. 563,417
Int. Cl.² H05F *1/04*
U.S. Cl. 317—101 R **6 Claims**

1. An improved printed circuit board arrangement for electrical apparatus, comprising in combination:

a first printed circuit board for accommodating a plurality of associated components and designed to provide predetermined operational capabilities;

a second printed circuit board for accommodating other circuit components and designed to provide additional operational capabilities,

said first and second printed circuit boards being placed in an edge-to-edge, co-planar relation with one another;



a pair of guide rails for bridging said first and second circuit boards and engaging respective edge portions thereof to maintain the same in said co-planar relation; and

a printed flex harness interconnecting said first and second printed circuit board.

3,961,229

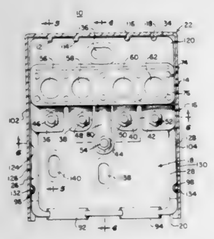
TWO PAIR STATION PROTECTOR

Frank G. Splitt, Arlington Heights, Ill., assignor to Cook Electric Company, Morton Grove, Ill.

Filed Oct. 9, 1974, Ser. No. 513,400

Int. Cl.² H02B *1/08*

U.S. Cl. 317—120 **10 Claims**



1. A station protector for mounting overvoltage arresters of the type which protect telephone lines from high voltages or surge currents occurring on said lines, said station protector comprising:

a base assembly having a base portion with a pair of side edges extending between first and second opposed end portions of said base assembly, and an upstanding wall portion at said first end portion,

a mounting section disposed on said base portion adjacent said second end portion and between said side edges, said mounting section having mounting means for mounting said overvoltage arresters,

a terminal section disposed on said base portion adjacent said mounting section and between said mounting section and said upstanding wall, said terminal section generally centrally located between said upstanding wall and said second end portion and having at least four line terminals to be coupled to said lines and a ground terminal, and

a storage area being defined by said upstanding wall, said terminal section and said side edges, the distance between said upstanding wall and said terminal section being at least approximately **40** percent of the distance between said upstanding wall and said second end portion.

3,961,230

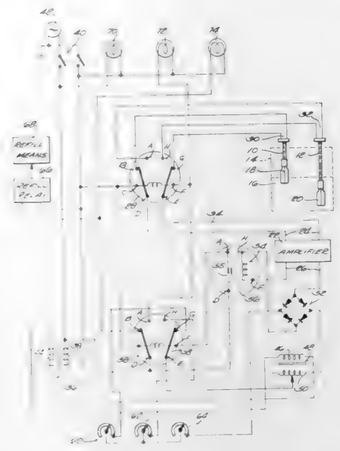
CURRENT RELAY ACTUATED BY MULTISTAGE AMPLIFIER'S TOTAL CURRENT DRAINS

Nelson Hartley, Towson, Md., assignor to Hartley Controls Corporation, Neenah, Wis.

Division of Ser. No. 472,790, May 23, 1974, Pat. No. 3,908,133. This application May 12, 1975, Ser. No. 576,764

Int. Cl.² H01H *47/00*

U.S. Cl. 317—123 **2 Claims**



1. In a control circuit including a multi-stage amplifier having signal input terminals and power input terminals, a current source coupled to said power input terminals, a variable signal input device coupled to said signal input terminals, and a current responsive device coupled to said amplifier for initiating a predetermined action in response to a predetermined signal level of said input device, the improvement wherein said current responsive device is coupled in series between said current source and said power input terminals so as to respond to the total current drain of said multi-stage amplifier rather than to the current drain of one stage thereof, thereby achieving maximum sensitivity in response to a given variation of said signal input device.

3,961,231

CONTROLLED CHEMICAL INJECTION SYSTEM FOR WASHING MACHINES

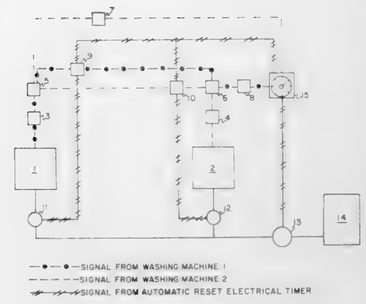
Robert A. Gillespie, Bridgeport, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

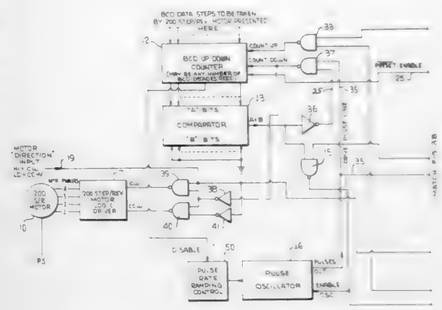
Filed Apr. 17, 1975, Ser. No. 569,135

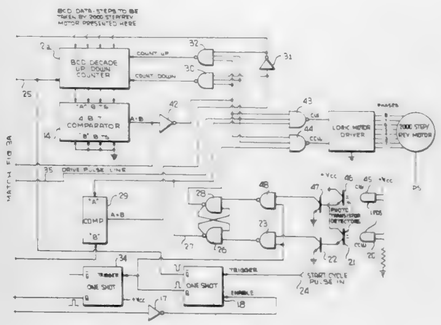
Int. Cl.² G05D *7/00*

U.S. Cl. 317—139 **8 Claims**

1. A system for automatically introducing a chemical, from a metering device, through a chemical introducing means into two or more simultaneously operating programed washing machines, for a predetermined time interval which comprises: an electrical circuit which includes an automatically resettable timing means, settable for the predetermined time interval, means for activating the chemical introducing means in response to the timed interval and means for receiving and relaying a signal from the programmers of the washing machines to the automatically resettable timing means, said receiving and relaying means associated with each washing machine comprising in combination; means for receiving and holding a signal from a washing machine programmer; a first signal blocking means, activated by a signal from a first washing machine programmer which has activated the timing means, to prevent reactivation of the timing means, by a signal from a second washing machine programmer, before termination of the predetermined time interval; signal time delay means which delays the signal from the signal holding means to permit the timing means to reset after the predetermined time interval; a second signal blocking means, associated with the circuits of all other simultaneously operating washing machines in the system, which passes the signal from the programmer of a first washing machine programmer, when the timing means is not activated by a signal from a second washing machine programmer; and means for directing the chemical introducing activating means, to the chemical introducing means associated with the washing machine whose programmer activated the timing means.







pulses applied to each of said step motors from said source of pulses to achieve a total predetermined rotary motion of said second rotor, said second rotor having an output shaft for coupling to a load.

3,961,233

D-C VOLTAGE CONTROL

George A. Fagg, Portland, Oreg., assignor to Controltek, Inc., Portland, Oreg.

Filed Aug. 26, 1974, Ser. No. 500,595

Int. Cl.² H02K *13/00*; **H02P** *5/44*, *7/50*

U.S. Cl. 318—361 **8 Claims**

3,961,232

HYBRID STEP MOTOR SYSTEM

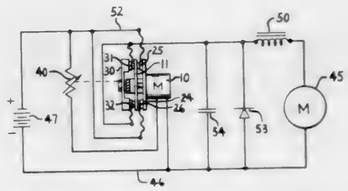
Harold R. Newell, S. Newbury, N.H., assignor to Mesur-Matic Electronics Corporation, Salem, Mass.

Filed Apr. 30, 1974, Ser. No. 465,596

Int. Cl.² H02P *5/46*

U.S. Cl. 318—46 **15 Claims**

1. A motor system, including a first step motor having a first housing and a first rotor which rotates relative to said first housing, a source of pulses, means connecting said source of pulses to said first step motor for effecting a step motion of said first rotor in either sense selectively in response to each of said pulses, a second step motor having a second housing and a second rotor which rotates relative to said second housing, logic means connecting said source of pulses to said second step motor for effecting a step motion of said second rotor in either sense selectively in response to each of said pulses, means coupling said first rotor to said second housing for rotation of said second housing in response to rotation of said first rotor, and logic means for controlling the number of



1. A d-c voltage control system comprising a commutator-type switching device arranged to continuously close and open an energizing circuit for a load so as to provide closed circuit and open circuit intervals in each revolution of the commutator, means for varying the duration of said closed circuit intervals in relation to said open circuit intervals, an inductance in series with said load in said energizing circuit, and a rectifier in parallel with said load and inductance; said switching device comprising a commutator, a pair of stationary brushes spaced 180° apart connected to a supply wire, and a pair of movable brushes spaced 180° apart connected to said energizing circuit, said means for varying the duration of said

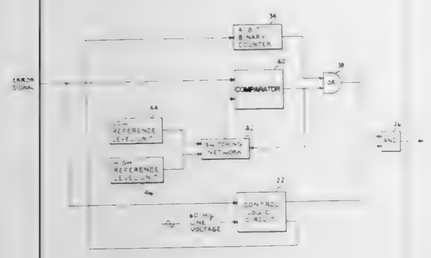
closed circuit intervals shifting said movable brushes; said commutator comprising an insulating disc having conductive segments in corresponding positions on opposite faces of said disc, said corresponding segments being electrically connected to each other, said stationary brushes being disposed on one face of said disc, and said movable brushes being disposed on the opposite face of said disc.

3,961,234

ADAPTIVE FILTERING

George Sutton Chambers, and Carter Sinclair, both of Waynesboro, Va., assignors to General Electric Company, Salem, Va.

Filed Dec. 29, 1972, Ser. No. 319,180
Int. Cl.² G05B *13/00*
U.S. Cl. 318—561 **8 Claims**



1. In a process control system which includes means for generating control signal pulses in response to an error signal, a filter circuit for minimizing the effects of noise associated with said error signal, and filter circuit comprising:

a. means to generate a train of control signal pulses;

b. first means responsive to said error signal for selectively inhibiting a preselected number of control signal pulses whenever said error signal is less than a first predetermined value; and

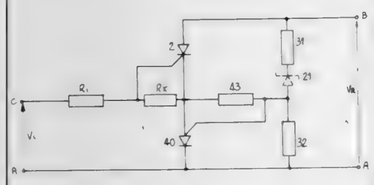
c. second means responsive to said error signal for allowing said control signal pulses to pass whenever said error signal is greater than said first predetermined value.

3,961,235

STATIC SWITCH CONTROLLER SYNCHRONIZED WITH A PASSAGE TO ZERO OF THE SUPPLY VOLTAGE

Maurice Sauvanet, Fontenay-le-Fleury, France, assignor to Silec-Semi-Conducteurs, Societe Anonyme, Paris, France

Filed Aug. 15, 1974, Ser. No. 497,798
Claims priority, application France, Sept. 11, 1973, 73.32646
Int. Cl.² H03K *17/56*
U.S. Cl. 323—18 **5 Claims**



1. An electric circuit for controlling a static switch in synchronism with the passage to zero of the feed voltage comprising:

a. an auxiliary thyristor provided with an anode, a cathode and a gate;

b. a control signal source means for applying a control signal to the gate of said auxiliary thyristor;

c. a feed source means comprising a first terminal and a second terminal;

d. an anode gate thyristor comprising an anode, a cathode and a gate, the anode of which is connected with the cathode of said auxiliary thyristor and the cathode of which is connected with said second terminal;

e. an impedance connected between the anode and the anode gate of the anode gate thyristor;

f. means connected to said first terminal for rectifying the current from said feed source means; and

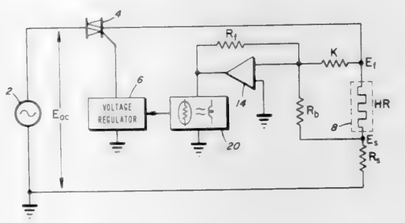
g. a biasing impedance connected between the anode gate and the cathode of the anode gate thyristor, said impedance being biased by the rectified current from said rectifying means, whereby a load current may flow in the auxiliary thyristor when the instantaneous value of the rectified voltage becomes lower than a threshold value.

3,961,236

CONSTANT POWER REGULATOR FOR XEROGRAPHIC FUSING SYSTEM

Victor Rodek, Rochester, and Thomas B. Michaels, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 7, 1975, Ser. No. 547,932
Int. Cl.² G05F *1/44*
U.S. Cl. 323—18 **1 Claim**



1. In a constant power regulator circuit for a variable impedance load which is coupled to a variable voltage alternating current power source, the improvement comprising:

a summing circuit for maintaining substantially constant the power applied to said variable impedance load as a direct function of the voltage across said variable impedance load plus the current through said variable impedance load, wherein said summing circuit comprises;

a first voltage tap from said variable impedance load providing a first voltage signal proportional to the voltage applied across said variable impedance load,

a fixed current measurement impedance in series with said alternating current power source and said variable impedance load,

said fixed current measurement impedance having a second voltage tap providing a second voltage signal corresponding to the current through said variable impedance load,

an amplifier having a voltage responsive input,

first resistance means connecting said input of said amplifier with said first voltage tap to connect said first voltage signal to said amplifier input,

second resistance means connecting said second voltage tap to the same said input of said amplifier to connect said second voltage signal thereto and to sum said first and second voltage signals at said same input of said amplifier,

said first and second resistance means and said fixed current measurement impedance having values selected to nominally provide substantially equal first and second said voltage signals to said input of said amplifier,

said amplifier providing an output control signal controlled by said input; and

wherein zero crossing control means are connected between said alternating current power source and said variable impedance load to control the power applied to said variable impedance load, said control means being operative at zero crossing conditions of said alternating current power source,

said zero crossing control means being controlled by said output control signal from said amplifier of said summing circuit.

3,961,237

MODULATING ELECTRONIC ROOM THERMOSTAT

Hugh Jean Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 11, 1974, Ser. No. 522,326
Int. Cl.² G05D *23/24*
U.S. Cl. 323—19 **20 Claims**



18. A thermostatic device for the generation of a plurality of command signals responsive to sensed temperature deviations of a control zone from upper and lower distinct set temperature points which comprise:

temperature responsive means in a temperature sensing location in said control zone;

first command signal generating means including said temperature responsive means and first circuit means to generate a first analog command signal in response to sensed temperature by said temperature responsive means about said upper set temperature point;

second command signal generating means including said temperature responsive means and second circuit means to generate a second analog command signal of discontinuous proportionation to said first command signal and offset therefrom by a band of from 3° to about 15° F. in response to sensed temperature by said temperature responsive means about said lower set temperature point;

adjustment means in said first and second circuit means for the fixed adjustability of said upper and lower set temperature points;

stop means associated with said adjustment means to prevent movement of said adjustment means decreasing the magnitude of said band.

3,961,238

SELECTIVE METAL DETECTOR CIRCUIT HAVING DUAL TUNED RESONANT CIRCUITS

Byron B. Randolph, Jr., Phoenix, Ariz., assignor to Robert F. Gardiner, Phoenix, Ariz.

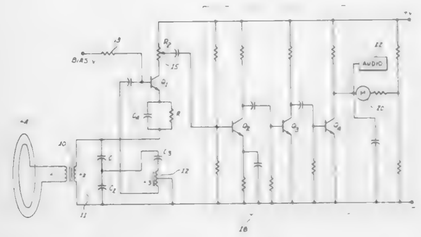
Filed Jan. 22, 1975, Ser. No. 542,961
Int. Cl.² G01V *3/08*
U.S. Cl. 324—3 **3 Claims**

1. In a metal detector of the type to be passed over the ground to detect metallic objects near the surface of the ground, the combination comprising:

a. a search coil;

b. a transistor oscillator for driving said search coil and having a parallel resonant tank circuit and a series resonant feedback circuit, each tuned to a different frequency;

c. said parallel resonant tank circuit including an inductor inductively coupled to said search coil and including a pair of series connected capacitors connected in parallel with said inductor;



d. a transistor having an emitter, collector and a base;

e. means connecting said parallel tank circuit to said emitter;

f. means connecting said series resonant feedback circuit between the junction of said capacitors and said base;

g. amplifying means, means connecting said amplifying means to said collector; and

h. indicator means connected to said amplifying means for receiving the amplified signal therefrom and presenting an indication of the amplitude thereof to an operator.

3,961,239

SIGNAL CONDITIONING CIRCUIT FOR VEHICLE DIAGNOSTIC SYSTEM

Richard F. Lach, Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 26, 1975, Ser. No. 562,388
Int. Cl.² G01R *13/42, 23/00*
U.S. Cl. 324—15 **3 Claims**



1. In a diagnostic system for a motor vehicle having an internal combustion engine, said engine having an ignition system for selectively supplying a series of spark voltage pulses to a plurality of spark ignition devices, said voltage pulses exhibiting ringing and large voltage excursions, the improvement of a signal conditioning circuit for said voltage pulses comprising

a transistor having an emitter, a base and a collector,

means for biasing the base of said transistor so that said transistor is normally nonconductive,

a capacitor connected to the collector of said transistor,

a source of voltage connected to the collector of said transistor and to said capacitor, said capacitor being charged by said voltage source when said transistor is nonconductive,

a comparator having first and second input terminals and an ouput terminal,

means connecting said voltage source to the first input terminal of said comparator, and connecting said capacitor to the second input terminal of said comparator, said

comparator producing a first voltage output at the output terminal thereof when said capacitor is discharged, and producing a second voltage output at the output terminal thereof when said capacitor is charged to a predetermined voltage level,

means connecting said series of spark voltage pulses to the base junction of said transistor to cause conduction thereof, said capacitor discharging through said conducting transistor,

output circuit means connected to the output terminal of said comparator, said output circuit means producing an output signal in the form of a square wave having a leading edge occurring simultaneously with the leading edge of said spark voltage pulses, and having a trailing edge delayed in time from the trailing edge of said spark voltage pulses by a fixed time constant as a function of the charging rate of said capacitor,

and ignition adapter circuit means connected in series between said ignition system and the base junction of said transistor for preventing conduction of said transistor until said spark voltage pulses attain a preselected voltage magnitude.

3,961,240

TESTING ELECTRICAL IGNITION SYSTEMS OF INTERNAL COMBUSTION ENGINES

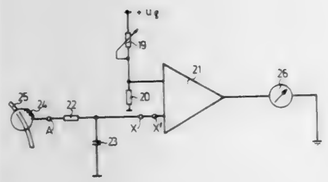
Dieter Pohl, Boll, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Aug. 6, 1974, Ser. No. 495,194

Claims priority, application Germany, Aug. 31, 1973, 2343895

Int. Cl.² G01R *13/42, 23/00, 27/00*

U.S. Cl. 324—16 R **7 Claims**



4. Test apparatus to test electrical ignition of internal combustion engines comprising

means (**24**) deriving a signal having a wave shape directly corresponding to an ignition pulse applied to the spark plug (**18**) of the internal combustion engine;

a low pass filter (**22, 23**) having said derived signal applied thereto and forming an average signal;

comparator means (**21**) having said average signal applied to one input and a reference signal applied to another input;

output means (**26**) sensing whether the average signal is above, or below said reference signal;

a timing circuit (**27**) starting a timing interval upon generation of said ignition pulse;

and switch means (**30**) connecting the output of said low pass filter with the comparator, controlled by said time circuit, upon lapse of said timing interval.

3,961,241

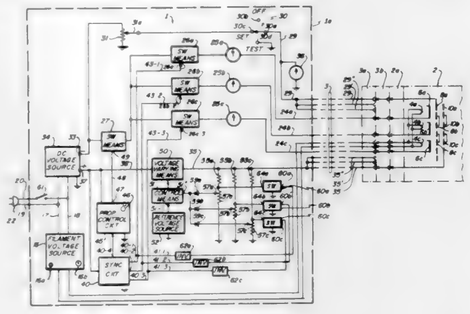
EMISSION TESTING CIRCUIT FOR COLOR CATHODE RAY TUBES

Richard Goldstein, Deerfield, and Harold Feldman, Skokie, both of Ill., assignors to Dynascan Corporation, Chicago, Ill.

Filed Apr. 30, 1975, Ser. No. 573,370

Int. Cl.² G01R *31/024*

U.S. Cl. 324—20 CR **12 Claims**



1. In a circuit for testing the emission of the electron guns of a color cathode ray tube and including heater filament, cathode, control and accelerator electrode connecting terminals to be connected respectively to the heater filament, cathode, control and accelerator electrodes of the respective electron guns of a color cathode ray tube, a source of heater current to be continuously connected to said heater filament connecting terminals for continuously energizing the heater filaments of the electron guns of the cathode ray tube under test, and voltage source means to be connected between the cathode and one of the other electrodes of each electron gun for causing electron emission which is an indication of the electron emitting capabilities thereof, the improvement comprising separate emission indicating means for each electron gun of the cathode ray tube to be tested, each emission indicating means providing an indication as to whether or not the current flow between the cathode and said other electrode of the associated electron gun is at an adequate level, and switching means for sequentially connecting said voltage source means and emission indicating means to said electron gun electrode connecting terminals for cyclically establishing in sequence the flow of emission current between the cathode and said other electrodes of said various electron guns, whereby emission current flow occurs in only one electron gun at any given time segment of each switching cycle, while said emission indicating means simultaneously indicate the emission produced by the electron guns.

3,961,242

EMISSION TESTING CIRCUIT FOR COLOR CATHODE RAY TUBES

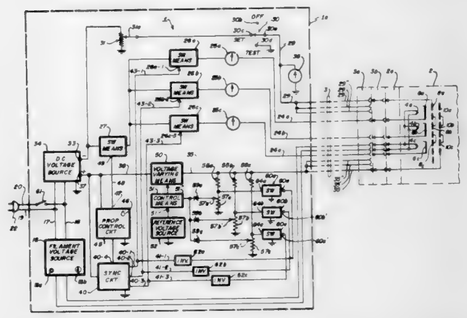
Gus C. Rose, Wood Dale, Ill., assignor to Dynascan Corporation, Chicago, Ill.

Filed Apr. 30, 1975, Ser. No. 573,374

Int. Cl.² G01R *31/024*

U.S. Cl. 324—20 CR **9 Claims**

1. In a circuit for indicating the individual and relative emission capabilities of the electron guns of a color cathode ray tube of a television receiver and including heater filament, cathode, control and accelerator electrode connecting terminals to be connected respectively to the heater filament, cathode, control and accelerator electrodes of the respective electron guns of a color cathode ray tube, said circuit including a source of heater current to be continuously connected to said heater filament connecting terminals for continuously energizing the heater filaments of the electron guns of the cathode ray tube under test, and voltage source means to be connected between the cathode and one of said other electrodes of each electron gun for causing electron emission which is an indication of the electron emitting capability thereof, the improvement comprising separate emission current indicating means responsive to flow of current flow between the cathode connecting terminal and one of the other electrode connecting terminals for all of the electron guns for respectively simultaneously displaying the values of said current flow, and adjustable means for simultaneously progressively varying to the same degree the emission current indications of said separate current indicating means so the highest or lowest indication can be brought to a given reference value from which it can be readily determined if the other of same is beyond or below a value indicating an unacceptable ratio of the same.



3,961,243

INDUCTIVE DISPLACEMENT TRANSDUCER USING A BRIDGE CIRCUIT HAVING A STABLE VOLTAGE PHASE IN THE DIAGONAL OF THE BRIDGE

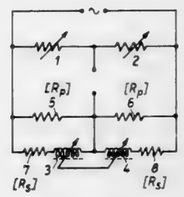
Winfried Schulz, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed May 17, 1974, Ser. No. 470,904

Claims priority, application Germany, May 21, 1973, 2326257

Int. Cl.² G01R *33/00*

U.S. Cl. 324—34 D **3 Claims**



1. In an inductive displacement transducer comprising a current measuring bridge circuit for measuring an a-c current of a frequency W and including in one half of the bridge circuit a pair of adjustable electrical resistors coupled in series relationship, and in the other half of the bridge circuit a pair of series coupled electrical induction coils having the same dimensions and electrical characteristics and a movable magnetic armature inductively coupled to the induction coils, with each of said coils having the same electrical inductance L when the armature is positioned symmetrically with respect to the induction coils, and each bridge circuit branch which includes an induction coil having the same ohmic resistance R_s, said induction coils and said electrical resistors being coupled in parallel relationship, the improvement comprising a pair of series coupled electrical shunt resistors each coupled in parallel relationship to one of said induction coils, with the electrical resistance R_p of each of said shunt resistors being determined by the equation $R_p = W^2L^2/R_s$, and WL is chosen so as to be substantially greater in value than R_s.

3,961,244

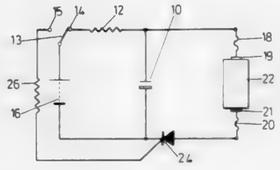
MAGNETIZING MEANS FOR A MAGNETIC FLAW DETECTOR INCLUDING A CHARGING AND DISCHARGING CIRCUIT

Raphael Isaac Minchom, London, England, assignor to Minchom Magnetic Systems Limited, London, England

Filed Sept. 11, 1974, Ser. No. 505,047

Int. Cl.² G01R *33/12*

U.S. Cl. 324—38 **11 Claims**



1. Apparatus for magnetically detecting flaws in a magnetisable object, the said apparatus comprising a first circuit having a storage capacitor therein and adapted to be connected across a D.C. battery; a second circuit comprising a series circuit including the said storage capacitor, a thyristor, and two conductors each extending to a permanent magnet and wound about said magnet, said magnet magnetically connecting said conductors and the storage capacitor to the object; a third circuit comprising the said thyristor and adapted to be connected across the said D.C. battery; and a multi-position switch connected in both the first and third circuits, the switch having a first position in which the second and third circuits are open-circuited and in which the first circuit is completed to effect charging of the storage capacitor by the D.C. battery, and the switch having a second position in which the first circuit is open-circuited and the third circuit is closed, such closure of the third circuit causing the thyristor to close the second circuit whenever said object is connected between the conductors, and thus causing the storage capacitor to be hyperbolically discharged and to generate magnetic flux in the object.

3,961,245

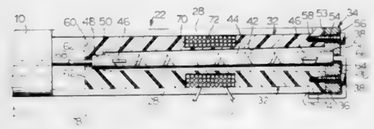
MAGNETIC LOCATOR HAVING IMPROVED SENSORS

Erick O. Schonstedt, Reston, Va., assignor to Schonstedt Instrument Company, Reston, Va.

Filed Nov. 20, 1974, Ser. No. 525,574

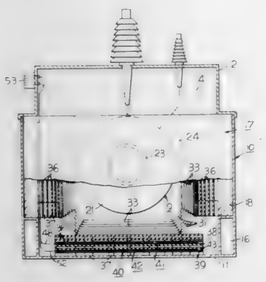
Int. Cl.² G01R *33/02*

U.S. Cl. 324—43 R **20 Claims**



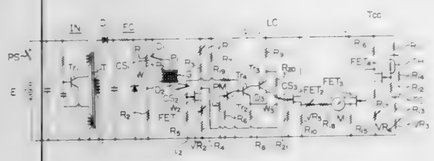
1. Magnetic sensor apparatus comprising a housing for an elongated magnetic core, the housing including an elongated bobbin having a longitudinal cavity therein for receiving the core and having means for pivotally engaging one end of the core, and an end piece for connection to the bobbin, the end piece having means for engaging the other end of the core and the position of the end piece being adjustable transversely relative to the bobbin.

3,961,246
CAPACITANCE METHOD OF MONITORING INSULATION DRYNESS OF AN ELECTRICAL INDUCTION APPARATUS
Michael W. Waterman, Milwaukee, and Samuel L. Foster, Eagle, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Nov. 7, 1974, Ser. No. 521,743
Int. Cl.² G01R *27/26, 31/12*
U.S. Cl. 324—54 **8 Claims**



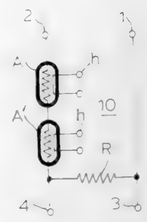
1. In a method of determining the insulation dryness of an electrical reactor device immersed in oil contained in a tank which is at ground potential without de-energizing the reactor device comprising:
providing a pair of spaced apart electrodes separated by at least one layer of representative insulation of the reactor device which is disposed adjacent to the bottom of the tank to form a capacitor;
grounding the one electrode nearest to the windings of the reactor device;
measuring the dissipation or power factor between the grounded and ungrounded electrodes to obtain a value; and,
comparing the dissipation or power factor measured value obtained to similar dissipation or power factor data previously obtained on the representative or similar insulation of the reactor device of known dryness.

3,961,247
LINEAR OUTPUT MOISTURE METER WITH TEMPERATURE COMPENSATOR
Kuni Toki, Tokyo, Japan, assignor to Kett Electric Laboratory, Tokyo, Japan
Filed June 16, 1975, Ser. No. 587,495
Claims priority, application Japan, July 19, 1974, 49-83013
Int. Cl.² G01R *27/02*
U.S. Cl. 324—65 R **6 Claims**



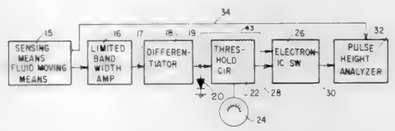
1. A moisture measuring apparatus for measuring the water content of a specimen by measuring the electric resistivity of the specimen which has a correlation with the water content, the electric resistivity of the specimen varies non-linearly with the water content in one water content range and linearly with the water content in another water content range, comprising:
means for measuring the electric resistivity of said specimen;
linearizer means for generating an electric signal varying linearly with the water content of the specimen in said one water content range from an electric signal changing non-linearly with the water content;
indicator means for indicating the measured quantity in terms of the water content;
change-over means for connecting and disconnecting said linearizer means between said resistivity measuring means and said indicator means; and
temperature compensating means for measuring the temperature of the specimen and shifting the zero point of the indicator means corresponding to the measured temperature, the linearizer means being so adjusted that the same temperature compensating means provides accurate temperature compensation both for said one and another water content ranges.

3,961,248
GAS DETECTOR USING GAS SENSING ELEMENTS EXHIBITING DIFFERENT RESPONSE CHARACTERISTICS
Masanori Kawamura, Chiba, Japan, assignor to Nohmi Bosai Kogyo Co. Ltd., Tokyo, Japan
Filed July 2, 1974, Ser. No. 485,140
Int. Cl.² G01N *31/06*
U.S. Cl. 324—71 SN **5 Claims**



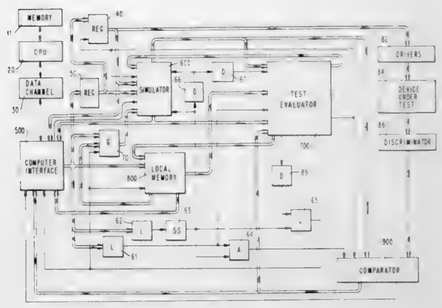
1. A gas detector comprising:
a pair of input terminals;
a pair of output terminals; and
an electrical circuit comprised of a plurality of gas sensing elements serially connected across said input terminals through a resistor connected across said output terminals, said gas sensing elements each having a different sensitivity for at least one of the gaseous components to be detected.

3,961,249
PARTICLE SIZE DISTRIBUTION ANALYZATION EMPLOYING TRAILING EDGE DIFFERENTIATION
Wallace H. Coulter, Miami Springs, Fla., assignor to Coulter Electronics, Inc., Hiealeah, Fla.
Continuation of Ser. No. 404,035, Oct. 15, 1973, abandoned.
This application July 18, 1975, Ser. No. 597,081
Int. Cl.² G01N *27/00*
U.S. Cl. 324—71 CP **15 Claims**



1. In a method for particle distribution analyzation, each particle when passing through a sensing zone producing a pulse having an amplitude proportional to the size of the particle, said method comprising the steps of: differentiating at least one edge of each particle-produced pulse, short-circuiting to ground the other edge of each particle-produced pulse, passing the differentiated pulse to a limiting stage to produce signals for controlling the passage of a part of the differentiated pulse to pulse amplitude analyzing means, and employing the height of the resulting differentiated pulse part as a measure of the size of the original particle-produced pulse.

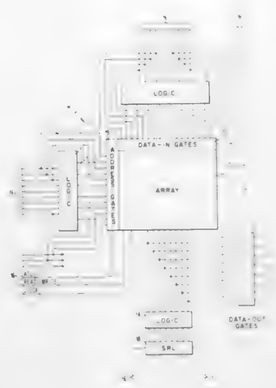
3,961,250
LOGIC NETWORK TEST SYSTEM WITH SIMULATOR ORIENTED FAULT TEST GENERATOR
Thomas J. Snethen, Wappinger Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 8, 1974, Ser. No. 468,108
Int. Cl.² G01R *15/12*; **G06F** *11/00*
U.S. Cl. 324—73 R **8 Claims**



1. A logic network tester for testing a logic network having a plurality of primary inputs and primary outputs and including a plurality of logic blocks having inputs and outputs, at least some of said inputs and outputs being inaccessible within the logic network, comprising:
simulator means for simulating the logic network to be tested and identifying the plurality of logic blocks and the inputs and outputs to each of said blocks;
means for applying a test pattern of binary valued signals to the primary inputs of said simulated network;
test evaluator means operatively associated with and responsive to said simulator means for determining whether said test pattern should also be applied to the network under test, and causing said means for applying a test pattern to apply said test pattern to the network under test, if desired; and
comparator means responsive to both said network under test and said simulated network for comparing corresponding outputs of said network under test and said simulated network.

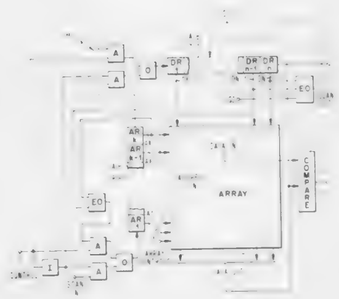
3,961,251
TESTING EMBEDDED ARRAYS
William J. Hurley, Poughkeepsie, and Hans P. Muhlfeld, Highland, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 20, 1974, Ser. No. 534,605
Int. Cl.² G01R *15/12*
U.S. Cl. 324—73 AT **9 Claims**

1. In an LSI semiconductor device comprising a memory array, associated logic circuitry and primary access points to and from external circuitry, operatively associated and so arranged as to provide no direct access from said primary access points to all portions of said memory array, the improvement comprising;
means bypassing said associated logic circuitry for loading a test pattern into said array directly from primary access points; and,



means bypassing said associated logic circuitry for testing the output of said memory array.

3,961,252
TESTING EMBEDDED ARRAYS
Edward B. Eichelberger, Purdy Station, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 20, 1974, Ser. No. 534,606
Int. Cl.² G01R *15/12*
U.S. Cl. 324—73 AT **11 Claims**



1. In the testing of a memory array including address and data registers, the improvement comprising:
means for scanning a test pattern into the address and data registers;
means for shifting the test pattern through said address and data registers;
means converting said registers to counters;
feedback means for recirculating said register counter outputs to said address and data register inputs; and,
means for testing the output of said memory array.

3,961,253
ELECTRICAL VOLTAGE INDICATING DEVICE

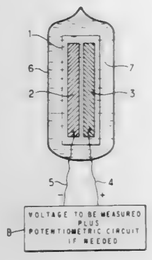
Alfred Brych, Chasseneuil-du-Poitou, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Oct. 3, 1974, Ser. No. 511,672

Claims priority, application France, Oct. 16, 1973, 73.36810

Int. Cl.² G01R *27/22*

U.S. Cl. 324—94 **7 Claims**



1. Electrical voltage indicating device for d.c. voltages comprising at least one electrochemiluminescent cell, said cell containing a non-aqueous electrolyte and solvent, at least one electrochemiluminescent substance whose excitation threshold has a value that corresponds to the value of a voltage to be detected and indicated, a pair of electrodes in said cell immersed in said electrolyte and spaced apart not greater than 0.5 mm, and means for connecting said electrodes to the d.c. voltage to be detected and indicated.

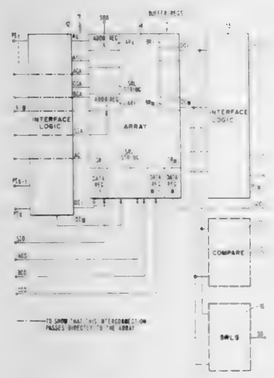
3,961,254
TESTING EMBEDDED ARRAYS

Joseph R. Cavaliere, and Rocco Robortaccio, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1974, Ser. No. 534,608

Int. Cl.² G01R *15/12*

U.S. Cl. 324—73 AT **7 Claims**



1. In an LSI semiconductor device comprising a memory array, including address, data and buffer registers, associated logic circuitry and primary access points to and from external circuitry, operatively associated and so arranged as to provide no direct access from said primary access points to all portions of said memory array, the improvement comprising:

means bypassing said associated logic circuitry for loading a test pattern into one of said address and data registers directly from primary access points; and,

means bypassing said associated logic circuitry for testing the output of said memory array.

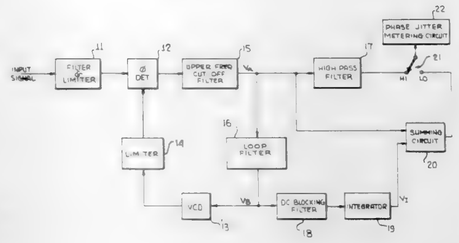
3,961,255
MEASUREMENT BANDWIDTH ENHANCEMENT IN PHASE LOCK LOOPS

Norris C. Hekimian, Rockville, Md., assignor to Hekimian Laboratories, Inc., Rockville, Md.

Filed Aug. 15, 1974, Ser. No. 497,817

Int. Cl.² G01R *25/00*

U.S. Cl. 324—83 R **9 Claims**



1. In a control loop of predetermined bandwidth and of the type wherein an input signal and feedback signal are compared to provide an error signal to a loop filter which in turn controls a feedback circuit which provided the feedback signal, a method of measuring said error signal over a bandwidth which extends to frequencies below the loop bandwidth, said method comprising the steps of:

processing the output signal from said low pass loop filter through a circuit having a transfer characteristic which matches the transfer characteristic of said feedback circuit;

summing the processed output signal with said error signal; and

measuring the amplitude of the summed signals.

3,961,256
LIGHT-EMITTING SEMICONDUCTOR DISPLAY APPARATUS FOR DISPLAYING A BAND REPRESENTATION OF A VOLTAGE ANALOG OF A MEASURED PARAMETER

Colin Simister Gaskell, Waresley, and Rory Morgan O'Brien, Weston, both of England, assignors to Alfred Herbert Limited, Coventry, England

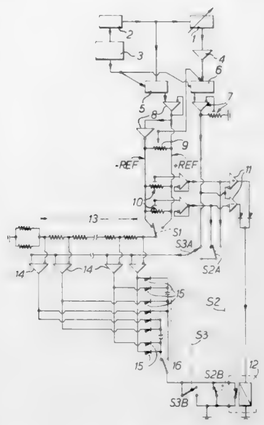
Filed Oct. 10, 1974, Ser. No. 513,944

Claims priority, application United Kingdom, Oct. 17, 1973, 48453/73

Int. Cl.² G01R *31/00, 13/02, 19/16*

U.S. Cl. 324—96 **16 Claims**

1. Apparatus for use in conjunction with means for forming a voltage analog of a parameter to be measured, for providing a visual display of the value of the analog and hence of the parameter, said apparatus comprising a series of semiconductor light emission means, a conductor portion for receiving said voltage analog, and electrical circuitry including a plurality of resistors for forming a series of different reference voltages and comparator means operable to compare said voltage analog with said reference voltages and to cause the light emission means to emit light whereby they provide a band representation of the value of said analog with a zero value of the analog being represented by a band terminating intermediate the ends of the said series, said circuitry further including means for forming two signals respectively defining the upper and lower limits of a predetermined tolerance range for said analog, both said upper and lower tolerance range limits being intermediate the limits of the range of measurement of the apparatus, further comparator means operable for determining when said analog is outside said tolerance range limits, and means which is connected to be controlled by said further



comparator means and which becomes operable, when said anlog is outside said tolerance range limits as aforesaid, to produce a marked visible change in the nature of said representation while the value of the analog is still being displayed, in such a way that the operator's attention is drawn to the displayed value.

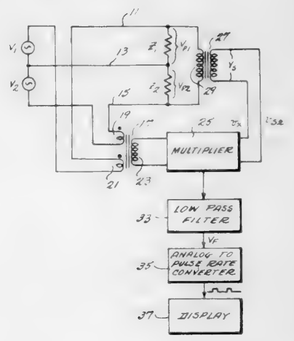
3,961,257
SINGLE PHASE 3-WIRE ELECTRONIC ELECTRICAL ENERGY METER

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 13, 1974, Ser. No. 505,798

Int. Cl.² G01R *7/00, 11/32*

U.S. Cl. 324—142 **3 Claims**



1. An apparatus for measuring the electrical energy in a single phase, three-wire, a.c. system comprising:

a current transformer having two primary windings and a single secondary winding, one of said primary windings being connected in series with one of said wires and the other of said primary windings being connected in series with a second one of said wires,

a potential transformer having a primary and a secondary winding, the primary winding of said potential transformer being connected across the load impedances of said three-wire electrical system,

pulse width amplitude multiplying means connected to the secondary of said current transformer and the secondary of said potential transformer for generating a signal which is proportional to the total power in said electrical system,

means for converting said power proportional signal to a pulse train having a pulse repetition rate which is proportional to the total average power in said system, each pulse corresponding to a constant amount of electrical energy, and

means for accumulating said electrical pulses.

3,961,258
PULSE TIME INTERVAL MEASURING SYSTEM

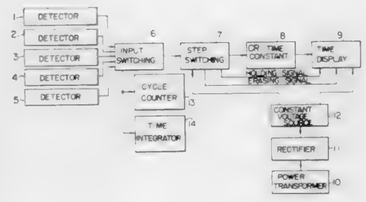
Nobukazu Morisaki, Aichi, Japan, assignor to Daido Metal Company, Ltd., Nagoya, Japan

Filed Aug. 26, 1974, Ser. No. 500,740

Claims priority, application Japan, Sept. 7, 1973, 48-100875

Int. Cl.² G04F *8/00*

U.S. Cl. 324—189 **3 Claims**



1. A pulse time interval measuring system comprising a plurality of signal generating means each generating a pulse train signal, selecting means connectable to any desired one of said signal generating means, step switching means connected to said selecting means and having a first and a second contact mechanism arranged to be changed over stepwise in interlocking relation in response to the output of said selecting means, a CR time constant circuit having a capacitor and a resistor, said CR time constant circuit so connected to said first contact mechanism that said capacitor is charged only when a predetermined contact is connected to said RC time constant circuit, while said capacitor discharges when the remaining contacts are connected thereto, and time display means for measuring the value of the charged voltage in said capacitor to give a digital display of the time corresponding to the charged voltage.

3,961,259
MARINE SMOKE MARKERS

William Rupert Brooke Elstow, and David Michael Jennings, both of Salisbury, England, assignors to Pains-Wessex Limited, Salisbury, England

Filed July 5, 1974, Ser. No. 486,209

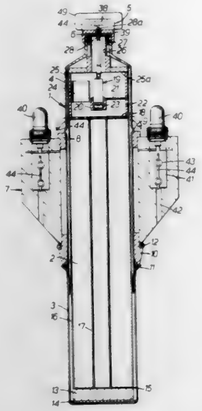
Claims priority, application United Kingdom, July 5, 1973, 31994/73

Int. Cl.² B63B *21/52;* **H04B** *1/034*

U.S. Cl. 325—66 **20 Claims**

1. Personnel marine smoke marker for marine use comprising an elongate casing, a mass of smoke-generating composition contained in said casing, igniting means for igniting said smoke-generating composition, a buoyance flotation ring, said flotation ring surrounding said casing over a part only of the length of said casing, a radio transmitter, said transmitter being recessed into said flotation ring, whereby the range of detection is increased while the marker is kept compact, an aerial, a power source for said transmitter, and circuitry con-

necting said power source and said aerial to said transmitter, the transmitter and the smoke-generating composition being



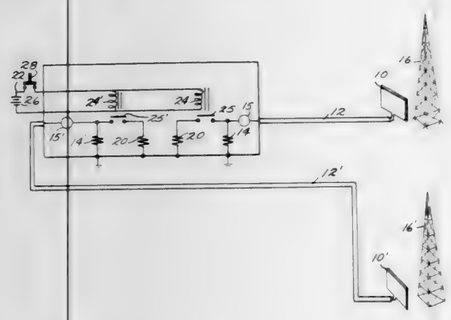
operable concurrently for a period of time after the marker enters a body of water.

3,961,260

APPARATUS AND METHOD FOR TESTING THE CONDITION OF AN ANTENNA MONITORING SYSTEM

Francis S. Colligan, 5200 Oakland Road, Chevy Chase, Md. 20015

Filed June 5, 1973, Ser. No. 367,340
Int. Cl.² H04B *17/00*
U.S. Cl. 325—133 **16 Claims**



1. In an antenna monitoring system having at least one sampling element coupled to an antenna element, an antenna monitor having at least a first impedance and at least one electrical energy conductor connected between the sampling element and the impedance, the improvement comprising:

at least one additional passive impedance located for selective placement in circuit relationship with said first impedance; and

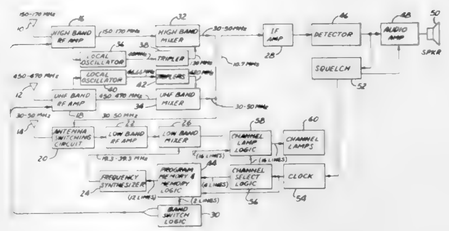
circuit means in operative relationship with said additional impedance for selectively placing said additional impedance in circuit with said first impedance and for enabling changes in said monitoring system to be determined by comparing the currents passing through said first and said additional impedances when the antenna element and the monitoring system are known to be operating properly with the currents passing through said first and said additional impedances when the antenna element and the monitoring system are now known to be in proper operating condition.

3,961,261

CRYSTALLESS SCANNING RADIO RECEIVER

Peter W. Pflasterer, Oak Ridge, Tenn., assignor to Tennelec, Inc., Oak Ridge, Tenn.

Filed Mar. 14, 1974, Ser. No. 450,983
Int. Cl.² H04B *1/06*
U.S. Cl. 325—335 **23 Claims**



1. A receiver for scanning a plurality of channels of predetermined radio frequency channels and selecting one channel having a radio frequency signal thereon said receiver comprising:

an RF section including at least one RF amplifier and an associated mixer coupled to said amplifier;

means for generating one of a plurality of beating signals of preselected frequency for application to said mixer to tune a received channel signal and provide an intermediate signal in response to said channel signal;

said beating signal generating means comprising a phase-locked-loop frequency synthesizing means having at least one input thereto, wherein various preselected combinations of signals applied to said input produces said beating signals of preselected frequencies at the output of said generating means;

programmable memory means connected to said input for storing said various preselected combinations of signals at predetermined addresses;

means for programming said memory means to enter said various preselected combinations of signals at predetermined addresses in said memory means, said programming means including switching means for manually and separately producing each of the signals within said various preselected combinations of signals;

means connected to said memory means for selectively addressing said combinations to thereby cause said selected combinations to be applied to said input;

an IF section connected to said mixer and including an IF amplifier for amplifying said intermediate signal;

detector means for producing audio signals when said intermediate signal is being received; and,

an audio amplifier connected to said detector means for driving an audio speaker with said audio signals.

3,961,262

FM RECEIVER AND DEMODULATION CIRCUIT

Gerhard-Gunter Gassmann, Berkheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 15, 1974, Ser. No. 524,097
Claims priority, application Germany, Nov. 22, 1973, 2358288
Int. Cl.² H04B *1/00*
U.S. Cl. 325—345 **7 Claims**

1. A receiver for frequency modulated RF signals having a known center frequency and bandwidth, comprising:

a first and second signal mixing means each having first and second inputs and an output;

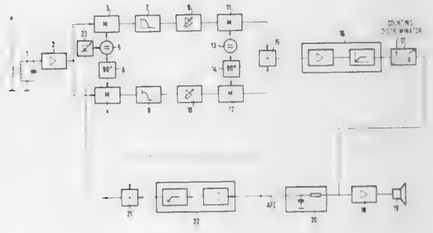
means for receiving said frequency modulated RF signals and providing said signals to the first inputs of said first and second mixing means;

first oscillator means having an output for providing a signal having a frequency approximately 10 kHz from the center frequency of the received signal, the output of said oscillator means being connected to the second inputs of each of said first and second mixing means;

phase shifting means disposed at one of said inputs of the first mixing means for shifting the signal applied thereto by 90°;

a pair of low pass filter means connected to the outputs of said first and second mixing means, said low pass filter means having a cut off frequency equal to approximately one-half the bandwidth of the received signals;

third and fourth means for signal mixing and carrier suppression, each means having first and second inputs and an output, first inputs of said third and fourth means being connected to the pair of low pass filter means for receiving a filtered signal therefrom, said third mixing means receiving the signal from the first mixing means;



second oscillator means having an output providing a signal having a frequency equal to at least twice the cut off frequency of the low pass filter means, the output of said oscillator means being connected to the second inputs of each of said third and fourth mixing means;

phase shifting means disposed at the second input of the third mixing means for shifting the signal received thereby by 90°;

adding means having first and second inputs connected to the outputs of the second pair of mixing means for adding the signals received therefrom and for providing an output signal;

means for receiving the output signal from the adding means and for amplifying and limiting said signal and for providing a limited output signal; and

demodulation means for receiving and demodulating the limited output signal for providing a demodulated audio signal.

3,961,263

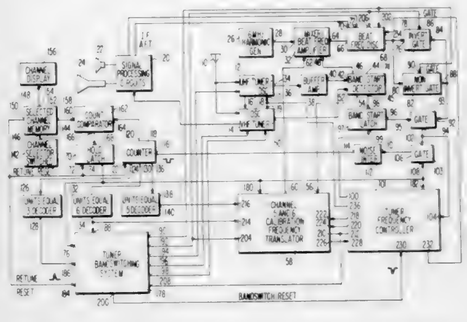
BANDSTART DETECTOR SYSTEM FOR A TELEVISION TUNING SYSTEM

John Barrett George, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed June 3, 1974, Ser. No. 476,086
Int. Cl.² H04B *1/16*
U.S. Cl. 325—421 **3 Claims**

1. In a television tuning system which provides for the selection of any one of a plurality of television channels in at least a first band of radio frequencies where access to said one channel is accomplished by a sweeping of an oscillator of a tuner through at least a second band of frequencies and where said one channel is identified by comparing a signal from said oscillator with a plurality of harmonically related signals within said second band of frequencies and accumulating in a counter a count representative of the number of predetermined frequency comparisons between said oscillator signal and said harmonically related signals encountered during a period of sweeping of said oscillator, a system for initiating counting by said counter, comprising:

first means coupled to said oscillator for developing a control signal having a magnitude representative of a frequency difference between said signal from said oscillator and a frequency selected in predetermined relationship to said second band of frequencies, said first means comprising a resonant circuit tuned to said frequency selected in predetermined relationship to said second band of frequencies and adapted to be coupled to said oscillator, a unilateral conducting device having a first terminal coupled to said resonant circuit and a second terminal, and means coupled to said second terminal of said unilateral conducting device for the development of said control



signal, said resonant circuit being tuned to a frequency between said harmonically related signals and separated in frequency from said second band of frequencies by less than one frequency spacing of said harmonically related signals;

second means coupled to said first means and responsive to said control signal for providing a first output when said control signal magnitude is less than a threshold value and for providing a second output when said control signal magnitude is greater than said threshold value; and

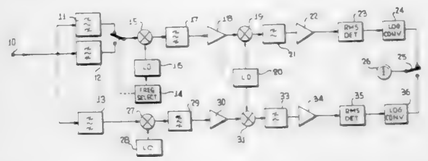
means coupling said second means to said counter for conditioning said counter for operation upon a transition between said first and said second output.

3,961,264

LINEAR FREQUENCY CONVERTER WITH GAIN INDEPENDENT OF CIRCUIT PARAMETERS

Norris C. Hekimian, Rockville, Md., and Walter Mack, Falls Church, Va., assignors to Hekimian Laboratories, Inc., Rockville, Md.

Filed May 2, 1974, Ser. No. 466,459
Int. Cl.² H04B *1/28*
U.S. Cl. 325—451 **8 Claims**



1. A frequency converter circuit responsive to a local oscillator signal and an input voltage signal for providing an output signal at a predetermined frequency, said circuit comprising:

active means for converting said input voltage signal to a signal current having an amplitude proportional to the input voltage;

circuit means tuned to said predetermined frequency;

current steering means responsive to said local oscillator signal for alternately conducting said signal current via two paths to said circuits means;

output means operable over a range of relatively low applied signal amplitudes;

means for applying said output signal to said output means at an amplitude which is a function of the current conducted to said circuit means by said steering means; and

current limiting diode means for limiting the maximum possible current through said steering means to a level which corresponds to an output signal amplitude residing within said range of relatively low amplitudes.

3,961,265

VHF-UHF SWITCHING MECHANISM OF A TELEVISION RECEIVER

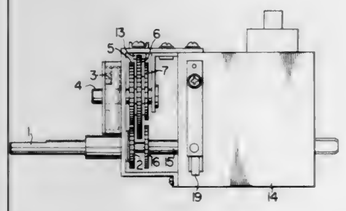
Tugio Ohigashi, Aichi, and Junichi Ariga, Inazawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 2, 1974, Ser. No. 528,630

Claims priority, application Japan, Dec. 3, 1973, 48-139627[U]

Int. Cl.² F16H *35/18*

U.S. Cl. 325—452 **2 Claims**



1. A VHF-UHF switching mechanism for a television receiver having a VHF tuner including a tuner shaft therein, comprising

a rotatably supported main operation shaft;

a first spur gear fixed to said main operation shaft;

a switch shaft rotatably supported adjacent said main operation shaft;

a second spur gear fixed to said switch shaft, said second spur gear meshing with said first spur gear;

a switch coupled to said switch shaft, operation of said switch switching between UHF stations in regular sequence in accordance with the rotational position of said switch shaft;

a segment gear fixed to said switch shaft, part of the outer periphery thereof being formed as a circular arc and the remaining part being formed as a toothed gear surface, the heights of the two teeth positioned on both sides of the circular arc surface of said segment gear being lower than the heights of the remaining teeth on said segment gear; and

a third spur gear fixed to the tuner shaft of said VHF tuner, said third spur gear being geared to the toothed gear surface of said segment gear, one tooth of said third spur gear being higher than the other teeth on said third spur gear.

3,961,266

CHANNEL SEEKING TUNING SYSTEM

Akio Tanaka, Evanston, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 3, 1974, Ser. No. 430,446

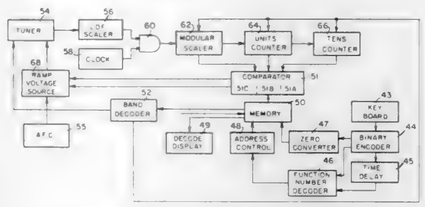
Int. Cl.² H04B *1/06*

U.S. Cl. 325—452 **44 Claims**

1. In a television tuning system including a voltage controllable oscillator for selectively tuning a plurality of fixed frequency bandwidth television channels in a predetermined range of frequencies, channel number selection means, voltage generating means for changing the tuning frequency of said voltage controllable oscillator and comparison means, the method of operating said tuning system comprising the steps of:

encoding on a sample basis the tuning frequency of said oscillator into channel number information related to the channel numbers of corresponding receivable television channels;

comparing channel number information from said channel number selection means with said channel number information from said oscillator;



driving said voltage controllable oscillator from said voltage generator means until a preselected condition exists in said comparison means, said preselected condition occurring only when said oscillator tuning is within a restricted frequency range about the frequency corresponding to the channel number from said selection means, said restricted frequency range having two distinct bounds defining a non-zero interval and being substantially narrower than the frequency difference between adjacent television channels.

3,961,267

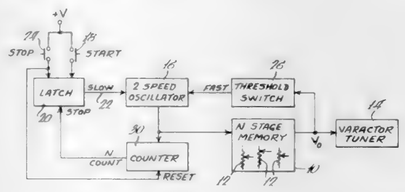
CHANNEL SELECTING CONTROL SYSTEM FOR TELEVISION TUNER INCLUDING UNUSED CHANNEL SKIP SYSTEM

William R. Weissmueller, Jr., Wildwood, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Nov. 1, 1974, Ser. No. 520,030

Int. Cl.² H04B *1/32*

U.S. Cl. 325—470 **14 Claims**



1. In a receiver having an electrically controlled tuner, a sequential tuning system comprising:

a plurality of actuable stages corresponding to a plurality of frequencies only some of which are to be selected, each stage having an adjustable resistor which can be varied to change the level of a tuning signal coupled when the stage is actuated to the tuner to control the frequency thereof;

each adjustable resistor being adjustable to generate a predetermined level of tuning signal when the associated stage is to be effectively skipped during a scanning sequence;

sequence means for sequentially actuating at a slow rate each of the plurality of stages to sequentially generate tuning signals from the adjustable resistor in order to step the tuner sequentially through the entire plurality of frequencies;

switch means responsive to generation of tuning signals having the predetermined level for causing the sequence means to step at a fast rate to actuate the next stage to

thereby effectively skip stages which are not to be selected during the scanning sequence;

frequency stopping means actuable for stopping the sequence means when the tuner has been stepped to any desired frequency in order to maintain the receiver tuned to the desired frequency; and

cycle stopping means for stopping the sequence means after the entire plurality of frequencies has been scanned once without actuation of the stopping means in order to return the tuner to the frequency to which the tuner was tuned when automatic scanning was initiated by actuation of the sequence means.

3,961,268

DISTURBANCE PULSE DETECTOR CIRCUIT FOR RADIO RECEIVER BLANKING

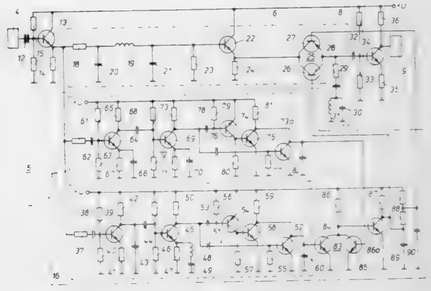
Jens Hansen, Hildesheim, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed June 30, 1975, Ser. No. 591,318

Claims priority, application Germany, Mar. 20, 1975, 2512239

Int. Cl.² H04B *1/10*

U.S. Cl. 325—478 **11 Claims**



1. In an interference blanking circuit for a radio receiver which includes an interference detector circuit and a blanking switch interposed between the output of the demodulator of the receiver and the circuits for utilizing the demodulated signal, the improved interference detector circuit which comprises the combination of:

first disturbance recognition means (**16**) connected to the output of the demodulator and having a sensitivity maximum in a first frequency region lying slightly above the frequency band of the utilizable demodulated signal for recognizing the effects of a disturbance in said frequency region;

second disturbance recognition means (**17**) connected to the output of the demodulator for recognizing the high-frequency components of disturbances in a frequency region well above the frequency region in which said first disturbance recognition means is most sensitive, and

means connected to the outputs of said first and second disturbance recognition means for providing a blanking signal for operating the blanking switch of the receiver to interrupt the demodulated signal of the receiver only when both said first and said second disturbance recognition means (**16, 17**) recognize disturbance components in their respective frequency regions of sensitivity.

3,961,269

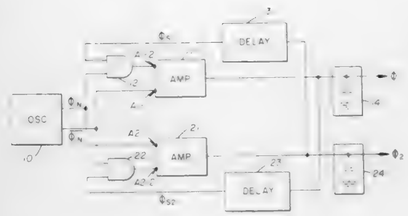
MULTIPLE PHASE CLOCK GENERATOR

Cesar E. Alvarez, Jr., Griffith, Ind., assignor to Teletype Corporation, Skokie, Ill.

Filed May 22, 1975, Ser. No. 579,759

Int. Cl.² H03K *1/00, 3/04*; **H03B** *27/00*

U.S. Cl. 328—62 **18 Claims**



1. A multiple-phase clock generator circuit for providing at least two clock phases, each consisting of an individual pulse train comprising:

means for producing a first input pulse train at a first node and a second input pulse train at a second node, the first and second input pulse trains being complementary;

first amplifier means for producing one of the clock phases;

first connection means for coupling the first and second nodes to the first amplifier means;

the first amplifier means being turned on to start a pulse of the one clock phase when a pulse from the first input pulse train is coupled to the first amplifier means, and the first amplifier means being turned off to end the pulse of the one clock phase when a pulse from the second input pulse train is coupled to the first amplifier means;

second amplifier means for producing another of the clock phases;

second connection means for coupling the first and second nodes to the second amplifier means;

the second amplifier means being turned on to start a pulse of the other clock phase when a pulse from the second input pulse train is coupled to the second amplifier means, and the second amplifier means being turned off to end the pulse of the other clock phase when a pulse from the first input pulse train is coupled to the second amplifier means;

feedback means for producing from the other clock phase at the output of the second amplifier means, a first control pulse train whose pulses are delayed by a first selected time from the end of the corresponding pulses of the other clock phase; and

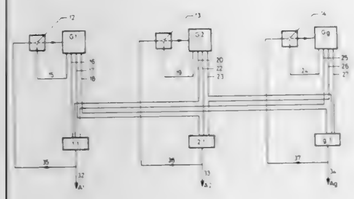
said first connection means including means responsive to the control pulse train for coupling the first input pulse train at the first node to the first amplifier means only during the occurrence of the pulse of the first control pulse train;

whereby a pulse of the one clock phase will begin only the first preselected time after a pulse of the other clock phase has ended.

3,961,270
APPARATUS COMPRISING A PLURALITY OF SEPARATE PARTS, AND CONTROL APPARATUS FOR PRODUCING SYNCHRONIZING CONTROL SIGNALS FOR SAID SEPARATE PARTS

Werner Ullmann, Locarno; Renato Derighetti, Muralto, and Umberto Gagliati, Locarno, all of Switzerland, assignors to A.G. fur industrielle Elektronik AGIE Losone b. Locarno, Losone, Switzerland

Filed Nov. 7, 1974, Ser. No. 521,632
Claims priority, application Switzerland, Nov. 14, 1973, 15994/73
Int. Cl.² H03K *17/00, 17/26, 17/28*
U.S. Cl. 328—75 **16 Claims**



1. Control apparatus including a co-ordinated group of independently operable signal generators for producing output signals for control of separately controllable portions of an apparatus system with reliability-assurance redundance by means of independent electric signal supply circuits, said control apparatus comprising:

a number *g* of electric signal supply circuits, which number is greater by at least 1 than twice a chosen degree of redundance *r* of the signal generator group, each of said signal supply circuits containing:

an independently operable signal generator (G1, G2 . . . Gg) for generating timing pulses (S1*n*, S2*n*, Sg*n*; S1*n*+1, Sg*n*+1);

at least one gate circuit (**11**, **21**, *g*1, *a*1, *a*2, *ag*) for furnishing an output to a portion of said apparatus system, said gate circuit being responsive to the outputs of all the signal generators of the respective signal supply circuits for providing said output signals only when the number of said outputs of said signal generators with pulses (S1*n*, S2*n*; S1*n*+1, Sg*n*+1) timed within said predetermined interval (Δ*tn*, Δ*tn*+1) exceeds by at least 1 the said degree of redundance *r*, and

phase correcting circuit means (**12**, **13**, **14**; **121**, **131**, **141**) for furnishing an output to said phase correcting circuit means (Δ*tn*, Δ*tn*+1) and having as inputs at least an input supplied by an output of said generator of the same signal supply circuit and an input supplied by the output of one of said gate circuits of the same signal supply circuit.

3,961,271
PULSE WIDTH AND AMPLITUDE SCREENING CIRCUIT

Valentine John Zlydak, Clark, and Maurice Leon Jezo, Cedar Grove, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 7, 1975, Ser. No. 547,835
Int. Cl.² H03K *5/20*; **G06G** *7/14*
U.S. Cl. 328—111 **13 Claims**

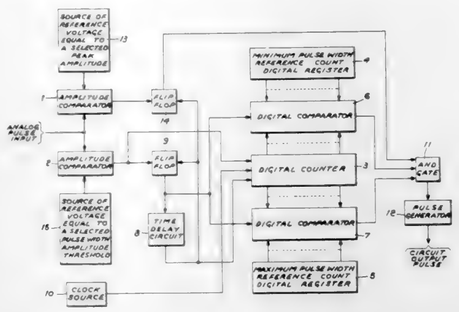
1. A pulse width and amplitude screening circuit to provide an output pulse for each input pulse whose amplitude and width fall within specified limits comprising:

a first source of said analog input pulses;

first means coupled to said first source to produce a first signal when the amplitude of one of said input pulses exceeds a first reference amplitude;

second means coupled to said first source to produce a second signal when the width of said one of said input pulses has an amplitude exceeding a second reference amplitude different than said first reference amplitude;

third means coupled to said second means to convert said second signal into a binary count, to produce a third signal when said count is greater than a minimum pulse



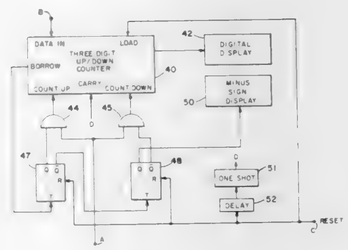
width reference count and to produce a fourth signal when said count is less than a maximum pulse width reference count; and

fourth means coupled to said first means and said third means responsive to the simultaneous presence of said first, third and fourth signals to produce said output pulse.

3,961,272
ENCODING ALTIMETER

Norman M. Witriol, 2501 Lancelot Drive SE, Huntsville, Ala. 35803, and Carlton L. Frederick, 518 Dryden Road, Ithaca, N.Y. 14850

Filed Dec. 17, 1974, Ser. No. 533,576
Int. Cl.² G01R *29/02*; **G01C** *21/00*
U.S. Cl. 328—129 **3 Claims**

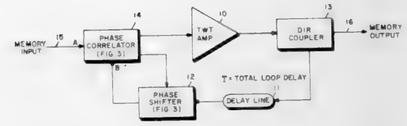


1. A system comprising a up/down counter having a countup input, a countdown input, a data input, a count output and a borrow output; first information means connected to the data in inputs so as to store a first count in the counter; a second information means producing a second count in a form which said counter can count; a control circuit connecting said second information means to the countdown input; said control circuit being connected to the borrow output so as to switch the connections of the second information means to the countup input when an output is presented by said borrow output; said first and second information means produce outputs in a cyclic manner; reset signal means producing a signal output once each cycle; said up/down counter having a load input; said control means having a reset input; and said reset signal means being connected to the load input of the counter and to the reset input of the control means so as to allow the up/down counter to compare the counts of the first and second information means.

3,961,273
FREQUENCY MEMORY APPARATUS

Victor Trush, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed June 19, 1972, Ser. No. 264,123
Int. Cl.² H03B *3/04*; **H03K** *5/18*
U.S. Cl. 328—155 **17 Claims**



1. A frequency memory comprising

an amplifier and a delay line coupled in an oscillatory loop;

means for applying an input pulse of periodic signal to said loop, said loop responding thereto to recirculate said pulse;

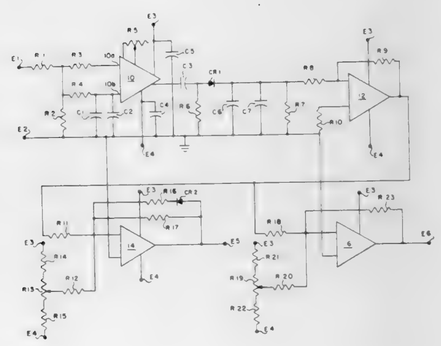
means for correlating said input pulse with the first recirculated version of itself; and

means responsive to said correlating means to adjust the phase delay of said loop in a direction to optimize the memory output power at the frequency of said periodic signal.

3,961,274
NOISE RIDING THRESHOLD

Robert W. Jones, San Diego, and James K. Hall, Santee, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 10, 1975, Ser. No. 557,191
Int. Cl.² H03B *1/04*; **H03K** *5/08*; **H04B** *1/10*
U.S. Cl. 328—165 **12 Claims**



1. A network comprising:

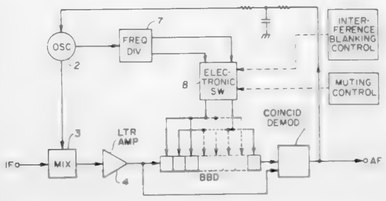
isolation means for receiving an input signal having signal, DC and noise components and for outputting a negative level DC voltage proportional to the average value of the negative portion of said input signal noise component; and

output means connected to said isolation means for adding a preset voltage to said negative level DC voltage and for providing a threshold voltage.

3,961,275
FM DISCRIMINATOR CIRCUIT

Hans-Hermann Kochsmeier, Hildesheim, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed May 21, 1975, Ser. No. 579,504
Claims priority, application Germany, June 5, 1974, 2427028
Int. Cl.² H03K *9/06*
U.S. Cl. 329—107 **6 Claims**



1. FM discriminator circuit in which demodulation is obtained by means of a coincidence demodulator to which both a delayed and a non-delayed intermediate frequency signal are applied, comprising:

oscillator-mixer means (**2**,**3**) for subjecting the intermediate frequency signal to a frequency conversion additional to the frequency conversion used for tuning;

bucket brigade circuit means (**5**) for producing a delayed signal from an intermediate frequency signal which has been subjected to frequency conversion by said oscillator-mixer means, said bucket brigade circuit means (**5**) being controlled by pulses of a stepping feqeuency;

means, responsive to an output of the oscillator (**2**) of the oscillator-mixer means for providing said stepping frequency pulses to said bucket brigade circuit means, and

coincidence demodulator means and means for supplying said coincidence demodulator means with both delayed and undelayed intermediate frequency signals which have been subjected to frequency conversion by said oscillator-mixer means, said delayed signal being provided from the output of said bucket brigade circuit means and said undelayed signal being provided from the source of the input of said bucket brigade circuit means.

3,961,276
STEREO SIGNAL DEMODULATOR IN A FOUR-CHANNEL STEREO BROADCAST RECEIVER COMPRISING MEANS FOR PERFORMING DELAY EQUALIZATION TOGETHER WITH SAMPLING OF A COMPOSITE SIGNAL

Hirotaka Kurata, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed June 23, 1975, Ser. No. 589,263
Claims priority, application Japan, June 27, 1974, 49-72791
Int. Cl.² H03D *3/18*
U.S. Cl. 329—112 **19 Claims**

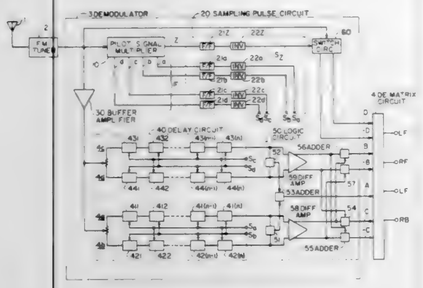
1. Apparatus for demodulating a composite signal from an FM tuner by sampling of said composite signal, said composite signal including a multi-channel signal and at least one pilot signal, said multi-channel signal including a main channel component, and first and second sub-channel components which are positioned at different frequency regions relative to each other, said second sub-channel component being different from said main channel component and from said first sub-channel component in delay time, comprising:

means receiving said composite signal,

sampling pulse means (**10**, **20**; **70**, **20**) responsive to said pilot signal for producing first (S_a,S_b,S_c,S_d) and second (S_z) sampling pulse series which have different repetition frequencies,

delay means (**40**) comprising plural steps of electronic delay lines responsive to said composite signal and to said

first sampling pulse series (S_a,S_b,S_c,S_d), said plural steps of electronic delay lines being switched responsive to said first sampling pulse series to sample said composite signal at its first delay step and to subsequently shift the sampled values of said composite signal to the following delay step,



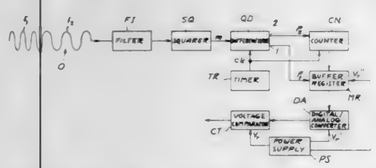
logic means (**50**) coupled to said delay means (**40**) and responsive to sampled values delayed by said delay means for demodulating said main channel component and said first sub-channel component, and

means (**60**) responsive to said second sampling pulse series (S_z) and to said composite signal for demodulating said second sub-channel component.

3,961,277
FREQUENCY DEMODULATOR, ESPECIALLY FOR DATA-TRANSMISSION SYSTEM

Umberto Rossi, Milan, and Pietro Basili, Pedaso, both of Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Apr. 8, 1975, Ser. No. 566,130
Claims priority, application Italy, Apr. 8, 1974, 21025/74
Int. Cl.² H03D *3/20*
U.S. Cl. 329—128 **7 Claims**



1. A demodulator for an incoming oscillation including a succession of distinct signal frequencies, comprising:

wave-shaping means for converting said oscillation into a square wave;

differentiation means connected to said wave-shaping means for deriving from each discontinuity in the voltage of said square wave a pair of closely spaced trigger pulses following each other within a small fraction of a cycle of the highest signal frequency to be demodulated;

a source of clock pulses having a cadence which is high compared with said highest signal frequency;

a pulse counter connected to said source for stepping by said clock pulses;

storage means connected to said pulse counter for receiving the reading thereof;

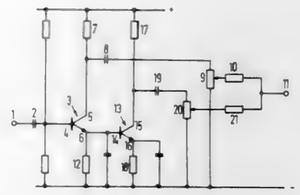
a digital/analog converter connected to said storage means for energization by the contents thereof, said storage means being connected to said differentiation means for enablement by the first trigger pulse of each pair to transfer the reading of said pulse counter to said converter, said pulse counter being connected to said differentiation means for resetting by the second trigger pulse of each pair immediately after each transfer; and

threshold means connected to said converter for comparing the output thereof with a fixed reference voltage.

3,961,278
TRANSISTOR AMPLIFIER

Robert Ronald Laupman, Wijchen, Netherlands, assignor to Novanex Automation N.V., Wijchen, Netherlands

Continuation of Ser. No. 372,998, June 25, 1973, abandoned.
This application Feb. 18, 1975, Ser. No. 550,434
Claims priority, application Netherlands, June 26, 1972, 7208762
Int. Cl.² H03F *3/04*
U.S. Cl. 330—21 **8 Claims**



1. A transistor amplifier system for amplifying and dividing a spectrum of frequencies contained in an input signal, comprising in combination:

a plurality of transistor amplifier stages connected in cascade, each stage including a transistor having a base electrode and an emitter-collector output path, there being at least two amplifier stages formed by a first and second transistor with the emitter-collector output path of said first transistor being connected to the base electrode of said second transistor; and

output means for providing the amplified and divided spectrum of frequencies, said output means including at least first and second coupling capacitors and an output terminal means;

said first transistor having its base electrode connected to receive the input signal to be amplified and having an emitter electrode and a collector electrode defining its emitter-collector output path;

said first coupling capacitor having a value to pass the higher frequency content of the amplified input signal and connected between one of said emitter and collector electrodes of said first transistor and said output terminal means;

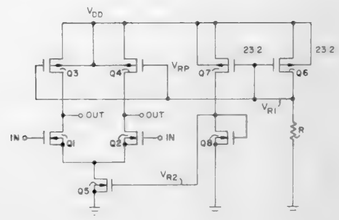
said second transistor having its base electrode connected with that electrode of the emitter-collector output path of said first transistor which is not connected with said first coupling capacitor so as to be biased predominantly by lower frequencies of the input signal, and having an emitter electrode and a collector electrode defining its emitter-collector output path; and

said second coupling capacitor having a value to pass said lower frequencies of the amplified input signal and connected between one of said emitter and collector electrodes of said second transistor and said output terminal means.

3,961,279
CMOS DIFFERENTIAL AMPLIFIER CIRCUIT UTILIZING A CMOS CURRENT SINKING TRANSISTOR WHICH TRACKS CMOS CURRENT SOURCING TRANSISTORS

Clark W. Davis, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 29, 1975, Ser. No. 545,097
Int. Cl.² H03F *3/16, 3/45*
U.S. Cl. 330—30 D **18 Claims**



1. A CMOS differential amplifier circuit including a first and second branch circuit, said amplifier circuit comprising:

a first CMOS amplifier transistor a source, a drain and a gate, the source to drain circuit thereof being in said first branch circuit of said amplifier,

a second CMOS amplifier transistor comprising a source, a drain, and a gate, the source to drain circuit thereof being in said second branch circuit of said amplifier parallel to said first branch circuit,

a CMOS current sourcing transistor having a source, a drain, and a gate, the source to drain circuit thereof being coupled to the source to drain circuit of said first amplifier transistor in said first branch circuit,

a CMOS current sinking transistor having a source, a drain, and a gate, the source to drain circuit thereof being coupled in common to the source to drain circuits of said two amplifier transistors,

a source of electrical potential, said two branch circuits and the source to drain circuit of said current sinking transistor being coupled in series across said source of potential,

and a CMOS control circuit for providing a first reference voltage to be applied to the gate of said current sourcing transistor and a second reference voltage to be applied to the gate of said current sinking transistor, said CMOS control circuit comprising;

a first CMOS control transistor having a source, a drain, and a gate,

a resistor circuit coupled in series with the source to drain circuit of said first control transistor across said source of potential, the gate of said first control transistor being coupled to the node of said resistor and said source to drain circuit of said first control transistor, the gate of said current sourcing transistor being coupled to said node whereby the voltage developed at said node is utilized as the first reference voltage to the gate of said current sourcing transistor,

a second CMOS control transistor comprising a source, a drain, and a gate, the gate thereof being coupled to the node of said resistor and said source to drain circuit of said first control transistor whereby said first reference voltage is applied to the gate of said second control transistor,

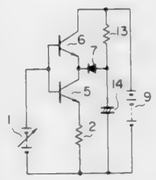
and a third CMOS control transistor having a source, a drain, and a gate, the source to drain circuit of said third control transistor being coupled in series with the source to drain circuit of said second control transistor across said source of potential, the gate of said third control transistor being coupled to the node of the source to drain circuits of said second control transistor and said third control transistor, the gate of said current sinking transistor being coupled to the node of said source to drain circuits of said second and third control transistors whereby the voltage developed at said node is utilized as the second reference voltage to the gate of said current sinking transistor,

the ratios of the channel widths of said three control transistors, said current sourcing transistor, and said current sinking transistor being such that the value of the second reference voltage applied to the gate of the current sinking transistor produces a current limiting value therein which is about twice the current limiting value produced in said current sourcing transistor by said first reference voltage applied to the gate of said current sourcing transistor.

3,961,280
AMPLIFIER CIRCUIT HAVING POWER SUPPLY VOLTAGE RESPONSIVE TO AMPLITUDE OF INPUT SIGNAL

Tohru Sampei, Toyokawa, Japan, assignor to Hitachi, Ltd., Japan

Filed Aug. 23, 1974, Ser. No. 499,916
Claims priority, application Japan, Aug. 25, 1973, 48-94861
Int. Cl.² H03F *3/04*
U.S. Cl. 330—40 **6 Claims**



1. An amplifier circuit of a high efficiency adopted to be used as an output circuit of an amplifier, said amplifier circuit comprising:

a first transistor for amplifying an incoming input signal applied to a base of said first transistor;

means for connecting an emitter of said first transistor to a reference potential point through means for passing a DC current;

a second transistor having a base receiving said incoming input signal applied to the base of said first transistor and an emitter connected to a collector of said first transistor;

a single power source for applying a bias voltage to each of said first and second transistors;

means for connecting a collector of said second transistor to said power source;

a series connection of a resistance element and a capacitive element connected in parallel with said power source, said capacitive element being provided on the side of said reference potential point;

a diode connected between the junction point between the collector of said first transistor and the emitter of said second transistor and the junction point between said resistance element and said capacitive element; and

a load connected to the emitter of said first transistor.

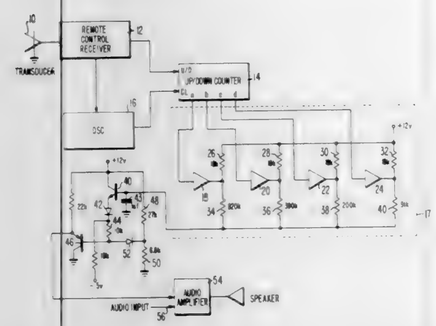
3,961,281
DIGITAL CONTROL SYSTEM

Kenneth Rau Woolling, Jr., Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 23, 1975, Ser. No. 580,680
Int. Cl.² H03G *3/00*
U.S. Cl. 330—129 **4 Claims**

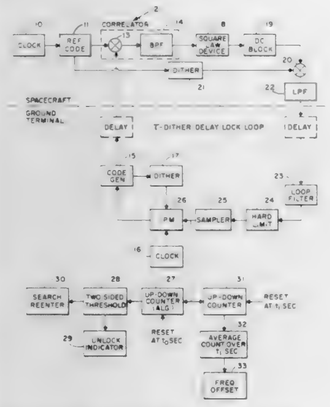
1. Apparatus responsive to transmitted remote control signals for providing a control voltage suitable for controlling the gain of a voltage controlled amplifier comprising:

receiving means responsive to said transmitted control signals for providing actuating signals;
pulse generating means responsive to said actuating signals for providing a series of output pulses;
counting means responsive to pulses from said generating means for providing numerical representative binary coded output signals;



digital-to-analog converter means responsive to signals from said pulse responsive means for providing an output voltage level representative of said binary coded signals; and
means responsive to said output voltage level from said converter means for providing a modified output voltage having a first rate of change with respect to said numerical representative signals for output voltage levels of a first voltage range and a second rate of change with respect to said numerical representative signals for output voltage levels of a second voltage range.

3,961,282
TRACKING STATUS DETECTOR FOR A DIGITAL DELAY LOCK LOOP
Chang Chung Chen, Harbor City; Jack K. Holmes, Los Angeles, and James L. Lewis, Torrance, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 28, 1975, Ser. No. 572,557
Int. Cl.² H03B *3/04*
U.S. Cl. 331—1 R **9 Claims**

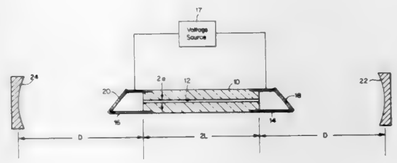


3. In a method for monitoring the tracking status of a digital phase-locked loop which contains an incremental phase modulator which periodically makes positive and negative adjustments to the pulses generated within said loop so as to increase or decrease their lengths by fractional amounts, the steps of
determining the algebraic sum of the positive and negative adjustments that are made during successive time intervals of equal lengths; and
indicating whenever this sum attains a particular threshold value which is selected to correspond to a specific amount of misalignment between the pulses being phase locked.

7. Apparatus for monitoring the tracking status of an analog phase-locked loop of the type wherein a voltage controlled oscillator is adjusted by a phase error signal developed within the loop, comprising in combination
means for converting said phase error signal into a digital signal which is indicative of the sign and amplitude of said phase error signal;
an adder-subtractor;
means for applying said digital signal to said adder-subtractor at a specified rate; and
means for indicating whenever the quantity registered in said adder-subtractor reaches a predetermined value within mutually exclusive, equal time intervals.

9. Apparatus for monitoring the tracking status of an analog phase-locked loop of the type that has a voltage controlled oscillator therein which is regulated by a phase error signal whose sign and amplitude represent the direction and amount of phase displacement between the two signals involved in the phase-locked process, comprising
means for converting said phase error signal into a one-bit binary code,
said bit being positive or negative depending upon the sign of said phase error signal;
an up-down counter; and
means for feeding said one-bit binary code to said up-down counter at a rate governed by the amplitude of said phase error signal;
means for periodically resetting said up-down counter to zero; and
means for providing an indication whenever the count registered in said up-down counter reaches a preselected threshold value.

3,961,283
WAVEGUIDE GAS LASER WITH WAVELENGTH SELECTIVE GUIDE
Richard L. Abrams, Pacific Palisades, and Arthur N. Chester, Malibu, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Mar. 14, 1975, Ser. No. 558,612
Int. Cl.² H01S *3/03*
U.S. Cl. 331—94.5 C **9 Claims**



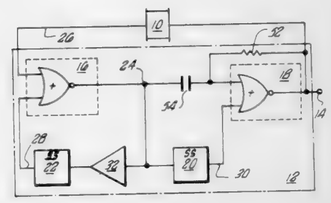
1. A gas laser comprising:
a waveguiding member defining a capillary bore of radius a and length 2L,
a laser gas disposed within said bore and having a laser transition capable of providing stimulated emission of light at wavelength λ,
means in association with said waveguiding member for providing an enclosure for said laser gas,
means for exciting said laser gas to invert the population of the energy levels of said laser transition,

optical resonator means for reflecting light of wavelength λ back and forth through said capillary bore; and
said bore radius a and length 2L and said wavelength λ each being of a preselected value satisfying the relation

$$\frac{a^2}{\lambda L} = \frac{1}{8N},$$

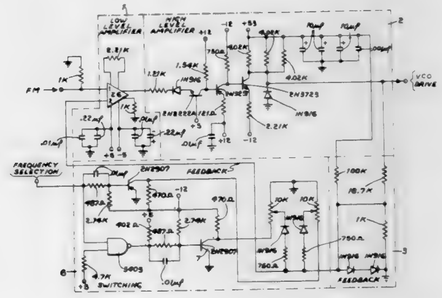
where N is a positive integer.

3,961,284
OSCILLATOR CONTROL CIRCUIT
Laurence Paul Flora, Covina, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Aug. 1, 1975, Ser. No. 601,198
Int. Cl.² H03B *5/36*
U.S. Cl. 331—116 R **9 Claims**



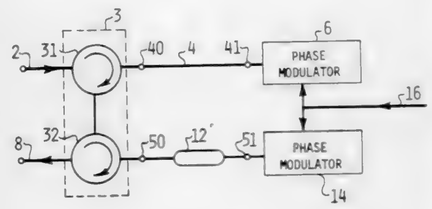
1. In an oscillator for which output is sustained by a feedback path for a harmonic-rich oscillating element, a frequency determining circuit in the feedback path, comprising:
a pair of single-shot multivibrators having relaxation periods between a quarter-period and a half-period of a desired oscillation harmonic and responsive to transitions in the output of the element, the first responsive to transitions to one polarity and the second responsive to transitions to the opposite polarity;
summing means for the output of each said multivibrator and the output of the element corresponding thereto; and
means to connect the output of said summing means as feedback excitation for the element.

3,961,285
VOLTAGE CONTROLLED OSCILLATOR DRIVER
Ronald H. Jelinek, Pine Brook, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Sept. 23, 1971, Ser. No. 183,121
Int. Cl.² H03C *3/00*
U.S. Cl. 332—16 T **3 Claims**



1. A circuit for driving a voltage controlled oscillator which is to be switched between two preset variable frequencies and for simultaneously imposing frequency modulation about a selected center frequency comprising:
low level amplifying means having two inputs, one of said inputs being connected to a frequency modulating signal and having an output for driving a voltage controlled oscillator;
high level amplifying means having an input coupled to the output of said low level amplifying means;
a feedback circuit having an input coupled to the output of said high level amplifying means, said feedback circuit for generating a controlling DC voltage which is applied to the other input of said low level amplifying means; and
means for changing the output of said feedback network as a function of frequency.

3,961,286
REFLECTION TYPE PHASE MODULATOR HAVING REDUCED TEMPERATURE SENSITIVITY AND REDUCED DISTORTION
Young Dae Kim, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 10, 1975, Ser. No. 557,197
Int. Cl.² H03C *3/20*
U.S. Cl. 332—22 **6 Claims**



1. A phase modulator comprising:
four port circulating means having a first port for receiving an applied carrier signal, a second port for supplying a phase modulated signal, a third port and a fourth port;
first phase modulating means having a modulation signal input and a signal port with a first reflection coefficient for phase varying a signal applied to the signal port in response to a modulating signal applied to the modulation signal input;
second phase modulating means having a modulation signal input and a signal port with a second reflection coefficient for phase varying a signal applied to the signal port in response to a modulating signal applied to the modulation signal input;
means for connecting the third port of the circulating means to the signal port of the first phase modulating means; and
means coupled to the fourth port of the circulating means and to the signal port of the second phase modulating means for causing the second reflection coefficient of the second signal port to be equal in magnitude with the first reflection coefficient of the first signal port and substantially 180° different in phase.

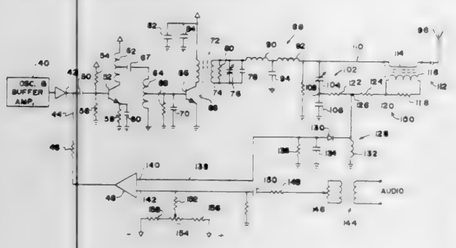
3,961,287
AMPLITUDE MODULATED TRANSMITTER
John Cacciola, Ardsley, and David W. Thomas, Lederach, both of Pa., assignors to PRF, Inc., Lansdale, Pa.
Filed Apr. 16, 1975, Ser. No. 568,802
Int. Cl.² H03C *1/06*
U.S. Cl. 332—37 D **7 Claims**

1. An amplitude modulated transmitter, comprising:
means for providing a carrier frequency signal at an output;
diode modulation means connected in series with the output of said carrier frequency means for modulating the car-

rier frequency signal in response to a modulation signal which varies the bias of said diode modulation means;

amplifier means, said amplifier means receiving the modulated carrier frequency signal and amplifying the same to provide an amplified output signal;

directional coupler sampler means connected to the output of said amplifier means, said directional coupler means including voltage coupling means, current coupling means, and signal processing means responsive to said voltage and current coupling means for providing a sensed output signal proportional to the modulation output of said amplifier means;



an audio frequency signal input means for providing an audio frequency signal; and

difference amplifier means, said difference amplifier means being provided with a first and a second input, said first input receiving said sensed output signal and said second input receiving said audio frequency signal, said difference amplifier means producing a difference output signal which is applied to said diode modulation means as the modulation signal whereby the amplitude modulated transmitter may be operated at high levels of efficiency with a minimum of distortion.

3,961,288

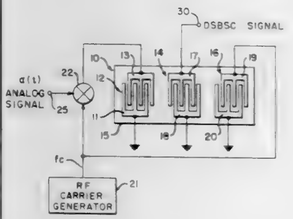
DOUBLE SIDEBAND SUPPRESSED CARRIER MODULATOR USING SURFACE WAVE DEVICE

Robert S. Gordy, Largo, Fla., assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 28, 1975, Ser. No. 570,145

Int. Cl.² H03C *1/46, 1/52*

U.S. Cl. 332—44 **17 Claims**



16. A method for generating a double sideband suppressed carrier signal comprising the following steps:

generating a first acoustic signal from a carrier signal;

generating a second acoustic signal from a modulated carrier signal;

combining the first and second acoustic signals; and

deriving a double sideband suppressed carrier signal from the combined first and second acoustic signals.

3,961,289

ULTRASONIC DELAY MATERIAL

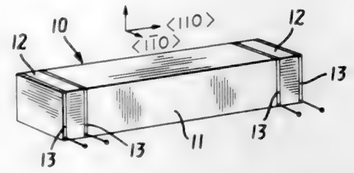
Yoshihiro Kino, Kawasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Continuation-in-part of Ser. No. 340,458, March 12, 1973, abandoned. This application Aug. 30, 1974, Ser. No. 502,187

Claims priority, application Japan, Mar. 15, 1972, 47-27035

Int. Cl.² H03H *9/26, 9/30*

U.S. Cl. 333—30 R **10 Claims**



1. A process for producing a time delay in ultrasonic wave signals comprising the step of propagating an ultrasonic wave signal through a single crystal of a spinel-type oxide material exhibiting a cooperative Jahn-Teller effect, said oxide being maintained in a temperature-controlled environment at temperatures near and above the Jahn-Teller phase transition temperature thereof.

3,961,290

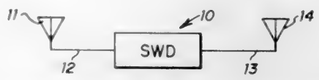
PROGRAMMABLE PHASE CODED SURFACE WAVE DEVICE

Samuel D. Moore, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 7, 1975, Ser. No. 547,900

Int. Cl.² H03H *9/26, 9/30, 9/32*; **H03K** *13/02*

U.S. Cl. 333—30 R **12 Claims**



1. An acoustic surface wave programmable processor comprising:

substrate means having at least a surface layer of piezoelectric material,

means to produce respective first and second acoustic surface waves of opposite phase wherein the second acoustic surface wave is at least substantially the inverse of the first acoustic surface wave in the piezoelectric material of said substrate means and propagating along two distinct paths,

a first output transducer array having a plurality of sets of electrode elements on the piezoelectric surface of said substrate means and disposed in the first path for sampling the first acoustic surface wave to be propagated therein at spaced time points corresponding to said sets of electrode elements along said first path,

a second output transducer array having a plurality of sets of electrode elements on the piezoelectric surface of said substrate means and disposed in the second path for sampling the second acoustic surface wave to be propagated therein at spaced time points differing from the spaced time points in said first path at which the first acoustic surface wave to be propagated is sampled by said first output transducer array, and

means operably connected to said first and second output transducer arrays for combining respective electrical output signals from sets of electrode elements at successive time points along said first and second paths from said first and second output transducer arrays.

3,961,291

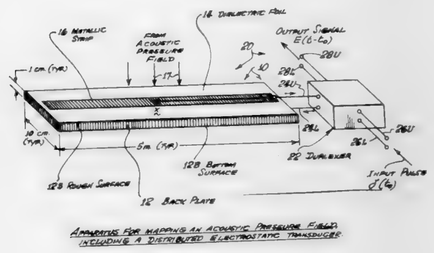
APPARATUS AND METHOD FOR MAPPING ACOUSTIC FIELDS

Harper John Whitehouse, and Tibor G. Horwath, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 319,124, Dec. 29, 1972, Pat. No. 3,868,624. This application Nov. 29, 1974, Ser. No. 528,176

Int. Cl.² H01P *3/08*; **H04B** *13/00*; **H03H** *9/00*

U.S. Cl. 333—31 R **3 Claims**



1. Apparatus useful for mapping acoustic pressure fields, P ($\underline{k}$,w), where $\underline{k}$ is a wave vector and w is frequency, comprising:

a distributed electrostatic transducer, functioning as a strip transmission line, which includes;

a flat, substantially rectangular, metal plate, one surface of which is rough, the plate having a length generally in the range of 10 to 100 wavelengths of the acoustic frequency at which the mapping is to be done, and a width and thickness in the range of 0.05λ and 0.01λ;

a rectangular strip of dielectric foil disposed under surface tension on the rough surface of substantially the entire metal plate so that the foil touches only the most protruding parts of the surface; and

a long, narrow, rectangular, metallic strip disposed on and attached to the dielectric foil, the strip being exposed to, and therefore defining, an acoustic pressure field; and

a duplexer, electrically connected to the metallic strip and to the flat plate, connectable to a a source of electrical input signals, and having output terminals at which an output electrical signal may be measured;

with the result that, when an electromagnetic delta function $\delta(t_o)$ is applied at the input to the duplexer, electromagnetic waves travel in both directions along the strip transmission line, the duplexer having the function of separating the signal reaching the output terminals of the duplexer from the applied signal $E(t-t_o)\ \delta(t_o)$ which is interrogating the strip line, the first mentioned signal containing two groups of frequencies:

1. low frequency components w_s identical to those present in the acoustic pressure field, and

2. high-frequency components containing the wave vectors $\underline{k}_s$, also present in the acoustic pressure field, the two components being readily separable, because of the great differences in their frequencies, and hence the pressure field P(k,w) may be reconstructed.

3,961,292

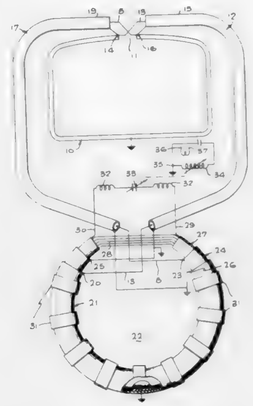
RADIO FREQUENCY TRANSFORMER

Ross Alan Davis, 724 Ala Moana Blvd., Honolulu, Hawaii 96813

Continuation of Ser. No. 430,095, Jan. 2, 1974, abandoned. This application May 19, 1975, Ser. No. 578,642

Int. Cl.² H03H *7/38*; **H01Q** *1/32*

U.S. Cl. 333—32 **7 Claims**



1. A radio-frequency transformer system, including:

a source of push-pull radio-frequency signals having first and second output terminals at respective ones of which radio-frequency signals of substantially equal amplitude but opposite phase appear;

a transformer primary having first and second hollow tubular portions, said second portion being nested within but electrically insulated from said first portion; and,

a secondary winding including multiple turns of an electrical conductor passing through the inner opening of said second portion of said primary;

said first and second portions of said primary each having a first and a second end, said first end of said first portion being coupled to said first output terminal, said first end of said second portion being coupled to said second output terminal;

said first end of said first portion being juxtaposed to said second end of said second portion and said first end of said second portion being juxtaposed to said second end of said first portion.

3,961,293

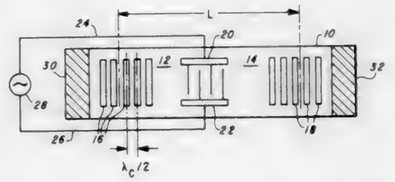
MULTI-RESONANT SURFACE WAVE RESONATOR

Clinton S. Hartmann, Richardson, and Jeffrey Stuart Schoenwald, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 3, 1975, Ser. No. 546,358

Int. Cl.² H03H *9/02, 9/20, 9/26, 9/32*

U.S. Cl. 333—72 **19 Claims**



1. A surface wave multi-resonant device comprising:

substrate means having at least a surface layer of piezoelectric material,

acoustic surface wave transducer means disposed on said piezoelectric surface of said substrate means and being operable to convert an input electrical signal to acoustic surface waves propagating on said piezoelectric surface of said substrate means,

means defining first and second reflective structures on the piezoelectric surface of said substrate means for respectively substantially reflecting acoustic surface waves propagating on the surface of said substrate means,

said first and second reflective structures being disposed in opposing alignment with respect to each other and being spaced apart to cooperatively define a resonant cavity capable of supporting acoustic surface wave standing wave resonance at a plurality of distinct frequencies falling within the effective reflecting bandpass of said first and second reflective structures, and

the effective centers of reflection of said first and second reflective structures being separated by a distance L and there being at least two values for the integer N in the equation:

$$L = \lambda[(N/2) - (\theta_r/360)],$$

where

λ is the wavelength of the acoustic surface wave being propagated, and

θ_r is the reflection phase angle,

such that at least two values of the wavelength θ correspond to surface wave frequencies falling within the effective reflecting bandpass of said first and second reflective structures.

3,961,294

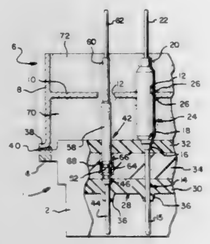
CONNECTOR HAVING FILTER ADAPTOR

Robert David Hollyday, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 21, 1975, Ser. No. 569,919

Int. Cl.² H03H *7/04, 7/14;* **H01R** *25/08, 3/06*

U.S. Cl. 333—79 **4 Claims**



1. A connector, comprising:

a conducting shell having an interior web provided with apertures therethrough,

first and second conductive pins freely received through said apertures,

an electrical filter of sleeve configuration soldered over at least one first pin,

the outer periphery of each said filter being soldered within a corresponding aperture of said web,

a connector housing secured to said shell,

a seal of resilient material in the interior of said connector compressibly encircling said first and second pins,

said connector housing being provided with latching means latchably securing at least one second pin within said connector housing, and

encapsulant material in said shell encircling said first and second pins and separating each said second pin from said web.

3,961,295

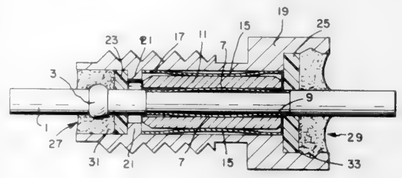
SOLDERLESS FILTER ASSEMBLY

Robert David Hollyday, Hershey, Pa., and Jack Leo Bradbery, Evergreen Park, Ill., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 25, 1975, Ser. No. 561,808

Int. Cl.² H03H *7/04;* **H01G** *4/42*

U.S. Cl. 333—79 **2 Claims**



1. A solderless filter assembly, comprising:

a feed-through type filter of sleeve configuration,

a conductive pin,

a first resilient spring connecting an internal surface of said filter to said conductive pin projecting through said filter,

a conductive housing receiving said filter and said pin,

a second resilient spring received in said housing against an internal flange and electrically connecting an external surface of said filter with an internal surface of said housing,

opposite ends of said housing being provided with corresponding recesses,

opposite ends of said pin projecting outwardly of said recesses,

nonconductive sealing means press-fit internally of each recess and in encirclement about said pin for sealing said filter and said first and second springs internally of said housing, and

nonconductive potting material in said recesses provided in said housing bonded to said housing and bonded in encirclement about said pin.

3,961,296

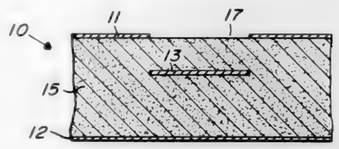
SLOTTED STRIP-LINE

James T. Wiggenhorn, Coral Springs, Fla., assignor to Motorola, Inc., Chicago, Ill.

Filed Mar. 6, 1975, Ser. No. 555,930

Int. Cl.² H01P *3/08*

U.S. Cl. 333—84 M **10 Claims**



1. An improved strip-line transmission line comprising:

a. first and second spaced apart ground planes formed of parallel, coextensive sheets of conductive material;

b. a center conductor positioned between said first and second ground planes and extending from one end of the transmission line to the other, parallel with said ground planes and spaced therefrom;

c. a dielectric material filling the volume between said ground planes and fixedly engaging said first and second ground planes and said center conductor; and

d. an elongated channel formed in one of said first and second ground planes in overlying relationship to said center conductor, said channel extending the length of said center conductor, and the width of said channel being adjusted to introduce a predetermined impedance in the transmission line throughout the length thereof.

3,961,297

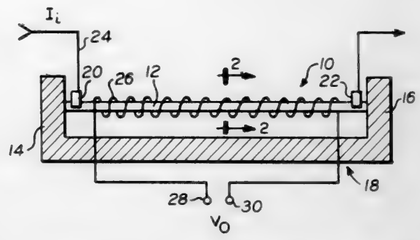
ELECTROMAGNETIC ANISOTROPIC DEVICES

Ivan J. Garshelis, 61 Oleander Way, Clark, N.J. 07066

Filed July 12, 1974, Ser. No. 488,209

Int. Cl.² H01H *55/00*

U.S. Cl. 335—3 **5 Claims**



1. An electromagnetic device comprising a current conductive rod which exhibits magnetic anisotropy in other than a purely circular or longitudinal direction, a conductive coil wound about said rod, and means for applying an alternating current through said rod of sufficient magnitude to produce a helical magnetization of said rod in a given direction during one half-cycle of said current and for reversing the direction of said helical magnetization during the next half cycle of said current, whereby to produce a change in the linkage of axial flux in said rod with said conductive coil to cause an AC output signal at the terminal thereof.

3,961,298

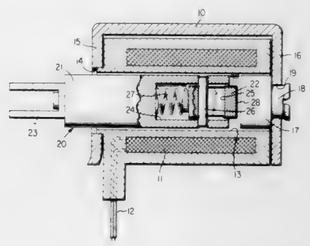
DUAL PLUNGER SOLENOID

Wolfgang Jaffe, Roselle Park, and Oswald M. Porter, Livingston, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed May 7, 1975, Ser. No. 575,282

Int. Cl.² H01F *7/18*

U.S. Cl. 335—259 **4 Claims**



1. A solenoid having a current carrying coil and an armature assembly located within and movably longitudinally of said coil, said armature assembly including a primary plunger and at least one secondary plunger telescopically arranged and mechanically interconnected with said primary plunger for limited axially movement relative to the primary plunger and having its end portion normally projecting beyond the end portion of said primary plunger for movement in the same air gap as that traversed by the primary plunger upon energization of the solenoid, said mechanical interconnection between said primary and secondary plungers being such that the initial movement of said second plunger exerts an immediate pulling force on said primary plunger.

3,961,299

MAGNETIC CIRCUIT HAVING LOW RELUCTANCE

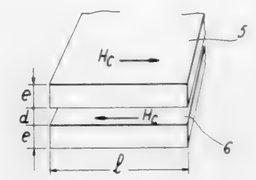
Jean-Pierre Lazzari, Seyssinet, and Igor Melnick, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris and Compagnie Internationale pour l'Informatique, Louveciennes, both of, France

Continuation of Ser. No. 294,601, Oct. 3, 1972, abandoned, which is a continuation of Ser. No. 81,887, Oct. 19, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,544

Claims priority, application France, Oct. 28, 1969, 69.36864

Int. Cl.² H01F *27/24;* **G11B** *5/16*

U.S. Cl. 336—218 **2 Claims**



1. A magnetic element comprising an alternate stack of anisotropic thin films of Fe-Ni-Cr alloy having an easy axis of magnetization and a hard axis of magnetization, a demagnetizing field and a coercive field and of non-magnetic insulating thin films, the demagnetizing field of two successive films of Fe—Ni—Cr being in opposite directions, said Fe—Ni—Cr films being even in number and said non-magnetic insulating films having a thickness providing a value of the difference between the emagnetizing fields of two successive films of Fe—Ni—Cr alloy equal at a maximum to the value of the coercive field of each Fe—Ni—Cr film.

3,961,300

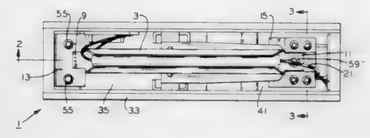
THERMAL TIMER, THERMAL ACTUATOR, CONTROL SYSTEM AND CIRCUIT

Stanley J. Budlane, Fulton, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed June 18, 1974, Ser. No. 480,562

Int. Cl.² H01H *37/02*

U.S. Cl. 337—303 **12 Claims**

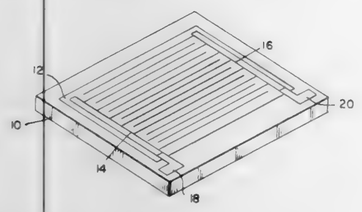


1. A thermal timer comprising a housing, means responsive to oppositely acting thermal differentials established thereacross for pivotally moving generally in opposite directions through a predetermined timed cycle including a pair of generally elongate metallic strips disposed at least in part in spaced overlaying relation with each other, a pair of opposite end portions on each of said strips, one of said opposite end portions of said strips being interconnected, and means fixedly connected between the other of said opposite end portions for spacing them apart so that said spacing means and said strips constitute a generally triangularly shaped integral truss, means for mounting only said spacing means to said housing so that said strips may pivotally move generally in the opposite directions about said spacing means, and a pair of means respectively associated with said strips and adapted to be energized for alternately heating said strips to establish the thermal differentials thereacross and effect the pivotal movement of said strips in the opposite directions about said spacing means and through the predetermined timed cycle.

3,961,301
HUMIDITY SENSOR

Anthony V. Fraioli, Essen Fells, N.J., assignor to Plessey Incorporated, Melville, N.Y.

Filed Dec. 13, 1973, Ser. No. 426,953
Int. Cl.² H01C *13/00*
U.S. Cl. 338—35 **5 Claims**

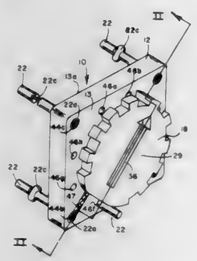


1. A humidity sensor comprising:
a high-temperature resistant dielectric substrate;
a fired layer of cobalt oxide on a major surface of said substrate;
a pair of electrodes in contact with said cobalt oxide; and
a porous, non-wettable coating covering at least said cobalt oxide layer.

3,961,302
VARIABLE RESISTANCE CONTROL

James N. Hufford, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Filed Nov. 15, 1974, Ser. No. 524,089
Int. Cl.² H01C *10/34*
U.S. Cl. 338—174 **9 Claims**

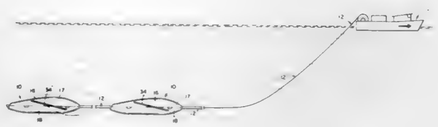


1. In a variable resistance control, the combination of an electrically nonconductive substrate provided with an aperture and a plurality of sets of locator means disposed around the periphery of the substrate, each of said locator means in the set being equidistant from the next closest locator means in the set, the first set of said locator means being disposed in the corners of the substrate a first distance from said aperture, the remainder set of said locator means being symmetrically disposed about the aperture a second distance from said aperture, said first distance being greater than said second distance, resistance means supported on a first surface of the substrate, an electrically conductive collector carried on said first surface of the substrate, adjusting means rotatably secured to the substrate, a projection connected to the adjusting means and extending radially outwardly from the adjusting means, an electrically conductive contactor constrained to move with the adjusting means and wipably engaging the resistance means and the collector, the contactor being electrically insulated from the adjusting means, a plurality of terminal members disposed in a predetermined number of said first set of locator means and in a predetermined number of said remainder set of said locator means, the terminal members being electrically connected to the resistance means and to the collector, said terminal members electrically connecting the variable resistance control to an external circuit, the terminal member disposed in the remainder set of said locator means being in an interference path with said projection and comprising an engagement portion extending above said first surface.

3,961,303
DEPTH CONTROLLERS WITH CONTROLLABLE NEGATIVE AND UNCONTROLLABLE POSITIVE LIFT-PRODUCING MEANS

John Lloyd Paitson, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed May 8, 1974, Ser. No. 468,129
Int. Cl.² G01V *1/00*
U.S. Cl. 340—7 PC **10 Claims**

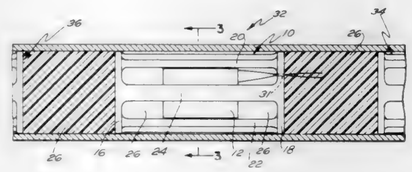


1. A depth controller for controlling the depth at which an object coupled to the controller is towed in a body of water, said controller comprising:
a streamlined body;
depth control elements movably mounted in said body to produce only negative lift; and
depth control means including means operatively coupled to said elements to extend and retract them from and into said body in dependence upon the depth of the controller in said water.

3,961,304
DECOUPLED HYDROPHONE WITH REDUCED RESPONSE TO VIBRATION AND STRESS CONCENTRATION

Henry P. Bakewell, Jr., Old Saybrook, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 21, 1974, Ser. No. 516,330
Int. Cl.² G01V *1/00*; **H04B** *13/00*; **H04R** *15/00*
U.S. Cl. 340—7 R **7 Claims**

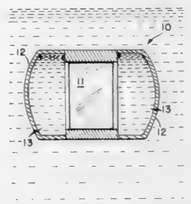


1. An acoustic array including a longitudinal tube having a plurality of hydrophone assemblies mounted therein, each of said hydrophone assemblies comprising:
a structure including a plurality of longitudinally disposed ribs secured by a pair of discs at the ends thereof;
an electro-acoustic transducer element housed in said structure; and
an elastic fill material for maintaining said transducer element in place in said structure, said fill material being potted in said structure, thereby reducing vibration and flow noise, and enhancing mechanical protection.

3,961,305
FLUID FOR FILLING SONAR TRANSDUCERS

Charles E. Green, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 14, 1975, Ser. No. 550,067
Int. Cl.² H04B *13/00*
U.S. Cl. 340—8 LF **2 Claims**

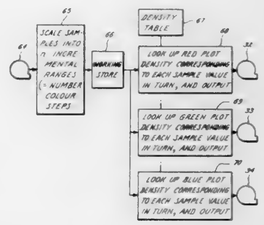


1. In a transducer of acoustic energy having a housing containing a ferroelectric element to be acoustically coupled to an acoustic window, an improvement therefor is provided comprising:
polyakylene glycol having acoustic properties making its velocity of sound propogation nearly equal to that of water, its density nearly equal to water, its acoustic impedance nearly equal to water and its signal attenuation nearly negligable, chemical properties ensuring long time stability and compatibility with other transducer materials, physical properties making its viscosity lower only thirty centistokes from zero to twenty degrees centigrade, and environmental properties allowing safe handling, fills the housing and all voids therein for acoustically coupling the active element to the acoustic window.

3,961,306
METHOD OF FORMING COLOR GRAPHIC DISPLAYS FROM INPUT DATA

Nigel A. Anstey, Sevenoaks, England, assignor to Seiscom Delta Inc.

Division of Ser. No. 300,718, Oct. 25, 1972, abandoned. This application May 23, 1975, Ser. No. 580,437
Claims priority, application United Kingdom, Oct. 28, 1971, 50199/71
Int. Cl.² G01V *1/34*
U.S. Cl. 340—15.5 DS **28 Claims**

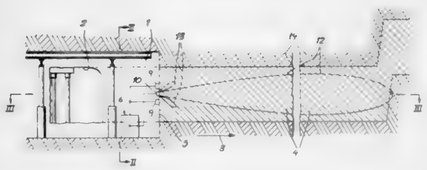


1. A method of forming color graphic displays directly from a sequence of input digital data values, wherein differing colors at data display points in the color displays are quantitatively indicative of differing values or ranges of values of the digital data, comprising:
a. forming an assignment table comprised of a set of numerical codes referenced as a two-dimensional matrix wherein one dimension of the matrix represents sample values of the data to be displayed, each sample value representing an assigned range from a plurality of ranges into which the input data values are partitioned, and the other dimension of the matrix representing a plurality of component displays, one component display for each component color in the color displays to be formed, said numerical codes specifying the visual image densities to be formed at data display points of the component displays and further specifying the relative density of each component color in the color correspondng to the sample value associated with such display points;
b. processing the input digital data sequence to determine the sample values for the data display points;
c. assigning numerical codes from the assignment table to define image densities of the data display points according to the sample values thereof;
d. organizing the numerical codes assigned to the data display points into output sequences for each of the component displays;
e. forming a component display for each output sequence; and
f. displaying in superimposition the component displays in their respective component colors, to thereby form the color graphic display wherein the resulting colors of the data display points are quantitatively indicative of the input digital data.

3,961,307
EXPLORATION OF THE BOUNDARIES OF AN UNDERGROUND COAL SEAM

Hans-Joachim Hochheimer, Recklinghausen; Hans Haas, Essen; Hans-Ludwig Jacob, Recklinghausen; Paul Helling, Herne, and Bernhard Wulk, Essen, all of Germany, assignors to Ruhrkohle Aktiengesellschaft, Essen, Germany

Filed Sept. 10, 1974, Ser. No. 504,768
Claims priority, application Germany, Sept. 12, 1973, 2345884
Int. Cl.² G01V *1/00, 1/22*
U.S. Cl. 340—15.5 CP **9 Claims**



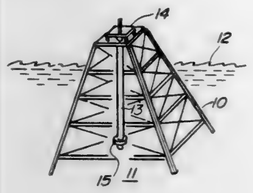
1. A method of exploring the boundaries of a coal seam, comprising the steps of:
emitting modulated monochromatic sound waves from a set of juxtaposed, coherently excited transmitting transducers at a location below ground into a coal seam to be explored, said location immediately adjoining said seam;
detecting, through a set of juxtaposed receiving transducers at said location, beamed reflections of said sound waves from a discontinuity of said seam;
scanning said discontinuity by operating at least one of said sets of transducers with a progressively varying phase relationship to change the direction of a major lobe of a directive pattern of said sound waves; and
determining the distance from said location to said discontinuity from the time lapse between emission and reception of said sound waves in different scanning positions of said directive pattern.

3,961,308

OIL AND GAS WELL DISASTER VALVE CONTROL SYSTEM

William H. Parker, Hurst, Tex., assignor to Del Norte Technology, Inc., Euless, Tex.

Filed Oct. 2, 1972, Ser. No. 294,289
Int. Cl.[2] G01V *1/14*; **E21B** *35/00*
U.S. Cl. 340—18 NC **7 Claims**



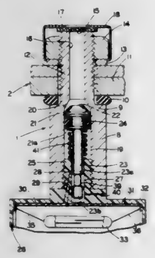
1. A system for communicating into an oil or gas well comprising a gas or oil tubing extending down into said well, transmitting sonic energy transducer means near one end of said tubing for distinctively activating said tubing walls with sonic energy to transmit signals to the walls of said tubing, said transducer comprising magnetostrictive means for supporting the weight of said tubing, wherein said magnetostrictive means comprises a plurality of nickel rods having coils thereon, means for periodically energizing said coils to change the length of the nickel rods thereby lifting and lowering said supported tubing, means near the other end of said tubing for detecting the signals transmitted through said walls, and means responsive to said detection of said signals for performing a control function near said other end of said tubing.

3,961,309

HIGH-LOW TIRE PRESSURE SIGNAL SWITCH

William C. Eddy, Columbus, Ohio, assignor to Aspro, Incorporated, West Port, Conn.

Continuation-in-part of Ser. No. 567,533, April 14, 1975. This application June 18, 1975, Ser. No. 587,994
Int. Cl.[2] B60C *23/02*
U.S. Cl. 340—58 **14 Claims**



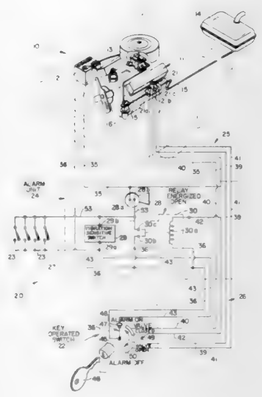
1. In a vehicle tire pressure signaling system of a type in which magnetically activated alarm circuitry is actuated by a pressure switch, the construction including pressure cylinder means having pressure and contactor ends; rod and O-ring piston means having pressure and switch contactor ends movable in said cylinder means; spring means in the cylinder means reacting between the cylinder and piston means normally biasing the piston means toward the cylinder means pressure end to maintain the piston means in an intermediate position when the pressure ends of the piston and cylinder means are exposed to predetermined desired tire pressure; the cylinder means contactor end having electrical contactors; the piston rod contactor end having contactor means adapted to engage the cylinder means contactors in switch closed position when the piston means is in intermediate position to provide a circuit through the piston rod; the piston means being movable in the cylinder means in one direction or the other from intermediate position upon change in tire pressure to above or below the said predetermined desired value to establish an open switch condition of the switch contactors and to open the circuit through the piston rod; and means connecting said switch contactors with magnetically activated signaling system circuitry.

3,961,310

VEHICLE ANTI-TAMPERING ANTI-THEFT PROTECTION SYSTEM

Daniel E. Grant, 3229 Yorkshire Road, Cleveland Heights, Ohio 44118

Continuation-in-part of Ser. No. 355,881, April 30, 1973, abandoned. This application June 28, 1974, Ser. No. 484,276
Int. Cl.[2] B60R *25/04*, *24/10*
U.S. Cl. 340—65 **11 Claims**



1. An anti-tampering anti-theft protection system for a vehicle of the type having a body, a plurality of closures on the body, and an engine supplied with fuel through a fuel supply connected to a fuel tank, comprising in combination:

a. a latching solenoid operated fuel cutoff valve interposed in the fuel supply for preventing the supply of fuel from the tank, said latching solenoid valve having at least three electrical terminals;

b. one pair of the terminals being operable, when energized, to close said valve;

c. another pair of the terminals being operable, when energized, to open said valve;

d. alarm means including a motion sensitive switch electrically connected to an audible signal device, the motion sensitive switch being operative when the alarm means is enabled to energize the signal device in response to sensed vehicle movement;

e. said alarm means further including a closure actuated switch electrically connected to said signal device and operative when said alarm means is enabled to energize said signal device in response to sensed opening of a body closure;

f. electrical switch means electrically connected through first conductor means to said one pair of terminals and to said alarm means;

g. the electrical switch means having an operator movable between alarm-on and alarm-off positions, said operator being operable upon movement from the alarm-off to the alarm-on positions to energize said one pair of terminals and to enable said alarm means;

h. the electrical switch means being electrically connected through second conductor means to said another pair of terminals;

i. the electrical switch means being operable upon movement of the operator from the alarm-off to the alarm-on positions to energize said another pair of terminals through the second conductor means piror to energizing said one pair of terminals through the first conductor means; and,

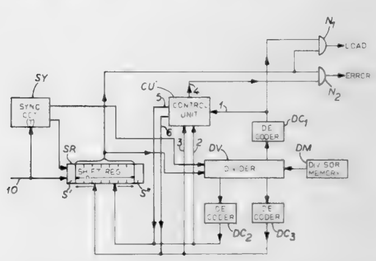
j. the electrical switch means additionally being operable upon movement of the operator from the alarm-on to the alarm-off positions to energize said one pair of terminals through said first conductor means prior to energizing said another pair of terminals through said second conductor means.

3,961,311

CIRCUIT ARRANGEMENT FOR CORRECTING SLIP ERRORS IN RECEIVER OF CYCLIC BINARY CODES

Gustavo Pavoni, Milan; Enzo Repossi, Voghera, and Mario Loiudice, Monza, all of Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Dec. 27, 1974, Ser. No. 536,992
Claims priority, application Italy, Dec. 27, 1973, 32267/73
Int. Cl.[2] G06F *11/00*; **H04L** *7/00*
U.S. Cl. 340—146.1 D **7 Claims**



1. In a receiver for cyclic binary codes forming *n*-bit code words with *k* information bits and (*n*-*k*) redundancy bits, the bits of each code word normally constituting the coefficients of a composite polynomial which is a multiple of a predetermined generator polynomial, in combination:

a shift register having an input connected to a communication channel carrying an unbroken succession of *n*-bit code words arriving during consecutive transmission cycles, said shift register including a group of *n* intermediate stages for the temporary storage of the bits of an incoming code word to be decoded, at least one initial stage upstream of said intermediate stages for the temporary storage of the first bit of an immediately succeeding code word, and at least one terminal stage downstream of said intermediate stages for the temporary storage of the last bit of an immediately preceding code word;

a divider with a dividend input connected only to said intermediate stages, a divisor input connected to a source of said generator polynomial, and output means carrying bits of a remainder resulting from the division of said generator polynomial into the composite polynomial defined by said *n* bits;

timing means for enabling the readout to said dividend input, during a predetermined period at the end of every *n*-bit transmission cycle, of the bits stored in said *n* intermediate stages;

discriminating means connected to said output means for generating a first signal in response to said remainder being zero, a second signal in response to said remainder having values indicative of a backward slip of the stored code word by a number of bit positions not exceeding the number of said initial stages, and a third signal in response to said remainder having values indicative of a forward slip of the stored code word by a number of bit positions not exceeding the number of said terminal stages;

gate means connected to said intermediate stages and to said discriminator means for reading out the stored code word to a load in response to said first signal; and

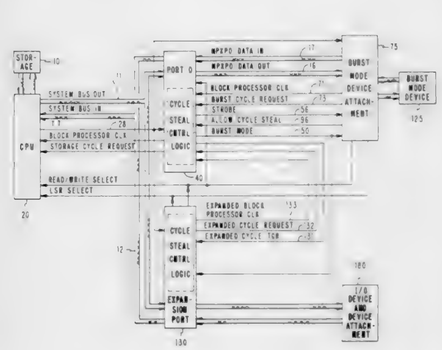
stepping means for said shift register connected to said output means for shifting the stored bits forward in response to said second signal and backward in response to said third signal, within said predetermined period, to an extent compensating for the slip indicated by said remainder, thereby enabling the readout of a corrected version of said stored code word to the load.

3,961,312

CYCLE INTERLEAVING DURING BURST MODE OPERATION

Ronald Eugene Bodner; Thomas L. Crooks; John E. Guest, all of Rochester, Minn.; Israel B. Magrisso, Coral Springs, Fla., and Keith K. Slack, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 15, 1974, Ser. No. 488,349
Int. Cl.[2] G06F *3/00*
U.S. Cl. 340—172.5 **12 Claims**



1. In a computer system including storage, central processing unit and I/O devices, said central processing unit being connected to said storage and to said I/O devices, said central processing unit including means for controlling the operation of said storage, and further including means for granting storage cycles to said I/O devices, at least one I/O device being connected to selectively operate in a dedicated mode, whereby said CPU grants successive storage cycles thereto without interruption, and at least one I/O device being connected to selectively operate in a non-dedicated mode, whereby storage cycles are granted thereto by said CPU when said I/O device operating in a dedicated mode is not operating or when said I/O device operating in a dedicated mode yields an allocated storage cycle while continuing to operate in said dedicated mode, the improvement comprising:

means for detecting when said I/O device operating in a dedicated mode is unable to use the next occurring storage cycle,

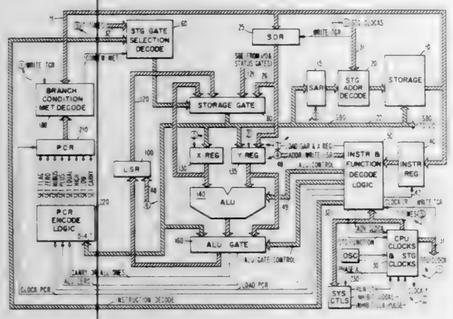
means for generating an allow signal in response to detecting when said I/O device operating in a dedicated mode is unable to use the next occurring storage cycle, and

means responsive to said allow signal for granting said next occurring storage cycle to said I/O device operating in said non-dedicated mode while said I/O device operating in said dedicated mode remains in said dedicated mode.

3,961,313
COMPUTER CONTROL APPARATUS

Ronald E. Bodner; Thomas L. Crooks, both of Rochester, Minn.; Israel B. Magrisso, Coral Springs, Fla.; Keith M. Slack, Rochester, Minn., and Richard S. Smith, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1974, Ser. No. 529,677
Int. Cl.² G06F 9/18
U.S. Cl. 340—172.5 **8 Claims**



1. Control apparatus for a stored program computer having an instruction cycle, said instruction cycle including an instruction fetch cycle, said instruction fetch cycle taking a finite period of time, said finite period of time including a portion of time for forming an address for the next instruction to be fetched, followed by an instruction execution cycle, said instruction execution cycle taking a finite period of time at least equal to said portion of time for forming an address for the next instruction to be fetched the improvement comprising

means for fetching and executing instructions, decoding means connected to said means for fetching and executing instructions for identifying that the instruction fetched is a branch instruction;

means connected to said means for fetching and executing instructions for forming the "branch to" instruction address during the execution of an instruction identified by said decoding means as a branch instruction and for furnishing said "branch to" instruction address to said means for fetching and executing instructions to enable the same to fetch said "branch to" instruction, and

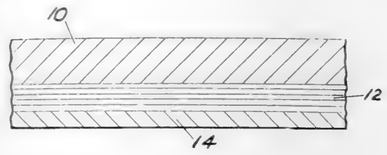
means responsive to said decoding means identifying the instruction fetched as a branch instruction for generating a control signal for skipping said portion of time for forming an address for the next instruction to be fetched during said instruction fetch cycle for said "branch to" instruction and furnishing said control signal to said means for fetching and executing instructions.

3,961,314
STRUCTURE AND METHOD FOR PRODUCING AN IMAGE

Peter H. Klose, Troy, and Stanford R. Ovshinsky, Bloomfield Hills, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Mar. 5, 1974, Ser. No. 448,289
Int. Cl.² G11C 11/42; H01L 17/00
U.S. Cl. 340—173 LS **79 Claims**

1. A structure comprising a layer comprising an imaging material which is capable of an image forming change upon the application of energy and wherein the image forming change can be promoted by a catalyst material, a barrier layer, comprising a barrier material, in contact on one side with said layer of imaging material, and in contact with said barrier layer on the opposite side thereof a layer comprising a catalyst material, which is capable of traversing the barrier layer and of promoting, in activated form, the image forming change in said layer of imaging material, wherein the layer of barrier

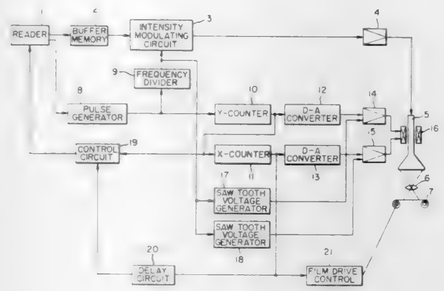


material has the capacity of controlling transmission of the catalyst material from the layer of catalyst material to the layer of imaging material in response to energy.

3,961,315
INFORMATION RECORDING SYSTEM

Noboru Yokoyama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 397,805, Sept. 17, 1973. This application Apr. 11, 1975, Ser. No. 567,054
Int. Cl.² G11C 13/04
U.S. Cl. 340—173 LM **18 Claims**



3. An information recording system for recording digital information upon a micro-film comprising:

a. a digital information source for generating digital information;

b. a micro-film having a base of a first density;

c. optical beam generating means for recording the information from said digital information source upon said micro-film;

d. control means for controlling the brightness and the location of said optical beam from said optical beam generating means to record said digital information intermittently in the recording direction as dark and light images, which are different from said first density;

said control means further including,

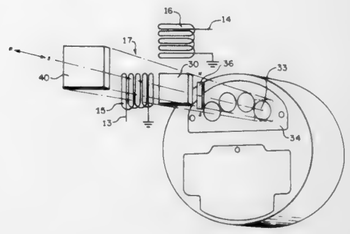
i. intensity modulating means, connected to said optical beam generating means, for modulating said optical beam to first, second and third brightnesses different from each other, wherein the second brightness and the third brightness correspond to the digital information from said digital information source, and

ii. deflecting means, operable in synchronism with said modulating means, for locating said optical beams along the recording direction so that said second or third brightness beams are alternately repeated with respect to said first brightness optical beam.

3,961,316
MECHANICALLY ACTUATED MAGNETOCRYSTALLINE COUNTER

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 23, 1974, Ser. No. 535,868
Int. Cl.² G11C 11/14
U.S. Cl. 340—174 TF **11 Claims**



1. A mechanically actuated magnetocrystalline counter for counting a series of mechanical events, said counter comprising:

a. a uniaxially anisotropic magnetrocrystalline platelet having means associated therewith for sustaining at least one movable cylindrical magnetic domain therein and means for guiding said domain to move sequentially through a predetermined shift register pattern of positions therein;

b. permanent magnet means mounted to be moved relatively to said platelet responsively to a mechanical event comprising a pair of apertured magnets mounted adjacent to each other in opposed polarity relationship with the apertures thereof aligned to form a central chamber in which said uniaxially anisotropic magnetocrystalline platelet is spring mounted for movement in and orthogonally to the central field of said apertured magnets responsively to a mechanical transient applied thereto by one of said mechanical events to be counted for generating a cyclically moving magnetic field for moving said at least one movable magnetic domain through said serial shift register formed in said platelet to form a bit stream which digitally accumulates data representative of said series of mechanical events, each cycle of said field motion resulting from one of said mechanical events and each said cycle of said field motion producing a single bit in said bit stream; and,

c. means to read out the count thereby accumulated in said shift register.

3,961,317
SYSTEM FOR REMOTE READING OF INDICATING DEVICES AS METERS AND THE LIKE

Francois Regis Marcetteau De Brem, Paris, and Maurice Denis Waroux, Deuil-la-Barre, both of France, assignors to Gaz de France, Paris, France

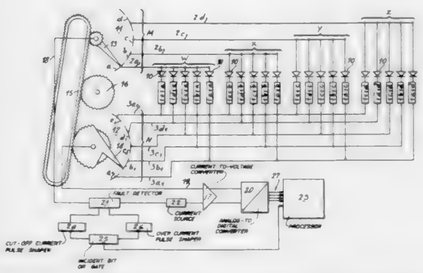
Filed May 3, 1973, Ser. No. 357,067
Claims priority, application France, May 8, 1972, 72.16391
Int. Cl.² G08C 15/06
U.S. Cl. 340—188 R **13 Claims**

1. An electrical apparatus for detecting, transmitting and storing in a remote central recording device under digital form the total number of events which have occurred from a known origin of time in each of a large set of indicating devices and for converting said digits in such a way that said number of events may be processed comprising:

individual means controlled by the relevant indicating device causing the change of state of an alternating electrical switch associated with an electrical impedance upon the occurrence of any relevant event such as the fact that a predeterminate amount of a physical magnitude has passed through a given indicating device;

means for electrically grouping several such alternating electrical switches associated each with an electrical impedance whereby the switches and the impedances are electrically connected together and with an additional failure detecting impedance not associated with any switch in such a manner that the impedances may be combined and wherein any individual switched impedance and said failure detecting impedance and any combination thereof is different from any other resultant impedance and combination thereof;

means for electrically connecting each of a plurality of such electrical groups of several alternating electrical switches associated each with an electrical impedance and said failure detecting impedance to one of M lines of a first lattice on the one hand and to one of N lines of a second



lattice on the other hand, whereby any one among the M lines of the first lattice may be connected to any one among the N lines of the second lattice through only one of said electrical groups of several alternating electrical switches and said failure detecting impedance, the maximum number of groups of switches so connected to both lattices being thus M times N;

means for cyclically scanning every group of switches by serially electrically energizing during short durations on the one hand each line of the M lines lattice and, during the energizing of said line, on the other hand each line of the N lines lattice, whereby the individual states of said electrically grouped switches are sensed, said sensing resulting in an elementary electrical current of short duration which is an image of said individual states of switches, and wherein the interval of time between two consecutive scannings of any group of switches is shorter than the minimum normal time interval covering two consecutive changes of state of any switch of said group;

analog-to-digital converter means receiving successively the elementary electrical currents of short durations which are each the image of the individual states of a group of switches and serially transmitting said elementary electrical currents and translating said image into an elementary logical binary electrical current the highs and lows of which represent the on and off states of the relevant individual switches;

a first memory means where said on and off states of the individual switches are stored;

means comparing the last sensed state of each individual switch with the state of the same switch sensed on the immediately preceding scanning as it is stored in a second memory means, whereby if the state of a switch is unchanged the record of the indication of the dial corresponding to the indicating device controlling said switch is unchanged, whereas if the state of a switch is altered with reference to the state of the same switch on the previous scanning the corresponding record of the indication of the dial is altered in a manner corresponding to the manner it would be altered if it were directly controlled by the relevant indicating device; and

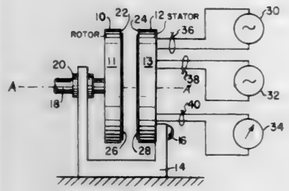
means to transfer the recording of the last scanning as it is in the first memory means to the second memory means

in place of the recording of the preceding scanning in order that a new comparison of the consecutive states of each switch at two successive scannings may be performed after the next scanning of the switches.

3,961,318
ELECTROSTATIC POSITION-MEASURING TRANSDUCER

Robert W. Farrand, Weston, Conn., and Joseph Elbling, Armonk, N.Y., assignors to Inductosyn Corporation, Valhalla, N.Y.

Filed Jan. 17, 1975, Ser. No. 541,983
Int. Cl.² G08C *19/16*
U.S. Cl. 340—200 **17 Claims**



1. A transducer having a plurality of measurement cycles comprising:

a. two relatively movable elements, each said element having a surface positiond in spaced opposition to a surface of the other element;

b. two sets of first electrodes fixed on the surface of one of said elements, each first electrode having a base portion and a finger portion extending from said base portion in a direction transverse to the path of relative movement of said elements, the finger portions of each set of first electrodes being uniformly spaced one measurement cycle apart, and the finger portions of one set of first electrodes being interdigitated at one-half cycle spacing with the finger portions of the other set of first electrodes;

c. two sets of second electrodes fixed on the surface of the other said elements, each set of second electrodes having finger portions extending in a direction transverse to said path and spaced approximately one cycle apart opposing the finger portions of said sets of first electrodes, the finger portions of one set of second electrodes being uniformly interdigitated with the finger portions of the other set of second electrodes;

d. first and second coupling electrodes fixed on the surface of said other of said elements, said coupling electrodes respectively opposing and capacitively coupling with the base portions of said two sets of first electrodes;

e. means for electrically interconnecting each set of second electrodes, respectively, and for connecting said sets of second electrodes in an external circuit; and

f. means for connecting said first and second coupling electrodes in an external circuit.

3,961,319
GROUND CIRCUIT MONITOR

James Robert Asberry, Mount Carmel, Ill., assignor to AMF Incorporated, White Plains, N.Y.

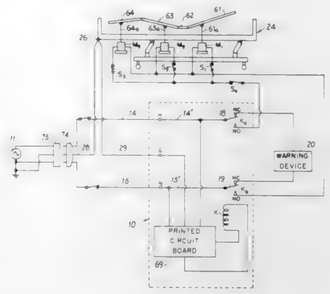
Filed May 21, 1975, Ser. No. 579,385
Int. Cl.² G08B *21/00*
U.S. Cl. 340—255 **18 Claims**

1. In a ground monitor device the combination comprising first, second and third input terminals for coupling thereto, respectively, the high, ground and neutral conductors of an electrical supply source, said ground and neutral conductors normally being coupled to earth ground at least at said source,

a relay winding connected between said high and neutral conductors,

switching means having first and second switching conditions connected between said high and neutral conductors,

said switching means operating to energize said relay winding when in its first switching condition and operating to deenergize the relay winding when in its second switching condition,



means responsive to the voltage between said second and third input terminals for producing a first signal when said voltage differs by a predetermined magnitude from a given voltage,

means coupling said switching means to the means responsive to the voltage between the second and third input terminals for operating the switching means to its second switching condition upon occurrence of said first signal,

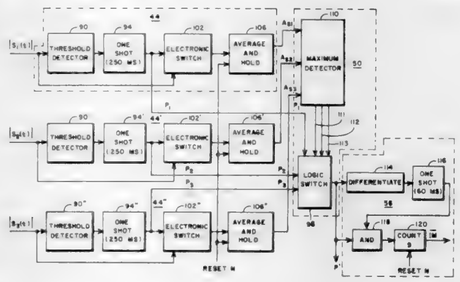
delayed operating latch means operatively coupled to said switching means for latching said switching means in its second switching condition at a fixed time delay after occurrence of said first signal, and

relay switch means operable in response to energization of said relay winding.

3,961,320
INTRUSION DETECTION SYSTEMS

David P. Erdmann, Hopkins, and Dennis L. Kurschner, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 368,162, June 8, 1973, Pat. No. 3,846,790. This application Sept. 3, 1974, Ser. No. 503,003
The portion of the term of this patent subsequent to Nov. 5, 1991, has been disclaimed.
Int. Cl.² G08B *13/00*
U.S. Cl. 340—258 D **5 Claims**



1. Improved intrusion detection apparatus utilizing seismic and magnetic disturbance information, comprising in combination:

seismic sensor means responsive to seismic disturbances in each of a plurality of locations along a predetermined boundary to produce a plurality of seismic sensor signals each of which is indicative of the disturbance in a distinct location;

magnetic sensor means producing a signal indicative of the magnetic disturbances in one location along a predetermined boundary;

seismic maximum means which receives said plurality of seismic sensor signals, and selects the largest average amplitude seismic sensor signal; and

a seismic signal frequency detector responsive to said largest average amplitude seismic sensor signal to detect whether the frequency of disturbances above a predetermined intensity represented thereby is below a predetermined frequency level.

3,961,321
OMNIDIRECTIONAL ULTRASONIC INTRUSION SURVEILLANCE UNIT

Royston Arthur Leslie Moss, "Fishpools", Werrington., Peterborough, England

Continuation-in-part of Ser. No. 397,853, Sept. 17, 1973, abandoned. This application Jan. 24, 1975, Ser. No. 543,821
Int. Cl.² G08B *13/16*
U.S. Cl. 340—258 B **7 Claims**

1. An omnidirectional ultrasonic surveillance unit for used in a closed environment and comprising:

a substantially closed shell forming a housing;

means for supporting the housing away from any ceiling, walls and floor of the closed environment so that there is open space substantially all around the housing;

means for radiating oscillatory energy at an ultrasonic frequency in substantially all directions from said surveillance unit so that the open space all around the housing is filled with sound waves;

said housing being adapted to vibrate in response to reflected sound waves impinging thereon;

receiver transducer means connected to the inside of said housing for sensing vibration thereof and for generating an oscillatory electrical signal in response thereto; and

electrical circuitry inside the housing, said electrical circuitry including:

means for generating said oscillatory energy inside the housing and for driving said radiating means;

means for amplifying the oscillatory electrical signal generated by said receiver transducer means;

discriminator means for producing a variable DC signal responsive to amplitude variations in the amplified oscillatory electrical signal from the amplifying means;

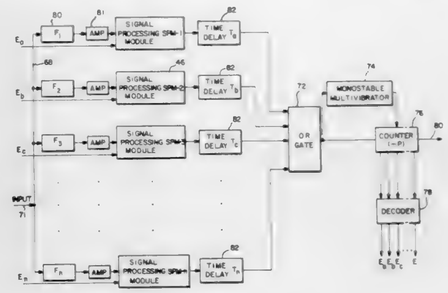
low frequency amplifier means for amplifying low frequency signals from said discriminator means; and

means responsive to the output from said low frequency amplifier means for producing an electrical alarm-operating signal.

3,961,322
REAL TIME SIGNAL DISCRIMINATION CIRCUITRY

George Jay Lichtblau, 425 E. 63rd St. Suite E-12-D, New York, N.Y. 10021

Filed July 2, 1974, Ser. No. 485,206
The portion of the term of this patent subsequent to Jan. 28, 1992, has been disclaimed.
Int. Cl.² G08B *13/00, 21/00*
U.S. Cl. 340—280 **8 Claims**



1. For use in an electronic security system which includes means for providing in a surveillance zone an electromagnetic field of a frequency which is swept within a predetermined range, and means for detecting the presence of a resonant tag circuit having a frequency within said range, circuitry for discriminating between signals indicating the presence of a valid tag circuit in said surveillance zone and spurious signals, said circuitry comprising:

means for receiving expected signals having a plurality of pulse components of predetermined parameters occurring in a predetermined sequence and time relationship and representative of detection of said tag circuit within said surveillance zone;

at least one controllable pulse threshold detector indicating detection of a pulse component having predetermined amplitude and width parameters;

means for serially enabling said at least one controllable pulse threshold detector in a predetermined sequence and time relationship;

means for defining a predetermined time interval for detection of a real signal in response to the detection of a first pulse component thereof;

means operative in response to detection of all of the pulse components comprising the expected signal in predetermined time sequence and within the predetermined time interval to provide an alarm indication; and

means for resetting said circuitry at the end of said predetermined time interval.

3,961,323
CARGO MONITOR APPARATUS AND METHOD

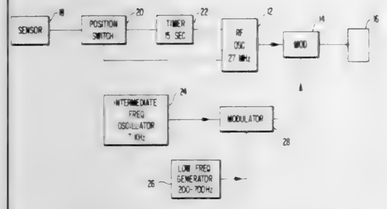
Albert W. Hartkorn, Hershey, Pa., assignor to American Multi-Lert Corporation, Hershey, Pa.

Continuation-in-part of Ser. No. 117,410, Feb. 22, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 315,852
Int. Cl.² G08B *13/02*
U.S. Cl. 340—280 **20 Claims**

1. Cargo container monitoring system comprising:

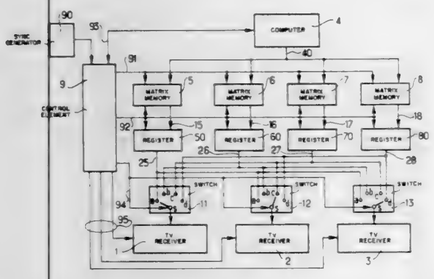
a plurality of transmitter units each adapted for separate attachment to different cargo containers and each comprising:

a radio frequency oscillator and antenna;
means for generating a mid-frequency signal and for modulating the signal from said radio frequency oscillator;
circuit means operating at a low frequency up to about 1000 Hz connected to continuously interrupt said mid-frequency signal and including a device for controlling frequency of said interruptions with sufficient precision to enable a transmitter unit to be distinguished from other transmitter units in the system; and
a sensing element connected to cause initiation of a transmitter signal;



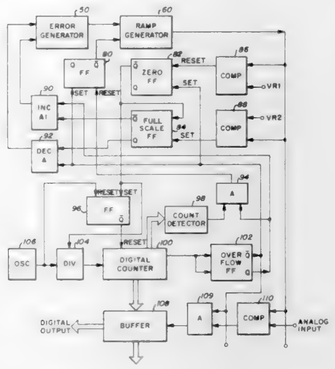
and
a receiver station having an antenna adapted to receive signals from a transmitter antenna and comprising:
a radio frequency section connected to said antenna;
circuit means including a bandpass filter for passing said mid-frequency signal connected to receive an output signal from said radio frequency station;
a circuit including a frequency selective unit connected to receive an output signal from said bandpass filter responsive only to the interruption rate at said low frequency of said mid-frequency signal for selectively producing a signal; and
an alarm circuit connected to be actuated in response to the signal from said frequency selective unit.

3,961,324
MULTIPLE RECEIVER SCREEN TYPE PICTURE DISPLAYING DEVICE
Alain Cousin, La Garenne-Colombes, and Henri Berard, Etampes, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France
Filed Mar. 5, 1975, Ser. No. 555,614
Claims priority, application France, Mar. 13, 1974, 74.08535
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 AD **2 Claims**



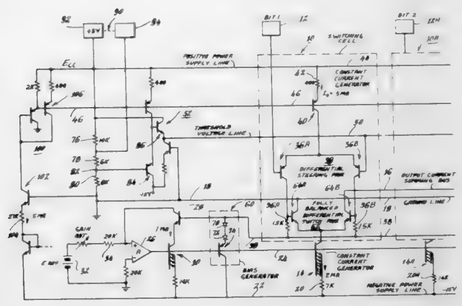
1. Device for displaying pictures on the screens of *n* receivers of the television type from binary data coming from a computer and stored temporarily in memories during the displaying of those pictures for the maintaining of the pictures on the screens, wherein said memories are $n + 1$ in number and are each connected to the said computer for their charging, said device comprising n switches ensuring the connection of any one of the $n + 1$ memories on one of the said receivers and a dynamic memory monitoring element ensuring the setting in the charge state of one of the memories during reading and the connecting of the *n* other memories respectively to the n receivers for the displaying of *n* different memories.

3,961,325
MULTIPLE CHANNEL ANALOG-TO-DIGITAL CONVERTER WITH AUTOMATIC CALIBRATION
Larry J. Kendall, Concord, and Larry D. Snyder, San Jose, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed July 15, 1974, Ser. No. 488,339
Int. Cl.² H03K *13/20*
U.S. Cl. 340—347 CC **5 Claims**



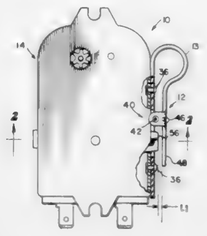
1. A multiple channel analog-to-digital converter comprising:
a. a ramp generator for generating a ramp signal;
b. a digital counter for generating a count output indicative of the instantaneous count within said counter;
c. a control means responsive to said ramp signal and to the count within said digital counter and operative to maintain the time coincidence of a zero count in said counter and a first value of said ramp signal, and a full scale count in said counter and a second value of said ramp signal, wherein said control means comprises;
i. a first means responsive to said ramp signal and operative to generate an analog full scale signal whenever said ramp signal equals said second value,
ii. a second means responsive to the count in said counter and operative to generate a digital full scale signal whenever said counter reaches said full scale count, and
iii. a third means responsive to said analog full scale signal and said digital full scale signal and operative to vary the slope of said ramp signal in accordance with the difference between the time occurrence of said analog full scale signal and said digital full scale signal,
iv. a fourth means responsive to said ramp signal and operative to reset said counter to a zero count upon the occurrence of said first value;
d. means comprising at least one channel, each channel comprising;
i. a compare means responsive to an analog input signal and operative to generate a compare signal whenever said analog input is equal to said ramp output; and
ii. a buffer means responsive to said compare signal and operative to transfer the count of said counter to said buffer for effectively producing in said buffers the digital value associated with the analog value of the analog input signal to said compare means.

3,961,326
SOLID STATE DIGITAL TO ANALOG CONVERTER
Robert B. Craven, Wayland, Mass., assignor to Analog Devices, Inc., Norwood, Mass.
Filed Sept. 12, 1974, Ser. No. 505,477
Int. Cl.² H03K *13/04*, *17/56*
U.S. Cl. 340—347 DA **14 Claims**



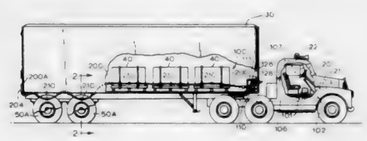
1. In an integrated-circuit, digital-to-analog converter of the type comprising a plurality of transistors formed in an IC chip and arranged with cooperating means to serve as constant-current generators to produce binarily-scaled currents;
improved switch means for selectively directing the current of each such constant-current generator either to a first summing line or to a second line; said switch means comprising:
a source of supply current;
first and second transistors connected as a first differential pair providing controllable alternative conduction therethrough, said transistors being coupled to said source of supply current so that the conducting transistor of the pair carrier current from said source;
logic signal means connected to one of said first pair of transistors to apply thereto a binary logic signal;
threshold means connected to the other of said first pair of transistors to provide that the binary state of said logic signal determines which of said first pair of transistors carries the current from said source of supply current;
third and fourth matched transistors connected as a second differential pair providing selective alternative conduction thereof;
said second pair of transistors having their emitters connected together to said constant-current generator, and having their collectors connected to said first and second lines, respectively, to direct the current passing through said constant-current generator to one or the other of said lines depending upon which of said second pair of transistors has been made conductive;
first input signal means responsive to current flow through said first transistor to apply to the base of said third transistor a first control voltage turning on said third transistor when said first transistor conducts current;
second input signal means responsive to current flow through said second transistor to apply to the base of said fourth transistor a second control voltage turning on said fourth transistor when said second transistor conducts current;
said first and second input signal means including means arranged to provide that said connected emitters of said third and fourth transistors are maintained substantially at the same voltage as the current from said constant-current generator switches from one to the other of said second pair of transistors in accordance with the state of said binary logic signal.

3,961,327
AUDIBLE ALARM FOR A SYNCHRONOUS MOTOR
Ernest F. Kloenne, and Kanti D. Patel, both of Indianapolis, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed July 22, 1974, Ser. No. 490,805
Int. Cl.² G01K *1/08*; **H01F** *7/08*
U.S. Cl. 340—402 **8 Claims**



1. In a synchronous motor having a rotor, a winding, and a set of stator poles, an audible alarm, comprising:
a. a buzzer anvil electromagnetically connected to said stator poles projecting from said synchronous motor; and
b. a bight-shaped magnetically-attractable buzzer arm carried by said motor juxtaposition to said buzzer anvil and intermittently engaging said buzzer anvil upon energization of said winding, whereby said engagement of said buzzer arm and said buzzer anvil produces a buzzing sound.

3,961,328
DETECTION SYSTEM
Lloyd H. Hornbostel, Jr., Beloit, Wis., assignor to Center for Management Services and Applied Research, Beloit, Wis.
Division of Ser. No. 368,609, June 11, 1973, abandoned. This application Aug. 5, 1974, Ser. No. 494,987
Int. Cl.² G08B *17/04*
U.S. Cl. 340—420 **3 Claims**



1. A break union for use in an ambient condition sensing system having a continuous fluid line comprising an elongated element for inclusion in fluid communication with said line, said element including a bore defining a fluid passage through said union and further defining a wall portion having a selected wall thickness, said element being constructed of a material capable of rupture in said wall portion when exposed to a given ambient condition, and the time required for the rupture of the wall portion, in response to said given ambient condition, being proportional to the selected thickness of said wall portion, whereby the break union response time can be varied by varying the thickness of said element.

3,961,329
HIGH RESOLUTION SECTOR SCAN RADAR
Herbert H. Naidich, Trumbull, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Apr. 14, 1975, Ser. No. 568,068
Int. Cl.² G01S *7/12*; **H01J** *29/70*
U.S. Cl. 343—11 R **4 Claims**

1. A radar system comprising:

first oscillator means for generating a high frequency sinusoidal signal;

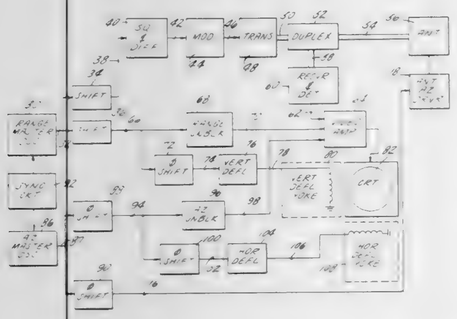
a transmitter responsive to said first oscillator means for providing radar signals at a pulse repetition frequency determined by said first oscillator means;

an antenna means responsive to said transmitter for transmitting radar signals and receiving target return radar signals;

receiving means responsive to said antenna means for processing target return radar signals received by said antenna means;

video display means for displaying information received by said receiving means and having vertical and horizontal deflection amplifier;

range means responsive to said first oscillator means for providing a range unblank signal to said video display means, at a time delayed from the radar main bang by an amount related to the distance of the range segment containing the target from which return signals are desired for display on said video display means, and for providing a deflection signal to said video display means consisting of a sine wave having a suitable amplitude, in excess of the amplitude required for maximum deflection in the range dimension, and delayed from said unblank signal by a suitable amount such that a substantially linear portion of said sinusoidal range deflection signal, coincident with said range unblank signal, provides desired video display deflection in the range dimension during the desired range segment;



second means for generating a low frequency sinusoidal signal of a frequency orders of magnitude lower than that of the signal produced by said high frequency sinusoidal means; and

azimuth means responsive to said second means for providing an azimuth unblank signal to said video display means at a time delayed from said antenna azimuth drive signal by an amount related to the difference between the total azimuth angle of antenna scan, and the azimuth angular component thereof containing the target from which return signals are desired for display on said video display means, and for providing a deflection signal to said video display means consisting of a sine wave having a suitable amplitude, in excess of the amplitude required for maximum deflection in the azimuth dimension, and delayed from said azimuth unblank signal by a suitable amount such that a substantially linear portion of said sinusoidal azimuth deflection signal, coincident with said azimuth unblank signal, provides desired video display deflection in the azimuth dimension during the desired azimuth increment, and for providing synchronization of the antenna azimuth scan with the video display deflection in the azimuth dimension.

3,961,330

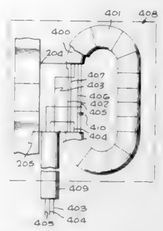
ANTENNA SYSTEM UTILIZING CURRENTS IN CONDUCTIVE BODY

Ross Alan Davis, 724 Ala Moana Blvd., Honolulu, Hawaii 96813

Continuation of Ser. No. 427,258, Dec. 21, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,569

Int. Cl.² H01Q 1/32

U.S. Cl. 343—712 **4 Claims**



1. An antenna system for operation at at least one intended frequency, said antenna system including:

an electrically conductive three-dimensional body forming a closed loop for the flow of radio frequency signals therethrough at said at least one intended frequency when said body is exposed to a radio frequency field, said loop having a length which is short with respect to a resonant fraction of a wavelength at said intended frequency;

a column of relatively reduced cross-sectional area connecting major surfaces of said body and through which said radio frequency signals tend to flow;

means cooperating with said column portion for increasing the electrical impedance of a segment of said column portion; and,

body resonating means connected directly to said column portion across said segment for producing forced electrical resonance of said body at said intended frequency.

3,961,331

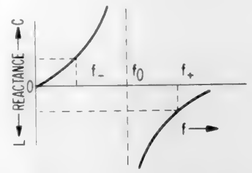
LOSSY CABLE CHOKE BROADBAND ISOLATION MEANS FOR INDEPENDENT ANTENNAS

Donn V. Campbell, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 21, 1975, Ser. No. 579,645

Int. Cl.² H01Q 1/52

U.S. Cl. 343—792 **11 Claims**



1. In a broadband antenna system including at least two dipole antennas respectively coupled to first and second radio apparatus, said antennas being mounted one above the other and having a predetermined spacing therebetween with respective pairs of antenna elements being aligned generally along a common vertical axis and having a first feedline coupling said first radio apparatus to the upper dipole antenna and a second feedline coupling said second radio apparatus to the lower dipole antenna, the improvement comprising:

the first feedline being configured to include an isolator section in said predetermined spacing between said at least two dipole antennas, said isolator section being comprised of a plurality of series connected cable choke sections, each having a respective electrical damping resistor shunted thereacross.

3,961,332

ELONGATED TELEVISION RECEIVING ANTENNA FOR INDOOR USE

Marvin P. Middlemark, 96 Store Hill Road, Old Westbury, Long Island City, N.Y. 11568

Filed July 24, 1975, Ser. No. 598,573

Int. Cl.² H01Q 9/16

U.S. Cl. 343—802 **2 Claims**



1. An indoor television antenna comprising a rigid, elongated antenna body, said body being hollow, tubular, and formed of electrically insulating plastic material, a coiled spiral conductive elongated antenna element device for receiving broadcast directional television frequency waves and disposed within and substantially throughout the length of said body to define a dipole, and an elongated flexible transmission line having at least two conductors, one end of said line with its said conductors entering one end of said body and its said conductors at said one end of said line being connected to said dipole antenna at a central portion, and the conductors at the other end of said line being adapted for connection to the input system of a television receiver, the length of said transmission line between said one end of said body, and said other end of said line being greater than the length of said body, said body being free of supporting structure other than its own rigid tubular form and its said transmission line whereby said body may be freely physically oriented in any position of reception limited only by its end connection to said line.

3,961,333

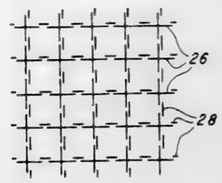
RADOME WIRE GRID HAVING LOW PASS FREQUENCY CHARACTERISTICS

Donald L. Purinton, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 29, 1974, Ser. No. 501,518

Int. Cl.² H01Q 1/42

U.S. Cl. 343—872 **5 Claims**



1. A radome comprising:

a sheet of dielectric material forming a window,

a plurality of discontinuous electrical conductors forming a linear grid embedded within said sheet, and

distributed capacitor means for coupling said plurality of conductors together across points of discontinuity to provide capacitance and inductance at a preselected radar frequency,

whereby said radome passes radio frequency energy at said radar frequency with substantially no attenuation and also passes radio frequency energy at frequencies less than about one half said preselected radar frequency.

3,961,334

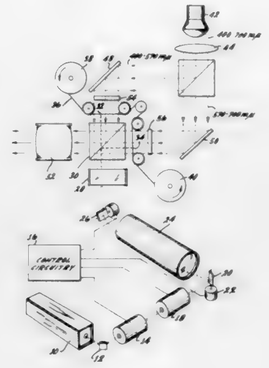
COMBINED LASER RECORDING AND COLOR PROJECTION SYSTEM

Clyde M. Whitby, Valencia, and Douglas L. White, Granada Hills, both of Calif., assignors to The Singer Company, New York, N.Y.

Filed Aug. 11, 1975, Ser. No. 603,414

Int. Cl.² G01D 9/32

U.S. Cl. 346—17 **5 Claims**



1. A recording and projection system including: a laser; means for selectively deflecting the beam of said laser and focusing said beam upon a recording medium having a normal first transparency state that is changed into a second transparency state where exposed to said focused laser beam; and means including backlighting means and a projection lens system for projecting the images in said recording medium to a display screen; the improvement comprising:

polarization means interposed in the path of said laser beam for selectively rotating said beam from a first plane of polarization to a second plane of polarization;

a dichroic polarizer cube interposed in said laser beam downstream from said polarization means, said cube reflecting said beam when polarized in said first plane and transmitting said beam when polarized in said second plane of polarization;

first and second recording mediums positioned at the focal points of said transmitted beam and said reflected beam;

a source of white projection light;

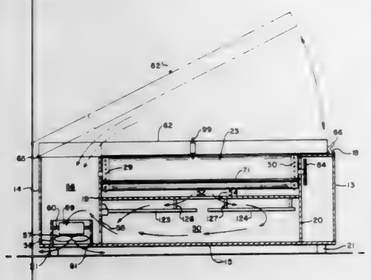
a dichroic element interposed in the beam produced by said source, said element having dichroic properties substantially identical with the dichroic properties of said dichroic polarizer cube, said element producing from said white light a band of long wavelength visible light that is transmitted through said element to backlight said first recording medium, and a band of short wavelength visible light that is reflected by said element to backlight said second recording medium;

whereby images recorded in said first recording medium are transmitted through said dichroic polarizer cube to be projected in visible light in the long wavelength band, images recorded in said second medium are reflected by said dichroic polarizer cube to be projected in visible light in the short wavelength band, and light from both long wavelength and short wavelength bands backlighting identical images recorded in both of said first and second mediums will be combined to project images in a color containing both said long wavelength and said short wavelength bands.

3,961,335
GRAPHIC RECORDER WITH PAPER POSITIONING AND TENSIONING MEANS

James F. Gordon, Saratoga, Calif., assignor to Zeta Research Inc., Lafayette, Calif.

Filed Dec. 16, 1974, Ser. No. 532,897
Int. Cl.² G01D *15/30*; B65H *17/28*
U.S. Cl. 346—136 14 Claims

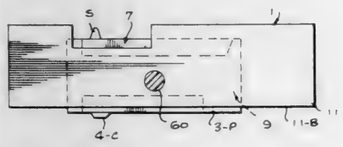


1. Apparatus for transporting strip paper along a path from a supply of the paper, the paper being characterized in having means forming openings along the length of the paper, the combination of a housing having an opening, a pair of rollers mounted on the housing for supporting a portion of the strip paper across said opening, said rollers being mounted for rotation about respective transversely extending axes which are spaced-apart along said path, sprocket means on each of said rollers, said sprocket means including a plurality of radially extending pins positioned in register with the openings for releasably engaging the same, drive means for conjointly rotating said rollers and sprocket means for moving the strip paper along the path, and means creating a differential air pressure on opposite sides of the portion of strip paper which is suspended between the rollers, said differential air pressure serving to produce a resultant force acting in a direction against said suspended portion of the strip chart so that the outer side edges of the openings are urged into engagement with the outer sides of respective pins whereby the suspended portion of the strip paper maintains registry with the rollers irrespective of wear or irregularities in the openings or in dimensional changes of the paper.

3,961,336
ELECTRODE PRINT HEAD

John A. Walker; Dimitri S. Dimitri, both of Northridge, and Reginald Louis Perkins, Los Angeles, all of Calif., assignors to Datametrics Corporation, Van Nuys, Calif.

Filed May 21, 1975, Ser. No. 579,460
Int. Cl.² G01D *15/08*
U.S. Cl. 346—139 C 14 Claims



1. An improved print-head assembly comprising a plurality of print-electrode sets separated by separator sheets, each electrode set being comprised of a thin electrode foil having at least one resilient contact arm member cantilevered out from the electrode body so as to accommodate resilient reciprocation toward and away therefrom, plus a pair of thin dielectric sheets each being disposed on one side of said electrode to isolate it electrically and being relieved adjacent each said arm thereof to accommodate the unimpeded reciprocation of the arm;

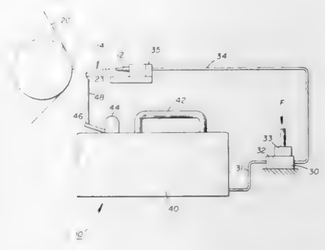
each foil electrode being fashioned by selecting a prescribed metal sheet and generating a prescribed print-electrode structure therefrom without introducing any appreciable lateral protrusions on said electrode;

said array of print-electrodes and associated separation means being mounted in an aligned array and retained so aligned as an integral assembly in a prescribed holder means.

3,961,337
DISPOSABLE INK SUPPLY AND NOZZLE SYSTEM USING A SIMPLE PUMP

Werner Jung, Morton Grove, and Kurt E. Knuth, Mount Prospect, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Aug. 26, 1974, Ser. No. 500,819
Int. Cl.² G01D *15/18*
U.S. Cl. 346—140 R 1 Claim



1. In combination with an inkjet printer of the type having a nozzle from which ink is forced in a stream of drops, which are manipulated electrostatically to print information patterns on a sheet of paper placed in the printer, and wherein relative movement is caused between the nozzle and the paper to print a page of copy, after which the page is removed and a fresh sheet of paper is inserted in the printer, an improved apparatus for forming a constant pressure ink jet of sufficient duration to print a full page, which comprises:

a thin-walled cylindrical tube with closed ends, the tube being made of a compressible resilient plastic;

an ink supply line connecting the tube to the nozzle;

a pair of dies between which the tube is mounted with the dies engaging opposed portions of the cylindrical wall of the tube;

means for moving the dies to an open position, in which no force is exerted on the tube;

means responsive to opening of the dies for filling the tube with ink;

means responsive to a paper-feed signal to the printer for gradually closing the dies so as to compress the tube and force ink through the nozzle in a stream of droplets having a sufficient constant velocity for ink jet printing, the means for closing being arranged to close the dies with a gradually increasing force required to squirt the ink through the nozzle at a substantially constant pressure for a time long enough to print one page of copy after start up, the means for closing the dies being timed to start the ink stream prior to the time that a fresh page has been inserted and printing is to begin so that the effect of an initial shock wave when the dies start to close is dissipated prior to printing and a steady-state, constant-velocity ink jet is established prior to the start of printing each new page;

means responsive to the completion of each page of printing for operating the means for opening the dies, the walls of the plastic tube springing back to their cylindrical configuration when the dies are opened and creating a partial vacuum in the tube, which vacuum is effective to suck ink into the tube from the means for filling;

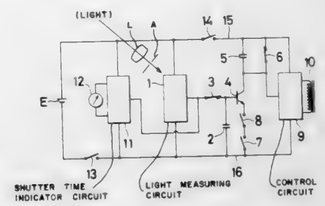
a refill line connecting the tube with the means for filling; and

a one-way check valve in the refill line for allowing ink to pass only from the supply means to the tube, and preventing any flow through the refill line when the dies are closed.

3,961,338
AUTOMATIC EXPOSURE TIME CONTROL DEVICE FOR USE IN SINGLE LENS REFLEX CAMERA

Masayoshi Sahara, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 22, 1975, Ser. No. 570,320
Claims priority, application Japan, Apr. 24, 1974, 49-46801
Int. Cl.² G03B *7/08*, *9/62*
U.S. Cl. 354—24 5 Claims



1. An automatic exposure time control device for use in a single lens reflex camera including anobjective lens, a shutter and a diaphragm, said exposure control device comprising:

a light measuring circuit for generating an output voltage proportional to the logarithm of the intensity of light which has come from an object to be photographed and passed through said objective lens and said diaphragm;

means for storing said output voltage;

means connected to one terminal of said storing means for converting said output voltage stored in said storing means to a current proportional to the antilogarithm thereof;

means for integrating said current;

means for commencing the integration of said integrating means simultaneously with commencement of the opening of said shutter due to shutter release operation;

means for controlling the closure of said shutter depending on the voltage across said integrating means;

a power source for providing electric power to said light-measuring circuit, converting means and controlling means;

first and second conductive means respectively connected to the opposite terminals of said power source, said light measuring circuit, converting means and said control means being connected between said first and second conductive means in parallel with each other, said integrating means being connected between said converting means and second conductive means, and another terminal of said storing means being connected to said first conductive means;

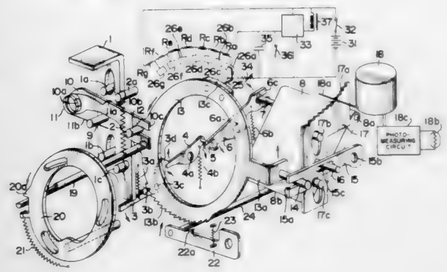
a first switch openable in response to shutter cocking operation and closable in response to the shutter release operation prior to commencement of the opening of said shutter; and

a second switch closable at the latest with the commencement of opening of said shutter and at the earliest with the cocking of said shutter and openable at the earliest with the commencement of closure of said shutter, said first and second switches being arranged between said first conductive means and said converting means in series with each other and in parallel with said controlling means.

3,961,339
AUTOMATIC EXPOSURE CONTROL MEANS FOR SINGLE-LENS REFLEX CAMERA

Kazuhiro Akiyama, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Apr. 8, 1974, Ser. No. 458,897
Claims priority, application Japan, June 19, 1973, 48-68890
Int. Cl.² G03B *7/14*
U.S. Cl. 354—29 10 Claims



1. An automatic exposure control means for a single-lens reflex camera including therein an electric shutter controlled by an electric circuit the time constant of which is determined by a resistor means connected therein and a swing-up mirror swingably mounted to swing from a reflecting position to a swing-up position upon operation of a shutter release means comprising;

a photo-detector which receives light from the object to be photographed passing through a picture taking lens of the camera;

an exposure meter connected with said photodetector and having a pointer which is moved in accordance with a signal from said photodetector representing the variation in the quantity of light passing through the picture taking lens and received by said photodetector;

a step cam member movable to be in engagement with said pointer so that the position thereof when engaged with the pointer may be determined by the position of the pointer;

a shutter release means which is operated upon depression of a shutter release button;

an exposure control member rotatably mounted to rotate in one direction upon operation of said shutter release means and mechanically connected with said step cam member, said exposure control member associated with the shutter release means so as to be moved by the shutter release means when the shutter is released, said exposure control member being associated with said step cam member to move the step cam member into engagement with said pointer when the shutter is released;

a diaphragm control member associated with a diaphragm to control the diaphragm opening, said diaphragm control member being operatively associated with said exposure control member thereby controlling the diaphragm opening in accordance with the position of said exposure control member;

a shutter speed controlling means including a series of resistors provided in an exposure control circuit for determining the shutter speed, each said resistor having an electric contact, and a sliding contact mounted to said exposure control member to be selectively in contact with the electric contact of said series of resistors; and

a locking means associated with the swing-up mirror of the camera so as to be moved into engagement with said movable member to lock the same when the mirror is swung up and be moved apart from the movable member to release the same when the mirror is returned to the reflecting position;

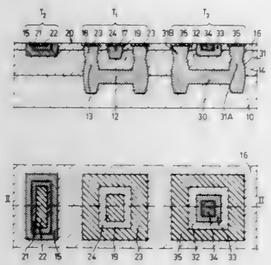
whereby both the shutter speed and the diaphragm opening are selected upon release of the shutter.

3,961,340

INTEGRATED CIRCUIT HAVING BIPOLAR TRANSISTORS AND METHOD OF MANUFACTURING SAID CIRCUIT

Jean Encinas, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 308,034, Nov. 20, 1972, abandoned.
This application Dec. 20, 1974, Ser. No. 535,144
Claims priority, application France, Nov. 22, 1971, 71.41734
Int. Cl.² H01L *27/02*
U.S. Cl. 357—40 **11 Claims**



1. A semiconductor device containing at least two bipolar transistors of the same polarity and comprising a semiconductor body, said body comprising

a. a semiconductor substrate comprising at least a surface portion of a first conductivity type;

b. first and second epitaxial layers of said first conductivity type successively disposed on said substrate, said first layer being located between said substrate and said second layer; and

c. said bipolar transistors individually comprising emitter, base, and collector zones, said collector zones being of a second opposite conductivity type, at least a part of said second conductivity type collector zone of a first one of said transistors being disposed at said surface portion and extending along a first interface between said substrate and said first epitaxial layer, at least a part of said collector zone of a second one of said transistors extending along a second interface located between said first and second layers and being at least partly located above said first transistor collector zone, said collector of said first transistor at least partially defining a base region that is located in said first and second epitaxial layers and that has a thickness exceeding the base region of said second transistor, said second transistor base region being located only in said second epitaxial layer.

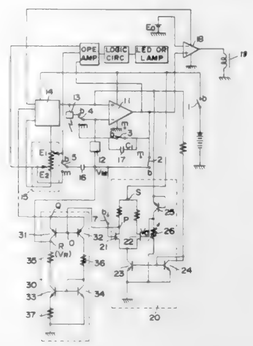
3,961,341

AUTOMATIC SHUTTER SPEED CONTROL MEANS FOR A CAMERA

Saburo Numata, and Shinichiro Fujino, both of Urawa, Japan, assignors to Fuji Photo Optical Co., Ltd., Japan

Filed Dec. 11, 1974, Ser. No. 531,601
Claims priority, application Japan, Dec. 13, 1973, 48-140962
Int. Cl.² G03B *7/08*
U.S. Cl. 354—51 **2 Claims**

1. A shutter speed control means for controlling operation of shutter mechanism of a camera wherein the scene brightness is detected by a detecting means including a photodetector, and the exposure time is controlled by a shutter control circuit which operates in accordance with the output of said photodetector, said control means comprising: a timing capacitor connected to said shutter mechanism to control the operation thereof under certain conditions; memorizing means to memorize the output voltage of said photodetector; level shifting means to shift the memorized output voltage to a shutter control circuit operating level when the level of the



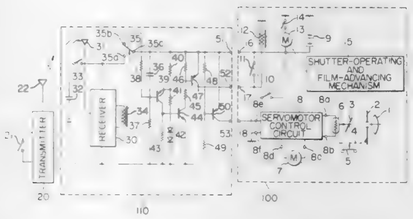
output voltage memorized by said memorizing means is below a predetermined level, thereby operating said shutter control circuit in accordance with the shifted level, whereby the shutter speed is controlled in accordance with the predetermined shifted level when the scene brightness is below a predetermined level.

3,961,342

REMOTE CONTROL PHOTOGRAPHIC APPARATUS

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 10, 1974, Ser. No. 513,868
Claims priority, application Japan, Oct. 12, 1973, 48-118000[U]
Int. Cl.² G03B *9/64*
U.S. Cl. 354—60 R **7 Claims**



1. Remote control apparatus for use with a camera having an exposure control system for automatically controlling film exposure, a mechanism for operating a camera shutter and advancing film, first switch means operable for actuating said system, second switch means operable for actuating said mechanism, a manually moveable button, and means coupling the button to both of said switch means for sequentially operating the first switch means and then the second switch means in response to manual movement of the button, said apparatus comprising:

third switch means operable for actuating said system;

fourth switch means operable for actuating said mechanism;

receiver means for producing an output signal in response to a remotely generated photography signal; and

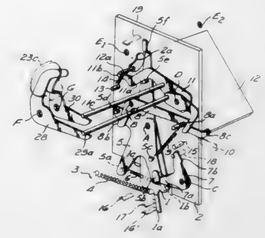
means responsive to said output signal for sequentially operating said third switch means and then said fourth switch means, whereby said exposure control system is actuated before said mechanism for operating the shutter and advancing the film.

3,961,343

METHOD AND ARRANGEMENT FOR MANUAL STOP-DOWN MIRROR-UPS OF SINGLE LENS REFLEX CAMERA

Tetsuji Shono, Ranzan, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 14, 1975, Ser. No. 568,106
Int. Cl.² G03B *19/12*
U.S. Cl. 354—156 **11 Claims**



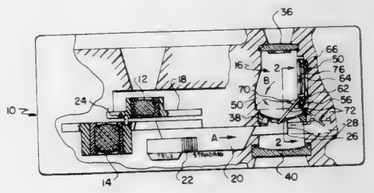
1. A control assembly for manual stop-down mirror-up operations of a single lens reflex camera having a camera ready condition wherein an automatic diaphragm arrangement normally maintains a diaphragm operating member in a full open position and a quick-return mirror arrangement normally maintains a mirror in a viewing position comprising manually operable button means externally mounted on the camera for manual non-depressing movement between first and second button positions and for manual depressing operation in said first and second button positions, said button means being operatively engageable with said automatic diaphragm arrangement in said first button position to bias said diaphragm operating member from said normal full open position to a stop-down position with said mirror in said viewing position upon manual operation of said button means in said first button position and to cause the return of said diaphragm operating member to said normal full open position upon completion of the manual operation of said button means in said first button position, said button means being operatively engageable with said automatic diaphragm arrangement and said quick-return mirror arrangement in said second button position to bias said diaphragm operating member from said normal full open position to said stop-down position and said mirror from said normal viewing position to a mirror-up shutter operating position upon manual operation of said button means in said second button position.

3,961,344

DUAL FIELD VIEWFINDER

Theodor Baisch, Esslingen (Neckar); Kurt Deininger, Stuttgart; Joseph R. Strobel, Stuttgart-Wangen, and Alfred Trumpp, Stuttgart-Uhlbech, all of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,046
Int. Cl.² G03B *13/12, 13/08*
U.S. Cl. 354—222 **6 Claims**



1. Photographic apparatus comprising a plurality of lenses that can be selectively moved to a first operative position and a viewfinder, said viewfinder comprising:

a pair of reticles of different size;

first reflective means for projecting a virtual image of one of said reticles; and

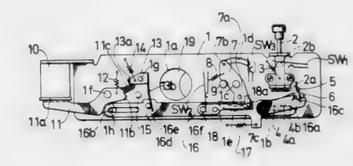
second reflective means, mounted within said photographic apparatus for movement to a second operative position, for projecting a virtual image of the other of said reticles after movement to said second operative position in response to selective movement of one of said plurality of lenses in such photographic apparatus to said first operative position.

3,961,345

OPENING AND CLOSING MEANS FOR ELECTRICALLY CONTROLLED SHUTTERS

Kunio Arisaka, Urawa, Japan, assignor to Copal Company Limited, Japan

Filed July 8, 1974, Ser. No. 486,648
Claims priority, application Japan, July 9, 1973, 48-77361
Int. Cl.² G03B *9/40, 9/58*
U.S. Cl. 354—234 **3 Claims**



1. An opening and closing means for electric shutters comprising a pair of shutter blades arranged so as to move substantially in parallel with and in directions reverse to each other; a shutter blade opening and closing member connected to said pair of shutter blades so as to move said pair of shutter blades at the same time in reverse directions during movement of said opening and closing member; an actuating member having thereon an operating member engageable with said shutter blade opening and closing member and arranged (a) to open said blades by engaging with said shutter blade opening and closing member during a first segment of linear movement in one direction of said actuating member and (b) to close said blades by disengaging from said shutter blade opening and closing member during a remaining segment of linear movement in said one direction; an electromagnet located adjacent to said actuating member and arranged to be kept energized during a predetermined exposure time; and an armature member operatively related to said electromagnet and adapted to hold said actuating member, at the end of said first segment of linear movement of said actuating member and while said electro-magnet remains energized, and to release said actuating member for said remaining segment of linear movement at the time when said electromagnet is de-energized at the end of said exposure time.

3,961,346

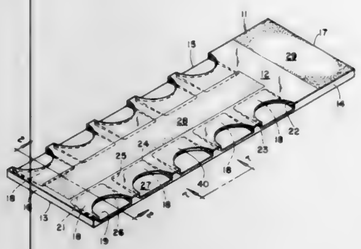
LIQUID INSPECTION SLIDE

Fred K. White, Glen Ellyn, Ill., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 30, 1975, Ser. No. 545,379
Int. Cl.² G01N *21/16, 1/10*
U.S. Cl. 356—244 **10 Claims**

1. A liquid inspection apparatus comprising a transparent organoplastic slide having an outer edge portion and having at least one capillary examination chamber formed therein and extending inwardly from said outer edge portion, said chamber having a flat bottom wall surface and having a flat upper wall surface formed on the underside of a thin flat upper wall

portion, said upper and bottom wall surfaces extending at a slight acute angle from one another to form the capillary chamber therebetween, said upper wall portion being cut



away adjacent said slide outer edge portion to define an outer edge of said upper wall portion extending inwardly in a concave fashion from the outer edge portion of said organoplastic slide.

3,961,347

INTERCHANGEABLE OBJECTIVE LENS DIAPHRAGM EXPOSURE CONTROL COUPLING MECHANISM

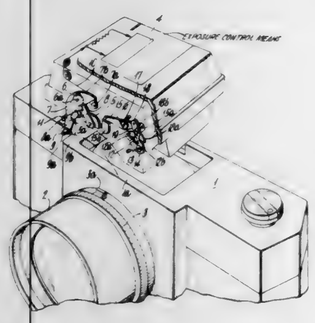
Minoru Sekida, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 23, 1975, Ser. No. 543,571

Claims priority, application Japan, Feb. 5, 1974, 49-14089

Int. Cl.² G03B *9/02, 7/20*

U.S. Cl. 354—272 **11 Claims**



8. A lens interchangeable type camera including a camera body, an objective lens interchangeably mounted on said camera body and having a rotatable diaphragm with a coupler pawl, and a finder housing, comprising,

an exposure control means;

a fixed gear disposed in said camera;

a revolving gear rotatable around said fixed gear and revolvable about its own axis, and an interlocking gear intercoupling said fixed and revolving gears;

a connecting member having one end connected to said revolving gear and being moveable with said revolving gear and its other end connectable with said coupler pawl of said diaphragm ring and moveably interlocking with the movement of said diaphragm ring for moving said revolving gear;

a mounting arm swingable about said fixed gear and rotatably supporting said revolving gear and interlocking gear; and

a transmitting means for transmitting the movement of said revolving gear to said exposure control means.

3,961,348

LIGHT PATH SWITCHING INDICATOR FOR OPTICAL INSTRUMENTS

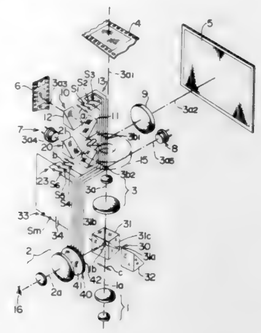
Kensaku Miyazaki, Machida, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1975, Ser. No. 551,745

Claims priority, application Japan, Mar. 2, 1974, 49-23754

Int. Cl.² G03B *17/00*

U.S. Cl. 354—289 **10 Claims**



1. A light path switching indicator for use in a viewing instrument comprising first means establishing an objective light path, a plurality of means for establishing separate light paths which are each adapted to be selectively connected with the objective light path, a light path switching mechanism for selectively connecting at least one of the plurality of separate light path establishing means with the objective light path of said first means, a liquid crystal display panel having means for generating a visually observable pattern indicative of that particular one of the separate light paths which is connected with the objective light path, switching means operated in unison with the light path switching mechanism for controlling the liquid crystal display panel.

3,961,349

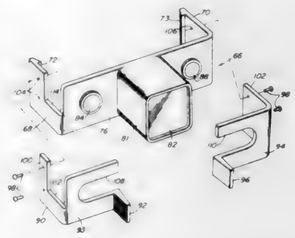
ACCESSORY MOUNTING ADAPTOR FOR PHOTOGRAPHIC APPARATUS

Robert P. Forsyth, Carlisle, and Gilbert A. Rose, Sr., East Taunton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1974, Ser. No. 533,328

Int. Cl.² G03B *17/56*

U.S. Cl. 354—295 **7 Claims**



4. An accessory attachment for use with a camera having a lens-shutter housing formed with a front wall mounting a lens, and with side walls extending rearwardly from said front wall and terminating in rear corner portions, said accessory attachment comprising:

a camera accessory device and an accessory housing mounting said accessory device therein, said accessory housing including an accessory-mounting front portion and a pair of side wing portions extending rearwardly from said front portion and spaced apart to receive said lens-shutter housing therebetween, said wing portions bearing a pair of opposed latch portions constructed and arranged to releasably engage said rear corner portions to secure said accessory attachment on said lens-shutter housing, said latch portions being relatively movable for manual deflection thereof to engage and disengage said latch portions with said rear corner portions, said wing portions being resiliently flexible and incorporating said latch portions, and a pair of actuator levers connected to said wing portions and extending therefrom into grip portions located forwardly of said front portion, said actuator levers being constructed and arranged to flex said wing portions to spread said latch portions apart to clear said rear corner portions when said grip portions are pressed toward one another.

3,961,350

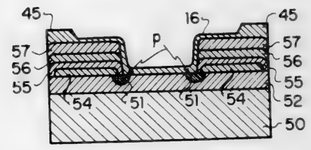
METHOD AND CHIP CONFIGURATION OF HIGH TEMPERATURE PRESSURE CONTACT PACKAGING OF SCHOTTKY BARRIER DIODES

Karl H. Tiefert, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 4, 1974, Ser. No. 520,328

Int. Cl.² H01L *29/48, 29/34, 23/48, 23/42*

U.S. Cl. 357—15 **7 Claims**



1. A configuration of semiconductor chip having at least one active region for use in a high-temperature seal, pressure-contact lead package, said semiconductor chip configuration comprising:

a semiconductor chip;

a layer of a first material covering the entire semiconductor chip, except at least a portion of the active region thereof, for chemically insulating the semiconductor chip;

a layer of a second material covering the first layer of the first material for chemically insulating the semiconductor chip from reacting with the package impurities;

a layer of the first material covering the layer of the second material for enhancing adhesion thereof with other materials;

a layer of a third material covering the last-mentioned layer of the first material for providing insulation and reducing semiconductor chip capacitance; and

a layer of electrically conducting material covering the entire active region of the semiconductor chip and covering a portion of the layer of third material for physically and electrically contacting a lead,

said portion of conducting material over the third material having a pad portion disposed so as to contact said lead at a relatively substantial distance from the active region, thereby to transmit pressure of the contacting lead away from the active region.

3,961,351

IMPROVEMENT IN OR RELATING TO INTEGRATED CIRCUIT ARRANGEMENTS

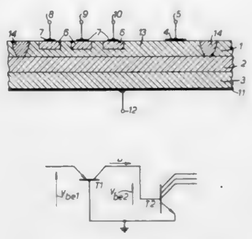
Victor Blatt, Northampton, England, assignor to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Nov. 7, 1974, Ser. No. 521,893

Claims priority, application United Kingdom, Nov. 8, 1973, 51856/73

Int. Cl.² H01L *29/48, 29/56*

U.S. Cl. 357—15 **7 Claims**



1. An integrated circuit arrangement having at least one pair of superposed transistor structures, the arrangement including first, second and third superposed semiconductive layers, the second layer being interposed between, and of the opposite conductivity type to, the first and third layers and having a doping density higher than the first layer but lower than the third layer; a plurality of electrical contacts formed on a surface of the first layer to provide multi-inputs for the integrated circuit, said first layer having a doping density such that each of said plurality of electrical contacts forms a Schottky diode with the first layer; a plurality of spaced-apart semiconductive regions of the same conductivity type as the second layer formed in the said surface of the first layer; an electrical contact for each of the semiconductive regions to provide multi-outputs for the integrated circuit; and a layer of an electrical contact material formed on a surface of the third layer.

3,961,352

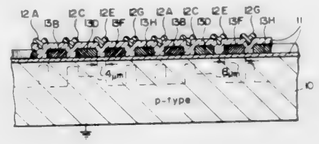
MULTI-RIPPLE CHARGE COUPLED DEVICE

Douglas Roy Colton, Kanata, and Stanley Daniel Rosenbaum, Ottawa, both of Canada, assignors to Northern Electric Company Limited, Montreal, Canada

Filed May 30, 1975, Ser. No. 582,276

Int. Cl.² H01L *29/78;* **H03K** *3/353*

U.S. Cl. 357—24 **3 Claims**



1. A charge coupled device comprising:

a charge storage body;

a row of alternately lower and upper elongated conductive field plates laterally disposed on an insulating layer over said body, each upper field plate overlapping the two adjacent lower field plates;

conductive feed lines contiguously disposed on said insulating layer along the sides of said row; the row being divided into sequential groups of at least four consecutive lower field plates and four consecutive upper field plates, each conductive feed line being connected in each of the sequential groups to a correspondingly located field plate;

means for applying clock voltages to the feedlines of said lower field plates to create potential wells in the charge storage body beneath said lower field plates for the simultaneous storage of charge in all but one of the potential wells in each group, and for sequentially altering the clock voltages applied to the feedlines of the lower and upper field plates in one direction to stepwise transfer charge in an adjacent potential well to said one potential well in the opposite direction.

3,961,353

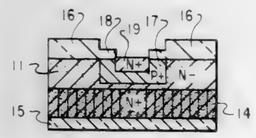
HIGH POWER SEMICONDUCTOR DEVICE

Joseph A. Aboaf, Peekskill; Robert W. Broadie, Hopewell Junction; Edward M. Hull, LaGrangeville, and H. Bernhard Pogge, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 21, 1974, Ser. No. 516,064

Int. Cl.² H01L *29/72*

U.S. Cl. 357—34 **6 Claims**



1. A semiconductor device comprising:

a semiconductor substrate; and,

a porous portion within said substrate doped to form a region of higher conductivity than said substrate.

3,961,354

MESA TYPE THYRISTOR AND ITS MAKING METHOD

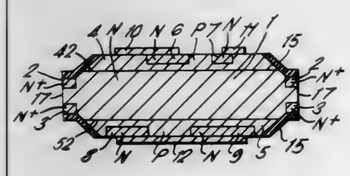
Masahiro Kuwagata, Suita; Masao Yamada, Takatsuki; Kenichiro Nakamura, Nagaokakyo, and Yorisada Kawakami, Osaka, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Nov. 19, 1973, Ser. No. 416,799

Claims priority, application Japan, Nov. 17, 1972, 47-115836

Int. Cl.² H01L *29/747, 7/44*

U.S. Cl. 357—39 **1 Claim**



1. A mesa-type thyristor comprising:

a silicon substrate of a first conductivity type having upper and lower principal surfaces respectively on opposite sides of said substrate and a peripheral surface surroundingly extending between said principal surfaces,

said substrate further having a pair of spaced mesa-etched surfaces on said peripheral surface encircling said substrate, mesa-etched

said mesa-etched surfaces having outer peripheral edges respectively at said principal surfaces and extending respectively from said principal surfaces generally toward each other to a predetermined extent to define respective inner peripheral edges spaced apart a given distance,

a pair of first regions of a second conductivity type, opposite said first conductivity type, respectively on said upper and lower principal surfaces for forming PN junctions therewith,

a plurality of additional regions of said first conductivity type formed in said first regions,

electrodes disposed in contact with at least said additional regions, and

a pair of spaced electrodeless semiconductor ring regions of said first conductivity type and having an impurity concentration higher than that of said substrate, said ring regions being only in contact with and formed around said substrate in said peripheral surface and heightwise respectively extending from the said inner peripheral edges of said mesa-etched surfaces toward each other a distance substantially less than said given distance so as to expose between said rings a portion of said substrate which isolates said rings by providing high resistance relative to said rings and hence high breakdown voltage along said peripheral surface and for preventing PN junction leakage current by said ring regions effectively preventing the linking of an inversion layer across said PN junctions.

3,961,355

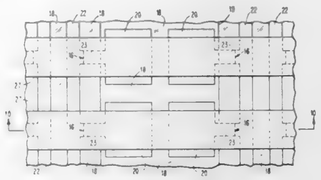
SEMICONDUCTOR DEVICE HAVING ELECTRICALLY INSULATING BARRIERS FOR SURFACE LEAKAGE SENSITIVE DEVICES AND METHOD OF FORMING

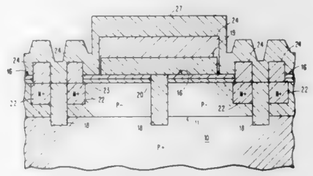
Shakir A. Abbas; Chi S. Chang, both of Wappingers Falls; Leo B. Freeman, Jr., Poughkeepsie, and Ronald W. Knepper, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 267,771, June 30, 1972, abandoned. This application Nov. 18, 1974, Ser. No. 524,602

Int. Cl.² H01L *27/12*

U.S. Cl. 357—49 **6 Claims**





1. A semiconductor device comprising:

a heavily doped semiconductor substrate;

a lightly doped epitaxial layer overlying a surface of said substrate and having the same conductivity type as said substrate;

an electrically insulating layer disposed on the surface of said epitaxial layer at selected locations and comprising a separate portion at each location;

said epitaxial layer having a surface leakage sensitive device therein beneath each separated portion of said insulating layer;

a plurality of electrically insulating barriers extending from the surface of said epitaxial layer through said epitaxial layer and into said substrate to electrically isolate surface leakage sensitive areas of said devices from each other;

said insulating barriers having a depth greater than the depth of said insulating layer, the depth of said insulating barriers being at least as great as that of said epitaxial layer;

a highly doped diffusion of opposite conductivity type to said substrate and said epitaxial layer disposed in said epitaxial layer and in contact with said insulating barriers;

each of said insulating barriers extending into said substrate for a distance less than the thickness of said substrate and laterally surrounding each said surface leakage sensitive device except where each said barrier is discontinuous to allow a conductive path between said diffusion and a respective one of said surface leakage sensitive devices;

said conductive path comprising the entire thickness of said epitaxial layer

said diffusion and each of said surface leakage sensitive devices being located on opposite sides of said discontinuous barriers; and

each said conductive path constituting a component part of a respective one of said surface leakage sensitive devices.

3,961,356

INTEGRATED CIRCUIT WITH OXIDATION-JUNCTION ISOLATION AND CHANNEL STOP

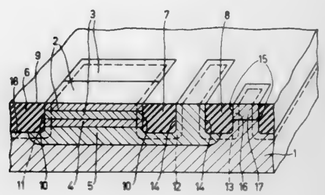
Else Kooi, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 238,784, March 28, 1972, abandoned. This application Apr. 8, 1974, Ser. No. 458,526

Claims priority, application Netherlands, Apr. 3, 1971, 7104496

Int. Cl.² H01L *27/04*

U.S. Cl. 357—50 **7 Claims**



1. A semiconductor device comprising a semiconductor body having a major surface, a pattern of insulating material inset at the major surface in the body over at least part of its thickness to form at least one layer-shaped, surface body part adjoining the inset pattern along its entire circumference and throughout its entire thickness, at least one circuit element having at least first and second regions of a first conductivity type separated by a third region of a second conductivity type, said first and third regions being located entirely in said one layer-shaped body part, said second region having at least a part located in said one layer-shaped body part and said second region part adjoining the inset pattern along its entire circumference, said third region adjoining the inset pattern along at least a part of its circumference and being separated from the major surface at least in part by the first region, and an additional zone in the semiconductor body and adjacent to and bordering the whole of the inset pattern and extending completely between the latter and the remainder of the semiconductor body, said additional zone containing a concentration of second type forming impurities which is smaller than the maximum concentration of first type forming impurities in the second region but still sufficiently large to prevent in the semiconductor adjacent the inset pattern undesired electrical connections between spaced first type regions.

3,961,357

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

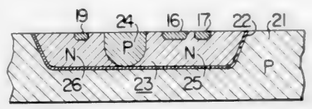
Shinzi Okuhara, Fujisawa, and Ichiro Ohhinata, Yokohama, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 31, 1974, Ser. No. 519,683

Claims priority, application Japan, Nov. 2, 1973, 48-122761

Int. Cl.² H01L *27/04*

U.S. Cl. 357—50 **13 Claims**



1. A semiconductor integrated circuit device comprising a substrate, a plurality of monocrystalline semiconductor regions formed in said substrate and spaced apart from each other by a predetermined distance, each of said monocrystalline semiconductor regions being isolated by a dielectric material, a semiconductor isolation region formed in at least one of said monocrystalline semiconductor regions and extending from the surface thereof by at least a predetermined depth, said semiconductor isolation region having a conductivity type opposite to that of said at least one monocrystalline semiconductor region and said at least one monocrystalline semiconductor region being substantially separated into a plurality of parts by reversely biasing a PN junction between said semiconductor isolation region and said at least one monocrystalline semiconductor region, and at least one circuit element formed in each of the separated parts of said at least one monocrystalline semiconductor region.

3,961,358

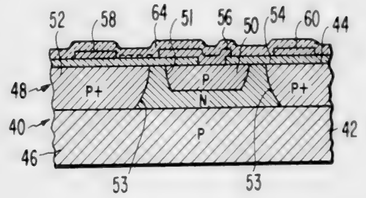
LEAKAGE CURRENT PREVENTION IN SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES

Murray Arthur Polinsky, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 21, 1973, Ser. No. 334,431

Int. Cl.² H01L *29/40*

U.S. Cl. 357—53 **6 Claims**



1. In a semiconductor integrated circuit device of the type which includes a body of semiconductive material having a surface, regions in said body bounded by PN junctions extending to said surface, a layer of insulating material on said surface, and conductors overlying said layer of insulating material, said conductors, during operation of said device, being at different potentials whereby charge can leak off a conductor and spread over a finite area of said layer of insulating material to act as a field plate to induce an inversion layer channel in said body therebeneath, the improvement comprising:

a conductor layer on said insulating layer over a portion of the finite area of said insulating layer which lies between one of said PN junctions and a conductor from which charge can leak, for preventing such a field induced inversion layer channel from extending into contact with one of said PN junctions.

portions of said insulating layer which do not lie between said PN junction and a conductor from which charge can leak having no conductor layer thereon.

3,961,359

VIDEO SIGNAL PROCESSING SYSTEM FOR REPRODUCING A VIDEO SIGNAL FROM A BANDWIDTH LIMITED RECORDED SIGNAL

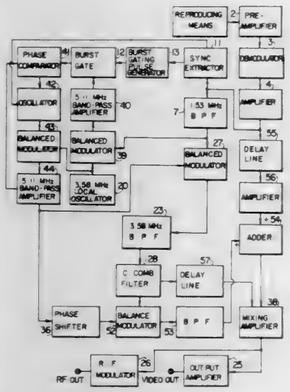
Noboru Okuno, Sennan; Toshiro Kamogawa, and Kosei Kamisaka, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

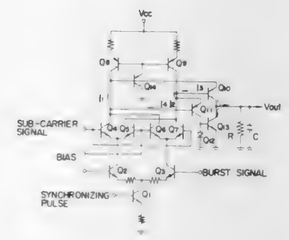
Filed Feb. 20, 1974, Ser. No. 443,994

Claims priority, application Japan, Feb. 20, 1973, 48-20838; Feb. 22, 1973, 48-21462; May 31, 1973, 48-61539; May 31, 1973, 48-61540; July 23, 1973, 48-82950; Aug. 2, 1973, 48-87054; May 31, 1973, 48-64631[U]; May 31, 1973, 48-64632[U]

Int. Cl.² H04N *9/02*

U.S. Cl. 358—4 **16 Claims**





14. A video processing system comprising:

a. means for reproducing an angular modulation signal recorded on a recording medium, said angular modulation signal being produced through angular modulation of a color television signal obtained by colorplexing a frequency shifted chrominance signal shifted to a lower frequency band with a luminance signal by using frequency interlacement;

b. a demodulating means for demodulating said reproduced angular modulation signal;

c. an extracting means for extracting a signal in the lower frequency shifted chrominance signal band from the demodulated signal and providing the extracted signal at its output;

d. a first frequency conversion means having an output terminal for frequency converting the extracted signal in the lower frequency shifted chrominance signal band into a first signal in the chrominance signal band of a standard color television signal;

e. a first separating means connected to the output terminal of said first frequency conversion means for separating the chrominance signal from said first signal, said first separating means including a first comb filter including a one-line delay element and providing the separated chrominance signal at its output;

f. a second frequency conversion means for frequency converting the chrominance signal separated by said first separating means to the frequency band of said lower frequency shifted chrominance signal band;

g. an adding means for adding the output of said second frequency conversion means to said demodulated angular modulation signal in opposite phase to each other so that only the lower frequency shifted chrominance signal in said demodulated angular modulation signal in cancelled; and

h. means for mixing the output of said first separating means with the output of said adding means wherein a standard color television signal is obtained as the output of said mixing means.

3,961,360

SYNCHRONIZING DETECTOR CIRCUIT

Mitsuya Sato, Kokubunji; Yozo Tanihara, and Makoto Furihata, both of Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sept. 9, 1974, Ser. No. 504,364

Claims priority, application Japan, Sept. 7, 1973, 48-100180

Int. Cl.² H04N *9/50*; **H03D** *3/18*, *13/00*

U.S. Cl. 358—27 **11 Claims**

1. In a synchronizing detector circuit which includes:

at least two differentially connected first conductivity type transistors;

a constant current circuit composed of a pair of second conductivity type transistors having their collectors respectively connected to the collectors of the differentially connected transistors, their bases connected to each other, and their emitters connected to a supply voltage;

a filter; and

a second conductivity type output transistor having its base connected to a juncture between one of the said differentially connected transistors and one of the transistors of said constant current circuit and its collector connected to said filter circuit;

a first signal being applied to the base of one of the said differentially connected transistors, and a second signal being applied to the emitters thereof;

the improvement comprising:

means connected between the other of the junctures between the second of said differentially connected transistors and the other of the transistors of said constant current circuit and said filter circuit for preventing the occurrence of an offset voltage in said filter circuit due to noise.

3,961,361

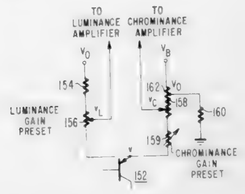
GAIN CONTROL ARRANGEMENT USEFUL IN A TELEVISION SIGNAL PROCESSING SYSTEM

Jack Avins, Princeton, and Bernard Joseph Yorkanis, South Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 23, 1975, Ser. No. 580,690

Int. Cl.² H04N *9/12*

U.S. Cl. 358—27 **11 Claims**



3. In a color television signal processing system of the type including luminance and chrominance signal processing channels, apparatus comprising:

first and second amplifiers respectively included in said luminance and chrominance channels, said amplifiers having gain control voltage characteristics including linear portions extrapolated to cut-off at substantially the same predetermined voltage;

a source of gain controlling voltage; and

means for coupling said gain controlling voltage to said first and second amplifiers.

3,961,362

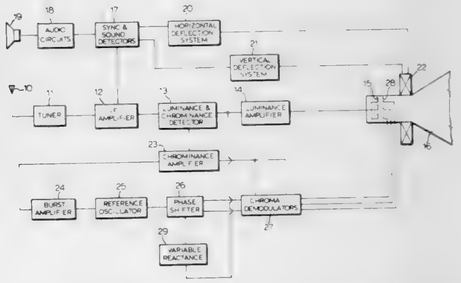
DYNAMIC HUE CONTROL NETWORKS

John D. Lovely, Waterloo, Canada, assignor to Electrohome Limited, Kitchener, Canada

Filed Apr. 11, 1975, Ser. No. 567,060

Int. Cl.² H04N *9/46*

U.S. Cl. 358—28 **7 Claims**



1. In a colour television receiver comprising means responsive to a composite colour television signal, which signal includes a luminance component and a colour subcarrier component modulated with chrominance information, for reconstituting a colour image, which means include a demodulator coupled to a source of chrominance signal and to a source of colour reference signal for developing a colour control signal, means for automatically increasing the phase angle between said reference signal and said chrominance signal when said luminance signal moves toward a signal representing black and for automatically decreasing said phase angle when said luminance signal moves toward a signal representing white, the last mentioned means including a variable phase shift network for varying said phase angle, means for deriving a signal that varies with the level of said luminance signal, and means for applying the derived signal to said variable phase shift network to automatically vary the phase shift imparted by said network such that said phase angle increases and decreases as said luminance signal moves towards signals representing black and white respectively.

3,961,363

COLOR PICKUP TUBES

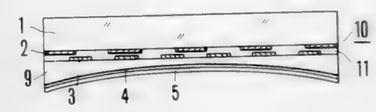
Hayao Kohzai, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 17, 1974, Ser. No. 506,790

Claims priority, application Japan, Nov. 5, 1973, 48-123421

Int. Cl.² H04N *9/07*; **H01J** *31/26*

U.S. Cl. 358—43 **5 Claims**



1. In a vidicon type colour pickup tube for use in a colour television camera system of the type comprising a glass envelope, a transparent glass substrate sealed to one end of said envelope, an optical colour analyzing stripe filter disposed on the rear surface of said glass substrate, a transparent film formed on said filter, a transparent electroconductor film formed on said transparent film and a photoconductor film formed on said electroconductor film, the improvement wherein the thickness of said transparent film is increased gradually from the central portion toward the peripheral portion of said transparent film.

3,961,364

COLOR TELEVISION CAMERA

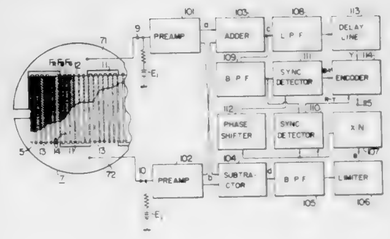
Hiromichi Tanaka, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 26, 1974, Ser. No. 527,267

Claims priority, application Japan, Nov. 27, 1973, 48-133883

Int. Cl.² H04N *9/07*

U.S. Cl. 358—46 **12 Claims**



1. A color television camera for generating an electrical signal corresponding to an object to be televised, comprising:

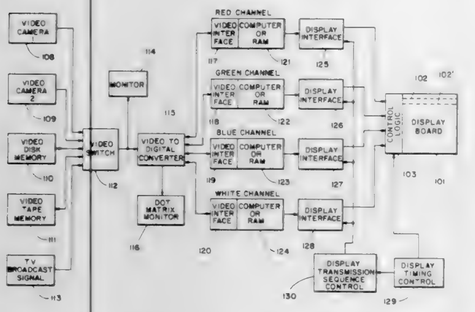
a photoconductive surface adapted to convert an image focused thereon into an electrical signal;

a striped color filter disposed between said object and said scanning surface and adapted to form on said scanning surface a color separated image in accordance with the color components of said object;

a signal electrode divided into a plurality of separate electrode segments, at least one of said plurality of separate electrode segments consisting of a plurality of elements each having a width greater than the recurrence cycle of the filter-element sets in said striped color filter, each of said elements provided with a plurality of beam current interrupting portions arranged at predetermined intervals smaller than said recurrence cycle; and

circuit means adapted for generating from the signals derived from said plurality of electrode segments by the scanning of the electron beam an index signal for generating a color video signal.

3,961,365
COLOR DISPLAY DEVICE
Robert A. Payne, Des Plaines, and Gregory E. Slobodzian, Chicago, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.
Filed Oct. 24, 1974, Ser. No. 517,520
Int. Cl.² H04N *9/30*
U.S. Cl. 358—56 **19 Claims**



1. A system capable of at least eight levels of light intensity for displaying color images on a plurality of visual display devices forming a cluster operated by application of a periodic power waveform, said cluster display devices arranged in modules to form a full display matrix comprising:

a. a source of video color signals;

b. a video to digital signal converter producing digital signals therefrom;

c. means for storing said digital signals; in matrix form;

d. means for extracting the digital signals from said storage means;

e. means for transmitting the extracted signals to said display devices;

f. means for decoding the extracted signals only during selected intervals on said power waveform to obtain color intensity level information for initiating operation of selected ones of said display devices at each interval, each of said selected intervals corresponding to a display device turn on point for a different level of light intensity; and

g. means for applying the intensity level information to predetermined ones of the display devices.

3,961,366
APPARATUS FOR EXPOSING A LIGHT-SENSITIVE LAYER
Paul Weishaupt, Oberburg, Switzerland, assignor to Wagner & Cie AG, Burgdorf, Switzerland
Division of Ser. No. 355,919, April 30, 1973, Pat. No. 3,897,250. This application June 10, 1974, Ser. No. 478,355
Claims priority, application Switzerland, May 15, 1972, 7183/72
Int. Cl.² H04N *5/84*
U.S. Cl. 358—80 **3 Claims**

1. An apparatus for exposing a light-sensitive layer serving to make reproductions of black-and-white or color patterns comprising in combination:

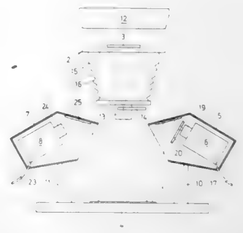
a support table for the light sensitive layer;

a purely optical projection means for projecting a first image of a pattern onto the light-sensitive layer when positioned on the support table;

an electronic camera means for scanning the projected pattern image and for generating video signals of the image of the pattern projected onto the light-sensitive layer;

a video recording means operatively connected with the electronic camera means for storing the video signals on a recording carrier;

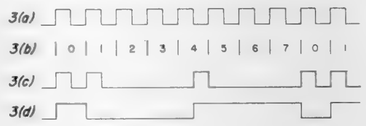
control means operatively connected with said video recording means for selecting a stored video signal corresponding to a second image to be projected onto the light-sensitive layer; and



an electro-optical projection means receiving said selected stored video signal from said video recording means for projecting said second image of the pattern onto the light-sensitive layer to be exposed, to thereby correct the contrast of color shades or both of the first projected pattern image;

said purely optical projection means and said electro-optical projection means being positionally disposed such that said first and second images of the pattern projected onto the light-sensitive layer by said purely optical projection means and said electro-optical projection means substantially coincide.

3,961,367
SELF-CLOCKING, ERROR CORRECTING LOW BANDWIDTH DIGITAL RECORDING SYSTEM
Chin Tao Wu, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.
Filed July 3, 1974, Ser. No. 485,520
Int. Cl.² G11B *5/09*
U.S. Cl. 360—44 **3 Claims**



1. A method for recording digital data signals comprising the steps of:

recording a pulse to identify the beginning of each cell time;

recording one digital value by a single change in polarity of the recorded signal during the cell time; and

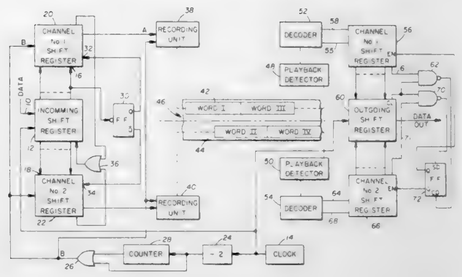
recording another digital value by maintaining the same polarity of the recorded signal during the cell time.

3,961,368
APPARATUS FOR RECORDING AND REPRODUCING DIGITAL DATA
Wayne R. Herbst, Northbrook, and Paul L. Mika, Des Plaines, both of Ill., assignors to Teletype Corporation, Skokie, Ill.
Filed Nov. 20, 1974, Ser. No. 525,435
Int. Cl.² G11B *5/09*
U.S. Cl. 360—48 **6 Claims**

1. An apparatus for recording an informational signal composed of a series of digital words upon an elongated magnetic tape defining at least two continuous, parallely oriented informational channels comprising:

means for splitting said informational signal into at least two groups of digital words said input signal splitting means serving to direct consecutive words of the incoming signal into separate groups so that each group consists of complete non-consecutive ones of the digital words comprising the information signal;

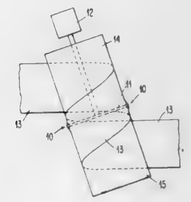
means for concurrently recording each group of digital words upon one of said channels so that each group corresponds to one of said informational channels;



means for detecting the digital words recorded upon each of said channels, said detecting means including at least two playback detectors, each playback detector being associated with one of said channels and providing a signal corresponding to the digital information recorded upon the related channel; and

means for combining the digital signals from said detecting means in their original incoming order so as to provide an output signal having a word arrangement corresponding to the word arrangement of the incoming recorded signal.

3,961,369
ROTATING HEAD APPARATUS HAVING A PROTRUDING DIAMETER HEADWHEEL WHICH SUPPORTS A PROTRUDING FLYING HEAD
Gerald W. Baumann, Longmont; Harvey R. Fraser, Jr., and Francis E. Hauke, both of Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 15, 1974, Ser. No. 488,341
Int. Cl.² G11B *5/60, 21/04, 5/52*
U.S. Cl. 360—84 **9 Claims**



1. Apparatus for uniformly supporting magnetic tape along the path of a rotating noncontact head for reading and/or writing information in magnetic domain tracks, said apparatus comprising:

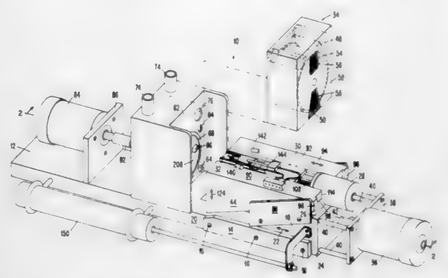
first and second spaced tape support means cooperating to form a first level of support for supporting the tape;

a rotor operably mounted intermediate said support means and cooperating to form a second level of support;

said rotor having an annual surface whose outer diameter extends radially beyond said support means and being operable to support the tape with a gas bearing along the path of said rotor, to thereby produce localized tape deflection coincident with said path; and

a noncontact head mounted on said rotor and extending radially beyond the outer diameter thereof, to thereby produce a third level of support and a moving tent of localized tape deflection coincident with said head.

3,961,370
RAPID ACCESS STORAGE DEVICE
John William Wenner, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 20, 1974, Ser. No. 534,973
Int. Cl.² G11B *23/04, 15/58, 5/78*
U.S. Cl. 360—93 **33 Claims**



1. Single reel magnetic media unit apparatus, comprising:

a stationary tapered-wall vacuum column positioned on one side of said reel,

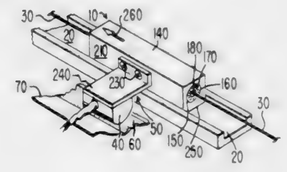
driving means operably connected for reversibly rotating said reel about its axis,

a stationary friction surface positioned on the opposite side of said vacuum column,

first force means operable for loading said magnetic media against the friction surface, whereupon rotation of said reel produces rapid transfer of tape layers from previously formed inner bale and outer bale, said inner and outer bales being separated by a space, and

second force means operable for loading said magnetic media against a reel flange of said reel, whereupon rotation of said reel produces sequential transfer of tape layers between the inner and outer bales.

3,961,371
VIBRATION ABSORPTION SYSTEM FOR A CARD READING MECHANISM
Lawrence P. Kobylarz, Howell, and Ronald H. Mack, Plymouth, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Dec. 20, 1974, Ser. No. 534,679
Int. Cl.² G11B *21/02, 21/18;* **G06K** *7/01*
U.S. Cl. 360—101 **25 Claims**



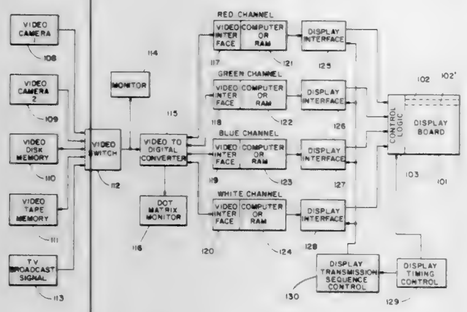
12. A device for dampening external excitations below the response level of an associated read head, the read head being a part of a reader apparatus including a magnetic stripe operative to be read by the read head, a track means guiding the read head for movement along the longitudinal axis of the magnetic stripe, and a drive cable for moving the read head, the device comprising:

circuit means adapted for generating from the signals derived from said plurality of electrode segments by the scanning of the electron beam an index signal for generating a color video signal.

3,961,365
COLOR DISPLAY DEVICE

Robert A. Payne, Des Plaines, and Gregory E. Slobodzian, Chicago, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed Oct. 24, 1974, Ser. No. 517,520
Int. Cl.² H04N *9/30*
U.S. Cl. 358—56 **19 Claims**



1. A system capable of at least eight levels of light intensity for displaying color images on a plurality of visual display devices forming a cluster operated by application of a periodic power waveform, said cluster display devices arranged in modules to form a full display matrix comprising:

a. a source of video color signals;

b. a video to digital signal converter producing digital signals therefrom;

c. means for storing said digital signals; in matrix form;

d. means for extracting the digital signals from said storage means;

e. means for transmitting the extracted signals to said display devices;

f. means for decoding the extracted signals only during selected intervals on said power waveform to obtain color intensity level information for initiating operation of selected ones of said display devices at each interval, each of said selected intervals corresponding to a display device turn on point for a different level of light intensity; and

g. means for applying the intensity level information to predetermined ones of the display devices.

3,961,366
APPARATUS FOR EXPOSING A LIGHT-SENSITIVE LAYER

Paul Weishaupt, Oberburg, Switzerland, assignor to Wagner & Cie AG, Burgdorf, Switzerland

Division of Ser. No. 355,919, April 30, 1973, Pat. No. 3,897,250. This application June 10, 1974, Ser. No. 478,355
Claims priority, application Switzerland, May 15, 1972, 7183/72
Int. Cl.² H04N *5/84*
U.S. Cl. 358—80 **3 Claims**

1. An apparatus for exposing a light-sensitive layer serving to make reproductions of black-and-white or color patterns comprising in combination:

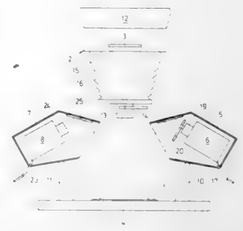
a support table for the light sensitive layer;

a purely optical projection means for projecting a first image of a pattern onto the light-sensitive layer when positioned on the support table;

an electronic camera means for scanning the projected pattern image and for generating video signals of the image of the pattern projected onto the light-sensitive layer;

a video recording means operatively connected with the electronic camera means for storing the video signals on a recording carrier;

control means operatively connected with said video recording means for selecting a stored video signal corresponding to a second image to be projected onto the light-sensitive layer; and



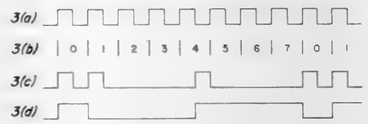
an electro-optical projection means receiving said selected stored video signal from said video recording means for projecting said second image of the pattern onto the light-sensitive layer to be exposed, to thereby correct the contrast of color shades or both of the first projected pattern image;

said purely optical projection means and said electro-optical projection means being positionally disposed such that said first and second images of the pattern projected onto the light-sensitive layer by said purely optical projection means and said electro-optical projection means substantially coincide.

3,961,367
SELF-CLOCKING, ERROR CORRECTING LOW BANDWIDTH DIGITAL RECORDING SYSTEM

Chin Tao Wu, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 3, 1974, Ser. No. 485,520
Int. Cl.² G11B *5/09*
U.S. Cl. 360—44 **3 Claims**



1. A method for recording digital data signals comprising the steps of:

recording a pulse to identify the beginning of each cell time;

recording one digital value by a single change in polarity of the recorded signal during the cell time; and

recording another digital value by maintaining the same polarity of the recorded signal during the cell time.

3,961,368
APPARATUS FOR RECORDING AND REPRODUCING DIGITAL DATA

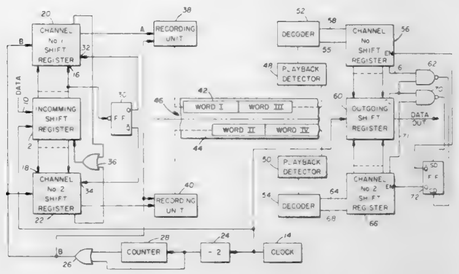
Wayne R. Herbst, Northbrook, and Paul L. Mika, Des Plaines, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Nov. 20, 1974, Ser. No. 525,435
Int. Cl.² G11B *5/09*
U.S. Cl. 360—48 **6 Claims**

1. An apparatus for recording an informational signal composed of a series of digital words upon an elongated magnetic tape defining at least two continuous, parallely oriented informational channels comprising:

means for splitting said informational signal into at least two groups of digital words said input signal splitting means serving to direct consecutive words of the incoming signal into separate groups so that each group consists of complete non-consecutive ones of the digital words comprising the information signal;

means for concurrently recording each group of digital words upon one of said channels so that each group corresponds to one of said informational channels;



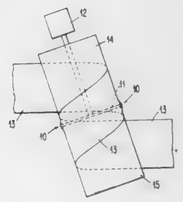
means for detecting the digital words recorded upon each of said channels, said detecting means including at least two playback detectors, each playback detector being associated with one of said channels and providing a signal corresponding to the digital information recorded upon the related channel; and

means for combining the digital signals from said detecting means in their original incoming order so as to provide an output signal having a word arrangement corresponding to the word arrangement of the incoming recorded signal.

3,961,369
ROTATING HEAD APPARATUS HAVING A PROTRUDING DIAMETER HEADWHEEL WHICH SUPPORTS A PROTRUDING FLYING HEAD

Gerald W. Baumann, Longmont; Harvey R. Fraser, Jr., and Francis E. Hauke, both of Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 15, 1974, Ser. No. 488,341
Int. Cl.² G11B *5/60, 21/04, 5/52*
U.S. Cl. 360—84 **9 Claims**



1. Apparatus for uniformly supporting magnetic tape along the path of a rotating noncontact head for reading and/or writing information in magnetic domain tracks, said apparatus comprising:

first and second spaced tape support means cooperating to form a first level of support for supporting the tape;

a rotor operably mounted intermediate said support means and cooperating to form a second level of support;

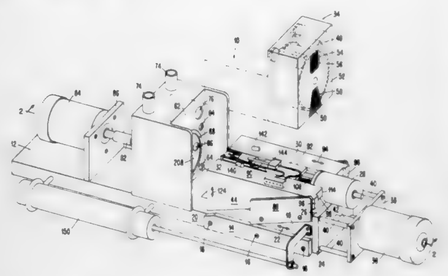
said rotor having an annual surface whose outer diameter extends radially beyond said support means and being operable to support the tape with a gas bearing along the path of said rotor, to thereby produce localized tape deflection coincident with said path; and

a noncontact head mounted on said rotor and extending radially beyond the outer diameter thereof, to thereby produce a third level of support and a moving tent of localized tape deflection coincident with said head.

3,961,370
RAPID ACCESS STORAGE DEVICE

John William Wenner, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1974, Ser. No. 534,973
Int. Cl.² G11B *23/04, 15/58, 5/78*
U.S. Cl. 360—93 **33 Claims**



1. Single reel magnetic media unit apparatus, comprising:

a stationary tapered-wall vacuum column positioned on one side of said reel,

driving means operably connected for reversibly rotating said reel about its axis,

a stationary friction surface positioned on the opposite side of said vacuum column,

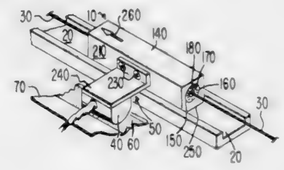
first force means operable for loading said magnetic media against the friction surface, whereupon rotation of said reel produces rapid transfer of tape layers from previously formed inner bale and outer bale, said inner and outer bales being separated by a space, and

second force means operable for loading said magnetic media against a reel flange of said reel, whereupon rotation of said reel produces sequential transfer of tape layers between the inner and outer bales.

3,961,371
VIBRATION ABSORPTION SYSTEM FOR A CARD READING MECHANISM

Lawrence P. Kobylarz, Howell, and Ronald H. Mack, Plymouth, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 20, 1974, Ser. No. 534,679
Int. Cl.² G11B *21/02, 21/18;* **G06K** *7/01*
U.S. Cl. 360—101 **25 Claims**



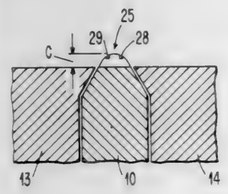
12. A device for dampening external excitations below the response level of an associated read head, the read head being a part of a reader apparatus including a magnetic stripe operative to be read by the read head, a track means guiding the read head for movement along the longitudinal axis of the magnetic stripe, and a drive cable for moving the read head, the device comprising:

a. housing means mounting said magnetic stripe reading head,
b. a damping element of predetermined density and compressible resiliency disposed within said housing means, and
c. means responsive to the starting and stopping of said drive cable and said reading head effective for applying a constant bias to said damping element whereby the frequency vibrations caused by the starting and stopping excitation of the drive cable are reduced below said response level of said reading head.

3,961,372
MAGNETIC TAPE TRANSPORT WITH SLOTTED ROTATING HEAD

George W. Brock, and Frederick W. Hahn, Jr., both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 5, 1974, Ser. No. 486,028
Int. Cl.² G11B *5/60*
U.S. Cl. 360—102 **7 Claims**



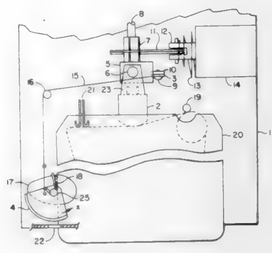
1. A rotating magnetic transducer for magnetically reading and writing information from a flexible information-storage media which flies relative to said rotating magnetic transducer, comprising:
a flying flexible information-storage media having a magnetizable surface,
a head having pole pieces with transducing interface rotating relative to said media,
said transducing interface having a spherical surface and including a transducing gap with at least two parallel surface slots, being positioned in the pole pieces of said head, and extending in the general direction of said transducer movement, perpendicular to said transducing gap and positioned one on each side of the transducing gap, and
support means to rotate said head so that an air bearing is generated thereby enabling the storage media to fly with microinch adjacency to the transducing interface of the head.

3,961,373
TRACK INDICATING MECHANISM FOR MAGNETIC TAPE RECORDING AND REPRODUCING DEVICE

Susumu Takagi, Iwaki, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Dec. 4, 1974, Ser. No. 529,483
Claims priority, application Japan, Dec. 27, 1973, 49-4914
Int. Cl.² G11B *21/08*
U.S. Cl. 360—106 **5 Claims**

1. A track indicating mechanism for a multi-track magnetic tape recording and/or reproducing device including in combination: a frame member; a cam member mounted for rotation in said frame member and movable in accordance with a track changing operation of the magnetic tape device; an indicator lever arm having a cam follower portion abutting said cam member and pivotally mounted at one end on said frame member; a spring; track indicating means urged in a predetermined direction by said spring; and linking means connecting the other end of said indicator lever arm to said track indicating means for constantly resiliently urging said cam follower portion of said indicator lever arm against said cam member through the forces applied by said spring to said track indicat-

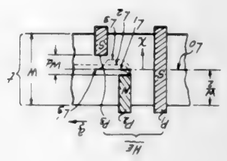


ing means, so that said indicator lever arm moves said track indicating means to predetermined positions corresponding to predetermined rotational positions of said cam member.

3,961,374
STATIC MAGNETIC ERASE HEAD

Nobuyuki Murata, Yokohama, and Makoto Saito, Omiya, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 27, 1974, Ser. No. 509,946
Claims priority, application Japan, Oct. 2, 1973, 48-110867
Int. Cl.² G11B *5/12*
U.S. Cl. 360—118 **9 Claims**



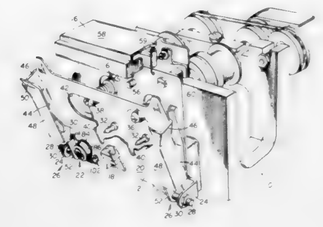
1. A magnetic erasing head comprising at least three magnetic poles arranged to engage the recording track of a moving magnetic recording medium, said first magnetic pole extending perpendicular to the direction of such movement and engaging at least the full width of said recording track and providing a static magnetic field sufficient to magnetize said track with a first polarity to a magnetically saturated state, a second magnetic pole engaging substantially one-half of said recording track with one edge of said second pole extending beyond one edge of the recording track, the other edge of said pole being spaced from the centerline of the recording track on the same side as said one edge of the recording track, said second pole providing a static magnetic recording field which is greater than the maximum coercive force of the magnetic recording medium, said second pole having a polarity opposite to that of the first pole, said third magnetic pole engaging the other half of said recording track below said centerline and providing a static magnetic field to said magnetic recording medium which is greater than the minimum coercive force of the magnetic recording medium, said third pole having a polarity the same as the first pole, said first, second and third magnetic poles being spaced in the direction of such movement with said second pole between said first and third poles.

3,961,375
APPARATUS FOR CLEANING AN INFORMATIONAL TAPE

Paul L. Mika, Des Plaines; Kurt Rothlisberger, Morton Grove, and Richard F. Vee, Chicago, all of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed July 15, 1974, Ser. No. 488,623
Int. Cl.² G11B *5/00*
U.S. Cl. 360—137 **13 Claims**

1. In combination with a cassette recorder having a cradle defining a cavity for receipt of a cassette containing a magnetic tape, wherein the cradle has an inner wall disposed toward and serving to define at least a portion of the cavity, and wherein the cassette is selectively movable from a first position to a second position, an apparatus for wiping particles from the surface of the moving magnetic tape comprising:
a rotatable bobbin mounted upon said inner wall of said cradle;
a wiping media wrapped about an outwardly disposed surface of said bobbin, said bobbin being positioned on said inner wall of said cradle for selective surface contact of the wiping media with the magnetic tape carried in the cassette; and
means, actuated by movement of the cassette from the first to the second position for incrementally rotating said bobbin so that successive segments of the wiping media



are presented to the tape in the cassette as a result of the incremental rotation of said bobbin when the cassette is moved.

DESIGN PATENTS

GRANTED JUNE 1, 1976

ERRATA

For CLASS	See PATENT NO.
007-137	240,099
025-035	240,126
016-015	240,160
016-014	240,161
016-031	240,162

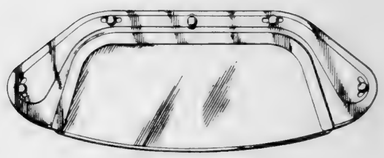
DESIGNS

JUNE 1, 1976

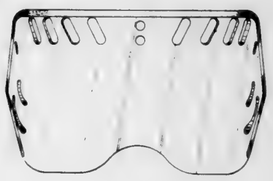
240,091
DIAPER COVER
Yoshizo Okuda, 3–16 Gakuenkita 1-chome, Nara, Japan
Filed Sept. 9, 1974, Ser. No. 504,065
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—10



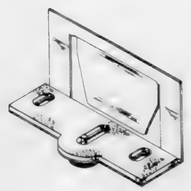
240,092
DETACHABLE FLEXIBLE FACE SHIELD FOR FITTING THE CURVATURE OF A HELMET
Kenard E. Urion, Dover, Del., assignor to ILC Industries, Inc., Frederica, Del.
Filed Jan. 29, 1975, Ser. No. 545,060
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233



240,093
FACE SHIELD FOR ATTACHMENT TO HELMET
John W. Meadows, Natick, Mass., assignor to M.G.S., Inc., Framingham, Mass.
Filed May 15, 1975, Ser. No. 577,729
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233



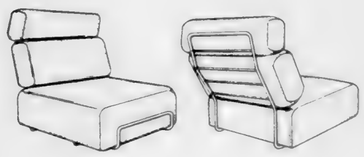
240,094
BELT-ATTACHED CAMERA CARRIER
Arnoldo D. Linn and Berta Cortes, both of 2046 Greenwich St., San Francisco, Calif. 94123
Filed Nov. 21, 1974, Ser. No. 526,025
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400



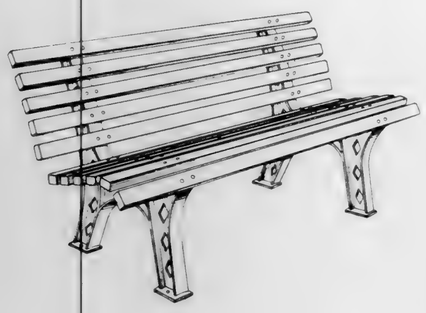
240,095
TOOTHBRUSH
Arnold Sims, Beachwood, Ohio, assignor to Vistron Corporation, Cleveland, Ohio
Filed Apr. 10, 1974, Ser. No. 459,552
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—15



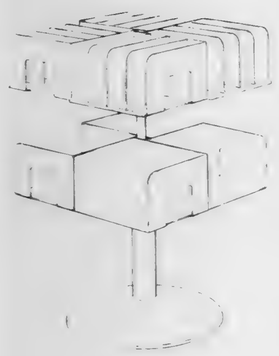
240,096
CHAIR OR SIMILAR ARTICLE
Christian Gunnar Haggstam, Sockenstugan, Kyrkskolan, and Hans Tage Alfred Ehrlin, Sjostugan, Hatte, both of S–573 00 Tranas, Sweden
Filed Sept. 10, 1973, Ser. No. 395,406
Claims priority, application Sweden Mar. 12, 1973
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47



240,097
GARDEN BENCH
Theodor M. Box, 1108 Aileen Road,
Brielle, N.J. 08730
Filed Apr. 10, 1975, Ser. No. 566,796
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—60



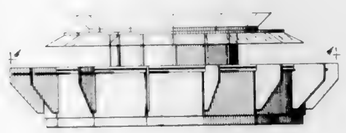
240,098
COMBINED FILE AND DISPLAY RACK
Sven-Eric Juhlin, Gustavsberg, Sweden, assignor to AB
Gustavsbergs Fabriker, Gustavsberg, Sweden
Filed Dec. 24, 1974, Ser. No. 536,170
Claims priority, application Sweden July 11, 1974
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—24

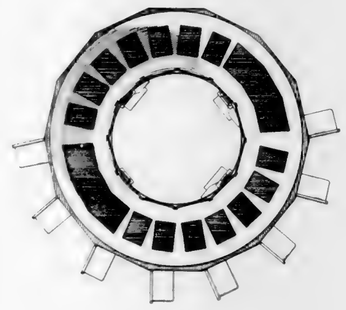


240,099
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to
Oneida Ltd., Oneida, N.Y.
Filed Feb. 18, 1975, Ser. No. 550,168
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

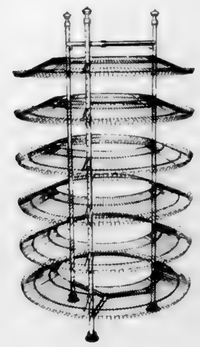


240,100
COMBINED ROTATING CAFETERIA TYPE FOOD
SERVICE COUNTER AND DISPLAY SHELF
Elmer R. Weddendorf, 2541 N. Bend Road, Apt. 4,
Cincinnati, Ohio 45239
Filed Sept. 3, 1974, Ser. No. 502,566
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—146

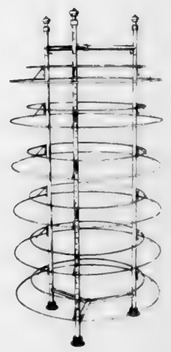




240,101
DISPLAY RACK FOR SHOES OR THE LIKE
Roland Redler, 8 Sundeliusgatan,
602 35 Norrkoping, Sweden
Filed Jan. 8, 1975, Ser. No. 539,550
Term of patent 7 years
Int. Cl. D20—*02*
U.S. Cl. D6—146



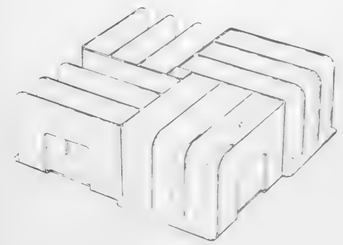
240,102
DISPLAY RACK FOR SHOES OR THE LIKE
Roland Redler, 8 Sundeliusgatan,
602 35 Norrkoping, Sweden
Filed Jan. 8, 1975, Ser. No. 539,551
Term of patent 7 years
Int. Cl. D20—*02*
U.S. Cl. D6—146



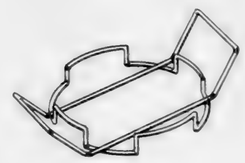
240,103
BANK OF LOCKERS FOR BICYCLES,
MOTORCYCLES OR THE LIKE
Benjamin Agundez III, 5930 Franklin,
Los Angeles, Calif. 90028
Filed Oct. 29, 1974, Ser. No. 518,320
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—157



240,104
COMBINED FILE AND DISPLAY RACK
Sven-Eric Juhlin, Gustavsberg, Sweden, assignor to AB
Gustavsbergs Fabriker, Gustavsberg, Sweden
Filed Dec. 24, 1974, Ser. No. 536,169
Claims priority, application Sweden July 11, 1974
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189



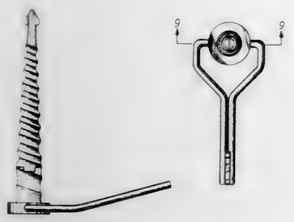
240,105
PIE PAN CRADLE
John C. Boyd and Antonia D. Boyd, both of 21654
Cherryland Court, Hayward, Calif. 94541
Filed July 1, 1974, Ser. No. 484,900
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—130



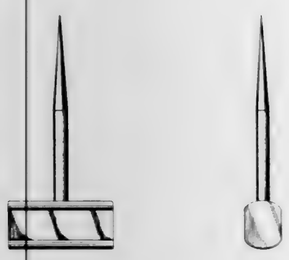
240,106
TABLE FORK
Chokichi Sato, 16–11 Higashi-Nippori 5-chome,
Arakawa-ku, Tokyo, Japan
Filed May 29, 1974, Ser. No. 474,211
Claims priority, application Japan Dec. 29, 1973
Term of patent 3½ years
Int. Cl. D7—*01*
U.S. Cl. D7—137



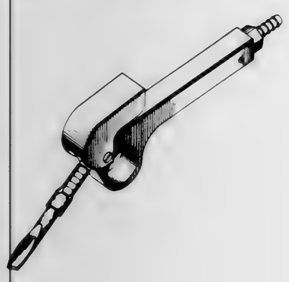
240,107
SPIRAL FID FOR HAWSERS
James D. McGrew, 8120 Rio Linda Blvd., Elverta, Calif. 95626
Filed Mar. 21, 1975, Ser. No. 560,804
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



240,108
COMBINED FID AND AWL
James D. McGrew, 8120 Rio Linda Blvd., Elverta, Calif. 95626
Filed Apr. 3, 1975, Ser. No. 564,610
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



240,109
VACUUM PICK-UP FOR WAFERS
Bruce K. Miller, Mesa, and T. John Trayes, Phoenix, Ariz., assignors to Motorola, Inc., Chicago, Ill.
Filed Mar. 28, 1974, Ser. No. 455,849
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—71



240,110
UNIVERSAL SANDING BLOCK
Jose A. Lugo, Ridgewood, N.Y., assignor to Jose A. Lugo, Ridgewood, N.Y.
Filed Oct. 2, 1974, Ser. No. 511,169
Term of patent 7 years
Int. Cl. D8—*05*
U.S. Cl. D8—90



240,111
HACK SAW
Carl-Arne Breger, Malmo, and P. Mats A. Danielsson, Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden
Filed Apr. 8, 1975, Ser. No. 566,053
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—96

240,112
PRESSURIZED DISPENSING CONTAINER
William J. O'Neil, Jr., Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio
Filed Dec. 18, 1974, Ser. No. 533,859
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—9



240,113
CONTAINER FOR PULVERULENT MATERIALS
George R. Conrad, Chicago, Ill., assignor to Blue Cross Laboratories, Inc., North Hollywood, Calif.
Filed Oct. 24, 1974, Ser. No. 517,725
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—146



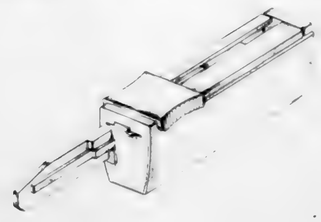
240,114
STORAGE CONTAINER FOR FOOD OR THE LIKE
Arnold C. Martinelli, Lake Shore Drive, Rawdon, Quebec, Canada
Filed Mar. 27, 1974, Ser. No. 455,337
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



240,115
TYPE BALL CONTAINER
Lewis H. Herr, Lansdale, and John S. Kovacs, Norristown, Pa., assignors to Sperry Univac, Blue Bell, Pa.
Filed June 19, 1974, Ser. No. 480,610
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—222

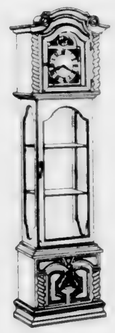


240,116
RAZOR BLADE DISPENSER
Norman D. Poisson, Andover, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of design application Ser. No. 366,559, June 4, 1973, now Patent No. 235,135. This application Jan. 22, 1974, Ser. No. 435,537
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D9—224



240,117
STACKING INSERT FOR CONTAINERS
Hans Ake Hilding Skagmo, Helsingborg, Sweden, assignor to Svenska Elopak, Helsingborg, Sweden
Continuation-in-part of design application Ser. No. 216,324, Jan. 7, 1972. This application July 19, 1973, Ser. No. 380,828
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294

240,118
COMBINED FLOOR CLOCK AND CURIO CABINET
Leonard Eisen, 14 Lomas Lane, Montvale, N.J. 07645
Filed Oct. 19, 1973, Ser. No. 407,785
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—16



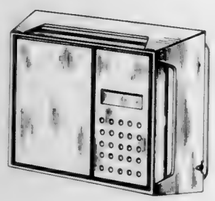
240,119
METAL DETECTOR CASE
Gilbert Y. Y. Yue, Hong Kong, and Beatrice Siu Hween Koot, San Francisco, Calif. (both of 771 45th Ave., San Francisco, Calif. 94121)
Filed Jan. 6, 1975, Ser. No. 538,752
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—47



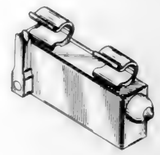
240,120
COMBUSTION PRODUCTS DETECTOR
Ralph E. Pasquarette, Jordan, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 21, 1974, Ser. No. 525,784
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



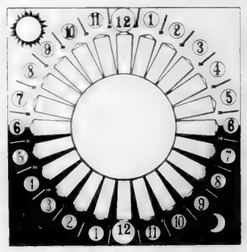
240,121
COMBUSTION PRODUCTS DETECTOR
Ralph E. Pasquarette, Jordan, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 21, 1974, Ser. No. 525,792
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



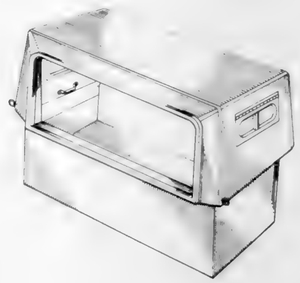
240,122
FISHING SIGNAL
Theodore Montgomery, Box 43, and Wayne T. Wise, Box 175, both of Frankfort, S. Dak. 57440
Filed Mar. 6, 1975, Ser. No. 555,744
Term of patent 14 years
Int. Cl. D10—*06*; D26—*02*
U.S. Cl. D10—114



240,123
FACE PLATE FOR SURROUNDING THE DIAL OF AN INTERNATIONAL TIME CLOCK
Tancredi E. De Lorenzo, 20000 Woodside, Harper Woods, Mich. 48225
Filed July 29, 1974, Ser. No. 492,449
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—123



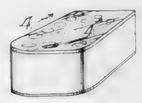
240,124
AUXILIARY HOUSING FOR PICKUP TRUCKS
Harold G. Phillips, Rte. 3, Box 103A, Pasadena, Md. 21122
Filed Mar. 24, 1975, Ser. No. 561,543
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



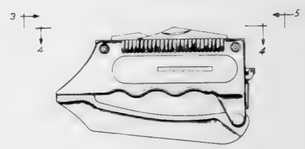
240,125
AUTOMOBILE WINDOW LOUVER
Henry Bolden, 70 Peck St., New Haven, Conn. 06513
Filed Mar. 24, 1975, Ser. No. 561,248
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181



240,126
STAGE SECTION
Michael J. Mujadin, Fort Lauderdale, Fla., assignor to Early Grey Associates, Fort Lauderdale, Fla.
Filed Apr. 22, 1974, Ser. No. 462,971
Term of patent 14 years
Int. Cl. D25—*35*
U.S. Cl. D13—1 R



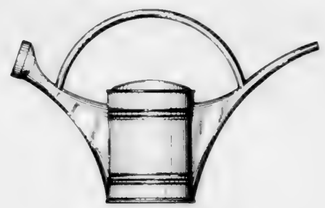
240,127
FISHERMAN'S IMPLEMENT
Kenneth John McDonald, Pyrmont, New South Wales, Australia, and John Bunyan, Redfern, New South Wales, Australia, assignors to K-tel International, Inc.
Filed Nov. 4, 1974, Ser. No. 520,902
Claims priority, application Australia May 3, 1974
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31



240,128
WATER PURIFIER
William H. Stephens and David R. Jones, Albuquerque, N. Mex., assignors to Water Pollution Control Systems, Inc., Dallas, Tex.
Filed Apr. 29, 1974, Ser. No. 464,777
Term of patent 7 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



240,129
SPRINKLING CAN
Edward C. Grotz, 20 E. Dale Road, Northfield, Wilmington, Del. 19810
Filed Aug. 7, 1974, Ser. No. 495,394
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—11





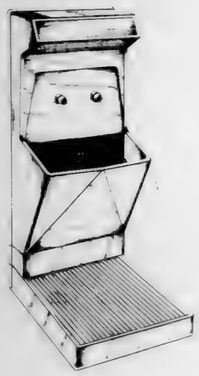
240,130
AIR PUMP FOR CAMPING STOVES
William Albert Folke, Upplands Vasby, Sweden, assignor to Aktiebolaget Optimus, Upplands Vasby, Sweden
Filed Aug. 5, 1975, Ser. No. 602,183
Claims priority, application Sweden Feb. 5, 1975
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—15



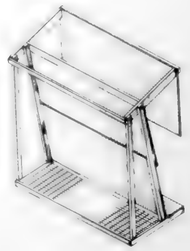
240,131
T-TYPE FITTING
Patrick F. Dwyer, 6221 Hillfield NW., North Canton, Ohio 44720
Filed May 19, 1975, Ser. No. 578,467
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



240,132
URINAL
Gunnar Torbjorn Lofgren, Krakuddsvagen 23, Nasby Park, 183 51 Taby 3, Sweden
Filed Oct. 8, 1974, Ser. No. 513,212
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—68

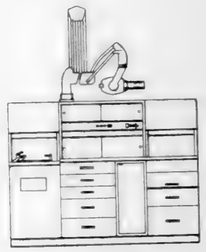


240,133
COMBINED AIR INTAKE AND VECTOR CONTROL FOR AGRIBUILDINGS
Donald L. De Myer, % Cycle Systems, Inc., 9290 Belding Road NE., Rockford, Mich. 49341
Filed Feb. 11, 1975, Ser. No. 548,901
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139

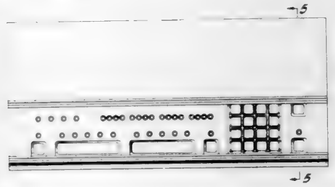


240,134
DENTAL CABINET
David D. Pierson, Pittsford, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed July 8, 1974, Ser. No. 486,360
Term of patent 14 years
Int. Cl. D6—*04;* D24—*01*
U.S. Cl. D24—1 B

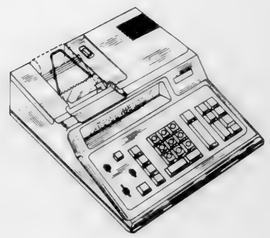




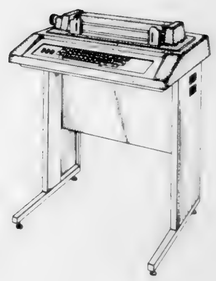
240,135
COMPUTER CONTROL PANEL
Kenneth C. Gorman, Mission Viejo, Robert E. Kopicki, Newport Beach, Joseph C. Reiss, Hemet, and Ronald E. Loosen, Malibu, Calif., assignors to Computer Automation, Inc., Irvine, Calif.
Filed Apr. 30, 1973, Ser. No. 355,936
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



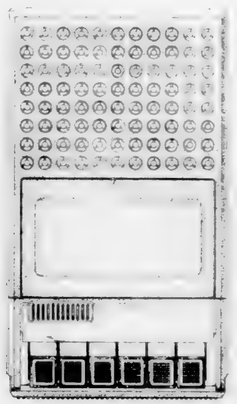
240,136
ELECTRONIC CALCULATING MACHINE
Shigetoshi Hazama, Osaka, Japan, assignor to Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, Japan
Filed Aug. 21, 1974, Ser. No. 499,150
Claims priority, application Japan Feb. 25, 1974
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D26—5 C



240,137
TELEPRINTER
Paul A. Jenkins, Groton, and Richard C. Schneider, Marlboro, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Sept. 16, 1974, Ser. No. 506,138
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



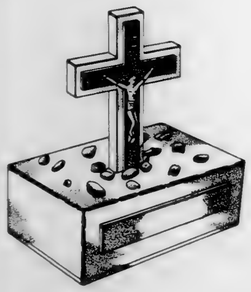
240,138
CASSETTE TAPE RECORDER
Richard Culbertson, Manlius, and Cornelius W. Christie, Fulton, N.Y., assignors to General Electric Company, Syracuse, N.Y.
Filed May 30, 1975, Ser. No. 582,477
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



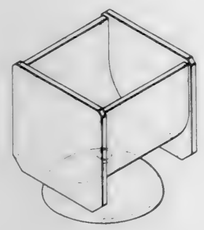
240,139
LIGHTER
Guy Neyret, Francheville, Rhone, France, assignor to Etablissements Genoud & Cie, Venissieux, Rhone, France
Filed Aug. 30, 1974, Ser. No. 502,228
Claims priority, application France Mar. 13, 1974
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—42



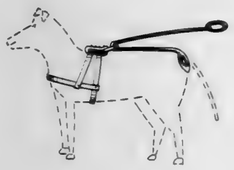
240,140
CRUCIFIX
Henry B. Graves III, Miami, Fla.
(101 Antiquera, Coral Gables, Fla. 33134)
Filed June 10, 1974, Ser. No. 478,050
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A



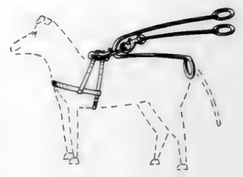
240,141
AQUARIUM OR SIMILAR ARTICLE
Tony Robert, 5701 Southwest Freeway,
Houston, Tex. 77057
Filed Mar. 24, 1975, Ser. No. 561,490
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—6



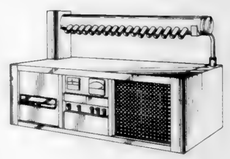
240,142
TAIL ENGAGED DOG CONTROL HARNESS
John P. Francis, 20 Boston St.,
Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 248,778, Apr. 28, 1972, now Patent No. 230,036.
This application Oct. 5, 1973, Ser. No. 404,119
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—38



240,143
TAIL ENGAGED DOG CONTROL HARNESS WITH DUAL HAND LEASH
John P. Francis, 20 Boston St.,
Haverhill, Mass. 01830
Continuation-in-part of design application Ser. No. 248,778, Apr. 28, 1972, now Patent No. 230,036.
This application Nov. 8, 1973, Ser. No. 413,901
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—38



240,144
FREEZE DRYER
Douglas S. Fraser, New Paltz, N.Y., assignor to FTS Systems, Inc., Stone Ridge, N.Y.
Filed July 29, 1974, Ser. No. 492,887
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D32—2 C



240,145
MAGNETIC MIXING BAR
Leonard E. Brown and Larry E. Brown, Morton Grove, Ill., assignors to Parkside Industries, Chicago, Ill.
Filed Feb. 24, 1975, Ser. No. 552,383
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D32—2 C



240,146
PUPPET
Jean Lowenstein, Erdenheim, Pa., and Robert V. Myers, Elgin, Ill., assignors to David C. Cook Publishing Company, Elgin, Ill.
Filed Jan. 10, 1975, Ser. No. 540,285
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



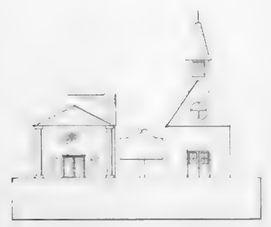
240,147
PUPPET
Robert V. Myers, Elgin, Ill., and Jean Lowenstein, Erdenheim, Pa., assignors to David C. Cook Publishing Company, Elgin, Ill.
Filed Jan. 10, 1975, Ser. No. 540,212
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R



240,148
GAME NET
Fred L. Carbonero, 1623 Kingsmere,
Rochester, Mich. 48063
Filed Nov. 20, 1974, Ser. No. 525,343
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 VV



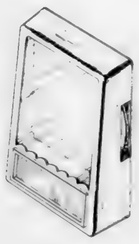
240,149
TOY SAVINGS BANK
Lesta V. Herring, 1911 Ariel Drive,
Dallas, Tex. 75232
Filed Apr. 24, 1974, Ser. No. 463,558
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D34—11 A



240,150
INFLATABLE BOXING GLOVE
Jimmy Kowk Wing Lau, 2–1, Section 2, Shihchuan Road, Panchiao, Taipei Hsien, Taiwan, Republic of China
Filed June 26, 1974, Ser. No. 483,281
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15 DD



240,151
TOY STAGE
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner, Inc., New York, N.Y.
Filed Oct. 7, 1974, Ser. No. 512,570
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 R



240,152
SPREADER FOR FERTILIZER AND OTHER GRANULAR OR POWDERY MATERIAL
Dieter Raffler and Franco Clivio, Ulm, Germany, assignors to Gardena Kress + Kastner GmbH
Filed Apr. 3, 1974, Ser. No. 457,621
Claims priority, application Germany Oct. 8, 1973
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D35—2 R



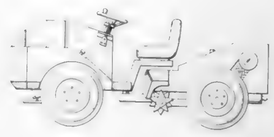
240,153
LAPIDARY APPARATUS FOR PROCESSING STONES
John W. Flaherty, Galesburg, Ill., and Robert C. Ingersoll and William F. Goodrich, Adrian, Mich., assignors to Dick Blick Company
Filed Mar. 17, 1975, Ser. No. 559,263
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D37—1 A



240,154
LAPIDARY APPARATUS FOR PROCESSING STONES
John W. Flaherty, Galesburg, Ill., and Robert C. Ingersoll and William F. Goodrich, Adrian, Mich., assignors to Dick Blick Company
Filed Mar. 17, 1975, Ser. No. 559,264
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D37—1 A



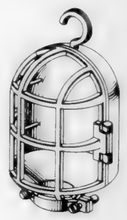
240,155
SELF PROPELLED ARTICULATED LAWN TREATING VEHICLE
John W. Burns and James A. Burns, Olney, Md. (both of 1107 Taft St., Rockville, Md. 20850)
Filed Apr. 4, 1975, Ser. No. 565,087
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 E



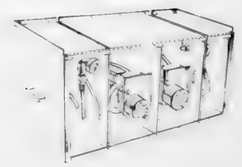
240,156
SHADE FOR A LAMP
Bozidar M. von Serda, 9304 Santa Monica Blvd., Beverly Hills, Calif. 90210
Filed Aug. 26, 1974, Ser. No. 500,324
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 D



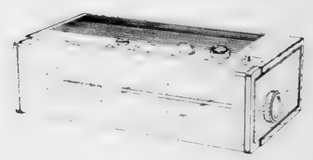
240,157
LIGHT GUARD
Harry M. Dorn, North Miami, Fla. (1133 Broadway, New York, N.Y. 10010)
Filed Nov. 13, 1974, Ser. No. 523,399
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 B



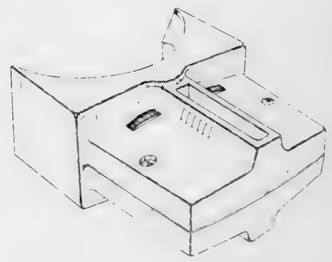
240,158
FOAM INSULATION APPLICATION UNIT
Henry Sperber, assignor to Ark-Seal Corporation, Denver, Colo.
Filed Mar. 29, 1974, Ser. No. 455,983
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 R



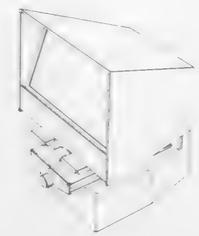
240,159
CLOCK RADIO
Kunio Hoshino, Kadoma, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Kadoma, Osaka, Japan
Filed May 9, 1974, Ser. No. 468,511
Claims priority, application Japan Nov. 12, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



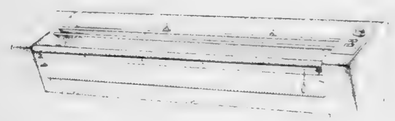
240,160
APERTURE CARD VIEWER
Thomas C. Laughon, Columbia, Md., and James H. Sias, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 14, 1974, Ser. No. 451,242
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—15



240,161
MICROFICHE VIEWER
Peter Joseph Hall, Willowdale, Ontario, Canada, assignor to Microfilm Recording Co. Ltd.
Filed July 31, 1974, Ser. No. 493,408
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—14



240,162
DIAZO DEVELOPER APPARATUS
Paul Matwey, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.
Filed Jan. 17, 1975, Ser. No. 541,924
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



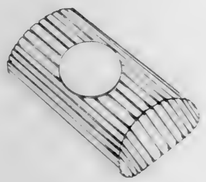
240,163
FONT OF LETTERS AND FIGURES
Robert N. Craven, Valley Cottage, N.Y., assignor to The Ealing Corporation, Cambridge, Mass.
Filed Feb. 28, 1973, Ser. No. 337,285
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B



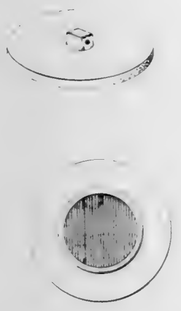
240,164
FONT OF NUMBERS
Marius Gagnadre, 8304 De Gaspe St., Montreal, Quebec, H2P 2K1, Canada
Filed Feb. 27, 1975, Ser. No. 512,057
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B



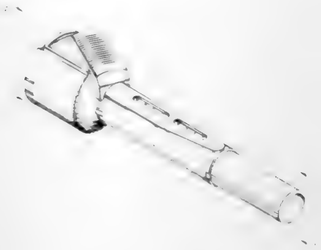
240,165
SOAP BAR
Tedd Theodore Thomas, New Canaan, Conn., assignor to Herbert S. Sylvester, Colgate-Palmolive Company, New York, N.Y.
Filed May 16, 1974, Ser. No. 470,455
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D71—1 B



240,166
MEDICAL ELECTRODE
James Vernon Cartmell and Edwin Charles Beck, Dayton, Ohio, assignors to NDM Corporation
Filed Jan. 13, 1975, Ser. No. 540,652
Term of patent 14 years
Int. Cl. D24—*01, 99*
U.S. Cl. D83—1 F



240,167
CURLING IRON ATTACHMENT
Joseph A. Rinaldi, Oradell, N.J., assignor to The Gillette Company, Boston, Mass.
Filed Dec. 16, 1974, Ser. No. 533,207
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



240,168
COMBINATION CARD AND VIEWER
James C. Brettman, 2770 NE. 6th St., and Mary Lynne Lauson, 777 S. Federal Highway, both of Pompano Beach, Fla. 33062
Filed Jan. 28, 1974, Ser. No. 436,991
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 F



240,169
SIGN STRUCTURE OR THE LIKE
Mike Summey, 514 Rhododendron Ave., Black Mountain, N.C. 28711
Filed Feb. 11, 1974, Ser. No. 440,954
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 1ST DAY OF JUNE, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.M. Industries: *See—*
Cloud, Robert H.; and Hopton, Edward J., 3,959,892.

A/S Hydraulik Brattvaag: *See—*
Naas, Erling, 3,960,340.

Aagaard, Karl Lund. Method and apparatus for purifying and separating bee glue. 3,960,329, Cl. 241-23.000.

AB Bofors: *See—*
Gustafsson, Jan Kenneth, 3,960,010.

AB Gustavsbergs Fabriker: *See—*
Nordgren, Peter, 3,959,829.

AB Inventing: *See—*
Wallsten, Hans Ivar, 3,960,386.

Abbas, Shakir A.; Chang, Chi S.; Freeman, Leo B., Jr.; and Knepper, Ronald W., to International Business Machines Corporation. Semiconductor device having electrically insulating barriers for surface leakage sensitive devices and method of forming. 3,961,355, Cl. 357-49.000.

Abbott Laboratories: *See—*
Bujan, Albert Frank, 3,960,149.

Abbuhl, Hermann; and Tanner, Hans, to Hydrel A.G.; and W. Schneeberger AG. Series roll body conveyance. 3,960,413, Cl. 308-3.00A.

Abe, Michio, to Tokai TRW & Co. Limited. Method for producing a core form to be employed in the molding of a ball joint bearing. 3,959,872, Cl. 29-527.400.

Abele, Rolf, to Siemens Aktiengesellschaft. Dry-reed contact construction. 3,961,148, Cl. 200-268.000.

Abernathy, David D.; Adams, Herbert D.; Gilbertson, Warren L.; Leonard, Isaac E., III; and Silvia, Denis A., to United States of America, Navy. Variable geometry warhead. 3,960,085, Cl. 102-67.000.

Abney, Dave L.; Williams, Robert C.; and Gilbert, Horace E., to Dresser Industries, Inc. Reverse acting lock open crossover valve. 3,960,366, Cl. 251-341.000.

Aboaf, Joseph A.; Broadie, Robert W.; Hull, Edward M.; and Pogge, H. Bernhard, to International Business Machines Corporation. High power semiconductor device. 3,961,353, Cl. 357-34.000.

Aboutboul, Henri A.; Kirch, William; and Krekeler, Jerome H., to National Petro Chemicals Corporation. Olefin polymerization process. 3,960,826, Cl. 526-103.000.

Abrams, Richard L.; and Chester, Arthur N., to Hughes Aircraft Company. Waveguide gas laser with wavelength selective guide. 3,961,283, Cl. 331-94.50C.

Abriany, Raymond R. Catalytic muffler. 3,960,509, Cl. 23-288.00F.

Acevedo, Ignacio. Flush valve and overflow pipe assembly for a toilet tank. 3,959,828, Cl. 4-57.00P.

ACF Industries, Incorporated: *See—*
Plympton, Michael R., 3,960,168.

Acme Highway Products Corporation: *See—*
Kerschner, James J., 3,960,462.

Acord, William A., to Beckman Instruments, Inc. Chemical analyzer with automatic calibration. 3,960,497, Cl. 23-253.00R.

Acurex Corporation: *See—*
Sweet, John R., II; and Chan, Kingsley, 3,960,293.

Adahan, Carmeli, to Singer Company, The. Combination rotary paper cutter and logo printer. 3,960,080, Cl. 101-291.000.

Adams, Herbert D.: *See—*
Abernathy, David D.; Adams, Herbert D.; Gilbertson, Warren L.; Leonard, Isaac E., III; and Silvia, Denis A., 3,960,085.

Adams, John H. Anchor bolt holder. 3,960,356, Cl. 249-205.000.

Adams, Phillip: *See—*
Merianos, John J.; and Adams, Phillip, 3,960,538.

Addressograph Multigraph Corporation: *See—*
Griesmer, Jerome J., 3,960,556.
Stevko, Phillip J., Jr., 3,960,109.

Adler, Karl; Ducommun, Georges; and Wantz, Charles A., to Biviator S.A. Oscillator for time measurement. 3,961,209, Cl. 310-6.000.

Adler, Klaus: *See—*
Heichele, Friedrich; Vojtechovsky, Georg; Hollenbach, Georg; Adler, Klaus; and Bauer, Johann, 3,960,986.

Adler, Stanford L.: *See—*
Gordon, Abraham; and Adler, Stanford L., 3,960,020.

Adolphi, Heinrich: *See—*
Keihs, Karl; Adolphi, Heinrich; and Huber, Rolf, 3,960,885.

Aebi, Otto, to Hermes Precisa International S.A. Typewriter mechanism for automatically loading and ejecting paper. 3,960,258, Cl. 197-127.00R.

Agarwal, Jagdish Chandra; Giberti, Richard Andre; and Petrovic, Louis John, to Kennecott Copper Corporation. Method for removal of sulfur from coal. 3,960,513, Cl. 44-1.00R.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Baulard-Cogan, Raymond Gerard, 3,959,919.

Ahlgren, Erick L.; McMorris, Arthur H.; Miille, Jerry L.; and Schweppe, Joseph L., to Houston Engineering Research Corporation. Automatic label-printing apparatus. 3,960,072, Cl. 101-35.000.

Ahrens, Hanns; Rufer, Clemens; Biere, Helmut; Schroder, Eberhard; Losert, Wolfgang; Loge, Olaf; and Schillinger, Ekkehard, to Schering Aktiengesellschaft. 1,2-Biguanides. 3,960,949, Cl. 260-564.00B.

Air Products and Chemicals, Inc.: *See—*
Wyatt, Kenneth, 3,960,717.

Airwick Industries, Inc.: *See—*
Rabussier, Bernard; and Mandon, Jean-Pierre, 3,961,040.

Aisenberg, Sol, to Space Sciences, Inc. Film deposition. 3,961,103, Cl. 427-39.000.

Aizawa, Hiroshi: *See—*
Hosoe, Kazuya; Aizawa, Hiroshi; Matsumoto, Seiichi; and Yokota, Hideo, 3,961,178.

Ajinomoto Co., Inc.: *See—*
Enei, Hitoshi; Sato, Katsuaki; and Hirose, Yoshio, 3,960,660.
Enei, Hitoshi; Sato, Katsuaki; Ishii, Morikatsu; and Hirose, Yoshio, 3,960,661.

Akiyama, Kazuhiro, to Fuji Photo Optical Co., Ltd. Automatic exposure control means for single-lens reflex camera. 3,961,339, Cl. 354-29.000.

Akiyama, Taichiro. Process for preparing granular porous silicone rubbers. 3,960,786, Cl. 260-2.50S.

Aktiebolaget ASEA-ATOM: *See—*
Isaksson, Conny; Nordin, Lars-Erik; Olsson, Curt; and Sahlin, Thorbjorn, 3,960,263.

Aktiebolaget M. Anderssons Isolering: *See—*
Andersson, Frans Gunnar Seved, 3,960,180.

Aktiebolaget Piab: *See—*
Tell, Peter Hans, 3,959,864.

A.G. fur industrielle Elektronik AGIE Losone b. Locarno: *See—*
Ullmann, Werner; Derighetti, Renato; and Gagliati, Umberto, 3,961,270.

Albrecht, Donald. Traction belt. 3,960,146, Cl. 128-75.000.

Albright & Wilson Limited: *See—*
Walker, Ralph Lawrence; and Stockdale, John Richard, 3,960,611.

Alco Standard Corporation: *See—*
Smith, Robert D., 3,960,006.

Alder, Hanspeter, to Swiss Aluminium Ltd. Electrolysis of a molten charge using incomsumable electrodes. 3,960,678, Cl. 204-67.000.

Aldred, Edward John, to Ransomes Sims & Jefferies Limited. Speed control mechanisms for vehicles. 3,960,233, Cl. 180-77.00R.

Alexander, Robert: *See—*
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 3,961,028.

Alexeev, Viktor Ivanovich; Emelyanov, Ivan Yakovlevich; Ivanov, Vladimir Maximovich; Konstantinov, Leonard Vasilievich; Lysikov, Boris Vasilievich; Postnikov, Viktor Viktorovich; and Rybakov, Jury Viktorovich. Miniature ionization chamber. 3,961,196, Cl. 250-385.000.

Alfa-Laval AB: *See—*
Dahlberg, Bengt Ingmar, 3,960,318.

Alfred Herbert Limited: *See—*
Gaskell, Colin Simister; and O'Brien, Rory Morgan, 3,961,256.

Allen, David. Roof truss spacer. 3,959,945, Cl. 52-690.000.

Allen, John Clarence, Jr. Automatic spot sprayer. 3,959,924, Cl. 47-1.430.

Allen, Paul T., to Mobil Oil Corporation. Separation of isomers. 3,960,520, Cl. 55-59.000.

Allen, Robert J.: *See—*
Petrow, Henry G.; and Allen, Robert J., 3,960,989.

Allen, Samuel B. Method for producing large rigid foam panels. 3,960,998, Cl. 264-45.100.

Alley, David W., to Pravel & Wilson; and Alley, David W., part interest to each. Tongue toothbrush. 3,959,842, Cl. 15-167.00R.

Allied Chemical Corporation: *See—*
Kavesh, Sheldon, 3,960,200.
Vitek, Richard K., 3,961,024.

Allis-Chalmers Corporation: *See—*
Shy, James L.; and Bliemeister, Robert M., 3,959,890.
Spooner, Ronald E.; and Downing, Terry R., 3,960,286.
Waterman, Michael W.; and Foster, Samuel L., 3,961,246.

Allred, Victor D., to Marathon Oil Company. Vapor phase water process for retorting oil shale. 3,960,702, Cl. 208-11.00R.

Alonas, Kay, to Teletype Corporation. Keying contact assembly. 3,961,147, Cl. 200-159.00B.

Alpine Designs, Inc.: *See—*
Hunt, Harry, 3,959,834.

Alps Motorola, Inc.: *See—*
Takagi, Susumu, 3,961,373.

Altainer Incorporated: *See—*
Ropiequet, Richard L., 3,961,000.

Aluminum Company of America: *See—*
Ryan, James R., 3,960,523.

Alvarez, Cesar E., Jr., to Teletype Corporation. Multiple phase clock generator. 3,961,269, Cl. 328-62.000.

Alvarez, Francisco Sanchez, to Syntex Corporation. 2-(6'-methoxynaphth-2'yl) propionaldoxime and 5'-halo derivatives thereof. 3,960,957, Cl. 260-566.00A.

Alza Corporation: *See—*
Hussain, Anwar A.; Higuchi, Takeru; and Shell, John W., 3,960,150.

Amchem Products, Inc.: *See—*
Newhall, William F., 3,960,539.
Steinbrecher, Lester; and Hall, Wilbur S., 3,960,610.

Amerace Corporation: *See—*
Cirule, Fred M.; and Preziosi, Joseph R., 3,960,395.
Wyman, Carl W.; and Andersen, Charles E., 3,959,869.

American Can Company: *See—*
Dobbins, Thomas Edward, 3,960,315.
Feinberg, Jacob Howard, 3,960,684.
Rush, John E., 3,960,073.

American Chain & Cable Company, Inc.: *See—*
Henig, Seymour, 3,960,262.

American Cyanamid Company: *See—*
Augurt, Thomas Anthony; Rosensaft, Michael Norman; and Perciaccante, Vincent Anthony, 3,960,152.
Beachem, Michael Thomas; and Nichols, Mary Ellen, 3,960,755.
Blank, Werner Josef, 3,960,983.
Calbo, Leonard Joseph, Jr., 3,960,688.
Cerini, Costantino Peter, 3,961,046.
Sonnino, Mario, 3,959,947.
Ueno, Eichiro; Kawasaki, Hideo; and Shigita, Syozo, 3,959,836.

American Frozen Foods Corporation: *See—*
Zukerman, Harold W., 3,961,087.

American Hoist & Derrick Company: *See—*
Carpenter, Emerl R., 3,960,284.

American Hospital Supply Corporation: *See—*
Choksi, Pradip V.; and Steidley, Roy B., 3,960,002.

American Multi-Lert Corporation: *See—*
Hartkorn, Albert W., 3,961,323.

American Optical Corporation: *See—*
Davis, John King; and Fernald, Henry Grant, 3,960,442.
Woodcock, Richard Forrest, 3,960,754.

American Videonetics Corporation: *See—*
Furst, Marcel, 3,960,342.

AMF Incorporated: *See—*
Asberry, James Robert, 3,961,319.

AMP Incorporated: *See—*
Bunnell, Edward Dennman; Fleischhacker, James Earl; and Tennant, Robert John, 3,960,430.
Hollyday, Robert David, 3,961,294.
Hollyday, Robert David; and Bradbery, Jack Leo, 3,961,295.
Soes, Lucas, 3,960,434.
Weisenburger, Lawrence Paul, 3,960,423.
Weisenburger, Lawrence Paul, 3,960,424.

Analog Devices, Inc.: *See—*
Craven, Robert B., 3,961,326.

Andersen, Charles E.: *See—*
Wyman, Carl W.; and Andersen, Charles E., 3,959,869.

Anderson, Frank R.: *See—*
Stephens, James B.; and Anderson, Frank R., 3,960,297.

Anderson, Glenn W.: *See—*
Hutchison, Stanley O.; and Anderson, Glenn W., 3,960,014.

Anderson, Harold E.; and Kiner, Gerald T., to McCulloch Corporation. Capacitor discharge ignition system. 3,960,128, Cl. 123-148.00E.

Anderson, Luzon L. Apparatus for preparing ice. 3,959,981, Cl. 62-135.000.

Anderson, Ralph A.: *See—*
Thompson, Harold R.; and Anderson, Ralph A., 3,960,343.

Anderson, Thomas P., to Microseal Corporation. Film record card. 3,959,907, Cl. 40-159.000.

Andersson, Frans Gunnar Seved, to Aktiebolaget M. Anderssons Isolering. Protection cover for pipe bends. 3,960,180, Cl. 138-110.000.

Ando, Yujiro, to Canon Kabushiki Kaisha. Image formation method. 3,961,192, Cl. 250-315.00R.

Andrews, Ann; and Andrews, Peter. Hair rollers. 3,960,157, Cl. 132-40.000.

Andrews, John S., to H. H. Robertson Company. Particle separating apparatus. 3,960,526, Cl. 55-227.000.

Andrews, Lawrence F. Spring-stressed orthodontic bracket. 3,959,880, Cl. 32-14.00A.

Andrews, Peter: *See—*
Andrews, Ann; and Andrews, Peter, 3,960,157.

Angilletta, Domenick J. Solar heater and thermal barrier. 3,960,135, Cl. 126-270.000.

Anheuser-Busch, Incorporated: *See—*
Teng, James; and Stubits, Marcella C., 3,960,514.

ANPA Research Institute: *See—*
Navi, Menashe, 3,960,291.

Anstey, Nigel A., to Seiscom Delta Inc. Method of forming color graphic displays from input data. 3,961,306, Cl. 340-15.5DS.

Anthony, William H.; and Popplewell, James M., to Swiss Aluminium Ltd. Process for providing heat transfer with resistance to erosion-corrosion in aqueous environment. 3,960,208, Cl. 165-1.000.

Antivols Simplex S.A.: *See—*
Thirion, Andre, 3,959,996.

Antonov, Asparuh Mihailov: *See—*
Balevski, Anguel Tonchev; Nikolov, Ivan Dimov; Antonov, Asparuh Mihailov; and Semerdjiev, Stefan Georgiev, 3,960,996.

Antos, George J.; Hayes, John C.; and Pollitzer, Ernest L., to Universal Oil Products Company. Hydrocarbon conversion with an acidic multimetallic catalytic composite. 3,960,711, Cl. 208-139.000.

Anumin Pty. Limited: *See—*
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 3,961,028.

Anzai, Makoto: *See—*
Aono, Shigeo; and Anzai, Makoto, 3,960,120.

Aoki Electric Industrial Co., Ltd.: *See—*
Otagoshi, Hitoshi, 3,961,175.

Aoki, Hideo: *See—*
Yasui, Hiroshi; Kyono, Iwao; Aoki, Hideo; and Manabe, Haruo, 3,961,031.

Aono, Shigeo; and Anzai, Makoto, to Nisan Motor Co., Ltd. Electronic fuel injection control circuit for an internal combustion engine. 3,960,120, Cl. 123-32.0EA.

Applied Science Laboratories, Inc.: *See—*
Kruppa, Richard F.; and Coleman, Arthur Edward, 3,960,521.

Aprato, Armando: *See—*
Bisson, Flavio; and Aprato, Armando, 3,960,255.

Arai, Mikio: *See—*
Nishimura, Kenji; Arai, Mikio; Sasahara, Kunihiro; and Nitanai, Takashi, 3,961,041.

Aramaki, Masaharu: *See—*
Nomura, Etsuji; Aramaki, Masaharu; and Nishimura, Yuji, 3,960,681.

Archambault, Jean. Dishwashing machine and rotary sprayer therefor. 3,960,328, Cl. 239-264.000.

Archibald, Robert W. Dinghy with mast well. 3,959,837, Cl. 9-2.00R.

Arend, Raymond J.: *See—*
Plattner, Robert F.; Arend, Raymond J.; and Verberkmoes, John A., 3,960,352.

Arias, Anibal Aguirre, to Escalesilla Tresaes Ltd. Furniture foldable structure. 3,960,241, Cl. 182-33.300.

Ariga, Junichi: *See—*
Ohigashi, Tugio; and Ariga, Junichi, 3,961,265.

Arisaka, Kunio, to Copal Company Limited. Opening and closing means for electrically controlled shutters. 3,961,345, Cl. 354-234.000.

Arlt, Dieter; and Bremen, Josef, to Bayer Aktiengesellschaft. Process for the preparation of isopropenyl isocyanate. 3,960,915, Cl. 260-453.00P.

Armco Steel Corporation: *See—*
Evans, James D.; and Long, William R., Jr., 3,960,616.

Armstrong, David J.: *See—*
Besand, Roy T.; Carey, Paul L.; and Armstrong, David J., 3,961,088.

Artos Engineering Company: *See—*
Gudmestad, Ragnar; and Sandblom, Sven O., 3,960,040.

Artur Fischer: *See—*
Linser, Jorg, 3,960,166.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Ibata, Jyoji; Kobayashi, Hidehiko; Toyomoto, Kazuo; Suzuoki, Kazuhiro; Hayashi, Yoshio; and Kurihara, Masakazu, 3,960,572.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Shono, Tetsuji, 3,961,343.

Asai, Komei: *See—*
Moriyama, Akio; Fukai, Masakazu; and Asai, Komei, 3,960,750.

Asai, Yasuhiro: *See—*
Tabuchi, Muneharu; Bando, Shosen; Tabei, Tadashi; and Asai, Yasuhiro, 3,961,158.

Asberry, James Robert, to AMF Incorporated. Ground circuit monitor. 3,961,319, Cl. 340-255.000.

Asher, Delman R.: *See—*
Raley, Charles F., Jr.; and Asher, Delman R., 3,960,770.

Aspro, Incorporated: *See—*
Eddy, William C., 3,961,309.

Association for Pharmacologic Research, Inc.: *See—*
Innerfield, Irving, 3,960,669.

Astra Lakemedal Aktiebolag: *See—*
Fuxe, Kjell Gunnar, 3,961,060.

Atchley, Fenimore Edward; and Gilliam, Betty Lou. Grass-clearing device for lawn-sprinkler heads. 3,960,218, Cl. 172-13.000.

Athens Stove Works, Inc.: *See—*
Biddle, William P.; and Tacker, John J., 3,959,866.

Atlantic Richfield Company: *See—*
Russell, Donald H.; and Lenton, R. Warren, 3,960,813.
Striegler, John Howard; and Howell, Eddie Paul, 3,960,213.
Striegler, John Howard; and Howell, Eddie Paul, 3,960,214.

Atlas Copco Aktiebolag: *See—*
Noren, Carl Anders, 3,960,407.

Ato Chimie: *See—*
Potin, Philippe; and Biensan, Michel, 3,960,846.

Atom Chemical Paint Co., Ltd.: *See—*
Nishiumi, Yoshio; and Nagasaka, Yukio, 3,960,326.

Auburn Research Foundation: *See—*
Nasir, Syed Shahid; and Wilken, Leon Otto, Jr., 3,961,004.

Audero, Miguel Angel: *See—*
Varotto, Conrado F.; Audero, Miguel Angel; Vasallo, Daniel I.; Pascual, Roberto; and Ruffo, Hector J., 3,960,548.

Augurt, Thomas Anthony; Rosensaft, Michael Norman; and Perciaccante, Vincent Anthony, to American Cyanamid Company. Surgical sutures of unsymmetrically substituted 1,4-dioxane-2,5-diones. 3,960,152, Cl. 128-335.500.

Augustine, Douglas R.: *See—*
Barnett, Charles W. H.; Lucey, George K., Jr.; and Augustine, Douglas R., 3,960,000.

Aungst, Jack D., to Rockwell International Corporation. Visually alignable sensor wand which excludes unwanted light from a sensor system. 3,961,198, Cl. 250-566.000.

Ausnit, Steven. Interlocking separable fastener. 3,959,856, Cl. 24-201.00C.

Austin, Thomas Howard: *See—*
Cuscurida, Michael; and Austin, Thomas Howard, 3,960,788.

Automated Building Components, Inc.: *See—*
Leutwyler, Roy B., 3,960,353.

Automobiles Peugeot: *See—*
Chometon, Alain; and Boquet, Georges, 3,960,031.

Avakian, Souren; and Seneca, Harry, to Centaur Chemical Co. Multimedia petri dish. 3,960,658, Cl. 195-103.50R.

Avins, Jack; and Yorkanis, Bernard Joseph, to RCA Corporation. Gain control arrangement useful in a television signal processing system. 3,961,361, Cl. 358-27.000.

Aylett, Frank Henry, to Vickers Limited. Printing with blanket having recessed portion. 3,960,077, Cl. 101-142.000.

Aziende Colori Nazionali Affini ACNA S.p.A.: *See—*
Ribaldone, Giuseppe; Borsotti, Giampiero; and Gonzati, Franco, 3,960,866.

Azuma, Tosio; and Yonekawa, Hisashi, to Bridgestone Tire Company Limited. Apparatus for and method of conveying and handling tire bead wires. 3,960,260, Cl. 198-19.000.

Baba, Yoshio, to Director-General of the Agency of Industrial Science and Technology. Process for the desulfurization of light oils. 3,960,683, Cl. 204-158.00R.

Babcock, Henry Nash, to Construction Products Research, Inc. Composition and method for inhibiting curing shrinkage in organic plastic systems. 3,960,785, Cl. 260-2.50R.

Babler, Egon S., to Teletype Corporation. Elastomeric mounting mechanisms. 3,960,075, Cl. 101-93.480.

Backus Devices, Incorporated: *See—*
Backus, Harold Adams, 3,960,121.

Backus, Harold Adams, to Backus Devices, Incorporated. Engine combustion system. 3,960,121, Cl. 123-34.00A.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Keihs, Karl; Adolphi, Heinrich; and Huber, Rolf, 3,960,885.
Rohr, Wolfgang; and Fischer, Adolf, 3,960,919.

Baget, Jean, to Rhone-Poulenc Industries. Hydroxy and ether containing phenothiazine derivatives. 3,961,055, Cl. 424-247.000.

Bahr, William J. Target and air actuated projectors. 3,960,378, Cl. 273-85.00H.

Bailey, Donald L. Syringe device with means for removing contaminates when drawing blood sample. 3,960,139, Cl. 128-2.00F.

Bailey Meter Company: *See—*
Ross, David F.; and Pocock, Robert E., 3,960,500.

Bailey, William R.; Krumm, Stephen H.; and Marach, David R., to Underwriters Safety Device Company. Cartridge fuse clip with rejection means. 3,960,435, Cl. 339-186.00R.

Baisch, Theodor; Deininger, Kurt; Strobel, Joseph R.; and Trumpp, Alfred, to Eastman Kodak Company. Dual field viewfinder. 3,961,344, Cl. 354-222.000.

Baker, Allister L.; and Kooi, J. Peter E., to Keuffel & Esser Company. Precise indexing detent. 3,959,888, Cl. 33-282.000.

Baker, Charles T., to Vermont Marble Company. Easy-open ecology crown cap. 3,960,287, Cl. 215-253.000.

Baker, Don R.; Walker, Francis H.; and Letchworth, Peter E., to Stauffer Chemical Company. N-cyanomethyl-N-methyl-3,5-dimethylbenzamide. 3,960,922, Cl. 260-465.00D.

Bakewell, Henry P., Jr., to United States of America, Navy. Decoupled hydrophone with reduced response to vibration and stress concentration. 3,961,304, Cl. 340-7.00R.

Bakke, Even; Witte, Michael; and Mehta, Manankumar S., to U.S. Filter Corporation. Electrostatically enhanced removal of sulfur dioxide from gaseous carriers. 3,960,687, Cl. 204-164.000.

Balassiano, Max. Flexible double ball-point pen. 3,960,455, Cl. 401-209.000.

Balevski, Anguel Tonchev; Nikolov, Ivan Dimov; Antonov, Asparuh Mihailov; and Semerdjiev, Stefan Georgiev, to Institut po Metaloznanie i Technologia na Metalite. Method of injection molding a thermoplastic article having a cellular core and integral skin involving use of reclaimed material. 3,960,996, Cl. 264-37.000.

Balko, Edward N.: *See—*
Bortak, John J.; Balko, Edward N.; Schweickart, Albert J.; and Collins, Stephen M., 3,960,699.

Ball, Frank J.; Braddon, David V.; and Stryker, Lynden J., to Westvaco Corporation. Low porosity cement and process for producing same. 3,960,582, Cl. 106-90.000.

Ballantyne, Joseph M.; Tang, Chung L.; Rhodes, Lawrence Bryce; Turner, John J.; and Yang, Ji Liang, to Cornwell Research Foundation, Inc. Scanning electron microscope fabrication of optical gratings. 3,961,102, Cl. 427-43.000.

Baltare, Gunnar: *See—*
Gee, Thomas A.; Jacobs, Gerald L.; and Baltare, Gunnar, 3,961,215.

Bando, Shosen: *See—*
Tabuchi, Muneharu; Bando, Shosen; Tabei, Tadashi; and Asai, Yasuhiro, 3,961,158.

Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Bugaenko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, to Nikeshichev, Jury Nikolaevick; and Petryoev, Evgeny Petrovich. Method of processing waste gases containing sulphurous-acid anhydride. 3,960,682, Cl. 204-157.10H.

Bare, Thomas M.; and Shu, John T., to Richardson-Merrell Inc. 1-Oxo-1H-2-benzothiopyran-3-carboxylic acid derivatives. 3,960,892, Cl. 260-327.0TH.

Barker International, Inc.: *See—*
Crane, Edward J., 3,959,850.

Barna, Janos, to Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt. Process for the separation of natural water-soluble aluminum hydrosilicate organo-complexes. 3,960,724, Cl. 210-49.000.

Barnett, Charles W. H.; Lucey, George K., Jr.; and Augustine, Douglas R., to United States of America, Army. Flight simulator for missiles. 3,960,000, Cl. 73-15.400.

Barrett, Harrison H., to Raytheon Company. High intensity radiation imaging system. 3,961,188, Cl. 250-303.000.

Barrett, Harrison H.: *See—*
Stoner, William W.; Wilson, David T.; and Barrett, Harrison H., 3,961,191.

Barringer, Anthony Rene, to Barringer Research Limited. Remote sensing of marine hydrocarbon seeps. 3,961,187, Cl. 250-301.000.

Barringer Research Limited: *See—*
Barringer, Anthony Rene, 3,961,187.

Barrio, Jorge R.: *See—*
Secrist, John A., III; Barrio, Jorge R.; Leonard, Nelson J.; and Weber, Gregorio, 3,960,840.

Barry Wright Corporation: *See—*
Frochaux, Alain; and Salerno, Charles M., 3,960,239.

Barton, Lucian Anthony, to RCA Corporation. Process for improved development of electron-beam-sensitive resist films. 3,961,101, Cl. 427-43.000.

BASF Aktiengesellschaft: *See—*
Daubach, Ewald; Saukel, Heinz; and Von Rambach, Leonhard, 3,960,486.
Fuchs, Werner; Platz, Rolf; and Vogt, Volker, 3,960,916.
Hagen, Helmut; and Niemeyer, Juergen, 3,960,862.
Pasedach, Heinrich; and Friederang, Albrecht, 3,960,970.
Sander, Bruno; Berbner, Heinz; and Hoffmann, Manfred, 3,960,794.

BASF Wyandotte Corporation: *See—*
Bortak, John J.; Balko, Edward N.; Schweickart, Albert J.; and Collins, Stephen M., 3,960,699.
Davis, Pauls; Vogt, Herwart C; and Deck, Charles F., 3,960,822.
Vogt, Herwart C.; Deck, Charles F.; and Davis, Pauls, 3,960,821.

Basili, Pietro: *See—*
Rossi, Umberto; and Basili, Pietro, 3,961,277.

Bastian-Blessing: *See—*
Plattner, Robert F.; Arend, Raymond J.; and Verberkmoes, John A., 3,960,352.

Batesville Casket Company: *See—*
Stein, Joseph A., Jr.; and Wettering, Carl A., 3,959,859.

Battersby, John; and Forbes, Eric Simon, to British Petroleum Company Limited, The. Gasoline composition. 3,960,965, Cl. 260-584.00R.

Bauer, Johann: *See—*
Heichele, Friedrich; Vojtechovsky, Georg; Hollenbach, Georg; Adler, Klaus; and Bauer, Johann, 3,960,986.

Baulard-Cogan, Raymond Gerard, to Agence Nationale de Valorisation de la Recherche (ANVAR). Animated objects such as dolls, figured personages and the like. 3,959,919, Cl. 46-135.00R.

Bauman, Robert Andrew, to Colgate-Palmolive Company. Keto-quaternary compositions. 3,961,074, Cl. 424-54.000.

Bauman, Robert Andrew, to Colgate-Palmolive Company. Ether-linked quaternary ammonium compositions. 3,961,075, Cl. 424-54.000.

Baumann, Gerald W.; Fraser, Harvey R., Jr.; and Hauke, Francis E., to International Business Machines Corporation. Rotating head apparatus having a protruding diameter headwheel which supports a protruding flying head. 3,961,369, Cl. 360-84.000.

Baumann, Hans D. Low torque and low noise butterfly valve disc. 3,960,177, Cl. 137-625.310.

Baur, Charles B.; and Schultz, Roland P. Article for covering various pipefittings. 3,960,181, Cl. 138-178.000.

Baxter, George I.; Rolla, Clarence P.; and Holland, Charles L., to General Dynamics Corporation. Refrigerated hopper equipment for automatic riveting machines. 3,960,206, Cl. 165-61.000.

Bayer Aktiengesellschaft: *See—*
Arlt, Dieter; and Bremen, Josef, 3,960,915.
Burger, Alex; Kaiser, Hermann; and Ludovici, Werner, 3,960,761.
Darsow, Gerhard; Schiller, Paul; Reese, Eckart; Bottenbruch, Ludwig; Binsack, Rudolph; Vernaleken, Hugo; and Wank, Joachim, 3,960,815.
Hippolyte JUY, Lucien Charles; and Suckfull, Fritz, 3,960,831.
Knickel, Birger; Keifer, Siegfried; Perrey, Hermann; Rudolph, Hans; Rosenkranz, Hans Jurgen; and Rudisch, Reinhold, 3,960,590.
Kramer, Wolfgang; Draber, Wilfried; Hammann, Ingeborg; and Scheinpflug, Hans, 3,961,061.
Kroebel, Reinhard; and Meyer, Alfred, 3,960,762.
Linhart, Karl; and Schmitz, Reinold, 3,960,903.
Schmitzer, Willi, 3,960,506.

Vernaleken, Hugo; Bottenbruch, Ludwig; Emmer, Gerhard; and Hucks, Uwe, 3,960,968.
Witte, Josef; Theisen, Dieter; Roos, Ernst; and Nutzel, Karl, 3,960,758.
Wollweber, Hartmund; Enders, Edgar; and Stendel, Wilhelm, 3,960,890.

Bayer, Ernst; and Mutter, Manfred, to Hoechst Aktiengesellschaft. Polyalkylene glycols used for the preparation of peptides. 3,960,830, Cl. 260-112.50R.

BBC Brown Boveri & Company Limited: *See—*
Meylan, Pierre, 3,959,973.

Beach, Edmund E.: *See—*
Briggs, Glenn E.; Beach, Edmund E.; and Chase, Walter P., 3,961,228.

Beach, Shirley, to Phillips Cables Limited. Composition for filling cables. 3,961,128, Cl. 174-23.00C.

Beachem, Michael Thomas; and Nichols, Mary Ellen, to American Cyanamid Company. Detecting compositions and method of using same. 3,960,755, Cl. 252-301.160.

Beacon, Robert G., to Ellcon-National, Inc. Empty-load brake with lading controlled reservoir. 3,960,411, Cl. 303-23.00R.

Beatty, Bobby D.; Daniel, Russell D., Humerickhouse, Billy J.; and Norris, Gary G., to United States of America, Navy. Smoke and illumination signal. 3,960,087, Cl. 102-90.000.

Bechteler, Martin; Stock, Rolf; and Welsch, Wolfgang, to Siemens Aktiengesellschaft. Electron optical system with a magnetic focusing and electromagnetic deflection system of unit design. 3,961,219, Cl. 313-389.000.

Beck, Siegfried; Brack, Karl; and Gansauge, Peter, to International Business Machines Corporation. Method of implantation of boron ions utilizing a boron oxide ion source. 3,960,605, Cl. 148-1.500.

Becker, James H.; and Wysocki, Joseph J., to Xerox Corporation. Texture transformations in optically negative liquid crystals. 3,960,439, Cl. 350-160.0LC.

Becker, Kurt, to Hermann Heye. Apparatus for simultaneously transferring a plurality of articles from one conveyor to another. 3,960,266, Cl. 198-235.000.

Beckman Instruments, Inc.: *See—*
Acord, William A., 3,960,497.

Beecham Group Limited: *See—*
Fake, Charles Sylvester, 3,960,879.
Fake, Charles Sylvester, 3,960,880.

Beekhuis, Gerrit E.; and Geurts, Leonardus H., to Stamicarbon B.V. Process for the preparation of unsaturated cyanocarbonyl compounds. 3,960,924, Cl. 260-465.900.

Beers, Melvin Dale; Chura, Harold; and Robillard, Robert Joseph, to General Electric Company. Process for the manufacture of a one-component room-temperature vulcanizable silicone composition. 3,960,802, Cl. 260-37.0SB.

Beiersdorf Aktiengesellschaft: *See—*
Petersen, Rudolf Theodor; and Fleck, Wolfgang, 3,960,878.

Beitz, Donald C.; and Phillips, Mitchell E., to Iowa State University Research Foundation, Inc. Method of measuring the fat and protein content in fluids. 3,960,493, Cl. 23-230.00B.

Bell, Allyn R.: *See—*
Plant, Howard L.; and Bell, Allyn R., 3,960,542.

Bell & Howell Company: *See—*
Pacholok, Jaroslaw, 3,960,373.
Sather, Eugene, 3,960,447.
Tiger, Emil, 3,960,042.

Bell Telephone Laboratories, Incorporated: *See—*
Carbrey, Robert Lawrence, 3,961,140.
Jarvis, John Frederick, 3,961,134.

Benda, David; and Davis, Charles Alfred, to GTE Sylvania Incorporated. Elongated getter support for cathode ray tube having rotatable member at end. 3,961,221, Cl. 313-481.000.

Bender, Paul E.; and Loev, Bernard, to SmithKline Corporation. Akenyl(or alkynyl) 9-xanthenyl ether compounds. 3,961,069, Cl. 424-283.000.

Bendix Corporation, The: *See—*
Fallon, Herbert J., 3,959,933.
Peterson, William A., Jr., 3,960,130.

Benes, Ivan, to Solco Basel AG. Process for the manufacture of injectable preparations of Tc99m and/or In113m and apparatus for carrying out the process. 3,961,038, Cl. 424-1.000.

Bennett, James G.; and Cooper, Glenn D., to General Electric Company. Process for the preparation of an amorphous polyphenylene oxide. 3,960,811, Cl. 260-47.0ET.

Bennett, William S., to Singer Company, The. Method and apparatus for combining video images with proper occlusion. 3,961,133, Cl. 178-6.800.

Benno, Edward Leonard; Schlueter, David Frederick; and Seymour, Lonnie Ray, to Illinois Tool Works Inc. System, machine and method for multipackaging containers. 3,959,949, Cl. 53-35.000.

Berard, Henri: *See—*
Cousin, Alain; and Berard, Henri, 3,961,324.

Berbner, Heinz: *See—*
Sander, Bruno; Berbner, Heinz; and Hoffmann, Manfred, 3,960,794.

Berg, Rudolph G., to Pfizer Inc. Preparation of citraconic acid. 3,960,901, Cl. 260-346.80R.

Bergwerksverband GmbH: *See—*
Juntgen, Harald; Knoblauch, Karl; Gappa, Gunther; and Schwarte, Jurgen, 3,960,529.
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,522.
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,769.

Berkelius, Hans. Device at hydraulic motor. 3,960,058, Cl. 91-224.000.

Berkenblit, Melvin; Lussow, Robert O.; and Reisman, Arnold, to International Business Machines Corporation. Glass composition. 3,961,114, Cl. 428-38.000.

Berkley, Marian: *See—*
Coleman, Henry Evans, 3,961,083.

Berkley, S. Thomas: *See—*
Hoffman, Bruce E.; and Berkley, S. Thomas, 3,961,226.

Berlin, Evan H. Balancing skill game. 3,960,376, Cl. 273-1.00E.

Bernard, Jean Rene; Brunel, Daniel Elie; Commeyras, Auguste Andre; Coste, Camille Michel; Itier, Jean Joseph; and Knoche, Hubert Wilhelm, to Entreprise de Recherches et d'Activites Petrolieres Elf. Catalytic composition for the conversion of hydrocarbons. 3,960,764, Cl. 252-429.00R.

Bernard, Rodolphe J. Viscous material dispenser. 3,960,294, Cl. 222-103.000.

Berner, Erling. Door closure. 3,960,196, Cl. 160-222.000.

Berninger, Kenneth L. Engine speed maintaining apparatus. 3,960,123, Cl. 123-103.00R.

Bertagnoli, Leopoldo, to Nuova San Giorgio S.p.A. Circular knitting machine cam arrangement. 3,959,994, Cl. 66-54.000.

Bertea Corporation: *See—*
York, Ray A., 3,960,361.

Bertholet, Raymond: *See—*
Hirsbrunner, Pierre; and Bertholet, Raymond, 3,960,942.

Bertus, Brent J.; Farha, Floyd, Jr.; and Johnston, Harlin D., to Phillips Petroleum Company. Catalyst compositions and their preparation. 3,960,773, Cl. 252-455.00R.

Besand, Roy T.; Carey, Paul L.; and Armstrong, David J., to Ralston Purina Company. Method of packaging fruit drinks. 3,961,088, Cl. 426-262.000.

Beschke, Helmut; Schaefer, Hans; Schreyer, Gerd; Schuler, Wilhelm Alfons; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Catalyst for the production of pyridine and 3-methylpyridine. 3,960,766, Cl. 252-437.000.

Besenhard, Jurgen: *See—*
Fritz, Heinz Peter; and Besenhard, Jurgen, 3,960,594.

Bessant, Glyndwr A. R.; Eichamer, Paul D.; Koros, Robert M.; and Schieni, Steven R., to Exxon Research and Engineering Company. Trough-type scale traps. 3,960,508, Cl. 23-288.00R.

Bessen, Irwin I., to General Electric Company. Coated article and method and material of coating. 3,961,098, Cl. 427-34.000.

Bethe, Eugene J., to Uniroyal Inc. Methods of making foamed polymer trim pads for vehicle seats. 3,961,001, Cl. 264-46.400.

Betz Laboratories, Inc.: *See—*
Carter, David A.; and Vogt, Frederick G., 3,960,576.
Schieber, John R., 3,960,496.

Bewley, Adele Lorraine. Electric food mixer spatter guard. 3,960,370, Cl. 259-118.000.

Beyer, William F.; and Gleason, David D., to Upjohn Company, The. Automatic system for high pressure liquid chromatography. 3,960,003, Cl. 73-61.10C.

Bhandia, B. S., to Lawrence Peska Associates, Inc., a part interest. Ring having adjustably mounted rapidly rotatable indicia-bearing member. 3,959,989, Cl. 63-15.650.

BHS-Bayerische Berg Hutten-und Salzwerke Aktiengesellschaft: *See—*
Martin, Rolf, 3,960,028.

Bhuta, Pravin G.: *See—*
Schmidt, James L.; Jacoby, Jerold L.; Shaw, Garrett D.; and Bhuta, Pravin G., 3,960,448.

Biardi, Giuseppe, to Norton Company. Grinding wheel manufacture. 3,960,516, Cl. 51-293.000.

Bibi-Roubi, Albert; and Bibi-Roubi, Robert. Element for use in making a playing surface. 3,960,375, Cl. 272-3.000.

Bibi-Roubi, Robert: *See—*
Bibi-Roubi, Albert; and Bibi-Roubi, Robert, 3,960,375.

Bickers, Fredrick Allen, to Martin Engineering Co. Exhaust valve for a mold and core blowing machine. 3,960,173, Cl. 137-550.000.

Bickoff, Charles; and Hall, St. John Merrill, Jr., to Digital Equipment Corporation. Adjustable carriage apparatus. 3,960,256, Cl. 197-1.00R.

Bicron Corporation: *See—*
Noakes, John E., 3,960,756.

Biddle, William P.; and Tacker, John J., to Athens Stove Works, Inc. Method of making a gas range top burner. 3,959,866, Cl. 29-157.00R.

Bienert, Horst, to Webasto-Werk W. Baier KG. Sliding roof structure with two-way openable roof panel. 3,960,404, Cl. 296-137.00F.

Biensan, Michel: *See—*
Potin, Philippe; and Biensan, Michel, 3,960,846.

Biere, Helmut: *See—*
Ahrens, Hanns; Rufer, Clemens; Biere, Helmut; Schroder, Eberhard; Losert, Wolfgang; Loge, Olaf; and Schillinger, Ekkehard, 3,960,949.

Billany, Michael Royston; Longworth, Arthur Raymond; and Shatwell, John, to Imperial Chemical Industries Limited. Cleansing compositions. 3,960,745, Cl. 252-106.000.

Binsack, Rudolph: *See—*
Darsow, Gerhard; Schiller, Paul; Reese, Eckart; Bottenbruch, Ludwig; Binsack, Rudolph; Vernaleken, Hugo; and Wank, Joachim, 3,960,815.

Biorex Laboratories, Limited: *See—*
Chan, Rosalind Po-Kuen, 3,960,931.

Birchall, James Derek; and Cassidy, John Edward, to Imperial Chemical Industries Limited. Phosphates. 3,960,592, Cl. 106-308.00Q

Birrell, Peter Leslie, to Cornelius Company, The. Container assembly for use with a separator dispenser. 3,960,298, Cl. 222-541.000.

Bishop, Gerald B.; and Gladden, David J., to Ford Motor Company. Carburetor power valve control apparatus. 3,960,990, Cl. 261-39.00A.

Bishop, Walton B.; and Hovey, John M., to United States of America, Navy. Biased-bit generator. 3,961,169, Cl. 235-152.000.

Bisson, Flavio; and Aprato, Armando, to Ing. C. Olivetti & C., S.p.A. Mounting mechanism for a non-impact dots-matrix print head. 3,960,255, Cl. 197-1.00R.

Biviator S.A.: *See—*
Adler, Karl; Ducommun, Georges; and Wantz, Charles A., 3,961,209.

Bjelvert, Sven William: *See—*
Svensson, Sven Torsten Arnold; and Bjelvert, Sven William, 3,960,453.

Bjermo, Gote Herbert Egard; and Tresjo, Paul Einar, to System AB Infoteknik. Method for sludge treatment. 3,960,725, Cl. 210-67.000.

Bjorklund, Knut Bertil. Cancer associated polypeptide antigen, process for its preparation, process for preparing antibodies, process of cancer diagnosis and composition useful as an immunizing agent. 3,960,827, Cl. 260-112.00R.

Black Clawson Company, The: *See—*
Seifert, Peter, 3,960,332.

Black, Sivalls & Bryson, Inc.: *See—*
Ebeling, Harold O.; and McMinn, Robert E., 3,960,519.

Blackburn, Dale W.; and Caldwell, Henry Cecil, to SmithKline Corporation. Alkanesulfonic acid salts of decinine. 3,960,870, Cl. 260-293.530.

Blair, Calvin B.; and Blair, John W. Tillage tool transport arrangement. 3,960,221, Cl. 172-311.000.

Blair, John W.: *See—*
Blair, Calvin B.; and Blair, John W., 3,960,221.

Blake, Alan Ronald: *See—*
Hutt, Peter Richard; Blake, Alan Ronald; von Cavallar, Gunter; Douglas, Brian Neil; and Dodds, Philip John, 3,961,137.

Blake, William W., to Caterpillar Tractor Co. Cartridge modulating valve. 3,960,172, Cl. 137-504.000.

Blanchard, Eugene J.: *See—*
Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., 3,960,477.

Blank, Werner Josef, to American Cyanamid Company. Composition of matter comprising a blend of a polyether polyol and an aminoplast cross-linking agent. 3,960,983, Cl. 260-839.000.

Blatt, Victor, to Plessey Handel und Investments A.G. Improvement in or relating to integrated circuit arrangements. 3,961,351, Cl. 357-15.000.

Blaupunkt-Werke GmbH: *See—*
Hansen, Jens, 3,961,268.
Kochsmeier, Hans-Hermann, 3,961,275.

Blaylock, Arnold O., to Lectric Lite Company. Warning light apparatus for industrial vehicle use. 3,961,174, Cl. 240-8.180.

Blech- und Metallwarenfabrik Robert Fischbach KG: *See—*
Siemes, Franz; Kraus, Andreas; and Buhl, Joachim, 3,960,063.

Bledsoe, Woodrow W. Cotton ginning apparatus. 3,959,851, Cl. 19-48.00A.

Bleiche A.G.: *See—*
Stritzko, Vilem, 3,960,487.

Bliemeister, Robert M.: *See—*
Shy, James L.; and Bliemeister, Robert M., 3,959,890.

Block, Charles, to Joseph Galkin Corporation. High speed gearless fabric puller. 3,960,097, Cl. 112-214.000.

Blossey, Robert G.: *See—*
Manzonelli, Carmen C.; and Blossey, Robert G., 3,960,607.

Blount, David H. Process for the production of an acidic aqueous solution of silico-formic acid. 3,960,747, Cl. 252-182.000.

Blumenthal, Gunter, to Bochumer Eisenhutte Heintzmann & Company. Excavation-roof support. 3,959,976, Cl. 61-45.00D.

Bochumer Eisenhutte Heintzmann & Company: *See—*
Blumenthal, Gunter, 3,959,976.

Bodner, Ronald E.; Crooks, Thomas L.; Magrisso, Israel B.; Slack, Keith M.; and Smith, Richard S., to International Business Machines Corporation. Computer control apparatus. 3,961,313, Cl. 340-172.500.

Bodner, Ronald Eugene; Crooks, Thomas L.; Guest, John E.; Magrisso, Israel B.; and Slack, Keith K., to International Business Machines Corporation. Cycle interleaving during burst mode operation. 3,961,312, Cl. 340-172.500.

Boehringer Ingelheim GmbH: *See—*
Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, 3,961,071.

Boeing Company, The: *See—*
Emanuel, Mary Victoria, 3,961,096.

Boeker, Gilbert F.: *See—*
Boorse, Henry A.; Boeker, Gilbert F.; and Menke, John R., 3,960,468.

Boer, Karl W. Heat exchange apparatus. 3,960,207, Cl. 165-104.00R.

Bogaert, Pieter Joseph, to Manta. Device for unwinding thread and bobbin used therewith. 3,960,089, Cl. 112-228.000.

Bohanan, Charles S.; Jones, David H.; Raab, Harry F., Jr.; and Radkowsky, Alvin, to United States of America, Energy Research and Development Administration. Nuclear reactor for breeding U^{233}. 3,960,655, Cl. 176-18.000.

Bokalo, Peter: *See—*
Weldon, Lawrence A.; and Bokalo, Peter, 3,961,155.

Bolduc, Lee R. Electrosurgical and ECG monitoring system. 3,960,141, Cl. 128-2.06E.

Bolestova, Galina Ilinichna: *See—*
Zavyalov, Sergei Ivanovich; Rodionova, Natalya Alexandrovna; Parnes, Zinaida Naumovna; Bolestova, Galina Ilinichna; Filippov, Vladimir Vasilievich; and Zheleznaya, Lidia Lvovna, 3,960,884.

Boliver, Vincent J., to General Electric Company. Shielded power cable separable connector module having conducting contact rod with a beveled shoulder overlapped by insulating follower material. 3,960,433, Cl. 339-111.000.

Bondar, Larisa Nikolaevna: *See—*
Gortinskaya, Tatyana Vladimirovna; Mashkovsky, Mikhail Davidovich; Polezhaeva, Antonina Ivanovna; Nyrkova, Valentina Georgievna; Bondar, Larisa Nikolaevna; Litova, Galina Nikolaevna; Schukina, Maria Nikolaevna, deceased; and Preobrazhenskaya, Maria Nikolaevna, administrator, 3,961,058.

Bonne, Ulrich, to Honeywell Inc. Reflective displays. 3,960,438, Cl. 350-160.0LC.

Bontrager, Jacob. Deflector roller apparatus. 3,959,958, Cl. 56-314.000.

Boorse, Henry A.; Boeker, Gilbert F.; and Menke, John R., to United States of America, Energy Research and Development Administration. Fluid lubricated bearing assembly. 3,960,468, Cl. 417-424.000.

Boquet, Georges: *See—*
Chometon, Alain; and Boquet, Georges, 3,960,031.

Bordowsky, Karl-Heinz; Brendel, Uwe; and Bucksch, Manfred, to Zahnradfabrik Friedrichshafen AG. Hydraulic pressure regulator. 3,960,163, Cl. 137-56.000.

Bore, Pierre: *See—*
Ghilardi, Giuliana; Bore, Pierre; and Grollier, Jean-Francois, 3,960,476.

Borer, Charles: *See—*
Mosimann, Hans; Heim, Peter; and Borer, Charles, 3,960,799.

Borg-Warner Corporation: *See—*
Roberts, Richard W.; and Salle, Ralph D., 3,959,983.

Borsotti, Giampiero: *See—*
Ribaldone, Giuseppe; Borsotti, Giampiero; and Gonzati, Franco, 3,960,866.

Bortak, John J., to Wyandotte Corporation. Electrode support for filter press cells. 3,960,698, Cl. 204-267.000.

Bortak, John J.; Balko, Edward N.; Schweickart, Albert J.; and Collins, Stephen M., to BASF Wyandotte Corporation. Self supporting electrodes for chlor-alkali cell. 3,960,699, Cl. 204-268.000.

Bos, Karel; and Smit, Hendrik, to Scambia Industrial Developments AG. Hydraulic jack. 3,959,970, Cl. 60-477.000.

Bosch-Siemens Hausgerate GmbH: *See—*
Mayer, Rolf; and Menzel, Walter, 3,960,071.

Bosniack, David S., to Exxon Research and Engineering Company. Adhesive compositions and methods. 3,960,793, Cl. 260-28.5AS.

Bostian, Logan C.; and Winslow, Charles E., to Virginia Chemicals Inc. Method of removing sodium thiosulfate from a hydrosulfite reaction mixture. 3,961,034, Cl. 423-181.000.

Bottenbruch, Ludwig: *See—*
Darsow, Gerhard; Schiller, Paul; Reese, Eckart; Bottenbruch, Ludwig; Binsack, Rudolph; Vernaleken, Hugo; and Wank, Joachim, 3,960,815.
Vernaleken, Hugo; Bottenbruch, Ludwig; Emmer, Gerhard; and Hucks, Uwe, 3,960,968.

Bouchard, Robert Joseph; and Rogers, Donald Burl, to Du Pont de Nemours, E. I., and Company. Pyrochlore-based thermistors. 3,960,778, Cl. 252-519.000.

Bourdeau, Jean Paul; Seris, Jean Louis; and Pornin, Rene, to Societe Nationale des Petroles d'Aquitaine. Preparation of an enzyme-cellulose complex. 3,960,666, Cl. 195-68.000.

Bourquin, Jean-Pierre; Schwarb, Gustav; and Waldvogel, Erwin, to Sandoz Ltd. 9-Bromo-or chloro-9,10-dihydro-10-dihydro-10-alkoxy-4H-benzo[4,5]cyclo-hepta[1,2-b]thiophen-4-ones. 3,960,894, Cl. 260-332.30P.

Bowers, William S., to United States of America, Agriculture. Synthetic hormones for insect control. 3,960,902, Cl. 260-348.00R.

Bowley, Wallace W., to Intech, Inc. Method for oxygenating blood. 3,960,657, Cl. 195-1.800.

Bowman, Robert A.; Machol, Guenther Keith; and Terlet, Rene Henri, to International Business Machines Corporation. Time division multiplexed loop communication system with dynamic allocation of channels. 3,961,139, Cl. 179-15.0AL.

Bowyer, Ralph Mitchell, to Formica Corporation. Method and apparatus for controlling a press. 3,960,069, Cl. 100-38.000.

Boyle, Edward Michael Joseph; and Johnson, Melvin Harry, to Du Pont de Nemours, E. I., and Company. Slot vacuum jet. 3,960,305, Cl. 226-95.000.

BP Chemicals International Limited: *See—*
Gasson, Edward James; Krosnar, Thomas Charles; and Marrian, Stanley Frederic, 3,960,925.

Brack, Karl: *See—*
Beck, Siegfried; Brack, Karl; and Gansauge, Peter, 3,960,605.

Bracken, Joseph W., to Eaton Corporation. Cantilever mounting. 3,960,418, Cl. 308-184.00R.

Brackmann, Warren A.; and Dilanni, Daniel, to Rothmans of Pall Mall Canada Limited. Method and apparatus for the opening of tow. 3,960,645, Cl. 156-441.000.
Bradbery, Jack Leo: *See—*
Hollyday, Robert David; and Bradbery, Jack Leo, 3,961,295.
Braddon, David V.: *See—*
Ball, Frank J.; Braddon, David V.; and Stryker, Lynden J., 3,960,582.
Bradley, Ronnie A.; and Sease, John D., to United States of America, Energy Research and Development Administration. Preparation of high temperature gas-cooled reactor fuel element. 3,960,994, Cl. 264-.500.
Bradley, Steven Y., to Masonite Corporation. Scraping apparatus. 3,959,839, Cl. 15-93.00R.
Bradshaw, Robert S.: *See—*
Carbine, Joseph C.; and Bradshaw, Robert S., 3,960,264.
Bradshaw, Robert W.: *See—*
Thompson, Thomas D.; and Bradshaw, Robert W., 3,960,588.
Bramley, Anthony. Method of making netting by molding plastic about strand crossings. 3,961,011, Cl. 264-251.000.
Brand, John R., to Warwick Electronics Inc. Filter circuit. 3,960,043, Cl. 84-1.190.
Brandis, Curt; and Muller, Peter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Production of flats for carding machines. 3,961,006, Cl. 264-138.000.
Brandt, Louis K. Self cleaning screen assembly. 3,960,731, Cl. 210-332.000.
Braukmann, Bernhard W.: *See—*
Vollmer, Rudolf; and Braukmann, Bernhard W., 3,960,358.
Braun, Klaus; Gabsch, Gunther; Forster, Werner; Ertel, Rolf; and Femmer, Klaus, to VEB Arzneimittelwerk Dresden. 21-Deoxydihydroajmaline derivatives. 3,960,859, Cl. 260-247.5FP.
Brawley, Thomas Scott. Bearing component. 3,960,419, Cl. 308-216.000.
Breedijk, Theo, to Hoogovens Ijmuiden, B.V. Weldable bar, especially for use in reinforcing concrete. 3,960,615, Cl. 148-36.000.
Breiter, Manfred W.: *See—*
Mitoff, Stephan P.; Powers, Robert W.; and Breiter, Manfred W., 3,960,596.
Bremen, Josef: *See—*
Arlt, Dieter; and Bremen, Josef, 3,960,915.
Brendel, Uwe: *See—*
Bordowsky, Karl-Heinz; Brendel, Uwe; and Bucksch, Manfred, 3,960,163.
Bresson, Clarence R., to Phillips Petroleum Company. Coalescence filter for oil-water dispersions. 3,960,719, Cl. 210-23.00R.
Bretti, Franco: *See—*
De Sandre, Giovanni; Subrizi, Angelo; and Bretti, Franco, 3,961,170.
Breu, Hanspeter: *See—*
Hofling, Erich; and Breu, Hanspeter, 3,960,622.
Breuer, Hermann, to E. R. Squibb & Sons, Inc. Amino-1,2,4-oxadiazolyl-3-acetyl cephalosporins. 3,960,849, Cl. 260-243.00C.
Breuer, Hermann: *See—*
Treuner, Uwe D.; and Breuer, Hermann, 3,960,850.
Brewster, Robert W.: *See—*
Warren, Lyle D.; and Brewster, Robert W., 3,960,041.
Bridgestone Tire Company Limited: *See—*
Azuma, Tosio; and Yonekawa, Hisashi, 3,960,260.
Yukuta, Toshio; Ohashi, Takashi; Taniguchi, Yoshiko; and Saito, Masumi, 3,960,980.
Briggs, Glenn E.; Beach, Edmund E.; and Chase, Walter P., to Motorola, Inc. Printed circuit board arrangement. 3,961,228, Cl. 317-101.00R.
Bristol-Myers Company: *See—*
Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, 3,960,833.
British Petroleum Company Limited, The: *See—*
Battersby, John; and Forbes, Eric Simon, 3,960,965.
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Tylko, Jozef Kazimierz, 3,960,544.
Broadie, Robert W.: *See—*
Aboaf, Joseph A.; Broadie, Robert W.; Hull, Edward M.; and Pogge, H. Bernhard, 3,961,353.
Brock, George W.; and Hahn, Frederick W., Jr., to International Business Machines Corporation. Magnetic tape transport with slotted rotating head. 3,961,372, Cl. 360-102.000.
Broemer, Heinz; Meinert, Norbert; and Spincic, Johann, to Ernst Leitz GmbH, Optische Werke. Titanium dioxide containing glasses having a high index of refraction and a high dispersion and process of producing same. 3,960,579, Cl. 106-52.000.
Brokenshire, Robert E.; and Pratt, Robert G., to Detroit Edison Company, The. Fiber optic displacement transducer. 3,961,185, Cl. 250-231.00R.
Bronicki, Lucien Y., to Ormat Turbines (1965) Ltd. Supercharger system for combustion engine. 3,961,199, Cl. 290-52.000.
Brotman, Morley: *See—*
High, Cliff R.; and Brotman, Morley, 3,960,257.
Brotzmann, Karl: *See—*
Rote, Franklin E.; and Brotzmann, Karl, 3,960,546.
Brown, Clarence Eugene. Method of building construction using synthetic foam material. 3,961,002, Cl. 264-46.500.
Brown, Francis B.; and Erickson, John W., to Kobe Inc. Centrifugal separator. 3,960,319, Cl. 233-19.00R.
Brown, Melancthon S., deceased (by Kohn, Gustave K., special administrator), to Chevron Research Company. N-cycloalkyldithio-N'-fluorophenyl ureas. 3,960,943, Cl. 260-453.00R.
Brown, Pedro, Jr., to RCA Corporation. Memory dial for teletypewriter subscribers. 3,961,130, Cl. 178-2.00E.
Brown, Richard E.; and Shavel, John, Jr., to Warner-Lambert Company. Benzopyrano(3,4-C)pyridine bronchodilators. 3,961,057, Cl. 424-248.000.
Brown, Robert Saul, to Deering Milliken Research Corporation. Circular knitting machine with cantilevered, pivotally mounted platform. 3,959,991, Cl. 66-8.000.
Browning-Ferris Industries, Inc.: *See—*
Cradeur, Robert R.; and Holloway, Ronald Webb, 3,959,845.
Bruce, Walter Esmond. Manufacture of agricultural discs. 3,959,863, Cl. 29-148.300.
Brunel, Daniel Elie: *See—*
Bernard, Jean Rene; Brunel, Daniel Elie; Commeyras, Auguste Andre; Coste, Camille Michel; Itier, Jean Joseph; and Knoche, Hubert Wilhelm, 3,960,764.
Brunetti, Heimo: *See—*
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Brunswick Corporation: *See—*
Parks, Dewey P.; and Scott, Charles R., 3,960,650.
Bruzas, John A.: *See—*
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Bruzzese, Tiberio; and Ghielmetti, Giuseppe, to SPA-Societa Prodotti Antibiotici S.p.A. Esters of partricin derivatives. 3,961,047, Cl. 424-122.000.
Brych, Alfred, to Saft-Societe des Accumulateurs Fixes et de Traction. Electrical voltage indicating device. 3,961,253, Cl. 324-94.000.
Brzeski, Lech Andrzej; Kazimierski, Zbyszko Kazimierz; Krysinski, Jan Eugeniusz; and Siwek, Andrzej Witold, to Politechnika Lodzke. Gas-lubricated bearing. 3,960,414, Cl. 308-9.000.
Buchele, Ferdinand: *See—*
Leimbacher, Erwin; Marte, Walter; and Buchele, Ferdinand, 3,960,484.
Bucksch, Manfred: *See—*
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Budlane, Stanley J., to General Electric Company. Thermal timer, thermal actuator, control system and circuit. 3,961,300, Cl. 337-303.000.
Bugaenko, Lenar Timofeevich: *See—*
Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Bugaenko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, 3,960,682.
Buhl, Joachim: *See—*
Siemes, Franz; Kraus, Andreas; and Buhl, Joachim, 3,960,063.
Buhler, Erich, to Muller, Jacob. Ribbon weaving loom construction. 3,960,185, Cl. 139-307.000.
Bujan, Albert Frank, to Abbott Laboratories. Flow control device. 3,960,149, Cl. 128-214.00R.
Buker, Edward, to Coach & Car Equipment Corporation. Seat with anti-theft structure. 3,960,406, Cl. 297-345.000.
Bunker Ramo Corporation: *See—*
Mathe, Istvan, 3,959,868.
Bunnell, Edward Dennman; Fleischhacker, James Earl; and Tennant, Robert John, to AMP Incorporated. Flat wiring system and crimped connection. 3,960,430, Cl. 339-97.00C.
Burger, Alex; Kaiser, Hermann; and Ludovici, Werner, to Bayer Aktiengesellschaft. Production of strong active carbon moldings. 3,960,761, Cl. 252-421.000.
Burkall, Alvin Edward, to Whirlpool Corporation. Removable lint screen assembly for a dryer. 3,959,891, Cl. 34-82.000.
Burke, William. Combination mattress, mattress insert, and commode. 3,959,833, Cl. 5-90.000.
Burroughs Corporation: *See—*
Carbine, Joseph C.; and Bradshaw, Robert S., 3,960,264.
Flora, Laurence Paul, 3,961,284.
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Busch, Peter: *See—*
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Buschini, Anthony Alan; and Swarsbrick, Douglas Edward, to Parsons Controls Limited. Kelly's eye component for a fishing trawl. 3,959,909, Cl. 43-8.000.
Butler, Donald: *See—*
Shackleton, Frank; and Butler, Donald, 3,960,948.

Butler, James W., to Ford Motor Company. Magnetization of iron chromium system. 3,960,723, Cl. 210-42.00S.
Butuzov, Vladimir Petrovich; Vatolkin, Evgeny Konstantinovich; Gordienko, Leonid Alexandrovich; Feldman, Ernst Borisovich; Khadzhi, Valentin Evstafievich; and Shaposhnikov, Anatoly Alexandrovich. Apparatus for growing crystals from hydrothermal solutions. 3,960,501, Cl. 23-273.00H.
Buxbaum, Lothar: *See—*
Morawetz, Gottfried; and Buxbaum, Lothar, 3,960,817.
Buxton, Richard L. Physiological monitoring system. 3,960,140, Cl. 128-2.06R.
Byakov, Vsevolod Mikhailovich: *See—*
Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Bugaenko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, 3,960,682.
Byrne, John Frank, to Xerox Corporation. Composition and method for repairing selenium photoreceptors. 3,959,934, Cl. 51-317.000.
Cabot Corporation: *See—*
Hayes, Jimmie R., 3,960,001.
Cabut, Louis Antoine: *See—*
Huille, Michel Ernest Antoine; and Cabut, Louis Antoine, 3,960,587.
Caccavale, John L.; Pierce, Victor J.; Young, Robert W.; and Prussin, Samuel B. Process for producing flavored popcorn. 3,961,091, Cl. 426-307.000.
Cacciola, John; and Thomas, David W., to PRF, Inc. Amplitude modulated transmitter. 3,961,287, Cl. 332-37.00D.
Caffine, George S. Method and apparatus for automatically annunciating the completion of a telephone call hold interval. 3,961,142, Cl. 179-81.00R.
Cain, Patrick J.: *See—*
Roepke, Wallace W.; and Cain, Patrick J., 3,960,009.
Calbo, Leonard Joseph, Jr., to American Cyanamid Company. Process for electrodepositing coatings on metal. 3,960,688, Cl. 204-181.000.
Caldwell, Henry Cecil: *See—*
Blackburn, Dale W.; and Caldwell, Henry Cecil, 3,960,870.
Calehuff, Girard L., to Westvaco Corporation. Shear pump headbox. 3,960,654, Cl. 162-342.000.
Campbell, Charles R.; Danly, Donald E.; and Mueller, Werner H., to Monsanto Company. Process for hydrodimerizing olefinic compounds. 3,960,679, Cl. 204-73.00A.
Campbell, Donn V., to United States of America, Army. Lossy cable choke broadband isolation means for independent antennas. 3,961,331, Cl. 343-792.000.
Campbell, John J., to Caterpillar Tractor Co. Mounting arrangement for a hydraulic motor. 3,960,061, Cl. 91-506.000.
Canac Consultants Limited: *See—*
Vezina, Georges E., 3,960,005.
Canadian Patents and Development Limited: *See—*
Sparks, Bryan D., 3,961,005.
Canadian Porcelain Company Limited: *See—*
Rosenblatt, Gordon, 3,960,779.
Canon Kabushiki Kaisha: *See—*
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Goshima, Takeshi; Sugiura, Yoshinori; Endo, Kiyonobu; Sato, Hideaki; Kono, Kimio; and Tsuji, Takao, 3,960,443.
Hosoe, Kazuya; Aizawa, Hiroshi; Matsumoto, Seiichi; and Yokota, Hideo, 3,961,178.
Kamiya, Osamu; and Itoh, Susumu, 3,960,441.
Yokoyama, Noboru, 3,961,315.
Capetti, Federico, to Societa' Nebiolo S.p.A. Rotary printing press. 3,960,079, Cl. 101-232.000.
Cappel, Fred Erich: *See—*
Schmalfeld, Paul; Sauter, Dieter; and Cappel, Fred Erich, 3,960,543.
Caputi, Arthur, Jr.; and Wong, Thomas C., to E & J Gallo Winery. Continuous process for making fibrous cellulose acetate filter material. 3,961,007, Cl. 264-140.000.
Carbine, Joseph C.; and Bradshaw, Robert S., to Burroughs Corporation. Item transport apparatus. 3,960,264, Cl. 198-179.000.
Carbrey, Robert Lawrence, to Bell Telephone Laboratories, Incorporated. Line switch controller for a time-division switching system. 3,961,140, Cl. 179-15.0AT.
Cardone, Paul A., to Polaroid Corporation. Dye free, spectrally sensitive silver halide layers in diffusion transfer films. 3,960,558, Cl. 96-3.000.
Carella, Richard F.; Podolan, Edward G.; and Przybysz, Francis C., to General Motors Corporation. Retractable roof closure. 3,960,403, Cl. 296-137.00B.
Carey, Helen L., to Raymond Lee Organization, Inc., The, a part interest. Medication timing sealing device. 3,960,713, Cl. 206-534.000.
Carey, Jane Towne; and Fracchia, Alfred Andrew. Apparatus for the palliative treatment of pleural effusions. 3,960,153, Cl. 128-347.000.
Carey, Paul L.: *See—*
Besand, Roy T.; Carey, Paul L.; and Armstrong, David J., 3,961,088.
Carl Hurth, Maschinen- und Zahnradfabrik: *See—*
Eichinger, Johann, 3,960,029.
Carleton, Joseph G.; and Sweet, Richard G., to Leland Stanford Junior University, The Board of Trustees of. Measurement of angular dependence of scattered light in a flowing stream. 3,960,449, Cl. 356-103.000.
Carney, Richard William James, to Ciba-Geigy Corporation. 2-Phenoxy-alkanoic acids. 3,960,874, Cl. 260-293.820.
Carney, William V.: *See—*
DeLuca, Paul V.; and Carney, William V., 3,961,227.
Carpaneti, Edoardo: *See—*
Vargiu, Silvio; Carpaneti, Edoardo; and Passalenti, Beppino, 3,960,981.
Carpenter, Emerl R., to American Hoist & Derrick Company. Hydraulic backhoe circuitry. 3,960,284, Cl. 214-138.00R.
Carter, David A.; and Vogt, Frederick G., to Betz Laboratories, Inc. Silicate-based corrosion inhibitor. 3,960,576, Cl. 106-14.000.
Carter, Joseph F.: *See—*
Workman, William, Jr.; and Carter, Joseph F., 3,960,035.
Casadevall, James L., to Martin Marietta Corporation. Method of making high performance ablative tape. 3,960,626, Cl. 156-93.000.
Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Heinrich, Ernst; Mix, Konrad; and Ribka, Joachim, 3,960,480.
Cassidy, John Edward: *See—*
Birchall, James Derek; and Cassidy, John Edward, 3,960,592.
Cassimally, Khalil Ahmad Ibrahim. Collapsible trolley and portable case. 3,960,252, Cl. 190-18.00A.
Catalysts and Chemicals Industries Co., Ltd.: *See—*
Sanga, Seiji; and Nishimura, Yoichi, 3,960,760.
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Blake, William W., 3,960,172.
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Greiner, Jonny R., 3,959,968.
Klett, Gene Ralph, 3,959,901.
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McClure, Randall D.; and Marques, Jerry G., 3,960,238.
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Shuler, James R., 3,960,412.
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Cattien, Eckart: *See—*
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Cavaliere, Joseph R.; and Robortaccio, Rocco, to International Business Machines Corporation. Testing embedded arrays. 3,961,254, Cl. 324-73.0AT.
Celanese Coatings & Specialties Company: *See—*
Hicks, Darrell D., 3,960,824.
Cengel, John A.: *See—*
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Centaur Chemical Co.: *See—*
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Center for Management Services and Applied Research: *See—*
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Centre d'Etudes et de Realisations Industrielles de l'Atlantique C.E.R.I.A.: *See—*
Chardonneau, Joel; and Sable, Claude, 3,959,967.
Cerini, Costantino Peter, to American Cyanamid Company. Mumps vaccine and preparation thereof. 3,961,046, Cl. 424-89.000.
Certain-teed Products Corporation: *See—*
Eberl, James Joseph; Thelen, Edmund; and Heller, Harold L., 3,961,105.
Chadwick, Kenneth E.: *See—*
Chia, E. Henry; and Chadwick, Kenneth E., 3,960,606.
Chafetz, Harry: *See—*
Cullen, William P.; Chafetz, Harry; and Miller, Edward F., 3,960,889.
Chambers, George Sutton; and Sinclair, Carter, to General Electric Company. Adaptive filtering. 3,961,234, Cl. 318-561.000.
Champion, Fred; and Kern, Thomas W., to Olin Corporation. Novel anode adjustment apparatus. 3,960,694, Cl. 204-219.000.
Chan, Kingsley: *See—*
Sweet, John R., II; and Chan, Kingsley, 3,960,293.
Chan, Rosalind Po-Kuen, to Biorex Laboratories, Limited. 1,2-Diphenyl-ethane derivatives. 3,960,931, Cl. 260-479.00R.
Chandra, Grish; and Rowland, Colin Mostyn, to Dow Corning Limited. Coating process. 3,960,810, Cl. 260-46.5UA.
Chang, Chi S.: *See—*
Abbas, Shakir A.; Chang, Chi S.; Freeman, Leo B., Jr.; and Knepper, Ronald W., 3,961,355.
Change, Nicholas D.; and Riggs, Michael T., to PCB Piezotronics, Inc. Conformal pressure transducer. 3,960,018, Cl. 73-398.00R.
Chapman, Richard B., to United States of America, Navy. Pressurized ship structure for slamming loads. 3,960,100, Cl. 114-61.000.
Chardonneau, Joel; and Sable, Claude, to Centre d'Etudes et de Realisations Industrielles de l'Atlantique C.E.R.I.A. Reciprocating apparatus particularly for pump unit. 3,959,967, Cl. 60-382.000.
Charron, Louis Donald: *See—*
MacKenzie, Morley Scott; Charron, Louis Donald; Dooley, Andrew Philip Charles; and Lee, John Davidson, 3,960,431.
Chartet, Andre, to Societe Anonyme des Usines Chausson. Device for fixing tube plates and lateral flanges of heat exchangers. 3,960,210, Cl. 165-149.000.
Chase-Shawmut Company, The: *See—*
Salzer, Erwin, 3,959,875.
Chase, Walter P.: *See—*
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Chavee, Rene M., to Fabrique Nationale Herstal S.A. en abrege FN. Fuse for rifle-grenade. 3,960,084, Cl. 102-65.200.
Chemical Cleaning Composition Trust: *See—*
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Chemie Linz Aktiengesellschaft: *See—*
Hollinger, Roderich; Wendtlandt, Wolf; and Schneider, Gerda, 3,960,960.
Mayr, Hubert; Presoly, Elfriede; Weinrotter, Ferdinand; Muller, Walter; Stern, Gerhard; and Frohner, Walter Mizzi, deceased, 3,960,541.

Chemische Werke Huls Aktiengesellschaft: *See—*
Magosch, Karl Heinz; Feinauer, Roland; and Ruter, Jorn, 3,960,686.

Chemko Industries, Inc.: *See—*
Cyphert, Gilbert G., 3,959,844.

Chen, Chang Chung; Holmes, Jack K.; and Lewis, James L., to United States of America, Navy. Tracking status detector for a digital delay lock loop. 3,961,282, Cl. 331-1.00R.

Cheney, Richard F.: *See—*
Port, David J.; Lafferty, William D.; and Cheney, Richard F., 3,960,545.

Chester, Arthur N.: *See—*
Abrams, Richard L.; and Chester, Arthur N., 3,961,283.

Chevron Research Company: *See—*
Brown, Melancthon S., deceased, 3,960,943.
Honnen, Lewis R., 3,960,515.
Hutchison, Stanley O.; and Anderson, Glenn W., 3,960,014.
Hutchison, Stanley O.; and Mitchell, Neal L., 3,960,211.
Hutchison, Stanley O., 3,960,212.
Mitchell, Neal L., 3,960,215.
Stayner, Robert A., 3,960,613.
Stayner, Robert A., 3,960,614.

Chia, E. Henry; and Chadwick, Kenneth E., to Southwire Company. Aluminum silicon alloy and method of preparation thereof. 3,960,606, Cl. 148-2.000.

Chino, Shigeru; Miyazaki, Nobuto; and Takahashi, Tadaya, to Nigata Engineering Co., Ltd. Fluid loading device. 3,960,176, Cl. 137-615.000.

Chiyomaru, Isao: *See—*
Horii, Tetsuo; Chiyomaru, Isao; Kawada, Seigo; and Takita, Kiyoshi, 3,961,049.

Cho, Jin Sul. Kite. 3,960,346, Cl. 244-155.00A.

Chodosh, Stewart M., to Leesona Corporation. Anode construction. 3,960,600, Cl. 136-120.00R.

Choksi, Pradip V.; and Steidley, Roy B., to American Hospital Supply Corporation. Medical liquid container with tactile sterility indicator and method of testing container. 3,960,002, Cl. 73-52.000.

Chometon, Alain; and Boquet, Georges, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Collapsible steering columns. 3,960,031, Cl. 74-492.000.

Choong, Alan Chong Seong. Music teaching device. 3,960,046, Cl. 84-471.00R.

Chou, Albert S., to Shugart Associates. Line printer having hammer which spans three print positions. 3,960,074, Cl. 101-93.140.

Christmann, Harold F.; and Miklas, Edward J., to Petro-Tex Chemical Corporation. Modified zinc ferrite oxidative dehydrogenation catalysts. 3,960,767, Cl. 252-437.000.

Chu, Gordon P. K., to GTE Sylvania Incorporated. Lamp having crystallizable light diffusing envelope. 3,960,533, Cl. 65-33.000.

Chura, Harold: *See—*
Beers, Melvin Dale; Chura, Harold; and Robillard, Robert Joseph, 3,960,802.

Ciba-Geigy AG: *See—*
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Ciba-Geigy Corporation: *See—*
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Duerr, Dieter; and Pissiotas, Georg, 3,960,947.
Ferrini, Pier Giorgio; Haas, Georges; and Rossi, Alberto, 3,960,868.
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Orban, Ivan; Lind, Hanns; Brunetti, Heimo; and Rody, Jean, 3,960,875.
Ramey, Chester R.; and Luzzi, John J., 3,960,809.
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Piotrowski, Tadeusz Wiktor, 3,960,381.

Cirule, Fred M.; and Preziosi, Joseph R., to Amerace Corporation. Expansion clamp. 3,960,395, Cl. 285-370.000.

Cities Service Company: *See—*
Rosen, Bernard H.; Pelofsky, Arnold H.; and Greene, Marvin, 3,960,700.

Clark, Duncan, to Imperial Chemical Industries Limited. Production of esters. 3,960,930, Cl. 260-475.00N.

Clark Equipment Company: *See—*
McKenzie, Ian, 3,960,371.

Clark, Frederick G., to Eastman Machine Company. Cloth cutting machine with wick lubricator. 3,960,244, Cl. 184-6.140.

Clark, James Monroe: *See—*
Cohen, Stuart Barry; Clark, James Monroe; and Magnus, Arthur Howard, 3,961,136.

Cleary, Robert A.: *See—*
Mort, Paul R., Jr.; and Cleary, Robert A., 3,960,640.

Clement, James H. Mail box with signal attachment. 3,960,317, Cl. 232-35.000.

Close, James R.; Wood, William P.; Hatch, Robert A.; and Johnson, James R., to Minnesota Mining and Manufacturing Company. Method of containing a resiliently supported rigid ceramic catalyst support. 3,959,865, Cl. 29-157.00R.

Cloud, Robert H.; and Hopton, Edward J., to A.M. Industries. Heated air recycle arrangement. 3,959,892, Cl. 34-131.000.

Clovis, James S.; and Dohling, Jerome, to Rohm and Haas Company. Quinones as corrosion inhibitor in distilling alkanoic acids. 3,960,671, Cl. 203-7.000.

Clyburn, Charles W.: *See—*
Piaget, Robert E.; and Clyburn, Charles W., 3,960,427.

Coach & Car Equipment Corporation: *See—*
Buker, Edward, 3,960,406.

Cochoy, Robert E., to United States of America, Air Force. Poly (perfluoroalkylene oxide) oxadiazoles and their synthesis. 3,960,814, Cl. 260-47.00R.

Coetzee, Chris. Refuse devices. 3,960,351, Cl. 248-101.000.

Coggins, Robert W., to Combustion Engineering, Inc. Oil-gas separator having defoaming structure. 3,960,525, Cl. 55-178.000.

Cohen, Stuart Barry; Clark, James Monroe; and Magnus, Arthur Howard, to International Telephone and Telegraph Corporation. Digital data transmit and receive channel modem. 3,961,136, Cl. 178-67.000.

Cole, Robert Clay; Koch, Ronney R.; and Ramos, Joseph, to Halliburton Company. Pumpable epoxy resin composition. 3,960,801, Cl. 260-33.6EP.

Cole, William L., to Wilkinson Sword Limited. Members having a cutting edge. 3,960,608, Cl. 30-346.540.

Coleman, Arthur Edward: *See—*
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Coleman, Henry Evans, to Berkley, Marian, a part interest. Meat flavored vegetable protein product. 3,961,083, Cl. 426-92.000.

Colgate-Palmolive Company: *See—*
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Bauman, Robert Andrew, 3,961,075.

Colligan, Francis S. Apparatus and method for testing the condition of an antenna monitoring system. 3,961,260, Cl. 325-133.000.

Collins, Stephen M.: *See—*
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Colton, Douglas Roy; and Rosenbaum, Stanley Daniel, to Northern Electric Company Limited. Multi-ripple charge coupled device. 3,961,352, Cl. 357-24.000.

Combustion Engineering, Inc.: *See—*
Coggins, Robert W., 3,960,525.

Comision Nacional de Energia Atomica: *See—*
Varotto, Conrado F.; Audero, Miguel Angel; Vasallo, Daniel I.; Pascual, Roberto; and Ruffo, Hector J., 3,960,548.

Commercial Solvents Corporation: *See—*
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Commissariat a l'Energie Atomique: *See—*
Faure, Jacqueline; Malmejac, Yves; and Schaub, Bernard, 3,960,647.
Lazzari, Jean-Pierre; and Melnick, Igor, 3,961,299.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Cousin, Alain; and Berard, Henri, 3,961,324.
Jouanneault, Jean-Pierre, 3,959,876.

Compagnie Internationale pour l'Informatique: *See—*
Lazzari, Jean-Pierre; and Melnick, Igor, 3,961,299.

Compania Metalurgica Austral Argentina: *See—*
Varotto, Conrado F.; Audero, Miguel Angel; Vasallo, Daniel I.; Pascual, Roberto; and Ruffo, Hector J., 3,960,548.

Conley, James F., to Maremont Corporation. Automatic firearm having anti-bounce sear. 3,960,053, Cl. 89-149.000.

Conrad, Herbert M.: *See—*
Gaines, Jerome; and Conrad, Herbert M., 3,960,632.

Consonni, Pietro: *See—*
Pifferi, Giorgio; Omodei-Sale', Amedeo; and Consonni, Pietro, 3,960,858.

Consortium fur Elecktrochemische Industrie GmbH: *See—*
Seiter, Hartmut, 3,960,619.

Construction Products Research, Inc.: *See—*
Babcock, Henry Nash, 3,960,785.

Continental Can Company, Inc.: *See—*
Erlandson, Paul M., 3,960,624.

Continental Oil Company: *See—*
Kegler, William H.; and Huyser, Marvin E., 3,960,704.

Controls Company of America: *See—*
Orth, Charles D.; and Treder, Charles F., 3,960,169.

Controltek, Inc.: *See—*
Fagg, George A., 3,961,233.

Convain, Michel, to S. A. Pronal. Tank capable of being carried by a helicopter. 3,960,192, Cl. 150-1.000.

Conway, Bernard W.; and Moran, James, to Dexter Corporation, The. Process of forming wet laid tufted nonwoven fibrous web and tufted product. 3,960,652, Cl. 162-108.000.

Conway, John E., to Universal Oil Products Company. Hydrodesulfurization of asphaltene-containing black oil with a gamma-alumina composite catalyst of specified particle density. 3,960,712, Cl. 208-216.000.

Cook Electric Company: *See—*
Splitt, Frank G., 3,961,229.

Cooper, David J.; Hoover, John R. E.; and Weisbach, Jerry A., to SmithKline Corporation. Mercaptopseudodisaccharides. 3,960,838, Cl. 260-210.0AB.

Cooper, Glenn D., to General Electric Company. Polypheylene ether-resin compositions with organopolyiloxanes having silicon-H-bonds. 3,960,985, Cl. 260-874.000.

Cooper, Glenn D.: *See—*
Bennett, James G.; and Cooper, Glenn D., 3,960,811.

Copal Company Limited: *See—*
Arisaka, Kunio, 3,961,345.

Cordes Europe France: *See—*
Eisler, Robert, 3,960,050.

Cornelius Company, The: *See—*
Birrell, Peter Leslie, 3,960,298.

Corning Glass Works: *See—*
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Kohanzadeh, Youssef; and Smith, Roy E., 3,960,531.
Lanier, Terry O.; and Ramanaiah, Nunna, 3,960,689.
Rice, Dale W., 3,960,503.

Cornwell Research Foundation, Inc.: *See—*
Ballantyne, Joseph M.; Tang, Chung L.; Rhodes, Lawrence Bryce; Turner, John J.; and Yang, Ji Liang, 3,961,102.

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Bernard, Jean Rene; Brunel, Daniel Elie; Commeyras, Auguste Andre; Coste, Camille Michel; Itier, Jean Joseph; and Knoche, Hubert Wilhelm, 3,960,764.

Cote, Gerald M., to Thermanil Chemical Company, Incorporated. Process for tanning leather. 3,960,481, Cl. 8-94.260.

Cotton, C. W. Tree climbing device. 3,960,240, Cl. 182-20.000.

Coucoulas, Alexander, to Western Electric Company, Inc. Method of forming an integrated circuit assembly. 3,959,874, Cl. 29-577.000.

Coucoulas, Alexander, to Western Electric Company, Inc. Method of depositing a metal on a surface comprising an electrically nonconductive ferrite. 3,960,674, Cl. 204-16.000.

Coulter Electronics, Inc.: *See—*
Coulter, Wallace H., 3,961,249.

Coulter, Wallace H., to Coulter Electronics, Inc. Particle size distribution analyzation employing trailing edge differentiation. 3,961,249, Cl. 324-71.0CP.

Cousin, Alain; and Berard, Henri, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Multiple receiver screen type picture displaying device. 3,961,324, Cl. 340-324.0AD.

Coville, William E.: *See—*
Schenk, Raymond L., Jr.; Bruzas, John A.; and Coville, William E., 3,960,602.

Cox, David Alexander; Danilewicz, John Christopher; Ham, Allan Leslie; Kemp, John Edward Glyn; and Snarey, Michael, to Pfizer Inc. Phenoxypropanolamine therapeutic agents. 3,961,072, Cl. 424-324.000.

Cox, James Patrick; and Cox, Jeanne Marie, to Martin, Robertson & Bain Ltd. Rice-treating method and rice products. 3,961,084, Cl. 426-93.000.

Cox, Jeanne Marie: *See—*
Cox, James Patrick; and Cox, Jeanne Marie, 3,961,084.

Cox, Lyndon S.: *See—*
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Coyle, Roy Thomas, to Du Pont de Nemours, E. I., and Company. Gold compositions. 3,960,777, Cl. 252-514.000.

CPC International Inc.: *See—*
Tamura, Masaki; Ushiro, Soichiro; and Hasagawa, Shiro, 3,960,663.

Cradeur, Robert R.; and Holloway, Ronald Webb, to Browning-Ferris Industries, Inc. Apparatus and method for cleaning mining cars. 3,959,845, Cl. 15-321.000.

Cragar Industries, Inc.: *See—*
Liffick, Fenton A., 3,960,047.

Crane, Edward J., to Barker International, Inc. Counter-rotating fowl picker. 3,959,850, Cl. 17-11.10R.

Craven, Robert B., to Analog Devices, Inc. Solid state digital to analog converter. 3,961,326, Cl. 340-347.0DA.

Crisci, Joseph R.: *See—*
Hering, Frederic S.; Ohlbaum, Robert H.; and Crisci, Joseph R., 3,960,459.

Crooks, Thomas L.: *See—*
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Bodner, Ronald Eugene; Crooks, Thomas L.; Guest, John E.; Magrisso, Israel B.; and Slack, Keith K., 3,961,312.

Crosby, Wayne Howard, to General Foods Corporation. Growth regulation in lawn care. 3,960,540, Cl. 71-76.000.

Crossley, Thomas J., to Westinghouse Electric Corporation. Cyclic process for re-use of waste water generated during the production of UO_2. 3,961,027, Cl. 423-6.000.

Crouch, Dell A.: *See—*
Werth, John; Crouch, Dell A.; and Sklarchuk, Jack C., 3,960,597.

Crouzet: *See—*
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Crown Zellerbach Corporation: *See—*
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CTS Corporation: *See—*
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Culbertson, George S., to Standard Oil Company. Mono or bis 3-(polypropyl or butyl-propenyl)-amino alkyl piperazines. 3,960,865, Cl. 260-268.0PL.

Cullen, William P.; Chafetz, Harry; and Miller, Edward F., to Texaco Inc. Dehydrohalogenated polyalkene-maleic anhydride reaction product. 3,960,889, Cl. 260-326.50E.

Cumberland Engineering Company, Inc.: *See—*
Wudyka, Joseph Paul, 3,960,334.

Cumpston, Edward H., Jr. Air scrubber. 3,960,524, Cl. 55-86.000.

Curran, Adrian Charles Ward, to John Wyeth & Brother, Ltd. Certain 1-carbothioamides of 1,8-naphthyridines, pyrrolo(2,3-b)pyridines and pyrido(2,3-b)azepines. 3,960,876, Cl. 260-294.80C.

Curtiss-Wright Corporation: *See—*
Lamping, Harold D.; and Myers, David M., 3,960,115.

Cuscurida, Michael; and Austin, Thomas Howard, to Jefferson Chemical Company, Inc. Modified isocyanate foams. 3,960,788, Cl. 260-2.5AW.

Cutler-Hammer, Inc.: *See—*
Dummer, Merlin R., 3,961,146.
Halbeck, Werner B., 3,961,145.

Cutler, Ivan B., to University of Utah, The. Process for producing a solid solution of aluminum oxide in silicon nitride. 3,960,581, Cl. 106-65.000.

Cyphert, Gilbert G., to Chemko Industries, Inc. Carpet soil extractor. 3,959,844, Cl. 15-320.000.

Cyrenne, Henri-Paul. Combination flue gas scrubber and heat exchanger unit. 3,960,992, Cl. 261-152.000.

Czarnetzky, Edward J.: *See—*
Forest, Joseph G.; and Czarnetzky, Edward J., 3,961,092.

Dahlberg, Bengt Ingmar, to Alfa-Laval AB. Centrifugal separator. 3,960,318, Cl. 233-4.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
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Daido Metal Company, Ltd.: *See—*
Morisaki, Nobukazu, 3,961,258.

Daigle, Donald J.; Pepperman, Armand B., Jr.; and Vail, Sidney L., to United States of America, Agriculture. Treatment of organic textiles with adduct polymers and phenols. 3,961,110, Cl. 427-390.000.

Daikin Kogyo Co., Ltd.: *See—*
Kometani, Yutaka; Koizumi, Shun; Kubota, Kazuo; and Nawazima, Takeaki, 3,960,651.

Dailey, Lawrence W., to Societe Nationale des Petroles d'Aquitaine. Combined hydrolysis and absorption process and apparatus therefor. 3,961,015, Cl. 423-229.000.

Dailey, Leo L.: *See—*
Morrow, James J.; and Dailey, Leo L., 3,960,673.

Daimer, Wolfgang; and Dworak, Gert, to Vianova-Kunstharz A. G. Aqueous coating compositions comprising film-forming polyhydroxy component and polyvalent film-forming resin without polyelectrolyte character. 3,960,789, Cl. 260-21.000.

Daimler-Benz Aktiengesellschaft: *See—*
Neubrand, Franz, 3,960,209.
Perrin, Gunter, 3,960,122.

Dairylea Cooperative Inc.: *See—*
Jones, Calvin, 3,960,021.

Daley, Edwin W.; and Yowler, M. Pauline, to Procter & Gamble Company, The. Shampoo compositions which impart high luster and manageability to hair. 3,960,782, Cl. 252-544.000.

Daniel, Russell D.: *See—*
Beatty, Bobby D.; Daniel, Russell D.; Humerickhouse, Billy J.; and Norris, Gary G., 3,960,087.

Daniels, Phillip D. Screen and storm sash construction. 3,960,197, Cl. 160-371.000.

Danilewicz, John Christopher; Kemp, John Edward Glyn; and Wright, James Robert, to Pfizer Inc. 2 (or 4) Amino 4 (or 2) N-hetero quinazolines. 3,960,861, Cl. 260-256.40Q.

Danilewicz, John Christopher: *See—*
Cox, David Alexander; Danilewicz, John Christopher; Ham, Allan Leslie; Kemp, John Edward Glyn; and Snarey, Michael, 3,961,072.

Danly, Donald E.: *See—*
Campbell, Charles R.; Danly, Donald E.; and Mueller, Werner H., 3,960,679.

Danner, Kenneth H., to Rosemount Inc. Heated roll inductive heater construction. 3,961,151, Cl. 219-10.490.

Dansk Industri Syndikat A/S: *See—*
Jorgensen, Hemming Kristian, 3,960,202.

Dargitz, Arthur Z.; and Dargitz, Lawrence A. Dry wall taping device. 3,960,643, Cl. 156-390.000.

Dargitz, Lawrence A.: *See—*
Dargitz, Arthur Z.; and Dargitz, Lawrence A., 3,960,643.

Darsow, Gerhard; Schiller, Paul; Reese, Eckart; Bottenbruch, Ludwig; Binsack, Rudolph; Vernaleken, Hugo; and Wank, Joachim, to Bayer Aktiengesellschaft. Branched aromatic polyaryl-ether sulphones. 3,960,815, Cl. 260-49.000.

Dart Industries Inc.: *See—*
Kelley, Joseph M.; and Miskel, John J., Jr., 3,960,987.

Datametrics Corporation: *See—*
Walker, John A.; Dimitri, Dimitri S.; and Perkins, Reginald Louis, 3,961,336.

Daubach, Ewald; Saukel, Heinz; and Von Rambach, Leonhard, to BASF Aktiengesellschaft. Powdered, highly concentrated and stably dispersible dye formulations. 3,960,486, Cl. 8-79.000.

Davies, Phineas; and Hall, Alan James, to Imperial Chemical Industries Limited. Process for forming hydrogen and carbon dioxide using a catalyst consisting essentially of oxides of copper, zinc and aluminum or magnesium. 3,961,037, Cl. 423-656.000.
Davies, Terrence Ardern, to Square D Company. Electrical contact materials and methods of making the same. 3,960,553, Cl. 75-173.00R.
Davis, Bill G., to Jetco, Inc. Internal combustion engine starting system. 3,960,131, Cl. 123-187.50R.
Davis, Charles Alfred: *See—*
Benda, David; and Davis, Charles Alfred, 3,961,221.
Davis, Clark W., to National Semiconductor Corporation. CMOS differential amplifier circuit utilizing a CMOS current sinking transistor which tracks CMOS current sourcing transistors. 3,961,279, Cl. 330-30.00D.
Davis, John King; and Fernald, Henry Grant, to American Optical Corporation. Ophthalmic lens series. 3,960,442, Cl. 351-176.000.
Davis, Lyle W. Weighted picnic table cloth. 3,960,193, Cl. 150-52.00R.
Davis, Pauls; Vogt, Herwart C; and Deck, Charles F., to BASF Wyandotte Corporation. Crosslinking polymers with chloronitroso compounds. 3,960,822, Cl. 260-79.50P.
Davis, Pauls: *See—*
Vogt, Herwart C.; Deck, Charles F.; and Davis, Pauls, 3,960,821.
Davis, Richard W.; and Muir, Thomas L., to Villa Precision, Inc. Frame for supporting frangible sheet materials. 3,960,268, Cl. 206-45.330.
Davis, Ross Alan. Radio frequency transformer. 3,961,292, Cl. 333-32.000.
Davis, Ross Alan. Antenna system utilizing currents in conductive body. 3,961,330, Cl. 343-712.000.
Davis, Royston H.; and Searle, Robert J. G., to Shell Oil Company. Pesticidal dihalovinyl-spiroalkanecyclopropane derivatives. 3,961,070, Cl. 424-304.000.
Davy, Duncan Clement. Trimarans. 3,960,102, Cl. 114-123.000.
Dawson, John M., to United States of America, Energy Research and Development Administration. X-ray generator. 3,961,197, Cl. 250-493.000.
Dawson, Samuel G.: *See—*
Fowler, Charles F.; and Dawson, Samuel G., 3,959,948.
Dawson, Stanford, to Lawrence Peska Associates, Inc., a part interest. Flying toy. 3,959,917, Cl. 46-74.00D.
De Brem, Francois Regis Marcetteau; and Waroux, Maurice Denis, to Gaz de France. System for remote reading of indicating devices such as meters and the like. 3,961,317, Cl. 340-188.00R.
De Brey, Robert J. Particle flow monitor. 3,960,106, Cl. 116-67.00R.
Deck, Charles F.: *See—*
Davis, Pauls; Vogt, Herwart C; and Deck, Charles F., 3,960,822.
Vogt, Herwart C.; Deck, Charles F.; and Davis, Pauls, 3,960,821.
Decker, Peter: *See—*
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Decoflex Limited: *See—*
Faiers, John Alan, 3,960,314.
Deering Milliken Research Corporation: *See—*
Brown, Robert Saul, 3,959,991.
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Deininger, Kurt: *See—*
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Dejima, Shigeo: *See—*
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Del Norte Technology, Inc.: *See—*
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DeLigt, John; and Nikkel, Willem A., to Westvaco Corporation. Angular indexing mechanism. 3,960,475, Cl. 425-505.000.
Dell'Acqua, Ernani; and Ferrari, Rodolfo, to SPA-Societa prodotti Antibiotici S.p.A. Water-solubilized antibiotics. 3,961,048, Cl. 424-122.000.
DeLong, David C. Bench seat with end aligning and reinforcing insert. 3,960,405, Cl. 297-248.000.
DeLuca, Paul V.; and Carney, William V., to Porta Systems Corporation. Telephone connector block. 3,961,227, Cl. 317-101.00R.
De Marinis, Robert M.; and Hoover, John R. E. Substituted sulfonylacetamido cephalosporins. 3,960,852, Cl. 260-243.00C.
De Marinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. Substituted sulfonylacetamido cephalosporins. 3,960,853, Cl. 260-243.00C.
De Marinis, Robert M.; and Hoover, John R. E., to SmithKline Corporation. Substituted sulfonylacetamido cephalosporins. 3,960,855, Cl. 260-243.00C.
Denis, Joseph Herbert; and Rodolitz, Abraham J. Refrigeration unit. 3,959,982, Cl. 62-223.000.
Denson, Donald Derby: *See—*
Story, Paul Richard; Busch, Peter; Denson, Donald Derby; and Wright, Carl Edward, 3,960,897.
Derighetti, Renato: *See—*
Ullmann, Werner; Derighetti, Renato; and Gagliati, Umberto, 3,961,270.
De Sandre, Giovanni; Subrizi, Angelo; and Bretti, Franco, to Ing. C. Olivetti & C., S.p.A. Fixed point to floating point conversion in an electronic computer. 3,961,170, Cl. 235-154.000.
Design and Manufacturing Corporation: *See—*
Yake, William H.; and Wallace, Donald G., 3,960,290.
DeSimone, Robert S., to Rhodia, Inc. Process for the preparation of α,β-unsaturated nitriles. 3,960,923, Cl. 260-465.900.
Detroit Edison Company, The: *See—*
Brokenshire, Robert E.; and Pratt, Robert G., 3,961,185.
Deubel, Reinhold; Hemmerling, Volker; Reitz, Werner; and Teige, Wolfgang, to Hoechst Aktiengesellschaft. Process for the preparation of pigment compositions for the dope dyeing of polyacrylonitrile. 3,960,591, Cl. 106-308.00M.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Beschke, Helmut; Schaefer, Hans; Schreyer, Gerd; Schuler, Wilhelm Alfons; and Weigert, Wolfgang, 3,960,766.
Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Weigert, Wolfgang, 3,961,023.
Deutsche Texaco Aktiengesellschaft: *See—*
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Deutsches Brennstoffinstitut Freiberg: *See—*
Hubner, Wolfgang; and Fasshauer, Wilhelm, 3,960,394.
Deutschlander, Gert, to S I G Schweizerische Industrie-Gesellschaft. Packaging apparatus using hose-shaped wrapper. 3,959,952, Cl. 53-373.000.
Develpro Incorporated: *See—*
Dutchburn, Leslie G., 3,960,067.
Dewitt, Ivan L.; and Pacanowsky, Eugene, to Thiokol Corporation. Process for the manufacture of oxalyl dihydrazide and the use of same as a coolant in gas generating compositions. 3,960,946, Cl. 260-561.00H.
Dexter Corporation, The: *See—*
Conway, Bernard W.; and Moran, James, 3,960,652.
Di Antonio, Daniel Joseph, to Litton Systems, Inc. Adapter bushing for lubrication system. 3,960,243, Cl. 184-6.000.
Dickler, Paul J. Tamper-proof backpack. 3,960,300, Cl. 224-8.00R.
Dicks, Mason L.; and Morrow, James B., to Hanna Mining Company, The. Cationic froth flotation process. 3,960,715, Cl. 209-166.000.
Dielacher, Maximilian; and Hansen, Uwe, to Deutsche Texaco Aktiengesellschaft. Process for the purification of slack waxes. 3,960,703, Cl. 208-26.000.
Dietrich, Paul; and Sundt, Erling, to Firmenich S.A. Flavoring agents comprising unsaturated butyrolactone derivatives and precursors thereof. 3,961,094, Cl. 426-536.000.
Dietzel, Russel W.; and Leslie, William B., to United States of America, Energy Research & Development Administration. Igniter containing titanium hydride and potassium perchlorate. 3,960,083, Cl. 102-28.00R.
Digital Equipment Corporation: *See—*
Bickoff, Charles; and Hall, St. John Merrill, Jr., 3,960,256.
DiGiulio, Walter, to Nuclear Diagnostics, Inc. Method for determining an index of binding protein content of blood. 3,960,492, Cl. 23-230.00B.
Dilanni, Daniel: *See—*
Brackmann, Warren A.; and Dilanni, Daniel, 3,960,645.
DiMaio, Vincent, to Structural Plastics Incorporated. Method of making resin impregnated glass fiber article. 3,961,012, Cl. 264-257.000.
Dimensional Development Corporation: *See—*
Lo, Allen Kwok Wah; and Nims, Jerry Curtis, 3,960,563.
Dimitracopoulos, Panayotis C. Internal combustion engine. 3,960,119, Cl. 123-32.00C.
Dimitri, Dimitri S.: *See—*
Walker, John A.; Dimitri, Dimitri S.; and Perkins, Reginald Louis, 3,961,336.
Director-General of the Agency of Industrial Science and Technology: *See—*
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Dmitriev, Vladimir Alexandrovich: *See—*
Levin, Felix Lvovich; Golovanenko, Sergei Alexandrovich; Pridantsev, Mikhail Vasilievich; and Dmitriev, Vladimir Alexandrovich, 3,960,617.
Dobbins, Thomas Edward, to American Can Company. Carton with inspection flap and blank therefor. 3,960,315, Cl. 229-87.00F.
Dobias, Robert M.; Kmetz, Tibor; and Warnell, Walter C., to National Can Corporation. Can trimming apparatus. 3,960,099, Cl. 113-7.00R.
Dodds, Philip John: *See—*
Hutt, Peter Richard; Blake, Alan Ronald; von Cavallar, Gunter; Douglas, Brian Neil; and Dodds, Philip John, 3,961,137.
Dogliotti, Amilcare, to P. Ferrero & C. S.p.A. Method of manufacture of hollow chocolate articles. 3,961,089, Cl. 426-274.000.
Dohling, Jerome: *See—*
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Dokoshi, Noriaki: *See—*
Yoda, Naoya; Yoshi-i, Toshiya; Fujita, Saburo; Mochizuki, Hiroshi; Yumoto, Hirosuke; Kurihara, Masaru; Kubota, Takashi; Dokoshi, Noriaki; and Tanaka, Chiaki, 3,961,009.
Dokunikhin, Nikolai Stepanovich; and Vorozhtsov, Georgy Nikolaevich. Method of producing perylenetetracarboxylic acid derivatives. 3,960,867, Cl. 260-281.00P.
Doll & Co.: *See—*
Fleischmann, Johann R.; Fechter, Willy; and Schmidt, Heinrich, 3,959,929.
Domange, Jean-Louis: *See—*
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Dominion Engineering Works, Limited: *See—*
Futcher, Ralph James; and Malashenko, Alexander, 3,960,653.
Domyan, Frank F., to International Telephone and Telegraph Corporation. Ball valve. 3,960,363, Cl. 251-174.000.
Donley, Miller & Nowikas: *See—*
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Donovan, James W., to Nace, Barry J., a part interest. Fuel saving apparatus. 3,960,133, Cl. 123-198.00R.

Dooley, Andrew Philip Charles: *See—*
MacKenzie, Morley Scott; Charron, Louis Donald; Dooley, Andrew Philip Charles; and Lee, John Davidson, 3,960,431.
Dorheim, David W.: *See—*
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Doss, James D.; and McCabe, Charles W., to United States of America, Energy Research and Development Administration. Differential temperature integrating diagnostic method and apparatus. 3,960,138, Cl. 128-2.00H.
Douglas, Brian Neil: *See—*
Hutt, Peter Richard; Blake, Alan Ronald; von Cavallar, Gunter; Douglas, Brian Neil; and Dodds, Philip John, 3,961,137.
Douthat, Dean Z.: *See—*
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Dow Chemical Company, The: *See—*
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Free, Dustin L.; Krumel, Karl L.; and Snyder, Travis C., 3,960,736.
Nakamura, Masao, 3,960,792.
Raley, Charles F., Jr.; and Asher, Delman R., 3,960,770.
Rubens, Louis C., 3,960,784.
Savage, Albert B., 3,960,584.
Dow Corning Corporation: *See—*
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Lee, Kenneth M., 3,960,574.
Parsels, David L., 3,961,003.
Dow Corning Limited: *See—*
Chandra, Grish; and Rowland, Colin Mostyn, 3,960,810.
Dowa Co., Ltd.: *See—*
Miyahara, Kingo, 3,960,396.
Dowbenko, Rostyslaw; and Marchetti, Joseph R., to PPG Industries, Inc. Hydrolyzed reaction product of a polyepoxide with a phenolic compound having a group hydrolyzable to carboxyl. 3,960,795, Cl. 260-29.2EP.
Downing, John Kenneth, to Vent Axia Limited. Improvements in and relating to fans. 3,960,464, Cl. 415-146.000.
Downing, Terry R.: *See—*
Spooner, Ronald E.; and Downing, Terry R., 3,960,286.
Doyel, John S. Apparatus for attaching ornaments to sheet material. 3,960,307, Cl. 227-144.000.
Doyle, John R.: *See—*
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Doyle, Natividad F. Game apparatus. 3,960,377, Cl. 273-1.00R.
Draber, Wilfried: *See—*
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Drawe, William A., to Xerox Corporation. Color highlighting electrophotographic printing machine. 3,960,445, Cl. 355-4.000.
Dreier, Gustav H.: *See—*
Zindler, Jerrold; and Dreier, Gustav H., 3,960,498.
Dresser Industries, Inc.: *See—*
Abney, Dave L.; Williams, Robert C.; and Gilbert, Horace E., 3,960,366.
Jett, Marion Barney; Jackson, Jay Warner; and Irby, Richard Eugene, 3,960,015.
Drose, Georg: *See—*
Rosner, Wolfgang; and Drose, Georg, 3,961,108.
Dryden, Gale E. Apparatus for high flow anesthesia. 3,960,148, Cl. 128-188.000.
Du Pont of Canada Limited: *See—*
Pinney, Baden McDowall, 3,960,820.
Dubot, Guy; and Lemercier, Jacques, to Fabrique d'Horlogerie la Vedette S.A. Light-responsive electric switch. 3,961,183, Cl. 250-214.00R.
Ducan, Lane S.; Tamny, Simon Z.; and Riedy, Charles H., to Nordson Corporation. Powder spray system. 3,960,323, Cl. 239-3.000.
DuCharme, Donald W., to Upjohn Company, The. Substituted morpholine guanidines for the treatment of arrhythmic conditions. 3,961,056, Cl. 424-248.000.
Duchmann, Gail E.: *See—*
Hanson, Christina D.; and Duchmann, Gail E., 3,959,894.
Ducommun, Georges: *See—*
Adler, Karl; Ducommun, Georges; and Wantz, Charles A., 3,961,209.
Dudziak, Ernst: *See—*
Gustavs, Helmut; and Dudziak, Ernst, 3,960,081.
Duerr, Dieter; and Pissiotas, Georg, to Ciba-Geigy Corporation. Condensation products. 3,960,947, Cl. 260-561.00R.
Dufrene, Alex. Setting and retrieval device for down-hole equipment. 3,960,399, Cl. 294-86.250.
Dugan, Virgil H. Precision mobile gravity survey and guidance system. 3,960,344, Cl. 244-182.000.
Dummer, Merlin R., to Cutler-Hammer, Inc. Pretravel switch for portable tools. 3,961,146, Cl. 200-157.000.
Dumont, Louis Claude; Paris, Rene Antoine; and Scharff, Claude Mathilde, to PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiques. Antichlorosis compositions for plants. 3,960,536, Cl. 71-1.000.
Dunn, Wendell E., Jr., to Titanium Technology N.V. Fluidized bed cooler. 3,960,203, Cl. 165-1.000.
Du Pont de Nemours, E. I., and Company: *See—*
Bouchard, Robert Joseph; and Rogers, Donald Burl, 3,960,778.
Boyle, Edward Michael Joseph; and Johnson, Melvin Harry, 3,960,305.
Coyle, Roy Thomas, 3,960,777.
Gorski, Robert Alexander, 3,960,746.
Jacobs, Emmett Smith; and Liberi, Vincent Edward, 3,960,528.
Khanna, Ram Tirth, 3,960,979.
Kohan, Melvin Ira, 3,960,984.
Uyeda, Roy Teruyuki, 3,960,956.
Duranleau, Roger G.; and Larkin, John M., to Texaco Inc. Preparation of acylhydroximyl halides. 3,960,953, Cl. 260-566.00A.
Dusenberry, William L. Silver recovery process. 3,960,550, Cl. 75-118.00P.
Dutchburn, Leslie G., to Develpro Incorporated. Counterbalance for rotary spit. 3,960,067, Cl. 99-421.00H.
Dute, John C. Apparatus for constructing control circuits having relay circuit functional characteristics. 3,961,200, Cl. 307-112.000.
Dworak, Gert: *See—*
Daimer, Wolfgang; and Dworak, Gert, 3,960,789.
Dynascan Corporation: *See—*
Goldstein, Richard; and Feldman, Harold, 3,961,241.
Rose, Gus C., 3,961,242.
E. D. Bullard Company: *See—*
Van Tuyl, David H., 3,960,104.
E & J Gallo Winery: *See—*
Caputi, Arthur, Jr.; and Wong, Thomas C., 3,961,007.
E. Kahn's Sons Company, The: *See—*
Weiner, Philip D.; and Kermans, Jasper J., 3,961,090.
E. R. Squibb & Sons, Inc.: *See—*
Breuer, Hermann, 3,960,849.
Krapcho, John; and Turk, Chester Frank, 3,960,848.
Treuner, Uwe D.; and Breuer, Hermann, 3,960,850.
Yale, Harry Louis, 3,960,847.
E-Systems, Inc.: *See—*
Stobart, Charles R., 3,961,166.
Earl, Robert A.: *See—*
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Early California Industries, Inc.: *See—*
Lacey, Kathleen P., 3,960,735.
Eastlick, David Thomas: *See—*
Long, Alan Gibson; Walker, Derek; Eastlick, David Thomas; and Stables, Harry Carson, 3,960,843.
Eastman Kodak Company: *See—*
Baisch, Theodor; Deininger, Kurt; Strobel, Joseph R.; and Trumpp, Alfred, 3,961,344.
Klanderman, Bruce H.; and Klingbiel, Richard T., 3,960,748.
Klanderman, Bruce H.; and Maier, David P., 3,960,752.
O'Brien, Robert J.; Lelewski, Stanley, Jr.; and LaFleur, Bob A., 3,960,738.
Eastman Machine Company: *See—*
Clark, Frederick G., 3,960,244.
Eaton Corporation: *See—*
Bracken, Joseph W., 3,960,418.
Gee, Thomas A.; Jacobs, Gerald L.; and Baltare, Gunnar, 3,961,215.
Goetz, George W., 3,960,390.
Griffiths, Thomas C.; and Slack, Albert L., 3,960,362.
Morgan, David Frederick, 3,960,234.
Sasena, John J., 3,959,852.
Eaton Yale Ltd.: *See—*
Smith, John Gerald, 3,960,190.
Windsor, Robert N.; and Jasinski, Stanley C., 3,960,189.
Ebeling, Harold O.; and McMinn, Robert E., to Black, Sivalls & Bryson, Inc. Method and system for generating a dehydrated inert gas stream. 3,960,519, Cl. 55-31.000.
Eberl, James Joseph; Thelen, Edmund; and Heller, Harold L., to Certain-teed Products Corporation. Method for the manufacture of coated calcium sulfate whisker fibers. 3,961,105, Cl. 427-220.000.
Echterling, Hubert H. Newspaper arrival indicators. 3,960,316, Cl. 232-1.00C.
Ecology Controls, Inc.: *See—*
Sleeper, David P., 3,960,237.
Economic Laboratories, Inc.: *See—*
Freis, Richard E.; and Rue, Larry M., 3,960,781.
Edamura, Fred Y., to Dow Chemical Company, The. 6-(Substituted phenoxy)tetrazolo(1,5-b)pyridazines and a method of use for control of soil-borne plant diseases. 3,961,059, Cl. 424-250.000.
Eddy, William C., to Aspro, Incorporated. High-low tire pressure signal switch. 3,961,309, Cl. 340-58.000.
Eder, Ulrich: *See—*
Haffer, Gregor; Eder, Ulrich; Laurent, Henry; Ruppert, Jurgen; Sauer, Gerhard; and Wiechert, Rudolf, 3,960,842.
Edmiston, Glen P. Trolling depthometer. 3,959,885, Cl. 33-126.000.
Edwards, Preston G., to General Electric Company. Sheet metal base for pinch sealed electric lamp. 3,961,216, Cl. 313-51.000.
Ehlert, Delbert D. Rope hook mount for a vehicle or the like. 3,960,091, Cl. 105-475.000.
Eibl, Hansjorg; and Nicksch, Alfar, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Diacylglycerophosphoric acid esters of aminoethanol and methylaminoethanol and method of preparing the same. 3,960,905, Cl. 260-403.000.
Eichamer, Paul D.: *See—*
Bessant, Glyndwr A. R.; Eichamer, Paul D.; Koros, Robert M.; and Schieni, Steven R., 3,960,508.
Eichelberger, Edward B., to International Business Machines Corporation. Testing embedded arrays. 3,961,252, Cl. 324-73.0AT.
Eichinger, Johann, to Carl Hurth, Maschinen- und Zahnradfabrik. Gear drive. 3,960,029, Cl. 74-413.000.

Eickmann, Karl. Pressure responsive control body arrangement. 3,960,060, Cl. 91-487.000.

Eisai Co., Ltd.: *See—*
Konishi, Toji; Kayano, Masanori; and Tanabe, Yoshio, 3,961,064.

Eisenhardt, Robert G.: *See—*
Jordan, Gene M.; Eisenhardt, Robert G.; and Douthat, Dean Z., 3,959,884.

Eisler, Robert, to Cordes Europe France. Method of making impregnated braided rope. 3,960,050, Cl. 87-1.000.

Elbling, Joseph: *See—*
Farrand, Robert W.; and Elbling, Joseph, 3,961,318.

Elderton, Peter: *See—*
Lawford, Victor Nicholas; Granada, Richard Paul; and Elderton, Peter, 3,960,033.

Electric Power Transmission Pty. Limited: *See—*
Holmes, Harold Edwin; and Oriolo, Enzo, 3,959,946.

Electrohome Limited: *See—*
Lovely, John D., 3,961,362.

Electrovert Ltd.: *See—*
Tardoskegyi, Louis V., 3,960,350.

Elektriska Svetsningsaktiebolaget: *See—*
Ericsson, Rolf, 3,961,154.

Eli Lilly and Company: *See—*
Gale, Richard M.; Higgens, Calvin E.; and Hoehn, Marvin M., 3,960,667.
Gutowski, Gerald E., 3,960,836.
Kukolja, Stjepan; and Lammert, Steven R., 3,960,844.
Kukolja, Stjephan P.; and Lammert, Steven R., 3,960,851.

Elks, Joseph; Weir, Niall Galbraith; Gane, Timothy Larry; and Burton, Brian, to Glaxo Laboratories Limited. Process for the preparation of D(−)-penicillamine and salts thereof. 3,960,940, Cl. 260-534.00S.

Ellcon-National, Inc.: *See—*
Beacon, Robert G., 3,960,411.

Elliott, Stanley E.; and Shore, Jack H., to Institutes of Medical Sciences, The. Air flow to pressure differential transducer for pneumotachography. 3,960,142, Cl. 128-2.080.

Ellis, Michael C.; and Manning, Harold E., to Petro-Tex Chemical Corporation. Lithium promoted magnesium chromite dehydrogenation catalysts. 3,960,776, Cl. 252-465.000.

Elliston, Thomas L., to Elliston, Thomas L. Internally pressurized load supporting mast. 3,960,360, Cl. 254-139.100.

Elstow, William Rupert Brooke; and Jennings, David Michael, to Pains-Wessex Limited. Marine smoke markers. 3,961,259, Cl. 325-66.000.

Eltra Corporation: *See—*
Mattson, Richard W., 3,960,125.

Emanuel, Mary Victoria, to Boeing Company, The. Conservation and conversion of poultry waste products. 3,961,096, Cl. 426-644.000.

Emelyanov, Ivan Yakovlevich: *See—*
Alexeev, Viktor Ivanovich; Emelyanov, Ivan Yakovlevich; Ivanov, Vladimir Maximovich; Konstantinov, Leonard Vasilievich; Lysikov, Boris Vasilievich; Postnikov, Viktor Viktorovich; and Rybakov, Jury Viktorovich, 3,961,196.

Emery Industries, Inc.: *See—*
Najour, Gerald Costa; and Witt, Peter Ray, 3,960,806.

Emmer, Gerhard: *See—*
Vernaleken, Hugo; Bottenbruch, Ludwig; Emmer, Gerhard; and Hucks, Uwe, 3,960,968.

Emodi, Alexander, to Hoffmann-La Roche Inc. Juvenile hormones stabilized with acrylonitrile U.V. absorbers. 3,961,051, Cl. 424-174.000.

Encinas, Jean, to U.S. Philips Corporation. Integrated circuit having bipolar transistors and method of manufacturing said circuit. 3,961,340, Cl. 357-40.000.

Encoline(Process)Limited: *See—*
Farrow, Harold Frederick; and Rackstraw, Bernard Booth, 3,960,078.

Enders, Edgar: *See—*
Wollweber, Hartmund; Enders, Edgar; and Stendel, Wilhelm, 3,960,890.

Endo, Kiyonobu: *See—*
Goshima, Takeshi; Sugiura, Yoshinori; Endo, Kiyonobu; Sato, Hideaki; Kono, Kimio; and Tsuji, Takao, 3,960,443.

Enei, Hitoshi; Sato, Katsuaki; and Hirose, Yoshio, to Ajinomoto Co., Inc. Method of producing guanosine by fermentation. 3,960,660, Cl. 195-28.00N.

Enei, Hitoshi; Sato, Katsuaki; Ishii, Morikatsu; and Hirose, Yoshio, to Ajinomoto Co., Inc. Method for producing inosine by fermentation. 3,960,661, Cl. 195-28.00N.

Energy Conversion Devices, Inc.: *See—*
Klose, Peter H.; and Ovshinsky, Stanford R., 3,961,314.

Engel, Klaus; Prezewowsky, Klaus; Laurent, Henry; and Nishino, Yukishige, to Schering Aktiengesellschaft. 3,17,18-Trihydroxy-1,3,5(10)-estratrienes. 3,960,841, Cl. 260-239.55R.

Engelhardt, Albrecht: *See—*
Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, 3,961,071.

Engelhardt, Edward L.; and Remy, David C., to Merck & Co., Inc. 4-Halo-2,3,5,6-dibenzobicyclo[5.1.0]octane. 3,960,974, Cl. 260-649.00R.

Engler, Maynard F.: *See—*
Kircher, Morton S.; and Engler, Maynard F., 3,960,697.

Entreprise de Recherches et d'Activites Petrolieres Elf: *See—*
Bernard, Jean Rene; Brunel, Daniel Elie; Commeyras, Auguste Andre; Coste, Camille Michel; Itier, Jean Joseph; and Knoche, Hubert Wilhelm, 3,960,764.

Erdmann, David P.; and Kurschner, Dennis L., to Honeywell Inc. Intrusion detection systems. 3,961,320, Cl. 340-258.00D.

Erickson, John W.: *See—*
Brown, Francis B.; and Erickson, John W., 3,960,319.

Ericsson, Rolf, to Elektriska Svetsningsaktiebolaget. Direct current power supply for manual arc welding. 3,961,154, Cl. 219-135.000.

Erlandson, Paul M., to Continental Can Company, Inc. Method of fabricating tubular bodies. 3,960,624, Cl. 156-69.000.

ERNO Raumfahrttechnik GmbH: *See—*
Selke, Winfried, 3,959,923.

Ernst Leitz G.m.b.H.: *See—*
Leitz, Ludwig; and Heitman, Knut, 3,960,410.

Ernst Leitz GmbH, Optische Werke: *See—*
Broemer, Heinz; Meinert, Norbert; and Spincic, Johann, 3,960,579.

Ertel, Rolf: *See—*
Braun, Klaus; Gabsch, Gunther; Forster, Werner; Ertel, Rolf; and Femmer, Klaus, 3,960,859.

ESB Incorporated: *See—*
Werth, John; Crouch, Dell A.; and Sklarchuk, Jack C., 3,960,597.

Escalesilla Tresaes Ltd.: *See—*
Arias, Anibal Aguirre, 3,960,241.

Eschenbach, Paul W., to Deering Milliken Research Corporation. Circular knitting machine with attached stool member. 3,959,992, Cl. 66-8.000.

Eschenmoser, Albert: *See—*
Naf, Ferdinand; Ohloff, Gunther; and Eschenmoser, Albert, 3,960,977.

Escuela Politecnica Nacional: *See—*
Guerrero, Milton, 3,960,839.

Ester, Margarete, nee Berkemann, heir: *See—*
Ester, Wilhelm, deceased; Lovis, Brigitte, nee Ester, heir; Ester, Wolfgang, heir; and Heitmann, Wilhelm, 3,960,672.

Ester, Wilhelm, deceased (by Ester, Margarete, nee Berkemann, heir); by Lovis, Brigitte, nee Ester, heir; by Ester, Wolfgang, heir; and Heitmann, Wilhelm, to Veba-Chemie AG. Continuous distillation process for purifying alkanols. 3,960,672, Cl. 203-37.000.

Ester, Wolfgang, heir: *See—*
Ester, Wilhelm, deceased; Lovis, Brigitte, nee Ester, heir; Ester, Wolfgang, heir; and Heitmann, Wilhelm, 3,960,672.

Etablissements Francois Salomon et Fils: *See—*
Salomon, Georges Pierre Joseph, 3,960,384.

Ethyl Corporation: *See—*
Kleiman, Joseph P.; and Keblys, Kestutis A., 3,961,033.
Shubkin, Ronald L., 3,960,962.
Wiegand, Karl E., 3,960,941.

Ettenberg, Michael, to RCA Corporation. Method of making a transmission mode semiconductor photocathode. 3,960,620, Cl. 148-175.000.

Evans, James D.; and Long, William R., Jr., to Armco Steel Corporation. Rare earth metal treated cold rolled, non-oriented silicon steel and method of making it. 3,960,616, Cl. 148-111.000.

Evans, John L.: *See—*
Zoltan, Bart J.; and Evans, John L., 3,960,691.

Evans, R. Douglas, Jr.: *See—*
Leibee, Donald L.; Oaks, Seibert S.; and Evans, R. Douglas, Jr., 3,960,222.

Evers, William J.; Heinsohn, Howard H., Jr.; Mayers, Bernard J.; and Karoll, Elizabeth A., to International Flavors & Fragrances Inc. Novel flavoring compositions and products containing 2-methyl-3-thio-(2-methylbutyryl)-furan. 3,961,093, Cl. 426-535.000.

Evers, William J.: *See—*
Katz, Ira; Wilson, Richard A.; Evers, William J.; Vock, Manfred H.; and Verhoeve, Gerrit W., 3,960,860.

ExCel Engineering, Inc.: *See—*
Paules, Eugene H., 3,959,951.

Excelermatic, Inc.: *See—*
Kraus, Charles Edward, 3,960,417.

Exploaterings Aktiebolaget T.B.F.: *See—*
Porath, Jerker Olof; and Rosengren, Jan Gunnar, 3,960,720.

Extracorporeal Medical Specialties Inc.: *See—*
Miller, Frederick W., III, 3,960,730.

Exxon Research and Engineering Company: *See—*
Bessant, Glyndwr A. R.; Eichamer, Paul D.; Koros, Robert M.; and Schieni, Steven R., 3,960,508.
Bosniack, David S., 3,960,793.
Hamner, Glen P.; and Mattox, William J., 3,961,036.

Fabrique d'Horlogerie la Vedette S.A.: *See—*
Dubot, Guy; and Lemercier, Jacques, 3,961,183.

Fabrique Nationale Herstal S.A. en abrege FN: *See—*
Chavee, Rene M., 3,960,084.

Fagg, George A., to Controltek, Inc. D-C voltage control. 3,961,233, Cl. 318-361.000.

Faiers, John Alan, to Decoflex Limited. Coin bags with flip top closures. 3,960,314, Cl. 229-62.000.

Fairchild Camera and Instrument Corporation: *See—*
Kendall, Larry J.; and Snyder, Larry D., 3,961,325.

Fake, Charles Sylvester, to Beecham Group Limited. Non-toxic ADL antihypertensives. 3,960,879, Cl. 260-297.00B.

Fake, Charles Sylvester, to Beecham Group Limited. Tetrahydropyrid-4-yl-chroman-5-ol derivatives. 3,960,880, Cl. 260-295.00F.

Fallon, Herbert J., to Bendix Corporation, The. Clamping fixture for a double disc grinder. 3,959,933, Cl. 51-217.00R.

Fantl, Joel; and Martins, Joseph G., to Monsanto Company. Process for recovery and reuse of textile size. 3,960,485, Cl. 8-138.000.

Farha, Floyd, Jr.: *See—*
Bertus, Brent J.; Farha, Floyd, Jr.; and Johnston, Harlin D., 3,960,773.

Farrand, Robert W.; and Elbling, Joseph, to Inductosyn Corporation. Electrostatic position-measuring transducer. 3,961,318, Cl. 340-200.000.

Farrenkothen, Armin: *See—*
Holstein, Herbert; and Farrenkothen, Armin, 3,960,056.

Farrow, Harold Frederick; and Rackstraw, Bernard Booth, to Encoline(Process)Limited. Printing processes. 3,960,078, Cl. 101-150.000.

Fasshauer, Wilhelm: *See—*
Hubner, Wolfgang; and Fasshauer, Wilhelm, 3,960,394.

Faure, Jacqueline; Malmejac, Yves; and Schaub, Bernard, to Commissariat a l'Energie Atomique. Method of growing single crystals. 3,960,647, Cl. 156-603.000.

Fazakerley, Stanley, to British Petroleum Company Limited, The. Treatment of proteinaceous material. 3,960,659, Cl. 195-5.000.

Fechter, Willy: *See—*
Fleischmann, Johann R.; Fechter, Willy; and Schmidt, Heinrich, 3,959,929.

Fedorov, Valery Ionovich: *See—*
Filatov, Nikolai Grigorievich; Gridnev, Vitaly Nikiforovich; Gavriljuk, Valentin Gennadievich; Meshkov, Jury Yakovlevich; Mashlenko, Felix Isaakovich; Mikhailov, Konstantin Vasilievich; Fedorov, Valery Ionovich; Marchenko, Vladimir Zakharovich; Lyskov, Ivan Konstantinovich; and Budilovsky, Viktor Alexandrovich, 3,959,999.

Fegeat, Antoine Gabriel (dit Tony). Circular pile fabric knitting machines. 3,959,993, Cl. 66-9.00B.

Feinauer, Roland: *See—*
Magosch, Karl Heinz; Feinauer, Roland; and Ruter, Jorn, 3,960,686.

Feinberg, Jacob Howard, to American Can Company. Sulfones as solvents in catalysts of U.V. curable systems. 3,960,684, Cl. 204-159.110.

Feist, Wolfgang M., to Raytheon Company. Thin film dielectric storage target and method for making same. 3,960,562, Cl. 96-38.000.

Feiten, Karl-Josef: *See—*
Halberschmidt, Friedrich; Paulus, Helmut; and Feiten, Karl-Josef, 3,960,627.

Feldman, Ernst Borisovich: *See—*
Butuzov, Vladimir Petrovich; Vatolkin, Evgeny Konstantinovich; Gordienko, Leonid Alexandrovich; Feldman, Ernst Borisovich; Khadzhi, Valentin Evstafievich; and Shaposhnikov, Anatoly Alexandrovich, 3,960,501.

Feldman, Harold: *See—*
Goldstein, Richard; and Feldman, Harold, 3,961,241.

Fellinger, Frank, to North Electric Company. Asynchronous bit-serial data receiver. 3,961,138, Cl. 178-69.50R.

Femmer, Klaus: *See—*
Braun, Klaus; Gabsch, Gunther; Forster, Werner; Ertel, Rolf; and Femmer, Klaus, 3,960,859.

Fergason, James L., to International Liquid Xtal Company. Liquid-crystal mixtures for use in liquid-crystal displays. 3,960,749, Cl. 252-299.000.

Fernald, Henry Grant: *See—*
Davis, John King; and Fernald, Henry Grant, 3,960,442.

Ferodo Limited: *See—*
Stirling, Walter Robert, 3,960,249.

Ferrari, Rodolfo: *See—*
Dell'Acqua, Ernani; and Ferrari, Rodolfo, 3,961,048.

Ferrini, Pier Giorgio; Haas, Georges; and Rossi, Alberto, to Ciba-Geigy Corporation. Derivatives of 6,7 or 8 cycloalkyl 4-oxo quinoline 3 carboxylic acid. 3,960,868, Cl. 260-287.0AN.

Fial, Ronald Augustine; and Markowtiz, Hal, to Portland Zoological Society. Audio information device. 3,960,254, Cl. 194-9.00T.

Fieldhouse, Roger, to Foseco Trading A.G. Expansible frame hot topping apparatus with wedge insertion means. 3,960,199, Cl. 164-339.000.

Filatov, Nikolai Grigorievich; Gridnev, Vitaly Nikiforovich; Gavriljuk, Valentin Gennadievich; Meshkov, Jury Yakovlevich; Mashlenko, Felix Isaakovich; Mikhailov, Konstantin Vasilievich; Fedorov, Valery Ionovich; Marchenko, Vladimir Zakharovich; Lyskov, Ivan Konstantinovich; and Budilovsky, Viktor Alexandrovich, to Lyskov, Ivan Konstantinovich; and Budilovsky, Viktor Alexandrovich. Method of producing long-length articles from hot-rolled carbon steel and article produced thereby. 3,959,999, Cl. 72-364.000.

Filippi, Ernest A.: *See—*
Smith, Matthew S.; and Filippi, Ernest A., 3,960,052.

Filippov, Vladimir Vasilievich: *See—*
Zavyalov, Sergei Ivanovich; Rodionova, Natalya Alexandrovna; Parnes, Zinaida Naumovna; Bolestova, Galina Ilinichna; Filippov, Vladimir Vasilievich; and Zheleznaya, Lidia Lvovna, 3,960,884.

Firestone Tire & Rubber Company, The: *See—*
Spiewak, John W., 3,960,818.

Firmenich & Cie: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,961,095.

Firmenich S.A.: *See—*
Dietrich, Paul; and Sundt, Erling, 3,961,094.
Naf, Ferdinand; Ohloff, Gunther; and Eschenmoser, Albert, 3,960,977.

First Ann Arbor Corporation: *See—*
Jordan, Gene M.; Eisenhardt, Robert G.; and Douthat, Dean Z., 3,959,884.

Fisch, Richard S.; and Newman, Norman, to Minnesota Mining and Manufacturing Company. Silver bleaching solutions. 3,960,565, Cl. 96-60.00R.

Fischer, Adolf: *See—*
Rohr, Wolfgang; and Fischer, Adolf, 3,960,919.

Fischer, Artur. Connector for elements made of structural foam 3,960,460, Cl. 403-292.000.

Fischer & Porter Co.: *See—*
Morrow, James J.; and Dailey, Leo L., 3,960,673.

Fisher Controls Company: *See—*
Hargrave, Michael E., 3,960,364.

Fisher, Elliott. Spring power device. 3,960,246, Cl. 185-40.00H

Fisher, Evan D., to United States of America, Army. Air valve safety device for bomb fuzes. 3,960,086, Cl. 102-70.20G.

Fisher, Robert C. Shoulder strap bracket. 3,959,855, Cl. 24-163.0FC.

Fisher, Robert C. Seat belt retractor. 3,960,339, Cl. 242-107.40R.

Flamand, Maurice, to Rockwell International Corporation. Interchangeable weft carrier. 3,960,183, Cl. 139-447.000.

Flament, Ivon: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,961,095.

Fleck, Wolfgang: *See—*
Petersen, Rudolf Theodor; and Fleck, Wolfgang, 3,960,878.

Fleischhacker, James Earl: *See—*
Bunnell, Edward Dennman; Fleischhacker, James Earl; and Tennant, Robert John, 3,960,430.

Fleischmann, Johann R.; Fechter, Willy; and Schmidt, Heinrich, to Doll & Co. Device for precision grinding and polishing of workpieces. 3,959,929, Cl. 51-68.000.

Fletcher, Gerald William. Ski lock. 3,959,995, Cl. 70-18.000.

Flint, Alan G. Mask plate handling apparatus. 3,960,277, Cl. 214-1.0BH.

Flora, Laurence Paul, to Burroughs Corporation. Oscillator control circuit. 3,961,284, Cl. 331-116.00R.

Fluid Power Research, Inc.: *See—*
Heskett, Don E., 3,960,721.

FMN Schuster & Co.: *See—*
Tschentscher, Alfred, 3,960,336.

Fontsere, Francisco Carrio: *See—*
Genzer, Jerome D.; and Fontsere, Francisco Carrio, 3,960,856.

Forbes, Eric Simon: *See—*
Battersby, John; and Forbes, Eric Simon, 3,960,965.

Ford Motor Company: *See—*
Bishop, Gerald B.; and Gladden, David J., 3,960,990.
Butler, James W., 3,960,723.

Forenade Fabriksverken: *See—*
Svensson, Sven Torsten Arnold; and Bjelvert, Sven William, 3,960,453.

Forest, Joseph G.; and Czarnetzky, Edward J. Method for preserving high moisture content agricultural grains. 3,961,092, Cl. 426-331.000.

Formica Corporation: *See—*
Bowyer, Ralph Mitchell, 3,960,069.

Forney Engineering Company: *See—*
Slater, Billy Ray, 3,960,320.

Forster, Werner: *See—*
Braun, Klaus; Gabsch, Gunther; Forster, Werner; Ertel, Rolf; and Femmer, Klaus, 3,960,859.

Forsyth, Robert P.; and Rose, Gilbert A., Sr., to Polaroid Corporation Accessory mounting adaptor for photographic apparatus. 3,961,349, Cl. 354-295.000.

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Foseco Trading A.G.: *See—*
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Foster, Samuel L.: *See—*
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Fovarosi Muanyagipari Vallalat: *See—*
Pataki, Zsuzsa, nee Nagy; Windisch, Ferenc; Nagy, Jozsef; Kecskemethy, Geza; and Virag, Gyorgy, 3,960,630.

Fowler, Charles F.; and Dawson, Samuel G. Method of placing a sterilized sheath on a probe. 3,959,948, Cl. 53-35.000.

Fowler, Donald W.; and O'Connor, Sean J., to United Technologies Corporation. Aerodynamic surface control feel augmentation system. 3,960,348, Cl. 244-83.00D.

Fowler, Gordon Arthur: *See—*
Unsworth, William; and Fowler, Gordon Arthur, 3,960,609.

Fowler, Lambuth G. Cotton harvesting machine. 3,959,956, Cl. 56-30.000.

Fozzard, George B.: *See—*
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Fracchia, Alfred Andrew: *See—*
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Fraioli, Anthony V., to Plessey Incorporated. Humidity sensor 3,961,301, Cl. 338-35.000.

Franz Muller Maschinenfabrik: *See—*
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Fraser, Harvey R., Jr.: *See—*
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Frederick, Carlton L.: *See—*
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Free, Dustin L.; Krumel, Karl L.; and Snyder, Travis C., to Dow Chemical Company, The. Self-breaking viscous aqueous solutions and the use thereof in fracturing subterranean formations. 3,960,736, Cl. 252-8.55R.

Freeman, Jacob J., to United States of America, Navy. Method of obtaining correlation between certain selected samples of a sequence. 3,961,171, Cl. 235-181.000.

Freeman, Leo B., Jr.: *See—*
Abbas, Shakir A.; Chang, Chi S.; Freeman, Leo B., Jr.; and Knepper, Ronald W., 3,961,355.

Freeport Minerals Company: *See—*
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Freis, Richard E.; and Rue, Larry M., to Economic Laboratories, Inc. Isocyanate-capped surface active compositions and methods of using them. 3,960,781, Cl. 252-541.000.

Freund, Thomas: *See—*
Morrison, Stanley Roy; and Freund, Thomas, 3,960,589.

Fridlyander, Iosif Naumovich; Yatsenko, Konstantin Petrovich; Nekrasova, Galina Anatolievna; Gulin, Alexandr Nikolaevich; Semenova, Zoya Grigorievna; Sidorov, Nikolai Grigorievich; Morozov, Boris Sergeevich; Krichevsky, Efrem Julievich; Zakharova, Tatyana Alexandrovna; and Sarycheva, Raisa Grigorievna. Aluminium based alloy. 3,960,551, Cl. 75-147.000.

Fried, John H.; and Harrison, Ian T., to Syntex Corporation. Naphthyl substituted aliphatic acids. 3,960,936, Cl. 260-488.0CD.

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Brandis, Curt; and Muller, Peter, 3,961,006.

Fried. Krupp Huttenwerke AG: *See—*
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Friederang, Albrecht: *See—*
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Frischer, Myles E., to Burroughs Corporation. Gaseous discharge display panel having two color bar display. 3,961,217, Cl. 313-188.000.

Frisons Limited: *See—*
Suschitzky, John Louis; and Rutherford, David, 3,960,911.

Fritz Buser AG Maschinenfabrik: *See—*
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Fritz, Dieter: *See—*
Winkler, Bruno; and Fritz, Dieter, 3,961,085.

Fritz, Heinz Peter; and Besenhard, Jurgen, to Rheinisch-Westfalisches Elektrizitatswerk Aktiengesellschaft. Primary or secondary electrochemical cell. 3,960,594, Cl. 136-6.0LN.

Frochaux, Alain; and Salerno, Charles M., to Barry Wright Corporation. Noise-reducing fluid-flow devices. 3,960,239, Cl. 181-49.000.

Frohner, Maria: *See—*
Mayr, Hubert; Presoly, Elfriede; Weinrotter, Ferdinand; Muller, Walter; Stern, Gerhard; and Frohner, Walter Mizzi, deceased, 3,960,941.

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Mayr, Hubert; Presoly, Elfriede; Weinrotter, Ferdinand; Muller, Walter; Stern, Gerhard; and Frohner, Walter Mizzi, deceased, 3,960,941.

Frost, Donald J., to Modine Manufacturing Company. Method of making a heat exchanger and the heat exchanger. 3,959,867, Cl. 29-157.3AH.

Fuchs, Werner; Platz, Rolf; and Vogt, Volker, to BASF Aktiengesellschaft. Manufacture of organic isocyanates. 3,960,916, Cl. 260-453.0RH.

Fuji Photo Film Co., Ltd.: *See—*
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Ikenoue, Shinpei; and Masuda, Takao, 3,960,566.
Ikenoue, Shinpei; and Masuda, Takao, 3,960,908.
Ogata, Yasuhiro; and Hayashi, Takao, 3,960,638.
Oishi, Yasushi; Ohi, Reiichi; and Kosuge, Yoshio, 3,960,570.
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Fujita, Shigemi: *See—*
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Fukai, Masakazu: *See—*
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Moriyama, Akio; Fukai, Masakazu; Tatsuta, Hiroshi; and Takahashi, Hiroaki, 3,960,751.

Fukuda, Nobuyoshi. Packaging system. 3,959,950, Cl. 53-37.000.

Fukui, Jun: *See—*
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Fukui, Yoshiharu: *See—*
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Fukumaru, Toshitsugu; Kobayashi, Kenji; Mizote, Hiroyuki; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. 6,7-Benzomorphan derivatives. 3,961,066, Cl. 424-267.000.

Fukuoka, Kenji, to Olympus Optical Co., Ltd. Image information transfer device. 3,961,165, Cl. 235-92.0SH.

Fukuroi, Takeo, to Yoshida Kogyo Kabushiki Kaisha. Bridge top stop for slide fasteners. 3,959,858, Cl. 24-205.11F.

Fukushima, Mitsuru: *See—*
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Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Hattori, Yoshinori; Kobari, Sadami; and Matsuda, Tetsuo, 3,960,757.

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Furia, Thomas E.; and Steinberg, David H., to Ciba-Geigy Corporation. Combatting dandruff with mercapto quinoline N-oxides. 3,961,054, Cl. 424-245.000.

Furihata, Makoto: *See—*
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Furst, Marcel, to American Videonetics Corporation. Tape transport apparatus. 3,960,342, Cl. 242-192.000.

Furuta, Akihiro: *See—*
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Futcher, Ralph James; and Malashenko, Alexander, to Dominion Engineering Works, Limited. Downflow control system for web making machines. 3,960,653, Cl. 162-264.000.

Fuxe, Kjell Gunnar, to Astra Lakemedal Aktiebolag. Method and compositions for the treatment of neurological disorders. 3,961,060, Cl. 424-253.000.

G. D. Searle & Co.: *See—*
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G. Siempelkamp and Co.: *See—*
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G & W Electric Specialty Company: *See—*
Gear, Robert B., Jr.; and Masepohl, John C., 3,961,127.

Gabrail, Sami I., to General Electric Company. Etchant for removing metals from glass substrates. 3,960,741, Cl. 252-79.300.

Gabsch, Gunther: *See—*
Braun, Klaus; Gabsch, Gunther; Forster, Werner; Ertel, Rolf; and Femmer, Klaus, 3,960,859.

Gaenzler, Wolfgang; Kabs, Klaus; and Schroeder, Guenter, to Rohm GmbH. Method for the oxycarbonylation of ethylene and propylene. 3,960,934, Cl. 260-484.00R.

Gaffney, John Marshall, to Harris-Intertype Corporation. Sheet delivery system. 3,960,374, Cl. 271-189.000.

Gaffney, Thomas David, to Oeleq Limited. Computer with manual parameter entry means. 3,961,168, Cl. 235-152.000.

Gagliati, Umberto: *See—*
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Gaidis, James M.: *See—*
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Gainer, Robert E., Jr., to Westinghouse Electric Corporation. Powdered metallurgical process for forming vacuum interrupter contacts. 3,960,554, Cl. 75-200.000.

Gaines, Donald R.; and Jelenic, Bronko F., to Gulf & Western Manufacturing Company (Michigan). Wear indicator for ball joints. 3,960,457, Cl. 403-27.000.

Gaines, George L., Jr.; and LeGrand, Donald G., to General Electric Company. Thin polymer films and method. 3,961,122, Cl. 428-220.000.

Gaines, Jerome; and Conrad, Herbert M., to Veriprint Systems Corporation. Method of preparing a dispensing pad for fingerprinting reagents. 3,960,632, Cl. 156-245.000.

Galantay, Eugene E.; and Habeck, Dietmar A., to Sandoz, Inc. Substituted carbinol derivatives. 3,961,053, Cl. 424-243.000.

Gale, Richard M.; Higgens, Calvin E.; and Hoehn, Marvin M., to Eli Lilly and Company. Antibiotic A23187 and process for preparation thereof. 3,960,667, Cl. 195-80.00R.

Gallo, Charles F., Jr., to Xerox Corporation. Sodium vapor lamp configuration. 3,961,222, Cl. 315-49.000.

Gane, Timothy Larry: *See—*
Elks, Joseph; Weir, Niall Galbraith; Gane, Timothy Larry; and Burton, Brian, 3,960,940.

Gano, John W., to Warner & Swasey Company, The. Material handling apparatus. 3,960,285, Cl. 214-141.000.

Gansauge, Peter: *See—*
Beck, Siegfried; Brack, Karl; and Gansauge, Peter, 3,960,605.

Gantley, Francis C., to General Electric Company. Membrane mask for selective semiconductor etching. 3,960,623, Cl. 156-16.000.

Gappa, Gunther: *See—*
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Gardiner, Robert F.: *See—*
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Gardner, Josef M.: *See—*
Segrest, Steven F.; and Gardner, Josef M., 3,960,171.

Garey, Robert B., to Subsea Equipment Associates Limited. Self-engaging and aligning shaft coupling. 3,959,987, Cl. 64-8.000.

Garrott, William L., to Sperry Rand Corporation. Apparatus to detect the passage of ferrous material in crop harvesting machines. 3,959,953, Cl. 56-10.200.

Garshelis, Ivan J. Electromagnetic anisotropic devices. 3,961,297, Cl. 335-3.000.

Garton Company: *See—*
Read, Donald E., 3,960,392.

Garwood, William E.; and Wise, John J., to Mobil Oil Corporation. Conversion of foots oil to lube base stocks. 3,960,705, Cl. 208-111.000.

Gaskell, Colin Simister; and O'Brien, Rory Morgan, to Alfred Herbert Limited. Light-emitting semiconductor display apparatus for displaying a band representation of a voltage analog of a measured parameter. 3,961,256, Cl. 324-96.000.

Gassman, Paul G.; and Gruetzmacher, Gordon D., to Ohio State University Research Foundation, The. Process for preparing azasulfonium halide salts. 3,960,926, Cl. 260-470.000.

Gassmann, Gerhard-Gunter, to International Standard Electric Corporation. FM receiver and demodulation circuit. 3,961,262, Cl. 325-345.000.

Gasson, Edward James; Krosnar, Thomas Charles; and Marrian, Stanley Frederic, to BP Chemicals International Limited. Production of acrylonitrile by ammoxidation of propylene. 3,960,925, Cl. 260-465.300.

Gates, Walter C., Jr.: *See—*
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Gatti, Raimondo; and Gierse, Franz Josef, to Franz Muller Maschinenfabrik. Method and apparatus for stabilizing a longitudinally moving web of material. 3,960,303, Cl. 226-1.000.

Gautreaux, Gloria A.: *See—*
Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., 3,960,477.

Gautschi, Fritz: *See—*
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,961,095.

Gavin, David F., to Olin Corporation. Separation of 3,4-diaminotoluene from a mixture of o-tolucnediamine isomers. 3,960,963, Cl. 260-582.000.

Gavriljuk, Valentin Gennadievich: *See—*
Filatov, Nikolai Grigorievich; Gridnev, Vitaly Nikiforovich; Gavriljuk, Valentin Gennadievich; Meshkov, Jury Yakovlevich; Mashlenko, Felix Isaakovich; Mikhailov, Konstantin Vasilievich; Fedorov, Valery Ionovich; Marchenko, Vladimir Zakharovich; Lyskov, Ivan Konstantinovich; and Budilovsky, Viktor Alexandrovich, 3,959,999.

Gavrish, Petr Dmitrievich: *See—*
Sloevsky, Fedor Ignatievich; Orlov, Naum Yakovlevich; Gavrish, Petr Dmitrievich; and Rashesky, Anatoly Nikolaevich, 3,960,082.

Gaw, William, to Shell Oil Company. Reducing H_2S-emission from hot cast sulfur-asphalt mixtures. 3,960,585, Cl. 106-274.000.

Gaz de France: *See—*
De Brem, Francois Regis Marcetteau; and Waroux, Maurice Denis, 3,961,317.

Gear, Robert B., Jr.; and Masepohl, John C., to G & W Electric Specialty Company. Universal power cable joint for use with power cables having various insulations. 3,961,127, Cl. 174-22.00R.

Gebr. Giulini GmbH: *See—*
Wittner, Hubert, 3,960,696.

Gebrueder Heller: *See—*
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Gee, Thomas A.; Jacobs, Gerald L.; and Baltare, Gunnar, to Eaton Corporation. Rotor for wheel speed sensor assembly. 3,961,215, Cl. 310-168.000.

Gehrs, Donald F.; and Higgins, David T., to Zinsco Electrical Products. Electrical bussing and jumper assembly. 3,961,129, Cl. 174-72.00B.

Geigel, Ronald J.: *See—*
Maloney, Joseph V.; Geigel, Ronald J.; and Zidek, Peter R., 3,960,379.

Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of cyanogen chloride and hydrogen chloride. 3,961,023, Cl. 423-383.000.

Gelotte, Karl O.: *See—*
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General Dynamics Corporation: *See—*
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General Electric Company: *See—*
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Bennett, James G.; and Cooper, Glenn D., 3,960,811.
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General Tire & Rubber Company, The: *See—*
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Genevitz, Joseph R.: *See—*
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Genevitz, Roberta L.; Genevitz, Joseph R.; and Sowell, John B. Luminous embossable tape. 3,961,112, Cl. 428-29.000.

Genzer, Jerome D.; and Fontsere, Francisco Carrio, to Warner-Lambert Company. Process for the preparation of 4-hydroxy-3-(5-methyl-3-isoxazolylcarbamoyl)-2-methyl-2H-1,2-benzothiazine 1,1-dioxide. 3,960,856, Cl. 260-243.00R.

George, John Barrett, to RCA Corporation. Bandstart detector system for a television tuning system. 3,961,263, Cl. 325-421.000.

Gerhardt, Klaus, to G. Siempelkamp and Co. Transporter for flat workpieces. 3,960,276, Cl. 214-1.0BT.

Gerstein, Bernard C.; and Macaulay, David B., to United States of America, Energy Research and Development Administration. Method of removing carbon monoxide from gases. 3,961,016, Cl. 423-247.000.

Gert Oestergaard, Vejle Plastic: *See—*
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Geurts, Leonardus H.: *See—*
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Gewerkschaft Eisenhutte Westfalia: *See—*
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Ghielmetti, Giuseppe: *See—*
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Ghilardi, Giuliana; Bore, Pierre; and Grollier, Jean-Francois. Lyophilized and spray dried dyes. 3,960,476, Cl. 8-10.100.

Giaever, Ivar, to General Electric Company. Method and apparatus for quantitative surface inhibition test. 3,960,488, Cl. 23-230.00B.

Giaever, Ivar, to General Electric Company. Method and apparatus for determination of concentration of immunologically reactive biological particles. 3,960,489, Cl. 23-230.00B.

Giaever, Ivar, to General Electric Company. Method and apparatus for detecting immunologic reactions by diffusion in gel. 3,960,490, Cl 23-230.00B.

Giaever, Ivar, to General Electric Company. Method and apparatus for detecting immunologically reactive biological particles. 3,960,491, Cl. 23-230.00B.

Giberti, Richard Andre: *See—*
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Gierse, Franz Josef: *See—*
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Giles, Dion Ewing: *See—*
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Gillespie, Robert A., to Stauffer Chemical Company. Controlled chemical injection system for washing machines. 3,961,231, Cl. 317-139.000.

Gilliam, Betty Lou: *See*—
Atchley, Fenimore Edward; and Gilliam, Betty Lou, 3,960,218.

Gipstein, Edward; Moreau, Wayne M.; and Need, Omar U., III, to International Business Machines Corporation. Thermally stable positive polycarbonate electron beam resists. 3,961,099, Cl. 427-43.000.

Giraudi, Edouard; and Teisseire, Paul Jose, to Societe Anonyme Roure-Bertrand-Dupont. Process for the preparation of 8,14-cedranoxide. 3,960,899, Cl. 260-346.20M.

Givens, Edwin N.; Plank, Charles J.; and Rosinski, Edward J., to Mobil Oil Corporation. Converting low molecular weight olefins over zeolites. 3,960,978, Cl. 260-683.15R.

Gladden, David J.: *See*—
Bishop, Gerald B.; and Gladden, David J., 3,960,990.

Glastic Corporation, The: *See*—
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Glaxo Laboratories Limited: *See*—
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Long, Alan Gibson; Walker, Derek; Eastlick, David Thomas; and Stables, Harry Carson, 3,960,843.

Gleason, David D.: *See*—
Beyer, William F.; and Gleason, David D., 3,960,003.

Gleason, Lawrence E. Adjustable lamp stand. 3,961,176, Cl. 240-81.0BC.

Gloxhuber, Christian. *See*—
Ploger, Walter; Schmidt-Dunker, Manfred; and Gloxhuber, Christian, 3,960,888.

Goble, George G.; and Rausche, Frank. Pile capacity testing means. 3,960,008, Cl. 73-84.000.

Godbersen, Harold W. Concrete slip forming apparatus. 3,959,977, Cl. 61-63.000.

Goettl, Adam D. Air delivery and treatment apparatus. 3,960,527, Cl. 55-269.000.

Goetz, George W., to Eaton Corporation. Inflator. 3,960,390, Cl. 280-731.000.

Goffe, William L., to Xerox Corporation. Photographic charging and imaging process. 3,960,555, Cl. 96-1.0PS.

Golden, Eddie R. Eye-shading means for automotive vehicle operators. 3,961,181, Cl. 250-208.000.

Goldman, Irving M.: *See*—
Winter, Max; Gautschi, Fritz; Flament, Ivon; Stoll, Max; and Goldman, Irving M., 3,961,095.

Goldstein, Richard; and Feldman, Harold, to Dynascan Corporation. Emission testing circuit for color cathode ray tubes. 3,961,241, Cl. 324-20.0CR.

Goldsworthy, William Brandt. Method for inductive heat curing of conductive fiber stock. 3,960,629, Cl. 156-180.000.

Golitz, Friederich, to Maschinenfabrik Ernst Thielenhaus. Assembly for mounting an electric motor on a gearbox. 3,959,990, Cl. 64-27.0NM.

Golovanenko, Sergei Alexandrovich: *See*—
Levin, Felix Lvovich; Golovanenko, Sergei Alexandrovich; Pridantsev, Mikhail Vasilievich; and Dmitriev, Vladimir Alexandrovich, 3,960,617.

Gonzati, Franco: *See*—
Ribaldone, Giuseppe; Borsotti, Giampiero; and Gonzati, Franco, 3,960,866.

Good, Samuel William, to Zephyr Aluminum, Incorporated. Sealing assembly. 3,959,927, Cl. 49-368.000.

Goodyear Aerospace Corporation: *See*—
Hatchett, Jerry L., 3,961,177.

Goodyear Tire & Rubber Company, The: *See*—
Lawrence, John P., 3,960,857.
Neale, Patrick S., 3,960,194.

Gordienko, Leonid Alexandrovich: *See*—
Butuzov, Vladimir Petrovich; Vatolkin, Evgeny Konstantinovich; Gordienko, Leonid Alexandrovich; Feldman, Ernst Borisovich; Khadzhi, Valentin Evstafievich; and Shaposhnikov, Anatoly Alexandrovich, 3,960,501.

Gordon, Abraham; and Adler, Stanford L., to Technicon Instruments Corporation. Liquid aspirating probe assembly of a supply analyzer. 3,960,020, Cl. 73-423.00A.

Gordon, James F., to Zeta Research Inc. Graphic recorder with paper positioning and tensioning means. 3,961,335, Cl. 346-136.000.

Gordon, Stuart. *See*—
Whitworth, Edward; Gordon, Stuart; and Hayes, Stephen Harry, 3,960,621.

Gordy, Robert S., to NCR Corporation. Double sideband suppressed carrier modulator using surface wave device. 3,961,288, Cl. 332-44.000.

Gorgens, Richard A., to Incoterm Corporation. Card reader. 3,961,160, Cl. 235-61.11E.

Gorham, Jack C., to Hoerner Waldorf Corporation. Die cut container. 3,960,312, Cl. 229-37.00R.

Gorissen, Adrianus Marinus Johannes, to ITT Industries, Inc. Hydraulic telescopic shock absorber providing a damping effect which is dependent upon the position of the piston in the cylinder. 3,960,251, Cl. 188-286.000.

Gorski, Robert Alexander, to Du Pont de Nemours, E. I., and Company. Azeotrope-like compositions of methanol, nitromethane and trichlorotrifluoroethane. 3,960,746, Cl. 252-171.000.

Gortinskaya, Tatyana Vladimirovna; Mashkovsky, Mikhail Davidovich; Polezhaeva, Antonina Ivanovna; Nyrkova, Valentina Georgievna; Bondar, Larisa Nikolaevna; Litova, Galina Nikolaevna; Schukina, Maria Nikolaevna, deceased; and Preobrazhenskaya, Maria Nikolaevna, administrator. Antidepressant medicinal preparation. 3,961,058, Cl. 424-248.000.

Goserud, Chester O. Device for lubricating an internal combustion engine with powdered graphite. 3,960,132, Cl. 123-196.0CP.

Goshima, Takeshi; Sugiura, Yoshinori; Endo, Kiyonobu; Sato, Hideaki; Kono, Kimio; and Tsuji, Takao, to Canon Kabushiki Kaisha. Optical head moving device. 3,960,443, Cl. 350-247.000.

Gossie, Mijo A., to Corning Glass Works. Decal applying. 3,960,633, Cl. 156-247.000.

Gould Inc.: *See*—
Schenk, Raymond L., Jr.; Bruzas, John A.; and Coville, William E., 3,960,602.

Graf, Edward D. Soil stabilization by ion diffusion. 3,959,975, Cl. 61-36.00C.

Gralinski, Edward Richard, to Donley, Miller & Nowikas. Stored energy ejector mechanism. 3,960,023, Cl. 74-2.000.

Granada, Richard Paul: *See*—
Lawford, Victor Nicholas; Granada, Richard Paul; and Elderton, Peter, 3,960,033.

Grant, Daniel E. Vehicle anti-tampering anti-theft protection system. 3,961,310, Cl. 340-65.000.

Granzer, Ernold: *See*—
Lerch, Ulrich; and Granzer, Ernold, 3,961,062.

Grapho Metronic GmbH & Co.: *See*—
Wirz, Burkhardt; and Decker, Peter, 3,960,451.

Gravlee, Joseph F., Jr. Method of preparing tissue for microscopic examination. 3,961,097, Cl. 427-2.000.

Greco, Nicholas P.; and Webb, David A., to Koppers Company, Inc. Method for preparing an improved creosote wood preservative from a coal tar creosote by the use of caustic compounds. 3,960,969, Cl. 260-627.00H.

Green, Charles E., to United States of America, Navy. Fluid for filling sonar transducers. 3,961,305, Cl. 340-8.0LF.

Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., to Millmaster Onyx Corporation. Quaternary ammonium co-polymers for controlling the proliferation of bacteria. 3,961,042, Cl. 424-78.000.

Greene, Marvin: *See*—
Rosen, Bernard H.; Pelofsky, Arnold H.; and Greene, Marvin, 3,960,700.

Greer Hydraulics, Inc.: *See*—
Zahid, Abduz, 3,960,179.

Greever, Willis L., to United States of America, Navy. Case bonding composite for double base propellants. 3,960,088, Cl. 102-103.000.

Gregory, Donald R. Portable forge. 3,960,093, Cl. 110-3.500.

Greiner, Jonny R., to Caterpillar Tractor Co. Steering valve with linear spool dampening. 3,959,968, Cl. 60-384.000.

Gridnev, Vitaly Nikiforovich: *See*—
Filatov, Nikolai Grigorievich; Gridnev, Vitaly Nikiforovich; Gavriljuk, Valentin Gennadievich; Meshkov, Jury Yakovlevich; Mashlenko, Felix Isaakovich; Mikhailov, Konstantin Vasilievich; Fedorov, Valery Ionovich; Marchenko, Vladimir Zakharovich; Lyskov, Ivan Konstantinovich; and Budilovsky, Viktor Alexandrovich, 3,959,999.

Griesmer, Jerome J., to Addressograph Multigraph Corporation. Constant current toner transfer. 3,960,556, Cl. 96-1.400.

Griffin, Lawrence C., to Griffin Research & Development, Inc. Polluted air effluent incinerating apparatus. 3,960,504, Cl. 23-277.00C.

Griffin Research & Development, Inc.: *See*—
Griffin, Lawrence C., 3,960,504.

Griffiths, Raymond Paul, to Welding Controls Limited. Backing ring assembly for pipes. 3,960,311, Cl. 228-49.000.

Griffiths, Thomas C.; and Slack, Albert L., to Eaton Corporation. Hoist control with limit switches. 3,960,362, Cl. 254-168.000.

Griggs, Elmer L. Classification gauge for vane clusters. 3,959,886, Cl. 33-174.00C.

Grollier, Jean-Francois: *See*—
Ghilardi, Giuliana; Bore, Pierre; and Grollier, Jean-Francois, 3,960,476.

Gross, Benjamin; Jacob, Solomon M.; Nace, Donald M.; and Voltz, Sterling E., to Mobil Oil Corporation. Simulation of catalytic cracking process. 3,960,707, Cl. 208-113.000.

Gruetzmacher, Gordon D.: *See*—
Gassman, Paul G.; and Gruetzmacher, Gordon D., 3,960,926.

Grumman Aerospace Corporation: *See*—
Lippert, Joseph, Jr., 3,960,345.

Gruppo Lepetit S.p.A.: *See*—
Pifferi, Giorgio; Omodei-Sale', Amedeo; and Consonni, Pietro, 3,960,858.

GTE Automatic Electric Laboratories Incorporated: *See*—
Mills, Jeffrey P., 3,961,167.

GTE Sylvania Incorporated: *See*—
Benda, David; and Davis, Charles Alfred, 3,961,221.
Chu, Gordon P. K., 3,960,533.
Port, David J.; Lafferty, William D.; and Cheney, Richard F., 3,960,545.
Say, Donald LeRoy, 3,961,220.

Gudmestad, Ragnar; and Sandblom, Sven O., to Artos Engineering Company. Method for producing electrical conductors of measured length. 3,960,040, Cl. 83-18.000.

Guerrero, Milton, to Escuela Politecnica Nacional. Process for recovering and isolating solasodine and glycosides thereof. 3,960,839, Cl. 260-210.500.

Guerrini, Gian Paolo; and Oddicini, Giuseppe, to Ing. C. Olivetti & C., S.p.A. Ribbon cartridge for typewriter, calculating, accounting or like office machines. 3,960,259, Cl. 197-151.000.

Guest, John E.: *See*—
Bodner, Ronald Eugene; Crooks, Thomas L.; Guest, John E.; Magrisso, Israel B.; and Slack, Keith K., 3,961,312.

Guglier, Michel: *See*—
Reynier, Jacques; and Guglier, Michel, 3,960,599.

Guibert, Clarence Robert: *See*—
Hough, William Vernon; Guibert, Clarence Robert; and Hefferan, Gerald Thomas, 3,961,017.

Gulf & Western Manufacturing Company (Michigan): *See*—
Gaines, Donald R.; and Jelenic, Bronko F., 3,960,457.

Gulf & Western Metals Forming Company: *See*—
Robertson, John M.; and Wyatt, Wilbur E., 3,961,149.

Gulin, Alexandr Nikolaevich: *See*—
Fridlyander, Iosif Naumovich; Yatsenko, Konstantin Petrovich; Nekrasova, Galina Anatolievna; Gulin, Alexandr Nikolaevich; Semenova, Zoya Grigorievna; Sidorov, Nikolai Grigorievich; Morozov, Boris Sergeevich; Krichevsky, Efrem Julievich; Zakharova, Tatyana Alexandrovna; and Sarycheva, Raisa Grigorievna, 3,960,551.

Gulton Industries, Inc.: *See*—
Weldon, Lawrence A.; and Bokalo, Peter, 3,961,155.

Gundlach, Robert W.; Whited, Charles A.; and Pike, Thomas W., to Xerox Corporation. Electrophotographic printing machine. 3,960,444, Cl. 355-3.0DD.

Gustafsson, Jan Kenneth, to AB Bofors. Analog-digital converter for a resistance bridge. 3,960,010, Cl. 73-88.50R.

Gustavs, Helmut; and Dudziak, Ernst, to Mohndruck Reinhard Mohn OHG. Drying arrangement for drying inks, adhesives and analogous substances on sheet material. 3,960,081, Cl. 101-416.00A.

Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See*—
Weinrich, Hellmut, 3,960,245.

Guthrie, Robert William; and Kierstead, Richard Wightman, to Hoffmann-La Roche Inc. Amino citric acid derivatives. 3,960,933, Cl. 260-482.00P.

Gutlhuber, Johann; Muhlner, Karl; and Klenk, Peter, to Kunststoffwerk Gerbruder Anger GmbH & Co. Process and apparatus for manufacturing fittings, preferably pressure pipe insertion fittings of synthetic resin. 3,961,013, Cl. 264-297.000.

Gutman, Arnold D., to Stauffer Chemical Company. Certain oxime esters. 3,960,951, Cl. 260-566.0AC.

Gutowski, Gerald E., to Eli Lilly and Company. Acylated derivatives of pyrazofurin and process for their preparation. 3,960,836, Cl. 260-210.0AB.

H. H. Robertson Company: *See*—
Andrews, John S., 3,960,526.

Haas, Georges: *See*—
Ferrini, Pier Giorgio; Haas, Georges; and Rossi, Alberto, 3,960,868.

Haas, Hans: *See*—
Hochheimer, Hans-Joachim; Haas, Hans; Jacob, Hans-Ludwig; Helling, Paul; and Wulk, Bernhard, 3,961,307.

Habeck, Dietmar A.: *See*—
Galantay, Eugene E.; and Habeck, Dietmar A., 3,961,053.

Haberle, Wilhelm. Comminution device for scrap plastics. 3,960,335, Cl. 241-236.000.

Hackett, Barrie H.: *See*—
Miller, Robert C.; and Hackett, Barrie H., 3,961,157.

Haffer, Gregor; Eder, Ulrich; Laurent, Henry; Ruppert, Jurgen; Sauer, Gerhard; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Process for the preparation of 17β-oxalyl steroids. 3,960,842, Cl. 260-239.55C.

Hagen, Helmut; and Niemeyer, Juergen, to BASF Aktiengesellschaft. 1,3-Diazacycloalkeno-[1,2,d]-benzo-[f-]-1,3,4-thiadiazepines. 3,960,862, Cl. 260-256.50R.

Hageneier, Werner: *See*—
Temme, Helmut; Hageneier, Werner; and Schneider, Hans-Dieter, 3,960,265.

Hahn, Frederick W., Jr.: *See*—
Brock, George W.; and Hahn, Frederick W., Jr., 3,961,372.

Haining, Frank W.; Kolly, Joseph M.; and Lynch, Thomas E., Jr., to International Business Machines Corporation. Method for making electrical lead frame devices. 3,960,561, Cl. 96-36.200.

Hakanson, Karin, to Levi Strauss & Co. Method of skewing twill fabric to avoid leg twist. 3,959,826, Cl. 2-227.000.

Halbeck, Werner B., to Cutler-Hammer, Inc. Miniature electronic watch switch. 3,961,145, Cl. 200-155.00A.

Halberschmidt, Friedrich; Paulus, Helmut; and Feiten, Karl-Josef, to Saint-Gobain Industries. Manufacture of glazing. 3,960,627, Cl. 156-104.000.

Halcon International, Inc.: *See*—
Russell, Joseph Lee; and Kollar, John, 3,960,954.

Hall, Alan James: *See*—
Davies, Phineas; and Hall, Alan James, 3,961,037.

Hall, George H. Method of forming a cutting tool. 3,960,518, Cl. 51-309.00R.

Hall, James K.: *See*—
Jones, Robert W.; and Hall, James K., 3,961,274.

Hall, St. John Merrill, Jr.: *See*—
Bickoff, Charles; and Hall, St. John Merrill, Jr., 3,960,256.

Hall, Wilbur S.: *See*—
Steinbrecher, Lester; and Hall, Wilbur S., 3,960,610.

Halliburton Company: *See*—
Cole, Robert Clay; Koch, Ronney R.; and Ramos, Joseph, 3,960,801.

Halls, Lawrence M., to Sperry Rand Corporation. Crop harvesting machine header suspension system. 3,959,957, Cl. 56-208.000.

Halsten, Lawrence E. Grass cutting and pulverizing rotary mower. 3,959,954, Cl. 56-12.800.

Ham, Allan Leslie: *See*—
Cox, David Alexander; Danilewicz, John Christopher; Ham, Allan Leslie; Kemp, John Edward Glyn; and Snarey, Michael, 3,961,072.

Hamaguchi, Hiroshi, to Minolta Camera Kabushiki Kaisha. Driving mechanism for endless sensitive member. 3,960,306, Cl. 226-96.000.

Hamilton, Harold E.; and Oelke, Waldemar W., to Libbey-Owens-Ford Company. Method of and apparatus for bending glass sheets. 3,960,535, Cl. 65-104.000.

Hamilton, Samuel L. Refrigerant moisture detection system. 3,959,980, Cl. 62-126.000.

Hamisch, Paul H., Jr.; and Makley, James A., to Monarch Marking Systems, Inc. Apparatus for printing and applying pressure sensitive labels. 3,960,642, Cl. 156-384.000.

Hammann, Ingeborg: *See*—
Kramer, Wolfgang; Draber, Wilfried; Hammann, Ingeborg; and Scheinpflug, Hans, 3,961,061.

Hammar, Walton James, to Riker Laboratories, Inc. 8-Carboxamide dibenzobicyclo(3.2.1)octadienes. 3,960,944, Cl. 260-558.00R.

Hammer, Klaus-Dieter; Porrmann, Herbert; and Klenk, Ludwig. Fiber fleece containing a polymeric reinforcing material, and process for the production of such fleece. 3,961,107, Cl. 427-246.000.

Hamner, Glen P.; and Mattox, William J., to Exxon Research and Engineering Company. Alumina synthesis. 3,961,036, Cl. 423-628.000.

Hanna Mining Company, The: *See*—
Dicks, Mason L.; and Morrow, James B., 3,960,715.

Hannah, Harvey John. Underwater cleaning. 3,959,838, Cl. 15-1.700.

Hansen, Jens, to Blaupunkt-Werke GmbH. Disturbance pulse detector circuit for radio receiver blanking. 3,961,268, Cl. 325-478.000.

Hansen, Robert L., to Minnesota Mining and Manufacturing Company. Process for carbodiimide synthesis. 3,960,950, Cl. 260-566.00R.

Hansen, Uwe: *See*—
Dielacher, Maximilian; and Hansen, Uwe, 3,960,703.

Hanson, Christina D.; and Duchmann, Gail E. Perceptual cells writing guide. 3,959,894, Cl. 35-38.000.

Harada, Katsumasa: *See*—
Ichigo, Minoru; Suzuki, Takeshi; and Harada, Katsumasa, 3,960,108.

Hardouin, Jean-Claude Henri Raoul; and Vallette, Maurice Rene Jean, to Produits Chimiques Ugine Kuhlmann. Anhydrous bases and salts of dyestuffs of the auramine series, process for their preparation and their use. 3,960,952, Cl. 260-566.00R.

Harendza-Harinxma, Alfred J. Method of carbonizing a substance comprising cellulose. 3,961,025, Cl. 423-415.00R.

Hargrave, Michael E., to Fisher Controls Company. High pressure tight shutoff valve seal. 3,960,364, Cl. 251-210.000.

Harold, Billy E. Vehicle transport trailer. 3,960,401, Cl. 296-1.00A.

Harp, Charles, Jr.: *See*—
Noecker, Marshall V.; Thom, Kenneth C.; and Harp, Charles, Jr., 3,959,926.

Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., to United States of America, Agriculture. Cross-dyed cotton fabrics. 3,960,477, Cl. 8-15.000.

Harris, Barron M., Sr.; and Johnson, Doyle F., to North American Culvert Corporation. Nesting support apparatus for fowl. 3,960,111, Cl. 119-23.000.

Harris Corporation: *See*—
Renz, Alfred C.; Spacie, Roy W.; and Fuller, Edward J., 3,960,011.

Harris, David Isaac; and Johnston, Loren Bainum, to RCA Corporation. Method for developing electron beam sensitive resist films. 3,961,100, Cl. 427-43.000.

Harris-Intertype Corporation: *See*—
Gaffney, John Marshall, 3,960,374.

Harris, Louis Selig; Pars, Harry George; Razdan, Raj Kumar; and Sheehan, John Clark, to Sharps Associates. Esters of thienobenzopyrans and thiopyranobenzopyrans. 3,960,871, Cl. 260-293.570.

Harris, Thomas, to Glastic Corporation, The. Die structure for forming a serrated rod. 3,960,473, Cl. 425-467.000.

Harrison, Ian T.: *See*—
Fried, John H.; and Harrison, Ian T., 3,960,936.

Harshaw Chemical Company, The: *See*—
Hildering, Roelof; and Mudrak, Anton, 3,960,677.

Hartbauer, Ellsworth A.; and Rehr, Henry W., to Crown Zellerbach Corporation. Roll product with manually graspable tail end and manufacture thereof. 3,960,272, Cl. 206-389.000.

Hartkorn, Albert W., to American Multi-Lert Corporation. Cargo monitor apparatus and method. 3,961,323, Cl. 340-280.000.

Hartleroad, Ronald J.; Krajewski, James C.; and Rayon, Ronald G., to General Motors Corporation. Magnetic alignment for semiconductor device bonding. 3,960,279, Cl. 214-1.0BV.

Hartley Controls Corporation: *See*—
Hartley, Nelson, 3,961,230.

Hartley, Nelson, to Hartley Controls Corporation. Current relay actuated by multistage amplifier's total current drains. 3,961,230, Cl. 317-123.000.

Hartmann, Clinton S.; and Schoenwald, Jeffrey Stuart, to Texas Instruments Incorporated. Multi-resonant surface wave resonator. 3,961,293, Cl. 333-72.000.

Hasagawa, Shiro: *See—*
Tamura, Masaki; Ushiro, Soichiro; and Hasagawa, Shiro, 3,960,663.

Hatch, Robert A.: *See—*
Close, James R.; Wood, William P.; Hatch, Robert A.; and Johnson, James R., 3,959,865.

Hatchett, Jerry L., to Goodyear Aerospace Corporation. Automatic focusing of optical images. 3,961,177, Cl. 250-201.000.

Hatta, Masami; and Ohkawa, Tetsusi, to Hitachi Metals, Ltd. Apparatus for cutting off cast parts from a runner of a casting body. 3,959,930, Cl. 51-92.0ND.

Hattori, Yoshinori: *See—*
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Hattori, Yoshinori; Kobari, Sadami; and Matsuda, Tetsuo, 3,960,757.

Haubner, Georg: *See—*
Hofer, Walter; Haubner, Georg; and Schmaldienst, Peter, 3,960,129.

Haug, Theobald: *See—*
Renner, Alfred; and Haug, Theobald, 3,960,812.

Haughton, Paul F.; and McCoy, Thomas E., to Romac Metals, Inc. Modular display system with interlocking frame members. 3,960,275, Cl. 211-182.000.

Hauke, Francis E.: *See—*
Baumann, Gerald W.; Fraser, Harvey R., Jr.; and Hauke, Francis E., 3,961,369.

Hawkins, John L., Jr.: *See—*
Naus, Hubert W.; and Hawkins, John L., Jr., 3,960,428.

Hayashi, Katsumi, to Fuji Photo Film Co., Ltd. Process and composition for producing photolithographic plate for the graphic arts. 3,960,567, Cl. 96-66.500.

Hayashi, Takao: *See—*
Ogata, Yasuhiro; and Hayashi, Takao, 3,960,638.

Hayashi, Yoshio: *See—*
Ibata, Jyoji; Kobayashi, Hidehiko; Toyomoto, Kazuo; Suzuoki, Kazuhiro; Hayashi, Yoshio; and Kurihara, Masakazu, 3,960,572.

Hayashibara Biochemical Laboratories, Incorporated: *See—*
Sano, Takezo; Uemura, Yukikazu; and Furuta, Akihiro, 3,960,685.

Hayes, Jimmie R., to Cabot Corporation. Bag filter leak detection. 3,960,001, Cl. 73-40.700.

Hayes, John C., to Universal Oil Products Company. Hydrocarbon conversion with a trimetallic catalytic composite. 3,960,709, Cl. 208-139.000.

Hayes, John C.: *See—*
Antos, George J.; Hayes, John C.; and Pollitzer, Ernest L., 3,960,711.
Pollitzer, Ernest L.; and Hayes, John C., 3,960,710.

Hayes, Stephen Harry: *See—*
Whitworth, Edward; Gordon, Stuart; and Hayes, Stephen Harry, 3,960,621.

Hazaki, Eiichi: *See—*
Kometani, Eiji; Imai, Masaya; and Hazaki, Eiichi, 3,960,057.

Hazel, Herbert Kenneth, to International Business Machines Corporation. Fine wire twisted pair routing and connecting system. 3,960,309, Cl. 228-5.100.

Hearn, Ralph B.; and McMillen, Clarence, to PPG Industries, Inc. Coating glass sheets on both surfaces. 3,961,120, Cl. 428-210.000.

Heck, Richard F., to University of Delaware, The. Process for the preparation of aldehydes from organic halides. 3,960,932, Cl. 260-479.00R.

Hefferan, Gerald Thomas: *See—*
Hough, William Vernon; Guibert, Clarence Robert; and Hefferan, Gerald Thomas, 3,961,017.

Heichele, Friedrich; Vojtechovsky, Georg; Hollenbach, Georg; Adler, Klaus; and Bauer, Johann, to Wacker-Chemie GmbH. Impact-resistant molding compositions containing polyvinyl chloride. 3,960,986, Cl. 260-876.00R.

Heil, Jurgen: *See—*
Lohnert, Gunter; Muller-Frank, Ulrich; and Heil, Jurgen, 3,960,650.

Heim, Peter: *See—*
Mosimann, Hans; Heim, Peter; and Borer, Charles, 3,960,799.

Heim Universal Corporation: *See—*
McCloskey, Albert R., 3,960,416.

Heimbach, Heinrich: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,522.
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,769.

Heimberger, Werner: *See—*
Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Weigert, Wolfgang, 3,961,023.

Heinrich, Ernst; Mix, Konrad; and Ribka, Joachim, to Cassella Farbwerke Mainkur Aktiengesellschaft. Bisazo dyestuffs of the 2,6-diaminopyridine series. 3,960,480, Cl. 8-41.00R.

Heinsohn, Howard H., Jr.: *See—*
Evers, William J.; Heinsohn, Howard H., Jr.; Mayers, Bernard J.; and Karoll, Elizabeth A., 3,961,093.

Heinz Hermann Weick: *See—*
Trueb, Victor, 3,960,274.

Heitman, Knut: *See—*
Leitz, Ludwig; and Heitman, Knut, 3,960,410.

Heitmann, Wilhelm: *See—*
Ester, Wilhelm, deceased; Lovis, Brigitte, nee Ester, heir; Ester, Wolfgang, heir; and Heitmann, Wilhelm, 3,960,672.

Heitzinger, Friedrich; and Lechleitner, Wilhelm, to Schwarzkopf Development Corporation. Device for temperature measurements. 3,960,604, Cl. 136-233.000.

Hekimian Laboratories, Inc.: *See—*
Hekimian, Norris C., 3,961,255.
Hekimian, Norris C.; and Mack, Walter, 3,961,264.

Hekimian, Norris C., to Hekimian Laboratories, Inc. Measurement bandwidth enhancement in phase lock loops. 3,961,255, Cl. 324-83.00R.

Hekimian, Norris C.; and Mack, Walter, to Hekimian Laboratories, Inc. Linear frequency converter with gain independent of circuit parameters. 3,961,264, Cl. 325-451.000.

Hellberg, Arvid Emanuel, to Plate Kofasil Gesellschaft mit beschrankter Haftung. Ensiling of green fodder with hexamethylene tetramine and sodium nitrite. 3,961,079, Cl. 426-54.000.

Heller, Harold L.: *See—*
Eberl, James Joseph; Thelen, Edmund; and Heller, Harold L., 3,961,105.

Helling, Paul: *See—*
Hochheimer, Hans-Joachim; Haas, Hans; Jacob, Hans-Ludwig; Helling, Paul; and Wulk, Bernhard, 3,961,307.

Hemmerling, Volker: *See—*
Deubel, Reinhold; Hemmerling, Volker; Reitz, Werner; and Teige, Wolfgang, 3,960,591.

Hemotec, Inc.: *See—*
Kuhn, William E., 3,960,151.

Hendricks, Jon Michael. Wash basin drain filter. 3,959,831, Cl. 4-287.000.

Henig, Seymour, to American Chain & Cable Company, Inc. Accumulating conveyor. 3,960,262, Cl. 198-127.00R.

Henkel & Cie G.m.b.H.: *See—*
Ploger, Walter; Schmidt-Dunker, Manfred; and Gloxhuber, Christian, 3,960,888.

Henrick, Clive A.; and Staal, Gerardus B., to Zoecon Corporation. Esters of cyclopropyl substituted carboxylic acids. 3,960,907, Cl. 260-410.90R.

Henson, Howard K. Method for maximizing throughput in an ore grinding system. 3,960,330, Cl. 241-30.000.

Herberlein Textildruck AG: *See—*
Leimbacher, Erwin; Marte, Walter; and Buchele, Ferdinand, 3,960,484.

Herbst, Wayne R.; and Mika, Paul L., to Teletype Corporation. Apparatus for recording and reproducing digital data. 3,961,368, Cl. 360-48.000.

Herculite Protective Fabrics Corporation: *See—*
Kydonieus, Agis F.; and Smith, Inja, 3,961,117.

Hering, Frederic S.; Ohlbaum, Robert H.; and Crisci, Joseph R., to United States of America, Navy. Reduced shear stress end fitting. 3,960,459, Cl. 403-267.000.

Heritage, Robert, to Rotaflex (Great Britain) Limited. Electrical installation. 3,960,426, Cl. 339-21.00R.

Hermann Heye: *See—*
Becker, Kurt, 3,960,266.

Hermes Precisa International S.A.: *See—*
Aebi, Otto, 3,960,258.

Hertzenberg, Elliot P.: *See—*
Netting, David I.; and Hertzenberg, Elliot P., 3,960,583.

Heskett, Don E., to Fluid Power Research, Inc. Fluid treating apparatus and method. 3,960,721, Cl. 210-25.000.

Hess, Thomas M.: *See—*
Speraw, Floyd G.; Hess, Thomas M.; and Sampson, Harold J., 3,960,420.

Heusser, Eduard, to Zellweger, Ltd. Method of increasing the long-term stability of a measuring element of textile testers. 3,960,593, Cl. 134-37.000.

Hewlett-Packard Company: *See—*
Kim, Young Dae, 3,961,286.
Tiefert, Karl H., 3,961,350.

Heytmeijer, Herman R.; and Panaccione, Elmer S., to United States of America, Interior. Method for applying wax or plastic coatings to granular materials. 3,961,106, Cl. 427-221.000.

Hibino, Masaru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Timing chain tensioner. 3,960,026, Cl. 74-242.11S.

Hicks, Darrell D., to Celanese Coatings & Specialties Company. Mercaptan initiated polymerization process carried out in the presence of oxygen. 3,960,824, Cl. 526-85.000.

Higgens, Calvin E.: *See—*
Gale, Richard M.; Higgens, Calvin E.; and Hoehn, Marvin M., 3,960,667.

Higgins, David T.: *See—*
Gehrs, Donald F.; and Higgins, David T., 3,961,129.

High, Cliff R.; and Brotman, Morley, to Morley Studios. Apparatus for conveying and engraving tokens. 3,960,257, Cl. 197-6.700.

Higuchi, Takeru: *See—*
Hussain, Anwar A.; Higuchi, Takeru; and Shell, John W., 3,960,150.

Hildering, Roelof; and Mudrak, Anton, to Harshaw Chemical Company, The. Acid zinc electroplating. 3,960,677, Cl. 204-55.00R.

Hille, Peter M., to International Standard Electric Corporation. Method of manufacturing a solid electrolytic capacitor. 3,959,873, Cl. 29-570.000.

Hiller, Sigwart; and Schad, Harald, to Kraftwerk Union Aktiengesellschaft. Device for monitoring activity of gases. 3,961,189, Cl. 250-304.000.

Hintergraber, Maximilian, to Kraftwerk Union Aktiengesellschaft. Flywheel with anti-cracking safeguard for protection against overspeed. 3,960,034, Cl. 74-609.000.

Hippolyte Juy, Lucien Charles. Push flange construction for a pivotal roller system of a speed change mechanism. 3,960,025, Cl. 74-217.00B.

Hippolyte JUY, Lucien Charles; and Suckfull, Fritz, to Bayer Aktiengesellschaft. Disazo dyestuffs containing amino azo benzene sulfonic acid and phenolic or naphtholic couplers. 3,960,831, Cl. 260-186.000.

Hirai, Katsumi: *See—*
Tsujikawa, Masahiro; Ozasa, Minoru; Takagi, Fumio; Hirai, Katsumi; Iwasaki, Akio; Imamura, Hiroshi; and Ueda, Testuhiro, 3,960,507.

Hiraoka, Tetsuo; and Sugimura, Yukio, to Sankyo Company Limited. Process for preparing 7β-acylamino-7α-alkoxycephalosporins or 6β-acylamino-6α-alkoxypenicillins. 3,960,845, Cl. 260-239.100.

Hirate, Masao, to Nippon Electric Company Limited. Exclusion circuit in key telephone system. 3,961,144, Cl. 179-99.000.

Hirose, Yoshio: *See—*
Enei, Hitoshi; Sato, Katsuaki; and Hirose, Yoshio, 3,960,660.
Enei, Hitoshi; Sato, Katsuaki; Ishii, Morikatsu; and Hirose, Yoshio, 3,960,661.

Hirsbrunner, Pierre; and Bertholet, Raymond, to Societe D'Assistance Technique pour Produits. Leucine isoleucine separation. 3,960,942, Cl. 260-534.00R.

Hitachi Chemical Company, Ltd.: *See—*
Numata, Shunichi; Yokono, Hitoshi; Mukai, Junji; Muroi, Tadashi; Nakano, Mineo; and Manabe, Mikio, 3,960,982.

Hitachi Construction Machinery Co., Ltd.: *See—*
Kometani, Eiji; Imai, Masaya; and Hazaki, Eiichi, 3,960,057.

Hitachi, Ltd.: *See—*
Kawamura, Masao; Ito, Kazuhiro; Morioka, Makoto; Ono, Yuichi; Ishioka, Sachio; and Kurata, Kazuhiro, 3,960,618.
Kohzai, Hayao, 3,961,363.
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Okuhara, Shinzi; and Ohhinata, Ichiro, 3,961,357.
Sampei, Tohru, 3,961,280.
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Hitachi Metals, Ltd.: *See—*
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Sato, Kuniaki; Toyama, Kozo; Saheki, Toshio; Mizukoshi, Kaoru; and Suzuki, Shuei, 3,960,458.

Hochheimer, Hans-Joachim; Haas, Hans; Jacob, Hans-Ludwig; Helling, Paul; and Wulk, Bernhard, to Ruhrkohle Aktiengesellschaft. Exploration of the boundaries of an underground coal seam. 3,961,307, Cl. 340-15.5CP.

Hochstrasser, Harry T. Apparatus and method for isolating soluble blood components. 3,960,727, Cl. 210-78.000.

Hodge, Edward B., to Commercial Solvents Corporation. Zearalanone-zearalanol product. 3,960,898, Cl. 260-343.20F.

Hodge, John S. Building structure. 3,959,939, Cl. 52-301.000.

Hoechst Aktiengesellschaft: *See—*
Bayer, Ernst; and Mutter, Manfred, 3,960,830.
Deubel, Reinhold; Hemmerling, Volker; Reitz, Werner; and Teige, Wolfgang, 3,960,591.
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Hoehn, Marvin M.: *See—*
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Hoerner Waldorf Corporation: *See—*
Gorham, Jack C., 3,960,312.

Hofer, Walter; Haubner, Georg; and Schmaldienst, Peter, to Robert Bosch G.m.b.H. Compensated semiconductor ignition system for internal combustion engines. 3,960,129, Cl. 123-148.0CC.

Hoffman, Bruce E.; and Berkley, S. Thomas, to International Telephone and Telegraph Corporation. Multi-terminal arrestor holder and connector module. 3,961,226, Cl. 317-61.500.

Hoffmann-La Roche Inc.: *See—*
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Guthrie, Robert William; and Kierstead, Richard Wightman, 3,960,933.
Maestrone, Gian Paolo; and Mitrovic, Milan, 3,961,068.
Olson, Gary Lee; and Saucy, Gabriel, 3,960,967.
Rosenberger, Michael; and Saucy, Gabriel, 3,960,895.
Rosenberger, Michael; and Saucy, Gabriel, 3,960,896.
Widmer, Erich; and Seuret, Marcel, 3,960,966.

Hoffmann, Manfred: *See—*
Sander, Bruno; Berbner, Heinz; and Hoffmann, Manfred, 3,960,794.

Hofling, Erich; and Breu, Hanspeter, to Swiss Aluminium Ltd. Method of making strip-shaped multiple conductor. 3,960,622, Cl. 156-3.000.

Hogan, Gary LaDon, to LaDon Corporation. Hair treatment appliance. 3,960,160, Cl. 132-112.000.

Holbrook, Legrand K.; and Sturdevant, Gary F., to Medical Development Corporation. Fluid collection bottle with improved air flow valve means. 3,960,165, Cl. 137-202.000.

Holl, Helmer Heinz: *See—*
Papajewski, Reinhold; and Holl, Helmer Heinz, 3,960,098.

Holland, Charles L.: *See—*
Baxter, George I.; Rolla, Clarence P.; and Holland, Charles L., 3,960,206.

Holland-Letz, Guenter, to Nixdorf Computer AG. Device for holding down sheet material. 3,960,304, Cl. 226-74.000.

Hollenbach, Georg: *See—*
Heichele, Friedrich; Vojtechovsky, Georg; Hollenbach, Georg; Adler, Klaus; and Bauer, Johann, 3,960,986.

Holliday, Robert G., to Xerox Corporation. Microfiche storage unit. 3,959,904, Cl. 40-102.000.

Hollinger, Paul, to Maryland Cup Corporation. Industrial straw dispensing carton. 3,960,299, Cl. 222-559.000.

Hollinger, Roderich; Wendtlandt, Wolf; and Schneider, Gerda, to Chemie Linz Aktiengesellschaft. 1,1-Diphenyl-1-lower alkoxy-aminoalkanes and the salts thereof. 3,960,960, Cl. 260-570.00R.

Holloway, Ronald Webb: *See—*
Cradeur, Robert R.; and Holloway, Ronald Webb, 3,959,845.

Hollyday, Robert David, to AMP Incorporated. Connector having filter adaptor. 3,961,294, Cl. 333-79.000.

Hollyday, Robert David; and Bradbery, Jack Leo, to AMP Incorporated. Solderless filter assembly. 3,961,295, Cl. 333-79.000.

Holmes, Harold Edwin; and Oriolo, Enzo, to Electric Power Transmission Pty. Limited. Pole structure. 3,959,946, Cl. 52-731.000.

Holmes, Jack K.: *See—*
Chen, Chang Chung; Holmes, Jack K.; and Lewis, James L., 3,961,282.

Holmes, Richard N., to McDonnell Douglas Corporation. Lock core panel. 3,960,236, Cl. 181-33.00G.

Holmes, Robert Taylor, to Serck Industries Limited. Method of manufacturing heat exchangers. 3,961,010, Cl. 264-221.000.

Holstein, Herbert; and Farrenkothen, Armin, to Oswald Forst Maschinenfabrik und Apparatebauanstalt GmbH. Vertical broaching machine. 3,960,056, Cl. 90-73.000.

Homma, Itomi; Mino, Junryo; and Kunikawa, Kenzo, to Kao Soap Co., Ltd. Powder detergent composition. 3,960,744, Cl. 252-102.000.

Honea, William S., Jr., to T. L. James Company, Inc. Form support means for use with performed girders. 3,960,357, Cl. 249-211.000.

Honeywell Inc.: *See—*
Bonne, Ulrich, 3,960,438.
Erdmann, David P.; and Kurschner, Dennis L., 3,961,320.
Hutch, Frederick S., 3,961,203.
Schierholz, Edward A.; and Nardi, Frank, 3,960,349.

Honnen, Lewis R., to Chevron Research Company. Hydrocarbyl amine additives for distillate fuels. 3,960,515, Cl. 44-58.000.

Hoogovens Ijmuiden, B.V.: *See—*
Breedijk, Theo, 3,960,615.
Vermeulen, Jacobus Cornelis; and Stuart, Eric Jan, 3,961,032.

Hoover, John R. E.: *See—*
Cooper, David J.; Hoover, John R. E.; and Weisbach, Jerry A., 3,960,838.
De Marinis, Robert M.; and Hoover, John R. E., 3,960,852.
De Marinis, Robert M.; and Hoover, John R. E., 3,960,853.
De Marinis, Robert M.; and Hoover, John R. E., 3,960,855.

Hopton, Edward J.: *See—*
Cloud, Robert H.; and Hopton, Edward J., 3,959,892.

Horak, Vladimir. Continuous liquid proportioning system. 3,960,295, Cl. 222-145.000.

Horii, Tetsuo; Chiyomaru, Isao; Kawada, Seigo; and Takita, Kiyoshi, to Kumiai Chemical Industry Co., Ltd. Method for controlling mites and thioureidobenzene phosphates. 3,961,049, Cl. 424-211.000.

Horn, Stuart B., to United States of America, Army. Low void volume regenerator for Vuilleumier cryogenic cooler. 3,960,204, Cl. 165-4.000.

Hornbostel, Lloyd H., Jr., to Center for Management Services and Applied Research. Detection system. 3,961,328, Cl. 340-420.000.

Horne, Juliana S. Apparatus for applying liquid preparations to the body. 3,959,841, Cl. 15-104.940.

Horowitz, Charles, to Sloan Valve Company. Gladhand with shutoff cock. 3,960,365, Cl. 251-286.000.

Horsens Plastic A/S: *See—*
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Hortin, Kenneth L.: *See—*
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Horwath, Tibor G.: *See—*
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Hosmer/Dorrance Corporation: *See—*
Wilkes, Donald F., 3,960,247.

Hosoe, Kazuya; Aizawa, Hiroshi; Matsumoto, Seiichi; and Yokota, Hideo, to Canon Kabushiki Kaisha. Image sharpness detecting system and apparatus utilizing the same. 3,961,178, Cl. 250-201.000.

Hosoi, Masahiro: *See—*
Kuratsuji, Takatoshi; Kawase, Shoji; Shima, Takeo; Shimotsuma, Sakae; and Hosoi, Masahiro, 3,961,008.

Hosokawa, Hiroyuki; Maeda, Shiro; and Yamada, Kenji, to Nippondenso Co., Ltd. Hose connector. 3,960,393, Cl. 285-137.00R.

Houdaille Industries, Inc.: *See—*
Mc Elwain, James A., 3,960,372.

Hough, William Vernon; Guibert, Clarence Robert; and Hefferan, Gerald Thomas, to Mine Safety Appliances Company. Production of dodecahydrododecaborate (2-). 3,961,017, Cl. 423-286.000.

Houston Engineering Research Corporation: *See—*
Ahlgren, Erick L.; McMorris, Arthur H.; Mille, Jerry L.; and Schweppe, Joseph L., 3,960,072.

Hovey, John M.: *See—*
Bishop, Walton B.; and Hovey, John M., 3,961,169.

Hovorak, William P. Hog oiler. 3,960,114, Cl. 119-157.000.

Howell, Eddie Paul: *See—*
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Striegler, John Howard; and Howell, Eddie Paul, 3,960,214.

Hsiao, James C., to Union Special Corporation. Automatic button positioning apparatus. 3,960,094, Cl. 112-110.000.

Hubbell, Franklin R., III, to Tenneco Inc. Exhaust system mounting. 3,960,232, Cl. 180-64.00A.

Hubele, Adolf, to Ciba-Geigy Corporation. Imidazolidine-2,4-dione derivatives and their use as pesticides. 3,960,883, Cl. 260-309.500.

Huber, Rolf: *See—*
Keihs, Karl; Adolphi, Heinrich; and Huber, Rolf, 3,960,885.

Hubert, Hans-Juergen: *See—*
Mueller, Karl Heinz; and Hubert, Hans-Juergen, 3,960,912.

Hubner, Wolfgang; and Fasshauer, Wilhelm, to Deutsches Brennstoffinstitut Freiberg. Pipe union. 3,960,394, Cl. 285-297.000.

Hucks, Uwe: *See—*
Vernaleken, Hugo; Bottenbruch, Ludwig; Emmer, Gerhard; and Hucks, Uwe, 3,960,968.

Hudson, Frederick W., to Xerox Corporation. Self adjusting corona device. 3,961,193, Cl. 250-324.000.

Hudson, Ralph B., Jr.: *See—*
Suggitt, Robert M.; Gates, Walter C., Jr.; and Hudson, Ralph B., Jr., 3,960,964.

Huebner, Victor R., to Technical Hardware, Inc. Color monitor utilizing ambient light illumination. 3,960,452, Cl. 356-173.000.

Hufford, James N., to CTS Corporation. Variable resistance control. 3,961,302, Cl. 338-174.000.

Hughes Aircraft Company: *See—*
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Moulin, Norbert L., 3,960,429.
Myer, Jon H., 3,961,316.

Hughes, John A. Reversible necktie. 3,959,825, Cl. 2-146.000.

Huille, Michel Ernest Antoine; and Cabut, Louis Antoine, to Produits Chimiques Ugine Kuhlmann. Phthalocyanines, compositions derived therefrom and processes for their preparation. 3,960,587, Cl. 106-288.00Q.

Hull, Edward M.: *See—*
Aboaf, Joseph A.; Broadie, Robert W.; Hull, Edward M.; and Pogge, H. Bernhard, 3,961,353.

Humerickhouse, Billy J.: *See—*
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Hunt, Harry, to Alpine Designs, Inc. Sleeping bag construction. 3,959,834, Cl. 5-343.000.

Hunt, William E., to United States of America, Navy. Ejection launch mechanism. 3,960,051, Cl. 89-1.800.

Hurley, William J.; and Muhlfeld, Hans P., to International Business Machines Corporation. Testing embedded arrays. 3,961,251, Cl. 324-73.0AT.

Hursey, Martin E. Light shield/support device. 3,961,159, Cl. 235-1.00D.

Hussain, Anwar A.; Higuchi, Takeru; and Shell, John W., to Alza Corporation. Bioerodible ocular device. 3,960,150, Cl. 128-260.000.

Hutch, Frederick; S., to Honeywell Inc. Signal correlator. 3,961,203, Cl. 307-236.000.

Hutcheon, Robert Stewart. Real-time cross-correlation signal processor. 3,961,172, Cl. 235-181.000.

Hutchison, Stanley O.; and Anderson, Glenn W., to Chevron Research Company. Method of obtaining permeability information from an underground formation penetrated by a well. 3,960,014, Cl. 73-151.000.

Hutchison, Stanley O.; and Mitchell, Neal L., to Chevron Research Company. Gas operated hydraulically actuated wire line packer. 3,960,211, Cl. 166-187.000.

Hutchison, Stanley O., to Chevron Research Company. Method of obtaining impression information from a well. 3,960,212, Cl. 166-250.000.

Hutt, Peter Richard; Blake, Alan Ronald; von Cavallar, Gunter; Douglas, Brian Neil; and Dodds, Philip John, to Independent Broadcasting Authority. Biphase digital television systems. 3,961,137, Cl. 178-68.000.

Huvar, Arthur J., to Mobil Oil Corporation. Deodorized pesticidal organothiophosphorus compounds. 3,961,043, Cl. 424-76.000.

Huyser, Marvin E.: *See—*
Kegler, William H.; and Huyser, Marvin E., 3,960,704.

Hydrel A.G.: *See—*
Abbuhl, Hermann; and Tanner, Hans, 3,960,413.

Hyer, Frank S.; and Karosas, Raymond, to Hyer Industries, Inc. Conveyor belt system with positional transformation of weight data 3,960,225, Cl. 177-121.000.

Hyer Industries, Inc.: *See—*
Hyer, Frank S.; and Karosas, Raymond, 3,960,225.

I.C.M. Industries, Inc.: *See—*
Piaget, Robert E.; and Clyburn, Charles W., 3,960,427.

Ibata, Jyoji; Kobayashi, Hidehiko; Toyomoto, Kazuo; Suzuoki, Kazuhiro; Hayashi, Yoshio; and Kurihara, Masakazu, to Asahi Kasei Kogyo Kabushiki Kaisha. Photosensitive compositions comprising a polyester-polyether block polymer. 3,960,572, Cl. 96-115.00P.

Ichigo, Minoru; Suzuki, Takeshi; and Harada, Katsumasa, to Kikusui Kagaku Kogyo Kabushiki Kaisha. Spray coating apparatus. 3,960,108, Cl. 118-324.000.

Ideal Toy Corporation: *See—*
Ieda, Michael, 3,959,920.

Idemitsu, Kosan Kabushiki Kaisha (Idemitsu Kosan Co., Ltd.): *See—*
Tomikawa, Masami; Tsunoda, Akiji; Kaneda, Kazuhisa; Ohkawa, Hideo; and Mugino, Yutaka, 3,960,722.

Ieda, Michael, to Ideal Toy Corporation. Breakaway stunt car. 3,959,920, Cl. 46-201.000.

Iijima, Tetsuya, to Nisan Motor Co., Ltd. Transmission locking system. 3,960,235, Cl. 180-82.00A.

Ikenoue, Shinpei; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Method for dry stabilization of silver halide photographic material. 3,960,566, Cl. 96-61.00R.

Ikenoue, Shinpei; and Masuda, Takao, to Fuji Photo Film Co., Ltd. Process for preparing organosilver carboxylates. 3,960,908, Cl. 260-414.000.

Illinois Tool Works Inc.: *See—*
Benno, Edward Leonard; Schlueter, David Frederick; and Seymour, Lonnie Ray, 3,959,949.
Marco, Leslie Stephan, 3,961,113.
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Imai, Masaya: *See—*
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Imamura, Hiroshi: *See—*
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Imperial Chemical Industries, Inc.: *See—*
Jones, Eileen; Morris, Arthur; Thomas, Ieuan; and Traynor, James Rodney, 3,960,819.

Imperial Chemical Industries Limited: *See—*
Billany, Michael Royston; Longworth, Arthur Raymond; and Shatwell, John, 3,960,745.
Birchall, James Derek; and Cassidy, John Edward, 3,960,592.
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Davies, Phineas; and Hall, Alan James, 3,961,037.
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O'Mant, Derrick Michael, 3,960,893.
Pumphrey, Nicholas William James; and Woods, William Laurence, 3,960,680.
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Inaba, Shigeho: *See—*
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Inaba, Yoshihito: *See—*
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Hattori, Yoshinori; Kobari, Sadami; and Matsuda, Tetsuo, 3,960,757

Incoterm Corporation: *See—*
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Independent Broadcasting Authority: *See—*
Hutt, Peter Richard; Blake, Alan Ronald; von Cavallar, Gunter; Douglas, Brian Neil; and Dodds, Philip John, 3,961,137.

Inductosyn Corporation: *See—*
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Ing. C. Olivetti & C., S.p.A.: *See—*
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De Sandre, Giovanni; Subrizi, Angelo; and Bretti, Franco, 3,961,170.
Guerrini, Gian Paolo; and Oddicini, Giuseppe, 3,960,259.

Ingham, Lawrence Allister. Rotary engine. 3,960,116, Cl. 123-8.450.

Ingram, Maxwell. Shaft horsepower and efficiency monitoring system. 3,960,012, Cl. 73-136.00A.

Inman, Charles Edward, to Pennwalt Corporation. Water-in-oil emulsions of fluoroalkyl polymer, chlorinated alkane solvent and nonioinic surfactant. 3,960,797, Cl. 260-29.60F.

Innerfield, Irving, to Association for Pharmacologic Research, Inc. Urine diagnostic test for fibrinolytic activity. 3,960,669, Cl. 195-103.50R.

Inoue, Hisao: *See—*
Okada, Masayasu; and Inoue, Hisao, 3,960,463.

Inouye, Kozo: *See—*
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INRYCO, Inc.: *See—*
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Institut po Metaloznanie i Technologia na Metalite: *See—*
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Institutes of Medical Sciences, The: *See—*
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Instrumentation Laboratory, Inc.: *See—*
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Intech, Inc.: *See—*
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Interatom, Internationale Atomreaktrobau GmbH: *See—*
Lohnert, Gunter; Muller-Frank, Ulrich; and Heil, Jurgen, 3,960,656.

International Business Machines Corporation: *See—*
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International Flavors & Fragrances Inc.: *See—*
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International Liquid Xtal Company: *See—*
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Iowa State University Research Foundation, Inc.: *See—*
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Irelan, Edward A.; Dorheim, David W.; and Robotham, William Frederick, to McGraw-Edison Company. Convertible portable electric tool. 3,959,878, Cl. 30-220.000.

Isaksson, Conny; Nordin, Lars-Erik; Olsson, Curt; and Sahlin, Thorbjorn, to Aktiebolaget ASEA-ATOM. Transport device for reactor fuel rod cladding tubes. 3,960,263, Cl. 198-170.000.

Ishii, Morikatsu: *See—*
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Ishikawa, Atsuo: *See—*
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Isobe, Mineo. Fire-extingushing equipment. 3,960,216, Cl. 169-48.000.

Isukamoto, Hiroji; Morikawa, Hisashi; Nakagawa, Masao; Kato, Shinji; Miyamoto, Masaki; Yoda, Toichiro; and Yoshihara, Katsuhiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for preparing foamable synthetic resin granules. 3,960,787, Cl. 260-2.50B.

Itier, Jean Joseph: *See—*
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Iyengar, Rama, to Northern Electric Company Limited. Method of coating a glass fiber filament. 3,960,530, Cl. 65-3.00C.

J. M. Huber Corporation: *See—*
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J. Mustad AB: *See—*
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Jacobs, Emmett Smith; and Liberi, Vincent Edward, to Du Pont de Nemours, E. I., and Company. Muffler particulate trap for internal combustion engines. 3,960,528, Cl. 55-346.000.

Jacobs, Gerald L.: *See—*
Gee, Thomas A.; Jacobs, Gerald L.; and Baltare, Gunnar, 3,961,215.

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Jacoby, Jerold L.: *See—*
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Jaffe, Wolfgang; and Porter, Oswald M., to Singer Company, The. Dual plunger solenoid. 3,961,298, Cl. 335-259.000.

Jagusch, Leonhard: *See—*
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Jakobsen, William J., to Lourdes Industries, Inc. Cannister arrangement of transducers to monitor pressures. 3,960,019, Cl. 73-420.000.

Janci, John. Energy-absorbing bumper system. 3,960,397, Cl. 293-86.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Tanaka, Hiroshi; Tanaka, Takuo; and Tanaka, Takeshi, 3,960,771.

Jarvis, John Frederick, to Bell Telephone Laboratories, Incorporated. Bi-level display system. 3,961,134, Cl. 178-7.30D.

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Jelinek, Ronald H., to International Telephone and Telegraph Corporation. Voltage controlled oscillator driver. 3,961,285, Cl. 332-16.00T.

Jenaer Glaswerk Schott & Gen.: *See—*
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Jenkins, Garry W. Combination ash tray and chewed gum disposal package. 3,960,269, Cl. 206-233.000.

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Jezo, Maurice Leon: *See—*
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John Wyeth & Brother, Ltd.: *See—*
Curran, Adrian Charles Ward, 3,960,876.

Johns-Manville Corporation: *See—*
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Johns, Robert W., to World Oil Mining Ltd. Tunnel layout for longwall mining using shields. 3,960,408, Cl. 299-19.000.

Johnson, Craig E.; and Luense, John R., to United States of America, Navy. Method for extruding solventless gun powder. 3,960,993, Cl. 264-3.00B.

Johnson, Doyle F.: *See—*
Harris, Barron M., Sr.; and Johnson, Doyle F., 3,960,111.

Johnson, Hiram K.: Carrier apparatus. 3,960,398, Cl. 294-16.000.

Johnson, James R.: *See—*
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Johnson, Melvin Harry: *See—*
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Johnston, Harlin D.: *See—*
Bertus, Brent J.; Farha, Floyd, Jr.; and Johnston, Harlin D., 3,960,773.

Johnston, Loren Bainum: *See—*
Harris, David Isaac; and Johnston, Loren Bainum, 3,961,100.

Jonason, Karl Gunnar. Apparatus for affixing surface enlarging members in the form of coherent transversally corrugated metal strips to elongate metal basic profiles. 3,960,308, Cl. 228-5.100.

Jones, Calvin, to Dairylea Cooperative Inc. Sampling apparatus. 3,960,021, Cl. 73-425.40R.

Jones, David H.: *See—*
Bohanan, Charles S.; Jones, David H.; Raab, Harry F., Jr.; and Radkowsky, Alvin, 3,960,655.

Jones, Eileen; Morris, Arthur; Thomas, Ieuan; and Traynor, James Rodney, to Imperial Chemical Industries, Inc. Catalytic preparation of polyamides from bis(aminophenyl)sulphone. 3,960,819, Cl. 260-78.00R.

Jones, Robert W., and Hall, James K., to United States of America, Navy. Noise riding threshold. 3,961,274, Cl. 328-165.000.

Jonker, Hendrik: *See—*
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Jordan, Gene M.; Eisenhardt, Robert G.; and Douthat, Dean Z., to First Ann Arbor Corporation. Method of classifying fingerprints. 3,959,884, Cl. 33-1.0BB.

Jorgensen, Hemming Kristian, to Dansk Industri Syndikat A/S. Foundry equipment. 3,960,202, Cl. 164-325.000.

Joseph Galkin Corporation: *See—*
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Jouanneault, Jean-Pierre, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Method of forming a printed circuit with means for preventing accumulation of metal alloy. 3,959,876, Cl. 29-628.000.

Jung, Michel: *See—*
Metcalf, Brian Walter; and Jung, Michel, 3,960,927.

Jung, Werner; and Knuth, Kurt E., to Teletype Corporation. Disposable ink supply and nozzle system using a simple pump. 3,961,337, Cl. 346-140.00R.

Juntgen, Harald; Knoblauch, Karl; Gappa, Gunther; and Schwarte, Jurgen, to Bergwerksverband GmbH. Apparatus for removing sulfur oxide from exhaust gases. 3,960,529, Cl. 55-390.000.

Juntgen, Harald: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,522.
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,769.

Jurisch, Louis A., to Commercial Solvents Corporation. Process for the preparation of a no-bake sand core from an oxazoline condensate as binder. 3,960,816, Cl. 260-73.00L.

K/Tronic Inc.: *See—*
Shapley, Bruce D., 3,960,338.

Kabs, Klaus: *See—*
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Kabushiki Kaisha Ricoh: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
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Kader, Reiner, to Mauser Kommanditgesellschaft. Apparatus for manufacturing reinforced plastic containers by blow molding. 3,960,474, Cl. 425-503.000.

Kaelin, Joseph Richard. Method of processing refuse and/or sludge and a plant for carrying out the method. 3,960,537, Cl. 71-9.000.

Kaiser, Carl; and Ross, Stephen T., to SmithKline Corporation. α-Aminoalkyl-4-hydroxy-3-alkylsulfonylmethylbenzyl alcohols having β-adrenergic stimulant activity. 3,961,076, Cl. 424-330.000.

Kaiser, Hermann: *See—*
Burger, Alex; Kaiser, Hermann; and Ludovici, Werner, 3,960,761.

Kaiser, Rudolf: *See—*
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Kajima Corporation: *See—*
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Kaku, Katsuo; Yoshimura, Hirofumi; Yada, Hiroshi; and Yamada, Nasomi, to Nippon Steel Corporation. Method for producing a low temperature high strength tough steel. 3,960,612, Cl. 148-12.00F.

Kalyazin, Evgeny Petrovich: *See—*
Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Buganko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, 3,960,682.

Kamisaka, Kosei: *See—*
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Kamiya, Osamu; and Itoh, Susumu, to Canon Kabushiki Kaisha. Anti-reflection coating having pseudo-inhomogeneous layers. 3,960,441, Cl. 350-164.000.

Kammerer, Edwin G. Rotary engine. 3,960,117, Cl. 123-8.490.

Kamogawa, Toshiro: *See—*
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Kamoshita, Katsuo: *See—*
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Kanebo, Ltd.: *See—*
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Kaneda, Kazuhisa: *See—*
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Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
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Kang, Kenneth Suk; and McNeely, William H. Polysaccharide and bacterial fermentation process for its preparation. 3,960,832, Cl. 260-209.00R.

Kansai Paint Company, Ltd.: *See—*
Kondo, Taizo; Matsui, Komaharu; and Yamamoto, Kunio, 3,960,791.
Miyosawa, Yoshiaki; and Umemoto, Sueo, 3,960,676.

Kao Soap Co., Ltd.: *See—*
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Murata, Moriyasu; Yamanaka, Makoto; and Sai, Fumio, 3,960,780.
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Karoll, Elizabeth A.: *See—*
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Karosas, Raymond: *See—*
Hyer, Frank S.; and Karosas, Raymond, 3,960,225.

Kasper, Willi: *See—*
Licht, Helmut; and Kasper, Willi, 3,960,400.

Kaster, Robert L. Heart valve prosthesis. 3,959,827, Cl. 3-1.500.

Katchman, Arthur, to General Electric Company. Polyphenylene ether composition. 3,960,808, Cl. 260-42.180.

Kato, Shinji: *See—*
Isukamoto, Hiroji; Morikawa, Hisashi; Nakagawa, Masao; Kato, Shinji; Miyamoto, Masaki; Yoda, Toichiro; and Yoshihara, Katsuhiko, 3,960,787.

Katz, Ira; Wilson, Richard A.; Evers, William J.; Vock, Manfred H.; and Verhoeve, Gerrit W., to International Flavors & Fragrances Inc. 2-Methyl-5,7-dihydrothieno-[3,4d]-pyrimidine. 3,960,860, Cl. 260-251.00A.

Kauffman, Robert N.: *See—*
Smith, James D. B.; and Kauffman, Robert N., 3,960,803.

Kaufmann Window and Door Corporation: *See—*
Noecker, Marshall V.; Thom, Kenneth C.; and Harp, Charles, Jr., 3,959,926.

Kaulig, Heinz; and Orth, Gerhard, to Vorwerk & Co. Elektrowerke KG. Floor cleaning apparatus. 3,959,847, Cl. 15-368.000.

Kaveloski, Robert J. Prefabricated disposable fly trap. 3,959,914, Cl. 43-118.000.

Kavesh, Sheldon, to Allied Chemical Corporation. Apparatus for liquid quenching of free jet spun metal. 3,960,200, Cl. 164-281.000.

Kawada, Seigo: *See—*
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Kawakami, Yorisada: *See—*
Kuwagata, Masahiro; Yamada, Masao; Nakamura, Kenichiro; and Kawakami, Yorisada, 3,961,354.

Kawamata, Naoyuki: *See—*
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Kawamura, Kiyoshi: *See—*
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Kawamura, Masanori, to Nohmi Bosai Kogyo Co. Ltd. Gas detector using gas sensing elements exhibiting different response characteristics. 3,961,248, Cl. 324-71.0SN.

Kawamura, Masao; Ito, Kazuhiro; Morioka, Makoto; Ono, Yuichi; Ishioka, Sachio; and Kurata, Kazuhiro, to Hitachi, Ltd. Epitaxial growth process for compound semiconductor crystals in liquid phase. 3,960,618, Cl. 148-171.000.

Kawamura, Yoshikazu: *See—*
Koike, Kenichi; and Kawamura, Yoshikazu, 3,961,213.

Kawanishi, Toshiyuki, to Kabushiki Kaisha Ricoh. Negatively charged liquid developer for use in electrostatic photography. 3,960,737, Cl. 252-62.10L.

Kawasaki, Hideo: *See—*
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Kawase, Shoji: *See—*
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Kayano, Masanori: *See—*
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Kazimierski, Zbyszko Kazimierz: *See—*
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KDI Sylvan Pools, Inc.: *See—*
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Keblys, Kestutis A.: *See—*
Kleiman, Joseph P.; and Keblys, Kestutis A., 3,961,033.

Keck, Jack L. Vehicle flow direction vanes. 3,960,402, Cl. 296-1.00S.

Kecskemethy, Geza: *See—*
Pataki, Zsuzsa, nee Nagy; Windisch, Ferenc; Nagy, Jozsef; Kecskemethy, Geza; and Virag, Gyorgy, 3,960,630.

Kegler, William H.; and Huyser, Marvin E., to Continental Oil Company. Manufacture of isotropic delayed petroleum coke. 3,960,704, Cl. 208-50.000.

Keifer, Siegfried: *See—*
Knickel, Birger; Keifer, Siegfried; Perrey, Hermann; Rudolph, Hans; Rosenkranz, Hans Jurgen; and Rudisch, Reinhold, 3,960,590.

Keihs, Karl; Adolphi, Heinrich; and Huber, Rolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Succinic acid oximidophosphoric esters. 3,960,885, Cl. 260-326.50A.

Keijzer, Johan H.; Pierle, Willy R. J.; and Van de Voorde, G., to Monroe Belgium N.V. Leveling system. 3,960,385, Cl. 280-692.000.

Kelley, Joseph M.; and Miskel, John J., Jr., to Dart Industries Inc. Process for producing high melt flow poly-olefin polymers. 3,960,987, Cl. 260-878.00B.

Kelley, Zar W. Device for mixing gases with liquids. 3,960,164, Cl 137-202.000.

Kelly, Ralph; and Ritter, Edmond Jean, to Cincinnati Milacron, Inc. Skin protective compositions. 3,961,044, Cl. 424-78.000.

Kelsey-Hayes Company: *See—*
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Kemp, John Edward Glyn: *See—*
Cox, David Alexander; Danilewicz, John Christopher; Ham, Allan Leslie; Kemp, John Edward Glyn; and Snarey, Michael, 3,961,072.
Danilewicz, John Christopher; Kemp, John Edward Glyn; and Wright, James Robert, 3,960,861.

Kempster, George A. Method of making records. 3,960,634, Cl 156-277.000.

Kendall Company, The: *See—*
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Kendall, Larry J.; and Snyder, Larry D., to Fairchild Camera and Instrument Corporation. Multiple channel analog-to-digital converter with automatic calibration. 3,961,325, Cl. 340-347.0CC

Kennametal Inc.: *See—*
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Kennecott Copper Corporation: *See—*
Agarwal, Jagdish Chandra; Giberti, Richard Andre; and Petrovic, Louis John, 3,960,513.

Kent, Eric George; and Walker, John, to Polysar Limited. Vulcanization of bromobutyl. 3,960,988, Cl. 260-879.000.

Kermans, Jasper J.: *See—*
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Kern, Thomas W.: *See—*
Champion, Fred; and Kern, Thomas W., 3,960,694.

Kerschner, James J., to Acme Highway Products Corporation. Sealing member. 3,960,462, Cl. 404-64.000.

Kett Electric Laboratory: *See—*
Toki, Kuni, 3,961,247.

Kettlestrings, John S. Propelled disk copter toy. 3,959,915, Cl. 46-74.00D.

Keuffel & Esser Company: *See—*
Baker, Allister L.; and Kooi, J. Peter E., 3,959,888.

Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co Kommanditgesellschaft: *See—*
Stolzer, Paul, 3,960,280.

Keyworth, Donald A.: *See—*
Sudduth, Jerome R.; and Keyworth, Donald A., 3,960,910.

Khadzhi, Valentin Evstafievich: *See—*
Butuzov, Vladimir Petrovich; Vatolkin, Evgeny Konstantinovich; Gordienko, Leonid Alexandrovich; Feldman, Ernst Borisovich; Khadzhi, Valentin Evstafievich; and Shaposhnikov, Anatoly Alexandrovich, 3,960,501.

Khanna, Rakesh, to Litton Business Systems, Inc. Temperature compensation for regulator circuit. 3,961,208, Cl. 307-297.000.

Khanna, Ram Tirth, to Du Pont de Nemours, E. I., and Company. High solids can coating compositions based on epoxy resin crosslinking agent, flexibilizing polyol, co-reactive acid catalyst, and surface modifier. 3,960,979, Cl. 260-834.000.

Khanna, Sarwan Kumar, to RCA Corporation. Disc record and method of compounding disc record composition. 3,960,790, Cl 260-23.0XA.

Kiddie Products, Inc.: *See—*
Panicci, Richard L., 3,960,289.

Kielsmeier, Lester O., to Leprino Cheese Manufacturing Company. Pasta filata cheese production by stored curd process. 3,961,077, Cl. 426-36.000.

Kierstead, Richard Wightman: *See—*
Guthrie, Robert William; and Kierstead, Richard Wightman, 3,960,933.

Kikkoman Shoyu Co., Ltd.: *See—*
Sugimoto, Hiroshi; Takeuchi, Hiroyuki; and Yokotsuka, Tamotsu, 3,961,080.

Kikusui Kagaku Kogyo Kabushiki Kaisha: *See—*
Ichigo, Minoru; Suzuki, Takeshi; and Harada, Katsumasa, 3,960,108.

Kim, Young Dae, to Hewlett-Packard Company. Reflection type phase modulator having reduced temperature sensitivity and reduced distortion. 3,961,286, Cl. 332-22.000.

Kimberly-Clark Corporation: *See—*
Thomas, Gordon D., 3,961,119.

Kinder, Mark Russell, to TRW Inc. Hydraulic motor brake. 3,960,470, Cl. 418-61.00B.

Kiner, Gerald T.: *See—*
Anderson, Harold E.; and Kiner, Gerald T., 3,960,128.

Kino, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. Ultrasonic delay material. 3,961,289, Cl. 333-30.00R.

Kirch, William: *See—*
Aboutboul, Henri A.; Kirch, William; and Krekeler, Jerome H., 3,960,826.

Kircher, Morton S.; and Engler, Maynard F., to Olin Corporation. Diaphragm cell having uniform and minimum spacing between the anodes and cathodes. 3,960,697, Cl. 204-252.000.

Kirk, Donald C., Jr.; and Morin, Otto, to Litton Systems, Inc. Harness cable connector. 3,960,425, Cl. 339-17.00R.

Kirkhof Manufacturing Corporation: *See—*
Medendorp, Roger L., 3,960,471.

Kirkpatrick, James W.; Porter, W. Fergus; and Shepherd, William E., to Youngstown Sheet and Tube Company. Steelmaking process. 3,960,547, Cl. 75-60.000.

Kishimoto, Tozo. High viscous dyeing sizing material producing machine. 3,960,368, Cl. 259-10.000

Kitagawa, Sumio: *See—*
Maruyama, Isamu; Yamamoto, Hisao; Nakao, Masaru; Sakai, Shigeru; Sasajima, Kikuo; Kitagawa, Sumio; and Inaba, Shigeho, 3,960,873.

Klanderman, Bruce H.; and Klingbiel, Richard T., to Eastman Kodak Company. Nematic liquid crystal compositions. 3,960,748, Cl. 252-299.000.

Klanderman, Bruce H.; and Maier, David P., to Eastman Kodak Company. Liquid crystal compositions. 3,960,752, Cl. 252-299.000

Kleiman, Joseph P.; and Keblys, Kestutis A., to Ethyl Corporation. Preparation of bromine. 3,961,033, Cl. 423-502.000

Klein, Charles, to United Merchants and Manufacturers, Inc. Method for texturizing flocked fabric and fabric produced thereby. 3,961,115, Cl. 428-88.000.

Klein, Charles, to United Merchants and Manufacturers, Inc. Novel flocked fabric. 3,961,116, Cl. 428-90.000.

Klein, Edward I., to V-Mark Automation Ltd. Continuous motion assembly machine. 3,959,870, Cl. 29-208.00R

Kleine, Werner, to Gebrueder Heller. Drill for rock. 3,960,223, Cl. 175-385.000.

Klenk, Ludwig: *See—*
Hammer, Klaus-Dieter; Porrmann, Herbert; and Klenk, Ludwig, 3,961,107.

Klenk, Peter: *See—*
Gutlhuber, Johann; Muhlner, Karl; and Klenk, Peter, 3,961,013.

Klett, Gene Ralph, to Caterpillar Tractor Co. High strength earth working penetration tooth. 3,959,901, Cl. 37-142.00R.

Klingbiel, Richard T.: *See—*
Klanderman, Bruce H.; and Klingbiel, Richard T., 3,960,748.

Klint, Bernard C., to Nylint Corporation. Toy vehicle with operator-simulating doll. 3,959,921, Cl. 46-202.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Strauss, Werner, 3,960,714.

Kloenne, Ernest F.; and Patel, Kanti D., to P. R. Mallory & Co., Inc. Audible alarm for a synchronous motor. 3,961,327, Cl 340-402.000.

Klose, Peter H.; and Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Structure and method for producing an image. 3,961,314, Cl. 340-173.0LS

Kmetz, Tibor: *See—*
Dobias, Robert M.; Kmetz, Tibor; and Warnell, Walter C., 3,960,099.

Knapp, Philip B., to Minnesota Mining and Manufacturing Company. Apparatus for singulating and depositing seeds. 3,960,292, Cl 221-211.000.

Knepper, Ronald W.: *See—*
Abbas, Shakir A.; Chang, Chi S.; Freeman, Leo B., Jr.; and Knepper, Ronald W., 3,961,355.

Knickel, Birger; Keifer, Siegfried; Perrey, Hermann; Rudolph, Hans; Rosenkranz, Hans Jurgen; and Rudisch, Reinhold, to Bayer Aktiengesellschaft. Modified chromium oxide pigment. 3,960,590, Cl. 106-302.000.

Knight, Arthur R.: *See—*
Verma, Arun; and Knight, Arthur R., 3,960,494.

Knoblauch, Karl: *See—*
Juntgen, Harald; Knoblauch, Karl; Gappa, Gunther; and Schwarte, Jurgen, 3,960,529.
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,522.
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,769.

Knoche, Hubert Wilhelm: *See—*
Bernard, Jean Rene; Brunel, Daniel Elie; Commeyras, Auguste Andre; Coste, Camille Michel; Itier, Jean Joseph; and Knoche, Hubert Wilhelm, 3,960,764.

Knollmueller, Karl O., to Olin Corporation. Halogenated alkoxysilane intermediate compounds and their preparation. 3,960,913, Cl. 260-448.8QR.

Knorr, Atlee M.: *See—*
LaRocco, Thomas C.; and Knorr, Atlee M., 3,960,066.

Knuth, Kurt E.: *See—*
Jung, Werner; and Knuth, Kurt E., 3,961,337.

Kobari, Sadami: *See—*
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Hattori, Yoshinori; Kobari, Sadami; and Matsuda, Tetsuo, 3,960,757.

Kobayashi, Akio: *See—*
Morita, Tomijiro; Kobayashi, Akio; Funahashi, Isao; Matsuda, Toshiharu; Naoki, Makoto; Kawamata, Naoyuki; and Fukui, Jun, 3,961,021.

Kobayashi, Hidehiko: *See—*
Ibata, Jyoji; Kobayashi, Hidehiko; Toyomoto, Kazuo; Suzuoki, Kazuhiro; Hayashi, Yoshio; and Kurihara, Masakazu, 3,960,572.

Kobayashi, Kenji: *See—*
Fukumaru, Toshitsugu; Kobayashi, Kenji; Mizote, Hiroyuki; Inaba, Shigeho; and Yamamoto, Hisao, 3,961,066.

Kobe Inc.: *See—*
Brown, Francis B.; and Erickson, John W., 3,960,319.

Kobylarz, Lawrence P.; and Mack, Ronald H., to Burroughs Corporation. Vibration absorption system for a card reading mechanism. 3,961,371, Cl. 360-101.000.

Koch, Ronney R.: *See—*
Cole, Robert Clay; Koch, Ronney R.; and Ramos, Joseph, 3,960,801.

Kochsmeier, Hans-Hermann, to Blaupunkt-Werke GmbH. FM discriminator circuit. 3,961,275, Cl. 329-107.000.

Kohan, Melvin Ira, to Du Pont de Nemours, E. I., and Company. Composition of oxymethylene polymer and amide oligomers. 3,960,984, Cl. 260-857.00F.

Kohanzadeh, Youssef; and Smith, Roy E., to Corning Glass Works. Method and apparatus for splicing optical fibers. 3,960,531, Cl. 65-4.00B.

Kohl, Charles F., Jr., to Dow Corning Corporation. Acetoxysiloxane adhesion promoter and primer composition. 3,960,800, Cl. 260-32.8SB.

Kohlmuller, Hans, to Siemens Aktiengesellschaft. Filter press-type fuel cell battery. 3,960,598, Cl. 136-86.00R.

Kohn, Gustave K., special administrator: *See—*
Brown, Melancthon S., deceased, 3,960,943.

Kohzai, Hayao, to Hitachi, Ltd. Color pickup tubes. 3,961,363, Cl. 358-43.000.

Koide, Hiroshi: *See—*
Konomi, Toshiaki; and Koide, Hiroshi, 3,960,118.

Koike, Kenichi; and Kawamura, Yoshikazu, to Kabushiki Kaisha Suwa Seikosha. Motion transformer. 3,961,213, Cl. 310-104.000.

Koizumi, Shun: *See—*
Kometani, Yutaka; Koizumi, Shun; Kubota, Kazuo; and Nawazima, Takeaki, 3,960,651.

Kokal, August, Jr. Bite intensity detecting articulating paper. 3,959,881, Cl. 32-19.000.

Kollar, John: *See—*
Russell, Joseph Lee; and Kollar, John, 3,960,954.

Kolly, Joseph M.: *See—*
Haining, Frank W.; Kolly, Joseph M.; and Lynch, Thomas E., Jr., 3,960,561.

Komai, Hisataka; and Ishikawa, Atsuo, to Nippon Zeon Co., Ltd. Hydrocarbon resins and compositions thereof. 3,960,823, Cl. 526-237.000.

Kometani, Eiji; Imai, Masaya; and Hazaki, Eiichi, to Hitachi Construction Machinery Co., Ltd. Hydraulic pump or motor. 3,960,057, Cl. 92-160.000.

Kometani, Yutaka; Koizumi, Shun; Kubota, Kazuo; and Nawazima, Takeaki, to Daikin Kogyo Co., Ltd. Reinforced air-pervious polytetrafluorothylene sheet. 3,960,651, Cl. 162-105.000.

Kondo, Taizo; Matsui, Komaharu; and Yamamoto, Kunio, to Kansai Paint Company, Ltd. Powder coating composition for electrodeposition. 3,960,791, Cl. 260-23.0AR.

Kondo, Tokiharu: *See—*
Sueyoshi, Tohru; Nakazawa, Yoshiyuki; Nakamura, Yoshuhara, Ohi, Reiichi; and Kondo, Tokiharu, 3,960,568.

Konishi, Toji, Kayano, Masanori; and Tanabe, Yoshio, to Eisai Co., Ltd. Pharmaceutical composition for remedy of hyperammoniemia 3,961,064, Cl. 424-266.000.

Kono, Kimio: *See—*
Goshima, Takeshi; Sugiura, Yoshinori; Endo, Kiyonobu; Sato, Hideaki; Kono, Kimio; and Tsuji, Takao, 3,960,443.

Kono, Osamu; Tsuchiya, Noboru; Matsuda, Atsushi; and Yoshida, Kiichi, to Sony Corporation. Power supply circuit for use with an electrostatic transducer. 3,961,202, Cl. 307-150.000.

Konomi, Toshiaki; and Koide, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air-fuel ratio adjusting device in an internal combustion engine having a carburetor. 3,960,118, Cl. 123-32.0EA.

Konstantinov, Leonard Vasilievich: *See—*
Alexeev, Viktor Ivanovich; Emelyanov, Ivan Yakovlevich; Ivanov, Vladimir Maximovich; Konstantinov, Leonard Vasilievich; Lysikov, Boris Vasilievich; Postnikov, Viktor Viktorovich; and Rybakov, Jury Viktorovich, 3,961,196.

Kooi, Else, to U.S. Philips Corporation. Integrated circuit with oxidation-junction isolation and channel stop. 3,961,356, Cl. 357-50.000.

Kooi, J. Peter E.: *See—*
Baker, Allister L.; and Kooi, J. Peter E., 3,959,888.

Koppe, Herbert; Engelhardt, Albrecht; and Zeile, Karl, to Boehringer Ingelheim GmbH. Therapeutic compositions and method. 3,961,071, Cl. 424-319.000.

Koppers Company, Inc.: *See—*
Greco, Nicholas P.; and Webb, David A., 3,960,969.

Korbacher, Werner: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,522.
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,769.

Koros, Robert M.: *See—*
Bessant, Glyndwr A. R.; Eichamer, Paul D.; Koros, Robert M.; and Schieni, Steven R., 3,960,508.

Kosuge, Yoshio: *See—*
Oishi, Yasushi; Ohi, Reiichi; and Kosuge, Yoshio, 3,960,570.

Kourkene, Jacques P. Method for prestressing a body of ceramic material. 3,960,995, Cl. 264-27.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Hiller, Sigwart; and Schad, Harald, 3,961,189.
Hintergraber, Maximilian, 3,960,034.

Krajewski, James C.: *See—*
Hartleroad, Ronald J.; Krajewski, James C.; and Rayon, Ronald G., 3,960,279.

Kramer, Daniel E. Dual voltage forced air heat exchanger. 3,959,979, Cl. 62-89.000.

Kramer, Wolfgang; Draber, Wilfried; Hammann, Ingeborg; and Scheinpflug, Hans, to Bayer Aktiengesellschaft. Pesticidal 2-amidocarbonylthiobarbituric acids. 3,961,061, Cl. 424-254.000.

Krapcho, John; and Turk, Chester Frank, to E. R. Squibb & Sons, Inc. 2-Aminoalkyl-3a,4,5,6,7,8-hexahydro-3-phenyl-8-(phenylmethylene)-cyclopenta[c]pyrazoles. 3,960,848, Cl. 260-240.00F.

Kratky, Frank, to Westguard Products, Inc. Animal restraint. 3,960,113, Cl. 119-99.000.

Kraus, Andreas: *See—*
Siemes, Franz; Kraus, Andreas; and Buhl, Joachim, 3,960,063.

Kraus, Charles Edward, to Excelermatic, Inc. Hydrostatic axial thrust bearing. 3,960,417, Cl. 308-170.000.

Kreiner, Philipp: *See—*
Schmitt, Walti; and Kreiner, Philipp, 3,960,991.

Krekeler, Jerome H.: *See—*
Aboutboul, Henri A.; Kirch, William; and Krekeler, Jerome H., 3,960,826.

Kremer, Richard K.; and Zeblisky, Rudolph J., to Photocircuits Division of Kollmorgen Corporation. Sensitizers and process for electroless metal deposition. 3,961,109, Cl. 427-304.000.

Krichevsky, Efrem Julievich: *See—*
Fridlyander, Iosif Naumovich; Yatsenko, Konstantin Petrovich; Nekrasova, Galina Anatolievna; Gulin, Alexandr Nikolaevich; Semenova, Zoya Grigorievna; Sidorov, Nikolai Grigorievich; Morozov, Boris Sergeevich; Krichevsky, Efrem Julievich; Zakharova, Tatyana Alexandrovna; and Sarycheva, Raisa Grigorievna, 3,960,551.

Kroebel, Reinhard; and Meyer, Alfred, to Bayer Aktiengesellschaft. Production of absorbents. 3,960,762, Cl. 252-426.000.

Krolla, Georg, to Jenaer Glaswerk Schott & Gen. Arsenic pentoxide glasses. 3,960,578, Cl. 106-47.00Q.

Krosnar, Thomas Charles: *See—*
Gasson, Edward James; Krosnar, Thomas Charles; and Marrian, Stanley Frederic, 3,960,925

Kruger, Leo: *See—*
Wurzburg, Otto B.; Szymanski, Chester D.; and Kruger, Leo, 3,961,045.

Krumel, Karl L.: *See—*
Free, Dustin L.; Krumel, Karl L.; and Snyder, Travis C., 3,960,736.

Krumm, Stephen H.: *See—*
Bailey, William R.; Krumm, Stephen H.; and Marach, David R., 3,960,435

Kruppa, Richard F.; and Coleman, Arthur Edward, to Applied Science Laboratories, Inc.; and Silar Laboratories, Inc. High temperature polar stationary phase for gas chromatography. 3,960,521, Cl. 55-67.000.

Krysinski, Jan Eugeniusz: *See—*
Brzeski, Lech Andrzej; Kazimierski, Zbyszko Kazimierz; Krysinski, Jan Eugeniusz; and Siwek, Andrzej Witold, 3,960,414.

Kubota, Kazuo: *See—*
Kometani, Yutaka; Koizumi, Shun; Kubota, Kazuo; and Nawazima, Takeaki, 3,960,651.

Kubota, Takashi: *See—*
Yoda, Naoya; Yoshi-i, Toshiya; Fujita, Saburo; Mochizuki, Hiroshi; Yumoto, Hirosuke; Kurihara, Masaru; Kubota, Takashi; Dokoshi, Noriaki; and Tanaka, Chiaki, 3,961,009.

Kudo, Shinji, to Yodogawa Steel Works, Limited. Method of making a laminated metal-based facing. 3,960,639, Cl. 156-222.000.

Kuffer, Fernand Bannie, to General Dynamics Corporation. Beam directing system having a moveable low mass inertia beam folding optical element. 3,961,179, Cl. 250-203.00R.

Kuhla, Donald E.; and Sarges, Reinhard, to Pfizer Inc. Benzenesulfonylurea derivatives. 3,961,065, Cl. 424-266.000.

Kuhla, Donald E.; Sarges, Reinhard; and Wiedermann, Hans E., to Pfizer Inc. Composition comprising a benzenesulfonylurea hypoglycemic agent and method of treatment. 3,961,067, Cl. 424-270.000.

Kuhlmann-Schafer, Wilhelm H., to Preussag Aktiengesellschaft. Zone melting process. 3,960,511, Cl. 23-301.0SP

Kuhn, William E., to Hemotec, Inc. Method and means for the repair of peripheral nerves. 3,960,151, Cl. 128-334.00R.

Kukolja, Stjepan; and Lammert, Steven R., to Eli Lilly and Company. Preparation of 6-acylamino-2-methyl-2-halomethyl penams. 3,960,844, Cl. 260-239.100.

Kukolja, Stjephan P.; and Lammert, Steven R., to Eli Lilly and Company. Preparation of desacetoxy-cephalosporin sulfoxides from penicillin sulfoxides. 3,960,851, Cl. 260-243.00C.

Kuligowski, Gerd; and Cattien, Eckart, to Siemens Aktiengesellschaft. Method and apparatus for obtaining a signal having a low harmonic content. 3,961,205, Cl. 307-261.000.

Kumiai Chemical Industry Co., Ltd.: *See—*
Horii, Tetsuo; Chiyomaru, Isao; Kawada, Seigo; and Takita, Kiyoshi, 3,961,049.

Kunikawa, Kenzo: *See—*
Homma, Itomi; Mino, Junryo; and Kunikawa, Kenzo, 3,960,744.

Kunstle, Gerhard; and Siegl, Herbert, to Wacker-Chemie GmbH. Process for preparing palladium(II)acetylacetonate. 3,960,909, Cl. 260-429.00J.

Kunststoffwerk Gerbruder Anger GmbH & Co.: *See—*
Gutlhuber, Johann; Muhlner, Karl; and Klenk, Peter, 3,961,013.

Kuntschik, Lawrence F.; and Rigdon, Orville W., to Texaco Inc. Purification process. 3,960,955, Cl. 260-566.00A.

Kurashiki Boseki Kabushiki Kaisha: *See—*
Suminokura, Toshihiko; Kyogoku, Yojuro; and Yasumoto, Noboru, 3,961,125.

Kurata, Hirotaka, to Sansui Electric Co., Ltd. Stereo signal demodulator in a four-channel stereo broadcast receiver comprising means for performing delay equalization together with sampling of a composite signal. 3,961,276, Cl. 329-112.000.

Kurata, Kazuhiro: *See—*
Kawamura, Masao; Ito, Kazuhiro; Morioka, Makoto; Ono, Yuichi; Ishioka, Sachio; and Kurata, Kazuhiro, 3,960,618.

Kuratsuji, Takatoshi; Kawase, Shoji; Shima, Takeo; Shimotsuma, Sakae; and Hosoi, Masahiro, to Teijin Limited. Process for preparing polyester shaped articles. 3,961,008, Cl. 264-178.00R.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Morita, Tomijiro; Kobayashi, Akio; Funahashi, Isao; Matsuda, Toshiharu; Naoki, Makoto; Kawamata, Naoyuki; and Fukui, Jun, 3,961,021.

Kurihara, Masakazu: *See—*
Ibata, Jyoji; Kobayashi, Hidehiko; Toyomoto, Kazuo; Suzuoki, Kazuhiro; Hayashi, Yoshio; and Kurihara, Masakazu, 3,960,572.

Kurihara, Masaru: *See—*
Yoda, Naoya; Yoshi-i, Toshiya; Fujita, Saburo; Mochizuki, Hiroshi; Yumoto, Hirosuke; Kurihara, Masaru; Kubota, Takashi; Dokoshi, Noriaki; and Tanaka, Chiaki, 3,961,009.

Kuroiwa, Katumasa: *See—*
Nagasawa, Takeshi; Kuroiwa, Katumasa; and Narita, Kouichi, 3,960,829.

Kurschner, Dennis L.: *See—*
Erdmann, David P.; and Kurschner, Dennis L., 3,961,320.

Kuwabara, Kiyoaki: *See—*
Nakajima, Mikio; and Kuwabara, Kiyoaki, 3,960,648.

Kuwagata, Masahiro; Yamada, Masao; Nakamura, Kenichiro; and Kawakami, Yorisada, to Matsushita Electronics Corporation. Mesa type thyristor and its making method. 3,961,354, Cl. 357-39.000.

Kydonieus, Agis F.; and Smith, Inja, to Herculite Protective Fabrics Corporation. Antistatic carpet and method for manufacturing same. 3,961,117, Cl. 428-96.000.

Kyi, Roland R., to Olin Corporation. Preparation of 2-chloropyridine by hydrogenolysis. 3,960,869, Cl. 260-290.0HL.

Kyogoku, Yojuro: *See—*
Suminokura, Toshihiko; Kyogoku, Yojuro; and Yasumoto, Noboru, 3,961,125.

Kyono, Iwao: *See—*
Yasui, Hiroshi; Kyono, Iwao; Aoki, Hideo; and Manabe, Haruo, 3,961,031.

Lacey, Kathleen P., to Early California Industries, Inc. Corrosion-inhibited polyphosphate compositions. 3,960,735, Cl. 252-2.000.

Lach, Richard F., to United Technologies Corporation. Signal conditioning circuit for vehicle diagnostic system. 3,961,239, Cl. 324-15.000.

LaDon Corporation: *See—*
Hogan, Gary LaDon, 3,960,160.

Lafferty, William D.: *See—*
Port, David J.; Lafferty, William D.; and Cheney, Richard F., 3,960,545.

LaFleur, Bob A.: *See—*
O'Brien, Robert J.; Lelewski, Stanley, Jr.; and LaFleur, Bob A., 3,960,738.

Lagues, Michel; and Domange, Jean-Louis, to U.S. Philips Corporation. Method of manufacturing a non-thermally emitting electrode for an electric discharge tube. 3,960,421, Cl. 316-17.000

Laing, Nikolaus. Storage body with latent storage substances for temperature equilization. 3,960,205, Cl. 165-48.000.

Laitala, Veikko A. Subsoil plow. 3,960,220, Cl. 172-261.000.

Lambooy, Guus. Transportable house, particularly of the caravan-type. 3,959,936, Cl. 52-65.000.

Lambou, Madeline G.; Spadaro, James J.; and Rusch, Eunice M., to United States of America, Agriculture. Agricultural foams as carriers for activated charcoal. 3,960,763, Cl. 252-428.000.

Lammert, Steven R.: *See—*
Kukolja, Stjepan; and Lammert, Steven R., 3,960,844.
Kukolja, Stjephan P.; and Lammert, Steven R., 3,960,851.

Lamping, Harold D.; and Myers, David M., to Curtiss-Wright Corporation. Stratified charge rotary engine (method of operation). 3,960,115, Cl. 123-8.090.

Landsman, Robert M., to Log Etronics Inc. Sequential image-modulated dot-area recording. 3,961,132, Cl. 178-6.70R.

Langhans, Gerhard: *See—*
Liepe, Friedrich; Langhans, Gerhard; Jagusch, Leonhard; Richter, Klaus; and Schlaf, Guenter, 3,960,175.

Lanier, Terry O.; and Ramanaiah, Nunna, to Corning Glass Works. pH reference electrode. 3,960,689, Cl. 204-195.00F.

Lankro Chemicals Group Limited: *See—*
Shackleton, Frank; and Butler, Donald, 3,960,948.

Larkin, John M.: *See—*
Duranleau, Roger G.; and Larkin, John M., 3,960,953

LaRocco, Thomas C.; and Knorr, Atlee M., to Union Kol-Flo Corporation. Beverage preparation apparatus. 3,960,066, Cl. 99-323.200.

La Roy, Dick; and Tengbergen, Erik Adriaan Willem Van Ebbenhorst, to N.V. Hollandse Signaalapparaten. Method for the fabrication of printed circuits. 3,960,635, Cl. 156-286.000.

Larrabee, Robert Dean, to RCA Corporation. Fluorescent liquid crystals. 3,960,753, Cl. 252-299.000.

Latimer, Eugene E.; and Lorimor, Larry W., to Caterpillar Tractor Co Hydraulic circuit with dual tank system and method for using the same. 3,960,174, Cl. 137-563.000.

Lau, Hung Wah Anthony, to Solartron Electronic Group Limited, The. Non linear network converting bipolar sawtooth signal into sinewave signal. 3,961,206, Cl. 307-261.000.

Laubie, Michel: *See—*
Malen, Charles; and Laubie, Michel, 3,960,891.

Laupman, Robert Ronald, to Novanex Automation N.V. Transistor amplifier. 3,961,278, Cl. 330-21.000.

Laurent, Henry: *See—*
Engel, Klaus; Prezewowsky, Klaus; Laurent, Henry; and Nishino, Yukishige, 3,960,841.
Haffer, Gregor; Eder, Ulrich; Laurent, Henry; Ruppert, Jurgen; Sauer, Gerhard; and Wiechert, Rudolf, 3,960,842.

Laurenz, Frank R. Animal facility equipment. 3,960,110, Cl. 119-28.000.

Lawford, Victor Nicholas; Granada, Richard Paul; and Elderton, Peter, to International Telephone and Telegraph Corporation. Flowmeter and function generator therefor. 3,960,033, Cl. 74-522.000.

Lawrence, John P., to Goodyear Tire & Rubber Company, The. Urea additives for sulfur vulcanizable polymers. 3,960,857, Cl. 260-246.00B.

Lawrence Peska Associates, Inc.: *See—*
Bhandia, B. S., 3,959,989.
Dawson, Stanford, 3,959,917.
Levkovski, Nikola, 3,960,092.
McCormick, John B., 3,960,231.
Meyer, Paul, 3,959,916.
Nos, Rudolph, 3,959,835.
Reynolds, Tom, 3,960,382.
Tesberg, Allan V., 3,960,159.

Lazarev, Vladimir Ilich: *See—*
Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Bugaenko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, 3,960,682.

Lazet, Frank J., to Philadelphia Quartz Company. Preparing alkali metal silicate glass with bubbles. 3,960,532, Cl. 65-22.000.

Lazzari, Jean-Pierre; and Melnick, Igor, to Commissariat a l'Energie Atomique; and Compagnie Internationale pour l'Informatique. Magnetic circuit having low reluctance. 3,961,299, Cl. 336-218.000.

Lear Siegler, Inc.: *See—*
Psenka, Joseph A.; and Tersch, Richard W., 3,960,055.
Strader, Don S.; Masser, Lloyd G.; and Lundwall, Robert J., 3,960,388.

Lebo, Willis R. Method and apparatus for treating liquid sewage and waste. 3,960,718, Cl. 210-14.000.

Lechleitner, Wilhelm: *See—*
Heitzinger, Friedrich; and Lechleitner, Wilhelm, 3,960,604.

Lectric Lite Company: *See—*
Blaylock, Arnold O., 3,961,174.

Ledermann, Hugo. Heat-pump system for hot-water room-heating. 3,959,986, Cl. 62-324.000.

Lednicer, Daniel, to Upjohn Company, The. 4'-Fluoro-4-[4-(phenyl)cyclohexyl]amino butyrophenones and the salts thereof. 3,960,961, Cl. 260-570.5CA.

Lee, David C., to Morehead, Charles D. Fishing lure. 3,959,912, Cl. 43-42.020.

Lee, John Davidson: *See—*
MacKenzie, Morley Scott; Charron, Louis Donald; Dooley, Andrew Philip Charles; and Lee, John Davidson, 3,960,431.

Lee, Kenneth M., to Dow Corning Corporation. Detergent resistant auto polish. 3,960,574, Cl. 106-3.000.

Leesona Corporation: *See—*
Chodosh, Stewart M., 3,960,600.

LeGrand, Donald G.: *See—*
Gaines, George L., Jr.; and LeGrand, Donald G., 3,961,122.

Lehmann, Gerard; and Rassinoux, Therese, to Saft-Societe des Accumulateurs Fixes et de Traction. Electrochemical generator. 3,960,595, Cl. 136-6.0LN.

Leibee, Donald L.; Oaks, Seibert S.; and Evans, R. Douglas, Jr., to Kennametal Inc. Tool for cutting groove in hole. 3,960,222, Cl. 175-263.000.

Leimbacher, Erwin; Marte, Walter; and Buchele, Ferdinand, to Herberlein Textildruck AG. Process and apparatus for improving the fiber structure of textile material containing cellulose fibers. 3,960,484, Cl. 8-125.000.

Leistikow, Gerard K., to Mattel, Inc. Push toy adapted to pick up three-dimensional objects lying on a supporting surface. 3,959,922, Cl. 46-205.000.

Leitz, Ludwig and Heitman, Knut, to Ernst Leitz G.m.b.H. System for achieving a maximum braking effect. 3,960,410, Cl. 303-21.00A.

Leland Stanford Junior University, The Board of Trustees of: *See*—
Carleton, Joseph G.; and Sweet, Richard G., 3,960,449.

Lelewski, Stanley, Jr.: *See*—
O'Brien, Robert J.; Lelewski, Stanley, Jr.; and LaFleur, Bob A., 3,960,738.

Leloux, Arnoldus Willem Jan, to Wavin B.V. Method of making a band of plastic bags. 3,960,062, Cl. 93-35.00R.

Lemercier, Jacques: *See*—
Dubot, Guy; and Lemercier, Jacques, 3,961,183

Lennox Industries Inc.: *See*—
Vlasak, Robert, 3,959,984.

Lenton, R. Warren: *See*—
Russell, Donald H.; and Lenton, R. Warren, 3,960,813

Leonard, Edward O., to Chemical Cleaning Composition Trust. Water-dispersable solvent emulsion type cleaner concentrate. 3,960,742, Cl. 252-90.000.

Leonard, Isaac E., III: *See*—
Abernathy, David D.; Adams, Herbert D.; Gilbertson, Warren L.; Leonard, Isaac E., III; and Silvia, Denis A., 3,960,085.

Leonard, Nelson J.: *See*—
Secrist, John A., III; Barrio, Jorge R.; Leonard, Nelson J.; and Weber, Gregorio, 3,960,840.

Leowald, Karl-Friedrich; and Schenk, Jakob, to Siemens Aktiengesellschaft. Firing circuit for an electric valve. 3,961,204, Cl 307-252.00N.

Leprino Cheese Manufacturing Company: *See*—
Kielsmeier, Lester O., 3,961,077.

Lerch, Ulrich, and Granzer, Ernold, to Hoechst Aktiengesellschaft. Pharmaceutical composition containing 1-(imidazole-1-yl)-isoquinolines and method of treating hyperlipemia. 3,961,062, Cl 424-258.000

Lesher, George Y.; Gelotte, Karl O.; and Surrey, Alexander R., to Sterling Drug Inc. 4-[-(Alkoxy or polyhaloalkoxy)-benzamido]cyclohexanones. 3,960,945, Cl. 260-559.00R.

Leslie, William B.: *See*—
Dietzel, Russel W.; and Leslie, William B., 3,960,083.

Letchworth, Peter E.: *See*—
Baker, Don R.; Walker, Francis H.; and Letchworth, Peter E., 3,960,922.

Leunbach, Ib: Method and apparatus for the determination of electron density in a part volume of a body. 3,961,186, Cl. 250-272.000.

Leutwyler, Roy B., to Automated Building Components, Inc. Electrical component mounting panel. 3,960,353, Cl. 248-309.00R.

Levi Strauss & Co.: *See*—
Hakanson, Karin, 3,959,826.

Levin, Felix Lvovich; Golovanenko, Sergei Alexandrovich; Pridantsev, Mikhail Vasilievich; and Dmitriev, Vladimir Alexandrovich. Method of producing metal parts having magnetic and non-magnetic portions. 3,960,617, Cl. 148-121.000.

Levkovski, Nikola, to Lawrence Peska Associates, Inc., a part interest. Collapsible stool. 3,960,092, Cl. 108-41.000.

Lewis, Edward M. Table skirt mounting. 3,959,854, Cl. 24-84.00B.

Lewis, James L.: *See*—
Chen, Chang Chung; Holmes, Jack K.; and Lewis, James L., 3,961,282.

Lewis, Peter Sydney; and Lohning, Franklin Marius, to Tarax Pty. Limited. Sterilization apparatus. 3,961,150, Cl. 219-10.490.

Libbey-Owens-Ford Company: *See*—
Hamilton, Harold E.; and Oelke, Waldemar W., 3,960,535.

Liberi, Vincent Edward: *See*—
Jacobs, Emmett Smith; and Liberi, Vincent Edward, 3,960,528.

Licht, Helmut; and Kasper, Willi, to Fried. Krupp Huttenwerke AG Lightweight railway wheel. 3,960,400, Cl. 295-11.000.

Lichtblau, George Jay. Real time signal discrimination circuitry. 3,961,322, Cl. 340-280.000.

Liconix: *See*—
Shull, William A., 3,960,422.

Liebman, Israel; and Corry, John, to United States of America, Interior. Passive explosion barrier. 3,960,217, Cl. 169-64.000.

Liepe, Friedrich; Langhans, Gerhard; Jagusch, Leonhard; Richter, Klaus; and Schlaf, Guenter, to VEB Chemieanlagenbau und Montagekombinat Leipzig. Installation for charging liquids, particularly fermentation liquids, with gas. 3,960,175, Cl. 137-604.000.

Liffick, Fenton A., to Cragar Industries, Inc. Dual size lug nut. 3,960,047, Cl. 85-32.00R.

Lind, Hanns: *See*—
Orban, Ivan; Lind, Hanns; Brunetti, Heimo; and Rody, Jean, 3,960,875.

Lindley, John; and McLeod, Andrew John, to Imperial Chemical Industries Limited. Separation process by fractional crystallization 3,959,978, Cl. 62-58.000.

Lindtveit, Herbert E., to Sid Harvey, Inc. Reversible pump. 3,960,469, Cl. 418-39.000.

Linhart, Karl; and Schmitz, Reinold, to Bayer Aktiengesellschaft. Process for preparing 1-nitro-anthraquinone. 3,960,903, Cl. 260-369.000.

Linser, Jorg, to Artur Fischer. Valve assembly kit. 3,960,166, Cl. 137-271.000.

Lippert, Joseph, Jr., to Grumman Aerospace Corporation. Means to reduce and/or eliminate vortices, caused by wing body combinations. 3,960,345, Cl. 244-130.000.

Lippert, Thomas E.; and Skriba, Michael C., to United States of America, Environmental Protection Agency. System for dewatering dilute slurries. 3,960,732, Cl. 210-386.000.

Litova, Galina Nikolaevna: *See*—
Gortinskaya, Tatyana Vladimirovna; Mashkovsky, Mikhail Davidovich; Polezhaeva, Antonina Ivanovna; Nyrkova, Valentina Georgievna; Bondar, Larisa Nikolaevna; Litova, Galina Nikolaevna; Schukina, Maria Nikolaevna, deceased; and Preobrazhenskaya, Maria Nikolaevna, administrator, 3,961,058.

Litton Business Systems, Inc.: *See*—
Khanna, Rakesh, 3,961,208.

Litton Systems, Inc.: *See*—
Di Antonio, Daniel Joseph, 3,960,243.
Kirk, Donald C., Jr.; and Morin, Otto, 3,960,425.
McAdams, Hugh P., Jr., 3,961,212.

Lo, Allen Kwok Wah; and Nims, Jerry Curtis, to Dimensional Development Corporation. Methods and apparatus for taking and composing stereoscopic pictures. 3,960,563, Cl. 96-40.000.

Lockheed Aircraft Corporation: *See*—
Wirt, Leslie S.; and Morrow, Duane L., 3,960,004.

Loev, Bernard: *See*—
Bender, Paul E.; and Loev, Bernard, 3,961,069.

Lofton, John T.: *See*—
Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., 3,960,477.

Log Etronics Inc.: *See*—
Landsman, Robert M., 3,961,132.

Loge, Olaf: *See*—
Ahrens, Hanns; Rufer, Clemens; Biere, Helmut; Schroder, Eberhard; Losert, Wolfgang; Loge, Olaf; and Schillinger, Ekkehard, 3,960,949.

Lohnert, Gunter; Muller-Frank, Ulrich; and Heil, Jurgen, to Interatom, Internationale Atomreaktrobau GmbH. Pebble-bed reactor. 3,960,656, Cl. 176-58.0PB.

Lohning, Franklin Marius: *See*—
Lewis, Peter Sydney; and Lohning, Franklin Marius, 3,961,150.

Loiudice, Mario: *See*—
Pavoni, Gustavo; Repossi, Enzo; and Loiudice, Mario, 3,961,311.

Lokkart, Hendricus Johannes, to International Telephone & Telegram Corporation. Velocity pick-off with noise cancellation. 3,961,214, Cl. 310-155.000.

Long, Alan Gibson; Walker, Derek; Eastlick, David Thomas; and Stables, Harry Carson, to Glaxo Laboratories Limited. Process for the preparation of esters of N-blocked penicillin acids which comprises reacting the acid or a salt thereof with a primary amine and a nitrosating agent. 3,960,843, Cl. 260-239.100.

Long, William R., Jr.: *See*—
Evans, James D.; and Long, William R., Jr., 3,960,616.

Longworth, Arthur Raymond: *See*—
Billany, Michael Royston; Longworth, Arthur Raymond; and Shatwell, John, 3,960,745.

Lonning, Thor J. G., to Monsanto Company. Polyvinyl chloride polyblend molding. 3,959,895, Cl. 36-32.00R.

Looger, Lonnie L., to United States of America, Army. Anti-tank rocket launcher telescoping tube locking device. 3,960,054, Cl. 89-1.816.

Lorimor, Larry W.: *See*—
Latimer, Eugene E.; and Lorimor, Larry W., 3,960,174.

Losert, Wolfgang: *See*—
Ahrens, Hanns; Rufer, Clemens; Biere, Helmut; Schroder, Eberhard; Losert, Wolfgang; Loge, Olaf; and Schillinger, Ekkehard, 3,960,949

Louault, Gerard: *See*—
Louault, Guy; and Louault, Gerard, 3,959,959.

Louault, Guy; and Louault, Gerard, to S. A. Louault. Machine for vintaging grapes. 3,959,959, Cl. 56-330.000.

Lourdes Industries, Inc.: *See*—
Jakobsen, William J., 3,960,019.

Lovely, John D., to Electrohome Limited. Dynamic hue control networks. 3,961,362, Cl. 358-28.000.

Lovis, Brigitte, nee Ester, heir: *See*—
Ester, Wilhelm, deceased; Lovis, Brigitte, nee Ester, heir; Ester, Wolfgang, heir; and Heitmann, Wilhelm, 3,960,672.

Lowe, Robert R. Livestock identification tag. 3,959,908, Cl. 40-301.000

Lubrizol Corporation, The: *See*—
Schroeck, Calvin William, 3,960,918.

Lucey, George K., Jr.: *See*—
Barnett, Charles W. H.; Lucey, George K., Jr.; and Augustine, Douglas R., 3,960,000.

Luck, Dieter G. Implement assembly for hydraulically operated excavators. 3,959,900, Cl. 37-117.500.

Ludovici, Werner: *See*—
Burger, Alex; Kaiser, Hermann; and Ludovici, Werner, 3,960,761.

Luense, John R.: *See*—
Johnson, Craig E.; and Luense, John R., 3,960,993.

Lukianoff, George V.; and Touw, Theodore R., to International Business Machines Corporation. Voltage contrast detector for a scanning electron beam instrument. 3,961,190, Cl. 250-310.000.

Lundwall, Robert J.: *See*—
Strader, Don S.; Masser, Lloyd G.; and Lundwall, Robert J., 3,960,388.

Lussow, Robert O.: *See*—
Berkenblit, Melvin; Lussow, Robert O.; and Reisman, Arnold, 3,961,114.

Luzzi, John J.: *See*—
Ramey, Chester R.; and Luzzi, John J., 3,960,809.

Lynch, Thomas E., Jr.: *See*—
Haining, Frank W.; Kolly, Joseph M.; and Lynch, Thomas E., Jr., 3,960,561.

Lyons, James E., to Sun Ventures, Inc. Conversion of formamides to isocyanates. 3,960,914, Cl. 260-453.00P.

Lysikov, Boris Vasilievich: *See*—
Alexeev, Viktor Ivanovich; Emelyanov, Ivan Yakovlevich; Ivanov, Vladimir Maximovich, Konstantinov, Leonard Vasilievich; Lysikov, Boris Vasilievich; Postnikov, Viktor Viktorovich; and Rybakov, Jury Viktorovich, 3,961,196.

Lyskov, Ivan Konstantinovich: *See*—
Filatov, Nikolai Grigorievich; Gridnev, Vitaly Nikiforovich; Gavriljuk, Valentin Gennadievich; Meshkov, Jury Yakovlevich; Mashlenko, Felix Isaakovich; Mikhailov, Konstantin Vasilievich; Fedorov, Valery Ionovich; Marchenko, Vladimir Zakharovich; Lyskov, Ivan Konstantinovich; and Budilovsky, Viktor Alexandrovich, 3,959,999.

Ma, Raymond, to Tel-Tone Corporation. Stop time-out until after first DTMF digit dialed circuit. 3,961,141, Cl. 179-16.0EC.

Maag Gear-Wheel & Machine Company Limited: *See*—
Sigg, Hans, 3,960,253.

Macaulay, David B.: *See*—
Gerstein, Bernard C.; and Macaulay, David B., 3,961,016.

MacGregor, John James, to Matthey Rustenburg Refiners, Limited. Process for the separation and purification of platinum, rhodium and iridium. 3,960,549, Cl. 75-108.000.

Machol, Guenther Keith: *See*—
Bowman, Robert A.; Machol, Guenther Keith; and Terlet, Rene Henri, 3,961,139.

Mack, Ronald H.: *See*—
Kobylarz, Lawrence P.; and Mack, Ronald H., 3,961,371.

Mack, Walter: *See*—
Hekimian, Norris C.; and Mack, Walter, 3,961,264.

MacKenzie, Burton Thornley, Jr., to General Electric Company. Method of stabilizing the dielectric strength of polyolefin polymers, and the stabilized compositions and products thereof. 3,960,739, Cl. 252-63.200.

MacKenzie, Morley Scott; Charron, Louis Donald; Dooley, Andrew Philip Charles; and Lee, John Davidson, to Nothern Electric Company Limited. Electrical connector. 3,960,431, Cl. 339-98.000.

Maddux, John F., to Owens-Corning Fiberglas Corporation. Apparatus and method for increasing electric power in an electric glass-melting furnace. 3,961,126, Cl. 13-6.000.

Maeda, Shiro: *See*—
Hosokawa, Hiroyuki; Maeda, Shiro; and Yamada, Kenji, 3,960,393.

Maestrone, Gian Paolo; and Mitrovic, Milan, to Hoffmann-La Roche Inc. Use of ipronidazole in combatting *Sphaerophorus necrophorus* infections. 3,961,068, Cl. 424-273.000.

Magnesium Elektron Limited: *See*—
Unsworth, William; and Fowler, Gordon Arthur, 3,960,609.

Magnus, Arthur Howard: *See*—
Cohen, Stuart Barry; Clark, James Monroe; and Magnus, Arthur Howard, 3,961,136.

Magnuson, Leo D. Bicycle pedal attachment. 3,960,027, Cl. 74-594.600.

Magosch, Karl Heinz; Feinauer, Roland; and Ruter, Jorn, to Chemische Werke Huls Aktiengesellschaft. Method for preparing low pilling effect polyester fiber products. 3,960,686, Cl. 204-159.190.

Magrisso, Israel B.: *See*—
Bodner, Ronald E.; Crooks, Thomas L.; Magrisso, Israel B.; Slack, Keith M.; and Smith, Richard S., 3,961,313.
Bodner, Ronald Eugene; Crooks, Thomas L.; Guest, John E.; Magrisso, Israel B.; and Slack, Keith K., 3,961,312.

Maida, Osamu, to Nippon Kogaku K.K. Remote control photographic apparatus. 3,961,342, Cl. 354-60.00R.

Maier, David P.: *See*—
Klanderman, Bruce H.; and Maier, David P., 3,960,752.

Maki, Naoki; and Suzuki, Katsunori, to Hitachi, Ltd. Linear synchronous motor powered vehicle. 3,960,090, Cl. 104-148.0LM.

Makley, James A.: *See*—
Hamisch, Paul H., Jr.; and Makley, James A., 3,960,642.

Malashenko, Alexander: *See*—
Futcher, Ralph James; and Malashenko, Alexander, 3,960,653.

Malen, Charles; and Laubie, Michel, to Science-Union et Cie. Thiochroman compounds. 3,960,891, Cl. 260-327.0TH.

Mallis, James N., to United States of America, Navy. Liquid vesicant differentiating paint. 3,960,759, Cl. 252-408.000.

Malmejac, Yves: *See*—
Faure, Jacqueline; Malmejac, Yves; and Schaub, Bernard, 3,960,647.

Maloney, Joseph V.; Geigel, Ronald J.; and Zidek, Peter R. Children's game. 3,960,379, Cl. 273-95.00R.

Manabe, Haruo: *See*—
Yasui, Hiroshi; Kyono, Iwao; Aoki, Hideo; and Manabe, Haruo, 3,961,031.

Manabe, Mikio: *See*—
Numata, Shunichi; Yokono, Hitoshi; Mukai, Junji; Muroi, Tadashi; Nakano, Mineo; and Manabe, Mikio, 3,960,982.

Manaugh, Carlisle F. Car parking structure with a car lift at the entrance thereof. 3,960,282, Cl. 214-16.1CB.

Mandon, Jean-Pierre: *See*—
Rabussier, Bernard; and Mandon, Jean-Pierre, 3,961,040.

Manning, Harold E., to Petro-Tex Chemical Corporation. Magnesium chromite dehydrogenation catalyst. 3,960,975, Cl. 252-465.000.

Manning, Harold E.: *See*—
Ellis, Michael C.; and Manning, Harold E., 3,960,776.

Manning, Steven J.: *See*—
Townsend, Leroy B.; Earl, Robert A.; and Manning, Steven J., 3,960,864.

Manta: *See*—
Bogaert, Pieter Joseph, 3,960,089.

Manzonelli, Carmen C.; and Blossey, Robert G., to National Steel Corporation. Novel aluminum alloy, continuously cast aluminum alloy shapes, method of preparing semirigid container stock therefrom, and container stock thus prepared. 3,960,607, Cl. 148-2.000.

Marach, David R.: *See*—
Bailey, William R.; Krumm, Stephen H.; and Marach, David R., 3,960,435.

Marathon Oil Company: *See*—
Allred, Victor D., 3,960,702.

Marchbanks, Clandes B. Ventilated screen for motor vehicle passenger compartment window openings. 3,960,195, Cl. 160-105.000.

Marchenko, Vladimir Zakharovich: *See*—
Filatov, Nikolai Grigorievich; Gridnev, Vitaly Nikiforovich; Gavriljuk, Valentin Gennadievich; Meshkov, Jury Yakovlevich; Mashlenko, Felix Isaakovich; Mikhailov, Konstantin Vasilievich; Fedorov, Valery Ionovich; Marchenko, Vladimir Zakharovich; Lyskov, Ivan Konstantinovich; and Budilovsky, Viktor Alexandrovich, 3,959,999.

Marchetti, Joseph R.: *See*—
Dowbenko, Rostyslaw; and Marchetti, Joseph R., 3,960,795.

Marco, Leslie Stephan, to Illinois Tool Works Inc. Thermoplastic preform and heated mandrel constructions. 3,961,113, Cl. 428-35.000.

Maremont Corporation: *See*—
Conley, James F., 3,960,053.

Markowtiz, Hal: *See*—
Fial, Ronald Augustine; and Markowtiz, Hal, 3,960,254.

Marks, Alvin M. Electrostatic air purifier using charged droplets. 3,960,505, Cl. 23-284.000.

Marquardt, Robert J., to Miller Industries, Inc. Roller assembly for sliding doors. 3,959,849, Cl. 16-105.000.

Marques, Jerry G.: *See*—
McClure, Randall D.; and Marques, Jerry G., 3,960,238.

Marrian, Stanley Frederic: *See*—
Gasson, Edward James; Krosnar, Thomas Charles; and Marrian, Stanley Frederic, 3,960,925.

Marte, Walter: *See*—
Leimbacher, Erwin; Marte, Walter; and Buchele, Ferdinand, 3,960,484.

Martin Engineering Co.: *See*—
Bickers, Fredrick Allen, 3,960,173.

Martin, Eugene Ray, to SWS Silicones Corporation. Detergent resistant polish compositions. 3,960,575, Cl. 106-10.000.

Martin Marietta Corporation: *See*—
Casadevall, James L., 3,960,626.

Martin, Robertson & Bain Ltd.: *See*—
Cox, James Patrick; and Cox, Jeanne Marie, 3,961,084.

Martin, Rolf, to BHS-Bayerische Berg Hutten-und Salzwerke Aktiengesellschaft. Rotor alignment apparatus for a processing and power generating machine. 3,960,028, Cl. 74-405.000.

Martins, Joseph G.: *See*—
Fantl, Joel; and Martins, Joseph G., 3,960,485.

Maruyama, Isamu; Yamamoto, Hisao; Nakao, Masaru; Sakai, Shigeru; Sasajima, Kikuo; Kitagawa, Sumio; and Inaba, Shigeho, to Sumitomo Chemical Co., Ltd. 1-Phenylthiopropyl-4-hydroxy-4-phenyl piperidines. 3,960,873, Cl. 260-293.730.

Maryland Cup Corporation: *See*—
Hollinger, Paul, 3,960,299.

Maschinenfabrik Augsburg-Nurnberg AG: *See*—
Schurrer, Josef, 3,961,184.
Seidel, Karlheinz, 3,959,887.

Maschinenfabrik Ernst Thielenhaus: *See*—
Golitz, Friederich, 3,959,990.

Maschinenfabrik Zuckermann Komm. Ges. Wien: *See*—
Schmidt, Erich, 3,960,188.

Masepohl, John C.: *See*—
Gear, Robert B., Jr.; and Masepohl, John C., 3,961,127.

Mashkovsky, Mikhail Davidovich: *See*—
Gortinskaya, Tatyana Vladimirovna; Mashkovsky, Mikhail Davidovich; Polezhaeva, Antonina Ivanovna; Nyrkova, Valentina Georgievna; Bondar, Larisa Nikolaevna; Litova, Galina Nikolaevna; Schukina, Maria Nikolaevna, deceased; and Preobrazhenskaya, Maria Nikolaevna, administrator, 3,961,058.

Mashlenko, Felix Isaakovich: *See*—
Filatov, Nikolai Grigorievich; Gridnev, Vitaly Nikiforovich; Gavriljuk, Valentin Gennadievich; Meshkov, Jury Yakovlevich; Mashlenko, Felix Isaakovich; Mikhailov, Konstantin Vasilievich; Fedorov, Valery Ionovich; Marchenko, Vladimir Zakharovich;

Lyskov, Ivan Konstantinovich; and Budilovsky, Viktor Alexandrovich, 3,959,999.

Masonite Corporation: *See—*
Bradley, Steven Y., 3,959,839.

Masser, Lloyd G.: *See—*
Strader, Don S.; Masser, Lloyd G.; and Lundwall, Robert J., 3,960,388.

Massie, Stephen N., to Universal Oil Products Company. Method of producing reinforced foamed structures. 3,960,999, Cl. 264-45.300.

Masuda, Takao: *See—*
Ikenoue, Shinpei; and Masuda, Takao, 3,960,566.
Ikenoue, Shinpei; and Masuda, Takao, 3,960,908.

Mathe, Istvan, to Bunker Ramo Corporation. Tool and adapter for electrical connector unit using insulation piercing contacts. 3,959,868, Cl. 29-203.0DT.

Matsuda, Atsushi: *See—*
Kono, Osamu; Tsuchiya, Noboru; Matsuda, Atsushi; and Yoshida, Kiichi, 3,961,202.

Matsuda, Tetsuo; Yamaguchi, Tsutomu; Fujii, Tadashiro; Matsumoto, Kunio; Morishita, Masataka; Fukushima, Mitsuru; and Shibuya, Yuzo, to Toyo Jozo Kabushiki Kaisha. Process for the production of 7-amino-cephem compounds. 3,960,662, Cl. 195-29.000.

Matsuda, Tetsuo: *See—*
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Hattori, Yoshinori; Kobari, Sadami; and Matsuda, Tetsuo, 3,960,757.

Matsuda, Toshiharu: *See—*
Morita, Tomijiro; Kobayashi, Akio; Funahashi, Isao; Matsuda, Toshiharu; Naoki, Makoto; Kawamata, Naoyuki; and Fukui, Jun, 3,961,021.

Matsui, Komaharu: *See—*
Kondo, Taizo; Matsui, Komaharu; and Yamamoto, Kunio, 3,960,791.

Matsumoto, Kunio: *See—*
Matsuda, Tetsuo; Yamaguchi, Tsutomu; Fujii, Tadashiro; Matsumoto, Kunio; Morishita, Masataka; Fukushima, Mitsuru; and Shibuya, Yuzo, 3,960,662.

Matsumoto, Seiichi: *See—*
Hosoe, Kazuya; Aizawa, Hiroshi; Matsumoto, Seiichi; and Yokota, Hideo, 3,961,178.

Matsumura, Kazuhiro: *See—*
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; and Uchida, Satoru, 3,960,765.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kino, Yoshihiro, 3,961,289.
Minakuchi, Hiroshi, 3,961,207.
Moriyama, Akio; Fukai, Masakazu; and Asai, Komei, 3,960,750.
Moriyama, Akio; Fukai, Masakazu; Tatsuta, Hiroshi; and Takahashi, Hiroaki, 3,960,751.
Nagata, Takashi; and Mindlin, Raymond David, 3,961,210.
Ohigashi, Tugio; and Ariga, Junichi, 3,961,265.
Okuno, Noboru; Kamogawa, Toshiro; and Kamisaka, Kosei, 3,961,359.
Otagoshi, Hitoshi, 3,961,175.
Tanaka, Hiromichi, 3,961,364.
Tsujikawa, Masahiro; Ozasa, Minoru; Takagi, Fumio; Hirai, Katsumi; Iwasaki, Akio; Imamura, Hiroshi; and Ueda, Testuhiro, 3,960,507.

Matsushita Electronics Corporation: *See—*
Kuwagata, Masahiro; Yamada, Masao; Nakamura, Kenichiro; and Kawakami, Yorisada, 3,961,354.

Matsuura, Hiroshi; Ishimoto, Kazuo; and Yasukuni, Takashi, to Mitsubishi Jukogyo Kabushiki Kaisha. Reduced pressure mould production method. 3,960,198, Cl. 164-7.000.

Mattel, Inc.: *See—*
Leistikow, Gerard K., 3,959,922.

Matthey Rustenburg Refiners, Limited: *See—*
MacGregor, John James, 3,960,549.

Matton, George. Shoe-stiffener material of latex saturated flexible fabric. 3,961,124, Cl. 428-250.000.

Mattox, William J.: *See—*
Hamner, Glen P.; and Mattox, William J., 3,961,036.

Mattson, Richard W., to Eltra Corporation. Dual vacuum actuator ignition timing. 3,960,125, Cl. 123-117.00A.

Mauser Kommanditgesellschaft: *See—*
Kader, Reiner, 3,960,474.

Mauz, Otto, to Hoechst Aktiengesellschaft. Process for the manufacture of condensation products from phenols and polyacetoacetic acid esters. 3,960,928, Cl. 260-473.00S

Mauz, Otto, to Hoechst Aktiengesellschaft. Process for manufacture of condensation products from phenols and acetoacetic acid esters. 3,960,929, Cl. 260-473.00S.

Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
Eibl, Hansjorg; and Nicksch, Alfar, 3,960,905

May, Bob. Cigarette case. 3,960,270, Cl. 206-256.000.

May, William P. Combination vibrating cutter head and crusher 3,959,897, Cl. 37-58.000.

Mayer, Rolf; and Menzel, Walter, to Bosch-Siemens Hausgerate GmbH. Refuse compactor. 3,960,071, Cl. 100-229.00A.

Mayers, Bernard J.: *See—*
Evers, William J.; Heinsohn, Howard H., Jr.; Mayers, Bernard J.; and Karoll, Elizabeth A., 3,961,093.

Mayr, Hubert; Presoly, Elfriede; Weinrotter, Ferdinand; Muller, Walter; Stern, Gerhard; and Frohner, Walter Mizzi, deceased (by Frohner, Maria), to Chemie Linz Aktiengesellschaft. Process for regulating or influencing the growth and metabolism of plants. 3,960,541, Cl. 71-88.000.

Mazzoni, Albert H., Jr. Ski carrying strap. 3,960,302, Cl. 224-45.00S.

McAdams, Hugh P., Jr., to Litton Systems, Inc. Integral servomechanism. 3,961,212, Cl. 310-68.00R.

McCabe, Charles W.: *See—*
Doss, James D.; and McCabe, Charles W., 3,960,138.

McCabe, Francis J. Air control apparatus. 3,960,065, Cl. 98-40.00D.

McCloskey, Albert R., to Heim Universal Corporation. Spherical bearing having adjustable key. 3,960,416, Cl. 308-72.000.

McCloskey, Edward W. Expandable irrigation signal. 3,960,107, Cl. 116-118.00A.

McClure, David L.; and Tweedie, Jeffrey D. Object compacting device. 3,960,070, Cl. 100-49.000.

McClure, Randall D.; and Marques, Jerry G., to Caterpillar Tractor Co. Sound attenuating engine enclosure. 3,960,238, Cl. 181-33.00K.

McCollum, John D.; and Quick, Leonard M., to Standard Oil Company. Process for upgrading a hydrocarbon fraction. 3,960,706, Cl. 208-112.000.

McCollum, John D.; and Quick, Leonard M., to Standard Oil Company. Process for upgrading a hydrocarbon fraction. 3,960,708, Cl. 208-121.000.

McCormick, John B., to Lawrence Peska Associates, Inc., a part interest. Garden tractor. 3,960,231, Cl. 180-19.00R.

McCoy, Thomas E.: *See—*
Haughton, Paul F.; and McCoy, Thomas E., 3,960,275.

McCulloch Corporation: *See—*
Anderson, Harold E.; and Kiner, Gerald T., 3,960,128.

McDonnell Douglas Corporation: *See—*
Holmes, Richard N., 3,960,236.

Mc Elwain, James A., to Houdaille Industries, Inc. Punch press. 3,960,372, Cl. 269-320.000.

McFadden, Eldon C. Pipe lining apparatus. 3,960,644, Cl. 156-390.000.

McGraw-Edison Company: *See—*
Irelan, Edward A.; Dorheim, David W.; and Robotham, William Frederick, 3,959,878.

McKenzie, Carl O. Molasses feed block for animals and method of making same. 3,961,081, Cl. 426-658.000.

McKenzie, Ian, to Clark Equipment Company. Compact tree clamp. 3,960,371, Cl. 269-55.000.

McLeod, Andrew John: *See—*
Lindley, John; and McLeod, Andrew John, 3,959,978.

McMillen, Clarence: *See—*
Hearn, Ralph E.; and McMillen, Clarence, 3,961,120.

McMinn, Robert E.: *See—*
Ebeling, Harold O.; and McMinn, Robert E., 3,960,519.

McMorris, Arthur H.: *See—*
Ahlgren, Erick L.; McMorris, Arthur H.; Miille, Jerry L.; and Schweppe, Joseph L., 3,960,072.

McNamee, Anthony. Flexible coupling. 3,959,988, Cl. 64-15.00B.

McNaney, Joseph T. Light optic data handling system. 3,960,440, Cl. 350-161.000.

McNeely, William H.: *See—*
Kang, Kenneth Suk; and McNeely, William H., 3,960,832.

McTaggart, Larry S., to Minnesota Mining and Manufacturing Company. Thermoformed polyester articles having impact resistance and high temperature dimensional stability. 3,960,807, Cl. 260-40.00R.

McWatters, William Andrew. Dredge ladder shock mounting arrangement. 3,959,898, Cl. 37-72.000.

Medendorp, Roger L., to Kirkhof Manufacturing Corporation. Container molding apparatus. 3,960,471, Cl. 425-388.000.

Medical Development Corporation: *See—*
Holbrook, Legrand K.; and Sturdevant, Gary F., 3,960,165.

Mehta, Manankumar S.: *See—*
Bakke, Even; Witte, Michael; and Mehta, Manankumar S., 3,960,687.

Meienhofer, Johannes Arnold, to United States of America, Health, Education and Welfare. Catalytic hydrogenolysis of protected sulfur containing peptides. 3,960,828, Cl. 260-112.50R.

Meinert, Norbert: *See—*
Bruemer, Heinz; Meinert, Norbert; and Spincic, Johann, 3,960,579.

Mekari, Milad H. Cooling system. 3,959,971, Cl. 60-517.000.

Melnick, Igor: *See—*
Lazzari, Jean-Pierre; and Melnick, Igor, 3,961,299.

Menke, John R.: *See—*
Boorse, Henry A.; Boeker, Gilbert F.; and Menke, John R., 3,960,468.

Mennen, Frederick C.: *See—*
Smith, David M.; and Mennen, Frederick C., 3,959,955.

Menzel, Walter: *See—*
Mayer, Rolf; and Menzel, Walter, 3,960,071.

Mercier, Jacques H. Pressure vessel. 3,960,178, Cl. 138-30.000.

Merck & Co., Inc.: *See—*
Engelhardt, Edward L.; and Remy, David C., 3,960,974.
Novello, Frederick C., 3,960,854.
Prugh, John D., 3,960,872.

Merianos, John J.; and Adams, Phillip, to Millmaster Onyx Corporation. Amino derivatives of tetrasubstituted benzene compounds. 3,960,538, Cl. 71-67.000.

Merianos, John J.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,961,042.

Merson, Karol J. W., to Wonder Steel Manufacturing International (Ontario) Limited. Combined spacer and transverse reinforcing beam. 3,959,942, Cl. 52-551.000.

Meshkov, Jury Yakovlevich: *See—*
Filatov, Nikolai Grigorievich; Gridnev, Vitaly Nikiforovich; Gavriljuk, Valentin Gennadievich; Meshkov, Jury Yakovlevich; Mashlenko, Felix Isaakovich; Mikhailov, Konstantin Vasilievich; Fedorov, Valery Ionovich; Marchenko, Vladimir Zakharovich; Lyskov, Ivan Konstantinovich; and Budilovsky, Viktor Alexandrovich, 3,959,999.

Mesur-Matic Electronics Corporation: *See—*
Newell, Harold R., 3,961,232.

Metallgesellschaft Aktiengesellschaft: *See—*
Rudolph, Paul; and Supp, Emil, 3,959,972.
Schmalfeld, Paul; Sauter, Dieter; and Cappel, Fred Erich, 3,960,543.

Metcalf, Brian Walter; and Jung, Michel, to Richardson-Merrell Inc. Olefinic derivatives of amino acids. 3,960,927, Cl. 260-471.00A.

Meyer, Alfred: *See—*
Kroebel, Reinhard; and Meyer, Alfred, 3,960,762.

Meyer, Paul, to Lawrence Peska Associates, Inc., a part interest. Whistling scaling toy. 3,959,916, Cl. 46-74.00D.

Meyer, Roth & Pastor Maschinenfabrik GmbH: *See—*
Wust, Toni, 3,959,965.

Meylan, Pierre, to BBC Brown Boveri & Company Limited. Apparatus for controlling steam blocking at stuffing boxes for steam turbine shafting. 3,959,973, Cl. 60-657.000.

Michaelis, David E., to Plastics Development Corporation of America. Simulated wood panel. 3,961,118, Cl. 428-151.000.

Michaels, Thomas B.: *See—*
Rodek, Victor; and Michaels, Thomas B., 3,961,236.

Michel, Max: *See—*
Fort, Jean-Paul; and Michel, Max, 3,960,772.

Mickley, Harold S., to Stauffer Chemical Company. Process for preparing hydrogen sulfide. 3,961,035, Cl. 423-563.000.

Microlife Technics, Inc.: *See—*
Olsen, Ronald H.; and Rothchild, Harold, 3,960,664.

Microseal Corporation: *See—*
Anderson, Thomas P., 3,959,907.

Middlemark, Marvin P. Elongated television receiving antenna for indoor use. 3,961,332, Cl. 343-802.000.

Mihic, Wlajko. Clamping arrangement for a cutting tool. 3,959,861, Cl. 29-96.000.

Miille, Jerry L.: *See—*
Ahlgren, Erick L.; McMorris, Arthur H.; Miille, Jerry L.; and Schweppe, Joseph L., 3,960,072.

Mika, Paul L.; Rothlisberger, Kurt; and Vee, Richard F., to Teletype Corporation. Apparatus for cleaning an informational tape. 3,961,375, Cl. 360-137.000.

Mika, Paul L.: *See—*
Herbst, Wayne R.; and Mika, Paul L., 3,961,368.

Mikhailov, Konstantin Vasilievich: *See—*
Filatov, Nikolai Grigorievich; Gridnev, Vitaly Nikiforovich; Gavriljuk, Valentin Gennadievich; Meshkov, Jury Yakovlevich; Mashlenko, Felix Isaakovich; Mikhailov, Konstantin Vasilievich; Fedorov, Valery Ionovich; Marchenko, Vladimir Zakharovich; Lyskov, Ivan Konstantinovich; and Budilovsky, Viktor Alexandrovich, 3,959,999.

Miklas, Edward J.: *See—*
Christmann, Harold F.; and Miklas, Edward J., 3,960,767.

Miles Laboratories, Inc.: *See—*
White, Fred K., 3,960,499.
White, Fred K., 3,961,346.

Milkovic, Miran, to General Electric Company. Single phase 3-wire electronic electrical energy meter. 3,961,257, Cl. 324-142.000.

Miller, David J.: *See—*
Wiewiorowski, Tadeusz K.; and Miller, David J., 3,961,030.

Miller, Edward F.: *See—*
Cullen, William P.; Chafetz, Harry; and Miller, Edward F., 3,960,889.

Miller, Frederick W., III, to Extracorporeal Medical Specialties Inc. Embossed support for dialyzer membrane. 3,960,730, Cl. 210-321.00A.

Miller Industries, Inc.: *See—*
Marquardt, Robert J., 3,959,849.

Miller, Robert C.; and Hackett, Barrie H., to Safeway Products Inc. Electrical radiant heater panel. 3,961,157, Cl. 219-345.000.

Miller, Thomas J. Boat transport anchoring means. 3,960,301, Cl. 224-42.10R.

Millmaster Onyx Corporation: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,961,042.
Merianos, John J.; and Adams, Phillip, 3,960,538.

Mills, Jeffrey P., to GTE Automatic Electric Laboratories Incorporated. PCM tone receiver using optimum statistical technique. 3,961,167, Cl. 235-152.000.

Minakuchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Output retaining electronic circuit. 3,961,207, Cl. 307-273.000.

Minchom Magnetic Systems Limited: *See—*
Minchom, Raphael Isaac, 3,961,244.

Minchom, Raphael Isaac, to Minchom Magnetic Systems Limited. Magnetizing means for a magnetic flaw detector including a charging and discharging circuit. 3,961,244, Cl. 324-38.000.

Mindlin, Raymond David: *See—*
Nagata, Takashi; and Mindlin, Raymond David, 3,961,210.

Mine Safety Appliances Company: *See—*
Hough, William Vernon; Guibert, Clarence Robert; and Hefferan, Gerald Thomas, 3,961,017.

Minks, Werner; and Zebisch, Manfred W., to International Standard Electric Corporation. Electrical connector. 3,960,436, Cl. 339-221.00M.

Minnesota Mining and Manufacturing Company: *See—*
Close, James R.; Wood, William P.; Hatch, Robert A.; and Johnson, James R., 3,959,865.
Fisch, Richard S.; and Newman, Norman, 3,960,565.
Hansen, Robert L., 3,960,950.
Knapp, Philip B., 3,960,292.
McTaggart, Larry S., 3,960,807.

Mino, Junryo: *See—*
Homma, Itomi; Mino, Junryo; and Kunikawa, Kenzo, 3,960,744.

Minolta Camera Kabushiki Kaisha: *See—*
Hamaguchi, Hiroshi, 3,960,306.
Ogawa, Masaya; Wada, Kenichi; and Yasue, Yoshihiko, 3,960,446.
Sahara, Masayoshi, 3,961,338.
Sekida, Minoru, 3,961,347.

Minuto, Maurice A. Method of making silicone polymer with fillers dispersed therein and using same to make silicone rubber. 3,960,804, Cl. 260-37.0SB.

Mironov, Nikolai Petrovich: *See—*
Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Bugaenko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, 3,960,682.

Miskel, John J., Jr.: *See—*
Kelley, Joseph M.; and Miskel, John J., Jr., 3,960,987.

Mitchell, Neal L., to Chevron Research Company. Method and apparatus for performing sequentially timed operations in a well. 3,960,215, Cl. 166-315.000.

Mitchell, Neal L.: *See—*
Hutchison, Stanley O.; and Mitchell, Neal L., 3,960,211.

Mitoff, Stephan P.; Powers, Robert W.; and Breiter, Manfred W., to General Electric Company. Battery casing and hermetically sealed sodium-sulfur battery. 3,960,596, Cl. 136-6.0FS.

Mitrovic, Milan: *See—*
Maestrone, Gian Paolo; and Mitrovic, Milan, 3,961,068.

Mitsubishi Chemical Industries Ltd.: *See—*
Suzuki, Yoshiaki; Mori, Hajime; and Nakanome, Takemi, 3,960,976.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Matsuura, Hiroshi; Ishimoto, Kazuo; and Yasukuni, Takashi, 3,960,198.

Mitsubishi Mining & Cement Company, Ltd.: *See—*
Tachibana, Kan-ichi; Nishioka, Michihiro; Uchida, Akio; and Ono, Mikiya, 3,961,225.

Mitsui Mining & Smelting Co., Ltd.: *See—*
Nomura, Etsuji; Aramaki, Masaharu; and Nishimura, Yuji, 3,960,681.

Mitsui Shipbuilding & Engineering Co., Ltd.: *See—*
Suzuki, Hideo, 3,960,101.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Tsujimoto, Michihiro; Nishizawa, Tsutomu; and Okubo, Ichiro, 3,960,479.

Mix, Konrad: *See—*
Heinrich, Ernst; Mix, Konrad; and Ribka, Joachim, 3,960,480.

Miyahara, Kingo, to Dowa Co., Ltd. Handle for opening and closing a door. 3,960,396, Cl. 292-347.000.

Miyamoto, Masaki: *See—*
Isukamoto, Hiroji; Morikawa, Hisashi; Nakagawa, Masao; Kato, Shinji; Miyamoto, Masaki; Yoda, Toichiro; and Yoshihara, Katsuhiko, 3,960,787.

Miyazaki, Kensaku, to Olympus Optical Co., Ltd. Light path switching indicator for optical instruments. 3,961,348, Cl. 354-289.000.

Miyazaki, Nobuto: *See—*
Chino, Shigeru; Miyazaki, Nobuto; and Takahashi, Tadaya, 3,960,176.

Miyosawa, Yoshiaki; and Umemoto, Sueo, to Kansai Paint Company, Ltd. Coating process for aluminum and aluminum alloy. 3,960,676, Cl. 204-38.00A.

Mizote, Hiroyuki: *See—*
Fukumaru, Toshitsugu; Kobayashi, Kenji; Mizote, Hiroyuki; Inaba, Shigeho; and Yamamoto, Hisao, 3,961,066.

Mizukoshi, Kaoru: *See—*
Sato, Kuniaki; Toyama, Kozo; Saheki, Toshio; Mizukoshi, Kaoru; and Suzuki, Shuei, 3,960,458.

Moan, Kenneth L.; and Pei, Yu Kun, to Owens-Illinois, Inc. Solar energy collection system. 3,960,136, Cl. 126-271.000.

Mobil Oil Corporation: *See—*
Allen, Paul T., 3,960,520.
Garwood, William E.; and Wise, John J., 3,960,705.
Givens, Edwin N.; Plank, Charles J.; and Rosinski, Edward J., 3,960,978.
Gross, Benjamin; Jacob, Solomon M.; Nace, Donald M.; and Voltz, Sterling E., 3,960,707.
Huvar, Arthur J., 3,961,043.
Moffitt, Myron L., 3,960,636.

Mochizuki, Hiroshi: *See*—
Yoda, Naoya; Yoshi-i, Toshiya; Fujita, Saburo; Mochizuki, Hiroshi; Yumoto, Hirosuke; Kurihara, Masaru; Kubota, Takashi; Dokoshi, Noriaki; and Tanaka, Chiaki, 3,961,009.

Modine Manufacturing Company: *See*—
Frost, Donald J., 3,959,867.

Moffitt, Myron L., to Mobil Oil Corporation. Method and apparatus for the production of shear seals in thermoplastic materials. 3,960,636, Cl. 156-290.000.

Mohndruck Reinhard Mohn OHG: *See*—
Gustavs, Helmut; and Dudziak, Ernst, 3,960,081.

Molenaar, Arian; and Jonker, Hendrik, to U.S. Philips Corporation. Physical development process utilizing a physical developer containing a specific reducing agent, a thiol compound. 3,960,564, Cl. 96-48.0PD.

Moller, Paul S., to Discojet Corporation. Torque converter. 3,960,036, Cl. 74-802.000.

Monarch Marking Systems, Inc.: *See*—
Hamisch, Paul H., Jr.; and Makley, James A., 3,960,642.

Monroe Belgium N.V.: *See*—
Keijzer, Johan H.; Pierle, Willy R. J.; and Van de Voorde, G., 3,960,385.

Monsanto Company: *See*—
Campbell, Charles R.; Danly, Donald E.; and Mueller, Werner H., 3,960,679.
Fantl, Joel; and Martins, Joseph G., 3,960,485.
Lonning, Thor J. G., 3,959,895.

Montanari, Roberto. Chemical compounds for trichomoniasis and candidiosis treatment. 3,960,882, Cl. 424-273.000.

Montedison S.p.A.: *See*—
Ribaldone, Giuseppe; Borsotti, Giampiero; and Gonzati, Franco, 3,960,866.

Montgomery, Theodore, to Wise, Wayne T., a part interest. Fishing signal device. 3,959,910, Cl. 43-17.000.

Moore, Samuel D., to Texas Instruments Incorporated. Programmable phase coded surface wave device. 3,961,290, Cl. 333-30.00R.

Moran, James: *See*—
Conway, Bernard W.; and Moran, James, 3,960,652.

Morawetz, Gottfried; and Buxbaum, Lothar, to Ciba-Geigy AG. Solid phase polyester polycondensation. 3,960,817, Cl. 260-75.00M.

Moreau, Wayne M.: *See*—
Gipstein, Edward; Moreau, Wayne M.; and Need, Omar U., III, 3,961,099.

Morehead, Charles D.: *See*—
Lee, David C., 3,959,912.

Morehouse, Industries, Inc.: *See*—
Szkaradek, Edward J., 3,960,331.

Morelli, Morello: *See*—
Piccinini, Carlo; Morelli, Morello; and Rebora, Pierluigi, 3,960,775.

Morgan, David Frederick, to Eaton Corporation. Controller for fluid pressure operated devices providing high pressure to an auxiliary device. 3,960,234, Cl. 180-132.000.

Mori, Hajime: *See*—
Suzuki, Yoshiaki; Mori, Hajime, and Nakanome, Takemi, 3,960,976.

Mori, Mitsuo; and Ohashi, Kengo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for driving detaching rollers in textile combing machines. 3,960,024, Cl. 74-52.000.

Morikawa, Hisashi: *See*—
Isukamoto, Hiroji; Morikawa, Hisashi; Nakagawa, Masao; Kato, Shinji; Miyamoto, Masaki; Yoda, Toichiro; and Yoshihara, Katsuhiko, 3,960,787.

Morin, Otto: *See*—
Kirk, Donald C., Jr.; and Morin, Otto, 3,960,425.

Morioka, Makoto: *See*—
Kawamura, Masao; Ito, Kazuhiro; Morioka, Makoto; Ono, Yuichi; Ishioka, Sachio; and Kurata, Kazuhiro, 3,960,618.

Morioka, Yuji; and Dejima, Shigeo, to Sanyo Electric Co., Ltd. Alkaline battery. 3,960,603, Cl. 136-135.00R.

Morisaki, Nobukazu, to Daido Metal Company, Ltd. Pulse time interval measuring system. 3,961,258, Cl. 324-189.000.

Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Hattori, Yoshinori; Kobari, Sadami; and Matsuda, Tetsuo, to Toyo Jozo Co., Ltd. Process for encapsulation of medicaments. 3,960,757, Cl. 252-316.000.

Morishita, Masataka: *See*—
Matsuda, Tetsuo; Yamaguchi, Tsutomu; Fujii, Tadashiro; Matsumoto, Kunio; Morishita, Masataka; Fukushima, Mitsuru; and Shibuya, Yuzo, 3,960,662.

Morita, Tomijiro; Kobayashi, Akio; Funahashi, Isao; Matsuda, Toshiharu; Naoki, Makoto; Kawamata, Naoyuki; and Fukui, Jun, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for removing sulfur dioxide from combustion exhaust gas. 3,961,021, Cl. 423-242.000.

Moriyama, Akio; Fukai, Masakazu; and Asai, Komei, to Matsushita Electric Industrial Co., Ltd. Electro-optical display. 3,960,750, Cl. 252-299.000.

Moriyama, Akio; Fukai, Masakazu; Tatsuta, Hiroshi; and Takahashi, Hiroaki, to Matsushita Electric Industrial Co., Ltd. Electro-optical display element. 3,960,751, Cl. 252-299.000.

Morley Studios: *See*—
High, Cliff R.; and Brotman, Morley, 3,960,257.

Morozov, Boris Sergeevich: *See*—
Fridlyander, Iosif Naumovich; Yatsenko, Konstantin Petrovich; Nekrasova, Galina Anatolievna; Gulin, Alexandr Nikolaevich; Semenova, Zoya Grigorievna; Sidorov, Nikolai Grigorievich; Morozov, Boris Sergeevich; Krichevsky, Efrem Julievich; Zakharova, Tatyana Alexandrovna; and Sarycheva, Raisa Grigorievna, 3,960,551.

Morris, Arthur: *See*—
Jones, Eileen; Morris, Arthur; Thomas, Ieuan; and Traynor, James Rodney, 3,960,819.

Morrison, Stanley Roy; and Freund, Thomas, to Stanford Research Institute. Stabilized pigment and method for producing the same. 3,960,589, Cl. 106-296.000.

Morrow, Duane L.: *See*—
Wirt, Leslie S.; and Morrow, Duane L., 3,960,004.

Morrow, James B.: *See*—
Dicks, Mason L.; and Morrow, James B., 3,960,715.

Morrow, James J.; and Dailey, Leo L., to Fischer & Porter Co. Technique for continuously analyzing the concentration of ozone dissolved in water. 3,960,673, Cl. 204-1.00R.

Mort, Paul R., Jr.; and Cleary, Robert A., to Syncro-Motion Corporation. Bottom labeling apparatus. 3,960,640, Cl. 156-351.000.

Mosimann, Hans; Heim, Peter; and Borer, Charles, to Schweizerische Isola-Werke. Heat-resistant adhesive lacquers as wire coatings. 3,960,799, Cl. 260-30.200.

Moss, Royston Arthur Leslie. Omnidirectional ultrasonic intrusion surveillance unit. 3,961,321, Cl. 340-258.00B.

Motorola, Inc.: *See*—
Briggs, Glenn E.; Beach, Edmund E.; and Chase, Walter P., 3,961,228.
Wiggenhorn, James T., 3,961,296.

Motter, John C., to Motter Printing Press Co. Method for deplating and replating rotogravure cylinders. 3,960,675, Cl. 204-25.000.

Motter Printing Press Co.: *See*—
Motter, John C., 3,960,675.

Moulin, Norbert L., to Hughes Aircraft Company. Connector assembly with axially operable engagement means. 3,960,429, Cl. 339-91.00R.

Muanyagipari Kutato Intezet: *See*—
Pataki, Zsuzsa, nee Nagy; Windisch, Ferenc; Nagy, Jozsef; Kecskemethy, Geza; and Virag, Gyorgy, 3,960,630.

Mudrak, Anton: *See*—
Hildering, Roelof; and Mudrak, Anton, 3,960,677.

Mueller, Karl Heinz; and Hubert, Hans-Juergen, to Schering Aktiengesellschaft. Process for the preparation of trialkyl aluminum compounds. 3,960,912, Cl. 260-448.00A.

Mueller, Werner H.: *See*—
Campbell, Charles R.; Danly, Donald E.; and Mueller, Werner H., 3,960,679.

Mugino, Yutaka: *See*—
Tomikawa, Masami; Tsunoda, Akiji; Kaneda, Kazuhisa; Ohkawa, Hideo; and Mugino, Yutaka, 3,960,722.

Muhlfeld, Hans P.: *See*—
Hurley, William J.; and Muhlfeld, Hans P., 3,961,251.

Muhlner, Karl: *See*—
Gutlhuber, Johann; Muhlner, Karl; and Klenk, Peter, 3,961,013.

Muir, David Michael: *See*—
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 3,961,028.

Muir, Thomas L.: *See*—
Davis, Richard W.; and Muir, Thomas L., 3,960,268.

Mukai, Junji: *See*—
Numata, Shunichi; Yokono, Hitoshi; Mukai, Junji; Muroi, Tadashi; Nakano, Mineo; and Manabe, Mikio, 3,960,982.

Muller-Frank, Ulrich: *See*—
Lohnert, Gunter; Muller-Frank, Ulrich; and Heil, Jurgen, 3,960,656.

Muller, Jacob: *See*—
Buhler, Erich, 3,960,185.

Muller, Peter: *See*—
Brandis, Curt; and Muller, Peter, 3,961,006.

Muller, Walter: *See*—
Mayr, Hubert; Presoly, Elfriede; Weinrotter, Ferdinand; Muller, Walter; Stern, Gerhard; and Frohner, Walter Mizzi, deceased, 3,960,541.

Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, to Bergwerksverband GmbH. Carbon-containing molecular sieves. 3,960,522, Cl. 55-68.000.

Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, to Bergwerksverband GmbH. Carbon-containing molecular sieves. 3,960,769, Cl. 252-444.000.

Murata, Moriyasu; Yamanaka, Makoto; and Sai, Fumio, to Kao Soap Co., Ltd. Non-caking alkyl ether sulfate-containing detergent composition. 3,960,780, Cl. 252-532.000.

Murata, Nobuyuki; and Saito, Makoto, to Sony Corporation. Static magnetic erasing head. 3,961,374, Cl. 360-118.000.

Muroi, Tadashi: *See*—
Numata, Shunichi; Yokono, Hitoshi; Mukai, Junji; Muroi, Tadashi; Nakano, Mineo; and Manabe, Mikio, 3,960,982.

Murray, Pierre Charles, to Illinois Tool Works Inc. Fastener feeding and driving attachment. 3,960,191, Cl. 144-32.00R.

Murray, William M. Compression bone staples and methods of compressing bone segments. 3,960,147, Cl. 128-92.00B.

Murrell, Nicholas John. Solid-state display for time-piece. 3,959,963, Cl. 58-50.00R.

Mutter, Manfred: *See*—
Bayer, Ernst; and Mutter, Manfred, 3,960,830.

Myer, Jon H., to Hughes Aircraft Company. Mechanically actuated magnetocrystalline counter. 3,961,316, Cl. 340-174.0TF.

Myers, David M.: *See*—
Lamping, Harold D.; and Myers, David M., 3,960,115.

Naas, Erling, to A/S Hydraulik Brattvaag. Winch drum provided with side flanges and a separate flange. 3,960,340, Cl. 242-117.000.

Nace, Barry J.: *See*—
Donovan, James W., 3,960,133.

Nace, Donald M.: *See*—
Gross, Benjamin; Jacob, Solomon M.; Nace, Donald M.; and Voltz, Sterling E., 3,960,707.

Naf, Ferdinand; Ohloff, Gunther; and Eschenmoser, Albert, to Firmenich S.A. Process for the preparation of poly-unsaturated hydrocarbons. 3,960,977, Cl. 260-677.00R.

Nagai, Yohei; and Kawamura, Kiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Keyboard arrangement having after-control signal detecting sensor in electronic musical instrument. 3,960,044, Cl. 84-1.010.

Nagasaka, Yukio: *See*—
Nishiumi, Yoshio; and Nagasaka, Yukio, 3,960,326.

Nagasawa, Takeshi; Kuroiwa, Katumasa; and Narita, Kouichi, to Nitto Boseki Co., Ltd. Process for acylation of amino, imino and hydroxyl groups using pyrimidine derivatives. 3,960,829, Cl. 260-112.50R.

Nagata, Masayoshi: *See*—
Suzuki, Gyoji; Nagata, Masayoshi; Tomotsu, Takeshi; and Ono, Hisatake, 3,960,559.

Nagata, Takashi; and Mindlin, Raymond David, to Matsushita Electric Industrial Co., Ltd. Piezoelectric dot resonator driven at a harmonic overtone. 3,961,210, Cl. 310-9.500.

Nagy, Jozsef: *See*—
Pataki, Zsuzsa, nee Nagy; Windisch, Ferenc; Nagy, Jozsef; Kecskemethy, Geza; and Virag, Gyorgy, 3,960,630.

Naidich, Herbert H., to United Technologies Corporation. High resolution sector scan radar. 3,961,329, Cl. 343-11.00R.

Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, to Bristol-Myers Company. Butirosin A 3'',5''-O-isopropylidene derivatives. 3,960,833, Cl. 260-210.0AB.

Najour, Gerald Costa; and Witt, Peter Ray, to Emery Industries, Inc. Flame resistant linear polyesters. 3,960,806, Cl. 260-40.00P.

Nakagawa, Masao: *See*—
Isukamoto, Hiroji; Morikawa, Hisashi; Nakagawa, Masao; Kato, Shinji; Miyamoto, Masaki; Yoda, Toichiro; and Yoshihara, Katsuhiko, 3,960,787.

Nakagawa, Susumu: *See*—
Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, 3,960,833.

Nakagawa, Yunosuke; and Sato, Koitsu, to Kao Soap Co., Ltd. Bleaching composition. 3,960,743, Cl. 252-99.000.

Nakajima, Mikio; and Kuwabara, Kiyoaki, to Nippon Carbide Kogyo Kabushiki Kaisha. Method for treating pulp-containing waste liquors. 3,960,648, Cl. 162-29.000.

Nakamura, Kenichiro: *See*—
Kuwagata, Masahiro; Yamada, Masao; Nakamura, Kenichiro; and Kawakami, Yorisada, 3,961,354.

Nakamura, Masao, to Dow Chemical Company, The. Plastic foam. 3,960,792, Cl. 260-2.50E.

Nakamura, Yoshuhara: *See*—
Sueyoshi, Tohru; Nakazawa, Yoshiyuki; Nakamura, Yoshuhara; Ohi, Reiichi; and Kondo, Tokiharu, 3,960,568.

Nakano, Mineo: *See*—
Numata, Shunichi; Yokono, Hitoshi; Mukai, Junji; Muroi, Tadashi; Nakano, Mineo; and Manabe, Mikio, 3,960,982.

Nakanome, Takemi: *See*—
Suzuki, Yoshiaki; Mori, Hajime; and Nakanome, Takemi, 3,960,976.

Nakao, Masaru: *See*—
Maruyama, Isamu; Yamamoto, Hisao; Nakao, Masaru; Sakai, Shigeru; Sasajima, Kikuo; Kitagawa, Sumio; and Inaba, Shigeho, 3,960,873.

Nakazawa, Tetsuo; and Nishida, Osamu, to Hitachi, Ltd. Process for regulating hardening speed of self-hardening mold. 3,960,798, Cl. 260-29.6BM.

Nakazawa, Yoshiyuki: *See*—
Sueyoshi, Tohru; Nakazawa, Yoshiyuki; Nakamura, Yoshuhara; Ohi, Reiichi; and Kondo, Tokiharu, 3,960,568.

Naoki, Makoto: *See*—
Morita, Tomijiro; Kobayashi, Akio; Funahashi, Isao; Matsuda, Toshiharu; Naoki, Makoto; Kawamata, Naoyuki; and Fukui, Jun, 3,961,021.

Narahari, Gattu, to Sycon Corporation. Wheel suspension system. 3,960,389, Cl. 280-697.000.

Nard Institute, Ltd.: *See*—
Ohotsubo, Junichirow, 3,960,920.

Nardi, Frank: *See*—
Schierholz, Edward A.; and Nardi, Frank, 3,960,349.

Narita, Kouichi: *See*—
Nagasawa, Takeshi; Kuroiwa, Katumasa; and Narita, Kouichi, 3,960,829.

Nash, John E.; and Reader, Trevor D., to Star Dental Manufacturing Co., Inc. Collet wrench. 3,960,039, Cl. 81-52.40R.

Nasir, Syed Shahid; and Wilken, Leon Otto, Jr., to Auburn Research Foundation. Method of tabletting using gluconolactone as the direct compression diluent. 3,961,004, Cl. 264-115.000.

National Airoil Burner Company, Inc.: *See*—
Straitz, John F., III; and Shakiba, Hosein M., 3,960,064.

National Can Corporation: *See*—
Dobias, Robert M.; Kmetz, Tibor; and Warnell, Walter C., 3,960,099.

National Petro Chemicals Corporation: *See*—
Aboutboul, Henri A.; Kirch, William; and Krekeler, Jerome H., 3,960,826.

National Semiconductor Corporation: *See*—
Davis, Clark W., 3,961,279.

National Starch and Chemical Corporation: *See*—
Wurzburg, Otto B.; Szymanski, Chester D.; and Kruger, Leo, 3,961,045.

National Steel Corporation: *See*—
Manzonelli, Carmen C.; and Blossey, Robert G., 3,960,607.

Naus, Hubert W.; and Hawkins, John L., Jr., to International Telephone and Telegraph Corporation. Electrical connector. 3,960,428, Cl. 339-90.00R.

Navi, Menashe, to ANPA Research Institute. Folded article dispensing machine. 3,960,291, Cl. 221-36.000.

Nawazima, Takeaki: *See*—
Kometani, Yutaka; Koizumi, Shun; Kubota, Kazuo; and Nawazima, Takeaki, 3,960,651.

NCR Corporation: *See*—
Gordy, Robert S., 3,961,288.
Speraw, Floyd G.; Hess, Thomas M.; and Sampson, Harold J., 3,960,420.

Neale, Patrick S., to Goodyear Tire & Rubber Company, The. Balanced three-ply bias tire. 3,960,194, Cl. 152-355.000.

Need, Omar U., III: *See*—
Gipstein, Edward; Moreau, Wayne M.; and Need, Omar U., III, 3,961,099.

Nekrasova, Galina Anatolievna: *See*—
Fridlyander, Iosif Naumovich; Yatsenko, Konstantin Petrovich; Nekrasova, Galina Anatolievna; Gulin, Alexandr Nikolaevich; Semenova, Zoya Grigorievna; Sidorov, Nikolai Grigorievich; Morozov, Boris Sergeevich; Krichevsky, Efrem Julievich; Zakharova, Tatyana Alexandrovna; and Sarycheva, Raisa Grigorievna, 3,960,551.

Nelson Research & Development Company: *See*—
Snyder, Solomon H., 3,961,073.

Nelson, Thomas N. Carrying case for darts. 3,960,271, Cl. 206-315.00R.

Nerio, Arnif G. Manually propelled toy snow vehicle. 3,960,387, Cl. 280-12.140.

Netting, David I.; and Hertzenberg, Elliot P., to Philadelphia Quartz Company. Method of preparing modified hollow, largely spherical particles by spray drying. 3,960,583, Cl. 106-122.000.

Neubrand, Franz, to Daimler-Benz Aktiengesellschaft. Regenerative heat exchanger of a gas turbine. 3,960,209, Cl. 165-8.000.

New Registon Company, Limited, The: *See*—
Ukita, Junichi, 3,960,517.

Newell, Harold R., to Mesur-Matic Electronics Corporation. Hybrid step motor system. 3,961,232, Cl. 318-46.000.

Newhall, William F., to Amchem Products, Inc. Limonene derivatives used in growth inhibition and plant abscission processes. 3,960,539, Cl. 71-76.000.

Newington, Timothy John; and van der Walt, Nicolaas Tjaart. Fire detector having means for heating the support member of an electrode to prevent formation of moisture thereon. 3,961,195, Cl. 250-385.000.

Newman, Norman: *See*—
Fisch, Richard S.; and Newman, Norman, 3,960,565.

NHK Spring Co., Ltd.: *See*—
Shiguma, Heijiro; and Suzuki, Shigekazu, 3,959,931.

Nichols, Dennis R.: *See*—
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Nichols, Mary Ellen: *See*—
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Nicksch, Alfar: *See*—
Eibl, Hansjorg; and Nicksch, Alfar, 3,960,905.

Niemeyer, Juergen: *See*—
Hagen, Helmut; and Niemeyer, Juergen, 3,960,862.

Nienow, James O.; and Yundt, Deryl S., to Roofmaster Inc. Portable heating and spraying apparatus and method for applying highly viscous coating material. 3,960,325, Cl. 239-13.000.

Nigata Engineering Co., Ltd.: *See*—
Chino, Shigeru; Miyazaki, Nobuto; and Takahashi, Tadaya, 3,960,176.

Nikeshichev, Jury Nikolaevich: *See*—
Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Bugaenko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, 3,960,682.

Nikeshichev, Jury Nikolaevick: *See*—
Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Bugaenko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, 3,960,682.

Nikkel, Willem A.: *See*—
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Nikolov, Ivan Dimov: *See—*
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Niltec Corporation: *See—*
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Nims, Jerry Curtis: *See—*
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Nintendo Co., Ltd.: *See—*
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Nippon Carbide Kogyo Kabushiki Kaisha: *See—*
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Nippon Electric Company Limited: *See—*
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Ohyama, Miyoji; Uchida, Yushi; and Onodera, Tateo, 3,961,135.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Gohsei Kagaku Kabushiki Kaisha: *See—*
Sekiyama, Kunihiko; Taga, Yasuyoshi; and Fujita, Shigemi, 3,960,939.

Nippon Kogaku K.K.: *See—*
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Nippon Mining Co., Ltd.: *See—*
Yasui, Hiroshi; Kyono, Iwao; Aoki, Hideo; and Manabe, Haruo, 3,961,031.

Nippon Steel Corporation: *See—*
Kaku, Katsuo; Yoshimura, Hirofumi; Yada, Hiroshi; and Yamada, Naoomi, 3,960,612.

Nippon Zeon Co., Ltd.: *See—*
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Nippondenso Co., Ltd.: *See—*
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Nisan Motor Co., Ltd.: *See—*
Aono, Shigeo; and Anzai, Makoto, 3,960,120.
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Nishida, Osamu: *See—*
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Nishimura, Kenji; Arai, Mikio; Sasahara, Kunihiro; and Nitanai, Takashi, to Interx Research Corporation. Effervescent enteric coated L-dopa formulation and method of using the same. 3,961,041, Cl. 424-35.000.

Nishimura, Yoichi: *See—*
Sanga, Seiji; and Nishimura, Yoichi, 3,960,760.

Nishimura, Yuji: *See—*
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Nishino, Yukishige: *See—*
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Nishioka, Michihiro: *See—*
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Nishiumi, Yoshio; and Nagasaka, Yukio, to Atom Chemical Paint Co., Ltd. Apparatus for paint application. 3,960,326, Cl. 239-214.000.

Nishizawa, Tsutomu: *See—*
Tsujimoto, Michihiro; Nishizawa, Tsutomu; and Okubo, Ichiro, 3,960,479.

Nitanai, Takashi: *See—*
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Nitto Boseki Co., Ltd.: *See—*
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Nixdorf Computer AG: *See—*
Holland-Letz, Guenter, 3,960,304.

Noakes, John E., to Bicron Corporation. High efficiency scintillation detectors. 3,960,756, Cl. 252-301.180.

Noecker, Marshall V.; Thom, Kenneth C.; and Harp, Charles, Jr., to Kaufmann Window and Door Corporation. Tilt window. 3,959,926, Cl. 49-181.000.

Noel, Francois Gilbert. Vented umbrella. 3,960,162, Cl. 135-35.00V.

Nohda, Masao, to Nippon Kogaku K.K. Lens meter with target orthogonalizer. 3,960,450, Cl. 356-126.000.

Nohmi Bosai Kogyo Co. Ltd.: *See—*
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Nomura, Etsuji; Aramaki, Masaharu; and Nishimura, Yuji, to Mitsui Mining & Smelting Co., Ltd. Method for producing electrolytic high purity lead using large-sized electrodes. 3,960,681, Cl. 204-114.000.

Nord, Eric T., to Nordson Corporation. Thermoplastic dispenser. 3,960,296, Cl. 222-146.0HE.

Nordgren, Peter, to AB Gustavsbergs Fabriker. Improvements in and relating to dry closets. 3,959,829, Cl. 4-131.000.

Nordin, Lars-Erik: *See—*
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Nordson Corporation: *See—*
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Nord, Eric T., 3,960,296.

Nordstrom, Kjell Helge, to Transearch AB. Shear beam load cell. 3,960,228, Cl. 177-211.000.

Noren, Carl Anders, to Atlas Copco Aktiebolag. Cutters and methods of cutting. 3,960,407, Cl. 299-17.000.

Norman, Lowell R. Portable structure. 3,960,161, Cl. 135-1.00R.

Norris, Gary G.: *See—*
Beatty, Bobby D.; Daniel, Russell D.; Humerickhouse, Billy J.; and Norris, Gary G., 3,960,087.

Norris, J. Robert, Jr.; and Wasserman, Noa, to Norris, J. Robert, Jr.; and Wasserman, Noa. Message display system. 3,959,906, Cl. 40-125.00A.

Norris, Kenneth Edward. Incipient shear pin failure indicating means. 3,960,456, Cl. 403-27.000.

North American Culvert Corporation: *See—*
Harris, Barron M., Sr.; and Johnson, Doyle F., 3,960,111.

North Electric Company: *See—*
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Northern Electric Company Limited: *See—*
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Iyengar, Rama, 3,960,530.

Norton Company: *See—*
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Nos, Rudolph, to Lawrence Peska Associates, Inc., a part interest. Inflatable air mattress. 3,959,835, Cl. 5-368.000.

Nothern Electric Company Limited: *See—*
MacKenzie, Morley Scott; Charron, Louis Donald; Dooley, Andrew Philip Charles; and Lee, John Davidson, 3,960,431.

Novanex Automation N.V.: *See—*
Laupman, Robert Ronald, 3,961,278.

Novello, Frederick C., to Merck & Co., Inc. 7-Mercapto(or thio)-benzothiadiazine products. 3,960,854, Cl. 260-243.00D.

Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt.: *See—*
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Nuclear Diagnostics, Inc.: *See—*
DiGiulio, Walter, 3,960,492.

Numata, Saburo; and Fujino, Shinichiro, to Fuji Photo Optical Co., Ltd. Automatic shutter speed control means for a camera. 3,961,341, Cl. 354-51.000.

Numata, Shunichi; Yokono, Hitoshi; Mukai, Junji; Muroi, Tadashi; Nakano, Mineo; and Manabe, Mikio, to Hitachi, Ltd.; and Hitachi Chemical Company, Ltd. Thermosetting resins. 3,960,982, Cl. 260-838.000.

Nuova San Giorgio S.p.A.: *See—*
Bertagnoli, Leopoldo, 3,959,994.

Nussbaum, Lucian. Apparatus for brazing hardened tips to surfaces. 3,960,310, Cl. 228-6.00R.

Nutzel, Karl: *See—*
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N.V. Hollandse Signaalapparaten: *See—*
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Nylint Corporation: *See—*
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Nyrkova, Valentina Georgievna: *See—*
Gortinskaya, Tatyana Vladimirovna; Mashkovsky, Mikhail Davidovich; Polezhaeva, Antonina Ivanovna; Nyrkova, Valentina Georgievna; Bondar, Larisa Nikolaevna; Litova, Galina Nikolaevna; Schukina, Maria Nikolaevna, deceased; and Preobrazhenskaya, Maria Nikolaevna, administrator, 3,961,058.

Nysted, Leonard N., to G. D. Searle & Co. 6-Aminomethylated 3-oxygenated cholest-5-enes. 3,960,904, Cl. 260-397.200.

Oaks, Seibert S.: *See—*
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Oates, William Lee, to RCA Corporation. Method of assembling a liquid crystal cell. 3,960,534, Cl. 65-43.000.

O'Brien, Robert J.; Lelewski, Stanley, Jr.; and LaFleur, Bob A., to Eastman Kodak Company. Method for producing improved electrographic developer. 3,960,738, Cl. 252-62.10P.

O'Brien, Rory Morgan: *See—*
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O'Connor, John Vincent; and Zolnick, Edmund Joseph, to Johns-Manville Corporation. Belling assembly and method of forming a bell end. 3,960,472, Cl. 425-393.000.

O'Connor, Sean J.: *See—*
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Oddicini, Giuseppe: *See—*
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Oettinger, Willi: *See—*
Ripperger, Willi; Oettinger, Willi; Kaiser, Rudolf; Pfitzner, Klaus; and Palm, Richard Adolf, 3,960,768.

Ogata, Yasuhiro; and Hayashi, Takao, to Fuji Photo Film Co., Ltd. Process for separating a number of sheets into groups. 3,960,638, Cl. 156-305.000.

Ogawa, Masaya; Wada, Kenichi; and Yasue, Yoshihiko, to Minolta Camera Kabushiki Kaisha. Electrostatic copying apparatus. 3,960,446, Cl. 355-13.000.

Ohashi, Kengo: *See—*
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Ohashi, Takashi: *See—*
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Ohhinata, Ichiro: *See—*
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Sueyoshi, Tohru; Nakazawa, Yoshiyuki; Nakamura, Yoshuhara; Ohi, Reiichi; and Kondo, Tokiharu, 3,960,568.

Ohigashi, Tugio; and Ariga, Junichi, to Matsushita Electric Industrial Co., Ltd. VHF-UHF switching mechanism of a television receiver. 3,961,265, Cl. 325-452.000.

Ohio State University Research Foundation, The: *See—*
Gassman, Paul G.; and Gruetzmacher, Gordon D., 3,960,926.

Ohkawa, Hideo: *See—*
Tomikawa, Masami; Tsunoda, Akiji; Kaneda, Kazuhisa; Ohkawa, Hideo; and Mugino, Yutaka, 3,960,722.

Ohkawa, Tetsusi: *See—*
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Ohlbaum, Robert H.: *See—*
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Ohloff, Gunther: *See—*
Naf, Ferdinand; Ohloff, Gunther; and Eschenmoser, Albert, 3,960,977.

Ohotsubo, Junichirow, to Nard Institute, Ltd. Process for the preparation of a saturated polycyclic carboxylic acid. 3,960,920, Cl. 260-464.000.

Ohtomo, Koichiro, to Kanebo, Ltd. Radiation shielding phenolic fibers and method of producing same. 3,961,123, Cl. 428-224.000.

Ohyama, Miyoji; Uchida, Yushi; and Onodera, Tateo, to Nippon Electric Company Limited. Synchronized demodulation system. 3,961,135, Cl. 178-7.30R.

Oishi, Yasushi; Ohi, Reiichi; and Kosuge, Yoshio, to Fuji Photo Film Co., Ltd. Color photographic silver halide light-sensitive materials. 3,960,570, Cl. 96-100.000.

Okada, Ichiro. Fabric-marking apparatus. 3,960,038, Cl. 81-9.220.

Okada, Masayasu; and Inoue, Hisao, to Hitachi, Ltd. Method of starting operation for a pump or a pump turbine. 3,960,463, Cl. 415-1.000.

Okaya Denki Sangyo Kabushiki Kaisha: *See—*
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Okubo, Ichiro: *See—*
Tsujimoto, Michihiro; Nishizawa, Tsutomu; and Okubo, Ichiro, 3,960,479.

Okuhara, Shinzi; and Ohhinata, Ichiro, to Hitachi, Ltd. Semiconductor integrated circuit device. 3,961,357, Cl. 357-50.000.

Okumura, Akio; Yokota, Yukio; Inouye, Kozo; Shiba, Keisuke; and Yamada, Minoru, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 3,960,571, Cl. 96-100.000.

Okuno, Noboru; Kamogawa, Toshiro; and Kamisaka, Kosei, to Matsushita Electric Industrial Co., Ltd. Video signal processing system for reproducing a video signal from a bandwidth limited recorded signal. 3,961,359, Cl. 358-4.000.

Olin Corporation: *See—*
Champion, Fred; and Kern, Thomas W., 3,960,694.
Gavin, David F., 3,960,963.
Kircher, Morton S.; and Engler, Maynard F., 3,960,697.
Knollmueller, Karl O., 3,960,913.
Kyi, Roland R., 3,960,869.
Saeman, Walter C., 3,960,502.

Olsen, Ronald H.; and Rothchild, Harold, to Microlife Technics, Inc. Bacterial product useful for making sausage. 3,960,664, Cl. 195-59.000.

Olson, Donald C., to Shell Oil Company. Electrochemical detector for lead alkyls. 3,960,690, Cl. 204-195.00R.

Olson, Gary Lee; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Process for producing a sulfone derivative of vitamin A alcohol. 3,960,967, Cl. 260-607.00R.

Olson, Richard A. Lawn sprinkler programmer. 3,960,327, Cl. 239-236.000.

Olson, Verl O.: *See—*
Walls, Earl L.; and Olson, Verl O., 3,959,883.

Olsson, Curt: *See—*
Isaksson, Conny; Nordin, Lars-Erik; Olsson, Curt; and Sahlin, Thorbjorn, 3,960,263.

Olympus Optical Co., Ltd.: *See—*
Fukuoka, Kenji, 3,961,165.
Miyazaki, Kensaku, 3,961,348.
Terada, Masaaki, 3,960,143.

O'Mant, Derrick Michael, to Imperial Chemical Industries Limited. Phenyl-thienyl-alkanoic acid derivatives and phenyl-furyl-alkanoic acid derivatives. 3,960,893, Cl. 260-332.20A.

Omodei-Sale', Amedeo: *See—*
Pifferi, Giorgio; Omodei-Sale', Amedeo; and Consonni, Pietro, 3,960,858.

O'Neil, Bryan L. Magnetic ski binding. 3,960,383, Cl. 280-612.000.

Ono, Hisatake: *See—*
Suzuki, Gyoji; Nagata, Masayoshi; Tomotsu, Takeshi; and Ono, Hisatake, 3,960,559.

Ono, Mikiya: *See—*
Tachibana, Kan-ichi; Nishioka, Michihiro; Uchida, Akio; and Ono, Mikiya, 3,961,225.

Ono, Yoshiaki, to Fuji Photo Film Co., Ltd. Diffusion transfer color film unit with hydroxy substituted alkylene amino development accelerators. 3,960,569, Cl. 96-77.000.

Ono, Yuichi: *See—*
Kawamura, Masao; Ito, Kazuhiro; Morioka, Makoto; Ono, Yuichi; Ishioka, Sachio; and Kurata, Kazuhiro, 3,960,618.

Onodera, Tateo: *See—*
Ohyama, Miyoji; Uchida, Yushi; and Onodera, Tateo, 3,961,135.

Orbaiceta, S.A.: *See—*
Ros, Bonifacio Echavarri, 3,960,167.

Orban, Ivan; Lind, Hanns; Brunetti, Heimo; and Rody, Jean, to Ciba-Geigy Corporation. Process for the preparation of 2,2,6,6-tetramethyl-4-oxopiperidine. 3,960,875, Cl. 260-293.890.

Oriolo, Enzo: *See—*
Holmes, Harold Edwin; and Oriolo, Enzo, 3,959,946.

Orlov, Naum Yakovlevich: *See—*
Sloevsky, Fedor Ignatievich; Orlov, Naum Yakovlevich; Gavrish, Petr Dmitrievich; and Rashesky, Anatoly Nikolaevich, 3,960,082.

Ormat Turbines (1965) Ltd.: *See—*
Bronicki, Lucien Y., 3,961,199.

Ormond, Alfred Newman. Platform load cell. 3,960,013, Cl. 73-141.00A.

Oroschakoff, Georgi. Mounting and/or fixing member for a reinforcement or reinforcing element for use in reinforced concrete structures. 3,959,944, Cl. 52-665.000.

Orth, Charles D.; and Treder, Charles F., to Controls Company of America. Pilot operated evaporator pressure regulator. 3,960,169, Cl. 137-491.000.

Orth, Gerhard: *See—*
Kaulig, Heinz; and Orth, Gerhard, 3,959,847.

Ortiz, Nilson, to Niltec Corporation. Airborne toy. 3,959,918, Cl. 46-86.00R.

Ostdiek, Arthur J.; and Cox, Lyndon S., to United States of America, Army. Null adjustable vortex rate sensor. 3,960,022, Cl. 73-505.000.

Ostrow, Paul F. Composite structural member. 3,960,637, Cl. 156-293.00R.

Oswald Forst Maschinenfabrik und Apparatebauanstalt GmbH: *See—*
Holstein, Herbert; and Farrenkothen, Armin, 3,960,056.

Otagoshi, Hitoshi, to Matsushita Electric Industrial Co., Ltd.; and Aoki Electric Industrial Co., Ltd. Portable battery operated electric light. 3,961,175, Cl. 240-10.630.

Otzen, Karl G., to Safety-Kleen Corporation. Disposable filter apparatus. 3,960,728, Cl. 210-167.000.

Ovshinsky, Stanford R.: *See—*
Klose, Peter H.; and Ovshinsky, Stanford R., 3,961,314.

Owens-Corning Fiberglas Corporation: *See—*
Maddux, John F., 3,961,126.

Owens-Illinois, Inc.: *See—*
Moan, Kenneth L.; and Pei, Yu Kun, 3,960,136.

Ozasa, Minoru: *See—*
Tsujikawa, Masahiro; Ozasa, Minoru; Takagi, Fumio; Hirai, Katsumi; Iwasaki, Akio; Imamura, Hiroshi; and Ueda, Testuhiro, 3,960,507.

P. Ferrero & C. S.p.A.: *See—*
Dogliotti, Amilcare, 3,961,089.

P. R. Mallory & Co., Inc.: *See—*
Kloenne, Ernest F.; and Patel, Kanti D., 3,961,327.
Ring, Thomas F., 3,960,105.

Pacanowsky, Eugene: *See—*
Dewitt, Ivan L.; and Pacanowsky, Eugene, 3,960,946.

Pacholok, Jaroslaw, to Bell & Howell Company. Shuttle guard for signature feeder. 3,960,373, Cl. 271-10.000.

Page Engineering Company: *See—*
Rangaswamy, Krishnaswamy, 3,959,899.

Pains-Wessex Limited: *See—*
Elstow, William Rupert Brooke; and Jennings, David Michael, 3,961,259.

Paitson, John Lloyd, to Western Geophysical Company of America. Depth controllers with controllable negative and uncontrollable positive lift-producing means. 3,961,303, Cl. 340-7.0PC.

Pallos, Ferenc M., to Stauffer Chemical Company. Bis-cycloalkylthiocarbamates. 3,960,917, Cl. 260-455.00A.

Palm, Richard Adolf: *See—*
Ripperger, Willi; Oettinger, Willi; Kaiser, Rudolf; Pfitzner, Klaus; and Palm, Richard Adolf, 3,960,768.

Panaccione, Elmer S.: *See—*
Heytmeijer, Herman R.; and Panaccione, Elmer S., 3,961,106.

Panferova, Alexandra Timofeevna: *See—*
Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Bugaenko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, 3,960,682.

Panicci, Richard L., to Kiddie Products, Inc. Latching receptacle lid. 3,960,289, Cl. 220-318.000.

Papajewski, Reinhold; and Holl, Helmer Heinz, to Singer Company, The. Thread wiper and tension release mechanism for securing machines. 3,960,098, Cl. 112-252.000.

Paris, Rene Antoine: *See—*
Dumont, Louis Claude; Paris, Rene Antoine; and Scharff, Claude Mathilde, 3,960,536.

Parish, Roger C., to SmithKline Corporation. 2,3-Bis-(3-acyl-2-thioureido)-pyridines. 3,961,063, Cl. 424-263.000.

Parke, Davis & Company: *See—*
Woo, Peter W. K., 3,960,837.

Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, to Anumin Pty. Limited. Method of producing cuprous sulfate and bisulfate solutions. 3,961,028, Cl. 423-41.000.

Parker, William H., to Del Norte Technology, Inc. Oil and gas well disaster valve control system. 3,961,308, Cl. 340-18.0NC.

Parks, Dewey P.; and Scott, Charles R., to Brunswick Corporation. Machine and method for making a laminate structure. 3,960,650, Cl. 162-103.000.

Parnes, Zinaida Naumovna: *See—*
Zavyalov, Sergei Ivanovich; Rodionova, Natalya Alexandrovna; Parnes, Zinaida Naumovna; Bolestova, Galina Ilinichna; Filippov, Vladimir Vasilievich; and Zheleznaya, Lidia Lvovna, 3,960,884.

Pars, Harry George: *See—*
Harris, Louis Selig; Pars, Harry George; Razdan, Raj Kumar; and Sheehan, John Clark, 3,960,871.

Parsels, David L., to Dow Corning Corporation. Method and apparatus for making elongated Si and SiC structures. 3,961,003, Cl. 264-81.000.

Parsons Controls Limited: *See—*
Buschini, Anthony Alan; and Swarsbrick, Douglas Edward, 3,959,909.

Parsons, H. William: *See—*
Shea, Yale R.; Thelen, Arthur B.; and Parsons, H. William, 3,959,943.

Parsons, Vivian. Invalid hammock. 3,959,832, Cl. 5-84.000.

Pasch, Lambert; and Wagemann, Heinz, to Uniroyal A.G. Transfer molding method. 3,961,014, Cl. 264-297.000.

Pascual, Roberto: *See—*
Varotto, Conrado F.; Audero, Miguel Angel; Vasallo, Daniel I.; Pascual, Roberto; and Ruffo, Hector J., 3,960,548.

Pasedach, Heinrich; and Friederang, Albrecht, to BASF Aktiengesellschaft. Manufacture of d,l-methol. 3,960,970, Cl. 260-631.00H.

Passalenti, Beppino: *See—*
Vargiu, Silvio; Carpaneti, Edoardo; and Passalenti, Beppino, 3,960,981.

Passavant-Werke Michelbacher Hutte: *See—*
Schmitt, Walti; and Kreiner, Philipp, 3,960,991.

Pataki, Zsuzsa, nee Nagy; Windisch, Ferenc; Nagy, Jozsef; Kecskemethy, Geza; and Virag, Gyorgy, to Muanyagipari Kutato Intezet; and Fovarosi Muanyagipari Vallalat. process and apparatus for the production of wound sandwich structures. 3,960,630, Cl. 156-190.000.

Patel, Kanti D.: *See—*
Kloenne, Ernest F.; and Patel, Kanti D., 3,961,327.

Patton, Thayer E. Combination temperature and pressure relief valve with energy cutoff switch. 3,961,156, Cl. 219-331.000.

Paules, Eugene H., to ExCel Engineering, Inc. Food packaging machine. 3,959,951, Cl. 53-162.000.

Paulus, Helmut: *See—*
Halberschmidt, Friedrich; Paulus, Helmut; and Feiten, Karl-Josef, 3,960,627.

Pavoni, Gustavo; Repossi, Enzo; and Loiudice, Mario, to Societa Italiana Telecomunicazioni Siemens S.p.A. Circuit arrangement for correcting slip errors in receiver of cyclic binary codes. 3,961,311, Cl. 340-146.10D.

Payet, George Louis, to Strike Corporation, The. Durable press process employing high mositure content fabrics. 3,960,482, Cl. 8-116.400.

Payet, George Louis, to Strike Corporation, The. Durable press process employing alkyl sulfonic or sulfuric acid. 3,960,483, Cl. 8-116.400.

Payne, Frank, to Robertshaw Controls Company. Pollutant emission control system and a combined electric switch and temperature responsive valve thereof. 3,960,124, Cl. 123-117.00A.

Payne, Robert A.; and Slobodzian, Gregory E., to Stewart-Warner Corporation. Color display device. 3,961,365, Cl. 358-56.000.

PCB Piezotronics, Inc.: *See—*
Chang, Nicholas D.; and Riggs, Michael T., 3,960,018.

Pearce, Bryan Robert; and Powell, Walter James, to Rolls-Royce (1971) Limited. Gas turbine engine. 3,959,966, Cl. 60-39.320.

Pedersen, Henning Kristen, to Gert Oestergaard, Vejle Plastic. Means for applying labels to a sheet material length. 3,960,641, Cl. 156-362.000.

Pei, Yu Kun: *See—*
Moan, Kenneth L.; and Pei, Yu Kun, 3,960,136.

Pelofsky, Arnold H.: *See—*
Rosen, Bernard H.; Pelofsky, Arnold H.; and Greene, Marvin, 3,960,700.

Pennwalt Corporation: *See—*
Inman, Charles Edward, 3,960,797.
Robinson, Donald Nellis; and Welsh, Charles Benjamin, 3,960,825.
Smith, Harold Vernon, deceased, 3,961,111.

Pepperman, Armand B., Jr.: *See—*
Daigle, Donald J.; Pepperman, Armand B., Jr.; and Vail, Sidney L., 3,961,110.

PEPRO, Societe pour le Developpement et la Vente de Specialites Chimiques: *See—*
Dumont, Louis Claude; Paris, Rene Antoine; and Scharff, Claude Mathilde, 3,960,536.

Perciaccante, Vincent Anthony: *See—*
Augurt, Thomas Anthony; Rosensaft, Michael Norman; and Perciaccante, Vincent Anthony, 3,960,152.

Perfect Equipment Corporation: *See—*
Songer, Hubert D., 3,960,409.

Perkins, Reginald Louis: *See—*
Walker, John A.; Dimitri, Dimitri S.; and Perkins, Reginald Louis, 3,961,336

Perrey, Hermann: *See—*
Knickel, Birger; Keifer, Siegfried; Perrey, Hermann; Rudolph, Hans; Rosenkranz, Hans Jurgen; and Rudisch, Reinhold, 3,960,590.

Perrin, Gunter, to Daimler-Benz Aktiengesellschaft. Engine exhaust brake for otto-engines operated with gas. 3,960,122, Cl. 123-97.00B.

Perry, John T.; and Schmutzer, Joel J., to Varian Associates. Heat unit integrator for X-ray tubes. 3,961,173, Cl. 235-184.000.

Peters, Werner: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,522.
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; and Zundorf, Dieter, 3,960,769.

Petersen, Rudolf Theodor; and Fleck, Wolfgang, to Beiersdorf Aktiengesellschaft. Phenoxyalkylamine containing pyridines. 3,960,878, Cl. 260-296.0AE.

Peterson, C. Lynn, to Peterson Filters and Engineering Co. Automatic filter level control by dilution with filtrate. 3,960,726, Cl. 210-77.000.

Peterson, C. Lynn; and Peterson, Clarence J., to Peterson Filters and Engineering Co. Flow conducting connectors for disc filter sectors and internal passages of filter shaft. 3,960,729, Cl. 210-232.000.

Peterson, Clarence J.: *See—*
Peterson, C. Lynn; and Peterson, Clarence J., 3,960,729.

Peterson Filters and Engineering Co.: *See—*
Peterson, C. Lynn, 3,960,726.
Peterson, C. Lynn; and Peterson, Clarence J., 3,960,729.

Peterson, William A., Jr., to Bendix Corporation, The. Start air control system. 3,960,130, Cl. 123-179.00A.

Petro-Tex Chemical Corporation: *See—*
Christmann, Harold F.; and Miklas, Edward J., 3,960,767.
Ellis, Michael C.; and Manning, Harold E., 3,960,776.
Manning, Harold E., 3,960,975.

Petrocci, Alfonso N.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,961,042.

Petrovic, Louis John: *See—*
Agarwal, Jagdish Chandra; Giberti, Richard Andre; and Petrovic, Louis John, 3,960,513.

Petrow, Henry G.; and Allen, Robert J. Colloidal sol antimony pentaoxide flameproofing compositions. 3,960,989, Cl. 260-884.000.

Petrushevskava, Valentina Sergeevna: *See—*
Petrushevsky, Georgy Sergeevich; and Petrushevskava, Valentina Sergeevna, 3,960,045.

Petrushevsky, Georgy Sergeevich; and Petrushevskava, Valentina Sergeevna. Register switching device for a reed musical instrument. 3,960,045, Cl. 84-376.0SM.

Petryaev, Petrovich Evgeny: *See—*
Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Bugaenko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, 3,960,682.

Petryoev, Evgeny Petrovich: *See—*
Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Bugaenko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, 3,960,682.

Pfitzner, Klaus: *See—*
Ripperger, Willi; Oettinger, Willi; Kaiser, Rudolf; Pfitzner, Klaus; and Palm, Richard Adolf, 3,960,768.

Pfizer Inc.: *See—*
Berg, Rudolph G., 3,960,901.
Cox, David Alexander; Danilewicz, John Christopher; Ham, Allan Leslie; Kemp, John Edward Glyn; and Snarey, Michael, 3,961,072.
Danilewicz, John Christopher; Kemp, John Edward Glyn; and Wright, James Robert, 3,960,861.
Kuhla, Donald E.; and Sarges, Reinhard, 3,961,065.
Kuhla, Donald E.; Sarges, Reinhard; and Wiedermann, Hans E., 3,961,067.
Richardson, Kenneth, 3,960,958.

Pflasterer, Peter W., to Tennelec, Inc. Crystalless scanning radio receiver. 3,961,261, Cl. 325-335.000.

Pflug, Irving J. Method and apparatus for sterility monitoring. 3,960,670, Cl. 195-103.50R.

Philadelphia Quartz Company: *See—*
Lazet, Frank J., 3,960,532.
Netting, David I.; and Hertzenberg, Elliot P., 3,960,583.
Pierce, Richard H., 3,961,022.

Phillips Cables Limited: *See—*
Beach, Shirley, 3,961,128.

Phillips, Edwin D. Bottle cap with means to effect seal with irregular bottle ends. 3,960,288, Cl. 215-329.000.

Phillips, Eugene N., to Rockwell International Corporation. Loom picker retainer. 3,960,184, Cl. 139-159.000.

Phillips, Mitchell E.: *See—*
Beitz, Donald C.; and Phillips, Mitchell E., 3,960,493.

Phillips Petroleum Company: *See—*
Bertus, Brent J.; Farha, Floyd, Jr.; and Johnston, Harlin D., 3,960,773.
Bresson, Clarence R., 3,960,719.
Reece, Jack E.; and Fozzard, George B., 3,960,881.
Schiff, Sidney, 3,960,937.
Stapp, Paul R., 3,960,972.

Stapp, Paul R., 3,960,973.
Vives, Van C., 3,960,921.

Photocircuits Division of Kollmorgan Corporation: *See—*
Zeblisky, Rudolph J., 3,960,573.

Photocircuits Division of Kollmorgen Corporation: *See—*
Kremer, Richard K.; and Zeblisky, Rudolph J., 3,961,109.

Piaget, Robert E.; and Clyburn, Charles W., to I.C.M. Industries, Inc., a part interest. Retainer for an end fitting of a welding cable. 3,960,427, Cl. 339-39.000.

Piccinini, Carlo; Morelli, Morello; and Rebora, Pierluigi, to Snam Progetti S.p.A. Catalyst for the production of ethylene oxide. 3,960,775, Cl. 252-463.000.

Pierce, Richard H., to Philadelphia Quartz Company. Silicate dissolving. 3,961,022, Cl. 423-332.000.

Pierce, Victor J.: *See—*
Caccavale, John L.; Pierce, Victor J.; Young, Robert W.; and Prussin, Samuel B., 3,961,091.

Pierle, Willy R. J.: *See—*
Keijzer, Johan H.; Pierle, Willy R. J.; and Van de Voorde, G., 3,960,385.

Pifferi, Giorgio; Omodei-Sale', Amedeo; and Consonni, Pietro, to Gruppo Lepetit S.p.A. 3-Hetero acyl-2,3-benzoxazepines. 3,960,858, Cl. 260-247.20B.

Pike, Thomas W.: *See—*
Gundlach, Robert W.; Whited, Charles A.; and Pike, Thomas W., 3,960,444.

Pinaev, Viktor Alexandrovich: *See—*
Baranova, Rimma Bronislavovna; Lazarev, Vladimir Ilich; Mironov, Nikolai Petrovich; Pinaev, Viktor Alexandrovich; Bugaenko, Lenar Timofeevich; Kalyazin, Evgeny Petrovich; Panferova, Alexandra Timofeevna; Byakov, Vsevolod Mikhailovich; Nikeshichev, Jury Nikolaevich; and Petryaev, Petrovich Evgeny, 3,960,682.

Pinney, Baden McDowall, to Du Pont of Canada Limited. Regulating the flow of molten polyamides in a continuous process for the preparation thereof. 3,960,820, Cl. 260-78.00R.

Piotrowski, Tadeusz Wiktor, to Cincinnati Milacron, Inc. Seal method and apparatus. 3,960,381, Cl. 277-1.000.

Pissiotas, Georg: *See—*
Duerr, Dieter; and Pissiotas, Georg, 3,960,947.

Pitney-Bowes, Inc.: *See—*
Zucker, Fredric E.; Storace, Anthony; and Sette, Paul R., 3,960,227.

Plank, Charles J.: *See—*
Givens, Edwin N.; Plank, Charles J.; and Rosinski, Edward J., 3,960,978.

Planke, Tore. Apparatus for conveying articles. 3,960,261, Cl. 198-26.000.

Plant, Howard L.; and Bell, Allyn R., to Uniroyal Inc. Herbicidal 2-sulfinyl and 2-sulfonyl pyridine N-oxide derivatives. 3,960,542, Cl. 71-94.000.

Plastic-Fabrik Elbenia GmbH & Co., Inc.: *See—*
Thelen, Adam, 3,960,341.

Plastics Development Corporation of America: *See—*
Michaelis, David E., 3,961,118.

Plate Kofasil Gesellschaft mit beschrankter Haftung: *See—*
Hellberg, Arvid Emanuel, 3,961,079.

Plattner, Robert F.; Arend, Raymond J.; and Verberkmoes, John A., to Bastian-Blessing. Leg assemblies for cabinets. 3,960,352, Cl. 248-188.000.

Platz, Rolf: *See—*
Fuchs, Werner; Platz, Rolf; and Vogt, Volker, 3,960,916.

Pless, Janos, to Sandoz Ltd. N,N'-bis 6-[(3,4-dihydroxyphenyl)alkylamino]-hexyl hexamethylenediamines and the salts thereof. 3,960,959, Cl. 260-570.50P.

Plessey Handel und Investments A.G.: *See—*
Blatt, Victor, 3,961,351.

Plessey Incorporated: *See—*
Fraioli, Anthony V., 3,961,301.

Ploger, Walter; Schmidt-Dunker, Manfred; and Gloxhuber, Christian, to Henkel & Cie G.m.b.H. Pyrrolidone-5,5-diphosphonic acids. 3,960,888, Cl. 260-326.50A.

Plympton, Michael R., to ACF Industries, Incorporated. Valve locking device. 3,960,168, Cl. 137-385.000.

Pocock, Robert E.: *See—*
Ross, David F.; and Pocock, Robert E., 3,960,500.

Podolan, Edward G.: *See—*
Carella, Richard F.; Podolan, Edward G.; and Przybysz, Francis C., 3,960,403.

Pogge, H. Bernhard: *See—*
Aboaf, Joseph A.; Broadie, Robert W.; Hull, Edward M.; and Pogge, H. Bernhard, 3,961,353.

Pohl, Dieter, to Robert Bosch G.m.b.H. Testing electrical ignition systems of internal combustion engines. 3,961,240, Cl. 324-16.00R.

Pokhodenko, Vladimir Nikiforovich; and Tselik, Ivan Nikiforovich. Method of producing basic zirconium carbonate. 3,961,026, Cl. 423-419.000.

Polaroid Corporation: *See—*
Cardone, Paul A., 3,960,558.
Forsyth, Robert P.; and Rose, Gilbert A., Sr., 3,961,349.
Timson, William J., 3,960,557.

Polezhaeva, Antonina Ivanovna: *See—*
Gortinskaya, Tatyana Vladimirovna; Mashkovsky, Mikhail Davidovich; Polezhaeva, Antonina Ivanovna; Nyrkova, Valentina Georgievna; Bondar, Larisa Nikolaevna; Litova, Galina Nikolaevna; Schukina, Maria Nikolaevna, deceased; and Preobrazhenskaya, Maria Nikolaevna, administrator, 3,961,058.

Polinsky, Murray Arthur, to RCA Corporation. Leakage current prevention in semiconductor integrated circuit devices. 3,961,358, Cl. 357-53.000.

Politechnika Lodzke: *See—*
Brzeski, Lech Andrzej; Kazimierski, Zbyszko Kazimierz; Krysinski, Jan Eugeniusz; and Siwek, Andrzej Witold, 3,960,414.

Pollard, Eula Mae. Novel hair grooming composition, and a method and an instrument employing the same. 3,960,154, Cl. 132-9.000.

Pollitzer, Ernest L.; and Hayes, John C., to Universal Oil Products Company. Hydrocarbon conversion with an acidic multimetallic catalytic composite. 3,960,710, Cl. 208-139.000.

Pollitzer, Ernest L.: *See—*
Antos, George J.; Hayes, John C.; and Pollitzer, Ernest L., 3,960,711.

Polysar Limited: *See—*
Kent, Eric George; and Walker, John, 3,960,988.

Popplewell, James M.: *See—*
Anthony, William H.; and Popplewell, James M., 3,960,208.

Porath, Jerker Olof; and Rosengren, Jan Gunnar, to Exploaterings Aktiebolaget T.B.F. Gel product for separation purposes and method of using the product for hydrophobic salting out adsorption. 3,960,720, Cl. 260-112.50R.

Pornin, Rene: *See—*
Bourdeau, Jean Paul; Seris, Jean Louis; and Pornin, Rene, 3,960,666.

Porrmann, Herbert: *See—*
Hammer, Klaus-Dieter; Porrmann, Herbert; and Klenk, Ludwig, 3,961,107.

Port, David J.; Lafferty, William D.; and Cheney, Richard F., to GTE Sylvania Incorporated. Cermet plasma flame spray powder, method for producing same and articles produced therefrom. 3,960,545, Cl. 75-.50R.

Porta Systems Corporation: *See—*
DeLuca, Paul V.; and Carney, William V., 3,961,227.

Portalier, Robert, to Societe de Vente de l'Aluminium Pechiney. Injection device for molding machines. 3,960,201, Cl. 164-312.000.

Porter, Oswald M.: *See—*
Jaffe, Wolfgang; and Porter, Oswald M., 3,961,298.

Porter, W. Fergus: *See—*
Kirkpatrick, James W.; Porter, W. Fergus; and Shepherd, William E., 3,960,547.

Portland Zoological Society: *See—*
Fial, Ronald Augustine; and Markowtiz, Hal, 3,960,254.

Postnikov, Viktor Viktorovich: *See—*
Alexeev, Viktor Ivanovich; Emelyanov, Ivan Yakovlevich; Ivanov, Vladimir Maximovich; Konstantinov, Leonard Vasilievich; Lysikov, Boris Vasilievich; Postnikov, Viktor Viktorovich; and Rybakov, Jury Viktorovich, 3,961,196.

Potin, Philippe; and Biensan, Michel, to Ato Chimie. Method for purifying lactams. 3,960,846, Cl. 260-239.30A.

Pouille, Georges. Synthetic chinchilla fur production by reverse side application of dye solution. 3,960,478, Cl. 8-14.000.

Powell, Walter James: *See—*
Pearce, Bryan Robert; and Powell, Walter James, 3,959,966.

Powers, Robert W.: *See—*
Mitoff, Stephan P.; Powers, Robert W.; and Breiter, Manfred W., 3,960,596.

PPG Industries, Inc.: *See—*
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Preobrazhenskaya, Maria Nikolaevna, administrator: *See—*
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Prichard, Amelia A.: *See—*
Prichard, Harry A., Jr., deceased; and Prichard, Amelia A., 3,960,355.

Prichard, Harry A., Jr., deceased; and by Prichard, Amelia A. Scaffold supporting waler bracket. 3,960,355, Cl. 249-189.000.

Pridantsev, Mikhail Vasilievich: *See—*
Levin, Felix Lvovich; Golovanenko, Sergei Alexandrovich; Pridantsev, Mikhail Vasilievich; and Dmitriev, Vladimir Alexandrovich, 3,960,617.

Prochazka, Svante, to General Electric Company. Dense polycrystalline silicon carbide. 3,960,577, Cl. 106-44.000.

Procter & Gamble Company, The: *See—*
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Prugh, John D., to Merck & Co., Inc. 1 Alkyl-4-(10:oxo or hydroxy-10,11-dihydro-5H-dibenzo[a,d]cyclohepten-5-ylidene)-piperidine compounds. 3,960,872, Cl. 260-293.620.

Prussin, Samuel B.: *See—*
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Psenka, Joseph A.; and Tersch, Richard W., to Lear Siegler, Inc. Shaving cutter for finishing gears. 3,960,055, Cl. 90-1.60A.

Puckett, Ronnie R. Light and signal device. 3,959,911, Cl. 43-17.000.

Pumphrey, Nicholas William James; and Woods, William Laurence, to Imperial Chemical Industries Limited. Treatment of catalytic anodes. 3,960,680, Cl. 204-98.000.

Purinton, Donald L., to Texas Instruments Incorporated. Radome wire grid having low pass frequency characteristics. 3,961,333, Cl. 343-872.000.

Puskas, Imre; and Cengel, John A., to Standard Oil Company. Polybutenylsuccinic anhydride production. 3,960,900, Cl. 260-346.80R.

Qualitrol Corporation: *See—*
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Quick, Leonard M.: *See—*
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Raab, Harry F., Jr.: *See—*
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Rabussier, Bernard; and Mandon, Jean-Pierre, to Airwick Industries, Inc. Insecticidal evaporator having a diffusion layer of olefin polymerizate. 3,961,040, Cl. 424-33.000.

Rackson, Chester B. Fluid control apparatus. 3,959,882, Cl. 32-22.000.

Rackstraw, Bernard Booth: *See—*
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Radkowsky, Alvin: *See—*
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Raley, Charles F., Jr.; and Asher, Delman R., to Dow Chemical Company, The. Process for preparing macroporous open-cell carbon foam from normally crystalline vinylidene chloride polymer. 3,960,770, Cl. 252-444.000.

Ralston Purina Company: *See—*
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Ramanaiah, Nunna: *See—*
Lanier, Terry O.; and Ramanaiah, Nunna, 3,960,689.

Ramberg, Lawrence R. Reinforcing assembly and reinforced concrete building walls. 3,959,940, Cl. 52-348.000.

Ramey, Chester R.; and Luzzi, John J., to Ciba-Geigy Corporation. Compositions stabilized with hindered piperidine carboxylic acids. 3,960,809, Cl. 260-45.75N.

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Rampe, John F., to Rampe Research. Finishing system with cyclically operable closure control. 3,959,932, Cl. 51-163.100.

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Randolph, Byron B., Jr., to Gardiner, Robert F. Selective metal detector circuit having dual tuned resonant circuits. 3,961,238, Cl. 324-3.000.

Rangaswamy, Krishnaswamy, to Page Engineering Company. Boom point assembly for an excavating machine. 3,959,899, Cl. 37-116.000.

Ransomes Sims & Jefferies Limited: *See—*
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Rashesky, Anatoly Nikolaevich: *See—*
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Raymond Lee Organization, The: *See—*
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Raymond Lee Organization, Inc., The: *See—*
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Reback, Richard L. Method of selecting replacement valve stems. 3,959,871, Cl. 29-407.000.

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Reece, Jack E.; and Fozzard, George B., to Phillips Petroleum Company. Method for preparing 4-carboxythiazolidine-2-thione. 3,960,881, Cl. 260-306.70C.

Reed, George T.; and Seidler-Gordon, Laura, to Westvaco Corporation. UPC encodation verifier. 3,961,164, Cl. 235-61.12N.

Reese, Eckart: *See—*
Darsow, Gerhard; Schiller, Paul; Reese, Eckart; Bottenbruch, Ludwig; Binsack, Rudolph; Vernaleken, Hugo; and Wank, Joachim, 3,960,815.

Reeves, Robert L. Means for preventing dry burn in a paper plastic dunnage bag. 3,960,281, Cl. 214-10.50D.

Regie Nationale des Usines Renault: *See—*
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Remy, David C.: *See—*
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Renard, Pierre, to Rhone-Poulenc S.A. Continuous process for the preparation of maleimides. 3,960,887, Cl. 260-326.5FM.

Renner, Alfred; and Haug, Theobald, to Ciba-Geigy Corporation. Compositions of new imides of unsaturated dicarboxylic acids and azomethines. 3,960,812, Cl. 260-47.0UA.

Renz, Alfred C.; Spacie, Roy W.; and Fuller, Edward J., to Harris Corporation. First fault indicator for engines. 3,960,011, Cl. 73-116.000.

Repossi, Enzo: *See—*
Pavoni, Gustavo; Repossi, Enzo; and Loiudice, Mario, 3,961,311.

Research Corporation: *See—*
Story, Paul Richard; Busch, Peter; Denson, Donald Derby; and Wright, Carl Edward, 3,960,897.

Rey, Herbert. Marine skimmer craft. 3,960,103, Cl. 115-1.00C.

Reynier, Jacques; and Guglier, Michel, to SAFT-Societe des Accumulateurs Fixes et de Traction. Button type cell and battery. 3,960,599, Cl. 136-111.000.

Reynolds, Tom, to Lawrence Peska Associates, Inc., a part interest. Ski pole with retractable point. 3,960,382, Cl. 280-11.37P.

Rheinisch-Westfalisches Elektrizitatswerk Aktiengesellschaft: *See—*
Fritz, Heinz Peter; and Besenhard, Jurgen, 3,960,594.

Rhodes, Lawrence Bryce: *See—*
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Rhone-Poulenc Industries: *See—*
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Rhone-Poulenc S.A.: *See—*
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Rhone-Progil: *See—*
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Ribaldone, Giuseppe; Borsotti, Giampiero; and Gonzati, Franco, to Montedison S.p.A.; and Aziende Colori Nazionali Affini ACNA S.p.A. Process for preparing 1-aza-2-hydroxybenzanthrone. 3,960,866, Cl. 260-278.000.

Ribka, Joachim: *See—*
Heinrich, Ernst; Mix, Konrad; and Ribka, Joachim, 3,960,480.

Rice, Dale W., to Corning Glass Works. Particulate material feeder for high temperature vacuum system. 3,960,503, Cl. 23-273.0SP.

Richardson, Kenneth, to Pfizer Inc. 3,4- and 3,5-Dialkoxybenzylamines. 3,960,958, Cl. 260-570.900.

Richardson-Merrell Inc.: *See—*
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Metcalf, Brian Walter; and Jung, Michel, 3,960,927.

Richter, Klaus: *See—*
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Rigdon, Orville W.: *See—*
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Riggs, Michael T.: *See—*
Change, Nicholas D.; and Riggs, Michael T., 3,960,018.

Riker Laboratories, Inc.: *See—*
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Ring, Thomas F., to P. R. Mallory & Co., Inc. Sound making system. 3,960,105, Cl. 116-22.00R.

Ripperger, Willi; Oettinger, Willi; Kaiser, Rudolf; Pfitzner, Klaus; and Palm, Richard Adolf, to Sirmac Ltd. Production of carbon by eliminating hydrogen halide from polymerized halohydrocarbons. 3,960,768, Cl. 252-444.000.

Ritter, Edmond Jean: *See—*
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Robert Bosch G.m.b.H.: *See—*
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Weyl, Helmut; and Steinke, Leo, 3,960,693.

Roberts, Richard W.; and Salle, Ralph D., to Borg-Warner Corporation. Variable capacity wobble plate compressor. 3,959,983, Cl. 62-226.000.

Robertshaw Controls Company: *See—*
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Robertson, Donald E., to Commercial Solvents Corporation. Zearaline glycoside compounds. 3,960,835, Cl. 260-210.00R.

Robertson, John M.; and Wyatt, Wilbur E., to Gulf & Western Metals Forming Company. Apparatus for application of bearing material. 3,961,149, Cl. 219-9.500.

Robillard, Robert Joseph: *See—*
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Robinson, Donald Nellis; and Welsh, Charles Benjamin, to Pennwalt Corporation. High-modulus thermoplastic ethylene-tetrafluoroethylene hexafluoropropene terpolymers. 3,960,825, Cl. 526-206.000.

Robison, Howard A. Automotive fan clutch lock. 3,960,465, Cl. 416-169.00R.

Robortaccio, Rocco: *See—*
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Robotham, William Frederick: *See—*
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Rodek, Victor; and Michaels, Thomas B., to Xerox Corporation. Constant power regulator for xerographic fusing system. 3,961,236, Cl. 323-18.000.

Rodionova, Natalya Alexandrovna: *See—*
Zavyalov, Sergei Ivanovich; Rodionova, Natalya Alexandrovna; Parnes, Zinaida Naumovna; Bolestova, Galina Ilinichna; Filippov, Vladimir Vasilievich; and Zheleznaya, Lidia Lvovna, 3,960,884.

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Rody, Jean: *See—*
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Roepke, Wallace W.; and Cain, Patrick J. Rockbolt safety gage. 3,960,009, Cl. 73-88.00F.

Rogers, Alan Francis, to Spacemaker (Products) Limited. Fence with adjustable vertical panels. 3,960,367, Cl. 256-21.000.

Rogers, Donald Burl: *See—*
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Rogers, George S.: *See—*
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Rohm GmbH: *See—*
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Rohm and Haas Company: *See—*
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Rohr, Wolfgang; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Substituted sulfonylglycolic acid anilides. 3,960,919, Cl. 260-456.00A.

Roland Offsetmaschinenfabrik Faber & Schleicher AG.: *See—*
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Rolla, Clarence P.: *See—*
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Roller, Paul S. Apparatus for the electrolytic production of insoluble metal hydroxide. 3,960,695, Cl. 204-227.000.

Rolls-Royce (1971) Limited: *See—*
Pearce, Bryan Robert; and Powell, Walter James, 3,959,966.

Romac Metals, Inc.: *See—*
Haughton, Paul F.; and McCoy, Thomas E., 3,960,275.

Romanowski, Robert F., to Qualitrol Corporation. Thermometer insertable in winding of fluid cooled transformer. 3,960,017, Cl. 73-349.000.

Roofmaster Inc.: *See—*
Nienow, James O.; and Yundt, Deryl S., 3,960,325.

Roos, Ernst: *See—*
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Ropiequet, Richard L., to Altainer Incorporated. Method of manufacturing a nesting or interlocking loose-fill cellular packing material. 3,961,000, Cl. 264-45.500.

Ros, Bonifacio Echavarri, to Orbaiceta, S.A. Gas cock. 3,960,167, Cl. 137-375.000.

Rosback, Donald H., to Universal Oil Products Company. Zeolitic adsorbent for xylene separation. 3,960,774, Cl. 252-455.00Z.

Rose, Gilbert A., Sr.: *See—*
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Rose, Gus C., to Dynascan Corporation. Emission testing circuit for color cathode ray tubes. 3,961,242, Cl. 324-20.0CR.

Rosemount Inc.: *See—*
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Rosen, Bernard H.; Pelofsky, Arnold H.; and Greene, Marvin, to Cities Service Company. Coal hydrogenation to produce liquids. 3,960,700, Cl. 208-8.000.

Rosenbaum, Stanley Daniel: *See—*
Colton, Douglas Roy; and Rosenbaum, Stanley Daniel, 3,961,352.

Rosenberger, Michael; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Aryl ketals of polycyclic oxo compounds and processes. 3,960,895, Cl. 260-340.500.

Rosenberger, Michael; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Aryl ketals of polycyclic oxo compounds and processes. 3,960,896, Cl. 260-340.500.

Rosenblatt, Gordon, to Canadian Porcelain Company Limited. Semiconducting glaze composition. 3,960,779, Cl. 252-521.000.

Rosengren, Jan Gunnar: *See—*
Porath, Jerker Olof; and Rosengren, Jan Gunnar, 3,960,720.

Rosenkranz, Hans Jurgen: *See—*
Knickel, Birger; Keifer, Siegfried; Perrey, Hermann; Rudolph, Hans; Rosenkranz, Hans Jurgen; and Rudisch, Reinhold, 3,960,590.

Rosensaft, Michael Norman: *See—*
Augurt, Thomas Anthony; Rosensaft, Michael Norman; and Perciaccante, Vincent Anthony, 3,960,152.

Rosenthal, Morris H. Patient monitoring. 3,961,201, Cl. 307-116.000.

Rosinski, Edward J.: *See—*
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Rosner, Wolfgang; and Drose, Georg. Method for treating surfaces of wood panels. 3,961,108, Cl. 427-275.000.

Ross, Bernard D. Pipe swaging apparatus. 3,959,998, Cl. 72-312.000.

Ross, David F.; and Pocock, Robert E., to Bailey Meter Company. Gas sampling analyzing system. 3,960,500, Cl. 23-254.00E.

Ross, Stephen T.: *See—*
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Rossi, Alberto: *See—*
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Rossi, Umberto; and Basili, Pietro, to Societa Italiana Telecomunicazioni Siemens S.p.A. Frequency demodulator, especially for data-transmission system. 3,961,277, Cl. 329-128.000.

Rotaflex (Great Britain) Limited: *See—*
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Rote, Franklin E.; and Brotzmann, Karl, to United States Steel Corporation. Method for eliminating nose-skulls from steelmaking vessels. 3,960,546, Cl. 75-60.000.

Rothchild, Harold: *See—*
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Rothenstein, Karl-Heinz: *See—*
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Rothlisberger, Kurt: *See—*
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Rothmans of Pall Mall Canada Limited: *See—*
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Rowland, Colin Mostyn: *See—*
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Rubens, Louis C., to Dow Chemical Company, The. Bodies of expandable synthetic resins and method of preparation. 3,960,784, Cl. 260-2.50B.
Rudisch, Reinhold: *See—*
Knickel, Birger; Keifer, Siegfried; Perrey, Hermann; Rudolph, Hans; Rosenkranz, Hans Jurgen; and Rudisch, Reinhold, 3,960,590.
Rudolph, Hans: *See—*
Knickel, Birger; Keifer, Siegfried; Perrey, Hermann; Rudolph, Hans; Rosenkranz, Hans Jurgen; and Rudisch, Reinhold, 3,960,590.
Rudolph, Paul; and Supp, Emil, to Metallgesellschaft Aktiengesellschaft. Power plant process. 3,959,972, Cl. 60-651.000.
Rue, Larry M.: *See—*
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Rufer, Clemens: *See—*
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Ruff, John D.; and Wheeler, Phillip R. Solar heat pump. 3,960,322, Cl. 62-2.000.
Ruffo, Hector J.: *See—*
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Ruhrkohle Aktiengesellschaft: *See—*
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Rusch, Eunice M.: *See—*
Lambou, Madeline G.; Spadaro, James J.; and Rusch, Eunice M., 3,960,763.
Rush, John E., to American Can Company. Machine for decorating two-piece cans. 3,960,073, Cl. 101-40.000.
Rush, Martin A. Solar powered sea water evaporating and condensing unit. 3,960,668, Cl. 202-185.00R.
Russell, Donald H.; and Lenton, R. Warren, to Atlantic Richfield Company. Zinc chloride as catalyst for epoxy/adnc blends. 3,960,813, Cl. 260-47.0EP.
Russell, Joseph Lee; and Kollar, John, to Halcon International, Inc. Process for preparing oximes and hydroxylamines. 3,960,954, Cl. 260-566.00A.
Ruter, Jorn: *See—*
Magosch, Karl Heinz; Feinauer, Roland; and Ruter, Jorn, 3,960,686.
Rutherford, David: *See—*
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Ryan, James R., to Aluminum Company of America. Effluent gas monitor. 3,960,523, Cl. 55-84.000.
Rybakov, Jury Viktorovich: *See—*
Alexeev, Viktor Ivanovich; Emelyanov, Ivan Yakovlevich; Ivanov, Vladimir Maximovich; Konstantinov, Leonard Vasilievich; Lysikov, Boris Vasilievich; Postnikov, Viktor Viktorovich; and Rybakov, Jury Viktorovich, 3,961,196.
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Sachs, Isaac. Drop wire clamps. 3,960,461, Cl. 403-368.000.
Saeman, Walter C., to Olin Corporation. Absorber-crystallizer tower including spray means and scale trap. 3,960,502, Cl. 23-273.00R.
Safety-Kleen Corporation: *See—*
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Safeway Products Inc.: *See—*
Miller, Robert C.; and Hackett, Barrie H., 3,961,157.
Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
Brych, Alfred, 3,961,253.
Lehmann, Gerard; and Rassinoux, Therese, 3,960,595.
Reynier, Jacques; and Guglier, Michel, 3,960,599.
Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Automatic exposure time control device for use in single lens reflex camera. 3,961,338, Cl. 354-24.000.
Saheki, Toshio: *See—*
Sato, Kuniaki; Toyama, Kozo; Saheki, Toshio; Mizukoshi, Kaoru; and Suzuki, Shuei, 3,960,458.
Sahlin, Thorbjorn: *See—*
Isaksson, Conny; Nordin, Lars-Erik; Olsson, Curt; and Sahlin, Thorbjorn, 3,960,263.
Sai, Fumio: *See—*
Murata, Moriyasu; Yamanaka, Makoto; and Sai, Fumio, 3,960,780.
Saint-Gobain Industries: *See—*
Halberschmidt, Friedrich; Paulus, Helmut; and Feiten, Karl-Josef, 3,960,627.
Saito, Makoto: *See—*
Murata, Nobuyuki; and Saito, Makoto, 3,961,374.
Saito, Masumi: *See—*
Yukuta, Toshio; Ohashi, Takashi; Taniguchi, Yoshiko; and Saito, Masumi, 3,960,980.
Sakai, Shigeru: *See—*
Maruyama, Isamu; Yamamoto, Hisao; Nakao, Masaru; Sakai, Shigeru; Sasajima, Kikuo; Kitagawa, Sumio; and Inaba, Shigeho, 3,960,873.
Salerno, Charles M.: *See—*
Frochaux, Alain; and Salerno, Charles M., 3,960,239.
Salete, Felipe. Machine for whitening, polishing or pearling grains and cereals and more particularly rice. 3,960,068, Cl. 99-606.000.
Salle, Ralph D.: *See—*
Roberts, Richard W.; and Salle, Ralph D., 3,959,983.
Salomon, Georges Pierre Joseph, to Etablissements Francois Salomon et Fils. Method for providing recoil in a safety binding for skis and device for the same. 3,960,384, Cl. 280-623.000.
Salukvadze, Viktor Samsonovich. Rotary cutting tool. 3,959,862, Cl. 29-105.00R.
Salzer, Erwin, to Chase-Shawmut Company, The. Method and fixture for manufacturing fuses having helically wound fusible elements. 3,959,875, Cl. 29-623.000.
Samour, Carlos M., to Kendall Company, The. Nonionic monomeric emulsion stabilizers. 3,960,935, Cl. 260-485.00G.
Sampei, Tohru, to Hitachi, Ltd. Amplifier circuit having power supply voltage responsive to amplitude of input signal. 3,961,280, Cl. 330-40.000.
Sampson, Harold J.: *See—*
Speraw, Floyd G.; Hess, Thomas M.; and Sampson, Harold J., 3,960,420.
Sandblom, Sven O.: *See—*
Gudmestad, Ragnar; and Sandblom, Sven O., 3,960,040.
Sander, Bruno; Berbner, Heinz; and Hoffmann, Manfred, to BASF Aktiengesellschaft. Manufacture of aqueous suspensions of polyolefin fibrids. 3,960,794, Cl. 260-17.300.
Sanders Associates, Inc.: *See—*
Trush, Victor, 3,961,273.
Sanders, Donald W., to United States of America, Agriculture. Mechanized bark hack. 3,959,925, Cl. 47-12.000.
Sandoz, Inc.: *See—*
Galantay, Eugene E.; and Habeck, Dietmar A., 3,961,053.
Sandoz Ltd.: *See—*
Bourquin, Jean-Pierre; Schwarb, Gustav; and Waldvogel, Erwin, 3,960,894.
Pless, Janos, 3,960,959.
Schelling, Hans-Peter; and Schaub, Fritz, 3,960,906.
Sanga, Seiji; and Nishimura, Yoichi, to Catalysts and Chemicals Industries Co., Ltd. Sewer waste water treating agent produced from waste cracking catalyst. 3,960,760, Cl. 252-412.000.
Sankyo Company Limited: *See—*
Hiraoka, Tetsuo; and Sugimura, Yukio, 3,960,845.
Sato, Yasunobu; Fujita, Hiroshi; Takagi, Hiromu; and Kamoshita, Katsuo, 3,960,863.
Sano, Takezo; Uemura, Yukikazu; and Furuta, Akihiro, to Sumitomo Chemical Company, Limited; and Hayashibara Biochemical Laboratories, Incorporated. Photosensitive resin composition containing pullulan or esters thereof. 3,960,685, Cl. 204-159.120.
Sansui Electric Co., Ltd.: *See—*
Kurata, Hirotaka, 3,961,276.
Santos, Manuel V. Tensioning, twisting and cutting device for sutures. 3,959,960, Cl. 57-22.000.
Sanyo Electric Co., Ltd.: *See—*
Morioka, Yuji; and Dejima, Shigeo, 3,960,603.
Sarges, Reinhard: *See—*
Kuhla, Donald E.; and Sarges, Reinhard, 3,961,065.
Kuhla, Donald E.; Sarges, Reinhard; and Wiedermann, Hans E., 3,961,067.
Sarycheva, Raisa Grigorievna: *See—*
Fridlyander, Iosif Naumovich; Yatsenko, Konstantin Petrovich; Nekrasova, Galina Anatolievna; Gulin, Alexandr Nikolaevich; Semenova, Zoya Grigorievna; Sidorov, Nikolai Grigorievich; Morozov, Boris Sergeevich; Krichevsky, Efrem Julievich; Zakharova, Tatyana Alexandrovna; and Sarycheva, Raisa Grigorievna, 3,960,551.
Sasahara, Kunihiro: *See—*
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Sasajima, Kikuo: *See—*
Maruyama, Isamu; Yamamoto, Hisao; Nakao, Masaru; Sakai, Shigeru; Sasajima, Kikuo; Kitagawa, Sumio; and Inaba, Shigeho, 3,960,873.
Sasena, John J., to Eaton Corporation. Fastener for fence construction. 3,959,852, Cl. 24-73.00B.
Saskatchewan Power Corporation: *See—*
Verma, Arun; and Knight, Arthur R., 3,960,494.
Sather, Eugene, to Bell & Howell Company. Locating and locking mechanism for glass flat. 3,960,447, Cl. 355-75.000.
Sato, Hideaki: *See—*
Goshima, Takeshi; Sugiura, Yoshinori; Endo, Kiyonobu; Sato, Hideaki; Kono, Kimio; and Tsuji, Takao, 3,960,443.
Sato, Katsuaki: *See—*
Enei, Hitoshi; Sato, Katsuaki; and Hirose, Yoshio, 3,960,660.
Enei, Hitoshi; Sato, Katsuaki; Ishii, Morikatsu; and Hirose, Yoshio, 3,960,661.
Sato, Koitsu: *See—*
Nakagawa, Yunosuke; and Sato, Koitsu, 3,960,743.

Sato, Kuniaki; Toyama, Kozo; Saheki, Toshio; Mizukoshi, Kaoru; and Suzuki, Shuei, to Kajima Corporation; and Hitachi Metals Ltd. Fittings for connecting columns and beams of steel frame construction. 3,960,458, Cl. 403-189.000.
Sato, Masamichi, to Fuji Photo Film Co., Ltd. Method for producing a photomask. 3,960,560, Cl. 96-36.000.
Sato, Mitsuya; Tanihara, Yozo; and Furihata, Makoto, to Hitachi, Ltd. Synchronizing detector circuit. 3,961,360, Cl. 358-27.000.
Sato, Tadayoshi. Pipe cleaning apparatus. 3,959,840, Cl. 15-104.3SN.
Sato, Yasunobu; Fujita, Hiroshi; Takagi, Hiromu; and Kamoshita, Katsuo, to Sankyo Company Limited. Pyrido[1,2-a]pyrimidinone derivatives. 3,960,863, Cl. 260-256.40F.
Satoh, Shinobu. Method for purification of exhaust gases. 3,961,019, Cl. 423-235.000.
Saucy, Gabriel: *See—*
Olson, Gary Lee; and Saucy, Gabriel, 3,960,967.
Rosenberger, Michael; and Saucy, Gabriel, 3,960,895.
Rosenberger, Michael; and Saucy, Gabriel, 3,960,896.
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Saukel, Heinz: *See—*
Daubach, Ewald; Saukel, Heinz; and Von Rambach, Leonhard, 3,960,486.
Sauter, Dieter: *See—*
Schmalfeld, Paul; Sauter, Dieter; and Cappel, Fred Erich, 3,960,543.
Sauvanet, Maurice, to Silec-Semi-Conducteurs, Societe Anonyme. Static switch controller synchronized with a passage to zero of the supply voltage. 3,961,235, Cl. 323-18.000.
Savage, Albert B., to Dow Chemical Company, The. Water-dispersible, high molecular weight polymer compositions. 3,960,584, Cl. 106-178.000.
Sawano, Yukio: *See—*
Ueda, Hiroyuki; and Sawano, Yukio, 3,961,161.
Sax, Alan M.; and Stolkin, Walter J., to Stolmar Corporation. Automatic setup carton constructions. 3,960,313, Cl. 229-41.00B.
Saxonmeyer, Wallace J., to Whiting Corporation. Orbital service bridge. 3,960,242, Cl. 182-36.000.
Say, Donald LeRoy, to GTE Sylvania Incorporated. Snubber means for positioning a gun structure in an electron discharge device. 3,961,220, Cl. 313-417.000.
Scambia Industrial Developments AG: *See—*
Bos, Karel; and Smit, Hendrik, 3,959,970.
Scarbrough, Gilbert R. Heat therapy and spinal traction chair. 3,960,145, Cl. 128-68.100.
Schad, Harald: *See—*
Hiller, Sigwart; and Schad, Harald, 3,961,189.
Schaefer, Hans: *See—*
Beschke, Helmut; Schaefer, Hans; Schreyer, Gerd; Schuler, Wilhelm Alfons; and Weigert, Wolfgang, 3,960,766.
Scharff, Claude Mathilde: *See—*
Dumont, Louis Claude, Paris, Rene Antoine; and Scharff, Claude Mathilde, 3,960,536.
Schaub, Bernard: *See—*
Faure, Jacqueline; Malmejac, Yves; and Schaub, Bernard, 3,960,647.
Schaub, Fritz: *See—*
Schelling, Hans-Peter; and Schaub, Fritz, 3,960,906.
Scheinpflug, Hans: *See—*
Kramer, Wolfgang; Draber, Wilfried; Hammann, Ingeborg; and Scheinpflug, Hans, 3,961,061.
Schelling, Hans-Peter; and Schaub, Fritz, to Sandoz Ltd. ω-Aliphatic and cycloaliphatic hydrocarbonoxy-2,6-alkadienoates and 2-alkenoates. 3,960,906, Cl. 260-410.90R.
Schenk, Jakob: *See—*
Leowald, Karl-Friedrich; and Schenk, Jakob, 3,961,204.
Schenk, Raymond L., Jr.; Bruzas, John A.; and Coville, William E., to Gould Inc. Intercell connector assembly for positive displacement casting system. 3,960,602, Cl. 136-134.00R.
Schering Aktiengesellschaft: *See—*
Ahrens, Hanns; Rufer, Clemens; Biere, Helmut; Schroder, Eberhard; Losert, Wolfgang; Loge, Olaf; and Schillinger, Ekkehard, 3,960,949.
Engel, Klaus; Prezewowsky, Klaus; Laurent, Henry; and Nishino, Yukishige, 3,960,841.
Haffer, Gregor; Eder, Ulrich; Laurent, Henry; Ruppert, Jurgen; Sauer, Gerhard; and Wiechert, Rudolf, 3,960,842.
Mueller, Karl Heinz; and Hubert, Hans-Juergen, 3,960,912.
Schexnayder, Lawrence F., to Caterpillar Tractor Co. Fast exhaust circuit for hydraulic jacks. 3,960,059, Cl. 91-443.000.
Schieber, John R., to Betz Laboratories, Inc. Corrosion probe device for boiler gases. 3,960,496, Cl. 23-253.00C.
Schieni, Steven R.: *See—*
Bessant, Glyndwr A. R.; Eichamer, Paul D.; Koros, Robert M.; and Schieni, Steven R., 3,960,508.
Schierholz, Edward A.; and Nardi, Frank, to Honeywell Inc. Integral, self retaining read-out block. 3,960,349, Cl. 248-27.00R.
Schiff, Charles M., to Teleflex Incorporated. Motion transmitting remote control assembly. 3,960,032, Cl. 74-501.00R.
Schiff, Sidney, to Phillips Petroleum Company. Ashless additives for lubricating compositions. 3,960,937, Cl. 260-501.200.
Schiller, Paul: *See—*
Darsow, Gerhard; Schiller, Paul; Reese, Eckart; Bottenbruch, Ludwig; Binsack, Rudolph; Vernaleken, Hugo; and Wank, Joachim, 3,960,815.
Schillinger, Ekkehard: *See—*
Ahrens, Hanns; Rufer, Clemens; Biere, Helmut; Schroder, Eberhard; Losert, Wolfgang; Loge, Olaf; and Schillinger, Ekkehard, 3,960,949.
Schindler, Donald R., to General Electric Company. Method of making non-shorting photoflash lamp. 3,959,860, Cl. 29-25.160.
Schlaf, Guenter: *See—*
Liepe, Friedrich; Langhans, Gerhard; Jagusch, Leonhard; Richter, Klaus; and Schlaf, Guenter, 3,960,175.
Schlueter, David Frederick: *See—*
Benno, Edward Leonard; Schlueter, David Frederick; and Seymour, Lonnie Ray, 3,959,949.
Schmaldienst, Peter: *See—*
Hofer, Walter; Haubner, Georg; and Schmaldienst, Peter, 3,960,129.
Schmalfeld, Paul; Sauter, Dieter; and Cappel, Fred Erich, to Metallgesellschaft Aktiengesellschaft. Process of producing self-supporting briquettes for use in metallurgical processes. 3,960,543, Cl. 75-3.000.
Schmid, Charles. Apparatus for frying food by immersing it in boiling oil. 3,960,137, Cl. 126-387.000.
Schmidt-Dunker, Manfred: *See—*
Ploger, Walter; Schmidt-Dunker, Manfred; and Gloxhuber, Christian, 3,960,888.
Schmidt, Erich, to Maschinenfabrik Zuckermann Komm. Ges. Wien. Programmed contour copying machine. 3,960,188, Cl. 142-7.000.
Schmidt, Heinrich: *See—*
Fleischmann, Johann R.; Fechter, Willy; and Schmidt, Heinrich, 3,959,929.
Schmidt, James L.; Jacoby, Jerold L.; Shaw, Garrett D.; and Bhuta, Pravin G., to TRW Inc. Holographic instrument for measuring stress in a borehole wall. 3,960,448, Cl. 356-32.000.
Schmitt, Walti; and Kreiner, Philipp, to Passavant-Werke Michelbacher Hutte. Rotary aerator. 3,960,991, Cl. 261-92.000.
Schmitz, H. Gunter, to Supfina Maschinenfabrik Hentzen KG. Apparatus for micro-finish machining of compound, circular arc-shaped profiled surfaces in annular workpieces. 3,959,928, Cl. 51-58.000.
Schmitz, Reinold: *See—*
Linhart, Karl; and Schmitz, Reinold, 3,960,903.
Schmitzer, Willi, to Bayer Aktiengesellschaft. Apparatus for producing homogeneous materials or foam from at least two inter-reacting components. 3,960,506, Cl. 23-285.000.
Schmutzer, Joel J.: *See—*
Perry, John T.; and Schmutzer, Joel J., 3,961,173.
Schneider, Gerda: *See—*
Hollinger, Roderich; Wendtlandt, Wolf; and Schneider, Gerda, 3,960,960.
Schneider, Hans-Dieter: *See—*
Temme, Helmut; Hageneier, Werner; and Schneider, Hans-Dieter, 3,960,265.
Schoenwald, Jeffrey Stuart: *See—*
Hartmann, Clinton S.; and Schoenwald, Jeffrey Stuart, 3,961,293.
Schonstedt, Erick O., to Schonstedt Instrument Company. Magnetic locator having improved sensors. 3,961,245, Cl. 324-43.00R.
Schonstedt Instrument Company: *See—*
Schonstedt, Erick O., 3,961,245.
Schreyer, Gerd: *See—*
Beschke, Helmut; Schaefer, Hans; Schreyer, Gerd; Schuler, Wilhelm Alfons; and Weigert, Wolfgang, 3,960,766.
Geiger, Friedhelm; Heimberger, Werner; Schreyer, Gerd; and Weigert, Wolfgang, 3,961,023.
Schroder, Eberhard: *See—*
Ahrens, Hanns; Rufer, Clemens; Biere, Helmut; Schroder, Eberhard; Losert, Wolfgang; Loge, Olaf; and Schillinger, Ekkehard, 3,960,949.
Schroeck, Calvin William, to Lubrizol Corporation, The. Preparation of esters of amidoalkanesulfonic acids. 3,960,918, Cl. 260-456.00A.
Schroeder, Guenter: *See—*
Gaenzler, Wolfgang; Kabs, Klaus; and Schroeder, Guenter, 3,960,934.
Schroeder, Karl-Heinz; and Tuemmel, Herbert, to Zeiss Ikon AG. Offset drive pin adaptors for film projectors, film spools, and 35mm to 16mm converters. 3,960,337, Cl. 242-68.300.
Schroeder, Kenneth K. Apparatus for cleaning bowling lanes. 3,960,454, Cl. 401-140.000.
Schroeder, Wilburn C. Hydrogenation of coal to produce coke, pitch and electrode carbon. 3,960,701, Cl. 208-8.000.
Schuhmacher, Werner; and Rothenstein, Karl-Heinz, to Robert Bosch G.m.b.H. Pressure regulating valve. 3,960,170, Cl. 137-491.000.
Schukina, Maria Nikolaevna, deceased: *See—*
Gortinskaya, Tatyana Vladimirovna; Mashkovsky, Mikhail Davidovich; Polezhaeva, Antonina Ivanovna; Nyrkova, Valentina Georgievna; Bondar, Larisa Nikolaevna; Litova, Galina Nikolaevna; Schukina, Maria Nikolaevna, deceased; and Preobrazhenskaya, Maria Nikolaevna, administrator, 3,961,058.
Schulenberg, John W., to Sterling Drug Inc. Substituted N-arylanilines. 3,960,886, Cl. 260-326.50L.
Schuler, Wilhelm Alfons: *See—*
Beschke, Helmut; Schaefer, Hans; Schreyer, Gerd; Schuler, Wilhelm Alfons; and Weigert, Wolfgang, 3,960,766.
Schultz, Frank H. Luminaire duration control. 3,961,180, Cl. 250-206.000.
Schultz, Roland P.: *See—*
Baur, Charles B.; and Schultz, Roland P., 3,960,181.
Schulz, David Arthur, to Union Carbide Corporation. Fuel cell electrode. 3,960,601, Cl. 136-120.0FC.

Schulz, Winfried, to Siemens Aktiengesellschaft. Inductive displacement transducer using a bridge circuit having a stable voltage phase in the diagonal of the bridge. 3,961,243, Cl. 324-34.00D.

Schulze, James L., Sr., to General Electric Company. Air conditioning system for a mobile home including an interlock. 3,959,985, Cl. 62-239.000.

Schurrer, Josef, to Maschinenfabrik Augsburg-Nurnberg AG. Device for photoelectric measurements of moving parts. 3,961,184, Cl. 250-231.00R.

Schwarb, Gustav: *See—*
Bourquin, Jean-Pierre; Schwarb, Gustav; and Waldvogel, Erwin, 3,960,894.

Schwarte, Jurgen: *See—*
Juntgen, Harald; Knoblauch, Karl; Gappa, Gunther; and Schwarte, Jurgen, 3,960,529.

Schwarz, Rudolf, to Staeubli, Ltd. Heddles for weaving machines having heddle frame bars for several heddles, which bars are moved by a shed-forming device. 3,960,182, Cl. 139-91.000.

Schwarzkopf Development Corporation: *See—*
Heitzinger, Friedrich; and Lechleitner, Wilhelm, 3,960,604.

Schweickart, Albert J.: *See—*
Bortak, John J.; Balko, Edward N.; Schweickart, Albert J.; and Collins, Stephen M., 3,960,699.

Schweizerische Isola-Werke: *See—*
Mosimann, Hans; Heim, Peter; and Borer, Charles, 3,960,799.

Schweppe, Joseph L.: *See—*
Ahlgren, Erick L.; McMorris, Arthur H.; Miille, Jerry L.; and Schweppe, Joseph L., 3,960,072.

Science-Union et Cie: *See—*
Malen, Charles; and Laubie, Michel, 3,960,891.

Scott, Charles R.: *See—*
Parks, Dewey P.; and Scott, Charles R., 3,960,650.

Scott, Elmira J. Utensil holder for stove. 3,960,134, Cl. 126-24.000.

Searle, Robert J. G.: *See—*
Davis, Royston H.; and Searle, Robert J. G., 3,961,070.

Sease, John D.: *See—*
Bradley, Ronnie A.; and Sease, John D., 3,960,994.

Secrist, John A., III; Barrio, Jorge R.; Leonard, Nelson J.; and Weber, Gregorio, to University of Illinois Foundaton. Fluorescent derivatives of adenine-containing compounds. 3,960,840, Cl. 260-211.50R.

Segrest, Steven F.; and Gardner, Josef M., to United States of America, Navy. Helmet exhaust valve. 3,960,171, Cl. 137-495.000.

Seidel, Karlheinz, to Maschinenfabrik Augsburg-Nurnberg AG. Device for precision measurement of internal diameters. 3,959,887, Cl. 33-178.00R.

Seidler-Gordon, Laura: *See—*
Reed, George T.; and Seidler-Gordon, Laura, 3,961,164.

Seifert, Peter, to Black Clawson Company, The. Defibering apparatus for paper making stock. 3,960,332, Cl. 241-46.060.

Seiscom Delta Inc.: *See—*
Anstey, Nigel A., 3,961,306.

Seiter, Hartmut, to Consortium fur Elecktrochemische Industrie GmbH. Process for preparing layers of silicon carbide on a silicon substrate. 3,960,619, Cl. 148-175.000.

Seki, Michiharu, to Hitachi, Ltd. Process for removing sulfur oxides and nitrogen oxides from flue gases using halogen-impregnated actuated carbon with simultaneous injection of ammonia. 3,961,020, Cl. 423-239.000.

Sekida, Minoru, to Minolta Camera Kabushiki Kaisha. Interchangeable objective lens diaphragm exposure control coupling mechanism. 3,961,347, Cl. 354-272.000.

Sekiyama, Kunihiko; Taga, Yasuyoshi; and Fujita, Shigemi, to Nippon Gohsei Kagaku Kabushiki Kaisha. Method for preparing sorbic acid. 3,960,939, Cl. 260-526.00N.

Selke, Winfried, to ERNO Raumfahrttechnik GmbH. Equipment for growing algae. 3,959,923, Cl. 47-1.400.

Sellers, Jerry W., to Rockwell International Corporation. Electrically powered grass trimmer. 3,959,879, Cl. 30-276.000.

Seltzer, Raymond; and Sherman, Paul D., to Ciba-Geigy Corporation. Novel polymers from s-triazine cyanamide compounds. 3,960,783, Cl. 260-2.00R.

Semenova, Zoya Grigorievna: *See—*
Fridlyander, Iosif Naumovich; Yatsenko, Konstantin Petrovich; Nekrasova, Galina Anatolievna; Gulin, Alexandr Nikolaevich; Semenova, Zoya Grigorievna; Sidorov, Nikolai Grigorievich; Morozov, Boris Sergeevich; Krichevsky, Efrem Julievich; Zakharova, Tatyana Alexandrovna; and Sarycheva, Raisa Grigorievna, 3,960,551.

Semerdjiev, Stefan Georgiev: *See—*
Balevski, Anguel Tonchev; Nikolov, Ivan Dimov; Antonov, Asparuh Mihailov; and Semerdjiev, Stefan Georgiev, 3,960,996.

Seneca, Harry: *See—*
Avakian, Souren; and Seneca, Harry, 3,960,658.

Senoo, Yoshio, to Tokico Ltd. Process for recovering chromic acid solution from a waste liquor containing chromic ions. 3,961,029, Cl. 423-54.000.

Serck Industries Limited: *See—*
Holmes, Robert Taylor, 3,961,010.

Sergeys, Francis John, to W. R. Grace & Co. Honeycomb structure for countercurrent gas flow. 3,960,510, Cl. 23-288.0FB.

Seris, Jean Louis: *See—*
Bourdeau, Jean Paul; Seris, Jean Louis; and Pornin, Rene, 3,960,666.

Sette, Paul R.: *See—*
Zucker, Fredric E.; Storace, Anthony; and Sette, Paul R., 3,960,227.

Seuret, Marcel: *See—*
Widmer, Erich; and Seuret, Marcel, 3,960,966.

Seymour, Lonnie Ray: *See—*
Benno, Edward Leonard; Schlueter, David Frederick; and Seymour, Lonnie Ray, 3,959,949.

Shackleton, Frank; and Butler, Donald, to Lankro Chemicals Group Limited. Substituted chloroacylanilides. 3,960,948, Cl. 260-562.00B.

Shakiba, Hosein M.: *See—*
Straitz, John F., III; and Shakiba, Hosein M., 3,960,064.

Shapley, Bruce D., to K/Tronic Inc. Magnetic tape cassette hub with tape retention means. 3,960,338, Cl. 242-74.100.

Shaposhnikov, Anatoly Alexandrovich: *See—*
Butuzov, Vladimir Petrovich; Vatolkin, Evgeny Konstantinovich; Gordienko, Leonid Alexandrovich; Feldman, Ernst Borisovich; Khadzhi, Valentin Evstafievich; and Shaposhnikov, Anatoly Alexandrovich, 3,960,501.

Sharp, John Howard: *See—*
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 3,961,028.

Sharps Associates: *See—*
Harris, Louis Selig; Pars, Harry George; Razdan, Raj Kumar; and Sheehan, John Clark, 3,960,871.

Shatwell, John: *See—*
Billany, Michael Royston; Longworth, Arthur Raymond; and Shatwell, John, 3,960,745.

Shavel, John, Jr.: *See—*
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Shaw, Garrett D.: *See—*
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Shea, Yale R.; Thelen, Arthur B.; and Parsons, H. William, to INRYCO, Inc. Riveted cellular panel assembly. 3,959,943, Cl. 52-618.000.

Sheehan, John Clark: *See—*
Harris, Louis Selig; Pars, Harry George; Razdan, Raj Kumar; and Sheehan, John Clark, 3,960,871.

Shell, John W.: *See—*
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Shell Oil Company: *See—*
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Shepherd, William E.: *See—*
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Sherman, Paul D.: *See—*
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Sherwin-Williams Company, The: *See—*
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Shiba, Keisuke: *See—*
Okumura, Akio; Yokota, Yukio; Inouye, Kozo; Shiba, Keisuke; and Yamada, Minoru, 3,960,571.

Shibuya, Yuzo: *See—*
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Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; and Uchida, Satoru, to Sumitomo Chemical Company, Limited. Catalyst for polymerization of olefins and process for preparing the same. 3,960,765, Cl. 252-429.00B.

Shigita, Syozo: *See—*
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Shiguma, Heijiro; and Suzuki, Shigekazu, to NHK Spring Co., Ltd. Grinding machine for coil springs. 3,959,931, Cl. 51-112.000.

Shima, Takeo: *See—*
Kuratsuji, Takatoshi; Kawase, Shoji; Shima, Takeo; Shimotsuma, Sakae; and Hosoi, Masahiro, 3,961,008.

Shimotsuma, Sakae: *See—*
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Shinoda, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Pressure regulator of liquefied-gas fuel system for internal combustion engines. 3,960,126, Cl. 123-120.000.

Shio, Cheng. Electromagnetic vehicle. 3,960,229, Cl. 180-1.0VS.

Shneider, Aaron H. Protectors for rotary display stands. 3,959,903, Cl. 40-68.600.

Shono, Tetsuji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Method and arrangement for manual stop-down mirror-ups of single lens reflex camera. 3,961,343, Cl. 354-156.000.

Shore, Jack H.: *See—*
Elliott, Stanley E.; and Shore, Jack H., 3,960,142.

Shu, John T.: *See—*
Bare, Thomas M.; and Shu, John T., 3,960,892.

Shubkin, Ronald L., to Ethyl Corporation. Process for replacing the hydroxy group of an aromatic hydroxy compound with an amine group. 3,960,962, Cl. 260-581.000.

Shugart Associates: *See—*
Chou, Albert S., 3,960,074.

Shuler, James R., to Caterpillar Tractor Co. Wear-compensating replacement sprocket. 3,960,412, Cl. 305-57.000.

Shull, William A., to Liconix. Process for manufacturing a helium metal vapor laser tube. 3,960,422, Cl. 316-19.000.

Shuttleworth, Henry, to Texaco Trinidad, Inc. Extraction of sulfuric acid from sulfuric acid-sulfonic acid mixtures. 3,960,938, Cl. 260-504.00S.

Shy, James L.; and Bliemeister, Robert M., to Allis-Chalmers Corporation. Method and apparatus for adjustably feeding raw material to a preheater for a kiln. 3,959,890, Cl. 34-10.000.

Sid Harvey, Inc.: *See—*
Lindtveit, Herbert E., 3,960,469.

Sidorov, Nikolai Grigorievich: *See—*
Fridlyander, Iosif Naumovich; Yatsenko, Konstantin Petrovich; Nekrasova, Galina Anatolievna; Gulin, Alexandr Nikolaevich; Semenova, Zoya Grigorievna; Sidorov, Nikolai Grigorievich; Morozov, Boris Sergeevich; Krichevsky, Efrem Julievich; Zakharova, Tatyana Alexandrovna; and Sarycheva, Raisa Grigorievna, 3,960,551.

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Siemes, Franz; Kraus, Andreas; and Buhl, Joachim, to Blech- und Metallwarenfabrik Robert Fischbach KG. Roof fan. 3,960,063, Cl. 98-43.00R.

Sigg, Hans, to Maag Gear-Wheel & Machine Company Limited. Positive engagement clutch. 3,960,253, Cl. 192-67.00A.

Sigg, Theodore William. Educational gaming apparatus. 3,959,893, Cl. 35-31.00G.

Sigma Diesel: *See—*
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Silvers, Charles. Precision cut-off weighing apparatus. 3,960,224, Cl. 177-47.000.

Silvia, Denis A.: *See—*
Abernathy, David D.; Adams, Herbert D.; Gilbertson, Warren L.; Leonard, Isaac E., III; and Silvia, Denis A., 3,960,085.

Simikoski, Wayne L. Corner protector. 3,960,354, Cl. 248-345.100.

Simjian, Luther G. Exercise and massaging apparatus. 3,960,144, Cl. 128-58.000.

Simmons, Pansy. Hair weaving tension system. 3,960,158, Cl. 132-56.000.

Simon, Karl-Heinz; and Weinheimer, Hans-Richard, to Zeiss-Stiftung, Carl. Tracking and display apparatus for heat-detecting systems. 3,961,194, Cl. 250-334.000.

Simpson, Robert Scott, to Reichhold Chemicals, Inc. Heat insulating assembly and method for making same. 3,960,625, Cl. 156-79.000.

Sinclair, Carter: *See—*
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Slack, Albert L.: *See—*
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Slack, Keith M.: *See—*
Bodner, Ronald E.; Crooks, Thomas L.; Magrisso, Israel B.; Slack, Keith M.; and Smith, Richard S., 3,961,313.

Slater, Billy Ray, to Forney Engineering Company. Combustion optimizer. 3,960,320, Cl. 236-15.00B.

Sleeper, David P., to Ecology Controls, Inc. Sound reducing enclosing. 3,960,237, Cl. 181-33.00K.

Sloan Valve Company: *See—*
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Slobodzian, Gregory E.: *See—*
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Sloevsky, Fedor Ignatievich; Orlov, Naum Yakovlevich; Gavrish, Petr Dmitrievich; and Rashesky, Anatoly Nikolaevich. Down-the-hole device for breaking rock, concrete and reinforced concrete by pulsewize high liquid pressure. 3,960,082, Cl. 102-22.000.

Smit, Hendrik: *See—*
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Smith, David M.; and Mennen, Frederick C. Self cleaning rotary lawn mower blade and deck assembly. 3,959,955, Cl. 56-17.500.

Smith, Elmer O.; and Weinstein, Samuel, to TRW Inc. Machine for fabricating a wire network. 3,961,153, Cl. 219-56.000.

Smith, Harold Vernon, deceased (by Smith, Jean E., administrator), to Pennwalt Corporation. Method of increasing corrosion resistance of anodized aluminum. 3,961,111, Cl. 427-419.000.

Smith, Inja: *See—*
Kydonieus, Agis F.; and Smith, Inja, 3,961,117.

Smith, James D. B.; and Kauffman, Robert N., to Westinghouse Electric Corporation. Flexible nontacky prepreg for bonding coils in high voltage devices and method of making said prepreg. 3,960,803, Cl. 260-37.0EP.

Smith, Jean E., administrator: *See—*
Smith, Harold Vernon, deceased, 3,961,111.

Smith, John Gerald, to Eaton Yale Ltd. Method and apparatus for harvesting sheared trees. 3,960,190, Cl. 144-3.00D.

Smith, John H.; and Rogers, George S., to United States of America, Navy. Reinforcement of cast or pressed explosives. 3,960,049, Cl. 86-20.00B.

Smith, Leonard W., to Standard Products Company, The. Weather strip with insertable cover strip. 3,959,941, Cl. 52-400.000.

Smith, Matthew S.; and Filippi, Ernest A. Weapon arrangement. 3,960,052, Cl. 89-37.0BA.

Smith, Richard S.: *See—*
Bodner, Ronald E.; Crooks, Thomas L.; Magrisso, Israel B.; Slack, Keith M.; and Smith, Richard S., 3,961,313.

Smith, Robert D., to Alco Standard Corporation. Non-destructive test apparatus and method for a material having a cavity therein. 3,960,006, Cl. 73-67.80S.

Smith, Roy E.: *See—*
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Smith, William E., to General Electric Company. Process for preparing allylic alcohols. 3,960,971, Cl. 260-638.00R.

SmithKline Corporation: *See—*
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Blackburn, Dale W.; and Caldwell, Henry Cecil, 3,960,870.
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Snarey, Michael: *See—*
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Snethen, Thomas J., to International Business Machines Corporation. Logic network test system with simulator oriented fault test generator. 3,961,250, Cl. 324-73.00R.

Snyder, Larry D.: *See—*
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Snyder, Robert H., to Uniroyal Inc. Steel-belted radial ply tires with 0° textile cap band. 3,960,628, Cl. 156-123.000.

Snyder, Solomon H., to Nelson Research & Development Company. Antidepressant. 3,961,073, Cl. 424-325.000.

Snyder, Travis C.: *See—*
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Societa' Italiana Resine S.I.R. S.p.A.: *See—*
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Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
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Societa' Nebiolo S.p.A.: *See—*
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Societe Anonyme des Usines Chausson: *See—*
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Societe Anonyme Roure-Bertrand-Dupont: *See—*
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Societe D'Assistance Technique pour Produits: *See—*
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Societe de Vente de l'Aluminium Pechiney: *See—*
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Societe Nationale des Petroles d'Aquitaine: *See—*
Bourdeau, Jean Paul; Seris, Jean Louis; and Pornin, Rene, 3,960,666.
Dailey, Lawrence W., 3,961,015.

Soes, Lucas, to AMP Incorporated. Electrical connector assembly. 3,960,434, Cl. 339-176.00M.

Solartron Electronic Group Limited, The: *See—*
Lau, Hung Wah Anthony, 3,961,206.

Solco Basel AG: *See—*
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Sommer, Warren T. Stirring mechanism. 3,960,369, Cl. 259-111.000.

Songer, Hubert D., to Perfect Equipment Corporation. Wheel balancing weight. 3,960,409, Cl. 301-5.00B.

Sonnino, Mario, to American Cyanamid Company. Winding suture reel-labels. 3,959,947, Cl. 53-21.0FW.

Sony Corporation: *See—*
Kono, Osamu; Tsuchiya, Noboru; Matsuda, Atsushi; and Yoshida, Kiichi, 3,961,202.
Murata, Nobuyuki; and Saito, Makoto, 3,961,374.

Sorensen, Leif Brunswig, to Horsens Plastic A/S. Method of manufacturing biaxially stretched shrink foils and an apparatus for carrying the method into effect. 3,960,997, Cl. 264-40.000.
Southwire Company: *See—*
Chia, E. Henry; and Chadwick, Kenneth E., 3,960,606.
Sowell, John B.: *See—*
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SPA-Societa Prodotti Antibiotici S.p.A.: *See—*
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Space Sciences, Inc.: *See—*
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Spacie, Roy W.: *See—*
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Spadaro, James J.: *See—*
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Sparks, Bryan D., to Canadian Patents and Development Limited. Spherical agglomeration of ilmenite. 3,961,005, Cl. 264-117.000.
Speraw, Floyd G.; Hess, Thomas M.; and Sampson, Harold J., to NCR Corporation. Checkout system. 3,960,420, Cl. 312-140.100.
Sperry Rand Corporation: *See—*
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Spicer, William E., to Varian Associates. Pick up screens for X-ray image intensifier tubes employing evaporated activated scintillator layer. 3,961,182, Cl. 250-213.0VT.
Spiewak, John W., to Firestone Tire & Rubber Company, The. Ordered aromatic copolyamide urea polymer. 3,960,818, Cl. 260-77.50C.
Spincic, Johann: *See—*
Broemer, Heinz; Meinert, Norbert; and Spincic, Johann, 3,960,579.
Splitt, Frank G., to Cook Electric Company. Two pair station protector. 3,961,229, Cl. 317-120.000.
Spodig, Heinrich. Magnetic separator. 3,960,716, Cl. 209-220.000.
Spooner, Ronald E.; and Downing, Terry R., to Allis-Chalmers Corporation. Automatic overload control for a counterbalanced lift truck. 3,960,286, Cl. 214-674.000.
Spunt, Leonard. Modular dome structure. 3,959,937, Cl. 52-81.000.
Square D Company: *See—*
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SSP Products, Inc.: *See—*
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Staal, Gerardus B.: *See—*
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Staats, James B., to General Electric Company. Magnetron power supply and control circuit. 3,961,152, Cl. 219-10.55B.
Stables, Harry Carson: *See—*
Long, Alan Gibson; Walker, Derek; Eastlick, David Thomas; and Stables, Harry Carson, 3,960,843.
Stach, Leonard J., to Velsicol Chemical Corporation. Insecticidal compositions and methods of killing insects using benzylthiomethylenephosphonamidates and phosphoramidates. 3,961,050, Cl. 424-216.000.
Staeubli, Ltd.: *See—*
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Stahlecker, Fritz, to Stahlecker, Fritz; and Stahlecker, Hans. Apparatus for removing impurities from fibrous material. 3,959,961, Cl. 57-56.000.
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McCollum, John D.; and Quick, Leonard M., 3,960,708.
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Stapp, Paul R., to Phillips Petroleum Company. Alkenol production. 3,960,972, Cl. 260-638.00R.
Stapp, Paul R., to Phillips Petroleum Company. Alkenol production. 3,960,973, Cl. 260-638.00R.
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Stauffer Chemical Company: *See—*
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Gutman, Arnold D., 3,960,951.
Mickley, Harold S., 3,961,035.
Pallos, Ferenc M., 3,960,917.
Stayner, Robert A., to Chevron Research Company. Wax-flux composition containing amine salts of carboxylic acids for soldering. 3,960,613, Cl. 148-23.000.
Stayner, Robert A., to Chevron Research Company. Wax-flux composition containing a diester of sulfomaleic acid for soldering. 3,960,614, Cl. 148-23.000.
Steele, Everett T., Jr., to Robertshaw Controls Company. Temperature responsive valve. 3,960,321, Cl. 236-100.000.
Steidley, Roy B.: *See—*
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Stein, Joseph A., Jr.; and Wettering, Carl A., to Batesville Casket Company. Casket cap brace. 3,959,859, Cl. 27-18.000.
Steinberg, David H.: *See—*
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Steinbrecher, Lester; and Hall, Wilbur S., to Amchem Products, Inc. Process for coating metals. 3,960,610, Cl. 148-6.14R.
Steinke, Leo: *See—*
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Stendel, Wilhelm: *See—*
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Stephens, James B.; and Anderson, Frank R., to Westates Space-Era Products, Inc. Liquid measuring devices. 3,960,297, Cl. 222-449.000.
Stephens, Milton L., to Textron, Inc. Quick opening device for a slide fastener. 3,959,857, Cl. 24-205.00R.
Sterling Drug Inc.: *See—*
Lesher, George Y.; Gelotte, Karl O.; and Surrey, Alexander R., 3,960,945.
Schulenberg, John W., 3,960,886.
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Sternheimer, Richard. Urinary sediment stain. 3,961,039, Cl. 424-3.000.
Stevenson, Clarence H., III. Programmable digital/analog memory system. 3,961,163, Cl. 235-61.11A.
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Stier, Otto, to Vollmer Werke Maschinenfabrik GmbH. Machine for treating teeth of saw blades. 3,960,037, Cl. 76-43.000.
Stierli, Robert F.; Tarver, Clayton C.; and Gaidis, James M., to W. R. Grace & Co. Magnesium phosphate concrete compositions. 3,960,580, Cl. 106-58.000.
Stingl, Helmut, to Hoechst Aktiengesellschaft. Fungicidal compositions. 3,961,052, Cl. 424-200.000.
Stirling, Walter Robert, to Ferodo Limited. Vehicle retarders. 3,960,249, Cl. 188-264.00F.
Stitt, Paul A. Soluble waste conversion process and pasteurized proteinaceous products. 3,961,078, Cl. 426-41.000.
Stobart, Charles R., to E-Systems, Inc. Vehicle locating apparatus. 3,961,166, Cl. 235-150.270.
Stock, Heinz; and Rebentisch, Hans W., deceased (by Rebentisch, Waltraud, heir at law), to USM Corporation. Method and device for metering and dispersing fluid materials. 3,960,187, Cl. 141-1.00R.
Stock, Rolf: *See—*
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Stoner, William W.; Wilson, David T.; and Barrett, Harrison H., to Raytheon Company. Coded imaging systems. 3,961,191, Cl. 250-312.000.
Stoppacher, Waldemar, to Interoptic Laboratories, Inc. Abrasive pad for grinding lenses. 3,959,935, Cl. 51-395.000.
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Story, Paul Richard; Busch, Peter; Denson, Donald Derby; and Wright, Carl Edward, to Research Corporation. Method for the preparation of macrocyclic compound. 3,960,897, Cl. 260-343.000.
Story, Wayne G. Automatic quilting machine. 3,960,095, Cl. 112-118.000.
Strader, Don S.; Masser, Lloyd G.; and Lundwall, Robert J., to Lear Siegler, Inc. Vehicle suspension system and alignment mechanism therefor. 3,960,388, Cl. 280-693.000.
Straitz, John F., III; and Shakiba, Hosein M., to National Airoil Burner Company, Inc. Tall stack construction. 3,960,064, Cl. 98-60.000.
Strauss, Werner, to Klockner-Humboldt-Deutz Aktiengesellschaft. Centrifugal separator with rotary distributor. 3,960,714, Cl. 209-139.00A.
Striegler, John Howard; and Howell, Eddie Paul, to Atlantic Richfield Company. Production of bitumen by steam injection. 3,960,213, Cl. 166-272.000.
Striegler, John Howard; and Howell, Eddie Paul, to Atlantic Richfield Company. Recovery of bitumen by steam injection. 3,960,214, Cl. 166-272.000.
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Payet, George Louis, 3,960,483.
Stritzke, Gerd O. Attachment for kites and the like. 3,960,347, Cl. 244-155.00R.
Stritzko, Vilem, to Bleiche A.G. Liquid-treating of filamentary materials. 3,960,487, Cl. 8-155.100.
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Structural Plastics Incorporated: *See—*
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Suckfull, Fritz: *See—*
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Sudduth, Jerome R.; and Keyworth, Donald A., to Tenneco Chemicals, Inc. Process for the purification of gas streams. 3,960,910, Cl. 260-438.100.
Sueyoshi, Tohru; Nakazawa, Yoshiyuki; Nakamura, Yoshuhara; Ohi, Reiichi; and Kondo, Tokiharu, to Fuji Photo Film Co., Ltd. Photographic material containing fine silver halide particles and hydroxylamino substituted triazine or pyrimidine sensitizers. 3,960,568, Cl. 96-76.00R.
Suggitt, Robert M.; Gates, Walter C., Jr.; and Hudson, Ralph B., Jr., to Texaco Inc. Hydrocarbon upgrading process. 3,960,964, Cl. 260-583.00M.
Sugimoto, Hiroshi; Takeuchi, Hiroyuki; and Yokotsuka, Tamotsu, to Kikkoman Shoyu Co., Ltd. Process for autolysis of yeast. 3,961,080, Cl. 426-60.000.
Sugimura, Yukio: *See—*
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Sugiura, Yoshinori: *See—*
Goshima, Takeshi; Sugiura, Yoshinori; Endo, Kiyonobu; Sato, Hideaki; Kono, Kimio; and Tsuji, Takao, 3,960,443.
Sullivan, Edward A., to Ventron Corporation. Wood pulp bleaching composition containing sodium hydrosulfite and hexamethylenetetramine. 3,960,649, Cl. 162-72.000.
Suminokura, Toshihiko; Kyogoku, Yojuro; and Yasumoto, Noboru, to Kurashiki Boseki Kabushiki Kaisha. Temporary interlining coated with foamed adhesive. 3,961,125, Cl. 428-261.000.
Sumitomo Chemical Company, Limited: *See—*
Fukumaru, Toshitsugu; Kobayashi, Kenji; Mizote, Hiroyuki; Inaba, Shigeho; and Yamamoto, Hisao, 3,961,066.
Maruyama, Isamu; Yamamoto, Hisao; Nakao, Masaru; Sakai, Shigeru; Sasajima, Kikuo; Kitagawa, Sumio; and Inaba, Shigeho, 3,960,873.
Sano, Takezo; Uemura, Yukikazu; and Furuta, Akihiro, 3,960,685.
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; and Uchida, Satoru, 3,960,765.
Sun Ventures, Inc.: *See—*
Lyons, James E., 3,960,914.
Sundt, Erling: *See—*
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Supfina Maschinenfabrik Hentzen KG: *See—*
Schmitz, H. Gunter, 3,959,928.
Supp, Emil: *See—*
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Surrey, Alexander R.: *See—*
Lesher, George Y.; Gelotte, Karl O.; and Surrey, Alexander R., 3,960,945.
Suschitzky, John Louis; and Rutherford, David, to Frisons Limited. Ferrocene compounds and preparation. 3,960,911, Cl. 260-439.0CY.
Suzuki, Gyoji; Nagata, Masayoshi; Tomotsu, Takeshi; and Ono, Hisatake, to Fuji Photo Film Co., Ltd. Method of making a semiconductor device utilizing a light-sensitive etching agent. 3,960,559, Cl. 96-36.000.
Suzuki, Hideo, to Mitsui Shipbuilding & Engineering Co., Ltd. Ships for transporting iron ore pellets. 3,960,101, Cl. 114-73.000.
Suzuki, Katsunori: *See—*
Maki, Naoki; and Suzuki, Katsunori, 3,960,090.
Suzuki, Kooji, to Dai Nippon Insatsu Kabushiki Kaisha. Display apparatus. 3,959,902, Cl. 40-28.00R.
Suzuki, Shigekazu: *See—*
Shiguma, Heijiro; and Suzuki, Shigekazu, 3,959,931.
Suzuki, Shuei: *See—*
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Suzuki, Takeshi: *See—*
Ichigo, Minoru; Suzuki, Takeshi; and Harada, Katsumasa, 3,960,108.
Suzuki, Yoshiaki; Mori, Hajime; and Nakanome, Takemi, to Mitsubishi Chemical Industries Ltd. Method for the separation of hydrocarbons. 3,960,976, Cl. 260-674.00R.
Suzuoki, Kazuhiro: *See—*
Ibata, Jyoji; Kobayashi, Hidehiko; Toyomoto, Kazuo; Suzuoki, Kazuhiro; Hayashi, Yoshio; and Kurihara, Masakazu, 3,960,572.
Svahn, B. Knut Lennart; and Wersen, Lars Gustav Vilhelm, to J. Mustad AB. Stretching screw. 3,960,359, Cl. 254-67.000.
Svensson, Sven Torsten Arnold; and Bjelvert, Sven William, to Forenade Fabriksverken. Electronic telescopic sight. 3,960,453, Cl. 356-252.000.
Swarsbrick, Douglas Edward: *See—*
Buschini, Anthony Alan; and Swarsbrick, Douglas Edward, 3,959,909.
Sweet, John R., II; and Chan, Kingsley, to Acurex Corporation. Centrifugal arranging and feeding apparatus. 3,960,293, Cl. 221-258.000.
Sweet, Richard G.: *See—*
Carleton, Joseph G.; and Sweet, Richard G., 3,960,449.
Swensen, Eugene T. Ultrasonic standing wave sensor. 3,960,007, Cl. 73-67.80R.
Swiss Aluminium Ltd.: *See—*
Alder, Hanspeter, 3,960,678.
Anthony, William H.; and Popplewell, James M., 3,960,208.
Hofling, Erich; and Breu, Hanspeter, 3,960,622.
SWS Silicones Corporation: *See—*
Martin, Eugene Ray, 3,960,575.
Sycon Corporation: *See—*
Narahari, Gattu, 3,960,389.
Symmons Industries, Inc.: *See—*
Symmons, Paul C., 3,960,016.
Symmons, Paul C., to Symmons Industries, Inc. Water mixing valve with temperature indicator. 3,960,016, Cl. 73-343.00R.
Syncro-Motion Corporation: *See—*
Mort, Paul R., Jr.; and Cleary, Robert A., 3,960,640.
Syntex Corporation: *See—*
Alvarez, Francisco Sanchez, 3,960,957.
Fried, John H.; and Harrison, Ian T., 3,960,936.
System AB Infoteknik: *See—*
Bjermo, Gote Herbert Egard; and Tresjo, Paul Einar, 3,960,725.
Szkaradek, Edward J., to Morehouse, Industries, Inc. Sandmill. 3,960,331, Cl. 241-43.000.
Szymanski, Chester D.: *See—*
Wurzburg, Otto B.; Szymanski, Chester D.; and Kruger, Leo, 3,961,045.
T. L. James Company, Inc.: *See—*
Honea, William S., Jr., 3,960,357.
Tabei, Tadashi: *See—*
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Tabuchi, Muneharu; Bando, Shosen; Tabei, Tadashi; and Asai, Yasuhiro, to Toray Industries, Inc. Heating roller apparatus with precise temperature measurement. 3,961,158, Cl. 219-471.000.
Tachibana, Kan-ichi; Nishioka, Michihiro; Uchida, Akio; and Ono, Mikiya, to Mitsubishi Mining & Cement Company, Ltd. Surge absorber. 3,961,225, Cl. 317-61.000.
Tacker, John J.: *See—*
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Taga, Yasuyoshi: *See—*
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Takagi, Fumio: *See—*
Tsujikawa, Masahiro; Ozasa, Minoru; Takagi, Fumio; Hirai, Katsumi; Iwasaki, Akio; Imamura, Hiroshi; and Ueda, Testuhiro, 3,960,507.
Takagi, Hiromu: *See—*
Sato, Yasunobu; Fujita, Hiroshi; Takagi, Hiromu; and Kamoshita, Katsuo, 3,960,863.
Takagi, Susumu, to Alps Motorola, Inc. Track indicating mechanism for magnetic tape recording and reproducing device. 3,961,373, Cl. 360-106.000.
Takahashi, Hiroaki: *See—*
Moriyama, Akio; Fukai, Masakazu; Tatsuta, Hiroshi; and Takahashi, Hiroaki, 3,960,751.
Takahashi, Tadaya: *See—*
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Takeuchi, Hiroyuki: *See—*
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Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; and Ito, Hiroko, 3,960,834.
Talan, Maryan. Fastening peg and method of making same. 3,959,853, Cl. 24-73.0PF.
Tamny, Simon Z.: *See—*
Ducan, Lane S.; Tamny, Simon Z.; and Riedy, Charles H., 3,960,323.
Tamura, Masaki; Ushiro, Soichiro; and Hasagawa, Shiro, to CPC International Inc. Process for the continuous isomerization of dextrose. 3,960,663, Cl. 195-31.00F.
Tanabe, Yoshio: *See—*
Konishi, Toji; Kayano, Masanori; and Tanabe, Yoshio, 3,961,064.
Tanaka, Akio, to Zenith Radio Corporation. Channel seeking tuning system. 3,961,266, Cl. 325-452.000.

Tanaka, Chiaki: *See—*
Yoda, Naoya; Yoshi-i, Toshiya; Fujita, Saburo; Mochizuki, Hiroshi; Yumoto, Hirosuke; Kurihara, Masaru; Kubota, Takashi; Dokoshi, Noriaki; and Tanaka, Chiaki, 3,961,009.

Tanaka, Hiromichi, to Matsushita Electric Industrial Co., Ltd. Color television camera. 3,961,364, Cl. 358-46.000.

Tanaka, Hiroshi; Tanaka, Takuo; and Tanaka, Takeshi, to Japan Synthetic Rubber Co., Ltd. Composite adsorbent. 3,960,771, Cl. 252-446.000.

Tanaka, Takeshi: *See—*
Tanaka, Hiroshi; Tanaka, Takuo; and Tanaka, Takeshi, 3,960,771.

Tanaka, Takuo: *See—*
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Tang, Chung L.: *See—*
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Tanner, Hans: *See—*
Abbuhl, Hermann; and Tanner, Hans, 3,960,413.

Tanner, John Ernest. Internal cylindrical bearing surfaces. 3,961,104, Cl. 427-198.000.

Tantram, Anthony Desmond Shand. Detection of combustible gases. 3,960,495, Cl. 23-232.00E.

Tarax Pty. Limited: *See—*
Lewis, Peter Sydney; and Lohning, Franklin Marius, 3,961,150.

Tardoskegyi, Louis V., to Electrovert Ltd. Shock-resisting hanger systems and suspended assemblies. 3,960,350, Cl. 248-54.00R.

Tarver, Clayton C.: *See—*
Stierli, Robert F.; Tarver, Clayton C.; and Gaidis, James M., 3,960,580.

Tate, Henry P.: *See—*
Vetter, Craig W.; Doyle, John R.; and Tate, Henry P., 3,960,391.

Tatsuta, Hiroshi: *See—*
Moriyama, Akio; Fukai, Masakazu; Tatsuta, Hiroshi; and Takahashi, Hiroaki, 3,960,751.

Taylor, Byron Kent, to RCA Corporation. Disc record locked groove escape apparatus. 3,961,131, Cl. 178-6.60R.

Taylor, Edward J. Douche-enema pump. 3,960,466, Cl. 417-234.000.

Taylor, Lynn Johnston. Direct synthesis of organic polymer-inorganic oxide composites. 3,960,805, Cl. 260-37.00N.

Technical Hardware, Inc.: *See—*
Huebner, Victor R., 3,960,452.

Technicon Instruments Corporation: *See—*
Gordon, Abraham; and Adler, Stanford L., 3,960,020.

Tee-pak, Inc.: *See—*
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Teige, Wolfgang: *See—*
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Teijin Limited: *See—*
Kuratsuji, Takatoshi; Kawase, Shoji; Shima, Takeo; Shimotsuma, Sakae; and Hosoi, Masahiro, 3,961,008.

Teisseire, Paul Jose: *See—*
Giraudi, Edouard; and Teisseire, Paul Jose, 3,960,899.

Tel-Tone Corporation: *See—*
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Teleflex Incorporated: *See—*
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Teletype Corporation: *See—*
Alonas, Kay, 3,961,147.
Alvarez, Cesar E., Jr., 3,961,269.
Babler, Egon S., 3,960,075.
Herbst, Wayne R.; and Mika, Paul L., 3,961,368.
Jung, Werner; and Knuth, Kurt E., 3,961,337.
Mika, Paul L.; Rothlisberger, Kurt; and Vee, Richard F., 3,961,375.
Wiater, Kenneth Walter, 3,960,250.

Tell, Peter Hans, to Aktiebolaget Piab. Method for producing an ejector device. 3,959,864, Cl. 29-156.40R.

Temme, Helmut; Hageneier, Werner; and Schneider, Hans-Dieter, to Gewerkschaft Eisenhutte Westfalia. Mining installations. 3,960,265, Cl. 198-204.000.

Teng, James; and Stubits, Marcella C., to Anheuser-Busch, Incorporated. Synergistic organic solvent gellant. 3,960,514, Cl. 44-7.00B.

Tengbergen, Erik Adriaan Willem Van Ebbenhorst: *See—*
La Roy, Dick; and Tengbergen, Erik Adriaan Willem Van Ebbenhorst, 3,960,635.

Tennant, Robert John: *See—*
Bunnell, Edward Dennman; Fleischhacker, James Earl; and Tennant, Robert John, 3,960,430.

Tenneco Chemicals, Inc.: *See—*
Sudduth, Jerome R.; and Keyworth, Donald A., 3,960,910.

Tenneco Inc.: *See—*
Hubbell, Franklin R., III, 3,960,232.

Tennelec, Inc.: *See—*
Pflasterer, Peter W., 3,961,261.

Terada, Masaaki, to Olympus Optical Co., Ltd. Endoscope with a tube for a medical treating instrument. 3,960,143, Cl. 128-4.000.

Terlet, Rene Henri: *See—*
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Tersch, Richard W.: *See—*
Psenka, Joseph A.; and Tersch, Richard W., 3,960,055.

Tesberg, Allan V., to Lawrence Peska Associates, Inc., a part interest. Dental floss holder and applicator. 3,960,159, Cl. 132-90.000.

Texaco Inc.: *See—*
Cullen, William P.; Chafetz, Harry; and Miller, Edward F., 3,960,889.
Duranleau, Roger G.; and Larkin, John M., 3,960,953.
Kuntschik, Lawrence F.; and Rigdon, Orville W., 3,960,955.
Suggitt, Robert M.; Gates, Walter C., Jr.; and Hudson, Ralph B., Jr., 3,960,964.

Texaco Trinidad, Inc.: *See—*
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Texas Instruments Incorporated: *See—*
Hartmann, Clinton S.; and Schoenwald, Jeffrey Stuart, 3,961,293.
Moore, Samuel D., 3,961,290.
Purinton, Donald L., 3,961,333.

Textron, Inc.: *See—*
Stephens, Milton L., 3,959,857.

Thatcher, Arthur K. Apparatus for mounting tape containing recorded information. 3,959,905, Cl. 40-124.000.

Theisen, Dieter: *See—*
Witte, Josef; Theisen, Dieter; Roos, Ernst; and Nutzel, Karl, 3,960,758.

Thelen, Adam, to Plastic-Fabrik Elbenia GmbH & Co., Inc. Spool core for the wet treatment of threads and yarns. 3,960,341, Cl. 242-118.100.

Thelen, Arthur B.: *See—*
Shea, Yale R.; Thelen, Arthur B.; and Parsons, H. William, 3,959,943.

Thelen, Edmund: *See—*
Eberl, James Joseph; Thelen, Edmund; and Heller, Harold L., 3,961,105.

Thermanil Chemical Company, Incorporated: *See—*
Cote, Gerald M., 3,960,481.

Thiokol Corporation: *See—*
Dewitt, Ivan L.; and Pacanowsky, Eugene, 3,960,946.

Thirion, Andre, to Antivols Simplex S.A. Anti-theft device for automobile vehicles. 3,959,996, Cl. 70-186.000.

Thom, Kenneth C.: *See—*
Noecker, Marshall V.; Thom, Kenneth C.; and Harp, Charles, Jr., 3,959,926.

Thomas, David W.: *See—*
Cacciola, John; and Thomas, David W., 3,961,287.

Thomas, Gordon D., to Kimberly-Clark Corporation. Embossed paper toweling and method of production. 3,961,119, Cl. 428-178.000.

Thomas, Ieuan: *See—*
Jones, Eileen; Morris, Arthur; Thomas, Ieuan; and Traynor, James Rodney, 3,960,819.

Thomas, Luther B. Internal combustion engine. 3,959,974, Cl. 60-712.000.

Thomas, Samuel M. Method and apparatus for determining a measured direction relative to an external magnetic direction. 3,959,889, Cl. 33-361.000.

Thompson, Harold R.; and Anderson, Ralph A., to SSP Products, Inc. Double wall ducting. 3,960,343, Cl. 244-1.00R.

Thompson, Russell L. Quick hair end wrap for permanent wave. 3,960,156, Cl. 132-31.00R.

Thompson, Thomas D.; and Bradshaw, Robert W., to Yara Engineering Corporation. Reinforcing pigments. 3,960,588, Cl. 106-288.00Q.

Thyssens, Guido Maria Josepha Benedikt, to International Standard Electric Corporation. Multi-frequency signalling system. 3,961,143, Cl. 179-84.0VF.

Tiefert, Karl H., to Hewlett-Packard Company. Method and chip configuration of high temperature pressure contact packaging of Schottky barrier diodes. 3,961,350, Cl. 357-15.000.

Tiger, Emil, to Bell & Howell Company. Microfiche reader-printer. 3,960,042, Cl. 83-583.000.

Tiller, Boyce C. Bird feeder. 3,960,112, Cl. 119-51.00R.

Timson, William J., to Polaroid Corporation. Polydispersed silver halide emulsions with iodide for use in diffusion transfer. 3,960,557, Cl. 96-3.000.

Titanium Technology N.V.: *See—*
Dunn, Wendell E., Jr., 3,960,203.

Tittmann, Egon; and Walter, Heinz, to Robert Bosch G.m.b.H. Apparatus for regulating the pressure and rate of flow of fluid supplied by a variable-delivery pump. 3,959,969, Cl. 60-445.000.

Titus, Donald E.; and Tsao, Sherman H. M., to International Business Machines Corporation. Method for generation of multiple uniform fluid filaments. 3,960,324, Cl. 239-4.000.

Toda, Soichiro: *See—*
Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, 3,960,833.

Tokai TRW & Co. Limited: *See—*
Abe, Michio, 3,959,872.

Toki, Kuni, to Kett Electric Laboratory. Linear output moisture meter with temperature compensator. 3,961,247, Cl. 324-65.00R.

Tokico Ltd.: *See—*
Senoo, Yoshio, 3,961,029.

Tomikawa, Masami; Tsunoda, Akiji; Kaneda, Kazuhisa; Ohkawa, Hideo; and Mugino, Yutaka, to Idemitsu, Kosan Kabushiki Kaisha (Idemitsu Kosan Co., Ltd.). Oil adsorbent. 3,960,722, Cl. 210-36.000.

Tomotsu, Takeshi: *See—*
Suzuki, Gyoji; Nagata, Masayoshi; Tomotsu, Takeshi; and Ono, Hisatake, 3,960,559.

Toray Industries, Inc.: *See—*
Tabuchi, Muneharu; Bando, Shosen; Tabei, Tadashi; and Asai, Yasuhiro, 3,961,158.
Yoda, Naoya; Yoshi-i, Toshiya; Fujita, Saburo; Mochizuki, Hiroshi; Yumoto, Hirosuke; Kurihara, Masaru; Kubota, Takashi; Dokoshi, Noriaki; and Tanaka, Chiaki, 3,961,009.

Touw, Theodore R.: *See—*
Lukianoff, George V.; and Touw, Theodore R., 3,961,190.

Townsend, Leroy B.; Earl, Robert A.; and Manning, Steven J., to University of Utah, The. Method of synthesizing 1-(tetrahydro-2-furanyl)-5-fluorouracil. 3,960,864, Cl. 260-260.000.

Toyama, Kozo: *See—*
Sato, Kuniaki; Toyama, Kozo; Saheki, Toshio; Mizukoshi, Kaoru; and Suzuki, Shuei, 3,960,458.

Toyo Jozo Co., Ltd.: *See—*
Morishita, Masataka; Inaba, Yoshihito; Fukushima, Mitsuru; Hattori, Yoshinori; Kobari, Sadami; and Matsuda, Tetsuo, 3,960,757.

Toyo Jozo Kabushiki Kaisha: *See—*
Matsuda, Tetsuo; Yamaguchi, Tsutomu; Fujii, Tadashiro; Matsumoto, Kunio; Morishita, Masataka; Fukushima, Mitsuru; and Shibuya, Yuzo, 3,960,662.

Toyomoto, Kazuo: *See—*
Ibata, Jyoji; Kobayashi, Hidehiko; Toyomoto, Kazuo; Suzuoki, Kazuhiro; Hayashi, Yoshio; and Kurihara, Masakazu, 3,960,572.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Transearch AB: *See—*
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Traynor, James Rodney: *See—*
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Treder, Charles F.: *See—*
Orth, Charles D.; and Treder, Charles F., 3,960,169.

Tresjo, Paul Einar: *See—*
Bjermo, Gote Herbert Egard; and Tresjo, Paul Einar, 3,960,725.

Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. 3-Heterothio derivatives of [(alkoxycarbonyl)oxyacetyl]cephalosporins. 3,960,850, Cl. 260-243.00C.

Tribe, Leonard T., to Kelsey-Hayes Company. Speed sensing device. 3,960,248, Cl. 188-181.00R.

Trueb, Victor, to Heinz Hermann Weick. Wall-mounted laundry driers. 3,960,274, Cl. 211-1.300.

Truett, William Lawrence, to PPG Industries, Inc. Antifreeze composition. 3,960,740, Cl. 252-73.000.

Trumpp, Alfred: *See—*
Baisch, Theodor; Deininger, Kurt; Strobel, Joseph R.; and Trumpp, Alfred, 3,961,344.

Trush, Victor, to Sanders Associates, Inc. Frequency memory apparatus. 3,961,273, Cl. 328-155.000.

TRW Inc.: *See—*
Kinder, Mark Russell, 3,960,470.
Schmidt, James L.; Jacoby, Jerold L.; Shaw, Garrett D.; and Bhuta, Pravin G., 3,960,448.
Smith, Elmer O.; and Weinstein, Samuel, 3,961,153.

Tsao, Sherman H. M.: *See—*
Titus, Donald E.; and Tsao, Sherman H. M., 3,960,324.

Tschentscher, Alfred, to FMN Schuster & Co. Apparatus for forming a waste winding adjacent a reserve winding when winding a thread onto a spool. 3,960,336, Cl. 242-18.0PW.

Tselik, Ivan Nikiforovich: *See—*
Pokhodenko, Vladimir Nikiforovich; and Tselik, Ivan Nikiforovich, 3,961,026.

Tsuchiya, Noboru: *See—*
Kono, Osamu; Tsuchiya, Noboru; Matsuda, Atsushi; and Yoshida, Kiichi, 3,961,202.

Tsuji, Takao: *See—*
Goshima, Takeshi; Sugiura, Yoshinori; Endo, Kiyonobu; Sato, Hideaki; Kono, Kimio; and Tsuji, Takao, 3,960,443.

Tsujikawa, Masahiro; Ozasa, Minoru; Takagi, Fumio; Hirai, Katsumi; Iwasaki, Akio; Imamura, Hiroshi; and Ueda, Testuhiro, to Matsushita Electric Industrial Co., Ltd. Apparatus for removing nitrogen oxides from a contaminated gas containing the same. 3,960,507, Cl. 23-288.00K.

Tsujimoto, Michihiro; Nishizawa, Tsutomu; and Okubo, Ichiro, to Mitsui Toatsu Chemicals, Incorporated. Coloring of organic materials with asymmetric thioindigoid compounds. 3,960,479, Cl. 8-36.000.

Tsunoda, Akiji: *See—*
Tomikawa, Masami; Tsunoda, Akiji; Kaneda, Kazuhisa; Ohkawa, Hideo; and Mugino, Yutaka, 3,960,722.

Tuemmel, Herbert: *See—*
Schroeder, Karl-Heinz; and Tuemmel, Herbert, 3,960,337.

Turbak, Albin F., to Tee-pak, Inc. Process for improving storage life of meat. 3,961,086, Cl. 426-240.000.

Turk, Chester Frank: *See—*
Krapcho, John; and Turk, Chester Frank, 3,960,848.

Turner, John J.: *See—*
Ballantyne, Joseph M.; Tang, Chung L.; Rhodes, Lawrence Bryce; Turner, John J.; and Yang, Ji Liang, 3,961,102.

Tweedie, Jeffrey D.: *See—*
McClure, David L.; and Tweedie, Jeffrey D., 3,960,070.

Tyler, Hugh Jean, to Robertshaw Controls Company. Modulating electronic room thermostat. 3,961,237, Cl. 323-19.000.

Tylko, Jozef Kazimierz, to British Titan Limited. Process for the production of iron-containing titaniferous particles. 3,960,544, Cl. 75-3.000.

Uchida, Akio: *See—*
Tachibana, Kan-ichi; Nishioka, Michihiro; Uchida, Akio; and Ono, Mikiya, 3,961,225.

Uchida, Satoru: *See—*
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; and Uchida, Satoru, 3,960,765.

Uchida, Yushi: *See—*
Ohyama, Miyoji; Uchida, Yushi; and Onodera, Tateo, 3,961,135.

Ueda, Hiroyuki; and Sawano, Yukio, to Fuji Photo Film Co., Ltd. System for preparing commutation ticket and the like. 3,961,161, Cl. 235-61.11F.

Ueda, Testuhiro: *See—*
Tsujikawa, Masahiro; Ozasa, Minoru; Takagi, Fumio; Hirai, Katsumi; Iwasaki, Akio; Imamura, Hiroshi; and Ueda, Testuhiro, 3,960,507.

Uemura, Yukikazu: *See—*
Sano, Takezo; Uemura, Yukikazu; and Furuta, Akihiro, 3,960,685.

Ueno, Eichiro; Kawasaki, Hideo; and Shigita, Syozo, to American Cyanamid Company. Printing process. 3,959,836, Cl. 8-21.00A.

Uenoyama Kiko Co., Ltd.: *See—*
Yokota, Rikizo, 3,959,843.

Ukita, Junichi, to New Registon Company, Limited, The. Resinoid wheel containing a mixture of trimanganese tetraoxide and ferroxide and ferric oxide fillers. 3,960,517, Cl. 51-298.00R.

Ullmann, Werner; Derighetti, Renato; and Gagliati, Umberto, to A.G. fur industrielle Elektronik AGIE Losone b. Locarno. Apparatus comprising a plurality of separate parts, and control apparatus for producing synchronizing control signals for said separate parts. 3,961,270, Cl. 328-75.000.

Umemoto, Sueo: *See—*
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Umezawa, Hamao; Takita, Tomohisa; Fujii, Akio; and Ito, Hiroko, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Method for preparing 3-(methylmercaptol) propylaminobleomycin. 3,960,834, Cl. 260-210.0AB.

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V-Mark Automation Ltd.: *See—*
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van der Lely, Cornelis. Soil cultivating implements. 3,960,219, Cl. 172-39.000.
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Van Dieren, Harry M. Filter unit for washing machine. 3,960,733, Cl. 210-460.000.
Van Dusen, Frederick E., to Van Dusen & Co., Inc. Support for silo unloader, silo safety platform, and silage distributor. 3,960,283, Cl. 214-17.0CB.
Van Tuyl, David H., to E. D. Bullard Company. Back-up alarm with improved keeper. 3,960,104, Cl. 116-60.000.
Van Wuytswinkel, Charles M. G., to Caterpillar Tractor Co. Motor disconnect means. 3,960,230, Cl. 180-9.620.
Vargiu, Silvio; Carpaneti, Edoardo; and Passalenti, Beppino, to Societa' Italiana Resine S.I.R. S.p.A. Mixtures of vinyl ester resins. 3,960,981, Cl. 260-837.00R.
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Vause, Arthur Samuel, to Burroughs Corporation. Lamp cap assembly. 3,960,278, Cl. 339-145.00R.
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Vuaille, Andre, to Sigma Diesel. Device for regulating the delivery of a fuel injection pump of an internal combustion engine. 3,960,127, Cl. 123-140.0MP.
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Wagner, David Prugh, to Illinois Tool Works Inc. Fastener assembly for creating accurate tension indicating fastener and method of calibrating the same. 3,960,048, Cl. 85-62.000.
Wagner, Ernest W., to Caterpillar Tractor Co. Self-loading scraper with pivotal floor panel. 3,959,896, Cl. 37-8.000.
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Walker, John A.; Dimitri, Dimitri S.; and Perkins, Reginald Louis, to Datametrics Corporation. Electrode print head. 3,961,336, Cl. 346-139.00C.
Walker, Ralph Lawrence; and Stockdale, John Richard, to Albright & Wilson Limited. Coating compositions with magnesium phosphate pigment. 3,960,611, Cl. 148-6.15R.
Wall, Albert. Hair styling device. 3,960,155, Cl. 132-9.000.
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Walls, Earl L.; and Olson, Verl O. Hand control system for power hand tools. 3,959,883, Cl. 32-27.000.
Wallsten, Hans Ivar, to AB Inventing. Means for expandable objects, preferably shock-absorbing protective means for passengers in vehicles. 3,960,386, Cl. 280-731.000.
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Warsager, Rubin. Transfer tape for surface decorating an article. 3,961,121, Cl. 428-200.000.
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Weisenburger, Lawrence Paul, to AMP Incorporated. Multi-contact connector for substrate-to-board connections. 3,960,423, Cl. 339-17.0CF.
Weisenburger, Lawrence Paul, to AMP Incorporated. Multi-contact spring connector for board to board connections. 3,960,424, Cl. 339-17.00M.
Weishaupt, Paul, to Wagner & Cie AG. Apparatus for exposing a light-sensitive layer. 3,961,366, Cl. 358-80.000.

Weiss, Leonard E.; and Hortin, Kenneth L., to Whirlpool Corporation. Method of making a liner construction. 3,960,631, Cl. 156-244.000.
Weissmueller, William R., Jr., to Warwick Electronics Inc. Channel selecting control system for television tuner including unused channel skip system. 3,961,267, Cl. 325-470.000.
Welding Controls Limited: *See—*
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Mavredes, Anthony L., to E. I. du Pont de Nemours & Co. Tiered package assembly. T947,001, 6–1–76, Cl. 206—504.
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Porchey, David V., D. J. Royer, and C. M. Starks, to Continental Oil Co. Modified cracking of paraffins. T947,006, 6–1–76, Cl. 260—683.
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Ishijura, Jun: *See—*
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Johnson, Robert C., to Reynolds Metals Company. Floor construction for an animal enclosure and method of making same. Re. 28,834, Cl. 119-28.000.
Nitto Chemical Industry Co., Ltd.: *See—*
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Johnson, Robert C., Re. 28,834.
Roberts, Kent S.; and Roberts, Stanley D., to Roberts Mfg., Inc. Work cabinet for sewing machine. Re. 28,835, Cl. 312-29.000.
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Saito, Shigeru; Ishijura, Jun; and Sasaki, Yutaka, to Nitto Chemical Industry Co., Ltd. Process for simultaneously producing methacrylonitrile and butadiene by vapor-phase catalytic oxidation of mixed butenes. Re. 28,836, Cl. 260-465.300.
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Silva, Frank A., to Amerace Corporation. Shielding tape grounding device for high voltage cables. Re. 28,837, Cl. 174-78.000.

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Mack, Grace H., Jessel, and Duffett. 3,897.
Mack, Grace H., Jessel, and Duffett. 3,898.
Graham, R. Merrell. Rose plant. 3,899, 6–1–76. Cl. 20.
Jessel, Walter H., Jr.: *See—*
Mack, Grace H., Jessel, and Duffett. 3,897.
Mack, Grace H., Jessel, and Duffett. 3,898.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,896, 6–1–76, Cl. 75.
Krynak, George: *See—*
Krynak, John, Sr., J. Kraynak, Jr., and G. Kraynak. 3,900.
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Yoder Brothers, Inc.: *See—*
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Juhlin, Sven-Eric. 240,098.
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Agundez, Benjamin III. Bank of lockers for bicycles, motorcycles or the like. 240,103, 6–1–76, Cl. D6—157.

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Boyd, John C., and A. D. Pie pan cradle. 240,105, 6–1–76, Cl D7—130.

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Brettman, James C., and M. L. Lauson. Combination card and viewer. 240,168, 6–1–76, Cl. D96—12.

Brown, Leonard E., and Larry E., to Parkside Industries. Magnetic mixing bar. 240,145, 6–1–76, Cl. D32—2.

Burns, John W., and James A. Self propelled articulated lawn treating vehicle. 240,155, 6–1–76, Cl. D40—1.

Carbonero, Fred L. Game net. 240,148, 6–1–76, Cl. D34—5.

Cartmell, James V., and E. C. Beck, to NDM Corp. Medical electrode. 240,166, 6–1–76, Cl. D83—1.

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De Myer, Donald L. Combined air intake and vector control for agribuildings. 240,133, 6–1–76, Cl. D23—139.

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Dorn, Harry M. Light guard. 240,157, 6–1–76, Cl. D48—16.

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Flaherty, John W., R. C. Ingersoll, and W. F. Goodrich, to Dick Blick Co. Lapidary apparatus for processing stones. 240,154, 6–1–76, Cl. D37—1.

Folke, William A., to Aktiebolaget Optimus. Air pump for camping stoves. 240,130, 6–1–76, Cl. D23—15.

Francis, John P. Tail engaged dog control harness. 240,142, 6–1–76, Cl. D30—38.

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Fraser, Douglas S., to FTS Systems, Inc. Freeze dryer. 240,144, 6–1–76, Cl. D32—2.

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Gillette Co., The: *See*—
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Grotz, Edward C. Sprinkler can. 240,129, 6–1–76, Cl. D23—11.

Haggstam, Christian G., and H. T. A. Ehrlin. Chair or similar article. 240,096 6–1–76, Cl. D6—17.

Hall, Peter J., to Microfilm Recording Co. Ltd. Microfiche viewer. 240,161, 6–1–76, Cl. D16—14.

Hzama, Shigetoshi, to Sharp Kabushiki Kaisha. Electronic calculating machine. 240,136, 6–1–76, Cl. D26—5.

Herr, Lewis H., and J. S. Kovacs, to Sperry Univac, Sperry Rand Corp. Type ball container. 240,115, 6–1–76, Cl. D9—222.

Herring, Lesta V. Toy savings bank. 240,149, 6–1–76, Cl. D34—11.

Honeywell Inc.: *See*—
Pasquarette, Ralph E. 240,120.
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Hoshino, Kunio, to Matsushita Electric Industrial Co. Clock radio. 240,159, 6–1–76, Cl. D56—4.

ILC Industries, Inc.: *See*—
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Lugo, Jose A. Universal sanding block. 240,110, 6–1–76, Cl. D8—90.

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McGrew, James D. Spiral fid for hawsers. 240,107, 6–1–76, Cl. D8—14.

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Pasquarette, Ralph E., to Honeywell Inc. Combustion products detector. 240,121, 6–1–76, Cl. D10—106.

Phillips, Harold G. Auxiliary housing for pickup trucks. 240,124, 6–1–76, Cl. D12—156.

Pierson, David D., to Sybron Corp. Dental cabinet. 240,134, 6–1–76, Cl. D24—1.

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Redler, Roland. Display rack for shoes or the like. 240,101, 6–1–76, Cl. D6—146.

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CLASS 64
8 3,959,987
15B 3,959,988
27NM 3,959,990

CLASS 65
3C 3,960,530
4B 3,960,531
22 3,960,532
33 3,960,533
43 3,960,534
104 3,960,535

CLASS 66
8 3,959,991
3,959,992
9B 3,959,993
54 3,959,994

CLASS 70
18 3,959,995
186 3,959,996
419 3,959,997

CLASS 71
1 3,960,536
9 3,960,537
67 3,960,538
76 3,960,539
3,960,540
88 3,960,541
94 3,960,542

CLASS 72
312 3,959,998
364 3,959,999

CLASS 73
15.4 3,960,000
40.7 3,960,001
52 3,960,002
61.1C 3,960,003
67.1 3,960,004
67.7 3,960,005
67.8R 3,960,007
67.8S 3,960,006
84 3,960,008
88F 3,960,009
88.5R 3,960,010
116 3,960,011
136A 3,960,012
141A 3,960,013
151 3,960,014
155 3,960,015
343R 3,960,016
349 3,960,017
398R 3,960,018
420 3,960,019
423A 3,960,020
425.4R 3,960,021
505 3,960,022

CLASS 74
2 3,960,023
52 3,960,024
217B 3,960,025
242.11S 3,960,026
405 3,960,028
413 3,960,029
481 3,960,030
492 3,960,031
501R 3,960,032
522 3,960,033
594.6 3,960,027
609 3,960,034
785 3,960,035
802 3,960,036

CLASS 75
.5R 3,960,545
3 3,960,543
3,960,544
60 3,960,546
3,960,547
78 3,960,548
108 3,960,549
118P 3,960,550
147 3,960,551
171 3,960,552
173R 3,960,553
200 3,960,554

CLASS 76
43 3,960,037

CLASS 81
9.22 3,960,038
52.4R 3,960,039

CLASS 83
18 3,960,040
32R 3,960,047
361 3,960,041
583 3,960,042

CLASS 84
1.01 3,960,044
1.19 3,960,043
376SM 3,960,045
471R 3,960,046

CLASS 85
62 3,960,048

CLASS 86
20B 3,960,049

CLASS 87
1 3,960,050

CLASS 89
1.8 3,960,051
1.816 3,960,054
37BA 3,960,052
149 3,960,053

CLASS 90
1.6A 3,960,055
73 3,960,056

CLASS 91
224 3,960,058
443 3,960,059
487 3,960,060
506 3,960,061

CLASS 92
160 3,960,057

CLASS 93
35R 3,960,062

CLASS 96
1PS 3,960,555
1.4 3,960,556
3 3,960,557
3,960,558
36 3,960,559
3,960,560
36.2 3,960,561
38 3,960,562
40 3,960,563
48PD 3,960,564
60R 3,960,565
61R 3,960,566
66.5 3,960,567
76R 3,960,568
77 3,960,569
100 3,960,570
3,960,571
115P 3,960,572

CLASS 98
40D 3,960,065
43R 3,960,063
60 3,960,064

CLASS 99
323.2 3,960,066
421H 3,960,067
606 3,960,068

CLASS 100
38 3,960,069
49 3,960,070
229A 3,960,071

CLASS 101
35 3,960,072
40 3,960,073
93.14 3,960,074
93.48 3,960,075
119 3,960,076
142 3,960,077
150 3,960,078
232 3,960,079
291 3,960,080
416A 3,960,081

CLASS 102
22 3,960,082
28R 3,960,083
65.2 3,960,084
67 3,960,085
70.2G 3,960,086
90 3,960,087
103 3,960,088

CLASS 104
148LM 3,960,090

CLASS 105
475 3,960,091

CLASS 106
1 3,960,573
3 3,960,574
10 3,960,575
14 3,960,576
44 3,960,577
47Q 3,960,578
52 3,960,579
58 3,960,580
65 3,960,581
90 3,960,582
122 3,960,583
178 3,960,584
274 3,960,585
288B 3,960,586
288Q 3,960,587
3,960,588
296 3,960,589
302 3,960,590
308M 3,960,591
308Q 3,960,592

CLASS 108
41 3,960,092

CLASS 110
3.5 3,960,093

CLASS 112
110 3,960,094
118 3,960,095
121.11 3,960,096
214 3,960,097
228 3,960,089
252 3,960,098

CLASS 113
7R 3,960,099

CLASS 114
61 3,960,100
78 3,960,101
128 3,960,102

CLASS 115
1C 3,960,103

CLASS 116
22R 3,960,105
60 3,960,104
67R 3,960,106
118A 3,960,107

CLASS 118
324 3,960,108
637 3,960,109

CLASS 119
23 3,960,111
28 Re 28,834
3,960,110
51R 3,960,112
99 3,960,113
157 3,960,114

CLASS 123
8.09 3,960,115
8.45 3,960,116
8.49 3,960,117
32EA 3,960,118
3,960,120
32C 3,960,119
34A 3,960,121
97B 3,960,122
103R 3,960,123
117A 3,960,124
3,960,125
120 3,960,126
140MP 3,960,127
148CC 3,960,129
148E 3,960,128
179A 3,960,130
187.5R 3,960,131
196CP 3,960,132
198R 3,960,133

CLASS 126
24 3,960,134
270 3,960,135
271 3,960,136
387 3,960,137

CLASS 128
2F 3,960,139
2H 3,960,138
2.06E 3,960,141
2.06R 3,960,140
2.08 3,960,142
4 3,960,143
58 3,960,144
68.1 3,960,145
75 3,960,146
92B 3,960,147
188 3,960,148
214R 3,960,149
260 3,960,150
334R 3,960,151
335.5 3,960,152
347 3,960,153

CLASS 132
9 3,960,154
3,960,155
31R 3,960,156
40 3,960,157
56 3,960,158
90 3,960,159
112 3,960,160

CLASS 134
37 3,960,593

CLASS 135
1R 3,960,161
35V 3,960,162

CLASS 136
6FS 3,960,596
3,960,597
6LN 3,960,594
3,960,595
86R 3,960,598
111 3,960,599
120EC 3,960,601
120R 3,960,600
134R 3,960,602
135R 3,960,603
233 3,960,604

CLASS 137
56 3,960,163
202 3,960,164
3,960,165
271 3,960,166
375 3,960,167
385 3,960,168
491 3,960,169
3,960,170
495 3,960,171
504 3,960,172
550 3,960,173
563 3,960,174
604 3,960,175
615 3,960,176
625.31 3,960,177

CLASS 138
30 3,960,178
3,960,179
110 3,960,180
178 3,960,181

CLASS 139
91 3,960,182
159 3,960,184
307 3,960,185
447 3,960,183
450 3,960,186

CLASS 141
1R 3,960,187

CLASS 142
7 3,960,188

CLASS 144
3D 3,960,189
3,960,190
32R 3,960,191

CLASS 148
1.5 3,960,605
2 3,960,606
3,960,607
6.14R 3,960,610
6.15R 3,960,611
6.3 3,960,609
12F 3,960,612
23 3,960,613
3,960,614
36 3,960,615
111 3,960,616
121 3,960,617
171 3,960,618
175 3,960,619
3,960,620

CLASS 149
65 3,960,621

CLASS 150
1 3,960,192
52R 3,960,193

CLASS 152
355 3,960,194

CLASS 156
3 3,960,622
16 3,960,623
69 3,960,624
79 3,960,625
93 3,960,626
104 3,960,627
123 3,960,628
180 3,960,629
190 3,960,630
222 3,960,639
244 3,960,631
245 3,960,632
247 3,960,633
277 3,960,634
286 3,960,635
290 3,960,636
293R 3,960,637
305 3,960,638
351 3,960,640
362 3,960,641
384 3,960,642
390 3,960,643
3,960,644
441 3,960,645
518 3,960,646
603 3,960,647

CLASS 160
105 3,960,195
222 3,960,196
371 3,960,197

CLASS 162
29 3,960,648
72 3,960,649
103 3,960,650
105 3,960,651
108 3,960,652
264 3,960,653
342 3,960,654

CLASS 164
7 3,960,198
281 3,960,200
312 3,960,201
325 3,960,202
339 3,960,199

CLASS 165
1 3,960,203
3,960,208
4 3,960,204
8 3,960,209
48 3,960,205
61 3,960,206
104R 3,960,207
149 3,960,210

CLASS 166
187 3,960,211
250 3,960,212
272 3,960,213
3,960,214
315 3,960,215

CLASS 169
48 3,960,216
64 3,960,217

CLASS 172
13 3,960,218
39 3,960,219
261 3,960,220
311 3,960,221

CLASS 174
22R 3,961,127
23C 3,961,128
72B 3,961,129
78 Re 28,837

CLASS 175
263 3,960,222
385 3,960,223

CLASS 176
18 3,960,655
58PB 3,960,656

CLASS 177
47 3,960,224
121 3,960,225
164 3,960,226
210 3,960,227
211 3,960,228

CLASS 178
2E 3,961,130
6.6R 3,961,131
6.7R 3,961,132
6.8 3,961,133
7.3D 3,961,134
7.3R 3,961,135
67 3,961,136
68 3,961,137
69.5R 3,961,138

CLASS 179
15AL 3,961,139
15AT 3,961,140
16EC 3,961,141
81R 3,961,142
84VF 3,961,143
99 3,961,144

CLASS 180
1VS 3,960,229
9.62 3,960,230
19R 3,960,231
64A 3,960,232
77R 3,960,233
82A 3,960,235
132 3,960,234

CLASS 181
33G 3,960,236
33K 3,960,237
3,960,238
49 3,960,239

CLASS 182
20 3,960,240
33.3 3,960,241
36 3,960,242

CLASS 184
6 3,960,243
6.14 3,960,244
6.16 3,960,245

CLASS 185
40H 3,960,246

CLASS 188
1B 3,960,247
181R 3,960,248
264F 3,960,249
281 3,960,250
286 3,960,251

CLASS 190
18A 3,960,252

CLASS 192
67A 3,960,253

CLASS 194
9T 3,960,254

CLASS 195
1.8 3,960,657
5 3,960,659
28N 3,960,660
3,960,661
29 3,960,662
31F 3,960,663
59 3,960,664
66R 3,960,665
68 3,960,666
80R 3,960,667
103.5R 3,960,658
3,960,669
3,960,670

CLASS 197
1R 3,960,255
3,960,256
6.7 3,960,257
127R 3,960,258
151 3,960,259

CLASS 198
19 3,960,260
26 3,960,261
127R 3,960,262
170 3,960,263
179 3,960,264
204 3,960,265
235 3,960,266
278 3,960,267

CLASS 200
155A 3,961,145
157 3,961,146
159B 3,961,147
268 3,961,148

CLASS 202
185R 3,960,668

CLASS 203
7 3,960,671
37 3,960,672

CLASS 204
1R 3,960,673
16 3,960,674
25 3,960,675
38A 3,960,676
55R 3,960,677
67 3,960,678
73A 3,960,679
98 3,960,680
114 3,960,681
157.1H 3,960,682
158R 3,960,683
159.11 3,960,684
159.12 3,960,685
159.19 3,960,686
164 3,960,687
181 3,960,688
195F 3,960,689
195R 3,960,690
3,960,691
195S 3,960,692
3,960,693
219 3,960,694
227 3,960,695
245 3,960,696
252 3,960,697
267 3,960,698
268 3,960,699

CLASS 206
45.33 3,960,268
233 3,960,269
256 3,960,270
315R 3,960,271
389 3,960,272
534 3,960,713

CLASS 208
8 3,960,700
3,960,701
11R 3,960,702
26 3,960,703
50 3,960,704
111 3,960,705
112 3,960,706
113 3,960,707
121 3,960,708
139 3,960,709
3,960,710
3,960,711
216 3,960,712

CLASS 209
139A 3,960,714
166 3,960,715
220 3,960,716

CLASS 210
6 3,960,717
14 3,960,718
23R 3,960,719
25 3,960,721
36 3,960,722
42S 3,960,723
49 3,960,724
67 3,960,725
77 3,960,726
78 3,960,727
167 3,960,728
232 3,960,729
321A 3,960,730
332 3,960,731
386 3,960,732
460 3,960,733
512M 3,960,734

CLASS 211
1.3 3,960,274
4 3,960,273
182 3,960,275

CLASS 214
1BH 3,960,277
1BT 3,960,276
1BV 3,960,279
8.5A 3,960,280
10.5D 3,960,281
16.1CB 3,960,282
17CB 3,960,283
138R 3,960,284
141 3,960,285
674 3,960,286

CLASS 215
253 3,960,287
329 3,960,288

CLASS 219
9.5 3,961,149
10.49 3,961,150
3,961,151
10.55B 3,961,152
56 3,961,153
135 3,961,154
216 3,961,155
331 3,961,156
345 3,961,157
471 3,961,158

CLASS 220
318 3,960,289
338 3,960,290

CLASS 221
36 3,960,291
211 3,960,292
258 3,960,293

CLASS 222
103 3,960,294
145 3,960,295
146HE 3,960,296
449 3,960,297
541 3,960,298
559 3,960,299

CLASS 224
8R 3,960,300
42.1R 3,960,301
45S 3,960,302

CLASS 226
1 3,960,303
74 3,960,304
95 3,960,305
96 3,960,306

CLASS 227
144 3,960,307

CLASS 228
5.1 3,960,308
3,960,309
6R 3,960,310
49 3,960,311

CLASS 229
37R 3,960,312
41B 3,960,313
62 3,960,314
87F 3,960,315

CLASS 232
1C 3,960,316
35 3,960,317

CLASS 233
4 3,960,318
19R 3,960,319

CLASS 235
1D 3,961,159
61.11A 3,961,163
61.11E 3,961,160
3,961,162
61.11F 3,961,161
61.12N 3,961,164
92SH 3,961,165
150.27 3,961,166
152 3,961,167
3,961,168
3,961,169
154 3,961,170
181 3,961,171
3,961,172
184 3,961,173

CLASS 236
15B 3,960,320
100 3,960,321

CLASS 239
3 3,960,323
4 3,960,324
13 3,960,325
214 3,960,326
236 3,960,327
264 3,960,328

CLASS 240
8.18 3,961,174
10.63 3,961,175
81BC 3,961,176

CLASS 241
23 3,960,329
30 3,960,330
43 3,960,331
46.06 3,960,332
46.15 3,960,333
60 3,960,334
236 3,960,335

CLASS 242
18PW 3,960,336
68.3 3,960,337
74.1 3,960,338
107.4R 3,960,339
117 3,960,340
118.1 3,960,341
192 3,960,342

CLASS 244
1R 3,960,343
83D 3,960,348
130 3,960,345
155A 3,960,346
155R 3,960,347
182 3,960,344

CLASS 248
27R 3,960,349
54R 3,960,350
101 3,960,351
188 3,960,352
309R 3,960,353
345.1 3,960,354

CLASS 249
189 3,960,355
205 3,960,356
211 3,960,357

CLASS 250
201 3,961,177
3,961,178
203R 3,961,179
206 3,961,180
208 3,961,181
213VT 3,961,182
214R 3,961,183
231R 3,961,184
3,961,185
272 3,961,186
301 3,961,187
303 3,961,188
304 3,961,189
310 3,961,190
312 3,961,191
315R 3,961,192
324 3,961,193
334 3,961,194
385 3,961,195
3,961,196
493 3,961,197
566 3,961,198

CLASS 251
61.5 3,960,358
141 3,960,361
174 3,960,363
210 3,960,364
286 3,960,365
341 3,960,366

CLASS 252
2 3,960,735
8.55R 3,960,736
62.1L 3,960,737
62.1P 3,960,738
63.2 3,960,739
73 3,960,740
79.3 3,960,741
90 3,960,742
99 3,960,743
102 3,960,744
106 3,960,745
171 3,960,746
182 3,960,747
299 3,960,748
3,960,749
3,960,750
3,960,751
3,960,752
3,960,753
300 3,960,754
301.16 3,960,755
301.18 3,960,756
316 3,960,757
404 3,960,758
408 3,960,759
412 3,960,760
421 3,960,761
426 3,960,762
428 3,960,763
429B 3,960,765
429R 3,960,764
437 3,960,766
3,960,767
444 3,960,768
3,960,769
3,960,770
446 3,960,771
455R 3,960,772
455Z 3,960,774
463 3,960,775
465 3,960,776
3,960,975
514 3,960,777
519 3,960,778
521 3,960,779
532 3,960,780
541 3,960,781
544 3,960,782

CLASS 254
67 3,960,359
139.1 3,960,360
168 3,960,362

CLASS 256
21 3,960,367

CLASS 259
10 3,960,368
111 3,960,369
118 3,960,370

CLASS 260
2R 3,960,783
2.5AW 3,960,788
2.5B 3,960,784
3,960,787
2.5E 3,960,792
2.5R 3,960,785
2.5S 3,960,786
17.3 3,960,794
21 3,960,789
23AR 3,960,791
23XA 3,960,790
28.5AS 3,960,793
29.2EP 3,960,795
29.3 3,960,796
29.6BM 3,960,798
29.6F 3,960,797
30.2 3,960,799
32.8SB 3,960,800
33.6EP 3,960,801
37EP 3,960,803
37SB 3,960,802
3,960,804
37N 3,960,805
40P 3,960,806
40R 3,960,807
42.18 3,960,808
45.75N 3,960,809
46.5UA 3,960,810
47EP 3,960,813
47ET 3,960,811
47UA 3,960,812
47R 3,960,814
49 3,960,815
73L 3,960,816
75M 3,960,817

77.5C 3,960,818
78R 3,960,819
3,960,820
79.3A 3,960,821
79.5P 3,960,822
112R 3,960,827
112.5R 3,960,720
3,960,828
3,960,829
3,960,830
186 3,960,831
209R 3,960,832
210AB 3,960,833
3,960,834
3,960,836
3,960,837
3,960,838
210R 3,960,835
210.5 3,960,839
211.5R 3,960,840
239.1 3,960,843
3,960,844
3,960,845
239.3A 3,960,846
239.55C 3,960,842
239.55R 3,960,841
240F 3,960,848
240K 3,960,847
243C 3,960,849
3,960,850
3,960,851
3,960,852
3,960,853
3,960,855
243D 3,960,854
243R 3,960,856
246B 3,960,857
247.2B 3,960,858
247.5FP 3,960,859
251A 3,960,860
256.4F 3,960,863
256.4Q 3,960,861
256.5R 3,960,862
260 3,960,864
268PL 3,960,865
278 3,960,866
281P 3,960,867
287AN 3,960,868
290HL 3,960,869
293.53 3,960,870
293.57 3,960,871
293.62 3,960,872
293.73 3,960,873
293.82 3,960,874
293.89 3,960,875
294.8C 3,960,876
295.5A 3,960,877
296AE 3,960,878
297B 3,960,879
3,960,880
306.7C 3,960,881
309.5 3,960,883
309.7 3,960,884
326.5FM 3,960,887
326.5A 3,960,885
3,960,888
326.5E 3,960,889
326.5L 3,960,886
326.85 3,960,890
327TH 3,960,891
3,960,892
332.2A 3,960,893
332.3P 3,960,894
340.5 3,960,895
3,960,896
343 3,960,897
343.2F 3,960,898
346.2M 3,960,899
346.8R 3,960,900
3,960,901
348R 3,960,902
369 3,960,903
397.2 3,960,904
403 3,960,905
410.9R 3,960,906
3,960,907
414 3,960,908
429J 3,960,909
438.1 3,960,910
439CY 3,960,911
448A 3,960,912
448.8R 3,960,913
453PH 3,960,916
453P 3,960,914
3,960,915
453R 3,960,943
455A 3,960,917
456A 3,960,918
3,960,919
464 3,960,920
3,960,921
465D 3,960,922
465.3 Re 28,836
3,960,925
465.9 3,960,923
3,960,924
470 3,960,926
471A 3,960,927
473S 3,960,928
3,960,929
475N 3,960,930
479R 3,960,931
3,960,932
482P 3,960,933
484R 3,960,934
485G 3,960,935
488CD 3,960,936
501.2 3,960,937
504S 3,960,938
526N 3,960,939
534E 3,960,941
534R 3,960,942
534S 3,960,940
558R 3,960,944
559R 3,960,945
561H 3,960,946
561R 3,960,947
562B 3,960,948
564B 3,960,949
566AC 3,960,951
566AE 3,960,956
566A 3,960,953
3,960,954
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566R 3,960,950
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566 3,960,957
570R 3,960,960
570.5CA 3,960,961
570.5P 3,960,959
570.9 3,960,958
581 3,960,962
582 3,960,963
583M 3,960,964
584R 3,960,965
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607R 3,960,967
619R 3,960,968
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649R 3,960,974
674R 3,960,976
677R 3,960,977
683.15R 3,960,978
834 3,960,979
835 3,960,980
837R 3,960,981
838 3,960,982
839 3,960,983
857F 3,960,984
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876R 3,960,986
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879 3,960,988
884 3,960,989

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152 3,960,992

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5 3,960,994
3B 3,960,993
27 3,960,995
37 3,960,996
40 3,960,997
45.1 3,960,998
45.3 3,960,999
45.5 3,961,000
46.4 3,961,001
46.5 3,961,002
81 3,961,003
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140 3,961,007
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205 3,961,009
221 3,961,010
251 3,961,011
257 3,961,012
297 3,961,013
3,961,014

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55 3,960,371
320 3,960,372

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3 3,960,375

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1 3,960,381

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12.14 3,960,387
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623 3,960,384
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693 3,960,388
697 3,960,389
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273 3,961,207
297 3,961,208

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216 3,960,419

CLASS 310
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140.1 3,960,420

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417 3,961,220
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49 3,961,222
371 3,961,223

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17 3,960,421
19 3,960,422

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61.5 3,961,226
101R 3,961,227
3,961,228
120 3,961,229
123 3,961,230
139 3,961,231

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46 3,961,232
361 3,961,233
561 3,961,234

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18 3,961,235
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19 3,961,237

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3 3,961,238
15 3,961,239
16R 3,961,240
20CR 3,961,241
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43R 3,961,245
54 3,961,246
65R 3,961,247
71CP 3,961,249
71SN 3,961,248
73AT 3,961,251
3,961,252
3,961,254
73R 3,961,250
83R 3,961,255
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75 3,961,270
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65 3,961,310
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3,961,313
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173LS 3,961,314
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140R 3,961,337

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160LC 3,960,438
3,960,439
161 3,960,440
164 3,960,441
247 3,960,443

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176 3,960,442

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234 3,961,345
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13 3,960,446
75 3,960,447

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103 3,960,449
126 3,960,450
161 3,960,451
173 3,960,452
244 3,961,346
252 3,960,453

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15 3,961,350
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40 3,961,340
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80 3,961,366

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118 3,961,374
137 3,961,375

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209 3,960,455

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368 3,960,461

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146 3,960,464

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234 3,960,466
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61B 3,960,470

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41 3,961,028
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228 3,961,018
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239 3,961,020
242 3,961,021
247 3,961,016
286 3,961,017
332 3,961,022
383 3,961,023
406 3,961,024
415R 3,961,025
419 3,961,026
502 3,961,033
563 3,961,035
628 3,961,036
656 3,961,037

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35 3,961,041
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3,961,044
3,961,045
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122 3,961,047
3,961,048
174 3,961,051
200 3,961,052
211 3,961,049
216 3,961,050
243 3,961,053
245 3,961,054
247 3,961,055
248 3,961,056
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258 3,961,062
263 3,961,063
266 3,961,064
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267 3,961,066
270 3,961,067
273 3,960,882
3,961,068
283 3,961,069
304 3,961,070
319 3,961,071
324 3,961,072
325 3,961,073
330 3,961,076

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393 3,960,472
467 3,960,473
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505 3,960,475

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	3,961,088	644	3,961,096		3,961,101	390	3,961,110	90	3,961,116	250	3,961,124
274	3,961,089	658	3,961,081		3,961,102	419	3,961,111	96	3,961,117	261	3,961,125
281	3,961,090		CLASS 427	198	3,961,104		CLASS 428	151	3,961,118		CLASS 526
307	3,961,091	2	3,961,097	220	3,961,105			178	3,961,119	85	3,960,824
331	3,961,092	34	3,961,098	221	3,961,106	29	3,961,112	200	3,961,121	103	3,960,826
535	3,961,093	39	3,961,103	246	3,961,107	35	3,961,113	210	3,961,120	206	3,960,825
536	3,961,094	43	3,961,099	275	3,961,108	38	3,961,114	220	3,961,122	237	3,960,823

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		240,093	D 8—	14	240,107		106	240,120		40	240,131			240,143	D48—	16B	240,157
	400	240,094			240,108			240,121		68	240,132	D32—	2C	240,144		D	240,156
D4—	15	240,095		71	240,109		114	240,122		139	240,133			240,145	D55—	1R	240,158
D6—	24	240,098		90	240,110		123	240,123	D24—	1B	240,134	D34—	4R	240,146	D56—	4B	240,159
	47	240,096		96	240,111	D12—	156	240,124	D25—	35	240,126			240,147	D64—	12	240,163
	60	240,097	D 9—	9	240,112		181	240,125	D26—	5C	240,135		5VV	240,148			240,164
	146	240,100		146	240,113	D16—	14	240,161			240,136		11A	240,149	D73—	1	240,165
		240,101		219	240,114		15	240,160			240,137		15DD	240,150	D83—	F	240,166
		240,102		222	240,115		31	240,162		14B	240,138		R	240,151	D86—	10E	240,167
	157	240,103		224	240,116	D22—		240,127	D27—	42	240,139	D35—	2	240,152	D96—	12F	240,168
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D 7—	130	240,105															

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P. —	20	3,899	P. —	55	3,900	P. —	75	3,896	P. —		3,897	P. —		3,898		

DEFENSIVE PUBLICATIONS APPLICATIONS

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23—	230R	T947,004	156—	344	T947,009	206—	504	T947,001	252—	8.55D	T947,003		683R	T947,006	356—	114	T947,008
34—	9	T947,010	176—	18	T947,011	219—	216	T947,012	260—	31.8R	T947,002	339—	159A	T947,007	444—	1	T947,005

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,959,925		3,960,107		3,960,509		3,961,335		3,960,777		3,959,921
	3,960,054		3,960,117		3,960,512		3,961,336		3,960,778		3,959,940
	3,960,140		3,960,128		3,960,515		3,961,350		3,960,932		3,959,949
	3,960,694		3,960,142		3,960,552	8 :	3,959,834		3,960,956		3,959,983
	3,961,097		3,960,145		3,960,589		3,960,113		3,960,979		3,960,006
	3,961,146		3,960,146		3,960,613		3,960,139		3,960,984		3,960,042
	3,961,272		3,960,155		3,960,614		3,960,349		3,961,112		3,960,043
4 :	3,959,844		3,960,156		3,960,632		3,960,456		3,961,164		3,960,048
	3,959,968		3,960,159		3,960,643		3,960,472	11 :	3,960,133		3,960,059
	3,960,131		3,960,179		3,960,644		3,960,702		3,960,695		3,960,061
	3,960,268		3,960,181		3,960,734		3,961,077	12 :	3,959,837		3,960,075
	3,960,330		3,960,196		3,960,747		3,961,140		3,959,849		3,960,094
	3,960,527		3,960,206		3,960,832		3,961,369		3,959,855		3,960,095
	3,960,550		3,960,211		3,960,907		3,961,370		3,959,881		3,960,149
	3,960,735		3,960,212		3,960,917		3,961,372		3,959,905		3,960,172
	3,961,238		3,960,215		3,960,922	9 :	3,959,895		3,959,953		3,960,173
5 :	3,959,912		3,960,218		3,960,936		3,959,916		3,959,980		3,960,174
	3,960,281		3,960,236		3,960,943		3,959,947		3,960,111		3,960,191
	3,960,362		3,960,246		3,960,951		3,959,997		3,960,171		3,960,238
	3,961,318		3,960,269		3,960,957		3,960,144		3,960,224		3,960,242
6 :	3,959,826		3,960,271		3,960,995		3,960,152		3,960,231		3,960,250
	3,959,831		3,960,272		3,961,007		3,960,208		3,960,244		3,960,270
	3,959,846		3,960,277		3,961,015		3,960,227		3,960,353		3,960,286
	3,959,871		3,960,282		3,961,059		3,960,348		3,960,430		3,960,305
	3,959,880		3,960,293		3,961,081		3,960,416		3,960,539		3,960,313
	3,959,883		3,960,294		3,961,091		3,960,419		3,960,626		3,960,347
	3,959,885		3,960,297		3,961,099		3,960,425		3,960,650		3,960,354
	3,959,886		3,960,302		3,961,130		3,960,442		3,960,679		3,960,365
	3,959,918		3,960,317		3,961,139		3,960,502		3,961,228		3,960,373
	3,959,922		3,960,319		3,961,153		3,960,542		3,961,249		3,960,391
	3,959,937		3,960,325		3,961,163		3,960,657		3,961,288		3,960,397
	3,959,948		3,960,331		3,961,172		3,960,658		3,961,296		3,960,406
	3,959,975		3,960,338		3,961,179		3,960,739	13 :	3,960,240		3,960,412
	3,959,987		3,960,342		3,961,180		3,960,754		3,960,563		3,960,415
	3,959,989		3,960,343		3,961,182		3,960,785		3,960,606		3,960,435
	3,959,995		3,960,356		3,961,197		3,960,869		3,960,756		3,960,447
	3,960,002		3,960,361		3,961,198		3,960,901		3,960,897		3,960,454
	3,960,004		3,960,363		3,961,214		3,960,913		3,961,002		3,960,469
	3,960,013		3,960,402		3,961,224		3,960,963	15 :	3,961,292		3,960,499
	3,960,014		3,960,422		3,961,237		3,960,983		3,961,330		3,960,546
	3,960,033		3,960,428		3,961,274		3,961,035	17 :	3,959,825		3,960,624
	3,960,036		3,960,429		3,961,279		3,961,065		3,959,839		3,960,709
	3,960,047		3,960,432		3,961,282		3,961,067		3,959,854		3,960,710
	3,960,052		3,960,437		3,961,283		3,961,132		3,959,868		3,960,711
	3,960,070		3,960,440		3,961,284		3,961,157		3,959,893		3,960,712
	3,960,074		3,960,448		3,961,286		3,961,231		3,959,896		3,960,721
	3,960,080		3,960,449		3,961,291		3,961,239		3,959,899		3,960,733
	3,960,091		3,960,452		3,961,305		3,961,304		3,959,901		3,960,742
	3,960,093		3,960,465		3,961,316		3,961,329		3,959,903		3,960,774
	3,960,099		3,960,466		3,961,325	10 :	3,960,528		3,959,907		3,960,816
	3,960,104		3,960,497		3,961,334		3,960,746		3,959,915		3,960,865

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10 : T947,001
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34 : T947,004
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47 : T947,002
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Examination

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent & Trademark Office as patent attorneys or agents will be held on Tuesday, September 7, 1976.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent & Trademark Office in patent cases must, pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent & Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

The examination will be given under the supervision of the Civil Service Commission, and may be taken in any of the cities in which the Civil Service Commission regularly conducts examinations. Applications to take the examination must be filed in the Patent & Trademark Office together with a $35 fee not later than July 31, 1976.

Application blanks may be obtained from the Clerk of the Patent & Trademark Office Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents & Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

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Chairman, Committee on Enrollment.

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The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before July 9, 1976.

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Patent Suits

Notices under 35 U.S.C. 290: Patent Act of 1952

3,129,442, T. L. Leckie, STENCIL PRINTING OF THICK FABRICS; **3,140,028,** same, PRINTING OF THICK FABRICS AND STENCIL PRINTING APPARATUS, **filed** Aug. 21, 1973, D.C., N.D. Ga. (Atlanta) Doc. 18829, *Champion International Corporation* v. *Bradford Dyers' Association Limited.* Stipulation of dismissal with prejudice, Feb. 23, 1976.

3,140,028. (See 3,129,442.)

3,142,368, J. W. Roney, ELECTRICAL COLLECTOR ASSEMBLY; **3,249,704,** D. H. Scofield, ELECTRICAL CONDUCTOR BAR FOR TROLLEY ELECTRIFICATION SYSTEMS; **3,452,433,** same, METHOD OF MANUFACTURING ELECTRICAL CONDUCTOR BARS FOR TROLLEY ELECTRIFICATION SYSTEMS, **filed** Feb. 24, 1976, D.C., C.D. Calif. (Los Angeles) Doc. CV–76–0605–IH, *Duct-O-Wire Company* v. *Insul-8 Corporation.*

3,218,220, N. Weber, STRENGTHENED GLASS ARTICLE AND METHOD OF PRODUCING SAME, **filed** Feb. 18, 1976, D.C., W.D.N.Y. (Buffalo) Doc. C–7–68, *PPG Industries, Inc.* v. *Bausch & Lomb, Inc.*

3,249,704. (See 3,142,368.)

3,319,052, G. Arshal, DIRECTIONAL COMPUTER, **filed** Dec. 12, 1975, United States Court of Claims (District of Columbia) Doc. 431–75, *George Arshal* v. *The United States.*

3,325,573, Boon and Hager, MANUFACTURE OF FOAM MATERIAL, **filed** Mar. 28, 1973, D.C. Md. (Baltimore) Doc. 73–279–N, *Reeves Brothers, Inc.* v. *Wm. T. Burnett & Company, Inc.* Stipulated order of dismissal pursuant to Rule 41(a)(1)(ii), F.R.C.P., Feb. 27, 1976.

3,394,498, Reinitz and Scott, TRAFFIC CONTROL DEVICES, **filed** Mar. 7, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c754, *Saftran Systems Corporation* v. *National Electric Control Co. et al.* Order, the above cause of action is hereby stricken from this court's call without prejudice and with leave to reinstate upon motion, Oct. 3, 1975.

3,396,342, A. E. Feinberg, POWER SUPPLY CIRCUIT FOR CONTINUOUS WAVE MAGNETRON OPERATED BY PULSED DIRECT CURRENT, **filed** Feb. 17, 1976, D.C., N.D. Ill. (Chicago) Doc. 76c553, *Advance Transformer Co.* v. *Wieboldt Stores, Inc.*

3,415,129, R. D. Stamm, DUAL BAND PUSHBUTTON TUNER; **3,463,017,** Stamm and Smart, same, **filed** Feb. 27, 1976, D.C. Del. (Wilmington) Doc. 7–97, *General Instrument Corporation* v. *Lear Jet Stereo, Inc.*

3,452,433. (See 3,142,368.)

3,463,017. (See 3,415,129.)

3,674,061, Calisher and Burbick, LIQUID TRANSFER APPARATUS WITH PRESSURE-SENSITIVE AUTOMATIC SHUT-OFF NOZZLE, **filed** Feb. 26, 1976, D.C.N.J. (Trenton) Doc. C–76–351, *DeLaval Turbine, Inc.* v. *Aeroquip Corporation.*

3,724,789, S. L. Snyder, RAM AIR GLIDE PARACHUTE, **filed** Jan. 21, 1976, D.C., N.D. Calif. (San Francisco), Doc. C–76–149, *Lucasey Manufacturing Co., Inc.* v. *Peerless Sales Co.*

3,737,135, W. A. Bertolini, LOCKING DEVICE; **3,767,255,** same, CHASSIS WITH LOCKING DEVICE, **filed** Feb. 5, 1974, D.C.N.J. (Newark) Doc. C–74–162, *Bertolini Engineering Co., Inc.* v. *Zim-Israel Navigation Co., Ltd.* Order of dismissal of action, Mar. 2, 1976.

3,767,255. (See 3,737,135.)

3,785,569, R. Helmrich, AEROSOL GRENADE, **filed** Feb. 11, 1976, D.C.N.J. (Newark) Doc. 76–265, *Diamond Aerosol Corporation* v. *Security Laboratories, Inc. et al.*

3,852,846, L. E. Slaybaugh, DOOR HOLD OPEN ATTACHMENT FOR A DOOR CHECK, **filed** Feb. 26, 1976, D.C., S.D. Ill. (Peoria) Doc. P–C–76–0017, *Republic Industries, Inc.* v. *Schlage Lock Company.*

3,887,768, Forney, Jr. and Gallager, SIGNAL STRUCTURES FOR DOUBLE SIDE BAND-QUADRATURE CARRIER MODULATION, **filed** Feb. 27, 1976, D.C. Fla. (Miami) Doc. 75–435–C–CF, *Codex Corporation* v. *Milgo Electronic Corporation.*

D. 215,259, M. J. Syverson, BEVERAGE DISPENSER, **filed** Feb. 20, 1976, D.C., N.D. Iowa (Cedar Rapids) Doc. C76–2004, *Fountain Industries, Inc.* v. *Professional Office Services, Inc. and Lester Purtee.*

PATENT NOTICES

Certificates of Correction for the Week of June 8, 1976

Re. 28,528	3,897,782	3,931,294	3,942,993
Re. 28,579	3,898,312	3,931,327	3,943,403
Re. 28,749	3,898,715	3,931,977	3,943,472
D. 238,732	3,900,578	3,932,332	3,943,892
D. 238,733	3,901,062	3,932,554	3,943,898
D. 238,734	3,903,183	3,932,781	3,943,988
D. 239,175	3,904,793	3,933,561	3,943,998
3,699,944	3,906,801	3,934,067	3,944,249
3,729,688	3,907,273	3,934,111	3,944,402
3,766,058	3,907,779	3,934,222	3,944,457
3,769,426	3,909,183	3,934,438	3,944,674
3,771,925	3,909,285	3,934,563	3,944,684
3,778,861	3,909,308	3,934,911	3,944,796
3,783,260	3,910,965	3,934,984	3,945,083
3,785,833	3,911,400	3,935,091	3,945,245
3,794,869	3,912,430	3,935,221	3,945,493
3,812,170	3,912,443	3,935,480	3,945,547
3,814,570	3,912,665	3,935,728	3,945,741
3,816,307	3,913,343	3,936,153	3,945,945
3,816,458	3,913,752	3,936,169	3,946,105
3,816,463	3,914,828	3,936,400	3,946,254
3,821,291	3,915,375	3,936,597	3,946,285
3,831,652	3,915,540	3,937,116	3,946,311
3,836,577	3,916,320	3,937,204	3,946,346
3,838,066	3,916,509	3,937,765	3,946,438
3,842,048	3,917,597	3,937,964	3,946,494
3,844,991	3,918,174	3,938,371	3,946,545
3,850,802	3,918,233	3,938,384	3,946,614
3,851,535	3,918,467	3,938,408	3,946,732
3,853,937	3,919,762	3,938,440	3,947,133
3,862,727	3,921,888	3,938,879	3,947,206
3,866,049	3,923,186	3,938,987	3,947,275
3,869,538	3,924,366	3,939,247	3,947,319
3,873,320	3,924,452	3,939,512	3,947,339
3,874,649	3,924,897	3,939,527	3,947,431
3,874,916	3,924,963	3,939,536	3,947,443
3,879,260	3,925,019	3,939,545	3,947,454
3,879,560	3,925,373	3,939,568	3,947,478
3,879,678	3,925,515	3,939,626	3,947,642
3,880,995	3,926,804	3,939,719	3,947,647
3,881,802	3,926,873	3,940,226	3,947,681
3,886,820	3,926,896	3,940,594	3,947,742
3,887,703	3,927,401	3,940,776	3,947,773
3,888,655	3,927,664	3,941,648	3,947,872
3,888,855	3,927,673	3,941,674	3,947,959
3,893,177	3,928,730	3,941,739	3,948,192
3,893,575	3,929,108	3,941,816	3,948,563
3,896,087	3,929,383	3,941,866	3,949,101
3,897,434	3,929,681	3,941,986	3,949,272
3,897,481	3,930,239	3,942,718	3,949,976
3,897,561	3,930,981	3,942,988	

Dedication

3,788,788.—*Karl Hehl*, Lossburg, Wurttemberg, Germany. INJECTION MOLDING MACHINE. Patent dated Jan. 29, 1974. Dedication filed May 14, 1976, by the inventor.

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

3,198,043.—*Paul K. Davis*, Alameda, Calif. PIPE CUTTING AND HANDLING APPARATUS. Patent dated Aug. 3, 1965. Disclaimer filed Apr. 12, 1976, by the assignee, *Pacific Roller Die Co., Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 of said patent.

3,257,881.—*Paul K. Davis*, Alameda, Calif. PIPE CUTTING AND HANDLING METHOD. Patent dated June 28, 1966. Disclaimer filed Apr. 12, 1976, by the assignee, *Pacific Roller Die Co., Inc.*

Hereby enters this disclaimer to claim 5 of said patent.

3,599,837.—*Douglas W. Anderson*, Palatine, Ill. PLASTIC DISPENSING CONTAINER AND CLOSURE THEREFOR. Patent dated Aug. 17, 1971. Disclaimer filed Mar. 31, 1976, by the assignee, *Dave Chapman, Design, Inc.*

Hereby enters this disclaimer to claims 5, 6 and 7 of said patent.

3,928,630.—*Fulvio Perini*, Palo Alto, Calif. ENZYMATIC PROCESSES FOR HYDROLYZING PROTEINS. Patent dated Dec. 23, 1975. Disclaimer filed Apr. 9, 1976, by the assignee, *Syntex (U.S.A.) Inc.*

Hereby enters this disclaimer to all claims of said patent.

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DOUGLAS J. CAMPION,
Patent Program Coordinator.

U.S. DEPARTMENT OF THE ARMY

Office of Judge Advocate General, Patent Division, Room 2C–455, Pentagon, Washington, D.C. 20310

Patent 3,879,997. Pressure Check Apparatus for Electrical Connector Contacts. Filed Jan. 29, 1974. Patented Apr. 29, 1975. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Research Agreements and Patent Mgmt. Branch, General Services Division, Federal Bldg., Agricultural Research Service, Hyattsville, Md. 20782

Patent 3,907,497. Catalysis With Odor Free Hydroxymethanesulfonic Acid in the Finishing of Cellulosic Textiles. Filed Oct. 10, 1973. Patented Sept. 23, 1975. Not available NTIS.

Patent 3,909,861. Aluminum Chlorhydroxide Catalyst Systems for Treatments to Give Wrinkle Resistant Textiles. Filed Oct. 5, 1973. Patented Oct. 7, 1975. Not available NTIS.

Patent 3,910,760. Azeotropic Solvents for Permanent Press Treatments of Cotton and Cotton Blend Fabrics. Filed May 14, 1973. Patented Oct. 7, 1975. Not available NTIS.

Patent 3,910,886. Organo-Phosphorus Compounds Containing Perfluoroalkyl Radicals and Aziridine Radicals. Filed June 9, 1971. Patented Oct. 7, 1975. Not available NTIS.

Patent 3,912,449. Process for Preparing Water Repellent Cotton Textiles and the Product. Filed Jan. 31, 1973. Patented Oct. 14, 1975. Not available NTIS.

Patent 3,914,109. Cotton-Oxime, Cotton-Semicarbazone, and Cotton-Hydantoin-Textile Products of High Nitrogen Content. Filed Apr. 6, 1973. Patented Oct. 21, 1975. Not available NTIS.

Patent 3,915,631. Processes to Make Olive Drab to Greenish-Gold Mineral Dye Shades for Cellulosics. Filed June 28, 1973. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,915,915. Flame Proofing Textile Treating Composition of Tris(Hydroxymethyl) Phosphine-Urea Adduct and Polyvinylbromide. Filed June 28, 1972. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,917,446. Single Bath Fungicidal Chrome-Zirconyl Acetate Mineral Dyeing Process for Cellulosics. Filed Mar. 22, 1974. Patented Nov. 4, 1975. Not available NTIS.

Patent 3,917,638. 1,3-Diacyl Derivatives of Imidazolidine. Filed Mar. 4, 1974. Patented Nov. 4, 1975. Not available NTIS.

Patent 3,918,899. Carboxymethyl (CM) Cottons Prepared in Non-Aqueous Media. Filed Aug. 16, 1974. Patented Nov. 11, 1975. Not available NTIS.

Patent 3,918,903. Dehydration Process to Impart Wrinkle Resistance to Cellulose-Containing Fibrous Materials. Filed July 25, 1972. Patented Nov. 11, 1975. Not available NTIS.

Patent 3,919,439. Method of Application of THPOH-NH3 Fire Retardant Finish to Textiles. Filed May 10, 1974. Patented Nov. 11, 1975. Not available NTIS.

Patent 3,926,550. Cotton-Tung Oil Durable-Press Textiles With High Flex Abrasion Resistance. Filed Nov. 26, 1974. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,926,555. Modification of Cotton Textiles and Cotton/Polyester Textile Blends by Photo-Initiated Polymerization of Vinylic Monomers. Filed Mar. 16, 1973. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,929,535. Color Reversible, Mirror Surface Glassy Materials From Plumbite-Treated Cellulosics. Filed Aug. 22, 1974. Patented Dec. 30, 1975. Not available NTIS.

Patent 3,929,634. Removal of Mercury From Aqueous Solutions Employing Naval Stores Products. Filed Aug. 16, 1974. Patented Dec. 30, 1975. Not available NTIS.

Patent 3,932,123. Flameproofing of Cotton Cellulose With Hexamethyl Phosphorous Triamide. Filed Mar. 16, 1973. Patented June 13, 1976. Not available NTIS.

Patent 3,932,560. High-Molecular Weight Acidic Polymers. Filed Aug. 28, 1974. Patented Jan. 13, 1976. Not available NTIS.

Patent 3,933,944. Bis(Phosphono)Dicarboxylic Acid Derivatives. Filed Dec. 4, 1972. Patented Jan. 20, 1976. Not available NTIS.

Patent 3,934,971. Process for Preparing Multicolored Cotton Pile Fabric. Filed June 4, 1974. Patented Jan. 27, 1976. Not available NTIS.

Patent 3,936,580. Electrically Conductive Glasslike Films on Glass or Ceramic Surfaces From Aluminum and Plumbite-Treated Cellulosics. Filed Aug. 22, 1974. Patented Feb. 3, 1976. Not available NTIS.

U.S. DEPARTMENT OF COMMERCE
Assistant General Counsel for Administration
Washington, D.C. 20230

Patent application 663,401. High Speed, Wide Dynamic Range Analog-to-Digital Conversion. Filed Mar. 3, 1976. PC $3.50/MF $2.25.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Reseach
Code 302, Arlington, Va. 22217

Patent application 638,138. Homing Projectile. Filed Dec. 5, 1975. PC $3.50/MF $2.25.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 641,784. Load Regulating Latch. Filed Dec. 18, 1975. PC $3.50/MF $2.25.

Patent 3,923,166. Remote Manipulator System. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,444. Ultrasonic Calibration Device. Patented Dec 9, 1975. Not available NTIS.

Patent 3,925,104. Thermocouple Tape. Patented Dec. 9, 1975. Not available NTIS.

Patent 3,926,482. Fluid Journal Bearings. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,927,324. Micrometeoroid Velocity and Trajectory Analyzer. Patented Dec. 16, 1975. Not available NTIS.

U.S. DEPARTMENT OF THE ARMY
Office of Judge Advocate General, Patent Division, Room 2C–455, Pentagon, Washington, D.C. 20310

Patent 3,432,855. Moving Target Indicator. Filed Feb. 5, 1968. Patented Mar. 11, 1969. Not available NTIS.

Patent 3,642,580. Enzymatic Saccharification of Cellulose. Filed Jan. 8, 1970. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,773,799. Diglycidyl Ether of 4-Methylol Resorcinol. Filed July 6, 1971. Patented Nov. 20, 1973. Not available NTIS.

Patent 3,855,004. Method of Producing Current With Ceramic Ferroelectric Device. Filed Nov. 1, 1973. Patented Dec. 17, 1974. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 623,529. Turbine Blade With Secondary Air Nozzles Cast Integral With the Turbine Blades. Filed Oct. 17, 1975. PC $3.50/MF $2.25.

Patent application 634,799. Composite Rocket Nozzle Structure. Filed Nov. 25, 1975. PC $3.50/MF $2.25.

Patent application 635,001. Mass Flowmeter Starting System. Filed Nov. 25, 1975. PC $3.50/MF $2.25.

Patent 3,924,406. Embedded Porous Element Rocket Motor. Filed May 3, 1973. Patented Dec. 9, 1975. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements and Patent Mgmt. Branch, General Services Division, Federal Bldg., Agricultural Research Service, Hyattsville, Md. 20782

Patent 3,647,893. Process for the Preparation of Alkyl and Aryl Iodine. Filed Mar. 23, 1970. Patented Mar. 7, 1972. Not available NTIS.

Patent 3,652,682. Process for the Preparation of Alkyl, Perfluoroalkyl and Aryl Iodides. Filed Mar. 23, 1970. Patened Mar. 28, 1972. Not available NTIS.

Patent 3,784,114. Protein-Enriched Whey Fractions. Filed June 7, 1972. Patented Jan. 8, 1974. Not available NTIS.

Patent 3,809,772. Process for Preparing a Food Adjunct From Collagen. Filed Jan. 5, 1971. Patented May 7, 1974. Not available NTIS.

Patent 3,824,319. Arthropod Maturation Inhibition Employing Certain Epoxy Compounds. Filed Jan. 7, 1971. Patented July 16, 1974. Not available NTIS.

Patent 3,842,128. Arthropod Maturation Inhibitors. Filed Apr. 6, 1973. Patented Oct. 15, 1974. Not available NTIS.

Patent 3,846,451. Arthropod Maturation Inhibitors. Filed Apr. 6, 1973. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,846,458. Arthropod Maturation Inhibitors. Filed Apr. 6, 1973. Patented Nov. 5, 1974. Not available NTIS.

Patent 3,852,472. Certain Ethers of Open Chain Terpenoids as Insect Control Agents. Filed May 23, 1973. Patented Dec. 3, 1974. Not available NTIS.

Patent 3,930,037. Process for Preparing Mixtures of Carotenoid Pigments. Filed Oct. 9, 1974. Patented Dec. 30, 1975. Not available NTIS.

Patent 3,930,038. Method for Coloring Fruits and Vegetables. Filed Oct. 9, 1974. Patented Dec. 30, 1975. Not available NTIS.

Patent 3,934,046. Water Leaching Pre-Fried Potato Slices. Filed Apr. 6, 1973. Patented Jan. 20, 1976. Not available NTIS.

U.S. DEPARTMENT OF TRANSPORTATION
Patent Counsel, 400 7th St., SW.,
Washington, D.C. 20590

Patent 3,758,775. Railroad Crossing Signalling System. Filed Sept. 29, 1971. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,880,610. Universal Function Module. Filed Dec. 14, 1973. Patented Apr. 29, 1975. Not available NTIS.

Patent 3,899,213. Airborne Laser Remote Sensing System for the Detection and Identification of Oil Spills. Filed Mar. 8, 1974. Patented Aug. 12, 1975. Not available NTIS.

Patent 3,905,012. Dynamic Railroad Freight Car Monitoring System. Filed Aug. 2, 1974. Patented Sept. 9, 1975. Not available NTIS.

Patent 3,911,389. Magnetic Gradient Vehicle Detector. Filed Mar. 21, 1974. Patented Oct. 7, 1975. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch,
Westwood Bldg., Bethesda, Md. 20014

Patent 3,925,547. Isolation and Purification of Active Principle of Fruit of Synsepalum Dulcificum. Filed Apr. 24, 1973. Patented Dec. 9, 1975. Not available NTIS.

Patent 3,928,584. Extracts From Active Tree Saps for Treating P388 Mouse Leukemia. Filed Apr. 5, 1972. Patented Dec. 23, 1975. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Reseach
Code 302, Arlington, Va. 22217

Patent application 588,450. Hydraulic Fluidic Level Control System. Filed June 19, 1975. PC $3.50/MF $2.25.

Patent application 610,207. Method and Apparatus for Direct Radon Measurement. Filed Sept. 4, 1975. PC $3.50/MF $2.25.

Patent application 625,449. Fuze. Filed Oct. 24, 1975. PC $3.50/MF $2.25.

Patent application 628,631. Digital Mean Clutter Doppler Compensation System. Filed Nov. 4, 1975. PC $3.50/MF $2.25.

Patent application 648,557. Steerable Extraction Rocket. Filed Jan. 12, 1976. PC $3.50/MF $2.25.

Patent 3,585,114. Tin Plating Bath Having Organic Compound. Filed May 14, 1969. Patented June 15, 1971. Not available NTIS.

Patent 3,830,663. Battery Holder for Satellite and Method. Filed Mar. 5, 1973. Patented Aug. 20, 1974. Not available NTIS.

Patent 3,830,674. Propellant Composition Containing Beryllium and an Energetic Difluoramino Containing Binder. Filed Apr. 29, 1969. Patented Aug. 20, 1974. Not available NTIS.

Patent 3,836,951. Heterodyne Autocorrelation Guidance System. Filed May 5, 1960. Patented Sept. 17, 1974. Not available NTIS.

Patent 3,838,422. Radar Adaptive Video Processor. Filed Sept. 20, 1973. Patented Sept. 24, 1974. Not available NTIS.

Patent 3,839,720. Corporate Feed System for Cylindrical Antenna Array. Filed June 25, 1973. Patented Oct. 1, 1974. Not available NTIS.

Patent 3,840,797. Related Power Supply. Filed Dec. 28, 1970. Patented Oct. 8, 1974. Not available NTIS.

Patent 3,842,841. Constant Current Power Pack for Bone Healing and Method of Use. Filed Oct. 29, 1971. Patented Oct. 22, 1974. Not available NTIS.

Patent 3,851,300. Transducer. Filed Nov. 3, 1971. Patented Nov. 26, 1974. Not available NTIS.

Patent 3,851,586. Temperature Compensated Pyrotechnic Delays. Filed May 15, 1973. Patented Dec. 3, 1974. Not available NTIS.

Patent 3,893,042. Lock Indicator for Phase-Locked Loops. Filed Dec. 12, 1973. Patented July 1, 1975. Not available NTIS.

Patent 3,893,061. Underwater Acoustic Detection System. Filed May 13, 1970. Patented July 1, 1975. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

Patent application 634,214. Control for Nuclear Thermionic Power Source. Filed Oct. 17, 1975. PC $3.50/MF $2.25.

Patent application 640,806. Ceramic Fiber Insulating Material and Methods of Producing Same. Filed Dec. 15, 1975. PC $4.00/MF $2.25.

Patent application 641,302. Improved Accumulator. Filed Dec. 18, 1975. PC $3.50/MF $2.25.

Patent application 641,862. High Visibility Air Sea Rescue Panel. Filed Dec. 17, 1975. PC $3.50/MF $2.25.

Patent application 643,041. Selective Coating for Solar Panels. Filed Dec. 22, 1975. PC $3.50/MF $2.25.

Patent application 643,897. Method and Apparatus for Splitting a Beam of Energy. Filed Dec. 23, 1975. PC $4.00/MF $2.25.

Patent 3,916,060. Fiber Modified Polyurethane Foam for Ballistic Protection. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,916,187. Cosmic Dust Analyzer. Patented Oct. 28, 1975. Not available NTIS.

Patent 3,922,930. Remotely Operable Articulated Manipulator. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,137. Deuterium Pass Through Target. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,164. High Temperature Beryllium Oxide Capacitor. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,200. Atomic Standard With Variable Storage Volume. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,237. Horn Antenna Having V-Shaped Corrugated Slots. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,924,239. Dichroic Plate. Patented Dec. 2, 1975. Not available NTIS.

Patent 3,925,312. Polyimides of Ether-Linked Aryl Tetracarboxylic Dianhydrides. Patented Dec. 9, 1975. Not available NTIS.

Patent 3,926,567. Cermet Composition and Method of Fabrication. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,927,227. Method for Manufacturing Mirrors in Zero Gravity Environment. Patented Dec. 16, 1975. Not available NTIS.

Patent 3,927,408. Single Frequency, Two Feed Dish Antenna Having Switchable Beamwidth. Patented Dec. 16, 1975. Not available NTIS.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 8, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds: Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-2-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-31-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-7-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-2-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-21-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-1-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-23-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-22-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	11-7-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	6-16-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-10-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-5-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-6-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-16-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-15-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	10-2-75

Expiration of patents: The patents within the range of numbers indicated below expire during May 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

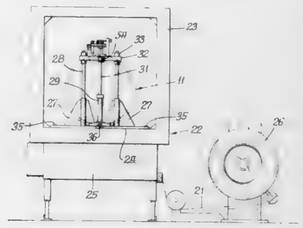
Patents..... Numbers 2,884,634 to 2,588,678 inclusive
Plant Patents..... Numbers 1,829 to 1,837 inclusive

REISSUES

JUNE 8, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,838
WHEEL RIM STRIP ASSEMBLY
Eugene von Heitlinger, Chicago, Ill., assignor to Signode Corporation, Glenview, Ill.
Original No. 3,840,956, dated Oct. 15, 1974, Ser. No. 439,383, Feb. 4, 1974. Application for reissue July 7, 1975, Ser. No. 593,561
Int. Cl.[2] B23P *23/04*; **B21K** *1/34*
U.S. Cl. 29—33.5 **7 Claims**



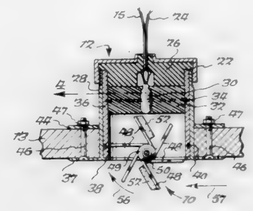
1. Apparatus for mounting a nylon strip around the periphery of the rim of a spoked wheel having a valve stem hole therethrough and spokes with their outer ends secured to said rim by nipples extending therethrough, *comprising strapping means*, wheel support means including locator means cooperating with said valve stem hole to properly position said wheel thereon when in a loading position, manually operable control means for initiating movement of said support means to an operative position relative to said strapping means, switch means automatically operable to stop movement of said support means in said operative position and to initiate cyclic actuation of said strapping means to wrap a nylon strip peripherally around said rim, tension, cut and secure the ends of said strip together, and piercing means operable in response to completion of said cyclic actuation of said strapping means to cut an aperture in said strip coinciding with said valve stem hole and to initiate movement of said support means to return said wheel to loading position.

7. Apparatus for mounting a nylon strip around the periphery of the rim of a spoked wheel having a valve stem hole therethrough and spokes with their outer ends secured to said rim by nipples extending therethrough, comprising strapping means, wheel support means including locator means cooperating with said valve stem hole to properly position said wheel thereon, means for initiating cyclic actuation of said strapping means to wrap a nylon strip peripherally around said rim, tension, cut and secure the ends of said strip together, and piercing means operable in response to completion of said cyclic actuation of said strapping means to cut an aperture in said strip coinciding with said valve stem hole.

Re. 28,839
MARINE SPEEDOMETER
Ronald R. Overs, 96 Fox Hunt Lane, East Amherst, N.Y 14051
Original No. 3,706,224, dated Nov. 14, 1972, Ser. No. 112,268, Feb. 3, 1971. Application for reissue Feb. 11, 1974, Ser. No. 441,270
Int. Cl.[2] G01C *21/10*
U.S. Cl. 73—187 **9 Claims**

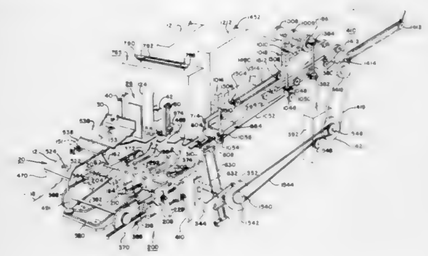
2. A marine speed indicator, comprising;

a substantially cylindrical tubular housing, one end of which is open and the other end of which is closed by a member having a substantially planar surface facing said open end with a hollow gap therebetween, said housing having a longitudinal axis, an impeller supported by said housing intermediate said ends thereof and mounted for rotation about an axis that is substantially perpendicular to said longitudinal axis and spaced from the walls of said housing



and said planar surface, said impeller comprising a plurality of vanes, at least one of which contains and supports a magnet for rotation therewith, and means responsive to movement of said magnet for generating a signal which is proportional to rotational movement of said impeller.

Re. 28,840
FEED, TRANSPORT AND DELIVERY MECHANISM FOR BOOK TRIMMERS AND THE LIKE
Ernest J. Sarring, Mundelein, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Original No. 3,722,336, dated Mar. 27, 1973, Ser. No. 114,225, Feb. 10, 1971. Application for reissue Mar. 20, 1975, Ser. No. 560,063
Int. Cl.[2] B26D *7/24*
U.S. Cl. 83—63 **8 Claims**



1. A trimmer for trimming edges of books comprising a hopper for holding a stack of books to be trimmed, means for moving the books from beneath the stack to said trimmer, said hopper comprising a front and a rear wall facing, respectively, toward and away from the direction from which comes the means for moving the books, a table surface beneath said walls on which the stack of books is seated, said walls defining a location for the stack of books, said rear wall being at a first location, stripper gate means at said first location and having a lower edge, said gate means being adjustable in height with respect to said table surface, whereby said gate lower edge is height adjustable for different height books to be moved away from said hopper, a switch connected with said moving means for activating and deactivating it, said gage being operable upon being contacted by a book of greater height than the height of said gate lower edge, which book is being moved by

said moving means, said gate being operable to operate said switch which thereby deactivates said moving means, said trimmer comprising knives for trimming the book edges and transport means for transporting the books to and past said knives, said trimmer being positioned to receive books delivered by said moving means, and said switch also being connected with said trimmer knives and said transport means such that operation of said switch deactivates these items and the entire trimmer.

Re. 28,841

OSTEOSYNTHETIC PRESSURE PLATE CONSTRUCTION

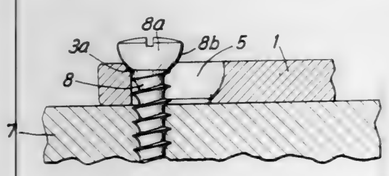
Martin Allgower; Stefan Perren, both of Chur, and Max E. Russenberger, Schaffhausen, all of Switzerland, assignors to Synthes A.G., Chur, Switzerland

Original No. 3,552,389, dated Jan. 5, 1971, Ser. No. 646,542, June 16, 1967. Application for reissue Aug. 3, 1972, Ser. No. 277,816

Claims priority, application Switzerland, June 22, 1966, 9068/66

Int. Cl.² A61F 5/04; A61B 17/18

U.S. Cl. 128—92 D **15 Claims**



1. An apparatus for securing bone fragments together in pressure contact using screws at least one of which has a head with an inwardly tapered undersurface, comprising a plate having a top side and a bootom side and at least two spaced [longitudinally elongated] slot openings extending therethrough for receiving the screws which are adapted to pass through the slot openings to engage into respective bone fragments, *at least one of said openings being longitudinally elongated, and* said plate having a wall bounding at least one of said openings which is inclined at an angle *to* said top side toward said bottom side to cause shifting of the plate in a direction to move the bone fragments together when engaged by the tapered undersurface of the head of the screw as said plate is being secured to its respective bone fragment, said inclined wall of said slot extending from said top surface inwardly and downwardly towards said bottom surface and defining an inclined planar surface from one end of the slot to the other which is displaceable by the tapered undersurface of the screw head when it is advanced into its respective bone fragment.

Re. 28,842

UNLOADER VALVE FOR SPRAY GUNS

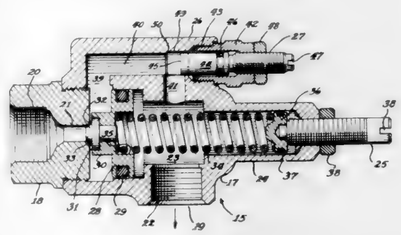
Ted Lee Butterfield, Naperville, Ill., assignor to Spraying Systems Co., Wheaton, Ill.

Original No. 3,729,018, dated Apr. 24, 1973, Ser. No. 160,014, July 6, 1971. Continuation-in-part of Ser. No. 55,319, July 6, 1970, Abandoned, which is a Continuation of Ser. No. 797,196, Feb. 6, 1969, abandoned. Application for reissue July 18, 1974, Ser. No. 489,589

Int. Cl.² F16K 17/04

U.S. Cl. 137—470 **9 Claims**

1. An unloader valve defined by a hollow valve body having an inlet and an outlet leading to an interior working space in the body, a pressure operated piston movably mounted in the interior space of said body *thereby subdividing said interior space into spaces on the opposite sides of said piston*, said valve body having a valve seat of smaller cross-sectional area than said piston and formed around said inlet [passage], said piston including a reduced portion adapted to engage said seat to close off flow through said body, said valve body including *a fluid* passage [means] *defined in said valve body* communicating the space between said seat and said piston, when said piston is away from said seat, with an outlet from said body, *said fluid passage being the sole source of fluid communication between said inlet and said outlet, said passage being in communication with a lower face of said piston at one end and an upper face of said piston and said outlet at another end*, adjustable means *disposed in said passage between said lower face of said piston and said upper face of said piston* for varying the flow area through said passage [means] *thereby providing variable control of the fluid pressures exerted on said faces of said*



piston under maximum fluid flow through said body, a spring positioned between said piston and an abutment in said valve body to exert closing forces on said piston, and means for adjusting the spring pressure to adjust the closing forces exerted by said spring on said piston to thereby vary the pressure force in said inlet [passage] necessary to move said piston away from said seat, the entire cross-sectional area of said piston being subjected to the pressure in said space when said piston is away from said seat to thereby hold the piston away fr0m said seat as long as the total force due to pressure in said space exceeds the closing forces of said spring.

Re. 28,843

TEXTURED POLYETHYLENE TEREPHTHALATE YARNS

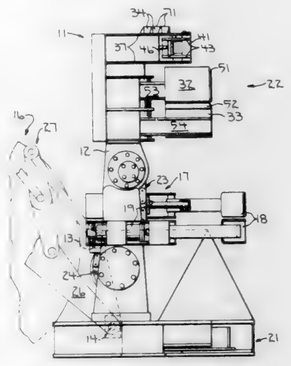
Michel Buzano, Villeurbanne, France, assignor to Rhone-Poulenc-Textile, S.A., Paris, France

Original No. 3,680,301, dated Aug. 1, 1972, Ser. No. 74,914, Sept. 23, 1970. Division of Ser. No. 799,794, Feb. 17, 1969, abandoned. Application for reissue Aug. 1, 1974, Ser. No. 493,825

Claims priority, application France, Feb. 19, 1968, 68.140387

Int. Cl.² D02G 3/34, 3/24, 1/00

U.S. Cl. 57—140 J **2 Claims**



1. Textile articles comprising multi-filament polyethylene terephthalate yarns, in which each filament consists of alternating zones whose diameter progressively increases and decreases respectively between at least two different mean values, the parts of lowest diameter having the highest crystallinity index and molecular orientation, the crystallinity index in the thinner parts of the filaments being between 15 and 60 percent and that in the thicker parts being between 5 and 25 percent but always lower than that in the thinner parts, each filament having a non-spiral three-dimensional structure and a high apparent volume.

Re. 28,844

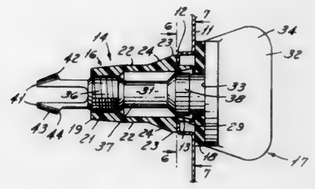
VALVE ASSEMBLY

David C. Dehar, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Original No. 3,811,650, dated May 21, 1974, Ser. No. 347,964, Apr. 4, 1973. Application for reissue Feb. 14. 1975, Ser. No. 550,241

Int. Cl.² B65D 41/04

U.S. Cl. 251—144 **12 Claims**



1. A valve assembly for a liquid container comprising:
an insert member received within an opening formed in a wall of the container and
a plug member received within said insert member and
seal means positioned between a portion of said plug member and a portion of the wall about said opening,
said insert member including
a portion having a cross sectional shape which cooperates with the shape of said opening to prevent rotation of said insert relative to said opening,
a threaded portion having an axis extending generally perpendicular to said wall portion,
first abutment means engageable with the inner surfaces of said wall adjacent said opening,
said plug member including
a stem portion received within said insert member and having a threaded portion engageable with the threaded portion of said insert,
a head portion of dimensions greater than said opening,
said plug member being rotatable relative to said insert causing said threaded portions to displace said plug member axially relative to said insert member and to compress said seal means and said wall portion between said abutment means and said head portion.

Re. 28,845

HAND AND FINGER EXERCISER

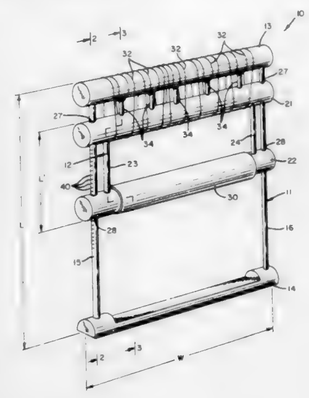
Harry L. Ratchford, 4177 Hubbartt Drive, Palo Alto, Calif. 94306

Original No. 3,570,849, dated Mar. 16, 1971, Ser. No. 844,818, July 25, 1969. Continuation of Ser. No. 244,969, Apr. 17, 1972, abandoned. Application for reissue Jan. 14, 1974, Ser. No. 432,891

Int. Cl.² A63B 11/08, 21/14, 23/00

U.S. Cl. 272—68 **8 Claims**

1. A hand exerciser comprising
an outer frame having a pair of longitudinally spaced cross bars,
an inner frame supported on and within said outer frame for reciprocative movement in a common plane and having a pair of longitudinally spaced cross bars,
one of the cross bars of said inner frame having a rotatable finger grip thereon,
tensioning means coupling the other cross bar of the inner frame to the adjacent cross bar of the outer frame, and
a plurality of transversely spaced anchor means mounted on one of said coupled cross bars substantially across the width of the inner frame,



said tensioning means comprising
a rubber band for each of said anchor means, each of said bands being looped around the other of said coupled bars and having its opposite ends looped over the same anchor means.

Re. 28,846

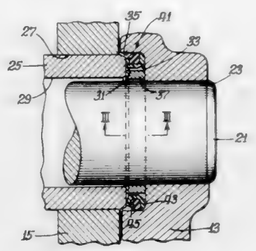
COLLAPSIBLE PALLET BOX

Hershey L. Wait, Lake Zurich, Ill., assignor to Rockaway Corporation, Rockaway, N.J.

Original No. 3,459,321, dated Aug. 5, 1969, Ser. No. 719,913, Apr. 9, 1968. Continuation of Ser. No. 163,511, July 16, 1971, abandoned. Application for reissue Mar. 14, 1974, Ser. No. 451,307

Int. Cl.² B65D 9/18

U.S. Cl. 217—16 **13 Claims**



12. A collapsible pallet container comprising four side walls each formed of vertically extending slots, said side walls having inner and outer faces and first and second opposed vertical edges; the vertical edges of the adjacent side walls being in lapped relationship when the container is in the erected position with said first vertical edge of each side wall in end abutting relation with the inner face of an adjacent side wall adjacent the second vertical edge of said adjacent side wall, two sets of four aligned horizontal cleats secured to the outer faces of said side walls said cleats each having a length which is equal to the length of the side wall to which it is secured plus the approximate thickness of the side wall slats, one of said sets being positioned adjacent the top of said side wall and the other of said sets being positioned adjacent the bottom of said side walls with the end of one of the two adjacent cleats at each corner of said

container being aligned with the adjacent second vertical edge of the side wall to which said cleat is attached and with the end of the other adjacent cleat at said corner extending beyond the first vertical edge of the side wall to which said cleat is attached a distance approximately equal to the thickness of said slats, whereby, when the container is in the erected position, the second edge of one of the two adjacent slats at each corner overlaps the first edge of the other adjacent slat with its inner face engaged with the first vertical edge of said adjacent slat and the adjacent ends of the cleats in each of said sets are contiguous but non-overlapping and, when the container is collapsed, alternate pairs of adjacent cleat ends in each of said sets come into end abutting relationship, a pair of endless flexible metal straps, each extending around said container parallel to and overlying one of said sets of cleats, the circumference of said straps being such that said straps fit substantially tightly around said container in both the erected and collapsed positions, said cleats including means for laterally retaining said straps on the cleats while permitting longitudinal movement thereof as the container is moved between the erected and collapsed positions.

Re. 28,847

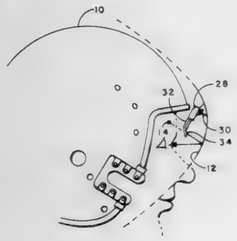
INSIDE HELMET SIGHT DISPLAY APPARATUS

Richard P. Vizenor, Maple Lake, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Original No. 3,787,109, dated Jan. 22, 1974, Ser. No. 266,995, June 28, 1972. Application for reissue Sept. 15, 1975, Ser. No. 613,593

Int. Cl.² G02B *5/08*

U.S. Cl. 350—302 **2 Claims**



9. A head-mounted display system comprising:

a. a partially transparent, partially reflective visor, one surface of said visor having a curvature for collimating light, the curvature having a definable focal point;

b. light emitting means position so that light travels from said means to a reflective surface which is located out of the observer's normal forward line of sight, the light being reflected from the reflective surface directly, and without being further reflected, to the one surface of the visor where the light is collimated and at least partially reflected to the observer generally along the observer's normal forward line of sight, the observer thus receiving the light as if it were originating at infinity.

Re. 28,848

BLASTING SLURRY COMPOSITIONS CONTAINING CALCIUM NITRATE AND METHOD OF PREPARATION

Robert B. Clay, Bountiful; Melvin A. Cook, and Lex L. Udy, both of Salt Lake City, all of Utah, assignors to Ireco Chemicals, Salt Lake City, Utah

Original No. 3,660,181, dated May 2, 1972, Ser. No. 821,095, May 1, 1969. Application for reissue Oct. 24, 1972, Ser. No. 300,323

Int. Cl.² C01B *1/04*; **C06B** *19/00*

U.S. Cl. 149—2 **10 Claims**

1. A pumpable and pourable aqueous slurry blasting composition of low water content and high sensitivity, comprising a liquid phase which includes a solution of powerful oxidizer salts selected from the group which consists of inorganic nitrates, chlorates and perchlorates and including at least 10% by weight, based on the total composition, of calcium nitrate, said liquid comprising water and ethylene glycol and including a viscosity-increasing agent in the liquid phase per se to impart thereto a viscosity sufficient to entrap and hold tiny bubbles of gas dispersed in said phase, a sufficient quantity of gas in the form of tiny bubbles being dispersed throughout said liquid phase to substantially enhance the sensitivity of the whole composition to detonation, and a storage stable, strongly cross-linked thickener or gel former selected from the group which consists of polysaccharide gums and starches in proportions sufficient to permanently hold said gas bubbles dispersed in situ and also to inhibit segregation of solid particles suspended in the liquid phase and inhibit intrusion of borehole water into said composition.

Re. 28,849

SURFACE PREPARATION PROCESS FOR RECOATING OF USED COATED METALLIC ELECTRODES

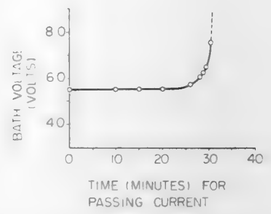
Reiichi Itai, and Hideo Kanai, both of Maebashi, Japan, assignors to The Japan Carlit Co., Ltd., Tokyo, Japan

Original No. 3,841,983, dated Oct. 15, 1974, Ser. No. 348,115, Apr. 5, 1973. Application for reissue Oct. 9, 1975, Ser. No. 621,021

Claims priority, application Japan, Aug. 28, 1972, 47-85281

Int. Cl.² C25F *5/00, 3/00*

U.S. Cl. 204—146 **12 Claims**



1. A surface preparation process for recoating of a used coated metallic electrode coated with one or more platinum group [metals] *metal oxides* or iron group metal oxides, comprising using said electrode as an anode and passing a current at about 1 to 100 A./dm.² of anode current density between said anode and steel cathodes, in an electrolytic bath containing an aqueous solution containing about 5 to 70 percent by weight of a salt selected from the group consisting of a sulfate, a nitrate, a perchlorate, a chlorate, a persulfate and a mixture thereof, at a temperature of about 0 to 50° C., for a period of time sufficient to effect removal of coating remaining on said used electrode.

Re. 28,850

PROCESS FOR PREPARING ALTERNATING COPOLYMER OF BUTADIENE AND α-OLEFINE AND NOVEL ALTERNATING COPOLYMER OF BUTADIENE AND α-OLEFINE CONTAINING CIS-CONFIGURATION BUTADIENE UNIT

Akihiro Kawasaki, and Isao Maruyama, both of Ichihara, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Original No. 3,766,153, dated Oct. 16, 1973, Ser. No. 278,416, Aug. 7, 1972. Division of Ser. No. 35,637, May 8, 1970, Pat. No. 3,714,133. Application for reissue July 9, 1975, Ser. No. 594,512

Claims priority, application Japan, May 13, 1969, 44-36161; July 16, 1969, 44-55768; July 24, 1969, 44-58030; Aug. 7, 1969, 44-62009; Dec. 12, 1969, 44-99375; Dec. 12, 1969, 44-99376

Int. Cl.² C08F *4/52, 210/00, 212/08, 236/06*

U.S. Cl. 526—98 **9 Claims**

1. A process for preparing a 1:1 copolymer of butadiene and an alpha-olefin having alternating butadiene and alpha-olefin units, said alpha-olefin having the general formula of $CH_2{=}CHR'$ wherein R' represents a phenyl radical or a C_1 to C_4 normal or branched chain alkyl radical, which comprises contacting butadiene and the alpha-olefin in liquid phase at a temperature of from −100° C. to 50° C. with a catalyst system comprising a first component of an organoaluminum compound having the general formula of AlR_3 wherein R represents a hydrocarbon radical selected from the group consisting of an alkyl radical, an aryl radical and a cycloalkyl radical, a second component of titanium tetrahalide having the general formula TiX'_4 wherein X' is selected from the group consisting of chlorine, bromine and iodine, and a third component of a carbonyl group-containing compound, wherein the molar ratio of said organoaluminum compound to said titanium tetrahalide is from greater than 1.5 to 20 and the molar ratio of butadiene to said alpha-olefin in the initial monomer composition is within a range of from 20:80 to 80:20.

Re. 28,851

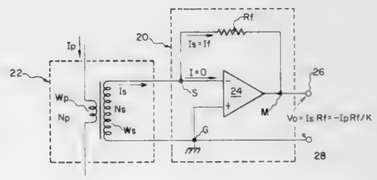
CURRENT TRANSFORMER WITH ACTIVE LOAD TERMINATION

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Original No. 3,815,013, dated June 4, 1974, Ser. No. 365,429, May 31, 1973. Continuation of Ser. No. 262,643, June 14, 1972, abandoned. Application for reissue Mar. 13, 1975, Ser. No. 558,094

Int. Cl.² G01R *19/00*

U.S. Cl. 323—6 **12 Claims**



1. In combination: a current transformer including primary and secondary windings adapted for conducting primary and secondary currents, respectively; and, a transresistance amplifier for terminating said secondary winding and serving as an active load which virtually short-circuits said secondary winding while supplying an output voltage proportional to the primary current, if any [.] *and, means coupled with said transresistance amplifier for supplying in response to said output voltage another output voltage phase-inverted with respect to said output voltage.*

Re. 28,852

TRAFFIC SIGNAL WITH DIRECTIONAL INDICATOR

Fred C. Sproul, Sr., 12227 Ranch House Road, San Diego, Calif. 92128

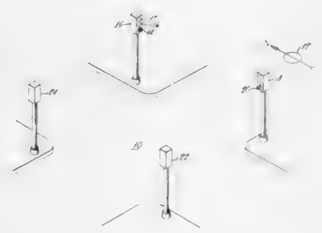
Original No. 3,740,716, dated June 19, 1973, Ser. No. 198,332, Nov. 12, 1971. Application for reissue Aug. 23 1974, Ser. No. 500,144

Int. Cl.² B60Q *1/00*

U.S. Cl. 340—107 **4 Claims**

1. Apparatus for displaying adjacent a roadway orientational information indicative of the compass heading direction in which a vehicle must be traveling if the vehicle operator can view the apparatus, in such a manner that motorists on said roadway must of necessity observe it, comprising:

a traffic signal comprised of at least three different-colored lenses and means of illuminating said lenses [selectively], said traffic signal installed with said lenses directed toward a first compass heading; and



means for permanently modifying the light beam transmitted by one of said lenses to convey information indicative of a second compass heading opposite said first compass heading to provide information as to the direction in which vehicles approaching the traffic signal are traveling.

Re. 28,853

SUPERCONDUCTIVE SHIFT REGISTER UTILIZING JOSEPHSON TUNNELLING DEVICES

Harvey C. Hamel; Charles A. Kunzinger, and William K. Stelzenmuller, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 3,825,906, dated July 23, 1974, Ser. No. 375,236, June 29, 1973. Application for reissue June 16, 1975, Ser. No. 587,458

Int. Cl.² G11C *11/44*

U.S. Cl. 340—173.1 **11 Claims**

1. A two-phase shift register using Josephson tunnelling devices comprising:

a plurality of shift register stages;

a current source for providing DC current to each of said shift register stages;

a first and second branch circuit in parallel in each of said shift register states;

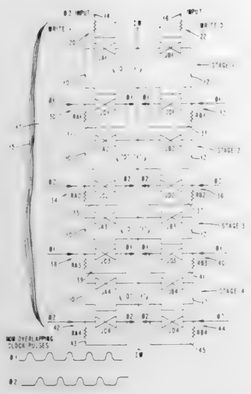
a first and second Josephson tunnelling device located in said first and second branch circuits, respectively, said devices operating in their no-voltage state;

a first and second input means for setting the associated Josephson junction to its finite voltage state causing the input current to flow in the opposite branch;

a first and second coupling means located between the first and second branches, respectively, of the stages of said shift register;

a source of phase time pulses, said first and second coupling means between successive stages being energized alternately by a current pulse at the opposite phase times; and

said first and second coupling means responding simultaneously to said phase time pulse and to the branch circuit



in which the current flows in the preceding stage thereby causing the current to flow in the opposite branch in the succeeding state.

Re. 28,854
FLOWER POT
Rodney Dennis Bufton, by the Lucas Electrical Company Ltd., Birmingham, England, assignee
Original No. Des. 233,058, dated Oct. 1, 1974, Ser. No. 372,100, June 21, 1973. Application for reissue May 13, 1975, Ser. No. 577,084
Claims priority, application United Kingdom, Dec. 21, 1972
Term of patent 14 years
Int. Cl. D11-*02*



PLANT PATENTS

GRANTED JUNE 8, 1976

3,901
AZALEA PLANT
James W. Hines, Jr., Corona Del Mar, Calif., assignor to Hines Wholesale Nurseries, Santa Ana, Calif.
Filed Nov. 25, 1974, Ser. No. 526,617
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—56 **1 Claim**

1. A new and distinct variety of azalea plant which is a hybrid of the Belgian Indica strain and the Southern Indica strain, and characterized in particular to novelty by its ability to grow and flower in full sun or light shade in the southern California area without tip burning of the leaves or blasting of the flowers; by its moderately abundant and rich green foliage and compact habit of growth; by the unique eye-appealing coloring of its flowers; and by its greater salts tolerance, making it less subject to root diseases common to other varieties grown in the same general area of the Irvine Ranch in southern California.

3,902
ROSE PLANT SEEDLING 69—23R
Roy L. Byrum, Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.
Filed Mar. 21, 1975, Ser. No. 560,693
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct variety of rose plant substantially as herein shown and described, characterized by its vigorous, upright growing habit, its abundant continuous production of solid colored flowers borne on straight, sturdy stems, and by the minimal amount of blind canes.

3,903
CHRYSANTHEMUM PLANT
Walter H. Jessel, Jr., Doylestown, and William Erwin Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Apr. 25, 1975, Ser. No. 571,478
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant characterized particularly by the combined characteristics of daisy inflorescence form and semi-incurved inflorescence form, 5.5 to 6.5 inches diameter across face of inflorescence at maturity, bronze ray floret color, tall plant height, uniform 9 week flowering response period, and semi-spreading branching habit.

3,904
BEGONIA PLANT
James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens Inc., Ashtabula, Ohio
Filed May 5, 1975, Ser. No. 574,627
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of begonia plant characterized particularly by the combined features of light rose red tepal color and ruffled and serrated tepal form and "flower-in-flower" form that provides added depth to the size of the bloom; propagation by leaf cuttings which produce vegetative adventitious shoots; vigorous, heavy stems thereby permitting upright plant growth; superior keeping quality in the home, and by its foliage which is is excellent in quality and immune to powdery mildew and resistant to *Xanthomonas begoniae*.

3,905
BEGONIA PLANT
James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens Inc., Ashtabula, Ohio
Filed May 5, 1975, Ser. No. 574,628
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of begonia plant particularly characterized by the combined characteristics of relatively large flower size, double flower form and light pink flower color; ruffled tepals and "flower-in-flower" effect of individual flowers; propagation by leaf cuttings that develop vegetative adventitious shoots; vigorous stems that provide upright growth; excellent foliage which is resistant to powdery mildrew and by its excellent keeping qualities of tepals.

PATENTS

GRANTED JUNE 8, 1976

ERRATA

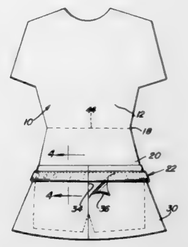
For CLASS	See PATENT NO.
029-059	3,961,378
128-303 R	3,961,419
073-066	3,961,505
073-363	3,961,507
195-139	3,961,696
140-105	3,961,703
427-405	3,961,740
235-164	3,961,750
172-777	3,961,788
252-182	3,962,067
526-011.1	3,962,195
526-074	3,962,196
526-079	3,962,197
528-485	3,962,199
526-078	3,962,200
526-193	3,962,201
526-074	3,962,202
528-486	3,962,203
526-089	3,962,204
526-352	3,962,205
427-224	3,962,213
426-535	3,962,321
426-574	3,962,335
426-639	3,962,355
424-274	3,962,471
174-035 GC	3,962,550
174-074	3,962,554
235-132 R	3,962,568
248-340	3,962,575
240-026	3,962,675
240-081	3,962,678
340-172.5	3,962,706

PATENTS

GRANTED JUNE 8, 1976

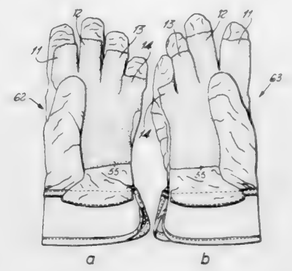
GENERAL AND MECHANICAL

3,961,376
DETACHABLE CONNECTION FOR COMBINATION SHORTS AND SKIRT
Evelyn M. Howell, 711 E. Jane St., Valdosta, Ga. 31601
Filed Mar. 6, 1975, Ser. No. 556,171
Int. Cl.² A41D *1/14*
U.S. Cl. 2—71 **3 Claims**



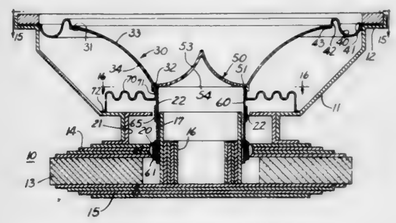
1. In combination with a body encircling garment including a waistline and a hip line disposed below the waistline as well as short legs extending downwardly below said hip line, said garment further including front and rear sides and vertical central rear side slide fastener means releasably connecting separable upper opposite side portions of said rear side, said slide fastener means extending downwardly to a point spaced sightly below said hip line and above said legs, a body band including opposite ends and extending at least substantially entirely about said garment and including upper and lower marginal edge portions, said upper marginal edge portion of said band being attached to the exterior of said garment along the hip line thereof with at least substantially the entire length of said band, extending about said garment, disposed below said upper marginal portion being free of attachment to said garment, the opposite end edge portions of said band being attached to said garment along and at opposite sides of the lower end of said slide fastener means, a body encircling skirt portion including upper and lower marginal portions, said upper marginal portion of said skirt portion being upwardly displaced beneath the lower marginal edge portion of said band between the latter and the opposing hip line of said garment, said skirt upper marginal portion and the hip line of said garment including coacting means removably attaching said skirt portion to said garment, said skirt portion comprising a horizontally elongated panel member having opposite ends, said panel member extending about the portion of said garment disposed below said hip line with the ends of said panel member disposed in at least closely adjacent relation and overlying the center of the front side of said garment, said panel member including a lower marginal portion projecting downwardly beyond the lower marginal portions of the short legs of said garment and an upper marginal edge portion having an upwardly opening notch formed therein centrally intermediate the opposite ends of said panel member, the width of said notch extending along said panel member, being greater than the spacing between said opposite end portions of said band attached to said garment, that portion of the panel member defining the bottom of said notch bridging and passing between and below, respectively, the opposite ends of said panel member and the upper marginal portions of said panel member defining the ends of said notch, spaced along said panel member, being received beneath the end portions of said band closely adjacent said end edge portions of said band secured to said garment.

3,961,377
GLOVE AND METHOD FOR THE PRODUCTION OF SAID GLOVE
Pehr Lars-Jos, Mobyn, 78200 Malung, Sweden
Filed Oct. 15, 1974, Ser. No. 515,028
Claims priority, application Sweden, Oct. 16, 1973, 7314030
Int. Cl.² A41D *19/02*
U.S. Cl. 2—169 **12 Claims**



1. A protective glove, including a palmar hand portion having a palmar thumb portion, a dorsal hand rear portion and a dorsal thumb portion, finger stall portions connection to said palmar hand portion and said dorsal hand rear portion, respective palmar and dorsal finger stall sections of each finger stall portion comprised of one single piece of material, each said piece having two dorsally extending, opposite and longitudinal edges joined together along the mid-part of the dorsal finger stall portion, the shape of said dorsal finger stall section of each finger stall portion conforming to the curvature of the dorsally joined edges, and a protecting piece covering the palmar hand portion and at least the adjacent parts of the palmar side of each finger stall portion said protecting piece being connected to said palmar side.

3,961,378
CONE CONSTRUCTION FOR LOUDSPEAKER
Stanley F. White, 466 E. Vallette, Elmhurst, Ill. 60126
Division of Ser. No. 325,162, Jan. 19, 1973, Pat. No. 3,862,376. This application Nov. 11, 1974, Ser. No. 522,431
Int. Cl.² H04R *31/00*
U.S. Cl. 29—594 **2 Claims**



1. The method of making a loudspeaker cone assembly which comprises combining hollow spheres of glass of microscopic dimension with a mixture of an epoxy plastic and hardener in the liquid state to form a pastey emulsion free of voids, placing the emulsion in an open mold cavity, closing the mold

cavity to form the emulsion into the shape of a cone having a periphery and a central throat, applying heat to harden the cone, re-opening the mold cavity and removing the cone therefrom, affixing a flexible surround to the periphery and a flexible spider to the throat, and mounting a voice coil axially at the throat.

3,961,379

BIOIMPLANTABLE DEVICE FROM CROSSLINKED, SWOLLEN, HYDROPHILIC POLYMERS

Donald J. Highgate, "Brambles," Wonham Way, Gomshall, Guildford, Surrey, England

Filed July 17, 1974, Ser. No. 489,293

Claims priority, application United Kingdom, July 18, 1973, 34188/73

Int. Cl.² A61F *1/16;* **C08K** *5/07, 5/05;* **C08L** *31/02*

U.S. Cl. 3—13 **7 Claims**

1. A process for modifying properties of a swellable cross-linked solid polymer of at least one monomer selected from the group consisting of alkyl acrylates, alkyl methacrylates, hydroxy alkyl acrylates, hydroxy alkyl methacrylates and acrylamide comprising the steps of swelling an article of said cross-linked polymer in a mixture, in which said polymer is swellable, of at least one monomer selected from the group consisting of alkyl acrylates, alkyl methacrylates and N-vinyl-2-pyrrolidone and a cross-linking agent selected from the group consisting of allyl methacrylate and ethylene glycol dimethacrylate for the selected monomer and polymerising said mixture in the swollen polymer.

3,961,380

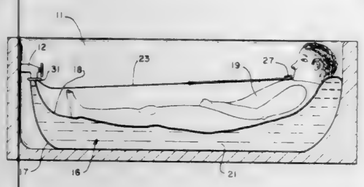
BATHTUB APPLIANCE WITH HOT WATER BLADDER AND HEAT CHAMBER

Ernest J. Garr, 3587 Powell Drive, Lafayette, Calif. 94549

Filed May 27, 1975, Ser. No. 580,953

Int. Cl.² A61H *33/12*

U.S. Cl. 4—160 **7 Claims**



1. In an appliance for use in a bathtub: a bladder fabricated of a flexible material adapted to rest in the lower portion of the bathtub and contain therein a body of water for supporting a person away from the walls of the tub in a sitting or reclining position, and a flexible cover attached to and integral with the bladder forming an enclosure for the body of a person resting on the bladder.

3,961,381

ONE-PIECE SAFETY, SLATLESS, BED RAIL ASSEMBLY

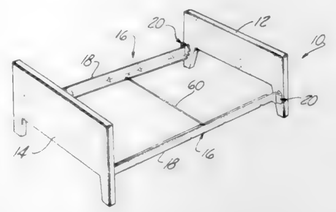
Maurice Weinhart, 18620 Ardmoor, Detroit, Mich. 48235, and Walter Weinhart, 29500 W. Nine Mile Road, Farmington Hills, Mich. 48024

Filed June 17, 1974, Ser. No. 479,753

Int. Cl.² A47C *19/04*

U.S. Cl. 5—296 **1 Claim**

1. A bed rail assembly comprising a pair of one piece rails; each of said rails comprising an elongated member having an upper vertical flange and a lower horizontal flange and a pair of connection fittings, one of said fittings disposed on each end of said member each connection fitting comprising a pair of outwardly and downwardly extending hooks, one of said hooks disposed under the other hook in a spaced relationship wherein both hooks are parallel to the plane of said vertical flange, and a vertical U-shaped channel having one edge along the base of said hooks wherein the side of said channel immediately adjacent said hooks is substantially perpendicular to the plane of the hooks, a pair of tabs wherein each of said tabs is integral with the last mentioned side of the U-shaped channel and is substantially perpendicular to the plane of the hooks, and wherein the tabs lie on one side of the plane of the hooks and the U-shaped channel lies in the other side of the



plane of the hooks to thereby define a shoulder on each side of said hooks extending in a plane substantially perpendicular to the plane of said hooks, a pair of apertures formed in each of said members in spaced relationship and a support member having end portions receivable in one of said apertures in each of said members whereby the distances between said rails can be adjusted depending upon which apertures in said rail are utilized.

3,961,382

HYDROTHERAPY BATH ASSEMBLY

Samuel F. Peterson, Jr., Chicago, Ill., assignor to Associated Mills, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 420,225, Nov. 29, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 506,317

Int. Cl.² A61H *9/00*

U.S. Cl. 4—178 **10 Claims**



1. In a portable hydrotherapy bath assembly wherein the bath assembly includes: an overhead support housing; a motor housing which has a motor positioned therein and which is connected with one end of the overhead support housing; a pump housing which has a pump drive shaft supported therein for rotation about its longitudinal axis and which is connected, at its one, upper end, with the other end of the overhead support housing so that the overhead support housing, the motor housing and the pump housing have a generally inverted U-shape and so that the overhead support housing may rest on the upper edge of a bath tub, with the motor housing being disposed without the bath tub and with the other, lower end of the pump housing being immersed in water in the bath tub; wherein the overhead housing including means for connecting the upper end of the pump drive shaft with the motor so that the motor may cause rotation of the pump drive shaft; and wherein a pump impeller is connected with the lower end of the pump drive shaft; the improvement comprising:

a unitary pump housing body including: a first, outer cylindrical wall having an upper end and a lower end; a second, inner cylindrical wall, which has an upper end and a lower end, which is concentric with and is spaced radially inwardly from the first outer cylindrical wall so as to define an annular chamber therebetween and which defines a central, cylindrical chamber that has the pump drive shaft disposed and supported therein for rotation; a pump chamber which is adjacent to the lower ends of the first and second cylindrical walls, which has the pump impeller disposed therein and which has a water inlet for permitting the ingress of water into the pump chamber and a water outlet for permitting the egress of water, under pressure, from the pump chamber; wall means extending between the lower ends of the first and second cylindrical walls for closing the lower end of the annular chamber and for isolating the annular chamber from the pump chamber; and an upright aerator tube positioned adjacent to the outer periphery of the first cylindrical wall and communicating with the water outlet;

a base forming a part of the other end of the overhead support housing and including: a downwardly projecting, cylindrical support portion that receives and supports the upper end of the second cylindrical wall while permitting relative rotational movement therebetween; and a downwardly facing, circular groove that is concentric with the cylindrical support portion and receives the upper end of the first cylindrical wall while permitting relative rotational movement therebetween;

means cooperating with the upper end of the second cylindrical wall and the cylindrical support portion for preventing relative, axial movement between the unitary pump housing body, and the cylindrical support portion; and

detent means cooperating with the first cylindrical wall and the annular groove for maintaining the unitary pump housing body in a desired rotated position relative to the overhead support housing.

3,961,383

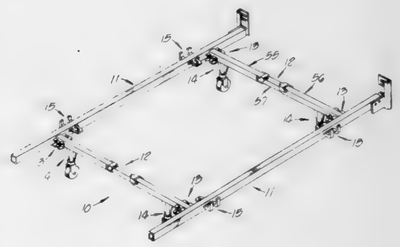
BED FRAME HAVING RELEASABLY INTERLOCKED SIDE RAILS AND CROSSBARS

Melvin P. Spitz, 619 N. Elm Drive, Beverly Hills, Calif. 90210

Filed Mar. 10, 1975, Ser. No. 556,914

Int. Cl.² A47C *19/04*

U.S. Cl. 5—181 **17 Claims**



1. In a bed frame having a pair of side rails connected with at least one end crossbar having spaced apart side walls, to provide a supporting frame structure for an associated box spring, the improvement comprising:

a. means releasably connecting the side walls of an end portion of each crossbar with a side rail, including:

a bracket secured to the side rail, said bracket having spaced apart side walls projecting inwardly from said side rail and coacting to form a socket for receiving an end portion of the connected crossbar into a seated position therein with its side walls respectively extending along the bracket walls; and

coacting parts respectively on the walls of said bracket and the walls of said seated crossbar end portion for sliding interlocked engagement in said seated position to retain said end portion against endwise withdrawal from said socket, said coacting parts during use being spaced inwardly from the terminal end of the crossbar.

3,961,384

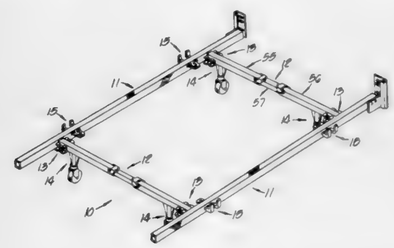
BED FRAME HAVING RELEASABLY INTERLOCKED SIDE RAILS AND CROSSBARS

Melvin P. Spitz, 619 N. Elm Drive, Beverly Hills, Calif. 90210

Division of Ser. No. 556,914, March 10, 1975. This application Aug. 18, 1975, Ser. No. 605,542

Int. Cl.² A47C *19/04*

U.S. Cl. 5—184 **7 Claims**



1. In a bed frame having a pair of side rails interconnected by at least one end crossbar to provide a frame structure for supporting a box spring, the improvement comprising:

a. the crossbar having interfitting sections connected with overlapping adjacent end portions for longitudinal extension and retraction movements to selective positions for providing a plurality of standard bed widths;

b. locking means carried by one of said overlapping end portions and being selectively manually operable to locking and non-locking positions; and

c. a plurality of slots spaced apart longitudinally of another of said overlapping end portions corresponding to said selective positions, said locking means including a part operative in said locking position to enter the slot for the selected position, and anchor the end portions against relative longitudinal movement.

3,961,385

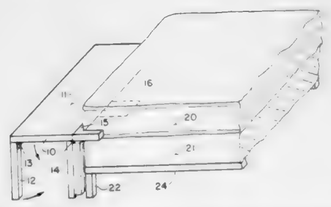
PLACEMENT FOR BEDSPREAD

Rose M. Ferry, Tracy, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 10, 1974, Ser. No. 504,753

Int. Cl.² A47C *21/00*

U.S. Cl. 5—318 **1 Claim**



1. A foldable placement platform adaptable for mounting to the mattress and spring support unit of a bed for the support of the bedspread of the bed, when the bedspread has been removed from the bed, said platform hinged to a frame member fitted with attachment means, with folding legs fitted to the underside of the platform, in which

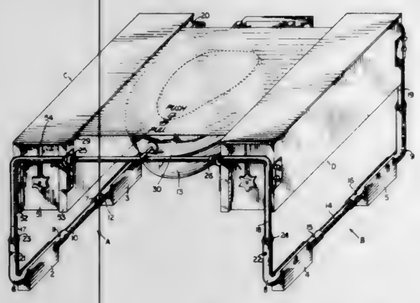
the frame member of the device is fitted with means to clamp to the opposed sides of a mattress, and fitted with braces adaptable for fastening between the end of a clamped mattress and the end of the mattress support spring unit,

said platform and said frame member joined by hinges which permit the platform to extend in a first position in a horizontal plane away from a mattress to which the frame is clamped, with the platform supported by said hinges and by the attached legs of the platform, and said hinges permitting the platform to be rotated to a second position in a vertical plane, adjacent to the frame and extending from the frame to the floor below the frame, with the legs of the platform folded between the platform and the attached mattress support spring.

3,961,386
TOILET SEAT COVER

Ferdinand Beno, 3548 W. 25th St., Chicago, Ill. 60623

Filed Mar. 27, 1974, Ser. No. 455,347
Int. Cl.² A47K *13/18*
U.S. Cl. 4—247 **6 Claims**



1. An apparatus for providing a sanitary cover for a toilet seat having dual parallel rollers adapted to accommodate a strip of sanitary covering material and disposed on opposite sides of said seat, and crank means connected to each of said rollers for moving the sanitary covering material across the top of said seat;

the improvement consisting of,

floor engaging U-shaped leg members having front and back ends and being disposed on opposite sides of said seat,

upright support means connected to the front and back ends of each of said leg members,

means for connecting front and back ends of said rollers to respective front and back ends of said upright support members, and

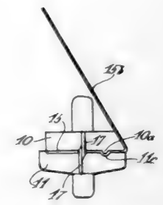
frontally disposed transverse connecting means extending between the front ends only of said roller connecting means and being disposed at a lower level than said seat.

3,961,387
TRIG MAKING TOOLS

Gail E. Porter, 4750 182nd Place, Country Club Hills, Ill. 60477

Filed Nov. 22, 1974, Ser. No. 526,144
Int. Cl.² B25F *1/00*
U.S. Cl. 7—5.6 **9 Claims**

1. A plier-type tool to make clips from a metal strip and having a pair of similarly-formed jaws, the lower jaw serving as a flat base with a recess for receiving said strip from the side, said recess having an end-wall as a limit to the length of insertion of said strip and a side wall as a guide during such insertion, said walls combining to fix the location of the strip in the recess in said base, the lower jaw further containing an indentation in the bottom surface of said recess, the upper jaw being formed flat with a projection matching the indentation to impress the strip when the jaws are closed, said upper jaw further having a beveled surface on one side thereof to define

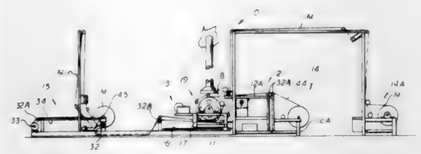


the outer limit of the inserted portion of said strip for bending the remaining portion of said strip back upon said inserted portion after said strip has been impressed.

3,961,388
METHOD AND APPARATUS FOR EFFECTING TRANSFER PRINTING

David Jaffa, Fairlawn, N.J., assignor to Precision Screen Machines Inc., Hawthorne, N.J.

Filed Jan. 3, 1975, Ser. No. 538,358
Int. Cl.² D06P *1/00, 5/15;* **B41M** *1/08*
U.S. Cl. 8—2.5 R **10 Claims**



8. A method of sublimation printing discrete cut-pieces of goods on a rotary drum printer comprising the steps of

continuously feeding a web having a heat transfer print thereon to a rotary drum printer as said drum rotates,

effecting the movement of said drum in the direction of feed a predetermined amount to index said web a corresponding amount as the drum rotates, and

returning the drum in a direction opposite to the direction of feed upon completion of the indexing movement as the drum of said printer continues to rotate to thereby effect a transfer print.

3,961,389
DEPTH REGULATING APPARATUS

Clark W. Dovell, Potomac; Frank Peregrim, Silver Spring, and Daniel R. Tolliver, Laurel, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 9, 1969, Ser. No. 856,414
Int. Cl.² B63B *21/52*
U.S. Cl. 9—8 R **4 Claims**

1. Apparatus for mooring a buoyant body at a preselected depth in a body of water comprising:

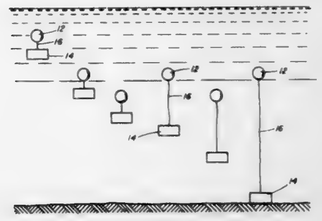
an anchor;

a mooring line connecting said buoyant body and said anchor and substantially contained within said anchor;

pressure sensing means within said anchor for measuring continuously the depth of said anchor;

means within said anchor for measuring the amount of said mooring line payed out from said anchor; and,

payout control means in said anchor responsive to said pressure sensing means and said mooring line measuring

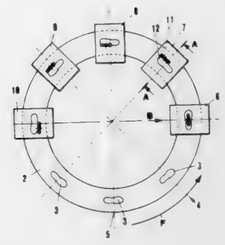


means for regulating the payout of mooring line to float the submerged buoyant body at said preselected depth.

3,961,390
PROCESSES AND DEVICES FOR BUFFING THE SOLES OF SHOE UPPERS

Antonio Giordano, Florence, Italy, assignor to Viges S.p.A., Vigevano (Pavia), Italy

Filed July 30, 1974, Ser. No. 493,190
Claims priority, application Italy, Sept. 24, 1973, 42719/73
Int. Cl.² A43D *95/00*
U.S. Cl. 12—1 A **3 Claims**



1. An apparatus for buffing the soles of shoe uppers, comprising a continuously movable annular element for supporting lasts on which are fixed the shoe uppers to be buffed, a multiplicity of buffing machines bridging said annular element, each such buffing machine being arranged for buffing a single individual area of the shoe uppers, the longitudinal axes of the lasts on which the uppers are mounted being located concentrically with the annular support element, the number and location of the buffing machines being such that, after the passage of each upper under the said multiplicity of buffing machines, the sole of such upper will be entirely buffed.

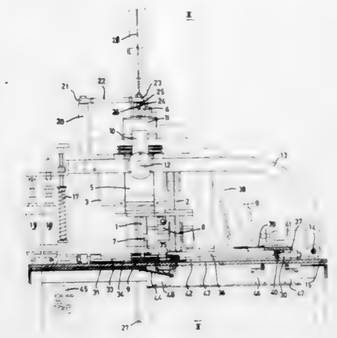
3,961,391
SHOE-HEEL DRESSING OR ROUGHENING MACHINE

Hendrik Joosten, Eindhoven, Netherlands, assignor to Bata Shoe Company, Inc., Belcamp, Md.

Filed Dec. 13, 1973, Ser. No. 424,332
Int. Cl.² A43D *87/00;* **B24B** *7/00*
U.S. Cl. 12—46 **8 Claims**

1. In a heel dressing machine including a roughening brush, connected to a power source

for rotation about a central axis of rotation, the axis of rotation being parallel to the work surface of the roughening brush; and a mechanism for clamping a heel during dressing of an upper surface confronting the circumferential plane of rotation of said brush, characterized in that said brush is connected to a rotatable axis, which crosses at one side perpendicular said axis of rotation of said brush and which is connected through driving means, which effects on rotation of the axis a circumferential plane for said brush, during the rotation about its axis of rotation, and in which the work surface of the brush is on a circular path over the upper surface of the heel to be

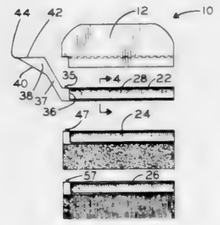


roughened, means for changing the circular path into an ellipse-shaped path, said means comprising an eccentric mechanism connected to the rotatable axis which causes said axis, while rotating, to effect a to-and-fro tilting movement in one direction.

3,961,392
CLEANING DEVICE FOR SHOWER ENCLOSURE TRACKS

Charles C. Young, Fresno, Calif., assignor to Kenneth Fleeman, Exeter, Calif.

Filed June 5, 1975, Ser. No. 584,113
Int. Cl.² A47L *13/12, 25/00*
U.S. Cl. 15—105 **3 Claims**



1. In a cleaning device particularly suited for use in removing encrusted residue from metallic surfaces exemplified by the surfaces of channel shaped tracks formed of aluminum and provided for supporting sliding doors defining an enclosure for a shower, the improvement comprising:

A. an elongated handle characterized by a depth greater than the width thereof having an elongated slot extended along one surface and characterized by a cross section of a T-shape configuration, and a detent disposed in axial alignment with said slot for receiving a locking protuberance; and

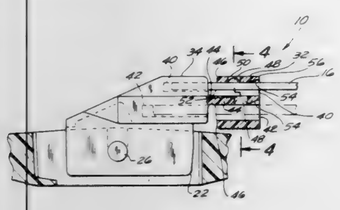
B. a scouring body suitably dimensioned to be received by the tracks for removing residual encrustation from said metallic surface comprising an elongated backbone characterized by a portion having a cross section of T-shape configuration and adapted to be inserted axially into said slot, means including a locking protuberance projected from said backbone and adapted to be received by said detent for securing the backbone against axial displacement relative to said slot, and a pad of pressed polyester fiber adhered to said backbone and projecting therefrom.

3,961,393
SWIMMING POOL CLEANING APPARATUS
Andrew L. Pansini, 180 Los Cerros Drive, Greenbrae, Calif. 94904
Continuation-in-part of Ser. No. 516,747, Oct. 21, 1974, abandoned. This application July 23, 1975, Ser. No. 598,245
Int. Cl.² E04H 3/20
U.S. Cl. 15—1.7 2 Claims



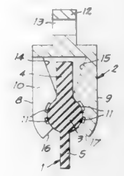
1. A pool cleaner comprising a housing having an upper open-ended conduit part and a lower flange part, wheels carried by the flange part to space the latter from a pool floor, a water delivery ring disposed near the lower end of the conduit part, a number of discharge ports in said ring, said ports being uniformly oriented to project jets of water in alike paths extending inwardly and upwardly toward each other and up above the upper end of the conduit part in a spiralled pattern whereby there is induced within the pool water within the conduit part an upwardly ascending, swirling current of water flow, and a water inlet conduit connected to the delivery ring.

3,961,394
CONNECTING CLIP
Werner Thomas Steger, Mississauga, Canada, assignor to Tridon Limited, Burlington, Canada
Filed May 28, 1975, Ser. No. 581,665
Int. Cl.² B60S 1/40
U.S. Cl. 15—250.32 11 Claims



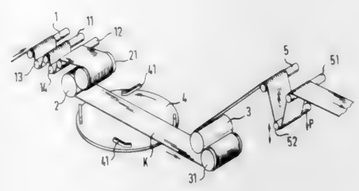
1. A connecting clip for use in connecting a windshield wiper arm to the superstructure of a windshield wiper assembly, said clip comprising a clip body having a first end portion including means for connecting the clip body to a windshield wiper superstructure and a second end portion adapted to operatively engage a windshield wiper arm, said second end portion having a pair of axially extended recesses formed therein and a wall portion separating the recesses, said recesses having different cross sectional areas for receiving wiper arms of different sizes, and said wall having an opening formed therein for receiving a locking button on the wiper arm.

3,961,395
DOUBLE STRIP WINDSCREEN-WIPER BLADE
Paul Journée, Chateau de Reilly, 60 Reilly par, Chaumont-en-Vexin, France
Filed Jan. 30, 1975, Ser. No. 545,384
Claims priority, application France, Jan. 30, 1974, 74.03100
Int. Cl.² B60S 1/38
U.S. Cl. 15—250.36 4 Claims



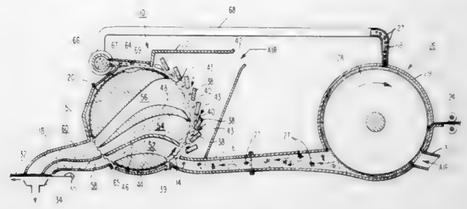
1. A reversible windshield wiper blade assembly comprising:
an elongated support having means for holding a squeegee blade;
a squeegee blade of elastomeric material having opposed wiping edge portions and a central thicker portion between said wiping edge portions, said support releasably engaging said central thicker portion to position a selected one of said wiping edge portions in windshield wiping position, said wiping edge portions being of substantially different thickness and therefore of different stiffness whereby said squeegee may be positioned on said support to present either selected wiping edge to a windshield in accordance with different operating conditions.

3,961,396
METHOD AND APPARATUS FOR LOOSENING AND SPREADING OF FILAMENT TOWS
Wolfgang Lubitzsch, Lubeck-Gr. Steinrade, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany
Filed Feb. 5, 1975, Ser. No. 547,202
Claims priority, application Germany, Feb. 5, 1974, 2405473
Int. Cl.² D01D 11/02
U.S. Cl. 19—65 T 6 Claims



1. The method of loosening and spreading the filaments of a tow comprising guiding the tow to a tensioning zone, applying tension to the filaments of the tow while advancing same in said zone, and exerting a plucking force on said tow by successively moving inclined profiles from one side of the tow to the other across the filaments thereof as said tow is advanced in said zone.

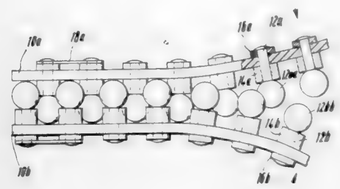
3,961,397
CLUMP REMOVAL DEVICES
Rudolf Neuenschwander, Swarthmore, Pa., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Nov. 21, 1974, Ser. No. 525,966
Int. Cl.² D01G 5/00
U.S. Cl. 19—65 R 13 Claims



1. A device for removing fiber clumps from an air stream containing substantially individualized fibers and fiber clumps suspended therein, said device including
A. an inlet duct for receiving said air stream;
B. a foraminous separating surface movable past said inlet duct for intercepting said air stream to prevent fiber clumps from passing therethrough;
C. pressure control means for establishing a pressure drop through the separating surface to direct the air stream and substantially individualized fibers through said separating surface;
D. stationary air-flow directing means spaced from the inlet duct in the direction in which the separating surface is movable past said inlet duct, said air-flow directing means being in communication with inrushing air and being positioned closely adjacent the separating surface on the high pressure side thereof for confining the flow of said inrushing air so that it is directed into engagement with the separating surface at an acute angle opposed to the direction in which said separating surface is movable past said air-flow directing means, whereby a fiber/clump mix directed into the region of the air-flow directing means by the separating surface will be subjected to a vigorous rolling action which separates individual fibers from the fiber/clump mix for passage through the separating surface; and
E. clump-removal means for removing clumps that do not pass through the separating surface.

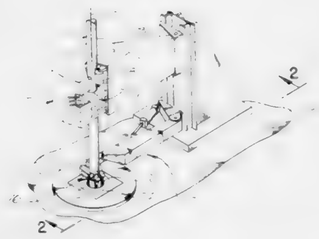
3,961,398
SEPARABLE FASTENING
Walter Herterich, Dachau, and Georg Probst, Munich, both of Germany, assignors to Ecofon Verkaufsgesellschaft Probst KG, Munich, Germany
Filed Feb. 20, 1975, Ser. No. 551,265
Claims priority, application Germany, Feb. 27, 1974, 2409445; Jan. 23, 1975, 2502741
Int. Cl.² A44B 19/08, 19/40
U.S. Cl. 24—205.12 10 Claims

1. In a separable fastening comprising two elastically deformable carriers each supporting a plurality of rows of coupling pins having spherical, substantially non-deformable heads, which heads can be brought by elastic deformation of one of the carriers into non-positive engagement behind oppositely located and offset heads of the other carrier to close the fastening, said carriers each having a strip form with a longitudinal dimension several times longer than the width dimension thereof, the improvement wherein each row of pins on each of said carriers extends substantially at right angles to the longitudinal axis of said carriers and has a separate and substantially non-elastic reinforcement member of a strip form connected to each of said pins in one of said rows and to one of said carriers to extend substantially at right angles to said longitudinal axis of said carrier, said reinforcement member having a longitudinal dimension substantially equal to the width dimension of said carrier, whereby the fastening can be



separated only in the direction of said longitudinal axis of said carriers.

3,961,399
POWER SLIP UNIT
George I. Boyadjieff, Anaheim, Calif., assignor to Varco International, Inc., Orange, Calif.
Filed Feb. 18, 1975, Ser. No. 550,776
Int. Cl.² E21B 3/04
U.S. Cl. 24—263 DG 26 Claims

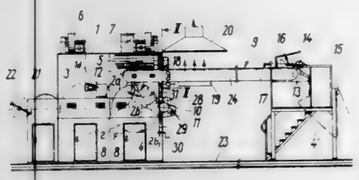


1. The combination comprising:
a slip assembly including a plurality of relatively movable slips having inner pipe gripping portions and outer downwardly tapering faces adapted to be cammed inwardly by downward movement relative to a coacting tapered bowl; and
powered means for releasably clamping said slips inwardly against a generally vertical well pipe by force exerted other than through the camming action of said bowl, and with a force sufficient to releasably lock the slips to the pipe for vertical movement therewith relative to the bowl;
said slips including a central slip and two clamping slips hinged to opposite sides thereof;
said powered means including a piston and cylinder mechanism acting in opposite directions against said two side slips respectively to power actuate them against the pipe.

3,961,400
PERFORATED DRUM DRIER
Walter Schmid, Gaertringen, Germany, assignor to Erich Kiefer, Lufttechnische Anlagen G.m.b.H., Gaertringen, Germany
Filed Aug. 10, 1971, Ser. No. 170,592
Claims priority, application Germany, Sept. 7, 1970, 2044217
Int. Cl.² D06C 3/02
U.S. Cl. 26—80 7 Claims

1. A perforated drum drier for alternately treating an open knit fabric or a tubular knit fabric, comprising a drier housing having front and rear end walls and an upper inlet opening and a lower inlet opening in said rear end wall, at least two drums

rotatably mounted in a row behind and parallel to each other in said housing and having perforated peripheral walls, the first of said drums being located adjacent to said rear end wall, means connected to said drums for producing a suction at the inside of said drums, first lower feeding means connected to said rear end wall for feeding a tubular fabric through said lower opening to said first drum, said first feeding means including a shrinking roller mounted on said rear end wall closely adjacent to said lower inlet opening, said lower inlet opening being disposed substantially within a horizontal plane extending through the axis of said first drum, and second upper feeding means located considerably above said first feeding means and comprising a front guide roller mounted within said housing, a rear guide roller mounted outside of said housing and spaced from said rear end wall, a pair of



endless pin-studded stentering chains parallel to and laterally spaced from each other and movable between and over said guide rollers and forming upper and lower chain stringers extending substantially horizontally between said guide rollers and through said upper opening into and from said housing, and means for rotating said drums and for driving said chains, said first guide roller having an axis located at a short distance beyond a vertical plane extending through the axis of said first drum and so far above said first drum that the part of said lower stringers adjacent to said front guide roller is substantially in horizontal alignment with the top of the perforated wall of said first drum so than an open fabric fed on said upper stringers toward said first guide roller, after passing around the latter and turning an angle of substantially 180° to reverse the direction of travel, will be removed from the pins of said chains by its own gravity and by the suction of said first drum and will be transferred substantially simultaneously to the peripheral perforated wall of said first drum while said drum is rotating in the same general direction in which said lower stringers are moved substantially horizontally.

6. A perforated drum drier for alternately treating an open knit fabric or a tubular knit fabric, comprising a drier housing having front and rear end walls and an upper inlet opening and a lower inlet opening in said rear end wall, at least two drums rotatably mounted in a row behind and parallel to each other in said housing and having perforated peripheral walls, the first of said drums being located adjacent to said rear end wall, a wind screen mounted in said first drum near the peripheral wall thereof, said wind screen having a section substantially facing said inlet openings, said section being pivotable toward the inside of said drum, means connected to said drums for producing a suction at the inside of said drums, first lower feeding means connected to said rear end wall for feeding a tubular fabric through said lower opening to said first drum, and second upper feeding means located considerably above said first feeding means and comprising a front guide roller mounted within said housing, a rear guide roller mounted outside of said housing and spaced from said rear end wall, a pair of endless pin-studded stentering chains parallel to and laterally spaced from each other and movable between and over said guide rollers and forming upper and lower chain stringers extending substantially horizontally between said guide rollers and through said upper opening into and from said housing, and means for rotating said drums and for driving said chains, said first guide roller having an axis located at a short distance beyond a vertical plane extending through the axis of said first drum and so far above said first drum that the part of said lower stringers adjacent to said front guide roller is substantially in horizontal alignment with the top of the perforated wall of said first drum so that an open fabric fed on said upper stringers toward said first guide roller, after passing around the latter and turning an angle of substantially 180° to reverse the direction of travel, will be removed from the pins of said chains by its own gravity and by the suction of said first drum and will be transferred substantially simultaneously to the peripheral perforated wall of said first drum while said drum is rotating in the same general direction in which said lower stringers are moved substantially horizontally.

3,961,401

APPARATUS FOR THE PRODUCTION OF BULKED AND CRIMPED YARN

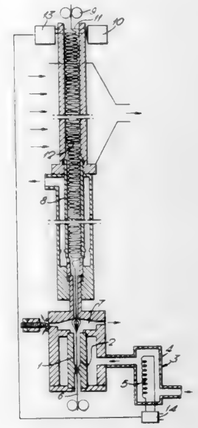
Duncan Cameron Ferrier; Thomas Berry, both of Tiverton, England, and Karel Murenbeeld, Geneva, Switzerland, assignors to John Heathcoat & Co. Ltd., Tiverton, England

Filed May 14, 1973, Ser. No. 360,145

Claims priority, application United Kingdom, May 17, 1972, 23070/72; Oct. 12, 1972, 47082/72; Apr. 7, 1973, 16812/73; May 17, 1972, 23071/72

Int. Cl.² D02G *1/20, 1/12*

U.S. Cl. 28—1.3 **18 Claims**



1. A device for producing bulked and crimped filamentary yarn of controlled quality, comprising yarn feed means for receiving yarn and propelling it forwardly, means for receiving the yarn and arranging it in a crimped bulked state in the form of an elongated package extending in a direction away from the yarn feed means, variable heat exchanging means arranged in heat exchanging relationship with the yarn, means for taking off bulked and crimped yarn from the end of the package remote from said yarn feed means, means for sensing the position of the take-off end of the yarn package and generating a corresponding take-off signal, and means for receiving the take-off signal and controlling the operation of the heat-exchanging means in conformity with the information contained in the take-off signal so as to determine the quantity of heat exchanged between the heat-exchanging means and the yarn being fed to the package.

11. A device for producing bulked and crimped filamentary yarn of controlled quality, comprising yarn feed means for receiving yarn and propelling it forwardly, variable heat-exchanging means arranged in heat-exchanging relation with the yarn, means arranged to cause the yarn filaments to separate, thereby bulking the yarn, yarn receiving means arranged to receive the bulked yarn and arrange it in a crimped state in the form of an elongated package extending in a direction away from the yarn feed means, means for taking off bulked and crimped yarn from the end of the package remote from the yarn feed means, means for sensing the position of the take-off end of the yarn package and generating a corresponding take-off signal, and means for receiving the take-off signal and controlling the operation of the heat-exchanging means in conformity with the information contained in the take-off signal so as to determine the quantity of heat exchanged between the heat-exchanging means and the yarn being fed to the package.

3,961,402

PROCESS FOR THE PRODUCTION OF BULKED AND CRIMPED YARN

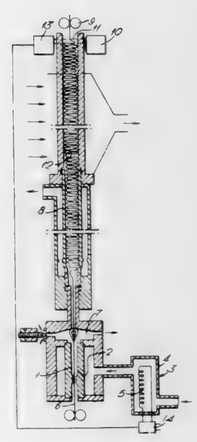
Duncan Cameron Ferrier; Thomas Berry, both of Tiverton, England, and Karel Murenbeeld, Geneva, Switzerland, assignors to John Heathcoat & Company Ltd., Tiverton, England

Division of Ser. No. 360,145, May 14, 1973. This application Dec. 16, 1974, Ser. No. 533,028

Claims priority, application United Kingdom, Oct. 12, 1972, 47082/72; Apr. 7, 1973, 16812/73; May 17, 1972, 23070/72

Int. Cl.² D02G *1/12, 1/20*

U.S. Cl. 28—72.14 **2 Claims**



1. A method of producing bulked and crimped yarn of substantially constant quality by the use of a bulking and crimping device of the type incorporating means arranged to receive yarn and propel it forwardly so as to form an elongated package extending in a direction away from the receiving and propelling means, the yarn being added to one end of the package and being taken off from the other end of the package in a bulked and crimped state, comprising sensing the deviation of the position of the take-off end of the package from a predetermined datum position, generating a signal containing information about the magnitude of the said deviation and using said signal to control the temperature of the yarn being fed to the package so that the temperature of the yarn is a function of the deviation of the position of the take-off end of the yarn package from the predetermined datum position.

3,961,403

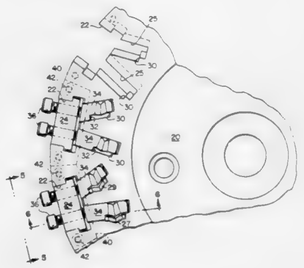
CUTTER HEAD ASSEMBLY FOR GEAR CUTTING MACHINERY

Ernst J. Hunkeler, Fairport, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Division of Ser. No. 428,989, Dec. 27, 1973, Pat. No. 3,881,889. This application Apr. 9, 1975, Ser. No. 566,509

Int. Cl.² B26D *1/12*

U.S. Cl. 29—105 A **2 Claims**



1. An improved cutter head assembly for use with a gear cutting machine, comprising

a disc-shaped cutter head body,

a plurality of clamping slots formed into the periphery of said cutter head body for receiving clamping members;

two or more blade-receiving slots formed in open communication with each of said clamping slots, each of said blade-receiving slots being of a sufficient size and shape to receive a single cutting blade, said blade-receiving slots being formed at angles to longitudinal axes of said cutter head body so that cutting faces of cutting blades can be carried at angles corresponding to the angles of said slots, whereby the cutting blades can be removed, resharpened, and replaced into said slots without removing any stock from their cutting faces,

a plurality of cutting blades which can be inserted and clamped into the cutter head body so as to project axially outwardly from one face of said cutter head body, and

a plurality of clamping members for securing said cutting blades in place, each of said clamping members being provided with separate screw members for bearing against each separate cutting blade carried by the blade-receiving slots associated therewith.

3,961,404

METHOD FOR MACHINING A GROOVE IN A METAL SURFACE

Alexander Goloff, East Peoria, and Hiram Allen Brubaker, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 1, 1975, Ser. No. 573,680

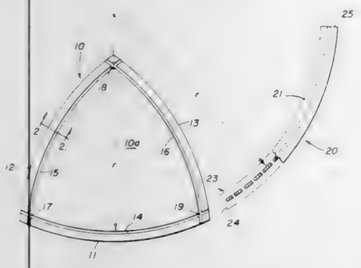
Int. Cl.² B23P *15/10*

U.S. Cl. 29—156.5 R **6 Claims**

1. A method of providing an essentially planar face of a metal object with a groove which extends between selected margins of said face without intersecting said margins, said groove being uniformly curved on an arc of radius "*r*" and being of a width "*w*" and a constant depth "*d*",said method comprising:

providing a broach which is uniformly curved from a leading end to a trailing end on an arc of radius "*r*", said broach having a base with a planar surface of width greater than "*w*", and a series of fixed cutting teeth of width "*w*" perpendicular to said surface, the teeth of said series being progressively longer from said leading end toward said trailing end and the last tooth in said series being of a length no less than "*d*";

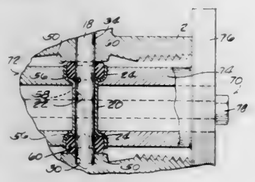
positioning said article so that its planar face is perpendicular to an axis and the line of the groove to be cut is on an arc of a circle of radius "r" struck about said axis;
positioning said broach so that it occupies an arc of said circle in a plane parallel to said face and with the leading end portion of the planar surface of the broach base confronting said face;
producing relative motion of the object and the broach about said axis with said surface moving in a plane parallel to said face, so as to cause said series of teeth to cut said face of the object progressively;



continuing said motion until all of said teeth have traversed the entire object to form a continuous groove which intersects both of said selected margins;
and plugging the end portions of the groove to effectively obliterate said groove for predetermined distances inwardly from said selected margins.

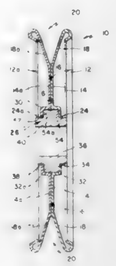
6. The method of claim 1 in which the object is a piston of an engine of the trochoidal type which has a planar face bounded by arcuate faces, a groove is cut in the planar surface parallel to each of the arcuate faces of the piston so that said grooves intersect adjacent the intersections of said arcuate faces, and portions of said grooves are plugged from said arcuate faces inwardly toward, but not through said intersections.

3,961,405
METHOD OF FABRICATING A BUTTERFLY VALVE
Daniel T. Robinson, West Allis, Wis., assignor to Milwaukee Valve Company, Inc., Milwaukee, Wis.
Division of Ser. No. 401,343, Sept. 27, 1973, Pat. No. 3,902,697. This application June 2, 1975, Ser. No. 582,953
Int. Cl.² B23P *15/00*
U.S. Cl. 29—157.1 R **6 Claims**



1. In a method for fabricating a butterfly valve including a body having a generally cylindrical bore defining a flow passage which extends substantially straight through the body, coaxial apertures in the body for rotatably journaling a stem which extends transversely of the flow passage, a generally circular disc member having a peripheral groove and mounted on the stem for rotatable movement between an open position and a closed position to shutoff flow, and a sealing ring disposed in the disc member groove, the steps comprising
forming the sealing ring as a unitary member including a pair of opposed annular sections adapted to encircle the stem at locations adjacent to the valve body bore and a pair of semicircular sections respectively connecting the annular sections and adapted to sealingly engage the valve body bore when the disc member is in the closed position;
forming a pair of identically arranged disc halves from a relatively thin material, each of the disc halves including a generally semicylindrical portion which, upon face-to-face assembly of the disc halves, cooperates with the corresponding semicylindrical portion of the other disc half to define a hub for receiving the stem and peripheral flange which lies away from a plane coincident with the confronting face, and upon face-to-face assembly of the disc halves, cooperates with the corresponding peripheral flange on the other disc half to define the peripheral groove for receiving the sealing ring;
installing the sealing ring inside the bore with the annular sections coaxially aligned with the body apertures and the semicircular sections located in a position generally corresponding to the closed position of the disc member;
inserting the stem into the body apertures and through the annular sealing ring sections;
installing the disc halves in facing relationship through the opposite ends of the bore;
moving the two disc halves into juxtaposition whereby the hub-defining portions thereof engage the opposite outer surfaces of the stem and the peripheral flanges thereof compressively engage the sealing ring; and
fastening each of the disc halves to the stem to form an assembled disc member wherein the sealing ring is positively restrained from being twisted or dislodged from the peripheral groove defined by the cooperating disc flanges during opening and closing of the disc member.

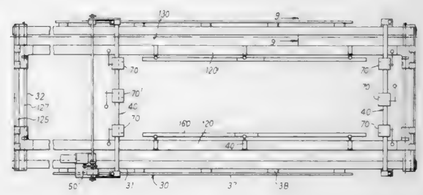
3,961,406
METHOD OF PULLEY CONSTRUCTION
Charles C. Frost, Grand Rapids; Douglas J. Van Der Meulen, Shelbyville, and Siegfried K. Weis, Grand Rapids, all of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.
Division of Ser. No. 346,329, March 30, 1973, Pat. No. 3,898,888. This application Apr. 30, 1975, Ser. No. 573,037
Int. Cl.² B21K *1/28, 1/42*
U.S. Cl. 29—159 R **19 Claims**



1. The method of high speed precision pulley wheel construction comprising, the steps of:
a. providing a pair of identical flat metallic discs having identical means defining a central opening;
b. stamping said discs in a die such that each of said discs have an outwardly extending annular outer portion, a flat radially extending web portion, and an inner flange portion formed with a first portion extending axially away from said web portion and a second portion extending radially inward from said first portion;
c. forming a coined surface of reference on the inner surface of said second flange portion whereby said inner surface is offset outwardly from said coined surface;

d. providing an annular hub member with means for receiving a shaft, said hub member including an annular projection having relatively flat radial and axial sides;
e. joining said pair of identical discs back-to-back with said hub member captured between said flange portions, said flange portions forming a pocket for said hub member such that the inner surface of said first portion of said flange portions is in positive press face-to-face contact with the axial sides of said hub projection and the inner surface of said second portion of said flange portion is in positive press face-to-face contact with the radial side of said hub projection with said coined surface indexing said discs relative said hub member to prevent lateral and radial movement relative said discs; and
f. joining said discs together to form said pulley wheel.

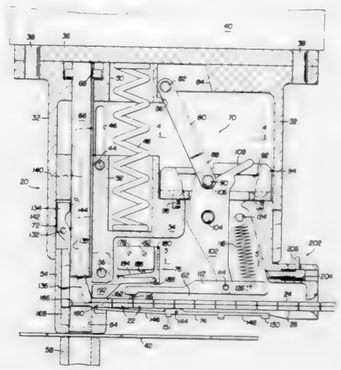
3,961,407
MANUFACTURE OF CONSTRUCTION ELEMENTS
Johan Caspar Falkenberg, Fjordveien 59 c, N-1322 Hovik, Norway
Filed Jan. 23, 1975, Ser. No. 543,301
Int. Cl.² B23P *19/00*
U.S. Cl. 29—200 B **12 Claims**



1. Apparatus for the manufacture of construction elements which include upper and lower plates of nailable material and web strips holding the plates together in spaced apart relationship, the web strips comprising elongated, sinuous sheet metal strips having along their longitudinal edges a plurality of teeth which are embedded in the respective plates, characterized in that a supporting structure is provided with means mounted thereon which are displaceable relative to each other and adapted to grip the end portions of the web strips and adapted to be moved relative to each other in the respective length directions of the web strips to thereby stretch these web strips to their predetermined lengths, the web strips and the upper and lower plates of the elements being pressed together and the means being adapted to hold the web strips in a stretched condition while the strips and plates are pressed together, and locating means for mutual vertical alignment of the element plates and stretched web strips.

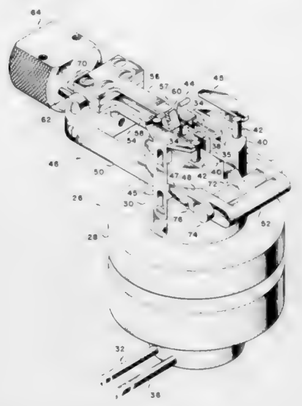
3,961,408
FASTENER INSTALLATION HEAD
Dale H. Goodsmith, and Harold A. Ladouceur, both of Livonia, Mich., assignors to Multifastener Corporation, Detroit, Mich.
Filed May 5, 1975, Ser. No. 574,775
Int. Cl.² B23P *19/04*
U.S. Cl. 29—208 C **10 Claims**

1. In a fastener installation head having an elongated nut passage for receiving a plurality of nuts aligned in side to side relation for installation by said head, a transverse plunger passage having a reciprocating plunger therein communicating with said nut passage and receiving nuts beneath said plunger, for installation through said plunger passage upon actuation of said plunger, the improvement comprising:
a nut sensor means located within said nut passage having an electrical switch interconnected with the actuation circuit of said plunger and a probe means sensing the presence or absence of a nut adjacent said plunger passage, said probe means including an arm extending generally parallel to said nut passage with said arm normally engaging the nut adjacent said plunger passage and said arm closing said switch when a nut is located adjacent



said plunger passage, ready for installation and said probe means opening the plunger actuation circuit and preventing actuation of said plunger when a nut is not located adjacent said plunger passage ready for installation.

3,961,409
MACHINE FOR UNLOADING MICRO-ELECTRONIC BEAM LEAD CHIPS
Theodore R. Sherwood, Sunnyvale, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed June 30, 1975, Ser. No. 592,126
Int. Cl.² B23P *19/02*
U.S. Cl. 29—235 **9 Claims**



1. A machine for unloading micro-electronic beam lead chips from a carrier that includes a carrier base, a cover and a two-legged resilient clip, said machine comprising:
a machine base including a means for receiving and retaining a beam lead chip carrier, said receiving and retaining means aligning the carrier to the machine base means,
a carriage moveable in said machine base, said carriage including an actuator means, a first finger means, a second finger means and a pusher means,
said first finger means adapted for engaging one leg of said resilient clip,
said second finger means including at least one rotatable expander on the end thereof, said pusher means cooper-

ating with said rotatable expander to rotate said expander to engage the second leg of said resilient clip to thereby disengage said resilient clip from the rest of said carrier, and

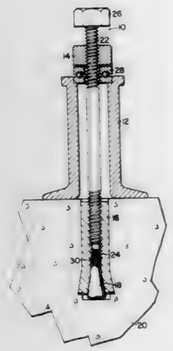
means for locking said pusher relative to said second finger so that said resilient means can be removed from the rest of said carrier.

3,961,410

MASONRY ANCHOR EXTRACTOR TOOL

Donald K. Reed, 2700 Highway 1, Sp. 28, Oceano, Calif. 93445

Filed Oct. 7, 1974, Ser. No. 478,516
Int. Cl.² B23P *19/04*
U.S. Cl. 29—256 **7 Claims**



1. An extractor tool to remove a masonry anchor or the like from a cavity in a masonry structure, the masonry anchor including a cylindrical anchor with internal threads, the anchor when installed being wedged into the side walls of the cavity by an expander plug seated in the cavity, the extractor tool including

means to axially separate the anchor from its expander plug, said means including a bolt with a threaded shaft for mating with the inernal threads in the cylindrical anchor, the bolt shaft having a reduced outer end to provide a stud portion, the stud forcing the expander plug from the cylindrical anchor as the shaft is threaded into the cylindrical anchor and

means to extract the separated anchor from the cavity, said extracting means including a collar member about the bolt and a nut threaded onto the bolt shaft and positioned between the bolt and the end of the collar member whereby when the bolt shaft is threaded into an anchor, the nut may be screwed down to bear on the collar, the collar in turn bearing on the masonry structure and exerting sufficient force as the nut is turned to withdraw the anchor.

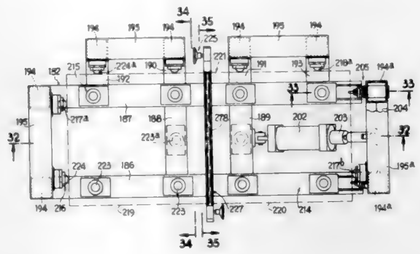
3,961,411

VOUSSOIR FOR A LINING, AND METHOD FOR CONSTRUCTING THE LINING

Jacques Francois Oger, Pont-a-Mousson, France, assignor to Pont-A-Mousson S.A., Pont-a-Mousson, France

Division of Ser. No. 441,927, Feb. 12, 1974, Pat. No. 3,946,567. This application June 25, 1975, Ser. No. 590,341
Claims priority, application France, Feb. 19, 1973, 73.05727; Jan. 31, 1974, 74.03310
Int. Cl.² B23Q *1/00, 3/00, 7/04*
U.S. Cl. 29—283 **24 Claims**

1. A pre-assembling jig for pre-assembling voussoirs into a substantially part cylindrical panel, comprising a frame provided with a device for supporting webs of the voussoirs, the support device having the general shape of a portion of a cylinder, a bearing device for bearing against walls of the voussoirs, the bearing device having at least one group of bearing means arranged in two parts in two mean planes which



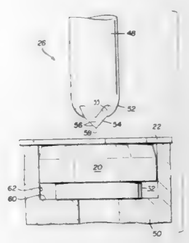
are perpendicular to said cylindrical shape and located at a predetermined distance from each other, and spreading device for spreading apart the voussoirs toward the bearing means.

3,961,412

METHOD OF INSTALLING A FASTENER

Harold A. Ladouceur, Livonia, Mich., assignor to Multifastener Corporation, Detroit, Mich.

Division of Ser. No. 476,747, June 5, 1974, Pat. No. 3,923,089, which is a continuation-in-part of Ser. No. 353,049, April 20, 1973, which is a continuation-in-part of Ser. No. 149,517, June 3, 1971, abandoned. This application June 30, 1975, Ser. No. 591,669
Int. Cl.³ B23P *9/00;* **B21D** *39/00;* **B23P** *11/00*
U.S. Cl. 29—445 **4 Claims**



1. In a method of installing a nut on a metal panel, the nut having a flat end face and an axial bore generally perpendicular to said end face, said nut further having a counterbore concentric with said axial bore including a crown-shaped indent to define a plurality of points projecting toward said end face, the steps of:

orienting said nut end face against a face of the panel;

piercing the panel in alignment with the nut bore by a piercing tool having a tip including a plurality of tearing edges inclined relative to the nut bore axis, said tearing edges being aligned with each of the points of said counterbore; and

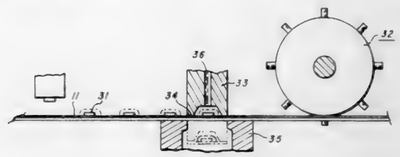
deflecting the panel material circumscribed by said nut counterbore axially to form an annular panel projection terminating in a crown-shaped end conjugate and mating with said counterbore indent and radially outward into contact with the longitudinal surfaces defined by said counterbore.

3,961,413

METHOD AND APPARATUS FOR THE ASSEMBLY OF SEMICONDUCTOR DEVICES

Terry Wayne Noe, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 320,349, Jan. 2, 1973, Pat. No. 3,859,718. This application July 12, 1974, Ser. No. 486,266
Int. Cl.² B01J *17/00*
U.S. Cl. 29—569 R **3 Claims**



1. Apparatus for use in the assembly of semiconductor devices, wherein a flexible film-supported interconnect pattern is bonded to a lead frame, comprising in combination:

a. indexing means for moving the interconnect pattern into a position of alignment corresponding to its assembled relationship with the lead frame;

b. a bonding tool having a tip geometry shaped to provide uniform simultaneous contact with each of a plurality of to-be-bonded locations on said lead frame;

c. a punching means shaped to mate with said tip geometry;

d. a shearing die located near said pattern and between said punching means and said bonding tool, aligned to coincide with said position of alignment of the pattern with the lead frame; and

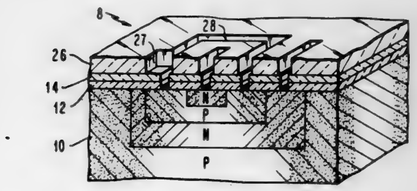
e. means for advancing said punching means in contact with the film supporting said interconnect pattern, then through said shearing die to a position which forces said pattern in contact with said lead frame, and which presses said frame against the bonding tool with a pressure sufficient to complete a bonding operation.

3,961,414

SEMICONDUCTOR STRUCTURE HAVING METALLIZATION INLAID IN INSULATING LAYERS AND METHOD FOR MAKING SAME

Charles B. Humphreys, Pleasant Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 261,348, June 9, 1972, Pat. No. 3,838,442, which is a continuation of Ser. No. 28,891, April 15, 1970, abandoned. This application May 6, 1974, Ser. No. 467,347
Int. Cl.² B01J *17/00*
U.S. Cl. 29—577 **7 Claims**



1. A method of forming metallization over the surface of a semiconductor body comprising:

forming a first passivating layer over the surface of the body which is insensitive to an etchant, said layer having openings therein for providing contacts to said body;

forming on top of the first passivating layer and in said contact openings a first insulating layer which is removable by the etchant;

etching with said etchant at least one trench in the first insulating layer, said trench being connected to at least one contact opening and the bottom of the trench being the upper surface of the first passivating layer, and simultaneously re-exposing said contact openings;

depositing metal into the trench and contact openings, the quantity of metal deposited being sufficient to cause the surface of the metal to be substantially flush with the surface of the first insulating layer;

forming a second passivating layer which is insensitive to said etchant used on said first insulating layer and said metal, said second layer having at least one via hole therein for interconnecting first and second levels of metallization;

forming on top of said second passivating layer and in said hole a second insulating layer which is removable by the etchant;

etching with said etchant at least one trench in said second insulating layer, said trench being connected to said hole and the bottom of the trench being the upper surface of the second passivating layer, and simultaneously re-exposing said hole;

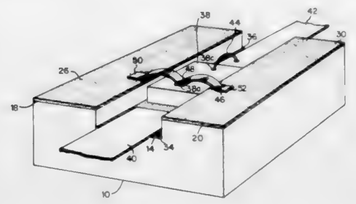
depositing metal into the trench formed in said second insulating layer and via hole, the quantity of metal deposited being sufficient to cause the surface of the metal to be substantially flush with the surface of said second insulating layer.

3,961,415

CARRIER FOR MOUNTING A SEMICONDUCTOR CHIP AND METHOD THEREFOR

John M. Davis, Jr., Torrance, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 2, 1975, Ser. No. 538,059
Int. Cl.² B01J *17/00*
U.S. Cl. 29—591 **2 Claims**



1. A method for mounting a transistor chip of specified height and width having at least an emitter, a collector and a base, and for providing minimum emitter inductance of the transistor chip, comprising the steps of:

selecting a carrier of insulating material having a top surface for later mounting thereon of the transistor chip;

precisely forming means for defining a groove having a bottom and walls in the carrier and for defining a groove depth and width substantially equal to the specified height and width of the transistor chip, thereby for ensuring that the transistor chip and carrier top surface will be substantially coplanar when the transistor chip is mounted on the carrier and wherein the top surface is divided into two spaced portions by the groove means;

metallizing only the top surface and the groove bottom of the carrier for defining contact areas for emitter, collector and base leads with means for defining an unmetallized portion in the bottom of the groove means extending between the walls thereof and thereby for defining separate contact areas for base and collector leads;

placing the transistor chip in the groove means thereof and bonding the transistor chip and its collector to the collector lead contact area;

bonding ribbon leads respectively to the separate contact areas in the bottom of the groove means for forming the base and collector leads;

bonding a lead between the base of the transistor chip and the base lead;

laying a ribbon lead having a center portion on the emitter of the transistor chip and having end portions on the metallized top surface portions for defining a pair of the emitter leads, with the ribbon lead center portion overlaying the transistor chip emitter and with the ribbon lead end portions overlaying the emitter leads; and

bonding the ribbon lead end portions and center portion to their respective metallized emitter leads and transistor chip emitter.

3,961,416

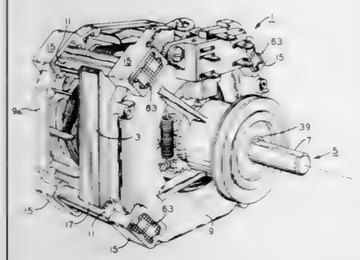
METHOD OF ASSEMBLING A DYANAMOELECTRIC MACHINE

Charles W. Otto, DeKalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 495,941, Aug. 9, 1974, abandoned, which is a division of Ser. No. 397,693, Sept. 17, 1973, Pat. No. 3,844,024, which is a continuation-in-part of Ser. No. 246,219, April 21, 1972, abandoned. This application June 9, 1975, Ser. No. 585,148

Int. Cl.² H02K *15/16*

U.S. Cl. 29—596 **42 Claims**



1. A method of assembling a dynamoelectric machine comprising the steps of:

a. mounting a set of beams to a magnetic core with two spaced portions of each beam extending from opposite faces of the core, respectively;

b. positioning a rotor within the bore of the magnetic core with a rotor shaft journaled through a bearing of a first bearing carrying end shield;

c. positioning the set of beam portions extending from one of the opposite faces of the core within a set of sockets in the first bearing carrying end shield with an air gap existing between the inner walls of the sockets and the extending beam portions residing therewithin;

d. filling at least portions of the air gaps with molten metal;

e. solidifying the molten metal to form metallic plugs within the sockets in abutment with the inner socket walls and the extending beam portions residing therewithin;

f. positioning the set of beam portions extending from the other of the opposite faces of the core within a set of second sockets in a second bearing carrying end shield with air gaps existing between the inner walls of the second sockets and the extending beam portions residing therewithin, and with the rotor shaft journaled through the bearing of the second bearing carrying end shield;

g. filling at least portions of the air gaps within the second set of sockets with molten metal; and

h. solidifying the molten metal in the second set of sockets in abutment with the second set of socket inner walls and the extending beam portions residing therebetween.

3,961,417

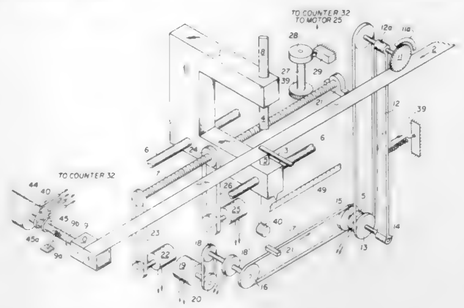
METHOD OF AND MEANS FOR WINDING COILS FROM FOIL OR STRIP WHEN COILS HAVE SEVERAL TAPS

Howard A. George, Railroad Plaza, Oyster Bay, N.Y. 11771

Filed May 5, 1975, Ser. No. 574,541

Int. Cl.² H01F *41/10*

U.S. Cl. 29—605 **5 Claims**



1. In a machine for winding electrical coils from thin strip or ribbon composed of a spindle on which the conductor is wound; means for welding connections to the strip with predetermined spacing, means for moving the welding unit in relation to the winding spindle, means for precisely rotating the winding spindle and consistently stopping it at a fixed position, and means for measuring precisely the length of one turn of the coil, the welding being moved a distance dependent on the results of the measuring so as to locate and weld each connection at a point that will cause it to fall in the required place when the strip has been would into a coil.

3,961,418

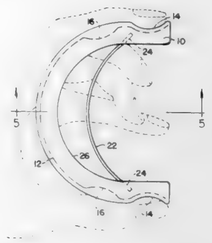
LEMON PEELER

Michael J. Neveu, 35755 Chestnut, Wayne, Mich. 48184

Filed July 23, 1975, Ser. No. 598,418

Int. Cl.² A47J *17/04*

U.S. Cl. 30—123.5 **5 Claims**



1. A lemon peeler comprising a horseshoe-shaped frame, and a relatively flat blade having ends each fastened to said frame proximate each end thereof, said blade being arcuately bowed in the same general direction as said frame and having at least one cutting edge.

3,961,419

METHOD OF CUTTING AND REMOVING SUTURES

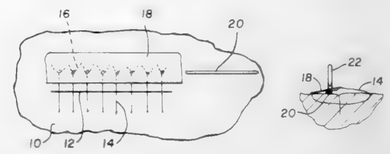
Boris Schwartz, 400 Park Ave., Paterson, N.J. 07504

Filed June 30, 1975, Ser. No. 592,087

Int. Cl.² A61B *17/10, 17/32, 19/00*

U.S. Cl. 128—303 R **5 Claims**

1. The method of cutting and removing surgical sutures with apparatus having a potential one time use, said method including the steps of: (a) forming a cutting blade member having a height not exceeding one-eighth inch, this cutting blade member being made of inexpensive metal and having a blunt end formed on the distal end of this member and adjacent thereto is formed a cutting blade portion, this blunt end being configured so as to make accidental penetration of the skin difficult; (b) forming the cutting blade portion with an edge of a sufficient sharpness so as to sever surgical sutures when this cutting edge portion is brought underneath the suture and while in tensioned engagement with the suture moving the cutting edge so as to slide the cutting edge across the suture and with a slight upward pressure effect a cutting of the suture; (c)



forming a handle means and attaching it to the cutting blade portion to provide a cutter assembly to enable grasping and manipulating of this cutter assembly so as to guide and slide the cutting blade portion under and across the sutures, and (d) supplying a length of flexible tape-like material having one surface coated with an adhesive having sufficient adhesion to entrap and retain the sutures and pulling the sutures from the skin of the patient as the sutures are cut and pressing this length of tape onto the uncut sutures prior to their being severed by the cutter.

3,961,420

DENTAL RESTORATION COMBINING DENTAL PORCELAIN AND IMPROVED WHITE GOLD ALLOY

Joseph J. Tuccillo, Norwalk, Conn., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 370,496, June 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 190,686, Oct. 19, 1971, abandoned. This application June 26, 1974, Ser. No. 483,271

Int. Cl.² A61C *13/00*

U.S. Cl. 32—8 **8 Claims**

1. A dental restoration comprising a cast white gold alloy metal base in the shape of a tooth, said alloy consisting essentially, in percent by weight, of 50 to 54% gold; 27 to 31% palladium; 11 to 16% silver; about 0.05 to about 0.25% of a Group VIII metal selected from the group consisting of iridium and ruthenium, and a total of 4.5 to 8% indium and tin, provided there is at least 2% indium and no more than 4.5% tin, and further provided that if there is less than about 6% indium, there must be at least 0.25% tin, and dental porcelain covering said metal base and baked-on-thereto.

3,961,421

ORTHODONTIC ELASTIC BAND WITH VARYING OUTER PERIPHERY

Melvin Wallshein, 8645 Bay Parkway, Brooklyn, N.Y. 11214

Continuation-in-part of Ser. No. 310,574, Nov. 29, 1972, Pat. No. 3,879,850. This application Apr. 10, 1975, Ser. No. 566,752

The portion of the term of this patent subsequent to Apr. 29, 1992, has been disclaimed.

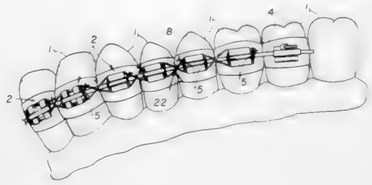
Int. Cl.² A61C *7/00*

U.S. Cl. 32—14 A **50 Claims**

1. An orthodontic elastic band for use with orthodontic bracket means mountable on teeth, each bracket means at least partially defining an opening of predetermined cross-sectional dimension adapted to receive at least a portion of an orthodontic elastic band therein, at least one of said bracket openings having at least one engaging and retaining surface adjacent thereto,

said elastic band comprising an elongated elastic member having, distributed over a substantial length thereof, alternately arranged portions of larger and smaller dimensions relative to a substantially straight and substantially

central axial line passing through the elongated band when it is in a straight condition, said dimensions being taken in the same direction in a common plane containing said substantially straight axial line, said larger dimension portions being dimensioned such that when said elastic band is stretched along its length and is at least partially engaged in an opening defined by at least one orthodontic



bracket means, said larger dimension portion abuttingly engages at least a portion of said at least one engaging and retaining surface to substantially prevent the stretched elastic band from relaxing, and when knotting the ends thereof, at least two of said larger dimension portions engaging each other to substantially prevent the stretched elastic band from relaxing.

3,961,422

STOP DEVICE FOR ENDODONTIC INSTRUMENTS

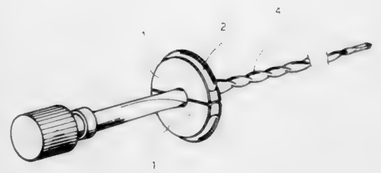
Francesco Riitano, Corso Umberto 1° (Palazzo Tiani), Soverato (Catanzaro), and Vincenzo Spina, Via Fogliano,, 35 Rome, both of Italy

Filed Nov. 4, 1974, Ser. No. 520,953

Claims priority, application Italy, Nov. 8, 1973, 4922/73

Int. Cl.² A61C *5/02*

U.S. Cl. 32—57 **4 Claims**



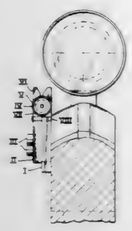
1. The combination of an elongated dental instrument for use in an endodontic operation; and a stop for limiting the depth of penetration of the elongated dental instrument during the endodontic operation; said stop comprising: a diametrically bifurcated disc having a central instrument-receiving bore extending therethrough in a direction generally normal to the plane of the disc and dimensioned for snugly receiving the elongated dental instrument, and having a circumferentially grooved outer lateral surface, said bifurcated disc comprising two disc halves disposed in use about the elongated dental instrument with the elongated dental instrument extending through the instrument-receiving bore and clamped between the two disc halves, and positioned in use along the elongated dental instrument to limit the depth of penetration thereof; and a resilient snap-ring dimensioned to fit within the circumferentially grooved lateral surface and secure the two disc halves in position with the elongated dental instrument clamped therebetween.

3,961,423

SECONDARY SIDE MOUNTED GUN SIGHT AND ARRANGEMENT, FOR AUXILIARY USE WITH A PRIMARY TOP MOUNTED TELESCOPE RIFLE SIGHT

Matthew J. Hrebar, P.O. Box C, Beaverdale, Pa. 15921

Filed Feb. 18, 1975, Ser. No. 550,424
Int. Cl.² F41G *1/02, 1/16, 1/38, 1/00*
U.S. Cl. 33—258 **2 Claims**



1. A gun sight comprising: a front sight assembly, said front sight assembly including a support means mounted on one side of a gun with a front sighting element thereon, said front sighting element being supported by said support means to one side of the gun; a rear sight assembly, said rear sight assembly including a support plate having at least one slot therein, a clamp means having fastening means extending through said slot and fastening said clamp means to said one side of the gun to clamp the support plate to said one side, said slot extending in the vertical direction a sufficient distance to allow vertical adjustment of said support plate, said support plate mounting both a peep sight aperture and an open sight in positons on said one side of the gun so that either may be used by a shooter.

3,961,424

PROCESS FOR FREEZING COFFEE EXTRACT PRIOR TO LYOPHILIZATION

Byron E. Elerath, Mountain Lakes, N.J., assignor to General Foods Corporation, White Plains, N.Y.

Filed Aug. 28, 1975, Ser. No. 608,417
Int. Cl.² F26B *5/06*
U.S. Cl. 34—5 **11 Claims**

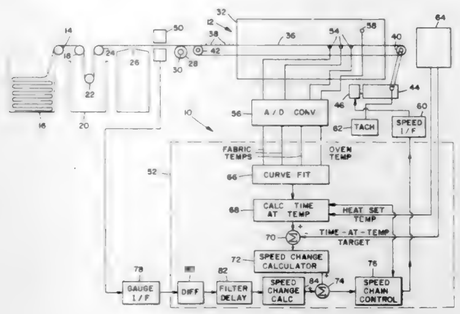
1. A process for producing a dark colored freeze-dried coffee which comprises:
   a. producing a liquid coffee extract,
   b. mixing the coffee extract in a liquid refrigerant wherein the liquid refrigerant is maintained at a temperature between about 15°F. to the ice point,
   c. allowing the coffee extract to reach temperature equilibration with the refrigerant of step (b) and remain so for at least 4 minutes in order to permit the growth of large ice crystal structures, and thereafter,
   d. cooling the coffee extract/liquid refrigerant mix to a temperature below the eutectic point of the coffee extract,
   e. separating the frozen coffee extract from the liquid refrigerant, and
   f. freeze drying the frozen coffee extract.

3,961,425

TEMPERATURE CONTROL SYSTEM FOR TEXTILE TENTER FRAME APPARATUS

S. Keith Swanson, Saratoga, and David E. Stepner, Cupertino, both of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Filed June 18, 1975, Ser. No. 587,952
Int. Cl.² F26B *3/04*
U.S. Cl. 34—25 **8 Claims**



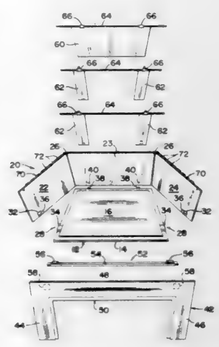
1. In a tenter frame for supporting fabric to be heat treated to set the fabric fibers and thereby minimize future shrinkage including means for driving the tender frame and the fabric supported thereby in a linear direction; means for controlling the driving means of the tenter frame, and an oven housing around said tenter frame including means therein for heating and drying the fabric on the moving tenter frame, an automatic control system for the tenter frame comprising:
   means for measuring the temperature of the moving fabric on the tenter frame within said housing and the bulk air temperature within said housing;
   means for measuring the actual speed of the tenter frame;
   computer means responsive to said temperature measuring and speed measuring means for computing a predicted time-at-temperature value for the fabric within said tenter frame, and for comparing it with a preselected target value for heat set temperature and time-at-temperature to provide output control signals; and means extending from said computing means and connected to said drive means for utilizing said output control signals to change its speed and thereby achieve said target value.

3,961,426

PORTABLE STAGE ASSEMBLY

Brad Wallace, 7941 Broughton St., Sarasota, Fla. 33580

Filed June 3, 1974, Ser. No. 476,094
Int. Cl.² G09B *19/00*
U.S. Cl. 35—16 **6 Claims**



1. A model stage assembly of the type utilized to create a predetermined set design, said stage assembly comprising:

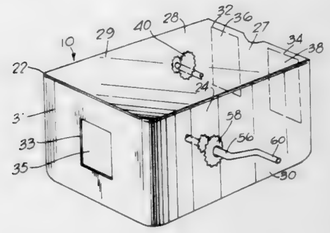
stage means comprising a substantially flat, planar configuration, housing means connected to said stage means and disposed contiguous to at least a portion of the periphery of said stage means, first connector means disposed in interconnecting relation to said stage means and said housing means, said first connecting means including a magnetic element and a metallic plate both interconnected between said stage means and said housing means, said first connector means further comprising a tit means and an aperture means also interconnected between said stage means and said housing means, said tit means disposed in aligned relation with said aperture means and engaged therein when said housing means is mounted on said stage means, said stage means further including floor means; backdrop means disposed in cooperative relation to said housing means and said floor means and facing means disposed adjacent to the viewing front of said stage assembly, whereby replicas of intended stage arrangements can be determined upon operative positioning of said stage assembly, said housing means comprising three wall elements each comprising a substantially flat, planar configuration and each being pivotally attached in successive relation and thereby disposable in foldable, substantially overlapping relation to one another, said three wall elements mountable about three consecutively positioned peripheral portions of said stage means and disposed in substantially perpendicular relation to the plane of said stage means, said facing means mounted along a front peripheral portion of said stage means in substantially interconnecting relation to free ends of said interconnected three wall elements comprising said housing means; orienting means comprising a plurality of notches disposed in substantially equidistant spaced relation along the upper longitudinal edge of each of two of said three wall elements which are operatively disposed relative to one another, support means connected in supported relation at opposite ends thereof to said two oppositely disposed side wall elements, said support means disposed to position opposite extremities thereof in correspondingly positioned notches on each of said two oppositely disposed side wall elements respectively; attachment means movably mounted along the length of said support means, said backdrop means having one end thereof removably connected to said attachment means and thereby disposed in downwardly extending, suspended relation from said support means, and in substantially surrounding relation to said three wall elements, said backdrop means disposed relative to said stage means and said three wall elements so as to be viewable through said facing means.

3,961,427

DEVICE FOR VIEWING THREE DIMENSIONAL PICTURES

Robert Smith, Bethpage, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed June 23, 1975, Ser. No. 589,661
Int. Cl.² G09B *19/22*
U.S. Cl. 35—29 A **6 Claims**



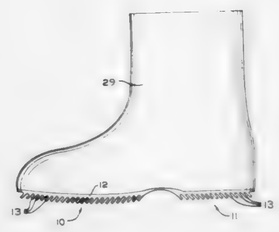
1. A device for exhibiting three dimensional pictures, which comprises:
   a. a housing having an internal chamber therein, a base, a pair of upwardly extending sidewalls, an upwardly extending rear wall, an upwardly extending front wall, a top cover, said rear wall having two apertures therethrough, and said front wall having a hole therethrough;
   b. transparent windows affixed across said apertures and said hole;
   c. three drums contained in said chamber, two said drums aligned with said apertures, and one said drum aligned with said hole;
   d. two of said drums mounted on a first horizontal shaft journaled for rotation in a first pair of bearing blocks affixed in said sidewalls;
   e. a third said drum mounted on a second horizontal shaft journaled for rotation in a second pair of bearing blocks affixed in said sidewalls;
   f. means for rotation of said shafts and said drums;
   g. a plurality of panels affixed to the outside peripheries of each said drums, said panels extending outwardly from said peripheries of said drums;
   h. rear views of said pictures adapted to be in one set of panels affixed to one said drum;
   i. front views of said pictures adapted to be received in another set of said panels affixed to said second drum; and
   j. side views of said pictures adapted to be received in another set of said panels affixed to said third drum.

3,961,428

MUD RESISTANCE ELASTOMER

James Sidles, Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 173,883, Aug. 23, 1971, abandoned. This application Feb. 19, 1975, Ser. No. 550,976
Int. Cl.² A43B *13/04, 23/28*
U.S. Cl. 36—32 R **6 Claims**

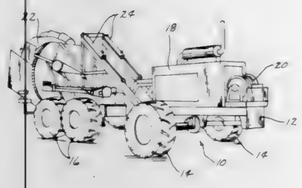


1. In a ground contacting element which covers substantially the entire bottom surface of a boot, overshoe, shoe or the like, a resilient body adapted to fixedly be secured to the base of an overshoe, said resilient body having a sole portion and a heel portion, said heel and sole portions having a plurality of transversely extending flexible fins, said heel portion being at the rear of said overshoe and said toe portion being at the forward of said overshoe, said fins on said heel portion comprising a first group extending downwardly and rearwardly from said resilient body, said fins on said sole portion comprising a second group extending downwardly and forwardly from said resilient body, the respective fins of said first group have respective front and rear surface portions that are parallel to each other and parallel to adjacent faces of adjacent fins in said first group, the respective fins of said second group have respective front and rear surface portions that are parallel, all of said fins being longitudinally extending, linearly straight and of uniform width for the entire length and height thereof, and said fins of each group being cooperative with adjacent fins in their said respective groups defining grooves therebetween.

3,961,429
EXCAVATING DEVICE

Stanley L. Brown, R.R. No. 1, Lenox, Iowa 50851

Filed Jan. 6, 1975, Ser. No. 538,897
Int. Cl.² E02F *5/02*
U.S. Cl. 37—80 R **2 Claims**



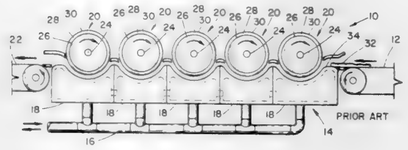
1. An excavating device comprising:
a frame having forward and rearward ends and front and rear wheels,
a winch mounted on said frame;
an excavating implement mounted on said frame for engaging and excavating the ground;
a hydraulically actuated wheel drive mechanism drivingly connected to said front and rear wheels for causing movement of said frame across the ground,
said wheel drive mechanism comprising a hydraulic wheel pump drivingly connected to a hydraulic wheel motor, said wheel motor being drivingly connected to a gear box having two output shafts, means connecting one of said output shafts to said front wheels and the other of said output shafts to said rear wheels,
said connecting means comprising a chain and sprocket mechanism driven by said one output shaft, an elongated straight drive shaft connected to and driven by said chain and sprocket mechanism, said straight shaft extending forwardly and being drivingly connected to said front wheels by a front wheel differential;
a hydraulically actuated winch drive mechanism connected to said winch, said winch mechanism including a hydraulic winch pump;
an implement drive mechanism connected to said implement;
a central power unit having a transmission means connected thereto, said transmission means having a first output shaft and a power takeoff shaft;
means connecting said first output shaft to said implement drive mechanism for driving said implement;
means connecting said power takeoff shaft to both said wheel pump and said winch pump, and
separate control means associated with said winch pump and said wheel pump for individually controlling the speed at which said wheels and said winch are driven.

3,961,430
PNEUMATIC PAD AND ROLL COVER FOR IRONING ROLLS ON INDUSTRIAL IRONERS

Dan D. Mazzolla, 2464 Raleigh Drive, York, Pa. 17402

Continuation-in-part of Ser. No. 487,020, July 10, 1974, abandoned. This application Mar. 7, 1975, Ser. No. 556,100
Int. Cl.² D06F *71/36*
U.S. Cl. 38—66 **9 Claims**

1. A pneumatic pad and roll cover assembly for use upon rotatable ironing cylinder members of an industrial ironing machine comprised of an initially substantially flat flexible pneumatic member having a pair of similar impermeable elastic walls and said pneumatic member also having opposite ends and a length and width adequate to substantially circumferentially and longitudinally envelope said ironing cylinder members, means to secure said opposite ends of said pneumatic member together when extended around said cylinder, a flexible substantially inelastic cover member having opposite ends and substantially circumferentially and longitudinally enveloping said pneumatic member when extended about an ironing cylinder, and means to connect the opposite ends of said cover member in circumferential and longitudinal cylindrical envelopment about said pneumatic member when mounted upon said ironing cylinder to restrict the expansion of said pneumatic member to a pre-determined circumferential dimension, whereby when said pneumatic member is inflated with gas under a limited pressure said pneumatic

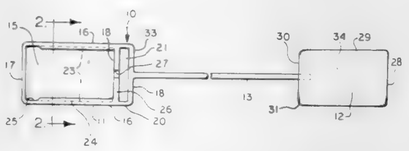


member is elastically distended radially inward to compressively and frictionally engage the longitudinal outer circumference of said ironing cylinder member with one wall of said pneumatic member and said pneumatic member also is distended radially outward to frictionally engage the longitudinal circumferential cover member with the opposite wall of said pneumatic member, thereby being adapted to provide an ironing cylinder having a compressible and yieldable pressure surface throughout the entire circumference of said cylinder.

3,961,431
LUGGAGE TAG

Robert E. Kalenian, Chicago, Ill., assignor to Conversion Caddy Co., Skokie, Ill.

Filed Sept. 22, 1975, Ser. No. 615,799
Int. Cl.² G09F *3/14*
U.S. Cl. 40—21 R **4 Claims**

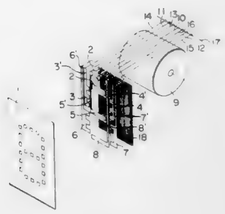


1. A luggage tag comprising an elongated strap for fastening the tag to luggage, the strap having attached at one end a case body adapted to receive an identification label and at the other end a plate adapted for closing the case and retaining the label therein, the case, plate and strap being integrally formed as a unitary blank from a synthetic plastic material, the case having sidewalls, front end walls and rear end walls of substantially equal height, the sidewalls being formed with internal channels and adapted to slidably receive and thereafter confine the movement of the plate upwardly from the case, the sidewalls having upper edges provided with grooves to assist the entry of the plate into the sidewall channels, the plate when fully deployed in the channels being retained therein by the front and rear walls against longitudinal displacement from the channels, the rear wall having a ledge extending therefrom having an aperture, the aperture being dimensioned to allow the passage of the plate therethrough, the strap being bent to form a loop as the plate is passed through the aperture and slid inside the channels, thereby closing the case when fully deployed therein and providing a strap loop for fastening the tag to a piece of luggage.

3,961,432
DIGITAL INDICATOR

Yasuo Wakabayashi, 1362-293, Hisaki, Zushi, Kanagawa, Japan

Filed Oct. 25, 1975, Ser. No. 518,083
Claims priority, application Japan, Oct. 26, 1973, 48-119836
Int. Cl.² G09F *11/00*
U.S. Cl. 40—28 C **11 Claims**

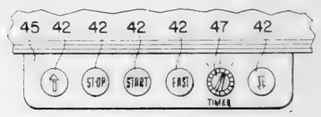


1. A segment type digital indicator, comprising:
a masking sheet having an exposed face of one color and apertured areas arranged to represent at least seven digit segments;
shutter plates movably mounted in a common plane behind and parallel to said masking sheet, each of said shutter plates having at least one segment shutter portion of said one color for covering one of said apertured areas representing a digit segment;
means defining a planar surface of another color contrasting with said one color mounted immediately behind said shutter plates; and
operating means including aligned drive elements movable in parallel paths and independently movable members connecting said drive elements with said shutter plates, respectively, said drive elements being selectively operative to move said shutter plates in said common plane between covering and uncovering positions with respect to said apertured areas of said masking sheet to selectively expose said surface of contrasting color through said apertured areas representing one or more of said digit segments to form an alphanumeric character.

3,961,433
PICTURE POSTER VIEWER

Errol D'Cruz, and June D'Cruz, both of Bramalea, Canada, assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed June 21, 1974, Ser. No. 481,653
Int. Cl.² G09F *11/28*
U.S. Cl. 40—31 **2 Claims**

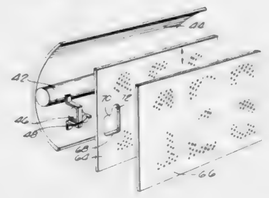


1. A picture poster viewing device for the viewing through an aperature of a single individual picture on a strip imprinted with a plurality of pictures comprising,
a picture frame adaptable for mounting to a flat surface, said frame formed with an open viewing aperature,
a strip of flexible sheeting upon which a plurality of pictures are imprinted, with the opposed ends of said strip mounted upon a pair of rollers, rotatably mounted in spaced parallel orientation, each located on an opposite side of the viewing aperature from the other,
reversible motorized means to rotate both rollers so as to wind the strip upon one roller and unwind the strip upon the other roller,
said motorized means rotatably linked to a drive shaft, with each roller fixed to an individual roller shaft,
each roller shaft fitted with a first bevel gear, about the boss of which flat frictional spring means are externally wound to serve as a clutch brake, each said first bevel gear being individually meshed with a second bevel gear,
each of said second bevel gears being joined to the drive shaft by an individual clutch assembly incorporating a coil spring joining the drive shaft to the clutch assembly in constant tension and a compression spring biasing the respective clutch assembly against each of the second bevel gears, with
the frictional spring means about the boss of each of the first bevel gears being wound in an opposite direction from the frictional spring means wound about the other first bevel gear, so that in a given direction of rotation of the drive shaft, one of the first bevel gears is under braking torque causing the clutch assembly of the associated second beveled gear to slip with relation to the drive shaft, and retarding the motion of the roller associated with said first bevel gear.

3,961,434
ANIMATED SIGN

Edward A. Sampon, Milwaukee, Wis., assignor to Everbrite Electric Signs, Inc., South Milwaukee, Wis.

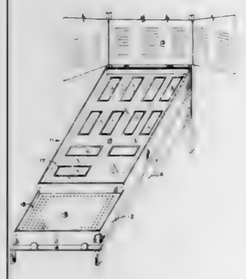
Filed Nov. 18, 1974, Ser. No. 524,595
Int. Cl.² G09F *13/34*
U.S. Cl. 40—106.53 **5 Claims**



1. An illuminated animated sign comprising a source of light, a first panel having an opaque background and an array of transparent dots of like size thereon, a second panel having an opaque background and an array of transparent dots thereon of substantially the same size as the dots of the first panel, said panels being in superimposed relationship on one side of said light source, one of said panels being mounted for reciprocal movement along a straight line relative to the other panel, the array of transparent dots on the first panel being arranged in a square grid pattern, the array of transparent dots of said second panel being positioned along diagonal lines, each of said diagonal lines being the diagonal of rectangles on said first panel, each of which rectangles is formed by two adjacent squares which are defined by six dots, each diagonal line of dots on said second panel is at an angle of approximately 26° with respect to the long sides of said six dot rectangles of the first panel the transparent dots of said second panel being arranged to form a plurality of patterns which are periodically illuminated when the transparent dots of the second panel register with the transparent dots dots of the first panel, and means for reciprocally moving one of said panels in such a direction that the transparent dots of the second panel move on the beforementioned diagonal lines with respect to the transparent dots which form said grid pattern on said first panel, whereby a maximum number of dots on a diagonal line of said second panel is accommodated between the diagonally opposite corner dots of each of said six dot rectangles of said first panel in positions where they may be moved in sequence along said diagonal lines into registration with one of said

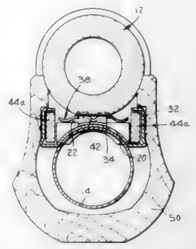
corner dots without overlapping any of the other dots defining a six dot rectangle, there are at least three transparent dots on said second panel positioned on a diagonal line between diagonally opposite transparent dots of said six dot grid pattern on said first panel, the transparent dots on said second panel being arranged to form at least three different patterns which are periodically illuminated in sequence as said one panel is reciprocated with respect to the other panel.

3,961,435
CUSTOMER-OPERATED MERCHANDISE LOCATING DEVICE
Dan L. Keckler, 5411 Taylor St., Davenport, Iowa 52806
Continuation of Ser. No. 542,641, Jan. 20, 1975, abandoned, Division of Ser. No. 451,594, March 15, 1974, abandoned.
This application Nov. 21, 1975, Ser. No. 634,130
Int. Cl.² G09F *13/04*
U.S. Cl. 40—130 R **1 Claim**



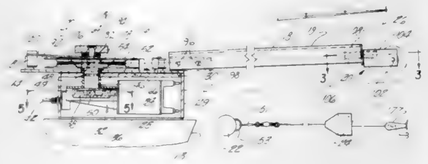
1. A merchandise locating device comprising:
a rectangular display cabinet,
a light-transmitting display panel having a floor plan thereon,
a plurality of light-emitting devices,
an array of electrical switches,
a mounting frame having said array of electrical switches on one end portion thereof and a grid extending across the other end portion thereof, said grid providing closely spaced openings adapted to receive said light-emitting devices individually at selected points on said grid, each of said light-emitting devices being readily removable from any of said openings and positional in another of said openings, conductive means interconnecting said switches and said light-emitting devices to provide selective illumination of said light-emitting devices,
first supporting members along the inside walls of the sides of said cabinet adapted to receive said light-transmitting display panel as a drawer insertable from one end of said cabinet, the upper surface of said light-transmitting display panel being visible while the panel is normally inserted in said cabinet,
second supporting means along inside walls at positions below said first supporting members adapted to receive said mounting frame as a drawer in a normal position for locating said grid a short distance below said light-transmitting display panel, said grid being coextensive with said floor plan while said light-transmitting display panel and said mounting frame are in their respective normal positions in said cabinet, and
third supporting means within the upper inside edge of said sides of said display cabinet for supporting said mounting frame in a temporary position above said light-transmitting panel to facilitate accurate positioning of said light-emitting devices, each opening of said grid being closest to the same respective point on said floor plan whether said grid is mounted either temporarily above or normally below said floor plan.

3,961,436
FORE-END AND BARREL SUPPORT
Leonard J. Hagen, Herkimer; James S. Martin, and Clark B. Workman, both of Mohawk, all of N.Y., assignors to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Mar. 28, 1975, Ser. No. 563,107
Int. Cl.² F41C *27/00*
U.S. Cl. 42—75 B **10 Claims**



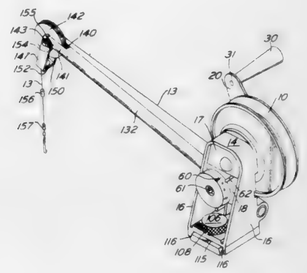
1. In a firearm having a receiver with an attached magazine tube assembly projecting therefrom, an action bar assembly slidably mounted on said magazine tube assembly, a removable barrel assembly mounted in said receiver directly above and parallel to said magazine tube assembly, and a fore-end positioned over said action bar assembly and said magazine tube assembly, the improvement comprising a support member positioned between said barrel assembly and said magazine tube assembly, means attaching said support member to said action bar assembly to permit sliding movement of said action bar assembly therein, said support member having means thereon for co-operating with corresponding means on said fore-end to support said fore-end on the firearm, and spring means on said support member having a predetermined amount of resiliency for maintaining a firm support for said barrel assembly on said magazine tube assembly regardless of variations in manufacturing tolerances of the barrel assembly, the magazine tube assembly, and the receiver.

3,961,437
DOWNRIGGER
Gerald F. Lewis, 1850 Columbia, Berkley, Mich. 48072
Filed Feb. 3, 1975, Ser. No. 546,207
Int. Cl.² A01K *91/00, 89/00*
U.S. Cl. 43—27.4 **17 Claims**



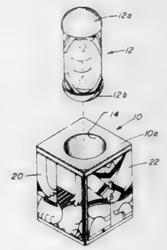
1. A downrigger for controlling the depth of a trolling weight suspended by a line from a boat, the combination of: a housing adapted to be supported on a boat, a shaft rotatably supported by said housing and extending vertically therefrom, a reel for receiving and dispensing line mounted on said shaft for rotational movement relative thereto on a generally vertical axis relative to the boat, an elongated arm supported relative to said housing and extending therefrom for swinging movement in a full arc about said vertical axis and relative to the housing, guide means at the free end of said arm for receiving the line from said reel and guiding the line away from the boat, motor means for rotating said shaft, and clutch means drive connecting said shaft to said reel and being selectively adjustable between positions permitting free rotation of said reel relative to said shaft and releasably connecting said reel to said shaft for rotation therewith and for release therefrom in response to a selected load on said weight.

3,961,438
TROLLING APPARATUS
Walter J. Henze, and San Thein, both of Philadelphia, Pa., assignors to Penn Fishing Tackle Mfg. Co., Philadelphia, Pa.
Filed Mar. 10, 1975, Ser. No. 556,552
Int. Cl.² A01K *97/00*
U.S. Cl. 43—27.4 **10 Claims**



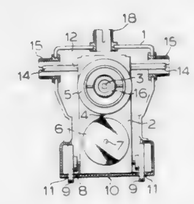
1. Trolling apparatus for fishing which comprises
a base assembly comprising a base,
a shaft member carried by said base and free to rotate in one direction with respect to said base,
a handle fixed to said shaft member for rotating said shaft member,
a reel for supply of line rotatably mounted on said shaft member and normally free to rotate on said shaft member,
an adjustable drag assembly carried by said shaft member and interposed between said shaft member and said reel,
a boom detachably secured to said base and having a pulley for carrying the line, and
a bracket assembly attached to said boom and receiving the line from said pulley.

3,961,439
PICTORIAL AMUSEMENT DEVICE
Matthew A. Moustakas, Mercerville, N.J., assignor to CBS Inc., New York, N.Y.
Filed Aug. 21, 1975, Ser. No. 606,664
Int. Cl.² A63H *3/16*
U.S. Cl. 46—22 **6 Claims**



1. A pictorial amusement device comprising:
a generally cubical block having four side surfaces and top and bottom surfaces, said side surfaces having representations thereon of a human body from the shoulders down in four different attires depicting different activities, and having a central socket in said top surface of predetermined depth, and
a cylindrical block of length about twice the depth of said socket and having a diameter so as to be loosely received in said socket, approximately half of the length of the outer surface of said cylindrical block from one end thereof having a representation thereon of a human head with a first facial expression and the other half of the length of the block from the other end thereof having a representation thereon of a human head with a second facial expression, the face of one of the heads being inverted relative to the other face,
said cylindrical block being reversibly insertable in said socket so as to depict, in cooperation with the representation on one of the side surfaces of the cubical block, a human with either said first or said second facial expression, and rotatable in the socket so as to associate the selected facial expression with a selected one of the four depicted bodies.

3,961,440
SPRING PRIME MOVER UNIT
Shigeru Saito, No. 6-4, 2-chome, Kuramae, Taito, Tokyo, Japan
Filed Aug. 28, 1975, Ser. No. 608,539
Int. Cl.² A63H *17/00*
U.S. Cl. 46—206 **3 Claims**



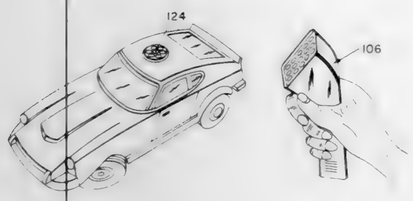
1. A spring prime mover unit, comprising a spring prime mover, a transmission gear, a plurality of connectors, a mechanism frame and a box frame; said spring prime mover comprising a spring and a pair of drums, and set outside the mechanism frame; one of said drums being fixed to the front end of a main shaft and the other of said drums being mounted on a subsidiary shaft beneath said upper drum; said spring being fixed to the circumferences of each drum by both ends and having power of winding from the upper drum to the lower drum; said transmission gear comprising the main shaft, a square shaft, a rotatable shaft and an intermediate transmission gear; said main shaft passing through the mechanism frame in front and in the rear, journaled in said mechanism frame and equipped with the upper drum as described above and with a handle having an adjustor at the rear end, and said upper drum being fitted with a rotatable connector at the front; said square shaft passing transversely through the upper portion of the mechanism frame, journaled in said mechanism frame and being engaged with the main shaft by a worm and a worm gear, and both ends of the square shaft becoming rotatable connectors; said rotatable shaft passing transversely through the lower portion of the mechanism frame and being fitted with a pair of wheels at both ends and engaged indirectly with the main shaft by the intermediate transmission gear; said mechanism frame being fitted with a stopper to stop a winding back motion of the spring; and said box frame covering all the above members and being fitted with a connector at the top, with tubular side connectors at both sides in which both ends of the square shaft are housed without contact and with a semicircular ring connector at the lower portion of the back, and having an aperture for the connector of the main shaft and a pair of slots from which the wheels of the rotatable shaft are projected downward by halves.

3,961,441

SONIC RESPONSIVE TOY VEHICLE STEERING SYSTEM

Akihiro Sato, No. 9-10 Tateishi 7-chome, Katsushika, Tokyo, Japan

Filed Mar. 7, 1975, Ser. No. 556,328
Claims priority, application Japan, Apr. 4, 1974, 49-38256
Int. Cl.² A63H *17/36*
U.S. Cl. 46—256 **11 Claims**



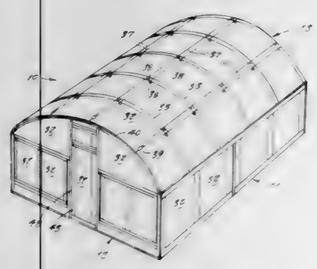
1. A toy vehicle and remote control steering system, comprising:
a chassis;
rear wheels, and means mounting said rear wheels to said chassis for rotation;
front wheels, and means mounting said front wheels to said chassis for rotation and turning;
propulsion means mounted within said chassis;
means operatively connecting said rear wheels and said propulsion means to rotate said rear wheels to propel the vehicle along a surface;
means for sensing predetermined sound waves and temporarily connecting said propulsion means to said front wheel mounting means, thereby turning said front wheels to steer said vehicle; and
means remote from the vehicle for generating said predetermined sound waves.

3,961,442

PORTABLE GREENHOUSE

Martin F. Carter, Rte. 4, Box 374, Kingston, Tenn. 37763

Filed July 29, 1974, Ser. No. 492,467
Int. Cl.² A01G *9/00*
U.S. Cl. 47—17 **2 Claims**



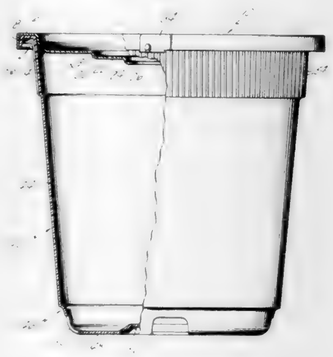
1. An inexpensive portable greenhouse capable of being easily disassembled for storage and thereafter quickly reassembled for use at any location, which comprises:
a pair of substantially parallel vertical side walls formed from a plurality of rectangular side sections, each side section having a top beam provided with a hole therethrough near each end, and each side section being joined to an adjoining section in an end-to-end relationship with a fastening member having releasable fasteners passing through the holes in the top beams of adjoining sections, the fasteners being smaller in diameter than the holes;
a pair of vertical end walls attached with releasable fasteners to terminal side sections and having a rectangular lower portion and an upwardly arched upper portion;
a closely fitting pedestrian door in at least one end wall for ingress and egress to the greenhouse;
a clear plastic sheeting individually covering and attached to each of the side sections, the end walls and the door;
a plurality of angular braces substantially equally spaced along the side walls connected between the top beams of the side sections and ground, the braces including length adjusting means to permit adjusting the side walls to vertical orientation;
a plurality of upwardly arched, substantially equally spaced roof ribs extending between the side walls with ends of the ribs being in receptacles at the top beams of the side walls, the arch of the ribs substantially conforming to the arched shape of the upper portion of the end walls; and
a clear plastic sheeting laid over the roof ribs and attached to the top beams of the side and end walls with removeable fasteners whereby the greenhouse is completely enclosed so as to be substantially airtight.

3,961,443

COVER FOR NURSERY POTS PROVIDING IMPROVED PROTECTION, SUPPORT AND FEEDING

Charles J. Insalaco, Pigeon Swamp Road, South Windham, Conn. 06266

Filed May 5, 1975, Ser. No. 574,650
Int. Cl.² A01G *13/00*
U.S. Cl. 47—32 **6 Claims**



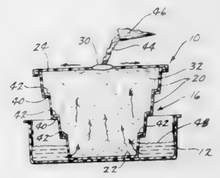
1. A cover for a nursery pot adapted to protect and support nursery stock contained therein and through which the stock can be fed and watered, comprising
an annulus of thin, flexible plastic material having a centrally located circular aperture,
the outside circumference of said annulus being curved smoothly upwardly to form a bounding wall which makes a slightly obtuse angle with said annulus,
a rim portion comprising a horizontal wall extending radially outwardly a short distance from the topmost extension of said bounding wall, and including a vertical wall extending downwardly a short distance from the outermost extension of said horizontal wall, said rim portion forming with said bounding wall an inverted U which is adapted to fit snugly over the rim of a nursery pot,
said annulus comprising a first flat annular portion lying in a plane extending radially inwardly from the bottom of said bounding wall toward said aperture and terminating short thereof, and a second flat annular portion extending radially inwardly from the inner circumference of said first annular portion, the outer circumference of said second annular portion being joined to the inner circumference of said first annular portion by a short substantially vertical curved wall, said second annular portion being in a plane slightly below the plane of said first annular portion,
a short, curved lip extending downwardly and inwardly from the inner circumference of said second annular portion and terminating at the outer circumference of said aperture,
a slit extending the entire radius of said cover and permitting the portions of said cover on either side of said slit to be slightly separated and allowing said cover to be mounted on or removed from a pot containing nursery stock,
and a plurality of small holes in said first and second annular portions.

3,961,444

FLOWER POT CONTAINER FOR PLANT SEEDS IN A DORMANT GROWING MEDIUM AND METHOD OF PREPARING FOR STORAGE AND SHIPMENT AND THEN USING SAME

William Skaife, Potosi, Wis., assignor to Springtime Flowers, Inc., Dubuque, Iowa

Continuation-in-part of Ser. No. 503,803, Sept. 6, 1974. This application May 15, 1975, Ser. No. 577,863
Int. Cl.² A01G *9/02*; **B65D** *7/24*
U.S. Cl. 47—34.11 **12 Claims**



1. A flower pot container and growing medium comprising, a flower pot container including
a plurality of telescopically interconnected sections and a top wall connected to the uppermost section,
compressed peat moss filling a portion of the maximum capacity of said container,
said container having sufficient capacity to hold said compressed peat moss upon it being expanded by the application of water, and
said container being self adjusting to conform to the size of the peat moss in its compressed and expanded states whereby said peat moss when wetted rising and forcing said top wall upwardly moving said sections from a collapsed to an expanded state.

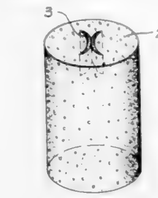
3,961,445

PLANT HOLDER AND PROCESS FOR PRODUCING THE SAME

David Rack, Freilassing, Germany, assignor to Plana-GmbH, Luxembourg, Luxemburg

Filed Feb. 12, 1974, Ser. No. 442,115
Claims priority, application Germany, Feb. 16, 1973, 2307732
Int. Cl.² A01G *9/02*
U.S. Cl. 47—37 **10 Claims**

1. A plant holder comprising a substrate mixture of peat, humus, loam, and fertilizer, with reticulated flakes of polyurethane foam carrying said substrate mixture, said mixture and flakes being bound together by an elastic binder, said binder being present in an amount sufficient to produce a coherent yet porous mass.

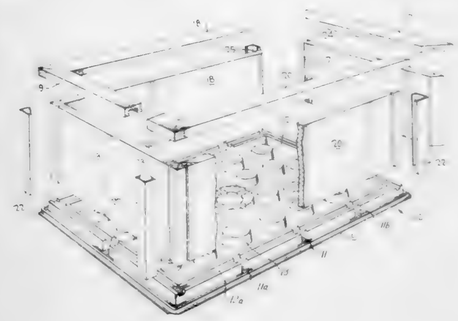


3,961,446

BALANCED BOTANICAL GROWTH CONTAINER

Stanley I. Mason, Jr., and James E. Richardson, both of Weston, Conn., assignors to Simco, Inc., Weston, Conn.

Filed May 19, 1975, Ser. No. 578,425
Int. Cl.² A01G *9/00*
U.S. Cl. 47—38 **18 Claims**



1. A plant growth container eliminating plant overwatering and reducing root rot comprising:
a water impermeable base having:
an inner channel substantially defining the periphery of the growth container, capable of receiving and supporting a soil containment means,
a series of root control means located on the base surface within the inner channel, said root control means extending upwardly from said base to a predetermined height defining an upper plane, and
an outer water/gas transmission channel substantially defining the periphery of the base having a plurality of channels in communication with the root control means,
the bottom of the inner channel and the upper plane of said root control means being generally higher than the top of the water/gas transmission channel, and
separate soil containment means comprising panels which fit into the inner channel thereby defining a container suitable for growth.

3,961,447

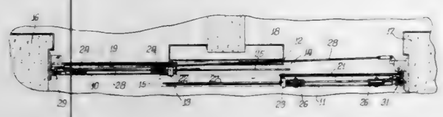
PRISON DOOR LOCKING MECHANISM

Francis T. Wolz, Joliet, Ill., assignor to Folger Adam Co., Joliet, Ill.

Filed June 13, 1975, Ser. No. 586,796
Int. Cl.² E05F *11/34*
U.S. Cl. 49—362 **6 Claims**

1. For use with a prison door laterally movable across an opening defined by a doorway frame, a door locking mechanism comprising: a door-suspending carriage slidingly and laterally movable about the frame, said carriage having a transverse end latch plate; a rack bar; coupling means for

connecting said rack bar to said carriage and for providing limited relative movement therebetween; reversible rack bar drive means for moving said door-suspending carriage between open and closed positions; a cam carried by said rack bar; a locking dog pivotally mounted to the frame and having cam follower means for effecting pivotal locking dog movement between inner and outer positions in response to movement of said rack bar, said locking dog having a latch engageable with said latch plate when said dog is in said inner position to lockably restrain carriage movement; spring means for urging said locking dog into said inner position; and bumper means for blocking movement of said carriage beyond a predetermined position adjacent said locking dog and corresponding to door closure; said locking dog having a protruding arm engaged by said rack bar upon movement thereof toward said arm and relative to said carriage when the latter is in said predetermined position to insure deadlock rotation of said locking dog to said inner position.



3,961,448

WHOLE SPHERICAL SURFACE POLISHING DEVICE

Shoichi Akahane, No. 2192-2, Oaza Hiraide, Tatsuno, Kamina, Nagano, Japan

Filed Sept. 12, 1974, Ser. No. 505,381

Claims priority, application Japan, Dec. 12, 1973, 48-139390

Int. Cl.² B24B *11/10*

U.S. Cl. 51—117 **5 Claims**



1. Apparatus for lapping a complete spherical surface on a body in one operation, comprising three shafts located in a plane and having axes intersecting at one point in said plane and being angularly displaced from each other by angles of 120°; three lapping cups mounted at one of the ends of said shaft at equal distances from said point, each of said cups having a spherical contact surface adapted to contact the body to be processed through an angle of less than 120°, said cups being respectively connected to said shafts for rotation therewith and one of said cups being immovably fixed to one of said shafts and the other cups being respectively connected to the other two shafts for a slight tilting movement about said one end; bearing means mounting said shafts for rotation and for movement in axial direction; biasing means connected to said other two shafts for urging said other two shafts and the cups connected thereto towards said point; means engaging the other end of said one shaft for adjusting the axial position thereof; and drive means connected to each of said shafts for driving the same respectively at different speeds of rotation so as to revolve a body contacted by said spherical contact surfaces and to lap the whole surface of said body to a perfect spherical shape.

3,961,449

GRINDING MACHINE FOR HOUSEHOLD USE

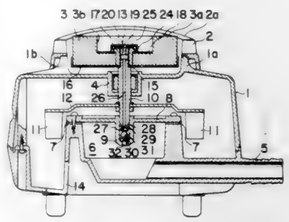
Minoru Ise, Osaka, Japan, assignor to Ise Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 27, 1975, Ser. No. 608,253

Claims priority, application Japan, Apr. 9, 1974, 49-106968[U]

Int. Cl.² B24B *3/36*

U.S. Cl. 51—128 **5 Claims**



1. A grinding machine for household use comprising:

a rotary shaft vertically supported by an upper bearing and a lower bearing mounted on a housing, the rotary shaft having a small water passage extending vertically therethrough,

a whetstone mounted on the upper end of the rotary shaft and disposed above the housing, the whetstone having a top surface serving as a grinding surface,

drive means for rotating the whetstone along with the rotary shaft at a high speed by the pressure of tap water, the drive means including a uniform pressure chamber for receiving the tap water and adapted to maintain its internal pressure at as uniform a level as possible, nozzles formed in the periphery of the chamber and an impeller mounted on the rotary shaft and rotatable by the water forced out from the nozzles against the impeller,

a water supply member including means for fastening the whetstone to the rotary shaft and having a T-shaped water channel communicating with the water passage of rotary shaft to form a water layer on the grinding surface during the rotation of the whetstone, and

urging means for applying the pressure of water in the uniform pressure chamber to the lower end of the rotary shaft supported by the lower bearing to raise the whetstone along with the shaft and for supplying water to the water channel of the water supply member through the water passage of the rotary shaft.

3,961,450

TWIST DRILL SHARPENING APPARATUS

Kenneth Kay Knaell, 307 S. Cassingham Road, Columbus, Ohio 43209

Filed Feb. 10, 1975, Ser. No. 548,822

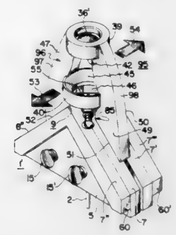
Int. Cl.² B24B *3/26*

U.S. Cl. 51—219 R **12 Claims**

1. A twist drill sharpening apparatus for hand use and portable comprising a twist drill holder means, said twist drill holder means comprising adjacent flat faces at an angle to each other and forming a V-shaped member having a straight roof line at the intersection of said faces,

means for removably fastening the twist drill to said holder means in alignment at right angle to said roof line in a plane formed by said roof line and a line bisecting equally the angle formed by said faces, to position the drill with the cutting edges extending out from said faces to expose the cutting edges for sharpening by a sharpening means having a flat sharpening surface that is moved along each of said faces,

means for indicating the orientation of the twist drill in said drill holder means to place each of the twist drill cutting edges in a desired position relative to the plane of said holder means faces, said indicating means being arranged to align said cutting edges at a predetermined angle with respect to said roof line, said indicating means comprising an index that can be aligned with a cutting edge of a twist drill, means on said indicating means for alignment with



said roof line, to position said index at a predetermined angle with respect to said roof line, said index being oriented to position a twist drill at said predetermined angle that enables a sharpening means with a flat sharpening surface moving along each of said flat faces to sharpen each of the twist drill cutting edges.

3,961,451

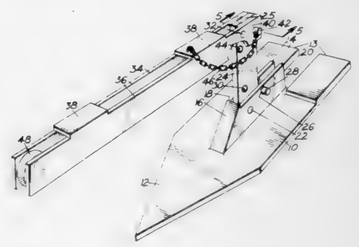
GROUND ANCHOR

Jack L. McCain, 2160 Riverview St., Eugene, Oreg. 97201

Filed Apr. 29, 1974, Ser. No. 464,941

Int. Cl.² E02D *5/80*

U.S. Cl. 52—163 **3 Claims**



1. A ground anchor comprising

a. a blade having upper and lower surfaces and a sharpened front end arranged to penetrate the ground,

b. a first shank portion,

c. first pivot means connecting said first shank portion at one of its ends to said blade,

d. the axis of said first pivot means extending in a direction transversely of said blade,

e. a second shank portion,

f. second pivot means connecting one end of said second shank portion to the end of said first shank portion which is opposite from the pivot connection with said blade,

g. the axis of said second pivot means also extending in a direction transversely of said blade,

h. and releasable connectiong means engageable between said blade and said first shank portion and between said first and second shank portions,

i. said releasable connecting means in a first operative position including means rigidly locking said first and second shank portions in longitudinal alignment with each other and in longitudinal alignment with said blade to form a longitudinal extension of said blade in a stake-like structure,

j. said releasable connecting means in a second operative position including means rigidly locking said first shank portion parallel with and along said blade but allowing pivotal movement of said second shank portion a selected amount away from said blade but less than 90° therefrom,

k. said releasable connecting means in a third operative position including means rigidly locking said first shank portion at substantially a right angle relative to said blade and rigidly locking said second shank portion at substantially a right angle relative to said first shank portion extending substantially parallel with said blade and in the same direction as the sharpened end of the latter.

3,961,452

WALL CONSTRUCTION

S. Eugene Hubbard, and Lawrence F. Biebuyck, both of Niles, Mich., assignors to Kawneer Company, Inc., Niles, Mich.

Continuation of Ser. No. 401,460, Sept. 27, 1973, abandoned, which is a division of Ser. No. 279,066, Aug. 9, 1972, which is a continuation of Ser. No. 41,951, June 1, 1970, abandoned. This application Feb. 10, 1975, Ser. No. 548,681

Int. Cl.² E04B *5/52*

U.S. Cl. 52—475 **5 Claims**

1. A wall construction including a through vertical mullion of one piece continuous tubular transverse cross-section having a pair of spaced apart opposite side walls with a glazing recess in at least one of said side walls and a horizontal member in end abutting relation against said one of said side walls, said horizontal member having a pair of longitudinally extending screw splines disposed on opposite sides of a glazing recess aligned with the recess in said side wall for receiving an edge portion of a wall panel, a pair of shear pin fasteners each having a threaded shank threaded into the end of one of the screw splines and having a head portion projecting laterally of said shank and spaced from said end of its respective screw spline, said fasteners each including an arcuate bearing portion between said head portion and shank providing the spacing between said head portion and the end of said horizontal member, said vertical mullion having spaced apart circular holes in said one side wall for receiving said head portions of said fasteners inserted through said holes until inside of said one side wall within said tubular cross-section with said arcuate bearing portions bottomed against lower portions of wall edges defined by said holes with said head portion bearing against the inside surface of said one side wall to secure said horizontal member together with said vertical mullion with adequate bearing support for said horizontal member.

3,961,453

SUPPORTS FOR CONSTRUCTIONAL OR BUILDING ELEMENTS

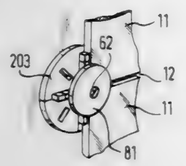
Paul Couwenbergs, Altfeldstr. 5, D-7500 Karlsruhe 21, Germany

Filed May 17, 1974, Ser. No. 471,150

Claims priority, application Germany, May 17, 1973, 7318461

Int. Cl.² E04C *1/10*

U.S. Cl. 52—509 **27 Claims**



1. A constructional arrangement comprising: at least one constructional element, support plate means arranged to engage at least an edge or a corner joint of the constructional element, the support plate means having a first and second planar face, said second planar face having four dogs offset by 90° relatively to one another about an axis perpendicular to the support plate means and arranged to engage respectively between adjacent constructional elements, each of said support plate means being divided into a plurality of segmental support elements terminating in lateral edge portions engageable with adjoining edge portions of adjacent segmental support elements, said lateral edge portions being offset by about 90° relative to one another about an axis perpendicular to the support plate means and extending radially outwardly from the center of said support plate means, a dog is disposed along each lateral edge portion at half the radial extent thereof, each of said lateral edge portions including a first radially outwardly extending edge surface, a second edge surface extending transversely to the first edge surface, and a third edge surface extending radially outwardly from said second edge surface at a position spaced from said first edge surface, said second edge surface extending through a respective dog to divide the same.

3,961,454

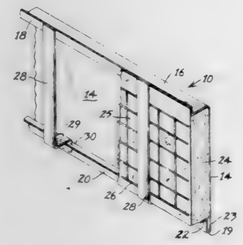
PREFABRICATED INSULATION PANEL

Howard C. Adams, Apt. C-14, 120 Malibu Drive, Clarksville, Tenn. 37040

Filed Oct. 16, 1972, Ser. No. 297,782

Int. Cl.² E04D *1/00*

U.S. Cl. 52—527 **4 Claims**



1. A prefabricated insulation panel adapted to be assembled in overlapping relationship with other like panels upon the outside of a support member of a heating apparatus comprising:

a. a planar face member made of imperforate sheet material having a top edge, a bottom edge, a front exterior surface, and a rear interior surface,

b. a top flange fixed to and projecting rearward from said top edge,

c. an attaching flange fixed to, and projecting upward above, said top flange, said attaching flange being spaced behind said face member and having a fastener opening therethrough,

d. a fastener member adapted to project through said opening and secure said attaching flange to and in front of a support member, said fastener member being substantially behind said face member when secured to said support member,

e. a connecting flange integrally connected to the bottom edge of said planar face member comprising a reversely bent extension of said face member and projecting upward immediately behind and parallel to said face member, said connecting flange having an upper end portion,

f. a foot flange fixed to and projecting rearward from the upper end portion of said connecting flange substantially parallel to said top flange, said foot flange comprising a bent extension of said connecting flange,

g. said foot flange terminating in a rear edge spaced substantially forward of said attaching flange to minimize heat conduction from the support member to the face member,

h. said foot flange being spaced above said bottom edge a distance substantially less than the distance between said foot flange and said top flange so that the lower portion of said face member between said foot flange and said bottom edge comprises a lapping portion,

i. said lappping portion being adapted to overlap and extend downward in front of the upper portion of the face member of a subjacent panel when said foot flange is seated upon the top flange of said subjacent panel,

j. an insulation member received snugly between and against said top flange and said foot flange and against the interior surface of said face member in an insulating position,

k. said insulation member having a substantially uniform thickness at least as great as the front-to-rear dimension of said top flange and substantially greater than the front-to-rear dimension of said foot flange, and

l. securing means retaining said insulation member in said insulating position.

3,961,455

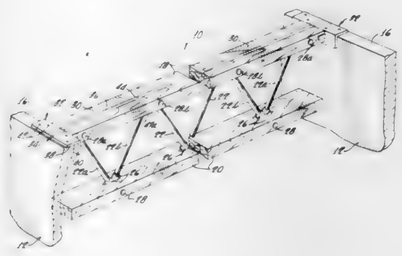
TRUSS SUPPORT CONNECTOR

Dierk D. Peters, 5815 Highland, Yorba Linda, Calif. 92686

Continuation of Ser. No. 365,033, May 29, 1973, abandoned. This application Oct. 21, 1974, Ser. No. 516,281

Int. Cl.² E04C *3/02*

U.S. Cl. 52—693 **24 Claims**



1. A truss arrangement for connecting a truss to a support surface, said arrangement comprising:

a top chord member;

a bottom chord member;

means for bearing substantially the entire load of one end of said truss, said means attaching only said top chord member to said support surface;

a plurality of horizontally spaced webs connecting said top chord member with said bottom chord member, each end of each of said webs horizontally spaced from said support surface and said attaching means;

means for connecting the ends of said webs to said top and bottom chord members;

each of said connecting means horizontally spaced from said support surface and said attaching means; and

an elongate strengthening member, constructed of material having substantially greater shear strength than the material forming said top and bottom chord members, extended along the end of said top chord member, one end of said strengthening member attached to said means for attaching said top member to said support surface, said strengthening member reducing shear and moment forces in said upper chord member by extending from said bearing means to a point beyond two of said spaced means connecting said web ends to said top chord adjacent said support surface, said strengthening member terminating short of the center of said upper chord member.

3,961,456

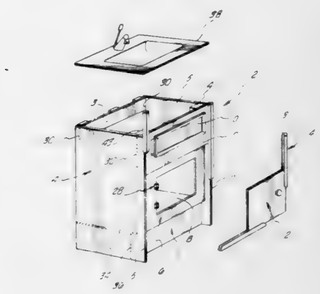
MOLDING FOR CABINETS AND DOORS

Glen D. Manlove, 1109 S. Sixth Ave., Arcadia, Calif. 91006, and Paul K. Ishler, 4334 Ridgewood, El Monte, Calif. 91734

Continuation-in-part of Ser. No. 313,775, Dec. 11, 1972. This application Aug. 19, 1974, Ser. No. 498,749

Int. Cl.² A47B *96/20*; **E04C** *2/38*

U.S. Cl. 52—716 **10 Claims**



1. In a construction assembly such as cabinets, shelves, doors and the like formed from a plurality of members such as wood particle boards with at least one decorative surface and an enlarged locking head edge portion adjacent the decorative surface with at least one support shoulder adjacent the base of the locking head, the improvement comprising:

a flexible molding member assembly including an elongated flexible body member mounted over the enlarged locking head edge portion;

a pair of resilient relatively parallel leg portions movable relative to each other and extending from the body member, one leg portion being longer than the other and extending beyond the base edge portion of the locking head to overlap the decorative surface of the board member, the other shorter leg portion terminating in a shoulder abutting the support shoulder of the board member, the surface of the shorter leg portion being planar and not extending substantially beyond the plane containing the adjacent surface of the board member; and

means connected to the flexible body member between the outside surfaces of the parallel leg portions for gripping the locking head adjacent its base on either side.

3,961,457

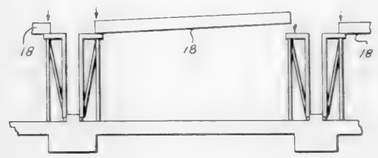
METHOD OF BUILDING CONSTRUCTION

Waclaw P. Zalewski, 15 Goden St., Belmont, Mass. 02178

Filed May 2, 1974, Ser. No. 466,404

Int. Cl.² E04G *21/00, 11/02*

U.S. Cl. 52—743 **10 Claims**



1. A method of building construction comprising the steps of:

1. erecting at horizontally spaced locations at least two forms for a setable, plastic material, said forms each defining a vertical support section and at least one horizontal support section;

2. positioning a prefabricated floor element on the horizontal support sections of said forms, said floor element partially spanning the horizontal distance between the vertical support sections of said forms;

3. placing a setable, plastic material in each of said forms, said material forming in each form a support element having a vertical portion and at least one horizontal portion with the horizontal portion forming a rigid connection with said floor element; and,

4. removing said forms after said plastic material has set.

3,961,458

PRETREATMENT, PACKING, STORING AND FINISHING TREATMENT OF TEXTILE MATERIAL PRODUCTS

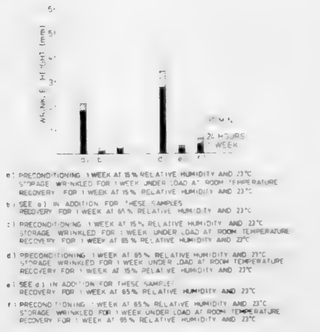
Roshan Lal Shishoo, Askim, and Erik Malte Lundell, Molnlycke, both of Sweden, assignors to Svenska Textilforskningsinstitutet, Goteborg, Sweden

Filed June 25, 1975, Ser. No. 590,170

Claims priority, application Sweden, July 5, 1974, 7408871

Int. Cl.² B65B *31/02, 25/20*

U.S. Cl. 53—21 FC **7 Claims**



1. A method for pretreatment, packing, storing and finishing treatment of a textile material product, the pretreatment comprising reducing the moisture content of the product followed by enclosing the product in a package made from a material having low water vapor permeability, wherefter the greater portion of the air contained in the package is removed therefrom and the package moisture-proof-sealed, wherein the product before enclosure in the package is brought to a moisture equilibrium with air at a relative humidity of 0–30% and at a temperature of 25°C, in such a way that the tempera-

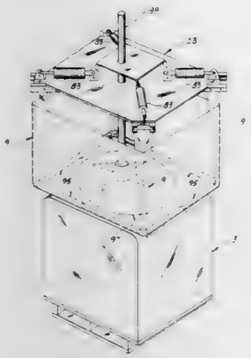
ture in the product at the termination of this treatment does not exceed 25°C and that the packaged product after sealing the package is kept at a temperature of no higher than 30°C until the product is to be used, whereat the package is opened and the product is reconditioned in an unloaded state at a relative humidity of at least 55% and a temperature of 20—45°C.

3,961,459

METHOD OF AND APPARATUS FOR WRAPPING A LOAD IN A WRAPPER OF STRETCHABLE MATERIAL

Eugene H. Wolske, Minnetonka, Mich., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Apr. 16, 1974, Ser. No. 461,306
Int. Cl.² B65B *43/26, 63/02*
U.S. Cl. 53—24 **8 Claims**



1. The method of wrapping an item, such as a palletized load, in a wrapper of stretchable material, utilizing an open-mouth bag of said material as the wrapper, the girth of the bag when unstressed being smaller than the girth of said item, comprising: applying the bag over a plurality of stretcher members, moving said members outwardly within the bag to stretch the bag to a size larger than said item, bringing the outside of the bottom of the bag stretched on said stretcher members down into engagement with the top of said item and moving said members downwardly relative to said item to strip the bag from said members and evert the bag over said item while retracting said members inwardly as they move downwardly relative to said item to relax the stretch of the bag as it is everted thereby to reduce the force required to strip the bag from said members.

3,961,460

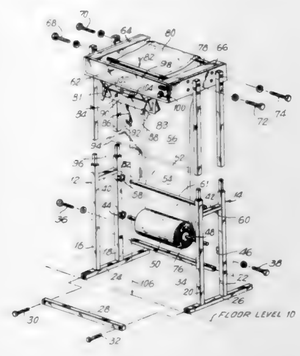
BAGGING APPARATUS WITH BAG SPREADING DEVICE AND BRAKING DEVICE

Murray Jelling, Roslyn Heights; Alexander Kahn, Massapequa; Ernest George Moore, East Meadow, and Michael Friedman, Brooklyn, all of N.Y., assignors to U.S. Dynamics Corporation, Amityville, N.Y., a part interest

Filed Dec. 9, 1974, Ser. No. 530,201
Int. Cl.² B65B *57/04, 25/20*
U.S. Cl. 53—64 **47 Claims**

1. Bagging apparatus comprising a source of flatted tubing, said tubing having spaced transverse lines of openings therein to define a sequence of detachable sections, aid detachable sections being provided with transverse seams at least in part closing the respective sections forming bags for the bagging of baggable items, said tubing being adapted for being drawn from said source over said items at a bagging zone into which the items are sequentially moved to enable the sequential bagging of said items, said seams limiting the penetration of said items into the bags at said bagging zone, said bags having detectable indicia, braking means for braking the drawing of the tubing from said source, detecting means sensitive to said indicia, operating means responsive to said detecting means for operating the braking means whereby to facilitate detaching said detachable sections, means for supporting said items in said zone for bagging; and bag spreading means around which said tubing is passed in order to facilitate passing the bags over said items, said transverse seams having openings through which the bag spreading means can pass; said detecting means being so located and said indicia being so related to said lines of openings that the braking means will be operated by said operating means to facilitate the detaching of one of said sections when said spreading means has entered the next sequential bag.

27. Bagging apparatus comprising a source of flatted tubing, said tubing having spaced transverse lines of openings therein to define a sequence of detachable sections, said detachable



sections being provided with transverse seams at least in part closing the respective sections forming bags for the bagging of baggable items, said tubing being adapted for being drawn from said source over said items at a bagging zone into which the items are sequentially moved to enable the sequential bagging of said items, said seams limiting the penetration of said items into the bags at said bagging zone, said bags having detectable indicia, braking means for braking the drawing of the tubing from said source, detecting means sensitive to said indicia for operating the braking means whereby to facilitate detaching said detachable sections; said bagging apparatus further comprising means for supporting said items in said bagging zone; said braking means including two rollers between which said tubing passes and a solenoid for urging one of said rollers against the other to grip the tubing, said solenoid being controlled by said detecting means.

3,961,461

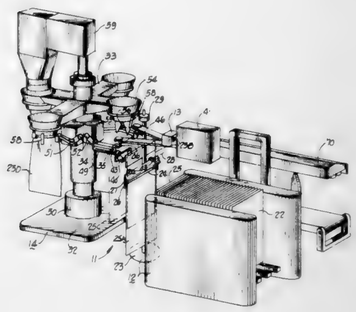
BAG MACHINE

Walter Ruf, Spring Valley, and Robert George Kelley, Central Valley, both of N.Y., assignors to St. Regis Paper Company, New York, N.Y.

Filed Mar. 3, 1975, Ser. No. 554,663
Int. Cl.² B65B *1/06, 43/34*
U.S. Cl. 53—188 **15 Claims**

1. A bag machine, comprising, in combination:
a bag holder;
a bag closer; and
a multi-station bag filler supplying filled bags to said bag closer;
said multi-station bag filler including a base,
a frame journalled for rotation on said base about an axis;
arm means on said frame,
a pair of gripper hands on said arm means,
motor means connected between said base and said frame to index said frame around said axis between at least a bag pickup station and a bag filling station,

transfer means connected to transfer bags from said bag holder to said gripper hands when said hands are at said bag pickup station,
said transfer means including a transfer arm mounted for movement relative to said base and substantially normal to the plane of the bag to transfer bags from said holder to said gripper hands,



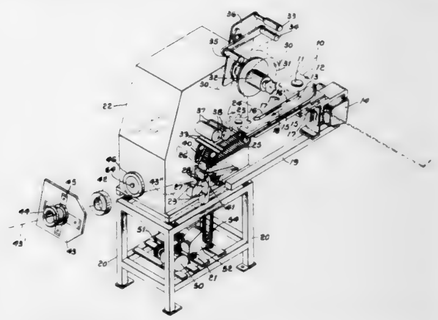
said hands being actuable between open and closed positions with said closed position gripping two portions of the bag with the bag carried in said transfer means,
means to allow said gripper hands to move in a first path toward each other from a first to a second position to open the top of the bag,
and means at said bag filling station to fill a bag held in said gripper hands.

3,961,462

APPARATUS FOR WRAPPING CONFECTIONERY PRODUCTS AND THE LIKE

Donald A. Slathar, Chanhassen, and Christiaan H. Neutkens, Cottage Grove, both of Minn., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 4, 1975, Ser. No. 547,071
Int. Cl.² B65B *11/54*
U.S. Cl. 53—221 **22 Claims**



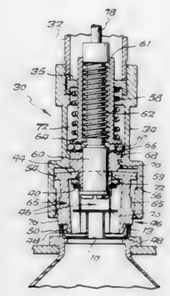
1. Apparatus for successively wrapping individual and similarly shaped items, comprising:
vibrating means for receiving said items and feeding said items into the apparatus;
indexing means coupled to receive said fed items and to move said items along in a spaced sequence in the apparatus;
a stationary receiving yoke;
conveying means for feeding and displacing the items into said receiving yoke, said yoke located below said conveying means; and
means operable to push said items in said yoke into a wrapping means.

3,961,463

SELF-RELEASING CAPPER CHUCK

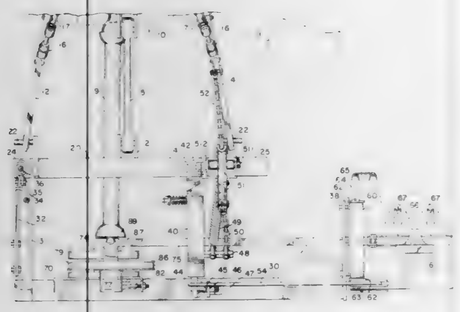
George H. Dimond, deceased, late of East Aurora, N.Y., and by Frederick C. Jensen, executor, Elma, N.Y., assignors to A-T-O Inc., Willoughby, Ohio

Filed July 14, 1975, Ser. No. 595,352
Int. Cl.² B65B *7/28*
U.S. Cl. 53—306 **8 Claims**



1. A vertically reciprocable internally gripping chuck for a machine applying closure elements to a series of containers presented therebeneath, the machine having means adapted to operate on successive containers provided along a feed path and a plurality of said vertically reciprocable chucks mounted thereon and successively positioned above and in substantial vertical alignment with the containers, supply means containing closure elements, and means for successively feeding closure elements from said supply means to said chucks, each of said chucks comprising:
a spindle means adapted for connection to said machine;
an outer body having upper and lower end portions, said outer body member being attached at said upper end portion thereof to said spindle means;
an inner body member having upper and lower end portions and being co-axially disposed within said outer body member and slidable therein;
jaw means, said jaw means being pivotedly suspended from said lower end portion of said inner body member and having flange means adapted for internally engaging closure elements;
a jaw spring means, said jaw spring means being disposed between said inner and outer body members for urging said inner body member in a downward direction with respect to said outer body member so that said jaw means are urged to pivot radially outward to internally engage closure elements; and
interlock means operatively disposed between said inner and outer body members, said interlock means retarding the downward movement of said inner body member as induced by said jaw spring means after disposition of a closure element onto a container so that said jaw means may release from the closure element by pivoting radially inward.

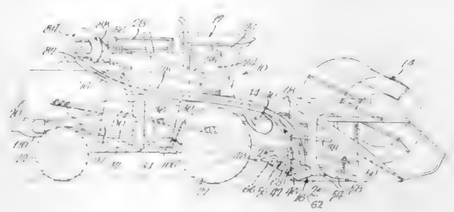
3,961,464
CUTTERBAR CONTROL SYSTEM
Robert Sorensen, Glen Ellyn, and Richard A. Zablocki, Downers Grove, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Apr. 10, 1975, Ser. No. 566,877
Int. Cl.² A01D *35/16*
U.S. Cl. 56—10.4 **17 Claims**



1. A mower adapted for attachment at the rear of a tractor comprising:
a frame adapted for attachment to a vertically movable tractor hitch;
a drag bar pivotally mounted through means at one end to said frame for rotation about a vertical axis;
a cutterbar pivotally attached at the other end of said drag bar for rotation thereabout between an operative position and a gagged position;
a generally fore-and-aft extending pull bar having a forward end attached to said frame by first means permitting rotation of said pull bar about an axis generally longitudinal of said pull bar and having a rearward end attached to an intermediate portion of said drag bar by second means permitting rotation of said pull bar about said generally longitudinal axis;
a float spring interconnecting said pull bar and said frame and disposed to exert a torque on said pull bar about said generally longitudinal axis in a first direction upon in said operative position;
a lifting member connected to said pull bar and disposed to rotate said pull bar about said generally longitudinal axis in said first direction to said gagged position upon being loaded; and
gag link means for pivoting said cutterbar about said drag bar having a first end connected to said cutterbar and a second end pivotally attached to said pull bar at a point removed from said axis of rotation thereof and disposed to rotate said pull bar in a direction opposite said first direction due to the weight of said cutterbar.

3,961,465
VACUUM HARVESTING MACHINE
LeRoy Winings, 208 E. Third St., Harristown, Ill. 62537
Filed Dec. 4, 1974, Ser. No. 529,353
Int. Cl.² A01D *45/22*
U.S. Cl. 56—13.1 **9 Claims**

1. In a combine for harvesting a kernal-type product, a power unit having a chassis with product processing apparatus therein, a cutter platform mounted on the front of said power unit, means for conveying product from said cutter platform into said processing apparatus, in combination, a floating row cover mounted on said cutter platform between said platform and said power unit, means mounted on said chassis for creating a suction under said row cover to draw up loose product



from the ground, and means in said processing apparatus for separating debris from said loose product.

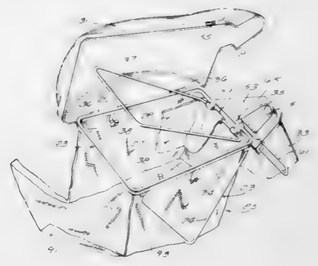
3,961,466
CROP FEEDING ATTACHMENT FOR FORAGE CHOPPERS
Virgil B. Martin, West Bend; Roger L. Villers, Waubeka, and Philip F. Fleming, West Bend, all of Wis., assignors to Gehl Company, West Bend, Wis.
Continuation of Ser. No. 437,958, Jan. 30, 1974, abandoned. This application June 4, 1975, Ser. No. 583,685
Int. Cl.² A01D *45/02*
U.S. Cl. 56—14.3 **1 Claim**



1. A crop feeding attachment for forage choppers comprising an attachment frame having an elevated transverse rear section and a forward section slanting forwardly and downwardly from said rear section; crop cutting means and associated crop conveying means operatively mounted on said attachment frame for severing a crop row from the ground and moving it along an upwardly and rearwardly inclined crop feeding passage into said elevated rear section; said conveying means comprising a pair of endless conveyor belts, first and second front idler sprockets in cooperative engagement, respectively, with said conveyor belts, mounting structures for said front idler sprockets reciprocably mounted on said forward frame section for back and forth movement lengthwise of said crop feeding passage, and resilient means biasing said mounting structures toward forwardly adjusted, conveyor belt tensioning positions, respectively; and said crop cutting means comprising a cutting blade rigidly secured to the mounting structure for said first idler sprocket so as to present a knife edge of said cutting blade in a crop cutting position at the inlet end of said crop feeding passage; a crop engaging star wheel connected with said first idler sprocket for rotation therewith on a level below and in face to face engagement with said cutting blade, and a plate member mounted on the mounting

structure for said second sprocket wheel and presenting a crop engaging side edge on a level above said cutting blade and a rear edge spaced rearwardly from said cutting blade so as to provide a crop material discharge gap between said rear edge of said plate member and the upper surface of said cutting blade and between the lower surface of said plate member and the side edge of said cutting blade; said star wheel and plate member being operatively interrelated so as to guide standing crop material toward said knife edge while cut crop material is conveyed rearwardly and upwardly by said crop conveying means.

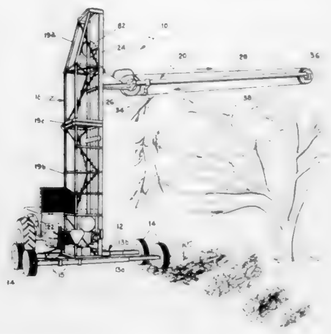
3,961,467
GRASS COLLECTING APPARATUS FOR ROTARY MOWER
Eugene C. Carpenter, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Continuation-in-part of Ser. No. 503,348, Sept. 5, 1974. This application Dec. 18, 1974, Ser. No. 533,975
Int. Cl.² A01D *35/22*
U.S. Cl. 56—202 **12 Claims**



5. A lawn mower comprising a grass collecting apparatus including a grass collecting bag, a support, a frame removably engageable with said bag for retention thereof in a grass collecting position, and means mounting said frame from said support for movement between a bag retaining position and a second position spaced from said bag retaining position so that movement of said frame from said bag retaining position to said second position is operable, when said bag is laden with clippings, to remove said bag from said frame.

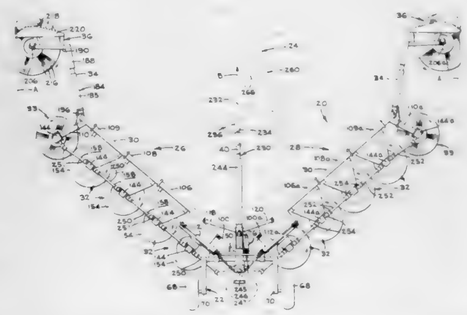
3,961,468
HEDGER
Philip A. Brown, and Vincent B. Brown, both of Conklin, Mich., assignors to Harlo Products Corporation, Grandville, Mich.
Filed Dec. 21, 1973, Ser. No. 427,091
Int. Cl.² A01D *55/00*
U.S. Cl. 56—237 **27 Claims**

1. A trimming apparatus for trees, hedges, and the like comprising:
a framework;
ground-supported means for supporting said framework for movement over the ground;
an upstanding tower mounted on said framework;
a variably positionable trimming means on said tower;
support means on said tower for mounting said trimming means for generally vertical movement along said tower;
said trimming means including
a support arm,
flexible, resilient, drive means and flexible, resilient, idler means spaced apart on said support arm for supporting a continuous, band-type saw blade,
a continuous, band-type saw blade mounted on said drive and idler means, said blade being substantially unsupported intermediate said drive and idler means, and
means on said support arm for rotating said blade in a closed path about said drive and idler means;
said trimming apparatus also including pivot means between said support means and support arm for pivoting said arm toward and away from said tower about a first axis which is longitudinally disposed in the intended direction of



movement of the apparatus, and rotation means on said support means for rotating said support arm about a predetermined second axis generally transverse to the intended direction of movement of the apparatus; said pivot means and rotation means allowing the cutting edge of said saw blade to be variously inclined for cutting and trimming.

3,961,469
ROTARY WINDROWING MACHINE
Leon R. McRobert, Ocoee, Fla., assignor to FMC Corporation, San Jose,, Calif.
Filed Aug. 26, 1974, Ser. No. 500,238
Int. Cl.² A01D *51/00*
U.S. Cl. 56—328 R **20 Claims**

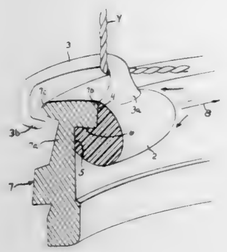


1. In a windrowing machine for windrowing articles from an article supporting surface which may vary in contour, the combination of a rotatable windrowing means of at least semi-rigid construction defined by a generally continuous outer peripheral surface which extends in a generally vertical plane and which is adapted to move articles, means for supporting one side of side windrowing means at a predetermined distance above the article supporting surface, means for advancing the rotatable windrowing means along a predetermined path, said means for advancing being coupled to said means for supporting the windrowing means, drive means including a generally vertically extending drive shaft for rotating said rotatable windrowing means in a predetermined direction, and universal joint means connecting said drive shaft to said rotatable windrowing means for universal movement allowing the rotatable windrowing means to follow the contour of the article supporting surface while moving along said path.

3,961,470
C-SHAPED RING TRAVELERS FOR YARN TWISTERS

Robert L. Goerens, Esch sur Alzette, Luxemburg, assignor to Uniroyal Inc., New York, N.Y.

Filed Dec. 3, 1974, Ser. No. 529,184
Claims priority, application Germany, Dec. 5, 1973, 2360615
Int. Cl.² D01H 7/60
U.S. Cl. 57—125 **18 Claims**



1. A C-shaped ring traveler designed for movement in only one given direction along a ring of a yarn twister or like machine, wherein the ring is of generally T-shaped cross-section and has a generally upright annular web and at the top of the latter a pair of generally transverse circumferential flanges the free lateral edges of which face inwardly and outwardly of the ring, respectively;

a. said traveler having a body including (i) a relatively thicker elongated foot or base section which, when the traveler is in use, is juxtaposed to and moves longitudinally along the inside of the ring, and (ii) a relatively thinner transverse bowed or arched section which, when the traveler is in use, extends generally horizontally across and moves translationally along the top of the ring, said bowed or arched section being secured to and extending laterally from a medial portion of said foot or base section and terminating in a hook-like free end which, when the traveler is in use, extends in under said free lateral edge of and moves translationally along beneath said outwardly facing flange of the ring;

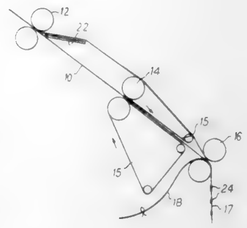
b. said foot or base section of said body on the side thereof which faces toward said hook-like free end of said bowed or arched section having (i) a pair of laterally and vertically offset, generally vertical guide surfaces for sliding engagement, respectively, with said free lateral edge of said inwardly facing flange and with the surface of said web beneath said inwardly facing flange of the ring, and (ii) a generally horizontal guide surface intermediate and bridging the gap between said vertical guide surfaces for sliding engagement with the underside of said inwardly facing flange of the ring; and

c. said foot or base section of said body having throughout its expanse, except at the locations of said vertical and horizontal guide surfaces, a cross-sectional configuration (i) which is generally drop-shaped or airfoil-like with reference to each of two mutually perpendicular planes including the longitudinal axis of said foot or base section, (ii) which has, as viewed with reference to said given direction of movement of the traveler, a relatively blunt leading edge and a relatively less blunt trailing edge, and (iii) which, when the traveler is in use, is effective to generate aerodynamic lift forces directed inwardly of the ring so as to oppose the effects of centrifugal forces on said foot or base section of said body and thereby to minimize rubbing friction between said vertical guide surfaces and, respectively, said free lateral edge of said inwardly facing flange and said surface of said web beneath said inwardly facing flange.

3,961,471
PRODUCTION OF YARN

Lindsay Alfred Allen, Ilkley, England, assignor to IWS Nominee Co. Ltd. and Commonwealth Scientific and Industrial Research Organization, both of Canberra, Australia

Filed Sept. 4, 1974, Ser. No. 503,479
Int. Cl.² D02G 3/34
U.S. Cl. 57—140 J **8 Claims**



1. A method of forming fancy yarns comprising the steps of:

providing a plurality of strands of staple fibre to constitute foundation and effect strands;

passing said foundation strand and at least one effect strand through a first pair of drafting rollers;

passing said foundation strand through drafting restraint surfaces moving at a speed greater than the speed of the first pair of drafting rollers to a second pair of drafting rollers having a greater speed than the drafting restraint surfaces;

passing the at least one effect strand into engagement with said foundation strand without passage between said drafting restraint surfaces;

causing said second pair of drafting rollers to rotate to cause drafting of said strands and to pull in varying portions of said effect strand while constraining said foundation strand by the action of said drafting restraint;

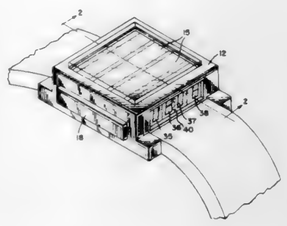
incorporating said portions of said effect strand with said foundation strand as irregularities;

and spinning said drafted strands together to form yarn in which said irregularities persist as slubs in the yarn.

3,961,472
SOLID STATE ELECTRONIC TIMEPIECE

Roger W. Riehl, Troy, Ohio, assignor to Ragen Semiconductor, Inc., Whippany, N.J.

Division of Ser. No. 139,468, May 3, 1971, Pat. No. 3,823,551. This application July 10, 1974, Ser. No. 486,990
Int. Cl.² G04B 19/24, 37/08
U.S. Cl. 58—4 A **17 Claims**



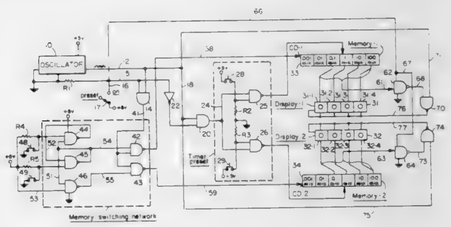
1. An electronic solid-state timepiece adapted for use as a wrist watch comprising means for generating electrical pulses at a constant predetermined frequency, battery means for supplying power to said generating means, means for counting said pulses and for producing a plurality of electrical time outputs corresponding to at least hours and minutes, electro-

optical digital readout means for producing a visual display of selected said outputs from said counting means, a solar cell connected to recharge said battery means, means including a control element for selectively connecting said time outputs of said counting means to said digital readout means, a substantially water and air impervious encasing material surrounding and supporting said battery means, said pulse generating means, said counting means, said readout means, said solar cell and said control element to form a durable fluid-tight time capsule, said encasing material being capable of transmitting light in areas adjacent said solar cell and said readout means, and means disposed outboard of said time capsule for remotely activating said control element within said time capsule by producing a field acting through said encasing material.

3,961,473
ELECTRONIC CHESS TIMER

George Hung, 339 Harwick Road, Rochester, N.Y. 14609

Filed Mar. 6, 1975, Ser. No. 556,167
Int. Cl.² G04B 5/20
U.S. Cl. 58—145 D **10 Claims**



1. A digital timer for indicating the time for completing moves in a chess match, comprising

a source of electrical signals,

a pair of registers for storing said signals in bit form,

presetting means operable for selectively directing signals from said source to said registers for storage therein,

means coupled to said source of electrical signals, for controlling the shifting of the stored signals serially out of said registers to reduce the quantities of signals previously stored therein,

means for selectively connecting said shifting means to said registers one at a time to reduce the signals stored therein, and

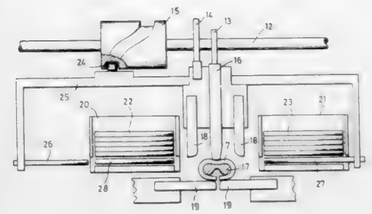
a pair of electrical displays connected to said registers and operative separately to indicate in digital form for each register the operating time in minutes it will take said shifting means to remove all remaining stored signals from the associated register.

3,961,474
METHOD AND APPARATUS FOR THE MANUFACTURE OF CHAINS WITH ROUND LINKS, HAVING VARYING MECHANICAL CHARACTERISTICS

Paul Esser, Cologne, Germany, assignor to Meyer, Roth & Pastor Maschinenfabrik GmbH, Cologne, Germany

Filed Aug. 28, 1974, Ser. No. 501,369
Claims priority, application Germany, Aug. 28, 1973, 2343266; Aug. 28, 1973, 2348851
Int. Cl.² B21L 1/02
U.S. Cl. 59—23 **5 Claims**

1. A method for the manufacture of link chains having links consisting of C-shaped bent stock sections formed on a chain bending machine comprising, in combination, the steps of feeding a wire stock section in a longitudinal direction in front of a bending mandrel which is arranged vertically relative to the longitudinal feeding direction of the stock material; locking the stock material in a locking fixture which is advanced intermediately of the stock material and the bending mandrel, and positioning the locking fixture vertically relative to both the center position of the stock material and the front of the bending mandrel; bending the stock material by means of bending tools round the bending mandrel and forming the

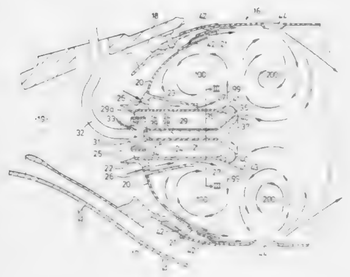


C-shape of a chain link, the improvement characterized in that the wire stock sections forming the C-shaped chain links are of different physical properties, and have different extensibility under tension, and feeding the different stock materials to the bending mandrel in a pre-selected and recurring sequence.

3,961,475
COMBUSTION APPARATUS FOR GAS TURBINE ENGINES

Robert David Wood, Derby, England, assignor to Rolls-Royce (1971) Limited, London, England

Continuation of Ser. No. 394,395, Sept. 4, 1973, Pat. No. 3,906,718. This application Mar. 31, 1975, Ser. No. 563,468
Claims priority, application United Kingdom, Sept. 7, 1972, 41504/72
The portion of the term of this patent subsequent to Sept. 23, 1992, has been disclaimed.
Int. Cl.² F02C 7/22
U.S. Cl. 60—39.65 **3 Claims**



1. Combustion apparatus comprising a combustion chamber, an upstream end wall of said chamber, a downstream wall of said chamber, openings in said chamber walls defining first and second air inlet means for delivering air into said chamber, a member extending axially downstream of said upstream end wall and defining at least in part a passage which is in communication with said first air inlet means, means for supplying fuel to the passage, a deflecting member disposed at the downstream end of the passage for deflecting the air/fuel mixture in a direction substantially radially of said passage whereby to promote a substantially toroidal vortex circulating first radially outwards from said passage, then upstream towards the upstream end wall of the combustion chamber and then downstream adjacent and substantially parallel to the passage, said secondary air inlet means being positioned to promote a secondary toroidal vortex immediately downstream of said first vortex and having a hand opposite to that of the first vortex, said member defining said passage being a cylin-

drical member, wherein the deflecting member has a surface for focusing and directing the air/fuel mixture which surface is concentric with said cylindrical member, said surface having a portion of increasing radial dimension extending in the downstream direction followed by a portion of further increased radial dimension extending in the upstream direction, said surface portions cooperating with said cylindrical member to define an annular outlet which converges up to an annular discharge opening, said outlet focusing and directing air/fuel mixture in a stream into the combustion chamber.

3,961,476

METAL INTERLAYER ADHESIVE TECHNIQUE

Bernard Wasserman, Ridgecrest, and Allen T. Robinson, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 11, 1975, Ser. No. 612,429
Int. Cl.² F20K *9/04*
U.S. Cl. 60—255 **4 Claims**

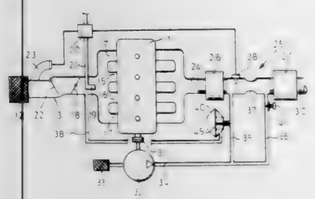
1. A rocket motor containing a layer of silicone rubber adjacent to the inner wall of the combustion chamber and bonded thereto, a layer of lowly exothermic metal adjacent to the inner wall of the silicone rubber layer and bonded thereto and a solid rocket propellant grain inside of and adjacent to the inner wall of the metal layer and bonded thereto, the solid propellant grain containing a binder of isocyanate cured hydroxy terminated polybutadiene.

3,961,477

PROCESS AND SYSTEM FOR DETOXICATING THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

Hermann Grieshaber, Stuttgart, and Wolf Wessel, Schwieberdingen, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Jan. 3, 1975, Ser. No. 538,243
Claims priority, application Germany, Jan. 12, 1974, 2401417
Int. Cl.² F02B *75/10*
U.S. Cl. 60—274 **16 Claims**



1. A process for detoxicating the exhaust gases of an internal combustion engine having an exhaust line containing in series a first reactor for reducing nitrogen oxides and a second reactor for oxidizing hydrocarbons and carbon monoxide, and an oxygen measuring element connected to the exhaust line comprising the steps of:

a. regulating the mass ratio of air to fuel on the suction side of the engine as a function of the measured quantity of the oxygen measuring element;

b. injecting additional air into the exhaust line upstream of the oxidizing reactor in the form of a first and second air stream, the first one of which is injected in the exhaust flow direction upstream of the oxygen measuring element, and

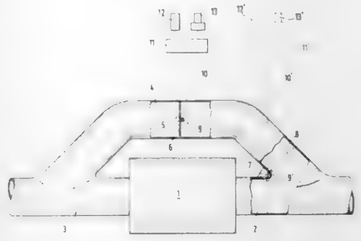
c. regulating the first air stream at a quantity corresponding to the gas throughput of the engine, so that when the measuring element measures a stoichiometric mixture a slightly rich air-fuel mixture is supplied to the engine.

3,961,478

INSTALLATION FOR THE CATALYTIC AFTERBURNING OF EXHAUST GASES IN THE EXHAUST GAS SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Karlheinz Lange, Stuttgart, Germany, assignor to Dr. -Ing. H.c.F. Porsche Aktiengesellschaft, Germany

Filed Dec. 6, 1974, Ser. No. 530,298
Claims priority, application Germany, Dec. 5, 1973, 2360581
Int. Cl.² F02B *75/10*
U.S. Cl. 60—277 **6 Claims**



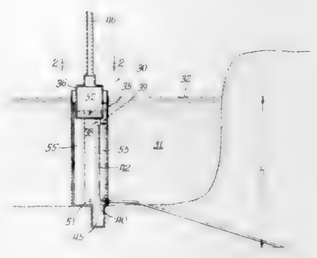
1. An installation for the catalytic afterburning of exhaust gases in an exhaust gas system of an internal combustion engine, which includes a by-pass line means by-passing the installation for the catalytic afterburning, in which is arranged a throttle valve means actuated in dependence on the temperature of the installation for the catalytic afterburning, further means for actuating the throttle valve also independently of the temperature of the installation for the catalytic afterburning, in dependence of at least one parameter of the internal combustion engine, characterized in that the throttle valve means is actuated, after turning off the ignition of the internal combustion engine, by the oil pressure in the internal combustion engine which continues to exist for a short period of time, by way of an oil pressure switch means and a control means forming part of said further means.

3,961,479

ENERGY CONVERTING HYDRAULIC BUOYANT MOTOR

Ray C. Anderson, 6655 S. New Haven, Tulsa, Okla. 74136

Continuation-in-part of Ser. No. 407,523, Oct. 18, 1973. This application Jan. 31, 1974, Ser. No. 425,945
Int. Cl.² F03C *5/02*
U.S. Cl. 60—496 **37 Claims**



1. A hydraulic buoyant motor adapted to operate in a water medium having a surface level and a drain outlet at some level below the surface level so that a static fluid pressure head exists across the motor and comprising:

a buoyant reciprocating piston disposed in the water medium;

valve means for controlling the relative level of the water tending to buoy up the piston with respect to the water surface level;

power output means operatively associated with said piston and adapted to perform work by the buoyant force and motion of said piston; and

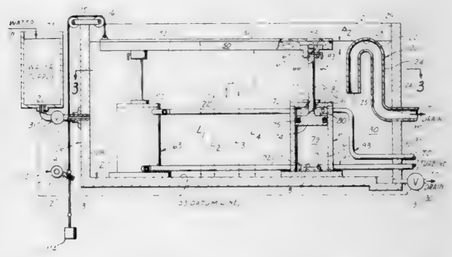
detention means connected to said piston and adapted to restrain the upward movement of said piston prior to commencement of its upward stroke.

3,961,480

PRESSURE SOURCE AND SYSTEMS INCORPORATING IT

William S. West, 380 Cliff Drive Apt. 2, Pasadena, Calif. 91107

Filed Jan. 17, 1974, Ser. No. 432,667
Int. Cl.² F03B *13/12*; **F03G** *3/00*
U.S. Cl. 60—496 **29 Claims**



1. A pressure source comprising: pressurizing means comprising an enclosure which bounds a chamber, said enclosure comprising a first and second portion, at least one of which is movable relative to the other as a consequence of a force applied to one of them so as to reduce the volume of the chamber and thereby to place under pressure liquid which is contained therein; a conduit leading from said chamber through which a stream of said liquid under pressure can flow for use in doing work; a flotation tank adapted to contain liquid at an upper and at a lower elevation; weight means floatable buoyantly in the liquid in the flotation tank; force transmission means so disposed and arranged as to apply force from elevated weight means to said one portion cycling means for controlling the supply of liquid into, and the drainage of liquid out of, the flotation tank so as respectively to raise the weight means and to permit it to descend; and release means to delay the descent of the weight means whereby the weight means can descend at a rate which is independent of the level of the liquid in the flotation tank.

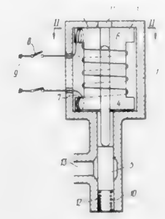
3,961,481

ARRANGEMENT FOR RETAINING AN ACTUATING MEMBER IN AN EXTREME POSITION

Nikolai Trofimovich Romanenko, Tokmakov pereulok, 13-15, kv. 165; Jury Filippovich Nikitin, ulitsa Arbat, 18, kv. 31, and Ljudmila Anatolievna Litenkova, Bashilovskaya ulitsa 19, kv. 158, all of Moscow, U.S.S.R.

Continuation of Ser. No. 499,075, Aug. 20, 1974, abandoned, which is a continuation of Ser. No. 378,904, July 13, 1973, abandoned. This application Mar. 24, 1975, Ser. No. 561,076
Claims priority, application U.S.S.R., July 13, 1972, 1808784
Int. Cl.² F03C *5/00*
U.S. Cl. 60—531 **1 Claim**

1. An arrangement for retaining an actuating member in an extreme position thereof and for releasing the actuating member to perform a working stroke, comprising: a housing; a plurality of undeformable supports mounted within said housing in spaced relationship; an undeformable connecting element permanently cooperating with said actuating member, said connecting element being received between said supports; at least one coil of wire stressively wound about said supports to product elastic deformation of tension of the wire for urging said supports to engageably retain said connecting element with an effort sufficient to hold said actuating member in an extreme position thereof, said coil of wire being selectively connectable to a power supply source whereby



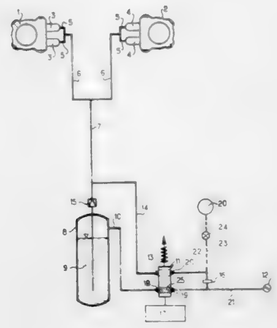
when said wire is connected to the power supply the temperature of the wire increases resulting in reduced elastic deformation in the wire and said effort is reduced in magnitude so that said connecting element is released to be displaced relative to said supports and said actuating member is permitted to move through its working stroke.

3,961,482

METHOD AND DEVICE FOR CLEANING A SUPERCHARGING SET POWERING TURBINE DRIVEN BY THE EXHAUST GASES OF A HEAT ENGINE

Joseph Auguste Jamaux, Saint-Germain-en-Laye, France, assignor to Societe d'Etudes de Machines Thermiques, Saint Denis, France

Filed May 16, 1974, Ser. No. 470,438
Claims priority, application France, June 19, 1973, 73.22303
Int. Cl.² F02B *33/44*
U.S. Cl. 60—606 **7 Claims**

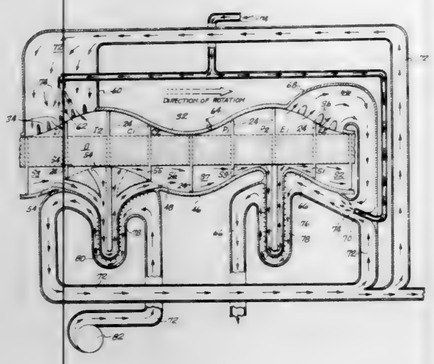


1. A method of cleaning an exhaust gas-driven power turbine for operating a supercharging set of a heat engine such as an internal combustion engine, comprising the steps of putting a washing liquid under pressure by means of a compressed gaseous fluid such as compressed air, feeding said washing liquid during washing periods into said turbine through injection nozzles fitted onto inlet ducts for the exhaust gases on said turbine and constantly blowing outside of the washing periods a determined flow rate of compressed gaseous fluid into said injection nozzles for steadily sweeping or scavanging them with a gaseous current thereby avoiding their being clogged or fouled and their being choked.

3,961,483
COMPOSITE CYCLE ENGINE

Edward Robin Wiley, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed July 3, 1975, Ser. No. 593,097
Int. Cl.² F01K *23/10*
U.S. Cl. 60—616 **12 Claims**

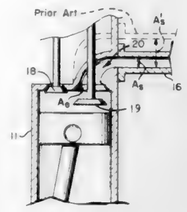


1. A rotary composite cycle engine comprising:
a. a first top housing assembly and a first bottom housing assembly, said first housing assemblies each being substantially annular about a central axis passing through a central hub cover in said first housing assemblies having bearing means for supporting a shaft passing through said bearing means along said central axis, said first housing assemblies each having an inner surface contoured as a sinusoid of two periods adjacent to said central hub cover and converging toward focal points at the outer periphery of said annulus, said first housing assemblies being disassemblably joined one to the other along the periphery of said first housing assemblies to form a first sealed sinusoidal enclosure of substantially constant spacing between said first top housing assembly and said first bottom housing assembly at points equidistant from said central axis;
b. a first rotor assembly rotatably disposed within said first sealed sinusoidal enclosure, said first rotor assembly comprising a substantially circular plate having a fixed hub at the center thereof, said hub having a shaft therethrough at the center of and perpendicular to said plate, said shaft being located on said central axes of said first housing assemblies and passing through said bearing means of said first housing assemblies, said circular plate and said hub having a plurality of slots therein disposed angularly equidistant around said rotor;
c. a plurality of first movable vanes disposed within said plurality of slots in said first rotor assembly, said first movable vanes each having a pivot point disposed adjacent one of said focal points of said first sealed sinusoidal enclosure, said first movable vanes each having one edge disposed close adjacent said sinusoidal surface of said first top housing assembly and a second edge disposed close adjacent said sinusoidal surface of said first bottom housing assembly, said first movable vanes defining a plurality of first spaces between said first rotor assembly and said first top housing assembly and an equal number of second spaces between said first rotor assembly and said first bottom housing assembly, said first spaces and said second spaces expanding and contracting sinusoidally as said first rotor assembly rotates;
d. means for inserting a first expandable fluid into said first spaces;
e. means for inserting a second expandable fluid into said second spaces;
f. means for causing said first expandable fluid to expand in one of said first spaces; and,
g. means for causing said second expandable fluid to expand in one of said second spaces.

3,961,484
INTERNAL COMBUSTION ENGINE WITH POWER RECOVERY TURBINE

James L. Harp, Jr., 8435 Cozycroft, Canoga Park, Calif. 91306

Filed July 29, 1974, Ser. No. 492,606
Int. Cl.² F02G *3/02*
U.S. Cl. 60—624 **1 Claim**

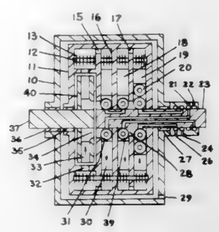


1. In combination: an internal combustion engine having cylinders with given inlet and exhaust valve flow areas; a turbine coupled to the engine wherein exhaust gases are passed to said turbine to provide recovery power derived from said exhaust gases; stacks connecting the exhaust valve flow areas to said turbine; each stack having a cross sectional flow area less than the given cross sectional flow area of the exhaust valve to which it is connected; and a port for each cylinder connecting the associated exhaust stack to the exhaust outlet, said port reducing in cross sectional area between said outlet and said stack, the cross sectional flow area of each of said stacks being from 0.50 to 0.90 the given cross sectional flow area of the exhaust valve to which it is connected, said reduced stack areas permitting a quicker buildup of high pulse pressure in the stack thereby reducing throttling losses during the valve opening process.

3,961,485
TURBINE WITH HEAT INTENSIFIER

Michael Eskeli, 7994-41 Locke Lane, Houston, Tex. 77042

Continuation-in-part of Ser. No. 413,258, Nov. 6, 1973, Pat. No. 3,889,471, and a continuation-in-part of Ser. No. 474,729, May 30, 1974. This application June 16, 1975, Ser. No. 587,408
Int. Cl.² F01K *23/08*
U.S. Cl. 60—655 **4 Claims**

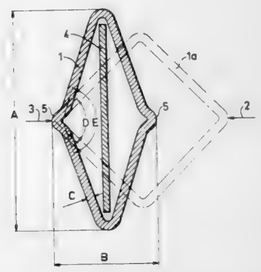


1. A turbine for generating power comprising:
a. a first shaft and a second shaft rotatably supported in bearings;
b. a first rotor supported for rotation by said first shaft;
c. a second rotor supported for rotation by said second shaft;
d. said first rotor comprising:
i. an inward extending first fluid passage and an inward extending first fluid passage, a fist passage means connecting the outward ends of aid outward extending first fluid passage and said inward extending first fluid passage and a second passage means for connecting the inner ends of said outward extending first fluid passage and said inward extending first fluid passage, a first fluid circulating in said passages, being compressed by centrifugal force by said first rotor with accompanying temperature increase;
ii. an outward extending second fluid passage connected at its outward end with an opening for a second fluid with said second fluid being passed into nozzles oriented to discharge said second fluid forwardly in the direction of rotation;
iii. a high temperature heat exchanger being carried by said first rotor and providing heat removal for said first fluid and providing heat addition for said second fluid with said high temperature heat exchanger being at least in part near the periphery of said first rotor;
iiii. a heat addition heat exchanger for adding heat into said first fluid and being carried by said first rotor;
e. said second rotor comprising an inward extending second fluid passage with the outer ends of said inward extending passages being downstream adjacent to said first rotor nozzles and the inner ends of said inward extending second fluid passages communicating with the inner ends of said outward extending second fluid passages of said first rotor.

3,961,486
PIPE FOR STICKING DOWN DRAINS INTO THE GROUND

Sven Granholm, and Signar Lundmark, both of Skelleftea, Sweden, assignors to Linden-Alimak AB, Skelleftea, Sweden

Filed Oct. 22, 1974, Ser. No. 516,923
Int. Cl.² E02B *11/00*
U.S. Cl. 61—11 **4 Claims**

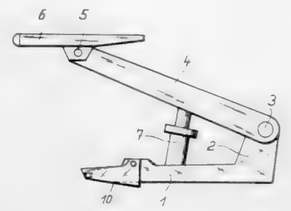


1. An elongated pipe adapted to be driven into the ground in the direction of its elongation for use in sticking drains down into the ground, said pipe having a predetermined, fixed cross-sectional profile of substantially parallelogram shape, two opposite corners of said parallelogram being substantially closer to one another than the other two opposite corners thereof, all sides of said parallelogram being integral with one another and the dimensions of said parallelogram being substantially constant throughout the length of said pipe, the parallelogram shape of said pipe causing said pipe to exhibit resistance to bending sufficient to permit said pipe to be driven into the ground and causing comparatively small disturbance of the ground as said pipe is driven into the ground, said pipe being used to protect a drain located therein, the spacing between the more widely spaced corners of said parallelogram being at least as great as the width of such a drain.

3,961,487
MINE ROOF SUPPORT

Gunter Blumenthal, Westerholt, Germany, assignor to Bochumer Eisenhutte Heintzmonn, & Co., Bochum, Germany

Filed Sept. 30, 1975, Ser. No. 618,212
Claims priority, application Germany, Nov. 9, 1974, 2453257
Int. Cl.² E21D *15/44*
U.S. Cl. 61—45 D **10 Claims**

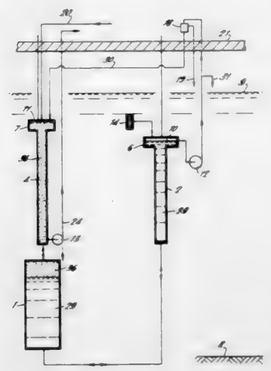


1. A mine roof support, comprising at least two elongated support members laterally adjacent one another and extending transverse to the mine face, each of said support members having an underside, a first end portion facing towards and a second end portion facing away from said mine face; shield means mounted on said second end portions and extending upwardly thereof for supporting the mine roof; extension means connectable to said first end portions of said support members with limited freedom of pivoting movement in vertical direction, and including a ground plate extending to all of said support members and inclined relative to said undersides thereof, and terminal portions which rise upwardly towards said mine face in the region of the free ends of said first end portions of said support members.

3,961,488
METHOD FOR FILLING AND EMPTYING OF CASSIONS

Torbjorn Ovsttun, Oslo, Norway, assignor to A/S Akers Mek. Verksted, Norway

Filed Nov. 19, 1974, Ser. No. 525,252
Int. Cl.² E02B *1/00;* **E02D** *23/00*
U.S. Cl. 61—46 **9 Claims**



5. An arrangement for the filling and emptying by gravitational means of caissons in which are stored hydrocarbons such as oil, said caissons being filled to capacity with liquid of at least one of water and hydrocarbon, said caissons being located below a body of water and being anchored to the bottom thereunder, at least one column extending above the body of water and to which said caissons are connected, a platform carried above said body of water, at least two con-

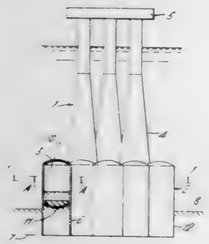
tainers being disposed in an atmospheric compartment arranged inside said one or more columns, said containers being disposed below said body of water and above said caissons, at least one of said containers containing said hydrocarbon and having an inlet disposed below said body of water and an outlet thereon, and at least one of said containers containing water and having an inlet situated below said body of water and an outlet thereon, a first pipe communicating between the outlet of said container containing hydrocarbon and said caissons for supplying and draining stored hydrocarbons to and from said caissons, and a second pipe communicating between the outlet of said container containing water for supplying and draining water to and from said caissons, said first and second pipes being introduced in said caissons at different levels therein, whereby a pressure differential is established across a wall of said caissons equal to the hydrostatic pressure at said containers so that if leakage paths develop in said caissons, water from the body tends to be forced into said caissons rather than said hydrocarbon being forced out.

3,961,489

METHOD FOR PLACING A FLOATING STRUCTURE ON THE SEA BED

Olav Mo, Gronsundveien 94, Nesbru, 1370 Asker, Norway

Division of Ser. No. 352,679, April 19, 1973, Pat. No. 3,911,687. This application Oct. 18, 1974, Ser. No. 516,123
Claims priority, application Norway, May 2, 1972, 1541/70
Int. Cl.² E02B *17/00*
U.S. Cl. 61—46.5 **2 Claims**



1. A method for supporting at deeper layers of sea bed soil a floating structure which is submerged down onto the sea bed and founded, the structure comprising a caisson having at least one ballast cell and a plurality of skirts extending downwardly below the base of said caisson and defining compartments, said compartments being open at their lower ends, said method comprising the steps of:

floating said structure to a location at sea;

sinking said structure at said location;

introducing sufficient ballast into said ballast cell to cause the skirts to penetrate downwardly into said deeper layers of sea bed soil whereby said skirts form closed compartments each being defined by the skirt, the base of said caisson, and the sea bed;

removing sea water trapped within said closed compartments; and

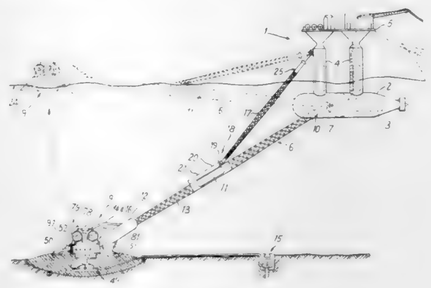
removing ballast from said ballast cell to reduce the vertical load on the sea bed to a load level which the material making up the sea bed can bear without failing whereby movement of said structure is primarily restrained by adherence and friction between the sea bed and said skirts and by temporary pressure differentials within said closed compartments created by partial movement of said structure.

3,961,490

ANCHORAGE OF FLOATING STRUCTURES

Jean-Louis Corgnet, Boulogne Billancourt, France, assignor to Compagnie Francaise des Petroles, Paris, France

Filed Dec. 23, 1974, Ser. No. 535,920
Claims priority, application Canada, Dec. 21, 1973, 188913; France, Apr. 30, 1974, 74.14934; Nov. 27, 1974, 74.38886
Int. Cl.² E02D *21/00;* **B63B** *21/00;* **B65B** *3/04*
U.S. Cl. 61—46.5 **53 Claims**



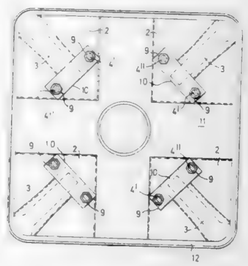
1. An assembly for anchorage of a floating structure comprising: a floating structure; a first enclosure having an opening at its top portion and arranged in the seabed; a movable member; means to releasably and rotatably connect said movable member to said first enclosure so as to form with said first enclosure a watertight chamber capable of being brought to atmospheric pressure, said means allowing said movable member to rotate through 360° about a vertical axis relative to said first enclosure; and rigid arm means extending from said movable member to said floating structure and pivotable about two horizontal axes by which its ends are attached respectively to said movable member and to said floating structure.

3,961,491

PILE CONNECTING DEVICE

Anthony Lewis Reddaway, Windlesham, and Frank Edward Young, Sutton Courtenay, both of England, assignors to West's Piling and Construction Company Limited, Great Britain

Filed Mar. 14, 1975, Ser. No. 558,386
Claims priority, application United Kingdom, Mar. 14, 1974, 11427/74
Int. Cl.² E02D *5/30;* **F16B** *7/00*
U.S. Cl. 61—56 **7 Claims**



1. A pile connecting device, comprising a plurality of plate members each adapted to be secured to the end of a first pile section and each having a recess extending inwardly from its periphery, first frame means for operatively interconnecting said plate members, a plurality of second plate members each adapted to be secured to the end of a second pile section and each having a recess extending inwardly from its periphery,

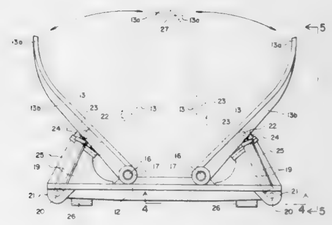
and a second frame means for operatively interconnecting said second plate members, each of said first plate members adapted to bear against a corresponding one of said second plate members prior to connection of said first and second pile sections with the recesses in said corresponding first and second plate members registering, and a plurality of locking pins each of substantially I-shaped cross-section and adapted to be inserted and retained in one of said pairs of registering recesses, substantially the entire underfaces of the heads of each locking pin bearing against the outer surfaces of the abutting plate members.

3,961,492

MACHINE FOR AND METHOD OF STEMMING BLAST HOLES

Jay K. Buehler; Thomas R. Carlson, both of Salt Lake City, and Alvin J. McIntosh, Midvale, all of Utah, assignors to Kennecott Copper Corporation, New York City, N.Y.

Filed Feb. 7, 1975, Ser. No. 548,029
Int. Cl.² E02D *29/12;* **E02B** *1/00;* **A01B** *63/00*
U.S. Cl. 61—63 **7 Claims**



1. A machine for stemming blast holes, comprising a vehicle capable of being driven forwardly and backwardly; a substantially solely upstanding pusher blade extending transversely across the vehicle at an end thereof for pushing loose earth materials along a ground surface; a pair of auxiliary earthmoving blades pivotally mounted on said pusher blade in mutually spaced relationship transversely of the vehicle and swingable toward and away from each other, said auxiliary blades having tip portions inwardly turned so as to be in confronting relationship when the blades are swung together; and means for swinging the blades outwardly away from each other and inwardly toward each other.

3,961,493

METHODS AND APPARATUS FOR PURGING LIQUID FROM AN OFFSHORE PIPELINE AND/OR SCANNING A PIPELINE INTERIOR

Clyde Earvin Nolan, Jr., Houston; John Paul Soland, Alvin, and William Samuel Tillinghast, Humble, all of Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Jan. 22, 1975, Ser. No. 542,900
Int. Cl.² F16L *45/00;* **B08B** *1/00*
U.S. Cl. 61—72.3 **28 Claims**



19. Pipeline purging apparatus for passing pipeline pigs from a first pipeline means end to a second, submerged pipeline means end, said apparatus comprising:

pig launcher means attached to said pipeline means at said first pipeline means end, said pig launcher means including

first compartment means containing at least one pig element, and

means for injecting pressurized gas behind said pig element to propel said pig element through said pipeline means toward said second pipeline means end; and

pig receiver means attached to said pipeline means at said second, submerged pipeline means end, said pig receiver means including

means for exhausting fluid displaced by said pig element,

second compartment means for receiving said propelled pig element, and

means detachably connecting said pig receiving means with said pipeline to permit the concurrent removal of said pig receiving means and a pig element from said pipeline means;

said pig receiver means including

means for exhausting a portion of said pressurized, pig element propelling gas into the ambient water to indicate arrival of said pig element within said pig receiver means; and

said pig launcher means including

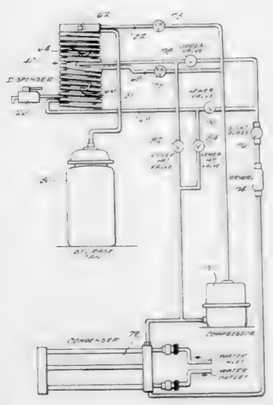
means for exhausting pressurized, pig element propelling gas into the ambient water in response to advancement of a pig element being launched.

3,961,494

SOFT FOOD MIX DISPENSING APPARATUS AND METHOD

Robert Schaefer, Lakeview, and Richard L. Hammell, Lima, both of Ohio, assignors to The Kroger Company, Cincinnati, Ohio

Filed Feb. 14, 1975, Ser. No. 550,039
Int. Cl.² A23G *9/00;* **F25C** *5/08*
U.S. Cl. 62—73 **14 Claims**



1. An apparatus for dispensing a soft food mix comprising:

a source of soft food mix at a pressure above atmospheric pressure,

heat exchanger means for storing a quantity of said mix without mechanical agitation,

valve means coupled to said heat exchanger means for selectively dispensing mix from said heat exchanger,

means coupling said source to said heat exchanger means for transferring mix from said source to said heat exchanger means as said mix is dispensed from said heat exchanger,

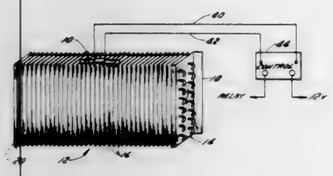
refrigeration means in operative relation with said heat exchanger means for cooling the mix in said heat exchanger means so as to congeal a portion of the mix and

heating means in operative relation with said heat exchanger means for at least periodically heating the mix in said heat exchanger means in response to a buildup of the congealed mix in the heat exchanger which buildup would otherwise prevent flow of the fluid mix.

3,961,495
FROST DETECTING DEVICE FOR A REFRIGERATION APPARATUS

Guy Beauvent, Loretteville, and Jacques Roy, Ste-Foy, both of Canada, assignors to Centre de Recherche Industrielle du Quebec, Canada

Filed Mar. 26, 1975, Ser. No. 562,053
Int. Cl.² F25D *21/02*
U.S. Cl. 62—140 **8 Claims**



1. A frost detecting device for use in a refrigeration apparatus of the type having refrigerant-carrying coils equipped with fins comprising:

a support adapted to be fixedly mounted to said fins;

infrared radiation emitting means mounted to said support;

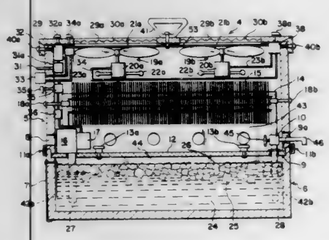
radiation sensitive means mounted to said support in spaced relationship with said emitting means; said sensitive means and said emitting means having a common radiation axis;

control circuit means electrically connected to said emitting means and to said sensitive means for detecting an unacceptable amount of frost on said fins to then actuate a defrosting system associated with the refrigeration apparatus, said control circuit means including means for pulsating at a predetermined frequency said infrared radiation from said emitting means so that undesired signals are thereby eliminated.

3,961,496
PORTABLE AIR CONDITIONER

Paul H. Y. Ku, 47-50 - 59th St., Woodside, N.Y. 11377

Filed Oct. 30, 1975, Ser. No. 627,197
Int. Cl.² F25D *3/02*; **B60H** *3/04*; **F25B** *25/00*
U.S. Cl. 62—459 **10 Claims**



1. A portable air conditioning device comprising in combination: container means for retaining water and for providing insulation against heat transfer through walls thereof and for providing support structure for elements mounted thereon; said support structure including a dividing partition substantially dividing interior space of the container means into an ice compartment and a heat-transfer compartment, said ice compartment and said heat-transfer compartment being substantially segregated from one-another; pump and motor means for pumping water in closed cycle from said ice compartment through said heat-transfer compartment and back to said ice compartment; heat-transfer means for circulating warm air in heat-exchange relationship with cool water when circulated in said closed cycle, within said heat-transfer compartment, and for intaking said warm air from and exterior source and for evacuating cooled air from the heat-transfer compartment to an exterior location to be cooled; said heat-transfer means including fans located above said closed cycle, the container means having intake ports within lower portions of walls of said heat-transfer compartment and having exhaust ports within upper portions of walls of said heat-transfer compartment and the heat-transfer means further including water-circulation conduits cycling water from and to the ice compartment, and said water-circulation conduits being mounted substantially above a level of said intake ports.

3,961,497
UNIVERSAL JOINT

William A. Cohen, Brooklyn, N.Y., assignor to Sphero International Company, West Long Branch, N.J.

Filed July 28, 1975, Ser. No. 599,605
Int. Cl.² F16D *3/30*
U.S. Cl. 64—21 **10 Claims**

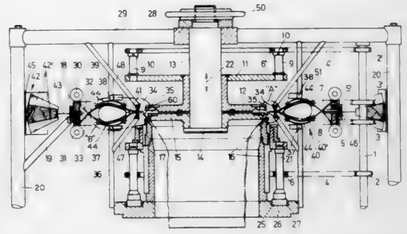


1. A joint for transmitting torque at the uniform angular velocity between a first and a second rotatable shaft angularly movable relative to each other, said joint comprising first and second parts operatively connected to said first and second shafts, respectively, said parts being relatively movable about a given point in accordance with the angular movement of said shafts relative to each other and rotatable in accordance with the rotation of said shafts, each of said parts comprising two pairs of articulate fingers situated in diametrically opposed relationship to each other, each pair of fingers on one part meshing with the corresponding pair of fingers on the other part as the parts are angularly moved, means for operably connecting said parts for simultaneous rotation thereof, means on each of said parts for slidably mounting said connecting means thereto to permit relative angular movement between said connecting means and each of said parts, respectively, and means for maintaining said connecting means at a position equidistant from the axis of said shafts throughout the range of angular movement thereof.

3,961,498
MACHINE FOR PRODUCING CIRCULAR TEXTILE WEBS

Hans Georg Braunschweiler, Winterthur, Switzerland, assignor to Uniroyal Inc., New York, N.Y.

Continuation of Ser. No. 427,498, Dec. 26, 1973. This application Apr. 14, 1975, Ser. No. 567,994
Claims priority, application Switzerland, Jan. 5, 1973, 91/73
Int. Cl.² D04B *9/12*
U.S. Cl. 66—13 **7 Claims**



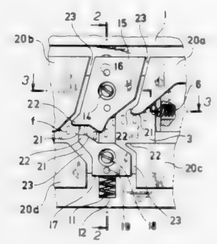
1. A circular weaving-knitting machine for producing textile webs, having a circular weaving portion and a circular knitting portion characterized in that the circular weaving portion of the machine has two groups of separate warp yarn supply means delivering warp yarns radially to a closed curve, upper and lower weft yarn supply means having associated therewith weft yarn insertion bows arranged in rotary manner about the closed curve for delivering weft yarns thereto, combined with a circular knitting portion having needle-containing means in which knitting needles operate to produce stitches in such a way that the weaving line of the weaving portion described by said rotating insertion bows with their yarn discharge openings corresponds with the knitting line of the knitting portion to form a common weaving-knitting line, and that the weft yarns are inserted from each insertion bow in succession by the rotation of upper and lower insertion bows in sheds which are formed from the warp yarns by the insertion bows by the synchronized driving of the circular weaving and knitting portions of the machine, said weft yarn insertions being formed into stitches as programmed by the controlled operation of the needles or retained as a weft yarn insertion.

3,961,499
MECHANISM FOR SUPPORTING NEEDLE CAMS ON KNITTING MACHINES

Bohumil Stepánek, and Rudolf Bandoch, both of Brno, Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Mar. 14, 1973, Ser. No. 341,266
Int. Cl.² D04B *9/00*
U.S. Cl. 66—54 **3 Claims**

1. A supporting device for the needle cams on knitting machines having a plurality of knitting needles controlled by the needle cams, comprising a supporting frame member, a first slide mounted on the frame member for adjustment along a first path transverse to the knitting stroke of the needles, means for adjusting the first slide along said first path, a stitch cam, means mounting the stitch cam on the first slide for adjustment with respect thereto along a second path parallel to the knitting stroke of the knitting needles, said last named means comprising a passage in the first slide parallel to said second path, a second slide slidably mounted in said passage, the stitch cam being secured to the second slide, and means for adjusting the second slide with respect to the first slide along said second path, the means for adjusting the first slide along said first path and the means for adjusting the second slide with respect to the first slide being accessible to an operator and adjustable by him during the operation of the knitting machine, the means to adjust the first slide relative to the frame member comprising an adjusting cam and an adjusting

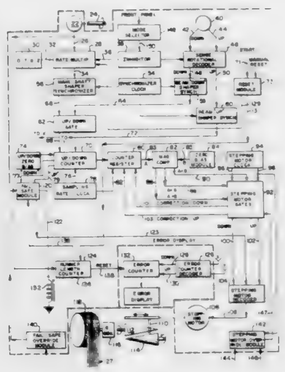


cam follower means mounted on said first slide acting between the frame member and the first slide.

3,961,500
YARN RUNNER-LENGTH CONTROLLER FOR KNITTING MACHINES

Robert L. Braley, Thomaston; Mircea Tenenbaum, Hamden, and Edward J. Milano, Bristol, all of Conn., assignors to Gould Inc., Chicago, Ill.

Filed Oct. 15, 1974, Ser. No. 514,812
Int. Cl.² D04B *23/00*, *27/00*
U.S. Cl. 66—210 **48 Claims**



1. A yarn runner-length controller for knitting machines having a main shaft and at least one beam section comprising:

A. a first metering means for continuously monitoring the length of yarn used to produce the fabric as the yarns are unwound from the beam section, and producing a length output signal corresponding thereto;

B. a second metering means for continuously monitoring the angular movement of the main shaft;

C. a metering means convertor connected to the second metering means for transforming the output of the second metering means to a continuous target output signal related to a desired yarn runner-length;

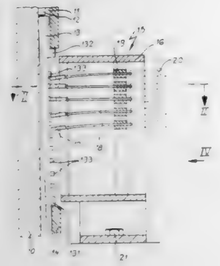
D. an error monitoring means connected to the outpu signals of the first metering means and the convertor fo producing an error signal related to their difference; and

E. a means for adjusting the angular velocity of the beam section in response to the error signal, whereby the length of yarn unwound from the beam section will approximate the desired runner-length.

3,961,501
NEEDLE SELECTING ARRANGEMENT FOR A KNITTING MACHINE

Johann Martinetz, Hechingen, Germany, assignor to Mayer & Cie. Maschinenfabrik, Tailfingen, Wurttemberg, Germany

Filed Mar. 27, 1974, Ser. No. 455,205
Claims priority, application Germany, Apr. 4, 1973, 2316794
Int. Cl.² D04B *15/66*
U.S. Cl. 66—154 A **7 Claims**



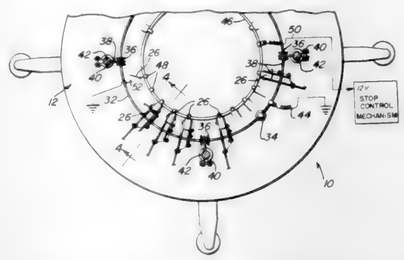
1. In a knitting machine, in combination, a carrier; a plurality of knitting-needle units, each knitting-needle unit being comprised of a needle portion and a motion-transmitting portion mounted on said carrier for longitudinal reciprocation and movable between an operative position and a non-operative position; motion-transmitting means for imparting longitudinal motion to those of said motion-transmitting portions which are in said operative position; and selecting cam means including a selector cam movable in a predetermined direction between a first position in which said selector cam is operative for causing said motion-transmitting portions to be moved from one to the other of said positions thereof and a second position in which said selector cam is not operative for causing said motion-transmitting portions to be moved from one to said other of said positions, said selector cam having an engagement portion, means for moving said slector cam from one to the other of said positions thereof, and biasing means for normally urging said selector cam to said one of said positions; and cam position control means including at least one cam position control member in the form of a flexural detent member made of a material which upon alternate applications and removal of an energizing signal to said detent member undergoes alternate opposite dimensional changes causing said flexural detent member to bend about a predetermined bending axis oriented approximately parallel to said predetermined direction of movement of said selector cam to become engaged with and disengaged from said engagement portion, said flexural detent member being so disposed that when engaged with said engaging portion said detent member opposes the biasing force of said biasing means by exerting upon said selector cam a holding force in direction approximately parallel to said predetermined bending axis.

3,961,502
SAFETY RING

James N. Lawson, Fairmont, N.C., assignor to Musselwhite Enterprises, Inc., Lumberton, N.C., a part interest

Filed Jan. 24, 1973, Ser. No. 326,399
The portion of the term of this patent subsequent to June 8, 1992, has been disclaimed.
Int. Cl.² D04B *35/14, 35/16*
U.S. Cl. 66—163 **10 Claims**

1. A stop mechanism for a knitting machine, comprising, in combination: first means for assuring stopping of the knitting machine in the event of thread breakage and failure of the normal stop motion switches; second means for forming a portion of an electrical circuit; and a stop motion switch associated with a thread of a knitting machine, and provided with contacts connected to an electrically conductive annulus, and with said first means including an electrically conducting element arranged for contacting the circuit forming means

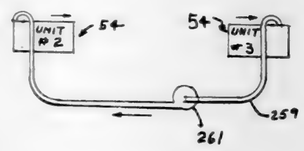


upon breakage and termination of the thread and assuring completion of an electrical circuit through the stop motion switch in the event a circuit is not closed through the contacts of said switch.

3,961,503
LAUNDERING APPARATUS AND METHOD, CONTINUOUS WITH RECIRCULATION

Frederick W. Grantham, 600 S. Lairport St., El Segundo, Calif. 90245

Continuation-in-part of Ser. No. 16,318, March 4, 1970, Pat. No. 3,693,382. This application Sept. 21, 1972, Ser. No. 290,862
Int. Cl.² D06F *31/00*
U.S. Cl. 68—27 **6 Claims**



1. Laundry apparatus comprising:
a plurality of laundry units each having entrance and exit ends, said units being arranged serially;
first pump means associated with each of said units for moving liquid with laundry goods through the units from entrance ends to exit ends thereof;
means for transferring wet laundry goods from the exit end of each upstream unit to the entrance end of an adjacent downstream unit; and
second pump means for circulating liquid through at least one of said units, the second pump means being separately operative from the first pump means.

3,961,504
VEHICULAR TRUNK LID LATCH ASSEMBLY

Raymond G. Sprecher, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 3, 1975, Ser. No. 564,619
Int. Cl.² E05B *63/00*
U.S. Cl. 70—1.5 **4 Claims**

1. For use with an automotive trunk lid having a lock cylinder assembly mounted on an outer wall thereof, a latch assembly comprising a housing mounted on an inner wall of said trunk lid, a cam member rotatably mounted in said housing and having a rectangular opening formed therein, a shaft operatively extending from said lock cylinder assembly and through said rectangular opening for rotating said cam member in response to manual key actuation of said lock cylinder assembly, an abutment edge formed on the extended end of said shaft, first and second latching levers separately pivotally mounted in said housing, respective cooperative latching surfaces formed on said first and second latching levers, first spring means operatively connected between said first and second latching levers for retaining said latching surfaces together when in a latched condition and for urging said latching surfaces apart when in an unlatched condition, a camming lever having a cam surface and an abutment edge formed thereon and being pivotally mounted in said housing and adapted to have said cam surface positioned intermediate said

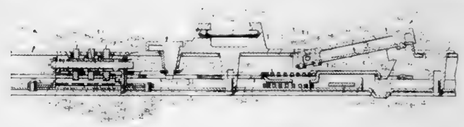


cam member and said first latching lever, and second spring means urging said abutment edge of said camming lever into contact with said abutment edge of said shaft, said camming lever thereby being adapted to being pivoted away from said abutment edge of said shaft by said cam member against the force of said second spring means to sequentially pivot said first latching lever in response to rotation of said cam member by said lock cylinder assembly via said shaft, until such time as said lock cylinder assembly and said shaft are removed from said trunk lid after which said second coil spring will rotate said camming lever out of the path of said cam member, thereby preventing the unlatching of said latching levers from outside said trunk lid via rotation of said cam member.

3,961,505
LATCHING DEVICE INCLUDING COMBINATION LOCKING MEANS

Charles S. Gehrie, Montclair, and Lazlo Bako, Woodcliff Lake, both of N.J., assignors to Presto Lock Company, Elmwood Park, N.J.

Filed Nov. 5, 1974, Ser. No. 521,040
Int. Cl.² E05B *65/52*
U.S. Cl. 70—66 **15 Claims**

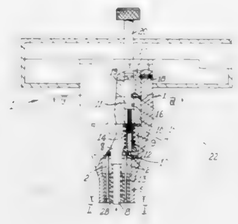


1. A latching device cooperable with a pair of spaced hasps comprising a pair of spaced latch members having lowered and raised positions for latching and unlatching conditions, respectively, biasing means for urging the latch members into raised position, a manually operable actuating member movable to latching and release positions, longitudinally movable engagement means associated with the actuating member, the engagement means being engageable with respective latch members for holding the latch members in lowered position when the actuating member is in the latching position and being movable out of engagement with the latch members when the actuating member is moved into the release position, thereby enabling the latch members to be moved to raised position by the biasing means, and a longitudinally movable plug member associated with each latch member for engaging a hasp when the latch member is in lowered position, the plug member being disengaged from the hasp when the latch member is in raised position.

3,961,506
LOCKS

Antonio L. Perez, 15 Phoebe Mansions, Middle Ave., North End, Port Elizabeth, Cape Province, South Africa

Filed Oct. 7, 1974, Ser. No. 513,039
Claims priority, application South Africa, Oct. 9, 1973, 73/7867
Int. Cl.² E05B *9/04, 15/14, 19/18, 27/00*
U.S. Cl. 70—363 **5 Claims**

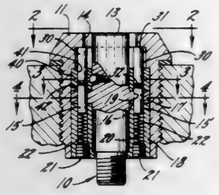


1. A lock and key assembly wherein the key is adapted to co-operate with the lock, the lock comprising:
a substantially cylindrical hollow body including a key receiving opening at one end;
an axial pintle centrally rotatably mounted in said body, having a first shaped end terminating in said key receiving opening and a second end projecting through a second end of said body and connected to a movable locking bolt;
a plurality of pin tumblers equally spaced apart circumferentially and mounted longitudinally in a space between said pintle and said body so as to be rotatable about the longitudinal axis of the pintle and longitudinally movable in said body and wherein each tumbler is extensible in length and comprises a pin formation extending inwardly from said key receiving opening and co-operating screw threaded male and female parts with the one part terminating near said second end of the body and having a transverse recess in its side;
means for biasing said pin tumblers towards the key receiving opening of said body;
a plurality of radially inwardly extending projections in said body arranged to allow rotation of said pintle and tumblers when said recesses in the tumblers are aligned therewith; and
openings in said second end of the body to enable each of said one tumbler part to be manipulated to vary the tumbler length;
and the key comprising a substantially cylindrical hollow body having one end shaped to fit into said key receiving opening in the lock body;
an aperture centrally formed in said one end complementary in transverse shape to the shaped pintle end;
a plurality of spindles equally spaced apart circumferentially in said key body which extend in passages formed in said one end towards the opposite end of the body, the spindles at said opposite end being screw threaded onto the key body and openings being provided in this end to enable adjustable manipulation of the spindles.

3,961,507
RESETTABLE AXIAL PIN TUMBLER LOCK

Morris Falk, Palm Springs, Calif., assignor to Fork Lock Corporation, River Grove, Ill.

Filed Jan. 17, 1975, Ser. No. 542,039
Int. Cl.² E05B *25/00*
U.S. Cl. 70—363 **6 Claims**



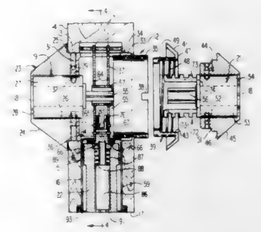
1. A resettable axial pin tumbler lock comprising,
a. axially movable pins consisting solely of first and second sets of pins,
b. a spindle rotatably mounted in a barrel with the spindle and barrel forming a first radial interface and a plurality of cooperating axial wells for receiving the first set of axial pins,
c. the first set of pins being a plurality of driver pins disposed in the wells in said barrel and spring biased across said radial interface into the wells in said spindle to lock said spindle against rotation in said barrel,
d. a reset ring rotatably mounted in said barrel with the reset ring and the spindle forming a second radial interface and a plurality of cooperating axial wells for receiving the second set of axial pins,
e. said second set of pins being a plurality of reset pins disposed in the wells in said spindle and reset ring in axial alignment and engagement with said driver pins so that the spring bias on the driver pin also applies a biasing force to the reset pins,
f. said spindle and barrel forming a narrow annular keyway for receiving a tubular key for engaging said reset pins and axially displacing both the reset pins and the driver pins against the spring bias on said driver pins to align the radial interfaces between the reset pins and driver pins either with the reset ring-spindle interface to permit rotation of the reset ring relative to the spindle while locking the spindle to the barrel, or with the spindle-barrel interface to permit rotation of the spindle relative to the barrel while locking the spindle to the reset ring,
g. said reset pins having a preselected combination of different axial lengths so that rotation of the reset ring, when all the pin interfaces are aligned with the reset ring-spindle interface, changes the combination of axial pin displacements required to align all the pin interfaces with the spindle-barrel interface.

3,961,508
LOCK CYLINDER HAVING A RELEASABLE CATCH

Alois Crepinsek, El Paso, Tex., assignor to Alois Crepinsek; Lee A. Chagra and Dave McFadden, all of El Paso, Tex., part interest to each

Filed Dec. 12, 1974, Ser. No. 531,926
Int. Cl.² E05B *9/08*
U.S. Cl. 70—370 **5 Claims**

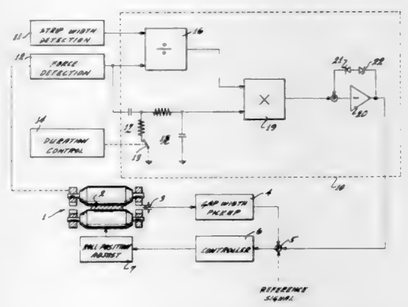
1. In a door lock assembly, lock cylinder means at least partially housed within a housing to pass into a transverse bore in a door to be locked near one edge thereof, said lock cylinder means disposed in mechanical operative association with a lock bolt assembly carried by the door for effecting translation of the lock bolt into and out of the edge portion of the door by rotation of a portion of said lock cylinder means, fastening means releasably fastening said lock cylinder means to a structure disposed within said transverse bore in the door, and release means operatively associated with said fastening means and accessible to an operator when installed in the door only from said edge of the door when the door is at least partially open for releasing said fastening means to permit removal of the lock cylinder means, said release means including actuating means movable in a direction toward said releasable fastening means from said door edge, and said actuating means including an axially translatable actuating member carried with and axially translatable relative to the lock bolt, and spring bias means for biasing said actuating member relative to said bolt so as to urge said actuating member out of operative engagement with said fastening means.



3,961,509
ROLL GAP CONTROL

Gunter Dohrmann, Neukrug, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany

Filed May 12, 1975, Ser. No. 576,566
Claims priority, application Germany, May 21, 1974, 2424615
Int. Cl.² B21B *37/08*
U.S. Cl. 72—6 **5 Claims**

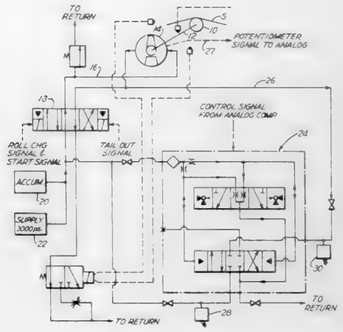


1. In an apparatus for controlling the gap between the rolls of a mill in response to an error signal which represents deviation of the necessary condition for rolling from the existing one, the apparatus including means being responsive to that error signal to control the relative position between the rolls, the improvement comprising:
means for detecting the force as exerted by the rolls and providing a first signal representing said force, and a second signal representing the time derivative of said force;
means for detecting the width of the stock and providing a third signal representative thereof; and
circuit means connected to receive the first, second and third signals and providing a composite signal and superimposing it upon said error signal.

3,961,510
TENSION DEVICE FOR A ROLLING MILL AND THE LIKE

Daniel Charles Kovacs, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed July 11, 1975, Ser. No. 595,195
Int. Cl.² B21B *37/06, 39/08*
U.S. Cl. 72—20 **5 Claims**

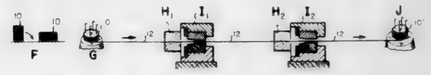


1. In a tensioning device for continually moving material, such as rolled metallic strip,
means arranged to contact one of the surfaces of the strip in a manner to deflect the strip out of a datum path of travel to impose a tension thereon,
a fluid actuator means operably connected to said strip contacting means for displacing said strip contacting means towards said strip,
said actuating means having two ports,
fluid servomeans,
means for connecting a first pressure source to one of said ports of said actuator,
means for connecting said servo to the other port of said actuator in a manner to establish a pressure difference between said two ports,
a computer,
means for producing a signal representative of the position of said strip contacting means relative to said datum position and for sending said signal to said computer,
said computer including means for employing said signal for calculating the required pressure for said actuator for a desired tension and for controlling the operation of said servo in accordance therewith.

3,961,511
METAL DRAWING MIXTURE

John W. Wolfe, 323 North St., McDonald, Pa. 15057

Filed Jan. 9, 1975, Ser. No. 539,727
Int. Cl.² B21C *9/00*
U.S. Cl. 72—42 **8 Claims**

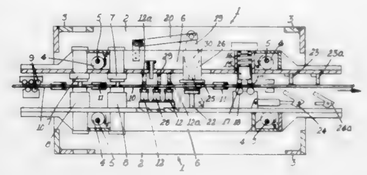


1. An improved method of die-drawing a relatively hard metal workpiece which comprises, cleaning the surface of the workpiece and applying an adherent dried-on alkaline coating thereto, providing a dry miscible powder containing substantially equally proportioned minor quantities of soap and graphite powders and a major quantity of fire clay powder, applying the dry miscible powder to and adhering it on the alkaline coating, and thereafter forming a protective surface film on and reducing the workpiece by moving it through a draw die with the miscible powder thereon.

3,961,512
METAL PUNCHING MACHINE

Andrew Mentis, 96 Kloof Road, Bedfordview, Johannesburg, Transvaal Province, South Africa

Filed Mar. 19, 1975, Ser. No. 559,962
Claims priority, application South Africa, Mar. 25, 1974, 74/1915
Int. Cl.² B26D *1/56;* **B23D** *15/02;* **B21D** *31/06*
U.S. Cl. 72—53 **15 Claims**



1. Punching apparatus adapted to punch a series of spaced holes along the length of a strip of metal comprising;
a framework,
at least two pairs of shafts rotatably mounted on the frame work wherein the pairs are spaced apart along a feed path defined in the framework and the shafts of each pair are spaced apart one on each side of said feed path,
an eccentric on each shaft with the eccentrics on the same side of said feed path being similarly orientated and the eccentrics associated with each pair of shafts being orientated approximately 180° apart,
a beam on each side of the feed path mounted on the corresponding eccentrics, the beams being located in parallel with the feed path,
a punch on one beam extending towards the other beam,
a complementary die on said other beam directly opposite said punch, and
means for holding and moving a strip of metal along said feed path comprising a member attached to and movable in unison with one of said beams, the member comprising a slide slidable in a guide transverse to said beam, said slide being spring biassed away from the beam toward the feed path and carrying two lugs thereon spaced apart by one or a multiple of pitches to engage an aperture punched in the metal strip during a first half cycle of the apparatus when the beams are in close proximity to each other and to hold the strip during punching and to move the strip forward one pitch immediately after punching as the shafts are rotated in unison with the shafts on opposite sides of the feed path rotating in opposite directions.

3,961,513
METHOD OF MAKING PIPE FITTINGS

H. La Mar Stahly, Noppanee, Ind., assignor to Elkhart Products Corporation, Elkhart, Ind.

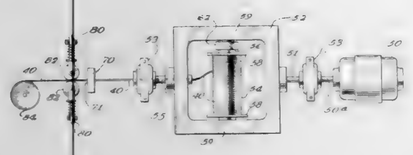
Filed Apr. 11, 1975, Ser. No. 567,424
Int. Cl.² B21D *51/16*
U.S. Cl. 72—58 **3 Claims**



1. A method for producing a wrought fitting having three legs arranged in a generally T-shape comprising the steps of:
cold deforming a solid plug of malleable metal to provide a tube closed at one end and having a tube wall thickness adjacent said one end greater than the tube wall thickness remote from said one end,
confining said tube in die means having relief zones on each side of said tube adapted to develop curved legs extending from the sides of said tube,

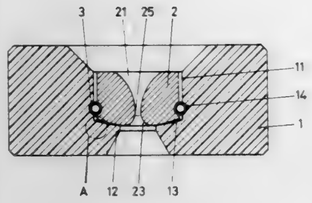
further deforming said tube in a single step by utilizing a ram to extrude said tube while internally pressurizing said tube with fluid to provide a pair of curved legs adjacent said one end, and
severing the ends of said legs.

3,961,514
TWIST DRAWN WIRE, PROCESS AND APPARATUS FOR MAKING SAME
Arthur L. Geary, Barrington, Ill., assignor to Brunswick Corporation, Skokie, Ill.
Division of Ser. No. 334,223, Feb. 21, 1973, Pat. No. 3,883,371. This application Feb. 18, 1975, Ser. No. 550,517
Int. Cl.² B21C *1/00*
U.S. Cl. 72—274 **5 Claims**



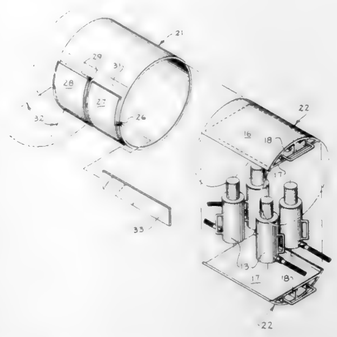
1. A method of increasing the torsional strength of metal wire by the steps of:
a. cold drawing the wire to at least a 75% reduction in cross-sectional area;
b. twisting the wire while in a plastically deforming state substantially within the reducing zone of the die;
c. confining the wire twist in the reducing zone of the die by means of cooperating twist arresting rolls; and
d. preventing over twist of the wire.

3,961,515
ALTERNATE SUPPORT FOR A DRAWING DIE MADE OF HARD METAL OR DIAMOND
Fritz Schmale, Buchenweg 11, 5990 Altena 8, and Hans Theis, Amselweg 3, 6349 Mittenaar,Offenbach, both of Germany
Filed June 24, 1975, Ser. No. 589,822
Int. Cl.² B21C *3/00*
U.S. Cl. 72—285 **5 Claims**



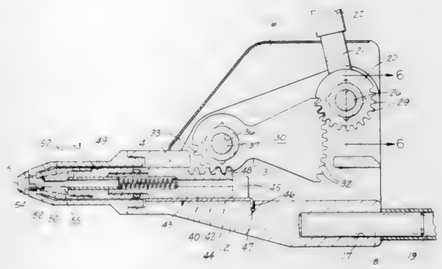
1. An alternate support for a drawing die made of hard metal, comprising:
a support having a bore formed with a shoulder, and
hollow clamping ring means for clamping a drawing die and said support, and the drawing die being supported by said shoulder in said bore in said support, said drawing die being swingingly supported on said shoulder within said support.

3,961,516
APPARATUS AND METHOD FOR RE-FORMING AND MAINTAINING THE CIRCULAR SHAPE OF A DEFORMED ROLL OF MATERIAL
Jack E. Priester, 1560 Marcia Ave., Modesto, Calif. 95350
Filed Jan. 8, 1975, Ser. No. 539,296
Int. Cl.² B21B *17/02*
U.S. Cl. 72—370 **6 Claims**



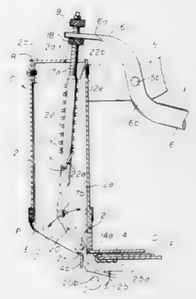
1. A method for re-forming a deformed annular coil of material of a type to be unwound from the coil and cut into predetermined lengths thereof and for preserving the re-formed shape of said coil comprising the steps of inserting into the center opening of said coil a radially expansible annular coil liner formed of a band of material wrapped cylindrically to dispose the end edges of said band in closely spaced confronting relation separated by a gap therebetween, radially urging said liner from within said center opening with sufficient force to round out and re-form the center opening and coil while spacing the confronting ends of said liner, inserting a spacer element between the spaced apart ends of said liner to retain said liner in its expanded condition upon release of the radial urging, and thereafter removing means for radially expanding said liner from said center opening.

3,961,517
RIVET SETTING TOOL
Anthony E. DiMaio, Georgetown, Mass., assignor to Marson Fastener Corporation, Chelsea, Mass.
Continuation of Ser. No. 189,993, Oct. 18, 1971, abandoned. This application May 13, 1974, Ser. No. 469,592
Int. Cl.² B21J *15/34*
U.S. Cl. 72—391 **6 Claims**



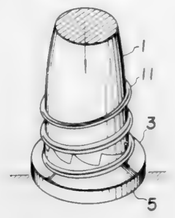
1. A heavy duty manually operated rivet setting tool adapted to set blind rivets which include an eyelet portion and a projecting mandrel portion, said tool comprising, in combination, an elongated body element, a fixed handle secured to one end of said body element and projecting outwardly therefrom, a pivotally movable handle adjacent said fixed handle projecting outwardly from said body element a gear portion secured to said movable handle disposed between first bearing means and provided with an opening in said portion in alignment with openings within said first bearing means, a first pin disposed within the openings, an intermediate elongated pinion member disposed between second bearing means and having teeth at opposite ends thereof and provided with an opening therewithin, one set of teeth of said pinion member being engaged with said gear member, the opening within said pinion member and the openings within said second bearing members being in aligned relationship, a second pin disposed between said aligned openings; a rivet control element projecting outwardly from said body element opposite said handle members, a plurality of co-acting jaws and coupled actuating means therewithin, a polygonal-sided rack slidably movable against the body element to provide a substantial planar load-bearing area between the rack and body element and having teeth thereupon engaged with the opposite set of teeth of said pinion member and at least one of said bearing means including a spaced pair of bearing support elements forming a part of the body element and a bearing member disposed within said support elements, each of said bearing members having a cylindrical chamber therewithin the axis of which chamber is parallel to planes formed by polygonal sides of the bearing with said sides engaging the bearing support element so that the bearing is unable to rotate and each polygonal sided bearing providing substantial load-bearing planar area between the bearing support element and the bearing member through which pressure is applied by the bearing member to the bearing support element.

3,961,518
CRIMPING DEVICE
Frank J. Osbolt, 4410 Santee, Houston, Tex. 77018
Filed Nov. 11, 1974, Ser. No. 522,478
Int. Cl.² B21D *5/01*
U.S. Cl. 72—409 **7 Claims**



1. Apparatus for crimping a vehicle door panel or the like onto the vehicle door frame without having to remove said door frame from said vehicle, comprising:
an elongated hollow housing having a first handle member fixedly mounted at the rear end thereof and a second handle member mounted onto said first handle member for pivotal movement with respect thereto;
an actuator shaft member positioned in said elongated housing and connected to said second handle member for movement in response to pivotal movement of said second handle member;
a crimping member positioned in said housing and having a crimping portion extending outwardly from the front of the housing;
means mounting said crimping member onto said housing at the front end thereof for pivotal movement with respect to said housing and means pivotally connecting said crimping member to said actuator shaft; and
said housing having an anvil face mounted at the front end thereof such that a door frame and panel are receivable between said crimping portion and said anvil face, said crimping portion being rotated downwardly and inwardly toward said anvil face and having means for adjusting the amount of rotation of said crimping member thereby crimping said door panel to said frame in response to movement of said second handle member toward said first handle member.

3,961,519
HAMMER FOR SHEET METAL
Yoshio Kurata, 2-17, Joto 5-chome, Kofu, Yamanashi, Japan
Filed Dec. 19, 1974, Ser. No. 534,655
Int. Cl.² B21D *1/12, 25/00*
U.S. Cl. 72—465 **7 Claims**



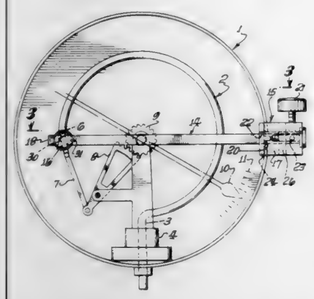
1. A hammer head for working sheet metal to straighten pieces of sheet metal which have been deformed, causing surface bumps and depressions, said hammer head comprising:
a. an elongated hammer head body with a circular front surface piece at the front of said body;
b. a plurality of hammer face sections at said front surface piece, each section extending substantially from the circular center of said circular front surface piece and slanting towards the axis of elongation of said body, each section being similar to the other sections and slanting in the same direction as viewed when traveling around the periphery of said circular front surface piece;
c. a cylindrical adapter in contact with said front surface piece having adapter face sections corresponding to the hammer face sections and in contact therewith; and,
d. resilient means holding said adapter and front face pieces in contact, whereby, when said hammer head strikes a workpiece, the adapter face sections slide on the hammer face sections imparting a sliding and turning motion at the time of the hammer blow.

3,961,520
APPARATUS FOR MECHANICALLY EXERCISING BOURDON TUBE GAUGE
Tommie R. Modgling, Chino, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 27, 1975, Ser. No. 580,653
Int. Cl.³ G01L *27/00, 7/04*
U.S. Cl. 73—4 R **5 Claims**

1. Apparatus for exercising a housed Bourdon tube gage having a coiled tube portion provided with a sealed end adapted upon variations in interior tube pressure to move arcuately in a predetermined path, said gage further being provided with a scale and with linkage means for translating said arcuate movements into scale pointer movements; said apparatus comprising:
an elongate pivotal lever arm having inner and outer ends,
a tube-engaging platen carried by said arm near its inner end,
a base plate pivotally supporting the outer end of said arm, said plate being adapted to be secured firmly on said gage

housing in a fixed position with said pivotal arm extending inwardly toward said sealed end of the Bourdon tube, and

manually-operable mechanical means carried by the base plate outwardly of said lever arm support for exerting pivotal pressure on said lever arm outer end,



said platen being adjustably carried by said lever arm for enabling said platen to be moved into a tube-engaging position and said platen having an inclined engagement surface for permitting the tube to move in an unrestrained natural arc when said lever is pivotedly moved,

whereby said tube can be exercised by pivotally moving said tube repeatedly through its full scale arc.

3,961,521

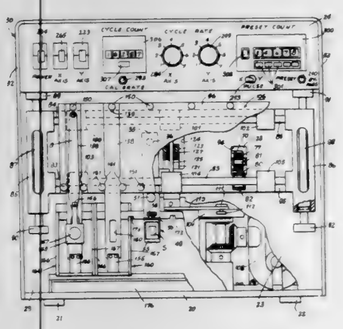
TOOTH TESTING SYSTEM AND MACHINE

Ronald L. Bailey, No. 11 Flamingo, St. Peters, Mo. 63376; Joseph C. Muhler, R.R. 2, Sturgis, Mich. 49091, and Mark S. Putt, 4034 Westlane Drive, Fort Wayne, Ind. 46805

Filed May 31, 1974, Ser. No. 474,960

Int. Cl.² G01N *3/56*

U.S. Cl. 73—7 **29 Claims**



1. In a machine for applying rubbing tests to specimens, such as tests for the effects of polishing, cleaning, scratching and abrasion agents on human teeth, and the like: a base, a specimen holder means, a support means for supporting a rubbing device, the specimen holder means and the support means being mounted on the base in proximity so that a specimen on the holder means can be rubbed by the rubbing device and one of said means being laterally movable on the base relatively to the other, and driving mechanism for transversely moving the laterally movable one of the means relative to the other to produce a path of movement of the rubbing device across a specimen in the holder and return, the driving mechanism including means to cause the movement of the said laterally movable one of the means across the specimen to be in one path and its return movement to be in a different path, to reduce grooving of the specimen by repeated motion forth and back along the same path.

3,961,522

APPARATUS FOR RECORDING DISCONTINUITIES

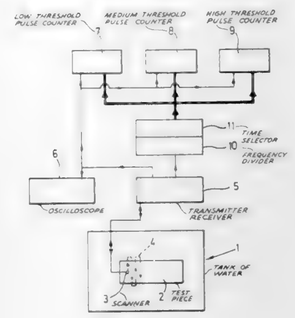
Joseph-Bernard Leon Kilen, rue Fernand Huet, 72, B.4920 Embourg, Belgium

Filed May 21, 1974, Ser. No. 472,036

Claims priority, application Belgium, June 6, 1973, 44191

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67 **3 Claims**



1. An ultrasonic non-destructive testing apparatus for detecting and counting discontinuities in a given volume and particularly inclusions in a piece, comprising an ultrasonic waves transmitter directing ultrasonic waves into said given volume at a given pulse repetition frequency, pulse counters capable of registering all the pulses constituting the video signal entirely received by each of said pulse counters, said pulse counters being each preset to a different actuation threshold, a frequency divider for dividing the pulse repetition frequency to vary the sounding density along the path of the scanner, and a time selector combined with said divider to allow each of said counters to count during a determined time corresponding to the depth of the desired probing all the signals whose amplitude exceeds the actuation threshold of the associated said counter.

3,961,523

SCANNING ULTRASONIC INSPECTION METHOD AND APPARATUS

Alexander Rankin Cornforth, Stanion, England, assignor to British Steel Corporation, London, England

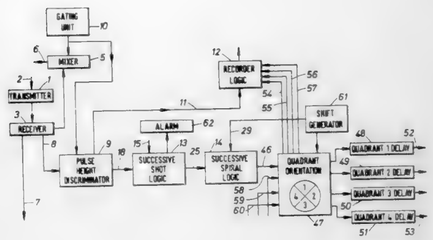
Filed June 17, 1974, Ser. No. 479,707

Claims priority, application United Kingdom, June 19, 1973, 29053/73

Int. Cl.² G01N *29/04*

U.S. Cl. 73—67.8 S **17 Claims**

10. A method of testing elongate articles for defects comprising scanning a defect detecting device in a helical path about the article; marking, upon receipt of defect indicative signals at the device, a pictorial record of the magnitude and position along the article of defects shown by the received defect indicative signals; subjecting received defect indicative signals, if they are greater than a predetermined magnitude, to predetermined repetition test; and marking on the pictorial record the radial position about the article of defects shown



by the received defect indicative signals if they satisfy the predetermined repetition tests.

3,961,524

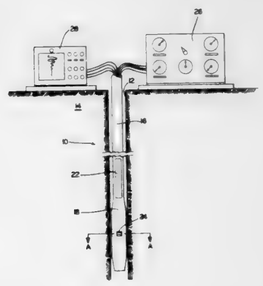
METHOD AND APPARATUS FOR DETERMINING ROCK STRESS IN SITU

Rodolfo V. de la Cruz, Madison, Wis., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 6, 1975, Ser. No. 574,992

Int. Cl.² E21B *49/00*

U.S. Cl. 73—88 E **14 Claims**



1. In situ method of measuring the natural state of stress of rock at a preselected subterranean region in a borehole, comprising the steps of:

obtaining an initial strain reading of a test portion of the wall of said borehole at said pre-selected region, said initial strain created by the natural stress of the rock;

de-stressing said test wall portion by creating a fracture in the wall of said borehole;

obtaining a de-stressed strain reading of said test wall portion while maintaining open said fracture; and

determining the natural state of stress of the rock from said initial strain and de-stressed strain readings.

3,961,525

METHOD OF AND DEVICE FOR TESTING THE FATIGUE STRENGTH OF ROTORS, ESPECIALLY DISC WHEELS, ESPECIALLY THOSE FOR MOTOR VEHICLES

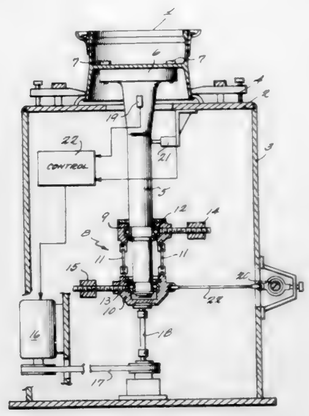
Gunther Himmler, Darmstadt, Germany, assignor to Gebr. Hofmann KG, Darmstadt, Germany

Filed Sept. 13, 1974, Ser. No. 505,835

Claims priority, application Germany, Dec. 17, 1973, 2362559

Int. Cl.² G01N *3/32*

U.S. Cl. 73—91 **11 Claims**



1. A method of testing the fatigue strength of a stationary rotor comprising the steps of:

clamping the rotor on an exciter rod;

and

rotating rotary weights in parallel planes lying at different distances from said clamping point to apply equal and opposite transverse forces to said rod so as to reduce the net radial forces substantially to zero.

3. In an apparatus for testing the fatigue strength of a rotor having a clamping means for mounting the rotor, an exciter rod connected at one end to the rotor and the other end of which carries a rotatable exciter head by means of which transverse forces acting on the exciter rod can be produced, the improvement comprising rotary weights mounted 180° apart on said exciter head and rotating in planes which lie at different distances from the clamping surface of the rotor for producing the transverse forces acting on the exciter rod.

3,961,526

ROTARY TORQUEMETER

Sydney Himmelstein, Lake Forest, Ill., assignor to S. Himmelstein and Company, Elk Grove Village, Ill.

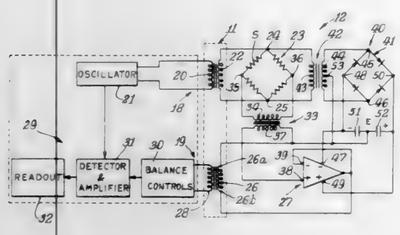
Continuation of Ser. No. 355,973, April 30, 1973, abandoned. This application Dec. 30, 1974, Ser. No. 537,248

Int. Cl.² G01L *3/10*

U.S. Cl. 73—136 A **12 Claims**

1. In a rotary torquemeter for indicating torque transmission in a rotary drive means, said torquemeter having an input rotary transformer defined by a stator primary winding and a secondary winding carried by said drive means, an output rotary transformer defined by primary winding carried by said drive means and a stator secondary winding, means for providing an input carrier signal to said input transformer, and means for receiving an output signal from said output transformer, an improved strain responsive means carried by said drive means for rotation therewith for acting on said input carrier signal to provide a variable output signal corresponding to the amount of torque being transmitted through said drive means, said strain responsive means comprising: foil

strain gauge means carried by said drive means; an amplifier carried by said drive means; and circuit means connecting said strain gauge means and amplifier between the secondary winding of said input rotary transformer and the primary winding of said output rotary transformer for providing to said receiving means a variable output signal accurately corresponding to the amount of torque being transmitted by the drive means, said circuit means including a step-up transformer connected to said strain gauge means and said amplifier comprising an operational amplifier connected between said step-up transformer and said output rotary transformer primary winding.



3,961,527

SYSTEM FOR MEASURING THE FLOW AND RECORDING QUANTITIES OF LIQUID

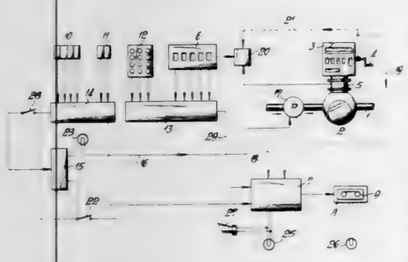
Joachim Sonnberg, and Ulrich Sanden, both of Hildesheim, Germany, assignors to Diessel GmbH & Co.

Continuation-in-part of Ser. No. 193,283, Oct. 28, 1971, abandoned. This application Mar. 18, 1974, Ser. No. 451,961

Claims priority, application Germany, Nov. 19, 1970, 2056854

Int. Cl.² G01F *1/00*

U.S. Cl. 73—194 R **12 Claims**



1. An apparatus for flow-metering and recording amounts of liquid, particularly milk, provided with a volumetric meter comprising:

a. a pulse generator (5) generating pulses which are a function of the flow rate;

b. an electronic counter (6) connected to said pulse generator and receiving said pulses which are a function of the flow rate;

c. a shift register (13) connected to the output of said electronic counter;

d. a control apparatus (7) connected to the output of said shift register;

e. a keyboard (12) for the input of given data entries connected to an input of said shift register;

f. at least one coding switch (10, 11) for the input of further given data entries connected to said control apparatus;

g. a magnetic tape unit (8) connected to the output of said control apparatus for storing the output values of said electronic counter, said data recorded by said magnetic tape unit for further processing in a data processing system; and

h. a blocking device (15) connected to said at least one coding switch actuating means for initiating flow metering after input and recording of said given data entries assigned to said at least one coding switch.

3,961,528

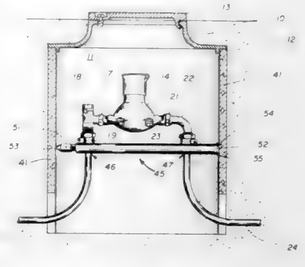
METER SETTING DEVICE

Stanley W. Ford, Wabash, Ind., assignor to The Ford Meter Box Company Inc., Wabash, Ind.

Filed Sept. 6, 1974, Ser. No. 503,617

Int. Cl.² G01F *15/18*

U.S. Cl. 73—201 **13 Claims**



1. The combination comprising:

a. a meter box having side walls and a top having a lid;

b. a meter within said meter box;

c. service pipes;

d. means connecting said service pipes to said meter;

e. an expansible member having a first end and a second end contacting opposite portions of the side walls of said meter box, said expansible member including means for forcing said first end and second end apart from each other and against opposite portions of the side walls;

f. means for maintaining the service pipes in a fixed relation to said expansible member; and

g. said second end of said expansible member including a contacting portion for contacting the side walls which contacting portion is rotatably mounted to permit rotation about an axis which is not parallel to the longitudinal axis of the expansible member.

3,961,529

URINE METERING AND COLLECTION SYSTEM

Paul Hanifl, Warwick, R.I., assignor to International Paper Company, New York, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,011

Int. Cl.² A61B *5/00*; **G01F** *11/28*

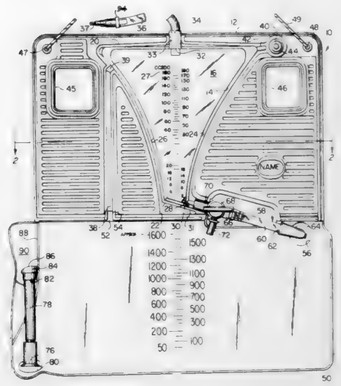
U.S. Cl. 73—219 **10 Claims**

1. A urine metering and collection system comprising:

a. a stiff head member including a closed volume calibrated chamber having a substantially flat front wall, a substantially flat rear wall, a top wall, and first and second sidewalls, a bottom wall sloping downwardly and forming an acute angle with said first sidewall, one of said walls having volumetric calibrations thereon, at least a section of said one of said walls having the calibrations thereon or adjacent thereto being transparent, the sidewalls continuously converging downwardly toward each other throughout at least a major portion of the length of said chamber such that each horizontal section of the chamber within said major portion has a smaller volume per unit of height than does the next adjacent upper horizontal section of the chamber, an outlet passageway at the bottom of said chamber through said first sidewall and in alignment with said bottom wall, an inlet passageway communicating with the chamber adjacent to the top of the chamber, an overflow passageway having one end in fluid-flow communication with said chamber adjacent to the top thereof and an air vent in air-flow communication with said chamber;

b. an inlet tube attached at one end to said head member and in fluid-flow communication with said inlet passageway, the other end of said inlet tube being adapted for connection to a catheter; and

c. a collection bag fixedly secured to the head member below said chamber and having a first opening in fluid-flow communication with the other end of said overflow passageway, and a second opening in fluid-flow communication with said outlet passageway.



3,961,530

METHOD AND THERMOMETER FOR MEASURING TEMPERATURE BY DETERMINATION OF SATURATION OF A SOLVENT HAVING TEMPERATURE DEPENDENT CHARACTERISTICS

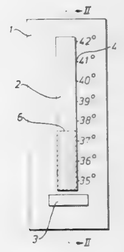
Claes Ivar Helgesson, Akersberga, Sweden, assignor to Arbman Development AB, Stockholm, Sweden

Filed Oct. 24, 1974, Ser. No. 517,750

Claims priority, application Sweden, Nov. 1, 1973, 7314906

Int. Cl.² G01K *11/12, 3/00*

U.S. Cl. 73—339 R **13 Claims**



1. A method for determining a temperature within a predetermined temperature range comprising contacting a solute in columnar form with a solvent therefor at one end thereof while being subjected to the temperature to be determined, said solvent being unsaturated with solute at the temperature within said predetermined temperature range and the amount of said solute soluble in said solvent varying in accordance with the temperature thereof, and determining the amount of solute progressively dissolved in said solvent when saturated with solute after contacting the solute with said solvent, to determine the temperature thereof.

5. A thermometer for measuring temperature within a predetermined temperature range comprising a columnar means containing a soluble substance, frangible means containing a specified quantity of a solvent for said soluble substance and disposed at one end of said columnar means, said frangible means normally separating said soluble substance from said solvent, and a temperature scale associated with said columnar means, said solvent and soluble substance having solubility characteristics which change with temperature and said solvent being unsaturated with the soluble substance at temperatures within said predetermined temperature range whereby when said frangible means is broken said solvent progressively dissolves the soluble substance in said columnar means until the solvent becomes saturated with the soluble substance and the extent to which said soluble substance is dissolved indicating the existing temperature on said temperature scale.

3,961,531

METHOD AND APPARATUS FOR ADHERING THERMOMETER IN LIQUID

Ting-Fu Peng, 6313 Fair Oaks Ave., Baltimore, Md. 21214

Continuation-in-part of Ser. No. 344,076, March 23, 1973, abandoned. This application Jan. 6, 1975, Ser. No. 539,004

Int. Cl.² G01K *13/00*

U.S. Cl. 73—353 **1 Claim**



1. A method for adhering a floating thermometer casing to the wall of liquid container including the steps of providing a flat surface on said casing which is to hold the thermometer, placing the thermometer and casing in the liquid of said container and arranging said flat surface to be next to said wall of said container, and allowing surface tension of said liquid to adhere said casing to said liquid container thereby preventing the thermometer and casing from rotating.

3,961,532

DISPOSABLE CLINICAL THERMOMETER

Raymond Kukuruzinski, 88 Clinton Place, Hackensack, N.J. 07601

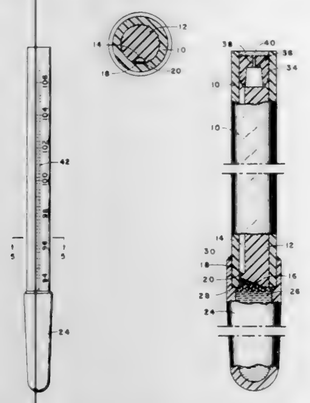
Continuation-in-part of Ser. No. 563,789, March 31, 1975, abandoned. This application Oct. 29, 1975, Ser. No. 626,762

Int. Cl.² G01K *5/10, 5/22*

U.S. Cl. 73—371 **12 Claims**

1. A disposable clinical thermometer for one-time use, said thermometer including: (a) a rod-like member of regular cross section and at least partially translucent and said rod having a longitudinal groove of regular cross section along its outer surface; (b) a baffle provided at one end of the rod, said baffle substantially closing the end of the groove to provide a constriction while not completely closing the groove; (c) an outer tubular housing of relatively transparent material, this outer housing being a tight fit on the rod and in mounted condition terminating near the baffle end of the rod while extending beyond the other end of the rod; (d) a rigid fluid container sealingly attached to the outer tubular housing at the end adjacent the baffle end of the rod; (e) a closing member secured to the other end of the tubular outer housing to seal this end while providing an expansion chamber connected to the longitudinal groove by which air and the like in the groove

may flow from the groove as the groove is filled by fluid; (f) an indicating fluid having a determined coefficient of expansion when heated, said fluid as it expands flowing past the constriction and up the groove an amount commensurate to the amount of heat applied to the fluid container, and (g)



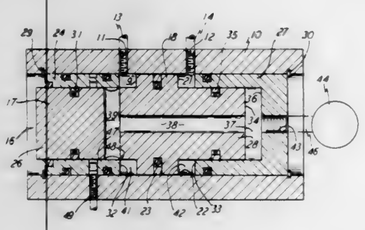
indicia applied so as to be viewed from the outside of the thermometer to indicate the degree of heat induced into the fluid container, the indicating fluid having and leaving an indicating color in the groove to indicate the maximum amount of the upward fluid travel.

3,961,533

DIFFERENTIAL FLUID-PRESSURE TRANSDUCER

Milton C. Bennett, Moline, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Apr. 22, 1975, Ser. No. 571,011
Int. Cl.² G01L *7/16*
U.S. Cl. 73—419 **8 Claims**



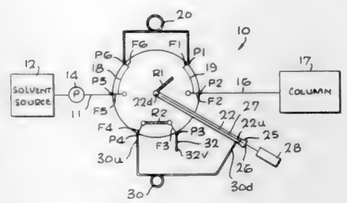
1. A differential fluid-pressure transducer, comprising a housing having two spaced-apart fluid inlet openings and a fluid outlet opening, a member movably disposed in said housing intermediate said inlet openings and fluid-tightly separating said inlet openings from each other, said member having thereon two areas of one size respectively and independently exposed to said inlet openings, a portion of said member and said housing together defining a compartment and said member being movable relative to said compartment in response to fluid pressure at said two areas, the area of said portion also being of said one size, a fluid passageway extending between said compartment and one of said two areas for fluid flow communication therebetween, said housing having a drain port, said member and said housing having a clearance therebetween and thereby form a variable fluid leakage path in flow communication with said compartment and said one of the said two areas and said drainport, and having said clearance arranged with a variable magnitude to alter fluid volume in accordance with the position of said member relative to said compartment while maintaining full fluid pressure exposed to said one area and when said member is moved in the direction away from said compartment, and said housing fluid outlet being in fluid-flow communication with said compartment for receiving the pressure of the fluid in said compartment in accordance with fluid pressure at said two areas.

3,961,534

TWO POSITION ROTARY VALVE FOR INJECTING SAMPLE LIQUIDS INTO AN ANALYSIS SYSTEM

Richard Gundelfinger, 6273 Chabot Road, Oakland, Calif. 94618

Filed Sept. 2, 1975, Ser. No. 609,394
Int. Cl.² G01N *1/10*
U.S. Cl. 73—422 GC **8 Claims**



1. For use in combination with a source of liquid from which liquid flows at a selected pressure greater than atmospheric pressure to a liquid receiver, a rotary valve, positionable in either a first position, definable as a load position, or a second position, definable as in inject position, for injecting a liquid sample into the liquid stream from said source to said receiver, the valve comprising:

a stator including a plurality of external ports and a corresponding plurality of internal liquid flow paths in communication with said ports, said ports including first and second ports connectable to said source and receiver, respectively, a third port vented to atmospheric pressure, and a fourth port;

an external conduit defining a fixed length sample loop having an upstream end connected to said fourth port and a downstream end;

rotable rotor means defining a needle cavity connected to the sample loop downstream end, and defining an upstream end and a downstream end, said rotor means further defining first and second rotor flow passages, said first rotor passage providing a flow path between the cavity downstream end to the stator internal path in communication with said second port only when said valve is in said inject position, and said second rotor passage providing a flow path between the stator internal paths in communication with said third and fourth ports when said valve is in said load position, and between the stator internal paths in communication with said first and fourth ports when said valve is in said inject position, said rotor means further including seal means for sealing the cavity upstream end, said seal means defining an opening accessible from the valve exterior for facilitating the insertion of a syringe needle into said cavity therethrough for injecting a liquid sample into said sample loop through said cavity; and

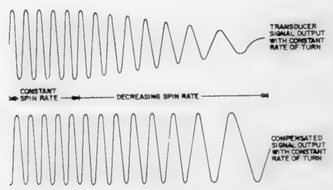
plug means for effectively closing the opening of said seal means, said seal means with said plug means being adapted to withstand said selected pressure when liquid flows through said cavity at said selected pressure when said valve is in said inject position, said plug means comprising an elongated wire having a front portion thereof insertable into said cavity through the seal means opening to thereby close the latter, and a lockable plug holder connected to the wire end opposite the front portion which is insertable into said cavity.

3,961,535

SPIN RATE COMPENSATOR

Daniel Blitz, Boston, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 10, 1975, Ser. No. 548,306
Int. Cl.² G01C *21/12*; **G01P** *15/08*
U.S. Cl. 73—505 **8 Claims**



1. Apparatus for providing spin rate compensation for a spinning device the output signal from which is proportional to spin rate in both frequency and amplitude and proportional to turn rate in amplitude, comprising:

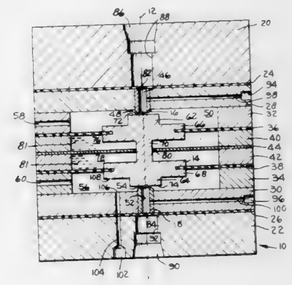
a compensator coupled to the spinning device, said compensator having an amplitude response that is inversely proportional to frequency over the range of spin frequencies of interest.

3,961,536

FLUIDIC ACCELEROMETER

Carl Gustave Ringwall, Scotia, N.Y., assignor to General Electric Company, New York, N.Y.

Filed Nov. 15, 1974, Ser. No. 524,195
Int. Cl.² G01P *15/02*
U.S. Cl. 73—515 **9 Claims**



1. A fluidic accelerometer having a sensitive axis, comprising:

a. a seismic mass having first and second end surfaces positioned perpendicular to said sensitive axis;

b. viscous damping means, mechanically coupled to and suspending said seismic mass in a normal null position, for damping oscillatory movement of said seismic mass in the direction of said sensitive axis;

c. means responsive to movement of said seismic mass in the direction of said sensitive axis for providing a restoring force to return said seismic mass to the normal null position and for producing an output fluidic signal variation proportional to the acceleration of said seismic mass in the direction of said sensitive axis; and

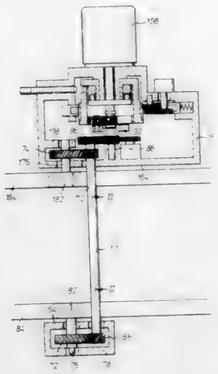
d. means for applying a fluidic signal to said seismic mass perpendicular to one of said first and second end surfaces for counteracting the force of gravity on said fluidic accelerometer.

3,961,537

FEED DRIVE FOR THE BED SLIDE OF A MACHINE TOOL

Hans Günther Rohs, Rechberghausen, Germany, assignor to Gebruder Boehringer GmbH, Germany

Filed Nov. 12, 1974, Ser. No. 523,027
Claims priority, application Germany, Nov. 19, 1973, 2357659
Int. Cl.² F16H *19/04*
U.S. Cl. 74—29 **4 Claims**



1. In a machine tool a bed provided with a straight guideway, a bed-slide movable thereon, a pair of spaced, parallel racks provided on said guide-way in fixed relationship thereto, a pair of spaced pinions each engaging one of said racks and being rotatably mounted on said bed-slide, a feed motor on said bed-slide, and means for gearing said pinions to said motor, including

a differential transmission having an input connected with said motor and having two outputs,

said outputs comprising a first pair of helical gears drivingly connected with said pinions, each of said helical gears having a hand opposite to that of the other helical gear of the pair thereof, and

means mounting said first pair of helical gears so that they equalize the torques transmitted thereby from said motor to said pinions by affording relative rotation of said pinions.

3,961,538

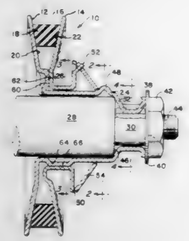
EXPANSIBLE SHEET METAL PULLEY WITH MANNUAL DETENT ADJUSTMENT MEANS

Ronald L. Phillips, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 23, 1974, Ser. No. 508,537
Int. Cl.² F16H *55/52*, *55/54*
U.S. Cl. 74—230.8 **3 Claims**

1. An adjustable pulley of the split sheave type of sheet metal construction wherein a movable sheave half is adjustably positioned relative to a fixed sheave half providing a variable width belt groove therebetween, the adjustable pulley comprising in combination; a fixed sheave half, a first hub fixed to said fixed sheave half, a shaft, said first hub positioned on said shaft, means drivingly connecting said first hub to said shaft, a movable sheave half, a second hub secured to said movable sheave half, said movable sheave half mounted for axial reciprocating movement relative to said fixed sheave half, means drivingly connecting said fixed and movable sheave halves for rotation in unison as a pulley assembly, spring means mounted on said first hub engaging said second hub continuously biasing said movable sheave half toward said fixed sheave half while maintaining the sheave halves assembled, cam means in the form of deformations having varying

heights on one of said sheave halves, and cam seats in the form of deformations on the other of said sheave halves, said cam means selectively engaging said cam seats when said movable

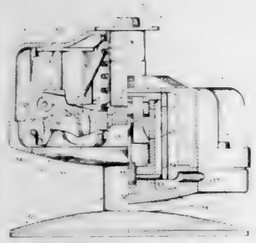


sheave half is rotated against the biasing force of said spring means, engagement of particular cam means with said cam seats establishing a predetermined axial distance between said sheave halves and a predetermined width in said belt groove.

3,961,539
CLUTCH

Alain Tremblay, Sainte-Barbe, and Jean-Guy Talbot, Valcourt, both of Canada, assignors to Bombardier Limited, Valcourt, Canada

Filed Apr. 11, 1975, Ser. No. 567,110
Claims priority, application Canada, May 23, 1974, 200653
Int. Cl.² F16H *55/52*
U.S. Cl. 74—230.17 E **3 Claims**



1. In a rotary clutch comprising a fixed pulley flange adapted to rotate with a clutch shaft, and a movable pulley flange adapted to slide axially towards and away from said fixed flange to vary the drive ratio of an endless belt driven between said flanges, said movable flange being resiliently urged axially away from said fixed flange; centrifugally actuated means operable at a predetermined speed of rotation to overcome said resilient means and displace the movable flange axially towards the fixed flange with a force which increases with the speed of rotation, said centrifugally actuated means comprsing a plurality of flyweights spaced at uniform angular intervals about the axis of the shaft and pivotally mounted on a part associated with the movable flange, each said flyweight being adapted to co-operate with a follower means on a corresponding radial limb of a spider which is fixed in relation to said shaft; means constraining said movable flange to rotate with said fixed flange; said flyweight and spider being enclosed within a housing detachably secured to the rear side of said movable flange;

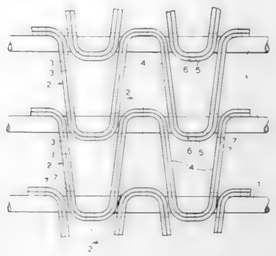
The improvement comprising:

each flyweight being mounted on a pivot shaft received in aligned through bores in a pair of spaced lugs close to the periphery of said movable flange, and said housing including for each flyweight a pair of projecting bodies which straddle said lugs and form a pair of closely spaced abutments adjacent respective ends of said pivot shaft, thus preventing disassembly thereof when the housing is attached to the movable flange, said pivot shaft being readily removable upon detachment of the housing.

3,961,540
CONVEYOR BELTS

George Arthur Harvey, Blakedown, England, assignor to U.M.-E.C.-Boydell (Belting) Limited, Wolverhampton, England

Filed Aug. 6, 1975, Ser. No. 602,432
Claims priority, application United Kingdom, Aug. 13, 1974, 35538/74
Int. Cl.² F16G *1/18, 1/00*
U.S. Cl. 74—239 **5 Claims**

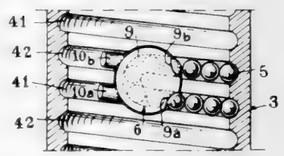


1. A honeycomb conveyor belt comprising a series of parallel transverse rods and a plurality of open-work belt sections which extend between and are pivoted to said transverse rod, said belt sections being of cranked or wavey form having a series of longitudinally extending components spaced apart transversely of the conveyor belt joined at their ends by transversely extending cross components, adjacent belt sections longituidnally of the conveyor belt intermeshing with one another at said transverse rods which pass through said longitudinally extending components, and each said belt section comprising a plurality of metal strips correspondingly bent to said cranked wavey form of said belt section and disposed in nesting relationship with respect to one another.

3,961,541
BALL-EQUIPPED SCREW AND NUT MECHANISM

Jean Claude Fund, Bourdeau, and Jacques Detraz, Chambery, both of France, assignors to La Technique Integrale S.A., Chambery, France

Filed Oct. 21, 1974, Ser. No. 516,497
Claims priority, application France, Oct. 30, 1973, 73.38615
Int. Cl.² F16H *55/22*
U.S. Cl. 74—459 **8 Claims**

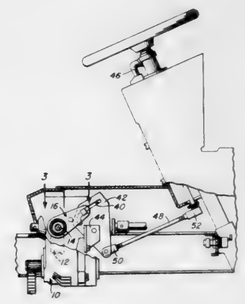


1. In a ball-equipped screw and nut mechanism including a plurality of spherical balls and mating nut and screw members, wherein rotary motion of one of said members relative to the other causes axial motion of the other, the nut having an outer surface and helical groove in its inner surface, the screw having a complemental groove in its outer surface, said grooves cooperating to define a helical channel of substantially circular cross-section in which said balls circulate, the improvement in combination therewith wherein said nut includes a hole extending generally radially outward from its inside surface to its outer surface, a transfer component comprising a body part which is cylindrical and conforms to and is positioned in said hole in the nut, said body part having length in the axial direction of the screw corresponding to one pitch length between two adjacent grooves of said helical channel and defines therein a transfer passage extending between and communicating with said adjacent grooves, said transfer component further comprising at least one appendage extending transversely from said body part in a circumferential direction into and engaging a portion of said helical channel for immobilizing said component in rotation and translation, and guide means extending from said body part into said helical channel for deflecting balls from the helical channel into said transfer passage.

3,961,542
CONTROL LINKAGE FOR HYDROSTATIC TRANSMISSION

David A. Fulghum, La Grange, and John R. Badini, Villa Park, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 10, 1975, Ser. No. 540,199
Int. Cl.² F16D *3/76*
U.S. Cl. 74—470 **8 Claims**



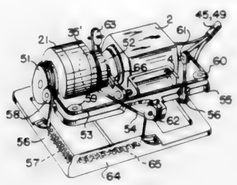
1. In a vehicle hydrostatic transmission system, a swash plate, trunnion shaft means fixed to and extending from said swash plate for rotational mounting of said swash plate, said shaft means having a limit pin fixed to and projecting laterally therefrom, a movably mounted control arm having a pair of spaced abutments for receiving said limit pin therebetween for force transmission engagement therewith and having an aperture for receiving said shaft means, and an elastomeric bushing bonded to and engaged between said arm and said shaft means for selective transmission of torque therebetween, said bushing being elastically deformable to a predetermined degree prior to transmission of torque beyond which deformation said limit pin engages said abutment and said bushing transmits torque.

3,961,543
ELECTRIC ADJUSTING MEANS FOR AZIMUTH AND ELEVATION ADJUSTMENT

David M. Morgenstern, deceased, late of Shaker Heights, Ohio; by Stanley Morgenstern, executor, Shaker Heights, Ohio; Harold M. Chattman, executor, and Allan R. Cole, executor, both of Cleveland, Ohio, assignors to Tenna Corporation, Cleveland, Ohio

Division of Ser. No. 185,250, Sept. 30, 1971, Pat. No. 3,857,631. This application Dec. 26, 1973, Ser. No. 427,640
Int. Cl.² G02B *5/08*
U.S. Cl. 74—501 M **13 Claims**

1. An adjusting device for effecting limited universal adjustment of a part to be adjusted comprising; a first supporting member; a second supporting member spaced from the first member; universal joint means connecting said members effecting limited universal movement therebetween; and actu-

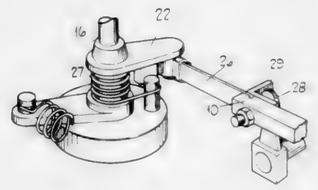


ating means disposed on the first member including tensioned elongated flexible connecting means coacting with said second member to effect universal movement of such second member with respect to the first member.

3,961,544
ACTUATOR MECHANISM

Ronald Phillips, Northolt, England, assignor to C.A.V. Limited, Birmingham, England

Continuation of Ser. No. 457,701, April 4, 1974, abandoned. This application Apr. 12, 1974, Ser. No. 460,530
Claims priority, application United Kingdom, Apr. 14, 1973, 18095/73
Int. Cl.² G05G *1/14*
U.S. Cl. 74—513 **6 Claims**



1. An actuator mechanism for the fuel quantity control member of a fuel injection pump and comprising an electromagnetic device including an angularly movable drive shaft, an ouput member in the form of an arm mounted for angular movement relative to said shaft, means coupling said arm to said control member, further means coupling said arm to said shaft for moving the control member to increase the amount of fuel supplied by the pump, resilient means acting on the shaft for opposing movement of the shaft in the direction to increase the amount of fuel, a yieldable connection included in said further means whereby the control member may be moved towards a predetermined position irrespective of the setting of the shaft by the application of external force.

3,961,545
PARKING BRAKE CONTROL

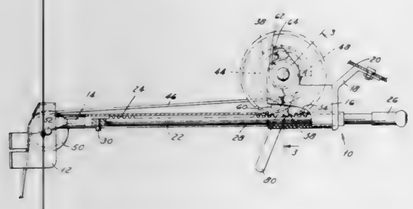
Randall P. Petresh, Northville, and Raymond F. Toohey, Lincoln Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed July 1, 1974, Ser. No. 484,895
Int. Cl.² G05G *1/04*
U.S. Cl. 74—517 **4 Claims**

1. A multi-stroke parking brake control for a motor vehicle comprising a housing and an actuating rod slidably supported in said housing,

said actuating rod being linearly displaceable between an at rest position and a cable tensioning position,

said actuating rod having a handle constructed to be manipulated by a motor vehicle operator,
said actuating rod having a toothed rack formed along a portion of its length,
a driving member having a pulley portion constructed to be connected to a brake cable,
said driving member being rotatably supported on said housing and angularly displaceable in a cable tensioning direction and in a tension relieving direction,
said driving member having first and second drum-like hub portions,
a gear rotatably supported on said first hub portion and having teeth in mesh engagement with said toothed rack of said actuating rod,
said gear being angularly displaced in a first direction when said actuating member is displaced from said at rest position to said cable tensioning position,
a first one-way clutch comprising a first helical spring coil disposed about said first hub portion and having one end secured to said gear,



said first coil being constructed to grip said first hub portion when said gear is rotated in said first direction and to slidably engage said first hub portion when said gear is rotated in said second direction,
a second one-way clutch comprising a second helical spring coil disposed about said second hub portion of said driving member and having one end secured to said housing,
said second coil being constructed to grip said second hub portion when said driving member is rotated in said tension relieving direction and to slidably engage said second hub portion when said driving member is rotated in said cable tensioning direction,
said gear being angularly displaceable in a second direction when said actuating member is displaced from said cable tensioning position to said at rest position,
said second coil having a second free end,
a release lever having a portion constructed to engage said free end of said second coil and to displace said second coil whereby said second hub portion slidably engages said second coil when said second hub portion is angularly displaced in said tension relieving direction.

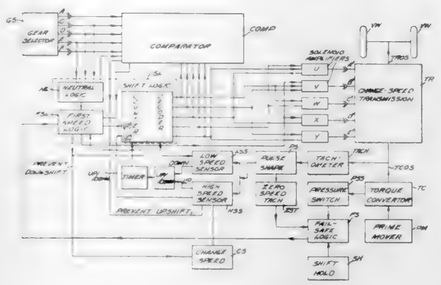
3,961,546

DIGITAL AUTOMATIC TRANSMISSION CONTROL

Thomas P. Gilmore, Wauwatosa, and David L. Moore, Brookfield, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sept. 17, 1974, Ser. No. 506,793
Int. Cl.² B60K *21/00*
U.S. Cl. 74—866 **37 Claims**

1. In combination with a gear selector which provides digitally coded electrical signals representative of desired speed and a change-speed transmission which engages selected gears to provide different speed ratio power paths between input and output shafts in accordance with digitally encoded electrical signals applied to inputs thereof, a digital control for automatically shifting said transmission comprising
tachometer means for generating pulses at a frequency which is a function of the angular velocity of said transmission input shaft,
an up-down counter,
high speed sensor means and low speed sensor means operable respectively when the frequency of said tachometer pulses is above a first predetermined rate and below a second predetermined rate,
means responsive to the operation of said high speed sensor means and to the operation of said low speed means sensor respectively for incrementing and decrementing said counter,



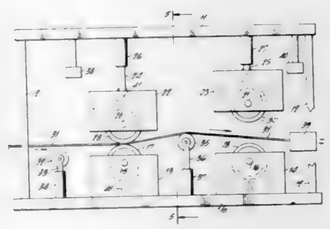
means for generating digitally coded signals representative of the count stored in said counter and for applying them to the inputs to said transmission so that said transmission engages the gear corresponding to the count stored in said counter, and
comparator means for comparing the speed set on said gear selector, as indicated by the digitally coded electrical output signals therefrom, to the count stored in said counter and for disabling said high speed sensor means when the former is equal to or less than the latter, whereby said control cannot shift to a gear above the setting of said gear selector.

3,961,547

PAPER SCORING AND SLITTING MACHINE

Maurice Shainberg, 22J Amberly Drive, Englishtown, N.J. 07726, and Joseph Purcell, 49 Kaurik St., Little Ferry, N.J. 07643

Filed Nov. 20, 1974, Ser. No. 525,350
Int. Cl.² B26D *3/08*
U.S. Cl. 83—11 **1 Claim**



1. A scoring and slitting machine for a moving web including a first set of upper and lower rotary knives and scoring wheels for scoring and slitting the web; a second set of upper and lower rotary knives and scoring wheels, spaced from the first set for alternate operation on the web for producing an alternate pattern of slits and score marks; the improvement comprising:
a. supporting cross shafts for rotatably mounting each of the sets of slitting knives and scoring wheels;
b. a threaded cross shaft in parallel alignment with each of the supporting cross shafts;

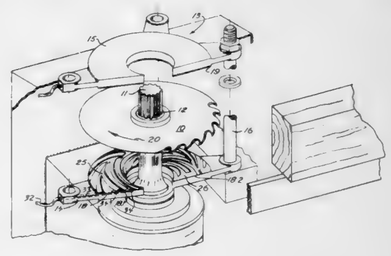
c. a plurality of split nuts coupled to the knives and scoring wheels for selectively engaging the threads on said threaded cross shaft for moving the knives and scoring wheels transversely to predetermined positions when the threaded shaft is rotated and for anchoring the knives and scoring wheels when the threaded shaft is not rotating;
d. means on each of the split nuts for engaging and disengaging the nuts from the threaded shafts;
e. circuit means including a source of potential, for selectively operating the split nut engaging means during a pattern changing operation;
f. and means comprising a manually operable selector switch to energize either a first or second relay winding to raise one of the cross shafts and lower the other cross shaft while the web is moving.

3,961,548

GUIDE APPARATUS FOR ROTARY SAWS HAVING FLOATING CIRCULAR SAW BLADES

Lutz Claassen, Delta, Canada, assignor to Hawker Siddeley Canada Ltd., Toronto, Canada

Filed Mar. 27, 1974, Ser. No. 455,411
Claims priority, application United Kingdom, Apr. 3, 1973, 15853/73
Int. Cl.² B27B *5/29;* **B23D** *59/02*
U.S. Cl. 83—169 **11 Claims**



1. Guide apparatus for a rotary saw having a circular saw blade freely movable longitudinally of an arbor, the guide apparatus comprising:
a. a pair of substantially circular guide plates having a segment removed therefrom adapted to be disposed on opposite sides of, and spaced from the saw blade, said plates having curved inner and outer peripheral edges clear of the arbor and saw teeth, respectively, and substantially radially extending leading and trailing edges, relative to direction of rotation of the saw blade, and having guide faces extending parallel to the saw blade,
b. the guide plates having a plurality of spiral grooves extending across the guide faces, the grooves having leading ends, relative to direction of rotation of the saw blade, opening out of at least one edge of each of the guide plates so that rotation of the saw blade induces a flow of air into the grooves,
c. the grooves being effectively closed at trailing ends so as to develop air cushions between the saw blade and the guide plates.

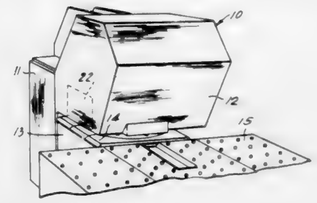
3,961,549

DIE CHANGING TURRET TABLE SEGMENT

Franklin A. Smith, Clarence, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed June 16, 1975, Ser. No. 587,392
Int. Cl.² B26D *7/00*
U.S. Cl. 83—552 **11 Claims**

1. In a machine tool having an annular turret with a periphery substantially closed by a worktable having outer edges spaced from the periphery of the turret, the worktable having a segment thereof extending from the periphery of the turret to the outer edge of the worktable removable from the remainder of the worktable to provide access to the periphery of the turret below a common worktable top level, the improvement of said segment being connected to said matching through a plurality of connection means, said segment movable between first and second position, said first position being a work position with a top of the segment planer with the top of the remainder of the worktable, said second position being a turret access position with said top of said segment being spaced below the remainder of said worktable, the said connection means limiting movement of the said segment except between said positions.

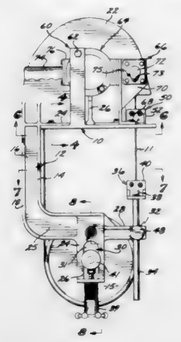


3,961,550

BAND SAW

Everett O. Oliver, 15504 E. Hornell, Whittier, Calif. 90604, and John T. Millwee, 18231 Sharon Lane, Villa Park, Calif. 92667

Filed Feb. 24, 1975, Ser. No. 552,300
Int. Cl.² B26D *5/08;* **B27B** *13/00*
U.S. Cl. 83—574 **14 Claims**



1. In a band saw having a frame supporting distal blade wheels including driven and idler blade wheels pivotally mounted thereon, a band saw blade extending between and about said blade wheels, prime mover means coupled in driving relationship to said driven blade wheel, the improved mounting means for the idler blade wheel which comprises:
distal channel means open at one end of said frame;
elongated slot means transverse to said channel means, also open at said distal end of said frame;
slide means in the form of an elongated plate having a tapered inner end and bearing, at its opposite end, threaded shaft means;
boss means on said elongated plate for tracking in said elongated slot and bearing a central bore receiving a blade wheel support shaft projecting therefrom for journalled support of said idler saw wheel;
tension adjustment means comprising a hand wheel threaded on said threaded shaft means and resilient

means biased between said hand wheel and said frame whereby the tension load on said saw blade can be fixedly adjusted; and

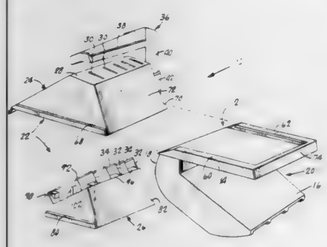
tilt adjustment means comprising screw means threadably carried by said frame and projecting into said channel and bearing the tapered end of said slide means whereby the tilt of said idler blade wheel can be fixedly adjusted.

3,961,551

HAND-OPERATED DEVICE FOR SLITTING FABRIC INTO STRIPS

John S. Doyel, 404 W. 20th. St., New York, N.Y. 10011

Filed Aug. 22, 1975, Ser. No. 606,777
Int. Cl.² B26D *3/12*
U.S. Cl. 83—648 **6 Claims**



1. A hand-operated device for slitting fabric drawn therethrough into springs comprising:

a bracket formed of a top leg and a bottom leg joined at their back end and extending divergently forwardly therefrom to form therebetween a generally V-shaped notch;

a blade unit secured to the bracket, said blade unit comprising a generally convex, hollow blade support cover and a generally convex blade support removably nesting in the cover, said cover having a top wall formed with a laterally extending row of elongated slots each extending forwardly, and said support having means for holding a laterally extending row of blades each extending forwardly and protruding upwardly through a corresponding one of said slots in the cover, the protruding portion of each blade having a sharpened edge sloping upwardly in extending from the back toward the front of the bracket;

a guard bar extending laterally over the protruding portions of the blades and spaced upwardly therefrom; and

a wedge having two opposite walls converging towards a sharp end at an angle matching that of the V-shaped notch formed by the bracket;

said device engaging a table top by moving the bracket from the edge toward the interior of the table top, with the top bracket leg over the top surface of the table top and with the bottom leg under the underside of the table top, and pressing the inner side of one leg flat against the table top by inserting the sharp end of the wedge between the other leg and the table top and forcing the wedge toward the back of the bracket, said device slitting fabric into strips by drawing the fabric forwardly between the top surface of the blade support cover and the facing surface of the guard bar while pressing the fabric downwardly over the sharpened edges of the blades.

3,961,552

MEANS FOR CUTTING SQUARES

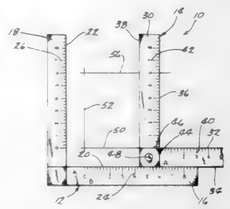
Walter B. Graham, 1010 S. 91st St., Omaha, Nebr. 68114

Filed May 30, 1975, Ser. No. 582,122
Int. Cl.² B26D *7/00*
U.S. Cl. 83—821 **1 Claim**

1. A device for cutting squares, comprising,

a first flat guide member comprising an elongated base portion and an elongated leg portion extending from one end of said base portion at a right angle thereto, said base and leg portions having inner guide edges formed thereon,

and a second flat guide member comprising an elongated base portion and an elongated leg portion extending from one end of said base portion at a right angle thereto, said base and leg portions having outer guide edges complimentary to the inner guide edges on said first guide member, said base and leg portions of said second guide member having inner guide edges provided thereon,



said base and leg portions of each of said first and second guide members having scales provided thereon,

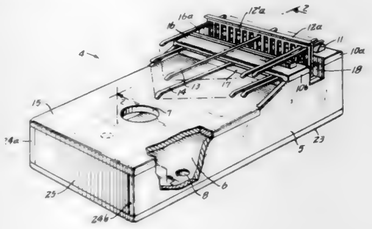
said scales on said base and leg portions of said first guide member having their 0 indices spaced a predetermined distance from the inner guide edges of said leg and base portions respectively, said spacing corresponding to the width of said base and leg portions of said second guide member respectively.

3,961,553

TWO-TIER CHROMATIC THUMB PIANO

Steven M. Schorr, 2853 Webb Ave., Bronx, N.Y. 10468

Filed July 14, 1975, Ser. No. 595,377
Int. Cl.² G10D *13/08*
U.S. Cl. 84—408 **7 Claims**



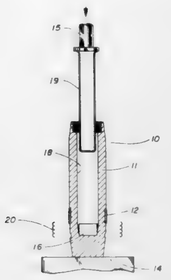
1. A multi-tier chromatic thumb piano comprising in combination: an elongated enclosure vessel means defining an elongated space within, and defining at one end thereof an upperface stepped support structure including a higher tier in juxtaposition to said one end and a lower tier adjacent thereto located toward a remaining spaced-away other end thereof, and defining a through-aperture within an upper face of the vessel means such that said elongated space is in communication with exterior space; two sets of elongated semi-flexible finger members of varying lengths from one-another ranging from predetermined short length to predetermined long length in steps of length predetermined to equal tone variations, one set having lengths of the finger members adapted as to obtain tones of substantially half-way intermediate tones relative to a second sets finger members, the one set being mounted to extend substantially horizontally above an upper face of the elongated enclosure vessel means from the higher tier, and the second set being mounted to extend substantially horizontally above the upper face from the lower tier, distal ends of finger members of the one set and of the second set respectively extending substantially toward said remaining spaced-away other end.

3,961,554

METHOD FOR MAKING INCENDIARY LINES FOR ORDNANCE

Darrel W. Harris, Colonial Beach; Robert A. Green, McLean, and Donald M. Grigsby, Rollins Fork, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 8, 1974, Ser. No. 459,131
Int. Cl.² F42B *33/00*
U.S. Cl. 86—1 R **3 Claims**



1. A method for producing cast in place incendiary liners in the explosive cavities of ordnance items wherein contact between the incendiary material and the explosive is precluded comprising the steps of:

placing a slug of incendiary material within the cavity of the ordnance item;

heating the ordnance item and incendiary material to a temperature at which the incendiary material may be easily formed;

forcing a deep drawn metal cup into the cavity to displace the incendiary material into the desired liner configuration; and

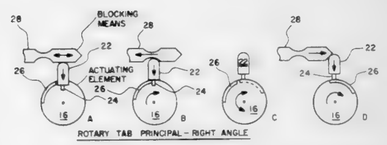
cooling the resulting configuration whereby the incendiary liner is mechanically and metallurgically bonded to both the ordnance item and said metal cup and the recess within said metal cup defines a cavity for the explosive load with intimate contact between the explosive load and said liner being prevented.

3,961,555

SAFETY MECHANISM FOR INTERVALOMETERS AND DISTRIBUTORS

Wayne G. Zellmer, and Marvin E. McGowan, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 13, 1975, Ser. No. 540,479
Int. Cl.² F41F *3/04*; **F42C** *15/06*
U.S. Cl. 89—1.812 **5 Claims**



1. In a firing device for ordnance or the like the combination comprising:

an electrically operable actuating element movable between a normal SAFE position and a FIRE position for firing said ordnance;

energy storage means biasing said element to said SAFE position;

energy output means effectively connected to said element for moving said element to said FIRE position;

blocking means associated with said element and relatively movable from a position disabling full movement of said element to a position enabling full movement of said element;

said blocking means and said element including complementary cooperating surfaces which coact to prevent movement of said element to said FIRE position when said blocking means is in said disabling position and to allow movement of said element to said FIRE position when said blocking means is in said enabling position; and

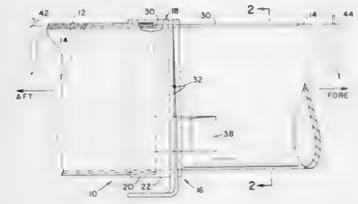
said surfaces further cooperating to prevent movement of said blocking means from either position to the other when said energy output means is acting to urge said element from said SAFE position to said FIRE position.

3,961,556

ROCKET LAUNCHER TELESCOPING TUBE LOCKING MECHANISM

Glen A. Clodfelter, Madison, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1974, Ser. No. 511,829
Int. Cl.² F41F *3/04*
U.S. Cl. 89—1.816 **3 Claims**



1. A lightweight man-transportable rocket launcher comprising:

a. inner and outer tubular sections connected to telescope between a shortened, inoperative position and an extended operative position;

b. a first sight mounted on said outer tubular member, and, a second sight mounted on said inner tubular member; and

c. a locking mechanism carried by said tubular sections for cooperation therebetween for securing said sections in said extended position, said locking mechanism including a retainer ring secured to the forward end of the outer tubular section and a locking plate secured to said inner tubular section, said retainer ring having an outer cylindrical portion provided with a groove therein, a lock spring disposed in said groove, said groove being provided with openings therethrough whereby during displacement of said tubes to said extended position said lock spring extends through said openings in said groove to engage said locking plate.

3,961,557

QUICK-LOCKING MACHINE STOP

Randolph M. Jezowski, Lynn, Mass., assignor to Signet Tool and Engineering, Inc., Saugus, Mass.

Filed June 16, 1975, Ser. No. 587,252
Int. Cl.² B23Q *3/18*
U.S. Cl. 90—11 E **6 Claims**

5. In a work stop of the type used on machine tools to limit the movement of a workpiece during the machining thereof and wherein said work stop comprises a housing means for positioning the height and angular position of said housing on a post; and wherein said housing carries a clamp means adapted to hold a work stop member, the improvement

wherein said housing comprises a lock actuating means including

A. a first vertical bore in said housing forming means to receive said post;

B. a horizontal bore and second vertical bore together forming means to contain a clamp-actuating mechanism;

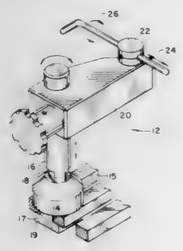
C. said horizontal bore in said housing forming means to house a horizontally aligned lockactuating means, said horizontal bore partially intersecting with said first vertical bore so that a portion of a cylinder formed by said first vertical bore passes through a segment of the space formed by said vertical bore;

D. said second vertical bore intersecting said horizontal bore and forming means to house a vertically aligned means for locking said clamp means, and wherein

E. said horizontally aligned actuating means comprises

1. an actuating screw

2. a post clamp member through which said screw passes and which comprises a segmental cutout for receiving that portion of said post which is placed in said segment



3. a first cam means comprising a first cam surface mounted at an angle to said horizontal bore;

4. a second angular cam measn mounted in said vertical bore and connected to vertical clamp-actuating means mounted in said bore, said second cam forming with said first cam, means to convert horizontal force vector exerted on said first cam means to a vertical force vector on said vertically-aligned locking means

F. lock-actuating means comprising screw means to pull said post clamp member into locking contact with said post and, simultaneously, force said first cam against said second cam and thereby lock said clamp means and said work stop member,

G. and a biasing means positioned in said clamp-actuating mechanism, said biasing means adapted to maintain sufficient pressure on said clamp post to avoid spurious movement of said post clamp movement relative to said post when said lock actuating means is in a retracted position.

3,961,558

POSITIVE-DISPLACEMENT HYDRAULIC MOTOR

Alexandr Viktorovich Dokukin, Zemledelchesky pereulok, 12, kv. 9; Jury Evgenievich Tyablikov, ulitsa Kastanaevskaya, 31, korpus 1, kv. 8, both of Moscow; Anatoly Yakovlevich Rogov, poselok VUGI, 8, kv. 15, Moskovskaya oblast, Ljubertsy-4; Valerian Mikhailovich Berman, Smolenskaya ulitsa, 7, kv. 67, Moscow; Jury Arsentievich Nikitin, ulitsa Vostrukhina, 6, korpus 2, kv. 76, Moscow, and Leonid Solomonovich Feifets, ulitsa Udaltsova, 13, kv. 9, Moscow, all of U.S.S.R.

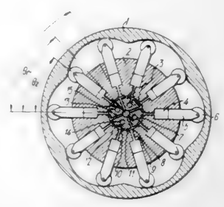
Filed Nov. 19, 1974, Ser. No. 525,110

Claims priority, application U.S.S.R., Nov. 20, 1975, 1967422

Int. Cl.² F01B *13/06*; **F15B** *21/02*

U.S. Cl. 91—35 **4 Claims**

1. A positive-displacement hydraulic motor comprising: a guide element; a valve; a block of variable volume chambers; ports made in the surface of said valve and grouped in pairs so that one port of the pair communicates with a delivery line and the other one communicates with a discharge line; distribution ports made at the side of said unit of the variable volume chambers facing said valve; each of said chambers of said block communicated by means of a commutation channel with one of said distribution ports; a closer member accommodated in each of said chambers of the block and being in a permanent engagement with a surface of said guide element facing thereto; a surface of said guide element facing said block and divided into cam portions so that said closer mem-



ber performs a complete stroke within the limits of each of said separate cam portions; said variable volume chambers of said unit and cam portions having spacings being not aliquant with respect to each other; said valve being capable to perform a positive, independent and continuous movement during the operation of the motor; said variable volume chambers of said block; said pairs of ports of the valve and said cam portions of the guide element having spacings which are selected respectively from the following relationship:

$$\frac{1}{Q_r} = \frac{n}{\theta_z} + \frac{K}{\theta_z}$$

whereby with a predetermined speed of the valve the operating conditions of the hydraulic motor can be preselected, wherein:

θ_r, θ_z, θ_z are spacings between pairs of ports of the valve, variable volume chambers and cam portions of the guide element respectively;

n and K are factors selected to provide a predetermined ratio between the speeds of the guide element, block of variable volume chambers and the valve, the factor n being equal to an integer including null, and the factor K being equal to any integer which is represented by a coprime number with respect to the greatest possible number of non-coherent variable volume chambers except for null and number fulfilling the relationship:

$$K = -n\frac{\theta_z}{\theta_z}$$

wherein the factor K correlates the numbers of the variable volume chambers in order of their arrangement in the block with the numbers of the distribution ports in order of their arrangement on the surface facing the valve so that each value of numbers of one of these elements and the product of the number of another element communicating therewith through the communication channel by factor K represent modulo residues of a maximum possible number of non-coherent variable volume chambers.

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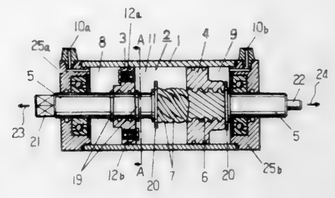
ACTUATOR

Hiroshi Teramachi, No. 34-8; Higashi-tamagawa 2-chome, Setagaya Tokyo, Japan

Filed Nov. 18, 1974, Ser. No. 524,997

Int. Cl.² F01B *21/02*; **F15B** *11/20*, *13/06*

U.S. Cl. 91—189 R **3 Claims**



1. An actuator, operable by hydraulic fluid under pressure, comprising, in combination, an axially elongated cylinder having a non-circular cross-section throughout its length and having a central axis; end walls closing the opposite ends of said cylinder; first and second non-circular and non-rotatable axially spaced pistons in said cylinder in direct engagement with the interior surface thereof and dividing said cylinder into first and second end chambers and an intermediate chamber; a piston rod extending through said pistons and said end walls, to project beyond said end walls, coaxially with said center axis, said piston rod being rotatable relative to said pistons; means restraining relative axial displacement of said piston rod and said first piston; said piston rod being formed with at least one male spiral thread and said second piston being formed with at least one female spiral thread engaged with a respective said male spiral thread; first and second relief pressure valves in said first piston communicating with said first chamber and said intermediate chamber, and opening in respective opposite axial directions; said first relief pressure valve opening toward said first chamber and said second relief pressure valve opening toward said intermediate chamber; and first and second port means in respective end walls for selectively supplying hydraulic fluid to said chambers and exhausting hydraulic fluid therefrom, said first port means communicating with said first chamber and said second port means communicating with said second chamber; whereby, when said first port means is connected to exhaust and said second port means is connected to a source of hydraulic fluid under pressure, said first and second pistons will advance said piston rod, without rotation thereof, toward the end wall having said first port means with said first relief pressure valve blocking communication between said first chamber and said intermediate chamber until said first piston is blocked from further movement toward the end wall having said first port means; said second piston then advancing toward said first piston with the pressure in said intermediate chamber opening said first relief pressure valve to exhaust fluid from said intermediate chamber into said first chamber and out through said first port means, said second piston, due to its threaded engagement with said piston rod, rotating said piston rod; said first and second pistons, upon connection of said first port means to a supply of hydraulic fluid under pressure and said second port means to exhaust, initially moving said piston rod without rotation in a direction toward the end wall having said second port means with said second relief pressure valve blocking communication between said first chamber and said intermediate chamber; upon blockage of movement of said piston rod toward said end wall having said second port means and continued supply of hydraulic fluid to said first port means, said second relief pressure valve connecting said first chamber to said intermediate chamber opens to increase the pressure in said intermediate chamber to advance said second piston toward the end wall having said second port means to effect reverse rotation of said piston rod.

3,961,560

CONTROL MEANS FOR JET AIRCRAFT THRUST REVERSING MEANS

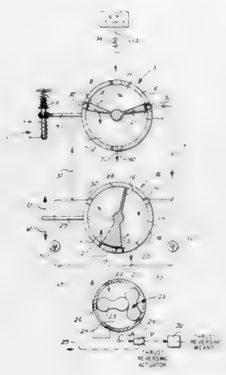
Eberhard Bader, Munich, Germany, assignor to Motoren- und Turbinen-Union Munchen GmbH, Munich, Germany

Filed Oct. 30, 1974, Ser. No. 519,171

Claims priority, application Germany, Nov. 2, 1973, 2354747

Int. Cl.² F15B *13/16*

U.S. Cl. 91—358 R **7 Claims**



1. For use with a thrust reversing means of an aircraft jet engine having jet deflector flaps and a source of pressurized air, control means for controlling the movement of the flaps between their retracted position and their deployed position, said control means comprising:

a. an air-driven actuator for operating the thrust reversing means, said actuator having first and second ports,

b. a control valve having first and second ports communicating with the first and second ports of said actuator, and a control valve member almost completely covering said control valve second port while leaving said control valve first port substantially unobstructed when the flaps are in their retracted position, said control valve member defining within said control valve a first chamber communicating with said control valve first port and a second chamber communicating with said control valve second port,

c. a pilot valve having an inlet port connected to the pressurized air source, an exhaust port, a first port communicating with said control valve first chamber, a pilot valve member for controlling flow of pressurized air from the source to said control valve first chamber, and a second port communicating with said control valve second chamber, said pilot valve member having a neutral position in which it closes both of said pilot valve first and second ports, and said pilot valve member permitting communication between said pilot valve second and exhaust ports when said pilot valve member is adjusted to permit flow of pressurized air from the source to said control valve first chamber,

d. means for adjusting said pilot valve member to permit flow of pressurized air from the source to said control valve first chamber when the flaps are to be moved from their retracted to their deployed position, and

e. means responsive to operation of said actuator for moving said control valve member to gradually uncover said

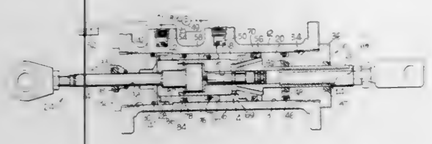
control valve second port and gradually close said control valve first port, so that during the initial movement of said actuator pressurized air flows freely through said control valve first port but flow through said control valve second port is limited, during the final movement of said actuator pressurized air flows freely through said control valve second port but flow through said control valve first port is limited, and during movement of said actuator between its initial and final movements pressurized air flows freely through said control valve first and second ports.

3,961,561

PROPORTIONAL FORCE AMPLIFIER

Dale A. Knutson, Oconomowoc, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Nov. 8, 1971, Ser. No. 196,495
Int. Cl.² F15B *9/10, 15/17*
U.S. Cl. 91—378 **10 Claims**



1. A proportional force amplifier comprising a housing having a cylindrical bore,

a piston assembly positioned in said bore and separating said bore into first and second chambers,

means in said cylindrical bore for defining a third chamber separate from said first chamber,

a fluid inlet port in said housing connecting said first chamber to a fluid pressure source;

a fluid outlet port in said housing connecting said third chamber to a reservoir;

said piston assembly including a piston head having a working surface on one side positioned to respond to the pressure of the fluid in the first chamber and a control surface on the other side positioned to respond to the pressure of the fluid in the second chamber;

said working surface cross-sectional area being proportionately smaller than the cross-sectional area of the control surface;

an axial bore in said piston assembly having one end connected to said third chamber;

a first passage in said piston assembly connecting said first chamber to said axial bore;

a second passage in said piston assembly connecting said second chamber to said axial bore;

a spool valve positioned in said axial bore in said piston assembly, said valve including means for providing a continuous flow of fluid from said first passage through said bore to said second passage and to said third chamber whereby a predetermined pressure relation is maintained between said first chamber and said second chamber, said valve being selectively movable for connecting said second passage to one of the first passage or axial bore for discharge to the third chamber, said piston assembly moving in response to changes in pressure in said control chamber a distance equal to the distance of movement of said spool valve;

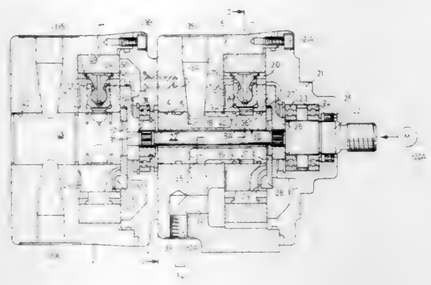
an actuating member positioned in said housing and being adapted for connection to an external input mechanism and means for resiliently connecting said spool valve to said actuating member to compensate for variations in concentricity between said actuating member and said spool valve.

3,961,562

MULTIPLE PUMP ASSEMBLY

Günter Kersten; Ulrich Aldinger; Emil Knodel, and Rainer Knoblauch, all of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 26, 1973, Ser. No. 428,613
Claims priority, application Germany, Jan. 12, 1973, 2301448
Int. Cl.² F01B *13/06*
U.S. Cl. 91—492 **18 Claims**



1. A multiple pump assembly comprising a series of pumps having coaxial drive shaft means and including a first pump and at least one additional pump, said first pump constituting a radial piston pump and including a pintle coaxial with said shaft means, a cylinder block driven by said shaft means, rotatably surrounding said pintle and having radial cylinders, fluid displacing and pressurizing pistons in said cylinders, and a slide block surrounding said pistons and being eccentric with respect to said cylinder block so as to effect reciprocatory movements of said pistons in response to rotation of said cylinder block, said pintle having channel means for evacuation of fluid which is pressurized by said pistons and an axial bore for a portion of said shaft means, said additional pump having a rotary element driven by said portion of said shaft means; and first and second coupling means for respectively transmitting torque from said shaft means to said cylinder block and said rotary element.

3,961,563

AXIAL PISTON MACHINE OF THE TYPE HAVING A TILTABLE CYLINDER BLOCK

Ludwig Wagenseil, Vohringen, and Horst Deininger, Unterbalzheim, both of Germany, assignors to Hydromatik GmbH, Ulm, Danube, Germany

Filed Mar. 1, 1974, Ser. No. 447,225
Claims priority, application Germany, Mar. 19, 1973, 2313575
Int. Cl.² F01B *13/04*
U.S. Cl. 91—506 **6 Claims**

1. In an axial piston machine of the type having a machine body, a tiltable cylinder block, an axis of rotation extending through the cylinder block, a socket plate rotated in fixed bearings in the body by a drive shaft, an axis of tilt for the tiltable cylinder block extending through the socket plate, pistons operatively coupled with the socket plate by ball and socket joints in the socket plate, a valve plate at the piston end of the cylinder block adapted to be displaced by a stroke control mechanism and effective to tilt the block about the tilt axis on such displacement, a cylindrical slideway in the body for supporting the valve plate, said valve plate having a front face engaged with and subjected to the hydraulic end thrust at the piston end of the cylinder block and a back face shaped conformably to and engaged with the cylindrical slideway, and side faces in the body of the machine which guide the sides of the valve plate and prevent displacement of the valve plate in the direction of the axis of tilt, the improvement comprising,

at least one of the front and back faces of the valve plate having a spherically arched curvature so related to the geometry of the hydraulic end thrusts exerted by the piston ends of the cylinder block on the valve plate as to cause the hydraulic end thrusts to generate an asymetrical laterally directed force component effective to maintain one of the sides of the valve

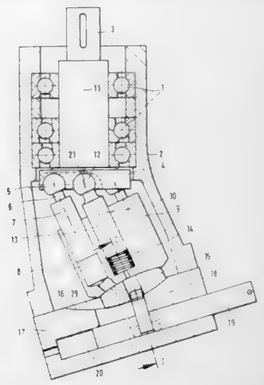


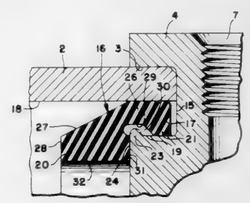
plate in continuous lateral contact with a cooperating side face in the body of the machine without jamming and wedging of the valve plate in the slideway when the tilt of the cylinder block is adjusted regardless of the existing load and without additional guiding and locating means whereby the valve plate can be actuated by a small adjusting force whatever the hydraulic pressure in the cylinders.

3,961,564

FLUID MOTOR AND COMBINATION BUMPER AND SEALING RING THEREFOR

Beldon R. Rich, Des Plaines; Richard J. Gallagher, Glenview, and John F. Berninger, Des Plaines, all of Ill., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 337,914, March 5, 1973, abandoned. This application May 14, 1974, Ser. No. 469,651
Int. Cl.² F01B *11/02*
U.S. Cl. 92—85 R **3 Claims**



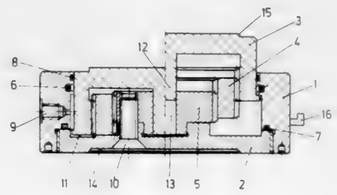
1. In combination, a fluid motor having a cylinder defining a bore and including an end cap at one end; said end cap having an end portion which extends axially into said cylinder bore from said one end thereof; said end portion having an inner wall extending axially inwardly from said one end and radially spaced with respect to said cylinder bore; an inner end surface extending in the radial direction at the axially innermost end of said inner wall and projecting radially outwardly beyond said inner wall, said inner end surface being radially spaced with respect to said cylinder bore; an outer end surface extending radially from said inner wall to said cylinder bore; a piston reciprocable in said cylinder; and a one-piece combination seal and bumper ring of resiliently deformable material having a sealing portion radially squeezed between said bore and said inner wall into sealing engagement therewith and having a bumper portion extending radially inwardly with respect to said cylinder bore and axially inwardly with respect to said inner and surface; said bumper portion having annular end walls respectively in juxtaposition to said inner end surface and engageable by said piston to apply axial compressive force on said bumper portion to deform the latter thus to cushion the end portion of the piston stroke; said sealing portion having axial clearances with said outer end surface and the radially outer portion of the end wall of said bumper portion which is in juxtaposition to said inner end surface having axial clearances with the radially outer portion of said inner end surface and defining an annular groove in said bumper portion extending axially inwardly from said inner end surface for axial sliding movement of said sealing portion during deformation of said bumper portion between said piston and said inner end surface.

3,961,565

PISTON AND CYLINDER ASSEMBLY

Heinz Lampert, Buchs/SG, Switzerland, assignor to Fa. Werner Looser, Maschinenbau, Riedern, Switzerland

Filed Apr. 2, 1975, Ser. No. 564,296
Claims priority, application Switzerland, Apr. 9, 1974, 4965/74
Int. Cl.² F01B *15/02;* **F16C** *1/26, 17/06*
U.S. Cl. 92—117 R **6 Claims**



1. The combination of a cylinder component, a piston component axially reciprocable within said cylinder component, and a cylindrical guide ring operatively interposed between said cylinder and piston components, said guide ring being provided at its inner and outer peripheries with oppositely slanted thread means meshing respectively with complementary thread means on said cylinder and piston components.

3,961,566

METHOD FOR FORMING PATCH TOP CONTAINER END AND CLOSURE MEMBER ASSEMBLY

Teddy M. Westphal, Chesterfield, and Robert J. Hough, Ballwin, both of Mo., assignors to Boise Cascade Corporation, Boise, Idaho

Filed Dec. 9, 1974, Ser. No. 530,547
Int. Cl.² B31B *1/90*
U.S. Cl. 93—36 B **11 Claims**

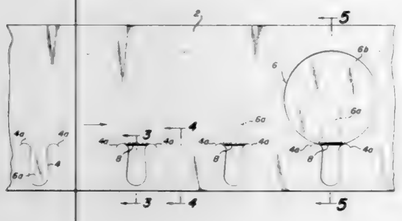
1. The method of forming from a web (**2**) of sheet material a patch top closure member (**6**) having body (**6***b*) and tab (**6***a*) portions, and assembling the closure member within a reusable overcap member (**20**) having a planar body portion (**20***a*) and a continuous circumferential flange portion (**20***b*), which comprises the steps of:

a. cutting a first portion of the web along a discontinuous line (**4**) to define the tab portion (**6***a*) of the closure member;

b. initially bending the tab portion about a fold line (**8**) through an angle of 90° to a position normal to the web;

c. subsequently progressively bending the tab portion about said fold line through a further angle of 90° to a reversely bent position in engagement with a first face of a second portion of the web;

d. severing said second web portion from the web to define the patch top closure member (6), the body portions of said closure and overcap members having congruent circumferential configurations; and



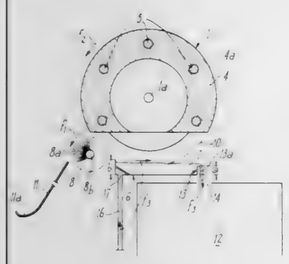
e. introducing the patch top closure member within the overcap member in seated engagement with the body portion thereof, the first face of said closure member facing said overcap body portion and said tab portion being arranged between said first face and said overcap body portion.

3,961,567

MACHINE FOR AUTOMATICALLY MAKING PANCAKES

Rene Munier, Dourdan, France, assignor to Societe Industrielle pour la Construction de Materiels Automatiques S.I.C.M.A., Dourdan, France

Filed June 25, 1974, Ser. No. 483,002
Int. Cl.² A23P *1/00*; **A47J** *37/10*
U.S. Cl. 99—327 **10 Claims**



1. A machine for automatically making pancakes, said machine comprising:

a heated cooking drum rotatably mounted about an axis, said drum having on the periphery thereof at least one raised surface area having a contour corresponding to the shape of pancakes to be made;

a batter pan positioned beneath said cooking drum, said batter pan having a plurality of walls, at least one of said walls having a height less than that of the remainder of said walls and an exterior wall face;

a batter supply container positioned beneath said batter pan and having an opening positioned vertically beneath said exterior wall face of said one wall;

means for supplying batter from said container to said batter pan;

drive means for rotating said cooking drum about said axis to bring said raised surface area into contact with batter within said batter pan, whereby a pancake is formed and cooked on said raised surface area;

means for detaching and removing cooked pancakes from said raised surface area, said detaching and removing means comprising a brush rotatable in the same direction as and at a peripheral speed greater than said drum, said brush having flexible radial bristles positioned to contact said raised surface area during rotation of said drum; and

coin operated control means, operable in response to the insertion therein of a predetermined quantity of coins, and:

operably connected to said batter supplying means for supplying batter to said batter pan for a predetermined period until said batter overflows said at least one wall of shorter height,

operably connected to said drive means for rotating said cooking drum a first complete revolution to cause setting on said raised surface area of a quantity of batter corresponding to one pancake, for thereafter arresting rotating of said cooking drum for a predetermined period corresponding to the time necessary to cook said pancake, and for thereafter rotating said cooking drum a second complete revolution; and

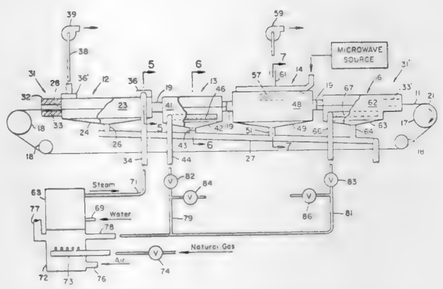
operably connected to said brush for rotating said brush to remove the cooked pancake during said second revolution of said drum.

3,961,568

APPARATUS FOR THE PREPARATION OF PRE-COOKED MEAT PRODUCTS

Morris R. Jeppson, Box 4943, Carmel, Calif. 93921

Division of Ser. No. 262,636, June 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 106,641, Jan. 15, 1971, abandoned. This application Feb. 14, 1974, Ser. No. 442,412
Int. Cl.² A47J *37/00*; **H05B** *9/06*
U.S. Cl. 99—339 **7 Claims**



1. Apparatus for pre-cooking fatty meat products comprising:

conveyor means for carrying said products along a predetermined path of travel,

means forming a steam preheating housing around a first portion of said path of travel of said conveyor means for partially cooking said meat products and for partially dehydrating said products by exposure to steam through the rendering and removal of moisture containing fat from said products by said steam,

means for maintaining the temperature in said steam preheating housing at a level at which fat is rendered from said product by supplying steam to said steam preheating housing means,

electrically conductive means forming a microwave energy housing around at least a portion of the subsequent path of travel of said conveyor means,

means for injecting microwave energy into said microwave housing to generate cooking heat within said products,

additional heating means for maintaining a hot non-aqueous gas environment around at least a portion of said subsequent path of travel of said conveyor means to assure cooking of the surface regions of said product, and

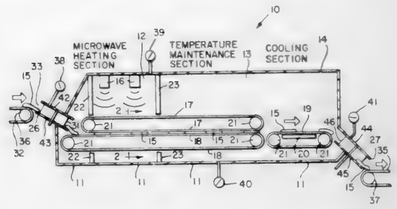
means for preventing accumulation of steam within said microwave housing.

3,961,569

APPARATUS FOR CONTINUOUS MICROWAVE STERILIZATION OF FOOD IN POUCHES

Ernest M. Kenyon, Medfield; Daniel Berkowitz, Wellesley, and John A. Ayoub, Dedham, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 15, 1974, Ser. No. 497,789
Int. Cl.² A23L *3/04*, *3/32*; **H05B** *9/00*
U.S. Cl. 99—451 **4 Claims**



1. Apparatus for sterilizing food sealed in flexible, microwave-permeable pouches, including in combination:

a tunnel pressurized above atmospheric pressure comprising a microwave heating section, a temperature maintenance section, and a cooling section, said microwave heating section having a source of microwaves for heating said food to sterilizing temperatures, said temperature maintenance section comprising a space wherein said food sealed in said flexible, microwave-permeable pouches is maintained at said sterilizing temperatures after said food passes out of said microwave heating section for a length of time sufficient to accomplish sterilization of said food, said cooling section having means for reducing the temperature of said food after sterilization thereof sufficiently to prevent bursting of said pouches when exposed to the atmosphere outside of said pressurized tunnel,

means for introducing said flexible, microwave-permeable pouches into said pressurized tunnel at an entrance end thereof while an atmosphere of predetermined pressure above atmospheric pressure is maintained within said pressurized tunnel,

means for removing said pouches from said pressurized tunnel at an exit end thereof while an atmosphere of predetermined pressure above atmospheric pressure is maintained within said pressurized tunnel,

two parallel, spaced apart, heat-insulated, endless conveyor belts, one of said conveyor belts being positioned above the other of said conveyor belts and spaced from said other conveyor belt a distance which is substantially equal to the thickness of said flexible pouches of food, said conveyor belts being contained within said microwave heating section and said temperature maintenance section of said pressurized tunnel, at least one of said two parallel, spaced apart, heat-insulated, endless conveyor belts being microwave-permeable,

a third endless conveyor belt contained within said cooling section of said pressurized tunnel,

means for driving each of said endless conveyor belts,

said two parallel, spaced apart, heat-insulated, endless conveyor belts being adapted to receive said flexible pouches of food from said introducing means and to convey said flexible pouches of food therebetween through said microwave heating section and said temperature maintenance section of said pressurized tunnel and to deposit said flexible pouches of food in succession onto said third endless conveyor belt,

said third endless conveyor belt being adapted to receive said flexible pouches of food from said two parallel, spaced apart, heat-insulated, endless conveyor belts and to convey said flexible pouches of food through said cooling section of said pressurized tunnel and to discharge said flexible pouches of food from said cooling section into said removing means;

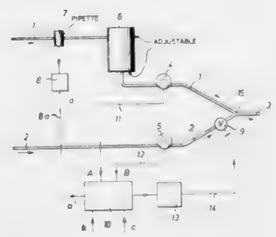
whereby said food sealed in said flexible pouches is irradiated by said microwaves while said pouches are being conveyed through said microwave heating section, said food being heated by said microwaves to temperatures effective for sterilizing said food, at which temperatures said pouches are held while being conveyed through said temperature maintenance section wherein said food becomes sterilized, said flexible pouches of food thereafter being cooled while being conveyed through said cooling section sufficiently to prevent bursting of said pouches when exposed to the atmosphere outside of said pressurized tunnel, said flexible pouches of food being discharged from said third conveyor belt into said removing means and thereafter being discharged from said removing means into the atmosphere outside of said pressurized tunnel in a sterilized condition.

3,961,570

APPARATUS FOR OBTAINING A SPECIFIC FAT CONTENT IN MILK

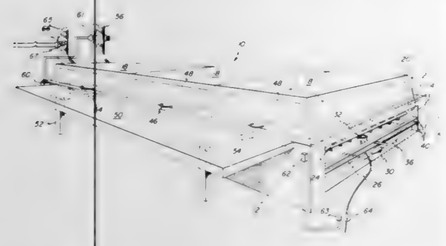
Ulrich-Christian Sanden, Hildesheim, Germany, assignor to Diessel GmbH & Co.

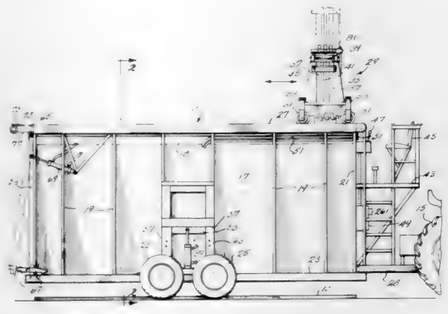
Filed May 31, 1974, Ser. No. 475,095
Claims priority, application Germany, July 5, 1973, 2334239
Int. Cl.² A23C *9/00*
U.S. Cl. 99—452 **19 Claims**



1. An apparatus for obtaining a given fat content in milk wherein whole milk and skimmed milk are mixed, comprising a first supply line for whole milk and a second supply line for skimmed milk, said first supply line having a first volumeter and a first opening connected to a common mixing line, said second supply line having a second volumeter and a second opening connected to said common mixing line, an adjustable valve acted on by a regulator being arranged in said second supply line, an automatic sampling device (7) comprising a fat content evaluator (8) arranged in said first supply line (1) in front of said first volumeter (4), said sampling device (7) being connected to a computer (10) which is actuated by signals from said volumeters (4,5) and is combined with the regulator (13) and the volume of said first supply line (1) is such that the time taken by the milk to pass through it corresponds to the evaluation time of the sample from the time of taking the sample to the time said adjustable valve (9) is adjusted.

3,961,571
OVEN FOR COOKING FOOD BY A HOT SMOKE PROCESS
Arthur Decuir, 825 Morrison Ave., Bronx, N.Y. 10472
Filed Feb. 11, 1972, Ser. No. 225,567
Int. Cl. A23b *1/04*
U.S. Cl. 99—474 **1 Claim**





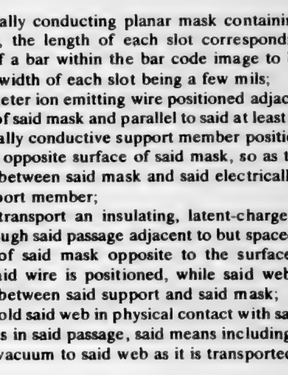
1. An oven for cooking food by a hot smoke process comprising:
a base having an open top and side walls including an opening in one end for receiving fuel for combustion purposes;
a grate in said base adjacent the opening on which solid fuel is placed for furnishing heat to the oven;
a removable pan beneath said grate for receiving the residue resulting from combustion of the fuel;
supplementary heat means including a gas burner mounted near the grate for initially igniting the solid fuel and reigniting portions thereof in the event it becomes extinguished, said burner comprising an arm mounted between a pair of parallel bars in said base, said arm and attached burner being movable beneath and along the width of said grate;
hood means covering the top opening in said base and thereby providing an enclosure for the oven;
a grill supported by the base side walls and located in said top opening, the arrangement being such that when food is placed on the grill, the space bound by the hood and base walls establishes a closed circuit for the circulation of heat over the food and in a closed path in the oven;
a grease pan mounted beneath said grill;
a smoke exhaust pipe having a damper therein connected to a thermostat in the oven for controlling the temperature level in the oven; and
a second smoke exhaust pipe connected with said oven, a blower in said pipe, and switch means for energizing said blower when it is desired to vent hot gases from the oven to the atmosphere prior to opening said hood means.

3,961,572
TRAMPER FOR COTTON MODULE MAKER
Douglas Johnston, Decatur, Ala., assignor to John Blue Company Division of Subscription Television, Inc., New York, N.Y.
Filed Apr. 29, 1974, Ser. No. 465,437
Int. Cl.² B30B *15/28, 1/32*
U.S. Cl. 100—53 **17 Claims**

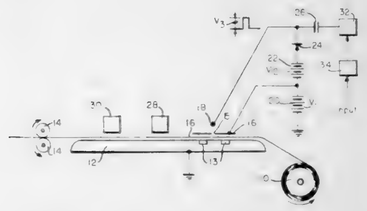
1. A tramper mechanism for forming cotton modules comprising:
a frame having opposed side walls and openings at the top and bottom thereof, said frame having a closable door forming the rear wall thereof,
a carriage mounted on said frame at the top thereof between said opposed side walls, said carriage being movable along the longitudinal length of said frame,
a tramper footing vertically movable with respect to said carriage and extending transversely across said frame between said side walls, said tramper footing compacting cotton within said frame to thereby form a cotton module,
hydraulic means releasably fixed to said carriage in an operational position for raising and lowering said tramper footing with respect to said carriage, said hydraulic means including a hydraulic cylinder releasably fixed with respect to said carriage, a piston rod secured at one end to said tramper footing and mounted in said cylinder for reciprocal movement with respect thereto, a piston means reciprocably positioned in said cylinder and connected to the other end of said piston rod, means for moving said piston longitudinally in said cylinder, means for directing the force generated by said cylinder against said piston along the center line of said piston and cylinder, said directing means comprising a first spherical bearing means for joining said piston rod to said tramper footing;
latching means for releasing said hydraulic means from said operational position to a retracted position within said frame to thereby permit the transportation of said tramper mechanism from one place to another; and
safety means for enabling said latch releasing means when said tramper footing is at its lowest operational position, said safety means inhibiting said latch releasing means when said tramper is raised with respect to said lowest operational position.

3,961,573
REFUSE BIN WITH POWER-ACTUATED COMPACTOR BLADE
Lewis W. Schmidt, Rio Vista, Calif., assignor to Blackwelders, Rio Vista, Calif.
Filed Mar. 3, 1975, Ser. No. 554,912
Int. Cl.² B30B *1/34, 15/06*
U.S. Cl. 100—100 **6 Claims**

1. In a portable refuse bin embodying a normally closed cover, the cover being hinged to the bin for gravitational opening to permit discharge of refuse from the bin upon inversion thereof, a normally engaged but releasable latch between the bin and cover, the cover having an opening through which refuse can be deposited in the bin, a normally closed lid embracing such opening, the lid being hinged to the cover for manual opening to permit such deposit of refuse, and a normally engaged but releasable latch between the lid and the cover; the improvement characterized by the inclusion of a compactor blade normally closely underlying the lid, means hinging the compactor blade on the lid for downward pivotal sweeping therefrom into the bin, power means confined in the space between the lid and compactor blade and mounted in direct connection therebetween, said power means being operative, when the lid is closed and latched, to forcefully pivotally sweep said compactor blade downwardly into the bin to compact refuse previously deposited therein, and means on the bin to control the power means from exteriorly of said bin.



3,961,574
ELECTROSTATIC BAR CODE PRINTER
Richard A. Fotland, Aurora, Ohio, assignor to Horizons Incorporated, Cleveland, Ohio
Filed Jan. 15, 1975, Ser. No. 541,292
Int. Cl.² B41J *3/18*
U.S. Cl. 101—1 **1 Claim**

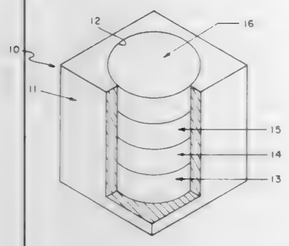


1. A printing apparatus for generating a visible bar code image in accordance with an electronic input command which comprises:
an electrically conducting planar mask containing at least one slot, the length of each slot corresponding to the height of a bar within the bar code image to be printed and the width of each slot being a few mils;
a fine diameter ion emitting wire positioned adjacent to one surface of said mask and parallel to said at least one slot;
an electrically conductive support member positioned adjacent the opposite surface of said mask, so as to define a passage between said mask and said electrically conductive support member;
means to transport an insulating, latent-charge receiving web through said passage adjacent to but spaced from the surface of said mask opposite to the surface adjacent which said wire is positioned, while said web is in the passage between said support and said mask;
means to hold said web in physical contact with said support while it is in said passage, said means including means to apply a vacuum to said web as it is transported past said slot to overcome the electrostatic forces tending to lift said web from said support;
means to maintain an electrical potential between said mask and said electrically conductive support and means electrically connected to said last named means to bias said ion emitting wire at a potential just below the corona threshhold voltage;
electronic input command means to apply a high voltage pulse to said ion emitting wire for a selected variable interval corresponding to the bar width which is to be printed for varying the width of each printed bar to a width, smaller, greater or equal to the width of said slot thereby forming a latent charge image on said web; and
means to tone said latent image whereby said bar code image is printed as a visible image.

3,961,575
PRINTING APPARATUS FOR USE ON PLASTIC CONTAINERS
Rowena Ann Rodabaugh, 10110 Sepulveda No. 27, Mission Hills, Calif. 91340
Filed Apr. 12, 1974, Ser. No. 460,587
Int. Cl.² B44B *5/02;* **B41F** *17/20*
U.S. Cl. 101—9 **10 Claims**

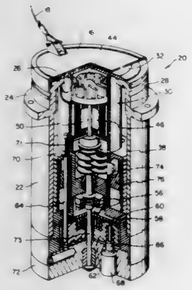
1. A printing device for applying indicia to the surface of a workpiece including
a backing member having a frontal surface which generally conforms to the configuration of said surface of the workpiece,
a resilient member attached to said frontal surface of the backing member,
a heater assembly disposed upon and attached to said resilient member,
insulation means interposed between said heater assembly and said resilient member,
a rigid, permanent-configuration die member attached to said heater assembly and disposed in heat transfer relationship with said heater assembly,
a sheet of printing material having on one side thereof a coating of heat sensitive material,
said sheet of printing material being disposed between said die member and said workpiece with said coating being on the side adjacent said workpiece, and
motive means for moving the die member into registry with said workpiece to compress a portion of said sheet of printing material against the workpiece,
whereby the heated die member causes that area of heat sensitive material overlying the die member to be released from the sheet of printing material and to be deposited on the work piece and,
whereby movement of said die members into engagement with the workpiece by said motive means causes an automatic alignment of said die members with the workpiece due to the presence of the resilient means.

3,961,576
REACTIVE FRAGMENT
Hugh E. Montgomery, Jr., 209 N. Randolph Road, Fredericksburg, Va. 22401
Filed June 25, 1973, Ser. No. 375,246
Int. Cl.² F42B *13/48*
U.S. Cl. 102—67 **6 Claims**



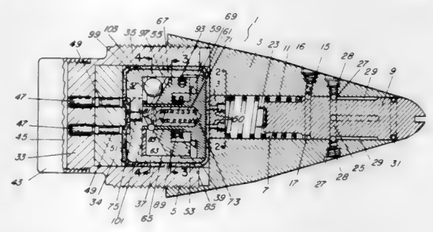
1. A reactive fragment for an ordnance item adopted to release both chemical and mechanical energy upon impact with a target comprising:
a fragment body having a blind recess formed therein; and
a plurality of layers of a chemically reactive material comprising a metal-metal oxide mixture disposed within said blind recess in said fragment body, said layers being of successively diminishing density and increasing reaction rate from bottom to top of said recess, the top layer being of a density such that it will ignite due to the heat and shock of explosive projection upon detonation of the ordnance item, and at least the bottom layer having been consolidated at a pressure greater than 130,000 pounds per square inch.

3,961,577
AIR DRIVEN ENERGY STORING FUZE SAFING AND ARMING MECHANISM
James K. O'Steen, Olney, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 12, 1975, Ser. No. 576,753
Int. Cl.² F42C *5/00, 15/12*
U.S. Cl. 102—70.2 G **18 Claims**



1. A safing-and-arming mechanism for ordnance fuzes having no stored arming energy comprising:
a housing;
environmental sensing means slidably positioned within and extendible from said housing;
means responsive to air speed to power an electric generator and a driving gear train;
a rotor supporting a component of an explosive firing train and operatively coupled to the gear train to be displaceable from an out-of-alignment, safe position to an aligned, armed position;
torquing means coupled to the driving gear train to supply a rotary force to said rotor; and
rotor immobilizing means to maintain said rotor in the out-of-alignment, safe position, including:
a first locking means controlled by the position of said environmental sensing means;
a second locking means supported on said rotor and operable only after said first locking means has been unlocked; and
retracting means controlling said second locking means and activated by a command signal.

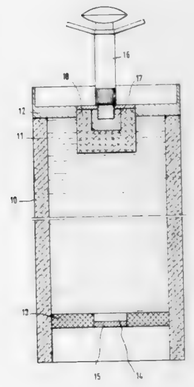
3,961,578
POINT-DETONATING PROJECTILE FUZE
Dragolyoub Popovitch, Denville, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Mar. 1, 1974, Ser. No. 447,452
Int. Cl.² F42C *1/04*
U.S. Cl. 102—78 **11 Claims**



1. An inertial graze-impact fuze comprising:
a hollow cylindrical housing including outer, front and rear walls; said housing having a tubular portion extending axially from one of said front and rear walls with at least one radial opening therein;
a firing pin slidably disposed in said tubular portion with a spring interposed between said front wall and said firing pin for biasing said firing pin rearwardly;
a detonator disposed adjacent to the rear end of said tubular portion, in line with said firing pin;
an annular locking member slidable in said housing, in the space between said outer wall and said tubular portion, independently of said firing pin;
a creep spring between said locking member and said front wall to bias said locking member rearwardly independently of said firing pin;
spin-releasable detent means locking said locking member in a rearward position in the safe condition of said fuze;
a detent ball disposed partially in said opening for locking said firing pin in a safe position spaced from said detonator, and means carried by said locking member for holding said detent ball in locking position in said safe condition; and
inertia means, responsive to transverse or graze impact of said fuze with a target, for positively moving said locking member forwardly in opposition to said creep spring, after being released by said detent means during launch, to release said detent ball and unlock said firing pin, whereby said firing pin is free to be moved rearwardly by its spring to fire said detonator after the forward inertia force of said firing pin at impact becomes less than the force of said firing pin spring; said inertia means comprising a plurality of spherical weights all of which initially engage outer portions of at least one outwardly-and-forwardly inclined camming surface on the rear end of said locking member and a radial surface at the rear of said housing, and at least one of which moves inwardly upon said graze impact to move said locking member forwardly.

5. A fuze structure for an explosive projectile, comprising:
a cup-shaped base;
an ogive member attached to the open end of said base to form therewith a coaxial cylindrical cavity;
an inertial fuze disposed in said cavity and including a first detonator disposed adjacent to said base and inertia-operated means responsive to transverse graze impact of said fuze with a target for exploding said first detonator;
a continuous loop of combustible fuze material extending around said inertial fuze in an axial plane, with the rear side thereof between said base and said first detonator, said loop being otherwise isolated from said inertial fuze;
direct-impact firing means including an axially-movable firing member in said ogive and a second detonator adjacent to the front side of said fuze loop and aligned with said firing member; and
at least one explosive charge in said base adjacent to said rear side of said fuze loop;
whereby said explosive charge can be independently initiated, through said fuze loop, by either said inertial fuze or said direct-impact firing means.

3,961,579
DESTRUCTIVE DEVICES
Walter Faber, Pionierhohe, and Paul Huber, Jettenberg, both of Germany, assignors to Firma Buck K.G., Germany
Filed Dec. 14, 1973, Ser. No. 424,741
Claims priority, application Germany, Jan. 2, 1973, 2300043
Int. Cl.² F42B *11/24*
U.S. Cl. 102—90 **6 Claims**



1. An apparatus for the destruction of equipment such as machines, tanks, and tank gun barrels comprising a casing, an alumino-thermically reacting mixture contained within the casing, fuse means for igniting the mixture to produce a heat-generating alumino-thermic reaction, and outlet means for outwardly conducting the hot, liquid-like reaction products of the ignited mixture onto said equipment to be destroyed, the improvement wherein:
said alumino-thermic mixture has a reaction period less than ten seconds;
said casing comprising a reaction-confining protion and an outflow portion;
said outflow portion being formed of a material less heat resistant than said reaction-confining portion so as to discharge said reaction products in a given direction during said reaction while said reaction-confining portion confines said reaction products to discharge in said given direction;
said reaction-confining portion consisting of a heat resistant paper whose heat resistance is selected in relation to the reaction period so that said reaction-confining portion confines said reaction products during the reaction period and decomposes immediately upon completion thereof.

3,961,580
ENERGY-ABSORBING SABOT
William M. Burnett, Oxon Hill, and Albert W. Horst, Jr., Accokeek, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Feb. 27, 1975, Ser. No. 553,848
Int. Cl.² F42B *13/16*
U.S. Cl. 102—93 **4 Claims**

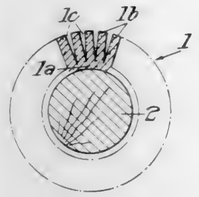


1. In combination, a subcaliber projectile and a sabot for launching the projectile comprising:
a sabot positionable adjacent the aft portion of the projectile, said sabot having an obturating surface;
a plurality of longitudinal ridges on the inner surface of said sabot;
a plurality of longitudinal grooves on the projectile which slidably receives said longitudinal ridges;
a plurality of positioning recesses longitudinally spaced along said longitudinal grooves;
a plurality of shear elements on said sabot receivable in said recesses for attaching the sabot to the projectile in one of a plurality of longitudinal positions; and
an energy storage means positioned between the sabot obturating surface and the aft end of the projectile for effectuating sabot separation from the projectile subsequent to projectile launch,
whereby the relative positioning of said sabot on the projectile establishes the overall length of the projectile and establishes an initial energy level in said energy storage means.

3,961,581
IGNITOR ELEMENT FOR A GENERATOR OF HOT GAS
Pierre Larue, Orsay, and Pierre Beaumont, Massy, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.), Chabillon-Sous-Bagneux, France
Continuation of Ser. No. 366,166, June 1, 1973, abandoned, which is a continuation of Ser. No. 108,418, Jan. 21, 1971, abandoned. This application Apr. 30, 1975, Ser. No. 572,893
Claims priority, application France, Jan. 27, 1970, 70.02873
Int. Cl.² F42B *1/00*
U.S. Cl. 102—99 **3 Claims**

1. An igniter element for a generator of hot gas, said igniter element comprising a deformable plate constituted of solid hot gas generating material, one face of said plate having continuous parallel striae constituted by single slits with initially contiguous lips and extending from one end to the other of said plate, the other face of said plate being unstriated, a rigid central mandrel against which said unstriated face is wound and fixed so that the plate forms a single layer on the exterior of the mandrel without overlapping, said slits being oriented at least approximately parallel to the axis of said central mandrel and the lips of said slits being flared outwardly because of the wound configuration of said deformable plate around said mandrel, said striae thus forming continuous outwardly open flame conducting channels open at their ends and providing a considerable passage cross-section for the

flow of the combustion products for a given diametric bulk, said mandrel being constituted of a material nonconsummable under the conditions of temperature and duration of operation



of the igniter, said igniter element having been fabricated by forming said parallel striae in said plate in an unwound state, and thereafter winding the striated plate around said central mandrel to thus open said striae toward the exterior.

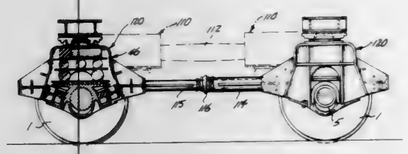
3,961,582
ARTICULATED RAILCAR

Hamilton Neil King Paton, 2521 W. Montlake Place E., Seattle, Wash. 98112, and John B. Skilling, 3000 Webster Pt. Road NE., Seattle, Wash. 98105

Continuation-in-part of Ser. No. 353,371, April 23, 1973, abandoned, which is a continuation of Ser. No. 189,379, Oct. 14, 1971, abandoned. This application Apr. 3, 1974, Ser. No. 457,422

Int. Cl.² B61F *3/00, 5/14, 5/18, 5/30*

U.S. Cl. 105—3 **14 Claims**



1. An articulated railcar unit, comprising: two car bodies having ends; forward and rearward trucks pivotally mounting the forward and rearward ends of said two car bodies, respectively, to swivel independently thereof, the forward truck asscciated with one car body having a single axle, the rearward truck associated with the other car body having a single axle; means acting between the forward end of the one car body and the rearward end of the other car body for transmitting pushing and pulling forces therebetween; and means acting between said forward and rearward single axle trucks for maintaining their axles in parallel alignment while permitting relative longitudinal movement of said single axle trucks when negotiating curved track.

8. A double axle railcar truck system which comprises two trucks, each including a single axle, means for swivel mounting one single axle truck to an overhead railcar body, means for swivel mounting the other single axle truck to another railcar body, and means acting between said trucks for maintaining their axles in parallel alignment while permitting relative longitudinal movement of said trucks when negotiating curved track.

3,961,583
STABILIZED ARTICULATED CAR

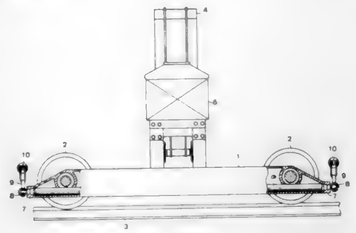
Roger Fagel, Marcinelle, Belgium, assignor to Ateliers de Constructions Electriques de Charlerol (ACEC), Charleroi, Belgium

Filed June 7, 1974, Ser. No. 477,289

Claims priority, application Belgium, June 19, 1973, 5177; Feb. 8, 1974, 5699

Int. Cl.² B61F *3/08, 3/12, 5/24, 5/52*

U.S. Cl. 105—4 R **8 Claims**



1. A device for compensating for the rocking movements between a railroad bogie and articulated railroad car bodies, the ends of which are supported on the bogie, the device comprising:

a. a bogie having a frame;

b. a torsionally rigid, elongated member pivotally supported in said bogie by bearings;

c. first and second crank arms, one end of each crank arm being rigidly and integrally fixed to said elongated member;

d. first rigid means, coupled to the other end of said first crank arm, for rigidly connecting said first crank arm to one car body;

e. second rigid means, coupled to the other end of said second crank arm, for rigidly connecting said second crank arm to another car body;

f. means for selectively releasing said first and second rigid connecting means to allow generally free relative movement between the car bodies and bogie so that said first and second rigid connecting means may be released at lower speeds to facilitate negotiation of relatively tortuous track;

g. whereby the car bodies may be selectively coupled together at high speeds to restrain their freedom of movement with respect to each other and with respect to the bogie thereby compensating for the usual rocking movements between the bogie and the car bodies.

3,961,584
RAILWAY CAR TRUCK

Hamilton Neil King Paton, 2521 W. Montlake Place E., Seattle, Wash. 98112, and John B. Skilling, 3000 Webster Pt. Road NE., Seattle, Wash. 98105

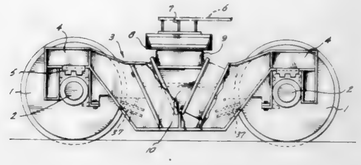
Continuation-in-part of Ser. No. 353,371, April 23, 1973, abandoned, which is a continuation of Ser. No. 189,379, Oct. 14, 1971, abandoned. This application Apr. 3, 1974, Ser. No. 457,424

Int. Cl.² B61F *3/08, 5/14, 5/18, 5/30*

U.S. Cl. 105—182 R **27 Claims**

1. A railway car comprising a truck including substantially parallel side frames spaced apart transversely, truss means having its length extending transversely of said truck, connecting said side frames and including a portion between said side frames torsionally flexible to enable said side frames to rock lengthwise of the truck relative to each other, car body means disposed above said truck, pivot means interconnecting said car body means and the central portion of said truss means, guiding said car body means and said truck for relative rotation about an upright axis, and means for transmitting the weight of said car body to said side frames independently of said pivot means and said truss means.

2. A railway car truck having wheels and axles and comprising an elastically rigid H truck frame including side members and a unitary transverse member fixed to and rigidly connecting said side members such that the horizontal forces applied to said transverse member by a pivot pin depending from an overhead car body are transmitted through said transverse member to said side members while maintaining side member vertical tram and preventing side member parallelogramming, at least a portion of said transverse member being torsionally flexible to permit said side members to swing relatively in respective planes substantially perpendicular to the lengthwise axis of said transverse member to thereby maintain substantially equal wheel loading.



14. A railway car truck comprising a pair of side frames suitable for mounting a pair of wheeled axles, unitary structural means interconnecting the side frames between the axles and movably engageable with a depending car body vertical pivot pin, and side frame non-resilient low friction bearing means mounted on each side frame and adapted to mate with cooperative bearing means mounted by an overhead car body such that a depending car pivot pin transfers essentially no vertical loading to said structural means, the said railway car truck being characterized in that said structural means includes a transverse member extending between said side frames and means fixedly connecting said transverse member with said side frames such that said structural means constitutes an interconnection between said side frames that is relatively rigid against horizontal loading to maintain said frame vertical tram and to prevent side frame parallelogramming; in that said structural means including said transverse member is sufficiently torsionally flexible to enable the side frames to rock in vertical planes to maintain substantially equal wheel loading; in that said structural means includes centering means mounted by said transverse member for engaging a depending car body pivot pin for transmitting horizontal loads therebetween and said transverse member is adapted for transmitting horizontal loads to the side frames; and in that the side frames are provided with resilient suspension means; and wherein the car truck can rotate about the axis of the pivot pin relative to an overhead car body without causing side frame bearing means separation or non-uniform loading, and so as to simultaneously maintain the side frame bearing means in load support of an overhead car body.

24. A railway car truck, comprising: a pair of side frames suitable for mounting a pair of wheeled-axles, unitary structural means interconnecting said side frame between the axles and movably engageable with a depending car body vertical pivot pin, and side frame non-resilient low-friction bearing means mounted on each side frame and adapted to mate with cooperative bearing means mounted by an overhead car body for supporting an overhead car body such that a depending car body pivot pin transfers essentially no vertical loading to said structural means, said structural means including vertically spaced upper and lower plates extending between said side frames and secured thereto, at least two diagonal braces extending between said upper and lower plates, a first of said braces having one end secured to said lower plate adjacent a first outer end thereof and a second end secured to the central portion of said upper plate, and a second of said braces having one end secured to said lower plate adjacent a second outer end thereof and a second end secured to the central portion of said upper plate, the second ends of said first and second braces being spaced apart on either side of the center of said upper plate, said structural means constituting an interconnection between said side frames that is relatively rigid against horizontal loading to maintain side frame vertical tram and to prevent side frame parallelogramming, said structural means being sufficiently torsionally flexible to enable said side frames to rock in vertical plane to maintain substantially equal wheel loading, said structural means further including centering means for engaging a depending car body pivot pin for transmitting horizontal loads therebetween, said side frames further including resilient suspension means, and wherein the car truck can rotate about the axis of the pivot pin relative to an overhead car body without causing side frame bearing means separation or non-uniform loading; and so as to simultaneously maintain the side frame bearing means in load support of an overhead car body.

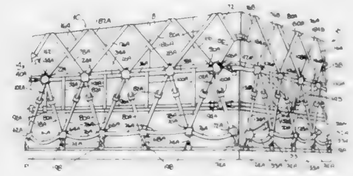
3,961,585
CARGO NET

Harold Brewer, Lexington, Ky., assignor to Irvin Industries, Inc., Greenwich, Conn.

Filed Nov. 11, 1974, Ser. No. 522,729

Int. Cl.² B66C *1/12;* **B61D** *45/00*

U.S. Cl. 105—469 **16 Claims**



1. A net of the type having a plurality of interconnected straps for securing a load to a support comprising:

a. front and rear sections adapted to be connected to the support;

b. respective side sections adapted to be connected to the support;

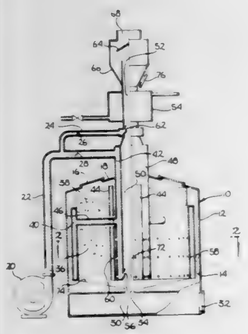
c. connectors for connecting together said front and rear sections to said side sections whereby said net surrounds the periphery of the load;

d. and a top section adapted to be placed over the top of the load and connecting said front and rear sections to said side sections whereby forces on said front and rear sections are applied to said side sections, said top section comprising diagonally extending straps for connecting respective intermediate points on said front and rear sections to different intermediate points on said side sections, said front and rear sections being identical in construction and comprising at least a first set of longitudinally spaced connecting members, said side sections being identical in construction and comprising at least a first set of laterally spaced connecting members, said diagonally extending straps interconnecting respective ones of said first set of longitudinally spaced connecting members of said front and rear sections to different ones of said first set of laterally spaced connecting members of said side sections.

3,961,586
SHELVING
Claude Bernard, 6, rue de la Fraiche, 25500 Morteau (Doubs), France
Filed Aug. 19, 1974, Ser. No. 498,727
Claims priority, application France, Aug. 24, 1973, 73.31303
Int. Cl.² A47B 47/04
U.S. Cl. 108—111 3 Claims

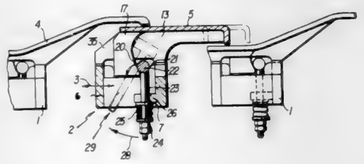
1. Collapsible shelving having rectangular boards laterally supported by vertical boards and rearwardly supported by vertically superposed rectangular boards having abutting edges joining tightly substantially along one of said horizontal boards and including at least one connecting part having projecting means thereon, each such means being inserted in a bore in a corresponding board, perpendicularly in respect to the direction of said abutting edges, so as to prevent said boards from moving laterally with respect to each other and prevent the shelving from breaking down laterally, each connecting part is located perpendicularly to the joint between adjacent vertical boards, the part having a cross-member of substantially rectangular section for fitment into a groove of complementary shape in the edge of at least one of the two vertical boards, the cross-member comprising extensions projecting radially from its ends, the extensions forming at least one reduced portion between opposed shoulders gripping in the region of the joint of the two members to be joined on the two large opposed sides of at least one of the latter.

3,961,587
COMBUSTION EQUIPMENT IN WHICH HUMID COMBUSTIBLE EXCRETA AND DISPOSED MATERIALS SUCH AS LIVESTOCK EXCRETA, PAPER SLUDGE CAN BE BURNT SPONTANEOUSLY
Takahisa Ozawa, Aichi, Japan, assignor to Yugenkaisha Sankyo Furnace, Owari-Asahi, Japan
Filed Nov. 20, 1974, Ser. No. 525,498
Claims priority, application Japan, Dec. 29, 1973, 49-572
Int. Cl.² F23G 5/00; F23J 5/02; F23L 17/00
U.S. Cl. 110—8 A 9 Claims



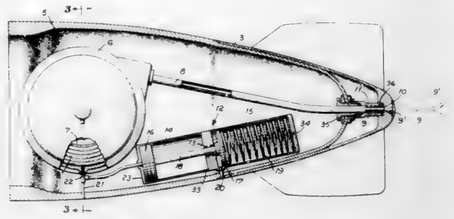
1. A furnace for a self sustaining combustion of moist waste material including animal excrement and paper sludge comprising a combustion chamber **48** in the center of a furnace body **10**, said combustion chamber having a generally circular preheating air tank **42** on the outer circumference of said combustion chamber, said furance body having a crown **18** with inlets **16** defined therein to permit introduction of said waste material, a generally toroidal preheating air tank having apertures **58** defined therein on the inner wall, an ash dumping port **34** defined in the center of said furnace body, an ash collector **30** provided below said ash dumping port, said combustion chamber disposed vertically within said body, said ash dumping port disposed beneath said combustion chamber, said combustion chamber having a first plurality of upwardly directed air jets **56** disposed therein, said air jets communicating with said circular preheating air jacket, said circular preheating air jacket having apertures **60** defined in the outer circumferential wall and coupled to a plurality of preheating blast pipes **46**, said preheating blast pipes being extended radially from said circular preheating air tank to said toroidal preheating air tank and being coupled thereto, said toroidal preheating air tank disposed within the inner wall of said furnace body, said circular preheating air tank being coupled to a turboblower **20** by a blast pipe **22**.

3,961,588
THRUST GRATE WITH A SERIES OF OVERLAPPING ROWS OF PLATES
Herbert Bode, Wohltorf; Manfred Göllner, and Günther Köberer, both of Hamburg, all of Germany, assignors to Claudius Peters AG, Hamburg, Germany
Filed July 1, 1975, Ser. No. 592,172
Claims priority, application Germany, July 6, 1974, 2432599
Int. Cl.² F23B 1/22
U.S. Cl. 110—38 13 Claims



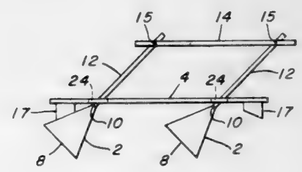
1. A thrust grate comprising:
a plurality of rows of grate plates;
each preceding row of plates overlapping the next following row of plates;
said rows of grate plates being alternatingly rigidly fixed and reciprocable in longitudinal direction of the grate;
grate plate supports arranged transversely to the longitudinal direction of the plates;
the rigidly fixed grate plates provided with fastening devices on said supports;
each said fastening device having:
support rib and plate surfaces extending essentially parallel to the longitudinal direction of the grates;
a stop surface, extending transversely to the said support surfaces on the grate plate support and on each grate plate;
a traction element holding the grate plate on the grate plate support; and
a wedge connection;
said wedge connection being formed by a wedge surface extending slantingly to the support plate surface and the support rib surface and in opposite direction to the said stop flange and plate surface on the grate plate, a wedge surface enclosing therewith a wedge angle on the reciprocable grate plate support and a wedge element pulled by the traction element into the wedge angle;
said traction element engaging by means of said wedge connection the said grate plate.

3,961,589
BUOYANT CABLE ANTENNA REELING SYSTEM
Anthony Joseph Lombardi, Flanders, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed July 11, 1975, Ser. No. 596,037
Int. Cl.² B63G 8/42
U.S. Cl. 114—16 R 14 Claims



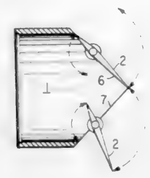
1. A buoyant cable antenna reeling system for a buoy towed by a submerged submarine comprising:
a pressure sealed housing contained within said buoy;
a cable reel disposed for rotation within said housing;
a buoyant cable antenna disposed in an ejecting and retracting relationship with said reel, said cable antenna having one end thereof extending from said housing to the exterior of said buoy; and
a cylinder-piston arrangement having a sea water inlet and a connection to said housing, said arrangement being responsive to the pressure of said sea water at said inlet to control air pressure in said housing to provide a pressure difference between said air pressure in said housing and the pressure of said sea water on said one end of said cable antenna exterior of said buoy for ejection and retraction of said cable antenna from and into said buoy.

3,961,590
CATAMARAN WATERCRAFT
Gust Kefalos, 523 E. Railroad Ave., Verona, Pa. 15147
Filed Sept. 19, 1974, Ser. No. 507,281
Int. Cl.² B63B 1/12
U.S. Cl. 114—61 7 Claims



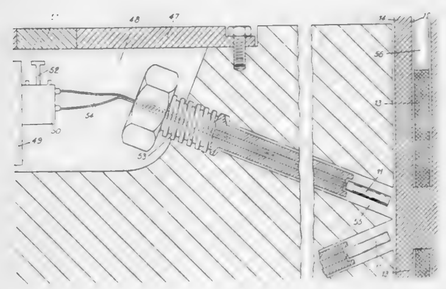
1. A watercraft of the catamaran type comprising:
a pair of parallel pontoons, each pontoon having a substantially linear top surface forming a longitudinal axis of rotation, and widening downwardly and outwardly to a larger substantially planar bottom surface, with the bow portion of the bottom surface curving upward;
a deck supported by the top surface of each of the pontoons and secured to each pontoon so as to be pivotable about the longitudinal axis of that pontoon; and
control means attached to the pontoons for pivoting the pontoons relative to the deck such that rotational movement of either pontoon about its longitudinal axis causes a correlative rotational movement of the other pontoon about its longitudinal axis, whereby the rotation of the pontoons serves as the primary steering means for the watercraft.

3,961,591
DEFLECTOR RUDDERS
Ronald George Fuller, P.O. Box 337, Hudson Heights, Quebec JOP IJO, Canada
Filed Aug. 1, 1974, Ser. No. 494,531
Int. Cl.² B63H 25/06
U.S. Cl. 114—166 7 Claims



1. A propulsion and steering assembly for a marine vessel comprising a propeller operating within a nozzle, at least one end opening of said nozzle defined by inclined nozzle walls terminating in the form of inclined planes symmetrically intersecting at the nozzle centerline outboard of the intersection of said inclined planes with side walls of said nozzle thereby forming two inclined nozzle openings two balanced deflector rudders pivotally mounted across said two inclined nozzle openings and each said rudder having associated therewith a pivot axis lying vertically in one of said inclined planes, said deflector rudders profiled such that same may be turned within the nozzle profile to register with a respective one of said inclined nozzle openings to form a continuous solid barrier abutting to the nozzle side wall at one end whilst intersecting an axis normal to the nozzle centerline and parallel to each said rudder pivot axis at the other end, thereby to obstruct the passage of liquid through said one inclined nozzle opening and divert liquid through the other inclined nozzle opening remaining open on the other side of said nozzle there to act upon the other deflector rudder to enhance vessel steering.

3,961,592
QUICK RELEASE
Jean-Louis Corgnet, Boulogne, France, assignor to Compagnie Francaise des Petroles, Paris, France
Filed Apr. 4, 1974, Ser. No. 458,002
Claims priority, application France, Apr. 10, 1973, 73.12915
Int. Cl.² B63B 21/24
U.S. Cl. 114—206 R 15 Claims



12. A method of quick release anchoring for a vessel, platform, or rig wherein an anchor having defined therein first and second chambers is connected by coupling means to an anchor line under tension, said coupling means comprising a tension transmitter subject to the tension of said anchor line

and having at least one cavity defined therein; said method comprising the steps of:

transmitting a signal to a control signal receiver disposed in said chamber and operable for producing an output signal in response thereto;

conducting said output signal to a detonator disposed in said second chamber and operable to explode in response thereto; and

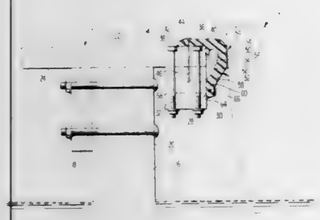
disposing an explosive charge in said cavity so that it will be exploded by the shock wave produced by said detonator, whereby said anchor is disconnected from said anchor line.

3,961,593

DOCK FENDER ASSEMBLY

Joseph E. Matthews, 4017 N. Witchduck, Virginia Beach, Va. 23455

Filed May 30, 1975, Ser. No. 582,138
Int. Cl.² B63B *59/02*
U.S. Cl. 114—219 **1 Claim**



1. The combination, with a dock having an overhanging deck, said deck including a top, a bottom, and a side edge, of a dock fender assembly, comprising:

an elongated strip, having an outer side face, affixed to the bottom of the deck with said outer side face vertically aligned with the side edge of the deck;

a dock fender formed of resilient material;

the dock fender including a horizontal upper wall with inner and outer surfaces secured to the deck and with the inner surface contacting the top of the deck;

a rigidifying rod embedded in the upper wall and extending longitudinally therethrough;

means extending through the horizontal upper wall outboard of the rigidifying rod and into the deck;

the dock fender including a vertical lip outward of the upper wall, said lip bearing against the side edge of the dock;

the dock fender further including a main fender portion having an outwardly extending arm, a vertical bumper, an inwardly angled leg, and a connector base;

the main fender portion and the lip defining an open chamber which permits flexation of the main fender portion, said chamber extending from a position behind the lip whereat it is semi-circular to the connector base and is of decreased depth as it approaches the base;

a rigidifying rod embedded in the connector base and extending longitudinally therethrough; and

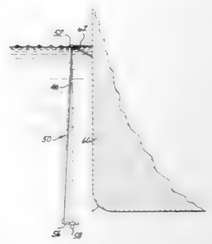
means extending through the connector base below the rod into said elongated strip to affix the base to the strip.

3,961,594

REMOVAL OF SEA GROWTH FROM SUBMERGED SHIP HULL SURFACES

Bradley E. Meyers, Seattle, Wash., assignor to Sea Mesh Corporation, Bellevue, Wash.

Filed Jan. 4, 1974, Ser. No. 430,606
Int. Cl.² B63B *59/00*; **B60S** *1/00*
U.S. Cl. 114—222 **17 Claims**



1. The method of removing sea growth from submerged ship hull surfaces, comprising the steps of;

a. forming a network from an explosive cord;

b. positioning the network substantially parallel and in untouching predetermined spaced relationship from the surface, and,

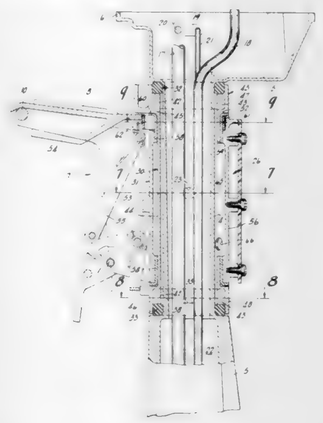
c. initiating the cord.

3,961,595

STEERING APPARATUS FOR SMALL OUTBOARD MOTORS

James A. Meyer, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 29, 1974, Ser. No. 501,486
Int. Cl.² B63H *21/26*
U.S. Cl. 115—18 R **18 Claims**



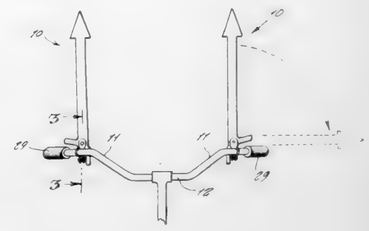
16. In an outboard motor having a support housing with a powerhead secured to the upper end thereof and a propeller unit secured to the lower end thereof and mounted within a swivel bracket mounting assembly, said powerhead including an internal combustion engine exhausting gas downwardly through said housing, an improved mounting apparatus comprising a tubular section encircling said support housing, coupling members located between said support housing and said tubular section and defining an exhaust expansion chamber, said support housing having an exhaust opening to said expansion chamber, and a tuned passageway means secured to the tubular section and having an inlet connected to said expansion chamber.

3,961,596

BICYCLE DIRECTIONAL SIGNAL

Louise Schiavone, 476 Richmond Terrace, Apt. 5A, Staten Island, N.Y. 10301

Filed Dec. 9, 1974, Ser. No. 530,802
Int. Cl.² B60Q *1/36*
U.S. Cl. 116—53 **1 Claim**



1. In a bicycle directional signal, the combination of a flat lever and base, said base having means for securement upon an arm of a bicycle handle bar, and means being provided for pivoting said lever between a horizontal and vertical position; said lever being of arrow-shape having an arrow-head shaped on one end, an opposite end having a counterweight secured thereto, a pivot opening transversely through said lever near said counterweight, said opening receiving a pivot bolt of said base and about which said lever pivots; said base being comprised of a pair of generally U-shaped clips hooked together, a first of said clips supporting a second of said clips which carries said pivot bolt; said pivot bolt extending through an opening in each opposite end leg formed on said second clip, and said bolt also extending through openings formed in a pair of rubber friction washers one of which is positioned on each side of said lever, said bolt being fitted with a nut for adjusting a friction grasp of said lever by said washers, and opposite end legs formed on said first clip, each having an opening aligned together for receiving a mounting bolt after the said first clip is fitted around said bicycle handle bar arm, wherein said lever includes a sideward extension located between said arrowhead shaped end and said lever opening, said sideward extension being relatively close to said lever opening, said sideward extension and said counterweight each serving as a stop by abutting against said bicycle handle bar arm when said lever is pivoted between said horizontal and vertical positions respectively, and opposite sides of said lever having peripheral edges covered by a luminescent paint.

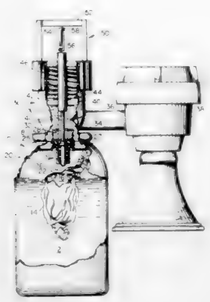
3,961,597

LIQUEFIED GAS ALARM DEVICE

William W. Lester, Wellesley, and Lawrence V. Mason, Marblehead, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed June 27, 1974, Ser. No. 483,840
Int. Cl.² B67D *05/10*; **G08B** *17/00*
U.S. Cl. 116—103 **2 Claims**

1. An alarm device comprising a pressure vessel, valve means at the outlet of said pressure vessel, gas-pressure-powered signal means, conduit means connecting said signal means through said valve means to said pressure vessel, a liquefied propellant gas in said pressure vessel for operating said signal means, means responsive to an external condition to open said valve means, whereby said signal means is caused to emit a signal, and a sealed plastic bag containing water as a heat reservoir in said pressure vessel to release heat during vaporization of said liquefied propellant gas, whereby to maintain rapid vaporization of said liquefied propellant gas for operating said signal means.

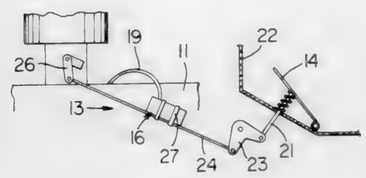


3,961,598

GAS SAVING TACTILE DEVICE

LaVerne M. Krieger, 7718 Julie Drive, Kalamazoo, Mich. 49002

Filed Dec. 6, 1974, Ser. No. 530,059
Int. Cl.² G01D *13/00*
U.S. Cl. 116—114 AE **10 Claims**



1. In a vehicle having an internal combustion engine, an intake manifold means associated with said engine for supplying a fuel-air mixture thereto, and operator engaging means disposed within the passenger compartment of the vehicle and adapted to be engaged by the operator of the vehicle, the improvement comprising:

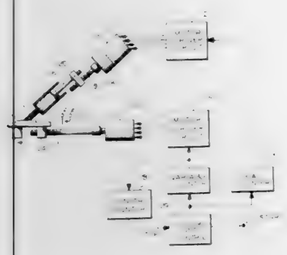
a tactile-type warning system coacting with said engine for warning the operator when the engine is being operated in an uneconomical manner by imposing a tactile vibration on the operator, said warning system including vibrator means for generating a tactile vibration when an uneconomical operational condition exists, vibration transmitting means connected between said vibrator means and said operator engaging means for transmitting said tactile vibration to said operator to signal said uneconomical operational condition, and activating means coacting between said manifold means and said vibrator means for activating said vibrator means whenever the vacuum in said intake manifold means is less than a predetermined magnitude.

3,961,599

APPARATUS FOR MAKING MINIATURE LAYER RESISTORS ON INSULATING CHIPS BY DIGITAL CONTROLS

John Paul Jones, Jr., Wayne, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 171,144, Aug. 12, 1971, abandoned. This application Oct. 25, 1973, Ser. No. 409,589
Int. Cl.² B05C *5/02, 11/10*
U.S. Cl. 118—6 **9 Claims**



1. A system for producing miniaturized flat layer electronic components including resistors of the order and magnitude of a mil in thickness and of a few hundredths of an inch in width and length by coating a flat insulating chip with a paste-like ink material, comprising in combination, a chip, a hypodermic syringe-like capsule for holding and dispensing a supply of said ink having a dispensing spout with an opening therein approximately the width and thickness of the component to be placed on said chip, positioning means for supporting said chip adjacent said dispensing spout, said positioning means comprising a moveable table for supporting said chip, said table connected to a drive mechanism controlled by a stepping motor so that said table can be moved in relation to said spout for a precisely determined distance and at a precisely determined speed, and metering means for dispensing during said movement a metered amount of ink from the spout on said chip to form a coating thereon wherein the capsule has an ink supply chamber with a movable piston therein so constructed to exclude air from contacting said ink in said capsule, said metering means comprising a piston drive mechanism including a threaded screw assembly connected to said piston and a stepping motor drive therefor said stepping motors including electronic circuits synchronized simultaneously and having various controls for establishing the numbers of steps taken by each of the stepping motors thereby establishing the quantity of ink dispensed, the table movement and thus the length and thickness of the coating on the chip.

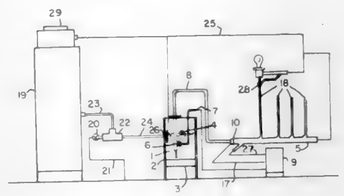
3,961,600

APPARATUS FOR COATING INCANDESCENT LAMP BULBS

Horace H. Homer, Arlington; Richard S. Doron, Winchester, both of Mass., and Donald J. Grolemund, Kersey, Pa., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 23, 1974, Ser. No. 517,353
Int. Cl.² B05C *7/02, 11/10*
U.S. Cl. 118—7 **7 Claims**

1. Apparatus for coating incandescent lamp bulbs with powder comprising: a container having means for maintaining the powder in suspension; a constant level sensor means in said container for maintaining the suspended powder at a constant level; a coating manifold; a vortex nozzle; means for drawing suspended powder from said container through said vortex nozzle into said coating manifold; and a tube for carrying powder from said coating manifold to a lamp bulb coating station, wherein said vortex nozzle contains an axial bore connected to said drawing means and a plurality of holes opening inwardly into the bore in a direction toward said manifold and angular with respect to its axis so as to impart a



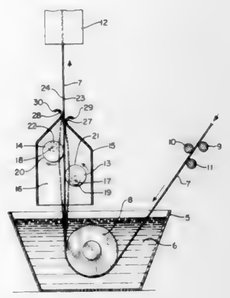
forward swirling motion to powder transported through said nozzle, and means for supplying air to said holes.

3,961,601

APPARATUS FOR VIBRATING AND DEWEBBING TIRE CORD FABRIC COATED WITH AN UNDRIED LIQUID

Edward E. Hunter, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 17, 1975, Ser. No. 596,703
Int. Cl.² B05C *11/08*
U.S. Cl. 118—57 **15 Claims**



1. An apparatus for shaking fabric coated with an undried liquid, comprising in combination:

a. means for guiding a sheet of fabric along a desired pathway which is angularly disposed to the horizontal;

b. a pair of elongated cams disposed in spaced relation, the length of each cam being at least coextensive with the width of the fabric;

c. means for mounting the cams for rotation about parallel axes which are parallel to the desired pathway of the fabric and spaced apart both in horizontal and vertical directions;

d. means for positioning the cams such that their rotational axes are equally spaced in opposite directions from the desired pathway of the fabric; and

e. means fo synchronizing rotation of the cams such that

I. the outer surface farthest from the rotational axis of one of the cams and the outer surface closest to the rotational axis of the other of the cams, simultaneously contact the fabric and

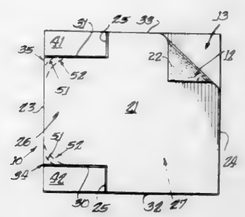
II. the cams continuously contact the fabric as they alternately push the fabric in opposite directions from the desired pathway, thereby vibrating or shaking the fabric between the rotational axes of the cams.

3,961,602

BUTT COVERS

Robert E. Dresser, 173 Buena Vista Drive, Port Richey, Fla. 33568

Filed June 16, 1975, Ser. No. 587,370
Int. Cl.² B05C *17/06*
U.S. Cl. 118—505 **6 Claims**



1. A butt cover intended for protecting a butt plate of a hinge member against paint and paint sprays, the butt plate being of a flat configuration having hinge pin cylindrical receiving segments affixed thereto and projecting outwardly therefrom, the butt cover member comprising, in combination:

a thin flat flexible body member having a face surface and a back surface;

a coating of pressure sensitive adhesive applied evenly completely over the back surface of the body member;

a protective backing sheet disposed in juxtaposition with the adhesive coating back surface of the body member to protect the adhesive coating while being readily peelable therefrom to expose the adhesive coating preparatory to use of the cover member;

the body member having a general T-shaped configuration with the leg of the T defining a butt plate portion and with the arm of the T defining a hinge pin hole portion, the butt plate portion being of a general rectangular configuration having a flat vertical inner edge and opposed flat horizontal top and bottom edges with the front edge of the butt plate portion formed contiguously with a back edge of the hinge pin hole portion, inner corners defined on the butt plate portion between the inner edge and the adjacent most top and bottom edges, means defining the shape of the inner edges between a square corner configuration and an arcuate curved corner configuration, the hinge pin hole portion being of a rectangular configuration of a greater vertical height than the butt plate portion with its back edge extending outwardly of the side edges of the butt plate portion to define spaced apart back edge portions, a flat outer edge portion extending vertically parallel to the butt plate portion inner edge, and opposed parallel horizontal top and bottom edges extending parallel to and spaced outwardly from the butt plate portion top and bottom edges; and

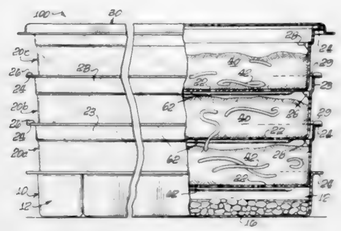
the means defining the shape of the inner corner edges of the butt plate portion of the body member comprising a normally rectangular corner member, a series of generally concentric arcuate dashed score lines spaced inwardly of the body member from each of the inner corners and defining perforation lines for tearing off portions of the body member for selective adjustment of the corners to correspond to associated corners of a butt plate on which the cover member is to be detachably affixed.

3,961,603

HABITAT FOR EARTHWORM CULTIVATION

Ronald E. Gaddie, Sr., 1140 W. Philadelphia, Ontario, Calif. 91761

Filed July 31, 1975, Ser. No. 600,570
Int. Cl.² A01K *67/00*
U.S. Cl. 119—15 **6 Claims**



1. A habitat for the raising of earthworms in a bedding matrix, comprising:

a plurality of stacked pans, each of said pans being provided with a flat bottom; perforations in that bottom, for the circulation of air, moisture and earthworms therethrough; peripheral sidewalls with an upwardly opening draft, defining spaces for the charging thereinto of said bedding; gusset means, projecting inwardly from said sidewalls into said spaces, for the support of a superior pan thereon; and with upwardly convex spacing buttons, in a substantially horizontal flange extending around the upper circumference of said sidewalls;

a humidity control pan with a water-impermeable base and peripheral walls, adapted to sealably receive the lowermost one of said plurality of stacked pans; and

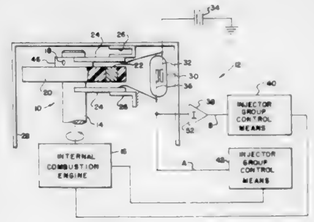
a cover, overlapping the circumferential flange of the topmost one of said plurality of stacked pans, supported on the spacing buttons thereon.

3,961,604

MAGNETIC TRIGGER DEVICE FOR TWO GROUP FUEL INJECTION SYSTEM

Yoram Shimrony, Givat-Shmuel, Israel, assignor to The Bendix Corporation, Southfield, Mich.

Filed Sept. 9, 1974, Ser. No. 504,615
Int. Cl.² F02B *3/00;* **H01H** *9/00*
U.S. Cl. 123—32 EA **2 Claims**



1. In a fuel injection system for an internal combustion engine a magnetic timing device for generating group timing signals to the injectors, said device comprising:

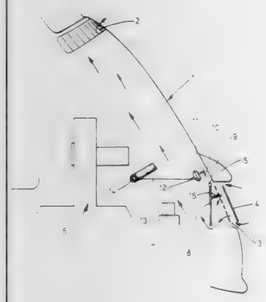
a rotatable shaft operatively coupled to the crankshaft of the engine;

a non-magnetic disc member connected to said shaft for rotating thereby;

a bar magnet having a cross-sectional area substantially less than said disc and located in said disc near the periphery

thereof, said magnet positioned so that its magnetic axis is parallel to said shaft;
a pair of spaced apart magnetizable ferrite members, each of said members having an arcuate length of 180° and positioned for allowing said magnet to pass along a path therebetween during a revolution of said disc;
a reed switch positioned to be magnetically actuated by said magnet during the time said magnet is moving between said members, said switch having an input and an output;
a source of power electrically connected to the input of said reed switch; and
a circuit means including two output lines electrically connected to the output of said switch and an inverter means for generating a first output signal on one output line when said switch is closed and through said inverter means for generating a second output signal when said switch is open.

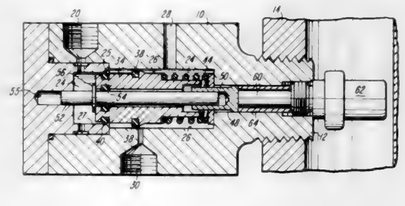
3,961,605
ENGINE COOLING ARRANGEMENT
Hermann Kaltner, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Continuation of Ser. No. 378,941, July 13, 1973, abandoned. This application Jan. 31, 1975, Ser. No. 546,072
Int. Cl.² F01P *7/02*
U.S. Cl. 123—41.05 **10 Claims**



1. In combination with a vehicle having a primary cooling system for an engine, a fuel system cooling arrangement supplemental to and distinct from the primary cooling system of the engine comprising:
a. means defining a first opening in said housing, at least a portion of said first opening being located higher than said fuel system;
b. means defining a second opening in said housing, at least a portion of said second opening being located lower than said fuel system;
c. movable closure means for selectively covering said second opening; and
d. an automatic actuating means coupled to said closure means and operative to open said closure means only in response to a predetermined condition of the vehicle normally indicative of a heated condition within said housing conducive to the vaporization of fuel, thereby to permit convection cooling of the fuel system with air being drawn in through said second opening and flowing out through said first opening.

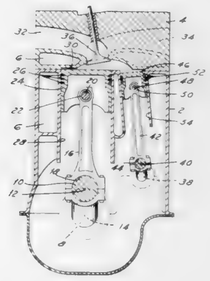
10. A method of providing cooling for a fuel system of a vehicular engine having a primary cooling system to prevent fuel vaporization, which cooling is supplemental to and distinct from the engine cooling and which fuel system is located within a housing, said method comprising the steps of:
a. providing a first opening in the housing, at least a portion of said first opening being opening being located higher than the fuel system;
b. providing a second opening in the housing, at least a portion of said second opening being located lower than the fuel system;
c. sensing a heated condition capable of inducing vaporization of fuel in the fuel system; and
d. opening said second opening in the housing only if said heated condition is present, whereby fuel vaporization will be prevented by a cooling convection flow of air induced around the fuel system.

3,961,606
THERMALLY RESPONSIVE FLUID CONTROL VALVE
Backman Wong, Wayland, Mass., assignor to Standard-Thomson Corporation, Waltham, Mass.
Filed Jan. 2, 1975, Ser. No. 538,186
Int. Cl.² F16D *43/25*
U.S. Cl. 123—41.12 **6 Claims**



1. Valve apparatus for control of a fluid operable clutch in response to temperature conditions within a coolant system of an internal combustion engine in which the clutch joins a fan to a drive member and in which the clutch is actuated for operation of the fan when fluid pressure of a suitable value is absent from the clutch and in which the clutch is disengaged for operation of the fan when fluid pressure of a suitable value is applied to the clutch, comprising:
a housing, the housing having an inlet passage, an outlet passage, and a vent passage, the housing also having a main internal passage which is in communication with the other passages, the main internal passage having wall surfaces forming an annular valve seat between the inlet passage and the outlet passage,
a movable valve member within the main internal passage,
a first annular elastomeric sealing member carried by the movable valve member in engagement with a wall surface of the main internal passage,
a second annular elastomeric sealing member carried by the movable valve member and in engagement with a wall surface of the main internal passage,
the movable valve member being movable within the main internal passage to position the first annular elastomeric sealing member in engagement with the annular valve seat to close communication between the inlet passage and the outlet passage, the movable valve member being movable within the main internal passage to position the second annular elastomeric sealing member between the vent passage and the outlet passage, the movable valve member being movable within the main internal passage to position the second annular elastomeric sealing member between the inlet passage and the outlet passage, the second annular elastomeric sealing member being positioned between the inlet passage and the outlet passage when the first annular elastomeric member is in engagement with the annular valve seat,
resilient means within the main internal passage and urging movement of the movable valve member toward the annular valve seat for engagement of the first annular elastomeric sealing member within the annular valve seat,
a thermally responsive device having a portion operable to move the movable valve member toward the valve seat,
the thermally responsive actuator member having a temperature sensing portion exterior of the housing and positionable within a coolant system of an internal combustion engine, the inlet passage of the housing being adapted to be in communication with a source of air having a suitable pressure, the outlet passage of the housing being adapted to be in communication with a clutch of an air operable fan which is operable to cool a radiator of a coolant system of an internal combustion engine.

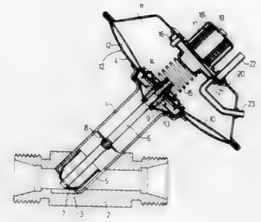
3,961,607
INTERNAL COMBUSTION ENGINE
John Henry Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010
Filed May 12, 1972, Ser. No. 252,840
Int. Cl.² F02B *75/04, 25/12*
U.S. Cl. 123—78 R **12 Claims**



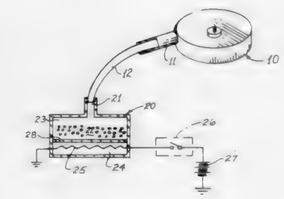
1. An improvement in an internal combustion engine of the reciprocating piston type which comprises:
a. means forming a primary cylinder cavity,
b. means forming a secondary cylindrical cavity,
c. primary and secondary pistons movable in each said respective cavities,
d. means forming a passage between said primary and secondary cylindrical cavities to permit movement of gases independently of the position of said pistons,
e. a primary crankshaft associated with said piston in said primary cavity,
f. a secondary crankshaft associated with said piston in said secondary cavity,
g. means interconnecting said crankshafts to cause said secondary crankshaft to rotate in a variable defined relationship to the rotation of said primary crankshaft, said interconnecting means including means to drive said secondary crankshaft at a higher angular velocity than said primary crankshaft and to rotate an average integral number of half revolutions for each revolution of said primary crankshaft.

3,961,608
VALVE FOR CONTROLLING THE FLOW OF COMBUSTION GASES IN A COMBUSTION ENGINE
Wilhelm Hertfelder, Steinenbronn, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed June 5, 1973, Ser. No. 367,203
Claims priority, application Germany, Nov. 11, 1972, 2255297
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 A **10 Claims**

1. A valve for controlling flow of combustion gases of an internal combustion engine, said valve comprising a tubular member communicating at opposite ends with an intake manifold and a gas outlet of the engine respectively; a housing having an interior space; valve means having a slidable valve member movable across said tubular member between said opposite ends thereof between an open position permitting flow of combustion gases from the gas outlet into the manifold and a closed position preventing such flow, said valve means including a valve rod extending with one end into said interior space; at least one flexible diaphragm subdividing said interior space into two chambers and being fixed to said one end of said valve rod, one of said chambers communicating with the atmosphere; a first conduit communicating at one end with the other chamber and at the other end with the manifold; a second conduit communicating at one end, spaced from and substantially aligned with said one end of said first conduit, with said other chamber, and at the other end with the atmosphere; and an electromagnetic valve for alternatively closing said one end of one of said conduits while opening said one end of the other of said conduits and vice versa, said electromagnetic valve being arranged in said other chamber, coaxially with said valve rod and having an armature in form of a leaf spring fixed at one end to said housing and having a free end portion located between said one end of said first conduit at said one end of said second conduit, and sealing material provided on said free end portion for sealingly engaging the one end of the respective conduit.



3,961,609
PURE OXYGEN SUPPLY TO AN INTERNAL COMBUSTION ENGINE
Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705
Filed July 12, 1973, Ser. No. 378,437
Int. Cl.² F02M *25/06*
U.S. Cl. 123—119 E **5 Claims**



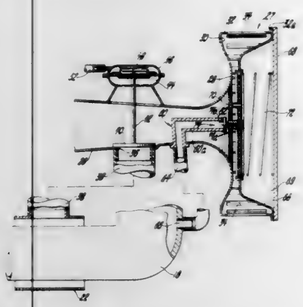
1. A method for decreasing hydrocarbons and oxides of nitrogen emanating from an exhaust system of an internal combustion engine by supplying substantially pure oxygen to said engine, the improvement comprising the steps of:
storing a chemical source of oxygen which is at least one compound selected from the group consisting essentially of potassium perruthenate, potassium persulfate, calcium peroxide and potassium pyrophosphate in a chamber;
heating said at least one compound to a temperature within the range of about 100° to 360° farenheit so as to release oxygen therefrom; and
passing the released oxygen to an intake of said engine.

3,961,610

EXHAUST GAS RECIRCULATION CONTROL SYSTEM

Kelly W. Thurston, Okemos, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1974, Ser. No. 518,820
Int. Cl.² F02M 25/06
U.S. Cl. 123—119 A 7 Claims



1. An internal combustion engine comprising an induction passage for air flow to the engine, an exhaust passage for exhaust flow from the engine, said induction passage including a throttle controlled carburetor, an air cleaner upstream of said carburetor and a snorkel having an outlet at one end to said air cleaner and a variable area air inlet means at its opposite end open to ambient air, said variable area air inlet means including a fixed first wall and a differential pressure responsive valve means including a valve member movable relative to said first wall to define a variable area inlet for ambient air flow into said snorkel, said differential pressure responsive valve means including servo means operative as a function of air pressure in said snorkel immediately downstream of said variable area air inlet means, an exhaust gas passage means extending from said exhaust passage to said snorkel, said exhaust gas passage means including an outlet orifice in said snorkel opening toward and positioned closely adjacent to said variable area air inlet means and, an exhaust gas recirculation control valve fixed to said valve means for movement therewith and positioned in axial alignment with said outlet orifice for movement relative to said outlet orifice to control the exhaust gas recirculation flow through said outlet orifice into said snorkel.

3,961,611

PREHEATING INSTALLATION FOR AIR-COMPRESSING AND AUTO-IGNITING INJECTION INTERNAL COMBUSTION ENGINE

Gerhard Frankle, Grunbach, and Roland Klak, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

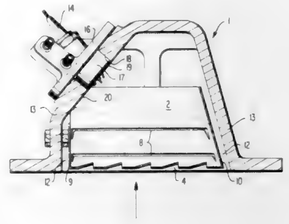
Continuation-in-part of Ser. No. 237,735, March 24, 1972, abandoned. This application Apr. 22, 1974, Ser. No. 463,133
Claims priority, application Germany, Mar. 25, 1971, 2114473
Int. Cl.² F02M 31/00
U.S. Cl. 123—122 D 25 Claims

1. An installation for preheating combustion air in a combustion engine using poorly ignitable fuels comprising

intake air means mounted between separate cylinder row banks of an engine for distributing combustion air to said separate cylinder row banks of the engine, said intake air means having an inlet opening to pass combustion air into said intake air means, and said intake air means having at least two arms with an opening at the ends of each of said arms connected to said separate cylinder row banks of said engine, said intake air opening being arranged between said at least two arms, and said intake opening being centrally positioned between said separate cylinder row blanks,

preheating means mounted on said intake air means substantially opposite said inlet air opening for producing a heating flame to preheat said combustion air, and

protective means for shielding said heating flame, said protective means arranged in said intake air means such that said combustion air entering into said intake air means



through said inlet opening is deflected by said protection means into respective ones of said at least two arms connected to said separate cylinder row banks,

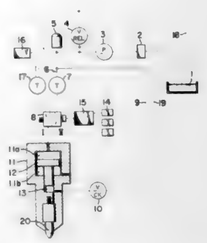
wherein said preheating means comprises a structural unit including a fuel injection nozzle, a spark plug and cover means for partially covering said nozzle and spark plug, said structural unit being inserted into a wall of said intake air means substantially opposite said central inlet opening such that said cover means is flush with said wall.

3,961,612

FUEL INJECTION DEVICE FOR DIESEL ENGINES

Kazuo Okamoto, Saitama, and Nobuhiro Kaibara, Higashi-Matsuyama, both of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1974, Ser. No. 499,590
Int. Cl.² F02D 1/04; F02M 39/00
U.S. Cl. 123—139 E 7 Claims



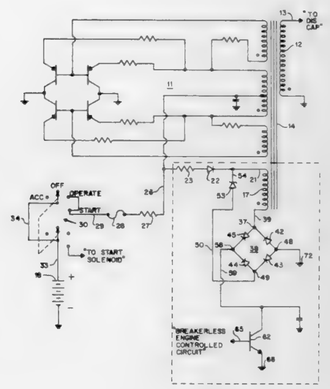
1. A fuel injection device for diesel engines comprising a body including a large diameter portion and a small diameter portion of a servopiston to define a piston chamber, a counter piston chamber and a plunger chamber, an electromagnetic valve, a fuel supply pump having a discharge portion, a fuel tank, a check valve preventing fuel from flowing out of said plunger chamber, said servopiston chamber being changeably connected by the electromagnetic valve to the fuel tank and to receive pressure from said fuel supply pump, said counter piston chamber being connected to the fuel tank and said plunger chamber being connected to said piston chamber through the check valve, a variable throttle member arranged between the electromagnetic valve and the discharges portion of the fuel supply pump, said variable throttle member varying in opening in proportion to the displacement of an accelerator, said variable throttle member controlling the stroke speed of the servopiston in the fuel injection direction when fuel is supplied under pressure, and a throttle means arranged in a conduit connected to said piston chamber, the stroke speed of the servopiston in the fuel suction direction being controlled by the throttle means.

3,961,613

CONTROLLED SPARK-DURATION IGNITION SYSTEM

Robert E. Canup, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,060
Int. Cl.² F02P 1/00
U.S. Cl. 123—148 E 11 Claims



1. A controlled spark-duration ignition system for an internal combustion engine having a crank shaft, said system comprising in combination

a high-frequency continuous-wave oscillator including first circuit means for connecting a source of D.C. power thereto and a transformer having a high-voltage output winding,

second circuit means for connecting said transformer output winding to a sparking circuit,

an oscillator control winding located on said transformer for starting and stopping oscillation of said oscillator,

third circuit means for applying a D.C. bias current to said oscillator control winding when said oscillator is not oscillating, and

means controlled by said engine crank angle for cutting off said D.C. bias at the beginning of each spark-duration interval.

3,961,614

LUBRICATING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Jean Rameau, Sannois, France, assignor to Regie Nationale des Usines Renault and Societe des Automobiles Peugeot, both of Paris, France

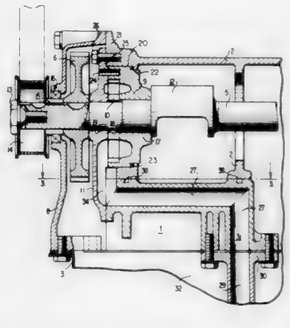
Filed Sept. 25, 1974, Ser. No. 509,255
Claims priority, application France, Oct. 11, 1973, 73.36358
Int. Cl.² F02F 7/00
U.S. Cl. 123—195 A 7 Claims

1. An arrangement for the lubrication of an internal combustion engine having a crankcase within which are located the rotary engine shafts, one of which is the crankshaft, and the bearings for said shafts, the cylinder block of said engine being disposed within the upper portion of said crankcase while the oil pan is disposed within the lower portion of said crankcase, said arrangement comprising:

a rotary type oil pump having a body within which is enclosed at least one rotor mounted directly upon an extension of one of said rotary shafts of said engine;

a lubricating circuit including an intake duct fluidically connected to said pump and a supply duct fluidically connected to lubrication channels of said engine bearings;

said pump body being radially centered and removably disposed within said crankcase by means of peripheral engagement with seating means provided within one of the end walls of said engine crankcase and serving as an



end bearing for said one of said rotary shafts of said engine; and

a cover secured to said oil pump body in an oil-tight manner and which defines, together with said pump body, a space within which said pump rotor is enclosed;

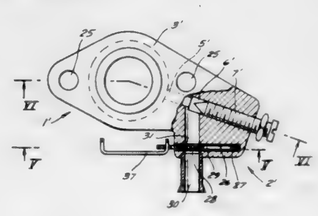
said cover also being directly removably secured to said engine crankcase, and preferably to the front face of said one of the end walls thereof, in such a way as to maintain said pump body pressed against a shoulder of said pump seating means yet permitting said pump body to be removed from said crankcase seating means and said crankcase.

3,961,615

DETOXICATION DEVICE FOR EXHAUST GASES OF INTERNAL-COMBUSTION ENGINES

Stjepan Poslek, and Vladimir Pericki, both of Vinagorska 19, Zagreb, Yugoslavia

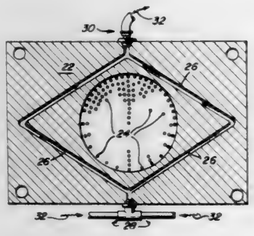
Filed Feb. 14, 1974, Ser. No. 442,344
Claims priority, application Yugoslavia, Feb. 20, 1973, 425/73; Aug. 17, 1973, 2240/73
Int. Cl.² F02M 23/02
U.S. Cl. 123—119 DB 1 Claim



1. The combination with an internal-combustion engine having a carburetor provided with a butterfly valve controlled by an accelerator pedal and feeding fuel-air mixture to an intake manifold of the engine, of a detoxification device interposed between said carburetor and said intake manifold, said detoxification device comprising:

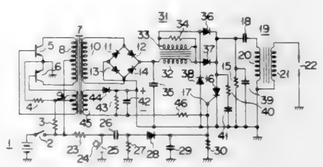
a generally flat casing formed with a passage communicating between said carburetor and said intake manifold and formed on one side with an intake orifice;
a ring received in said casing on the opposite side of said passage and defining therein a ring-shaped diffusor channel outwardly of said orifice and an annular slot extending around the circumference of said orifice, and opening from said channel inwardly at the end of said orifice, said ring being formed with an outlet orifice widening away from said slot, said casing being formed with
a bore communicating with said channel at one end of the bore,
another passage extending annularly from said bore and communicating therewith,
a fitting mounted on said casing for supplying secondary air thereto, and
a rectangular channel extending perpendicular to said fitting and said further passage;
a slidable shield received in said rectangular channel and formed with a small cross section opening and a large cross section opening respectively alignable with said further passage; and
operating means connected with said shield for selectively positioning said openings in communication between said fitting and said further passage in response to displacement of said accelerator.

3,961,616
FUEL VAPORIZER FOR ENGINES
George A. Brown, 310 S. Highway 288, Clute, Tex. 77531
Filed Dec. 31, 1974, Ser. No. 537,661
Int. Cl.² F02M *31/00*
U.S. Cl. 123—122 A **4 Claims**



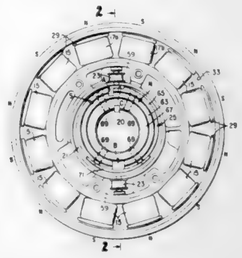
1. In a fuel vaporizing device for an internal combustion engine having a carburetor with fuel and air mixture feed and supply means, engine block, and exhaust gas system, the combination of a heavy, thick plate means having perforations and passageways extending over substantially the central area of said plate, said perforations being drilled through a central circular portion of said plate, said passageways being formed within the thickness dimension, in a generally diamond-shaped, or rhombic, pattern around said perforations, gasket means sealing the central perforated area to means connecting said perforated area within the fuel and air mixture supply means, said passageways in said plate communicating with the periphery of the plate at opposite sides thereof with conduit means communicating the passageways at one side of the plate with the exhaust manifold, and conduit means communicating the passageways at the opposite side of the plate with the carburetor whereby reduced pressure in the carburetor will induce flow of exhaust gases through the passageways in the plate to utlize the waste heat of the exhaust gases to vaporize the fuel enroute to the engine.

3,961,617
IGNITION DEVICE FOR AN INTERNAL COMBUSTION ENGINE
Yasuro Satake, Chino, Japan, assignor to Suwa Electric Wire Co., Ltd., Suwa, Japan
Filed Nov. 27, 1974, Ser. No. 527,529
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 OC **5 Claims**



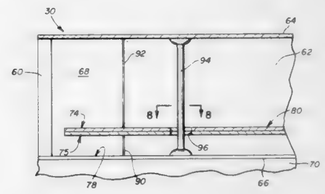
1. An ignition device for an internal combustion engine which comprises a DC-DC converter operatively connected to receive the output voltage of a battery and including an oscillation voltage stepup transformer for increasing the battery voltage; a discharge capacitor charged with output from said DC-DC converter; a transformer type circuit for coupling said DC-DC converter with said discharge capacitor including a transformer provided with a primary winding, a first terminal of which is connected to the positive output terminal of said DC-DC converter and a secondary winding, a first terminal of which is connected to a second terminal of said primary winding, a first diode connected between said second terminal of said primary winding and said discharge capacitor, and a second diode connected between a second terminal of said secondary winding and said discharge capacitor; an SCR for discharging electric energy stored in said discharge capacitor through the primary winding of an ignition coil; an ignition circuit for triggering said SCR responsive to the operation of a contact breaker; and biasing means for impressing reversed bias voltage across the gate and cathode of said SCR.

3,961,618
SMALL ENGINE IGNITION SYSTEM WITH SPARK ADVANCE
Thomas Edwin Swift, West Springfield, Mass., assignor to Eltra Corporation, Toledo, Ohio
Continuation-in-part of Ser. No. 322,445, Jan. 10, 1973, abandoned. This application Nov. 25, 1974, Ser. No. 527,103
Int. Cl.² F02P *5/04, 1/00*
U.S. Cl. 123—148 CC **5 Claims**



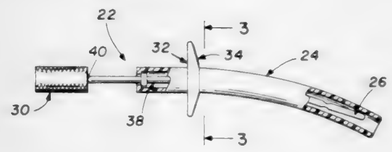
1. An ignition system, comprising:
ignition means operable in response to trigger signals for producing corresponding ignition pulses to operate an internal combustion engine,
trigger means for supplying trigger signals to said ignition means in timed relation with a movement of the piston of the engine,
said trigger means including a trigger coil operably associated with the piston for supplying trigger signals to said ignition means and a magnetic trigger rotor rotatable about an axis past said trigger coil in synchronism with the movement of the piston for generating a trigger signal in said trigger coil,
said trigger rotor having a peripheral portion constructed of magnetically conductive material with a substantially radial slot formed therein to provide an air gap rotatable past said trigger coil in close proximity and having magnetic means providing magnetic poles of opposite polarity on opposite sides of the radial slot in said peripheral portion to establish across the air gap a magnetic field with flux reversal for generating a trigger signal of maximum magnitude at relative low engine speeds, and
said trigger rotor having a notch formed in said peripheral portion adjacent the radial slot for providing a reduced flux density through the trigger coil to generate an advanced trigger signal suitable for producing an advanced ignition pulse upon acceleration of the engine to a predetermined speed.

3,961,619
FLAT PLATE SOLAR COLLECTOR MODULE
James M. Estes; Eliot E. Kerlin, both of Fort Worth, and Harold A. Blum, Dallas, all of Tex., assignors to Solarsystems Incorporated, Tyler, Tex., a part interest
Division of Ser. No. 373,795, June 26, 1973, Pat. No. 3,916,871. This application July 15, 1974, Ser. No. 488,791
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **12 Claims**



1. In a solar collector for operation within an operating temperature range, the collector having in combination a housing defining a sealed evacuated chamber with a planar-shaped solar radiation transmitting portion on at least one side thereof, an absorber mounted in the chamber for receiving incident radiant energy, an energy absorption surface means on the absorber, the absorber extending substantially across the cross-section of the chamber in a plane parallel to the transmitting portion of the housing, the housing and absorber being constructed from materials with coefficients of thermal expansion which create relative movement between points on the absorber and the housing due to changes of the temperature of the collector within the temperature operating range, the improvement which comprises means for reducing stresses within the collector and increasing thermal efficiency of the collector comprising in combination:
a plurality of compression members mounted in the housing and extending across the chamber transverse to the absorber and contacting the transmitting portion of the housing at points spaced away from the edges of the absorber;
a plurality of clearance openings extending through the absorber, each opening defined by a continuous edge on the absorber, each of said compression members positioned in the chamber to extend through one of said openings, said edges being spaced away from said compression members a sufficient distance to prevent contact between said edges and said compression members during relative movement between said compression members and the absorber caused by thermal expansion and contraction of the collector during temperature changes in the collector within the operating temperature range; and
a plurality of support pin means extending between the absorber and the housing having a sufficient columnar strength to support the absorber in a position spaced away from the housing and a bending strength to reduce the transfer of thermally induced stress between the housing and the absorber.

3,961,620
CERVICAL SAMPLING APPARATUS
Colin B. Schack, and Clarence E. Purdy, both of Omaha, Nebr., assignors to Research Industries Corporation, Salt Lake City, Utah
Continuation of Ser. No. 123,697, March 12, 1971, abandoned. This application Mar. 30, 1973, Ser. No. 346,698
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 B **4 Claims**



1. A cervical sampling apparatus comprising:
an elongate, substantially rigid hollow tube having a first, relatively long end which is curved about an axis extending perpendicularly to the tube and having a second relatively short end which is substantially straight;
an annular shield fixed to the outside of the tube at the intersection of the first and second ends for locating the first end in the vaginal canal adjacent the cervix;
a substantially rigid, paddle-shaped sampling member normally enclosed by the first end of the tube,
said sampling member comprising opposed, flat, parallel major surfaces, opposed parallel side edges, and a semicircular end edge extending between the side edges whereby the sampling member is adapted to collect a cervical test specimen and thereafter for cytological analysis of the collected cervical test specimen with the cervical test specimen intact on the sampling member;
an elongate flexible shaft fixed to the sampling member and extending therefrom through the tube and out the second end thereof for selectively reciprocating the sampling member out of the first end of the tube to a sampling position in the vaginal canal adjacent the cervix, for rotating the sampling member in the sampling position and thereby collecting a cervical test specimen on the sampling member, and for thereafter reciprocating the sampling member into the first end of the tube so that the cervical test specimen on the sampling member can be removed from the vaginal canal without contamination;
a handle means secured to the end of the flexible shaft remote from the sampling member for engagement with the second end of the tube;
an enlarged portion formed on the flexible shaft at a point spaced from the handle means; and
a reduced diameter portion at the second end of the tube providing means for cooperation with the enlarged portion of the flexible shaft to limit retraction of the sampling member into the tube;
said sampling member, said flexible shaft and said enlarged portion on the flexible shaft having an overall length less than the distance from the reduced diameter portion to said first end of the tube so that the sampling member is fully enclosed by the tube when the enlarged portion on

the flexible shaft is in engagement with the reduced diameter portion of the tube;

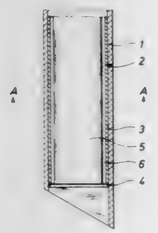
said enlarged portion being positioned on the flexible shaft at a point spaced apart from the handle means by a distance at least as great as the overall length of the sampling member so that the sampling member is fully extended to the sampling portion whenever the handle means is in engagement with the reduced diameter portion of the tube.

3,961,621

SURGICAL TOOL FOR TAKING BIOLOGICAL SAMPLES

Allan Northeved, Bagsvaerd, Denmark, assignor to Akademiet for de tekniske Videnskaber, Svejsecentralen, Glostrup, Denmark

Filed Jan. 24, 1975, Ser. No. 543,854
Claims priority, application Denmark, Feb. 6, 1974, 654/74
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 B **2 Claims**



1. A surgical instrument for taking biological samples from an interior surface of living animals including human beings, the instrument comprising an elongate tubular needle with an elongate tubular stiletto snugly and slidably disposed therein, said tubular stiletto having a sharpened annular distal end and having disposed therein means for guiding light from an external light source longitudinally through the stiletto by said sharpened end to said interior surface, means for guiding a reflected image from said interior surface longitudinally back through the stiletto from said sharpened end, and fine air ducts longitudinally extending through the stiletto to said sharpened end for applying a partial vacuum to cause said stiletto, when said sharpened end is adjacant said interior surface, to slide forward through the needle into abutment with said interior surface to cut out a biological sample and to cause said sample to adhere to said distal end of said stiletto.

3,961,622

ASPIRATOR METHOD

Donald W. Edwards, 821 Peoria Ave., Dixon, Ill. 61021

Division of Ser. No. 477,847, June 10, 1974, Pat. No. 3,920,001, which is a continuation-in-part of Ser. No. 58,049, July 24, 1970, abandoned. This application Sept. 9, 1975, Ser. No. 611,613
Int. Cl.² A61B *5/14*
U.S. Cl. 128—2 F **2 Claims**

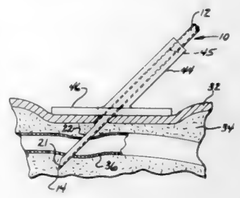
1. A method of taking a blood sample from an infant utilizing a cannula having a penetrating point at its distal end and an elongate lateral opening through the cannula wall on the side opposite the penetrating point and intersecting the end opening, comprising the steps of:

providing a sleeve having a length greater than the length of the lateral opening and an outwardly-extending flat base at the end adjacent the penetrating point;

slidably mounting the sleeve on the cannula for movement between a first position where the penetrating point is inside the sleeve and the lateral opening is covered by the sleeve, and a position closer to the hub;

sealing the sleeve against the cannula to provide an air-tight cover extending over the lateral opening;

sealing the base against an infant's skin at a location above the femoral vein and maintaining the sealing against the skin throughout the sebsequent steps;



inserting the cannula into the infant's leg and through the femoral vein until the penetrating point is adjacent the femur, thereby sliding the cannula relative to the sleeve;

withdrawing the cannula until the lateral opening communicates with the femoral vein;

applying a slight vacuum on the cannula to withdraw blood therethrough; and

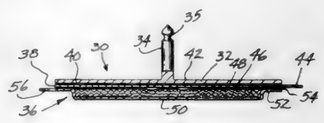
thereafter withdrawing the cannula from the infant.

3,961,623

METHOD OF USING A DISPOSABLE ELECTRODE PAD

Dean L. Milani, Highland Park, and Richard G. Kerwin, Prospect Heights, both of Ill., assignors to Medical Research Laboratories, Inc., Niles, Ill.

Filed Jan. 17, 1975, Ser. No. 542,033
Int. Cl.² A61B *5/05*; A61H *31/00*
U.S. Cl. 128—2.06 E **1 Claim**



1. The method of using a monitoring and defibrillating electrode having a disposable electrode pad thereon impregnated with an electrically conductive gel and covered with a conductive metallic foil which comprises pressing said foil against the skin of a patient's chest, monitoring the heartbeat of such patient through the electrode and the foil, and, in the event of detecting fibrillating of the heart of said patient, at least partially removing said foil and directly contacting the skin of said patient's chest with said electrode pad containing the electrically conductive gel, applying a defibrillating electrical charge to the heart of said patient through the electrode and the electrically conductive gel, and thereafter discarding said disposable electrode pad and substituting a new one on said electrode.

3,961,624

METHOD OF DETERMINING LUNG PRESSURE OF A PATIENT USING A POSITIVE PRESSURE BREATHING SYSTEM

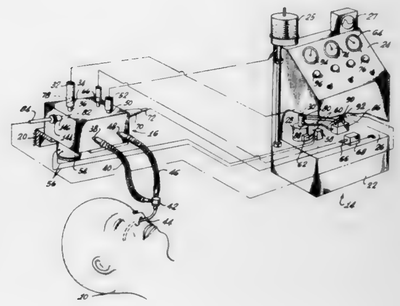
James Weigl, Santa Monica, Calif., assignor to Puritan-Bennett Corporation, Los Angeles, Calif.

Division of Ser. No. 313,978, Dec. 11, 1972, Pat. No. 3,871,371. This application Aug. 9, 1974, Ser. No. 496,278
Int. Cl.² A61B *5/08*
U.S. Cl. 128—2.08 **4 Claims**

1. A method of determining lung pressure during the breathing cycle of a patient undergoing positive pressure

breathing therapy by means of a respiration system, comprising the steps of:

sensing pressure at a location in the positive pressure respiration system having a low volume spatial separation, within the fluid communication path between the system and the lungs, from the patient's lungs;



controlling the respiration system to provide a breathing cycle having an inspiration phase, followed by a plateau phase during which expiration is prevented and the sensed pressure falls to the maximum lung pressure, and an expiration phase;

generating and displaying a system pressure versus time characteristic from the sensed pressure; and

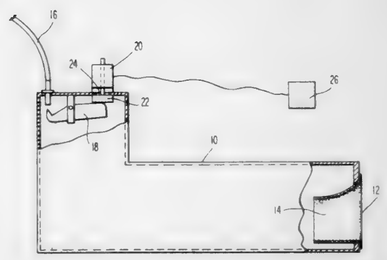
determining from said characteristic, lung pressure in the patient.

3,961,625

PROMOTING CIRCULATION OF BLOOD

Richard S. Dillon, 150 Mill Creek Road, Ardmore, Pa. 19003

Continuation of Ser. No. 485,077, July 2, 1974, abandoned. This application June 9, 1975, Ser. No. 584,747
Int. Cl.² A61H *1/00*
U.S. Cl. 128—40 **4 Claims**



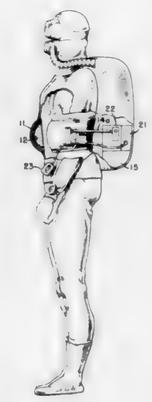
1. Method of promoting circulation of blood through a leg which comprises: subjecting substantially the entire portion of the leg from thigh to foot to external pressure of compressed gas on the leg to improve circulation of blood through the arteries and veins in said portion; and periodically suddenly reducing the external pressure upon the arrival of the arterial pulse at said portion of the leg.

3,961,626

HYPERBARIC AND UNDERWATER EXTRATHORASIC ASSISTED BREATHING METHOD AND APPARATUS

John R. Houchen, 9175 Southern Road, La Mesa, Calif. 92041, and Irving Rehman, 5153 Tampa Ave., Tarzana, Calif. 91356

Filed Apr. 18, 1975, Ser. No. 569,524
Int. Cl.² A62B *7/00*
U.S. Cl. 128—145 R **48 Claims**



1. In an underwater breathing system adapted to be carried by a diver including means for delivering a dense gas mixture from said underwater breathing system to the diver, the improvement comprising:

means for assisting the breathing of said dense gas mixture said assisting means including means for fitting over the upper abdomen and lower rib cage;

means positioned in the dense gas mixture flow of the diver's underwater breathing system for sensing normal inhalation and exhalation to provide representative signals thereof;

means for fluidly coupling the fitting means to a source of fluid; and

means responsive to said signals generated by said sensing means for pumping said source of fluid into the fitting means to create a positive pressure therein when said sensing means transmits an exhalation signal representative of normal exhalation and for pumping fluid out of the fitting means to create a negative pressure therein when the sensing means transmits an inhalation signal representative of normal inhalation thereby aiding in the breathing of the dense gas mixture.

3,961,627

AUTOMATIC REGULATION OF RESPIRATORS

Heini Ernst, Witterswil, and Albert Guenin, Therwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sept. 3, 1974, Ser. No. 502,846
Claims priority, application Switzerland, Sept. 7, 1973, 12896/73
Int. Cl.² A61M *16/00*
U.S. Cl. 128—145.8 **24 Claims**

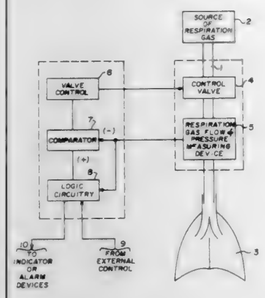
1. Regulation of the flow and pressure of the respiration gas in a respirator during the respiration cycle in which the actual flow and pressure of the respiration gas are measured via a measuring device arranged proximate the patient connection and the measured values thereof are converted into electrical signals and in which the flow and pressure of the respiration gas are controlled during the inspiration and expiration portions of the respiration cycle via valve means arranged be-

tween the respiration gas source and the measuring device, comprising:

measuring the actual flow of respiration gas proximate the patient;

measuring the actual pressure of respiration gas proximate the patient,

calculating nominal values of flow and pressure from preselected fixed values and said actual values;



comparing the actual values measured for the flow and pressure with said nominal values; and

obtaining from said comparison a control signal for modulating the valve means and thereby regulating the flow and pressure of the respiration gas wherein the inspiration portion of the respiration cycle is comprised of two phases, and wherein said regulation includes pressure-regulating the first of said two phases and flow-regulating the second of said two phases.

3,961,628

OCULAR DRUG DISPENSING SYSTEM

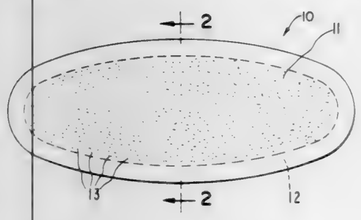
Randall K. Arnold, San Jose, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 493,819, Aug. 1, 1974, abandoned, which is a continuation of Ser. No. 227,051, Feb. 17, 1972, abandoned. This application Apr. 21, 1975, Ser. No. 569,953

Claims priority, application Italy, Apr. 10, 1974, 68147/74

Int. Cl.² A61M *31/00*

U.S. Cl. 128—260 **30 Claims**



1. An ocular delivery device for the continuous administration of drug over a prolonged period of time comprising a sealed container shaped for insertion into the eye, the container having a pair of first and third membrane walls spaced from each other, each formed of a material insoluble in tear fluid, with at least one of the membrane walls being permeable to the passage of drug by diffusion at a controlled rate, and a second ring-shaped wall interposed between and sealingly engaging the first and third membrane walls along their outer faced peripheries to define an integral unit and form a reservoir defined by the inner surfaces of the first, second and third walls, said reservoir containing drug which is released therefrom at a controlled rate by passage through the rate controlling membrane wall.

3,961,629

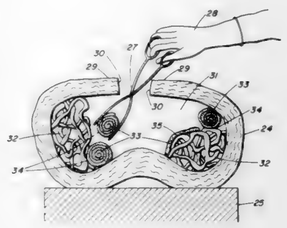
USING HYDROPHILIC POLYURETHANE LAPAROTOMY SPONGES

Ferdinand Joseph Richter, and Charles Teets Riall, both of Danbury, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 736,181, June 11, 1968, Pat. No. 3,566,871. This application Feb. 26, 1971, Ser. No. 119,299

Int. Cl.² A61F *13/00*

U.S. Cl. 128—296 **1 Claim**



1. A method for removing internal body fluids from surgical incisions which comprises contacting internal body fluids with a sterile hydrophilic sponge adapted for medical usage comprising a thin flexible hydrophilic polyurethane foam,

a. the surface of said foam being non-abrasive towards internal body organs exposed during surgery,

b. said foam containing at least one zone of intercommunicating pores extending inwardly from a surface of the foam,

c. said pores being of sufficiently small dimension to insure retention of body fluids therein substantially by capillarity,

d. the surface of said pore zone being substantially free from obstructions which inhibit flow of fluids into the pores,

e. substantially all of the internal surfaces of said pores being hydrophilic and substantially non-foaming when the sponge is moistened,

f. the polyurethane foam being crushed to possess dead fold characteristics whereby when once placed in position, the foam does not resiliently return by elastic memory to a different position, and

g. the sponge being stored in sterile condition in a strippable package and just before use, the package is stripped open to release the sponge in sterile condition, and the sponge is then aseptically transferred to contacting relationship with raw body tissues,

whereby substantial amounts of internal body fluids based on the dry weight of the sponge are absorbed by the sponge and removed from their environment upon contact of said internal fluids with said pore zone, and then removing said sponge containing said absorbed fluids from the body environment.

3,961,630

PROTECTIVE CIRCUIT FOR RADIO-FREQUENCY ELECTROSURGICAL DEVICE

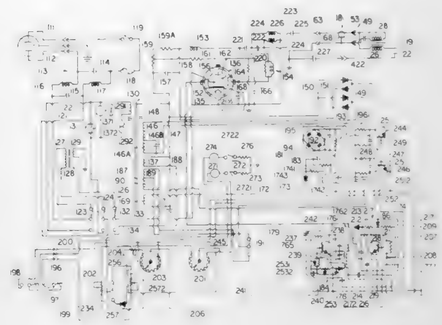
Donald I. Gonser, Forest Park, Ohio, assignor to Dentsply Research & Development Corporation, Milford, Del.

Division of Ser. No. 414,646, Nov. 12, 1973, Pat. No. 3,870,047. This application Dec. 5, 1974, Ser. No. 529,608

Int. Cl.² A61B *17/36;* **A61N** *3/02*

U.S. Cl. 128—303.14 **4 Claims**

1. In an electrosurgical device, means for generating a radio-frequency electrosurgical current, a handpiece, means on the handpiece for holding an electrosurgical instrument, a passive electrode coupled to the generating means to provide return from a patient and a circuit connecting the generating means to the instrument holding means which comprises a plurality of condensers connected in series between the generating means and the instrument holding means and inductance means connected between successive condensers and ground, the inductance means discharging non-radio-frequency current to ground in the event of condenser failure.



3,961,631

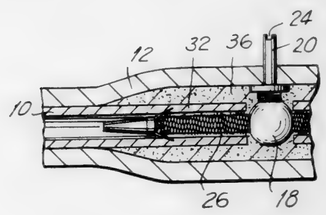
METHODS FOR APPLYING SURGICAL SPLINTS

Louis Bucalo, Holbrook, N.Y., assignor to Investors In Ventures, Inc., New York, N.Y.

Filed June 20, 1974, Ser. No. 481,136

Int. Cl.² A61B *17/12;* **A61F** *1/24*

U.S. Cl. 128—334 R **6 Claims**



1. In a surgical procedure, the steps of surgically displacing tissue which normally covers a body part away from a portion of the body part to expose said portion thereof, while leaving said tissue connected with said body part beyond said exposed portion thereof, performing a given surgical treatment on the thus-exposed portion of the body part, thereafter covering the exposed portion of the body part with a highly viscous semisolid substance, and returning the previously displaced tissue to a position covering the semisolid substance and forming with said portion of the body part a pocket in which the semisolid substance becomes situated between the previously exposed portion of the body part and the returned tissue, the body part being tubular while the treatment involves inserting at least part of an implant into the tubular body part so that the semisolid substance presses the tubular body part inwardly radially toward the implant.

3,961,632

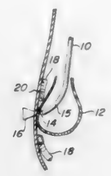
STOMACH INTUBATION AND CATHETER PLACEMENT SYSTEM

Mohamed H. Moossun, Box 237, R.R. 4, Elizabethtown, Ky. 42701

Filed Dec. 13, 1974, Ser. No. 532,735

Int. Cl.² A61B *17/34;* **A61M** *25/00*

U.S. Cl. 128—347 **6 Claims**



1. A method of stomach manipulation for perforation thereof to receive a catheter comprising the steps of:

intubating the stomach with an elongate flexible tubular member having a magnetically attractable tip thereon,

magnetically attracting said tube tip from externally of the body thereby translating the stomach wall adjacent the tube lip laterally toward the body exterior and thereby displacing yieldable body members normally disposed therebetween, and

perforating the body abdominal wall and the stomach therebehind in the immediate area of the magnetically attracted tip.

3,961,633

METHOD AND MACHINE FOR THE PRODUCTION OF COMPOSITE FILTER MOUTHPIECES

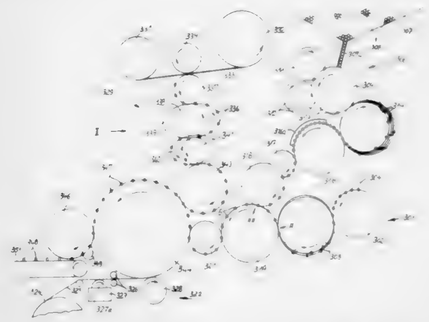
Bernhard Schubert, Neu Boernsen, and Otto Blidung, Geesthacht, both of Germany, assignors to Hauni-Werke Korber & co., KG, Hamburg, Germany

Division of Ser. No. 275,096, July 25, 1972, Pat. No. 3,834,285. This application June 27, 1974, Ser. No. 483,668

Claims priority, application Germany, July 26, 1971, 2137318; July 26, 1971, 2137319; Sept. 10, 1971, 2145375

Int. Cl.² A24C *5/48, 5/58*

U.S. Cl. 131—94 **9 Claims**



9. In a machine for the production of filter tipped rod-shaped smokers' products of the type wherein a wrapped tobacco rod section is united with at least one coaxial filter plug and at least one coaxial filter disk, a combination comprising a continuously moving wrapping conveyor having a plurality of parallel receiving means and means for continuously moving said receiving means sideways; first, second and third feeding means for respectively supplying to successive receiving means at least one wrapped tobacco rod sec-

tion, at least one filter plug and at least one filter disk with the latter located between the respective filter plug and the respective tobacco rod section, said wrapping conveyor comprising retaining means for holding the filter disks in said receiving means against movement out of axial alignment with the respective tobacco rod sections and said retaining means comprising suction-operated means for attracting said filter disks to the respective tobacco rod sections; and fourth feeding means for supplying adhesive-coated uniting bands to said receiving means, said wrapping conveyor further comprising means for convoluting said uniting bands around the respective filter disks, filter plugs and tobacco rod sections.

3,961,634
HAIR BLEACHING PREPARATIONS CONTAINING KERATOSE AND PROCESSES OF USING THE SAME

Peter Busch, Willich, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed July 23, 1974, Ser. No. 491,050

Claims priority, application Germany, July 30, 1973, 2338518

Int. Cl.² A45D *7/04*; **A61K** *7/135*

U.S. Cl. 132—7 **9 Claims**

5. In a process for bleaching hair which comprises applying a bleaching agent containing an oxidizing agent to the hair at a temperature and for a time effective to bleach said hair, and removing said agent from the hair; the improvement which consists essentially in utilizing from 0.05% to 10% by weight of keratose in said bleaching agent containing an oxidizing agent.

3,961,635
HAIR TREATING LIQUID APPLICATOR

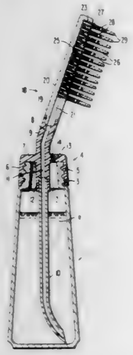
Yoichi Miya, Tokyo, Japan, assignor to Shiseido Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1974, Ser. No. 537,510

Claims priority, application Japan, Dec. 29, 1973, 49-1154[U]; Dec. 29, 1973, 49-1155[U]; Dec. 29, 1973, 49-1156[U]; Jan. 28, 1974, 49-11824[U]; Mar. 30, 1974, 49-36412[U]

Int. Cl.² A45D *20/00*

U.S. Cl. 132—11 R **10 Claims**



1. An applicator device for depositing and distributing a liquid on the hair comprising:

a. a supply reservoir having an open end;

b. a cap portion attached to said open end of said supply reservoir, said cap portion having a first passageway therethrough communicating with the interior of said supply reservoir;

c. a comb tooth support member attached to said cap portion, said comb tooth support member having a passageway extending partially therethrough and communicating with said passageway through said cap portion;

d. a plurality of comb teeth each having a first passageway extending partially therethrough in a longitudinal direction and a second passageway extending laterally through said comb tooth and communicating with said first passage, said second passageway located at the approximate midpoint between the comb tooth ends to allow placement of the liquid onto the hair without contacting the scalp; and

e. attachment means to removably attach said plurality of comb teeth to said comb teeth support member, such that each of said first passageways communicates with said passageway in said comb tooth support member.

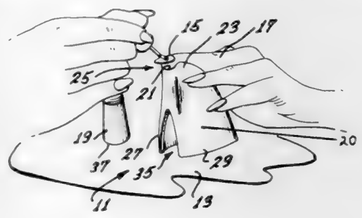
3,961,636
NAIL CARE APPARATUS

Arthur N. Mele, 3387 N. Knoll Drive, Los Angeles, Calif. 90068

Filed Feb. 18, 1975, Ser. No. 550,771

Int. Cl.² A45D *29/00*

U.S. Cl. 132—73 **13 Claims**



1. In combination for use with a container of nail polish, a housing,

a pair of sholder portions disposed on the housing and defining a channel for receiving the particular finger, the channel being configured to support the particular finger in a position separated from the remaining fingers on the hand of the user;

the housing including a plurality of sidewalls extending from the shoulder portions to support the shoulder portions in an elevated position and defining at least one cavity substantially directly beneath the channel and interiorly of the housing;

the cavity being shoulder to receive the container of nail polish in a press-fit relationship to store the container when the container is not being used to provide for the polishing of the nail of the particular finger.

3,961,637
AGGREGATE MATERIALS WASHING APPARATUS

Clyde W. Owen, Sr, P.O. Box 368, Covington, Tenn. 38019

Filed Dec. 12, 1974, Ser. No. 532,033

Int. Cl.² B08B *3/04*, *3/10*

U.S. Cl. 134—104 **9 Claims**

1. Aggregate materials washing apparatus comprising:

a cylindrical drum including an interior wall, and first and second end walls containing respectively an outlet and an inlet;

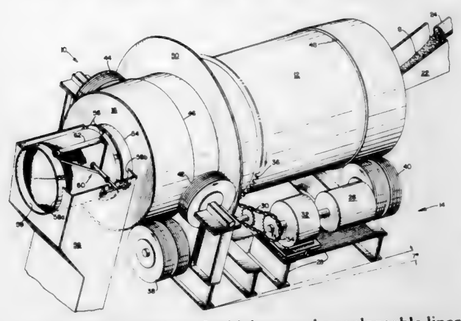
means for infeeding aggregate and wash fluid to said drum at said inlet;

said drum being inclined from the horizontal to provide a flow of the aggregate and wash toward the outlet;

power means for rotating said drum about its longitudinal axis;

a plurality of longitudinally extending agitator elements spaced around the interior wall of said drum for tumbling the aggregate during rotation of the drum;

a plurality of imperforate, scoop-shaped pumping elements extending radially between the interior wall and said outlet, said pumping elements scooping up both wash fluid and aggregate from said interior wall below said outlet and transferring the fluid and aggregate to said



outlet during rotation of said drum and a replaceable liner adapted for lining the interior of said drum, said liner carrying said agitating elements.

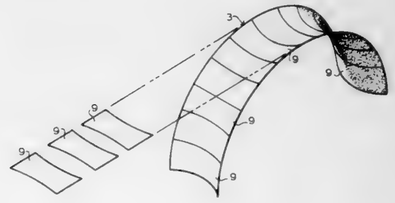
3,961,638
VAULTED MEMBRANE SHELTER

Carl F. Huddle, Pleasant Ridge, Mich., assignor to Tension Structures Co., Pleasant Ridge, Mich.

Continuation-in-part of Ser. No. 225,899, Feb. 14, 1972, Pat. No. 3,820,533, which is a continuation-in-part of Ser. No. 93,293, Nov. 27, 1970. This application May 23, 1974, Ser. No. 467,906

Int. Cl.² A45F *1/12*, *1/16*

U.S. Cl. 135—4 R **19 Claims**



1. A vaulted membrane structure comprising two arches with curved bights mounted on a base in substantially vertical positions, face to face but spaced apart from each other to form a vaulted frame work; a flexible roof membrane extending between and being operatively attached to said arches and said base, and being tensioned longitudinally and transversely with an inward concave curvature between the bights of said arches, said concave curvature having been formed by said membrane having a progressively shorter circumferential length from where it is operatively attached to said arches to its circumferential length in a vertical plane midway between said arches; and means for holding said arches apart that includes at least one strut to maintain tension in said membrane.

3,961,639
METHODS AND COMPOSITIONS FOR REDUCING THE FRICTIONAL RESISTANCE TO FLOW OF AQUEOUS LIQUIDS

Jen-Lin Chang, Chicago, Ill., and Jacques L. Zakin, Rolla, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Filed Sept. 10, 1973, Ser. No. 395,946

Int. Cl.² F17D *1/08*

U.S. Cl. 137—13 **10 Claims**

1. A method for reducing the frictional energy losses in the flow of an aqueous liquid along a surface comprising:

incorporating into said liquid a polyethylene oxide alkyl alcohol surfactant;

moving said liquid on a flow path along said surface at a velocity sufficient to provide a Reynolds number greater than about **4000** based on the properties of water; and

maintaining the temperature of said liquid near to or greater than its cloud point, whereby the frictional energy loss per unit length of said flow path is less than the corresponding loss of energy which occurs when moving substantially pure water at the same volumetric rate on the same path.

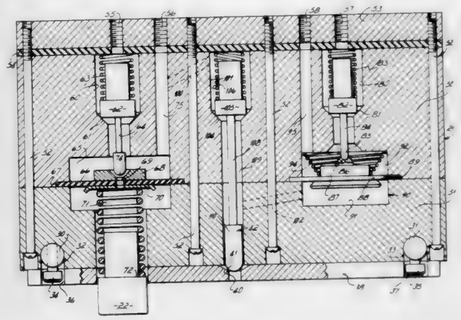
3,961,640
DENTAL HANDPIECE CONTROL

Ronald L. Baker, Florence, Ky., assignor to Thomas G. Lutes, Fort Mitchell, Ky., a part interest

Filed Sept. 23, 1974, Ser. No. 508,153

Int. Cl.² A61C *1/05*

U.S. Cl. 137—87 **10 Claims**



1. A control for regulating the supply of water and air to a dental handpiece comprising,

a housing,

an air inlet port and an air outlet port in said housing,

an air valve interconnecting said air ports,

an operator for said air valve having a portion projecting from said housing,

a water inlet port and a water outlet port in said housing,

a water valve interconnecting said water ports,

a fluid pressure operator for said water valve,

an air passageway connected between said air outlet port and said fluid pressure operator to operate said water valve when said passageway is open and high pressure air is at said air outlet port,

a valve in said passageway,

and means on said housing for opening and closing said passageway valve.

3,961,641
LIQUID SEAL FOR PREVENTING PNEUMATIC BACK FLOW

Thomas L. Tyson, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed June 20, 1975, Ser. No. 588,929

Int. Cl.² F04F *1/00*

U.S. Cl. 137—209 **11 Claims**

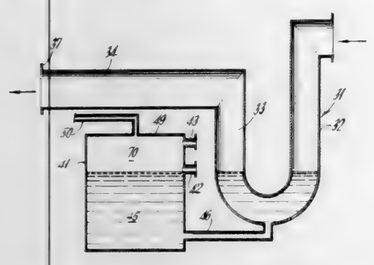
1. A liquid seal for preventing back flow in a gas line having a pump associated therewith for circulating said gas, comprising in combination

a U-shaped conduit adapted for connection to the inlet of said gas line,

a reservoir for holding a supply of said sealing liquid and having an overflow located at a predetermined level above the bottom of said U-shaped conduit, and

a liquid flow passage connecting the bottom of said U-shaped conduit with said reservoir,

said reservoir having a closed top with means for connecting the ullage space to a valve means for alternatively connecting said ullage space to the inlet of said gas line or to suction of said circulating pump.



3,961,642

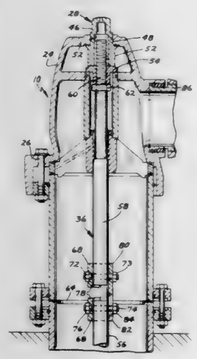
FIRE HYDRANT VALVE ROD COUPLING

David F. Thomas, West St. Paul, and Harold A. Berglund, Afton, both of Minn., assignors to Waterous Company, South St. Paul, Minn.

Filed Mar. 10, 1975, Ser. No. 556,782

Int. Cl.² E03B 9/14; F16D 1/00

U.S. Cl. 137—272 **4 Claims**



1. In a hydrant having a bottom housing; a valve seat in said housing; a hydrant valve operably associated with said valve seat and movable vertically between a first upper closed position in sealing relation to said seat and a second lower open position in spaced relation to the seat; a breakaway standpipe extending upwardly from said housing in surrounding relation to said valve seat; a nozzle section extending outwardly of said standpipe and including at least one nozzle; a main valve control rod including a lower valve rod section extending upwardly from said valve, an upper valve rod section extending upwardly from said lower rod section and in axial alignment therewith, and breakaway coupling means coupling said upper and lower rod sections to each other; and valve operating means operable from outside said nozzle section to move said upper rod section between upper and lower finite limits in an upward direction to cause said valve to move to said first closed position and in downward direction to cause said valve to move to said second open position; the improvement in said breakaway coupling means wherein said coupling means includes:

A. a first frangible sleeve fixedly positioned with respect to a lower end of an upper rod section and fixedly positioned with respect to an upper end of a lower rod section to maintain said rod sections in fixed, axially aligned relationship to each other, said sleeve being breakable under overload conditions to release said rod sections from each other;

B. a second non-frangible sleeve fixedly positioned with respect to one of said ends of one of said rod sections;

C. retention means extending transversely outwardly from the other of said rod sections;

D. said second sleeve being provided with an open ended slot encompassing said retention means and extending in longitudinal alignment with said rod sections to the end of said second sleeve opposite said one rod section, said second sleeve being of sufficient length that said slot continues to encompass said retention means when said lower rod section and a hydrant valve attached to said lower rod section are in a closed, upward position and as said upper rod section is moved by a valve operating means between finite upper and lower limits.

3,961,643

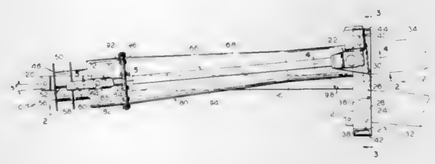
VALVE SHIFTING SYSTEM

Peter D. Lynch, Portland, Oreg., assignor to Rader Companies, Inc., Portland, Oreg.

Filed Dec. 2, 1974, Ser. No. 528,632

Int. Cl.² F17D 3/03

U.S. Cl. 137—610 **14 Claims**



7. A shifting apparatus for connecting a first conveying line between a plurality of other conveying lines comprising:

a frame,

switching plate means mounted on said frame, said switching plate means having a plurality of ports for communication with said other conveying lines,

conveying line connector means mounted on said frame, and adapted to be connected to said first conveying line,

arm means extending from said conveying line connector means to said switching plate means, said arm means being pivotally connected to said conveying line connector means and supported by said switching plate means in a manner permitting sliding of said arm means on said switching plate means while said arm means rotates about said conveying line connector means,

a pivot tube supported at one end by said arm means and coupled at the opposite end to said conveying line connector means in a manner permitting rotation of said pivot tube about an axis parallel to the axis of rotation of said arm means and forward and backward motion of said pivot tube relative to said switching plate means,

said pivot tube being adapted to be positioned selectively in communication with said ports to form a continuous passageway from said conveying line connector means through said pivot tube and said switching plate means,

and drive means for shifting the end of said pivot tube adjacent to said switching plate means between said ports in a cycloidal path.

3,961,644

FLAT SEAT VALVE, IN PARTICULAR, FOR THE CONTROL OF FUEL METERING DEVICES

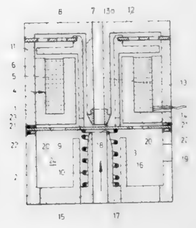
Konrad Eckert, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 12, 1973, Ser. No. 396,526

Claims priority, application Germany, Sept. 22, 1972, 2246477

Int. Cl.² F16K 31/06

U.S. Cl. 137—625.65 **13 Claims**



1. A flat seat valve for the control of the flow of a fluid medium, comprising

a valve housing;

a control membrane clamped-in fixedly across the interior of said housing such that the membrane lies in a plane which extends substantially transversely with respect to the housing and divides the interior of said housing into two spaces, said membrane having at least one aperture establishing free communication between the two spaces;

a solenoid adapted for axially displacing said membrane when energized, said solenoid comprising an exciting winding, a magnetic core and an armature arranged about one of said sleeves, said armature comprises an external annular flange extending radially past said exciting coil and magnetic core in the interior of said housing;

first valve seat-bearing means stationary in said housing on one side of said membrane; and

second valve seat-bearing means stationary in said housing on the opposite side of said membrane each said valve seat-bearing means comprises a tubular sleeve which projects from an interior wall of said housing toward said membrane therein and includes a valve seat at its end adjacent said membrane, said valve seats being of different diameter and defining along with their respective tubular sleeves a flowpath for said fluid medium;

Whereby displacement of the membrane produces a change in the distance of said membrane from one of said valve seats and hence in the width of the one flowpath past said valve seat and a change in the opposite sense in the distance of the membrane from, and hence the width of the other flowpath past, said other valve seat.

3,961,645

FLUID-CONVEYING PIPE CONNECTOR

Aristide Jean Michel Kagan, 14 bis, Avenue Pierre Curie, 77330 Ozoir-la-Ferriere, France

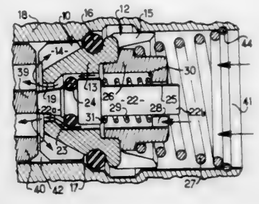
Filed Dec. 19, 1974, Ser. No. 534,573

Claims priority, application France, Dec. 21, 1973, 73.46106

Int. Cl.² F16L 29/00

U.S. Cl. 137—630.15 **5 Claims**

1. A connector forming a junction between the free ends of two ducts one of which communicates with a source supplying a fluid under pressure, said connector comprising a first part fitting the free end of the duct connected to said source and a second part mounted on the free end of the second duct, said first part comprising a main valve having a seat closing off said free end of the first duct and urged upon closing against its seat by the action of the fluid feed pressure prevailing in the first duct, said first part further comprising a second auxiliary valve having a seat also closing off said end of the first duct and which is also urged upon closing against its seat by the action of the fluid feed pressure prevailing in said first duct, said seat of said auxiliary valve having a reduced section as compared with that of said main valve, said second connector part co-operating with control members for the opening of said valves which are so arranged that when both connector parts are drawn near each other for connecting the same together said second part will at first open said auxiliary valve while allowing a small fluid flow rate to pass from said first duct to the second duct at the beginning of the coupling step of said connector and then will open said main valve, said main and auxiliary valves including biasing springs returning said valves to their closing position, said auxiliary valve comprising a piston rod forming the head of the valve, said piston rod being coaxial with said main valve, said seat of said auxiliary valve being formed within the head of said main valve, said piston rod passing through said seat, said second connector part comprising a central portion and an annular portion, said central portion being caused to push back said piston rod of said auxiliary valve thereby actuating the same for the opening thereof, said annular portion portion being caused to



push back said head of said main valve thereby actuating the same for opening thereof, said central portion and said annular portion being so disposed that said auxiliary valve is actuated for opening before said main valve, a fluid-tight seal mounted on said head of said main valve to co-operate with said seat of said main valve, said head having passages for the flow of said fluid therethrough when said head is not applied against its seat, said head being provided with a central aperture forming said seat for said auxiliary valve, said piston rod of said auxiliary valve comprising first and second ends, said first end projecting towards said second connector part through said central aperture of said main valve and forming said head of said auxiliary valve, a fluidtight seal mounted on said first end for co-operating with said seat formed in said head of said main valve, a cap mounted so as to bear against said head of said main valve under the action of the biasing spring returning said main valve to the closing position, said cap having a passageway through which said second end of said piston rod is guided, a sleeve locating said first connector part and connectable to said free end of said first duct, an abutment on said sleeve, said biasing spring of the main valve being mounted between said cap and said abutment, said cap having further passageways for allowing the ingress of said fluid towards said auxiliary valve.

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PRESSURE ACCUMULATOR

Otmar Schön, Scheidterberg, Germany, assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed Mar. 13, 1975, Ser. No. 557,876

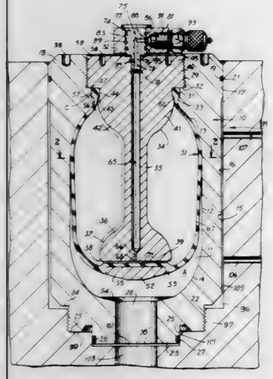
Claims priority, application Germany, Oct. 1, 1974, 2446798

Int. Cl.² F16L 55/04

U.S. Cl. 138—30 **3 Claims**

1. A pressure accumulator comprising an elongated rigid hollow housing, the interior wall surface of which has a cylindrical central portion and two substantially hemispherical end

portions, said housing having an axial bore at one end along its longitudinal axis, defining an oil port extending into the interior thereof through one of said hemispherical end portions, the other end of the housing having an enlarged diameter axial bore, the outer end of said bore defining the mouth of the housing, an elongated support member having an axial bore therethrough and having a central cylindrical portion and two end portions each being substantially hemispherical and formed about a point lying toward the interior center of the housing, means to retain said support member in fixed position in said housing extending axially thereof, one of said end portions being longitudinally spaced from said oil port, a deformable bladder in said housing extending axially thereof, said bladder having one end closed and having a mouth at its other end, said bladder encompassing said support member, means to retain the mouth end of the bladder in fixed position, the outer end of said axial bore in said support member being



threaded, a pin having a threaded stem screwed into said threaded outer end, said pin having a protruding head, a block having a bore into which said head extends for rotary mount of the block, said pin having an axial passageway through the stem thereof and a transverse passageway leading into said axial passageway, said block having a transverse bore in communication with said transverse passageway and a valve member in said transverse bore for connection to a source of gas under pressure to charge said bladder with gas under pressure, said bladder being movable between an outward expanded condition in which it engages the wall surface of the interior of said housing and an inward deformed condition in which at least a portion of the bladder engages said support member, the dimensions and configuration of said bladder and the interior of said housing and the support member being such that the bladder will move from its outward to its inward condition without the formation of sharp folds therein.

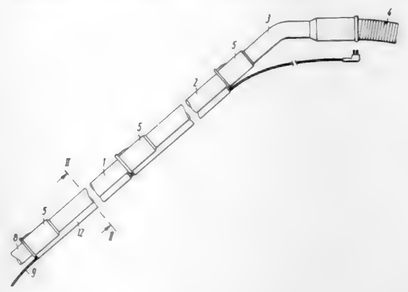
3,961,647

SUCTION PIPE HAVING MEANS TO SUPPORT A SUPPLY CONDUIT

Eric G. Doubleday, Am Kraherwald 167, 7 Stuttgart-W, Germany

Filed Jan. 6, 1975, Ser. No. 539,012
Int. Cl.² F16L *11/12, 55/00*
U.S. Cl. 138—103 **5 Claims**

1. In a suction pipe for a suction operated cleaning device, a plurality of pipe sections having means for assembly by end to end telescopic engagement, and means on said pipe sections for supporting an electric cable, the means on each section integral with the section comprising a pair of thin, resilient longitudinal walls extending along substantially the length of said pipe section to form a channel opening outwardly, said walls being inclined toward a radial plane between the walls and having restrictive formations along their outer edges to reduce the space between the walls to less than



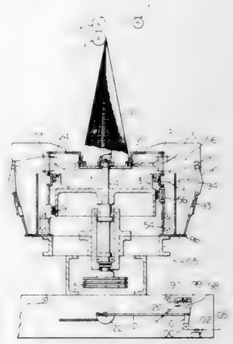
the space between said walls at their base along said pipe, so that a cable in the channels will be retained by the restrictive formations on the outer edges of said walls.

3,961,648

POSITIVE SHEDDING MOTION DEVICE FOR A CIRCULAR LOOM

Soichi Torii, Kyoto, Japan, assignor to Torii Winding Machine Co., Ltd., Kyoto, Japan

Filed Apr. 24, 1974, Ser. No. 463,438
Claims priority, application Japan, Oct. 11, 1973, 48-114504
Int. Cl.² D03D *37/00*
U.S. Cl. 139—13 R **1 Claim**



1. A positive shedding motion device for a circular loom for tape yarn, wherein said circular loom is provided with a shuttle guide ring apparatus at the center of the loom, a shuttle guide race device which is arranged concentrically with said shuttle guide ring apparatus, a shuttle which is mounted between said guide ring apparatus and said shuttle guide race device, and is moved by the rotation of a cam disc and a warp yarn guide which is positioned at the outermost apex of the warp yarn shed and at the outermost ends of the warp lines of the warp yarns which are arranged horizontally, and each pair of inner and outer heald frames and the driving device therefore comprises an inner heald frame, which is provided with a supporting sheet secured on the side of a sliding piece moving up and down and also mounted on one side of an endless belt, an outer heald frame, which is provided with a supporting sheet mounted on another side of an endless belt, an endless belt onto the surface of which an outer heald frame supporting sheet and an inner heald frame supporting sheet are mounted, respectively, and a pair of upper and lower guide pulleys

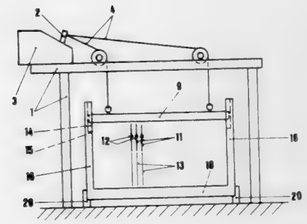
arranged in a vertical arrangement and around both pulleys said belt is mounted, wherein said device comprises, several sections of heald frames arranged on one complete circle, wherein each section consists of a plurality of inner and outer heald frames.

3,961,649

HEDDLE FRAME ARRANGEMENT FOR A WEAVING MACHINE

Joseph Palau, Haute-Savoie, France, assignor to Staeubli, Ltd., Horgen-Zurich, Switzerland

Filed Apr. 7, 1975, Ser. No. 565,393
Claims priority, application Switzerland, Apr. 9, 1974, 4973/74
Int. Cl.² D03C *13/00, 9/00, 9/02*
U.S. Cl. 139—82 **17 Claims**



1. A heddle frame arrangement for a weaving machine, comprising:
a base;
a frame secured to said base, said frame consisting of a pair of horizontally spaced and parallel side members and an abutment member, said side members and abutment member defining a plane;
vertically aligned guide means mounted on said side members;
a horizontally aligned and vertically movable bar extending between said side members, the ends of said horizontally aligned bar cooperating with said vertically aligned guide means to maintain a coplanar relationship thereof to said plane of said frame;
at least one heddle secured at one end to said horizontally aligned bar and having an eyelet therein for receiving a warp thread;
first securement means on an end of said heddle remote from said end secured to said bar; and
resilient means secured to and extending between said first securement means and said abutment means to resiliently hold said heddle taut and at least assisting in urging said horizontally aligned bar toward the lowermost position thereof.

3,961,650

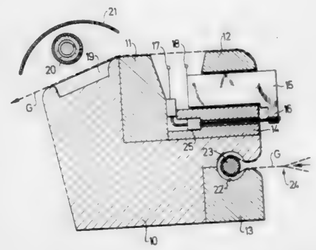
WEAVING METHOD AND MACHINE

Ruthard Marowsky, Kreuzbergstrasse 56, D-5630 Remscheid 12, Germany

Filed Jan. 22, 1974, Ser. No. 435,491
Claims priority, application Germany, Jan. 22, 1973, 2302949
Int. Cl.² D03D *49/00;* **D03J** *1/06, 1/08*
U.S. Cl. 139—291 R **6 Claims**

1. A method of forming a plurality of patterned strips of fabric woven from threads of synthetic material using a broad weaving machine having a sley and a breast beam, which method comprises:
weaving on the broad weaving machine a unitary broad fabric with said strips to be formed extending in parallel relation along the warp direction of said fabric;
conveying said fabric from the position where the sley of said machine beats up the fabric at a sufficiently low warp tension that a boxing condition occurs to obviate weft arching;
guiding the woven fabric leaving the position where the sley beats up the fabric to allow movement towards the breast beam of said machine, but not in the opposite direction;
cutting the guided woven fabric in the warp direction with a heated cutting blade means maintained at a first temperature of at least about 300° C to form strips whereby the edges are welded by the heat and thereby avoids ripping;
separating said strips;
and thereafter further heating the entire body of said separated strips at a second temperature lower than said cutting temperature to relieve varying tensile stress therein by thermostabilization.

2. In a broad fabric weaving machine having a sley and a breast plate for forming a plurality of strips of fabric from threads of synthetic fiber, the improvement comprising:
a fabric guiding station extending across the width of said machine at the output from the machine where the sley beats up the fabric and ahead of the breast plate, said



fabric guiding station comprising a slot and a rounded guide bar therebehind to define a re-entrant part-annular path for passage of woven fabric into said slot, round said bar and back out of said slot;
said guide bar being formed with a left-hand fabric guided thread over the right-hand half of its length in the direction towards a cutting station, and a right-hand guiding thread over its left-hand half;
a heating and cutting station downstream from said guiding station in the fabric path to said breast plate, which station includes a plurality of electrically heated cutting wires successively spaced across the width of said machine in the direction of the weft and extending into the path of the fabric for heating and cutting said woven fabric into desired width separated strips parallel to the warp of the fabric and for heating the cut edges of said strips to weld the same;
and a second heating station comprising an elongated heating member to heat said separated strips extending across the width of said machine downstream from said hot wire cutting and cut edge heating station towards said breast beam for heating the strips at a temperature lower than said cutting temperature to effect thermostabilization of said strips.

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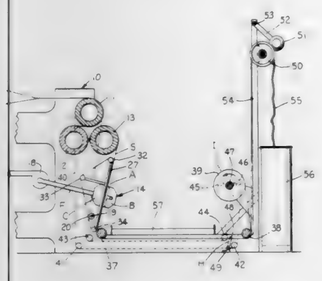
APPARATUS FOR HEAT TREATING FABRIC AT THE LOOM

George H. Balentine, Jr., State Park Road, Greenville, S.C. 29601

Filed July 24, 1974, Ser. No. 491,402
Int. Cl.² D03D *49/00;* **D06C** *3/10;* **F26B** *3/32, 13/00*
U.S. Cl. 139—291 R **2 Claims**

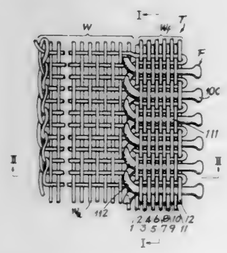
1. An apparatus for heat treating fabric at the loom comprising:

an elongated housing extending across the full width of the fabric;
a passageway extending through said housing permitting the fabric to pass therethrough in open width and dividing said housing defining a pair of opposed chambers therein;
a heating element carried by said housing in one chamber;



a heat reflector carried by said housing in the other chamber opposite said heating element so that the fabric passes between the heating element and the reflector;
means for restraining the edges of the fabric in open width against shrinkage during the application of heat thereto;
an air hose communicating with the interior of said housing;
means developing suction on said air hose;
whereby fumes developing from the action of heat on the fabric may be withdrawn from said housing.

3,961,652
TAPE STRINGER FOR SLIDING CLASP FASTENERS
Minoru Hasuda, No. 265, Tenjinshin, Kurobe, Toyama, and Yasuo Yamada, No. 4024, Mikkaichi, Kurobe, Toyama, both of Japan
Continuation of Ser. No. 378,251, July 11, 1973, abandoned, which is a continuation of Ser. No. 783,049, Dec. 11, 1968, abandoned. This application Sept. 4, 1974, Ser. No. 503,067
Claims priority, application Japan, Sept. 28, 1967, 42-12440; Dec. 21, 1967, 42-82156; July 23, 1968, 43-51947
Int. Cl.² D03D *3/00*
U.S. Cl. 139—384 B **7 Claims**



1. In combination:
a. a row of successively connected together elongated loops, each of said loops having a coupling portion at one end thereof dimensioned to releasably couple with mating loops of another row of loops, and an upper leg and a lower leg extending from said coupling portion in a common direction, said upper leg and said lower leg each having a portion remote from said coupling portion connected to a next adjacent one of said loops;
b. a stringer tape comprising a continuous weft thread extending in a transverse dimension of said tape and having an extent defining the width of said tape, said continuous weft thread having portions disposed between each adjacent pair of said elongated loops and coextensive with substantially the entire length of the legs of the loops, a first plurality of threads extending longitudinally of said stringer tape and alternately overlying an upper leg and underlying a lower leg of successive ones of said elongated loops. said first plurality of threads being interwoven with the portions of said continuous weft thread between said elongated loops and disposed extending substantially the entire length of the legs of said loops, a second plurality of threads extending longitudinally of said stringer tape and alternately underlying a lower leg and overlying an upper leg of said successive ones of said elongated loops, said second plurality of threads being interwoven with the portions of said continuous weft thread between said elongated loops and disposed extending substantially the entire length of the legs of said loops, and a plurality of warp threads extending longitudinally of said stringer tape and interwoven with said continuous weft thread to jointly define therewith a web portion of said stringer tape; and
c. a sewing thread fastening said elongated loops to the interwoven combination of said first and said second plurality of threads and said portions of said continuous weft thread disposed between each adjacent pair of said elongated loops.

3,961,653
LOOM WEFT POSITIONER
Harrison N. Thibault, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed May 14, 1975, Ser. No. 577,299
Int. Cl.² D03D *47/34*
U.S. Cl. 139—450 **3 Claims**

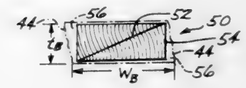


1. In a shuttleless loom of the type having an external stationary weft supply source, reciprocable carrier means for inserting picks of weft from said source into sheds of warp threads, a weft control member comprising:
a. a depressor arm;
b. a weft engaging member;
c. means mounting said weft engaging member on said depressor arm, said means providing for movement of said weft engaging member to release the weft after its engagement by the carrier means; and
d. cam controlled linkage members operatively connected to said depressor arm for moving the latter in a path to cause said weft engaging member to engage each pick of weft and present it to the carrier means.

3,961,654
LOG CUTTING AND REJOINING PROCESS
Earl Dean Hasenwinkle, Longview, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Feb. 20, 1973, Ser. No. 333,911
Int. Cl. B32b *3/14*
U.S. Cl. 144/316 **16 Claims**

1. The process for making composite lumber products from generally cylindrical logs comprising the steps of:

cutting a log radially into a plurality of sector-shaped pieces, and



bonding no more than two sector-shaped pieces together along radial faces such that the thin edge of one is approximately adjacent the thick edge of the other.

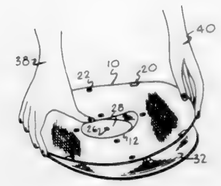
3,961,655
BULK MATERIAL CONTAINERS
Frank Nattrass, Fallows End, Brearton, Harrogate, Yorkshire, and Peter Johnson Nattrass, Tresco, Chain Lane, Knaresborough, Yorkshire, both of England
Filed Sept. 16, 1974, Ser. No. 506,569
Claims priority, application United Kingdom, Sept. 17, 1973, 43599/73
Int. Cl.² B65D *29/02*
U.S. Cl. 150—1 **3 Claims**



1. A bag, for transporting bulk material, comprising:
an outer bag member comprising:
a base section having an opening defined therein; and
sidewalls;
means, secured to upper parts of said sidewalls, by which said bag may be lifted;
an inner liner within said outer bag member, said inner liner having a lower end terminating in a tubular section;
a first tube secured to said base section around the opening therein and projecting outwardly from said base section;
a second tube secured to said base section;
said first tube being disposed within said second tube;
said tubular section being disposed within said first tube;
means releasably securing said tubular section within said first tube; and
means releasably closing said second tube with said tubular section and said first tube being restrained wholly within said second tube by said releasable closing means.

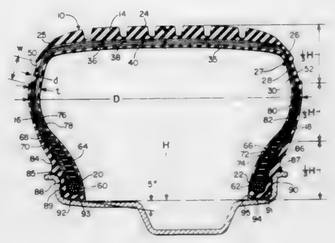
3,961,656
PHONOGRAPH RECORD INSULATOR
Lalit K. Aggarwal, 3718 Spring Garden St., Philadelphia, Pa. 19104
Filed Apr. 30, 1975, Ser. No. 573,246
Int. Cl.² B65B *11/00;* **B65D** *65/04*
U.S. Cl. 150—52 R **8 Claims**

1. A pair of record insulators for covering the surfaces of a phonograph record, each of said record insulators having a hole at the center and an inner surface operable to contact one of the surfaces of the said phonograph record, and an outer surface opposite said inner surface, said inner surface comprising a layer of electrically-conductive material permanently affixed to the layer comprising the outer surface of the said record insulator, said layer of conductive material having an extended portion turned back and overlying the said outer surface layer at the periphery of the insulator, said record insulator being shaped and sized to fit the phonograph record, and having releasable mounting means engaging the perimeter of said record to temporarily maintain said insulator in place on said record, said mounting means affording removal of only



the insulator of said pair covering the side of the record to be played, so that the other side of the said phonograph record can remain covered by the other of the pair of record insulators while playing the phonograph record on conventional phonograph record players.

3,961,657
HIGH SPEED RADIAL PLY TIRE
Dennis Steven Chrobak, Silver Lake, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed May 3, 1974, Ser. No. 466,750
Int. Cl.² B60C *5/12*
U.S. Cl. 152—355 **19 Claims**

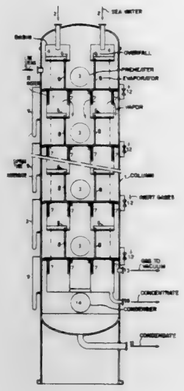


1. A pneumatic tire comprising a tread portion including a non-skid tread surface extending circumferentially thereabout; a pair of annular bead portions each including an annular inextensible bead core, a radially inner base surface, and an axially outer flange engaging surface; a sidewall portion extending between each axially outer edge of said tread portion to the respectively associated bead portion; a carcass structure extending from bead portion to bead portion; and a belt structure extending circumferentially about said carcass structure the improvement comprising, means extending circumferentially about said tire and disposed in the radially outer one-third of each sidewall portion to provide a flexible transition between said tread portion and the sidewall portions and said carcass structure including at least one carcass ply of continuous cord reinforced fabric extending circumferentially about the tire and from bead to bead at an angle of between 0° and 15° with respect to planes containing the rotational axis of the tire and wherein said tire was curved in a configuration in which two straight lines lying in a single plane containing the rotational axis of the tire and tangent respectively to said fabric at a point radially inwardly of the axially outer edge of said ground contacting surface and a point in the next adjacent sidewall located next adjacent the radially inner edge of said means are perpendicular to each other.

3,961,658
SEA WATER DESALINATION APPARATUS

Giorgio Pagani, Milan, Italy, assignor to Snam Progetti S.p.A., Milan, Italy

Continuation of Ser. No. 376,949, July 6, 1973, abandoned. This application Aug. 8, 1975, Ser. No. 603,186
Claims priority, application Italy, July 7, 1972, 26732/72
Int. Cl.² B01D *1/22, 1/26, 3/02*
U.S. Cl. 159—13 A **4 Claims**



1. A multiple effect distillation apparatus for the desalination of sea water which comprises a column of a plurality of superposed cylindrical sections, each section comprising the following elements:

a. two interior falling film evaporators, each with a bundle of vertical tubes, the bundle of each film evaporator having a cross section shaped as a segment of a circle, without external shell;

b. two respective basins, the basins in the uppermost section being connected at their tops to their respective feed tubes for sea water, the respective basins in succeeding sections being connected at their respective upper tube sheets to the tubes associated with the basin in that section bundle which is immediately superjacent; all of said basins being connected at their bottoms to the respective upper tube sheet of the respective falling film evaporators of said same colinearly subjacent cylindrical section segmental bundle with the exception of those basins in the lowermost section which has its bottom connected to a brine discharge tube;

c. a restriction placed at the bottom of each basin, having the purpose of permitting the passage of the brine from the basin to the underlying tube sheet by dissipating the positive pressure difference existing between the basin and said tube sheet;

d. openings in the upper side of each basin except in the basins of the first section which allow vapor to flow from each of said basins about the tubes of the respective subjacent bundle, said openings having associated droplet removers or demisters returning captured droplets to their respective basins;

e. one or more siphon tubes for withdrawing the condensate collected at the bottom of each section and for reintroducing said condensate at the intermediate point of the succeeding subjacent section;

f. a horizontal tube bundle exchanger, for preheating the sea water, the preheating agent being the vapor produced in each single stage said preheating exchanger being centrally located between the pair of segmental film evaporators in each section;

g. means for transferring any inert gases from each section to the succeeding subjacent section; said lowermost section having connecting means to a vacuum system to collect said inert gases;

h. said vertically superposed sections each having a head of condensed liquid on its bottom except the lowermost section, for preventing free passage of vapor between said sections;

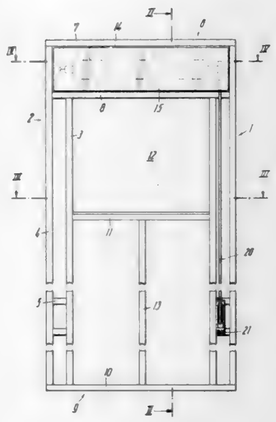
i. said apparatus having inlet tubes for the introduction of sea water to the basins of said uppermost section and inlet tubes for the introduction of steam to the exterior surfaces of the tube bundles of said uppermost section; and

j. an outlet tube at said lowermost section for removing condensate.

3,961,659
PREFABRICATED WINDOW UNIT

Helmut Siegel, Heidelberger Strasse 10, D-6833 Kirrlach, Germany

Filed Oct. 10, 1974, Ser. No. 513,877
Int. Cl.² A47H *1/00, 1/13*
U.S. Cl. 160—26 **2 Claims**



1. A window unit comprising, in combination:

a. a rectangular frame including a pair of elongated, spacedly parallel first frame elements and a pair of spacedly parallel second frame elements elongated at right angles to said first elements and connecting said first elements,

1. said frame elements being located in a common plane,

2. each frame element including an inner member and an outer member spacedly parallel to said inner member,

3. said outer members having respective outer faces directed away from the associated inner members and exposed to the ambient atmosphere,

4. said inner members bounding a window opening in said frame,

5. the outer members of said first elements having respective terminal portions projecting longitudinally beyond the associated inner members,

6. the outer member of one of said second frame element being fixedly fastened to said terminal portions and connecting the same,

7. the inner member of said one second frame element being fixedly fastened to each of the outer and inner members of said first frame elements and connecting the same,

8. said members of said one second element and said terminal portions jointly bounding a rectangular opening,

9. the outer member of the other second element connecting respective longitudinal ends of the outer and inner members of said pair of first elements, and

10. the inner member of said other second frame element connecting the inner members of said first elements;

b. an elongated housing adapted to enclose a rolled-up sliding shutter,

1. said housing being received in said rectangular opening and fixedly connected to said one second element, and

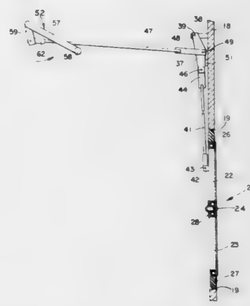
2. said housing being fixedly fastened to said terminal portions and connecting the same; and

c. operating means mounted on one of said first elements for moving a sliding shutter between an inoperative position and an operative position, said sliding shutter being substantially completely received within said housing when in said inoperative position, and said shutter blocking said window opening in said operative position thereof.

3,961,660
DOOR OPERATING APPARATUS

J. Fredrick Vinci, Forest City, Iowa, assignor to Winnebago Industries, Inc., Forest City, Iowa

Filed Mar. 6, 1975, Ser. No. 556,166
Int. Cl.² E05F *11/10*
U.S. Cl. 160—188 **16 Claims**



1. A vehicle comprising: a body having a passenger compartment and a wall having a doorway open to the passenger compartment, door means for selectively opening and closing the doorway, apparatus for opening and closing the door means, said apparatus having a control link with a first portion and a second portion, a support attached to the wall, first pivot means pivotally connecting the first portion to the support, rod means connecting the second portion to the door means whereby movement of the control link will open and close the door means, second pivot means connecting the rod means to the second portion, third pivot means pivotally connecting the rod means to the door means, first stop means engageable with the control link to locate the second pivot means in an outward over-center location relative to the first and second pivot means to thereby hold the door means in its closed position, and means connected to the control link for selectively moving the control link away from the stop means to open the door means and moving the control link toward the first stop means to close the door means, said means connected to the control link comprising a linkage, pivot means connecting the linkage to the control link, second stop means engageable with the linkage to hold the linkage in a fixed position locating the door means in the open position, said linkage including a first member pivotally connected to the control link and a second crank member, pivot means connecting the crank member to the first member, and means rotatably mounting the crank member on a part of the body, said crank member engageable with the second stop means to hold the pivot means in an over-center position relative to a line between the means mounting the crank member and the pivotal connection of the first member and control link thereby holding the door means in its open position.

3,961,661
HANGING AND STRETCHING DEVICE FOR WALL COVERING FABRICS

Gerard J. Tombu, 8, Rue des Bouchers, F-02 Saint-Quentin, France

Filed Aug. 13, 1974, Ser. No. 497,077
Claims priority, application France, Aug. 2, 1974, 74.26919
Int. Cl.² A47H *23/00*
U.S. Cl. 160—328 **6 Claims**

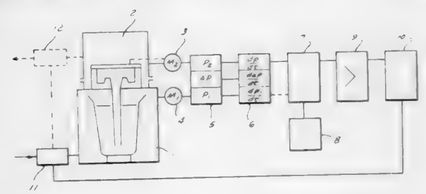


1. Device for hanging and stretching wall covering fabrics, of the type comprising a combination of first sections fixed along the two lateral edges of a wall to be covered and each constituted by a sole-piece one side of which is substantially plane and the other side of which has three profiled ribs forming fastening elements, two of which delimit a first housing and one of these fastening elements and a third one of the fastening elements delimiting a second housing; second sections fixed along the two lateral edges of a first fabric and each constituted by a lath the two lengthwise edges of which are provided with a slot, the slots of each of said second sections co-operating with the respective fastening elements delimiting the first housing of a said first section in such a manner that this second section is secured in this first section, said first fabric being clamped at each lateral edge thereof between a fastening element of the first section and a lengthwise edge of the respective second section; and rods each inserted with the adjacent part of a second fabric in a said second housing.

3,961,662
METHOD FOR CONTROLLING THE RATE OF FILLING OF CASTING MOLDS

Angel Tonchev Balevski; Ivan Dimov Nikolov; Dragan Iliev Nenov, and Emil Nikolov Momchilov, all of Sofia, Bulgaria, assignors to Institut po Metaloznanie i Technologia na Metalite, Sofia, Bulgaria

Filed Aug. 12, 1974, Ser. No. 496,741
Claims priority, application Bulgaria, Aug. 16, 1973, 24336
Int. Cl.² B22D *27/14*
U.S. Cl. 164—4 **3 Claims**



1. A method of controlling the rate of filling of a casting mold wherein a pressure P_1 is applied to a chamber containing a vessel for the material to be cast, a pressure P_2 is applied to a chamber containing a casting mold, a casting mold being connected to the vessel by a tube for conducting the material

from said vessel into said mold at a rate determined by the pressure differential $\Delta P = P_1 - P_2$, said method comprising the steps of:

producing a first signal representing the time derivative of one of said pressures;

monitoring said first signal and controlling said one of said pressures to maintain the time derivative thereof substantially constant;

producing a second signal representing the time derivative of one of the parameters constituted by said pressure differential and the other of said pressures;

comparing said second signal with a set-point value in accordance with a predetermined program; and

controlling said other pressure in response to a signal representing the comparison of said second signal and said set-point value.

3,961,663

PROCESS OF EMPLOYING A SUBSTANCE IN PELLET FORM FOR NODULARIZING GRAPHITE IN LIQUID CAST IRON

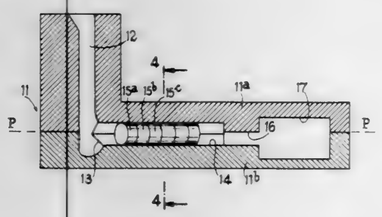
Michel Louis Degois, and Jean-Pierre Albert Maquaire, both of Point-a-Mousson, France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed May 28, 1974, Ser. No. 473,976

Claims priority, application France, May 28, 1973, 73.19340; May 9, 1974, 74.16090

Int. Cl.² B22D *27/20*

U.S. Cl. 164—58 **4 Claims**



1. A process for nodularizing graphite in molten cast iron which contains iron and a nodularizing agent which comprises pouring said molten cast iron in a mould and contacting said cast iron with a substance including pure iron and pure nodularizing agent in a powdered state and agglomerated together; said substance being in the form of pellets arranged in a plurality of groups of pellets whose nodularizing agent content varies from one group to the others, and said contacting step including placing at the upstream end of the path of the poured molten iron the group of pellets having the highest nodularizing agent content and placing in downstream sequence groups of pellets having a decreasing order of nodularizing agent content.

3,961,664

SPLIT MOULDS AND CARRIERS THEREFOR

John David Ward, Stourport, England, assignor to Precision Engineering (Worcester) Limited, Warndon, England

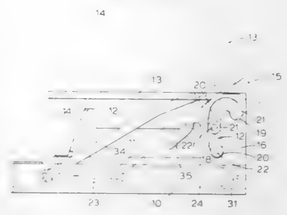
Filed Aug. 22, 1975, Ser. No. 607,044

Claims priority, application United Kingdom, Sept. 5, 1974, 38804/74

Int. Cl.² B22D *17/10*

U.S. Cl. 164—343 **5 Claims**

1. In a split mould having a base supporting a base mould part, a swinging arm carrying an upper mould part capable of being lowered on to the base mould part and of being raised and swung backwardly clear thereof for access to the base mould part and pin-and-slot hinging means located between said base and said arm clear of the mould parts and to the rear thereof, said hinging means comprising at each side of the mould two spaced parallel and laterally projecting pins or pin-mounted rollers fixed to said arm and a cooperating guide slot extending upwardly from said base, the two pins or pin-mounted rollers riding in the guide slot to define a desired closing and opening path of said arm and upper mould part,



the improvement comprising:

a. piston and cylinder means acting between the base and the swinging arm,

b. the piston and cylinder means being arranged to act generally horizontally with the cylinder attached to the base and the piston attached to a link adjacent one end thereof, the other end of the link being attached to the swinging arm.

3,961,665

APPARATUS FOR SEPARATING A PRODUCT OF SUBLIMATION FROM A GAS

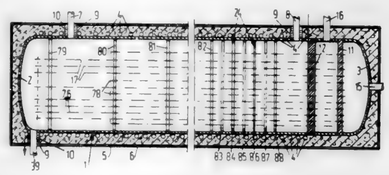
Johannes Langbroek, Egmand aan de Hoef, and Jan W. A. M. Koolen, Culemborg, both of Netherlands, assignors to Ultracentrifuge Nederland N.V., The Hague, Netherlands

Filed Oct. 8, 1974, Ser. No. 513,171

Claims priority, application Netherlands, Oct. 31, 1973, 7314937

Int. Cl.² B01D *7/00*; **F28F** *13/00*

U.S. Cl. 165—61 **8 Claims**



1. Apparatus for separating a product of sublimation from a gas in which this product is present in the form of a vapor, comprising

a. a housing, elongated in a generally horizontal dimension, and having an inner wall,

b. means surrounding said housing for maintaining said housing at a temperature above the melting point of the product of sublimation, said means including heat-exchanging means,

c. a gas inlet at one end of said housing,

d. a drain for removing a molten product of sublimation from said housing,

e. a gas outlet at the end of said housing opposite said gas inlet end, gas introduced at said gas inlet flowing in a path toward said gas outlet,

f. means for providing the precipitation of the product of sublimation in solid form while minimizing the opportunity for blockage of said gas path by precipitated solid, said means including (i) a plurality of cooling tubes of different lengths including tubes of longest and shortest length, (ii) means near the gas outlet end of said housing for mounting said tubes generally parallel to the dimension of elongation of said housing and generally parallel to the path of said gas so that only the longest tubes extend to said gas inlet end of said housing and so that the tube density increases from said gas inlet toward said gas outlet, said mounting means including tube plates near the gas outlet end of said housing, and (iii) inlet and outlet means for a heatexchanging medium flowing in said tubes communicating with said tube plates and said tubes mounted thereby.

3,961,666

HEAT DISPERSION DEVICE FOR USE IN AN ELECTRONIC APPARATUS

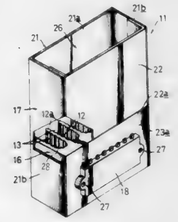
Tadao Suzuki, Tokyo; Hirohito Kawada, Chofu, and Yasuo Sugimoto, Musashino, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 20, 1973, Ser. No. 417,520

Claims priority, application Japan, Nov. 24, 1972, 47-135276; July 2, 1973, 48-78628

Int. Cl.² F24H *9/02*

U.S. Cl. 165—129 **11 Claims**



1. A heat dispersion device, comprising at least one heat dispersion member of heat conducting material including a first portion for receiving at least one heat-generating electronic element thereon and a second portion connected to said first portion and having at least one set of spaced apart fins defining channels therebetween which open at the top and bottom of said set of fins, said fins being positioned parallel to each other and uniformly spaced apart in the range between 5mm and 10mm; and at least one open ended duct having one end mounted on said second portion of said heat dispersion member and extending upwardly from said top of the set of fins in communication with said channels, a portion of said duct cooperating with said second portion of said heat dispersion member to define a conductive passageway for heated air to pass through said channels and through said duct for exhaust at the other end of the latter.

3,961,667

HYDRAULICALLY ACTUATED WIRE LINE APPARATUS

Neal L. Mitchell, Taft, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sept. 30, 1974, Ser. No. 510,260

Int. Cl.² E21B *33/127, 23/04*

U.S. Cl. 166—187 **9 Claims**

1. A wire line inflatable packer comprising an elongated body including a tubing section; means for connecting a wire line to the upper end of said elongated body; an elongated resilient sleeve positioned over at least a portion of said tubing section; means connecting the ends of said resilient sleeve in fluid-tight relationship with said tubing section to form an annular chamber between said tubing section and said resilient sleeve; port means providing a passageway for flowing fluid to said annular chamber; gas chamber means for storing high-pressure gas in said elongated body for use in inflating said resilient sleeve; pressure sink means forming a pressure sink for use in deflating said resilient sleeve; conduit means connected between said gas chamber means and said port means and between said port means and said pressure sink means for use in inflating and deflating said sleeve; valve means connected to said conduit means for selectively controlling flow of high-pressure gas between said port means and said gas chamber means through said conduit means to inflate said resilient sleeve and between said port means and said pressure sink means through said conduit means to deflate said resilient sleeve; and sequencing timer actuating means connected to said valve means for sequentially operating said valve means after passage of a predeterminable time interval to first inflate said resilient sleeve and then after passage of a second predeterminable time interval to deflate said resilient sleeve, said sequencing timer actuating means comprising means defining an orifice, a supply of noncompressible liquid for flow through said orifice, means for driving said liquid through said orifice and operating means responsive to flow of said liquid through said orifice for operating said valve means.

3,961,668

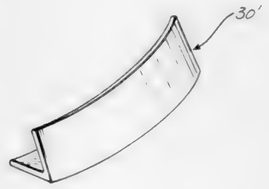
CORRECTIONAL PAD

Robert A. Sirles, 2873 Mary St., Omaha, Nebr. 68112

Filed Jan. 31, 1974, Ser. No. 438,362

Int. Cl.² A01L *1/00*

U.S. Cl. 168—4 **7 Claims**



1. A correctional pad for use on the hoof of an animal, comprising,

a side wall member having upper and lower ends,

a bottom wall member extending laterally from the lower end of said side wall member,

said side wall member being comprised of a material which may be adhesively secured to the side of the animal's hoof,

said bottom wall member extending beneath the hoof in a preselected position to alter the flight of the animal's foot,

said side wall member having a length substantially less than the side wall of the hoof,

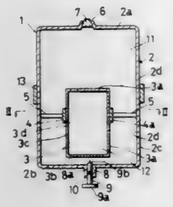
said bottom wall member having a length substantially less than the bottom of the hoof.

3,961,669

AUTOMOBILE FIRE FIGHTING APPARATUS

Mikio Kaneko, Toyoda, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Oct. 9, 1974, Ser. No. 513,235
Claims priority, application Japan, Dec. 6, 1973, 48-136627
Int. Cl.² A62C 35/12, 13/40
U.S. Cl. 169—62 10 Claims



1. A fire fighting apparatus for installation on an automobile body, said apparatus being adapted for automatic operation upon application of a colliding impact onto said automobile body, said apparatus comprising:

an outer container made of a rigid material and comprising a cylindrical body closed by a pair of end walls at the opposite ends thereof, said outer container containing a fire fighting composition;

a first opening formed in one of said end walls of said outer container in a substantially coaxial relationship with said cylindrical body, said first opening defining an outwardly extending hollow projecting having a tapered construction which terminates in a nozzle for discharging said composition from said outer container;

a plug in said hollow projection, said plug being tapered complementarily to said hollow projection and normally keeping said nozzle closed, said plug being made of a material which is easily collapsible when subjected to an elevated pressure;

a second opening formed in the other of said end walls of said outer container in a substantially coaxial relationship with said cylindrical body, and defining an outwardly extending tubular projection;

an inner container containing a high pressure gas therein and encased in said outer container in a substantially coaxial relationship with said outer container, said inner container comprising a cylindrical body closed by a pair of end walls at the opposite ends thereof, said cylindrical body of said inner container being considerably smaller in diameter and length than said cylindrical body of said outer container, one of said end walls of said inner container being made of a fragile material at least in the central portion thereof and located close to said other end wall of said outer container;

an elongate plunger slidably received in said tubular projection, one end of said plunger being pointed and located in a destructively engageable relationship with said one end wall of said inner container, the other end of said plunger being located outside of said tubular projection and terminating in an enlarged head, said head being spaced apart from said tubular projection by a distance which permits said one end to plunge into destructive engagement with said one end wall of said inner container upon sliding movement of said plunger,

a hoop encircling said cylindrical body of said inner container for holding said inner container in a fixed position relative to said outer container;

a plurality of equally spaced, radially extending supporting bars each joined to said hoop at one end and said cylindrical body of said outer container at the other end, said bars cooperating with said hoop in supporting said inner container on said outer container; and

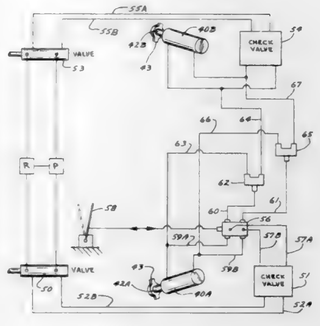
another hoop encircling said cylindrical body of said outer container for attaching said apparatus to a convenient portion of said automobile body.

3,961,670

HYDRAULIC CONTROL SYSTEM FOR HYDRAULICALLY OPERATED ROAD GRADER

Theodore Rivinius, 810 N. 2nd St., Bismarck, N. Dak. 58501

Filed Mar. 13, 1975, Ser. No. 557,923
Int. Cl.² E02F 3/76
U.S. Cl. 172—4.5 3 Claims



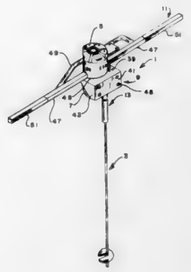
1. In combination with an earthworking machine having a pair of double acting cylinders each having a base end and a rod end providable with fluid under pressure for operating an earth working blade, and a separate control valve for each of said cylinders, each control valve having a pair of lines comprising selectively actuable first and second lines for operating the one of said double acting cylinders associated therewith, the improvement comprising a selector valve in fluid communication with the first and second lines of one of said control valves and to the cylinder associated therewith, said selector valve provided with means movable to a first position wherein said first and second lines are in fluid communication with the corresponding cylinder, and a second position wherein said first and second lines from said one control valve will be in fluid communication with separate outlet ports of said selector valve, a first flow integrator valve having a pair of first inlet ports and a first outlet port, said first outlet port being in fluid communication with one of said outlet ports of said selector valve, and said first inlet ports each being in fluid communication with the base end of a different one of said cylinders from the cylinder in fluid communication with the other of said first inlet ports, and a second flow integrator valve having a pair of second inlet ports and a second outlet port, and said second outlet port being in fluid communication with the other of said outlet ports of said selector valve and said second inlet ports being in fluid communication with the rod end of a different one of said cylinders from the cylinder in fluid communication with the other of said second inlet ports, said flow integrator valves each permitting parallel fluid flow in a direction from their respective outlet ports to their respective inlet ports, but preventing substantially dissimilar fluid flow from each of the respective inlet ports to their respective outlet port whereby said flow integrator valves meter the exhaust flows from both of said double acting cylinders to insure equal exhaust flows, and permit parallel operation of said cylinders with substantially equal movement thereof.

3,961,671

EARTH ANCHOR DRIVE PROCESS

James R. Adams, 1125 E. Vandiver, and James K. Adams, Rte. No. 10, both of Columbia, Mo. 65201

Filed Sept. 3, 1974, Ser. No. 502,982
Int. Cl.² E02D 7/22, 5/80
U.S. Cl. 173—1 11 Claims



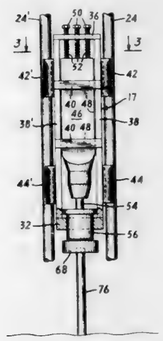
1. A method of inserting into the earth an earth anchor having a rod with a diameter of from about ½ to about ¾ inch and a length of from about 3 feet to about 5 feet, and having toward the normally lower end of said rod a single turn helix with a diameter of from about 4 to 8 inches and a pitch of from about 1 to 3 inches, said method utilizing a hand-held electric motor-powered drive tool, said method comprising forming a driving connection between said drive tool and the upper end of said rod at a distance of at least 2 feet from said helix, and driving said anchor into the earth at a rotational speed which at no time exceeds 10 revolutions per minute.

3,961,672

IMPACT HAMMER POST DRIVER

John H. Welsch, Dunmore, and Edward J. Sparrow, Blakely, both of Pa., assignors to Sterling Engineering and Manufacturing Company, Wilkes-Barre, Pa.

Filed Nov. 13, 1974, Ser. No. 523,260
Int. Cl.² E04H 17/26
U.S. Cl. 173—43 17 Claims



1. A fluid impulse post-driving apparatus comprising

a. a tower;

b. at least one fluid reservoir;

c. a fluid-pressure actuated impact hammer having a fluid chamber therein and operating fluid in said chamber;

d. means for positioning said hammer in line with a post to be driven;

e. a cage for retaining said hammer therein;

f. advancing means having a first and a second end, said first end secured to said tower and said second end secured to said cage wherein said advancing means is adapted to move said cage longitudinally toward and away from said post after said hammer has been positioned by said positioning means;

g. fluid pressure operated means for applying and maintaining static pressure on said post while it is being driven, said static pressure means being capable of applying static pressure to said post only through said hammer;

h. a shank, moveable with respect to said hammer, intervening said hammer and said post and positioned to transmit force from said fluid chamber within said hammer to said post;

i. fluid-pressure generating means communicating with said fluid chamber;

j. fluid-pressure impulse generating means for creating intermittent fluid pressure pulses in said operating fluid, said pressure pulses producing downward forces on said shank and upward reaction forces on said hammer;

k. resilient means positioned to receive and store energy from said reaction forces, said resilient means engaging said hammer for redelivery of said stored energy to said post through said hammer and said shank, during the period between pressure pulses; and

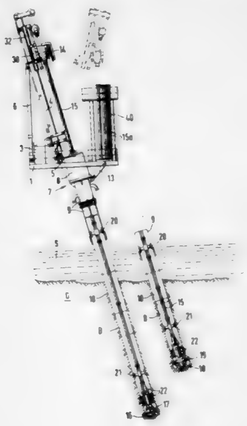
l. anvil means alignable with and intervening said post and said shank and including means for maintaining alignment between said shank and said post, said anvil means being constructed and positioned to transmit said downward force from said shank to said post when said static pressure is being applied to said post, said construction and positioning of said anvil preventing transmission of upward forces from said post to said cage except through said resilient means.

3,961,673

DRILLING APPARATUS

Jakob Wolters, Wegberg-Beeck, and Josef Classen, Heinsberg-Horst, both of Germany, assignors to Maschinen- und Bohrgerate-Fabrik Alfred Wirth & Co., K.G., Erkelenz, Germany

Filed Mar. 24, 1975, Ser. No. 561,160
Claims priority, application Germany, Apr. 2, 1974, 11496[U]
Int. Cl.² E21B 19/14
U.S. Cl. 175—52 9 Claims



1. A drilling apparatus comprising a frame structure, a mast, a pivoting axis and a support means having an adjustable length operably related to the frame structure and mast for connecting the mast to the frame structure, the mast being angularly adjustable relative to the frame structure about the pivoting axis by adjusting the length of the support means, a drill string extending along the mast, drive means for rotating the drill string, a support having an opening for the passage of the drill string, the support being pivotally connected to the frame structure, adjustable connecting means between the support and frame structure by which the support is angularly

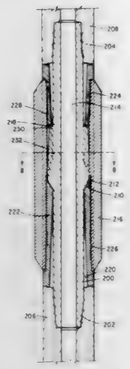
adjustable relative to the frame structure by adjusting the length of the connecting means, the support having a lower part defined by a tube-like member for mounting on the upper end of a stationary pipe,

3,961,674

DIRECTIONAL DRILLING SYSTEM

James T. Craig, Jr., Bixby, and Arthur Park, Tulsa, both of Okla., assignors to Standard Oil Company, Chicago, Ill.

Filed July 11, 1974, Ser. No. 487,482
Int. Cl.² E21B 7/10
U.S. Cl. 175—325 6 Claims



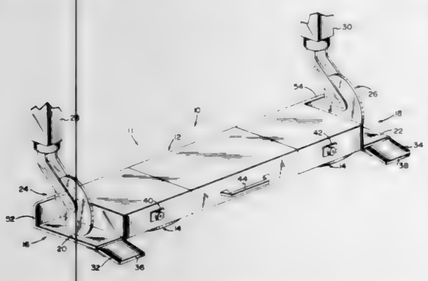
1. A stabilizer for use in a string of drill pipe which includes:
an inner hollow mandrel having an enlarged bearing section on the outer surface intermediate the ends thereof;
a hollow blade element housing surrounding said mandrel, the inner diameter of said housing being about equal to the diameter of said bearing section of said mandrel so as to form an upper annulus between the mandrel and housing on one side of said bearing section and a lower annulus on the other side thereof;
an upper insert in said upper annulus, said upper insert being annular in shape and having a larger internal diameter at the outer end than at the inner end; and
a lower annular insert in said lower annulus, said lower insert having a larger internal diameter at the outer end than at the inner end.

3,961,675

PORTABLE HOUSING FOR WEIGHING SYSTEMS

Vernon Harold Siegel, 5120 Brookfield Lane, Clarence, N.Y. 14031

Filed May 1, 1975, Ser. No. 573,455
Int. Cl.² G01G 21/00, 19/00
U.S. Cl. 177/126 6 Claims



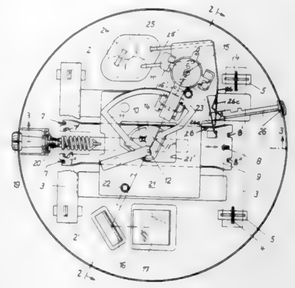
1. A portable housing for a weighing system for monitoring the weight of a non-ambulatory patient, said housing comprising: an elongated, box-like apparatus having a central section and two end sections; each of said end sections containing at least one operatively positioned weight responsive element, and being further formed to provide a receptacle for the terminal portion of the leg of a bed and having associated therewith an entrance for said terminal portion and means for releasably restraining said terminal portion therein, said end sections being adjustable toward and away from one another whereby beds having legs of different widths can be accommodated.

3,961,676

WEIGHING SCALES

Marc Terraillon, Gaillard, France, assignor to Terraillon, Annemasse, France

Filed May 9, 1975, Ser. No. 576,300
Claims priority, application Switzerland, May 24, 1974, 7196/74
Int. Cl.² G01G 23/32
U.S. Cl. 177—178 7 Claims



1. A weighing scales comprising a base and a platform adapted to receive a person to be weighed, means carried by said base both for supporting said platform and for translating movement of said platform relative to said base to movement of a graduated scale formed by a transparency carrying weight indicia, and an optical system including a light source for projecting a beam of light through said graduations of said transparency, a plurality of mirrors for reflecting an illuminated image of weight indicium, and a translucent window provided with an index carried by said platform, said weighing scales characterized in that it further comprises a support plate, said support plate mounting said light source and said transparency in fixed spaced relation thereto, said support plate being fixed to said base at points within a plane aligned along a straight line which is at least substantially parallel and in proximity to the optical axis of the beam of light from said light source serving to project the graduations onto said translucent window.

3,961,677

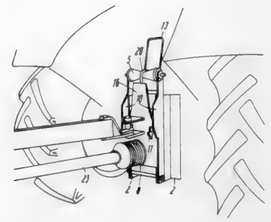
DEVICE FOR CONNECTING A POWER TRANSMISSION SHAFT OF AN AGRICULTURAL IMPLEMENT, MACHINE OR THE LIKE TO A TRACTOR POWER TAKE-OFF SHAFT

Hubert Geisthoff, Lohmar, Donrath, Germany, assignor to Jean Walterscheid GmbH, Lohmar, Rhineland, Germany

Division of Ser. No. 401,863, Sept. 28, 1973, Pat. No. 3,847,415. This application Sept. 9, 1974, Ser. No. 504,113
Claims priority, application Germany, Sept. 29, 1973, 2247903
Int. Cl.² B60D 1/00
U.S. Cl. 180—14 B 6 Claims

1. In a device for connecting a power transmission shaft on an agricultural implement and the like to a power take-off shaft of a tractor vehicle, the combination of a catch bar pivotally mounted on the rear of a tractor vehicle, an inwardly

tapered alignment roller on said catch bar, a coupling plate mounted on the implement to be connected, an aligning hook on said coupling plate having an opening engageable with said catch bar inwardly tapered alignment roller and shaped to



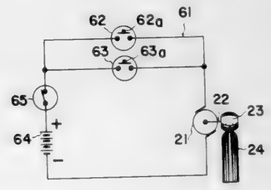
align vertically and horizontally the plate and transmission shaft with the power take-off shaft, and mutually engageable means on said tractor power take-off shaft and said power transmission shaft for coupling said shafts in the vicinity of said coupling plate.

3,961,678

SIMPLE ELECTRIC BICYCLE

Yukio Hirano, and Akio Iwata, both of Kiryu, Japan, assignors to Mitsubadenkiseisakusho Company, Ltd., Kiryu, Japan

Filed Aug. 22, 1974, Ser. No. 499,635
Claims priority, application Japan, Sept. 11, 1973, 48-101651
Int. Cl.² B62D 61/02; B60K 17/00; B62M 7/08
U.S. Cl. 180—33 D 7 Claims



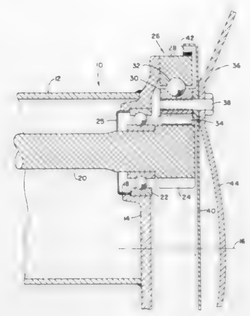
1. In the combination of a bicycle having a frame and two wheels and an electric motor for propelling said bicycle, the improvement comprising:
a swing arm;
means for pivotally mounting said swing arm at one end to said bicycle frame at a position above the uppermost portion of one of said wheels and forward of a vertical line passing through the axle of said wheel;
a drive roller rotatably mounted to the other end of said swing arm, said drive roller being in contact with said wheel and driven by said electric motor;
said mounting means, when the drive roller is in contact with said wheel, positioning said swing arm relative to said wheel to form an angle whereby the radial force applied by the drive wheel is a function of the driving force of said electric motor; and
an electrical circuit including a pair of switches attached to said bicycle at two spaced locations, a power switch and a power supply, said pair of switches are in parallel with each other and in series with said power switch, said electric motor and said power supply, said pair of parallel switches being located on the right and left portions of a handlebar of said bicycle respectively such that actuation of said electric motor may be controlled from at least two spaced locations.

3,961,679

VEHICLE FINAL DRIVE AND WHEEL MOUNTING

Mahlon Lloyd Love, Osco, Ill., assignor to Deere & Company, Moline, Ill.

Filed Feb. 27, 1975, Ser. No. 553,890
Int. Cl.² B60K 17/04
U.S. Cl. 180—75 8 Claims



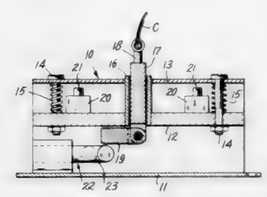
1. A vehicle final drive and wheel mounting comprising: a nonrotatable axle housing structure connected to the vehicle; a single annular bearing having coaxial annular inner and outer races, and a plurality of bearing elements between the inner and outer races providing relative rotation between the races; and annular internal ring gear having a smaller diameter than and coaxially disposed within the bearing inner race; means coaxially attaching the wheel to one of the bearing races; means connecting the other bearing race to the axle housing structure; a drive shaft journaled for rotation relative to the axle housing structure; and gear means drivingly connecting the drive shaft to the internal ring gear to drive the wheel at a lower speed than the drive shaft.

3,961,680

AUTOMOBILE SECURITY DEVICE

Marcel Miescher, 9 rue du Vieux-Billard, Geneva, Switzerland

Filed Sept. 30, 1974, Ser. No. 510,721
Claims priority, application Switzerland, Sept. 28, 1973, 13984/73
Int. Cl.² B60R 21/10
U.S. Cl. 180—82 C 4 Claims



1. In an automobile vehicle provided with at least one safety belt, a security device comprising:
a. an attachment piece secured to an end of the belt, said attachment piece having a pivotally movable catch thereon;
b. a casing fixed in the vehicle, said casing including means defining an opening removably receiving said attachment piece and said pivotally movable catch;
c. a member movably mounted in said casing;
d. spring means opposing said movement of the member;
e. means for normally holding said catch in a fixed position, relative to said member, to lock said attachment piece in

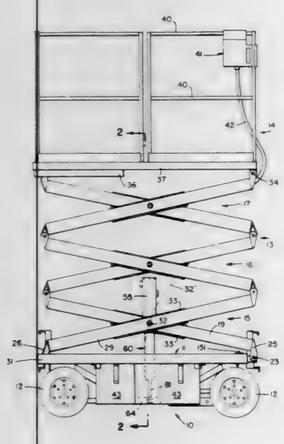
said casing; and means for releasing said holding means in response to movement of said member by an amount corresponding to a given traction in the belt and after a given delay whereby said catch may pivot on said attachment piece for withdrawal thereof through said opening.

3,961,681

MOBILE SCAFFOLD WITH SERIES-CONNECTED HYDRAULIC MOTOR DRIVE

Robert E. Fisher, Larkspur, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed July 1, 1974, Ser. No. 484,811
Int. Cl.² B60K *41/16*; E04G *1/24*
U.S. Cl. 180—66 R **8 Claims**



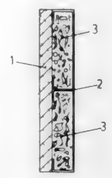
1. A mobile device comprising:
a. a generally rectangular frame,
b. a plurality of ground-engaging wheels mounted on said frame,
c. a first hydraulic motor drivingly connected to one of said wheels,
d. a second hydraulic motor drivingly connected to another of said wheels,
e. a hydraulic pump mounted on said frame,
f. power means mounted on said frame for driving said pump,
g. a fluid conduit having two ends, said first and second hydraulic motors being connected in series in said conduit between the two ends thereof,
h. means including a valve for connecting said pump to said conduit to enable fluid under pressure from said pump to flow through said conduit, said valve having a first position connecting the output of said pump to one end of said conduit and a second position blocking flow of fluid through said conduit,
i. means forming a bypass passage connected at its ends to the ends of said conduit whereby both of said motors are bypassed, said bypass passage having a flow restrictor therein,
j. bypass valve means in said bypass passage having an open position allowing fluid to flow through said bypass passage and a closed position preventing fluid flow through said bypass passage.

3,961,682

SOUND-ABSORBING WALL ELEMENT

Gerd Dausch, Wuppertal, and Heinrich Klotz, Westhofen, both of Germany, assignors to Hermann Hemscheidt Maschinenfabrik, Germany

Filed Nov. 29, 1974, Ser. No. 528,543
Claims priority, application Germany, Dec. 5, 1973, 2360519
Int. Cl.² E04B *1/82*
U.S. Cl. 181—33 G **4 Claims**



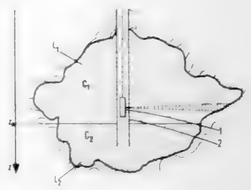
1. In an open air sound-absorbing wall, a sound-absorbing wall element adapted to absorb air-borne sound, said element being composed of shreds of disintegrated reinforced pneumatic rubber tires, said shreds being bonded together to form an irregular weather-resistant panel structure having irregular pores, a majority of said shreds being of a length between 3 and 30 millimeters, said wall element containing a volume of said shreds which is not more than 60% of the volume of the wall element and having a density of less than 0.6 grams per cubic centimeter.

3,961,683

METHOD FOR DETERMINING THE SHAPE OF AN UNDERGROUND CAVITY AND THE POSITION OF THE SURFACE SEPARATING TWO MEDIA CONTAINED THEREIN AND DEVICE FOR CARRYING OUT SAID METHOD

Robert Delignieres, Mareil-Marly, France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants, France

Filed June 21, 1973, Ser. No. 371,962
Claims priority, application France, June 22, 1972, 72.22694
Int. Cl.² G01V *1/40*
U.S. Cl. 181—102 **15 Claims**



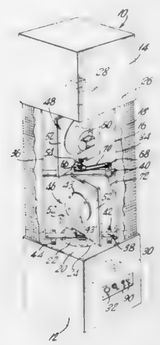
1. A device for determining the shape of a cavity containing at least one substance comprising:
a. means for transmitting a sequence of acoustic pulses along each of successive transmission axes from reference locations within the cavity in the direction of places of the wall of said cavity;
b. means for detecting echoes of the acoustic pulses received along each of said transmission axes between the transmission of any two acoustic pulses of the sequence;
c. means for selecting a plurality of echoes within a propagation time interval between two successive transmissions and substantially unchanged for each of the acoustic pulses transmitted along each of said axes; and
d. means for measuring the average propagation time interval of the selected echoes.

3,961,684

OMNI-DIRECTIONAL SOUND SYSTEM

Stanley H. Michael, Miami, Fla.; Hans J. Weilandt, Clark, and Ralph R. Soupe, Little Falls, both of N.J., assignors to Turnsound Corporation, Maplewood, N.J.

Filed May 23, 1974, Ser. No. 473,089
Int. Cl.² G10K *7/00*
U.S. Cl. 181—143 **5 Claims**



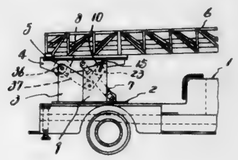
1. A turnable speaker system comprising,
a. frame means,
b. a speaker-baffle assembly including (1) a basket speaker, (2) a first baffle, for reflecting sound, external to and coupled to said speaker, and (3) a second baffle with at least one opening mounted to the front face of said speaker; said first baffle being arranged generally parallel to and near the front face of said speaker; said first baffle having an aperture within which an outer portion of said speaker is seated; said speaker-baffle assembly having a center of gravity within said speaker at a location rearward of said first baffle;
c. a pair of shaft members rotatably coupled in spaced relation to the frame means in alignment with one another to form a rotation axis;
d. mounting means including a pair of brackets mounted to the rear of said first baffle and extending rearward thereof and coupled to respective ones of said shaft members such that the rotation axis is substantially aligned through said center of gravity.

3,961,685

LADDER WORKING LIMIT BASED LADDER STOPPING DEVICE FOR AERIAL LADDER TRUCK

Tetsuo Kozai, Osaka, Japan, assignor to Morita Pump Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1974, Ser. No. 536,036
Int. Cl.² B66F *11/04*
U.S. Cl. 182—19 **4 Claims**



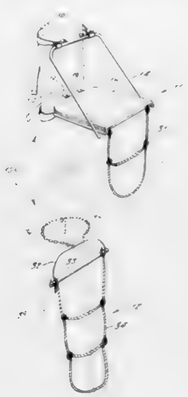
1. In an aerial ladder truck assembly having a turntable unit mounted on the rear portion of the truck, a ladder support pillar unit mounted on the turntable unit, a ladder support frame unit pivotally mounted on the ladder support pillar unit, ladder means mounted on the ladder support frame unit, hydraulic cylinder means operatively positioned between the ladder support pillar unit and the ladder support frame unit to vertically swing the ladder means, operating lever means for actuating said hydraulic cylinder means, drum means to extend and contract the ladder means, hydraulic driving means for actuating the drum means, operating lever means for actuating said hydraulic driving means, hydraulic pump means for actuating the hydraulic cylinder means and the hydraulic driving means, and control means for operating said hydraulic cylinder means and said hydraulic driving means respectively, the improvement of a safety mechanism for preventing the vertical swinging and the extension of the ladder means beyond safe working limits, said safety mechanism including first indicator means operatively connected with the ladder means for indicating the amount of extension of the ladder means, second indicator means operatively connected with the ladder means for indicating the vertical swing of the ladder means, first solenoid valve means operatively associated with the hydraulic driving means for automatically stopping the extension and contraction of said ladder means, second solenoid valve means operatively associated with the hydraulic cylinder means for automatically stopping the raising and lowering of said ladder means, and electrical circuit means operatively connected to said first indicator means and to said second indicator means on the one side and to said first solenoid means and said second solenoid means on the other side, said electrical circuit means including switching means whereby when said ladder means reaches a maximum safe extension point at the particular vertical inclination angle of the ladder means as indicated by said first indicator means and said second indicator means, said switching means of said electrical circuit means will energize said first and second solenoid means to prevent any further movement of the ladder means beyond the safe point of the ladder means.

3,961,686

EASY-UP TREE STAND

Isaac R. Starkey, 205 W. Sugar Tree St., Wilmington, Ohio 45177

Filed Apr. 18, 1973, Ser. No. 352,172
Int. Cl. A47c *9/10*; E06c *1/56*
U.S. Cl. 182—187 **1 Claim**



1. In an easy-up tree stand, the combination of a seat unit attached to a higher part of a tree trunk, and a ladder unit attached therebelow to a lower part of said tree trunk, said seat unit comprising a pair of U-shaped frames attached pivotally together, one frame having a seat panel attached thereupon and a cushion or pad attached on said panel, a depending rope ladder attached to said panel, spurs attached to each frame, and straps attached along an intermediate leg of said U-shaped frame and securable around said tree trunk, each said U-shaped frame having a pair of said spurs in spaced apart

relation along said intermediate leg of said U-shaped frame, said spurs being tapered, said ladder unit comprising a bowed frame and a straight rod rigidly attached together at their ends, a rope ladder attached thereto, and a pair of chains attached to said bowed frame, the other ends of said chains being adjustably attached together by a bolt, nut and washer assembly.

3,961,687

LUBRICATION OF ROTATABLE MEMBERS

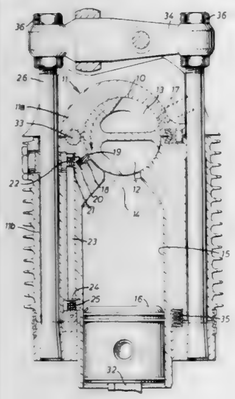
Michael Ellison Cross, 52 Bloomfield Ave., and Albert Edward Coles, 366 Bloom Road, both of Bath, England

Filed Sept. 6, 1974, Ser. No. 504,686

Claims priority, application United Kingdom, Sept. 7, 1973, 42107/73

Int. Cl.² F01M *9/10*

U.S. Cl. 184—6.9 **5 Claims**



1. An assembly for removing excess lubricant from a rotatably mounted cylindrical valve member comprising a housing, a cylindrical member rotatably mounted within the housing, a recess formed in the cylindrical surface of the cylindrical member, the housing defining an opening which comes into and out of communication with the said recess as the valve member rotates, means to supply lubricant to the cylindrical member within the housing, means to remove excess lubricant from the surface of the cylindrical member comprising a rigid scraper blade mounted within the housing and resiliently biased towards the surface of the rotatable cylindrical member, the axial extent of the rigid scraper blade being greater than that of the recess and the magnitude of the resilient bias coupled with the rigidity of the scraper deforming the rigid scraper blade by an amount not greater than 1/3000 of the diameter of the rotatable member when the recess and the blade are in register, a passage provided in the housing to allow draining of lubricant removed by the scraper blade and one or more non-return valves located in the said passage to produce an area of reduced pressure to assist in the draining of lubricant removed by the scraper blade.

3,961,688

TRANSPORTATION SYSTEM WITH MALFUNCTION MONITOR

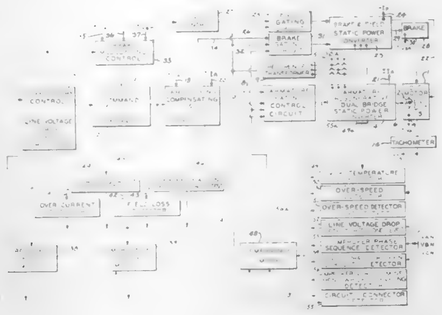
John T. Maynard, New Berlin, Wis., assignor to Armor Elevator Company, Louisville, Ky.

Filed Apr. 29, 1974, Ser. No. 465,271

Int. Cl.² B66B *5/02*

U.S. Cl. 187—29 R **218 Claims**

1. A transportation system for a structure having a plurality of spaced landings comprising a transport vehicle, means mounting said vehicle for movement relative to said structure in a path extending adjacent each of said landings, motive means moving said vehicle relative to the structure, braking means selectively permitting vehicle movement and retarding movement and retaining said vehicle in a stopped position with respect to said structure, control means connected to a source of energy and cooperating with said motive means and said braking means and controlling movement of said vehicle relative to the structure and stopping said vehicle at a selected landing, said control means having a plurality of modes of operation controlling the movement of said vehicle, means monitoring one or more malfunctions within said transportation system, and transfer means responsive to the functioning of said monitoring means and transferring said control means



from one of said modes of operation to another of said modes of operation, said plurality of modes including a first mode of operation operating said vehicle and providing normal service between a plurality of landings and a second mode of operation established in response to a malfunction sensed within said transportation system rendering said motive means essentially inoperative for supplying a driving force to said vehicle and automatically operating said braking means as essentially the sole control for guiding said transport vehicle to one of said landings.

3,961,689

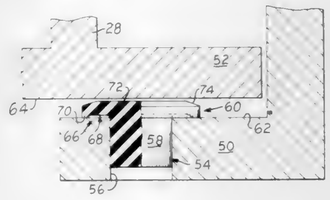
SPACER AND NOISE SUPPRESSOR CUSHIONS FOR LIFT TRUCK MAST UNITS

Edward V. Leskovec, Eastlake, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Apr. 18, 1975, Ser. No. 569,513

Int. Cl.² B66B *7/02*

U.S. Cl. 187—95 **4 Claims**



1. In a lift truck mast unit including a fixed upright unit, at least one movable upright unit and a carriage arranged for longitudinal movement relative to the movable upright unit, motor means being operable for moving the carriage relative to the movable upright unit and for shifting the movable upright unit relative to the fixed upright unit, the movable upright unit including a pair of flanged structural beams arranged in spaced-apart relation, the fixed upright unit also including structural beams having flanges arranged in facing relation to the flanges of the movable upright beams, a plurality of spacer and noise suppressor cushions arranged upon the flanges of either the movable upright beams or the fixed upright beams, each spacer and noise suppressor cushion comprising an elastomeric body including a reduced diameter

portion secured within a bore formed by one flange, the elastomeric body including another portion having a diameter substantially larger than the bore for arrangement between the one flange and the facing flange, the larger diameter portion of the elastomeric body having an annular surface abutting the one flange about its bore, the annular surface of the elastomeric body portion being circumferentially undercut to form a peripheral rim normally in contact with the surface of the one flange, the larger diameter portion of the elastomeric body thereby exhibiting increased resilience due both to its elastomeric composition and a spring effect due to its undercut configuration.

3,961,690

DISC BRAKE

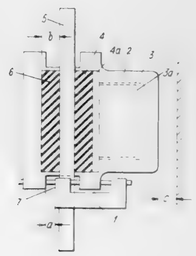
Johannes Schanz, Offenbach, and Jochen Burgdorf, Bad Homburg, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 530,314, Dec. 6, 1974, abandoned. This application Aug. 11, 1975, Ser. No. 603,850

Claims priority, application Germany, Feb. 20, 1974, 2408075

Int. Cl.² F16D *66/00*

U.S. Cl. 188—1 A **6 Claims**



1. A disc brake comprising:
a brake disc rotatable in a given plane;
a stationary brake carrier;
a floating caliper embracing said disc and slideably guided by said carrier in transverse moveable relationship to said given plane;
a brake cylinder having a working piston supported by said caliper;
a first brake pad supported at and actuated by said working piston, said first pad being disposed in a parallel relation to said given plane;
a second brake pad supported by said caliper on a side of said disc remote from said cylinder, said second pad being disposed in a parallel relation to said given plane;
a stationary stop carried by said carrier to limit the maximum shifting travel of said caliper to a given distance when said caliper abuts said stop, said given distance being less than the thickness of said second pad;
said caliper having a first outward projection adjacent said first brake pad and a second outward projection adjacent said second brake pad;
said carrier having a U-shape with first and second legs extending toward said caliper and embracing said first projection, said first leg being disposed adjacent said brake cylinder and spaced from said first projection and said second leg being disposed between and spaced from said first and second projections, said second leg carrying said stop on a surface thereof parallel to and adjacent said second projection and being spaced from said second projection said given distance; and
a stationary rod extending through the ends of said first and second projections and the ends of said first and second legs to assist in slideably guiding said caliper.

3,961,691

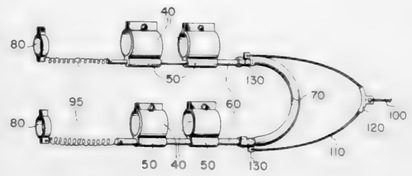
EMERGENCY BICYCLE BRAKE

Shuck Tong Eng, Corona, N.Y., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Apr. 28, 1975, Ser. No. 572,180

Int. Cl.² B62L *1/02, 3/06*

U.S. Cl. 188—24 **2 Claims**



1. An emergency brake for bicycles, comprising:
a semicircular member slidably attached to the frame of the bicycle to be slidable forwardly and rearwardly in a horizontal plane, the member being located directly forwardly of the rear wheel with the free ends of the member extending rearwardly:
a spring urging the member rearwardly to press against the rear wheel; and
lock means for holding the member in its forwardmost position when the lock means is locked, and leaving the member free to slide when the lock means is unlocked;
said lock means including a trigger means and a reset means, the reset means allowing the member to be pulled forwardly and locked in its forwardmost position after being released to press against the rear wheel, the trigger means cooperating with the reset means to allow the reset means to release the member when the trigger means is operated, said reset means including a cylindrical spool having an axial bore upon which a cable attached to the member can be wrapped, an axle fixed to the bicycle frame extending through the bore to allow the spool to rotate about its axis, a lever attached to the spool for rotating the spool, a notched disc attached to the spool, and a springloaded movable pawl normally engaging the notch in the disc to prevent the spool's rotation unless the pawl is disengaged; and
a flexible bicycle handbrake cable interconnecting the trigger means, reset means and said member, and wrapped on the spool.

3,961,692

VARIABLE TORQUE ELECTRIC CLUTCH AND BRAKE

Ray L. Marquis, Blookfield, and Frank H. Beckman, New Britain, both of Conn., assignors to Kalart Victor Corporation, Plainville, Conn.

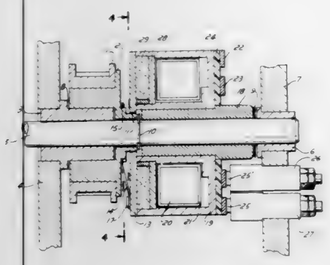
Filed Nov. 1, 1974, Ser. No. 519,829

Int. Cl.² F16D *19/00*

U.S. Cl. 192—84 A **9 Claims**

1. A magnetic clutch having a rotary power input structure comprising a flat, annular plate, and an output structure comprising two coplanar, spaced apart non-resilient friction surfaces and a third planar, lubricant impregnated resilient friction surface located between said two coplanar surfaces, and magnetic flux generating means within said output structure,

said plate and said friction surfaces of said output structure being coaxial and juxtapositioned so that the plate is drawn



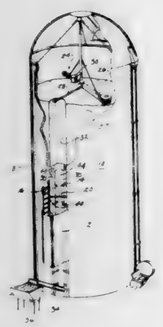
against the output structure when a magnetic flux is applied to the plate.

3,961,693

INVERTED SILO CHUTES HAVING SWINGABLE SIDE WALL PANELS

George B. Bruecker, Rte. 1, Greenleaf, Wis. 54126

Filed Apr. 9, 1975, Ser. No. 566,593
Int. Cl.² B65G *11/02*
U.S. Cl. 193—14 **7 Claims**



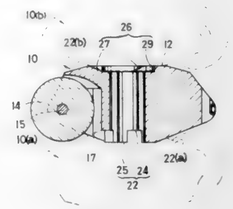
1. In a silo having a wall and having an upright opening in said wall, an inverted chute projecting inwardly in said silo in registration with said upright opening, the improvement wherein said chute includes at least one upright series of swingable panels each having inner and outer edges, each panel being hingedly connected along its outer edge to a side of said upright opening for independent swinging movement from a position projecting inwardly of the silo to form part of the chute to a position where it serves as a continuation of the silo wall to close part of said opening, and readily removable connecting means releasably holding said swingable panels in said position where they project inwardly of the silo, said panels being swingable to non-projecting position with respect to the interior of the silo and being sized and positioned to each close part of said opening when swung toward said opening on the hinge connections after said removable connecting means has been released.

3,961,694

ROLLER DEVICE

Masahiro Murakami, 28-21 Oimazato 2-chome, Higashinari, Osaka, Japan

Continuation of Ser. No. 321,309, Jan. 5, 1973, Pat. No. 3,878,927. This application Jan. 31, 1975, Ser. No. 545,908
Claims priority, application Japan, Feb. 22, 1972, 47-18812
Int. Cl.² B65G *39/04*
U.S. Cl. 193—37 **1 Claim**



1. A roller device comprising a main body, including a cylindrical boss adapted for mounting on a shaft, a plurality of rollers rotatably spaced apart concentrically around said boss, ribs extending radially from the outer periphery of the boss to rotatably receive said rollers, said ribs branching into a plurality of support arms with front and rear faces at the end opposite the boss, wherein one end face of the boss is formed with tonguelike projections and recesses alternately adjacent to said rollers and ribs, and the other end face of the boss is formed with a circular recess having the same diameter as the diameter of said boss and a depth different from height of the said projections, and cutouts extending from said circular recess being angularly displaced from the ribs on the one face by one half the angular pitch of the roller arrangement wherein two said roller devices may be coupled together by placing the projections of one of said roller devices into the circular recess or the recesses of the other of said roller devices whereby the rollers of said one device are displaced by one half of the angular pitch of the roller placement of said other devices.

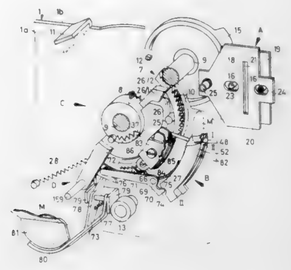
3,961,695

MANUALLY ACTIVATED APPARATUS FOR TIMING INTERVALS OF DIFFERENT MAGNITUDE

Ortwin Wokköck, Schwenningen, and Bernhard Kaiser, Villingen, both of Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany

Filed May 9, 1974, Ser. No. 468,446
Claims priority, application Germany, May 10, 1973, 2323567
Int. Cl.² G07F *17/24*
U.S. Cl. 194—83 **7 Claims**

1. In an apparatus for timing intervals of varying magnitude, particularly in a parking meter, a combination comprising manually operable first means which is continually biased to a starting position and turnable from the same to an operating position; second means associated with said first means and operative for receiving a coin, and for determining the value of the coin in response to turning of said first means towards said operating position; third means operatively connected with said first and second means for presetting, during turning of said first means to said operating position, a time interval of a magnitude which depends upon the coin value determined by said second means; fourth means operatively connected with said first and third means for indicating the magnitude of the preset time interval in response to returning of said first means to said starting position thereof, wherein said fourth means is movable between a null position and a plurality of time-interval indicating positions; and further comprising means for moving said fourth means to said null position



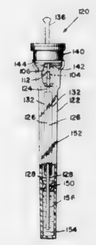
in response to turning of said first means from said starting position to said operating position thereof.

3,961,696

DEVICE FOR MAKING A CULTURE OF CO_2 REQUIRING ORGANISMS

Betty Anne Bowie, Havertown, and Joseph F. Pagano, Paoli, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Oct. 20, 1975, Ser. No. 623,936
Int. Cl.² C12B *1/02*
U.S. Cl. 195—139 **6 Claims**



1. A device for making a culture of micro-organisms comprising:
an elongated member,
a culture medium for culturing CO_2 requiring organisms supported by said member,
a container for the elongated member having an open end,
means to seal the open end of the container, and
means to secure a CO_2 tablet to said elongated member between the culture medium and the open end of the container with the tablet exposed to the atmosphere within the container.

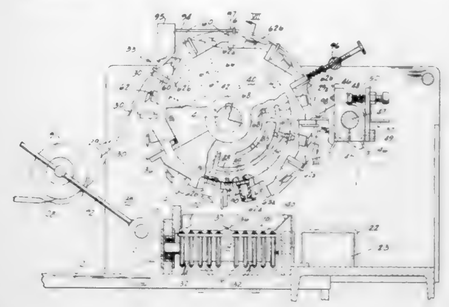
3,961,697

APPARATUS FOR SHINGLING AND PACKING OF ARTICLES

Donn A. Hartman, Zion, and Charles E. Cloud, Wilmette, both of Ill., assignors to R. A. Jones & Company Inc., Covington, Ky.

Filed Mar. 20, 1974, Ser. No. 452,798
Int. Cl.² B65G *47/00*
U.S. Cl. 198—25 **18 Claims**

18. Apparatus for orienting pouches comprising,
an indexing wheel having a plurality of suction heads spaced around its periphery,
means for rotating said wheel,
a conveyor passing below and at right angles to the rotary path of said wheel,
means for applying vacuum to said heads to grasp individual pouches,



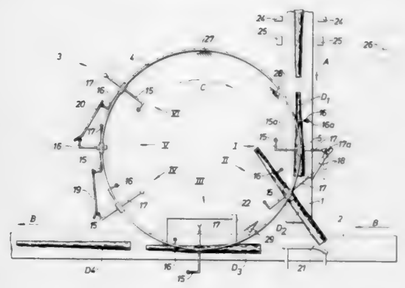
and means for releasing said vacuum at different predetermined angular positions of said wheel to cause said heads to release said pouches onto said conveyor to form a plurality of rows of pouches on said conveyor.

3,961,698

METHOD AND APPARATUS FOR TURNING LOGS

Gösta Ahlenius, Domsjoverken, and Ake Svensson, Sjalevad, both of Sweden, assignors to Mo och Domsjo AB, Ornskoldsvik, Sweden

Continuation-in-part of Ser. No. 381,293, July 20, 1973, abandoned. This application Dec. 26, 1974, Ser. No. 536,686
Claims priority, application Sweden, July 31, 1972, 9968/72
Int. Cl.² B65G *49/00*
U.S. Cl. 198—25 **22 Claims**



1. A process for orienting logs having a root end and a crown end and arranged in a row so that all the logs in the row have their roots ends pointing in the same direction, which comprises arranging the logs in a row in a heterogeneous orientation; conveying the logs along a first conveying path; at a selected location along the first conveying path, gripping selected logs in sequence at approximately their mid-point intermediate the root and crown ends of the logs in a manner to permit turning them; and turning selected gripped logs about an axis passing through the gripping point intermediate the root and crown ends of the logs, as required to orient the logs in a homogeneous orientation with the root ends of all logs in the rows facing in the same direction, while maintaining continued conveying movement of the logs; and transferring the homogeneously oriented logs to and conveying the homogeneously oriented logs along a second conveying path.

12. An apparatus for orienting logs having a root end and a crown end and arranged in a row in a heterogeneous orienta-

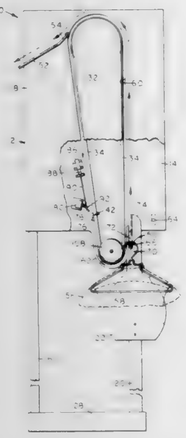
tion so that all the logs have their root ends pointing in the same direction, which comprises, in combination, a conveyor for conveying the logs arranged in a row one log after another log along the conveying path; means for gripping selected logs in sequence at a point intermediate their root and crown ends for removing selected logs from the row at one selected location along the conveying path, turning the selected logs about an axis passing through the gripping point intermediate the ends thereof, as required to orient the turned logs in a homogeneous orientation with the root ends of all the other logs in the row facing in the same direction, and returning the selected turned and homogeneously oriented logs to the row on the conveyor at another selected location along the conveying path, while maintaining continued conveying movement of the logs, and arranged to move along a path approximately parallel to the path of the conveyor and along an endless path, meeting the conveying path at the one and the other locations; and means for rotating the gripping means to turn the gripped logs about said axis.

3,961,699

AUTOMATIC GARMENT HANGER DISPENSER AND HANGERING DEVICE

Gary Marc Hirsch, 1931 NE. 187 Drive, North Miami Beach, Fla. 33179

Filed July 12, 1974, Ser. No. 488,046
Int. Cl.² B65G *47/00*
U.S. Cl. 198—26 **9 Claims**



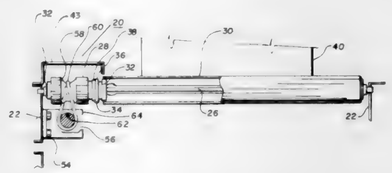
1. A garment (**56**) hanger (**58**) dispensing (**94**) and hangering (**94**) device (**10**) comprising a downward angularly extending hanger hook (**50**) dispenser slope arm (**98**), a hanger hook guide bar (**102**) spaced and supported (**104**) thereabove a distance at least slightly greater than the thickness of a hanger hook (**50**) to be dispensed thereby, a hanger hook stop means (**100**) on said slope arm (**98**) spaced from the downward end of said hanger hook guide bar (**102**) a distance approximately the thickness of a hanger hook (**50**), a J-shaped hook leg (**66**) pivoted (**106**) on said dispenser slope arm (**98**) downwardly of said stop means (**100**), said leg (**66**) having an upper end J-hook point (**110**) pivoting (**106**) to just clear the downward end of said guide bar (**102**) and thus extend up just beyond the downmost hanger hook (**50**) on said slope arm (**98**) to lift such downmost hanger hook (**50**) over said stop means (**100**) to then slide downwardly on said J-hook leg (**66**), means (**70, 72, 74**) limiting the downward pivoting movement of said J-hook leg (**66**) and the downward slide movement of said downmost hanger hook (**50**) thereon and supporting (**70**) said J-hook leg and hanger hook thereon in such downward position while a garment (**54**) may be manually draped on the hanger thereon, an endless belt (**34**), an upper pulley (**32**) and a lower pulley (**36**) on which said endless belt is rotatably mounted, a motor and motor brake (**30**) operatively connected to one of said pulleys, support means (**12**) on which said motor and pulleys are mounted, a hanger hook to long rigid pick-up finger (**42**) fixedly secured on and extending transversely of said endless belt (**34**) and operable by said endless belt in a path intercepting the hanger hook of said garment draped hanger adjacent said lower pulley, the draped garment and hanger abutting the downwardly extending J-hook leg and lifting and holding said J-hook leg (**66**) up until the draped garment and hanger pass up thereby to then release said leg (**66**) to pivot down and cause its J-hook (**68**) end point (**110**) to pick up a further hanger hook from said slope arm, a hanger hook interception drop-off means (**52, 54**) adjacent said upper pulley (**32**) in the path of the garment draped hanger and hanger hook, a manually operable normally open switch (**64**) mounted on said support means (**14**) adjacent the garment draping position (**74**), a motor actuating solenoid (**86**), a slave toggle switch (**80**) connected to said solenoid (**86**) and initiated into action by said manually operable switch (**64**), a toggle switch controlling arm (**78**) of said slave switch extending into the downward path of said hanger hook pick-up means to stop operation of said belt rotating motor at the end of one cycle, and means connecting said solenoid (**86**) to said slave switch arm (**78**) comprising a rod (**90**) pivotally connected to the armature (**88**) of said solenoid and having a closed loop (**92**) extending about said slave switch arm (**78**).

3,961,700

LIMITED TORQUE CONVEYOR CONSTRUCTION

Fred J. Fleischauer, 1345 Meadowlark Drive, Pittsburgh, Pa. 15243

Filed Aug. 9, 1973, Ser. No. 387,152
Int. Cl.² B65G *13/08, 13/073*
U.S. Cl. 198—127 R **2 Claims**



1. A roller conveyor having a plurality of rollers rotatably mounted to define a pass line for articles conveyed by said conveyor, a flexible line drive shaft rotatably mounted adjacent said rollers and extending longitudinally of said pass line, a magnetic coupling and a drive belt for coupling each of said rollers to said drive shaft for limited-torque rotation thereby, said conveyor being a curved section having said conveyor rollers disposed in an arcuate array, means for extending said drive shaft in a generally arcuate configuration along said curved section, said extending means including an arcuate array of bearing members in which said shaft is maintained by means of said drive belts, said bearing members being shaped to receive said flexible shaft.

3,961,701

METHOD OF AND CONVEYOR FOR TRANSPORTING FRAGILE OBJECTS

Paul F. Paddock, Riverside, and Jerry W. Cramer, Upland, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed July 10, 1974, Ser. No. 487,242
Int. Cl.² B65G *17/12*
U.S. Cl. 198—131 **12 Claims**

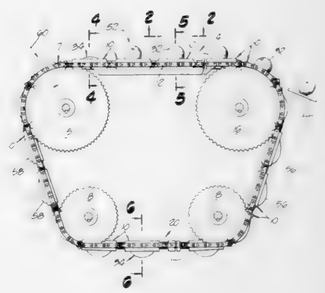
1. A method of transporting objects which are vulnerable to damage by impact, between an object receiving station at which the objects are successively received along a free-fall path, and an object discharge station,

which comprises the steps of:

providing a continuous row of separate object-carrying cushions, loosely arranging at each of the cushions a displaceable mass of pellets,

maintaining said pellets at said cushions for movement in a path from the receiving station to the discharge station;

directing successive objects along said free-fall path onto successive masses of each cushion, upon its arrival at an object receiving position,



causing said objects to effect the displacement of the pellets of the mass resulting from the impact of the received object to frictionally absorb and dissipate the impact forces, and to form a recess in the pellet mass for stabilizing and holding the object during movement to the discharge station; then

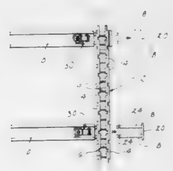
rearranging said pellets to eliminate said recess prior to directing the next object thereto and following discharge of said article from said cushion at said discharge station.

3,961,702

MOUNTING MEANS FOR CONVEYOR FLIGHT

Glen R. Blok, Milwaukee, Wis., assignor to Pratt Manufacturing Corporation, Milwaukee, Wis.

Filed Jan. 20, 1975, Ser. No. 542,146
Int. Cl.² B65G *19/00;* **F16G** *13/02*
U.S. Cl. 198—175 **9 Claims**



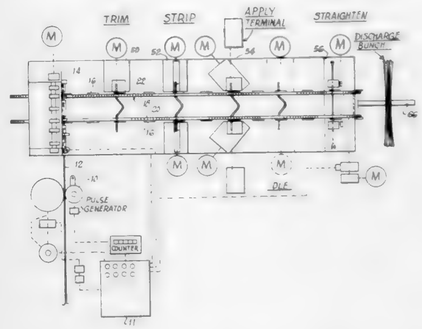
9. In combination with a conveyor including at least one conveyor chain mounted for movement along a conveyor path, and including at least one conveyor flight extending transversely of said chain and connected thereto, the improvement wherein the means for connecting said flight to said chain includes a pin projecting laterally from said chain, a bore in said flight slideably receiving said pin as a result of pushing movement longitudinally only of said flight, and means including cooperating latch means on said flight and pin, one of which is yielding, removably connecting said flight to said pin when the latter has been fully inserted in said bore by said longitudinal pushing movement.

3,961,703

CONVEYOR SYSTEM FOR LENGTHS OF FLEXIBLE MATERIAL

Carl McKeever, Kendallville, Ind., assignor to Lyall Electric, Inc., Albion, Ind.

Filed July 31, 1974, Ser. No. 493,274
Int. Cl.² B21F *23/00*
U.S. Cl. 140—105 **13 Claims**



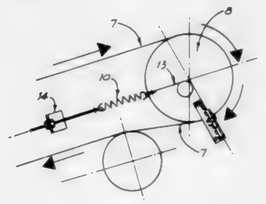
7. Apparatus for discharging lengths of flexible material from a conveyor system in which the lengths of flexible material are gripped by a pair of spaced gripping means comprising an elongate bar extending longitudinally between the pair of gripping means, a pair of elongate spaced parallel folding elements extending substantially parallel but spaced from said bar, means to release the lengths of flexible material from the gripping means as the gripping means advance the lengths of flexible material over the bar whereby the lengths of flexible material are advanced over the bar and are bent under the folding elements as the lengths of flexible material are released from the gripping means, and means to advance the lengths of flexible material along the bar for discharge therefrom.

3,961,704

CONVEYOR BELT WIPER SYSTEM

Beresford Eton Rochester, Jamaica, British W. Indies, assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

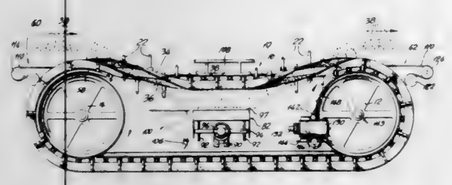
Filed Nov. 21, 1974, Ser. No. 525,806
Int. Cl.² B65G *15/00*
U.S. Cl. 198—188 **4 Claims**



1. In combination with an endless conveyor belt a self-tensioning and resiliently mounted belt wiper system for removing particulate material from the working surface of the belt, the system comprising a wiper holder, a sheave means and a pair of individually adjustable spring means mounted adjacent the opposing edges of the belt, the spring means being connected to the wiper holder by connecting means trained about the sheave means, the wiper holder being crosswise disposed across the full width of the belt and a plurality of wipers fixedly attached to the holder in substantially parallel arrange-

ment to each other, said wipers being in contact with the belt adjacent the normal point of return thereof and at a selected angle relative to the main axis of the belt.

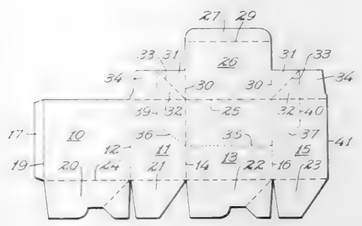
3,961,705
CLAMPING CONVEYOR
George Suciu, Montreal, Canada, assignor to Newmapak Ltd., St-Lambert, Canada
Filed Sept. 9, 1974, Ser. No. 504,320
Int. Cl.² B65G *47/24*
U.S. Cl. 198—248 **11 Claims**



1. A clamping conveyor for transporting containers of various sizes comprising:
a. spaced driven and driving wheels and means rotating said driving wheels;
b. a flexible endless support member mounted to wind over said driving and driven wheels to be brought into endless motion to convey containers placed thereon;
c. a plurality of clamping assemblies mounted on said support member in spaced relationship along the length thereof, each clamping assembly comprising:
— an open ended housing fixed to said support member transversely thereof with respect to the direction of motion applied thereto;
— an L-shaped container gripping member having a base arm slidably extending into said open ended housing to be guided therein and having a clamping arm upstanding from the plane of said support member and on one side thereof, and
— resilient means acting on said L-shaped gripping member to bias the clamping arm thereof toward said support member;
d. wherein successive clamping arms of said L-shaped members are disposed on opposite sides of said support member, and
e. a pair of endless flexible gripping belts each on one side of said support member and means securing said belts to said clamping arms.

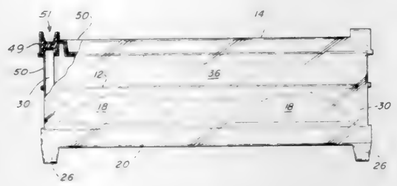
3,961,706
COMBINED PACKER AND DISPLAY CARTON
Harry I. Roccaforte, Western Springs, and Herbert L. Lambert, Glendale Heights, both of Ill., assignors to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed May 16, 1975, Ser. No. 578,154
Int. Cl.² B65D *5/50*
U.S. Cl. 206—44 R **5 Claims**

1. A multi-walled carton including:
a rear wall, side walls, and a front wall connected along generally parallel vertical fold lines to provide a multi-sided body,
a bottom closure for said rectangular body,
a top closure flap secured to said front wall,
a continuous weakened line of separation extending across the forward halves of said side walls and across said front wall,
fold lines extending upwardly from the rear edges of said weakened line of separation parallel to the vertical edges of said side walls generally midway between the forward and rear edges to the upper edges of said side walls,
side wall closure flaps on the forward portions of said side walls connected to said top closure flaps by gusset flaps,
side wall closure flaps on the rear portions of said side walls connected to said side wall closure flaps on the forward portions of said side walls along fold lines aligned with said fold lines extending upwardly from the rear edges of said weakened line of separation,



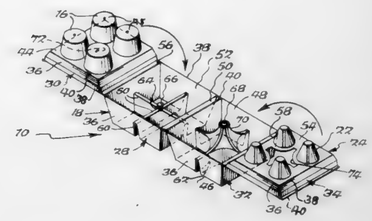
whereby, when said weakened line of separation is separated, the forward portions of said walls above said weakened line of separation may be folded to lie inwardly of the rear portions of said side wall and said rear wall to provide a display.

3,961,707
CATHODE RAY TUBE OR FUNNEL SHIPPING AND/OR STORAGE CONTAINER
David R. Lehr, Hoffman Estates, and James H. Pollard, Westmont, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Oct. 21, 1974, Ser. No. 516,328
Int. Cl.² B65D *19/04, 21/02, 65/02, 85/42*
U.S. Cl. 206—419 **20 Claims**



1. A durable, high-stackable, multi-tiered, hydrophobic shipping/storage container for television cathode ray tubes or funnels or other articles having a massive funnel at one end and a fragile neck at the other end, said container comprising:
a base defining a first plurality of cavities configured and sized to individually snugly receive the faces of a like first plurality of face-down tubes or funnels and also defining a second plurality of cavities configured and sized to individually snugly receive the necks of a second plurality of face-down tubes or funnels, said base having integral hollow legs spaced around the periphery of the container for elevating the container body sufficiently to pass the forks of a fork-lift truck therebeneath such that said container serves as its own skid;
a cap defining cavities configured and sized to individually snugly receive the necks of the face-down tubes or funnels; and
a plurality of posts positioned between said base and cap and in said hollow legs of said base for spacing said base and cap and for giving stacking strength to the container, said container being structured to be stacked post-on-post such that said posts support substantially the entire load of any stacked-on containers.

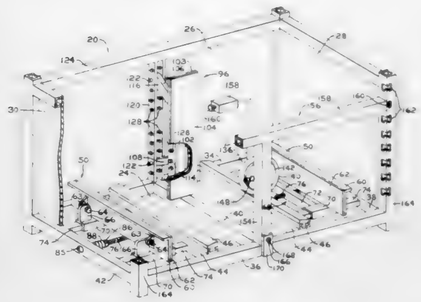
3,961,708
RETURNABLE BOTTLE PACKING CASE
Henry Claus von Dohlen, Dover, and Wallace Allison Burt, Morristown, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Dec. 23, 1974, Ser. No. 535,257
Int. Cl.² B65D *5/48*
U.S. Cl. 206—435 **5 Claims**

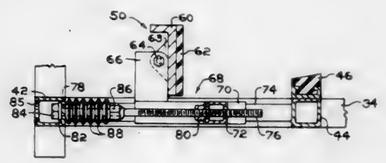


1. An integral packaging device for fragile articles comprising a base, a top, a base insert, and a top insert each of which is individually defined by its own sidewalls, each of said sidewalls having top and bottom edges,
said base being further defined by a bottom wall connected to the bottom edges of the sidewalls of the base, and having partitioning means therein,
said top being further defined by a top wall connected to the top edges of the sidewalls of the top, the bottom edge of one of the sidewalls of the top being connected by a hinge to the top edge of one of the sidewalls of the base,
said base insert including a lower wall connected to the sidewalls of the base insert, said lower wall being provided with a plurality of downwardly extending depressions each having an interior which is approximately the size of a lower portion of a fragile article for containing said lower portion, said base insert being hinged at the top edge of one of its sidewalls to the top edge of a sidewall of the base other than the top edge of the sidewall of the base hinged to the top, said base insert being sized to sit tightly into the base with said depressions being separated by said partitioning means of the base,
said top insert including an upper wall connected to the sidewalls of the top insert, said upper wall being provided with a plurality of upwardly extending depressions to match the depressions in the base insert, each depression having the approximately the size of an upper portion of a fragile article for containing said upper portion, said top insert being hinged at the bottom edge of one of its sidewalls to the bottom edge of its sidewall of the top other than the bottom edge of the sidewall of the top hinged to the base, said top insert being sized to fit tightly into the top,
said packaging device being nestable into a similar packaging device when the upper edges of the sidewalls of the base and base insert, and the bottom edges of the top and top insert of the packaging device are in approximately parallel plains, the base insert is not fitted into the base and the top insert is not fitted into the top.

3,961,709
END RESTRAINT FOR SHIPPING BINS
James R. Rowley, Freeport, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed July 15, 1974, Ser. No. 488,346
Int. Cl.² B65D *85/48*
U.S. Cl. 206—448 **11 Claims**

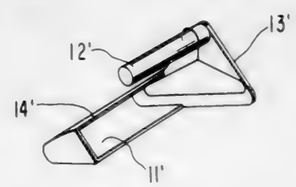
1. An end restraint for an article shipping bin to prevent longitudinal reciprocal movement of the articles, wherein the bin is of the type having a backwall secured to a base, comprising:
at least one guide rail means mounted on the base generally parallel to the backwall;
carriage means slideably mounted on said guide rail means for reciprocal movement in a first direction toward the center of the base and in a second direction opposite to the first direction;
a rigid plate for engaging the articles mounted on said carriage means;





means acting on said carriage means for moving said carriage means in the first direction to a selected one of a plurality of engaging positions and for moving said carriage means in the second direction; and
means for dampening forces acting on said plate as said carriage means moves in the second direction from the selected one of the plurality of positions.

3,961,710
CLOTHES HANGER SUPPORT AND STORAGE APPARATUS
Adelene B. Creamer, 137 Palmer Ave., Mountain View, Calif. 94040
Filed Mar. 13, 1974, Ser. No. 443,269
Int. Cl.² B65B *17/02*
U.S. Cl. 211—49 R **1 Claim**



1. A complete and independent clothes hanger support and storage assembly for removably supporting a multiplicity of empty conventional clothes hangers having hanger portions including a head and a neck portion and at least first and second arm portions, each arm portion connected at one end to said neck portion, said assembly comprising:

an elongate base support member an upright support member integrally connected to said base support member and projecting upwardly therefrom,

an elongate hanger support rod cantilevered and integrally connected from one end to said upright support member and sloping upwardly away from said base support member in the direction along said rod away from said upright support member,

said hanger support rod at the end thereof connected to the said upright support member spaced from said base support member by a distance

greater than the vertical distance from the head portion to the ends of the arm portions remote from the neck portion of a coat hanger and

less than the distance from the head portion to the end of an arm portion, said support rod having a length for holding a multiplicity of coat hangers side by side and free from obstruction of the hanger head portion above said rod, and

a hanger retaining member integrally connected to said base support member, spaced to one side of said support member, and spaced closer to said base support member than said hanger support rod, said assembly being free from obstruction above said base support member on the side of said support rod opposite said one side where said hanger retaining member is located,

said retaining member laterally spaced from said hanger support rod by a distance less than the lateral distance between the neck of a clothes hanger and the end of an arm portion remote from the hanger neck portion to permit contact of a portion of said retaining member with an arm portion of a hanger hung by its head portion on said hanger support rod,

said hanger retaining member along the length therof longitudinally spaced at least closer to said base member than said hanger support rod by a distance equal to or greater than the vertical distance from the top of the hanger head portion to a point on the hanger arm portion spaced laterally from the top of the head by a distance equal to the lateral spacing at said upright support member between the hanger support rod and said contacting portion of said hanger retaining member whereby an arm of an empty clothes hanger with the head portion thereof hooked over said support rod contacts said hanger retaining member when said base support member is supported on a horizontal surface.

3,961,711

OVERHEAD STORAGE APPARATUS

Arthur Thomas Perks, 37, The Green, Castle Bromwich, Birmingham B36 9AL, England

Continuation of Ser. No. 331,444, Feb. 12, 1973, abandoned. This application Dec. 26, 1974, Ser. No. 536,696

Int. Cl.² A47F *5/08*

U.S. Cl. 211—117 **5 Claims**

1. Overhead storage apparatus comprising a main support member which has an attachment means at an upper end thereof whereby said member can be attached to an overhead stationary support; a tubular article carrying member which is mounted on the main support member so as to be slidable upwardly and downwardly therealong and is engaged with the main support member so that it is not turnable therearound, the lower end portion of the article carrying member being formed with a gap and having at the upper end of said gap a downwardly facing transverse abutment face; releasable catch means comprising an upwardly facing transverse abutment face which is provided on an upwardly bent lower end portion of the main support member and is resiliently biased to an operative position in which it is positively engaged beneath said abutment face of the article carrying member when the article carrying member is lifted into a raised position relative to the main support member to retain the article carrying member in said raised position, the main support member being resiliently flexible and bowed so that it bears against the internal surface of the article carrying member at the side of the latter opposite that side at which the abutment faces are disposed and said faces are thereby biased into mutual engagement by the inherent resilience of the main support member, the upwardly bent lower end portion of the main support member being disposed in said gap in the lower end of the article carrying member when the catch means is engaged and said abutment faces being manually transversely relatively



movable out of mutual engagement against said resilient bias to release the catch means and allow the article carrying member to move downwardly relative to the main support member into a lowered position; and a stop arranged inside the tubular article carrying member so as to be engaged by said abutment face of the main support member when the article carrying member is moved to its lowered position thereby to retain the article carrying member in said lowered position.

3,961,712

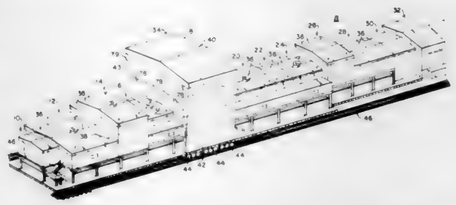
INDUSTRIAL BUILDING STRUCTURE SYSTEM

Thomas S. Bartley, Mobile, Ala., assignor to International Paper Company, New York, N.Y.

Filed Oct. 31, 1974, Ser. No. 519,647

Int. Cl.² B66C *17/06*

U.S. Cl. 212—5 **10 Claims**



1. A crane housing system movable on track means positioned on each side of a building having individually removable roof structures, comprising:

a. a top structure laterally spanning the roof of the widest part of said building;

b. side wall members positioned exterior to said building and supporting said top structure for clearing the highest structural portion of said building;

c. transit means attached to said side wall members for moving said crane housing on said track means in a longitudinal direction relative to said building;

d. end wall sections vertically movable and cooperating with said top structure and said side walls members for substantially enclosing longitudinal sections of said building, said end wall sections conforming to the contour of the roof of said building, and

e. crane means attached to said crane housing for removing a roof structure and suspending within said crane housing the removed roof structure during subsequent crane operations, said crane means including:

1. a first overhead crane adapted to raise or lower a roof section of said building, and

2. a plurality of second overhead cranes movable laterally of said crane housing.

3,961,713

SINGLE LINE DAVIT

Joe C. Stine, Houston, Tex., assignor to Houston Systems, Inc., Houston, Tex.

Filed June 28, 1974, Ser. No. 483,925

Int. Cl.² B66C *23/06*

U.S. Cl. 212—58 R **5 Claims**



1. A new and improved single line davit for raising and lowering extremely heavy pipe lengths or the like, comprising:

a rotatable base adapted for mounting onto the deck of a floating vessel or the like, said base being mounted for rotation with respect to said deck;

a pedestal mounted onto said rotatable base for rotation therewith;

a davit-supporting frame mounted onto said pedestal for rotation therewith, said davit supporting frame including opposing, spaced frame members extending upwardly at approximately the center of said pedestal;

a boom assembly pivotally mounted at said opposing frame members and a hydraulic ram assembly pivotally connected between said davit-supporting frame and said boom assembly for moving said boom assembly;

a winch assembly mounted internally of said opposing frame members, said winch assembly including a rotating drum located at substantially the center of said rotatable base and having mounted thereon a single line which extends outwardly through said boom assembly, for raising, lowering or otherwise supporting pipe lengths or the like and a winch drive;

said winch drive including:

drum mounting means mounting said drum for rotation at substantially the center of said rotatable base;

said drum having a drum shaft extending through said drum and through said opposing frame members;

a first planetary gear drive mounted on one of said opposing frame members in operative engagement with said drum shaft, said first gear drive being driven by a motor means mounted on said one opposing frame members; and

a second planetary gear drive being mounted with said other opposing frame member in operative engagement with said drum shaft and said drum for rotating said drum in response to rotation of said shaft;

a substantially circular rack adapted for mounting in a stationary position onto the deck, said circular rack being positioned circumferentially around said rotatable base in a horizontal plane adjacent the horizontal plane of said rotatable base;

rotation means mounted with said rotatable base for engaging said circular rack for rotating said circular base; and

said rotatable base and said stationary rack being mounted for rotation with respect to each other by a bearing assembly mounted therebetween, said bearing assembly including an inner and outer race with ball bearings therebetween, said circular rack operating as said outer race and said inner race being affixed to said rotatable base.

3,961,714

INSTALLATION FOR LOADING A ROAD VEHICLE WITH LOADING UNITS

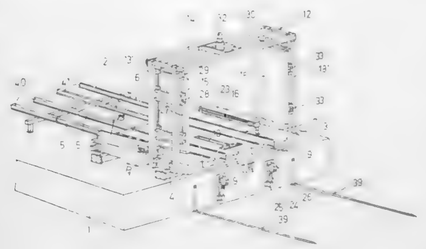
Max Buehler, Thalwil, Switzerland, assignor to Weelpal AG, Zug, Switzerland

Filed Mar. 13, 1975, Ser. No. 557,968

Claims priority, application Switzerland, Mar. 15, 1974, 003807/74

Int. Cl.² B65G *67/08*

U.S. Cl. 214—41 R **13 Claims**



1. An installation for loading a road vehicle with loading units which is positioned at an exit of a warehouse on an inclined rail track, comprising:

a loading platform supported on a rail track loading ramp at the end of said exit of said rail track;

said loading platform being displaceably supported on lifting means to lift said platform relative to said loading ramp and also relative to said exit end of said rail track;

a first conveying mechanism countersunk in the floor of said loading platform comprising conveying means provided with catches extending above the floor surface of said loading platform and adapted to catch the loading units standing on the loading platform;

a second conveying mechanism submersibly attached to the floor of said loading platform comprising a ram liftable out of the floor of said loading platform into a working position and adapted to rest against the back sides of the loading units to push them into the road vehicle;

a number of rail members connecting said end of said rail track to said loading platform;

each of said rail members being movably connected to the end of said rail track with their one end in alignment while their other end is adapted to rest on the surface of said loading platform;

said rail members being arranged so as to converge from a distance between each other given by the arrangement in the warehouse to a minimal distance given by the width of the loading units;

said loading platform comprising conveying means for conveying clusters of said loading units from said loading platform into the road vehicle.

3,961,715

TRUNK MOUNTED ROLLER FOR HANDLING HEAVY OBJECTS

Harry J. Ellen, 499 W. Missouri Ave., Phoenix, Ariz. 85013

Filed Apr. 2, 1973, Ser. No. 346,718

Int. Cl.² B60P *1/00*

U.S. Cl. 214—84 **1 Claim**

1. A device for mounting in the trunk of an automobile for aiding in loading and unloading luggage therefrom comprising:

a pair of brackets for spacedly mounting within the opening of the trunk for supporting a roller substantially perpen-

dicular to the longitudinal axis of the automobile, juxtapositioned to its rear bumper and with its bearing ends extending slightly above the periphery of the opening of the trunk, the periphery of which opening along the floor of the trunk extends above the floor of the trunk, and

a roller mounted on said ends of said brackets to extend therebetween above the floor of the trunk and the periphery of the opening of the trunk adjacent the floor of the trunk for rotation thereon, and

said roller being positioned so that a part of its outer surface extends above the edge of the periphery of the juxtapositioned opening of the trunk so that luggage can be moved over said roller without engaging the periphery of said edge of said opening.

3,961,716

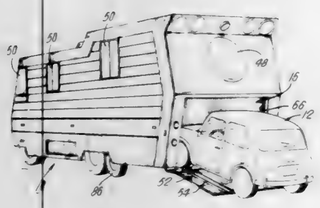
MOBILE HOUSING UNIT

Michel G. Renaud, 71 Youville, Varennes, Quebec, Canada

Filed May 6, 1974, Ser. No. 467,598

Int. Cl.² B65G 67/02

U.S. Cl. 214—85 **5 Claims**



1. A self-powered vehicle having a chassis and at least first rear wheels on the chassis, a secondary loadbearing wheel structure including at least a pair of wheels being suspended on springs from the chassis, the secondary structure being provided with means for receiving at least a portion of a vehicle ro be carried whereby said vehicle to be carried is at least partially supported independently of said chassis, and connecting means provided to allow the load-bearing wheel structure limited flexible movement relative to the chassis, said connecting means including a universal joint adapted for axial sliding movement to allow the load-bearing wheel struture to have relative flexible and independent movement from the truck chassis.

3,961,717

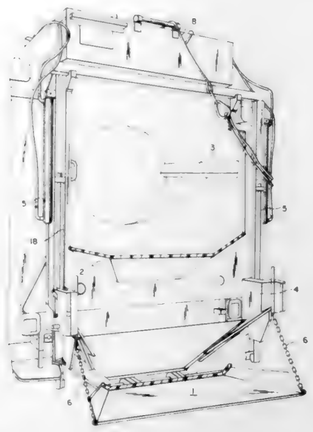
COMBINATION SPILL PLATE AND STEP FOR WASTE DISPOSAL VEHICLES

George L. Sabine, 524 Cleveland Town Road, Boonesboro, Md. 21713

Filed Apr. 2, 1975, Ser. No. 564,384

Int. Cl.² B60P 1/44

U.S. Cl. 214—302 **9 Claims**



1. A combination lift and spill plate for use in combination with a container vehicle further including a hatch within a wall of said container vehicle, said hatch further having a lip permanently attached to its lower most edge, comprising:

A. vertical transport means attached to the body of said container vehicle on either side of said hatch;

B. a stabilizing member means operably engaged to be vertically moved by said vehicle transport means, said stabilizing member means further including substantially vertical outrigger members extending rearwardly and proximate said vertical transports;

C. a substantially rectangular spill plate having an innermost edge substantially parallel to said container vehicle wall and further being hingedly attached proximate said innermost edge to said stabilizing member,

D. restraining means operable to selectively restrain said spill plate in a substantially horizontal position and securing means for selectively securing said spill plate in contact with said outriggers when said spill plate is pivoted upwardly,

E. wherein said spill plate is configured for a first sealing engagement with said stabilizing member means when pivoted into said contact therewith, and said innermost spill plate edge is further configured for a second sealing engagement with said hatch lip when said stabilizing member means is vertically raised proximate said hatch.

3,961,718

SELF-LOADING AND SELF-UNLOADING TRAILER

Gustave Lucas, Route de Saint-Aubin, La Verrie (85), France

Continuation-in-part of Ser. No. 245,368, April 19, 1972, abandoned. This application Jan. 2, 1974, Ser. No. 429,944

Claims priority, application France, Apr. 20, 1971, 71.14872; Nov. 10, 1971, 71.41931

Int. Cl.² B60P 1/00

U.S. Cl. 214—520 **5 Claims**

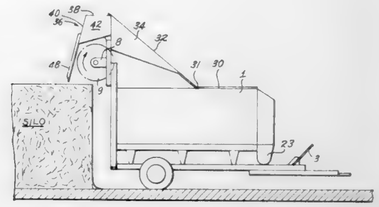
1. In self-loading and self-unloading apparatus comprising a vehicle having a bottom and enclosure-forming side walls, an open top portion at one end of said vehicle and a horizontal endless conveyor extending along said bottom wall, the improvement comprising:

an upright frame mounted on said vehicle at said one end thereof;

support means mounted on said frame for vertical displacement therealong;

rotary pick-up means mounted on said support means and arranged to pick up products and throw the same upwardly;

a fixed cover over the top portion at the other end of said vehicle; and



a guiding chute means over said open top portion and said support means and rotary pick-up means and positioned to deflect said upwardly thrown products through said open top portion into said enclosure, said guiding chute means comprising a hood and a cover plate;

said hood fixed to said support means and movable vertically with said support means and said rotary pick-up means;

said cover plate hinged to said fixed cover and extending over said open top portion so as to be slidably supported on said hood.

3,961,719

CAP WHICH CAN BE PACKAGED WITHOUT DANGER OF WEDGING

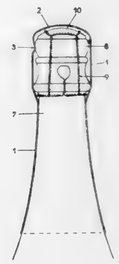
Bernard Pierlot, and Georges Potaufeu, both of Clisalu, France, assignors to Clisalu, Mareul, France

Filed Feb. 24, 1975, Ser. No. 552,431

Claims priority, application Luxemburg, Feb. 28, 1974, 69513

Int. Cl.² B65D 41/62

U.S. Cl. 215—277 **4 Claims**



1. In a cap adapted to be applied to enclose a previously sealed open end of a bottle, in which the cap is formed of foil, a bottom wall and a long skirt of frustoconical shape extending from the bottom wall dimensioned to have a length greater than the diameter of the cap, and a notch in the skirt portion closely spaced from the bottom wall, a means for protecting the cap and for maintaining the cap in an easily separable relation when a plurality of such caps are telescoped one within another in a stack comprising a cushion of foam material in the interior of the cap adjacent the bottom wall and extending from the bottom wall to the said notch.

3,961,720

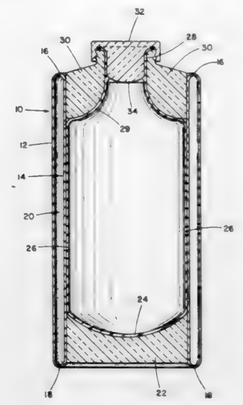
VACUUM INSULATED CONTAINER

Gordon W. Potter, Jr., Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Filed Oct. 7, 1974, Ser. No. 512,411

Int. Cl.² A47J 41/02

U.S. Cl. 215—13 R **16 Claims**



1. A thermally insulated container comprising:

a. a hollow double walled sleeve formed by a pair of concentric tubular members sealed together at their ends to form an airtight chamber therebetween and from which air is substantially evacuated;

b. a base of thermal insulating material sealingly engaging one end of said sleeve;

c. a liner secured in the hollow central portion of said sleeve and having an opening at the other end of said sleeve for receiving material to be thermally insulated; and

d. means for sealing and thermally insulating said opening and the immediately adjacent portions of said liner.

3,961,721

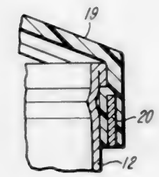
MAGNETIC CONTAINER COVER

Edwin J. Gordon, and Adam I. Gordon, both of 1208 Brooklands Road, Kettering, Ohio 45409

Filed Nov. 28, 1975, Ser. No. 636,247

Int. Cl.² B65D 55/00

U.S. Cl. 220—230 **10 Claims**

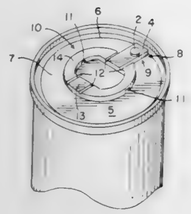


1. In combination with a metal container comprising a cylindrical wall and having an open top and a closed bottom; a removable flexible cover comprising a flat circular body having a downturned flange; the inner surface of said flange frictionally engaging the outer surface of said wall; said flange having at least one integral downwardly extending magnetic member contacting said wall to secure said cover thereon.

3,961,722
CHILD RESISTANT EASY OPENING CLOSURE

John S. Bozek, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Jan. 27, 1975, Ser. No. 544,151
Int. Cl.² B65D 41/32
U.S. Cl. 220—270 29 Claims

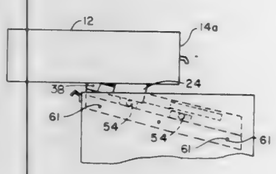


1. An improved safety closure for use on a can or similar container comprising an end panel having a score defining an opening flap therein, a pull tab secured to said end panel, said pull tab comprising a nose portion and a finger grip portion, first means associated with the tab accommodating ineffective movement of said finger grip portion to open said flap, and second means selectively operable to render said first means ineffective and interrelating said portions of said tab to form a lever effective to open said flap, said second means being operable prior to movement of said finger grip portion.

3,961,723
RECEPTACLE WITH SLIDING COVER

Alan Eckel, Westford, Mass., assignor to Eckel Industries, Inc., Cambridge, Mass.

Filed July 12, 1974, Ser. No. 487,878
Int. Cl.² B65D 43/14
U.S. Cl. 220—331 10 Claims

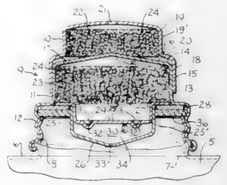


1. A receptacle, a cover for said receptacle, and means connecting said cover to said receptacle for facilitating moving of said cover between open and closed positions relative to said receptacle, said connecting means comprising (a) first and second inclined slideway guides attached to first and second opposite sides respectively of said receptacle, (b) first and second rails pivotally attached to said first and second guides respectively, (c) first and second slide members slidably mounted on said first and second rails respectively, and (d) first and second connector members attached respectively to first and second opposite sides of said cover and also to said first and second slide members, said connecting means being arranged so that (1) said slide members extend along said guides when said cover is in closed position and (2) pushing said cover from its closed position so as to force said slide members to slide along said guides on said rails toward the pivot points of said rails will cause the weight of said cover to pivot said rails in a direction whereby said weight will assist said cover to reach open position.

3,961,724
FUEL TANK FILLER CAP WITH IMPROVED VENT

Robert J. Kapsy, Hartland, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Mar. 13, 1975, Ser. No. 557,982
Int. Cl.² B65D 51/16
U.S. Cl. 220—371 5 Claims



1. A fuel tank cap having an air vent through which vapor can leave and air can enter the tank and means to prevent liquid fuel in the tank from being expelled through the air vent, comprising:

A. an inverted cup-shaped portion adapted for detachable connection to the neck of a fuel tank inlet;

B. walls fixed with respect to said inverted cup-shaped portion defining at least two superimposed coaxial substantially cylindrical compartments above the top of said inverted cup-shaped portion, and a bottom compartment beneath said superimposed compartments,

each of said compartments having a side wall and said bottom compartment also having a bottom wall which together with its side wall separates the bottom compartment from the interior of the inverted cup-shaped portion;

C. the upper one of two of said directly superimposed compartments being smaller in diameter than the lower one and its side wall having a flange projecting laterally outward from its lower marginal edge;

D. the wall that separates said directly superimposed compartments having its peripheral portion underlying said laterally projecting flange and being spaced therefrom a short distance to form a shallow annular space which communicates with the upper one of said directly superimposed compartments;

E. port means in said peripheral portion of the wall that separates said directly superimposed compartments communicating the lower one of said compartments with said shallow annular space and forming the only communication between said directly superimposed compartments;

F. the wall separating the lowermost one of said superimposed compartments from the bottom compartment having port means spaced from the common axis of said compartments through which the compartments at the opposite sides of said wall are communicated;

G. port means in a wall of said bottom compartment communicating the same with the interior of the fuel tank on which the cap is mounted;

H. a centrally located port in the top of the uppermost of said superimposed compartments; and

I. fibrous material filling said superimposed compartments.

3,961,725
METHOD AND APPARATUS FOR DISPENSING FLUIDS UNDER PRESSURE

Richard A. Clark, 12 Kirkwood Drive, Glen Cove, N.Y. 11542

Filed Apr. 9, 1974, Ser. No. 459,440
Int. Cl.² B65D 37/00
U.S. Cl. 222—1 15 Claims

1. A method for dispensing a fluid under pressure from a container for the fluid by means of an expanded resilient bladder which contains the fluid, and wherein the resilient character of said expanded bladder provides the pressure for expelling the fluid from said bladder, the improvement comprising tensioning said bladder by the introduction of fluid into the bladder, mechanically tensioning said bladder, said mechanical tensioning being applied internally of said bladder, said mechanical tensioning being substantially fully applied by

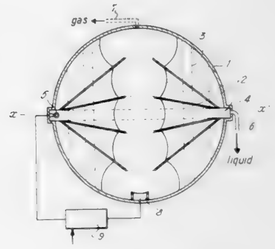


fluid entering said container but prior to fluid entering said bladder, and dispensing the fluid while releasing the fluid tensioning of said bladder, but while maintaining said mechanical tensioning of said bladder at least until substantially all of the fluid is expelled therefrom.

3,961,726
PRESSURIZATION AND DISPENSING DEVICE FOR A LIQUID MONOPROPELLANT IN A CONTAINER

Maurice Pierre Joseph Fournet, Meudon, France, assignor to Centre National d'Etudes Spatiales, Paris, France

Filed Aug. 22, 1975, Ser. No. 607,053
Claims priority, application France, Aug. 26, 1974, 74.29141
Int. Cl.² B67B 7/24
U.S. Cl. 222—3 11 Claims

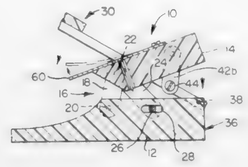


1. A reservoir for a liquid monopropellent such as hydrazine, which reservoir is intended to be full of liquid monopropellent at the beginning of its period of operation, said reservoir being provided with means controlling the thermal transformation of the liquid monopropellent into a gaseous phase, a plurality of partitions within the reservoir which are arranged to confine the liquid monopropellent in a preselected zone of the reservoir by capillary or surface tension effects and to define a complementary zone of the reservoir where the gaseous phase is formed under pressure as a result of thermal treatment of the liquid monopropellent, and means for discharging the liquid monopropellent or the gaseous phase or both from the reservoir.

3,961,727
COLLAPSIBLE TUBE SQUEEZING DEVICE

Cecil Julius Spears, 112 McFarland Road, Enfield, N.C. 27823

Filed Nov. 4, 1975, Ser. No. 628,781
Int. Cl.² B65D 35/28
U.S. Cl. 222—103 6 Claims



1. A collapsible tube squeezing device comprising a pair of jaw members, means mounting said jaw member to receive a collapsible tube therebetween, said mounting means including:

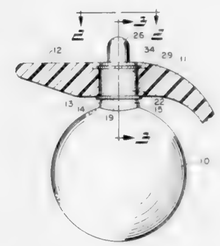
a. a first pair of links pivotally connecting opposite sides of one end of each jaw member with the longitudinal axes of the pair of links being generally normal to planes of the jaw members, and

b. a second pair of links pivotally connected at one end to the pivotal connection between the first pair of links and one of the jaw members and connected at the other end to the other jaw member for limited sliding motion relative to said other jaw member in a plane parallel to the plane of the said other jaw member.

3,961,728
FLUID CONTAINER MOUNTING METHOD AND APPARATUS

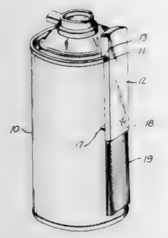
James T. Harris, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 31, 1975, Ser. No. 563,601
Int. Cl.² B67D 5/06
U.S. Cl. 222—180 18 Claims



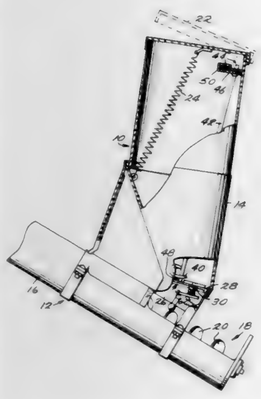
1. A fluid container for locking engagement in an opening of a supporting member comprising a tubular member projecting outwardly from said container for insertion in said opening, a collar member fastened around said tubular member and having a size generally the same as the size of said opening for a generally close fit of said collar in said opening, separate locking means mounted on said collar member for movement outwardly of said collar member into locking engagement with said supporting member after movement of said collar member with said tubular member into said opening.

3,961,729
SHAVING CREAM CAN HAVING BRUSH ATTACHMENT
William C. Grimm, 250 Woodlawn Ave., Jersey City, N.J. 07305
Filed Oct. 17, 1974, Ser. No. 515,554
Int. Cl.² A46B *11/02, 15/00*
U.S. Cl. 222—192 1 Claim



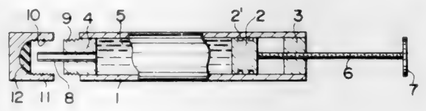
1. In combination with a can for shaving cream, said can having an upper round rim, a shaving bush attachment adapted to be carried by said can and comprising an elongated plate with upper and lower edges and inner and outer surfaces, said plate having a slot extending across the inner surface of the plate adjacent the upper edge thereof and having upper and lower surfaces, the upper surface of the slot extending to the inner surface of the plate by a greater length than that of the lower surface, the lower surface of the slot being curved, the upper and lower surfaces of the slot being spaced to fit over the rim of said can, a plurality of projections carried by said plate and extending from the inner surface of the plate to engage a surface of the can, and a brush carried by the lower edge of the plate and consisting of parallel bristles extending below the plate.

3,961,730
LIQUID DISPENSING APPARATUS
Robert W. Haynes, c/o Haynes Chemical Co., East Grand Forks, Minn. 56721
Filed Sept. 25, 1974, Ser. No. 509,344
Int. Cl.² G01F *13/00*
U.S. Cl. 222—231 7 Claims



1. Liquid-dispensing apparatus comprising
a. conveying means for conveying material to be treated, said conveying means including engagement means,
b. a liquid reservoir adapted to hold material-treating liquid,
c. valve means biased to a closed position for preventing delivery of liquid from said reservoir to material being conveyed by said conveying means when closed, and alternatively for allowing delivery of an amount of liquid from said reservoir to said material when opened,
d. tripping means for temporarily opening said valve means with a snap-action against its closed-position bias so that no movement of the valve member takes place in direct response to movement of said conveying means but only in response to movement by said tripping means after release thereof by said conveying means engagement means, said tripping means including a member for cooperation with said engagement means of said conveying means, and
e. means for positioning said tripping means to temporarily open said valve means once during each predetermined degree of movement of said conveying means.

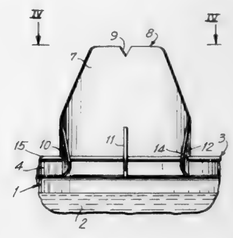
3,961,731
DRIPPING VESSEL
Ei Mochida, Tokyo, Japan, assignor to Mochida Seiyaku Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 28, 1975, Ser. No. 572,507
Claims priority, application Japan, May 2, 1974, 49-050358[U]
Int. Cl.² B67D *5/42*; B65D *47/04*
U.S. Cl. 222—390 5 Claims



1. A vessel for holding and dispensing a liquid alkyl boron compound, said vessel comprising:
a cylinder made of a material selected from the group consisting of metal and glass, said cylinder having a first end pierced by a fine tube,
a movable plug within said cylinder, said plug being made of a material selected from the group consisting of fluoro rubbers and fluoro resins,
means for moving said plug in said cylinder and operable from a point outside said tube,
a removable cap for closing the outer end of said tube, said cap comprising a pad made of a material selected from the group consisting of fluoro rubbers and fluoro resins, and
interengaging means on said cap and said cylinder for holding said pad in air-tight sealing engagement with said outer end of said tube.

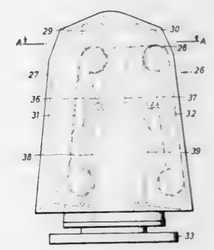
3,961,732
POURING ACCESSORY
Marshall E. Roberts, 610 East Ave., Opelika, Ala. 36801
Filed May 12, 1975, Ser. No. 576,463
Int. Cl.² B65D *5/74*
U.S. Cl. 272—570 4 Claims

1. A pouring accessory for a container storing liquid in a substantially airtight manner and having an upper rim and a pair of concentric spaced lips formed in the upper rim to form a trough therebetween, the lips constituting an inner lip having a predetermined diameter and an outer lip having a diameter greater than the predetermined diameter, said pouring accessory comprising
a substantially flexible sheet-type member removably accommodated in the trough of the upper rim of a container for guiding liquid poured from the container out of the container bypassing said trough and thereby preventing the liquid from entering said trough and from spilling on the outside of the container; and
securing means on the sheet-type member comprising a plurality of spaced securing devices for releasably securing said member to the inner lip of the upper rim of the



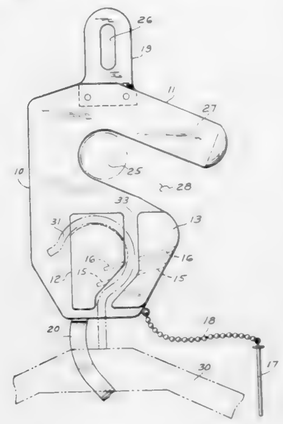
container, each of the securing devices having a substantially rib-like member extending substantially perpendicularly from the sheet-type member and having a slot formed therein in a part thereof abutting said sheet-type member for accommodating the inner lip of the upper rim of the container.

3,961,733
DEVICE FOR PRESSING ARTICLES OF CLOTHING
Martin Kannegiesser, Bad Salzuflen, and Richard Juraschek, Vlotho, Weser, both of Germany, assignors to Herbert Kannegiesser Kommanditgeselischaft, Vlotho, Weser, Germany
Filed Mar. 26, 1975, Ser. No. 562,275
Claims priority, application Germany, Mar. 27, 1974, 2414702
Int. Cl.² D06C *15/00*
U.S. Cl. 223—57 9 Claims



1. A device for pressing articles of clothing, more particularly, for pressing the body parts of shirts and work uniforms having at least two heated pressing plates comprising: a) a support; b) a molded body mounted on the support and consisting of an inflatable buck or the like made of a pressure medium-resistant material; c) means to advance and retract the inflatable buck between the heated pressing plates; and d) controllably movable supporting and spreading elements (13, 14 or 29–32) attached to said support and located inside the inflatable buck, said elements movable to fully support the contours of the shoulders and/or side parts of the inflatable buck (11 or 27) against the contours of the article to be pressed.

3,961,734
SUIT CARRIER HANDLE
Clay L. Threeton, Sr., Atlanta, Ga., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Aug. 13, 1974, Ser. No. 496,982
Int. Cl.² A45C *71/00*
U.S. Cl. 224—45 T 4 Claims

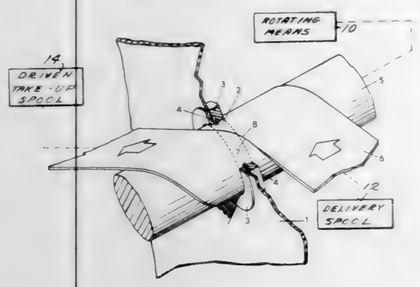


1. A device for use in manual carrying, or alternately, storing in suspension, one or more clothes hangers on which garments may be hung, said device fitted with a carrying handle, a first end of which is fastened to a projection extending from the body of the device, said projection of a length to space the handle member from the body of the device by a distance of the diameter of a conventional horizontal closet pole to permit slipping the handle over a conventional horizontal closet pole said handle member extending downwards at an acute angle to the horizontal plane from the said first end, when the device hangs freely from the handle member on a horizontal closet pole so that the second and free end of the handle extends below the top of the closet pole supporting the handle member, said angular orientation of the handle member also enabling a person to comfortably grip the handle member when carrying the device with lengthy items of clothing hung from a clothes hanger suspended from the device, in which the body of the device is fitted with a first and a second shaped section, each section projecting from the same side of the said body, with said sections separated from each other by a substantially hooked shaped slot of a size to loosely fit about the neck of a clothes hanger hook, the top of which hook is hanging over the first said section, said first said section being shaped to fit within the hook of a clothes hanger which is supported by the said first shaped section.

3,961,735
SEAL
Alexander James Finlay, and Geoffrey Taylor, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Sept. 9, 1974, Ser. No. 504,264
Claims priority, application United Kingdom, Oct. 4, 1973, 46377/73
Int. Cl.² B65H *17/24*
U.S. Cl. 226—168 4 Claims

1. A sealing means for permitting continuous passage of a web material through a gap in a wall separating two zones at different pressures while minimising the flow of air from one zone to the other, comprising a cylindrical rod passing through the gap, means for feeding the web material on to the rod in helical disposition on one side of the wall, means for removing

the web material from the rod after the web material has passed through the gap to the other side of the wall, and



sealing means fitted to the circumference of the gap so as to contact the web material as it passes through the gap.

3,961,736

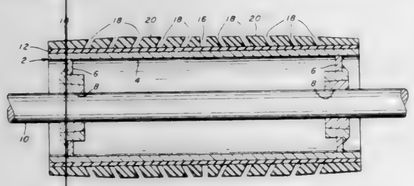
RUBBER-COVERED SELF-CENTERING ROLLS

James J. Fatula, Perry Township, Lawrence County, Pa., assignor to Ryman Engineering Co., Elwood City, Pa.

Filed May 9, 1975, Ser. No. 576,091

Int. Cl.² B65H *17/20*

U.S. Cl. 226—192 **8 Claims**



1. In a self-centering roll having a body and flexible projections on each side of the transverse center of the roll extending outwardly from the body toward said transverse center; the improvement comprising a first layer of rubber surrounding said body, and a second layer of rubber surrounding said first layer, the rubber in said first layer being softer and of lower density than the rubber in said second layer, said flexible projections being formed in said second layer.

3,961,737

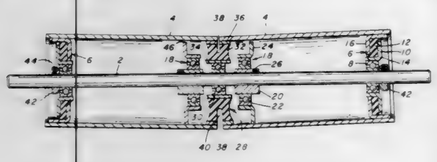
SELF-CENTERING ROLLS

James J. Fatula, Perry Township, Lawrence County, Pa., assignor to Ryman Engineering Co., Ellwood City, Pa.

Filed May 9, 1975, Ser. No. 576,090

Int. Cl.² B65H *17/20*

U.S. Cl. 226—192 **16 Claims**



1. A self-centering roll comprising a straight shaft; two tubular end rim portions surrounding said shaft; a pair of deflectible end webs mounted on said shaft, each of said webs including a bearing surrounding said shaft with its outer periphery spaced from the inner wall of its associated rim portion, and an outer member extending between and fastened to said bearing and said associated rim portion; and a pair of inner webs mounted on said shaft one adjacent the inner end of each tubular end rim portions, each of said inner webs including an eccentric hub attached to said shaft, a bearing surrounding said eccentric hub, and a radial member eccentric with respect to said shaft surrounding said bearing concentric therewith, the outside diameter of said eccentric radial member being only slightly less than the inside diameter of the associated end rim portion, the inner webs being arranged with the same eccentricity so that the two end rim portions will rotate on axes that intersect at a point between the inner webs and are arranged at the same angle with respect to the shaft axis.

3,961,738

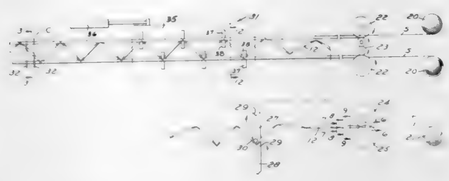
APPARATUS FOR MAKING TRUSS MEMBERS

Melvin L. Ollman, Detroit, Mich., assignor to C-O, Inc., Detroit, Mich.

Division of Ser. No. 350,158, April 11, 1973, Pat. No. 3,827,117, which is a continuation-in-part of Ser. No. 129,040, March 14, 1971, abandoned. This application July 1, 1974, Ser. No. 484,703

Int. Cl.² B23K *31/00*

U.S. Cl. 228—5.1 **16 Claims**



1. An apparatus for making truss members comprising
means for intermittently feeding three endless strips to a pressing station,
press means at said pressing station operable intermittently to form a pair of said endless strips into parallel channels, said channels having a base and flanges and to form said third strip into a plurality of interconnected struts,
each strut comprising a non-flat portion and being connected to adjacent struts by flat end portions,
means operable intermittently to bend the third strip at said flat portions to form alternately extending apices,
means for thereafter bringing the third strip between said pair of channels with alternate apices contacting opposite channels,
means for welding said channels to said apices,
means in advance of said press means operable periodically to cut flanges of opposite channels at predetermined points,
means for cutting the assembled truss members at certain of said cut flange portions to form a truss section having free ends on said channels and struts,
and end bending means for bending the free ends of the channels and struts inwardly toward one another at other of said cut portions.

3,961,739

METHOD OF WELDING METALS USING STRESS WAVES

Basil P. Leftheris, East Northport, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

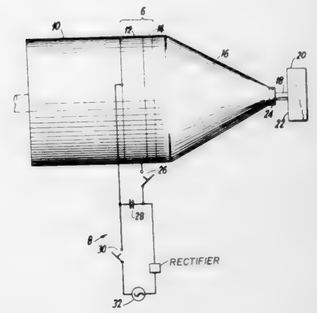
Division of Ser. No. 244,402, April 17, 1972, Pat. No. 3,824,824, which is a continuation-in-part of Ser. No. 863,045, Oct. 2, 1969, abandoned. This application May 7, 1974, Ser. No. 467,723

Int. Cl.² B23K *21/02*; **B23P** *11/00*

U.S. Cl. 228—110 **3 Claims**

1. A method of spot welding two metallic workpieces of similar materials which are in contact with one another, comprising the steps of:

electromagnetically generating a stress wave having a high particle velocity;
conditioning the high velocity stress wave to increase its intensity and duration;
applying the conditioned stress wave as a single pulse to one of the metallic workpieces; and



providing sufficient energy density at the interface of the workpieces from the conditioned stress wave pulse to generate enough heat to weld the two metallic workpieces together.

3,961,740

PROCESS FOR FORMING A COMPOSITE OF A METALLIC MATERIAL AND VULCANIZED RUBBER

Yuzuru Nakamoto, Kodaira; Eishi Kubota, Kokubunji, and Fukushi Suzuki, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Mar. 4, 1974, Ser. No. 447,631

Claims priority, application Japan, Mar. 12, 1973, 48-27925

Int. Cl.² B05D *1/36*, *7/14*

U.S. Cl. 427—405 **4 Claims**

1. A process for producing a composite product which is a metallic base and a vulcanized rubber with an intermediate adhesive layer which is a ternary alloy composed of 59 to 73% by weight copper, 23 to 34% by weight zinc and 2 to 13% by weight tin, said process comprising coating a metallic substrate with said ternary alloy, coating resulting product with an unvulcanized rubber and thereafter vulcanizing said rubber.

3,961,741

HEAT TRANSFER TUBES WITH INTERNAL EXTENDED SURFACE

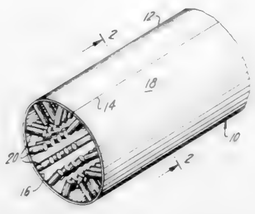
Eric Klein, Verona, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Continuation of Ser. No. 288,606, Sept. 13, 1972, abandoned. This application Mar. 15, 1974, Ser. No. 451,721

Int. Cl.² B23K *31/02*

U.S. Cl. 228—144 **5 Claims**

1. The method of manufacturing a heat exchange tube with internal heat exchange surfaces comprising the steps of:
providing an elongated flat sheet of heat exchange material having two parallel edges;
providing a plurality of individual heat exchange elements solid through their entire cross sections, each having a width which is a small portion of the width of said elongated flat sheet;
placing on one face of said sheet a plurality of said heat exchange elements so that said heat exchange elements are free of contact with each other and free of contact with any element other than said sheet so that the width of each of said heat exchange elements covers only a small portion of the width of said heat exchange material;
welding said plurality of heat exchange elements to said face of said sheet to form a web;



moving said two edges of said web together to envelop said elements, form a tube with said face forming the inside surface of said tube with said elements inside of said tube and bring said edges into proximity; and
welding said edges together to form a seam.

3,961,742

PARALLELEPIPEDAL PACKING CONTAINER

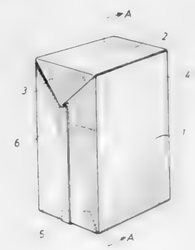
Olof Stark, Rydsgard, and Kjell Martensson, Malmo, both of Sweden, assignors to AB Ziristor, Lund, Sweden

Continuation of Ser. No. 464,676, April 26, 1974, abandoned. This application July 2, 1975, Ser. No. 592,651

Claims priority, application Sweden, May 30, 1973, 7306743

Int. Cl.² B65D *5/72*, *5/42*

U.S. Cl. 229—17 R **4 Claims**



1. A parallelepipedal package having opposed end walls, opposed front and rear walls and opposed side walls adjoining said other walls, each side wall having a medial longitudinal face to face seal extending between said end walls and folded against a side wall of said package, one of said front and rear walls being provided with an overlappingly sealed portion extending transversely of said package across said one wall and extending from the edges of said one wall to said medial longitudinal face to face seal of each side wall.

3,961,743

PLASTIC BAG AND METHOD OF MANUFACTURE

John R. Hollowell, 22179 Long Blvd., Dearborn, Mich. 48124

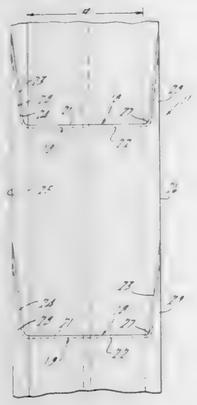
Filed July 22, 1974, Ser. No. 490,410

Int. Cl.² B65D *33/16*

U.S. Cl. 229—62 **1 Claim**

1. A flattened tubular plastic strip formed so that individual bags may be removed therefrom, comprising a plurality of heat seals and adjacent parallel perforations formed at equally spaced intervals along said strip, each heat seal and perforation having a central portion extending transversely across most of said strip, and ear portions extending almost at right angles to said central portions until the edges of said strip, whereby the bottom of each bag has a central portion extending straight across the bag for almost its entire width to maximize bag capacity, the length of said ear portions being suffi-

cient to form ears which may be tied together to close each bag after it is removed along a perforation from the strip, the sides of said strip being tucked in to form two inward folds with strip layers on opposite sides thereof, the layers being partially offset so that outer areas of the layers are exposed in



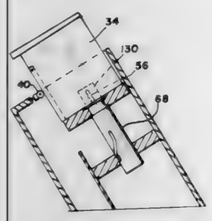
opposite directions, the transverse central portions of said heat seals and perforations extending at least to said exposed areas, the ear portions and the junctures between the ear and central portions of said heat seals and perforations being formed only in said exposed areas.

3,961,744

COIN COLLECTING SYSTEM FOR PARKING METERS

Andrew Kashuba, Jr., Secaucus, N.J., assignor to Henry R. Stiffel, River Vale, N.J.

Filed Apr. 23, 1975, Ser. No. 570,563
Int. Cl.² G07D *9/00*
U.S. Cl. 232—16 **10 Claims**



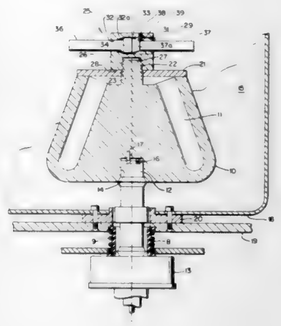
1. A coin collecting apparatus for automatically unlocking and opening locked coin boxes and during the opening of said box receiving and retaining the coins therefrom and after the box has been emptied the box is removed from the apparatus and during removal the box is closed and relocked, the collecting apparatus includes a receiving chute into which the locked box is placed and during a reciprocating push in, pull out operation this chute retains the box in its inserted and oriented condition while the box is unlocked, opened, closed and relocked, the chute having an opening associated therewith, said opening in communication with a coin accumulating means, the coin collecting apparatus including: (a) a guide chute having sides and a top and bottom surface providing a slide and guide means of determined extent; (b) an end member fixedly carried in said chute and substantially transverse to the axis of the chute; (c) a movable member carried in the chute and disposed intermediate the open end of the chute and the fixed end member; (d) sliding and guiding means for maintaining the movable member substantially normal to the axis of the chute while at both ends of its limit of movement and during movement of the movable member toward and from the fixed member; (e) biasing means for urging the movable member to and toward the open end of the chute; (f) a barrel cam carried by and with the movable member, said cam having a cam track formed to include a quarter turn helix with one end of the helix track portion continuing with a straight portion in axial alignment with the axis of the cam; (g) a cam follower in association with and in engagement with the cam track and so retained that with the movement of the movable member the barrel cam is rotated to correspond to the radial displacement of the cam track with reference to a theoretical line parallel to the axis of the cam; (h) a key associated with and rotatable with the barrel cam, said key oriented so as to enter the keyway of the lock of the coin box when said coin box is entered into the chute with the door thereof positioned downwardly and whereby when the coin box is entered in the chute the keyway of the lock of the coin box slides along the key to achieve the desired penetration of the keyway; (i) an interlock which includes a lock means which engages the barrel cam to prevent rotation thereof until the interlock is activated and said lock means being removed with and by bringing the coin box adjacent to the movable member and maintaining the coin box thereat during the key insertion into the lock of the coin box after which the face of the coin box as it moves forwardly urges the movable member toward the end member, said movement causing the cam follower to rotate the barrel cam and the associated key to turn the lock and release the door which opens into the opening in the guide wall and remains open during the movement of the cam follower in the straight portion of the cam track, and by and with the biasing means the movable member and coin box is moved toward the open end of the chute, the straight portion of the cam track enables the door to be fully closed by the chute guide means before the helix portion of the cam track is engaged to cause the key and lock to be turned to lock the coin box, and (j) an opening in the bottom guide wall and guide means of the chute, said opening corresponding to a gravitational opening of the door in the coin box to permit the door to swing downwardly and the coins in the box to fall from the open box.

3,961,745

CENTRIFUGE APPARATUS

Herschel E. Wright, Santa Clara, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 8, 1974, Ser. No. 458,837
Int. Cl.² B04B *7/06*
U.S. Cl. 233—1 B **7 Claims**



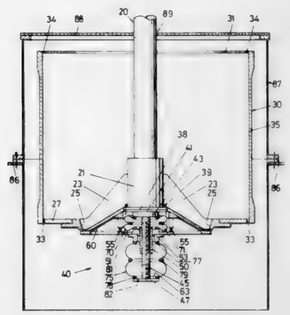
1. A high speed centrifuge apparatus comprising:
a rotor adapted to carry samples to be centrifuged;
a vertical drive shaft having an end thereof adapted for coupling to said rotor for rotating said rotor on the rotational axis of said shaft;
a handle assembly attached to said rotor, said handle assembly including,
a centerpiece positioned on the rotational axis of said rotor and extending outwardly from said rotor on the opposite side thereof from said drive shaft, said centerpiece having a hole therethrough normal to the axis of rotation,
a safety link handle having a central portion fitting snugly in said hole in said centerpiece and two arms extending outwardly from opposite sides of said central portion through the openings in said hole in said centerpiece, said safety link handle being proportioned so that it is balanced when rotated with said rotor,
means for retaining said safety link handle within said hole in said centerpiece, and
one of said arms of said safety link having a section thereof close to said central portion designed and constructed of reduced tensile strength so as to withstand a rotational force less than the other arm and to rupture at a predetermined rotational velocity of said rotor whereby the outwardly extending portion of said one arm departs through said hole in said centerpiece thereby creating an imbalance condition causing said rotor and shaft to oscillate about the rotational axis thereby causing said rotor to depart from said vertical drive shaft.

3,961,746

CENTRIFUGE WITH A DEVICE FOR BLOCKING AND UNBLOCKING AN OPENING THEREOF

Wolfgang Werner, Braunschweig, Germany, assignor to Salzgitter Maschinen Aktiengesellschaft, Salzgitter, Germany

Filed June 28, 1974, Ser. No. 484,325
Claims priority, application Germany, June 29, 1973, 2333122
Int. Cl.² B04B *11/05*
U.S. Cl. 233—20 R **17 Claims**



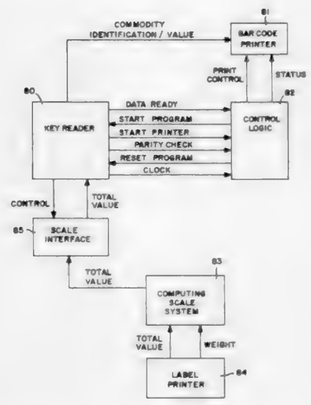
1. In a centrifuge, particularly a sugar centrifuge, a combination comprising a centrifuge drum mounted for rotation about an upright axis and having a bottom wall provided with an opening; a closure member mounted for movement relative to said bottom wall between a first position in which it sealingly blocks said opening, and a second position in which it unblocks said opening; a guide rod projecting axially of said drum from said bottom wall; a sleeve slidably surrounding said guide rod axially adjacent said closure member; coupling means coupling said sleeve with said closure member for joint movement therewith; an expansible and collapsible bellows element cooperating with said sleeve to effect, when inflated, sliding of said sleeve along said guide rod until said closure member is in said first position; and connecting means for connecting said bellows element with the source of pressure fluid.

3,961,747

COMMODITY IDENTIFICATION APPARATUS

James R. Small, and Robert C. Meckstroth, both of Dayton, Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Apr. 30, 1975, Ser. No. 573,594
Int. Cl.² G06K *15/02*; **G01G** *23/38, 19/40*; **G06K** *7/10*
U.S. Cl. 235—61.9 R **15 Claims**



1. Label printing apparatus comprising:
a commodity key comprising a plurality of rows of aperture spaces arranged in a plurality of columns, with one of said columns having an indicium in each space to serve as a clocking mark and with indicia in others of said spaces representing commodity identification information and partly checking information for said commodity identification information,
receiving means for receiving said commodity key and reading said commodity identification information and said parity checking information in response to the movement of said clocking indicia during the seating of said key in said receiving means,
first storage means for storing said commodity identification information and connected for recirculating said information therethrough without loss thereof,
second storage means for storing said parity information,
program control means for generating data reading strobe signals, parity checking strobe signals and data shifting clock signals,
data reading means responsive to said data reading strobe signals for progressively reading out the commodity identification stored in said first storage means,
means for transmitting said data shifting clock signals from said program control means to said first storage means and causing aforesaid recirculating shifting of said commodity identification information,
parity checking means responsive to said parity checking strobe signals for progressively reading out said parity checking information from said second storage means in synchronism with the reading out of said commodity identification information and progressively performing a parity check thereagainst,
a printer for printing a machine readable commodity identification code in response to the reading out as aforesaid of said commodity identification information,
means for inhibiting the operation of said printer if said parity checking means detects a parity error, and
means for resetting said program control means to cause continuation of aforesaid reading, parity checking and printing operations so long as no parity error occurs and said printer is in condition for operation.

3,961,748

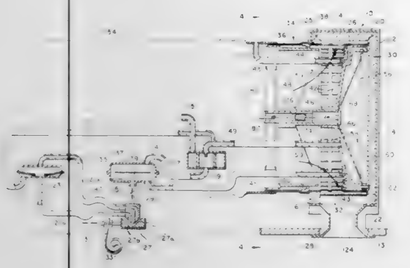
AIR DISTRIBUTION REGULATOR APPARATUS

John C. McNabney, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Division of Ser. No. 498,826, Aug. 19, 1974. This application June 30, 1975, Ser. No. 591,742

Int. Cl.² F24F *7/00*

U.S. Cl. 236—49 **13 Claims**



1. Air distribution apparatus comprising: an air plenum chamber having air inlet opening for receiving air supplied under pressure and an air outlet communicating with a space; means for applying air to said inlet opening; valve means for controlling the air passing from said outlet opening; a fluid powered actuator means for positioning said valve means in response to a controlled fluid pressure; fluid control means for supplying a controlled fluid pressure to said actuator means including: a first element having first and second faces fixed in relation to each other at an oblique angle; a second element having first and second faces fixed in relation to each other at an oblique angle and disposed respectively in opposed relationships with said first and second faces of said element; a first vent passageway having a first port on said first face of one of said first and second elements; second vent passageway having a second port on said second face of one of said first and second elements; first means for adjusting the relative position of said first element through a first path that reduces or increases the spacing between said first faces of said first and second elements and simultaneously respectively increases or reduces the spacing between said faces of said first and second element in response to a first condition; second means for adjusting the relative position of said first and second elements through a second path non-parallel to said first path that reduces or increases the spacing between said first faces of said first and second elements and simultaneously respectively reduces or increases the spacing between said second faces of said first and second element in response to a second condition.

3,961,749

MULTIPLE PORT MULTIPLE TEMPERATURE THERMALLY RESPONSIVE VALVE

John W. Orcutt, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

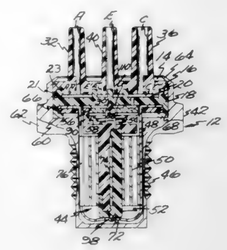
Filed Jan. 10, 1975, Ser. No. 535,922

Int. Cl.² G05D *23/08*

U.S. Cl. 236—101 D **10 Claims**

1. A thermally responsive valve assembly comprising a valve body, said body having a plurality of passages therein and valve means including a thermally responsive bimetallic coil and rotatable passage switching means operably connected thereto, said rotatable passage switching means including a switch disc and a switch plate, said switch plate having a plurality of holes therein, each of said holes being a part of one of said passages, said switch disc having a plurality of linking passage portions and being rotatable to provide communication between the various holes which changes as said disc rotates, said bimetal coil rotating said passage switching means in response to temperature changes to effect a change in communication between said passages.

7. A thermally responsive valve assembly comprising a valve body having a first part at one end of said valve body and a second part at another end of said body, the first part of the body having a plurality of passages, each passage having an opening at one end adapted for connection to a fluid line and an opening at a second end to allow for communication between passages; and the second part containing a thermally



conductive portion and a valve means for providing communication between said passages, said valve means comprising a thermally responsive bimetal coil having a first end and a second end, means for fixedly securing said first end of said bimetal coil, and switch disc means rotatably mounted and operatively connected to said second end of said bimetal coil having a plurality of linking passage portions which contain said second end openings to provide communication between passages which is changeable upon rotation of said disc means.

3,961,750

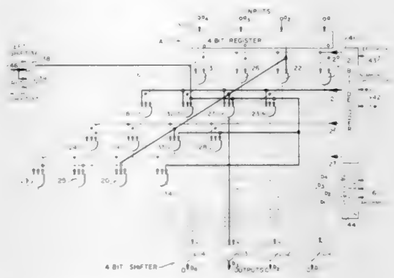
EXPANDABLE PARALLEL BINARY SHIFTER/ROTATOR

Tich T. Dao, Cupertino, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 458,241, April 5, 1974, abandoned. This application Jan. 17, 1975, Ser. No. 542,080

Int. Cl.² G06F *7/00*

U.S. Cl. 235—164 **7 Claims**



1. A parallel shifter having minimum time delay comprising: storage register means for storing a group of bits arranged in increasing weight; a group of OR gates having outputs corresponding to said bits after having been shifted a predetermined direction and number of shift steps; and means for shifting said stored group of bits including, a plurality of AND gates conceptually arranged in a skewed multiplication matrix each representing a cross product of said group of bits multiplied by a binary number representing a power of 2 such power being indicative of the number of shift steps, said multiplication of said group of bits and said binary number forming a final product having a least significant half and a most significant half, each of said AND gates having an output respectively connected to one of said OR gates which has the same relative weight as such AND gate relative to the order of such AND gate in said least significant half of said final product or most significant half of said final product, said AND gates having inputs connected as follows—each AND gate is connected to a register bit which is the multiplicand for the cross product represented by such AND gate, first enabling means responsive to a left shift instruction is connected to AND gate inputs representing cross products corresponding to the least significant half of the final product, second enabling means responsive to a right shift instruction is connected to AND gate inputs representing cross products corresponding to the most significant half of the final product, and third enabling means having a plurality of outputs each respectively corresponding to one of said number of shift steps has each output respectively connected to a group of AND gate inputs representing cross products formed by a common multiplier bit of said binary number.

3,961,751

ARTIFICIAL CROSS-COUNTRY SKIING PATH

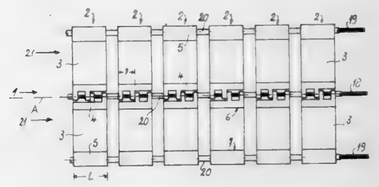
Jean Kessler, Grenoble, France, assignor to Societe Kessler S.A., Grenoble, France

Filed Mar. 27, 1975, Ser. No. 562,854

Claims priority, application France, Mar. 29, 1974, 74.11824

Int. Cl.² E01B *23/00*

U.S. Cl. 238—10 R **10 Claims**



1. A ski path comprising:

a pair of side-by-side rows of elongated tracks each formed as an upwardly open and longitudinally extending channel in turn each formed of a longitudinal succession of separate similar track elements each having a central web and inside and outside flanges upstandingly higher than and flanking said web, each inside flange of each element of each row being turned toward an inside flange of a corresponding element of the other row and being provided with an ear extending toward said other row and having a longitudinal length shorter than the overall longitudinal length of the element, each ear being longitudinally offset from the corresponding ear of the corresponding element of the other row and extending transversely beyond a longitudinal midline of said path extending generally between said rows; and

an elongated longitudinally extending connector member passing through said ears at said midline and interconnecting said corresponding elements in side-by-side relation into a chain with the upstanding flanges and webs of each side forming one of said channels.

3,961,752

METHOD AND APPARATUS FOR DUST CONTROL TREATMENT

Gerard Doeksen, Montrose, Canada, assignor to Cominco Ltd., Vancouver, Canada

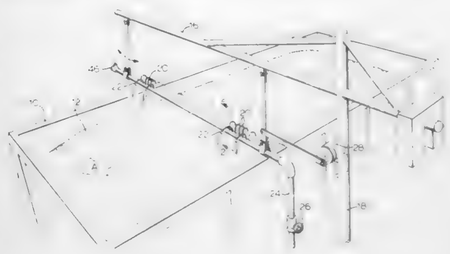
Filed Mar. 28, 1975, Ser. No. 563,243

Claims priority, application Canada, July 22, 1974, 205262

Int. Cl.² B05B *3/14, 15/04;* **B08B** *3/02;* **E01C** *7/36*

U.S. Cl. 239—1 **9 Claims**

1. A method of applying a fluid treatment composition to a moving bed of particulate material which comprises spraying a major portion of a composition of an aqueous binder material and a wetting agent through a first group of nozzles and a minor portion of said composition through a second group of nozzles onto said moving bed, said nozzles being attached to the top of a common transverse spray header, oscillating said header across said moving bed during said spraying, directing through said first group of nozzles a plurality of substantially parallel vertical jets of said major portion onto



the surface of said moving bed to penetrate said surface and form therein a zigzag pattern of trenches, retaining treatment composition in said trenches until absorbed by adjoining particulate material, and directing by means of deflectors attached to said second group of nozzles said minor portion in adjoining spray curtains which together extend transversely across said moving bed to ensure wetting of areas between the zigzag trenches formed by jets from the first group of nozzles.

3,961,753

IRRIGATION SYSTEM CONTROLLER

Charles Kenneth Sears, Tucson, Ariz., assignor to International Electric Co., Chicago, Ill.

Filed Oct. 6, 1975, Ser. No. 619,854

Int. Cl.² A01G *25/16, 27/00*

U.S. Cl. 239—64 **13 Claims**



1. In an irrigation system wherein for purposes of soil moisture content control a constant speed motor drives a pump for dispensing water for preselected water control periods and a motor starter means operationally connects with said motor for selectively supplying electrical power thereto, the combination with said motor starting means of a soil moisture content controller comprising:

a. a soil moisture content sensing means installed at the point for desired soil moisture content control,

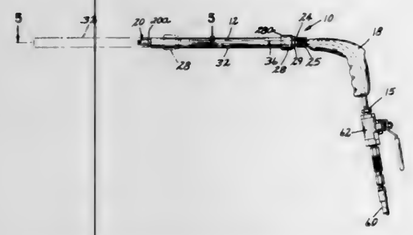
b. a transducer means operationally connected to the output of the soil moisture content sensing means and having a soil moisture content indexing output,
c. a soil moisture content single setpoint indexing means,
d. a soil moisture content comparator means operationally connected to the soil moisture content indexing output of the transducer means and to the output of the soil moisture content single setpoint indexing means, and
e. a water control period selector means operationally connected to the output of the soil moisture content comparator means and to the input to the motor starter means.

3,961,754

SPRAY AND FOAM PRODUCING NOZZLE APPARATUS

Garrett D. Kuhns, Egan, Minn.; Norman E. Astorp, Sumner, Iowa; Richard V. Mullen, Cottage Grove, Minn., and John Ellwood Thomas, Riverfalls, Wis., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Sept. 12, 1975, Ser. No. 612,865
Int. Cl.² B05B *1/12, 7/04*
U.S. Cl. 239—289 **15 Claims**



1. A hand-held spray and foam producing nozzle apparatus, comprising:
a. an elongate rigid conduit member having a passageway extending from an inlet port to an outlet port spaced from said inlet port;
b. a handle connected to said conduit member for enabling an operator to hand-carry the nozzle apparatus and to directionally aim said outlet port thereof;
c. a spray producing nozzle connected to said conduit at its said outlet port, suitable for forming and for directing a spray outwardly therefrom of solution passing under pressure through said passageway; and
d. means slidably attached in overlying engagement with said conduit member for selectively producing foam from said spray and for directionally ejecting said foam outwardly from said nozzle apparatus.

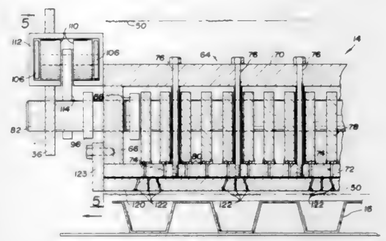
3,961,755

APPARATUS FOR DISPENSING IN A PREDETERMINED PATTERN

Richard L. Morine, Mentor, and James J. Hokes, Lakewood, both of Ohio, assignors to Fedco Inc., Mentor, Ohio

Continuation of Ser. No. 382,743, July 26, 1973, abandoned. This application Mar. 10, 1975, Ser. No. 556,870
Int. Cl.² B05B *7/00*
U.S. Cl. 239—319 **5 Claims**

1. Apparatus for applying to a surface a relatively uniform layer or film of a relatively viscous fluid in a predetermined pattern, said apparatus comprising:
a sheet of foraminous material having first and second opposed sides and an area greater than said predetermined pattern;
first means for supporting said sheet with its first said facing and closely adjacent said surface;
second means for saturating said sheet with said fluid; and,
air discharge means mounted closely adjacent said second side of said sheet, said air discharge means including:
a first plate member extending generally parallel to said sheet and having a multiplicity of small, closely-spaced openings extending therethrough and laid out in a pattern corresponding to said predetermined pattern and directed toward the second side of said sheet;
a second plate member positioned generally parallel to and closely adjacent said first plate member on the side opposite said sheet, said second plate member having a multiplicity of relatively uniformly spaced perforations extending therethrough and directed toward said first plate member;
air chamber means enclosing said second plate member; and,
valve means for opening and closing said perforations to allow air from said air chamber means to pass through said first and second plates and discharge through said openings and through said sheet.

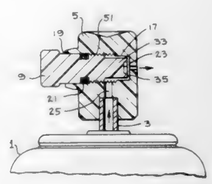


3,961,756

ADJUSTABLE-SPRAY MECHANISM

Leo A. Martini, Mesquite, Tex., assignor to National Chemsearch Corporation, Irving, Tex.

Filed Feb. 10, 1975, Ser. No. 548,515
Int. Cl.² B05B *7/32, 1/30, 1/34*
U.S. Cl. 239—337 **4 Claims**



1. An improved adjustable spray tip for selectively varying the spray pattern from a wide angle misting spray to a concentrated stream, comprising,
bore button body having a bore therein for receiving an adjustable valve means, the internal end of the bor defining an end wall,
an outlet orifice communicating with the end wall of said bore and extending to the exterior surface of the button body for expelling the spray,
an adjustable valve means in said bore, said adjustable valve means including advancement-retraction means operatively associated therewith and with the bore for moving the valve means toward or away from said outlet orifice,
said adjustable valve means being of cylindrical configuration and including a nose surface at the end thereof proximate said outlet orifice,
fluid swirl means operatively associated with the outlet orifice for imparting a vortex flow to the fluid about the axis of the bore, and,

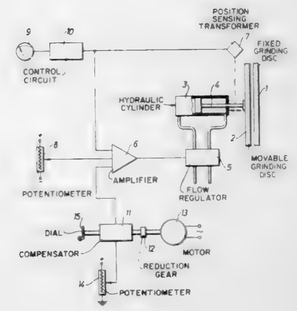
said fluid swirl means including a counterbore means of circular shape in the nose surface of said valve means, the counterbore means being recessed a predetermined depth in the nose surface,
fluid conduit means in the nose surface extending inwardly from the surface of the cylindrical valve means into tangential intersection with said circular counterbore means, the depth of said fluid conduit means being the same as said counterbore means, so that the entire volume of fluid introduced to the counterbore means is subjected to maximum centrifugal forces of rotation prior to escape through the outlet orifice,
a fluid inlet passage communicating with the bore so that upon introduction of a fluid stream to the bore, the stream is caused to swirl about the end of the valve means adjacent the inlet orifice whereby advancement or retraction of the valve means with respect to the orifice produces a respective correlative stream-like or mist-like spray pattern.

3,961,757

METHOD AND MACHINE FOR REFINING WOOD CHIPPINGS, SHAVINGS, PAPER PULP AND THE LIKE

Torsten Lennart Berggren, Nassjo, Sweden, assignor to Cellwood Machinery AB, Nassjo, Sweden

Filed Apr. 2, 1975, Ser. No. 564,337
Int. Cl.² B27L *11/08*
U.S. Cl. 241—28 **19 Claims**



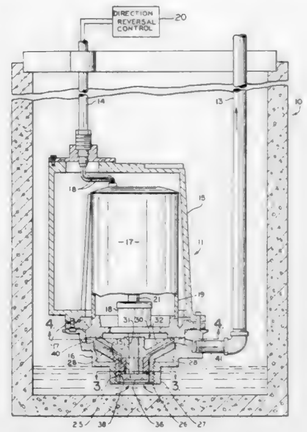
1. Method of refining wood chippings, shavings, paper pulp in high non-pumpable concentrations and the like by use of a refining machine which includes two relatively displaceable grinding devices which are rotatable relative to one another and which are each provided with grinding bodies thereon, the method comprising:
arranging said grinding devices to form a narrow slot-shaped grinding chamber between the grinding bodies of the two grinding devices, said grinding devices being relatively displaceable toward and away from each other so as to vary the size of said slot-shaped grinding chamber; and
displacing a grinding device relative to the other as a function of the position thereof relative to the other grinding device and at a predetermined rate during the period of time the machine is in operation, said predetermined rate being independent of the relative positions of the grinding devices, to vary the distance between said grinding devices so as to compensate for wear of said grinding bodies of said grinding devices.

3,961,758

CENTRIFUGAL PUMP WITH INTEGRAL GRINDER

Arvid E. Morgan, Mansfield, Ohio, assignor to Peabody Barnes, Inc., Mansfield, Ohio

Filed Aug. 23, 1974, Ser. No. 500,106
Int. Cl.² B02C *18/06*
U.S. Cl. 241—46.11 **14 Claims**



1. Apparatus for pumping liquids and liquid slurries and for comminuting solid and semi-solid material contained therein comprising:
a housing defining a volute chamber and an outlet therefrom,
a drive motor,
a rotary drive shaft extending vertically downward from said motor,
a stator coaxial with said shaft and adapted for axial adjustment relative to said housing, said stator having an upwardly facing frusto-conical surface and an interior cylindrical surface coaxial with said shaft and having a plurality of axially extending slots formed therein,
means defining an inlet communicating with the lower ends of said slots in said stator,
a grinding member having an abrasive outer cylindrical surface mounted on the lower end of said shaft within said stator and cooperable therewith to comminute solid and semi-solid material passing upwardly from said inlet through said slots between said grinder element and said stator,
a centrifugal impeller mounted on said shaft above said grinding member and having a downwardly facing frusto-conical exterior impeller surface cooperable with said upwardly facing stator surface for pumping material radially outward and axially upward to said volute chamber, said downwardly facing impeller surface having radially extending lands that define pumping cavities therebetween, said lands having edges in cooperating relation with said slots to sweep past the upper ends of said slots and to shear solid and semi-solid matter contained in said slurry.

3,961,759

AUTOMATIC WEB-WINDING ROUND APPARATUS

Haruyoshi Fujiwara, Mihara, Japan, assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 13, 1974, Ser. No. 532,313
Int. Cl.² B65H *17/08*
U.S. Cl. 242—66 **3 Claims**

1. An apparatus for starting a web wrapping a core on a two drum winder, said winder comprising a first winding drum and

a second winding drum, said winding drums being positionable on the same horizontal level,

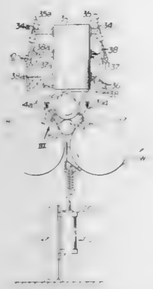
a rider roll nipping the core against said winding drums and being positionable above said winding drums,

first and second web directing members,

means to move said web directing members into contact with said rider roll and said winding drums, and means to move said members out of contact with said rider roll and said respective drums,

a web holding means located beneath said winding drums,

means to raise said web holding means into engagement with said web and hold said web in contact with one of said winding drums,



means to maintain said web holding means into engagement with said web thereby preventing the web from falling between said winding drums;

said first web directing member in its contact position being arranged to divert the web into the nip between said rider roll and said core,

said second web directing member in its contacting position being arranged to divert the web into the nip between said second winding drum and said core,

a third web directing means being arranged to direct the web upwardly into the nip between said first winding drum and said core, said third web directing means being said web holding means, said first, second and third web directing means thereby wrapping the web around said core without utilizing any external fastening means.

3,961,760

MAGAZINE FOR X-RAY FILM SHEETS, COMPRISING A ROTATABLE STORAGE DRUM

Theodorus Franciscus Arnoldussen; Antonius Johannes Ludovicus Maria Hoeks, and Norbertus Johannes Josephus Liebrand, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,375

Claims priority, application Netherlands, Apr. 18, 1973, 7305412

Int. Cl.² B65H *17/06*

U.S. Cl. 242—67.3 R **8 Claims**

1. A magazine for taking up and giving off x-ray film sheets, comprising:

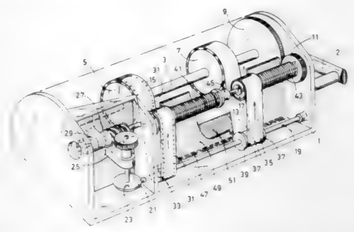
rotatable storage drum means;

first and second flexible belts attached at one end to said drum means, rotation of said drum means wrapping and unwrapping said belts about said drum means at spaced apart locations;

first and second independently rotatable auxilary drums positioned with respect to said storage drum means to take up therefrom and give off thereto said first and second belts respectively;

first and second resilient elements cooperating with said first and second auxiliary drums respectively for independently applying substantially constant and substantially equal tension to said first and second belts respectively;

means for rotating said storage drum means; and



means for guiding film sheets to and from said storage drum means, so that film sheets are taken up and given off by clamping and unclamping thereof about said storage drum means with said wrapping and unwrapping belts.

3,961,761

STORAGE DEVICE FOR A SAFETY BELT

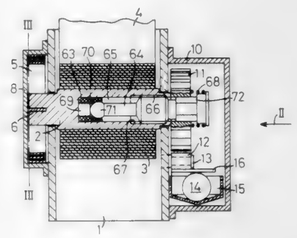
Josef Wiesböck, Dachau, Germany, assignor to Hans Kolb KG, Munich, Germany

Filed Jan. 20, 1975, Ser. No. 542,247

Claims priority, application Germany, Jan. 21, 1974, 2402650

Int. Cl.² B65H *75/48*

U.S. Cl. 242—107.4 A **5 Claims**



1. A storage device for a safety belt, said storage belt including a rotatably mounted coiling shaft, said safety belt being secured at one end to said coiling shaft, inertia actuated locking means for locking said coiling shaft against rotation in a direction of belt withdrawal, a bolt member coupled between said coiling shaft and said locking means, and an energy absorbing cushion, said bolt member being axially movable against said energy absorbing cushion through turning of said coiling shaft due to belt withdrawal following actuation of said inertia means.

3,961,762

WIRE DRAG UNIT

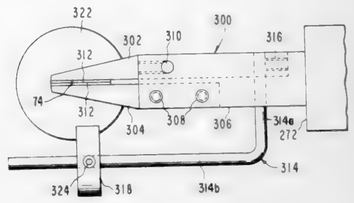
John C. Diepeveen, 1737 Kimberly Drive, Sunnyvale, Calif. 94087

Continuation of Ser. No. 471,525, May 20, 1974, abandoned, which is a continuation of Ser. No. 307,896, Nov. 20, 1972, abandoned, which is a division of Ser. No. 133,932, April 14, 1971, Pat. No. 3,709,422. This application June 17, 1975, Ser. No. 587,753

Int. Cl.² B65H *59/22*

U.S. Cl. 242—149 **2 Claims**

1. A wire drag unit for a wire bonding machine comprising: a support; a first jaw rigidly secured in a generally horizontal position to the support; an elongated second jaw; a generally horizontal pin pivotally mounting the second jaw intermediate its ends on the support and above the first jaw to permit rotational movement of one end of the second jaw toward and away from the first jaw, whereby a wire can be clamped between the jaws; a weight; and means coupled to the opposite end of the second jaw, spaced below said first jaw and extending through and beyond the vertical plane in which said pin is disposed for adjustably supporting said weight, said weight normally being on the side of said plane on which said one end of the second jaw is disposed.



3,961,763

DEVICE FOR GUIDING A MAGNETIC TAPE IN A RECORDING CASSETTE

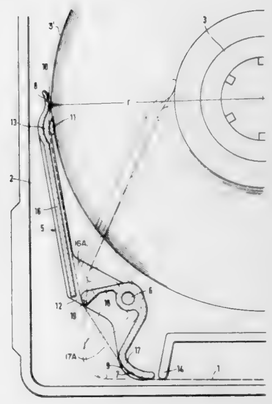
Stanley Brice Lascelles Somers, 5, Quai du Mont-Blanc, Geneva, Switzerland

Filed June 3, 1974, Ser. No. 476,155

Claims priority, application Switzerland, June 8, 1973, 8411/73

Int. Cl.² G03B *1/04*; **G11B** *15/32, 23/04*

U.S. Cl. 242—199 **14 Claims**



1. A one-piece device for guiding a tape in a two-spool cassette, comprising;

a lever;

means for mounting the lever for pivotal movement alternately toward and away from a spool and for defining an inward side of the lever facing the spool and an outward side of the lever facing away from the spool, the lever having a first end portion at least relatively adjacent the spool and a second end portion remote from the spool;

means on the relatively adjacent end portion for guiding a tape along the inward side, adjacent to the spool; and

means on the remote end portion for guiding the tape along the outward side, between another spool and the relatively adjacent end portion.

3,961,764

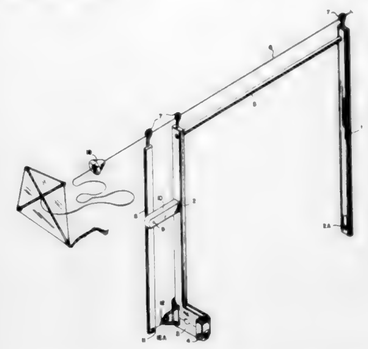
TOY SPACE VEHICLE PAYLOAD FOR A KITE

John E. Keough, Ogden, Utah, assignor to The Raymond Lee Organization, Inc., a part interest

Filed Oct. 25, 1974, Ser. No. 517,902

Int. Cl.² A63H *27/08*

U.S. Cl. 244—155 R **6 Claims**



1. In combination with a kite having a string attached:

a payload shaped in the form of a space vehicle having a turbine rotor to aid in ascent and descent of the vehicle;

a carrier for said payload, said payload being detachably secured to said carrier, said carrier being attached to the string of said kite and bearing the payload upwardly towards the kite under the influence of the wind, said carrier including first and second rectangular payload support struts having slide clips at one end, said string extending slidably through said clips, and a connecting bar parallel to the string, said connecting bar extending transversely between said struts and secured at each end to the one end of the corresponding strut, the first strut having a longitudinally extending slot in the other end, the second strut having at its other end a notched release jaw supported in a hinge, said payload being supported by the notch in the jaw and by the slot in the first strut; and

a stop mounted on the string which when touched by the carrier causes said playload to be released from the carrier and to descend to earth under the influence of gravity.

3,961,765

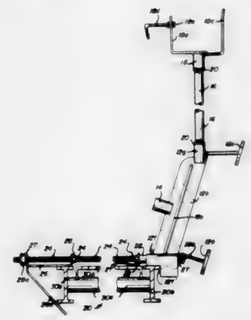
MULTI-POSITION CONTAINER HOLDING ARRANGEMENT

Alvin O. Brothers, 2001 E. Franklin St., Evansville, Ind. 47711

Filed Dec. 26, 1973, Ser. No. 427,991

Int. Cl.² F16M *13/00*

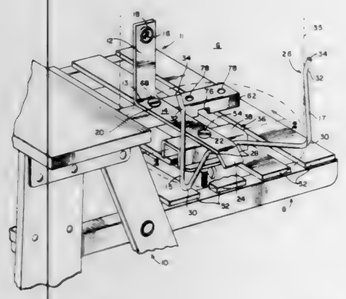
U.S. Cl. 248—126 **7 Claims**



1. A multi-position container holding arrangement comprising a framework having legs supporting a container-receiving

assembly at a first upstanding position, scaffolding, and releasable positioning means extending from said framework and selectively mounting said framework on said scaffolding at a tilted position of said framework to define a second container-receiving assembly position, said framework having means including first and second sleeves for receiving said container-receiving assembly at said first and at said second position, and means including a third sleeve receiving said releasable positioning means at said second position.

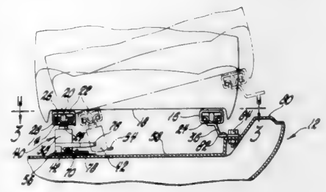
3,961,766
CONTAINER HOLDING ARRANGEMENT
Alvin O. Brothers, 2001 E. Franklin St., Evansville, Ind. 47711
Filed Aug. 21, 1975, Ser. No. 606,514
Int. Cl.² F16M *13/00*; **B44D** *3/14*
U.S. Cl. 248—210 **8 Claims**



1. A container-receiving arrangement adapted for clamping to an upwardly extending support of a ladder and to an apertured horizontal work surface of a ladder, said arrangement comprising container-receiving means having at least first vertical and horizontal members, first bracket means for attachment to said first horizontal member, first clamp means for attachment through said work surface aperture to said first bracket means for clamping said horizontal work surface between said first bracket means and said first clamp means for removably clamping said container-receiving means to said horizontal work surface, second bracket means adapted for selective attachment to either said first vertical or horizontal member when said container-receiving means is clamped to said upwardly extending support or said horizontal work surface respectively, and second clamp means for removable attachment to said second bracket means for removably clamping said container receiving means to said upwardly extending support of said ladder when said second bracket means is attached to said vertical member and said second clamp means is attached to said second bracket means with said support therebetween.

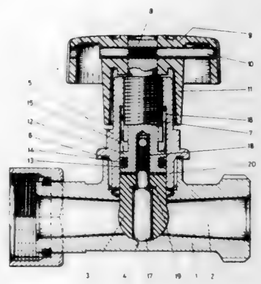
3,961,767
VEHICLE BUCKET SEAT APPARATUS AND ASSEMBLY METHOD THEREFOR
William C. Albrecht, Warren, and David L. Clark, Grosse Pointe Woods, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed June 11, 1975, Ser. No. 585,840
Int. Cl.² A62B *35/00*; **B65J** *1/22*
U.S. Cl. 248—503 **4 Claims**

1. For use with an automotive underbody including a floor and a rocker panel, and with an automotive bucket seat having inboard and outboard channels and associated adjustment rollers and tracks operatively connected thereto, a seat mounting arrangement comprising an anchor bracket assembly secured to said floor; a locator bracket assembly secured to the inboard adjustment track; and a pair of mounting flanges secured to the outboard adjustment track; said anchor bracket assembly including a base plate member, side walls formed on opposite edges of said base plate member, horizontal open-ended aligned slots formed in each of said side walls, pilot means formed adjacent the open end portion of said open-ended slots, and mounting means operatively connected to said side walls and/or said base plate member for securing said anchor bracket assembly to said floor; said locator bracket assembly including a bottom plate, vertical wall members formed on opposite edges of said bottom plate, aligned openings formed through said vertical wall members, a rod



mounted in said aligned openings and having the ends thereof extended beyond said openings and adapted to being piloted by said pilot means into said respective horizontal open-ended slots, resilient means operatively connected to said rod and adapted to cause said rod-ends to be securely mounted in said respective open-ended slots, and mounting straps formed on the upper edges of said vertical wall members and secured to said inboard adjustment track; and said pair of mounting flanges on said outboard adjustment track being secured to a pair of mounting surfaces formed at a predetermined location on an inboard side of said rocker panel.

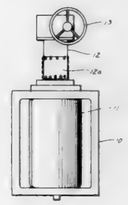
3,961,768
PLUNGER VALVES
Hubertus Leonardus Martinus Veugelers, Delft, Netherlands, assignor to Conval Nederland N.V., Den Haag, Netherlands
Filed Mar. 27, 1974, Ser. No. 455,190
Claims priority, application Netherlands, Mar. 30, 1973, 7304432
Int. Cl.² F16K *3/28*
U.S. Cl. 251—191 **3 Claims**



1. Plunger valve comprising a body having an essentially straight through passage and a bore extending substantially normal thereto into a head piece of the body, a plunger of a rubbery or synthetic material movable in said bore with a sliding fit, said plunger being mounted with a sliding fit on a retaining fit fixed to a screw threaded stem cooperating with an internal screw thread of the head piece for up and down movement of said stem with said pin and plunger, the end of said plunger facing away from said head piece being dome-shaped and engageable in a shallow recess of a complimentary

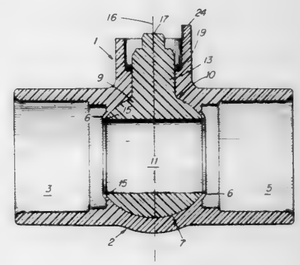
shape in the opposed wall part of said through passage, said dome-shaped end having an open bore for said retaining pin which has a retracted position within said bore when said dome-shaped head is not in contact with said opposed wall part but which engages said wall part when the stem is screwed down to close said passage under limited elastic deformation of said plunger, and in which the head of said retaining pin is correspondingly dome-shaped to said shallow recess in the wall of the through passage.

3,961,769
ADJUSTABLE BEARING STRUCTURE FOR BUTTERFLY GATE VALVES
Harold E. Crow, and Edward L. Brown, both of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
Filed Apr. 9, 1973, Ser. No. 349,066
Int. Cl.² F16K *1/22*
U.S. Cl. 251—305 **8 Claims**



1. In a butterfly gate structure adapted to be mounted in an aperture in a conduit or the like, a leaf having a central vertical shaft extending thereabove and therebelow, a radial bearing for the lower end of said shaft, a radial bearing and a vertical thrust bearing for the upper portion of said shaft, said thrust bearing carrying the entire weight of said leaf and shaft, means associated with said vertical thrust bearing for adjusting the vertical position of said leaf, and a bonnet covering and protecting said upper radial and thrust bearings and adjusting means.

3,961,770
PLUG VALVE
Thomas J. Wrasman, Louisville, Ky., assignor to Celanese Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 394,037, Sept. 4, 1973. This application Feb. 7, 1975, Ser. No. 548,157
Int. Cl.² F16K *5/00*
U.S. Cl. 251—315 **24 Claims**



1. A valve comprising:
a unitary housing of moldable non-metallic material provided with inlet and outlet channels having peripheries and including end sections formed as homogeneous parts of said housing for connection to communicating conduits on opposite sides of said valve;
a plug mounted for rotary movement at a position between said inlet and outlet channels and having a through passageway including an orifice with a periphery smaller than the periphery of the adjoining channel;
a body seal portion formed as a homogeneous part of said housing and being in sealing engagement with portions of the plug remote from said orifice; and
an annular lip seal member formed as a homogeneous part of said body seal portion and surrounding said plug orifice, said lip seal member extending radially inwardly from the periphery of said adjoining channel to a position adjacent the periphery of said orifice and being sufficiently thin in the direction of fluid flow through the valve to form a fluid tight seal by causing the radially innermost portion of the lip seal member to flexingly engage an outer surface portion of the plug.

3,961,771
MECHANICAL GUY CABLE CONTROL DEVICE
Archie M. Kumasaka, Middletown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed June 18, 1975, Ser. No. 588,089
Int. Cl.² B66D *1/26*
U.S. Cl. 254—184 **10 Claims**

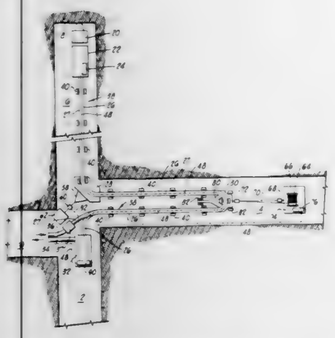


1. A guy element control mechanism for vertically extensible and retractable structures subject to varying wind loads during extension and retraction, said mechanism comprising a support means adapted to be fixed near the base of a vertically extensible and retractable structure, a pair of opposing flexible guy elements having corresponding ends adapted for attachment to a top section of a vertically extensible and retractable structure, guide means for said flexible guy elements positioned substantially equal distances from opposite sides of a base of a structure, a pair of capstans on the support means and each receiving convolutions of one of said flexible guy elements, storage reel means for the flexible guy elements on the support means in spaced relation to the capstans and receiving the other corresponding ends of the flexible guy elements to complete a closed loop guy system with a vertically extensible and retractable structure, a pair of one way freewheeling and one way locking rotary brake assemblies on the support means each having input and output rotary components, said capstans being secured to said input components of the brake assemblies to turn therewith, and a differential gear means disposed between said brake assemblies including gear components drivingly coupled with said output components of the brake assemblies, the output components of the brake assemblies being in back-to-back relationship axially on said support means, said brake assemblies being operable when the input torque of a given capstan is greater than the input torque of the other capstan.

3,961,772
CONTROL SYSTEM FOR POSITIONING EXTENSIBLE PIPELINE SYSTEM

William T. Sweeney, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Nov. 4, 1974, Ser. No. 520,312
Int. Cl.² B66D 1/48
U.S. Cl. 254—173 R 9 Claims



1. A control system for automatically maintaining proper alignment and tension in a flexible pipeline of the type which is mobilely supported and of relative large diameter for carrying slurried particulate matter, wherein a 180° loop is formed for movable adjustment of the effective length of the pipeline from source to a remote location, comprising;

a mobile turn vehicle receiving said pipeline loop movably thereover;

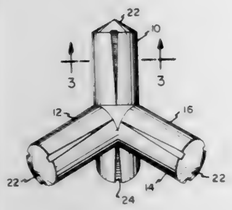
means for sensing the tension variation between the mobile turn vehicle and a selected stationary point and providing an electrical output indicative thereof; and

control means responsive to said electrical output for effecting movement of said turn vehicle until the pipeline tension is adjusted to within predetermined limits.

3,961,773
TRACTION DEVICE

Max L. Faulkner, 2000 W. 92nd Ave., Space 25, Denver, Colo. 80221

Filed July 14, 1975, Ser. No. 595,844
Int. Cl.² F04H 17/00
U.S. Cl. 256—1 4 Claims

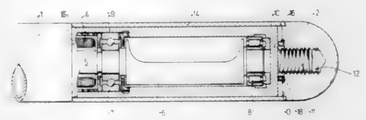


1. A disposable device adapted to be used in relatively large numbers with automobile tires in place of using tire chains on icy roads, said device comprising a polymeric solid body having four like solid legs which are interconnected and integral, all of the legs having one end in common, the opposite ends of all legs being pointed, said legs extending outward in four different directions and being separated by 120° with respect to each other, each three adjacent pointed ends defining a plane whereby four intersecting planes defining a regular tetrahedron are formed, each pointed end defining a different vertex thereof, each leg having a plurality of equidistantly spaced longitudinally extending grooves in the outer surface.

3,961,774
VIBRATORY COMPACTOR

Gotthilf Strohbeck, Leonberg, and Eugen Stahle, Magstadt, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 11, 1974, Ser. No. 531,617
Claims priority, application Germany, Jan. 7, 1974, 2400592
Int. Cl.² B01F 11/00
U.S. Cl. 259—1 R 11 Claims



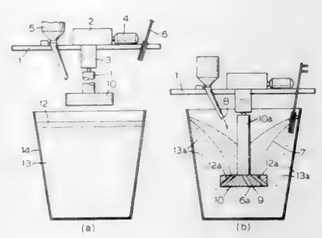
1. A vibratory compactor for compacting of flowable concrete and the like, comprising a tubular housing provided with an end portion having an axial end; vibration-producing means in said housing

and operative to cause the same to vibrate so as to effect compacting of concrete or an analogous flowable mass when said housing is dipped thereinto; a protective sleeve surrounding said housing over at least part of the axial length thereof, so that when the housing is dipped into the mass to be compacted it will be the sleeve that is subjected to wear and the housing will be protected by the sleeve, said sleeve having a portion axially adjacent said axial end; and an end cap mounted on said end portion and urging said portion of said sleeve against said axial end of said end portion of said housing.

3,961,775
METHOD AND APPARATUS FOR LIQUID MIXING

Frank Markus, Burlington, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Canada

Filed Nov. 25, 1974, Ser. No. 527,026
Claims priority, application United Kingdom, Nov. 28, 1973, 55297/73
Int. Cl.² B01F 7/26
U.S. Cl. 259—24 6 Claims



1. A method of increasing the surface contact between two immiscible liquids of different specific densities, comprising the steps:

placing the two liquids in a container to form an interface with the less dense liquid above the interface and the more dense liquid below the interface,

providing a rotor of substantially circular outline having generally an upper face and a lower face, the rotor having a diameter of at least about one-third of the container internal diameter, the rotor having at least one internal passageway which opens at one end through the upper face at a first location adjacent the rotor axis, the other end of the passageway opening at a second location on the rotor axis that is said first location,

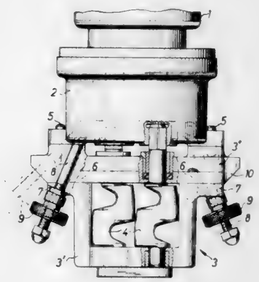
inserting said rotor into said container sufficiently far to bring said upper face beneath said interface when the liquids are at rest, the axis of the rotor being generally vertical,

and rotating the rotor about its axis at a speed sufficient to draw a part of the interface down to the upper face of the rotor, whereby the less dense liquid passes into said one end of said passageway and is pumped through said passageway into said more dense liquid.

3,961,776
MIXING AND KNEADING DEVICE

Kurt Sperrle, Stuttgart, Germany, assignor to Werner & Pfleiderer, Stuttgart, Germany

Filed June 19, 1974, Ser. No. 480,970
Claims priority, application Germany, July 28, 1973, 2338456
Int. Cl.² B29B 1/10
U.S. Cl. 259—192 5 Claims



1. A mixing and kneading device comprising in combination:

a power drive means including a motor, a gearing and a housing for said motor and gearing;

a receptacle for mixing and kneading therein a supply of material and having a side wall and end walls;

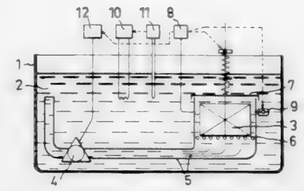
rotary mixing and kneading means within said receptacle and journalled in said end walls thereof, said mixing and kneading means being releasably coupled to said power drive means thereby constituting a power unit therewith, said receptacle being composed of two separate parts, one part being disposed adjacent to said power drive means and the other part being disposed remote from the power drive means and in lengthwise superimposition with said one part, said adjacent one part including one of said end walls and said remote other part including the other end wall and the side wall; and

clamping means for releasably clamping said receptacle parts to each other and to said power drive means for support by the same, said clamping means including at least one elongate member hinged at one end to said power drive means and a clamping surface on said remote other receptacle part, said surface being provided on a lateral protrusion of said side wall, and said elongate clamping member being swingable into and out of clamping engagement with said clamping surface, engagement of the clamping member with said surface clamping the two separate receptacle parts to each other and jointly to the power drive means and disengagement of the clamping member freeing both parts of the receptacle from each other and from the power drive means.

3,961,777
APPARATUS FOR THE REGULATED COOLING OF HOT OBJECTS FOR QUENCHING OR HARDENING PURPOSES

Birger David Lineberg, Koping, Sweden, assignor to AB Volvo, Goteborg, Sweden

Division of Ser. No. 381,068, July 20, 1973. This application May 10, 1974, Ser. No. 468,884
Claims priority, application Sweden, July 28, 1972, 9914/72
Int. Cl.² C21D 1/64
U.S. Cl. 266—114 7 Claims

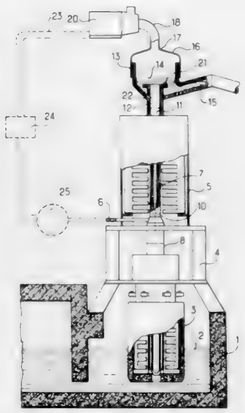


1. In apparatus for the regulated cooling of hot objects for quenching or hardening purposes, comprising a container with a liquid cooling agent therein, means for regulating the temperature of the cooling agent, means for moving said agent through a circulation path within said container, a hollow shaft in the container defining a portion of the path, and means for inserting an object to be cooled into the shaft in direct heat exchange relationship with the liquid cooling agent in the shaft; the improvement comprising means for varying the pressure of the liquid cooling agent in the shaft during said cooling of said object in said shaft, and sealable means closing the upper end of the shaft.

3,961,778
INSTALLATION FOR THE TREATING OF A MOLTEN METAL

Henri Carbonnel, Antony, and Pierre Vaury, Clamart, both of France, assignors to Groupement pour les Activites Atomiques et Avancees, Le-Plessis-Robinson, France

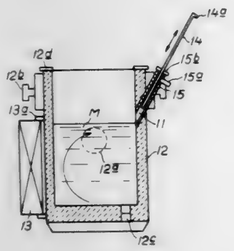
Filed May 28, 1974, Ser. No. 473,980
Claims priority, application France, May 30, 1973, 73.19774
Int. Cl.² C22B 21/06
U.S. Cl. 266—217 9 Claims



1. An installation for the industrial treating of a molten metal comprising in combination:

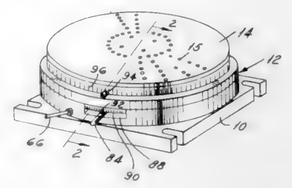
a furnace for holding said liquid metal,
a duct mounted on said furnace and extending upwardly therefrom and formed of a refractory substance having a predetermined porosity,
a sealed metallic tube surrounding said duct, spaced therefrom and connected to a source of treatment gas under pressure,
a liquid metal ascending pump immersed in said molten metal below said duct and operatively coupled thereto for forcing under pressure molten metal through said duct for treatment by said gas, said duct being connected at its upper end to a decanting and degassing tank,
an electromagnetic treating pump mounted above said furnace and surrounding said duct for carrying the molten metal for providing a pumping force acting in opposition to that of said liquid metal ascending pump,
the capacity of said liquid metal ascending pump being such that when liquid metal is forced upwardly through said duct, a back pressure is exerted by said electromagnetic treating pump to provide turbulence and metal is discharged from said duct into said decanting and degassing tank under pressure,
and said installation further comprising a treatment gas high-discharge pump at the upper end of said decanting and degassing tank for lowering the pressure of the treatment gas within said decanting and degassing tank after gas treatment of the metal.

3,961,779
APPARATUS AND METHOD FOR REFINING A METAL MELT
Magnus Gustav Georg Tiberg, Hallefors, and Jan B:Son Uggla, Vasteras, both of Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Nov. 14, 1974, Ser. No. 523,886
Claims priority, application Sweden, Nov. 14, 1973, 7315403
Int. Cl.² C21C *7/00*
U.S. Cl. 266—225 **7 Claims**



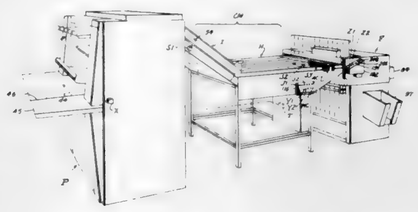
1. A metal melt refining apparatus comprising a tiltable ladle for containing the melt, said ladle having a side wall upwardly extending to a rim substantially above the top surface of said melt when the ladle is upright, means for tilting said ladle to a degree substantially increasing the area of said surface without the surface extending above said rim, and at least one downwardly pointing nozzle positioned through said side wall and opening therethrough at a position above the melt's said top surface when said ladle is upright and below this top surface when the ladle is tilted by said means.

3,961,780
PRECISION ROTARY INDEXING FIXTURE
Joseph J. Saj, Detroit, Mich., assignor to U.S. Industries, Inc., Ferndale, Mich.
Filed Mar. 19, 1975, Ser. No. 559,659
Int. Cl.² B23Q *3/18*
U.S. Cl. 269—64 **15 Claims**



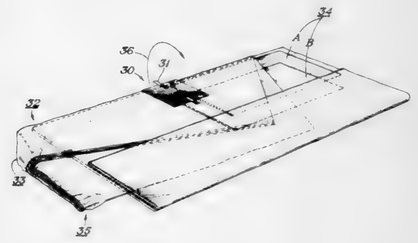
1. A precision rotary indexing fixture for workpieces, comprising: a base; a plate having a support face on which a workpiece is adapted to be mounted, said plate being journalled on said base for rotation about an axis extending transversely to the plane of said support face; means connecting said plate and base for preventing relative movement thereof along said axis; a first narrow ring of accurately formed teeth on said support plate, said teeth being spaced uniformly apart and concentrically about said axis; a second narrow ring of accurately formed teeth on said base, said last mentioned teeth being spaced apart uniformly and accurately concentric with said first ring of teeth, said two rings of teeth facing in the same direction; a coupling member on said base having two sets of accurately formed teeth thereon which are aligned with the first and second rings of teeth respectively; the teeth of one set on said coupling member being spaced apart to correspond with the spacing of the teeth on said support plate and the teeth of the other set on said coupling member being spaced apart to correspond with the spacing of the teeth on said base, said coupling member being movable on said base to shift said two sets of teeth toward and away from the rings of teeth on the support plate and base whereby to mesh with the latter teeth and thereby retain said top plate and base against relative rotary movement; and means for moving said coupling member to bring said teeth into and out of said meshing engagement.

3,961,781
FOLDABLE-SHEET PROCESSING SYSTEMS
Roger S. Funk, Holicong, Pa., assignor to R. Funk & Co., Inc., Doylestown, Pa.
Continuation of Ser. No. 873,454, Nov. 3, 1969, abandoned. This application Feb. 23, 1973, Ser. No. 335,020
Int. Cl.² B41F *13/56*
U.S. Cl. 270—20 **20 Claims**



1. A continuous automatic print system for making prints and for folding the prints comprising a printing machine for making prints of different sizes, having an exit opening for the prints, a print folding machine having means for folding the prints, irrespective of size, into packets of uniform size, said folding means including a plurality of selectively operable folding units; conveyor means for conveying the prints from the exit opening of the printing machine to said folding machine along a conveying path, means for sensing print size along said conveying path in advance of any of said folding units, and means coupled with a plurality of said folding units and operated by the sensing means to selectively actuate said folding units so as to fold successive prints irrespective of size into packets of uniform size.

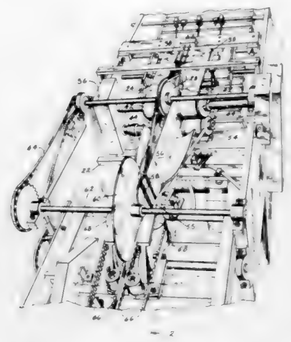
3,961,782
AID FOR FOLDING SHEETS AND THE LIKE
Edna Earl Lowry, 7308 Coronet, Tarrant County, Forth Worth, Tex. 76118
Continuation-in-part of Ser. No. 303,064, Nov. 2, 1972, abandoned. This application Oct. 23, 1974, Ser. No. 517,329
Int. Cl.² B65H *45/00*
U.S. Cl. 270—61 R **5 Claims**



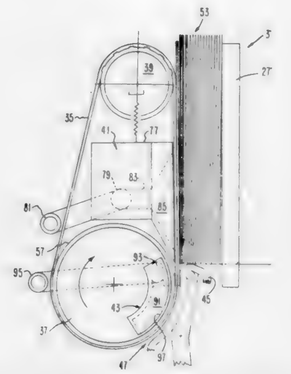
1. Apparatus for folding sheets and pillow cases into unitary assemblages of a uniform size comprising:
a rigid board member of relatively thin thickness having top and bottom flat surfaces and four straight peripheral edge surfaces including first and second pairs of opposite generally parallel edge surfaces, and
a pair of flexible tab members mounted on said board member with one tab member being mounted along one of the opposite generally parallel edge surfaces of one of the pairs of edge surfaces and extending outwardly therebeyond and the other tab member being mounted along the other one of the opposite generally parallel edge surfaces of the one of the pairs of edge surfaces and extending outwardly therebeyond.

3,961,783
ENDLESS BELT FOLDER
John F. Beaudoin, Milwaukee, Wis., assignor to Pratt Manufacturing Corporation, Milwaukee, Wis.
Filed Mar. 12, 1975, Ser. No. 557,549
Int. Cl.² B65H *45/22*
U.S. Cl. 270—66 **9 Claims**

1. Folding apparatus for sheet material comprising a first endless belt having an exposed sheet-engaging face with a permanent groove therein, a narrow second endless belt having an exposed sheet-engaging face with a permanent longitudinal ridge, and means for mounting said belts for conjoint movement with portions of said exposed faces in longitudinal linear engagement along a linear folding path, with the ridge of the second belt in interfitting engagement with the groove of the first belt to receive flat sheet material therebetween for folding of opposite sides of the sheet material toward each other, the groove of the first belt being a substantial depth and the ridge of the second belt projecting a substantial distance into said groove, and said ridge and groove being sized and shaped relative to one another to cause partial folding of said opposite sides of the sheet toward each other on opposite sides of said narrow second belt and means for completing said folding.



3,961,784
DOCUMENT TRANSPORT APPARATUS HAVING A VACUUM ASSISTED FRICTION FEEDER
Nitin M. Sevak, Westland, and Chauchang Su, West Bloomfield Township, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Mar. 3, 1975, Ser. No. 554,660
Int. Cl.² B65H *3/12*
U.S. Cl. 271—94 **22 Claims**



1. In document reading and sorting apparatus having a document hopper for receiving a stack of documents to be readably and sortably processed, at least one document output stacker, guideway means communicating with said hopper and said stacker, a document read station disposed along said guideway means, and drive means for transporting documents along said guideway means and into said stacker, improved document feed means effective for picking documents one at a time from said hopper and for advancing said picked documents at high speed into said guideway means, said improved document feed means comprising:
a. a rotatably mounted apertured friction feed belt responsive to said drive means and cooperably disposed relative to the leading document of a said stack of documents received within said hopper,
b. a biasing member disposed within said hopper and effective for contacting the trailing document of said stack of documents and for applying a nominal biasing force to

said stack to thereby urge the leading document thereof into contact with said apertured friction feed belt,

c. first vacuum means responsive to said drive means and effective for applying a vacuum pressure of a first order of magnitude to a linear section of said apertured belt disposed inboard of said hopper to thereby lock the leading document of said stack thereto, whereby upon the high speed rotation of said belt by said drive means documents are picked from said hopper and transported outwardly therefrom to an entranceway to said guideway means, and

d. second vacuum means responsive to said drive means and effective for applying a vacuum pressure of a second order of magnitude to an arcuate section of said apertured belt disposed outboard of said hopper and contiguous to said entranceway to thereby lock the leading edges of said picked documents thereto such that said documents are pullably advanced at high speed from said entranceway into and along said guideway means.

3,961,785

ARRANGEMENT FOR RESPECTIVELY WITHDRAWING A SINGLE FILM SHEET FROM A STACK OF DIRECTLY LOOSELY SUPERIMPOSED FILM SHEETS

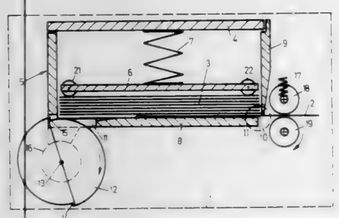
Arthur Gall, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Sept. 26, 1974, Ser. No. 509,727

Claims priority, application Germany, Sept. 29, 1973, 2349097

Int. Cl.² B65H *3/06, 3/46*

U.S. Cl. 271—119 **10 Claims**



1. In an arrangement for respectively withdrawing a single film sheet from a stack of directly loosely superimposed film sheets, particularly for use in X-ray filming apparatus, including a magazine having said stack of film disposed therein; means for pressing said stack of film sheets against the floor of said magazine; a calibrated withdrawal slot formed in a sidewall of said magazine in the plane of the extreme film sheet located on the floor of said magazine; and means for conveying the particular film sheet located on the floor of said magazine through said withdrawal slot, the improvement comprising: said magazine floor forming a boundary edge for said calibrated withdrawal slot; and a step roll projecting into said magazine through an aperture formed in the floor of said magazine in the region of an edge of said film sheet located on the floor of said magazine remote from said withdrawal slot, said step roll having the axis thereof oriented in parallel to said boundary-forming edge, said magazine floor in the region of said withdrawal slot being set back from the calibrated withdrawal slot in a direction opposite to the withdrawing direction of said extreme film sheet.

3,961,786

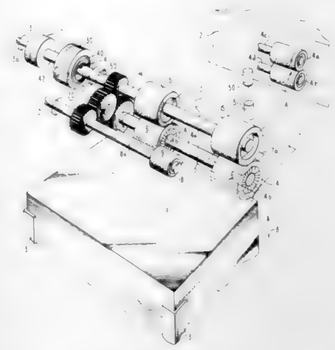
SELF CLEARING ROLLER FEED ASSEMBLY FOR DOCUMENT FEED APPARATUS

George Michael Yanker, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1975, Ser. No. 589,736

Int. Cl.² B65H *3/06, 5/06*

U.S. Cl. 271—122 **6 Claims**



1. Apparatus for feeding documents from the top of a stack of said documents, said apparatus composing:

a. a first roller assembly comprising separator and restraint rollers cooperatively communicating with one another at a nip point, and a picker roller translating documents from said stack toward said nip point,

b. respective shafts associated with said separator, restraint, and picker rollers and mounted for rotation with said rollers;

c. means adapted to be coupled with said separator roller shaft for rotatably powering said separator roller in a feed direction, thereby to advance documents entering said nip point away from said stock,

d. spring means coupled with said separator roller shaft for urging said separator roller in a direction of rotation opposite to said feed direction, the torque imparted to said separator roller increasing as said separator roller rotates in said feed direction, and

e. sensor means responsive to documents exiting said nip point for uncoupling said rotatable powering means from said separator roller shaft, thereby to enable said separator roller to rotate in said opposite direction, whereby documents entering said nip point are driven back toward said stack.

3,961,787

ALL DIRECTIONS BALANCE BOARD TO ENHANCE MOTOR DEVELOPMENT OF THE CEREBRAL PALSIED CHILD

Gary W. Studebaker, and Susan H. Studebaker, both of 9340 Buell St., Downey, Calif. 90241

Filed May 19, 1975, Ser. No. 578,520

Int. Cl.³ A63B *23/00*

U.S. Cl. 272—93 **4 Claims**

1. A device comprising:

a board with a substantially flat, rectangular surface;

means on said board, opposite said flat surface, for allowing said board to tilt slightly from its horizontal position;

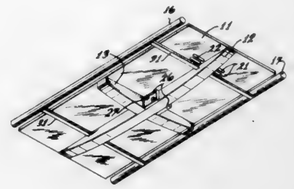
means disposed in the plane of said surface for allowing a user to grasp the device;

a removable handlebar assembly adapted to extend upward from said flat surface;

said means for tilting including a longitudinal rocker and a transverse rocker, each having a curvature equal to each other;

said handlebar assembly comprising:

a post having two spaced bars extending from one end, and



a handlebar disposed at the other end,

said board having a pair of holes disposed on opposite sides of said longitudinal rocker and each adapted to receive a respective bar; and

means for fastening said bars to said longitudinal rocker.

3,961,788

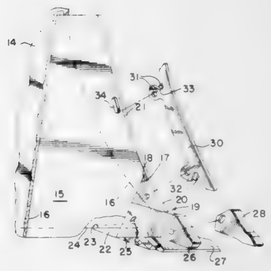
BULLDOZER BLADE WITH IMPROVED TIP AND END BIT

Eugene L. Helton, Peoria, Ill.; Nathan Gutman, Loudonville, N.Y., and Donald E. Ribbing, Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 7, 1975, Ser. No. 548,111

Int. Cl.² E02F *3/60, 3/76*

U.S. Cl. 172—777 **8 Claims**



6. An earthworking tool comprising

an upright member having a pair of laterally spaced end plates secured on the ends thereof,

a pair of mounting plates each secured forwardly on and on an outboard side of a respective one of said end plates,

a pair of adapters each secured forwardly on a respective one of said mounting plates,

a pair of hardened earthworking tips each detachably mounted forwardly on a respective one of said adapters,

a forward end of each of said adapters terminating at a wedge shaped mounting projection having one of said hardened earthworking tips detachably mounted thereon and wherein forwardly disposed top edges of one of said mounting plates and a respective one of said adapters are aligned in at least substantially flush relationship relative to each other, and

an end bit mounted on said aligned top edges and detachably mounted on one of said adapters.

3,961,789

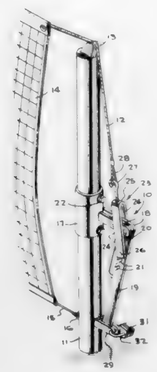
NET TIGHTENER

Martin S. Tabacheck, Box 514 Stoney Batter Road, Kingsville, Md. 21087

Filed Mar. 13, 1975, Ser. No. 557,938

Int. Cl.² A63B *61/00*

U.S. Cl. 273—29 BE **1 Claim**



1. In a tennis net support means having at least one cable for supporting a net on a vertically disposed post having cable guide means for receiving one end portion of the cable, said cable having a hook receiving member at one end, the improvement comprising a collar encircling said post and fixed to said post by securing elements, said securing elements being at least one screw member, said screw member engaging aligned holes in said collar and said post, a pair of support members extending outwardly from said collar and substantially perpendicular to said post, an elongated lever bar swingably connected at one end to the outer ends of said support members, said lever bar having a plurality of downwardly facing and spaced apart slots located adjacent to said one end, each of said slots being inclined from one edge of said bar toward said one end, a guard member having a portion spaced from said slots and having opposite ends connected to said lever bar so that said guard member straddles said slots, a yoke having elongated generally parallel spaced apart side portions connected together at one end by a bight portion, said side portions being spaced apart a distance to receive said support members, pin means connecting the ends of said side portions remote from said bight portion, said pin means being confined within the area between said guard member and said lever bar and selectively received within said slots, hook means carried by said yoke at said bight portion and engageable with the hook receiving member of said cable, projection means secured adjacent to the lower end of said post and extending substantially perpendicular thereto and in spaced parallel relationship with said support members, means for locking the other end of said lever bar to said projection means when said yoke overlies said support members and is positioned inwardly of said one end of said lever bar, whereby said lever bar is swung upwardly so that said hook means is attached to said hook receiving member and then is swung downwardly so that said yoke overlies said support members and the tension of the cable urges said lever bar toward said post.

3,961,790
HOCKEY STICK

Frank Milligan, 251 Riverside Drive, Oakville, Ontario, Canada

Filed Feb. 5, 1975, Ser. No. 547,362
Int. Cl.² A63B 59/14
U.S. Cl. 273—67 A **6 Claims**

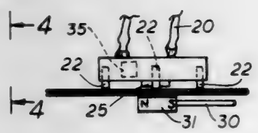


1. A hockey stick, having an elongated blade subject to undue wear in combination with a handle rigidly and readily detachably secured thereto by adjoing portions secured together in telescoped mutually gripping relation, one of said portions having a hollow end comprising a pair of opposed side walls and a top and a bottom wall to form the hollow end, said side walls each having at least one aperture therethrough in mutually aligned relation with the corresponding aperture in the opposite wall, the inner surfaces of said hollow end providing a socket of non-circular shaped cross section, said top and bottom walls each having a wedge-shaped recess therein through the thickness of the wall extending from the mouth of the hollow end a predetermined distance along the length of said one portion, the other said portion of the combination having a spigot end member with a cross section correspondingly shaped with said inner surfaces of said hollow end to provide torque resisting engagement therewith and to fit in stable engaging relation within said hollow end, a pair of oppositely extending wedge-shaped protuberances integral with said other portion protruding from opposite top and bottom surfaces of said spigot member to extend in flush fitting relation within said wedge-shaped recesses, at least one aperture extending through said spigot, positioned to fit in matching alignment with said related side wall apertures, and removeable fastening means extending through said aligned apertures to draw said side walls into gripping relation with two sides of said spigot and said spigot protuberances to provide a distributed edge contact zone acting over a predetermined axial extent of said telescoped portions.

3,961,791
RACING GAME

Pedro Etchegoyhen, Chicago, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 18, 1974, Ser. No. 524,617
Int. Cl.² A63F 9/14
U.S. Cl. 273—86 B **2 Claims**



1. A racing game comprising a game board mounted on supports so as to provide space under the board that is open to the sides of the board, the upper surface of said board being marked in a pattern of racing lanes,

a plurality of wheeled, motor-driven racing objects, with each racing object fitted in its base with a magnetically attractable block, and

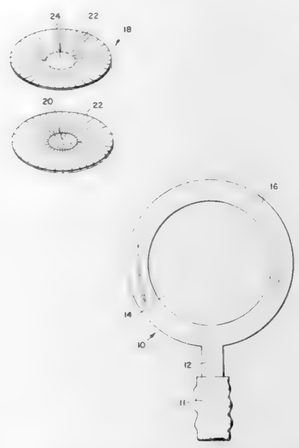
a plurality of rods, each of which is utilized by a player to steer his racing object, with one end of each rod tipped with a block that is magnetically attractable to the block in the base of a racing object, with

the magnetically attractable block fitted in the base of each racing object located so as to be magnetically attracted when the racing object is mounted in the erect position on the game board, by a said tipped end of the rod positioned under the game board opposite the said block so as to permit steering of the racing object, in motor-driven motion, by manual manupulation of the rod, without direct physical contact between the rod and the racing object.

3,961,792
APERTURED PADDLE AND RESILIENT PROJECTILE

John Shankel, and Marilou Shankel, both of San Francisco, Calif., assignors to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Mar. 27, 1975, Ser. No. 562,469
Int. Cl.² A63B 71/00
U.S. Cl. 273—95 R **5 Claims**



1. A toy comprising a resilient member having radially extending cuts therein, said cuts defining a substantially circular solid central core in combination with a paddle member having handle means at one end thereof and a substantially centrally located aperture defined by a substantially spherical ring shaped portion at a second end thereof, said aperture being of a dimension greater than the dimension of said resilient member.

3,961,793
EDUCATIONAL AND RECREATIONAL GAME

Willie M. Zanders, 2725 Soniat St., New Orleans, La. 70115

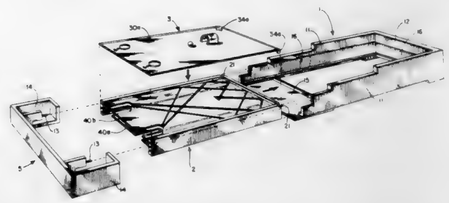
Filed Jan. 30, 1974, Ser. No. 438,019
Int. Cl.² A63D 13/00
U.S. Cl. 273—124 R **9 Claims**

1. An educational and recreational game comprising:

a basic support frame;

at least one principal playing surface element of transparent material mounted on said support frame having targets mounted thereon and on which balls are rolled at said targets;

a multiple number of interchangeable complementary playing elements, each having different sets of path lines disposed thereon associated with said principal playing surface element; each set of path lines on said complementary elements being keyed to said targets and used to show the path which the ball should travel on said principal playing surface element to hit said targets and designed to illustrate certain geometrical relationships and/or figures;

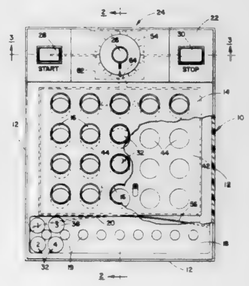


said complementary playing elements being made of transparent material, at least two of them being usable in said game at the same time, the complementary playing elements being located when in use beneath said principal playing surface element, said path lines of each of said complementary playing elements when in use being visible through said transparent material of said principal playing surface element and any of said complementary playing surface elements positioned thereabove.

3,961,794
MOTOR SKILL GAME

Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif. 91356, and Erwin Benkoe, 17965 Medley Drive, Encino, Calif. 91316

Filed Feb. 10, 1975, Ser. No. 548,399
Int. Cl.² A63F 9/06
U.S. Cl. 273—132 **13 Claims**



11. A motor skill game comprising:

a. a game board having a plurality of apertures therein,

b. a retaining means located beneath said game board, and being movable relative to said game board between a second position where said retaining means has a portion thereof disposed beneath said apertures in a peg retaining location and a first position where said retaining means has no portion thereof disposed beneath said apertures,

c. a plurality of pegs sized to be inserted in said apertures and retained on said retaining means when inserted in said apertures, and when said retaining means is in the second position,

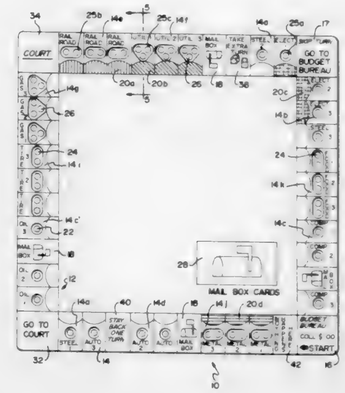
d. timing means operatively associated with said retaining means to move said retaining means to said first position after a pre-established time interval,

e. and stop means operatively associated with said game board to stop said timing means.

3,961,795
ANTITRUST PROSECUTING BOARD GAME

Ralph Anspach, Berkeley, Calif., assignor to Anti-Monopoly, Inc., San Rafael, Calif.

Continuation-in-part of Ser. No. 454,062, March 25, 1974, abandoned. This application Mar. 3, 1975, Ser. No. 554,687
Int. Cl.² A63F 3/00
U.S. Cl. 273—134 AD **3 Claims**



1. Antitrust prosecuting game apparatus comprising:

a game board;

a track on said game board having a series of spaces forming a continuous path along which a game piece is movable in increments determined by indicator means;

each of certain of said track spaces representing a business entity;

a plurality of first indicia areas of different colors on said certain track spaces, each of said first indicia color appearing on at least two of said certain track spaces to group said spaces to represent unlawful business entity combinations;

a plurality of indictment chips in groups of different colors, a group for each player available for purchase by said player to serve on a business entity space on which his game piece lands;

indictment areas delineated on each of said certain track spaces for placement of indictment chips thereon, with the number of said indictment areas on all spaces of a group thereof representing a business combination being the same to identify the nature of said combination and the numbers of indictment areas differing between groups in accordance with the types of unlawful business combinations represented thereby.

3,961,796
GOLFING IRON HEAD WITH DOWNWARDLY TAPERED KEEL

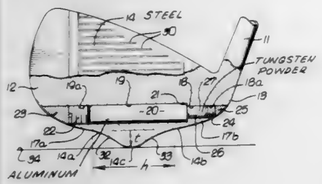
Stanley C. Thompson, 7851 Talbert St. Apt. 1, Playa Del Rey, Calif. 90271

Continuation-in-part of Ser. No. 368,641, June 11, 1973, Pat. No. 3,845,960. This application Sept. 27, 1974, Ser. No. 510,111
Int. Cl.² A63B 53/04
U.S. Cl. 273—167 A **8 Claims**

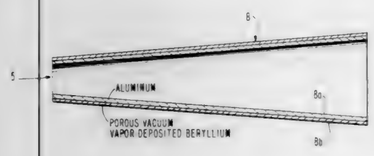
1. In a golf iron,

a. a metallic club head having a toe and heel, a front face to strike a golf ball, a rear side, the head having an elongated base portion extending between the toe and heel,

b. there being an elongated through opening extending within the base portion between the heel and the toe,
c. an elongated balancing weight extending within the opening, and
d. the base portion having an underside forming a downwardly convex keel extending rearwardly from the front face toward said rear side beneath said weight,
e. said front face having lower edge portions which taper downwardly and toward one another from said toe and heel, respectively, thereby to define an apex generally below the center of the ball striking zone of the front face, said apex portion being downwardly convexly rounded, said keel extending from said apex portion as a rearwardly elongated extention thereof, said underside having faces at opposite sides of the keel and which have downward concavity, said faces extending beneath said opening,
f. said through opening located approximately midway between said front face and said rear side of the head, and said through opening extending crosswise over that portion of the keel which is approximately midway between the forwardmost and rearwardmost extents of the keel, said through opening intersecting a convex outer surface of the heel which merges with one concave underside face, and also intersecting a convex outer surface of the toe which merges with the other concave underside face,
g. the keel extending under the mid-portion of the weight, and including means to retain the weight in position within the opening and relative to the keel,
h. and said balancing weight consisting of a material less dense than the material of said club head.

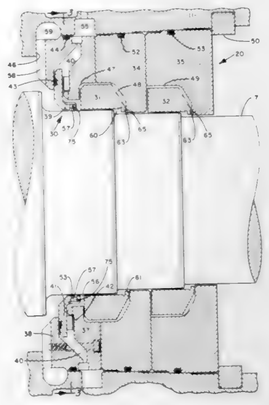


3,961,797
PHONOGRAPH PICKUP CARTRIDGE STYLUS ROD
Tsunehiro Tsukagoshi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed May 14, 1974, Ser. No. 469,724
Claims priority, application Japan, May 14, 1973, 48-56502[U]
Int. Cl.² G11B *3/02*
U.S. Cl. 274—37 **1 Claim**



1. In a phonograph pickup cartridge stylus rod of the type wherein said rod mounts a stylus tip at the forward end and has a moving element constituting one portion of a signal generating structure at the rear end, the improvement wherein: said stylus rod comprises an aluminum pipe whose periphery carries a porous vacuum vapor deposited beryllium layer.

3,961,798
SHAFT SEAL ASSEMBLY
Leonard P. Damratowski, Monroeville, and Carl H. Geary, Greensburg, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Oct. 3, 1975, Ser. No. 619,328
Int. Cl.² F16J *15/50*
U.S. Cl. 277—3 **9 Claims**

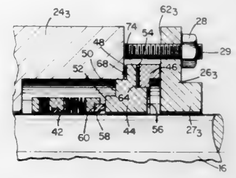


1. In a fluid shaft seal assembly for use in a rotary machine of the type wherein the working substance contained within the machine is prevented from escaping about the shaft by a high pressure fluid barrier maintained between the shaft and the machine frame, the improvement comprising
a pressure breakdown bushing encompassing the shaft within the fluid seal region for throttling the sealing fluid from a region of high pressure to a region of lower pressure as the fluid moves between the shaft and the bushing, said bushing being loosely housed within an opening formed in the machine frame so that the fluid in the high pressure region substantially encompasses the outer periphery of the bushing contained within the opening,
a radially extended arm dependent upon the bushing positioned adjacent to the region of lower pressure and being arranged to pass inwardly into an undercut formed in the shaft to a depth greater than the outside diameter of the shaft, and
a balancing ring extending between the arm and one wall of the opening, the diametral centerline of the ring being substantially coextensive with the outside diameter of the shaft, the ring forming a seal with the wall to prevent high pressure sealing fluid in the opening from passing around said bushing.

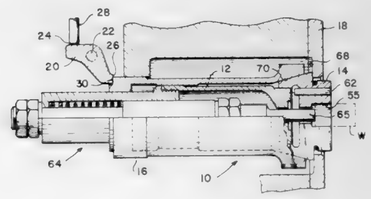
3,961,799
CONVERSION KIT
Harvey K. Peet, Providence, R.I., assignor to Sealol, Inc., Warwick, R.I.
Filed Sept. 29, 1975, Ser. No. 617,458
Int. Cl.² F16J *15/34*
U.S. Cl. 277—9 **6 Claims**

1. A conversion kit for installing rotary mechanical shaft seals having seal rings in stuffing boxes of different sizes having packing followers, comprising:
a mating ring having
in one radial face a first stepped annular surface adapted to fit a corresponding first size of stuffing box and a first inner annular surface lapped flat to form a sealing contact with a seal ring when the mating ring is installed with said one radial face facing a rotary mechanical seal, and

in the other radial face a second stepped annular surface adapted to fit a corresponding second size of stuffing box and a second inner annular surface lapped flat to form a sealing contact with a seal ring when the mating ring is installed with the other radial face facing a rotary mechanical seal; and
gaskets sized to fit the stepped annular surfaces for providing a seal between a stepped annular surface and its corresponding stuffing box.



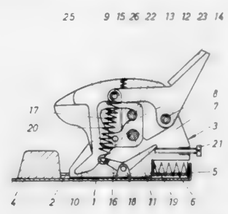
3,961,800
STUB COLLET
Anders Adolf Peterson, Elmira, and William J. Cummiskey, Horseheads, both of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.
Filed Oct. 10, 1974, Ser. No. 513,833
Int. Cl.² B23B *31/12*
U.S. Cl. 279—58 **12 Claims**



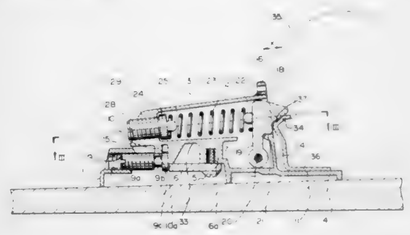
6. A collet assembly comprising:
a. a spring body member having a cylindrical rear portion and a plurality of spring fingers extending axially therefrom,
b. a circumferentially disposed segment of a raised annular bead near the distal end of each of said fingers
c. work gripping pads mounted on each of said fingers, said pads having a circumferentially disposed segments of a groove on the interior thereof for mounting said pads on the beads on said fingers,
d. said pads each having exterior surfaces which collectively form a frusto-conical cam surface for cooperative engagement with an actuator cam surface,
e. said pads further including an internal work gripping surface, and
f. said pads being free to rock slightly axially on said annular bead when said collet is opened or closed.

3,961,801
HEEL-HOLDING DEVICE FOR SKI BINDINGS
Heinz Korger, Munich, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany
Filed Feb. 5, 1975, Ser. No. 547,336
Claims priority, application Germany, Feb. 20, 1974, 2408159
Int. Cl.² A63C *9/08*
U.S. Cl. 280—626 **4 Claims**

1. A heel-holding device for ski bindings comprising, in combination, a first transverse shaft mounted on the ski behind the boot, a sole depressor having a closing pedal mounted on said first transverse shaft for pivotal movement onto the upper sole rim of the boot and into a released position, a second transverse shaft mounted on the ski between the boot and said first transverse shaft, a locking member mounted on said second transverse shaft for pivotal movement parallel to said sole depressor between a sole depressor retaining position and a sole depressor releasing position, a first spring for urging said sole depressor through said locking member into a yieldingly clamping position onto the upper sole rim of the boot, a handle pivotally mounted on the ski for pivotally moving said locking member into said sole depressor releasing position, a second spring weaker than said first spring for urging said sole depressor into said released position, a latch member on said sole depressor, said locking member having a recess for receiving said latch member, said locking member recess having a slide track for sliding engagement with said latch member in the boot sole rim engaging position of said sole depressor and a catch groove adjacent said slide track for locking engagement with said latch member in the released position of said sole depressor.



3,961,802
SKI BINDING
Harley E. Vannatter, 1432 Lakeshore Road, Sarnia, Ontario, Canada
Filed June 9, 1975, Ser. No. 584,884
Int. Cl.² A63C *9/08*
U.S. Cl. 280—631 **9 Claims**

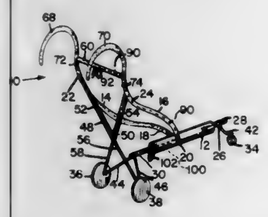


1. A ski binding heel assembly for releasably securing the heel of a ski boot on a ski, comprising:
a. mounting plate means for fixedly attaching the assembly to the top surface of a ski;
b. a housing carried on said mounting plate, and a latching element pivotally mounted in said housing and including a tapering tongue movable towards and away from a latching position wherein it projects forwardly from a front part of said housing;
c. spring means within said housing operative at one end to urge said latching element to pivot in a direction to move said tongue to the latching position; and
d. adjustment means in said housing engaging an opposite end of said spring means and selectively adjustable to vary the loading in said spring means and thereby adjust the force with which the tongue is urged towards the latching position; said tongue being transversely elongated and having an upwardly and forwardly inclined

lower surface and symmetrically opposed lateral surfaces which converge in a forward direction, said tongue being adapted in the latching position to engage in a recess associated with the heel of a ski boot the recess having surfaces complementary to the lower and lateral surfaces respectively of the tongue;

such that in use said spring means is normally effective to retain the latching element in the latching position and the heel of the ski boot on the ski through interengagement of said tongue with the recess, said latching element beng pivotable against the force of said spring means to permit retraction of said tongue from the recess and release of the ski boot through interaction of said complementary tongue and recess surfaces in response to a displacement force of sufficient magnitude, as determined by the loading of the spring means, applied to the heel of the boot in any lateral or upward direction in a plane transverse to the length of the ski.

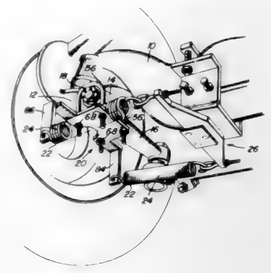
3,961,803
BABY HOLDING DEVICE
Henry Fleischer, 18 Notch Park Road, Little Falls, N.J. 07424
Filed Oct. 15, 1973, Ser. No. 406,620
Int. Cl.² B62B *7/08, 7/14*
U.S. Cl. 280—642 **32 Claims**



1. A collapsible baby holding device comprising a collapsible frame assembly and baby holding means, said collapsible frame assembly comprising, in combination, a primary support member comprising a substantially elongated member, a pair of secondary support members having first and second end portions, said first end portions being connected to said primary support member, and the second end portions of said secondary support members being spaced from each other and adapted to be moved toward each other and toward and away from said primary support member, a wheel support member having first and second portions and an intermediate portion, said first and second portions extending from said primary support member, and said intermediate portion being disposed in contact with said primary support member, at least one front wheel rotatably connected to said first portion of said wheel support member, a pair of back wheels rotatably connected to said second portion of said wheel support member thereof, at least a pair of cross members connected to said secondary support members and handle means for maneuvering said frame.

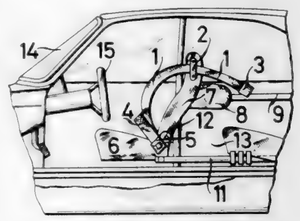
3,961,804
STEERING ARM ATTACHMENT ADAPTER FOR STEERING STABILIZER
Grover Blanton, Deming, N. Mex., assignor to Steer Safe, Inc., Deming, N. Mex.
Filed Apr. 8, 1975, Ser. No. 566,116
Int. Cl.² B62D *7/06*
U.S. Cl. 280—94 **6 Claims**

1. A steering stabilizer mount for the steering arm of a vehicle equipped with a hub mounted steering arm having one end portion secured through a steering knuckle, said mount including a generally planar plate body including means on one side thereof for abutting against one side of the steering knuckle sleeve portion through which said one end portion of said arm is secured, a pair of U-bolts each including a pair of generally parallel arms interconnected at one pair of corresponding ends by means of an integral curved bight portion and threaded at the other pair of ends thereof, said pair of U-bolts being disposed in substantially parallel planes for



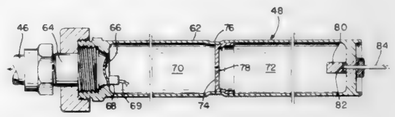
snugly embracing the side of said one end portion of said steering arm, at the opposite ends of said sleeve portion, remote from said one side of said sleeve portion, and the threaded ends of said parallel arms being secured through said plate body.

3,961,805
SAFETY SYSTEM FOR THE OCCUPANTS OF VEHICLES, ESPECIALLY MOTOR VEHICLES
Roland Satzinger, Hammelburger Str. 21 a, D-8731 Euerdorf, Germany
Filed Mar. 13, 1975, Ser. No. 558,105
Claims priority, application Germany, Apr. 4, 1974, 2416313
Int. Cl.² B60R *21/10*
U.S. Cl. 280—747 **6 Claims**



1. In a motor vehicle equipped with a front seat comprising a seating surface hingedly connected to a backrest, said motor vehicle equipped with a safety system which comprises at least one energy absorbing damper connected to said driver's seat to absorb forces which would tend to move said driver's seat forward and to stop said forward movement, a lap belt disposable over an occupant of the seat, said lap belt connected at each end thereof to said seat, a shoulder belt connected to said seat at one end thereof and to said vehicle at the other end thereof and disposable diagonally across the body of a seat occupant, said energy absorbing system comprising a first energy absorbing damper which is connected to the seating surface which longitudinally guides said front seat and a second energy absorbing damper, independent of the first energy absorbing damper, said second energy absorbing damper connected to said backrest to longitudinally guide the same, said backrest having connected thereto a rearwardly disposed restraining cushion.

3,961,806
TWO STAGE INFLATION SYSTEM
Lincoln B. Katter, Lynnwood, Wash., assignor to Rocket Research Corporation, Redmond, Wash.
Filed Feb. 4, 1972, Ser. No. 223,461
Int. Cl.² B60R *21/08*
U.S. Cl. 280—732 **32 Claims**



1. In a vehicle having an occupant location and having structure spaced from said location, a crash restraint apparatus for protecting an occupant in said location from impact with said structure, said apparatus comprising:

a. an inflatable having a first collapsed position, a second full inflated position so that is provides a protective cushion to an occupant positioned further from said structure in said occupant location, and a third intermediate position wherein the inflatable is inflated to an intermediate volume sufficient to protectively engage an occupant closer to said structure in said occupant location,

b. an aspirating inflating apparatus comprising:

1. means defining an aspirating passageway leading into said inflatable, and

2. aspirating means arranged to direct aspirating gas into said passageway to inflate the inflatable,

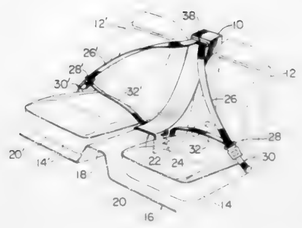
c. vent means operatively associated with said inflatable to permit outflow of gas from said inflatable,

d. gas supply means to supply an initial amount of aspirating gas to said aspirating means at a higher flow rate sufficient to quickly inflate the inflatable only to a volume at its intermediate position, and to supply a later amount of aspirating gas at a lower flow rate to said aspirating means, such that with said occupant in said position further from said structure so as to permit unobstructed inflation of the inflatable, the inflatable becomes inflated to its full inflated position, and with said occupant in said position closer to said structure so as to exert a back pressure on the inflatable, the lower flow rate of aspirating gas is such relative the vent means that the inflatable is at most inflated at a moderate rate.

3,961,807
SAFETY HARNESS ARRANGEMENT
Takeo Maki, and Kazuhiko Yoshiyuki, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Oct. 17, 1974, Ser. No. 515,484
Claims priority, application Japan, Nov. 22, 1973, 48-134734[U]
Int. Cl.² B60R *21/10*
U.S. Cl. 280—747 **7 Claims**

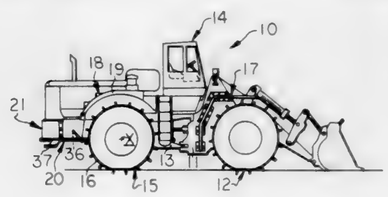
7. In a safety harness arrangement for use in a motor vehicle cabin, said motor vehicle having at least one pair of vehicle seats arranged abreast facing forward of said vehicle and with a shoulder belt associated with each of the seats;

a post member having a bottom portion thereof firmly mounted by a pair of bolts on a transmission tunnel provided on a vehicle floor between said pair of vehicle seats, and an upper portion thereof provided with a cavity and an opening, said cavity establishing communication with the outside of said post member through said opening, the cross section of said bottom portion being larger than that of said upper portion, and further, said post member having a height slightly higher than the seat back of said seat; and



fastening means positioned with said cavity for fastening the upper end of the respective shoulder belts to the inner surface of said post member through said opening.

3,961,808
REAR FENDER ASSEMBLY FOR WHEEL LOADERS
Michael L. Dotson, Plano, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed June 2, 1975, Ser. No. 583,225
Int. Cl.² B62D *25/16*
U.S. Cl. 280—153 R **10 Claims**



1. In an earthworking vehicle comprising a frame having a pair of laterally spaced ground engaging wheels rotatably mounted on a rearward end thereof and a fender assembly mounted on said frame to cover each of said wheels, said fender assembly comprising a fender overlying a respective wheel, a support bracket secured to each of said frame and a rearward end of said fender and a reinforcing and deflection member secured to a forward end of said bracket and disposed closely adjacent to said wheel to extend transversely across the periphery thereof.

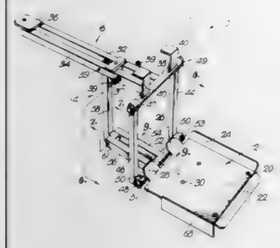
3,961,809
SAFETY STEP FOR VEHICLES
George Doyle Clugston, Rural Rte. 3, Pittsburg, Kans. 66762
Filed Feb. 6, 1975, Ser. No. 547,382
Int. Cl.² B60W *3/02*
U.S. Cl. 280—166 **8 Claims**

3. Safety step apparatus including:

a parallel linkage assembly having an upper linkage arm, a lower linkage arm, a pair of side linkage arms, and four pivotal connecting means having parallel axes for swingably interconnecting, respectively, said upper arm adjacent one extremity thereof with one of said side arms adjacent the upper extremity thereof, said one side arm adjacent the lower extremity thereof with said lower arm adjacent one extremity thereof, said lower arm adjacent the other extremity thereof with the other of said side arms adjacent the lower extremity thereof, and said other side arm adjacent the upper extremity thereof with said upper arm adjacent the other extremity thereof;

releasable means mounted on said assembly and operably associated with one of said connecting means for preventing relative swinging movement between the arms inter-

connected by said one connecting means when said releasable means ia actuated; and



step means supported by said assembly and operably coupled with said releasable means for actuating the latter in response to the weight of a user when placed upon said step means.

3,961,810

BICYCLE SAFETY AND CONVERSION WHEEL

Larry L. Arico, 630 - 3rd St., Hermosa Beach, Calif. 90254

Continuation-in-part of Ser. No. 392,267, Aug. 28, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,628

Int. Cl.² B62D *63/00*

U.S. Cl. 280—239 **3 Claims**



1. In combination with a conventional bicycle having a frame, a rotatably mounted front wheel, a rear axle secured to said frame, a rear wheel rotatably mounted on said rear axle, a seat post, a seat mounted in said seat post, and a seat support structure having two distal ends, one of said distal ends connected to said seat and the other of said distal ends connected to said frame adjacent said rear axle, said bicycle having a stable mode of operation with both conventional wheels in ground contact and a semi-stable "wheelie" mode of operation; the improvement comprising:

elongated bar structure fixedly secured to said frame adjacent said rear axle and arm structure relatively shorter than said bar structure fixedly secured to said seat adjacent said seat support structure, said arm structure and said bar structure being fixedly secured together higher than said rear axle when in said stable mode of operation, a mounting plate carried by said arm structure and bar structure adjacent their securement, an auxiliary seat mounted on said arm structure between said seat and said mounting plate to accommodate a passenger thereon, and a wheel assembly mounted on said mounting plate, said wheel assembly having a safety wheel thereon so that said bicycle can be operated in said semi-stable mode of operation with said safety wheel and said rear wheel in ground engagement.

3,961,811

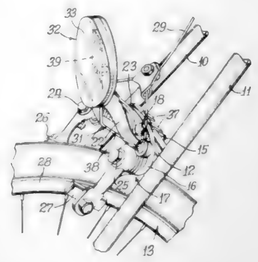
BICYCLE REFLECTOR BRACKET

Frank P. Brilando, Niles, and Rudolph G. Blaho, Franklin Park, both of Ill., assignors to Schwinn Bicycle Company, Chicago, Ill.

Filed Feb. 24, 1975, Ser. No. 552,350

Int. Cl.² B62J *5/20*

U.S. Cl. 280—289 A **5 Claims**



1. A reflector mounting bracket for use on a bicycle having a cross member, a caliper brake arm bridge and a center bolt for attaching said bridge to said cross member, said bracket comprising a slotted mounting portion adapted to be inserted between said bridge and said cross member and to receive said center bolt therethrough, a forked end portion formed integrally with said mounting portion and extending substantially normal thereto in a first direction, an intermediate portion formed integrally with said mounting portion and extending substantially normal thereto in a second direction parallel and opposite to said first direction, a second end portion integrally formed with said intermediate portion and extending therefrom, and means for mounting said reflector on said second end portion, said reflector being disposed on said second end portion such that said forked end portion is adapted to overlie said cross member and said intermediate portion extends beneath said bridge.

3,961,812

DEVICE FOR COUPLING A TRACTOR TO AN AGRICULTURAL IMPLEMENT AND THE LIKE

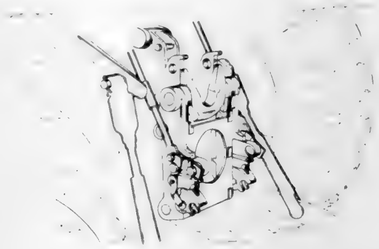
Wilhelm Von Allworden, Lohmar, Rhineland, Germany, assignor to Jean Walterscheid GmbH, Lohmar,Rhineland, Germany

Filed Sept. 5, 1975, Ser. No. 610,868

Claims priority, application Germany, Sept. 7, 1974, 2442900

Int. Cl.² B60D *1/08*

U.S. Cl. 280—478 R **11 Claims**



1. In a device for coupling an agricultural implement and the like having a shield plate to a tractor, a supporting bracket on said tractor, a pair of parallel catch arms pivotally mounted at their lower ends to said supporting bracket and a catch plate rigidly interconnecting said catch arms, a retaining pawl pivotally mounted on each catch arm and having a jaw opening, a locking shaft on said supporting bracket and engagable by said pawl jaw opening, a locking element pivotally mounted on each of said catch arms and having a curved surface extending eccentrically of its pivot mounts, said curved surface being lockingly engagable with said retaining pawl, a locking lever pivotally mounted on said locking element to retain said locking element in locking engagement with said retaining pawl, and safety linkage means connected to said locking element for releasing said locking element and thereby releasing said retaining pawl from said locking shaft when said safety linkage means is actuated to pivot said locking elements.

3,961,813

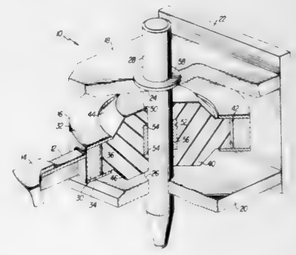
TRAILER HITCH

O. Leon Thomas, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Mar. 25, 1975, Ser. No. 561,911

Int. Cl.² B60D *1/00*

U.S. Cl. 280—485 **9 Claims**



1. A trailer hitch for coupling a draft vehicle to a drawn vehicle comprising a drawbar extending from one of said vehicles and having eye means mounted thereon, means extending from the other of said vehicles for receiving said eye means in coupling relation, pintle means axially extendable through said eye means and said receiving means for coupling said eye means and said receiving means, resilient means substantially completely surrounding said pintle means for maintaining said pintle means in spaced relation from said eye means and for yieldingly restraining relative radial movement between said pintle means and said eye means, said eye means including a ring-shaped housing having an annular channel formed in the inner periphery thereof, said resilient means being a molded insert of flexible material having an axial bore extending therethrough, and wherein said molded insert is mounted in the annular channel of said housing with an annular clearance which permits radial outward deformation of said insert into said channel when said pintle becomes axially inclined with respect to the axis of said eye means.

3,961,814

METHOD OF JOINING PLASTIC PIPE

Michael F. Byrne, Long Island City, N.Y., and Douglas V. N. Powelson, Audubon, Pa., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 77,489, Oct. 2, 1970, abandoned, and a continuation-in-part of Ser. No. 868,139, Oct. 21, 1969. This application June 21, 1973, Ser. No. 372,119

The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.

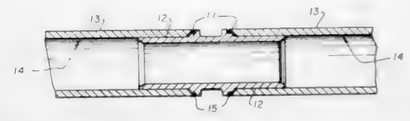
Int. Cl.² F16L *13/02*

U.S. Cl. 285—21 **8 Claims**

1. A polyethylene graft copolymer fitting, for use solely in joining polyethylene pipe sections to produce a pipe joint assembly wherein the fitting is less stiff than and can creep with the pipe sections which it joins, the combined fitting and pipe sections forming a pipe joint which is at least as strong as the pipe itself, said fitting comprising:

a. an annular insert portion having an outer diameter substantially the same as the inner diameter of the pipe section to be joined thereto, and

b. a shoulder portion having a larger diameter than the insert portion, the fitting formed of a polyethylene graft polymer comprising the reaction product of a polyethylene polymer or copolymer having a density of 0.940–0.950, with from about 5.0 to about 15.0% by weight of the polyethylene of a butyl rubber and from about 0.30 to about 2.5% by weight of the polyethylene of a bifunctional phenolic composition having ortho functionality and the para position of the phenol ring substituted with an inert hydrocarbon radical selected from the group consisting of alkyl, aryl, alkaryl and aralkyl radicals of up to 16 carbon atoms.



3,961,815

LEAK-TIGHT BALL-AND-SOCKET CONNECTING DEVICE TRANSMITTING TORQUES AND STRESSES BETWEEN TWO PIPES

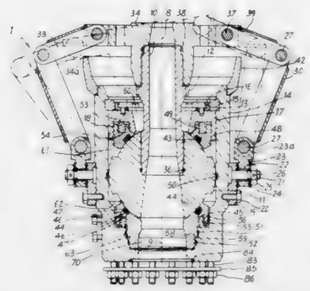
Rene H. Coulboy, Sausset les Pins, France, and Donald F. Taylor, Dallas, Tex., assignors to Subsea Equipment Associates Limited, Hamilton, Bermuda

Filed May 6, 1975, Ser. No. 575,119

Claims priority, application France, May 6, 1974, 74.15527

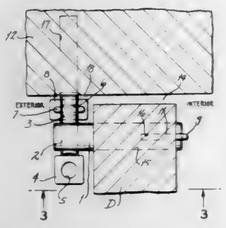
Int. Cl.² F16L *27/06*

U.S. Cl. 285—93 **20 Claims**



1. Leak-tight connecting device for the connection of two pipes comprising: a primary ball-and-socket joint traversed by a bore; a secondary connecting support for said ball-and-socket joint, said secondary support comprising first and second outer sealing joints and a common central sealing joint located between said first and second outer sealing joints, each said sealing joint being disposed between said ball and socket joint and said support to define with said support and said ball-and-socket joint two chambers; means for connecting said chambers to a source of an incompressible fluid under pressure; mechanical means externally connecting said ball-and-socket joint and said secondary support, said mechanical means being pivotally coupled to each said joint and said support and operable to transmit torque from one of said joint and support to the other for various relative angular dispositions of said joint and said support; and means for biasing at least one of said outer sealing joints bounding said chambers against said ball-and-socket joint.

3,961,816
AUXILIARY DOOR LOCK
Theodore V. Mueller, Florissant, Mo., assignor to Security Lock Systems, Inc., Florissant, Mo.
Filed July 3, 1975, Ser. No. 593,038
Int. Cl.² E05C *19/18*
U.S. Cl. 292—148 **12 Claims**



1. An auxiliary lock in combination with a closure mounted within a closure frame for movement between open and closed condition, said lock comprising an elongated lock body, said closure having an opening adjacent said frame for extension therethrough of said lock body, means limiting the extension of said lock body through said closure opening, said lock body having at least one transverse bore through its extended portion, an elongated bolt dimensioned for projection through said bore, means at one end of said bolt for limiting projections of said bolt through said lock body bore, said closure frame having a socket receiving the other end of said bolt, and means detachably engageable upon said bolt between said socket-received end and said lock body.

3,961,817
DOOR LATCH FOR A PRESSURE VESSEL
Albert Eugene Schrimsher, Kansas City, Mo., assignor to Hobart Corporation, Troy, Ohio
Filed Dec. 23, 1974, Ser. No. 535,380
Int. Cl.² E05C *5/04*
U.S. Cl. 292—336.3 **29 Claims**

1. In a pressure vessel having a wall provided with an access opening, apparatus for sealing a door against the inside surface of said wall to cover said opening comprising:

door support means supported exteriorly adjacent said wall,

door mounting means supported by said door support means and extending inwardly through said opening for pulling said door toward said wall, said door mounting means comprising a cam follower and a cam having a cam surface having adjoining steeply pitched and gradually pitched surface portions for causing door movement along said axis at a relatively repid rate when said cam follower moves against the steeply pitched portion of said cam surface and at a relatively slow mechanically advantageous rate when said cam follower moves against the gradually pitched portion of said cam surface, and

door operating means connected to said door mounting means for producing relative movement between said cam and cam follower.

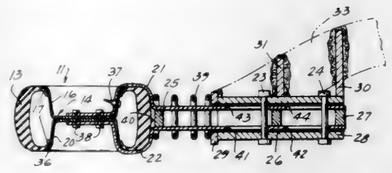
3,961,818
AIR BUMPER
George Roth, Jr., 4529 N. Hamilton, Chicago, Ill. 60625
Filed Mar. 28, 1975, Ser. No. 563,126
Int. Cl.² B60R *19/10*
U.S. Cl. 293—71 P **1 Claim**

1. A motor vehicle bumper adapted to protrude from portions of the vehicle body to be protected, comprising:

a. a vehicle body;

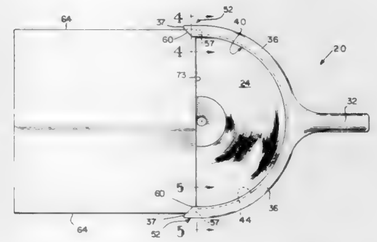
b. a rubber compound encasement shaped as an elongated loop formed of a substantially linear rear portion adjacent the vehicle body, a bowed front portion, and two curved end portions connecting said rear and front portions, said encasement having upper and lower lips around an inner periphery of the loop;

c. an elongated rim supporting said encasement, said rim having upper and lower peripheral lips which seal with said upper and lower encasement lips around their entire periphery, said rim having an air valve connected thereto;



d. upper and lower support means each having a U-shaped intermediate portion for fitting around said encasement rear portion, said upper and lower support means being spaced and slidably contained within a hollow enclosure attached to the vehicle body, a spring encircling said upper and lower supports and positioned between said encasement rear portion and said hollow enclosure.

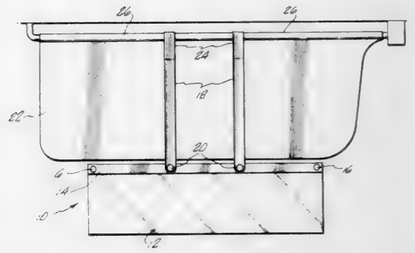
3,961,819
RECORD TOOL
Richard A. Yocum, 10730 Pendleton Pike, Indianapolis, Ind. 46236
Filed Oct. 24, 1975, Ser. No. 625,678
Int. Cl.² B65G *7/12*
U.S. Cl. 294—27 R **6 Claims**



1. A hand-held tool for removing a phonograph record from, and reinserting said record in, a record jacket, said tool comprising a handle, an arm member attached to said handle, said arm member having a semicircular inwardly opening continuous groove for receiving a portion of the radially outer peripheral portion of said record therein, and means for holding said record jacket in the proper orientation with respect to said groove for removing said record from, and inserting said record into, said jacket.

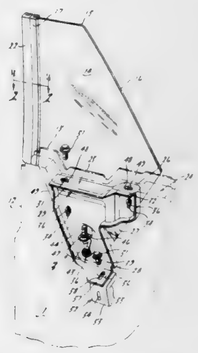
3,961,820
ADJUSTABLE SUN SHIELD
Eugene A. Spangler, 5513 Watcher St., Bell Gardens, Calif. 90201
Filed May 13, 1974, Ser. No. 469,546
Int. Cl.³ B60J *3/02*
U.S. Cl. 296—97 C **1 Claim**

1. An adjustable sun screen adapted to be supported from an automobile sun visor, said sun screen comprising a tinted translucent sheet, a reinforcing rib disposed along the upper edge of said sheet and extending substantially the length thereof, means for securing said rib to said sheet and a pair of supporting arms, each of said arms being of single piece construction and pivotally secured at their respective lower ends thereof to said reinforcing rib, the pivot axis of each of said arms being perpendicular to said rib and said sheet, each of said arms defining a hook member at its upper end thereof adapted to fit about the upper edge of said automobile visor



whereby said tinted sheet can be horizontally and vertically adjusted through the positioning of said hook members toward or away from each other along said upper edge of said visor and the pivoting of said supporting arms with respect to said rib and said sheet whereby the sun screen serves as an adjustable extension of the sun visor.

3,961,821
VEHICLE BODY HAVING A WINDOW OPENING
Chris Mistopoulos, Jr., Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed June 23, 1975, Ser. No. 589,641
Int. Cl.² B60J *1/10*
U.S. Cl. 296—146 **8 Claims**



1. A vehicle body having a window opening, a window well subjacent the opening, and a vertical inner body panel forming a wall of the window well,

a window panel for the window opening,

and a bracket supporting the window in the opening,

wherein the improvement comprises:

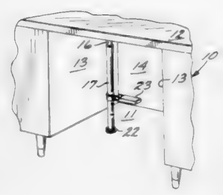
a first series of fasteners for securing the window panel to a face of the bracket and a second series of fasteners for securing the bracket to the body panel,

both series of fasteners passing through a plurality of correlated slots for permitting, prior to final tightening of the fasteners, vertical movement of the window panel relative to the bracket and fore or aft and inboard or outboard movement of the bracket relative to the body panel,

and an adjustment screw interposed between the window panel and the bracket,

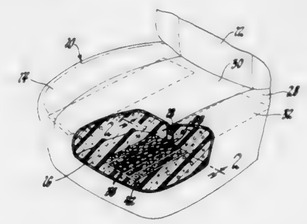
the adjustment screw being operable to vertically position the window panel in a final position in the window opening prior to the window panel being fixedly secured to the bracket by tightening the first series of fasteners.

3,961,822
FOOTREST FOR DESKS
Donald G. Daniel, 1842 Riverford Road, Tustin, Calif. 92680
Filed Oct. 17, 1975, Ser. No. 623,399
Int. Cl.³ A47C *7/50*
U.S. Cl. 297—423 **8 Claims**



1. A footrest adapted to be removably mounted in the foot receiving area disposed beneath the top of a desk, said footrest comprising an upper tubular member and a lower tubular member, said tubular members being slidably and telescopically connected to each other at one end thereof, floor engaging means carried by the opposite end of said lower tubular member and desk top engaging means carried by the opposite end of said upper tubular member for engaging the underside of the top of the desk when said tubular members are disposed within the foot receiving area of said desk, an elongated coil spring mounted within said tubular members, said coil spring urging said floor engaging means and desk engaging means in opposite directions into engagement with said floor and desk top respectively, and a foot support member pivotally connected to said lower tubular member for movement between a horizontal use position in which it extends transversely to said lower tubular member and a storage position in which it extends vertically parallel and closely adjacent to said lower tubular member.

3,961,823
VEHICLE SEAT BOLSTER WIRE ASSEMBLY
Charles Caudill, Jr., Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 9, 1974, Ser. No. 504,024
Int. Cl.² A47C *7/18*
U.S. Cl. 297—452 **3 Claims**



1. A vehicle seat comprising: a resilient foam cushion having an upwardly opening slot therein defined by side walls and a bottom wall, a plastic mesh strip having interstices therein, the plastic mesh strip traversing the slot across the bottom wall thereof and being visible at the bottom of the slot, the plastic mesh strip having portions thereof extending beyond the side walls of the slot with a plurality of the interstices having foam therein to embed the mesh strip in the foam cushion, a wire underlying the mesh strip and extending continuously along

the bottom wall of the slot generally intermediate the side walls thereof, a strip of fabric of a width greater than the diameter of the wire and underlying the wire, the strip of fabric being sewn to the strip of plastic mesh with the wire captured therebetween to attach the wire to the mesh strip so that the wire is visible at the bottom of the slot through the interstices in the plastic mesh strip, a seat cover having a portion thereof received into the slot and positioned adjacent the mesh strip, and fastener means receivable through the slot for attaching the seat cover to the wire at any selected point along the continuously visible length of the wire at the bottom of the slot.

3,961,824

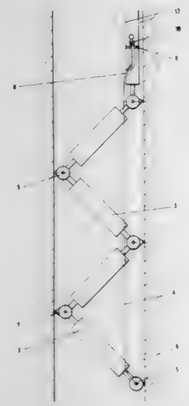
METHOD AND SYSTEM FOR WINNING MINERALS

Wouter Hugo Van Eek, 56, Groot Haesebroekseweg, Wassenaar; Henri Marie Boers, 71, Catsheuvel, The Hague; Arnold Willem J. Grupping, 3, Anjelierenlaan, Aerdenhout; Pieter Jacobus J. Van Wamelen, Delft, and Willem Christian Rehm, 172 Gravenweg, Rotterdam, all of Netherlands

Filed Oct. 21, 1974, Ser. No. 516,615

Int. Cl.² E21B *9/26*

U.S. Cl. 299—17 **12 Claims**



1. A method of mining minerals comprising forming a bore hole from the surface into the mineral formation, introducing into the bore hole from the surface in a stretched position a sectional scraper structure that can be folded into a zig-zag position in the mineral formation, pulling the scraper into a zig zagged condition from the surface, moving the zig zagged scraper up and down from the surface to exert a scraping action in the mineral formation and circulating a liquid through the bore hole to raise the scraped loose mineral upwardly through the bore hole.

3,961,825

TUNNELLING MACHINE

Richard Lovat, 42 Grovtree Ave., Rexdale, Ontario, Canada

Filed Aug. 5, 1974, Ser. No. 494,609

Int. Cl.² E21D *9/04*

U.S. Cl. 299—33 **14 Claims**

1.

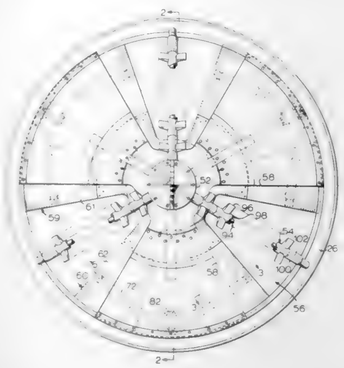
An apparatus for tunnelling through soil, comprising: a cylindrical housing;

a cutting head rotatably mounted on one end of the housing coaxial therewith and closing said one end, the cutting head having an outwardly projecting conical face with at least one aperture therein opening into the housing;

at least one toothed cutter bar mounted radially on the cutting head adjacent the face thereof and in front of the aperture;

at least one flood door mounted on the cutting head and slidable laterally on the conical face thereof to open or close the aperture or to vary the size thereof;

means mounted on the cutting head to move the flood door; and



means mounted in the housing to rotate the cutting head to advance the housing, and to convey soil rearwardly from the cutting head.

3,961,826

SUSPENSION UNIT

Phillip J. Sweet; Buck C. Hamlet, and David L. Sweet, all of Fresno, Calif., assignors to American Carrier Equipment, Inc., Fresno, Calif.

Filed Mar. 6, 1975, Ser. No. 555,892

Int. Cl.² B60G *11/56*

U.S. Cl. 301—125 **6 Claims**



1. An improved suspension unit for an overland vehicle of the type including a body-supporting frame and a wheel-supported axle, comprising:

A. a bracket adapted to be disposed beneath the frame of a selected vehicle and rigidly connected thereto;

B. a rigid arm of a substantially angulated configuration including a base segment and a distal segment angularly related to said base segment;

C. means including a knuckle joint for pivotally connecting said base segment of the arm to the bracket;

D. means adapted to rigidly connect the axle of the vehicle to the distal segment of the arm;

E. means adapted to resiliently support the vehicle including a pressurized air bag of a substantially constant height interposed between the bracket and the distal segment of the arm; and

F. stop means for said arm including a first pair of protrusions extended from the base segment of said arm in juxtaposition with said knuckle joint, a second pair of protrusions extended from said bracket into the path of said first pair of protrusions, for limiting pivotal motion imparted to said arm in a downward direction, and a rigid stop depending from said bracket in a vertical plane passing through said arm for limiting pivotal motion imparted to said arm in an upward direction.

3,961,827

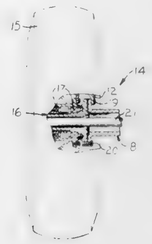
STRESS-RELIEVED WHEEL ASSEMBLY AND METHOD THEREFOR

Aleksander Mankowski, Downers Grove; Eugene M. Poplawski, and Jack H. Kraina, both of Aurora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 20, 1975, Ser. No. 588,920

Int. Cl.² B60B *35/00*

U.S. Cl. 301—132 **13 Claims**



1. A stress-relieved wheel assembly comprising

an axle housing, adapted for attachment to a frame of a vehicle, having an annular first flange disposed to extend radially outwardly on an outboard end thereof,

a wheel spindle, adapted to have a wheel rotatably mounted thereon, having an annular second flange disposed to extend radially outwardly on an inboard end thereof to position an inner face thereof in abutting relationship with an inner face of said first flange,

means forming at least a generally frustro-conically shaped concavity on at least one of the inner faces of said first and second flanges, and

fastening means drawing and securing said first and second flanges together for imposing a compressive force on radially inner portions of said flange having said concavity formed thereon.

3,961,828

TWO-CIRCUIT BRAKING SYSTEM FOR MOTOR VEHICLES EMPLOYING A WHEEL LOCK-PREVENTION DEVICE

Konrad Eckert, Stuttgart; Alexander Von Lowis, Mauren, and Klaus-Otto Riesenberg, Ludwigsburg-Ossweil, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Jan. 25, 1974, Ser. No. 436,781

Claims priority, application Germany, Jan. 25, 1973, 2303505

Int. Cl.² B60T *8/00*

U.S. Cl. 303—21 AF **10 Claims**

1. In a two-circuit braking system for motor vehicles having a brake pedal, a wheel lock-prevention device that holds the brake line pressure below a locking limit pressure by means of sensors in the system and magnetic valves included in each circuit, the improvement comprising:

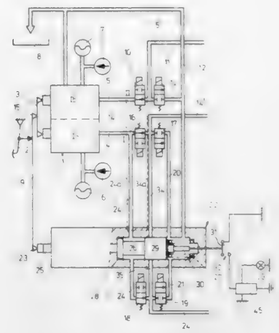
a. switching valve means connected to both circuits;

b. means mechanically connecting the brake pedal to said switching valve means; and

c. bypass means connecting at least one of the two circuits to said switching valve means, wherein

said switching valve means has a threshold value associated therewith and is switched in dependence on said threshold value such that said bypass means is placed into open communication with its respective circuit, wherein

said threshold value is a particular value of the force applied to the brake pedal, and wherein



at least some of the magnetic valves are rendered ineffective due to the switching of said switching valve means so that a braking pressure increase without lock-prevention is achieved.

3,961,829

IMPROVEMENTS IN OR RELATING TO RESILIENT MOUNTINGS

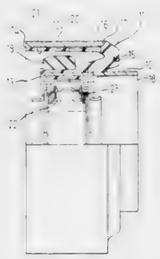
Gwynne Bowen, Leicester, and Alan Frederick Moore, Burbage, both of England, assignors to Dunlop Limited, London, England

Filed Sept. 11, 1973, Ser. No. 396,144

Claims priority, application United Kingdom, Sept. 20, 1972, 43528/74; May 5, 1973, 21521/74

Int. Cl.² F16C *35/12*

U.S. Cl. 308—28 **27 Claims**



1. Reilient mounting comprising: an outer rigid member defining an aperture, an inner rigid member situated in said aperture so that the two rigid members define an annular space therebetween, a deformable first annular element located in said annular space and extending between and bonded to the inner and outer rigid members, and an annular buffer ring of deformable material located between and secured to at least one of said inner and outer rigid members wherein the improvement comprises a substantially inextensible reinforcement associated with the buffer ring which compresses an inner layer of resilient material between the reinforcement and the rigid member to which it is secured so that the buffer ring is secured by the action of compression forces in the inner layer of resilient material, the material of the buffer ring having a resilience different from that of the material of the deformable first annular element, and wherein said annular buffer ring is continuous in a circumferential direction and of a cross-sectional shape such that it resists any substan-

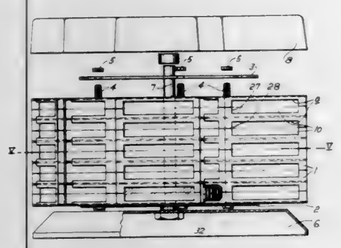
tial deformation by bending in a plane containing the axis of the mounting.

3,961,830

SALES DISPLAY, IN PARTICULAR FOR WATCHBAND TRANSPARENT PACKAGES

Fritz Göswald, Peiting, Upper Bavaria, Germany, assignor to Eulit-Werk Staude & Co. KG, Peiting, Upper Bavaria, Germany

Filed Nov. 7, 1974, Ser. No. 521,641
Claims priority, application Germany, Nov. 26, 1973, 421019; July 2, 1974, 224412
Int. Cl.² A47B *88/00*; A47F *3/10*
U.S. Cl. 312—135 **15 Claims**



1. In a display device having several similar rectangularly shaped individual structural units, said individual structural units being placed side-by-side and one on top of the other between a base plate and a cover plate and having compartments formed between at least a pair of said individual structural units one vertically stacked on the other, said compartments having a sight opening defined by a pair of vertically stacked individual structural units and a side opening from which a package can be removed on another perpendicularly adjoining outer side, said individual structural units being connected to one another and to said base plate and said cover plate, the improvement comprising wherein each individual structural unit has a vertically extending first tongue on at least one corner and a vertically extending groove on a corner which is diagonally opposite said first tongue, both said first tongue and said groove having a rounded profile with said groove partly enclosing said tongue of an adjacent individual structural unit to thereby define a hingelike connection between said side-by-side individual structural units to facilitate a change in angular relationship between said side-by-side stack of units without necessitating an alteration in the side-by-side connection therebetween.

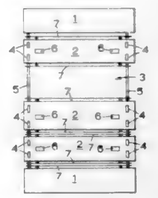
3,961,831

STORAGE ASSEMBLIES

Richard Grahame Dugard Showell, Bishampton, near Pershore, and Peter John Spears, Cropthorne, both of England, assignors to Bar Productions (Bromagrove) Limited, Bromagrove, England

Filed Mar. 18, 1975, Ser. No. 559,507
Claims priority, application United Kingdom, Mar. 23, 1974, 13266/74; Dec. 18, 1974, 54742/74
Int. Cl.² A47B *53/02*; B61J *3/04*
U.S. Cl. 312—200 **19 Claims**

1. Sensor means which is fitted to a mobile member so as to stop the latter on engagement with an object in its path comprising a trip bar; a plurality of links which are arranged at spaced points along the length of the trip bar; a pivotal connection between one end of each link and the trip bar and a pivotal connection between the other end of each link and the mobile member; the pivotal axes of all of said pivotal connections extending parallel to one another and being spaced relative to one another so that the links, mobile member and trip bar form a folding parallelogram in which the trip bar is guided to move in a plane perpendicular to said pivotal axes; and switch means which is arranged in relation to said trip bar



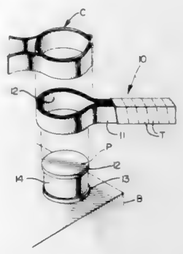
so as to be operated by movement of the latter towards said mobile member.

3,961,832

LIGHTWEIGHT ELECTRICAL CABLE

Richard E. Diggs, 12 A Road, Carthage, Mo. 64836

Filed Mar. 12, 1975, Ser. No. 557,679
Int. Cl.² H01R *11/12*
U.S. Cl. 339—29 B **9 Claims**



1. A lightweight electrical cable comprising:
a plurality of continuous flat strips of silver foil formed in layers one upon the other, with the innermost one of said flat strips being folded back on itself to form an elongated structure having the fold at one end thereof and a pair of confronting faces which contact each other for a predetermined length of said elongated structure, said confronting faces being spaced apart in non-contacting relationship with each other adjacent said one end to form a loop thereat, said loop having an inner transverse dimension sufficient to receive an electrical conductor therein with said electrical conductor oriented to extend axially of said loop with the confronting faces which form the inner surface of said loop contacting said electrical conductor to form an electrical connection between said one strip and said electrical conductor.

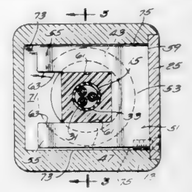
3,961,833

STRAIN RELIEF

James E. Schmitz, Racine, Wis., assignor to Andis Clipper Company, Racine, Wis.

Filed Jan. 29, 1975, Ser. No. 545,096
Int. Cl.² H01R *13/58, 13/60*
U.S. Cl. 339—119 R **4 Claims**

1. An electrical apparatus comprising a housing having an outer surface, an inner surface forming one wall of an interior chamber, an aperture extending in said housing between said inner and outer surfaces and communicating with said chamber, and an opening extending laterally with respect to said aperture and communicating with said chamber, an electrical cord including an inner wire and an outer sheath including a strain relief portion comprising a first enlarged part engaging said housing outer surface and a second enlarged part of lesser size than said first enlarged part, extending through said aperture and including therein inwardly of said housing inner surface and within said chamber, a groove extending at least partially peripherally of said second enlarged part, a retaining clip adapted for passage through said opening, received in said groove, and including a surface engageable with said housing



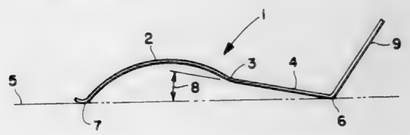
inner surface to prevent withdrawal of said cord through said aperture, a cover removably closing said opening and preventing lateral withdrawal of said clip from said groove, and means for preventing relative rotation between said cord and said housing.

3,961,834

BOW CONTACT AND CONNECTOR USING THE SAME

John T. Venaleck, Painesville, and John N. Tengler, Chardon, both of Ohio, assignors to A & P Products Incorporated, Painesville, Ohio

Filed June 19, 1974, Ser. No. 480,695
Int. Cl.² H01R *13/22, 13/40*
U.S. Cl. 339—176 M **20 Claims**



1. An electrical contact adapted for attachement to a substantially planar surface, comprising a deformable curved bow portion, and a substantially linear attaching portion, the contact having first and second ends at remote parts of said bow portion and said attaching portion respectively, said attaching portion defining an acute angle with a line drawn between said ends when the contact is unstressed, and while the contact is supported at said ends said attaching portion being deformable to a substantially planar abutting relation with such a surface, the contact also comprising transition portion means coupling said bow and attaching portions for maintaining said attaching portion under zero stress as a region of zero moment when said attaching portion has been so deformed to such a substantially planar abutting relation with such a surface while said first end remains so supported and while said bow portion is deformed within a predetermined range.

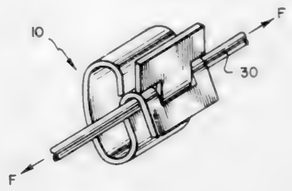
3,961,835

ELASTIC RETAINING CLIP

Pao C. Huang, Towson, and John C. Matra, Jr., Cockeysville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1975, Ser. No. 544,714
Int. Cl.² H01R *9/12*
U.S. Cl. 339—260 **4 Claims**

1. An elastic fastening device capable of repeatedly applying a consistent holding force comprising:
a substantially flat, planar base portion;
a pair of upstanding, arcuate leg portions having opposed, reversed, S-shaped bends formed therein, the end portion of each of the upper bends being substantially parallel to said base portion and the radius of curvature of the lower bend being larger than the radius of curvature of the upper bend;
an aperture in the upper bend of one leg portion;
a reduced-width portion in the upper bend of the other leg portion receivable in said aperture; and



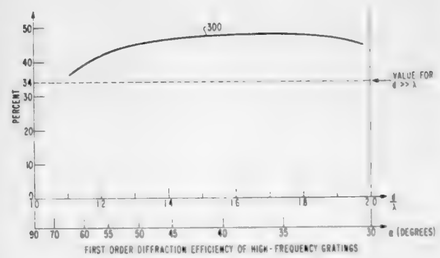
lateral extensions on said reduced-width portion cooperating with said aperture to limit the displacement of said reduced-width portion within said aperture to the elastic range of the material of said fastening device,
whereby said reduced-width portion is displaceable within said aperture to receive therein the means to be fastened.

3,961,836

FOCUSED-IMAGE HOLOGRAM SYSTEM PROVIDING INCREASED OPTICAL READOUT EFFICIENCY

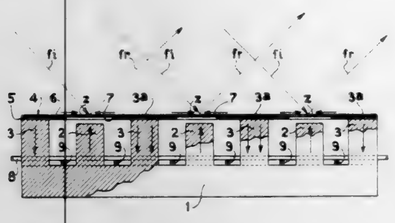
Karl Knop, Zurich, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Sept. 20, 1974, Ser. No. 507,706
Int. Cl.² G03H *1/22*
U.S. Cl. 350—3.5 **2 Claims**



1. A method for increasing the optical diffraction efficiency with which a focused-image hologram consisting of a sinusoidal spatial carrier diffraction grating amplitude-modulated by a focused image of a given scene may be read out with light energy having a given intensity and including a given wavelength to reconstruct a brighter image of said given scene, said method comprising the steps of:
a. employing as said diffraction grating a sinusoidal diffraction grating lying in a given plane and exhibiting a given line spacing in which the ratio of said given line spacing to said given wavelength is greater than one and less than two, and
b. illuminating said focused image hologram diffraction grating with a collimated beam of said incident light energy which is inclined at a given angle larger than 30° with respect to the normal to said given plane.

3,961,837
MAGNETICALLY ACTUATED DEFLECTABLE MEMBRANE PAGE COMPOSER FOR HOLOGRAPHY
Philippe Bied-Charreton, Limours; Luigi d'Auria, Chevreuse; Francois Micheron, Gif-sur-Yvette, and Jean Pierre Huignard, Chatenay-Malabry, all of France, assignors to Thomson-CSF, Paris Cedex, France
Filed Sept. 20, 1974, Ser. No. 507,970
Claims priority, application France, Sept. 21, 1973, 73.33871
Int. Cl.² G03H *1/30;* **G02F** *1/19*
U.S. Cl. 350—3.5 **10 Claims**



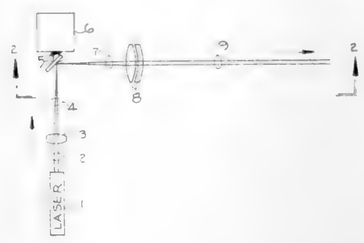
1. In a device for converting electrical data into optical data, comprising a flexible magnetic sheet which is reflective on one of its sides, a network of magnetic circuits having a base plate of a magnetic material and being associated with a network of as many zones of said sheet for selectively deforming each one of said zones by a modification of the magnetic flux in their associated magnetic circuit and a matrix of exciting means having input means for said electrical data so as to be controlled by said electrical data for varying said magnetic flux and selectively modifying the conditions of reflection in said zones as a function of the electrical data, the improvement wherein said network of magnetic circuits comprises a network of studs of the same magnetic material as said base plate, said studs projecting from said base plate and being integral therewith, said network of magnetic studs comprising a group of first studs fixing said sheet in position and a group of second studs confronting said zones of said sheet, the second studs being slightly shorter than the first studs so as to define between their ends and said sheet a slight airgap in absence of electrical excitation and said exciting means comprising a matrix of crossed linearly disposed wires forming loops located on the bottom of the grooves defined between said first and second studs.

3,961,838
APPARATUS FOR PRODUCING A SCANNING LASER BEAM OF CONSTANT LINEAR VELOCITY
Carl A. Zanoni, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.
Filed Jan. 10, 1975, Ser. No. 540,079
The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.
Int. Cl.² G02B *27/17*
U.S. Cl. 350—7 **7 Claims**

1. Apparatus for producing a single scanning beam of radiant energy comprising (1) a source of radiant energy producing a single narrow collimated beam; (2) a uniformly rotating reflecting surface for reflecting said beam to produce a single angularly-scanned input beam of uniform angular velocity, which passes through (3) means for converting said single input beam into a linearly-scanning output beam of uniform linear velocity, said means comprising a lens which satisfies the relationship

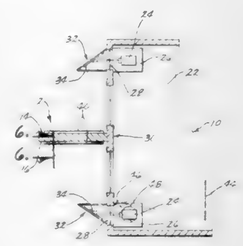
$$h = k\theta$$

where h is the distance between the center of said output beam and the optical axis of said lens, k is a constant very nearly equal to the focal length of the lens and θ is the angle



between the center of said input beam and the optical axis of said lens.

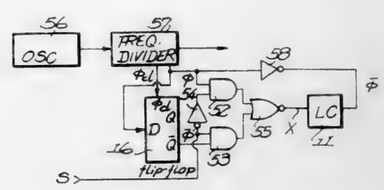
3,961,839
INDOOR-OUTDOOR IMAGE PROJECTION SYSTEM
Clarence O. Brobst, 2223 Washington, Cedar Falls, Iowa 50313
Continuation of Ser. No. 267,634, June 29, 1972, abandoned. This application Sept. 12, 1974, Ser. No. 505,489
Int. Cl.² G03B *21/56*
U.S. Cl. 350—117 **5 Claims**



1. An indoor-outdoor image projection system, comprising,
a building located along a public thoroughfare and having an exterior vertical wall parallel to said thoroughfare,
a vertically disposed screen at eye level from the ground, positioned outside said building between the wall and the thoroughfare and extending substantially perpendicular to said wall and said thoroughfare, and said screen having oppositely facing viewing faces viewable from said thoroughfare,
a pair of projection windows in said wall,
a pair of image projection sources in said building positioned on the inside face of said wall and on opposite sides of said screen to project images through the adjacent projection windows, and
a mirror unit including an enclosure positioned on the outside face of said wall directly adjacent each projection source to receive said image from said inside projection source and direct it onto the adjacent face of said screen, said mirror unit having a mirror extending at a 45° angle to said wall and said screen, said screen being positioned substantially equal distance between said mirror units,
a screen being provided inside said building and said image projection source being positioned on a rotatable support such that said projection source can be turned,
a mirror inside said building being positioned closely adjacent said projection window and being aligned between one of said projection sources and said screen in said building to transmit said image to said screen in said building upon said one projection source being turned only a few degrees from said outside mirror unit, and

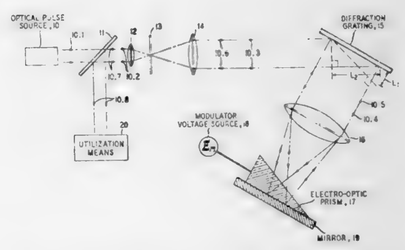
the distance from said mirrors to said screen being greater than the distance from said projection sources to said mirrors and said screen being substantially larger than said mirror unit thereby making said screen more noticeable than said mirror units.

3,961,840
DRIVING CIRCUIT FOR LIQUID-CRYSTAL DISPLAY
Shigeru Morokawa; Fukuo Sekiya; Ryuichi Maruka, and Yasushi Nomura, all of Tokorozawa, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan
Filed May 8, 1974, Ser. No. 467,993
Claims priority, application Japan, May 15, 1973, 48-53889
Int. Cl.² G02F *1/13*
U.S. Cl. 350—160 LC **8 Claims**



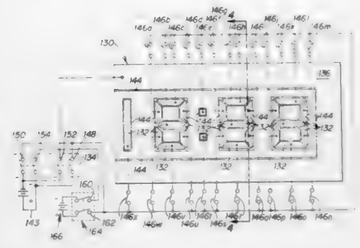
1. In a visual display system including a liquid-crystal element constituting a segment of the display, said element being provided with a pair of electrodes for applying thereacross a voltage difference exciting a change in the visual appearance of said element, the combination therewith of a source of voltage pulses in the form of a square wave connected across said electrodes, gating means in series with said source connected to a supply of control voltage for selectively activating said segment, and switching means between said source and said electrodes for periodically short-circuiting said element with concurrent open-circuiting of said source in the activated state of said element during a recurrent interval which is short in comparison with a cycle of said square wave, said interval bridging a discontinuity in the voltage of said square wave.

3,961,841
OPTICAL PULSE POSITION MODULATOR
Joseph Anthony Giordmaine, 38 Laurel Ave., Summit, N.J. 07901
Filed Sept. 23, 1970, Ser. No. 74,569
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 R **8 Claims**



1. A pulse position modulation system which comprises:
a. first means for producing an angular dispersion of the Fourier frequency components in an optical pulse beam;
b. second means for producing a controllable phase shift in said components, which is proportional to the difference in frequency between each of the components and the central frequency of the pulse beam;
c. third means for undoing the angular dispersion after the beam has traversed the second means, in order to form an output pulse beam whose position is shifted in accordance with the controllable phase shift.

3,961,842
REGENERATING ELECTRODE FOR ELECTROCHROMIC DISPLAY CELL
Raymond J. Jasinski, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Sept. 20, 1974, Ser. No. 507,896
Int. Cl.² G02F *1/28*
U.S. Cl. 350—160 R **15 Claims**



1. An electrochromic display cell comprising:
a. a cell structure means defining a sealed volume;
b. an electrolyte composition completely filling said volume comprising water, an anion, and an n-heptylviologen cation which when reversibly reduced combines with said anion to produce an insoluble insulating adherent film that markedly absorbs visible light;
c. a first electrode contained in said cell structure means and contacting said electrolyte forming a reversible half cell in said electrolyte;
d. a second electrode electrically insulated from said first electrode, contained in said cell structure means and contacting said electrolyte;
e. a third electrode for transferring a regeneration charge electrically insulated from said first and second electrodes, contained in said cell structure means and contacting said electrolyte;
f. means for applying an electrical voltage across said cell to effect an electrolytic current flow to alternatively write and then erase said electrochromic display; and
g. means for applying a regeneration current across said cell such that said third electrode is an anode to restore the coulombic capacity of said first electrode.

3,961,843
LIQUID CRYSTAL ELECTRO-OPTICAL DEVICE
Kenji Nakamura; Keizo Matsushita, both of Kamahura; Shigetaro Furuta, Fujisawa, and Kazuo Totani, Kamakura, all of Japan, assignors to Dai Nippon Toryo Kabushiki Kaisha, Osaka, Japan
Filed Nov. 11, 1974, Ser. No. 522,834
Claims priority, application Japan, June 29, 1974, 49-73830; July 31, 1974, 49-87082
Int. Cl.² G02F *3/00*
U.S. Cl. 350—160 LC **7 Claims**

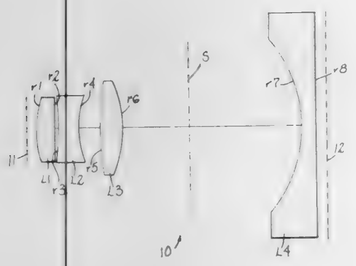
1. A liquid crystal device of the torsion effect type comprising a cell of the structure comprising a pair of facing electrode plates and a nematic liquid crystal material having a positive dielectric anisotropy, which is inserted and supported between said two electrode plates, wherein facing electrode surfaces of said electrode plates coming into contact with the nematic liquid crystal layer are provided with a coating selected from the group consisting of poly-p-xylylene, its substituted product and mixtures thereof, and the surface of said coating is fur-

nished with a predetermined orientation and a thin band of adhesive is provided on the peripheral edge of the electrode surface of at least one of said electrode plates to seal the space between said two electrode plates.

3,961,844
LENS

Ellis I. Betensky, Toronto, Canada, assignor to Optigon Research & Development Corporation, Santa Monica, Calif.

Continuation-in-part of Ser. No. 337,213, March 1, 1973, abandoned. This application Apr. 12, 1974, Ser. No. 460,342
Int. Cl.² G02B *3/00, 9/34*
U.S. Cl. 350—175 FS **1 Claim**



1. A lens having characteristics substantially as follows as scaled to a 23.5mm equivalent focal length:

Lens	Radius		Lens Thickness or air Space Distance	N_d	V_d
	r1	10.05mm			
L1			2.08mm	1.694	30.9
	r2	−66.137			
			.23		
	r3	−20.40			
L2			2.00	1.792	25.5
	r4	10.616			
			2.095		
	r5	27.597			
L3			2.15	1.643	59.9
	r6	−12.989			
			18.02		
	r7	−13.755			
L4			1.50	1.491	58.4
	r8	Plano			
			1.0		

Film Plane

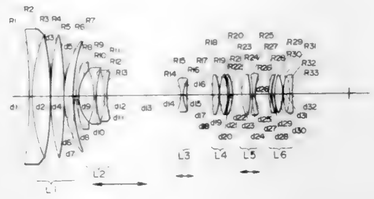
Where N_d is the index of refraction, V_d is the Abbe number and L1 – L4 are lens elements from the object end.

3,961,845
ZOOM LENS SYSTEM

Yoshikazu Doi; Yutaka Sakai, and Kenzo Sado, all of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Continuation-in-part of Ser. No. 426,139, Dec. 19, 1973, abandoned. This application July 14, 1975, Ser. No. 595,885
Claims priority, application Japan, Aug. 17, 1973, 48-92113
Int. Cl.² G02B *15/00*
U.S. Cl. 350—184 **11 Claims**

1. A zoom lens system comprising a zooming lens component and a relay lens component wherein said relay lens component includes a movable lens component of no power which is moved along the optical axis thereof to compensate the fluctuation of aberration of the zoom lens system caused by

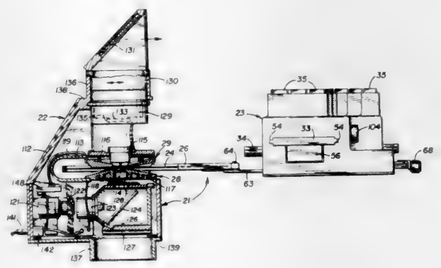


the axial movement of the zooming lens component accompanying the zooming operation.

3,961,846
ULTRA-HIGH REDUCTION MICROFICHE LAYOUT AND POSITIONING MECHANISM THEREFOR

Wynn D. Crew, Denver, Colo., assignor to Microtech Press Inc., Lakewood, Colo.

Division of Ser. No. 214,096, Dec. 30, 1971, Pat. No. 3,871,759. This application Nov. 21, 1974, Ser. No. 526,011
Int. Cl.² G03B *23/08, 21/11*
U.S. Cl. 353—27 R **15 Claims**



1. A selector component for use when locating image pages and materials presented in ordered arrangement on a layout sheet comprising a selector body, a carrier for said sheet mounted for movement with respect to said body, a vertical guide system for constraining vertically oriented movements of said sheet carrier, a horizontal guide system for constraining horizontally oriented movements of said sheet carrier, guide ways provided by said body, separate horizontal and vertical selector plates mounted on said guide ways for reciprocal movement at angles of 90° one to the other, means constraining said sheet carrier for movement with either of said horizontal or vertical selector plates, and indexing means for establishing relative horizontal and vertical positioning of said guide ways, guide systems and sheet carrier.

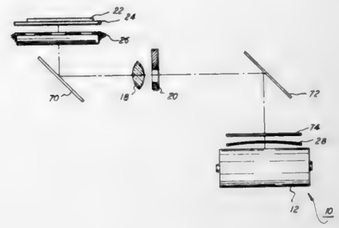
3,961,847
ARCUATE SCREEN FOR AN ELECTROPHOTOGRAPHIC PRINTING MACHINE

Timothy D. Turner, and Dennis J. Smith, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 6, 1975, Ser. No. 556,027
Int. Cl.² G03G *15/22*
U.S. Cl. 355—4 **18 Claims**

1. An electrophotographic printing machine of the type having an arcuate photoconductive member, including:

an arcuate screen member closely spaced to the photoconductive member with the plane of curvature of said

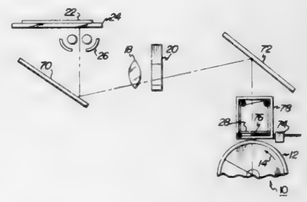


screen member being substantially normal to the plane of curvature of the photoconductive member.

3,961,848
ELECTROPHOTOGRAPHIC PRINTING MACHINE WITH HALFTONE SCREEN CLEANING

Timothy D. Turner, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1975, Ser. No. 567,149
Int. Cl.² G03G *15/22*
U.S. Cl. 355—4 **13 Claims**



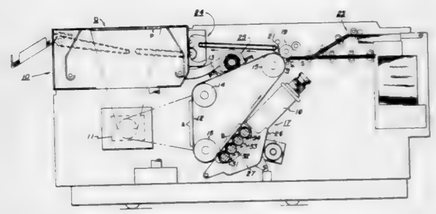
1. An electrophotographic printing machine of the type having a photoconductive member, including:
- a screen member mounted movably in the printing machine and positioned closely adjacent to the photoconductive member;
- means for adjusting the spacing between said screen member and the photoconductive member;
- a cleaning member mounted movably in the printing machine and operatively associated with said screen member; and
- means for moving said cleaning member across said screen member to remove contaminants therefrom.

3,961,849
ELECTROSTATIC PRINTING MACHINE

Hugh L. Jones, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 97,572, Dec. 14, 1970, abandoned. This application Apr. 12, 1974, Ser. No. 460,316
Int. Cl.² G03G *15/22*
U.S. Cl. 355—11 **2 Claims**

1. A reproduction printing apparatus of the type employing a continuously moving endless flexible belt having a photoconductive surface adapted to carry an electrostatic latent image of an original to be copied including,
- a plurality of support rollers having their axes generally in parallel for supporting and guiding the belt in an endless path of movement, said rollers being arranged to effect at least three substantially flat runs of the belt during movement thereof,
- charging means mounted in operative relationship with a first of said belt runs for uniformly charging the photoconductive belt during movement thereof, said first run lying in a plane at an incline relative to a horizontal plane,
- imaging means having means for exposing the photoconductive surface during movement thereof to produce an electrostatic latent image of an original to be copied, said imaging means being effective to produce said latent image at an exposure station positioned at a second of said belt runs, said second run lying in a plane substantially parallel to the vertical,
- developing means mounted below a third of said runs, said developing means comprising a series of individual cooperative developing members for progressively developing the latent image thereat, said third run lying in a plane upwardly inclined to the horizontal plane,

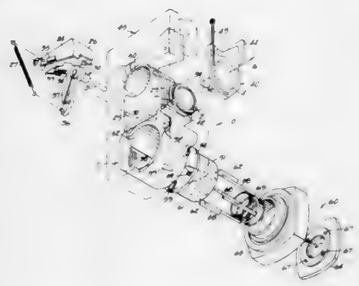


- means for feeding support material into contact with the belt at one of said support rollers, and
- transfer means mounted adjacent said one support roller for effecting the transfer of the developed image to the support material as the same is in contact with the belt, said one support roller being positioned vertically higher than the others of said plurality of support rollers and higher than said exposure station and said second run so that the first and third runs are inclined downwardly relative to the horizontal plane running through the axis of said one support roller, said transfer means including a transfer roller disposed in operative relation with said belt opposite said one support roller, said support material passing between said belt and said transfer roller along a transfer path higher than said belt runs.

3,961,850
OPTICAL INDEX AND METHOD FOR CAMERAS AND FILM PROCESSING

James A. Millett, Fountain Valley, Calif., assignor to Lure Camera Ltd., Vancouver, Canada

Division of Ser. No. 362,274, May 21, 1973, which is a division of Ser. No. 297,324, Oct. 13, 1972, abandoned. This application Sept. 3, 1974, Ser. No. 502,555
Int. Cl.² G03B *27/32*
U.S. Cl. 355—77 **1 Claim**



1. A method of indexing and printing film strips using cameras having a lens system, a shutter controlling the opening

and closing of the lens system and a film transport for successively advancing portions of its film strip in non-uniform intervals across a framing window for sequential exposures and commercially available automatic printing equipment comprising the steps of exposing a limited portion of an edge of a film strip within such a camera not within the framing window at non-uniform intervals through an independent light passage simultaneously with the exposure of the portion of said film strip within said framing window, developing said film strip to obtain a negative of said exposed portions of said film strip, optically sensing on said developed film strip with automatic equipment said negative of said exposed limited portion on said edge of said developed film strip, and positioning said exposed portion of said developed film strip containing said negative which was within the framing window in a printer in relationship to the information obtained by optically sensing said exposed limited portion, whereby said negative is automatically positioned in said printer for proper printing.

3,961,851

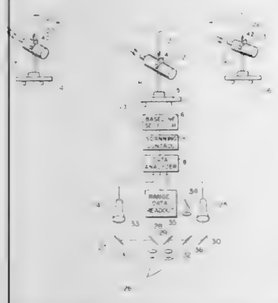
PASSIVE STEREOVISION RANGE FINDER

Reinhold Gerharz, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1974, Ser. No. 511,876

Int. Cl.² G01C *3/00*

U.S. Cl. 356—1 **1 Claim**



1. A passive stereovision rangefinder system comprising:

image converting scanning means including at least three image converting television cameras positioned at various locations constituting the vertices of a triangle whereby the baseline for scanning and ranging in any particular area is maximized by remotely selecting the two cameras having the greater baseline separation;

at least three mobile base means with one of said cameras mounted on each base;

synchronous drive means associated with each of said cameras for remotely controlling their aiming while maintaining their optical axes in parallel relationship;

ranging means associated with each mobile base for determining the distance between said cameras;

a control site for controlling said synchronous drive means positioned remotely from said cameras, wherein said control site further includes selector means for selecting the two cameras having the greatest baseline when the cameras are pointed toward an area of interest, means for receiving and displaying outputs from said cameras and means for providing a range measurement from said outputs.

3,961,852

WRITING INSTRUMENT

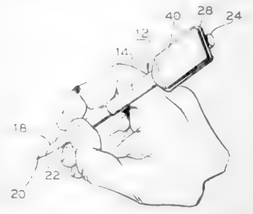
David W. Parry, 2390 N. Forest Road, Getzville, N.Y. 14068

Filed June 3, 1974, Ser. No. 475,653

Int. Cl.² B43K *29/00*

U.S. Cl. 401—195 **6 Claims**

1. An elongated writing instrument comprising a first section having a marking means at an end thereof and a separable second section telescopically and removably engaging said first section, a relatively rigid, relatively thin, flat plate having one side thereof joined to said second section, a portion thereof protruding laterally from said second section and extending longitudinally from adjacent one end of said second section toward the other end thereof, a pocket clip mounted on said writing instrument diametrically opposite to an area of



contact between said plate and said second section, said plate having a substantially uninterrupted planar surface on the side opposite said one side and means for removably mounting a supply of writing paper upon said planar surface for writing upon by said marking means whereby said instrument serves as a writing instrument, a writing base, a marking surface and a pocket shield.

3,961,853

SHRUNK FIT COUPLING

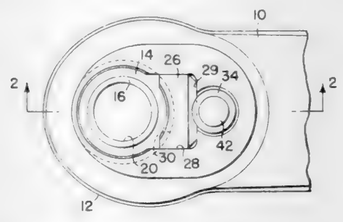
Karl Grimpe, Mulheim, Germany, assignor to DEMAG Aktiengesellschaft, Duisburg, Germany

Continuation of Ser. No. 439,978, Feb. 6, 1974. This application, Apr. 18, 1975, Ser. No. 569,184

Claims priority, application Germany, Feb. 8, 1973, 2306215.9

Int. Cl.² F16B *4/00*

U.S. Cl. 403—273 **6 Claims**



1. A shrunk fit coupling, comprising

(a) an outer sleeve means having a cylindrical bore of first predetermined diameter when heated and expanded and a second predetermined diameter when cooled and contracted;

(b) an inner cylindrical hub means having an outer diameter less than said first predetermined diameter and greater than said second diameter;

(c) plural, parallel groove means formed in each of said cylindrical bore of said sleeve means and said cylindrical hub means to provide each with a plurality of uniformly spaced, parallel land means of uniform width;

(d) said groove means being of uniform width and wider than said land means;

(e) said groove means and said land means being disposed circumferentially of said sleeve means and said hub means to establish longitudinal grooves and lands spaced radially from one another about the axes of said sleeve means and said hub means; and

(f) means limiting relative displacement of said sleeve means with respect to said hub means to the width of one of said groove means.

3,961,854

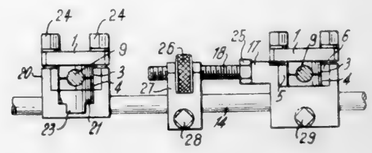
APPARATUS FOR ORIENTING AND MAINTAINING A ROD IN ANY DIRECTION

Henri Jaquet, 9, route des Jeunes, Geneva, Switzerland

Filed Sept. 10, 1975, Ser. No. 612,172

Int. Cl.² F16B *7/06*

U.S. Cl. 403—59 **12 Claims**



1. Apparatus for orienting and securing a rod in a spatially adjusted position, comprising a U-shaped element including opposed parallel branches, and a bottom portion connecting said branches, at least two superposed plates having mating faces with grooves therein cooperatively defining a hole, said plates being disposed between said branches a rod engaged in said hole, a flange detachably secured to said branches of the U-shaped element to hold said plates and said rod between said branches, means connecting said plates respectively to said flange and to said bottom portion for rotation about an axis parallel to said branches to enable said rod to be angularly rotated with said plates in a plane perpendicular to said branches, a support bar extending longitudinally through said U-shaped element in a direction perpendicular to said axis, and locking means for locking said plates and said rod in said U-shaped element and for locking said U-shaped element on said support bar.

3,961,855

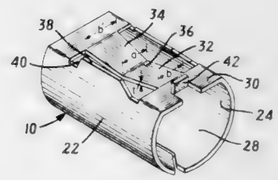
RETAINER FOR SECURING OPERATING ELEMENTS TO CONTROL SHAFTS

Peter A. Basile, Edison, N.J., assignor to Amerace Corporation, New York, N.Y.

Filed May 22, 1974, Ser. No. 472,441

Int. Cl.² F16D *1/06*

U.S. Cl. 403—329 **13 Claims**



13. For use in securing an operating element to a shaft, said operating element having a recess extending interiorly therein from an open end thereof,

a retainer disposed in said operating element recess and having a first end inwardly in said recess of a second opposed end of said retainer,

said retainer defining a hollow interior for receiving said shaft and having spring means for resiliently engaging said shaft,

said spring means comprising first and second spring members extending respectively from said retainer first and second ends, said first spring member having a greater average section modulus than said second spring member.

3,961,856

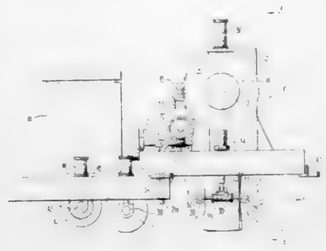
SOIL COMPACTING MACHINE

Ernest Degenhart, Urbanizacion Bustamante No. 2, Avenue Espana, San Salvador, El Salvador

Filed Feb. 20, 1975, Ser. No. 551,376

Int. Cl.² E01C *19/34*

U.S. Cl. 404—133 **6 Claims**



1. A soil compacting machine comprising frame means with a rotary shaft mounted thereon, a plurality of hammers serving as compacting elements, each of said hammers having a curved opening through which said shaft extends, each said hammer having a ground-engaging surface, ground-engaging means on said frame means for stabilizing the machine during its soil compacting operation, arm members mounted along said shaft for rotation therewith, one of said arm members being associated with each of said hammers and each being mounted eccentrically with respect to said hammer openings at different radial positions along said shaft, means for rotating said shaft to effect a walking movement of the machine in forward and reverse directions whereby, upon said rotation, said hammers are caused to be moved successively upwardly as said arm members each rotate between an approximately forward or rearward horizontal position and an upward vertical position, and whereby said hammers are permitted to be moved successively downwardly into contact with the soil as said arm members rotate beyond their approximately rearward or forward horizontal positions, each said hammer remaining in contact with the soil at said opposite end thereof during rotation of its respective arm member between the approximately rearward or forward and the approximately forward or rearward horizontal positions thereof, whereby said hammers effect a kneading action against the soil to thereby expel the air therefrom and effect an orientation of the soil crystals for improving upon the compaction of the soil surface.

3,961,857

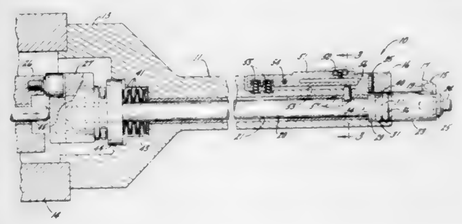
BORING BAR OR THE LIKE

Robert T. Koblesky, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed Jan. 27, 1975, Ser. No. 544,318

Int. Cl.² B23B *29/034*

U.S. Cl. 408—83 **2 Claims**



2. Cutting apparatus comprising a rotatable bar having an outer end, a shaft telescoped axially within said bar and supported to turn about a rotational axis which is offset radially

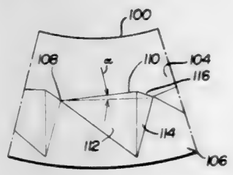
from the axis of the bar, selectively operable drive mechanism for rotating said shaft about its rotational axis, a cutting tooth fixed rigidly to said shaft and located outwardly beyond the outer end of said bar, said tooth being moved from an inactive position located radially inwardly of the periphery of the bar to an active cutting position located radially outwardly of the periphery of the bar when said shaft is turned in one direction within said bar, said shaft being slidable axially within said bar between first and second positions, connecting means adjacent the outer end portions of said bar and said shaft and engageable to couple said bar and said shaft for rotation in unison when the shaft is in said first position and releasable to uncouple said bar and said shaft and permit said shaft to turn within said bar when the shaft is in said second position, angularly spaced support pads mounted on the periphery of said bar to move substantially radially between inwardly retracted and outwardly projected positions, means for urging each pad to its inwardly retracted position, and means engageable with said shaft and operable to move each pad to its outwardly projected position when said shaft is in said second position and is turned to move said cutting tooth from its inactive position toward its cutting position.

3,961,858

COMPOUND ANGLE CUTTING EDGE

Billy R. Smith, and Francis Moses Smith, both of Warren, Mich., assignors to B&M Die Co., Inc., Warren, Mich.

Filed June 11, 1975, Ser. No. 585,802
Int. Cl.² B23B *51/04*
U.S. Cl. 408—204 **13 Claims**



1. A cutting tool having a shank terminating in a cutting portion which includes two converging surfaces forming a convergent angle of between one and thirty degrees, wherein the improvement comprises a plurality of side-by-side notches formed in one of the converging surfaces of said cutting portion, said notches defining (a) a series of generally equally spaced sharp piercing points and (b) a primary cutting edge extending away from each piercing point toward the next adjacent piercing point, each primary cutting edge extending substantially the entire distance between two adjacent piercing points and defining an angle in side elevation of the cutting tool with a line through the piercing points of between one and fifteen degrees, and each primary cutting edge defining an angle in plan view of the cutting tool with a line through two adjacent piercing points of between about zero and 15°.

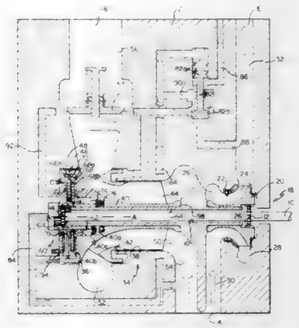
3,961,859

CLUTCH CONNECTED MULTI-STAGE IMPELLER PUMP

John E. Cygnor, Middletown, and Jack G. Sundberg, Meriden, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Filed Apr. 17, 1975, Ser. No. 568,905
Int. Cl.² B27C *9/00*
U.S. Cl. 415—18 **4 Claims**

1. A pumping system comprising:
a first impeller pump having an inlet and an outlet;
a second impeller pump having an inlet and an outlet, the second impeller pump comprising: housing means, and an impeller element, having a hub, mounted for rotation within the housing means;
means to drive the first impeller pump, the drive means comprising: a splined drive shaft mounted within the housing means;
clutch means to connect the drive means to the second impeller pump to disconnect the drive means from the second impeller pump, the clutch means comprising: a pressure operated friction clutch in driving connection with the splined shaft and adapted to contact a surface on the hub during clutch engagement;



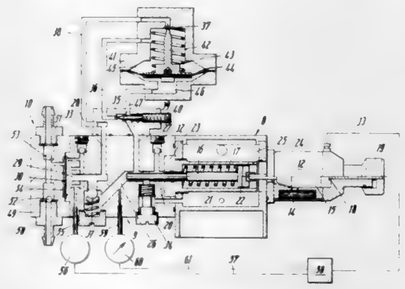
means to engage and disengage the clutch means for respectively connecting the second impeller pump to the drive means and disconnecting the second impeller pump from the drive means, the engaging and disengaging means comprising: means to apply a first fluid pressure to the clutch for engagement thereof, means to apply a second fluid pressure to the clutch which is higher than the inlet pressure for the second impeller pump to facilitate clutch disengagement and prevent clutch self-engagement in the absence of an application of the first fluid pressure, and a spring interposed between the clutch and the hub for urging the clutch to a disengaged position.

3,961,860

PROPORTIONING PUMP

Franz Ernst, Aglasterhausen, Germany, assignor to Chemie and Filter GmbH, Heidelberg, Germany

Continuation of Ser. No. 258,977, June 2, 1972, abandoned. This application Mar. 3, 1975, Ser. No. 554,651
Claims priority, application Germany, June 15, 1971, 2129588
Int. Cl.² F04B *9/10*
U.S. Cl. 417—44 **10 Claims**



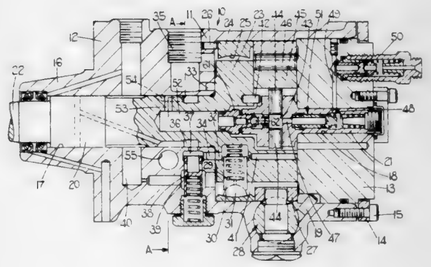
1. A metering pump unit comprising a first pumping means having a movable pumping element which provides first and second oppositely expanding and contracting chambers on opposite sides thereof, inlet and outlet valve means for said first chamber to effect the flow of fluid into and out of said first chamber upon the respective expansion and contraction thereof, second pumping means and an expansible chamber, parallel supply and return fluid paths between said expansible chamber of said second pumping means and said second chamber of said first pumping means, adjustable throttle means in said supply path for varying the quantity of a fluid delivered to said second chamber per time unit during the forward stroke of said second pumping means, and one way valve means in said return path.

3,961,861

FUEL PUMPING APPARATUS

Dorian Farrar Mowbray, Burnham, England, assignor to C.A.V. Limited, Birmingham, England

Filed Dec. 30, 1974, Ser. No. 537,413
Claims priority, application United Kingdom, Jan. 4, 1974, 362/74
Int. Cl.² F04B *3/00, 29/00*
U.S. Cl. 417—265 **4 Claims**



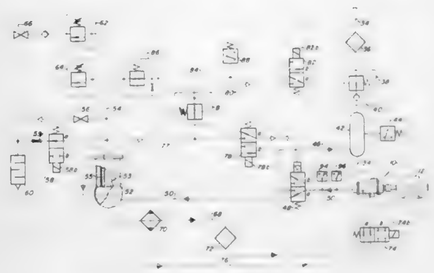
1. A liquid fuel pumping apparatus for supplying fuel to internal combustion engines, comprising a body, said body comprising a generally cup-shaped portion having an open end and a base portion, said body also including a plug portion which is retained, within said open end of said cup-shaped portion, a cylindrical rotor mounted within said body and rotatable in synchronism with an associated engine, said rotor having a first portion located in a bore of said cup-shaped portion of said body with an enlargement axially located between said base portion and said plug portion, said enlargement having side faces bearing against said base portion and said plug portion, fuel passage means opening out onto said side faces for providing lubrication thereof, said rotor also having a second portion separate from said first portion and located in a bore in said plug portion of said body, a transversely disposed bore formed in said second rotor portion, a pair of pumping plungers housed in said bore, cam means for imparting inward movement to the plungers, a fuel feed pump for supplying fuel at a low pressure, said first portion of the rotor and said cup-shaped portion of the body accommodating said fuel feed pump and also accommodating cooperating passage means for effecting a timed supply of fuel from the feed pump to said bore to effect outward movement of the plungers, means for controlling the amount of fuel supplied to the bore, and first passage means in said second rotor portion for conveying high pressure fuel discharged from said bore during successive inward movement of the plungers to successive outlet ports in turn, said outlet ports being located in said plug portion.

3,961,862

COMPRESSOR CONTROL SYSTEM

Soren E. H. Edstrom; Richard L. Ertel, and Robert A. Litteken, all of Quincy, Ill., assignors to Gardner-Denver Company, Dallas, Tex.

Filed Apr. 24, 1975, Ser. No. 571,179
Int. Cl.² F04B *49/00, 49/02*
U.S. Cl. 417—282 **13 Claims**



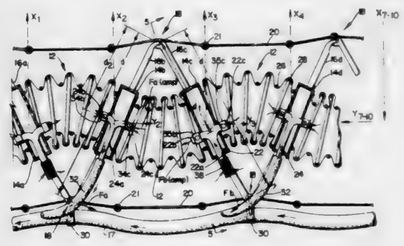
1. In a gas compressor apparatus:
a positive displacement rotary gas compressor including a gas inlet port and a gas discharge port;
an inlet conduit in communication with said inlet port;
a discharge conduit means in communication with said discharge port and a compressed gas receiver;
an inlet valve for closing off the flow of inlet gas into said inlet conduit;
means defining a chamber in communication with said inlet conduit between said inlet valve and said inlet port;
valve means interposed in said discharge conduit means between said discharge port and said receiver and operable to interrupt the flow of gas from said discharge port to said receiver and place said discharge port in fluid flow communication with said chamber; and,
control means for operating said inlet valve to close off the flow of inlet gas into said compressor and upon substantial evacuation of gas from said chamber operating said valve means to place said discharge port in communication with said chamber whereby the power consumed by said compressor is reduced.

3,961,863

WATER ACTION POWERED PUMP

Lee Ezekiel Hooper, III, 11 Sandpiper Road, Tampa, Fla. 33609

Filed Jan. 13, 1975, Ser. No. 540,544
Int. Cl.² F04B *17/00*
U.S. Cl. 417—334 **17 Claims**



1. Apparatus for converting surface motion of a fluid body into usable energy comprising:
pumping means responsive to multiplanar activating forces for pumping a fluid;

flotation means distributed along a length of said pumping means for floating said pumping means at active strata of the fluid body;

a plurality of lever arm struts rigidly connected to said flotation means, the ends of said lever arm struts being pivotally coupled together, including means for preventing excessive expansion of said pumping means, thereby converting natural motions of the fluid body into multi-planar forces for activating said pumping means; and

means for transferring the pumped fluid from said pumping means to a load.

3,961,864
RADIAL FLOW FAN

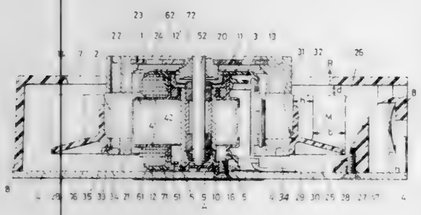
Georg Papst, St. Georgen, and Guenter Wrobel, Villingen, both of Germany, assignors to Papst-Motoren KG, Germany

Filed Nov. 23, 1973, Ser. No. 418,213

Claims priority, application Germany, Nov. 23, 1972, 2257509

Int. Cl.² F04B *35/04*; **B63H** *1/28*; **H02K** *5/00, 9/00*

U.S. Cl. 417—354 **20 Claims**



1. A radial flow fan comprising:

fan wheel means which includes a plurality of fan blades and is rotatable about a fan wheel axis,

drive motor means arranged coaxially with respect to the fan wheel means for imparting rotational movement to said fan wheel means, at least part of said drive motor means being arranged within the fan wheel means intermediate the outer periphery of the fan wheel means and the fan wheel axis, said drive motor means including a stator and a rotor,

fan casing means including circumferentially extending casing wall means which extends circumferentially around said fan wheel means at a spacing therefrom and casing end wall means at each of the respective opposite axial end faces of said circumferentially extending wall means,

outlet port means provided in said circumferentially extending wall means for accommodating discharge of gas out of said casing means in a radial direction with respect to the axis of rotation of the fan wheel means,

and inlet port means in a first of said end wall means for accommodating flow of gas into said casing means in communication with said fan blades,

wherein said rotor includes a plurality of bores therethrough distributed along the circumference of a short-circuit end ring of said rotor, said plurality of bores extending parallel to said fan wheel axis, and

wherein a continuous annular groove is provided at the axial end of said rotor facing a second of said end wall means, said annular groove being communicated with said bores and being defined on the outside by an external annular groove wall, said annular groove wall including portions bendable over portions of a collar of said fan wheel means to connect said fan wheel means to said rotor.

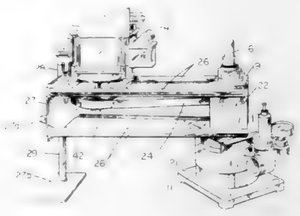
3,961,865
CONVERSION BRACKET FOR WELL PUMP

Vernon E. Spaulding, Rte. No. 3, Box 149, Vine Grove, Ky. 40175

Filed July 12, 1974, Ser. No. 488,031

Int. Cl.² F04B *9/14*

U.S. Cl. 417—362 **3 Claims**



1. A bracket assembly for converting a conventional well pump driven by an attached electric motor to internal combustion engine drive, said bracket assembly comprising in combination a drive shaft housing formed by horizontal upper and lower plates held in vertically spaced relation by vertical side members extending between the plates, a vertical drive shaft extending through and supported for rotation by said upper and lower plates, said lower plate being adapted to overlie a conventional well pump, the lower end of the drive shaft extending into drive relation with the pump, a plurality of spaced arms extending sidewardly from the upper portion of said drive shaft housing and rigidly secured to an end plate spaced horizontally from said drive shaft, a support leg carried by the end plate, a small internal combustion engine supported on said spaced arms with its output shaft extending vertically downward between said arms, and motion transmission means extending between the engine output shaft and said drive shaft and disposed in the space bounded by said spaced arms.

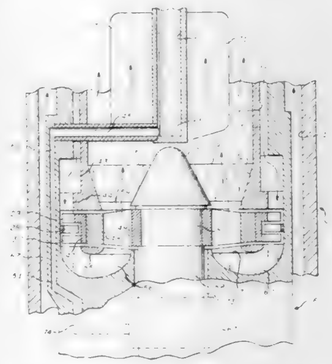
3,961,866
GEOTHERMAL ENERGY SYSTEM HEAT EXCHANGER AND CONTROL APPARATUS

Kenneth E. Nichols, Arvada, Colo., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 14, 1974, Ser. No. 497,441

Int. Cl.² F04B *17/00, 35/00*; **F03G** *7/02, 7/04*

U.S. Cl. 417—379 **4 Claims**



1. In geothermal deep well pump apparatus of the kind including deep well pump means for pumping a geothermal fluid always in liquid state for flow in cooperative energy-exchanging relation with respect to a second fluid:

injection conduit means for conveying said second fluid in liquid state from a station adjacent the earth's surface at a pressure above the pressure of said geothermal fluid,

first discrete heat exchanger means responsive to said geothermal fluid for converting a first portion of said second fluid into its vapor,

motive means coupled to said deep well pump means utilizing energy of said vapor for pumping said geothermal fluid, thereby cooling said vapor,

second discrete heat exchanger means responsive to said cooled vapor for cooling a second portion of said second fluid,

said motive means utilizing said cooled second portion of said second fluid for lubricating bearings thereof while in liquid state,

vapor conduit means disposed generally concentrically about said injection conduit means for transfer of said cooled vapor to said station adjacent the earth's surface,

geothermal fluid conduit means disposed generally concentrically about said vapor conduit means for transfer of said geothermal fluid to said station adjacent the earth's surface, and

vapor expansion diffuser means disposed within said cooled vapor in said vapor conduit means between said motive means and said second discrete heat exchanger means,

said motive means, said vapor expansion means, and said second discrete heat exchanger means being disposed in immediate successive axial relation along said vapor conduit means,

said vapor expansion diffuser means cooperating in cooling said second fluid, and

said vapor expansion diffuser means being supported adjacent said motive means by radial vanes extending from said vapor conduit means inner surface, said vanes additionally providing reduced rotation of said cooled vapor at said vapor expansion diffuser means.

3,961,867
ROTATABLE ASSEMBLY WITH ROTOR ABRADED BY SEAL RING

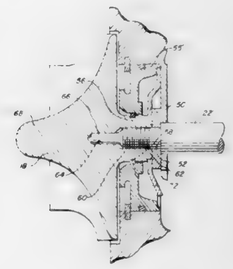
William E. Woollenweber, Columbus, Ind., assignor to Holset Engineering Company Limited, Turnbridge, England

Filed Mar. 27, 1974, Ser. No. 455,068

Claims priority, application United Kingdom, Apr. 6, 1973, 16521/73

Int. Cl.² F03B *11/00*; **F03D** *11/00*; **F16J** *15/34*

U.S. Cl. 417—407 **4 Claims**



1. A high speed rotatable assembly comprising a housing; a rotor rotatably mounted within said housing, said rotor having an axially extending sleeve portion provided with an axial bore and an external groove; a shaft rotatably mounted within said housing and having one end thereof disposed within said sleeve bore; a backing plate attached to the housing interior surface, said plate being provided with a stepped bore through which said rotor sleeve portion extends, said stepped bore having a large diameter portion and a small diameter portion, the latter forming a step located intermediate the sleeve external groove and the open end of the sleeve bore; seal means disposed within said sleeve external groove and encompassing said sleeve exterior and frictionally engaging the large diameter portion of said plate stepped bore, said seal means having greater wear-resistant characteristics than that of the sleeve portion defining said external groove accommodating said seal means, said seal means having one end face thereof subjected to pneumatic forces urging said seal means towards said step when said rotor is rotating; and thrust bearing means disposed intermediate said sleeve portion and an abutment on said shaft.

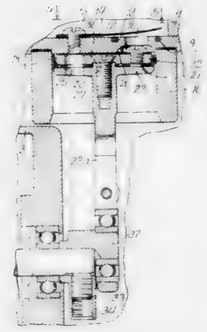
3,961,868
AIR COMPRESSOR

Arthur John Droege, Sr., and Richard Charles Bell, both of Sheboygan, Wis., assignors to Thomas Industries, Inc., Sheboygan, Wis.

Filed Feb. 21, 1974, Ser. No. 444,472

Int. Cl.² F04B *39/10*

U.S. Cl. 417—550 **1 Claim**



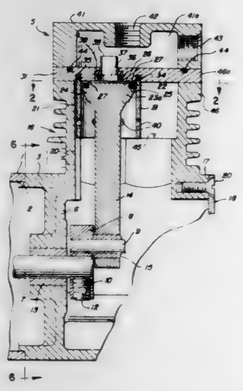
1. In a compressor the combination of a cylinder (10) having a cylindrical interior working wall and a cylinder head (9), a discharge check valve (14) having a passageway (16) through said cylinder head, said valve comprising a thin parallel sided flat strip of spring metal attached at one end to the top side of said cylinder head, a piston (22,23) in said cylinder, said piston having an inlet passageway (25) therethrough and an inlet check valve (30) for said passageway permitting gaseous fluid to flow through the piston inlet passageway into the cylinder from below the piston, a crank shaft (5) having a stationary bearing (4) rigid with the cylinder and having a crank with a crank pin (32), a piston rod (23a) rigidly connected at its outer end with the piston and having a free end with a crank bearing journaled on said crank pin (32), said piston comprising a circular base plate (23) rigidly attached to the end of the piston rod (23a) remote from the aforesaid crank bearing and an upper circular flat clamping plate (22), a flexible nonmetallic cupped sealing disk (26) of a free diameter greater than the diameter of the bore of the cylinder and having a central flat portion clamped between said circular base plate (23) and said clamping plate (22) and comprising an integral peripheral flange engaging the walls of the cylinder in sliding relation, said cupped nonmetallic flanged disk (26) comprising a thin circular body of Teflon of substantially uniform thickness, the flange of said disk fitting against the walls of the cylinder on both suction stroke and discharge stroke of the piston, said inlet check valve (30) having a passageway connecting the space below the piston with the inside of the cylinder, and the discharge check valve (14) providing a connection from inside the cylinder through the cylinder head, said check valve comprising a thin flat flexible strip of spring metal attached at one end to the cylinder head (9), the flange of said Teflon disk maintaining the metal parts of the piston out of metal-to-metal contact with the cylinder

walls during reciprocation of said piston, said circular Clamping plate (22) having a central axial opening countersunk at its upper end, the disk (26) having a central opening in register with the opening of the aforesaid clamping plate 22, the base plate (23) on the upper end of the connecting rod having a threaded screw socket, there being registering central openings through the clamping plate and the disk, a central conical headed clamping screw threaded into said threaded socket far enough to bring its head below the level of the upper surface of the clamping plate (22) for clamping the plate (22), the flexible disk (26) and the end of the connecting rod together, and the discharge valve comprising a thin flat parallel-sided spring held by a clamping screw threaded into the clamping plate (22) over the countersunk screw (27) and over the inlet passageway (25).

3,961,869
AIR COMPRESSOR

Arthur John Droege, Sr., Sheboygan, Wis., and Richard Charles Bell, Pittsburgh, Pa., assignors to Thomas Industries, Inc., Sheboygan, Wis.

Filed Sept. 26, 1974, Ser. No. 509,691
Int. Cl.² F04B *21/04*; F01B *7/00*
U.S. Cl. 417—555 R **2 Claims**

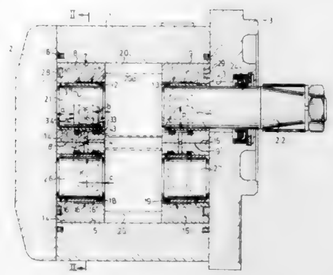


1. In a gas compressor, a hollow main frame comprising a generally cylindrical crank case adapted to be disposed with its longitudinal axis in horizontal position and having a substantially vertical end wall, a horizontal crank shaft extending through and journaled in said end wall, said frame comprising a tubular neck portion disposed substantially at right angles to the axis of the crank case, said neck portion being joined to and opening into said crank case, a substantially horizontally disposed cylinder supporting plate mounted upon and closing the upper end of said tubular neck portion, an inverted cup-shaped delivery chamber having its rim superposed upon the margins of the upper side of the cylinder-supporting plate, a compressor cylinder with its axis substantially at right angles to the axis of the crank shaft mounted to and sealed to the lower side of said plate, there being a check valve passageway through said plate from the inside of the cylinder to said delivery chamber, a wobble piston and a piston rod fixed to said piston cooperating with said cylinder, a crank on said crank shaft coupled to said piston rod, and means for admiting air to the cylinder upon the outward stroke of the piston, said neck portion of the main frame having an internal horizontal shoulder for engagement with the lower end of said cylinder, the bore of the hollow neck portion being oblong in cross section to permit displacement of the cylinder laterally along said crank shaft to disconnect the lower end of the piston rod from the crank pin for removal of the cylinder and contained piston with piston rod from the hollow main housing.

3,961,870
GEAR PUMP OR MOTOR WITH RADIAL BALANCING

Jan Vlemmings, Hochdorf, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 15, 1974, Ser. No. 515,042
Claims priority, application Germany, Oct. 25, 1973, 2353445
Int. Cl.² F01C *21/02*; F03C *3/00*; F01C *19/08*; F04C *15/00*
U.S. Cl. 418—73 **12 Claims**



1. In a hydraulic machine, a combination comprising a housing having an inlet opening for admission of hydraulic fluid and an outlet opening for evacuation of fluid, the pressure of fluid in one of said openings being higher than the pressure of fluid in the other of said openings; a pair of mating gears rotatable in said housing and having two end faces and coaxial stubs extending beyond said end faces; bearing members mounted in said housing, one for each of said stubs and each having a bore for the respective stub, each of said bores having a smaller diameter portion remote from the respective gear and a larger diameter portion nearer to the respective gear and joined at a shoulder to the smaller diameter portion, said bearing members having internal surfaces bounding said bores thereof and said stubs transmitting forces radially of said bearing members when said machine is in operation, each of said internal surfaces having an arcuate groove extending from said shoulder to the nearest end face of the respective gear and each of said internal surfaces having a portion bounding the respective groove and said bearing members having recesses in said portion of said internal surfaces; cylindrical sleeves surrounding said stubs, each of said sleeves extending with minimum clearance into the smaller diameter portion and being radially spaced from the larger diameter portion of the respective bore; and means for producing hydrostatic pressure fields between said stubs and the respective bearing members to counteract said forces, including sealing elements disposed in said grooves, extending into the respective recesses and engaging the outer surface of the respective sleeves and being spaced apart from the nearest end face of the respective gear, said sealing elements defining fluid-filled plenum chambers.

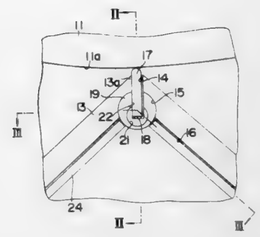
3,961,871
CORNER SEAL MEANS FOR ROTARY PISTON TYPE ENGINES

Noriyuki Kurio, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Japan

Filed Jan. 16, 1975, Ser. No. 541,572
Claims priority, application Japan, Jan. 23, 1974, 49-10646[U]; Nov. 8, 1974, 49-135850[U]
Int. Cl.² F01C *19/10*
U.S. Cl. 418—121 **4 Claims**

1. In a rotary piston type engine comprising a casing which includes a rotor housing with a trochoidal inner peripheral wall and a pair of side housings sealingly secured to the opposite sides of the rotor housing, and a polygonal rotary piston disposed in the casing for rotation relative thereto and having a plurality of apex portions, the rotary piston being provided

with apex seals disposed at apex portions thereof, side seals on each end surface of the piston substantially along the periphery thereof and corner seals on each end surface of the piston at the apex portions thereof, characterized by the fact that said corner seal comprises a substantially cylindrical body, an

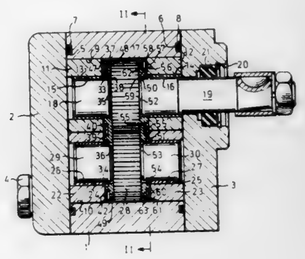


axial bore of circular cross-section radially offset from the axis of the body with the center of said axial bore located below the axis of the body, and a substantially radially extending slot provided in the body at the side opposite to the direction of offset of the bore so as to define a substantially C-shaped cross-section of varying wall thickness.

3,961,872
GEAR MACHINE WITH FLUID-BIASED END FACE SEALING ELEMENTS

Karl-Heinz Müller, Gerlingen; Wolfgang Talmon, Otisheim, and Wilhelm Dworak, Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Dec. 17, 1974, Ser. No. 533,674
Claims priority, application Germany, Jan. 24, 1974, 2403319
Int. Cl.² F01C *19/08*; F03C *3/00*; F04C *15/00*
U.S. Cl. 418—132 **19 Claims**

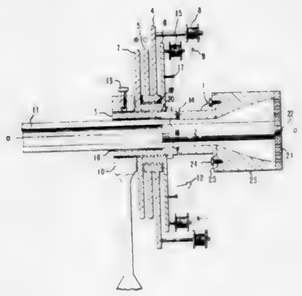


1. In a hydraulic gear machine, particularly a gear pump or motor, a combination comprising a housing having an inner surface bounding a cavity; a pair of gears in said cavity and having meshing teeth; means for mounting said gears for rotation about spaced axes and including bearing elements; sealing elements interposed between said bearing elements and said gears, said bearing elements being juxtaposed with said housing and said sealing elements along respective interfaces and defining with said housing and said sealing elements respective recesses into which said interfaces open; and seal member accommodated in said recesses and delimiting therein confined spaces for a pressurized fluid, each of said seal members having one sealing face which engages said inner surface of said housing and another sealing face which engages a circumferential surface radially inwardly bounding said recess and being operative for interrupting communication between said confined spaces and said interfaces to thereby prevent the pressurized fluid from reaching and leaking through said interfaces.

3,961,873
APPARATUS FOR REINFORCING TUBING

Martin Luther Brown, Elkton, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1975, Ser. No. 546,180
Int. Cl.² B29F *3/00*
U.S. Cl. 425—114 **4 Claims**



1. An apparatus for reinforcing elastomeric or plastic tubing which comprises:

a. a cylindrical mandrel,

b. a means connected to said mandrel for attaching the cylindrical mandrel to an extruder,

c. a first ring die surrounding and concentric with the cylindrical mandrel,

d. a means connected to said first ring die for attaching the first ring die to the extruder,

e. a second ring die surrounding and concentric with the cylindrical mandrel and longitudinally spaced apart from the first ring die to form an annular opening,

f. a means connected to said second ring die for supporting the second ring die, and

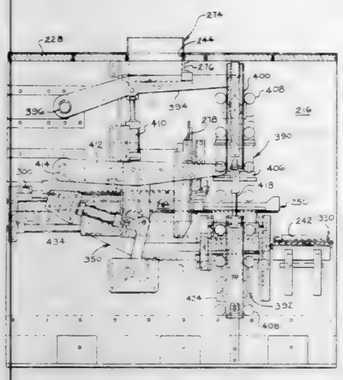
g. a pair of spool carriers, the first of which is rotatably mounted on bearings which are located on the outer surface of the second ring die, and the second of which is rotatably mounted on bearings which are located on the outer surface of the base of the first spool carrier so that the spool carriers can rotate in opposite directions around the axis of the cylindrical mandrel which runs perpendicular to all radii of the cylindrical mandrel, said spool carriers for holding spools of reinforcing filament.

3,961,874

SOUND INSULATED BLOCK MOLDING MACHINE

Milo G. Balhorn, Waterloo, Iowa, assignor to Old Fort International, Inc., Adrian, Mich.

Filed Jan. 27, 1975, Ser. No. 544,137
Int. Cl.² B28B *1/08, 3/00*
U.S. Cl. 425—211 **26 Claims**



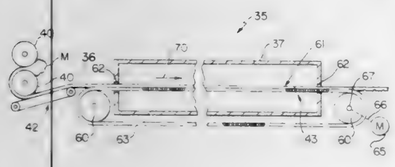
1. An improved block molding machine having a frame and a plurality of movable compounds for molding blocks, said components including a moldbox mountd for vibrational movement, a feed drawer mounted for movement between a retracted position and an advanced position to deposit successive charges of material into the moldbox, a pressure head mounted for movement onto material in the moldbox for compressing the material to form a block during vibrational movement of the moldbox and to cooperate in stripping a compressed block from the moldbox, a strip mechanism mounted for movement for stripping the compressed block from the moldbox, and an ejector and pallet feed mechanism mounted for movement to eject the pallet and the compressed block thereon from below said moldbox and to deposit a succeeding pallet below said moldbox, the improvement comprising said frame having right and left side rigid frame panels connected in generally parallel relationship and on the inner surfaces of which said components are mounted for support for making their various movements, said frame being substantially closed at the front, top and rear by sound insulation panels so that said frame panels and sound insulation panels cooperating to define a sound insulation enclosure for said movable components and also to provide a shield to protect operators from exposure to the movable components during operation of the block molding machine.

3,961,875

APPARATUS FOR MAKING CARPET UNDERLAY

George R. Sprague, Dyersburg, Tenn., assignor to Colonial Rubber Works, Inc., Dyersburg, Tenn.

Division of Ser. No. 380,429, July 18, 1973. This application June 26, 1975, Ser. No. 590,662
Int. Cl.² B29H *3/00*
U.S. Cl. 425—224 **6 Claims**



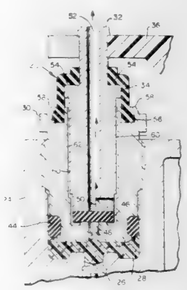
1. An apparatus for making carpet underlay comprising, a device for providing a controlled environment comprising a heating means for curing a sheet of elastomeric material which is adapted to define said carpet underlay, means for supporting said sheet in said device, said supporting means comprising a wire-like mesh material having a plurality of undulating members with each adjacent pair of undulating members being held together by a common tie member, and elongated flat strip means supported by each undulating member, said flat strip means being adapted to support portions of said sheet once it is exposed to the environment of said device so that carpet underlay defined using said device and supporting means has a plurality of coplanar load-carrying portions defined by said flat strip means.

3,961,876

VALVE ASSEMBLY

Stephen P. Chernock, Flax Mill Lane, Milford, Conn. 06460

Filed June 6, 1974, Ser. No. 477,037
Int. Cl.² F23D *13/04*
U.S. Cl. 431—344 **4 Claims**



1. A leak-free valve assembly comprising:

a. a housing incorporating

a. a combustible fluid portal positioned for receiving and passing said combustible fluid therethrough,

b. an internal chamber extending substantially the entire length of said housing and communicating with said fluid portal;

b. a hollow valve stem a major portion of which is slidably mounted within said internal chamber of said housing, the remainder of which extends therefrom above said housing, said valve stem being movable from a first closed position to a second open, fluid flow position;

c. a flexible, leak-preventing member peripherally surrounding and encapsulating portions of said housing and said valve stem, with

a. one end thereof sealingly engaged about a shoulder of the valve stem above the housing with the valve stem extending through and above said member, and

b. the remainder thereof extending therefrom peripherally surrounding the valve stem, with the other end pressed between opposed upper portions of said housing and biasing the valve stem into a closed position,

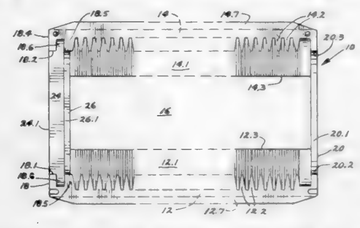
whereby leakage between the outer peripheral surface of the valve stem and the inner chamber of the housing to the atmosphere is completely eliminated by said leak-preventing member completely sealing any leakage zone.

3,961,877

REINFORCED WAFER BASKET

Douglas M. Johnson, Carver, Minn., assignor to Fluoroware, Inc., Chaska, Minn.

Filed Sept. 11, 1974, Ser. No. 504,904
Int. Cl.² F27D *5/00*
U.S. Cl. 432—253 **13 Claims**



1. A reinforced, distortion-resistant wafer basket having an open top for insertion and removal of wafers, an open bottom, opposed, upright end walls, and side walls with inner, opposed ribs for spacing axially aligned wafers in the basket, the side walls having lower portions offset inwardly to stiffen the side walls and to support wafers from beneath, one end wall of the basket having a central recess therein with a transverse indexing bar extending thereacross intermediate the heighth of the basket, the one end wall including a transverse flange providing stiffening gussets extending between the side walls and the indexing bar to reinforce the recessed end wall against distortion and to co-act with the offset side walls to stiffen the basket and restrain twisting or bowing of the side walls.

3,961,878
ELECTROSTATIC SPRAYING OF FIXING AGENTS

Miro Capponi, Muttenz, Switzerland, and Jacques Moreau, Mulhouse, France, assignors to Sandoz Ltd., Basel, Switzerland

Filed Feb. 15, 1974, Ser. No. 443,076
Claims priority, application Switzerland, Feb. 16, 1973, 2324/73
Int. Cl.² D06P *5/20*
U.S. Cl. 8—2 **9 Claims**

1. A process for fixing on a textile substrate a reactive dye which has been previously dyed or printed thereon which comprises applying to the dyed or printed substrate, in an electrostatic field, a spray consisting essentially of droplets of an aqueous solution of a fixing agent selected from the group consisting of alkali metal hydroxides, alkali metal carbonates, alkali metal bicarbonates and ammonium carbonate, said solution being of a concentration of 0.5 to 20%.

3,961,879
DYE COMPOSITION FOR KERATINIC FIBERS CONTAINING A PHENOL COUPLER

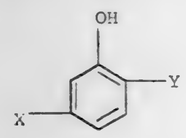
Andree Bugaut, Boulogne-sur-Seine, and Monique Laudon, Gagny, both of France, assignors to L'Oreal, Paris, France

Filed June 24, 1974, Ser. No. 482,559
Claims priority, application Luxemburg, June 22, 1973, 67862
Int. Cl.² A61K *7/13*
U.S. Cl. 8—10.2 **15 Claims**

1. A dye composition for keratinic fibers comprising an aqueous or hydroalcoholic solution of

a. at least one oxidation base comprising a paraphenylenediamine, present in the form of a free base, or in the form of an acid addition salt thereof and

b. at least one coupler of the formula:



wherein Y represents a member selected from the group consisting of $-NHCOCH_3$ and $-NHCONH_2$; and X represents a member selected from the group consisting of fluorine, chlorine, and bromine, or the acid addition salt of said coupler, said coupler being present in an amount of 0.05 to 4% based on the total weight of the composition and the molar ratio of said oxidation base to said coupler being between 5:1 and 1:2.

3,961,880
CONTINUOUS PROCESS FOR OPTICAL BRIGHTENING AND PRINTING OF ORGANIC TEXTILE FIBER MATERIAL

Gerhard Reinert, Allschwil; Andres Schaub, Biel-Benken, and Paul Dussy, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 18, 1974, Ser. No. 480,340
Claims priority, application Switzerland, June 29, 1973, 9505/73
Int. Cl.² D06M *13/00*; **D06P** *5/22*
U.S. Cl. 8—17 **19 Claims**

1. Continuous process for the optical brightening and printing of organic textile fibre material, wherein the material is dry cleaned and at least one optical brightener applied from an organic liquor, the said material being then intermediately dried, printed, and subsequently finished by a heat treatment to simultaneously develop the optical brightener and fix the dyestuff.

3,961,881
COLORATION PROCESS

Harry Hall Sumner, and Gerald Williams, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed July 22, 1974, Ser. No. 490,493
Claims priority, application United Kingdom, Aug. 21, 1973, 39429/73
Int. Cl.² D06P *3/06, 3/26*
U.S. Cl. 8—17 **5 Claims**

1. Process for coloring synthetic polyamide textile materials to produce level coloration having excellent wet fastness properties which consists essentially of applying to the said textile materials by a dyeing, padding or printing process an aqueous dispersion of pH less than 7 containing a disperse dyestuff of the azo, anthraquinone, nitro, styryl or quinophthalone series containing a carboxylic acid group, said application being carried out in the presence of a tanning agent selected from tannic acid, vegetable tannin, condensation product of naphthol, naphthalene sulphonic acid and formaldehyde, condensation product of phenol, naphthalene, formaldehyde and sulphuric acid, condensation product of dihydroxydiphenylsulphone and bisulphite, condensation product of naphthalene sulphonic acid, dihydroxydiphenylsulphone and formaldehyde, condensation product of dihydroxydiphenylsulphone sulphonic acid and aliphatic aldehyde or condensation product of sulphurized phenol, naphthalene and formaldehyde.

3,961,882
SCULPTURED PRINTING OF NYLON CARPET

Helmuth Vits, Greenville, and Preston G. Baker, Jr., Taylors, both of S.C., assignors to Bigelow-Sanford, Inc., Greenville, S.C.

Filed July 25, 1974, Ser. No. 491,654
Int. Cl.² D06P *3/24, 5/22*; **D06Q** *1/02*
U.S. Cl. 8—17 **9 Claims**

1. A process for imparting a sculptured design to the pile surface of a polyamide fabric which consists of applying to substantially less than all of its surface area, a printing composition containing a member selected from the group consisting of resorcinol in an amount varying between about 15 and 40% by weight, dilute sulfuric acid in an amount varying between about 10 and 15% by weight and phenol in an amount varying between about 2 and 8% by weight.

3,961,883
PROCESS FOR PRINTING A FIBER PRODUCT CONTAINING ACRYLIC FIBERS AND CELLULOSIC FIBERS

Eichiro Ueno, Wakayama; Hideo Kawasaki, Moriyama, and Syozo Shigita, Hirakata, all of Japan, assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 31, 1973, Ser. No. 411,565
Int. Cl.² D06P *3/87*
U.S. Cl. 8—21 A **10 Claims**

1. A process for dyeing a product of a fiber blend consisting of from about 25 to 75 weight percent of acrylic fibers having substantially no dyesites for anionic dyes and, correspondingly from about 75 to 25 weight percent of a cellulosic fiber, which process comprises: (1) printing said fiber product with a paste comprising an acid dye having a single sulfonic acid group and a ratio of inorganicity/organicity of less than 4 and a dye selected from direct and reactive dyes; and (2) steaming the printed fiber product to fix the dyes, the acrylic fiber being dyed with said acid dye and the cellulose fiber being dyed with the dye selected from reactive and direct dyes.

3,961,884
PROCESS FOR DYEING TEXTILE MATERIAL OF POLYESTER FIBER/CELLULOSE BLENDS

Hasso Hertel, Muhlheim, Main; Willy Gronen, Kelkheim, Taunus, and Hans Kaiser, Offenbach, Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 12, 1974, Ser. No. 505,500
Claims priority, application Germany, Sept. 15, 1973, 2346504
Int. Cl.² D06P *3/82*
U.S. Cl. 8—21 C **8 Claims**

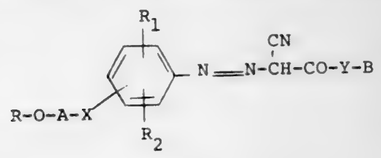
1. In a process for the continuous dyeing of textile material consisting of blends of polyester and cellulose fibers with disperse dyestuffs and water-insoluble azo dyestuffs produced on the fiber, the improvement which comprises: padding the fibrous material with an aqueous solution which contains at least one component capable of entering azo coupling and which is suitable for ice-color dyeing, sodium hydroxide and sodium nitrite, subsequently crosspadding the material so treated with a second aqueous bath at room temperature which contains a solution, a dispersion or an emulsion of at least one amine capable of being diazotized and which is suitable for ice-color dyeing, at least one disperse dyestuff and an acidic agent, and then successively causing formation of the azo dyestuff on the fibers by diazotizing and coupling as well as fixing the disperse dyestuff by subjecting the material to an elevated temperature.

3,961,885
PROCESS FOR THE DYEING OF SYNTHETIC FIBROUS MATERIALS FROM ORGANIC SOLVENTS USING AZO DYES

Walter Birke; Franz Schön, both of Frankfurt am Main, and Willi Steckelberg, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 1, 1973, Ser. No. 412,017
Claims priority, application Germany, Nov. 2, 1972, 2253582
Int. Cl.² C09B *27/00*
U.S. Cl. 8—41 A **4 Claims**

1. A process for the continuous dyeing of textile materials consisting of or containing synthetic fibrous materials of the group consisting of high molecular polyamides, polyolifines, polyacrylonitriles, polyurethanes, polyvinylchlorides, polyvinylacetates, cellulose-2½-acetate, cellulose-triacetate and high molecular polyesters, from organic solvents, which comprises impregnating the said fibrous materials with organic dyebaths containing at least one dyestuff of the formula



in which R is linear or branched alkylcarbonyl of 4 to 18 carbon atoms, X is oxygen or sulfur, Y is a direct linkage or NH, A is linear or branched alkylene of 1 to 4 carbon atoms unsubstituted or substituted by methoxy, ethoxy, phenoxy or R as defined above, B is (1) phenyl unsubstituted or substituted by fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, cyano, carboalkoxy, nitro, acetyl, benzoyl or phenyl, or (2) naphthyl, R_1 is hydrogen or nitro, and R_2 is hydrogen, chlorine, bromine or methyl, and heating the impregnated fibrous materials to a temperature between 100°C and 240°C.

3,961,886
PROCESS FOR THE DYEING AND PRINTING OF CELLULOSE-CONTAINING TEXTILE MATERIALS

Hasso Hertel, Mulheim, and Willy Gronen, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 12, 1974, Ser. No. 505,463
Claims priority, application Germany, Sept. 15, 1973, 23465034
Int. Cl.² D06P *1/02*
U.S. Cl. 8—44 **1 Claim**

1. A process for the continuous dyeing and printing of textile material consisting of or containing cellulose fibers, with water-insoluble azo dyestuffs produced on the fiber, which comprises padding the fiber material with an aqueous solution which contains a 2-hydroxy-naphthalene-3-carboxylic acid phenyl amide, an alkaline agent and an alkali metal nitrite, cross-padding the material thus impregnated, under conditions of room temperature, with a second aqueous bath or printing with a printing paste containing a solution, a dispersion or an emulsion of a 4-amino-diphenyl amine as well as an acidic agent, and bringing about the formation of the azo dyestuff by diazotizing and coupling by a drying process, if desired with the aid of an elevated temperature, a subsequent passage of the dyeings and prints through a hot sodium carbonate solution or both said elevated temperature and sodium carbonate treatment steps.

3,961,887
PROCESS FOR THE PRINTING OF CELLULOSE CONTAINING TEXTILE MATERIAL

Willy Gronen, Kelkheim, Taunus, and Hasso Hertel, Muhlheim, Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 9, 1973, Ser. No. 404,729
Claims priority, application Germany, Oct. 15, 1973, 2249533; Sept. 15, 1973, 2346612
Int. Cl.² C09B *27/00*
U.S. Cl. 8—71 **4 Claims**

1. A process for the printing of cellulose containing textile or textiles consisting completely of cellulose with water-insoluble azo dyestuffs produced on the fiber, which comprises: printing the material previously impregnated with alkaline liquors of (1) β-hydroxy-naphthoic acid arylamides and sodium nitrite or (2) acetoacetic acid arylamides and sodium nitrite, with a printing paste containing an aqueous dispersion of an amine suitable for ice color dyeing having a maximum grain size of 0.03 mm or less, acidifiers and a thickening, and finishing the prints after drying in usual manner by washing, soaping and rinsing.

3,961,888
ACRYLIC FIBER CONVERSION UTILIZING A STABILIZATION TREATMENT CONDUCTED INITIALLY IN AN ESSENTIALLY INERT ATMOSPHERE

John P. Riggs, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 18, 1968, Ser. No. 760,658
Int. Cl.² D06M *3/26*; **C01B** *31/07*
U.S. Cl. 8—115.5 **13 Claims**

1. A process for the stabilization of an acrylic fibrous material comprising heating a fibrous material consisting primarily of recurring acrylonitrile units in an essentially inert atmosphere at a temperature of about 200°C. to 270°C. until a cyclized product is formed in the absence of appreciable oxygen cross-linking which retains its original fibrous configuration essentially intact, and subsequently heating said cyclized product in an oxygen-containing atmosphere at a temperature of about 180°C. to 325°C. until an oxygen cross-

linked stabilized fibrous product capable of undergoing carbonization is formed which retains its original fibrous configuration essentially intact and which is non-burning when subjected to an ordinary match flame.

3,961,889
PROCESS AND AUXILIARY AGENT FOR IMPROVING THE WETTABILITY OF TEXTILE MATERIAL

Walter Birke; Hans-Ulrich von der Eltz, and Franz Schön, all of Frankfurt am Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 5, 1974, Ser. No. 530,001
Claims priority, application Germany, Dec. 7, 1973, 2360985
Int. Cl.² D06P *1/68*
U.S. Cl. 8—115.5 **19 Claims**

1. In a process for wetting a textile material by aqueous treating liquors containing 10 to 60% by volume of a saturated aliphatic alcohol of up to 2 carbon atoms, or dyeing or finishing liquors containing such a mixture, the improvement which comprises adding to said mixture, in an amount of 1 to 8% by volume, an aliphatic, straight-chain or branched, monohydric alcohol of more than 2 carbon atoms.

3,961,890
METHOD FOR WASHING ACRYLIC FILAMENTS

Bruno Brusa; Camillo Panozzo, both of Mestre (Venezia), and Giovanni Zanini, Valdagno (Vicenza), all of Italy, assignors to Montefibre S.p.A., Milan, Italy

Filed Nov. 26, 1974, Ser. No. 527,260
Claims priority, application Italy, Nov. 29, 1973, 31930/73
Int. Cl.² D01F *6/18*; **D06L** *3/16*; **D06M** *3/18, 3/20*
U.S. Cl. 8—137.5 **4 Claims**

1. In a method for washing acrylic filaments in which acrylic filaments made from an acrylic polymer consisting essentially of acrylonitrile homopolymer or copolymer containing at least 35% of acrylonitrile, and produced by wetspinning a solution of said acrylonitrile homopolymer or copolymer in dimethylacetamide, are coagulated, with or without subsequent stretching, and are finally washed with an aqueous wash solution, the improvement wherein the aqueous wash solution contains acetic acid in a quantity between 0.0050% and 0.1% by weight and dimethylamine in such a quantity that the dimethylamine/acetic acid molar ratio is greater than 0.2.

3,961,891
ANTIBACTERIAL LAUNDRY OIL AND DUST CONTROL OIL COMPOSITION

Richard E. Ware, Aston, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Dec. 6, 1974, Ser. No. 530,475
Int. Cl.² B08C *3/00*
U.S. Cl. 8—142 **7 Claims**

1. A dust control fabric impregnated with a composition comprising a major portion of a naphthenic or paraffinic oil and from about 0.0001 to 0.10 weight percent of phenyl mercury oleate, said percent based on total weight of composition.

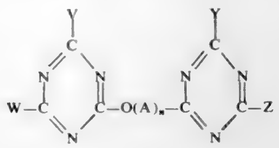
3,961,892
TEXTILE SOFTENING AGENTS

David Paul Bishop, and Ronald Meredith Morris, both of Wirral, England, assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 233,343, March 9, 1972, Pat. No. 3,847,915. This application Feb. 28, 1974, Ser. No. 446,981
Claims priority, application United Kingdom, Mar. 18, 1971, 7179/71
Int. Cl.² D06M *13/18, 13/34*
U.S. Cl. 8—190 **4 Claims**

1. A process for conditioning a textile material composed of fibres selected from the group consisting of cellulose, regenerated cellulose, cellulose ester and cellulose ether fibres comprising

a impregnating the textile material with an aqueous composition comprising a compound of the general formula



(I)

in which A represents an ethenoxy; propenoxy; 1,2 or 2,3 butenoxy group or a combination thereof, VWYZ represent halogen, -OH, $-NRR_1$ or $-OR_1$ providing that at least one of VW and at least one of YZ is halogen and at least one of VWYZ is $-OR_1$ or $-NRR_1$, R represents hydrogen or a C_{12}-C_{30} linear or branched chain alkyl group, R_1 represents a C_{12}-C_{30} linear or branched chain alkyl group, n=1-80

b treating the impregnated material with an aqueous solution containing an acid binding agent and having a pH of at least 7.5;

c heating the treated textile material at a temperature of 100° to 150°C for a time effective to fix the compound.

3,961,893
STEAM DISINFECTOR FOR CONTACT LENSES

James S. Russell, and Arthur G. Nelson, both of Rancho Santa Fe, Calif., assignors to Hydrotherm Corporation, San Diego, Calif.

Filed Oct. 17, 1974, Ser. No. 515,700
Int. Cl.² A61L *3/00*; **H05B** *1/00*
U.S. Cl. 21—95 **1 Claim**

1. A disinfector comprising:

a plastic main housing;

a recess in said main housing terminating in a bottom platform having upper and lower surfaces, said recess and bottom platform forming a lens well, said lens well dimensioned for receiving a standard lens carrier;

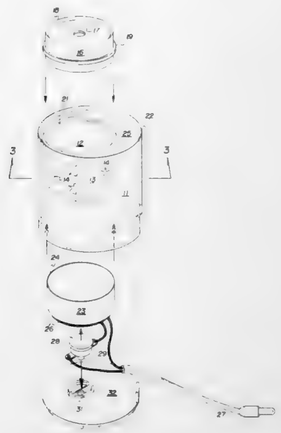
a plurality of apertures in said bottom platform;

a metallic reservoir attached to the lower surface of said bottom platform and disposed directly beneath said apertures, said metallic reservoir having a bottom surface;

a flat annular heating coil carried by and attached to the bottom surface of said metallic reservoir;

a manually resettable thermostat switch mounted on the bottom surface of said reservoir surrounded by said heating coil and connected electrically in series with said heating coil, said thermostat switch being operable for opening the electrical connection upon an increase in temperature when said reservoir is empty; and

a cap removably covering said recess whereby upon placing water in said reservoir and placing a lens carrier with contact lenses therein in said well and applying electrical power to said heating coil, boiling water in the reservoir will cause steam to pass through said apertures, heating said lens carrier therein and disinfecting said lenses, said cap being dimensioned for carrying a predetermined volume of water for emptying into said reservoir and disinfecting any contact lens in a lens carrier in the lens

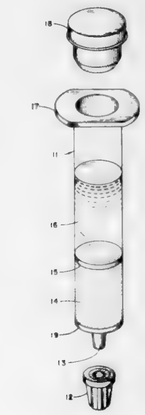


well during a period required for boiling out of said predetermined volume of water.

3,961,894
TEST FOR DETERMINATION OF TRIIODOTHYRONINE

Amirav Gordon, and Jack Gross, both of Jerusalem, Israel, assignors to Yissum Research Development Company, Jerusalem, Israel

Filed Apr. 22, 1974, Ser. No. 462,882
Claims priority, application Israel, Apr. 24, 1973, 42105
Int. Cl.² G01N *33/16*; **G21H** *5/02*
U.S. Cl. 23—230.6 **11 Claims**



1. A method for the in vitro determination of triiodothyronine in a biological fluid sample comprising the steps of:

a. adding to a column containing a crosslinked dextran gel at a pH of at least about 10.5 or less than about 3 a predetermined quantity of said fluid sample and a quantity of radioactive labeled triiodothyronine,

b. washing said column with an aqueous solution having a pH of between about 6 and 9,

c. adding to said column a predetermined quantity of antibody to triiodothyronine,

d. incubating said column,

e. washing said column with an aqueous solution to substantially remove the antibody-bound-triiodothyronine,

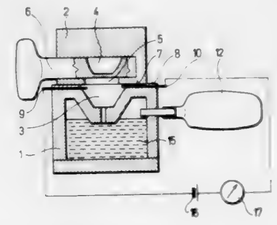
f. determining the ratio of radioactive labeled triiodothyronine retained in said column after step (*e*) to that added in step (*a*), and

g. comparing the ratio determined in step (*f*) to ratios obtained using standard samples containing known amounts of triiodothyronine.

3,961,895
PROCESS AND EQUIPMENT FOR THE DETERMINATION OF CERTAIN COMPONENTS, PARTICULARLY THE CARBON DIOXIDE CONTENT OF GAS MIXTURE

Vilmos Frenyo, Budapest, Hungary, assignor to Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt., Budapest, Hungary

Filed Mar. 17, 1975, Ser. No. 559,044
Claims priority, application Hungary, June 26, 1974, NO 184
Int. Cl.² G01N *27/06, 31/06*
U.S. Cl. 23—232 E **6 Claims**

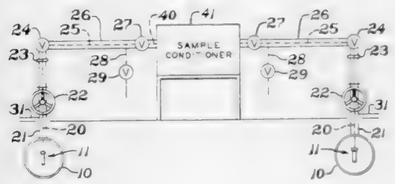


1. A process for the determination of the content of a component of a gaseous mixture, comprising supporting on a solid surface a thin film of a liquid reagent that reacts with said component to change the electrical resistance of the reagent, exposing an exposed surface of said film to a gas to be tested for said component, and measuring the variation of electrical resistance of said film.

3,961,896
ANALYSIS OF NITRILE SYNTHESIS GAS STREAMS

Bobby Eugene Dunn, Murray, Ky., assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 500,802, Aug. 26, 1974, which is a division of Ser. No. 291,741, Sept. 25, 1972, abandoned. This application Nov. 28, 1975, Ser. No. 635,963
Int. Cl.² G01N *33/00*; **C07C** *121/04*
U.S. Cl. 23—232 R **3 Claims**



1. In a method of analyzing the effluent gases resulting from an ammoxidation process wherein a mixture of an aliphatic alpha-monoolefin containing from 2 to 6 carbon atoms per molecule, ammonia and oxygen are passed through a solid ammoxidation catalyst at temperatures in the range of from about 550° to 1150°F. to produce a corresponding unsatu-

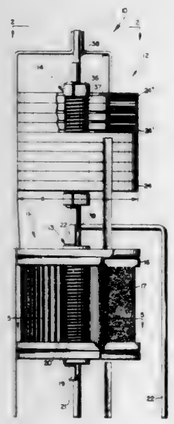
rated aliphatic nitrile, the improvement which comprises withdrawing a portion of the gases leaving said catalyst and cooling same to a temperature in the range of from about 350° to about 450°F., removing solids larger than about 5 microns in diameter therefrom, and subjecting the resulting filtered and temperature-conditioned gas to analysis.

3,961,897

GETTER PUMP

Tiziano A. Giorgi, and Stephen John Hellier, both of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Filed Aug. 30, 1974, Ser. No. 502,092
Claims priority, application Italy, Oct. 1, 1973, 29588/73
Int. Cl.² B01J *1/22*; **F04B** *37/04, 37/06*; **F04F** *11/00*
U.S. Cl. 23—252 R **14 Claims**



1. A getter pump useful for pumping hydrocarbons comprising:

A. a high temperature getter element comprising:
   1. a metallic substrate,
   2. non-evaporable getter metal in the form of particles embedded in the substrate,

B. means for maintaining the high temperature getter element at a temperature of 350° to 700°C,

C. a low temperature getter element comprising a cohesive mass of non-evaporable getter metal, said low temperature getter element being attached to and in flow communication with said high temperature getter element, said getter elements being carried by a common frame and forming a single unit

D. means for maintaining the low temperature getter element at a temperature of 50° to 300°C,

E. means for maintaining a temperature differential of at least 100°C between the low temperature getter element and the high temperature getter element,

F. means for cracking the hydrocarbons,

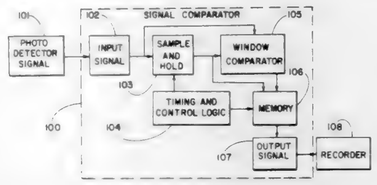
wherein the weight ratio of the getter metal of the low temperature getter element to the getter metal of the high temperature getter element is at least 1:2.

3,961,898

COMPARATOR CIRCUIT FOR AUTOMATIC ANALYSIS APPARATUS

William E. Neeley, Rockville, Md.; Stephen C. Wardlaw, Branford, Conn., and Maurice E. T. Swinnen, Lanham, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 14, 1975, Ser. No. 541,033
Int. Cl.² G01N *21/26*
U.S. Cl. 23—253 R **5 Claims**



1. In a continuous-flow fluid analyzer having a colorimeter flow cell and means for conducting fluid segmented by a substance inert to the fluid through the colorimeter flow cell, the improvement comprising:

a. sampling and storing circuit means receiving signals from the flow cell;

b. memory and recording means connected to and receiving signals from said sampling and storing means;

c. differentiator circuit means connected to said sampling and storing means and to said memory and recording means for limiting voltages received by said memory and recording means;

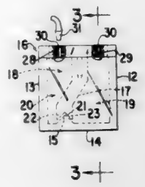
d. logic circuit means including interconnected repetitive pulse generating means, counter means, decoder means and flip-flop circuit means connected to said sampling and storing circuit means and said memory and recording circuit means, said differentiating circuit means selectively controlling said flip-flop circuit means, whereby a selected output signal from said colorimeter flow cell is stored in said storing circuit means and compared with succeeding signals from said flow cell during a cycle of repetitive pulses, said flow cell output signals conducted to said memory and recording circuit means selectively when the voltage difference of said succeeding and stored pulses does not exceed limiting voltages set by said differentiator circuit means and said flip-flop circuit means is activated to permit recording of said selected flow cell output signals.

3,961,899

REACTION CONTAINER FOR CHEMICAL ANALYSIS

Ramesh C. Trivedi; Henry R. Bungay, III, both of Freehold, and Paul J. Cuccolo, Toms River, all of N.J., assignors to Worthington Biochemical Corporation, Freehold, N.J.

Continuation-in-part of Ser. No. 473,942, May 28, 1974, abandoned. This application May 16, 1975, Ser. No. 578,147
Int. Cl.² G01N *31/00*
U.S. Cl. 23—253 R **20 Claims**



1. A disposable reaction container which is composed of rigid or semi-rigid material and which comprises:

a receptacle comprising spaced-apart side walls of substantial lateral extent, a bottom wall and end walls, the inner surfaces of said walls defining a chamber which when upright is open at the top and which is adapted for the retention of a liquid therein;

a projection which extends a substantial distance upwardly from said bottom wall and between said side walls and which separates the lower part of said chamber into two portions each of which is adapted for the retention of a substantial quantity of liquid therein separated from the other portion by said projection;

a cover for said opening at the top of said chamber;

a divider depending from said cover which is contiguous, respectively, with the inner surfaces of said side wall and which at its lower end is in closely adjacent spaced relation to said projection so as to leave an opening of restricted cross section therebetween, said divider together with said projection separating said receptacle into two chambers each of which is adapted for the retention of a liquid therein separated from the other chamber except for said opening; and

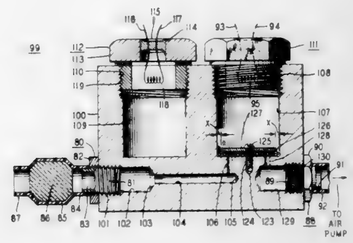
a transparent window in the portion of each of said side walls comprised in one of said chambers, said windows being adapted and disposed for the successive transmission of light therethrough and through a body of liquid of predetermined thickness in said chamber.

3,961,900

COMBUSTIBLE VAPOR DETECTOR

Louis Gintella, Gillette; Harry Kundrat, New Providence, and Anantha K. S. Raman, Gillette, all of N.J., assignors to Catalytic Pollution Controls, Inc., Gillette, N.J.

Continuation-in-part of Ser. No. 367,239, June 5, 1973, abandoned. This application Aug. 1, 1975, Ser. No. 601,081
Int. Cl.² G01N *27/16, 33/22*; **G08B** *21/00*
U.S. Cl. 23—254 E **2 Claims**



1. Apparatus for detecting combustible vapors comprising:

heat sink means, the structure of the heat sink means defining a reference chamber and a sensing chamber;

the sensing chamber being characterized by a lower section which has a bottom portion and sidewalls which have a preselected interior perimeter;

the reference chamber being essentially sealed;

at least one entrance passage and one exit passage being physically separated one from the other and both being located in the bottom portion of the lower section of the sensing chamber;

first and second essentially identical filament means, both of the filament means being adapted to vary in resistive value as a function of the amount of combustible vapor present in air which comes into contact with the filament means;

first circuit means coupled to the first and second filament means, the first circuit means being adapted to generate a first alarm signal if either filament means breaks or burns out;

the first and second filament means being located essentially within the sensing chamber and reference chamber, respectively;

second circuit means comprising a wheatstone bridge circuit having first and second resistive circuit legs, the first leg comprising the first and second filament means, the resistive value of the first and second legs being selected such that when there are substantially no combustible vapors in the sensing and reference chambers the wheatstone bridge is unbalanced, however, if there is a significant amount of combustible vapor in the sensing chamber and substantially none in the reference chamber, the wheatstone bridge goes through balance to an unbalanced condition in the reverse direction;

alarm circuit means being coupled to the wheatstone bridge, the alarm circuit means being adapted to generate a second alarm signal if and only if the wheatstone bridge goes through balance to an unbalanced condition in the reverse direction;

first conduit means in open communication with the entrance passage of the bottom portion of the lower section of the sensing chamber;

second conduit means in open communication with the exit passage of the bottom portion of the lower section of the sensing chamber;

air pumping means in communication with the second conduit means, the air pumping means being adapted to continuously draw air, which may or may not contain combustible gases or vapors, into the first conduit means, through the sensing chamber, and out of the second conduit means;

air sampling and calming means and flame arresting means, both the air sampling and calming means and the flame arresting means being located in the lower section of the sensing chamber;

the flame arresting means being physically located below the air sampling and calming means and being located so as to overlap the entrance and exit passages in the sensing chamber;

the air sampling and calming means being an essentially solid non-porous member, the outer perimeter of the member being slightly smaller than the interior perimeter of the sidewalls of the lower section of the sensing chamber such that a relatively small space exists between the sidewalls of the lower section of the sensing chamber and the air sampling and calming means; and

the air sampling and calming means having a much higher resistance to the flow of air therepast than the flame arresting means such that only a relatively small amount of the total air continuously drawn into the sensing chamber by the air pumping means continuously passes above the air sampling and calming means and enters the portion of the sensing chamber which contains the sensing filament.

3,961,901

ALKYLATION ACID END POINT DETECTOR

Charles R. Beavens, Port Arthur, and Kenneth O. Higgs, Port Neches, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,757
Int. Cl.² G01N *31/16*
U.S. Cl. 23—253 R **7 Claims**

1. Alkylation acid end-point detector, comprising in combination,

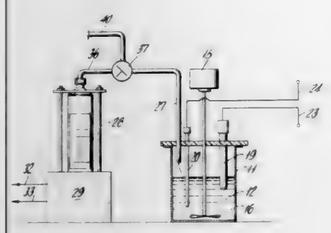
an electrical cell for generating a potential that is proportional to the acidity pH of said alkylation acid,

an amplifier for increasing the amplitude of said potential,

means connected to said amplifier for differentiating said amplified potential in order to produce a first derivative signal from said potential,

means connected to said differentiator for amplifying said first derivative signal to produce a first acid end-point signal,

a noise filter connected between said cell and said first named amplifier, and



voltage comparison means connected to said first derivative amplifying means for producing a second acid end-point signal when said first acid end-point signal has reached a predetermined amplitude.

3,961,902

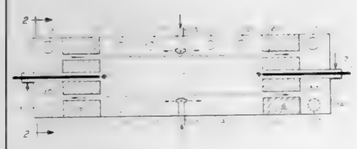
CARBON BLACK REACTOR

John W. Vanderveen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 313,538, Dec. 8, 1972, Pat. No. 3,865,926. This application Dec. 4, 1974, Ser. No. 529,667

Int. Cl.² C01B *49/00*

U.S. Cl. 23—259.5 **5 Claims**



1. A carbon black reactor comprising:

a. a tubular chamber having a first and second end closed by a first and a second wall,

b. first conduit means for feeding hydrocarbon feed along the axis of the reactor into said reactor proximate the first end of said chamber,

c. second conduit means comprising a plurality of conduits opening tangentially into said chamber at a plurality of loci positioned along the longitudinal axis of said chamber and substantially equally spaced over the entire length of said chamber,

d. third conduit means for introducing fuel into said reactor, the fuel outlet of said means being located approximately in the center between the two ends of said chamber for discharge of fuel in about equal amounts towards both ends of said chamber,

e. fourth means for withdrawal of carbon black-containing gas from said reactor, said fourth means being located proximate to the locus of said first conduit means,

f. fifth conduit means for introducing hydrocarbon feed or oxidant into said chamber along its longitudinal axis, said fifth conduit means being arranged proximate to the second end of said chamber, and

g. sixth means for withdrawal of carbon black-containing gas from said reactor, said sixth means being located proximate to the locus of said fifth conduit means.

3,961,903

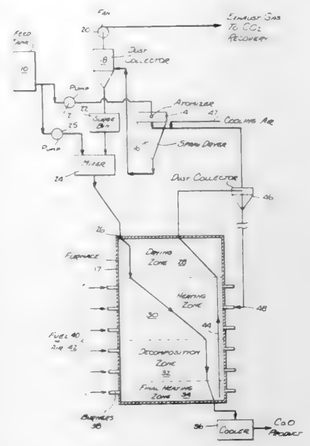
APPARATUS FOR RECLAIMING LIMESTONE MUD

Haagen Bach Nielsen, Glen Ridge, N.J.; Edwin J. Bonner, Staten Island, and Ernest A. Lado, Hastings-on-Hudson, both of N.Y., assignors to Nichols Engineering & Research Corporation, Belle Mead, N.J.

Division of Ser. No. 210,075, Dec. 20, 1971, Pat. No. 3,796,791. This application Oct. 11, 1973, Ser. No. 405,304

Int. Cl.² B01J *6/00*; **C04B** *3/00*

U.S. Cl. 23—262 **6 Claims**



1. A system for reclaiming limestone mud comprising a spray dryer for directly receiving a portion of said mud to be reclaimed, a calciner furnace, means for passing hot exhaust gases from said calciner furnace to said spray dryer, a dust collector, means for passing dry powder together with exhaust gases from the bottom of said spray dryer to said dust collector, said dust collector having an upper exit opening for discharging gases therefrom, means for passing said gases to a recarbonating station, a mixer, means for conveying dried spent lime powder from said dust collector to said mixer, means for conveying a second portion of said mud to be reclaimed to said mixer, means for conveying the discharge from said mixer to the top of said calciner furnace, said calciner furnace having a drying zone adjacent the top thereof, a heating zone disposed below said drying zone, a decomposition zone disposed below said heating zone, a second heating zone disposed below said decomposition zone, said calciner furnace having an exit opening at the bottom thereof, a cooler, means for carrying calcined lime from said exit opening to said cooler, said cooler having an outlet for discharging the calcined lime product.

3,961,904

CRYSTALLIZATION APPARATUS

Richard C. Bennett, Park Forest, Ill., assignor to Whiting Corporation, Harvey, Ill.

Continuation-in-part of Ser. No. 246,439, April 21, 1972, Pat. No. 3,873,275, which is a continuation of Ser. No. 861,805, Sept. 29, 1969, abandoned. This application Mar. 24, 1975, Ser. No. 561,256

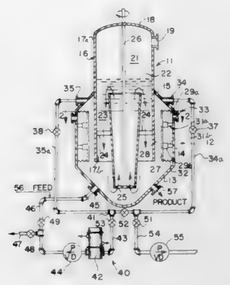
The portion of the term of this patent subsequent to Mar. 25, 1992, has been disclaimed.

Int. Cl.² B01D *9/02*

U.S. Cl. 23—273 R **16 Claims**

1. An improved crystallization apparatus, comprising a vessel adapted to contain a body of slurry which includes crystal particles and liquid, first means for maintaining supersaturation conditions in the slurry body to induce crystallization therein, second means in said crystallization apparatus for

circulating said slurry in a predetermined flow path in said vessel and for maintaining said crystal particles in suspension, third means for selectively removing a stream of slurry liquid and crystal particles which are below a predetermined size only from said slurry body and fourth means for selectively regulating the volume of slurry liquid and crystal particles in said stream independently of the size of the crystal particles in said stream, said third means including an elutriation column and flow regulating means operatively associated therewith, said elutriation column having an inlet adjacent its lower end



communicating with said body of slurry adjacent the periphery of said predetermined flow path and an outlet located at least a substantial height above said inlet, said flow regulating means being operatively associated with said outlet for withdrawing slurry from said elutriation column at a rate which can be selectively controlled to establish a desired flow velocity in said elutriation column for suspending and removing from said slurry body crystal particles which are below a predetermined size only, said fourth means including means for selectively varying the cross-sectional area of said elutriation column.

3,961,905

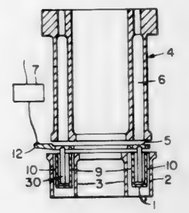
CRUCIBLE AND HEATER ASSEMBLY FOR CRYSTAL GROWTH FROM A MELT

Dale W. Rice, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 25, 1974, Ser. No. 445,630

Int. Cl.² B01D *9/00*; **B01J** *17/18*; **F27B** *14/10*

U.S. Cl. 23—273 SP **8 Claims**



1. In an apparatus for growing and pulling a plurality of crystalline articles from a melt of an inorganic, crystalline material, an improved crucible for containing the melt which comprises an annular channel with a generally U shaped cross-section adapted to contain the melt therein,

a plurality of spaced forming members disposed in ring-like arrangement within the crucible and haivng upper portions adapted to be above the surface of the melt in the crucible, the upper portions including means for shaping and feeding the melt to a crystallization zone in which the articles grow, and the forming members including means for conveying melt from the crucible to the upper portions,

a vertically adjustable ring-shaped heating element positioned concentric with the crucible and above the melt therein for providing heat to the upper portions and the crystallization zone, and having a plurality of apertures therethrough adapted and arranged to have the upper portions positioned at least partially therein in substantial axial alignment with axes of the apertures, and

means operatively connected to the ring-shaped heating element for independently controlling the heat output thereof.

3,961,906

APPARATUS FOR CRUCIBLE-FREE ZONE MELTING OF SEMICONDUCTOR CRYSTAL RODS INCLUDING OSCILLATION DAMPENING MATERIAL

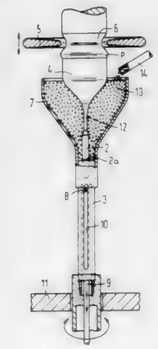
Wolfgang Keller, Munich, Germany, Assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Division of Ser. No. 525,641, Nov. 20, 1974, Pat. No. 3,923,468. This application May 27, 1975, Ser. No. 580,548

Claims priority, application Germany, Nov. 22, 1973, 2358300

Int. Cl.² B01J *17/10*

U.S. Cl. 23—273 SP **2 Claims**



1. A device for crucible-free zone melt processing of a semiconductor rod comprising an operative crucible-free zone melt apparatus including two vertically opposing approximately coaxially mounted members for supporting a semiconductor rod within said apparatus; and a funnel-shaped support means coupled to one of said mounting members in an axially movable manner in relation to said one mounting member, said support means comprising a funnel-shaped casing filled with a self-adjusting oscillation dampening material selected from the group consisting of silicon particles, quartz particles, sand, and metal spheroids, said support means being moveable to an uppermost position for encompassing a cone area of the rod above said one mounting member.

3,961,907

CATALYTIC CONVERTER

James R. Close, Roberts, Wis.; William P. Wood, Stillwater; Robert A. Hatch, St. Paul, and James R. Johnson, White Bear Lake, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

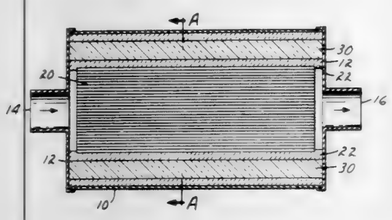
Filed Dec. 8, 1972, Ser. No. 313,272

Int. Cl.² F01N *3/15*; **B01J** *8/00*

U.S. Cl. 23—288 FC **11 Claims**

1. A cannister comprising a casing having openings therein for introduction and exhaust of a gas stream, at least one frangible monolithic catalyst support within said casing and spaced therefrom, said catalyst support having passageways therethrough and containing catalyst thereon, said passage-

ways providing open ends aligned with the openings of said casing, and said casing further comprising resilient inorganic sheet material and high temperature resistant cellular foam



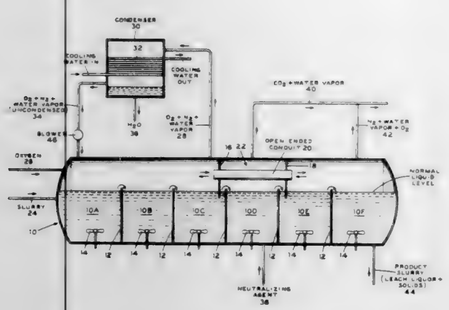
encircling the girth of said catalyst support within the space between said casing and said catalyst support, said cellular foam exerting pressure firmly securing said sheet material and said catalyst in said casing.

3,961,908

AUTOCLAVE SYSTEM FOR LEACHING SULFIDE CONCENTRATES

Freddie J. Touro, New Orleans, La., assignor to Freeport Minerals Company, New York, N.Y.

Filed Feb. 27, 1974, Ser. No. 446,412
Int. Cl.² B01J *3/04*; C01G *3/02*; C22B *15/00*
U.S. Cl. 23—290 **9 Claims**



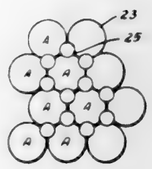
1. Apparatus for the leaching of ores comprising:
a horizontally disposed autoclave having means for establishing a predetermined normal liquid level and a vapor space above the liquid level in said autoclave,
means for supplying a slurry of ore into said autoclave,
upstanding baffle means within said autoclave, disposed along the horizontal length of said autoclave and dividing said autoclave into at least three compartments, which include an upstream compartment, a downstream compartment, and a compartment intermediate said upstream and downstream compartments,
said baffle means further comprising upper edges above the predetermined normal liquid level in said autoclave which allow overflow movement of said slurry between said compartments during operation of said autoclave,
means isolating the vapor space above said intermediate compartment from the vapor space above said upstream and downstream compartments,
means interconnecting the vapor space above said upstream and downstream compartments whereby vapor can move freely between said upstream and downstream compartments but cannot enter said isolated vapor space above said intermediate compartment,
means for supplying an oxygen-containing gas into said autoclave other than in said isolated vapor space,
means for agitating and intermixing said slurry with said oxygen-containg gas,
means for maintaining the temperature of said slurry within said autoclave,
means for maintaining the pressure of said oxygen-containing gas within said autoclave,
means for introducing a neutralizing agent into said intermediate compartment so that gaseous reaction products of said neutralizing agent and said slurry are contained within said isolated vapor space above said intermediate compartment,
means for removing said gaseous reaction products from said isolated vapor space while avoiding contamination of said oxygen-containing gas with said gaseous reaction products,
means for purging nonreacted gases from said upstream and downstream compartments, and
means for continuously withdrawing a stream of product slurry from said autoclave.

3,961,909

UNIFORMLY POROUS BODY

Zalman M. Shapiro, Pittsburgh, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 289,196, Sept. 14, 1972, abandoned, which is a division of Ser. No. 751,680, July 29, 1968, Pat. No. 3,762,026, which is a continuation of Ser. No. 250,112, Jan. 8, 1963, abandoned. This application Jan. 17, 1975, Ser. No. 541,755
Int. Cl.² B22F *1/02, 3/10*
U.S. Cl. 29—192 CP **4 Claims**



1. A body of substantially uniform communicating porosity throughout, said body consisting only of the combination of spheres of a plurality of sets of preselected size and refractory material deposited in the interior of the porous body for bonding together all said spheres, the largest spheres being generally tangent with adjacent largest spheres in order to define void spaces therebetween, the diameter of each set of small spheres being selected within the range from one-tenth to one-fifth of the diameter of the next larger set of spheres, each smaller set of spheres being nested substantially uniformly in the void spaces defined amongst the spheres of larger size and defining smaller void spaces thereby, the refractory material being deposited in the interior of the porous body to partially fill some of the void spaces to bond all of said spheres together and establish a porosity of selected amount without significant alteration in the geometry and uniformity of the pores.

3,961,910

RHODIUM-CONTAINING SUPERALLOY COATINGS AND METHODS OF MAKING SAME

Gregor Baladjanian, Santa Monica, and Eugene V. Clark, Northridge, both of Calif., assignors to Chromalloy American Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 364,035, May 25, 1973, abandoned, which is a continuation-in-part of Ser. No. 160,013, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 115,251, Feb. 16, 1972, abandoned. This application Jan. 8, 1975, Ser. No. 539,391
Int. Cl.² C23C *9/02*; C23F *17/00*
U.S. Cl. 29—197 **19 Claims**

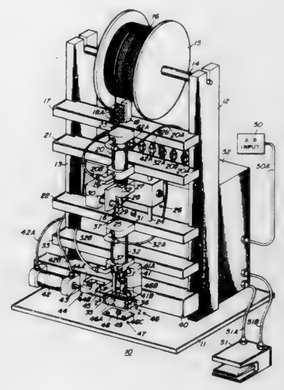
1. Method of forming a diffusion coating on a nickel base or cobalt base alloy structure which includes applying onto the structure surface to be coated an adherent layer of rhodium having a depth equal to between 5 percent and 35 percent of the intended depth of the diffusion coated base, prediffusing said rhodium layer into the structure surface under a nonoxidizing nonreactive atmosphere at a temperature between about 1400°F. and 2350°F., and thereafter diffusing aluminum into the prediffused rhodium containing structure surface at an elevated temperature and for a time sufficient to form with the rhodium and base metal said diffusion coating, whereby as a result of said prediffusing said alloy structure has a diffusion coating the inner boundary portion of which is relatively rich in rhodium.

3,961,911

TUBE CUTTING AND INSERTING MACHINE

Orland W. Ericksen, Park Ridge, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Jan. 30, 1975, Ser. No. 545,270
Int. Cl.² H01R *43/04*
U.S. Cl. 29—203 B **10 Claims**



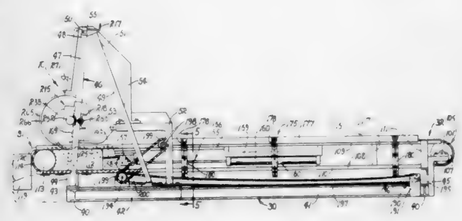
1. A machine for inserting tubing onto a contact member comprising:
a base;
support means associated with said base for holding a supply of continuous tubular material having a predetermined internal dimension and an end portion;
means coupled to said base for feeding said end portion a predetermined amount;
means coupled to said base fo cutting a predetermined length of said tubular material from said end portion and locating said cut tubing length in a predetermined position;
means coupled to said base, including a push rod having a reduced end portion smaller than said predetermined internal dimension and adapted for fitting therein, for inserting said cut tubing length from said predetermined position onto said contact member;
means coupled to said base for sequentially activating said feeding, cutting, and insertion means according to a predetermined timing relationship; and
means coupled to said sequencing means for actuating said sequencing means.

3,961,912

MACHINE FOR ASSEMBLING REELS AND THE LIKE

Roane C. Noel, Orange, Calif., assignor to The Wickes Corporation, Del.

Filed Jan. 9, 1975, Ser. No. 539,638
Int. Cl.² B23P *19/00*
U.S. Cl. 29—200 P **23 Claims**



17. A machine for assembling structures composed of a plurality of segments disposed in a preselected configuration and united with members endwardly connected to the segments, the machine comprising a guide frame having a concave surface defining the preselected configuration; means associated with the guide frame for conveying said plurality of segments disposed in side-by-side abutting relation on to the concave surface of the guide frame while holding said segments in abutting relation to be guided by said guide frame into the preselected configuration; and means for conveying said members into endward engagement with the segments.

3,961,913

PROCESS FOR TREATING ORGANIC WASTES AND PRODUCT THEREOF

Richard S. Brenneman, Natick, and John J. Clancy, Westwood, both of Mass., assignors to Combustion Equipment Associates, Inc., New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,338
Int. Cl.² C10L *9/02, 5/00, 1/32*
U.S. Cl. 44—1 D **58 Claims**

22. A process for forming a combustible fuel from solid municipal waste containing an organic waste fraction and an inorganic waste fraction, comprising the steps of
a. treating the solid organic waste fraction of solid municipal waste with up to 11% of mineral acid based on the weight of said solid organic waste fraction, and elevated temperature under conditions to form an embrittled material without effecting any substantial carbonization, any substantial pyrolysis, any substantial decomposition or any substantial loss in dry weight of said waste component; and
b. reducing the resulting embrittled material to a finely divided form.

35. A process in accordance with claim 22 including the step of mixing said embrittled material in finely divided form with a primary fuel.

36. A process in accordance with claim 35 wherein said primary fuel is in fluid form.

42. A process in accordance with claim 35 wherein said primary fuel is a solid fuel.

3,961,914
PROCESS FOR TREATING COAL TO MAKE IT RESISTANT TO SPONTANEOUS COMBUSTION

James K. Kindig, Arvada, and Ronald L. Turner, Lakewood, both of Colo., assignors to Hazen Research, Inc., Golden, Colo.

Filed July 26, 1974, Ser. No. 492,257
Int. Cl.² C10L 9/00
U.S. Cl. 44—1 R **16 Claims**

1. A process for making coal resistant to spontaneous combustion which comprises coating the coal in particulate form with a thin coating of silicon dioxide.

8. The process of claim 1 in which the coal particles are coated in accordance with the following process steps:

a. introducing coal particles into a coating chamber;
b. introducing silicon tetrachloride into the chamber under conditions that will promote its combination with water either introduced into the chamber in a separate stream or derived from the coal itself to form an intermediate reaction product on the surface of the coal;
c. permitting the intermediate reaction product between the silicon tetrachloride and water to form a coating on the particles; and
d. raising the temperature in the chamber to drive off water and hydrochloric acid as vapors.

3,961,915
SYNERGISTIC ADDITIVE IN PETROLEUM MIDDLE DISTILLATE FUEL

Max J. Wisotsky, Highland Park, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Dec. 27, 1974, Ser. No. 536,723
Int. Cl.² C10L 1/20
U.S. Cl. 44—62 **6 Claims**

1. A fuel oil improved in its cold flow characteristics, comprising a major proportion of an atmospheric distillate petroleum oil and in the range of 0.01 to 3 wt. % of a synergistic cold flow improving combination of 0.3 to 10 parts by weight of wool fat, per part by weight of an auxiliary oil-soluble flow improving material selected from the group consisting of:

Friedel-Crafts condensation product of wax having a melting point of about 38° to 94°C. halogenated to about .5 to 25 wt. % halogen and condensed with an aromatic hydrocarbon, in a relative weight ratio of about 5 to 15 parts of halogenated wax per part of said hydrocarbon; and

ester polymer having a molecular weight in the range of about 5,000 to 1,000,000 and being a polymer of a C_8 to C_{18} alkyl ester of C_3 to C_8 monoethylenically unsaturated acid.

3,961,916
MIDDLE DISTILLATE COMPOSITIONS WITH IMPROVED FILTERABILITY AND PROCESS THEREFOR

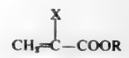
Stephen Ihnyckyj, Maplewood, N.J., and Charles O. Cole, Sarnia, Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 224,612, Feb. 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 115,714, Feb. 16, 1971, abandoned. This application Feb. 28, 1974, Ser. No. 446,596
Int. Cl.² C10L 1/18
U.S. Cl. 44—62 **11 Claims**

1. A fuel oil composition comprising a major proportion of a middle distillate fuel oil containing n-paraffin wax which crystallizes from said oil during cooling, and in the range of about 0.005 to 0.1 wt.% of a synergistic flow improving combination comprising:

a. a wax nucleator which raises the temperature at which the onset of wax crystallization from said fuel oil occurs during cooling, said nucleator being soluble in said oil at temperatures substantially above the saturation temperature of said wax in said oil but which begins to separate out from the oil as the oil is cooled towards said saturation temperature, and
b. a wax growth arrester which when added to said fuel oil lowers the temperature at which wax begins to crystallize from said oil during cooling, said growth arrester being a pour point depressant,

both of said (a) and (b) being separately prepared synthetic polymers which are copolymers consisting essentially of ethylene with an ethylenically unsaturated ester selected from the group consisting of vinyl acetate, vinyl ester of a C_3 to C_7 saturated fatty acid, and compounds of the formula:



wherein: X is selected from the group consisting of hydrogen and C_2 to C_7 alkyl groups, and R is a C_2 to C_8 alkyl group;

said (a) synthetic polymer having a number average molecular weight (VPO) in the range of 500 to 10,000 and containing in the range of 0.3 to 12 mole % of said unsaturated ester;

said (b) synthetic polymer having a number average molecular weight (VPO) in the range of 1,200 to 20,000;

said (a) and (b) synthetic polymers being present in a relative weight ratio of 1 to 20 parts of (a) synthetic polymer per 1 to 100 parts of (b) synthetic polymer;

said (a) and (b) synthetic polymers differing from each other in at least one of the following characteristics: specific unsaturated ester monomer utilized in the polymer, amount of ethylene present relative to the respective comonomer, the amount of branching, and molecular weight;

and wherein, when both of said (a) and (b) synthetic polymers are copolymers of ethylene and a vinyl ester, the vinyl ester content of (a) synthetic polymer is at least 5 weight % lower than the vinyl ester content of the (b) synthetic polymer.

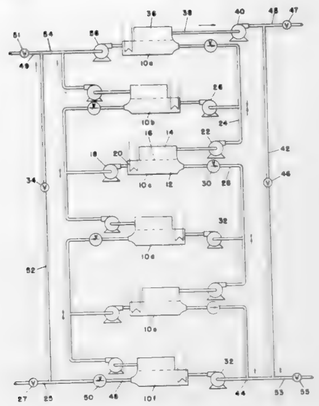
3,961,917
METHOD OF INDEPENDENTLY OPERATING A GROUP OF STAGES WITHIN A DIFFUSION CASCADE

Manson Benedict, Westfield; Allen J. Fruit, Millington, and Horace B. Levey, Bloomfield, all of N.J., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed July 13, 1949, Ser. No. 104,404
Int. Cl.² B01D 59/12
U.S. Cl. 55—16 **4 Claims**

1. A method of operating a group of the diffusion stages of a productive diffusion cascade with countercurrent flow, said group comprising a top and a bottom stage, which comprises isolating said group from said cascade, circulating the diffused gas produced in said top stage to the feed of said bottom stage

while at the same time circulating the undiffused gas from said bottom stage to the feed of said top stage whereby major

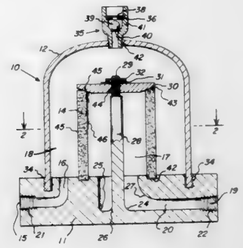


changes in inventory distribution within the group of stages are prevented.

3,961,918
METHOD AND APPARATUS FOR DEGASSING LIQUIDS

Thomas B. Johnson, 2428 Chicago Ave., South, Minneapolis, Minn. 55404

Continuation of Ser. No. 236,033, March 20, 1972, abandoned. This application Apr. 4, 1974, Ser. No. 457,920
Int. Cl.² B01D 19/00, 39/16
U.S. Cl. 55—170 **2 Claims**



1. An improved degassing apparatus for use with artificial kidney machines for obtaining gas-free dialysis liquid for use in said artificial kidney machines, said degassing apparatus comprising:

housing means defining a hollow interior;

a generally cylindrical degassing member mounted in said housing and cooperating therewith to divide said interior into the outer and inner chambers, said degassing member having outer and inner surfaces each defining a wall of said outer and inner chambers respectively;

means for supplying a liquid containing entrained and dissolved air to said outer chamber for exposure to the outer surface of said degassing member, and for passage through said degassing member only into said inner chamber;

said degassing member being constructed of finely entwined porous epoxy resin having physical properties and density sufficient to cause the entrained and dissolved air in the liquid to coalesce near the outer surface of the degassing member as the result of the passage of said liquid only through said degassing member;

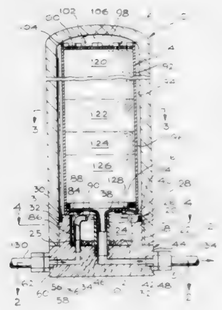
and vent means including a float valve in said housing means for discharge of air from said outer chamber, said float valve being disposed to prevent escape of liquid through said vent means;

said housing defining a passageway for discharge of degassed liquid from said inner chamber.

3,961,919
GAS-VAPOR SEPARATING AND GAS PURIFYING APPARATUS

Charles L. Lamoreaux, 28012 Santona Drive, Rancho Palos Verdes, Calif. 90274

Filed June 23, 1975, Ser. No. 589,387
Int. Cl.² B01D 53/24
U.S. Cl. 55—184 **18 Claims**



1. A combination gas-vapor separating and gas purifying apparatus, which comprises:

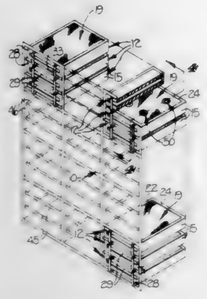
a. a pressure vessel having a closable opening, a base portion of said vessel having formed therein a vapor separating chamber in communication with other portions of the inside of said vessel, said base portion also having formed therein inlet, outlet and drain passages,
said inlet passage communicating through said base portion with said separating chamber,
said outlet passage communicating through said base portion with an inside portion of said vessel,
said drain passage communicating through said base portion with said separating chamber;
b. purifying means adapted for purifying a gas, said purifying means including a removable purifying element disposed within said vessel and installable through said closable opening,
said purifying element having a gas permeable upper portion and an open lower portion, and being formed to provide a generally annular passageway between outer portions thereof and adjacent inside portions of said vessel from said separating chamber to said permeable upper filter portion;
c. means for connecting said lower open portion of said filter to said outlet passage; and
d. vortexing means for causing a pressurized mixture of gas and vapor supplied to said base inlet passage to vortex around said separating chamber and upwardly around and through said annular passageway to cause separation of said vapor from said gas by centrifugal action, substantially vapor-free gas being passed to said permeable portion of said purifying element and liquefied, separated vapor being collected in said separating chamber.

3,961,920

GAS ADSORBER CELL TEST SAMPLER

Humphrey Gilbert, P.O. Box 704, McLean, Va. 22101

Filed Jan. 24, 1974, Ser. No. 436,184
Int. Cl. B01d *53/14*
U.S. Cl. 55—387 **19 Claims**



1. A gas adsorber cell for use in high efficiency gas cleaning systems and the like and having provision for obtaining a representative and undisturbed sample of the adsorbent material to permit periodic testing of the efficacy of the adsorbent material, said adsorbent cell comprising,

an enclosure including a pair of perforated sheets disposed in spaced apart, parallel relationship, said enclosure being adapted to receive an adsorbent material between said sheets such that a gas may be passed transversely through the sheets and absorbent material,

a sample holder adapted to be filled with an adsorbent material and comprising a perforated top end wall, a perforated bottom end wall, said top and bottom end walls being disposed in spaced apart, parallel relationship with respect to each other, and a peripheral side wall extending between said top and bottom end walls, and

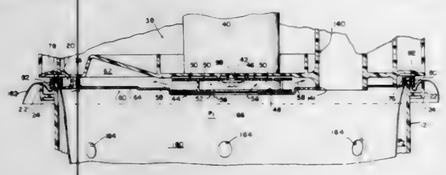
means for removably mounting said sample holder within said enclosure and between said sheets in an operative position wherein said top and bottom end walls of said holder are positioned parallel to said two perforated sheets, whereby a representative portion of the gas passing transversely through the adsorber cell passes through said sample holder, and said holder may be removed to permit the testing of the adsorbent material carried therein.

3,961,921

VACUUM CLEANER WITH AN IMPERMEABLE COLLECTOR BAG

Richard I. Heiman, and David R. Hult, both of Columbus, Ind., assignors to Verco Corporation, Columbus, Ind.

Filed Oct. 15, 1974, Ser. No. 514,587
Int. Cl.² B01D *45/18*
U.S. Cl. 55—429 **13 Claims**



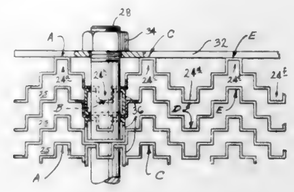
1. A vacuum cleaner including a tank having an interior space for receiving dirt and debris, said tank providing an access opening, a blower assembly including a housing for closing said access opening, said housing providing, within the boundary of said access opening, an intake port for said tank, and said blower assembly including a motor and a blower for drawing air from said tank to create a vacuum therein, and in which the improvement comprises impermeable flexible bag means disposed in and lining said tank, said bag means having a mouth in registry with said access opening such that dirt and debris entering said intake port are deposited into the interior of said bag means, and said bag means also having means for establishing venting between its interior and the space between its exterior and the internal surfaces of said tank to equalize the air pressure within said bag means and tank.

3,961,922

VANE SEPARATOR

Kam Fong Leung, Little Elm, Tex., assignor to Dallas Research Enterprises, Dallas, Tex.

Filed Jan. 2, 1975, Ser. No. 537,927
Int. Cl.² B01D *45/08*
U.S. Cl. 55—440 **7 Claims**



1. Apparatus for separating droplets of liquid from gas flowing through a chamber having an inlet and an outlet comprising: first and second side plates in the chamber; first and second zigzag shaped vane plates; support means in the chamber supporting said first and second zigzag shaped vane plates between said first and second side plates and in spaced apart relation such that a zigzag shaped path is formed between said first and second vane plates, spacer means between said vanes plates, and means urging said vane plates into engagement with said spacer means, said zigzag shaped plates having one end communicating with the inlet of the chamber and another end communicating with the outlet of the chamber, said vane plates having points of inflection intermediate the opposite ends of each of said zigzag-shaped plates; each of said vane plates being shaped to form a series of zigzag shaped vane plate segments intermediate the points of inflection, each of said vane plate segments being shaped to form a series of substantially right angularly disposed surfaces arranged such that surfaces of discontinuity are formed and which define the zigzag shaped path between the points of inflection while forming pockets along each side of said zigzag shaped plates adjacent said surfaces of discontinuity; each of said vane plate segments comprising surfaces extending substantially parallel to said first and second side plates and surfaces disposed perpendicular thereto.

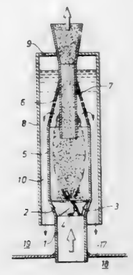
3,961,923

VAPOR-LIQUID SEPARATOR

S. Zia Rouhani, Nykoping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed July 3, 1974, Ser. No. 485,566
Claims priority, application Sweden, July 16, 1973, 73099491
Int. Cl.² B01D *45/12*
U.S. Cl. 55—457 **13 Claims**

1. A separator for dividing a liquid-vapor mixture, such as a steam-water mixture, into its liquid and vapor components, comprising a vertically extending first pipe arranged to convey the liquid-vapor mixture from a source, a central body positioned within and spaced inwardly from said first pipe and extending in the axial direction of said first pipe, a plurality of vanes located within the extending approximately radially of said first pipe below the upper end thereof, said vanes arranged in spaced relationship to one another in an annular formation extending between said central body and said first pipe, said vanes arranged to whirl the liquid-vapor mixture within said first pipe as the mixture flows upwardly about said vanes, a vertically extending second pipe located within said first pipe with the lower end thereof spaced upwardly above said vanes and arranged to receive the vapor component of the mixture separated by the whirling action imparted to the mixture by said vanes, said second pipe being substantially co-axial with said first pipe, the upper end of said second pipe extends upwardly from the upper end of said first pipe, wall means laterally enclosing said first pipe and forming an annular outlet chamber therebetween for the separated liquid component and the upward end of said first pipe above the lower end of said second pipe being perforated to flow the separated liquid component into the outlet channel, the upper



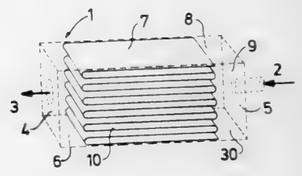
end of said second pipe being located above said wall means wherein the improvement comprises that each of said vanes has an upper edge and a lower edge relative to the vertical direction of said first pipe and an inner edge contacting said central body and an outer edge contacting the inner surface of said first pipe, each of said vanes has a curved cross-section in the axial direction of said first pipe extending from the lower edge to the upper edge thereof with the radius of curvature of each of said vanes increasing from the inner edge thereof to the outer edge thereof, each of said vanes being formed in the shape of a portion of the outer surface of an imaginary cone having a top angle in the range of 50° to 70° with the axis of the cone arranged transversely of the axis of the first pipe and the apex of the cone located inwardly of the inner surface of said first pipe, and the upper edge of said vanes is disposed approximately horizontally and the lower edge of said vanes slopes upwardly in the inward direction.

3,961,924

FILTER DEVICE

Magnus Alskog, Skara, Sweden, assignor to AB Lectrostatic, Skara, Sweden

Filed Feb. 20, 1975, Ser. No. 551,357
Claims priority, application Sweden, Mar. 1, 1974, 7402786
Int. Cl.² B01D *27/06*
U.S. Cl. 55—500 **1 Claim**



1. A self-contained filter assembly including:

a housing having top, bottom, side and end walls formed of cardboard,

an inlet in one end wall of said housing and an outlet in the opposite end wall thereof,

a filter element positioned in said housing in the path of flow of contaminated air and gas through said housing,

said filter element including a filter web of air and gas permeable, particle collecting material such as paper,

said filter web being formed in an accordion-like manner in which adjacent portions of the filter web extend generally parallel to each other and form pockets which alternately open in opposite directions, one set of pockets opening in the direction of flow of air and gas through the filter housing, and

a spacer element installed in each pocket to engage and support adjacent portions of said filter web,

each spacer element including a plurality of elongated ribs extending lengthwise in the direction of flow of air and gas through said housing, said ribs being spaced apart across the width of said housing to form longitudinally extending channels between said ribs to permit air and gas to pass through the spacer element, the outermost ribs on the sides of each spacer element being fastened to the side walls of said housing, and

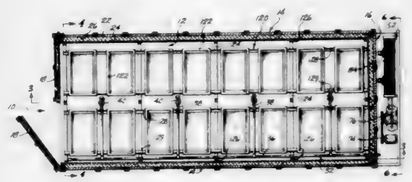
cross bracing extending between said ribs to strengthen the spacer element thereby permitting the spacer element to reinforce said housing to thereby counteract outwardly and inwardly directed forces resulting from the movement of air and gas through said housing during filtering operations, said ribs having sufficient strength to resist bending and to absorb tensile and compressive forces acting in the direction of flow of air and gas through the housing.

3,961,925

REFRIGERATED STORAGE AND TRANSPORTATION CONTAINER FOR PERISHABLE COMMODITIES

John H. Rhoad, P.O. Box 108, Lapush, Wash. 98350

Filed Dec. 16, 1974, Ser. No. 532,833
Int. Cl.² F25D *17/02*
U.S. Cl. 62—376 **14 Claims**



1. A self-contained, refrigerated storage and transportation container for preserving perishable commodities comprising:

a container defining an insulated storage chamber therewithin for accommodating said perishable commodities;

a recirculating liquid cooling system comprising conduit means for a liquid coolant disposed within said storage chamber, nozzle means disposed along said liquid coolant conduit means and adapted to spray said liquid coolant directly onto said perishable commodities to maintain said commodities at a uniform cool temperature, means within said container for delivering said liquid coolant to said liquid coolant conduit means, and recirculating means within said container adapted to withdrawn the sprayed liquid coolant from the bottom portion of said storage chamber and recirculate it back through said liquid cooling system;

the bottom portion of said storage chamber comprising a collection tank having a cover thereover to reduce movement of said liquid coolant in said collection tank during transport of said container, said cover including one-way

valve means allowing coolant to flow into but not out of said collection tank during transport of said container; and

refrigeration means within said container adapted to cool said liquid coolant, said refrigeration means comprising heat exchanger means for a circulating refrigerant disposed within said collection tank and adapted to contact said collected liquid coolant, means for cooling said refrigerant and delivering it to said heat exchanger means, and refrigerant return means adapted to receive said circulated refrigerant from said heat exchanger means and return it to said refrigerant cooling means.

3,961,926

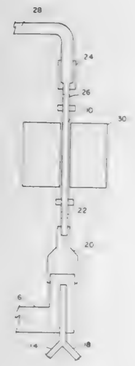
PREPARATION OF GERMANIA CORES IN OPTICAL FIBERS

Adolf R. Asam, Daleville, Va., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Dec. 27, 1974, Ser. No. 536,768

Int. Cl.² C03C *25/02, 15/00*

U.S. Cl. 65—3 A **5 Claims**



1. A method for forming optical fibers comprising:

supporting a hollow silica tube adjacent a heat source;

depositing a first substantially pure silica layer on the inner surface of said tube;

sealing said tube at one end;

inserting a solid crystalline germanium halide compound into said tube;

sealing the other end of said tube;

heating said tube to vaporize and decompose said compound and coat said silica layer with a layer of germanium;

opening said sealed tube ends;

heating said tube while passing a carrier gas therethrough to remove the halide vapor;

passing oxygen through said tube while further heating to oxidize said germanium and diffuse germania into said silica layer; and heating said tube and layer to collapse into an optical fiber preform.

3,961,927

APPARATUS AND METHOD FOR MOULDING GLASS OBJECTS

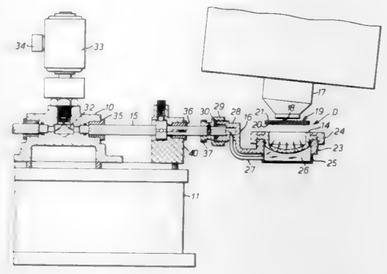
John Victor Alderson, Southport; Donald Frederick Stanley, Wigan, and John Duncan Rudd, Newburgh, near Wigan, all of England, assignors to Pilkington Brothers Limited, Liverpool, England

Continuation of Ser. No. 446,000, Feb. 26, 1974, abandoned. This application July 2, 1975, Ser. No. 592,630

Claims priority, application United Kingdom, Mar. 5, 1973, 10640/73; Mar. 26, 1973, 14490/73; Aug. 8, 1973, 37641/73

Int. Cl.² C03B *11/00*

U.S. Cl. 65—25 R **50 Claims**



1. A method of shaping glass to a desired form in which delivered molten glass can be brought to a suitable viscosity condition for shaping independently of the viscosity of delivery, the method comprising:

feeding gas under pressure through minute, tortuous, gas flow channels of a porous wall of a support member, located at least at the base of the support member, from the reverse side of said wall into a support cavity defined by a cavity surface presented by the support member;

delivering molten glass into the support cavity, while so feeding the gas under a pressure

sufficient to support the glass, while it is in a viscosity condition wherein it can distort or flow, out of contact with the cavity surface on a cushion of gas, but

insufficient to induce perceptible gas stream or blast to blow from the cavity surface so as to push the glass actively away from the cavity surface;

maintaining the glass floating freely in the support cavity on the established gas cushion support of the glass, out of contact with the cavity surface, for a hold time during which

the glass in the support cavity is allowed to assume, under the forces of surface tension, gravity and gas cushion pressure, a shape approximating to that of the support cavity and having a fire-finished glass surface, and

the glass is cooled to a viscosity condition such that it can be further shaped by contact with a solid surface without any substantial surface damage to the fire-finished glass surface formed on the gas cushion; and

shaping the so conditioned glass by a shaping process which involves contact with such a solid surface.

25. Apparatus for shaping glass to a desired form in which delivered molten glass can be brought to a suitable viscosity condition for shaping independently of the viscosity of delivery, the apparatus comprising:

a support member having a porous wall located at least at the base thereof and presenting minute, tortuous, gas flow channels, said support member presenting a cavity surface defining a support cavity;

means for delivering molten glass into said support cavity;

means for feeding gas through said porous wall of said support member, from the reverse side thereof into said support cavity at a pressure

sufficient to support the glass, while it is in a viscosity condition wherein it can distort or flow, out of contact with the cavity surface on a cushion of gas, but

insufficient to induce a perceptible gas stream or blast to blow from the cavity surface so as to push the glass actively away from that cavity surface;

said gas feeding means and said support cavity being cooperable to maintain the glass floating freely in the support cavity on the established gas cushion support of the glass, out of contact with the cavity surface, for a hold time during which

the glass in the support cavity is allowed to assume, under the forces of surface tension, gravity and gas cushion pressure, a shape approximating to that of the support cavity and having a fire-finished glass surface; and

the glass is cooled to a viscosity condition such that it can be further shaped by contact with a solid surface without any substantial surface damage to the fire-finished glass surface formed on the gas cushion; and

means for subsequently shaping the so conditioned glass by a shaping process which involves contact with a solid surface.

3,961,928

DETECTION AND REDUCTION OF ROLL BOWING

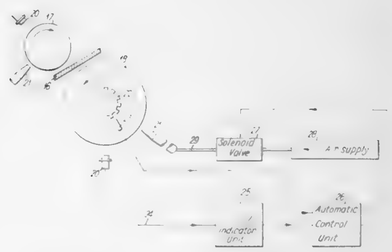
John James Jago, Liverpool, and Colin Billington, Burscough, both of England, assignors to Pilkington Brothers Limited, Merseyside, England

Filed June 16, 1975, Ser. No. 587,497

Claims priority, application United Kingdom, June 21, 1974, 27717/74

Int. Cl.² C03B *13/16*

U.S. Cl. 65—29 **17 Claims**



1. Apparatus for detecting and reducing bowing of a rotating roll which is used in contact with hot material, which apparatus comprises a proximity sensor mounted in a fixed position adjacent the surface of a roll or of a member attached thereto, and arranged to generate an electric signal which varies between maximum and minimum limit values during each revolution of the roll in dependence on movement of the surface towards and away from the sensor as the roll rotates, heat transfer means arranged for selectively transferring heat to or from parts of the roll and control means responsive to said electric signal and arranged to control operation of the heat transfer means, said control means comprising a bowing detection circuit arranged to receive said electric signal and provide an operating signal for that period, if any, during any one revolution of the roll, that the said electric signal varies by more than a predetermined amount from one of the said limit values, and actuating means arranged to respond to the operating signal and operate the heat transfer means in predetermined synchronism with the occurrence of the operating signal so that heat is selectively transferred to or from a required part of the roll to reduce bowing of the roll.

17. A method of reducing bowing of a roll used in the formation of glass ribbon from a mass of molten glass, which method comprises sensing variation of the surface position of the roll by a proximity sensor arranged to provide an electric signal varying between maximum and minimum limit values in each revolution with varying position of the roll surface relative to the detector, providing an operating signal if said signal varies by more than a predetermined amount from one of said limit values and using said operating signal to operate heat transfer means in synchronism with the rotation of the roll and selectively heat or cool an appropriate part of the roll to reduce bowing.

3,961,929

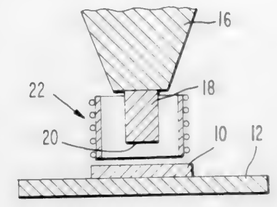
METHOD FOR EMBOSSING A PATTERN IN GLASS

George Fairbank Stockdale, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 24, 1975, Ser. No. 589,854

Int. Cl.² C03B *29/00, 23/00*

U.S. Cl. 65—35 **9 Claims**



1. A method for embossing glass comprising the steps of:

heating the glass to at least the annealing temperature of the glass;

heating a die containing a negative of the pattern to be embossed to a higher temperature than the glass; and

vibrating the die against the surface of glass so as to continually make and break contact between the die and the glass.

3,961,930

MANUFACTURE OF FLAT GLASS

Albert Sidney Robinson, Southport; David Gordon Loukes, Prescot, and Jack Lawrenson, St. Helens, all of England, assignors to Pilkington Brothers Limited, Liverpool, England

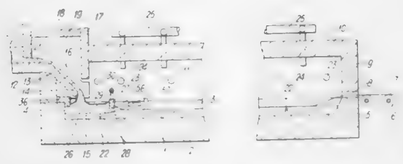
Division of Ser. No. 287,713, Sept. 11, 1972, Pat. No. 3,850,787. This application Nov. 19, 1974, Ser. No. 525,202

Claims priority, application United Kingdom, Sept. 16, 1971, 43269/71

The portion of the term of this patent subsequent to Nov. 6, 1990, has been disclaimed.

Int. Cl.² C03B *19/02*

U.S. Cl. 65—99 A **22 Claims**



20. A method of manufacturing flat glass comprising supporting on a surface of molten metal bath contained in a tank structure, an advancing ribbon of glass formed from molten glass flowing through an elongated aperture defined beneath a solid member on to the molten metal bath surface downstream of the solid member, the lower surface of the solid member being wetted by the molten glass and being located at a level slightly above the level of the molten metal surface, and attenuating the advancing ribbon of glass to a desired

thickness by traction applied to the ribbon of glass and acting against reaction provided by wetting of the molten glass on to the solid member.

3,961,931

APPARATUS FOR HEAT-BONDING OPTICAL FIBERS

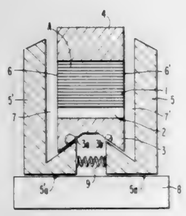
Kenji Nakagawa, Tokorozawa, and Kunimitsu Kobayashi, Yamato, both of Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Division of Ser. No. 482,681, June 24, 1974, abandoned. This application Feb. 24, 1975, Ser. No. 552,075

Claims priority, application Japan, Sept. 10, 1973, 48-101796

Int. Cl.² C03B *23/20, 9/42*

U.S. Cl. 65—152 **7 Claims**



1. A mold apparatus for heat bonding optical fibers comprising:

An upper press member forming one side wall of said mold;

A lower press member having a plurality of inclined surfaces disposed thereon;

At least one end member forming an end wall of said mold and having a surface capable of sliding inwardly along one of said plurality of inclined surfaces of said lower press member upon the application of pressure from said upper press member; and

At least one side member forming another side surface of said mold and having a surface capable of sliding inwardly along another of said plurality of inclined surfaces of said lower press member upon the application of pressure from said upper press member whereby the side and end walls of said mold uniformly compress the optical fibers contained in the mold along each side and the ends thereof.

3,961,932

PROCESS FOR COATING GRANULAR FERTILIZERS WITH CHELATED MICRONUTRIENTS

Ralph Miller, Pleasantville, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 431,527, Jan. 7, 1974, abandoned, which is a continuation of Ser. No. 224,986, Feb. 9, 1972, abandoned. This application July 22, 1974, Ser. No. 490,825

Int. Cl.² C05G *3/00*

U.S. Cl. 71—1 **3 Claims**

1. A process for producing a substantially dust-free chelated metallic micronutrient impregnated granular fertilizer consisting essentially of blending a granular fertilizer formulation and while the blending is continuing, spraying about 1 to 5% by weight of a concentrated aqueous solution of a chelated metallic micronutrient selected from the group consisting of complexes of synthetic amino acid chelating agents with zinc, copper or manganese metals onto the moving solids to uniformly impregnate the solid granules with said solution, the chelated metallic micronutrient in said solution being nonreactive with any component of the granular fertilizer formulation, and without removing any water and while the blending is continuing adding from about 1 to 4% by weight of a finely divided, water absorbent powder to overcome the detrimental effect of the added water and continuing the blending until said substantially dust-free chelated metallic micronutrient impregnated granular fertilizer formulation is formed, said formulation containing from about 0.05 to 0.5% by weight of micronutrient.

3,961,933

FUNGICIDAL/ALGICIDAL COMPOSITION FOR NON-MEDICAL USES

Hiroshi Kuyama, Urawa, and Nobuyuki Higosaki, Tanashi, both of Japan, assignors to Tokyo Organic Chemical Industries, Inc., Tokyo, Japan

Filed Dec. 19, 1974, Ser. No. 534,519

Claims priority, application Japan, Dec. 22, 1973, 48-493172

Int. Cl.² A01N *11/04*

U.S. Cl. 71—67 **3 Claims**

1. A microbiocidal composition which comprises a microbiocide which consists essentially of a combined effective amount of at least one compound selected from Group A and at least one compound selected from Group B wherein Group A is copper terephthalate and copper isophthalate; and Group B is an inorganic copper salt selected from the group consisting of copper oxychloride, copper chloride, basic copper sulfate, basic copper carbonate, copper silicate, basic copper phosphate and copper hydroxide, the ratio of A:B being from 1:9 to 9:1.

3,961,934

METHOD FOR INCREASING THE SUCROSE CONTENT OF GROWING PLANTS

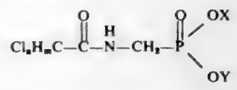
Kenneth Wayne Ratts, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 19, 1974, Ser. No. 534,268

Int. Cl.² A01N *9/36*

U.S. Cl. 71—86 **19 Claims**

1. A method for increasing the sucrose content of sugar cane plants which comprises applying to said plants, from about 2 to 8 weeks prior to harvest, an effective amount of a compound selected from those of the formula



wherein X and Y represent hydrogen or lower alkyl, *n* is an integer from zero to three, *m* is an integer from zero to three, and the sum of *m* + *n* is three; and certain salts thereof, which salts are selected from the group consisting of alkali metal, ammonium, lower alkyl and lower alkanol amine, aniline and substituted aniline.

3,961,935

SYNERGISTIC HERBICIDAL COMPOSITION COMPRISING O-METHYL OR O-ETHYL-O-(3-METHYL-6-NITROPHENYL)-N-SECONDARY-BUTYLPHOSPHOROTHIOAMIDATE AND A PHENOXY-TYPE HERBICIDE

Takeo Satomi, Nishinomiya, and Naganori Hino, Toyonaka,, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

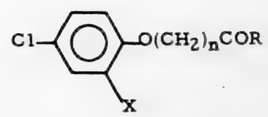
Filed Nov. 9, 1973, Ser. No. 414,574

Claims priority, application Japan, Nov. 10, 1972, 47-113129

Int. Cl.² A01N *9/36*

U.S. Cl. 71—87 **6 Claims**

1. A synergistic herbicidal composition consisting essentially of a herbicidally effective amount of the mixture of O-methyl or O-ethyl-O- (3-methyl-6-nitrophenyl)-N-secondary-butylphosphorothiomidate and a phenoxy-type herbicide represented by the formula:



wherein X represents a chlorine atom or a methyl group, R represents a hydroxy group, *n* is an integer of 1 to 3, said butylphosphorothioamidate being present in an amount of one weight part for 0.1 – 0:5 weight parts of said phenoxy-type compound, and a herbicidaily acceptable inert carrier.

3,961,936

HERBICIDAL AGENTS

Kurt Westphal, Wuppertal-Vohwinkel; Werner Meiser, Wuppertal-Elberfeld; Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

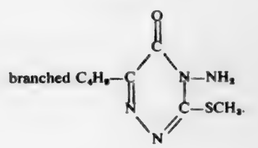
Filed Apr. 12, 1967, Ser. No. 630,225

Claims priority, application Germany, Apr. 16, 1966, 48954

Int. Cl.² A01N *9/22*

U.S. Cl. 71—93 **4 Claims**

1. Herbicidal composition which comprises a mixture of an inert carrier vehicle selected from the group consisting of (1) a solid and (2) a dispersible liquid containing a surface active agent, and a herbicidally effective amount constituting substantially between about 0.001 and 95% by weight of the mixture of a 3-methylthio-4-amino-6-branched butyl-1,2,4-triazine-5-one having the formula



3,961,937

ESTERS OF 1-HYDROXY-1H-IMIDAZO-(4,5-b)-PYRIDINES AS HERBICIDES

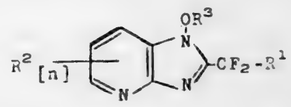
George O. P. O'Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 236,195, March 20, 1972, Pat. No. 3,818,022, Continuation-in-part of Ser. No. 181,638, Sept. 17, 1971, abandoned, Continuation-in-part of Ser. No. 100,410, Dec. 21, 1970, abandoned. This application Mar. 1, 1974, Ser. No. 447,115

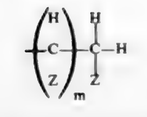
Int. Cl.² A01N *9/22*

U.S. Cl. 71—92 **19 Claims**

1. A method for controlling undesired vegetation which comprises applying to the locus thereof an effective amount of an active agent, said active agent being selected from the group consisting of the compounds of the formula



wherein R^1 represents hydrogen, chlorine, fluorine, difluoromethyl, perfluoroalkyl of C_1–C_8, or radical of the formula:



wherein each Z independently represents hydrogen or halogen and m represents 0 or 1; R^2 represents halogen, nitro, $-CF_3$—, $-CF_2Cl$, $-CF_2H$, or loweralkylsulfonyl of C_1–C_4; and R^3 represents

1. alkyl of C_1–C_8;
2. alkenyl of C_2–C_8;
3. cycloalkyl of C_5–C_6;
4. benzyl; or
5. phenethyl.

3,961,938

SUBSTANCE USEFUL FOR GROWTH OF PLANTS AND PROCESS FOR MANUFACTURING THE SAME

Chiyokichi Iizuka, 121 Shimizu, Noda, Chiba, and Chohachi Fumoto, 2-7-46, Kawarasone, Koshigaya, Saitama, both of Japan

Filed Nov. 8, 1974, Ser. No. 522,249

Claims priority, application Japan, Aug. 2, 1974, 49-88767

Int. Cl.² A01N *9/00*

U.S. Cl. 71—97 **9 Claims**

1. A method of promoting the growth of a plant whose growth is promoted by germanium, comprising applying to the leaves of said plant or to the soil surrounding said plant a growth promoting amount of an organic germanium component obtained by extracting the hyphae of an edible fungus selected from the group consisting of shiitake, nameko and enokidake in combination with a liquid carrier.

3,961,939

3-OXOCYCLOHEX-1-ENYL 2-METHOXY-3,6-DICHLOROBENZOATE, AND HERBICIDAL USE THEREOF

Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 18, 1975, Ser. No. 545,653

Int. Cl.² C07C *69/76;* **A01N** *9/30*

U.S. Cl. 71—107 **3 Claims**

1. The compound 3-oxocyclohex-1-enyl 2-methoxy-3,6-dichlorobenzoate.

3,961,940

POST-TREATMENT OF ILMENITE ORE SUBJECTED TO SELECTIVE CHLORINATION TREATMENT

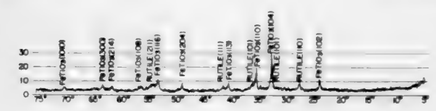
Seitaro Fukushima; Ariyoshi Saito, and Fukuzo Kaneko, all of Omiya, Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Japan

Filed Nov. 15, 1974, Ser. No. 524,340

Claims priority, application Japan, Nov. 20, 1973, 48-130468

Int. Cl.² C22B *1/00;* **C01G** *23/00*

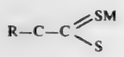
U.S. Cl. 75—1 T **10 Claims**



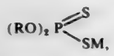
1. In a process for upgrading an ilmenite ore containing gangue materials to produce an artificial rutile comprising chlorinating the ilmenite ore in the presence of a solid carbonaceous material whereby the larger part of the iron value in the ilmenite ore is selectively chlorinated into chlorides thereof which are evaporated off during the chlorination under conditions which leave the titanium value in the ilmen-

ite ore unchlorinated in the resulting chlorinated ilmenite ore, the improvement which comprises:

1. subjecting said resulting chlorinated ilmenite ore to magnetic separation in a high-intensity magnetic field, thereby to separate a magnetic portion and a non-magnetic portion of the chlorinated ilmenite ore, and then
2. subjecting the non-magnetic portion to flotation with the use of a frothing agent, and a collector selected from the group consisting of xanthates represented by the general formula



and dithiophosphates represented by the general formula



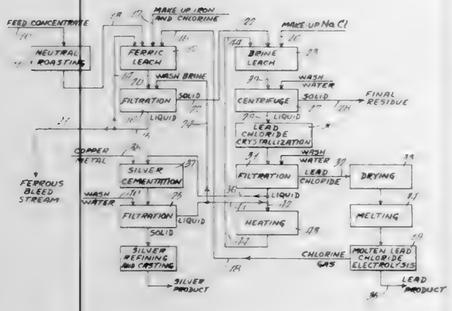
wherein R is an alkyl group containing 2 to 5 carbon atoms and M is a member selected from the group consisting of sodium, potassium and allyl, thereby to separate the residual of the solid carbonaceous material concentrated in the non-magnetic portion and a part of the gangue materials liberated from the ilmenite ore, and to obtain an artificial rutile of high titanium content as a tailing portion from the flotation.

3,961,941

METHOD OF PRODUCING METALLIC LEAD AND SILVER FROM THEIR SULFIDES

Richard D. Baker, Osburn, Idaho; Stephen M. Cottam, Bountiful, Utah; Howard E. Day, Silverton, and William A. Griffith, Osburn, both of Idaho, assignors to Hecla Mining Company, Wallace, Idaho

Filed May 19, 1975, Ser. No. 578,745
Int. Cl.² C22B *1/02, 11/04, 13/04*
U.S. Cl. 75—101 R **12 Claims**



1. In the method of producing metallic silver and elemental sulfur from a mineral material comprising silver sulfide, the improvement comprising: roasting said material under substantially non-oxidizing conditions at an elevated temperature of about 525°–900°C. for a time equivalent to about 1.5 hours at about 550°–600°C. to produce a roasted product; first leaching said roasted product in an aqueous water soluble ferric salt solution containing ferric ions to produce the corresponding solid silver salt and elemental sulfur; subjecting said solid silver salt to a second leach with aqueous sodium chloride brine solution to produce the corresponding soluble silver chloride dissolved in the solution and a solid residue comprising said elemental sulfur; and separating said dissolved silver salt from said elemental sulfur.

3,961,942

HYDROMETALLURGICAL PROCESS FOR COPPER RECOVERY FROM SULFIDE ORES

Philip R. Haskett; Carl H. Elges, III; Donald J. Bauer, and Roald E. Lindstrom, all of Reno, Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 413,408, Nov. 6, 1973, abandoned. This application Mar. 19, 1975, Ser. No. 559,942
Int. Cl.² C22B *15/00*
U.S. Cl. 75—101 BE **9 Claims**

1. A process for the recovery of copper from sulfide ores or concentrates comprising leaching the ore or concentrate in a concentrated caustic solution with an oxidizing gas at a pressure of from about 80 to about 200 psig, and at a temperature of from about 25° to about 200°C, whereby the dissolution of copper from the ore or concentrate is effected.

3,961,943

PROCESS FOR RECOVERING PALLADIUM

Joseph G. Schell, Jr., Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 18, 1975, Ser. No. 569,628
Int. Cl.² C22B *11/04*
U.S. Cl. 75—108 **10 Claims**

1. A method of converting an inactive palladium-containing complex, formed during the process of making an alkylene glycol monoester from a carboxylic acid and an olefin, to metallic palladium, said method comprising reducing at least a portion of said palladium-containing complex to metallic palladium by adding hydrazine or hydrogen to a slurry of said palladium-containing complex and an alkylene glycol ester.

3,961,944

ALUMINUM-BASE ALLOYS FOR CABLE-SHEATH

Kiyomi Yanagida; Tadashi Hirokane; Megumu Sumitomo, and Hidenori Takaoka, all of Aichi, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 20, 1974, Ser. No. 471,745
Claims priority, application Japan, May 18, 1973, 48-56610; May 18, 1973, 48-56111
Int. Cl.² C22C *21/00*
U.S. Cl. 75—138 **18 Claims**

1. A cable-sheath material comprising an aluminum-base alloy consisting essentially of aluminum and at least one of less than about 1.7% by weight Mn and less than about 0.8% by weight Cr in the ranges defined by the two equations

$$3.8 \times \text{Cr-content (wt.\%)} + 3.0 \times \text{Mn-content (wt.\%)} \leqq 5.1$$

$$3.8 \times \text{Cr-content (wt.\%)} + 3.0 \times \text{Mn-content (wt.\%)} \geqq 0.35$$

and 0.05 to 0.45% by weight Li.

3,961,945

ALUMINUM-SILICON COMPOSITE

Robert N. Sanders, Baton Rouge, La., and Alex R. Valdo, Phoenix, Ariz., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 219,523, Jan. 20, 1972, abandoned. This application Apr. 19, 1974, Ser. No. 462,312
Int. Cl.² C22C *21/02*
U.S. Cl. 75—142 **4 Claims**

1. A hard generally uniform metallic composite consisting essentially of a dispersion of particles between about 60 mesh and about 400 mesh in size of a hard filler selected from the group consisting of zircon, alumina, zirconia and aluminum silicates, the dispersion being in an aluminum-silicon alloy containing by weight 19 to 21% silicon, 4 to 8% magnesium and 2 to 4% copper, the balance of the alloy being essentially aluminum, and about 5 to about 80% by weight of the composite being the dispersed particles.

3,961,946

MAGNETIC ALLOY FOR USE IN THERMO AND MAGNETO PRINTING

Yoshimi Makino, Fujisawa, and Shigeyasu Ito, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 6, 1975, Ser. No. 547,542
Claims priority, application Japan, Feb. 13, 1974, 49-17458
Int. Cl.² C22C *5/04*
U.S. Cl. 75—172 R **1 Claim**

1. Magnetic alloy for use in thermo and magneto printing, containing platinum, nickel and cobalt, as represented $Pt_x(Ni_yCo_{1-y})_{1-x}$ where x being not less than 0.45 and not more than 0.55, y being not less than 0.65 and not more than 0.86.

3,961,947

PROCESS FOR PREPARING WATERLESS LITHOGRAPHIC MASTERS

John B. Wells, Savannah, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 19, 1973, Ser. No. 408,222
Int. Cl.² G03F *7/02*
U.S. Cl. 96—1 R **28 Claims**

1. A method of preparing a waterless lithographic master comprising:

a. providing a suitable ink accepting substrate,
b. coating said substrate with a silicone gum curing catalyst,
c. depositing a barrier fusible hydrophobic particulate image pattern on said coated substrate to mask said curing catalyst in the image areas,
d. fusing said particulate image pattern,
e. coating the resultant substrate with a curable silicone gum as an aqueous emulsion; and
f. curing said silicone gum in the nonimage areas to selectively provide ink receptive image areas and ink releasing nonimage areas.

25. The method of claim **1** wherein the image is electrophotographically formed.

3,961,948

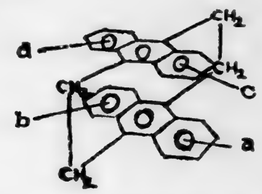
PHOTOCHROMIC IMAGING METHOD

Franklin D. Saeva, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 323,589, Jan. 15, 1974. This application Aug. 2, 1974, Ser. No. 494,246
Int. Cl.² G03C *13/00;* **B41M** *5/18;* **G03C** *5/24;* **G03G** *16/00*
U.S. Cl. 96—1 R **35 Claims**

8. An imaging method based upon the visible light induced differences with respect to the relative physical properties, chemical properties or electrical properties of a photochromic compound and its corresponding photoisomer, said method comprising:

a. providing a photochromic imaging member wherein the imaging layer comprises a dispersion of at least 1 weight percent of at least 1 cyclic photochromic compound of the formula:



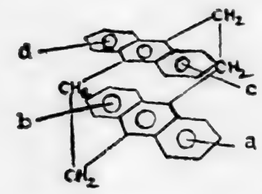
wherein *a*, *b*, *c* and *d* are independently selected from the group consisting of hydrogen, halogen, NO_2, NH_2, lower alkyl, phenyl, phenoxy, lower alkoxy, carboxy, hydroxyl, lower alkyl esters and aryl esters

in a film-forming polymeric resin;

b. forming a latent image within said imaging layer by imagewise exposure of said imaging layer to sufficient visible light to convert the photochromic compound(s) to its (their) corresponding photoisomer(s); and
c. rendering said latent image visible by charging the surface of the imaging layer followed by contacting said charged surface with a charged colored powder, the relative polarity of the surface charge and the charge on the colored powder causing the attraction of said powder to those areas of the imaging layer capable of retention of the surface charge.

15. An imaging method based upon the visible light induced differences with respect to the relative physical properties, chemical properties or electrical properties of a photochromic compound and its corresponding photoisomer, said method comprising:

a. providing a photochromic imaging member wherein the imaging layer comprises a dispersion of at least 1 weight percent of at least 1 cyclic photochromic compound of the formula:



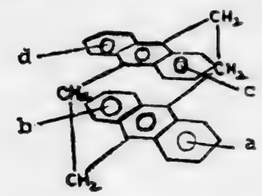
wherein *a*, *b*, *c* and *d* are independently selected from the group consisting of hydrogen, halogen, NO_2, NH_2, lower alkyl, phenyl, phenoxy, lower alkoxy, carboxy, hydroxyl, lower alkyl esters and aryl esters

in a film-forming polymeric resin;

b. forming a latent image within said imaging layer by imagewise exposure of said imaging layer to sufficient visible light to convert the photochromic compound(s) to its (their) corresponding photoisomer(s); and
c. rendering said latent image visible by (*i*) heating of the surface of the imaging layer to a point just above its glass transition temperature thereby rendering the surface of the imaging layer adhesive in imagewise configuration, (ii) contacting said adhesive image with the surface of a donor member, said surface being coated with loosely adhering colored particles, and (*iii*) separating said donor member and said imaging layer, whereby colored particles are transferred to the adhesive areas of said imaging layer from the surface of said donor member.

22. An imaging method based upon the visible light induced differences with respect to the relative physical properties, chemical properties or electrical properties of a photochromic compound and its corresponding photoisomer, said method comprising:

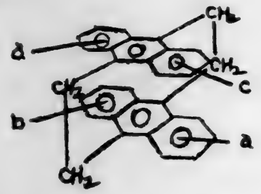
a. providing a photochromic imaging member wherein the imaging layer comprises a dispersion of at least 1 weight percent of at least 1 cyclic photochromic compound of the formula:



wherein *a*, *b*, *c* and *d* are independently selected from the

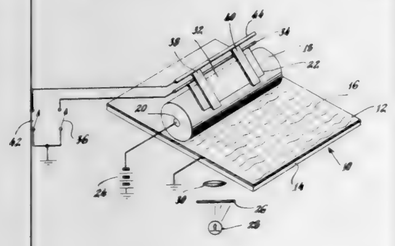
group consisting of hydrogen, halogen, NO_2, NH_2, lower alkyl, phenyl, phenoxy, lower alkoxy, carboxy, hydroxyl, lower alkyl esters and aryl esters
in a film-forming polymeric resin;
b. uniformly frosting the imaging layer;
c. forming a latent image within said imaging layer by imagewise exposure of said imaging layer to sufficient visible corresponding photoisomer(s); and
d. rendering said latent image visible by exposing the frosted surface of the imaging layer to solvent vapors whereby the unexposed surface of the film reverts to its former smooth condition.

29. An imaging method based upon the visible light induced differences with respect to the relative physical properties, chemical; properties or electrical properties of a photochromic compound and its corresponding photoisomer, said method comprising:
a. providing a photochromic imaging member wherein the imaging layer comprises a dispersion of at least 1 weight percent of at least 1 cyclic photochromic compound of the formula:



wherein *a*, *b*, *c* and *d* are independently selected from the group consisting of hydrogen, halogen, NO_2, NH_2, lower alkyl, phenyl, phenoxy, lower alkoxy, carboxy, hydroxyl, lower alkyl esters and aryl esters
in a film-forming polymeric resin;
b. forming a latent image within said imaging layer by imagewise exposure of said imaging layer to sufficient visible light to convert the photochromic compound(s) to its (their) corresponding photoisomer(s); and
c. rendering said latent image visible by exposing the surface of the imaging layer to solvent vapors whereby the polymeric resin of said imaging layer is crystallized in the exposed areas of the imaging layer.

3,961,949
PHOTOELECTROPHORETIC IMAGING METHOD PRODUCING A DESIRED IMAGE BORDER
Henry R. Till, and Percy Keith Watson, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 3, 1972, Ser. No. 214,936
Int. Cl.² G03G *17/04*
U.S. Cl. 96—1 PE **3 Claims**



1. A photoelectrophoretic imaging method comprising
a. providing a flat transparent injecting electrode and a cylindrically shaped blocking electrode,
b. providing a layer of imaging suspension on the surface of said injecting electrode, said suspension comprising a plurality of finely divided particles in an electrically insulating carrier liquid, each of said particles comprising an electrically photosensitive pigment;
c. bringing said blocking electrode into rolling virtual contact with said injecting electrode and establishing an electrical field across said suspension layer;
d. exposing said suspension to an imagewise pattern of activating electromagnetic radiation through said transparent injecting electrode; and
e. substantially reducing the electrical field across said suspension in predetermined areas outside of and bordering the image area by contacting the areas of said blocking electrode surface corresponding to said border areas with a conductive member biased to a potential which substantially reduces the electrical field in said border areas, wherein the particles in said suspension do not adhere to the surface of either electrode in said border areas,
whereby complementary images having clearly defined borders are formed on the surfaces of said electrodes.

3,961,950
IMAGING SYSTEM
Richard F. Bergen, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 10, 1975, Ser. No. 540,299
Int. Cl.² G03G *16/00*
U.S. Cl. 96—1.1 **21 Claims**

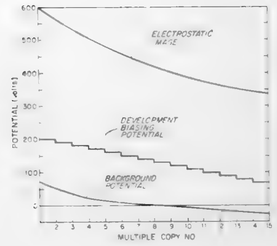
1. A method of obtaining a reverse sense image from an original comprising:
a. providing an unscreened electro-optic image recorder;
b. exposing said recorder to activating radiation through a grating pattern, thereby forming surface deformations on said recorder corresponding to said grating pattern; then,
c. exposing said recorder to an imagewise pattern of activating radiation corresponding to the original image, thereby forming an image in said recorder which, when the higher order diffracted light is viewed, is opposite in sense to the original.

4. The method of claim 1 wherein said recorder is reflection type image recorder, and further including a reflection type readout system for projecting the image information on said recorder onto a viewing plane.

16. The method of claim 13 wherein said image recorder comprises a layer of voltage or current-sensitive, light modulating material overlying a layer of photoconductive material.

3,961,951
ELECTROPHOTOGRAPHIC METHOD FOR PRODUCING MULTIPLE COPIES FROM THE SAME ELECTROSTATIC IMAGE
Edward F. Mayer, Acton, Mass., and Robert A. Moore, Nashua, N.H., assignors to Itek Corporation, Lexington, Mass.
Filed Dec. 26, 1974, Ser. No. 536,712
Int. Cl.² G03G *13/14*
U.S. Cl. 96—1.4 **10 Claims**

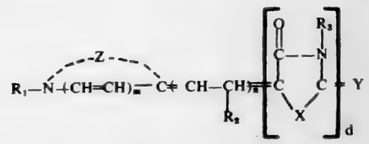
1. In an electrophotographic method including the steps of:
Forming an electrostatic image on an insulating surface;
Developing said electrostatic image with toner to form a first toner image on said insulating surface by passing the electrostatic image through a development zone containing developer while applying a biasing potential thereacross;
Transferring toner from said first toner image to a support surface to form a first copy;
Redeveloping said electrostatic image with toner by recycling it through said development zone;
Transferring said redeveloped toner images to a support surface to produce subsequent copies from said electrostatic image;
The improvement comprising reducing the applied biasing potential on successive cycles of said electrostatic image through said development zone to thereby offset reductions in said electrostatic image potential which produces



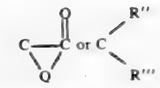
subsequent electrophotographic copies having good image density.

3,961,952
MEROCYANINE PHOTOCONDUCTORS
Robert H. Sprague, Carlisle, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed June 4, 1973, Ser. No. 366,907
Int. Cl.² G03G *5/04*
U.S. Cl. 96—1.5 **12 Claims**

1. An electrophotographic element comprising an electrically conducting support material with a photoconductive coating thereon, said photoconductive coating consisting essentially of a photoconductive merocyanine dye pigment dispersed in an insulating binder with a pigment to binder ratio of from about 2/1 to about 1/4, wherein said merocyanine dye can be represented by the following structural formula:



wherein:
R_1 is alkyl, unsaturated alkyl, hydroxyalkyl, alkoxyalkyl, acyloxyalkyl, carboxyalkyl, cycloalkyl, aryl, aralkyl or, heterocyclic;
Z represents the non-metallic atoms completing a 5 or 6 member heterocyclic ring;
m is equal to 0 or 1;
R_2 is hydrogen, alkyl, aryl or aralkyl;
n is equal to 0, 1, 2, 3 or 4;
R_3 is hydrogen, lower alkyl or hydroxyalkyl;
X is O, Se, S or N—R′ wherein R′ is a monovalent alkyl or aryl group; and,
d is equal to 1, 2, 3 or 4;
Y represents



wherein Q represents the non-metallic atoms necessary to complete a heterocyclic ring and wherein R″ and R‴ are individually selected from CN, COR and COOR where R is alkyl, aryl or aralkyl.

3,961,953
METHOD OF FABRICATING COMPOSITE TRIGONAL SELENIUM PHOTORECEPTOR
Richard P. Millonzi, and Richard W. Radler, both of Marion, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed May 28, 1974, Ser. No. 473,858
Int. Cl.² G03G *5/04*
U.S. Cl. 96—1.5 **4 Claims**

1. A method of making a photosensitive imaging device which comprises:
vacuum depositing a 0.03 to 0.8 micron thick layer of vitreous selenium onto a supporting substrate, forming a relatively thicker layer of a substantially transparent electrically organic material over said selenium layer and heating said device to a temperature of from 125° to 210°C for a time of from 1 to 24 hours to convert the vitreous selenium to the crystalline trigonal form.

3,961,954
ACID SENSITIZED CHARGE TRANSFER COMPLEXES AND CYCLIC ELECTROSTATOGRAPHIC IMAGING
Gustav R. Pfister, Webster; David J. Williams, Fairport, and Martin A. Abkowitz, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 27, 1972, Ser. No. 319,080
Int. Cl.² G03G *5/09*, *13/14*
U.S. Cl. 96—1.6 **5 Claims**

1. A cyclic electrostatographic imaging method comprising:
a. providing an imaging member having a photoconductive imaging layer containing an organic photoconductive material, an activator capable of formation of a charge transfer complex with said material and from about 0.01 to less than about 0.1 weight percent of an organic protonic acid having an aqueous dissociation constant of 10^{-4} or greater;
b. forming a latent electrostatic image on the surface of said imaging layer by first charging said surface followed by exposing said surface to a light and shadow image, the extent of exposure being sufficient to generate nonpersistent photocurrents in the irradiated areas of said layer without any substantial corresponding generation of persistent photocurrents in these same irradiated areas;
c. rendering said latent image visible by development with finely divided toner particles;
d. removing at least a portion of at least any residual developed image from said imaging surface; and
e. repeating steps a-d in sequence at least one additional time.

3,961,955
PRINTING PROCESS CAPABLE OF REPRODUCING CONTINUOUS TONE IMAGES

Robert F. Gracia, Scituate; Richard A. Laughrey, Marblehead, and Paul F. Tuohey, Acton, all of Mass., assignors to Itek Corporation, Lexington, Mass.

Continuation-in-part of Ser. Nos. 54,626, July 13, 1970, Pat. No. 3,809,562, and Ser. No. 54,627, July 13, 1970, Pat. No. 3,807,304, and Ser. No. 55,238, July 13, 1970, Pat. No. 3,807,305, and Ser. No. 174,102, Aug. 23, 1971, which is a continuation-in-part of Ser. No. 54,626, July 13, 1970, Pat. No. 3,809,562, and Ser. No. 54,627, July 13, 1970, Pat. No. 3,807,304, and Ser. No. 55,238, July 13, 1970, Pat. No. 3,807,305, and Ser. No. 862,912, Oct. 1, 1969, abandoned, said Ser. No. 54,626, and Ser. No. 54,627, and Ser. No. 55,238, each is a continuation-in-part of Ser. No. 74,467, July 15, 1969, abandoned. This application July 23, 1973, Ser. No. 381,836

The portion of the term of this patent subsequent to Nov. 27, 1990, has been disclaimed.

Int. Cl.² G03F *7/02;* **B41M** *1/00, 5/00*

U.S. Cl. 96—33 **10 Claims**

1. Process of recording a continuous tone image comprising:

a. forming a continuous tone physically developable image on a physically roughened support and

b. physically developing by contacting said medium with image forming materials comprising a source of metal ions external to the photosensitive layer and wherein the thickness of the physically developable image, the roughness of the support, the proximity of the physically developable image with respect to the surface of the support, and the length of contacting of said medium with said image forming materials being such as to selectively deposit sufficient metal to thereby form a coherent metal image of low contrast and having an extended tonal range and which is adherently bonded and in intimate contact with said support.

3,961,956
METHOD FOR PRODUCTION OF AND DISTINCTION BETWEEN COMBINED VALIDIFICATION AND IDENTIFICATION PHOTOGRAPHS

Susumu Fukuda, and Kuniomi Abe, both of Nishinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 388,861, Aug. 15, 1973. This application May 15, 1975, Ser. No. 578,053

Claims priority, application Japan, Oct. 25, 1972, 47-106782; Sept. 26, 1972, 47-96364

Int. Cl.² G03C *9/00, 5/04*

U.S. Cl. 96—40 **4 Claims**

1. A method of making an identification image in the form of a compositive photograph containing at least two different images, one of which is a holder image and the other of which is a check image, with the holder image not being clearly discernible when viewed normally because the check image dominates the view, which method comprises:

projecting a first holder image on a sheet of photosensitive material through a first board formed of a plurality of slats disposed parallel to one another at an even pitch and separated by gaps, said gaps being less wide than the slats and being no greater than 45 mm in width, with said slats being approximately at least twice as wide as the width of said gap, with said board being positioned in close contact with said photosensitive sheet, whereby, only said photosensitive sheet portions defined by said gaps of said first board are initially exposed, and

projecting a second check image on said photosensitive sheet through a second board, which is positioned in close contact with said photosensitive sheet, with said second board slats being at least as wide as said gaps of said first board and lying over the previously exposed portions of said photosensitive sheet and having gaps between said second board slats which are at least twice as wide as the gaps of said first board and being aligned with unexposed portions thereof, whereby, only said photosensitive sheet portions defined by said gaps between said second board slats are exposed to form a compositive photograph containing said first and second images, said first image being contained in thin striate portions corresponding to said photosensitive sheet portions exposed through gaps between said first positioned board slats, and said second image being contained in thin, straite portions corresponding to said photosensitive sheet portions exposed through said gaps between said second positioned board slats, whereby, said second image is readily viewable and dominates said view, and said first image becomes apparent and dominates said view only when viewed through a lenticular lens having plano-convex portions disposed at the same pitch as said slats of said first board when placed in close contact with said composite photograph and moved into a position in which said lens plano-convex portions are aligned with respective striate portions containing said first image.

3,961,957
DYE BLEACH PREPARATION FOR THE PHOTOGRAPHIC SILVER DYE BLEACH PROCESS

Ekkehard Kramp; John Lenoir; Max Marthaler, all of Marly, and Robert Schaller, Fribourg, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed May 10, 1974, Ser. No. 468,838

Claims priority, application Switzerland, May 18, 1973, 7124/73

Int. Cl.² G03C *7/00*

U.S. Cl. 96—53 **16 Claims**

1. Dye bleach preparation for the photographic silver dye bleach process which comprises an acid, a water-soluble iodide and at least one organic, at least bifunctional sulphur compound of which the solubility is at least 5×10^{-4} mol per liter of preparation and of which the vapour pressure in the temperature range of −20°C to +100°C is at most as great as that of water, and which contains at least one HS- group and at least one oxygen, nitrogen, phosphorus or additional sulphur atom, with the sulphur atom of each HS—group being separated from the next oxygen, sulphur, nitrogen and phosphorus atom present in the molecule by at least three carbon atoms, wherein the sulphur compound corresponds to the formula

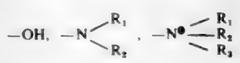
$$H - S - A(-B)_m$$

wherein

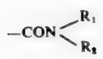
A denotes an aliphatic, araliphatic, aromatic or heterocyclic bridge member,

m denotes an integer of value at most 4 and

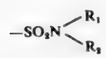
B denotes are of the groups of the formulae



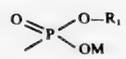
$X^{\ominus}$, —COOM,



—SO_3M,



and



wherein

M denotes a cation,

X denotes an anion,

R_1 and R_2 denote a hydrogen atom, a lower alkyl group, a lower hydroxyalkyl group or the radical of a benzenesulphonic acid and

R_3 denotes a lower alkyl group and

R_1 and R_2 present on the same nitrogen atom can also form a heterocyclic ring with the latter.

3,961,958
PROCESS FOR FIXING PHOTOGRAPHIC MATERIAL

Matthias Schellenberg, Marly, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 9, 1974, Ser. No. 513,449

Claims priority, application Switzerland, Oct. 18, 1973, 14756/73

Int. Cl.² G03C *5/38*

U.S. Cl. 96—61 R **6 Claims**

1. Process for fixing imagewise exposed and developed photographic material, containing silver iodide, with an aqueous fixing bath which contains at least one compound capable of forming soluble silver complexes and selected from the group consisting of thiocyanates and thiosulphates, which process comprises employing a fixing bath that contains at least one of the following solvents: N-methylpyrrolidone, ϵ-caprolactam, tetramethylurea, phosphoric acid trisdimethylamide, N-methylmorpholine, dimethylformamide, glycol monomethyl ether, dimethylsulphone, dimethylsulphoxide, acetonitrile.

3,961,959
PROCESS FOR DEVELOPING A LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Mitsuto Fujiwhara; Keiji Kasai; Yoshinobu Nakagawa; Hiroshi Tokura; Kenji Itoh, and Seiji Muramoto, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

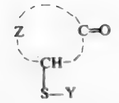
Filed Jan. 28, 1974, Ser. No. 436,868

Claims priority, application Japan, Feb. 5, 1973, 48-13811

Int. Cl.² G03C *5/30, 7/00, 1/06*

U.S. Cl. 96—66.3 **21 Claims**

1. A process for developing an imagewise exposed light-sensitive silver halide protographic material in the presence of a development releasing inhibitor compound which liberates a development inhibitor and simultaneously produces a colourless compound, said development releasing inhibitor compound comprising



wherein Z represents a group selected from the group consisting of a piperidone, a lactone having a 4- to 7-membered ring, a pyrrolidone, a hydantoin and an oxyindole, and Y represents a group that forms a development inhibitor when the sulphur atom of the thioether bond is split from the heterocyclic ring to release an aryl mercapto compound, a heterocyclic mercapto compound, a thioglycol, cysteine or glutathione.

3,961,960
MULTILAYER COLOR PHOTOGRAPHIC MATERIALS

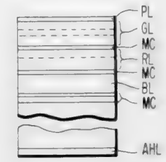
Keisuke Shiba; Takeshi Hirose; Jun Hayashi; Atsuaki Arai; Nobuo Furutachi, and Harumi Katsuyama, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed June 19, 1974, Ser. No. 480,802

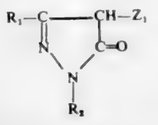
Claims priority, application Japan, June 19, 1973, 48-68892

Int. Cl.² G03C *1/76, 7/04, 1/40*

U.S. Cl. 96—74 **11 Claims**



1. A multilayer color photographic material comprising a support having coated thereon at least two photosensitive silver halide emulsion layer units which provide dye images having substantially different colors from each other by color development, each of said photosensitive emulsion layer units containing a coupler (A) capable of undergoing a coupling reaction with the oxidation product of a primary aromatic amine color developing agent and an interlayer color correction coupler (B) capable of providing an interlayer interimage effect, which provides a dye having a different color than that of the dye formed by the coupling reaction of said coupler (A) and the oxidation product of the primary aromatic amine color developing agent, wherein in said photosensitive emulsion layer units the dye images provided by said coupler (A) and said coupler (B) are of the same type, said couplers (A) and said interlayer color correction couplers (B) being couplers represented by the following general formula (I)



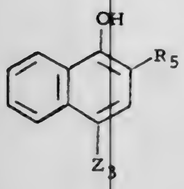
(I)

wherein R_1 represents an alkyl group, an aryl group, an alkoxy group, an aryloxy group, a heterocyclic ring, an amino group, a carbonamido group, or a ureido group; R_3 represents an alkyl group, an aryl group, or a heterocyclic group; and Z_1 represents a hydrogen atom or a group which is released or releases, in the case of the interlayer color correction coupler, a development inhibitor at color development; the general formula (II)



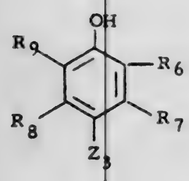
(II)

wherein R_3 represents an alkyl group or an aryl group; R_4 represents an aryl group; and Z_2 represents an hydrogen atom or a group which is released or releases, in the case of the interlayer color correction coupler, a development inhibitor at color development; the general formula (III)



(III)

wherein R_5 represents a carbonyl group, a sulfamyl group, an alkoxycarbonyl group, or an aryloxycarbonyl group; and Z_3 represents a hydrogen atom or a group which is released or releases in the case of the interlayer color correction coupler, a development inhibitor at color development; or the general formula (IV)



(IV)

wherein R_6 represents an alkyl group, an aryl group, a heterocyclic group, an amino group, a carbonamido group, a sulfonamido group, a sulfamyl group, or a carbamyl group; R_7, R_8, and R_9 each represents a hydrogen atom, an alkoxy group, an alkyl group, an aryl group, a heterocyclic group, an amino group, a carbonamido group, a sulfonamido group, a sulfamyl group, or a carbamyl group; and Z_4 represents a hydrogen atom or a group which is released or releases, in the case of the interlayer color correction coupler, a development inhibitor at color development.

3,961,961

POSITIVE OR NEGATIVE DEVELOPABLE PHOTOSENSITIVE COMPOSITION

Larry D. Rich, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

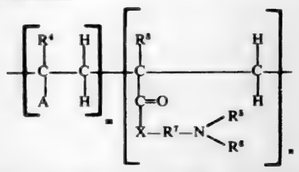
Filed Nov. 20, 1972, Ser. No. 308,121

Int. Cl.² G03C *1/68*

U.S. Cl. 96—83 **10 Claims**

1. An article comprising a substrate having thereover a light-sensitive layer comprising:

1. at least one free-radical polymerizable monomer having at least one terminal vinyl group and a boiling point above 100°C., said monomer being free of acidic and basic moieties,
2. at least one photoinitiator in an amount sufficient to polymerize said polymerizable monomer upon exposure to actinic radiation, and
3. a blend comprising:
   a. at least one acid soluble amino containing polymer of the formula



wherein R^4 is hydrogen or methyl; A is selected from the class consisting of hydrogen, alkyl having up to 18 carbon atoms, vinyl, isopropenyl, phenyl, alkoxy having up to 18 carbon atoms, alkoxycarbonyl having up to 18 carbon atoms, carboalkoxy having up to 18 carbon atoms, tetrahydrofurloxycarbonyl, carbamoyl, N,N-di(lower alkyl) carbamoyl, pyrrolidinyl, and cyano groups; R^5 and R^6 are each selected from the class consisting of hydrogen, lower alkyl, and phenyl groups and R^5 and R^6 together with the N may be a piperidino or morpholino group; R^7 is selected from divalent alkylene having 2 to 18 carbon atoms and phenylene groups; R^8 is hydrogen or lower alkyl group; X is oxygen or N-R^9 wherein R^9 is hydrogen or a lower alkyl group; *m* is zero or a positive integer; and *n* is a positive integer; and

   b. at least one compatible, acid insoluble, film-forming polymer,

said free radical polymerizable monomer and said components of said blend being present in an amount sufficient to allow said composition upon imagewise actinic radiation exposure to be developed positively and negatively as desired.

3,961,962

PHOTOMASK MATERIAL AND METHOD FOR PRODUCING SAME

Masamichi Sato, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 29, 1974, Ser. No. 528,317

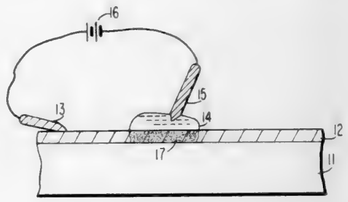
Claims priority, application Japan, Nov. 29, 1973, 48-134784

Int. Cl.² G03C *1/78*

U.S. Cl. 96—87 R **10 Claims**

1. A photomask material which comprises a transparent support having thereon an aluminum oxide thin film formed by anodic oxidation, said oxide thin film containing with a uniform distribution over the entire film a number of fine pores having a light-sensitive silver halide therein.

6. A method for producing the photomask material of claim 1, which comprises providing an aluminum thin layer on a transparent support, anodically oxidizing said aluminum thin layer by contacting said aluminum thin layer with an electrolytic solution such that the rate of anodic oxidation of said aluminum thin layer is continuously reduced in a direction of from one portion of said thin layer to another portion of said thin layer to thereby render said thin layer transparent, and incorporating a light-sensitive silver halide in a number of the



resulting fine pores formed in the aluminum oxide thin film and uniformly all over the aluminum oxide thin film.

3,961,963

MULTILAYER PHOTOGRAPHIC MATERIAL

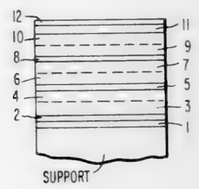
Keisuke Shiba; Takeshi Hirose, and Toshiaki Aono, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sept. 13, 1974, Ser. No. 505,816

Claims priority, application Japan, Sept. 13, 1973, 48-103542

Int. Cl.² G03C *1/40*

U.S. Cl. 96—100 **13 Claims**



1. A photographic photosensitive material comprising a support having thereon a silver halide photosensitive emulsion layer containing a hydroquinone derivative which releases a development inhibitor at development and including on said emulsion layer or between said emulsion layer and said support an adsorbing colloid layer containing silver halide particles which are not substantially developed by development for adsorbing said development inhibitor.

3,961,964

COATING COMPOSITION FOR SUPPRESSING COMBUSTION OF TITANIUM METAL

Meyer R. Achter, Washington, D.C., and James R. Griffith, Riverdale Heights, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1973, Ser. No. 406,074

Int. Cl.² C09D *5/14*

U.S. Cl. 106—15 FP **5 Claims**

1. A coating composition for suppressing combustion of titanium metal comprising from about 14.8% by weight to about 73.7% by weight N,N-diglycidyl-2,4,6-tribromoaniline, from about 13.2% by weight to about 31.2% by weight a solution of cyclopentene ether-2,3,2',3' diepoxide in the diglycidyl ether of bisphenol A, a curing agent, and a solvent.

3,961,965

DYESTUFF PREPARATIONS AND PRINTING INKS

Guenther Zwahlen, Dornach, Switzerland, assignor to Sublistatic Holding SA, Switzerland

Division of Ser. No. 354,978, April 27, 1973, Pat. No. 3,854,969, which is a continuation of Ser. No. 99,678, Dec. 8, 1970, abandoned, which is a continuation-in-part of Ser. No. 743,287, July 9, 1968, abandoned. This application July 18, 1974, Ser. No. 489,826

Claims priority, application Switzerland, July 24, 1967, 10436/67; Nov. 2, 1967, 15343/67

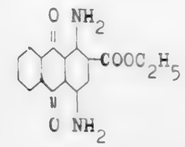
The portion of the term of this patent subsequent to Dec. 17, 1991, has been disclaimed.

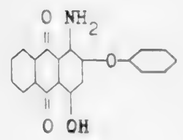
Int. Cl.² C09D *11/14*

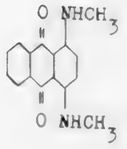
U.S. Cl. 106—22 **10 Claims**

1. An intaglio printing ink which contains:

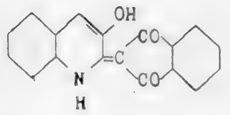
1. the dyestuff of formula







or



2. an aqueous-organic or substantially pure organic solvent or mixture thereof; and
3. at least one resinous cellulose derivative which dissolves readily in (2), and which serves as binder or thickener for the printing ink.

3,961,966
CYANOACRYLATE ADHESIVES

Bernd Brinkmann, Bad Zwischenahn, and Wolfgang Imoehl, Unna, both of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

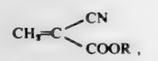
Filed Sept. 27, 1974, Ser. No. 509,827

Claims priority, application Germany, Oct. 4, 1973, 2349799

Int. Cl.² C07C *121/38;* **C07D** *305/10;* **C09J** *3/00;* **C09K** *3/14*

U.S. Cl. 106—36 **6 Claims**

1. An adhesive composition comprising an ester of α-cyanacrylic acid of the formula



wherein R is hydrocarbon having 1 to 10 carbon atoms, plasticized by the presence in said composition of 5 to 50 percent by weight of a monocyclic or bi-cyclic lactone having from 3 to 20 carbon atoms and having from 4 to 7 members in the lactone ring.

3,961,967
FOUNDRY FACING SAND COMPOSITION

Thomas Aaron Brooks, Moline, Ill., assignor to Deere & Company, Moline, Ill.

Filed Apr. 10, 1974, Ser. No. 459,782

Int. Cl.² B28B *7/36*

U.S. Cl. 106—38.23 **8 Claims**

1. A foundry facing green sand mold composition consisting essentially of silica sand and admixed therewith, in percent by weight of the silica sand, from about 0.8 to about 2 percent of a cellulose binder, from about 2 to about 6 percent of foundry clay, from about 3.5 to about 7 percent water, from about 1 to about 2.2 percent core oil, from about 0.3 to about 0.5 percent of a release agent-lubricant selected from the group consisting of kerosene, fuel oil, gasoline, and silicone base materials, and from about 0 to about 20 percent silica flour.

3,961,968
METHOD FOR PRODUCING HYBRID BINDER FOR CERAMIC MOLDS

Wayne F. Wales, Elnora, N.Y., assignor to Waukesha Foundry Company, Inc., Waukesha, Wis.

Continuation-in-part of Ser. No. 455,687, March 28, 1974, abandoned, and a continuation-in-part of Ser. No. 76,609, Sept. 29, 1970, abandoned, and a continuation-in-part of Ser. No. 841,117, July 11, 1969, abandoned. This application Mar. 17, 1975, Ser. No. 559,191

Int. Cl.² B28B *7/34;* **B01J** *13/00*

U.S. Cl. 106—38.35 **12 Claims**

1. The method of preparing a hybrid silicate binder comprising the steps of admixing the following:

a. 30–60 parts by volume glycol ether having the formula $C_nH(2n+1)OCH_2CH_2OH$ where $n = 1, 2, 3$ or 4;

b. 30–75 parts by volume colloidal silica sol comprising at least about 28% available SiO_2 and selected from the group of basic colloidal silica sol and acidic colloidal silica sol;

c. 5–25 parts by volume of organic silicate comprising at least about 28% available SiO_2 and selected from the group of ethyl silicate, ethylene glycol monoethyl ether silicate, propyl silicate and butyl silicate, said organic silicate being hydrolyzed with 1-2% water and containing sufficient acid to provide final binder pH of 1–4;

d. The volume and composition of the constituents added pursuant to b. and c. being chosen so that the ratio of % SiO_2 by weight contributed by the c. constituents to the % SiO_2 by weight contributed by the b. constituents to the final binder is between 0.09 and .9.

3,961,969
GLASS-CERAMICS FOR SEMICONDUCTOR DOPING

James E. Rapp, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 431,212, Jan. 7, 1974. This application Dec. 23, 1974, Ser. No. 535,170

The portion of the term of this patent subsequent to Sept. 23, 1992, has been disclaimed.

Int. Cl.² C03C *3/22, 3/08, 3/10*

U.S. Cl. 106—39.6 **4 Claims**

1. A glass-ceramic dopant for vapor phase transport of B_2O_3, said dopant host being rigid and dimensionally stable during doping at elevated temperatures in excess of 1050°C prepared by the thermal in-situ crystallization of a thermally crystallizable substantially alkali metal oxide free glass composition consisting essentially of:

Component	Mole %
SiO_2	15–40
Al_2O_3	15–30
B_2O_3	20–60
RO	5–25

wherein

$$4 \geq \frac{Al_2O_3}{RO} \geq 1.5$$

Wherein RO is:

MgO	0–15
CaO	0–10
SrO	0–10
BaO	0–15
La_2O_3	0–5
Nb_2O_5	0–5
Ta_2O_5	0–5

3,961,970
REED SWITCH CONSTRUCTION

David W. Morgan, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 21, 1975, Ser. No. 570,250

Int. Cl.² C03C *3/04, 3/10*

U.S. Cl. 106—52 **1 Claim**

1. A glass having a strain point between about 420°–450°C., a coefficient of thermal expansion (25°–300°C.) in the range of 100–120 × 10^{-7}/°C., an electrical resistivity, Log R, of at least 8.5 as measured at 250°C. and at least 6.5 when measured at 350°C., and being composed essentially of, in percent by weight as calculated from the glass batch on an oxide basis, 53–59% SiO_2, 3–7% Al_2O_3, 20–25% $Na_2O + K_2O$ with a K_2O:Na_2O ratio greater than 1.1 on a weight basis, 7–10% BaO, 2–6% ZnO, and 1–5% Fe_2O_3.

3,961,971
METHOD FOR IMPROVING BRIGHTNESS OF KAOLINITE CLAYS INCLUDING IRON PYRITES

William F. Abercrombie, Jr.; Frank R. Trowbridge, and Norman Lary McCook, all of Macon, Ga., assignors to J. M. Huber Corporation, Locust, N.J.

Continuation-in-part of Ser. No. 362,155, May 21, 1973, Pat. No. 3,853,983. This application Dec. 9, 1974, Ser. No. 531,027

The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.

Int. Cl.² C04B *33/13*

U.S. Cl. 106—72 **5 Claims**

1. A method for preparing a brightened coating kaolin from a crude kaolinitic clay, discolored with contaminants including discoloring iron-based contaminants in the form of iron pyrites and sulfurous contaminants, comprising:

subjecting said crude clay to comminution; k

roasting said comminuted crude clay in an oxidizing atmosphere at a temperature from 400°C to 600°C for a period of about 2 hours, said temperature being sufficient to oxidize the pyrites but insufficient to drive off the chemically bound water from the kaolinite crystals, a substantial cessation of sulfurous fumes being noted at the completion of said roasting;

converting at least a portion of the sulfurous contaminants to a form exhibiting increased magnetic susceptibility and increased solubility in chemical leachants selected from the group consisting of zinc dithionite, zinc salts of hydrosulfurous acid, sodium salts of hydrosulfurous acid and combinations thereof;

thereafter forming an aqueous slurry of said roasted clay, said slurry being of about 40% solids;

subjecting at least a portion of said slurry to a magnetic field having an intensity of at least 2.4 kilogauss and high field gradients for a period of about four minutes to separate at least part of said converted components; and

thereafter subjecting said slurry to leaching employing from 0.1 to 2.5 weight percent of leach selected from the group consisting of zinc dithionite, zinc salts of hydrosulfurous acid, sodium salts of hydrosulfurous acid and combinations thereof and to filtration.

3,961,972
HIGH STRENGTH SILICATE FORM AND METHOD FOR PRODUCING SAME

Derry D. Sparlin, and Charles M. Starks, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Apr. 9, 1975, Ser. No. 566,550

Int. Cl.² C04B *35/16*

U.S. Cl. 106—75 **17 Claims**

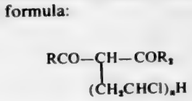
1. A silicate foam composition having improved strength which comprises:

a. from about 80 to 90 weight percent of an alkali metal silicate;

b. from about 10 to 15 weight percent of a cementing agent;

c. from about 1.5 to 2.5 weight percent of a filler;

d. from about 0.5 to 1.5 weight percent of a vinyl chloride telomer having an average molecular weight in the range of from about 600 to about 1,000 and represented by the generic formula:



wherein R and R_2 are alkyl radicals containing from 1 to about 20 carbon atoms, aromatic radicals containing about 6 to 10 carbon atoms, and alkyl substituted aromatic radicals wherein the alkyl constituent contains from 1 to about 6 carbon atoms and wherein the aromatic moiety contains from about 6 to 10 carbon atoms, and n has an average value of from about 3 to 13; and

e. from about 0.5 to 1.0 weight percent of a gelling agent.

3,961,973
LIGHTWEIGHT AGGREGATE

Dennis A. Jones, Vandalia, Ohio, assignor to Amax Resource Recovery Systems, Inc., Dayton, Ohio

Filed July 19, 1974, Ser. No. 489,905

Int. Cl.² C04B *7/02*

U.S. Cl. 106—98 **7 Claims**

1. A lightweight concrete product having as its major ingredients a pozzolanic material including primarily Portland cement; sand; and a lightweight inorganic non-reactive aggregate formed of dry bottom ash, said major ingredients having the following approximate proportions:

pozzolanic material	- 8 to 20 per cent
sand	- 10 to 50 per cent
aggregate	- remainder

said bottom ash aggregate consisting of dry bottom ash essentially as formed as the waste by-product of burning pulverized coal in a dry bottom furnace, said dry bottom ash containing no more than 5 per cent sulfur trioxide and less than 1 per cent iron pyrite by weight.

3,961,974
METHOD OF MANUFACTURE OF IMPROVED WHITE PORTLAND CEMENT

Stewart W. Tresouthick, North Township, Lake County, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 15, 1975, Ser. No. 568,335

Int. Cl.² C04B *7/08*

U.S. Cl. 106—101 **3 Claims**

1. Method of making white portland cement comprising forming dry white portland cement meal into generally pillow-shaped briquettes or pellets whose smallest dimension is from ¼ to ¾ inch having at least 40 pounds crushing strength and no more than 5% loss in the standard tumbler abrasion test, and whose largest dimension is no more than about three times the smallest dimension, passing the briquettes through a rotary kiln having a pyroprocessing zone reaching a temperature of 2700°F to 2800°F and quenching the briquettes to reduce their temperature from a kiln temperature of from about 2000°F or higher to a quench temperature of less than 1000°F in a period of from 5 seconds to 5 minutes in the presence of a reducing fluid or in the absence of oxygen.

3,961,975
TITANIUM DIOXIDE PIGMENTED CELLULOSIC POLYMER COMPOSITIONS WITH IMPROVED VISIBLE AND ULTRAVIOLET LIGHT STABILITY

Joseph S. Zannucci, and Gerald R. Lappin, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

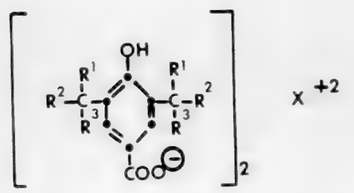
Filed Jan. 7, 1975, Ser. No. 539,193

Int. Cl.² C08L *1/08, 1/14*

U.S. Cl. 106—176 **8 Claims**

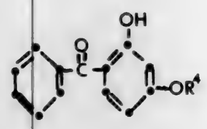
1. Composition comprising a titanium dioxide-pigmented cellulosic polymer normally susceptible to degradation due to visible or ultraviolet light mixed with a stabilizing amount of the following components (I) and (II):

I. a compound having the formula

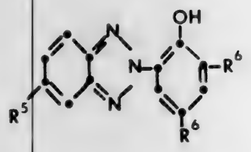


wherein R^1 to R^3 are the same or different and each represents an alkyl radical having 1 to 8 carbon atoms; X^{+2} is Mn^{+2} or Zn^{+2}; and

II. a compound selected from (a) compounds having the formula:

II 

or (b) compounds of the formula:

III 

wherein R^4 represents hydrogen or an alkyl radical, R^5 represents hydrogen or chloro, each R^6 is the same or different and represents hydrogen or an alkyl radical, each of said components being utilized in an amount of from about 0.01 to about 4.0 weight percent based on the weight of the polymer with an upper limit such that the sum of all such percentages of said components does not exceed 5 weight percent based on the weight of the polymer.

3,961,976

METHOD OF PREPARING SIZE

Alf Hugo Karlsson, Njurunda, Sweden, assignor to SCA Development Aktiebolag, Sundsvall, Sweden

Filed Apr. 25, 1975, Ser. No. 571,645

Claims priority, application Sweden, May 17, 1974, 7406630

Int. Cl.² C08L *1/28*

U.S. Cl. 106—186 **10 Claims**

1. A method of preparing fuse size which comprises combining carboxymethyl cellulose and urea, heating said combination, and adding an oxidizing agent to said heated combination in the presence of a metal ion, said metal ion having at least two oxidation stages and being in the lower of said two oxidation stages.

3,961,977

COATING COMPOSITION AND PROCESS FOR PRODUCING COATED ARTICLES

Hiroyuki Koda, Toyonaka; Toshiaki Izumita, Amagasaki; Shiro Gomyo, and Yoshio Inoue, both of Annaka, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Feb. 16, 1973, Ser. No. 333,189

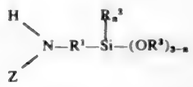
Claims priority, application Japan, Feb. 17, 1972, 47-16044

Int. Cl.² C07F *7/10*

U.S. Cl. 106—287 SB **4 Claims**

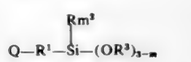
1. A coating composition for applying on a surface of a thermoplastic resin-molded article and forming a transparent coating layer having scratch resistance and antistatic properties, which comprises:

A. a partially-hydrolyzed carbon-functional silane derived from a carbon-functional silane selected from the group consisting of (*a*) a mixture of from 20 to 70 parts by weight of an aminoalkylalkoxysilane represented by a formula (I)



(I)

wherein R^1 stands for a divalent hydrocarbon group having 1 to 4 carbon atoms, R^2 and R^3 designate a monovalent hydrocarbon radical having 1 to 4 carbon atoms, z stands for a hydrogen atom or an aminoalkyl group, and n is 0 or 1, and from 80 to 30 parts by weight of an epoxyalkylalkoxysilane represented by a formula (II)



(II)

wherein R^1, R^2 and R^3 are as defined above, Q designates a glycidoxy or epoxycyclohexyl group, and m is 0 or 1 and (*b*) a reaction product thereof, which is obtained by effecting said carbon-functional silane with water in an amount of 10% to 40% of the amount calculated stoichiometrically to hydrolyze said carbon-functional silane into the corresponding silanol, and

B. an organic solvent which may dissolve said partially-hydrolyzed carbon-functional silane without swelling or dissolving of said thermoplastic resin-molded article.

3,961,978

PROCESS FOR PRODUCING PERLITE MICROSPHERES

Franz J. Brodmann, Philadelphia, Pa., assignor to General Refractories Company, Bala Cynwyd, Pa.

Filed Sept. 20, 1974, Ser. No. 507,702

Int. Cl.² C09C *1/28*; C04B *31/22*

U.S. Cl. 106—288 B **3 Claims**

1. The method of preparing hole-free microspheres of perlitic material comprising reducing said material to a particle size less than about 200 mesh, separating the reduced material into at least one fraction within the size range of from about less than 200 mesh to about less than 325 mesh, and a fraction of more than about 325 mesh, agglomerating the latter fraction with sodium lignosulfonate binder to an aggregate size of less than about 200 mesh, expanding said fractions at a temperature of about 1800° to 2200°F. for a period of about 30 to 60 seconds in a fluidized state and recovering a product comprising a preponderance of individual perlite microspheres having a diameter on the order of from about 10 to about 200 microns and a wall thickness of from about 0.7 to about 1.5 microns.

3,961,979

METHOD FOR CONTROLLING THE VISCOSITY OF DISPERSED CLAY SLURRIES

William F. Abercrombie, Jr., Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Filed June 17, 1974, Ser. No. 479,714

Int. Cl.² C09C *1/42*

U.S. Cl. 106—308 N **5 Claims**

1. A method for controlling and maintaining the viscosity of aqueous slurries of finely divided daolin pigments, comprising the steps of refining kaolin clay particulates in an aqueous medium to reduce partical size and improve brightness and contacting the refined kaolin clay particulates in said aqueous medium, having a clay solids content in the range of from about 60 to 72% by weight, with the pentasodium salt of diethylenetriamine pentacetic acid in an amount in the range of from about 0.1 to 5.0 pounds acid per ton of said clay particulates, based on the dry weight of said clay particulates.

3,961,980

PRODUCTION OF POWDERED SUCROSE:DEXTROSE BLENDS

Bryant R. Dunshee, St. Paul, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Aug. 5, 1974, Ser. No. 494,675

Int. Cl.² A23G *3/00*; C13K *13/00*

U.S. Cl. 127—30 **5 Claims**

1. A process for preparing a powdered sugar blend which comprises simultaneously grinding dextrose monohydrate and granular sucrose in a weight ratio, respectively, of about 1:99 to 50:50 to yield the blend wherein no more than about 1.5% of the particles thereof are retained on a U.S. No. 200 Standard Screen.

3,961,981

REFINING OF SUGAR CONTAINING LIQUIDS BY ION EXCHANGE

Frank Xavier Pollio, Union City, N.J., and Omar Campos, Campinas, Brazil, assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 384,991, Aug. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 303,461, Nov. 3, 1972, abandoned. This application Aug. 22, 1974, Ser. No. 499,707

Int. Cl.² C13D *3/14*; B01J *1/04*

U.S. Cl. 127—46 A **13 Claims**

1. In a process for decolorizing and deionizing a sugar containing liquid in which the liquid is passed through a bed of a weakly basic anion exchange resin in the bicarbonate form, so as to convert the salts present in the solution to their corresponding bicarbonates and to remove a large portion of the color bodies present therein, the improvement which comprises contacting the liquid containing the bicarbonate salts under pressure of 2 to 10 atmospheres with a strong acid sulfonic cation exchange resin in the calcium form thereby exchanging the non-calcium metal cations in the liquid with the calcium from the resin, and then deashing the liquid by converting the soluble calcium bicarbonate to form an insoluble, predominantly calcium carbonate precipitate, and then separating the clarified and decolorized sugar solution.

3,961,982

METHOD OF REMOVING SILVER IMAGES FROM ALUMINUM LITHOGRAPHIC PLATES

Eugene J. DeLorenzo, Acton, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jan. 4, 1974, Ser. No. 431,007

Int. Cl.² C23G *1/12*

U.S. Cl. 134—3 **6 Claims**

1. In the method of transforming portions of an oleophilic coherent silver image containing between about 1 and about 12 grams of silver per square meter and bonded to a grained metal surface of an aluminum lithographic plate substrate having a metal oxide barrier layer thereon into hydrophilic areas by contacting said portions with a deletion fluid, the improvement wherein said deletion fluid comprises an aqueous nitric acid solution containing from about 35% to about 70% by volume nitric acid and a finely divided inert metal oxide thickening agent present in an amount sufficient to provide said deletion fluid with a viscosity of at least about 500 centipoises.

3,961,983

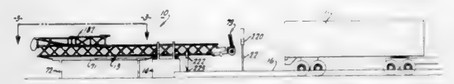
APPARATUS AND METHOD FOR WASHING INTERIORS OF TRUCK AND TRAILER BODIES

Clyde O. Crandall, Pleasanton, and Charles Delbert Douglas, Oceanside, both of Calif., assignors to Safeway Stores, Incorporated, Oakland, Calif.

Filed Dec. 23, 1974, Ser. No. 535,287

Int. Cl.² B60S *1/00*

U.S. Cl. 134—8 **13 Claims**



1. In a system for washing the interior of a truck or trailer body, the combination of a fixed base, an elongate horizontal boom mounted on the base, a washer head mounted on one end of the boom for entry into said interior, spray means on the washer head for directing washing fluid against said interior, brush-like scrubbing means on the washer head for contacting and scrubbing said interior, means for moving the washer head with said end of the boom along a horizontal axis into and out of the interior, and control means for actuating said spray means and scrubbing means when the washer head is within the interior.

3,961,984

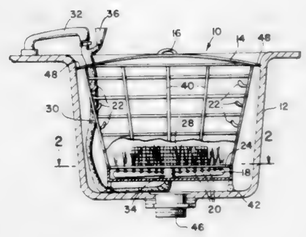
SPACE SAVER DISHWASHER

Albert F. Torresen, Bronx, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Jan. 30, 1975, Ser. No. 545,330

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—100 **2 Claims**

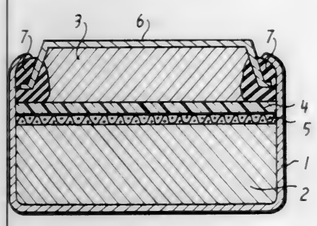


1. Apparatus for washing dishes in a sink comprising: a rack for placement in said sink, said rack having a bottom portion configured for standing on an interior bottom wall of the bowl of said sink and a top portion configured for holding dishes; a generally horizontal rotor rotatably carried by said bottom portion of said rack, said rotor having a central inlet port and upwardly facing water nozzles in fluid communication with said inlet port for spraying water upward onto said dishes, said nozzles being oriented for the production of a rotary reaction force upon said rotor; a conduit having means at one end for coupling to a faucet of said sink, the other end of said conduit coupled to said rotor inlet port; a cover for mounting over the top portion of said rack, said cover being configured for peripheral sealing engagement with the sidewalls of said sink; and an aperture in said cover for passage of said conduit therethrough.

3,961,985
NICKEL-ZINC CELL

Tsutomu Takamura, Kawasaki; Tamotsu Shirogami, Yamato, and Yoshimi Kanada, Tokorozawa, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 346,450, March 30, 1973, abandoned. This application Dec. 24, 1974, Ser. No. 536,153
Claims priority, application Japan, Mar. 10, 1973, 48-27603
Int. Cl.² H01M *43/04*
U.S. Cl. 136—28 **9 Claims**

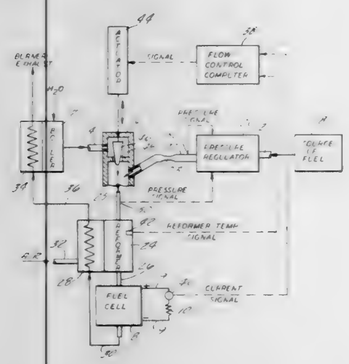


1. A nickel-zinc cell comprising a compressed positive nickel electrode composition in the bottom of a cell, a negative zinc electrode composition on top of said positive electrode composition and an alkaline electrode and a separator disposed between said positive and negative electrode compositions, the positive nickel electrode composition comprising an electron conducting material, a positive electrode material comprising 100 parts by weight nickel oxide and 40 to 60 parts by weight manganese dioxide, and a binding material, whereby the capacity of said nickel-zinc cell is increased under heavy current discharge loads and the capacity loss of said nickel-zinc cell is reduced during storage of the cell.

3,961,986
METHOD AND APPARATUS FOR CONTROLLING THE FUEL FLOW TO A STEAM REFORMER IN A FUEL CELL SYSTEM

Elliot I. Waldman, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 20, 1975, Ser. No. 633,993
Int. Cl.² H01M *8/06*
U.S. Cl. 136—86 B **7 Claims**

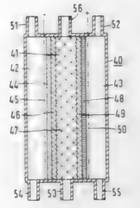


1. In a fuel cell system having a fuel cell with fuel reforming apparatus upstream of said fuel cell, said apparatus including a steam reformer, and an ejector upstream of the reforming apparatus, the method of regulating the feed flow to the reforming apparatus comprising:
introducing steam into the ejector as the primary flow thereof;
introducing a gaseous fuel into the ejector as the secondary flow thereof for mixing with the steam therein;
controlling the rate of fuel flow into the ejector by
1. controlling the rate of steam flow into the ejector;
2. trimming the fuel flow to the ejector using passive trim means in the conduit carrying the fuel to the ejector; and
3. increasing and decreasing the pressure of the fuel supplied to the trim means by amounts equivalent to increases and decreases in the ejector back pressure; and
conveying the mixture of fuel and steam from the ejector into the fuel reforming apparatus.

3,961,987
ELECTRO-CATALYST AND PROCESS OF MANUFACTURE

Konrad Mund, and Rolf Schulte, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 23, 1974, Ser. No. 472,699
Claims priority, application Germany, June 1, 1973, 2328050
Int. Cl.² H01M *27/04*
U.S. Cl. 136—86 D **10 Claims**

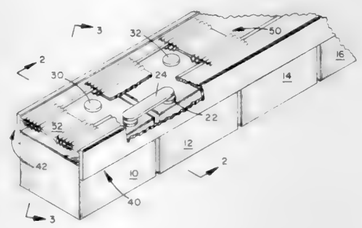


1. An electrocatalyst comprising at least one compound with semiconductor characteristics consisting of a metal of the iron group of the periodic table of elements and two different elements selected from the group consisting of phosphorous, arsenic, antimony, bismuth, tellurium and sulfur or selenium.

3,961,988
BATTERY COVER

Gerald F. Andreoff, 13208 Fleta Drive, La Mirada, Calif. 90638

Filed Apr. 28, 1975, Ser. No. 572,118
Int. Cl.² H01M *10/02*
U.S. Cl. 136—181 **8 Claims**

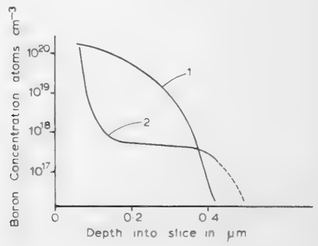


1. The improvement in a cover for a bank of electrical batteries for covering the terminals thereof comprising:
a pair of elongated L-shaped angular members which conform at least in part at their angular portions to the edges of a series of batteries placed in alignment with each other;
a bridging member joined between said angular members across the top of said batteries; and,
means to join said bridging member to said L-shaped angular members in the form of an elongated longitudinal edge on one of said members and an elongated channel on the other member having a space for receiving the elongated edge therein.

3,961,989
METHOD OF MAKING IMPATT DIODE AND RESULTING DIODE

Christopher John Heslop, Pinner, England, assignor to The Post Office, London, England

Filed Feb. 4, 1975, Ser. No. 547,013
Claims priority, application United Kingdom, Feb. 8, 1974, 5865/74
Int. Cl.² H01L *21/263*
U.S. Cl. 148—1.5 **6 Claims**

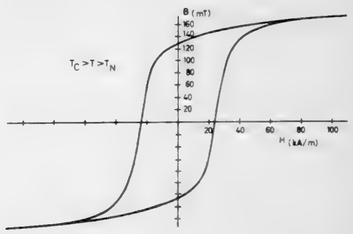


1. A method of making an IMPATT diode comprising the steps of:
a. doping an n-type epitaxial layer of silicon grown on an n^+-type silicon substance with boron; and then
b. bombarding said layer with ions while maintaining its temperature between 590°C and 610°C.

3,961,990
MANUFACTURE OF MAGNETIC MATERIALS WHICH EXHIBIT EXCHANGE ANISOTROPY

Eberhard Koester, Frankenthal; Gerd Wunsch, Speyer; Paul Deigner, Weisenheim; Karl Uhl, Frankenthal; Werner Stumpfl, Ludwigshafen, and Werner Steck, Mutterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Dec. 23, 1974, Ser. No. 535,578
Claims priority, application Germany, Dec. 29, 1973, 2365178
Int. Cl.² H01F *1/06*
U.S. Cl. 148—6.3 **5 Claims**



1. A process for the manufacture of magnetic pigments exhibiting exchange anisotropy and consisting essentially of two-phase magnetic single-domain particles with the alloy $[Co_xNi_{1-x}]$ as a ferromagnetic phase A and its oxidized form $[(CoO)_x(NiO)_{1-x}]$ as an antiferromagnetic phase B, x being from 0.04 to 0.96, which comprises:
heating said alloy $[Co_xNi_{1-x}]$ in particulate form at temperatures up to 450°C in the presence of gaseous nitrous oxide (N_2O) to oxidize the surface of the particles to a depth of from 40 to 1000A to the antiferromagnetic phase $B[(CoO)_x(NiO)_{1-x}]$.

3,961,991
METHOD FOR CHEMICAL TREATMENT OF THE SURFACE OF AN IRON SUBSTRATE WITH PHOSPHORIC ACID SOLUTIONS

Yuichi Yoshida, Ageo, and Akio Takagi, Yokohama, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Nov. 21, 1973, Ser. No. 417,759
Claims priority, application Japan, Nov. 22, 1972, 47-117378
Int. Cl.² C23F *7/10*
U.S. Cl. 148—6.15 R **14 Claims**

1. A method for the chemical treatment of the surface on an iron substrate to render the surface especially suitable for a subsequent painting step which consists essentially of the step of (a) treating the surface with an aqueous solution which consists essentially of phosphoric acid in a concentration of 0.5 to 80 weight/volume percent, followed by the step of (b) subjecting the surface without water rinsing to treatment with an aqueous solution consisting essentially of phosphoric acid and a substance (A) capable of reacting with the phosphoric acid to give a water-soluble salt, which salt is then hydrolyzed and/or reacted with the iron substrate to form a volatile base, said substance (A) being selected from the group consisting of ammonia, ammonium hydroxide, hydroxylamine, tetraalkylammonium hydroxide of which the alkyl group has not more than 2 carbon atoms, an alkylamine of which the alkyl group has not more than 2 carbon atoms, a dialkylamine of which the alkyl group has not more than 2 carbon atoms, or a trialkylamine of which the alkyl group has not more than 2 carbon atoms or a substance (B) capable of reacting with the phosphoric acid to give a water-soluble salt, which salt is then hydrolyzed and/or reacted with the iron substrate to form a non-volatile base, said substance (B) being selected from the group consisting of an alkali metal, an alkali metal oxide or an alkali hydroxide, or mixtures of substances (A) and (B), the pH of the aqueous solution in step (b) being 1 to 9, the total ion concentration being 0.2 to 8 weight/volume percent and the concentration of the cation from the substance (B) being not more than 0.5 weight/volume percent, said aqueous solution of phosphoric acid and substance (A) or (B) being reused continuously for treating the surfaces of iron substrates in subsequent chemical treatment steps as defined above.

3,961,992
METHOD OF TREATING METAL SURFACES

Richard William Jahnke, Mentor-On-The-Lake, and Russell Lee Swaney, Mentor, both of Ohio, assignors to The Lubrizol Corporation, Cleveland, Ohio

Filed Oct. 3, 1974, Ser. No. 511,546
Int. Cl.² C23F *11/00, 7/08*
U.S. Cl. 148—6.15 R **12 Claims**

1. A method of rinsing a phosphated metal article which comprises contacting the surface of said phosphated article with a dilute solution consisting essentially of a solvent and the product obtained by reacting a hydroxyaromatic compound with formaldehyde under alkaline conditions, the mole ratio of said formaldehyde to said hydroxyaromatic compound being at least about 2:1.

3,961,993
COATED METAL ARTICLE AND METHOD OF COATING

Stephen P. Palisin, Jr., Cleveland, Ohio, assignor to The Empire Plating Company

Continuation-in-part of Ser. No. 200,224, Nov. 18, 1971, Pat. No. 3,790,355, which is a continuation of Ser. No. 887,397, Dec. 22, 1969, abandoned. This application Nov. 21, 1973, Ser. No. 418,114
Int. Cl.² C23F 7/10, 7/12, 7/26, 7/14
U.S. Cl. 148—6.16 10 Claims

1. A method of protecting a metallic surface to render it highly resistant to salt spray corrosion and to abrasion, wherein the surface is composed of a metal selected from the group of metals consisting of aluminum, iron, zinc, brass and copper alloys, comprising the steps of:

a. phosphating the surface in a phosphate coating bath;

b. chromating the phosphate surface to produce a clear, blemish-free colorless chromate coating thereon by treating it for between about 15 seconds and about 25 seconds with water containing between about 6 ounces and about 16 ounces per gallon of a liquid composed of about 90% CrO_3 and about 10% sodium bisulfate;

c. rinsing the chromated surface with water to flush away chromating solution remaining thereon;

d. coating the chromated surface with a transparent colorless hydrophobic thermosetting polymer; and,

e. heating the article to above about 300° F. to convert the polymer to a hard, colorless transparent film thereby providing a surface with a blemish-free corrosion resistant finish.

3,961,994
MANUFACTURE OF GRINDING MEMBERS OF FERROUS ALLOYS

Michel Thome, Paris, France, assignor to Acieries Thome Crombach, Paris, France

Filed May 3, 1974, Ser. No. 466,884
Claims priority, application France, May 4, 1973, 73.16163
Int. Cl.² C21D 7/14
U.S. Cl. 148—12 R 16 Claims



1. A method for the manufacture of forged grinding members from white cast iron having a high chromium content, the structure of which is composed of a solid martensitic or austenitic solution containing secondary chromium carbides and primary or eutectic chromium carbides of the M_7C_3 type, which are finely divided and distributed in a homogeneous manner, said method comprising heating at a temperature of 1000° to 1120°C a bar of white cast iron consisting essentially of 1.5% to 3% weight carbon, 8 to 25% by weight chromium, 0 to 2% by weight molybdenum and the remainder iron, cutting said bar into pieces at said temperature, forging said pieces at a second temperature of 1000° to 1070°C and hardening the forged pieces to obtain a solid martensitic or austentic solution containing chromium carbides exclusively of the M_7C_3 type and with exclusion of cementite carbides of M_3C type.

3,961,995
MOTHER ALLOY OF ALUMINUM, TITANIUM AND BORON AND PROCESS FOR FABRICATION

Maurice Alliot, Modane, France; Jean-Claude Beguin, Brussels, Belgium; Michel Moutach, Vizille, and Jean-Claude Percheron, Chedde, both of France, assignors to Aluminum Pechiney, Lyon, France

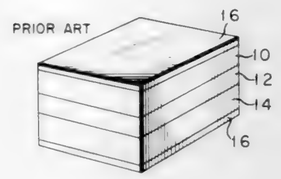
Filed Apr. 1, 1974, Ser. No. 456,672
Claims priority, application Luxemburg, Apr. 4, 1973, 67355
Int. Cl.³ C22C 21/00
U.S. Cl. 148—32 7 Claims

1. An aluminum-titanium-boron mother alloy consisting essentially of a boron content of 0.2 to 0.8% by weight and a titanium content such that Ti − 2.2 B 3.9%, balance aluminum, wherein the aluminum matrix comprises a preponderant proportion of grains less than 30 microns in size, and wherein it contains fine TiB_2 crystals having an average size of about 1 micron in highly dispersed form along the grain boundaries of the aluminum matrix.

3,961,996
PROCESS OF PRODUCING SEMICONDUCTOR LASER DEVICE

Hirofumi Namizaki, and Hirofumi Kan, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 17, 1974, Ser. No. 515,616
Claims priority, application Japan, Oct. 23, 1973, 48-119221
Int. Cl.² H01L 7/36, 7/38
U.S. Cl. 148—171 6 Claims

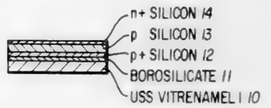


1. A process of producing a semiconductor laser device comprising the steps of forming, on a semiconductor substrate of a first type conductivity, a first semiconductor layer of the first type conductivity, a second semiconductor layer of the first type conductivity and a third semiconductor layer of the first type conductivity in the named order one after another, each of said semiconductor substrate and said second semiconductor layer being of a semiconductive material relatively narrow in a forbidden band width, each of said first semiconductor layer and said third semiconductor layer being of a semiconductor material relatively broad in a forbidden band, selectively etching said third semiconductor layer from the exposed surface thereof to remove a region including the etched portion of said third semiconductor layer and that portion of said second semiconductor layer located below the latter and reaching said first semiconductor layer, forming a fourth semiconductor layer of a second type conductivity so as to completely fill the removed region said fourth semiconductor layer being of a semiconductive material relatively broad in a forbidden band width, converting those portions of said first, second and third semiconductor layers adjacent to said fourth semiconductor layer to the second type semiconductivity, disposing a first electrical connection in ohmic contact with said semiconductor substrate, and disposing a second electrical connection in ohmic contact with said fourth semiconductor layer.

3,961,997
FABRICATION OF POLYCRYSTALLINE SOLAR CELLS ON LOW-COST SUBSTRATES

Ting L. Chu, Dallas, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 12, 1975, Ser. No. 576,488
Int. Cl.² H01L 31/00, 27/14, 29/04
U.S. Cl. 148—174 5 Claims

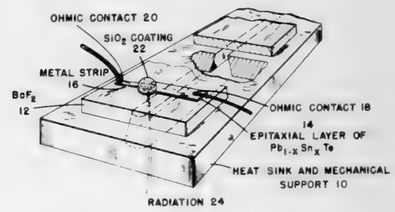


1. A method of fabricating low-cost polycrystalline silicon solar cells supported on a steel substrate, which comprises: coating said steel substrate with a diffusion barrier selected from the group consisting of silica, borosilicate, phosphosilicate or mixtures thereof; and depositing successive layers of polycrystalline silicon containing appropriate dopants over said coated steel substrate such that p-n junction devices are formed which effectively convert solar energy to electrical energy.

3,961,998
VACUUM DEPOSITION METHOD FOR FABRICATING AN EPITAXIAL PbSnTe RECTIFYING METAL SEMICONDUCTOR CONTACT PHOTODETECTOR

Kurt Peter Scharnhorst, Beltsville; Richard F. Bis, Mount Airy; Jack R. Dixon, Silver Spring; Bland B. Houston, Jr., Silver Spring; Richard W. Brown, Silver Spring, and Harold R. Riedl, Adelphi, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 9, 1975, Ser. No. 566,461
Int. Cl.² H01L 21/363, 27/14, 31/00
U.S. Cl. 148—175 15 Claims



1. A method for forming a photovoltaic, epitaxial film, metal contact radiation detector for detecting radiation having wavelengths ranging from 8 to 14 microns comprising the steps of:

depositing an epitaxial crystalline layer selected from the group consisting of:

$Pb_{1-x}Sn_xTe$,

$Pb_{1-x}Sn_xSe$, and

mixtures thereof

by the quasiequilibrium method on a thermally conducting, electrically insulating crystalline substrate of a material having a face-entered cubic lattice with spacing between atoms equal to that of said epitaxial crystalline layer and having a coefficient of thermal expansion approximately equal to that of said epitaxial crystalline layer wherein x is a quantity having an appropriate value for detecting electromagnetic radiation having wavelengths ranging from 8 to 14 microns;

thermally evaporating a strip of metal over at least a portion of said epitaxial crystalline layer without exposing said epitaxial crystalline layer to ambient gases so as to form a rectifying metal-semiconductor contact;

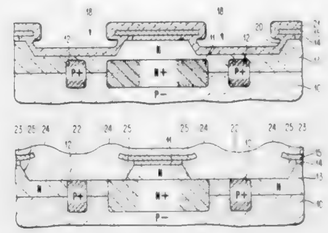
thermally evaporating a protective electrically insulating layer over said metal-semiconductor contact without exposing said metal-semiconductor to ambient gases;

bonding said crystalline subtrate to a heat sink.

3,961,999
METHOD FOR FORMING RECESSED DIELECTRIC ISOLATION WITH A MINIMIZED "BIRD'S BEAK" PROBLEM

Igor Antipov, Pleasant Valley, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed June 30, 1975, Ser. No. 592,015
Int. Cl.² H01L 21/76, 21/20
U.S. Cl. 148—175 5 Claims



1. In the fabrication of integrated circuits, a method for forming dielectrically isolated regions in a silicon substrate comprising

forming a layer of silicon dioxide on a surface of the substrate,

forming a masking layer of silicon nitride having a plurality of openings on said silicon dioxide layer

etching a plurality of openings through the masked silicon dioxide layer in registration with and having greater lateral dimensions than the silicon nitride mask openings, whereby said silicon dioxide layer openings undercut and expose the underside of the silicon nitride layer at the periphery of said silicon dioxide layer openings

etching a plurality of recesses in the silicon substrate respectively in registration with the openings through the silicon dioxide and silicon nitride layers,

depositing a layer of silicon to at least partially fill said recesses and cover said exposed underside of said silicon nitride layer, and

thermally oxidizing the silicon in and abutting said recesses to form regions of recessed silicon dioxide substantially coplanar with the unrecessed portions of the silicon substrate.

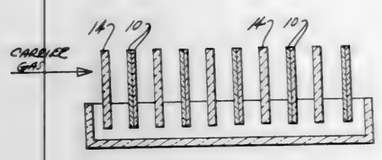
3,962,000
BARIUM ALUMINOBOROSILICATE GLASS-CERAMICS FOR SEMICONDUCTOR DOPING

James E. Rapp, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 431,212, Jan. 7, 1974, Pat. No. 3,907,618. This application Dec. 20, 1974, Ser. No. 534,860
The portion of the term of this patent subsequent to Sept. 23, 1992, has been disclaimed.
Int. Cl.² H01L 7/36
U.S. Cl. 148—189 7 Claims

1. In the process doping a semiconductor wherein a semiconductor and a glass-ceramic dopant host for vapor phase transport of B_2O_3 are maintained in vapor phase communication at a temperature and for a time sufficient to form a zone of P-type conductivity in said semiconductor, the improvement comprising using a glass-ceramic dopant host which has

been formed by the in-situ thermal crystallization of a barium alumino borosilicate parent glass composition containing less than about 0.5 mol percent of alkali metal oxides and consisting essentially of:



Components	Mole %
SiO_2	40<to 60
Al_2O_3	10 to 30
B_2O_3	20 to 40
BaO	1 to 15
Alkaline earth oxides selected from the group consisting of BaO, MgO, CaO, SrO, and mixtures thereof	3 to 20

Wherein $4 \geq \frac{Al_2O_3}{\text{Alkaline earth oxides}} \geq 1.5$

Wherein the BaO content is about 1–15 mole % of said composition.

3,962,001

METHOD OF MANUFACTURING A CAP-SENSITIVE AND NON-SENSITIVE AQUEOUS GEL SUSPENSION EXPLOSIVE

Edwin G. Marhofer; Mike L. Marrello, and Glenn E. Tolle, all of Pittsburg, Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Mar. 10, 1975, Ser. No. 556,754
Int. Cl. C06b *33/14*
U.S. Cl. 149—41 **6 Claims**

1. The method of manufacturing a cap-sensitive aqueous gel suspension explosive consisting essentially of the steps:

a. Mixing with a 30 to 40 weight percent aqueous solution of hexamethylenetetramine sufficient nitric acid to obtain a pH of 5.0 to 5.3, while controlling the temperature of the resulting mixture so that it does not rise above 66°C, so as to produce an aqueous solution in which the hexamethylenetetramine content is from 25 to 35 weight percent; then dissolving in this solution sufficient ammonium perchlorate to yield a concentration of from 5.0 to 6.0 percent, sufficient sodium nitrate to yield a concentration of 8.0 to 9.0 percent and sufficient ammonium nitrate to yield a concentration of 30 to 45 percent in the resulting solution;

b. into each 100 parts of the solution resulting from step (a) mixing thoroughly 60 to 65 parts by weight of finely ground ammonium nitrate and sufficient polysaccharide gum and crosslinking agent to thicken the mixture to a gel-like consistency;

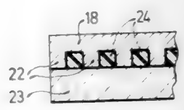
c. after the mixture produced in step (b) has become thickened, mixing from 6 to 8 parts of paint pigment grade aluminum powder therewith until the mixture is uniform in appearance.

3,962,002

METHOD FOR MAKING COMB ELECTRODE FOR ELECTRICAL RECORDING APPARATUS

Ludwig Finkbeiner, Walheim; Hans-Christoph du Mont, Renningen, Malmsheim; Kurt Hurst, and Manfred Koder, both of Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Sept. 25, 1974, Ser. No. 509,245
Claims priority, application Germany, Oct. 5, 1973, 2350026
Int. Cl.² C23F *1/02*
U.S. Cl. 156—3 **14 Claims**



1. Method to make a comb electrode array for electric recording apparatus, particularly for use with metallizing strip recording media,

to provide closely spaced elongated conductive strip electrodes (**22**), insulated from each other by an insulating gap and having a recording terminal end portion (**22**), the other end portion being formed as a connecting portion (**26**) for connection to an external circuit, the steps of

providing a thin sheet of springy, hard sheet metal (**10**);

coating the sheet metal on both surfaces with a photosensitive layer (**11,12**);

providing a first mask (**13**) having transparent areas corresponding to the electrode configuration and, in addition, having transparent areas (**15, 16, 17**) crossing said electrode configuration, the additional crossing transparent areas being located between said end portions to place the connecting portions (**18, 19**) between said end portions (**22, 26**) of the electrodes;

providing a second mask (**14**) at least having transparent areas corresponding to the electrode configuration;

applying the first mask (**13**) to one side of the sheet;

applying the other mask (**14**) to the other side of the sheet;

exposing both sides of the sheet through the respective mask, and developing the sides of the sheet by polymerizing those portions of the photo-sensitive layers which were beneath transparent areas of the mask and removing the photo-sensitive layer portions which were under opaque areas of the mask;

etching both sides of the developed sheet, the additional transparent areas thereby leaving connecting bridge portions (**18, 19, 20; 33, 34**) between the electrodes to provide for a mechanically stable sub-assembly suitable for further handling;

adhering the attached electrode sub-assembly array on a carrier substrate (**23, 28**) located against the side adjacent the second mask; and

removing the connecting portions (**18, 19, 20; 33, 34**) after the sub-assembly has been adhered to said carrier substrate (**23, 28**).

3,962,003

METHOD OF FORMING MAGNETIC BRUSH SUPPORT MEMBER

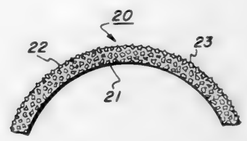
Arthur Drummond, Jr., Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 414,015, Nov. 8, 1973, Pat. No. 3,893,815. This application Jan. 29, 1975, Ser. No. 544,978
Int. Cl.² C23F *1/02*
U.S. Cl. 156—6 **2 Claims**

1. The process of forming a magnetic brush support member comprising a cylindrical sleeve having a surface adapted

to support a magnetic brush including magnetic particles comprising:

providing a composite including a metal binder component of aluminum and a particulate second phase component of tungsten carbide, said tungsten carbide component having a greater abrasion resistance than said aluminum component, said tungsten carbide particles having an irregular shape with jagged edges;



centrifugally casting said composite material into the shape of said cylindrical sleeve, whereby said tungsten carbide particles are segregated toward said support surface;

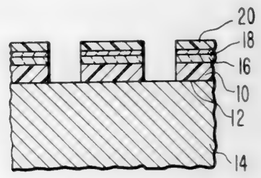
etching said aluminum component to dissolve a portion of said aluminum about said tungsten carbide component so that the tungsten carbide component protrudes from the surface of said aluminum component.

3,962,004

PATTERN DEFINITION IN AN ORGANIC LAYER

Kurt Jacques Sonneborn, Lebanon, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1974, Ser. No. 528,402
Int. Cl.² C23F *1/04*
U.S. Cl. 156—11 **8 Claims**



1. In a method of forming a pattern in a layer of cured organic material on a substrate wherein an etch mask comprising a layer of photoresist is formed above said layer of organic material using conventional photolithographic processes and said pattern defined by said mask is etched in said layer of organic material, the improvement in said method comprising the step of depositing a layer of silicon dioxide on said layer of cured organic material prior to forming said etch mask.

7. A method of forming a pattern in a layer of cured organic material on a substrate comprising the steps of:

depositing a layer of silicon dioxide on said layer of cured organic material,

applying a film of primer solution comprising a silane derivative on said layer of silicon dioxide,

forming a layer of photoresist on said film,

exposing selectively through a mask said layer of photoresist to light,

developing said layer of photoresist,

etching said pattern in said layer of cured organic material in an ultrasonic etch bath utilizing said layer of photoresist as an etch mask, and

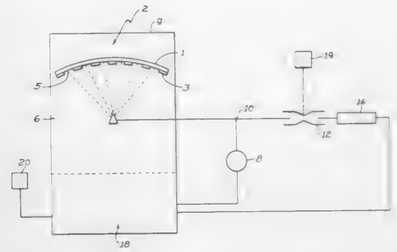
removing said layer of photoresist.

3,962,005

METHOD FOR ETCHING SHADOW MASK AND REGENERATING ETCHANT

Martin Lerner, River Forest, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 30, 1975, Ser. No. 591,735
Int. Cl.² C23F *1/04*
U.S. Cl. 156—16 **3 Claims**



1. In the manufacture of a color cathode ray tube shadow mask characterized by having a steel substrate layer and a thin aperture-defining layer, a method for etching a pattern of apertures in the substrate layer through a pattern of apertures preformed in the aperture-defining layer without substabtially further etching the aperture-defining layer, and for reclaiming the etchant employed, said method comprising,

etching said substrate layer of said shadow mask through said pattern of apertures in said aperture-defining layer with a ferric sulphate etchant drawn from a main reservoir, said etching process being characterized by a reaction of said ferric sulphate forming a used etchant containing ferrous sulphate;

continuously removing a portion of said used etchant material;

efficiently regenerating said portion of said used etchant by adding to it sulfuric acid and hydrogen peroxide wherein said hydrogen peroxide is caused to be sucked from a source of hydrogen peroxide into a narrow stream of said portion of said used etchant to effect a mixing of said hydrogen peroxide with said used etchant without exposure of the etchant to the atmosphere, without the introduction of substantial gravitational effects, and without any risk of inducing a backflow of said used etchant material into the source of hydrogen peroxide; and

returning the thus regenerated ferric sulphate formed from a chemical reaction of said ferrous sulphate, said sulfuric acid, and said hydrogen peroxide to the main reservoir.

3,962,006

COLLAPSIBLE THERMOPLASTIC TUBULAR CONTAINER AND METHOD OF PRODUCING THE SAME

Tadao Saito, and Isamu Ito, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 460,919, April 15, 1974. This application June 23, 1975, Ser. No. 589,720
Claims priority, application Japan, Apr. 23, 1973, 48-45975
Int. Cl.² B29C *27/02*
U.S. Cl. 156—69 **3 Claims**

1. A method of producing a tubular container, comprising the steps of:

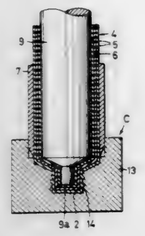
supporting a sleeve formed of a laminated resin with an impermeable layer between a tubular member and a core inserted in said tubular member;

continuously extruding a molten thermoplastic resin film formed of at least two resin layers and having an impermeable layer;

cutting a disc from said thermoplastic resin film;

welding said disc to the open end of said sleeve under the influence of the latent heat of said disc and thereby clos-

ing said open end so that the impermeable layers of said disc and sleeve may come into contact with each other to form an impermeable layer at the junction between said disc and said sleeve; and



forming a head member in a pressing process employing a female mold and said core.

3,962,007

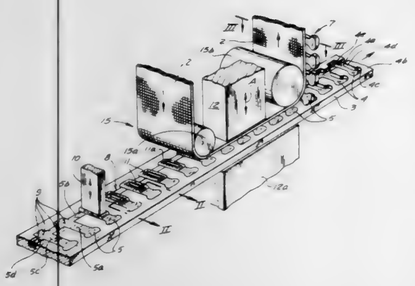
METHOD OF MAKING SLIDE-FASTENER STRINGERS

Helmut Heimberger, Grenzach, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

Division of Ser. No. 436,629, Jan. 25, 1974. This application Nov. 1, 1974, Ser. No. 520,443

Int. Cl.² B32B *31/16*

U.S. Cl. 156—73.1 **3 Claims**



1. A method of making a slide fastener stringer half comprising the steps of molding a coupling element in the form of a succession of thermoplastic synthetic resin couplings in successive cavities of an endless mold carrier, the cavities being open to one side and defining for each such coupling member a coupling head, a fastening portion for mounting the coupling member on a tape and a connecting portion for linking each member with an adjacent member; embossing the synthetic resin at an elevated temperature in each cavity by pressing a tool into at least one of the portions thereof for displacing the synthetic resin opposite to the pressing direction and around said tool to form an array of welding humps at said one of said portions while forcing the synthetic resin into contact with all of the surfaces defining the respective cavities; and ultrasonically welding said coupling element to a support tape under heat and pressure at said welding humps substantially immediately upon the embossing thereof.

3,962,008

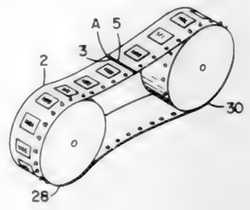
MESSAGE TAPE FOR INSTRUMENT DISPLAY SYSTEMS

Vincent Scardilli, West Orange, and Arthur Sussman, Jersey City, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Division of Ser. No. 203,621, Dec. 1, 1971, Pat. No. 3,900,647. This application Mar. 17, 1975, Ser. No. 559,296

Int. Cl.² B29C *27/08;* **B32B** *31/16*

U.S. Cl. 156—73.4 **5 Claims**



1. A method for manufacturing a message tape formed in a closed loop for instrument display systems comprising:
providing a clear plastic backing lamination;
applying a metallic lamination over the backing lamination;
cutting messages through the metallic lamination to the backing lamination;
applying a plurality of color coding dyes over the metallic lamination, and each of said dyes selectively extending through a cut message;
retaining the color coding dyes with the backing lamination;
providing longitudinally extending ends on the plastic backing lamination; and
splicing said ends to provide the closed tape loop.

3,962,009

DECORATIVE LAMINATED STRUCTURES AND METHOD OF MAKING SAME

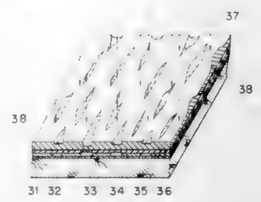
Kazuto Minami, Tokyo; Norihiko Tsukui, Higashikurume, and Tsunehiko Imamoto, Funabashi, all of Japan, assignors to Dai Nippon Printing Company Limited, Tokyo, Japan

Filed Dec. 11, 1972, Ser. No. 313,661

Claims priority, application Japan, Dec. 11, 1971, 46-99866; Jan. 13, 1972, 47-05564; Apr. 14, 1972, 47-37600; May 27, 1972, 47-52168

Int. Cl.² B32B *31/26*

U.S. Cl. 156—85 **32 Claims**



1. A method of making a decorative laminated structure having a predetermined surface pattern of convexes and concaves, said concaves being non-perforated and corresponding to picture areas of said laminated structure of a heat-sensitive ink composition containing a heat-absorbing coloring agent; and comprising printing a predetermined pattern of heat-sensitive picture areas on a surface of a heat-shrinkable resin sheet, said heat-sensitive picture areas being a heat-sensitive ink composition containing a heat-absorbing coloring agent; adhering a base sheet to one of the surfaces of said heat-shrinkable resin sheet to form an integral composite material; and irradiating the resultant composite material with an infrared or near infrared heat ray for a sufficient time such that heat energy is preferentially absorbed by said heat-sensitive ink composition causing said heat-shrinkable resin sheet to shrink locally and form non-perforated concaves at areas corresponding to said heat-sensitive picture areas.

3,962,010

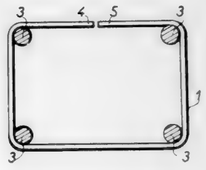
METHOD OF MANUFACTURING A BODY FOR A VALISE, SUITCASE, ATTACHE CASE OR SIMILAR ARTICLE

Joannes Riou, and Pierre Silvestri, both of Saint-Etienne, France, assignors to Rusi Societe, Saint-Etienne, France

Continuation-in-part of Ser. No. 271,536, July 13, 1972, abandoned. This application Jan. 8, 1975, Ser. No. 539,433

Int. Cl.² B32B *7/08*

U.S. Cl. 156—93 **18 Claims**



1. A method of manufacturing a stiffening frame forming the body of a valise, suitcase, luggage and similar article, constituted of a bottom body frame and a complementary adjoining lid frame, each said frame being of a honeycombed material and formed by the steps of: cutting a section from a profiled strip of plastic material of honeycombed cross-section having a width corresponding to the height of a respective frame being formed by said strip and of a length conforming to the periphery of the article; bending said strip about an axis perpendicular to said strip length while concurrently applying heat thereto so as to form said frame configuration in conformance with the generally finished peripheral contour of said body; and mutually joining the adjacent ends of said formed strip ends to provide a substantially finished article body.

3,962,011

COMPOSITE OF POLYAMINE BONDED TO RUBBER AND METHOD FOR MAKING THE SAME

Gerard E. van Gils, Tallmadge, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 316,206, Dec. 18, 1972, Pat. No. 3,872,937. This application Oct. 21, 1974, Ser. No. 516,311

Int. Cl.² B29H *5/02;* **C09J** *5/04*

U.S. Cl. 156—110 A **9 Claims**

1. A method for adhering a polyamide reinforcing element to a rubber compound which comprises dipping said element in a first dip consisting essentially of a liquid dispersion or suspension of a minor amount of an epoxide having an average of from about 2 to 4 epoxide groups per molecule and having a molecular weight up to about 600, drying said dipped element, dipping said dried polyepoxide treated element in a second dip consisting essentially of an aqueous alkaline dispersion of a minor amount of a mixture of a major amount of a rubbery vinyl pyridine copolymer and a minor amount of a heat reactable 2,6-bis(2,4-dihydroxy phenyl methyl)-4-chlorophenol composition, drying the same, and combining said twice dipped and twice dried element with a vulcanizable rubber compound and vulcanizing the same.

3,962,012

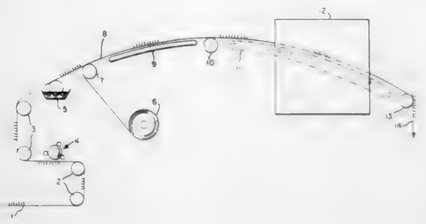
PROCESS FOR LAMINATING PRESSURE-SENSITIVE MATERIAL

Frederick George Schumacher, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 28, 1974, Ser. No. 484,306

Int. Cl.² B32B *31/08*

U.S. Cl. 156—164 **17 Claims**



1. In the process for laminating a primary and a secondary sheet, the face side of said primary sheet being subject to distortion by pressure or friction, said process comprising applying an adhesive to at least one of the surfaces selected from the group consisting of the back side of said primary sheet and the mating side of said secondary sheet, contacting the mating side of said secondary sheet with the back side of said primary sheet, pressing the primary and secondary sheets firmly together and setting the adhesive, the improvement comprising pressing the primary and secondary sheets firmly together, solely by applying pressure from the back side of said secondary sheet to the primary and secondary sheets under tension by pressure means to prevent distortion of the face side of said primary sheet until at least 50 percent of the terminal bond strength is developed.

3,962,013

METHOD OF FORMING A BEARING HOLE IN THE BODY OF A STRAP MEMBER MAINLY ADAPTED FOR USE AS A WATCH STRAP

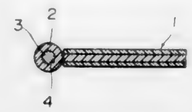
Toru Mashida, Tokyo, Japan, assignor to NCO Works, Ltd., Tokyo, Japan

Filed Mar. 10, 1975, Ser. No. 556,835

Claims priority, application Japan, Sept. 4, 1974, 49-102340; Oct. 17, 1974, 49-120176

Int. Cl.² B29C *19/04;* **B29H** *5/26*

U.S. Cl. 156—215 **14 Claims**



1. In the manufacture of a strap member comprising a body which includes at least one layer substantially composed of a thermoplastic resin and particularly suitable for use as watch strap, a method of forming a bearing hole in one end of said strap member for attaching said strap member onto a watch case or the like, comprising steps of:
a. preparing a tubular member of a thermoplastic resin with a central axis thereof penetrated by a core member of a material having a small dielectric loss and being of a nature not to be fused with the body of said strap member when heated;
b. placing said tubular member and strap member into a mold in such a fashion that the tubular member is in side-by-side contact with one end of the body of said strap member;

c. subjecting said tubular member and strap member to high-frequency adhesion so that the tubular member becomes fused with said end of said strap member body; and

d. removing said core member therefrom to form a bearing member therein.

3,962,014

THERMAL INSULATING MATERIALS

John Thomas Hughes, Mamble near Kidderminster, and Joseph Anthony MacWilliams, Kidderminster, both of England, assignors to Micropore Insulation Limited, Worcester, England

Filed June 10, 1971, Ser. No. 151,970

Claims priority, application United Kingdom, June 10, 1970, 28052/70

Int. Cl.² B32B *31/00*

U.S. Cl. 156—276 4 Claims

1. A method of making a panel of thermal insulating material comprising, placing dry particulate microporous thermal insulating material having an average particle size less than 100 milli-micro-meters in a bag consisting of porous sheet material, sealing the bag to form a complete enclosure for the insulating material, and applying pressure to the exterior of the bag to thereby cause the particles to bond together and consolidate the insulating material, to cause particles of the insulating material to penetrate into the pores of the material of the bag and bond the insulating material to the bag, and to create a tension strain in the material of the bag.

3,962,015

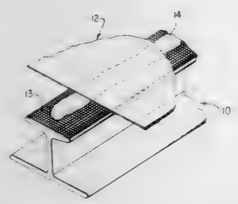
METHOD OF ASSEMBLING ROOF SHEETS TO ROOF BOWS

Fred G. Heimann, Mount Clemens, Mich., assignor to Fruehauf Corporation, Detroit, Mich.

Filed Dec. 20, 1974, Ser. No. 534,800

Int. Cl.² B23B *31/00*

U.S. Cl. 156—295 6 Claims



1. The method of assembling and joining structural metal members in a desired relative orientation with respect to each other which comprises the steps of:

a. positioning a first structural metal member to place at least one bonding surface thereof in upwardly facing accessible location;

b. heat insulating said bonding surface by placing a layer of porous heat insulating material thereon;

c. applying a hot melt adhesive to said layer of heat insulating material, said adhesive being at a temperature sufficient to render it fluid without significant penetration through said porous material;

d. positioning a second structural metal member in spaced relation to said bonding surface and at least approximately in said desired relative orientation of the second member with respect to said first member; and then

e. pressing the two members together in said desired relative orientation before said adhesive cools and loses its fluidity and with force sufficient to penetrate said adhesive through said porous material and into contact with said bonding surface.

3,962,016

PROCESS FOR JOINING ABUTTING THERMOPLASTIC SYNTHETIC-RESIN FOAM SHEETS

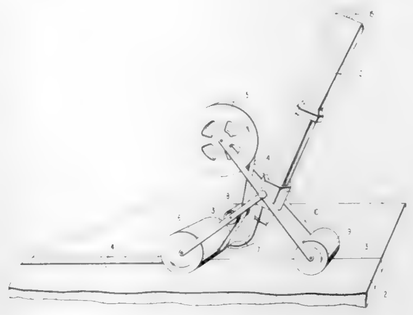
Franz Werner Alfter, Siegburg, and Hans-Ulrich Breitscheidel, Troisdorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

Filed Sept. 16, 1974, Ser. No. 506,335

Claims priority, application Germany, Sept. 14, 1973, 2346373

Int. Cl.² B29C *19/00*

U.S. Cl. 156—304 11 Claims



1. A process for joining abutting thermoplastic synthetic resin foam structures having planar peripheral surfaces by a strip covering the junction zone between the foam structures which comprises heating a metal strip to above the softening temperature of the synthetic resin foam, pressing the heated metal strip under slight pressure onto the junction zone and allowing the metal strip to cool whereby a bond is formed between the foam structures and the metal strip.

3,962,017

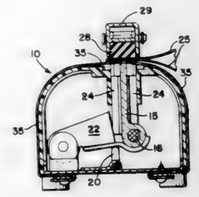
PLASTIC FILM SEALER

Harold G. Wyse, Dayton, Ohio, assignor to Gad-Jets, Inc., Dayton, Ohio

Filed Nov. 10, 1972, Ser. No. 305,537

Int. Cl.² C09J *5/00*; B32B *31/20*; B30B *15/34*

U.S. Cl. 156—306 11 Claims



1. In an apparatus for thermally joining a plurality of layers of heat sealable plastic film, including a heated bar which includes heating element means, said heated bar being movable upwardly into momentary thermal engagement with the layers of heat sealable plastic film to effect a thermal union thereamong, the improvement comprising:

a. a high temperature supporting film mounted independently of the heated bar and interposed between the bar and the plastic film layers to support the films in order to prevent them from sagging and from following the downward movement of the heated bar, the supporting film enabling a variety of combinations of numbers and thicknesses of heat sealable plastic films to be joined at substantially the samd heated bar temperature, and within a relatively broad range of heat application times,

b. a clamp opposite said high temperature supporting film for backing up the heat sealable plastic film layers when said heated bar is moved upwardly into thermal engagement therewith, and

c. a resilient elastomeric pad mounted in said clamp for engaging the heat sealable plastic films opposite said heated bar and high temperature film, the resiliency of said pad determining the bonding pressure applied to the heat sealable plastic film layers as they are clamped between said high temperature supporting film and said pad in said clamp.

9. A method for thermally joining a plurality of layers of heat sealable plastic film, comprising:

a. interposing a high temperature supporting film above a heated bar and beneath the plastic film layers, the heated bar including heating element means,

b. moving the heated bar upwardly into momentary thermal engagement with the high temperature supporting film and the plastic film layers to effect a thermal union among the heat sealable plastic films, the high temperature supporting film supporting the heat sealable plastic films independently of the downward movement of the bar in order to prevent them from sagging and following the downward movement of the bar, the supporting film thus enabling a variety of combinations of numbers and thicknesses of heat sealable plastic films to be joined at substantially the same bar temperature, and within a relatively broad range of heat application times, and

c. backing up the heat sealable plastic film layers with a resilient elastomeric pad opposite the high temperature supporting film to control the bonding pressure applied to the heat sealable plastic film layers according to the resiliency of the pad as they are clamped between the high temperature supporting film and the pad as the heated bar is moved upwardly into thermal engagement therewith.

3,962,018

POLYOLEFIN-ELASTOMER COMPOSITIONS

Bernard Costemalle, Waterloo, Belgium, and Arnold Cornelis van Ek, Westfield, N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Feb. 4, 1974, Ser. No. 439,319

Claims priority, application United Kingdom, Feb. 14, 1973, 7201/73

Int. Cl.² C09J *5/00*, *7/00*

U.S. Cl. 156—306 7 Claims

1. A process for preparing a multi-layer composition comprising the steps of:

a. intimately mixing a blend of a thermoplastic polyolefin and an elastomer, said blend containing 10 to 40% by weight of elastomer, the polyolefin being low pressure polyethylene having a molecular weight of 30,000 to 500,000 or low pressure polypropylene having a molecular weight of 50,000 to 500,000 and fluxing the blend at a temperature greater than 150°C., and

b. applying said blend to an elastomer surface which is preheated to 150° to 200°C. prior to application of said blend, and

c. bonding said blend to said surface by heating said multilayer composition to a temperature of from about 150° to 250°C. and applying a pressure of between about 1 and 10 kg/cm².

3,962,019

FLOATING MANDREL DUCT MAKING APPARATUS

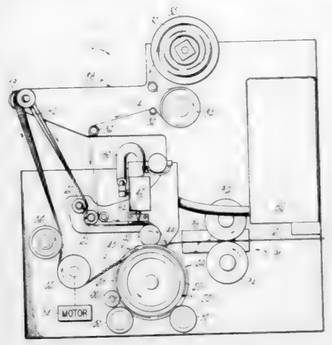
William E. Rejeski, Farmington, Conn., assignor to The Wiremold Company, West Hartford, Conn.

Filed June 16, 1975, Ser. No. 587,162

Int. Cl.² B65H *81/00*

U.S. Cl. 156—428 27 Claims

1. In a tubular duct making apparatus including a frame having feeding means for feeding a strip of sheet material, a wrapping device for forming the strip into continuous lapping wraps defining a generally tubular duct and comprising a mandrel supported on the frame for rotation, a guide mounted on the frame and having a contoured helical surface in fixed



surrounding relation to the mandrel, and a power operated drive for rotating the mandrel and simultaneously pulling the strip from the feeding means about the mandrel along a helical path established by the mandrel and the helical surface of the guide.

3,962,020

TIRE BEAD FLIPPING APPARATUS

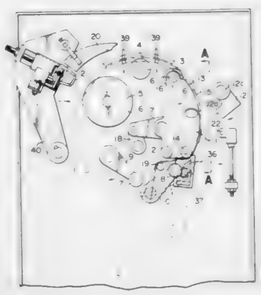
Hisashi Yonekawa, and Tosio Azuma, both of Higashimurayama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 23, 1974, Ser. No. 535,852

Claims priority, application Japan, Dec. 28, 1973, 49-2646

Int. Cl.² B29H *17/34*

U.S. Cl. 156—460 6 Claims



1. A tire bead flipping apparatus comprising:

first, second and third guide rollers having circumferential grooves and mounted on the inner side of a tire bead for rotation about axes which are disposed parallel to the rotational axis of said tire bead, at least one of said first to third guide rollers being rotatingly driven for revolving said tire bead under guidance;

at least two tire bead push rollers rotatable on the inner side of said tire bead opposingly to said guide rollers about axes which are disposed parallel to the rotational axis of said tire bead and movable toward and away from said tire bead;

a pair of inner and outer pressing guide members positioned on the inner and outer sides of said tire bead and movable toward and away from each other for transferring said flipper cloth together with and in pressed contact with the inner periphery of said tire bead at a position between said first guide roller and said tire bead push rollers, said

inner pressing guide member being provided with an arcuate guide surface of a curvature same as that of the inner periphery of said tire bead; a flipper cloth guide roller rotatable about an axis parallel to the rotational axis of said tire bead for guiding a web of flipper cloth to be fed to said pressing guide members at a position between said tire bead rollers;

a pair of flipper cloth folding members movable toward and away from said tire bead at a position between said second and third guide rollers for folding said flipper cloth on opposite sides of said tire bead, each of said flipper cloth folding members being in the form of a curved blade having its sides disposed substantially in parallel to the inner and outer peripheries of said tire bead at an end opposing said second guide roller and in parallel to the sides of said tire bead at the other end opposing said third guide roller;

a pair of flipper cloth pressing rollers rotatable about axes which are disposed perpendicular to the rotational axis of said tire bead and movable toward and away from said third guide roller, each of said flipper cloth pressing rollers having a truncated cone shape tapered toward said third guide roller and adapted to resiliently be pressed against the circumferential surface of said third guide roller by the action of a spring;

a flipper cloth detection mechanism mounted on the outer side of said tire bead opposingly to one of said pressing guide members and movable toward and away from said tire bead for detecting the leading end of said flipper cloth to produce a signal for stopping said one of said first to third guide rollers;

a cutting mechanism including a slit formed obliquely across said inner pressing guide member and a cutting blade adapted to run along said slit for severing said flipper cloth; and

flipper cloth holding means including a pair of flipping cloth holders movable toward and away from said arcuate guide surface of said inner pressing guide member for holding said flipper cloth on said inner pressing guide member at opposite sides of said slit.

3,962,021

TRANSPRINTING, BONDING OR FUSING MACHINES

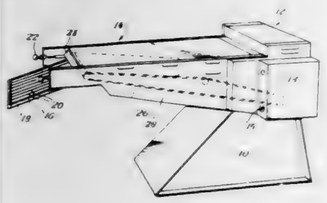
David Weisfeld, 3 Etheldene Ave., London N.10, England

Filed Mar. 19, 1974, Ser. No. 452,520

Claims priority, application United Kingdom, Mar. 22, 1973, 13962/73; Aug. 22, 1973, 39878/73

Int. Cl.² B29J *5/00*; **B32B** *31/20*

U.S. Cl. 156—499 **8 Claims**



1. A machine for applying material to a piece of material by bonding two pieces of material together or printing a transfer onto a piece of material, comprising a frame; a preparation table supported by the frame, on which the material is laid prior to being fed into the machine; a drum located within said frame and mounted for rotation about a horizontal axis; an endless belt that contacts the surface of said drum and extends at least part way around the surface thereof to form a bonding zone; a pressure roller located within the machine frame at one end of the bonding zone; an idler roller located within the machine frame at the other end of the bonding zone; heating means exterior to the surface of the drum and extending over a substantial part of the bonding zone; means for applying a predetermined constant pressure to said pressure roller to squeeze said belt into frictional contact with the drum; means for rotating said pressure roller thereby to drive the endless belt and the drum into rotation through the frictional contact maintained by the pressure appiied to said pressure roller, the direction of rotation being such that said idler roller is at the upstream end of the bonding zone with respect to material fed therein from the preparation table, whilst the pressure roller is at the downstream end of the bonding zone; means for guiding said endless belt in a closed loop outside said bonding zone; a tensioning roller mounted within a framework, said framework supporting the preparation table; manually operated screw adjusting means for altering the position of the tensioning roller, to thereby adjust the tension of the endless belt; and an unload tray comprising a frame pivotably mounted at all four corners, and a series of equi-spaced nylon threads stretched between opposite sides of the frame, said threads being parallel to the axis of rotation of said tensioning roller, whereby as the tracking of the tensioning roller is changed, the effective shape of the tray is altered, thus allowing the nylon threads to remain parallel with the other two sides of the frame.

3,962,022

METHOD AND APPARATUS FOR PRODUCING A CONTINUOUS BAND OF RUBBERIZED FABRIC HAVING TRANSVERSAL REINFORCING METAL ELEMENTS

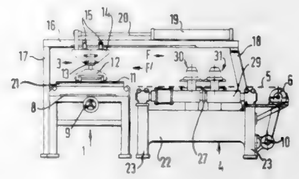
Franco Bottasso, and Antonio Pacciarini, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed July 1, 1974, Ser. No. 485,007

Claims priority, application Italy, July 3, 1973, 26121/73

Int. Cl.² G03D *15/04*

U.S. Cl. 156—507 **6 Claims**



1. An apparatus for manufacturing a continuous band of rubberized fabric provided with transversal reinforcing metal cords by butt-splicing, without overlapping, two identical quadrangular pieces of said rubberized fabric along their facing splicing edges, parallel to said metal cords, said edges being respectively defined as "terminal end" and "initial end", the "terminal end" being the edge of the continuous band already built up and the "initial end" being the edge of the piece to be spliced to said band, said apparatus comprising:

a splicing device provided with two symmetrical operating parts, each having a base element carrying a first series of fingers, parallel to one another, arranged side-by side and spaced apart from one another, which constitute the supporting plane for said pieces, said supporting planes on the two operating parts being coplanar and said operating parts being each provided with a movable element vertically displaceable with respect to its base element, said moveable element carrying a second series of fingers, parallel to one another, which are opposite to the fingers of the respective base element, the series of fingers of said operating parts being intercalated with each other, each of said operating parts being able to lock a piece of fabric between said first and said second series of fingers by the lowering of the moveable element on the base element, and being able subsequently to butt-splice said pieces by the approach of one operating part to the other,

a translating element having means for advancing each piece to said splicing device,

a drum for collecting the continuous band formed after splicing the two pieces, said splicing device being characterized in that each finger, in its zone directed towards the opposite finger, has the shape of a step formed by two substantially parallel surfaces, the first of which is that situated at the finger end directed towards the splicing line of the pieces, and the second is that situated at the remaining part or body of the finger, said two surfaces being so arranged that, when said second surfaces of two opposite fingers are in mutual contact, a gap is still existing between said first surfaces.

3,962,023

APPARATUS FOR APPLYING HANDLES TO PLASTIC BAGS

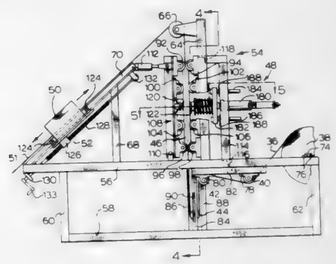
Waldemar Hofer, Sherwood Park, Canada, assignor to MacKenzie Trading Co. Ltd., Edmonton, Canada

Filed Mar. 27, 1975, Ser. No. 562,705

Claims priority, application Canada, July 17, 1974, 205110

Int. Cl.² B32B *31/00*

U.S. Cl. 156—514 **15 Claims**



1. Apparatus for applying plastic handles to tubular plastic bag stock the apparatus comprising:

a drive mechanism adapted to feed the bag stock through the apparatus intermittently in discrete lengths, each one of said lengths corresponding to the length of a bag;

a combination cutting and welding mechanism including a float piece adapted to be positioned inside the bag stock and a head movable axially along a predetermined line of action, the float piece having a central main portion and a pair of relatively thin wing members dependent from the main portion in a substantially common plane lying perpendicularly to said line of action;

means adapted to combine with the main portion of the float piece to restrain the float piece in a position at right angles to said line of action such that the float piece will remain in a predetermined position relative to said line of action as the bag stock is fed over the float piece by the drive mechanism;

a handle transport mechanism adapted to feed pairs of handles to respective positions one at either side of the float piece immediately adjacent respective outer sides of the bag stock with the handles disposed similarly about said line of action and in respective planes which are generally perpendicular to said line of action;

said combination cutting and welding mechanism being operable along said line of action when the bag stock is stationary, and further comprising: a guide means coupled to the head to restrain the head to move axially along said line of action; actuator means coupled to the head for moving the head axially; heating elements coupled to the main portion of the float piece; electrical contacts coupled electrically to the heating elements, these elements being shaped and positioned about said line of action such that upon heating the elements and energising said actuator to apply forces to press the sides of the bag stock between respective handles and heating elements, the respective bag stock sides and handles are welded to one another;

said head comprising: a cutter adapted to pierce the bag stock inside the handles; a retainer slidably mounted for axial movement relative to the cutter; means adapted to bias the retainer outwardly relative to the cutter; and electrically conductive shoes aligned axially with said electrical contacts;

a back stop aligned with the retainer;

said actuator means being operable to move the head between a withdrawn position in which the head is clear of the bag stock and handles, and an extended position in which the cutter projects through both sides of the bag stock and the retainer and back stop apply compressive forces which hold the handles in contact with the bag sides so that the bag sides are then in thermal engagement with the heating elements to thereby weld the bag sides to the handles, the electrical connectors then being in engagement with the respective conductive shoes to complete an electrical circuit for heating the heating elements.

3,962,024

APPARATUS FOR LAMINATING INSULATING WINDOW PANES OR THE LIKE

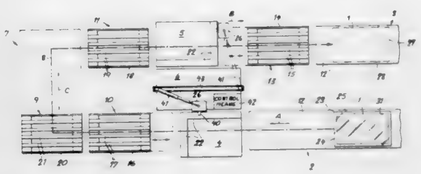
Otto Stehl, Essen-Bredeney, Germany, assignor to Flachglas Aktiengesellschaft Delog-Detag, Gelsenkirchen, Germany

Filed Sept. 3, 1974, Ser. No. 502,379

Claims priority, application Germany, Sept. 4, 1973, 2344461

Int. Cl.² B32B *31/00*

U.S. Cl. 156—539 **8 Claims**



1. An apparatus for bonding together the edges of a stack of rectangular workpieces in the production of a laminated unit, comprising:

intermittently operable transport means defining a generally U-shaped horizontal path for said stack with a first run, a second run substantially parallel to said first run and a transverse course interconnecting said runs at one end thereof, said transport means including a loading stage at an end of said first run opposite said transverse course and an unloading stage at an end of said second run opposite said transverse course;

a first press in said first run for clamping together a first pair of adjoining edges of said stack;

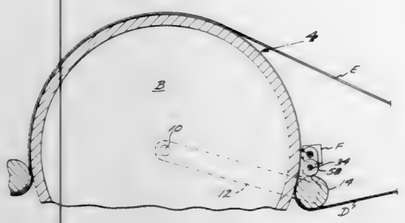
a second press in said second run for clamping together a second pair of adjoining edges of said stack, said presses being substantially aligned with each other; and

a common control station between said runs having access to both said presses, said control station including applicator means for a bonding agent to be spread onto said adjoining edges.

3,962,025
CORRUGATOR LINER BONDING DEVICE

Donald E. Jacobson, 14839 Wheatstone Ave., Norwalk, Calif. 90650

Filed Mar. 27, 1975, Ser. No. 562,459
Int. Cl.² B32B 31/04; B65C 11/04; B05C 1/00
U.S. Cl. 156—546 5 Claims



1. In combination with a corrugator having a rotating preheater roll supported on a horizontal first shaft, a pair of arms pivotally supported from said first shaft and disposed on opposite sides of said roll, an idler roller rotatably supported between said arms and spaced from said roll, a first liner of less width than the length of said roll that extends under said idler roller and then upwardly to contact said preheater roll, said first liner having a first marginal edge portion, a second liner of less width than the length of said roll that contacts said roll above said idler roller, said second liner having a second marginal edge portion that overlies said first marginal edge portion and is subsequently brought into physical contact therewith on said corrugator, a device for applying a film of glue to said first marginal edge portion prior to the latter being contacted by said second marginal edge portion to provide a bonded liner of a desired width, said device including:

a. a second shaft that extends between said arms above said idler roller and is parallel to said first shaft;

b. first means for adjustably supporting said second shaft in a non-rotatable position from said arms;

c. a resilient wheel rotatably mounted on said second shaft that is in frictional engagement with said idler roller and is driven as said idler roller rotates;

d. a glue reservoir disposed above said second shaft, said reservoir having a first sidewall adjacent said roll in which a vertical slot is defined;

e. second means for supporting said reservoir from said second shaft;

f. a third shaft rotatably supported in said reservoir parallel to said second shaft;

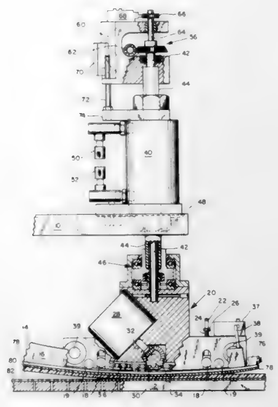
g. a glue applicator wheel disposed in said reservoir and rigidly secured to said third shaft, said wheel of substantially the same width as that of said first marginal edge portion, said wheel having the lower portion thereof in contact with glue in said reservoir, and said wheel projecting outwardly through said slot to contact said first marginal edge portion; and

h. third means for transferring rotational movement from said resilient wheel to said third shaft to drive said applicator wheel to apply a film of glue to said first marginal edge portion as said first and second liners move over said preheater roll to bond said first and second liners together to form said bonded liner.

3,962,026
ORGANIC MATRIX STACKING HEAD

Lawrence A. Lottridge, Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed June 25, 1975, Ser. No. 590,277
Int. Cl.² B32B 31/00; G05G 9/00
U.S. Cl. 156—584 12 Claims



1. Apparatus for use in the manipulation of workpieces which are temporarily adhesively bonded to a planar supporting medium comprising:

rocker foot means, said rocker foot means having a curved surface adapted to contact a workpiece to be removed from the support medium initially in a narrow linear region;

support means for said rocker foot means, said support means permitting translational motion of said rocker foot means with respect to said support means;

means for mounting said support means for motion in a plane transverse to the supporting medium;

means for reciprocating said support means with respect to said mounting means and the supporting medium; and

means for imparting rotation to said support means.

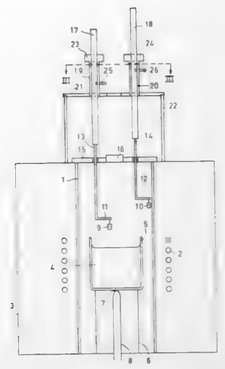
3,962,027
$Bi_4Ti_3O_{12}$ SINGLE CRYSTAL GROWTH FROM SATURATED SEEDED SOLUTION

Timothy Michael Bruton, Haywards Heath, England, assignor to U.S. Philips Corporation, Briarcliff Manor, N.Y.

Filed Sept. 9, 1974, Ser. No. 504,311
Claims priority, application United Kingdom, Sept. 11, 1973, 42629/73
Int. Cl.² B01J 17/04, 17/20; C01G 29/00
U.S. Cl. 156—624 6 Claims

1. A method of growing a single crystal of $Bi_4Ti_3O_{12}$, said method comprising, preparing a solution of TiO_2 in Bi_2O_3, adjusting the temperature of the solution to a temperature of about 5°C above the saturation temperature of the solution, maintaining the solution at said temperature while immersing polycrystalline TiO_2 into said solution until the solution contains a saturating amount of TiO_2, removing the undissolved

polycrystalline TiO_2 from the solution, immersing a $Bi_4Ti_3O_{12}$ seed crystal into said solution maintained at said temperature

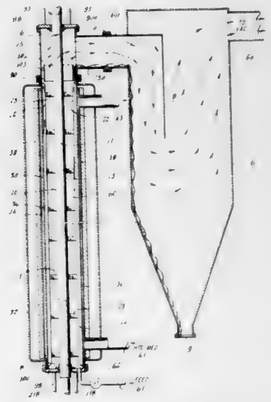


and then slowly cooling said solution thereby to cause growth of a single crystal of $Bi_4Ti_3O_{12}$.

3,962,028
SWEPT SURFACE EVAPORATOR

John C. Walsh, Winchester, Mass., assignor to The De Laval Separator Company, Poughkeepsie, N.Y.

Filed Sept. 9, 1974, Ser. No. 504,072
Int. Cl.² B01D 1/22
U.S. Cl. 159—6 W 5 Claims



1. A swept surface evaporator comprising a vertical inner cylinder partly defining a chamber having an inlet at its lower portion for a material to be concentrated, pump means for delivering the material to said inlet, a vertical outer cylinder surrounding the inner cylinder and forming therewith a generally annular heating space for receiving a heating medium, means for rotating said material about a vertical axis in said chamber to form an upwardly opening cavity in the material, said rotating means including a rotor mounted for rotation on a vertical axis and having blade means for sweeping the inner surface of the inner cylinder, a suction line communicating with said chamber for drawing vapors from said cavity, said inner cylinder having an upward extension projecting above the top level of said blade means and heating space and forming an overflow outlet for concentrated material, and a fixed annular guide member located at the upper portion of said chamber within said extension and having a lower end substantially below the level of said overflow outlet, said guide member forming an inner passageway for discharging vapors to said suction line and forming with said extension an outer annular passage separate from said inner passage, said outer annular passageway leading upwardly to said overflow outlet.

3,962,029
METHOD OF CONTROLLING THE AMOUNT OF CHEMICALS IN LIQUIDS USED WITHIN THE CELLULOSE INDUSTRY AND RELATED INDUSTRIES

Karl Gustav Gunnar Wettermark, Taby; Per Ulf Isacsson, Vallentuna; Bengt Goran Hultman, Domsjoverken; Per Henrik Otto Johan Norberg, Sjalevad, and Bo Nils Olof Lindahl, Domsjoverken, all of Sweden, assignors to Mo och Domsjo AB, Ornskoldsvik, Sweden

Filed Oct. 17, 1974, Ser. No. 515,735
Claims priority, application Sweden, Oct. 17, 1973, 7314129
Int. Cl.² D21C 7/14
U.S. Cl. 162—49 15 Claims

1. A process for controlling the quantity of oxidizing bleaching agent in a liquor for treating cellulosic material, which comprises continuously mixing such liquor containing such oxidizing bleaching agent with at least one chemiluminescent reagent selected from the group consisting of 1,3-aminophthalic acid hydrazide, N,N'-dimethylacridinium dinitrate, and 2,4,5-triphenyl imidazole, which reacts oxidatively therewith in a manner to emit light; continuously measuring the intensity of such light; determining the amount of such oxidizing bleaching agent in the liquor by comparison of the light intensity thus obtained with the light intensity for previously measured calibration values corresponding to known quantities of such oxidizing bleaching agent; and then from such determination controlling the addition of such oxidizing bleaching agent to the liquor, to maintain a desired quantity of such oxidizing bleaching agent in the liquor.

3,962,030
BLEACHING WOOD PULP WITH SODIUM HYDROSULFITE IN THE PRESENCE OF HEXAMETHYLENETETRAMINE

Edward A. Sullivan, Beverly, Mass., assignor to Ventron Corporation, Beverly, Mass.

Division of Ser. No. 511,940, Oct. 3, 1974, abandoned. This application Apr. 18, 1975, Ser. No. 569,236
Int. Cl.² D21C 9/10
U.S. Cl. 162—72 6 Claims

1. In a process for bleaching wood pulp with sodium hydrosulfite under anaerobic conditions at a temperature between about 90°F and 180°F and at a pH of between about 4.0 and 7.0, the improvement which comprises conducting the bleaching in the presence of at least about 2 weight percent hexamethylenetetramine based upon the weight of sodium hydrosulfite, said weight percent of hexamethylenetetramine being effective to prevent formation of hydrogen sulfide during sodium hydrosulfite bleaching of wood pulp.

3,962,031
STOCK INLET FOR A PAPER MACHINE

Alfred Bubik, and Friedrich Platz, both of Ravensburg, Germany, assignors to Escher Wyss G.m.b.H., Ravensburg, Germany

Filed Aug. 23, 1974, Ser. No. 500,066
Claims priority, application Switzerland, Aug. 29, 1973, 12362/73
Int. Cl.² D21F 1/06
U.S. Cl. 162—338 14 Claims

1. A stock inlet for a paper machine comprising

a hole plate for receiving an obliquely delivered flow of stock, said plate having a flat base surface on an inlet side and a plurality of distributor passages extending therethrough from a respective inlet in said base surface for individual flows of stock; and

a plurality of bosses on said inlet side, each boss being disposed adjacent a respective inlet of a passage while projecting from said base surface and extending from said



respective inlet in a direction upstream relative to the delivered flow, each boss having a maximum height adjacent a respective inlet and a breadth thereat of substantially the breadth of said respective inlet.

3,962,032

FAST NUCLEAR REACTOR

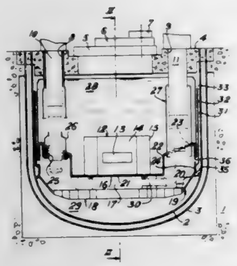
Jean-Marie Berniolles, Pierrevert, and Sabino Gallo, Paris, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 5, 1974, Ser. No. 448,395

Claims priority, application France, Mar. 7, 1973, 73.08075

Int. Cl.² G21C *15/00, 19/28*

U.S. Cl. 176—65 **5 Claims**



1. A fast reactor cooled by liquid sodium comprising a main reactor vessel having a vertical axis a reactor core supported by said main vessel, a primary vessel within said main vessel and containing said reactor core, said primary vessel separating hot liquid sodium discharged from said reactor core and cold liquid sodium, heat exchangers within said main reactor vessel, pumps circulating the cold liquid sodium discharged from said heat exchangers to said reactor core, an annular lateral skew section for said primary vessel, openings through said section receiving said heat exchangers and said pumps, said primary vessel having a shape of revolution about the vertical axis of said main vessel, a turned down edge for said skew section at the exterior of said primary vessel and means joining said turned down edge to said main vessel at a lower extremity of said edge, outlets of said heat exchangers being adjacent the lower surface of said skew section.

3,962,033

METHOD FOR PRODUCING CELLULOSE PULP

Karl-Erik Eriksson; Paul Ander; Björn Henningsson; Thomas Nilsson, and Bill Goodell, all of Stockholm, Sweden, assignors to Svenska Traforskningsinstitutet and Skogshogskolan, Stockholm, Sweden

Filed Apr. 10, 1974, Ser. No. 459,553

Claims priority, application Sweden, Apr. 16, 1973, 7305394

Int. Cl.² C12B *1/00, 1/20*

U.S. Cl. 195—8 **14 Claims**

1. A method of producing cellulose pulp from a starting material containing lignin and cellulose, comprising, treating the starting material with an artificially produced mutant of an organism capable of naturally forming lignin-decomposing and cellulose-decomposing enzymes, wherein the ability of the mutant to form cellulose-decomposing enzymes is reduced.

3,962,034

METHOD FOR PRODUCING S-ADENOSYLMETHIONINE OR METHYLTHIOADENOSINE BY YEAST

Takayasu Tsuchida, Kawasaki; Fumihiro Yoshinaga, Fujisawa, and Shinji Okumura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Nov. 25, 1974, Ser. No. 527,071

Claims priority, application Japan, Nov. 27, 1973, 48-13309; Nov. 27, 1973, 48-13310

Int. Cl.² C12D *13/06*

U.S. Cl. 195—28 N **9 Claims**

1. In a method for producing S-adenosylmethionine and methylthioadenosine which comprises culturing a yeast selected from the group consisting of members of the genus Saccharomyces, Candida, Pichia, Rhodotorula, Torulopsis, Trichosporon Lipomyces, Debaryomyces, Sporoboromyces, Cryptococcus, Kloechera Hansenula and Hanseniaspora in an aqueous culture medium and recovering S-adenosylmethionine and methylthioadenosine therefrom, the improvement which comprises including from 0.5 to 2.0 g/dl of L-methionine in the culture medium, continuing the culturing at a pH of from 2 to 5 until the concentration of S-adenosylmethionine which accumulates in the culture medium is at least 60 mg/dl in the broth and 30 mg/g in the cells, based on the weight of dry cells, and the concentration of methylthioadenosine which accumulates in the culture medium is at least 20 mg/dl in the broth and 10 mg/g in the cells, based on the weight of dry cells and recovering the accumulated S-adenosylmethionine and methylthioadenosine from the culture medium.

3,962,035

HYDROCARBON CONVERSION PROCESS

George Antos, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 24, 1974, Ser. No. 482,122

Int. Cl.² C07C *9/00*

U.S. Cl. 195—27 **7 Claims**

1. A process for converting waste material selected from the group consisting of animal waste, human waste and sewage sludge to prepare a saturated hydrocarbon fraction consisting essentially of gasoline which comprises:

a. reacting said waste material with a microorganism selected from the group consisting of *Butyribacterium rettgeri, Proprionibacterium freudenreichii* and *Acetobacter aceti* at a temperature of from 25°C. to 75°C. in an aerobic or anaerobic atmosphere to produce alkanoic acids containing up to 10 carbon atoms;

b. subjecting said alkanoic acids to catalytic decarboxylation to form said saturated hydrocarbon fraction at catalytic decarboxylation conditions; and

c. recovering said saturated hydrocarbon fracton.

3,962,036

PROCESS FOR THE MANUFACTURE OF 7-AMINO-CEPHALOSPORANIC ACID-TYPE COMPOUNDS

Manfred Liersch, Riehen, and Jakob Nuesch, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

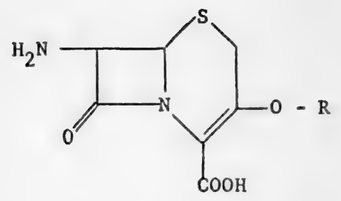
Filed Dec. 6, 1974, Ser. No. 530,116

Claims priority, application Switzerland, Dec. 20, 1973, 17902/73

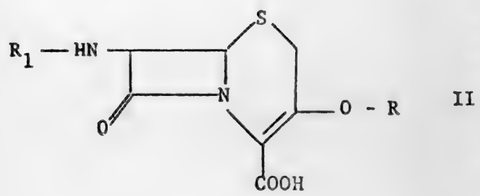
Int. Cl.² C12D *13/06*

U.S. Cl. 195—29 **4 Claims**

1. A process for the manufacture of amino compounds of the formula I



wherein R represents lower alkyl, wherein compounds of the formula II



in which R has the meaning already assigned to it and R_1 represents the acyl radical of a carboxylic acid, are treated with microorganisms possessing acylase activity or with extracts containing acylase or with the acylases themselves, in aqueous medium, and the compounds of the formula I are isolated from the solution.

3,962,037

COMPOSITION FOR STABILIZING AN ENZYME-CONTAINING REAGENT

Robert Jerry Mitchell, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 30, 1975, Ser. No. 545,733

Int. Cl.² C12K *1/00*

U.S. Cl. 195—63 **8 Claims**

1. A stabilized enzyme-containing reagent composition comprising a mixture of glycerol kinase and pyruvate kinase and a stabilizing composition consisting essentially of dextran and Cleland's reagent.

3,962,038

PREPARATION OF WATER-INSOLUBLE ENZYMES

Koji Kawashima, Chofu, and Keiji Umeda, Tokyo, both of Japan, assignors to Director of National Food Research Institute, Japan

Continuation-in-part of Ser. No. 332,239, Feb. 14, 1973, abandoned. This application Apr. 10, 1974, Ser. No. 459,624

Claims priority, application Japan, Mar. 9, 1972, 47-24150

Int. Cl.² C07G *7/02*

U.S. Cl. 195—68 **10 Claims**

1. Process for producing a water insoluble enzyme which comprises mixing together (i) at least one water soluble monomer selected from the group consisting of acrylamide, bisacrylamide, acrylic acid, sodium acrylate, potassium acrylate and calcium acrylate, and (ii) an enzyme, freezing the resultant mixture at a temperature below about −5°C and maintaining the thus obtained frozen material at said temperature, irradiating said frozen material with a dose of from about 40 to about 100 Krad of gamma rays or X-rays under aerobic conditions to polymerize said monomer and entrap the enzyme in the resulting polymer lattice, and thereafter recovering the enzyme product.

3,962,039

ANALYTICAL PROCEDURE FOR THYROID HORMONES

Harold M. Bates, East Brunswick, N.J., assignor to Center for Laboratory Medicine, Metuchen, N.J.

Continuation-in-part of Ser. No. 495,869, Aug. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 463,880, April 24, 1974, abandoned. This application Aug. 8, 1975, Ser. No. 603,007

Int. Cl.² G01N *31/14, 33/16*

U.S. Cl. 195—103.5 R **3 Claims**

1. A process for the analysis of the thyroid hormone content of a blood serum sample containing a thyroid hormone bound to blood serum proteins, which comprises admixing with a sample of blood serum an effective amount of pepsin at a pH of about 1.0, incubating the sample for a period of time and at a temperature sufficient to allow the pepsin to digest the proteins to which the thyroid hormone is bound and to release the thyroid hormone from said proteins, adjusting the mixture to a pH at which the pepsin is inactive, and assaying the mixture for the released thyroid hormone.

3,962,040

METHOD AND APPARATUS FOR PLATING AND COUNTING AEROBIC BACTERIA

Jeptha E. Campbell, and James E. Gilchrist, both of Cincinnati, Ohio, assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Division of Ser. No. 451,275, March 14, 1974, Pat. No. 3,892,632, which is a continuation-in-part of Ser. No. 149,137, June 2, 1972, Pat. No. 3,799,844. This application Jan. 28, 1975, Ser. No. 544,933

Int. Cl.² C12K *1/10*

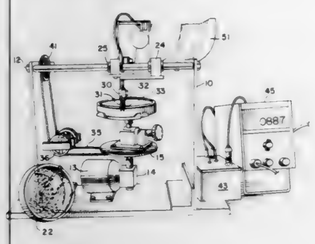
U.S. Cl. 195—127 **10 Claims**

1. An apparatus for counting aerobic bacteria on a bacterial growth plate on which bacterial solution has been deposited

in the form of a spiral with a continuously varying rate of deposition along the spiral, comprising:

means for directing a beam of light toward the plate;

sensing means, directed towards said plate so as to receive transmitted or reflected light from said beam directing means, for sensing the presence or absence of a bacterial colony on said plate;



traversing means for causing the point of intersection of the beam of light from said beam directing means and the plate to spirally traverse across the surface of the plate;

counting means for counting the bacterial colonies sensed by said sensing means; and

measuring means for measuring a parameter which is related to the area traversed by said point of intersection while said counting means is counting in such a manner as to allow, in combination with other preset parameters, the determination of said area.

3,962,041

METHOD AND APPARATUS FOR MEASURING THE OPACITY OF FLUIDS

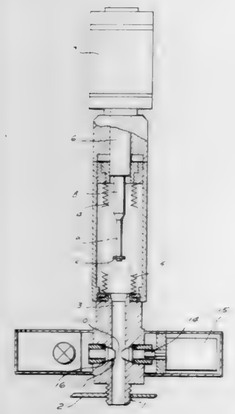
Hans Muller, Mannedorf, and Werner Stumpp, Stafa, both of Switzerland, assignors to Hans Muller, Mannedorf, Switzerland

Filed Mar. 17, 1975, Ser. No. 559,156

Claims priority, application Switzerland, Mar. 18, 1974, 3809/74

Int. Cl.² C12K *1/10*

U.S. Cl. 195—127 **7 Claims**



1. Apparatus for measuring the opacity of fluids, particularly for monitoring the growth of microorganisms suspended in a gas-containing liquid medium by measuring turbidity, comprising wall means forming a measuring chamber adapted to be placed into communication with a vessel containing the medium to be measured; suction means for drawing a sample of the medium into the measuring chamber; and measuring means for measuring the turbidity of the sample.

3,962,042

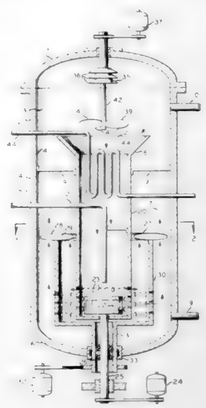
FERMENTATION APPARATUS

Emil A. Malick, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 13, 1975, Ser. No. 540,562

Int. Cl.² C12B *1/16*

U.S. Cl. 195—143 **6 Claims**



1. A fermentation apparatus including;

a. a vessel with a chamber and having an interior surface, said vessel being adapted to contain a fluid;

b. a draft tube mounted in the interior of said vessel and having opposite ends with flow openings adjacent each end, said draft tube being spaced from said interior surface defining a flow path therebetween;

c. pump means in said vessel and positioned adjacent at least one of said draft tube ends for inducing flow of fluid through said draft tube;

d. an impeller positioned between said draft tube and said interior surface; and

e. means operably connected to said impeller for rotating same.

3,962,043

PROCESS FOR PRODUCING FINE-GRAINED COKE BY DEGASIFICATION OF COAL

Paul Schmalfeld, Bad Homburg; Roland Rammler, Konigstein; Werner Peters, Wattensheid; Erwin Ahland, Essen; Burkhard Bock, Duisburg, and Joachim Lehmann, Essen-Haarzopf, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main and Bergwerksverband GmbH, Essen-Kray, both of, Germany

Continuation of Ser. No. 335,217, Feb. 23, 1974, abandoned. This application Nov. 26, 1974, Ser. No. 527,316

Claims priority, application Germany, Feb. 23, 1972, 2208418

Int. Cl.² C10B *49/10*

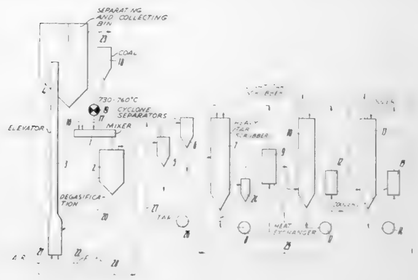
U.S. Cl. 201—21 **3 Claims**

1. Process for producing fine-grained coke by degasification of fine-grained coal which comprises:

a. mixing coal to be degasified with recirculated, heated, fine-grained coke in a mixing zone; b. feeding the mixture from (a) to a degasification zone located below said mixing zone; pulses

c. withdrawing gases and vapors produced by degasification in step (b) from the top portion of said degasifiction zone, subjecting said gases and vapors to a mechanical dust collection followed by fractional condensation, and recovering a dust-containing, high-boiling tar fraction;

d. feeding said tar fraction back to said mixing zone at a rate which is about twice the rate at which new high-boiling tar is formed by degasification in said degasification zone; and



e. mixing said tar fraction with said recirculated hot coke in said mixing zone, prior to mixing with said coal to be degasified, at temperatures in the range of 730°–760°C thereby cracking and eliminating about half of the quantity of said tar fraction fed back to said mixing zone in step (d) thus keeping the quantity of high-boiling tar constant in the process.

3,962,044

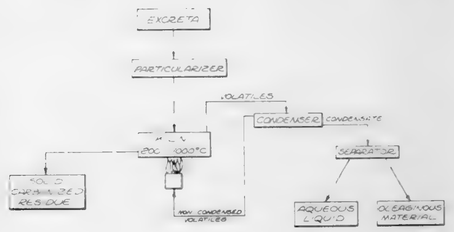
HEAT TREATING EXCRETA AND PRODUCTS THEREOF

John D. Mackenzie, Los Angeles, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 268,972, July 5, 1972, abandoned. This application June 17, 1974, Ser. No. 479,737

Int. Cl.² C10B *43/00*; A47K *11/02*; E03D *1/00*

U.S. Cl. 201—2.5 **6 Claims**



1. A method of treating solid dry animal excreta selected from the group consisting of solid livestock excreta, solid poultry excreta, solid human excreta in cake form, and mixtures thereof, to provide useful products therefrom, which method consists essentially of:

particulating said solid dry animal excreta to a mesh of about 5–50;

heating said dry particulate excreta in a closed heating zone by heating means to a temperature within a treating range of about 300°C to about 600°C;

maintaining said dry particulate excreta in said heating zone within said range for about 15 minutes to about 120 minutes sufficient to volatilize a portion of said excreta and partially carbonize the resultant solid residue;

separating and recovering said volatilized portion by condensation of condensibles and separation of water therefrom; and

cooling said residue and recovering the same.

3,962,045

APPARATUS FOR PYROLYSIS OF DOMESTIC AND OTHER WASTE MATERIALS

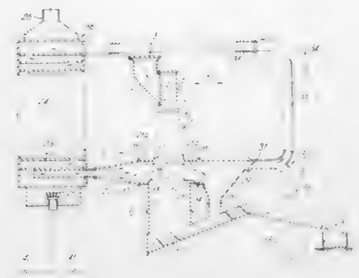
Edward Douglas, Welwyn, and Terence Walsh, Hitchin, both of England, assignors to National Research Development Corporation, London, England

Filed Aug. 28, 1974, Ser. No. 501,440

Claims priority, application United Kingdom, Sept. 7, 1973, 42223/73

Int. Cl.² C10B *57/04, 1/04*

U.S. Cl. 202—117 **4 Claims**



1. A vessel for the pyrolysis treatment of waste materials such as garbage or other domestic refuse, sewage sludge, plastics and rubber and having:

a first inlet for said waste materials in a first part of the wall of said vessel;

a first outlet for said waste materials after treatment in a second and opposite part of the wall of said vessel;

said vessel walls defining between said first inlet and outlet a first path for the progress of said material through said vessel;

the cross-section of said first path being of at least undiminishing area on proceeding along said first path from said first inlet to said first outlet;

a second inlet for hot gas to effect said pyrolysis including a first grate mounted in said vessel wall;

said second inlet being located in a third part of said vessel wall;

a second outlet for spent gas including a-second grate mounted in a fourth part of said vessel wall opposite said third part;

said second inlet and second outlet constituting the ends of a second path for the progress of pyrolysing gas through said vessel, the cross-sectional area of said first path being of increasing cross-sectional area at least from said first inlet to the region at the intersection of said first and second paths;

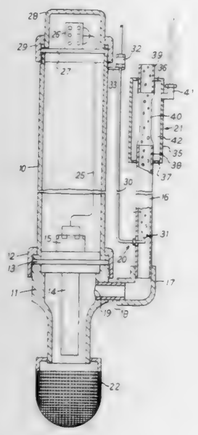
said first and second paths lying substantially at right angles to each other and intersecting within said vessel, and

riddling means located for contacting said material travelling along said first path, and for disturbing said material travelling along said first path so that it may resume travel after jamming including means for mounting at least one of said grates for oscillatory movement relative to the material travelling along said first path and means for oscillating the grate mounted for oscillatory movement.

3,962,046
METHOD AND APPARATUS FOR TESTING PROPERTIES OF LIQUIDS

Charles Alfred Morrison, Isleworth, England, assignor to George Kent Limited, Luton, England

Filed July 24, 1974, Ser. No. 491,511
Claims priority, application United Kingdom, July 27, 1973, 35797/73; Nov. 26, 1973, 54777/73
Int. Cl.² G01N *27/46*
U.S. Cl. 204—1 T **4 Claims**



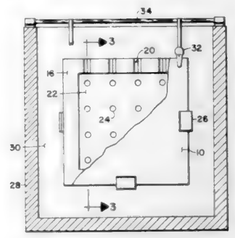
1. A method of measuring a property of liquid in a storage tank, reservoir or river by means of an electro-chemical probe adapted when immersed in the liquid to provide an electrical signal representative of said property of the liquid, comprising locating said probe in an open-ended duct having at least a portion thereof immersed in the liquid and extending continuously upwards towards one end of the duct, injecting into said portion of the duct a gaseous fluid having known properties to which said probe is responsive, the gaseous fluid rising up the said portion of the duct and thereby entraining the liquid in the duct and discharging the liquid through said one end of the duct to cause a continuous stream of the liquid to flow past the probe, the point of injection of said gaseous fluid into the duct being downstream of the probe relative to the direction of flow of liquid through the duct, periodically closing said one end of the duct while continuing injection of said gaseous fluid, so that the gaseous fluid displaces the liquid around said probe and the gaseous fluid comes into contact with the probe, and then co-relating the output of the probe with the known properties of the gaseous fluid to calibrate the apparatus.

3,962,047
METHOD FOR SELECTIVELY CONTROLLING PLATING THICKNESSES

Robert Wagner, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Mar. 31, 1975, Ser. No. 563,555
Int. Cl.² C25D *5/02, 7/00*
U.S. Cl. 204—15 **9 Claims**

1. A method for selectively controlling the plating thickness on opposing sides of a substrate which comprises:
providing an assembly comprising said substrate having first and second opposing surfaces, a first body having a plurality of apertures therein, and a second body disposed between said substrate and said first body and contiguous with the first surface of said substrate, said second body sealing said substrate and said first body, said second body having a first opening therein at least coextensive with the area to be plated on the first surface of said substrate and further including a plurality of second openings disposed parallel to said substrate and extending from the first opening through said second body along one side thereof;

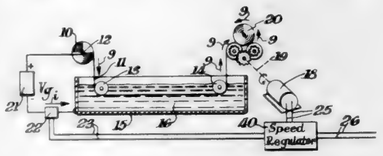


placing said assembly in a plating bath having a top surface so that said second openings are perpendicular to the top surface of the bath and plating essentially simultaneously on the first and second surfaces of said substrate.

3,962,048
METHOD FOR FORMING A UNIFORM OXIDE FILM ON A VALVE METAL

Curtiss M. Gilbert; Richard A. Bemis, and Norman D. Schulze, all of North Adams, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 434,716, Jan. 18, 1974, abandoned. This application Jan. 8, 1975, Ser. No. 539,360
Int. Cl.² C25D *7/06, 11/02, 17/00, 21/02*
U.S. Cl. 204—28 **13 Claims**



1. A method for continuously forming a uniform oxide film on a valve-metal surface comprising:
a. passing continuously through a liquid electrolyte a material having a valve metal surface;
b. applying a constant d.c. voltage between said material and an electrode in fluid contact with said electrolyte; and
c. varying the speed of said passing to maintain constant the forming current produced thereby.

3,962,049
PROCESS FOR COLORING ALUMINUM ANODIC OXIDE FILM

Shigeru Ueki, Kasukabe, Japan, assignor to Kabushiki Kaisha Aiden, Tokyo, Japan

Filed May 15, 1972, Ser. No. 253,430
Claims priority, application Japan, May 13, 1971, 46-31535
Int. Cl.² C25D *11/14, 11/22, 11/04*
U.S. Cl. 204—35 N **8 Claims**

1. A process for forming a colored anodic oxide film on a base member of aluminum or aluminum alloy, said process comprising applying electrical voltage to an aluminum or aluminum alloy member in an acidic bath at a determinable formation voltage for a pre-determined period of time to form an anodic aoxide film thereon with an inner barrier layer of a pre-determined thickness, reducing the thickness of the barrier layer to a particular value by lowering the voltage applied to said member over a period of 1 to 3 minutes to a value in a range between about two-thirds and one one-hundredth of the formation voltage and maintaining the voltage at the thus lowered value for an additional predetermined period of time of between 1 to 3 minutes after which the electric power supply is terminated, washing the member with water, and subjecting said member to electrolysis coloring in a coloring electrolyte containing metallic salts, the reduced thickness of the barrier layer to the particular value permitting the formation of a predetermined color density of substantial uniformity in the anodic oxide film.

3,962,050
RECOVERY OF ZINC FROM ZINC CHLORIDE BY FUSED SALT ELECTROLYSIS

Donald E. Shanks, and Frank P. Haver, both of Reno, Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 21, 1975, Ser. No. 579,640
Int. Cl.² C25C *3/34*
U.S. Cl. 204—66 **7 Claims**

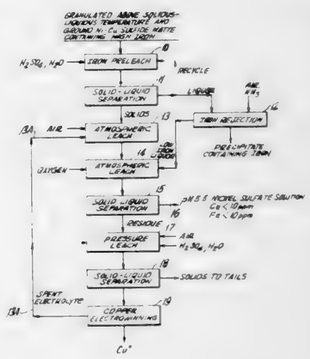
1. A method for recovery of metallic zinc from zinc chloride comprising electrolyzing a molten bath consisting essentially of zinc chloride and an electrolyte consisting of about 50 to 70 mole percent of lithium chloride and about 50 to 30 mole percent of potassium chloride.

3. The method of claim 1 in which the molten bath consists of about 0.6 to 47 mole percent zinc chloride.

3,962,051
ATMOSPHERIC LEACHING OF MATTE CONTAINING IRON

Raymond D. Symens, Arvada; Paul B. Queneau, Golden, and Antonio E. Blandon, Arvada, all of Colo., assignors to Amax Inc., New York, N.Y.

Filed Dec. 26, 1974, Ser. No. 536,383
Int. Cl.² C25C *1/12*
U.S. Cl. 204—108 **10 Claims**

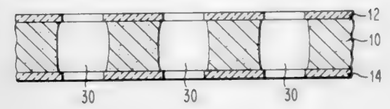


1. A method of leaching comminuted nickeliferous sulfide matte containing about 20% to 75% nickel, about 5% to 50% copper, non-stoichiometric sulfur in the range of over 4% to 20% and over 0.5% to about 20% iron, the sum of the nickel, copper and sulfur contents being at least about 80% which comprises,
providing said matte as a granulated product formed by quenching molten matte from a temperature at least about 10°C above its liquidus-solidus temperature,
comminuting said granulated matte,
subjecting said matte to a first stage atmospheric leaching step to dissolve nickel selectively therefrom by using a spent copper electrolyte solution containing sufficient sulfuric acid having a pH ranging up to about 2 while aerating said solution until the pH of said solution during leaching reaches a level of about 3.5 to 4.5,
then further subjecting said matte to a second stage atmospheric leaching step in said spent copper electrolyte by replacing said aeration with a stronger oxidant selected from the group consisting of oxygen, MnO_4^{-1} and $S_2O_8^{-2}$ to further complete said atmospheric leaching as evidenced by a rise in pH of over about 5, thereby forming a pregnant solution containing nickel and a nickel-copper containing residue,
separating the pregnant solution from said residue for nickel recovery,
and subjecting said nickel-copper containing residue to a sulfuric acid leaching step at elevated temperature and pressure to recover metal values therefrom.

3,962,052
PROCESS FOR FORMING APERTURES IN SILICON BODIES

Shakir A. Abbas, Wappingers Falls; Robert C. Dockerty, Highland, and Michael R. Poponiak, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 1975, Ser. No. 567,656
Int. Cl.² C25F *3/00*
U.S. Cl. 204—129.3 **16 Claims**



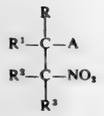
1. A process for forming a hole through a monocrystalline silicon body comprising:
forming masking layers on opposite sides of said body,
forming opposite registering openings in said masking layers,
introducing an impurity through said openings into said body forming low resistivity regions,
depositing a conductive layer on one side of said body,
anodically etching said body through the opening on the opposite side under conditions that form a region of porous silicon that extends completely through said body, and
removing the resultant porous region with a silicon etchant.

3,962,053
NITRO GROUP DISPLACEMENT

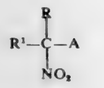
Nathan Kornblum, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 99,696, Dec. 18, 1970, abandoned. This application June 13, 1973, Ser. No. 369,635
Int. Cl.² B01J *1/10*; C07C *121/16, 120/00, 76/02*
U.S. Cl. 204—158 R **4 Claims**

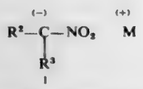
1. A method for the preparation of a compound having the formula



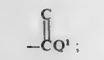
which comprises treating a nitro compound having the formula



with at least one mole of a salt of a nitro compound having the formula



at a temperature within the range of 0° to 50° C. in a polar, aprotic solvent,
wherein A is $-CO_2Q$, $-CN$, $-NO_2$, or



R separately is C_1–C_4 nontertiary alkyl,
C_4–C_8 cycloalkyl or phenyl p-chlorophenyl p-methoxyphenyl, p-tolyl;
R^1 separately is C_1–C_4 nontertiary alkyl, C_4–C_8 cycloalkyl, phenyl, $-CO_2Q$ or $-CN$;
or R and R^1 taken together with the carbon to which they are attached form a C_4–C_8 cycloalkyl ring;
R^2 separately is C_1–C_4 nontertiary alkyl or phenyl;
R^3 separately is C_1–C_4 nontertiary alkyl, phenyl or hydrogen;
or R^2 and R^3 taken together with the carbon to which they are attached form a C_4–C_8 cycloalkyl ring;
M is lithium, sodium, or potassium;
Q is C_1–C_8 alkyl or phenyl; and
Q^1 is phenyl or C_4–C_8 tertiary alkyl.

3. A method as in claim **1** wherein the reaction is conducted in the presence of light in the visible spectrum.

3,962,054
PROCESS FOR THE TREATMENT OF CELLULOSIC TEXTILE MATERIALS

Daniel Wattiez; Roger Chatelin, and Paul Fabre, all of Rouen, France, assignors to Agence National de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Oct. 26, 1973, Ser. No. 409,805
Claims priority, application France, Oct. 27, 1972, 72.38243
Int. Cl.² C08L *1/02*
U.S. Cl. 204—159.12 **13 Claims**

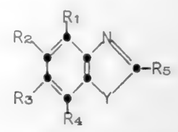
1. A process for the treatment of cellulosic textile materials comprising the following successive steps:
a. grafting the cellulose textile material with an acrylic acid ester monomer or a mixture thereof with a comonomer copolymerizable therewith in the presence of a chemical initiator agent, with a grafting ratio of a least 6% in relation to the weight of the starting cellulose material;
b. effecting irradiation treatment by ionising radiation of the grafted cellulose material obtained in the preceding stage with an irradiation dose of from 0.5 Mrads to 10 mards; and
c. effecting post-irradiation treatment by storage of the irradiated product for a period of from 1 day to 14 days at ambient temperature.

3,962,055
PHOTOSENSITIVE COMPOSITIONS CONTAINING BENZOTHIAZOLE SENSITIZERS

James G. Pacifici, and Charles A. Kelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 526,012, Nov. 21, 1974, Pat. No. 3,912,606. This application June 26, 1975, Ser. No. 590,782
Int. Cl.² C08F *2/46, 4/00*
U.S. Cl. 204—159.15 **14 Claims**

1. A molding and coating composition capable of being hardenable by ultraviolet radiation comprising a mixture of a photopolymerizable or photocrosslinkable ethylenically unsaturated compound and from 0.01 to 10% by weight of a photoinitiator selected from the group consisting of aryl heterocyclic compounds having the formula



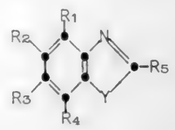
wherein R_1, R_2, R_3 and R_4 are hydrogen, alkyl, alkoxy, carboxy, alkoxycarbonyl, chlorine, bromine, nitro, amino and can be the same or different;
Y is a sulfur atom;
R_5 is CH_2X, CHX_2, CX_3, aryl-CH_2X; aryl-CHX_2 and aryl-CX_3 where X is chlorine and bromine.

3,962,056
PHOTOSENSITIVE COMPOSITIONS CONTAINING BENZIMIDAZOLE SENSITIZERS

James G. Pacifici, and Charles A. Kelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 526,012, Nov. 21, 1974, Pat. No. 3,912,606. This application June 26, 1975, Ser. No. 590,783
Int. Cl.² C08F *2/46, 4/00*
U.S. Cl. 204—159.15 **14 Claims**

1. A molding and coating composition capable of being hardenable by ultraviolet radiation comprising a mixture of a photopolymerizable or photocrosslinkable ethylenically unsaturated compound and from 0.01 to 10% by weight of a photoinitiator selected from the group consisting of aryl heterocyclic compounds having the formula

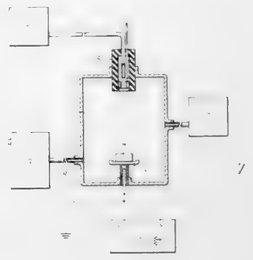


wherein R_1, R_2, R_3 and R_4 are hydrogen, alkyl, alkoxy, carboxy, alkoxycarbonyl chlorine, bromine, nitro, amino and can be the same or different;
Y is a nitrogen atom containing an unsubstituted or substituted lower alkyl group having 1 to 12 carbon atoms or an aryl group or substituted aryl group having 6 to 18 carbon atoms;
R_5 is CH_2X, CHX_2, CX_3, aryl-CH_2X; aryl-CHX_2 and aryl-CX_3 where X is chlorine and bromine.

3,962,057
METHOD OF IMPARTING CONTRAST TO A MICROSCOPE OBJECT

Günter Bartz, Wetzlor, Germany, assignor to Ernst Leitz G.m.b.H.

Division of Ser. No. 262,082, June 12, 1972, Pat. No. 3,859,535. This application June 7, 1974, Ser. No. 477,188
Claims priority, application Germany, June 21, 1971, 2130605
Int. Cl.² B01K *1/00*
U.S. Cl. 204—164 **5 Claims**

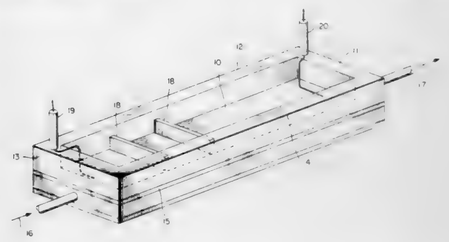


1. A method of imparting contrast to a surface portion of an object to be investigated microscopically, comprising the steps of:
a. introducing the object into a non-grounded vacuum chamber;
b. connecting the object to the positive pole of a regulatable high voltage direct current source;
c. evacuating the chamber to a partial vacuum;
d. bombarding a surface portion of the object with a combined electron-ion gun of the gas discharging type mounted in the wall of the vacuum chamber opposite the object, said combined electron-ion gun having a cathode connected to a negative pole of the direct current source;
e. regulating the gas source connected to the ion gun of the combined electron-ion gun for bombarding the surface portion of the object with a gas concentrated electron-ion beam;
f. adjusting the gas concentrated electron-ion beam to impinge on the object which is electrically conducting; and
g. feeding into the vacuum chamber gas which reacts chemically with the bombarded surface portion of the object.

3,962,058
FLAT BED ISOELECTRIC FOCUSING DEVICE

William Donner Denckla, Tenafly, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 24, 1975, Ser. No. 571,161
Int. Cl.² G01N *27/40, 27/26*
U.S. Cl. 204—180 R **14 Claims**

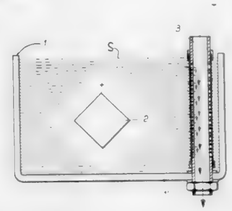


1. A flat bed isoelectric focusing device comprising a rectangular separation chamber defined by two side walls, two end walls and a bottom wall wherein the length to width rates of said separation chamber is at least 15:1 and the height of said side and end walls is from 2 to 4 mm; said bottom wall being provided with at least ten symmetrically spaced baffle means, said baffle means extending from one side wall to the other in a plane perpendicular to the longitudinal axis of said separation chamber and having a height of about ½ the height of said side and end walls; and electrode means in operative relationship with said separaton chamber.

3,962,059
PROCESS AND DEVICE FOR ELECTROPHORETICALLY PLATING METAL PARTS

Friedel Kaup, Gutersloh, and Heinrich Warnke, Marienfeld, both of Germany, assignors to Miele & Cie., Guttersloh, Germany

Filed Jan. 6, 1975, Ser. No. 538,476
Claims priority, application Germany, Jan. 8, 1974, 2400705
Int. Cl.² C25D *13/02*
U.S. Cl. 204—181 **8 Claims**

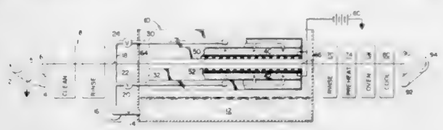


1. A process for electrophoretically plating metal parts with vitreous enamel in a plating vessel filled with a slurry, said vessel containing a holow cathode whose interior is connected by openings with its outside, the openings being covered on the outside by a membrane, and draining means being provided for said cathode for practically completely removing water and other liquids from the interior of the same.

3,962,060
CONTINUOUS ELECTRODEPOSITION OF COATING MATERIAL ON METAL SHEET STOCK

Peter Brasko; Daniel E. Festa, both of New Kensington, Pa., and Kenneth E. Buse, Davenport, Iowa, assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 23, 1974, Ser. No. 517,327
Int. Cl.² C25D *13/06, 13/16*
U.S. Cl. 204—181 **10 Claims**



1. A continuous system for electrodeposition of coating material on metal sheet stock which comprises:
a. uncoiling and cleaning the sheet;
b. passing the sheet in a substantially straight line through coating, baking and cooling stations; and
c. supporting the sheet in said substantially straight position in the coating station by passing the sheet through a transient bath in said coating station in which streams of liquid coating material provide impinging currents respectively on the opposite surfaces of said sheet, said liquid coating material being in electrical communication with at least one charged electrode maintained at a suffi-

cient potential with respect to said metal sheet to promote electrophoretic coating of said sheet by said liquid coating material, and said streams being adjustable to provide positioning and support of said sheet therebetween.

10. An apparatus for electrodeposition of coating on continuous sheet, said apparatus comprising:

a. means for uncoiling and cleaning said sheet;
b. means for passing said sheet in a substantially straight line through:
   1. a coating station, said station adapted to include a transient bath therein;
   2. a baking station; and
   3. a cooling station;
c. means for supporting said sheet in said substantially straight position while immersed in said transient bath, said means comprising nozzles adapted for adjustably directing flow of liquid coating material against opposite surfaces of said sheet;
d. means for coating said sheet with said liquid coating material, said coating means comprising at least one charged electrode adapted to be in contact with said liquid coating material and having sufficient potential with respect to said sheet to promote deposition of coating material thereon and further including insulation means interposed between said electrode and said sheet.

3,962,061
PROCESS FOR COATING ALUMINUM OR ALUMINUM ALLOY

Norio Nikaido; Shinji Shirai; Mototaka Iihashi, and Sueo Umemoto, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Ltd. and Fuji Sashi Industries Limited, both of, Japan

Filed Nov. 11, 1974, Ser. No. 522,878
Claims priority, application Japan, Nov. 20, 1973, 48-131096
Int. Cl.² C25D *13/06, 13/10, 13/20*
U.S. Cl. 204—181 **25 Claims**

1. A process for coating an aluminum or aluminum alloy comprising the steps of subjecting aluminum or aluminum alloy to boehmite treatment or chemical conversion treatment, conducting electrolysis using the resulting aluminum or aluminum alloy as an electrode in an aqueous solution of a water-soluble salt of at least one oxyacid, and thereafter coating electrophoretically the aluminum or aluminum alloy with an aqueous organic coating composition containing a binder resin and a water-soluble salt of at least one oxyacid to form a resin layer, said oxyacid contained in the aqueous solution and aqueous organic coating composition being at least one oxyacid selected from the group consisting of silicic acid, boric acid, phosphoric acid, molybdic acid, vanadic acid, permanganic acid, stannic acid and tungstic acid.

3,962,062
SPUTTERED DIELECTRIC THIN FILMS

Sidney Ivor Joseph Ingrey, Aylmer East, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

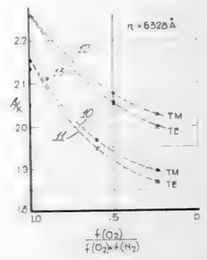
Filed Dec. 9, 1974, Ser. No. 530,849
Int. Cl.² C23C *15/00;* **G02B** *5/14, 5/28;* **H01G** *4/08*
U.S. Cl. 204—192 **10 Claims**

1. A method of sputtering a thin dielectric film containing one of tantalum and niobium in a gaseous atmosphere consisting of nitrogen and oxygen, comprising:

positioning a substrate on a holder in a sealable chamber;
positioning a cathode in said chamber, said cathode made of material to be sputtered;
evacuating the chamber to a predetermined high vacuum;
feeding oxygen and nitrogen into the chamber, and maintaining a flow of said gases through the chamber;
adjusting the flow of said gases to give a predetermined pressure in the chamber;
varying the flows of said gases as necessary to give a predetermined ratio of said gases in the chamber;
moving said substrate into sputtering position relative to said cathode;
sputtering a thin dielectric film on said substrate.

8. A method of sputtering a thin dielectric film containing one of tantalum and niobium, in an atmosphere consisting of nitrogen and oxygen, said film having predetermined dielectric properties comprising:

positioning a substrate in a chamber and providing a cathode composed of one of tantalum and niobium;
evacuating said chamber to a predetermined vacuum;
feeding oxygen and nitrogen gases separately into said chamber;



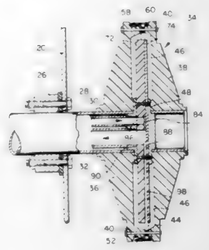
adjusting the flows of oxygen and nitrogen to give a predetermined pressure in said chamber and varying the relative flows to give a predetermined ratio of said gases in the chamber; and
sputtering a thin film containing said one of tantalum and niobium on said substrate to form a thin film having a predetermined ratio of oxygen to nitrogen included therein to give predetermined dielectric property.

10. A method as claimed in claim **8** including varying the relative flows of oxygen and nitrogen in a stepwise manner at predetermined time intervals and by predetermined amounts, during sputtering, and forming a thin film composed of a series of thin layers, each layer having a predetermined ratio of oxygen to nitrogen included therein to give a dielectric property which varies in a predetermined manner from the oxygen to nitrogen ratio and dielectric property of the preceding layer.

3,962,063
SELECTIVE PLATING APPARATUS

Ashok R. Hingorany, North Attleboro, Mass., assignor to Advanced Materials Systems, Inc., North Attleboro, Mass.

Filed Dec. 18, 1974, Ser. No. 533,816
Int. Cl.² C25D *19/00, 17/00*
U.S. Cl. 204—206 **9 Claims**

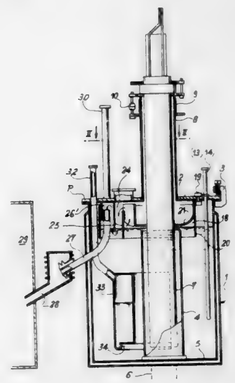


1. Continuous selective plating apparatus for electroplating metal on a metallic strip, said apparatus comprising a rotatably mounted hollow wheel having a slot extending around the periphery thereof, said slot communicating with the hollow interior of said wheel, means for maintaining a metal strip to be plated in engagement against a portion of the periphery of said wheel whereby the aforesaid slot for said peripheral portion is sealed closed by said strip, means for advancing said strip and rotating said wheel, fixed, nonrotatable distribution means mounted within said wheel comprising electrolysis and suction chambers extending radially toward, but terminating short of, said peripheral wheel portion, said chambers being open at their outer ends, means for continuously feeding an electrolyte to said electrolysis chamber and forcing same outwardly therethrough into contact with the adjacent exposed inner surface of said strip, anode means associated with said electrolysis chamber, said strip being connected as a cathode, whereby the inner surface of the strip contacted by the electrolyte is electroplated, means for imparting a negative pressure to said suction chamber, whereby excess electrolyte from said electrolysis chamber is continuously drawn into the open end of said suction chamber and then is evacuated from the apparatus, said suction chamber having no anode means whereby no appreciable plating of the strip takes place at that location, said wheel being vertically disposed, said suction chamber extending downwardly and said electrolysis chamber being located in juxtaposition to said suction chamber.

3,962,064
ELECTROLYZER AND A METHOD FOR THE PRODUCTION OF READILY OXYDIZABLE METALS IN A STATE OF HIGH PURITY

Albert Brut, Bollene; Gerard Nave, Miramas; Jean-Pierre Deleuil, Salon; Jean-Claude Brun, Miramas, and Yves Martin, Bordeaux-Cauderan, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sept. 13, 1974, Ser. No. 503,928
Int. Cl.² C25C *1/02, 7/08*
U.S. Cl. 204—245 **5 Claims**



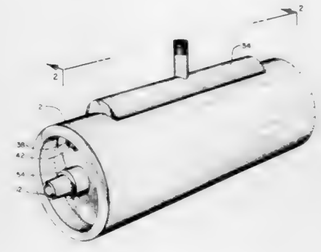
1. An electrolyzer for molten metal compounds for the preparation of readily oxidizable metals having a high degree of purity and comprising an electrolytic tank, a cathode welded to the bottom of said tank and surrounding a vertical anode and any known means for carrying out electrolysis, wherein the top end of the cathode is surmounted by a collecting chamber rigidly fixed to a coverplate and provided with a lateral chimney having a recess formed in the top portion of its wall and located at the greatest radial distance from the cathode so as to establish a communication between said chimney and a transfer compartment adapted to communicate at the base thereof with a discharge compartment maintained in an inert atmosphere and provided at the top portion thereof with a chimney which surrounds a metal discharge tube, an expansion chamber containing electrolyte in communication with the electrolyte of the tank and supplied periodically with air by a timing system which also controls the level of electrolyte so that it should move down from a top level at which the metal is poured-off at the level of said recess and at the level of said discharge tube, to a bottom level at which said metal passes from the transfer compartment to the discharge compartment

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3,962,065
CHLORINE GAS OR HYPOCHLORITE PRODUCING APPARATUS

Frank J. Scoville, 4646 South 3075 East, Salt Lake City, Utah 84117

Continuation-in-part of Ser. No. 473,678, May 28, 1974, abandoned. This application Apr. 14, 1975, Ser. No. 567,681
Int. Cl.² C25B *1/14, 1/16, 1/26*
U.S. Cl. 204—256 **13 Claims**



1. Apparatus for producing chlorine gas or a hypochlorite compound comprising

a housing,
one or more hollow tubes disposed in the housing and having a plurality of apertures spaced along the length of each tube, a plurality of carbon plate electrodes arranged in series in said housing, each having a hole or holes therein for receiving a tube or tubes therethrough, the planes defined by the plates being substantially parallel with each other and perpendicular with the tube or tubes, said plates being spaced to define chambers between adjacent plates, said chambers being located over one or more apertures in the tube or tubes,
a plurality of chloride ion permeable membranes, each disposed in a different one of said chambers to divide said one chamber into an anode compartment and a cathode compartment,
means for supplying an alkali or alkaline earth chloride solution to one hollow tube for transport to the chambers,
means for applying a D.C. current to the electrodes, and
means for collecting the products produced in the anode and cathode compartments.

3,962,066
RESILIENT LINER FOR AN ELECTROLYTIC CELL

Donald B. Barber, Los Angeles; Paul L. Everett, South Gate; Ivar Nou, North Hollywood; James Struebing, La Crescenta, and William Greenbecker, Long Beach, all of Calif., assignors to Barber-Webb, Los Angeles, Calif.

Filed Jan. 30, 1974, Ser. No. 437,965
Int. Cl.² C25B *9/00;* **B32B** *3/00*
U.S. Cl. 204—279 **1 Claim**

1. A resilient liner for an electrolytic cell comprising

a one-piece, resilient layer, said layer being impervious to electrolytes; and
a plurality of protrusions disposed on at least a portion of the exterior surface of said layer, said protrusions being conical in shape and providing passageways between said

layer and the cell for drainage of electrolytes trapped therebetween, said conical protrusions having a height to



base diameter ratio of approximately one-third to facilitate the fabrication of the liner.

3,962,067

PROCESS FOR THE PRODUCTION OF AN AQUEOUS SOLUTION OF SILICOFORMIC ACID

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 477,861, June 10, 1974. This application Sept. 4, 1975, Ser. No. 610,272

Int. Cl.² C01B *33/12, 33/18, 33/00*

U.S. Cl. 252—182 **5 Claims**

1. The method of preparing an aqueous solution of silicoformic acid by the steps of:

a. mixing together silicoformic acid and an alkali metal hydroxide in the ratio of about 5:1 by weight in an aqueous solution,

b. heating the said mixture to about 60°–100° C,

c. stirring the said mixture for about 10–20 minutes, thereby

d. preparing an aqueous solution of silicoformic acid.

3,962,068

METAL ANODE FOR ELECTROCHEMICAL PROCESSES

Dieter Zöllner; Christine Zöllner, both of Schwaig near Nurnberg, and Konrad Koziol, Rothenbach a. d. Pegnitz, all of Germany, assignors to Messrs. C. Conradty, Germany

Filed Mar. 13, 1974, Ser. No. 450,834

Claims priority, application Germany, Mar. 14, 1973, 2312563

Int. Cl.² C25B *11/08;* **B01K** *1/00;* **C25B** *1/00*

U.S. Cl. 204—290 F **6 Claims**

1. Metal anode for electrochemical processes, comprising a metal resistant to the electrolysis medium and an active cover layer on the surface of said metal consisting essentially of a crystalline structure of the type Me_A (I) $_{approx.\ 0.4}$ Me_B (I)$_{approx.\ 0.1}$ Pt_3O_4, where Me_A represents Li, Na, K, and Me_B represents Tl and Ag.

3,962,069

SYSTEM FOR TREATING SLUDGE

Kiyoshi Inoue, Tokyo, and Akihiko Shimizu, Isehara, both of Japan, assignors to Inoue-Japan Research Inc., Yokohama, Japan

Filed Sept. 23, 1974, Ser. No. 508,611

Claims priority, application Japan, Sept. 21, 1973, 48-105933; Sept. 21, 1973, 48-105934; Feb. 7, 1974, 49-14883; Feb. 15, 1974, 49-18831

Int. Cl.² B01D *13/02*

U.S. Cl. 204—300 R **9 Claims**

1. A system for treating sludge comprising:

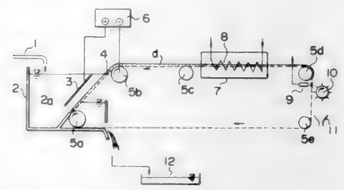
a vessel for receiving a bath of the sludge;

an electrically conductive member having an endless and screen-like perforated surface continuously displaceable through and outside of said bath along a predetermined path and forming a first electrode;

means for displacing said surface along said predetermined path;

a second electrode spacedly juxtaposed with said first electrode in said bath;

a power supply for applying an electric potential across said first and second electrodes to electrochemically effecting flow of water from said sludge through the perforations of said surface and form on the latter a deposit of consolidated sludge within said bath;



means disposed in said path and downstream of the bath for removing said deposit from said surface for disposal or reclamation; and

means for detecting the water content of said deposit on said surface carried from said bath to produce an electrical signal indicative of the detected value and means responsive to said signal for controlling said potential source so as to maintain the water content of said deposit at a desired value.

3,962,070

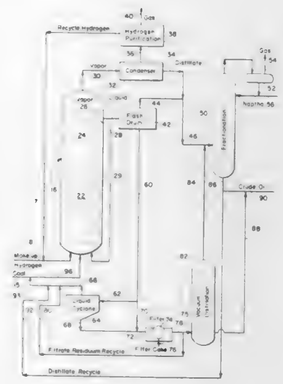
H-COAL PROCESS: SLURRY OIL RECYCLE SYSTEM

Harold H. Stotler, Westfield, N.J., assignor to Hydrocarbon Research, Inc., Morristown, N.J.

Continuation of Ser. No. 214,958, Jan. 3, 1972, abandoned. This application Jan. 14, 1974, Ser. No. 433,198

Int. Cl.² C10G *1/08*

U.S. Cl. 208—10 **2 Claims**



1. In a process for the hydrogenation of coal wherein particulate coal is admixed with a liquid hydrocarbon to form a coal-oil slurry which is passed with hydrogen through a reaction zone under hydrogenation temperature and pressure conditions and the coal is hydrogenated to produce hydrocarbon products including a liquid residuum having unconverted processed solids contained therein and wherein the reactor liquid residuum concentration is maximized to reduce the yield of liquid residuum by recycling to the reaction zone a portion of said liquid residuum in the coal-oil slurry, and wherein the solids concentration in the reactor liquid is maintained below 20 weight percent, the improvement which comprises:

1. removing the coarser particulate solids from at least part of the recycled residuum stream by liquid cyclone separation;
2. recycling the overhead stream from said liquid cyclone separation step to the reaction zone;
3. removing by filtering finer particulate solids from an additional liquid residuum stream recycled to the reaction zone and also providing a net filtrate liquid stream;
4. subjecting the net filtrate liquid to a distillation step to produce hydrocarbon vapor and liquid streams; and
5. combining the liquid from said distillation with a liquid resulting from condensation and fractionation of the overhead vapor from the reaction zone to produce a synthetic crude oil.

3,962,071

PROCESS FOR PRODUCING LUBRICATING OILS

Takuji Itoh; Tadashi Miura, and Ikuo Akitsuki, all of Ohi, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1974, Ser. No. 469,417

Claims priority, application Japan, May 19, 1973, 48-55765

Int. Cl.² C10G *37/06, 23/04*

U.S. Cl. 208—58 **7 Claims**

1. A process for producing lubricating oils of enhanced photostability comprising the following steps in combination:

i. hydrocracking a hydrocarbon oil having a kinematic viscosity of more than about 3 cst. at 98.9°C. over a hydrocracking catalyst under hydrocracking reaction conditions thereby producing a hydrocrackate product containing more than about 50 volume % of hydrocarbon oil fractions having lubricating oil viscosity;

ii. fractionating said hydrocrackate to obtain at least one hydrocarbon oil fraction having lubricating oil viscosity; and

iii. contacting said fraction having lubricating oil viscosity with hydrogen under hydrogenation reaction conditions comprising a reaction temperature of from about 180° to 300°C., a reaction pressure of more than about 10 kg/cm², a liquid hourly space velocity of less than about 10 V/hr/V, and a hydrogen gas flow rate of from about 30 to 3000 Nm³/kl in the presence of a hydrogenation catalyst comprising palladium supported on a silicacontaining refractory inorganic oxide carrier in which the silica content is from about 5 to less than 40 weight %, said carrier having a specific surface area of from about 100 to 500 m²/g, a pore volume of from about 0.5 to 1.2 ml/g, an average pore radius of from about 30 to 120A and a bulk density of from about 0.5 to 0.7 g/ml.

3,962,072

AIR SEPARATOR APPARATUS

Barry Ramacher, Stockton, and Marvin L. Pack, Linden, both of Calif., assignors to Ramacher Manufacturing Company, Linden, Calif.

Division of Ser. No. 381,150, July 20, 1973, Pat. No. 3,872,657. This application Jan. 3, 1975, Ser. No. 538,357

Int. Cl.² B07B *4/02*

U.S. Cl. 209—140 **3 Claims**

1. An air separator apparatus comprising:

a. an elongated fore to aft frame;

b. a primary feed conveyor supported on said frame and extending upwardly and rearwardly from a lower forward end to an elevated after end, said primary feed conveyor having a predetermined transverse width;

c. means defining a substantially vertical air column mounted on said frame, said means extending between an upper end and a lower end and including a forward wall having a transverse opening located adjacent said elevated after end of said primary feed conveyor, said transverse opening extending the width of said primary feed conveyor to receive the material discharging therefrom, said means also including an after wall and a pair of lateral walls, said lateral walls being spaced apart a distance substantially equal to said predetermined width of said primary feed conveyor;

d. a rotary fan mounted on said frame adjacent said means said fan including an inlet and an outlet, said outlet discharging to the atmosphere;

e. a duct opening into said upper end and in communication with said inlet of said fan for inducing air flow in a vertically upward direction from said lower end toward said upper end thereof and into collision with the material entering said air column through said opening for the removal of light debris from the heavier desired fraction of the material;

f. a secondary discharge conveyor supported on said frame and extending upwardly and rearwardly from a forward end located below and spaced from said lower end, said secondary discharge conveyor having a relatively narrow width with respect to said predetermined transverse width of said primary feed conveyor and the distance between said lateral walls, said secondary discharge conveyor being pervious to air flow from the atmosphere;

g. a pair of counter-rotating, power-driven, guide drums mounted on said frame for rotation about a spaced pair of fore to aft, horizontal, parallel axes, the tops of said drums being located adjacent the lower ends of said relatively widely spaced lateral walls, the adjacent sides of said drums extending approximately tangentially to the



edges of said relatively narrow secondary discharge conveyor and defining a venturi throat for air flowing upwardly from said forward end of said secondary discharge conveyor located below said guide drums;

h. a base plate mounted on said frame and extending downwardly from a location adjacent the lower end of said forward wall to a location adjacent the forward end of said secondary discharge conveyor, said base plate defining, with the adjacent surfaces of said guide drums, a substantially vertical downwardly converging passageway capable of funneling the material emerging from said lower end into a relatively narrow stream vertically descending through said venturi throat and onto said relatively narrow secondary discharge conveyor; and,

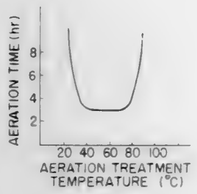
i. a horizontal, transversely oriented, drum-like housing interposed between said duct and said fan inlet, the bottom portion of said housing being located aft of said guide drums and above said secondary discharge conveyor, said housing being spaced from said secondary discharge conveyor to provide, with the after portions of said guide drums, an approximately horizontal path for air inflow into collision with the vertically descending and narrowing stream of material passing through said venturi throat, said horizontal flow of air then curving upwardly to supply said air column and eventually to flow through said fan to discharge to the atmosphere with entrained light debris separated from the heavier desired fraction in the material emerging from said opening and in said narrowing stream of material descending between said guide drums.

3,962,073

PROCESS FOR TREATING A WASTE LIQUID OF HYDROSULFITE

Yoshio Yoshikawa, Ushiku; Sadao Otsuka, Nagareyama; Akira Amemiya, and Toshio Komatsu, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 9, 1974, Ser. No. 496,090
Claims priority, application Japan, Aug. 15, 1973, 48-91435
Int. Cl.² C02C *1/06*
U.S. Cl. 210—7 8 Claims



1. In a process for treating a waste liquor from the final stage of a process for producing anhydrous hydrosulfite wherein the waste liquor includes sodium thiosulfate, sodium sulfite, sodium acid sulfite, sodium formate, and inorganic sulfur reducing compounds, the improvement which comprises diluting the waste liquor with water to adjust the ratio of 100 percent times the weight of iodine consumed by the waste liquor divided by the weight of waste liquor to one to fifteen percent, aerating the waste liquor at 30°–85°C in the presence of 10 to 1000 parts per million of a metal ion selected from the group consisting of iron, manganese, cobalt, copper and nickel ions to reduce the ratio by more than 50%, and treating the aerated liquor by an activated sludge process.

3,962,074

PROCESS FOR SEPARATING ACRYLIC ACID FROM AQUEOUS SOLUTIONS

Wilhelm Karl Schropp, Luetzelsachsen, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed May 6, 1974, Ser. No. 467,255
Claims priority, application Germany, May 9, 1973, 2323328
Int. Cl.² B01D *11/04*
U.S. Cl. 210—21 6 Claims

1. In a process for extracting acrylic acid from an aqueous solution thereof which comprises extracting said solution with an organic solvent and separating the organic phase from the aqueous raffinate, the improvement wherein the aqueous acrylic acid solution is extracted with a mixture of butanol and butyl acrylate, which mixture is saturated with water and in which mixture the weight ratio of butanol to butyl acrylate is from 1:3 to 10:1.

3,962,075

HEMO DIALYZER EMPLOYING TWO DIALYSATE SOLUTIONS

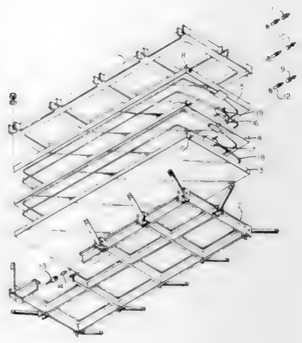
Sheldon L. Flaikoff, Brooklyn, N.Y., and Roy Alan Ackerman, Cambridge, Mass., assignors to Tri-Flo Research Laboratories, Ltd., Jamaica, N.Y.

Continuation-in-part of Ser. No. 395,675, Sept. 10, 1973, abandoned. This application Apr. 16, 1974, Ser. No. 461,461
Int. Cl.² B01D *31/00, 13/00*
U.S. Cl. 210—22 A 19 Claims

1. A method of purifying blood in which blood is subjected to filtration to remove impurities therefrom, said filtration comprising,

exposing blood between two zones, the first zone containing a hypotonic solution with respect to blood constituents, both said zones being separated from said flow of blood by a semi-permeable filtration medium, the hypotonic solution being at a concentration sufficient to remove at least a portion of said blood impurities,

the improvement comprising providing a hypertonic solution in said second zones, said hypertonic solution being hypertonic with respect to said blood constituents other than urea, both said hypertonic and hypotonic solutions



having constituents in common with blood but at concentrations different therefrom to produce a concentration gradient with respect to said constituents, said concentrations being highest in said hypertonic solution and lowest in said hypotonic solution.

whereby said concentration gradient produces an efflux of water from said blood by reason of the osmotic gradient which flow carries with it blood impurities effective to increase the dialysis rate.

3,962,076

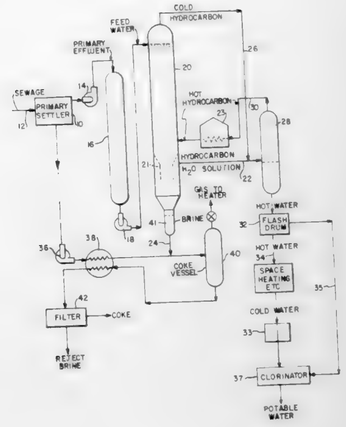
PROCESS FOR CONVERTING AQUEOUS SEWAGE TO POTABLE WATER

Howard V. Hess, Glenham; William F. Franz, Gardiner, and Edward L. Cole, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 304,160, Nov. 6, 1972, Pat. No. 3,876,538. This application Sept. 11, 1974, Ser. No. 505,127
Int. Cl.² B01D *11/00*
U.S. Cl. 210—22 R 10 Claims

1. A process for converting aqueous sewage containing dissolved brine-forming minerals and organic compounds to potable water, and coke, comprising: separating said sewage into a primary sludge consisting of a pumpable slurry and a relatively cool primary effluent containing said minerals; passing said effluent into direct counter-current contact with relatively hot hydrocarbon liquid under a pressure of 1000 to 3000 psi in a contacting zone at a temperature between 600 and 700°F thereby forming a hydrocarbon minerals-free water solution, cooled hydrocarbon and a hot concentrated minerals containing brine solution; separating said hydrocarbon from said water; flashing at least a part of said water and condensing

same for use as potable water; pressurizing said sludge to around 1000 to 3000 psi and injecting said hot brine into said



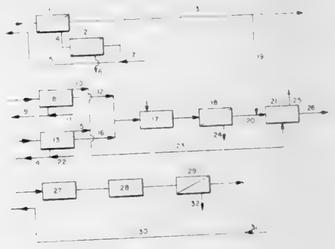
sludge to coke said sludge in the liquid phase to form a reject coker effluent, gases and coke.

3,962,077

PROCESS FOR THE PURIFICATION OF WASTE WATERS

Giorgio Pascarella, Pesaro, and Francesco Salvemini, Fano, both of Italy, assignors to Tecneco S.p.A., Fano (Pesaro), Italy

Filed June 14, 1974, Ser. No. 479,558
Claims priority, application Italy, June 15, 1973, 25392/73
Int. Cl.² B01D *13/00*
U.S. Cl. 210—23 H 5 Claims



1. A process for the purification of waste waters containing organic and inorganic products which may or may not be ionizable, said waste waters characterized as coming from the regeneration of the anionic and cationic demineralizing resins, the decoloring resins, and the decalcifying resins used for the treatment of the sugar juices in the sugar industry, said process comprising the following steps:

A. feeding said waste waters coming from the regeneration of the decoloring resins to an inverse osmosis section consisting of two stages;

B. feeding waste waters which come from the regeneration of the anionic demineralizing resins to an anodic compartment of one or more electrolytic cells each having two compartments and subjecting said water therein to electrolysis;

C. feeding waters which come from the regeneration of the cationic demineralizing resins to a cathodic compartment of one or more electrolytic cells each having two compartments and subjecting said water therein to electrolysis;

D. feeding waters coming from the regeneration of decalcifying resins to a precipitation treatment with sodium hydroxide, and carbon dioxide, subsequently neutralizing said waters and subjecting them to a final inverse osmosis treatment;

E. mixing and neutralizing the treated waters rich in organic materials from steps B and C hereinabove, where they are not completely demineralized, and then subjecting the waters to an inverse osmosis treatment and thereafter mixing them with treated solution rich in organic substances from step A; and

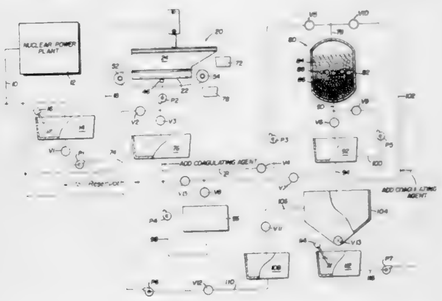
F. feeding treated waters from step E containing organic compounds (organic waters), after having been mixed together, to an evaporator for recovering the dry organic substance.

3,962,078

METHOD AND APPARATUS FOR TREATING LIQUID CONTAMINATED WITH RADIOACTIVE PARTICULATE SOLIDS

Gene Hirs, Birmingham, Mich., assignor to Hydromation Filter Company, Livonia, Mich.

Filed Dec. 13, 1974, Ser. No. 532,418
Int. Cl.² B01D *15/06, 37/00*
U.S. Cl. 210—27 16 Claims



1. In a method of removing radioactive particulate contaminants from liquid in a nuclear reactor plant for storage and disposal, the steps of:

flowing a liquid contaminated with radioactive particulate solids from a nuclear reactor through a foraminous medium having openings in the range of from about 0.002 to 0.025 inch accumulating particulate contaminants as a filter cake on the foraminous medium, and passing any non-accumulated particulate contaminants in a partially clarified liquid flow;

flowing the partially clarified liquid through a bed of granular filter medium and accumulating substantially all the previously non-filtered contaminants to provide a clarified liquid suitable for reuse, the filter bed being comprised of granular material having a specific gravity less than about 1.6;

terminating flow through the foraminous medium after that medium has accumulated a filter cake of radioactive particulate contaminants and removing the accumulated, radioactive filter cake for disposal;

terminating flow through the granular filter bed, flowing backwash liquid through the bed in a direction reverse to normal filtration flow, expanding the bed and removing at least a portion of the accumulated particulate contaminants from the granular filter bed;

accumulating the backwash liquid and removed contaminants from the granular filter bed in a reservoir, quiescently maintaining the accumulated backwash liquid and contaminants, and settling at least a part of the contaminants; and

decanting liquid from the reservoir to concentrate the contaminants.

11. A filtration system for removing radioactively contaminated particulate solids from liquid in a nuclear reactor plant, comprising: means for flowing liquid contaminated with radioactive particulate solids from a nuclear ractor through a first filter including a reusable foraminous medium having flow openings between about 0.002 and 0.025 inch in size, the foraminous medium accumulating radioactive contaminants thereon and passing any non-accumulated contaminants in a partially clarified liquid flow; a flow conduit interconnecting the first filter with a second filter including a bed of granular filter medium for accumulating and coalescing substantially all the radioactive particulate contaminants passed through the first filter including a bed of granular filter medium for a clarified liquid suitable for re-use in the nuclear power plant; means for removing the accumulated radioactive contaminants from the foraminous medium; means for flowing backwash liquid through the granular filter bed in a direction reverse to normal filtration flow to expand the bed and remove substantially all the accumulated, coalesced particulate radioactive contaminants therefrom; a reservoir means (a) receiving the backwash liquid with removed radioactive contaminants and (b) retaining same in a quiescent pool to settle the radioactive particulates; means for decanting liquid from the quiescent pool after settling to concentrate the radioactive particulates; and means for removing the settled radioactive particulates from the reservoir after decanting as a concentrated radioactive contaminant waste.

3,962,079

ACID TREATED CATIONIC STARCH IN THE FLOCCULATION AND DEWATERING OF SLUDGE

Walter G. Hunt, Bridgeton, and Ray J. Betz, Mehlville, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Division of Ser. No. 434,998, Jan. 21, 1974, Pat. No. 3,901,878. This application Feb. 18, 1975, Ser. No. 550,599

Int. Cl.² C08B *31/12*

U.S. Cl. 210—47 **5 Claims**

1. A method of treating municipal raw primary sludge including the steps of adding from about 0.007 to about 0.200% (based on the dry weight of sludge) of an acid treated gelatinized cationic starch ether of amine butene halide having about 0.15 to about 0.25 degree of substitution of amine butene halide and a fluidity of about 30 to about 50 ml., to said municipal raw primary sludge, and dewatering to below about 70% moisture.

3,962,080

SODIUM SULFUR OXIDES WASTES DISPOSAL PROCESS

Jacques M. Dulin, Libertyville, Ill.; Edward C. Rosar, Lakewood, Colo.; Russell B. Bennett, Worthington; Harvey S. Rosenberg, Columbus, both of Ohio, and Joseph M. Genco, Orono, Maine, assignors to Industrial Resources, Inc., Chicago, Ill.

Filed Oct. 31, 1973, Ser. No. 411,366

Int. Cl.² C02C *5/02*

U.S. Cl. 210—59 **38 Claims**

1. A water pollution control process for reducing the solubility of alkali metal sulfur oxides industrial process wastes comprising the steps of:

a. mixing said industrial process waste containing an alkali metal sulfur oxide selected from sodium, potassium, and lithium, sulfite, sulfate, and mixtures thereof, with an effective amount of an alumina and silica-containing ash selected from fly ash, bottom ash, and mixtures thereof to produce a mixture;

b. forming an agglomerate consisting of individual particles of said mixture;

c. heating said mixture-containing agglomerate to a temperature within the range of about 1000–2300°F for a time sufficient to sinter said agglomerate into an integral mass while retaining said agglomerate form with a substantial portion of individual agglomerate particles being fused together by a glassy matrix;

d. said sulfur oxide is in a sulfite state, a sulfate state, or a mixture of said states in amounts selected to produce no substantial degassing as SO_x, where x is selected from 2 or 3, of the sulfur oxide of said sulfur oxide component at said temperature;

e. said amount of ash in said mixture being effective in producing an agglomerated-sintered mass exhibiting about two orders of magnitude lower water solubility of said alkali metal sulfur oxide component incorporated therein, measured as said alkali metal, as compared to the solubility of said alkali metal sulfur oxide in an unincorporated state.

3,962,081

CERAMIC FOAM FILTER

John C. Yarwood, Madison, Conn.; James E. Dore, Ballwin, Mo., and Robert K. Preuss, Middleton, Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 28, 1975, Ser. No. 563,213

Int. Cl.² B01D *39/16*

U.S. Cl. 210—69 **14 Claims**

1. A ceramic foam filter for use in filtering molten metal having an open cell structure characterized by a plurality of interconnected voids surrounded by a web of said ceramic, said filter having an air permeability in the range of from 400 to 8000×10^{-7} cm², a porosity of 0.80 to 0.95, a pore size of 5 to 45 pores per linear inch and a thickness of from ½ 4 inches, said filter having substantial structural uniformity with a plurality of homogeneously distributed pore blockages throughout the foam.

3,962,082

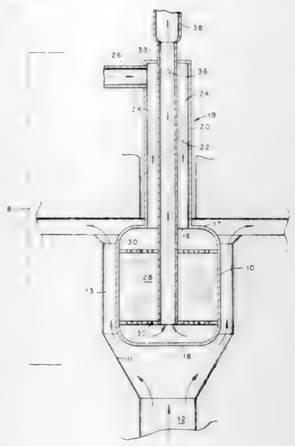
LIQUID METAL COLD TRAP

Rolv Hundal, Greensburg, Pa., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Mar. 28, 1975, Ser. No. 563,273

Int. Cl.² B01D *35/06*

U.S. Cl. 210—71 **6 Claims**



3. A method of preventing the accumulation of cover gases within the cold trap assembly, which assembly removes impurities from a liquid metal flowing through said cold trap assembly, comprising the steps of:

providing a cold trap assembly consisting of a cold trap container, a baffle assembly or crystallization element in said container, a container coolant means about said container, a regenerative heat exchanger connected in fluid communication with said cold trap container;

providing the regenerative heat exchanger with one outer tube and one inner tube coaxially aligned to form an elongated annulus therebetween with the liquid metal entering the cold trap container through an inlet means in the outer tube adjacent one end thereof by flowing in said annulus between the inner and outer tubes, and the liquid metal leaving the cold trap container through an outlet means in said inner tube adjacent one end thereof where said one end of said inner and outer tubes are adjacent one another at an end portion of the elongated annulus;

providing by-pass means between said inlet means and said outlet means for a portion of said liquid metal entering said cold trap assembly to by-pass said cold trap container and baffle assembly with said by-pass means extending from a position adjacent said inlet means to a position adjacent said outlet means;

flowing said portion of said liquid metal entering said cold trap assembly through said by-pass means;

flowing a portion of the cover gases that may have accumulated in said cold trap assembly through said by-pass means with said portion of said liquid metal thereby preventing the accumulation of cover gases in the cold trap assembly.

3,962,083

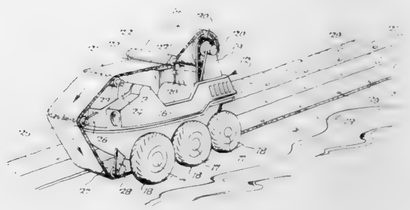
APPARATUS AND METHOD FOR PROTECTING A SHORELINE AGAINST CONTAMINATION FROM AN OIL SPILL

Max Goldman, Latham, N.Y., assignor to RRC International, Inc., Latham, N.Y.

Continuation of Ser. No. 417,478, Nov. 19, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,592

Int. Cl.² B01D *41/02*; **C02B** *9/02*; **E02B** *15/04*

U.S. Cl. 210—79 **24 Claims**



1. A method of treating a shoreline against contamination from an oil spill comprising the steps of transporting a web-laying vehicle and oil-absorbing web means to said shoreline, causing said web-laying vehicle to lay said oil-absorbing web means onto said shoreline as a blanket, taking up said oil-absorbing web means after they have been exposed to oil, extracting oil from said web means, storing said extracted oil, and conveying said extracted oil away from said shoreline.

10. A method of treating a shoreline against contamination from an oil spill comprising the steps of transporting oil-absorbing web means to a shoreline, laying said oil-absorbing web means on said shoreline as a blanket, and taking up said oil-absorbing web means after they have been exposed to oil.

3,962,084

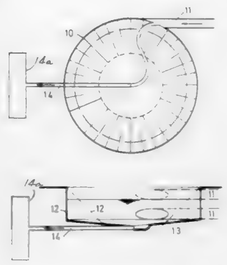
RAIN STORING TANK

Gert Nussbaum, Schulstrasse, 7111 Bitzfled, Germany

Continuation of Ser. No. 370,442, June 15, 1973, abandoned, which is a continuation of Ser. No. 122,974, March 10, 1971, abandoned. This application July 12, 1974, Ser. No. 488,017

Int. Cl.² B01D *21/00*

U.S. Cl. 210—83 **2 Claims**



1. The method of reducing pollution of open waters by controlling the flow of mixed rain water and sewage to a purification plant, comprising the steps of:

establishing a flow path having a flow capacity for directing mixed rain water and sewage to a purification plant having a handling capacity and limiting the flow capacity of said path to a value not exceeding the handling capacity of said plant;

establishing a generally circular holding station having a storing capacity at that end of said flow path opposite to said purification plant;

directing mixed water and sewage from a predetermined drainage area to said holding station and from said holding station to said limited flow path;

directing said polluted mixture of rain water and sewage at the beginning of each rain fall tangentially into said station to induce circular flow thereof and prevent accumulation of solids at the bottom of said station;

temporarily holding the polluted mixture of rain water and sewage at said holding station which exceeds the flow capacity of said limited flow path, up to the storing capacity of said holding station while continuously releasing said polluted mixture of rain water and sewage from the central bottom portion of said holding station to said limited flow path;

discharging any further supply of dilute mixed rain water and sewage exceeding the storing capacity of said holding station and the flow capacity of said limited flow path from said holding station to ambient surroundings whereby only said polluted mixture is directed to said purification plant.

3,962,085

SKIMMER ASSEMBLY

Max Davis Liston, Irvine, and Gerald Paul Frison, Dana Point, both of Calif., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 426,433, Dec. 19, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,225

Int. Cl.² B01D *33/00*

U.S. Cl. 210—131 **10 Claims**

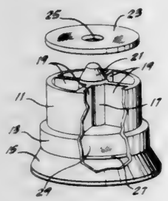
1. A plunger and valve assembly for insertion into the end of a cylinder whereby the cylinder with the assembly may be inserted into a vial to skim off the fluid contents therein, comprising:

a plunger member having dual cylinder sections, joined together in tandem and a central opening therethrough, one cylinder section having a smaller diameter than the other cylinder section and being adapted to be inserted into one end of a cylinder, said other cylinder section having a projecting lip therearound to engage and seal said plunger member with the interior wall of a vial into which said plunger member may be inserted, said other

cylinder section having an annular lip which partially closes said central opening of said plunger member;

radial ribs located within said central opening of said plunger member, said ribs having a shaft extending beyond the end of said one cylinder section, said shaft having a shoulder thereon which is constructed and arranged to be inserted through a central opening of a disc valve to hold the disc on said shaft in engagement therewith between said one end of said one cylinder section and said shoulder;

a circular disc valve having a diameter substantially the same as said end of said one cylinder section, said disc valve having a central opening therein by which said disc is mounted on said shaft and held thereon by said shoulder on said shaft such that when said plunger member is inserted into a vial, the uppermost contents of the vial are passed through said plunger between said end of said one cylinder section and said disc valve and when said plunger is removed from the vial, said disc valve closes said end of said one cylinder section to retain the contents passed



therethrough thereby skimming the uppermost contents of the vial;

a filter disc mounted between said annular lip and said shaft having ribs thereon for filtering the contents skimmed from the vial;

a cylinder having two ends, one end of which said one cylinder section of said plunger member is inserted; and

a tab extending along a diameter of the opening of the other end of said cylinder and intersecting the walls of said cylinder, said tab being connected to the walls of said cylinder at each point of intersection, said tab extending from said other end of said cylinder outwardly to form a projection which may be grasped between the thumb and fingers of an operator of the assembly, whereby said cylinder and plunger may be manually inserted into the vial to skim the uppermost contents thereof, said tab being connected to said cylinder wall such that it may be broken easily therefrom after the vial has been skimmed to prevent interference with the analysis of the contents of said cylinder.

3,962,086

APPARATUS FOR THE SEPARATION OF THE COMPONENTS OF AN AQUEOUS CONCRETE GROUT

Lionello Rossi, Grottaferrata, Italy, assignor to Fogt Industriemaschinenvertretung A.G., Zurich, Switzerland

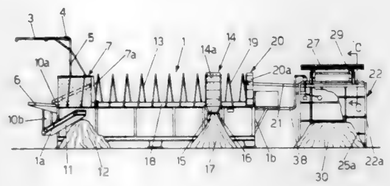
Filed Aug. 13, 1974, Ser. No. 497,101

Claims priority, application Italy, Aug. 31, 1973, 52286/73

Int. Cl.² B01D *21/06*

U.S. Cl. 210—138 **10 Claims**

1. Apparatus for the separation of the components of an aqueous concrete grout which includes gravel and crushed stones, sand, cement and water obtained from the washing with water of concrete receptacles, such as revolving drums of automotive concrete mixers, comprising first and second tanks each having an input and an output operatively connected in series, first separating means mounted in said first tank for separating and discharging the gravel and crushed stones of the aqueous concrete grout, second separating means mounted in said first tank and arranged subsequently of said first separating means for separating and discharging the sand of the aqueous concrete grout, means arranged at the output of said first tank for feeding the cement and water of the aqueous concrete grout to the input of said second tank, third separating means mounted in said second tank for sepa-



rating and discharging the cement of the aqueous concrete grout, distribution means for conveying the water from said second tank to the concrete receptacles and means at the input of said first tank for receiving the aqueous concrete grout from the concrete receptacles.

3,962,087

IMMERSION FILTER

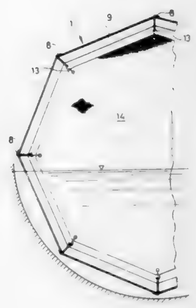
Hans Hartmann, Wiesenweg 175, 8501 Wachendorf, Germany

Filed June 27, 1974, Ser. No. 483,808

Claims priority, application Germany, June 27, 1973, 2332589

Int. Cl.² B01D *33/02*

U.S. Cl. 210—150 **52 Claims**



1. An immersion filter arrangement for biologically purifying sewage effluent, the arrangement comprising: a roller cage support structure means for rotation about an axis thereof, a plurality of biological growth accumulation surface means, and suspension means for suspending said growth accumulation surface means within said roller cage support structure means under tension in planes extending substantially parallel to one another, said biological growth accumulation surface means being adapted to be slowly rotated whereby said growth accumulation surface means are alternatively immersed in the sewage effluent and removed therefrom to enrich the biological growth accumulated thereon with oxygen, said biological growth accumulation surface means comprising foils or webs crossing said axis and being suppported by said suspension means at the peripheries of said foils or webs only.

3,962,088

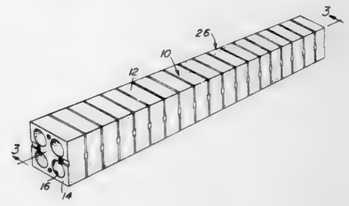
CONCRETE BLOCK ASSEMBLY

Harold L. Kuhlenschmidt, and Floyd E. Kuhlenschmidt, both of Elberfeld, Ind., assignors to Elberfeld Concrete Block Co., Inc. (Entire), Elberfeld, Ind.

Filed Sept. 17, 1974, Ser. No. 506,897

Int. Cl.² E02B *11/00;* **C02B** *3/06*

U.S. Cl. 210—170 **2 Claims**



1. A concrete block drain line forming a drain field of a septic tank sewage disposal system comprising a plurality of identical porous concrete blocks oriented in end-to-end aligned and sealed relation, each block including a plurality of larger openings extending therethrough to form a plurality of longitudinal passageways for effluent flow and adapted to be interconnected at their ends, and tension means extending through small openings in the plurality of blocks for retaining the blocks in assembled sealed relation prior to installation in the drain field, said small openings being disposed symmetrically about the center of the blocks and between said large openings and adjacent the periphery of the block, said tension means being in the form of a plurality of tension rods extending through the small openings in each block with retaining nuts on each end of each rod, the ends of the rod and retaining nuts being received in recesses in the endmost blocks to enable adjacent, aligned assemblies to be disposed in adjacent relation for interconnection, said blocks being of square configuration with the large openings therethrough and small openings therethrough being symmetrically arranged to align the openings in different positions of the blocks relative to each other, said concrete block drain line being in the form of a module to be oriented in end-to-end, aligned relation to similar modules to form a drain field, and connecting means associated with the endmost blocks on said concrete block module, said connecting means including a recess in opposite side edges of the axially innerface of the endmost blocks of the concrete block module and retaining clips each having a portion received in the recess and on the tension rod and a portion extending laterally beyond the concrete block module with the projecting portion adapted to receive clamping bolts for securing the adjacent endmost blocks of two aligned concrete block modules in secure connected relation, each of said blocks in the concrete block drain line including recesses in both faces thereof to enable any of the blocks to be oriented as the endmost blocks and with either face of such blocks faced axially inwardly of the concrete block module.

3,962,089

APPARATUS FOR SOFTENING HARD WATER

Yoshisada Fulukawa, Tokyo, Japan, assignor to Maruyama Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1974, Ser. No. 499,330

Claims priority, application Japan, Sept. 26, 1973, 48-108208

Int. Cl.² B01D *29/38*

U.S. Cl. 210—191 **6 Claims**

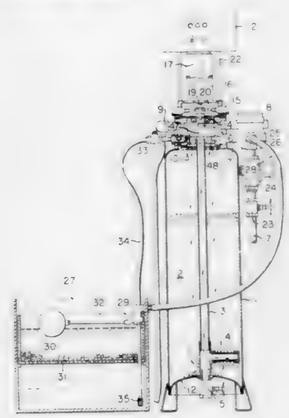
1. An apparatus for softening hard water, comprising:

an upright tank having an upwardly directed opening in the upper end thereof:

a cylindrical sleevelike valve seat fixedly mounted on the upper end of said tank in surrounding relationship to said opening, said valve seat having an inner cylindrical surface defined about a substantially vertical axis;

said valve seat having said first and second ports formed therein and extending radially therethrough, said first and second ports being substantially diametrically opposed and located substantially within a first radial plane which extends perpendicular to the axis of said valve seat;

said valve seat also having third and fourth ports formed therein and extending radially therethrough, said third and fourth ports being substantially diametrically opposed and located substantially within a second radial plane which extends perpendicular to the axis of said valve seat, said second radial plane being axially spaced from said first radial plane;



a soft water pipe, a discharge pipe, a raw water pipe, and a saltwater pipe respectively connected to the outer ends of said first, second, third and fourth ports;

valve means rotatably fitted within valve seat for rotation about said vertical axis, said valve means including a substantially cylindrical valve member disposed within the valve seat and having an outer cylindrical surface disposed in slidable and sealed engagement with said inner cylindrical surface;

said valve member having first passage means extending therethrough, one end of said first passage means terminating in the lower axial end of said valve member for communication with the interior of said tank, and the other end of said first passage means terminating in a first radial opening which extends through said outer cylindrical surface and is disposed substantially within said first radial plane;

a substantially vertically extending pipe disposed within the tank and having the upper end thereof connected to said valve member for communication with said one end of said first passage means, the lower end of said vertically extending pipe extending into a mass of ion exchange resin disposed within the tank;

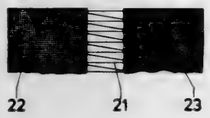
said valve member having second passage means extending therethrough, one end of said second passage means terminating in the lower axial end of said valve member for communication with the interior of said tank, and the other end of said second passage means terminating in a second radial opening which extends through the outer cylindrical surface and is disposed substantially within said second radial plane;

ejector means associated with said fourth port for permitting saltwater to be sucked through said saltwater pipe and supplied into said tank;

said valve set having restricted flow passage means formed therein and connecting said third and fourth ports for permitting raw water to be supplied to said ejector means

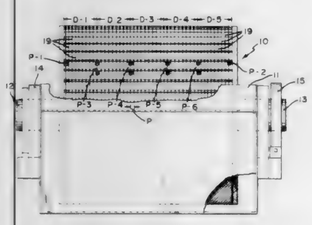
to actuate same;
motor means connected to said valve member for rotating same; and
control means for selectively rotating said motor means and the associated valve member.

3,962,090
FILTER UNIT
Heinz Langer, Hargesheim, Germany, assignor to Seitz-Asbest-Werke Theo & Geo Seitz, Germany
Filed Sept. 12, 1972, Ser. No. 288,298
Claims priority, application Germany, Sept. 13, 1971, 2145661
Int. Cl.² B01D *25/12*
U.S. Cl. 210—231 **2 Claims**



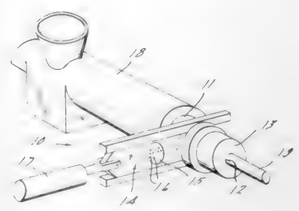
1. A filtering unit for a filter press having vertical filter elements comprising two individual soft filtering layers arranged on each side of a filtering element with longitudinal edges parallel and spaced by a side of the filter element, and a seam formed of stitching spanning the space between and connecting said spaced edges, so that said seam overlies the side of said filtering element and the edges of said layers do not extend beyond the filtering element.

3,962,091
ROTARY DRUM FILTER WITH WIRE DECK, APPARATUS AND METHOD
Frank S. Doria, Easton, Pa., and Victor A. Schinnerl, Norwalk, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.
Continuation of Ser. No. 321,099, Jan. 4, 1973, abandoned. This application June 11, 1974, Ser. No. 478,220
Int. Cl.² B01D *39/10, 33/06*
U.S. Cl. 210—232 **19 Claims**



1. In a rotary drum filter, a filter drum which comprises,
a cylindrical shell,
a multitude of longitudinally extending outwardly directed ribs provided on said shell spaced from one another about the periphery of said shell,
deck wire tension wound across said ribs in windings of predetermined pitch as defined by notches formed upon the top edges of the ribs,
at least one anchoring block for said wire, fixed in relation to said drum, and formed with a slot in the form of a saw cut, and with a depression formed at the bottom of said slot, said saw cut being aligned for receiving said wire while tensioned,
and a screw threaded into both inner sides of said slot, extending substantially radial to the axis of the drum, and when tightened effective to force the wire into said depression while tensioned, thereby fixedly anchoring the same.

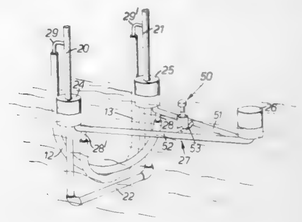
3,962,092
SCREEN CHANGER
Ritchey O. Newman, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 10, 1975, Ser. No. 540,289
Int. Cl.² B01D *29/02*
U.S. Cl. 210—236 **5 Claims**



1. A screen changing apparatus, particularly suited and adapted for use in the extrusion of heat-plastified synthetic resinous extrudable material, the apparatus comprising a conduit, the conduit having an upstream end and a downstream end, and a passage therebetween, a plate-like element slidably disposed within the conduit and extending transversely to the passage, first and second recesses defined in the plate-like element, the plate-like element being in sliding engagement with the conduit toward the dowstream end, and when forced toward the downstream end by the force of fluid flowing therethrough, the plate-like element being in sealing engagement therewith, in the region of each of the recesses the plate-like element defining a plurality of passageways providing communication between the upstream and the downstream end of the conduit, means to slidably retain the plate-like element within the conduit and permit selective positioning of the recesses within the conduit, a sealing means disposed within the conduit between the plate-like element and the upstream end of the conduit, the sealing means comprising an annular ring, the annular ring having an internal generally frustoconical surface outwardly divergent toward the upstream end of the conduit, the ring having a generally cylindrical outer surface, the cylindrical outer surface of the sealing ring defining an outwardly facing groove, an O-ring disposed within the groove and the O-ring being in contact with the conduit.

3,962,093
APPARATUS FOR REMOVING CONTAMINANTS FROM THE SURFACE OF A FLUID
Roland Richard Gibson, London, England, assignor to The Glacier Metal Company Limited, Alperton, England
Continuation of Ser. No. 396,869, Sept. 12, 1973, abandoned. This application Mar. 5, 1975, Ser. No. 555,349
Claims priority, application United Kingdom, Sept. 13, 1972, 42467/72
Int. Cl.² E02B *15/04*
U.S. Cl. 210—242 S **1 Claim**

1. A liquid-surface-layer extraction device including a floatable assembly having first, second and third spaced floats, the first float being connected to each of the second and third floats by interconnecting inlet and outlet tubes respectively, the inlet tube having fluid flow communication with an upwardly extending supply tube mounted on one of the second and third floats and the discharge tube having fluid flow communication with an upwardly extending discharge tube mounted on the other of the second and third floats, the interconnecting tubes supporting between them a nozzle which is adapted to direct a stream of fluid downwardly into the surface of a body of liquid, an orifice being disposed directly below said nozzle and being adapted to receive a layer of the liquid entrained by said fluid stream, the orifice being connected to the outlet tube, the nozzle having a supply duct which extends upwardly through said orifice and the lower



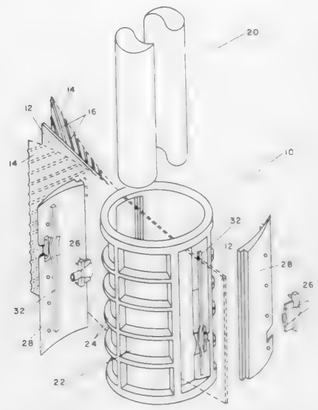
end of the supply duct being connected to the interconnecting inlet tube.

3,962,094
HOLLOW FIBER SEPARATORY DEVICE
James C. Davis, Midland, Mich., and Robert C. Stevens, Miami, Fla., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 398,501, Sept. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 285,547, Aug. 31, 1972, abandoned. This application Sept. 4, 1975, Ser. No. 610,361
Int. Cl.² B01D *13/00*
U.S. Cl. 210—321 R **19 Claims**

1. A hollow fiber separatory device comprising a hollow fiber bundle consisting of a plurality of fine hollow fibers whose end portions are potted in a tube-sheet and whose open fiber ends terminate in a tube-sheet face, the resulting bundle being sealed within a casing to form a separatory cell having one or more fluid ports which allow for the passage of one fluid through the fibers and another around the fibers without mixing of the two fluids, said tube-sheet comprising a cured polyurethane composition consisting essentially of:
A. A prepolymer which comprises the reaction product of castor oil with at least one mole per castor oil hydroxy group of an organic diisocyanate, and
B. A crosslinking agent comprising
a. castor oil or
b. the ester of
i. a polyhydric alcohol containing at least four hydroxy groups, and
ii. an aliphatic acid of at least 12 carbon atoms and one or more hydroxy and/or epoxy groups per molecule,
or mixtures of (*a*) and (*b*).

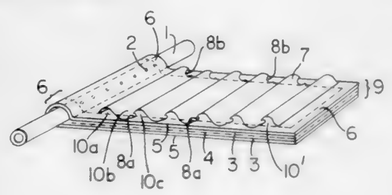
3,962,095
DIALYSER CARTRIDGE
Liberto Luppi, Mirandola, Italy, assignor to Sandoz Ltd., Basel, Switzerland
Continuation-in-part of Ser. No. 417,342, Nov. 19, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,553
Claims priority, application Italy, June 22, 1973, 25766/73
Int. Cl.² B01D *31/00*
U.S. Cl. 210—321 A **7 Claims**

1. A dialyser cartridge comprising a flat membrane tube through which blood to be dialysed may be passed, membrane support material over the outer surfaces of the membrane tube, a split core between which a central portion of the membrane tube and membrane support material is located and about which core said membrane tube and membrane support material are outwardly spirally wound so that the free ends of the membrane tube and membrane support material are situated at the outer periphery of the winding, the membrane support material comprising bands of sheet material having on one side a series of spaced apart parallel ribs lying against the outer surface of the membrane tube, the membrane tube being sandwiched between a pair of such bands with their ribs facing inwardly towards one another, the series of parallel ribs against one side of the membrane tube being at an angle relative to the series of parallel ribs against the other side of the membrane tube, a hollow cylindrically walled casing encasing the split core and spirally wound membrane tube and membrane support material, blood inlet means for



connection to an arterial line and blood outlet means for connection to a blood venous line leading through the circumferential wall of the casing into the ends of the membrane tube, and a pair of end covers fixed to the ends of the hollow cylindrical casing, one end cover having a dialysate inlet for connection to a dialysate supply line and the other end cover having a dialysate outlet for connection to a dialysate take-off line.

3,962,096
SEPARATOR
Kiyoshi Ishii, Saitama, and Takehisa Kubo, Ohmiya, both of Japan, assignors to Daicel, Ltd., Tokyo, Japan
Filed June 19, 1975, Ser. No. 588,308
Claims priority, application Japan, June 20, 1974, 49-70381
Int. Cl.² B01D *31/00*
U.S. Cl. 210—433 M **2 Claims**



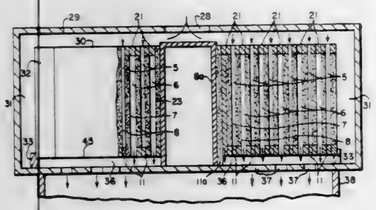
1. A reverse osmosis separating apparatus, comprising: a pressure vessel having a chamber therein; a reverse osmosis separator cartridge disposed in said chamber, said cartridge comprising a centrally located collecting pipe for discharging permeated liquid, a flexible envelope comprising a semipermeable reverse osmosis membrane defining an internal sealed compartment having a liner therein, said compartment being in fluid-flow communication with said collecting pipe so that flow of feed liquid in contact with the external surface of said membrane will cause liquid to permeate into said compartment and thence flow into said water-collecting pipe for discharge from the vessel, a flexible corrugated spacer extending along the envelope from a position adjacent the collecting

pipe to substantially the outer end of said envelope, said spacer having alternating ridges and grooves defining channels that extend substantially parallel to the collecting pipe, said spacer having inclined wall portions extending between the crests of said ridges and grooves, the correspondingly inclined wall portions adjacent to one edge of said spacer having a first set of notches therein, and the corresponding oppositely inclined wall portions adjacent to the other edge of said spacer having a second set of notches therein with the first and second sets of notches opening in opposite directions to provide communication between adjacent channels, said envelope and said spacer being spirally wound around said collecting pipe so that the spacer is positioned between adjacent turns of said envelope and the crests of the ridges and grooves of the spacer substantially sealingly contacting the membrane whereby the channels define flow passages for the feed liquid; resiliently compressible gaskets sealingly contacting and closing the opposite ends of the channels so that the feed liquid flows through said flow passages in series and flows through said notches when moving from one flow passage to the next; means for feeding the feed liquid into a flow passage adjacent one end of said spacer and means for removing concentrated liquid from a flow passage adjacent the opposite end of said spacer.

3,962,097
SPIRAL-WOUND FILTER

Peter A. Reiman, Weston, and Paul J. Cook, Manchester, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Apr. 22, 1971, Ser. No. 136,332
Int. Cl.² B01D *27/00*
U.S. Cl. 210—435 **12 Claims**

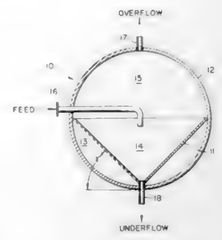


1. A filter unit construction formed from a spirally-wound multi-layer material having two opposed spiral end surfaces, said multi-layer material including at least two flat filter layers and at least two spacer layers; each surface of each filter layer contacting a spacer layer in the spirally wound unit, except for the filter layer forming the outside surface of said unit, said spacer layers being sealed so that a first set of spacer layers contacting each filter layer on a first surface is open to the atmosphere on a first spiral end surface and closed to the atmosphere on the second spiral end surface and a second set of spacer layers contacting the second surface of each filter layer is open to the atmosphere on the second spiral end surface and closed to the atmosphere on the first spiral end surface, said spacer layers being arranged so that spacer layers open on opposing spiral end surfaces are not in contact, the first set of spacer layers being sealed from the atmosphere along the widthwise edge adjacent the center of the spirally-wound unit and along a widthwise portion remote from the center of the spirally-wound unit and the center of said spirally-wound unit being sealed from the atmosphere adjacent at least one spiral end surface.

3,962,098
GRAVITY SETTLING

Morgan C. Sze, Upper Montclair, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Sept. 13, 1974, Ser. No. 505,933
Int. Cl.² B01D *21/02*
U.S. Cl. 210—532 R **4 Claims**



1. A gravity settler for separating solids from a coal liquefaction product at an elevated pressure, comprising:

an ellipsoidally shaped housing;

a conically shaped vessel positioned in the lower portion of the ellipsoidally shaped housing and surrounded thereby to define a gravity settling vessel having a conically shaped lower interior portion and a frusto-ellipsoidally shaped upper portion, said conically shaped vessel being sloped with respect to horizontal at an angle of at least 45° and less than 70°;

inlet means for downwardly introducing solids and liquid into an intermediate axial portion of the conically shaped vessel in the area of maximum cross-section;

first outlet means for withdrawing essentially solids free overflow from substantially the uppermost portion of the upper frust o-ellipsoidally shaped interior portion of the gravity settler; and

second outlet means for withdrawing solids containing underflow from the lower conically shaped interior portion of the gravity settler.

3,962,099
WATER BASE DRILLING MUD COMPOSITION

Donald L. Whitfill, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Apr. 29, 1974, Ser. No. 465,027
Int. Cl.² C09K *7/02, 7/04*
U.S. Cl. 252—8.5 A **8 Claims**

1. An improved water base drilling mud composition consisting essentially of an aqueous suspension of:

a. from about 5 to 35 pounds per barrel of a clay material;

b. from about 1 to 5 pounds per barrel of an alkaline earth metal hydroxide selected from the group consisting of calcium hydroxide and mixtures of calcium hydroxide and barium hydroxide; and

c. at least a stoichiometric amount, based on the weight of said alkaline earth metal hydroxide, of monocalcium phosphate.

3,962,100
FABRIC SOFTENING AGENTS

Alan P. Murphy, and Rickey Kretschmar, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 18, 1975, Ser. No. 605,479
Int. Cl.² D06M *13/36*
U.S. Cl. 252—8.8 **22 Claims**

1. A fabric softening and anti-static composition comprising a softening amount of an alkyl ammonium carbamate compound of the formula

$$R_1R_2N\overset{+}{H}_2\bar{O}(O)CNR_3R_4$$

wherein R_1 is hydrogen or an alkyl group, R_2 is a long chain alkyl group having 10 or more carbon atoms, R_3 is hydrogen or an alkyl group, and R_4 is hydrogen or an alkyl group; and sufficient suspending agent to suspend said alkyl ammonium carbamate in water.

3,962,101
COMPOSITION AND METHOD FOR ACIDIZING EARTHEN FORMATIONS

Curtis W. Crowe, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 316,421, Dec. 18, 1972. This application Dec. 17, 1973, Ser. No. 425,575
The portion of the term of this patent subsequent to June 8, 1993, has been disclaimed.
Int. Cl.² E21B *43/26*
U.S. Cl. 252—8.55 C **20 Claims**

1. A composition for acidizing a subterranean formation which comprises:

an aqueous acidizing acid solution for said formation and an effective amount of a cationic surfactant in said solution to reduce the normal reaction rate of said acidizing solution with said formation, said cationic surfactant consisting of an alkyl C_8 to C_{18} primary amine characterized as rendering the formation surface oil-wet.

8. A method of acidizing an oil containing subterranean formation with an acidizing acid solution which comprises:

contacting the subterranean formation with an acidizing acid solution containing dispersed therein an effective amount of a cationic surfactant consisting of an alkyl C_8 to C_{18} primary amine to increase the normal reaction time of said acidizing acid solution with said formation, said cationic surfactant characterized as in the presence of said acid, rendering oil containing formations oil-wet.

3,962,102
COMPOSITION AND METHOD FOR ACIDIZING EARTHEN FORMATIONS

Curtis W. Crowe, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 402,559, Oct. 1, 1973, abandoned, which is a continuation-in-part of Ser. No. 316,421, Dec. 18, 1972, Pat. No. 3,917,536. This application Dec. 17, 1973, Ser. No. 425,574
The portion of the term of this patent subsequent to June 8, 1993, has been disclaimed.
Int. Cl.² E21B *43/22, 43/28*
U.S. Cl. 252—8.55 C **11 Claims**

1. A method of acidizing an acid-soluble formation with an acidic solution in which said formation is soluble wherein the normal reaction time of said acid is extended, comprising:

contacting said formation with a mixture of an aqueous acidizing solution-in-oil emulsion and an effective amount of a cationic surfactant to increase the normal reaction time of said aqueous acidizing solution-in-oil emulsion with said formation, said cationic surfactant consisting of an alkyl C_8 to C_{18} primary amine.

3,962,103
DRY POWDER LUBRICANT

William G. Johnston, Pittsburgh, and Wendell C. Milz, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed May 16, 1975, Ser. No. 578,340
Int. Cl.² C10M *3/18, 5/14, 7/20, 7/24*
U.S. Cl. 252—22 **6 Claims**

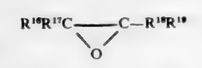
1. A dry powder composition suitable for use as a high temperature forging lubricant comprising a 1–10 carbon fatty acid salt of a group IV-A metal and an alkali metal soap wherein exposure to temperatures in excess of about 100°C will cause the soap and the salt to react to form a group IV-A metal soap lubricant in situ.

3,962,104
LUBRICATING OIL COMPOSITIONS

Joseph Marian Swietlik, Reading, and Michael David Sexton, Oxford, both of England, assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed June 24, 1974, Ser. No. 482,642
Claims priority, application United Kingdom, June 27, 1973, 30509/73
Int. Cl.² C10M *1/48, 1/40, 1/32, 1/54*
U.S. Cl. 252—32.7 E **16 Claims**

1. A lubricating oil composition comprising a major amount of a mineral or synthetic lubricating oil and a minor amount of a quaternary ammonium salt useful as an oil improving additive, wherein: the cation is derived from the reaction product of a one molar proportion of tertiary amine with one or more molar proportions of an olefin oxide and an amount of water in excess of stoichiometric, the anion is derived from an organic acid, and wherein: said tertiary amine has the formula $R^1R^2R^3N$ where R^1, R^2 and R^3 are the same or different alkyl, cycloalkyl, alkenyl, cycloalkenyl, substituted alkyl, substituted alkenyl, aromatic or substituted aromatic groups, each having 1 to 20 carbon atoms; said olefin oxide has the formula:



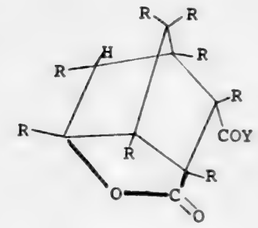
where R^{16}, R^{17}, R^{18} and R^{19} which may be the same or different are hydrogen atoms, alkyl, cycloalkyl, alkenyl, cycloalkenyl, aromatic or substituted aromatic groups; and wherein said organic acid is selected from the group consisting of carboxylic acid, carboxylic acid anhydride, dialkyldithiophosphoric acid, diaryldithiophosphoric acid, phenols, sulphonic acid, and phosphosulfurized hydrocarbon.

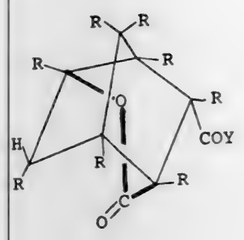
3,962,105
LUBRICATING COMPOSITIONS

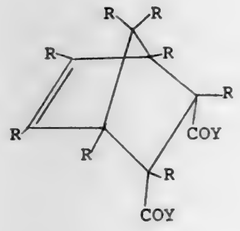
Richard Michael Lange, Euclid, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Filed Mar. 25, 1975, Ser. No. 561,963
Int. Cl.² C10M *1/24, 3/18, 5/12, 7/20*
U.S. Cl. 252—56 R **15 Claims**

1. A lubricating composition comprising a major amount of lubricating oil and a minor, effective, amount of an additive selected from the group consisting of those represented by the formulae:







and mixtures thereof, wherein each R is independently selected from the group consisting of hydrogen and lower alkyl, and each Y contains up to twenty-two carbon atoms and is independently selected from the group consisting of hydrocarbon-based oxy radicals and the oxy residue of polyhydric alcohol.

3,962,106

METHOD FOR AGGLOMERATING CHLOROCYANURATES

Fred K. Rubin, Leonia, and Donald V. Kinsman, Tenafly, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Aug. 1, 1974, Ser. No. 493,599
Int. Cl.² C11D *7/54*

U.S. Cl. 252—99 **12 Claims**

1. A method of agglomerating salts of chlorocyanuric acid selected from the group consisting of sodium and potassium dichlorocyanurate, sodium dichlorocyanurate dihydrate and [(monotrichloro)-tetra-(monopotassium dichloro)]pentaisocyanurate, said method resulting in an agglomerated particle having increased storage stability and compositional uniformity when admixed with a detergent base, which method comprises the steps of:

i. contacting said salts of chlorocyanuric acid with an agglomerating liquid, said liquid being a concentrated solution of compounds selected from the group consisting of potassium citrate monohydrate, sodium citrate dihydrate, sodium acetate trihydrate, anhydrous sodium sulfate, wherein the solution ranges from about 10% to a saturated solution of said compounds, said contacting being conducted in a continuously moving bed so as to allow intimate contact of said salts of chlorocyanuric acid with said agglomerating liquid, the ratios of said salt to said liquid ranging from about 2:1 to about 4:1 by weight,

ii. drying the resultant agglomerated particles, and

iii. passing said agglomerated particles through a sieve, said sieve mesh size corresponding to the particle size of said granular detergent base to which the agglomerated particles are added.

3,962,107

ENZYME-CONTAINING DENTURE CLEANSER TABLET

Norman Arthur Levin, Somerville, and Leonard Louis Kaplan, East Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed June 24, 1974, Ser. No. 482,404
Int. Cl.² C11D *7/54*

U.S. Cl. 252—100 **5 Claims**

1. A water-soluble effervescent layered denture cleanser tablet consisting essentially of

a. an enzyme layer in an effervescence producing composition and,

b. an active oxygen layer in an effervescence producing composition

wherein the enzyme layer is faster dissolving than the active oxygen layer; and wherein

i. said tablet contains at least one enzyme in an amount of from about 0.5 to 10 percent by weight and at least one active oxygen compound in an amount of from about 38 to 42 percent by weight, said amounts being based on the total weight of tablet,

ii. in said tablet the enzyme layer is less than one-half and the active oxygen layer more than one-half of the total thickness of the tablet,

iii. the effervescence producing composition in each layer of said tablet comprises an acid and an alkali metal carbonate compound,

iv. the amount of said effervescence producing composition to be incorporated in said tablet is for the enzyme layer from about 75 to 90 percent of the weight of the enzyme layer and for the active oxygen layer from about 30 to 40 percent of the weight of the active oxygen layer, and

v. each layer of said tablet has incorporated therein components in the form of finely divided powder of particle size of about 177 microns or less, the amounts of said powder being, for the enzyme layer from about 30 to 50 percent of the weight of the components of the enzyme layer and for the active oxygen layer from about 20 to 30 percent of the weight of the components of the active oxygen layer.

3,962,108

CHEMICAL STRIPPING SOLUTION

Salvatore M. Perruccio, San Jose, Calif., assignor to KTI Chemical, Inc., Sunnyvale, Calif.

Filed Nov. 3, 1975, Ser. No. 628,204
Int. Cl.² C11D *7/08;* **C23G** *1/02*

U.S. Cl. 252—142 **4 Claims**

2. A stripping solution for removing organic deposits from wafers of silicon, silicon dioxide coated silica, aluminum coated silicon and the like, comprising:

H_2SO_4 in an amount between 80 and 98 percent by weight of the total solution;

H_2O in an amount between 0 and 8 percent by weight of the total solution;

$HClO_4$ in an amount between 0.5 percent and 4 percent by weight of the total solution; and

CrO_3 in an amount between 0.5 and 4 percent by weight of the total solution.

3,962,109

AUTOMOTIVE CLEANER PLUS INHIBITOR

Alfred W. Oberhofer, Downers Grove, Ill.; James J. Benko, Griffith, Ind., and Joseph C. Drozd, Park Ridge, Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Dec. 16, 1974, Ser. No. 533,356
The portion of the term of this patent subsequent to May 25, 1993, has been disclaimed.
Int. Cl.² C02B *5/00*

U.S. Cl. 252—146 **18 Claims**

1. A liquid cleaner-inhibitor composition for automotive cooling systems consisting essentially of:

I. A cleaner portion consisting essentially of from 15–85% by weight of water and from 85–15% by weight of a Deposit Release Agent consisting essentially of:

A. An aminopolycarboxylic acid

B. An α hydroxy carboxylic acid

C. An azole copper protector selected from the group consisting of mercaptobenzothiazole and a monobenzotriazole with the ratio of A:B:C being within the range of from 3:1:1 to 2:1:1

and

II. An inhibitor portion consisting essentially of from 75–85% by weight of water and from 25–15% by weight of:

E. Borax or alkali metal borate

F. Alkali metal nitrite

G. Alkali metal silicate with a ratio of E:F:G being in the range of from 10:3:5 to 1:1:1

said composition having a pH of 7.5–12.6.

3,962,110

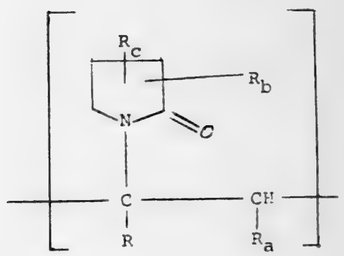
PROCESS AND COMPOSITION FOR PREVENTING SCALE BUILD-UP

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 82,186, Oct. 19, 1970, abandoned, and a continuation-in-part of Ser. No. 157,060, June 25, 1971, abandoned. This application Oct. 4, 1974, Ser. No. 511,973
Int. Cl.² C02B *5/02, 5/06*

U.S. Cl. 252—181 **10 Claims**

1. A process for controlling the build-up of inorganic mineral scale deposits in an aqueous system which comprises incorporating in said system a composition consisting essentially of a water-soluble polyvinylpyrrolidone, the said polyvinylpyrrolidone being present in an amount sufficient to inhibit the development of scale, wherein the said polyvinylpyrrolidone comprises recurring units of the formula:



wherein R, R_a, R_b and R_c are independently selected from the group consisting of hydrogen and alkyl of from 1 to 5 inclusive carbon atoms, and the molecular weight of the said polyvinylpyrrolidone being from about 10,000 to about 1,000,000; and wherein the said system is made acidic through the addition of up to about 30 percent by weight of a non-oxidizing mineral acid.

3,962,111

PROCESS FOR THE PRODUCTION OF SILICO-FORMIC ACID GRANULES CONTAINING AN ALKALI CATALYST

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Filed Apr. 21, 1975, Ser. No. 569,952
Int. Cl.² C01B *33/12, 33/18, 33/00*

U.S. Cl. 252—182 **6 Claims**

1. A process for the production of silico-formic acid granules containing an alkali metal carbonate by the following steps:

a. dry granular alkali metal metasilicate is slowly added to concentrated mineral acid in the ratio of 1:1 mols over a period of 15–45 minutes, while aggitating and keeping the temperature between 25°–85° C; the chemical reaction is completed in 4–12 hours, thereby

b. producing a white granular mixture of silico-formic acid and salt; then by

c. washing with water and filtering, the salt is removed, thereby

d. recovering the silico-formic acid; then

e. a residue of alkali metal carbonate is added to the silico-formic acid by adding an aqueous solution containing 10–25% alkali metal carbonate until the pH is 10–11, then filtering and air drying at 25°–85°, thereby

f. producing a fine white granular mixture, silico-formic acid containing a residue of alkali metal carbonate.

3,962,112

COMPOSITION AND PROCESS FOR REMOVING SULFUR DIOXIDE FROM COMBUSTION GASES

Charles William Shaheen, 1074 Highland Ave., St. Albans, W. Va. 25177

Filed Aug. 26, 1974, Ser. No. 500,653
Int. Cl.² C01B *17/56;* **B01D** *53/34*

U.S. Cl. 252—187 R **23 Claims**

1. The process of removing SO_2 from gases emitted by the combustion of materials comprising:

treating said gases with a liquid aqueous composition comprising,

0.1 to 10 pounds of ClO_2 per 100 pounds of SO_2 to be treated and from 5 to 40 pounds of detergent per pound of ClO_2.

3,962,113

METHOD FOR ACCELERATING OXYGEN REMOVAL EMPLOYING AN AQUEOUS SOLUTION OF AN ALKYL HYDRAZINE

Henry W. Schiessl, Northford, and John D. Kaufman, Prospect, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 318,286, Dec. 26, 1972, abandoned. This application Apr. 15, 1974, Ser. No. 460,844
Int. Cl.² C09K *3/00*

U.S. Cl. 252—188 **10 Claims**

1. A method for removing oxygen from an oxygen-containing material which comprises admixing said oxygen-containing material with a liquid organic hydrazine compound selected from the group consisting of monoalkyl hydrazines wherein the alkyl contains from 1 to about 10 carbon atoms, dialkyl hydrazine wherein alkyl contains from 1 to about 8 carbon atoms, and trialkyl hydrazines wherein the alkyl contains from 1 to about 4 carbon atoms, and having substituents in said alkyl selected from the group consisting of hydroxyl and amino radicals, in which said organic hydrazine com-

pound is present in an amount sufficient to remove said oxygen and maintain a residual organic hydrazine concentration corresponding to a hydrazine equivalent weight of from about 0.01 to about 1000 parts per million.

3,962,114

METHOD FOR SOLIDIFYING LIQUID RADIOACTIVE WASTES

Julius R. Berreth, Idaho Falls, Idaho, assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 11, 1975, Ser. No. 567,340
Int. Cl.² G21F *9/08*
U.S. Cl. 252—301.1 W **5 Claims**

1. In the method of solidifying liquid radioactive wastes by heating the wastes to dryness, wherein the wastes contain nitrates and nitrites which upon heating evolve noxious nitrogen oxides, the improvement comprising: adding urea to the waste solution before heating the waste solution, whereby upon heating the solution to between 130° and 180°C the urea reacts with the nitrates and nitrites present in the solution to evolve N_2, CO_2 and NH_3 gases.

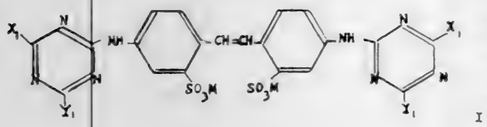
3,962,115

TREATMENT OF OPTICAL BRIGHTENING AGENTS

David Ronald Clark; Thomas Gerald Hyde, both of Sale, England, and Robert Erik Brauchbar, Aesch, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 128,198, March 25, 1971, abandoned. This application Oct. 30, 1973, Ser. No. 411,169
Claims priority, application United Kingdom, July 9, 1970, 33419/70
Int. Cl.² C09K *11/06*
U.S. Cl. 252—301.23 **23 Claims**

1. In a process for preparing an aqueous slurry containing from 15% to 60% by weight, based on the total weight of the slurry, of a compound of the formula



wherein X_1 and Y_1 are the same or different and each is phenylamino, phenylamino mono- or di-substituted by alkyl radicals having 1 or 2 carbon atoms, morpholino, alkylamino having 1 to 4 carbon atoms, alkylamino having 1 to 4 carbon atoms substituted by hydroxyl radicals or alkoxy having 1 to 4 carbon atoms, and M is hydrogen or an alkali metal, a major portion of the particles of this compound having size of 5 – 20 microns, which comprises mixing the wet filter cake obtained during the preparation of this compound with an agent to form the slurry, the improvement wherein the agent is from 0.1% to 5% by weight, based on the weight of the wet filter cake, of an anionic, cationic or nonionic surface active agent as dispersing agent, such that the resultant slurry is thixotropic and will not settle out appreciably on static storage and will have a Brookfield viscosity of from 200 to 10,000 centipoises at 6 r.p.m. and up to 2,000 centipoises at 60 r.p.m.

3,962,116

COMPOSITIONS OF OPTICAL BRIGHTNESS AND ALUMINOSILICATES AND METHODS OF THEIR PRODUCTION

Helmut Bloching, Hilden; Heinz Smolka, Langenfeld, and Milan Johann Schwuger, Monheim, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, both of, Germany

Filed Jan. 15, 1975, Ser. No. 541,208
Claims priority, application Austria, Jan. 17, 1974, 369/74
Int. Cl.² C09K *11/30*
U.S. Cl. 252—301.21 **11 Claims**

1. A heat-dried, finely-divided composition of optical brighteners and fillers consisting essentially of from 10 to 90% by weight of optical brighteners for textile fibers and from 10 to 90% by weight of fillers wherein from 50 to 100% by weight of said fillers is at least one compound inhibiting alkaline earth metal ion precipitation from aqueous solutions consisting of a finely-dispersed, water-insoluble silicate compound containing at least some combined water and having a calcium binding power of at least 50 mg CaO/gm of anhydrous active substance and the formula on the anhydrous basis

$$(M_{2/n}O)_x \cdot Me_2O_3 \cdot (SiO_2)_y$$

where M is a cation of the valence n, exchangeable with calcium selected from the group consisting of alkali metal, ammonium and magnesium, x is a number of from 0.7 to 1.5, Me is a member selected from the group consisting of aluminum and boron, and y is a number from 0.8 to 6; and from 0 to 50% by weight of said fillers is an organic hydrotropic compound selected from the group consisting of anionic hydrotropic compounds and non-ionic hydrotropic compounds.

3,962,117

CATHODOLUMINESCENT GLASSES ACTIVATED BY MANGANESE

Richard F. Reade, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 17, 1974, Ser. No. 470,836
Int. Cl.² C09K *11/34*; **C03C** *3/10*
U.S. Cl. 252—301.4 F **1 Claim**

1. A yellow-to-orange emitting cathodoluminescent glass consisting essentially, by weight on the oxide basis, of about 45–65% SiO_2, 15–35% Al_2O_3, 5–30% RO, wherein RO consists of at least one alkaline earth metal oxide in the indicated proportion of 0–30% MgO, 0–20% CaO, and 0–20% SrO, 2–5% ZrO_2, 0.05–0.5% SnO, and 0.25–3% manganese, expressed as MnO.

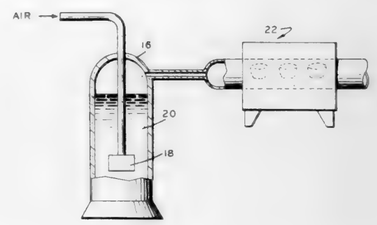
3,962,118

METHOD OF MAKING IMPROVED MAGNESIUM GALLATE PHOSPHORS

Charles F. Chenot, Towanda, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Feb. 5, 1973, Ser. No. 329,651
Int. Cl.² C09K *11/26, 11/30, 11/12, 11/16*
U.S. Cl. 252—301.4 R **4 Claims**

1. A method of manufacturing luminescent materials selected from the group consisting essentially of magnesium gallate and magnesium aluminum gallate activated by manganese which comprises the steps of: forming a mixture of raw materials which will yield said luminescent materials; including in said raw materials a source of fluorine; thoroughly mixing said raw materials and said source of fluorine; heat treating said raw materials in aluminum crucibles in a humidified, oxidizing atmosphere for about 2 hours at a temperature of about 1200°C–1300°C; cooling and comminuting said material; reheating said material in silica crucibles in a reducing



atmosphere for less than 40 minutes at a temperature of about 1200°C–1300°C; and cooling, comminuting and sieving said material.

3,962,119

NON-FOAMING DISPERSING COMPOSITION

Joseph P. Cosentino, Nutley, and Frederick R. Mahn, Verona, both of N.J., assignors to Drew Chemical Corporation, Parsippany, N.J.

Filed Aug. 6, 1971, Ser. No. 169,820
Int. Cl.² B01F *17/54*
U.S. Cl. 252—351 **12 Claims**

1. A dispersant composition consisting essentially of:

a. an oxyalkylene polymer having a molecular weight from about 500 to about 5000 wherein the recurring units consist of a member selected from the group consisting of oxypropylene, and mixture of oxypropylene and oxyethylene; and

b. a polysiloxane-polyoxyalkylene block copolymer having a molecular weight from about 500 to about 10,000 wherein the polysiloxane block consists essentially of recurring units of a dialkyl siloxane wherein the alkyl group has from 1–3 carbon atoms and the oxyalkylene block consists essentially of recurring units of a member selected from the group consisting of oxypropylene, oxyethylene and mixtures thereof, said components (*a*) and (*b*) being present in an amount effective to disperse contaminents in aqueous and polar organic liquid systems.

3,962,120

POLYURETHANE FOAM GENERATING APPARATUS

Louis R. Chiocchio, and Robert S. Zirlis, both of East Haven, Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 451,255, March 14, 1974, abandoned. This application Apr. 28, 1975, Ser. No. 572,002
Int. Cl.² B01J *13/00*
U.S. Cl. 252—359 E **14 Claims**

1. In an apparatus for mixing first and second interreactive polyurethane foam-forming materials and generating foam therefrom, which apparatus comprises

a. a first tank for supplying the first material,

b. a second tank for supplying the second material,

c. a mixing chamber having inlet means for receiving the first and second materials from their respective tanks and an outlet for dispensing a mixture of said materials from said mixing chamber,

d. first and second valve means for admitting the flow of the first and second materials, respectively, through said mixing chamber, and,

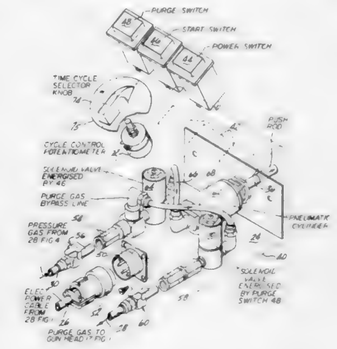
e. connecting means for coordinating closing and opening of said first and second valve means,

the improvement which comprises

f. an electrically energized actuator means for operating said connecting means and

g. electrical timing means adapted to be connected to an electrical power source, for operating said actuator means for a predetermined time period, said timing means comprising

1. an electrical timer, which is electrically connected to said actuator means for timed energization thereof,



2. a potentiometer adjacent to said mixing chamber, said potentiometer being electrically connected to said timer and manually operable to vary the duration of the time period of operation of said timer, and

3. first switch means mounted adjacent to said mixing chamber for connecting the electrical power source to said timer thereby energizing said timer.

3,962,121

PROCESS FOR PREPARING QUATERNARY AMMONIUM SALT POWDERS

Masaaki Takaku, and Shiro Imai, both of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1974, Ser. No. 442,592
Claims priority, application Japan, Feb. 20, 1973, 48-20408
Int. Cl.² B01F *3/00*
U.S. Cl. 252—363.5 **4 Claims**

1. A process for preparing powders of long chain alkyl quaternary ammonium salts which comprises mixing a member or a mixture of two or more members selected from the group consisting of water and alcohols which are liquid at ambient temperature with a long chain alkyl quaternary ammonium salt in an amount of 1 to 33% by weight based on the total weight of the mixture and subjecting the obtained quaternary ammonium salt mixture to a spray-cooling operation to obtain a powdery product of the quaternary ammonium salt.

3,962,122

POLYAMIDE CORROSION INHIBITOR

Charles Ballard Trial, Odessa, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed June 24, 1975, Ser. No. 589,829
Int. Cl.² C23F *11/14*
U.S. Cl. 252—392 **16 Claims**

1. A ferrous metal corrosion inhibitor prepared by

a. forming a primary amine-terminated amide adduct having a molecular weight of about 800 to 1500 by reacting a polyamine component containing at least 85% by weight of a mixture containing about 1 to 50% 1,6-hexanediamine, about 10 to 60% 1,6-hexanediamine dimer and about 10 to 70% 1,6-hexanediamine trimer with an organic acid component containing at least 85% by weight of a mixture containing about 10 to 40% monofunctional carboxylic acid having 15–23 carbon atoms, about 20–70% difunctional aliphatic carboxylic acids containing 36–40 carbon atoms, and about 10–40% trifunctional aliphatic carboxylic acids containing 54–60

carbon atoms, said acid component being free of compounds having atoms which interfere with the formation of the desired product or its effectiveness as a corrosion inhibitor, the relative amounts of polyamine component and organic acid component being such that the ratio of primary amine groups to carboxyl groups in the reaction mixture is about 1.8 to 3.0; and

b. neutralizing the primary amine-terminated adduct with a saturated or ethylenically unsaturated aliphatic acid having 2 to 60 carbon atoms.

3,962,123

PHENOLIC ANTIOXIDANT AQUEOUS DISPERSIONS

Anthony DiBattista, Eastchester, and Ambelal Patel, Dobbs Ferry, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

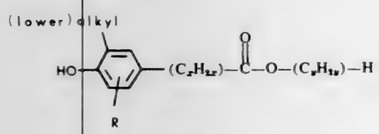
Filed May 20, 1974, Ser. No. 471,410

Int. Cl.² C09K *15/32, 15/08, 15/10;* **C08K** *5/05*

U.S. Cl. 252—400 A **12 Claims**

1. A storage stable aqueous dispersion of solid phenolic antioxidant comprising

a. 10 to 80%, by weight, based on the weight of the total dispersion, of a compound of the formula



I

in which R is H or lower alkyl, *x* has a value of from 0 to 6 inclusively and *y* has a value of from 6 to 30 inclusively; and

b. 2 to 30% by weight, based on the weight of compound I, of a fatty acid soap formed from a fatty acid and a base, or

c. 1 to 30% by weight, based on the weight of compound I, of a nonionic or anionic surfactant; and

d. water.

3,962,124

OXIDATION STABILIZED ORGANIC COMPOSITIONS

Kaye L. Motz, and Allan J. Lundeen, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 25, 1974, Ser. No. 454,492

Int. Cl.² C09K *15/08;* **C10M** *1/20;* **C09K** *15/06;* **C08K** *5/05*

U.S. Cl. 252—404 **6 Claims**

1. The use of a condensation reaction product of (1) a nonhindered phenol selected from the group consisting of: meta- cresol, para- cresol or a mixture of meta and para cresols, and (2) an aldehyde defined by R-CHO wherein R is hydrogen or an alkyl group having at least 1 carbon atom, as an antioxidant in organic compositions.

3,962,125

MULTI-PURPOSE DILUENT FOR USE IN BLOOD ANALYSIS BY ELECTRONIC INSTRUMENTATION OF THE COULTER TYPE

Douglas Armstrong, Coral Springs, Fla., assignor to Coulter Diagnostics, Inc., Hialeah, Fla.

Filed Jan. 13, 1975, Ser. No. 540,584

Int. Cl.² G01N *33/16*

U.S. Cl. 252—408 **9 Claims**

1. A multi-purpose blood diluent, which is both isotonic and osmotically balanced relative to the solutions in blood cells, to be analyzed for a plurality of classic parameters in an electronic particle analysis apparatus of the Coulter type consisting essentially of:

a. an osmotically balanced solution of sodium chloride, potassium chloride, sodium di-hydrogen phosphate and di-sodium phosphate,

b. sodium fluoride,

c. 2-phenoxyethanol,

d. an ethylenediamine tetracetic acid, said diluent being an aqueous electrolytic solution maintained at a pH of between 7.0 to 8.0 and at an osmolality of between 300 and 380 milliosmoles, and wherein the sodium fluoride services to stabilize red blood cell volume and aid in converting hemoglobin to cyanmethemoglobin for hemoglobin determination.

3,962,126

REACTIVATION OF A MAGNESIUM OXIDE CATALYST

William Eugene Pecak, Cohoes, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 25, 1974, Ser. No. 527,139

Int. Cl.² B01J *21/20, 31/06*

U.S. Cl. 252—416 **12 Claims**

1. In the method of reactivating a carbonized magnesium oxide catalyst that has become carbonized by use in a phenol alkylation reaction which comprises burning carbon from said catalyst by exposing said catalyst to heat in an oxygen containing atmosphere, to form a partially reactivated catalyst the improvement which consists essentially of contacting said partially reactivated catalyst with a sufficient amount of water at a temperature below 300 °C to restore the activity of said catalyst.

8. In a method of reactivating a carbonized magnesium oxide catalyst that has become carbonized by use in catalyzing the vapor phase ortho methylolation of phenol with methanol by exposing said carbonized magnesium oxide catalyst to a temperature of from 200° to 800°C in an oxygen containing atmosphere to form partially reactivated catalyst, the improvement which consists essentially of contacting said partially reactivated catalyst with water at a temperature below 300°C at a 1:10 to a 10:1 weight ratio of water to catalyst to restore the catalytic activity to the level of activity possessed by a freshly prepared catalyst.

11. The method of claim **10** wherein the catalyst also includes a manganese oxide selected from the group consisting of manganese oxide, dimanganese trioxide, trimanganese tetroxide, manganese heptoxide and mixtures thereof.

3,962,127

PROCESS FOR REMOVING INTERMITTANT ORGANIC COMPOUNDS FROM GASEOUS STREAMS

Rudolph C. Woerner, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Aug. 19, 1974, Ser. No. 498,388

Int. Cl.² B01D *15/06*

U.S. Cl. 252—419 **4 Claims**

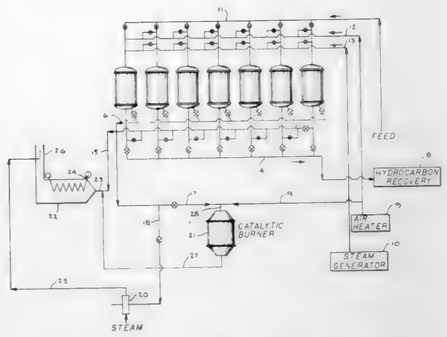
1. A process for regenerating a contact mass catalyst having coked thereon burnable carbonaceous materials comprising:

a. contacting said coked catalyst with a first gaseous stream containing from about 15% to 20% by volume of oxygen, said gaseous stream being at a temperature in the range of 800° to 1500°F,

b. said first gaseous stream volatilizing a portion of said carbonaceous materials from said catalyst,

c. admixing a portion of said gaseous stream comprising about 5 to 8 volume % thereof and containing said volatilized carbonaceous materials with a second gaseous stream and containing at least about 10 volume percent oxygen,

d. converting said carbonaceous materials in said gaseous mixture of step (*c*) into carbon dioxide and water at a temperature in the range of 800° to 1500°F, and



e. recovering a gaseous stream from step (*d*) having substantially less of said carbonaceous material than said mixture.

3,962,128

COAL DUST FUEL DISTRIBUTION SYSTEM AND METHOD OF MANUFACTURING ACTIVATED CARBON

James D. Nelson, and Gert R. Winge, both of Covington, Va., assignors to Westvaco Corporation, New York, N.Y.

Filed July 5, 1974, Ser. No. 486,101

Int. Cl.² B01J *21/18, 31/10;* **F23K** *3/02;* **B65G** *53/40*

U.S. Cl. 252—421 **4 Claims**

1. A method of manufacturing coal based activated carbon comprising the steps of:

A. segregating coal dust particles of 40 mesh and less from a bulk coal supply;

B. transporting coal particles larger than 40 mesh from said bulk supply through a multihearth activation furnace;

C. aspirating said dust particles into a first fluidized mixture stream with a first air flow stream;

D. delivering said first fluidized mixture stream to a mixing chamber;

E. holding said dust particles in turbulent fluidized suspension within said mixing chamber;

F. aspirating a second fluidized mixture stream from said mixing chamber to a combustion hearth of said multihearth activation furnace with a second air flow stream;

G. conducting a third fluidized mixture stream from said mixing chamber to a particle reservoir; and

H. controlling the relative flow rates of said first, second, and third fluidized mixture streams whereby the combined flow rates of said second and third mixture streams equal or exceed said first mixture stream.

3. In combination with a heat generating furnace, a fuel distribution system for delivering particulate coal dust to a combustion hearth of said furnace, said distribution system comprising:

A. a bulk reservoir for said coal dust;

B. a first aspirator having a chamber proximate of a low pressure induction zone of said first aspirator for receiving said coal dust from said reservoir;

C. a first pressurized air supply source connected to said first aspirator for evacuating said coal dust from said chamber into a first fluidized flow stream;

D. a mixing chamber having a first conduit connected therewith for receiving said first fluidized flow stream and holding a fluidized mixture of air and coal dust in turbulent suspension;

E. a second aspirator having a receiving chamber and low pressure induction zone flow connected to said mixing chamber through a second conduit;

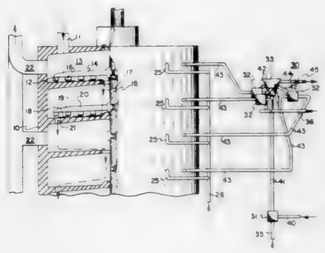
F. a second pressurized air supply source connected to said second aspirator for evacuating said fluidized mixture from said second aspirator receiving chamber into a second fluidized flow stream for delivery to said furnace combustion hearth; and,

G. a third conduit having flow control means therein connected to said mixing chamber for venting a select portion of fluidized mixture within said mixing chamber therefrom.

4. A method of firing a heat generating furnace combustion hearth with coal dust having a particle size of 40 mesh or less, said method comprising the steps of:

A. providing a bulk reservoir for said coal dust;

B. aspirating said dust from said reservoir into a first fluidized mixture stream with a first air flow stream;





C. delivering said first fluidized mixture stream to a mixing chamber;

D. holding said dust in turbulent fluidized suspension within said mixing chamber;

E. aspirating a second fluidized mixture stream from said mixing chamber to a furnace combustion hearth with a second air flow stream;

F. conducting a third fluidized mixture stream from said mixing chamber to a recirculation system; and

G. controlling the relative flow rates of said first, second and third fluidized mixture streams whereby the combined flow rates of said second and third mixture streams equal or exceed said first mixture stream.

3,962,129
IMPREGNATION OF COKE WITH AN ORGANIC COMPOUND TO PRODUCE A MOLECULAR SIEVE

Heinrich Münzner, Essen; Heinrich Heimbach, Bochum; Werner Korbacher, Essen; Werner Peters, Wattenscheid; Harald Juntgen, Essen; Karl Knoblauch, Essen; Dieter Zundorf, Essen, and Hugo Horbel, Essen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Feb. 4, 1974, Ser. No. 439,654

Claims priority, application Germany, Feb. 3, 1973, 2305435

Int. Cl.² B01J *31/02, 21/18, 29/02*

U.S. Cl. 252—428 **8 Claims**

1. A process for the production of a carbon-containing molecular sieve capable of separating different gases, particularly oxygen and nitrogen, and capable of adsorbing smaller gas molecules more rapdily than larger gas molecules, said process consisting of impregnating coke, having pores of a first size with a solution which includes an organic substance and a solvent for said organic substance which volatilizes more readily than said organic substance, said organic substance having a boiling point of at least about 200°C at atmospheric pressure and at most about 450°C at substantially zero pressure being a member of the group consisting of the light and heavy fuel oil fractions and hard paraffins derived from crude oil and petroleum, the fractions derived from coal tar, phenanthrene, anthracene, hexamethylbenzene, methylnaphthalene, diphenyl, dibenzl, acenaphthene, 1,2,3,4-tetrahydronaphthalene, stilbene, diphenylmethane, triphenylmethane, maleic acid anhydride, paraffin oil, kerosene, lubricating oil and pitch distillation residues; and permitting said solvent to undergo evaporation under conditions such that said organic substance remains in said pores thereby causing a reduction of said first size to an effective second size between about 0.2 and about 0.6 millimicrons, said organic substance being left in a non-coked condition.

3,962,130
BUTADIENE POLYMERIZATION CATALYST

Erik G. M. Tornqvist, Scotch Plains, and Charles Cozewith, Westfield, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 392,966, Aug. 30, 1973, Pat. No. 3,865,749. This application Jan. 2, 1975, Ser. No. 538,172 The portion of the term of this patent subsequent to Dec. 18, 1990, has been disclaimed.

Int. Cl.² C08F *4/12, 4/14, 4/64*

U.S. Cl. 252—429 B **1 Claim**

1. A hydrocarbon-soluble catalyst system consisting essentially of:

a. $TiCl_4$-AlH_3;

b. an aluminum trialkyl where the alkyl has from 1–12 carbon atoms, the molar ratio of aluminum trialkyl to $TiCl_4$-AlH_3 being in the range of from about 1.5:1 to about 4.5:1; and

c. a Lewis base selected from the group consisting of tetrahydrothiophene, tetrahydropyran, tetrahydrofuran, tetrahydrothiopyran, and 2,5-dimethyl tetrahydrofuran, the mole ratio of Lewis base to $TiCl_4$ being in the range of 10:1 to 200:1.

3,962,131
RHODIUM CONTAINING CATALYST AND USE THEREOF IN PREPARATION OF 6-DEOXY-5-OXYTETRACYCLINE

Hermann Faubl, Mystic, and Annette M. Belton, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 28, 1975, Ser. No. 544,839

Int. Cl.² B01J *31/04, 31/24, 31/30*

U.S. Cl. 252—429 R **3 Claims**

1. A catalyst produced by the process of reacting 1 mol of rhodium trichloride and 2 mols of sodium acetate in methanol at a temperature from about 50°C. to the reflux temperature of said reaction mixture, then reacting resulting reaction mixture with 2 mols of triphenylphosphine at a temperature of from about 50°C. to the reflux temperature of said reaction mixture and recovering resulting insoluble material.

3,962,132
PROCESS FOR IMPROVING THE WETTABILITY OF NATURAL OR SYNTHETIC ZEOLITES

Heinz Haschke, and Gerhard Morlock, both of Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Oct. 30, 1974, Ser. No. 519,322

Claims priority, application Germany, Oct. 31, 1973, 2354432

Int. Cl.² B01J *31/04, 29/06;* **C02B** *5/06*

U.S. Cl. 252—430 **22 Claims**

1. Process for improving the water wettability of natural or synthetic zeolites, said process comprising thoroughly mixing at least one natural zeolite, synthetic zeolite or mixture of natural and synthetic zeolites with an aqueous solution of a treating agent selected from the group consisting of at least one polyelectrolytic polycarboxylic acid, at least one completely or partially neutralized polycarboxylate, or at least one mixture of said polycarboxylic acid and polycarboxylate; wherein said treating agent has at least about 40 basic mole percent carboxyl or carboxylate groups and a mean degree of polymerization (numerical mean) between about 3 and about 5000; said mixing conducted at about 0° to about 100°C for at least about 5 minutes; said aqueous solution employed in a concentration between about 2 g and about 800 g polycarboxylic acid or polycarboxylate per liter and in such quantity that it comprises about 0.01 to about 10 parts by weight, related to one part by weight of zeolite, of the polycarboxylic acid or polycarboxylate.

3,962,133
GRAPHITE INTERCALATION

Paul G. Rodewald, Rocky Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 12, 1974, Ser. No. 532,146

Int. Cl.³ B01J *27/12*

U.S. Cl. 252—433 **12 Claims**

1. A method of intercalating a Lewis acid fluoride in graphite which comprises contacting graphite with a Lewis acid fluoride, having a boiling point below about 300°C., of an element of Group II, IIIA, IV, V or VIB of the Periodic Table in the presence of fluorine at a temperature within the approximate range of 15° to 150°C for at least a period of time to effect a weight increase in the graphite, the relative amount of said Lewis acid fluoride and fluorine being between about 30 to 1 and about 2 to 1 on a weight basis.

3,962,134
MAGNESIUM-ALUMINUM-SILICATE-PHOSPHATE CATALYSIS FOR AMMONIALYTIC CLEAVAGE OF LACTAMS TO FORM OMEGA-AMINONITRILES

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 420,879, Dec. 3, 1973, Pat. No. 3,886,196, which is a continuation-in-part of Ser. No. 329,557, Feb. 7, 1973, abandoned, which is a continuation of Ser. No. 879,635, Nov. 24, 1969, abandoned. This application Jan. 27, 1975, Ser. No. 544,647

Int. Cl.² B01J *27/14*

U.S. Cl. 252—437 **12 Claims**

1. A composition consisting essentially in combined form of magnesium, aluminum, phosphate, and silicate, on a substrate.

3,962,135
SHAPED CATALYST SUPPORT

Hamid Abdel Alafandi, Los Angeles, Calif., assignor to Filtrol Corporation, Los Angeles, Calif.

Filed Dec. 26, 1973, Ser. No. 428,615

Int. Cl.² B01J *29/00, 29/06*

U.S. Cl. 252—450 **6 Claims**

1. A process of producing a porous particle which comprises acid-leaching a raw sub-bentonite clay with sulfuric or nitric or hydrochloric acid to remove alumina from the crystal lattice of said sub-bentonite and to produce a plastic clay material having an alumina content substantially less than the raw clay but retaining the montmorillonite crystal structure as evidenced by X-ray diffraction, shaping said acid-leached clay into a shaped particle, calcining said acid-leached particle at a temperature in the range of 900° F. to 1300° F., re-extracting said calcined particles with sulfuric, or nitric, or hydrochloric acid and thereby extracting an additional portion of the alumina remaining after said initial extraction and producing a shaped pellet having substantially the shape of the first-mentioned pellet and more than about 80% SiO_2 and calcining said re-extracted clay pellet at a temperature of about 1000° F. to about 1600° F.

3,962,136
CATALYST FOR PRODUCTION OF ETHYLENE OXIDE

Robert P. Nielsen, Houston, Tex., and John H. La Rochelle, Baton Rouge, La., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 471,398, May 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 317,349, Dec. 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 216,188, Jan. 7, 1972, abandoned. This application Oct. 10, 1975, Ser. No. 621,270

Int. Cl.² B01J *21/04, 21/08, 23/04, 23/50*

U.S. Cl. 252—454 **29 Claims**

1. A catalyst article comprising a porous refractory support having deposited on its exterior and pore surfaces from about 2% weight to about 20% by weight of silver and, coincidentally deposited with silver, a total of from about 4.0×10^{-6} gew per kilogram of total catalyst to about 8.0×10^{-3} gew per kilogram of total catalyst of alkali metal present in final form on the support in the form of an oxide in which the said oxide consists of an oxide of cesium or rubidium or mixtures thereof optionally combined with a minor proportion of the oxide of potassium relative to said rubidium and cesium.

3,962,137
PRODUCTION OF CO-CATALYST COMPOSITION OF INCREASED ABRASION RESISTANCE

Paul D. Taylor, Clinton, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,986

Int. Cl.² B01J *29/16, 29/26*

U.S. Cl. 252—456 **4 Claims**

1. A process for preparing an abrasion resistant, cocatalyst composition comprising vanadium tetroxide and non-porous colloidal silica particles, which process comprises (a) intimately mixing at a temperature of from about 25° to about 115°C an aqueous suspension which comprises from about 6 to about 30 percent by weight non-porous colloidal silica particles and from about 70 to about 94 percent by weight water with an aqueous solution of vanadyl salt which comprises from about 20 to about 60 percent by weight vanadyl salt and from about 40 to about 80 weight percent water, (b) calcining this mixture at a temperature greater than about 300°C to form a vanadium tetroxide and non-porous colloidal silica containing co-catalyst composition, (c) adding at a temperature of from about 25° to about 115°C an aqueous suspension which comprises from about 6 to about 30 percent by weight non-porous colloidal silica particles and from about 70 to about 94 percent by weight water to the calcined co-catalyst composition of step (b), and (d) drying this composite co-catalyst at a temperature of from about 25° to about 115°C, wherein in said process from about 30 to about 70 percent by weight of the total amount of the non-porous colloidal silica is added in step (a) and correspondingly from about 70 to about 30 percent by weight of the total amount of the non-porous colloidal silica is added in step (c).

3,962,138
COBALT-OXIDE-BASED CATALYTIC SUBSTANCES FOR THE OXIDATION OF AMMONIA

Jean-Louis Ray, Fontaine, Saone, and Robert Laugier, Fresnes, both of France, assignors to Rhone-Progil, Courbevoie, France

Filed Mar. 18, 1974, Ser. No. 451,882

Claims priority, application France, Mar. 20, 1973, 73.09862

Int. Cl.² B01J *21/04, 23/10, 23/80*

U.S. Cl. 252—462 **4 Claims**

1. Shaped catalytic substances for the oxidation of ammonia, for the production of nitric acid, having a high mechanical strength and a long life, characterized in that they are devoid of alkali metals and formed of a mixture of calcined bodies of 60-95% by weight tricobalt tetraoxide, 5–15% by weight of aluminum oxide and 0 to 25% by weight of an oxide of a metal selected from the group consisting of thorium, cerium, zinc and cadmium.

3,962,139
CATALYST PREPARATION

Cornelis G. M. van de Moesdijk, Elsloo; Joseph J. F. Scholten, Sittard, and Jacobus J. M. G. Eurlings, Valkenburg, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Nov. 28, 1973, Ser. No. 419,883

Claims priority, application United Kingdom, Nov. 30, 1972, 55448/72

Int. Cl.² B01J *23/08*

U.S. Cl. 252—463 **14 Claims**

1. Process for preparation of powdery alloys of two or more metals, which are catalysts whose catalytically active component consists of an alloy of two or more metals, this process being characterized in that one of the metals is, as a powder or in the finely divided state on a carrier material, added to a liquid acidic medium of a pH between 1 and 5 at a temperature of up to the boiling point of the medium at the prevailing pressure, and is gold, iridium, copper, osmium, palladium, platinum, rhodium, ruthenium or silver, which medium contains a dissolved compound of at least one other metal to be alloyed whereupon the metal particles are contacted with a reducing gas or reducing liquid said other metal being germanium, rhenium or antimony.

3,962,140
NICKEL-COPPER-MOLYBDENUM METHANATION CATALYST

William R. Alcorn, Rocky River, and Leonard A. Cullo, Solon, both of Ohio, assignors to The Harshaw Chemical Company, Cleveland, Ohio

Filed Mar. 10, 1975, Ser. No. 556,808

Int. Cl.² B01J *23/84*

U.S. Cl. 252—470 **3 Claims**

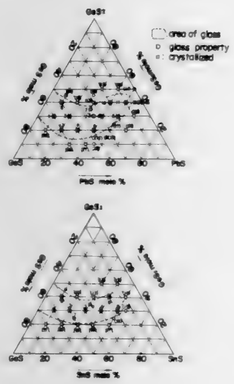
1. A supported methanation catalyst for the production of gaseous hydrocarbon mixtures, composed predominantly of methane with up to about 5 percent of ethane, on a moisture-free basis, said catalyst prepared by reduction with hydrogen of a complex of oxides on a catalyst support, said complex defined by the formula $Ni_aCu_bMo_cO_x$, wherein a, b and c are numbers so chosen that when b is unity, a and c are in the range from about 1 to about 9, and x is a number determined by the valence requirements of the other elements present, wherein the support comprises at least 50 percent of the total weight of the catalyst, the remainder including from about 5%

to about 20% by weight of molybdenum oxide, based on total catalyst, from about 5% to about 40% by weight of nickel oxide, and copper oxide, wherein the weight ratio of the nickel oxide to the copper oxide is in the range from about 1:1 and 9:1.

3,962,141
VITREOUS PHOTOCONDUCTIVE MATERIAL

Masayoshi Inoue, Sakai; Shoji Tsuchihashi, and Yoji Kawamoto, both of Kobe, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 22, 1974, Ser. No. 463,178
Claims priority, application Japan, Apr. 24, 1973, 48-47005
Int. Cl.² H01L *31/00*
U.S. Cl. 252—501 **1 Claim**



1. Vitreous photoconductive material having a composition of the formula $xGeS_2$—$yGeS$—zMS, where M is a metal other than germanium in Group IVa of the Periodic Table, x, y and z represent mole percentages, and $x+y+z=100$, x, y and z having numerical values in the ranges $15<x<50$, $5<y<70$, $0<z<55$ when M is lead and in the ranges $20<x<50$, $15<y<70$, $0<z<55$ when M is tin.

3,962,142
ELECTRICALLY CONDUCTING CONCRETE

Alan Freeman, and William Hymers, Chelmsford, both of England, assignors to The Marconi Company Limited, Chelmsford, England

Filed Feb. 7, 1974, Ser. No. 440,547
Claims priority, application United Kingdom, Feb. 7, 1973, 5956/73; July 6, 1973, 32442/73
Int. Cl.² H01B *1/04*
U.S. Cl. 252—503 **32 Claims**

1. A setable composition for use as a structural material comprising a cementitious material and an aggregate, wherein said aggregate contains quantities of carbonaceous material ranging in size between relatively large carbonaceous particulate material and relatively small carbonaceous particulate material, said aggregate constituting at least 20% by weight of the solid contents of the composition, and wherein the aggregate consists of particles of a size distribution such that the spectrum of sizes falls within the extreme limits of the combined specifications of British Standards 882, German Standards DIN 1045 and American Standards ASTMC 33, relating to the spectrum of particle sizes recommended for conventional aggregates in cementitious compositions.

3,962,143
REACTIVELY-BONDED THICK-FILM INK

Thomas Tipton Hitch, Trenton, and Thomas Ernest McCurdy, Belle Mead, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1974, Ser. No. 455,371
Int. Cl.² H01B *1/02*; H01C *1/02*; H01B *1/06*; H01C *1/06*
U.S. Cl. 252—514 **4 Claims**

1. A reactively-bonded thick-film conductive ink composition comprising about 10–20% by weight of a vehicle, and 90–80% by weight of solids consisting essentially of about 0.5–8% by weight of cupric oxide, and 99.5–92% by weight of finely divided silver and no glass frit.

3,962,144
PROCESS FOR MAKING A VOLTAGE DEPENDENT RESISTOR

Mikio Matsuura, Hirakata; Michio Matsuoka, Ibaragi, and Osamu Makino, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 16, 1974, Ser. No. 515,360
Claims priority, application Japan, Oct. 19, 1973, 48-118219
Int. Cl.² H01B *1/08*
U.S. Cl. 252—517 **16 Claims**

1. In a process for making a bulk-type voltage-dependent resistor in which zinc oxide (ZnO) powder and additives are admixed to form a sintered body composition having as the main constituent, zinc oxide, and in which the mixture is formed into a resistor body, the body is sintered, and electrodes are applied to the opposite surfaces of the sintered body, the improvement comprising the step of, prior to sintering and admixture with said additives, heat-treating the zinc oxide powder at a temperature of from 500° to 1000°C.

3,962,145
HIGH TEMPERATURE THERMISTOR COMPOSITION

Yoshihiro Matsuo, Neyagawa, and Shigeru Hayakawa, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 18, 1974, Ser. No. 480,547
Claims priority, application Japan, June 20, 1973, 48-70318; June 20, 1973, 48-70317; Dec. 17, 1973, 48-142288; Dec. 17, 1973, 48-142289
Int. Cl.² H01B *1/08*
U.S. Cl. 252—519 **19 Claims**

1. A high temperature thermistor composition comprising a spinel-type solid solution having the chemical formula of $(Mg_{(p_1)}Ni_{(p_2)}Co_{(p_3)}Mn_{(p_4)}Zn_{(p_5)})$ $(Al_{(x)}Cr_{(y)}Fe_{(z_1)}Mn_{(z_2)}Co_{(z_3)}Sb_{(z_4)})_2O_4$, wherein $p_1+p_2+p_3+p_4+p_5=1$, $0 \leqq p_n \leqq 1$ (n=1, 2, 3, 4, 5), $z_1+z_2+z_3+z_4=z$, $x+y+z=1$, $0.005 \leqq x \leqq 0.80$, $0.03 \leqq y \leqq 0.95$, $0.005 \leqq z \leqq 0.70$ and $0 \leqq z_n \leqq 0.70$ (n=1,2,3,4).

3,962,146
PTC THERMISTOR COMPOSITION AND METHOD OF MAKING THE SAME

Tomizo Matsuoka, Neyagawa; Masanori Fujimura, Hirakata, and Yoshihiro Matsuo, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sept. 18, 1974, Ser. No. 506,963
Claims priority, application Japan, Sept. 24, 1973, 48-107393
Int. Cl.² H01B *1/08*
U.S. Cl. 252—520 **7 Claims**

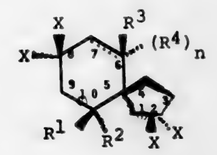
1. A PTC thermistor composition consisting essentially of a first oxide selected from the group consisting of barium oxide, barium strontium oxide, and barium lead oxide, and, on the basis of 1.00 mole of said first oxide, (A) 0.90 to 1.05 mole of an oxide selected from the group consisting of titanium dioxide and titanium stannic dioxide, (B) 0.0005 to 0.002 mole of an oxide selected from the group consisting of rare earth oxides, Nb_2O_5, Ta_2O_5, Bi_2O_3 and Sb_2O_3 and (C) 0.0005 to 0.10 mole of hafnium dioxide.

3,962,147
PERFUME COMPOSITION CONTAINING 6,10 DIMETHYL - SPIRO [4.5]DECANE-TYPE COMPOUNDS

Bruno Maurer, Collonge-Bellerive; Michel G. Fracheboud, and Gunther Ohloff, both of Bernex-Geneva, all of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Division of Ser. No. 363,187, May 23, 1973, Pat. No. 3,923,873. This application May 30, 1975, Ser. No. 582,265
Claims priority, application Luxemburg, July 17, 1972, 65737; May 29, 1972, 65431
Int. Cl.² C11B *9/00*; A61K *7/46*
U.S. Cl. 252—522 **1 Claim**

1. A perfume composition which comprises at least one of the compounds of the formula



containing a single or a double bond in the position indicated by the dotted line and wherein the index n represents the intergers zero or 1, one of the pairs of symbols X represents when said symbols are taken together, an oxygen atom or, when said symbols are taken separately, a hydroxyl or an O-acyl group and a hydrogen atom, and the other pair represents two hydrogen atoms and wherein

i. one of the symbols R^1 and R^2 represents a lower alkyl group and the other is a hydrogen atom and R^3 represents a lower alkyl group when the index n is zero; or

ii. each of the symbols R^1, R^2, R^3 and R^4 represents a lower alkyl group or a hydrogen atom provided however that the pairs

R^1 and R^2, and

R^3 and R^4, respectively,

cannot simultaneously comprise more than one alkyl group, and an inert diluent or a carrier.

3,962,148
ODORANT COMPOSITIONS CONTAINING 4,4,6-TRIMETHYL-2-CYCLOHEXENONE

Alan R. Hochstetler, Franklin Lakes, and Frederick Louis Schmitt, Holmdell, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed July 3, 1975, Ser. No. 592,963
Int. Cl.² C11B *9/00*
U.S. Cl. 252—522 **8 Claims**

1. A fragrance composition comprising an olfactorily effective amount of 4,4,6-trimethyl-2-cyclohexenone and at least one other olfactory agent.

3,962,149
NON-PHOSPHATE SPRAY DRIED DETERGENTS CONTAINING DICARBOXYLIC ACID SALTS

William Chirash, New Providence; Alfred Edgar Haase, Fanwood, and Andrew Henry Limekiller, Belle Mead, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 12, 1973, Ser. No. 406,015
Int. Cl.² C11D *1/83, 3/20, 11/02, 17/06*
U.S. Cl. 252—540 **18 Claims**

1. A spray dried, nonphosphate detergent bead composition post treated with a liquid spray containing polyethoxylated nonionic organic detergent in an amount of from about 3 to about 5 percent by weight, the base spray dried bead composition consisting essentially of, approximately by weight,

a. 5–25% of an alkali metal salt of a dibasic acid selected from the group consisting of oxalic, malonic, succinic, glutaric, adipic, pimelic,, suberic, azelaic and sebacic acids,

b. up to 35% of

1. anionic soap or synthetic organic sulfated or sulfonated detergent,

2. zwitterionic, or

3. amphoteric detergent material,

c. 0 to 2% of said nonionic detergent,

d. 0 to 7% of an alkali metal silicate,

e. the balance being sodium sulfate, said final detergent bead composition containing up to about 6 percent of said nonionic detergent, and said final composition being adapted to yield in aqueous solution a pH of about 7 to 9.

3,962,150
FOAM PRODUCING CLEANSING COMPOSITIONS

Leonard J. Viola, Yonkers, N.Y., assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Apr. 10, 1974, Ser. No. 459,651
Int. Cl.² C11D *1/58*
U.S. Cl. 252—542 **10 Claims**

1. An aqueous, non-pressurized, foam-producing, homogenous, skin-cleansing composition consisting essentially of from 0.5 to 14.5% of a pharmaceutically acceptable nonionic surfactant and from 0.5 to 14.5% of a pharmaceutically acceptable aanionic surfactant, the total surfactant concentration ranging from 1 **anionic to** 15%; from 1 to 15% of an alcoholic solvent selected from the group consisting of monohydric alcohols having from 2 to 3 carbon atoms, glycol ethers, polyhydric glycols and mixtures thereof; and from 70 to 98% water.

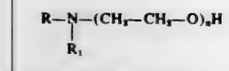
8. An aqueous, non-pressurized, aerated foam consisting essentially of a mixture of air and an aqueous, non-pressurized, foam-producing, homogeneous, skin-cleansing composition having from 0.5 to 14.5% of a pharmaceutically acceptable nonionic surfactant and from 0.5 to 14.5% of a pharmaceutically acceptable anionic surfactant, the total surfactant concentration ranging from 1 to 15%, from 1 to 15% of an alcoholic solvent selected from the group consisting of monohydric alcohols having from 2 to 3 carbon atoms, glycol ethers, polyhydric glycols and mixtures thereof, and from 70 to 98% water; said foam having a density of from 0.01 to 0.10 gm/ml.

3,962,151
SOLVENT TYPE CLEANERS

Abraham Dekker, and Albert Willems, both of Maarssen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Aug. 6, 1973, Ser. No. 385,945
Claims priority, application United Kingdom, Aug. 11, 1972, 37586/72
Int. Cl.² C11D *1/44, 3/43*
U.S. Cl. 252—548 **2 Claims**

1. A non-aqueous solvent type cleaner composition with quick breaking emulsion properties for cleaning metal surfaces, concrete structures, brickwork and the like, consisting essentially of 94.0–98.5% by weight of a non-chlorinated hydrocarbon solvent comprising a kerosene distillate with a flash point of at least 55°C, and about 0.2–5.0% by weight of a cationic emulsifier having the formula:



in which R is an alkyl or alkenyl group containing 8–25 carbon atoms; n is a number from 1–5; and R^1 is either $(CH_2—CH_2—O)_mH$, m being from 0–5, or an alkyl or alkenyl group containing 8–25 carbon atoms, and 0.5–1.0% by weight of an ethylene oxide condensate nonionic surface-active compound comprising a mixture of a low ethoxylated compound having up to 5 ethylene oxide units and a high ethoxylated compound having from 8–25 ethylene oxide units, in a weight ratio of from 2:1 to 15:1.

3,962,152

DETERGENT COMPOSITIONS HAVING IMPROVED SOIL RELEASE PROPERTIES

Charles Henry Nicol, Hamilton, and Hugh Robert Hays, Harrison, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 25, 1974, Ser. No. 483,185
Int. Cl.² C11D 7/26
U.S. Cl. 252—551 **8 Claims**

1. A detergent composition having improved soil release properties consisting essentially of:

a. from about 2 to about 95% by weight of a member selected from the group consisting of water-soluble anionic, nonionic, zwitterionic and ampholytic surface-active agents and mixtures thereof; and

b. from about 0.05 to about 25% by weight of a soil release polymer comprising ethylene terephthalate and polyethylene oxide terephthalate at a molar ratio of ethylene terephthalate to polyethylene oxide terephthalate of from about 25:75 to about 35:65, said polyethylene oxide terephthalate containing polyethylene oxide linking units having a molecular weight of from about 300 to 700, the molecular weight of said soil release polymer being in the range of from about 25,000 to about 55,000.

3,962,153

VERY HIGHLY STRETCHED POLYTETRAFLUOROETHYLENE AND PROCESS THEREFOR

Robert Walton Gore, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Continuation-in-part of Ser. No. 39,753, May 21, 1970, abandoned. This application June 14, 1973, Ser. No. 369,814
Int. Cl.² C08J 9/00; B29D 27/00
U.S. Cl. 260—2.5 R **10 Claims**

1. A porous product consisting essentially of polytetrafluoroethylene produced by a process comprising:

a. stretching an unsintered extrudate of said polymer made by a paste-forming extrusion technique, said stretching being performed after removal of lubricant extrusion aid from said extrudate;

b. said stretching being performed at a rate exceeding about 2000% per second;

c. said stretching being performed at an elevated temperature but below the melt point of said polymer; and,

d. said extrudate being stretched to such an extent that the final length of the stretched product after stretching exceeds 50 times the original length of said extrudate prior to stretching.

3,962,154

METHOD FOR PRODUCING AN IMPROVED MOLDED THERMOPLASTIC ARTICLE

Ernst A. Egli, Carol Stream, Ill., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 149,022, June 1, 1971, abandoned. This application May 31, 1974, Ser. No. 474,890
Int. Cl.² C08J 9/04; C08K 3/10
U.S. Cl. 260—2.5 HA **5 Claims**

1. A foamed thermoplastic polymeric resinous article substantially free of swirl-patterns in its surface comprising:

a thermoplastic polymeric resinous material selected from the group consisting of polystyrene, polypropylene, and polyethylene having a finely divided inorganic material comprising about 30% zinc sulfide and about 70% barium sulfate intimately associated therewith in a range between about 0.001% and about 50% based upon the total weight of the thermoplastic polymeric resin and the inorganic material.

3,962,155

MOLDED FOAMS AND PROCESS FOR PRODUCING THE SAME

Teruyoshi Usamoto, Higashi-Osaka; Kozo Tsuji, Ibaragi, and Takami Sato, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Hayashibara Biochemical Laboratories, Incorporated, both of, Japan

Filed Jan. 20, 1975, Ser. No. 542,686
Claims priority, application Japan, Feb. 6, 1974, 49-15636
Int. Cl.² C08J 9/00
U.S. Cl. 260—2.5 R **21 Claims**

1. A molded article comprising foamed pullulan, foamed modified pullulan prepared by subjecting pullulan to acetylation, hydroxyacetylation, dialdehydation, nitration, carboxyalkylation, esterification with an aliphatic or aromatic carboxylic acid, alkyl-etherification, hydroxyalkyl-etherification or carboxyalkyl-etherification, or is a graft copolymer prepared by grafting a vinyl compound on pullulan, or a foamed mixture thereof.

3,962,156

TACKIFIER FOR RUBBER

William H. Harrop, Downingtown, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed July 15, 1974, Ser. No. 488,379
Int. Cl.² C08L 7/00, 9/02, 9/06, 63/00
U.S. Cl. 260—5 **4 Claims**

1. A composition comprising a synthetic rubber selected from the group consisting of polybutadiene, butadiene-styrene copolymers, butadiene-acrylonitrile copolymers, butadiene-styrene-acrylonitrile terpolymers, polyisoprene, polychloroprene, isobutylene homopolymers and copolymers, ethylene propylene rubbers, ethylene-propylene-diene terpolymer rubbers, halogenated olefin polymers, propylene oxide rubbers, or mixtures of said synthetic rubber with natural rubber, and as a tackifier for the rubber, from about 2 to about 20 parts by weight per 100 parts rubber of the composition prepared by a process comprising reacting about 0.7 to 1.3 mole parts aldehyde with about 0.50 to 0.95 mole parts of predominantly mono-substituted phenol and about 0.50 to 0.05 mole parts of aliphatic or cycloaliphatic polyamine containing at least two primary amine groups in the presence of acid catalyst.

3,962,157

POLYPROPYLENE COMPOSITION MODIFIED WITH POROUS FILLER AND A RADICAL GENERATING AGENT

Seikou Nakano; Yukitaka Goto, and Takayuki Inoue, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Japan

Filed Aug. 26, 1974, Ser. No. 500,368
Claims priority, application Japan, Aug. 31, 1973, 48-97207
Int. Cl.² C08L 1/02
U.S. Cl. 260—17.4 R **9 Claims**

1. A process for preparing a modified polyolefin composition for shaping use which comprises adding a radical generating agent in a quantity of not greater than 5% by weight to 10 to 80% by weight of a porous filler having a particle size not greater than 5 mesh and 90 to 20% by weight of a polyolefin selected from the group consisting of propylene homopolymer and ethylene-propylene copolymers with an ethylene content not greater than 15%, all of said quantities of these materials being based on the total weight of the polyolefin, porous filler and radical generating agent, and kneading the resulting mixture at a high temperature above the decomposition temperature of the radical generating agent and the melting temperature of the polyolefin.

3,962,158

HYDROPHILIC POLYMER MEMBRANES OF POLYVINYL ALCOHOL AND CHITOSAN

Seiichi Mima, Toyonaka; Susumu Yoshikawa, and Masaru Miya, both of Ikeda, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Apr. 1, 1975, Ser. No. 563,962
Claims priority, application Japan, Apr. 5, 1974, 49-39167
Int. Cl.² B01D 13/00; C08L 5/08
U.S. Cl. 260—17.4 CL **8 Claims**

1. A hydrophilic polymer membrane which comprises a blend of polyvinyl alcohol and chitosan wherein said polyvinyl alcohol contains in its molecule at least 85 mol % vinyl alcohol units and said chitosan is present in an amount of 5–60% by weight based on said blend.

3,962,159

GRAFT COPOLYMERS OF A POLYAMIDEAMINE SUBSTRATE AND STARCH, AND METHOD OF MAKING SAME

Dilip K. Ray-Chaudhuri, Somerville, and Carmine P. Iovine, Somerset, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Feb. 3, 1975, Ser. No. 546,520
Int. Cl.² C08L 3/02, 3/04
U.S. Cl. 260—17.4 GC **10 Claims**

1. A graft copolymer comprising the condensation product obtained by the reaction of:

a. a polyamideamine substrate having a total amine to carboxylic equivalent ratio of 1.25:1 to 3.00:1 and a reduced viscosity in methanol at 1% weight by volume of 0.05 to 0.20 dl/gm., said polyamideamine substrate comprising the reaction product of a polyalkylene polyamine, a dibasic reagent and optionally at least one member selected from the group consisting of alkyl lactams, acrylic and methacrylic esters and beta-lactones,

b. a water dispersible starch, and

c. a condensing reagent selected from the group consisting of epichlorohydrin, epibromohydrin, 1,3-dichloropropanol, 1,2-dichloroethane, 1,4-dichloro-2-butene, divinyl sulfone, methylene bisacrylamide, glyoxal and divinyl ether, wherein the weight ratio of starch to polyamideamine is within the range of 1:9 to 9:1 and the amount of condensing reagent corresponds to 0.75 to 2.0 moles per equivalent of amine in the polyamideamine substrate.

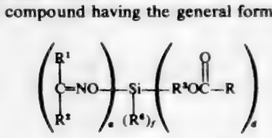
3,962,160

NOVEL ORGANOFUNCTIONAL (KETOXIMINO) SILANES AND ROOM TEMPERATURE, VULCANIZABLE COMPOSITIONS CONTAINING THE SAME

Melvin D. Beers, Elnora; Abe Berger, Schenectady; Stephen B. Hamilton, Schenectady, and Terry G. Selin, Schenectady, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Dec. 10, 1974, Ser. No. 531,343
Int. Cl.² C08L 91/00
U.S. Cl. 260—18 S **38 Claims**

1. A compound having the general formula,



wherein R is a radical having not more than about 8 carbon atoms and is selected from the group consisting of hydrocarbyl, halohydrocarbyl, nitrohydrocarbyl, alkoxyhydrocarbyl and cyanoalkyl, R^1 and R^2 are the same or different and are selected from the group consisting of C_1–C_8 alkyl and C_1–C_8 haloalkyl, R^3 is at least one divalent radical having from about 2 to 8 carbon atoms selected from the group consisting of a divalent saturated hydrocarbon, a halogen substituted divalent saturated hydrocarbon and an alkoxy substituted divalent saturated hydrocarbon, R^6 is at least one radical selected from the same group as R, *a* is a number from 1 to 3, *d* is a number from 1 to 3, *f* is a number from 0 to 2 and the sum of *a*, *d* and *f* is 4.

3,962,161

CROSSLINKING OF DIOLEFINIC POLYMERS USING DIACYL NITRILE OXIDES

Louis E. Trapasso, Somerset, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 17, 1975, Ser. No. 558,976
Int. Cl.² C08G 18/04, 18/00; C08F 8/00; C08L 91/00
U.S. Cl. 260—22 TN **9 Claims**

1. A process for crosslinking an olefinic group-containing polymer, which comprises blending with said polymer at least one mole of nitromethane and at least three equivalents of a polyisocyanate for each olefinic group to be crosslinked, and allowing the mixture to react.

3,962,162

RIGIDLY BONDED GREEN CERAMICS AND PROCESSES

Horst W. Schmank, Ringold, Ga., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 19, 1974, Ser. No. 443,298
Int. Cl.² C08G 63/20; C08K 3/00
U.S. Cl. 260—22 CB **9 Claims**

1. A formable green refractory composition flowable at temperatures of 20° to 40° C., curing to become rigid and shape-retentive at elevated temperatures below about 200° C. and firing at temperatures above at least 600° C. to refractory, said composition being thermosetting and comprising in percent by weight:

a. about 60 to 98% refractory powder;

b. about 1 to 30% linear unsaturated polyester having molecular weight of about 400 to 10,000 and hydroxyl numbers from about 5 to about 150;

c. about ⅛–12% unsaturated vinyl monomer for crosslinking and dilution;

d. about 0.02 to 0.5% catalyst for free radical polymerization;

e. about 0.5 to 5% internal mold release compounds and

f. about 0.5 to 7% volatile mold release and lubricant miscible with said saturated polyester and said vinyl monomer.

3,962,163
SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

Elmer D. Dickens, Jr., Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 30, 1974, Ser. No. 537,061
Int. Cl.² C08L *91/00*
U.S. Cl. 260—23 XA **14 Claims**

1. A smoke retardant composition comprising a vinyl chloride or vinylidene chloride polymer together with (A) at least one nickel compound selected from the group consisting of $NiCO_3$, $NiCrO_4$, $NiMoO_4$, NiO, $NiSO_4$, $NiSnO_3$ and nickel stearate and (B) at least one copper compound selected from the group consisting of CuI, CuO, CuSCN and 2-aminothiophenol Cu(I), said compounds (A) and (B) being present in a total amount from about 0.25 to about 20 weight parts per 100 weight parts of polymer.

3,962,164
SELF-EXTINGUISHING ACRYLONITRILE-BUTADIENE-STYRENE MOULDING COMPOSITION

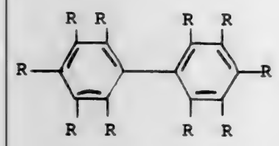
Hans Eberhard Praetzel, and Herbert Jenkner, both of Cologne, Germany, assignors to Chemische Fabrik Kalk GmbH, Germany

Continuation-in-part of Ser. No. 182,542, Sept. 21, 1971, Pat. No. 3,830,766. This application July 3, 1974, Ser. No. 485,558
Claims priority, application Germany, Sept. 23, 1970, 2046795
Int. Cl.² C08K *5/59*; **C09K** *3/28*
U.S. Cl. 260—28.5 B **7 Claims**

1. A self-extinguishing moulding composition comprising acrylonitrile-butadiene-styrene polymers and an additive comprising:

a. an aromatic compound having the formula

(1)



wherein R is selected from the group consisting of hydrogen, bromine, chlorine and alkyl having 1 to 3 carbon atoms; provided that at least two of the R's are bromine;

b. antimony trioxide or antimony oxychloride; and

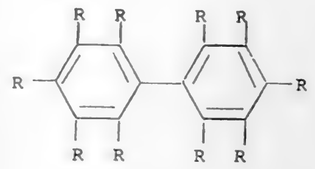
c. an organochloro compound selected from the group consisting of chloroparaffins having 45 to 72 percent by weight chlorine, hexachlorocyclopentadiene and its dimer, and chlorinated polyvinyl chloride;

said aromatic bromine compound being present in amount of about 1 to 15 percent by weight; said antimony compound being present in amount of about 1 to 10 percent by weight; and said organochloro compound being present in amount of about 0 to 5 percent by weight.

4. An additive for flame-proofing acrylonitrile-butadiene-styrene polymers comprising:

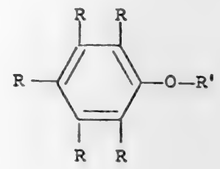
a. about 1 to 15 parts of an aromatic bromine compound selected from the group consisting of

(1)



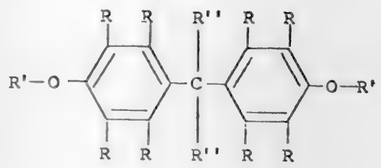
wherein R is selected from the group consisting of hydrogen, bromine, chlorine and alkyl having 1 to 3 carbon atoms; provided that at least two of the R's are bromine;

(2)



wherein R′ is selected from the group consisting of alkyl having 1 to 3 carbon atoms, alkenyl having 2 to 4 carbon atoms, halogenated alkyl having 1 to 3 carbon atoms and a maximum of three halogen atoms, phenyl and halogenated phenyl; R is as previously defined; provided that at least one R is bromine; and

(3)



wherein R″ is hydrogen or alkyl having 1 to 3 carbon atoms; R and R′ are as previously defined; provided that at least one R is bromine;

b. about 1 to 10 parts of antimony trioxide or antimony oxychloride; and

c. about 0 to 5 parts of an organochloro compound selected from the group consisting of chloroparaffins having 45 to 72 percent by weight chlorine, hexachlorocyclopentadiene and its dimer, and chlorinated polyvinyl chloride.

3,962,165
QUATERNARY AMMONIUM SALT-CONTAINING RESIN COMPOSITIONS

Joseph F. Bosso, Lower Burrell, and Marco Wismer, Gibsonia, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 277,697, Aug. 3, 1972, abandoned, which is a continuation-in-part of applications Ser. No. 100,825, Dec. 22, 1970, abandoned, Ser. No. 100,834, Dec. 22, 1970, abandoned, Ser. No. 129,267, Mar. 29, 1971, abandoned, Ser. No. 158,063, June 29, 1971, abandoned, and Ser. No. 167,470, July 29, 1971, said Ser. No. 158,063 is a division of Ser. No. 772,366, Oct. 31, 1968, abandoned. Said Ser. No. 167,470 is a continuation-in-part of Ser. No. 840,847, July 10, 1969, abandoned and Ser. No. 840,848, July 10, 1969, abandoned, and a continuation-in-part of said Ser. No. 100,825 and said Ser. No. 100,834, both being a continuation-in-part of Ser. No. 56,730, July 20, 1970, abandoned, which is a continuation-in-part of said Ser. No. 772,366, Oct. 31, 1968, abandoned.
This application Apr. 4, 1974, Ser. No. 457,881
Int. Cl.² C08G *30/16*, *51/24*
U.S. Cl. 260—29.2 EP **16 Claims**

1. A boron-free, water-dispersible, quaternary ammonium salt-containing resin suitable for use in electrodeposition comprising the reaction product of:

A. a polyglycidyl ether of a polyphenol, and

B. an amine acid salt,

the weight ratio of said amine acid salt to said polyglycidyl ether being from about one part to about 50 parts by weight of salt per 100 parts by weight of said polyglycidyl ether, said amine salt reacted with said polyglycidyl ether of a polyphenol in an amount and at a temperature below about 110°C. and sufficient to provide a quaternary ammonium salt-containing, water-dispersible resin.

3,962,166
STABLE UREA-FORMALDEHYDE COMPOSITIONS

Alex F. Gordon, Black Mountain, N.C., assignor to United Merchants and Manufacturers, Inc., New York, N.Y.

Continuation of Ser. No. 259,770, June 5, 1972, abandoned. This application Nov. 22, 1974, Ser. No. 526,083
Int. Cl.² C08L *61/20*
U.S. Cl. 260—29.4 R **5 Claims**

1. A method for making a stable mixture of a methylol urea and water, said methylolurea having a urea to formaldehyde ratio in the range from about 1:1.4 to 1:2.8, a free formaldehyde content of less than about 3% and a concentration of methylol urea in excess of about 60% based on the weight of the mixture consisting essentially of the following steps:

A. adjusting the pH of an aqueous mixture of urea and formaldehyde which has a urea to formaldehyde ratio greater than about 1:5 and a solids content in the range from about 20 to 60% to a value greater than about 10;

B. heating the mixture at a temperature in the range from about 100° to 230°F for about 1 to 3 hours;

C. adjusting the ratio of urea to formaldehyde by adding urea to a value in the range from about 1:1.4 to 1:2.8 during heating step (B); and

D. cooling the mixture to room temperature and adjusting the pH of the cool mixture to a value in the range from about 7.5 to 8.0.

3,962,167
METAL DECORATING AND AQUEOUS COATING COMPOSITION COMPRISING COPOLYMER AND AMINOPLAST

Richard Martorano, Marlton, N.J.; William H. Brendley, Jr., Hatboro, and Thomas H. Haag, Feasterville, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 377,685, July 9, 1973, abandoned, and a continuation-in-part of Ser. No. 377,685, , which is a continuation-in-part of Ser. No. 130,808, April 2, 1971, abandoned. This application Nov. 27, 1974, Ser. No. 527,792
Int. Cl.² C08L *61/20*
U.S. Cl. 260—29.4 UA **6 Claims**

1. A pigmented or unpigmented thermosettable composition adapted for direct-roller coating of metals comprising an alkaline aqueous blend having a binder consisting essentialy of:

A. a latex of a water-insoluble addition copolymer of (1) a monovinyl aromatic monomer, (2) at least one ester of acrylic or methacrylic acid, (3) at lest one ethylenically unsaturated monomer having an amide or a hydroxyl group, and (4) an ethylenically unsaturated monomer having a carboxyl group, the amount of (3) being from 1.5 to 5 percent and the amount of (4) being from .5 to 2 percent, based on the total weight of monomers, the Tg of the copolymer being below 0° C., and

B. a water-soluble urea-formaldehyde reaction product or a water-soluble methanol or ethanol ether thereof,

the weight ratio of A to B on a solids basis being from 35:65 to 65:35, the minimum film-forming temperature of the composition being no higher than about 15° C., and the solids content of the composition being between 40 and 80 percent.

3,962,168
NON-SKID COATING AND METHOD

Hugh K. Edwards, 5228 Page, St. Louis, Mo. 63112

Filed Jan. 24, 1974, Ser. No. 436,190
Int. Cl.² C08J *3/02*, *3/10*; **C08L** *35/02*, *35/06*
U.S. Cl. 260—29.6 RW **15 Claims**

1. A resilient coating material comprising a stable emulsion of a styrene acrylate polymer having a molecular weight of between about 800 and 1000 and a polyvinyl acetate-acrylic co-polymer having a molecular weight between about 100,000 and 120,000 in a dispersible aqueous-organic co-solvent system, the styrene acrylate polymer being present in proportions of between about 4 and 8% by weight and the polyvinyl acetate-acrylic co-polymer being present in proportions of between about 20 and 35% by weight, the co-solvent system being about 50 to 75% by weight of the emulsion.

3,962,169
FLUOROELASTOMER LATEX CONTAINING LITHIUM ION AND A CREAMING AGENT AND PROCESS FOR PREPARATION THEREOF

Paul Jeffrey Arruda, Wilmington, Del., and Charles Launcelot Barber, Jr., Chester, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 488,528, July 15, 1974, abandoned. This application May 27, 1975, Ser. No. 581,150
Int. Cl.² C08L *27/16*
U.S. Cl. 260—29.6 F **20 Claims**

1. A process for preparing a fluoroelastomer latex which comprises

A. forming an aqueous emulsion of monomers capable of being copolymerized into a fluoroelastomer, said emulsion comprising

1. vinylidene fluoride plus at least one other fluorine-containing monomer in an amount such that the total monomer content of the emulsion is about 10–35% by weight,

2. about 30 to 100 parts by weight of lithium ion per million parts of the emulsion, and

3. an inorganic free-radical initiator in an amount which permits the free-radical emulsion copolymerization of the monomers,

B. subjecting said emulsion to free-radical emulsion copolymerization in a reaction zone at a temperature of about 50°–135°C. and a pressure of about 7–140 kg./cm.² to form a fluoroelastomer latex, and

C. adding a creaming agent to the resulting fluoroelastomer latex in an amount equal to about 0.07–3.0 grams of creaming agent per 100 grams of fluoroelastomer present.

3,962,170

FLAME RESISTANT VINYLIDENE CHLORIDE COPOLYMER LATICES AND ARTICLES MADE THEREFROM

Adolf Antony Mally, Kinross, Scotland, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 16, 1974, Ser. No. 515,386

Claims priority, application United Kingdom, Oct. 30, 1973, 50473/73

Int. Cl.² C08K *3/28, 5/52*

U.S. Cl. 260—29.7 H **4 Claims**

1. A flame resistant composition consisting essentially of:

A. a latex prepared from a monomer mixture of (1) 15% to 45% by weight styrene, (2) 25% to 50% by weight butadiene, (3) 25% to 40% by weight vinylidene chloride and (4) 0.5 to 10% copolymerizable carboxylic acid, and

B. a flame retardant compound selected from the group consisting of ammonium bromide and tris dibromopropyl phosphate.

3,962,171

COMPOSITION FOR PROTECTING SURFACES

James D. Robbins, Ada, Mich., assignor to McGarry & Waters, Grand Rapids, Mich.

Continuation-in-part of Ser. No. 337,667, March 2, 1973, abandoned. This application Feb. 19, 1975, Ser. No. 550,968

Int. Cl.² C08K *5/02;* **B32B** *15/08*

U.S. Cl. 260—33.8 F **10 Claims**

1. A protective coating composition for application to decorative and other surfaces, said coating composition comprising:

50 to 5 parts by weight of a solution of 10 to 30 parts by weight of polytetrafluoroethylene and 90 to 70 parts of a fluorinated hydrocarbon solvent therefor, said polytetrafluoroethylene having a particle size less than about 30 microns before dissolution into said solvent and forming a solution therewith;

50 to 95 parts by weight of a volatile diluent of a halogenated hydrocarbon having 1 to 4 carbon atoms and a boiling point in the range of 25°–100°C, said polytetrafluoroethylene solution being finely and evenly dispersed in said diluent;

said diluent being present in sufficient amounts to evenly and thinly spread said composition onto surfaces when sprayed, and in amounts insufficient to cause settling of said polytetrafluoroethylene solution in a relatively short period of time following agitation, said composition, when sprayed onto a surface, forms a transparent coating after drying and buffing.

3,962,172

GLASS FIBER REINFORCED POLYAMIDE MOLDING MATERIAL OF HIGH IMPACT STRENGTH

Rolf Wurmb, Heidelberg; Peter Freyberg, Speyer; Kurt Wendel, and Wolfgang Schwarz, both of Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Sept. 3, 1974, Ser. No. 502,664

Claims priority, application Germany, Sept. 14, 1973, 2346310

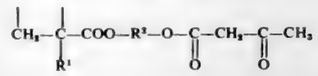
Int. Cl.² C08K *7/14, 9/04*

U.S. Cl. 260—37 N **5 Claims**

1. A glass fiber reinforced polyamide molding material of high impact strength which contains:

a. from 40 to 90% by weight of a polyamide: and

b. from 10 to 60% by weight of glass fibers which have been coated with a film-forming polymer containing from 4 to 50% by weight of units of the formula



(I)

in which R^1 is hydrogen or alkyl of one to five carbon atoms and R^2 is a saturated divalent hydrocarbon radical of two to ten carbon atoms, said coating being from about 0.1 to 10% by weight based on the weight of the coated fibers; with or without

c. a conventional stabilizer, flame retardant, pigment, filler or other additive.

3,962,173

PROCESS FOR THE PREPARATION OF EASILY DISPERSIBLE AND STABLE MOLYBDATE RED AND CHROME YELLOW PIGMENTS

Dieter Wick, deceased, late of Eschborn, Taunus, Germany, and by Anna Elisabeth Wick nee Sommer, heiress, Liederbach, Taunus, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

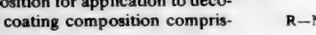
Filed Jan. 20, 1975, Ser. No. 542,422

Claims priority, application Germany, Jan. 21, 1974, 2402694

Int. Cl.² C08K *9/04*

U.S. Cl. 260—39 R **10 Claims**

1. In a process for preparing an easily dispersible and color-stable molybdate red or chrome yellow pigment stabilized with silicon dioxide, aluminum oxide and/or antimony trioxide and a longchain aliphatic amine the improvement comprising: precipitating said pigment from an aqueous solution, stabilizing it with silicon dioxide, aluminum oxide and/or antimony trioxide, precipitating on the so-obtained stabilized pigment an aliphatic mono-, di- or triamine of the formula



in which R is a hydrocarbon group which is saturated or once or twice ethylenically unsaturated and has 10 to 20 carbon atoms, A is alkylene of 2 to 4 carbon atoms and x is 0, 1 or 2, and adding to the so-obtained aqueous pigment suspension an air-drying, water-soluble lacquer binding agent.

3,962,174

POLYALKYLENE TEREPHTHALATE POLYMER MOLDING RESINS

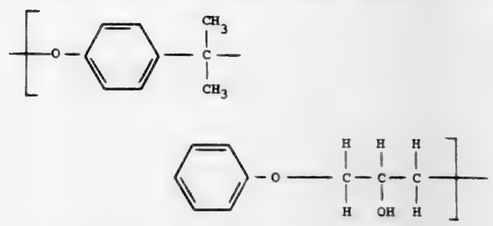
Frank M. Berardinelli, Millington, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 12, 1974, Ser. No. 496,607

Int. Cl.² C08L *67/02*

U.S. Cl. 260—40 R **16 Claims**

1. An improved thermoplastic polyester molding resin comprising a polyalkylene terephthalate polymer selected from the group consisting of polybutylene terephthalate polymer and polypropylene terephthalate polymer, and having an intrinsic viscosity in the range of from 0.2 to about 1.2 deciliters per gram, reinforcing agents intimately mixed with said polymer and from about 0.1 to about 8 weight percent, based on the total thermoplastic polyester molding resin, of a thermoplastic phenoxy resin having a repeating structure



and an average molecular weight range from about 15,000 to about 75,000.

3,962,175

BENZENE PHOSPHONOUS ACID COMPOUNDS, THEIR PRODUCTION AND USE AS STABILIZERS FOR ORGANIC MATERIALS

Kurt Hofer, Muenchenstein, and Guenther Tscheulin, Riehen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

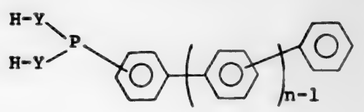
Division of Ser. No. 191,079, Oct. 20, 1971, Pat. No. 3,825,629. This application Apr. 25, 1974, Ser. No. 463,867

Claims priority, application Switzerland, Oct. 22, 1970, 15605/70; June 30, 1971, 9597/71

Int. Cl.² C08K *5/00*

U.S. Cl. 260—45.7 P **9 Claims**

1. A method of stabilizing material against the effect of light, oxygen or heat which comprises incorporating in or applying to the surface of an organic material which is sensitive to said effect an effective amount of a stabilizing agent of the formula



wherein Y is oxygen or sulphur and

n is 1 or 2,

in free acid or salt form.

3,962,176

ANTISTATIC POLYAMIDE COMPOSITIONS WHICH ARE STABILIZED AGAINST YELLOWING

Claus-Rudiger Bernert, Dormagen, and Eduard Radlmann, Dormagen-Hackenbroich, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

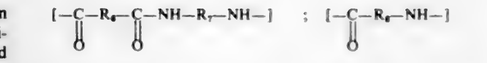
Filed May 16, 1974, Ser. No. 470,495

Claims priority, application Germany, May 16, 1973, 2324689

Int. Cl.² C08K *5/20, 5/41;* **C08L** *77/00*

U.S. Cl. 260—45.7 R **9 Claims**

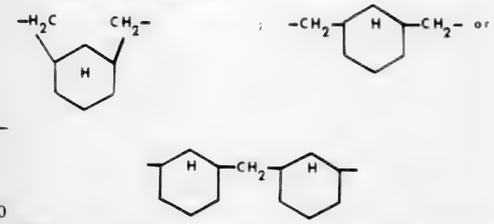
1. Antistatic polyamide compound which has been stabilized against yellowing caused by the action of heat, comprising an aliphatic polyamide having recurrent structural units corresponding to one of the following general formulae:



wherein

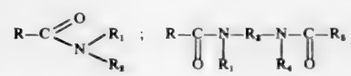
R_6 denotes a straight or branched chain C_4–C_{20} alkylene group,

R_7 denotes a straight or branched chain alkylene group, a cyclohexylene group or



and

R_8 denotes a straight or branched chain C_2–C_{20} alkylene group which contains at least one polyoxyalkylene compound in an amount up to 7%, by weight, and from 0.1 to 7%, by weight, of a carboxylic acid amide corresponding to one of the following general formulae:



wherein

R and R_5 represent the same or different C_6–C_{34} alkyl groups,

R_1 represents a C_6–C_{24} alkyl group,

R_2 represents a C_6–C_{24} alkyl group,

R_3 represents a C_1–C_6 alkylene group, and

R_4 represents hydrogen or a C_1–C_5 alkyl group.

3,962,177

SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

Elmer Douglas Dickens, Jr., Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed June 2, 1975, Ser. No. 582,743

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.75 N **20 Claims**

1. A smoke retardant composition comprising a vinyl chloride or vinylidene chloride polymer together with (A) at least one nickel compound selected from the group consisting of $Ni(BO_2)_2$, Ni_2O_3, $Ni_3(PO_4)_2$, nickel citrate, nickel oxalate and tetrakis (triphenyl phosphite) nickel and (B) at least one aluminum compound selected from the group consisting of aluminum metal, γ-Al_2O_3, AlSb, aluminum zinc sulfate, basic aluminum acetate, and sodium aluminum carbonate (dawsonite), said compounds (A) and (B) being present in a total amount from about 0.25 to about 100 weight parts per 100 weight parts of polymer.

3,962,178

STABILIZED POLYOLEFIN COMPOSITION

Mitsuo Masaki; Satoshi Matsunami; Toshio Yoshikawa, and Nagayoshi Sakamoto, all of Ichihara, Japan, assignors to UBE Industries, Ltd., Ube, Japan

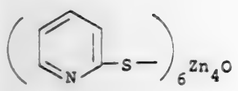
Filed July 16, 1975, Ser. No. 596,516

Claims priority, application Japan, Aug. 6, 1974, 49-89465

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.75 W **5 Claims**

1. A stabilized polyolefin composition which comprises 100 weight parts of a polyolefin and 0.001 – 5 weight parts of hexakis(2-pyridylthio)tetrazinc monooxide having the formula



3,962,179
NEOPRENE COMPOSITIONS CONTAINING TRIARYLPHOSPHINES

Mark Chaoming Chen, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1974, Ser. No. 534,200
Int. Cl.² C08K 5/50; C08L 11/00
U.S. Cl. 260—45.95 G **14 Claims**

1. A vulcanizable chloroprene polymer composition comprising about 0.5–5 parts by weight per 100 parts by weight of said polymer of a triarylphosphine, wherein the aryl groups are selected from phenyl, naphthyl, substituted phenyl, and substituted naphthyl;

the substituents being one or more alkyl groups having up to a total of ten carbon atoms per aromatic ring or one or more alkoxy groups having a total of up to five carbon atoms per aromatic ring;

and the chloroprene polymer being selected from homopolymers of chloroprene and copolymers of chloroprene with at least one other monomer belonging to the group consisting of sulfur and organic monomers copolymerizable with chloroprene, wherein chloroprene constitutes at least 50 weight percent of the total organic monomer makeup; said composition also comprising magnesia, zinc oxide, and a vulcanization accelerator, except that the vulcanization accelerator may be absent when the chloroprene polymer is a chloroprene/sulfur copolymer.

3,962,180
PROCESS FOR POLYMERIZING PHENOLS TO PRODUCE POLYPHENYLENE OXIDES OF LOW MOLECULAR WEIGHT

Eiichi Yonemitsu, Kashiwa; Akitoshi Sugio, Omiya, and Akihiko Konishi, Kashiwa, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 30, 1974, Ser. No. 519,196
Claims priority, application Japan, Nov. 2, 1973, 48-123731
Int. Cl.² C08G 61/10
U.S. Cl. 260—47 ET **9 Claims**

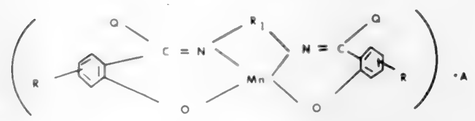
1. A process for polymerizing phenols to produce polyphenylene oxides of low molecular weight which comprises oxidative polymerization of phenols with oxygen or a gas containing oxygen in the presence of a catalyst selected from the group consisting of a combination of a copper compound and an amine, a combination of a manganese compound and amines or other basic compounds and a combination of a cobalt compound and an amine, in a solvent of an amount of 1 – 6 times the amount of the phenols and the phenols being added continuously to the reaction medium containing the catalyst.

3,962,181
PROCESS FOR PREPARATION OF POLYPHENYLENE OXIDES

Takashi Sakauchi; Akiyoshi Somemiya, and Satoshi Tonoki, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 203,297, Nov. 30, 1971, abandoned. This application May 13, 1974, Ser. No. 469,188
Claims priority, application Japan, Dec. 1, 1970, 45-106520
Int. Cl.² C08G 61/10
U.S. Cl. 260—47 ET **12 Claims**

1. A process for preparing polypheylene polyphenylene oxides comprising the steps of oxidizing and condensing a phenol selected from the group consisting of O-cresol; 2,6-dimethylphenol; 2,6-diethylphenol; 2,6-dimethoxyphenol; 2,6-dipropenylphenol; 2,6-diphenylphenol; 2,4,6-trimethylphenol; 3-methoxyphenol and mixtures thereof; in the presence of a basic chelate compound expressed by the formula:



wherein R_1 stands for ethylene, hexamethylene and o-phenylene groups, Q selected for a hydrogen atom or a hydrocarbon group, R stands for a hydrogen atom, a hydrocarbon group, a hydrocarbon-oxy group, a halogen atom, an amino group, a nitro group, a hydroxyl group, and A stands for ethylene diamine, and in the presence of an organic solvent.

3,962,182
IMIDE OXIRANE REACTIONS

Roger B. Steele, Fair Oaks; Arthur Katzakian, Jr.; Joseph J. Scigliano, both of Sacramento, and Edward E. Hamel, Placer County, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

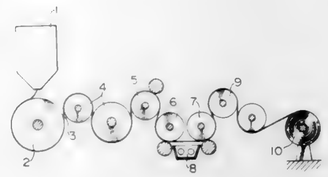
Division of Ser. No. 308,611, Nov. 21, 1972, Pat. No. 3,838,101. This application July 12, 1974, Ser. No. 487,956
Int. Cl.² C08G 30/14
U.S. Cl. 260—47 EN **12 Claims**

1. A method of catalyzing the reaction of primary cyclic imides with an oxirane oxygen compound which comprises carrying out the reaction in the presence of an effective catalytic amount of an active chromium III tricarboxylate having available coordination sites, at from about 0°C to 200°C.

3,962,183
POLYETHYLENE-1,2-DIPHENOXYETHANE-4,4′-DICARBOXYLATE UNIAXIALLY STRETCHED FILMS OF GOOD DIMENSIONAL STABILITY AND ANTI-FIBRILLATION

Mitsuo Kohno; Tsuneo Igarashi, both of Moriyama, and Minoru Nomura, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 5, 1974, Ser. No. 448,238
Int. Cl.² C08G 63/18, 63/70
U.S. Cl. 260—47 C **3 Claims**



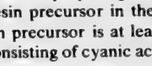
1. Uniaxially stretched film consisting essentially of polyethylene 1,2-diphenoxyethane-4,4′-dicarboxylate unit and having a density in the range of 1.345 to 1.360, a Young's modulus of 800–1500 Kg/mm² in the stretching direction, a tensile strength at 5% elongation of 15–40 Kg/mm² in the same direction, a strength at break of 25–70 Kg/cm² in the same direction, a tensile strength at 5% elongation of 5–10 kg/mm² in the direction perpendicular to the stretching direction, a strength at break of 7–15 Kg/mm² in the direction perpendicular to the stretching direction, an Elmendorf's tear strength of 8–20 kG/mm² in the stretching direction, an elongation at break of 50–150% in the direction perpendicular to the stretching direction and a shrinkage of 0–4% in any direction at the time when heated at 150°C for 2 hours.

3,962,184
PROCESS FOR PREPARING CURED RESIN FROM CYANIC ACID ESTERS USING IMIDAZOLE CATALYSTS

Toru Notomi; Morio Gaku; Kazuyuki Nakamichi, and Kazuhiro Suzuki, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 18, 1974, Ser. No. 533,746
Claims priority, application Japan, Dec. 21, 1973, 48-143100
Int. Cl.² C08G 18/00
U.S. Cl. 260—47 CP **4 Claims**

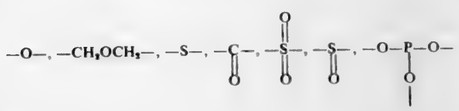
1. In the process for preparing a cured resin which comprises curing a resin precursor in the presence of a catalyst, wherein said resin precursor is at least one member selected from the group consisting of cyanic acid esters of the following formula



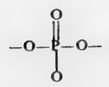
wherein R is an aromatic nucleus-containing residue which is selected from the group consisting of a residue derived from an aromatic hydrocarbon selected from the group consisting of benzene, biphenyl and naphthalene, a residue derived from a compound in which at least two benzene rings are bonded to each other by a bridging member selected from the group consisting of



wherein R_a and R_b are the same or different and each represents a hydrogen atom or an alkyl group containing 1 to 4 carbon atoms,

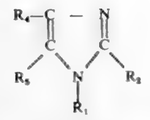


and



and a residue resulting from the removal of a phenolic hydroxyl group from a novolac-type or resol-type phenolic resin skeleton; said aromatic nucleus is optionally substituted by a substituent selected from the group consisting of alkyl groups containing 1 to 4 carbon atoms, alkoxy groups containing 1 to 4 carbon atoms, chlorine and bromine; *n*; is an integer of 2 to 5; and the cyanate group is always directly bonded to the aromatic nucleus,

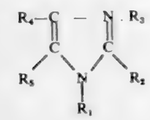
and prepolymers of the said cyanic acid esters which have a triazine ring and an average molecular weight of 400 to 6,000, and are formed by trimerizing the cyanate group of the cyanic acid esters, the improvement which is characterized in that as said curing catalyst is used at least one compound selected from the group consisting of imidazoles of the following formula (I)



(I)

wherein R_1 is a hydrogen atom, an alkyl group containing 1 to 5 carbon atoms, a benzyl group, a cyanoalkyl group containing an alkyl group with 1 to 5 carbon atoms, an aminoalkyl group containing 1 to 5 carbon atoms or a guanaminoalkyl group containing an alkyl group with 1 to 2 carbon atoms, the above alkyl groups being of linear or branched chain; R_2 is a hydrogen atom, a linear or branched chain alkyl group containing 1 to 20 carbon atoms, a cyclohexyl group or a phenyl group; and R_4 and R_5, independently from each other, are a hydrogen atom or a linear or branched chain alkyl group containing 1 to 5 carbon atoms,

and imidazole adducts of the following formula



(II)

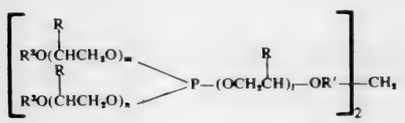
wherein R_1, R_2 R_4 and R_5 are the same as defined with regard to formula (I), and R_3 represents an aromatic polycarboxylic acid which forms an adduct by addition to the imidazole.

3,962,185
POLYESTER COMPOSITIONS HAVING A DURABLE ANTISTATIC PROPERTY

Kazuya Chimura; Hiroshi Iwata, both of Ohtake; Kazunori Kagawa, Hiroshima, and Kazuhiko Ishida, Ohtake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 277,573, Aug. 3, 1972, abandoned. This application Aug. 7, 1974, Ser. No. 495,361
Claims priority, application Japan, Dec. 22, 1971, 46-104316
Int. Cl.² C08G 63/18, 63/46, 63/70
U.S. Cl. 260—47 C **7 Claims**

1. A durably antistatic polyester composition comprising (*a*) a polyester wherein at least 80 mole % of the component units is ethylene terephthalate and, in amounts of 0.1 – 10% by weight of the polyester, (*b*) a compound having the general formula:



wherein R is selected from the group consisting of a hydrogen atom and a methyl group; R′ is a member selected from the group consisting of unsubstituted phenylene and phenylene substituted with one or more hydrocarbon radicals; R^2 and R^3 are each selected from the group consisting of C_1 to C_{10} alkyl, unsubstituted phenyl, and substituted phenyl containing one or more hydrocarbon radical substituents; and *l*, *m* and *n* are each an integer of from 1 to 200.

3,962,186
CURABLE COMPOSITION OF A POLYEPOXIDE WITH A METHYLOL DERIVATIVE OF A POLYTHIOL

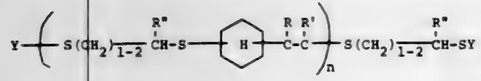
Richard A. Hickner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 388,714, Aug. 16, 1973, abandoned. This application Feb. 7, 1975, Ser. No. 548,116

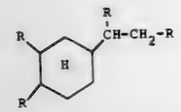
Int. Cl.² C08G *30/10*

U.S. Cl. 260—47 EC **6 Claims**

1. A curable composition comprising a 1,2-polyepoxide in admixture with a methylol derivative of a polythiol having the formula:



wherein *n* is 1–3, one of R and R′ is hydrogen and the other is hydrogen or methyl, and R″ is hydrogen or methyl; or said derivative having the formula



wherein each R is —Cl, —Br, —SR_1SY or —OR_2SR_1SY provided that at least two of said R groups independently are of said —SR_1SY or —OR_2SR_1SY; R_1 is an alkylene group having 2 to 10 carbon atoms or an alkylene group having 2 to 10 carbon atoms having one or more —O— or —S— ether groups and R_2 is an alkylene group of 2 to 4 carbon atoms; and wherein at least one Y is —CH_2OH.

3,962,187
STABILIZED POLYMERS OF DITERTIARY ALKYL-4-HYDROXYBENZYLOXY ALKYL ACRYLATES AND DIENES

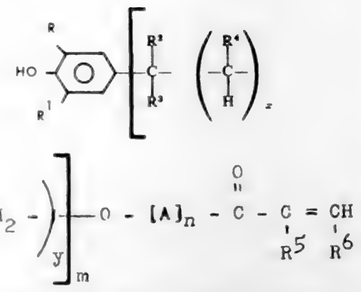
Richard H. Kline, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 20, 1970, Ser. No. 56,677

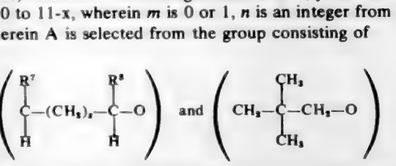
Int. Cl.² C08D *1/24, 3/06;* **C08F** *15/02*

U.S. Cl. 260—62 **23 Claims**

1. A process of preparing an age resistant polymeric composition comprising polymerizing in an emulsion free radical polymerization system, a monomer system containing at least one phenolic monomer having the following-structural formula:



wherein R and R^1 are tertiary alkyl radicals having from 4 to 8 carbon atoms, wherein R^2 and R^3 are selected from the group consisting of hydrogen, alkyl radicals having from 1 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, aralkyl radicals having from 7 to 13 carbon atoms and aryl radicals having from 6 to 12 carbon atoms, wherein R^4 is selected from the group consisting of alkyl radicals having from 1 to 12 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms and aralkyl radicals having from 7 to 13 carbon atoms, wherein R^5 is selected from the group consisting of hydrogen; alkyl radicals having from 1 to 4 carbon atoms, carboxymethyl radical and carbalkoxymethyl radicals and wherein R^6 is selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, phenyl and substituted phenyl radicals having located in the para position a radical selected from the group consisting of alkyl radicals having 1 to 4 carbon atoms and alkoxy radicals having 1 or 2 carbon atoms, carboxyl radical and carbalkoxy radicals, wherein *x* is an integer from 0 to 4, *y* is an integer from 0 to 11-x, wherein *m* is 0 or 1, *n* is an integer from 1 to 3, wherein A is selected from the group consisting of



and



wherein R^7 and R^8 are selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms and aryl radicals having from 6 to 12 carbon atoms, wherein *z* is an integer from 0 to 10, and wherein the monomer system contains at least 40 parts by weight of diene monomer per 100 parts by weight of total monomer in the monomer system.

3,962,188
LINEAR POLYESTERS BASED ON PHENYLISOCYANURATE AND PROCESSES FOR PREPARING SAME

William J. Kauffman, Lititz, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 31, 1974, Ser. No. 537,710

The portion of the term of this patent subsequent to June 8, 1993, has been disclaimed.

Int. Cl.² C08G *63/68*

U.S. Cl. 260—75 N **3 Claims**

1. A process for preparing a novel polyester comprising reacting a salt of phenylisocyanuric acid with ethyl-4-chlorobutyrate in an inert reaction medium at a temperature of about 25°C. to 150°C. to form the intermediate 1,3-bis(3-carbethoxypropyl)-5-phenylisocyanurate, hydrolyzing said intermediate in the presence of an acid to yield 1,3-bis(3-carboxypropyl)-5-phenylisocyanurate, and condensing 1,3-bis(3-carboxypropyl)-5-phenylisocyanurate with a diol of two to ten carbon atoms.

3,962,189
PROCESS AND CATALYST-INHIBITOR SYSTEMS FOR PREPARING SYNTHETIC LINEAR POLYESTERS

Nicholas C. Russin; Ronald A. Tershansy, and Charles J. Kibler, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 519,953, Nov. 1, 1974, abandoned. This application May 12, 1975, Ser. No. 576,415

Int. Cl.² C08G *63/14*

U.S. Cl. 260—75 R **22 Claims**

1. Process for producing polyethylene terephthalate comprising reacting dimethyl terephthalate and ethylene glycol at a temperature sufficient to effect ester interchange and in the presence of a catalyst system comprising a mixture of salts of manganese and cobalt with a titanium alkoxide and organic salt of an alkali metal or alkaline earth metal, the manganese salts being present in the amount of about 20–110 ppm Mn, the cobalt salts being present in the amount of about 5-35 ppm Co, the titanium alkoxide being present in the amount of about 20–60 ppm Ti, and the organic salt of an alkali metal or alkaline earth metal being present in the amount of about 7–35 ppm metal, all parts by weight based on the acid fraction of the polyester.

3,962,190
CHAIN COUPLERS FOR POLYESTERIFICATION AND NOVEL POLYESTERS

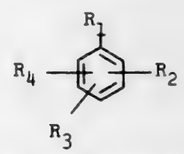
Robert L. Wear, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 7, 1974, Ser. No. 449,012

Int. Cl.² C08G *63/20*

U.S. Cl. 260—75 R **11 Claims**

1. In the process comprising forming a polyester by reacting at least one diol with at least one dicarboxylic compound the improvement which comprises adding to a reaction mixture of diol and dicarboxylic compound after polyesterification has begun, a chain coupling compound of the formula:



wherein R_1, R_2, R_3 and R_4 are hydrogen or a carboxylate group selected from a phenyl carboxylate group, a bis(-phenoxy carbonyl) phenyl ketone group, or a bis(phenoxy carbonyl) phenyl sulfone with at least three of R_1–R_4 being a phenyl carboxylate or a bis(phenoxy carbonyl) phenyl ketone or a bis(phenoxy carbonyl) phenyl sulfone group with at most one of either the ketone or the sulfone group in the chain coupling compound and each said carboxylate group having at most one adjacent carboxylate group.

3,962,191
LINEAR ISOCYANURATE POLYESTERS AND PROCESSES FOR PREPARING SAME

William J. Kauffman, Lititz, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 31, 1974, Ser. No. 537,686

Int. Cl.² C08G *63/68*

U.S. Cl. 260—75 N **3 Claims**

1. A process for preparing a novel polyester which comprises reacting phenylisocyanuric acid with acrylonitrile in the presence of N-benzyltrimethyl ammonium hydroxide; 40% in methanol, in an inert reaction medium at a temperature of about 75°C. to 150°C. to form the intermediate 1,3-bis(2-cyanoethyl)-5-phenylisocyanurate, hydrolyzing said intermediate in the presence of an acid to yield 1,3-bis(2-carboxyethyl)-5-phenylisocyanurate, and condensing 1,3-bis(2-carboxyethyl)-5-phenylisocyanurate with a diol of two to ten carbon atoms.

3,962,192
LINEAR POLYESTERS CONTAINING ISOCYANURATE RINGS AND PROCESSES FOR PREPARING SAME

William J. Kauffman, Lititz, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Dec. 31, 1974, Ser. No. 537,688

The portion of the term of this patent subsequent to June 8, 1993, has been disclaimed.

Int. Cl.² C08G *63/68*

U.S. Cl. 260—75 N **3 Claims**

1. A proces for preparing a novel polyester comprising reacting a salt of phenylisocyanuric acid with ethyl-chloroacetate in an inert reaction medium at a temperature of about 25° to 150°C. to form the intermediate 1,3-bis(carbethoxymethylene)-5-phenylisocyanurate, hydrolyzing said intermediate in the presence of an acid to yield 1,3-bis(carboxymethylene)-5-phenylisocyanurate, and condensing 1,3-bis (carboxymethylene)-5-phenylisocyanurate with a diol of 2 to 10 carbon atoms.

3,962,193
PROCESS FOR PREPARING LINEAR POLYESTERS IN THE PRESENCE OF METALLIC AMINO COMPOUNDS

Yuzi Okuzumi, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 696,095, Jan. 8, 1968, abandoned. This application Dec. 27, 1971, Ser. No. 212,716

Int. Cl.² C08G *63/34*

U.S. Cl. 260—75 R **2 Claims**

1. In the process of preparing glycol esters of dicarboxylic acids by ester interchange reaction of an ester of said acid selected from the group consisting of methyl, ethyl, propyl, butyl and phenyl esters with a glycol followed by condensation with the elimination of glycol to form a high molecular weight polyester resin the improvement which comprises carrying out said ester interchange reaction in the presence of a catalytic amount of diisopropyl amino lithium.

3,962,194
POLYESTERS CONTAINING STRUCTURAL UNITS DERIVED FROM PHOSPHONIC ACIDS OR ESTERE

Ulrich Bollert, Hofheim, Taunus; Hans-Jerg Kleiner, Bad Soden, Taunus, and Walter Herwig, Neuenhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 380,744, July 19, 1973, abandoned. This application Feb. 10, 1975, Ser. No. 548,828

Claims priority, application Germany, July 22, 1972, 2236037

Int. Cl.² C08G *63/16, 63/18, 63/66, 63/68*

U.S. Cl. 260—75 P **4 Claims**

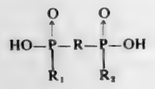
1. A filament or fiber manufactured by spinning a snythetic linear modified polyester, drawing and after-treating, which comprises preparing said modified synthetic linear polyester by reacting

a. at least one dicarboxylic acid as an acid or as an ester of a low molecular weight alcohol, said acid being suitable for the manufacture of a fiber-forming linear polyester

b. at least one diol, said diol being suitable for the manufacture of a fiber-forming linear polyester said acid and diol being reacted by esterification or transesterification and polycondensation, while said acid and diol being reacted, adding prior to, during or shortly before termination of the polycondensation,

c. about 5 to 15 mol percent based on the acid component, of a bifunctional alkylene-, arylene-, or aralkylene-diphosphinic acid, which may contain further hetero- and halogen atoms, and/or an ester of said diphosphonic acid of a low molecular weight alcohol or of a diol forming the

diol component of said polyester, oligomer of said diphosphinic acid diol esters, or mixtures of oligomers of said diphosphinic acid diol esters with monomers of said ester of said diphosphinic acid, said bifunctional alkylene-, arylene, or aralkylene- diphosphinic acid, including said hetero- and halogen atoms, having the formula:



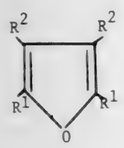
in which R represents a saturated open chain or cyclic alkylene, arylene or aralkylene radical, and where R may also have at least one hetero atom and/or at least one halogen atom selected from the group consisting of F, Cl, Br; R_1 and R_2 are identical or different and each represents an alkyl group having up to 6 C-atoms, an aryl group or an aralkyl group, which may contain at least one hetero atom and/or at least one halogen atom selected from the group consisting of F, Cl, and Br.

3,962,195
TERPOLYMERS OF A FURAN, A MALEIC ANHYDRIDE AND ONE OF A CONJUGATED DIENE AND A VINYL AROMATIC COMPOUND

George A. Moczygemba, and Henry L. Hsieh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 11, 1973, Ser. No. 369,062
Int. Cl.² C08F *222/06, 222/08, 224/00*
U.S. Cl. 526—11.1 **11 Claims**

1. A process for producing a novel terpolymer which comprises interreacting in the presence of a free-radical initiator: (1) a furan having the formula:



wherein R^1 is hydrogen, halogen, or a lower alkyl group such as methyl or ethyl and R^2 is hydrogen, halogen, or hydrocarbyl such as alkyl, cycloalkyl, aryl, or combinations thereof such as alkaryl, aralkyl and the like such that the total number of carbon atoms in all of the R groups does not exceed about 20; (2) a maleic anhydride and (3) at least one unsaturated compound selected from a conjugated diene and a vinyl aromatic, said interreacting under conditions suitable for terpolymerization comprising a pressure sufficient to maintain the reaction mixture substantially in the liquid phase and a ratio of said furan:maleic anhydride:unsaturated compound in the range of about 10 to 0.1:1:10 to 0.1.

3,962,196
TECHNIQUE FOR REDUCING POLYMER DEPOSIT DURING POLYMERIZATION IN AQUEOUS DISPERSION

Dean R. Weimer, and Albert M. Durr, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 29, 1974, Ser. No. 518,425
Int. Cl.² C08F *2/20, 14/06*
U.S. Cl. 526—74 **6 Claims**

1. A method for inhibiting polymer build-up on the interior surfaces of a polymerization vessel during the polymerization of substantially water-insoluble monoethylenically unsaturated liquid monomer in aqueous dispersion comprising adding a polymer build-up inhibiting amount of a heterocyclic compound to the aqueous dispersion prior to polymerization, said heterocyclic compound being benzotriazole, tolyltriazole, 2(2′-hydroxy-5′-methylphenyl) benzotriazole, or mixtures thereof.

3,962,197
SUSPENSION POLYMERIZATION PROCESS

Ravi Khanna, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 380,318, July 18, 1973, abandoned. This application Jan. 2, 1975, Ser. No. 538,069
Int. Cl.² C08F *2/18, 2/20*
U.S. Cl. 526—79 **8 Claims**

1. A high temperature, non-continuous, suspension polymerization process wherein a monomeric composition comprising at least about 40% by weight of an aryl monomer having a polymerizable ethylenically unsaturated organo substituent is polymerized into finely divided polymer particles in a liquid suspension media free from natural gums and polyacrylamide, the resultant polymer comprising said particles having the following properties: a low molecular weight equal to a styrene-containing polymer having an inherent viscosity within the range of from about 0.2 to about 0.6, insolubility in the liquid suspension media, and a glass transition temperature lower than the temperature maintained in said suspension media during polymerization, said process comprising the sequential steps of:

a. forming a heated liquid suspension media comprising water and a water-soluble suspending agent, said agent being present in said media in an amount less than about 3 percent by weight based on the total weight of said monomeric composition, said media being heated to a temperature above the glass transition temperature of said polymer particles;
b. substantially simultaneously introducing into said heated media (1) said monomeric composition and (2) a polymerization initiator soluble in the monomeric composition in an amount effective to initiate polymerization thereof, said monomeric composition and initiator being introduced at a slow, substantially continuous rate over a time within the range of from 20 to about 85 percent of the total polymerization reaction time, said heated media being subjected to continuous, high-rate shearing action throughout the addition of (1) and (2), and the total amount of initiator introduced being less than about 5 weight percent based on the total weight of said monomeric composition;
c. maintaining, until polymerization is substantially complete, said high-rate shearing action and said media at a temperature above the glass transition temperature of said polymer particles and
d. cooling said media below the glass transition temperature of said polymer particles while maintaining said high-rate shearing action to obtain finely-divided polymeric particles suspended in the liquid suspension media.

3,962,198
HOT-MELT COMPOSITION

Akira Wada, Kamakura, and Yorimitsu Shibata, Yokohama, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1975, Ser. No. 564,211
Claims priority, application Japan, Apr. 8, 1974, 49-39609
Int. Cl.² C08L *9/02, 23/04*
U.S. Cl. 260—889 **6 Claims**

1. A hot-melt composition comprising

[A] a cyclopentadiene resin having a bromine number of not more than 70 and a softening point of 50° to 170°C., said resin being the polymerization reaction product of 90 to 40% by weight of (I) a monomer containing a cyclopentadiene skeleton with 10 to 60% by weight of (II) at least one polar unsaturated monomer selected from the group consisting of (i) organic unsaturated cyano compounds containing 3 to 6 carbon atoms, (ii) alkenyl alkanoates derived from aliphatic monocarboxylic acids containing 1 to 4 carbon atoms and vinyl alcohol or allyl alcohol, and (iii) unsaturated carboxylic acid esters derived from unsaturated carboxylic acids containing 3 to 4 carbon atoms and aliphatic alcohols containing 1 to 6 carbon atoms, and

[B] a copolymer containing ethylene.

3,962,199
PROCESS FOR REMOVING VANADIUM CATALYST RESIDUES FROM POLYMER SOLUTIONS

Joel David Citron, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1975, Ser. No. 554,224
Int. Cl.² C08F *6/08*
U.S. Cl. 528—485 **19 Claims**

1. A process for removing dissolved vanadium residues from a solution of a hydrocarbon α-olefin polymer consisting of homopolymers of α-olefins and copolymers of α-olefins with monomers selected from other α-olefins and nonconjugated dienes, said process comprising contacting in the absence of oxygen said solution with one or more active metals selected from the group of lithium, sodium, potassium, rubidium, cesium, zinc, and aluminum at a temperature of about 50°–225°C. and separating the solution from insoluble vanadium residues precipitated thereby;

with the proviso that the solvent in which the α-olefin polymer and the vanadium residues are dissolved is inert to the active metal at the operating temperature and pressure, and that the solution is liquid.

3,962,200
BULK POLYMERIZATION USING AN ORGANOSILOXANE ANTI-FOAM COMPOUND

Yves de Zarauz, Gergovie-le-Cendre, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Cedex, France

Filed Jan. 31, 1975, Ser. No. 546,136
Claims priority, application France, Feb. 5, 1974, 74.03892
Int. Cl.² C08F *236/04, 279/00, 4/00*
U.S. Cl. 526—78 **11 Claims**

1. In the process for the homo- or co-polymerization of diene monomers with each other or with vinyl aromatic compounds by means of a coordination catalyst system comprising combinations of complexes having a base of transition metals as initiators, in the absence of solvent and using the heat of evaporation of the monomer or monomers to control the temperature of the reaction medium, the improvement which comprises adding to the reaction medium, at the latest at the time of the formation of the foam, a proportion of 0.01 to 30 per thousand, by weight of the monomer, of one or more anti-foam compounds selected from the group of the organosiloxanes containing in their main chain at least one recurrent unit of the general formula



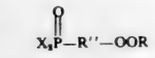
R, R′ being alkyl, aralkyl, aryl, haloalkyl, haloaryl or polyhaloalkyl radicals, and *n* being a whole number.

3,962,201
PROCESS FOR POLYMERIZING ACRYLICS EMPLOYING (HYDROCARBON-PEROXY HYDROCARBON) PHOSPHONATES

Lothar G. Dulog, St. Martens-Latem, and Willy P. Broeckx, Reet, both of Belgium, assignors to S. A. Texaco Belgium N.V., Brussels, Belgium

Division of Ser. No. 415,025, Nov. 12, 1973, which is a division of Ser. No. 291,898, Sept. 25, 1972. This application Nov. 21, 1974, Ser. No. 526,018
Int. Cl.² C08F *220/42, 220/70, 120/42, 120/70*
U.S. Cl. 526—193 **7 Claims**

1. The process for polymerizing an acrylic selected from the group consisting of acrylonitrile, and esters of acrylic acid and methacrylic acid which comprises initiating said polymerization reaction in the presence of



wherein R is a hydrocarbon containing less than about 18 carbon atoms and it may be inertly substituted, R″ is divalent hydrocarbon containing 2–10 carbon atoms and R″ may be inertly substituted, and X is —OR or NR_2 thereby forming polymer; and recovering said polymer.

3,962,202
PROCESS FOR POLYMERIZING OLEFINIC MONOMERS WHICH SUBSTANTIALLY ELIMINATES POLYMER BUILDUP

Marion G. Morningstar, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 27, 1973, Ser. No. 391,879
The portion of the term of this patent subsequent to Nov. 19, 1991, has been disclaimed.
Int. Cl.² C08F *1/11, 1/82, 3/30*
U.S. Cl. 526—74 **8 Claims**

1. In a process for the polymerization of monomers selected from vinyl halides, vinylidene halides, vinylidene monomers having at least one terminal $CH_2{=}C<$ grouping, and mixtures thereof which comprises polymerizing the monomer or monomers in an aqueous polymerization medium which contains a water-soluble divalent tin salt of an inorganic acid as a water-phase polymerization inhibitor and keeping said polymerization medium in constant contact with a surface coated with a composition comprised predominantly of an insolubilized polyethyleneimine polymer throughout the polymerization reaction, whereby due to the synergistic effect of said polyethyleneimine and said inhibitor, polymer build-up on said surface is substantially eliminated.

3,962,203
DECHLORINATION OF HIGH YIELD POLYOLEFINS USING NEUTRAL PHOSPHORYL ESTERS

Nicholas M. Karayannis; Habet M. Kheighatian, both of Naperville, and John S. Skryantz, Aurora, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 19, 1974, Ser. No. 534,189
Int. Cl.² C08F *6/00, 6/28*
U.S. Cl. 528—486 **14 Claims**

1. A process comprising the steps of:

a. admixing polyolefin containing a metal chloride catalyst residue, which polyolefin is made using at least one 1-alkene containing between two and eight carbon atoms by a bulk phase or vapor phase polymerization process, with an effective amount of at least one compound selected from the group consisting essentially of (RO)R′R′′PO and (RO)(R′O)R′′PO wherein R, R′ and R″ are the same or different, at least one RO group is a methoxy group, and the remaining R, R′ and R″ are one to about six carbon atom alkyl, alkaryl or aryl radicals; and

b. treating the result of step (a) such that said polyolefin and said compound react to produce a polymeric product substantially free of said metal chloride catalyst residue.

3,962,204
METHOD FOR THE PREPARATION OF POLYOLEFINS
Kazuo Matsuura, Kawasaki; Nobuyuki Kuroda; Toru Nakamura, both of Yokohama, and Mituji Miyoshi, Kanagawa, all of Japan, assignors to Nippon Oil Company Ltd., Tokyo, Japan
Filed May 16, 1974, Ser. No. 470,514
Claims priority, application Japan, May 21, 1973, 48-55526
Int. Cl.² C08F 4/64, 10/02
U.S. Cl. 526—89 5 Claims

1. Method for the preparation of polyolefins by polymerizing or copolymerizing an olefin or olefins in the presence of a catalyst composed of a halogenide of a titanium compound and/or vanadium compound supported on a solid carrier and an organometallic compound of a metal of Groups I–IV of the Periodic Table, said solid carrier comprising a reaction product obtained by reacting (1) an aluminum compound represented by the general formula $Al(OOCR)(OR')_2$ wherein R and R' being the same or different each represent alkyl, aryl or aralkyl and (2) a magnesium compound represented by the general formula $(Mg(OR'')_2$ wherein R'' being the same as or different from R and/or R' is alkyl, aryl or aralkyl at a molar ratio of (1):(2) of substantially at least 2:1 at a temperature in the range from 50° to 500°C for 1 to 30 hours in the presence of an inert solvent.

3,962,205
POLYMER MATERIALS
Ian MacMillan Ward, Bramhope, near Leeds, and Giancarlo Capaccio, Leeds, both of England, assignors to National Research Development Corporation, London, England
Filed Mar. 6, 1974, Ser. No. 448,630
Claims priority, application United Kingdom, Mar. 6, 1973, 10746/73; Oct. 3, 1973, 46141/73
Int. Cl.² C08F 10/02
U.S. Cl. 526—352 9 Claims

1. An oriented high density polyethylene polymer material having a density of from 0.85 to 1.0 gms/cm³, a weight average molecular weight of less than 200,000, a number average molecular weight of less than 20,000, a ratio of weight average molecular weight $\overline{M}_w$ to number average molecular weight $\overline{M}_n$ such that for $\overline{M}_n > 10^4$, $\overline{M}_w/\overline{M}_n < 8$ and for $\overline{M}_n < 10^4$, $\overline{M}_w/\overline{M}_n < 20$, and a Young's modulus as hereinbefore defined greater than $3 \times 10^{10} N/m^2$.

3,962,206
GEL CHROMATOGRAPHY PROCESS FOR FRACTIONATING IONIC POLYMERS
George B. Butler, Gainesville, Fla., assignor to The Board of Regents of the State of Florida, Fla.
Filed July 19, 1974, Ser. No. 489,889
Int. Cl.² C08F 6/04
U.S. Cl. 260—96 R 20 Claims

1. In a gel chromatographic method of fractionating the diverse molecular weight fractions of a polymer system containing ionic functional groups comprising passing a polar solvent solution of said polymer system through a gel chromatography bed of ionic polymer insoluble in but swellable by said polar solvent, the improvement comprising employing as said ionic gel polymer one containing ionic functional groups having the same charge as those in said polymer system.

3,962,207
METHOD OF PRODUCING α-L-ASPARTYL-L-PHENYLALANINE LOWER ALKYL ESTERS
Noboru Uchiyama, Yokkaichi; Masanori Nagao, Kawasaki, and Naomasa Mizoguchi, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Dec. 20, 1974, Ser. No. 534,706
Claims priority, application Japan, July 23, 1974, 49-84351
Int. Cl.² C07C 103/52; A23L 1/22
U.S. Cl. 260—112.5 R 8 Claims

1. A method of producing an α-L-aspartyl-L-phenylalanine alkyl ester which comprises reacting the hydrochloride or hydrobromide of L-aspartic anhydride with an alkyl ester of L-phenylalanine in a liquid medium essentially consisting of an alkanol, a strong acid, and a diluent substantially inert to said hydrochloride or hydrobromide, said ester of L-phenylalanine, said alkanol, and said strong acid during said reacting,

1. said strong acid being sulfuric acid, hydrogen chloride, or a monoalkyl ester of sulfuric acid in an amount of 0.05 to 0.5 mole per mole of said ester of L-phenylalanine,
2. the mole ratio of said hydrochloride or hydrobromide to said ester of phenylalanine being between 1:1 and 1:10,
3. the amount of said alkanol being 2 to 20 percent of the volume of said diluent,
4. said alkyl, said alkanol, and said monoalkyl having not more than four carbon atoms.

3,962,208
NOVEL FLAME RETARDANTS AND THEIR PRODUCTION BY CHLOROBROMINATION OF WOOD PULP WASTE LIQUORS
Esther Zeigerson, Omer, and Moshe Rudolf Bloch, Beer-Sheba, both of Israel, assignors to The State of Israel, Ministry of Commerce & Industry, Jerusalem, Israel
Filed Feb. 10, 1975, Ser. No. 548,797
Int. Cl.² C07G 1/00
U.S. Cl. 260—124 R 18 Claims

1. In a process for the production of a brominated lignin, the improvement which comprises chlorinating a kraft lignin liquor, a lignin sulfonate liquor, or a mixture thereof, with chlorine prior to brominating the lignin, and then both brominating and chlorinating the lignin in the chlorinated liquor in such proportion to produce a halogenated lignin having a total halogen content of from about 18% to about 40% by weight, in a Br:Cl weight ratio of from about 1:1 to about 5:1, and thereafter separating the chloro-brominated lignin which precipitates from the liquor.

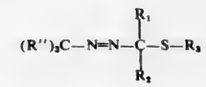
3,962,209
PROCESS FOR PREPARING AZO DYESTUFFS WITH ORTHO-AZO CYANO GROUPS BY CYANO EXCHANGE OF METAL CYANIDES AND HALO DYESTUFFS
Alois Gotteschlich, and Klaus Leverenz, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of Ser. No. 28,247, April 17, 1970, abandoned, which is a continuation of Ser. No. 615,898, Feb. 14, 1967, abandoned. This application May 18, 1973, Ser. No. 361,603
Claims priority, application Germany, Feb. 17, 1966, 48454; Jan. 12, 1967, 51232
Int. Cl.² C09B 43/00; D06P 1/18, 3/26, 3/54
U.S. Cl. 260—152 9 Claims

1. Process for the production of azo dyestuffs containing at least one cyano group in the diazo component ortho to the azo group, which comprises reacting at a temperature from about room temperature to less than 100°C an azo dyestuff of the formula X—A—N=N—K wherein A stands for an aromatic carbocyclic radical linked to the azo group by a nuclear carbon atom, X stands for Cl or Br linked by a nuclear carbon atom to A in the ortho position to the azo group, and K stands for the radical of a coupling component linked by a nuclear

carbon atom to the azo group, with a metal cyanide in a polar aprotic organic solvent with the exchange of the substituent X for cyano wherein the metal cyanide is copper (I) cyanide or copper (I) cyanide formed in situ by the reaction of alkali metal cyanide with a suitable copper (II) salt.

3,962,210
TERTIARY ALIPHATIC ALPHA-(SULFO)-AZO COMPOUNDS
Ronald Edward MacLeay, Williamsville, and Chester Stephen Sheppard, Tonawanda, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.
Continuation-in-part of Ser. No. 88,250, Nov. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 725,180, April 29, 1968, abandoned, which is a continuation-in-part of Ser. No. 616,158, Feb. 15, 1967, abandoned. This application Mar. 21, 1974, Ser. No. 453,456
Int. Cl.² C07C 107/02
U.S. Cl. 260—192 10 Claims

1. A tertiary-aliphatic α-(sulfo)azo compound of the formula



(I),

where:

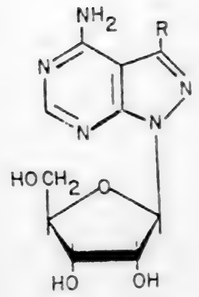
$(R'')_3$ C is C_4–C_{20} t-alkyl, cycloalkyl, alkylcycloalkyl or aralkyl where each R'' is separately selected from C_1–C_8 alkyl, C_7–C_{12} aralkyl or C_6–C_{14} aryl, not more than one R'' being aromatic, or 2 or 3 of said R''s join with the tertiary carbon atom to form C_3–C_{12} cyclo-, bicyclo- or tricycloalkyl;

R_1 and R_2 separately selected from C_1–C_{10} alkyl, C_3–C_{12} cyclo-, bicyclo- or tricycloalkyl and, C_7–C_{12} aralkyl, R_1 can also be C_6–C_{14} aryl, R_1 and R_2 taken together form C_3–C_{11} alkylene, or one or more of each of R_1 and R_2 is substituted with lower alkoxy, hydroxy, carboxy, lower alkoxycarbonyl, lower alkylcarbonyloxy, phenylcarbonyloxy, halogen, cyano, amido or lower alkylsulfonato; and

R_3 is selected from (*a*) C_1–C_{20} alkyl or cycloalkyl which are unsubstituted or subtituted with radicals selected from hydroxy, amino, carboxy, lower alkylcarbonyloxy, phenylcarbonyloxy, lower alkylcarbonyl, lower alkoxycarbonyl, phenoxycarbonyl, halogen, amido, phenyl, lower alkoxy, phenoxy, lower alkylthio, phenylthio, lower alkylphenylthio, cyano and carbonato; (*b*) substituted or unsubstituted C_6–C_{14} aryl; and (*c*) $-C(=O)R_4$, $-C(=S)OR_4$ or $-C(=S)SR_4$ where R_4 is C_1–C_{12} alkyl or cycloalkyl, or C_6–C_{14} aryl or substituted aryl, the substituents in (*b*), and (*c*) being selected from the radicals in (*a*) and C_1–C_6 alkyl.

3,962,211
7-SUBSTITUTED NUCLEOSIDE COMPOUNDS
Leroy B. Townsend, and Robert A. Earl, both of Salt Lake City, Utah, assignors to The University of Utah, Salt Lake City, Utah
Filed Jan. 13, 1975, Ser. No. 540,740
Int. Cl.² C07H 19/16
U.S. Cl. 260—211.5 R 9 Claims

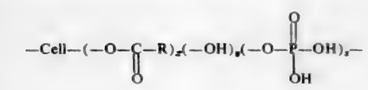
1. Compounds of the formula:



in which R is selected from the group consisting of carboxamidine, carboxylic acid, carboxamide, methyl formimidate, thiocarboxamide, carboxamidoxime, carboxamidrazone, and cyano.

3,962,212
PHOSPHORYLATED CELLULOSE ESTER MEMBRANE FOR USE IN SEPARATION OR CONCENTRATION OF SUBSTANCES
Takezo Sano, Ibaragi, and Takatoshi Shimomura, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed May 13, 1974, Ser. No. 469,281
Claims priority, application Japan, May 16, 1973, 48-54887
Int. Cl.² C08L 1/12, 1/20; C08B 7/00
U.S. Cl. 260—219 11 Claims

1. A phosphorylated cellulose ester membrane soluble in solvent for use in separation or concentration of substances in an aqueous solution, having a phosphorus content of from 0.1 to 10% and the formula



wherein Cell is a cellulose structural unit,

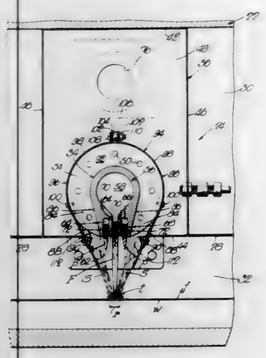


is a lower aliphatic acid residue, and x, y and z are positive numbers satisfying the relation x+y+z=3.

3,962,213
METHOD OF DRYING COATED WEBS
John H. Flynn, 234 Elk Ave., New Rochelle, N.Y. 10802
Filed Jan. 23, 1974, Ser. No. 435,851
Int. Cl.² B05D 3/08
U.S. Cl. 427—224 14 Claims

1. A method of drying on a web face an applied coating containing volatile products, which comprises feeding the web past a station at a rate of at least 50 feet per minute, supplying a high-capacity burner at said station with a combustible air-gas mixture to sustain a stable flame sheet and directing the flame sheet substantially with its tip into contact with the coated face of the fed web transversely thereof for evaporating and igniting the volatile products in the passing coating, and confining the evaporated products to, and completely burning them within a fixed zone through which the coated face of the fed web passes, by directing into contact with the

coated face of the fed web on opposite sides of and at a spacing from zero to less than 1 inch from the contacting flame



sheet, stable air sheets of a velocity within a range from about 400 feet per minute to about 1700 feet per minute.

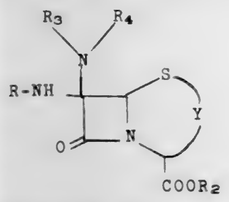
3,962,214

PROCESS FOR PREPARING AMINO SUBSTITUTED β-LACTAM ANTIBIOTICS

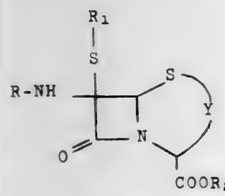
Theodore Goodson, Jr., and Wayne A. Spitzer, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 11, 1974, Ser. No. 487,703
Int. Cl.² C07D *499/04, 501/02*
U.S. Cl. 260—239.1 **1 Claim**

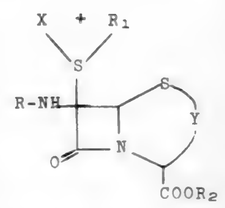
1. The process for preparing a compound of the formula



which comprises the steps of: (a) reacting in an inert solvent an alkylthio compound of the formula

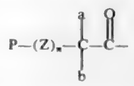


with chlorine, bromine, or sulfuryl chloride at a temperature between −80° and −25°C. to form the β-lactam halosulfonium halide of the formula



and (b) reacting said β-lactam halosulfonium halide in an inert solvent with an excess of an amine R_3R_4NH; wherein the formulas above

R is hydrogen, C_1–C_7 alkanoyl, benzoyl, C_1–C_4 alkylbenzoyl, halobenzoyl, C_1–C_4 alkoxybenzoyl, nitrobenzoyl, hydroxybenzoyl, or a group of the formula



wherein P is phenyl, C_1–C_4 alkylphenyl, C_1–C_4 alkoxyphenyl, halophenyl, nitrophenyl, hydroxyphenyl, protected hydroxyphenyl or a heteromonocyclic radical containing O, S, and/or N;

Z is O or S;

n is **0** or **1**;

a is hydrogen or C_1–C_3 alkyl;

b is hydrogen, C_1–C_3 alkyl, hydroxy, protected hydroxy, amino, or protected amino;

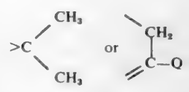
R_1 is C_1–C_3 alkyl or benzyl;

R_2 is hydrogen or a carboxylic acid protecting ester forming group;

R_3 and R_4 are hydrogen or C_1–C_4 alkyl;

X is chloro or bromo; and

Y is



wherein Q is methyl or acetoxymethyl, with the limitation that when *n* is **1**, P is phenyl, C_1–C_4 alkylphenyl, C_1–C_4 alkoxyphenyl, nitrophenyl, hydroxyphenyl or protected hydroxyphenyl.

3,962,215

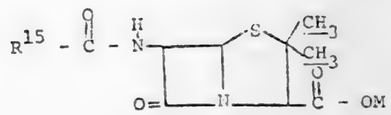
INTERMEDIATES FOR PREPARING SEMI-SYNTHETIC PENICILLINS AND PROCESSES RELATING THERETO

John H. Sellstedt, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

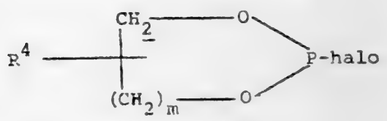
Continuation-in-part of Ser. No. 186,397, Oct. 4, 1971, Pat. No. 3,896,110. This application Jan. 14, 1972, Ser. No. 217,942
Int. Cl.² C07D *499/04, 501/02*
U.S. Cl. 260—239.1 **14 Claims**

1. A process for preparing a semi-synthetic penicillin which comprises:

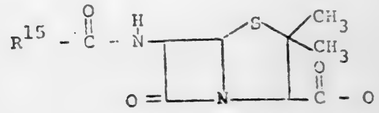
a. reacting a penicillin compound of the formula



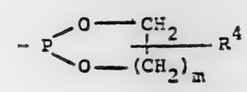
with a phosphorylating agent of the formula



to produce a compound of the formula

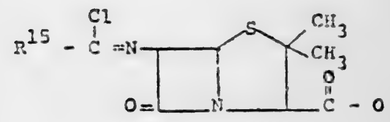


c. reacting said imino chloride with an alcohol at a temperature below about −10°C to produce an imino ether of the formula

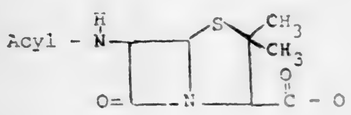


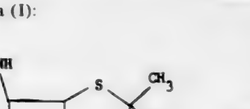
said reaction being carried out under anhydrous conditions in the presence of an inert non-hydroxylic organic solvent and a tertiary amine at a temperature in the range of about −40°C to about +10°C, the molar ratio of said penicillin compound to said phosphorylating agent being about 0.5:1 to about 3:1;

b. reacting said compound obtained in step (a) with an acid chloride in the presence of a tertiary amine at temperature between about −10°C and −65°C to produce an imino chloride compound of the formula



d. reacting said imino ether with water at a temperature below about −20°C and treating the resulting compound with a reactive derivative of an organic carboxylic acid in the presence of a tertiary amine at a temperature between about 0°C and −60°C to produce a compound of the formula





e. and hydrolyzing the resulting acylated product to remove the carboxyl protective group and obtain a semi-synthetic penicillin; wherein:

M is selected from the class consisting of hydrogen, an alkali metal and a tertiary amine; R^{15} is selected from the class consisting of phenoxymethyl and benzyl; R^4 is selected from the class consisting of hydrogen and lower alkyl; R^a is selected from the class consisting of lower alkyl, phenyl(lower)alkyl, cycloalkyl of four through eight carbon atoms, phenoxy(lower)alkyl, (lower)alkoxy(lower)alkyl; and *m* is an integer from 1 to 6.

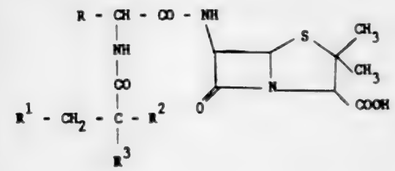
3,962,216

PENICILLINS

Harry Ferres, Horsham; Adrian Victor Kemmenoe, Westcott, and Desmond John Best, Sutton, all of England, assignors to Beecham Group Limited, England

Division of Ser. No. 466,184, May 3, 1974. This application Jan. 22, 1975, Ser. No. 543,064
Claims priority, application United Kingdom, May 4, 1973, 21203/73
Int. Cl.² C07D *499/68, 499/70, 499/66*
U.S. Cl. 260—239.1 **9 Claims**

1. A penicillin of formula (I):



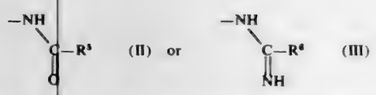
(I)

wherein

R is phenyl, hydroxyphenyl, halophenyl, nitrophenyl, alkoxyphenyl having 1–3 carbon atoms in the alkoxy part, aminophenyl, 2- or 3-thienyl, cycloalkyl having 3–7 carbon atoms in the alkyl part, cycloalkenyl having 5–7 carbon atoms in the cyclo part, or alkyl having 1–4 carbon atoms;

R^1 is carbamyl or carbamylmethyl;

R^2 is



(II) or

(III)

in which R^5 is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part, cyclohexylamino, hydrogen, alkyl of 1–4 carbon atoms or phenyl, and R^6 is amino, mono- or di-alkylamino having 1–4 carbon atoms in the alkyl part or cyclohexylamino;

R^3 is hydrogen or alkyl of 1–3 carbon atoms; or a pharmaceutically acceptable salt or hydrolyzable ester which converts to the free acid form in vivo.

3,962,217

PROCESS FOR THE MANUFACTURE OF Δ^{16}-STEROID-14β,18,20-TRIOLS AND -14β,20-DIOL-18-OLS OF THE PREGNANE SERIES

Hansuli Wehrli, Reinach, and Oskar Jeger, Zollikerberg, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

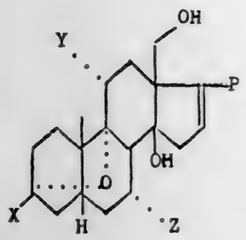
Continuation-in-part of Ser. No. 364,466, May 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 82,183, Oct. 19, 1970. This application Nov. 26, 1974, Ser. No. 527,334

Claims priority, application Switzerland, Oct. 24, 1969, 15902/69; July 24, 1970, 11242/70; May 30, 1972, 7966/72

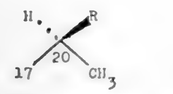
Int. Cl.[2] C07J *41/00*

U.S. Cl. 260—239.55 R **11 Claims**

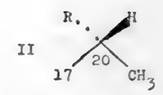
1. Process for the manufacture of 20-epimeric Δ^{16}-steroid-14β, 18,20-triols of the formula



in which formula P represents the 17-pregnane side chain which has one of the two following partial formulae



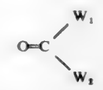
I



II

20(S)-configuration 20(R)-configuration

wherein R represents a free, esterified or etherified hydroxyl group, X an etherified or esterified hydroxyl group, Y an esterified hydroxyl group, and Z denotes a hydrogen atom or an esterified hydroxyl group, the ester groups being derived from carboxylic acids having up to 18 carbon atoms and the etherified hydroxyl groups being derived from alcohols having up to 8 carbon atoms, characterised in that a corresponding Δ^{16}-20-oxosteroid-14β, 18-diol of the pregnane series in which the 14,18-diol grouping is ketalized with a ketone of the formula



wherein W_1 and W_2 denote two lower aliphatic hydrocarbon radicals with 1–6 C-atoms or denote, together with the carbon atom to which they are bonded, an alicyclic hydrocarbon radical with 5–12 carbon atoms and 5–7 ring carbon atoms, is treated with a complex light metal hydride which reduces an oxo group to a hydroxyl group but which leaves esterified hydroxyl groups intact, a mixture of the 20(S)- and 20(R)-hydroxy compounds being formed, in which the ketalized 14,18-diol grouping is split subsequently by an acid treatment to give the free 14,18-diol grouping.

3,962,218

NOVEL PROSTANOIC ACID DERIVATIVES AND PROCESSES FOR THE PREPARATION THEREOF

Bernd Raduchel; Werner Skuballa; Helmut Vorbruggen; Walter Elger; Wolfgang Losert, and Olaf Loge, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

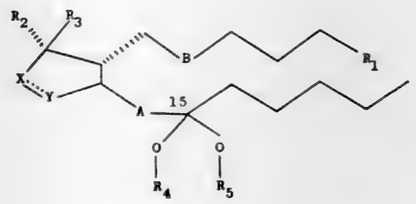
Filed May 23, 1974, Ser. No. 472,738

Claims priority, application Germany, May 30, 1973, 2328132

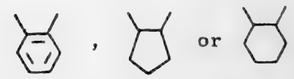
Int. Cl.[2] C07C *177/00*; C07D *317/12, 317/50, 319/04*

U.S. Cl. 260—240 R **23 Claims**

1. A prostaglandin of the formula



wherein R_1 is hydroxymethyl, carboxyl, alkoxycarbonyl of 1–8 carbon atoms in the alkoxy group, of —COO—CH_2—X—Y wherein X is a direct bond, carbonyl or carbonyloxy group and Y is phenyl substituted by phenyl, by alkoxy of 1–2 carbon atoms, or halo; R_2 is hydroxy and R_3 is a hydrogen atom or R_2 and R_3 collectively are an oxygen atom; A is (trans)—CH=CH—, B is —CH_2—CH_2 or (cis)—CH=CH—, R_4 and R_5 collectively are a ring-forming divalent group of the formula —Z— wherein Z is alkylene having 2–3 carbon atoms in the carbon chain and having a total of up to 23 carbon atoms or when alkylene contains at least 3 carbon atoms in the chain, alkylene substituted by hydroxy on a carbon atom other than one bonded to the ketal oxygen atom, or



X—Y is



or when R_2 and R_3 collectively are an oxygen atom,

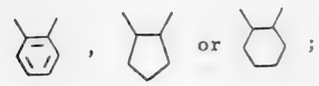


or HC≡CH; and when R_1 is carboxyl, physiologically acceptable salts with a base.

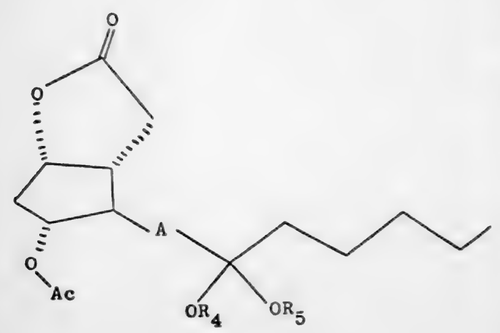
23. A process for the production of prostaglandins of claim 1 which comprises the steps of:

a. ketalizing a ketone of the formula

wherein Ac is an acyl radical of an aliphatic or aromatic acid, with an alcohol of the formula HO-Z-OH, wherein Z is alkylene having 2–3 carbon atoms in the chain and having a total of up to 23 carbon atoms or when alkylene contains at least 3 carbon atoms in the chain, alkylene substituted by hydroxy on a carbon atom other than one bonded to the ketal oxygen atom, or

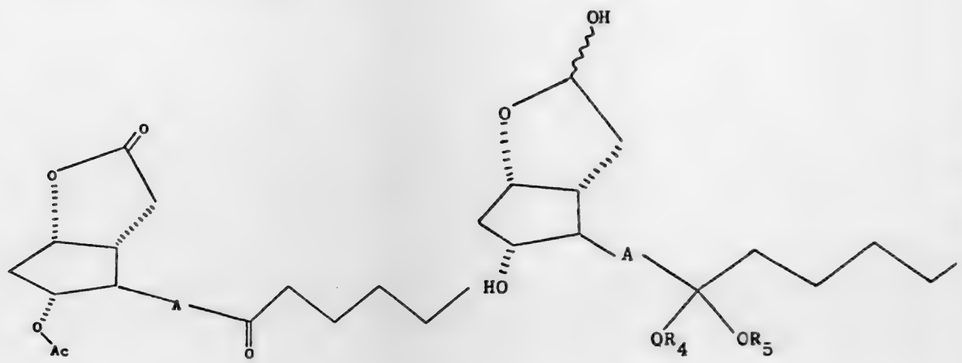


b. reducing the thus-obtained ketal of the formula



with diisobutylaluminum hydride or lithium tri-tert.-butoxyaluminum hydride; and

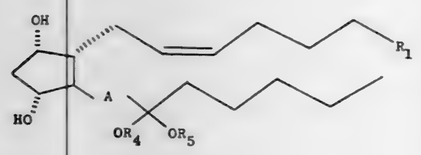
c. reacting the thus-produced hemiacetal of the formula



with a Wittig reagent of the formula

$Ph_3P=CH-(CH_2)_3-R_1$

wherein Ph is phenyl to produce a compound of the formula



wherein R_1, R_4, R_5 and A have the values given in claim 1.

3,962,219

OPTICAL BRIGHTENERS

Alfons Dorlars, Leverkusen; Otto Neuner, Bergisch,Gladbach, and Hans Theidel, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

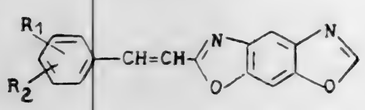
Filed Sept. 27, 1974, Ser. No. 509,839

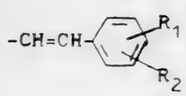
Claims priority, application Germany, Oct. 2, 1973, 2349480

Int. Cl.² C07D *417/02, 277/64*

U.S. Cl. 260—240 D **5 Claims**

1. Compounds of the formula:





wherein R_1 and R_4 independently of one another are hydrogen; halogen; nitrile; alkyl containing 1–6 C atoms which is unsubstituted or substituted with OH, C_1–C_4 alkylcarbonyloxy, F, Cl, or Br; alkoxy containing 1–6 C atoms which is unsubstituted or substituted with OH, C_1–C_4 alkylcarbonyloxy, F, Cl, or Br; cycloalkyl having 5–7 ring members which is unsubstituted or substituted with C_1–C_4 alkyl; phenyl; phenyl substituted with 1 to 3 C_1–C_4 alkyl groups; C_1–C_4 alkoxycarbonyl unsubstituted or substituted with OH, F, Cl, Br, or C_1–C_4 alkoxy; or carboxyl.

3,962,220

PREPARATION OF DISPERSE BISANIL DYES DERIVED FROM DIAMINOMALEONITRILE

Robert Walter Begland, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 430,414, Jan. 3, 1974, Pat. No. 3,914,276.

This application June 30, 1975, Ser. No. 592,204

Int. Cl.² C07D *207/18;* **C09B** *55/00*

U.S. Cl. 260—240 G **2 Claims**

1. One-step process of preparing the symmetrical bisanil dye of the formula $Ar_1CH=N-C(CN)=C(CN)-N=CH-Ar_2$ wherein Ar_1 and Ar_2 are the same and are selected from

1. benzo(5- and 6-membered)heterocyclic groups containing 0–4 methyl substituents and
2. 5-membered heterocyclic and 6-membered heterocyclic groups containing 0–3 substituents selected from NO_2, halogen, CN, C_{1-4} alkyl, C_{1-4} alkoxy, OCH_2-phenyl, phenyl, CF_3, OH, OC_{1-4} alkylene-$N(C_{1-4}$ alkyl$)_2$, C_{2-4} alkylene-Cl, $NHCONH_2$, NHCOA, $NHSO_2A$, SR_8, SO_2R_8, NHR_1, $NHCOC_{1-4}$ alkylene-B and $-NR_1R_2$ wherein:
   a. R_1 is C_{1-4} alkyl or C_{2-4} alkylene-R_3;
   b. R_2 is C_{1-4} alkyl, C_{2-4} alkylene-R_4, or, if Ar_1 or Ar_2 is phenyl, C_3 alkylene attached to a phenyl position which is ortho to the position to which the nitrogen is attached;
   c. R_3 is CN, halogen, OH, phenyl, C_{1-4} alkoxy, OC_{1-4} alkylene-CN, CO_2A, OCOA, OCONHA or CO_2C_{1-4} alkylene-OCOA;
   d. R_4 is CN, halogen, OH, phenyl, OC_{1-4} alkylene-CN, CO_2A, OCOA, CO_2C_{1-4} alkylene-OCOA, SO_2A, phthalimido, succinimido, glutarimido, $OCOCH=CH_2$, CH_2—CH(OCOA)CH_2OA or $CH_2CH(OCONHA)CH_2OA$;
   e. A is C_{1-4} alkyl or R_5;
   f. B is halogen, C_{1-4} alkoxy or R_5;
   g. R_5 is phenyl containing 0–2 substituents selected from C_{1-4} alkyl, C_{1-4} alkoxy, halogen, NO_2, CN, C_{1-4} alkyl-CONH and NR_6R_7 wherein each of R_6 and R_7 is independently selected from H and C_{1-4} alkyl, with at least one of R_6 and R_7 being C_{1-4} alkyl; and
   h. R_8 is C_{1-4} alkyl, C_2H_4OH, C_{5-6} cycloalkyl or R_5,

which process comprises heating diaminomaleonitrile and at least two molar equivalents of the aromatic aldehyde Ar_1CHO in the presence of glacial acetic acid to produce the symmetrical bisanil dye of the formula $AR_1—CH=N—C(CN)=C(CN)—N=CH—Ar_2$.

3,962,221

PREPARATION OF DISPERSE BISANIL DYES DERIVED FROM DIAMINOMALEONITRILE

Robert Walter Begland, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 430,415, Jan. 3, 1974, Pat. No. 3,912,724.

This application June 30, 1975, Ser. No. 592,206

Int. Cl.² C07D *207/18;* **C09B** *55/00*

U.S. Cl. 260—240 G **9 Claims**

1. Improved process of preparing the bisanil dye of the formula $Ar_1-CH=N-C(CN)=C(CN)-N=CH-Ar_2$ wherein each of Ar_1 and Ar_2 is independently selected from

1 benzo(5- and 6-membered)heterocyclic groups containing 0-4 methyl substituents and

2 phenyl, naphthyl, 5-membered heterocyclic and 6-membered heterocyclic groups containing 0-3 substituents selected from NO_2, halogen, CN, C_{1-4} alkyl, C_{1-4} alkoxy, OCH_2phenyl, phenyl, CF_3, OH, OC_{1-4} alkylene-$N(C_{1-4}$ alkyl$)_2$, C_{2-4} alkylene-Cl, $NHCONH_2$, NHCOA, $NHSO_2A$, SR_8, SO_2R_8, NHR_1, $NHCOC_{1-4}$ alkylene-B and $-NR_1R_2$ wherein:

a. R_1 is C_{1-4} alkyl or C_{2-4} alkylene-R_3;
b. R_2 is C_{1-4} alkyl, C_{2-4} alkylene-R_4, or, if Ar_1 or Ar_2 is phenyl, C_3 alkylene attached to a phenyl position which is ortho to the position to which the nitrogen is attached;
c. R_3 is CN, halogen, OH, phenyl, C_{1-4} alkoxy, OC_{1-4} alkylene-CN, CO_2A, OCOA, OCONHA or CO_2C_{1-4} alkylene-OCOA;
d. R_4 is CN, halogen, OH, phenyl, OC_{1-4} alkylene-CN, CO_2A, OCOA, CO_2C_{1-4} alkylene OCOA, SO_2A, phthalimido, succinimido, glutarimido, $OCOCH=CH_2$, CH_2-CH(OCOA)CH_2OA or $CH_2CH(OCONHA)CH_2OA$;
e. A is C_{1-4} alkyl or R_5;
f. B is halogen, C_{1-4} alkoxy or R_5;
g. R_5 is phenyl containing O-2 substituents selected from C_{1-4} alkyl, C_{1-4} alkoxy, halogen, NO_2, CN, C_{1-4} alkyl -CONH and NR_6R_7 wherein each of R_6 and R_7 is independently selected from H and C_{1-4} alkyl, with at least one of R_6 and R_7 being C_{1-4} alkyl; and
h. R_8 is C_{1-4} alkyl, C_2H_4OH, C_{5-6} cycloalkyl or R_5, with at least one of Ar_1 and Ar_2 being a heterocyclic group selected from (1) and (2), said bisanil dye being substantially free of imidazole impurities, which process comprises the steps:

1 condensing diaminomaleonitrile and the aromatic aldehyde Ar_1CHO to produce the monoanil Ar_1-CH=N-C(CN)=C(CN)-NH_2;
2 reducing the monoanil from step (1) to produce Ar_1CH_2NH-C(CH)=C(CN)-NH_2;
3 condensing the product from step (2) and the aromatic aldehyde Ar_2CHO, which aldehyde is the same as or different from the aldehyde of step (1), to produce the monoanil Ar_1CH_2NH-C(CN)=C(CN)-N=CH-Ar_2; and
4 oxidizing the monoanil from step (3) with manganese dioxide, at ambient temperature, in the presence of a solvent selected from the group consisting of dimethylformamide, dimethylacetamide, dimethylsulfoxide, hexamethylphosphoramide and N-methylpyrrolidone to produce the bisanil dye Ar_1-CH = N-C(CN) = C(CN)-N = CH-Ar_2.

3,962,222

3a,4,6,7-TETRAHYDRO-3-PHENYL-7-(PHENYLALKYLENE)-THIOPYRANO[4,3-c]PYRAZOLE-3(3H)-ALKANAMINE, AND ANALOGS

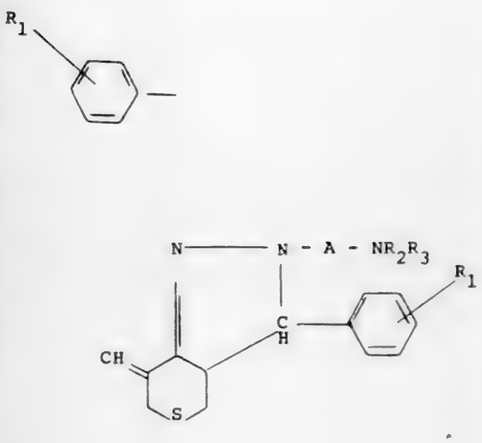
John Krapcho, Somerset; Chester F. Turk, Kendall Park, and George C. Rovnyak, Hopewell, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Aug. 1, 1975, Ser. No. 600,998

Int. Cl.² C07D *495/06*

U.S. Cl. 260—240 F **11 Claims**

1. A compound having the formula



a pharmaceutically acceptable acid addition salt thereof, a quaternary ammonium salt thereof, or a 5-oxide or 5,5-dioxide thereof, wherein A is a straight or branched chain alkylene group having 2 to 5 carbon atoms; R_1 is hydrogen, alkyl, alkoxy, trifluoromethyl, or halogen; R_2 is hydrogen or alkyl; and R_3 is hydrogen, alkyl, phenyl, or phenylalkyl; wherein alkyl and alkoxy refer to groups having 1 to 8 carbon atoms.

3,962,223

SUBSTITUTED CEPHENE-4-CARBOXYLATES AND THEIR METHOD OF PREPARATION

Jacques Martel, Bondy, and Rene Heymes, Romainville, both of France, assignors to Roussel-UCLAF, Paris, France

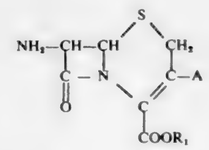
Filed Jan. 2, 1973, Ser. No. 320,493

Claims priority, application France, Dec. 31, 1971, 71.47758; Dec. 31, 1971, 71.47759; Dec. 31, 1971, 71.47760; Dec. 31, 1971, 71.47761; Dec. 31, 1971, 71.47762; Dec. 31, 1971, 71.31699

Int. Cl.² C07D *501/06, 501/22, 501/29*

U.S. Cl. 260—243 C **8 Claims**

1. A compound of the formula



wherein A is selected from the group consisting of alkyl of 2 to 5 carbon atoms and cycloakyl of 3 to 7 carbon atoms and R_1 is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, trichloroethyl, benzyl and methoxybenzyl.

3,962,224
CEPHALOSPORIN COMPOUNDS

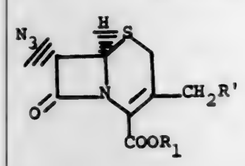
Burton G. Christensen, Scotch Plains, and Ronald W. Ratcliffe, North Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. Nos. 296,356, Oct. 10, 1972, abandoned, and Ser. No. 267,845, June 30, 1972, abandoned, said Ser. No. 296,356, is a continuation-in-part of Ser. No. 244,271, April 14, 1972, abandoned, and Ser. No. 267,846, June 30, 1972, abandoned. This application Mar. 5, 1973, Ser. No. 336,561

Int. Cl.² C07D *501/14*

U.S. Cl. 260—243 C **4 Claims**

1. A dl-7α-azido compound of the formula:



wherein R_1 is a blocking group and R′ is pyrrolidinylcarbonyloxy, carbamoyloxy, N-substituted carbamoyloxy, or N,N-disubstituted carbamoyloxy wherein the carbamoyl substituents may be the same or different and are lower alkyl, halogented lower alkyl, lower alkoxy, chloro, bromo, fluoro, benzyl, p-methoxy benzyl, phenethyl, p-methoxy phenethyl, or p-aminophenethyl.

3,962,225
NITRO(TETRAHYDRO-2H-1,3-THIAZIN-2-YLIDENE)-METHYL ALDEHYDES AND KETONES

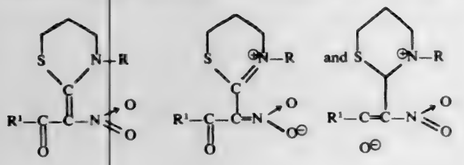
James E. Powell, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 468,122, May 8, 1974, abandoned. This application Feb. 6, 1975, Ser. No. 547,417

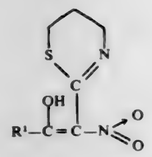
Int. Cl.² C07D *279/06*

U.S. Cl. 260—243 R **3 Claims**

1. A resonance hybrid in which the three significant forms which contribute thereto are represented by the formulae



and including when R is hydrogen, the enol form represented by the formula



wherein R is hydrogen, halogen or alkyl of from one to eight carbon atoms;

R^1 is hydrogen or contains up to 30 carbon atoms and is selected from alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, haloalkyl, haloalkenyl, alkoxyalkyl, alkylthioalkyl, cyanoalkyl, alkylsulfinylalkyl; and phenyl optionally, substituted on the ring by one or more of halogen, nitro, methylsulfonyl, cyano, alkyl, phenyl, alkoxy, phenoxy; heteroaryl selected from furanyl, 2- and 3-pyridyl; and their corresponding phenylmethyl and heteroarylmethyl counterparts.

3,962,226
3-NITROOXYCEPHAM COMPOUNDS AND PROCESS FOR PREPARING DESACETOXYCEPHALOSPORINS THEREFROM

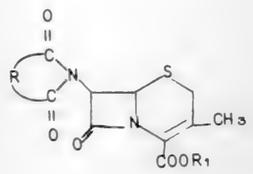
Stjepan P. Kukolja, Indianapolis, and Steven R. Lammert, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 267,850, June 30, 1972, abandoned. This application Mar. 27, 1974, Ser. No. 455,443

Int. Cl.³ C07D *499/04, 501/02*

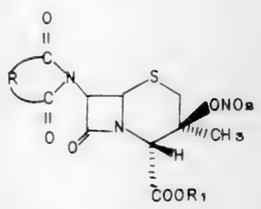
U.S. Cl. 260—243 C **31 Claims**

1. A process for preparing a mixture of a compound of the formula IV



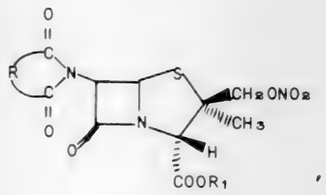
(IV)

a compound of the formula V



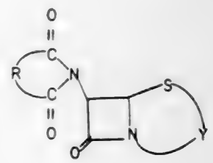
(V)

and a compound of the formula VI

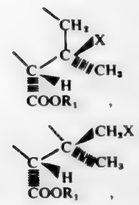


(VI)

which comprises the step of reacting a compound of the formula



in which Y is



or a mixture of the two, with silver nitrate, in which, in the above formulae, R is the residue of an imide derived from a dicarboxylic acid, R_1 is a carboxy protecting group, and X is chlorine or bromine.

3,962,227
3-HALO CEPHALOSPORINS

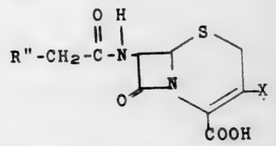
Robert R. Chauvette, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 335,414, Feb. 23, 1973, abandoned. This application Apr. 1, 1974, Ser. No. 457,150

Int. Cl.² C07D *501/60*

U.S. Cl. 260—243 C **5 Claims**

1. A compound of the formula



wherein R″ is 2-thienyl, 3-thienyl, 2-furyl, 2-oxazolyl, 2-thiazolyl, or 1-tetrazolyl;

X is chloro or bromo;

or the non-toxic pharmaceutically acceptable salts thereof.

3,962,228
3-BENZOYLPROPIONAMIDO CEPHALOSPORANIC DERIVATIVES

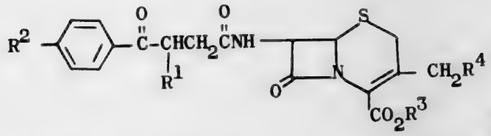
Peter H. L. Wei, Springfield, and Ronald J. McCaully, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,087

Int. Cl.² C07D *499/44, 501/20*

U.S. Cl. 260—243 C **9 Claims**

1. A compound of the formula:



in which

R^1 is —OH, alkoxycarbonyloxy of 2 to 6 carbon atoms, arylsulfonyl of 6 to 10 carbon atoms or thiocyanato;

R^2 is —H, halo or phenyl;

R^3 is —H, an alkali metal or $-NH_4$, and

R^4 is —H, alkanoyloxy of 2 to 6 carbon atoms, or when taken with the 3-carboxy group,



3,962,229
2-(THIOCARBONYLAMINO)ACETAMIDO-7α-METHOXY CEPHALOSPORANIC ACID COMPOUNDS

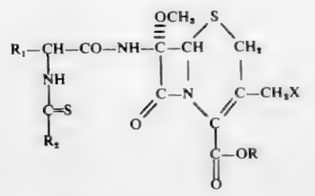
Hermann Breuer, and Uwe D. Treuner, both of Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 28, 1975, Ser. No. 581,449

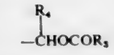
Int. Cl.² C07D *501/20*

U.S. Cl. 260—243 C **11 Claims**

1. A compound of the formula



wherein R is hydrogen, lower alkyl, phenyl, tri(halo)lower alkyl, phenyl-lower alkyl, aluminum, alkali metal, alkaline earth metal, lower alkylamine or



R_1 is phenyl, substituted phenyl wherein the phenyl substituent is lower alkyl, halogen, hydroxy, amino, ureido or methylsulfonylamino, furyl, thienyl or pyridyl; R_2 and R_4 each is hydrogen or lower alkyl; R_3 is lower alkyl, phenyl or phenyl-lower alkyl; and X is hydrogen, lower alkanoyloxy or azido.

3,962,230
P-HYDROXYMETHYLPHENYLACETAMIDOCEPHALOSPORINS

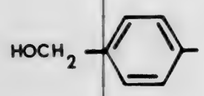
George L. Dunn, Wayne, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline & French Laboratories, Inc., Philadelphia, Pa.

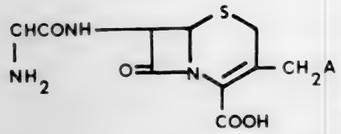
Division of Ser. No. 359,566, May 11, 1973, Pat. No. 3,891,634, which is a continuation-in-part of Ser. No. 262,903, June 14, 1972, Pat. No. 3,867,380, which is a continuation-in-part of Ser. No. 116,598, Feb. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 99,296, Dec. 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 289,499, Dec. 15, 1972, Pat. No. 3,855,213, which is a continuation-in-part of Ser. No. 262,903, June 14, 1972, and Ser. No. 116,599, Feb. 18, 1971, abandoned. This application Feb. 25, 1975, Ser. No. 552,916

Int. Cl.² C07D *501/20*

U.S. Cl. 260—243 C **3 Claims**

1. A compound of the formula





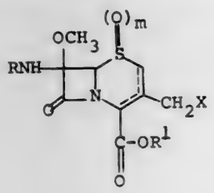
wherein A is methoxy or methylthio, or a pharmaceutically acceptable salt thereof.

3,962,231
PREPARATION OF 7-ACYLAMIDO-7-METHOXY-3-SUBSTITUTED METHYL-3(OR 2)-CEPHEM-4-CARBOXYLIC ACID AND ITS S-OXIDES

Seemon H. Pines, Murray Hill, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 207,980, Dec. 14, 1971, Pat. No. 3,867,378. This application Oct. 21, 1974, Ser. No. 516,346
Int. Cl.² C07D *501/02*
U.S. Cl. 260—243 C **5 Claims**

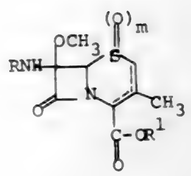
1. A process for preparing a compound of the formula:



wherein R is an acyl radical of the formula:



wherein
R^2 is hydrogen, halo, amino, hydroxy, tetrazolyl or carboxy;
R^3 is phenylthio, cyano, phenyl, or substituted phenyl, heterocycle or substituted heterocycle, heterocyclic thio or substituted heterocyclic thio group wherein said heterocycle is selected from the group consisting of furyl, thienyl, thiazolyl, isothiazolyl, oxadiazolyl and thiadiazolyl, and wherein said substituent on the phenyl, heterocycle and heterocyclic thio groups is selected from the group consisting of halo, carboxymethyl, aminomethyl, nitro, methoxy and methyl;
R^1 is trichloroethyl, tert-butyl, benzoylmethyl, p-methoxybenzyl, benzyl, benzhydryl, trimethylsilyl, methoxymethyl, benzoylmethylcarbonyloxy, or tert-butylcarbonyloxy; X is hydroxy or lower alkanoyloxy and *m* is an integer of 0 or 1 which comprises treating a compound of the formula:



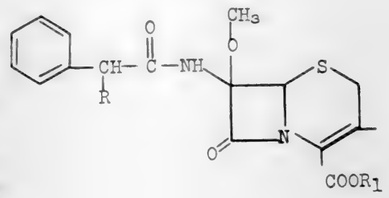
wherein R, R^1 and *m* are as defined above with selenium dioxide in ethanol, propanol, dioxane, acetic acid or propionic acid.

3,962,232
7-METHOXYCEPHALOSPORINS

Gary A. Koppel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 5, 1973, Ser. No. 413,097
Int. Cl.² C07D *501/20*
U.S. Cl. 260—243 C **5 Claims**

1. A compound of the formula



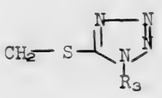
in which
R is carboxy or an alkali metal salt thereof;
R_1 is hydrogen, an alkali metal cation, or a readily removable ester forming group; and
R_3 is hydrogen C_1–C_4 alkyl, or phenyl.

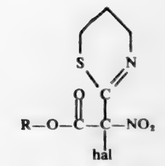
3,962,233
2-(HALONITRO(ORGANOOXYCARBONYL)METHYL)-5,6-DIHYDRO-4H-1,3-THIAZINES

Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 468,123, May 8, 1974, abandoned. This application Feb. 19, 1975, Ser. No. 551,171
Int. Cl.² C07D *279/06*
U.S. Cl. 260—243 R **1 Claim**

1. A 2-(halonitro(organooxycarbonyl)methyl)-5,6-dihydro-4H-1,3-thiazine of the formula





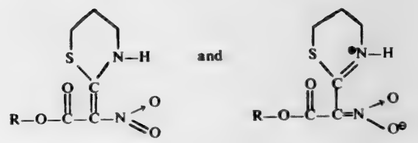
wherein "hal" is halogen selected from chlorine, bromine and fluorine, and R contains up to thirty carbon atoms and is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, haloalkyl, haloalkenyl, mono- and poly-(alkoxy)alkyl, alkylthioalkyl, phenylthioalkyl, benzylthioalkyl, cyanoalkyl, hydroxyalkyl, alkylsulfinylalkyl, phenyl or phenalkyl or either substituted on the ring by one to two of one or more of halogen, nitro, cyano, alkyl, phenyl, alkoxy or phenoxy; is aminoalkyl, $-(CH_2)_m NR^3R^4$, wherein *m* is one or two, R^3 is alkyl, cycloalkyl, alkenyl, phenyl or phenalkyl, and R^4 is hydrogen or one of the moieties represented by R^3; or is $-(CH_2)_n R^5$, wherein *n* is zero, one or two, and R^5 is a heteromonocyclic moiety of from five to six carbon atoms in the ring, containing in the ring carbon atoms and one to two of oxygen (—O—), sulfur (—S—) and nitrogen (=N— or —NH—) bonded to carbon in the ring.

3,962,234
ESTERS OF NITRO(TETRAHYDRO-2H-1,3-THIAZIN-2-YLIDENE)ACETIC ACIDS

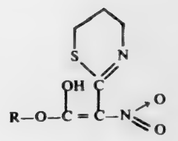
Steven A. Roman, Oakdale, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 468,125, May 8, 1974, abandoned. This application Mar. 3, 1975, Ser. No. 554,371
Int. Cl.² C07D *279/06*
U.S. Cl. 260—243 R **7 Claims**

1. A resonance hybrid in which the significant forms are represented by the formulae



and the enol form represented by the formula



wherein R contains up to thirty carbon atoms and is alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, alkadienyl, haloalkyl, haloalkenyl, mono- and poly-(alkoxy)alkyl, alkylthioalkyl, phenylthioalkyl, benzylthioalkyl, cyanoalkyl, hydroxyalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, phenyl or phenalkyl or either substituted on the ring by one to two of one or more of halogen, nitro, cyano, alkyl, phenyl, alkoxy or phenoxy; is aminoalkyl, $-(CH_2)_m NR^3R^4$,

wherein *m* is one or two, R^3 is alkyl, cycloalkyl, alkenyl, phenyl or phenalkyl, and R^4 is hydrogen or one of the moieties represented by R^3; or is

$-(CH_2)_n R^5$,

wherein *n* is zero, one or two, and R^5 is a heteromonocyclic moiety of from five to six carbon atoms in the ring, containing in the ring carbon atoms and one to two of oxygen (—O—), sulfur (—S—) and nitrogen (=N— or —NH—) bonded to carbon in the ring.

3,962,235
PROCESS FOR MAKING α-CHLORINATED DERIVATIVES OF 2-ALKYL-2-OXAZOLINES AND 2-ALKYL-5,6-DIHYDRO-4H-OXAZINES

Thomas A. Chamberlin, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 25, 1974, Ser. No. 436,780
Int. Cl.² C07D *265/08, 273/00, 290/00*
U.S. Cl. 260—244 R **12 Claims**

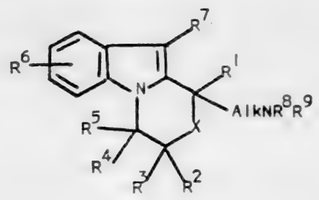
1. A process for making α-chlorinated derivatives of 2-alkyl-2-oxazolines and 2-alkyl-5,6-dihydro-4H-oxazines comprising reacting by contacting in liquid phase (a) a 2-alkyl-2-oxazoline or a 2-alkyl-5,6-dihydro-4H-oxazine with (b) a t-alkyl hypochlorite at a temperature below the thermal decomposition temperatures of said t-alkyl hypochlorite.

3,962,236
OXAZINOINDOLE- AND THIAZINOINDOLE DERIVATIVES

Christopher A. Demerson, St. Laurent; Leslie G. Humber, Dollard-des-Ormeaux; George Santroch, Montreal; Thomas A. Dobson, Dollard-des-Ormeaux, and Ivo Jirkovsky, Montreal, all of Canada, assignors to Ayerst McKenna and Harrison Ltd., Montreal, Canada

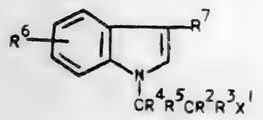
Division of Ser. No. 226,287, Feb. 14, 1972, Pat. No. 3,833,575. This application May 28, 1974, Ser. No. 473,646
Int. Cl.² C07D *265/16, 273/00, 295/00*
U.S. Cl. 260—244 R **18 Claims**

1. A process for preparing a compound of formula I



I.

in which R^1 is lower alkyl or lower cycloalkyl; R^2, R^3, R^4 and R^5 are the same or different selected from the group consisting of hydrogen or lower alkyl; R^6 is hydrogen, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, nitro or halo; R^7 is lower alkyl; X is oxy or thio; Alk is an alkylene selected from the group consisting of $CR^{10}R^{11}$, $CR^{10}R^{11}CR^{12}R^{13}$, $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}$ and $CR^{10}R^{11}CR^{12}R^{13}CR^{14}R^{15}CR^{16}R^{17}$ wherein R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16} and R^{17} are hydrogen or lower akyl; and R^8 and R^9 each are hydrogen; which comprises reacting in the presence of an inert, non-polar, organic solvent for 10 minutes to 60 hours a compound of formula III

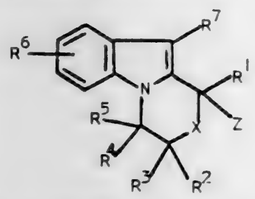


III.

in which R^7 are as defined herein and X^1 is hydroxy or mercapto, with a compound of formula



in which R^1 is lower alkyl or lower cycloalkyl and Z is Alk-NO_2 in the presence of from 0.01 to 100 molar equivalents of a Friedel-Crafts catalyst, to obtain a compound of formula V



and reducing the compound of formula V with a complex metal hydride to give the corresponding compound of formula I.

3,962,237
1 (H)-1,2,4-TRIAZOLE DERIVATIVES

John Terence Arnott Boyle, and John Christopher Saunders, both of Maidenhead, England, assignors to John Wyeth & Brother Limited, Maidenhead, England

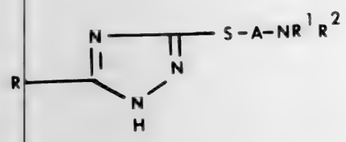
Filed Feb. 6, 1975, Ser. No. 547,669

Claims priority, application United Kingdom, Feb. 11, 1974, 6139/74

Int. Cl.² C07D *249/08*

U.S. Cl. 260—247.1 M **7 Claims**

1. A compound of the formula:



wherein,

R is phenyl or substituted phenyl in which said substituent is halo, lower alkyl, lower alkoxy, nitro or trihalo(lower-)alkyl;

A is lower alkylene;

R^1 and R^2 are independently hydrogen or lower alkyl or, when taken together with the nitrogen atom to which they are attached, represent pyrrolidino, piperidino, or morpholino;

or a pharmaceutically acceptable acid addition salt thereof.

3,962,238
ETHERS OF N-PROPANOL AMINE

Roland Yves Mauvernay, Riom; Norbert Busch, Loubeyrat; Jacques Moleyre, Mozac; André Monteil, Gerzat, and Jacques Simond, Chamalieres, all of France, assignors to Centre Europeen de Recherches Mauvernay "CERM", Riom, France

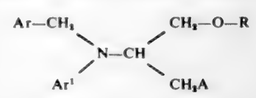
Filed Feb. 27, 1973, Ser. No. 336,357

Claims priority, application France, Mar. 6, 1972, 72.07647

Int. Cl.² C07D *295/00*

U.S. Cl. 260—247.2 B **6 Claims**

1. An ether of n-propanolamine having the formula



wherein A is morpholino, pyrrolidino, piperidyl, and di-lower-alkyl amino, R is a straight or branched chain lower alkyl, or benzyl, Ar is aryl and Ar^1 is aryl or pyridyl, and pharmacologically acceptable salts thereof.

3,962,239
METHOD FOR PRODUCING CYCLIC TRIMERS OF ORGANIC ISOCYANATES

Zbyněk Bukač, and Jan Šebenda, both of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Feb. 21, 1975, Ser. No. 551,514

Claims priority, application Czechoslovakia, Feb. 28, 1974, 1478-74

Int. Cl.² C07D *251/34*

U.S. Cl. 260—248 NS **13 Claims**

1. A method for producing cyclic trimers of organic isocyanates, wherein an organic isocyanate or its solution is added to a solution of the catalyst which is sodium dihydrobis-/alkoxyethoxy/aluminate of the formula

$$NaAlH_2(OCH_2CH_2OR)_2$$

where R is an alkyl group with 1 to 4 carbon atoms.

3,962,240
PROCESS FOR THE PREPARATION OF FURO(3,4-E)-AS-TRIAZINES

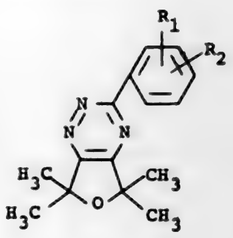
Gregory Benjamin Bennett, Mendham, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed May 8, 1975, Ser. No. 575,525

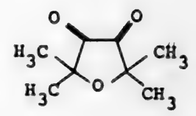
Int. Cl.² C07D *253/08*

U.S. Cl. 260—248 AS **10 Claims**

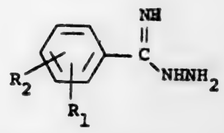
1. A process for preparing a compound of the formula



which comprises treating a compound of the formula



with a compound of the formula



under an inert atmosphere in the presence of an inert organic solvent,

where

R_1 and R_2 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl, straight chain lower alkoxy, amino, nitro or trifluoromethyl, and

provided that

i. when one of R_1 and R_2 represents nitro, the other is other than nitro or trifluoromethyl;

ii. when R_1 and R_2 represent trifluoromethyl, they are on other than adjacent carbon atoms,

iii. when R_1 and R_2 represent t-butyl, they are on other than adjacent carbon atoms, and

iv. when one of R_1 and R_2 is trifluoromethyl and the other is t-butyl, they are on other than adjacent carbon atoms.

3,962,241
LIGHT-SENSITIVE POLYMERIC COMPOUNDS

Donald Noel Hunter, Great Bookham, England, assignor to U.S. Philips Corporation, New York, N.Y.

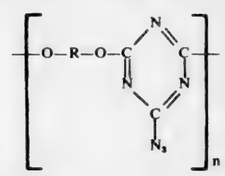
Filed July 22, 1974, Ser. No. 490,724

Claims priority, application United Kingdom, July 31, 1973, 36289/73

Int. Cl.² C07D *251/46*

U.S. Cl. 260—249.5 **6 Claims**

1. A light-sensitive polymeric compound of the formula I



in which formula

n is a whole number from 2 to 120 and

R represents

phenylene - 1,3

phenylene - 1,4

1- phenylcarbonyl-phenylene - 2,4

1- phenylcarbonyl-phenylene - 2,6

2,2′ - diphenylcarbonyl

2,3′ - diphenylcarbonyl

or an

1 - alkylcarbonyl-phenylene - 2,5

1 - alkylcarbonyl-phenylene - 2,4

1 - alkylcarbonyl-phenylene - 2,6

in which the alkyl group contains from 1 to 4 carbon atoms,

a naphthylene - 2,7

naphthylene - 2,6 or

naphthylene - 2,4 - group

wherein the phenyl groups, if desired, are substituted with one or two alkyl groups containing from 1 to 4 carbon atoms or a phenyl group.

3,962,242
3-(5-NITRO-2-FURYL)-6-CYANO-S-TRIAZOLO(4,3-b)PYRIDAZINE

Herbert Berger, Mannheim-Kafertal; Rudi Gall, Grosssachen; Max Thiel; Wolfgang Vömel, both of Mannheim, and Winfriede Sauer, Mannheim-Wallstadt, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany

Division of Ser. No. 316,197, Dec. 18, 1972. This application Jan. 30, 1975, Ser. No. 545,661

Claims priority, application Germany, Jan. 21, 1972, 2202745

Int. Cl.² C07D *237/26*

U.S. Cl. 260—250 AC **1 Claim**

1. 3-(5-nitro-2-furyl)-6-cyano-s-triazolo[4,3-b]pyridazine.

3,962,243
MEPYRAMINE THEOPHYLLINE ACETATE

Cristobal Martinez Roldan; Miguel Fernandez Brana, and Jose Maria Castellano Berlanga, all of Madrid, Spain, assignors to Laboratories Made, S.A., Madrid, Spain

Continuation-in-part of Ser. No. 396,426, Sept. 12, 1973, abandoned. This application Oct. 16, 1974, Ser. No. 515,188

Int. Cl.² C07D *473/08*

U.S. Cl. 260—253 **1 Claim**

1. 2-[(2-dimethylaminoethyl) (p-methoxybenzyl)amino]-pyridine 1,2,3,6-tetrahydro-1,3-dimethyl-2,6-dioxopurin-7-acetate.

3,962,244
BENZENE SULFONYL UREAS

Rudi Weyer, Frankfurt am Main; Walter Aumuller, Kelkheim, Taunus; Ruth Heerdt, Mannheim; Volker Hitzel, Lorsbach, Taunus; Helmut Weber, Frankfurt am Main, and Karl Muth, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

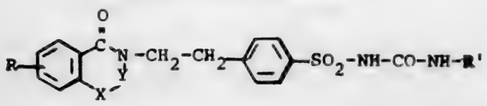
Continuation-in-part of Ser. No. 219,549, Jan. 20, 1972, abandoned, and Ser. No. 219,533, Jan. 20, 1972, abandoned. This application July 17, 1974, Ser. No. 489,103

Claims priority, application Germany, Dec. 13, 1971, 2161697; Jan. 23, 1971, 2103118

Int. Cl.² C07D *239/72*

U.S. Cl. 260—256.5 R **13 Claims**

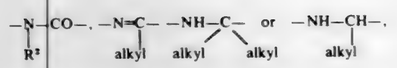
1. A benzenesulfonyl urea of the formula



in which

R represents a hydrogen, chlorine, or bromine atom, a methoxy or methyl group,

—X—Y— represents —N=CH—, —NH—CH_2—, —NH—CO—,



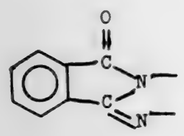
the alkyl herein containing from 1 to 4 carbon atoms,
R^2 represents an alkyl group having from 1 to 4 carbon atoms,
R' represents an alkyl group having from 3 to 6 carbon atoms, a cycloalkyl group having from 5 to 8 carbon atoms, 3-ethylcyclopentyl, methyl-cyclopentyl, dimethyl-cyclopentyl, 4-alkylcyclohexyl having from 1 to 3 carbon atoms in the alkyl group, cyclopentenyl, cyclohexenyl, cycloheptenyl, 4-chloro-cyclohexyl, 4,4-dimethylcyclohexyl, 3-methylcyclopentenyl, 4-methylcyclohexenyl; endoalkylene-cyclohexyl, endoalkylene-cyclohexenyl, each having 1 to 2 endoalkylene carbon atoms; bicyclo-(2.2.1) hept-2-2n-7-yl, or the physiologically tolerable salts thereof.

3,962,245
DIALKYLSULFONAMIDE DYES

Robert Jerome Tucker, Hackettstown, and Richard Spector, Kendall Park, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 431,199, Jan. 7, 1974, Pat. No. 3,909,442. This application Jan. 16, 1975, Ser. No. 541,546
Int. Cl.² C07D *239/00*
U.S. Cl. 260—256.5 R **2 Claims**

1. A compound of formula



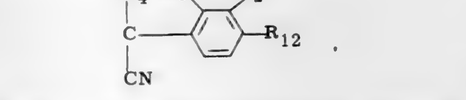
wherein R is an alkyl group of 1–5 carbon atoms and *n* is an integer of 1–4.

3,962,246
BROMO-PROPANOL DERIVATIVES AS FLAME RETARDANTS

Peter Borer, Basel; Hans-Werner Finck; Horst Mayerhoefer, both of Oberwil; Urs Sollberger, Fullinsdorf, and Wolfgang Heinz Mueller, Neuallschwil, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed July 19, 1974, Ser. No. 490,124
Claims priority, application Switzerland, July 25, 1973, 10838/73
Int. Cl.² C07D *295/18*
U.S. Cl. 260—268 C **1 Claim**

1. A compound of the formula:

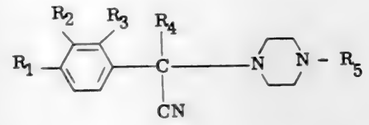


3,962,247
ALPHA-CYANOAMINE COMPOUNDS AND A PROCESS FOR PRODUCING THE SAME

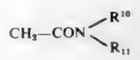
Katsumi Sakai, Kamiichi; Yukio Onogawa, Komae; Yoshitaka Inamoto, Namerikawa; Hiroshi Nakajima, Toyama; Yasuo Fujimoto, Tokyo; Kuniichiro Ohno, Kodaira; Masashi Yoshida, Souka, and Shigehito Araki, Tokyo, all of Japan, assignors to Fuji Chemical Industry Co., Ltd. and Nippon Chemiphar Co., Ltd., Tokyo, both of, Japan

Filed Aug. 6, 1974, Ser. No. 495,138
Claims priority, application Japan, July 16, 1974, 49-80727; July 16, 1974, 49-80728; July 16, 1974, 49-80729
Int. Cl.² C07D *241/12*
U.S. Cl. 260—268 CN **8 Claims**

1. An α-cyanoamine compound of the formula



or a pharmaceutically acceptable acid addition salt thereof, wherein R_1 is halogen or C_1 to C_3 alkoxy, R_2 and R_3 are each hydrogen, or C_1 to C_3 alkoxy, R_4 is hydrogen or C_1 to C_3 alkyl, R_5 is selected from the group consisting of R_8COOR_9, wherein R_8 is C_1 to C_3 alkylene and R_9 is C_1 to C_3 alkyl,



wherein R_{10} and R_{11} are each hydrogen or C_1 to C_3 alkyl, or R_{10} and R_{11} are joined with the nitrogen atom to form pyrrolidino, and

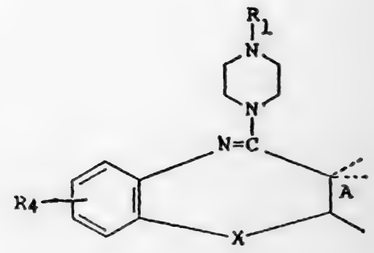
wherein R_2, R_3 and R_4 are defined as above and R_1 and R_{12} are C_1 to C_3 alkoxy.

3,962,248
PROCESS FOR MAKING 11-PIPERAZINO-DIAZEPINES, OXAZEPINES, THIAZEPINES AND AZEPINES

Josef Schneider, Minusio, Switzerland, assignor to Sandoz, Inc., Hanover, N.J.

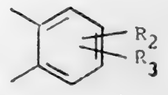
Continuation of Ser. No. 346,343, March 29, 1973, abandoned. This application Feb. 26, 1975, Ser. No. 553,142
Claims priority, application Switzerland, Apr. 4, 1972, 4898/72; Apr. 4, 1972, 4901/72
Int. Cl.² C07D *403/04, 413/04, 417/04*
U.S. Cl. 260—268 TR **8 Claims**

1. A process for the production of a compound of formula I,

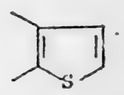


I

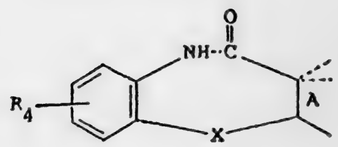
wherein
R_1 is hydrogen, alkoxyalkyl of 2 to 6 carbon atoms in the aggregate thereof, alkyl of 1 to 4 carbon atoms, hydroxyalkyl of 1 to 4 carbon atoms, or alkanoyl-oxalkyl of 3 to 22 carbon atoms in the aggregate thereof,
R_4 is hydrogen, alkyl, alkoxy or alkylthio, wherein the alkyl groups have 1 to 4 carbon atoms, halogen, or trifluoromethyl, and
a. A is



wherein R_2 is hydrogen, alkyl, dialkylaminosulphonyl, alkylsulphonyl, wherein the alkyl groups have 1 to 4 carbon atoms, alkoxy or alkylthio of 1 to 4 carbon atoms, halogen, nitro, trifluoromethylsulphonyl, trifluoromethoxy, trifluoromethylthio, acetyl, cyano or trifluoromethyl, and R_3 is hydrogen, halogen or alkyl of 1 to 4 carbon atoms, and X is $—CH_2—$, —O—, —S—, —NH or —N-alkyl wherein the alkyl group has 1 to 3 carbon atoms, or
b. A is

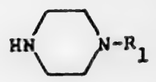


and X is $—CH_2—$ or —S—, which comprises reacting a compound of formula II,



II

wherein X, A and R_4 are as defined above, with a metal-amine complex wherein the metal is titanium, zirconium, hafnium or vanadium, and the amine is a compound of formula III,



III

wherein R_1 is as defined above.

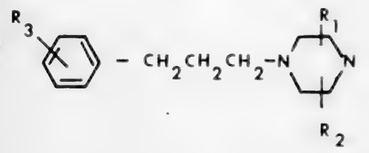
I

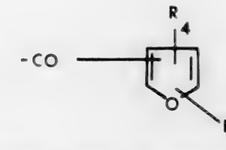
3,962,249
1-(3-PHENYLPROPYL)-4-FUROYLPIPERAZINE DERIVATIVES

Tsutomu Irikura, Tokyo, Japan, assignor to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1975, Ser. No. 555,992
Claims priority, application Japan, Mar. 6, 1974, 49-26067; Sept. 26, 1974, 49-110709
Int. Cl.² C07D *405/02, 405/06*
U.S. Cl. 260—268 C **28 Claims**

1. A compound of formula





wherein R_1 and R_2, independently of each other, represent hydrogen or alkyl having 1 to 4 carbon atoms; R_3 represents hydrogen, halogen, alkyl having 1 to 4 carbon atoms, or alkoxy having 1 to 4 carbon atoms; R_4 and R_5 independently of each other, represent hydrogen or alkyl having 1 to 4 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

3,962,250
OXIDATION PRODUCTS OF COBALT COMPLEXES, PROCESS FOR OBTAINING SAME AND INSERTION PROCESS

Carlo Neri, and Emilio Perrotti, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Division of Ser. No. 102,977, Dec. 30, 1970, Pat. No. 3,803,192. This application Apr. 8, 1974, Ser. No. 459,125
Claims priority, application Italy, Dec. 30, 1969, 26424/69
Int. Cl.² C07F *00/00*; **C07D** *213/02, 215/02*
U.S. Cl. 260—270 D **3 Claims**

1. A process for the preparation of tetradentate complexes of trivalent cobalt having the formula: CO^{III} $(L_1L_2L_3L_4)$ CR_1R_2O. $CR_1R_2OH.B$ wherein $(L_1L_2L_3L_4)$ is a planar tetradentate ligand selected from bis-(diacetylmonooximenimino)-propane, bis-(salicylaldehyde)-ethylenediamine and bis-(acetylacetone)-ethylenediamine; CR_1R_2O is an alcohol group selected from CH_3O, CL CH_2 CH_2O, OCH_2O and CH_2—CH—CH_2O; CR_1R_2 OH is the corresponding alcohol; and B is a heterocylic aromatic base selected from pyridine and quinoline which consists of reacting a mixture of cobalt complex $Co(L_1L_2L_3L_4)$, alcohol CR_1R_2OH and heterocyclic amine base B with molecular oxygen at a temperature of from 0° to 70° C.

3,962,251
PREPARATION OF FLAVANTHRONE PIGMENT

William E. Bachmann, North Haledon, and Thomas R. Flatt, Ridgewood, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 507,830, Sept. 20, 1974, abandoned, which is a division of Ser. No. 370,241, June 15, 1973, Pat. No. 3,898,233. This application Apr. 24, 1975, Ser. No. 571,164
Int. Cl.² C09B 5/22
U.S. Cl. 260—273 1 Claim

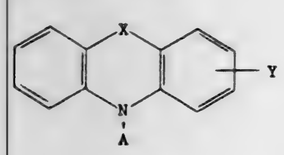
1. A process for producing a polymorphic crystalline reddish yellow flavanthrone pigment which exhibits an X-ray diffraction pattern wherein the only prominent peak between 7.00 and 8.00 dA occurs between 7.14 and 7.20 dA, and wherein the only prominent peaks between 3.30 and 3.75 occur between 3.39 and 3.42 dA and between 3.63 and 3.67 dA which comprises treating crude flavanthrone with concentrated nitric acid in an amount between 3 and 10 parts by weight based on the flavanthrone by agitating and maintaining the temperature of the flavanthrone-acid mixture between room temperature and 80°C for about 1 to 3 hours, thereafter drowning the acid mass with water and recovering the flavanthrone so treated.

3,962,252
10-IMIDOYLACRIDANS

Yao Hua Wu, and Walter G. Lobeck, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 336,671, Feb. 28, 1973, Pat. No. 3,888,852. This application Mar. 24, 1975, Ser. No. 561,462
Int. Cl.² C07D 219/14, 401/04
U.S. Cl. 260—279 R 7 Claims

1. A compound selected from the group consisting of 10-imidoylacridans having the formula



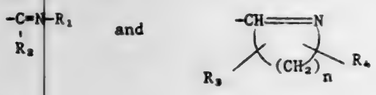
and a non-toxic pharmaceutically acceptable acid addition salt thereof wherein

X represents a divalent methylene radical of the formula $-C(Z_1Z_2)-$

wherein

Z_1 and Z_2 are independently selected from hydrogen or straight chain lower alkyl of from 1 to 4 carbon atoms inclusive;

Y represents hydrogen, trifluoromethyl, halogen, dihalogen, lower alkyl of 1 to 4 carbon atoms inclusive, lower alkoxy of 1 to 4 carbon atoms inclusive; and is selected from the group consisting of



wherein

R_1 is lower alkyl of 1 to 4 carbon atoms inclusive or cycloalkyl of 3 to 6 carbon atoms inclusive;

R_2 is hydrogen or lower alkyl of 1 to 4 carbon atoms inclusive;

R_3 and R_4 are independent members selected from the group consisting of hydrogen or lower alkyl of 1 to 4 carbon atoms inclusive;

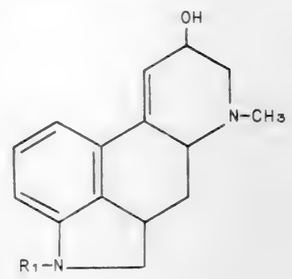
n is an integer of 3 to 5.

3,962,253
OXIDATION OF SELECTIVELY PROTECTED 2,3-DIHYDRO-6-METHYL-8-HYDROXY-9-ERGOLENES

Edmund C. Kornfeld, and Nicholas J. Bach, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 13, 1974, Ser. No. 532,332
Int. Cl.² C07D 457/10
U.S. Cl. 260—285.5 5 Claims

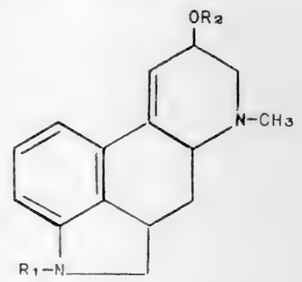
1. A compound of the formula



wherein:

R_1 is a halogenated acetyl group selected from the group consisting of chloroacetyl, bromoacetyl, iodoacetyl, dichloroacetyl, dibromoacetyl, and diiodoacetyl.

3. A compound of the formula



wherein:

R_1 is a halogenated acetyl group selected from the group consisting of chloroacetyl, bromoacetyl, iodoacetyl, dichloroacetyl, dibromoacetyl, and diiodoacetyl; and

R_2 is C_1-C_4 alkanoyl.

5. The process for converting 2,3-dihydro-6-methyl-8-hydroxy-9-ergolene to 6-methyl-8-hydroxy-9-ergolene comprising the steps of

A. selectively reacting 2,3-dihydro-6-methyl-8-hydroxy-9-ergolene with chloroacetic anhydride to obtain 1-chloroacetyl-2,3-dihydro-6-methyl-8-hydroxy-9-ergolene;

B. reacting 1-chloroacetyl-2,3-dihydro-6-methyl-8-hydroxy-9-ergolene with a C_1-C_4 alkanoyl acylating agent to obtain a 1-chloroacetyl-2,3-dihydro-6-methyl-8-(C_1-C_4 alkanoyloxy)-9-ergolene;

C. selectively hydrolyzing said 1-chloroacetyl-2,3-dihydro-6-methyl-8-(C_1-C_4-alkanoyloxy)-9-ergolene with thiourea to obtain 2,3-dihydro-6-methyl-8-(C_1-C_4-alkanoyloxy)-9 -ergolene;

D. oxidizing the 2,3-dihydro-6-methyl-8-(C_1-C_4-alkanoyloxy)-9-ergolene thus formed with manganese dioxide to yield a 6-methyl-8-(C_1-C_4-alkanoyloxy)-9-ergolene; and

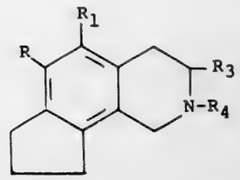
E. hydrolyzing said 6-methyl-8-(C_1-C_4-alkanoyloxy)-9-ergolene with an alkali metal hydroxide to obtain 6-methyl-8-hydroxy-9-ergolene.

3,962,254
N-SUBSTITUTED-5,6-DIHYDROXYCYCLOPENTANO,h]-1,2,3,4-TETRAHYDROISOQUINOLINES AND ETHERS AND ESTERS THEREOF

Ian William Mathison; William Ebenezer Solomons, both of Memphis, Tenn., and Raymond Henry Jones, Northport, N.Y., assignors to Marion Laboratories, Inc., Kansas City, Mo.

Filed Mar. 28, 1974, Ser. No. 455,671
Int. Cl.² C07D 217/16, 217/18
U.S. Cl. 260—287 CF 24 Claims

1. A compound of the formula



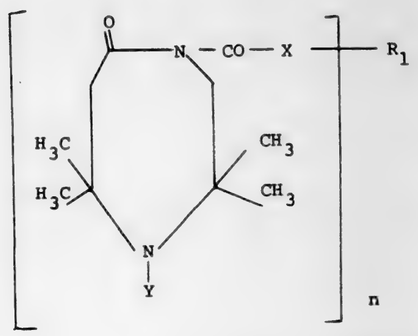
wherein R and R_1 represent hydroxy, alkoxy groups having 1 to 8 carbon atoms, alkanoyloxy groups having 1 to 8 carbon atoms, or phenyl-lower alkanoyloxy groups, R_3 represents hydrogen, a normal alkyl having 1 to 8 carbon atoms, isopropyl, sec-butyl or isopentyl, and R_4 represents alkyl having 1 to 8 carbon atoms, phenyl-carbonyl, phenyl-alkyl, benzyhydryl-alkyl, alkanoyl, phenyl-alkanoyl, benzhydryl-alkanoyl or benzhydrylcarbonyl groups in which groups represented by R_4 the alkyl and alkanoyl groups have 1 to 8 carbon atoms, and nontoxic acid addition salts thereof.

3,962,255
1,4-DIAZAEPINE-5-ONES

Alexander Michael Chalmers, Cheadle, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 26, 1974, Ser. No. 492,087
Claims priority, application United Kingdom, July 31, 1973, 36340/73
Int. Cl.² C07D 243/06
U.S. Cl. 260—239.3 R 11 Claims

1. A compound having the formula:



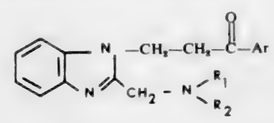
wherein *n* is 1 or 2, X is O or NH, Y is O, hydrogen or a branched or straight-chain alkyl having from 1 to 4 carbon atoms and R_1 is a hydrocarbyl having from 1 to 20 carbon atoms which is selected, when *n* is 1 from the group consisting of a branched- or straight-chain alkyl having from 1 to 20 carbon atoms, a branched- or straight-chain alkenyl having from 3 to 18 carbon atoms, an unsubstituted cycloalkyl having from 5 to 14 carbon atoms or said cycloalkyl substituted with an alkyl of 1 to 8 carbons unsubstituted aryl selected from phenyl and naphthyl or said aryl substituted with chloro, methoxy or phenyl, an alkaryl having from 7 to 18 carbon atoms said alkyl substituent having 1 to 12 carbons, and when n is 2, from the group consisting of a branched- or straight-chain alkylene having 2 to 20 carbon atoms, an alkenylene having 4 to 20 carbon atoms, an unsubstituted cycloalkylene having from 5 to 12 carbon atoms, a substituted or unsubstituted arylene having from 6 to 12 carbon atoms, or an alkarylene having from 7 to 8 carbon atoms, said aromatic substituents being halogen or lower alkoxy groups; and salts thereof said salts being in the form of a phosphate, carbonate, sulphate, chloride, acetate, stearate, maleate, citrate, tartrate, oxalate, benzoate or carbamate.

3,962,256
2-AMINOMETHYL BENZIMIDAZOLE DERIVATIVES

Claude P. Fauran, Paris; Jeannine A. Eberlé, Chatou; Guy M. Raynaud, and Nicole A. M. Dorme, both of Paris, all of France, assignors to Delalande S.A., Courbevoie, France

Filed June 20, 1974, Ser. No. 481,273
Claims priority, application France, July 3, 1973, 73.24388
Int. Cl.² C07D 401/06
U.S. Cl. 260—293.6 7 Claims

1. A compound having the formula



wherein Ar is phenyl or phenyl substituted by one halogen, or one or two alkyl having 1 to 4 carbon atoms, or one, two or three alkoxy having 1 to 4 carbon atoms, and R_1 and R_2 each is alkyl having one to 4 carbon atoms or



is piperidino, pyrrolidino, morpholino or hexamethyleneimino, and the pharmacologically acceptable acid addition salts thereof.

3,962,257
3-PHENACYLPIPERIDINES

Richard P. Pioch, and Klaus K. Schmiegel, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 31, 1974, Ser. No. 475,219
Int. Cl.² C07D 211/32
U.S. Cl. 260—293.8 6 Claims

1. A compound selected from the group consisting of 1-methyl-3-(4-fluorophenacyl)piperidine, 1-methyl-3-(3-fluorophenacyl)piperidine, 1-methyl-3-[4-(trifluoromethyl)-phenacyl]piperidine, 1-methyl-3-[3-(trifluoromethyl)-phenacyl]piperidine, 1-methyl-3-(3,4-dichlorophenacyl)-piperidine, and the pharmaceutically-acceptable acid addition salts thereof.

3,962,258
1,2,3,4,6,7,12,12b-OCTAHYDRO-2-BENZAMIDOINDOLO[2,3-a]QUINOLIZINE

John Leheup Archibald, Windsor; John Lambert Jackson, Henley-on-Thames, and Brian John Bushell, Southampton, all of England, assignors to John Wyeth & Brother Limited, Taplow, England

Filed May 17, 1974, Ser. No. 470,765
Claims priority, application United Kingdom, May 25, 1973, 25299/73
Int. Cl.² C07D *401/06*
U.S. Cl. 260—293.53 **1 Claim**

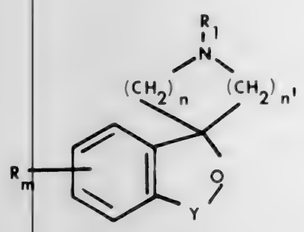
1. 1,2,3,4,6,7,12,12b-octahydro-2-benzamido-indolo[2,3-a]quinolizine or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof.

3,962,259
1,3-DIHYDROSPIRO[ISOBENZOFURAN]S AND DERIVATIVES THEREOF

Victor J. Bauer, Somerville, and Raymond W. Kosley, Jr., Convent, both of N.J., assignors to American Hoechst Corporation, Bridgewater, N.J.

Filed Dec. 12, 1973, Ser. No. 424,080
Int. Cl.² C07D *491/10*
U.S. Cl. 260—293.58 **6 Claims**

1. Process for the preparation of a compound of the formula



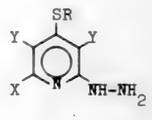
in which
R is hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, trifluoromethyl, halogen, hydroxy or methylenedioxy;
R_1 is alkyl of 1 to 6 carbon atoms, cycloalkylalkyl of 4 to 8 carbon atoms, alkenyl of 3 to 6 carbon atoms, phenylalkyl of the formula $CH_2(CH_2)_nPhR$, diphenylalkyl of the formula $(CH_2)_nCH(PhR)_2$, diphenylmethoxyalkyl of the formula $(CH_2)_nOCHPh_2$, alkanoyl of 2 to 6 carbon atoms, phenylalkanoyl of the formula $CO(CH_2)_nPhR$, benzoylalkyl of the formula $(CH_2)_nCOPhR$, phenylhydroxyalkyl of the formula $(CH_2)_nCHOHPhR$ or cycloalkylcarbonyl of 4 to 8 carbon atoms;
Y is CH_2 C=O;
Ph is phenyl;
m is 1 or 2; and
n and *n'* are integers from 1 to 3, the sum of *n* and *n'* being from 3 to 5; and the pharmaceutically acceptable acid addition salts thereof, which comprises reacting an o-halobenzoyl chloride with 2-amino-2-methyl-1-propanol to form the corresponding o-halo-N-(1-hydroxy-2-methyl-2-propyl)benzamide, cyclizing said benzamide to the corresponding o-halophenyloxazoline by treatment with a dehydrating agent, converting said oxazoline to a Grignard reagent by reaction with magnesium, reacting said Grignard reagent with a cycloazalkanone to prepare the corresponding hydroxy-oxazolinylphenylcycloazalkane, and reacting said azalkane with an acid to form the corresponding 1,3-dihydrospiro[isobenzofuran-cycloazalkane]-3-one.

3,962,260
6-HYDRAZINO-2,3,5-TRIHALO-4-ALKYLTHIO PYRIDINES AND METHOD OF PREPARING SAME

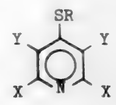
Sven H. Ruetman, Walnut Creek, and Richard N. Watson, Antioch, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 536,790, Dec. 27, 1974. This application July 31, 1975, Ser. No. 600,674
Int. Cl.² C07D *213/62*
U.S. Cl. 260—294.8 F **6 Claims**

1. A process for preparing a hydrazino-trihaloalkylthiopyridine of the formula



wherein R is an alkyl group of from 1 to 5 carbons; X is Cl or Br; and Y, which is the same in each occurrence, is Cl or Br, except that Y cannot be Br when X is Cl;
comprising reacting with hydrazine the corresponding tetrahalo-4-(alkylthio)pyridine of the formula



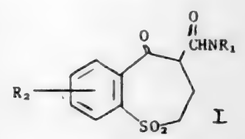
wherein R, X and Y are as above defined, thereby effecting replacement of one X in said tetrahalo-4-(alkylthio)pyridine with an —NH—NH_2 moiety.

3,962,261
2,3,4,5-TETRA HYDRO-5-OXO-1-BENZOTHIEPI N-4-CARBOXAMIDE 1,1-DIOXIDES

Harold Zinnes, Rockaway, and Jagadish C. Sircar, Dover, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 439,502, Feb. 4, 1974, abandoned. This application Aug. 6, 1975, Ser. No. 602,155
Int. Cl.² C07D *213/34*
U.S. Cl. 260—294.8 C **4 Claims**

1. A compound of the formula



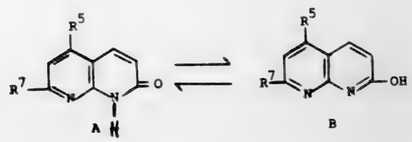
wherein R_1 is aryl of 6–10 carbon atoms, pyridyl, or thiazole and R_2 is hydrogen, lower alkyl, halogen, lower alkoxy or trifluoromethyl and the corresponding alkali metal salts.

3,962,262
1,8-NAPHTHYRIDINE COMPOUNDS

Haydn Windsor Richard Williams, Dollard-des-Ormeaux, and Clarence Stanley Rooney, Beaconsfield, both of Canada, assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 350,285, April 11, 1973, Pat. No. 3,843,663. This application June 7, 1974, Ser. No. 477,392
The portion of the term of this patent subsequent to Oct. 15, 1991, has been disclaimed.
Int. Cl.² C07D *213/44*, *471/14*
U.S. Cl. 260—294.8 C **8 Claims**

1. A 1,8-naphthyridine having one of the structures A or B



wherein R^5 is selected from the group consisting of lower alkyl, trifluoromethyl, pentafluoroethyl, phenyl, pyridyl, thienyl, and naphthyl; R^7 is selected from the group consisting of lower alkyl, trifluoromethyl and pentafluoroethyl, and at least one of the variable radicals R^5 or R^7 is trifluoromethyl or pentafluoroethyl.

3,962,263
N-(2,2-DIFLUOROALKANOYL)-2,3-PYRIDINEDIAMINE COMPOUNDS

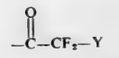
George O. P. Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 21,536, March 20, 1970, which is a continuation-in-part of Ser. No. 822,042, May 5, 1969. This application Dec. 9, 1971, Ser. No. 206,492
Int. Cl.² C07D *213/75*
U.S. Cl. 260—294.9 **7 Claims**

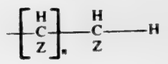
1. A compound of the formula



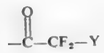
wherein
one of R^0 and R^1 represents a 2,2-difluoroalkanoyl radical of the formula



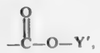
wherein Y represents hydrogen, chlorine, fluorine, perfluoroalkyl of C_1–C_6, or radical of the formula



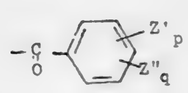
wherein each Z independently represents hydrogen or halogen and *n* represents 0 or 1;
the other of R^0 and R^1 represents hydrogen,



wherein Y is as defined above,
alkanoyl of C_1–C_8,
loweralkenoyl of C_3–C_4,
loweralkanoyl of C_3–C_4,
halogenated loweralkanoyl of C_2–C_4 bearing on any position or positions one or more halogen atoms, each independently selected, subject to the limitation that the alpha position bear at least one substituent moiety selected from the group consisting of hydrogen and halogen of atomic weight from 35 to 127, both inclusive,
radical of the formula



wherein Y' represents loweralkyl of C_1–C_4 or phenyl,
benzoyl,
furoyl,
naphthoyl, or
substituted benzoyl of the formula



wherein each Z' independently represents halo or nitro, Z'' represents loweralkyl of C_1–C_4 or loweralkoxy of C_1–C_4, *p* represents 1 or 2, *q* represents 0 or 1, and the sum of *p* and *q* is 1 or 2;
R^2 represents halogen, nitro, $-CF_3$, $-CF_2Cl$, $-CF_2H$, cyano, or loweralkylsulfonyl of C_1–C_4;
R^3 represents halogen;
and *m* represents an integer of from 0 to 2, both inclusive, subject to the limitation that when R^2 represents a moiety other than halogen, *m* is no greater than 1; or an acid addition salt thereof.

3,962,264
PROCESS FOR MAKING 2-AMINO NICOTINONITRILE

Marwan J. Abu El-Haj, Gales Ferry, and Beryl William Dominy, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 292,645, Sept. 27, 1972, Pat. No. 3,862,191. This application Sept. 23, 1974, Ser. No. 508,060
Int. Cl.² C07D *213/84*
U.S. Cl. 260—294.9 **3 Claims**

1. The process for preparing 2-aminonicotinonitrile, which process comprises:
1. reacting equimolar proportions of a 1,1,3,3-tetraalkoxypropane wherein said alkoxy group contains from 1 to 4 carbon atoms with malononitrile in the presence of at least three molar equivalents of an alkanoic acid anhy-

dride wherein said alkanonic acid contains from 2 to 4 carbon atoms at 30°–200°C. and

2. thereafter, reacting the intermediate 1-alkoxy-4,4-dicyano-1,3-butadiene product with equimolar proportions of ammonia at 25°–100°C. in a reaction inert solvent.

3,962,265

H'-(4-((6-CHLORO-2-PYRIDINYL)OXY)PHENYL)-N-METHYL-N-(1-METHYL-2-PROPYNYL)UREA

Howard Johnston, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 435,619, Jan. 22, 1974, abandoned. This application Apr. 21, 1975, Ser. No. 570,067

Int. Cl.² C07D *213/86*

U.S. Cl. 260—295 E **1 Claim**

1. The compound which is N'-(4-((6-chloro-2-pyridinyl)oxy)phenyl)-N-methyl-N-(1-methyl-2-propynyl)urea.

3,962,266

NOVEL SUBSTITUTED BENZOPYRANOPYRIDINE

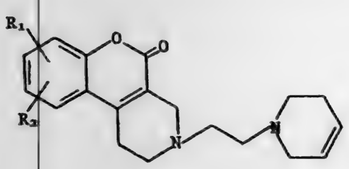
Richard E. Brown, East Hanover; Chester Puchalski, Dover, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 534,502, Dec. 19, 1974, which is a continuation-in-part of Ser. No. 343,613, March 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 122,498, March 9, 1971, abandoned. This application May 1, 1975, Ser. No. 573,668

Int. Cl.² C07D *519/00*

U.S. Cl. 260—295 T **2 Claims**

1. A substituted benzopyranopyridine of the formula;



I

wherein R_1 and R_2 may be hydrogen, hydroxy, lower alkoxy, or lower alkyl of 1 to 6 carbon atoms or taken together from a methylenedioxy group.

3,962,267

DENTAL CEMENT COMPOSITION

Narishige Suzuki, Kyoto; Yoshihiro Morino, Otsu; Yoshitaka Hashiguchi, Amagasaki, and Tunehiro Segawa, Sakai, all of Japan, assignors to Shofu Dental Corporation, Kyoto and Teikoku Chemical Industry Co., Ltd., Osaka, both of, Japan

Filed July 11, 1974, Ser. No. 487,486

Claims priority, application Japan, Apr. 16, 1974, 49-43179

Int. Cl.² C08K *3/22*

U.S. Cl. 260—29.6 TA **8 Claims**

1. A dental cement composition comprising:

A. an aqueous solution of a resin prepared by copolymerizing:

1. about 5 to 60 parts by weight of 3-butene-1,2,3-tricarboxylic acid,
2. about 40 to 95 parts by weight of an α,β-olefinically unsaturated monocarboxylic acid, and
3. about 0 to 15 parts by weight of an additional polymerizable monomer,

said copolymer having a molecular weight between about 5,000 and 250,000, said aqueous solution containing at least about 40% resin solids; and

B. a metal oxide,

C. the ratio of the copolymer to the metal oxide being about 1:1 to about 1:4.

3,962,268

PROCESS FOR PRODUCING 2:2'- OR 4:4'-BIPYRIDYLS

George Henry Lang, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 2, 1975, Ser. No. 574,089

Claims priority, application United Kingdom, May 22, 1974, 22890/74; Nov. 15, 1974, 49487/74

Int. Cl.² C07D *213/02*

U.S. Cl. 260—296 D **6 Claims**

1. A process for the manufacture of 2:2'- or 4:4'-bipyridyls which comprises heating at 40°– 180°C. in an organic solvent selected from hydrocarbons, halogenated hydrocarbons and ethers a 2- or 4-(halo-magnesium)-pyridine respectively with from 1 to 4 moles of the halide of an element from groups 4b, 5b, 6b, 7b, 8, 1b, 2b, 3a, 4a and 5a of the Periodic table.

3,962,269

1,3-PROPANDIOL INTERMEDIATES

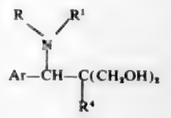
Richard N. Booher, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 427,944, Dec. 26, 1973, which is a continuation-in-part of Ser. No. 313,221, Dec. 8, 1972, abandoned. This application May 8, 1975, Ser. No. 575,561

Int. Cl.² C07D *213/38*

U.S. Cl. 260—296 R **4 Claims**

1. A compound of the formula



wherein

R and R^1 are C_1-C_4 alkyl, C_2-C_4 alkenyl or benzyl; or when taken together with the nitrogen atom to which they are attached are aziridino, pyrrolidino or piperidino;

R^4 is hydrogen or methyl; and

Ar is phenyl, halophenyl, hydroxyphenyl, methoxyphenyl, methylphenyl, trifluoromethylphenyl or 3-pyridyl.

3,962,270

PROCESS FOR PREPARING 2-VINYL OXAZOLINES

Dieter Arlt, Cologne-Buchheim, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

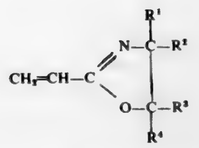
Filed May 21, 1974, Ser. No. 472,016

Claims priority, application Germany, June 9, 1973, 2329545

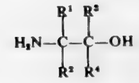
Int. Cl.² C07D *263/12, 263/14*

U.S. Cl. 260—307 F **3 Claims**

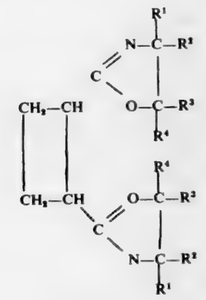
1. Process for preparing 2-vinyl oxazolines having the formula



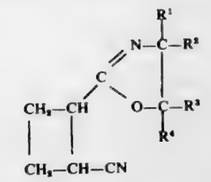
wherein R^1, R^2, R^3 and R^4, which may be the same or different, each represents hydrogen, alkyl with up to 4 carbon atoms, hydroxy substituted alkyl with up to 4 carbon atoms, phenyl and phenyl substituted by alkyl with 1 to 2 carbon atoms which comprises the steps of reacting in a first stage cyclobutane-1,2-dinitrile with an aminoethanol having the formula:



wherein R^1, R^2, R^3 and R^4 are as defined at a temperature of from 90° to 180°C and, in a second stage, heating the resulting 1,2-bis-oxazolin-2-yl cyclobutane having the formula:



and/or 2-oxazolin-2-yl cyclobutane nitrile having the formula:



wherein R^1, R^2, R^3 and R^4 are defined above to a temperature of from 250° to 600°C.

2. Process of claim 1 wherein the first stage is catalyzed by a metal salt whose cation is selected from the group of lithium, copper, calcium, zinc, cadmium, manganese, nickel and cobalt.

3,962,271

MONOCYCLIC POLYOXYMETHYLENEOXAZOLIDINES AND BIOCIDAL COMPOSITIONS CONTAINING SAME

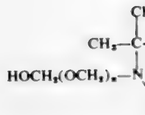
Henri Sidi, Paramus, and Hilding R. Johnson, Wayne, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Division of Ser. No. 447,797, March 4, 1974, Pat. No. 3,890,264. This application Oct. 31, 1974, Ser. No. 519,884

Int. Cl.² C07D *263/06*

U.S. Cl. 260—307 FA **4 Claims**

1. A monocyclic polyoxymethyleneoxazolidine having the structural formula



wherein n represents a number in the range of 1 to 4.

3,962,272

1H-TETRAZOLE-1-ACETATE ESTERS AND ACIDS AND PROCESS THEREFOR

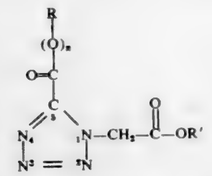
Allen S. Katner, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 280,625, Aug. 14, 1972, abandoned. This application Aug. 5, 1974, Ser. No. 494,599

Int. Cl.² C07D *257/04*

U.S. Cl. 260—308 D **11 Claims**

1. A compound of the formula



in which R' is hydrogen, an alkali metal cation, C_1— to C_4—alkyl, C_3— to C_6-cycloalkyl, phenyl, tolyl, xylyl, benzyl, p-nitrophenyl, p-nitrobenzyl, phenylethyl, 2,2,2-trichloroethyl, or phenacyl; R is C_1— to C_4-alkyl C_3— to C_6-cycloalkyl, phenyl, naphthyl, tolyl, benzyl, p-nitrobenzyl, or an alkali metal cation; and n is zero or one; subject to the limitation that, when n is zero, R is other than an akali metal cation.

3,962,273

NOVEL METHOD FOR THE SYNTHESIS OF 4-THIO AND 4-SELENO ETHERS OF 2-PYRAZOLIN-5-ONES

Delwyn E. Machiele, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,687

Int. Cl.² C09D *231/08;* **C07D** *257/06*

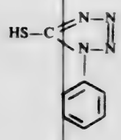
U.S. Cl. 260—308 D **16 Claims**

1. A process for obtaining a 4-thio- or a 4-seleno ether derivative of a 2-pyrazolin-5-one compound comprising reacting in reactive proportions in an inert organic reaction solvent and under mild reaction conditions a 4,4-dibromo-2-pyrazolin-5-one with a compound of the formula

$R^3—R^4H$

wherein R^4 is defined as —S— or —Se—; and R^3 is defined as a heterocyclic group having 5–6 atoms in a heteronucleus containing at least one sulfur, nitrogen, or oxygen atom; an aryl group; or an alkyl group, whereby said 4-thio- or 4-seleno-ether derivative of said 2-pyrazolin-5-one compound is produced.

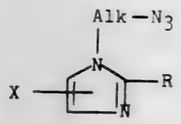
11. A process for obtaining 1-(2,4,6-trichlorophenyl)-3-(2,4-dichloroanilino)-4-(1-phenyl tetrazolylthio)-5-pyrazolone comprising contacting (a) 1-(2,4,6-trichlorophenyl)-3-(2,4-dichlorophenylanilino)-4,4-dibromo-5-pyrazolone with (b) a compound of the formula



in a weight ration of (a) to (b) respectively of from about 1:1 to about 1:5 in an acetonitrile reaction solvent, and recovering the resulting thioether product.

3,962,274
1-AZIDOALKYLIMIDAZOLES
Ernest F. Levon, Evanston, Ill., assignor to G. D. Searle & Co., Chicago, Ill.
Filed Aug. 11, 1975, Ser. No. 603,336
Int. Cl.² C07D *403/06*
U.S. Cl. 260—309 **10 Claims**

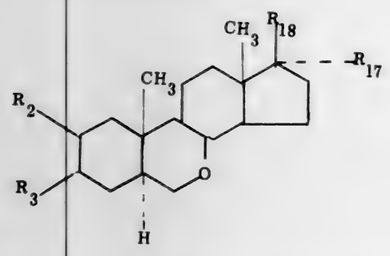
1. A compound of the formula



wherein R represents hydrogen, alkyl containing fewer than 8 carbons, phenyl, or halophenyl; Alk represents alkylene containing more than 1 and fewer than 5 carbons; and X represents hydrogen or nitro.

3,962,275
7-OXA STEROIDS
Robert William Guthrie, Fairfield; Richard Wightman Kierstead, and Ronald Andrew Lemahieu, both of North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 259,526, June 5, 1972, Pat. No. 3,869,467. This application Dec. 11, 1974, Ser. No. 531,494
Int. Cl.² C07D *493/02*
U.S. Cl. 260—310 C **2 Claims**

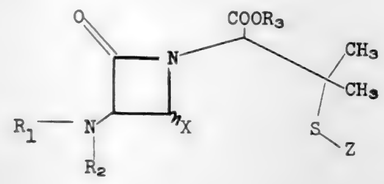
1. A compound of the formula:



wherein R_2 and R_3 are taken togther to form a pyrazole ring; R_{18} is hydroxy or hydroxy esterified with a lower alkanoic acid or a halo lower alkanoic acid, with said alkanoic acid containing from 2 to 7 carbon atoms.

3,962,276
AZETIDINONE ACETIC ACID INTERMEDIATES FOR 5-EPI-PENICILLINS
Stjepan Kukolja, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Division of Ser. No. 165,758, July 15, 1971, Pat. No. 3,897,445, which is a continuation-in-part of Ser. No. 148,129, May 28, 1971, abandoned. This application Nov. 14, 1974, Ser. No. 523,766
Int. Cl.² C07D *403/04, 205/08*
U.S. Cl. 260—326 S **5 Claims**

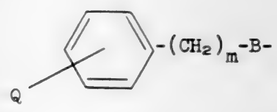
1. A compound of the formula



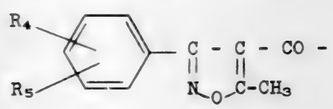
wherein R_1, taken alone, denotes an acyl group of the formula

$R_a—CH_2—CO$

where R_a is



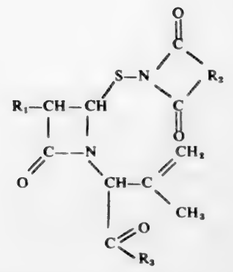
Q is hydrogen, chloro, bromo, C_1 to C_3-alkyl, C_1 to C_3-alkyloxy, nitro, or cyano; B is oxygen or a chemical bond; and *m* is an integer of from 0 to 2;
R_2, taken alone, is defined as R_1 above, or is



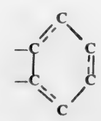
where each of R_4 and R_5 is hydrogen or a halogen (fluorine, chlorine, bromine, or iodine); or R_1 and R_2 taken together with the nitrogen to which they are bonded complete a cyclic imide radical derived from a hydrocarbon dibasic acid having from 3 to 20 carbon atoms, and R_3 is hydrogen, C_1 to C_4 alkyl, p-nitrobenzyl, p-methoxybenzyl, benzyl, benzyhydryl, phthalimidomethyl, succinimidomethyl, 2,2,2-trichloroethyl, trimethylsilyl, phenacyl, or p-halophenacyl in which halo denotes chlorine or bromine, X is chlorine or bromine and Z is hydrogen or —SCN.

3,962,277
ACETIDINE DERIVATIVES
Jan Verwey, Leiden, and Hong Sheng Tan, Bleiswijk, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands
Division of Ser. No. 440,725, Feb. 8, 1974. This application Oct. 6, 1975, Ser. No. 619,843
Claims priority, application United Kingdom, Feb. 9, 1973, 6576/73
Int. Cl.² C07D *209/34*
U.S. Cl. 260—326 S **23 Claims**

1. Azetidine derivatives of the formula



wherein R_1 represents a penicillin- or cephalosporin acylamido group, R_2 represents:



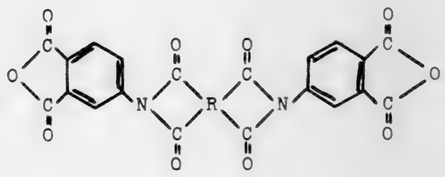
and when said group represents a phenylene - this group may carry one to four further substitutents selected from the group consisting of halogen and lower alkyl, lower alkenyl and phenyl
R_3 represents an amino group of the formula



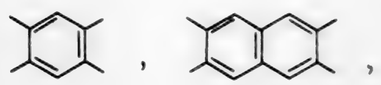
wherein R_7 represents a hydrogen atom or a lower alkyl and R_8 represents a lower alkyl, or
R_3 represents a N,N'-disubstituted hydrazino group wherein the substituents are lower alkyl, or
R_3 represents —OR_9, wherein R_9 represents a hydrogen atom, a lower alkyl optionally substituted by 1 to 3 halogen atoms or by 1 or 2 phenyl groups, wherein the phenyl groups may be substituted by a methoxy or a nitro, or R_9 represents a phenacyl group or an alkali metal or alkaline earth metal ion and corresponding azetidine derivatives wherein the double bond in the propenyl side chain has been shifted from the 2- to the 1-position.

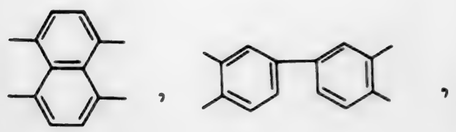
3,962,278
N,N'BIS(PHTHALIC ANHYDRIDE) DIIMIDES
George M. Bower, Pittsburgh, and Richard M. Skena, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 97,334, Dec. 11, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 413,073
Int. Cl.² C07D *405/14, 471/06, 487/04, 487/14*
U.S. Cl. 260—326 C **5 Claims**

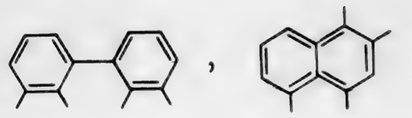
1. A dianhydride monomer containing imide linkages and having the structural formula:

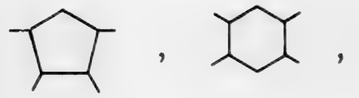


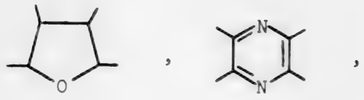
wherein R is selected from the group of tetravalent radicals consisting of:

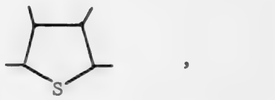


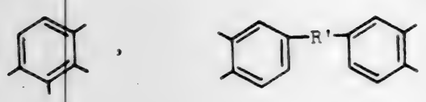




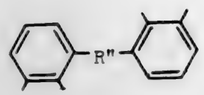








and



wherein R' is a radical selected from the group consisting of carbonyl, sulfonyl, oxy and alkylene groups of up to 3 carbons and R'' is an alkylene group of up to 3 carbons.

3,962,279

SYNTHESIS OF PERFLUOROPYRUVYL FLUORIDE DIMER

David Charles England, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 6, 1975, Ser. No. 584,381
Int. Cl.² C07D *317/32*
U.S. Cl. 260—340.2 **4 Claims**

1. The process of synthesizing the dimer of perfluoropyruvyl fluoride which comprises reacting liquid or gaseous hexafluoropropene epoxide with liquid dimethyl formamide.

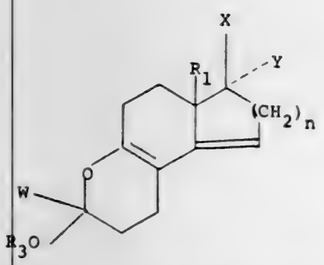
3,962,280

PROCESS FOR PREPARING BENZOPYRAN DERIVATIVES

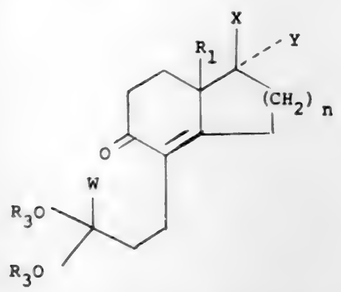
Ulrich Eder; Gerhard Sauer; Gregor Haffer; Jurgen Ruppert, and Rudolf Wiechert, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed June 6, 1973, Ser. No. 367,509
Claims priority, application Germany, June 8, 1972, 2228473; June 8, 1972, 2228475
Int. Cl.² C07D *311/78*
U.S. Cl. 260—340.5 **7 Claims**

1. A process for the production of a benzopyran of the formula



wherein R_1 and R_3 each are lower alkyl; n is the integer 1 or 2; X is hydroxy, acyloxy wherein acyl is the acyl radical of a hydrocarbon carboxylic acid of 1–10 carbon atoms optionally substituted by phenyl, or alkoxy of 1–10 carbon atoms optionally substituted by phenyl and Y is H; or X and Y collectively are =O; and W is $-(CH_2)_2$-Z-R_4, $-(CH_2)_2-CH=C-R_3$, $-CH_2)_2-COOR_4$ or $-(CH_2)_4CN$, wherein V is halogen, Z is a ketalized carbonyl group, hydroxymethylene, acyloxymethylene wherein acyl is the acyl residue of a hydrocarbon carboxylic acid of 1–10 carbon atoms optionally substituted by phenyl, alkoxymethylene or aryloxymethylene of 1–10 carbon atoms in the alkoxy or alkoxy residue, R_4 and R_5 each are lower alkyl and R_4 is alkyl, aryl or aralkyl, which comprises catalytically cyclizing in the presence of a catalytic amount of a mineral acid, a sulfonic acid, a Lewis acid, a carboxylic acid or a phenol, a compound of the formula



wherein R_1, R_2, W, X, Y and n have the same values as the product thus-produced, to form said benzopyran.

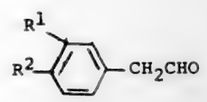
3,962,281

METHOD OF PREPARING ALDEHYDES

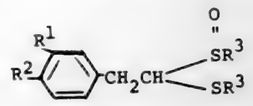
Genichi Tsuchihashi, Tama, and Katsuyuki Ogura, Sagamihara, both of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Division of Ser. No. 245,305, April 19, 1972, Pat. No. 3,845,076. This application Aug. 9, 1974, Ser. No. 496,206
Claims priority, application Japan, Apr. 20, 1971, 46-24910; Apr. 21, 1971, 46-25257; June 2, 1971, 46-37852; Apr. 30, 1971, 46-27998; June 2, 1971, 46-37853
Int. Cl.² C07C *43/30*
U.S. Cl. 260—340.5 **2 Claims**

1. A method of preparing a dimethyl acetal or diethyl acetal of an aldehyde of the formula



wherein R^1 is a member selected from the group consisting of hydrogen and alkoxy having 1 to 4 carbons, R^2 is a member selected from the group consisting of hydrogen, halogen and alkoxy having 1 to 4 carbons, and R^1 and R^2 together represent alkylidenedioxy having 1 to 4 carbons; which comprises the steps of subjecting to an acidic hydrolysis and acetalization a sulfoxide of the formula



wherein R^1 and R^2 have the above meanings, and the two R^3 groups are the same and each selected from the group consisting of alkyl having 1 to 4 carbons and phenyl, said acidic hydrolysis and acetalization being carried out in the presence of mineral or organic protic acids having a pK smaller than about 1 or Lewis acids and in the copresence of an acetalization agent selected from the group consisting of methyl orthoformate and ethyl orthoformate to produce the objective acetal compound.

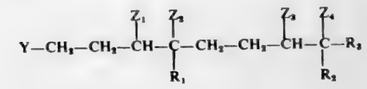
3,962,282

JUVENILE HORMONE MIMICS

Thomas L. Emmick, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 187,890, Oct. 8, 1971, Pat. No. 3,825,661, which is a continuation-in-part of Ser. No. 877,019, Nov. 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 787,281, Dec. 26, 1968, abandoned. This application July 3, 1974, Ser. No. 485,486
Int. Cl.² C07D *317/50, 319/08*
U.S. Cl. 260—340.5 **3 Claims**

1. A compound having the formula



wherein
each of R_1, R_2 and R_3 is a C_1–C_3 alkyl group: [each of Z_1, Z_2, Z_3 and Z_4 separately is hydrogen or halogen, or]
Zand Z_2 together and Z_3 and Z_4 together are a carbon to carbon bond; and
Y is substituted phenyl wherein the substituents are methylenedioxy or ethylenedioxy.

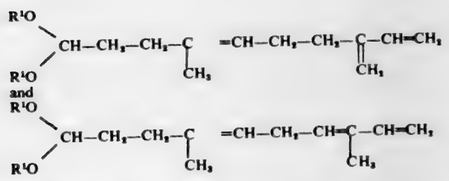
3,962,283

TERPENE FLAVORANT INTERMEDIATES

Erhard Bertele, Dubendorf, and Peter Schudel, Grut near Wetzikon, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 436,756, Jan. 25, 1974, which is a division of Ser. No. 742,178, July 3, 1968, Pat. No. 3,872,172. This application Oct. 16, 1974, Ser. No. 515,269
Claims priority, application Switzerland, July 7, 1967, 9749/67; Nov. 1, 1967, 15391/67
Int. Cl.² C07C *43/30;* **C07D** *317/12*
U.S. Cl. 260—340.9 **3 Claims**

1. A compound having the formula selected from the group consisting of



and

wherein the symbols R^1 each signify a lower alkyl group or together signify a lower alkylene group.

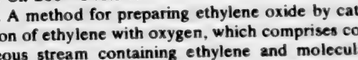
3,962,284

3-(5-ARYL-2-FURYL)-3-HYDROXYPROPIONIC ACIDS AND ETHYL ESTERS

Stanford S. Peloni, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Aug. 20, 1975, Ser. No. 606,244
Int. Cl.² C07D *307/40*
U.S. Cl. 260—347.5 **8 Claims**

1. A compound of the formula:



wherein X is 4-chloro, 3,4-dichloro, 4-bromo, 3-chloro, 4-fluoro or hydrogen and R is hydrogen or ethyl.

3,962,285

OLEFIN OXIDATION PROCESS

James A. Cusumano, Rahway, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 259,929, June 5, 1972, Pat. No. 3,844,981, which is a continuation-in-part of Ser. No. 887,747, Dec. 23, 1969, abandoned. This application May 22, 1974, Ser. No. 472,170
Int. Cl.² C07D *301/10*
U.S. Cl. 260—348.5 R **9 Claims**

1. A process for oxidizing ethylene to ethylene oxide which comprises contacting said ethylene, in the presence of oxygen, under oxidation conditions, such oxidation conditions comprising mixing about 20 to 40 wt. % oxygen, about 5 to 20 wt. % ethylene and about 40 to 75 wt. % of an inert gas at a temperature of from 100° to 400°C and a pressure of from 1 to 20 atm with a bimetallic catalyst, said catalyst comprising from 90 to 99.9 wt. % of silver and from 0.1 to 10 wt. % of a promoter metal present as a surface alloy phase which promoter metal is rhenium, at a space velocity of 1000 to 4000 V/V/hr. and thereby converting at least a portion of the ethylene to ethylene oxide.

3,962,286

CATALYTIC PROCESS FOR PREPARING ETHYLENE OXIDE BY OXIDATION OF ETHYLENE

Giambattista Antonelli, Brugherio (Milan); Natale Ferlazzo, Segrate (Milan), and Giancarlo Aglietti, Milan, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Dec. 17, 1974, Ser. No. 533,603
Claims priority, application Italy, Dec. 28, 1973, 32343/73
Int. Cl.² C07D *301/10*
U.S. Cl. 260—348.5 R **17 Claims**

1. A method for preparing ethylene oxide by catalytic oxidation of ethylene with oxygen, which comprises contacting a gaseous stream containing ethylene and molecular oxygen with a catalyst obtained by the steps comprising:
a. impregnating particles of a subdivided inert support with a heat-decomposable silver salt,
b. drying said impregnated particles while heating to a maximum temperature not exceeding 160°C,
c. flowing through the dried particles a gaseous stream consisting of superheated steam while raising the temperature to a selected value in the range of from 270°C to 350°C,
d. progressively replacing in the gaseous stream and the steam by air over a period of at least 1 hour, while maintaining the temperature at a value substantially equal to said selected value, and
e. maintaining the particles for at least 30 minutes under the gaseous stream consisting of air, while maintaining the temperature at a value substantially equal to said selected value.

3,962,287
CHEMICAL PROCESS FOR PRODUCING CITRIC ACID

Karl E. Wiegand, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 172,627, Aug. 18, 1971, Pat. No. 3,769,337. This application Mar. 13, 1973, Ser. No. 340,725

The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.

Int. Cl.² C07C *59/16*

U.S. Cl. 260—535 P **22 Claims**



1. A process for producing citric acid or salts thereof which comprises reacting a 3-carbamoyl-3-hydroxy-4-halobutyrate in an aqueous system with about 1 gram mol of cyanide ion and at least about 1 gram mol of alkaline earth metal hydroxide per gram mol of 3-carbamoyl-3-hydroxy-4-halobutyrate under conditions which form an alkaline earth metal adduct, and subjecting said adduct to hydrolysis under alkaline or acidic conditions to form a citrate.

3,962,288
1-ALKYL-SUBSTITUTED-1,2,3,4-TETRAHYDROANTHRAQUINONES

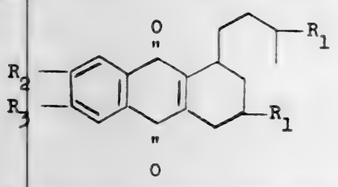
Lawrence G. Vaughan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 264,579, June 20, 1972, abandoned. This application Mar. 14, 1974, Ser. No. 451,116

Int. Cl.² C07C *49/68*

U.S. Cl. 260—369 **9 Claims**

1. An alkyl-substituted-1,2,3,4-tetrahydroanthraquinone of the formula



wherein R_1 is hydrogen or an alkyl group containing 1–10 carbon atoms and R_2 and R_3 are hydrogen or alkyl groups containing 1–6 carbon atoms.

3,962,289
ESTERS OF PGA_2 AND p-TRITYLPHENOL

Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 431,598, Jan. 8, 1974. This application Dec. 12, 1974, Ser. No. 531,993

Int. Cl.² C07C *69/74*

U.S. Cl. 260—395 **3 Claims**

1. The ester of p-tritylphenol and PGA_2.

3,962,290
PROCESS FOR N,N,N′,N′-TETRAARYLQUINONE DIIMONIUM SALTS

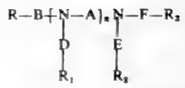
Vincent Gerard Grosso, Piscataway, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 25, 1974, Ser. No. 445,510

Int. Cl.² C07C *119/14*

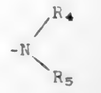
U.S. Cl. 260—396 N **4 Claims**

1. A process for oxidizing a diamine compound represented by the formula:

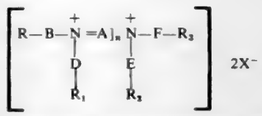


(I)

wherein A, B, D, E and F represent benzene or naphthalene radicals; n is 1 or 2 and R, R_1, R_2 and R_3 represent hydrogen, lower alkyl, lower alkoxy, phenyl, tolyl, acetyl, or



radicals, said R_4 and R_5 in turn representing hydrogen, alkyl of from 1 to 12 carbon atoms, benzyl, naphthylmethyl or trifluoroacetyl radicals; said A, B, D, E and F and R through R_5 which are other than hydrogen being either unsubstituted or substituted with an inert group selected from lower alkyl, lower alkoxy, hydroxy, cyano, carboxy, sulfo and halogen; to produce a diimonium compound represented by the formula



(II)

wherein A represents a benzoquinonoid or naphthoquinonoid radical and, B, D, E and F and R through R_3 have the same meaning as in formula I and X^- represents a hexalfluoroantimonate or hexafluoroarsenate ion; which process commprises conducting the oxidation reaction in an inert organic solvent in the presence of about 2 mole proportions of a cupric salt per mole proportion of said diamine and 2 mole proportions of a soluble hexafloroantimonate or hexafluoroarsenate salt per mole proportion of said cupric salt, said cupric salt being soluble in said solvent.

3,962,291
TOTAL SYNTHESIS OF 11-ALKYL STEROIDS

Robert B. Garland, Northbrook, and Raphael Pappo, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Sept. 5, 1974, Ser. No. 503,270

Int. Cl.² C07J *1/00*

U.S. Cl. 260—397.45 **2 Claims**

1. A process for the manufacture of 11-alkyl steroids which comprises contacting a 6-alkoxy-1-tetralone with a dialkylamino vinylic organometallic reagent, quaternizing the resulting 5-alkoxy-1-(3-dialkylaminoalken-1-yl)-1-tetralol by reaction with an alkyl halide and dehydrating the resulting quaternary ammonium salt by reaction with acetic anhydride or, alternatively, dehydrating said 6-alkoxy-1-(3-dialkylaminoalken-1-yl)-1-tetralol by reaction with acetic anhydride, then quaternizing the resulting 6-alkoxy-1-(3-dialkylaminoalken-2-yl)-3,4-dihydronaphthalene with an alkyl halide, contacting the resulting quaternary salt with a 2-alkylcyclopentane-1,3-dione to yield the corresponding 2-(6-alkoxy-3,4-dihydro-1-naphthyl)-1-(2-alkylcyclopentane-1,3-dione2-yl)-2-alkene, cyclizing the latter product by reaction with p-toluene-sulfonic acid, contacting the resulting 3-alkoxy-11alkylene-13-alkylgona-1,3,5(10),8(9),14-pentaen-17-one with lithium aluminum hydride, reacting the resulting 17β-ol with hydrogen in the presence of a palladium-calcium carbonate catalyst to afford the corresponding 3-alkoxy-11,13β-bisalkylgona-1,3,5,(10),9(11), 8(14)-pentaen-17β-ol, contacting the latter product with hydrogen in the presence of palladium on alumina catalyst to yield the corresponding gona-1,3,5(10),8(9)-

tetraene, contacting the latter derivative with sodium in liquid ammonia to yield the corresponding gona-1,3,5(10)triene, contacting the latter product with sodium in liquid ammonia in the presence of aniline to afford the corresponding 2,5(10)-diene, contacting that compound with chromic acid to yield the 17-one corresponding, reacting the latter substance with a 1-alkyne to afford the corresponding 17α-alkynyl-17β-ol, hydrolyzing the latter enol ether with oxalic acid to yield the corresponding 5(10)-en-3-one, contacting that product with dilute hydrochloric acid to afford the corresponding 4-en-3-one, contacting that product with lithium tri-tertiary butoxy aluminum hydride to yield the 3β-ol corresponding and reacting that product with acetic anhydride to yield the 3,17-bis-(alkanoate) corresponding.

3,962,292
PHOSPHATIDE PREPARATION PROCESS

Bernard F. Szuhaj, Lombard, and Joseph R. Yaste, Hoffman Estates, both of Ill., assignors to Central Soya Company, Inc., Fort Wayne, Ind.

Filed July 29, 1974, Ser. No. 492,762

Int. Cl.² C07F *9/10*

U.S. Cl. 260—403 **1 Claim**

1. In a method of modifying a natural phosphatide to develop water dispersability, the steps of:

acylating a vegetable material consisting predominantly of phosphatidic material by mixing said material with a carboxylic acid anhydride containing not more than ten carbon atoms exclusive of any aryl groups and continuing the reaction between said material and anhydride until the free amino nitrogen value of said material is reduced at least about 10% to about 90%,

thereafter hydroxylating the acylated product while the mixture is still at an acid pH from said acylating step and continuing the reaction between said acylated product and the hydroxylating agent until the iodine value of said acylated product is reduced at least about 5% to about 20%,

controlling the acylating and hydroxylating steps to develop a relatively higher reduction in one value when a relatively lower reduction in value results from the other step, and

thereafter substantially neutralizing the acylated, hydroxylated product.

3,962,293
13,14-DIHYDRO-16-FLUORO PROSTAGLANDIN F_1 ANALOGS

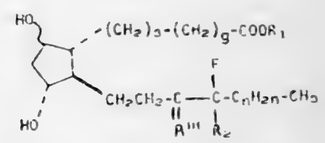
Barney J. Magerlein, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 381,155, July 20, 1973, which is a continuation-in-part of Ser. No. 248,013, April 27, 1972, abandoned. This application Feb. 21, 1975, Ser. No. 551,694

Int. Cl.² C07C *61/38, 69/74*

U.S. Cl. 260—408 **19 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein ~ indicates attachment of hydroxyl to the ring in alpha or beta configuration; wherein g is an integer from 2 to 5, inclusive, wherein C_nH_{2n} is alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive, in the chain between $-CFR_2-$ and terminal methyl; wherein M‴ is



wherein R_7 and R_8 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different; wherein R_1 is hydrogen or alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; and wherein R_2 is hydrogen, methyl, ethyl, or fluoro; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,962,294
OLEFIN ISOMERIZATION CATALYSTS AND PROCESS

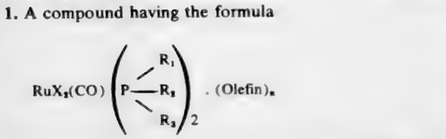
James E. Lyons, Wallingford, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

Continuation-in-part of Ser. No. 391,895, Aug. 27, 1973, abandoned, which is a division of Ser. No. 251,986, May 10, 1972, Pat. No. 3,855,323, which is a continuation-in-part of Ser. No. 80,750, Oct. 14, 1970, abandoned. This application May 9, 1975, Ser. No. 575,872

Int. Cl.² C07F *15/00*

U.S. Cl. 260—429 R **5 Claims**

1. A compound having the formula



wherein X is halogen; R_1, R_2, and R_3 are lower alkyl groups having from 1 to 6 carbon atoms, cycloalkyl, or aryl, wherein R_1, R_2, and R_3 may be the same or different; and n is 1; and wherein the olefin is an isomerizable monoolefin having from 4 to 36 carbon atoms or diolefin having from 5 to 40 carbon atoms.

3,962,295
NOVEL DIORGANOTIN DERIVATIVES OF α, ω-DIMERCAPTANS AND METHOD FOR PREPARING SAME

John Desmond Collins, 14 Windsor Road, Albrighton, Shropshire; Harold Coates, 60 Ounsdale Road, Wombourn, Staffordshire, and Iftikhar Hussain Siddiqui, 8 Wadhurst Road, Edgbaston, Birmingham, 13, Warwickshire, all of England

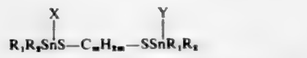
Continuation-in-part of Ser. No. 359,176, May 10, 1973, abandoned. This application Dec. 17, 1974, Ser. No. 533,535

Claims priority, application United Kingdom, May 10, 1972, 21826/72

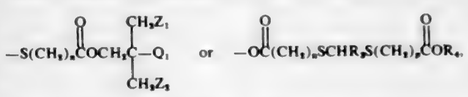
Int. Cl.² C07F *7/22*

U.S. Cl. 260—429.7 **16 Claims**

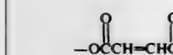
1. An organotin compound of the formula



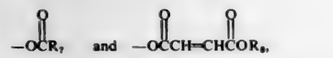
wherein R_1 and R_2 are individually selected from the group consisting of alkyl groups containing between 1 and 20 carbon atoms, cycloalkyl and phenyl groups, m is an integer between 1 and 8, inclusive, at least one of X and Y represents the group



with the proviso that when only one of X and Y represents said group, the other represents $-SR_8$ or



Q_1 represents an alkyl group containing between 1 and 6 carbon atoms, inclusive, or CH_2Z_3, wherein Z_1, Z_2 and Z_3 are individually selected from the group consisting of



R_3 represents an alkyl group containing between 1 and 20 carbon atoms, inclusive, an alkylphenyl or hydroxyphenyl group, R_4, R_5, R_6, R_7 and R_8 are individually selected from the group consisting of alkyl groups containing between 1 and 20 carbon atoms and n and p are each selected from the group consisting of integers between 1 and 6, inclusive.

3,962,296

PROCESS FOR THE PREPARATION OF STABILIZERS FOR SYNTHETIC RESINS

Tetsuo Chiba; Yoshio Itoh, both of Yokohama, and Satoshi Makabe, Ninomiya, all of Japan, assignors to Sankyo Organic Chemicals Co., Ltd., Kawasaki, Japan

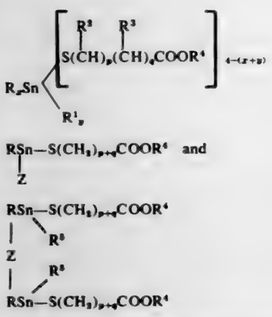
Continuation-in-part of Ser. No. 499,203, Aug. 21, 1974, abandoned. This application Apr. 29, 1975, Ser. No. 572,848

Claims priority, application Japan, Oct. 11, 1973, 48-113239

Int. Cl.² C07F 7/22

U.S. Cl. 260—429.7 **11 Claims**

1. A process for the preparation of a stabilizer for synthetic resins mainly a consisting of a molecular weight increased alkyltin mercaptocarboxylic acid ester which is characterized by reacctin an alkyltin mercaptocarboxylic acid alkylester having a formula selected from the group consisting of reacting



in which R is selected from the group consisting of an aliphatic alkyl group having 1 – 12 carbon atoms and a phenyl group; R^1 is selected from the group consisting of an aliphatic alkylthio group having 8 – 18 carbon atoms, an aliphatic alkanoyloxy group having 8 – 18 carbon atoms, a residue of a monoalkylester of maleic acid in which the alkyl is an aliphatic alkyl containing 8 – 18 carbon atoms and a benzoyloxy group; R^2 and R^3 are the same or different and each is selected from the group consisting of hydrogen, an aliphatic alkyl group having 1 – 4 carbon atoms and a phenyl group; R^4 is selected from the group consisting of an aliphatic alkyl group having 1 – 8 carbon atoms and an aliphatic alkoxyalkyl group having 3 – 6 carbon atoms; R^5 is selected from the group consisting of an aliphatic alkyl group having 1 – 12 carbon atoms, an aliphatic alkanoyloxy group having 8 – 18 carbon atoms and a $-S(CH_2)_{p+q}COOR^4$ group; x and y are integers of 1 to 3 and 0 to 1, respectively, in which $x+y$ is up to 3 inclusive; p and q are integers of 1 to 2 and 0 to 1, respectively; and Z is selected from the group consisting of oxygen, sulfur and a divalent maleic acid residue,

with a monovalent aliphatic alcohol having 4 – 18 carbon atoms, a divalent aliphatic alcohol having 2 – 6 carbon atoms or an aliphatic alkoxyalkyl alcohol having 4 – 10 carbon atoms, the boiling point of said alcohol being higher than that of an alcohol having the formula R^4OH, in which R^4 is the same as above, by at least 30°C,

at a temperature of 100° to 200°C in the absence of a catalyst, with removal of the lower boiling alcohol produced.

3,962,297

HIGH BURNING RATE CATALYST

William E. Hill, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1969, Ser. No. 805,385

Int. Cl.² C07F 15/02

U.S. Cl. 260—439 CY **3 Claims**

1. 1-isopropenyl-2-ferrocenoylcarborane.

3,962,298

PREPARATION OF HIGHLY SOLUBLE BISMUTH SALTS OF ORGANIC ALKANOIC ACIDS

Peter Cukor, Natick, and Kurt B. Kilichowski, Lexington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed July 24, 1974, Ser. No. 491,186

Int. Cl.² C07F 7/94

U.S. Cl. 260—447 **2 Claims**

1. A composition of matter consisting essentially of a major amount of bismuth (+3)-3,5,5-trimethylhexanate and a minor amount of 3,5,5-trimethylhexanoic acid.

3,962,299

ORGANOPOLYSILOXANE POLYESTERS

Robert W. Stackman, Morristown, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 25, 1974, Ser. No. 463,929

Int. Cl.² C07F 7/18

U.S. Cl. 260—448.8 R **12 Claims**

1. A polymerization process for producing an organopolysiloxane polyester which comprises condensing bis(2-hydroxyethyl) terephthalate with an organohalosilane having the formula:



wherein X is a halogen atom; and R is selected from halogen and hydrocarbon radicals, halo-substituted hydrocarbons and cyano-substituted hydrocarbons containing between 1 and about 22 carbon atoms.

3,962,300

PROCESS FOR PRODUCING METHANOL

Heinz Hiller, Bad Vilbel; Gerhard Hochgesand, Neu Isenburg; Emil Supp, Frankfurt am Main; Friedemann Marschner, Weisskirchen, and Gerhard Grunewald, Mainz-Mombach, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 350,849, April 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 130,693, April 2, 1971, abandoned. This application Apr. 15, 1975, Ser. No. 568,532

Claims priority, application Germany, May 19, 1970, 2024301

Int. Cl.² C07C 29/16

U.S. Cl. 260—449.5 **9 Claims**

1. In a process for producing methanol by (a) partiallly oxidizing a sulfur-containing high-boiling hydrocarbon in a gasification zone with oxygen and water vapor to produce a raw gas containing carbon monoxide, (b) desulfurizing the raw gas, (c) treating said desulfurized gas with water vapor to convert part of its carbon monoxide to carbon dioxide by reducing the water vapor to hydrogen thereby forming a methanol synthesis gas, and (d) producing methanol by contacting said synthesis gas with a copper-containing catalyst at elevated temperature and pressure, the improvement which comprises

a. effecting the partial oxidation under a pressure which is at least 5 kilograms per square centimeter above the methanol synthesis pressure of step (d),

b. effecting the desulfurization of the raw gas by washing with methanol below 0°C,

c. treating only a portion of the desulfurized gas with water vapor to effect conversion, scrubbing that converted portion with methanol below 0°C to remove at least part of the carbon dioxide, and combining the scrubbed converted portion with the untreated portion of the desulfurized gas, and

d. without compressing the combined gases subjecting them to the methanol synthesis at a temperature of 230° to 280°C under a pressure of 30–80 kilograms per square centimeter absolute pressure.

3,962,301

PREPARATION OF ALKYLENE DIISOCYANATES

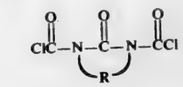
Laurence I. Peterson, Doylestown, Pa., and Michael J. VanEyck, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 5, 1975, Ser. No. 555,481

Int. Cl.² C07C 118/00

U.S. Cl. 260—453 P **9 Claims**

1. A process for production of alkylene diisocyanates comprising heating, at a temperature sufficient to cause dephosgenation, a compound represented by the formula



(I)

wherein —R— is dimethylene, trimethylene or tetramethylene which may bear from 1 to 8 lower alkyl groups of 1 to 3 carbon atoms each.

3,962,302

PRODUCTION OF ISOCYANATES FROM ESTERS OF CARBAMIC ACIDS (URETHANES)

Rudolph Rosenthal, Broomall, and John G. Zajacek, Devon, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 449,291, March 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 357,301, May 4, 1973, abandoned. This application July 18, 1975, Ser. No. 597,106

The portion of the term of this patent subsequent to Nov. 11, 1992, has been disclaimed.

Int. Cl.² C07C 118/00

U.S. Cl. 260—453 P **16 Claims**

1. A method for the production of isocyanates from esters or carbamic acids having the formula $R(NHCOOR')_x$ or $(RNHCOO)_xR'$ wherein R is a substituted or unsubstituted mono-, di- or trivalent organic radical selected from the group consisting of a saturated or monoolefinic unsaturated straight or branched chain aliphatic or cycloaliphatic radical containing not more than 32 carbon atoms, an alkoxyalkyl radical having not more than 32 carbon atoms, an aryl radical, an aralkyl radical, and an alkaryl radical containing 1 to 5 rings; R' is a substituted or unsubstituted mono-, di- or trivalent radical selected from the group consisting of a saturated or monoolefinic unsaturated straight or branched chain aliphatic or cycloaliphatic radical containing not more than 32 carbon atoms, an alkoxyalkyl having not more than 32 carbon atoms, an aryl radical, an aralkyl radical, and an alkaryl radical containing 1 to 3 rings; and x is 1, 2 or 3, and R and R' being the same or different, respectively, where x is 2 or 3, which comprises thermally decomposing said ester at a temperature in the range of from 175°C. to 350°C. while said ester is dissolved in an inert solvent to produce the isocyanate and alcohol, said solvent being characterized as a compound which is (a) a solvent for said ester, (b) liquid and stable at said reaction temperature and (c) non-reactive with said isocyanate produced in said thermal decomposition reaction and selected from the group consisting of aliphatic hydrocarbons having from 4 to 32 carbon atoms, the halo- and mono-nitro substituted derivatives of said aliphatic hydrocarbons, cycloaliphatic hydrocarbons, or aromatic hydrocarbons having from 1 to 3 rings, the alkyl benzenes having from 1 to 15 carbon atoms in the alkyl group, the halo- and mono-nitro substituted derivatives of said aromatic hydrocarbons, oxygenated compounds containing from 4 to 32 carbon atoms selected from the group consisting of ethers, ketones, and esters of organic carboxylic acids and sulfur analogues of said oxygenated compounds, and separately recovering said isocyanate and alcohol.

3,962,303

NOVEL BENZOYLPHENYLACETIC ACID DERIVATIVES

Jean Meier, La Varenne Saint-Hilaire, and Odile Le Martret, Paris, both of France, assignors to Roussel-UCLAF, Paris, France

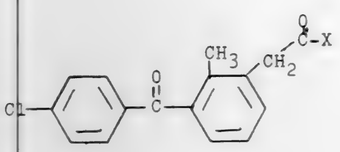
Division of Ser. No. 476,667, June 5, 1974, Pat. No. 3,931,286. This application Oct. 23, 1975, Ser. No. 625,267

Claims priority, application France, June 14, 1973, 73.21622

Int. Cl.² C07C 69/00

U.S. Cl. 260—453 RW **3 Claims**

1. A benzoylphenylacetic acid compound of the formula



wherein X is



Z is alkyl of 1 to 4 carbon atoms and Y is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms.

3,962,304

ALKOXY-SUBSTITUTED BENZYL DITHIOCARBAMIC ACID ESTERS

Kiyoshi Matsushima; Masao Miyamoto, and Nobuo Fukazawa, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 11, 1969, Ser. No. 884,321
Claims priority, application Japan, Dec. 20, 1968, 43-93912
Int. Cl.² C07C *155/08*
U.S. Cl. 260—455 A **5 Claims**

1. Alkoxy-substituted benzyl dithiocarbamate selected from the group consisting of 2-methoxy-5-methyl-benzyl-N,N-dimethyldithiocarbamate, 2-methoxy-5-chlorobenzyl-N,N-dimethyldithiocarbamate, 4-isopropoxy-3-chlorobenzyl-N,N-di-n-propyldithiocarbamate -chlorobenzyl-N,N-di-n-propyldithiocarbamate 3-chloro-4-ethoxybenzyl-N,N-diethyldithiocarbamate.

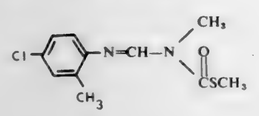
3,962,305

ACYLFORMANIDINE THIOCARBAMATES

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 439,507, Feb. 4, 1974, abandoned. This application May 7, 1975, Ser. No. 575,313
Int. Cl.² C07C *155/02*
U.S. Cl. 260—455 A **10 Claims**

1. A compound having the formula



3,962,306

SULFONYLOXYPHENYLUREA COMPOUNDS AND HERBICIDAL COMPOSITIONS

Engelbert Kuhle, Bergisch-Gladbach; Erich Klauke, Odenthal-Hahnenberg, and Ludwig Eue, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 14, 1974, Ser. No. 479,389
Claims priority, application Germany, July 7, 1973, 2334607
Int. Cl.² C07C *143/68*
U.S. Cl. 260—456 A **2 Claims**

1. N-(3-chloro-4-chloromethylsulfonyloxy-phenyl)-N′,N′-dimethylurea.

2. N-(3-chloro-4-methylsulfonyloxy-phenyl)-N′,N′-dimethylurea.

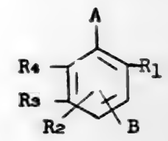
3,962,307

CYANOBENZENEACETONITRILES

Elmore Louis Martin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 241,849, April 6, 1972, Pat. No. 3,877,927, which is a continuation-in-part of Ser. No. 201,995, Nov. 24, 1971, abandoned. This application Feb. 18, 1975, Ser. No. 550,853
Int. Cl.² C07C *121/66*
U.S. Cl. 260—465 H **4 Claims**

1. A compound having the formula



wherein

A and B are different, one being a Z group and the other being a CR_5R_6Z radical; wherein R_5 and R_6 are each independently hydrogen or methyl, and Z is the cyano group; and

each of R_1, R_2, R_3, and R_4 independently is hydrogen, a C_1–C_7 alkyl, a halogen, or the nitro group;

provided that:

a. at most two of R_1, R_2, R_3, and R_4 are nitro groups;
b. at most two of R_1, R_2, R_3, and R_4 are halogens;
c. at least one of R_1, R_2, R_3, and R_4 is hydrogen or halogen;
d. at least one of R_1, R_2, R_3, and R_4 is a C_2–C_7 alkyl;
e. no nitro groups are ortho to each other;
f. no alkyl groups are ortho to each other;
g. each alkyl group has at most three carbon atoms in a straight chain from the point of attachment to the aromatic ring.

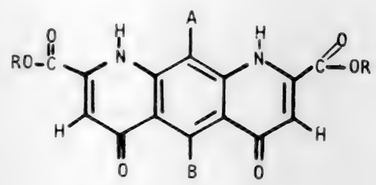
3,962,308

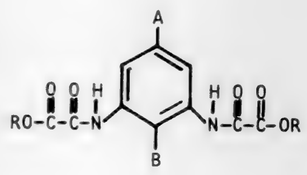
PROCESS FOR CONVERTING ESTERS TO AMINE SALTS

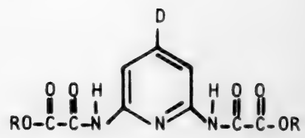
Anthony A. Sinkula, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 28, 1974, Ser. No. 501,055
Int. Cl.² C07D *215/48, 213/75;* **C07C** *101/44*
U.S. Cl. 260—465 D **12 Claims**

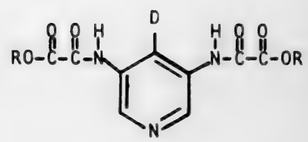
1. A process for converting esters to physiologically acceptable amine salts which comprises the step of reacting an ester selected from the group consisting of







and



wherein R is selected from the group consisting of alkyl from one to six carbon atoms, inclusive, phenyl, and phenylalkyl wherein alkyl has one to four carbon atoms, inclusive; A and B are the same or different and are selected from the group consisting of hydrogen, alkyl of one to four carbon atoms, inclusive, phenyl, alkoxy of one to four carbon atoms, inclusive, halogen, trifluoromethyl, cyano, carboxy, and nitro with the proviso that neither A nor B is nitro in the pyrido[3,2-g]quinoline series; D is selected from the same group as A and B; with a physiologically acceptable amine in a solvent consisting essentially of water.

3,962,309

AMMOXIDATION PROCESS

Tao P. Li, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 320,372, Jan. 2, 1973, Pat. No. 3,886,096. This application Dec. 30, 1974, Ser. No. 537,493
Int. Cl.² C07C *120/14*
U.S. Cl. 260—465.3 **4 Claims**

1. A process for producing acrylonitrile or methacrylonitrile which comprises reacting an olefin selected from the group consisting of propylene and isobutylene with ammonia and oxygen in amounts such that the molar ratio of ammonia to olefin is in the range from about 0.5:1 to 5:1 and the molar ratio of oxygen to olefin is from about 0.5:1 to 4:1 at a temperature in the range from about 250° to 650°C in contact with a catalyst system consisting essentially of the elements antimony, uranium, iron and tungsten in a catalytic active oxidized state represented by the formula

$$Sb_aU_bFe_cW_dO_e$$

wherein *a* is 1–10, *b* is 0.01–1, *c* is 0.01–1, *d* is 0.001–0.1 and *e* is a number taken to satisfy the average valences of the Sb, U, Fe and W in their catalytic active oxidation states prepared by forming a mixture of oxides or sulfates of antimony, uranium and iron in sulfuric acid, oxidizing said mixtures with nitric acid, digesting the resulting mixture, adjusting the pH to about 8, filtering the mixture, mixing the filter cake with ammonium tungstate or phosphotungstic acid, evaporating the filter cake mixture to dryness, then heating the dried filter cake mixture at a temperature from about 500° to about 1150°C to form said catalytic active oxidation states.

3,962,310

AMMOXIDATION PROCESS

Tao P. Li, Chesterfield, and Charles W. Hobbs, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 320,373, Jan. 2, 1973. This application Dec. 30, 1974, Ser. No. 537,495
Int. Cl.² C07C *120/14*
U.S. Cl. 260—465.3 **4 Claims**

1. A process for producing acrylonitrile or methacrylonitrile which comprises reacting in the vapor phase an olefin selected from the group consisting of propylene and isobutylene with ammonia and oxygen in amounts such that the molar ratio of ammonia to olefin is in the range from about 0.5:1 to about 5:1 and the molar ratio of olefin to oxygen is in the range from about 0.5:1 to 4:1, at a temperature in the range from about 250° to 650° C in contact with a catalyst system consisting essentially of the elements antimony, uranium, iron and bismuth in an oxidized state represented by the formula

$$Sb_aU_bFe_cBi_dO_e$$

wherein *a* is 1–10, *b* is 1–10, *c* is 0.01–1, *d* is 0.001–0.1 and *e* is a number taken to satisfy the average valences of the Sb, U, Fe and Bi in their catalytic active oxidation states prepared by forming a mixture of oxides or sulfates of antimony, uranium, iron and bismuth in sulfuric acid, oxidizing said mixture with nitric acid, digesting the resulting mixture, adjusting the pH to about 8, filtering the mixture, mixing the filter cake with a catalyst support and evaporating the filter cake mixture to dryness, then heating the dried mixture at a temperature of from about 500° to about 1150°C to form said active oxidation states.

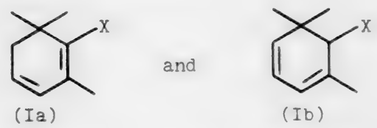
3,962,311

PREPARATION OF CYCLOHEXADIENE COMPOUNDS

Peter Loeliger, Pfaffhausen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

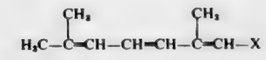
Filed Aug. 16, 1974, Ser. No. 497,993
Claims priority, application Switzerland, Aug. 24, 1973, 12195/73
Int. Cl.² C07C *67/30, 45/00;* **C07B** *29/00*
U.S. Cl. 260—468 L **5 Claims**

1. A process for the manufacture of an isomeric mixture of cyclohexadienes of the formulae:



(Ia) and (Ib)

wherein X is selected from the group consisting of $-COCH_3$ and $-COOR_1$, R_1 is a lower alkyl group having from 1 to 6 carbon atoms; which process comprises heating a compound of the formula:



wherein X is as defined above; in the presence of an inert organic solvent and at a temperature of from about 180°C. to about 250°C.

3,962,312
9,11,15-TRIHYDROXY PROST-5-ENOIC ACID ANALOGUES

Masaki Hayashi; Tadao Tanouchi, both of Takatsuki; Hiroyuki Ito, Saita, and Isao Ohyama, Kyoto, all of Japan, assignors to Ono Pharmaceutical Company, Osaka, Japan

Filed Sept. 19, 1973, Ser. No. 398,714
Claims priority, application Japan, Sept. 21, 1972, 47-94972; Mar. 23, 1973, 48-33234
Int. Cl.² C07C *61/38, 69/74*
U.S. Cl. 260—468 D **6 Claims**

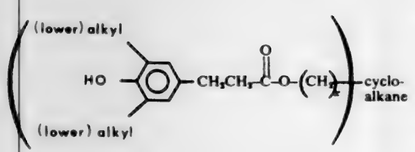
1. 15(ξ)-Methyl-13,14-dihydro-PGF_2 .
2. 15(ξ),16(R)-Dimethyl-13,14-dihydro-PGF_2 .
3. 16(ξ)-Phenyl-ω-trinor-13,14-dihydro-PGF_2 .
4. 16(ξ)-Cyclohexyl-ω-trinor-13,14-dihydro-PGF_2 .
5. 16(ξ) -Cyclopentyl-ω-tetranor-13,14-dihydro-PGF_2 .

3,962,313
CYCLOALIPHATIC ALKYLHYDROXYPHENYLALKANOATES

Martin Dexter, 416 Cedar Drive, Briarcliff Manor, N.Y. 10510, and David H. Steinberg, 2608 Davidson Ave., Bronx, N.Y. 10468

Continuation of Ser. No. 422,215, Dec. 6, 1973, abandoned, which is a continuation of Ser. No. 179,155, Sept. 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 648,998, June 26, 1967, Pat. No. 3,657,322, which is a continuation-in-part of Ser. No. 372,083, June 2, 1964, abandoned. This application Dec. 16, 1974, Ser. No. 533,379
Int. Cl.² C07C *69/75*
U.S. Cl. 260—473 S **11 Claims**

1. An ester of a monohydric alicyclic alcohol, the ester having the formula



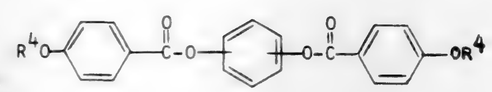
wherein x is 0 or 1, and cycloalkane represents a monovalent cycloalkyl radical having from 4 to 12 carbon atoms.

3,962,314
OXYBENZOYL DIOXYARYLENE MONO- AND DIESTERS

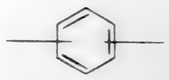
James Economy, Eggertsville; Steve G. Cottis, Amherst, and Bernard E. Nowak, Lancaster, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 288,845, Sept. 13, 1972, abandoned, which is a division of Ser. No. 96,234, Dec. 12, 1970, Pat. No. 3,772,250. This application Feb. 28, 1975, Ser. No. 554,284
Int. Cl.² C07C *69/78*
U.S. Cl. 260—473 S **5 Claims**

1. A linear polyester of the formula



wherein the indicated bonds on the phenylene nucleus represented by



are meta or para, and R^4 is selected from the group consisting of lower alkanoyl, benzoyl and hydrogen.

3,962,315
PROCESS FOR THE PURIFICATION OF TEREPHTHALIC ACID DIMETHYL ESTER

Eberhard Achsel, Fischbach, Taunus; Hans-Peter Hortig, Hattersheim, Main; Heinrich Seipp, and Heinz Giller, both of Offenbach, Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 7, 1974, Ser. No. 467,833
Claims priority, application Germany, May 9, 1973, 2323219
Int. Cl.² C07C *67/48*
U.S. Cl. 260—475 B **3 Claims**

1. A process for the purification of crude dimethyl terephthalate (DMT) made by the oxidation of p-xylene or p-xylene/p-toluic acid methyl ester (pTE) and subsequent esterification and containing as impurities dimethyl isophthalate (DMI), dimethyl orthophthalate (DMO) and (pTE) which comprises adding crude molten dimethyl terephthalate to a body of methanol to form a mixture of said crude DMT and a saturated solution of DMT in said methanol, maintaining the mixture of DMT and methanol solution at a temperature above the melting point of the eutectic mixture of DMT and DMI, DMO and pTE having the highest melting point, vigorously agitating the mixture of DMT and methanol solution, continuing to add crude molten DMT to said mixture to cause relatively pure DMT to crystallize therefrom and to cause the impurities to dissolve in said solution.

3,962,316
CARBAMATE

Karl Kiehs, Lampertheim; Rolf Huber, Ludwigshafen, and Heinrich Adolphi, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation-in-part of Ser. No. 371,778, June 20, 1973, abandoned. This application Mar. 17, 1975, Ser. No. 558,885
Claims priority, application Germany, June 26, 1972, 2231249
Int. Cl.² C07C *125/06*
U.S. Cl. 260—479 C **4 Claims**

1. o-(α-methoxy-β-chloro)-ethoxyphenyl-N-methylcarbamate.

3,962,317
D-3,6-DIAMINOHEXANOIC ACID 2-(CARBOXYMETHYL)-2-METHYLHYDRAZIDE, PROCESS OF PREPARING AND INTERMEDIATES OF SAID PROCESS

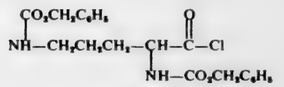
William Vincent Curran, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 19, 1974, Ser. No. 498,828
Int. Cl.² C07C *109/97, 125/06*
U.S. Cl. 260—482 B **7 Claims**

1. A compound selected from the group consisting of D-3,6-diaminohexanoic acid 2-(carboxymethyl)-2-methylhydrazide, the pharmacologically acceptable acid-addition salts thereof, the pharmacologically acceptable alkali metal salts thereof, and the pharmacologically acceptable alkaline earth metal salts thereof.

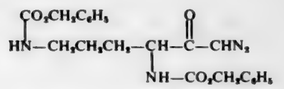
7. The process of preparing D-3,6-diaminohexanoic acid 2-(carboxymethyl)-2-methylhydrazide which comprises the steps of

a. converting N,N′-dicarbobenzoxy-D-ornithine to the corresponding acid chloride (I) by treatment with phosphorus pentachloride in diethyl ether,



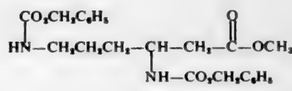
(I)

b. treating said acid chloride with diazomethane in diethyl ether to form the diazoketone (II),



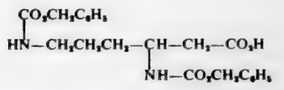
(II)

c. converting said diazoketone to the D-β-lysine derivative (III) by treatment with silver benzoate and triethylamine in methanol,



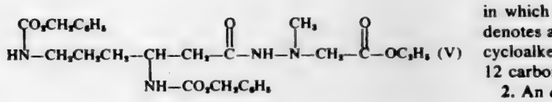
(III)

d. hydrolyzing said D-β-lysine derivative under basic conditions to form the free acid (IV),

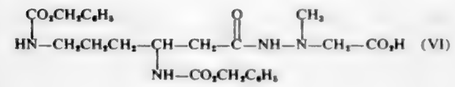


(IV)

e. coupling said free acid with ethyl N-methylhydrazinoacetate in tetrahydrofuran in the presence of N-methylmorpholine and isobutyl chloroformate to form D-3,6-di(benzyloxycarbonylamino)-hexanoic acid 2-(carbethoxymethyl)-2-methylhydrazide (V),



f. hydrolyzing said hydrazide ester under basic conditions to form the free acid (VI), and



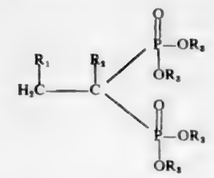
g. hydrogenating said free acid in methanol in the presence of 10% palladium on carbon.

3,962,318
SUBSTITUTED ETHANE DIPHOSPHONIC ACIDS AND SALTS AND ESTERS THEREOF

Al F. Kerst, Littleton, Colo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 463,224, April 23, 1974, Pat. No. 3,899,528, which is a division of Ser. No. 283,147, Aug. 23, 1972, Pat. No. 3,833,690, which is a division of Ser. No. 27,988, April 13, 1970, Pat. No. 3,705,191. This application Mar. 21, 1975, Ser. No. 560,837
Int. Cl.² C07F *9/38*
U.S. Cl. 260—502.4 P **6 Claims**

1. An ethane diphosphonate of the formula



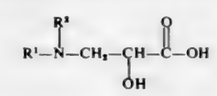
wherein each R_3 is selected from the group consisting of hydrogen, alkali metal ions and ammonium ions, and R_1 and R_2 are either hydroxy or carboxy provided that either R_1 or R_2 but not both is always hydroxy.

3,962,319
α-HYDROXY-β-AMINOCARBOXYLIC ACIDS

Friedrich Becke, and Helmut Fleig, both of Heidelberg, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

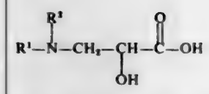
Filed Jan. 19, 1972, Ser. No. 219,151
Claims priority, application Germany, Jan. 26, 1971, 2103453
Int. Cl.² C07C *101/30, 101/72, 109/097, 109/06*
U.S. Cl. 260—514 J **8 Claims**

1. An α-hydroxy-β-aminocarboxylic acid of the formula:



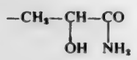
in which R^1 and R^2 may be identical or different and each denotes alkenyl of two to twenty carbon atoms, cycloalkyl or cycloalkenyl of five or six carbon atoms, or aralkyl of seven to 12 carbon atoms or aralkenyl of eight to 12 carbon atoms.

2. An α-hydroxy-β-aminocarboxylic acid of the formula:

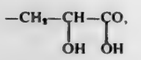


(I)

R^1 and/or R^2 may each denote the radical



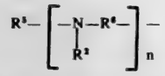
or the radical



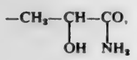
R^1 may also denote hydroxyl, a hydroxyl group, alkylol of one to four carbon atoms or the radical



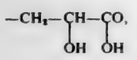
or the radical



in which R^2 in said two last-mentioned radicals denotes alkyl of two to 20 carbon atoms, alkenyl of two to 20 carbon atoms, cycloalkyl or cycloalkenyl respectively of five or six carbon atoms, aralkyl of seven to 12 carbon atoms, aralkenyl of eight to 12 carbon atoms, the radical



or the radical



in which R^5 denotes the above meanings for R^2 or alkylol or alkoxy-methyl of up to six carbon atoms, R^6 denotes alkylene of two to 12 carbon atoms and *n* denotes zero or 1.

3,962,320

BIS-SUBSTITUTED BENZYL ACETIC ACIDS

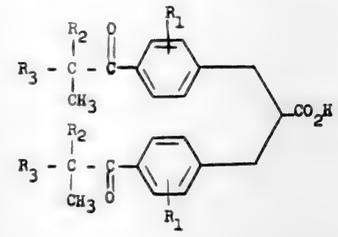
William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, both of N.J., assignors to Sandoz, Inc., East Hanover, N.J.

Division of Ser. No. 421,673, Dec. 4, 1973, Pat. No. 3,884,961, which is a continuation-in-part of Ser. No. 403,225, Oct. 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 333,892, Feb. 20, 1973, abandoned. This application Jan. 31, 1975, Ser. No. 545,736

Int. Cl.² C07C *63/33*

U.S. Cl. 260—515 R **4 Claims**

1. A compound of the formula:



where

R_1 each independently represents hydrogen, fluorine, chlorine or straight chain lower alkoxy, and

R_2 and R_3 each independently represent lower alkyl having 1 to 2 carbon atoms or a pharmaceutically acceptable salt thereof.

3,962,321

ENHANCEMENT OF COFFEE FLAVOR

Thomas H. Parliment, Valley Cottage; William P. Clinton, Monsey, both of N.Y.; Richard Scarpellino, Ramsey, N.J.; Robert J. Soukup, New City, and Martin F. Epstein, Pearl River, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 243,055, April 11, 1972, Pat. No. 3,886,297, which is a continuation-in-part of Ser. No. 129,609, March 30, 1971, Pat. No. 3,655,397, which is a continuation-in-part of Ser. No. 867,887, Oct. 12, 1969, abandoned, which is a continuation-in-part of Ser. No. 857,227, Sept. 11, 1969, abandoned. This application Dec. 17, 1973, Ser. No. 425,366

The portion of the term of this patent subsequent to Apr. 11, 1989, has been disclaimed.

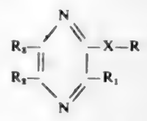
Int. Cl.² A23L *1/234*

U.S. Cl. 426—535 **13 Claims**

1. A process for enhancing the flavor of foodstuffs comprising adding thereto a mixture formulated to give a coffee-like flavor to said foodstuff of:

a. a compound selected from the group consisting of 2-nonenal, 2-nonenol, lower alkyl acetals of 2-nonenal, esters of organic acids and 2-nonenol in which the carbonyl is not conjugated with a double bond or aromatic ring, and mixtures thereof in an amount effective to impart woody coffee-like flavor to the foodstuff; and

b. a compound represented by the formula:



wherein X is oxygen or sulfur, R is a lower alkyl, and R_1, R_2 and R_3 hydrogen or alkyl provided at least one of R_1, R_2, and R_3 is alkyl of two to twelve carbons, and mixtures thereof in an amount effective to impart green flavor to the foodstuff said mixture being added in an amount effective to enhance the coffee flavor of the foodstuff.

3,962,322

PROCESS FOR UNSATURATED ALDEHYDE OXIDATION USING A SUPPORTED CATALYST

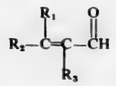
Peter C. Richardson, Morristown, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 25, 1974, Ser. No. 508,929

Int. Cl.² C07C *51/32*

U.S. Cl. 260—530 N **10 Claims**

1. In a process for the conversion of an unsaturated aldehyde to the corresponding unsaturated carboxylic acid which comprises reacting in the gas phase at a temperature sufficient to accomplish the desired reaction an aldehyde of the following formula:



wherein R_1 is hydrogen or an alkyl radical of from 1 to 6 carbon atoms and R_2 and R_3 are hydrogen or methyl radicals; with oxygen in the presence of a supported catalyst having the empirical formula $Mo_aV_bW_cMn_dO_e$, the atomic ratio of Mo:V:W:Mn:O being such that when *a* is 12, *b* is 0.5 to 12, *c* is 0.1 to 6, *d* is 0.5 to 20 and *e* is 37 to 94, the improvement which comprises using as the catalyst unagglomerated particles of the above empirical formula supported on porous silica particles having a surface area of from about 25 to about 350 m^2/gm and a porosity of from about 0.2 to about 1.0 cc/gm, the catalytic metals being contained essentially only on the surfaces of the particles, and wherein said process is performed in a reaction vessel and the maximum exotherm temperature is 30°C.

3,962,323

PROCESS FOR PREPARING ALKYL- OR ARYL-PHOSPHONOTHIOIC DIHALIDES

Arthur D. F. Toy, Stamford, Conn., and Eugene H. Uhing, Ridgewood, N.J., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 14, 1974, Ser. No. 523,761

Int. Cl.² C07F *9/42*

U.S. Cl. 260—543 P **5 Claims**

1. A method of preparing compounds of the formula:



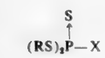
(II)

wherein R is selected from the group consisting of C_1-C_{10} alkyl; cycloalkyl of 4 – 6 carbons in the ring and the C_1-C_4 alkyl substituted derivatives thereof; aralkyl of up to 2 fused rings, the alkyl portion having from 1 to 20 carbon atoms; aryl of up to 3 fused rings and the C_1-C_4 alkyl substituted derivatives thereof; or biphenyl and the C_1-C_4 alkyl substituted derivatives thereof and X is selected from the group consisting of chlorine or bromine, comprising contacting under at least an autogenous pressure at a temperature of from about 200°C. to about 400°C. a reactant selected from the group consisting of compounds of the structural formulas:



(III)

or



(IV)

or



(V)

wherein R and X are as defined above, with phosphorus trihalide.

3,962,324

PROCESS FOR PREPARING HALOGENOMETHANE-PHOSPHONIC ACID DIHALIDES

Hans-Jerg Kleiner, Bad Soden, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

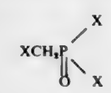
Filed Dec. 3, 1973, Ser. No. 420,882

Claims priority, application Germany, Dec. 5, 1972, 2259454

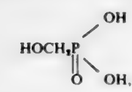
Int. Cl.² C07F *9/38, 9/42*

U.S. Cl. 260—543 P **2 Claims**

1. A process for preparing halogenomethanephosphonic acid dihalides having the general formula



wherein X represents chlorine or bromine which comprises: reacting a member of the group consisting of hydroxymethane-phosphonic acid of the formula



alkali metal or ammonium salts of hydroxymethane-phosphonic acid and mono- or di- alkyl esters of hydroxymethane phosphonic acid or alkali metal or ammonium salts of such esters, with acid halides having the formula

$(CO)_nX_2$

wherein *n* is 1 or 2, in the presence of

1. compounds containing at least one 3- to 5-valent nitrogen or phosphorus atom, which is bound with at least 3 valences to organic radicals having up to 20 carbon atoms, two of said valences being able to form a double bond, or in presence of
2. fully amidated tribasic organic or inorganic acids of 3-valent or 5-valent phosphorus, the nitrogen-atoms of which are substituted by aliphatic radicals having up to 20 carbon atoms and the organic radicals of which may contain up to 20 carbon atoms.

3,962,325

TRIFLUOROMETHYLMALONYL FLUORIDE

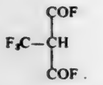
Carl George Krespan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 4, 1973, Ser. No. 403,416

Int. Cl.² C07C *55/08*

U.S. Cl. 260—544 F **1 Claim**

1. Trifluoromethylmalonyl fluoride of the formula



3,962,326

PROCESS FOR THE MANUFACTURE OF CARBOXYLIC ACID CHLORIDES

Günther Semler, Kelkheim, Taunus; Georg Schaeffer, Hofheim, Taunus, and Karl Waldmann, Neuenhain, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

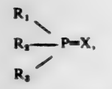
Filed Apr. 24, 1974, Ser. No. 463,826

Claims priority, application Germany, Apr. 26, 1973, 2321122

Int. Cl.² C07C *51/58*

U.S. Cl. 260—544 K 7 Claims

1. A process for preparing a carboxylic acid chloride which comprises reacting a carboxylic acid or carboxylic acid anhydride with phosgene at a temperature from 0° to 180°C. in the presence of 0.01 to 10 percent, by weight of said carboxylic acid or carboxylic acid anhydride, of a catalyst which is a trisubstituted phosphine oxide or phosphine sulfide of the formula



or is a reaction product thereof with at least one member selected from the group consisting of phosgene, said carboxylic acid, and said carboxylic acid anhydride, wherein X is oxygen or sulfur; R_1 and R_2, taken alone, are lower alkyl having up to 6 carbon atoms or phenyl; R_1 and R_2, taken together, are saturated or unsaturated alkylene having 4 to 5 carbon atoms; and R_3 is alkyl having up to 20 carbon atoms, haloalkyl, hydroxyalkyl, 2,4,6-trichlorophenoxy methyl, or phenyl.

3,962,327

PROCESS FOR THE PRODUCTION OF N-HALOFORMYLCARBAMIC ACID HALIDE COMPOUNDS

Hans Georg Schlee, Cologne; Klaus Sasse, Schildgen, and Engelbert Kuhle, Bergisch, Gladbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

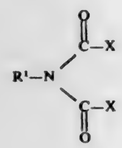
Filed Oct. 1, 1974, Ser. No. 510,971

Claims priority, application Germany, Oct. 13, 1973, 2351556

Int. Cl.² C07C *125/03*

U.S. Cl. 260—544 C 16 Claims

1. Process for the preparation of an N-haloformylcarbamic acid halide compound of the formula



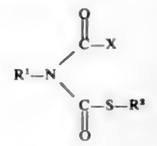
(I)

in which

R^1 is substituted alkyl of up to 8 carbon atoms, substituted cycloalkyl of from 5 to 7 ring carbon atoms or substituted aralkyl or aryl of from 6 to 10 carbon atoms in the aryl moiety, wherein the substituents are selected from the group consisting of halogen, alkyl and haloalkyl of from 1 to 4 carbon atoms; and

X is fluorine, chlorine or bromine,

which process comprises reacting an N-haloformylcarbamic acid thiol ester of the formula



(II)

in which

R^1 and X are identified as above, and

R^2 is straight-chain or branched alkyl of from 1 to 6 carbon atoms, aralkyl of from 6 to 10 carbon atoms or substituted aralkyl of from 6 to 10 carbon atoms wherein the substituent is selected from alkyl of up to 4 carbon atoms and halogen,

with at least 2 moles of fluorine, chlorine or bromine per thiol ester group at a temperature of −20° to 100°C.

3,962,328

ADAMANTYL THIOAMIDES

Koji Aigami, and Yoshiaki Inamoto, both of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1975, Ser. No. 572,355

Claims priority, application Japan, May 1, 1974, 49-49067; Dec. 26, 1974, 50-1723

Int. Cl.² C07C *153/057*

U.S. Cl. 260—551 S 1 Claim

1. 1,3-bis(aminothiocarbonylmethyl)adamantane.

3,962,329

MANUFACTURE OF GRANULAR ISOBUTYLIDENEDIUREA

Guenther Schoenaich, Ludwigshafen; Otto Grabowsky, Limburgerhof; Johann Mayer, and Guenther Matthias, both of Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Oct. 25, 1974, Ser. No. 517,889

Claims priority, application Germany, Nov. 5, 1973, 2355212

Int. Cl.² C07C *127/00*; C05C *9/00*; C05B *11/04*

U.S. Cl. 260—553 R 5 Claims

1. In a continuous process for the production of solid granular isobutylidene diurea by condensation of urea with isobutyraldehyde in the presence of a mineral acid, catalyst, the improvement consisting of repeatedly alternately adding phosphoric and sulfuric acid at different intervals of time to the continuous feed of the urea and isobutyraldehyde.

3,962,330

PROCESS FOR THE PREPARATION OF 6-DEMETHYL-6-DEOXY-6-METHYLENE-TETRACYCLINES

Gino Cotti, Monza (Milan), Italy, assignor to Ankerfarm, S.p.A., Milan, Italy

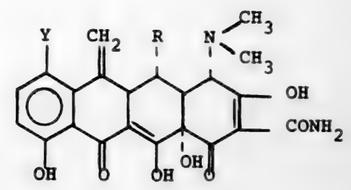
Filed Sept. 24, 1974, Ser. No. 509,054

Claims priority, application Italy, Sept. 28, 1973, 29488/73

Int. Cl.² C07C *103/22*

U.S. Cl. 260—559 AT 4 Claims

1. A process for the preparation of 6-demethyl-6-deoxy-6-methylene-tetracycline having the general formula II



II

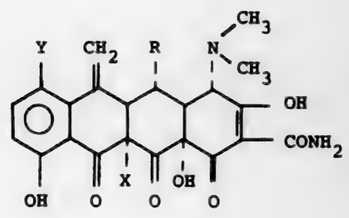
where:

Y = H, halogen

R = H, OH, —O—CO—R′

R′ = alkyl group containing from 1 to 6 C atoms,

by means of the reductive dehalogenation effected with the employment of tertiary phosphines, arsines or stibines, of 11a-halo-6-demethyl-6-deoxy-6-methylene tetracycline having the general formula I



I

where

Y = H, halogen

R = H —OH —O—COR′

R′ = alkyl group containing from 1 to 6 C atoms,

in polar solvents selected from the group consisting of alcohols containing at least one hydroxy group and from 1 to 4 carbon atoms, methoxyethanol, ethoxyethanol, their mixtures and said alcohols or their mixtures with dioxane, tetrahydrofurane, acetonitrile, N,N′-dimethylformamide and acetone, at temperatures comprised between 10°C and 90°C, for periods of time of from 5 minutes to 80 minutes.

3,962,331

PROCESS FOR THE PREPARATION OF α-6-DEOXYTETRACYCLINES

Gino Cotti, Monza, Italy, assignor to Ankerfarm, S.p.A., Milan, Italy

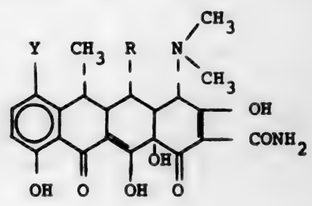
Filed Sept. 25, 1974, Ser. No. 509,055

Claims priority, application Italy, Sept. 28, 1973, 29487/73

Int. Cl.² C07C *103/22*

U.S. Cl. 260—559 AT 5 Claims

1. A process for the preparation of α-6-deoxytetracycline having the general formula III

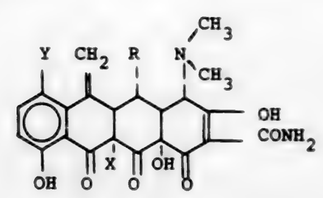


III

where

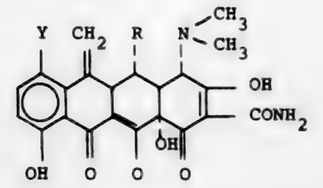
R = H, —OH, —O—CO—R′ (—R′ = alkyl group containing from 1 to 6 C atoms)

Y = H - halogen by means of the dehalogenation and homogeneous catalytic hydrogenation of 11a-halo-6-demethyl-6-deoxy-6-methylene tetracyclines having the general formula I



I

effected in a single step without isolating intermediate products of general formula II



II

where

Y, R have the meaning stated heretofore

X = halogen

with the use respectively of tertiary phosphines, arsines and stibines in the measure of one mole per mole of tetracycline group compound, of catalysts soluble in the reaction means consisting of complexes of noble metals with electron-donor ligands of the type of the tertiary phosphines, arsines, stibines, in a reaction solvent selected from the group consisting of alcohols containing at least one hydroxy group and from 1 to 4 C atoms, methoxyethanol, ethoxyethanol and their mixtures and said alcohols and their mixtures with at least one of acetonitrile, tetrahydrofuran, dioxane, acetone, N,N′-dimethylformamide and methylisobutylketone at temperatures comprised between 10°C and 100°C, for periods of time of from 1 to 8 hours in the presence of hydrogen and at pressures of from 1 to 160 kg/cm².

3,962,332

BIS-QUATERNARY AMMONIUM COMPOUNDS AND POLYMERS

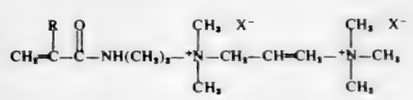
Louis E. Trapasso, Watchung, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 11, 1974, Ser. No. 531,577

Int. Cl.² C07C *103/44*

U.S. Cl. 260—561 N 1 Claim

1. A composition of the formula:



wherein R is hydrogen or methyl, and X is an anion.

3,962,333

PROCESS FOR THE PRODUCTION OF ACRYLAMIDE AND METHACRYLAMIDE

Kiyotaka Yoshimura, Fujisawa; Shiro Asano, , and Tadatoshi Honda, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

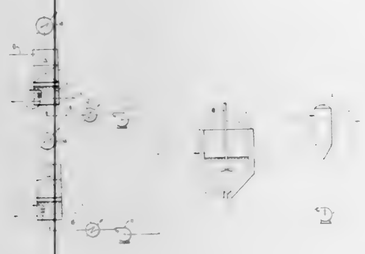
Continuation-in-part of Ser. No. 205,137, Dec. 6, 1971, Pat. No. 3,911,009. This application Sept. 25, 1975, Ser. No. 617,973

Claims priority, application Japan, Dec. 14, 1970, 45-110514

The portion of the term of this patent subsequent to Oct. 7, 1992, has been disclaimed.

Int. Cl.² C07C *103/08*

U.S. Cl. 260—561 N 5 Claims



1. In a process for preparing acrylamide or methacrylamide by reacting acrylonitrile or methacrylonitrile with water in the presence of a metallic copper containing catalyst, the improvement comprising adding to the reaction liquid a promoter for said catalyst, said promoter being selected from the group consisting of copper sulfate, copper nitrate, cupric chloride and a copper salt of a lower fatty acid, in an amount of from 5 to 150 ppm calculated as copper and based upon available water.

3,962,334

AMINOALKYL ETHERS OF 2,2'- AND 3,3'-DIHYDROXYBENZIL

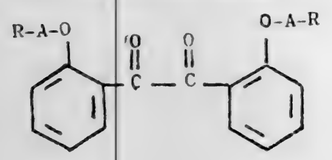
Gerhard R. Wendt, Havertown, and Michael W. Winkley, Malvern, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 513,354, Oct. 9, 1974, Pat. No. 3,935,191. This application Aug. 8, 1975, Ser. No. 603,556

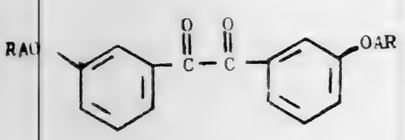
Int. Cl.² C07C *93/06*

U.S. Cl. 260—570.7 9 Claims

1. A compound of the formula



and



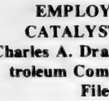
wherein A is a divalent aliphatic hydrocarbon radical of the formula

$-CH_2CH_2-$,

$-CH_2CH_2CH_2-$, or



and R is a substituted amino group of the formula



wherein R^1 is methyl, ethyl, propyl, or isopropyl; and the non-toxic, pharmaceutically acceptable acid addition salts thereof.

3,962,335

TEXTURED PROTEIN PRODUCT AND PROCESS

Surinder Kumar, Buffalo Grove, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed May 8, 1975, Ser. No. 575,623

Int. Cl.² A23J *3/00*

U.S. Cl. 426—574 14 Claims

1. A process for forming a textured protein comprising:
a. hydrating at least one vegetable or animal protein source to form a slurry;
b. heating the slurry to at least the boiling point of the slurry to condition the protein source;
c. recovering the conditioned protein source;
d. shaping the recovered protein source;
e. heating and shaped protein source in a liquid hydrophobic medium to induce texture in the protein source; and
f. recovering the textured protein source.

3,962,336

PROCESS FOR THE PREPARATION OF 5-CHLORO-2-TOLUIDINE

Rudolf Lademann, Kelkheim, Taunus, and Franz Landauer, Frankfurt am Main, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 16, 1974, Ser. No. 461,453

Claims priority, application Germany, Apr. 18, 1973, 2319645

Int. Cl.² C07C *85/24*

U.S. Cl. 260—579 8 Claims

1. A process for the preparation of the hydrochloride of 5-chloro-2-toluidine which comprises reacting a suspension of 2-toluidine hydrochloride in an inert halohydrocarbon solvent with less than the 1.2-fold molar amount of chlorine at a temperature of 10 to 70°C.

3,962,337

HYDROGENATION OF UNSATURATED DINITRILES EMPLOYING PALLADIUM AND RUTHENIUM CATALYST IN AQUEOUS TERTIARY ALKANOL

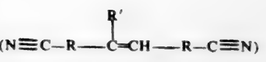
Charles A. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 29, 1974, Ser. No. 518,747

Int. Cl.² C07C *87/14*

U.S. Cl. 260—583 K 20 Claims

1. A process for the catalytic hydrogenation of an unsaturated dinitrile feedstock comprising at least one unsaturated dinitrile compound of the formula



wherein each R is independently selected from the group consisting of an alkylene radical and an alkylidene radical, R′ is an alkyl radical, and the number of carbon atoms in said compound is in the range of 7 to 30; which comprises contacting, at suitable hydrogenation conditions for the at least substantially complete hydrogenation of said at least one unsaturated dinitrile compound, said feedstock with ammonia; hydrogen; a diluent comprising water and at least one unsubstituted tertiary alkanol, the concentration of the water in the diluent being suitable to permit the desired degree of hydrogenation under said hydrogenation conditions; and a catalyst comprising a first catalyst component selected from the group consisting of elemental palladium and palladium compounds which are reducible by hydrogen to elemental palladium at said hydrogenation conditions, and mixtures thereof, and a second catalyst component selected from the group consisting of elemental ruthenium, ruthenium compounds which are reducible by hydrogen to elemental ruthenium at said hydrogenation conditions, and mixtures thereof, to thereby effect the at least substantially complete hydrogenation of said at least one unsaturated dinitrile compound to the corresponding branched-chain saturated aliphatic diamine.

3,962,338

NOVEL METHODS AND COMPOUNDS EMPLOYED THEREIN

Leonard M. Weinstock, Belle Mead; Roger J. Tull, Metuchen, and Dennis M. Mulvey, Milford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 172,231, Aug. 16, 1971, abandoned, which is a division of Ser. No. 818,474, April 21, 1969, Pat. No. 3,657,237. This application Nov. 19, 1973, Ser. No. 417,301

Int. Cl.² C07C *91/02, 93/02, 93/10, 95/02*

U.S. Cl. 260—584 R 8 Claims

1. A process comprising the reductive alkylation of ammonia, a primary amine or a secondary amine wherein the amine substituents are straight or branched chain lower alkyl groups optionally hydroxy substituted by the dropwise addition of a glyceraldehyde selected from D-glyceraldehyde and isopropylidene-D-glyceraldehyde in the presence of a catalyst selected from platinum, palladium and Raney nickel to provide an S-1,2-dihydroxy-3-amino propane, substantially completely free from its rectus isomer.

3,962,339

PROCESS FOR THE PRODUCTION OF BICYCLO DECENONE DERIVATIVES

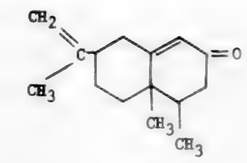
Theodore J. Leitereg, Albany; Dante G. Guadagni, Moraga, and Roy Teranishi, Berkeley, all of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 113,678, Feb. 8, 1971, abandoned. This application Apr. 6, 1973, Ser. No. 348,556

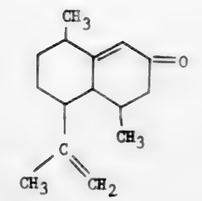
Int. Cl.² C07C *45/00*

U.S. Cl. 260—586 C 1 Claim

1. A method for preparing a mixture of the compounds



and



and including stereoisomers of each of these compounds, which comprises
a. condensing dihydrocarvone with 3-penten-2-one in the presence of sodium hydride at a temperature of about 60°–120° C., and
b. treating the resulting condensation product with potassium tert-butoxide in dimethylsulphoxide at room temperature.

3,962,340

1,2,6-TRIMETHYLTRICYCLO[5,3,2,0^{2,7}] DODECA-5-ONE

Akira Nagakura, Kawaguchi; Susumu Akutagawa, Yokohama, and Haruki Kurihara, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

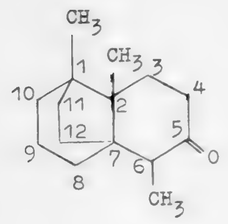
Filed Dec. 27, 1974, Ser. No. 537,005

Claims priority, application Japan, Jan. 11, 1974, 49-6389

Int. Cl.² C07C *49/36*

U.S. Cl. 260—586 G 1 Claim

1. 1,2,6-Trimethyltricyclo[5,3,2,0^{2,7}]dodeca-5-one having the formula (I)



(I)

3,962,341
PRODUCTION OF PIPERITENONE

Norbert Goetz, Bobenheim-Roxheim, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Feb. 4, 1974, Ser. No. 439,053
Claims priority, application Germany, Feb. 6, 1973, 2305628
Int. Cl.² C07C 45/00
U.S. Cl. 260—586 C 10 Claims

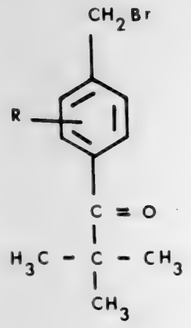
1. A process for the production of piperitenone wherein 3,3-dimethylacrolein is heated in the presence of from 0.005 to 5% by weight, based on the reaction mixture, of an unsubstituted organic monocarboxylic or dicarboxylic acid having 1–7 carbon atoms having a pK value of 1–6 or in the presence of from 0.0005 to 0.05% by weight, based on the reaction mixture, of a strong acid having a pK value of less than 1 in the liquid phase at a temperature of from 165° to 350°C.

3,962,342
BROMINATION PROCESS

Jerome Linder, Westfield, and William J. Houlihan, Mountain Lakes, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Mar. 24, 1975, Ser. No. 561,485
Int. Cl.² C07C 49/80
U.S. Cl. 260—592 5 Claims

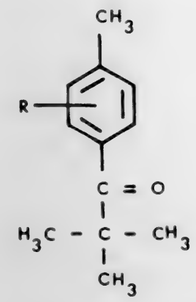
1. An improved process for preparing a compound of the formula



where

R represents hydrogen, halo having an atomic weight of about 19 to 36,

which comprises adding liquid bromine to a compound of the formula

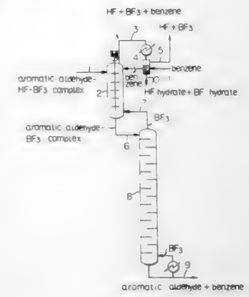


at a temperature of at least 100°C.

3,962,343
METHOD FOR DECOMPOSING AN AROMATIC ALDEHYDE-HYDROGEN FLUORIDE-BORON FLUORIDE COMPLEX

Susumu Fujiyama; Minoru Takagawa, and Shiro Kajiyama, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 8, 1974, Ser. No. 468,025
Claims priority, application Japan, May 25, 1973, 48-58333
Int. Cl.² C07C 45/24
U.S. Cl. 260—599 10 Claims



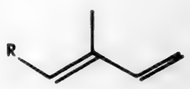
1. A method for decomposing an aromatic aldehyde-hydrogen fluoride-boron trifluoride complex to obtain the aromatic aldehyde, hydrogen fluoride and boron trifluoride separately, characterized by introducing the complex to a gas-liquid contacting column for rapid decomposition, and thereafter rapidly decomposing the complex therein in the presence of benzene at atmospheric or superatmospheric pressure and at a temperature of from about 40°C. to about 130°C. to dissociate hydrogen fluoride from the complex, thereby forming an aromatic aldehyde-boron trifluoride complex, and introducing the resulting complex to a gas-liquid contacting column for complete decomposition, and thereafter subjecting the complex to complete decomposition at atmospheric or superatmospheric pressure and at a temperature of from about 110°C. to about 180°C., thereby dissociating boron trifluoride from the complex.

3,962,344
PROCESS FOR MAKING 1,3-DIENE HYDROCARBONS

Klaus-Jurgen Pioner, Greifensee; Jost Wild, Uster, and Trudi Sigg-Grutter, Winterthur, all of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

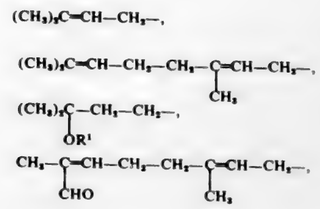
Filed May 14, 1974, Ser. No. 469,918
Claims priority, application Switzerland, May 18, 1973, 7122/73
Int. Cl.² C07C 47/20
U.S. Cl. 260—601 R 9 Claims

1. A process for the manufacture of unsaturated compounds of the general formula



(I)

wherein R represents the ethyl group of a grouping of the formula



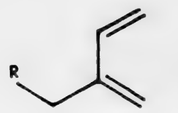
R³OCH₂—CH₂—

or

R³OCO—CH₂—

in which R^1 represents a hydrogen atom or a lower alkyl or lower acyl group, R^2 represents a lower alkyl or lower acyl group and R^3 represents a lower alkyl group,

which process comprises treating at 0° to 50°C. a compound of the general formula



(II)

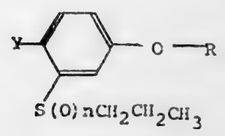
wherein R has the significance given earlier in this claim, or cis-ocimene in the presence of a lower aliphatic alcohol with $Rh(NO_3)_3$, and a carboxylic acid chloride selected from the group consisting of aromatic carboxylic acid chlorides and lower aliphatic carboxylic acid chlorides.

3,962,345
ALKYL PHENYL ETHER DERIVATIVES

Aoki Yukio; Takeuchi Susumu, both of Omiya; Wakita Shizuo; Kato Shoichi, both of Ageo, and Ishida Shuichi, Omiya, all of Japan, assignors to Nippon Kayaku Co., Ltd., Tokyo, Japan

Filed June 25, 1974, Ser. No. 482,861
Claims priority, application Japan, July 19, 1973, 48-82272
Int. Cl.² C07C 147/06, 149/32
U.S. Cl. 260—607 R 1 Claim

1. A compound represented by the formula:



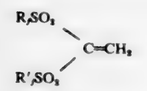
wherein Y represents methyl radical or chlorine atom, R represents an alkyl having from 2 to 7 carbon atoms, *n* is an integer of 0 and 1.

3,962,346
1,1-BIS(PERFLUOROALKYLSULFONYL)ETHENES

Loren L. Barber, Jr., Woodbury, and Robert J. Koshar, Mahtomedi, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 7, 1975, Ser. No. 556,475
Int. Cl.² C07C 147/02
U.S. Cl. 260—607 A 4 Claims

1. A 1,1-bis(perfluoroalkylsulfonyl)ethene of the formula



wherein R_f and R'_f are perfluoroalkyl radicals having 1–18 carbon atoms.

3,962,347
HYDROXYSUBSTITUTED POLYMETHYLOXANONANE

Kurt S. Herz, Perstorp, Sweden, assignor to Perstorp AB, Perstorp, Sweden

Filed Oct. 16, 1973, Ser. No. 406,935
Claims priority, application Sweden, Nov. 23, 1972, 15248/72
Int. Cl.² C07L 41/12
U.S. Cl. 260—615 R 2 Claims

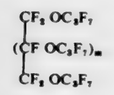
1. In a method for recovering pure 3,3,7,7-tetrahydroxymethyl-5-oxanonane from the bottom residue obtained in the production of trimethylolpropane from n-butyraldehyde and formaldehyde in the presence of an alkaline catalyst, said residue containing sodium formate, the improvement comprising mixing the residue with water in a ratio of from 0.5 to 10 parts water per part of residue, stirring the diluted residue until an aqueous solution is obtained, and cooling the solution to a temperature substantially below room temperature to precipitate pure crystals of 3,3,7,7-tetrahydroxymethyl-5-oxanonane, said diluted residue containing from 1 to 20 percent sodium formate calculated on the weight of the whole solution.

3,962,348
ALIPHATIC AND CYCLIC PERFLUORO-ALKYL ETHERS AND PROCESS FOR THE PREPARATION THEREOF

Siegfried Benninger, Schwalbach, Taunus; Thomas Martini, Neuenhain, Taunus, and Siegfried Rebsdat, Neuotting, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Feb. 7, 1974, Ser. No. 440,567
Claims priority, application Germany, Feb. 9, 1973, 2306494
Int. Cl.² C07L 43/12
U.S. Cl. 260—615 F 4 Claims

1. A compound of the general formula



wherein *m* is from 1 to 4.

3,962,349
2,2,2-FLUORODINITROETHYL 2-NITROALKYL ACETALS AND METHODS OF PREPARATION

Horst G. Adolph, Beltsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 26, 1974, Ser. No. 483,258
Int. Cl.² C07C *43/30*
U.S. Cl. 260—615 A **4 Claims**

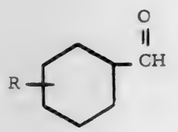
1. A compound having the formula $ROCH(CH_3)OR'$ wherein $R \neq R'$, but wherein both R and R' are selected from the group consisting of $-CH_2CXY(NO_2)$, $-CH_2C(NO_2)_2CH_3$ and $-CH_2C(NO_2)_2CH_2CF(NO_2)_2$ wherein X and Y vary independently and are selected from the group consisting of F and NO_2.

3,962,350
CONVERSION OF AROMATIC ALDEHYDES TO PHENOLIC COMPOUNDS

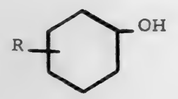
Theodore Horlenko, and James Henry George, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 33,931, May 1, 1970, Pat. No. 3,850,995. This application Aug. 26, 1974, Ser. No. 500,811
Int. Cl.² C07C *39/06*
U.S. Cl. 260—621 G **9 Claims**

1. A process for converting an aromatic aldehyde of the formula:



to a phenolic compouhd of the formula:



wherein R is a member of the group consisting of hydrogen and methyl groups, which process comprises the steps of:

a. reacting said aldehyde with molecular oxygen by continuously passing a gaseous mixture comprising said aldehyde and oxygen through a reaction zone maintained under at least atmospheric pressure at a temperature between about 250°C and about 450°C to form a gaseous reaction product comprising said phenolic compound; and

b. cooling said reaction product in intimate contact with an inert liquid diluent.

3,962,351
3-SUBSTITUTED IODO ALKENYL COMPOUNDS AND METHODS FOR PREPARING SAME

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 293,442, Sept. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 255,728, May 22, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,163
Int. Cl.² C07C *33/10*
U.S. Cl. 260—633 **1 Claim**

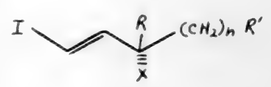
1. 3-hydroxy-1-iodo-1-trans octene.

3,962,352
3-SUBSTITUTED IODO ALKENYL COMPOUNDS AND METHODS FOR PREPARING SAME

Charles J. Sih, Madison, Wis.. assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 293,442, Sept. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 255,728, May 22, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,162
Int. Cl.² C07C *33/10*
U.S. Cl. 260—633 **4 Claims**

1. A method for preparing compounds having the formula



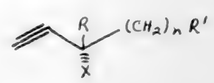
where

R is hydrogen, methyl or ethyl

R' is hydrogen, a saturated hydrocarbon chain containing from 1 to about 9 carbon atoms, pentene, hexene, cyclohexyl or benzyl,

and *n* is an integer from 0 to 5

which comprises reacting one molar equivalent of a compound having the formula



where R, R', X and *n* have the designations set forth above, with at least one molar equivalent of triisobutylaluminum,

reacting the resulting alkoxide with diisobutylaluminum hydride,

iodinating the resulting hydroalumination product,

treating the resulting mixture with sulfuric acid to decompose the alane formed

treating the resulting mixture with an excess of a basic trialkyl amine,

and recovering the desired product from the reaction mixture.

3,962,353
3-SUBSTITUTED IODO ALKENYL COMPOUNDS AND METHODS FOR PREPARING SAME

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 293,442, Sept. 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 255,728, May 22, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,163
Int. Cl.² C07C *33/10*
U.S. Cl. 260—633 **4 Claims**

1. A method for preparing compounds having the formula



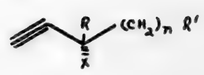
where

R is hydrogen, methyl or ethyl

R' is hydrogen, a saturated hydrocarbon chain containing from 1 to about 9 carbon atoms, pentene, hexene, cyclohexyl or benzyl.

X is hydroxyl, and

n is an integer from 0 to 5 which comprises reacting one molar equivalent a compound having the formula



where R, R', X and *n* have the designations set forth above, with two molar equivalents of diisobutylaluminum hydride,

iodinating the resulting hydroalumination product,

treating the resulting mixture with sulfuric acid to decompose the alane formed,

treating the resulting mixture with an excess of a basic trialkyl amine

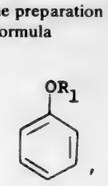
and recovering the desired product from the reaction mixture.

3,962,354
SYNTHESIS OF CIS-3-HEXEN-1-OL

Robert T. Dahill, Jr., Perth Amboy, N.J., assignor to Givaudan Corporation, Clifton, N.J.

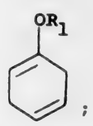
Continuation of Ser. No. 49,544, June 24, 1970, abandoned. This application Jan. 14, 1975, Ser. No. 540,940
Int. Cl.² C07C *29/00*
U.S. Cl. 260—638 R **5 Claims**

1. The process for the preparation of cis-3-hexen-1-ol from a phenyl ether of the formula

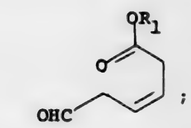


wherein R_1 is lower alkyl of 1–6 carbon atoms, cycloalkyl of 4–8 carbon atoms or phenyl via a sequence of reactions which comprises:

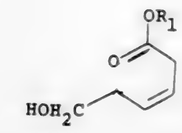
a. 1,4-hydrogenating the aromatic ring of the phenyl ether via a Birch reduction to a 1-alkoxy-1,4-cyclohexadiene of the formula



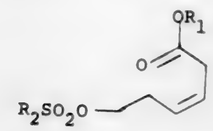
b. selectively oxidatively cleaving the alkoxy substituted 1,2 double bond of the 1-alkoxy-1,4-cyclohexadiene by reacting with an equimolar amount of ozone to provide a 6-oxo-cis-3-hexenoate of the formula



c. selectively reducing the aldehyde group of the 6-oxo-cis-3-hexenoate with sodium borohydride to form a 6-hydroxy-cis-3-hexenoate of the formula



d. esterifying the alcohol group of the 6-hydroxy-cis-3-hexenoate to a 6-sulfonyloxy-cis-3-hexenoate of the formula



wherein R_2 is a lower alkyl of 1–6 carbons, a phenyl, an alkyl phenyl or a napthyl radical; and

e. selectively reducing the 6-sulfonyloxy-cis-3-hexenoate with lithium aluminum hydride to form the cis-3-hexen-1-ol.

3,962,355
METHOD OF PRODUCING DEHYDRATED FRIED SNACK FOOD FROM APPLES

Tatsuo Yamazaki, Matsudo, and Takemi Hayashida, Hino, both of Japan, assignors to Kanro Co. Ltd., Tokyo, Japan

Filed Mar. 27, 1975, Ser. No. 562,586
Int. Cl.² A23B *7/02, 7/08*
U.S. Cl. 426—639 **6 Claims**

1. A method of producing a food product which comprises:

a. cutting apples into pieces;

b. soaking said pieces in sugar syrup;

c. draining excess syrup from said pieces;

d. drying the drained pieces to a moisture content of 6 % to 8 % while in contact with hot air;

e. frying the dried pieces at a reduced pressure of 0 to 160 mm Hg; and

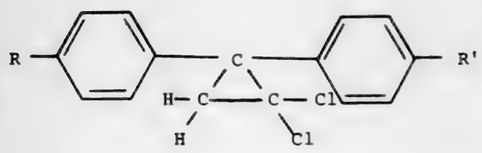
f. cooling the fried pieces at said pressure until they harden.

3,962,356
SUBSTITUTED CYCLOPROPANES

George Holan, Brighton, Australia, assignor to Monsanto Chemicals Limited, Australia

Division of Ser. No. 92,235, Nov. 23, 1970, Pat. No. 3,857,956, which is a division of Ser. No. 834,177, June 17, 1969, Pat. No. 3,642,910, which is a continuation-in-part of Ser. No. 684,554, Nov. 20, 1967, abandoned, which is a continuation of Ser. No. 402,949, Oct. 9, 1964, abandoned. This application Aug. 15, 1974, Ser. No. 497,776
Claims priority, application Australia, Oct. 24, 1963, 36877/63
Int. Cl.² C07C *25/18*
U.S. Cl. 260—649 R **3 Claims**

1. A compound of the formula



wherein R and R′ are selected from the group consisting of alkyl groups containing from 1 to 4 carbon atoms inclusive.

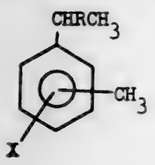
3,962,357

PROCESS FOR THE PREPARATION OF SUBSTITUTED VINYLBENZYL CHLORIDE

Richard F. Merritt, Fort Washington, Pa., and Clark R. Carpenter, Berlin, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed July 1, 1974, Ser. No. 484,634
Int. Cl.² C07C 25/24, 17/14
U.S. Cl. 260—651 R 12 Claims

1. A continuous, single step vapor phase process for the preparation of a substituted vinylbenzyl chloride which comprises contacting a substituted ethyl toluene of the formula:



wherein R is a substituent selected from the group consisting of hydrogen, chlorine, bromine and (C_1–C_4)alkyl; X is a substituent selected from the group consisting of hydrogen, (C_1–C_4)alkyl, halogen, cyano, aryl, hydroxy, carboxy, and OY groups wherein Y is an aryl group, as a vapor with chlorine at a temperature of between 250°C. and 750°C., condensing the organic reaction product and separating the halogenated reaction product from by-products formed therewith.

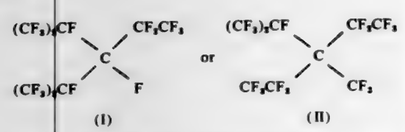
3,962,358

PROCESS FOR PREPARING PERFLUORONONANES

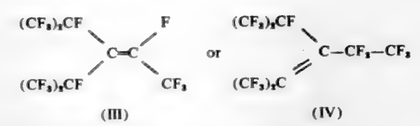
Sigmar-Peter von Halasz, Kelkheim, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed June 20, 1974, Ser. No. 481,460
Claims priority, application Germany, June 23, 1973, 2332097; Mar. 2, 1974, 2410028
Int. Cl.² C07C 19/08, 17/04
U.S. Cl. 260—653 9 Claims

4. A process for preparing a perfluorononane having the formula



or a mixture thereof which comprises reacting in the liquid phase a perfluorononene having the formula



or a mixture thereof with fluorine gas at a temperature from −40° to +120°C.

3,962,359

HYDROPROCESSING OF HYDROCARBONS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 443,046, Feb. 15, 1974, Pat. No. 3,900,386, which is a continuation-in-part of Ser. No. 365,782, May 31, 1973, Pat. No. 3,839,193, which is a continuation-in-part of Ser. No. 27,457, April 10, 1970, abandoned. This application Feb. 21, 1975, Ser. No. 551,789
Int. Cl.² C07C 5/10
U.S. Cl. 260—667 4 Claims

1. A process for producing a cycloparaffinic hydrocarbon which comprises contacting hydrogen and an aromatic hydrocarbon in a reaction zone at conditions selected to effect chemical consumption of hydrogen in contact with a catalytic composite of a platinum or a palladium component, an iridium component, a germanium component and a porous carrier material, substantially all of the platinum or palladium component and the iridium component being in the elemental metallic state and the germanium component being in an oxidation state above that of the elemental state, and separating the resulting reaction zone effluent to recover said paraffinic hydrocarbon.

3,962,360

ALKYLAROMATIC ISOMERIZATION PROCESS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 445,019, Feb. 22, 1974, Pat. No. 3,919,340, which is a continuation-in-part of Ser. No. 365,782, May 31, 1973, Pat. No. 3,839,193, which is a continuation-in-part of Ser. No. 27,457, April 10, 1970, abandoned. This application Mar. 5, 1975, Ser. No. 555,496
The portion of the term of this patent subsequent to Oct. 1, 1991, has been disclaimed.
Int. Cl.² C07C 5/30
U.S. Cl. 260—668 A 14 Claims

1. A process for isomerizing an isomerizable alkylaromatic hydrocarbon which comprises contacting said isomerizable alkylaromatic hydrocarbon at isomerization conditions, with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 weight percent platinum or palladium, about 0.01 to about 2 weight percent iridium, about 0.01 to about 5 weight percent germanium and about 0.1 to about 3.5 weight percent halogen, wherein the platinum or palladium, iridium and germanium are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum or palladium and iridium are present in the corresponding elemental metallic states and wherein substantially all of the germanium is present in an oxidation state above that of the elemental metal.

3,962,361

PROCESS FOR ALKYLATING AROMATIC HYDROCARBONS

George E. Stridde, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 503,985, Sept. 6, 1974. This application Dec. 6, 1974, Ser. No. 530,088
Int. Cl.² C07C 3/52
U.S. Cl. 260—671 C 21 Claims

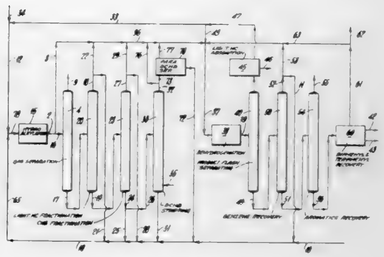
1. In a process for alkylating in the liquid phase an alkylatable aromatic hydrocarbon with an olefin-acting compound selected from the group consisting of mono-olefins, alkyl bromides, alkyl chlorides, and mixtures thereof, the improvement which comprises contacting said hydrocarbon and said compound under anhydrous alkylating conditions with a catalyst comprising a synthetic saponite-type mineral in which the central octahedral layer contains one or more divalent cations selected from the group consisting of Mg, Ni, Co, Zn, Mn, Cu, and mixtures thereof, provided that the octahedral layer contains less than 95 mole percent Mg, containing a metallic cation having a Pauling electronegativity greater than 1.0 in cation exchange positions on the surface of said mineral.

3,962,362

METHOD FOR PREPARING POLYPHENYLS

Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Development Corporation, New York, N.Y.

Filed Mar. 31, 1975, Ser. No. 563,754
Int. Cl.² C07C 15/12
U.S. Cl. 260—668 R 13 Claims



1. The method which comprises hydroalkylating a charge monocyclic aromatic hydrocarbon stream with a hydroalkylating quantity of hydrogen in the presence of hydroalkylation catalyst at hydroalkylation conditions thereby forming a hydroalkylate product stream containing naphthenyl benzenes; dehydrogenating, in the presence of dehydrogenating catalyst at dehydrogenation conditions, a dehydrogenation charge stream containing at least a portion of the naphthenyl benzenes in said hydroalkylate product and at least one diluent-carrier selected from the group consisting of benzene, cyclohexylbenzenes, methylcyclopentane, cyclohexane, toluene, xylene, and mixtures thereof, thereby forming a dehydrogenated product stream containing polyphenyls in diluent-carrier, said diluent-carrier being of lower molecular weight than said product polyphenyls; and recovering said polyphenyls from said dehydrogenated product stream.

3,962,363

PROCESS FOR SELECTIVELY PRODUCING PARAXYLENE

Albert Mabille, Saint-Servais; Inaki de Aguirre, Heverlee, both of Belgium, and Christian Marcilly, Montesson, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Sept. 25, 1974, Ser. No. 509,147
Claims priority, application France, Sept. 27, 1973, 73.34746
Int. Cl.² C07C 3/52, 3/62
U.S. Cl. 260—671 M 14 Claims

1. A process for producing xylenes of high paraxylene content, comprising reacting, in the vapor phase, a charge containing: (a) toluene, (b) methanol, and, (c) at least one polymethylbenzene containing at least 10 carbon atoms (C_{10}^+) and comprising at least 4 methyl groups fixed on the benzene ring, and the polymethylbenzene is tetramethylbenzenes, pentamethylbenzenes, hexamethylbenzenes or mixtures thereof, the molar composition of the said charge being 20 to 95 % of toluene, 2 to 60 % of methanol and 2 to 60 % of C_{10}^+ polymethylbenzenes, in the presence of an acid catalyst selected from the zeolites having pore diameters of at least 7.5 A.

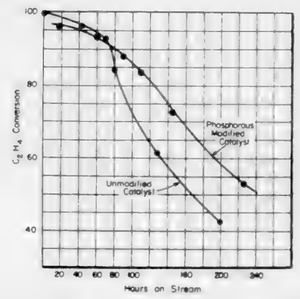
8. A process for producing xylenes of high paraxylene content, comprising a first step of reacting in the vapor phase, a charge containing (a) methanol and (b) at least one trimethylbenzene, the molar composition of the said charge being 5 to 90 % of methanol and 10 to 95 % of trimethylbenzenes, in order to obtain at least one C_{10}^+ polymethylbenzene, wherein the polymethylbenzene is tetramethylbenzenes, pentamethylbenzenes and hexamethylbenzenes, or mixtures thereof, and a second step, of reacting, in the vapor phase, toluene with at least one C_{10}^+ polymethylbenzene compound obtained in the first step, the molar composition of the feed charge for the reaction of toluene with at least one polymethylbenzene being 40 to 98 % of toluene and 2 to 60 % of polymethylbenzenes, in the presence of an acid catalyst selected from the zeolites having pore diameters of at least 7.5 A.

3,962,364

ALKYLATION IN PRESENCE OF PHOSPHORUS-MODIFIED CRYSTALLINE LUMINOSILICATE CATALYST

Lewis Brewster Young, Kendall Park, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 28, 1975, Ser. No. 563,286
Int. Cl.² C07C 3/52
U.S. Cl. 260—671 C 20 Claims



1. A process for effecting vapor phase alkylation of an aromatic hydrocarbon charge which comprises contacting said hydrocarbon charge with an olefinic hydrocarbon alkylating agent under conditions effective for accomplishing said vapor phase alkylation including a reactor inlet temperature between about 575°F. and about 900°F., a reactor pressure between atmospheric and about 3000 psig, employing a mole ratio of hydrocarbon charge to olefinic hydrocarbon alkylat-

ing agent in the approximate range of 1:1 to 30:1 and a weight hourly space velocity between about 2 and 2000 in the presence of a catalyst comprising a crystalline aluminosilicate zeolite, said zeolite having a silica to alumina ratio of at least about 12, a constraint index within the approximate range of 1 to 12, said catalyst having been modified by the addition thereto of phosphorus in an amount of at least about 0.5 percent by weight.

3,962,365

PROCESS FOR PRODUCING A MIXTURE OF ISOPROPYLNAPHTHALENES

Robert M. Gaydos, Export; Leonard F. Guziak, Monroeville, and Robert W. Maxwell, Jr., Pittsburgh, all of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 28, 1975, Ser. No. 581,553

Int. Cl.² C07C *3/54*

U.S. Cl. 260—671 P **2 Claims**

1. In a process for producing a mixture of isopropylnaphthalenes wherein naphthalene is reacted with propylene in the presence of a naphthalene sulfonic acid catalyst the Improvement which comprises:

a. treating naphthalene with concentrated sulfuric acid in an amount of at least 3% based on the amount of naphthalene and at a temperature in the range of 150°to 200°C at atmospheric pressure whereby a mixture containing naphthalene sulfonic acids and naphthalene is produced, and

b. adding propylene to the mixture at a temperature in the range of 150°–220°C at atmospheric pressure whereby an alkylate is produced containing monosubstituted and polysubstituted isopropylnaphthalenes and naphthalene.

3,962,366

ISOMERIZATION AND SEPARATION OF CYMENES FROM MIXTURES CONTAINING SAME

Gaston Henrich, Saint-Avold, and Philippe Gillet, Creutzwald, both of France, assignors to Societe Chimique des Charbonnages, Courbevoie, France

Filed Aug. 5, 1974, Ser. No. 495,000

Claims priority, application France, Aug. 9, 1973, 73.29188

Int. Cl.² C07C *7/01, 15/02*

U.S. Cl. 260—674 A **9 Claims**

4. In a process for isomerizing and separating the ortho-, meta- and para-cymenes from mixtures containing said compounds by bringing a mixture of said compounds in contact with HF and BF_3 at low temperatures so as to form a preferential complex with meta-cymene, the improvement comprising:

a. contacting the mixture to be treated containing the ortho-, meta- and para-cymenes with 4 to 50 mols of HF for each mol of total cymenes and 1.5 to 3 mols of BF_3 for each mol of meta-cymene present in said mixture, and maintaining the temperature of said mixture during said contacting at no greater than −50°C, while simultaneously contacting said mixture with added toluene;

b. allowing the reaction medium resulting from step (a) to separate into two phases, an upper phase or raffinate fraction containing the ortho- and para-cymenes, and a lower phase comprising the complex of meta-cymene in solution in HF;

c. separating said two phases from step (b);

d. distilling said raffinate fraction to obtain the desired ortho- and para-cymenes; and

e. thermally treating said lower phase to recover said HF and BF_3 and recycling the mixture of cymene isomers so obtained.

5. In a process for isomerizing and separating the ortho-, meta- and para-cymenes from mixtures containing said compounds by bringing a mixture of said compounds in contact with HF and BF_3 at low temperatures so as to form a preferential complex with meta-cymene, the improvement comprising:

a. contacting said mixture of ortho-, meta- and para-cymenes with 4 to 50 mols of HF for each mol of total cymenes and 0.5 to 1 mol of BF_3 for each mol of meta-cymene in said mixture, said contacting being carried out at a temperature between −5°C and about −45°C, and in the presence of added toluene;

b. allowing the reaction medium resulting from step (a) to separate into two phases, an upper phase of raffinate fraction containing the ortho- and para-cymenes, and a lower phase comprising the complex of meta-cymene in solution in HF;

c. separating said two phases from step (b);

d. distilling said raffinate fraction to obtain ortho- and para-cymenes;

e. contacting said lower phase comprising the complex of meta-cymene in solution in HF with di-isopropyl-toluene at a temperature not greater that −40°C and thereby obtaining two phases, an upper phase containing the meta-cymene and a complex lower phase containing the di-isopropyl-toluene;

f. recovering the meta-cymene from said upper phase and

g. thermally treating said lower phase of the complex to recover said HF and said BF_3.

8. In the process for isomerizing and separating the ortho-, meta- and para-cymenes from mixtures containing said compounds by putting said mixtures into contact with HF and BF_3 at low temperatures so as to form a preferential complex with meta- cymene in the presence of toluene, the improvement comprising

contacting the mixture to be treated at a temperature of −60°C with 20 mols of HF and 3 mols of BF_3 per mol of m-cymene in the presence of toluene,

separating the two resulting phases after decantation, the upper phase containing o- and p-cymenes and substantially no m-cymene and the lower phase containing substantially all the m-cymene, and

thermally decomposing the lower phase in the presence of toluene, whereby the m-cymene is partially isomerized into o- and p-cymenes which can be treated again as the said to be treated mixture.

3,962,367

OLEFIN ISOMERIZATION USING A COBALT-SULFUR CATALYST

Dalia Germanas, Des Plaines, and Ernest L. Pollitzer, Skokie, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 407,125, Oct. 17, 1973, Pat. No. 3,898,179. This application Mar. 24, 1975, Ser. No. 561,455

Int. Cl.² C07C *5/22*

U.S. Cl. 260—683.2 **3 Claims**

1. A process for isomerizing an isomerizable olefin by shifting the olefinic bond therein which comprises contacting said olefin at olefin isomerization conditions with a catalyst composite of a sulfur component and from about 5 to about 80 weight percent of a cobalt component with a porous carrier material, said catalyst containing less than about 1 mole and more than about 0.55 mole of said sulfur component per mole of said cobalt component, calculated as the elemental metal, said catalyst having been prepared by the steps of:

a. forming an initial composite of said cobalt component and said carrier material, said cobalt component being present in the initial composite as the elemental metal or the oxide;

b. sulfiding said initial composite by contacting same with a sulfide-yielding compound at sulfiding conditions to provide a sulfided composite containing at least about 1 mole of sulfur per mole of said cobalt component in the sulfided composite; and,

c. stripping sulfur from the resulting sulfided composite with a hydrogen-containing gas at stripping conditions, sufficient sulfur being stripped from said sulfided composite to provide a sulfur content in said catalyst of less than about 1 mole and more than about 0.55 mole of sulfur per mole of said cobalt component in the catalyst.

3,962,368

LINEAR POLYESTER MOLDING COMPOSITION CONTAINING CROSS-LINKED LINEAR POLYESTER AS A NUCLEATING AGENT

Walter Herwig, Neuenhain, Taunus, and Rudolf Kern, Mainz, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 253,196, May 15, 1972, Pat. No. 3,843,615. This application May 14, 1974, Ser. No. 469,911

Claims priority, application Germany, May 17, 1971, 2124336

Int. Cl.² C08G *45/14, 39/10*

U.S. Cl. 260—835 **18 Claims**

1. A thermoplastic polyester molding composition consisting of a physical mixture of

a. a linear saturated polyester of one or more aromatic dicarboxylic acids which may contain up to 10% by weight, based on the total weight of dicarboxylic acids, of aliphatic dicarboxylic acids, with saturated aliphatic or cycloaliphatic diols, and

b. 0.05 to 2% by weight, based on the weight of the linear saturated polyester (*a*), of a cross-linked saturated polyester of (1) terephthalic acid or an ester-forming derivative thereof, (2) a diol having from 2 to 10 carbon atoms and (3) 0.01 to 3% by weight, based on the weight of the cross-linked saturated polyester, of a cross-linking compound which is a 1,2-epoxide having at least two epoxide groups,

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3,962,369

SEALER-PRIMER FOR ELASTOMERIC COATINGS

Wen-Hsuan Chang, Gibsonia; Roger L. Scriven, Pittsburgh, and Paul J. Prucnal, Monroeville, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 361,016, May 16, 1973, abandoned. This application Dec. 19, 1974, Ser. No. 534,405

Int. Cl.² C08L *61/20, 61/26*

U.S. Cl. 260—849 **10 Claims**

1. A sealing-primer composition comprising:

A. a hydroxyl-containing, carboxyl-containing reaction product of:

1. an ungelled, hydroxy-containing urethane reaction product of an organic polyisocyanate and a polyhydric material, said reaction being terminated when the intrinsic viscosity of the reaction product is 1.0 deciliter per gram or less and the NCO/OH equivalent ratio being less than 1, with the major portion of said polyhydric material being selected from the group consisting of polyether polyols, saturated polyester polyols and mixtures thereof, wherein said polyhydric material contains no more than about 1 gram-mole of compounds having a functionality of 3 or more per 500 grams of polyhydric material, said urethane reaction product having a hydroxyl value of between about 10 and about 200; and

2. 0.1 to about 10 percent by weight based on total weight of the reaction mixture of a compound selected from the group consisting of polycarboxylic acids and polycarboxylic acid anhydrides; the acid and anhydride groups reacting with the hydroxyl groups of the urethane product to form a hydroxyl-containing, carboxyl-containing reaction product, and

B. an amine-aldehyde condensation product.

3,962,370

SHAPED POLYMERIC ARTICLES

Francis Gowland Hutchinson, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 203,067, Nov. 29, 1971, abandoned. This application Sept. 17, 1974, Ser. No. 506,778

Claims priority, application United Kingdom, Dec. 11, 1970, 58947/70

Int. Cl.² C08L *75/04*

U.S. Cl. 260—859 R **18 Claims**

1. A process for the preparation of a shaped polymeric article which comprises reacting a mixture consisting essentially of of (i) from 1% to 60% by weight of the precursors of a cross-linked polymeric material consisting essentially of at least one polymer having a Tg of not more than 25°C, a molecular weight of at least 3,000 and which contains hydroxyl groups and at least one polyisocyanate cross-linking agent, and (ii) from 99% to 40% by weight of at least one vinyl monomer which is free of groups which react with said hydroxylcontaining polymer or said polyisocyanate, to produce an article of a cross-linked polymeric material having a Tg of not more than 25°C and a vinyl polymer, and shaping the mixture while it is still fluid, the precursors of the cross-linked polymeric material being soluble in or dispersed in the vinyl monomer, and in which the reaction of the polymer with the cross-linking agent is substantially completed before polymerization of the vinyl monomer is allowed to proceed to the extent that the vinyl polymer so produced forms a separate phase.

3,962,371

WEATHER-RESISTANT THERMOPLASTS

Heinrich Alberts, Cologne; Herbert Bartl, Odenthal-Hahnenberg; Richard Prinz, Leverkusen; Salah Elabd Elghani, and Winfried Fischer, both of Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Dec. 6, 1974, Ser. No. 530,171

Claims priority, application Germany, Dec. 12, 1973, 2361717

Int. Cl.² C08L *51/04, 23/08, 23/14*

U.S. Cl. 260—876 R **12 Claims**

1. A composition of

A. 10 to 90% by weight of a copolymer of

I. 10 to 85% by weight of acrylonitrile, methacrylonitrile or a mixture thereof and

II. 10 to 90% by weight of at least one aromatic vinyl compound, the sum of components I to II being 100 and

B. 10 to 90% by weight of a graft copolymer of

III. 10 to 70% by weight of an ethylene/vinyl ester copolymer containing 25 to 75% by weight of grafted vinyl ester and

IV. 90 to 30% by weight of polymerized units of

a. 15 to 85% by weight of acrylonitrile, methacrylonitrile or a mixture thereof,

b. 85 to 15% by weight of at least one aromatic vinyl compound and

c. 0.1 to 10% by weight of at least one aliphatic monoolefin containing 2 to 18 carbon atoms, the sum of A + B being 100, the sum of III and IV being 100 and the sum of components (*a*) to (*c*) being 100.

3,962,372

STABILIZED QUICK SET ADHESIVES

Richard James Arhart, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 14, 1975, Ser. No. 540,846

Int. Cl.² C08L *23/34;* **C08F** *255/02*

U.S. Cl. 260—878 R **10 Claims**

1. A composition comprising a solution having a Brookfield viscosity of between about 2000 centipoise and about 150,000 centipoise of a chlorosulfonated polyethylene in at least one monomer selected from the class consisting of acrylic or meth-

acrylic monomers, and 0.01 to 10 parts by weight of the composition of a polymerization catalyst selected from the class consisting of organic peroxides and organic hydroperoxides, and 0.01 to 10 parts by weight of the composition of 2,6-di-t-butyl-4-methylphenol, the weight ratio of said polymerization catalyst to said 2,6-di-t-butyl-4-methylphenol being within the range of about 1 to 1 to 4 to 1, said chlorosulfonated polyethylene containing about 25 to 70 weight percent chlorine, and about 3 to 160 millimoles of sulfonyl chloride moiety per 100 g. of polymer, and being made from polyethylene having a melt index in the range of about 0.1 to 500 g/10 minutes.

3,962,373

COMPOSITIONS OF 3,3,3-TRIFLUORO-2-TRIFLUOROMETHYL PROPENE/VINYLIDENE FLUORIDE COPOLYMER AND POLYTETRAFLUOROETHYLENE

Frank Petrucelli, Parsippany-Troy Hills, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 21, 1974, Ser. No. 516,712
Int. Cl.² C08L 27/16, 27/18
U.S. Cl. 260—900 **10 Claims**

1. A blended composition in powder form comprising from about 25 to about 99 weight percent of a copolymer of 3,3,3-trifluoro-2-trifluoromethyl propene and vinylidene fluoride and from about 75 to about 1 weight percent of a low molecular weight, particulate polytetrafluoroethylene resin having a maximum particle size of about 15μ and a melt index of about 0.5 to 20.

3,962,374

METHOD OF PREPARING STABLE CONDENSATION PRODUCTS BY SOLVENT EXTRACTION AND PRODUCTS FORMED BY THE PROCESS

Kyung S. Shim, Irvington, and Edward N. Walsh, New City, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 5, 1974, Ser. No. 494,427
Int. Cl.² C07F 9/09, 9/40
U.S. Cl. 260—928 **13 Claims**

1. A process for forming a stabilized product which is adapted to be used in a polyurethane foam which comprises extracting a crude condensation product derived from condensing a β-haloalkyl ester of a pentavalent phosphoric acid with itself or with an alkyl ester of pentavalent phosphoric acid with at least one inert organic solvent which will solubilize and thereby remove medium molecular weight phosphorus oligomers contained in said crude product and evaporating said solvent to recover the extracted stabilized product.

12. The product formed by using the process of claim 1.

3,962,375

POLYMERIZATION PROCESS

Morford C. Throckmorton; Ken W. Donbar, and Karl C. Kauffman, all of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 424,389, Dec. 13, 1973, abandoned. This application Apr. 11, 1975, Ser. No. 567,443
Int. Cl.² C08F 4/06, 4/12
U.S. Cl. 526—335 **8 Claims**

1. A process for the polymerization of butadiene and butadiene in mixture with other diolefins to form polymers containing a high proportion of butadiene units in the cis-1,4-configuration comprising contacting at least one monomer from the group of butadiene and butadiene in mixture with other diolefins with a catalyst consisting essentially of (1) an organoaluminum compound selected from the group consisting of trialkylaluminums, dialkylaluminum hydrides and lithium aluminum tetraalkyl, (2) an organonickel compound selected from the class consisting of nickel salts of carboxylic acids, organic complex compounds of nickel tetracarbonyl and (3) a fluoride compound selected from the group of hydrogen fluoride and its complexes formed with ketones, aldehydes, esters, nitriles and ethers; and boron trifluoride and its complexes formed with ketones, aldehydes, esters, nitriles and ethers, wherein the improvement lies in that said catalyst is preformed by mixing the catalyst components in the presence of a preformed agent selected from the group consisting of trans-2-butene, mixed cis- and trans-2-pentene, cis-2-pentene, methyl acetylene, ethyl acetylene, 2-butyne, 1-pentyne, 2-pentyne, phenyl acetylene and isobutyl vinyl ether.

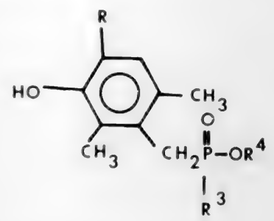
3,962,376

2,4,6-TRIALKYL-3-HYDROXYPHENYLALKANE PHOSPHONATES AND PHOSPHINATES

John D. Spivack, Spring Valley, and Martin Dexter, Briarcliff, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 400,602, Sept. 25, 1973, abandoned. This application July 22, 1974, Ser. No. 491,074
Int. Cl.² C07F 9/40
U.S. Cl. 260—953 **5 Claims**

1. A compound of the formula



wherein R is alkyl of 4 to 8 carbon atoms, R^3 is alkoxy of 12 to 24 carbon atoms, and R^4 is alkyl of 12 to 24 carbon atoms.

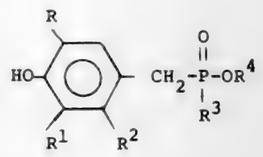
3,962,377

2,3,5-TRIALKYL-4-HYDROXYBENZYLPHOSPHONATES AND PHOSPHINATES

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 400,601, Sept. 25, 1973, abandoned. This application July 26, 1974, Ser. No. 492,089
Int. Cl.² C07F 9/40
U.S. Cl. 260—953 **9 Claims**

1. A compound of the formula



wherein R is alkyl of 4 to 8 carbon atoms, R^1 and R^2 are methyl or together are a butylene chain which, together with the phenyl group, forms a tetrahydronaphthyl group, R^3 is alkoxy of 4 to 24 carbon atoms and R^4 is alkyl of 4 to 24 carbon atoms.

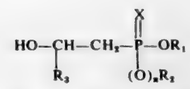
3,962,378

PREPARATION OF PHOSPHORUS-ORGANIC ESTERS

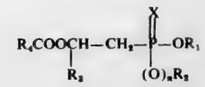
Manfred Finke, Fischbach, Taunus, and Hans-Jerg Kleiner, Bad Soden, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 8, 1974, Ser. No. 486,315
Claims priority, application Germany, July 14, 1973, 2335852
Int. Cl.² C07F 9/32, 9/40
U.S. Cl. 260—968 **15 Claims**

1. A process for preparing a 2-hydroxyethanephosphonic acid diester, a 2-hydroxyethyl-phosphinic acid ester, a 2-hydroxyethane-thiophosphonic acid diester or a 2-hydroxyethyl-thiophosphinic acid ester of the formula



wherein R_1 is an alkyl or a substituted alkyl of up to 18 carbon atoms, R_2 is an alkyl or a substituted alkyl of up to 18 carbon atoms, a cycloalkyl or a substituted cycloalkyl of up to 10 carbon atoms, an alkenyl or a substituted alkenyl of up to 18 carbon atoms, an aryl or a substituted aryl of up to 14 carbon atoms, or an aralkyl or substituted aralkyl of up to 15 carbon atoms, R_3 is hydrogen, alkyl or substituted alkyl of up to 18 carbon atoms, an alkenyl or substituted alkenyl of up to 18 carbon atoms, a cycloalkyl or substituted cycloalkyl of up to 10 carbon atoms, an aryl or a substituted aryl of up to 14 carbon atoms, or an aralkyl or a substituted aralkyl of up to 15 carbon atoms, X is oxygen or sulfur and n is 0 or 1, which comprises heating at a temperature between about 25°C. and about 150°C. a 2-acyloxy compound of the formula



wherein R_4 is an alkyl of 1 to 4 carbon atoms, in an alcohol of the formula ROH having 1 to 4 carbon atoms containing from about 0.1 to about 25 mol percent of a strong acid or from about 1 to about 15 mol percent of a strong base, said mol percent being calculated on the basis of said 2-acyloxy compound, to form said ester or diester and an ester of the formula R_4COOR, and removing said ester of the formula R_4COOR from the reaction mixture.

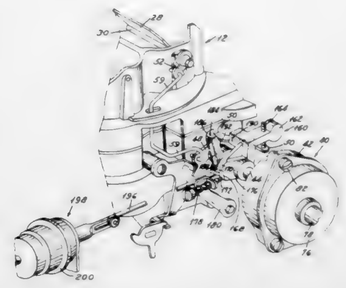
3,962,379

CARBURETOR COLD ENRICHMENT SYSTEM HAVING AUTOMATIC CHOKE OPENER AND FAST IDLE CAM HIGH STEP PULLOFF APPARATUS

Richard J. Freismuth, Mount Clemens, and Joseph F. Lopiccola, Warren, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 30, 1975, Ser. No. 618,298
Int. Cl.² F02M 1/10
U.S. Cl. 261—39 B **4 Claims**

1. A carburetor having an air/fuel induction passage open at one end to air at essentially atmospheric pressure and connected at its opposite end to an engine intake manifold to be subject to the changing vacuum levels therein, the one end having a choke valve rotatably mounted for movement across the passage between a closed air choking position and an open inoperative position, and a throttle valve rotatably mounted posterior of the choke valve for movement across the passage between a normal essentially closed engine idle speed position and beyond towards a wide open throttle position to control the quantity of air/fuel mixture flow through the passage, an abutment means rotatable with the throttle valve, a rotatable fast idle cam having a high cam step projecting radially from the cam axes for engagement at times by the abutment means during movement of the throttle valve in a closing direction to stop the throttle valve in a more open position than the idle speed position to increase mixture flow to the manifold, the cam also having a second cam step of lesser radial extent engagable with the abutment means at other times as a function of the rotative position of the cam to stop the throttle valve in a less open position than the high cam step position, the cam being rotatable by gravity towards an inoperative position upon disengagement of the abutment means with the cam steps permitting closure of the throttle valve to the normal idle speed position, rotatable lever means secured to the choke valve and having a portion extending into the path of rotative movement of the fast idle cam towards the inoperative position to stop the cam rotation, means to rotate the lever means, and vacuum mechanical control means operable



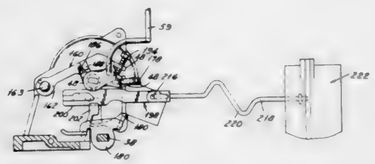
during cold engine operations while the abutment means is engaged with the fast idle cam high step to automatically both open the choke valve and rotate the fast idle cam to a position disengaging the abutment means from the high cam step and engaging it with the second cam step to lean and reduce the mixture flow to the engine to improve emissions while minimizing engine stalling, the control means including a shaft, means rotatably mounting the fast idle cam and a cam member on the shaft, the cam member having a projecting portion having at times a unidirectional engagement with the cam to rotate the same towards its inoperative position, and a vacuum servo connected to the cam member and operable to rotate the cam member against the cam to rotate the same off the high cam step engagement with the abutment means and also engage and rotate the lever means projecting portion to open the choke valve.

3,962,380

CARBURETOR WITH COMBINED CHOKE PULLDOWN AND FAST IDLE CAM KICKDOWN APPARATUS

Raymond J. Cedar, Dearborn, and Rodney R. Deyo, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 14, 1975, Ser. No. 622,332
Int. Cl.² F02M 1/10
U.S. Cl. 261—39 B **9 Claims**



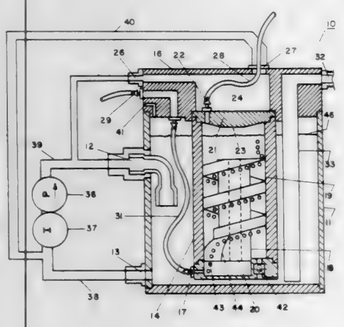
1. A carburetor having an air/fuel induction passage open at one end to air at essentially atmospheric pressure and con-

nected at its opposite end to an engine intake manifold to be subject to the changing vacuum levels therein, the one end having a choke valve rotatably mounted for movement across the passage between a closed air choking position and an open inoperative position, and a throttle valve rotatably mounted posterior of the choke valve for movement across the passage between a normal essentially closed engine idle speed position and beyond towards a wide open throttle position to control the quantity of air/fuel mixture flow through the passage, an abutment means rotatable with the throttle valve, a rotatable fast idle cam having a high cam step projecting radially from the cam axes for engagement at times by the abutment means during movement of the throttle valve in a closing direction to stop the throttle valve in a more open position than the idle speed position to increase mixture flow to the manifold, the cam also having a second cam step of lesser radial extent engagable with the abutment means at other times as a function of the rotative position of the cam to stop the throttle valve in a less open position than the high cam step position, the cam being rotatable by gravity towards an inoperative position upon disengagement of the abutment means with the cam step permitting closure of the throttle valve towards the normal idle speed position, rotatable lever means secured to the choke valve, interconnecting means operably connecting the lever means and fast idle cam and having a portion extending into the path of rotative movement of the fast idle cam towards the inoperative position to stop the cam rotation, means to rotate the lever means, and a single vacuum actuated member engagable with the interconnecting means and cam and operable immediately upon the engine attaining sustained operation after the initial cold engine cranking operation while the abutment means is engaged with the fast idle cam high step to automatically and sequentially first effect movement of the lever means to crack open the choke valve from a closed engine cranking position and subsequently rotate the fast idle cam to a position disengaging the abutment means from the high cam step and engaging the abutment means with the second cam step to lean and reduce the mixture flow to the engine to improve emissions while minimizing engine stalling.

3,962,381
HUMIDIFICATION APPARATUS

Dean T. Farrish, Parker, and Dalton E. Templeton, Denver, both of Colo., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Nov. 11, 1974, Ser. No. 522,528
Int. Cl.² G01D *18/00;* **A61M** *16/00*
U.S. Cl. 261—141 **17 Claims**



1. An apparatus for the humidification of a gas, which comprises in combination:
   a. An outer container having liquid recirculation means;
   b. An inner chamber, having gas inlet and gas outlet means, a helixal-shaped gas conveying means in gas-tight communication with the inner wall of the chamber, having an axial liquid conduit there through, and adapted to convey gas bubbles upward in a helixal pathway through a liquid in the chamber, a one-way valve at the base of the chamber, communicating with the chamber and the outer container and adapted to maintain a pre-set liquid level in the chamber, a top portion for the chamber having said gas outlet means and a substantially convex inner surface adapted to form a bubble trap;
   c. A top cover in sealable engagement with the outer container and the inner chamber having a liquid chamber having liquid inlet means and liquid outlet means, conduit means in the liquid chamber in communication with the gas outlet means of the top portion of the inner chamber, the conduit means in pass-through communication with the liquid outlet means, a gas inlet means communicating with the inner chamber, and a liquid inlet means communicating with the outer container;
   d. A second conduit means in the outer container in communication with both the gas inlet means of the top cover and the gas inlet means of the inner chamber.

3,962,382
PROCESS FOR FORMING A POURABLE PLASTISOL NITROCELLULOSE SLURRY

Craig E. Johnson, Indian Head, and Paul F. Dendor, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 27, 1974, Ser. No. 500,986
Int. Cl.² C06B *21/00*
U.S. Cl. 264—3 E **2 Claims**

1. A method for forming a stable slurry of fine particle plastisol nitrocellulose which comprises:
   a. forming a water wet plastisol nitrocellulose which is dried to a water content of up to about 0.6% of water by weight of the plastisol nitrocellulose;
   b. adding a suitable liquid to the plastisol nitrocellulose to form a slurry, and
   c. subjecting the slurry to high shear agitation, and
   b. examining a sample of the plastisol nitrocellulose slurry to determine the pourability thereof, an unpourable slurry indicating that additional drying is necessary.

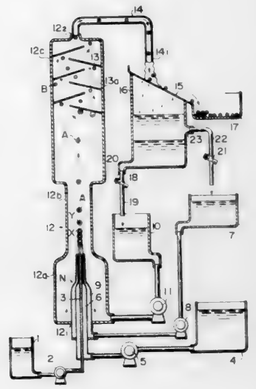
3,962,383
METHOD AND APPARATUS FOR MANUFACTURING SEAMLESS MATERIAL-FILLED CAPSULES

Yoshiro Hagiwara, 1-30-710 Agenaruo, Nishinomiya, Hyogo; Toshiyuki Suzuki, 7-6-104 Higashi Sonoda, Amagasaki, Hyogo, and Akira Imai, 4-20-5 Oimazato Higashinari, Osaka, all of Japan

Filed Apr. 9, 1973, Ser. No. 349,400
Claims priority, application Japan, Oct. 3, 1972, 47-99300
Int. Cl.² B29C *13/00;* **B29F** *5/00*
U.S. Cl. 264—4 **8 Claims**

1. A method of manufacturing seamless material-filled capsules, comprising the steps of jetting a capsule filler material, a sol solution and a water-insoluble solution in the form of a continuous jet of the same core into a hardening solution from a triple-orifice of the same core when the outermost layer (third layer) of said jet, in direct contact with said hardening solution, is a water-insoluble solution so that the spherical formation of the said jet three layers due to interfacial tension can be completed without contacting of said hardening solution and said sol solution directly at the outlet of said triple-orifice, and causing the resultant three-layered spherical drop to strike a plurality of interrupting plates in the hardening solution to destroy and separate said water-insoluble outermost layer so that the sol solution as the intermediate layer (second layer) thus exposed can then react with said hardening solution to form a water-insoluble film on the outer surface of the spherical drop, and controlling and changing the diameter and film thickness of the spherical drop by changing the flow speed of said hardening solution and the diameter of said triple-orifice.

4. An apparatus for manufacturing seamless material-filled capsules, comprising a triple-orifice of the same core consisting of an innermost pipe connected by means of a pipe to a tank for storing a capsule filler material, an intermediate pipe connected by means of a pipe to a tank for storing a sol solution, and an outermost pipe connected by means of a pipe to a tank for storing a water-insoluble solution, all of said innermost, intermediate and outermost pipes being connected to



respective pumps for feeding predetermined amounts of said respective solutions, and a tower containing hardening solution for capsule-drop forming and hardening purposes, in which said triple-orifice is arranged in the lower chamber thereof with the jet opening of said triple-orifice positioned upwardly, and a plurality of interrupting plates for contact with spherical drops from said orifice being provided in the upper chamber of said tower.

3,962,384
SPRAY-DRYING TECHNIQUE FOR PREPARING AGGLOMERATED POWDERS

Marco Alfred Cannalonga, Fort Lee, and Louis Vincent Czarecki, Succasunna, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 242,789, April 10, 1972, abandoned. This application June 26, 1974, Ser. No. 483,343
Int. Cl.² B01J *2/02*
U.S. Cl. 264—7 **10 Claims**

1. In a process for preparing coated agglomerated powders suitable for direct compression tablets comprising:
   A. spraying into a spray dryer chamber droplets of a spray-dryable formulation selected from the group consisting of an aqueous vitamin slurry and an aqueous vitamin emulsion, to produce a spray-dried powder thereby, the improvement comprising:
   B. metering into said chamber, in a concentration of about 1–5% by weight, based on the weight of said spray-dried powder, a dry particulate absorbent having:
      a. a particle size of from about 2 microns to about 16 microns;
      b. an oil absorption capacity of from about 150 to about 400 pounds of oil per 100 pounds of absorbent;
      c. a surface area of from about 175 to about 360 square meters per gram;
      d. insolubility in cold water;
      e. resistance to wetting by water;
      f. a free-flowing property and
      g. ability to not develop static electricity

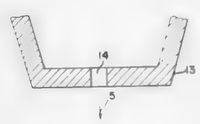
   said absorbent contacting said spray droplets in a semi-dry condition to coat said droplets and form a dry agglomerated powder thereof,

wherein said absorbent minimizes the development of static electricity during step A and on the resulting dried agglomerated powder.

3,962,385
METHOD FOR MANUFACTURING SPHERICAL HOLLOW PARTICLES

Itaru Niimi, Nagoya; Kametaro Hashimoto, Toyota; Kenji Ushitani, Toyota; Masashi Shibata, Toyota, and Yoshitaka Takahashi, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed July 16, 1973, Ser. No. 379,828
Claims priority, application Japan, July 17, 1972, 47-71447
Int. Cl.² B01J *2/02*
U.S. Cl. 264—11 **8 Claims**

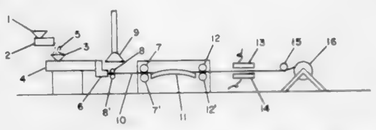


1. Method of manufacturing spherical hollow particles from molten metal which comprises the steps of
   a. ejecting a flow of water at a pressure of 5–30 kg/cm² through an annular gap defined between coaxial frusto-conical inner and outer walls, one of which walls is provided with a plurality of slots 0.1–0.5 mm in width and spaced 0.1–1.0 mm apart, to form an inverted cone of jets converging at a common point below said annular gap,
   b. dropping a stream of said molten metal through said common point to shatter said stream into hollow metal particles containing entrapped water from said jets, which water is converted to a gaseous state by the heat of said metal so as to expand within said particles, and then
   c. cooling said particles until they are solidified in the form of hollow balls.

3,962,386
CORONA DISCHARGE TREATMENT OF FOAM FIBRILLATED WEBS

Gary L. Driscoll, Boothwyn, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

Filed Jan. 2, 1973, Ser. No. 320,353
Int. Cl.² B29D *27/00;* **B29C** *25/00;* **H05B** *7/16*
U.S. Cl. 264—22 **1 Claim**



1. A process of producing a foam fibrillated fibrous web comprising extruding a resinous composition at least 70 weight percent of which is a poly α-olefin, and a gaseous material mixed with said polyolefin from a die into a zone of reduced pressure to produce an extrudate, withdrawing said extrudate from said die by a first take-up means at a linear rate from 2 to 25 times the linear rate at which said polyolefin reaches the die lips to form a foam fibrillated web, stretching said foam fibrillated web from 2 to 10 times in the machine direction, and surface treating the stretched foam fibrillated

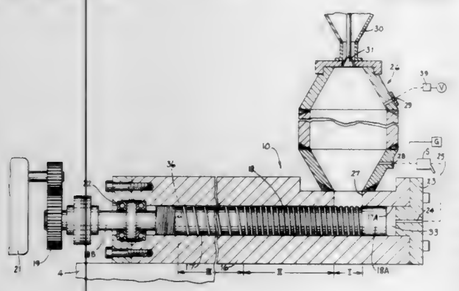
web with a corona discharge at an intensity of from 1 to 75 watt-minutes per square foot at about 20 to about 150℃ whereby the fibrous web has improved adhesion ability with itself.

3,962,387

METHOD OF INJECTION MOLDING A FOAMABLE THERMOPLASTIC MATERIAL

James W. Hendry, Louisville, Ky., assignor to Ex-Cell-O Corporation, Troy, Mich.

Division of Ser. No. 233,213, March 9, 1972, Pat. No. 3,806,291. This application July 24, 1973, Ser. No. 382,206
Int. Cl.² B29D *27/00*
U.S. Cl. 264—50 **16 Claims**



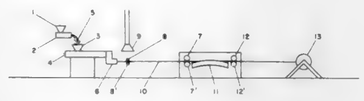
1. The method of foaming a thermoplastic material comprising the steps:
introducing a quantity of said thermoplastic material in a granular form into a hopper above and communicating through an opening with a plasticating chamber containing a plasticating member consisting of an elongate member rotatable for downstream advancement and plasticating of the thermoplastic material and having an inlet end portion extending past said opening;
maintaining said hopper in communication with said plasticating chamber through said opening while otherwise closing said hopper against gas escape, and permitting said granules to lie loosely in said hopper and in said opening in an unsoftened state;
supplying gas inert to the thermoplastic granules from an external high pressure gas source directly into said closed hopper without prior heating or mechanical compression of the granules and other than through said opening, and uniformly and rapidly penetrating the spaces between the thermoplastic granules lying in said hopper and said opening with said gas under pressure and wherein said gas under pressure is provided as the foaming agent;
preventing external gas entry directly into the plasticating chamber at any point downstream of said opening at all times, but permitting gas from said hopper to enter the plasticating chamber through said opening;
introducing said granules, still uniformly interspaced with said high pressure gas and prior to any heating or softening of such granules, into said plasticating chamber and engaging same by said plasticating member for subsequent downstream movement in the plasticating chamber by the plasticating member and while continuing connection of the high pressure gas supply through said hopper and opening to said plasticating chamber;
initiating and continuing melting said granules in said plasticating chamber by heat generation therein by working and moving the thermoplastic material along the plasticating chamber by rotating of said plasticating member, while maintaining said gasous pressure in said hopper and in the communicating portion of said plasticating chamber at a pressure substantially exceeding the pressure applied to the thermoplastic material by said plasticating member during melting, wherein said gas remains uniformly distributed throughout the material during said melting and upon the completion of said melting the resultant plastic material encases uniformly distributed separate bubbles of said high pressure gas.

3,962,388

METHOD OF PRODUCING A FOAM FIBRILLATED WEB

Gary L. Driscoll, Boothwyn, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

Filed Jan. 2, 1973, Ser. No. 320,355
Int. Cl.² B29C *25/00*; **B29D** *27/00*, *7/24*
U.S. Cl. 264—51 **4 Claims**



1. A process of producing a foam fibrillated fibrous web comprising heating a blend of from 75 to 98 weight percent as based on said blend of isotactic polypropylene having a melt index below 30 and from 2 to 25 weight percent as based on said blend of ethylene-vinyl acetate copolymer containing from 60 to 98 weight percent ethylene and from 2 to 40 weight percent vinyl acetate and having a melt index from 1 to 400 in an extruder to from 175° to 260°C whereby a molten blend is formed, extruding said molten blend and from 0.1 to 20 percent by weight as based on said blend of a material which is gaseous under the extrusion conditions used mixed with said molten blend from a die into a zone of reduced pressure to produce an extrudate, quenching said extrudate to a temperature below about 150°C while withdrawing said extrudate from said die by a first linear take-up means at a linear rate of from 2 to 25 times the linear rate at which said blend reaches the lips of said die whereby the foam cells forming are ruptured and a foam fibrillated web is formed, and stretching said foam fibrillated web from 1.5 to 10 times in the machine direction at a temperature of from about 90°C to about 150°C to increase the strength thereof.

3,962,389

METHOD FOR PRODUCING CERAMICS FROM PARTICLE SHEET MATERIAL USING CATIONIC PULP

Akira Takase; Mitsuo Suzuki; Yoichi Shiraki, all of Tokyo; Katsunori Horachi, Urawa, and Masao Anzai, Funabashi, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1973, Ser. No. 427,633
Claims priority, application Japan, Dec. 28, 1972, 48-1821; Dec. 28, 1972, 48-1822; Dec. 28, 1972, 48-1823; Dec. 28, 1972, 48-2870[U]; Dec. 28, 1972, 48-2871[U]; Feb. 3, 1973, 48-14122
Int. Cl. C04b *35/64*
U.S. Cl. 264—56 **9 Claims**

1. A method for producing ceramics which comprises the steps of:
forming an aqueous solution containing from about 50 to 98 percent by weight of inorganic particles having a negative ζ-potential in water, said inorganic particles being selected from the group consisting of clay, quartz, siliceous sand, china stone, feldspar, pyrophyllite, dolomite, limestone, kaolin, sinterable powdered oxides, powered silicate materials, carbides, nitrides, synthetic minerals of magnetic and dielectic materials, and mixtures thereof, and from about 50 to 2 percent by weight of cationic cellulose pulp having a positive ζ-potential of greater than about +20mV in water, said cationic cellulose pulp beign formed by the graft copolymerization of a cationic monomer to a cellulose pulp;
forming a particle sheet material material from said aqueous solution of said inorganic particles and said cationic cellulose pulp in a sheet forming machine;
heating said particle sheet material in an oxidizing atmosphere in order to burn off the cellulose pulp without sintering said inorganic particles; and
further heating said particle sheet material at elevated temperatures in order to sinter said inorganic particles.

3,962,390

METHOD OF PRODUCING COMPOSITE FOAMED SHAPED ARTICLES FROM THERMOPLASTIC RESINS

Hisayuki Mori; Eiichi Adachi, both of Nara, and Yoji Noguchi, Kyoto, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 97,382, Dec. 11, 1970, abandoned. This application May 21, 1974, Ser. No. 471,997
Claims priority, application Japan, Dec. 11, 1969, 44-99860
Int. Cl.² B29C *5/04*; **B29D** *27/00*
U.S. Cl. 264—45.4 **17 Claims**

1. A method of producing shaped articles of a thermoplastic resin having a non-foam layer and a foam layer, which consists essentially of mixing thermoplastic resin particles not containing a heat-decomposable blowing agent, said resin being selected from the group consisting of polyethylene, polypropylene resins, styrol resins, acrylonitrile-butadiene-styrene copolymers, vinyl chloride resins, methacrylic resins and acrylonitrile-styrene copolymers and thermoplastic resin particles containing a heat-decomposable blowing agent, said resin being selected from the group consisting of polyethylene resins, polypropylene resins, styrol resins, acrylonitrile-butadiene-styrene copolymers, vinyl chloride resins, methacrylic resins and acrylonitrile-styrene copolymers, said heat-decomposable blowing agent being at least one member selected from the group consisting of dinitropentamethylene-tetramine, dimethyl-dinitrosoterephthalazide, benzene sulfonylhydrazide, toluene sulfonylhydrazide, azobisisobutyronitrile, diazoaminobenzene, trihydrazine-triazine, paratoluenesulfonyl-semicarbazide, oxybisbenzenesulfonyl-semicarbazide and azodicarbonamide, and derivatives thereof, wherein the said thermoplastic resin particles not containing a heat-decomposable blowing agent and said thermoplastic resin particles containing said blowing agent have the following relationship:

$$1000 \geqq C_A/C_B \geqq 50$$

wherein C_A is the heat capacity of said thermoplastic resin particles containing a heat-decomposable blowing agent and C_B is the heat capacity of said thermoplastic resin particles not containing a blowing agent; introducing the mixture thus obtained into a mold; heating the mold and, in the meantime, moving said particles in said mold to effect the heat-melting of said particles as well as the heat-decomposition of the blowing agent into a gas and thereby forming the non-foam layer derived from said thermoplastic particles not containing the blowing agent and the foam layer derived from said thermoplastic particles containing said blowing agent.

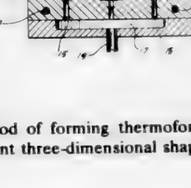
3,962,391

DISC SUPPORT STRUCTURE AND METHOD OF PRODUCING THE SAME

Wolfgang Dietze, Munich; Richard Mittermeier, Moosburg, and Gerhard Steinwagner, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 20, 1974, Ser. No. 452,934
Claims priority, application Germany, May 7, 1973, 2322952
Int. Cl.² B29C *13/00*, *17/10*
U.S. Cl. 264—81 **5 Claims**

1. A method of producing a support structure having a flat base and upwardly extending side walls integral with said base for supporting generally upright on edge crystal discs of a given diameter during treatment thereof, comprising:
thermally depositing silicon from a gaseous mixture comprises of a carrier gas and a thermally decomposable gaseous silicon compound onto at least one heated cylindrical carrier member, said carrier member having at least one flattened wall portion so as to form a correspondingly shaped tubular member composed of silicon about said carrier member and which tubular member has a flattened wall portion corresponding to that on said carrier member;
disjoining the deposited tubular member from said carrier member without destroying said tubular member;
forming longitudinal separation cuts in said tubular member through two opposing side wall portions thereof adjacent to said flattened wall portion of the tubular member and along lines parallel to a longitudinal axis of said tubular



member and at a height dimension above said flattened wall portion of the tubular member but below its wall portion located above said flattened wall portion; and
removing the cut-separated portion of the tubular member above said flattened wall portion so as to define a support structure having a flat base corresponding to said flattened wall portion and upwardly extending side walls integral with said flat base and in opposing relation to each other, said side wall having a height dimension (b) which is determined by the relation:

$$b = r_1^2 \pm a^2/2(r_2 \pm a)$$

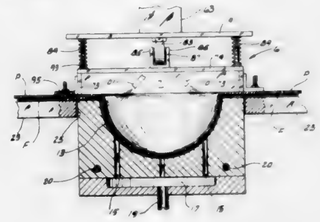
wherein
a is the distance from the radial center of said tubular member to the flattened wall portion thereof;
r_1 is the dimension of the internal radius of said tubular member; and
r_2 is the dimension of the crystal discs to be supported by the support structure.

3,962,392

METHODS OF MOLDING MOLDABLE TEXTILE FABRICS

William R. Conner, Jr., Shelbyville, Tenn., assignor to Stahl-Urban Company, Brookhaven, Miss.

Filed Nov. 15, 1974, Ser. No. 524,134
Int. Cl.² B29C *17/04*, *25/00*
U.S. Cl. 264—89 **3 Claims**



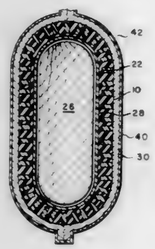
1. The method of forming thermoformable textile fabric into a permanent three-dimensional shape comprising apply-

ing a layer of substantially air impervious thermoformable sheet plastic material to one face of the fabric, applying the fabric with the plastic layer thereon to a mold having a cavity conforming to the three-dimensional shape desired with the fabric toward the cavity, heating the plastic layer to thermoforming temperature, applying vacuum to the cavity to draw the plastic layer and the fabric into the cavity thereby to mold the fabric and also said plastic layer to the shape of the cavity, and releasing the vacuum and removing the molded plastic layer with the molded fabric thereon from the mold, and cooling the plastic layer, wherein the mold is heated to heat the fabric to the forming temperature when the fabric is drawn into the cavity and contacts the surface of the mold within the cavity, the vacuum is reduced after the fabric contacts said surface to cause the fabric to withdraw slightly from said surface, the plastic layer is cooled in the cavity while the reduced vacuum is applied to the cavity, the vacuum is then released, and the molded plastic layer and molded fabric are removed together from the mold and the molded fabric retained on the molded plastic layer to hold the molded fabric in its molded shape for a sufficient period of time to stabilize the fabric in its molded shape.

3,962,393
METHOD FOR MAKING A HOLLOW LAMINATED ARTICLE

Leiv H. Blad, Van Nuys, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed May 7, 1974, Ser. No. 467,762
Int. Cl.² B29D *3/02*; **B29G** *7/00*
U.S. Cl. 264—90 **11 Claims**

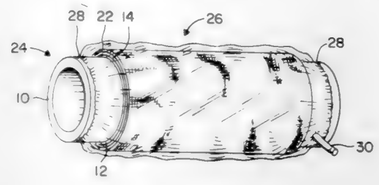


1. The method of making a fiber-reinforced polymeric hollow article comprising:
- forming a flexible mold envelope having a pattern of channels in an external surface thereof;
- supporting said envelope on a solid mandrel disposed internally thereof;
- applying a curable resin and flexible fibrous material about said supported envelope and in the channels thereof;
- enclosing an assembly of said envelope and said mandrel with applied said resin and fibrous material within a rigid die;
- sealably enclosing said envelope and said rigid die to form a sealed enclosure;
- establishing a vacuum in said sealed enclosure while admitting at least atmospheric pressure internally of said envelope in such a way as to form a separation between said envelope and said rigid die; and curing said resin.

3,962,394
METHOD FOR MOLDING FIBER REINFORCED COMPOSITE TUBE

Judge H. Hall, Anaheim, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed June 2, 1975, Ser. No. 583,346
Int. Cl.² B29C *27/10, 15/00*; **B29D** *3/02, 23/00*
U.S. Cl. 264—90 **9 Claims**

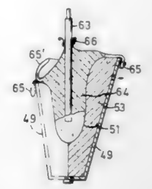


1. The method of molding a fiber-reinforced composite tube comprising the steps of:
- using a mold element having a peripheral molding surface about a central axis of the element;
- applying to said molding surface an annular liquidresin impregnated layer of reinforcing fibers;
- placing a compression sleeve in contact with an exposed side of said fiber-resin layer, said compression sleeve being longitudinally split so that the peripheral length of said sleeve can change with pressure and which sleeve is releasable from said resin; urging said compression sleeve against said fiber-resin layer by gaseous or fluid pressure, in such a way as to cause a change in the peripheral length of said sleeve by sliding one portion of said sleeve upon another portion of said sleeve, to compress the layer between said sleeve and mold element and thereby compact the reinforcing fibers in the layer; and curing the resin in said layer with heat while the layer is so compressed, and removing said sleeve from said layer and said layer from said mold element.

3,962,395
METHOD OF PRODUCING CASTINGS OR OTHER MOULDINGS BY MEANS OF VACUUM SUCTION OF FLEXIBLE CONTAINERS HOLDING GRANULAR MATERIAL

Lars Hägglund, Norrkoping, Sweden, assignor to Landstingens Inkopscentral, Solna, Sweden

Continuation-in-part of Ser. No. 310,420, Nov. 29, 1972, abandoned. This application Dec. 4, 1974, Ser. No. 529,468
Claims priority, application Sweden, Dec. 1, 1971, 15404/71
Int. Cl.² B29C *1/02*
U.S. Cl. 264—91 **4 Claims**

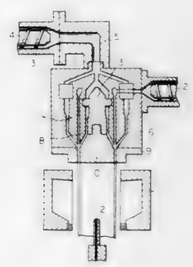


1. In a method of making a contoured mold member corresponding in shape to contours of a model, the steps comprising:
- a. forming a first air-tight chamber by sealing a readily deformable, flexible and extensible member about a peripheral edge of a container wall, said member including a portion extending beyond confines of said container;
- b. placing a model, contours of which are to be reproduced, against said extensible member and causing said extensible member to be partially conformed to said contours;
- c. introducing granular material into said chamber through a conduit thereto and causing said member to be conformed further to said contours;
- d. evacuating fluid at least partially from said first chamber creating a partial vacuum therein and causing said granular material to stiffen into a persistent shape and causing said extensible member to conform further to said contours;
- e. while maintaining said partial vacuum removing said model from contact with said extensible member thereby exposing a surface of said extensible member conformed to said contours of said model, said surface defining a mold cavity;
- f. filling said cavity with other granular material;
- g. sealing portions of said member, extending beyond confines of said container, to form a second air-tight chamber about said other granular material; and
- h. evacuating fluid from said second chamber to form a positive mold member from said other granular material and said extensible member.

3,962,396
PROCESS FOR MANUFACTURING A TRIPLE-WALL CONTAINER

Katuya Ono, Gifu; Koji Kozuka, and Yoshiyuki Komuro, both of Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 7, 1974, Ser. No. 448,965
Claims priority, application Japan, Mar. 13, 1973, 48-28555
Int. Cl.² B29C *17/07*
U.S. Cl. 264—98 **6 Claims**

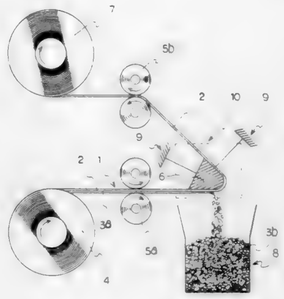


1. A process for manufacturing a thermoplastic polymer container having a triple-wall structure which comprises melt-extruding a composite plastic tube comprised of three closely adherent tubular laminates, the medial laminate being composed of a mixture of (i) 55 to 97% by weight of polyamide and (ii) 3 to 45% by weight of an ethylene copolymer containing 0.1 to 10% by mole, in polymerized form, of at least one compound selected from the group consisting of metal salts of acrylic acid and methacrylic acid, and the outer and inner laminates being composed of an olefin polymer, while the three independent streams of the polymer melts are joined together within a die such that the thickness of said medial laminate is 2 to 30% based on the total thickness of the three laminates; and then blow-molding the composite plastic tube into the shape of a container.

3,962,397
PRODUCTION OF REFLEXIBLE PIGMENT

Hiroshi Narui; Ikuo Akune; Terumi Shinohara, all of Kyoto; Masao Numa, Takatsuki, and Yosiya Kobiki, Kyoto, all of Japan, assignors to Oike & Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 295,908, Oct. 10, 1972, abandoned. This application Nov. 6, 1974, Ser. No. 521,507
Claims priority, application Japan, Dec. 22, 1971, 46-104999; Jan. 25, 1972, 47-9655
Int. Cl.² F02M *31/04*
U.S. Cl. 264—144 **17 Claims**



1. A process for making a light reflective pigment which comprises
- a. coating a base film with a resinous material;
- b. depositing a metal by vapor deposition on the coating;
- c. elongating only the base film at least 1% in air to peel the metal coated with the resinous material from the base film; and
- d. crushing the resulting coated metal leaf into pieces having a length and width within the range of about 0.1 to about 500 μ each, a thickness of about 0.1 to about 4 μ and a true specific gravity of about 1 to about 2.

3,962,398
PROCESS FOR PRODUCING HEAT RESISTANT MATERIALS

Kazuto Matsuo, Imari; Michiya Araki; Tomoyuki Matsugu, both of Yatsushiro, and Takahito Mikami, Nishinomiya, all of Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Division of Ser. No. 416,801, Nov. 19, 1973. This application Aug. 21, 1974, Ser. No. 499,156
Claims priority, application Japan, Nov. 21, 1972, 47-116207
Int. Cl.² D01F *6/00, 6/14*; **C08F** *29/24*
U.S. Cl. 264—184 **17 Claims**

1. A process for preparing fibers or films composed of
(a) polyvinyl alcohol having a polymerization degree of from 900 to 2500,
(b) a polyvinyl alcohol derivative having a polymerization degree from 100 to 1000 containing from 0.5 to 20% by moles of sulfonic acid or sulfate groups, said polyvinyl alcohol derivative being obtained by saponifying a copolymer produced from vinyl acetate and a sulfonic acid group bearing polymerizable monomer selected from the group consisting of vinylsulfonic acid, allylsulfonic acid, methallylsulfonic acid, and salts thereof, or is obtained by treating polyvinyl alcohol with one member selected from the group consisting of bromine and iodine and heating the thus treated polyvinyl alcohol in an aqueous solution of sodium hydrogen sulfite or is obtained by heating polyvinyl alcohol in a concentrated aqueous solution of sulfuric acid, and (c) a chloride containing a vinyl polymer formed from chloride containing monomers selected from the group consisting of vinyl chloride, vinylidene chloride, and copolymers thereof with another polymerizable vinyl monomer which does not contain chloride and

which is present in an amount not more than 15% by weight, a part of the cloride containing vinyl polymer being grafted on to the polyvinyl alcohol derivative, the content of said polyvinyl alcohol being 40 to 250% by weight based on the weight of (b) and (c), and the content of said polyvinyl alcohol derivative being 1.5 to 20% by weight of (b) and (c), the content of said chloride containing vinyl polymer being 80 to 98.5% by weight of (b) and (c) which comprises:

forming an aqueous emulsion by emulsion polymerization of said chloride-containing vinyl monomer in the presence of a polymerization catalyst and a polyvinyl alcohol derivative containing from about 0.5 to 20% by moles of sulfonic acid or sulfate groups in an amount of about 1.5 to 20% by weight of the total polymer components in the emulsion and adding said emulsion to a 14 to 20% by weight aqueous solution of said polyvinyl alcohol as a matrix that corresponds to 40 to 250% by weight of the total of said polyvinyl alcohol derivative and said chloride-containing vinyl polymer, a part of said chloride-containing vinyl polymer, a part of said chloride-containing vinyl polymer being grafted onto said polyvinyl alcohol derivative in the emulsion and then coagulating the polymers in the resulting mixture to form fiber or film.

3,962,399

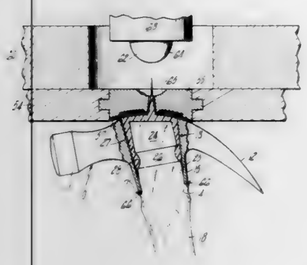
METHOD OF FORMING A HANDLE CONNECTION FOR IMPACT TOOLS

Warren Arnold Shepherd, Jr., Shelbyville, Tenn., and Joseph James Guanaccia, Wethersfield, Conn., assignors to The Stanley Works, New Britain, Conn.

Continuation-in-part of Ser. No. 340,259, March 12, 1973, Pat. No. 3,877,826. This application Jan. 30, 1975, Ser. No. 545,732

Int. Cl.² B32B *31/00*

U.S. Cl. 264—261 **10 Claims**



1. A method of forming a handle connection for impact tools comprising the steps of providing a metallic tool head with a handle receiving eye which increases in cross-section toward an exit end and a non-metallic handle having an end portion for insertion into the eye having a shoulder portion dimensioned for engagement with an entrance end of the eye while the remainder of the end portion is dimensioned to provide a clearance space between it and the eye and has a peripheral recessed portion therein adjacent the shoulder portion, inserting the end portion of the handle into the eye from the entrance end thereof and causing the shoulder to form a tight connection with the entrance end of the eye, injecting a heated thermoplastic through the exit end of the eye into the space between the end portion of the handle and the eye under a pressure in excess of the compressive strength of the material of the handle, compressing and densifying said material of the handle, and maintaining said pressure in excess of the compressive strength of the material of the handle while permitting the thermoplastic to solidify.

3,962,400

INJECTION MOLDING OF POLYAMIDES PREPARED FROM TEREPHTHALIC ACID MONO- OR DI-METHYL ESTERS AND 2,2,4-AND/OR 2,4,4-TRIMETHYLHEXAMETHYLENEDIAMINE

Johannes Schneider, and Wolfgang Pungs, both of Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Division of Ser. No. 260,942, June 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 771,208, Oct. 28, 1968, abandoned. This application Sept. 10, 1973, Ser. No. 395,795

Claims priority, application Germany, Oct. 28, 1967, 1669988

Int. Cl.² B28B *1/24*

U.S. Cl. 264—328 **5 Claims**

1. In an injection molding process for the formation of a transparent, high-impact-strength object of high stability of shape wherein polymer is introduced into an injection molding apparatus maintained under conditions of temperature and pressure to form an injection molded article, the improvement which comprises utilizing as the polymer a polyamide which is the polycondensation product of a precondensate of dimethyl terephthalate and at least one diamine selected from the group consisting of 2,4,4-trimethylhexamethylenediamine and 2,2,4-trimethylhexamethylenediamine which polyamide polymer condensate has a viscosity number, according to Deutsche Industrie Norm 53,727 of 120 to 180, as measured in a 0.5% solution in m cresol of 25°C, said precondensate having a methyl ester content of 10% or less.

3,962,401

METHOD OF RECOVERING NEPTUNIUM FROM SPENT NUCLEAR FUEL

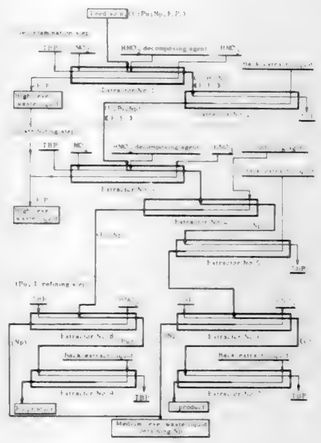
Takao Tsuboya, Tokai; Sinichi Nemoto, Naka; Tadaya Hoshino, Tokai, and Chuzaburo Tanaka, Komae, all of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Oct. 5, 1973, Ser. No. 403,976

Claims priority, application Japan, Oct. 7, 1972, 47-100829

Int. Cl.² C01G *56/00*

U.S. Cl. 423—10 **7 Claims**



1. In a method of separating and recovering neptunium contained in a spent nuclear fuel simultaneously with uranium and plutonium comprising the steps of

dissolving the spent nuclear fuel containing uranium, plutonium, neptunium and other fission products in a nitric acid solution to form a feed solution, and

counter-currently contacting said feed solution with an extracting agent of tributyl phosphate in the presence of nitric acid and nitrous acid in a multistage extractor unit having an extracting section and a washing section to extract uranium, plutonium and neptunium into said extracting agent, the improvement wherein

the concentration of said nitrous acid in said extractor is maintained at a level suited for effecting oxidation of neptunium from Np(V) to Np(VI) by introducing nitrous acid into said extracting section, while said nitrous acid is maintained at a lower level in said washing section to suppress the reduction of neptunium from Np(VI) to Np(V) by introducing a nitrous acid decomposing agent into said washing section,

the concentration of said nitric acid in said extractor being maintained at a high level in said washing section by introducing nitric acid into said washing section.

3,962,402

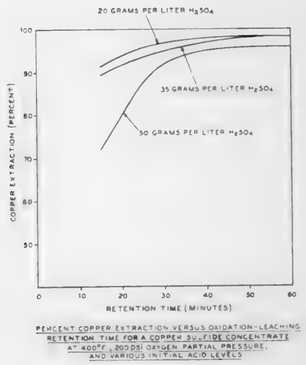
OXIDATION-LEACHING OF CHALCOPYRITE

Freddie J. Touro, New Orleans, La., assignor to Freeport Minerals Company, New York, N.Y.

Filed Feb. 27, 1974, Ser. No. 446,315

Int. Cl.² C01G *3/10*

U.S. Cl. 423—35 **4 Claims**



PERCENT COPPER EXTRACTION VERSUS OXIDATION-LEACHING RETENTION TIME FOR A COPPER SULFIDE CONCENTRATE AT 400°F., 200 PSI OXYGEN PARTIAL PRESSURE, AND VARIOUS INITIAL ACID LEVELS

1. A process for the oxidation-leaching of chalcopyrite to produce a leach liquor containing at least about 87% of the copper in the chalcopyrite but less than 1.5 grams of iron per liter, comprising:

introducing an aqueous slurry of chalcopyrite ore concentrate into an autoclave;

treating, for approximately 5 to 15 minutes, the slurry in said autoclave at a temperature of about 425° to 450°F. and at an oxygen partial pressure of about 50 to 200 pounds per square inch while increasing the acid concentration of the slurry to a value in excess of about 50 grams of H_2SO_4 per liter until at least about 87% of the copper in the concentrate is extracted as copper sulfate, the slurry having a dissolved iron concentration greater than about 1.5 grams per liter at the completion of the treatment; and

then, reducing the acid concentration of the slurry to a final acid concentration of 10 to 40 grams of H_2SO_4 per liter while it is still present in the autoclave and at a temperature of about 425° to 450°F. and an oxygen partial pressure of about 50 to 200 pounds per square inch, whereby iron is precipitated in the form of Fe_2O_3.

3,962,403

PROCESS FOR SEPARATION OF NAHCOLITE FROM OIL SHALE

Dagobert M. Wyslouzil, Peterborough, Canada, assignor to The Superior Oil Company, Houston, Tex.

Filed Jan. 14, 1974, Ser. No. 433,122

Int. Cl.² C01D *7/22;* **C10G** *1/00*

U.S. Cl. 423—206 R **11 Claims**

7. A process for separation of nahcolite from nahcolite-bearing oil shale ore, comprising the steps of:

heating said nahcolite-bearing oil shale ore at a temperature of from about 100°C to about 1000°C for a time sufficient to convert at least some of the surface of said nahcolite to sodium carbonate having a distinctly lighter color than the surface of the remaining oil shale; and

optically sorting said heated nahcolite-bearing oil shale ore to separate a lighter-colored converted nahcolite fraction from the remaining oil shale.

3,962,404

PROCESS FOR REGENERATING ABSORBENT SOLUTIONS USED FOR REMOVING GASEOUS IMPURITIES FROM GASEOUS MIXTURES BY STRIPPING WITH STEAM

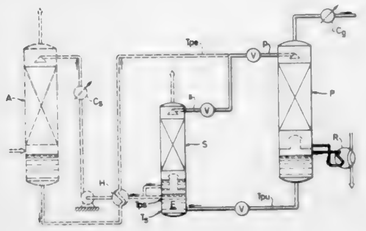
Giuseppe Giammarco, and Paolo Giammarco, both of San Marco n.3242, Piazzale Morolin, Venice, Italy

Filed Feb. 19, 1974, Ser. No. 443,573

Claims priority, application Italy, May 21, 1973, 68474/73; Feb. 16, 1973, 67372/73

Int. Cl.² C01B *17/16, 31/20*

U.S. Cl. 423—222 **27 Claims**



1. In a process for removing gaseous impurities selected from the group consisting of CO_2, H_2S, HCN and SO_2 from a mixture of gases by an absorption technique wherein an aqueous alkaline scrubbing solution selected from the group consisting of an alkali metal carbonate solution, an alkali metal carbonate solution activated by As_2O_3, an alkali metal carbonate solution activated by glycine, an alkali metal carbonate solution activated by an aminoacid, an alkali metal carbonate solution activated by ethanolamine, an alkali metal carbonate solution activated by a salt of boric acid, a solution of an alkali metal salt of an amino acid, an ethanol amine solution, an alkali phosphate solution, an alkali phenate solution, an alkali borate solution, and an alkali sulfite/alkali bisulfite solution is used to absorb said gaseous impurities from said mixture of gases in an absorption stage, and wherein said scrubbing solution is regenerated by being circulated to a regeneration stage wherein said gaseous impurities are desorbed from said scrubbing solution by contact with steam under reduced pressure, said regeneration stage actually consisting of two regeneration stages, respectively principal and secondary, the principal stage operating at a temperature and pressure higher than the secondary stage, and wherein said scrubbing solution is then recycled to said absorption stage, the improvement which comprises:

a. withdrawing said scrubbing solution containing said absorbed gaseous impurities from said absorption stage at a temperature of between about 40° and about 135°C;

b. circulating said scrubbing solution of (a) as an input to said principal regeneration stage wherein steam is contacted with said scrubbing solution to desorb said gaseous impurities;
c. regulating the amount of heat supplied to said principal regeneration stage and regulating the pressure to create a temperature difference between the temperature of said input scrubbing solution of (b) and the desorbed scrubbing solution exited from said principal regeneration stage of from 10° to 35°C and thereby obtain a temperature differential of from 5° to 10°C between the dew point of the gaseous mixture consisting of said steam and desorbed gaseous impurities removed from said principal regeneration stage and the dew point of the gaseous mixture in equilibrium with said input scrubbing solution of (b);
d. withdrawing from said principal regeneration stage the regenerated scrubbing solution, and lowering the pressure of said regenerated scrubbing solution to thereby flash off steam;
e. feeding said flashed off steam of (d) to said secondary regeneration stage as stripping steam, said secondary regeneration stage being operated at a temperature and pressure lower than that in said principal regeneration stage; and
f. recycling said regenerated scrubbing solution from the principal regeneration stage as well as regenerated scrubbing solution from the secondary regeneration stage to said absorption stage.

3,962,405
PROCESS FOR THE REMOVAL OF SULFUR OXIDES FROM WASTE GASES

Richard J. Annesser, Berkeley, and Robert J. Klett, San Francisco, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

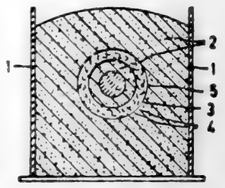
Filed Apr. 16, 1973, Ser. No. 351,420
Int. Cl.² C01B *17/00*
U.S. Cl. 423—242 **4 Claims**

1. In a process for removing sulfur dioxide from a gaseous sulfur dioxide-containing feed by means of a lean aqueous sulfite-containing solution in a gas scrubbing zone, said lean solution comprising regenerated sulfite-containing solution and makeup solution by:
a. introducing the lean solution into the scrubbing zone;
b. introducing the feed into the scrubbing zone and into contact with the lean solution to form a fat solution and a resulting gas having a sulfur dioxide content which is less than the sulfur dioxide content of the feed gas;
c. withdrawing the resulting gas from the gas scrubbing zone;
d. withdrawing the fat solution from the gas scrubbing zone;
e. passing the withdrawn fat solution into a stripping zone and forming gaseous sulfur dioxide and said regenerated solution by stripping said fat solution;
f. withdrawing said sulfur dioxide gas from the stripping zone; and
g. withdrawing the regenerated solution from the stripping zone and forming said lean solution by adding makeup solution, said makeup solution being aqueous alkaline caustic selected from the group consisting of alkali metal hydroxide, carbonate and mixtures thereof;
the improvement which comprises scrubbing said resulting gas with at least a portion of said makeup solution prior to said addition, said scrubbing being effected by employing at least sufficient of said makeup solution to maintain the process in balance and to provide a degree of gas scrubbing corresponding to at least a single tray in a tray-type gas scrubbing tower, thereby reducing the sulfur dioxide content of the resulting effluent gas stream to a value less than about 75 ppm.

3,962,406
METHOD OF MANUFACTURING SILICON CARBIDE CRYSTALS

Wilhelmus Franciscus Knippenberg, and Gerrit Verspui, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 778,550, Nov. 25, 1968, abandoned. This application Aug. 15, 1972, Ser. No. 280,763
Claims priority, application Netherlands, Nov. 25, 1967, 6716070
Int. Cl.² C01B *31/36*
U.S. Cl. 423—345 **8 Claims**



1. A method of forming silicon carbide crystals on a wall of silicon carbide, comprising the steps of:
positioning within a mass of loose granular material comprising silicon carbide or the constituents thereof a core consisting essentially of silicon dioxide, said core preventing said loose granular material from entering an intended cavity defined and occupied by said core;
gradually raising the temperature of said mass and core until a coherent wall of silicon carbide forms around said core and said core volatilizes leaving said intended cavity bounded by a coherent wall of silicon carbide; and
maintaining the temperature of said cavity and coherent wall within the range of 2000°C to 2600°C until silicon carbide crystals form within said cavity on said coherent wall.

3,962,407
PROCESS OF PREVENTING CORROSION OF A METAL WALLED SYSTEM CONTAINING MOLTEN FLUORIDE

Johann Schröder, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 4, 1974, Ser. No. 529,363
Claims priority, application Germany, Dec. 6, 1973, 2360850
Int. Cl.² C01D *3/02*; **C01F** *11/22*
U.S. Cl. 423—464 **3 Claims**

1. A method of preventing corrosion of a metal walled system containing a melt of a fluoride selected from the group consisting of at least one alkali metal fluoride and alkaline earth fluoride and mixtures thereof in contact with at least a portion of the metal wall of said system said method comprising filling said system with a melt of a fluoride selected from the group consisting of at least one alkali metal fluoride and alkaline earth fluoride and mixtures thereof and metallic aluminum in the presence of air and then sealing said system in a gastight manner.

3,962,408
DEHYDRATION OF MAGNESIUM CHLORIDE

Henry Dolezal, Salt Lake City, Utah, assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed July 14, 1975, Ser. No. 595,902
Int. Cl.² C01F *5/34, 5/32, 5/30*
U.S. Cl. 423—498 **9 Claims**

1. A method for dehydrating magnesium chloride compositions comprising magnesium chloride hydrates or magnesium chloride brines which comprises:
adding to said composition an amine hydrochloride of the group consisting of diethylamine, triethylamine, ethylene diamine, aniline, pyridine, toluidine or picoline, in a mole ratio of $MgCl_2$: amine hydrochloride of at least 1:1;
forming a complex of magnesium chloride hydrate and amine hydrochloride;
first heating said complex to drive off water and thereafter heating said complex at a more elevated temperature to decompose the dehydrated complex into substantially anhydrous magnesium chloride and amine hydrochloride.

3,962,409
PROCESS FOR PRODUCTION OF HYDROGEN AND SULFUR FROM HYDROGEN SULFIDE AS RAW MATERIAL

Yoshihide Kotera, Kawasaki; Naoyuki Todo, Tachikawa, and Kenzo Fukuda, Niiza, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Oct. 24, 1974, Ser. No. 517,656
Claims priority, application Japan, Oct. 29, 1973, 48-120727
The portion of the term of this patent subsequent to Dec. 24, 1991, has been disclaimed.
Int. Cl.² C01B *17/04*
U.S. Cl. 423—571 **6 Claims**

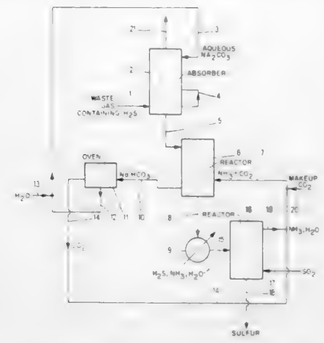
1. In a process for the production of hydrogen and sulfur from hydrogen sulfide, the improvement which comprises:
1. bringing hydrogen sulfide into contact with at least one member selected from the group consisting of the sulfides of molybdenum, and ruthenium at a temperature of from 450°–800°C thereby giving rise to a gaseous mixture consisting of hydrogen sulfide, hydrogen and sulfur,
2. cooling the said gaseous mixture thereby condensing the sulfur component of the said mixture and separating and obtaining elementary sulfur,
3. circulating back to the step (1) above the gaseous mixture remaining after removal of sulfur,
4. subjecting the circulated gaseous mixture to the steps (2) and (3) above continuously and recurrently for thereby forming a gaseous mixture having an increased hydrogen content and
5. separating the hydrogen component from the gaseous mixture having an increased hydrogen content.

3,962,410
PROCESS FOR PURIFYING INDUSTRIAL GASES CONTAINING HYDROGEN SULFIDE WITH SULFUR PRODUCTION

Philippe Renault, Noisy-Le-Roi; André Deschamps, Chatou, and Claude Dezael, Maisons-Laffitte, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Nov. 19, 1973, Ser. No. 416,868
Claims priority, application France, Nov. 20, 1972, 72.41219
The portion of the term of this patent subsequent to Nov. 5, 1991, has been disclaimed.
Int. Cl.² C01B *17/04*; **C01D** *7/02*
U.S. Cl. 423—574 R **6 Claims**

1. A process for purifying a hydrogen sulfide containing gas by means of an aqueous solution of sodium hydroxide or sodium carbonate, comprising the steps of:
a. contacting said gas with an aqueous solution of sodium hydroxide or sodium carbonate, so as to obtain a sodium sulfide solution,
b. contacting the sodium sulfide solution with an aqueous solution of ammonium hydrogen carbonate or with an equivalent gaseous mixture of carbon dioxide and ammonia, to precipitate sodium hydrogen carbonate and form a remaining liquid phase.
c. separating resultant precipitated sodium hydrogen carbonate from the remaining liquid phase, and

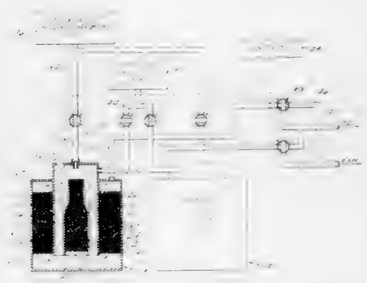


d. heating the remaining liquid phase from step c), to produce a gas containing ammonia, hydrogen sulfide and carbon dioxide.

3,962,411
METHOD FOR CATALYTICALLY CRACKING A HYDROCARBON FUEL

Herbert J. Setzer, Ellington, and Warren R. Standley, Tolland, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 424,486, Dec. 13, 1973, abandoned. This application May 2, 1975, Ser. No. 574,187
Int. Cl.² B01J *8/02, 35/08*; **C01B** *1/16*; **C10G** *11/04*
U.S. Cl. 423—651 **1 Claim**



1. An improved blow and run catalytic cracking process for the production, from gaseous and distillate hydrocarbon fuels, of a gaseous product which comprises mainly hydrogen, together with small amounts of carbon monoxide and water and traces of other byproducts, involving alternately making hydrogen and regenerating the catalyst bed which comprises the steps of:
A. making hydrogen by catalytically cracking without the use of steam a gaseous or distillate hydrocarbon fuel to form gaseous hydrogen and solid carbon including the steps of (1) passing said hydrocarbon fuel through a catalytic reaction bed consisting of supported metal, ring catalyzed pellets consisting of substrates of ceramics which are essentially spherical and selected from the group consisting of zirconia, alumina and mixtures of zirconia and alumina, having diameters of between one-quarter of an inch and five-eighths of an inch with nickel deposited to a depth of between one mil and one-hundred mils from the surface thereof so as to provide catalyzed substrates having substantial uncatalyzed cores, wherein

said catalyzed pellets comprise between ½% and 5% nickel by weight at the inlet end of said catalyst bed and said catalyzed pellets comprise between 15% and 50% by weight nickel at the outlet end of said bed; (2) maintaining the temperature of said catalytic reaction bed at between about 1500°F and 2000°F during at least step (1); (3) conducting the hydrogen produced in said bed away from said bed; and (4) shutting off the supply of said fuel to the bed; and

B. regenerating the bed without supplying additional fuel thereto including the steps of (1) passing an oxygen containing gas through said bed; (2) burning said solid carbon from said bed; (3) removing the products of combustion from said bed; and (4) shutting off the supply of oxygen containing gas to said bed.

3,962,412

METAL HYDROXIDE MICROSPHEROIDAL SCINTIGRAPHIC AGENTS AND METHOD OF PREPARATION

Robert G. Wolfangel, St. Louis, Mo., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.

Filed June 11, 1973, Ser. No. 368,864
Int. Cl.² A61K *43/00*
U.S. Cl. 424—1 **3 Claims**

1. A composition for use as a scintigraphic agent comprising an aqueous suspension of substantially spherical particles of an insoluble metal hydroxide tagged with a radionuclide, said particles having diameters between approximately 10μ and 100μ.

3,962,413

PLATE METHODS FOR DIAGNOSING *BRUCELLA CANIS* INFECTION

Lisle W. George, Cortland, and Leland E. Carmichael, Ithaca, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed May 14, 1974, Ser. No. 469,917
Int. Cl.² C12K *1/04*; G01N *31/02, 33/16*
U.S. Cl. 424—8 **18 Claims**

1. A plate test method of diagnosing *Brucella canis* infection in a subject susceptible to *Brucella canis* infection which comprises:

a. placing a quantity of blood serum of said subject upon a plate substrate and

b. admixing therewith a killed whole cell suspension comprising *Brucella ovis* antigen containing an agglutinate staining, substantially non-agglutination interfering amount of a dye, said suspension having a pH between about 6 and about 8,

c. wherein the formation of a visible agglutination product in the resulting mixture is indicative of *Brucella canis* infection.

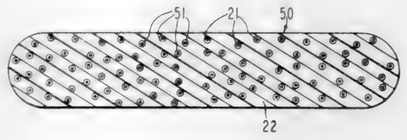
3,962,414

STRUCTURED BIOERODIBLE DRUG DELIVERY DEVICE

Alan S. Michaels, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 248,168, April 27, 1972, Pat. No. 3,867,519. This application Oct. 25, 1974, Ser. No. 517,982
Int. Cl.² A61K *9/22, 9/50, 9/52, 9/54*
U.S. Cl. 424—19 **9 Claims**

1. A delivery device for the sustained administration of a predetermined dosage of an ophthalmic drug to the eye of a mammalian patient comprising (1) an inner reservoir comprised of a biodegradable material that degrades to innocuous products in response to the biological ocular environment of the patient, said reservoir containing an ophthalmic drug formulation confined therein, and (2) an outer membrane surrounding the inner reservoir, the membrane permeable to the passage of ophthalmic drug, but at a lower rate than through the inner reservoir, the membrane formed from drug release rate controlling bioerodible material consisting of a polyvalent metal ion cross-linked anionic polyelectrolyte, said ion a member selected from the group consisting of aluminum, barium, cadmium, calcium, copper, iron, zinc and mixtures thereof, said polyelectrolyte a member selected from the group consisting of cellulose, hemicellulose, starch, polystyrene sulfonic acid, polyvinyl sulfonic acid, polyvinyl methylol sulfonic acid, polyacrylic acid, polymethacrylic acid, acrylic copolymers, methacrylic copolymers, polyvinyl alcohol, polyvinyl chloride, glycans and polysaccharides, which outer membrane bioerodes in the eye of the patient in response to the biological environment therein by a process of polyvalent metal ion displacement by noncross-linking ions present in the eye, and wherein when in the ocular environment the membrane continuously meters the flow of a therapeutically effective amount of ophthalmic drug from the reservoir to the eye of the patient at a controlled and continuous rate over a prolonged period of time.



3,962,415

INSECTICIDE EVAPORATOR COMPRISING DDVP WITH SYNERGIZED BENZODIOXOLE COMPOUND AS STABILIZER

Claude Hennart, Aubervilliers, and Marcel Louis Dulat, Poitiers, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Continuation-in-part of Ser. No. 180,507, Sept. 14, 1971, Pat. No. 3,852,439. This application July 17, 1973, Ser. No. 380,129
Int. Cl.² A01N *17/00, 9/36*
U.S. Cl. 424—19 **9 Claims**

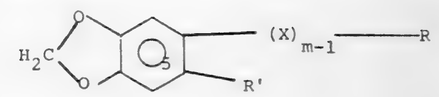
1. An insecticide evaporator comprising:

I. a solid or liquid insecticidal composition containing

A. an insecticidally effective amount of an insecticidal phosphate selected from the group consisting of
2,2-dichloro vinyl dimethyl phosphate
2,2-dichloro vinyl diethyl phosphate
2,2-dichloro vinyl dipropyl phosphate
2,2-dibromo vinyl dimethyl phosphate
2,2-dibromo vinyl diethyl phosphate
2,2-dibromo vinyl dipropyl phosphate
2-bromo-2-chloro vinyl dimethyl phosphate
2-bromo-2-chloro vinyl diethyl phosphate
2,2-dichloro vinyl, ethyl methyl phosphate
2,2-dichloro 1-methyl vinyl dimethyl phosphate and
2,2-dichloro 1-methyl vinyl diethyl phosphate,

wherein on contact with molecules of water at least partial decomposition of the ester takes place by protonization, said vinyl phosphate optionally being admixed with a solid or liquid solvent,

B. about 0.1 to 10%, based on the weight of said volatile phosphate, of a 1,3-benzodioxole capable of stabilizing said phosphate against decomposition by protonization, said benzodioxole having no action as a toxicity synergist for the insecticidal phosphate in said proportions, and selected from the group consisting of at least one compound of the formula



(I)

wherein *m* is 1 or 2, and X is an alkylene bridge of 1 or 2 or an alkenylene bridge of 2 carbon atoms, and R′ is

a. hydrogen or

b. lower alkyl and

A. When *m* represents 1 in formula (I) R represents

a. hydrogen

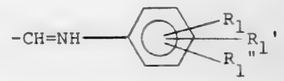
b. lower alkyl

c. lower alkenyl

d. halogen of atomic number not exceeding 17

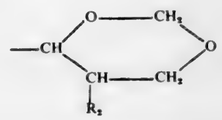
e. nitro

f. the group



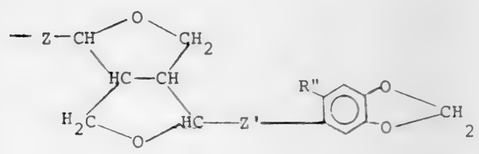
in which each of R_1, R_1' and R_1'', independently of the others, is the same or a different group selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, chloro and bromo;

g. the group



in which R_x is hydrogen or lower alkyl, or

h. the group



in which Z and Z′ are each independently a C—C bond or an oxygen atom (—O—) and R″ is hydrogen, lower alkyl or lower alkoxy, and

B. when *m* represents 1 or 2 in formula (I)

R represents

i. cyano

ii. the group



wherein R_4 is hydrogen, or lower alkyl and R_5 is hydrogen or lower alkyl,

iii. the group —CO—R_6 in which R_6 is

a. hydrogen

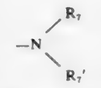
b. —OM in which M is hydrogen or an equivalent metal cation or a quaternary ammonium cation

c. lower alkyl

d. lower alkoxy

e. phenyl, unsubstituted or substituted by one or more of the following substituents: lower alkyl, lower alkoxy, chloro, or bromo; or

f. the group



wherein each of R_7 and R_7' is independently selected from hydrogen or lower alkoxy

iv. the group



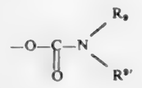
alkyl

in which the alkyl group has 1 to 8 carbon atoms

v. the group —O—R_8

in which R_8 is lower alkyl or oxa alkyl of at most 15 carbon atoms and 3 oxygen atoms in the chain,

vi. the group



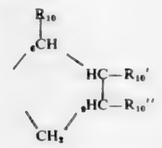
in which each of R_9 and R_9' independently is hydrogen, lower alkyl or phenyl or

vii. nitro

C. when *m* represents 1 in formula (I):

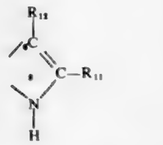
R and R′ taken together represent one of the following divalent groups:

a. the group



in which each of R_{10}, R_{10}' and R_{10}'' independently is hydrogen, lower alkyl, alkoxycarbonyl of 2 to 5 carbon atoms, or the group —COOM, M having the meaning given above, or

b. the group



in which R_{11} is

hydrogen, lower alkyl, lower alkoxy or pyrrolidino,

and R_{12} represents

hydrogen or lower alkyl,

c. at least one secondary agent for stabilizing said phosphate against decomposition by protonization selected from:

C_1 about 0.05 to 6%, based on the weight of said vinyl phosphate, of elemental suplhur or

C_2 about 0.05 to 10% by weight based on the weight of said vinyl phosphate of a divalent sulfur compound,

II. a solid fibrous support absorbent for the composition (I) formed of a felt of wool, a cellulosic fiber material or a cardboard of glass fibers.

3,962,416
PRESERVED NUTRIENTS AND PRODUCTS

Sol Katzen, Hanassi St., No. 62, Herzliya Fituach, Israel

Division of Ser. No. 109,566, Jan. 25, 1971. This application July 2, 1973, Ser. No. 375,435
Int. Cl.² A23L *1/30*
U.S. Cl. 424—19 **7 Claims**

1. An encapsulated product which comprises (a) at least one nutrient, which is in particulate form, and (b) a gelatinized carbohydrate or polymerized vegetable high protein encapsulating agent which encapsulates the nutrient particles, said product prepared by: (a) admixing at least one high-protein vegetable encapsulating agent or carbohydrate vegetable encapsulating agent and at least one nutrient, said high protein vegetable encapsulating agent containing only up to 40 percent by weight of starch and non-protein nitrogenous material, from about 1 to about 40 parts by weight of said nutrient being present per 100 parts by weight of said encapsulating agent, said high protein or carbohydrate vegetable encapsulating agent being selected from the group consisting of corn flour, cottonseed flour, soybean flour, wheat flour, and wheat gluten flour and said encapsulating agent being in a viscid state before admixture step (a) because of added water; (b) gelatinizing or polymerizing the encapsulating agent and forming an expanded product therefrom which encompasses the nutrient by extruding the above admixture at a temperature between about 250° to 450° F. and at a pressure between about 200 p.s.i. and about 2500 p.s.i. for a time between about 3 seconds and about 3 minutes, whereby the extrudate expands due to flash evaporation of the water upon exiting from the extruder; and (c) cooling the resultant expanded extrudate to form and encapsulated nutrient product containing air spaces.

3,962,417
DENTIFRICE

Charles J. Howell, 8436 Brentwood Road, Largo, Fla. 33540

Filed Mar. 27, 1974, Ser. No. 455,266
Int. Cl.² A61K *7/18*
U.S. Cl. 424—52 **1 Claim**

1. A method for cleansing teeth which comprises:

a. placing an effervescent dentifrice tablet wherein the constituent ingredients consist of 0.317% saccharin, 0.931% floral mint, 2.793% peppermint, 0.279% sodium copper chlorophyllin, 1.453% sodium lauryl sulfate, 11.173% magnesium carbonate, 21.229% calcium carbonate, 40.223% sodium bicarbonate, 18.622% citric acid, 1.117% stannous flouride, 0.913% magnesium sterate and 0.931% acacia powder, all percents by weight, directly into the mouth containing or having present a principal bacterium causing tooth decay acids, *Bacillus Acidophilios;*

b. orienting said tablet between the teeth;

c. crushing said tablet between the teeth;

d. completely dissolving said ingredients into a basic solution utilizing moisture in the mouth;

e. circulating the formed basic solution throughout the mouth and about the teeth therein;

f. brushing the teeth with said formed solution utilizing a brushing instrument, thereby neutralizing the acidic *Bacillus Acidophilios;*

g. expectorating said formed solution subsequent to said brushing; and

h. rinsing the mouth so as to remove remnants of said formed solution.

3,962,418
MILD THICKENED SHAMPOO COMPOSITIONS WITH CONDITIONING PROPERTIES

Roger Clarence Birkofer, North Bend, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 313,907, Dec. 11, 1972, abandoned. This application Apr. 8, 1975, Ser. No. 566,154
Int. Cl.² A61K *7/06*
U.S. Cl. 424—70 **18 Claims**

1. A thickened mild liquid shampoo composition having conditioning properties comprising:

A. from about 4% to about 8% of an anionic surfactant selected from the group consisting of (1) a surfactant of the formula $R(OC_2H_4)_nOSO_3M$, wherein R is a hydrophobic group selected from the group consisting of alkyl groups containing from about 8 to about 16 carbon atoms, alkylphenyl groups wherein the alkyl group contains from about 6 to about 15 carbon atoms, and fatty acid amido groups wherein the fatty acid contains from about 8 to about 16 carbon atoms, wherein n is a number from about 1 to about 10, and M is a non-toxic cation which makes the surfactant water-soluble, (2) a water-soluble polyethoxylated fatty alcohol sulfosuccinate monoester, (3) a water-soluble N-fatty acyl sarcosinate containing a fatty acyl group containing from about 8 to about 16 carbon atoms, (4) a water-soluble alkyl sulfate containing from about 8 to about 16 carbon atoms, and (5) a water-soluble N-fatty acyl-N-methyl taurine containing a fatty acyl group containing from about 8 to about 16 carbon atoms;

B. a surfactant selected from the group consisting of (1) a quaternary ammonium zwitterionic surfactant having the formula $(R^2)_A N^{(+)}(R^3)_{3-A}CH_{2-B}(R^2)_B(R^4)_C Y^{(-)}$

wherein A, B, and C are each selected from the group consisting of 0 and 1, wherein A is 0 when B is 1 and A is 1 when B is 0, wherein C can only be 1 when Y is a sulfonate group, wherein each R^2 is selected from the group consisting of alkyl groups containing from about 8 to about 16 carbon atoms and a moiety having the formula $R^5 - C(O)NH - R^6-$ wherein R^5 is an alkyl group containing from about 8 to about 16 carbon atoms and R^6 is an alkylene group containing from 1 to about 5 carbon atoms, wherein each R^3 is selected from the group consisting of alkyl, hydroxyalkyl and alkoxyalkyl groups which can be connected to form a ring and each of which contains from 1 to about 3 carbon atoms, wherein Y is selected from the group consisting of sulfonate and carboxylate groups, and wherein R^4 is an alkylene group containing from 1 to about 5 carbon atoms when Y is a carboxylate group and is selected from the group consisting of alkylene and hydroxyalkylene groups containing from about 2 to about 5 carbon atoms when Y is a sulfonate group and wherein the hydroxy group is on a secondary carbon atom, and (2) a water-soluble N-alkyl β-aminopropionate wherein the alkyl group contains from about 8 to about 16 carbon atoms, and (3) a water-soluble N-alkyl β-iminodipropionate wherein the alkyl group contains from about 8 to about 16 carbon atoms;

C. a polyethoxylated nonionic surfactant selected from the group consisting of: (1) polyethoxylated alkyl alcohols, said alcohols containing an alkyl group containing from about 8 to about 16 carbon atoms and said polyethoxylated alcohols containing from about 10 to about 45 ethoxy moieties per molecule, (2) polyethoxylated alkylphenols wherein the alkyl group contains from about 6 to about 15 carbon atoms and wherein the polyethoxylated alkylphenol contains from about 10 to about 45 ethoxy moieties per molecule, (3) polyethoxylated mono fatty acid esters of sorbitol wherein said fatty acids contain from about 8 to about 18 carbon atoms and said polyethoxylated mono fatty acid ester of sorbitol contains from about 10 to about 45 ethoxy moieties per molecule, (4) polyethoxylated polypropylene glycol having a molecular weight of from about 2,000 to about 6,000 and containing from about 40% to about 60% by weight of polyethoxy groups, and (5) polyethoxylated fatty acids wherein said fatty acid contains from about 8 to about 16 carbon atoms and said polyethoxylated fatty acid contains from about 10 to about 45 ethoxy moieties per molecule;

D. from about 50% to about 85% water; and

E. as a thickener and hair conditioning agent, from about 0.2% to about 4% of a quaternary nitrogen-containing cellulose ether having substituent groups of the formula

$$(C_2H_4O-)_n[-CH_2CHO(CH_2N^{(+)}(R^7)_2Cl^{(-)}-]_n(C_2H_4O-)_nH$$

wherein each R^7 is selected from the group consisting of methyl and ethyl groups, $m + p$ ranges from about 1 to about 10, n is from about 0.1 to about 0.5, the degree of substitution of the cationic group on the cellulose is from about 0.1 to about 0.5, and the viscosity of a 1% solution of the cellulose ether at 25°C. ranges from about 100 to about 2,000 centipoises, the molecular ratio of (A) to (B) being from about 1:1 to about 4:1; the weight ratio of (A) + (B) to (C) being from about 2:1 to about 1:2; and the pH of the composition being from about 6.0 to about 8.0.

3,962,419
STABILIZED ANTIBIOTIC SF-837 PREPARATION

Takeshi Mayama, Chigasaki; Toshiyuki Kobayashi, Kawasaki, and Akira Okada, Zushi, all of Japan, assignors to Meiji Seika Kaisha, Ltd., Japan

Continuation of Ser. No. 241,418, April 5, 1972, abandoned. This application Aug. 9, 1974, Ser. No. 496,299
Claims priority, application Japan, Apr. 15, 1971, 46-23452
Int. Cl.² A61K *9/36, 31/765, 35/00*
U.S. Cl. 424—78 **4 Claims**

1. A stabilized antibiotic preparation containing (1) at least 50% by weight of a macrolide antibiotic consisting essentially of antibiotic SF-837 incorporated into (2) a stabilizing amount of a polymer insoluble in acidic solutions consisting essentially of hydroxypropyl methylcellulose phthalate.

3,962,420
DISSOLUTION OF GALLSTONES

Michael C. Seidel, Chalfont, Pa., and Evan H. Crook, Cherry Hill, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed July 3, 1974, Ser. No. 485,476
Int. Cl.² A61K *31/78*
U.S. Cl. 424—81 **9 Claims**

1. A method for causing the dissolution of cholesterol gallstones and lowering of serum cholesterol which comprises the oral administration of an effective amount of an adsorbent macroreticular resin having a particle size of from 0.1μ to 300μ comprising aromatic ethylenically unsaturated monomers, aliphatic ethylenically unsaturated monomers or mixtures thereof wherein said resin selectively adsorbs cholesterol from the GI tract without affecting bile acid readsorption resulting in a disturbance of the bile acid to cholesterol ratio causing reduced lithogenicity.

3,962,421
METHOD FOR THE DISRUPTION OF LIPID-CONTAINING VIRUSES

Alexander R. Neurath, Philadelphia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 370,906, June 18, 1973, abandoned, which is a continuation of Ser. No. 201,937, Nov. 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 134,935, April 19, 1971, abandoned, which is a continuation-in-part of Ser. No. 826,783, May 16, 1969, abandoned. This application Sept. 19, 1974, Ser. No. 507,306
Int. Cl.² A61K *39/18, 39/29*
U.S. Cl. 424—89 **16 Claims**

1. In a method for the disruption of infectious lipid-containing viruses for preparing sub-unit vaccines, the step of bringing the intact infectious lipid-containing virus in an aqueous medium into contact with effective amounts of a wetting agent and a trialkylphosphate wherein said alkyl groups contain from 4 to 10 carbon atoms.

3,962,422
METHOD FOR IMMUNIZING NURSING PIGLETS AGAINST TRANSMISSIBLE GASTROENTERITIS(TGE) VIRUS

John B. Parks, Mountain View, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 18, 1975, Ser. No. 550,319
Int. Cl.² A61K *39/12, 39/42*
U.S. Cl. 424—89 **6 Claims**

1. Method of immunizing nursing piglets against transmissible gastroenteritis (TGE) virus by administering to a pregnant sow an effective amount of a vaccine containing attenuated tissue cultured propagated TGE virus, said vaccine being administered twice, (a) intramuscularly at from about 63 days to about 21 days pre-farrowing and (b) intranasally at from about 21 days to about 7 days prefarrowing, with the proviso that at least 14 days and not more than 42 days elapse between the intranasal and intramuscular inoculations, and permitting said nursing piglets to suckle said sow.

3,962,423
LIVE INFLUENZA TYPE B VIRUS VACCINES AND PREPARATION THEREOF

Julien Peetermans, Rixensart; Michèle Lobmann, Ceroux-Mousty; Jean-Marie Prevost, and Emil Vascoboinic, both of Brussels, all of Belgium, assignors to Recherche et Industrie Therapeutiques (R.I.T.), Belgium

Continuation-in-part of Ser. No. 439,176, Feb. 4, 1974, abandoned. This application Apr. 18, 1975, Ser. No. 569,258
Int. Cl.² A61K *39/18*
U.S. Cl. 424—89 **12 Claims**

1. A live influenza virus vaccine effective on intranasal administration comprising an effective amount of an attenuated influenza type B virus recombinant strain obtained by recombining a first vaccinal attenuated influenza type B virus strain resistant to serum inhibitors with a second influenza type B virus strain, and isolating a recombinant having (1) at least one marker property of the said first virus strain selected from the group consisting of positive allantoic membrane on shell and resistance to serum inhibitors and (2) the antigenic characteristics of the said second virus strain, and a carrier therefor.

3,962,424
LIVE BROVINE ADENOVIRUS VACCINES, PREPARATION THEREOF AND METHOD OF VACCINATION USING THEM

Nathan Zygraich, Brussels, and Constant Huygelen, Hulden-berg, both of Belgium, assignors to Recherche et Industrie Therapeutiques (R.I.T.), Belgium

Division of Ser. No. 438,503, Jan. 31, 1974, Pat. No. 3,927,208. This application Aug. 13, 1975, Ser. No. 604,377
Int. Cl.² A61K *39/12, 39/34*
U.S. Cl. 424—89 **8 Claims**

1. A polyvalent live intranasal bovine respiratory vaccine comprising (1) an intranasally effective dose of a temperature-sensitive nitrous acid mutant of a pathogenic bovine adenovirus, said mutant being protective against bovine adenovirus type 3 infection, having a cut-off temperature of from about 39° to 40°C, and being able to multiply in the upper respiratory tract of a bovine animal while having inhibited replication in the lower respiratory tract and internal organs of the body; (2) an intranasally effective dose of a vaccinal live temperature-sensitive mutant of a pathogenic infectious bovine rhinotracheitis virus; and (3) a pharmaceutical diluent.

3,962,425
RUMINANT REPELLENT FROM ENZYMATICALLY PUTREFIED LIPOIDAL MATERIAL

Katsuhi Oita, and James C. Lowe, both of Seattle, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 291,058, Sept. 21, 1972, abandoned. This application July 17, 1974, Ser. No. 489,458

Int. Cl.² A61K *37/48*

U.S. Cl. 424—94 **19 Claims**

1. A method for repelling ruminants from material normally eaten by said ruminants comprising:

contacting said edible material with a ruminant repelling non-phytotoxic amount of a ruminant repellent composition, an active ingredient of said repellent composition comprising a putrescent product of a mixture of an animal lipoidal material and an amount of a lipolytic enzyme in excess of the lipolytic enzyme occurring naturally in said lipoidal material.

3,962,426
ANTIBIOTICS LL-AC541 AND RACEMOMYCIN A AS TAENIACIDAL AGENTS

Joseph Szanto, Flemington; William E. Brown, Princeton, and Edward Meyers, East Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 27, 1975, Ser. No. 562,711

Int. Cl.² A61K *35/74*

U.S. Cl. 424—116 **9 Claims**

1. A method of treating a mammalian or poultry host infected with tapeworms which comprises orally administering to the host an effective taenicidal dose an antibiotic selected from the group consisting of LL-AC541, racemomycin A, and mixtures thereof.

3,962,427
ANTIBIOTIC NEBRAMYCIN FACTOR VII

William Max Stark, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 313,222, Dec. 8, 1972, Pat. No. 3,853,709, which is a continuation-in-part of Ser. No. 83,834, Oct. 26, 1970, abandoned. This application July 31, 1974, Ser. No. 493,426

Int. Cl.² A61K *35/00*

U.S. Cl. 424—118 **1 Claim**

1. The antibiotic nebramycin VII, said antibiotic being a basic, water soluble colorless crystalline compound having an empirical formula of $C_{21}H_{41}N_5O_{12}$; which is slightly soluble in methanol; which has the following percent elemental composition:

45.10 percent carbon
7.53 percent hydrogen
12.37 percent nitrogen
34.82 percent oxygen;

which has the following distinguishable absorption maxima in its infrared spectrum: 3.01, 3.47, 6.27, 6.91, 7.38, 7.50, 7.73, 7.98, 8.08, 8.51, 8.75, 8.97, 9.75, 10.01, 10.35, 10.65, 10.91, 11.98, 12.55 and 12.81 microns; which is transparent in the ultraviolet region of the spectrum; and which has a specific rotation of $[\alpha]_D^{27} = +170.4°$ (c = .154% in water).

3,962,428
STABILIZED INSECTICIDE COMPOSITIONS

Alexander Emodi, West Orange, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

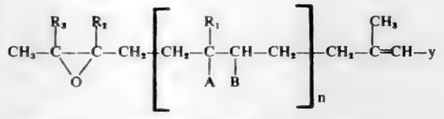
Division of Ser. No. 508,015, Sept. 20, 1974, which is a continuation-in-part of Ser. No. 323,494, Jan. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 180,100, Sept. 13, 1971, abandoned. This application Dec. 13, 1974, Ser. No. 532,656

Int. Cl.² A01N *9/28*

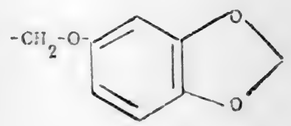
U.S. Cl. 424—174 **5 Claims**

1. A stabilized insecticide composition comprising;

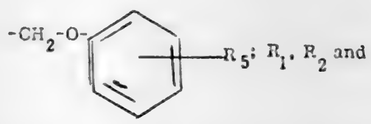
a. from about 10 to 75 weight percent of a juvenile hormone of the formula:



wherein Y is $-COOR_4$, $-CH_2-O-C \equiv CH$,



or



R_5; R_1, R_2 and

R_3 are hydrogen, methyl or ethyl; R_4 and R_5 are hydrogen or lower alkyl; *n* is an integer of from 0 to 1; and A and B are hydrogen or taken together to form a carbon to carbon bond;

b. from about 1% to 25% by weight of a phenolic anti-oxidant; and

c. from about 1 to 20% by weight of a benzotriazole U.V. absorber selected from the group consisting of 2-(3′,5′-ditert butyl-2′-hydroxy-5′-methylphenyl)-5-chlorobenzotriazole, 2(3,5′-ditert. butyl-2′-hydroxyphenyl)-5-chlorobenzotriazole, and 2(2′-hydroxy-5′-methylphenyl)-benzotriazole.

3,962,429
METHOD FOR REDUCING SIDE EFFECTS OF AMINOGLYCOSIDE ANTIBIOTICS AND COMPOSITION THEREFOR

Kouji Furuno, Kokubunji; Akira Okazaki, Oyama; Syuzo Matsubara, Fuchu; Motoharu Shiba, Omiya, and Akitoshi Shioya, Kawagoe, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed July 23, 1974, Ser. No. 491,171

Claims priority, application Japan, Aug. 1, 1973, 48-85846

Int. Cl.² A01N *9/00*, *9/28*

U.S. Cl. 424—181 **25 Claims**

1. A method for treating bacterial infection and reducing the side effects of such treatment, comprising administering to mammals, in an amount sufficient to treat bacterial infection, both glucosaccharo-1,4-lactone, glucosaccharo-6,3-lactone, or the sodium, potassium or calcium salt of one of said lactones, and an aminoglycoside antibiotic selected from the group consisting of streptomycin, neomycin B and C, kanamycin A, B and C, ribostamycin, paromomycin I and II, a gentamicin complex, tobramycin, butirosin A and B, lividomycin A and B, 3′, 4′-dideoxy-kanamycin B, sismomicin, 1-N-{(S)-4-amino-2-hydroxybutylyl}-3′,4′-dideoxy-kanamycin B, 1-N-{(S)-4-amino-2-hydroxybutylyl}-3′,4′-dideoxyneamine, 1-N-{(S)-4-amino-2-hydroxybutylyl} kanamycin A and mineral acid addition salts thereof, wherein said lactone or salt is used in an amount of from 50–1000% by weight of the antibiotic used based on the free form of the amino-glycoside antibiotic.

3,962,430
STERILIZATION OF SOLID NON-ELECTROLYTE MEDICINAL AGENTS EMPLOYING SODIUM CHLORIDE

Joseph L. O'Neill, Lafayette Hill, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 495,453, Aug. 7, 1974, abandoned, which is a continuation-in-part of Ser. No. 381,845, July 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 160,570, July 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 826,719, May 21, 1969, abandoned, which is a continuation-in-part of Ser. No. 485,592, Sept. 17, 1965, abandoned. This application July 14, 1975, Ser. No. 596,398

Int. Cl.² A61K *31/69*

U.S. Cl. 424—185 **6 Claims**

1. A process for preparing a sterile isotonic aqueous pharmaceutical suspension of a solid non-electrolyte medicinal agent selected from the group consisting of a corticosteroid, a steroid and a non-steroid wherein the corticosteroid is selected from the group consisting of cortisone, cortisone acetate, dexamethasone, dexamethasone acetate, dexamethasone tertiary butyl acetate, hydrocortisone acetate, predisolone, prednisolone acetate, betamethasone acetate, triamcinolone acetonide and methyl prednisolone; the steroid is selected from the group consisting of androsterone, 17-methyltestosterone, testosterone, testosterone borate, dienstrol, diethylstilbesterol, estradiol, estradiol-17-acetate, estradiol benzoate and ethinyl estradiol-3-methyl ether; and the non-steroid is selected from the group consisting of propylidone, primidone, diphenylhydantoin, indomethacin and thiabendazole, which comprises adding the medicinal agent to a mixture of sodium chloride and water, the concentration of sodium chloride being sufficient for a saturated solution at 100°C, heating at a temperature of from about 100°–130°C for a time sufficient to sterilize the medicinal agent and the aqueous system and after cooling to room temperature, adding sterile water for dilution to obtain the desired concentration of said medicinal agent in an effective amount in suspension.

3,962,431
INSECTICIDAL USE OF O,O-DIALKYL PHOSPHORODITHIOATE AND PHOSPHOROTHIOATE ESTERS OF OXAZOLIDINE-2,4-DIONE DERIVATIVES

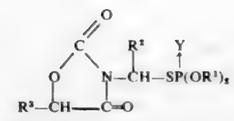
Joel Dexter Jamison, Mountainside, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 115,735, Feb. 16, 1971, abandoned, which is a division of Ser. No. 694,813, Jan. 2, 1968, Pat. No. 3,632,598. This application Apr. 26, 1972, Ser. No. 247,750

Int. Cl.² A01N *9/36*

U.S. Cl. 424—200 **7 Claims**

1. An insecticidal composition comprising an insecticidally effective quantity of a compound of the formula:



in which Y is O or S; R^1 is CH_3 or C_2H_5; and R^2 and R^3 are CH_3 or H, and a dispersing agent therefor.

3,962,432
METHOD OF TREATMENT OF CALCIUM DISORDERS USING AMINOALKANE-DIOPHOSPHONIC ACIDS

Manfred Schmidt-Dünker, Dusseldorf, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf, Germany

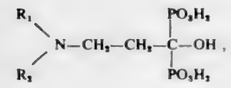
Filed Dec. 3, 1974, Ser. No. 529,039

Claims priority, application Germany, Feb. 4, 1974, 2405254

Int. Cl.² A61K *31/66*

U.S. Cl. 424—204 **8 Claims**

1. A method for alleviating conditions caused by the abnormal deposition or dissolution of difficulty soluble calcium salts in the body of warm-blooded animals having said conditions which consists in administering orally or parenterally to said warm-blooded animals, from 0.05 to 500 mg.kg. of the animal body weight of a pharmacologically acceptable aminoalkane-diphosphonic acid derivative selected from the group consisting of (A) at least one aminoalkane-diphosphonic acid of the formula:



wherein R_1 and R_2 are each selected from the group consisting of hydrogen and alkyl having 1 to 3 carbon atoms, and (B) a pharmacologically acceptable water-soluble salt of (A), said derivative being administered in the form of tablets, pills or capsules, or as injectable solutions.

3,962,433
METHOD OF TREATMENT OF CALCIUM DISORDERS USING PHOSPHONOALKANE-POLYCARBOXYLIC ACIDS

Karl-Heinz Worms, Dusseldorf-Holthausen; Christian Gloxhuber, Haan; Manfred Schmidt-Dunker, Dusseldorf, and Helmut Blum, Dusseldorf-Holthausen, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Filed Dec. 3, 1974, Ser. No. 529,040

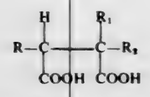
Claims priority, application Germany, Dec. 6, 1973, 2360797

Int. Cl.² A61K *31/66*

U.S. Cl. 424—212 **10 Claims**

1. A method for the treatment of diseases relating to the abnormal deposition or dissolution of difficultly soluble calcium salts in the body of warm-blooded animals which consists of administering orally or parenterally to said warm-blooded animals, a safe but effective amount for said treatment of at least one pharmacologically acceptable phosphonoalkane-polycarboxylic acid selected from the group consisting of

A. at least one phosphonoalkane-polycarboxylic acid of the formula



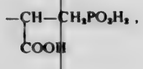
wherein R is selected from the group consisting of hydrogen and alkyl having 1 to 3 carbon atoms,
wherein R_1 is selected from the group consisting of



and



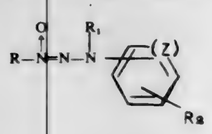
and
wherein R_2 is selected from the group consisting of hydrogen, alkyl having 1 to 3 carbon atoms, $-CH_2-CHRCOOH$, $-CH_2-CHRPO_3H_2$ and



and
B. a non-toxic pharmacologically acceptable water-soluble salt of (A).

3,962,434
3-ARYL-TRIAZENE-1-OXIDES FOR TREATING INFLAMMATORY DISEASES
John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Sept. 6, 1974, Ser. No. 503,580
Int. Cl.² A61K *31/655*
U.S. Cl. 424—226 **7 Claims**

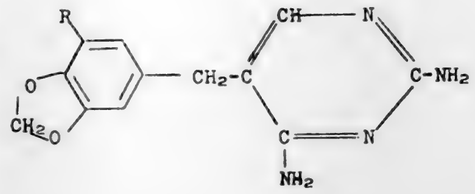
1. The method of treating an inflammatory condition which comprises administering to a subject suffering from such condition a compound of the formula



wherein
R is C_1–C_3 alkyl,
R_1 is hydrogen or C_1–C_3 alkyl,
Z is —CH—, and
R_2 is hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy or trihalomethyl, in an amount sufficient to be effective against the inflammation.

3,962,435
COMBINATION OF OXYTETRACYCLINE AND 2,4-DIAMINO-5-(3-ALKOXY-4,5-METHYLENEDIOXYBENZYL)PYRIMIDINE
Emanuel Grunberg, North Caldwell, and Max Hoffer, Nutley, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 404,953, Oct. 10, 1973, which is a division of Ser. No. 203,869, Dec. 1, 1971, Pat. No. 3,787,409. This application Dec. 9, 1974, Ser. No. 531,135
Int. Cl.² A61K *31/65*
U.S. Cl. 424—227 **3 Claims**

1. A therapeutic antibacterial composition comprising from about 1 to about 50 parts of oxytetracycline and one part of a pyrimidine of the formula



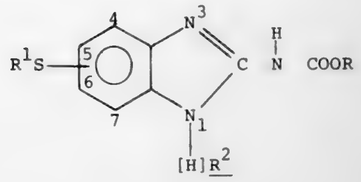
wherein R is lower alkoxy, or acid addition salts thereof with pharmaceutically acceptable acids.

3,962,436
PHARMACEUTICAL COMPOSITIONS HAVING CONTROLLED RATE OF GASTRO-INTESTINAL ABSORPTION
Toshio Nakamura, Ibaraki; Tadao Maeda, Ibaraki; Hiroshi Takenaka, Ibaraki, and Yoshiya Yamahira, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan
Division of Ser. No. 40,358, May 25, 1970, Pat. No. 3,849,558. This application Aug. 22, 1974, Ser. No. 499,572
Claims priority, application Japan, June 3, 1969, 44-43895; Jan. 30, 1970, 45-8619
Int. Cl.² A61K *31/615, 31/635, 31/525, 47/00*
U.S. Cl. 424—233 **8 Claims**

1. A pharmaceutical composition having a controlled gastro-intestinal absorption rate of a therapeutically active agent selected from the group consisting of chloramphenicol, chloramphenicol palmitate, riboflavin, riboflavin butyrate, sulfisoxazole, salicyclic acid, indomethacin and pharmaceutically acceptable water soluble salts thereof, said composition comprising a therapeutically effective amount of said therapeutically active agent and an equivalent or more by weight to said therapeutically active agent of N-α-methylbenzyl linoleamide.

3,962,437
5(6)-BENZENE RING SUBSTITUTED BENZIMIDAZOLE-2-CARBAMATE DERIVATIVES HAVING ANTHELMINTIC ACTIVITY
Colin C. Beard, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Division of Ser. No. 371,365, June 19, 1973, Pat. No. 3,901,901. This application Apr. 7, 1975, Ser. No. 566,014
Int. Cl.² C07D *513/08*
U.S. Cl. 424—246 **13 Claims**

1. A compound selected from the group of compounds represented by the formula:



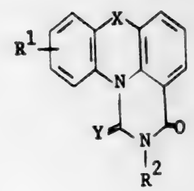
where R is lower alkyl group having 1 to 4 carbon atoms; R^1 is a fused, bicyclic heterocylic ring moiety represented by the formula:



where X and Y are independently —C—C—, —C=C—, —C—C—C, —C—C=C, or C=C—C, provided that at least one of X or Y has 3 carbon atoms, said heterocyclic ring moiety being optionally substituted with one or more alkyl having 1 to 4 carbon atoms, phenyl, alkoxy having 1 to 4 carbon atoms, or hydroxy radicals; R^2 is hydrogen, carboxylic acyl having 1 to 6 carbon atoms, carbalkoxy having 2 to 7 carbon atoms, carbamoyl, or alkylcarbamoyl wherein the alkyl portion thereof has 1 to 4 carbon atoms; the R^1 substitution being at the 5(6)-position of the benzimidazole nucleus; the pharmaceutically acceptable salts thereof.

3,962,438
ANTI-ARTHRITIC 1H-PYRIMIDO-(5,4,3-KL)PHENOTHIAZINE-1,3(2H)-DIONES AND 1-THIONES
Charles E. Berkoff, Huntingdon Valley; Blaine M. Sutton, Hatboro, and Joseph Weinstock, Phoenixville, all of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.
Filed Jan. 7, 1975, Ser. No. 539,208
Int. Cl.² A61K *27/00;* **C07D** *513/22*
U.S. Cl. 424—247 **12 Claims**

1. A compound of the formula:



in which:
X is S, SO or SO_2;
Y is O or S;
R^1 is hydrogen, halogen, lower alkyl, lower alkoxy, trifluoromethyl or nitro; and
R^2 is hydrogen, lower alkyl, hydroxy(lower)alkyl, dihydroxy(lower)alkyl or phenyl(lower)alkyl.

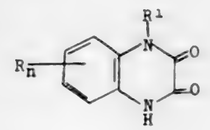
12. A method of treating arthritis which comprises administering internally to an animal subject an amount of a compound as claimed in claim 1 sufficient to inhibit arthritis.

3,962,439
OXYGEN-TRANSFERABLE EMULSION
Kazumasa Yokoyama, Suita; Koichi Yamanouchi, Sakai; Ryoichiro Murashima, Kashihara, and Ryozo Watanabe, Takatsuki, all of Japan, assignors to The Green Cross Corporation, Japan
Filed Feb. 4, 1974, Ser. No. 439,638
Claims priority, application Japan, Oct. 5, 1973, 48-112047
Int. Cl.² A61K *31/535, 31/445, 31/335, 31/35*
U.S. Cl. 424—248 **19 Claims**

1. A stable emulsion in a physiologically acceptable aqueous medium of an oxygen-transferable saturated perfluorocarbon compound having 9 to 11 carbon atoms and a particle size of about 0.05 to about 0.3 μ, which comprises said perfluorocarbon compound, a phospholipid as emulsifier, and at least one fatty acid compound as emulsifying adjuvant selected from the group consisting of fatty acids having 8 to 22 carbon atoms, physiologically acceptable salts and monoglycerides thereof, the perfluorocarbon compound being at least one member selected from the group consisting of perfluoro alkylcyclohexane having 3 to 5 carbon atoms in the alkyl, perfluorodecalin, perfluoro methyldecalin, perfluoro alkyltetrahydropyran having 4 to 6 carbon atoms in the alkyl, perfluoro alkyltetrahydrofuran having 5 to 7 carbon atoms in the alkyl, perfluoro alkylpiperidine having 4 to 6 carbon atoms in the alkyl, perfluoro alkylmorpholine having 5 to 7 carbon atoms in the alkyl, perfluoro trialkylamine, perfluoro (diethylcyclohexylamine), or perfluoro (dioxaalkane), said emulsion being suitable for use as a blood substitute.

3,962,440
QUINOXALINE COMPOUNDS AS HYPNOTIC AGENTS
Roger L. St. Clair, New Palestine, and Thomas D. Thibault, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Dec. 26, 1973, Ser. No. 427,948
Int. Cl.² A61K *31/495*
U.S. Cl. 424—250 **22 Claims**

1. A method for causing a hypnotic effect in a warm-blooded animal which comprises administering to a warm-blooded animal suffering from insomnia an effective amount of an active agent selected from the group consisting of a compound of the formula



wherein *n* represents 0, 1, or 2; each R independently represents
1. loweralkyl of C_1–C_4,
2. loweralkoxy of C_1–C_4,
3. loweralkylthio of C_1–C_4,
4. cyclopropyl,
5. bromo,
6. chloro,
7. fluoro,

8. nitro,
9. cyano,
10. fluoroalkyl of C_1–C_3,
11. amino, or
12. amino mono or disubstituted with loweralkyl of C_1–C_4, each independently selected;

subject to the limitation that R can represent bromo or chloro only when *n* represents 2 and one R represents a moiety other than bromo or chloro; and R^1 represents

1. H or
2. methyl;

and a pharmaceutically acceptable alkali metal or alkaline earth metal salt.

3,962,441

BENZOXAZOLE DERIVATIVES IN TREATING INFLAMMATION, PAIN AND FEVER

Delme Evans, Chalfont St. Peter; David William Dunwell, Camberley, and Terence Alan Hicks, Farnborough, all of England, assignors to Lilly Industries, Ltd., London, England

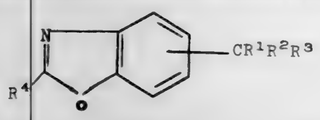
Division of Ser. No. 356,251, May 5, 1973, Pat. No. 3,912,748. This application June 17, 1975, Ser. No. 587,758

Claims priority, application United Kingdom, May 18, 1972, 23409/72

Int. Cl.[3] A61K *31/42, 31/44, 31/495*

U.S. Cl. 424—250 **1 Claim**

1. Method of treating an animal suffering from inflammation, algesia and/or pyreticosis which comprises administering to said animal an effective dose of a compound of the formula:



wherin the group $—CR^1R^2R^3$ is in the 5- or 6-position of the benzoxazole nucleus, wherein R^4 is cyclohexyl, furyl, thienyl, pyridyl, pyrazinyl, phenyl or phenyl substituted in any available position by one or two substituents selected from halogen, nitro, amino, hydroxy, C_1–C_4 alkoxy, C_1–C_3 alkyl-CO, C_1–C_4 alkyl sulphonyl, or substituted in two adjacent positions by methylene, or ethylene-dioxy, R^1 and R^2 are independently hydrogen, methyl or ethyl and R^3 is:

i. the group $—COOR^5$, where R^5 is C_1–C_4 alkyl; or
ii. the group $—CO—R^6$, where R^6 is —NHOH or $—NH_2$; or
iii. the group $—CH_2OR^9$ where R^9 is hydrogen or C_1–C_4 alkyl; or
iv. the group —COOH or an alkali or alkaline earth metal, aluminum or ammonium salt thereof.

3,962,442

FUNGICIDAL COMPOSITIONS CONTAINING 2-AMINO PYRIMIDINES AND METHODS OF USING THE SAME

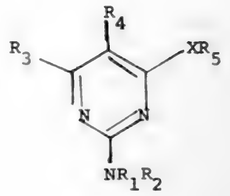
Brian Kenneth Snell, and Ranajit Ghosh, both of Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 623,810, March 17, 1967, abandoned. This application Jan. 26, 1971, Ser. No. 109,931

Int. Cl.[2] A01N *9/00, 9/22, 9/28*

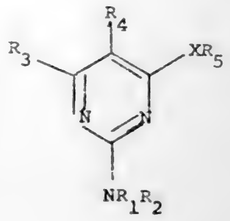
U.S. Cl. 424—251 **10 Claims**

1. A fungicidal composition comprising, as active ingredient, a fungicidally effective amount of a pyrimidine derivative selected from the group consisting of compounds having the formula:



wherein R_1 and R_2 represent atoms of hydrogen, lower alkyl, halophenyl or together with the adjacent N-atom form a piperidino, morpholino or piperazino ring; R_3 and R_4 represent atoms of hydrogen, halogen, lower alkyl, phenyl, benzyl, lower alkenyl or nitro; X represents an atom of oxygen or sulphur; and R_5 is a carbonyl or sulphonyl group bearing directly, or through an oxygen or sulphur atom, a lower alkyl, lower alkenyl, phenyl or nitro-, halo, lower alkylphenyl radical; or furyl or piperidino and the acid-addition salts thereof and a major amount of a carrier for said active ingredient.

7. A method of combating undesired fungal infections in plants which comprises applying to the locus of the plant a fungicidally effective amount of a pyrimidine derivative selected from the group consisting of compounds having the formula:



wherein R_1 and R_2 represent atoms of hydrogen, lower alkyl, halophenyl or together with the adjacent N-atom form a piperidino, morpholino or piperazino ring; R_3 and R_4 represent atoms of hydrogen, halogen, lower alkyl, phenyl, benzyl, lower alkenyl or nitro; X represents an atom of oxygen or sulphur; and R_5 is a carbonyl or sulphonyl group bearing directly, or through an oxygen or sulphur atom, a lower alkyl, lower alkenyl, phenyl or nitro-, halo-, lower alkyl-phenyl radical; or furyl or piperidino and the acid-addition salts thereof.

3,962,443

ANTIBACTERIAL PHARMACEUTICAL COMPOSITIONS AND PROCESSES FOR PREPARATION THEREOF

Shinsaku Minami, Yamato-Kouriyama; Jun-ichi Matsumoto, Takatsuki; Kazuyo Kawaguchi, Nara; Shinsaku Mishio, Osaka; Masanao Shimizu, Kobe; Yoshiyuki Takase, Amagasaki, and Shinichi Nakamura, Takatsuki, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

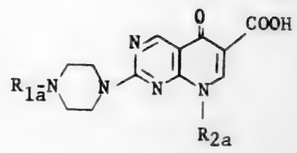
Division of Ser. No. 386,626, Aug. 8, 1973, Pat. No. 3,887,557. This application Feb. 21, 1975, Ser. No. 551,923

Claims priority, application Japan, Aug. 14, 1974, 47-81288; Dec. 19, 1972, 47-128022; Dec. 22, 1972, 48-269; Dec. 26, 1972, 48-3108; Dec. 27, 1972, 48-570; May 25, 1973, 48-58909; June 19, 1973, 48-69651

Int. Cl.[3] A61K *31/505*

U.S. Cl. 424—251 **3 Claims**

1. An antibacterial pharmaceutical composition comprising as an active ingredient a compound present in a pharmaceutically effective amount of the formula



wherein R_{1a} is a moiety selected from one of the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, hydroxyalkyl having 2 to 4 carbon atoms, phenyl or propargyl, R_{2a} is a moiety selected from one of the group consisting of alkyl having 1 to 4 carbon atoms, alkyl having 2 to 4 carbon atoms substituted by hydroxy or halogen, vinyl, allyl, or benzyl;

or pharmaceutically effective organic and inorganic salts thereof, in admixture with a pharmaceutically acceptable adjuvant.

3,962,444

USE OF 4-THIOCYANO-QUINAZOLINES AS FUNGICIDES

Antonius Gerhardus Maria Willems, van Houtenlaan, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

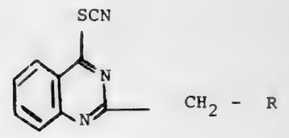
Division of Ser. No. 384,685, Aug., 1973, Pat. No. 3,888,857. This application Mar. 19, 1975, Ser. No. 559,823

Claims priority, application Netherlands, Aug. 9, 1972, 7210866

Int. Cl.[2] A01N *9/22, 17/00, 17/10*

U.S. Cl. 424—251 **4 Claims**

1. A fungicidal preparation comprising a fungicidally effective amount of a 4-thiocyano-quinazoline of the formula



wherein R is a member selected from the group consisting of fluoro and difluoromethyl and a carrier therefore.

3,962,445

ANTI-ALLERGENIC CARBOSTYRIL DERIVATIVES

Derek Richard Buckle, Redhill; Barrie Christian Charles Cantello, Horsham, and Harry Smith, Maplehurst, near Horsham, all of England, assignors to Beecham Group Limited, Sussex, England

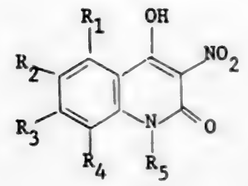
Division of Ser. No. 469,623, May 13, 1974. This application Jan. 29, 1975, Ser. No. 545,100

Claims priority, application United Kingdom, May 19, 1973, 24000/73; May 22, 1973, 24317/73

Int. Cl.[3] A61K *31/47*

U.S. Cl. 424—258 **58 Claims**

1. A pharmaceutical composition useful for treating allergic conditions in humans which comprises an anti-allergenic amount of a compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof, wherein R_1, R_2, R_3 and R_4 are hydrogen, lower alkyl, lower alkoxy, phenoxy, benzyloxy, phenyl, benzyl, pyridyl, hydroxy, nitro, or halogen or any two of R_1, R_2, R_3 and R_4 together with the carbon atoms to which they are attached form a fused phenyl or a fused 1,2-cyclohexenylene moiety, and R_5 is hydrogen, lower alkyl, phenyl or benzyl, in combination with a pharmaceutically acceptable nontoxic inert diluent or carrier.

3,962,446

ANALGESIC COMPOSITIONS CONTAINING 2-CYANOALKYLBENZOMORPHAN DERIVATIVES AND SALTS THEREOF

Toshio Atsumi, Saitama; Kenji Kobayashi; Yoshiaki Takebayashi, both of Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

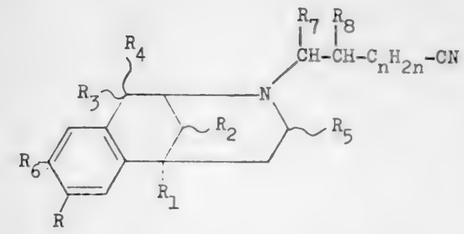
Continuation-in-part of Ser. No. 404,984, Oct. 10, 1973, abandoned, which is a division of Ser. No. 255,805, May 22, 1972, Pat. No. 3,793,332. This application Nov. 13, 1974, Ser. No. 523,412

Claims priority, application Japan, May 21, 1971, 46-34896; Dec. 20, 1971, 46-103839

Int. Cl.[3] A61K *31/485*

U.S. Cl. 424—260 **16 Claims**

1. An analgesic composition comprising an analgesically effective amount of at least one 6,7-benzomorphan derivative of the formula:



wherein R is a hydrogen atom, a hydroxyl group, a C^1 - C^3 alkoxy group or a C^1 - C^6 alkanoyloxy group; R_1 is a hydrogen atom, a C^1 - C^5 alkyl group, a phenyl group, a halophenyl group, an alkylphenyl group wherein the alkyl moiety has 1 to 3 carbon atoms, an alkoxyphenyl group wherein the alkoxy moiety has 1 to 3 carbon atoms, a trifluoromethylphenyl group, an alkylthiophenyl group wherein the alkylthio moiety has 1 to 3 carbon atoms or a group of the formula (C_mH_{1m-p+1}) - $(R_8)_p$ wherein *m* is an integer of 1 – 6, *p* is an integer of 1 – 2 and R_8 is a C^1 - C^3 alkoxy group; R_2 is a hydrogen atom or a C^1 - C^3 alkyl group; R_3 is a hydrogen atom, a C^1 - C^3 alkyl group, a phenyl group or an alkoxyphenyl group wherein the alkoxy moiety has 1 to 3 carbon atoms; R_4 is a hydrogen atom or a hydroxyl group, or R_3 and R_4 may form a C^1 - C^3 alkylidene group or a carbonyl group together with a carbon atom to which these substituents are bonded; R_5 is a hydrogen atom or a C^1 - C^3 alkyl group; R_6 is a hydrogen atom or a methyl group; R_7 and R_8 are independently a hydro-

gen atom or a C^1 - C^2 alkyl group; and n is an integer of 0 – 2; or an acid addition salt thereof, and a pharmaceutically acceptable carrier or diluent.

3,962,447

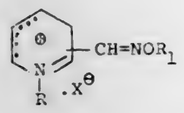
NOVEL PRO-DRUG DERIVATIVES OF PYRIDINIUM ALDOXIME TYPE CHOLINESTERASE REACTIVATORS AND METHOD OF USING SAME

Takeru Higuchi; Nicolae S. Bodor, and Efraim Shek, all of Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.

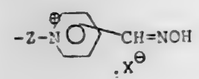
Division of Ser. No. 428,215, Dec. 26, 1973, Pat. No. 3,929,813. This application Aug. 11, 1975, Ser. No. 603,612
Int. Cl.² A61K *31/44*
U.S. Cl. 424—263 **32 Claims**

16. A method for reactivating blocked cholinesterase in a warm-blooded animal as a result of anticholinesterase compound poisoning, which comprises:

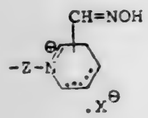
administering thereto, an effective cholinesterase reactivating amount of a pro-drug compound of the pyridine aldoxime (hydroxyiminomethyl pyridinium) type capable of reactivating blocked cholinesterase having the formula:



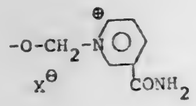
wherein R represents a member selected from the group consisting of an alkyl (C_1-C_4) group, a



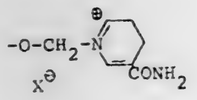
group, a



group,



group and a



group, wherein Z represents a member selected from the group consisting of a $-CH_2-CH_2-$ group, a $-CH_2-O-CH_2-$ group, a $-CH_2CH_2OCH_2CH_2-$ group, and a $-CH_2O-CH_2-CH_2-O-CH_2-$ group; wherein R_1 represents a member selected from the group consisting of a hydrogen atom, a methyl group, an acyl group and a



group; and wherein X^- represents an anion derived from a pharmaceutically acceptable acid addition salt.

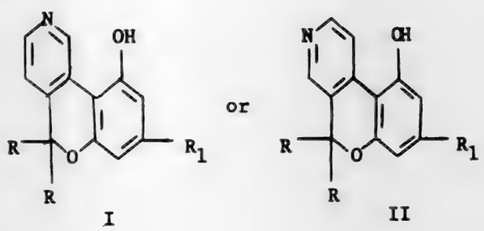
3,962,448

8-ALKYL AND ALKENYL-10-HYDROXY-5H[1]BENZOPYRANOPYRIDINE DERIVATIVES HAVING POLYPHAGIC ACTIVITY

Clifton A. Baile, Glen Mills, Pa.; Paul E. Bender, Willingboro, N.J., and Bernard Loev, Broomall, Pa., assignors to Smith-Kline Corporation, Philadelphia, Pa.

Division of Ser. No. 450,118, March 11, 1974, Pat. No. 3,986,137. This application Apr. 21, 1975, Ser. No. 570,130
Int. Cl.² A61K *31/44*
U.S. Cl. 424—263 **9 Claims**

1. A veterinary composition having polyphagic activity comprising as an active ingredient dispersed in an injectable or ingestible carrier a polyphagic but nontoxic quantity selected from the range of about 2.5–250 μ/kg. of body weight of a compound or a nontoxic, pharmaceutically acceptable salt thereof, said compound having the structure:



in which R is hydrogen, methyl or ethyl and R_1 is a straight or branched alkyl of from 1–20 carbon atoms.

3,962,449

CARDIOACTIVE BISPIDONES AND BISPIDINES

Fritz Binnig, Fussgoennheim; Manfred Raschack, Weisenheim am Sand, and Hans-Joerg Treiber, Bruehl, all of Germany, assignors to Knoll A.G. Chemische Fabriken, Ludwigshafen (Rhine), Germany

Filed June 10, 1975, Ser. No. 585,606
Claims priority, application Germany, June 14, 1974, 2428792
Int. Cl.² C07D *227/04*
U.S. Cl. 424—267 **15 Claims**

1. A compound of the formula



wherein R is =C=O or $-CH_2-$, R′ is lower alkyl optionally substituted by phenyl, and R″ is lower alkyl optionally substituted by one or two phenyl groups, with the proviso that R′ and R″ together contain at least six carbon atoms, and physiologically compatible salts thereof.

3,962,450

COMPOSITION AND METHODS FOR EFFECTING SEDATION

Lawrence J. Fischer, and John J. Ambre, both of Iowa City, Iowa, assignors to State of Iowa for use and benefit of the University of Iowa, Iowa City, Iowa

Filed Aug. 29, 1973, Ser. No. 392,571
Int. Cl.² A61K *31/445*
U.S. Cl. 424—267 **3 Claims**

1. A composition comprising an anesthetic dose of 4-hydroxy-2-ethyl-2-phenyl glutarimide and a pharmacologically inactive carrier therefor.

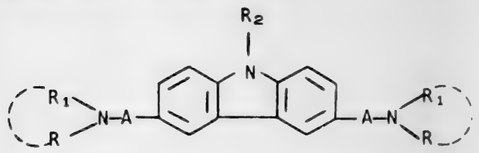
3,962,451

CARBAZOLE DERIVATIVES

William L. Albrecht, Cincinnati, Ohio, and Robert W. Fleming, Ann Arbor, Mich., assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 317,149, Dec. 21, 1972, Pat. No. 3,833,596. This application June 4, 1974, Ser. No. 476,331
Int. Cl.² A61K *31/445*
U.S. Cl. 424—267 **7 Claims**

6. A method of treating a host susceptible to invasion by pathogenic viral agents which comprises the daily prophylactic administration to said host of from 0.1 milligram to 500 milligrams per kilogram of body weight of a 3,6-bis-basic alkane carbazole having the formula



wherein A is a straight or branched alkylene chain having from 2 to 6 carbon atoms, R and R_1 are each selected from the group consisting of lower alkyl having from 1 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the unsaturation is in a position other than in the 1-position of the alkenyl group, and when R and R_1 are taken together with the nitrogen atom to which they are attached represent the pyrrolidinyl, morpholino or piperidino radical, R_2 is hydrogen or lower alkyl having from 1 to 4 carbon atoms or a pharmaceutically acceptable acid addition salt thereof.

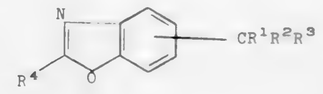
3,962,452

BENZOXAZOLE DERIVATIVES AS THERAPEUTICS

Delme Evans, Chalfont St. Peter; David William Dunwell, Camberley, and Terence Alan Hicks, Farnborough, all of England, assignors to Lilly Industries, Ltd., London, England

Division of Ser. No. 356,251, May 5, 1973, Pat. No. 3,912,748. This application June 17, 1975, Ser. No. 587,562
Claims priority, application United Kingdom, May 18, 1972, 23409/72
Int. Cl.² A61K *31/42, 31/44, 31/495*
U.S. Cl. 424—272 **3 Claims**

1. Pharmaceutical composition comprising an amount effective for treatment of inflammatory algesia and/or prepeticosis of a pharmacologically active compound in association with at least one pharmaceutically acceptable carrier therefor, said active compound being a compound of the formula:



wherein the group $-CR^1R^2R^3$ is in the 5- or 6-position of the benzoxazole nucleus, wherein R^4 is cyclohexyl, furyl, thienyl, pyridyl, pyrazinyl, or phenyl or phenyl substituted in any available position by one or two substituents selected from halogen, nitro, amino, hydroxy, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_3 alkyl-CO, C_1–C_4 alkyl sulphonyl or substituted in two adjacent positions by methylene- or ethylene-dioxy, R^1 and R^2 are independently hydrogen, methyl or ethyl and R^3 is:

i. the group $-COOR^5$, where R^5 is C_1–C_4 alkyl
ii. the group $-CO-R^6$ is $-NHOH$ or NH_2; or
iii. the group $-CH_2OR^9$ where R^9 is hydrogen or C_1–C_4 alkyl; or
iv. the group —COOH or an alkali or alkaline earth metal, aluminum or ammonium salt thereof.

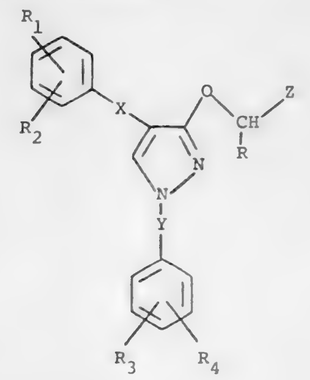
3,962,453

NOVEL PYRAZOLYLOXYACETIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF

Hans Ahrens; Helmut Biere; Clemens Rufer; Eberhard Schröder, and Henning Koch, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed Sept. 12, 1974, Ser. No. 505,208
Claims priority, application Germany, Sept. 14, 1973, 2347015
Int. Cl.² A61K *31/415*; C07D *231/18*
U.S. Cl. 424—273 **40 Claims**

1. A compound of the formula



wherein R is a hydrogen atom or alkyl of 1–4 carbon atoms; R_1, R_2, R_3 and R_4 each are a hydrogen atom, a halogen atom, alkyl of 1–4 carbon atoms or alkoxy of 1–4 carbon atoms; X and Y each are a bond joining the benzene ring to the pyrazole ring or methylene; and Z is a carboxyl or alkoxycarbonyl of 1–6 carbon atoms in the alkoxy group, and when Z is carboxyl physiologically acceptable, salts thereof with physiologically acceptable base.

40. A pharmaceutical composition in unit dosage form comprising an anti-inflammatory or antipyretic effective amount of compound of claim **1** in admixture with a pharmaceutically acceptable carrier.

3,962,454

BIS-(1-ALKYL-5-NITRO-IMIDAZOLYL-2-ALKYL)-COMPOUNDS

Erhardt Winkelmann, Kelkheim, Taunus, and Wolfgang Baether, Dreieichenhain, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

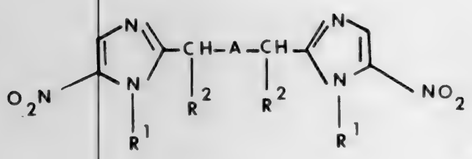
Filed Feb. 19, 1975, Ser. No. 550,919

Claims priority, application Germany, Feb. 21, 1974, 2408219

Int. Cl.² C07D *233/94*

U.S. Cl. 424—273 **6 Claims**

1. A bis-(1-alkyl-5-nitro-imidazolyl-2-alkyl)-sulfide, -sulfoxide, -sulfone or -disulfide of the formula



wherein R^1 is methyl or ethyl, R^2 is hydrogen or methyl and A is sulfur (-S-), sulfoxide (—SO—), sulfone ($-SO_2$) or disulfide (—S—S—).

3,962,455

ANTIBIOTIC ASCOFURANONE AND PROCESS FOR THE PRODUCTION THEREOF

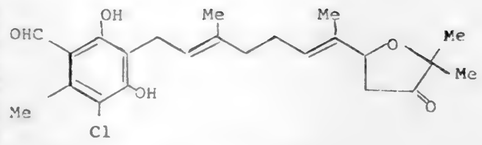
Hiroshi Sasaki; Tsuneo Okutomi; Tomoyoshi Hosokawa; Yoshiharu Nawata, and Kunio Ando, all of Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 364,033, May 25, 1973, Pat. No. 3,873,529. This application Nov. 22, 1974, Ser. No. 526,175

Int. Cl.² A61K *31/35*

U.S. Cl. 424—285 **8 Claims**

1. A therapeutic composition having hypotensive activity comprising an effective amount to create a hypotensive effect of ascofuranone, of the formula:



in a pharmaceutically acceptable carrier.

3,962,456

SLIME CONTROL COMPOSITIONS AND THEIR USE

Paul Swered, Philadelphia, and Bernard F. Shema, Glenside, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 545,676, Jan. 30, 1975, abandoned. This application Aug. 11, 1975, Ser. No. 603,899

Int. Cl.² A01N *9/20*

U.S. Cl. 424—298 **8 Claims**

1. A composition for the control of the microorganism Aerobacter aerogenes in aqueous systems comprising a mixture of 1,3-dichloroacetone oxime acetate, with beta-bromo-beta-nitrostyrene wherein the weight ratio of the acetate to the nitrostyrene ranges from about 95:5 to about 10:90 respectively.

3,962,457

METHODS OF KILLING MITES USING S-β-NAPHTHYLMETHYL-N,N-DIMETHYLTHIOLCARBAMATE

Shigeki Wakamori, Shimizu; Haruki Ogawa, Fujieda; Masayoshi Yamaguchi, and Seigo Kanamori, both of Shimizu, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1975, Ser. No. 543,774

Claims priority, application Japan, Jan. 21, 1974, 49-8548

Int. Cl.² A01N *9/20*

U.S. Cl. 424—300 **3 Claims**

1. A method of killing parasitic mites on plants which comprises applying to said mites a miticidally effective amount of S-β-naphthylmethyl-N,N-dimethyl thiolcarbamate.

3,962,458

SYSTEMIC CONTROL OF ECTOPARASITES WITH PYRETHROIDS

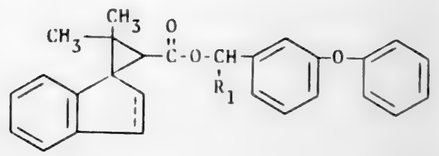
Michael Stanley Schrider, South Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 13, 1975, Ser. No. 550,106

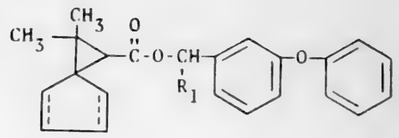
Int. Cl.² A01N *9/20*

U.S. Cl. 424—304 **10 Claims**

1. A method for the systemic control of ectoparasites which attack warm-blooded animals, comprising administering to said warm-blooded animals a systemically effective amount against the ectoparasites of a compound having a formula



and



wherein R_1 is hydrogen, cyano or ethynyl, and represents a single or double bond, and the optical and geometric isomers thereof.

3,962,459

LIPIDEMIA TREATMENT WITH P-PHENOXY-ALKYLPHENONE COMPOSITIONS

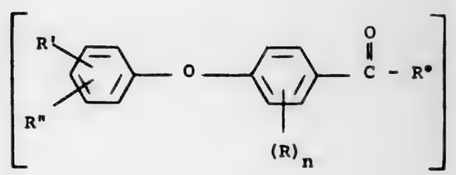
Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 394,181, Sept. 4, 1973, abandoned. This application Sept. 30, 1974, Ser. No. 510,477

Int. Cl.² A61K *31/125;* **C07C** *49/76*

U.S. Cl. 424—331 **10 Claims**

1. A pharmaceutical composition in unit dosage form for treating lipidemia in mammals comprising an inert pharmaceutically acceptable carrier and from 50 to 1500 milligrams of a compound of the formula



wherein

R° is branched alkyl of 3 to 5 carbon atoms,

R is hydrogen, alkyl of 1 to 4 carbon atoms or halo of atomic weight of from 18 to 36,

n is 1 or 2,

R′ is hydrogen, alkyl of 1 to 4 carbon atoms, halo of atomic weight of from 18 to 36 or alkoxy of 1 to 4 carbon atoms, and

R″ is hydrogen, alkyl of 1 to 4 carbon atoms, halo of atomic weight of from 18 to 36 or alkoxy of 1 to 4 carbon atoms.

3,962,460

ETHER COMPOUNDS AS INHALANT ANESTHETICS

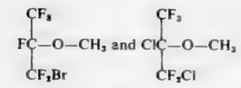
Louise S. Croix, Summit, and Alex J. Szur, North Plainfield, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 295,640, Oct. 6, 1972, abandoned. This application Aug. 20, 1974, Ser. No. 498,975

Int. Cl.² A61K *31/08*

U.S. Cl. 424—342 **6 Claims**

4. A method of anesthetizing an anesthetic-susceptible mammal which comprises administering to the mammal an anesthetically effective amount of aliphatic ether compound of a formula selected from the group consisting of



as an inhalation anesthetic while administering life-supporting amounts of oxygen.

3,962,461

BAIT INSECTICIDE FOR CARPENTER ANTS

William L. Brown, Jr., Ithaca, N.Y., and Barbara Brunhuber de Perez, Montreal, Canada, assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 481,465, June 20, 1974, abandoned. This application Aug. 28, 1975, Ser. No. 608,636

Int. Cl.² A01N *9/30, 17/10 , 17/14*

U.S. Cl. 424—352 **1 Claim**

1. A liquid bait insecticide for ants of the species *Camponotus herculeanus, Camponotus noveboracensis* and *Camponotus pennyslvanicus* which comprises the product obtained by sonicating a solution of recrystallized Mirex in xylene, in the presence of an emulsifier, said Mirex being present in a ratio of 1 gm. recrystallized Mirex to 9 ml. xylene, thereby forming a suspension, diluting the suspension with water in the ratio of 1 part suspension to 10 parts water, and mixing said diluted suspension with a honey - water mixture such that the product obtained contains 50–60% of the honey-water mixture, said Mirex being present in the amount of from 0.005 to 0.1% of the total weight of the product.

3,962,462

STABILIZATION OF DRY PET FOOD

Morris P. Burkwall, Jr., and Joseph C. Leyh, both of Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed May 31, 1974, Ser. No. 475,283

Int. Cl.² A23K *1/18*

U.S. Cl. 426—1 **10 Claims**

1. In the combination of dry pet food and semi-moist pet food, the improvement wherein the dry pet food comprises:

a. proteinaceous material;

b. amylaceous ingredients;

c. from **1** to **15** percent by weight of a member selected from the group consisting of sugar, sugar equivalents, and mixtures thereof;

d. from **1** to **3** percent by weight edible acid;

e. from **0.01** to **0.5** percent by weight antimycotic; and

f. wherein the moisture content of said dry pet food is less than **15** percent by weight and said dry pet food is microbiologically stable.

3,962,463

CHEWING GUM HAVING SURFACE IMPREGNATED, MICROENCAPSULATED FLAVOR PARTICLES

Frank Witzel, Spring Valley, N.Y., assignor to Life Savers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 240,564, April 3, 1972, abandoned. This application Mar. 19, 1975, Ser. No. 559,850

Int. Cl.² A23G 3/30, 3/00

U.S. Cl. 426—5 9 Claims

1. A chewing gum stick having a thickness within the range of from about 1250 to about 2300 microns and having solid flavor particles printed on at least one surface thereof, said flavor particles penetrating the surface thereof to a depth of within the range of from about 35 to about 230 microns, the interior of the stick being substantially free of flavor particles, said flavor particles providing an amount of flavor within the range of from about 0.14 to about 0.54% by weight of said stick.

3,962,464

PROCESS FOR PREPARING A BUTTER-LIKE DAIRY PRODUCT

Tomaso Sozzi, Lausanne, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation-in-part of Ser. No. 274,116, July 21, 1972, abandoned, which is a continuation-in-part of Ser. No. 49,989, June 25, 1970, abandoned. This application Mar. 18, 1974, Ser. No. 452,318

Int. Cl.² A23C 15/12, 7/00

U.S. Cl. 426—43 5 Claims

1. A process for preparing a butter-like dairy product which comprises the steps of pasteurising a cream containing not more than 40% by weight of fat, centrifuging the pasteurised cream and recovering a concentrated cream containing 50 to 60% by weight of fat, adding skimmed milk in quantity such that the fat content of the final product will be between 47 and 56%, heating the cream to between 85° and 93°C in 5 to 60 seconds, adding an acid substance in quantity such as to bring the pH of the final product to between 5.2 and 5.6, said addition being made under conditions such that the temperature of the product after said addition is at least 85°C, said acid substance being selected from the group consisting of an acid culture of a microorganism producing a butter flavour and an edible acid together with a butter flavour, cooling the resulting mixture to a temperature between about 2° and 10°C and holding the product at this temperature for at least 24 hours, the quantity of acid substance added when an acid culture being from 1 to 5% by weight and when an edible acid being from 0.05 to 0.2% by weight, said percentages being based on the weight of the final product.

3,962,465

METHOD OF PRODUCING STARCH HYDROLYSIS PRODUCTS FOR USE AS A FOOD ADDITIVES

Manfred Richter; Friedrich Schierbaum, both of Potsdam; Siegfried Augustat, Potsdam-Rehbrucke, and Klaus-Dieter Knoch, Berlin, all of Germany, assignors to Akademie der Wissenschaften der DDR, Berlin, Germany

Filed Aug. 27, 1973, Ser. No. 391,711

Int. Cl.² C12D 13/02

U.S. Cl. 426—48 12 Claims

1. Method of producing a starch hydrolysis product having a dextrose equivalent of at least 5% but below 25% and which forms with water, white, glossy thermoreversible gels having a neutral taste, which are stable to freezing and defrosting and the consistency of which can be varied from pasty to cutting hard, comprising suspending in water a starch or water soluble starch derivative in a concentration of 15–50% by weight and the starch-hydrolyzing enzyme bacterial α-amylase in a concentration within a range which is optimum for hydrolysis of the starch by the enzyme to produce said starch hydrolysis product, adjusting the pH of the suspension to a value of about 7, which is optimum for hydrolysis of the starch by the enzyme to produce said starch hydrolysis product, heating the suspension from a temperature of 55°C to a temperature of 70°C. in a period of 5 to 30 minutes, heating the suspension from a temperature of 70°C. to a temperature of 95° to 100°C. in a period of 5 to 20 minutes and maintaining the suspension at the latter temperatures for 5 to 20 minutes, whereby a precipitant is formed and the supernatant liquid is a solution of said starch hydrolysis product, and separating the precipitant from the supernatant liquid.

3,962,466

METHOD FOR TREATMENT OF MICROORGANISMS

Yutaka Nakabayashi, Fukuoka, Japan, assignor to Dai-Nippon Sugar Manufacturing Co., Ltd., Tokyo, Japan

Division of Ser. No. 414,576, Nov. 9, 1973. This application May 22, 1974, Ser. No. 472,327

Claims priority, application Japan, Nov. 10, 1972, 47-112026; Nov. 10, 1972, 47-112027

Int. Cl.² A23L 1/28

U.S. Cl. 426—60 2 Claims

1. A method for producing a yeast extract comprising nucleic acids and related substances which comprises chemically treating microorganisms with an alkali to extract material from said cells while substantially leaving within said cells protein contained within said cells, separating the thus treated microorganism cells from a waste liquor and adjusting said waste liquor to a pH of from 1 to 7, said alkali treatment being carried out by autolyzing the microorganisms with alkali at a pH of 7.0 to 10.5 and at a temperature of 25° to 65°C for a period of from 16 hours to 10 minutes or by treatment with alkali at a pH of from 10.5 to 12.9 at a temperature below 30°C for a period of about 4 minutes to 6 hours.

3,962,467

PROCESSES OF DRYING YEAST

Sidney Burrows, Tillicoultry, Scotland, assignor to The Distillers Company (Yeast) Limited, Morden, England

Filed July 22, 1974, Ser. No. 490,442

Claims priority, application United Kingdom, July 23, 1973, 34895/73

Int. Cl.² C12C 11/30

U.S. Cl. 426—62 10 Claims

8. A method in which active dried yeast is made by forming yeast particles containing less than 50% by weight dry matter and which are less than 1.7 mm in diameter by comminution in a mill or by spray drying and then drying these particles to a dry matter content of at least 94% by weight in a fluidised bed using warm air, and in which the yeast temperature is below 50°C. until the dry matter content is above 80% by weight and is from above 50° and no greater than 60°C. for a period of 10 to 45 minutes at the end of the drying.

3,962,468

SPRAY-DRIED L-ASPARTIC ACID DERIVATIVES

LaMonte D. Pischke, and Myron D. Shoaf, both of Danbury, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 7, 1974, Ser. No. 448,845

Int. Cl.² A23L 1/236

U.S. Cl. 426—96 18 Claims

1. Process for fixation of L-aspartic acid derivative sweetening compounds which comprises causing a slurry-forming level of undissolved hydrated particles of the sweetening compound to be dispersed in an aqueous dextrin solution to produce a dispersion, the level of said sweetening compound being at least 15% by weight of the solids in said dispersion, the level of said undissolved sweetening compound being a major amount of the total level of said sweetening compound in said dispersion and the dispersion being maintained at a temperature low enough to assure the existence of at least a part of the sweetening compound as discretely distributed

undissolved particles, and drying the dispersion to a moisture content below 5% and a density greater than 0.2 grams per cc. to encapsulate the particles of said sweetening compound in said dextrin.

3,962,469

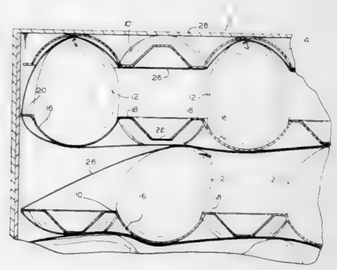
FRUIT TRAY PACKAGE

Roland B. Leavens, and Mark G. McNair, both of Hood River, Oreg., assignors to Diamond Fruit Growers, Inc., Hood River, Oreg.

Filed Feb. 22, 1974, Ser. No. 444,971

Int. Cl.² B65B 23/00, 25/04

U.S. Cl. 426—108 4 Claims



1. A package comprising a carton including a bottom wall and top wall:

a plurality of trays of molded sheet material positioned in stacked relationship in said carton,

each tray being formed to define a plurality of parallel rows of upwardly facing object receiving pockets and bridge portions between at least some of said pockets, and rounded objects susceptible to damage during shipment and having predetermined minimum and maximum diameters positioned in said pockets,

said pockets having a depth less than the mean diameter of said objects whereby said objects project substantially above the upper surface of said tray,

the surface portions of the tray beneath said pockets extending beneath said bridge portions,

the pockets of each row of a said tray being staggered with respect to each next adjacent row and with respect to the pockets of each tray immediately above and below said tray whereby the pockets of a tray will project downwardly between the objects in the next lower tray,

and a cover of flexible material secured only to opposite edges of each tray, said cover having sufficient length between said edges to permit the said bridge portions of a superposed tray to engage at least some of the objects on the tray immediately beneath, and to permit the pocket portions of said superposed tray to depress the said cover between each of said objects and render said cover taut and partially envelope each of the objects on said lower tray so as to snugly hold the said objects in position on said lower tray thereby to minimize damage to the said objects during slipping of the carton.

3,962,470

CONFECTION HOLDING DEVICE

James E. Stucker, 9212 Chiswell, Dallas, Tex. 75238

Filed Nov. 25, 1974, Ser. No. 527,075

Int. Cl.² A23G 9/26; B65D 85/78

U.S. Cl. 426—135 1 Claim

1. A symmetrical confection holding device comprising:

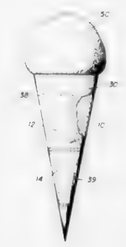
a conical container which is partially filled with confection,

a central body portion formed from an inedible rigid material and having a circular cross section defining a circumference substantially equal to the circumference of the midregion of said conical container, such that the periphery of said central body portion engages the inner surface of the midregion of the conical container when positioned within the conical container to thereby divide the conical container into first and second chambers, said confection filling said first chamber,

fist and second elongate members formed from an inedible rigid material and extending in opposite directions from and perpendicularly with respect to said central body portion, said first and second elongate members having the same length,

said elongate members being symmetrical about said circular cross section of said central body portion with each member being operable for use as a handle, said elongate members being configured such that said holding device may be deposited within the conical container in the correct position without regard to any required orientation of said elongate members,

one of said elongate members extending into said first chamber when positioned within the conical container to extend into and support the confection filling said first chamber,



the distal end of said one elongate member extending into said first chamber being positioned substantially below the end of the portion of the conical chamber which receives the confection,

the other of said elongate members extending into the second chamber within the conical container to serve as a downwardly extending handle for supporting the confection when the conical container is removed therefrom,

the distal end of said other elongate member extending substantially towards the apex of the conical container and engaging the side wall thereof and thereby orienting the circular cross section of the central body portion transversely relative to the axis of the cylindrical container, the end of each of said symmetrical elongate members having a beveled surface, whereby the beveled surface of the one of said elongate members extending into said second chamber snuggly engages the inner surface of the conical container near the apex portion of the conical container.

3,962,471

INDOLYLACETYLAMINO ACID DERIVATIVES, PROCESS FOR THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS

Helmut Biere; Hanns Ahrens; Clemens Rufer; Eberhard Schroder, and Henning Koch, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

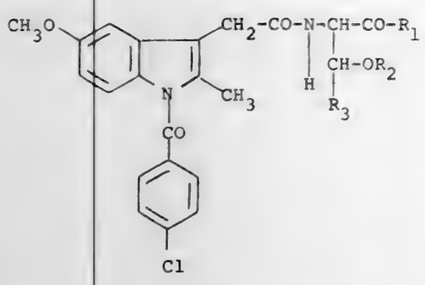
Filed Mar. 12, 1975, Ser. No. 557,515

Claims priority, application Germany, Mar. 15, 1974, 2413125

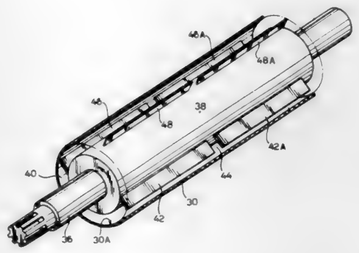
Int. Cl.² C07D 209/28

U.S. Cl. 424—274 13 Claims

1. An indolylacetylamino acid derivative of the formula



wherein R_1 is OH, NH_2, NHR_4 or OR_4, wherein R_4 is alkyl of 1–4 carbon atoms, or benzyl; R_2 is a hydrogen atom, alkyl of 1–4 carbon atoms, or benzyl; and R_3 is a hydrogen atom or methyl, and the physiologically acceptable salts thereof with bases.



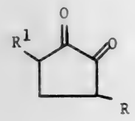
3,962,472

METHOD OF INHIBITION OF WARMED-OVER FLAVOR IN UNCURED MEATS

Anibal Torres, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed June 26, 1975, Ser. No. 590,599
Int. Cl.² A23L *1/31, 1/22;* A23B *4/14*
U.S. Cl. 426—281 **14 Claims**

1. An improved method for inhibiting the development of warmed-over flavor in uncured meat, which comprises adding to the uncured meat from about 25 to 250 parts by weight per million parts by weight of meat of a compound of formula (I):



(I)

wherein R is selected from the group consisting of methyl and ethyl; and R^1 is selected from the group consisting of hydrogen, methyl and ethyl.

3,962,473

METHOD OF MAKING CRUST LIQUEURS BY ANNULAR FLOW COOLING OF THE HOT AQUEOUS FILLING LIQUID

Dimitre Lilov, Milan, Italy, assignor to P. Ferrero & C. S.p.A., Alba (Cunea), Italy

Filed Oct. 25, 1973, Ser. No. 409,542
Claims priority, application Italy, Oct. 26, 1972, 70375/72; Dec. 27, 1972, 71089/72
Int. Cl.² A23G *3/20*
U.S. Cl. 426—282 **9 Claims**

1. In a method of making crust liqueurs by preparing a hot aqueous sugar solution, cooling the hot solution to below the melting point of chocolate thereby to supersaturate the solution, depositing the cool solution into preformed chocolate shells, and sealing the shells with a chocolate cover, the improvement comprising cooling the said hot solution in at least one cooling stage by causing the latter to flow in said stage in the form of an annular flow from an inlet end to the outlet end of a heat exchanger having at least one cooled smooth tubular surface surrounding said flow in contacting relationship thereto, and at the same time sweeping the solution over said tubular surface in a circumferential direction and in a continuous manner while positively defining said annular flow by a concentric rotor within said tube, then depositing the cooled supersaturated solution discharged at the said outlet end into the chocolate shells.

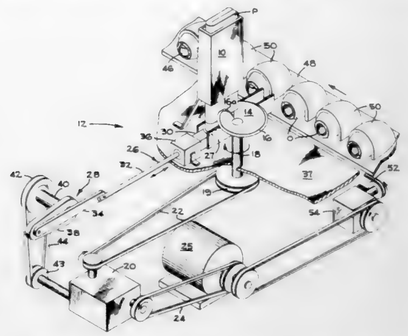
3,962,474

OLIVE STUFFING METHOD

William W. Smith, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 228,334, Feb. 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 16,832, March 5, 1970, abandoned. This application May 31, 1974, Ser. No. 475,325
Int. Cl.² A23B *7/02*
U.S. Cl. 426—282 **7 Claims**

1. A method of stuffing pitted olives with pimiento, comprising the steps of drying the pimiento until the moisture content therein is in the range of about 20% to about 2% to facilitate handling of said pimiento when stuffing said pimiento into pitted olives, stuffing said dried pimiento into the pit cavities of olives, and reconstituting said dried pimiento within the pitted olives by packing the stuffed olives in an aqueous solution.



3,962,475

METHOD FOR PRESERVING HIGH MOISTURE CONTENT AGRICULTURAL GRAINS

Joseph G. Forest, 303 Chemung St., P.O. Box 367, Waverly, N.Y. 14892, and Edward J. Czarnetzky, P.O. Box 330, Chazy, N.Y. 12921

Continuation-in-part of Ser. No. 466,777, May 3, 1974, abandoned. This application Feb. 13, 1975, Ser. No. 549,549
Int. Cl.² A21D *4/00*
U.S. Cl. 426—331 **2 Claims**

1. A method for preserving high moisture content agricultural grains which comprises applying to said grains, an antibacterial effective amount of a composition consisting essentially of:

1. water;
2. a member selected from the group consisting of formic acid, acetic acid, propionic acid, and phosphoric acid;
3. a member selected from the group consisting of an alkali metal sulfate salt and an alkaline earth metal sulfate salt; and
4. a member selected from the group consisting of a synthetic organic cationic or anionic surfactant selected from the group consisting of sodium dodecylsulfonethanolamine, ammonium dodecylbenzenepolyethersulfonate, and sodium dodecylbenzenepolyethersulfonate, whereby said surfactant enhances the penetration of said acid member of (2) into and throughout said high moisture content grain.

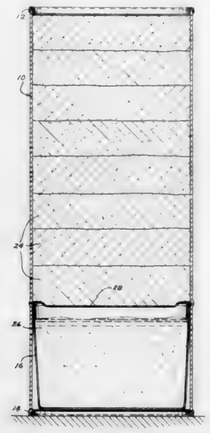
3,962,476

DOUGH PACKAGE CONTAINING TRIPLE SEALED ICING CUP AND METHOD OF PRODUCING THE SAME

Charles H. Turpin, Minneapolis, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Division of Ser. No. 345,927, March 29, 1974, Pat. No. 3,851,757. This application Aug. 26, 1974, Ser. No. 500,423
Int. Cl.² B65B *25/00*
U.S. Cl. 426—398 **1 Claim**

1. A process of forming a two compartmented fiber dough can comprising providing a tubular fiber dough container body, providing a generally cylindrical cup adapted to contain a food product other than dough, the cup being formed from a thermoplastic resinous material compatible with food substances, said cup having an open end and a closed end and the open end having an enlarged diameter adapted to engage the inner surface of the cylindrical fiber body wall with an interference fit, forcing the cup into the tubular container body coaxially thereof closed end first until it has reached substantially the opposite end of the container body from which it was inserted whereby the open end of the cup faces toward the center of the container body, lowering duct means into the container body after the cup has been placed in the container, inserting a food product comprising icing into the cup through said duct means providing a circular divider wall of rigid sheet material having a circular peripheral edge adapted to engage in sealing relationship with the inner wall of the container body, the peripheral edge of the divider wall being of a larger diameter than the inside diameter of the container body to thereby provide an interference fit therebetween, forcing the divider wall into the tubular container body until the peripheral edge engages the upper open end of the cup and rests thereon to provide a circular seal therebetween, whereby



there is formed a triple seal comprising the interference fit between the divider wall and the inside wall of the container the interference fit between the divider wall and the open end of the cup and interference fit between the cup and the inner wall of the fiber can body, introducing a leavened dough product into the compartment on the opposite side of the divider wall from the cup and sealing the open end of the tubular container body by applying a top closure to the end of the body through which the dough product was inserted and allowing the dough to proof to develop a pressure between about 10 and 60 p.s.i. and the dough pressure exerts a downward force on the divider following proofing to maintain the seal between the divider and the cup.

3,962,477

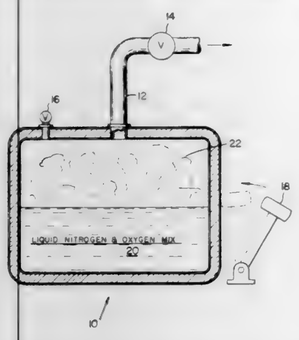
STORING COMESTIBLES IN A CRYOGENIC LIQUID

David A. Dixon, One Arroyo Drive, Kentfield, Calif. 94904

Continuation of Ser. No. 713,163, March 14, 1968, abandoned. This application June 28, 1971, Ser. No. 157,676
Int. Cl.² A23L *3/36*
U.S. Cl. 426—419 **4 Claims**

1. A process for inhibiting degradation of fresh perishable comestibles while stored in a substantially enclosed compartment, comprising the steps of: providing a chamber at least partially filled with a liquid mixture containing not less than 0.1 percent and not more than four percent liquified oxygen by total volume, the remainder being substantially all liquified nitrogen; at least periodically imparting vibration to said chamber by movement of a hammer against said chamber during the transportation thereof to maintain said liquified oxygen in uniform dispersion throughout said liquified nitrogen, said vibration being imparted to said chamber to produce vibraton of said liquid mixture at a frequency of from about 250 cycles per second to greater than 20,000 cycles per sec-

ond; storing comestibles in said compartment; vaporizing a portion of the liquified mixture; and introducing said vapor-



ized portion of said mixture into said compartment during the continued storage of said comestibles therein.

3,962,478
METHOD AND APPARATUS FOR PRODUCING BEER WORT

Gerhard Hohlbein, Buchenhorst 3, D6100 Darmstadt, and Heinrich Huppmann, Schwarzacherstrasse, D871 Kitzingen (Main), both of Germany

Filed June 5, 1974, Ser. No. 476,708
Claims priority, application Germany, June 8, 1973, 2329360
Int. Cl.² C12C *7/00, 7/16, 9/00*
U.S. Cl. 426—495 **6 Claims**

1. A method of separating mash into draff and clarified beer wort in a cylindrical upright vessel having an upper portion and a lower portion conically converging toward an apertured support forming the bottom of the vessel, comprising the steps of positioning a filter including a fibrous cellulose sliver layer on the apertured support; introducing a mash stream into the vessel near the upper portion tangentially against an inner circumferential side of the vessel so that solid components in the mash are forced against the side of the vessel due to centrifugal force; allowing the solids to settle and become deposited as a cake on the filter; filling the vessel to a predetermined level to provide above the cake a beer wort composed of two fractions, one of which is clear upper layer and the other of which is a lower layer containing suspended solids and being located above and proximal to the cake; applying suction to the apertured bottom of the vessel to draw the lower layer containing suspended solids downwardly through the cake to thereby intercept the suspended solids in the cake and accumulate clear wort below the filter until all of the lower layer is removed from the vessel; and withdrawing the upper clear layer in the vessel out of the same upwardly from above the cake.

3,962,479
METHOD FOR TREATING WHOLE KERNELS OF FEED GRAIN

Kenneth M. Coldren, Rte. No. 2, P.O. Box 116, Colfax, Ill. 61728

Division of Ser. No. 181,768, Sept. 20, 1971, Pat. No. 3,861,294. This application Oct. 15, 1974, Ser. No. 514,421
Int. Cl.² A23L *3/00*
U.S. Cl. 426—532 **20 Claims**

1. A process for treating whole kernels of feed grain, comprising the steps of:

introducing whole kernels of feed grain into a treating area with said kernels having plasticized hulls enclosing interior portions;

contacting said whole kernels of feed grain at said treating area with blunt projections on a first movable element to loosen portions of the hulls from the interior portions of the kernels to cause the hulls to blister;

thereafter contacting said kernels that have been blistered by contact with the blunt projections on said first movable element with cutting members on a second movable element to open said blisters to perforate the hulls substantially without shattering the kernels and substantially without removing the hulls; and

discharging treated kernels from said treating area.

3,962,480
BREAD INCLUDING NUTRITIONAL AMOUNTS OF MAGNESIUM

Sidney K. Wolf, 1000 Texas Hill Road, Hillsdale, N.Y. 12529, and Robert M. Cavanaugh, Box 3891, Greenville, Del. 19807

Filed July 19, 1974, Ser. No. 490,117
Int. Cl.² A21D *2/02, 2/24*
U.S. Cl. 426—549 **9 Claims**

1. In a bread made with wheat flour which is reduced in magnesium content relative to the wheat from which the flour is obtained, and to which magnesium has been added in an amount of from about 45 to 120 mg. per six ounces of the bread to replace magnesium removed during processing of the wheat, which magnesium renders the bread noticeably bitter in taste, the improvement wherein the bitter taste imparted by said magnesium is eliminated by including in the bread from about 0.5 to about 6.0 parts by weight of L-lysine monohydrochloride per part by weight of added magnesium.

3,962,481
MEAT-LIKE TEXTURED PROTEIN PRODUCT AND PROCESS

Surinder Kumar, Buffalo Grove, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed May 19, 1975, Ser. No. 578,741
Int. Cl.² A23J *3/00*
U.S. Cl. 426—574 **14 Claims**

1. A process for forming a meat-like textured protein comprising:

A. solubilizing at least one protein in an aqueous alkaline medium to form a slurry of a protein;

B. precipitating the protein from the slurry;

C. recovering the precipitated protein;

D. shaping the recovered protein; and

E. texturizing the shaped protein by heating the shaped protein in a hydrophobic liquid.

3,962,482
CLEAR, ELASTIC, WATER GELS BASED ON CARRAGEENAN

Frederick W. Comer, and Clifford H. G. Strong, both of Guelph, Canada, assignors to Uniroyal, Ltd., Canada

Filed June 2, 1975, Ser. No. 583,025
Claims priority, application Canada, Mar. 24, 1975, 222872
Int. Cl.² A23L *1/04, 1/06*
U.S. Cl. 426—575 **12 Claims**

1. A composition, soluble in water to produce a clear, elastic, water gel, comprising potassium-sensitive carrageenan in the form of an alkali metal or an ammonium salt, a non-toxic, water-soluble potassium salt other than potassium carrageenate in an amount equal to from about 10 to 110% by weight based on the weight of said potassium-sensitive carrageenan, said composition being free of polyvalent metal cations in amount more than about 0.01% by weight based on the combined weights of carrageenan or carrageenans present and said potassium salt.

3,962,483
PREPARATION OF MELT-RESISTANT PROCESS CHEESE

Max Erich Schulz, Ascheberg, Germany, assignor to Gervais-Danone AG, Munich, Germany

Continuation-in-part of Ser. No. 259,864, June 5, 1972, abandoned. This application Mar. 27, 1974, Ser. No. 455,284
Claims priority, application Germany, June 3, 1971, 2127531
Int. Cl.² A23C *19/00, 19/12, 19/14*
U.S. Cl. 426—582 **6 Claims**

1. Method of making a melt-resistant process cheese which comprises mixing cheese with emulsifying salt and water, pasteurizing the resultant mixture by heating to 80° to 110°C to produce process cheese, cooling the process cheese to a temperature within the range of 55° to 70°C, adding to the cooled process cheese a protein selected from the group consisting of egg albumin, lactalbumin, blood albumin and globulin in an amount of 2 to 20%, filling the resulting mixture into containers and heating to 80°–100°C to cause the added protein to coagulate in combination with the casein of the process cheese to solidify the process cheese.

3,962,484
METHOD FOR PREPARING LIQUID FEED SUPPLEMENTS CONTAINING CALCIUM CHLORIDE

Silvano Grosso, and Kenneth E. Nelson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 3, 1974, Ser. No. 475,367
Int. Cl.² A23K *1/22*
U.S. Cl. 426—658 **6 Claims**

1. In a method for preparing a liquid animal feed supplement substantially without occurrence of gelling or sedimentation, which supplement comprises water, soluble carbohydrate sources, at least one soluble elemental source selected from the group consisting of sources containing at least one of at least about 0.2% by weight of phosphorous and at least about 0.5% by weight of sulfur, and at least about 0.5% by weight of calcium as calcium chloride, and which supplement would contain at least one of gelled material and sedimentation upon the said calcium chloride content being incorporated thereinto as an aqueous solution, the improved sequence of steps comprising: A) first mixing said soluble elemental source with said carbohydrate source and water, and B) thereafter incorporating, with agitation, solid calcium chloride into the mixture of Step A to provide said calcium chloride in solution.

3,962,485
METHOD FOR FORMING UNIFORM STRESS-FREE THIN FILMS

Gordon Wood Anderson, Washington, D.C.; John E. Davey, Alexandria, Va., and Howard L. Grant, Bradenton, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 20, 1975, Ser. No. 624,201
Int. Cl.² B05D *5/12*
U.S. Cl. 427—9 **7 Claims**

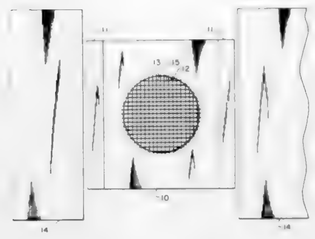
1. A method of forming uniform, stress-free, thin films of metals, semiconductors, and insulators which comprises:

supporting a collodion film on a fine mesh grid of a grid structure;

supporting said grid structure within a material deposition system;

depositing a film of a desired material of a desired thickness onto said collodion film on said grid;

subsequent to deposition of said film of a desired material onto said collodion, removing said collodion film thereby



leaving said film of a desired material supported by said grid.

3,962,486
NOVEL PROCESS FOR APPLYING THERMOSET RESINOUS COATINGS

Gene Gerek, and Coucher, Robert G., both of Salt Lake City, Utah, assignors to EPPCO, Salt Lake City, Utah

Filed Jan. 2, 1974, Ser. No. 430,094
Int. Cl.² B05D *1/08*
U.S. Cl. 427—34 **12 Claims**

1. A method of plasma spraying cured thermoset coatings comprising:

a. continuously introducing thermosettable resinous particles having a maximum thickness of less than about 100 microns into a region of a high velocity, plasma arc generated flame having a temperature substantially greater than the melting point of said resin, said particles being introduced externally to a device generating said plasma flame;

b. maintaining the residence time of said resinous particles in said flame region for a period sufficiently long to impart sufficient thermal and kinetic energy to said particles to polymerize the resins of said particles to a substantially cross-linked or cured state upon impact with a substrate, but wherein said thermal energy alone is insufficient to polymerize said resin to said cured state;

c. propelling said resinous particles towards a substrate with sufficient velocity to cause impact with sufficient force to cause said particles to flow upon said substrate to coat same with a continuous, thin coating; and

d. cooling said coated substrate at a rate sufficiently slow to assist the curing of said coating.

3,962,487
METHOD OF MAKING CERAMIC SEMICONDUCTOR ELEMENTS WITH OHMIC CONTACT SURFACES

Peter G. Fuller, Lakeville, Mass., and Hans A. Stoeckler, Woonsocket, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 3, 1975, Ser. No. 546,491
Int. Cl.² B05D *5/12*
U.S. Cl. 427—82 **6 Claims**

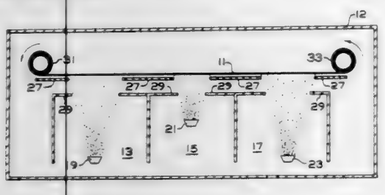
1. A method for forming a ceramic semiconductor element having ohmic contact surfaces thereon comprising the steps of combining bentonite clay with a bonding composition consisting essentially of a dispersion of a solid particulate material in an aqueous phosphate-chromate-metal ion solution to form a thixotropic coating material, screen-printing the coating material on selected limited surfaces of a ceramic semiconductor body, and heating said coated ceramic semiconductor body for heat curing said coating material to form ohmic contact layers in adherent relation to said ceramic semiconductor body.

3,962,488

ELECTRICALLY CONDUCTIVE COATING

Frank H. Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 9, 1974, Ser. No. 495,974
Int. Cl.² B05D *5/12*
U.S. Cl. 427—109 **8 Claims**



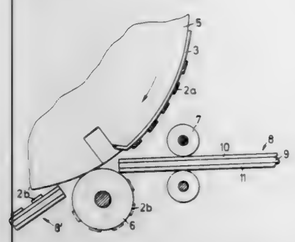
1. A method of making a coated article comprising:
a. vacuum depositing in a partial pressure of oxygen titanium oxide having the form TiO_x where x is from 1.3 to 1.7 on a substrate to form a transparent film having a thickness of from 200 to 500 Angstroms;
b. vacuum depositing silver or gold on the previously deposited TiO_x film at a rate sufficiently fast to form a transparent continuous metal film having a thickness of from 60 to 250 Angstroms and having a sheet resistance of less than 10 ohms per square, and
c. vacuum depositing in a partial pressure of oxygen titanium oxide having the form TiO_x where x is from 1.3 to 1.7 on the previously deposited metal film to form a transparent film having a thickness of from 200 to 500 Angstroms.

3,962,489

COPY SHEET AND METHOD OF PRINTING THE SAME

Gerhard Ritzerfeld, Schorlemer Allee 14, 1000 Berlin 33, Germany

Filed Apr. 26, 1974, Ser. No. 464,705
Claims priority, application Germany, May 17, 1973, 2325439; July 5, 1973, 2334689
Int. Cl.² B41M *5/04, 5/22*
U.S. Cl. 427—144 **5 Claims**



1. A copy sheet adapted for receiving images by transfer from a master sheet upon which master sheet mirror relief images formed from a composition consisting essentially of a leucauramine dye and a binder therefor have been impressed, the image-receiving surface of the said copy sheet being coated with a layer of a composition consisting essentially of a binder and a substance selected from the group consisting of magnesium silicates, aluminum silicates, and magnesium aluminum silicates that reacts to form a colored image when brought into contact with a leucauramine dye and an alcohol-containing liquid, and the opposite surface of the said copy sheet being coated with a layer of a composition consisting or carboxymethylcellulose or particles of zinc oxide or barium sulfate and a binder therefor consisting of starch or a copolymer of vinyl chloride and vinyl acetate, which opposite surface layer is essentially free of substances that react to form a colored image when brought into contact with a leucauramine dye an an alcohol-containing liquid.

3,962,490

PREPARATION OF NICKEL AND CHROMIUM SUBSTRATES FOR CERAMIC COATING

Rodney L. Ward, Streetsboro, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Jan. 24, 1974, Ser. No. 436,180
Int. Cl.² C23C *3/04;* **C23D** *5/00*
U.S. Cl. 427—193 **17 Claims**

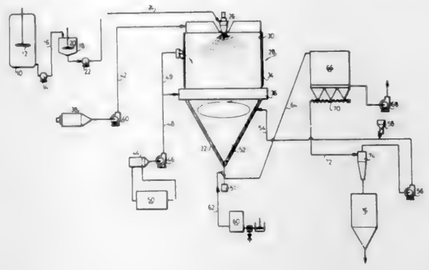
1. In the process of depositing a frit composition on a substrate and then heating to form a ceramic coat from the frit composition, the improvement prior to depositing said frit composition comprising using as the substrate a metallic workpiece that is not sufficiently electrochemically active to be coated by electrophoresis and that contains at least 10% by weight of a metal selected from nickel, chromium, and mixtures thereof, covering at least a portion of said substrate with a film of an oxide or a thermally decomposable compound of a transition metal selected from Group IIIB through Group IIB of the Periodic Table of The Elements, said compound being thermally decomposable at a temperature below the alloying temperature of the workpiece and transition metal, and then heating the workpiece to an alloying temperature within the range of about 1000°F to about 1800°F to alloy the transitional metal therewith.

3,962,491

PROCESS FOR PRODUCING RESIN-COATED SAND PARTICLES FOR USE IN SHELL MOLES

Tadashi Sato, Toyoda; Yasunobu Yamamoto, Kariya; Iwao Mizutani, Chiryu; Shigemitsu Yoshimi, and Tsutomu Teramoto, both of Toyoda, all of Japan, assignors to Aisin Chemical Company, Limited, Kariya, Japan

Division of Ser. No. 296,651, Oct. 11, 1972, abandoned. This application Feb. 8, 1974, Ser. No. 440,676
Int. Cl.² B05D *7/00, 3/02*
U.S. Cl. 427—195 **3 Claims**



1. A process of producing resin-coated sand particles for use in shell molds comprising the steps of:
a. forming a liquid containing phenol-formaldehyde resin in an initial state of the condensation thereof;
b. spraying said liquid prior to complete condensation into a hot zone and maintaining in said hot zone an atmosphere at a temperature higher than the melting point of the initial-condensation product of the resin to form droplets of the liquid;
c. causing the droplets sprayed into said hot zone gravitationally to descend into a cold zone below said hot zone;
d. maintaining in said cold zone an atmosphere at a temperature lower than the melting point at said initial condensation product to solidify said droplets into generally spherical particles;
e. collecting the generally spherical particles solidified in said cold zone; and
f. mixing said resin particles with sand particles heated to a temperature higher than the melting point of said resin so as to coat the surface of each sand particle with said resin, said liquid being formed by condensing a phenol component selected from the group which consists of metal-alkyl phenols, metal-alkoxy phenols, meta-halogenated phenols, phenol and resorcinol with an aldehyde component selected from the group which consists of formaldehyde, formalin, peraformaldehyde and furfural in the presence of acidic or alkaline catalyst.

3,962,492

METHOD OF PROTECTING REFRACTORY LINING IN CONTAINERS FOR MOLTEN METAL

Eric Phelps, Birmingham, England, assignor to Foseco International Limited, Birmingham, England

Filed July 30, 1974, Ser. No. 493,151
Claims priority, application United Kingdom, Aug. 16, 1973, 38752/73
Int. Cl.² C21B *7/06;* **B29C** *1/04*
U.S. Cl. 427—204 **8 Claims**

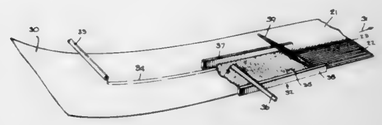
1. A method of protecting a refractory lining in a container for molten metal, said method comprising the steps of
applying to substantially the entire refractory lining a first layer consisting essentially of particulate carbonaceous material and being at least substantially free of binding agent, and
applying a second layer over said first layer so that a duplex layer protects said lining, said second layer consisting essentially of bonded particulate refractory material.

3,962,493

METHOD OF MAKING AN IRONER ROLL COVER

Sidney M. Faress, and Dallas C. Thomas, both of Hogansville, Ga., assignors to Uniroyal Inc., New York, N.Y.

Division of Ser. No. 360,817, May 16, 1973, Pat. No. 3,811,164, which is a continuation-in-part of Ser. No. 220,947, Jan. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 293,966, Oct. 2, 1972, abandoned. This application Nov. 2, 1973, Ser. No. 412,387
Int. Cl.² B05D *5/00, 1/32*
U.S. Cl. 427—259 **12 Claims**



1. The method of making an ironer roll cover from a single sheet of fabric made of a heatresistant fiber, the sheet having a length equal to the length of the ironer roll to be covered and a width sufficient to enable the fabric to be wound a plurality of times around the ironer roll, which comprises the steps of: impregnating a less than full width longitudinal portion of said sheet of fabric with a liquid coating composition comprising a thermosetting resinous material, the unimpregnated longitudinal portion being sufficiently wide to enable it to extend for at least one full turn around an ironer roll, and said impregnated longitudinal portion being sufficiently wide to enable it to extend for at least one full turn around said unimpregnated longitudinal portion, drying said sheet of fabric to remove volatiles therefrom, and subjecting said sheet of fabric to a curing operation for said resinous material to convert the same to thermoset condition and render said impregnated longitudinal portion capable of constituting a work-contacting surface of the ironer roll cover.

3,962,494

SENSITIZED SUBSTRATES FOR CHEMICAL METALLIZATION

Francis J. Nuzzi, Lynbrook, N.Y., assignor to Photocircuits Division of Kollmorgan Corporation, Glen Cove, N.Y.

Continuation of Ser. No. 167,506, July 29, 1971, abandoned. This application May 8, 1974, Ser. No. 468,077
Int. Cl.² C23C *3/02*
U.S. Cl. 427—304 **37 Claims**

1. A process for the production of an article catalytic to the electroless deposition of metal comprising the steps of:
a. treating a substrate with a liquid comprising the admixture of a reducible salt of a non-noble metal capable of catalyzing electroless metal deposition and at least one secondary reducing agent selected from the group consisting of formaldehyde and its precursors or derivatives; and
b. contacting the treated substrate of step (a) with a primary reducing agent comprising at least one member of the group consisting of borohydrides and borones, thereby rendering said substrate catalytic to the deposition of metal from an electroless metal deposition bath.

3,962,495

METHOD OF MAKING DUPLICATES OF OPTICAL OR SOUND RECORDINGS

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 304,595, Nov. 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 862,019, Sept. 29, 1969, abandoned. This application Jan. 2, 1975, Ser. No. 537,846
Int. Cl.² C23C *3/02*
U.S. Cl. 427—306 **9 Claims**

1. A method of replicating information recorded as a surface relief pattern on a surface of a synthetic resinous positive photoresist material of the type normally attacked by alkaline media without detectable degradation of the photoresist material, comprising:
cleaning said surface,
sensitizing and activating said surface to form nuclei of an activating metal thereon, and
electrolessly depositing nickel or cobalt on said activated surface by immersing said surface at substantially room temperature in a single aqueous solution containing a nickel or cobalt salt, sodium pyrophosphate, ammonium hydroxide and a reducing agent which is either an amine borane or a hypophosphite salt, said solution having a pH between about 9 and 11.

3,962,496

COMPOSITION AND METHOD FOR NEUTRALIZING AND SENSITIZING RESINOUS SURFACES AND IMPROVED SENSITIZED RESINOUS SURFACES FOR ADHERENT METALLIZATION

Edward J. Leech, Center Island, N.Y., assignor to Photocircuits Division of Kollmorgen Corporation, Glen Cove, N.Y.

Filed Nov. 7, 1974, Ser. No. 521,866
Int. Cl.² C23C *3/02*
U.S. Cl. 427—306 **20 Claims**

1. In a process for producing a securely bonded layer of metal on a resinous surface by electroless metal deposition, the improvement which comprises the steps:
a. treating the substrate to be metallized with an oxidizing agent;
b. contacting the treated substrate with a primary neutralizer so as to effect bulk removal of said oxidizing agent from said substrate; and
c. contacting the substrate with a composition comprising hydrazine and a sequestering agent capable of forming soluble complexes with at least one member of the group consisting of chromium ions and manganese ions, all prior to electroless metal deposition on said substrate.

3,962,497

METHOD FOR TREATING POLYMERIC SUBSTRATES PRIOR TO PLATING

Warren Russell Doty, Royal Oak, and Timothy James Kinney, Berkley, both of Mich., assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Mar. 11, 1975, Ser. No. 557,423
Int. Cl.² B05D *3/04*, *3/10*
U.S. Cl. 427—306 3 Claims

1. A method of treating a polymeric plastic substrate prior to plating a surface thereof, which comprises etching a surface of the substrate with an aqueous acid solution containing therein hexavalent chromium ions, rinsing and neutralizing, activating the etched substrate surface by contact with an acidic tin-palladium complex medium, rinsing the activated surface and accelerating said activated and rinsed surface of the polymeric substrate, the improvement which comprises contacting the polymeric substrate, in either or both the neutralizing and accelerating step with a hydroxylamine salt in an acidic solution containing therein hydrochloric acid, sulfuric acid or partially neutralized acidic salts whereby the hexavalent chromium ions from the etching step are reduced to the trivalent state.

3,962,498

METHOD FOR IMPROVING ADHESION BETWEEN ADHESIVES AND POLYESTER OR OTHER THERMOPLASTIC SUBSTRATES

William J. Owston, Edinboro, Pa., assignor to Lord Corporation, Erie, Pa.

Division of Ser. No. 300,818, Oct. 25, 1972, Pat. No. 3,838,093. This application Mar. 21, 1974, Ser. No. 453,493
Int. Cl.² C09J *7/02*
U.S. Cl. 427—322 11 Claims

1. The method for improving the adhesion between an adhesive of the class of polymerizable liquid ethylenically unsaturated compounds containing a single terminal $>C{=}CH_2$ group and a substrate selected from the group consisting of solid polyester and other solid thermoplastic compositions comprising treating said substrate with a solution consisting essentially of from about 0.85 to about 40 parts by weight of a first partial urethane adduct and a second partial urethane adduct in 60 to 100 parts of a low boiling, inert organic solvent, said first partial urethane adduct being the reaction product of from about 0.1 to about 0.7 molar equivalent weight of a hydroxy functional monomer and 1 molar equivalent weight of polyisocyanate of tri or higher functionality, said second partial urethane adduct being the reaction product of from about 0.05 to about 0.35 molar equivalent of a hydroxylated butadiene polymer or copolymer and 1 molar equivalent weight of a polyisocyanate of tri or higher functionality, said first and second partial urethane adducts being combined in said solution in a proportion ranging from 1:0.2 to 0.2:1; applying an adhesive of the class of polymerizable liquid ethylenically unsaturated compounds containing a single terminal $>C{=}CH_2$ group to said treated substrate and curing said adhesive.

3,962,499

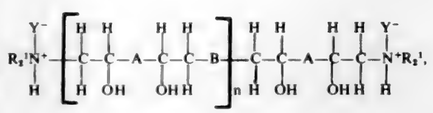
PROCESS FOR COATING METAL SUBSTRATES

Donald E. Brody, Verona, and Gabriel Karoly, Springfield, both of N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

Filed Apr. 17, 1974, Ser. No. 461,491
Int. Cl.² B05D *3/02*; B32B *15/08*
U.S. Cl. 427—386 8 Claims

1. A method for preparing adherent, solventresistant coatings on metal substrates, said method consisting essentially of

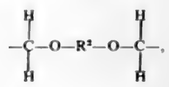
1. coating a surface of the substrate with an aqueous solution containing between 20 and 40% by weight of an epoxide-amine reaction product exhibiting the general formula



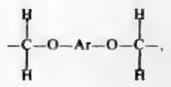
and

2. heating the coated substrate to between about 200° and 300°C. for a period of time sufficient to obtain a solvent-resistant coating,

wherein R^1 represents an alkyl radical containing between 1 and 20 carbon atoms, a hydroxyalkyl radical containing 2 or 3 carbon atoms, a cycloalkyl, aryl, alkaryl or an aralkyl radical; A is selected from the group consisting of alkylene radicals containing between 1 and 20 carbon atoms, cycloalkylene, arylene, alkarylene and aralkylene radicals, residues of diglycidyl ethers of dihydric alcohols,



wherein R^2 is an alkylene radical containing between 2 and 20 carbon atoms and residues of diglycidyl ethers of dihydric phenols,



wherein Ar represents an arylene or an alkarylene radical; B represents a divalent radical selected from the group consisting of $-O\left[R^3O\right]_m$,



and



wherein R^3 represents an alkylene radical containing between 2 and 20 carbon atoms, R^4 is selected from the same group as R^1; *m* represents an integer between 1 and 20; *n* represents an integer between 9 and 20, inclusive, and Y represents an anionic radical obtained by removal of a proton from a mineral acid, a sulfonic acid or the carboxyl radical of a carboxylic acid.

3,962,500

PROCESS FOR TREATING FIBERS

Charles Smith, Barry, Wales, assignor to Dow Corning Limited, Barry, Wales

Filed Dec. 12, 1974, Ser. No. 531,943
Claims priority, application United Kingdom, Dec. 18, 1973, 58604/73; Oct. 22, 1974, 45727/74
Int. Cl.² C08L *83/08*
U.S. Cl. 427—387 15 Claims

1. A process for the treatment of synthetic fibres which comprises applying thereto a composition consisting essentially of the product obtained by mixing (A) 100 parts by weight of a polydiorganosiloxane having terminal silicon-bonded hydroxyl radicals and a molecular weight of at least 750, at least 50 per cent of the organic substituents in the polydiorganosiloxane being methyl radicals, any other organic substituents present being monovalent hydrocarbon radicals having from 2 to 30 carbon atoms, (B) from 0.5 to 15 parts by weight of an organosilicon compound selected from the group consisting of organosilanes having the general formula $RSiR'_aX_{3-a}$ wherein R represents a monovalent radical composed of carbon, hydrogen, nitrogen and, optionally, oxygen which radical contains at least two amine groups and is attached to silicon through a silicon to carbon linkage, R′ represents an alkyl radical or an aryl radical, each X represents an alkoxy or alkoxyalkoxy radical having from 1 to 14 inclusive carbon atoms, and *a* is 0 or 1, and partial hydrolysates of said organosilanes and (C) from 1 to 20 parts by weight of an organosilicon compound selected from the group consisting of silanes having the general formula R''_bSiZ_{4-b}, wherein R″ is a hydrogen atom, a monovalent hydrocarbon radical or monovalent halogenated hydrocarbon radical, Z is an alkoxy or alkoxyalkoxy radical having from 1 to 4 inclusive carbon atoms and *b* is 0 or 1 and partial hydrolysates of said silanes, and thereafter curing the applied composition whereby the resiliency of the synthetic fibres is improved.

3,962,501

METHOD FOR COATING OF CORROSION-RESISTANT MOLTEN ALLOY

Misao Ohbu, and Seijun Higuchi, both of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 424,704, Dec. 14, 1973, abandoned.
This application Apr. 29, 1975, Ser. No. 572,843
Claims priority, application Japan, Dec. 15, 1972, 47-125987
Int. Cl.² B44D *1/52*; C22C *8/00*
U.S. Cl. 427—433 5 Claims

1. A method of coating a steel substrate with a corrosion resistant alloy, comprising immersing said steel substrate in an alloy bath, said bath being at a temperature in the range from 20° to 150°C above the melting point of said alloy and containing 75 to 5% by weight zinc, 25 to 95% by weight tin and 0.005 to 25% by weight of aluminum, based on the total bath composition.

3,962,502

PROCESS FOR CURING HEAT-CURABLE COATING

Robert Lee Rackley, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 12, 1974, Ser. No. 532,240
Int. Cl.² B44D *1/46*
U.S. Cl. 427—444 5 Claims

1. A process for curing a heat-curable coating on at least one surface of a substrate which comprises contacting the coated surface of said substrate with a polyolefin film having an embossed patterned surface characterized by a pattern height of at least 4 microns and a width at least coextensive with said substrate; superposing said substrate and said polyolefin film in alternating layers whereby said polyolefin film provides an interleaf between adjacent layers of said substrate; and heating said superposed substrate and polyolefin film to a temperature between about room temperature and below the softening temperature of said polyolefin film thereby to cure said coating on said substrate and allow air or vapors from said coating to flow through pathways provided between said embossed polyolefin film and said substrate.

3,962,503

DECORATIVE AND PROTECTIVE DEVICE FOR USE WITH A FLORAL CONTAINER

Mildred A. Crawford, 1206 Mathews St., Bowie, Tex. 76230

Filed Aug. 6, 1973, Ser. No. 385,957
Int. Cl.² B32B *3/04*; A01G *9/02*; A47G *7/08*; B65D *65/00*
U.S. Cl. 428—40 2 Claims

1. A device for use with a floral container to retain moisture within said cntainer, said device comprising:

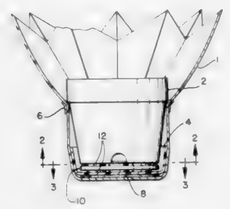
a water resistant sheet of flat material large enough to cover a substantial portion of said container when hand formed about said container:

a layer of cementitious material deposited on said water resistant sheet:

a tray positioned on said cementitious layer such that said tray is secured to said water resistant sheet:

a pad of absorbent material having circumferentially spaced, pressure sensitive, permanently tacky, water-proof, adhesive spots deposited on each side of said pad of absorbent material to adhesively secure said pad to said tray and to the lower face of the container; .

removable Holland cloth positioned over said adhesive spots deposited on each side of said pad to provide a temporary covering therefor.

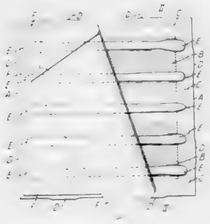


3,962,504

SELF-ATTACHING TILE OF A FIRED CERAMIC TILE BODY

Christopher John Sherwin, Newcastle, England, assignor to H & R Johnson-Richards Tiles Limited, Tunstall, England

Continuation-in-part of Ser. No. 496,549, Aug. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 307,402, Nov. 17, 1972, abandoned. This application Oct. 23, 1975, Ser. No. 624,872
Int. Cl.² B32B *3/00*; C09J *7/02*; E04B *5/00*; E04F *13/08*
U.S. Cl. 428—40 2 Claims



1. A self-attaching tile comprising a fired ceramic tile body having a rear surface which is provided with a series of fine parallel ribs but is otherwise substantially planar, a plurality of bodies of adhesive distributed over the rear surface of the tile body and projecting therefrom to a thickness of 0.75 to 1mm., the adhesive being a pressure-sensitive adhesive and being of a nature which retains said thickness of projection both prior to and after mounting of the tile without substantial flowing or spreading, each body of adhesive extending over a plurality of said ribs which are embedded therein, having a flat outer surface and being spaced from adjacent bodies of adhesive and from the edges of the tile body, and a peel-off film extending over said bodies of adhesive.

3,962,505
PLASTIC CONTACT LENS WITH MAGNETIC EMBEDDED METAL RING

Theodore P. Avery, 511 W. 6th St., Oil City, Pa. 16301

Division of Ser. No. 516,140, Oct. 18, 1974. This application Apr. 23, 1975, Ser. No. 570,942
Int. Cl.² B29D *11/00, 3/00;* **G02C** *7/04, 7/06*
U.S. Cl. 428—65 **4 Claims**



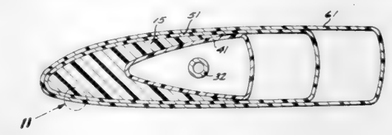
1. A set of components for enabling the fabrication of a contact lens comprising a lens blank block having an upper surface and a lower surface, a cylindrical well defined by a cylindrical well surface extending inwardly from said upper surface, an inner annular end wall surface adjacent the inner extent of said cylindrical well surface, a cylindrical pillar member extending axially within said cylindrical well surface outwardly from the inner annular end wall surface and having an upper termination below said upper surface of said lens blank block and a diameter less than the diameter of said cylindrical well surface, an annular ring member having an internal opening with a diameter slightly greater than the diameter of said cylindrical pillar member and an outer diameter slightly less than the diameter of said cylindrical wall surface, said annular ring member having a bottom face dimensioned and shaped to abuttingly engage the inner annular end wall surface and an upper face having a curvature approximately the same as the human eye, a cylindrical closure plug formed of the same material as said block having a cylindrical outer surface of a diameter slightly less than the diameter of said well, said cylindrical plug having an inner end surface of a configuration to coextensively engage said upper face of said annular ring member and an axial opening extending from its lower end and of cylindrical configuration having a diameter slightly greater than the diameter of said cylindrical pillar and of an axial length greater than the axial length of said pillar whereby said annular ring can be positioned over said pillar with a coating of adhesive applied to the ring and the pillar, the cylindrical closure plug and surrounding surfaces of the lens block so that heat and pressure treatment can provide a unitary structure which can be finished by a grinding and polishing operation to form a lens of desired optical character with said annular ring axially embedded therein and encircling the portion of the lens through which a user would look when wearing a finished lens providing by said grinding and polishing operation.

3,962,506
MULTI-CHAMBERED CELLULAR STRUCTURE AND METHOD FOR MANUFACTURE

Edmond O. Dunaboo, Long Beach, Calif., assignor to Fiber Science, Inc., Gardena, Calif.

Filed Apr. 29, 1974, Ser. No. 465,323
Int. Cl.² B32B *3/26*
U.S. Cl. 428—158 **15 Claims**

1. A fiber-reinforced plastic article of manufacture having a multi-chambered, cellular structure with an outer shell having a fluid foil shape with a leading edge having a smooth radius of curvature and a trailing edge over a substantial portion of its length and containing therein an inner shell which extends between at least two opposite interior walls of said outer shell thereby defining at least two chambers within said article, the walls of said shells being composed of a plastic having embedded therein at least one layer of a continuous roving of a fibrous reinforcement material, said at least one layer comprising two adjacent thicknesses of said roving with

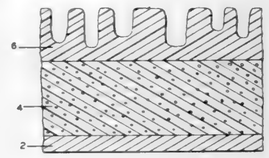


the rovings being in parallel alignment in each thickness and in diagonal orientation between thicknesses and with the rovings in the outer shell being continuous and unbroken over the leading edge of said foil shape.

3,962,507
VINYL STRUCTURE HAVING AN EMBOSSED TOP LAYER AND A FOAM BASE

Willard E. McCreary, Lancaster, and Elvin M. Weidman, Willow Street, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 312,813, Dec. 7, 1972, Pat. No. 3,887,409. This application Dec. 16, 1974, Ser. No. 532,840
Int. Cl.² B32B *3/26*
U.S. Cl. 428—159 **2 Claims**

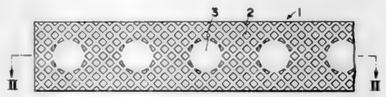


1. A vinyl structure which is composed of a foam back structure and an embossable top layer, both said foam back structure and said embossable top layer being formed of substantially the same composition of material, said embossable top layer being embossed and those regions of the foam backing which are directly below the deeply embossed portions of the embossed top layer being undamaged and without any foam cell structure collapse, said undamaged condition of the foam backing resulting from the fact that the top layer is formed from a plastisol resin which has a lower fusing temperature than the plastisol resin forming the foam backing, said top layer plastisol resin having a fusing temperature which is about 300°F. and said foam backing having a fusing temperature which is about 100°F. above the fusing temperature of the top layer plastisol resin.

3,962,508
THERMOPLASTIC RESIN TAPE FOR PACKAGING

Tokumitsu Nakanose, 1-17, Ikoma-cho, Kita, Nagoya, Aichi, Japan

Filed Mar. 26, 1975, Ser. No. 562,230
Int. Cl.² B65D *63/10*
U.S. Cl. 428—169 **4 Claims**



1. A thermoplastic resin tape for packaging, said tape having a non-uniform thickness consisting of concave-convex portions except for areas of uniform thickness disposed in spaced relation along the length of said tape at substantially regular intervals on the central part thereof.

3,962,509
WATERPROOF PAPERBOARD AND METHOD FOR PRODUCING SAME

Charles E. Thompson, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 475,016, May 31, 1974, abandoned, which is a continuation-in-part of Ser. No. 448,092, March 4, 1974, abandoned. This application Dec. 24, 1974, Ser. No. 534,241
Int. Cl.² B32B *3/28, 3/00*
U.S. Cl. 428—182 **17 Claims**

1. A waterproof paperboard having a water pickup of less than 20% and a high wet strength, said waterproof paperboard being produced by a process consisting essentially of:

a. impregnating paperboard with a mixture consisting essentially of from about 10 to about 50 weight percent tung oil and from about 90 to about 50 weight percent paraffin wax; and,

b. heating said impregnated paperboard at a temperature from about 80° to about 163°C for a time to effect curing of said waterproof paperboard.

3,962,510
WALL COVERINGS AND METHOD OF MAKING THE SAME

B. Conley Worcester, East Brunswick, and Wayne W. Grobner, East Windsor, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 292,599, Sept. 25, 1972, abandoned. This application Oct. 16, 1974, Ser. No. 515,261
Int. Cl.² D03D *3/00*
U.S. Cl. 428—245 **11 Claims**

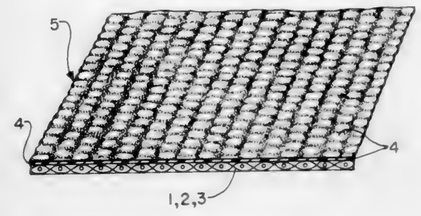


1. A wall covering having a long dimension and a short dimension and comprising a laminate of a synthetic plastic facing material bonded to a woven fabric backing material, said facing material having a thickness between 0.002 inch and 0.008 inch, said backing material woven with warp yarns and filling yarns, each filling yarn comprising from about 10% to 40% by weight of thermoplastic fibers capable of being autogenously bonded to said facing material at or below the softening temperature of said facing material, the remaining fibers in each of said filling yarns and said warp yarns not being capable of being autogenously bonded to said facing material at or below the softening temperature of said facing material, said warp yarns lying in the direction of the long dimension and said filling yarns lying in the direction of the short dimension of said wall covering, whereby said wall covering is rendered more stiff and less flexible in the direction of its short dimension as compared to its long dimension.

3,962,511
TEXTILE COMPOSITE STRUCTURE AND METHOD OF PREPARATION

Anthony J. Foti, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 21, 1974, Ser. No. 525,786
Int. Cl.² B29B *17/00;* **B29H** *7/22;* **F16G** *1/00*
U.S. Cl. 428—246 **8 Claims**



1. A method of preparing a textile fabric composite structure which comprises the sequential steps of (A) applying a volatile organic solvent solution coat of a polyurethane reaction mixture to a textile woven fabric to substantially encapsulate the fibers of said fabric, (B) drying and at least partially curing said reaction mixture to provide a thin flexible polyurethane coat on said fibers having an average thickness in the range of about 1 to about 5 mils, (C) adhering an overlay of a flexible thermoplastic film, having a thickness in the range of about 10 to about 100 mils, to one surface of said encapsulated fabric and (D) pressing said thermoplastic into the interstices of said encapsulated fabric with a pressure in the range of about 10 to about 50 pounds per square inch, and applying heat from the encapsulated fabric side of the composite opposite its overlay surface to cure the encapsulating polyurethane and adhere said flexible overlay.

3,962,512
COMPOSITE LAMINAR STRUCTURE AND RELATIVE MANUFACTURING PROCESS

Marco Fontana, and Bruno Borca, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 352,219, April 18, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 536,952
Claims priority, application Italy, May 22, 1972, 24655/72
Int. Cl.² B32B *17/02, 27/40*
U.S. Cl. 428—290 **6 Claims**

1. A microporous article having a fibrous surface and physical characteristics which adapt it to replace natural leather in industrial applications comprising a non-woven polyamide, polyester or regenerated cellulose fabric saturated with a crosslinked microcellular polyurethane elastomer in which the cells are predominately closed non-intercommunicating cells, said article having a density of from 0.85 to 1.4 g/cm³, a hardness of from 85 to 95 Shore A, a tensile strength of from 1.5 to 2.5 kg/mm² and a water vapor permeability of about 30 to 100 g/m²/24 hours as determined by DIN 53333.

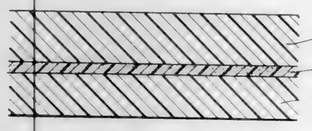
3,962,513
LASER TRANSFER MEDIUM FOR IMAGING PRINTING PLATE

Arnold C. Eames, Westbrook, Maine, assignor to Scott Paper Company, Philadelphia, Pa.

Filed Mar. 28, 1974, Ser. No. 455,594
Int. Cl.² G03G *5/00;* **G01D** *15/34;* **B41M** *5/26*
U.S. Cl. 428—323 **1 Claim**

1. In a transfer film for use in making an imaged printing plate by directing laser energy through a transparent substrate

having thereon a coating comprising particles which absorb said laser energy and a self-oxidizing binder, the improvement



which comprises a layer of ink-receptive resin overlying said coating.

3,962,514

EXUDED TRANSITION METAL SPINEL FILMS ON GLASS-CERAMIC ARTICLES

Hermann L. Rittler, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,148
Int. Cl.² B32B *9/04, 17/06*
U.S. Cl. 428—334 **1 Claim**

1. A glass-ceramic article having

a. a composition consisting essentially in weight percent on the oxide basis as calculated from the batch, of about 20–35% Al_2O_3, 5–35% B_2O_3, 28–60% MnO_2, 0–15% BaO, and 0–35% La_2O_3; and

b. an exuded transition metal-containing surface film ranging in thickness from about 0.1–4 microns composed predominantly of crystalline species selected from the group consisting of Mn_3O_4 and $Mn_2Al_2O_4$.

3,962,515

STRENGTHENED COMPOSITE GLASS ARTICLE AND METHOD OF PRODUCTION

William H. Dumbaugh, Jr, and Peter C. Schultz, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 492,441, July 29, 1974, abandoned. This application Aug. 21, 1975, Ser. No. 606,581
Int. Cl.² B32B *17/06, 17/12;* **C03C** *3/04*
U.S. Cl. 428—392 **7 Claims**

1. A composite glass article composed of a glass core portion encompassed within a compressively stressed exterior glass portion, the glass core portion consisting essentially of, in cation percent on an oxide basis, 65–92% SiO_2, 1–25% $AlO_{1.5}$, and 2–25% TiO_2, and the exterior glass portion being composed essentially of a vitreous silica type glass selected from the group consisting of fused quartz, fused silica, and 96% silica glass.

3,962,516

PRODUCTION OF POLYESTER TIRE YARN

Robert Moore Marshall, Chester, and Kimon Constantine Dardoufas, Richmond, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 412,368, Nov. 1, 1973, abandoned. This application June 4, 1975, Ser. No. 583,826
Int. Cl.² B32B *27/04*
U.S. Cl. 428—394 **4 Claims**

1. Synthetic filamentary yarn comprised of polyethylene terephthalate filaments which are first treated with from about 0.3 to about 0.6 weight percent based on the weight of the yarn of a liquid composition consisting essentially of about 10 to about 20 weight percent of said composition of each hexadecyl stearate and refined coconut oil, about 3.0 to about 6.0 weight percent of said composition of ethoxylated tallow amine, about 10 to about 20 weight percent of said composition of ethoxylated lauryl alcohol, about 8.0 to about 12.0 weight percent of said composition of sodium salt of alkylaryl sulfonate, about 1.0 to about 3.0 weight percent of dinonyl-sodium-sulfosuccinate, about 1.0 to about 3.0 weight percent of said composition of 4,4′-thio-bis(3-methyl-6-tert-butylphenol), about 35 to 50 weight percent of said composition of white mineral oil having a boiling point of between 510° and 620°F. wherein at least about 0.15 to about 0.30 weight percent is retained on said yarn, and then said yarn is treated with 0.5 to 1.5 weight percent based on the weight of the yarn of a polyalkylene glycol finish composition consisting essentially of a polyoxyethylated-polyoxypropylated monoether which is a condensation product of 40 to 60 percent ethylene oxide and 40 to 60 percent propylene oxide on a mol basis, terminated with an alcohol containing 3 to 5 carbon atoms, said polyoxyethylated-polyoxypropylated-monoether having a molecular weight of from 300 to 600 and a viscosity of from 75 to 300 S.U.S. at 100°F.

3,962,517

ELECTRIC CABLES

Stefan Verne, London, England, assignor to BICC Limited, London, England

Filed June 12, 1974, Ser. No. 478,623
Int. Cl.² H01B *9/02, 13/14*
U.S. Cl. 428—383 **21 Claims**



1. A cable core comprising a conductor having an extruded dielectric of an insulating material selected from the group of insulating materials consisting of rubber and plastics materials, a dielectric screen comprising a layer of conductive or semi-conductive material selected from the group consisting of conductive and semi-conductive rubber and plastics materials and, interposed between and bonded to the extruded dielectric and the dielectric screen throughout substantially the whole length of the core, an intermediate layer having at least in a circumferentially continuous zone of the layer a cohesive strength substantially less than the cohesive strengths of the extruded dielectric and the dielectric screen and substantially less than the strengths of the bonds between the intermediate layer and the extruded dielectric and between the intermediate layer and the dielectric screen such that when stripping the dielectric screen from the core over a part of its length for jointing or terinating purposes separation takes place within the intermediate layer to leave a portion of the intermediate layer on the extruded dielectric.

3,962,518

COMPOSITE OF POLYESTER BONDED TO RUBBER, METHOD FOR MAKING THE SAME AND COMPOSITION

Richard M. Wise, Uniontown, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 310,525, Nov. 29, 1972, Pat. No. 3,861,980. This application Dec. 20, 1974, Ser. No. 534,951
Int. Cl.² B32B *27/34;* **D02G** *3/00*
U.S. Cl. 428—395 **10 Claims**

1. A bonded composite material comprising a polyester element embedded in a vulcanized rubber, said element containing a total of from about 3 to 7% by weight (dry) based on the weight of said element of an adhesive composition consisting essentially of a deposit of a heat set mixture of a major amount by weight of a rubbery vinyl pyridine copolymer and a minor amount by weight of a heat reactable 2,6-bis(2,4-dihydroxy phenylmethyl)-4-chlorophenol composition, said adhesive composition forming a bond between said element and said rubber, and said chlorophenol composition having been made by the process of first reacting about 2 mols of formaldehyde with 1 mol of parachlorophenol to provide 2,6-dimethylol-4-chlorophenol which then is reacted with about 2 mols of resorcinol.

3,962,519

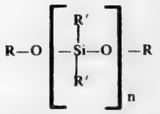
RUBBER ARTICLE OR INSTRUMENT AND METHOD OF PRODUCING THE SAME

Werner Rüsch, Rommelshausen; Heinrich Beer, Geradstetten; Veronika Seeger, Stuttgart-Bad Cannstatt, and Manfred Waibel, Schornbach, all of Germany, assignors to Messrs. Willy Rusch, K.G., Germany

Continuation of Ser. No. 373,760, June 26, 1973, abandoned, which is a continuation of Ser. No. 158,067, June 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 818,247, April 22, 1969, abandoned. This application Apr. 22, 1974, Ser. No. 463,170
Claims priority, application Germany, Apr. 26, 1968, 1766265
Int. Cl.² A61M *25/00;* **A61B** *1/00, 17/00;* **B32B** *25/20*
U.S. Cl. 428—409 **10 Claims**



7. A medical or sanitary rubber instrument consisting of individual layers of a rubber material firmly adhering to one another, the rubber material at least in the layers disposed under the surface of said instrument containing, based on the amount of rubber within said rubber material, about 0.1 to 10% by weight of an organic silicon compound which can at least in part migrate within the rubber of said rubber material whereby a sufficient quantity of the silicon compound is present at the surface of the instrument to maintain a surface which is hydrophobic and repels water and material which might adhere thereto, said organic silicon compound having the general formula.



wherein R represents hydrogen, methyl, ethyl, propyl, butyl or $Si(CH_2)_3$, and R′ represents hydrogen, methyl, ethyl or phenyl, and *n* represents a number which yields a molecular weight for said silicon compounds of more than 90,000; said organic silicon compound exhibiting a viscosity of at least 60,000 centistokes.

3,962,520

ADHESIVE COMPOSITION FOR FLEXIBLE PRINTED CIRCUIT AND METHOD FOR USING THE SAME

Tsutomu Watanabe; Shigenori Yamaoka, and Koichi Tanaka, all of Yokohama, Japan, assignors to Sumitomo Bakelite Company, Limited, Tokyo, Japan

Division of Ser. No. 423,708, Dec. 11, 1973, Pat. No. 3,896,076. This application Dec. 9, 1974, Ser. No. 530,986
Claims priority, application Japan, June 20, 1973, 48-68802
Int. Cl.² E05B *3/48, 3/96;* **C09J** *3/00*
U.S. Cl. 428—414 **20 Claims**

1. A process for producing a metal-clad laminate for a flexible printed circuit which comprises

heat-pressing together a plastic film and a metal foil having an adhesive composition therebetween to cure the adhesive and bond the plastic film and metal foil,

the adhesive composition comprising a mixture of 100 parts by weight of a polyester resin, 1 to 20 parts by weight of an isocyanate compound and 2 to 50 parts by weight of a B-stage epoxy resin obtained by reacting a compound containing at least two epoxy groups in the molecule with a compound having at least two active hydrogen atoms.

3,962,521

POLY(ETHER-URETHANE) COATING CURED WITH AN AMINOPLAST ON A SOLID SUBSTRATE

Wen-Hsuan Chang, Gibsonia, and Hartman, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 249,198, May 1, 1972, abandoned, which is a division of Ser. No. 839,648, July 7, 1969, abandoned. This application May 14, 1975, Ser. No. 577,382
Int. Cl.² C08L *68/20*
U.S. Cl. 428—423 **12 Claims**

1. A coated article comprising a highly extensible cured coating composition on a solid substrate wherein said coating composition comprises:

A. from 95 percent by weight to about 50 percent by weight, based on the combined weight of (A) and (B), of an ungelled, hydroxyl-containing urethane reaction product, having a hydroxyl value between about 10 and about 200, produced by the method comprising:

1. reacting an organic polyisocyanate with an active hydrogen-containing material selected from the group consisting of polyester polyols, low molecular weight monomeric diols, and diamines, thereby forming an isocyanato-terminated adduct, and

2. reacting said isocyanato-terminated adduct with polyether polyol, having an hydroxyl equivalent of at least about 100 and a glass transition temperature below about 25°C.,

whereby said active hydrogen-containing material provides hard segments in said urethane reaction product and whereby said polyether polyol provides soft segments in said urethane reaction product; and whereby said urethane reaction product has a major proportion of said soft segments and a minor proportion of said hard segments; and

B. about 5 percent to about 50 percent by weight, based on the combined weight of (A) and (B), of an aminoplast resin.

3,962,522

POLY(ESTERURETHANE) COATING CURED WITH AN AMINOPLAST ON A SOLID SUBSTRATE

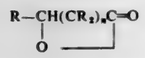
Wen-Hsuan Chang, Gibsonia, and Marvis E. Hartman, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 347,022, April 2, 1973, abandoned, Continuation of Ser. No. 828,337, May 27, 1969, abandoned. This application Apr. 21, 1975, Ser. No. 569,895
Int. Cl.² C08L *61/20, 61/26*
U.S. Cl. 428—423 **8 Claims**

1. A coated article comprising a solid substrate having thereon a cured coating comprising the reaction product of:

A. an ungelled hydroxyl-containing urethane reaction product of an organic polyisocyanate and a polyhydric material, wherein a major portion of said polyhydric material is a saturated polyester polyol; said polyester polyol being selected from the class consisting of:

1. condensates of
   i. an alcohol component having an average functionality of at least about 1.9, and
   ii. a saturated acid component consisting essentially of 1 or more monomeric carboxylic acids or anhydrides having 2 to 14 carbon atoms per molecule, said component having an average functionality of at least about 1.9; and
2. a lactone-polyester formed from reacting lactones or mixtures of lactones in which the lactone has the following structural formula:



wherein n is at least 4, at least n + 2R's are hydrogen, and the remaining R's are substituents selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkoxy and single ring aromatic hydrocarbon radicals with a polyol or a hydroxy acid;

said polyhydric material containing a total of not more than one gram-mole of compounds having a functionality of 3 or more per 500 grams of polyhydric material; said urethane reaction product having a hydroxyl value of at least 10; and

b. an amine-aldehyde condensate.

3,962,523

VITREOUS COATING COMPOSITION

Ian George Robinson, Noble Park, Australia, assignor to Blythe Colours (Australia) Proprietary Limited, East Brighton, Australia

Filed Apr. 13, 1972, Ser. No. 243,846

Claims priority, application Australia, July 9, 1970, 1774/70

Int. Cl.² B32B *17/06*; **C03C** *7/04*, *5/00*

U.S. Cl. 428—426 **4 Claims**

1. A composition adapted to be sintered on a substrate to form a vitreous enamel coating capable of enhancing oxidation of organic soils deposited thereon in the range of 300° F. to 550°F., consisting essentially of a comminuted mixture of previously smelted and quenched frit-producing material, and a separate oxidation inducing agent in the form of a silicate bearing ore selected from the group consisting of Rhodonite ($MnSiO_3$), Tephroite $MnSiO_4$), Alleghanyite ($5MnO_2 \cdot 2SiO_2$), Spessartite [$Mn_3Al_2(SiO_4)_3$] and Sobralite [$(MnFeCaMg)SiO_3$] in which the proportion of oxidation inducing agent to frit in the comminuted mixture is in the range of 90:10 to 60:40 by weight.

3,962,524

GLASS FIBER-REINFORCED POLYAMIDE RESIN MOLDING MATERIAL

Akira Miyamoto; Mitsuyasu Nagano; Fumitaka Sato, and Kiyoshi Morishige, all of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Sept. 30, 1974, Ser. No. 510,860

Claims priority, application Japan, Oct. 2, 1973, 48-110716

Int. Cl.² B32B *27/34*

U.S. Cl. 428—435 **4 Claims**

1. A glass fiber-reinforced polyamide resin molding material, consisting essentially of a polyamide resin obtained by the condensation reaction of xylylene diamine with at least one member selected from straight-chain aliphatic α,ω-dicarboxylic acids having 6 to 12 carbon atoms and blended therewith, glass fiber in an amount of 5 to 50% by weight based on the total weight of the polyamide resin and the glass fiber.

3,962,525

HOT TOPPING

Dillwyn Morgan Davies, Birmingham, England, assignor to Foseco Trading Limited, Birmingham, England

Filed Oct. 8, 1974, Ser. No. 513,173

Claims priority, application United Kingdom, Oct. 17, 1973, 48420/73

Int. Cl.² B22D *7/10*

U.S. Cl. 428—446 **3 Claims**

1. A hot top lining slab having on its inner molten metal-contacting face a coating of a mould flux, said coating consisting essentially of at least one material selected from the class consisting of fly ash, fly ash floaters, alkali metal silicates, alkaline earth metal silicates, alkali metal carbonates, alkaline earth metal carbonates, alkali metal halides and alkaline earth metal halides.

3,962,526

TISSUELESS PRE-PRINTED SPIRIT DUPLICATING MASTERS

Irving Panken, Dayton, Ohio, assignor to The Mazer Corporation, Dayton, Ohio

Filed July 23, 1974, Ser. No. 490,979

Int. Cl.² B41M *5/04*, *5/18*

U.S. Cl. 428—488 **11 Claims**

1. A tissueless pre-printed spirit duplicating master having reverse printed on the backside thereof a non-bleed, hot melt, spirit duplicating ink comprising 5–25% cetyl alcohol, 31–48% wax and 35–45% crystal violet.

7. A tissueless booklet of pre-printed spirit duplicating masters comprising a plurality of pre-printed spirit duplicating masters each having reverse printed on at least one side thereof, a non-bleed hot melt, spirit duplicating ink comprising 5–25% cetyl alcohol, 31–48% wax and 35–45% crystal violet, said plurality of pre-printed masters being bound along one edge to form said booklet.

3,962,527

NOVEL POLYMERS AND PHOTOGRAPHIC ELEMENTS CONTAINING SAME

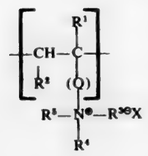
James R. King; Hyman L. Cohen, and Lewis M. Minsk, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 339,689, March 9, 1973, which is a division of Ser. No. 197,157, Nov. 9, 1971, Pat. No. 3,788,855, which is a division of Ser. No. 100,491, Dec. 21, 1970, Pat. No. 3,709,690, which is a continuation-in-part of Ser. No. 709,812, March 1, 1968, abandoned. This application Jan. 18, 1974, Ser. No. 434,748

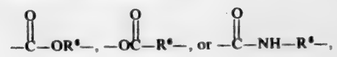
Int. Cl.² B32B *27/08*, *27/10*

U.S. Cl. 428—500 **3 Claims**

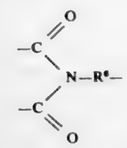
1. An element comprising a support having a layer thereon which comprises a mixture of 1) a hydrophilic colloid and 2) a polymer comprising units represented by the following formula in copolymerized relationship with units of at least one other ethylenically unsaturated monomer:



wherein R^1 and R^2 are hydrogen atoms or lower alkyl groups and R^2 can additionally be a group containing at least one aromatic nucleus; Q can be a divalent alkylene radical, a divalent arylene radical, a divalent aralkylene radical, a divalent arylenealkylene radical,



wherein R^6 is an alkylene radical, or R^2 can be taken together with Q to form a

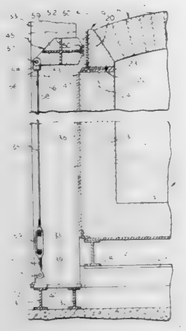


group; R^3, R^4 and R^5 can be lower alkyl or aryl, or R^3 and R^4 and the nitrogen atom to which they are attached can together with Q represent the atoms and bonds necessary to form a quaternized nitrogen-containing heterocyclic ring, and X is a monovalent negative salt forming radical or atom in ionic relationship with the positive salt forming radical; wherein said polymer is substantially free of carboxy groups and wherein the positive salt forming radical of said polymer comprises at least two aryl groups for each quaternary nitrogen atom in said polymer.

3,962,528
FURNACE SKEWBACK SUPPORT WITH BUCKSTAY PIVOT

Peter J. Wynne, Pittsburgh, Pa., assignor to Lectromelt Corporation, Pittsburgh, Pa.

Filed Feb. 7, 1975, Ser. No. 547,774
Int. Cl.² F27D 1/14
U.S. Cl. 13—35 **20 Claims**



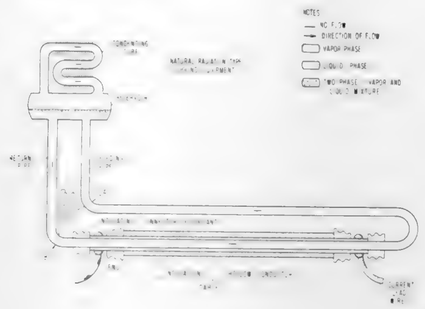
1. A refractory lined furnace comprising:
a sidewall and a hearth,
skewback refractory means disposed along the top of said sidewall,
an arched roof constructed and arranged for bearing against said skewback refractory means to obtain support for said roof,
support means adjacent said skewback refractory means and said sidewall, and
restraining means engaging said skewback refractory means and including bearing means for pivotally connecting said restraining means to said support means and for transferring outwardly directed forces from said skewback refractory means to said support means, said bearing means permitting relative pivotal movement between said restraining means and said support means without inducing forces in said skewback refractory means.

3,962,529
EVAPORATIVE COOLING POWER CABLE LINE

Hiroshi Kubo, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 187,256, Oct. 7, 1971, abandoned. This application Mar. 8, 1974, Ser. No. 449,570
Claims priority, application Japan, Oct. 7, 1970, 45-99805[U]; Nov. 26, 1970, 45-104270; May 1, 1971, 46-29008
Int. Cl.² H01B 7/34
U.S. Cl. 174—15 C **16 Claims**

1. An evaporative cooling power cable assembly comprising:
1. an electrically conductive member adapted to carry large amounts of electricity and
2. a closed loop cooling means including
a. a cooling duct in thermal contact with said electrically conductive member along at least a portion of the length of said electrically conductive member, said cooling duct having an inlet and an outlet;
b. a condenser;
c. a first tube joining said condenser to the inlet of said cooling duct;
d. a second tube, shorter than said first tube, joining said condenser to the outlet of said cooling duct; and
e. a refrigerant cooling fluid having insulating and liquescent properties contained within said cooling duct and said first and second tubes, the surface of said refrigerant cooling fluid being disposed higher than the inlet of said cooling duct,

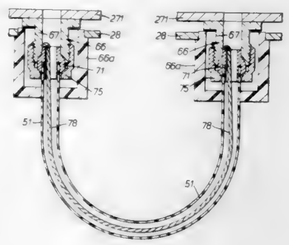


whereby said refrigerant cooling fluid will absorb heat and change state from a liquid at the inlet of said cooling duct to a gas at the outlet of said cooling duct as it travels the length of said cooling duct in a unidirectional flow, thereby creating a natural circulation cycle without forced circulation caused by a pump or the like.

3,962,530
HIGH-VOLTAGE LIQUID-COOLED APPARATUS AND SUPPLY LEADS THEREFOR

David William Jones, Liverpool, England, assignor to Triplex Safety Glass Company Limited, London, England

Filed Oct. 1, 1974, Ser. No. 510,965
Claims priority, application United Kingdom, Oct. 11, 1973, 47582/73
Int. Cl.² H01B 7/24
U.S. Cl. 174—15 C **8 Claims**



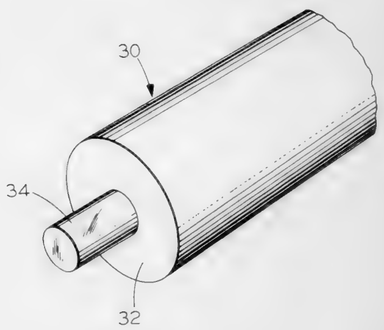
1. A high-voltage, liquid-cooled, vacuum apparatus, said apparatus comprising a wall defining a vacuum chamber, an exhaust connection in said wall to permit evacuation of said vacuum chamber, at least one high-voltage, liquid-cooled component located in said vacuum chamber, a source of high voltage located outside said vacuum chamber, a supply of cooling liquid also located outside said vacuum chamber, an electric conductor which is connected at one end to the said component and at its other end to the said source of high voltage and which passes through said wall of the vacuum chamber, and a cooling liquid supply pipe of electrically insulating material connected at one end to the said component and at its other end to said supply of cooling liquid, and which passes through said wall of the vacuum chamber, said electrical conductor being accommodated within said cooling liquid

supply pipe throughout a length thereof extending from the connection of said conductor and pipe to the said component and through said wall of the vacuum chamber, whereby said conductor is completely separated from the vacuum in said chamber.

3,962,531
ELECTRICAL CONDUCTOR INSULATED WITH FILLED POLYMERIC COMPOUNDS

Ray Clarence Lever, Fairfield, and Edward Vincent Wilkus, Trumbull, both of Conn., assignors to General Electric Company, New York, N.Y.

Division of Ser. No. 273,156, July 19, 1972. This application July 29, 1974, Ser. No. 492,961
Int. Cl.² H01B 7/02
U.S. Cl. 174—110 PM **8 Claims**

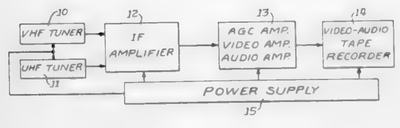


1. A metallic electrical conductor having an electrically insulating covering molded thereon formed of a compounded product comprising thermoplastic polymeric material and filler ingredients, and consisting essentially of particulate cohesive bodies of the compounded ingredients including the thermoplastic material and filler proportional in amounts ranging from at least 5 to about 200 parts by weight of the filler per 100 parts by weight of the polymeric material combined in a polyphase physical system of discontinuous phases interspersed with one another substantially comprising discrete blended phases of polymeric material and filler including stratified arrangements of a layer of filler particles adhered to a film-like layer of polymeric material, and interstitial phases of substantially polymeric material, said polymeric material and filler being combined to the extent that the blended phases contain a majority of greater than 50% of the filler having been assimilated with a majority of greater than 50% of the polymeric material while in a molten state, and said blended phases comprising fundamental units predominantly structured essentially of a stratified layer of the filler adhesively embraced by a film-like mass of polymeric material.

3,962,532
POWER SUPPLY FOR AN AUDIO-VIDEO RECORDING SYSTEM

Richard C. Aubert; George R. Dean, both of Chicago; James B. Ricks, Evanston, and John W. Wade, Mount Prospect, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 18, 1975, Ser. No. 569,346
Int. Cl.² H04N 7/00
U.S. Cl. 178—5.6 **9 Claims**



1. In a recording system of the type which records composite video and audio television signals onto a recording medium which includes a tuning and intermediate frequency section for receiving and converting transmitted television signals into composite video and audio signals and a recording device for recording the composite video and audio signals and having an input adapted for connection to an AC power source, the improvement of a power supply for activating the tuning and intermediate frequency section and the recording device to enable recording of the composite video and audio signals at preselected times comprising:
a timer having an input adapted for connection to an AC line voltage source, a switch coupled to said input and selectively operable for closing at a preselected time for providing said AC line voltage, and a receptacle coupled to said switch and adapted for receiving the recording device input for supplying the recording device with activating AC line voltage when said switch is closed;
rectifying means also coupled to said switch for converting said AC line voltage to a pulsating DC voltage; and
filtering means coupled to said rectifying means and to the tuning and intermediate frequency sections for providing the tuning and intermediate frequency sections with activating filtered DC voltage when said switch is closed; whereby,
when said switch is closed at said preselected time, the tuning and intermediate frequency sections are activated by said filtered DC voltage derived by said rectifying means and said filtering means from said AC line voltage provided by said timer switch to therby produce the composite video and audio signals, and the recording device is activated for recording the composite video and audio signals by said AC line voltage provided by said timer switch at said receptacle.

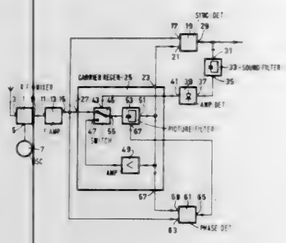
3,962,533
TELEVISION RECEIVER

Karl Frans Nickl von Nikelsberg, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1974, Ser. No. 466,712
Claims priority, application Netherlands, May 8, 1973, 6381
Int. Cl.² H04N 5/44
U.S. Cl. 178—5.8 R **2 Claims**

1. A television receiver including a synchronous detector coupled to an output of an I.F. section and to an output of an I.F. picture carrier regenerator, the I.F. picture carrier regenerator comprising a change-over switch for changing over from an active to a passive regeneration state of the picture carrier regenerator and conversely, a picture carrier filter coupled to said change-over switch, and an amplifier coupled between said picture carrier filter and said change-over switch, an operation signal input of said change-over switch being coupled to an output of a tuning detection circuit, said tuning detection circuit providing a signal rendering the pic-

ture carrier regenerator passive in case of a large deviation of the intermediate frequency of a received signal relative to the

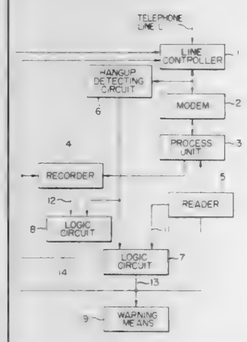


desired frequency and provides a signal rendering the picture carrier regenerator active in case of a small deviation.

3,962,534
FACSIMILE SET

Mutsuo Ogawa, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 2, 1974, Ser. No. 511,365
Claims priority, application Japan, Oct. 4, 1973, 48-111648
Int. Cl.² H04N 1/32
U.S. Cl. 178—6 **8 Claims**



1. A first facsimile set of the type interconnecting with a second calling or called facsimile set through a telephone channel, said first set comprising:

a. a facsimile reader for scanning an image to be transmitted to the second set to convert said image into electrical signals;

b. a facsimile recorder for reproducing upon a recording sheet an image transmitted from the second facsimile set;

c. first means for detecting the hangup of the second calling or called facsimile which has been interconnected with the first set through the telephone channel;

d. second means for detecting whether or not an image to be transmitted to the second set is being scanned by the reader of the first set;

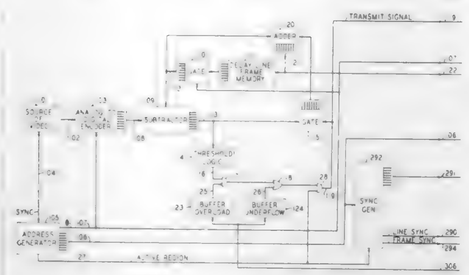
e. third means for detecting whether or not an image transmitted from the second set is being reproduced upon the recording sheet by the recorder of the first set; and

f. fourth means for resetting said facsimile reader when the output of said first means representing the hangup of the second set and the output of said second means representing that the image to be transmitted to the second set is being scanned are simultaneously derived in a transmission mode of the first set and for resetting said facsimile recorder when the output of said first means representing the hangup of the second set and the output of said third means representing that image transmitted from the second set is being reproduced are simultaneously derived in a reception mode of the first set.

3,962,535
CONDITIONAL REPLENISHMENT VIDEO ENCODER WITH SAMPLE GROUPING AND MORE EFFICIENT LINE SYNCHRONIZATION

Barin Geoffry Haskell, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 25, 1975, Ser. No. 571,531
Int. Cl.² H04N 7/12
U.S. Cl. 178—6 **16 Claims**

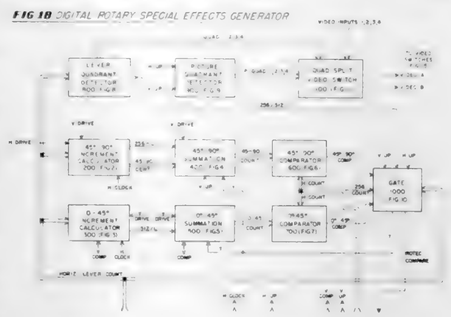


1. In a conditional replenishment video encoder wherein only selected samples are transmitted to a receiving location and each selected sample is located by a corresponding address word which represents by its value the position of the selected sample in a video line, apparatus for maintaining line synchronization comprising means for counting the number of sequential video lines wherein no samples have been selected for transmisison, means for detecting a first sample in a video line to be selected for transmission, means for coupling the address word corresponding to said selected sample to a transmission medium, and means responsive to said detecting means for coupling a bit sequence to said transmission medium in bit positions following said address word, the number of bits in said sequence being determined by a value provided at an output of said counter means.

3,962,536
DIGITAL ROTARY SPECIAL EFFECTS GENERATOR

Albert E. Busch, Bloomington, Ind., assignor to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed Mar. 23, 1973, Ser. No. 344,094
Int. Cl. H04n 5/22
U.S. Cl. 178—6.8 **37 Claims**



1. A digital rotational special effects generator having at least two video inputs and at least one video output, said generator comprising:

means for generating a first number proportional to the x-coordinate of each image point in each horizontal scan;

means for generating a second number proportional to the product of the y-coordinate of each image point multiplied by a third number that represents the desired amount of effect rotation;

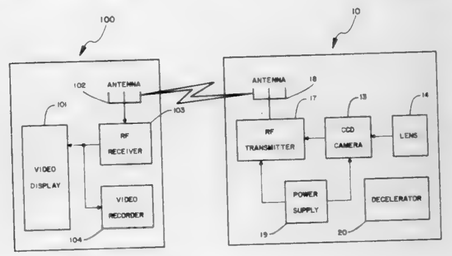
means for comparing said first and second numbers and for generating a signal whose state indicates which of said numbers is the larger number; and

video switching means controlled by said comparing means signal for disconnecting said video output from one of said video inputs and for connecting said video output to another of said video inputs each time said comparison means signal changes its state.

3,962,537
GUN LAUNCHED RECONNAISSANCE SYSTEM

Thomas M. Kearns, Dahlgren, and Kenneth D. Ferris, Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 27, 1975, Ser. No. 553,784
Int. Cl.² H04M 7/02
U.S. Cl. 178—6.8 **5 Claims**



1. A gun launched reconnaissance system for observing and continuously transmitting optical data from a target area to a remote location comprising:

a projectile housing;

a forward looking solid state charge coupled device (CCD) TV camera disposed within the nose of said housing;

a transmitter disposed within said housing and electrically connected to said CCD TV camera for continuously transmitting in real time signals therefrom to a remote location;

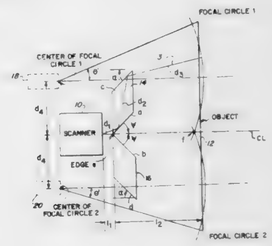
a power source electrically connected to said transmitter and to said CCD TV camera; and

a means for decelerating said projectile over a target area to extend the period of viewing thereof.

3,962,538
FLYING SPOT SCANNING SYSTEM WITH VIRTUAL SCANNERS

Antonio B. Nafarrate, Milpitas, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 21, 1974, Ser. No. 525,695
Int. Cl.² H04N 1/04
U.S. Cl. 178—7.6 **14 Claims**



1. An optical scanning system for scanning a surface comprising:

means for providing a beam of high intensity light,

means for imaging said beam to a spot in a focal plane,

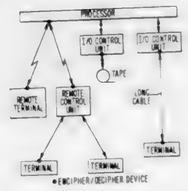
scanning means for directing said beam throughout a predetermined scan angle, and

optical means between said scanning means and said surface for redirecting said beam, said optical means being comprised of at least two prisms oriented symmetrically about the center-line which bisects said predetermined scan angle, the reflective surfaces of said prisms providing at least two contiguous focal circles that define a focal plane, said redirected bean scanning said contiguous focal circles as said beam is directed through said predetermined scan angle, the centers of each focal circle being located remote from said scanning means, the scan angle of said beam as it scans each focal circle being less than said predetermined scan angle.

3,962,539
PRODUCT BLOCK CIPHER SYSTEM FOR DATA SECURITY

William Friedrich Ehrsam, Hurley; Carl H. W. Meyer, Kingston; Robert Lowell Powers, West Hurley; John Lynn Smith, and Walter Leonard Tuchman, both of Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1975, Ser. No. 552,684
Int. Cl.² H04K 1/00; H04L 9/02
U.S. Cl. 178—22 **10 Claims**



1. A device for performing a product block cipher operation on a block of data bits under control of a set of cipher key bits comprising:

first store means storing said block of data bits,

first linear transformation means permuting said set of cipher key bits,

means connected to said first store means duplicating predetermined ones of the data bits of said block of data bits to produce ann expanded block of data bits equal in number to the number of said permuted cipher key bits,

means connected to said expansion means and said first linear transformation means carrying out a substitution transformation function in accordance with said expanded block of data bits and said permuted cipher key bits to produce a substitution set of bits equal in number to the number of bits in said block of data, and

second linear transformation means connected to said substitution transformation means permuting said substitution set of bits whereby the combined transformation results in a product block cipher of said block of data bits.

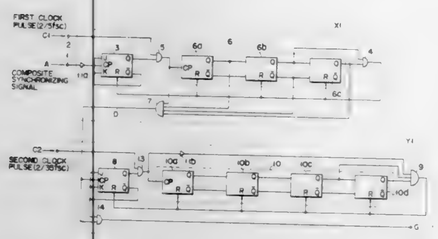
3,962,540
DEVICE FOR EXTRACTING A PREDETERMINED SYNCHRONIZING SIGNAL FROM A COMPOSITE SYNCHRONIZING SIGNAL

Naoyuki Kokado, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed June 12, 1974, Ser. No. 478,513
Claims priority, application Japan, June 25, 1973, 48-70741; June 25, 1973, 48-70742
Int. Cl.² H04L 7/00
U.S. Cl. 178—69.5 TV **12 Claims**

1. A synchronizing signal extracting device for extracting, from a composite synchronizing signal including a plurality of synchronizing signals whose respective constituent synchronizing pulses are different in cycle and width from each other, a synchronizing signal whose constituent synchronizing pulses have a desired cycle, said synchronizing signal extracting device comprising means including a circuit for generating, in response to each of pulses included in said composite synchro-

nizing signal, a reference pulse of predetermined width the leading edge of which is in synchronism with the leading edge of the pulse of said composite synchronizing signal, said means being operative to generate a first pulse in synchronism with the reference pulse, and a synchronizing pulse extracting means including a gate circuit to which the first pulse is supplied as an input and being operative to open the gate circuit during a time period corresponding to a time width including a point of time delayed a predetermined period from the rise of the reference pulse and to extract, as a synchronizing pulse constituting a synchronizing signal to be extracted, the first pulse passed through the gate circuit during said time period.



3,962,541

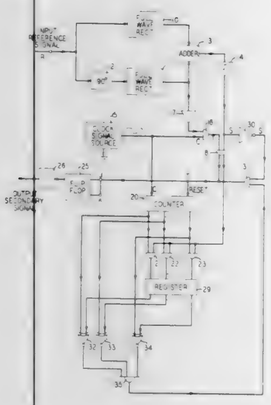
FREQUENCY SAMPLE-AND-HOLD CIRCUIT

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 13, 1975, Ser. No. 549,760

Int. Cl.² H04L *7/02*

U.S. Cl. 178—69.5 R **12 Claims**



5. A frequency sample-and-hold circuit for generating a secondary signal whose fundamental frequency is a function of the fundamental frequency of an incoming reference signal of limited time duration comprising:

a clock signal source;

means for counting and storing, during the duration of said reference signal, the number of cycles of said clock signal source occurring between zero crossings of said reference signal;

and means for producing, following the termination of said reference signal; a secondary signal whose zero crossing intervals are substantially equal to a rational multiple of the stored count multiplied by a period of time defined by said clock source.

3,962,542

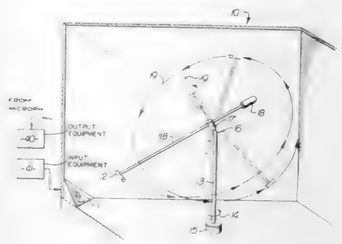
CHORALIZER APPARATUS AND METHOD

Paul S. Veneklasen, 1711 16th St., Santa Monica, Calif. 90404

Continuation of Ser. No. 44,348, June 8, 1970. This application Aug. 14, 1972, Ser. No. 280,192

Int. Cl.² H04R *3/00*

U.S. Cl. 179—1 J **18 Claims**



1. The process of synthesizing a choral effect by using a sound chamber and an elongated arm to be rotated about an axis extending at an angle relative to the arm, that includes

a. operating a sound source element to produce sound traveling in the chamber,

b. supporting a sound detector element at an outboard end portion of the arm relative to said axis, and operating said sound detector element to detect sound traveling in the chamber, and

c. effecting continuous sweeping movement of said arm and sound detector element thereon and about said axis to carry the sound detector through a sweeping path relative to said source element and relative to the chamber, while maintaining the source element in fixed position relative to the chamber so as to vary detected sound frequency and quality.

4. The process of synthesizing a choral effect by using a sound chamber in which a sound reflecting panel element is located, that includes

a. producing sound from a source element to be reflected from said panel element,

b. operating a sound detector element to detect sound traveling in the chamber,

c. effecting continuous movement of the panel element relative to said source element and relative to the chamber while keeping the source element in fixed position relative to the chamber so as to vary detected sound frequency and quality, and also effecting continuous movement of the sound detector element in the chamber.

3,962,543

METHOD AND ARRANGEMENT FOR CONTROLLING ACOUSTICAL OUTPUT OF EARPHONES IN RESPONSE TO ROTATION OF LISTENER'S HEAD

Jens Blauert, Aachen-Laurensberg; Georg Boerger, Berlin, and Peter Laws, Aachen, all of Germany, assignors to Eugen Beyer Elektrotechnische Fabrik, Heilbronn, Germany

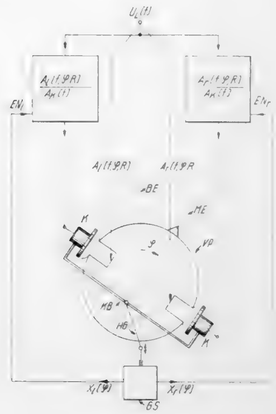
Filed May 15, 1974, Ser. No. 470,015

Claims priority, application Germany, June 22, 1973, 23316196

Int. Cl.² H04R *5/00*

U.S. Cl. 179—1 G **21 Claims**

1. A sound reproduction method, comprising, in combination, the steps of applying an audio signal to the audio-signal input of a headphone set to produce in the ears of the wearer of the headphone set corresponding audible sound waves; continually detecting changes in the orientation of the head of the wearer of the headphone set; and in dependence upon the detected changes in the orientation of the head of the wearer modifying said audio signal to effect changes in the audible sound waves produced in the ears of the wearer simulating the changes which would occur if the wearer of the headphone set were actually listening to an external stationary sound source, whereby to avoid the psychological impression of an orchestra, or the like, moving as a whole when the wearer of the headphone set moves his head.



3,962,544

SOUND REPRODUCING DEVICES

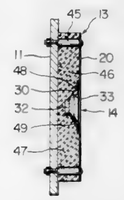
Fumio Kobayashi, Hino, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1974, Ser. No. 536,563

Claims priority, application Japan, Dec. 28, 1973, 48-2741; Dec. 28, 1973, 48-2742

Int. Cl.² H04R *1/28*

U.S. Cl. 179—1 E **12 Claims**



1. A sound reproducing device comprising:

a speaker enclosure with a buffer board disposed in front thereof for mounting a speaker device thereon,

a first speaker device enclosed in said enclosure and mounted on said buffer board to reproduce relatively low range audio frequencies,

a second speaker device mounted on said buffer board to reproduce relatively high range audio frequencies,

a diffuser assembly mounted on a front surface of said buffer board and provided with at least one sound radiation passage therein substantially in parallel with a front surface of said buffer board,

said diffuser assembly being provided with said second speaker device mounted thereon in front thereof, and

said second speaker device comprising a speaker cone, a front surface of which is disposed in front of said speaker enclosure to radiate the sounds reproduced there forward, and a rear surface of which communicates with said sound radiation passage in said diffuser assembly to radiate the sounds reproduced there substantially in parallel with the front surface of the buffer board.

3,962,545

UTILITY METER READING SYSTEM USING TELEPHONE LINE

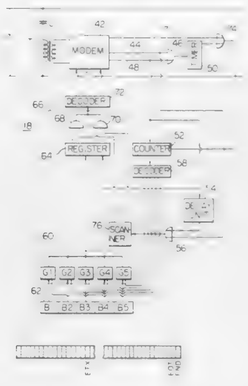
Takeshi Abe, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed July 25, 1974, Ser. No. 491,882

Claims priority, application Japan, Oct. 20, 1973, 48-118342; Dec. 30, 1973, 49-1017

Int. Cl.² H04M *11/00*

U.S. Cl. 179—2 AM **12 Claims**



1. A system for reading utility meters, comprising:

remote terminal means connected to the meters and operative to store the meter readings therein;

central terminal means communicating with the remote terminal means by a telephone line;

the central terminal means being operative to transmit an interrogation signal to the remote terminal means;

the remote terminal means being further operative to transmit the meter readings to the central terminal means in response to the interrogation signal;

the remote terminal means comprising a plurality of remote terminals, each remote terminal being connected to a different plurality of meters, the frequency of the interrogation signal being different for each remote terminal; and

each remote terminal being in a normal status prior to receipt of the interrogation signal and being operative to reset itself to the normal status at a predetermined time after receipt of the interrogation signal at it own frequency and in response to the interrogation signal at a frequency for another remote terminal.

3,962,546

MALFUNCTION DETECTION AND CHANGEOVER APPARATUS FOR DATA COMMUNICATIONS SYSTEM

Takemi Hashimoto, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1974, Ser. No. 518,825

Claims priority, application Japan, Dec. 13, 1973, 48-140740

Int. Cl.² H04M *11/04*

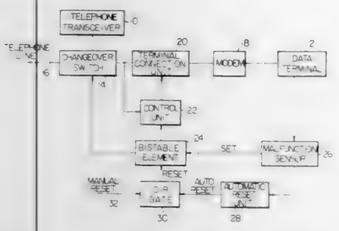
U.S. Cl. 179—2 DP **3 Claims**

1. In a method of data transmission in which a data terminal is normally connected to a telephone line, the improvement comprising the steps of:

a. sensing for the presence of a malfunction of the data terminal;

b. disconnecting the data terminal from the telephone line and connecting a telephone set to the telephone line when a malfunction is sensed; and

c. automatically disconnecting the telephone set from the telephone line and re-connecting the data terminal to the



telephone line at a predetermined time interval after performing step (b).

3,962,547

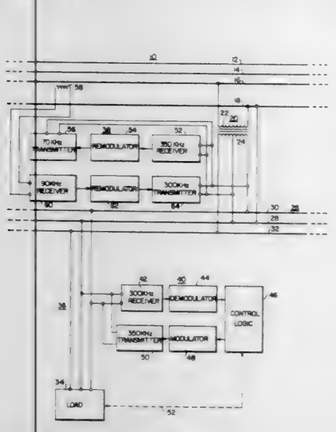
REPEATER COUPLER FOR POWER LINE COMMUNICATION SYSTEMS

Tamas I. Pattantyus-Abraham, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 27, 1975, Ser. No. 580,861

Int. Cl.² H04H *1/08*

U.S. Cl. 179—2.5 R **8 Claims**



8. Apparatus for connecting separate transmitters of a power line communication system to the same secondary distribution line, comprising:

a first transmitter having an output terminal which is maintained at a virtual ground potential when the first transmitter is not transmitting;

a second transmitter having a lower output power than said first transmitter;

an interconnecting transformer having first and second windings with the number of turns on the first winding being greater than the number of turns on the second winding, said first winding being connected to output terminals of the second transmitter;

a coupling transformer having primary and secondary windings, with said secondary winding being coupled to the secondary distribution line and with said primary winding connected between ground potential and one end of the second winding of the interconnecting transformer, the other end of said second winding being connected to the output terminal of the first transmitter; and

means for limiting the voltage which may develop across the second winding of the interconnecting transformer.

3,962,548

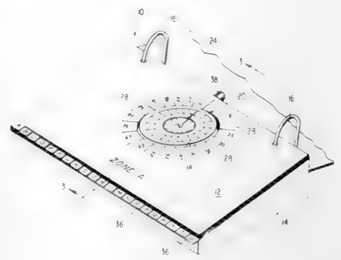
DIRECT READOUT EXHIBITOR FOR DETERMINING LONG DISTANCE TELEPHONE CHARGES

Wayne B. Stone, Jr., 7307 Nevis Road, Bethesda, Md. 20034

Continuation of Ser. No. 413,571, Nov. 7, 1973, abandoned. This application May 8, 1974, Ser. No. 468,202

Int. Cl.² H04M *15/18*

U.S. Cl. 179—7.1 R **5 Claims**



1. A direct readout telephone charge indicator for determining long distance charges incurred, comprising; a timing device having a visual time indicating indicial array and start, stop and reset means; a multiplicity of changeable exhibitor means each having geometrically congruent charge indicating indicial arrays geometrically similar to said time indicating indicial array and representative of long distance charge zones; and means mounting said changeable exhibitor means for selective movement into and out of juxtaposition to said timing device whereby the charge on a selected exhibitor means may be directly read by corresponding reference to the geometrically similar arrays on the timing device and selected exhibitor means.

3,962,549

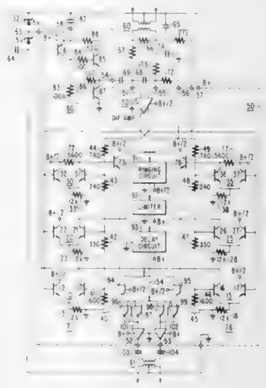
THRESHOLD DETECTOR CIRCUITRY, AS FOR PCM REPEATERS

Borys Zuk, New Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 29, 1975, Ser. No. 545,156

Int. Cl.² H04B *3/36*

U.S. Cl. 179—16 EA **14 Claims**



10. A repeater comprising, in combination:

means receptive of input pulses received by said repeater for providing first and second composite signals, each composite signal comprising a signal component of amplitude v superimposed upon a direct component of amplitude V, v always being smaller than V and being responsive to the amplitude of said input pulses, the signal component of second composite signal being concurrent with and of opposite polarity from that of the first composite signal;

means for dividing said first composite signal into first and second fractional signals, said first fractional signal comprising a smaller fraction of said first composite signal than said second fractional signal;

means for comparing said first fractional signal with the entire second composite signal thereby to derive a first control signal whenever said first fractional signal exceeds the entire second composite signal in amplitude;

means for comparing said second fractional signal with the entire second composite signal thereby to derive a second control signal whenever said second fractional signal exceeds the entire second composite signal in amplitude;

means responsive to the first control signal, when present, for attenuating said input pulses and thereby completing an automatic-gain-control loop for regulating the peak amplitudes of the signal components of said first and said second composite signals to be a fraction of V defined as 100% peak pulse amplitude; and

means responsive to each occurrence of said second control signal for generation of an output pulse.

3,962,550

JOINT SEALS FOR ELECTROMAGNETIC WAVE SHIELDS

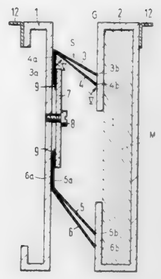
Hans-Peter Kaiserswerth, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 12, 1973, Ser. No. 378,716

Claims priority, application Germany, July 18, 1972, 2235216

Int. Cl.² H05K *9/00*

U.S. Cl. 174—35 GC **8 Claims**



1. In a construction for shielding against electromagnetic wave conduction,

a. a pair of adjacent relatively movable electrically conductive shield members having a space therebetween, and

b. a seal limiting leakage of radio-frequency signals through said space, said seal comprising:

1. two conductive elongated spaced contact spring assemblies having a V-shaped cross-section, one leg of each of said assemblies having a base portion disposed in electrical engagement with one of said members, and the other leg of the assemblies being a freely deflectable spring portion having an edge biased against the other of said members and in electrical engagement therewith;

2. at least one clamp secured to said one member between said spring assemblies and holding the base portions against said one member; and

3. electrical insulation disposed between the engaging points on said clamp and said base portions and insulating said clamp from said assemblies.

3,962,551

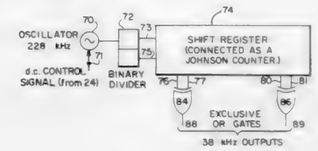
METHODS AND SYSTEMS FOR PROVIDING STEREO DECODING SIGNALS

Michael J. Gay, Geneva, Switzerland, assignor to Motorola, Inc., Chicago, Ill.

Filed Mar. 28, 1974, Ser. No. 455,840

Int. Cl.² H04H *5/00*

U.S. Cl. 179—15 BT **7 Claims**



1. A signal generator system for providing stereo decoding signals, including in combination:

oscillator means for providing an output signal at an output terminal thereof which has a repetition rate that is a first predetermined multiple of the repetition rate of a stereo decoding signal;

shift register means having an input terminal and a plurality of output terminals, said input terminal being connected to said output terminal of said oscillator means, said shift register means dividing said repetition rate of said oscillator output signal by a second predetermined multiple to provide output signals at said output terminals thereof, said output signals having a predetermined phase relation with respect to each other;

first circuit means responsive to selected ones of said output signals from said shift register means for providing at respective output terminals a first output signal having a repetition rate of said stereo decoding signal and a second output signal having a repetition rate of said stereo decoding signal, said second output signal having a predetermined phase relationship to said first output signal; and

second circuit means for combining said first and second output signals from said first circuit means so that a stereo decoding signal is produced which has substantially no third harmonic components.

3,962,552

SWITCHING NETWORK AND PERIPHERAL CIRCUITS FOR TELECOMMUNICATIONS SYSTEM

Jose Reines, Glen Ellyn; Eric G. Platt, Darien; Stanley Earl White, Hoffman Estates, and Marion Casimir Byckowski, Prospect Heights, all of Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

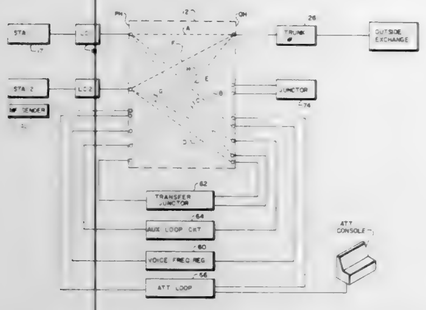
Continuation-in-part of Ser. No. 283,633, Aug. 25, 1972, abandoned. This application Dec. 12, 1973, Ser. No. 426,612

Int. Cl.² H04Q *3/54*

U.S. Cl. 179—18 EA **12 Claims**

1. A telecommunications system including a central program controller, an electronic switching network comprising a plurality of cascaded stages between its line end and its supervisory end, said network being of the end-marked type, a plurality of line circuits coupled to respective terminals on said line end and a plurality of junctors and trunks coupled to respective terminals on said supervisory end, said line circuits, trunks and junctors responsive to signals from said controller for marking respective terminals representative of a selected line end circuit and a selected supervisory end circuit, a predetermined number of available paths through said network from a selected terminal on one end of said network to a selected terminal at the other end of said network, said network responsive to marking of a terminal at one of its ends and

a terminal at the other of its ends to attempt completion of a path through the network over a random one of said paths in self-seeking fashion, and including a plurality of circuits peripheral to said network, each of said peripheral circuits being connected to a terminal at said line end and a terminal at said supervisory end for providing access to both ends of said network for providing a second plurality of available paths through a peripheral circuit between a peripheral circuit terminal at either end of said network and a terminal at the other end of said network responsive to failure of attempts at completion of a path from one end of said network to the other end thereof responsive to said mentioned marking of the network ends.



6. A telecommunications system employing an electronic switching network controlled by a stored program data processor for providing interconnection between stations of said system, and including a line circuit coupled to each station, means at certain of said stations for generating dial pulses in the form of interruptions of the station line loop, a first path from each line circuit to said network for the completion of a talking path through said network, means in each line circuit for continuously sensing the condition of the line loop at its coupled station, and a second path for forwarding signals representing said sensed condition to said processor for storage of said signals and for the return of control signals from said processor independently of the connection of the line circuit to the network, said sensed condition signals including interrupted dial pulses received from stations coupled to the line circuit.

3,962,553

PORTABLE TELEPHONE SYSTEM HAVING A BATTERY SAVER FEATURE

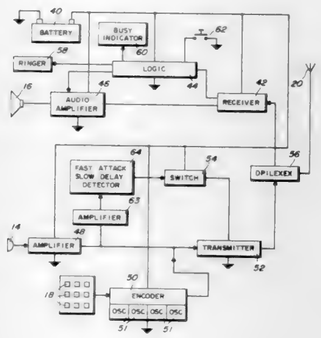
Donald L. Linder, Elmhurst; Orville M. Eness, Park Ridge, and Charles N. Lynk, Jr., Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 346,203, March 29, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,827
Int. Cl.² H04M *5/08*
U.S. Cl. 179—41 A **9 Claims**

1. A full duplex radio communication system including in combination:

a base station having base frequency modulated transmitter means for providing radio signals having a first carrier frequency and base frequency modulated receiver means including frequency modulation detector means for simultaneously receiving radio signals having a second carrier frequency different than said first carrier frequency, said base receiver means having an audio output circuit and noise operated squelch circuit means for muting said audio output circuit, said squelch circuit means being connected to the frequency modulation detector means of said base receiver means and responsive to radio frequency signals received by said base receiver for rendering said audio output circuit operative upon receipt of radio signals by said base receiver and for muting said output circuit upon termination of said received radio frequency signals, said squelch circuit having a response time of less than approximately 10 milliseconds for rendering said audio output circuit operative in substantial synchronism with the receipt of said second carrier frequency radio signals, and for rapidly muting said audio output circuit upon termination of said received radio signals to render noise bursts provided by said base receiver means in the absence of received signals substantially inaudible; and

a personal portable unit adopted to be carried by an individual and having portable transmitter means for providing radio frequency signals having said second carrier frequency and portable receiver means for simultaneously receiving radio signals having said first carrier frequency, said portable unit including a battery sufficiently small to be carried easily by the individual operating said portable unit for providing limited power to said portable unit, said portable unit having transducer means connected to said portable transmitter means for receiving voice signals and modulating said transmitter in accordance therewith, and voice detector means connected to said transducer means and to said portable transmitter means, said voice detector means being responsive to the voice signals applied to said transducer means for rendering said transmitter means operative within less than approximately 5 milliseconds following the application of voice signals to said transducer means to provide said second carrier frequency radio signals when voice signals are applied to said transducer means and for maintaining said portable transmitter means operative for more than approximately one-half second following the termination of said voice signals, said transmitter means being rendered inoperative with no signals applied to said voice detector.



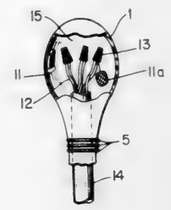
3,962,554

ELECTRICAL INSULATION PROTECTOR MEANS

James Anthony Eigel, Claremont, N.C., assignor to Superior Continental Corporation, Hickory, N.C.

Filed Apr. 2, 1975, Ser. No. 564,496
Int. Cl.² H02G *15/02*
U.S. Cl. 174—74 A **4 Claims**

1. First and second bags, said second bag being perforated, containing an antioxidant and disposed on the interior of the first bag, at least one plastic insulated electrical conductor protruding into the interior of the first bag and at least a portion of the sidewalls of the first bag being gathered about the periphery of the insulated electrical conductor to form an enclosed space about that portion of the insulated electrical conductor protruding into the first bag.

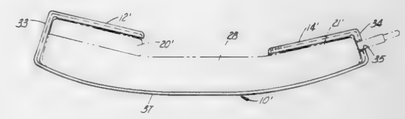


3,962,555

TELEPHONE HANDSET GUARD

Dale E. Efaw, 21486 Lorain Road, Fairview Park, Ohio 44126

Filed Mar. 6, 1975, Ser. No. 556,091
Int. Cl.² H04M *1/17*
U.S. Cl. 179—185 **5 Claims**



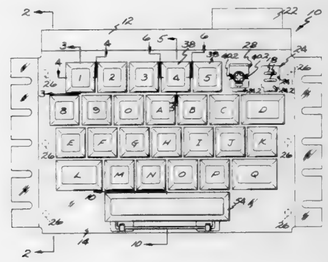
1. An apparatus for covering at least a portion of a handset of a telephone having a receiver, a transmitter, a handle and a dial mechanism intermediate the receiver and transmitter, comprising first cap means for covering the receiver of the handset, second cap means for covering the transmitter of the handset, filter means for each of said first and second cap means, and connecting means integrally connecting the first and second cap means covering a substantial portion of the handset specifically excluding the dial mechanism, and said connecting means including a slot for entry of an electrical connection to said handset.

3,962,556

KEYBOARD WITH VERSATILE SWITCH SUPPORT STRUCTURES

Robert T. Kravchuck, Lincoln, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 10, 1975, Ser. No. 535,529
Int. Cl.² B41J *5/08*; **H01H** *3/00, 13/62*; **G06C** *7/02*
U.S. Cl. 200—5 R **25 Claims**



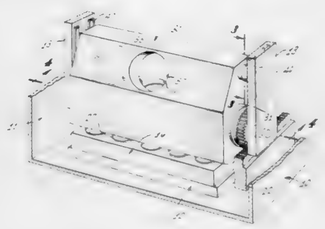
1. A keyboard comprising a substrate of insulating material having a plurality of pairs of electrical contact means disposed in a selected pattern on said substrate and having circuit path means connected to said contact means, a support member secured to said substrate extending in generally parallel relation to the substrate in a plane spaced a selected distance from the substrate, said support member having a plurality of openings therein and being secured to said substrate with said openings aligned with respective pairs of said contact means on said substrate, and a plurality of switch mechanisms disposed in respective support member openings, each of said switch mechanisms having a housing which is open at one end and which has an aperture opposite said open end, having a contact element which is movable in said housing to a depressed position at said open housing end and which is biased to a retracted position within said housing, and having a plunger means which is movable in said housing to move said contact element to said depressed position and which has a portion thereof extending from said aperture to be manually engaged for moving said plunger means, said switch mechanism housings each having stop means and resilient detent means engaging respective opposite sides of said support member around said support member openings for mounting said switch mechanisms on said support member in predetermined positions relative to respective pairs of said contact means on said substrate for permitting said contact element to bridge one pair of said contact means on said substrate when said contact element is disposed in said depressed position and for disposing said contact element spaced from at least one of that pair of contact means when the contact element is in said retracted position.

3,962,557

WASTE METAL REMOVAL IN E.D.M. MACHINING

Homer G. Buck, 1000 SE. Bay Blvd. No. 14F, Newport, Oreg. 97365

Filed Jan. 30, 1975, Ser. No. 545,696
Int. Cl.² B23P *1/12*
U.S. Cl. 219—69 D **16 Claims**



5. In an electrical discharge machining apparatus for cylindrical workpieces, the combination comprising:

means to support the workpiece for rotation within tthe dielectric liquid tank of the apparatus;

means to rotate the workpiece during electrical discharge machining thereof along longitudinal traces of the workpiece sequentially brought into machining zone registration with the electrode of the apparatus;

a housing for the workpiece formed with a cavity within which the workpiece is rotatable, said housing being formed with a fluid inlet opening surrounding the zone of machining registration of the workpiece and the electrode, said cavity defining a fluid passage relative to the portion of the workpiece enclosed by said housing and in fluid communication with an outlet port for the fluid;

and means for effecting flow of the liquid into said inlet opening and through said housing for exhausting via said outlet port to a location external of the tank of said apparatus for flushing waste metal particles out of the machining zone of registration of the workpiece and the electrode without dispersion of the particles into the liquid contained in the tank.

14. A process of removing waste particles from the machining zone between an electrode element and a workpiece ele-

ment disposed in a tank containing a dielectric liquid, one of the elements comprising a revolving body of revolution, comprising:

defining a barrier to isolate one of the elements from flow therearound by the surrounding liquid in the tank otherwise than by flow through an aperture closely surrounding the machining zone;

and flowing the liquid from the tank through the machining zone and aperture for circulation past the isolated element to a location external of the tank, whereby waste particles are entrained in the removed liquid for transfer from the machining zone to the external location.

3,962,558

METHOD AND APPARATUS FOR DRILLING WATCH JEWELS OR OTHER WORKPIECES BY MEANS OF LASER BEAMS

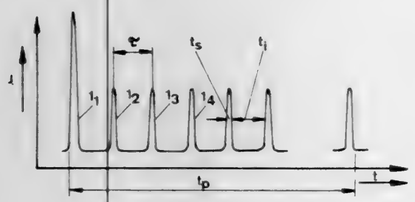
Ernst Kocher, Bayweg 11, 3123 Belp; Jürg Steffen, Bernstrasse 49, 3122 Kehrsatz, and Gerd Bernd Herziger, Wiesenstrasse 4, 3073 Gumligen, all of Switzerland

Continuation of Ser. No. 238,777, March 28, 1972, abandoned. This application Mar. 18, 1974, Ser. No. 452,379

Claims priority, application Switzerland, Mar. 29, 1971, 4550/71

Int. Cl.² B23K *27/00*

U.S. Cl. 219—121 LM **4 Claims**



1. A method for drilling holes in workpieces which are highly transparent or highly reflective to laser light, said method comprising applying a single laser pulse to the workpiece, forming the laser pulse with a plurality of spikes, the intensity of the first of these spikes being greater than that of all subsequent spikes and said subsequent spikes follow each other with a substantially constant period, providing the first spike with an intensity sufficient to vaporize a surface layer of the material of the workpiece, providing the subsequent spikes with sufficient energy such that each vaporizes a layer of material having a thickness of approximately 20 μm so as to form a hole in the workpiece, and maintaining the period between said subsequent spikes sufficiently large such that the vaporized material produced by a previous spike has escaped from the hole being formed before the next spike arrives at the workpiece, said spikes having an energy of approximately 1 m Joule, the duration of the spikes being approximately 0.5 μsec, the period between the spikes being approximately 3 μsec and the peak intensity being less than 10^9 W/cm2.

3,962,559

TEMPERATURE CONTROL CIRCUIT AND OVEN

Benedict J. Drda, Medina, Ohio, and Maxwell Meredith, Chelmsford, Mass., assignors to LFE Corporation, Waltham, Mass.

Filed Jan. 3, 1975, Ser. No. 538,401

Int. Cl.² H05B *1/00*

U.S. Cl. 219—210 **11 Claims**

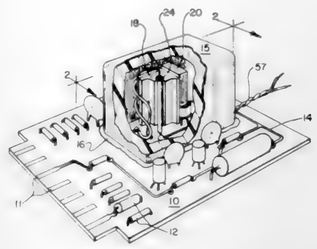
1. A temperature control circuit comprising:

a transistor having a base electrode, an emitter electrode, and a collector electrode,

first and second supply terminals for connection to a source of electrical power,

a load resistor connected between said first supply terminal and said collector electrode,

means connecting said emitter electrode to said second supply terminal,



a zener diode and a positive temperature coefficient thermistor connected in series between said first supply terminal and said base electrode, and

a second resistor connected between said base electrode and said second supply terminal.

3,962,560

WATER HEATER

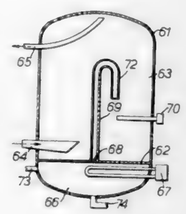
Chris Reidar Braathen, Melkeveien 55, Oslo 3, Norway

Filed Sept. 4, 1974, Ser. No. 503,063

Claims priority, application Norway, Jan. 4, 1974, 32/74

Int. Cl.² F24H *1/20*

U.S. Cl. 219—314 **8 Claims**



1. Water heater comprising a heat-insulated container having direct inlet from a pressure water pipe and outlet for hot pressure water, and an electric heating element for heating water in said container, characterized in that:

said container, in the lower part thereof, is provided with an essentially horizontal partition wall which separates the container into an upper compartment and a lower compartment, said compartments being substantially coextensive in a horizontal direction;

said wall having at least one opening which establishes communication between said upper compartment and said lower compartment;

said heating element being disposed in said lower compartment so as to be submersed in water contained therein;

said inlet and said outlet both being formed in said upper compartment, such that water in said upper compartment constitutes consumption water and water in said lower compartment constitutes storage water surrounding said heating element.

3,962,561

CATALYTICALLY ASSISTED PYROLYTIC SELF-CLEANING OVEN

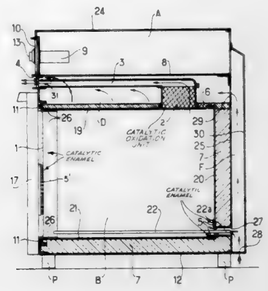
Paul Maitenaz, Orleans, France, assignor to Compagnie Europeenne pour l'Equipement Menager, CEPEM, Paris, France

Filed July 16, 1974, Ser. No. 489,022

Claims priority, application France, July 17, 1973, 73.26140

Int. Cl.² H05B *1/00*; **A21B** *1/00, 1/22*

U.S. Cl. 219—391 **3 Claims**



1. In a cooking oven which is self-cleaned by pyrolysis, and which includes front, rear, top, bottom and opposed side walls forming the oven muffle, and wherein said oven further includes means for thermally insulating said oven muffle walls, means for heating said oven muffle to a temperature of about 400° to 500° C to clean the oven walls by pyrolysis, and wherein the front wall includes an oven access opening therein and supports a pivotable door having a thermally insulated inner wall which overlies the opening to close off the same such that cold air leaking around the edge of the door forms reduced temperature areas on the inside face of the door and the oven wall surrounding the door, the improvement wherein said inside face of said oven door is lined with catalytic enamel and a strip of catalytic enamel lines the walls of the oven at a narrow zone immediately surrounding the access opening so as to substantially reduce the heating time for the self cleaning of the oven walls; the catalytic enamel being capable of withstanding the pyrolytic cleaning temperature.

3,962,562

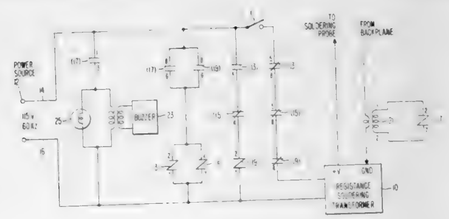
RESISTANCE SOLDER UNIT CONTROL

William F. Carter, Philadelphia, and John H. Drinkard, Jr., Exton, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 14, 1974, Ser. No. 432,831

Int. Cl.² H05B *1/02*

U.S. Cl. 219—490 **8 Claims**



1. A control circuit for controlling soldering probe temperatures in a resistance soldering unit, having an AC to DC power converter supplying direct current to a resistance soldering probe circuit, said circuit including a ground return line to said power converter, comprising:

means connected to the AC supply to said power converter for interrupting the alternating current to a transformer contained therein for limiting temperature rise in said soldering probe; and

means associated with said interrupting and limiting means for permitting reestablishment of current to said power converter for establishing a lower soldering temperature in said probe.

3,962,563

DEVICE FOR THE INCREMENTAL SCANNING OF A LINE SCALE

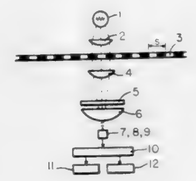
Hans-Dieter Schulz-Methke, Breitscheid, Germany, assignor to Espera-Werke GmbH, Duisburg, Germany

Filed Sept. 9, 1974, Ser. No. 504,075

Claims priority, application Germany, Sept. 13, 1973, 2346091

Int. Cl.² H03K *21/34*

U.S. Cl. 235—92 V **12 Claims**



1. A device for incremental scanning of a line scale divided into divisional intervals comprising:

three photoelectric cell means disposed at three different fixed points within a distance equivalent to one divisional interval of the line scale dividing each divisional interval into six increments;

illumination control means for changing the illumination of said three photoelectric cell means as the line scale moves relative to said three photoelectric cell means;

discriminator circuit means connected to said three photoelectric cell means for transforming into electric impulses the changes in resistance of said three photoelectric cell means caused by the change in the illumination of said three photoelectric cell means and having two outputs on which the electric impulses are provided; and,

counter means connected to the outputs of said discriminator circuit means for forward and backward counting of the number of electric impulses as a function of the direction of line scale movement comprising two counters, one of which counts all impulses, the other of which counts only impulses preceded by an impulse on the opposite output.

3,962,564

APPARATUS FOR COUNTING A STACK OF SHEETS

Gordon Stanley Dutton, Harwich, England, assignor to Vacuumatic Limited, England

Filed Sept. 19, 1974, Ser. No. 507,549

Int. Cl.² G06M *9/00*

U.S. Cl. 235—92 SB **5 Claims**

1. Apparatus for counting a stack of sheets, comprising in combination:

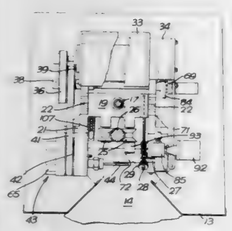
a. a counting head which is adapted to be traversed along a corner of a stack of sheets;

b. a suction blade having a suction orifice for insertion into the corner of such stack;

c. a wiping pin;

d. means mounting said suction blade and said pin on said head for movement therewith along the corner of the stack;

e. means to oscillate said blade about a corner of a sheet in the stack adhered by suction to one side of the blade from the next sheet;
f. means to move said pin in an elongate orbit around said blade to transfer the said corner of the sheet from the said one side of the blade to the opposite side thereof;
g. means to count the number of transfer operations effected;
h. means to traverse the counting head downwardly past a corner of a stack to be counted; and,

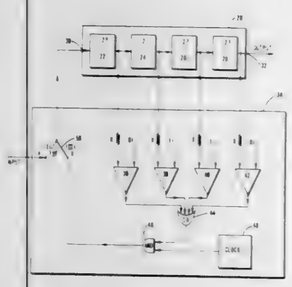


i. means for moving said wiping pin in a generally downwardly inclined elliptical orbit around the suction blade, said moving means comprising a first means for mounting the wiping pin for eccentric rotation about a first axis, a second means for mounting said first mounting means for eccentric rotation about a second axis, means to drive said second mounting means about the second axis, and means to drive the first mounting means about said first axis comprising a pinion fixed to the first mounting means in mesh with an internally toothed gear so that as the first mounting means is rotated with the second mounting means the pinion orbits said internally toothed gear so as to rotate the first mounting means.

3,962,565
APPARATUS FOR PRESETTING A COUNTER TO A GIVEN INITIAL COUNT

Bao-Dam N. Guyen-Phuoc, Orsay, France, assignor to Schlumberger Instruments et Systemes, Paris, France

Filed May 6, 1974, Ser. No. 467,027
Claims priority, application France, May 8, 1973, 73.16453
Int. Cl.² H03K *21/18, 21/36*
U.S. Cl. 235—92 PE **8 Claims**

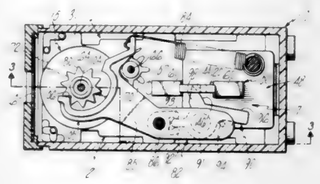


1. Apparatus for automatically presetting an electric pulse counter to a given initial count, comprising first means, triggered by a preset signal, for applying pulses to the input of the counter, and second means, triggered by the overflow pulse appearing at the output of the counter when it resets to cause the application to its input of a number of pulses equal to said initial count.

3,962,566
ELECTROMAGNETIC COUNTER

Edward F. Gebelein, Jr., Harwinton, and John G. Gamble, Simsbury, both of Conn., assignors to Veeder Industries, Inc., Hartford, Conn.

Filed July 30, 1974, Ser. No. 493,252
Int. Cl.² G06M *1/10*
U.S. Cl. 235—92 C **10 Claims**



1. In an electromagnetic counter having a frame and a counter and electromagnetic operator mounted on the frame in operative relationship for indexing the counter by energization of the electromagnetic operator with a predetermined electrical signal, the electromagnetic operator having an electromagnet with a generally U-shaped ferromagnetic core with a pair of spaced legs with opposed spaced poles and an energizing winding encircling at least one of the legs for selectively magnetizing the core, a ferromagnetic armature member reciprocably mounted adjacent to the pair of spaced poles at the core for being magnetically attracted in one direction by the core from a withdrawn position to an extended position upon energization of the winding with said predetermined electrical signal, and return means for returning the armature member in the opposite direction to its withdrawn position upon de-energization of the winding; the improvement wherein the electromagnetic counter comprises a ferromagnetic control member having a saturable shunt extending between the poles of the core so that the shunt is saturated with substantially less current than the current of said predetermined signal whereby a noise signal of substantially less duration than the predetermined electrical signal is ineffective to index the counter, the saturable shunt comprising a pole segment adjacent one of the poles of the core and the ferromagnetic control member having a portion extending between the poles and adjacent said pole segment to reduce the incipient air gap between said one pole and the ferromagnetic armature member.

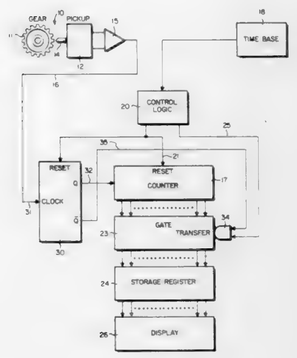
3,962,567
DIGITAL DISPLAY APPARATUS HAVING JITTER CORRECTION

Jeffrey A. Oicles, Glendale, Ariz., and Thomas F. Martin, Euclid, Ohio, assignors to TRW Inc., Redondo Beach, Calif.

Filed Jan. 13, 1975, Ser. No. 540,356
Int. Cl.² H03K *21/32, 21/18*
U.S. Cl. 235—92 EA **2 Claims**

1. A digital display apparatus having means for minimizing the effects of jitter, said apparatus comprising:
a. means for generating pulses indicative of a quantity to be measured;
b. a pulse counter coupled to said pulse generating means;
c. a storage register;
d. transfer means coupled between said pulse counter and said storage register for periodically transferring the number stored in said counter;
e. a time base;
f. logic means controlled by said time base and coupled to said counter and to said transfer means for periodically transferring the number in said counter by said transfer means to said storage register and for periodically resetting said counter after the occurrence of a predetermined period of time;

g. a first flip flop precounter coupled between said pulse generating means and said counter;
h. an AND gate coupled between said flip flop, said logic means and said transfer means, whereby said transfer means is only rendered operative by said AND gate when



said flip flop is in a predetermined one of two possible states; and
i. digital display means coupled to said storage register for displaying a number representative of the number of pulses occurring in said predetermined period.

3,962,568
RANGE EXTENDING ATTACHMENT FOR USE IN A PRICE DISPLAY MECHANISM

Francis M. Lathrop, II, 10306 Neuens, Houston, Tex. 77043

Filed Apr. 10, 1975, Ser. No. 566,927
Int. Cl.² B67D *5/22*; G07G *1/02*
U.S. Cl. 235—132 R **10 Claims**

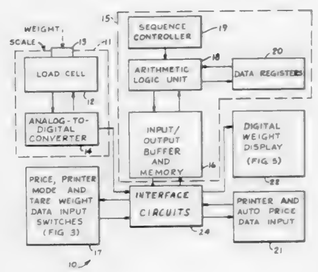


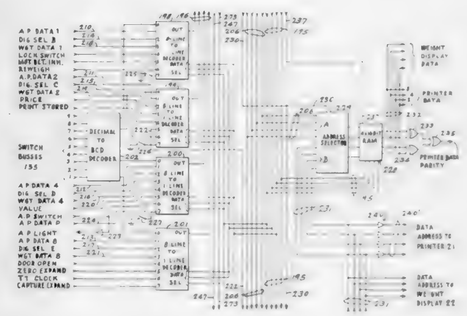
1. For use with a gasoline pump having a price totalizer which a specified number of decimal number wheels, the most significant number wheel having numbers thereon from zero to nine, and a reset mechanism which resets the price totalizer after totaling and before the next sale from the gasoline pump, a range extending apparatus which comprises:
a number serving as the next significant digit and located to indicate its position beyond the most significant number wheel;
mask means for selectively covering and exposing said number;
means for detecting movement of the most significant number wheel past the largest number displayed thereon, said means further moving said mask means to expose said number; and,
reset means for restoring said mask means to a position covering said number on operation of the reset mechanism of the totalizer.

3,962,569
VALUE COMPUTING SCALE

Richard C. Loshbough, Temperance, Mich.; Edward G. Pryor, and Gerald D. Robaszkiewicz, both of Toledo, Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 434,401, Jan. 18, 1974, abandoned. This application Apr. 30, 1975, Ser. No. 573,147
Int. Cl.² G01G *19/413*
U.S. Cl. 235—151.33 **8 Claims**





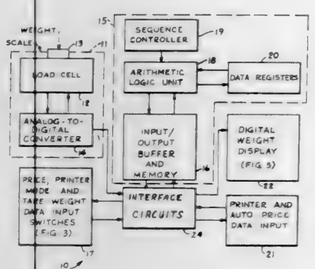
1. A computing and printing weighing scale comprising, in combination, an integrated circuit computer which includes an arithmetic logic unit, a sequence controller and data registers, load cell weighing scale means, data input means, interface means for receiving weight data from said scale means and price data from said data input means and functioning to multiplex such data to said computer, the weight and price data being related to each of a plurality of successive weighed articles, printer means for printing the weight and price data and the value computed from such data, said sequence controller causing said arithmetic logic unit and said data registers in said computer to compute the value of the weighed articles and controlling the supplying of such values and the weight and price data through said interface means to said printer means, and digital weight display means operatively connected to said interface means.

3. A computing printing weighing scale comprising, in combination, an integrated circuit microcomputer, load cell means for supplying weight data, data input means including four data input buses for supplying price data, said microcomputer computing the value of successive weighed articles from such weight and price data, such data being supplied to said microcomputer on the four data input buses, and interface means for multiplexing such data onto said four data input buses and including four decoders, each having a single output connected to a different one of said data input buses.

3,962,570
SCALE WITH MANUAL TARE ENTRY

Richard C. Loshbough, Temperance, Mich., and Edward G. Pryor, Toledo, Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 434,663, Jan. 18, 1974. This application Apr. 30, 1975, Ser. No. 573,150
Int. Cl.² G06F 15/46
U.S. Cl. 235—151.33 **4 Claims**

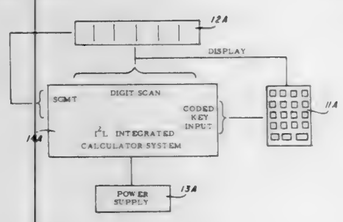


1. Net weight measuring apparatus comprising, in combination, scale means for measuring the gross weight of an article, a plurality of push button switch means for entering a tare weight into said apparatus, each switch means corresponding to a different value tare weight, a tare weight memory, means for measuring a predetermined time interval starting when one of said tare switch means is pushed, means for storing in said tare weight memory a tare weight corresponding to the sum of the tare weights for predetermined ones of said switch means pushed during a measured predetermined time interval, and means for subtracting the tare weight stored in said memory from the measured gross article weight to obtain the net weight of the article.

3,962,571
LOW POWER DIGIT BLANKING CIRCUIT

George L. Brantingham, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 26, 1974, Ser. No. 527,507
Int. Cl.² G06F 3/14
U.S. Cl. 235—152 **10 Claims**



1. In an electronic calculator system having data storage means, an arithmetic unit for performing operations on data, control means for providing commands which define the operation of the system and output means having first and second sets of output terminal means, an automatic leading zero digit blanking circuit comprising:

a. first means coupled to said first set of terminal means for providing output data to said first set of terminal means;

b. second means coupled to said second set of terminal means for selectively enabling said second set of terminal means;

c. a set of input terminal means for the application of input data from a keyboard generated in accordance with the selective activation of keys of said keyboard simultaneously with the selective enabling provided by said second set of terminal means;

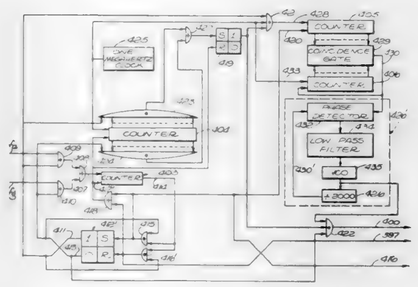
d. means coupled to said first means and responsive to said output data for detecting leading zero data and for selectively turning off said second means for leading zero digits to be displayed as blank; and

e. means for turning off said first means and delaying the turning off of said second means for a predetermined time period for the display of blank digits wherein said keyboard data is determinable by said system during said predetermined time period.

3,962,572
RATE DIVIDER

Albert Donald Stolzy, Encino, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 524,043, Nov. 15, 1974, Pat. No. 3,918,292. This application June 19, 1975, Ser. No. 588,641
Int. Cl.² H03K 21/36
U.S. Cl. 235—156 **1 Claim**

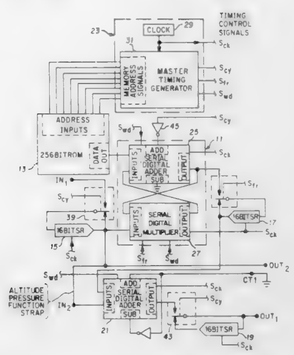


1. A rate divider comprising: a storage register having a plurality of stages; a counter having a plurality of stages and having count and reset inputs; a coincidence gate having an output and having plural inputs connected from the stages of both said storage register and said counter for producing an output pulse at said output thereof when the number stored in said counter becomes equal to the number stored in said storage register; clock means having an output signal frequency and an output connected to said counter count input, said coincidence gate having an output signal of a frequency equal to the clock means frequency divided by the number stored in said register, said coincidence gate also being connected to the reset input of said counter; and means to change the number stored in said storage register, said register and said counter each including a plurality of flip flops each having a "0" output and a "1" output, said coincidence gate including a first AND gate for each significant digit to be used, each said first AND gate having an input connected from a "0" output of a corresponding flip flop representing one significant digit in said storage register and another input connected from the "0" output of a corresponding flip flop representing the same significant digit in said counter, said coincidence gate also including a second AND gate for each significant digit to be used, each said second AND gate having an input connected from the "1" output of a corresponding flip flop representing one significant digit in said storage register and another input connected from a "1" output of a corresponding flip flop representing the same significant digit in said counter, each of said first and second AND gates having an output, said coincidence gate including an OR gate for each pair of AND gates corresponding to one significant digit, each OR gate having an output and inputs connected from the outputs of each corresponding pair of AND gates, said coincidence gate also including a third AND gate having an output and an input from each OR gate output, said third AND gate output being connected to said counter reset input, said coincidence output signal appearing at the output of said third AND gate.

3,962,573
DIGITAL FUNCTION GENERATOR

Lewis E. Staley, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed June 12, 1975, Ser. No. 586,480
Int. Cl.² G06F 7/38
U.S. Cl. 235—156 **7 Claims**



1. Digital function generator apparatus for providing an output Y from an input X according to

$$Y=f(X)=\sum_{j=0}^{n} A_jX^j$$

where the coefficients A_j are predetermined, said apparatus comprising:

first means comprising digital memory means for storing and supplying serial digital data representative of said coefficients A_0 through A_n;

second and third means comprising, respectively, serial digital adder means and serial digital multiplier means, each of said second and third means having first and second data input means and a data output means, said first data input means of said second means connected for receiving serial digital data from said first means, said first data input means of said third means connected for receiving serial digital data representative of at least one particular value x_i of the input X, said second data input means of said second means connected for receiving serial digital data from said data output means of said third means, and said second data input means of said third means connected for receiving serial digital data from said data output means of said second means;

fourth means including clock source means and timing generator means receiving the output of said clock source means, said fourth means comprising timing control means for

i. effecting multiplication by said third means of A_n and X_i such that the output of said third means is serial digital data representative of a first product $A_n{\cdot}X_i=P_1$,

ii. effecting the addition by said second means of said first product P_1 and A_{n-1} such that the output of said second means is serial digital data representative of a first sum $(P_1+A_{n-1})=W_1$,

iii. effecting the multiplication by said third means of said first sum W_1 and X_i such that the output of said third means is serial digital data representative of a second product $W_1{\cdot}X_i=P_2$,

iv. effecting the addition by said second means of P_2 and A_{n-2} so that the output of said second means is serial digital data representative of a second sum $(P_2+A_{n-2})=W_2$, and

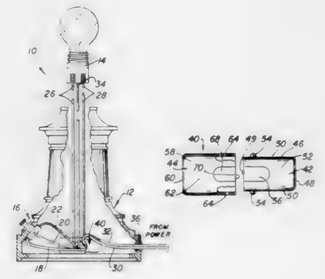
v. repetitively effecting similar alternating multiplications and additions so as to produce a series of products and sums wherein any particular jth sum W_j is equal to P_j+A_{n-j} for $j=1$ through n, where the jth product $P_j=W_{j-1}{\cdot}X_i$ and W_0 is defined to be equal to A_n, said fourth means repetitively effecting said multiplications and additions at least until serial digital data representative of the sum $W_{n-1}{\cdot}X_i+A_0$ appears at the data output means of said second means, said sum $W_{n-1}{\cdot}X_i+A_0$ being equal to

$$\sum_{j=0}^{n} A_jX_i.$$

3,962,574
LAMP WITH PROTECTIVE HOUSING OR JUNCTION BOX FOR SPLICED ELECTRICAL CONDUCTING WIRES

Nick Zurla, Chicago, Ill., assignor to Beatrice Foods Company, Chicago, Ill.

Filed June 30, 1975, Ser. No. 591,519
Int. Cl.² F21S 1/12; F21V 25/00; H02G 3/08
U.S. Cl. 240—81 BS **10 Claims**

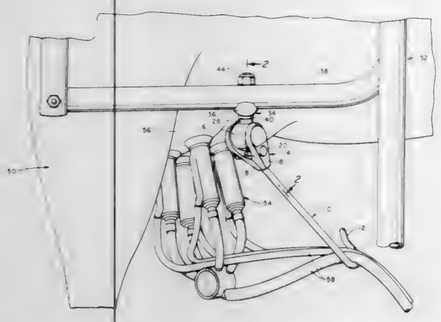


1. A combination comprising a lamp having a base with said lamp supporting an electric lamp socket,a switch on said lamp, a plurality of electrical conducting wires connecting said switch and electric lamp socket to means for connection to an electric power source, said plurality of electrical conducting wires having pairs of electrical conducting wires connected and forming a plurality of pairs of spliced connected ends, a protective housing in said base formed of a plastic fire-resistant material, said protective housing formed of two sections with said sections having means for interlocking said sections to form a single hollow housing, said housing having an opening therein communicating with the interior of said hollow housing, said plurality of electrical conducting wires extending into said housing through said opening with said plurality of spliced connected ends of said conducting wires bunched together and loosely positioned and retained within said housing, with each pair of said spliced connected ends being free for independent movement of other pairs of spliced connected ends in said housing.

3,962,575
RADIAL ARM MILK HOSE SUPPORT

Ben W. Vandenberg, 17226 Roseton Ave.; August Vandenberg, 17306 Roseton Ave., both of Artesia, Calif. 90701, and Andrew W. Vandenberg, 15751 Ryon St., Bellflower, Calif. 90706

Filed Feb. 26, 1975, Ser. No. 553,229
Int. Cl.² B42F *13/00*
U.S. Cl. 248—340 **3 Claims**



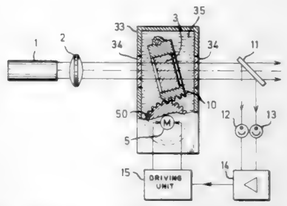
1. In a radial arm milk hose support construction for supporting milk hoses of automatic milkers at the cow stalls; the combination of a generally vertically downwardly projecting milk hose support arm supported projecting generally downwardly from a generally horizontal cow stall mounting rail and having hose engagement means at a lower end portion thereof for transversely engaging and supporting milk hoses connected to an automatic milker claw; universally selectively adjustable arm clamping means mounted between an upper end of said support arm and said generally horizontal cow stall mounting rail including a rigid self-lubricating plastic ball member secured to said cow stall mounting rail by a mounting bolt extending diametrically upwardly through said ball member and upwardly generally to said cow stall mounting rail, a sleeve telescoping said mounting bolt between said ball member and said cow stall mounting rail, a socket member formed of two transversely separable rigid self-lubricating plastic socket member halves upwardly transversely socket telescoping said ball member and downwardly transversely telescoping said support arm upper end, adjustment bolt means extending transversely through said socket member halves positioned vertically between said mounting bolt and said support arm upper end for transversely clamping said socket member halves over said support arm upper end and for frictionally engaging said socket member halves over said ball member permitting said universal adjustment therebetween to adjust and frictionally retain said support arm in all selected downwardly extending directions relative to said cow stall mounting rail.

3,962,576
METHOD AND APPARATUS FOR AUTOMATIC GENERATION OF PHASE-ADAPTED COHERENT SECONDARY RADIATION IN A NON-LINEAR CRYSTAL

Jürgen Kuhl, Aalen, and Hans-Jörg Spitschan, Heidenheim (Brenz), both of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Germany

Filed Jan. 17, 1975, Ser. No. 542,016
Claims priority, application Germany, Jan. 25, 1974, 2403501
Int. Cl.² G01J *1/20*
U.S. Cl. 250—201 **14 Claims**

1. The method of generating in a non-linear crystal a phase-adapted coherent secondary radiation by irradiation of such crystal with coherent primary radiation of variable wavelength the frequency of the secondary radiation being changed with respect to the frequency of the primary radiation, there being a change in angle between an optical axis of the crystal and an axis of the secondary radiation as a result of changing the wavelength of the primary radiation, said method comprising the steps of providing means for re-tuning a phase adaption of

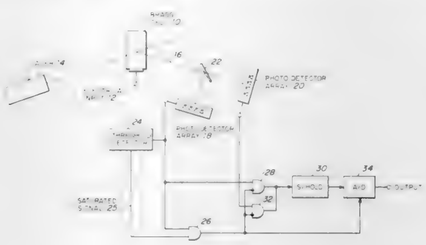


the secondary radiation to the primary radiation, providing sensing means having an output responsive to a change in said angle, and operating said re-tuning means from said output of said sensing means.

3,962,577
ELECTRO-OPTIC SYSTEM WITH EXPANDED POWER RANGE

John P. Lindley, Redwood City, and James Rieden, San Jose, both of Calif., assignors to Itek Corporation, Lexington, Mass.

Filed Jan. 10, 1975, Ser. No. 540,181
Int. Cl.² G01J *3/02, 3/42, 3/34*
U.S. Cl. 250—208 **5 Claims**

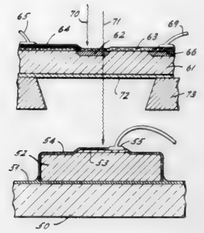


1. An electro-optic system for detecting radiation over an extended dynamic power range and comprising:
   a. a first photodetector means for detecting radiation;
   b. a second photodetector means for detecting radiation;
   c. means for directing radiation to be detected onto said first and second photodetector means, and including means for directing a major amount of radiation to be detected onto said first photodetector means, and means for directing a minor amount of radiation to be detected onto said second photodetector means such that said first photodetector means may be utilized to detect radiation signals having relatively weak power densities and said second photodetector means may be utilized to detect radiation signals having relatively strong power densities, whereby the dynamic power detection range of the system includes the combined power detection ranges of said first and second photodetector means; and
   d. means for determining when the major amount of radiation directed onto said first photodetector means exceeds a given threshold level, means for coupling said first photodetector means to the output of the system until said determining means indicates that the radiation directed onto said first photodetector means exceeds said given threshold level, and means for coupling said second photodetector means to the output of the system when said determining means indicates that the radiation directed onto said first photodetector means exceeds said given threshold level.

3,962,578
TWO-COLOR PHOTOELECTRIC DETECTORS HAVING AN INTEGRAL FILTER

John Roschen, Irvine, Calif., assignor to Aeronutronic Ford Corporation, Blue Bell, Pa.

Filed Feb. 28, 1975, Ser. No. 554,193
Int. Cl.² G01J *3/50*
U.S. Cl. 250—226 **2 Claims**



1. In a photodetector combination constructed to sense radiant energy in a plurality of wavelength bands, said combination comprising:
   a first photodetector optimized for response at a first wavelength, said first photodetector constructed to be transparent to a second wavelength that is relatively longer than said first wavelength and with active elements adjacent a first face thereof,
   a second photodetector optimized for response of said second wavelength, and
   means for mounting said first and said second photodetectors in a cascade wherein illumination is directed onto said first face of said first photodetector,
   the improvement comprising an integral filter coating formed on a second face of said first photodetector, said second face being opposite said first face and adjacent said second photodetector, said filter coating forming a bandpass radiant energy filter intermediate said first and said second photodetectors, said bandpass being selected to fall within the radiant energy wavelength response of said second photodetector.

3,962,579
THREE-DIMENSIONAL RADIOGRAPHY

Douglas Fredwill Winnek, 10450 W. Loyola Drive, Los Altos Hills, Calif. 94022

Continuation of Ser. No. 447,108, Feb. 28, 1974, abandoned, which is a continuation of Ser. No. 273,653, July 20, 1972, abandoned. This application Jan. 3, 1975, Ser. No. 538,425
Int. Cl.² G01N *23/04*
U.S. Cl. 250—313 **3 Claims**

1. Apparatus for use in the exposure of a film for making a photograph of a three-dimensional object by X-ray radiation beams from a plurality of point sources of said radiation comprising: a grating including a support, and a plurality of parallel, spaced, transversely circular rods rigidly secured to said support, each rod being opaque to said radiation, said grating adapted to be positioned at a location between said point sources and said film to permit the beams from said sources to pass between said rods and onto the film, each rod presenting a first, elongated, convex surface to the incoming radiation from each point source, respectively, and a second elongated, convex surface opposite to the corresponding first surface and

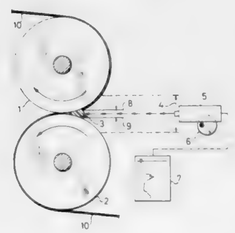


in facing relationship to said film when the grating is at said location.

3,962,580
INFRARED PROCESS FOR MEASURING THE KNEADING MASS IN A CALENDER ROLLER GAP

Franz Maier, Burgkirchen, Alz; Walter Niederstatter, Mehring-Od, and Hans-Rainer Stümpf, Burgkirchen, Alz, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 13, 1974, Ser. No. 532,416
Claims priority, application Germany, Dec. 20, 1973, 2363467
Int. Cl.² G01N *23/00*
U.S. Cl. 250—340 **1 Claim**



1. A process for measuring without contact the thickness of a thermoplastic mass having a temperature of at least 40°C in the manufacture of a sheeting on a calender having an accumulation of material kneading mass, in the feeding region of a roller gap having a pair of pressure elements at least one of which is a roller, one of the pressure elements forming the gap being covered by the sheeting in the region of the gap and other pressure elements being bare of sheeting and kneading mass in the feeding region of the gap, the process comprising the steps of scanning at a predetermined scanning speed the region in discrete areas having a diameter of from 0.5 to 3 mm over a scanning range of from 0.2 to 3 m in a zone extending over the transitions from bare pressure element surface to kneading mass to sheeting with an infrared radiation sensor having a small field of view capable of scanning the discrete area diameters from 0.5 to 3 mm, plotting the curve of thermal radiation detected by the sensor at a predetermined plotting

speed, measuring in the plotted curve the distance "*a*" of two points of discontinuity which occurs at the transitions between kneading mass and sheeting and kneading mass and bare pressure element, and multiplying the measured distance with the quotient of the scanning speed and the plotting speed to obtain the absolute thickness of the accumulated material kneading mass.

3,962,581

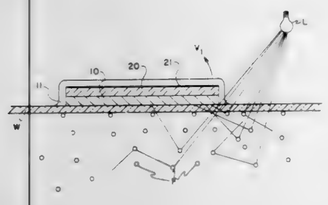
INFRA-RED CONSISTENCY METER

William E. Zimmerman, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 6, 1975, Ser. No. 619,677

Int. Cl.² G01N *21/00, 21/26, 21/34, 21/46*

U.S. Cl. 250—341 **12 Claims**



1. A method of measuring the consistency of opaque particles suspended in a translucent, fluidized slurry, said method comprising:

A. Illuminating a substantially homogenous flow stream of said slurry with a white light source of substantially constant power;

B. Filtering light originated from said source and reflected from said flow stream to permit only the substantial passage of wave-lengths greater than 0.70 microns;

C. Energizing with said filtered light a photocell that is responsive to wave-lengths within the spectrum of 0.70 microns to 1.05 microns;

D. Calibrating the electrical energy generation of said photocell relative to a known consistency of said slurry.

3,962,582

X-RAY IMAGE INTENSIFIER HAVING INPUT SCREEN WITH CARBON LAYER

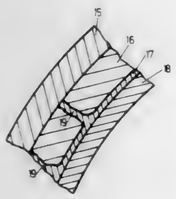
Walter Greschat, Dormitz, and Wolfgang Schubert, Erlangen-Frauenaurach, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Nov. 14, 1974, Ser. No. 523,796

Claims priority, application Germany, Dec. 17, 1973, 2362761

Int. Cl.² G01J *1/58*

U.S. Cl. 250—483 **3 Claims**



1. In an imput screen for electron-optical image intensifiers including a carrier; a luminescent layer on said carrier; a photocathode layer superimposed on said luminescent layer; and a dark-colored intermediate layer being interposed between said luminescent layer and said photocathode layer, the improvement comprising; said dark-colored intermediate layer being constituted of an at least approximately uniform surface coating layer of carbon for the partial transmission of light from said luminescent layer.

3,962,583

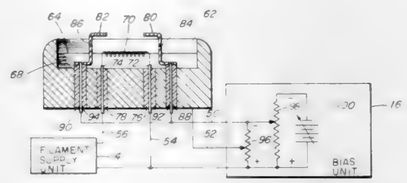
X-RAY TUBE FOCUSING MEANS

William P. Holland, West Redding, and Capleton I. Swanson, Bridgeport, both of Conn., assignors to The Machlett Laboratories, Incorporated, Stamford, Conn.

Filed Dec. 30, 1974, Ser. No. 537,225

Int. Cl.² H05G *1/30;* **H01J** *35/14*

U.S. Cl. 250—402 **8 Claims**



1. X-ray generating apparatus including:

an X-ray tube envelope;

an anode having a target surface disposed within the envelope;

an elongated electron emitting filament spaced from the target surface within the envelope and disposed to direct a beam of electrons onto an elongated area of the target surface;

electron focusing means comprising a plurality of conductive members insulatingly supported in fixed positional relationship with one another adjacent the filament and having longitudinal and transverse portions with respect to the filament for defining in the path of the electron beam an elongated aperture having a length less than the length of the filament, one of the conductive members being a cathode focussing cup having an elongated opening wherein the filament is insulatingly disposed in the cup to direct the electron beam through the opening and other conductive members of the focussing means comprising a pair of spaced conductive strips insulatingly supported within the cup adjacent respective end portions of the filament; and

electrical means for maintaining the anode, filament, and conductive members at different electrical potentials with respect to one another, and for maintaining at least one of the conductive members at a different electrical potential with respect to the other conductive members of the focusing means.

3,962,584

FILM-LOADING DEVICE

Joseph Munch, Deurne, Belgium, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Oct. 7, 1974, Ser. No. 512,594

Claims priority, application Belgium, Oct. 12, 1973, 53139

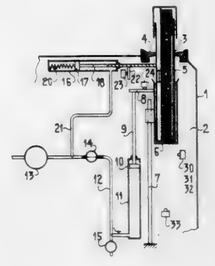
Int. Cl.² G03B *41/16*

U.S. Cl. 250—468 **3 Claims**

1. In an X-ray apparatus for carrying out radiographic examinations including a housing having a compartment for light-tightly containing a supply of unexposed film; a film-loading device for introducing said film supply into said compartment in daylight, adapted to cooperate with a film container including a hollow parallelepipedic box for containing a plurality of uncovered film sheets stacked therein, having sidewalls and an open top end for introducing therein and extracting therefrom said film sheets and a removable cover for light-tightly covering said open top end having a skirt portion for slideably surrounding said box sidewalls adjacent said open top end; said film-loading device comprising:

A. a slot within said housing provided with an elastic edge seal for providing an opening allowing the introduction of said film container box into said compartment, said edge seal being in intimate contact with said box sidewalls during said introduction thereof and providing said opening with dimensions smaller than those of the cross section of said cover skirt portion surrounding said box sidewalls so that said cover remains on top of said edge seal outside said compartment for light-tightly covering said opening during the introduction of said film container box therein;

B. bracket means for receiving and holding said film container box by its bottom portion, within said compartment;



C. means for guidedly displacing said bracket means within said compartment, from one position wherein the top end of said film container box protrudes through said opening outside said compartment, to another position wherein said box is entirely inside said compartment and vice-versa;

D. retractable slide means displaceable within said compartment from one position leaving said opening free for the introduction of a full film container box into said compartment and for ejecting an empty one therefrom, to another position adjacent said opening for light-tightly obturating it when said bracket means has reached its other position;

E. means for displacing said slide means from one of its positions to its other one and vice-versa.

3,962,585

ARRANGEMENT FOR THE LIGHT-PROJECTION OF INDICIA ONTO X-RAY FILMS

Robert Hüttner, and Gerhard Kütterer, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

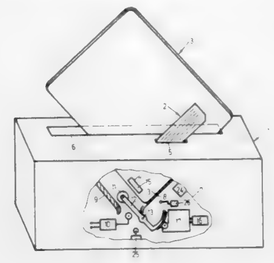
Filed Mar. 20, 1975, Ser. No. 560,232

Claims priority, application Germany, Mar. 29, 1974, 2415423

Int. Cl.² G03C *5/16*

U.S. Cl. 250—476 **6 Claims**

1. In an arrangement for the light-projection of indicia onto X-ray films, including an X-ray film cassette having a window provided in a cassette wall extending in parallel to the plane of the film; a magnetically-openable slide plate having at least a portion thereof formed of a ferromagnetic material adapted to maintain said window in a light-sealed relationship in the closed position of the window, said slide plate having a resilient tongue for maintaining the slide plate in a closed position; said slide being formed of a nonmagnetic material and being displaceably supported along the side of the window facing away from the film in cassette, said resilient tongue being formed of said ferromagnetic material; means supporting said slide plate for pivoting about an axis oriented perpendicular to the plane of the film; a carrier for the indicia to be projected onto the X-ray films; and light-projecting means for receiving said X-ray film cassette having a magnet at the inlet path of the X-ray film cassette located in position correlated to the position of the window in the inserted X-ray film cassette, the



improvement comprising: means mounting said magnet for pivotal movement about an axis in alignment with the pivot axis of said slide plate of the X-ray film cassette inserted into the light-projecting means.

3,962,586

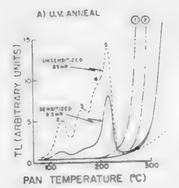
SENSITIZED THERMOLUMINESCENT PHOSPHOR AND METHOD

Michael R. Mayhugh, and Gary D. Fullerton, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 13, 1974, Ser. No. 523,322

Int. Cl.² H05B *33/00*

U.S. Cl. 250—484 **17 Claims**



1. A thermoluminescent phosphor suitable for use in radiation dosimetry in which the phosphor has been simultaneously exposed to radiations within the range of 750–100 nanometers while heated to elevated temperature with the corresponding elimination of interfering centers.

3,962,587

SHIPPING CASK FOR SPENT NUCLEAR FUEL ASSEMBLIES

Kenneth H. Dufrane, Orchard Park, N.Y.; Jack D. Rollins, Rosewell, Ga.; Ralph E. Best, Aiken, S.C.; Victor J. Barnhart, Pittsburgh, Pa.; Clifford J. Anderson, Silver Spring, Md.; Thomas H. Cox, Damascus, Md., and Robert R. Riggs, Edgewood, Md., assignors to Nuclear Fuel Services, Inc., Rockville, Md.

Filed June 25, 1974, Ser. No. 483,039

Int. Cl.² G21F *5/00*

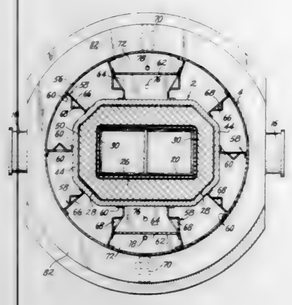
U.S. Cl. 250—506 **5 Claims**

1. A shipping cask for spent nuclear fuel assemblies, comprising:

an elongated, generally rectangular enclosure of somewhat flexible substantially flat stainless steel walls,

gamma ray shielding said enclosure and comprising a plurality of depleted uranium bodies of generally annular shape encompassing said enclosure, abutting each other, and having flat surfaces adjacent but slightly spaced from the

flat walls of said enclosure by a distance of the order of 30 to 50 thousandths of an inch whereby internal pressure in said enclosure will flex said flat walls outwardly into intimate heat-conducting contact with said flat surfaces;



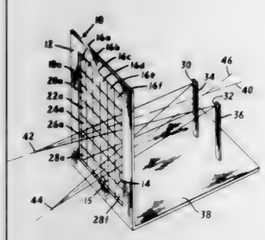
a stainless steel shell enclosing said gamma ray shielding and being bonded to the outer surface thereof by heat conducting material.

3,962,588

METHOD FOR MAKING RECORD OF OBJECTS

Paul L. Di Matteo, 6 Carol Court, Dix Hills, N.Y. 11746; Joseph A. Ross, 26 Trescott Path, Fort Salonga, N.Y. 11768, and Howard K. Stern, 89 Derby Ave., Greenlawn, N.Y. 11740

Continuation of Ser. No. 490,875, July 22, 1974, Pat. No. 3,934,469. This application June 12, 1975, Ser. No. 586,144
The portion of the term of this patent subsequent to Mar. 30, 1992, has been disclaimed.
Int. Cl.² G01C *11/12*
U.S. Cl. 250—558 **20 Claims**



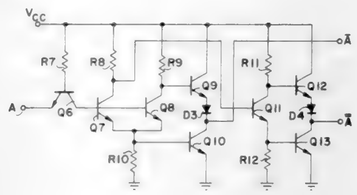
1. A method for use in making a record of an object from a given location comprising the steps of:
a. establishing a lens field of view extending from said given location to said object;
b. subdividing said lens field of view into a succession of adjacent separately discernible cells;
c. encoding said succession of cells by disposing discernible elements within said cells in a preselected sequence, said discernible elements being in number less than the number of said cells and being located between said given location and said object; and
d. introducing radiant energy in said lens field of view and recording radiant energy in said lens field of view definitive of said object, said succession of cells and said discernible elements, thereby making a record of such encoded cell succession superimposed on said object.

3,962,589

INVERTER WITH MINIMUM SKEW

Ury Priel, Cupertino, Calif., and Robert A. Anselmo, Canastota, N.Y., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 10, 1975, Ser. No. 548,189
Int. Cl.² H03K *19/40*
U.S. Cl. 307—214 **2 Claims**



1. A two-inverter circuit comprising:
a source of voltage for said inverters,
a first inverter having an input terminal and an output terminal and including:
a pull up transistor,
a diode, and
a pull down transistor all coupled in a series circuit to said voltage source, the collector of said pull down transistor being coupled to said output terminal,
a pair of phase splitter transistors coupled in a parallel circuit to said voltage source, the emitters of said phase splitter transistors being coupled together and being coupled to the base of said pull down transistor, the collector of a first one of said phase splitter transistors being coupled to the base of said pull up transistor,
and an input transistor coupled between said input terminal and the bases of said two phase splitter transistors, and
a second inverter including:
a pull up transistor,
a diode, and
a pull down transistor all coupled in a series circuit to said voltage source, the collector of said pull down transistor being coupled to an output terminal of said second inverter,
and a phase splitter transistor coupled to said voltage source, the collector and emitter of said phase splitter being coupled to the bases of said pull up and pull down transistors, respectively, the base of said phase splitter transistor being coupled to the collector of a second one of said phase splitter transistors in said first inverter.

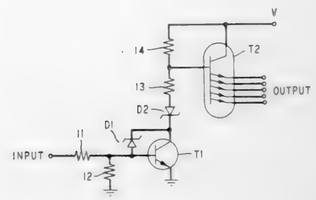
3,962,590

TTL COMPATIBLE LOGIC GATE CIRCUIT

Jack Kane, Bethlehem, and Richard Alan Pedersen, Allentown, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 14, 1974, Ser. No. 497,137
Int. Cl.² H03K *19/08, 19/12, 19/40;* **H01L** *29/48*
U.S. Cl. 307—214 **7 Claims**

1. A two transistor logic gate circuit comprising:
an input terminal and a plurality of output terminals,
an input transistor having the emitter connected to a first bias terminal, and a first Schottky barrier diode connected between the base and collector, the collector being connected to a second bias terminal through a series combination comprising a second Schottky barrier diode, a first resistor, and a second resistor;
an input resistance divider having a first terminal node connected to said input terminal for receiving an input signal, a second terminal node connected to said first bias terminal, and an intermediate node connected to the base of said input transistor; and
a multi-emitter output transistor connected in an emitter follower configuration having the base connected to said



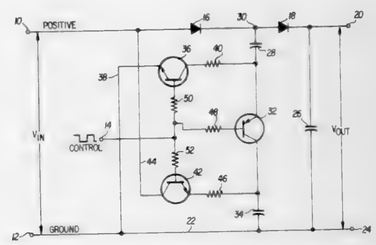
series combination at a node between said first and second resistors, the collector connected to said second bias terminal, and each emitter connected to a different one of said plurality of output terminals.

3,962,591

VOLTAGE DOUBLER CIRCUIT

Edward A. Popka, Ellicott City, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 23, 1974, Ser. No. 535,244
Int. Cl.² H03K *1/14;* **H02M** *3/10*
U.S. Cl. 307—264 **8 Claims**



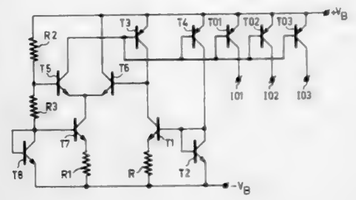
1. A voltage doubling circuit comprising:
input terminal means adapted to be coupled to a source of DC potential having a predetermined magnitude,
output terminal means coupled to said input terminal means for supplying an output voltage having a magnitude twice that of said input voltage,
first charge storage means coupled across said output terminal means for supplying an output voltage thereto,
charging circuit means coupled in parallel with said first charge storage means for controlling the charging thereof, said charging circuit means including an electronic switch having a single on-off function interposed in series between second and third charge storage means; and
control circuit means coupled to said charging circuit means for controlling the operation thereof.

3,962,592

CURRENT SOURCE CIRCUIT ARRANGEMENT

Werner Thommen, Uitikon, and Arpad Korom, Zurich, both of Switzerland, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 15, 1974, Ser. No. 470,273
Claims priority, application Netherlands, May 28, 1973, 7307378
Int. Cl.² H03F *3/18*
U.S. Cl. 307—297 **8 Claims**



1. A current source circuit, comprising;
first and second voltage supply terminals;
a first transistor of first conductivity type having an emitter connected to said first supply terminal and having a base and a collector;
a second transistor of second conductivity type having a collector connected to said collector of said first transistor and having a base and an emitter;
a third transistor of said first conductivity type having a base connected to said base of said first transistor, having a collector connected to said base of said second transistor and having an emitter;
first connection means connecting said emitter of said second transistor to said second supply terminal;
second connection means connecting said emitter of said third transistor to said first supply terminal, one of said connection means being an impedance and the other of said connection means being a direct electrical connection;
a diode connected between said collector of said third transistor and said second supply terminal;
a fourth transistor of said second conductivity type having a collector connected to said first supply terminal, having a base connected to said collector of said first transistor and having an emitter;
a fifth transistor of said second conductivity type having a collector connected to said base of said first transistor, having an emitter connected to said emitter of said fourth transistor and having a base;
means for applying a reference voltage to said base of said fifth transistor;
means for supplying a constant current to said connected emitters of said fourth and fifth transistors; and
at least one output transistor of said first conductivity type having an emitter connected to said first supply terminal, having a base connected to said collector of said fifth transistor and having a collector for current output.

3. A current source circuit comprising:
first and second voltage supply terminals;
a first transistor of first conductivity type having an emitter, a base and a collector;
a second transistor of second conductivity type having a collector connected to said collector of said first transistor, having an emitter connected to said second supply terminal and having a base;
a third transistor of said first conductivity type having an emitter connected to said first supply terminal, having a base connected to said base of said first transistor and having a collector connected to said base of said second transistor;

a diode having a first electrode connected to said collector of said third transistor and having a second electrode;

first connection means connecting said emitter of said first transistor to said first supply terminal;

second connection means connecting said second electrode of said diode to said second supply terminal, one of said connection means being an impedance and the other of said connection means being a direct electrical connection;

a fourth transistor of said second conductivity type having a collector connected to said base of said first transistor, having a base connected to said collector of said first transistor and having an emitter;

third connection means connecting said emitter of said fourth transistor to said second supply terminal; and

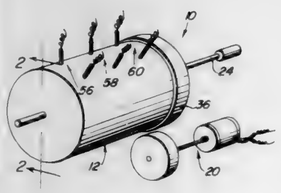
at least one output transistor of said first conductivity type having an emitter connected to said first supply terminal, having a base connected to said collector of said fourth transistor and having a collector for current output.

3,962,593

ELECTROMAGNETIC MOTOR

James H. Bowen, Atlanta, Ga., assignor to BDH, Inc., Rome, Ga.

Filed Apr. 1, 1975, Ser. No. 564,139
Int. Cl.² H02K *7/20*
U.S. Cl. 310—46 **6 Claims**



1. An electromagnetic impulse motor, comprising, in combination:

a stator;

a rotor arranged for rotation relative to the stator and cooperating with the stator to form a stator-rotor assembly;

a permanent magnet mounted on the rotor;

electromagnet means mounted on the stator for impulsing the permanent magnet and causing rotation of the rotor; and

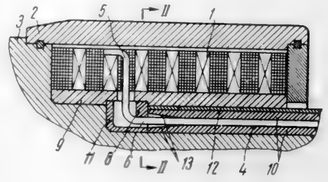
variable speed timing means electrically connected to the electromagnet means for pulsing the latter as a function of the speed of the variable speed timing means and controlling the speed of rotation of the rotor, the stator including a framework constructed from a non-magnetic material, the rotor including a shaft rotatably mounted on the framework, a plurality of flywheels having peripheries and being mounted on the shaft for rotating same, the flywheels being constructed from a non-magnetic material, the permanent magnet being a plurality of permanent magnets mounted on the peripheries of the flywheels, each of the flywheels being a disc having a periphery provided with a plurality of notches equally spaced around the periphery of a groove at the apex of each notch, the notches forming seats for the permanent magnets with a portion of each permanent magnet being held in the groove associated with the respective notch, the permanent magnets and electromagnets being advantageously with opposite poles thereof adjacent one another for creating only attraction forces between the permanent magnets and electromagnets.

3,962,594

ROTOR WINDING OF ELECTRIC MACHINES

Boris Leonidovich Konovalov, 603 mikroraion, 1, kv. 346; Evgeny Khaimovich Glider, ulitsa Beketova, 19/13, kv. 40; Oleg Borisovich Gradov, ulitsa Kosiora, 6, kv. 64; David Bentsionovich Karpman, ulitsa Frantisheka Krala, 49, kv. 54; Boris Volkovich Spivak, ulitsa Kosiora, 56, kv. 55; Alexandr Abramovich Chigirinsky, ulitsa Kuibysheva, 11, kv. 8; Vasily Semenovich Kildishev, ulitsa Plekhanovskaya, 41/43, kv. 55, all of Kharkov, U.S.S.R.; Genrikh Nukhimovich Linetsky, deceased, late of Kharkov, U.S.S.R., and by Ella Semenovna Linetskaya, administrator, 606 mikroraion 17, kv. 92, Kharkov, U.S.S.R.

Continuation of Ser. No. 429,396, Dec. 28, 1973, abandoned.
This application May 5, 1975, Ser. No. 574,469
Int. Cl.² H02K *1/32*
U.S. Cl. 310—61 **1 Claim**



1. In an electric machine having a rotor shaft, a plurality of axial slots formed in said shaft, a rotor winding having coil ends disposed circumferentially about said shaft, a plurality of cooling conduits for supplying said winding with a cooling liquid, and a tread ring disposed circumferentially about said coil ends, said cooling conduits having radial and axial portions with respect to said shaft, said axial portions positioned within said axial slots, the points at which said axial portions meet said radial portions defining a transition point of said conduits, the improvement which comprises means for reducing stresses on said cooling conduits which comprises: a first insulating gasket positioned between said coil ends and said axial slots; a supporting insulating block positioned between said first insulating gasket and an axial portion of each of said cooling conduits near said transition point so as to permit radial displacement of said radial portion of said cooling conduit; and a plurality of second insulating gaskets each of which is disposed within one of said axial slots about one of said conduits, the axial portion of each conduit fixedly contacting its associated second insulating gasket a predetermined distance from said transition point so as to further relieve stresses on said axial and radial portions of said cooling conduits.

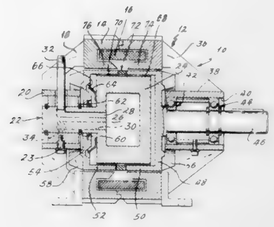
3,962,595

MAGNETIC PARTICLE BRAKE

Gerald R. Eddens, St. Louis County, Mo., assignor to W. J. Industries, Incorporated, St. Louis, Mo.

Filed Dec. 20, 1974, Ser. No. 534,716
Int. Cl.² H02K *49/00*
U.S. Cl. 310—93 **17 Claims**

1. A magnetic particle brake device comprising a stationary member including a housing portion constructed of magnetic material, said housing having an annular cavity defined in part by spaced annular inner housing portions, a coil mounted in said housing cavity, means connecting said coil to a source of electric energy, a movable member mounted in said stationary member, said movable member including a pair of spaced annular magnetic portions connected together by non-magnetic connecting means to define a flux gap therebetween, the portions of said spaced pair being located closely adjacent to respective ones of the spaced annular inner housing portions, another stationary magnetic member positioned on the opposite side of said pair of spaced movable portions from the spaced housing portions and including a portion with a smooth annular surface that extends across and closely adjacent to said spaced movable portions and to the non-magnetic connecting means therebetween so that a magnetic flux path produced when the coil is energized extends from the spaced housing portions through the respective spaced portions of the



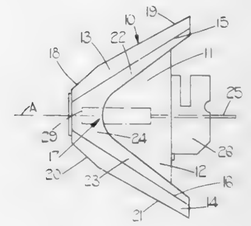
movable member and through the other stationary magnetic member, and particles of a magnetizeable substance positioned in the space between the movable member and said other stationary member, said particles forming parts of the flux path produced when the coil is energized.

3,962,596

FILAMENT SHIELDS

Geoffrey Roland Draper, Kettering, England, assignor to British Sealed Beams Limited, Corby, England

Filed Nov. 4, 1974, Ser. No. 520,785
Claims priority, application United Kingdom, Nov. 14, 1973, 52867/73
Int. Cl.² H01K *1/26, 1/18, 7/02*
U.S. Cl. 313—117 **10 Claims**



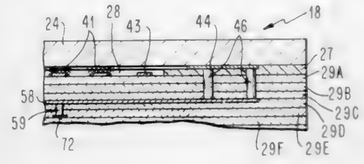
1. A filament shield for a parabolic reflector lamp unit, comprising a body having a recess therein said recess having a base and receiving, in use, a filament to be shielded so that the filament is spaced from the base, said recess being bounded on two opposed edges by a pair of surfaces, an inner edge of each said surface being linear and disposed at an angle to an axis along which the filament is destined to lie in use, said inner edge of each said surface being spaced from said axis, and an outer edge of each said surface being inclined at a greater angle to said axis than the respective inner edge so that each said surface tapers inwardly toward a focal point of the parabolic reflector lamp unit when said filament shield is mounted in said lamp unit.

3,962,597

GAS DISCHARGE DISPLAY PANEL INCLUDING ELECTRODE CONNECTIONS IN PLURALITY OF NON-CONDUCTIVE LAYERS

Kendall Clark, Poughkeepsie; Alan D. Lemberger, Wappinger Falls, and Milton R. Shapiro, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 1, 1974, Ser. No. 484,647
Int. Cl.² H01J *5/52, 11/02, 61/30, 61/36*
U.S. Cl. 313—188 **27 Claims**



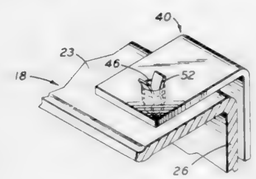
1. A gas discharge display panel having front and rear cover plates with transversely intersecting confronting electrodes in spaced apart relation therebetween, at least said electrodes associated with said rear cover plate being positioned on one outer surface of said rear cover plate; said rear cover plate including a plurality of discrete layers of nonconductive material with conductors extending therethrough and connecting said electrodes; and means defining a hermetically sealed gas filled chamber intermediate said plates at least between said electrodes.

3,962,598

MEANS FOR RESTRICTING MOVEMENT OF A SHADOW MASK IN A DIRECTION TRANSVERSE TO THE LONGITUDINAL AXIS OF A COLOR CATHODE RAY TUBE

Rudolph R. Schneider, Jr., Syracuse, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 16, 1973, Ser. No. 351,462
Int. Cl.² H01J *29/02, 29/07*
U.S. Cl. 313—406 **5 Claims**



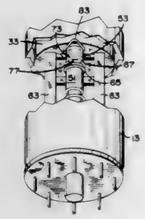
1. In a rectangular color picture tube of the shadow mask variety, said tube having a face plate portion with a luminescent screen formed on an interior surface thereof, said shadow mask being mounted within said face plate and comprising a relatively fragile foraminated portion affixed to a relatively rigid circumferential frame and wherein said mask is positioned in said face plate by means of three springs attached to said mask which cooperate with three studs affixed in walls of said face plate, one spring being attached to a long side of said mask and the other two springs being substantially oppositely disposed on the short side of said mask, the improvement comprising: means associated with said short side springs for substantially restricting movement of said mask in a direction transverse to the longitudinal axis of said tube, said means for restricting movement of said mask including at least one section that extends between said stud and said frame and is spaced from said frame.

3,962,599

SHIELDING MEANS FOR CATHODE RAY TUBE

Donald L. Say, Waterloo, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 25, 1974, Ser. No. 526,720
Int. Cl.² H01J *29/02, 29/56*
U.S. Cl. 313—449 **10 Claims**



1. An improvement in a cathode ray tube having an envelope with a cathodoluminescent screen formed on the viewing panel portion, a conductive coating interiorly disposed on the funnel and the upper neck portions, and a related multi-electrode electron gun assembly positioned in the glass neck portion in a manner to beam electrons to said screen, said gun assembly including in the forward region thereof neck contacting snubber means, a focusing electrode and a forwardly positioned high voltage accelerating electrode, said sequentially related electrodes having spatially related portions formed as outwardly rolled rims to provide rounded adjacently related surfaces, said improvement being shielding means comprising:

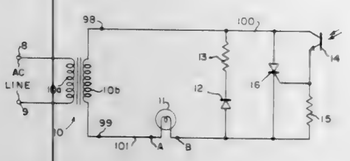
an element formed of round wire material configurated as a substantially U-shaped member having a bottom bridge and a pair of extending legs, the legs of said member being both attached to the side of at least one of said electrodes in a manner whereof the bottom bridge portion of said U-shaped member is fabricated to partially follow the peripheral contour of and be substantially contiguous with the rolled rim of said electrode extending outward therefrom toward but not touching the adjacent glass wall of said neck portion.

3,962,600

AMBIENT LIGHT RESPONSIVE ILLUMINATION BRIGHTNESS CONTROL CIRCUIT

Carl R. Pittman, Columbus, Ind., assignor to Arvin Hong Kong Ltd., Columbus, Ind.

Filed Feb. 14, 1975, Ser. No. 549,913
Int. Cl.² H05B *39/04*
U.S. Cl. 315—158 **9 Claims**



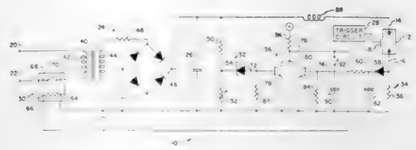
1. A controllable illuminating system comprising a power supply, a pair of terminals adapted to be coupled to said power supply, illuminating means coupled to one of said terminals, and control means coupled to said illuminating means and to the other of said pair of terminals, said control means having a diode coupled for inducing current flow of a first polarity from one of said terminals through said illuminating means and light sensitive circuit means coupled for controllably inducing current flow of opposite polarity from one of said terminals through said illuminating means in response to the ambient light level where said control means is located for varying the power supplied to said illuminating means thereby varying the intensity of illumination emitted from said illuminating means in response to said ambient light level.

3,962,601

ZERO CROSSING RELAY CONTROLLED CIRCUIT FOR HIGH POWER DISCHARGE DEVICES

Stanley Wrzesinski, 1535 N. Bosworth, Chicago, Ill. 60622

Filed Feb. 18, 1975, Ser. No. 550,415
Int. Cl.² H05B *41/32*
U.S. Cl. 315—241 R **5 Claims**



1. A circuit for operating high power discharge devices comprising in combination:

trigger means coupled to said discharge device for producing a discharge condition in said discharge device;

an energy storage circuit including capacitive reactance coupled to said discharge device for discharging through said discharge device when said discharge device is in a discharge condition;

charging means coupled between a power source and said energy storage circuit for charging said energy storage circuit;

switching means comprising a zero crossing solid state relay coupled to said charging means for selectively disabling and enabling said charging means;

first sensing means for sensing the level of charging of said energy storage circuit;

second sensing means for sensing the occurrence of discharge in said discharge device; and

control means coupled between said first and second sensing means and said switching means for disabling said charging circuit in response to the existence of a predetermined charge level of said energy storage circuit and in response to the occurrence of discharge in said discharge device.

3,962,602

SIDE PINCUSHION CORRECTION SYSTEM

Wolfgang Friedrich Wilhelm Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 27, 1974, Ser. No. 510,096
Int. Cl.² H01J *29/70*
U.S. Cl. 315—370 **7 Claims**



1. A side pincushion correction circuit comprising:

a line output transformer;

a line deflection winding;

a line deflection generator coupled to said deflection winding and to a first winding of said transformer for inducing energy therein for defining trace and retrace intervals during each line deflection cycle;

a series coupled inductance and active current conducting device coupled in parallel with a second winding of said line transformer;

first waveshaping means coupled to a winding of said transformer for shaping retrace interval waveforms obtained from said winding;

a field rate deflection generator;

second waveshaping means coupled to said field rate generator; and

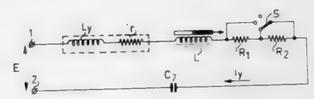
means for combining said line and field rate waveforms obtained from said first and second waveshaping means and for coupling them to a control electrode of said active current conducting device to conduct for different durations during the line retrace intervals at the field rate for loading said transformer and thereby altering the current in said line rate deflection winding in a manner to compensate for side pincushion distortion.

3,962,603

CIRCUIT ARRANGEMENT IN TELEVISION DISPLAY APPARATUS FOR CORRECTING THE HORIZONTAL LINEARITY

Johannus Gerhardus Jozef Van der Vegt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 20, 1975, Ser. No. 542,350
Claims priority, application Netherlands, Feb. 1, 1974, 7401402
Int. Cl.² H01J *29/56*
U.S. Cl. 315—370 **5 Claims**



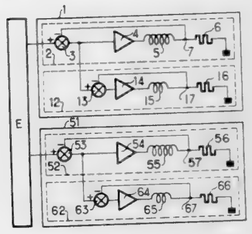
1. A circuit arrangement for correcting the linearity of the deflection current flowing through a line deflection coil, said circuit comprising a series arrangement means for coupling to said coil and including a correction inductor having a premagnetized core across which series arrangement a substantially constant voltage is present during the deflection interval, and a network means for providing a voltage which is a substantially linear function of time during the deflection interval.

3,962,604

DEFLECTION SYSTEM FOR A CATHODE RAY TUBE

Roger Guénard, Aulnay-sous-Bois, and Jean-Claude Bonno, Bruyeres-le-Chatel, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, France

Filed June 12, 1974, Ser. No. 478,734
Claims priority, application France, June 13, 1973, 73.21484
Int. Cl.² H01J *29/70*
U.S. Cl. 315—391 **7 Claims**



6. A deflection system for a cathode ray tube comprising a horizontal deflection device and a vertical deflection device, each of said horizontal and vertical deflection devices including a slow response deflection circuit and a rapid response deflection circuit,

means for applying a deflection signal to said slow response deflection circuit of each of said horizontal and vertical deflection devices, and

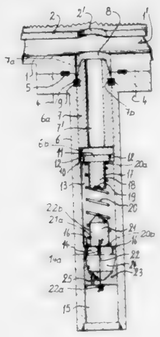
means for applying a control signal generated by said slow respsonse deflection circuit to said rapid response deflection circuit of each of said horizontal and vertical deflection devices, said control signal being a measure of signal delay in said slow response deflection circuit.

3,962,605

HIGH-SPEED GROUNDING APPARATUS FOR METAL ENCAPSULATED HIGH-VOLTAGE INSTALLATIONS

Richard Thaler, Unterentfelden, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed May 28, 1975, Ser. No. 581,685
Claims priority, application Switzerland, June 13, 1974, 8125/74
Int. Cl.² H02H *7/22*
U.S. Cl. 317—16 **9 Claims**



1. A high-speed grounding apparatus for a metal encapsulated high-voltage switching installation incorporating a conductor, a capsule for encapsulating said conductor, said high-speed grounding apparatus comprising a grounding bolt displaceable between a rest position into a grounding position for electrically connecting the capsule with the therein encapsulated conductor, a propellent charge which when ignited displaces the grounding bolt out of its rest position into its grounding position, and an ignition device provided for the propellent charge, said ignition device being triggered in response to a pressure increase prevailing in the switching installation.

3,962,606

SENSOR FOR A GROUND FAULT CIRCUIT INTERRUPTER

Edward P. Burns, Danbury, Conn., and Herbert W. McCord, Warren, N.J., assignors to General Signal Corporation, Rochester, N.Y.

Filed Oct. 9, 1974, Ser. No. 513,365
Int. Cl.² H02H *3/28*
U.S. Cl. 317—18 D **10 Claims**

1. A protection device responsive to a ground fault current comprising in combination:

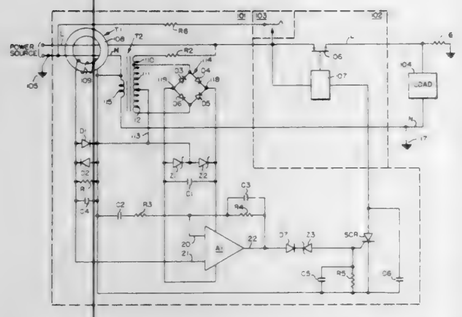
a. a differential sensing transformer having first and second primary windings in series, respectively, with the live and neutral conductors supplying power from a power source to a load;

b. a second transformer having one winding in series with said neutral conductor and having a second winding with

a part thereof coupled across said live and neutral conductors as an auto-transformer;

c. a diode bridge having its input supplied by said auto-transformer and its output coupled to an operational amplifier as a power supply therefor;

d. a sensing winding on said differential sensing transformer responsive to a difference of current in said live and neutral conductors for providing an input to said operational amplifier;



e. a disconnect actuating means coupled across said live and neutral conductors and responsive to an output from said operational amplifier for disconnecting said live conductor from said load; and

f. control means coupled between the output of said operational amplifier and said disconnect actuating means for controlling the magnitude of the output signal from said operational amplifier to which said disconnect actuating means responds.

3,962,607

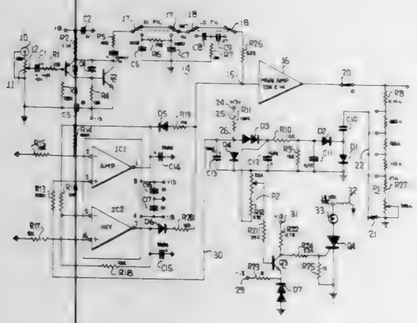
LOUDSPEAKER PROTECTIVE SYSTEM

Wade D. Burns, Roslyn, Pa., assignor to Dynaco Inc., Blackwood, N.J.

Filed June 5, 1974, Ser. No. 476,389

Int. Cl.² H02H *3/20, 7/20*

U.S. Cl. 317—31 **8 Claims**



1. In a protective circuit, a loudspeaker, a source of audio signal, a power amplifier having an input terminal and an output terminal, means connecting said source to said input terminal, means connecting said loudspeaker to said output terminal, means for deriving a predetermined fraction of the voltage at said output terminal at a further terminal, means rectifying the voltage on said further terminal and deriving a peak rectified voltage, accumulator means for accumulating said peak rectified voltage, said accumulator means having a relatively long time constant on discharge and a relatively short time constant on charge, a voltage responsive control circuit, means coupling said accumulator means to said voltage responsive control circuit, said means coupling including diode means poled to be forward biased by the voltage of said accumulator means, reference voltage means biasing said diode means to render said diode means non-conductive of said voltage of said accumulator means only while said voltage of said accumulator means is below a predetermined level indicative of a safe level of voltage drive of said loudspeaker, and means responsive to conductivity of said diode means for controlling by-pass of peaks of voltage at said input terminal as a function of said voltage of said accumulator means only sufficiently to reduce voltage into said loudspeaker to said safe level.

3,962,608

APPARATUS FOR HOLDING AND COOLING ELECTRONIC CIRCUIT BOARDS IN REMOTE-CONTROLLED TYPEWRITERS

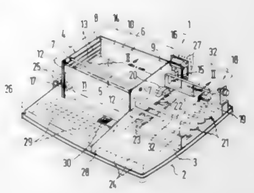
Franz Forster, Landshut, and Paul Bauer, Ergolding, both of Germany, assignors to Forster Electronic GmbH, Landshut-Ergolding, Germany

Filed July 1, 1974, Ser. No. 484,711

Claims priority, application Germany, July 13, 1973, 2335735

Int. Cl.² H05K *7/20*

U.S. Cl. 317—100 **11 Claims**



1. An arrangement for processing copy for remote-controlled typewriters, comprising, in combination, a box-shaped frame holding circuit boards having electronic components; a plurality of guides on said frame supporting said circuit boards, said circuit boards being located one above the other; means for rotating about a horizontal axis of the rear wall of said frame; a first window on said rear wall and spanning substantially said circuit boards located one above the other; blower means connected externally to said first window; and a second window in the region of said frame lying diagonally opposite said first window, said second window being substantially as high as said first window, said blower means directing cooling air along a path free from passing through said circuit boards, said path being free of substantially sharp flow deflections; said cooling air contacting substantially the entire surfaces of said circuit boards, said first and second windows being located also adjacent to one pair of diagonally opposite corners of each circuit board.

3,962,609

VOLTAGE TRANSFORMER FOR A COMPLETELY INSULATED HIGH-VOLTAGE INSTALLATION

Bishwarup Chaudhuri, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

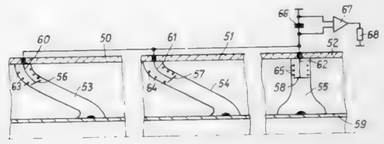
Filed May 17, 1974, Ser. No. 470,981

Claims priority, application Germany, May 17, 1973, 2325449

Int. Cl.² H01B *7/20;* **H05K** *9/00*

U.S. Cl. 317—103 **5 Claims**

1. In a fully-insulated, high-voltage installation including a grounded metal enclosure and a high-voltage conductor contained in the metal enclosure, a voltage transformer comprising: a supporting insulator centrally supporting the high-voltage conductor in the metal enclosure; a low-voltage electrode embedded in said supporting insulator so as to be in spaced relation to the high-voltage conductor, said low-voltage electrode and the high-voltage conductor conjointly defining a high-voltage capacitor; a low-voltage capacitor connected to said high-voltage capacitor, said high-voltage capacitor and said low-voltage capacitor conjointly defining a capacitive voltage divider; connecting means connecting said low-voltage capacitor to said low-voltage electrode embedded in said



support insulator, said connecting means being a connecting lead extending within said supporting insulator; and, control electrode means embedded in said supporting insulator in surrounding relation to said connecting lead whereby a significant alteration of the pattern of the electric field lines within the metal enclosure is precluded.

3,962,610

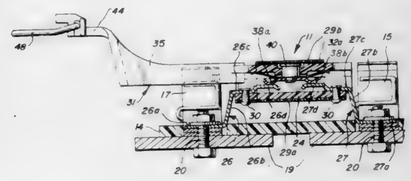
MANUAL BY-PASS DEVICE FOR METER SOCKETS

Ronald H. Reed, Versailles, and Raymond A. Diersing, Lexington, both of Ky., assignors to Square D Company, Park Ridge, Ill.

Filed Aug. 21, 1974, Ser. No. 499,366

Int. Cl.² H02B *9/00*

U.S. Cl. 317—108 **6 Claims**



1. The combination with a meter socket for a watt-hour meter having four contact blades extending outwardly therefrom, the meter socket including a front wall having an opening therein for accommodating a meter, a meter mounting ring mountable on the front wall about the opening for restraining the meter in place in the socket, four spring-jaw terminals mounted in the socket in alignment with the opening in the front wall for receiving the contact blades of the meter, respectively, two of the spring-jaw terminals being load terminals for connection to a load, and two of the spring-jaw terminals being line terminals for connection to power supply lines, of a manual by-pass device operable to provide continuous electrical service through the socket when the meter is removed from the socket and the contact blades are removed from the spring-jaw terminals, the by-pass device comprising four stationary contact brackets each having a base portion and a contact portion at opposite ends of an intermediate spacing portion, the base portions of the brackets being electrically connected to the spring-jaw terminals, respectively, the contact portions of the brackets being co-planar and spaced toward the front wall of the socket from the base portions by the respective spacing portions, two of the brackets connected to the spring-jaw terminals which are line terminals and the contact portions thereof being in side-by-side relation and the contact portions of the brackets connected to the spring-jaw terminals which are load terminals and the contact portions thereof being in side-by-side relation, an insulating base supported by the contact portions and positioned inwardly of the front wall therefrom, a slider reciprocally mounted on the insulating base and having two contact bridges mounted thereon, each contact bridge being aligned with two of the contact portions which are in side-by-side relation with the other two contact portions so as to be engageable therewith and disengageable therefrom upon reciprocation of the slider, biasing means between the slider and the contact bridges biasing the contact bridges inwardly of the front wall toward the contact portions, a handle portion of the slider extending outwardly to engage the meter mounting ring when the ring is mounted on the front wall and positioning the contact bridges in disengaged position with respect to the contact portions, the slider being capable of reciprocable movement only when the meter mounting ring is disengaged from the front cover to cause engagement of the contact bridges with the contact portions thereby to provide an alternate current path between the line and load terminals.

3,962,611

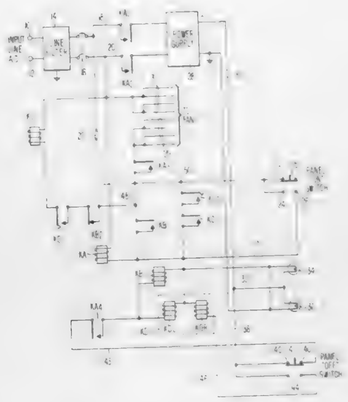
AUTOMATIC POWER RESTART FOR UNATTENDED ELECTRICAL EQUIPMENT

Bruce Jeffrey Miller, Malvern, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 19, 1975, Ser. No. 578,827

Int. Cl.² H03H *7/30*

U.S. Cl. 317—154 **6 Claims**



1. An automatic power restart circuit for use in a system having independent "ON" and "OFF" control means and in which AC power is delivered on a pair of lines to a DC power supply having at least a pair of output terminals, comprising:

a plurality of electrical relays each having at least a set of contacts associated therewith,

a first subcircuit having three parallel branches connected between a pair of nodes, one of said branches including said "ON" control means, means coupling one of said pair of nodes to one of said AC lines, a first of said plurality of relays having its coil interposed between the other of said nodes and the other of said AC lines,

a second subcircuit including said "OFF" control means connected in series with one of said power supply terminals, the disposition of said "OFF" control means providing selectively a pair of alternate circuit paths, a second of said relays being of the "latch-in" variety and having coil means for providing both latching and reset functions, a third relay having its coil connected in parallel with the latching coil means of said second relay and both being included in a first of said alternate circuit paths, the second of said circuit paths including the reset coil means of said second relay,

a third subcircuit connected across said AC lines, a fourth of said relays having its coil included in said third subcircuit,

said first relay having at least one set of normally open contacts interposed between said AC lines and said power

supply and a second set of normally open contacts connected in series relationship with the parallel combination of said second relay latching coil means and said third relay coil in said second subcircuit,

a second of said parallel branches in said first subcircuit including in series one set of contacts of said second relay, and the normally open contacts of said fourth relay, the third of said branches in said first subcircuit including a set of normally open contacts of said third relay,

said third subcircuit further including in series with said fourth relay coil another set of contacts of said second relay and a second normally closed set of contacts of said third relay.

3,962,612

CONTROL DEVICE FOR ELECTRIC VEHICLE

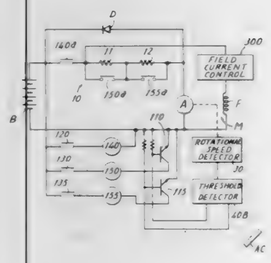
Toshikazu Kawasaki, Suita, Japan, assignor to Daihatsu Motor Co., Inc., Japan

Filed Oct. 8, 1974, Ser. No. 513,130

Claims priority, application Japan, Oct. 12, 1973, 48-114966; Oct. 12, 1973, 48-114967; Apr. 22, 1974, 49-45656; Apr. 22, 1974, 49-45657; Apr. 24, 1974, 49-46790; Apr. 24, 1974, 49-46791; June 22, 1974, 49-71757; June 22, 1974, 49-71758; June 22, 1974, 49-71759; Aug. 14, 1974, 49-93591; Apr. 24, 1974, 49-47518[U]; Apr. 24, 1974, 49-47519[U]

Int. Cl.² H02P 7/14

U.S. Cl. 318—139 **22 Claims**



1. A control device for an electric vehicle comprising:

an electrical power source;

a DC shunt or compound motor for driving said electric vehicle, said motor comprising an armature and a shunt field coil being connected so as to be energized by said electrical power source;

means for adjusting the rotational speed of said motor, wherein said means for adjusting has a range of positions and is continuously adjustable from a start position to positions throughout its range;

switching control means responsive to said speed adjusting means for selectively applying values of armature terminal voltage to said armature; and

field coil current control means responsive to said speed adjusting means throughout said range for continuously controlling the current flowing through said shunt field coil, whereby the rotational speed of said motor is controlled to a value determined by the applied armature terminal voltage selected by said switching control means and the current flowing through said shunt field coil continuously controlled by said field coil current control means.

3,962,613

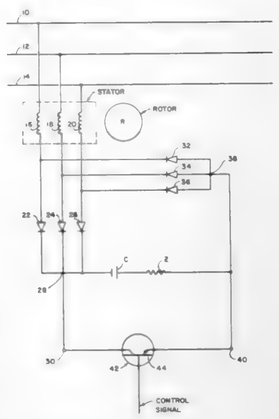
POLYPHASE AC MOTOR CONTROL

Robert D. Barry, Lockport, N.Y., assignor to Wer Industrial Division of Emerson Electric Co., Grand Island, N.Y.

Filed Jan. 31, 1973, Ser. No. 328,445

Int. Cl.² N02P 5/40

U.S. Cl. 318—225 R **6 Claims**



1. In a polyphase alternating current motor having a plurality of field coils each having one side connected to a source of polyphase current, the improvement comprising; a plurality of first rectifying means connected individually to said field coils and joined together to form a first junction, a plurality of second rectifying means connected individually to said field coils and joined together to form a second junction and a single means comprising a single controlling member connected between said first and second junction for varying the average current in each of said coils.

3,962,614

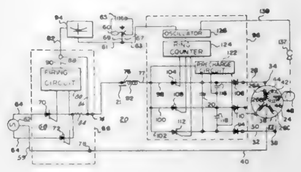
METHOD FOR CONTROLLING THE OUTPUT CONDITION OF A SELF EXCITED ALTERNATING CURRENT INDUCTION MOTOR

Charles E. Rettig, Brookfield, Wis., assignor to Litton Industrial Products, Inc., Milwaukee, Wis.

Continuation of Ser. No. 337,294, March 2, 1973, abandoned, which is a division of Ser. No. 82,302, Oct. 20, 1970, abandoned. This application Oct. 18, 1974, Ser. No. 515,936

Int. Cl.² H02P 5/40

U.S. Cl. 318—227 **38 Claims**



1. The method of producing a desired torque condition in an induction motor having a stator winding producing a motor flux controllable to a desired level by the magnitude of a stator current having a frequency characteristic, said motor also including a rotor the rotary condition of which is definable in terms of a rotor frequency which is referenced to the stator winding, and said motor being capable of having a slip frequency therein equal to the algebraic summation of the rotor frequency and the stator current frequency, said method comprising the steps of:

a. providing an adjustable stator current for the motor;

b. sensing the existing rotor frequency of the rotor;

c. establishing the slip frequency of the motor at a value proportional to the desired motor torque condition by altering at least one of the stator current frequency and the rotor frequency;

d. concurrently establishing the magnitude of the stator current responsive to the sensed rotor frequency to a value prescribed solely as a predetermined function of the desired motor torque condition; and

e. concurrently establishing the phase displacement of the stator current, wherein the stator winding is energized by the stator current phase displaceable with respect to a flux producing exciting current, at a value prescribed solely as a predetermined function of the desired motor torque condition, the concurrent predetermined establishment of the stator current magnitude and phase displacement values establishes the motor flux at a desired level while generating the desired torque condition in the motor.

3,962,615

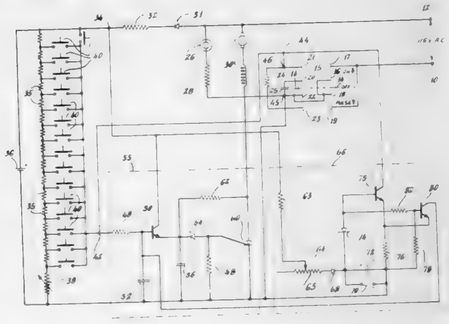
MULTIPLE MODE VARIABLE SPEED MOTOR CONTROL CIRCUIT

Searle T. Spangler, 2 Florian Court, Westport, Conn. 06880

Filed Mar. 20, 1974, Ser. No. 452,711

Int. Cl.² H02P 5/16

U.S. Cl. 318—305 **6 Claims**



1. A variable speed motor control circuit adapted to be actuated momentarily by push buttons for running the motor at a predetermined speed after the selected push button is released, comprising

a. a source of potential,

b. a master control switch coupled to said source of potential,

c. a plurality of serially connected resistors adapted to be coupled to said source of potential by said master control switch for providing a control voltage thereon,

d. a plurality of push button switches capable of being momentarily operated, selectively coupled to said resistors and having a common output for providing thereat a different control voltage in accordance with the push button selected,

e. a motor,

f. a motor control circuit having an imput coupled to said common output of said push button switches and an output coupled to said motor for controlling the speed of said motor in accordance with the push button depressed,

g. said motor control circuit having a high betaa transistor, a zener diode and a silicon controlled rectifier, said high beta transistor having an input thereof coupled to said common output of said push button switches and an output coupled to said zener diode, said silicon controlled rectifier coupled to said zener diode and to said motor whereby said motor speed is controlled by the controlled voltage applied to said transistor which controls said zener diode for switching said silicon controlled rectifier to apply power to said motor, and

h. memory means coupled to the input of said motor control circuit for providing a predetermined control voltage to said motor control circuit in accordance with the push button selected thereby requiring only a momentary activation of the push button selected.

3,962,616

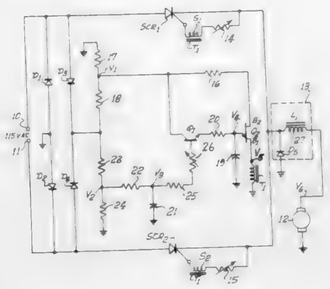
START-UP CONTROL FOR DC MOTORS

Robert L. Smith, Granville, Ill., assignor to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.

Filed Sept. 6, 1974, Ser. No. 503,972

Int. Cl.² H02P 1/18

U.S. Cl. 318—400 **8 Claims**



1. A controlled rectifier supply from an AC power source to a load comprising at least one silicon-controlled rectifier connected to rectify power from said source to said load, and thus produce rectified sinusoidal voltage pulses, a control transformer having a secondary winding connected between the cathode and control electrode of said silicon-controlled rectifier, said transformer having its primary winding connected to a control circuit, and a diode rectifier connected to rectify current from said source and deliver to said control circuit rectified sinusoidal voltage pulses, said control circuit comprising

means connected to said diode rectifier for generating a ramp voltage signal from said rectified current, and

a voltage-controlled relaxation oscillator powered by rectified current from said diode rectifier and responsive to said ramp voltage signal for producing a trigger pulse through the primary winding of said control transformer at a time during each cycle of said rectified sinusoidal voltage pulse that is inversely proportional to the amplitude of said ramp voltage signal.

3,962,617

CURRENT LIMITING IMPEDANCE NETWORK FOR DRYER CONTROL

Carl R. Offutt, St. Joseph, and Roque Denis Marcade, Stevensville, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

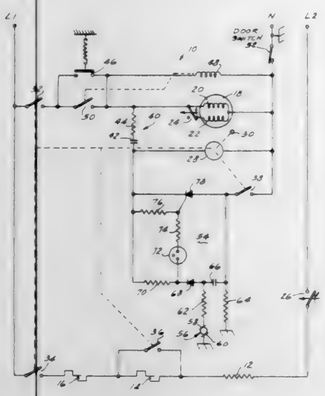
Filed Jan. 6, 1975, Ser. No. 539,018

Int. Cl.² H02P 1/04

U.S. Cl. 318—444 **5 Claims**

1. In an automatic clothes dryer of the type having a control circuit wherein an AC motor which is connected to an AC electrical supply is shunted by a controlled conduction device to selectively shunt one half of the AC wave to prevent operation of the motor, and a current limiting means is connected in series circuit with the controlled conduction device and the motor to limit the current through the controlled conduction device during its conductive condition, the improvement wherein:

said current limiting means comprises a resistor and a capacitor connected in series with said resistor, said capacitor having a capacitive reactance which is approximately

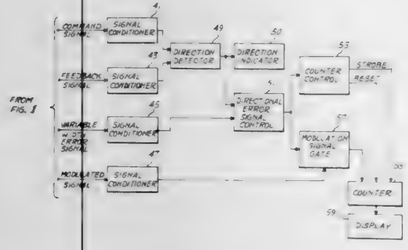


twice the inductive reactance of the motor to provide a capacitive circuit impedance and operation of the circuit with a leading current phase angle.

3,962,618
DIGITAL FOLLOWING ERROR MEASUREMENT SYSTEM

James M. Burton, Seattle, and Jansey D. Tieden, Puyallup, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Aug. 5, 1974, Ser. No. 494,969
Int. Cl.² G05B *13/00*
U.S. Cl. 318—561 **10 Claims**

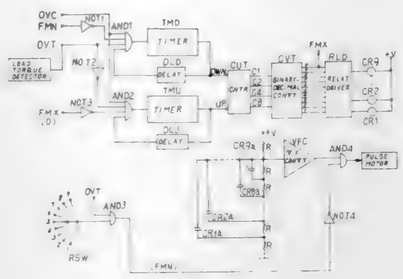


1. A digital following error measurement system for phase analog servo systems comprising:
error detecting means suitable for connection to a phase analog servo system so as to detect the following error between a commanded position and an actual position and form a bi-level signal having a duty cycle related to said following error;
signal detecting means suitable for connection to said phase analog servo system so as to detect a signal related to the commanded rate of position change an form a pulse chain having a frequency related to said commanded rate of position change;
a signal gate means connected to said error detecting means and to said signal detecting means for passing said pulse chain during the period of time said bi-level signal is in one of its two states; and
counting means connected to said signal gate for counting the pulses passed by said signal gate.

3,962,619
FEED CONTROL DEVICE

Hideo Nishimura, Kariya, and Tamotsu Ishigaki, Chiryu, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Japan

Filed Oct. 9, 1974, Ser. No. 513,383
Claims priority, application Japan, Dec. 11, 1973, 48-138420
Int. Cl.² G05B *19/24*
U.S. Cl. 318—571 **5 Claims**

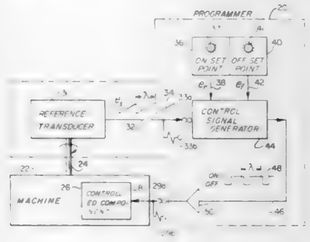


1. A feed control device for controlling the feed speed of a tool relative to a workpiece to be machined comprising:
a feed motor for moving said tool relative to said workpiece;
a load detector for generating an output signal in response to a load applied to said tool;
a delay circuit;
an AND circuit for receiving said output signal from said load detector and an output signal from said delay circuit;
a timer for receiving an output signal from said AND circuit, said delay circuit receiving an output signal from said timer;
a plurality of relays;
means responsive to said timer to selectively energize said plurality of relays to change an input voltage; and
a voltage-to-frequency converter for receiving said input voltage responsive to energization of said relays to thereby rotate said feed motor.

3,962,620
SWITCHING APPARATUS

Warren E. Dion, Bristol, Conn., assignor to The Arthur G. Russell Company, Incorporated, Bristol, Conn.

Filed June 3, 1974, Ser. No. 475,648
Int. Cl.² G05B *11/28*
U.S. Cl. 318—599 **9 Claims**



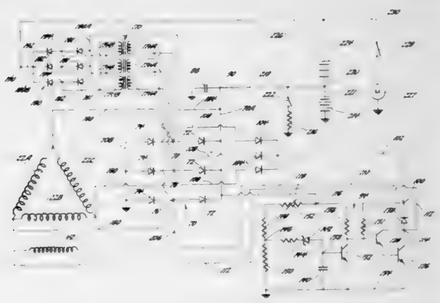
1. A switching apparatus for producing an ON and OFF valued control signal which switches from one value to the other at adjustable selected points in the variation range of a given reference variable, said switching apparatus comprising:
a reference transducer having said reference variable as an input thereto and operable to convert said reference variable to a reference signal the magnitude of which reference signal

corresponds to the magnitude of said reference variable, an ON set-point device for producing an ON set-point signal having a selectively variable magnitude, an OFF set-point device for producing an OFF set-point signal having a selectively variable magnitude which may be either higher or lower than the magnitude of said ON set-point signal, and a control signal generating means responsive to said reference signal, to said ON set-point signal and to said OFF set-point signal for generating an ON and OFF valued control signal which, as said reference signal increases in magnitude and regardless of whether said ON set-point signal is of a higher or lower magnitude than said OFF set-point signal, switches from its OFF to its ON value when said reference signal reaches comparison with said ON set-point signal and which switches from its ON to its OFF value when said reference signal reaches comparison with said OFF set-point signal.

3,962,621
DUAL BATTERY CHARGING GENERATOR SYSTEM

Louis J. Raver, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 406,701, Oct. 15, 1973, Pat. No. 3,863,127. This application Jan. 16, 1975, Ser. No. 541,624
Int. Cl.² H02J *7/14*
U.S. Cl. 320—15 **2 Claims**

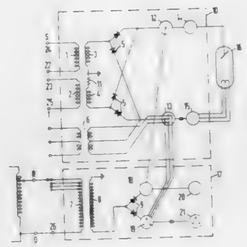


1. An electrical system associated with an internal combustion engine comprising, a load battery having a predetermined voltage rating, a second auxiliary battery of like voltage rating, first, second and third terminals, means connecting said load battery between said first and second terminals, means connecting said auxiliary battery between said second and third terminals, a cranking motor circuit connected across said first and third terminals, an electrical load circuit connected across said first and second terminals, a polyphase alternating current generator having a polyphase output winding and a field winding, a polyphase rectifier having A.C. input terminals and two direct voltage output terminals, means connecting said input terminals of said polyphase rectifier to said output winding, said polyphase rectifier operable to rectify the polyphase output voltage generated in said output winding into a direct voltage appearing across the direct voltage output terminals of said polyphase rectifier, means connecting said two direct voltage output terminals of said polyphase rectifier respectively to said first and second terminals, a voltage regulator connected to sense the voltage across said load battery and across said direct voltage output terminals of said polyphase rectifier for controlling the energization of said field winding to thereby maintain the voltage across said load battery at a desired regulated value, an isolation transformer having primary and secondary windings, means connecting said primary winding of said isolation transformer to said output winding, a second rectifier having input terminals and two output terminals, means connecting said secondary winding of said isolation transformer to said input terminals of said second rectifier, means connecting said two ouutput terminals of said second rectifier to said second and third terminals, the turns ratio of said isolation transformer being such as to produce an open circuit average voltage at the output of said second rectifier substantially equal to 0.97 of the open circuit average voltage at the output of said polyphase rectifier.

3,962,622
HIGH-VOLTAGE GENERATOR FOR AN X-RAY DIAGNOSTIC APPARATUS

Kurt Franke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Apr. 24, 1975, Ser. No. 571,392
Claims priority, application Germany, May 16, 1974, 2423929
Int. Cl.² H05G *1/12*
U.S. Cl. 321—8 R **6 Claims**



1. In a high-voltage generator for an X-ray diagnostic apparatus including a first oil-filled vessel; a primary winding and a secondary winding formed of two series-connected winding portions with a grounded connecting point of said high-voltage transformer, high-voltage rectifiers forming a rectifier bridge; and a heating filament transformer, all being located within said vessel, the junctions for said rectifier bridge, primary winding and heating filament transformer all leading exteriorly of said vessel, the improvement comprising: said primary winding including two winding portions having the junctions thereof conducted outwardly of said vessel to facilitate separate power supply to each said winding portion; a second oil-filled vessel; a second high-voltage transformer in said second vessel having a primary winding corresponding to said primary winding portions of said first high-voltage transformer and a secondary winding corresponding to the secondary winding portions of the latter, said secondary winding having one end connected to ground; and rectifiers connected to the other end of said secondary winding for supplementing the rectifier bridge for rectification of multiphase current, the outlets of the rectifiers and the junctions of the primary winding in said second vessel being conducted exteriorly thereof.

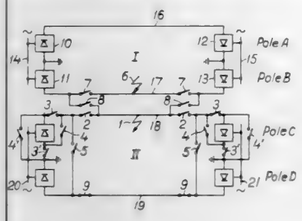
3,962,623
DIRECT CURRENT TRANSMISSION WITH TWO PARALLEL CIRCUITS

Ake Ekstrom, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 21, 1974, Ser. No. 526,067
Claims priority, application Sweden, Dec. 21, 1973, 7317337
Int. Cl.² H02M *7/00*
U.S. Cl. 321—27 R **1 Claim**

1. Direct current transmission comprising first and second separate parallel transmission circuits (I and II) each comprising convertors, at least the second of the transmission circuits being bipolar, pole reversing means (3, 3', 4, 4') for the convertors in at least one pole (C) of the second transmission circuit (II), transmission lines (16, 17, 18, 19) connecting the poles of each of the transmission circuits in parallel, means (2) for disconnecting a first of the transmission lines (18) of the second transmission circuit from the circuit, means (7) for disconnecting one of the transmission lines (17) of the first

transmission circuit from the circuit, reversing switches (5) for connecting at least two of the poles of the second transmission circuit through the second transmission line (19) thereof,

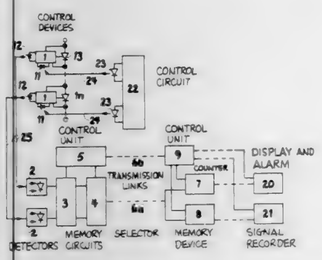


and means (8) for connecting the disconnected transmission line (18) of the second circuit with the first circuit across the disconnected transmission line (17) of the first circuit.

3,962,624
THYRISTOR RECTIFIER

Bernt Ostlund, and Georg Lindblom, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation-in-part of Ser. No. 374,378, June 28, 1973. This application Nov. 21, 1974, Ser. No. 526,068
Int. Cl.² H02M *7/00*
U.S. Cl. 321—27 R **5 Claims**



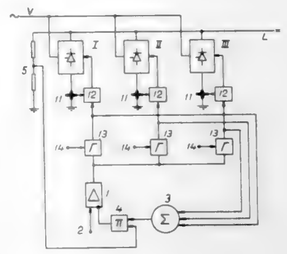
1. A thyristor rectifier for a static converter comprising a plurality of thyristors (13-1n) each provided with a control device (1), a control circuit (22) for the entire rectifier operatively connected with said control devices, detectors (2) and means (12) responsive to the voltage over each thyristor to emit an indicating pulse to said detectors when the voltage over a thyristor amounts to a certain value, a sensing member comprising a selector (4) for recording the indicating pulses emitted through the detectors, one after the other at a certain frequency, a counter (7,20), means to transmit the pulses from the selector to the counter, and control units (5,9) to control and synchronize the selector and the counter in relation to each other.

3,962,625
CONVERTOR STATION WITH PARALLEL-CONNECTED STATIC CONVERTORS

Lars-Erik Juhlin, and Gote Liss, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 19, 1974, Ser. No. 480,930
Claims priority, application Sweden, June 26, 1973, 7308925
Int. Cl.² H02M *7/00*
U.S. Cl. 321—27 R **1 Claim**

1. Convertor station for connection of a high-voltage DC line (L) and an AC network (V), which station comprises a plurality of static convertors (I-III) parallel-connected on the DC and AC sides, and a regulator (1) for setting a predetermined transmission magnitude between the DC and AC sides of the station, each static convertor having a separate regulating circuit (12) connected to said regulator (1) for the station, each regulating circuit (12) at the input side being provided with a limiting circuit (13), the input sides of the limiting circuits being parallel-connected and connected to the output

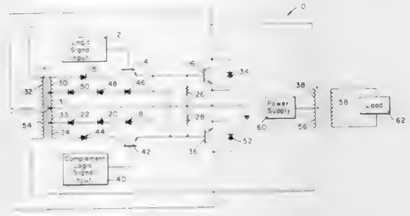


side of the regulator (1), the output sides of the limiting circuits each being connected to one of the regulating circuits (12) of the static convertor, a common summation device (3) connected to the output sides of the limiting circuits, and including means for feeding back the summation signal from the limiting circuits to the input side of the regulator (1).

3,962,626
CURRENT DRIVEN INVERTER

Gilbert I. Cardwell, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 26, 1974, Ser. No. 519,974
Int. Cl.² H02M *7/537*
U.S. Cl. 321—45 R **3 Claims**

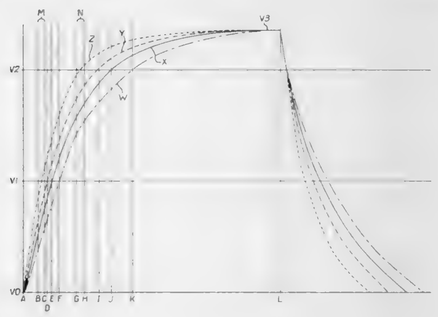


1. A current inverter utilizing current feedback to provide a more efficient inverter system and a feedback loop to remove base current from the output switching transistors of said inverter to provide faster switching comprising:
- a first and second output transistor for providing power from a source to a load whenever one of said output transistors are conducting;
- a logic signal input;
- a complementary logic signal input;
- a first and second drive transistor, said first drive transistor causes current to flow into the base of said first output transistor when a high binary signal is delivered by said logic signal input, and said second drive transistor causes current to flow into the base of said second output transistor when a high binary signal is delivered from said complementary logic signal input;
- said logic signal input provides a binary level signal to said first drive transistor to forward bias said transistor;
- said complementary logic signal input provides the inverse of said logic signal input's binary level signal to said second drive transistor;
- a current feedback transformer having a plurality of windings for providing regenerative feedback current to drive the bases of said output transistors through said drive transistors until said output transistors are saturated;
- first feedback means for removing base current from the base-emitter region of said first output transistor to rapidly turn off said transistor;
- second feedback means for removing base current from the base-emitter region of said second output transistor to rapidly turn off said transistor.

3,962,627
ELECTRONIC APPARATUS FOR TESTING MOVING COINS EMPLOYING SUCCESSIVE TIME SIGNIFICANT SENSINGS OF THE EFFECTS OF PROXIMITY OF A COIN UNDER TEST TO INDUCTIVE IMPEDANCE ELEMENTS UPON THE EFFECTIVE IMPEDANCES THEREOF

James F. Ptacek, Kansas City, Mo., and Leon J. Shaneyfelt, Lenexa, Kans., assignors to The Vendo Company, Kansas City, Mo.

Filed Dec. 20, 1974, Ser. No. 535,021
Int. Cl.² G01R *33/12*
U.S. Cl. 324—34 R **12 Claims**

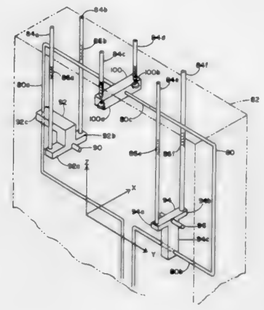


1. In apparatus for testing metallic objects such as coins:
- at least a pair of stations at which said objects may be tested;
- means for causing continuous movement of an object to be tested along a predetermined path successively toward, through and away from each of said stations;
- electrical impedance means for and disposed adjacent each of said stations respectively,
- each of said impedance means having a different normal electrical impedance,
- the effective electrical impedance of each of said impedance means being altered from said normal impedance thereof when a metallic object is at the corresponding station;
- electrical circuit means for and coupled with each of said impedance means respectively for providing an electrical output when said circuit means is energized;
- means for and coupled with each of said circuit means respectively effective when activated for energizing the corresponding circuit means and impedance means with direct current electrical power,
- each of said circuit means having a different time constant of delay in reaching operational equilibrium after commencement of energization thereof materially dependent upon the effective electrical impedance of the corresponding impedance means,
- said output of each of said circuit means being a direct current voltage of level which varies as a function of both said time constant of delay and the period of time that has elapsed following commencement of energization of said circuit means;
- sensing means for and coupled with each of said circuit means respectively for detecting when the voltage level of said output of said circuit means attains a predetermined level;
- control means, including means for activating each of said energizing means when an object to be tested is at the corresponding station, and means for measuring the lapse of time following commencement of energization of each of said circuit means; and
- testing means for and coupled with each of said sensing means respectively and with said time measuring means for determining whether or not the voltage level of said output for each of said circuit means is detected to have attained said respective predetermined level thereof during a testing interval occurring a predetermined period of time after commencement of energization of the corresponding circuit means,
- the combinations of said predetermined level of voltage output and said predetermined period of time being different for each of said circuit means.

3,962,628
ADJUSTABLE MAGNETIC GRADIOMETER

Charles R. Rein, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1975, Ser. No. 568,074
Int. Cl.² G01R *33/02*
U.S. Cl. 324—43 G **13 Claims**



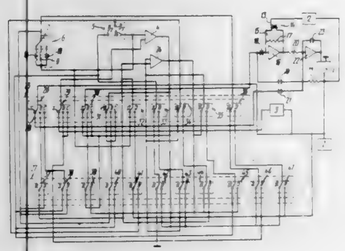
1. A magnetic field gradiometer of the character described, comprising:
- first and second substantially planar wire loops, each of said loops being characterized by first, second, and third areas as viewed along first, second, and third mutually orthogonal axes;
- support means, in supporting relation to said loops, for holding said loops in predetermined spaced relation to one another;
- positioning means, mounted on said support means, for positioning at least one limb portion of one of said loops relative to the remainder of said one loop so as to alter one of said areas thereof;
- instrument means, electrically coupled to said loops, for providing an output representative of relative effects of ambient magnetic field conditions on said loops; and
- said positioning means comprising at least one positioning element movably mounted on said support means and engaging said one limb portion, and shaft means, rotatably mounted with respect to said support means and coupled with said positioning element, for moving said positioning element and said one limb portion engaged thereby.

3,962,629

DEVICE FOR MEASUREMENT OF PARAMETERS OF COMPOUND ELECTRIC CIRCUIT ELEMENTS

Alexandr Ivanovich Martyashin, ulitsa Kirova, 69, kv. 59; Andrei Elizarovich Morozov, ulitsa Uritskogo, 44/10, kv. 62; Ljudmila Vladimirovna Orlova, ulitsa Popova, 2, kv. 75, and Viktor Mikhailovich Shlyandin, ulitsa Lermontova, 12, kv. 47, all of Penza, U.S.S.R.

Filed May 15, 1975, Ser. No. 577,747
Int. Cl.² G01R 27/00
U.S. Cl. 324—57 R 1 Claim



1. A device for measurement of parameters of compound electric circuits, comprising: a first operational amplifier; an inverter unit, the input thereof being connected to the output of said first operational amplifier; a second operational amplifier, the inverting input thereof being connected to one terminal of an electric circuit being analyzed, with a noninverting input also provided; a ground bus electrically coupled with said noninverting input of said second operational amplifier; a unit of calibrated elements, the output thereof being connected to said terminal of the electric circuit being analyzed; a pulse spacing and frequency measuring unit, the input thereof being connected to the output of said first operational amplifier; a first resistor, one terminal thereof being connected to the output of said first operational amplifier; a pulse shaping unit, the input thereof being also connected to the output of said first operational amplifier; an electronic switch, incorporating a control input, whereto the output of said pulse shaping unit is connected, and another input; a third operational amplifier, the input thereof being connected to said other input of said electronic switch, and the output thereof connected to the output of said electronic switch; a resistor inserted into the feedback circuit of said third operational amplifier; a network of two series-connected capacitors, with one terminal of said network connected to said other input of said electronic switch; a second resistor, one terminal thereof being connected to the output of said electronic switch, and the other terminal thereof being connected to the other terminal of said first resistor and to the other terminal of said network of two series-connected capacitors; a fourth operational amplifier, the input thereof being connected to the other terminal of said second resistor, and the output thereof being connected to the input of said first operational amplifier; a capacitor inserted into the feedback circuit of said fourth operational amplifier; a second capacitor, one terminal thereof being connected to the input of said fourth operational amplifier; a fifth operational amplifier; a switchgear electrically coupling the output of said first operational amplifier, the second and third terminals of said electric circuit being analyzed, the noninverting input and output of said second operational amplifier, the inverting and noninverting inputs of said fifth operational amplifier, the input of said unit of calibrated elements and the mid point of said two series-connected capacitors with the inverting and noninverting inputs and output of said fifth operational amplifier, with the input of said unit of calibrated elements, with the output of said second operational amplifier, with the output of said inverter unit, with the other terminal of said second capacitor with the second and third terminals of said electric circuit being analyzed, with the output of said unit of calibrated elements, with the output of said first operational amplifier a and with said ground bus; two selector switches of said switchgear, whereby, with said selector switches placed to the first position, the output of said first operational amplifier is connected to the other terminal of said second capacitor, the noninverting input of said second operational amplifier is connected to the output of said inverter unit, and the output of said second operational amplifier is connected to the mid point of said two series-connected capacitors and to the input of said unit of calibrated elements, the output thereof is connected to the noninverting input of said fifth operational amplifier, the inverting input and output thereof are connected to the third terminal of said electric circuit being analyzed, the second terminal thereof is connected to said ground bus, whereby the device permits measurement of parameters of parallel RLC circuits in delta-connected multiterminal circuit branches; with said first and second selector switches placed to the first and second positions, respectively, the output of said first operational amplifier is connected to the other terminal of said second capacitor, the noninverting input of said second operational amplifier is connected to the output of said inverter unit, and the output thereof is connected to the mid point of said two series-connected capacitors and to the second terminal of said electric circuit being analyzed, the third terminal thereof is connected to the inverting input and output of said fifth operational amplifier, the noninverting input thereof is connected to the output of said unit of calibrated elements, the input thereof is in its turn connected to said ground bus, whereby the device permits measurement of parameters of series RLC circuits in the delta-connected multiterminal circuit branches; with said first and second selector switches placed to the second and first positions, respectively, the output of said first operational amplifier is connected to the noninverting input of said fifth operational amplifier, the inverting input thereof is connected to the second terminal of said electric circuit being analyzed, the third terminal thereof is connected to the output of said fifth operational amplifier, the noninverting input of said second operational amplifier is connected to said ground bus, the output of said second operational amplifier is connected to the input of said unit of calibrated elements and to the mid point of said two series-connected capacitors, whereby the device permits measurement of parameters of parallel RLC circuits in star-connected multiterminal circuit branches; with both said selector switches placed to the second position, the output of said first operational amplifier is connected to the input of said unit of calibrated elements, the noninverting input of said second operational amplifier is connected to said ground bus, the output of said second operational amplifier is connected to the second terminal of said electric circuit being analyzed, the third terminal thereof is connected to the noninverting input of said fifth operational amplifier, the inverting input thereof is connected to the output of the same operational amplifier, said output thereof is connected to the mid point of said two series-connected capacitors, whereby the device permits measurement of parameters of series RLC circuits in star-connected multiterminal circuit branches.

3,962,630

ELECTRICAL CONTINUITY AND VOLTAGE TESTING DEVICE

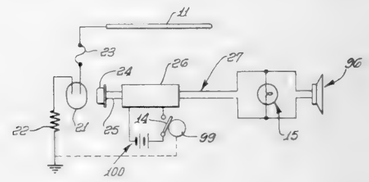
Bertram Chaffee, Anaheim, Calif., assignor to Mono-Probe Corporation, Los Angeles, Calif.

Filed Oct. 31, 1974, Ser. No. 519,747
Int. Cl.² G01R 31/02
U.S. Cl. 324—51 6 Claims

1. In a circuit testing device,

a. two probes one of which is sized for insertion into a single electrical socket receptacle to test for the presence of voltage, and both of which are applicable to spaced conductive elements to test for electrical continuity therebetween externally of said device, there being means connecting said probes in series for said continuity test,

b. detection means operatively connected with said probes and including indicator means to indicate the presence or absence of voltage when said one probe is inserted into said socket single receptacle, and to indicate the presence or absence of electrical continuity when said two probes are applied to said spaced conductive elements, there being a casing carrying said detection means and sized to



be hand carried, said one probe projecting relatively rigidly from said casing,

c. said detection means including a gas discharge lamp and electrical resistance, both connected in series between said one probe and the casing,

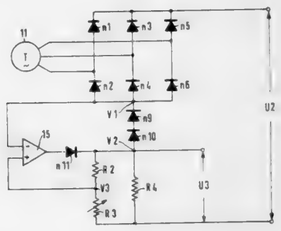
d. said indicator means including photocell means located to be illuminated by radiation from the lamp, amplififer means connected with the photocell means, and indicator structure connected with the amplifier means output.

3,962,631

CIRCUIT FOR DETERMINING A MEASURE VALUE OF A RECTIFIED A-C VOLTAGE

Herbert Poppinger, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 29, 1974, Ser. No. 528,488
Claims priority, application Germany, Dec. 5, 1973, 2360651
Int. Cl.² G01R 19/22; H02M 7/00
U.S. Cl. 324—119 5 Claims



1. A circuit for determining the measured value of a rectifier a-c voltage utilizing at least once compensation diode for compensating the diode threshold values in the rectifier, the compensation diode connected in the series with the rectifier, comprising:

a. at least one compensation diode connected in series with the rectifier with the same polarity as the rectifier diodes;

b. a compensation resistor in series with said compensation diode;

c. a voltage divider comprising two resistors in parallel with said compensation resistor; and

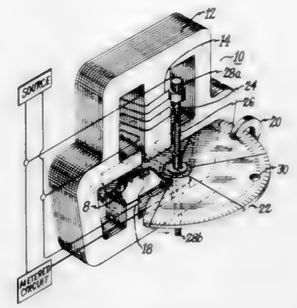
d. an operational amplifier having its inverting input coupled to the junction between the rectifier and the compensation diode, its noninverting input coupled to the center tap of said voltage divider and its output coupled between the compensation diode and the compensation resistor.

3,962,632

ROTATING DISC EXCESS CONSUMPTION WATTHOUR METER WITH RESTRAINING MEANS MOVABLY MOUNTED ON THE DISC

Samuel G. Hardy, and Joseph L. Peterson, both of Durham, N.H., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 22, 1975, Ser. No. 543,284
Int. Cl.² G01R 11/14, 11/10
U.S. Cl. 324—137 5 Claims



4. An excess consumption watthour meter rotor comprising an axial shaft, a conductive disc mounted at its center on said shaft, a disc rotation restraining means for interacting with a magnetic field generated by the meter's damping magnet to stop the disc from turning when the rate of energy consumption in the meter circuit is below a predetermined rate comprising a body of mildly magnetic material movably mounted on said disc, and manual adjustment means for selectively varying the radial distance of said body from the center of the disc thereby to provide a maximum threshold adjustment for the restraining means by moving said body to its radial outermost position.

3,962,633

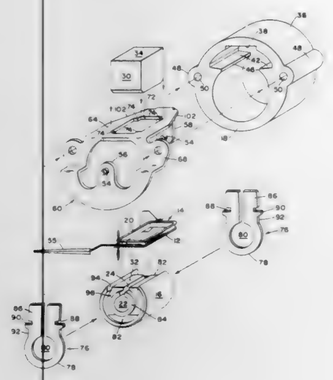
LONG-SCALE METER MOVEMENT HAVING A ONE-PIECE OUTER POLE AND RETURN RING, AND A DEMOUNTABLE SUBASSEMBLY THEREIN COMPRISING MAGNET, CENTRAL CORE, MOVING COIL AND SUPPORT FRAME

Francis R. Nadeau, Penacook, N.H., assignor to Hoyt Electrical Instrument Works, Inc., Penacook, N.H.

Filed Jan. 20, 1975, Ser. No. 542,437
Int. Cl.² G01R 1/20, 1/02
U.S. Cl. 324—150 7 Claims

1. A long-scale meter movement of the moving coil type in which one leg of the coil operates within an annular magnetic gap between concentric pole faces and another leg of the coil extends through a central passage in the inner core piece, comprising a block magnet, an outer ring member having an outer pole piece and a return ring portion in a unitary generally circular configuration, the return ring portion having an inner surface in contact with one pole of the magnet, a central core having a central passage, an access slot, and a surface in contact with the other pole of the magnet, a one-piece frame having front and rear supports for the coil and connecting portions extending through the return ring region of the outer ring member alongside the magnet, a pair of core supports extending through the frame in interlocking relation therewith at the front and rear of the magnet, the portions of the core supports extending through the frame having notches in their side margins which interlock with portions of the frame close to the magnet, the core ends having circular shoulders coaxial

with the axis of said central passage, the lower ends of the core supports having circular apertures within which the circular



shoulders are received, and the core supports having access slots aligned with the access slot in the core.

3,962,634

AUTOMATIC DELAY COMPENSATOR

Anthony L. Russo, Lanham, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 6, 1973, Ser. No. 385,938

Int. Cl.² H04B *7/20*

U.S. Cl. 325—6 **3 Claims**



1. A communication system comprising:

means for transmitting a multi-channel time division multiplex signal, wherein said means includes a source for the generation of a synchronization pattern for transmission on one channel of said signal;

a receiver geographically separated from the transmitter;

a signal path connecting said transmitter means and said receiver, the transmission delay over said path being variable with respect to time;

a local pattern generator adjacent to the receiver, which generates a pattern identical to the received pattern;

means for detecting a loss of synchronization by comparing the received pattern and said local pattern to detect a loss of alignment thereof, and

means adjacent to said receiver and within said signal path, and responsive to said detecting means, for maintaining constant the transmission time delay between said transmitter means and said receiver by predictably adding and subtracting increments of delay to realign said received pattern with said locally generated pattern.

3,962,635

TRANSMISSION SYSTEM FOR PULSE SIGNALS OF FIXED CLOCK FREQUENCY USING A FREQUENCY SELECTIVE CIRCUIT IN A CLOCK FREQUENCY RECOVERY CIRCUIT TO AVOID PHASE JITTER

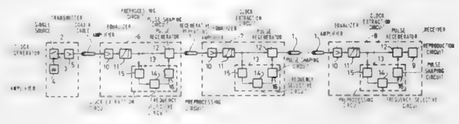
Engel Roza, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 17, 1975, Ser. No. 541,727

Claims priority, application Netherlands, Jan. 21, 1974, 7400760

Int. Cl.² H04B *7/14*

U.S. Cl. 325—13 **5 Claims**



1. A transmission system for pulse signals of fixed clock frequency, comprising a transmitter; a receiver; a transmission path connecting said transmitter to said receiver; and a number of regenerative repeaters located in the transmission path, each of said regenerative repeaters comprising a pulse regenerator, and a clock extraction circuit means including frequency selective circuit means for recovering pulse signals of said fixed clock frequency for for controlling the pulse regenerator, said frequency selective circuit means has a normalized phase transfer function whose absolute value as a function of the frequency is substantially constant from the frequency zero to a first corner frequency, monotonously decreases from the first corner frequency to a second corner frequency, is again substantially constant from the second corner frequency to a third corner frequency and again decreases monotonously for frequencies which are higher than the third corner frequency.

3,962,636

DEVICE FOR CONVERTING AN INCOMING ANALOG SIGNAL INTO AN OUTGOING PCM SIGNAL

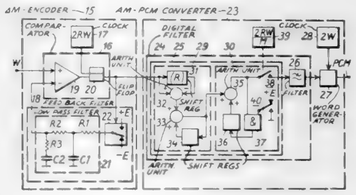
Gunnar Erik William Sparrendahl, Handen, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 5, 1974, Ser. No. 529,800

Claims priority, application Sweden, Dec. 21, 1973, 73173742

Int. Cl.² H03K *13/22*

U.S. Cl. 325—38 B **6 Claims**



1. Apparatus for converting an incoming analog signal into an outgoing PCM signal comprising: a Δ M-encoder having a comparator circuit with a first analog input adapted to receive the incoming signal, a second analog input and a digital output arranged to supply a delta signal with a clock frequency considerably higher than the upper limit frequency of the incoming signal, a feedback filter for the delta signal connected between said digital output and said second analog input of the comparator circuit, said feedback filter being formed as a low-pass filter comprising a second-order RC-network having two poles localized near the upper limit frequency of the incoming signal; and a digital Δ M-PCM converter operating at a given sampling frequency and having a digital filter means connected to said digital output of said comparator circuit in said Δ -encoder for generating an average signal from a number of samples of the delta signal at least equal to the ratio between said clock frequency and said sampling frequency, and a PCM word generator means connected in cascade with said digital filter for generating the outgoing PCM signal with a sampling frequency considerably lower than said clock frequency.

3,962,637

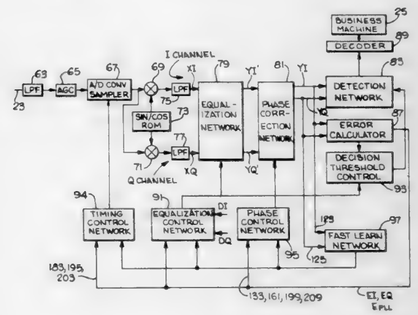
ULTRAFAST ADAPTIVE DIGITAL MODEM

David M. Motley, Santa Ana, and King Y. Cheng, Tustin, both of Calif., assignors to Hycom Incorporated, Irvine, Calif.

Filed Nov. 11, 1974, Ser. No. 522,642

Int. Cl.² H03H *7/36*

U.S. Cl. 325—42 **21 Claims**



1. An apparatus having first and second channels and adapted to make corrections for the phase error of a first signal comprising:

phase correction means for making a correction in the phase of the first signal to provide a substantially phase corrected signal with the phase corrected signal having first and second components in the first and second channels, respectively;

means for providing a phase error signal representative of the magnitude of the angle of phase error in the phase corrected signal, said angle having a trigonometric function which varies with the quotient of the first signal component divided by the second signal component;

phase control means responsive to the phase error signal to adjust the phase correction means to tend to reduce the phase error of the phase corrected signal; and

means responsive to said first signal component having a magnitude at least as great as a reference level for making a fixed predetermined adjustment in the phase correction means which reduces the phase error of the phase corrected signal.

3,962,638

DATA TRANSMISSION OVER VOICE BANDWIDTH OF FM RADIO CHANNEL

Jack B. Sallis, New Orleans, La., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 5, 1974, Ser. No. 494,595

Int. Cl.² H04B *1/00, 7/00*

U.S. Cl. 325—45 **3 Claims**

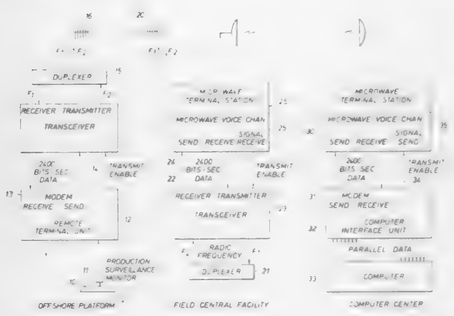
1. A data transmission system located at a remote location for transmitting digital data produced at the remote location to a central station and receiving digital data in the form of modulated tone transmitted from said central station, said system comprising:

a remote terminal unit;

a frequency modulated radio transceiver having both a receiver and transmitter circuit, said transmitter circuit having first circuit means for frequency modulating its transmitted carrier free of pre-emphasis with a relatively flat deviation versus modulating frequency characteristic and minimal phase delay distortion, said first circuit means being coupled to said remote terminal unit;

a power supply, said power supply being permanently coupled to the initial stages of the transmitter circuit including said first circuit means said receiver circuit being coupled to said power supply to receive signals transmitted to said remote location from said central station;

a modem, said modem being coupled to said remote terminal unit and designed to convert the digital data produced at said remote location to a modulated tone, said modem being coupled to said first circuit means of the transmitter whereby said modulated tone modulates the transmitter frequency;



the modem in addition being coupled to the receiver circuit to convert a modulated tone received from said central station into digital command signals, said digital command signals being supplied to said remote terminal unit to control said remote terminal unit; and

a second circuit means, said second circuit means being coupled to said remote terminal unit and disposed to couple said power supply to the final transmitting stages of said transmitter, said remote terminal unit actuating said second circuit means in response to one of said digital command signals.

3,962,639

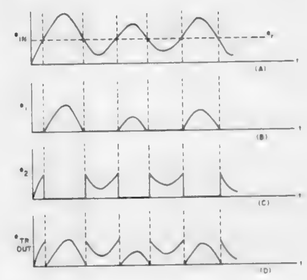
SYSTEM FOR REDUCING RADIO COMMUNICATION FREQUENCY BANDWIDTH AND INCREASING NUMBER OF CHANNELS AVAILABLE

David W. Kermode, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 11, 1973, Ser. No. 368,567

Int. Cl.² H04B *7/00*

U.S. Cl. 325—59 **8 Claims**



1. A system for reducing the bandwidth required to transmit frequency modulated electrical signals, comprising:

a transmitter for transmitting electrical signals, including means for reducing only those amplitudes that are greater than a preselected threshold to a level lower than said threshold, having a plurality of circuit channels, wherein the first of said channels provides the output of the trans-

mitter when the signal amplitude is less than said threshold, and the second of said channels provides the output of the transmitter when the signal amplitude is greater than said threshold level; and

a receiver for receiving said transmitted electrical signals, including means for reconstructing the waveform that existed before said reduction;

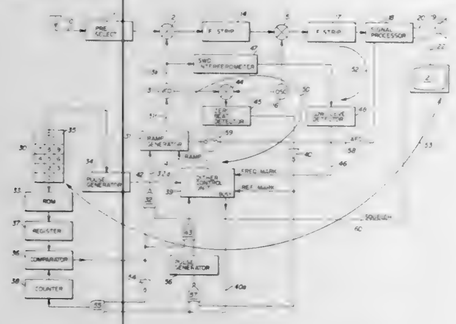
such that the bandwidth required to transmit said signals is less than the bandwidth required to transmit the unreduced signals.

3,962,640

FREQUENCY SELECTION AND CONTROL

Steven J. Bomba, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 9, 1974, Ser. No. 504,626
Int. Cl.² H04B *1/32*
U.S. Cl. 325—421 **9 Claims**



1. In a tuner system, the combination comprising:

a. a variable frequency oscillator to be connected in a frequency lock loop,

b. a monotonic ramp voltage generator connected to control the frequency of operation of said oscillator,

c. detector means including an interferometer of an SWD type connected to said oscillator to produce output markers at selected frequencies across a plurality of channel bands over which said oscillator frequency is driven,

d. counter means to count said markers as said ramp generator drives said oscillator frequency away from a reference frequency.

e. storage means having codes stored therein corresponding to the band difference between a reference frequency marker and a target band which includes a selected frequency therein,

f. comparator means responsive to said counter means and to said storage means connected to cause said ramp generator to vary said oscillator frequency until said selected frequency is reached, and

g. means operable when said selected frequency is reached to transfer control of said ramp generator to said frequency lock loop.

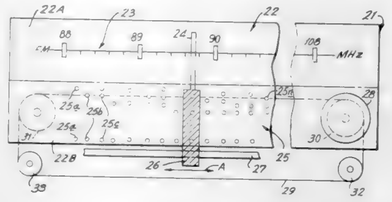
3,962,641

TUNING APPARATUS

Hisashi Suwa, Sagamihara, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 20, 1974, Ser. No. 534,796
Claims priority, application Japan, Dec. 27, 1973, 48-4684
Int. Cl.² H04B *1/06*
U.S. Cl. 325—455 **9 Claims**

1. In a tuning apparatus for a broadcast receiver having a voltage controlled variable frequency oscillator for generating a local frequency signal corresponding to a selected broadcasting station, and being provided with a phase locked loop including a reference signal oscillator, a variable frequency divider for dividing said local frequency signal with a variable dividing ratio, and comparator means for comparing the frequency and phase of outputs of said reference signal oscillator and said variable frequency divider, respectively, and producing a corresponding control voltage which is applied to said voltage controlled oscillator for determining said local frequency signal in dependence on said dividing ratio of the variable frequency divider; the combination of a dial member having a scale thereon with calibrations representing broadcast frequencies over a predetermined frequency band, an indicator movable relative to said scale to cooperate with the latter for indicating the broadcast frequency to which the tuning apparatus is tuned, an array of spaced apart digitally coded indicia each corresponding to a predetermined one of said broadcasting stations which are adapted to be selectively



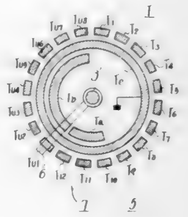
received by the broadcast receiver, each of said digitally coded indicia being spaced apart in correspondence with the spacing of the broadcast frequencies of the respective stations along said scale, a pickup head movable relative to said array of digitally coded indicia to scan said indicia in synchronism with the relative movement of said indicator and scale for selectively reading said digitally coded indicia, and control means for determining said dividing ratio of said variable frequency divider in accordance with the digitally coded indicia selectively read by said pickup head.

3,962,642

CHANNEL INDICATOR DEVICE

Nobuo Kitamura, Sagamihara, and Takao Mogi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 14, 1974, Ser. No. 479,557
Claims priority, application Japan, June 18, 1973, 48-71916[U]
Int. Cl.² H04B *1/06*
U.S. Cl. 325—455 **3 Claims**



1. A channel indicator device comprising:

A. a rotary shaft connected to a tuner and having a first plurality of angular positions corresponding to channel settings of VHF channels having single-digit numbers, a second plurality of angular positions corresponding to channel settings of VHF channels having two-digit numbers, and a third plurality of angular positions corresponding to UHF chanel settings that have been assigned single-digit numbers;

B. first and second multi-segment numeric indicators;

C. a rotary switch comprising:

1. a first array of contacts equal in number to the total number of said positions,

2. an arm to contact a respective one of said contacts in each of said positions,

3. a first multi-position contact to be contacted by said arm over each of said second plurality of positions,

4. a second multi-position contact to be contacted by said arm over each of said third plurality of positions, and

5 a third multi-position contact connected to one terminal of a power supply and being contacted by said arm in each of said total number of positions; and

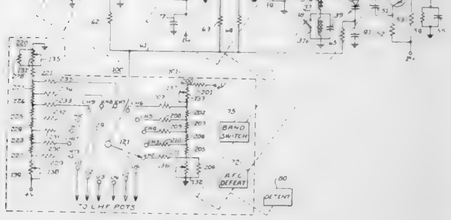
D. matrix circuit means connected to each of said first array of contacts and connected to said first indicator to connect selected segments of said first indicator to said power source by said arm and said third multi-position contact to energize the UNITS number of each of said VHF and UHF channel settings, said matrix circuit means being connected to said first multi-position contact and connected to said second indicator to connect selected segments of said second indicator to said power source by said arm and said third multi-position contact to energize the TENS number of each of said VHF channel settings having a multi-digit number, and said matrix circuit means being connected to said second multi-position contact and connected to said second indicator to connect selected segments of said second indicator to said power source to energize a symbol indicative of the angular position of said shaft as being with the range of said UHF settings.

3,962,643

ABRUPT JUNCTION VARACTOR DIODE TELEVISION TUNER

John Y. Ma, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 5, 1974, Ser. No. 494,449
Int. Cl.² H04B *1/06*
U.S. Cl. 325—464 **21 Claims**



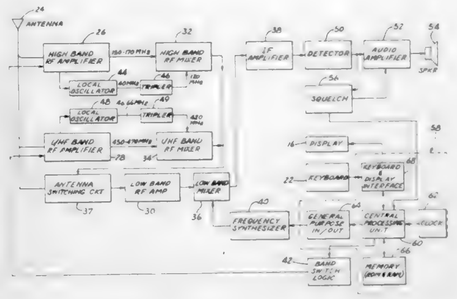
1. A tuner for tuning television signals in a predetermined frequency range having a maximum and minimum frequency comprising: translation and conversion means for receiving television signals and heterodyning the received signals with locally produced oscillatory signals to produce substantially fixed frequency intermediate frequency signals, said translation and conversion means having an input capacitance which limits high frequency signal gain and including a plurality of stages having tunable circuits each with an abrupt junction type variable capacitance diode for tuning thereof; means for imposing tuning voltages on said variable capacitance diodes for simultaneously varying their capacitances to change the tuning of said tunable circuits, said variable capacitance diodes having a capacitance-to-voltage characteristic which is predictable from diode-to-diode and which precludes the need for matching diodes to assure frequency tracking of said tunable circuits with tuning voltage changes on said diodes and being selected to have a capacitance at said maximum frequency that is greater than said input capacitance and a capacitance at said minimum frequency which satisfies the criterion that the gain-bandwidth product of said tuner is substantially constant over said predeterminned frequency band.

3,962,644

CRYSTALLESS SCANNING RADIO RECEIVER CONTROLLED BY PROCESSING MEANS

William Baker, Oak Ridge, Tenn., assignor to Tennelec, Inc., Oak Ridge, Tenn.

Filed May 30, 1975, Ser. No. 582,338
Int. Cl.² H04B *1/26*
U.S. Cl. 325—470 **27 Claims**



1. A signal seeking receiver for automatically scanning and monitoring a plurality of predetermined radio frequency channels located in one or more RF bands, and for selecting one channel having a radio frequency signal thereon, said receiver comprising:

an RF section for the RF band and including a RF amplifier and a RF mixer, said RF section providing an intermediate signal when a radio frequency signal is received on a channel;

an IF section operably connected to said RF band mixer and including an IF amplifier for amplifying the intermediate signal received from said RF section;

detector means for producing an audio signal when said intermediate signal is being received;

an audio amplifier connected to said detector means for driving an audio speaker with said audio signal;

means for disabling the audio amplifier when no audio signal is being received and for producing an indicating signal for application to a processing means when an audio signal be being received;

frequency synthesizing means for selectively generating beating signals of predetermined frequencies for application to said RF mixer to select a frequency and provide said intermediate signal, said frequency synthesizing means including a phase-locked-loop and being operable to provide said beating signals of preselected frequencies in response to various preselected input signals being applied thereto;

memory means for storing operating instructions for use by a processing means and for storing information for a plurality of channels;

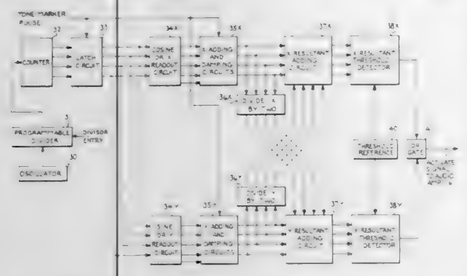
processing means for controlling said frequency synthesizing means and for loading and retrieving information and instructions from said memory means, said processing means normally operating in a first mode wherein said various preselected input signals concerning said channels are retrieved from said memory means and are applied to said frequency synthesizing means whereby said channels are sequentially scanned, said scanning terminating on a specific channel in response to receiving said indicating signal, said processing means resuming the scanning of said channels in response to the termination of said indicating signal; and

means operably connected to said procesing means for entering and loading instructions and frequency information for controlling the operation of said processing means.

3,962,645
TONE FREQUENCY DETECTING CIRCUIT

David A. Stewart, Elnora, N.Y., assignor to General Electric Company, Lynchburg, Va.

Filed Nov. 6, 1974, Ser. No. 521,460
Int. Cl.² H04B 1/16
U.S. Cl. 325—478 11 Claims



4. An improved circuit for detecting an identification signal of predetermined frequency comprising:

a. first means for repetitively producing a sequency of N numbers at a sequence repetition frequency substantially equal to said predetermined frequency of said identification signal;

b. second means responsive to said identification signal for producing signals indicative of the frequency thereof;

c. a vector generator having a first input connected to said first means for said numbers and having a second input connected to said second means for said frequency indicative signals, said vector generator having at least one ouput for producing a vector signal in response to the simultaneous presence of any of said N numbers at said first input and any frequency indicative signal at said second input;

d. each vector signal produced by said vector generator having a characteristic corresponding to the number present at said first input during its simultaneous presence with a frequency indicative signal at said second input;

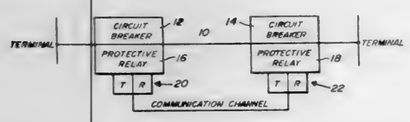
e. third means connected to said vector generator for summing the vector signals produced thereby and producing a resultant signal therefrom;

f. and fourth means connected to said third means for producing a detection signal in response to said resultant signal exceeding a predetermined magnitude.

3,962,646
SQUELCH CIRCUIT FOR A DIGITAL SYSTEM

John A. Templin, Glenview, Ill., assignor to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 287,121, Sept. 7, 1972. This application Nov. 4, 1974, Ser. No. 520,324
Int. Cl.² H04B 1/10, 3/20; H04J 3/06
U.S. Cl. 325—478 8 Claims



6. An improved squelch circuit for a digital system designed to receive transmitted digital messages, including a continuous train of regularly spaced bit timing pulses and excluding a plurality of predetermined unacceptable messages, and operate in response thereto comprising:

a. gate means having a plurality of inputs and at least one output for providing an inhibit signal at the output in response to a predetermined signal on at least one of said inputs;

b. the output of said gate means being connected to said digital system to inhibit the operation of said digital system in response to said inhibit signal;

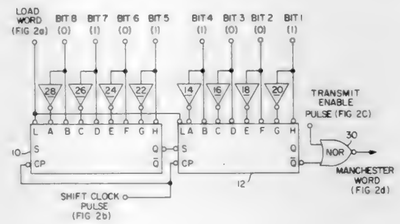
c. logic circuitry connected to a plurality of said inputs and to said digital system for receiving the transmitted digital messages and operating to provide said predetermined signal on one of the plurality of said inputs in response to the reception of a spurious digital signal which corresponds with any of the plurality of predetermined, unacceptable digital messages; and

d. said logic circuitry including further means connected to said digital system for receiving the continuous train of regularly spaced bit timing pulses and providing said predetermined signal on one of the plurality of inputs of said gate means in response to missing bit timing pulses in said continuous train of bit timing pulses.

3,962,647
BIPHASE WAVEFORM GENERATOR USING SHIFT REGISTERS

Jay L. Richman, Montville, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 27, 1974, Ser. No. 509,766
Int. Cl.² H04B 1/00
U.S. Cl. 328—59 7 Claims



1. Apparatus for generating a biphase waveform from a plurality of data bits, comprising:

a serial register of length 2N, where N is the number of data bits;

means for applying the data bits to the register including a plurality of inverters and means for applying each of the data bits to the register directly and through a corresponding inverter;

means for clocking the register at twice a predetermined output data rate, with the register providing an alternating logic level signal for each data bit; and

means for combining the phases of the alternating signals for each data bit to provide the biphase waveform.

3,962,648
FUNCTION GENERATOR

Charles A. Watson, Jr., Bremerhaven, Germany, assignor to E-Systems, Inc., Dallas, Tex.

Filed Jan. 20, 1975, Ser. No. 542,200
Int. Cl.² G06G 7/12
U.S. Cl. 328—142 8 Claims

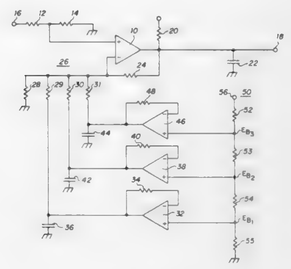
1. A function generator, comprising in combination:

a primary differential amplifier having first and second input terminals and a feedback loop from an output terminal to the second of the input terminals;

a first gain resistor also connected to the second input terminal and to a reference potential;

a plurality of additional gain resistors interconnected to the second of the input terminals;

a voltage ladder network providing control voltages in number equal to the plurality of additional gain resistors; and

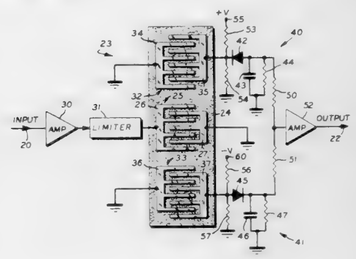


a plurality of secondary differential amplifiers equal in number to said additional gain resistors individually connected to one of said resistors and one of the control voltages to vary the gain of said primary differential amplifier.

3,962,649
SURFACE WAVE FREQUENCY DISCRIMINATOR

Martin Fischman, and Edward I. Zmuda, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 417,036, Nov. 19, 1973, abandoned. This application Jan. 6, 1975, Ser. No. 538,557
Int. Cl.² H03D 3/16
U.S. Cl. 329—103 13 Claims



1. A frequency discriminator including a piezoelectric substrate having an input transducer and first and second output transducers disposed thereon, and detecting means connected to said output transducers, the improvement comprising limiting means connected to said detecting means for maintaining said detecting means in an inoperative condition in response to spurious signals from said output transducers having signal magnitudes less than a threshold level.

3,962,650
INTEGRATED CIRCUIT AMPLIFIER HAVING CONTROLLED GAIN AND STABLE QUIESCENT OUTPUT VOLTAGE LEVEL

Michael J. Gay, Geneva, Switzerland, assignor to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 417,854, Nov. 21, 1973, abandoned. This application Apr. 25, 1975, Ser. No. 571,809
Int. Cl.² H03G 3/00
U.S. Cl. 330—29 16 Claims

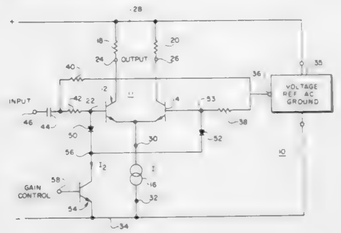
1. An amplifier suitable for manufacture in integrated circuit form having input, control and output terminals and which changes gain in response to a gain control signal developed at the control terminal thereof, including in combination:

current supply means having a first terminal and a second terminal;

first electron control means having a first electrode connected to said first terminal of said current supply means, a control electrode coupled to an amplifier input terminal and a second electrode coupled to an amplifier output terminal;

second electron control means having a first electrode connected to said first terminal of said current supply means, a control electrode coupled to an amplifier input terminal and a second electrode coupled to an amplifier output terminal;

a third electron control means having a first electrode connected to said control electrode of said first electron control means and a second electrode, said third electron control means having an impedance which varies with the magnitude of the current passing between said first and second electrodes thereof;



a fourth electron control means having a first electrode connected to said control electrode of said second electron control means and a second electrode connected to said second electrode of said third electron control means, said fourth electron control means having an impedance which varies with the magnitude of the current conducted between said first and second electrodes thereof;

reference supply means having a first terminal coupled to said first electrodes of said third and fourth electron control means and a second terminal; and

fifth electron control means having a control electrode adapted to receive the gain control signal, a first electrode connected to said second terminal of said reference supply means and to said second terminal of said current supply means, a second electrode connected to said second electrodes of said third and fourth electron control means, said fifth electron control means determining the magnitude of the currents through said third and fourth electron control means in response to the gain control signal to thereby control the gain of the amplifier.

3,962,651
ANALOG A-C STORAGE CIRCUIT EMPLOYING A HIGH GAIN AMPLIFIER

Frank Boyes McCall, Midlothian, Scotland, assignor to Ferranti, Limited, England

Filed Apr. 15, 1975, Ser. No. 568,201
Claims priority, application United Kingdom, Apr. 16, 1974, 16608/74
Int. Cl.² H03F 1/14
U.S. Cl. 330—51 6 Claims

1. An analog store for producing an alternating output voltage of amplitude dependent on a command signal, which includes a four-arm resistance bridge in which the resistance of one arm is constituted by the drain/source path of a field-effect transistor and hence is variable in dependence on the gate/source voltage, arrangements for energising the bridge across one diagonal by an alternating voltage, means for deriv-

ing the output from the bridge from the other diagonal by way of a high-gain negative-feedback amplifier so as to maintain the voltage between the drain and source terminals of the transistor equal to the voltage across the arm connected to the source terminal despite variations of the resistance of the drain/source path, a capacitor having one electrode connected to the gate electrode, means for applying the command signal to that gate electrode, and biasing means for applying to the other electrode of the capacitor a voltage with respect to the source terminal of the transistor which is equal to half the voltage developed across the said arm connected to that terminal.

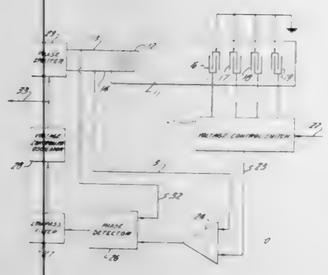


3,962,652

SIMPLIFIED SURFACE ACOUSTIC WAVE SYNTHESIZER

Alvin Zarin, Deal Park, and Francis A. Carbin, Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1975, Ser. No. 556,365
Int. Cl.² H03B *3/04, 5/30*
U.S. Cl. 331—1 R **8 Claims**



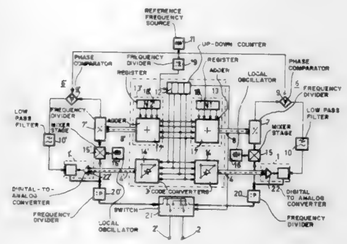
1. A variable frequency oscillator including:
a surface acoustic wave device having an input transducer and at least first and second spaced output transducers;
an amplifier having a first input terminal and an output terminal;
first means for connecting said output terminal of said amplifier to said input terminal of said transducer; and
second means for selectively connecting said first and second spaced output transducers to said first input terminal of said amplifier.

3,962,653

ARRANGEMENT FOR SIMULTANEOUSLY PRODUCING SIGNALS HAVING AN INCREASING FREQUENCY AND SIGNALS HAVING A DECREASING FREQUENCY

Jean-Claude Basset, Paris, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Dec. 19, 1974, Ser. No. 535,042
Claims priority, application France, Dec. 27, 1973, 73.46529
Int. Cl.² H03B *3/04*
U.S. Cl. 331—2 **7 Claims**



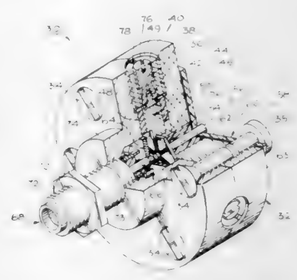
1. An arrangement for simultaneously producing in successive and equal time intervals signals having an increasing frequency and signals having a decreasing frequency on a pair of output terminals, the increasing and decreasing frequencies being complementary relative to a certain frequency, said arrangement comprising two voltage-controlled oscillators controlled by control signals derived from a clock-synchronized control generator, characterized in that each of the oscillators is incorporated in an associated phase control loop provided with a frequency divider adjustable in discrete steps, the control generator being of the digital type and adapted to produce two pairs of digital signals whose value in each of the said intervals varies between an initial value and a final value, one pair of said signals being applied to the frequency dividers and the other pair being applied to the oscillators in order to tune said oscillaors to a frequency within the operating range of their phase control loop.

3,962,654

MULTIPLE DIODE MICROWAVE OSCILLATOR APPARATUS

Bill E. Corrons, Montclair, and James F. Barker, Twenty Nine Palms, both of Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed Apr. 7, 1975, Ser. No. 565,997
Int. Cl.² H03B *7/14*
U.S. Cl. 331—56 **22 Claims**



1. A multiple-diode microwave oscillator including, in combination:

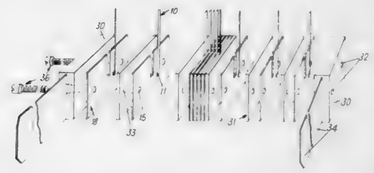
a housing having an axis;
a plurality of avalanche diodes;
a plurality of coaxial transmission lines, each coupled to a corresponding one of said plurality of avalanche diodes to form a plurality of signal generating units, each of said coaxial transmission lines comprising a radially directed, circular cylindrical opening in the housing, an inner conductor centrally spaced within the opening, and a dielectric spacer surrounding the inner conductor and separating it from and affixing it in position within the housing;
means carried by said housing and including an axially positioned common conductor for conductively coupling operating signals to each of said signal generating units;
said signal generating units being disposed within said housing radially about said common conductor; and
means for combining, at the same desired frequency, the power from all of said generating units.

3,962,655

SEMICONDUCTOR LASER STACK

Peter Richard Selway, Harlow; Norman Derek Leggett, Hoddesdon, and Brian Arthur Eales, Stansted, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 28, 1975, Ser. No. 544,739
Claims priority, application United Kingdom, Mar. 21, 1974, 12540/74
Int. Cl.² H01S *3/19*
U.S. Cl. 331—94.5 H **6 Claims**



1. A laser stack comprising a plurality of like oriented semiconductor laser dice, each laser die including a light emissive output facet and a fiber optic ribbon having one end secured to said facet, and a set of anodised aluminium plates interleaved between a set of indium coated copper plates, one edge of each aluminium plate having a slot, a laser die positioned in each respective slot with said fibre optic ribbon protruding from the slot, each die having opposite faces positioned between a pair of adjoining copper plates, the plurality of plates and laser dice being compression bonded, the thickness of each laser die in each slot being greater than that of the respective anodised aluminium plate by an amount which extends into the indium coating of the adjoining indium coated copper plates.

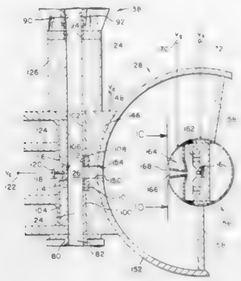
3,962,656

HIGH POWER FLOWING GAS LASER WITH PROFILED ELECTRON BEAM EXCITATION

Eugene R. Peressini, Palos Verdes Peninsula, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 7, 1974, Ser. No. 521,714
Int. Cl.² H01S *3/097, 3/22*
U.S. Cl. 331—94.5 PE **7 Claims**

1. In a high power electrically excited flowing gas laser the combination comprising:
means defining a as flow channel;
means for causing a laser gas to flow through said channel at a predetermined subsonic velocity; and
means for introducing a broad area electron beam into an excitation region of said flow channel in a direction perpendicular to the direction of gas flow, said electron beam having a cross-sectional area conforming substantially to that of said excitation region and having a cross-sectional electron desnsity which varies as a function of distance along the direction of gas flow from substantially a minimum value at the upstream and downstream extremities of said excitation region to a maximum value approximately midway along said excitation region, said maximum value of said electron density being approximately 1.6 times greater than said minimum value.

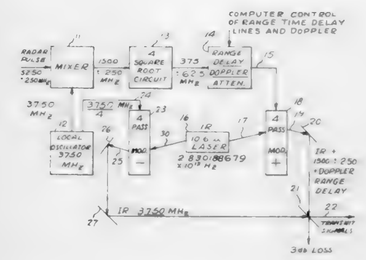


3,962,657

BROADBAND DATA MODULATION SYSTEM

Charles M. Redman, and Ronald W. Moore, both of Las Cruces, N. Mex., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 22, 1974, Ser. No. 516,942
Int. Cl.² H01S *3/00;* **H04B** *9/00;* **G02F** *1/28*
U.S. Cl. 332—7.51 **9 Claims**



1. A system for transmitting data over a wide band-width comprising an acousto-optical transparent crystal, a high frequency signal source with sidebands adapted to contain such data, means to apply said signal source to said crystal in a manner to form an acoustic grating in the crystal, a source of optical radiation providing a coherent optical beam, means for directing said optical beam through said crystal in a manner to traverse said acoustic grating a plurality of times and then emerge from the crystal which comprises means for correspondingly modulating the beam radiation with a band-width in accordance with the number of passes of the beams through the acoustic grating, and means to demodualte the emerging modulated beam, said crystal being provided with fixed grating means located to guide the optical beam through the acoustic grating.

3,962,658

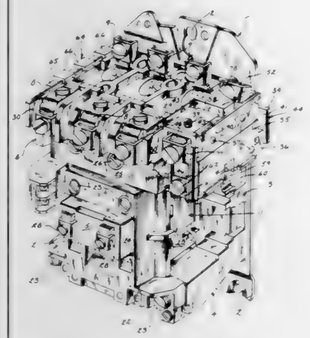
POWER POLE MODULE FOR CONTACTOR

Donald V. Zunft, Greendale; Siegfried Weidmann, Brown Deer, and Dennis J. Trendel, Mukwonago, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Nov. 18, 1974, Ser. No. 524,670

Int. Cl.² H01H *50/04, 50/62*

U.S. Cl. 335—133 **12 Claims**



1. A switch, the combination comprising:

a base;

a contact enclosure connected to the base and including a pair of spaced side walls;

a set of stationary contacts disposed within said contact enclosure between said side walls;

an actuator mounted to said base to slide along an actuator axis;

movable contacts mounted to said actuator for movement along said actuator axis between an opened position and a closed position in which they engage said stationary contacts; and

a power pole module mounted alongside said contact enclosure to one of said side walls, said power pole module including a set of stationary contacts substantially similar to the stationary contacts within said contact enclosure, a set of movable contacts substantially similar to the movable contacts mounted to said actuator, and means linking said movable contacts to said actuator for operating said movable contacts in response to the sliding motion of said actuator along said actuator axis.

3,962,659

ELECTROMAGNETIC SWITCH

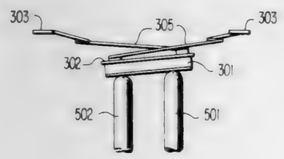
Ken-ichiro Kawase; Sadayuki Mitsuhashi; Kazutoshi Wakamatsu, and Nobuo Mikami, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Oct. 21, 1974, Ser. No. 516,334

Claims priority, application Japan, Oct. 20, 1973, 48-118321; Dec. 28, 1973, 49-218; Dec. 29, 1973, 49-2004

Int. Cl.² H01H *1/12*

U.S. Cl. 335—196 **9 Claims**



1. An electromagnetic switch including movable and fixed contacts, one of said contacts having a twin projection, said movable contact being suspended by a thin leaf spring capable of readily causing the movable contact to be flexibly displaced in the direction normal to the mating plane, said leaf spring comprising a contact portion having a magnetic body attached thereto, said contact portion and magnetic body in combination having a center of gravity substantially in its geometric center, a pair of side portions adapted for securing said contact portions in a housing of said electromagnetic switch, said side portions being located substantially in the plane of and on opposite sides of said contact portion, and a pair of symmetrically positioned bent arm portions, each of said bent arm portions communicating with a respective one of said side portions and a respective one side of said contact portion, said bent arm portions formed symmetrically with respect to each other about the center of gravity of said combination of contact portion and said magnetic body, whereby said combination of contact portion and said magnetic body is free to move in a direction substantially perpendicular to a plane in which said side arms are secured in response to a force overcoming the restraining force caused by said side portions and said bent arms.

3,962,660

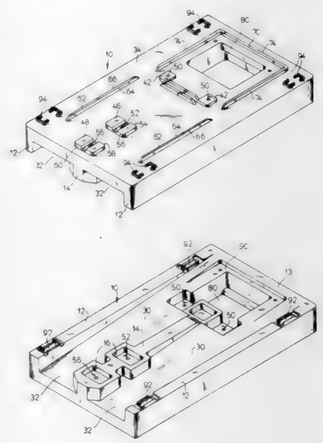
PALLET PAD FOR TRANSFORMERS AND TRANSFORMER AFFIXED THEREON

Don A. Duckett, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed Nov. 25, 1974, Ser. No. 526,892

Int. Cl.² H02B *5/00;* **B65D** *19/24*

U.S. Cl. 336—65 **10 Claims**



1. A ground level transformer unit comprising:

a transformer and a pallet pad, said pad being formed as one piece from a lightweight cellular plastic material and being affixed to said transformer for providing a shipping pallet and a permanent mounting base,

an opening through said pad to provide access for connecting said transformer to underground electrical cables below said pad and a ridge formed as an integral part of said pad around said opening to matingly engage said transformer to prevent tampering.

8. A transformer pallet pad, said pad comprising:

a pallet pad formed of lightweight cellular plastic material having sufficient strength to support a transformer on the ground,

an opening on the bottom of said pad for receiving the tines of a fork lift truck,

a number of bosses on the upper surface of said pad for securing various size transformers to the pad,

a second opening in said pad for accommodating underground cable leads,

and a ridge formed as an integral part of the upper surface of said pad around the outer periphery of a portion of said second opening to matingly engage the transformer and prevent tampering.

3,962,661

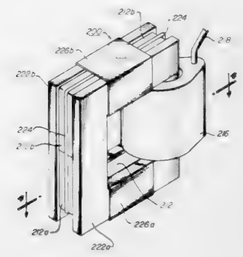
MAGNETICALLY SHUNTED CURRENT TRANSFORMER

Robert Kent Boyd, Florissant, and Allan Walter Lindberg, St. Louis, both of Mo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 22, 1975, Ser. No. 570,510

Int. Cl.² H01F *15/04, 27/24*

U.S. Cl. 336—84 **4 Claims**



1. A magnetically shunted current transformer for use with a current carrying conductor and having a non-distributed secondary winding member, said transformer comprising, in combination:

a magnetic core comprising first and second separable core sections adapted for placement about said conductor wherein the ends of said sections abut one another to form a substantially continuous core and wherein said secondary winding member is carried by said magnetic core and surrounds a portion of at least one of said sections;

means fastening said sections into abutting engagement;

at least one magnetic member having a geometry substantially conforming to said continuous core except at end portions thereof wherein said magnetic number overlaps said core in substantial registry therewith and wherein said end portions of said magnetic member confront said secondary winding; and,

means fastening said member with said continuous magnetic core, wherein leakage magnetic flux generated within said continuous core by said current in said conductor is guided by said magnetic member and substantially coupled with said secondary winding.

3,962,662

METAL WELDING GASKET

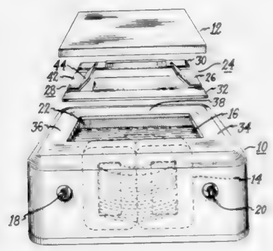
Moreland P. Bennett, Hickory, and Albert M. Hobbs, Jr., Conover, both of N.C., assignors to General Electric Company

Filed Apr. 28, 1975, Ser. No. 572,455

Int. Cl.² H01F *27/02*

U.S. Cl. 336—90 **4 Claims**

1. In an electrical apparatus having a core and coil unit therein immersed in a dielectric fluid and a cover welded to the container, the improvement which comprises a metal gasket member secured between the cover and the container



and in contact with both said cover and said container to prevent weld expulsion from entering the container.

3,962,663

INDUCTIVE POSITION DETERMINING DEVICE

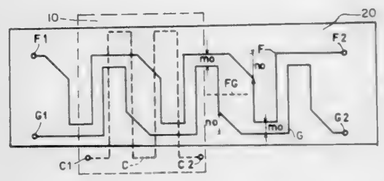
Wim Visser, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 5, 1974, Ser. No. 458,238

Claims priority, application Netherlands, Apr. 13, 1973, 7305172

Int. Cl.² H01F *21/04*

U.S. Cl. 336—129 **9 Claims**



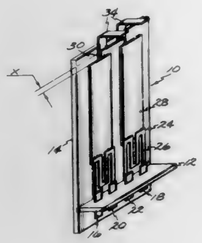
1. An inductive position determining device comprising, first and second members relatively movable in one direction, a signal winding layed out in a first plane along said one direction and secured to the first member and including at least one first meander curve which extends at right angles to said one direction, and two coplanar pick-up windings which lie in a second plane substantially parallel to the first plane and secured to the second member and each having periodically arranged second meander curves with limbs which extend at right angles to said one direction, a position signal being generated in the second meander curves upon correspondence with the first meander curve, characterized in that the periodically arranged second meander curves of a pick-up winding are separated by periodically arranged intervals in each of which at least one second meander curve of the other pick-up winding is accommodated, in that in said one direction groups of corresponding numbers of second meander curves of the two pick-up windings alternate with one another, in that the second meander curves of the two pick-up windings are arranged with equal periods but shifted in phase and correspond to curves of the signal winding, and in that the limbs of the second meander curves are proportioned so that the mean medians of all of said second meander curves coincide, said two pickup windings being the only windings secured to said second member.

3,962,664

CURRENT PROTECTOR

Henry Ty, Attleboro, Mass.; Alfred J. White, North Providence, R.I.; Roger L. Boisvert, Blackstone, and Raymond M. Sears, Attleboro, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 25, 1975, Ser. No. 607,161
Int. Cl.² H01H 61/00
U.S. Cl. 337—86 **8 Claims**



1. An overcurrent protection device for the protection of electrically operated equipment upon an overcurrent condition comprising mounting means, actuation means mounted in said mounting means, a blade member mounted in said mounting means electrically connected to ground and adapted to be engaged by said actuation means upon the occurrence of an overcurrent condition, said blade being snap-acting having a first overcurrent position from which said device is automatically resettable and a second overcurrent position from which said device is not automatically resettable, and line contact means adapted to be engageable by said blade when in said second overcurrent position for permanently grounding the device.

3,962,665

THERMALLY ACTUATED LIQUID LEVEL SENSOR

Edward Wojcik, Queens Village, and Ricardo Limeres, Staten Island, both of N.Y., assignors to Ideal Corporation, Brooklyn, N.Y.

Filed Feb. 13, 1975, Ser. No. 549,546
Int. Cl.² H01H 61/02
U.S. Cl. 337—102 **10 Claims**

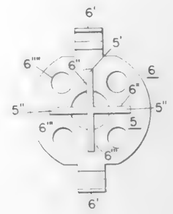
1. A liquid level sensor comprising a heat-conductive wall adapted to be contacted by a body of liquid, an elongate bimetal element protruding from said wall, said element having one end thereof fixed in thermally conductive relation to said wall and having its other end disposed away from said wall, contact means operable by said other end to open or close a signalling circuit, and electrical resistance means disposed along said bimetal element and connectible with a source of electrical current for heating said element, said bimetal element while being heated by said resistance means having either of two distinct postures in which, respectively, its said other end holds said contact means in either circuit opening or circuit closing position, said bimetal element and said heating means constituting means operative at any voltage of said current, absent heat loss from said element as to a body of liquid contacting said wall, to hold said other end substantially on the same line relative to said fixed end so as to maintain one of said postures, and operative during such heat loss to displace said other end laterally into the other of said postures.

3,962,666

SUPPORT PLATES FOR A HELICALLY WOUND FUSIBLE ELEMENT

Edward J. Knapp, Jr., Merrimac, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Apr. 28, 1975, Ser. No. 571,948
Int. Cl.² H01H 85/04
U.S. Cl. 337—159 **5 Claims**



1. An electric fuse including
a. a tubular casing of electric insulating material;
b. a pulverulent arc-quenching filler inside said casing;
c. a pair of ferrules supported by the ends of said casing and closing said casing;
d. a helically wound fusible element inside said casing embedded in said filler conductively interconnecting said pair of ferrules;
e. plate means of electric insulating material inside said casing having edges extending in a direction longitudinally thereof supporting said helically wound fusible element; and
f. a pair of disks of sheet metal arranged inside said casing adjacent the ends thereof, each of said pair of disks forming a support for the axially outer ends of said plate means and each of said pair of disks having connector tabs whose ends are interposed between the outer surface of said casing and the inner surface of one of said pair of ferrules, each of said pair of disks being arranged adjacent, parallel to, and in spaced relation from, an end surface of one of said pair of ferrules, and each of said pair of disks being provided with slot means and said plate means projecting through said slot means axially outwardly into a space bounded by said end surface of one of said pair of ferrules and by one of said pair of disks.

3,962,667

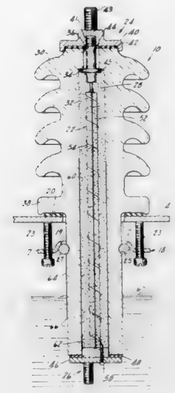
COMBINATION FUSE AND BUSHING

Edwin A. Link, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed July 26, 1972, Ser. No. 275,178
Int. Cl.² H01H 85/02
U.S. Cl. 337—202 **3 Claims**

1. A fused high voltage electrical bushing for connecting a high voltage cable through an opening in a casing to an electrical device housed within the casing, said bushing comprising:
a housing formed of a dielectrical material and having an axially extending passage,
an electric terminal sealed to each of said passage,
a fusible element within said passage electrically connected to each of said terminals,
a granular dielectric material completely filling said passage,
a first layer of conductive material on the surface of said passage for reducing voltage stress on said fusible element,
said first layer of conductive material being connected to one of said terminals and extending through the opening in said casing terminating in a spaced relation to the other of said terminals,

and a second layer of conductive material on the outer surface of said housing extending through the opening in the casing, whereby said inner and outer layers of conductive material cooperate to reduce voltage stress at the point of entrance of said bushing through the opening in the casing.

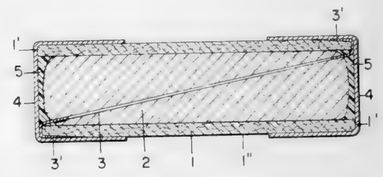


3,962,668

ELECTRIC LOW-VOLTAGE FUSE

Edward J. Knapp, Jr., Merrimac, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Apr. 22, 1975, Ser. No. 570,366
Int. Cl.² H01H 85/14
U.S. Cl. 337—228 **3 Claims**



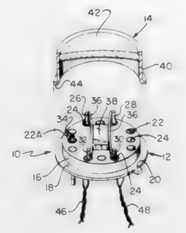
1. An electric fuse including
a. a tubular casing of absorbent cellulosic material;
b. a pulverulent non-fulgurite-forming arc-quenching filler inside said casing;
c. a fusible element of a soft low fusing point metal inside said casing, embedded in said filler and having ends bent around the rims formed by said casing at the ends thereof into engagement with the outer surface of said casing;
d. a pair of terminal caps each mounted under pressure on one of said ends of said casing, reducing the thickness and flattening said ends of said fusible element in engagement with said outer surface of said casing to form connector tabs having a width larger than the width of other portions of said fusible element; and
e. two bodies of a cured synthetic resin inside said casing adjacent said ends thereof, a portion of said resin forming each of said bodies being absorbed by said ends of said casing and thereby hardening and stiffening said ends, and each of said pair of terminal caps being adhesively bonded by said resin to one of said hardened and stiffened ends of said casing.

3,962,669

ELECTRICAL CONTACT STRUCTURE FOR SEMICONDUCTOR BODY

Gerald Entine, Newton; Frank C. Wilson, Tewksbury, both of Mass., and Richard Farrell, East Killingly, Conn., assignors to Tyco Laboratories, Inc., Waltham, Mass.

Filed July 24, 1974, Ser. No. 491,330
Int. Cl.² H01C 7/08
U.S. Cl. 338—19 **15 Claims**



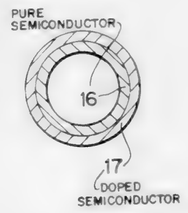
1. A device comprising:
a body of semiconductive material having a pair of opposed surfaces, said surfaces being each provided with a film of electrically conductive material; and
a mounting assembly including a base, at least two resilient spring electrically conductive contact members, and means attached to said contact members and said base for supporting said contact members in spaced relation to said base, said contact members being in spring biased contact with said opposed surfaces and providing stable, slow diffusion, electrical contact with said body.

3,962,670

HEATABLE HOLLOW SEMICONDUCTOR

Wolfgang Dietze, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Division of Ser. No. 410,758, Oct. 29, 1973, Pat. No. 3,899,557. This application Dec. 9, 1974, Ser. No. 530,667
Claims priority, application Germany, Oct. 31, 1972, 2253411
Int. Cl.² H01C 13/00
U.S. Cl. 338—334 **1 Claim**

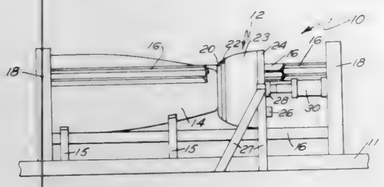


1. A diffusion container for doping semiconductor elements with a dopant comprising:
a gas-impermeable housing having an inner surface composed of pure silicon and an outer surface composed of a doped silicon having a specific electrical resistance of about 10 milliohm centimeters.

3,962,671
CALIBRATION TRANSDUCER

Adam Jilling, Newport, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 18, 1975, Ser. No. 605,565
Int. Cl.² H04R 29/00
U.S. Cl. 340—5 C 3 Claims



1. A structure for use in testing a homing system in the nose section of a torpedo comprising:

enclosing means adapted for holding and enclosing said nose section so that the axis of said nose section lies in a horizontal plane;

a transducer assembly held and enclosed in said enclosing means and adapted to be held in firm abutment to said nose section, said transducer assembly includes a transducer housing enclosing a transducer plate having a plurality of transducer elements arranged in quadrature on said plate and said transducer assembly having an axis coinciding with the perpendicular axis of symmetry of said plate, said axis of said plate and said assembly lying in a horizontal plane;

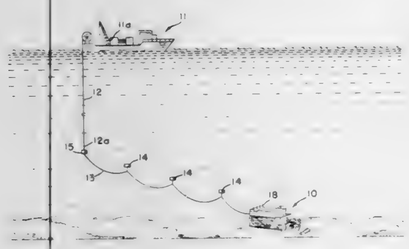
horizontal force means for exerting force in a horizontal direction adapted for holding said transducer housing in firm abutment with said nose section; and

a liquid lubicant disposed on said transducer housing.

3,962,672
TETHERED VEHICLE LOCATION SYSTEM

Robert L. Watts, and Michael D. Juniper, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 16, 1975, Ser. No. 596,329
Int. Cl.² G01S 5/18
U.S. Cl. 340—6 R 10 Claims



1. In a deep ocean system an apparatus for locating a tethered vehicle with respect to the distal end of a cable hanging from a support craft comprising:

means extending from the distal end of the cable for coupling signals between the cable and the vehicle;

means mounted on the distal end of the cable for transmitting an ensonifying signal;

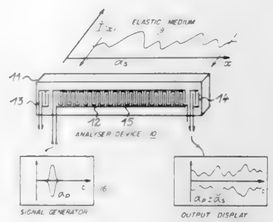
means carried on the vehicle for receiving phase variations of the acoustic signal;

means on the support craft for processing a cycle of the phase variations of the ensonifying signal into range and bearing information.

3,962,673
SYSTEM FOR READING ACOUSTIC IMAGES

Jean Desbois, and Pierre Tournois, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 29, 1974, Ser. No. 518,987
Claims priority, application France, Oct. 31, 1973, 73.38912
Int. Cl.² H04B 11/00
U.S. Cl. 340—15 6 Claims



1. A system for reading acoustic images propagated in an elastic medium, conprising:

a surface acoustic wave analyser device for processing an incident signal by interaction with an excitation signal and for producing a resulting output signal convenient for imaging;

a signal generator means for supplying said excitation signal having short pulses with a pulsation α_p kept at a first constant periodicity;

an output display means for imaging;

said analyzer device comprising a piezoelectric medium substrate having one face to meet said elastic medium for receiving incident acoustic bulk waves signal propagated at a second constant periodicity pulsation α_s and forming on said receiving face an acoustic image defined by a linear acoustic energy density,

and further provided on the opposite face with at least one electro-acoustic transducer means connectable to said output analyser means and at least one interdigital array means of a given length (L) successively arranged on said substrate opposite face perpendicularly to the direction of propagation of a launced elastic surface wave and connectable to said generator means,

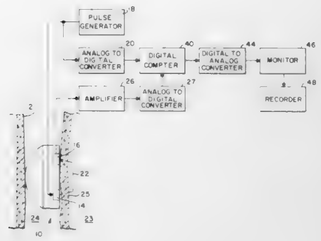
and wherein said incident α_s and excitation α_p signals, simultaneously applied to said array each respectively generate a pattern of mechanical surface strains and the non linear interaction thus produced by the two said patterns gives rise to acoustic surface waves with resulting signal pulsation due to addition or difference of the superimposed pulsations ($\alpha_p \pm \alpha_s$), the duration (T) of said resulting signal ($\alpha_p \pm \alpha_s$) being equal to the ratio of said array length (L) to the propagation velocity (C) of the surface waves over the said substrate, and

the acoustic image being derived from the electrical signal supplied by said transducer means to said output display means with a filtering around its constant resulting pulsation ($\alpha_p \pm \alpha_s$).

3,962,674
ACOUSTIC LOGGING USING ULTRASONIC FREQUENCIES

Eddie P. Howell, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 27, 1975, Ser. No. 553,555
Int. Cl.² G01V 1/40
U.S. Cl. 340—15.5 AC 12 Claims



1. An acoustic logging system for determining characteristics of an earth formation comprising:

a. downhole logging means for transmitting an acoustic signal at ultrasonic frequency through the adjacent formation and for receiving said signal,

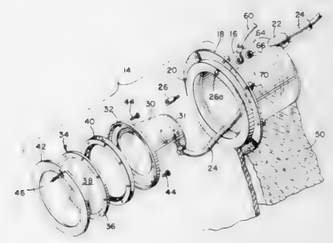
b. means for detecting the initial compressional pulse and the subsequent fluid pulse in said received signal, and

c. means for analyzing said initial compressional pulse and subsequent fluid pulse to determine formation characteristics dependent upon their relative attenuation and transit times.

3,962,675
UNDERWATER FLOODLIGHT ASSEMBLY

William N. Rowley, Palos Verdes Estates, and Gordon F. Ehret, Alhambra, both of Calif., assignors to Weil-McLain Co., Inc., Dallas, Tex.

Filed Mar. 25, 1975, Ser. No. 561,989
Int. Cl.² F21V 31/00
U.S. Cl. 240—26 10 Claims

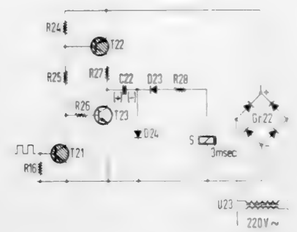


1. An underwater floodlight assembly comprising an open-ended shell adapted to extend in an opening formed in a wall of a reservoir for water, said shell having an outwardly extending integrally formed flange which engages the surface of said wall, a plurality of bosses formed integrally with said flange, said bosses extending in a spaced relationship around said shell and extending into said wall, an open-ended inner housing disposed within said shell and including light bulb receptacle means, and cover means for covering the open ends of said housing and said shell.

3,962,676
CONTROL SYSTEM FOR OHMIC LOADS, PREFERABLY SIGNAL LAMPS IN A ROAD TRAFFIC SYSTEM

Horst Maisel, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 23, 1973, Ser. No. 381,903
Claims priority, application Germany, Aug. 4, 1972, 2238521
Int. Cl.² G08G 1/00
U.S. Cl. 340—41 R 2 Claims

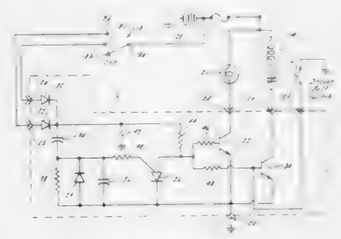


1. A control system for ohmic loads, particularly signal lamps of a traffic regulating system, in response to periodic test pulses supplied under normal operating conditions of the ohmic loads, comprising an evaluation relay having an inherent delay and including an actuating winding, a series circuit comprising a capacitor; a first diode, a unidirectional power supply and a first transistor, operative when said first transistor is conductive to charge said capacitor from said power supply, a second series circuit comprising said capacitor, a second diode, a second transistor, and said actuating winding, operative when said second transistor is conductive to discharge said capacitor through said actuating winding, and means operatively supplying said test pulses to said transistors for effecting alternate conduction of said transistors whereby the charge and discharge of said capacitor is controlled by said test pulses the duration of the charge period being less than the inherent delay of said relay.

3,962,677
SAFETY BELT WARNING SYSTEM

Frederick Otto Richard Miesterfeld, Troy, and Stephen Jay Orris, Allen Park, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 18, 1975, Ser. No. 605,493
Int. Cl.² G08B 21/00; B60R 21/10
U.S. Cl. 340—52 E 2 Claims



1. In a vehicle safety belt warning circuit the combination with the vehicle battery and the vehicle ignition switch of a normally open safety belt switch associated with a safety belt of the vehicle, a warning lamp, a warning buzzer and an electronic control module operatively coupling the vehicle battery, ignition switch, warning lamp, warning buzzer and belt switch, said module comprising a first main control transistor having an emitter, collector, and base and having its emitter-

collector circuit arranged to control conduction through the warning lamp, a second main control transistor having an emitter, collector, and base and arranged to have its emitter-collector circuit controlling conduction through the warning buzzer, means connecting the safety belt switch with the base of the second control transistor, and a timing network connecting the ignition switch with the base terminals of the two transistors, said timing network comprising an input RC charging circuit, diode means operatively coupling said charging circuit with a terminal of the ignition switch which is connected to the battery when the ignition switch is actuated from its off position, a programmable unijunction transistor having its anode-cathode circuit coupled through a resistor to said diode means, means coupling the anode of the programmable unijunction transistor with the base terminals of said first and second transistors, means coupling the anode-gate terminal of the programmable unijunction transistor with the RC charging circuit for triggering the programmable unijunction transistor after a certain charge has been given to said RC circuit, and means forming a discharge circuit for discharging the RC circuit when the ignition switch is operated to its off position.

3,962,678

LIGHTING APPARATUS

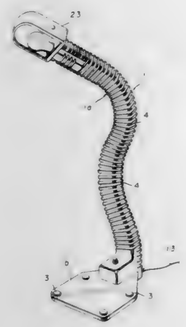
Masayuki Kurokawa, Tokyo, Japan, assignor to Yamagiwa Electric Co. Ltd., Tokyo, Japan

Filed June 10, 1974, Ser. No. 477,742

Claims priority, application Japan, May 1, 1974, 49-50195; May 1, 1974, 49-50196; May 1, 1974, 49-50197

Int. Cl.² F21S *1/12, 3/10*

U.S. Cl. 240—81 BD **5 Claims**



1. In a lighting apparatus particularly adapted for use as a stand type lamp comprising: a light assembly comprising a socket; a light bulb; a shade; and a stand including an elongated stem member having two ends and a central portion carrying said light assembly on the upper end thereof and formed with a plurality of annular grooves of generally U-shaped cross-section over the periphery thereof, each groove extending radially with respect to the longitudinal axis of said stem member and all grooves arranged in parallel and successive relation at regular intervals substantially along the whole length of the stem member; and at least one flexible metal bar penetrating through said stem member along the longitudinal axis thereof which holds the stem member in selected positions, the improvement in which said annular grooves become gradually deeper toward at least one end of the stem member from the central portion thereof.

3,962,679

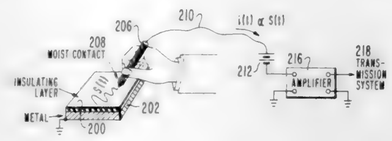
HANDWRITING IDENTIFICATION TECHNIQUE

Rudolf Succo Engelbrecht, Bremgarten, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed June 6, 1974, Ser. No. 476,898

Int. Cl.² G06K *9/00*

U.S. Cl. 340—146.3 SY **7 Claims**



1. A handwriting identification system comprising a handwriting speed transducer for directly generating a single analog signal proportional to the instantaneous speed of any given handwriting, wherein said speed is a scalar magnitude independent of the direction of said given handwriting at that instant and which has a quantitative value equal to $(v_x)^2+(v_y)^2$, where v_x and v_y are respectively the horizontal and vertical velocity vectors, wherein said given handwriting includes a plurality of direction components obliquely inclined with respect to the horizontal, vertical and each other, and wherein said transducer incorporates an electrically insulating film writing surface and a movable element for applying electrostatic charges to said surface with a conductive liquid which does not wet said film to produce said given handwriting on said surface with said movable element and provide a single signal proportional to the instantaneous speed of said element with respect to said surface, whereby said single signal may be employed by itself without processing as a discriminant for identifying handwriting.

3,962,680

COMPARATOR DEVICE

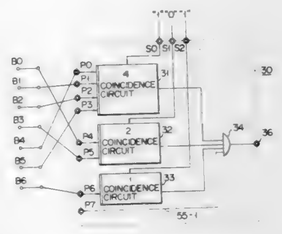
Shigeharu Hirao, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 11, 1975, Ser. No. 557,249

Claims priority, application Japan, Mar. 13, 1974, 49-28100

Int. Cl.² G06F *7/02*

U.S. Cl. 340—146.2 **6 Claims**



1. A comparator device comprising a plurality of coincidence circuits having first input terminals supplied with the corresponding number of bit signals being compared, each having one second input terminal supplied with one of comparison base bit signals, and producing a coincidence detection signal when all the bit signals for each coincidence circuit have the same logical level as that of the comparison base bit signals for that coincidence circuit; and an AND circuit for obtaining the logical product of outputs from the plural coincidence circuits, wherein the number m of the coincidence circuits is so chosen as to satisfy the relationship

$$2^{m-1} \leqq x \leqq 2^m - 1$$

with the total number of bit signals being compared designated as x ($x \geqq 3$).

3,962,681

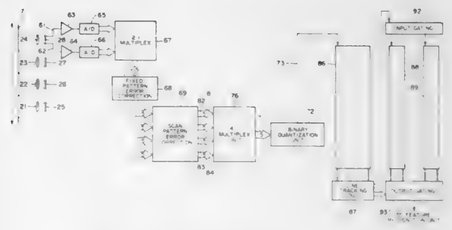
PAGE WIDTH OPTICAL CHARACTER PROCESSING METHOD AND SYSTEM

Stanley C. Requa, Dallas, and Richard Gayle Van Tyne, Richardson, both of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed June 19, 1972, Ser. No. 264,014

Int. Cl. G06k *9/12*

U.S. Cl. 340—146.3 H **19 Claims**



1. A page width optical scanning system of the type wherein an image of a portion of a complete line of characters on a document is projected onto a plurality of groups of photosensitive means arranged in a single column, the groups to be scanned simultaneously, the photosensitive means extending parallel to character line length and wherein the output signals of all the photosensitive means in the array are periodically scanned and sampled, and wherein said system includes means for correcting scan pattern offset which comprises:

multiplexing means having a plurality of inputs and a single output;

means for delaying for selected periods, scanned data from each of said groups of photosensitive means, respectively, said periods being equal to the time required to compensate for scan pattern offset from each of the groups of photosensitive means; and

means for transferring delayed data from each of said groups of photosensitive means, respectively, to individual inputs of said multiplexing means and produce scan corrected data at the output thereof.

3,962,682

SPLIT LOW ORDER INTERNAL ADDRESS BUS FOR MICROPROCESSOR

Thomas H. Bennett, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Oct. 30, 1974, Ser. No. 519,136

Int. Cl.² G06F *3/00, 13/00*

U.S. Cl. 340—172.5 **22 Claims**

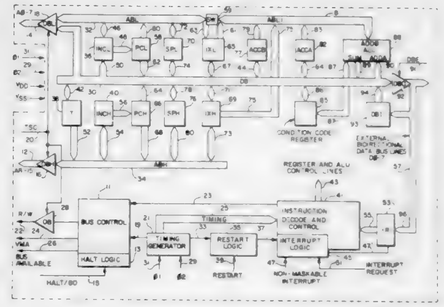
1. A microprocessor unit including an internal data bus N bits wide, N being an interger, coupled to a data output circuit comprising:

parallel internal address bus means including first address bus means N bits wide coupled to first register means for transferring data representative of low order address bits, and second address bus means independent of said first address bus means N bits wide coupled to second register means for transferring data representative of high order address bus bits, said parallel internal bus means being coupled to data output circuit means;

said first register means including first program register means coupled to said first address bus means for storing low order address bits of a current instruction and transferring said low order address bits to said first address bus means if said current instruction is of a first type or to said data bus if said current instruction is of a second type;

said second register means including second program register means coupled between said second address bus means and said data bus for storing high order address bits of said current instruction and transferring said high order address bits to said second address bus if said current instruction is of said first type or to said data bus if said current instruction is of said second type;

counter means coupled to said first and second register means for updating said low and high order address bits in said first and second program register means by incrementing or decrementing, under program control, an address stored in said first and second register means



wherein said counter means includes a first counter coupled between said first address bus means and said data bus and also coupled to said first program register means for updating contents of said program register means;

said counter means including a second counter coupled to said address bus means and said second program register means for updating contents of said second program register means independently of said second address means;

said microprocessor unit also including arithmetic logic unit means coupled to said low order address bus and said data bus and control means coupled to said arithmetic logic unit means, said first and second register means, and said counter means for controlling transfers of data thereat.

3,962,683

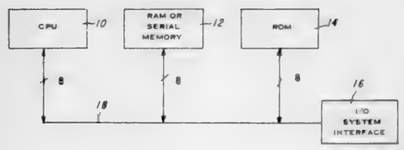
CPU PROGRAMMABLE CONTROL SYSTEM

Max Brown, 1107 Winrock, Apt. 8401, Houston, Tex. 77027, and Gary Boone, 6319 Oakham, Houston, Tex. 77045

Continuation of Ser. No. 176,665, Aug. 31, 1971, abandoned. This application Sept. 4, 1973, Ser. No. 394,361

Int. Cl. G06f *9/00*

U.S. Cl. 340—172.5 **8 Claims**



1. In a synchronous CPU characterized by an operation cycle having a first subcycle during which the CPU may access an external memory and a second subcycle during which the CPU processes data and instructions retrieved from memory, a control system comprising:

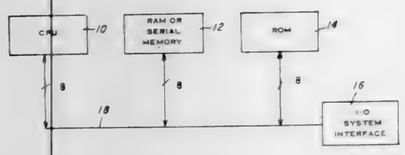
a. circuit means for generating said first and second subcycle times, said circuit means including a programmable logic array for selectively defining the time duration of said subcycles,
b. instruction decode means for receiving instructions from said external memory and for producing output signals corresponding to the processor operation required for respective instructions, said decode means comprising a programmable logic array for selectively defining processor operation resulting from selected instructions,
c. cycle timing means operably connected to said circuit means, and having inputs coupled to said instruction decode means to receive output signals therefrom, for controlling the number of processor cycles required for respective instructions. and
d. timing control means for receiving inputs from said circuit means, and coupled to said decode means to receive output signals therefrom, and receiving inputs from the cycle timing means, for generating control signals to synchronize processor operation, said timing control means including a programmable logic array for selectively defining a sequence of operation of the processor.

3,962,684

COMPUTING SYSTEM INTERFACE USING COMMON PARALLEL BUS AND SEGMENTED ADDRESSING

Edward R. Caudel, and Gary W. Boone, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1971, Ser. No. 176,669
Int. Cl.² G06F *9/00*
U.S. Cl. 340—172.5 **8 Claims**



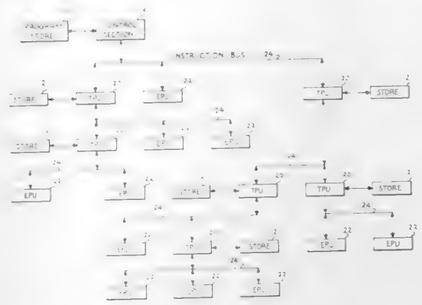
4. In a computing system which includes a central processor unit in combination with a plurality of external memory units wherein the processor includes a control section, a parallel arithmetic logic unit, an instruction register and a random access memory interconnected by a plurality of parallel bus lines common to the processor and external memory units, an internal memory section that includes a last-in-first-out program address stack for addressing the external memory units comprising:
a. a first set of dynamic random access memory registers functioning to store low order address bits,
b. a second set of dynamic random access memory registers coupled respectively to said first set functioning to store high order address bits, and
c. a bidirectional counter for respectively selecting one pair from said first and second sets to function as the program address register to address said external memory units, the remaining pairs of registers of said first and second set defining a last-in-first-out address stack, whereby in response to a subroutine call said counter indexes one unit in a first direction to select an adjacent pair of data registers as the new program address, the previous pair of data registers storing the address for a return instruction which is effective to cause said counter to index one unit in the opposite direction.

3,962,685

DATA PROCESSING SYSTEM HAVING PYRAMIDAL HIERARCHY CONTROL FLOW

Albert P. Belle Isle, Pittsfield, Mass., assignor to General Electric Company, Salem, Va.

Filed June 3, 1974, Ser. No. 476,030
Int. Cl.² G06F *15/16*
U.S. Cl. 340—172.5 **22 Claims**



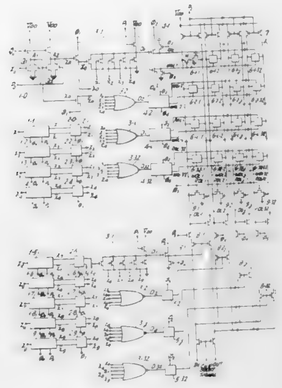
1. A data processing system based upon a pyramidal hierarchy of at least three levels having a bus interfacing adjacent levels thereof, comprising:
A. a first, highest level including,
1. a store containing a plurality of addressable locations each capable of retaining an instruction word containing an operation code portion defining an operation to be performed, and
2. a sequence controller for addressing said store to selectively retrieve instruction words therefrom and for placing said words on the bus interfacing the first and second levels;
B. second and third respectively lower levels each including a plurality of processing units connected in parallel to the bus interfacing the respective level to the next higher level,
1. each of said processing units containing recognition means responsive to the operation code portion of the instruction word on the bus interfacing it with the next higher level to accept only those words containing designated operation code portions,
2. each of said processing units being of a one of two types, an execution processing unit or a translator processing unit,
3. each of said second and third levels capable of including execution processing units and translator processing units and each having at least one translator processing unit,
a. each of said execution processing units responsive to an instruction word recognized thereby to perform the operation specified by that instruction word, and
b. each of said translator processing units including means to distinguish between first and second types of instruction words recognized thereby comprising,
i. means responsive to the first of the two types of instruction words for transmitting that instruction word to the next lower interface bus without modification, and
ii. means responsive to the second of the two types of instruction words for initiating an operation by an associated execution processing unit in accordance with a stored group of additional instruction words, including means to address a store means containing said additional instruction words; and
C. addressable store means associated with each of said translator processing units for storing said additional instruction words.

3,962,686

MEMORY CIRCUIT

Shigeki Matsue, and Hajime Shirato, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Continuation of Ser. No. 360,687, May 16, 1973, abandoned. This application Aug. 9, 1974, Ser. No. 496,190
Claims priority, application Japan, May 16, 1972, 47-48876
Int. Cl.² G11C *13/00*
U.S. Cl. 340—173 R **17 Claims**



1. A memory circuit employing insulated-gate field-effect transistors, said memory circuit comprising a plurality of terminals for receiving a plurality of address signals, a terminal for receiving a single timing signal, a plurality of circuits to be operated in sequence, and means for controlling the commencement of operation of each of said plurality of circuits, said controlling means including a control circuit having an operation time substantially similar to that of one of said plurality of circuits, said control circuit receiving the same input signal as that for said one circuit and producing an output signal that is applied to and effective to initiate the operation of the succeeding one of said plurality of circuits subsequent to said one circuit upon the completion of operation of said one circuit, whereby said plurality of circuits of said memory circuit are operated automatically in a predetermined sequence with said single timing signal.

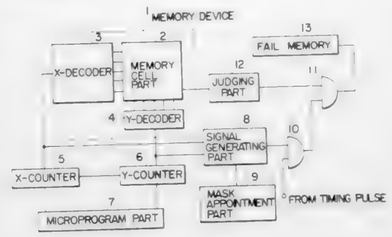
3,962,687

METHOD OF INSPECTION OF SEMICONDUCTOR MEMORY DEVICE

Yoshikazu Suzumura, Fuchu, and Yoichi Asano, Setagaya; both of Tokyo, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 15, 1974, Ser. No. 514,927
Claims priority, application Japan, Oct. 12, 1973, 48-113896
Int. Cl.² G11C *13/00*
U.S. Cl. 340—173 R **2 Claims**

1. In a testing apparatus for detecting faults in a semiconductor memory array made up of a plurality of memory cells, each cell being capable of storing a binary bit of information, each cell being addressed by an X-address signal and a Y-address signal, said testing apparatus including:
a. program means for generating a testing signal;
b. X-counter means, controlled by said program means, for generating an X-address signal for the semiconductor memory array to be tested;
c. Y-counter means, controlled by said program means, for generating a Y-address signal for the semiconductor memory array to be tested;
d. judging means, coupled to said semiconductor memory array to be tested, for generating judgment signals representative of the results of the testing of a respective cell within said semiconductor memory array, addressed by said X-counter means and said Y-counter means;
e. memory means, coupled to said judging means, for storing judgement signals representative of the results of the testing of a respective cell; and
f. first gate means connected between said judging means and said memory means, for controllably coupling said judgment signals to said memory means;
the improvement comprising;
g. mask appointment means for generating a masking signal representative of the address of a memory cell known to be defective;



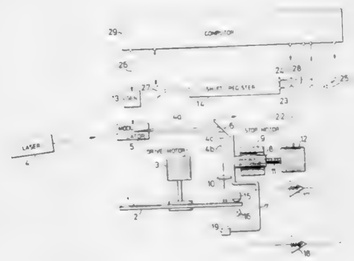
h. signal generating means, coupled to said X-counter means, said Y-counter means, and said mask appointment means, for comparing said masking signal with the X-address signals and Y-address signals by which the memory cells of the semiconductor memory array are addressed during the testing thereof, and for generating a mask signal upon coincidence of the masking signal with said X-address and Y-address signals; and
i. second gate means, coupled between said signal generating means and said first gate means, and receiving a timing pulse, for inhibiting the transmission of said timing pulse to said first gate means, in response to the generation of a mask signal by said signal generating means.

3,962,688

OPTICAL MASS DATA MEMORY

Erik Gerhard Natanael Westerberg, Hastskovagen 7A, S-183 50 Taby, Sweden

Filed Apr. 2, 1975, Ser. No. 564,637
Claims priority, application Sweden, Apr. 16, 1974, 7405076
Int. Cl.² G11C *13/04, 11/42*
U.S. Cl. 340—173 LM **8 Claims**



1. An optical memory for storing large amounts of information with a great packing density having recording and reading cycles controlled by a computer, there being a laser beam to provide recording and reading of information respectively on and from a memory disk rotating in operation, in response to

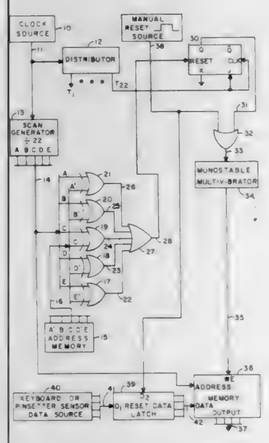
acousto-optical modulation of the beam, this modulation providing fine adjustment of the beam in the radial direction of the disk while coarse adjustment of the beam takes place mechanically, characterized by an acousto-optical modulator arranged in the path of the laser beam for both amplitude and frequency modulating the beam, so that it is fine adjusted by deflection, or for providing different intensities, and by a mechanical coarse adjusting unit for stepwise displacement of the beam in the radial direction of the disk.

3,962,689

MEMORY CONTROL CIRCUITRY

Raymond D. Brunson, 5404 Brixham Court, Burke, Va. 22015

Filed Nov. 21, 1974, Ser. No. 525,917
Int. Cl.² G11C 13/00
U.S. Cl. 340—173 R 8 Claims



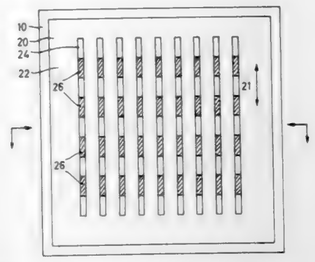
1. A system for controlling read and write functions of a random access memory to continuously read out therefrom in sequential binary order, data words stored in said memory and to selectively enter a next data word into a predetermined one of said memory addresses, comprising means for generating a binary scan sequence signal comprising a repeated clock signal controlled binary count corresponding to successive ones of a plurality of addresses in said random access memory; means for addressing said random access memory with said binary scan sequence signal; means for applying a next data word to be entered into said memory to the data input of said memory; means for comparing the binary address into which said next data word is to be entered with said binary scan signal during a time interval comprising at least that period of time required for said binary scan signal to generate signals corresponding to all of the addresses of said memory; said means for comparing a synchronization signal upon said binary scan and next data word address being the same; and means for applying said synchronization signal to write-enable pulse forming a logic means, in response to which said write-enable pulse forming logic means outputs a write-enable pulse; and said write-enable pulse being applied to said memory to cause said next data word to be written into the then addressed location in said memory.

3,962,690

THIN FILM MAGNETIC STORAGE DEVICE

Roland Koenig, Ludwigshafen; Hermann Deichelmann, Schwetzingen, and Herbert Henkler, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 5, 1974, Ser. No. 503,285
Claims priority, application Germany, Sept. 6, 1973, 2344983
Int. Cl.² G11C 19/08
U.S. Cl. 340—174 ZB 2 Claims



1. An improved thin film magnetic storage device of the type having a flat support to which a ferromagnetic layer is applied, said layer containing areas of low coercive force which are in the shape of strip-like channels and which are surrounded by areas of higher coercive force, and wherein electric conductors extend in planes parallel with said flat support which are adapted for the flow of electrical signal current which establishes the magnetic fields needed to nucleate, propagate, read and erase the magnetic domains in the low coercive force areas, the improvement comprising:

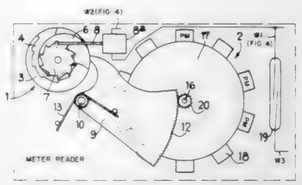
said electric conductors being arranged in two separate planes in a manner such that they intersect said channels perpendicularly, the conductors of one plane at the point of intersection with said channels being situated about the gaps between the conductors of the second plane.

3,962,691

DEVICE FOR THE TRANSMISSION OVER A DISTANCE OF INDICATIONS IN PARTICULAR OF A METER

Michel Langenfeld, Vandoeuvre-les-Nancy, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Nov. 27, 1974, Ser. No. 527,784
Claims priority, application France, Nov. 29, 1973, 73.42592; Nov. 4, 1974, 74.36617
Int. Cl.² G08C 19/16
U.S. Cl. 340—203 12 Claims



1. In a device for transmitting over a distance the angular position of rotary elements such as indicator drums of a meter, comprising an exterior connector, a current generating and decoding reading apparatus for making a reading of the angular position of the rotary elements, the reading apparatus being detachably connected in the connector, an encoding unit comprising for each rotary element a stepped cam which has steps in successive equal sectors of the stepped cam and is connected to rotate with the corresponding rotary element,

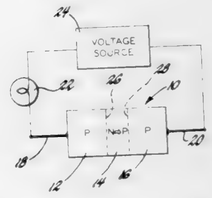
the steps being positioned on radii of the cam which increase progressively from a first of said steps to a last of said steps, a movable follower combined with the cam to be driven by the cam, elastically yieldable means for biasing the follower against the stepped cam, a smooth cam coaxial with the stepped cam, drive means for driving the smooth cam in rotation, the smooth cam having a camming surface cooperative with the follower and capable of maintaining the follower spaced away from the steps of the stepped cam outside periods in which the reading apparatus makes said reading, and a device for detecting movement of the follower; the improvement comprising the following features: the smooth cam has in at least a part of the smooth cam a camming surface which has a radius which increases progressively to shift the follower to the same extent as said radii of said steps between a minimum radius corresponding to the radius of said first step and a maximum radius corresponding to the radius of said last step, a substantially radially extending surface interconnecting the maximum radius part and the minimum radius part of the camming surface, said drive means being capable of causing the smooth cam to effect a predetermined number of rotational steps in the direction of increasing radii of said camming surface, the angular extent of said rotational steps corresponding to the angular extent of said steps of the stepped cam, means being provided in the reading apparatus for counting the steps effected by the smooth cam while the follower cooperates with said part of the smooth cam.

3,962,692

SOLID STATE TEMPERATURE RESPONSIVE SWITCH

Michael P. Murphy, Flint, and John W. Riddel, Fenton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1974, Ser. No. 524,675
Int. Cl.² G01K 7/22; G08B 21/00; H01L 29/167, 31/10
U.S. Cl. 340—228 R 4 Claims



1. An electrical circuit that includes a solid state temperature responsive switch device having a thermally dependent P-N junction providing switching action, said circuit comprising:

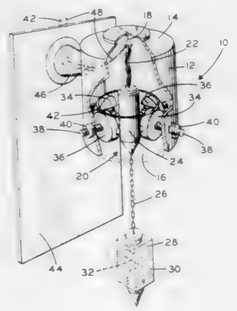
a body of semiconductive material, said body having at least two regions defining an interface therebetween, one of said regions being thermally non-invertible in conductivity type wherein said one region has the same conductivity type regardless of temperature, the other region being thermally invertible in conductivity type at a predetermined temperature, said thermally invertible region being doped with both P-type and N-type selected impurities in appropriate concentrations to produce conductivity type inversion at said predetermined temperature, said N-type impurities having an activation energy of less than about 0.1 electron volt and having a given actual concentration, said P-type impurities having an activation energy at least three times the activation energy of said N-type impurities and an actual concentration at least ten times said given concentration of said N-type impurities, said thermally invertible region having N-type conductivity below said predetermined temperature and P-type conductivity above said predetermined temperature thereby producing a P-N junction at said interface when both of said regions are of opposite conductivity type and not producing a P-N junction when both of said regions are of the same conductivity type, an electrically conductive terminal on each of said outer regions, said terminals being serially connected into a circuit having a direct current voltage source of appropriate polarity and a temperature indicating means, wherein said body blocks current from the voltage source when said P-N junctions are present, yet readily passes current when they are not present and thereby activates said temperature indicating means.

3,962,693

MOTION DETECTION DEVICE INCLUDING A PENDULUM SWITCH

Charles H. M. Schamblin, P.O. Box 1709, Bakersfield, Calif. 93302

Filed July 21, 1975, Ser. No. 597,441
Int. Cl.² G08B 13/08, 17/00
U.S. Cl. 340—261 6 Claims



1. A motion detection device comprising:

A. a pair of electrical terminals having a potential difference established therebetween;

B. a multiplicity of pairs of mutually spaced electrical contacts arranged in intersecting planes and commonly connected to one electrical terminal of said pair of electrical terminals;

C. an electrically conductive, first pendulous mass connected with the other terminal of said pair of terminals suspended for pendulous motion between said multiplicity of pairs of contacts and adapted to engage the contacts for thus establishing electrical continuity between the pair of terminals; and

D. a second pendulous mass suspended from said first pendulous mass for damping pendulous motion imparted thereto having means including a level for indicating the instantaneous position of the masses relative to a vertical plane projected substantially midway between at least one pair of contacts.

3,962,694

METHOD AND APPARATUS FOR MONITORING AN ELECTRICALLY ACTUATED TOOL

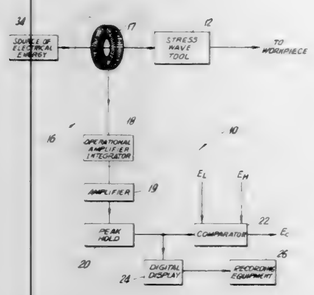
Vincent S. Calia, Greenlawn, and Basil P. Leftheris, Huntington, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 6, 1975, Ser. No. 556,169
Int. Cl.² G08B 21/00
U.S. Cl. 340—267 R 14 Claims

1. A method of monitoring the current flowing in the tool circuit of an electrically actuated tool, in which the force output delivered by the tool is proportional to the square of the current delivered to the tool, comprising the steps of:

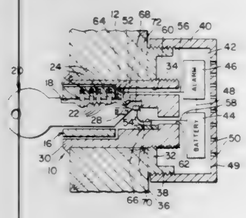
a. providing an analog voltage signal proportional to the rate of change of the current delivered to the tool;
b. integrating the analog voltage signal resulting from step (a) to provide a voltage signal proportional to the current delivered to the tool;
c. monitoring the amplitude of the integrated voltage signal resulting from step (b) and holding the maximum value thereof;
d. comparing the maximum amplitude of the integrated voltage signal with a reference envelope; and
e. producing an error signal if the maximum amplitude of the integrated voltage signal is outside the range established by the reference envelope.

7. Apparatus for monitoring the current flowing in the tool circuit of an electrically actuated tool, comprising:



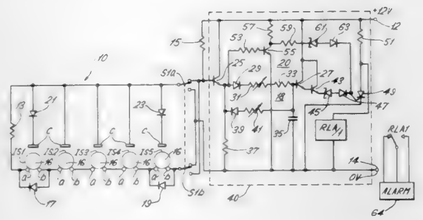
means for providing an analog voltage signal proportional to the current delivered to the tool;
means for monitoring the analog voltage signal and holding the maximum amplitude thereof.
means for comparing the amplitude of the signal held by said monitoring and holding means with reference signals which are proportioned to the highest and lowest allowable force output levels and producing an error signal if the signal held by said monitoring and holding means is outside the range established by the two reference signals; and
means for preventing recycling of the tool in the presence of an error signal.

3,962,695
MAGNETIC KEY LOCK AND ALARM
George Peters, Brooklyn, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed July 3, 1975, Ser. No. 592,828
Int. Cl.² E05B *45/10*
U.S. Cl. 340—274 R **3 Claims**



1. A battery operated alarm system responsive to a serrated magnet-bearing key comprising a tumbler assembly having a key slot for cooperation with the serrations of said key, a first switch means carried by said lock for detecting the presence of a key in said key slot, a second switch means including ferromagnetic material for magnetic actuation of said second switch means by said key, a battery holder and an alarm means carried by said lock and means for interconnecting said battery, said alarm and said first and second switch means for said alarm to be energized upon insertion of a non-magnet-bearing key.

3,962,696
PROTECTIVE SYSTEMS
Ashtyn Hereward Smith, Carmarthenshire, Wales, and John Egon Forbat, Hartley Wintney, England, assignors to Inertia Switch Limited, Hartley Wintney, England
Filed June 14, 1973, Ser. No. 369,956
Claims priority, application United Kingdom, June 15, 1972, 28165/72
Int. Cl.² G08B *13/02*
U.S. Cl. 340—276 **22 Claims**

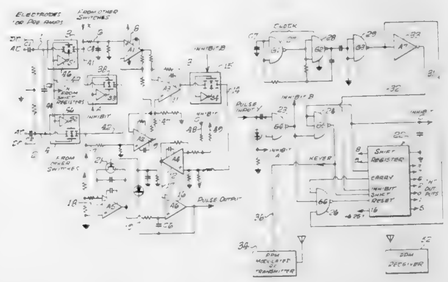


1. A monitoring system comprising terminal means connectible to a potential source, a voltage divider connected between said terminal means and including first and second elements in series, a sensor circuit including at least one set of normally-closed contacts in series with said voltage divider between terminal means and adjacent said second divider element, at least one set of normally-open contacts in series with said first divider element and in parallel with said second divider element, and output circuit means coupled to the sensor circuit between said voltage divider elements and including a timer means and a first output terminal means for providing a first output signal upon actuation of a said set of normally-closed contacts at least for a predetermined period, said output circuit means further including a second output terminal means for providing a second output signal upon actuation of a said set of normally-open contacts, said timer means being adjustable to vary the length of said predetermined period.

3,962,697
LOW LEVEL BIO-TELEMETRY SYSTEM USING C/MOS MULTIPLEXING
Robert Vreeland, San Francisco, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 16, 1975, Ser. No. 587,172
Int. Cl.² G08C *15/06*
U.S. Cl. 340—183 **11 Claims**

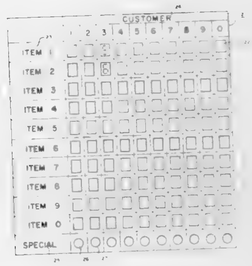
1. A multi-channel biotelemetry system for multiplexing and transmitting individual data samples derived as signal inputs from a plurality of electrode sources, comprising:
a plurality of complimentary-type MOS switching mechanisms receivably-coupled one to each said data samples, said mechanisms being sequentially operated for cumulatively providing an output pulse train formed of said electrode source samples
broadband main amplifying means receivably coupled to said output pulse train,
pulse-position modulating means receivably-coupled to said amplified train for producing a sequence of output pulses

spaced one from another a distance directly proportional to the amplitude of each pulse of said train,
transmitter means coupled to said modulated output,
resetable pulse-generating means for sequentially operating said plurality of switching mechanisms, said means being



responsively coupled to said modulated pulse train for generating a separate switch-enabling pulse for each successively-received pulse, and
means for synchronizing the resetting of said pulse-generating means after said switching mechanisms have been sequentially enabled.

3,962,698
VISUAL DISPLAY AND REMOTE CONTROL PANEL SYSTEM
Don N. Hunt, West Jordan, and Robert P. Anderson, Salt Lake City, both of Utah, assignors to Don N. Hunt, West Jordan, Utah
Filed Nov. 20, 1974, Ser. No. 525,378
Int. Cl.² G08B *5/36*
U.S. Cl. 340—286 **4 Claims**



1. An illuminatable display and control panel system including, in combination: a display panel having a matrix of lighting means for giving a visual indication and indicia means for identifying rows and columns of said matrix, said matrix comprising a series of individual, multi-numeral lighting devices; a control panel having plural series of finger-actuated, successively actuatable switch means for successively selecting particular numeral illumination of particular light means of said matrix; memory means for electronically storing information as derived from successive series of switch means selections; and means for strobing said memory means and coupled to said lighting means to provide a continuously visible display of said selections simultaneously.

3,962,699
SWITCH CLOSURE RESPONSIVE LOGIC SIGNAL GENERATION MEANS
Raymond D. Brunson, 5404 Brixham Court, Burke, Va. 22015
Filed July 15, 1974, Ser. No. 488,282
Int. Cl.² A63D *5/04*
U.S. Cl. 340—323 B **5 Claims**

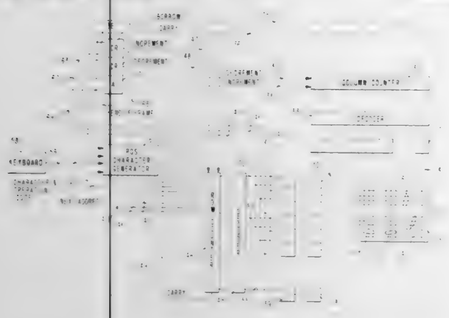


1. In a signal conditioner circuit for developing reliable command output signals from mechanical switch input signals having contact bounce both on closure to voltage potential and on opening: mechanical switch signal input means; one shot multivibrator means; logic level actuation delay circuit means; circuit means interconnecting said mechanical switch signal input means as a signal source to the input of said one shot multivibrator means and to the input of said logic level actuation delay circuit means; OR gate means connected for receiving the output of said one shot multivibrator means and the output of said logic level actuation delay circuit means, the output of said OR gate circuit means comprising a pulse, the leading edge of which coincides with the time occurrence of the first contact during contact bounce on switch closure as defined by the time of said one shot multivibrator means, with said OR gate means output pulse being maintained through off intervals of said one shot multivibrator means while the switch signal input means remains on, by time overlapping activation of said logic level actuation delay circuit means; said mechanical switch signal input means comprising a plurality of mechanical switches, each of said switches connected for actuation from contact closure connection to a voltage potential reference source to contact closure actuation connection to a DC source; said circuit means comprising logic circuitry responsive to the voltage levels respectively defined by said reference and DC voltage sources; said logic circuitry comprising a first plurality of six logic circuits defining a first level of logic circuitry, each of said first plurality of circuits connected to and responsive to closure of an associated pair of a plurality of 12 of said mechanical switches, to develope an output level defined by said DC voltage source in response to a single one of said associated pair of mechanical switches being closed to connection with said DC voltage source; a second plurality of three like logic circuits defining a second level of logic circuitry, each of said second plurality of circuits connected to the outputs of an associated respective pair of said first plurality of logic circuits, a further logic circuit, defining a third level of logic circuitry, connected to the outputs of first and second ones of said second plurality of logic circuits; a second further like logic circuit connected respectively to the output of the third one of said second plurality of logic circuits and the output of said further logic circuit, with the output of said second further logic circuit comprising the output of said logic circuitry and being applied to said filter circuit means.

3,962,700
ALPHANUMERIC GAS DISPLAY PANEL WITH MODULAR CONTROL

Tony N. Criscimagna, Woodstock, and Albert O. Piston, Catskill, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Dec. 30, 1974, Ser. No. 537,238
Int. Cl.² G06F *3/14*
U.S. Cl. 340—324 M **6 Claims**



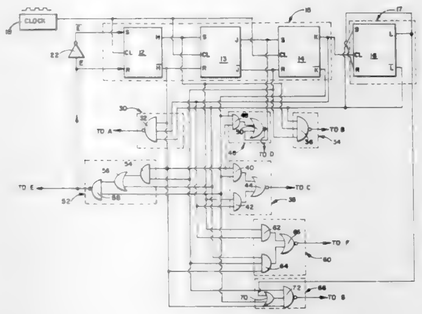
1. A modular display system, comprising,
a display panel having a row and column array of light emitting cells, means for producing a write operation at selected row and column coordinates of the array, and a row counter and a column counter for selecting the coordinates of a next character position for the write operation,
means for supplying a signal defining a graphic symbol to be written in a next character position of the display, character generator and control means responsive to said symbol signal for supplying symbol forming signals to said write means and for supplying control signals, including column increment signals, for associated operations of the display system,
means connecting said character generator and control means to provide increment signals to said column counter to advance the character position as a write operation proceeds, and
means connecting said row counter and said column counter to provide carry signals to said character generator and control means to initiate an operation at the end of A line and at the end of a frame.

3,962,701
CODED COUNTING SEQUENCE AND LOGIC IMPLEMENTATION THEREOF TO DRIVE A DISPLAY PATTERN

Gary L. Heimbigner, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 23, 1974, Ser. No. 535,642
Int. Cl.² G06K *15/18*; H03K *21/18*
U.S. Cl. 340—336 **17 Claims**

1. In combination,
first counter means having input and output terminal means,
second counter means having a plurality of input and output terminal means, at least one of said input terminal means of said second counter means connected to said output terminal means of said first counter means to receive signals therefrom,
each of said plurality of output terminal means of said second counter means connected in a cross-coupled feedback network to said plurality of input terminal means of said second counter means to provide complementary feedback signals thereto,
logic means connected to receive signals from said output terminal means of both said first and second counter means and to produce a plurality of output signals representative of the signals produced by said first and second counter means, and
feedback means connected from said logic means to the input terminal means of said first counter means.

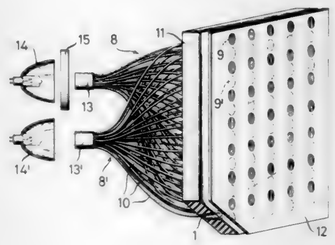


3. The combination recited in claim 1, wherein at least one of said plurality of input terminal means of said second counter means includes a clock input terminal, said output terminal means of said first counter means connected to said clock input terminal.

3,962,702
OPTICAL FIBER DISPLAY DEVICE

Wolfgang Kriege, Mainz, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Filed Feb. 19, 1975, Ser. No. 551,143
Claims priority, application Germany, Mar. 1, 1974, 7407095[U]; Aug. 5, 1974, 2437580
Int. Cl.² G08B *5/00*; G02B *9/14*
U.S. Cl. 340—380 **17 Claims**

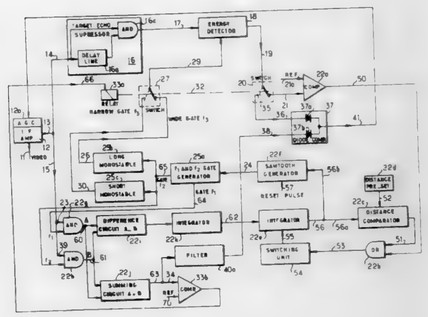


1. Signal display means comprising
A. a multi-strand set of light conductors comprising light-transmitting fibers, each light conductor having two ends, the set of light conductors being arranged to have a first end of each of the light conductors bundled together and being arranged to have a second end of each of the light conductors separated to be free of the other light conductors in the set, a second end of each light conductor being arranged in a display matrix, and
B. light-transmitting cone means comprising at least one light-transmitting cone, the cone means being optically attached to one end of each of the light conductors.

3,962,703
AIRBORNE TELEMETERING RADAR HAVING VARIABLE WIDTH RANGE GATES

Gérard Collot, Saint-Germain-en-Laye, and Jean Ferreol, Palaiseau, both of France, assignors to Societe Dite: Electronique Marcel Dassault, Paris, France

Continuation-in-part of Ser. No. 260,177, June 6, 1972, abandoned. This application May 31, 1974, Ser. No. 475,026
Claims priority, application France, June 8, 1971, 71.20758
Int. Cl.² G01S *9/14*
U.S. Cl. 343—7.3 **3 Claims**

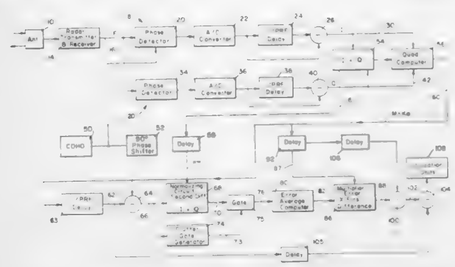


1. An airborne target acquisition and range tracking radar receiver, comprising:
an intermediate frequency amplifier, to the input of which return radar signals are applied;
a gain control unit of said amplifier;
echo suppressor means coupled to the output of said I.F. amplifier for suppressing a target echo from the return radar signal;
energy detector means having one input coupled to the output of said suppressor means for detecting the energy of an echo return radar signal other than a target echo;
range gate generating means generating first and second adjacent range gates as well as a third gate adjacent to one of said first and second gates and supplying said third gate to said detector means, said third gate having two possible widths of different magnitude;
means for selectively coupling one of said two widths of said third gate to a second input of said detector means;
first control means coupled to said automatic gain control unit for controlling the gain thereof;
second control means;
means coupling an output of said second control means to said range gate generating means for controlling the generation of said range gates; and
further means selectively coupling the output of said energy detector means to inputs of said first and second control means for selectively controlling the gain of said automatic gain control unit and the generation of said range gates as a function of the output of said energy detector means;
wherein said first control means includes means having inputs coupled to said further selective coupling means and to said range gate generating means and an output coupled to said gain control unit and providing at its output the signal of larger amplitude from between its two inputs, whereby the tracking of a target is discontinued when the energy in said third range gate is greater than that in said first and second range gates.

3,962,704
MOVING TARGET INDICATOR CLUTTER TRACKER

Norol T. Evans, San Pedro, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 31, 1974, Ser. No. 475,217
Int. Cl.² G01S *9/42*
U.S. Cl. 343—7.7 **7 Claims**

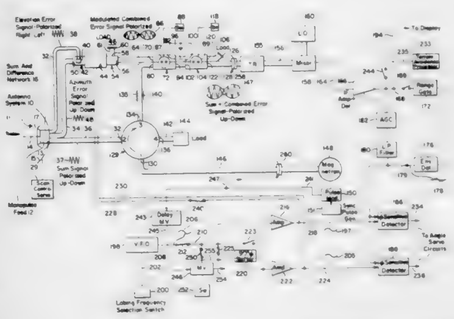


1. A moving target indicator cancelling system responding to a radar signal having moving target components separated in frequency comprising
first canceller means for developing a first difference signal,
second canceller means for developing a second difference signal,
normalizing means responsive to the amplitude of said first difference signal and to said second difference signal for developing an angular error signal,
means responsive to said angular error signal and to said first difference signal for developing a corrected first difference signal, and
subtracter means responsive to said corrected first difference signal and to said second difference signal for developing a corrected second difference signal.

3,962,705
RADAR MICROWAVE LOBING SYSTEMS

Richard S. Jamison, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 1, 1963, Ser. No. 256,197
Int. Cl.² G01S *9/22*; H01P *5/16, 5/18*
U.S. Cl. 343—16 M **13 Claims**



4. A radar system responsive to unmodulated elevation error signals, azimuth error signals and sum signals comprising a modulator responsive to the elevation and azimuth error signals coupled in space quadrature for rotating said error signals at a predetermined velocity and including a plane of acceptance for polarizing the rotating error signals as modulated error signals, first and second hybrid means each having first and second input and output sections, the first input of said first hybrid means coupled to said modulating means for receiving the modulated error signals, the first and second outputs of said first hybrid means respectively coupled to said first and second inputs of said second hybrid means, said first and second hybrid means each having a pair of movable ports

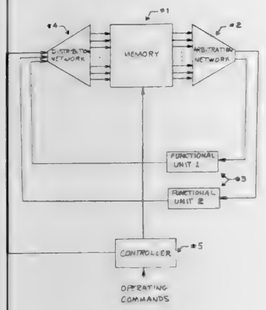
for selectively preventing division of energy therein, a dissipative load coupled to the first output of said second hybrid means, circulating means having first, second, third and fourth ports with the second port responsive to said sum signals, the third port coupled to the second input of said first hybrid means and the fourth port coupled to the second output of said second hybrid means, and signal processing means coupled to the first port of said circulating means.

3,962,706

DATA PROCESSING APPARATUS FOR HIGHLY PARALLEL EXECUTION OF STORED PROGRAMS

Jack B. Dennis, Belmont, and David P. Misunas, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 29, 1974, Ser. No. 456,488
Int. Cl.² G06F *3/00, 13/00;* **G06K** *17/00*
U.S. Cl. 340—172.5 **16 Claims**



1. A data processing apparatus for highly parallel execution of stored programs, comprising:

memory means for holding instructions of a data processing program and data items for processing under direction by said program, said memory means comprising a plurality of cells, each cell comprising plural registers, each register comprising means for holding an instruction or a data item, each register of said memory means having a unique address, and each instruction comprising an operation code specifying a computational operation and zero or more addresses;

functional means including at least one functional unit for performing computational operations on data items.

arbitration means for transmitting instruction packets from any cell of said memory means to functional units, an instruction packet comprising an instruction and at least one data item, said arbitration means delivering the data item parts of each instruction packet and the plural address parts of each instruction packet to functional units capable of performing the computational operation specified by the operation part of said instruction packet; said arbitration means beng capable of transmitting a plurality of instruction packets at the same time;

distribution means for transmitting result pockets from said functional units to registers of said cells, a result packet comprising a data item and an address, said distribution means delivering the data item part of each result packet to the register specified by the address part of the result packet, said distribution means being capable of transmitting a plurality of result packets at the same time;

said functional means further comprising: means for separating the data items and address parts of instruction packets received from said arbitration means; means for performing a computational operation on the data items to produce a new data item; means for holding addresses during the performance of computational operations on the associated data items; means for combining a data item and one or more addresses into one or more result packets for transmission through said distribution means;

each register of each cell indicating whether it contains an instruction or data item and whether it is full or empty; and each register accepting a data item delivered to it by said distribution means as said register becomes empty, each register further indicating that it is full when an instruction or data item has been transferred into said register, each cell presenting to said arbitration means an instruction and data items held in its registers just as all registers of said cell are full; each register contributing its contents as part of an instruction packet transmitted to said arbitration means while retaining the instruction or data item and maintaining a full indication or otherwise becoming empty and changing to an empty indication; and

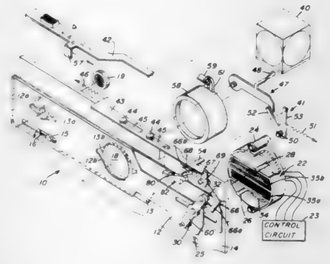
means for setting up instruction and initial data items in said memory means, for controlling the number of cycles of program execution, and for altering stored instructions and data items at intermediate points during program execution.

3,962,707

CAMERA DIAPHRAGM WITH FOLLOW FOCUS CONTROL

Floyd M. Galbraith, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,937
Int. Cl.² G03B *7/08*
U.S. Cl. 354—44 **2 Claims**



1. In a camera adapted to receive, a flash unit and having an adjustable diaphragm, a focusable lens and focus control for said lens, apparatus for adjusting said diaphragm in proportion to the focusing of said lens, said apparatus comprising:

an electronic circuit including an element responsive to scene brightness for influencing said circuit in response to said brightness;

a differential motor, coupled with said circuit and said diaphragm, for moving said diaphragm to form an aperture of size related to ambient scene brightness received by said scene brightness responsive element;

a rocker mounted to be movable about an axis and being located to engage said differential motor;

a slider, associatable with said focus control and said rocker and being movable with movement of said focus control to move said rocker about said axis; and

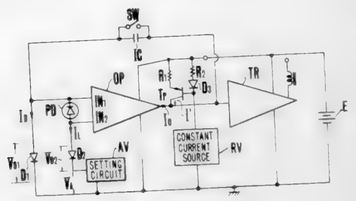
a retainer, coupled with said slider to retain said slider in an inactive condition wherein it is held from movement with said focus control, and being responsive to a received flash unit to permit said slider to move to an active condition wherein it is permitted to move with said focus control, said retainer being disengaged from said slider in said active condition.

3,962,708

ELECTRIC SHUTTER OPERATING CIRCUITS

Sadao Muramatsu, Sagamihara, Japan, assignor to Yashica Co., Ltd., Tokyo, Japan

Filed May 3, 1974, Ser. No. 466,819
Claims priority, application Japan, May 11, 1973, 48-52339
Int. Cl.² G03B *7/08*
U.S. Cl. 354—51 **3 Claims**



1. An electric shutter operating circuit for a photographic camera, comprising a photoelectric element for producing a photoelectric current in response to the brightness of an object, an operational amplifier having two inputs connected across said photoelectric element, a first impedance element having one terminal connected to one input of said operational amplifier and being connected in series circuit relationship with said photoelectric element so as to pass said photoelectric current, a second impedance element connected to the other input of said operational amplifier in parallel circuit relationship with said series connected first impedance element and said photoelectric element, a feedback circuit extending between the output and said other input of said operational amplifier for passing feedback current through said second impedance element, an integrating capacitor connected in said feedback circuit, switch means interlocked with the shutter release button of said camera for causing said integrating capacitor to begin to integrate the feedback current upon said shutter release button being depressed, a shutter trigger circuit connected to the output of said operational amplifier for closing the shutter of said camera upon the voltage across said integrating capacitor reaching a predetermined value, and constant current circuit means connected to the output of said operational amplifier in parallel circuit relationship with said shutter trigger circuit for normally adding to the output from said operational amplifier a relatively small current in contrast to the normal feedback current obtained under normal brightness conditions whereby the sum of the small constant current and the output from the operational amplifier equals the feedback current which is proportional to the photoelectric current and under low brightness conditions where the output current from the operational amplifier is reduced to zero the shutter trigger circuit will be actuated in time by the small current supplied through the feedback circuit to the integrating capacitor from the constant current circuit means.

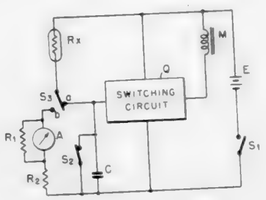
3,962,709

EXPOSURE TIME CONTROL CIRCUIT

Kiyoshi Kitai, Tokyo; Yukio Nakamura, Yotsukaido; Hiroaki Ishida, Yotsukaido, and Shinji Nagaoka, Yotsukaido, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Continuation of Ser. No. 377,933, July 10, 1973. This application Dec. 17, 1974, Ser. No. 533,537
Claims priority, application Japan, July 10, 1972, 47-68842
Int. Cl.² G03B *7/08, 17/18*
U.S. Cl. 354—51 **3 Claims**

1. An exposure time control circuit for a shutter comprising, a power source, a switching circuit connected across the power source, a capacitor for applying a signal to the switching circuit for effecting closing of the shutter, a light-detecting circuit comprising a light-responsive element connected to said power source for varying charging of said capacitor as a function of the intensity of light sensed from an exposure scene that is to be photographed to thereby control the shutter exposure time, a light-intensity indicating circuit connected directly in series with said light-detecting circuit light-responsive element and in series with said capacitor to indicate the value of the current passing through said light-responsive element and representative of the intensity of the light sensed by said light-responsive element, and switch means connected in parallel with said capacitor for short circuiting said capacitor and operable to alternatively place the capacitor in circuit



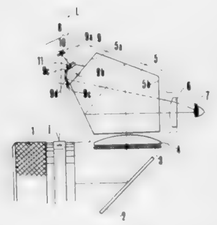
with said light-responsive element for charging thereof to a predetermined level and for taking the capacitor out of circuit and for independently of control of the charging of said capacitor taking a reading of the intensity of the light being sensed by said light-responsive element, said light-intensity indicating circuit comprising said light-responsive element and an ammeter connected directly to said light-responsive element to receive the output thereof directly and a resistor shunting the ammeter, and said resistor and said ammeter having a resistance considerably less than the internal resistance of said light-responsive element.

3,962,710

VIEWFINDER FOR A SINGLE LENS REFLEX CAMERA

Youichi Okuno, Yokohama, and Hideo Yokota, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Nov. 1, 1974, Ser. No. 520,132
Claims priority, application Japan, Nov. 7, 1973, 48128850
Int. Cl.² G03B *13/02*
U.S. Cl. 354—225 **7 Claims**



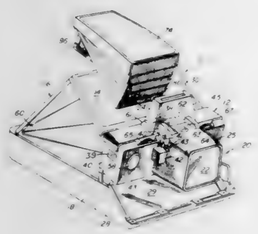
1. A viewfinder for a single lens reflex camera having an object lens, a lens barrel containing the object lens, and photograhic information provided on the lens barrel, said viewfinder comprising, in combination, a focusing screen on which an object image is formed by said object lens; an eye piece; a pentagonal roof prism directing light from said focusing screen toward said eye piece; said pentagonal roof prism having an incident light entry surface on which light from said focusing screen is incident, two roof reflection surfaces, a front reflection surface, a front non-reflection surface and a light projection surface opposite said eye piece; a sub-prism having an incident light entry surface, a plurality of intermediate reflection surfaces, a final reflection surface and a light projection surface; said light projection surface of said sub-prism being cemented to said front non-reflection surface and

said final reflection surface of said sub-prism being positioned outwardly of said intermediate reflection surfaces; and optical means positioned above said final reflection surface of said sub-prism and having a reflecting surface facing said photographic information on said lens barrel and said incident light entry surface of said sub-prism; whereby light from said photographic information is reflected by the reflecting surface of said optical means and directed into said sub-prism through said incident light entry surface of said sub-prism, the light being then reflected by said intermediates reflection surfaces of said sub-prism and directed into said pentagonal prism through said light-projection surface of said sub-prism by said final reflection surface of said sub-prism to pass through said pentagonal prism and through said light projection surface thereof to said eye piece.

3,962,711
ACCESSORY ADAPTER FOR PHOTOGRAPHIC APPARATUS

Norman W. Cutler, Jr., Braintree, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1974, Ser. No. 533,327
Int. Cl.² G03B *17/56*
U.S. Cl. 354—295 **1 Claim**



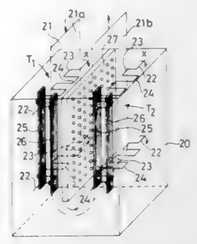
1. An accessory attachment for use with a camera having a front wall mounting a lens, and a top wall extending rearwardly from said front wall, said top wall being formed with a downwardly-extending socket, said accessory attachment comprising:

a camera accessory device, a housing mounting said accessory device therein, a mounting element having a lower surface receivable on said top wall, a plug attached to said lower surface and extending downwardly therefrom, said plug being slidably receivable in said socket to attach said mounting element to said camera, clip means attached to said mounting element and engageable with a downwardly-facing surface of said camera, a pair of cantilever arms attached to said mounting element and extending forwardly from said front wall of the camera in the attached position of said mounting element thereon, said housing being pivotally attached to said cantilever arms and normally suspended thereby in operative relation to said front wall of the camera, said housing being angularly movable about said pivotal attachment to positions raised from said front wall to permit access thereto, and releasable latch means for engaging said housing to said mounting element in said normally suspended operative relation.

3,962,712
APPARATUS FOR TRANSPORTING STRIP-SHAPED OR SHEET-SHAPED MATERIALS

Werner Merz, Oberelchingen, and Werner Michaelis, Stuttgart, both of Germany, assignors to Merz & Co., Oberelchingen, Germany

Filed Oct. 16, 1974, Ser. No. 515,423
Claims priority, application Germany, Oct. 17, 1973, 2352069
Int. Cl.² G03D *3/08*
U.S. Cl. 354—319 **21 Claims**

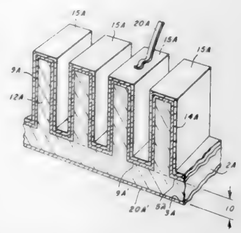


1. An apparatus for transporting strip-shaped or sheet-shaped materials, especially photographic material, comprising first means including a plurality of hollow material-engaging elements having respective material-engaging surfaces which are perforate, and suction means communicating with the interior of the elements; and second means for moving said elements sequentially in paths in each of which the respective element moves into engagement with the material, transports the material through a predetermined distance, and then moves out of engagement with the material.

3,962,713
LARGE VALUE CAPACITOR

Don L. Kendall, and Walter T. Matzen, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 259,332, June 2, 1972, abandoned. This application Oct. 25, 1973, Ser. No. 409,509
Int. Cl.² H01L *29/93*
U.S. Cl. 357—14 **3 Claims**



1. A microelectronic capacitance device comprising:

a. a semiconductor substrate of one conductivity type having first and second surfaces and a resistivity no greater than **0.01** ohm-centimeter,

b. a multiplicity of parallel semiconductor studs of said one conductivity type integral with and extending perpendicularly from said one surface, said studs having a resistivity of at least **0.06** ohm-centimeter, said studs also having a p-n junction therein, formed by a thin surface layer of semconductor of opposite conductivity type,

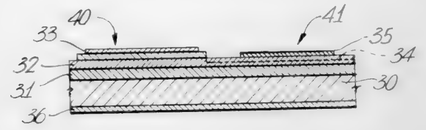
the height of said studs, measured perpindicularly from said one surface, being larger than the average center to center spacing of said studs, whereby the area of said P-N junction is substantially larger than that of a planar P-N junction, for similar substrate areas, and

c. an adherent film of conductor coating said surface layer of opposite conductivity type and having an electrical contact thereto.

3,962,714
SEMICONDUCTOR OPTICAL MODULATOR

Frederick David King, Smith Falls, Canada, assignor to Northern Electric Company Limited, Montreal, Canada

Filed Sept. 19, 1974, Ser. No. 507,451
Int. Cl.² H01L *31/12, 31/16, 29/161*
U.S. Cl. 357—19 **6 Claims**



1. A semiconductor optical modulator, comprising:

a substrate of GaAs semiconductor material, of one conductivity type;

a confining layer of highly doped GaAlAs semiconductor material on said substrate, said confining layer of the same conductivity type as said substrate;

an active layer of low doping level GaAs semiconductor material on said confining layer, said active layer of the same conductivity type as said confining layer;

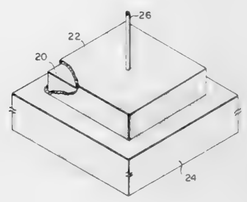
an insulating layer on said active layer, said insulating layer of high dielectric strength and having a lower refractive index than said active layer; and

means for applying a variable bias to said insulating layer, whereby light passing through the active layer is modulated on application of said variable bias.

3,962,715
HIGH-SPEED, HIGH-CURRENT SPIKE SUPPRESSOR AND METHOD FOR FABRICATING SAME

Paul M. Raccah, Hillside; Teodoro Halpern, Teaneck, both of N.J., and Soo Hee Shin, Bronx, N.Y., assignors to Yeshiva University, New York, N.Y.

Filed Dec. 3, 1974, Ser. No. 529,222
Int. Cl.² H01L *45/00*
U.S. Cl. 357—2 **9 Claims**

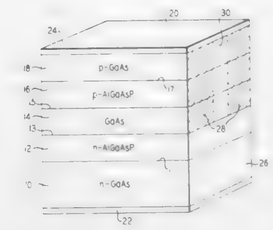


1. A spike suppressor comprising a pair of electrodes, a conducting refractory substrate of single-crystal NbO, and at least one layer of refractory crystalline NbO_2 on said substrate, said substrate and at least one crystalline layer of NbO_2 being secured between said pair of electrodes, and said at least one crystalline layer having a total thickness of at least 1 micron.

3,962,716
REDUCTION OF DISLOCATIONS IN MULTILAYER STRUCTURES OF ZINC-BLEND MATERIALS

Pierre Marc Pétroff, Westfield, and George Arthur Rozgonyi, Chatham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 414,674, Nov. 12, 1973, abandoned. This application Apr. 25, 1974, Ser. No. 463,870
Int. Cl.² H01S *33/19*; **H01L** *29/161, 29/205*
U.S. Cl. 357—18 **11 Claims**



1. A semiconductor device comprising

a first layer of a material having a zinc-blende crystallographic structure and exhibiting a non-zero dislocation density,

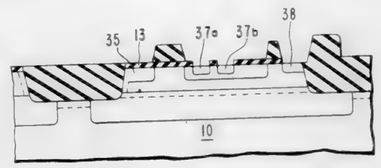
a second layer of a material having a zinc-blende crystallographic structure formed on said first layer so that misfit dislocations are generated at the interface between said layers,

the thickness and composition of said second layer being effective to generate a unidirectional array of misfit dislocations at said interface which virtually prevents any defects in said first layer from extending into said second layer.

3,962,717
OXIDE ISOLATED INTEGRATED INJECTION LOGIC WITH SELECTIVE GUARD RING

David O'Brien, Mountain View, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 29, 1974, Ser. No. 518,445
Int. Cl.² H01L *27/04, 29/72*
U.S. Cl. 357—44 **8 Claims**



2. An oxide-isolated semiconductor structure comprising:

a semiconductor body;

an epitaxial layer overlaying said semiconductor body, said epitaxial layer being of one conductivity type;

an oxide-isolation region composed of the oxide of the semiconductor of said semiconductor body which surrounds and defines a device region in said epitaxial layer;

at least one semiconductor device formed in said device region, said device comprising an integrated structure having a vertical bipolar transistor with first, second and third transistor regions of said one conductivity type, conductivity opposite to said one conductivity type, and said one conductivity type, respectively, with a P-N junction separating said first and second transistor regions and a P-N junction separating said second and third transistor

regions, said first region abutting the surface of said epitaxial layer and said third region having a contact area abutting said surface of said epitaxial layer and said oxide-isolation region; and a complementary lateral bipolar transistor having fourth, fifth and sixth transistor regions of said opposite conductivity type, said one conductivity type, and said opposite conductivity type, respectively, with a P-N junction separating said fourth and fifth transistor regions and a P-N junction separating said fifth and sixth transistor regions, said fifth region abutting said oxide-isolation region; said second region of said vertical bipolar transistor being contiguous with said sixth region of said complementary lateral bipolar transistor; and

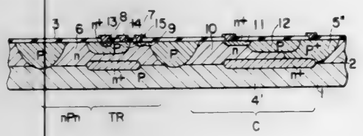
a guard ring of doped semiconductor of said opposite conductivity type selectively formed at the interface of said oxide-isolation region and said device region; said guard ring being present everywhere along said interface except adjacent said fifth region of said lateral bipolar transistor and adjacent said contact area.

3,962,718

CAPACITANCE CIRCUIT

Fumihito Inoue, Kodaira; Yoshiji Nakajima, Fuchu, and Noboru Horie, Kodaira, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 4, 1973, Ser. No. 403,406
Claims priority, application Japan, Oct. 4, 1972, 47-99061
Int. Cl.² H01L *27/04*
U.S. Cl. 357—48 **5 Claims**



1. A capacitance circuit comprising:

a p-type semiconductor substrate;

an n-type epitaxial semiconductor layer disposed on said substrate;

an n^+ - type buried region disposed at the junction between said substrate and said epitaxial layer;

a p^+ -type isolation region diffused into said epitaxial layer into contact with a portion of said buried region and defining a first pn junction portion with said buried region; and

an n^+ -type region diffused into said epitaxial layer into contact with said p^+ -type isolation region and defining a second pn junction portion having an area of about $200\mu^2$ with said p^+ -type isolation region, said second pn junction portion having a reverse breakdown voltage lower than that of said first pn junction portion, and said first pn junction portion having a large capacitance relative to said second pn junction portion.

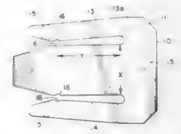
3,962,719

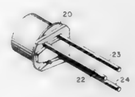
MOUNTING PAD AND SEMICONDUCTOR ENCAPSULATION DEVICE COMBINATION

Wayne K. Pfaff, Irving, Tex., assignor to Plastronics, Inc., Farmers Branch, Tex.

Filed Dec. 5, 1974, Ser. No. 529,727
Int. Cl.² H01L *23/12*
U.S. Cl. 357—74 **3 Claims**

1. In combination, a semiconductor encapsulation device having at least two substantially parallel leads projecting from a single face thereof in substantially the same plane and a mounting pad comprising a body of electrically non-conductive material having first and second substantially oppositely disposed major faces and at least one transverse slot therein normal to said major faces traversing a major portion of said major faces and intersecting only one edge of said body, said slot having a non-uniform width, the slot being widest at the point of its intersection with said edge and narrowest at a point intermediate said edge and the terminal end of said slot, the width of said slot generally expanding from the narrowest





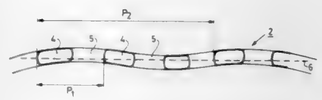
point to a width substantially matching the width of the leads projecting from the encapsulation device at the terminal end of said slot, said slot further including a notch in at least one side thereof at said narrowest point, and one lead passing through said slot at the terminal end thereof and a second lead passing through said notch.

3,962,720

RECORD CARRIER ON WHICH A TELEVISION SIGNAL IS STORED

Josephus Johannes Maria Braat, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1974, Ser. No. 530,165
Claims priority, application Netherlands, Oct. 3, 1974, 7413044
Int. Cl.² H04N *5/76, 9/00*
U.S. Cl. 358—4 **5 Claims**



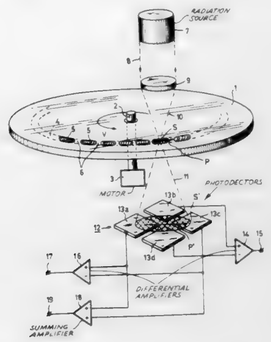
1. A record carrier on which a television signal is stored in an optically readable form in tracks in the form of first areas alternating with intermediate areas, the record carrier being readable with optical radiation, said first areas influencing a read beam of radiation in a different manner than the intermediate areas, the television signal comprising a first carrier wave which is frequency modulated with the luminance information and further carrier waves which are modulated with other information, the tracks of the information structure exhibiting an undulation, the first carrier wave being defined by the spatial frequency of the first areas, the undulation of the tracks corresponding to the further carrier waves, the undulation amplitude being substantially smaller than the period of the track structure in a direction transverse to the direction in which the tracks are read and the frequency of the first carrier wave being at least twice as high as the frequency of the further carrier waves.

3,962,721

APPARATUS FOR READING A DISC-SHAPED RECORD CARRIER WITH VIDEO LUMINANCE AND CHROMINANCE INFORMATION

Maarten Rutger de Haan, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1974, Ser. No. 530,276
Claims priority, application Netherlands, Oct. 7, 1974, 7413162
Int. Cl.² H04N *5/84*; **G11B** *7/00*
U.S. Cl. 358—4 **4 Claims**



1. In an apparatus for reading an optically encoded disc-shaped record carrier having information provided thereon in the form of parallel extending tracks, the apparatus comprising a radiation source for optically scanning said tracks, a multi-element photoelectric detector unit provided with two read detectors offset relative to each other in a direction parallel to an image of the track direction formed by the use of said radiation source for converting the image into electrical signals, and a first combination circuit connected to said two read detectors for provided a first signal channel of the information read from said carrier, the improvement comprising a second combination circuit connected to said two read detectors for adding the electrical signals therefrom and for providing a second signal channel of said information read from said carrier, and filter means connected to said first combination circuit and said second combination circuit for deriving from said first combination circuit that portion of said first signal channel of the information read from said carrier that exceeds a predetermined frequency and for deriving from said second combination circuit that portion of the second signal channel of said information read from said carrier that is below said predetermined frequency.

3,962,722

COLOR TELEVISION SETUP APPARATUS AND METHOD

Walter S. Ciciora, Park Ridge, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 27, 1974, Ser. No. 527,556
Int. Cl.² H04N *9/62*
U.S. Cl. 358—10 **14 Claims**

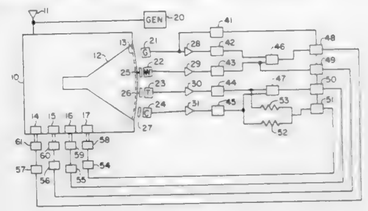
11. A setup system for automatically establishing and second viewable characteristics of a television receiver at desired settings, said receiver including adjustable elements for adjustment of said characteristics, comprising:

signal generation means for producing first and second patterns on the picture tube of said receiver which differ in the first of said viewable characteristics;

light sensitive means comprising photocells positioned adjacent to said picture tube in alignment with corresponding ones of said patterns for generating a first signal indicative of said first characteristic in said first pattern and a second signal indicative of said first characteristic in said second pattern;

motor means engageable with said adjustable elements; said first and second signals bearing a predetermined ratio when said first characteristic is at its desired setting;

means operating said motor means for adjusting said adjustable elements until said signals indicate said characteristics are at said desired settings including



first means for adjusting said first characteristic of said television receiver until said predetermined ratio is obtained; and

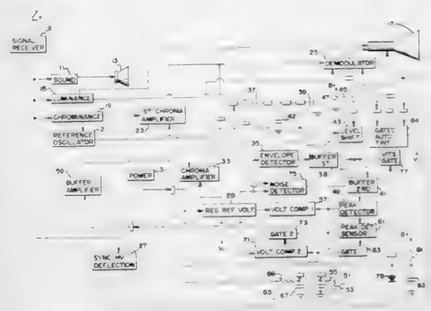
second means for adjusting said second characteristic of said television receiver to its desired setting.

3,962,723

AUTOMATIC PEAK COLOR CONTROL CIRCUIT

Gopal Krishna Srivastava, Amherst, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Continuation of Ser. No. 409,655, Oct. 25, 1973, abandoned.
This application July 15, 1974, Ser. No. 488,807
Int. Cl.² H04N *9/535*
U.S. Cl. 358—27 **26 Claims**



1. In a color television receiver having a luminance channel, a power source, high voltage, synchronization and deflection means and a first chrominance amplifier stage providing a chrominance output signal to a chrominance demodulation stage, an automatic peak color control circuit comprising:

a source of regulated reference potential coupled to said power source;

chrominance signal amplifier means coupled to said source and said chrominance amplifier stage of said receiver;

a potential level shifting means coupled to an adjustable potential source for providing a DC potential of a polarity opposite and in an amount substantially proportional to a maximum chroma signal derived from said chrominance signal amplifier means;

envelope detector means coupled to said chrominance signal amplifier means and to said source of regulated reference potential for providing a filtered low frequency half-envelope chroma signal;

peak detector means coupled to said potential level shifting means and to said envelope detector means for providing a DC potential representative of the peak magnitude of the chroma signal; and

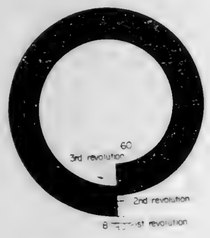
voltage comparator means coupled to said source of regulated reference potential and to said peak detector means and responsive to a potential differential therebetween for providing a control signal to effect alterations in gain of said first chrominance amplifier stage whereby a chrominance signal of substantially constant magnitude is applied to said chrominance demodulator stage.

3,962,724

METHOD OF AND DEVICE FOR TESTING MOVABLE MAGNETIC HEADS FOR ABILITY TO TRACE A PREDETERMINED SPIRAL MAGNETIC TRACK WITHOUT DEVIATING THEREFROM

Masami Koizumi, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed May 11, 1973, Ser. No. 359,364
Claims priority, application Japan, May 16, 1972, 47-48842
Int. Cl.² G11B *27/36, 21/10*
U.S. Cl. 360—31 **5 Claims**



1. A method of testing movable magnetic heads for ability to trace a predetermined spiral magnetic track without deviating therefrom for magnetic recording and reproducing apparatus wherein electric signals are recorded and reproduced in a spiral track, comprising the steps of

a. magnetically recording a magnetic head deviation detection signal in a spiral signal track on a testing sheet for disposition of the signal on a first convolution of the predetermined spiral magnetic track and both sides of said first convolution, such that said spiral signal track has a width equal to the width of the predetermined spiral magnetic track plus the width of the two recordingless zones on both sides of said first convolution, and has an edge coincident with an edge of a convolution of said predetermined spiral magnetic track adjacent said first convolution;

b. juxtaposing said sheet to a turntable carrying a magnetic head to be tested;

c. operating the turntable and head for tracing of the detection signal by the head and production of output power representative of the signal as detected by the head, the operating step including moving the head in a radial direction with respect to the axis of turntable rotation during tracing of the detection signal by the head; and

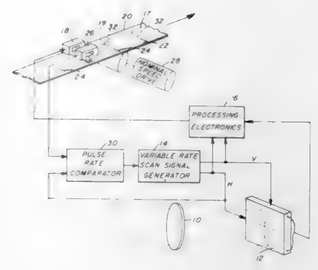
d. detecting the produced output power level to determine deviation of the head from the predetermined spiral track as represented by departure of said output power level from a predetermined relation to said signal.

3,962,725

MAGNETIC-TAPE CARTRIDGE-LOADED PORTABLE VIDEO CAMERA USING PRERECORDED TIMING SIGNALS TO CONTROL THE VIDEO TIME BASE

James U. Lemke, and Robert A. Lentz, both of Del Mar, Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1974, Ser. No. 519,178
Int. Cl.² H04N *5/78, 3/30*
U.S. Cl. 360—36 **12 Claims**



1. A method of recording and playing back video information on magnetic tape comprising:

a. first recording along the length of said magnetic tape timing signal information while moving said tape at a precise nominal speed;

b. thereafter moving said tape at approximately said nominal speed past a record head;

c. applying video signals to said record head while varying the time base of said video signals as a function of variations in tape speed relative to said precise nominal speed; and

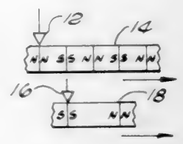
d. thereafter moving said tape at precisely said nominal speed while playing back said video signals recorded by said record head.

3,962,726

SELF-CLOCKING MAGNETIC RECORD SENSING SYSTEM

Robert Sutherland De Land, Jr., Torrance, Calif., assignor to Mag-Tek, Inc., Carson, Calif.

Filed Feb. 21, 1975, Ser. No. 551,875
Int. Cl.² G11B *5/09*
U.S. Cl. 360—51 **9 Claims**



1. An information pulse signal processing system for use with a magnetic recording medium and relatively moving inductive head means, comprising:

means to receive a sensed signal from said head means;

threshold means connected to receive said sensed signal for establishing a current amplitude level in accordance with the amplitude of said sensed signal during an immediately prior period; and

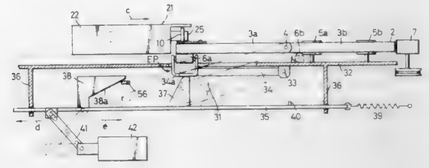
binary signal-forming means for providing a pulse upon occurrences of said sensed signal attaining a predetermined relationship with respect to said current amplitude level.

3,962,727

MAGNETIC ROTARY HEAD RECORDER WITH AUTOMATIC TAPE LOADING AND UNLOADING

Tomohisa Kamimura, Ichikawa, and Makoto Suzuki, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 20, 1974, Ser. No. 525,677
Claims priority, application Japan, Nov. 20, 1973, 48-130404
Int. Cl.² G11B *15/66, 23/04*
U.S. Cl. 360—85 **11 Claims**



1. In a magnetic recording and/or reproducing apparatus that includes a cylindrical tape guide drum with at least one rotary magnetic head moved in a circular path substantially coinciding with the periphery of said drum, a cassette holder spaced from said guide drum for receiving and positioning a tape cassette having a housing with an access opening and containing a magnetic tape which is wound on reels within the housing and extends between the reels across said opening, and a tape loading and unloading device comprising an annular support means rotatable around said drum between first and second positions in an arcuate path that is substantially planar and extends adjacent said holder, and tape engaging means mounted on said support means so as to extend substantially normal to the plane of said arcuate path and being movable with said support means for extending into said opening of the housing of a cassette positioned by said holder and engaging the tape extending across said opening with said support means in said first position and for withdrawing a progressively extended loop of said tape from the cassette housing and wrapping one side of the tape loop about at least a portion of said periphery of the guide drum in response to movement of said support means from said first position to said second position thereof; the improvement comprising said annular support means including at least first and second arcuate parts, means joining said first and second parts for movement of said first part relative to said second part generally in the directions normal to said plane of the arcuate path, said tape engaging means being mounted on said first part for movement with the latter in said directions normal to said plane of the arcuate path, said first part extending towards said holder in said first position of the support means, and means rotatably carrying said support means and maintaining said first and second parts of the latter in said plane of the arcuate path during movements of said support means between said first and second positions, said means rotatably carrying said support means including means operative to displace said first part in said directions normal to said plane of the arcuate path when said support means is in said first position so as to insert and withdraw said tape engaging means in respect to the opening of a cassette housing positioned by said holder.

DESIGN PATENTS

GRANTED JUNE 8, 1976

ERRATA

For CLASS	See PATENT NO.
025-035	240,216
025-001	240,217
034-045	240,218
025-052	240,219
034-045	240,220
025-074	240,221
016-059	240,268
016-059	240,269
025-080	240,274

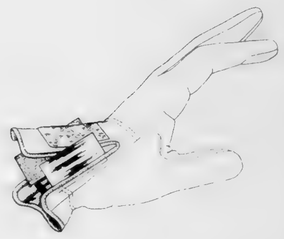
DESIGNS

JUNE 8, 1976

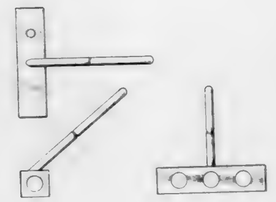
240,170
SPORT SHOE
William J. Cohen, Randolph, Mass., assignor to CITC Industries Inc., New York, N.Y.
Filed June 19, 1974, Ser. No. 480,880
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



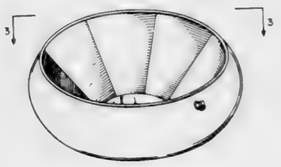
240,171
GOLF GLOVE
James D. Giambazi, 12 Abbott St., Cumberland, R.I. 02864
Filed Jan. 14, 1975, Ser. No. 540,886
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



240,172
BRUSH HOLDER
Robert Roettgen, Rte. 1, Box 19, Union Grove, Wis. 53182
Continuation-in-part of abandoned design application Ser. No. 181,285, Sept. 15, 1971. This application July 26, 1974, Ser. No. 492,065
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—4



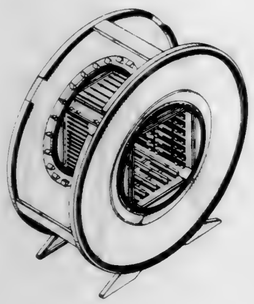
240,173
BABY RETAINING DEVICE
Gary Young, Ramblewood, Pennsylvania Furnace, Pa. 16865
Filed June 21, 1974, Ser. No. 481,763
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7



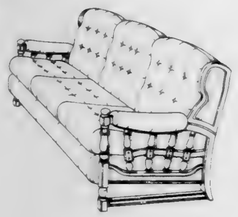
240,174
TABLE FOR FOOD PRODUCTS DISPLAY
Franklin Moore, Jr., 902 McBurney Drive, Lebanon, Ohio 45036
Filed Apr. 30, 1974, Ser. No. 465,516
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—20



240,175
COMBINED STORAGE AND DISPLAY RACK PRIMARILY FOR TAPE CASSETTES
Richard Roy Rumble, 47 Orchard Court, Portland Square, London W.1, England
Filed Mar. 8, 1974, Ser. No. 449,549
Claims priority, application Great Britain Jan. 3, 1974
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—29



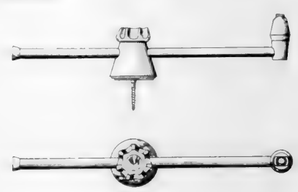
240,176
SEAT
Alan H. Friedman, Millburn, N.J., assignor to Futorian Corporation, Amsterdam, N.Y.
Filed May 28, 1974, Ser. No. 473,612
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



240,177
CONVERTIBLE SEAT OR SIMILAR ARTICLE OF FURNITURE
Frank W. Petersilie, Boone, N.C., assignor to Investments & Innovative Concepts, Inc., Boone, N.C.
Filed Aug. 29, 1974, Ser. No. 501,626
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—64



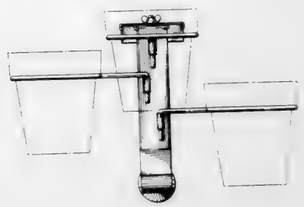
240,178
WALL SUPPORT FOR HAND SHOWER OR SIMILAR ARTICLE
Frede Johansen, Seden, Denmark, assignor to A/S Dansk Metal & Armaturindustri
Filed July 19, 1974, Ser. No. 489,929
Claims priority, application Denmark Jan. 22, 1974
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—86



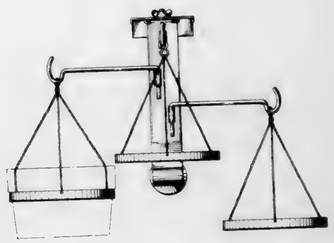
240,179
TOWEL RACK
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation Societe Anonyme, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,487
Claims priority, application France May 6, 1974
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—99



240,180
FLOWER POT HOLDER
Michael W. K. Young, 45—14 196th St., Flushing, N.Y. 11358
Filed May 30, 1975, Ser. No. 582,211
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—137



240,181
FLOWER POT HOLDER
Michael W. K. Young, 45—14 196th St., Flushing, N.Y. 11358
Filed May 30, 1975, Ser. No. 582,213
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—137



240,182
FLOWER POT HOLDER
Michael W. K. Young, 45—14 196th St., Flushing, N.Y. 11358
Filed May 30, 1975, Ser. No. 582,418
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—137



240,183
COUNTER DISPLAY STAND
George Weisenfeld, 11920 Briarvale Lane, and David Halpern, 11301 Dona Isabel Drive, both of Studio City, Calif. 91604
Filed Mar. 20, 1975, Ser. No. 560,567
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—146



240,184
DESK
Richard L. Neuschaefer, Denver, Colo., assignor to Hex Design, Ltd., Denver, Colo.
Filed Aug. 23, 1973, Ser. No. 390,868
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



240,185
DESK
Leon Rosen, Scarsdale, N.Y., assignor to The Pace Collection Inc., New York, N.Y.
Filed Jan. 17, 1975, Ser. No. 541,890
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—176



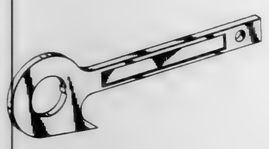
240,186
TABLE
Leon Rosen, Scarsdale, N.Y., assignor to The Pace Collection Inc., New York, N.Y.
Filed Jan. 17, 1975, Ser. No. 541,891
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



240,187
BAKING PAN HAVING RELEASABLE HANDLES
Wilhelm Kaimeier, 7 Am Graffweg, 465 Gelsenkirchen-Rotthausen, Germany
Filed Feb. 21, 1974, Ser. No. 444,450
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—97



240,188
COMBINED CAN AND BOTTLE OPENER
Robert R. Lytle, 1942 High St., Cuyahoga Falls, Ohio 44221
Filed Nov. 25, 1974, Ser. No. 526,749
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D8—18

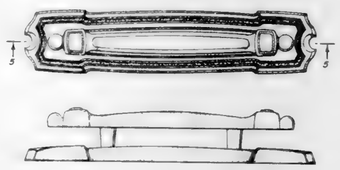


240,189
PORTABLE DESOLDERING TOOL OR THE LIKE
William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91402
Filed Oct. 15, 1974, Ser. No. 514,952
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51

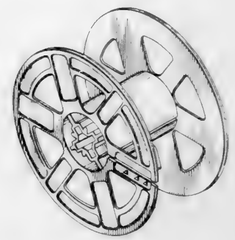


240,190
ENVELOPE OPENER
Ivan D. Cleveland, Everett, Wash. (15828 E. Shore Drive, Lynnwood, Wash. 98036)
Filed Sept. 13, 1974, Ser. No. 505,554
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D8—103

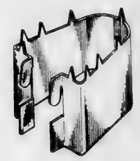
240,191
DRAWER PULL
George D. Read, Glendora, Lawrence Glen McCain, Beverly Hills, and Edward William Scott, Culver City, Calif., assignors to Ajax Hardware Corporation, City of Industry, Calif.
Filed Oct. 15, 1974, Ser. No. 514,825
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—167



240,192
MICROFILM REEL
James G. Balmer, Jr., Bloomfield Hills, Mich., assignor to Xerox Corporation, Stamford, Conn.
Filed July 3, 1974, Ser. No. 485,663
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D8—220



240,193
HANGER FOR FABRIC OR THE LIKE
Phillip Sperling, 3206 Coolidge Ave., Los Angeles, Calif. 90066
Filed Aug. 4, 1975, Ser. No. 601,528
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—249



240,194
OAR REST
Harold H. Foster, 519 Cassandra Lane, Lakeland, Fla. 33801
Filed May 29, 1975, Ser. No. 581,977
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D8—232



240,195
HANGER FOR FABRIC OR THE LIKE
Phillip Sperling, 3206 Coolidge Ave., Los Angeles, Calif. 90066
Filed Aug. 4, 1975, Ser. No. 601,531
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—249



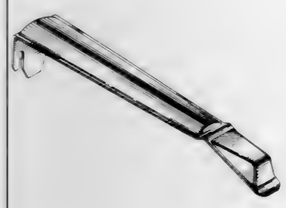
240,196
HANGER FOR FABRIC OR THE LIKE
Phillip Sperling, 3206 Coolidge Ave., Los Angeles, Calif. 90066
Filed Aug. 4, 1975, Ser. No. 601,529
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—249



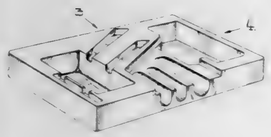
240,197
HANGER FOR FABRIC OR THE LIKE
Phillip Sperling, 3206 Coolidge Ave., Los Angeles, Calif. 90066
Filed Aug. 4, 1975, Ser. No. 601,530
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—249



240,198
PEGBOARD HOOK GUARD
Stanley J. Valiulis, Rockford, Ill., assignor to Southern Imperial, Inc., Rockford, Ill.
Filed Aug. 6, 1974, Ser. No. 495,223
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—263



240,199
PACKAGING TRAY
Alan J. Perfect, Allentown, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Dec. 20, 1974, Ser. No. 534,612
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



240,200
PACKAGING CONTAINER
Larry M. Lynn, North Vancouver, British Columbia, Canada, assignor to Easy-Scoop Industries Ltd., Vancouver, British Columbia, Canada
Filed Sept. 27, 1974, Ser. No. 509,805
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187

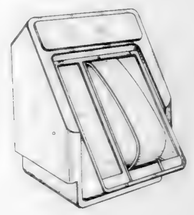


240,201
TONER PARTICLE STORAGE CONTAINER
Donald R. Avolio, Fairport, Edmund G. D'Emilio, Rochester, Claude H. Hutcheson, Jr., Fairport, and Eugene A. Mikolas, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 30, 1973, Ser. No. 346,486
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—216





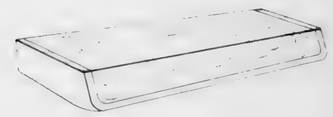
240,202
JEWELRY DISPLAY CASE
Howard Ferguson, Valley Cottage, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed June 27, 1974, Ser. No. 483,616
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—233



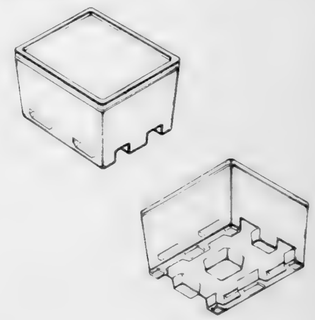
240,203
JEWELRY DISPLAY CASE
Howard Ferguson, Valley Cottage, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed June 27, 1974, Ser. No. 483,617
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—236



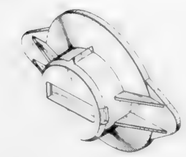
240,204
JEWELRY DISPLAY CASE
Howard Ferguson, Valley Cottage, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed June 27, 1974, Ser. No. 483,630
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—236



240,205
COLD STORAGE TRANSPORT BOX FOR PERISHABLE FOOD
Gerrit A. Visser, Edmonds, and John O. Olson, Lynnwood, Wash., and Edward Harris, Vancouver, British Columbia, Canada, assignors to Washington Research and Development Inc., Edmonds, Wash.
Filed Aug. 19, 1974, Ser. No. 498,779
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—246



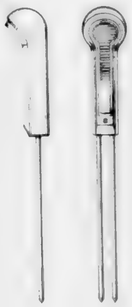
240,206
FLUIDS INDICATING GAUGE
Pierre Paret, Coutras, Gironde, France, assignor to Bornes & Balises, Coutras, Gironde, France
Filed Apr. 22, 1974, Ser. No. 463,061
Claims priority, application France Mar. 1, 1974
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—101



240,207
EMERGENCY WARNING LIGHT
Jhi Hung Leung, San Po Kong, Kowloon, Hong Kong, assignor to Star Industrial Co., Ltd., San Po Kong, Kowloon, Hong Kong
Filed July 3, 1974, Ser. No. 485,585
Term of patent 7 years
Int. Cl. D10—*06*; D26—*02*
U.S. Cl. D10—114



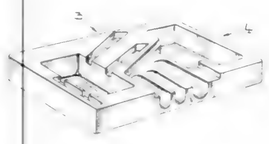
240,208
AUDIBLE SIGNAL FOR PLANT SOIL CONDITIONS
Bjorn N. De Bough, 801 1st NE., Seattle, Wash., and Robert D. Swenson, Seattle, Wash.; said Swenson assignor to said De Bough
Filed July 8, 1974, Ser. No. 486,333
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



240,198
PEGBOARD HOOK GUARD
Stanley J. Valiulis, Rockford, Ill., assignor to Southern Imperial, Inc., Rockford, Ill.
Filed Aug. 6, 1974, Ser. No. 495,223
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—263



240,199
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Alan J. Perfect, Allentown, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Dec. 20, 1974, Ser. No. 534,612
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



240,200
PACKAGING CONTAINER
Larry M. Lynn, North Vancouver, British Columbia, Canada, assignor to Easy-Scoop Industries Ltd., Vancouver, British Columbia, Canada
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U.S. Cl. D9—187



240,201
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Donald R. Avolio, Fairport, Edmund G. D'Emilio, Rochester, Claude H. Hutcheson, Jr., Fairport, and Eugene A. Mikolas, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 30, 1973, Ser. No. 346,486
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—216

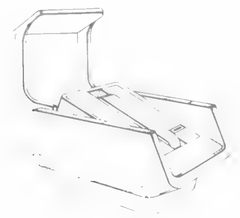




240,202
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Filed June 27, 1974, Ser. No. 483,616
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—233



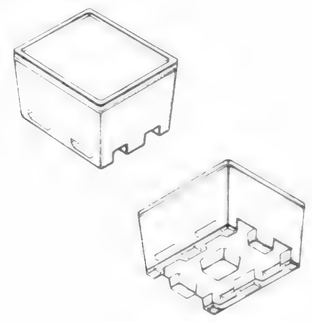
240,203
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Howard Ferguson, Valley Cottage, N.Y., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed June 27, 1974, Ser. No. 483,617
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—236



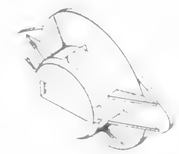
240,204
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Filed June 27, 1974, Ser. No. 483,630
Term of patent 7 years
Int. Cl. D9—*03*
U.S. Cl. D9—236



240,205
COLD STORAGE TRANSPORT BOX FOR PERISHABLE FOOD
Gerrit A. Visser, Edmonds, and John O. Olson, Lynnwood, Wash., and Edward Harris, Vancouver, British Columbia, Canada, assignors to Washington Research and Development Inc., Edmonds, Wash.
Filed Aug. 19, 1974, Ser. No. 498,779
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—246



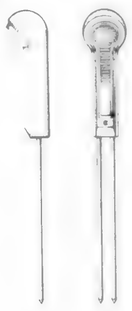
240,206
FLUIDS INDICATING GAUGE
Pierre Paret, Coutras, Gironde, France, assignor to Bornes & Balises, Coutras, Gironde, France
Filed Apr. 22, 1974, Ser. No. 463,061
Claims priority, application France Mar. 1, 1974
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—101



240,207
EMERGENCY WARNING LIGHT
Jhi Hung Leung, San Po Kong, Kowloon, Hong Kong, assignor to Star Industrial Co., Ltd., San Po Kong, Kowloon, Hong Kong
Filed July 3, 1974, Ser. No. 485,585
Term of patent 7 years
Int. Cl. D10—*06*; D26—*02*
U.S. Cl. D10—114



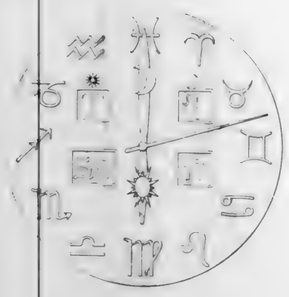
240,208
AUDIBLE SIGNAL FOR PLANT SOIL CONDITIONS
Bjorn N. De Bough, 801 1st NE., Seattle, Wash., and Robert D. Swenson, Seattle, Wash.; said Swenson assignor to said De Bough
Filed July 8, 1974, Ser. No. 486,333
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—116



240,209
BUMPER ENGAGING VEHICLE PARKING GUIDE
Jack Mendelsohn, 108—49 63rd Ave.,
Forest Hills, N.Y. 11375
Filed July 31, 1974, Ser. No. 493,703
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



240,210
COMBINED WATCHFACE AND HANDS THEREFOR
Mark Jeffrey Buckingham, Piscataway, Md.
(Box 18098, Oxon Hill, Md. 20021)
Filed Dec. 18, 1973, Ser. No. 425,726
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—124



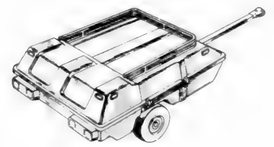
240,211
SAUSAGE CASING HANGER MEMBER
Donald J. Ernst, 524 W. Greenfield Ave.,
Milwaukee, Wis. 53204
Filed May 2, 1974, Ser. No. 466,163
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D11—1 R



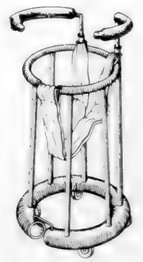
240,212
PALLET FOR STORING AND TRANSPORTING TIRES
Emanuel J. Zinna, 28 Holly Drive,
Sayville, N.Y. 11782
Filed Dec. 18, 1974, Ser. No. 533,865
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D12—53



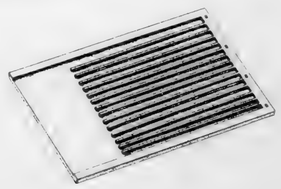
240,213
MOTORCYCLE TRAILER
Robert E. Beckwith, Jr., Elkhart County, Ind., assignor to R & W Associates, Inc., Cassopolis, Mich.
Filed Nov. 7, 1974, Ser. No. 521,566
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102



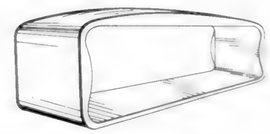
240,214
INVALID'S WALKER
Lillie C. Allen, 1821 5th St., Portsmouth, Ohio 45662
Filed Aug. 20, 1975, Ser. No. 606,303
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—130



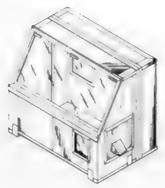
240,215
MUD FLAP FOR TRUCKS
Lowell H. Fox, Fostoria, Ohio, assignor to Roppe Rubber Corporation, Fostoria, Ohio
Filed Feb. 26, 1975, Ser. No. 553,414
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—185



240,216
PREFABRICATED MODULE UNIT FOR HOUSES
Matti Johannes Suuronen, Westend, Finland, assignor to Oy Polykem AB, Helsinki, Finland
Filed Feb. 11, 1974, Ser. No. 441,662
Claims priority, application Finland Aug. 14, 1973
Term of patent 7 years
Int. Cl. D25—*03*
U.S. Cl. D25—35



240,217
NOISE REDUCING ENCLOSURE FOR A THREAD POINTER OR THE LIKE
Richard T. Wheeler, 20 Hemlock Drive,
Vernon, Conn. 06066
Filed Feb. 28, 1974, Ser. No. 446,817
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—1



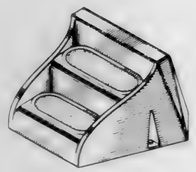
240,218
SUPPORT STAND FOR A DIVING BOARD OR SIMILAR ARTICLE
Carl R. Meyer, 205 Palo Verde Drive,
Brownsville, Tex. 78520
Filed Jan. 17, 1975, Ser. No. 541,759
Term of patent 14 years
Int. Cl. O25—*99*
U.S. Cl. D34—45



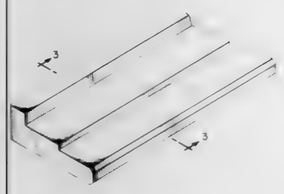
240,219
PREFABRICATED BAY WINDOW UNIT
Isao Kaneko, Iwao Shiina, and Takashi Kato, Tokyo, Japan, assignors to Misawa Homes Institute of Research & Development, Tokyo, Japan
Filed Sept. 30, 1974, Ser. No. 510,706
Claims priority, application Japan Apr. 2, 1974
Term of patent 3½ years
Int. Cl. D25—*02*
U.S. Cl. D25—52



240,220
SUPPORT STAND FOR A DIVING BOARD OR SIMILAR ARTICLE
Carl R. Meyer, 205 Palo Verde Drive, Brownsville, Tex. 78520
Filed Jan. 16, 1975, Ser. No. 541,666
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D34—45



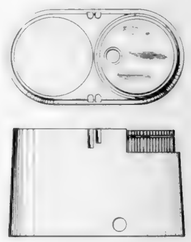
240,221
MOLDING FOR USE AS A DOOR JAMB
Gary A. Hinz, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Mar. 12, 1974, Ser. No. 450,311
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



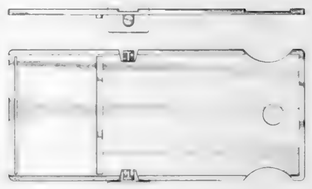
240,222
APPOINTMENT CARD
John W. Cuozzo, Montclair, N.J., assignor to C Co., Glen Ridge, N.J.
Filed July 30, 1974, Ser. No. 493,651
Terms of patent 14 years
Int. Cl. D19—*08*
U.S. Cl. D19—6



240,223
PENCIL POINTER
Francis W. MacGregor, New Britain, Conn., assignor to Hunt Manufacturing Co., Philadelphia, Pa.
Filed Mar. 3, 1975, Ser. No. 554,576
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—73



240,224
TELEPHONE INDEX SUPPORT ATTACHABLE TO A TELEPHONE BASE
Irwin H. Schneider, 12 Lee St., Stoneham, Mass. 02180, and Terrance M. Carter, Woodbine Farm, Jaffrey Center, N.H. 03454
Filed July 5, 1974, Ser. No. 485,837
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D19—76



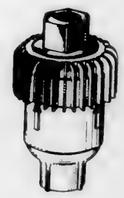
240,225
GUN HOLSTER
Roy L. Baker, Rte. 1, Box 245, Magnolia, Ark. 71753
Filed Feb. 6, 1975, Ser. No. 547,561
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13



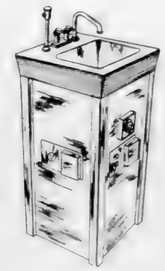
240,226
CARTRIDGE HOLDER
Gerald D. Sjostrand, 4734 E. Home, Fresno, Calif. 93703
Filed Jan. 10, 1975, Ser. No. 540,248
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—14



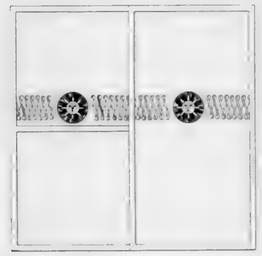
240,227
PRESSURE OPERATED VALVE FOR IRRIGATION SPRINKLERS
Charles J. Flynn, Glendora, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Oct. 7, 1974, Ser. No. 512,696
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19



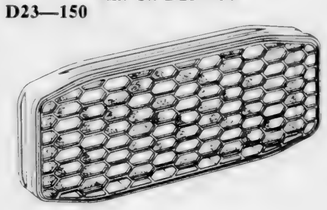
240,228
COMBINED SINK AND UTILITY PEDESTAL OR SIMILAR ARTICLE
William F. Helwig, Jr., Downers Grove, Ill., assignor to Avtec Industries, Incorporated
Filed Dec. 26, 1974, Ser. No. 536,418
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



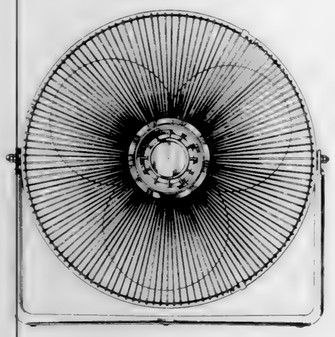
240,229
BATHTUB ENCLOSURE DOOR
George F. Mendenhall, 510 W. Hickory St., Hinsdale, Ill. 60521
Filed July 15, 1974, Ser. No. 488,713
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



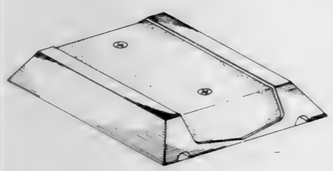
240,230
CONTAINER FOR USE IN DISSEMINATING DEODORANT, RE-ODORANT, AIR-FRESHENING OR INSECTICIDAL VAPORS
Victor Dorsen, London, England, assignor to Shell Oil Company, Houston, Tex.
Filed Feb. 14, 1975, Ser. No. 550,879
Claims priority, application Great Britain Aug. 16, 1974
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



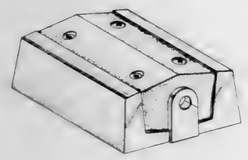
240,231
FAN
Noel Thomas Patton, 8227 Westridge Road, Fort Wayne, Ind. 46825
Filed Jan. 31, 1975, Ser. No. 546,090
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—156



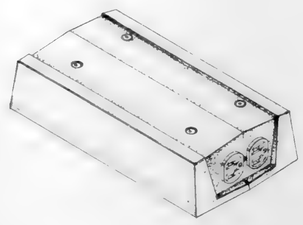
240,232
TELEPHONE OUTLET RECEPTACLE
Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Inc., Harrisburg, Pa.
Filed Jan. 31, 1975, Ser. No. 546,046
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



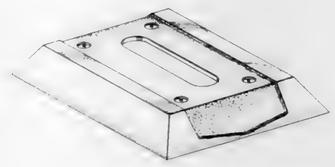
240,233
TELEPHONE OUTLET RECEPTACLE
Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Inc., Harrisburg, Pa.
Filed Jan. 31, 1975, Ser. No. 546,047
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



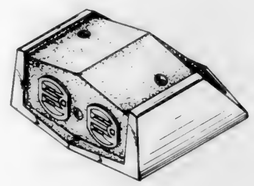
240,234
COMBINED TELEPHONE AND ELECTRICAL OUTLET RECEPTACLE
Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Inc., Harrisburg, Pa.
Filed Jan. 31, 1975, Ser. No. 546,048
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



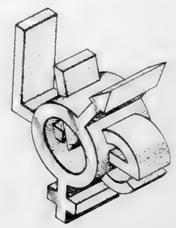
240,235
TELEPHONE OUTLET RECEPTACLE
Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Inc., Harrisburg, Pa.
Filed Jan. 31, 1975, Ser. No. 546,049
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B



240,236
ELECTRICAL OUTLET RECEPTACLE
Edward Dennman Bunnell, Palm Harbor, Fla., assignor to AMP Inc., Harrisburg, Pa.
Filed Jan. 31, 1975, Ser. No. 546,050
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 B

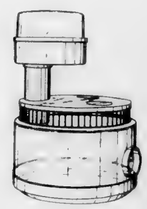


240,237
SCULPTURE OR THE LIKE
Richard E. McVicker, 802 N. Bend Road, Beech Grove, Ind. 46107
Filed Dec. 26, 1974, Ser. No. 536,629
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A

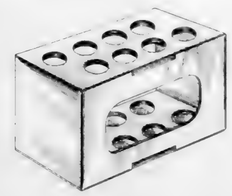




240,238
CAGE FOR SMALL DOMESTIC ANIMALS
Roy Frederick Perkins, Reigate, and John Richard Calvert, Epping, England, assignors to Genyk Products Limited, Mitcham, England
Filed Sept. 19, 1974, Ser. No. 507,501
Claims priority, application Great Britain Apr. 2, 1974
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



240,239
TEST TUBE HOLDER
Michael J. Calandrino, Woodhaven, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 4, 1974, Ser. No. 520,755
Term of patent 14 years
Int. Cl. D6—*04*; D24—*02*
U.S. Cl. D32—1 A





240,240
TOY COW FIGURE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Feb. 10, 1975, Ser. No. 548,633
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



240,241
TOY HORSE FIGURE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Feb. 10, 1975, Ser. No. 548,644
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



240,242
TOY LAMB FIGURE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Feb. 10, 1975, Ser. No. 548,646
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



240,243
TOY HOOP ROLLER
Earl L. Frudeger, 2663 Taft St. 80215, and Donald W. Krengel, 9007 E. Oxford Ave. 80237, both of Denver, Colo.
Filed Feb. 14, 1972, Ser. No. 226,360
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 HP



240,244
TENNIS TARGET
Thomas E. Clemmons, Sr., Rte. 11, Box 826, Greensboro, N.C. 27410
Filed Oct. 10, 1973, Ser. No. 405,069
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 PP



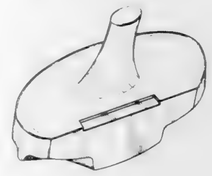
240,245
GOLF PUTTER
Louis Aragona, 11 Scheiber Terrace Cedar Grove, N.J. 07009
Filed May 20, 1974, Ser. No. 471,245
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



240,246
FOOT-BALL GAME TABLE
Rene Pierre, 7 Rue de Paris, Champforgueil, Saone et Loire, France
Filed June 25, 1974, Ser. No. 482,923
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 J



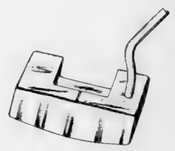
240,247
PUTTER HEAD
Vincent J. Richilano, Lakewood, Ohio, assignor to Zephyr Industries, Inc., Lakewood, Ohio
Filed Aug. 5, 1974, Ser. No. 494,862
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



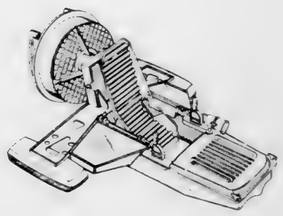
240,248
GAME TARGET
Gerard Andrew Himmelman, 379 Gordons Corner Road, Englishtown, N.J. 07726
Filed Nov. 11, 1974, Ser. No. 522,901
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 PP



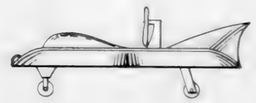
240,249
PUTTER
Edward M. Chellman, 4928 W. 119th St., Hawthorne, Calif. 90250
Filed Dec. 16, 1974, Ser. No. 532,773
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GC



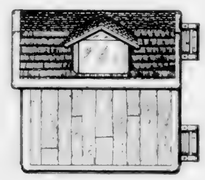
240,250
TOY SWAMP CRAFT
George W. Ptaszek, Pascoag, R.I., assignor to Hasbro Development Corp.
Filed Sept. 9, 1974, Ser. No. 504,657
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



240,251
FLYING SAUCER PULL TOY
Nilson V. Ortiz, San Francisco, Calif., assignor to Niltec Corporation, San Francisco, Calif.
Filed Oct. 15, 1974, Ser. No. 514,854
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 D



240,252
TOY HOUSE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Feb. 10, 1975, Ser. No. 548,640
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



240,253
PLANT STAND
Bobby Lee Crawford, 7711 Old Battle Grove Road, Baltimore, Md. 21222
Filed Mar. 10, 1975, Ser. No. 556,553
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 C



240,254
PENDANT OR SIMILAR ARTICLE
Margaretta C. Roberts, Providence, R.I., assignor to Reed & Barton Corporation, Taunton, Mass.
Filed May 28, 1974, Ser. No. 473,763
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D45—16 A



240,255
PENDANT OR THE LIKE
Bonnie H. Richardson, Southington, Conn. (General Delivery, Gloucester, N.C. 28528)
Filed Nov. 2, 1973, Ser. No. 412,148
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—19 G



240,256
PENDANT OR SIMILAR ARTICLE
Margaretta C. Roberts, Providence, R.I., assignor to Reed & Barton Corporation, Taunton, Mass.
Filed May 23, 1974, Ser. No. 472,818
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D45—19 L



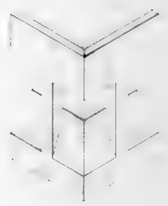
240,257
PENDANT OR SIMILAR ARTICLE
Margaretta C. Roberts, Providence, R.I., assignor to Reed & Barton Corporation, Taunton, Mass.
Filed May 23, 1974, Ser. No. 472,834
Term of patent 3½ years
Int. Cl. D11—*01*
U.S. Cl. D45—19 S



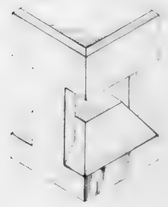
240,258
WALL MOUNTED LIGHTING FIXTURE FOR MIRRORS OR THE LIKE
Guy Vrignaud, Grenoble, France, assignor to Allibert Exploitation, Puteaux, France
Filed Nov. 6, 1974, Ser. No. 521,490
Claims priority, application France May 6, 1974
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 F



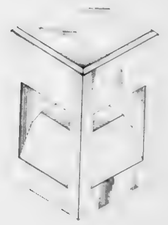
240,259
LIGHTING FIXTURE
Robert E. Walker, Bellevue, and G. Thomas Henderson, Bainbridge Island, Wash., assignors to Cascade Pacific Lumber Co., Inc.
Filed July 17, 1974, Ser. No. 489,375
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



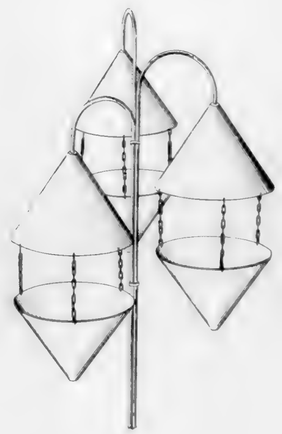
240,260
LIGHTING FIXTURE
Robert E. Walker, Bellevue, and G. Thomas Henderson, Bainbridge Island, Wash., assignors to Cascade Pacific Lumber Co., Inc.
Filed July 17, 1974, Ser. No. 489,376
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



240,261
LIGHTING FIXTURE
Robert E. Walker, Bellevue, and G. Thomas Henderson, Bainbridge Island, Wash., assignors to Cascade Pacific Lumber Co., Inc.
Filed Dec. 5, 1974, Ser. No. 529,806
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



240,262
COMBINED LAMP AND PLANT STAND OR SIMILAR ARTICLE
Benny-Loy Dalgaard-Hansen, Tilburg Alle 20, DK–2792 Store Magleby, Denmark
Filed Jan. 6, 1975, Ser. No. 538,582
Term of patent 14 years
Int. Cl. D11—*02*; D26—*03*
U.S. Cl. D48—31



240,263
SPADE BIT
William Southall, deceased, late of Moonah, Tasmania, Australia, by Dorothy L. Southall, administratrix, Moonah, Tasmania, Australia, assignor to The Stanley Works, New Britain, Conn.
Filed Feb. 11, 1974, Ser. No. 441,174
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D54—4



240,264
AERATOR FOR A SEWAGE SYSTEM
David S. MacLaren, 21176 Brantley Road, Shaker Heights, Ohio 44120
Original design application Apr. 17, 1974, Ser. No. 461,493, now Patent No. 237,007, which is a continuation of abandoned design application Ser. No. 276,078, July 28, 1972. Divided and this application May 12, 1975, Ser. No. 576,452
Term of patent 14 years
Int. Cl. D15—*99*; D23—*01*
U.S. Cl. D55—1 D



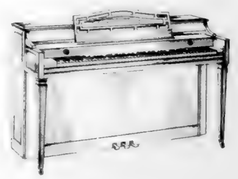
240,265
CLOCK RADIO
Ken Kawamura, Katano, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Oct. 30, 1973, Ser. No. 411,071
Claims priority, application Japan May 7, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



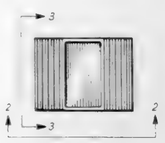
240,266
COIN OPERATED PHONOGRAPH
Robert A. O'Neil and Michael C. Wilson, Glen Ellyn, Ill., assignors to The Seeburg Corporation of Delaware, Chicago, Ill.
Filed Aug. 13, 1974, Ser. No. 497,115
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 R



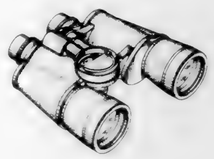
240,267
PIANO
Winsor D. White, Jr., Chicago, Ill., and Dennis Barket, Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed Aug. 26, 1974, Ser. No. 500,398
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9



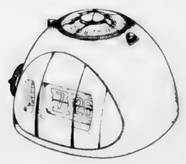
240,268
ZOOM OR FOCUS CONTROL KNOB FOR BINOCULAR
Claus O. Huckenbeck, Sherman Oaks, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 2, 1975, Ser. No. 538,088
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—59



240,269
COMBINED BINOCULAR AND COMPASS
Nils Viktor Johansson, 123 Maltesholmsvagen, 162 37 Vallingby, Sweden
Filed Mar. 21, 1975, Ser. No. 560,699
Term of patent 7 years
Int. Cl. D16—*06*
U.S. Cl. D16—59



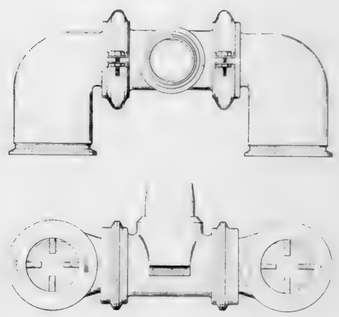
240,270
RADIO RECEIVER WITH CLOCK
Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Jan. 10, 1975, Ser. No. 540,270
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D56—4 B



240,271
PRINTER HAMMER
Paul L. Boumann, Pleasanton, and Herbert R. Beaven, Los Altos, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Aug. 1, 1974, Ser. No. 493,799
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—11 R



240,272
PUMP MANIFOLD
George M. Philpott, 43–485 Tennessee, Palm Desert, Calif. 92260
Filed May 28, 1974, Ser. No. 473,704
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1 R



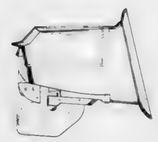
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COMBINED DIETARY MODULE AND REFRIGERATION UNIT AND SUPPORTING FRAMES THEREFOR
James H. Patrie, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Sept. 12, 1973, Ser. No. 396,422
Term of patent 14 years
Int. Cl. D12—*02*; D15—*07*
U.S. Cl. D67—3 R



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ROOF TILE
Peter Markos, Fort Lauderdale, Fla. (5440 N. Braeswood, Apt. 962, Houston, Tex. 77096)
Filed Sept. 18, 1974, Ser. No. 506,947
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—80



240,275
MARINE JET PROPULSION DRIVE
William L. Woodfill and Arthur F. Miller, Oshkosh, Wis., assignors to Brunswick Corporation, Skokie, Ill.
Filed July 21, 1975, Ser. No. 597,967
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 R



240,276
MEDICAL ELECTRODE
James Vernon Cartmell and Edwin Charles Beck, Dayton, Ohio, assignors to NDM Corporation
Filed Jan. 13, 1975, Ser. No. 540,653
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Int. Cl. D24—*01, 99*
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David E. Staub, Clearwater, Fla., assignor to Concept, Inc.
Filed July 12, 1974, Ser. No. 488,181
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



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VITREOUS CUTTER
David E. Staub, Clearwater, Carl L. Foltz, Holiday, and Raymond W. Simmons, Pinellas Park, Fla., assignors to Concept, Inc.
Filed Dec. 12, 1974, Ser. No. 531,967
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Int. Cl. D8—*01*; D24—*02*
U.S. Cl. D83—12 R



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Melvin H. Boldt, Glenview, and Thurber H. Morrison, Evanston, Ill., assignors to Canteen Corporation, Chicago, Ill.
Filed Mar. 5, 1975, Ser. No. 555,545
Term of patent 14 years
Int. Cl. D6—*04*; D20—*01*
U.S. Cl. D94—3 A



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Showell, Richard Grahame Dugard; and Spears, Peter John, 3,961,831.

Barber, Charles Launcelot, Jr.: *See—*
Arruda, Paul Jeffrey; and Barber, Charles Launcelot, Jr., 3,962,169.

Barber, Donald B.; Everett, Paul L.; Nou, Ivar; Struebing, James; and Greenbecker, William, to Barber-Webb. Resilient liner for an electrolytic cell. 3,962,066, Cl. 204-279.000.

Barber, Loren L., Jr.; and Koshar, Robert J., to Minnesota Mining and Manufacturing Company. 1,1-Bis(perfluoroalkylsulfonyl)ethenes. 3,962,346, Cl. 260-607.00A.

Barber-Webb: *See—*
Barber, Donald B.; Everett, Paul L.; Nou, Ivar; Struebing, James; and Greenbecker, William, 3,962,066.

Barker, James F.: *See—*
Corrons, Bill E.; and Barker, James F., 3,962,654.

Barnhart, Victor J.: *See—*
Dufrane, Kenneth H.; Rollins, Jack D.; Best, Ralph E.; Barnhart, Victor J.; Anderson, Clifford J.; Cox, Thomas H.; and Riggs, Robert R., 3,962,587.

Barry, Robert D., to Wer Industrial Division of Emerson Electric Co. Polyphase AC motor control. 3,962,613, Cl. 318-225.00R.

Bartl, Herbert: *See—*
Alberts, Heinrich; Bartl, Herbert; Prinz, Richard; Elghani, Salah Elabd; and Fischer, Winfried, 3,962,371.

Bartley, Thomas S., to International Paper Company. Industrial building structure system. 3,961,712, Cl. 212-5.000.

Bartz, Gunter, to Ernst Leitz G.m.b.H. Method of imparting contrast to a microscope object. 3,962,057, Cl. 204-164.000.

BASF Aktiengesellschaft: *See—*
Goetz, Norbert, 3,962,341.
Kiehs, Karl; Huber, Rolf; and Adolphi, Heinrich, 3,962,316.
Koenig, Roland; Deichelmann, Hermann; and Henkler, Herbert, 3,962,690.
Koester, Eberhard; Wunsch, Gerd; Deigner, Paul; Uhl, Karl; Stumpfi, Werner; and Steck, Werner, 3,961,990.
Schoenaich, Guenther; Grabowsky, Otto; Mayer, Johann; and Matthias, Guenther, 3,962,329.
Schropp, Wilhelm Karl, 3,962,074.
Wurmb, Rolf; Freyberg, Peter; Wendel, Kurt; and Schwarz, Wolfgang, 3,962,172.

Basile, Peter A., to Amerace Corporation. Retainer for securing operating elements to control shafts. 3,961,855, Cl. 403-329.000.

Basset, Jean-Claude, to Telecommunications Radioelectriques et Telephoniques T.R.T. Arrangement for simultaneously producing signals having an increasing frequency and signals having a decreasing frequency. 3,962,653, Cl. 331-2.000.

Bata Shoe Company, Inc.: *See—*
Joosten, Hendrik, 3,961,391.

Bates, Harold M., to Center for Laboratory Medicine. Analytical procedure for thyroid hormones. 3,962,039, Cl. 195-103.50R.

Bauer, Donald J.: *See—*
Haskett, Philip R.; Elges, Carl H., III; Bauer, Donald J.; and Lindstrom, Roald E., 3,961,942.

Bauer, Paul: *See—*
Forster, Franz; and Bauer, Paul, 3,962,608.

Bauer, Victor J.; and Kosley, Raymond W., Jr., to American Hoechst Corporation. 1,3-Dihydrospiro[isobenzofuran]s and derivatives thereof. 3,962,259, Cl. 260-293.580.

Bayer Aktiengesellschaft: *See—*
Alberts, Heinrich; Bartl, Herbert; Prinz, Richard; Elghani, Salah Elabd; and Fischer, Winfried, 3,962,371.
Arlt, Dieter, 3,962,270.
Bernert, Claus-Rudiger; and Radlmann, Eduard, 3,962,176.
Dorlars, Alfons; Neuner, Otto; and Theidel, Hans, 3,962,219.
Gotteschlich, Alois; and Leverenz, Klaus, 3,962,209.
Kuhle, Engelbert; Klauke, Erich; and Eue, Ludwig, 3,962,306.
Matsushima, Kiyoshi; Miyamoto, Masao; and Fukazawa, Nobuo, 3,962,304.
Schlee, Hans Georg; Sasse, Klaus; and Kuhle, Engelbert, 3,962,327.
Westphal, Kurt; Meiser, Werner; Eue, Ludwig; and Hack, Helmuth, 3,961,936.

BDH, Inc.: *See—*
Bowen, James H., 3,962,593.

Beard, Colin C., to Syntex (U.S.A.) Inc. 5(6)-Benzene ring substituted benzimidazole-2-carbamate derivatives having anthelmintic activity. 3,962,437, Cl. 424-246.000.

Beatrice Foods Company: *See—*
Zurla, Nick, 3,962,574.

Beaudoin, John F., to Pratt Manufacturing Corporation. Endless belt folder. 3,961,783, Cl. 270-66.000.

Beaumont, Pierre: *See—*
Larue, Pierre; and Beaumont, Pierre, 3,961,581.

Beauvent, Guy; and Roy, Jacques, to Centre de Recherche Industrielle du Quebec. Frost detecting device for a refrigeration apparatus. 3,961,495, Cl. 62-140.000.

Beavens, Charles R.; and Higgs, Kenneth O., to Texaco Inc. Alkylation acid end point detector. 3,961,901, Cl. 23-253.00R.

Becke, Friedrich; and Fleig, Helmut, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. α-Hydroxy-β-aminocarboxylic acids. 3,962,319, Cl. 260-514.00J.

Beckman, Frank H.: *See—*
Marquis, Ray L.; and Beckman, Frank H., 3,961,692.

Beckman Instruments, Inc.: *See—*
Wright, Herschel E., 3,961,745.

Beecham Group Limited: *See—*
Buckle, Derek Richard; Cantello, Barrie Christian Charles; and Smith, Harry, 3,962,445.
Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, 3,962,216.

Beer, Heinrich: *See—*
Rusch, Werner; Beer, Heinrich; Seeger, Veronika; and Waibel, Manfred, 3,962,519.

Beers, Melvin D.; Berger, Abe; Hamilton, Stephen B.; and Selin, Terry G., to General Electric Company. Novel organofunctional (ketoximino) silanes and room temperature, vulcanizable compositions containing the same. 3,962,160, Cl. 260-18.00S.

Begland, Robert Walter, to Du Pont de Nemours, E. I., and Company. Preparation of disperse bisanil dyes derived from diaminomaleonitrile. 3,962,220, Cl. 260-240.00G.

Begland, Robert Walter, to Du Pont de Nemours, E. I., and Company. Preparation of disperse bisanil dyes derived from diaminomaleonitrile. 3,962,221, Cl. 260-240.00G.

Beguin, Jean-Claude: *See—*
Alliot, Maurice; Beguin, Jean-Claude; Moutach, Michel; and Percheron, Jean-Claude, 3,961,995.

Bell & Howell Company: *See—*
Aubert, Richard C.; Dean, George R.; Ricks, James B.; and Wade, John W., 3,962,532.

Bell, Richard Charles: *See—*
Droege, Arthur John, Sr.; and Bell, Richard Charles, 3,961,868.
Droege, Arthur John, Sr.; and Bell, Richard Charles, 3,961,869.

Bell Telephone Laboratories, Incorporated: *See—*
Haskell, Barin Geoffry, 3,962,535.
Kane, Jack; and Pedersen, Richard Alan, 3,962,590.
Petroff, Pierre Marc; and Rozgonyi, George Arthur, 3,962,716.
Seidel, Harold, 3,962,541.

Belle Isle, Albert P., to General Electric Company. Data processing system having pyramidal hierarchy control flow. 3,962,685, Cl. 340-172.500.

Beloit Corporation: *See—*
Fujiwara, Haruyoshi, 3,961,759.

Belton, Annette M.: *See—*
Faubl, Hermann; and Belton, Annette M., 3,962,131.

Belz, Ray J.: *See—*
Hunt, Walter G.; and Belz, Ray J., 3,962,079.

Bemis Company, Inc.: *See—*
Wolske, Eugene H., 3,961,459.

Bemis, Richard A.: *See—*
Gilbert, Curtiss M.; Bemis, Richard A.; and Schulze, Norman D., 3,962,048.

Bender, Paul E.: *See—*
Baile, Clifton A.; Bender, Paul E.; and Loev, Bernard, 3,962,448.

Bendix Corporation, The: *See—*
Richman, Jay L., 3,962,647.
Scardilli, Vincent; and Sussman, Arthur, 3,962,008.

Shimrony, Yoram, 3,961,604.

Benedict, Manson; Fruit, Allen J.; and Levey, Horace B., to United States of America, Energy Research and Development Administration. Method of independently operating a group of stages within a diffusion cascade. 3,961,917, Cl. 55-16.000.

Benko, James J.: *See—*
Oberhofer, Alfred W.; Benko, James J.; and Drozd, Joseph C., 3,962,109.

Benkoe, Erwin: *See—*
Goldfarb, Adolph E.; and Benkoe, Erwin, 3,961,794.

Bennett, Gregory Benjamin, to Sandoz, Inc. Process for the preparation of furo(3,4-e)-as-triazines. 3,962,240, Cl. 260-248.0AS.

Bennett, Milton C., to J. I. Case Company. Differential fluid-pressure transducer. 3,961,533, Cl. 73-419.000.

Bennett, Moreland P.; and Hobbs, Albert M., Jr., to General Electric Company. Metal welding gasket. 3,962,662, Cl. 336-90.000.

Bennett, Richard C., to Whiting Corporation. Crystallization apparatus. 3,961,904, Cl. 23-273.00R.

Bennett, Russell B.: *See—*
Dulin, Jacques M.; Rosar, Edward C.; Bennett, Russell B.; Rosenberg, Harvey S.; and Genco, Joseph M., 3,962,080.

Bennett, Thomas H., to Motorola, Inc. Split low order internal address bus for microprocessor. 3,962,682, Cl. 340-172.500.

Benninger, Siegfried; Martini, Thomas; and Rebsdat, Siegfried, to Hoechst Aktiengesellschaft. Aliphatic and cyclic perfluoro-alkyl ethers and process for the preparation thereof. 3,962,348, Cl. 260-615.00F.

Beno, Ferdinand. Toilet seat cover. 3,961,386, Cl. 4-247.000.

Berardinelli, Frank M., to Celanese Corporation. Polyalkylene terephthalate polymer molding resins. 3,962,174, Cl. 260-40.00R.

Bergen, Richard F., to Xerox Corporation. Imaging system. 3,961,950, Cl. 96-1.100.

Berger, Abe: *See—*
Beers, Melvin D.; Berger, Abe; Hamilton, Stephen B.; and Selin, Terry G., 3,962,160.

Berger, Herbert; Gall, Rudi; Thiel, Max; Vomel, Wolfgang; and Sauer, Winfriede, to Boehringer Mannheim G.m.b.H. 3-(5-Nitro-2-furyl)-6-cyano-s-triazolo(4,3-b)pyridazine. 3,962,242, Cl. 260-250.0AC.

Berggren, Torsten Lennart, to Cellwood Machinery AB. Method and machine for refining wood chippings, shavings, paper pulp and the like. 3,961,757, Cl. 241-28.000.

Berglund, Harold A.: *See—*
Thomas, David F.; and Berglund, Harold A., 3,961,642.

Bergwerksverband GmbH: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; Zundorf, Dieter; and Horbel, Hugo, 3,962,129.
Schmalfeld, Paul; Rammler, Roland; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,962,043.

Berkoff, Charles E.; Sutton, Blaine M.; and Weinstock, Joseph, to SmithKline Corporation. Anti-arthritic 1H-pyrimido-(5,4,3-kl)phenothiazine-1,3(2H)-diones and 1-thiones. 3,962,438, Cl. 424-247.000.

Berkowitz, Daniel: *See—*
Kenyon, Ernest M.; Berkowitz, Daniel; and Ayoub, John A., 3,961,569.

Berlanga, Jose Maria Castellano: *See—*
Roldan, Cristobal Martinez; Brana, Miguel Fernandez; and Berlanga, Jose Maria Castellano, 3,962,243.

Berman, Valerian Mikhailovich: *See—*
Dokukin, Alexandr Viktorovich; Tyablikov, Jury Evgenievich; Rogov, Anatoly Yakovlevich; Berman, Valerian Mikhailovich; Nikitin, Jury Arsentievich; and Feifets, Leonid Solomonovich, 3,961,558.

Bernard, Claude. Shelving. 3,961,586, Cl. 108-111.000.

Bernert, Claus-Rudiger; and Radlmann, Eduard, to Bayer Aktiengesellschaft. Antistatic polyamide compositions which are stabilized against yellowing. 3,962,176, Cl. 260-45.70R.

Berninger, John F.: *See—*
Rich, Beldon R.; Gallagher, Richard J.; and Berninger, John F., 3,961,564.

Berniolles, Jean-Marie; and Gallo, Sabino, to Commissariat a l'Energie Atomique. Fast nuclear reactor. 3,962,032, Cl. 176-65.000.

Berreth, Julius R., to United States of America, Energy Research and Development Administration. Method for solidifying liquid radioactive wastes. 3,962,114, Cl. 252-301.10W.

Berry, Thomas: *See—*
Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, 3,961,401.
Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, 3,961,402.

Bertele, Erhard; and Schudel, Peter, to Givaudan Corporation. Terpene flavorant intermediates. 3,962,283, Cl. 260-340.900.

Best, Desmond John: *See—*
Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, 3,962,216.

Best, Ralph E.: *See—*
Dufrane, Kenneth H.; Rollins, Jack D.; Best, Ralph E.; Barnhart, Victor J.; Anderson, Clifford J.; Cox, Thomas H.; and Riggs, Robert R., 3,962,587.

Betensky, Ellis I., to Optigon Research & Development Corporation. Lens. 3,961,844, Cl. 350-175.0FS.

Betz Laboratories, Inc.: *See—*
Swered, Paul; and Shema, Bernard F., 3,962,456.

BICC Limited: *See—*
Verne, Stefan, 3,962,517.

Biebuyck, Lawrence F.: *See—*
Hubbard, S. Eugene; and Biebuyck, Lawrence F., 3,961,452.

Bied-Charreton, Philippe; d'Auria, Luigi; Micheron, Francois; and Huignard, Jean Pierre, to Thomson-CSF. Magnetically actuated deflectable membrane page composer for holography. 3,961,837, Cl. 350-3.500.

Biere, Helmut; Ahrens, Hanns; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, to Schering Aktiengesellschaft. Indolylacetylamino acid derivatives, process for their preparation, and pharmaceutical compositions. 3,962,471, Cl. 424-274.000.

Biere, Helmut: *See—*
Ahrens, Hans; Biere, Helmut; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, 3,962,453.

Bigelow-Sanford, Inc.: *See—*
Vits, Helmuth; and Baker, Preston G., Jr., 3,961,882.

Billington, Colin: *See—*
Jago, John James; and Billington, Colin, 3,961,928.

Binnig, Fritz; Raschack, Manfred; and Treiber, Hans-Joerg, to Knoll A.G. Chemische Fabriken. Cardioactive bispidones and bispidines. 3,962,449, Cl. 424-267.000.

Birke, Walter; Schon, Franz; and Steckelberg, Willi, to Hoechst Aktiengesellschaft. Process for the dyeing of synthetic fibrous materials from organic solvents using azo dyes. 3,961,885, Cl. 8-41.00A.

Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, to Hoechst Aktiengesellschaft. Process and auxiliary agent for improving the wettability of textile material. 3,961,889, Cl. 8-115.500.

Birkofer, Roger Clarence, to Procter & Gamble Company, The. Mild thickened shampoo compositions with conditioning properties. 3,962,418, Cl. 424-70.000.

Bis, Richard F.: *See—*
Scharnhorst, Kurt Peter; Bis, Richard F.; Dixon, Jack R.; Houston, Bland B., Jr.; Brown, Richard W.; and Riedl, Harold R., 3,961,998.

Bishop, David Paul; and Morris, Ronald Meredith, to Lever Brothers Company. Textile softening agents. 3,961,892, Cl. 8-190.000.

Blackwelders: *See—*
Schmidt, Lewis W., 3,961,573.

Blad, Leiv H., to Lockheed Aircraft Corporation. Method for making a hollow laminated article. 3,962,393, Cl. 264-90.000.

Blaho, Rudolph G.: *See—*
Brilando, Frank P.; and Blaho, Rudolph G., 3,961,811.

Blandon, Antonio E.: *See—*
Symens, Raymond D.; Queneau, Paul B.; and Blandon, Antonio E., 3,962,051.

Blanton, Grover, to Steer Safe, Inc. Steering arm attachment adapter for steering stabilizer. 3,961,804, Cl. 280-94.000.

Blauert, Jens; Boerger, Georg; and Laws, Peter, to Eugen Beyer Elektrotechnische Fabrik. Method and arrangement for controlling acoustical output of earphones in response to rotation of listener's head. 3,962,543, Cl. 179-1.00G.

Blidung, Otto: *See—*
Schubert, Bernhard; and Blidung, Otto, 3,961,633.

Blitz, Daniel, to Sanders Associates, Inc. Spin rate compensator. 3,961,535, Cl. 73-505.000.

Bloch, Moshe Rudolf: *See—*
Zeigerson, Esther; and Bloch, Moshe Rudolf, 3,962,208.

Bloching, Helmut; Smolka, Heinz; and Schwuger, Milan Johann, to Henkel & Cie G.m.b.H.; and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Compositions of optical brightness and aluminosilicates and methods of their production. 3,962,116, Cl. 252-301.210.

Blok, Glen R., to Pratt Manufacturing Corporation. Mounting means for conveyor flight. 3,961,702, Cl. 198-175.000.

Blount, David H. Process for the production of an aqueous solution of silicoformic acid. 3,962,067, Cl. 252-182.000.

Blount, David H. Process for the production of silico-formic acid granules containing an alkali catalyst. 3,962,111, Cl. 252-182.000.

Blum, Harold A.: *See—*
Estes, James M.; Kerlin, Eliot E.; and Blum, Harold A., 3,961,619.

Blum, Helmut: *See—*
Worms, Karl-Heinz; Gloxhuber, Christian; Schmidt-Dunker, Manfred; and Blum, Helmut, 3,962,433.

Blumenthal, Gunter, to Bochumer Eisenhutte Heintzmonn, & Co. Mine roof support. 3,961,487, Cl. 61-45.00D.

Blythe Colours (Australia) Proprietary Limited: *See—*
Robinson, Ian George, 3,962,523.

Bochumer Eisenhutte Heintzmonn, & Co.: *See—*
Blumenthal, Gunter, 3,961,487.

Bock, Burkhard: *See—*
Schmalfeld, Paul; Rammler, Roland; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,962,043.

Bode, Herbert; Gollner, Manfred; and Koberer, Gunther, to Claudius Peters AG. Thrust grate with a series of overlapping rows of plates. 3,961,588, Cl. 110-38.000.

Bodor, Nicolae S.: *See—*
Higuchi, Takeru; Bodor, Nicolae S.; and Shek, Efraim, 3,962,447.

Boehringer Mannheim G.m.b.H.: *See—*
Berger, Herbert; Gall, Rudi; Thiel, Max; Vomel, Wolfgang; and Sauer, Winfriede, 3,962,242.

Boeing Company, The: *See—*
Burton, James M.; and Tieden, Jansey D., 3,962,618.
Wiley, Edward Robin, 3,961,483.

Boerger, Georg: *See—*
Blauert, Jens; Boerger, Georg; and Laws, Peter, 3,962,543.

Boers, Henri Marie: *See—*
Van Eek, Wouter Hugo; Boers, Henri Marie; Grupping, Arnold Willem J.; Van Wamelen, Pieter Jacobus J.; and Rehm, Willem Christian, 3,961,824.

Boise Cascade Corporation: *See—*
Westphal, Teddy M.; and Hough, Robert J., 3,961,566.

Boisvert, Roger L.: *See—*
Ty, Henry; White, Alfred J.; Boisvert, Roger L.; and Sears, Raymond M., 3,962,664.

Bollert, Ulrich; Kleiner, Hans-Jerg; and Herwig, Walter, to Hoechst Aktiengesellschaft. Polyesters containing structural units derived from phosphonic acids or estere. 3,962,194, Cl. 260-75.00P.

Bomba, Steven J., to Texas Instruments Incorporated. Frequency selection and control. 3,962,640, Cl. 325-421.000.

Bombardier Limited: *See—*
Tremblay, Alain; and Talbot, Jean-Guy, 3,961,539.

Bonner, Edwin J.: *See—*
Nielsen, Haagen Bach; Bonner, Edwin J.; and Lado, Ernest A., 3,961,903.

Bonno, Jean-Claude: *See—*
Guenard, Roger; and Bonno, Jean-Claude, 3,962,604.

Booher, Richard N., to Eli Lilly and Company. 1,3-Propandiol intermediates. 3,962,269, Cl. 260-296.00R.

Boone, Gary: *See—*
Brown, Max; and Boone, Gary, 3,962,683.

Boone, Gary W.: *See—*
Caudel, Edward R.; and Boone, Gary W., 3,962,684.

Borca, Bruno: *See—*
Fontana, Marco; and Borca, Bruno, 3,962,512.

Borer, Peter; Finck, Hans-Werner; Mayerhoefer, Horst; Sollberger, Urs; and Mueller, Wolfgang Heinz, to Sandoz Ltd. Bromo-propanol derivatives as flame retardants. 3,962,246, Cl. 260-268.00C.

Bosso, Joseph F.; and Wismer, Marco, to PPG Industries, Inc. Quaternary ammonium salt-containing resin compositions. 3,962,165, Cl. 260-29.2EP.

Bottasso, Franco; and Pacciarini, Antonio, to Industrie Pirelli S.p.A. Method and apparatus for producing a continuous band of rubberized fabric having transversal reinforcing metal elements. 3,962,022, Cl. 156-507.000.

Bowen, Gwynne; and Moore, Alan Frederick, to Dunlop Limited. Improvements in or relating to resilient mountings. 3,961,829, Cl. 308-28.000.

Bowen, James H., to BDH, Inc. Electromagnetic motor. 3,962,593, Cl. 310-46.000.

Bower, George M.; and Skena, Richard M., to Westinghouse Electric Corporation. N,N'bis(phthalic anhydride) diimides. 3,962,278, Cl. 260-326.00C.

Bowie, Betty Anne; and Pagano, Joseph F., to SmithKline Corporation. Device for making a culture of CO_2 requiring organisms. 3,961,696, Cl. 195-139.000.

Boyadjieff, George I., to Varco International, Inc. Power slip unit. 3,961,399, Cl. 24-263.0DG.

Boyd, Robert Kent; and Lindberg, Allan Walter, to International Telephone and Telegraph Corporation. Magnetically shunted current transformer. 3,962,661, Cl. 336-84.000.

Boyle, John Terence Arnott; and Saunders, John Christopher, to John Wyeth & Brother Limited. 1 (H)-1,2,4-triazole derivatives. 3,962,237, Cl. 260-247.10M.

Bozek, John S., to Continental Can Company, Inc. Child resistant easy opening closure. 3,961,722, Cl. 220-270.000.

Braat, Josephus Johannes Maria, to U.S. Philips Corporation. Record carrier on which a television signal is stored. 3,962,720, Cl. 358-4.000.

Braathen, Chris Reidar. Water heater. 3,962,560, Cl. 219-314.000.

Braley, Robert L.; Tenenbaum, Mircea; and Milano, Edward J., to Gould Inc. Yarn runner-length controller for knitting machines. 3,961,500, Cl. 66-210.000.

Brana, Miguel Fernandez: *See—*
Roldan, Cristobal Martinez; Brana, Miguel Fernandez; and Berlanga, Jose Maria Castellano, 3,962,243.

Brantingham, George L., to Texas Instruments Incorporated. Low power digit blanking circuit. 3,962,571, Cl. 235-152.000.

Brasko, Peter; Festa, Daniel E.; and Buse, Kenneth E., to Aluminum Company of America. Continuous electrodeposition of coating material on metal sheet stock. 3,962,060, Cl. 204-181.000.

Brauchbar, Robert Erik: *See—*
Clark, David Ronald; Hyde, Thomas Gerald; and Brauchbar, Robert Erik, 3,962,115.

Braunschweiler, Hans Georg, to Uniroyal Inc. Machine for producing circular textile webs. 3,961,498, Cl. 66-13.000.

Breitscheidel, Hans-Ulrich: *See—*
Alfter, Franz Werner; and Breitscheidel, Hans-Ulrich, 3,962,016.

Brems, John Henry. Internal combustion engine. 3,961,607, Cl. 123-78.00R.

Brendley, William H., Jr.: *See—*
Martorano, Richard; Brendley, William H., Jr.; and Haag, Thomas H., 3,962,167.

Brenneman, Richard S.; and Clancy, John J., to Combustion Equipment Associates, Inc. Process for treating organic wastes and product thereof. 3,961,913, Cl. 44-1.00D.

Breuer, Hermann; and Treuner, Uwe D., to E. R. Squibb & Sons, Inc. 2-(Thiocarbonylamino)acetamido-7α-methoxy cephalosporanic acid compounds. 3,962,229, Cl. 260-243.00C.

Brewer, Harold, to Irvin Industries, Inc. Cargo net. 3,961,585, Cl. 105-469.000.

Bridgestone Tire Company Limited: *See—*
Nakamoto, Yuzuru; Kubota, Eishi; and Suzuki, Fukushi, 3,961,740.
Yonekawa, Hisashi; and Azuma, Tosio, 3,962,020.

Briggs & Stratton Corporation: *See—*
Kapsy, Robert J., 3,961,724.

Brilando, Frank P.; and Blaho, Rudolph G., to Schwinn Bicycle Company. Bicycle reflector bracket. 3,961,811, Cl. 280-289.00A.

Brinkmann, Bernd; and Imoehl, Wolfgang, to Schering Aktiengesellschaft. Cyanoacrylate adhesives. 3,961,966, Cl. 106-36.000.

British Sealed Beams Limited: *See—*
Draper, Geoffrey Roland, 3,962,596.

British Steel Corporation: *See—*
Cornforth, Alexander Rankin, 3,961,523.

Brobst, Clarence O. Indoor-outdoor image projection system. 3,961,839, Cl. 350-117.000.

Brodmann, Franz J., to General Refractories Company. Process for producing perlite microspheres. 3,961,978, Cl. 106-288.00B.

Brody, Donald E.; and Karoly, Gabriel, to M & T Chemicals Inc. Process for coating metal substrates. 3,962,499, Cl. 427-386.000.

Broeckx, Willy P.: *See—*
Dulog, Lothar G.; and Broeckx, Willy P., 3,962,201.

Brooks, Thomas Aaron, to Deere & Company. Foundry facing sand composition. 3,961,967, Cl. 106-38.230.

Brothers, Alvin O. Multi-position container holding arrangement. 3,961,765, Cl. 248-126.000.

Brothers, Alvin O. Container holding arrangement. 3,961,766, Cl. 248-210.000.

Brown, Edward L.: *See—*
Crow, Harold E.; and Brown, Edward L., 3,961,769.

Brown, George A. Fuel vaporizer for engines. 3,961,616, Cl. 123-122.00A.

Brown, Martin Luther, to Du Pont de Nemours, E. I., and Company. Apparatus for reinforcing tubing. 3,961,873, Cl. 425-114.000.

Brown, Max; and Boone, Gary. CPU programmable control system. 3,962,683, Cl. 340-172.500.

Brown, Philip A.; and Brown, Vincent B., to Harlo Products Corporation. Hedger. 3,961,468, Cl. 56-237.000.

Brown, Richard E.; Puchalski, Chester; and Shavel, John, Jr., to Warner-Lambert Company. Novel substituted benzopyranopyridine. 3,962,266, Cl. 260-295.00T.

Brown, Richard W.: *See—*
Scharnhorst, Kurt Peter; Bis, Richard F.; Dixon, Jack R.; Houston, Bland B., Jr.; Brown, Richard W.; and Riedl, Harold R., 3,961,998.

Brown & Root, Inc.: *See—*
Nolan, Clyde Earvin, Jr.; Soland, John Paul; and Tillinghast, William Samuel, 3,961,493.

Brown, Stanley L. Excavating device. 3,961,429, Cl. 37-80.00R.

Brown, Vincent B.: *See—*
Brown, Philip A.; and Brown, Vincent B., 3,961,468.

Brown, William E.: *See—*
Szanto, Joseph; Brown, William E.; and Meyers, Edward, 3,962,426.

Brown, William L., Jr.; and Brunhuber de Perez, Barbara, to Cornell Research Foundation, Inc. Bait insecticide for carpenter ants. 3,962,461, Cl. 424-352.000.

Brubaker, Hiram Allen: *See—*
Goloff, Alexander; and Brubaker, Hiram Allen, 3,961,404.

Bruecker, George B. Inverted silo chutes having swingable side wall panels. 3,961,693, Cl. 193-14.000.

Brun, Jean-Claude: *See—*
Brut, Albert; Nave, Gerard; Deleuil, Jean-Pierre; Brun, Jean-Claude; and Martin, Yves, 3,962,064.

Brunhuber de Perez, Barbara: *See—*
Brown, William L., Jr.; and Brunhuber de Perez, Barbara, 3,962,461.

Brunson, Raymond D. Memory control circuitry. 3,962,689, Cl. 340-173.00R.

Brunson, Raymond D. Switch closure responsive logic signal generation means. 3,962,699, Cl. 340-323.00B.

Brunswick Corporation: *See—*
Geary, Arthur L., 3,961,514.
Meyer, James A., 3,961,595.

Brusa, Bruno; Panozzo, Camillo; and Zanini, Giovanni, to Montefibre S.p.A. Method for washing acrylic filaments. 3,961,890, Cl. 8-137.500.

Brut, Albert; Nave, Gerard; Deleuil, Jean-Pierre; Brun, Jean-Claude; and Martin, Yves, to Commissariat a l'Energie Atomique. Electrolyzer and a method for the production of readily oxydizable metals in a state of high purity. 3,962,064, Cl. 204-245.000.

Bruton, Timothy Michael, to U.S. Philips Corporation. $Bi_4Ti_3O_{12}$ Single crystal growth from saturated seeded solution. 3,962,027, Cl. 156-624.000.

Bubik, Alfred; and Platz, Friedrich, to Escher Wyss G.m.b.H. Stock inlet for a paper machine. 3,962,031, Cl. 162-338.000.

Bucalo, Louis, to Investors In Ventures, Inc. Methods for applying surgical splints. 3,961,631, Cl. 128-334.00R.

Buck, Homer G. Waste metal removal in E.D.M. machining. 3,962,557, Cl. 219-69.00D.

Buck K.G., Firma: *See—*
Faber, Walter; and Huber, Paul, 3,961,579.

Buckle, Derek Richard; Cantello, Barrie Christian Charles; and Smith, Harry, to Beecham Group Limited. Anti-allergenic carbostyril derivatives. 3,962,445, Cl. 424-258.000.

Buehler, Jay K.; Carlson, Thomas R.; and McIntosh, Alvin J., to Kennecott Copper Corporation. Machine for and method of stemming blast holes. 3,961,492, Cl. 61-63.000.

Buehler, Max, to Weelpal AG. Installation for loading a road vehicle with loading units. 3,961,714, Cl. 214-41.00R.

Bugaut, Andree; and Laudon, Monique, to L'Oreal. Dye composition for keratinic fibers containing a phenol coupler. 3,961,879, Cl. 8-10.200.

Bukac, Zbynek; and Sebenda, Jan, to Ceskoslovenska akademie ved. Method for producing cyclic trimers of organic isocyanates. 3,962,239, Cl. 260-248.0NS.

Bungay, Henry R., III: *See—*
Trivedi, Ramesh C.; Bungay, Henry R., III; and Cuccolo, Paul J., 3,961,899.

Burgdorf, Jochen: *See—*
Schanz, Johannes; and Burgdorf, Jochen, 3,961,690.

Burkwall, Morris P., Jr.; and Leyh, Joseph C., to Quaker Oats Company, The. Stabilization of dry pet food. 3,962,462, Cl. 426-1.000.

Burnett, William M.; and Horst, Albert W., Jr., to United States of America, Navy. Energy-absorbing sabot. 3,961,580, Cl. 102-93.000.

Burns, Edward P.; and McCord, Herbert W., to General Signal Corporation. Sensor for a ground fault circuit interrupter. 3,962,606, Cl. 317-18.00D.

Burns, Wade D., to Dynaco Inc. Loudspeaker protective system. 3,962,607, Cl. 317-31.000.

Burroughs Corporation: *See—*
Carter, William F.; and Drinkard, John H., Jr., 3,962,562.
Miller, Bruce Jeffrey, 3,962,611.
Sevak, Nitin M.; and Su, Chauchang, 3,961,784.

Burrows, Sidney, to Distillers Company (Yeast) Limited, The. Processes of drying yeast. 3,962,467, Cl. 426-62.000.

Burt, Wallace Allison: *See—*
von Dohlen, Henry Claus; and Burt, Wallace Allison, 3,961,708.

Burton, James M.; and Tieden, Jansey D., to Boeing Company, The. Digital following error measurement system. 3,962,618, Cl. 318-561.000.

Busch, Albert E., to Sarkes Tarzian, Inc. Digital rotary special effects generator. 3,962,536, Cl. 178-6.800.

Busch, Norbert: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; Monteil, Andre; and Simond, Jacques, 3,962,238.

Busch, Peter, to Henkel & Cie G.m.b.H. Hair bleaching preparations containing keratose and processes of using the same. 3,961,634, Cl. 132-7.000.

Buse, Kenneth E.: *See—*
Brasko, Peter; Festa, Daniel E.; and Buse, Kenneth E., 3,962,060.

Bushell, Brian John: *See—*
Archibald, John Leheup; Jackson, John Lambert; and Bushell, Brian John, 3,962,258.

Butler, George B., to State of Florida, The Board of Regents of the. Gel chromatography process for fractionating ionic polymers. 3,962,206, Cl. 260-96.00R.

Byckowski, Marion Casimir: *See—*
Reines, Jose; Platt, Eric G.; White, Stanley Earl; and Byckowski, Marion Casimir, 3,962,552.

Byrne, Michael F.; and Powelson, Douglas V. N., to Allied Chemical Corporation. Method of joining plastic pipe. 3,961,814, Cl. 285-21.000.

C.A.V. Limited: *See—*
Mowbray, Dorian Farrar, 3,961,861.
Phillips, Ronald, 3,961,544.

C. L. Frost & Son, Inc.: *See—*
Frost, Charles C.; Van Der Meulen, Douglas J.; and Weis, Siegfried K., 3,961,406.

C-O, Inc.: *See—*
Ollman, Melvin L., 3,961,738.

Calia, Vincent S.; and Leftheris, Basil P., to Grumman Aerospace Corporation. Method and apparatus for monitoring an electrically actuated tool. 3,962,694, Cl. 340-267.00R.

Campbell, Jeptha E.; and Gilchrist, James E., to United States of America, Health, Education and Welfare. Method and apparatus for plating and counting aerobic bacteria. 3,962,040, Cl. 195-127.000.

Campos, Omar: *See—*
Pollio, Frank Xavier; and Campos, Omar, 3,961,981.

Cannalonga, Marco Alfred; and Czarecki, Louis Vincent, to Hoffmann-La Roche Inc. Spray-drying technique for preparing agglomerated powders. 3,962,384, Cl. 264-7.000.

Canon Kabushiki Kaisha: *See—*
Okuno, Youichi; and Yokota, Hideo, 3,962,710.

Cantello, Barrie Christian Charles: *See—*
Buckle, Derek Richard; Cantello, Barrie Christian Charles; and Smith, Harry, 3,962,445.

Canup, Robert E., to Texaco Inc. Controlled spark-duration ignition system. 3,961,613, Cl. 123-148.00E.

Capaccio, Giancarlo: *See—*
Ward, Ian MacMillan; and Capaccio, Giancarlo, 3,962,205.

Capponi, Miro; and Moreau, Jacques, to Sandoz Ltd. Electrostatic spraying of fixing agents. 3,961,878, Cl. 8-2.000.

Carbin, Francis A.: *See—*
Zarin, Alvin; and Carbin, Francis A., 3,962,652.

Carbonnel, Henri; and Vaury, Pierre, to Groupement pour les Activites Atomiques et Avancees. Installation for the treating of a molten metal. 3,961,778, Cl. 266-217.000.

Carborundum Company, The: *See—*
Economy, James; Cottis, Steve C.; and Nowak, Bernard E., 3,962,314.

Cardwell, Gilbert I., to Hughes Aircraft Company. Current driven inverter. 3,962,626, Cl. 321-45.00R.

Carl Zeiss-Stiftung: *See—*
Kuhl, Jurgen; and Spitschan, Hans-Jorg, 3,962,576.

Carlson, Thomas R.: *See—*
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Carmichael, Leland E.: *See—*
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Carpenter, Clark R.: *See—*
Merritt, Richard F.; and Carpenter, Clark R., 3,962,357.

Carpenter, Eugene C., to Outboard Marine Corporation. Grass collecting apparatus for rotary mower. 3,961,467, Cl. 56-202.000.

Carrier Corporation: *See—*
Damratowski, Leonard P.; and Geary, Carl H., 3,961,798.

Carter, Martin F. Portable greenhouse. 3,961,442, Cl. 47-17.000.

Carter, William F.; and Drinkard, John H., Jr., to Burroughs Corporation. Resistance solder unit control. 3,962,562, Cl. 219-490.000.

Catalytic Pollution Controls, Inc.: *See—*
Gintella, Louis; Kundrat, Harry; and Raman, Anantha K. S., 3,961,900.

Caterpillar Tractor Co.: *See—*
Dotson, Michael L., 3,961,808.
Goloff, Alexander; and Brubaker, Hiram Allen, 3,961,404.
Helton, Eugene L.; Gutman, Nathan; and Ribbing, Donald E., 3,961,788.
Mankowski, Aleksander; Poplawski, Eugene M.; and Kraina, Jack H., 3,961,827.

Caudel, Edward R.; and Boone, Gary W., to Texas Instruments Incorporated. Computing system interface using common parallel bus and segmented addressing. 3,962,684, Cl. 340-172.500.

Caudill, Charles, Jr., to General Motors Corporation. Vehicle seat bolster wire assembly. 3,961,823, Cl. 297-452.000.

Cavanaugh, Robert M.: *See—*
Wolf, Sidney K.; and Cavanaugh, Robert M., 3,962,480.

CBS Inc.: *See—*
Moustakas, Matthew A., 3,961,439.

Cedar, Raymond J.; and Deyo, Rodney R., to Ford Motor Company. Carburetor with combined choke pulldown and fast idle cam kickdown apparatus. 3,962,380, Cl. 261-39.60B.

Celanese Corporation: *See—*
Berardinelli, Frank M., 3,962,174.
Horlenko, Theodore; and George, James Henry, 3,962,350.
Richardson, Peter C., 3,962,322.
Riggs, John P., 3,961,888.
Stackman, Robert W., 3,962,299.
Taylor, Paul D., 3,962,137.
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Trapasso, Louis E., 3,962,332.
Wrasman, Thomas J., 3,961,770.

Cellwood Machinery AB: *See—*
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Center for Laboratory Medicine: *See—*
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Central Soya Company, Inc.: *See—*
Szuhaj, Bernard F.; and Yaste, Joseph R., 3,962,292.

Centre de Recherche Industrielle du Quebec: *See—*
Beauvent, Guy; and Roy, Jacques, 3,961,495.

Centre Europeen de Recherches Mauvernay "CERM": *See—*
Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; Monteil, Andre; and Simond, Jacques, 3,962,238.

Centre National d'Etudes Spatiales: *See—*
Fournet, Maurice Pierre Joseph, 3,961,726.

Ceskoslovenska akademie ved: *See—*
Bukac, Zbynek; and Sebenda, Jan, 3,962,239.

Chaffee, Bertram, to Mono-Probe Corporation. Electrical continuity and voltage testing device. 3,962,630, Cl. 324-51.000.

Chagra, Lee A.: *See—*
Crepinsek, Alois, 3,961,508.

Chalmers, Alexander Michael, to Ciba-Geigy Corporation. 1,4-Diazaepine-5-ones. 3,962,255, Cl. 260-239.30R.

Chamberlin, Thomas A., to Dow Chemical Company, The. Process for making α-chlorinated derivatives of 2-alkyl-2-oxazolines and 2-alkyl-5,6-dihydro-4H-oxazines. 3,962,235, Cl. 260-244.00R.

Chandler Evans Inc.: *See—*
Cygnor, John E.; and Sundberg, Jack G., 3,961,859.

Chang, Jen-Lin; and Zakin, Jacques L., to University of Missouri, The Curators of the. Methods and compositions for reducing the frictional resistance to flow of aqueous liquids. 3,961,639, Cl. 137-13.000.

Chang, Wen-Hsuan; Scriven, Roger L.; and Prucnal, Paul J., to PPG Industries, Inc. Sealer-primer for elastomeric coatings. 3,962,369, Cl. 260-849.000.

Chang, Wen-Hsuan; and Hartman, Marvis E., to PPG Industries, Inc. Poly(ether-urethane) coating cured with an aminoplast on a solid substrate. 3,962,521, Cl. 428-423.000.

Chang, Wen-Hsuan; and Hartman, Marvis E., to PPG Industries, Inc. Poly(esterurethane) coating cured with an aminoplast on a solid substrate. 3,962,522, Cl. 428-423.000.

Chase-Shawmut Company, The: *See—*
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Knapp, Edward J., Jr., 3,962,668.

Chatelin, Roger: *See—*
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Chattman, Harold M., executor: *See—*
Morgenstern, David M., deceased; Morgenstern, Stanley, executor; Chattman, Harold M., executor; and Cole, Allan R., executor, 3,961,543.

Chaudhuri, Bishwarup, to Siemens Aktiengesellschaft. Voltage transformer for a completely insulated high-voltage installation. 3,962,609, Cl. 317-103.000.

Chauvette, Robert R., to Eli Lilly and Company. 3-Halo cephalosporins. 3,962,227, Cl. 260-243.00C.

Chemie and Filter GmbH: *See—*
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Chemische Fabrik Kalk GmbH: *See—*
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Chen, Mark Chaoming, to Du Pont de Nemours, E. I., and Company. Neoprene compositions containing triarylphosphines. 3,962,179, Cl. 260-45.95G.

Cheng, King Y.: *See—*
Motley, David M.; and Cheng, King Y., 3,962,637.

Chenot, Charles F., to GTE Sylvania Incorporated. Method of making improved magnesium gallate phosphors. 3,962,118, Cl. 252-301.40R.

Chernock, Stephen P. Valve assembly. 3,961,876, Cl. 431-344.000.

Chevron Research Company: *See—*
Annesser, Richard J.; and Klett, Robert J., 3,962,405.
Mitchell, Neal L., 3,961,667.

Chiba, Tetsuo; Itoh, Yoshio; and Makabe, Satoshi, to Sankyo Organic Chemicals Co., Ltd. Process for the preparation of stabilizers for synthetic resins. 3,962,296, Cl. 260-429.700.

Chigirinsky, Alexandr Abramovich: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Gradov, Oleg Borisovich; Karpman, David Bentsionovich; Spivak, Boris Volkovich; Chigirinsky, Alexandr Abramovich; Kildishev, Vasily Semenovich; Linetsky, Genrikh Nukhimovich, deceased; and Linetskaya, Ella Semenovna, administrator, 3,962,594.

Chimura, Kazuya; Iwata, Hiroshi; Kagawa, Kazunori; and Ishida, Kazuhiko, to Mitsubishi Rayon Co., Ltd. Polyester compositions having a durable antistatic property. 3,962,185, Cl. 260-47.00C.

Chiocchio, Louis R.; and Zirlis, Robert S., to Olin Corporation. Polyurethane foam generating apparatus. 3,962,120, Cl. 252-359.00E.

Chirash, William; Haase, Alfred Edgar; and Limekiller, Andrew Henry, to Colgate-Palmolive Company. Non-phosphate spray dried detergents containing dicarboxylic acid salts. 3,962,149, Cl. 252-540.000.

Christensen, Burton G.; and Ratcliffe, Ronald W., to Merck & Co., Inc. Cephalosporin compounds. 3,962,224, Cl. 260-243.00C.

Chrobak, Dennis Steven, to Goodyear Tire & Rubber Company, The. High speed radial ply tire. 3,961,657, Cl. 152-355.000.

Chromalloy American Corporation: *See—*
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Chrysler Corporation: *See—*
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Chu, Ting L., to United States of America, National Aeronautics and Space Administration. Fabrication of polycrystalline solar cells on low-cost substrates. 3,961,997, Cl. 148-174.000.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Furuno, Kouji; Okazaki, Akira; Matsubara, Syuzo; Shiba, Motoharu; and Shioya, Akitoshi, 3,962,429.
Sasaki, Hiroshi; Okutomi, Tsuneo; Hosokawa, Tomoyoshi; Nawata, Yoshiharu; and Ando, Kunio, 3,962,455.

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Ciciora, Walter S., to Zenith Radio Corporation. Color television setup apparatus and method. 3,962,722, Cl. 358-10.000.

Citizen Watch Co., Ltd.: *See—*
Morokawa, Shigeru; Sekiya, Fukuo; Maruka, Ryuichi; and Nomura, Yasushi, 3,961,840.

Citron, Joel David, to Du Pont de Nemours, E. I., and Company. Process for removing vanadium catalyst residues from polymer solutions. 3,962,199, Cl. 528-485.000.

Claassen, Lutz, to Hawker Siddeley Canada Ltd. Guide apparatus for rotary saws having floating circular saw blades. 3,961,548, Cl. 83-169.000.

Clancy, John J.: *See—*
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Clark, David L.: *See—*
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Clark, David Ronald; Hyde, Thomas Gerald; and Brauchbar, Robert Erik, to Ciba-Geigy AG. Treatment of optical brightening agents. 3,962,115, Cl. 252-301.230.

Clark, Eugene V.: *See—*
Baladjanian, Gregor; and Clark, Eugene V., 3,961,910.

Clark, Kendall; Lemberger, Alan D.; and Shapiro, Milton R., to International Business Machines Corporation. Gas discharge display panel including electrode connections in plurality of non-conductive layers. 3,962,597, Cl. 313-188.000.

Clark, Richard A. Method and apparatus for dispensing fluids under pressure. 3,961,725, Cl. 222-1.000.

Classen, Josef: *See—*
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Claudius Peters AG: *See—*
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Clinton, William P.: *See—*
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Clisalu: *See—*
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Clodfelter, Glen A., to United States of America, Army. Rocket launcher telescoping tube locking mechanism. 3,961,556, Cl. 89-1.816.

Close, James R.; Wood, William P.; Hatch, Robert A.; and Johnson, James R., to Minnesota Mining and Manufacturing Company. Catalytic converter. 3,961,907, Cl. 23-288.0FC.

Cloud, Charles E.: *See—*
Hartman, Donn A.; and Cloud, Charles E., 3,961,697.

Clugston, George Doyle. Safety step for vehicles. 3,961,809, Cl. 280-166.000.

Coates, Harold: *See—*
Collins, John Desmond; Coates, Harold; and Siddiqui, Iftikhar Hussain, 3,962,295.

Cobb, Raymond L., to Phillips Petroleum Company. Magnesium-aluminum-silicate-phosphate catalysis for ammonialytic cleavage of lactams to form omega-aminonitriles. 3,962,134, Cl. 252-437.000.

Cohen, Hyman L.: *See—*
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Cohen, William A., to Sphero International Company. Universal joint. 3,961,497, Cl. 64-21.000.

Coldren, Kenneth M. Method for treating whole kernels of feed grain. 3,962,479, Cl. 426-532.000.

Cole, Allan R., executor: *See—*
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Cole, Charles O.: *See—*
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Colgate-Palmolive Company: *See—*
Chirash, William; Haase, Alfred Edgar; and Limekiller, Andrew Henry, 3,962,149.

Collins, John Desmond; Coates, Harold; and Siddiqui, Iftikhar Hussain. Novel diorganotin derivatives of α, ω-dimercaptans and method for preparing same. 3,962,295, Cl. 260-429.700.

Collot, Gerard; and Ferreol, Jean, to Societe Dite: Electronique Marcel Dassault. Airborne telemetering radar having variable width range gates. 3,962,703, Cl. 343-7.300.

Colonial Rubber Works, Inc.: *See—*
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Combustion Equipment Associates, Inc.: *See—*
Brenneman, Richard S.; and Clancy, John J., 3,961,913.

Comer, Frederick W.; and Strong, Clifford H. G., to Uniroyal, Ltd. Clear, elastic, water gels based on carrageenan. 3,962,482, Cl. 426-575.000.

Cominco Ltd.: *See—*
Doeksen, Gerard, 3,961,752.

Commissariat a l'Energie Atomique: *See—*
Berniolles, Jean-Marie; and Gallo, Sabino, 3,962,032.
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Compagnie Generale de Radiologie: *See—*
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Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
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Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
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Conner, William R., Jr., to Stahl-Urban Company. Methods of molding moldable textile fabrics. 3,962,392, Cl. 264-89.000.

Continental Can Company, Inc.: *See—*
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Continental Oil Company: *See—*
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Cook, Paul J.: *See—*
Reiman, Peter A.; and Cook, Paul J., 3,962,097.
Corgnet, Jean-Louis, to Compagnie Francaise des Petroles. Anchorage of floating structures. 3,961,490, Cl. 61-46.500.
Corgnet, Jean-Louis, to Compagnie Francaise des Petroles. Quick release. 3,961,592, Cl. 114-206.00R.
Cornell Research Foundation, Inc.: *See—*
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Eddens, Gerald R., to W. J. Industries, Incorporated. Magnetic particle brake. 3,962,595, Cl. 310-93.000.
Eder, Ulrich; Sauer, Gerhard; Haffer, Gregor; Ruppert, Jurgen; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Process for preparing benzopyran derivatives. 3,962,280, Cl. 260-340.500.
Edstrom, Soren E. H.; Ertel, Richard L.; and Litteken, Robert A., to Gardner-Denver Company. Compressor control system. 3,961,862, Cl. 417-282.000.
Edwards, Donald W. Aspirator method. 3,961,622, Cl. 128-2.00F.
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Fatula, James J., to Ryman Engineering Co. Self-centering rolls. 3,961,737, Cl. 226-192.000.
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Fauran, Claude P.; Eberle, Jeannine A.; Raynaud, Guy M.; and Dorme, Nicole A. M., to Delalande S.A. 2-Aminomethyl benzimidazole derivatives. 3,962,256, Cl. 260-293.600.
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Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, to John Heathcoat & Company Ltd. Process for the production of bulked and crimped yarn. 3,961,402, Cl. 28-72.140.
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Finke, Manfred; and Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Preparation of phosphorus-organic esters. 3,962,378, Cl. 260-968.000.
Finlay, Alexander James; and Taylor, Geoffrey, to Imperial Chemical Industries Limited. Seal. 3,961,735, Cl. 226-168.000.
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Fischman, Martin; and Zmuda, Edward I., to GTE Sylvania Incorporated. Surface wave frequency discriminator. 3,962,649, Cl. 329-103.000.
Fisher, Robert E., to Up-Right, Inc. Mobile scaffold with series-connected hydraulic motor drive. 3,961,681, Cl. 180-66.00R.
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Petresh, Randall P.; and Toohey, Raymond F., 3,961,545.
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Forest, Joseph G.; and Czarnetzky, Edward J. Method for preserving high moisture content agricultural grains. 3,962,475, Cl. 426-331.000.
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Fotland, Richard A., to Horizons Incorporated. Electrostatic bar code printer. 3,961,574, Cl. 101-1.000.
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Fukushima, Seitaro; Saito, Ariyoshi; and Kaneko, Fukuzo, to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha. Post-treatment of ilmenite ore subjected to selective chlorination treatment. 3,961,940, Cl. 75-1.00T.
Fulghum, David A.; and Badini, John R., to International Harvester Company. Control linkage for hydrostatic transmission. 3,961,542, Cl. 74-470.000.
Fuller, Peter G.; and Stoeckler, Hans A., to Texas Instruments Incorporated. Method of making ceramic semiconductor elements with ohmic contact surfaces. 3,962,487, Cl. 427-82.000.
Fuller, Ronald George. Deflector rudders. 3,961,591, Cl. 114-166.000.
Fullerton, Gary D.: *See—*
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Furuno, Kouji; Okazaki, Akira; Matsubara, Syuzo; Shiba, Motoharu; and Shioya, Akitoshi, to Chugai Seiyaku Kabushiki Kaisha. Method for reducing side effects of aminoglycoside antibiotics and composition therefor. 3,962,429, Cl. 424-181.000.
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Gall, Arthur, to Siemens Aktiengesellschaft. Arrangement for respectively withdrawing a single film sheet from a stack of directly loosely superimposed film sheets. 3,961,785, Cl. 271-119.000.
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Garland, Robert B.; and Pappo, Raphael, to G. D. Searle & Co. Total synthesis of 11-alkyl steroids. 3,962,291, Cl. 260-397.450.
Garr, Ernest J. Bathtub appliance with hot water bladder and heat chamber. 3,961,380, Cl. 4-160.000.
Gay, Michael J., to Motorola, Inc. Methods and systems for providing stereo decoding signals. 3,962,551, Cl. 179-15.0BT.
Gay, Michael J., to Motorola, Inc. Integrated circuit amplifier having controlled gain and stable quiescent output voltage level. 3,962,650, Cl. 330-29.000.
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Geary, Arthur L., to Brunswick Corporation. Twist drawn wire, process and apparatus for making same. 3,961,514, Cl. 72-274.000.
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Gehrie, Charles S.; and Bako, Lazlo, to Presto Lock Company. Latching device including combination locking means. 3,961,505, Cl. 70-66.000.
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Franzke, Gerhard, and Klak, Roland, to Daimler-Benz Aktiengesellschaft. Preheating installation for air-compressing and auto-ignition injection internal combustion engine. 3,961,611. Cl. 123-122.00D.

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Fujiyama, Susumu, Takagawa, Minoru, and Kajiyama, Shiro, to Mitsubishi Gas Chemical Company, Inc. Method for decomposing an aromatic aldehyde-hydrogen fluoride-boron fluoride complex. 3,962,343. Cl. 260-599.000.

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Fuller, Peter G., and Stoeckler, Hans A., to Texas Instruments Incorporated. Method of making ceramic semiconductor elements with ohmic contact surfaces. 3,962,497. Cl. 427-82.000.

Fuller, Ronald George. Deflector rudders. 3,961,591. Cl. 114-66.000.

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Fukukawa, Yoshisada, to Maruyama Mfg. Co., Ltd. Apparatus for softening hard water. 3,962,089. Cl. 210-191.000.

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Funk, Roger S., to R. Funk & Co., Inc. Foldable-sheet processing systems. 3,961,781. Cl. 270-20.000.

Furuno, Kouji, Okazaki, Akira, Matsuhara, Syuzo, Shiba, Motoharu, and Shioya, Akinobu, to Chugai Seiyaku Kabushiki Kaisha. Method for reducing side effects of aminoglycoside antibiotics and compositions therefor. 3,962,429. Cl. 424-181.000.

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Galbraith, Floyd M., Jr., to Eastman Kodak Company. Camera diaphragm with follow focus control. 3,962,707. Cl. 354-44.000.

Gall, Arthur, to Siemens Aktiengesellschaft. Arrangement for respectively withdrawing a single film sheet from a stack of directly loosely superimposed film sheets. 3,961,785. Cl. 271-109.000.

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Garland, Robert B., and Pappo, Raphael, to G. D. Searle & Co. Total synthesis of 11-alkylsteroids. 3,962,291. Cl. 260-397.45J.

Garr, Ernest J. Bathtub appliance with hot water inadder and heat chamber. 3,961,380. Cl. 4-191.000.

Gay, Michael J., to Motorola, Inc. Methods and systems for providing stereo decoding signals. 3,962,551. Cl. 179-15.03BT.

Gay, Michael J., to Motorola, Inc. Integrated circuit amplifier having controlled gain and stable quiescent output voltage level. 3,962,650. Cl. 330-29.00R.

Gaynos, Robert M., Guzma, Leonard F., and Maxwell, Robert W., Jr., to Koppers Company, Inc. Process for producing a mixture of isopropylnaphthalenes. 3,962,365. Cl. 260-667.00P.

Geary, Arthur L., to Brunswick Corporation. Twist drawn wire, process and apparatus for making same. 3,961,514. Cl. 72-274.000.

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Gehme, Charles S., and Bakic, Lazic, to Presto Lock Company. Latching device including combination locking means. 3,961,505. Cl. 70-358.00.

Gensthoff, Hubert, to Jean Walterscheid GmbH. Device for connecting a power transmission shaft of an agricultural implement, machine or the like to a tractor power take-off shaft. 3,961,677. Cl. 180-14.00B.

Genco, Joseph M. *See*—
Duim, Jacques M., Roser, Edward C., Bennett, Russell B., Rosenberg, Harven S., and Genco, Joseph M., 3,962,086

General Dynamics Corporation. *See*—
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Beers, Melvin D., Berger, Abe, Hamilton, Stephen B., and Seiler, Terry G., 3,962,691
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General Signal Corporation. *See*—
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General Tire & Rubber Company, The. *See*—
van Gils, Gerard E., 3,962,111
Wise, Richard M., 3,962,518

George, Howard A. Method of and means for winding coils from foil or strip where coils have several taps. 3,961,417. Cl. 29-605.000.

George, James Henry. *See*—
Horlenko, Theodore, and George, James Henry, 3,962,250

George Kent Limited. *See*—
Morrison, Charles Alfred, 3,962,046

George, Lisle W., and Carmichael, Leland E., to Cornell Research Foundation, Inc. Plate methods for diagnosing *Brucella canis* infection. 3,962,413. Cl. 424-8.000.

Gerek, Gene, and Coucher, Robert G., to EPPCO. Novel process for applying thermoset resinous coatings. 3,962,486. Cl. 427-34.000.

Gerhartz, Reinhold, to United States of America, Army. Passive stereoscopic range finder. 3,961,851. Cl. 356-1.000.

Germanas, Dalita, and Pollnitzer, Ernest L., to Universal Oil Products Company. Olefin isomerization using a cobalt-sulfur catalyst. 3,962,367. Cl. 260-683.200.

Gerry, Martin E. Pure oxygen supply to an internal combustion engine. 3,961,609. Cl. 123-119.00E.

Gervais-Danone AG. *See*—
Schulz, Max Erich, 3,962,483

Ghosh, Ranajit. *See*—
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Giammarco, Giuseppe, and Giammarco, Paolo. Process for regenerating absorbent solutions used for removing gaseous impurities from gaseous mixtures by stripping with steam. 3,962,404. Cl. 423-222.000.

Giammarco, Paolo. *See*—
Giammarco, Giuseppe, and Giammarco, Paolo, 3,962,404

Gibson, Roland Richard, to Glacier Metal Company Limited, The. Apparatus for removing contaminants from the surface of a fluid. 3,962,093. Cl. 210-242.00S.

Gilbert, Curtiss M., Bemis, Richard A., and Schultze, Norman D., to Sprague Electric Company. Method for forming a uniform oxide film on a valve metal. 3,962,048. Cl. 204-58.00.

Gilbert, Humphrey. Gas absorber cell test sampler. 3,961,920. Cl. 55-387.000.

Gilchrist, James E. *See*—
Campbell, Jagtha E., and Gilchrist, James E., 3,962,040

Giller, Heinz. *See*—
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Gillery, Frank H., to PPG Industries, Inc. Electrically conductive coating. 3,962,488. Cl. 427-109.000.

Gillet, Philippe. *See*—
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Gillette Company, The. *See*—
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Gilmore, Thomas P., and Moore, David L., to Allis-Chalmers Corporation. Digital automatic transmission control. 3,961,546. Cl. 74-866.000.

Gintella, Louis, Kunerat, Harry, and Raman, Anantha K. S., to Catalytic Pollution Controls, Inc. Combustible vapor detector. 3,961,909. Cl. 23-254.00E.

Giordano, Antonio, to Viges S.p.A. Processes and devices for buffing the soles of shoe uppers. 3,961,396. Cl. 12-1.00A.

Giordmaine, Joseph Anthony. Optical pulse position modulator. 3,961,841. Cl. 350-160.00R.

Giorgi, Tiziano A., and Hellier, Stephen John, to S.A.E.S. Getters S.p.A. Getter pump. 3,961,897. Cl. 23-252.00R.

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Goetz, Norbert, to BASF Aktiengesellschaft. Production of piperitenone. 3,962,341. Cl. 260-586.00C.

Goldfarb, Adolph E., and Benkoe, Erwin. Motor skill game. 3,961,794. Cl. 273-132.000.

Goldman, Max, to RRC International, Inc. Apparatus and method for protecting a shoreline against contamination from an oil spill. 3,962,085. Cl. 210-79.000.

Gollner, Manfred. *See*—
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Goloff, Alexander, and Brutsaker, Hiram Allen, to Caterpillar Tractor Co. Method for machining a groove in a metal surface. 3,961,464. Cl. 29-156.50R.

Gomyo, Shiro. *See*—
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Gonser, Donald I., to Dentsply Research & Development Corporation. Protective circuit for radio-frequency electrosurgical device. 3,961,630, Cl. 128-303.140.

Goodell, Bill: *See—*
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Goodsmith, Dale H.; and Ladouceur, Harold A., to Multifastener Corporation. Fastener installation head. 3,961,408, Cl. 29-208.00C.

Goodson, Theodore, Jr.; and Spitzer, Wayne A., to Eli Lilly and Company. Process for preparing amino substituted β-lactam antibiotics. 3,962,214, Cl. 260-239.100.

Goodyear Tire & Rubber Company, The: *See—*
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Gordon, Alex F., to United Merchants and Manufacturers, Inc. Stable urea-formaldehyde compositions. 3,962,166, Cl. 260-29.40R.

Gordon, Amirav; and Gross, Jack, to Yissum Research Development Company. Test for determination of triiodothyronine. 3,961,894, Cl. 23-230.600.

Gordon, Edwin J.; and Gordon, Adam I. Magnetic container cover. 3,961,721, Cl. 220-230.000.

Gore, Robert Walton, to W. L. Gore & Associates, Inc. Very highly stretched polytetrafluoroethylene and process therefor. 3,962,153, Cl. 260-2.50R.

Gosswald, Fritz, to Eulit-Werk Staude & Co. KG. Sales display, in particular for watchband transparent packages. 3,961,830, Cl. 312-135.000.

Goto, Yukitaka: *See—*
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Gotteschlich, Alois; and Leverenz, Klaus, to Bayer Aktiengesellschaft. Process for preparing azo dyestuffs with ortho-azo cyano groups by cyano exchange of metal cyanides and halo dyestuffs. 3,962,209, Cl. 260-152.000.

Gould Inc.: *See—*
Braley, Robert L.; Tenenbaum, Mircea; and Milano, Edward J., 3,961,500.

Grabowsky, Otto: *See—*
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Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., to Itek Corporation. Printing process capable of reproducing continuous tone images. 3,961,955, Cl. 96-33.000.

Gradov, Oleg Borisovich: *See—*
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Graham, Walter B. Means for cutting squares. 3,961,552, Cl. 83-821.000.

Granholm, Sven; and Lundmark, Signar, to Linden-Alimak AB. Pipe for sticking down drains into the ground. 3,961,486, Cl. 61-11.000.

Grant, Howard L.: *See—*
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Grantham, Frederick W. Laundering apparatus and method, continuous with recirculation. 3,961,503, Cl. 68-27.000.

Green Cross Corporation, The: *See—*
Yokoyama, Kazumasa; Yamanouchi, Koichi; Murashima, Ryoichiro; and Watanabe, Ryozo, 3,962,439.

Green, Robert A.: *See—*
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Greenbecker, William: *See—*
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Greer Hydraulics, Inc.: *See—*
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Greschat, Walter; and Schubert, Wolfgang, to Siemens Aktiengesellschaft. X-ray image intensifier having input screen with carbon layer. 3,962,582, Cl. 250-483.000.

Grieshaber, Hermann; and Wessel, Wolf, to Robert Bosch G.m.b.H. Process and system for detoxicating the exhaust gases of an internal combustion engine. 3,961,477, Cl. 60-274.000.

Griffith, James R.: *See—*
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Griffith, William A.: *See—*
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Grigsby, Donald M.: *See—*
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Grimm, William C. Shaving cream can having brush attachment. 3,961,729, Cl. 222-192.000.

Grimpe, Karl, to DEMAG Arkiengesellschaft. Shrunk fit coupling. 3,961,853, Cl. 403-273.

Grobner, Wayne W.: *See—*
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Grolemund, Donald J.: *See—*
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Gronen, Willy; and Hertel, Hasso, to Hoechst Aktiengesellschaft. Process for the printing of cellulose containing textile material. 3,961,887, Cl. 8-71.000.

Gronen, Willy: *See—*
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Hertel, Hasso; and Gronen, Willy, 3,961,886.

Gross, Jack: *See—*
Gordon, Amirav; and Gross, Jack, 3,961,894.

Grosso, Silvano; and Nelson, Kenneth E., to Dow Chemical Company, The. Method for preparing liquid feed supplements containing calcium chloride. 3,962,484, Cl. 426-658.000.

Grosso, Vincent Gerard, to American Cyanamid Company. Process for N,N,N′,N′-tetraarylquinone diimonium salts. 3,962,290, Cl. 260-396.00N.

Groupement pour les Activites Atomiques et Avancees: *See—*
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Grunberg, Emanuel; and Hoffer, Max, to Hoffmann-La Roche Inc. Combination of oxytetracycline and 2,4-diamino-5-(3-alkoxy-4,5-methylenedioxybenzyl)pyrimidine. 3,962,435, Cl. 424-227.000.

Grunewald, Gerhard: *See—*
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Guenard, Roger; and Bonno, Jean-Claude, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Deflection system for a cathode ray tube. 3,962,604, Cl. 315-391.000.

Guenin, Albert: *See—*
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Gulf Oil Corporation: *See—*
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Gundelfinger, Richard. Two position rotary valve for injecting sample liquids into an analysis system. 3,961,534, Cl. 73-422.0GC.

Guthrie, Robert William; Kierstead, Richard Wightman; and Lemahieu, Ronald Andrew, to Hoffmann-La Roche Inc. 7-Oxa steroids. 3,962,275, Cl. 260-310.00C.

Gutman, Nathan: *See—*
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Guyen-Phuoc, Boa-Dam N., to Schlumberger Instruments et Systemes. Apparatus for presetting a counter to a given initial count. 3,962,565, Cl. 235-92.0PE.

Guziak, Leonard F.: *See—*
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H & R Johnson-Richards Tiles Limited: *See—*
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Hagen, Leonard J.; Martin, James S.; and Workman, Clark B., to Remington Arms Company, Inc. Fore-end and barrel support. 3,961,436, Cl. 42-75.00B.

Hagglund, Lars, to Landstingens Inkopscentral. Method of producing castings or other mouldings by means of vacuum suction of flexible containers holding granular material. 3,962,395, Cl. 264-91.000.

Hagiwara, Yoshiro; Suzuki, Toshiyuki; and Imai, Akira. Method and apparatus for manufacturing seamless material-filled capsules. 3,962,383, Cl. 264-4.000.

Hall, Judge H., to TRW Inc. Method for molding fiber reinforced composite tube. 3,962,394, Cl. 264-90.000.

Halpern, Teodoro: *See—*
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Hammell, Richard L.: *See—*
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Hanifl, Paul, to International Paper Company. Urine metering and collection system. 3,961,529, Cl. 73-219.000.

Hannes Marker: *See—*
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Hans Kolb KG: *See—*
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Hardinge Brothers, Inc.: *See—*
Peterson, Anders Adolf; and Cummiskey, William J., 3,961,800.

Hardy, Samuel G.; and Peterson, Joseph L., to General Electric Company. Rotating disc excess consumption watthour meter with restraining means movably mounted on the disc. 3,962,632, Cl. 324-137.000.

Harlo Products Corporation: *See—*
Brown, Philip A.; and Brown, Vincent B., 3,961,468.

Harp, James L., Jr. Internal combustion engine with power recovery turbine. 3,961,484, Cl. 60-624.000.

Harris, Darrel W.; Green, Robert A.; and Grigsby, Donald M., to United States of America, Navy. Method for making incendiary lines for ordnance. 3,961,554, Cl. 86-1.00R.

Harris, James T., to Goodyear Tire & Rubber Company, The. Fluid container mounting method and apparatus. 3,961,728, Cl. 222-180.000.

Harrop, William H., to Rohm and Haas Company. Tackifier for rubber. 3,962,156, Cl. 260-5.000.

Harshaw Chemical Company, The: *See—*
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Hartman, Donn A.; and Cloud, Charles E., to R. A. Jones & Company Inc. Apparatus for shingling and packing of articles. 3,961,697, Cl. 198-25.000.

Hartman, Marvis E.: *See—*
Chang, Wen-Hsuan; and Hartman, Marvis E., 3,962,521.
Chang, Wen-Hsuan; and Hartman, Marvis E., 3,962,522.

Hartmann, Hans. Immersion filter. 3,962,087, Cl. 210-150.000.

Harvey, George Arthur, to U.M.E.C.-Boydell (Belting) Limited. Conveyor belts. 3,961,540, Cl. 74-239.000.

Haschke, Heinz; and Morlock, Gerhard, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for improving the wettability of natural or synthetic zeolites. 3,962,132, Cl. 252-430.000.

Hasenwinkle, Earl Dean. Log cutting and rejoining process. 3,961,654, Cl. 161-36.000.

Hashiguchi, Yoshitaka: *See—*
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Hashimoto, Takemi, to Ricoh Co., Ltd. Malfunction detection and changeover apparatus for data communications system. 3,962,546, Cl. 179-2.0DP.

Haskell, Barin Geoffry, to Bell Telephone Laboratories, Incorporated. Conditional replenishment video encoder with sample grouping and more efficient line synchronization. 3,962,535, Cl. 178-6.000.

Haskett, Philip R.; Elges, Carl H., III; Bauer, Donald J.; and Lindstrom, Roald E., to United States of America, Interior. Hydrometallurgical process for copper recovery from sulfide ores. 3,961,942, Cl. 75-101.0BE.

Hasuda, Minoru; and Yamada, Yasuo. Tape stringer for sliding clasp fasteners. 3,961,652, Cl. 139-384.00B.

Hatch, Robert A.: *See—*
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Hauni-Werke Korber & co., KG: *See—*
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Hayakawa, Shigeru: *See—*
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Hayashi, Masaki; Tanouchi, Tadao; Ito, Hiroyuki; and Ohyama, Isao, to Ono Pharmaceutical Company. 9,11,15-Trihydroxy prost-5-enoic acid analogues. 3,962,312, Cl. 260-468.00D.

Hayashibara Biochemical Laboratories, Incorporated: *See—*
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Hayes, John C., to Universal Oil Products Company. Hydroprocessing of hydrocarbons. 3,962,359, Cl. 260-667.000.

Hayes, John C., to Universal Oil Products Company. Alkylaromatic isomerization process. 3,962,360, Cl. 260-668.00A.

Haynes, Robert W. Liquid dispensing apparatus. 3,961,730, Cl. 222-231.000.

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Heerdt, Ruth: *See—*
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Heiman, Richard I.; and Hult, David R., to Vernco Corporation. Vacuum cleaner with an impermeable collector bag. 3,961,921, Cl. 55-429.000.

Heimann, Fred G., to Fruehauf Corporation. Method of assembling roof sheets to roof bows. 3,962,015, Cl. 156-295.000.

Heimbach, Heinrich: *See—*
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Heimberger, Helmut, to Opti-Holding AG. Method of making slide-fastener stringers. 3,962,007, Cl. 156-73.100.

Heimbigner, Gary L., to Rockwell International Corporation. Coded counting sequence and logic implementation thereof to drive a display pattern. 3,962,701, Cl. 340-336.000.

Helgesson, Claes Ivar, to Arbman Development AB. Method and thermometer for measuring temperature by determination of saturation of a solvent having temperature dependent characteristics. 3,961,530, Cl. 73-339.00R.

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Helton, Eugene L.; Gutman, Nathan; and Ribbing, Donald E., to Caterpillar Tractor Co. Bulldozer blade with improved tip and end bit. 3,961,788, Cl. 172-777.000.

Hendry, James W., to Ex-Cell-O Corporation. Method of injection molding a foamable thermoplastic material. 3,962,387, Cl. 264-50.000.

Henkel & Cie G.m.b.H.: *See—*
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Busch, Peter, 3,961,634.
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Worms, Karl-Heinz; Gloxhuber, Christian; Schmidt-Dunker, Manfred; and Blum, Helmut, 3,962,433.

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Henrich, Gaston; and Gillet, Philippe, to Societe Chimique des Charbonnages. Isomerization and separation of cymenes from mixtures containing same. 3,962,366, Cl. 260-674.00A.

Henze, Walter J.; and Thein, San, to Penn Fishing Tackle Mfg. Co. Trolling apparatus. 3,961,438, Cl. 43-27.400.

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Hertel, Hasso; and Gronen, Willy, to Hoechst Aktiengesellschaft. Process for the dyeing and printing of cellulose-containing textile materials. 3,961,886, Cl. 8-44.000.

Hertel, Hasso: *See—*
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Herterich, Walter; and Probst, Georg, to Ecofon Verkaufsgesellschaft Probst KG. Separable fastening. 3,961,398, Cl. 24-205.120.

Hertfelder, Wilhelm, to Robert Bosch G.m.b.H. Valve for controlling the flow of combustion gases in a combustion engine. 3,961,608, Cl. 123-119.00A.

Herwig, Walter; and Kern, Rudolf, to Hoechst Aktiengesellschaft. Linear polyester molding composition containing cross-linked linear polyester as a nucleating agent. 3,962,368, Cl. 260-835.000.

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Hess, Howard V.; Franz, William F.; and Cole, Edward L., to Texaco Inc. Process for converting aqueous sewage to potable water. 3,962,076, Cl. 210-22.00R.

Heymes, Rene: *See—*
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Hiller, Heinz; Hochgesand, Gerhard; Supp, Emil; Marschner, Friedemann; and Grunewald, Gerhard, to Metallgesellschaft Aktiengesellschaft. Process for producing methanol. 3,962,300, Cl. 260-449.500.
Himmelstein, Sydney, to S. Himmelstein and Company. Rotary torquemeter. 3,961,526, Cl. 73-136.00A.
Himmler, Gunther, to Gebr. Hofmann KG. Method of and device for resting the fatigue strength of rotors, especially disc wheels, especially those for motor vehicles. 3,961,525, Cl. 73-91.000.
Hingorany, Ashok R., to Advanced Materials Systems, Inc. Selective plating apparatus. 3,962,063, Cl. 204-206.000.
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Hirsch, Gary Marc. Automatic garment hanger dispenser and hangering device. 3,961,699, Cl. 198-26.000.
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Howell, Charles J. Dentifrice. 3,962,417, Cl. 424-52.000.

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Howell, Evelyn M. Detachable connection for combination shorts and skirt. 3,961,376, Cl. 2-71.000.
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Hung, George. Electronic chess timer. 3,961,473, Cl. 58-145.00D.
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Hunt, Walter G.; and Belz, Ray J., to Anheuser-Busch, Incorporated. Acid treated cationic starch in the flocculation and dewatering of sludge. 3,962,079, Cl. 210-47.000.
Hunter, Donald Noel, to U.S. Philips Corporation. Light-sensitive polymeric compounds. 3,962,241, Cl. 260-249.500.
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Ishigaki, Tamotsu: *See—*
Nishimura, Hideo; and Ishigaki, Tamotsu, 3,962,619.

Ishii, Kiyoshi; and Kubo, Takehisa, to Daicel, Ltd. Separator. 3,962,096, Cl. 210-433.00M.

Ishler, Paul K.: *See—*
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Itek Corporation: *See—*
DeLorenzo, Eugene J., 3,961,982.
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., 3,961,955.
Lindley, John P.; and Rieden, James, 3,962,577.
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Ito, Isamu: *See—*
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Ito, Shigeyasu: *See—*
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Itoh, Kenji: *See—*
Fujiwhara, Mitsuto; Kasai, Keiji; Nakagawa, Yoshinobu; Tokura, Hiroshi; Itoh, Kenji; and Muramoto, Seiji, 3,961,959.

Itoh, Takuji; Miura, Tadashi; and Akitsuki, Ikuo, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for producing lubricating oils. 3,962,071, Cl. 208-58.000.

Itoh, Yoshio: *See—*
Chiba, Tetsuo; Itoh, Yoshio; and Makabe, Satoshi, 3,962,296.

ITT Industries, Inc.: *See—*
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Iwata, Akio: *See—*
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Iwata, Hiroshi: *See—*
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IWS Nominee Co. Ltd.: *See—*
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Izumita, Toshiaki: *See—*
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J. I. Case Company: *See—*
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Jackson, John Lambert: *See—*
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Jacobson, Donald E. Corrugator liner bonding device. 3,962,025, Cl. 156-546.000.

Jaffa, David, to Precision Screen Machines Inc. Method and apparatus for effecting transfer printing. 3,961,388, Cl. 8-2.50R.

Jago, John James; and Billington, Colin, to Pilkington Brothers Limited. Detection and reduction of roll bowing. 3,961,928, Cl. 65-29.000.

Jahnke, Richard William; and Swaney, Russell Lee, to Lubrizol Corporation, The. Method of treating metal surfaces. 3,961,992, Cl. 148-6.15R.

Jamaux, Joseph Auguste, to Societe d'Etudes de Machines Thermiques. Method and device for cleaning a supercharging set powering turbine driven by the exhaust gases of a heat engine. 3,961,482, Cl. 60-606.000.

Jamison, Joel Dexter, to Hercules Incorporated. Insecticidal use of O,O-dialkyl phosphorodithioate and phosphorothioate esters of oxazolidine-2,4-dione derivatives. 3,962,431, Cl. 424-200.000.

Jamison, Richard S., to Hughes Aircraft Company. Radar microwave lobing systems. 3,962,705, Cl. 343-16.00M.

Jaquet, Henri. Apparatus for orienting and maintaining a rod in any direction. 3,961,854, Cl. 403-59.000.

Jasinski, Raymond J., to Texas Instruments Incorporated. Regenerating electrode for electrochromic display cell. 3,961,842, Cl. 350-160.00R.

Jean Walterscheid GmbH: *See—*
Geisthoff, Hubert, 3,961,677.
Von Allworden, Wilhelm, 3,961,812.

Jeger, Oskar: *See—*
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Jelling, Murray; Kahn, Alexander; Moore, Ernest George; and Friedman, Michael, to U.S. Dynamics Corporation, a part interest. Bagging apparatus with bag spreading device and braking device. 3,961,460, Cl. 53-64.000.

Jenaer Glaswerk Schott & Gen.: *See—*
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Jenkner, Herbert: *See—*
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Jensen, Frederick C., executor: *See—*
Dimond, George H., deceased; and Jensen, Frederick C., executor, 3,961,463.

Jeppson, Morris R. Apparatus for the preparation of pre-cooked meat products. 3,961,568, Cl. 99-339.000.

Jezowski, Randolph M., to Signet Tool and Engineering, Inc. Quick-locking machine stop. 3,961,557, Cl. 90-11.00E.

Jilling, Adam, to United States of America, Navy. Calibration transducer. 3,962,671, Cl. 340-5.00C.

Jirkovsky, Ivo: *See—*
Demerson, Christopher A.; Humber, Leslie G.; Santroch, George; Dobson, Thomas A.; and Jirkovsky, Ivo, 3,962,236.

John Blue Company Division of Subscription Television, Inc.: *See—*
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John Heathcoat & Co. Ltd.: *See—*
Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, 3,961,401.
Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, 3,961,402.

John Wyeth & Brother Limited: *See—*
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Boyle, John Terence Arnott; and Saunders, John Christopher, 3,962,237.

Johnson, Craig E.; and Dendor, Paul F., to United States of America, Navy. Process for forming a pourable plastisol nitrocellulose slurry. 3,962,382, Cl. 264-3.00E.

Johnson, Douglas M., to Fluoroware, Inc. Reinforced wafer basket. 3,961,877, Cl. 432-253.000.

Johnson, Hilding R.: *See—*
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Johnson & Johnson: *See—*
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Worcester, B. Conley; and Grobner, Wayne W., 3,962,510.

Johnson, Thomas B. Method and apparatus for degassing liquids. 3,961,918, Cl. 55-170.000.

Johnston, Douglas, to John Blue Company Division of Subscription Television, Inc. Tramper for cotton module maker. 3,961,572, Cl. 100-53.000.

Johnston, Howard, to Dow Chemical Company, The. H'-(4-((6-chloro-2-pyridinyl)oxy)phenyl)-N-methyl-N-(1-methyl-2-propynyl)urea. 3,962,265, Cl. 260-295.00E.

Johnston, William G.; and Milz, Wendell C., to Aluminum Company of America. Dry powder lubricant. 3,962,103, Cl. 252-22.000.

Jones, David William, to Triplex Safety Glass Company Limited. High-voltage liquid-cooled apparatus and supply leads therefor. 3,962,530, Cl. 174-15.00C.

Jones, Dennis A., to Amax Resource Recovery Systems, Inc. Lightweight aggregate. 3,961,973, Cl. 106-98.000.

Jones, Hugh L., to Xerox Corporation. Electrostatic printing machine. 3,961,849, Cl. 355-11.000.

Jones, John Paul, Jr., to Air Products and Chemicals, Inc. Apparatus for making miniature layer resistors on insulating chips by digital controls. 3,961,599, Cl. 118-6.000.

Jones, Raymond Henry: *See—*
Mathison, Ian William; Solomons, William Ebenezer; and Jones, Raymond Henry, 3,962,254.

Joosten, Hendrik, to Bata Shoe Company, Inc. Shoe-heel dressing or roughening machine. 3,961,391, Cl. 12-46.000.

Journee, Paul. Double strip windscreen-wiper blade. 3,961,395, Cl. 15-250.360.

Juhlin, Lars-Erik; and Liss, Gote, to Allmanna Svenska Elektriska Aktiebolaget. Convertor station with parallel-connected static convertors. 3,962,625, Cl. 321-27.00R.

Juniper, Michael D.: *See—*
Watts, Robert L.; and Juniper, Michael D., 3,962,672.

Juntgen, Harald: *See—*
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Kabushiki Kaisha Aiden: *See—*
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Kagan, Aristide Jean Michel. Fluid-conveying pipe connector. 3,961,645, Cl. 137-630.150.

Kagawa, Kazunori: *See—*
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Kahn, Alexander: *See—*
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Kaibara, Nobuhiro: *See—*
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Kaiser Aluminum & Chemical Corporation: *See—*
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Kaiser, Bernhard: *See—*
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Kaiser, Hans: *See—*
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Kaiserswerth, Hans-Peter, to Siemens Aktiengesellschaft. Joint seals for electromagnetic wave shields. 3,962,550, Cl. 174-35.0GC.

Kajiyama, Shiro: *See—*
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Kalart Victor Corporation: *See—*
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Kalenian, Robert E., to Conversion Caddy Co. Luggage tag. 3,961,431, Cl. 40-21.00R.

Kaltner, Hermann, to Volkswagenwerk Aktiengesellschaft. Engine cooling arrangement. 3,961,605, Cl. 123-41.050.

Kamimura, Tomohisa; and Suzuki, Makoto, to Sony Corporation. Magnetic rotary head recorder with automatic tape loading and unloading. 3,962,727, Cl. 360-85.000.

Kan, Hirofumi: *See—*
Namizaki, Hirofumi; and Kan, Hirofumi, 3,961,996.

Kanada, Yoshimi: *See—*
Takamura, Tsutomu; Shirogami, Tamotsu; and Kanada, Yoshimi, 3,961,985.

Kanamori, Seigo: *See—*
Wakamori, Shigeki; Ogawa, Haruki; Yamaguchi, Masayoshi; and Kanamori, Seigo, 3,962,457.

Kane, Jack; and Pedersen, Richard Alan, to Bell Telephone Laboratories, Incorporated. TTL compatible logic gate circuit. 3,962,590, Cl. 307-214.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
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Kaneko, Fukuzo: *See—*
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Kaneko, Mikio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automobile fire fighting apparatus. 3,961,669, Cl. 169-62.000.

Kannegiesser, Martin; and Juraschek, Richard, to Herbert Kannegiesser Kommanditgesellschaft. Device for pressing articles of clothing. 3,961,733, Cl. 223-57.000.

Kanro Co. Ltd.: *See—*
Yamazaki, Tatsuo; and Hayashida, Takemi, 3,962,355.

Kansai Paint Company, Ltd.: *See—*
Nikaido, Norio; Shirai, Shinji; Iihashi, Mototaka; and Umemoto, Sueo, 3,962,061.

Kao Soap Co., Ltd.: *See—*
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Takaku, Masaaki; and Imai, Shiro, 3,962,121.

Kaplan, Leonard Louis: *See—*
Levin, Norman Arthur; and Kaplan, Leonard Louis, 3,962,107.

Kapsy, Robert J., to Briggs & Stratton Corporation. Fuel tank filler cap with improved vent. 3,961,724, Cl. 220-371.000.

Karayannis, Nicholas M.; Khelghatian, Habet M.; and Skryantz, John S., to Standard Oil Company. Dechlorination of high yield polyolefins using neutral phosphoryl esters. 3,962,203, Cl. 528-486.000.

Karlsson, Alf Hugo, to SCA Development Aktiebolag. Method of preparing size. 3,961,976, Cl. 106-186.000.

Karoly, Gabriel: *See—*
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Karpman, David Bentsionovich: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Gradov, Oleg Borisovich; Karpman, David Bentsionovich; Spivak, Boris Volkovich; Chigirinsky, Alexandr Abramovich; Kildishev, Vasily Semenovich; Linetsky, Genrikh Nukhimovich, deceased; and Linetskaya, Ella Semenovna, administrator, 3,962,594.

Kasai, Keiji: *See—*
Fujiwhara, Mitsuto; Kasai, Keiji; Nakagawa, Yoshinobu; Tokura, Hiroshi; Itoh, Kenji; and Muramoto, Seiji, 3,961,959.

Kashuba, Andrew, Jr., to Stiffel, Henry R. Coin collecting system for parking meters. 3,961,744, Cl. 232-16.000.

Kathawala, Faizulla G., to Sandoz, Inc. Lipidemia treatment with p-phenoxy-alkylphenone compositions. 3,962,459, Cl. 424-331.000.

Katner, Allen S., to Eli Lilly and Company. 1H-Tetrazole-1-acetate esters and acids and process therefor. 3,962,272, Cl. 260-308.00D.

Katsuyama, Harumi: *See—*
Shiba, Keisuke; Hirose, Takeshi; Hayashi, Jun; Arai, Atsuaki; Furutachi, Nobuo; and Katsuyama, Harumi, 3,961,960.

Katter, Lincoln B., to Rocket Research Corporation. Two stage inflation system. 3,961,806, Cl. 280-732.000.

Katzakian, Arthur, Jr.: *See—*
Steele, Roger B.; Katzakian, Arthur, Jr.; Scigliano, Joseph J.; and Hamel, Edward E., 3,962,182.

Katzen, Sol. Preserved nutrients and products. 3,962,416, Cl. 424-19.000.

Kauffman, Karl C.: *See—*
Throckmorton, Morford C.; Donbar, Ken W.; and Kauffman, Karl C., 3,962,375.

Kauffman, William J., to Armstrong Cork Company. Linear polyesters based on phenylisocyanurate and processes for preparing same. 3,962,188, Cl. 260-75.00N.

Kauffman, William J., to Armstrong Cork Company. Linear isocyanurate polyesters and processes for preparing same. 3,962,191, Cl. 260-75.00N.

Kauffman, William J., to Armstrong Cork Company. Linear polyesters containing isocyanurate rings and processes for preparing same. 3,962,192, Cl. 260-75.00N.

Kaufman, John D.: *See—*
Schiesal, Henry W.; and Kaufman, John D., 3,962,113.

Kaup, Friedel; and Warnke, Heinrich, to Miele & Cie. Process and device for electrophoretically plating metal parts. 3,962,059, Cl. 204-181.000.

Kawada, Hirohito: *See—*
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Kawaguchi, Kazuyo: *See—*
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Kawamoto, Yoji: *See—*
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Kawasaki, Hideo: *See—*
Ueno, Eichiro; Kawasaki, Hideo; and Shigita, Syozo, 3,961,883.

Kawasaki, Toshikazu, to Daihatsu Motor Co., Inc. Control device for electric vehicle. 3,962,612, Cl. 318-139.000.

Kawase, Ken-ichiro; Mitsuhashi, Sadayuki; Wakamatsu, Kazutoshi; and Mikami, Nobuo, to Nippon Electric Company Limited. Electromagnetic switch. 3,962,659, Cl. 335-196.000.

Kawashima, Koji; and Umeda, Keiji, to Director of National Food Research Institute. Preparation of water-insoluble enzymes. 3,962,038, Cl. 195-68.000.

Kawneer Company, Inc.: *See—*
Hubbard, S. Eugene; and Biebuyck, Lawrence F., 3,961,452.

Kearns, Thomas M.; and Ferris, Kenneth D., to United States of America, Navy. Gun launched reconnaissance system. 3,962,537, Cl. 178-6.800.

Keckler, Dan L. Customer-operated merchandise locating device. 3,961,435, Cl. 40-130.00R.

Kefalos, Gust. Catamaran watercraft. 3,961,590, Cl. 114-61.000.

Keller, Wolfgang, to Siemens Aktiengesellschaft. Apparatus for crucible-free zone melting of semiconductor crystal rods including oscillation dampening material. 3,961,906, Cl. 23-273.0SP.

Kelley, Robert George: *See—*
Ruf, Walter; and Kelley, Robert George, 3,961,461.

Kelly, Charles A.: *See—*
Pacifici, James G.; and Kelly, Charles A., 3,962,055.
Pacifici, James G.; and Kelly, Charles A., 3,962,056.

Kemmenoe, Adrian Victor: *See—*
Ferres, Harry; Kemmenoe, Adrian Victor; and Best, Desmond John, 3,962,216.

Kendall, Don L.; and Matzen, Walter T., to Texas Instruments Incorporated. Large value capacitor. 3,962,713, Cl. 357-14.000.

Kennecott Copper Corporation: *See—*
Buehler, Jay K.; Carlson, Thomas R.; and McIntosh, Alvin J., 3,961,492.

Kenyon, Ernest M.; Berkowitz, Daniel; and Ayoub, John A., to United States of America, Army. Apparatus for continuous microwave sterilization of food in pouches. 3,961,569, Cl. 99-451.000.

Keough, John E., to Raymond Lee Organization, Inc., The, a part interest. Toy space vehicle payload for a kite. 3,961,764, Cl. 244-155.00R.

Kerlin, Eliot E.: *See—*
Estes, James M.; Kerlin, Eliot E.; and Blum, Harold A., 3,961,619.

Kermode, David W., to United States of America, Navy. System for reducing radio communication frequency bandwidth and increasing number of channels available. 3,962,639, Cl. 325-59.000.

Kern, Rudolf: *See—*
Herwig, Walter; and Kern, Rudolf, 3,962,368.

Kerst, Al F., to Monsanto Company. Substituted ethane diphosphonic acids and salts and esters thereof. 3,962,318, Cl. 260-502.40P.

Kersten, Gunter; Aldinger, Ulrich; Knodel, Emil; and Knoblauch, Rainer, to Robert Bosch GmbH. Multiple pump assembly. 3,961,562, Cl. 91-492.000.

Kerwin, Richard G.: *See—*
Milani, Dean L.; and Kerwin, Richard G., 3,961,623.

Kessler, Jean, to Societe Kessler S.A. Artificial cross-country skiing path. 3,961,751, Cl. 238-10.00R.

Khanna, Ravi, to Eastman Kodak Company. Suspension polymerization process. 3,962,197, Cl. 526-79.000.

Khelghatian, Habet M.: *See—*
Karayannis, Nicholas M.; Khelghatian, Habet M.; and Skryantz, John S., 3,962,203.

Kibler, Charles J.: *See—*
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Kiehs, Karl; Huber, Rolf; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Carbamate. 3,962,316, Cl. 260-479.00C.

Kienzle Apparate GmbH: *See—*
Wokock, Ortwin; and Kaiser, Bernhard, 3,961,695.

Kierstead, Richard Wightman: *See—*
Guthrie, Robert William; Kierstead, Richard Wightman; and Lemahieu, Ronald Andrew, 3,962,275.

Kildishev, Vasily Semenovich: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Gradov, Oleg Borisovich; Karpman, David Bentsionovich; Spivak, Boris Volkovich; Chigirinsky, Alexandr Abramovich; Kildishev, Vasily Semenovich; Linetsky, Genrikh Nukhimovich, deceased; and Linetskaya, Ella Semenovna, administrator, 3,962,594.

Kilen, Joseph-Bernard Leon. Apparatus for recording discontinuities. 3,961,522, Cl. 73-67.000.

Kilichowski, Kurt B.: *See—*
Cukor, Peter; and Kilichowski, Kurt B., 3,962,298.

Kindig, James K.; and Turner, Ronald L., to Hazen Research, Inc. Process for treating coal to make it resistant to spontaneous combustion. 3,961,914, Cl. 44-1.00R.

King, Frederick David, to Northern Electric Company Limited. Semiconductor optical modulator. 3,962,714, Cl. 357-19.000.

King, James R.; Cohen, Hyman L.; and Minsk, Lewis M., to Eastman Kodak Company. Novel polymers and photographic elements containing same. 3,962,527, Cl. 428-500.000.

Kinney, Timothy James: *See—*
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Kinsman, Donald V.: *See—*
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Kitai, Kiyoshi; Nakamura, Yukio; Ishida, Hiroaki; and Nagaoka, Shinji, to Seiko Koki Kabushiki Kaisha. Exposure time control circuit. 3,962,709, Cl. 354-51.000.

Kitamura, Nobuo; and Mogi, Takao, to Sony Corporation. Channel indicator device. 3,962,642, Cl. 325-455.000.

Klak, Roland: *See—*
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Klauke, Erich: *See—*
Kuhle, Engelbert; Klauke, Erich; and Eue, Ludwig, 3,962,306.

Klein, Eric, to Foster Wheeler Energy Corporation. Heat transfer tubes with internal extended surface. 3,961,741, Cl. 228-144.000.

Kleiner, Hans-Jerg, to Hoechst Aktiengesellschaft. Process for preparing halogenomethane-phosphonic acid dihalides. 3,962,324, Cl. 260-543.00P.

Kleiner, Hans-Jerg: *See—*
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Klett, Robert J.: *See—*
Annesser, Richard J.; and Klett, Robert J., 3,962,405.

Kline, Richard H., to Goodyear Tire & Rubber Company, The. Stabilized polymers of dittertiary alkyl-4-hydroxybenzyloxy alkyl acrylates and dienes. 3,962,187, Cl. 260-62.000.

Klotz, Heinrich: *See—*
Dausch, Gerd; and Klotz, Heinrich, 3,961,682.

Knaell, Kenneth Kay. Twist drill sharpening apparatus. 3,961,450, Cl. 51-219.00R.

Knapp, Edward J., Jr., to Chase-Shawmut Company, The. Support plates for a helically wound fusible element. 3,962,666, Cl. 337-159.000.

Knapp, Edward J., Jr., to Chase-Shawmut Company, The. Electric low-voltage fuse. 3,962,668, Cl. 337-228.000.

Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit, to U.S. Philips Corporation. Method of manufacturing silicon carbide crystals. 3,962,406, Cl. 423-345.000.

Knoblauch, Karl: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; Zundorf, Dieter; and Horbel, Hugo, 3,962,129.

Knoblauch, Rainer: *See—*
Kersten, Gunter; Aldinger, Ulrich; Knodel, Emil; and Knoblauch, Rainer, 3,961,562.

Knoch, Klaus-Dieter: *See—*
Richter, Manfred; Schierbaum, Friedrich; Augustat, Siegfried; and Knoch, Klaus-Dieter, 3,962,465.

Knodel, Emil: *See—*
Kersten, Gunter; Aldinger, Ulrich; Knodel, Emil; and Knoblauch, Rainer, 3,961,562.

Knoll A.G. Chemische Fabriken: *See—*
Binnig, Fritz; Raschack, Manfred; and Treiber, Hans-Joerg, 3,962,449.

Knop, Karl, to RCA Corporation. Focused-image hologram system providing increased optical readout efficiency. 3,961,836, Cl. 350-3.500.

Knutson, Dale A., to Applied Power Inc. Proportional force amplifier. 3,961,561, Cl. 91-378.000.

Kobayashi, Fumio, to Sansui Electric Co., Ltd. Sound reproducing devices. 3,962,544, Cl. 179-1.00E.

Kobayashi, Kenji: *See—*
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Kobayashi, Kunimitsu: *See—*
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Kobayashi, Toshiyuki: *See—*
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Koberer, Gunther: *See—*
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Kobiki, Yosiya: *See—*
Narui, Hiroshi; Akune, Ikuo; Shinohara, Terumi; Numa, Masao; and Kobiki, Yosiya, 3,962,397.

Koblesky, Robert T., to Ingersoll Milling Machine Company, The. Boring bar or the like. 3,961,857, Cl. 408-83.000.

Koch, Henning: *See—*
Ahrens, Hans; Biere, Helmut; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, 3,962,453.
Biere, Helmut; Ahrens, Hanns; Rufer, Clemens; Schroder, Eberhard; and Koch, Henning, 3,962,471.

Kocher, Ernst; Steffen, Jurg; and Herziger, Gerd Bernd. Method and apparatus for drilling watch jewels or other workpieces by means of laser beams. 3,962,558, Cl. 219-121.0LM.

Koda, Hiroyuki; Izumita, Toshiaki; Gomyo, Shiro; and Inoue, Yoshio, to Mitsubishi Gas Chemical Company, Inc. Coating composition and process for producing coated articles. 3,961,977, Cl. 106-287.0SB.

Koder, Manfred: *See—*
Finkbeiner, Ludwig; du Mont, Hans-Christoph; Hurst, Kurt; and Koder, Manfred, 3,962,002.

Koenig, Roland; Deichelmann, Hermann; and Henkler, Herbert, to BASF Aktiengesellschaft. Thin film magnetic storage device. 3,962,690, Cl. 340-174.0ZB.

Koester, Eberhard; Wunsch, Gerd; Deigner, Paul; Uhl, Karl; Stumpfi, Werner; and Steck, Werner, to BASF Aktiengesellschaft. Manufacture of magnetic materials which exhibit exchange anisotropy. 3,961,990, Cl. 148-6.300.

Kohjin Co., Ltd.: *See—*
Matsuo, Kazuto; Araki, Michiya; Matsugu, Tomoyuki; and Mikami, Takahito, 3,962,398.

Kohno, Mitsuo; Igarashi, Tsuneo; and Nomura, Minoru, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyethylene-1,2-diphenoxyethane-4,4'-dicarboxylate uniaxially stretched films of good dimensional stability and anti-fibrillation. 3,962,183, Cl. 260-47.00C.

Koizumi, Masami, to Ricoh Co., Ltd. Method of and device for testing movable magnetic heads for ability to trace a predetermined spiral magnetic track without deviating therefrom. 3,962,724, Cl. 360-31.000.

Kokado, Naoyuki, to Tokyo Shibaura Electric Co., Ltd. Device for extracting a predetermined synchronizing signal from a composite synchronizing signal. 3,962,540, Cl. 178-69.5TV.

Komatsu, Toshio: *See—*
Yoshikawa, Yoshio; Otsuka, Sadao; Amemiya, Akira; and Komatsu, Toshio, 3,962,073.

Komuro, Yoshiyuki: *See—*
Ono, Katuya; Kozuka, Koji; and Komuro, Yoshiyuki, 3,962,396.

Konishi, Akihiko: *See—*
Yonemitsu, Eiichi; Sugio, Akitoshi; and Konishi, Akihiko, 3,962,180.

Konishiroku Photo Industry Co., Ltd.: *See—*
Fujiwhara, Mitsuto; Kasai, Keiji; Nakagawa, Yoshinobu; Tokura, Hiroshi; Itoh, Kenji; and Muramoto, Seiji, 3,961,959.

Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Gradov, Oleg Borisovich; Karpman, David Bentsionovich; Spivak, Boris Volkovich; Chigirinsky, Alexandr Abramovich; Kildishev, Vasily Semenovich; Linetsky, Genrikh Nukhimovich, deceased; and by Linetskaya, Ella Semenovna, administrator. Rotor winding of electric machines. 3,962,594, Cl. 310-61.000.

Koolen, Jan W. A. M.: *See—*
Langbroek, Johannes; and Koolen, Jan W. A. M., 3,961,665.

Koppel, Gary A., to Eli Lilly and Company. 7-Methoxycephalosporins. 3,962,232, Cl. 260-243.00C.

Koppers Company, Inc.: *See—*
Gaydos, Robert M.; Guziak, Leonard F.; and Maxwell, Robert W., Jr., 3,962,365.

Korbacher, Werner: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; Zundorf, Dieter; and Horbel, Hugo, 3,962,129.

Korger, Heinz, to Hannes Marker. Heel-holding device for ski bindings. 3,961,801, Cl. 280-626.000.

Kornblum, Nathan, to Purdue Research Foundation. Nitro group displacement. 3,962,053, Cl. 204-158.00R.

Kornfeld, Edmund C.; and Bach, Nicholas J., to Eli Lilly and Company. Oxidation of selectively protected 2,3-dihydro-6-methyl-8-hydroxy-9-ergolenes. 3,962,253, Cl. 260-285.500.

Korom, Arpad: *See—*
Thommen, Werner; and Korom, Arpad, 3,962,592.

Koshar, Robert J.: *See—*
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Kosley, Raymond W., Jr.: *See—*
Bauer, Victor J.; and Kosley, Raymond W., Jr., 3,962,259.

Kotera, Yoshihide; Todo, Naoyuki; and Fukuda, Kenzo, to Agency of Industrial Science & Technology. Process for production of hydrogen and sulfur from hydrogen sulfide as raw material. 3,962,409, Cl. 423-571.000.

Kovacs, Daniel Charles, to Wean United, Inc. Tension device for a rolling mill and the like. 3,961,510, Cl. 72-20.000.

Kozai, Tetsuo, to Morita Pump Kabushiki Kaisha. Ladder working limit based ladder stopping device for aerial ladder truck. 3,961,685, Cl. 182-19.000.

Koziol, Konrad: *See—*
Zollner, Dieter; Zollner, Christine; and Koziol, Konrad, 3,962,068.

Kozuka, Koji: *See—*
Ono, Katuya; Kozuka, Koji; and Komuro, Yoshiyuki, 3,962,396.

Kraina, Jack H.: *See—*
Mankowski, Aleksander; Poplawski, Eugene M.; and Kraina, Jack H., 3,961,827.

Kramp, Ekkehard; Lenoir, John; Marthaler, Max; and Schaller, Robert, to Ciba-Geigy AG. Dye bleach preparation for the photographic silver dye bleach process. 3,961,957, Cl. 96-53.000.

Krapcho, John; Turk, Chester F.; and Rovnyak, George C., to E. R. Squibb & Sons, Inc. 3A,4,6,7-Tetrahydro-3-phenyl-7-(phenylalkylene)-thiopyrano[4,3-C]pyrazole-2(3H)-alkanamine, and analogs. 3,962,222, Cl. 260-240.00F.

Kravchuck, Robert T., to Texas Instruments Incorporated. Keyboard with versatile switch support structures. 3,962,556, Cl. 200-5.00R.

Krespan, Carl George, to Du Pont de Nemours, E. I., and Company. Trifluoromethylmalonyl fluoride. 3,962,325, Cl. 260-544.00F.

Kretschmar, Rickey: *See—*
Murphy, Alan P.; and Kretschmar, Rickey, 3,962,100.

Kriege, Wolfgang, to Jenaer Glaswerk Schott & Gen. Optical fiber display device. 3,962,702, Cl. 340-380.000.

Krieger, LaVerne M. Gas saving tactile device. 3,961,598, Cl. 116-114.0AE.

Kroger Company, The: *See—*
Schaefer, Robert; and Hammell, Richard L., 3,961,494.

KTI Chemical, Inc.: *See—*
Perruccio, Salvatore M., 3,962,108.

Ku, Paul H. Y. Portable air conditioner. 3,961,496, Cl. 62-459.000.

Kubo, Hiroshi, to Sumitomo Electric Industries, Ltd. Evaporative cooling power cable line. 3,962,529, Cl. 174-15.00C.

Kubo, Takehisa: *See—*
Ishii, Kiyoshi; and Kubo, Takehisa, 3,962,096.

Kubota, Eishi: *See—*
Nakamoto, Yuzuru; Kubota, Eishi; and Suzuki, Fukushi, 3,961,740.

Kuhl, Jurgen; and Spitschan, Hans-Jorg, to Carl Zeiss-Stiftung. Method and apparatus for automatic generation of phase-adapted coherent secondary radiation in a non-linear crystal. 3,962,576, Cl. 250-201.000.

Kuhle, Engelbert; Klauke, Erich; and Eue, Ludwig, to Bayer Aktiengesellschaft. Sulfonyloxyphenylurea compounds and herbicidal compositions. 3,962,306, Cl. 260-456.00A.

Kuhle, Engelbert: *See—*
Schlee, Hans Georg; Sasse, Klaus; and Kuhle, Engelbert, 3,962,327.

Kuhlenschmidt, Floyd E.: *See—*
Kuhlenschmidt, Harold L.; and Kuhlenschmidt, Floyd E., 3,962,088.

Kuhlenschmidt, Harold L.; and Kuhlenschmidt, Floyd E., to Elberfeld Concrete Block Co., Inc. (Entire). Concrete block assembly. 3,962,088, Cl. 210-170.000.

Kuhns, Garrett D.; Astorp, Norman E.; Mullen, Richard V.; and Thomas, John Ellwood, to Economics Laboratory, Inc. Spray and foam producing nozzle apparatus. 3,961,754, Cl. 239-289.000.

Kukolja, Stjepan, to Eli Lilly and Company. Azetidinone acetic acid intermediates for 5-epi-penicillins. 3,962,276, Cl. 260-326.00S.

Kukolja, Stjepan P.; and Lammert, Steven R., to Eli Lilly and Company. 3-Nitrooxycepham compounds and process for preparing desacetoxycephalosporins therefrom. 3,962,226, Cl. 260-243.00C.

Kukuruzinski, Raymond. Disposable clinical thermometer. 3,961,532, Cl. 73-371.000.

Kumar, Surinder, to Quaker Oats Company, The. Textured protein product and process. 3,962,335, Cl. 426-574.000.

Kumar, Surinder, to Quaker Oats Company, The. Meat-like textured protein product and process. 3,962,481, Cl. 426-574.000.

Kumasaka, Archie M., to United States of America, Army. Mechanical guy cable control device. 3,961,771, Cl. 254-184.000.

Kumiai Chemical Industry Co., Ltd.: *See—*
Wakamori, Shigeki; Ogawa, Haruki; Yamaguchi, Masayoshi; and Kanamori, Seigo, 3,962,457.

Kundrat, Harry: *See—*
Gintella, Louis; Kundrat, Harry; and Raman, Anantha K. S., 3,961,900.

Kurata, Yoshio. Hammer for sheet metal. 3,961,519, Cl. 72-465.000.

Kurihara, Haruki: *See—*
Nagakura, Akira; Akutagawa, Susumu; and Kurihara, Haruki, 3,962,340.

Kurio, Noriyuki, to Toyo Kogyo Co., Ltd. Corner seal means for rotary piston type engines. 3,961,871, Cl. 418-121.000.

Kuroda, Nobuyuki: *See—*
Matsuura, Kazuo; Kuroda, Nobuyuki; Nakamura, Toru; and Miyoshi, Mituji, 3,962,204.

Kurokawa, Masayuki, to Yamagiwa Electric Co. Ltd. Lighting apparatus. 3,962,678, Cl. 240-81.0BD.

Kutterer, Gerhard: *See—*
Huttner, Robert; and Kutterer, Gerhard, 3,962,585.

Kuyama, Hiroshi; and Higosaki, Nobuyuki, to Tokyo Organic Chemical Industries, Inc. Fungicidal/algicidal composition for non-medical uses. 3,961,933, Cl. 71-67.000.

Kyorin Seiyaku Kabushiki Kaisha: *See—*
Irikura, Tsutomu, 3,962,249.

La Technique Integrale S.A.: *See—*
Fund, Jean Claude; and Detraz, Jacques, 3,961,541.

Laboratories Made, S.A.: *See—*
Roldan, Cristobal Martinez; Brana, Miguel Fernandez; and Berlanga, Jose Maria Castellano, 3,962,243.

Lademann, Rudolf; and Landauer, Franz, to Hoechst Aktiengesellschaft. Process for the preparation of 5-chloro-2-toluidine. 3,962,336, Cl. 260-579.000.

Lado, Ernest A.: *See—*
Nielsen, Haagen Bach; Bonner, Edwin J.; and Lado, Ernest A., 3,961,903.

Ladouceur, Harold A., to Multifastener Corporation. Method of installing a fastener. 3,961,412, Cl. 29-445.000.

Ladouceur, Harold A.: *See—*
Goodsmith, Dale H.; and Ladouceur, Harold A., 3,961,408.

Lambert, Herbert L.: *See—*
Roccaforte, Harry I.; and Lambert, Herbert L., 3,961,706.

Lammert, Steven R.: *See—*
Kukolja, Stjepan P.; and Lammert, Steven R., 3,962,226.

Lamoreaux, Charles L. Gas-vapor separating and gas purifying apparatus. 3,961,919, Cl. 55-184.000.

Lampert, Heinz, to Fa. Werner Looser, Maschinenbau. Piston and cylinder assembly. 3,961,565, Cl. 92-117.00R.

Landauer, Franz: *See—*
Lademann, Rudolf; and Landauer, Franz, 3,962,336.

Landstingens Inkopscentral: *See—*
Hagglund, Lars, 3,962,395.

Lang, George Henry, to Imperial Chemical Industries Limited. Process for producing 2:2'- or 4:4'-bipyridyls. 3,962,268, Cl. 260-296.00D.

Langbroek, Johannes; and Koolen, Jan W. A. M., to Ultracentrifuge Nederland N.V. Apparatus for separating a product of sublimation from a gas. 3,961,665, Cl. 165-61.000.

Lange, Karlheinz, to Dr. -Ing. H.c.F. Porsche Aktiengesellschaft. Installation for the catalytic afterburning of exhaust gases in the exhaust gas system of an internal combustion engine. 3,961,478, Cl. 60-277.000.

Lange, Richard Michael, to Lubrizol Corporation, The. Lubricating compositions. 3,962,105, Cl. 252-56.00R.

Langenfeld, Michel, to Pont-A-Mousson S.A. Device for the transmission over a distance of indications in particular of a meter. 3,962,691, Cl. 340-203.000.

Langer, Heinz, to Seitz-Asbest-Werke Theo & Geo Seitz. Filter unit. 3,962,090, Cl. 210-231.000.

Lappin, Gerald R.: *See—*
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La Rochelle, John H.: *See—*
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Lars-Jos, Pehr. Glove and method for the production of said glove. 3,961,377, Cl. 2-169.000.

Larue, Pierre; and Beaumont, Pierre, to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.). Ignitor element for a generator of hot gas. 3,961,581, Cl. 102-99.000.

Lathrop, Francis M., II. Range extending attachment for use in a price display mechanism. 3,962,568, Cl. 235-132.00R.

Laudon, Monique: *See—*
Bugaut, Andree; and Laudon, Monique, 3,961,879.

Laughrey, Richard A.: *See—*
Gracia, Robert F.; Laughrey, Richard A.; and Tuohey, Paul F., 3,961,955.

Laugier, Robert: *See—*
Ray, Jean-Louis; and Laugier, Robert, 3,962,138.

Lawrence Peska Associates, Inc.: *See—*
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Shankel, John; and Shankel, Marilou, 3,961,792.
Smith, Robert, 3,961,427.
Torressen, Albert F., 3,961,984.

Lawrenson, Jack: *See—*
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Laws, Peter: *See—*
Blauert, Jens; Boerger, Georg; and Laws, Peter, 3,962,543.

Lawson, James N., to Musselwhite Enterprises, Inc., a part interest. Safety ring. 3,961,502, Cl. 66-163.000.

Leavens, Roland B.; and McNair, Mark G., to Diamond Fruit Growers, Inc. Fruit tray package. 3,962,469, Cl. 426-108.000.

Lectromelt Corporation: *See—*
Wynne, Peter J., 3,962,528.

Leech, Edward J., to Photocircuits Division of Kollmorgen. Composition and method for neutralizing and sensitizing resinous surfaces and improved sensitized resinous surfaces for adherent metallization. 3,962,496, Cl. 427-306.000.

Leftheris, Basil P., to Grumman Aerospace Corporation. Method of welding metals using stress waves. 3,961,739, Cl. 228-110.000.

Leftheris, Basil P.: *See—*
Calia, Vincent S.; and Leftheris, Basil P., 3,962,694.

Leggett, Norman Derek: *See—*
Selway, Peter Richard; Leggett, Norman Derek; and Eales, Brian Arthur, 3,962,655.

Lehmann, Joachim: *See—*
Schmalfeld, Paul; Rammler, Roland; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,962,043.

Lehr, David R.; and Pollard, James H., to Zenith Radio Corporation. Cathode ray tube or funnel shipping and/or storage container. 3,961,707, Cl. 206-419.000.

Leitereg, Theodore J.; Guadagni, Dante G.; and Teranishi, Roy, to United States of America, Agriculture. Process for the production of bicyclo decenone derivatives. 3,962,339, Cl. 260-586.00C.

Lemahieu, Ronald Andrew: *See—*
Guthrie, Robert William; Kierstead, Richard Wightman; and Lemahieu, Ronald Andrew, 3,962,275.

Le Martret, Odile: *See—*
Meier, Jean; and Le Martret, Odile, 3,962,303.

Lemberger, Alan D.: *See—*
Clark, Kendall; Lemberger, Alan D.; and Shapiro, Milton R., 3,962,597.

Lemke, James U.; and Lentz, Robert A., to Eastman Kodak Company. Magnetic-tape cartridge-loaded portable video camera using prerecorded timing signals to control the video time base. 3,962,725, Cl. 360-36.000.

Lenoir, John: *See—*
Kramp, Ekkehard; Lenoir, John; Marthaler, Max; and Schaller, Robert, 3,961,957.

Lentz, Robert A.: *See—*
Lemke, James U.; and Lentz, Robert A., 3,962,725.

Lerner, Martin, to Zenith Radio Corporation. Method for etching shadow mask and regenerating etchant. 3,962,005, Cl. 156-16.000.

Leskovec, Edward V., to Towmotor Corporation. Spacer and noise suppressor cushions for lift truck mast units. 3,961,689, Cl. 187-95.000.

Lester, William W.; and Mason, Lawrence V., to Gillette Company, The. Liquefied gas alarm device. 3,961,597, Cl. 116-103.000.

Leung, Kam Fong, to Dallas Research Enterprises. Vane separator. 3,961,922, Cl. 55-440.000.

Lever Brothers Company: *See—*
Bishop, David Paul; and Morris, Ronald Meredith, 3,961,892.
Dekker, Abraham; and Willems, Albert, 3,962,151.
Rubin, Fred K.; and Kinsman, Donald V., 3,962,106.

Lever, Ray Clarence; and Wilkus, Edward Vincent, to General Electric Company. Electrical conductor insulated with filled polymeric compounds. 3,962,531, Cl. 174-110.0PM.

Leverenz, Klaus: *See—*
Gotteschlich, Alois; and Leverenz, Klaus, 3,962,209.

Levey, Horace B.: *See—*
Benedict, Manson; Fruit, Allen J.; and Levey, Horace B., 3,961,917.

Levin, Norman Arthur; and Kaplan, Leonard Louis, to Johnson & Johnson. Enzyme-containing denture cleanser tablet. 3,962,107, Cl. 252-100.000.

Levon, Ernest F., to G. D. Searle & Co. 1-Azidoalkylimidazoles. 3,962,274, Cl. 260-309.000.

Lewis, Gerald F. Downrigger. 3,961,437, Cl. 43-27.400.

Leyh, Joseph C.: *See—*
Burkwall, Morris P., Jr.; and Leyh, Joseph C., 3,962,462.

LFE Corporation: *See—*
Drda, Benedict J.; and Meredith, Maxwell, 3,962,559.

Li, Tao P., to Monsanto Company. Ammoxidation process. 3,962,309, Cl. 260-465.300.

Li, Tao P.; and Hobbs, Charles W., to Monsanto Company. Ammoxidation process. 3,962,310, Cl. 260-465.300.

Liebrand, Norbertus Johannes Josephus: *See—*
Arnoldussen, Theodorus Franciscus; Hoeks, Antonius Johannes Ludovicus Maria; and Liebrand, Norbertus Johannes Josephus, 3,961,760.

Liersch, Manfred; and Nuesch, Jakob, to Ciba-Geigy Corporation. Process for the manufacture of 7-amino-cephalosporanic acid-type compounds. 3,962,036, Cl. 195-29.000.

Life Savers, Inc.: *See—*
Witzel, Frank, 3,962,463.

Lilly Industries, Ltd.: *See—*
Evans, Delme; Dunwell, David William; and Hicks, Terence Alan, 3,962,441.
Evans, Delme; Dunwell, David William; and Hicks, Terence Alan, 3,962,452.

Lilov, Dimitre, to P. Ferrero & C. S.p.A. Method of making crust liqueurs by annular flow cooling of the hot aqueous filling liquid. 3,962,473, Cl. 426-282.000.

Limekiller, Andrew Henry: *See—*
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Limeres, Ricardo: *See—*
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Lindahl, Bo Nils Olof: *See—*
Wettermark, Karl Gustav Gunnar; Isacsson, Per Ulf; Hultman, Bengt Goran; Norberg, Per Henrik Otto Johan; and Lindahl, Bo Nils Olof, 3,962,029.

Lindberg, Allan Walter: *See—*
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Lindblom, Georg: *See—*
Ostlund, Bernt; and Lindblom, Georg, 3,962,624.

Linden-Alimak AB: *See—*
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Linder, Donald L.; Eness, Orville M.; and Lynk, Charles N., Jr., to Motorola, Inc. Portable telephone system having a battery saver feature. 3,962,553, Cl. 179-41.00A.

Linder, Jerome; and Houlihan, William J., to Sandoz, Inc. Bromination process. 3,962,342, Cl. 260-592.000.

Lindley, John P.; and Rieden, James, to Itek Corporation. Electro-optic system with expanded power range. 3,962,577, Cl. 250-208.000.

Lindstrom, Roald E.: *See—*
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Lineberg, Birger David, to AB Volvo. Apparatus for the regulated cooling of hot objects for quenching or hardening purposes. 3,961,777, Cl. 266-114.000.

Linetskaya, Ella Semenovna, administrator: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Gradov, Oleg Borisovich; Karpman, David Bentsionovich; Spivak, Boris Volkovich; Chigirinsky, Alexandr Abramovich; Kildishev, Vasily Semenovich; Linetsky, Genrikh Nukhimovich, deceased; and Linetskaya, Ella Semenovna, administrator, 3,962,594.

Linetsky, Genrikh Nukhimovich, deceased: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Gradov, Oleg Borisovich; Karpman, David Bentsionovich; Spivak, Boris Volkovich; Chigirinsky, Alexandr Abramovich; Kildishev, Vasily Semenovich; Linetsky, Genrikh Nukhimovich, deceased; and Linetskaya, Ella Semenovna, administrator, 3,962,594.

Link, Edwin A., to RTE Corporation. Combination fuse and bushing. 3,962,667, Cl. 337-202.000.

Liss, Gote: *See—*
Juhlin, Lars-Erik; and Liss, Gote, 3,962,625.

Liston, Max Davis; and Frison, Gerald Paul, to Abbott Laboratories. Skimmer assembly. 3,962,085, Cl. 210-131.000.

Litenkova, Ljudmila Anatolievna: *See—*
Romanenko, Nikolai Trofimovich; Nikitin, Jury Filippovich; and Litenkova, Ljudmila Anatolievna, 3,961,481.

Litteken, Robert A.: *See—*
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Litton Industrial Products, Inc.: *See—*
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Lobeck, Walter G., Jr.: *See—*
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Lobmann, Michele: *See—*
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Lockheed Aircraft Corporation: *See—*
Blad, Leiv H., 3,962,393.

Lockheed Missiles & Space Company, Inc.: *See—*
Sherwood, Theodore R., 3,961,409.

Loeliger, Peter, to Hoffmann-La Roche Inc. Preparation of cyclohexadiene compounds. 3,962,311, Cl. 260-468.00L.

Loev, Bernard: *See—*
Baile, Clifton A.; Bender, Paul E.; and Loev, Bernard, 3,962,448.

Loge, Olaf: *See—*
Raduchel, Bernd; Skuballa, Werner; Vorbruggen, Helmut; Elger, Walter; Losert, Wolfgang; and Loge, Olaf, 3,962,218.

Lombardi, Anthony Joseph, to International Telephone and Telegraph Corporation. Buoyant cable antenna reeling system. 3,961,589, Cl. 114-16.00R.

Lopiccola, Joseph F.: *See—*
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Lord Corporation: *See—*
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L'Oreal: *See—*
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Losert, Wolfgang: *See—*
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Loshbough, Richard C.; Pryor, Edward G.; and Robaszkiewicz, Gerald D., to Reliance Electric Company. Value computing scale. 3,962,569, Cl. 235-151.330.

Loshbough, Richard C.; and Pryor, Edward G., to Reliance Electric Company. Scale with manual tare entry. 3,962,570, Cl. 235-151.330.

Lottridge, Lawrence A., to United Technologies Corporation. Organic matrix stacking head. 3,962,026, Cl. 156-584.000.

Loukes, David Gordon: *See—*
Robinson, Albert Sidney; Loukes, David Gordon; and Lawrenson, Jack, 3,961,930.

Lovat, Richard. Tunnelling machine. 3,961,825, Cl. 299-33.000.

Love, Mahlon Lloyd, to Deere & Company. Vehicle final drive and wheel mounting. 3,961,679, Cl. 180-75.000.

Lowe, James C.: *See—*
Oita, Katashi; and Lowe, James C., 3,962,425.

Lowry, Edna Earl. Aid for folding sheets and the like. 3,961,782, Cl. 270-61.00R.

Lubitzsch, Wolfgang, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Method and apparatus for loosening and spreading of filament tows. 3,961,396, Cl. 19-65.00T.

Lubrizol Corporation, The: *See—*
Jahnke, Richard William; and Swaney, Russell Lee, 3,961,992.
Lange, Richard Michael, 3,962,105.

Lucas, Gustave. Self-loading and self-unloading trailer. 3,961,718, Cl. 214-520.000.

Lummus Company, The: *See—*
Sze, Morgan C., 3,962,098.

Lundeen, Allan J.: *See—*
Motz, Kaye L.; and Lundeen, Allan J., 3,962,124.

Lundell, Erik Malte: *See—*
Shishoo, Roshan Lal; and Lundell, Erik Malte, 3,961,458.

Lundmark, Signar: *See—*
Granholm, Sven; and Lundmark, Signar, 3,961,486.

Luppi, Liberto, to Sandoz Ltd. Dialyser cartridge. 3,962,095, Cl. 210-321.00A.

Lure Camera Ltd.: *See—*
Millett, James A., 3,961,850.

Lutes, Thomas G.: *See—*
Baker, Ronald L., 3,961,640.

Lyall Electric, Inc.: *See—*
McKeever, Carl, 3,961,703.

Lynch, Peter D., to Rader Companies, Inc. Valve shifting system. 3,961,643, Cl. 137-610.000.

Lynk, Charles N., Jr.: *See—*
Linder, Donald L.; Eness, Orville M.; and Lynk, Charles N., Jr., 3,962,553.

Lyons, James E., to Sun Ventures, Inc. Olefin isomerization catalysts and process. 3,962,294, Cl. 260-429.00R.

M & T Chemicals Inc.: *See—*
Brody, Donald E.; and Karoly, Gabriel, 3,962,499.

Ma, John Y., to Zenith Radio Corporation. Abrupt junction varactor diode television tuner. 3,962,643, Cl. 325-464.000.

Mabille, Albert; de Aguirre, Inaki; and Marcilly, Christian, to Institut Francais du Petrole des Carburants et Lubrifiants. Process for selectively producing paraxylene. 3,962,363, Cl. 260-671.00M.

Machiele, Delwyn E., to Eastman Kodak Company. Novel method for the synthesis of 4-thio and 4-seleno ethers of 2-pyrazolin-5-ones. 3,962,273, Cl. 260-308.00D.

Machlett Laboratories, Incorporated, The: *See—*
Holland, William P.; and Swanson, Capleton I., 3,962,583.

Mackenzie, John D., to University of California, The Regents of the. Heat treating excreta and products thereof. 3,962,044, Cl. 201-2.500.

MacKenzie Trading Co. Ltd.: *See—*
Hofer, Waldemar, 3,962,023.

MacLeay, Ronald Edward; and Sheppard, Chester Stephen, to Pennwalt Corporation. Tertiary aliphatic alpha-(sulfo)-azo compounds. 3,962,210, Cl. 260-192.000.

MacWilliams, Joseph Anthony: *See—*
Hughes, John Thomas; and MacWilliams, Joseph Anthony, 3,962,014.

Maeda, Tadao: *See—*
Nakamura, Toshio; Maeda, Tadao; Takenaka, Hiroshi; and Yamahira, Yoshiya, 3,962,436.

Mag-Tek, Inc.: *See—*
De Land, Robert Sutherland, Jr., 3,962,726.

Magerlein, Barney J., to Upjohn Company, The. 13,14-Dihydro-16-fluoro prostaglandin F_1 . 3,962,293, Cl. 260-408.000.

Mahn, Frederick R.: *See—*
Cosentino, Joseph P.; and Mahn, Frederick R., 3,962,119.

Maier, Franz; Niederstatter, Walter; and Stumpf, Hans-Rainer, to Hoechst Aktiengesellschaft. Infrared process for measuring the kneading mass in a calender roller gap. 3,962,580, Cl. 250-340.000.

Maisel, Horst, to Siemens Aktiengesellschaft. Control system for ohmic loads, preferably signal lamps in a road traffic system. 3,962,676, Cl. 340-41.00R.

Maitenaz, Paul, to Compagnie Europeenne pour l'Equipement Menager, CEPEM. Catalytically assisted pyrolytic self-cleaning oven. 3,962,561, Cl. 219-391.000.

Makabe, Satoshi: *See—*
Chiba, Tetsuo; Itoh, Yoshio; and Makabe, Satoshi, 3,962,296.

Maki, Takeo; and Yoshiyuki, Kazuhiko, to Nissan Motor Co., Ltd. Safety harness arrangement. 3,961,807, Cl. 280-747.000.

Makino, Osamu: *See—*
Matsuura, Mikio; Matsuoka, Michio; and Makino, Osamu, 3,962,144.

Makino, Yoshimi; and Ito, Shigeyasu, to Sony Corporation. Magnetic alloy for use in thermo and magneto printing. 3,961,946, Cl. 75-172.00R.

Malick, Emil A., to Phillips Petroleum Company. Fermentation apparatus. 3,962,042, Cl. 195-143.000.

Mallinckrodt Chemical Works: *See—*
Wolfangel, Robert G., 3,962,412.

Mally, Adolf Antony, to Goodyear Tire & Rubber Company, The. Flame resistant vinylidene chloride copolymer latices and articles made therefrom. 3,962,170, Cl. 260-29.70H.

Mankowski, Aleksander; Poplawski, Eugene M.; and Kraina, Jack H., to Caterpillar Tractor Co. Stress-relieved wheel assembly and method therefor. 3,961,827, Cl. 301-132.000.

Manlove, Glen D.; and Ishler, Paul K. Molding for cabinets and doors. 3,961,456, Cl. 52-716.000.

Maquaire, Jean-Pierre Albert: *See—*
Degois, Michel Louis; and Maquaire, Jean-Pierre Albert, 3,961,663.

Marcade, Roque Denis: *See—*
Offutt, Carl R.; and Marcade, Roque Denis, 3,962,617.

Marcilly, Christian: *See—*
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Marconi Company Limited, The: *See—*
Freeman, Alan; and Hymers, William, 3,962,142.

Marhofer, Edwin G.; Marrello, Mike L.; and Tolle, Glenn E., to Gulf Oil Corporation. Method of manufacturing a cap-sensitive and non-sensitive aqueous gel suspension explosive. 3,962,001, Cl. 149-41.000.

Marion Laboratories, Inc.: *See—*
Mathison, Ian William; Solomons, William Ebenezer; and Jones, Raymond Henry, 3,962,254.

Markus, Frank, to Steel Company of Canada, Limited, The. Method and apparatus for liquid mixing. 3,961,775, Cl. 259-24.000.

Marowsky, Ruthard. Weaving method and machine. 3,961,650, Cl. 139-291.00R.

Marquis, Ray L.; and Beckman, Frank H., to Kalart Victor Corporation. Variable torque electric clutch and brake. 3,961,692, Cl. 192-84.00A.

Marrello, Mike L.: *See—*
Marhofer, Edwin G.; Marrello, Mike L.; and Tolle, Glenn E., 3,962,001.

Marschner, Friedemann: *See—*
Hiller, Heinz; Hochgesand, Gerhard; Supp, Emil; Marschner, Friedemann; and Grunewald, Gerhard, 3,962,300.

Marshall, Robert Moore; and Dardoufas, Kimon Constantine, to Allied Chemical Corporation. Production of polyester tire yarn. 3,962,516, Cl. 428-394.000.

Marson Fastener Corporation: *See—*
DiMaio, Anthony E., 3,961,517.

Martel, Jacques; and Heymes, Rene, to Roussel-UCLAF. Substituted cephene-4-carboxylates and their method of preparation. 3,962,223, Cl. 260-243.00C.

Martensson, Kjell: *See—*
Stark, Olof; and Martensson, Kjell, 3,961,742.

Marthaler, Max: *See—*
Kramp, Ekkehard; Lenoir, John; Marthaler, Max; and Schaller, Robert, 3,961,957.

Martin, Elmore Louis, to Du Pont de Nemours, E. I., and Company. Cyanobenzeneacetonitriles. 3,962,307, Cl. 260-465.00H.

Martin, James S.: *See—*
Hagen, Leonard J.; Martin, James S.; and Workman, Clark B., 3,961,436.

Martin, Thomas F.: *See—*
Oicles, Jeffrey A.; and Martin, Thomas F., 3,962,567.

Martin, Virgil B.; Villers, Roger L.; and Fleming, Philip F., to Gehl Company. Crop feeding attachment for forage choppers. 3,961,466, Cl. 56-14.300.

Martin, Yves: *See—*
Brut, Albert; Nave, Gerard; Deleuil, Jean-Pierre; Brun, Jean-Claude; and Martin, Yves, 3,962,064.

Martinetz, Johann, to Mayer & Cie. Maschinenfabrik, DT. Needle selecting arrangement for a knitting machine. 3,961,501, Cl. 66-154.00A.

Martini, Leo A., to National Chemsearch Corporation. Adjustable-spray mechanism. 3,961,756, Cl. 239-337.000.

Martini, Thomas: *See—*
Benninger, Siegfried; Martini, Thomas; and Rebsdat, Siegfried, 3,962,348.

Martorano, Richard; Brendley, William H., Jr.; and Haag, Thomas H., to Rohm and Haas Company. Metal decorating and aqueous coating composition comprising copolymer and aminoplast. 3,962,167, Cl. 260-29.4UA.

Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Orlova, Ljudmila Vladimirovna; and Shlyandin, Viktor Mikhailovich. Device for measurement of parameters of compound electric circuit elements. 3,962,629, Cl. 324-57.00R.

Maruka, Ryuichi: *See—*
Morokawa, Shigeru; Sekiya, Fukuo; Maruka, Ryuichi; and Nomura, Yasushi, 3,961,840.

Maruyama Mfg. Co., Ltd.: *See—*
Fulukawa, Yoshisada, 3,962,089.

Masaki, Mitsuo; Matsunami, Satoshi; Yoshikawa, Toshio; and Sakamoto, Nagayoshi, to UBE Industries, Ltd. Stabilized polyolefin composition. 3,962,178, Cl. 260-45.75W.

Maschinen- und Bohrgerate-Fabrik Alfred Wirth & Co., K.G.: *See—*
Wolters, Jakob; and Classen, Josef, 3,961,673.

Mashida, Toru, to NCO Works, Ltd. Method of forming a bearing hole in the body of a strap member mainly adapted for use as a watch strap. 3,962,013, Cl. 156-215.000.

Mason, Lawrence V.: *See—*
Lester, William W.; and Mason, Lawrence V., 3,961,597.

Mason, Stanley I., Jr.; and Richardson, James E., to Simco, Inc. Balanced botanical growth container. 3,961,446, Cl. 47-38.000.

Massachusetts Institute of Technology: *See—*
Dennis, Jack B.; and Misunas, David P., 3,962,706.

Mathison, Ian William; Solomons, William Ebenezer; and Jones, Raymond Henry, to Marion Laboratories, Inc. N-substituted-5,6-dihydroxycyclopentano[h]-1,2,3,4-tetrahydroisoquinolines and ethers and esters thereof. 3,962,254, Cl. 260-287.0CF.

Matra, John C., Jr.: *See—*
Huang, Pao C.; and Matra, John C., Jr., 3,961,835.

Matsubara, Syuzo: *See—*
Furuno, Kouji; Okazaki, Akira; Matsubara, Syuzo; Shiba, Motoharu; and Shioya, Akitoshi, 3,962,429.

Matsue, Shigeki; and Shirato, Hajime, to Nippon Electric Company Limited. Memory circuit. 3,962,686, Cl. 340-173.00R.

Matsugu, Tomoyuki: *See—*
Matsuo, Kazuto; Araki, Michiya; Matsugu, Tomoyuki; and Mikami, Takahito, 3,962,398.

Matsumoto, Jun-ichi: *See—*
Minami, Shinsaku; Matsumoto, Jun-ichi; Kawaguchi, Kazuyo; Mishio, Shinsaku; Shimizu, Masanao; Takase, Yoshiyuki; and Nakamura, Shinichi, 3,962,443.

Matsunami, Satoshi: *See—*
Masaki, Mitsuo; Matsunami, Satoshi; Yoshikawa, Toshio; and Sakamoto, Nagayoshi, 3,962,178.

Matsuo, Kazuto; Araki, Michiya; Matsugu, Tomoyuki; and Mikami, Takahito, to Kohjin Co., Ltd. Process for producing heat resistant materials. 3,962,398, Cl. 264-184.000.

Matsuo, Yoshihiro; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. High temperature thermistor composition. 3,962,145, Cl. 252-519.000.

Matsuo, Yoshihiro: *See—*
Matsuoka, Tomizo; Fujimura, Masanori; and Matsuo, Yoshihiro, 3,962,146.

Matsuoka, Michio: *See—*
Matsuura, Mikio; Matsuoka, Michio; and Makino, Osamu, 3,962,144.

Matsuoka, Tomizo; Fujimura, Masanori; and Matsuo, Yoshihiro, to Matsushita Electric Industrial Co., Ltd. PTC Thermistor composition and method of making the same. 3,962,146, Cl. 252-520.000.

Matsushima, Kiyoshi; Miyamoto, Masao; and Fukazawa, Nobuo, to Bayer Aktiengesellschaft. Alkoxy-substituted benzyl dithiocarbamic acid esters. 3,962,304, Cl. 260-455.00A.

Matsushita Electric Industrial Co., Ltd.: *See—*
Matsuo, Yoshihiro; and Hayakawa, Shigeru, 3,962,145.
Matsuoka, Tomizo; Fujimura, Masanori; and Matsuo, Yoshihiro, 3,962,146.
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Matsushita, Keizo: *See—*
Nakamura, Kenji; Matsushita, Keizo; Furuta, Shigetaro; and Totani, Kazuo, 3,961,843.

Matsuura, Kazuo; Kuroda, Nobuyuki; Nakamura, Toru; and Miyoshi, Mituji, to Nippon Oil Company Ltd. Method for the preparation of polyolefins. 3,962,204, Cl. 526-89.000.

Matsuura, Mikio; Matsuoka, Michio; and Makino, Osamu, to Matsushita Electric Industrial Co., Ltd. Process for making a voltage dependent resistor. 3,962,144, Cl. 252-517.000.

Matthews, Joseph E. Dock fender assembly. 3,961,593, Cl. 114-219.000.

Matthias, Guenther: *See—*
Schoenaich, Guenther; Grabowsky, Otto; Mayer, Johann; and Matthias, Guenther, 3,962,329.

Matzen, Walter T.: *See—*
Kendall, Don L.; and Matzen, Walter T., 3,962,713.

Maurer, Bruno; Fracheboud, Michel G.; and Ohloff, Gunther, to Firmenich S.A. Perfume composition containing 6,10 dimethyl - spiro [4.5]decane-type compounds. 3,962,147, Cl. 252-522.000.

Mauvernay, Roland Yves; Busch, Norbert; Moleyre, Jacques; Monteil, Andre; and Simond, Jacques, to Centre Europeen de Recherches Mauvernay "CERM". Ethers of n-propanol amine. 3,962,238, Cl. 260-247.20B.

Maxwell, Robert W., Jr.: *See—*
Gaydos, Robert M.; Guziak, Leonard F.; and Maxwell, Robert W., Jr., 3,962,365.

Mayama, Takeshi; Kobayashi, Toshiyuki; and Okada, Akira, to Meiji Seika Kaisha, Ltd. Stabilized antibiotic SF-837 preparation. 3,962,419, Cl. 424-78.000.

Mayer & Cie. Maschinenfabrik: *See—*
Martinetz, Johann, 3,961,501.

Mayer, Edward F.; and Moore, Robert A., to Itek Corporation. Electrophotographic method for producing multiple copies from the same electrostatic image. 3,961,951, Cl. 96-1.400.

Mayer, Johann: *See—*
Schoenaich, Guenther; Grabowsky, Otto; Mayer, Johann; and Matthias, Guenther, 3,962,329.

Mayerhoefer, Horst: *See—*
Borer, Peter; Finck, Hans-Werner; Mayerhoefer, Horst; Sollberger, Urs; and Mueller, Wolfgang Heinz, 3,962,246.

Mayhugh, Michael R.; and Fullerton, Gary D., to Wisconsin Alumni Research Foundation. Sensitized thermoluminescent phosphor and method. 3,962,586, Cl. 250-484.000.

Maynard, John T., to Armor Elevator Company. Transportation system with malfunction monitor. 3,961,688, Cl. 187-29.00R.

Mazer Corporation, The: *See—*
Panken, Irving, 3,962,526.

Mazzolla, Dan D. Pneumatic pad and roll cover for ironing rolls on industrial ironers. 3,961,430, Cl. 38-66.000.

McCain, Jack L. Ground anchor. 3,961,451, Cl. 52-163.000.

McCall, Frank Boyes, to Ferranti, Limited. Analog A-C storage circuit employing a high gain amplifier. 3,962,651, Cl. 330-51.000.

McCaully, Ronald J.: *See—*
Wei, Peter H. L.; and McCaully, Ronald J., 3,962,228.

McCook, Norman Lary: *See—*
Abercrombie, William F., Jr.; Trowbridge, Frank R.; and McCook, Norman Lary, 3,961,971.

McCord, Herbert W.: *See—*
Burns, Edward P.; and McCord, Herbert W., 3,962,606.

McCreary, Willard E.; and Weidman, Elvin M., to Armstrong Cork Company. Vinyl structure having an embossed top layer and a foam base. 3,962,507, Cl. 428-159.000.

McCurdy, Thomas Ernest: *See—*
Hitch, Thomas Tipton; and McCurdy, Thomas Ernest, 3,962,143.

McFadden, Dave: *See—*
Crepinsek, Alois, 3,961,508.

McGarry & Waters: *See—*
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McGowan, Marvin E.: *See—*
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McIntosh, Alvin J.: *See—*
Buehler, Jay K.; Carlson, Thomas R.; and McIntosh, Alvin J., 3,961,492.

McKeever, Carl, to Lyall Electric, Inc. Conveyor system for lengths of flexible material. 3,961,703, Cl. 140-105.000.

McNabney, John C., to Trane Company, The. Air distribution regulator apparatus. 3,961,748, Cl. 236-49.000.

McNair, Mark G.: *See—*
Leavens, Roland B.; and McNair, Mark G., 3,962,469.

McRobert, Leon R., to FMC Corporation. Rotary windrowing machine. 3,961,469, Cl. 56-328.00R.

Mead Johnson & Company: *See—*
Wu, Yao Hua; and Lobeck, Walter G., Jr., 3,962,252.

Measurex Corporation: *See—*
Swanson, S. Keith; and Stepner, David E., 3,961,425.

Meckstroth, Robert C.: *See—*
Small, James R.; and Meckstroth, Robert C., 3,961,747.

Medical Research Laboratories, Inc.: *See—*
Milani, Dean L.; and Kerwin, Richard G., 3,961,623.

Meier, Jean; and Le Martret, Odile, to Roussel-UCLAF. Novel benzoylphenylacetic acid derivatives. 3,962,303, Cl. 260-453.0RW.

Meiji Seika Kaisha, Ltd.: *See—*
Mayama, Takeshi; Kobayashi, Toshiyuki; and Okada, Akira, 3,962,419.

Meiser, Werner: *See—*
Westphal, Kurt; Meiser, Werner; Eue, Ludwig; and Hack, Helmuth, 3,961,936.

Mele, Arthur N. Nail care apparatus. 3,961,636, Cl. 132-73.000.

Mentis, Andrew. Metal punching machine. 3,961,512, Cl. 72-53.000.

Merck & Co., Inc.: *See—*
Christensen, Burton G.; and Ratcliffe, Ronald W., 3,962,224.
O'Neill, Joseph L., 3,962,430.
Pines, Seemon H., 3,962,231.
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Meredith, Maxwell: *See—*
Drda, Benedict J.; and Meredith, Maxwell, 3,962,559.

Merritt, Richard F.; and Carpenter, Clark R., to Rohm and Haas Company. Process for the preparation of substituted vinylbenzyl chloride. 3,962,357, Cl. 260-651.00R.

Merz & Co.: *See—*
Merz, Werner; and Michaelis, Werner, 3,962,712.

Merz, Werner; and Michaelis, Werner, to Merz & Co. Apparatus for transporting strip-shaped or sheet-shaped materials. 3,962,712, Cl. 354-319.000.

Messrs. C. Conradty: *See—*
Zollner, Dieter; Zollner, Christine; and Koziol, Konrad, 3,962,068.

Messrs. Willy Rusch, K.G.: *See—*
Rusch, Werner; Beer, Heinrich; Seeger, Veronika; and Waibel, Manfred, 3,962,519.

Metallgesellschaft Aktiengesellschaft: *See—*
Hiller, Heinz; Hochgesand, Gerhard; Supp, Emil; Marschner, Friedemann; and Grunewald, Gerhard, 3,962,300.
Schmalfeld, Paul; Rammler, Roland; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,962,043.

Meyer, Carl H. W.: *See—*
Ehrsam, William Friedrich; Meyer, Carl H. W.; Powers, Robert Lowell; Smith, John Lynn; and Tuchman, Walter Leonard, 3,962,539.

Meyer, James A., to Brunswick Corporation. Steering apparatus for small outboard motors. 3,961,595, Cl. 115-18.00R.

Meyer, Roth & Pastor Maschinenfabrik GmbH: *See—*
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Meyers, Bradley E., to Sea Mesh Corporation. Removal of sea growth from submerged ship hull surfaces. 3,961,594, Cl. 114-222.000.

Meyers, Edward: *See—*
Szanto, Joseph; Brown, William E.; and Meyers, Edward, 3,962,426.

Michael, Stanley H.; Weilandt, Hans J.; and Soupe, Ralph R., to Turnsound Corporation. Omni-directional sound system. 3,961,684, Cl. 181-143.000.

Michaelis, Werner: *See—*
Merz, Werner; and Michaelis, Werner, 3,962,712.

Michaels, Alan S., to Alza Corporation. Structured bioerodible drug delivery device. 3,962,414, Cl. 424-19.000.

Micheron, Francois: *See—*
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Micropore Insulation Limited: *See—*
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Microtech Press Inc.: *See—*
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Miele & Cie.: *See—*
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Miescher, Marcel. Automobile security device. 3,961,680, Cl. 180-82.00C.

Miesel, John L., to Eli Lilly and Company. 3-Aryl-triazene-1-oxides for treating inflammatory diseases. 3,962,434, Cl. 424-226.000.

Miesterfeld, Frederick Otto Richard; and Orris, Stephen Jay, to Chrysler Corporation. Safety belt warning system. 3,962,677, Cl. 340-52.00E.

Mikami, Nobuo: *See—*
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Mikami, Takahito: *See—*
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Milani, Dean L.; and Kerwin, Richard G., to Medical Research Laboratories, Inc. Method of using a disposable electrode pad. 3,961,623, Cl. 128-2.06E.

Milano, Edward J.: *See—*
Braley, Robert L.; Tenenbaum, Mircea; and Milano, Edward J., 3,961,500.

Miles Laboratories, Inc.: *See—*
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Miller, Bruce Jeffrey, to Burroughs Corporation. Automatic power restart for unattended electrical equipment. 3,962,611, Cl. 317-154.000.

Miller, Ralph, to Ciba-Geigy Corporation. Process for coating granular fertilizers with chelated micronutrients. 3,961,932, Cl. 71-1.000.

Millett, James A., to Lure Camera Ltd. Optical index and method for cameras and film processing. 3,961,850, Cl. 355-77.000.

Milligan, Frank. Hockey stick. 3,961,790, Cl. 273-67.00A.

Millipore Corporation: *See—*
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Millonzi, Richard P.; and Radler, Richard W., to Xerox Corporation. Method of fabricating composite trigonal selenium photoreceptor. 3,961,953, Cl. 96-1.500.

Millwee, John T.: *See—*
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Milwaukee Valve Company, Inc.: *See—*
Robinson, Daniel T., 3,961,405.

Milz, Wendell C.: *See—*
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Mima, Seiichi; Yoshikawa, Susumu; and Miya, Masaru, to Director-General of the Agency of Industrial Science and Technology. Hydrophilic polymer membranes of polyvinyl alcohol and chitosan. 3,962,158, Cl. 260-17.4CL.

Minami, Kazuto; Tsukui, Norihiko; and Imamoto, Tsunehiko, to Dai Nippon Printing Company Limited. Decorative laminated structures and method of making same. 3,962,009, Cl. 156-85.000.

Minami, Shinsaku; Matsumoto, Jun-ichi; Kawaguchi, Kazuyo; Mishio, Shinsaku; Shimizu, Masanao; Takase, Yoshiyuki; and Nakamura, Shinichi, to Dainippon Pharmaceutical Co., Ltd. Antibacterial pharmaceutical compositions and processes for preparation thereof. 3,962,443, Cl. 424-251.000.

Minnesota Mining and Manufacturing Company: *See—*
Barber, Loren L., Jr.; and Koshar, Robert J., 3,962,346.
Close, James R.; Wood, William P.; Hatch, Robert A.; and Johnson, James R., 3,961,907.
Rich, Larry D., 3,961,961.
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Minolta Camera Kabushiki Kaisha: *See—*
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Minsk, Lewis M.: *See—*
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Mistopoulos, Chris, Jr., to Ford Motor Company. Vehicle body having a window opening. 3,961,821, Cl. 296-146.000.

Misunas, David P.: *See—*
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Mitchell, Neal L., to Chevron Research Company. Hydraulically actuated wire line apparatus. 3,961,667, Cl. 166-187.000.

Mitchell, Robert Jerry, to Miles Laboratories, Inc. Composition for stabilizing an enzyme-containing reagent. 3,962,037, Cl. 195-63.000.

Mitsubadenkiseisakusho Company, Ltd.: *See—*
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Mitsubishi Denki Kabushiki Kaisha: *See—*
Namizaki, Hirofumi; and Kan, Hirofumi, 3,961,996.

Mitsubishi Gas Chemical Company, Inc.: *See—*
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Northeved, Allan, to Akademiet for de tekniske Videnskaber, Svejsecentralen. Surgical tool for taking biological samples. 3,961,621, Cl. 128-2.00B.
Notomi, Toru; Gaku, Morio; Nakamichi, Kazuyuki; and Suzuki, Kazuhiro, to Mitsubishi Gas Chemical Company, Inc. Process for preparing cured resin from cyanic acid esters using imidazole catalysts. 3,962,184, Cl. 260-47.0CP.
Nou, Ivar: *See—*
Barber, Donald B.; Everett, Paul L.; Nou, Ivar; Struebing, James; and Greenbecker, William, 3,962,066.
Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt.: *See—*
Frenyo, Vilmos, 3,961,895.
Nowak, Bernard E.: *See—*
Economy, James; Cottis, Steve C.; and Nowak, Bernard E. 3,962,314.
Nuclear Fuel Services, Inc.: *See—*
Dufrane, Kenneth H.; Rollins, Jack D.; Best, Ralph E.; Barnhart, Victor J.; Anderson, Clifford J.; Cox, Thomas H.; and Riggs, Robert R., 3,962,587.
Nuesch, Jakob: *See—*
Liersch, Manfred; and Nuesch, Jakob, 3,962,036.
Numa, Masao: *See—*
Narui, Hiroshi; Akune, Ikuo; Shinohara, Terumi; Numa, Masao; and Kobiki, Yosiya, 3,962,397.
Nussbaum, Gert. Rain storing tank. 3,962,084, Cl. 210-83.000.
Nuzzi, Francis J., to Photocircuits Division of Kollmorgan Corporation. Sensitized substrates for chemical metallization. 3,962,494, Cl. 427-304.000.
Oberhofer, Alfred W.; Benko, James J.; and Drozd, Joseph C., to Nalco Chemical Company. Automotive cleaner plus inhibitor. 3,962,109, Cl. 252-146.000.
O'Brien, David, to Fairchild Camera and Instrument Corporation. Oxide isolated integrated injection logic with selective guard ring. 3,962,717, Cl. 357-44.000.
O'Doherty, George O. P., to Eli Lilly and Company. Esters of 1-hydroxy-1H-imidazo-(4,5-b)-pyridines as herbicides. 3,961,937, Cl. 71-92.000.
Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.): *See—*
Larue, Pierre; and Beaumont, Pierre, 3,961,581.
Offutt, Carl R.; and Marcade, Roque Denis, to Whirlpool Corporation. Current limiting impedance network for dryer control. 3,962,617, Cl. 318-444.000.
Ogawa, Haruki: *See—*
Wakamori, Shigeki; Ogawa, Haruki; Yamaguchi, Masayoshi; and Kanamori, Seigo, 3,962,457.
Ogawa, Mutsuo, to Ricoh Co., Ltd. Facsimile set. 3,962,534, Cl. 178-6.000.

Oger, Jacques Francois, to Pont-A-Mousson S.A. Voussoir for a lining, and method for constructing the lining. 3,961,411, Cl. 29-283.000.

Ogura, Katsuyuki: *See—*
Tsuchihashi, Genichi; and Ogura, Katsuyuki, 3,962,281.

Ohbu, Misao; and Higuchi, Seijun, to Nippon Steel Corporation. Method for coating of corrosion-resistant molten alloy. 3,962,501, Cl. 427-433.000.

Ohloff, Gunther: *See—*
Maurer, Bruno; Fracheboud, Michel G.; and Ohloff, Gunther, 3,962,147.

Ohno, Kuniichiro: *See—*
Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, 3,962,247.

Ohyama, Isao: *See—*
Hayashi, Masaki; Tanouchi, Tadao; Ito, Hiroyuki; and Ohyama, Isao, 3,962,312.

Oicles, Jeffrey A.; and Martin, Thomas F., to TRW Inc. Digital display apparatus having jitter correction. 3,962,567, Cl. 235-92.0EA.

Oike & Co., Ltd.: *See—*
Narui, Hiroshi; Akune, Ikuo; Shinohara, Terumi; Numa, Masao; and Kobiki, Yosiya, 3,962,397.

Oita, Katashi; and Lowe, James C., to Weyerhaeuser Company. Ruminant repellent from enzymatically putrefied lipoidal material. 3,962,425, Cl. 424-94.000.

Okada, Akira: *See—*
Mayama, Takeshi; Kobayashi, Toshiyuki; and Okada, Akira, 3,962,419.

Okamoto, Kazuo; and Kaibara, Nobuhiro, to Diesel Kiki Kabushiki Kaisha. Fuel injection device for diesel engines. 3,961,612, Cl. 123-139.00E.

Okazaki, Akira: *See—*
Furuno, Kouji; Okazaki, Akira; Matsubara, Syuzo; Shiba, Motoharu; and Shioya, Akitoshi, 3,962,429.

Okumura, Shinji: *See—*
Tsuchida, Takayasu; Yoshinaga, Fumihiro; and Okumura, Shinji, 3,962,034.

Okuno, Youichi; and Yokota, Hideo, to Canon Kabushiki Kaisha. Viewfinder for a single lens reflex camera. 3,962,710, Cl. 354-225.000.

Okutomi, Tsuneo: *See—*
Sasaki, Hiroshi; Okutomi, Tsuneo; Hosokawa, Tomoyoshi; Nawata, Yoshiharu; and Ando, Kunio, 3,962,455.

Okuzumi, Yuzi, to Goodyear Tire & Rubber Company, The. Process for preparing linear polyesters in the presence of metallic amino compounds. 3,962,193, Cl. 260-75.00R.

Old Fort International, Inc.: *See—*
Balhorn, Milo G., 3,961,874.

Olin Corporation: *See—*
Chiocchio, Louis R.; and Zirlis, Robert S., 3,962,120.
Schiessl, Henry W.; and Kaufman, John D., 3,962,113.

Oliver, Everett O.; and Millwee, John T. Band saw. 3,961,550, Cl. 83-574.000.

Ollman, Melvin L., to C-O, Inc. Apparatus for making truss members. 3,961,738, Cl. 228-5.100.

O'Neill, Joseph L., to Merck & Co., Inc. Sterilization of solid non-electrolyte medicinal agents employing sodium chloride. 3,962,430, Cl. 424-185.000.

Ono, Katuya; Kozuka, Koji; and Komuro, Yoshiyuki, to Toray Industries, Inc. Process for manufacturing a triple-wall container. 3,962,396, Cl. 264-98.000.

Ono Pharmaceutical Company: *See—*
Hayashi, Masaki; Tanouchi, Tadao; Ito, Hiroyuki; and Ohyama, Isao, 3,962,312.

Onogawa, Yukio: *See—*
Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, 3,962,247.

Opti-Holding AG: *See—*
Heimberger, Helmut, 3,962,007.

Optigon Research & Development Corporation: *See—*
Betensky, Ellis I., 3,961,844.

Orcutt, John W., to Texas Instruments Incorporated. Multiple port multiple temperature thermally responsive valve. 3,961,749, Cl. 236-101.00D.

Orlova, Ljudmila Vladimirovna: *See—*
Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Orlova, Ljudmila Vladimirovna; and Shlyandin, Viktor Mikhailovich, 3,962,629.

Orris, Stephen Jay: *See—*
Miesterfeld, Frederick Otto Richard; and Orris, Stephen Jay, 3,962,677.

Osbolt, Frank J. Crimping device. 3,961,518, Cl. 72-409.000.

O'Steen, James K., to United States of America, Navy. Air driven energy storing fuze safing and arming mechanism. 3,961,577, Cl. 102-70.20G.

Ottlund, Bernt; and Lindblom, Georg, to Allmanna Svenska Elektriska Aktiebolaget. Thyristor rectifier. 3,962,624, Cl. 321-27.00R.

Otsuka, Sadao: *See—*
Yoshikawa, Yoshio; Otsuka, Sadao; Amemiya, Akira; and Komatsu, Toshio, 3,962,073.

Otto, Charles W., to General Electric Company. Method of assembling a dyanamoelectric machine. 3,961,416, Cl. 29-596.000.

Outboard Marine Corporation: *See—*
Carpenter, Eugene C., 3,961,467.

Ovsttun, Torbjorn, to A/S Akers Mek. Verksted. Method for filling and emptying of cassions. 3,961,488, Cl. 61-46.000.

Owen, Clyde W., Sr. Aggregate materials washing apparatus. 3,961,637, Cl. 134-104.000.

Owens-Illinois, Inc.: *See—*
Rapp, James E., 3,961,969.
Rapp, James E., 3,962,000.

Owston, William J., to Lord Corporation. Method for improving adhesion between adhesives and polyester or other thermoplastic substrates. 3,962,498, Cl. 427-322.000.

Oxy Metal Industries Corporation: *See—*
Doty, Warren Russell; and Kinney, Timothy James, 3,962,497.

Ozawa, Takahisa, to Yugenkaisha Sankyo Furnace. Combustion equipment in which humid combustible excreta and disposed materials such as livestock excreta, paper sludge can be burnt spontaneously. 3,961,587, Cl. 110-8.00A.

P. Ferrero & C. S.p.A.: *See—*
Lilov, Dimitre, 3,962,473.

Pacciarini, Antonio: *See—*
Bottasso, Franco; and Pacciarini, Antonio, 3,962,022.

Pacifici, James G.; and Kelly, Charles A., to Eastman Kodak Company. Photosensitive compositions containing benzothiazole sensitizers. 3,962,055, Cl. 204-159.150.

Pacifici, James G.; and Kelly, Charles A., to Eastman Kodak Company. Photosensitive compositions containing benzimidazole sensitizers. 3,962,056, Cl. 204-159.150.

Pack, Marvin L.: *See—*
Ramacher, Barry; and Pack, Marvin L., 3,962,072.

Paddock, Paul F.; and Cramer, Jerry W., to Sunkist Growers, Inc. Method of and conveyor for transporting fragile objects. 3,961,701, Cl. 198-131.000.

Pagani, Giorgio, to Snam Progetti S.p.A. Sea water desalination apparatus. 3,961,658, Cl. 159-13.00A.

Pagano, Joseph F.: *See—*
Bowie, Betty Anne; and Pagano, Joseph F., 3,961,696.

Palau, Joseph, to Staeubli, Ltd. Heddle frame arrangement for a weaving machine. 3,961,649, Cl. 139-82.000.

Palisin, Stephen P., Jr., to Empire Plating Company, The. Coated metal article and method of coating. 3,961,993, Cl. 148-6.160.

Pallos, Ferenc M., to Stauffer Chemical Company. Acylformanidine thiocarbamates. 3,962,305, Cl. 260-455.00A.

Panken, Irving, to Mazer Corporation, The. Tissueless pre-printed spirit duplicating masters. 3,962,526, Cl. 428-488.000.

Panozzo, Camillo: *See—*
Brusa, Bruno; Panozzo, Camillo; and Zanini, Giovanni, 3,961,890.

Pansini, Andrew L. Swimming pool cleaning apparatus. 3,961,393, Cl. 15-1.700.

Pappo, Raphael: *See—*
Garland, Robert B.; and Pappo, Raphael, 3,962,291.

Papst, Georg; and Wrobel, Guenter, to Papst-Motoren KG. Radial flow fan. 3,961,864, Cl. 417-354.000.

Papst-Motoren KG: *See—*
Papst, Georg; and Wrobel, Guenter, 3,961,864.

Park, Arthur: *See—*
Craig, James T., Jr.; and Park, Arthur, 3,961,674.

Parker-Hannifin Corporation: *See—*
Rich, Beldon R.; Gallagher, Richard J.; and Berninger, John F., 3,961,564.

Parks, John B., to Syntex (U.S.A.) Inc. Method for immunizing nursing piglets against transmissible gastroenteritis(TGE) virus. 3,962,422, Cl. 424-89.000.

Parliment, Thomas H.; Clinton, William P.; Scarpellino, Richard; Soukup, Robert J.; and Epstein, Martin F., to General Foods Corporation. Enhancement of coffee flavor. 3,962,321, Cl. 426-535.000.

Parry, David W. Writing instrument. 3,961,852, Cl. 401-195.000.

Pascarella, Giorgio; and Salvemini, Francesco, to Tecneco S.p.A. Process for the purification of waste waters. 3,962,077, Cl. 210-23.00H.

Patel, Ambelal: *See—*
DiBattista, Anthony; and Patel, Ambelal, 3,962,123.

Paton, Hamilton Neil King; and Skilling, John B. Articulated railcar. 3,961,582, Cl. 105-3.000.

Paton, Hamilton Neil King; and Skilling, John B. Railway car truck. 3,961,584, Cl. 105-182.00R.

Pattantyus-Abraham, Tamas I., to Westinghouse Electric Corporation. Repeater coupler for power line communication systems. 3,962,547, Cl. 179-2.50R.

Peabody Barnes, Inc.: *See—*
Morgan, Arvid E., 3,961,758.

Pecak, William Eugene, to General Electric Company. Reactivation of a magnesium oxide catalyst. 3,962,126, Cl. 252-416.000.

Pedersen, Richard Alan: *See—*
Kane, Jack; and Pedersen, Richard Alan, 3,962,590.

Peet, Harvey K., to Sealol, Inc. Conversion kit. 3,961,799, Cl. 277-9.000.

Peetermans, Julien; Lobmann, Michele; Prevost, Jean-Marie; and Vascoboinic, Emil, to Recherche et Industrie Therapeutiques (R.I.T.). Live influenza type B virus vaccines and preparation thereof. 3,962,423, Cl. 424-89.000.

Pelosi, Stanford S., Jr., to Morton-Norwich Products, Inc. 3-(5-Aryl-2-furyl)-3-hydroxypropionic acids and ethyl esters. 3,962,284, Cl. 260-347.500.

Peng, Ting-Fu. Method and apparatus for adhering thermometer in liquid. 3,961,531, Cl. 73-353.000.

Penn Fishing Tackle Mfg. Co.: *See—*
Henze, Walter J.; and Thein, San, 3,961,438.

Pennwalt Corporation: *See—*
MacLeay, Ronald Edward; and Sheppard, Chester Stephen, 3,962,210.
Tuccillo, Joseph J., 3,961,420.

Percheron, Jean-Claude: *See—*
Alliot, Maurice; Beguin, Jean-Claude; Moutach, Michel; and Percheron, Jean-Claude, 3,961,995.

Peregrim, Frank: *See—*
Dovell, Clark W.; Peregrim, Frank; and Tolliver, Daniel R., 3,961,389.

Peressini, Eugene R., to Hughes Aircraft Company. High power flowing gas laser with profiled electron beam excitation. 3,962,656, Cl. 331-94.5PE.

Perez, Antonio L. Locks. 3,961,506, Cl. 70-363.000.

Pericki, Vladimir: *See—*
Poslek, Stjepan; and Pericki, Vladimir, 3,961,615.

Perks, Arthur Thomas. Overhead storage apparatus. 3,961,711, Cl. 211-117.000.

Perrotti, Emilio: *See—*
Neri, Carlo; and Perrotti, Emilio, 3,962,250.

Perruccio, Salvatore M., to KTI Chemical, Inc. Chemical stripping solution. 3,962,108, Cl. 252-142.000.

Perstorp AB: *See—*
Herz, Kurt S., 3,962,347.

Peters, Dierk D. Truss support connector. 3,961,455, Cl. 52-693.000.

Peters, George, to Lawrence Peska Associates, Inc., a part interest. Magnetic key lock and alarm. 3,962,695, Cl. 340-274.00R.

Peters, Werner: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; Zundorf, Dieter; and Horbel, Hugo, 3,962,129.
Schmalfeld, Paul; Rammler, Roland; Peters, Werner; Ahland, Erwin; Bock, Burkhard; and Lehmann, Joachim, 3,962,043.

Peterson, Anders Adolf; and Cummiskey, William J., to Hardinge Brothers, Inc. Stub collet. 3,961,800, Cl. 279-58.000.

Peterson, Joseph L.: *See—*
Hardy, Samuel G.; and Peterson, Joseph L., 3,962,632.

Peterson, Laurence I.; and VanEyck, Michael J., to Dow Chemical Company, The. Preparation of alkylene diisocyanates. 3,962,301, Cl. 260-453.00P.

Peterson, Samuel F., Jr., to Associated Mills, Inc. Hydrotherapy bath assembly. 3,961,382, Cl. 4-178.000.

Petresh, Randall P.; and Toohey, Raymond F., to Ford Motor Company. Parking brake control. 3,961,545, Cl. 74-517.000.

Petro-Tex Chemical Corporation: *See—*
Woerner, Rudolph C., 3,962,127.

Petroff, Pierre Marc; and Rozgonyi, George Arthur, to Bell Telephone Laboratories, Incorporated. Reduction of dislocations in multilayer structures of zinc-blend materials. 3,962,716, Cl. 357-18.000.

Petrucelli, Frank, to Allied Chemical Corporation. Compositions of 3,3,3-trifluoro-2-trifluoromethyl propene/vinylidene fluoride copolymer and polytetrafluoroethylene. 3,962,373, Cl. 260-900.000.

Pfaff, Wayne K., to Plastronics, Inc. Mounting pad and semiconductor encapsulation device combination. 3,962,719, Cl. 357-74.000.

Pfister, Gustav R.; Williams, David J.; and Abkowitz, Martin A., to Xerox Corporation. Acid sensitized charge transfer complexes and cyclic electrostatographic imaging. 3,961,954, Cl. 96-1.600.

Pfizer Inc.: *See—*
Abu El-Haj, Marwan J.; and Dominy, Beryl William, 3,962,264.
Faubl, Hermann; and Belton, Annette M., 3,962,131.
Torres, Anibal, 3,962,472.

Phelps, Eric, to Foseco International Limited. Method of protecting refractory lining in containers for molten metal. 3,962,492, Cl. 427-204.000.

Phillips Petroleum Company: *See—*
Cobb, Raymond L., 3,962,134.
Drake, Charles A., 3,962,337.
Malick, Emil A., 3,962,042.
Moczygemba, George A.; and Hsieh, Henry L., 3,962,195.
Vanderveen, John W., 3,961,902.

Phillips, Ronald, to C.A.V. Limited. Actuator mechanism. 3,961,544, Cl. 74-513.000.

Phillips, Ronald L., to General Motors Corporation. Expansible sheet metal pulley with mannual detent adjustment means. 3,961,538, Cl. 74-230.800.

Photocircuits Division of Kollmorgan Corporation: *See—*
Nuzzi, Francis J., 3,962,494.

Photocircuits Division of Kollmorgen: *See—*
Leech, Edward J., 3,962,496.

Pierlot, Bernard; and Potaufeu, Georges, to Clisalu. Cap which can be packaged without danger of wedging. 3,961,719, Cl. 215-277.000.

Pilkington Brothers Limited: *See—*
Alderson, John Victor; Stanley, Donald Frederick; and Rudd, John Duncan, 3,961,927.
Jago, John James; and Billington, Colin, 3,961,928.
Robinson, Albert Sidney; Loukes, David Gordon; and Lawrenson, Jack, 3,961,930.

Pillsbury Company, The: *See—*
Turpin, Charles H., 3,962,476.

Pines, Seemon H., to Merck & Co., Inc. Preparation of 7-acylamido-7-methoxy-3-substituted methyl-3(or 2)-cephem-4-carboxylic acid and its S-oxides. 3,962,231, Cl. 260-243.00C.

Pioch, Richard P.; and Schmiegel, Klaus K., to Eli Lilly and Company. 3-Phenacylpiperidines. 3,962,257, Cl. 260-293.800.

Pioneer Electronic Corporation: *See—*
Tsukagoshi, Tsunehiro, 3,961,797.

Pischke, LaMonte D.; and Shoaf, Myron D., to General Foods Corporation. Spray-dried L-aspartic acid derivatives. 3,962,468, Cl. 426-96.000.

Piston, Albert O.: *See—*
Criscimagna, Tony N.; and Piston, Albert O., 3,962,700.

Pittman, Carl R., to Arvin Hong Kong Ltd. Ambient light responsive illumination brightness control circuit. 3,962,600, Cl. 315-158.000.

Plana-GmbH: *See—*
Rack, David, 3,961,445.

Plastronics, Inc.: *See—*
Pfaff, Wayne K., 3,962,719.

Platt, Eric G.: *See—*
Reines, Jose; Platt, Eric G.; White, Stanley Earl; and Byckowski, Marion Casimir, 3,962,552.

Platz, Friedrich: *See—*
Bubik, Alfred; and Platz, Friedrich, 3,962,031.

Ploner, Klaus-Jurgen; Wild, Jost; and Sigg-Grutter, Trudi, to Givaudan Corporation. Process for making 1,3-diene hydrocarbons. 3,962,344, Cl. 260-601.00R.

Polaroid Corporation: *See—*
Cutler, Norman W., Jr., 3,962,711.

Pollard, James H.: *See—*
Lehr, David R.; and Pollard, James H., 3,961,707.

Pollio, Frank Xavier; and Campos, Omar, to Rohm and Haas Company. Refining of sugar containing liquids by ion exchange. 3,961,981, Cl. 127-46.00A.

Pollitzer, Ernest L.: *See—*
Germanas, Dalia; and Pollitzer, Ernest L., 3,962,367.

Pont-A-Mousson S.A.: *See—*
Degois, Michel Louis; and Maquaire, Jean-Pierre Albert, 3,961,663.
Langenfeld, Michel, 3,962,691.
Oger, Jacques Francois, 3,961,411.

Popka, Edward A., to United States of America, Army. Voltage doubler circuit. 3,962,591, Cl. 307-264.000.

Poplawski, Eugene M.: *See—*
Mankowski, Aleksander; Poplawski, Eugene M.; and Kraina, Jack H., 3,961,827.

Poponiak, Michael R.: *See—*
Abbas, Shakir A.; Dockerty, Robert C.; and Poponiak, Michael R., 3,962,052.

Popovitch, Dragolyoub, to United States of America, Army. Point-detonating projectile fuze. 3,961,578, Cl. 102-78.000.

Poppinger, Herbert, to Siemens Aktiengesellschaft. Circuit for determining a measure value of a rectified a-c voltage. 3,962,631, Cl. 324-119.000.

Porter, Gail E. Trig making tools. 3,961,387, Cl. 7-5.600.

Poslek, Stjepan; and Pericki, Vladimir. Detoxication device for exhaust gases of internal-combustion engines. 3,961,615, Cl. 123-119.0DB.

Post Office, The: *See—*
Heslop, Christopher John, 3,961,989.

Potaufeu, Georges: *See—*
Pierlot, Bernard; and Potaufeu, Georges, 3,961,719.

Potter, Gordon W., Jr., to Aladdin Industries, Incorporated. Vacuum insulated container. 3,961,720, Cl. 215-13.00R.

Powell, James E., to Shell Oil Company. Nitro(tetrahydro-2H-1,3-thiazin-2-ylidene)methyl aldehydes and ketones. 3,962,225, Cl. 260-243.00R.

Powelson, Douglas V. N.: *See—*
Byrne, Michael F.; and Powelson, Douglas V. N., 3,961,814.

Powers, Robert Lowell: *See—*
Ehrsam, William Friedrich; Meyer, Carl H. W.; Powers, Robert Lowell; Smith, John Lynn; and Tuchman, Walter Leonard, 3,962,539.

PPG Industries, Inc.: *See—*
Bosso, Joseph F.; and Wismer, Marco, 3,962,165.
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Chang, Wen-Hsuan; and Hartman, Marvis E., 3,962,521.
Chang, Wen-Hsuan; and Hartman, Marvis E., 3,962,522.
Gillery, Frank H., 3,962,488.
Rowley, James R., 3,961,709.

Praetzel, Hans Eberhard; and Jenkner, Herbert, to Chemische Fabrik Kalk GmbH. Self-extinguishing acrylonitrile-butadiene-styrene moulding composition. 3,962,164, Cl. 260-28.50B.

Pratt Manufacturing Corporation: *See—*
Beaudoin, John F., 3,961,783.
Blok, Glen R., 3,961,702.

Precision Engineering (Worcester) Limited: *See—*
Ward, John David, 3,961,664.

Precision Screen Machines Inc.: *See—*
Jaffa, David, 3,961,388.

Presto Lock Company: *See—*
Gehrie, Charles S.; and Bako, Lazlo, 3,961,505.

Preuss, Robert K.: *See—*
Yarwood, John C.; Dore, James E.; and Preuss, Robert K., 3,962,081.

Prevost, Jean-Marie: *See—*
Peetermans, Julien; Lobmann, Michele; Prevost, Jean-Marie; and Vascoboinic, Emil, 3,962,423.

Priel, Ury; and Anselmo, Robert A., to National Semiconductor Corporation. Inverter with minimum skew. 3,962,589, Cl. 307-214.000.

Priester, Jack E. Apparatus and method for re-forming and maintaining the circular shape of a deformed roll of material. 3,961,516, Cl. 72-370.000.

Prinz, Richard: *See—*
Alberts, Heinrich; Bartl, Herbert; Prinz, Richard; Elghani, Salah Elabd; and Fischer, Winfried, 3,962,371.
Probst, Georg: *See—*
Hertenich, Walter; and Probst, Georg, 3,961,398.
Procter & Gamble Company, The: *See—*
Birkofer, Roger Clarence, 3,962,418.
Murphy, Alan P.; and Kretschmar, Rickey, 3,962,100.
Nicol, Charles Henry; and Hays, Hugh Robert, 3,962,152.
Prucnal, Paul J.: *See—*
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Pryor, Edward G.: *See—*
Loshbough, Richard C.; Pryor, Edward G.; and Robaszkiewicz, Gerald D., 3,962,569.
Loshbough, Richard C.; and Pryor, Edward G., 3,962,570.
Ptacek, James F.; and Shaneyfelt, Leon J., to Vendo Company, The. Electronic apparatus for testing moving coins employing successive time significant sensings of the effects of proximity of a coin under test to inductive impedance elements upon the effective impedances thereof. 3,962,627, Cl. 324-34.00R.
Puchalski, Chester: *See—*
Brown, Richard E.; Puchalski, Chester; and Shavel, John, Jr., 3,962,266.
Pungs, Wolfgang: *See—*
Schneider, Johannes; and Pungs, Wolfgang, 3,962,400.
Purcell, Joseph: *See—*
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Purdue Research Foundation: *See—*
Kornblum, Nathan, 3,962,053.
Purdy, Clarence E.: *See—*
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Rack, David, to Plana-GmbH. Plant holder and process for producing the same. 3,961,445, Cl. 47-37.000.
Rackley, Robert Lee, to Du Pont de Nemours, E. I., and Company. Process for curing heat-curable coating. 3,962,502, Cl. 427-444.000.
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Ray-Chaudhuri, Dilip K.; and Iovine, Carmine P., to National Starch and Chemical Corporation. Graft copolymers of a polyamideamine substrate and starch, and method of making same. 3,962,159, Cl. 260-17.4GC.
Ray, Jean-Louis; and Laugier, Robert, to Rhone-Progil. Cobalt-oxide-based catalytic substances for the oxidation of ammonia. 3,962,138, Cl. 252-462.000.
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Reed, Donald K. Masonry anchor extractor tool. 3,961,410, Cl. 29-256.000.
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Reinert, Gerhard; Schaub, Andres; and Dussy, Paul, to Ciba-Geigy Corporation. Continuous process for optical brightening and printing of organic textile fiber material. 3,961,880, Cl. 8-17.000.
Reines, Jose; Platt, Eric G.; White, Stanley Earl; and Byckowski, Marion Casimir, to International Telephone and Telegraph Corporation. Switching network and peripheral circuits for telecommunications system. 3,962,552, Cl. 179-18.0EA.
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Renault, Philippe; Deschamps, Andre; and Dezael, Claude, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for purifying industrial gases containing hydrogen sulfide with sulfur production. 3,962,410, Cl. 423-574.00R.
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Rich, Beldon R.; Gallagher, Richard J.; and Berninger, John F., to Parker-Hannifin Corporation. Fluid motor and combination bumper and sealing ring therefor. 3,961,564, Cl. 92-85.00R.
Rich, Larry D., to Minnesota Mining and Manufacturing Company. Positive or negative developable photosensitive composition. 3,961,961, Cl. 96-83.000.
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Richman, Jay L., to Bendix Corporation, The. Biphase waveform generator using shift registers. 3,962,647, Cl. 328-59.000.
Richter, Ferdinand Joseph; and Riall, Charles Teets, to American Cyanamid Company. Using hydrophilic polyurethane laparotomy sponges. 3,961,629, Cl. 128-296.000.
Richter, Manfred; Schierbaum, Friedrich; Augustat, Siegfried; and Knoch, Klaus-Dieter, to Akademie der Wissenschaften der DDR. Method of producing starch hydrolysis products for use as a food additives. 3,962,465, Cl. 426-48.000.
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Riggs, John P., to Celanese Corporation. Acrylic fiber conversion utilizing a stabilization treatment conducted initially in an essentially inert atmosphere. 3,961,888, Cl. 8-115.500.
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Ringwall, Carl Gustave, to General Electric Company. Fluidic accelerometer. 3,961,536, Cl. 73-515.000.
Riou, Joannes; and Silvestri, Pierre, to Rusi Societe. Method of manufacturing a body for a valise, suitcase, attache case or similar article. 3,962,010, Cl. 156-93.000.
Rittler, Hermann L., to Corning Glass Works. Exuded transition metal spinel films on glass-ceramic articles. 3,962,514, Cl. 428-334.000.
Ritzerfeld, Gerhard. Copy sheet and method of printing the same. 3,962,489, Cl. 427-144.000.
Rivinius, Theodore. Hydraulic control system for hydraulically operated road grader. 3,961,670, Cl. 172-4.500.
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Roccaforte, Harry I.; and Lambert, Herbert L., to Hoerner Waldorf Corporation. Combined packer and display carton. 3,961,706, Cl. 206-44.00R.
Rochester, Beresford Eton, to Kaiser Aluminum & Chemical Corporation. Conveyor belt wiper system. 3,961,704, Cl. 198-188.000.
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Rodabaugh, Rowena Ann. Printing apparatus for use on plastic containers. 3,961,575, Cl. 101-9.000.
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Roman, Steven A., to Shell Oil Company. Esters of nitro(tetrahydro-2H-1,3-thiazin-2-ylidene)acetic acids. 3,962,234, Cl. 260-243.00R.
Romanenko, Nikolai Trofimovich; Nikitin, Jury Filippovich; and Litenkova, Ljudmila Anatolievna. Arrangement for retaining an actuating member in an extreme position. 3,961,481, Cl. 60-531.000.
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Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, to Fuji Chemical Industry Co., Ltd.; and Nippon Chemiphar Co., Ltd. Alpha-cyanoamine compounds and a process for producing the same. 3,962,247, Cl. 260-268.0CN.
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Satzinger, Roland. Safety system for the occupants of vehicles, especially motor vehicles. 3,961,805, Cl. 280-747.000.
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Scharnhorst, Kurt Peter; Bis, Richard F.; Dixon, Jack R.; Houston, Bland B., Jr.; Brown, Richard W.; and Riedl, Harold R., to United States of America, Navy. Vacuum deposition method for fabricating an epitaxial PbSnTe rectifying metal semiconductor contact photodetector. 3,961,998, Cl. 148-175.000.
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Slathar, Donald A.; and Neutkens, Christiaan H., to International Telephone and Telegraph Corporation. Apparatus for wrapping confectionery products and the like. 3,961,462, Cl. 53-221.000.
Small, James R.; and Meckstroth, Robert C., to Hobart Corporation. Commodity identification apparatus. 3,961,747, Cl. 235-61.90R.
Smith, Ashtyn Hereward; and Forbat, John Egon, to Inertia Switch Limited. Protective systems. 3,962,696, Cl. 340-276.000.
Smith, Billy R.; and Smith, Francis Moses, to B&M Die Co., Inc. Compound angle cutting edge. 3,961,858, Cl. 408-204.000.
Smith, Charles, to Dow Corning Limited. Process for treating fibers. 3,962,500, Cl. 427-387.000.
Smith, Dennis J.: *See—*
Turner, Timothy D.; and Smith, Dennis J., 3,961,847.
Smith, Francis Moses: *See—*
Smith, Billy R.; and Smith, Francis Moses, 3,961,858.
Smith, Franklin A., to Houdaille Industries, Inc. Die changing turret table segment. 3,961,549, Cl. 83-552.000.
Smith, Harry: *See—*
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Smith, John Lynn: *See—*
Ehrsam, William Friedrich; Meyer, Carl H. W.; Powers, Robert Lowell; Smith, John Lynn; and Tuchman, Walter Leonard, 3,962,539.
Smith, Robert, to Lawrence Peska Associates, Inc., a part interest. Device for viewing three dimensional pictures. 3,961,427, Cl. 35-29.00A.
Smith, Robert L., to Electronic Memories and Magnetics Corporation. Start-up control for DC motors. 3,962,616, Cl. 318-400.000.
Smith, William W., to FMC Corporation. Olive stuffing method. 3,962,474, Cl. 426-282.000.
SmithKline Corporation: *See—*
Baile, Clifton A.; Bender, Paul E.; and Loev, Bernard, 3,962,448.
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Pagani, Giorgio, 3,961,658.
Snell, Brian Kenneth; and Ghosh, Ranajit, to Imperial Chemical Industries Limited. Fungicidal compositions containing 2-amino pyrimidines and methods of using the same. 3,962,442, Cl. 424-251.000.
Societa' Italiana Resine S.I.R. S.p.A.: *See—*
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Societe Chimique des Charbonnages: *See—*
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Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
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Societe des Automobiles Peugeot: *See—*
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Societe d'Etudes de Machines Thermiques: *See—*
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Societe Dite: Electronique Marcel Dassault: *See—*
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Societe Industrielle pour la Construction de Materiels Automatiques S.I.C.M.A.: *See—*
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Societe Kessler S.A.: *See—*
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Somers, Stanley Brice Lascelles. Device for guiding a magnetic tape in a recording cassette. 3,961,763, Cl. 242-199.000.
Sonnberg, Joachim; and Sanden, Ulrich, to Diessel GmbH & Co. System for measuring the flow and recording quantities of liquid. 3,961,527, Cl. 73-194.00R.
Sonneborn, Kurt Jacques, to RCA Corporation. Pattern definition in an organic layer. 3,962,004, Cl. 156-11.000.
Sony Corporation: *See—*
Kamimura, Tomohisa; and Suzuki, Makoto, 3,962,727.
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Sorensen, Robert; and Zablocki, Richard A., to International Harvester Company. Cutterbar control system. 3,961,464, Cl. 56-10.400.
Soukup, Robert J.: *See—*
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Sozzi, Tomaso, to Societe d'Assistance Technique pour Produits Nestle S.A. Process for preparing a butter-like dairy product. 3,962,464, Cl. 426-43.000.
Spangler, Eugene A. Adjustable sun shield. 3,961,820, Cl. 296-97.00C.
Spangler, Searle T. Multiple mode variable speed motor control circuit. 3,962,615, Cl. 318-305.000.
Sparlin, Derry D.; and Starks, Charles M., to Continental Oil Company. High strength silicate form and method for producing same. 3,961,972, Cl. 106-75.000.
Sparrendahl, Gunnar Erik William, to Telefonaktiebolaget L M Ericsson. Device for converting an incoming analog signal into an outgoing PCM signal. 3,962,636, Cl. 325-38.00B.
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Spaulding, Vernon E. Conversion bracket for well pump. 3,961,865, Cl. 417-362.000.
Spears, Cecil Julius. Collapsible tube squeezing device. 3,961,727, Cl. 222-103.000.
Spears, Peter John: *See—*
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Spector, Richard: *See—*
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Spitschan, Hans-Jorg: *See—*
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Spitz, Melvin P. Bed frame having releasably interlocked side rails and crossbars. 3,961,383, Cl. 5-181.000.
Spitz, Melvin P. Bed frame having releasably interlocked side rails and crossbars. 3,961,384, Cl. 5-184.000.
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Spivack, John D.; and Dexter, Martin, to Ciba-Geigy Corporation. 2,4,-6-Trialkyl-3-hydroxyphenylalkane phosphonates and phosphinates. 3,962,376, Cl. 260-953.000.
Spivack, John D., to Ciba-Geigy Corporation. 2,3,5-Trialkyl-4-hydroxybenzylphosphonates and phosphinates. 3,962,377, Cl. 260-953.000.
Spivak, Boris Volkovich: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Gradov, Oleg Borisovich; Karpman, David Bentsionovich; Spivak, Boris Volkovich; Chigirinsky, Alexandr Abramovich; Kildishev, Vasily Semenovich; Linetsky, Genrikh Nukhimovich, deceased; and Linetskaya, Ella Semenovna, administrator, 3,962,594.
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Sprague, George R., to Colonial Rubber Works, Inc. Apparatus for making carpet underlay. 3,961,875, Cl. 425-224.000.
Sprague, Robert H., to Itek Corporation. Merocyanine photoconductors. 3,961,952, Cl. 96-1.500.
Sprecher, Raymond G., to General Motors Corporation. Vehicular trunk lid latch assembly. 3,961,504, Cl. 70-1.500.
Sprecher & Schuh AG: *See—*
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Springtime Flowers, Inc.: *See—*
Skaife, William, 3,961,444.
Square D Company: *See—*
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Srivastava, Gopal Krishna, to GTE Sylvania Incorporated. Automatic peak color control circuit. 3,962,723, Cl. 358-27.000.
Stach, Leonard J., to Velsicol Chemical Corporation. 3-Oxocyclohex-1-enyl 2-methoxy-3,6-dichlorobenzoate, and herbicidal use thereof. 3,961,939, Cl. 71-107.000.
Stackman, Robert W., to Celanese Corporation. Organopolysiloxane polyesters. 3,962,299, Cl. 260-448.80R.
Staeubli, Ltd.: *See—*
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Stahl-Urban Company: *See—*
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Stahle, Eugen: *See—*
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Stahly, H. La Mar, to Elkhart Products Corporation. Method of making pipe fittings. 3,961,513, Cl. 72-58.000.
Staley, Lewis E., to Rockwell International Corporation. Digital function generator. 3,962,573, Cl. 235-156.000.
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Stanley Works, The: *See—*
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Stark, Olof; and Martensson, Kjell, to AB Ziristor. Parallelepipedal packing container. 3,961,742, Cl. 229-17.00R.

Stark, William Max, to Eli Lilly and Company. Antibiotic nebramycin factor VII. 3,962,427, Cl. 424-118.000.

Starkey, Isaac R. Easy-up tree stand. 3,961,686, Cl. 182-187.000.

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State of Florida, The Board of Regents of the: *See—*
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Steele, Roger B.; Katzakian, Arthur, Jr.; Scigliano, Joseph J.; and Hamel, Edward E., to Aerojet-General Corporation. Imide oxirane reactions. 3,962,182, Cl. 260-47.0EN.

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Steger, Werner Thomas, to Tridon Limited. Connecting clip. 3,961,394, Cl. 15-250.320.

Stehl, Otto, to Flachglas Aktiengesellschaft Delog-Detag. Apparatus for laminating insulating window panes or the like. 3,962,024, Cl. 156-539.000.

Steinberg, David H.: *See—*
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Stepanek, Bohumil; and Bandoch, Rudolf, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Mechanism for supporting needle cams on knitting machines. 3,961,499, Cl. 66-54.000.

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Stewart, David A., to General Electric Company. Tone frequency detecting circuit. 3,962,645, Cl. 325-478.000.

Stiffel, Henry R.: *See—*
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Stine, Joe C., to Houston Systems, Inc. Single line davit. 3,961,713, Cl. 212-58.00R.

Stockdale, George Fairbank, to RCA Corporation. Method for embossing a pattern in glass. 3,961,929, Cl. 65-35.000.

Stoeckler, Hans A.: *See—*
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Stolzy, Albert Donald, to International Telephone and Telegraph Corporation. Rate divider. 3,962,572, Cl. 235-156.000.

Stone, Wayne B., Jr. Direct readout exhibitor for determining long distance telephone charges. 3,962,548, Cl. 179-7.10R.

Stotler, Harold H., to Hydrocarbon Research, Inc. H-coal process: slurry oil recycle system. 3,962,070, Cl. 208-10.000.

Stridde, George E., to NL Industries, Inc. Process for alkylating aromatic hydrocarbons. 3,962,361, Cl. 260-671.00C.

Strohbeck, Gotthilf; and Stahle, Eugen, to Robert Bosch GmbH. Vibratory compactor. 3,961,774, Cl. 259-1.00R.

Strong, Clifford H. G.: *See—*
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Struebing, James: *See—*
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Stucker, James E. Confection holding device. 3,962,470, Cl. 426-135.000.

Studebaker, Gary W.; and Studebaker, Susan H. All directions balance board to enhance motor development of the cerebral palsied child. 3,961,787, Cl. 272-93.000.

Studebaker, Susan H.: *See—*
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Suciu, George, to Newmapak Ltd. Clamping conveyor. 3,961,705, Cl. 198-248.000.

Suggitt, Robert M., to Texaco Development Corporation. Method for preparing polyphenyls. 3,962,362, Cl. 260-668.00R.

Sugimoto, Yasuo: *See—*
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Sugio, Akitoshi: *See—*
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Sullivan, Edward A., to Ventron Corporation. Bleaching wood pulp with sodium hydrosulfite in the presence of hexamethylenetetramine. 3,962,030, Cl. 162-72.000.

Sumitomo Bakelite Company, Limited: *See—*
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Sumitomo Chemical Company, Limited: *See—*
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Supp, Emil: *See—*
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Suzuki, Narishige; Morino, Yoshihiro; Hashiguchi, Yoshitaka; and Segawa, Tunehiro, to Shofu Dental Corporation; and Teikoku Chemical Industry Co., Ltd. Dental cement composition. 3,962,267, Cl. 260-29.6TA.

Suzuki, Tadao; Kawada, Hirohito; and Sugimoto, Yasuo, to Sony Corporation. Heat dispersion device for use in an electronic apparatus. 3,961,666, Cl. 165-129.000.

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Svenska Textilforskningsinstitutet: *See—*
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Svenska Traforskningsinstitutet and Skogshogskolan: *See—*
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Swanson, S. Keith; and Stepner, David E., to Measurex Corporation. Temperature control system for textile tenter frame apparatus. 3,961,425, Cl. 34-25.000.

Sweeney, William T., to Continental Oil Company. Control system for positioning extensible pipeline system. 3,961,772, Cl. 254-173.00R.

Sweet, David L.: *See—*
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Sweet, Phillip J.; Hamlet, Buck C.; and Sweet, David L., to American Carrier Equipment, Inc. Suspension unit. 3,961,826, Cl. 301-125.000.

Swered, Paul; and Shema, Bernard F., to Betz Laboratories, Inc. Slime control compositions and their use. 3,962,456, Cl. 424-298.000.

Swietlik Joseph Marian; and Sexton, Michael David, to Exxon Research and Engineering Company. Lubricating oil compositions. 3,962,104, Cl. 252-32.70E.

Swift, Thomas Edwin, to Eltra Corporation. Small engine ignition system with spark advance. 3,961,618, Cl. 123-148.0CC.

Swinnen, Maurice E. T.: *See—*
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Swiss Aluminium Ltd.: *See—*
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Symens, Raymond D.; Queneau, Paul B.; and Blandon, Antonio E., to Amax Inc. Atmospheric leaching of matte containing iron. 3,962,051, Cl. 204-108.000.

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Szanto, Joseph; Brown, William E.; and Meyers, Edward, to E. R. Squibb & Sons, Inc. Antibiotics LL-AC541 and racemomycin A as taeniacidal agents. 3,962,426, Cl. 424-116.000.

Sze, Morgan C., to Lummus Company, The. Gravity settling. 3,962,098, Cl. 210-532.00R.

Szuhaj, Bernard F.; and Yaste, Joseph R., to Central Soya Company, Inc. Phosphatide preparation process. 3,962,292, Cl. 260-403.000.

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Tabacheck, Martin S. Net tightener. 3,961,789, Cl. 273-29.0BE.

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Takamura, Tsutomu; Shirogami, Tamotsu; and Kanada, Yoshimi, to Tokyo Shibaura Electric Co., Ltd. Nickel-zinc cell. 3,961,985, Cl. 136-28.000.

Takaoka, Hidenori: *See—*
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Takase, Yoshiyuki: *See—*
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Teikoku Chemical Industry Co., Ltd.: *See—*
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Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
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Tempka, John A., to Motorola, Inc. Squelch circuit for a digital system. 3,962,646, Cl. 325-478.000.

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Teramachi, Hiroshi. Actuator. 3,961,559, Cl. 91-189.00R.

Teramoto, Tsutomu: *See—*
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Terraillon, Marc, to Terraillon. Weighing scales. 3,961,676, Cl. 177-178.000.

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Thomas, John Ellwood: *See—*
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Thomas, O. Leon, to Southwire Company. Trailer hitch. 3,961,813, Cl. 280-485.000.

Thome, Michel, to Acieries Thome Cromback. Manufacture of grinding members of ferrous alloys. 3,961,994, Cl. 148-12.00R.

Thommen, Werner; and Korom, Arpad, to U.S. Philips Corporation. Current source circuit arrangement. 3,962,592, Cl. 307-297.000.

Thompson, Charles E., to Continental Oil Company. Waterproof paperboard and method for producing same. 3,962,509, Cl. 428-182.000.

Thompson, Stanley C. Golfing iron head with downwardly tapered keel. 3,961,796, Cl. 273-167.00A.

Thomson-CSF: *See—*
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Throckmorton, Morford C.; Donbar, Ken W.; and Kauffman, Karl C., to Goodyear Tire & Rubber Company, The. Polymerization process. 3,962,375, Cl. 526-335.000.

Thurston, Kelly W., to General Motors Corporation. Exhaust gas recirculation control system. 3,961,610, Cl. 123-119.00A.

Tiberg, Magnus Gustav Georg; and Uggla, Jan B:Son, to Allmanna Svenska Elektriska Aktiebolaget. Apparatus and method for refining a metal melt. 3,961,779, Cl. 266-225.000.

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Till, Henry R.; and Watson, Percy Keith, to Xerox Corporation. Photoelectrophoretic imaging method producing a desired image border. 3,961,949, Cl. 96-1.0PE.

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Toray Industries, Inc.: *See—*
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Torii Winding Machine Co., Ltd.: *See—*
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Tornqvist, Erik G. M.; and Cozewith, Charles, to Exxon Research and Engineering Company. Butadiene polymerization catalyst. 3,962,130, Cl. 252-429.00B.

Torres, Anibal, to Pfizer Inc. Method of inhibition of warmed-over flavor in uncured meats. 3,962,472, Cl. 426-281.000.

Torressen, Albert F., to Lawrence Peska Associates, Inc., a part interest. Space saver dishwasher. 3,961,984, Cl. 134-100.000.

Totani, Kazuo: *See—*
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Touro, Freddie J., to Freeport Minerals Company. Autoclave system for leaching sulfide concentrates. 3,961,908, Cl. 23-290.000.

Touro, Freddie J., to Freeport Minerals Company. Oxidation-leaching of chalcopyrite. 3,962,402, Cl. 423-35.000.

Towmotor Corporation: *See—*
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Toy, Arthur D. F.; and Uhing, Eugene H., to Stauffer Chemical Company. Process for preparing alkyl- or aryl-phosphonothioic dihalides. 3,962,323, Cl. 260-543.00P.

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Trapasso, Louis E., to Celanese Corporation. Bis-quaternary ammonium compounds and polymers. 3,962,332, Cl. 260-561.00N.

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Tresouthick, Stewart W., to United States Steel Corporation. Method of manufacture of improved white portland cement. 3,961,974, Cl. 106-101.000.

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Tridon Limited: *See—*
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Tsuchida, Takayasu; Yoshinaga, Fumihiro; and Okumura, Shinji, to Ajinomoto Co., Inc. Method for producing S-adenosylmethionine or methylthioadenosine by yeast. 3,962,034, Cl. 195-28.00N.

Tsuchihashi, Genichi; and Ogura, Katsuyuki, to Sagami Chemical Research Center. Method of preparing aldehydes. 3,962,281, Cl. 260-340.500.

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Turner, Timothy D.; and Smith, Dennis J., to Xerox Corporation. Arcuate screen for an electrophotographic printing machine. 3,961,847, Cl. 355-4.000.

Turner, Timothy D., to Xerox Corporation. Electrophotographic printing machine with halftone screen cleaning. 3,961,848, Cl. 355-4.000.

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Ty, Henry; White, Alfred J.; Boisvert, Roger L.; and Sears, Raymond M., to Texas Instruments Incorporated. Current protector. 3,962,664, Cl. 337-86.000.

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U.M.E.C.-Boydell (Belting) Limited: *See—*
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Ueki, Shigeru, to Kabushiki Kaisha Aiden. Process for coloring aluminum anodic oxide film. 3,962,049, Cl. 204-35.00N.

Ueno, Eichiro; Kawasaki, Hideo; and Shigita, Syozo, to American Cyanamid Company. Process for printing a fiber product containing acrylic fibers and cellulosic fibers. 3,961,883, Cl. 8-21.00A.

Uggla, Jan B:Son: *See—*
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Yamaguchi, Masayoshi: *See—*
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Yamahira, Yoshiya: *See—*
Nakamura, Toshio; Maeda, Tadao; Takenaka, Hiroshi; and Yamahira, Yoshiya, 3,962,436.

Yamamoto, Hisao: *See—*
Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, 3,962,446.

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Yamazaki, Tatsuo; and Hayashida, Takemi, to Kanro Co. Ltd. Method of producing dehydrated fried snack food from apples. 3,962,355, Cl. 426-639.000.

Yanagida, Kiyomi; Hirokane, Tadashi; Sumitomo, Megumu; and Takaoka, Hidenori, to Sumitomo Chemical Company, Limited. Aluminum-base alloys for cable-sheath. 3,961,944, Cl. 75-138.000.

Yanker, George Michael, to International Business Machines Corporation. Self clearing roller feed assembly for document feed apparatus. 3,961,786, Cl. 271-122.000.

Yarwood, John C.; Dore, James E.; and Preuss, Robert K., to Swiss Aluminium Ltd. Ceramic foam filter. 3,962,081, Cl. 210-69.000.

Yashica Co., Ltd.: *See—*
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Yaste, Joseph R.: *See—*
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Yissum Research Development Company: *See—*
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Yokota, Hideo: *See—*
Okuno, Youichi; and Yokota, Hideo, 3,962,710.

Yokoyama, Kazumasa; Yamanouchi, Koichi; Murashima, Ryoichiro; and Watanabe, Ryozo, to Green Cross Corporation, The. Oxygen-transferable emulsion. 3,962,439, Cl. 424-248.000.

Yonekawa, Hisashi; and Azuma, Tosio, to Bridgestone Tire Company Limited. Tire bead flipping apparatus. 3,962,020, Cl. 156-460.000.

Yonemitsu, Eiichi; Sugio, Akitoshi; and Konishi, Akihiko, to Mitsubishi Gas Chemical Company, Inc. Process for polymerizing phenols to produce polyphenylene oxides of low molecular weight. 3,962,180, Cl. 260-47.0ET.

Yoshida, Masashi: *See—*
Sakai, Katsumi; Onogawa, Yukio; Inamoto, Yoshitaka; Nakajima, Hiroshi; Fujimoto, Yasuo; Ohno, Kuniichiro; Yoshida, Masashi; and Araki, Shigehito, 3,962,247.

Yoshida, Yuichi; and Takagi, Akio, to Nippon Paint Co., Ltd. Method for chemical treatment of the surface of an iron substrate with phosphoric acid solutions. 3,961,991, Cl. 148-6.15R.

Yoshikawa, Susumu: *See—*
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Yoshimi, Shigemitsu: *See—*
Sato, Tadashi; Yamamoto, Yasunobu; Mizutani, Iwao; Yoshimi, Shigemitsu; and Teramoto, Tsutomu, 3,962,491.

Yoshimura, Kiyotaka; Asano, Shiro; and Honda, Tadatoshi, to Mitsui Toatsu Chemicals, Incorporated. Process for the production of acrylamide and methacrylamide. 3,962,333, Cl. 260-561.00N.

Yoshinaga, Fumihiro: *See—*
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Yoshino Kogyosho Co., Ltd.: *See—*
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Yoshiyuki, Kazuhiko: *See—*
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Young, Charles C., to Fleeman, Kenneth. Cleaning device for shower enclosure tracks. 3,961,392, Cl. 15-105.000.

Young, Frank Edward: *See—*
Reddaway, Anthony Lewis; and Young, Frank Edward, 3,961,491.

Young, Lewis Brewster, to Mobil Oil Corporation. Alkylation in presence of phosphorus-modified crystalline luminosilicate catalyst. 3,962,364, Cl. 260-671.00C.

Yugenkaisha Sankyo Furnace: *See—*
Ozawa, Takahisa, 3,961,587.

Yukio, Aoki; Susumu, Takeuchi; Shizuo, Wakita; Shoichi, Kato; and Shuichi, Ishida, to Nippon Kayaku Co., Ltd. Alkyl phenyl ether derivatives. 3,962,345, Cl. 260-607.00R.

Zablocki, Richard A.: *See—*
Sorensen, Robert; and Zablocki, Richard A., 3,961,464.

Zajacek, John G.: *See—*
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Zakin, Jacques L.: *See—*
Chang, Jen-Lin; and Zakin, Jacques L., 3,961,639.

Zalewski, Waclaw P. Method of building construction. 3,961,457, Cl. 52-743.000.

Zanders, Willie M. Educational and recreational game. 3,961,793, Cl. 273-124.00R.

Zanini, Giovanni: *See—*
Brusa, Bruno; Panozzo, Camillo; and Zanini, Giovanni, 3,961,890.

Zannucci, Joseph S.; and Lappin, Gerald R., to Eastman Kodak Company. Titanium dioxide pigmented cellulosic polymer compositions with improved visible and ultraviolet light stability. 3,961,975, Cl. 106-176.000.

Zanoni, Carl A., to Zygo Corporation. Apparatus for producing a scanning laser beam of constant linear velocity. 3,961,838, Cl. 350-7.000.

Zarin, Alvin; and Carbin, Francis A., to United States of America, Army. Simplified surface acoustic wave synthesizer. 3,962,652, Cl. 331-1.00R.

Zeigerson, Esther; and Bloch, Moshe Rudolf, to State of Israel, Ministry of Commerce & Industry, The. Novel flame retardants and their production by chlorobromination of wood pulp waste liquors. 3,962,208, Cl. 260-124.00R.

Zellmer, Wayne G.; and McGowan, Marvin E., to United States of America, Navy. Safety mechanism for intervalometers and distributors. 3,961,555, Cl. 89-1.812.

Zenith Radio Corporation: *See—*
Ciciora, Walter S., 3,962,722.
Lehr, David R.; and Pollard, James H., 3,961,707.
Lerner, Martin, 3,962,005.
Ma, John Y., 3,962,643.

Zia Rouhani, S., to Aktiebolaget Atomenergi. Vapor-liquid separator. 3,961,923, Cl. 55-457.000.

Zimmerman, William E., to Westvaco Corporation. Infra-red consistency meter. 3,962,581, Cl. 250-341.000.

Zinnes, Harold; and Sircar, Jagadish C., to Warner-Lambert Company. 2,3,4,5-Tetra hydro-5-oxo-1-benzothiepi N-4-carboxamide 1,1-dioxides. 3,962,261, Cl. 260-294.80C.

Zirlis, Robert S.: *See—*
Chiocchio, Louis R.; and Zirlis, Robert S., 3,962,120.

Zmuda, Edward I.: *See—*
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Zollner, Christine: *See—*
Zollner, Dieter; Zollner, Christine; and Koziol, Konrad, 3,962,068.

Zollner, Dieter; Zollner, Christine; and Koziol, Konrad, to Messrs. C. Conradty. Metal anode for electrochemical processes. 3,962,068, Cl. 204-290.00F.

Zuk, Borys, to RCA Corporation. Threshold detector circuitry, as for PCM repeaters. 3,962,549, Cl. 179-16.0EA.

Zundorf, Dieter: *See—*
Munzner, Heinrich; Heimbach, Heinrich; Korbacher, Werner; Peters, Werner; Juntgen, Harald; Knoblauch, Karl; Zundorf, Dieter; and Horbel, Hugo, 3,962,129.

Zunft, Donald V.; Weidmann, Siegfried; and Trendel, Dennis J., to Allen-Bradley Company. Power pole module for contactor. 3,962,658, Cl. 335-133.000.

Zurla, Nick, to Beatrice Foods Company. Lamp with protective housing or junction box for spliced electrical conducting wires. 3,962,574, Cl. 240-81.0BS.

Zwahlen, Guenther, to Sublistatic Holding SA. Dyestuff preparations and printing inks. 3,961,965, Cl. 106-22.000.

Zygo Corporation: *See—*
Zanoni, Carl A., 3,961,838.

Zygraich, Nathan; and Huygelen, Constant, to Recherche et Industrie Therapeutiques (R.I.T.). Live brovine adenovirus vaccines, preparation thereof and method of vaccination using them. 3,962,424, Cl. 424-89.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 8TH DAY OF JUNE, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allgower, Martin; Perren, Stefan; and Russenberger, Max E., to Synthes A.G. Osteosynthetic pressure plate construction. Re. 28,841, Cl. 128-92.00D.

Butterfield, Ted Lee, to Spraying Systems Co. Unloader valve for spray guns. Re. 28,842, Cl. 137-470.000.

Buzano, Michel, to Rhone-Poulenc-Textile, S.A. Textured polyethylene terephthalate yarns. Re. 28,843, Cl. 57-140.00J.

Clay, Robert B.; Cook, Melvin A.; and Udy, Lex L., to Ireco Chemicals. Blasting slurry compositions containing calcium nitrate and method of preparation. Re. 28,848, Cl. 149-2.000.

Cook, Melvin A.: *See*—
Clay, Robert B.; Cook, Melvin A.; and Udy, Lex L., Re. 28,848.

Dehar, David C., to Ford Motor Company. Valve assembly. Re. 28,844, Cl. 251-144.000.

Ford Motor Company: *See*—
Dehar, David C., Re. 28,844.

General Electric Company: *See*—
Milkovic, Miran, Re. 28,851.

Hamel, Harvey C.; Kunzinger, Charles A.; and Stelzenmuller, William K., to International Business Machines Corporation. Superconductive shift register utilizing Josephson tunnelling devices. Re. 28,853, Cl. 340-173.100.

Honeywell Inc.: *See*—
Vizenor, Richard P., Re. 28,847.

International Business Machines Corporation: *See*—
Hamel, Harvey C.; Kunzinger, Charles A.; and Stelzenmuller, William K., Re. 28,853.

Ireco Chemicals: *See*—
Clay, Robert B.; Cook, Melvin A.; and Udy, Lex L., Re. 28,848.

Itai, Reiichi; and Kanai, Hideo, to Japan Carlit Co., Ltd., The. Surface preparation process for recoating of used coated metallic electrodes. Re. 28,849, Cl. 204-146.000.

Japan Carlit Co., Ltd., The: *See*—
Itai, Reiichi; and Kanai, Hideo, Re. 28,849.

Kanai, Hideo: *See*—
Itai, Reiichi; and Kanai, Hideo, Re. 28,849.

Kawasaki, Akihiro; and Maruyama, Isao, to Maruzen Petrochemical Co., Ltd. Process for preparing alternating copolymer of butadiene and α-olefine and novel alternating copolymer of butadiene and α-olefine containing cis-configuration butadiene unit. Re. 28,850, Cl. 526-98.000.

Kunzinger, Charles A.: *See*—
Hamel, Harvey C.; Kunzinger, Charles A.; and Stelzenmuller, William K., Re. 28,853.

Maruyama, Isao: *See*—
Kawasaki, Akihiro; and Maruyama, Isao, Re. 28,850.

Maruzen Petrochemical Co., Ltd.: *See*—
Kawasaki, Akihiro; and Maruyama, Isao, Re. 28,850.

Milkovic, Miran, to General Electric Company. Current transformer with active load termination. Re. 28,851, Cl. 323-6.000.

Overs, Ronald R. Marine speedometer. Re. 28,839, Cl. 73-187.000.

Perren, Stefan: *See*—
Allgower, Martin; Perren, Stefan; and Russenberger, Max E., Re. 28,841.

Ratchford, Harry L. Hand and finger exerciser. Re. 28,845, Cl. 272-68.000.

Rhone-Poulenc-Textile, S.A.: *See*—
Buzano, Michel, Re. 28,843.

Rockaway Corporation: *See*—
Wait, Hershey L., Re. 28,846.

Rockwell International Corporation: *See*—
Sarring, Ernest J., Re. 28,840.

Russenberger, Max E.: *See*—
Allgower, Martin; Perren, Stefan; and Russenberger, Max E., Re. 28,841.

Sarring, Ernest J., to Rockwell International Corporation. Feed, transport and delivery mechanism for book trimmers and the like. Re. 28,840, Cl. 83-63.000.

Signode Corporation: *See*—
von Heitlinger, Eugene, Re. 28,838.

Spraying Systems Co.: *See*—
Butterfield, Ted Lee, Re. 28,842.

Sproul, Fred C., Sr. Traffic signal with directional indicator. Re. 28,852, Cl. 340-107.000.

Stelzenmuller, William K.: *See*—
Hamel, Harvey C.; Kunzinger, Charles A.; and Stelzenmuller, William K., Re. 28,853.

Synthes A.G.: *See*—
Allgower, Martin; Perren, Stefan; and Russenberger, Max E., Re. 28,841.

Udy, Lex L.: *See*—
Clay, Robert B.; Cook, Melvin A.; and Udy, Lex L., Re. 28,848.

Vizenor, Richard P., to Honeywell Inc. Inside helmet sight display apparatus. Re. 28,847, Cl. 350-302.000.

von Heitlinger, Eugene, to Signode Corporation. Wheel rim strip assembly. Re. 28,838, Cl. 29-33.500.

Wait, Hershey L., to Rockaway Corporation. Collapsible pallet box. Re. 28,846, Cl. 217-16.000.

LIST OF PLANT PATENTEES

Byrum, Roy L., to Joseph H. Hill Co. Rose plant seedling 69–23R. 3,902. 6–8–76. Cl. 28.

Duffett, William E.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,903.

Hill, Joseph H., Co.: *See*—
Byrum, Roy L. 3,902.

Hines, James W., Jr., to Hines Wholesale Nurseries. Azalea plant. 3,901, 6–8–76. Cl. 56.

Hines Wholesale Nurseries: *See*—
Hines, James W., Jr. 3,901.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,903, 6–8–76, Cl. 74.

Mikkelsens, Inc.: *See*—
Mikkelsen, James C. 3,904.
Mikkelsen, James C. 3,905.

Mikkelsen, James C., to Mikkelsens, Inc. Begonia plant. 3,904, 6–8–76, Cl. 68.

Mikkelsen, James C., to Mikkelsens, Inc. Begonia plant. 3,905, 6–8–76, Cl. 68.

Yoder Brothers, Inc.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,903.

LIST OF DESIGN PATENTEES

AMP, Inc.: *See*—
Bunnell, Edward D. 240,232–6.

A/S Dansk Metal & Armaturindustri: *See*—
Johansen, Frede. 240,178.

AVTEC Industries, Inc.: *See*—
Helwig, William F., Jr. 240,228.

Ajax Hardware Corp.: *See*—
Read, George D., Glen, and Scott. 240,191.

Allen, Lillie C. Invalid's walker. 240,214, 6–8–76, Cl. D12—130.

Allibert Exploitation societe anonyme: *See*—
Vrignaud, Guy. 240,179.
Vrignaud, Guy. 240,258.

American Sterilizer Co.: *See*—
Pairle, James H. 240,273.

Aragona, Louis. Golf putter. 240,245, 6–8–76, Cl. D34—5.

Avolio, Donald R., to Xerox Corp. Toner particle storage container. 240,201. 6–8–76. Cl. D9—216.

Baker, Roy L. Gun holster. 240,225, 6–8–76, Cl. D22—13.

Baldwin, D. H., Co.: *See*—
White, Winsor D., Jr., and Barket. 240,267.

Balmer, James G., Jr., to Xerox Corp. Microfilm reel. 240,192, 6–8–76. Cl. D8—220.

Barket, Dennis: *See*—
White, Winsor D., Jr., and Barket. 240,267.

Bausch & Lomb Inc.: *See*—
Huckenbeck, Claus O. 240,268.

Beaven, Herbert R.: *See*—
Boumann, Paul L., and Beaven. 240,271.

Beck, Edwin C.: *See*—
Cartmell, James V., and Beck. 240,276.

Beckwith, Robert E., Jr., to R & W Associates, Inc. Motorcycle trailer. 240,213, 6–8–76, Cl. D12—102.

Boldt, Melvin H., and T. H. Morrison, to Canteen Corp. Merchandise Mart. Liquid refreshment dispensing cabinet. 240,279, 6–8–76, Cl. D94—3.

Bornes & Ballises: *See*—
Paret, Pierre. 240,206.

Boumann, Paul L., and H. R. Beaven, to Rockwell International Corp. Printer hammer. 240,271, 6–8–76, Cl. D64—11.

Brunswick Corp.: *See*—
Woodfill, William L., and Miller. 240,275.

Buckingham, Mark J. Zodiacal watch face. 240,210, 6–8–76. Cl. D10—124.

Bulova Watch Co., Inc.: *See*—
Ferguson, Howard. 240,202.
Ferguson, Howard, 240,203.
Ferguson, Howard. 240,204.

Bunnell, Edward D., to AMP, Inc. Telephone outlet receptacle. 240,232, 6–8–76. Cl. D26—1.

Bunnell, Edward D., to AMP, Inc. Telephone outlet receptacle. 240,233, 6–8–76. Cl. D26—1.

Bunnell, Edward D., to AMP, Inc. Combined telephone and electrical outlet receptacle. 240,234, 6–8–76. Cl. D26—1.

Bunnell, Edward D., to AMP, Inc. Telephone outlet receptacle. 240,235, 6–8–76. Cl. D26—1.

Bunnell, Edward D., to AMP, Inc. Electrical outlet receptacle. 240,236, 6–8–76. Cl. D26—1.

C Co.: *See*—
Cuozzo, John W. 240,651.

Calandrino, Michael J., to Xerox Corp. Test tube holder. 240,239, 6–8–76. Cl. D32—1.

Calvert, John R.: *See*—
Perkins, Roy F., and Calvert. 240,238.

Canteen Corp. Merchandise Mart: *See*—
Boldt, Melvin H., and Morrison. 240,279.

Carter, Terrance M.: *See*—
Schneider, Irwin H., and Carter. 240,224.

Cartmell, James V., and E. C. Beck, to NDM Corp. Medical electrode. 240,276. 6–8–76, Cl. D83—1.

Cascade Pacific Lumber Co., Inc.: *See*—
Walker, Robert E., and Henderson. 240,259.
Walker, Robert E., and Henderson. 240,260.
Walker, Robert E., and Henderson. 240,261.

Chellman, Edward M. Putter. 240,249, 6–8–76, Cl. D34—5.

Cite Industries: *See*—
Cohen, William J. 240,170.

Clemmons, Thomas E., Sr. Tennis target. 240,244, 6–8–76, Cl. D34—5.

Cleveland, Ivan D. Envelope opener. 240,190, 6–8–76, Cl. D8—103.

Cohen, William J., to Cite Industries. Sport shoe. 240,170. 6–8–76, Cl. D2—310.

Concept, Inc.: *See*—
Staub, David E. 240,277.
Staub, David E., Foltz, and Simmons. 240,278.

Crawford, Bobby D. Plant stand. 240,253, 6–8–76, Cl. D35—3.

Cuozzo, John W., to C Co. Appointment card. 240,651, 6–8–76. Cl. D19—6.

Dalgaard-Hansen, Benny-Loy. Combined lamp and plant stand or similar article. 240,262, 6–8–76, Cl. D48—31.

De Bough, Bjorn N.: *See*—
Swenson, Robert D., and De Bough. 240,208.

De Bough, Bjorn N., and R. D. Swenson, to Bjorn N. De Bough. Audible signal for plant soil conditions. 240,208, 6–8–76, Cl. D10—116.

Dorsen, Victor, to Shell Oil Co. Container for use in disseminating deodorant, re-odorant, air-freshening or insecticidal vapors. 240,230. 6–8–76, Cl. D23—150.

Easy Scoop Industries Ltd.: *See*—
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Ethyl Corp.: *See*—
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Ferguson, Howard, to Bulova Watch Co., Inc. Jewelry display case. 240,202. 6–8–76. Cl. D9—233.

Ferguson, Howard, to Bulova Watch Co., Inc. Jewelry display case. 240,203. 6–8–76. Cl. D9—236.

Ferguson, Howard, to Bulova Watch Co., Inc. Jewelry display case. 240,204. 6–8–76. Cl. D9—236.

Flynn, Charles J., to Rain Bird Sprinkler, Mfg. Corp. Pressure operated valve for irrigation sprinklers. 240,227, 6–8–76, Cl. D23—19.

Foltz, Carl L.: *See*—
Staub, David E., Foltz, and Simmons. 240,278.

Fortune, William S. Portable desoldering tool or the like. 240,189, 6–8–76, Cl. D8—51.

Foster, Harold H. Oar rest. 240,194, 6–8–76, Cl. D8—232.

Fox, Lowell H., to Roppe Rubber Corp. Mud flap for trucks. 240,215, 6–8–76, Cl. D12—185.

Friedman, Alan H., to Futorian Corp. Seat. 240,176, 6–8–76, Cl. D6—63.

Frudeger, Earl L., and D. W. Krengel. Recreational hoop device. 240,243. 6–8–76. Cl. D34—5.

Futorian Corp.: *See*—
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Genyk Products Ltd.: *See*—
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Giambazi, James D. Golf glove. 240,171, 6–8–76, Cl. D2—361.

Glen, Lawrence: *See*—
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Halpern, David: *See*—
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Hasbro Development Corp.: *See*—
Ptaszek, George W. 240,250.

Helwig, William F., Jr., to AVTEC Industries, Inc. Combined sink and utility pedestal or similar article. 240,228, 6–8–76. Cl. D23—49.

Henderson, G. Thomas: *See*—
Walker, Robert E., and Henderson. 240,259.
Walker, Robert E., and Henderson. 240,260.
Walker, Robert E. and Henderson. 240,261.

Hex Design, Ltd.: *See*—
Neuschaefer, Richard L. 240,184.

Himmelman, Gerard A. Game target. 240,248, 6–8–76, Cl. D34—5.

Hinz, Gary A., to Ethyl Corp. Molding for use as a door jamb. 240,221. 6–8–76. Cl. D25—74.

Huckenbeck, Claus O., to Bausch & Lomb Inc. Zoom or focus control knob for binocular. 240,268. 6–8–76, Cl. D16—59.

Hunt Mfg. Co.: *See*—
MacGregor, Francis W. 240,223.

Investments & Innovative Concepts, Inc.: *See*—
Petersilie, Frank W. 240,177.

Johansen, Frede, to A/S Dansk Metal & Armaturindustri. Wall support for hand shower or similar article. 240,178, 6–8–76, Cl. D6—86.

Johansson, Nils V. Combined binocular and compass. 240,269. 6–8–76. Cl. D16—59.

Johnson & Johnson: *See*—
Perfect, Alan J. 240,199.

Kaimeier, Wilhelm. Baking pan having releaseable handles. 240,187. 6–8–76. Cl. D7—97.

Kaneko, Isao, Iwao Shiina, and Takashi Kato, to Misawa Homes Institute of Research & Development. Prefabricated bay window unit. 240,219. 6–8–76, Cl. D25—52.

Kato, Takashi: *See*—
Kaneko, Isao, Shiina, and Kato. 240,219.

Kawamura, Ken, to Matsushita Electrical Industrial Co. Clock radio. 240,265. 6–8–76. Cl. D56—4.

Kawano, Takeyoshi, to Matsushita Electric Industrial Co., Ltd. Radio receiver with clock. 240,270, 6–8–76, Cl. D56—4.

Krengel, Donald W.: *See*—
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Leung, Jhi H. Emergency warning light. 240,207, 6–8–76. Cl. D10—114.

Lynn, Larry M., to Easy Scoop Industries Ltd. Packaging container. 240,200. 6–8–76. Cl. D9—187.

Lytle, Robert R. Combined can and bottle opener. 240,188, 6–8–76. Cl. D8—18.

MacGregor, Francis W., to Hunt Mfg. Co. Pencil pointer. 240,223. 6–8–76. Cl. D19—73.

MacLaren, David S. Aerator for a sewage system. 240,264. 6–8–76. Cl. D55—1.

Markos, Peter. Roof tile. 240,274, 6–8–76, Cl. D25—80.

Matsushita Electrical Industrial Co.: *See*—
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33D 3,961,678
66R 3,961,681
75 3,961,679
82C 3,961,680

CLASS 181
33G 3,961,682
102 3,961,683
143 3,961,684

CLASS 182
19 3,961,685
187 3,961,686

CLASS 184
6.9 3,961,687

CLASS 187
29R 3,961,688
95 3,961,689

CLASS 188
1A 3,961,690
24 3,961,691

CLASS 192
8A 3,961,692

CLASS 193
14 3,961,693
37 3,961,694

CLASS 194
83 3,961,695

CLASS 195
8 3,962,033
27 3,962,035
28N 3,962,034
29 3,962,036
63 3,962,037
68 3,962,038
103.5R 3,962,039
127 3,962,040
3,962,041
139 3,961,696
143 3,962,042

CLASS 198
25 3,961,697
3,961,698
26 3,961,699
127R 3,961,700
131 3,961,701
175 3,961,702
188 3,961,704
248 3,961,705

CLASS 200
5R 3,962,556

CLASS 201
2.5 3,962,044
21 3,962,043

CLASS 202
117 3,962,045

CLASS 204
1T 3,962,046
15 3,962,047
28 3,962,048
35N 3,962,049
66 3,962,050
108 3,962,051
129.3 3,962,052
146 Re.28,849
158R 3,962,053
159.12 3,962,054
159.15 3,962,055
3,962,056
164 3,962,057
180R 3,962,058
181 3,962,059
3,962,060
3,962,061
192 3,962,062
206 3,962,063
245 3,962,064
256 3,962,065
279 3,962,066
290F 3,962,068
300R 3,962,069

CLASS 206
44R 3,961,706
419 3,961,707
435 3,961,708
448 3,961,709

CLASS 208
10 3,962,070
58 3,962,071

CLASS 209
140 3,962,072

CLASS 210
7 3,962,073
21 3,962,074
22A 3,962,075
22R 3,962,076
23H 3,962,077
27 3,962,078
47 3,962,079
59 3,962,080
69 3,962,081
71 3,962,082
79 3,962,083
83 3,962,084
131 3,962,085
138 3,962,086
150 3,962,087
170 3,962,088
191 3,962,089
231 3,962,090
232 3,962,091
236 3,962,092
242S 3,962,093
321A 3,962,095
321R 3,962,094
433M 3,962,096
435 3,962,097
532R 3,962,098

CLASS 211
49R 3,961,710
117 3,961,711
325 3,961,675

CLASS 212
5 3,961,712
58R 3,961,713

CLASS 214
41R 3,961,714
84 3,961,715
85 3,961,716
302 3,961,717
520 3,961,718

CLASS 215
13R 3,961,720
277 3,961,719

CLASS 217
16 Re.28,846

CLASS 219
69D 3,962,557
121LM 3,962,558
210 3,962,559
314 3,962,560
391 3,962,561
490 3,962,562

CLASS 220
230 3,961,721
270 3,961,722
331 3,961,723
371 3,961,724

CLASS 222
1 3,961,725
3 3,961,726
103 3,961,727
180 3,961,728
192 3,961,729
231 3,961,730
390 3,961,731

CLASS 223
57 3,961,733

CLASS 224
45T 3,961,734

CLASS 226
168 3,961,735
192 3,961,736
3,961,737

CLASS 228
5.1 3,961,738
110 3,961,739
144 3,961,741

CLASS 229
17R 3,961,742
62 3,961,743

CLASS 232
16 3,961,744

CLASS 233
1B 3,961,745
20R 3,961,746

CLASS 235
61.9R 3,961,747
92EA 3,962,567
92PE 3,962,565
92SB 3,962,564
92C 3,962,566
92V 3,962,563
132R 3,962,568
151.33 3,962,569
3,962,570
152 3,962,571
156 3,962,572
3,962,573
164 3,961,750

CLASS 236
49 3,961,748
101D 3,961,749

CLASS 238
10R 3,961,751

CLASS 239
1 3,961,752
64 3,961,753
289 3,961,754
319 3,961,755
337 3,961,756

CLASS 240
26 3,962,675
81BD 3,962,678
81BS 3,962,574

CLASS 241
28 3,961,757
46.11 3,961,758

CLASS 242
66 3,961,759
67.3R 3,961,760
107.4A 3,961,761
149 3,961,762
199 3,961,763

CLASS 244
155R 3,961,764

CLASS 248
126 3,961,765
210 3,961,766
340 3,962,575
503 3,961,767

CLASS 250
201 3,962,576
208 3,962,577
226 3,962,578
313 3,962,579
340 3,962,580
341 3,962,581
402 3,962,583
468 3,962,584
476 3,962,585
483 3,962,582
484 3,962,586
506 3,962,587
558 3,962,588

CLASS 251
144 Re.28,844
191 3,961,768
305 3,961,769
315 3,961,770

CLASS 252
8.5A 3,962,099
8.55C 3,962,101
3,962,102
8.8 3,962,100
22 3,962,103
32.7E 3,962,104
56R 3,962,105
99 3,962,106
100 3,962,107
142 3,962,108
146 3,962,109
181 3,962,110
182 3,962,067
3,962,111
187R 3,962,112
188 3,962,113
301.1W 3,962,114
301.21 3,962,116
301.23 3,962,115
301.4F 3,962,117
301.4R 3,962,118
351 3,962,119
359E 3,962,120
363.5 3,962,121
392 3,962,122
400A 3,962,123
404 3,962,124
408 3,962,125
416 3,962,126
419 3,962,127
421 3,962,128
428 3,962,129
429B 3,962,130
429R 3,962,131
430 3,962,132
433 3,962,133
437 3,962,134
450 3,962,135
454 3,962,136
456 3,962,137
462 3,962,138
463 3,962,139
470 3,962,140
501 3,962,141
503 3,962,142
514 3,962,143
517 3,962,144
519 3,962,145
520 3,962,146
522 3,962,147
3,962,148
540 3,962,149
542 3,962,150
548 3,962,151
551 3,962,152

CLASS 254
173R 3,961,772
184 3,961,771

CLASS 256
1 3,961,773

CLASS 259
1R 3,961,774
24 3,961,775
192 3,961,776

CLASS 260
2.5HA 3,962,154
2.5R 3,962,153
3,962,155
5 3,962,156
17.4CL 3,962,158
17.4GC 3,962,159
17.4R 3,962,157
18S 3,962,160
22CB 3,962,162
22TN 3,962,161
23XA 3,962,163
28.5B 3,962,164
29.2EP 3,962,165
29.4UA 3,962,167
29.4R 3,962,166
29.6RW 3,962,168
29.6TA 3,962,267
29.6F 3,962,169
29.7H 3,962,170
33.8F 3,962,171
37N 3,962,172
39R 3,962,173
40R 3,962,174
45.7P 3,962,175
45.7R 3,962,176
45.75N 3,962,177
45.75W 3,962,178
45.95G 3,962,179
47CP 3,962,184
47EC 3,962,186
47EN 3,962,182
47ET 3,962,180
3,962,181
47C 3,962,183
3,962,185
62 3,962,187
75N 3,962,188
3,962,191
3,962,192
75P 3,962,194
75R 3,962,189
3,962,190
3,962,193
96R 3,962,206
112.5R 3,962,207
124R 3,962,208
152 3,962,209
192 3,962,210
211.5R 3,962,211
219 3,962,212
239.1 3,962,214
3,962,215
3,962,216
239.3R 3,962,255
239.55R 3,962,217
240D 3,962,219
240F 3,962,222
240G 3,962,220
3,962,221
240R 3,962,218
243C 3,962,223
3,962,224
243R 3,962,225
3,962,233
3,962,234
244R 3,962,235
3,962,236
247.1M 3,962,237
247.2B 3,962,238
248AS 3,962,240
248NS 3,962,239
249.5 3,962,241
250AC 3,962,242
253 3,962,243
256.5R 3,962,244
3,962,245
268CN 3,962,247
268TR 3,962,248
268C 3,962,246
3,962,249
270D 3,962,250
273 3,962,251
279R 3,962,252
285.5 3,962,253
287CF 3,962,254
293.53 3,962,258
293.58 3,962,259
293.6 3,962,256
293.8 3,962,257
294.8C 3,962,261
3,962,262
294.8F 3,962,260
294.9 3,962,263
3,962,264
295E 3,962,265
295T 3,962,266
296D 3,962,268
296R 3,962,269
307EA 3,962,271
307F 3,962,270
308D 3,962,272
3,962,273
309 3,962,274
310C 3,962,275
326C 3,962,278
326S 3,962,276
3,962,277
340.2 3,962,279
340.5 3,962,280
3,962,281
3,962,282
340.9 3,962,283
347.5 3,962,284
348.5R 3,962,285
3,962,286
369 3,962,288
395 3,962,289
396N 3,962,290
397.45 3,962,291
403 3,962,292
408 3,962,293
429R 3,962,294
429.7 3,962,295
3,962,296
439CY 3,962,297
447 3,962,298
448.8R 3,962,299
449.5 3,962,300
453RW 3,962,303
453P 3,962,301
3,962,302
455A 3,962,304
3,962,305
456A 3,962,306
465D 3,962,308
465H 3,962,307
465.3 3,962,309
3,962,310
468D 3,962,312
468L 3,962,311
473S 3,962,313
3,962,314
475B 3,962,315
479C 3,962,316
482B 3,962,317
502.4P 3,962,318
514J 3,962,319
515R 3,962,320
530N 3,962,322
535P 3,962,287
543P 3,962,323
3,962,324
544C 3,962,327
544F 3,962,325
544K 3,962,326
551S 3,962,328
553R 3,962,329
559AT 3,962,330
3,962,331
561N 3,962,332
3,962,333
570.7 3,962,334
579 3,962,336
583K 3,962,337
584R 3,962,338
586C 3,962,339
3,962,341
586G 3,962,340
592 3,962,342
599 3,962,343
601R 3,962,344
607A 3,962,346
607R 3,962,345
615A 3,962,349
615F 3,962,348
615R 3,962,347
621G 3,962,350
633 3,962,351
3,962,352
3,962,353
638R 3,962,354
649R 3,962,356
651R 3,962,357
653 3,962,358
667 3,962,359
668A 3,962,360
668R 3,962,362
671C 3,962,361
3,962,364
671M 3,962,363
671P 3,962,365
674A 3,962,366
683.2 3,962,367
835 3,962,368
849 3,962,369
859R 3,962,370
876R 3,962,371
878R 3,962,372
889 3,962,198
900 3,962,373
928 3,962,374
953 3,962,376
3,962,377
968 3,962,378

CLASS 261
39B 3,962,379

3,962,380
141 3,962,381

CLASS 264
3E 3,962,382
4 3,962,383
7 3,962,384
11 3,962,385
22 3,962,386
45.4 3,962,390
50 3,962,387
51 3,962,388
56 3,962,389
81 3,962,391
89 3,962,392
90 3,962,393
3,962,394
91 3,962,395
98 3,962,396
144 3,962,397
184 3,962,398
261 3,962,399
328 3,962,400

CLASS 266
114 3,961,777
217 3,961,778
225 3,961,779

CLASS 269
64 3,961,780

CLASS 270
20 3,961,781
61R 3,961,782
66 3,961,783

CLASS 271
94 3,961,784
119 3,961,785
122 3,961,786

CLASS 272
68 Re.28,845
93 3,961,787
570 3,961,732

CLASS 273
29BE 3,961,789
67A 3,961,790
86B 3,961,791
95R 3,961,792
124R 3,961,793
132 3,961,794
134AD 3,961,795
167A 3,961,796

CLASS 274
37 3,961,797

CLASS 277
3 3,961,798
9 3,961,799

CLASS 279
58 3,961,800

CLASS 280
94 3,961,804
153R 3,961,808
166 3,961,809
239 3,961,810
289A 3,961,811
478R 3,961,812
485 3,961,813
626 3,961,801
631 3,961,802
642 3,961,803
732 3,961,806
747 3,961,805
3,961,807

CLASS 285
21 3,961,814
93 3,961,815

CLASS 292
148 3,961,816
336.3 3,961,817

CLASS 293
71P 3,961,818

CLASS 294
27R 3,961,819

CLASS 296
97C 3,961,820
146 3,961,821

CLASS 297
423 3,961,822
452 3,961,823

CLASS 299
17 3,961,824
33 3,961,825

CLASS 301
125 3,961,826
132 3,961,827

CLASS 303
21AF 3,961,828

CLASS 307
214 3,962,589
3,962,590
264 3,962,591
297 3,962,592

CLASS 308
28 3,961,829

CLASS 310
46 3,962,593
61 3,962,594
93 3,962,595

CLASS 312
135 3,961,830
200 3,961,831

CLASS 313
117 3,962,596
188 3,962,597
406 3,962,598
449 3,962,599

CLASS 315
158 3,962,600
241R 3,962,601
370 3,962,602
3,962,603
391 3,962,604

CLASS 317
16 3,962,605
18D 3,962,606
31 3,962,607
100 3,962,608
103 3,962,609
108 3,962,610
154 3,962,611

CLASS 318
139 3,962,612
225R 3,962,613
227 3,962,614
305 3,962,615
400 3,962,616
444 3,962,617
561 3,962,618
571 3,962,619
599 3,962,620

CLASS 320
15 3,962,621

CLASS 321
8R 3,962,622
27R 3,962,623
3,962,624
3,962,625
45R 3,962,626

CLASS 323
6 Re.28,851

CLASS 324
34R 3,962,627
43G 3,962,628
51 3,962,630
57R 3,962,629
119 3,962,631
137 3,962,632
150 3,962,633

CLASS 325
6 3,962,634
13 3,962,635
38B 3,962,636
42 3,962,637
45 3,962,638
59 3,962,639
421 3,962,640
455 3,962,641
3,962,642
464 3,962,643
470 3,962,644
478 3,962,645
3,962,646

CLASS 328
59 3,962,647
142 3,962,648

CLASS 329
103 3,962,649

CLASS 330
29 3,962,650
51 3,962,651

CLASS 331
1R 3,962,652
2 3,962,653
56 3,962,654
94.5PE 3,962,656
94.5H 3,962,655

CLASS 332
7.51 3,962,657

CLASS 335
133 3,962,658
196 3,962,659

CLASS 336
65 3,962,660
84 3,962,661
90 3,962,662
129 3,962,663

CLASS 337
86 3,962,664
102 3,962,665
159 3,962,666
202 3,962,667
228 3,962,668

CLASS 338
19 3,962,669
334 3,962,670

CLASS 339
29B 3,961,832
119R 3,961,833
176M 3,961,834
260 3,961,835

CLASS 340
5C 3,962,671
6R 3,962,672
15 3,962,673
15.5AC 3,962,674
41R 3,962,676
52E 3,962,677
107 Re.28,852
146.2 3,962,680
146.3SY 3,962,679
146.3H 3,962,681
172.5 3,962,682
3,962,683
3,962,684
3,962,685
3,962,706
173LM 3,962,688
173R 3,962,686
3,962,687
3,962,689
173.1 Re.28,853
174ZB 3,962,690
183 3,962,697
203 3,962,691
228R 3,962,692
261 3,962,693
267R 3,962,694
274R 3,962,695
276 3,962,696
286 3,962,698
323B 3,962,699
324M 3,962,700
336 3,962,701
380 3,962,702

CLASS 343
7.3 3,962,703
7.7 3,962,704
16M 3,962,705

CLASS 350
3.5 3,961,836
3,961,837
7 3,961,838
117 3,961,839
160LC 3,961,840
3,961,843
160R 3,961,841
3,961,842
175FS 3,961,844
184 3,961,845
302 Re.28,847

CLASS 353
27R 3,961,846

CLASS 354
44 3,962,707
51 3,962,708
3,962,709
225 3,962,710
295 3,962,711
319 3,962,712

CLASS 355
4 3,961,847
3,961,848
11 3,961,849
77 3,961,850

CLASS 356
1 3,961,851

CLASS 357
2 3,962,715
14 3,962,713
18 3,962,716
19 3,962,714
44 3,962,717
48 3,962,718
74 3,962,719

CLASS 358
4 3,962,720
3,962,721
10 3,962,722
27 3,962,723

CLASS 360
31 3,962,724
36 3,962,725
51 3,962,726
85 3,962,727

CLASS 401
195 3,961,852

CLASS 403
12 3,961,853
59 3,961,854
329 3,961,855

CLASS 404
133 3,961,856

CLASS 408
83 3,961,857
204 3,961,858

CLASS 415
18 3,961,859

CLASS 417
44 3,961,860
265 3,961,861
282 3,961,862
334 3,961,863
354 3,961,864
362 3,961,865
379 3,961,866
407 3,961,867
550 3,961,868
555R 3,961,869

CLASS 418
73 3,961,870
121 3,961,871
132 3,961,872

CLASS 423
10 3,962,401
35 3,962,402
206R 3,962,403
222 3,962,404
242 3,962,405
345 3,962,406
464 3,962,407
498 3,962,408
571 3,962,409
574R 3,962,410
651 3,962,411

CLASS 424
1 3,962,412
8 3,962,413
19 3,962,414
3,962,415
3,962,416
52 3,962,417
70 3,962,418
78 3,962,419
81 3,962,420
89 3,962,421
3,962,422
3,962,423
3,962,424
94 3,962,425
116 3,962,426
118 3,962,427
174 3,962,428
181 3,962,429
185 3,962,430
200 3,962,431
204 3,962,432
212 3,962,433
226 3,962,434
227 3,962,435
233 3,962,436
246 3,962,437
247 3,962,438
248 3,962,439
250 3,962,440
3,962,441
251 3,962,442
3,962,443
3,962,444
258 3,962,445
260 3,962,446
263 3,962,447
3,962,448
267 3,962,449
3,962,450
3,962,451
272 3,962,452
273 3,962,453
3,962,454
274 3,962,471
285 3,962,455
298 3,962,456
300 3,962,457
304 3,962,458
331 3,962,459
342 3,962,460
352 3,962,461

CLASS 425
114 3,961,873
211 3,961,874
224 3,961,875

CLASS 426
1 3,962,462
5 3,962,463
43 3,962,464
48 3,962,465
60 3,962,466
62 3,962,467
96 3,962,468
108 3,962,469
135 3,962,470
281 3,962,472
282 3,962,473
3,962,474
331 3,962,475
398 3,962,476
419 3,962,477
495 3,962,478
532 3,962,479
535 3,962,321
549 3,962,480
574 3,962,335
3,962,481
575 3,962,482
582 3,962,483
639 3,962,355
658 3,962,484

CLASS 427
9 3,962,485
34 3,962,486
82 3,962,487
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426 3,962,523
435 3,962,524
446 3,962,525
488 3,962,526
500 3,962,527

CLASS 431
344 3,961,876

CLASS 432
253 3,961,877

CLASS 526
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74 3,962,196
3,962,202
78 3,962,200
79 3,962,197
89 3,962,204
98 Re.28,850
193 3,962,201
335 3,962,375
352 3,962,205

CLASS 528
485 3,962,199
486 3,962,203

Classification of Designs

D2—	310	240,170		51	240,189		114	240,207		150	240,230		5GC	240,249		31	240,259
	361	240,171		103	240,190		116	240,208		156	240,231		GH	240,245			240,260
D4—	4	240,172		167	240,191		124	240,210	D25—	1	240,217			240,247			240,261
D6—	7	240,173		220	240,192	D11—	1R	240,211		35	240,216		HP	240,243			240,262
	20	240,174		232	240,194	D12—	53	240,212		52	240,219		PP	240,244	D54—	4	240,263
	29	240,175		249	240,193		102	240,213		74	240,221			240,248	D55—	1D	240,264
	63	240,176			240,195		130	240,214		80	240,274		J	240,246	D56—	4B	240,265
	64	240,177			240,196		185	240,215	D26—	1B	240,232		15AJ	240,250			240,270
	86	240,178			240,197	D16—	59	240,268			240,233		LL	240,252		R	240,266
	99	240,179		263	240,198			240,269			240,234		D	240,251		9	240,267
	137	240,180	D9—	185	240,199	D19—	6	240,222			240,235		45	240,218	D64—	11R	240,271
		240,181		187	240,200		73	240,223			240,236			240,220	D65—	1	240,272
		240,182		216	240,201		76	240,224	D29—	23A	240,237	D35—	3C	240,253	D67—	3	240,273
	146	240,183		233	240,202	D22—	13	240,225	D30—	1	240,238	D45—	16A	240,254	D77—	1	240,275
	161	240,184		236	240,203		14	240,226	D32—	A	240,239		19G	240,255	D83—	F	240,276
	176	240,185			240,204	D23—	19	240,227	D34—	2R	240,240		L	240,256		12R	240,277
	177	240,186		246	240,205		49	240,228			240,241		S	240,257			240,278
D7—	97	240,187	D10—	101	240,206		69	240,229			240,242	D48—	20F	240,258	D94—	3A	240,279
D8—	18	240,188		109	240,209												

Classification of Plants

P. —	28	3,902	P. —	56	3,901	P. —	68	3,904	P. —	3,905	P. —	74	3,903

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
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Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

Patents

1 :	3,961,556		3,961,762		3,962,626	10 :	3,962,012		3,961,526		3,961,703
	3,961,572		3,961,787		3,962,630		3,962,153		3,961,533		3,961,765
	3,961,712		3,961,792		3,962,637		3,962,169		3,961,542		3,961,766
	3,961,732		3,961,794		3,962,639		3,962,179		3,961,564		3,961,819
	3,962,297		3,961,795		3,962,654		3,962,199		3,961,622		3,961,867
4 :	3,961,715		3,961,796		3,962,656		3,962,220		3,961,623		3,961,921
	3,961,753		3,961,810		3,962,672		3,962,221		3,961,639		3,961,937
	3,962,047		3,961,820		3,962,675		3,962,279		3,961,679		3,961,974
	3,962,567		3,961,822		3,962,693		3,962,288		3,961,697		3,962,037
	3,962,682		3,961,826		3,962,697		3,962,307		3,961,706		3,962,053
5 :	3,961,466		3,961,850		3,962,701		3,962,325		3,961,707		3,962,088
6 :	Re.28,845		3,961,893		3,962,704		3,962,372		3,961,722		3,962,214
	Re.28,852		3,961,910		3,962,705		3,962,502		3,961,788		3,962,226
	3,961,380		3,961,912		3,962,717	11 :	3,961,964		3,961,791		3,962,227
	3,961,383		3,961,919		3,962,725		3,962,485		3,961,808		3,962,232
	3,961,384		3,961,983		3,962,726	12 :	3,961,426		3,961,811		3,962,252
	3,961,385		3,961,988	7 :	3,961,844		3,961,469		3,961,818		3,962,253
	3,961,392		3,962,025	8 :	3,961,773		3,961,602		3,961,827		3,962,257
	3,961,393		3,962,044		3,961,846		3,961,684		3,961,857		3,962,263
	3,961,399		3,962,066		3,961,866		3,961,699		3,961,862		3,962,269
	3,961,409		3,962,067		3,961,914		3,961,863		3,961,904		3,962,272
	3,961,410		3,962,072		3,962,051		3,962,125		3,961,911		3,962,276
	3,961,415		3,962,085		3,962,318		3,962,206		3,961,939		3,962,282
	3,961,425		3,962,108		3,962,381		3,962,417		3,961,967		3,962,427
	3,961,455		3,962,111	9 :	3,961,420		3,962,628		3,962,005		3,962,434
	3,961,456		3,962,135		3,961,443	13 :	3,961,376		3,962,035		3,962,440
	3,961,476		3,962,182		3,961,446		3,961,734		3,962,080		3,962,536
	3,961,480		3,962,225		3,961,500		3,961,813		3,962,109		3,962,600
	3,961,484		3,962,233		3,961,629		3,961,971		3,962,154		3,962,621
	3,961,503		3,962,234		3,961,692		3,961,979		3,962,203	19 :	3,961,429
	3,961,507		3,962,260		3,961,838		3,962,162		3,962,274		3,961,435
	3,961,516		3,962,265		3,961,859		3,962,493		3,962,291		3,961,660
	3,961,520		3,962,305		3,961,876		3,962,593		3,962,292		3,961,839
	3,961,534		3,962,339		3,961,986	16 :	3,961,941		3,962,335		3,961,853
	3,961,550		3,962,393		3,962,019		3,962,114		3,962,359		3,961,874
	3,961,555		3,962,394		3,962,026	17 :	Re.28,838		3,962,360		3,962,450
	3,961,568		3,962,405		3,962,081		Re.28,840		3,962,367		3,962,573
	3,961,573		3,962,414		3,962,113		Re.28,842		3,962,462	20 :	3,961,809
	3,961,575		3,962,422		3,962,120		Re.28,846		3,962,479		3,962,001
	3,961,603		3,962,437		3,962,131		3,961,378		3,962,481		3,962,447
	3,961,609		3,962,474		3,962,264		3,961,382		3,962,532	21 :	3,961,585
	3,961,624		3,962,477		3,962,323		3,961,386		3,962,552		3,961,632
	3,961,626		3,962,506		3,962,411		3,961,387		3,962,553		3,961,640
	3,961,628		3,962,538		3,962,468		3,961,404		3,962,574		3,961,770
	3,961,636		3,962,542		3,962,472		3,961,416		3,962,601		3,961,865
	3,961,667		3,962,572		3,962,531		3,961,431		3,962,616		3,961,896
	3,961,681		3,962,575		3,962,566		3,961,447		3,962,643		3,962,387
	3,961,701		3,962,577		3,962,583		3,961,464		3,962,646		3,962,610
	3,961,710		3,962,578		3,962,606		3,961,465		3,962,722	22 :	3,961,793
	3,961,745		3,962,579		3,962,615		3,961,467	18 :	3,961,513		3,961,908
	3,961,750		3,962,589		3,962,620		3,961,514		3,961,528		3,961,943

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PLANT PATENTS

6 : 3,901
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39 : 3,903
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U. S. GOVERNMENT PRINTING OFFICE : O - 1976

Vol. 947 Number 3

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

June 15 19

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Office

PUBLICATION

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

June 15, 1976 Volume 947 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Public Advisory Committee for Trademark Affairs

Open Meeting

In accordance with section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92–463), announcement is made of the following committee meeting.

The Public Advisory Committee for Trademark Affairs will meet from 9:30 a.m. to 5 p.m. on June 15, 1976 at the United States Trademark Association, 6 East 45th Street, New York, N.Y. 10017.

The Committee was established in 1970 to advise the Patent and Trademark Office on steps which can be taken in order to increase the efficiency and effectiveness of the administration of the Trademark Act and to provide a continuous source of knowledge from the private sector to the government in the field.

The agenda for the meeting is:

(1) Establishment of an agenda and plans for a meeting of the committee in the Fall of 1976.

(2) Discussion of expanding the committee membership.

The meeting will be open to public observation; approximately 15 seats will be available for the public on a first come first served basis. If time permits, oral comments by the public of 3 minutes on each topic within the above agenda items will be allowed. Any comments or suggestions relating to the agenda items should be submitted in writing before June 7. Further, comments and suggestions will be accepted after the meeting on any of the matters discussed.

Copies of the minutes will be available upon request 60 days after the meeting.

Inquiries may be addressed to Patricia M. Davis, Room 11C17, Crystal Plaza Building 3, Telephone: 703–557–3881.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved: May 12, 1976.

DAVID B. CHANG,
Acting Assistant Secretary for Science & Technology.

[FR Doc. 76–14744; Filed 5–19–76; 8.45 am]

PATENT NOTICES

Certificates of Correction for the Week of June 15, 1976

3,251,563	3,913,070	3,934,396	3,943,388
3,311,928	3,914,036	3,934,407	3,943,404
3,379,948	3,914,322	3,935,021	3,943,489
3,648,819	3,914,674	3,935,037	3,943,660
3,654,071	3,917,206	3,935,426	3,943,690
3,717,063	3,917,220	3,935,677	3,943,707
3,721,963	3,917,403	3,935,773	3,943,771
3,767,677	3,917,469	3,935,976	3,943,785
3,799,953	3,918,251	3,936,289	3,943,821
3,801,084	3,918,580	3,936,539	3,943,879
3,801,569	3,918,783	3,937,070	3,944,067
3,815,060	3,919,057	3,937,107	3,944,591
3,816,462	3,919,183	3,937,443	3,944,616
3,818,045	3,920,708	3,937,621	3,944,850
3,821,255	3,921,135	3,937,998	3,944,925
3,823,138	3,922,404	3,938,363	3,945,079
3,832,176	3,923,533	3,938,435	3,945,084
3,838,078	3,923,873	3,938,565	3,945,183
3,847,736	3,924,164	3,938,624	3,945,489
3,853,626	3,925,794	3,938,716	3,945,717
3,856,774	3,925,846	3,938,766	3,945,725
3,873,505	3,925,963	3,938,878	3,945,726
3,875,481	3,926,482	3,939,043	3,945,860
3,876,684	3,926,602	3,939,078	3,945,946
3,876,705	3,926,789	3,939,098	3,946,205
3,879,669	3,927,311	3,939,354	3,946,217
3,879,688	3,927,491	3,939,633	3,946,370
3,880,849	3,927,579	3,939,816	3,946,579
3,883,362	3,927,676	3,939,879	3,946,639
3,885,031	3,928,793	3,939,953	3,946,691
3,885,995	3,929,777	3,940,357	3,946,976
3,886,748	3,929,824	3,940,418	3,947,181
3,887,526	3,930,121	3,940,440	3,947,315
3,888,625	3,930,233	3,940,585	3,947,342
3,889,919	3,930,265	3,941,013	3,947,425
3,890,233	3,930,358	3,941,050	3,947,452
3,890,668	3,930,423	3,941,091	3,947,589
3,891,855	3,930,812	3,941,222	3,947,673
3,894,413	3,931,081	3,941,529	3,947,708
3,896,401	3,931,181	3,941,591	3,947,876
3,896,521	3,931,390	3,941,629	3,948,134
3,896,824	3,931,554	3,941,705	3,948,540
3,900,501	3,931,988	3,941,773	3,949,074
3,901,595	3,932,457	3,941,893	3,949,115
3,902,040	3,932,675	3,942,077	3,949,471
3,903,023	3,932,827	3,942,529	3,949,521
3,903,648	3,933,204	3,942,552	3,950,295
3,908,431	3,933,524	3,942,741	3,952,586
3,910,702	3,933,786	3,943,143	
3,912,662	3,934,213	3,943,202	

Dedication

3,418,896.—*Donald C. Rideout,* Huntingdon, Pa. REFLECTIVE MARKERS AND REFLECTIVE ELEMENTS THEREFOR. Patent dated Dec. 31, 1968. Dedication filed Apr. 13, 1976, by the assignee, *Prismo Universal Corporation.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

3,402,657.—*John T. Potter,* Plainview, *Thomas P. Foley,* Huntington, and *Carmine J. Antonucci,* Uniondale, N.Y. HIGH SPEED BELT PRINTER WITH PRINTING SLUG SUPPORTING MEANS. Patent dated Sept. 24, 1968. Disclaimer filed Apr. 21, 1976, by the assignee, *Potter Instrument Company, Inc.*

Hereby enters this disclaimer to claims 14 and 15 of said patent.

3,425,613.—*Frederick Reisfeld,* Commack, N.Y. SYSTEM FOR CONTROLLING THE STARTING AND STOPPING OF A CAPSTAN. Patent dated Feb. 4, 1969. Disclaimer filed Apr. 21, 1976, by the assignee, *Potter Instrument Company, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,460,570.—*Ernest H. Bucknell* and *Irving A. Ward,* Los Angeles, Calif. BALANCED CONTROL MIXING VALVE. Patent dated Aug. 12, 1969. Disclaimer filed Feb. 23, 1976, by the assignee, *Pearl White Bletcher,* part interest.

Hereby enters this disclaimer to her entire interest in all claims of said patent.

3,464,216.—*Lee A. Turzillo,* Bath, Ohio. METHOD AND MEANS FOR FORMING CAST-IN-PLACE REINFORCED CONCRETE PILE. Patent dated Sept. 2, 1969. Disclaimer filed Apr. 21, 1976, by the inventor.

The term of this patent subsequent to Jan. 16, 1984, has been disclaimed.

3,782,253.—*Frans Van Hekken,* Lancaster, Pa. COLOR TELEVISION PICTURE TUBE SCREENING METHOD. Patent dated Jan. 1, 1974. Disclaimer filed Mar. 26, 1976, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3 and 5 of said patent.

3,934,294.—*Walter Vornberger,* Tewksbury, Mass. LASTING MACHINE AND METHOD. Patent dated Jan. 27, 1976. Disclaimer filed Apr. 26, 1976, by the assignee, *International Shoe Machine Corporation.*

Hereby enters this disclaimer to claims 5 and 6 of said patent.

3,937,804.—*Thomas James Delaney,* Piscataway, and *William Grant Pierson,* Flanders, N.J. TOOTHPASTE. Patent dated Feb. 10, 1976. Disclaimer filed Feb. 17, 1976, by the assignee, *Colgate-Palmolive Company.*

The term of this patent subsequent to Feb. 10, 1993, has been disclaimed.

3,951,685.—*Marvin L. Kronenberg,* Cleveland Heights, Ohio. NONAQUEOUS CELL UTILIZING A 3Me2Ox-BASED ELECTROLYTE. Patent dated Apr. 20, 1976. Disclaimer filed Apr. 20, 1976, by the assignee, *Union Carbide Corporation.*

The term of this patent subsequent to Mar. 18, 1992, has been disclaimed.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 8, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds: Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry: Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-2-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur: Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-31-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-7-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products: Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures: Special Utility Compositions: Bleaching; Dyeing and Photography.	6-2-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods: Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-21-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures: Illumination: Horology; Acoustics; Recorders; Weighing Scales.	4-1-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-23-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-22-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles: Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	11-7-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	6-16-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-10-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-5-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	10-6-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-16-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-15-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	10-2-75

Expiration of patents: The patents within the range of numbers indicated below expire during May 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,884,634 to 2,888,678 inclusive
Plant Patents ..... Numbers 1,829 to 1,837 inclusive

REISSUES

JUNE 15, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

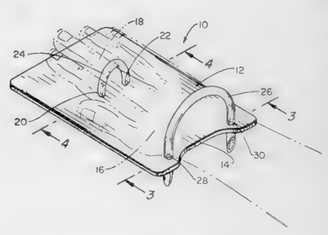
Re. 28,855
SWIM TRAINING PADDLE

Anthony James Montrella, P.O. Box K, Lakewood, Calif. 90714

Original No. 3,765,042, dated Oct. 16, 1973, Ser. No. 283,321, Aug. 24, 1972. Application for reissue Aug. 26, 1974, Ser. No. 500,724

Int. Cl.[2] **A63B** *31/02*

U.S. Cl. 9—307 **6 Claims**



1. A swim training paddle comprising:
a base composed of a rigid sheet material, said base having a fore end and an aft end, [said aft end of said base being relieved,] a first pair of apertures formed within said base adjacent said aft end;
a second pair of apertures formed within said base intermediate said ends but nearer said fore end than said aft end;
a first flexible tubing to be conducted through said first pair of apertures forming a loop to be located *approximately* about a swimmer's wrist; and
a second flexible tubing to be conducted through said second pair of apertures forming a single loop to be located solely about the middle finger of the swimmer's hand, [whereby the swimmer's hand is fixedly positioned upon the paddle with the pivotal movement of the hand about the wrist being substantially unhindered due to the relieving of said base, and] whereby the most efficient position of the paddle as it moves through the water is most sensitive to the swimmer due to the narrow fulcrum about the middle finger.

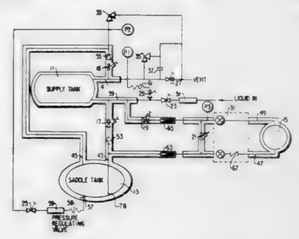
Re. 28,856
LOW-LOSS CLOSED-LOOP SUPPLY SYSTEM FOR TRANSFERRING LIQUIFIED GAS FROM A LARGE CONTAINER TO A SMALL CONTAINER

Kenneth R. Leonard, Boulder, Colo., assignor to Cryogenic Engineering Company, Denver, Colo.

Original No. 3,710,584, dated Jan. 16, 1973, Ser. No. 83,460, Oct. 23, 1970. Application for reissue July 18, 1974, Ser. No. 489,518

Int. Cl.[2] **F17C** *13/00*

U.S. Cl. 62—54 **34 Claims**



1. A low-loss method of filling a container for liquified gas from a supply system comprising the steps of:
transferring liquid from a first vessel into a second vessel, and transferring vapor from said second vessel to said first vessel whereby the pressure between said first and second vessels remains equalized as said liquid is transferred;
isolating said first vessel from said second vessel;
equalizing the pressure between said second vessel and said container for liquid gas;
connecting said first vessel to said container for liquified gas to permit vapor to flow therebetween;
connecting said second vessel to said container for liquified gas so that said liquid from said second vessel flows into said container for liquified gas, and maintaining the connection between said first vessel and said container for liquified gas to permit vapor from said container for liquified gas to flow into said first vessel.

Re. 28,857
APPARATUS FOR PRODUCING STITCH BONDED FABRIC

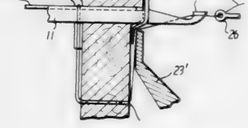
Arno Edgar Wildeman, Altrincham, England, assignor to Cosmopolitan Textile Company, Ltd., Winsford, England

Original No. 3,760,607, dated Sept. 25, 1973, Ser. No. 172,032, Aug. 16, 1971. Continuation-in-part of Ser. No. 867,331, Oct. 17, 1969, Pat. No. 3,646,780. Application for reissue Aug. 15, 1974, Ser. No. 497,732

Claims priority, application United Kingdom, June 30, 1971, 30616/71

Int. Cl.[2] **D04B** *23/10, 21/14;* **D04H** *1/52*

U.S. Cl. 112—438 **8 Claims**



1. An apparatus for producing a stitched bonded fabric from a fleece, said apparatus comprising a frame, a series of needles mounted in a spaced relation on said frame in a position to penetrate the fleece, a hook formation at the end of each needle, the hook formation being adapted to gather loops of fiber from the fleece upon withdrawal of the needle from the fleece, a corresponding number of thread guides mounted in the same plane as that of the needles and being reciprocally movable transversely on said frame to place threads on the hook formation at the end of each of said needles after penetrating said fleece, a rod positioned in each of said needles and being adapted to be moved partially through said fleece independently of said needles for mating engagement with said hook formations, a retention bar located below the level of the needles, and a series of support pins mounted on said frame and having their free ends cranked and positioned behind said retention bar to allow a thread on transverse movement of one of said thread guides to slide freely over the hook formation of one needle to the adjacent needle, whereby tricot stitches are formed and are locked into the fabric.

7. A textile comprising a fleece having a plurality of loose fibers, and a system of interlocking stitches of yarn having interlocked thread loops on one face of said fleece and connecting thread legs on the other face of said fleece, said yarn being

locked against removal from the fleece by entanglement of said yarn and loose fibers in said stitches.

Re. 28,858

SELECTIVE GAS PHASE FILTER MATERIAL

Elmer Francis Litzinger, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Original No. 3,716,063, dated Feb. 13, 1973, Ser. No. 75,773, Sept. 25, 1970. Application for reissue Feb. 7, 1975, Ser. No. 547,977

Int. Cl.² A24B *15/02*; **A24F** *7/04*; **B01D** *27/00*

U.S. Cl. 131—267 **12 Claims**

1. An improved tobacco smoke filter material comprising [at least 100 mg. of] a porous particulate carrier impregnated with a poly(alkyleneimine) alkanoate, wherein from about 2 to 6 percent by weight alkanoate is deposited on the carrier based on the total weight of the alkanoate and carrier, said poly(alkyleneimine) alkanoate having a pH from about 6.0 to 7.6, and wherein each of said carrier particles has a pore diameter of from about 0.1 to 2.0 microns, a surface area of from about 1 to 15 square meters per gram and a pore volume no less than about 0.3 cubic centimeter per gram.

Re. 28,859

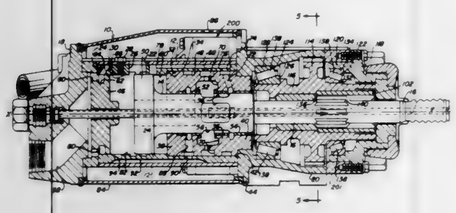
ROCK DRILL

Richard W. Beaumont, Dallas, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Original No. 3,666,024, dated May 30, 1972, Ser. No. 59,290, July 29, 1970. Application for reissue Oct. 1, 1973, Ser. No. 402,318

Int. Cl.² B25D *9/00*

U.S. Cl. 173—105 **12 Claims**



11. In a rock drill, the combination comprising: an elongated body member having a chamber extending longitudinally therein; a hammer piston having a head portion and a reduced diameter stem portion; said piston being reciprocable within said chamber for percussively actuating a striking bar by engagement of said stem portion with said striking bar upon movement of said piston from a first portion of said chamber to a second portion of said chamber; first passageway means in said body member adapted to be connected to a fluid pressure source; second passageway means in said stem portion in constant open communication with said first passageway means during at least a major portion of the reciprocable travel of said piston; third passageway means in said body member openly communicating between said second passageway means and a piston impact portion of said chamber only when said piston is moving through said first portion of said chamber; and fourth passageway means in said body member openly communicating with said second passageway means and a piston retracting portion of said chamber only when said piston is moving through said second portion of said chamber.

Re. 28,860

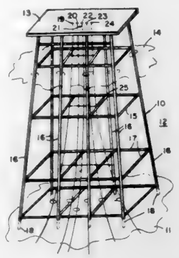
CURVED OFFSHORE WELL CONDUCTORS

Peter W. Marshall, New Orleans; Peter Arnold, Kenner, and Francis P. Dunn, New Orleans, all of La., assignors to Shell Oil Company, Houston, Tex.

Original No. 3,687,204, dated Aug. 29, 1972, Ser. No. 70,101, Sept. 8, 1970. Application for reissue Jan. 26, 1973, Ser. No. 326,706

Int. Cl.² E21B *7/04*; **E02B** *17/00*

U.S. Cl. 175—9 **30 Claims**



1. A method for producing hydrocarbons from a subterranean hydrocarbon-bearing formation located beneath the floor of a body of water, said method comprising the steps of:

installing a platform structure on the floor of said body of water above said formation;

extending at least one well conductor downwardly with respect to said platform structure, then curving said conductor outwardly and downwardly through said platform structure above the floor of said body of water in a manner maintaining a relatively smooth bore throughout substantially the entire extent of said conductor;

drilling via said conductor down through said floor and into fluid communication with said formation; and

producing formation fluids from said formation via said conductor.

Re. 28,861

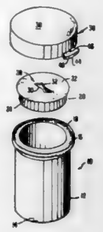
SAFETY MEDICINE BOTTLE CLOSURE

Samuel Hall, Jr., Brooklyn, N.Y., assignor to Plastic Container Corporation, Brooklyn, N.Y.

Original No. 3,473,681, dated Oct. 21, 1969, Ser. No. 777,723, Nov. 21, 1968. Application for reissue May 23, 1975, Ser. No. 580,207

Int. Cl.² B65D *55/02*, *85/56*; **A61J** *1/00*

U.S. Cl. 215—204 **2 Claims**



8. A safety container closure assembly including,

(a) a container having an opening,

(b) an internal closure in the form of a plug positioned within said opening, said closure having a key recess therein,

(c) an outer closure in the form of an external cap positioned over said opening,

(d) said external cap having a skirt integral therewith and depending from the top of said cap, the interior of said skirt carrying an annular bead which snaps over a complimentary bead on the outer periphery of container opening,

(e) a combination thumb abutment-key integral with and extending substantially horizontally outwardly from said skirt at the lower portion of the skirt, said thumb abutment-key functioning as a tab against which the thumb is pressed in a generally upwardly direction to remove the said external cap from the container and functioning additionally as a key for cooperation with the said key recess of said internal closure to thereby permit said internal closure to be removed from its position within the opening of said container.

Re. 28,862

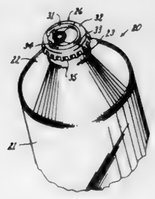
EASY OPEN MEANS FOR BOTTLES AND THE LIKE

Frederik A. Siemonsen, and Alfred L. Garriques, both of Richmond, Va., assignors to Owens-Illinois, Inc., Toledo, Ohio

Original No. 3,462,036, dated Aug. 19, 1969, Ser. No. 587,170, Oct. 17, 1966. Application for reissue Aug. 18, 1971, Ser. No. 172,735

Int. Cl.² B65D *41/32*

U.S. Cl. 215—255 **29 Claims**



1. In combination, a container having an open end for dispensing product means disposed in said container, and a [one-piece] closure member secured to said open end of said container to close said open end, said closure member having a top portion disposed over said open end and a depending peripheral rim portion disposed around said container at said open end thereof to secure said closure member to said container, said closure member having a tear section integral therewith throughout the entire juncture of said tear section with the remainder of said closure member and provided with two edges that join together at adjacent ends thereof to define one end of said tear section substantially at the central part of said top portion with at least one edge thereof extending from said top portion to the free edge of said rim portion and with the other edge always [progressively] diverging away from said one edge from said adjacent ends thereof to the other ends thereof, and a ring pull tab means secured to said tear section at said top portion of said closure member and having a finger-receiving opening passing therethrough to facilitate the pulling of at least said one edge of said tear section from said closure member.

Re. 28,863

GUIDE ELEMENTS FOR MAGNETIC TAPES WOUND OR TO BE WOUND IN THE FORM OF PACKS ON FLANGELESS SPOOLS

Norbert Schaeffer, Ludwigshafen; Horst Fitterer, Heidelberg-Hasenleiser; Karl Uhl, Frankenthal; Georg Schnell, Ludwigshafen, and Wilhelmus Andriessen, Wachenheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Original No. 3,841,582, dated Oct. 15, 1974, Ser. No. 208,704, Dec. 16, 1971. Application for reissue Apr. 17, 1975, Ser. No. 569,315

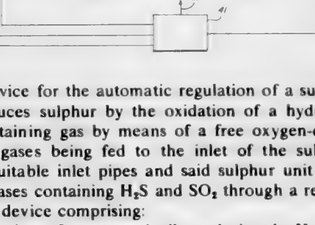
Int. Cl.² G03B *1/04*; **G11B** *15/32*, *23/04*

U.S. Cl. 242—199 **13 Claims**

1. In a magnetic tape assembly, the combination comprising:

a pair of tape-supporting flangeless spools rotatable to unwind tape off a pack on one spool and wind tape onto a pack on the other spool, said tape passing between the packs around guide means in the form of a loop, and

b. at least one guide element movable substantially radially to one of said spools and in the plane of rotation of said spools, at least part of said guide element being arranged between the pack and the outermost winding generally at a tangent to said pack, having a guide face which is substantially flat longitudinally of said outermost winding,



thereby providing continuous surface contact over a substantial length of said face between said face and the inside of said outermost winding when said tape is in motion, having adjacent that end of the guide face at which said outermost winding merges with said pack, a margin which is at least as close to the pack as said face so that said outermost winding is guided smoothly and virtually tangentially to said pack at said margin, and having guide flanges extending outwardly above and below said outermost winding.

Re. 28,864

PROCESS AND APPARATUS FOR AUTOMATED REGULATION OF SULPHUR PRODUCTION UNITS

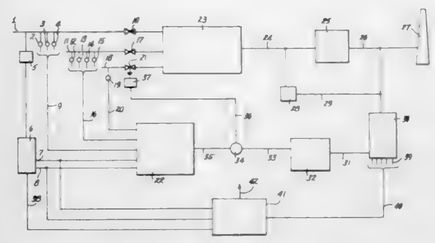
Guillaume Andral, Pau; Michel Carmassi, Mazeres-Lezons; Bernard Louvel, Buros; Jacques Maurice, Mourenx, and Georges Vandesande, Aroagnon, all of France, assignors to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

Original No. 3,871,831, dated Mar. 18, 1975, Ser. No. 391,478, Aug. 24, 1973. Division of Ser. No. 207,790, Dec. 14, 1971, abandoned. Application for reissue Oct. 22, 1975, Ser. No. 624,778

Claims priority, application France, Dec. 18, 1970, 70.45812

Int. Cl.² G01N *7/00*; **C01B** *17/16*;

U.S. Cl. 23—255 R **10 Claims**



1. A device for the automatic regulation of a sulphur unit that produces sulphur by the oxidation of a hydrogen sulphide-containing gas by means of a free oxygen-containing gas, said gases being fed to the inlet of the sulphur unit through suitable inlet pipes and said sulphur unit liberating residual gases containing H_2S and SO_2 through a residual gas pipe, said device comprising:

a first analyzer for automatically analyzing the H_2S-containing gas fed to the inlet of the sulphur unit for providing a signal representative of the H_2S content of said gas,

a first calculator connected to receive the signal provided by said first analyzer for computing the theoretical flow of free oxygen-containing gas to be fed to the inlet of the sulphur unit to keep the $H_2S:SO_2$ molar ratio in the residual gases to a set value and for providing an output signal representative of said theoretical flow,

sampling means for continuously taking samples of the residual gases,

a second analyzer for automatically analyzing said samples for providing signals representative of the H_2S and SO_2 contents of the residual gases,

a second calculator connected to receive the signals from the second analyzer for computing the instantaneous $H_2S:SO_2$ molar ratio in the residual gases and for computing a correction value representing the correction needed in the flow of free oxygen-containing gases to the inlet of the sulfur unit to adjust said instantaneous ratio to the set value, said second calculator providing a signal representative of said correction value,

means for electronically combining the signals provided by said first and second calculators to produce a resulting signal representing their sum, and means responsive to said resulting signal for automatically controlling the flow of free oxygen-containing gas to the inlet of the sulphur unit.

Re. 28,865
SELECTIVE DEHALOGENATION

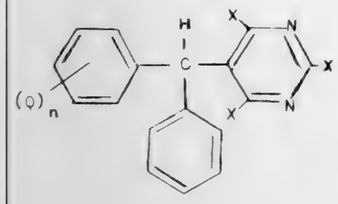
Jack B. Campbell, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Original No. 3,880,854, dated Apr. 29, 1975, Ser. No. 468,943, May 10, 1974. Continuation-in-part of Ser. No. 286,507, Sept. 5, 1972, abandoned. Application for reissue July 30, 1975, Ser. No. 600,247

Int. Cl.² C07D *239/00*

U.S. Cl. 260—251 R **4 Claims**

1. The process of selectively dehalogenating the pyrimidyl ring of a compound of the formula



wherein

at least one of X is chlorine or bromine, the remainder hydrogen; [or lower alkyl]

Q is chlorine or fluorine; and

n is an integer from 1 to 5,

by contacting the compound with hydrogen in the presence of Raney nickel catalyst,

in methanol as the solvent,

in the presence of a hydrogen halide acceptor selected from the group consisting of tri(C_1-C_4 alkyl)amines and pyridine, at a temperature within the range of from about ambient room temperature to about 60°C., at a hydrogen pressure of from about 14 pounds per square inch to about 60 pounds per square inch.

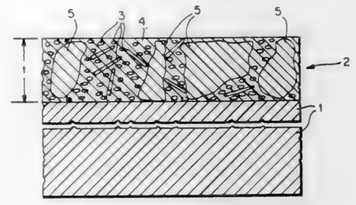
Re. 28,866
MAGNETIC RECORDING COATING

Joseph E. Haefele; Cecil R. Hawkins, and Ronald E. Kubec, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 3,843,404, dated Oct. 22, 1974, Ser. No. 289,892, Sept. 18, 1972. Continuation of Ser. No. 44,284, June 8, 1970, abandoned. Application for reissue Oct. 8, 1975, Ser. No. 620,671

Int. Cl.² H01F *10/02*

U.S. Cl. 428—336 **4 Claims**



1. A magnetic recording medium compising ferromagnetic and alumina particles dispersed in a binder as a unitary coating upon a non-magnetic substrate, each of the alumina particles disposed in said binder to be substantially equal to the thickness of the medium to form a solid barrier between the surface of the medium and the underlying non-magnetic substrate and present in an amount not above 5% by weight of the ferromagnetic and alumina particles.

Re. 28,867
MOVING OBJECT COMMUNICATION CONTROL SYSTEM

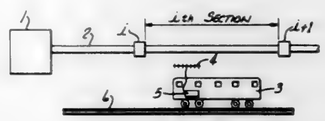
Takeshi Baba, Tokyo; Kenji Shibuya, Ohmiya; Tetsuro Maruhama, Amagasaki; Tsuneo Nakahara, Nishinomiya, and Kenichi Yoshida, Sakai, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Original No. 3,629,707, dated Dec. 21, 1971, Ser. No. 845,167, July 28, 1969. Application for reissue Feb. 5, 1973, Ser. No. 329,650

Claims priority, application Japan, July 30, 1968, 43-54099

Int. Cl. H04b *1/00*

U.S. Cl. 325—51 **7 Claims**



1. A communication system between mobile and a wayside stations, said mobile stations traveling on a track divided in sections by means of an open-type transmission line paralleling the track, a frequency selection and conversion device for each section along said open-type transmission line and connected thereto at the proper position to define the length of each section, means to transmit a series of first lower frequency carriers on said open-type transmission line at a low loss from said wayside station, said carriers allotted respectively to each specific section of said open-type transmission line, said selection and conversion devices operable to select and convert their respective first lower frequency carrier to a first higher frequency carrier for leaky transmission from said transmission line to a mobile station on the corresponding track section, an antenna for each mobile station for receiving and transmitting signals to said open-type transmission line.

PLANT PATENTS

GRANTED JUNE 15, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,906
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed May 15, 1975, Ser. No. 577,891

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—74 **1-Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness by the combined characteristics of daisy inflorescence type with moderate longitudinal petal roll in opening stages, flat inflorescence form not known to reflex, diameter across face of inflorescence up to 4.0 inches at maturity, orange bronze ray floret color with minimal color oxidation under fall, winter, and spring light conditions, medium green disc floret color with minimal color oxidation under fall, development, uniform nine week flowering response, very tall plant height, semi-upright branching habit, high percentage gradeout in top grades (SAF standards), and thin and weak peduncles during high light, high temperature periods (June through September).

3,907
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed May 15, 1975, Ser. No. 577,892

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant particularly characterized as to uniqueness by the combined characteristics of decorative inflorescence type, semi-incurved inflorescence form not known to reflex, diameter across face of inflorescence from 4.0 to 5.5 inches at maturity, golden yellow ray floret color devoid of bronze tinging, uniform eight week flowering response, short plant height, semi-upright branching habit, and by its adaptability to a wide range of container sizes due to responsiveness of height to day length and B–9.

3,908
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed May 15, 1975, Ser. No. 577,921

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant characterized particularly by the combined characteristics of decorative inflorescence type and flat inflorescence form, 4 to 5.5 inches diameter across face of inflorescence at maturity, uniform eight week flowering response, short plant height, semi-upright branching habit, and its adaptability due to responsiveness of height to day length and B–9.

3,909
CLIMBING ROSE PLANT

O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91762

Filed June 24, 1975, Ser. No. 589,866

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—4 **1 Claim**

1. A new and distinct variety of rose plant of the climber class, substantially as herein shown and described, characterized particularly as to novelty by being substantially identical with its parent variety "Town Talk" (Plant Pat. No. 2,709), but essentially differing therefrom by its climbing habit of growth evidenced by the production of climbing canes which attain an average mature height of 6 to 8 feet, and by the habit of bearing its flowers on stems which grow as laterals from the climbing canes.

3,910
ROSE

Roy L. Byrum, Richmond, Ind., assignor to Joseph H. Hill Company, Richmond, Ind.

Filed Mar. 31, 1975, Ser. No. 563,293

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—26 **1 Claim**

1. A new and distinct variety of rose plant substantially as herein shown and described, characterized by the distinctive pink coloration of its flowers, its much branched, free, vigorous and upright growth habit, and by its continuous and abundant production of flowers borne on strong straight stems and having excellent keeping qualities as cut flowers.

3,911
BEGONIA PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens Inc., Ashtabula, Ohio

Filed May 7, 1975, Ser. No. 575,440

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of begonia plant characterized particularly as to uniqueness by the combined characteristics of upright growth habit; rose red tepal color; superior keeping quality; double flower form; propagatable from leaf as well as stem cuttings, and by its apparent immunity to common powdery mildew and high resistance to *Xanthomonas begoniae*.

3,912
POINSETTIA PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens Inc., Ashtabula, Ohio

Filed May 7, 1975, Ser. No. 575,435

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct cultivar of poinsettia plant characterized particularly as to novelty by the combined characteristics of development of flowers and red bracts at 52°–54° F.; heavy, rigid upright stems; small foliage and close internodes; four to eight vigorous shoots after removal of the apical tip; durable bracts; long lasting foliage; resistance to botrytis infection, and by its distinct, dark red leaf petiole.

3,913
BEGONIA PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens Inc., Ashtabula, Ohio

Filed May 5, 1975, Ser. No. 574,626

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of begonia plant characterized particularly by the combined characteristics of red tepal color and unique "flower-in-flower" form which

gives added depth to individual flowers; propagatable by leaf cuttings that develop vegetative adventitious shoots, superior foliage quality, with the foliage being immune to powdery mildew, and by its vigorous and upright growth habit.

3,914

ROSE PLANT NAMED FESTIVE

Robert G. Jelly, Richmond, Ind., assignor to E. G. Hill Co., Inc., Richmond, Ind.

Filed July 7, 1975, Ser. No. 593,731

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—29 **1 Claim**

1. A new and distinct variety of rose plant substantially as herein shown and described, characterized by its continuous production of lustrous dark red blooms on strong, long, upright stems and strong erect peduncles of medium length, its vigorous and moderately free growth habit with almost complete elimination of blind wood, and its superior wintertime productivity.

3,915

NECTARINE TREE

Yoshio Yamada, Kingsburg, Calif., assignor to Vaughn Girazian, Fresno, Calif.

Filed July 14, 1975, Ser. No. 595,450

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree substantially as herein shown and described which bears large semi-cling yellow-fleshed and yellow-skinned fruit moderately streaked with red, similar to the Autumn Grand nectarine of U.S. Plant Pat. No. 2,894, in color but not as bright, particularly characterized as to novelty by ripening from September 25 to October 5, three or four weeks later than the Autumn Grand.

PATENTS

GRANTED JUNE 15, 1976

ERRATA

For CLASS	See PATENT NO.
014–069.5	3,962,747
057–034 HS	3,962,829
062–009	3,962,881
339–017 CF	3,963,315
339–017 C	3,963,316
339–074 R	3,963,317
339–097 P	3,963,318
339–176 MF	3,963,319
339–177 R	3,963,320
339–177 E	3,963,321
339–272 R	3,963,322
073–064.1	3,963,349
008–014	3,963,428
008–038	3,963,429
008–039	3,963,430
008–041 C	3,963,431
008–093	3,963,432
008–120	3,963,433
008–120	3,963,434
008–120	3,963,435
008–168 A	3,963,436
008–192	3,963,437
021–058	3,963,438
023–230 PC	3,963,439
023–253 R	3,963,440
023–253 R	3,963,441
023–253 TP	3,963,442
023–262	3,963,443
023–277 C	3,963,444
023–288 FC	3,963,445
023–288 A	3,963,446
023–288 FA	3,963,447
023–288 FB	3,963,448
029–182.5	3,963,449
029–191.4	3,963,450
029–196.1	3,963,451
029–193.5	3,963,452
029–197.5	3,963,453
029–197.5	3,963,454
029–198	3,963,455
029–203 B	3,963,456
048–202	3,963,457

ERRATA – Continued

For CLASS	See PATENT NO.
204–180 P	3,963,567
204–181	3,963,568
204–206	3,963,569
204–158 R	3,963,570
209–073	3,963,607
261–041 D	3,963,670
526–303	3,963,684
526–230	3,963,685
526–066	3,963,687
526–193	3,963,688
526–006	3,963,689
526–065	3,963,690
526–022	3,963,791
178–069.5 TV	3,963,877
235–144 R	3,963,903
315–381	3,963,961
320–021	3,963,976
331–094.5 Q	3,964,003
337–067	3,964,004
343–108 M	3,964,053
340–244 E	3,964,079
321–045 R	3,964,086
338–306	3,964,087
340–172.5	3,964,088

PATENTS

GRANTED JUNE 15, 1976

NOTE – A cross reference listing of applications published under Trial Voluntary Protest Program on January 28, 1975 is located in the back of this Issue. These entries will be in numerical order by document publication number.

GENERAL AND MECHANICAL

3,962,728
HEAD TURBAN

Claudia S. Pavlinik, North Arlington, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Mar. 7, 1975, Ser. No. 556,444
Int. Cl.² A42C *5/04;* **A42B** *1/02*
U.S. Cl. 2—174 **9 Claims**



1. A method of forming a head turban used for a person's head, which comprises:

a. forming a first elongated rectangular shaped member having a top and a bottom horizontal edge and a left and a right vertical end;

b. forming a second wider elongated rectangular shaped member having a top and a bottom horizontal edges and a left and a right vertical end, wherein said first member equals said second member in length;

c. sewing said top edge of said first member to said bottom edge of said second member;

d. folding in half said first and said second members as sewn together on a lateral center line;

e. sewing together a bottom half of said right and said left ends of said second member leaving unsewn a top half of said right and said left ends of said second member;

f. sewing together each side of said top edge of said second member from said center line to points midway between said center line and said left and said right ends of said second member leaving unsewn an outer portion of said top edge at said left and said right ends;

g. cutting away along smooth broad radii a top left and a top right corner of said second member;

h. securing first VELCRO tabs along each said outer portion of said top edge, each said cutaway corner, and each said unsewn top half of said left and said right ends of said second member; and

i. securing a second VELCRO tab along each said left and right ends of said first member.

3,962,729
ZIPPER FLY CONSTRUCTION FOR GARMENTS

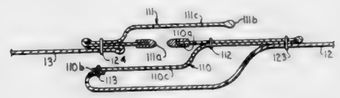
Dudley W. Cook, Merriam, Kans., assignor to The H. D. Lee Company, Inc., Shawnee Mission, Kans.

Continuation of Ser. No. 342,473, March 19, 1973, abandoned. This application Aug. 19, 1974, Ser. No. 498,746
Int. Cl.² A41D *1/06;* **A44B** *19/34*
U.S. Cl. 2—234 **4 Claims**

1. In a zipper fly construction for garments having a right and left panel to be joined by the fly, one of said panels being overlapped by the other at the fly, the combination of

a first unitary piece of fabric secured to said one panel and forming a first web portion extending from said one panel, said first web portion having a free edge located beyond said one panel and zipper scoops secured along said free edge, said first piece of fabric also formed with a second web portion which is generally parallel with and overlies said first web portion, said second web portion overlying and terminating well past the zipper scoops,

a second unitary piece of fabric secured to said other panel, said second piece forming a first web portion extending from said other panel, said first web portion on said second piece having a free edge and zipper scoops along said free edge for joinder with the zipper scoops on the first piece of fabric to close the fly, said second piece of fabric also formed with a second web portion which is generally parallel with and overlies said first web portion of said second piece and extends well past the zipper scoops on said second piece,



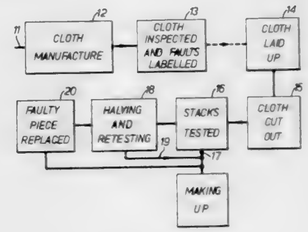
said second piece connected to said other panel at spaced locations with the second web thereof secured to the portion of said other panel overlapping said first panel so that said overlapping portion of said other panel is on the opposite side of said second web portion, to which it is secured, from said zipper scoops,

said pieces and panels so located relative to one another that the zipper scoop edges can be joined to connect the panels, and when joined, the joined zipper scoops are covered on one side by the second web portion of the first piece and on the other side by the second web portion of the second piece and the interconnected overlapping portion of the other panel.

3,962,730
REMOVAL OF FAULTY MATERIAL IN THE MANUFACTURE OF NON-METALLIC WEBS

Eric Richard Robinson, Chalfont St. Giles, England, assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Apr. 15, 1975, Ser. No. 568,342
Claims priority, application United Kingdom, Apr. 17, 1974, 16767/74
Int. Cl.² B26D *5/00*
U.S. Cl. 2—243 B **7 Claims**



1. A process of manufacture which comprises providing a non-metallic web, inspecting said web visually for at least one occasionally occurring characteristic, when such characteristic is noticed marking its location by adhesively attaching a label incorporating a metal foil to said web adjacent the characteristic, dividing said web into pieces, and inspecting said pieces by a metal detector to locate said label.

3,962,731

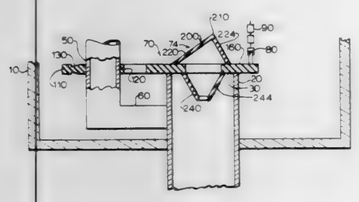
FLAPPER-TYPE DISCHARGE VALVE FOR FLUSH TANKS

Samuel S. Chelten, Highland Park, N.J., assignor to Marvin H. Chelten, Princeton, N.J.

Continuation-in-part of Ser. No. 457,659, April 3, 1974, abandoned, which is a continuation-in-part of Ser. No. 349,808, April 10, 1973, abandoned, which is a continuation-in-part of Ser. No. 201,727, Nov. 24, 1971, abandoned. This application July 10, 1975, Ser. No. 594,639

Int. Cl.² E03D 1/34

U.S. Cl. 4—56 **24 Claims**



1. A flapper-type control valve for use in controlling the retention and discharge of fluid by streamline action from a tank through an outlet pipe therein, said valve comprising

a generally flat, flexible member having securing means at one end, by means of which it can be secured to a vertical pipe adjacent to said outlet pipe which comprises a pivot with respect to which the member rotates when operated to discharge fluid from said tank,

said member having a generally flat top surface and a bottom surface and including a large-area portion adapted to overlay and obstruct the outlet opening in said outlet pipe with the fluid in the tank exerting pressure on said top surface thereof, and

a projecting member extending upwardly from said top surface of said flat member and having a relatively sharp line-like leading edge for providing generally streamline flow through said water when said valve is raised and rotated to permit said fluid to flow through ssid outlet pipe.

21. A flapper-type control valve for use in controlling the retention and discharge of fluid from a tank through an outlet pipe therein, said valve comprising

a generally flexible, large-area portion adapted to overlay and obstruct the outlet opening in said outlet pipe, with the fluid in the tank exerting pressure thereon,

a pair of arms extending from said large-area portion, generally parallel to each other for coupling to a vertical pipe adjacent to said outlet pipe with respect to which the valve rotates to lift said large-area portion off said outlet pipe to discharge fluid from said tank, each said arm having an end remote from said large-are portion and an upper surface and a lower surface, and

an upstanding apertured rib rising from the top surface of each said arm near the end thereof for use in coupling said arms to said outlet pipe, each apertured rib extending along substantially the entire length of its arm and including a portion which extends to said large-area portion whereby a favorable degree of rigidity is imparted to its arm.

3,962,732

DISPOSABLE BEDPANS

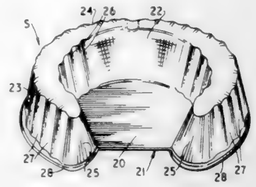
Kenneth Wilson Mills, 11 Redcar Road, Smithills Dean Bolton, Lancashire, England (BL1 2HP)

Filed May 9, 1975, Ser. No. 576,020

Int. Cl.² A61G 9/00

U.S. Cl. 4—112 **5 Claims**

1. In combination, an assembly comprising a bedpan of a disposable fibrous pulp material having a seat portion provided with a downturned peripheral lip, a receptacle portion provided within said seat portion and having downwardly convergent side walls, said receptacle portion being elongated from the front to the rear and being bilobate in plan view with the rear part of greater radius than the forepart, and a support of a disposable fibrous pulp material being fitted around the rear part of said bedpan, said support being a one-piece unit comprising a planar base generally circular in shape with a



front chordal edge, a divergent wall extending upwardly from the curved periphery of said base and connected to a downwardly divergent skirt by an upper generally horizontal web, and said wall and skirt being connected at the front by conic wall sections, and said support being arranged fitting snugly around the rear part of the bilobate receptacle portion of said bedpan with said front conic wall sections of said support being located in the waisted sides of said receptacle portion.

3,962,733

ALL WEATHER SAFETY SHOWER

Edward Parry, New York, N.Y., assignor to Thermal Conduction Engineering Corporation, Secaucus, N.J.

Filed Aug. 30, 1973, Ser. No. 392,992

Int. Cl.² E03C 1/02

U.S. Cl. 4—145 **10 Claims**



1. A safety shower comprising a piping system including a vertical portion leading from a constant water supply to an elevated horizontal portion terminating in a downwardly directed shower head, a quick actuating valve closely adjacent said shower head, control means for said valve readily accessible to an individual beneath said shower, an ambient temperature sensitive bleed valve assembly closely adjacent and in advance of said quick actuating valve, said bleed valve assembly further having a bleed valve containing valve actuating means which respond to said sensor to open and close said bleed valve at predetermined ambient temperatures, said temperature sensitive bleed valve being set to open as ambient

temperature reaches and exceeds predetermined depressed or elevated levels, thereby providing a limited flow of water through the piping system in advance of said quick actuating valve while the shower is not in use, upon and during occurrence of said predetermined depressed or elevated ambient temperature levels.

3,962,734

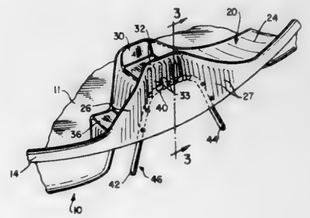
THERMOFORMED WADING POOL WITH INTEGRAL SLIDE AND HANDRAIL

Ascher Chase, Virginia Beach, Va., assignor to General Foam Plastics Corporation, Norfolk, Va.

Continuation-in-part of Ser. No. 396,680, Sept. 13, 1973, Pat. No. 3,908,205. This application Sept. 3, 1974, Ser. No. 502,364

Int. Cl.² E04H 3/16, 3/18

U.S. Cl. 4—172 **5 Claims**



1. In a container structure comprised of a single thermoformed sheet of plastic material having a flat bottom wall of predetermined configuration and circumscribing peripheral side walls of a predetermined height extending upwardly therefrom; a flange at the upper edge of said side walls; and an integral sliding surface sloping upwardly from said bottom wall along said peripheral side walls to a mounting platform therefor; the improvement comprising

a. a side wall for said slide structure and said mounting platform extending from said flat bottom wall to said mounting platform, said side wall being rigidified by heavy vertical ribs;

b. a hollow handrail on each side of said mounting platform, one of said handrails including portions integral with said slide wall and forming an upwardly extending extension thereof; and

c. the other of said handrails including portions integral with said flange adjacent said platform and forming an upwardly extending extension thereof, said upwardly extending flange portion including an enlarged skirt portion adjacent said platform;

d. said inner surfaces of said skirt portion accommodating the insertion therein and attachment thereto of a support leg means.

3,962,735

MOVABLE BULKHEAD WITH GUIDING AND OVERCANTING PREVENTION MEANS

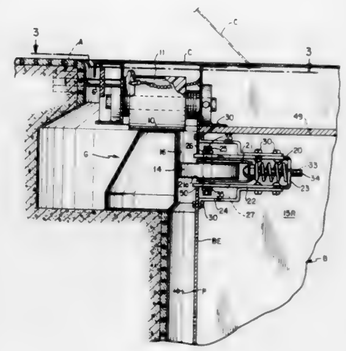
Dekkers H. Davidson, 420 Nanyhagen Road, Thornwood, N.Y. 10594

Filed Dec. 28, 1973, Ser. No. 429,093

Int. Cl.² E04H 3/16, 3/18

U.S. Cl. 4—172.12 **16 Claims**

1. A moveable bulkhead, for use in a swimming pool having rail means along the upper periphery of the sides thereof, for extending across and dividing the pool into separate activity areas, said bulkhead having forward and rearward walls and means for mounting the same in spaced relation means positioned intermediate the ends of said forward and rearward walls for supporting said bulkhead upon the upper surface of the rail means while stationary thereon and while being moved therealong, the improvement comprising means separate and remote from said supporting means for guiding and preventing over-canting of said bulkhead as it is moved, for preventing the ends of said forward and rearward walls from contacting



the sides of the pool, said guiding and preventing means including means for mounting the same adjacent the ends of said forward and rearward walls, said guiding and preventing means extending from said mounting means for substantially constant contact against the sides of the pool.

3,962,736

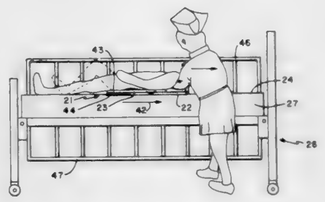
DEVICE FOR MOVING OR POSITIONING A PATIENT IN A BED

Margaret T. Fedele, 828 Carmel Court, San Leandro, Calif. 94578

Filed June 25, 1975, Ser. No. 590,205

Int. Cl.² A61G 1/02

U.S. Cl. 5—81 R **7 Claims**



1. A device for moving a patient in a bed comprising:

a horizontally extending base formed to provide a substantially smooth and uninterrupted horizontally extending path over the top surface of said bed; and

a horizontally extending relatively rigid platform formed for support of a portion of said patient thereon and mounted in superimposed relation to a portion of said base, said platform and said base being cooperatively formed for low friction guided simultaneous reciprocation of all portions of said platform to and fro over said base along said horizontally extending path to enable movement of said patient by a single attendant unimpeded by bed linens or the like.

3,962,737

LIFTING MEANS

David Richard James, Hasfield, England, assignor to Mecanaids, Limited, United Kingdom

Continuation of Ser. No. 256,581, May 24, 1972, abandoned. This application July 19, 1974, Ser. No. 490,125

Claims priority, application United Kingdom, May 28, 1971, 18035/71

Int. Cl.² A47B *83/04*

U.S. Cl. 5—86 **8 Claims**



1. An invalid hoist comprising a wheeled chassis, an upstanding column mounted on and adjacent the rear of the chassis, and a lifting arm projecting from the column, said chassis having a cross-member, two arms secured to and extending forwardly from said cross-member in spaced relation to leave a front opening between them and being provided adjacent their forward ends with fixed-axis load-carrying front wheels, two laterally spaced fixed-axis load-carrying wheels rotatably conected proximate the ends of said cross-member and being secured to said cross-member and extending rearwardly therefrom to define a T-shaped rear portion of said chassis, disposed intermediate the front wheels and the column, a rear member and a castor support wheel mounted on said rear member adjacent the rear of the chassis, the arrangement being such that the chassis with a patient supported thereon normally rests on the front and intermediate wheels with the rear wheel free of the ground but, for purposes of maneuvering, the hoist can be tilted back about the intermediate wheels onto the rear castor wheel.

3,962,738

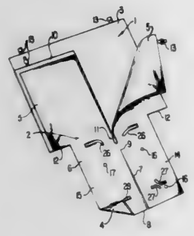
STROLLER BLANKET

Barbara Menditto, 289 Jerome Ave., Oakhurst, N.J. 07755

Filed July 11, 1974, Ser. No. 487,619

Int. Cl.² A47G *9/00*

U.S. Cl. 5—334 R **10 Claims**



1. A child or infant covering comprising:

1. a back section having:

a. an upper generally rectangular portion with its transverse dimension somewhat larger than its longitudinal dimension;

b. a lower generally rectangular portion joined to the upper rectangular portion at a common transverse boundary and having a bottom edge;

c. said lower rectangular portion having a transverse dimension no more than that of the upper rectangular portion, and having a longitudinal dimension at least equal to said transverse dimension;

d. said lower rectangular portion having a longitudinal slit at its longitudinal center line extending from the bottom edge to a crotch at a distance more than half but less than the entire longitudinal dimension of said lower rectangular portion, whereby a bifurcated lower back portion is formed;

2. a front section having a top edge comprising:

a. an upper generally rectangular portion somewhat smaller longitudinally than the upper rectangular back portion and having the same transverse dimension as the latter;

b. a bifurcated lower front portion having the same shape and dimensions as the bifurcated lower back portion and joined to the upper front portion along a common transverse boundary;

c. said upper front section and at least some of the lower front section being divided into two portions along their longitudinal center lines, means for joining together and unfastening said two portions;

3. said front and back lower portions being joined together along the edges thereof to form closed leg portions having sides and bottoms;

4. the transverse dimensions of the upper front and back sections and of the lower front and back sections ranging from being equal to each other to having the upper section somewhat larger than the lower section, and in the case of the latter having segments of the upper sections projecting beyond the ends of the lower section;

5. any segments of the front and back upper portions projecting beyond the front and back lower portions being joined together at the lower edges of said projecting portions; and

6. means to fasten the upper edges of the front and back upper portions at the corners thereof.

3,962,739

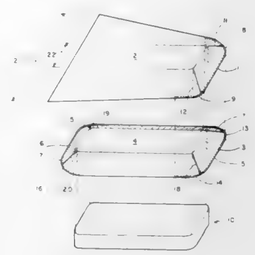
BEDSHEETING ARRANGEMENT

Lou Anne Crockett, P.O. Box 51, Brusly, La. 70719

Filed Jan. 16, 1975, Ser. No. 541,581

Int. Cl.² A47G *9/00*

U.S. Cl. 5—334 C **5 Claims**



1. A one-piece bedsheeting arrangement that fits about a mattress, which comprises:

a. a top sheet having rounded corners at one top sheet end and with top darts extending inward from each of said rounded corners to a point of said top sheet that will lay adjacent a corner of said mattress nearest said dart;

b. a bottom sheet having rounded corners at both bottom sheet ends, wherein said rounded corner at one end of said bottom sheet ends have an identical curvature as said rounded top sheet corners, and have bottom darts extending inward from each of said rounded corners to a point of said bottom sheet that will lay on a corner of said mattress nearest each of said darts, and connected to said top sheet by an elastic strip sewn to both sheets at said ends having said identical curvature, which elastic strip extends along said sheets' perimeter from one of said rounded corners to another of said rounded corners, and

c. a second elastic strip sewn to the other end of said bottom sheet along said other end's rounded corners.

3,962,740

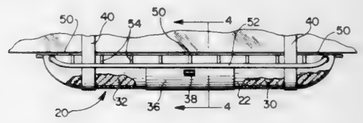
SURVIVAL KIT ATTACHMENT FOR A BOAT

John W. White, 9 Fairhaven Road, Mattapoisett, Mass. 02739

Filed Mar. 24, 1975, Ser. No. 561,269

Int. Cl.² B63C *9/00*

U.S. Cl. 9—14 **7 Claims**



1. A survival kit attachment for a boat having a hull that defines a botton for said boat, at least one elongated container having an interior chamber formed therein in which survival equipment is stored, means for mounting said container on said hull so that the longitudinal axis of the container is parallel to the longitudinal axis of the boat and the container is disposed on the bottom of the boat exteriorly thereof for complete immersion in water during normal operation of said boat, said container including a generally flat bottom wall located adjacent to said hull in generally parallel relation thereto and further including a generally curved outer wall that extends outwardly of said hull but that offers minimal resistance to the water during movement of the boat therethrough, flotation material located in end portions of said container for assisting in promoting a pontoon effect thereof and insuring that the boat remains afloat upon the capsizing thereof, a chamber formed in said container intermediate the floatation material for receiving said survival equipment therein, an opening formed in said curved wall and communicating with said chamber and equipment stored therein, and a door mounted on said curved wall for sealing said opening when said container is immersed in water as mounted on said hull, said door being movable to an open position to provide access to said chamber and the survival equipment therein when said boat is overturned in water.

3,962,741

HEEL AND SIDE LASTING MACHINE

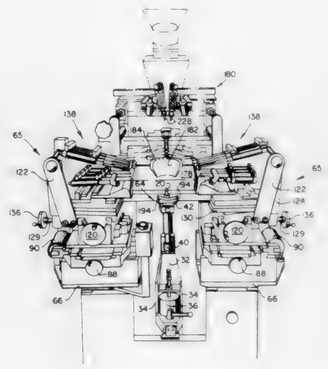
Walter Vornberger, Tewksbury, Mass., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Mar. 27, 1975, Ser. No. 562,746

Int. Cl.² A43D *21/00*

U.S. Cl. 12—10.5 **2 Claims**

1. A lasting machine comprising: heel wiping means, symmetrically disposed about a forwardly-rearwardly extending line of symmetry, mounted for forward movement from a retracted position to an advanced position in a heel wiping stroke; support means for so supporting bottom-up a shoe assembly, formed of a last having an upper mounted thereon and an insole located on its bottom, that the heel portion of the shoe assembly faces the heel wiping means and is located forwardly of the heel wiping means when the heel wiping means is in its retracted position whereby the heel wiping stroke causes the heel wiping means to wipe the heel portion of the upper margin against the insole, said support means being so movably mounted as to enable the heel portion of the shoe assembly to be swung transversely of said line of symmetry to thereby place the heel portion of a particular shoe assembly in symmetry with said line of symmetry; a base located outwardly of and on each side of the support means; means mounting each base for pivotal movement about an upright axis towards and away from said line of symmetry; a side lasting instrumentality mounted to each base for inward-outward movement and extending forwardly of its associated axis, each side lasting instrumentality being so constructed as to enable it, when it is moved inwardly of an outer position on its associated base, to perform operations on its associated side portion of the shoe assembly that include engaging its



associated side portion of the shoe assembly and wiping the margin of its associated side portion of the upper against the insole; and moving means for swinging each base about its associated axis between a first position wherein its associated side lasting instrumentality extends forwardly and outwardly of its associated axis and a second position wherein its associated side lasting instrumentality so extends forwardly of its associated axis that it is located inwardly of said first position.

3,962,742

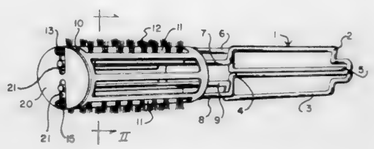
HAIR STYLING BRUSH

John Vendur, 1228 Scalp Ave., Johnstown, Pa. 15904

Filed June 13, 1975, Ser. No. 586,581

Int. Cl.² A46B *7/02*

U.S. Cl. 15—201 **8 Claims**



1. A hair styling brush comprising:

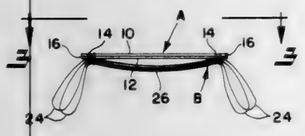
a. a handle comprised of two members each of said members having first and second prongs,

b. brush housing means fixably attached to said first prong means of each of said handle members,

c. bristle housing means fixably attached to the second prong means of each of said handle member, said bristle housing means extending inwardly of said brush housing member; and

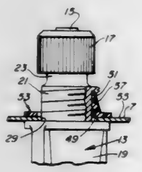
d. bristles extending from said bristle housing means extending outwardly of said brush housing means through apertures in said brush housing means.

3,962,743
MOP AND METHOD OF MAKING SAME
Theron V. Moss, P.O. Box 234, Cleveland, Tenn. 37311
Filed June 27, 1974, Ser. No. 483,536
Int. Cl.² A47L 13/20
U.S. Cl. 15—229 AP 15 Claims



1. A dust mop comprising a pair of fabric layers defining a flat generally rectangular support member having opposite longitudinal edges, opposite end edges and a longitudinal axis, a row of looped yarn adjacent one side of said support member and having looped ends extending outwardly beyond said longitudinal edges, outer rows of stitching extending through said yarn and at least one of said fabric layers adjacent said longitudinal edges for attaching said yarn to said support member, said yarn between said outer stitching rows being free from attachment to said support member, and the other of said fabric layers including means to facilitate mounting said mop to a mop holder.

3,962,744
LOCKING AND SEALING WASHER APPARATUS
Alfred A. Bien, West Bloomfield, and Robert W. Glover, Detroit, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Nov. 13, 1974, Ser. No. 523,305
Int. Cl.² B60S 1/34
U.S. Cl. 15—250.34 3 Claims



1. Apparatus for connecting an automotive vehicle windshield wiper to a structural member of vehicle comprising a coupling assembly adapted to extend through an opening in said structural member, said coupling including a tubular unit having an enlarged portion adapted to be located on the lower side of said structural member, a threaded portion extending from said enlarged portion and adapted to extend through said opening, a rotatable member extending through said tubular unit and adapted to be connected at its upper end to said wiper and at its lower end to an actuating assembly, said threaded portion having a slot therein, a deformable washer having a ring portion surrounding said threaded portion and a tapered finger extending from said ring portion and being located in said slot, a nut threaded on said threaded portion, said finger having a portion thereof deformable by said nut as the latter is moved toward said enlarged portion, said deformable portion inhibiting the removal of said nut when the latter is threaded onto said threaded portion, a portion of said threaded portion closing the upper end of said slot and forming a stop against which the upper end of said finger abuts.

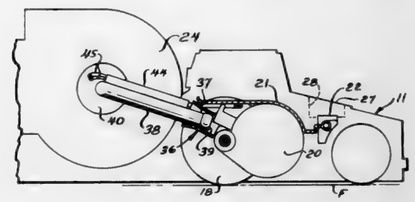
3,962,745
WALL RUG CLEANING MACHINE
Sydney Wellington Collier, R.R. No. 2, Norval, Ontario, Canada
Filed Nov. 21, 1974, Ser. No. 525,773
Int. Cl.² A47L 7/00
U.S. Cl. 15—322 3 Claims



1. A cleaning device for wall rugs and the like comprising a head, a rigid tube, and means for connecting said head to said rigid tube which is adapted to permit relative movement of said head about an axis of said rigid tube; said head including means for applying cleaning fluid to a rug surface throughout a first area, means for applying a vacuum to a rug surface throughout a second area which substantially completely surrounds said first area, an inner wall which has a free end defining an enclosure for said means for applying cleaning fluid where said first area is defined by and within said free end of the inner wall, and an outer wall which has a free end and which surrounds said inner wall to define an annular chamber between said inner wall and said outer wall, said annular chamber having an open end where said second area is defined between the free ends of said inner and outer walls, said annular chamber being in communication with a source of vacuum, the free ends of said inner and outer walls lying substantially in the same plane where said head is free of any projections extending substantially beyond said plane in a direction away from said head so that the free ends of said inner and outer walls are adapted to contact a rug surface to be cleaned.

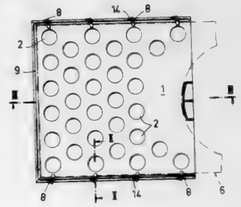
3,962,746
SELF-PROPELLED VACUUM CLEANER
Milton J. Johnson, Danville, Ky., and Joseph F. Schmitz, St. Paul, Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Dec. 6, 1974, Ser. No. 530,071
Int. Cl.² A47L 9/22
U.S. Cl. 15—340 14 Claims

1. In a self-propelled vacuum cleaner structure having a nozzle provided with a lower suction inlet and an upper wall portion, air flow suction means carried by the nozzle for flowing dirt laden air through the nozzle suction inlet and a dirt collector, and propelling means carried by the nozzle including vertically adjustably mounted wheels movably supporting the nozzle on a surface to be cleaned and means for driving the wheels including an electric drive motor movably mounted to said nozzle, the improvement comprising duct means for connecting relatively clean air from externally of the nozzle through said upper wall portion of the nozzle to said drive motor for cooling the same and from said drive motor to said air suction means for delivering the relatively clean air from



said drive motor with said air flowed from said nozzle suction inlet.

3,962,747
INSTALLATION FOR ANCHORING THE RAMP ENDS OF BRIDGES
Friedhelm Soffge, Kornwestheim, Germany, assignor to Dr. - Ing. H.c.F. Porsche Aktiengesellschaft, Germany
Filed Jan. 27, 1975, Ser. No. 544,270
Claims priority, application Germany, Jan. 25, 1974, 2403495
Int. Cl.² E01D 15/12
U.S. Cl. 14—69.5 26 Claims



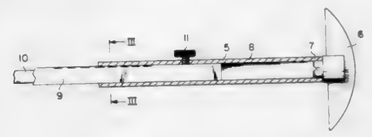
1. An arrangement for securing a ramp end of a bridge to a ramp end support surface, the arrangement comprising: anchoring plate means associated with the ramp end, gripping means provided on said anchoring plate means for firmly gripping the ramp end support surface to anchor the ramp end to the support surface, and tension means for releasably securing the anchor plate means to the ramp end, the anchoring plate means includes an upper surface portion facing the ramp end and a lower surface portion facing the ramp end support surface, said gripping means including a plurality of openings provided in said anchoring plate means having rim portions projecting from the lower surface of said anchoring plate means to form claw-like edges which engage the ramp end support surface.

3,962,748
TV CONTROL DEVICE
Chris T. Michaels, New York, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Mar. 24, 1975, Ser. No. 561,101
Int. Cl.² E05B 1/00
U.S. Cl. 16—114 R 2 Claims

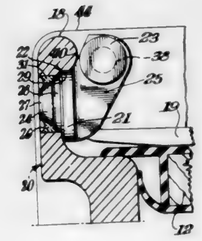
1. A TV control device for rotating a dial of a TV set, from an area distant from the set, said TV control device comprising

a rod-like member of variable adjustable length having a handle at one end, said rod-like member being independent from a TV set and comprising a plurality of telescoped sections and fastening means for releasably affixing the sections in position relative to each other, each of the sections of the rod-like member being of substantially hollow rectangular configuration;

a head part detachably secured at the opposite end of the rod-like member for cooperating with the dial of a TV set in a manner whereby a user in an area distant from the set selectively rotates the dial via the rod-like member, said head part being independent from a TV set but removably coupleable to a dial thereof and comprising a pair of spaced spring-like clamping heads for gripping the periphery of a dial, and a second detachable head post having a pair of opposed radially extending flat ears for cooperating with the slots of a dial.

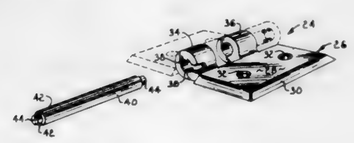


3,962,749
HINGE BUTT AND MOUNTING ASSEMBLY
Andrew Abolins, Langhorne, Pa., assignor to Strick Corporation, Fairless Hills, Pa.
Filed May 22, 1975, Ser. No. 580,026
Int. Cl.² E05D 5/06
U.S. Cl. 16—135 10 Claims



1. A mounted hinge butt for connection to an exposed elongated member having an inside and outside comprising an elongated base having a front and a back, a slot in the member, an elongated tapered plug on the back of the base loosely engaged within the slot with the base on the inside of the member and a weldment between the plug and the inner wall of the slot accessible from the outside of the member whereby the butt is secured to the member.

3,962,750
HINGE CONSTRUCTION
Kenton A. Buss, Oxford, and Tony E. Branscum, Winfield, both of Kans., assignors to Gott Manufacturing Co., Inc., Winfield, Kans.
Filed Apr. 7, 1975, Ser. No. 565,408
Int. Cl.² E05D 5/10
U.S. Cl. 16—168 8 Claims



1. Hinge construction comprising:

a first hinge half presenting a generally planar mounting portion and an integral first hinge tube section,

said first hinge tube section presenting a protuberance extending from one end of said section into the tubular opening along a portion of the length of said section;

a second hinge half presenting a generally planar mounting portion and an integral second hinge tube section,

said second hinge tube section presenting a protuberance extending from one end of said section into the tubular opening along a portion of the length of said section;

said first and second hinge halves being adapted to be disposed in mating relationship with said first and second hinge tube sections being aligned to present a tubular hinge opening with said protuberances at opposite ends of the opening; and

a hinge pin having a longitudinally extending slot disposed therein generally complemental in configuration to the shape of said protuberances whereby said pin may be inserted within said tubular hinge opening when said slot is aligned with the protuberance at one end of said opening and held therein upon rotation to a nonaligning position to cooperate with said first and second hinge halves to present a hinge.

3,962,751

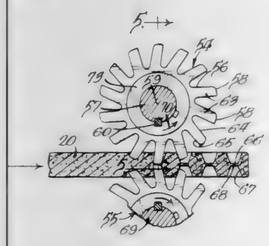
SCORING APPARATUS

Richard C. Wagner, Frankfort, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Filed Feb. 7, 1975, Ser. No. 547,863

Int. Cl.² A22C *9/00*

U.S. Cl. 17—26 **8 Claims**



1. Apparatus for scoring a patty of ground raw meat, comprising: conveyor means for moving the patty in a path through a scoring station; a scoring device at said scoring station comprising a plurality of generally circular blades arranged side-by-side along an axis of rotation that extends generally transversely to said path, each blade comprising a plurality of spaced outwardly projecting teeth of a flexible plastic polymer capable of sideways deflection without material damage to the teeth upon striking an obstruction, said teeth having blunt outer ends substantially describing a circle; and means for rotating said scoring device for scoring the surface of a patty carried by said conveyor means through said scoring station, each said blade having its said teeth spaced from and angularly staggered with respect to the teeth in the next adjacent blade.

3,962,752

METHOD AND APPARATUS FOR REMOVING MEAT FROM CRABS

Melvin B. Cooke, deceased, late of Bowie, Md. (by Barbara M. Cooke, administrator), and Eric Kaiser Pritchard, Bowie, Md., assignors to Innovative Seafood Systems, Inc., Bowie, Md.

Continuation-in-part of Ser. No. 868,414, Oct. 22, 1969, abandoned. This application Jan. 3, 1975, Ser. No. 538,329

Int. Cl.² A22C *29/00*

U.S. Cl. 17—71 **6 Claims**

1. Apparatus for removing the meat from a crab body, comprising:

a base;

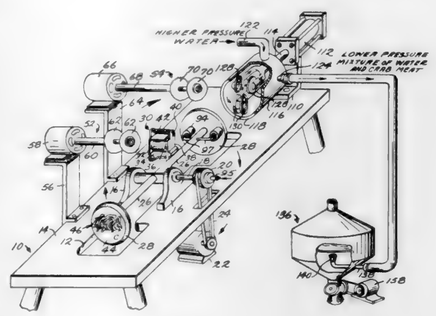
pivot means on said base;

an arm pivoted by said pivot means for rotation on said base and having an end spaced from said pivot means;

a clamp support mounted on said arm end;

clamp means on said clamp support for accepting and holding a crab so that the crab moves along a path as the arm pivots about the pivot means;

first cutting means disposed with respect to said base to intersect said path and to sever the claws, crawling legs and paddles from the crab as the crab moves along said path;



second cutting means disposed with respect to said base to intersect said path and to sever the body of the crab into a center segment and at one end of each end segment;

means on said clamp support for shifting said clamp to displace the segments to expose the cut surfaces at both ends of the center segment and at one end of each end segment;

means for subjecting the clamped, displaced crab body segments to a differential pressure to drive the meat from the segments to thereby leave behind the undesirable parts of the crab body.

3,962,753

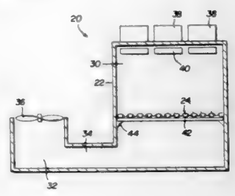
METHOD OF MAKING GLASS FIBER MATS AND CONTROLLING PRESSURE DROP ACROSS WEB BY VARYING PERFORATED PLATE BENEATH WEB

John W. Dunn, Sylvania, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 6, 1974, Ser. No. 467,543

Int. Cl.² D04H *1/00*

U.S. Cl. 19—156.3 **3 Claims**



1. A method of making a continuous mat of glass fibers in an enclosed hood, comprising the steps of:

a. directing the fibers downwardly within the hood toward a continuously moving foraminous conveyor,

b. creating a predetermined pressure drop across the hood, below said conveyor, by locating a plate having a plurality of apertures below said conveyor, wherein the apertures in said plate define less than fifty percent of the total area of said plate, and

c. continuously collecting the glass fibers on said conveyor, said pressure drop providing a relatively uniform distribution of fibers on said continuously moving foraminous conveyor.

3,962,754

PLATE CONNECTORS FOR BELTS

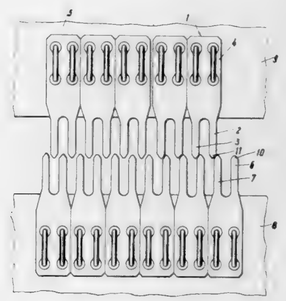
Hermann Stolz, Muhlheim am Main, Germany, assignor to MATO Maschinen-und Metallwarenfabrik Curt Matthaei GmbH & Co. KG, Offenbach, Germany

Filed May 23, 1974, Ser. No. 472,516

Claims priority, application Germany, June 1, 1973, 2327979

Int. Cl.² F16G *3/02*

U.S. Cl. 24—33 B **3 Claims**



1. In a connector for interconnecting the two opposite ends of a belt, wherein the connector has a plurality of connector members, each connector member having a pair of connector legs adapted to be secured to one of said two opposite ends of said belt and a U-shaped eye joining the two connector legs, said U-shaped eye being dimensioned to extend beyond the end of the belt, whereby the two ends of the belt may be joined by a connector rod extending transversely of the belt through the eyes of a plurality of said connector members secured to each of the two ends of the belt; the improvement wherein the cross-section through each eye in the region thereof through which the connector rod is adapted to extend, has an inwardly facing base surface which is straight in the plane of said cross-section, said base surface being curved in a plane extending at a right angle to said sectional plane and longitudinally to said belt, said inwardly facing base surface extending straight over the width of the eye to provide a wide surface contact between said base surface and a connector rod, each eye further having an outwardly facing surface opposite said base surface, which outwardly facing surface is so curved in said sectional plane and in said plane extending perpendicularly to said sectional plane, that the outwardly facing curved surface merges smoothly into the sides of its eye to allow opposite eyes to be readily guided into intermeshing by applying opposite longitudinal forces to the ends of the belt, and means for securing said connector legs to the respective belt end to form troughs between adjacent eyes to allow said intermeshing of said eyes, even when the opposed eyes and the opposite troughs between said eyes are slightly misaligned.

3,962,755

LINK COMPONENT FOR TRAWLING GEAR

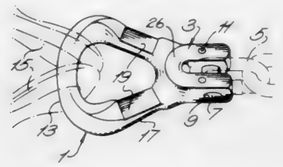
Anthony Alan Buschini, Fleetwood, and Douglas Edward Swarsbrick, Stourport-on-Severn, both of England, assignors to Parsons Controls Limited, Stourport on Severn, England

Filed Aug. 19, 1974, Ser. No. 498,767

Claims priority, application United Kingdom, Aug. 24, 1973, 40208/70

Int. Cl.² A44B *13/00*

U.S. Cl. 24—201 HL **7 Claims**



1. A unitary link component for use with a fishing trawl and having an intermediate generally transverse portion separating a first end of the component from a second end thereof; a pair of diverging arms extending outwardly from said intermediate portion toward said first end; a crown connecting together the outer ends of said arms at one end of said link component to define, with said diverging arms and said intermediate portion, a closed loop wider at its outer end than its inner end and sufficiently wide to receive in side-by-side relation a pair of couplers to provide a Y-shaped coupling, said arms extending a major portion of said closed loop; a pair of parallel arms extending from said intermediate portion toward said second end of said component; means defining apertures in each of said parallel arms, said apertures being transversely aligned with respect to said parallel arms; and a connecting pin in said apertures and providing with said parallel arms and said intermediate portion a closed U-shaped clevis adapted to receive a link of a chain, the width of said clevis being less than that of said closed loop at said one end of the component, at least one of said diverging arms having a portion of a predetermined reduced thickness to accommodate the throat of a hook of predetermined size when the hook and said component are relatively oriented with said throat positioned to pass over said one of said diverging arms at its portion of reduced thickness, thereby to engage said hook operatively with said closed loop.

3,962,756

CONTINUOUS COUPLING ELEMENT FOR SLIDE FASTENERS

Hiroyuki Ebata, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

Filed Aug. 16, 1974, Ser. No. 498,103

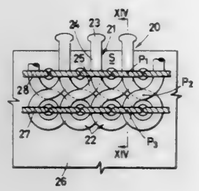
Claims priority, application Japan, Sept. 21, 1973, 48-111094[U]

Int. Cl.² A44B *19/12*

U.S. Cl. 24—205.16 C **5 Claims**

1. A continuous coupling element formed of a continuous elongated filament for attachment to a stringer tape to provide a slide fastener half, comprising a plurality of first loops having a series of uniformly spaced apart coupling heads along one longitudinal side thereof for mating engagement with identical coupling heads of a complementary continuous coupling element, each of said first loops further including a pair of shanks which are interconnected by each of said coupling heads and which are compressed into contact with each other at their ends remote from the coupling head, said pair of shanks being arranged in substantially parallel spaced relationship in a plane perpendicular to the plane of the stringer tape, and a plurality of second loops formed along the other longitudinal

side of said first loops and arranged in overlapping relationship in contact with each other, each of said second loops being formed by substantially annularly arranged extensions from said shanks of said first loops which extensions include crossed portions contacting each other, whereby said first and



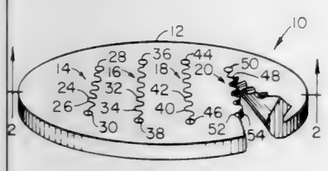
second loops are arranged in contacting relationship at three dissimilar points, corresponding first loops and second loops being integrally connected to one another with said second loops being disposed substantially parallel to the stringer tape to come into intimate contact therewith and oriented transversely to said plane of the shanks in the first loops.

3,962,757

FABRIC FASTENER

John F. Gedney, P.O. Box 960, Boston, Mass. 02103

Filed Mar. 17, 1975, Ser. No. 559,124
Int. Cl.² A44B *21/00*; B65D *77/10*
U.S. Cl. 24—255 BS **10 Claims**



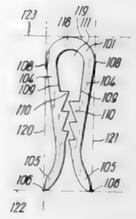
1. A device for holding a plurality of sheets of fabric-like material in a contoured configuration, said device comprising a resilient body formed with at least first, second, third and fourth grips, said first grip constituting a first corrugated slit that is bounded by a pair of holes at its ends, said second grip constituting a second corrugated slit that is bounded by a pair of holes at its ends, said third grip constituting a third corrugated slit that is bounded by a pair of holes at its ends, said fourth grip constituting a fourth corrugated slit that is bounded by a pair of holes at its ends, a longitudinal axis of any one slit being in spaced parallel relationship with a longitudinal axis of any other slit, at least one of said slits being longer in length than at least one other of said slits each of said slits configured to receive and captively hold a sheet of fabric-like material in a contoured configuration that constitutes a fitted corner, said slits arranged in such a manner that a sheet of fabric-like material inserted into one of said slits is operative to close said slits adjacent said one slit, said body in a bowed configuration when said sheets are received in said slits.

3,962,758

CLIP FOR RETAINING A SHIRT OR SIMILAR ARTICLE OF CLOTHING IN FOLDED POSITION ON AN INSERT

Heinrich Knappe, Eidinghausen; Karl Heinz Nolte, Vlotho, and Reinhold Kempelmann, Bad Salzuflen, all of Germany, assignors to Herbert Kannegiesser Kommanditgesellschaft, Vlotho, Germany

Filed Nov. 5, 1974, Ser. No. 521,017
Claims priority, application Germany, Nov. 10, 1973, 2356262
Int. Cl.² A44B *21/00*
U.S. Cl. 24—255 GP **2 Claims**



1. A generally U-shaped clip for use with an automatic feeding device which feeds the clip into an automatic shirt folding apparatus for retaining shirts or similar articles of clothing in position about an insert, comprising:

a. a generally U-shaped yoke (**118**) having a constant width and thickness;

b. two arms (**104**) of equal length each having one end attached to said yoke, said arms having the same width and thickness as said yoke (**118**), the arms converging toward each other to an area of minimum separation distance whereupon the distal ends of said arms (**106**) are bent outwardly away from the longitudinal axis of said clip and each end in a plane (**120, 121**) parallel to the longitudinal axis of the clip and containing the outermost portion of said yoke (**118**); and

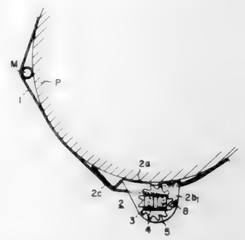
c. denticulations (**110**) located on the inner surface (**109**) of each of said arms at the area of minimum separation (**104**) to grip the shirt or similar article of clothing therebetween, the denticulations having a saw-toothed formation wherein the tips of same are directed towards the yoke (**118**) of the clip (**101**).

3,962,759

BAND CLAMPING DEVICE

Hiroshi Nagai, Tokyo, Japan, assignor to Kabushiki Kaisha Suda Seisakusho, Tokyo, Japan

Filed Mar. 20, 1975, Ser. No. 560,112
Claims priority, application Japan, May 13, 1974, 49-54252
Int. Cl.² B65D *63/00*
U.S. Cl. 24—269 **4 Claims**



1. A band clamping device, which comprises in combination:

a. a U-shaped main body having a bottom part thereof to constitute a seating member, and side parts extending from said seating member in the form of a channel to constitute a pair of support members;

b. a flexible band or strap, one end of which is folded so as to be hooked at one part of said seating member through at least one slot formed therein;

c. a T-shaped band take-up member having a parallelopiped head part and a pair of arcuate shaft members connected at one end thereof in said head part with their concaved faces being opposed each other providing a small gap therebetween so as to be utilized as a band insertion slot, the band take-up member being rotatably held in said pair of support members;

d. a ratchet wheel engaged with said gap between said opposing pair of the arcuate shaft members in a manner to rotate integrally with said band take-up members; and

e. a return preventive means including an engaging pawl provided on one part of said support member and which causes the engaging pawl to be engaged with said ratchet wheel,

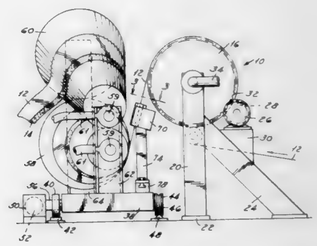
the angle of bending of said support members with respect to said seating member being made greater than 90° to thereby relax the overriding resistance between said ratchet wheel and said engaging pawl formed on one part of one of said support members, and, at the same time, the opening width of said pair of support members being narrowed by compression against its elasticity to thereby release the engagement between said ratchet wheel and said engaging pawl.

3,962,760

LAMINATING INTERLAYER EXPANDING APPARATUS

George A. Koss, Dearborn Heights, and Daniel J. Gurta, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 21, 1974, Ser. No. 516,846
Int. Cl.³ B29C *24/00*; B29F *5/00*
U.S. Cl. 26—72 **3 Claims**



1. An apparatus for expanding a laminating interlayer which comprises:

feeding means for feeding a continuous web of laminating interlayer material from a supply thereof;

heating means for heating said web to a temperature whereat it is pliable;

cooling cone means including a motor driving the same both for applying a stretching force to and for cooling said web;

structure means for mounting said cooling cone means adjacent said feeding means and said heating means;

first measuring device means for measuring the thickness of said web between said heating means and said cooling cone means for developing a signal indicative of the measured thickness;

second measuring device means for measuring the width of said web between said heating means and said cooling cone means and for developing a signal indicative of the measured width;

controllable power source means for variably controlling the speed of said motor driving said cooling cone means in accordance with a control signal applied thereto;

control circuit means responsive to said signals indicative of thickness and width of said web for developing a control signal for application to said controllable power source means, said control circuit means (1) increasing said control signal when said signal indicative of thickness is above a predetermined thickness level and said signal indicative of width is above a predetermined width level, (2) not increasing said control signal even though said signal indicative of thickness is above a predetermined thickness level when said signal indicative of width is at or below said predetermined width level, (3) maintaining said control signal when said signal indicative of thickness is at said predetermined thickness level and said signal indicative of width is at or above said predetermined width level, and (4) reducing said control signal when said signal indicative of width is below said predetermined width level; and

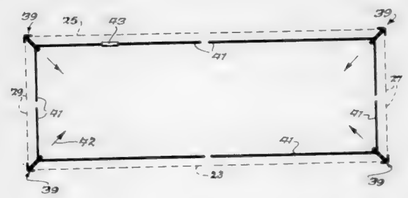
circuit means for connecting said first and said second measuring means to said control circuit means whereby changes in the thickness and the width are used to control the rotational speed of said motor of said cooling cone means.

3,962,761

CASKET HAVING IMPROVED CORNER BRACKETS

Robert L. Boughner, 3898 Schintzius Road, Eden, N.Y. 14057

Filed Oct. 11, 1974, Ser. No. 514,013
Int. Cl.² A61G *17/00*
U.S. Cl. 27—10 **12 Claims**



1. A casket comprising sheet metal side and end panels, a continuous tensioning member extending around the periphery of the casket and corner brackets located at corners between the side and end panels, the side and end panels of which form an enclosure, the continuous tensioning member of which is located interiorly of the enclosure, and the corner brackets of which have portions thereof outside the enclosure and portions thereof inside the enclosure, with the portions inside the enclosure being held in tension and being pulled inwardly, with respect to the enclosure, by the tensioning means, so that the brackets are pulled into contact with the outer portions of the side and end panels and bring said side and end panels into contact with each other and hold them together.

3,962,762

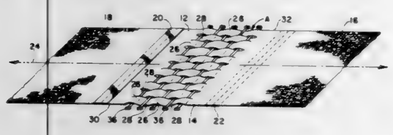
METHOD OF MAKING A FABRIC SPLICE

Alexander V. Alexeff, Cleveland, Ohio, assignor to Alexeff-Snyder Enterprises, Inc., Cleveland, Ohio

Division of Ser. No. 376,537, July 5, 1973, Pat. No. 3,885,596.
This application Nov. 11, 1974, Ser. No. 522,515
Int. Cl.² B65H *69/06*; D03D *23/00*
U.S. Cl. 28—72 R **11 Claims**

1. A method of making a splice between contacting overlapped fabric end portions defining a fabric double layer having a longitudinal axis and a lapping plane, comprising the steps of; forming a plurality of transverse rows of loops in said double layer with each row including a plurality of partial

loops extending alternately in opposite directions out of said plane transversely of said longitudinal axis, each said partial loop including the contacting fabric of both said overlapped



fabric end portions, and inserting elongated substantially rigid rod means through said partial loops in each of said loop rows to hold said fabric end portions together.

3,962,763

TRUSS-LIKE METAL MEMBER

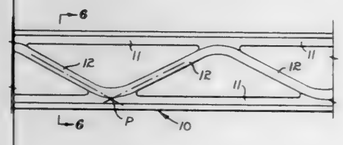
Harold Rex Jury, 23 Kensington Road, Norwood, South Australia

Filed July 13, 1971, Ser. No. 162,213

Claims priority, application Australia, July 16, 1970, 1860/70

Int. Cl.² E04B *1/18*

U.S. Cl. 29—6.1 **12 Claims**



1. A method of forming a metal member of a truss-like configuration having spaced chords interconnected by a plurality of struts, comprising the steps of:

a. extruding ductile metal to form a member of constant cross-sectional shape with two longitudinally extending chord forming portions and a longitudinally extending outstanding stiffening portion parallel to and between the chord forming portions,

b. forming a plurality of longitudinally extending rows of spaced slots in the member, each slot having spaced parallel sides and curved ends, the slots of each row being staggered relative to the respective slots of the next adjacent row and being separated therefrom by the stiffening portion, the centre distance between any two adjacent slots in any one row exceeding the length of each of said adjacent slots but being less than their combined lengths so that the slots of adjacent rows overlap thereby dividing the stiffening portion into a series of strut forming portions and forming between the adjacent slots a series of web portions, each strut forming portion having respective least radii of gyration of cross-sectional shape which exceed the least radius of gyration of cross-sectional shape of each web-forming portion but the effective cross-sectional area of each web-forming portion exceeding the cross-sectional area of each strut-forming portion sufficiently to compensate for its reduced radius of gyration when subjected to buckling loads,

c. clamping substantially only respective chord forming portions along their longitudinal extent in an elongation means, and

d. operating said elongation means so as to move said clamped chord forming portions apart to elongate said strut forming portions and form struts and chords, the struts being inclined to the chords.

3,962,764

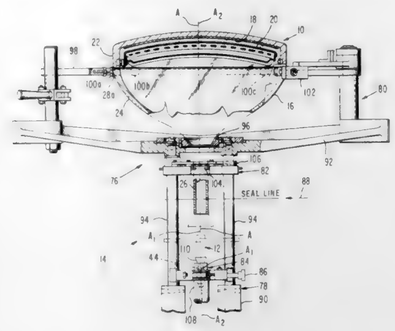
METHOD OF INSTALLING A MOUNT ASSEMBLY IN A MULTI-BEAM CATHODE RAY TUBE

John Franklin Stewart; Raymond Arthur Alleman, and Morris Robert Weingarten, all of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 15, 1975, Ser. No. 541,087

Int. Cl.² H01J *9/18*

U.S. Cl. 29—25.13 **10 Claims**



1. A method of assembling a cathode ray tube, said tube including a bulb assembly and a mount assembly, said bulb assembly having a central longitudinal axis and including a faceplate panel having a transverse axis, said mount assembly having a central longitudinal axis and including a multi-beam electron gun assembly having at least two reference points on the structure thereof, said reference points being spaced from each other and radially spaced around the central longitudinal axis of said mount assembly, said method comprising the steps of:

a. positioning said bulb assembly in a predetermined orientation;

b. positioning said mount assembly in a location spaced from said bulb assembly with the central longitudinal axis thereof coincident with the central longitudinal axis of said bulb assembly;

c. optically sensing the rotational position of said electron gun assembly about said coincident longitudinal axes with respect to said positioned bulb assembly by comparing the relative positions of said reference points on an optical display;

d. adjusting the relative positions of said reference points on the optical display by rotating said mount assembly about said coincident longitudinal axes until said reference points are in predetermined relative positions whereby said electron gun assembly is at a prescribed rotational orientation with respect to said bulb assembly;

e. then, while maintaining said rotational orientation, moving said mount assembly along said longitudinal axis to a desired longitudinal location with respect to the faceplate panel of said bulb;

f. and then permanently fixing said mount assembly to said bulb assembly.

3,962,765

METHOD OF INSTALLING A MOUNT ASSEMBLY IN A MULTI-BEAM CATHODE RAY TUBE

Charles Peter Stachel, Clarks Summit, and Morris Robert Weingarten, Lancaster, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed June 27, 1975, Ser. No. 590,921

Int. Cl.² H01J *9/18*

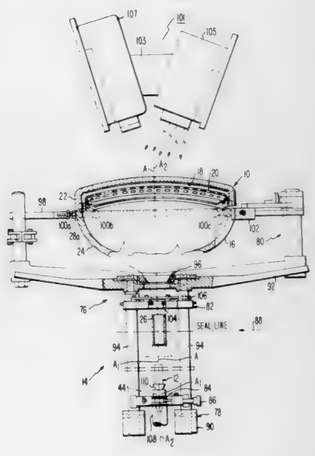
U.S. Cl. 29—25.13 **18 Claims**

1. A method of assembling a cathode ray tube, said tube including a bulb assembly and a mount assembly, said bulb assembly having a central longitudinal axis and including a faceplate panel having a plurality of phosphor deposits disposed thereon in a predetermined pattern, said mount assembly having a central longitudinal axis and including a multi-beam electron gun assembly, said method comprising the steps of:

a. positioning the central longitudinal axis of said bulb assembly in a predetermined orientation;

b. optically sensing the rotational position of said phosphor pattern about the central longitudinal axis of said bulb assembly;

c. positioning said bulb assembly about the central longitudinal axis thereof so that said phosphor pattern is at a predetermined rotational position;



d. positioning said mount assembly in a location spaced from said bulb assembly with the central longitudinal axis thereof coincident with the central longitudinal axis of said bulb assembly;

e. optically sensing the rotational position of said electron gun assembly about said coincident longitudinal axes;

f. rotating said mount assembly about said coincident longitudinal axes until said electron gun assembly is at a prescribed rotational orientation with respect to said phosphor pattern;

g. then, while maintaining said rotation orientation, moving said mount assembly along said longitudinal axis to a desired longitudinal location with respect to the faceplate panel of said bulb; and

h. permanently fixing said mount assembly to said bulb assembly.

3,962,766

PROCESS FOR ASSEMBLING TUBES OF PLASTICS MATERIAL AND ASSEMBLIES RESULTING FROM SAID PROCESS

Guy Pompidor, and Jean-Luc Serriere, both of Pont-a-Mousson, France, assignors to Pont-A-Mousson S.A., Nancy, France

Filed May 31, 1974, Ser. No. 475,227

Claims priority, application France, June 8, 1973, 73.20913

Int. Cl.² B21D *53/02*; **B29C** *27/22*; **B29D** *23/04*

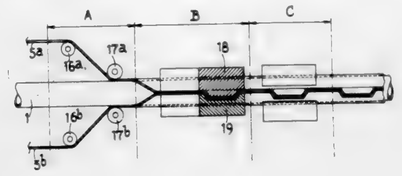
U.S. Cl. 29—157.3 B **6 Claims**

1. Process for manufacturing a heat exchanger having parallel tubes and radiating plates assembled with the tubes, comprising

simultaneously extruding in extruders a series of coplanar laterally spaced-apart parallel tubes of thermoplastic material having an elastic memory;

simultaneously drawing by pulling the extruded tubes through die heads coaxial with the outlets of the extruders and having a cross-sectional size less than the cross-sectional size of the tubes issuing from the extruders, the tubes being cooled down to a temperature in the neighbourhood of the softening point of said material before entering the die heads;

simultaneously passing the tubes issuing from the die heads through a cooling tank while maintaining the pulling force on the tubes;



feeding two radiating plates on both sides of the series of tubes issuing from the tank in contact with opposed generatrices of the tubes;

press-forming the two plates so that the plates conform to the shape of the tubes and come in contact with each other in regions thereof corresponding to the lateral spaces between the tubes;

fixing the plates together in said regions, and reheating the assembly of the tubes and the plates to said temperature.

3,962,767

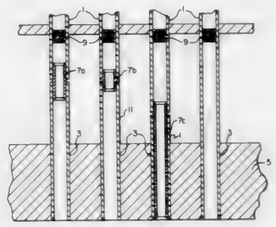
METHOD FOR REPAIRING A HEAT EXCHANGER TUBE

Wilbur M. Byerley, Riverview; Raymond H. Glatthorn, St. Petersburg, both of Fla., and Emil P. Lock, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 13, 1974, Ser. No. 497,180

Int. Cl.² B23P *15/26*

U.S. Cl. 29—157.3 R **7 Claims**



1. A method for repairing a defective portion of a tube disposed in a tube sheet in a heat exchanger, said method comprising the steps of:

removing scale and oxidation products from the inner surface of at least a portion of said tube,

severing said tube so as to form a gap therein,

with the tube sheet as a reference point inserting a sleeve into said tube so that the leading edge of said sleeve is disposed beyond the area where said tube was severed and beyond the defective portion,

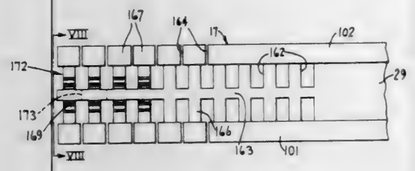
expanding at least a portion of said sleeve into engagement with said tube,

flooding at least the portion of said tube containing said sleeve with a gas suitable for welding said sleeve to said tube,

welding the leading edge of said sleeve to said tube and,

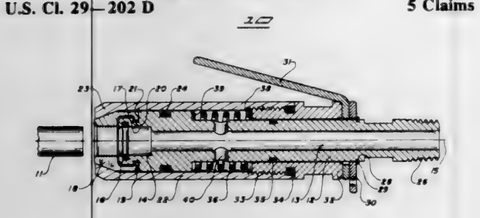
forming the sleeve from material suitable as a filler metal when welding two tubes together
forming the sleeve so as to be sufficiently long and locating the sleeve so that it covers the defective portion of the tube and the gap, and
welding the trailing end of the sleeve to the tube.

3,962,768
METHOD OF MAKING TAPE SPRING
Michael Lusko, 25330 John R, Madison Heights, Mich. 48071
Filed Feb. 10, 1975, Ser. No. 548,614
Int. Cl.² B21F *35/00*
U.S. Cl. 29—173 **6 Claims**



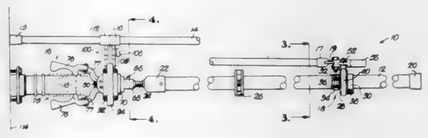
1. In a process for fabricating spring means for positioning within a cartridge having a tape capable of recording electromagnetic impulses, the steps comprising:
applying a pair of elongated flexible elements to one side of an elongated, relatively thin band of resiliently flexible material, said elements being parallel, substantially spaced from each other and located adjacent the lengthwise edges of said band;
providing said band with a plurality of uniformly spaced notches in both edges thereof and severing said elements adjacent said notches, said notches extending inwardly to a lengthwise central portion of said band to define a plurality of parallel and spaced, spring fingers arranged in transversely aligned pairs extending in opposite directions from said central portion of said band;
sequentially applying first distortions to said spring fingers; and
sequentially applying second distortions to said spring fingers whereby the free ends of said fingers are offset relative to said central portion of said band in the direction of said elements.

3,962,769
HYDRAULIC CHUCK
George R. Smida, 2039 105th Ave. Northeast, Minneapolis, Minn. 55434
Filed Apr. 2, 1975, Ser. No. 564,415
Int. Cl.² B23P *15/26*
U.S. Cl. 29—202 D **5 Claims**



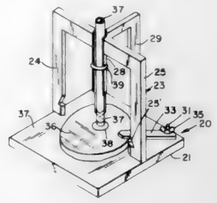
1. A hydraulic chuck, comprising:
piston means having an axially centered passage, the first end of said piston means being sized to engage a tube;
collet means located at said first end of said piston means for engagement of said tube upon closure of said collet means;
surface means bearing upon said collet means to close said collet means;
biasing means operably connected to said piston means for normally forcing said surface means upon said collet means;
attachment means operably connected to said biasing means to remove said surface means from said collet means to permit insertion of said tube; and
passage defining means in said piston to force said surface means on said collet means upon passage of fluid in said axially centered passage.

3,962,770
ELBOW PULLER
James P. Dooley, Peoria, Ill., and Roger O. Dake, Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.
Filed June 16, 1975, Ser. No. 587,433
Int. Cl.² H01R *43/00*
U.S. Cl. 29—203 H **17 Claims**



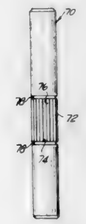
1. An appliance pulling tool, comprising:
an elongated appliance-pulling pole;
means adjacent one end of said appliance-pulling pole for gripping a pullably detachable appliance;
an elongated pushrod having one end thereof adapted for engagement with a stationary surface proximal to said appliance;
means shiftably mounting said pushrod on said appliance-pulling pole in general side-by-side relationship therewith, with said appliance-gripping means and surface-engaging end being proximally disposed,
said mounting means including an elongated link pivotally connected to said appliance-pulling pole and pushrod respectively; and
operating means for pivoting said link about an axis to produce a pushing force on said pushrod towards said stationary surface and a corresponding pulling force on said appliance-pulling pole.

3,962,771
STONE AND ROD HOLDER DEVICE
Roy Lines, Box 383, Oriska, N. Dak. 58063
Filed July 3, 1975, Ser. No. 592,919
Int. Cl.² B23Q *1/00, 3/00*
U.S. Cl. 29—283 **1 Claim**



1. A holder device for holding and aligning a stone and rod for attachment together comprising a platform with marking means on the platform extending out from the center of the platform for aligning a stone thereon, with the center of the stone centrally on the platform, clamp means to secure a stone aligned on the platform, a support member extending upward from the side of the platform over the center of the platform, an elongated channel member fixed to the support member at the center of the platform and extending vertically downward toward the center of the platform with its lower edge terminating at a location above the platform, said elongated channel member receiving said rod therein, whereby a stone may be aligned with at least the approximate center of the stone centrally on the platform and the rod may be glued to the stone while positioned in the channel member until the glue is hardened, whereupon the rod and stone may be removed with the rod attached centrally and perpendicularly to the stone and the rod may be used to rotate the stone for grinding and shaping the stone.

3,962,772
SHAFT-SUPPORTED COMPOSITE HIGH-STRENGTH MACHINE ELEMENT AND METHOD OF MAKING THE SAME
John Haller, Triesen Furstentum, Liechtenstein, assignor to Michigan Powdered Metal Products, Inc., Livonia, Mich.
Filed Sept. 4, 1974, Ser. No. 502,938
Int. Cl.² B22F *3/24*
U.S. Cl. 29—420 **5 Claims**

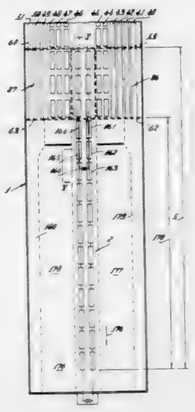


1. A shaft-supported composite machine element, comprising
an elongated supporting shaft of non-porous solid metal having a roughened area with a multiplicity of locking recesses in said shaft and with a plurality of shoulders extending across said shaft,
and an enlarged separate peripheral motion-transmitting body of solidified sintered powdered metal hot-forgedly secured to said shaft and extending laterally outward therefrom around said roughened area and extending axially along a part only of said shaft with the metal of said peripheral body extending into said recesses and against said shoulders and thereby inseparably interlocked by said recesses and shoulders with the metal of said roughened area and with another part of said shaft projecting from at least one of said peripheral body.

3,962,773
METHODS FOR THE MANUFACTURE OF PREFABRICATED BUILDING SECTIONS OR ROOM UNITS AND FACTORIES FOR THE IMPLEMENTATION OF SUCH METHODS
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland
Filed Sept. 19, 1973, Ser. No. 398,866
Claims priority, application Netherlands, Sept. 19, 1972, 7212651
Int. Cl.² B23P *15/00, 19/04;* **E04G** *21/14*
U.S. Cl. 29—430 **18 Claims**

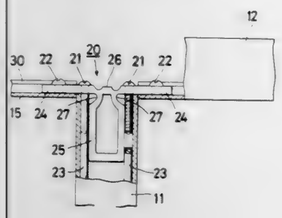
1. A method for the manufacture of prefabricated building sections on a production line, the method comprising the steps of producing prefabricated panels in a manufacturing part of the production line, making such panels which are intended for use as floor panels and ceiling or roof panels in an elongated rectangular shape in said manufacturing part while being maintained in a predetermined relative orientation, storing said floor panels and ceiling or roof panels in substantially said predetermined relative orientation proximate said production line, conveying said floor panels and ceiling or roof panels while substantially in said predetermined relative orientation to a location beside an assembly station, conveying said floor panels and said ceiling or roof panels to said assembly station while maintaining them in said predetermined relative orientation, assembling said prefabricated panels in at least one assembly jib at said assembly station while arranging





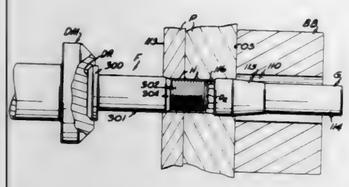
and holding said panels in said jig in substantially said predetermined relative orientation, securing said floor panels and said ceiling or roof panels and wall panels to one another in said jig, said floor panels and said ceiling or roof panels being substantially in said predetermined relative orientation while and immediately after being so secured to form the sections in a basically completed structural condition, and moving said basically completed structural sections out of said assembly jig for finishing operations on a further part of the production line.

3,962,774
METHOD OF INTERLOCKING A LATERAL MEMBER AND THE END OF A HOLLOW POST
Tadaomi Noro, 19-3 Tsurukawa 4 chome, Machida, Tokyo, Japan
Filed Mar. 19, 1975, Ser. No. 559,812
Int. Cl.² B23P 11/00
U.S. Cl. 29—432 3 Claims



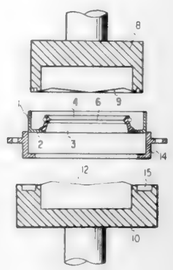
1. A method of jointing a lateral member and one end of a hollow post comprising the steps of pressing the stud body portion of a stud comprising a head portion for holding the lateral member in a desired position and a stud body portion of a size and shape to fit substantially snugly against the inner walls of the hollow post into the end of the hollow post and driving at least one self-tapping screw into and along at least one gap between the stud and the inner wall of the hollow post, thereby causing the screw threads of the self-tapping screw to bite into the stud and the inner wall of the hollow post.

3,962,775
METHOD OF FORMING A JOINT USING A GUIDE FASTENER
John O. King, Jr., 3990 N. Ivy Road, Atlanta, Ga. 30342
Filed Jan. 17, 1975, Ser. No. 542,076
Int. Cl.² B23P 9/00
U.S. Cl. 29—445 6 Claims



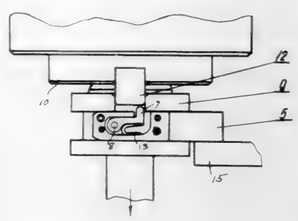
1. A method of forming a fastener joint comprising the steps of:
   a. inserting a guide member in the holes through the work pieces where the guide member has a pilot section with a diameter such that the pilot section is slidably received through the holes at their initial diameter and locates the central axis of the guide member substantially coaxially with the centerline of the holes, and an expansion section with a major diameter larger than the initial diameter of the holes;
   b. coaxially aligning a fastener to be installed in the holes with the leading end of the fastener at the trailing end of the guide member; and,
   c. forcing the guide member through the holes and the fastener into the holes with the guide member immediately preceding the fastener through the holes.

3,962,776
METHOD OF MAKING AN OIL SEAL
Yasuo Mikami, Fujisawa, Japan, assignor to Nippon Oil Seal Industry Co., Ltd., Tokyo, Japan
Filed Mar. 11, 1975, Ser. No. 557,298
Claims priority, application Japan, Mar. 14, 1974, 49-29484
Int. Cl.² B23P 11/00
U.S. Cl. 29—458 5 Claims



1. A method of producing an oilseal comprising the steps of:
providing a metallic ring having a flange projecting in the direction of the diameter of the ring;
providing a resilient oilseal main body having a lip, the surface of which generates a lip line;
integrally molding said oilseal main body to the edge of said flange; then plastically deforming at least one portion of said flange so as to impart a curvature section to the lip line.

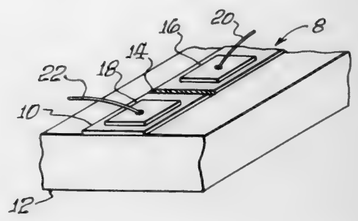
3,962,777
TOOL CLAMPING DEVICE FOR MULTIPLE-OPERATION MACHINES
Nikola Dimov Stoilov, Sofia, Bulgaria, assignor to Institute za Metalloobraborvashti Machini, Sofia, Bulgaria
Filed Dec. 19, 1974, Ser. No. 534,439
Claims priority, application Bulgaria, Dec. 19, 1973, 25288
Int. Cl.² B23Q 1/155; B23B 39/00, 31/06
U.S. Cl. 29—568 3 Claims



1. In the combination of a multiple-operation machine having a spindle with a pair of face keys and a tool changer therefor, an improved tool clamping device, comprising a self-blocking fork having a pair of arms adapted partially to embrace the shanks of a tool, wherein in both arms of the fork there being profile grooves, blocking pins pivotally mounted in respective ones of the grooves and springs between the blocking pins and the bottom wall of the grooves for continually pressing the blocking pins toward their tool blocking positions, the blocking pins having portions which are so disposed as to be engageable by the face keys on the spindle of the multiple-operation machine upon the approach of a spindle to the tool-changing position of the tool clamping

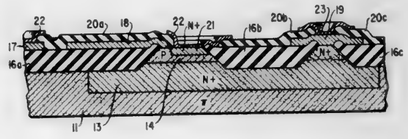
device, thereby to thrust the blocking pins to the tool unblocking position.

3,962,778
PHOTODETECTOR ARRAY AND METHOD OF MANUFACTURING SAME
John P. Palmer, Pomona, Calif., assignor to General Dynamics Corporation, Pomona, Calif.
Continuation-in-part of Ser. No. 425,429, Dec. 17, 1973, abandoned, which is a division of Ser. No. 352,777, April 19, 1973, abandoned. This application Jan. 24, 1975, Ser. No. 543,716
Int. Cl.² B01J 17/00; H01L 15/02
U.S. Cl. 29—572 7 Claims



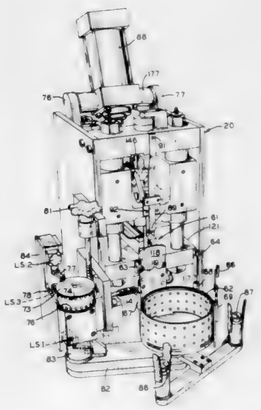
1. A method of manufacturing a photoconductive array cell comprising the steps of:
   depositing a thin film of photosensitizable semiconductor material on an insulative material substrate;
   diffusing an impurity into a defined portion of said photosensitizable thin film to photosensitize said defined region;
   depositing thin film metal electrode pads on said photosensitizable thin film around the photosensitized portion of said photosensitizable thin film, with said photosensitized portion being noncontiguous with said electrode pads defining only a small portion of the area between said electrode pads; and
   bonding a metal wire lead to each of said electrode pads.

3,962,779
METHOD FOR FABRICATING OXIDE ISOLATED INTEGRATED CIRCUITS
Roger Edwards, Gillette; William Joshua Evans; Wesley Norman Grant, both of Berkeley Heights, and Bernard Thomas Murphy, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of Ser. No. 432,896, Jan. 14, 1974, abandoned. This application Dec. 23, 1974, Ser. No. 535,445
Int. Cl.² B01J 17/00
U.S. Cl. 29—577 3 Claims



1. A method for fabricating a semiconductive integrated circuit comprising the steps of
   preparing a semiconductive element which includes on one surface a plurality of semiconductive regions which are separated at such surface by dielectric isolation regions,
   forming directly on said surface a first metallization pattern,
   depositing an insulating layer over said surface including the first metallization pattern,
   forming openings in the insulating layer for exposing at least one portion of said first metallization pattern and a portion of at least one semiconductive region,
   introducing impurities into the exposed portions of said semiconductive region for affecting their conductivities,
   and forming over said surface, including the first metallization pattern and the insulating layer, a second metallization pattern without reforming the openings in said insulating layer,
   said second metallization pattern making electrical connection to the exposed portions of the semiconductive regions and of the first metallization pattern through the openings in the insulating layer.

3,962,780
METHODS AND APPARATUS FOR MAKING ELECTRICAL INTERCONNECTIONS
Alan L. Kindig, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.
Filed June 26, 1975, Ser. No. 590,707
Int. Cl.² H02K 15/00
U.S. Cl. 29—596 10 Claims



1. A method of making at least two different electrical interconnections with at least two wires extending from windings supported on the core of a dynamoelectric machine, the method comprising:
   moving the core, windings, and at least two wires toward a wire connecting device;
   orienting and positioning a first one of the at least two wires relative to the device so as to position the first one of the at least two wires at a connecting station of the device and thereby conditioning the device to form a first interconnection of a first one of at least two different interconnection configurations while so positioning the first one of the at least two wires;
   forming a first electrical interconnection, involving the first one of the at least two wires, and with the first electrical interconnection having the first one of the at least two interconnection configurations, at the connecting station of the device;
   orienting and positioning a second one of the at least two wires relative to the device so as to position the second one of the at least two wires at a connecting station of the device and thereby conditioning the device to form an interconnection of a second one of at least two different interconnection configurations while so positioning the second one of the at least two wires;
   forming an electrical interconnection, of the second one of the at least two interconnection configurations and in-

volving the second one of the at least two wires, at the connecting station of the device; and,

moving the core, windings, at least two wires, and electrical interconnections away from the device.

3,962,781

ELECTROMAGNETIC WAVEGUIDES

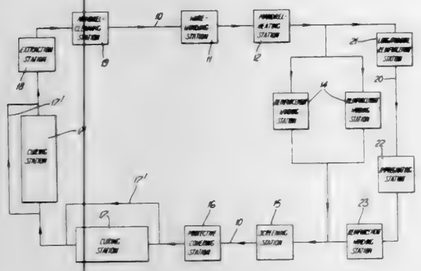
Alexander Joseph Moore, Marlow; David Alexander Taylor, Kenton, and David James Greene, Harrow, all of England, assignors to BICC Limited, London, England

Filed Mar. 25, 1975, Ser. No. 562,000

Claims priority, application United Kingdom, Mar. 29, 1974, 14174/74

Int. Cl.² H01P *11/00*

U.S. Cl. 29—600 **27 Claims**



1. A method of manufacturing a substantially rigid electromagnetic wavelength which comprises supporting an elongate mandrel with its axis substantially vertical and causing the mandrel so supported to travel along a predetermined path successively to a wire-winding station where a layer of closely wound helical turns of wire is applied over at least a major part of the length of the mandrel, a station where a layer of resin-impregnated reinforcing elements is formed over the layer of wire, a curing station where the layer of resin-impregnated reinforcing elements is cured, and an extraction station where the waveguide so formed is removed from the substantially vertical mandrel.

3,962,782

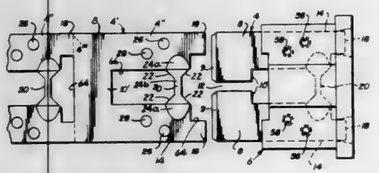
METHOD OF MAKING A MINIATURE PLUG-IN FUSE

Harold L. Williamson, Northbrook, and Avinash P. Aryamane, Mt. Prospect, both of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.

Division of Ser. No. 432,980, Jan. 14, 1974, Pat. No. 3,909,767. This application Sept. 8, 1975, Ser. No. 610,978

Int. Cl.² H01H *69/02*

U.S. Cl. 29—623 **18 Claims**



1. The method of making a plug-in assembly comprising a plug-in element including a coplanar plate-like body means having a pair of laterally spaced coplanar terminal forming blade portions to be received by pressure clip terminals in a mounting panel and coplanar current carrying extensions at the inner end portions of the pair of terminal forming blade portions, and a synthetic plastic housing which is open at the inwardly facing side thereof and which contains the coplanar plate-like body means of the plug-in element with the current carrying extensions thereof within the housing and with the pair of terminal forming blade portions thereof extending outwardly therefrom through the opening therein, said method comprising the steps of providing a blank containing the pair of laterally spaced coplanar terminal forming blade portions which are interconnected by a transverse web and the coplanar current carrying extensions thereof involved in the coplanar plate-like body means of the plug-in element, inserting over said blank the synthetic plastic housing by way of the opening at the inwardly facing side thereof with the current carrying extensions of the blank within the housing and with the pair of terminal blade portions of the blank, which are interconnected by the transverse web, extending outwardly from the housing through the opening therein, securing said blank in the synthetic plastic housing, and blanking the exposed transverse web interconnecting the terminal blade portions to complete the formation of the coplanar plate-like body means having the pair of laterally spaced coplanar terminal portions and of the plug-in assembly.

3,962,783

TRIMMING UNIT

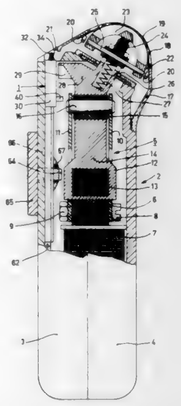
Albertus Pieter Rentema, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 27, 1975, Ser. No. 562,494

Claims priority, application Netherlands, Apr. 29, 1974, 7405728

Int. Cl.² B26B *19/10*

U.S. Cl. 30—34.1 **6 Claims**



1. In an electric shaver including a housing, an electric motor with a reciprocating armature in said housing, and a shaving head with a shaving cutter therein coupled to and driven by said armature, the improvement in combination therewith of a trimming unit comprising: a frame slidably mounted to said housing, a pair of stationary and movable blades removably mounted on said frame, said blades each having a row of teeth which cooperate in cutting action, a spindle carried by the frame, coupling means comprising a coupling member axially and pivotally movable on said spindle, a first coupling element on said member for engaging said armature, a second coupling element on said member for engaging said movable blade, said frame being slidable between its inactive position wherein said first coupling element is spaced from said armature and its active position wherein said first coupling element is engaged to said armature, said coupling member being pivotable between closed position wherein its second coupling element engages the movable blade, and open position wherein said coupling member is pivoted away from said movable blade allowing easy removal of said two blades from said frame, and helical spring means

around said spindle and engaging said frame and also engaging said coupling member, said spring means resiliently urging said coupling member into its closed position and against said movable blade, which is thereby resiliently urged against said stationary blade when said frame is in its active position.

3,962,784

DRY-SHAVING APPARATUS

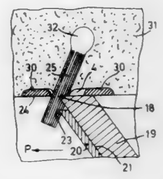
Eduard Willem Tietjens, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 20, 1975, Ser. No. 560,165

Claims priority, application Netherlands, Apr. 5, 1974, 7404657

Int. Cl.² B26B *19/14*

U.S. Cl. 30—43.6 **12 Claims**



6. In an electric shaver for cutting hairs and including a housing, an electric motor mounted in said housing, a comb carried by said housing, the comb having lamellae defining apertures between each two adjacent lamellae for receiving said hairs with an outer, exposed surface of said lamellae and an opposite inner surface of said lamellae, a cutter coupled to and driven by said motor in a predetermined direction, the cutter having blades extending therefrom with a top surface of each blade for engaging said inner surface of said comb lamellae, and means for resiliently urging said cutter blades against said inner surface of the lamellae, the improvement in combination therewith wherein said cutter-blade top surfaces define a plane generally parallel to said lamellae inner surface, each cutter blade has a lead surface in the direction of motion, and a cutting edge formed at the intersection of said top and lead surfaces, with an angle $Q \leq 90°$ defined between said top and lead surfaces, said improvement further comprising a hair puller secured to said cutter, with a hair puller blade adjacent each cutter blade, each hair puller blade having a top surface generally parallel to said cutter blade top surfaces, a lead surface in the direction of motion, and an opposite trailing surface in sliding engagement with said lead surface of the adjacent cutter blade, said hair pulled blade top surface being normally in said plane of said cutter blade top surface, and being movable in a direction away from said plane and being resiliently loaded in the direction toward said plane.

3,962,785

ELECTRIC TRIMMER

Hendrik Poel, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

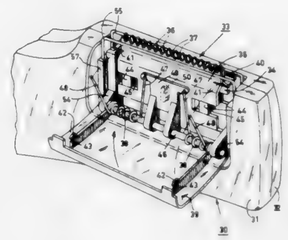
Filed Mar. 25, 1975, Ser. No. 561,874

Claims priority, application Netherlands, Apr. 8, 1974, 7404738

Int. Cl.² B26B *19/20, 19/10*

U.S. Cl. 30—90 **12 Claims**

1. In an electric trimmer including a housing with a longitudinal dimension which is suubstantially greater than its traverse dimension, an electric drive motor mounted in the housing, a trimming cutter set partially within the housing which comprises a stationary cutter and cooperating therewith a drivable cutter which is reciprocatable by the motor, which cutters are each provided with a row of teeth and together are disposed near one end of the housing in such a way that the rows of teeth project out of the housing, and resilient means for resiliently pressing the two cutters against each other, the improvement in combination therewith comprising a flap hingeably connected to said housing and movable between open and closed positions, the flap in closed position covering the part of the trimming cutter set located in the housing, said resilient means situated adjacent said flap and said drivable cutter, said flap in closed position engaging and deflecting said



resilient means which thereby resiliently urges said drivable cutter towards said stationary cutter, the improvement further comprising spring-loaded locking means in the housing for releasably locking said flap in said closed position, the distance over which the resilient means is deflected to obtain the resilient loading of the cutters is smaller than the distance over which the flap is moved between its open and closed positions.

3,962,786

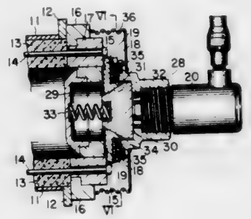
APPARATUS FOR CUTTING RIVETS OF TENSIONED REINFORCEMENT IN THE PROCESS OF MANUFACTURING CONCRETE PRODUCTS

Takemitsu Mori, Hachioji, and Katsunori Miyata, Hoya, both of Japan, assignors to Nippon Concrete Industries Co. Ltd., Tokyo, Japan

Filed Dec. 30, 1974, Ser. No. 537,369

Int. Cl.² B26B *7/00*

U.S. Cl. 30—168 **3 Claims**



1. Apparatus for cutting rivets, formed upon the ends of tensioned reinforcements, which protrude beyond the surface of an annular tension plate used for tensioning said reinforcements in order to increase the strength of a concrete product, comprising:

a main body co-axially aligned with said tension plate and having one end thereof disposed interiorly of said tension plate, the diameter of said body being substantially the same as, or slightly less than, that of said tension plate whereby said body is in peripheral contact with the inner surface of said tension plate so as to stabilize said main body, with respect to said tension plate and said concrete product, when said apparatus cuts said rivets;

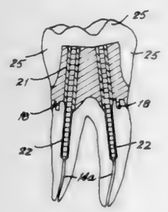
a plurality of radially extending chisel means slidably disposed, within said main body and along the outer radially disposed end surface of said tension plate for simultaneously engaging and cutting said rivets, the radially inner ends of said chisel means having inclined surfaces;

an oil pressure jack operatively connected to the other end of said main body;
a piston slidably disposed within said main body and operable by means of said oil pressure of said jack;
said piston having a substantially frusto-conical configuration so as to include a substantially conical peripheral surface which simultaneously operatively engages said inclined surfaces of said chisel means;
axially disposed spring means interposed between said one end of said main body and said piston for biasing said piston against the oil pressure of said jack; and
radially disposed spring means interposed between said main body and said chisel means for biasing said chisel means against the inclined peripheral surface of said piston means.

3,962,787
ATTACHING A TOOTH CROWN TO UN-PARALLEL TOOTH ROOT SYSTEMS

Andrew Neville Corbett, 2 York St., South Perth, Western Australia, Australia

Filed Dec. 20, 1974, Ser. No. 535,030
Claims priority, application Australia, Dec. 27, 1973, 6108/73
Int. Cl.² A61K *5/01*
U.S. Cl. 32—15 **9 Claims**

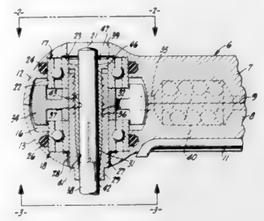


1. A method for attaching a tooth crown to a parallel or non-parallel tooth root system or a single rooted tooth comprising the following steps:
a. drilling a pin-mated hole in at least one of the root filled tooth roots to be used for fixation of the crown to the desired diameter or length and in the direction of the root canal;
b. inserting headed impression pins into the prepared holes;
c. taking an accurate impression of the respective tooth with the headed impression pins in position in the tooth to their full depth;
d. pouring up an accurate stone die on the said impression;
e. removing the impression pins from the die and inserting the matching final retentive pin to be used into the hole provided;
f. positioning a tube adjusted to the correct length over the said final retentive pin; said tube having a melting point substantially greater than that of the metal to be used for the casting of the crown;
g. waxing up the desired shape of the requisite casting around said tube;
h. removing the final retentive pin from the root canal holes through the tube;
i. sprewing the wax pattern and casting said pattern in the desired material around said high melting point tubes;
j. dissolving out the tubes within the casting;
k. locating the casting in position on the tooth root and passing final retentive pins through each of said tubes into the root canals;
l. cementing the pins in position through the tubes and into the root canals;
m. and cementing a crown over the cast core.

3,962,788
DENTAL HANDPIECE

Lloyd P. Flatland, 15 Quisisana Drive, Kentfield, Calif. 94904

Filed Jan. 4, 1974, Ser. No. 430,742
Int. Cl.² A61C *1/10*
U.S. Cl. 32—27 **1 Claim**

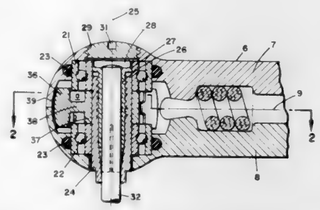


1. A dental handpiece comprising:
a housing having an opening therethrough and having a pair of bearings mounted therein in alignment on an axis extending along said opening and adjacent opposite ends of said opening each of said bearings having a rotatable inner race;
a hollow spindle rotatably carried by said inner races, extending through one of said inner races and outwardly of said housing at one end of said opening and terminating at its other end between the ends of the other inner race, said spindle having an interior taper portion and interior threads;
a chuck tube having an exterior taper portion engaging said interior taper and external threads engaging said internal threads, said chuck tube having a cylindrical bore of uniform diameter completely therethrough and terminating at one end in a flange extending outwardly thereof adjacent said other end of said hollow spindle and between said ends of the other inner race; and tool engaging means on said flange outwardly of said bore.

3,962,789
DENTAL HANDPIECE

Lloyd P. Flatland, 15 Quisisana Drive, Kentfield, Calif. 94904

Filed Apr. 8, 1974, Ser. No. 458,792
Int. Cl.² A61C *1/10*
U.S. Cl. 32—27 **5 Claims**



1. A dental handpiece comprising a housing defining a rotor chamber, an inlet duct leading through a nozzle opening into said chamber and an outlet duct opening from said chamber; a spindle mounted in said housing for rotation in said chamber about an axis; and a rotor in said chamber and mounted on said spindle, said rotor including an annular hub engaging and extending along said spindle for a predetermined axial distance, an annular web in a plane normal to said axis and extending radially from said hub and extending axially less than said distance, and circumferentially spaced axial blades extending radially from the outer edge of said web and extending an axial distance more than said web to leave rotor chambers on opposite sides of said web in communication with spaces between said blades.

3,962,790
ENDODONTIC INSTRUMENT

Francesco Riitano, Soverato, and Nino Cassani, Bologna, both of Italy, assignors to s.r.l. C.I.R. (Cooperativa Industriale Romagnola), Italy, Italy and Dott. Francesco Riitano, both of, Italy

Filed June 25, 1974, Ser. No. 483,035
Claims priority, application Italy, June 27, 1973, 3440/73
Int. Cl.² N61C *17/00*
U.S. Cl. 32—40 R **5 Claims**



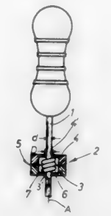
1. An endodontic instrument, comprising;
a head, defining an irrigation inlet chamber and, coaxially therewith, an aspiration outlet chamber, the head having a plurality of irrigation inlet ducts separate from one another, communicating with the inlet chamber, and aspiration outlet duct means communicating with the outlet chamber;
a hollow irrigation needle coaxially secured to the head, having a needle inlet section communicating with the inlet chamber, the needle extending into, through and outwardly from the outlet chamber, said chamber being sealed from the inlet chamber and needle;
an aspiration sleeve coaxially surrounding the needle, surrounded by a part of the head which includes the outlet chamber, and extending outwardly from said part along a portion of the needle, said sleeve being coaxially slidable in the head, from a lowermost position of the sleeve to an uppermost position thereof relative to the head, the sleeve being apertured, on the outside of the head, for aspiration of fluid into the sleeve; and
resilient means in the outlet chamber for urging the sleeve toward its lowermost position relative to the head to enable a point of the needle resiliently to penetrate variously from the sleeve into a radicular canal of a tooth to be treated while the sleeve remains in a fixed position at an opening of a pulp cavity of the tooth.

3,962,791
STOP FOR THE SHAFT OF A ROOT-CANAL INSTRUMENT

Eduard Zdarsky, Brautigamstr. 5, 8 Munich 71, Germany

Filed Jan. 22, 1975, Ser. No. 542,933
Claims priority, application Germany, Jan. 29, 1974, 2404151
Int. Cl.² A61C *5/02*
U.S. Cl. 32—57 **10 Claims**

1. In combination with a shaft of a root-canal tool, a stop, said stop comprising:
an abutment element formed with a throughgoing hole of larger diameter than said shaft and having an abutment face, said hole defining an axis generally perpendicular to said face; and
a multiturn coil spring secured to said element and having a throughgoing passage aligned with said axis and having a fully contracted inside diameter slightly smaller than

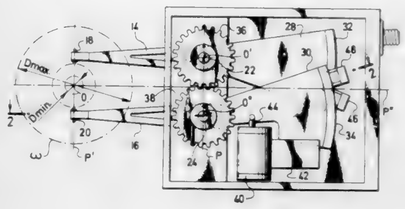


that of said shaft, whereby a shaft fitted axially through said stop is tightly gripped by said spring and said spring is expanded by said shaft.

3,962,792
APPARATUS FOR MEASURING THE DIAMETER OF A WORKPIECE

Karel Štěpánek, and Václav Ruckl, both of Prague, Czechoslovakia, assignors to Vyzkumny ustav obrabechlich stroju a obrabeni, Prague, Czechoslovakia

Filed Apr. 3, 1974, Ser. No. 457,417
Claims priority, application Czechoslovakia, Apr. 6, 1973, 2471-73
Int. Cl.² G01B *7/12*
U.S. Cl. 33—143 L **7 Claims**



1. Apparatus for measuring the diameter of a work piece comprising a pair of extending arms, each of said arms being mounted at one end on a shaft rotatable about an axis parallel to the longitudinal axis of the work piece and having a contact mounted at its other end for engagement with said work piece, coupling means for causing each of said respective arms and associated shafts to simultaneously move with respect to each other about the axis of the respective shafts in response to the engagement of said contact with said work piece, a segment member connected to each of said arms for conjoint movement therewith having a circumferential edge coaxial with the axis of rotation, each of said segments having means for producing a magnetic field variable along the length of its circumferential edge, and a pair of magnetic sensing heads respectively spaced from each of said circumferential edges at a given point to sense the respective magnetic fields at said given point and means for evaluating each of said fields and for determining the angular relationship between said segments and between said arms.

3,962,793

METHOD FOR DETERMINING INITIAL VELOCITY FOR A RAPID FIRE GUN

Frank R. Blume, Jeffersontown, Ky., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1975, Ser. No. 564,231
Int. Cl.² G01B *5/00*
U.S. Cl. 33—143 R **2 Claims**



1. A plug gauge for determining a corrected muzzle velocity for a gun barrel which fires a projectile having a rotating band thereon comprising,

a support slidably engageable with the breach of a gun barrel, said support having a cylindrical portion slightly smaller in diameter than the bore of a gun barrel to be gauged and having an annular lip adjacent said cylindrical portion larger in diameter than the bore of a gun barrel to be gauged whereby said annular lip limits the depth of insertion of said support into a gun barrel to be gauged,

a centrally located bore in said support,

a rod slidably mounted in said centrally located bore in said support,

a gauge head attached to one end of said rod, said gauge head having a front chamfer, a cylindrical portion thereon, and an outwardly extendng conical lip portion adjacent said cylindrical portion, said cylindrical portion and said conical lip portion simulating a rotating band on a projectile to be fired in said gun barrel, and

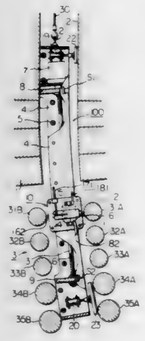
means for measuring the depth of penetration of said gauge head into the bore of a gun barrel, said depth being determined by the engagement of either the chamfer, the cylindrical portion, or the conical portion of said gauge head with the chamber wall of said gun barrel.

3,962,794

AUTOMATIC ROLL POSITION MEASURING APPARATUS FOR CONTINUOUS CASTING MACHINE

Keisuke Kima, Amagasaki, and Yasuo Sugitani, Takarazuka, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Oct. 17, 1974, Ser. No. 515,716
Claims priority, application Japan, Oct. 24, 1973, 48-123381
Int. Cl.² G01B *5/14, 7/14;* **B21B** *31/34*
U.S. Cl. 33—182 **7 Claims**



1. An automatic roll position measuring apparatus for use in a continuous casting machine which has a mold portion and a roller apron defining a curved guide path, said apparatus comprising:

an elongated guide slidably fitted within said mold portion and roller apron having a radius of curvature the same as the radius of curvature defined by said mold portion and said roller apron;

a truck carriage slidably mounted on said elongated guide and movable in the longitudinal direction therealong;

detector means mounted on said truck carriage and contacting said rolls of said roller apron for electrically detecting displacements of said rolls with respect to the reference positions thereof; and

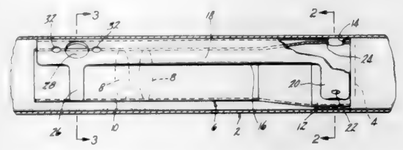
driving means operatively connected to said truck carriage for moving said truck carriage and said detector means mounted thereon in the longitudinal direction of said elongated guide.

3,962,795

ERECTOR ASSEMBLY RETAINER FOR TELESCOPIC RIFLE SIGHTS

Cecil J. Ross, El Paso, Tex., assignor to W. R. Weaver Company, El Paso, Tex.

Continuation-in-part of Ser. No. 566,855, April 10, 1975, abandoned. This application June 9, 1975, Ser. No. 584,798
Int. Cl.² F41G *1/38;* **G02B** *27/36*
U.S. Cl. 33—246 **6 Claims**



1. A telescopic sight comprising a retaining member for use in securing an erector lens assembly pivotally within a telescopic sight barrel, said retaining member being formed in one piece having an elongated bridge portion, means forming a pivot disposed at one end of said bridge portion, first integral spring means formed in one piece with, and at, said one end of said bridge portion for biasing pivot-engagement means on an erector tube into engagement with said pivot, said pivot-engagement means being operative upon engaging said pivot to hold the erector tube against longitudinal and rotational movement with respect to said retaining member while permitting pivotal movement of the erector tube with respect to the retaining member, and second integral spring means formed in one piece with and at the other end of said bridge portion for biasing the erector tube into engagement with adjusting means carried by said telescopic sight barrel.

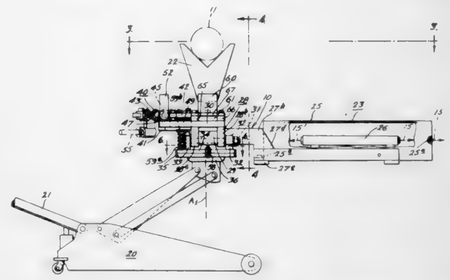
3,962,796

AXLE ALIGNMENT APPARATUS

Harry R. Johnston, Coatesville, Pa., assignor to American Machine Products Corporation, Coatesville, Pa.

Filed Feb. 19, 1975, Ser. No. 551,019
Int. Cl.² G01B *5/25*
U.S. Cl. 33—288 **4 Claims**

1. An apparatus useful in aligning an axle and wheel assembly of a vehicle with respect to the frame of the vehicle, including a carriage adapted to be moved into proximity with the axle, means providing a horizontal fulcrum on said carriage, a beam mounted to pivot about said fulcrum, means carried on said beam for engaging the axle at spaced locations for disposing the beam parallel to the axle, and a source of light carried by said carriage for projecting a ray of light transversely to said beam to facilitate alignment of the axle with the vehicle frame, wherein the improvement comprises: means mounting said light source to said beam so that the ray is disposed coaxial with said fulcrum, means mounting said fulcrum for horizontal movement relative to said carriage and axle, and means cooperating with said fulcrum mounting means and said wheel and axle assembly for centering said fulcrum with respect to said axle, whereby accurate axle alignment apparatus is provided.

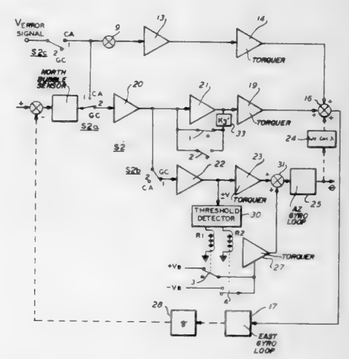


3,962,797

SELF CONTAINED QUICK REACTING WIDE ANGLE GYROCOMPASSING

George Galuschak, Hasbrouck Heights, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Oct. 17, 1974, Ser. No. 515,598
Int. Cl.² G01C *19/38*
U.S. Cl. 33—324 **10 Claims**



1. In a fast reacting wide angle self-contained gyrocompassing system having an east gyro loop, an azimuth gyro loop and a north sensor means, a means for detecting the output of said sensor means requiring high rate torquing comprising:

a mode selector switch comprising a coarse align position and a gyrocompassing position,

means for detecting a threshold voltage signal from said sensor means while said switch means is in said gyrocompassing position; and

means for alternately applying signals to said east gyro loop and said azimuth gyro loop whereby said sensor means is rapidly brought to a null condition.

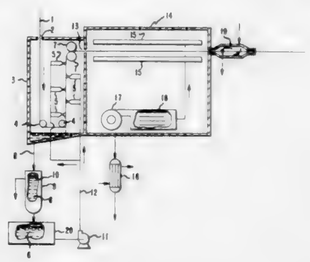
3,962,798

PROCESS FOR DRYING POROUS MATERIALS

Harold L. Jackson, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 28, 1975, Ser. No. 581,563
Int. Cl.² F26B *3/00, 5/00*
U.S. Cl. 34—9 **24 Claims**

1. Process for drying water-wet porous materials, which process comprises forcing a displacement liquid through the open interstices of the water-wet porous material to remove the water, the displacement liquid consisting of a water-immiscible, normally liquid organic solvent having a surface-active agent dissolved therein, said displacement liquid having at 25°C. an interfacial tension versus water of no greater than about 10 dynes cm^{-1} at 25°C., a density of at least about 1.25 grams $cm.^{-3}$ and an advancing adhesion tension versus platinum which is positive, and recovering porous material whose open interstices are substantially free of liquid water.

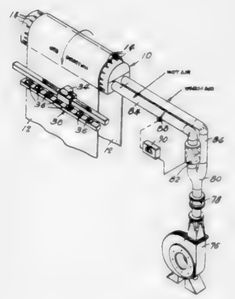


3,962,799

AIR BEARING MOISTURE PROFILER

Joseph A. Lapointe, Pointe Claire, and Ronald S. Sheel, Kirkland, both of Canada, assignors to Domtar Limited, Montreal, Canada

Filed Sept. 24, 1973, Ser. No. 400,155
Claims priority, application Canada, Oct. 2, 1972, 153047
Int. Cl.² F26B *21/12*
U.S. Cl. 34—54 **13 Claims**



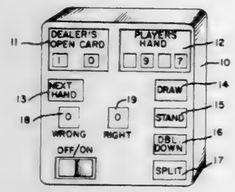
1. An air bearing dryer for drying a travelling flexible web comprising means dividing said dryer into a plurality of side by side drying sections transverse to the direction of web travel whereby each section is adapted to dry a narrow width of web passing over said dryer, each of said sections comprising an inlet chamber and an exhaust chamber in side by side relationship transverse to the direction of web travel thereby providing alternative inlet and exhaust chambers transverse to the direction of travel of said web, each of said chambers having a floor; nozzle means communicating with said inlet chambers for directing air from said inlet chambers towards said web thereby to form an air bearing, outlet passages for directing air from between said web and said dryer into said exhaust chambers, inlet duct means and exhaust duct means on the side of said floor opposite said chambers, said inlet and exhaust duct means extending across said chambers, means connecting said inlet duct means with said inlet chambers and means connecting said exhaust duct means with said exhaust chambers without interconnecting said exhaust and inlet chambers.

3,962,800

TEACHING DEVICE PARTICULARLY ADAPTED FOR THE GAME OF BLACKJACK

Robert J. Feldheim, 1441 Hemlock Ave., East Meadow, N.Y. 11554

Filed Feb. 20, 1975, Ser. No. 551,288
Int. Cl.² G09B *19/22*
U.S. Cl. 35—8 B **10 Claims**



1. Apparatus for teaching the card game of Blackjack or a similar game, wherein it is desired for a player to possess a hand totaling in face card values, as close to a predetermined sum as possible; comprising:

a. means for generating a first random number indicative of the total of a player's face value cards and a second number indicative of the face value of a dealer's card, and a control signal manifesting a desired one of a number of player actions,

b. second means for selecting any one of said desired player actions, and

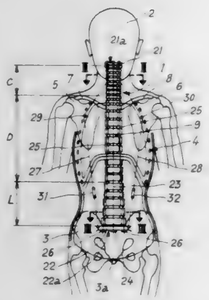
c. logic means responsive to said second means and said control signal and operative to compare said selected action with said desired one to indicate a proper or improper selection by a player using said apparatus.

3,962,801

VERTEBRAL COLUMN FOR AN ANTHROPOMORPHOUS DUMMY

Boris Gonzalez, Issy-les-Moulineaux, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed May 19, 1975, Ser. No. 578,384
Claims priority, application France, June 11, 1974, 74.20192
Int. Cl.² G09B *23/00*
U.S. Cl. 35—17 **5 Claims**



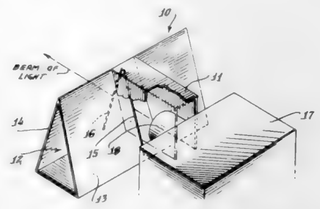
1. An anatomical and physiological structure for an anthropomorphous dummy, more particularly comprising a vertebral column constituted by a superimposition of vertebrae whose number is equal to that of the vertebrae of the human rachis, wherein each of the said vertebrae comprises a member which laterally and dorsally supports the radial processes constituting stops relative to the lateral and rearward bending movements of te column, said member is provided in its centre with an opening and has four lugs which are perforated and regularly distributed over the periphery thereof alternating with the said stops, wherein intervertebral discs made from an elastomer material are placed between each vertebra being provided with central openings corresponding with the central openings of the vertebrae, and wherein cords for assembling and maintaining in place the stacked vertebrae pass respectively into each of the central openings and into each of the lugs, their ends being secured to the base of the skull and the top of the pelvis of the said structure.

3,962,802

EDUCATIONAL DEVICE

Michael J. Kane, Chelmsford, Mass., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 28, 1975, Ser. No. 544,736
Int. Cl.² G09B *23/22*
U.S. Cl. 35—19 B **3 Claims**



1. An educational device for directing a single narrow beam of light comprising in combination:

a. a beam collimator including a first body having a triangular shape; first and second elongated narrow slots disposed on opposite arms of said triangular shaped body, said first slot being in axial alignment with said second slot; a second body including an inverted U-shaped sleeve secured to and projecting from said first body and substantially surrounding said second slot; and

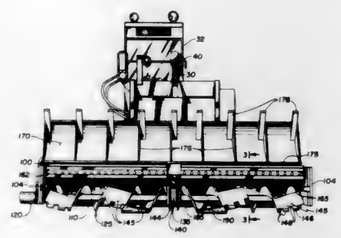
b. a light source disposed within said second body whereby the light from said source is directed through said first and second slots in the form of a single narrow beam of light.

3,962,803

DREDGING HEAD

Charles F. O'Brien, Golden Valley, Minn., assignor to National Car Rental System, Inc., Minneapolis, Minn.

Filed Oct. 18, 1974, Ser. No. 515,992
Int. Cl.² E02F *3/92, 3/94, 3/06;* **B65G** *33/00*
U.S. Cl. 37—66 **8 Claims**



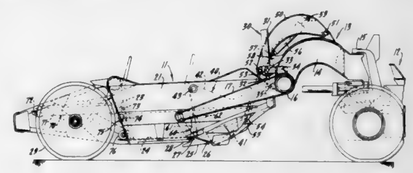
1. A dredging head adapted to be carried by a boom on one end of a movable pumping dredge to loosen and remove material from the bottom of a body of water comprising: an elongated frame including means for attachment to the boom and extending transversely thereof, a suction intake conduit attached to the elongated frame to transmit material into the dredge from the dredging head, a shaft positioned on the frame and including a drive motor mounted on one end of the shaft for rotating the same, a pair of augers having oppositely pitched flighting mounted on the shaft for directing material toward a spacing separating said augers on the shaft, said spacing between the augers positioned adjacent the intake conduit on the frame, a plurality of separate cutting blades being distributed circumferentially on the auger flighting in longitudinally spaced relationship with each blade being connected between adjacent peripheral edges of adjacent flighting to position the blades generally normal to the extent of the flighting to which they are attached, a blade mounting plate positioned on the frame adjacent the peripheral edges of the auger flighting and extending parallel to the shaft, removable cutting blades positioned on the blade mounting plate and distributed along the blade mounting plate to cooperate respectively with the cutting blades on the augers to sever material therebetween, and an adjustable elongated panel pivotally mounted on the frame and above the blade mounting plate having a generally concave under surface overlying the extent of the flighting on the augers to direct flow of water and material around the augers and to the suction intake conduit, said panel having projecting fender members thereon to prevent entrance of large objects into the augers, said plurality of separate cutting blades on each auger flighting each having a plurality of teeth projecting from an edge of the blade and in the direction of rotation of the augers.

3,962,804

SCRAPER HAVING FORWARDLY SWINGABLE APRON AND FULL WIDTH PIVOTED STRIKER

John H. Hyler, Peoria, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.

Filed Mar. 3, 1975, Ser. No. 554,430
Int. Cl.² C02F *3/62*
U.S. Cl. 37—126 AA **3 Claims**



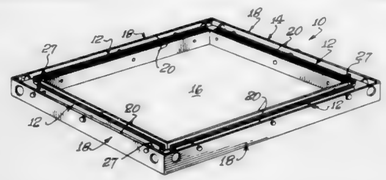
1. In a scraper for earth moving purposes, the combination comprising an open-fronted bowl including a pair of spaced vertical side sheets and a back wall as well as a floor extending between the side sheets in the rear of the bowl, ground wheels for supporting the bowl and mounted behind the rear of the bowl, ground wheels for supporting the bowl and mounted behind the back wall, a tractor-supported draft frame, a pair of draft members pivotally secured at their rear ends to the side sheets and extending forwardly and upwardly with rigid connection at their forward ends to the draft frame, actuator means coupled to the front end of the bowl for selectively supporting it at a predetermined level with respect to the draft frame, an apron having a bottom extending traversely between the side sheets in the front portion of the bowl, the apron having vertical side plates lying adjacent the side sheets and pendulously pivoted thereto, a pivoted strike-off member hinged in fixed position along the front edge of the floor and having a blade extending substantially the full width of the bowl, the strike-off member having a horizontal transport position in which it serves to enclose the bottom of the bowl and a downwardly projecting working position, actuator means for moving the apron selectively between (a) a closed position, (b) a partially open soil retaining position, and (c) a fully open position creating a large dicharge opening ahead of the floor, means including an abutment at the rear portion of the apron and an arm on the pivoted strike-off member, the arm being in the path of rearward movement of the abutment so that as the apron is swung rearwardly into closed position the blade is swung upwardly into its horizontal transport position and so that when the apron is swung from its closed position to its partially open position the blade is moved to its working position for use of the blade as a full width scraper, with the scraped soil being contained by the bowl and apron, the back wall of the bowl being movable and having an actuator for forward ejection of the contained soil incident to movement of the apron to its fully open position for use of the blade as a full width striker.

3,962,805

GRIPPING DEVICE

Kaino Johannes Hamu, 18421 Santa Belinda Circle, Fountain Valley, Calif. 92708

Filed May 22, 1975, Ser. No. 580,068
Int. Cl.² D06C *3/08*
U.S. Cl. 38—102.5 **11 Claims**



1. A gripping device for thin flexible sheet material comprising:

an elongate channel member containing a longitudinal channel of tapered cross-section opening laterally along its narrow side through one side of said member,

said channel having longitudinal side walls which converge toward the open side of said channel,

a gripper bar of substantially fixed tapered cross-section within said channel having longitudinal gripping surfaces along its opposite sides facing said channel side walls, respectively,

at least one of said gripping surfaces being flat and normally paralleling the adjacent channel side wall,

said gripper bar having a wide side with a lateral dimension exceeding the width of said open channel side and said gripper bar being movable laterally outward toward said open channel side to a gripping position wherein said bar is wedged between said channel side walls and said gripping surfaces of the bar are disposed in sheet gripping relation to said channel side walls, and

said channel is adapted to receive said sheet material in a manner such that the sheet material extends through said channel and around said gripper bar between the latter and the channel walls, whereby stress in the sheet material draws the gripper bar outwardly to said gripping position to effect gripping of the sheet material between said gripper bar surfaces and said channel side walls.

3,962,806

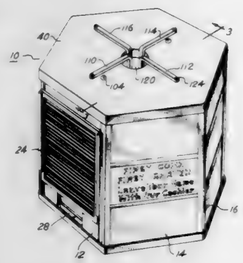
ROTATING MESSAGE DEVICE

Devon L. Eby, Nappanee, Ind., assignor to Tyme and Tydings Inc., Nappanee, Ind.

Filed Dec. 26, 1974, Ser. No. 536,417
Int. Cl.² G09F *11/23*
U.S. Cl. 40—33 **5 Claims**

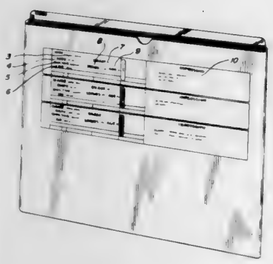
1. A rotating message device comprising a horizontally positioned upper plate, a horizontally positioned lower plate spaced from said upper plate, posts interconnecting said plates and being spaced from one another around the periphery of said plates, message panels disposed in the space between said posts and being supported along the panel sides and, with the top and bottom plates, forming a rigid body with an enclosed interior space, a motor disposed in said interior space for rotating said body, a bracket attached to said upper plate for supporting said motor in said space an arm means connected to said motor and projecting upwardly therefrom through a center hole in said upper plate for connecting said device to

a plurality of spaced points on a supporting structure and thereby supporting said device in operating position, and removable, flexible strips paralleling said posts and disposed



on the outside thereof and extending from one panel space to the next panel space for holding the panels in place adjacent said posts.

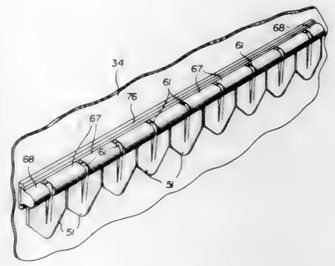
3,962,807
X-RAY FILM CODED IDENTIFICATION SYSTEM
Anton M. Pantone, Winnetka, Ill., assignor to CHI Systems, Inc., Evanston, Ill.
Filed Dec. 17, 1974, Ser. No. 533,486
Int. Cl.² G09F *11/30*
U.S. Cl. 40—78.15 **6 Claims**



1. A method for identifying X-rays comprising:
affixing a first series of labels to an X-ray film including a color coded portion and a symbolic coded portion representing the number of a particular visit in a series of visits;
affixing a second series of labels for affixation to an X-ray film including a color coded portion and a symbolic coded portion representing the body part or body system radiographed; and
affixing a third series of labels to physician's report of findings on an X-ray envelope including a color coded portion and a symbolic coded portion representing the number of a particular visit in a series of visits, wherein each series of labels allows the information represented therein to be readily apparent to an observor by a quick observation of the X-ray film.

3,962,808
CHECKLIST DEVICE
Francis E. Ryder, Barrington, and Theodore H. Mueller, Cary, both of Ill., assignors to Ryder International Corporation, Barrington, Ill.
Filed Dec. 26, 1974, Ser. No. 536,304
Int. Cl.² G09F *11/06*
U.S. Cl. 40—104.02 **10 Claims**

1. A checklist device for providing an indication of tasks to be performed and tasks already completed, comprising in combination: a housing having spaced apart first and second walls, and side and bottom walls for holding said first and second walls in a fixed spaced apart relationship relative to one another, said first wall being provided by a window panel secured relative to said side and bottom walls and having a plurality of transparent discrete viewing areas provided thereon, said window panel being positioned over said second wall, but spaced therefrom to provide a receptacle for an indicia bearing sheet having indicia bearing areas formed thereon to be positioned in registry with said viewing areas, and a plurality of toggle assemblies secured to said window panel with one said assembly positioned in relation to each said viewing area, each said toggle assembly capable of being adjusted as to the number of toggle elements employed and including a plurality of toggle elements and support means for said toggle elements, which elements each include a tab portion for manual engagement and movement thereof between a first and second position, and oppositely extending mounting

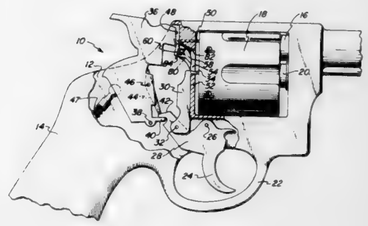


members for mounting said toggle elements to said support means, said support means including a channel shaped base member, a plurality of separate elongate bearing block elements, means mounting said bearing block element to said channel shaped base member in juxtopposed end-to-end aligned relationship, said bearing block elements being comprised of first and second types of elements, said first type comprising one or more identically shaped elements, each of which includes a bearing recess at the opposite ends thereof such that the recesses of adjacent bearing block elements rotatably receive the oppositely extending mounting members of an associated toggle element, thereby adapting said toggle element for rotative movement whereby the tab portion thereof can be moved between a first and second position, said second type of elements being disposed at the respective ends of said channel shaped base member, each said second types of element having but a single bearing recess for rotatably receiving a mounting member of an associated toggle element, and serving to define the distal ends of said assembly.

3,962,809
HAND GUN HAMMER BLOCK
Joseph L. Lee, 1558 Jefferson St., Teaneck, N.J. 07666
Filed Aug. 9, 1974, Ser. No. 496,176
Int. Cl.² F41C *17/00*
U.S. Cl. 42—66 **10 Claims**

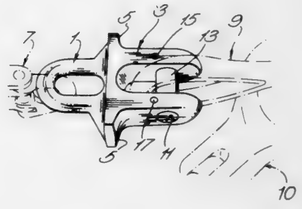
1. In a fire arm having a frame, a hammer pivotally mounted in said frame, a trigger pivotally mounted in said frame below said hammer and coacting with said hammer to move said hammer from a cocked position to a firing position upon actuation of said trigger, a cartridge-receiving cylinder rotatably mounted in front of the hammer and hand means connected to said trigger and including a hand coacting with said cartridge-receiving cylinder to rotate said cylinder responsive to actuation of said trigger, the improvement of a hammer block safety apparatus to prevent unintentional movement of said hammer to said firing position and to allow said hammer to move to said firing position in response to actuation of said trigger, comprising:

a blocking member;
means journalling said blocking member for pivotal movement about a given axis of rotation into and out of said path of travel of said hammer adjacent to said path of travel from said cocked position to said firing position;
means biasing said blocking member to pivotally rotate into said path of travel;



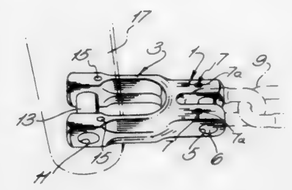
means positioning said blocking member in said path of travel; and
said hand means operatively connected to said trigger to contact said blocking member and pivotally rotate said blocking member out of said path of travel of said hammer upon actuation of said trigger for moving said hammer from said cocked position to said firing position.

3,962,810
STOPPER FOR USE IN TRAWLING GEAR
Anthony Alan Buschini, Fleetwood, and Douglas Edward Swarsbrick, Stourport-on-Severn, both of England, assignors to Parsons Controls Limited, Stourport-on-Severn, England
Filed Aug. 19, 1974, Ser. No. 498,766
Claims priority, application United Kingdom, Aug. 24, 1973, 40207/73
Int. Cl.² A01K *73/02*
U.S. Cl. 43—8 **5 Claims**



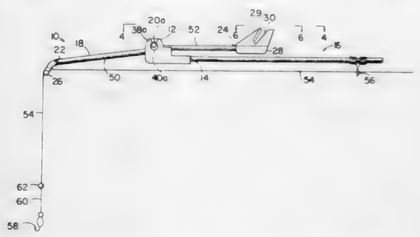
1. A stopper component for use in a fishing trawl, the component including a ring-like part at one end of generally chain link form and two spaced arms at the other end of the component forming a clevis and being joined to said ring-like part, said clevis merging with one end of said ring-like part, and shoulders respectively projecting outwardly from the sides of the component at the location where said clevis joins the ring-like part, said shoulders projecting laterally outwardly beyond said arms and laterally outwardly beyond said ring-like member, said arms being formed with aligned apertures; and a connecting pin extending between said apertures and into said apertures.

3,962,811
CHAIN COMPONENT
Anthony Alan Buschini, Fleetwood, and Douglas Edward Swarsbrick, Stourport-on-Severn, both of England, assignors to Parsons Controls Limited, Stourport-on-Severn, England
Filed Aug. 19, 1974, Ser. No. 498,780
Claims priority, application United Kingdom, Aug. 24, 1973, 40209/73
Int. Cl.² A01K *73/02*
U.S. Cl. 43—8 **2 Claims**



1. A shackle component for use in a fishing trawl comprising two clevises arranged in back-to-back relationship with the free ends of the arms of each clevis extending away from the free ends of the arms of the other clevis, the arms of one of said clevises being longer than the arms of the other of said clevises and said one of said clevises being wider than said other of said clevises, both of said clevises lying in the same plane, aligned main apertures of oval shape being formed in the arms of each clevis and other apertures being formed in at least one of the arms of each clevis to extend transversely to and intersect the main aperture in the associated arm, oval connecting pins respectively in the main apertures in each of said clevises and spanning the space between the associated clevis arms, each of said connecting pins having a tangential groove in the part thereof located within one of said main apertures, and locking pins respectively in said other apertures engaging the tangential grooves in said connecting pins in the respectively associated main apertures.

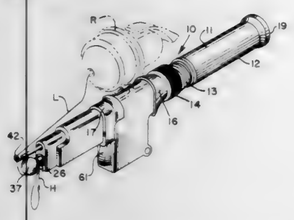
3,962,812
SIGNALING DEVICE FOR A FISHING ROD
Donald J. Means, 3284 Piney Ridge Road, Rte. No. 3, Ludington, Mich. 49431, and John R. Conlin, Jr., Rte. No. 1, Eau Claire, Mich. 49111
Filed Apr. 3, 1975, Ser. No. 564,699
Int. Cl.² A01K *97/12*
U.S. Cl. 43—17 **9 Claims**



1. A signaling device for use on a fishing rod having a reel end and a tip end, said device comprising: an adapter member having means for connection to said rod tip end; and a generally straight, elongated, balance beam member having opposite ends, said beam member having a line guide element on one end thereof, and means including a fin element on the other end thereof for retainably receiving shot weights, said beam member being pivotally mounted intermediate said ends thereof on said adapter member for movement between a

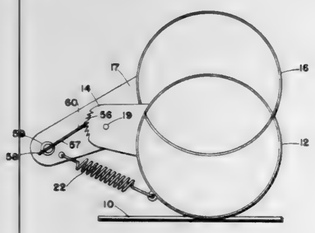
normal position with said beam member generally parallel with said rod and with said line guide element spaced outwardly from said tip end of said rod, and a signaling position at an angle with respect to said rod.

3,962,813
TARGET FISHING ROD
Paul G. Moon, 9614 Dona Court, Crown Point, Ind. 46307
Filed May 19, 1975, Ser. No. 578,719
Int. Cl.² A01K *91/02*
U.S. Cl. 43—19 **5 Claims**



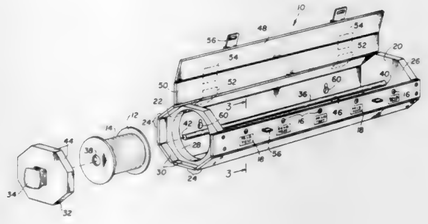
1. A fishing rod comprising a grip means for mounting a fishing line reel thereon, a float sub-assembly for releasably retaining a fishing line, said float assembly comprising a float and a float carrier, means mounting said float on said float carrier for movement between a fish hook clamping position and a hook released position, bore means housing said float sub-assembly in one end of said grip, means for propelling said float sub-assembly from said bore toward a fishing target area, and trigger means for retaining said float sub-assembly in said bore against the force of said propelling means, and for releasing said float sub-assembly for propelling movement toward a target area.

3,962,814
HUMANE TRAP
Henry William Steiner, Box 18, Site 19, R.R. No. 1, Dryden, Ontario, Canada
Continuation-in-part of Ser. No. 368,720, June 11, 1973, Pat. No. 3,835,576. This application Aug. 30, 1974, Ser. No. 502,175
Int. Cl.² A01M *23/26*
U.S. Cl. 43—86 **2 Claims**



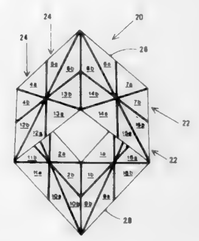
1. An animal trap for use on land or in water comprising in combination a base plate, a fixed ring secured to said base plate by the lower side thereof and extending upwardly therefrom to lie in a substantially vertical plane when in use, a movable ring pivotally secured for swinging movement by one side thereof to one side of said fixed ring, said rings being situated in parallel planes and substantially in juxtaposition one with the other, tension spring means operatively connected between said rings normally urging said movable ring out of concentric relationship with said fixed ring and in the sprung position, trigger means operatively connected between said rings to hold said movable ring substantially in concentric relationship with said fixed ring and in the set position, an offstanding lug secured to said fixed ring and extending outwardly therefrom in the same plane as said fixed ring, and an offstanding lug secured to said movable ring and extending outwardly therefrom in the same plane as said movable ring, pivot means securing said lugs together, said lug on said movable ring having an extension beyond said pivot means, spring anchor means on said fixed ring, said tension spring being operatively secured between said spring anchor means and said extension beyond said pivot means, by the ends thereof, and releasable lock means operatively connected between said rings to detachably lock said rings in the sprung position, said releasable lock means including ratchet teeth formed on the edge of one of said offstanding lugs and spring detent means fixedly secured by one end thereof to the other of said offstanding lugs and operatively engaging said ratchet teeth by the other end thereof to hold said rings in the sprung position until said spring detent means is manually disengaged from said ratchet teeth, said spring detent means comprising an elongated leaf spring fixedly secured by one end thereof to the other of said offstanding lugs and operatively engaging said ratchet teeth by the other end thereof.

3,962,815
STORAGE CONTAINER FOR SPOOLS OF FISHING LINE
Peter Christensen, 460 Sandhill Road, Wantagh, N.Y. 11793
Filed Feb. 7, 1975, Ser. No. 547,802
Int. Cl.² A01K *97/00*
U.S. Cl. 43—54.5 R **1 Claim**



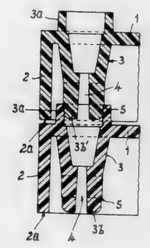
1. A storage container for plural cylindrically shaped spools of fishing line comprising a first and a second end member disposed in spaced apart facing relation, a cooperating arrangement of eight slats circumferentially disposed in spanning relation between said end members so as to bound an internal storage compartment of an octagonal shape so as to closely conform to the cylindrical shape of the spools while minimizing rolling of said container during shipboard use, said first end member having an access opening into said storage compartment of a size to permit the placement of spools of fishing line into, and their removal, from, said storage compartment, all of said slats being sized to extend beyond said first end member so as to form an octagonal-shaped closure-gripping lip about said access opening, a closure member adapted to be force fit within said lip in its closed position over said access opening, an adjacent pair of said slats being hinged to each other and also hinged for opening and closing movements relative to the other slats so as to provide a second access opening into said storage compartment, a spool-supporting axle connected in a central location across said storage compartment in spanning relation between said closure member and said second end member by having its opposite ends projected into openings in said closure member and said second end member, and dispensing openings at spaced locations in one said slat for unwinding select lengths of fishing line from supply spools thereof supported on said axle within said storage compartment.

3,962,816
FOLDABLE STRUCTURE
Iris Sarid, 27 Tiberias Str., Jerusalem, Israel
Filed Nov. 26, 1974, Ser. No. 527,278
Int. Cl.² A63H *33/16*
U.S. Cl. 46—1 R **2 Claims**



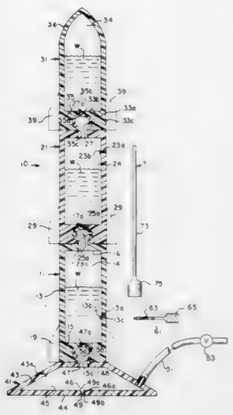
1. A closed, foldable blank for forming two and three dimensional structures, comprising at least three large square faces, each face being connected to two adjacent faces by transverse fold lines, and each face having a third transverse fold line bisecting said face, a further fold line perpendicular to said transverse fold lines at the midpoints thereof, thereby dividing each face into four small squares, and two diagonal fold lines connecting the corners of each face thereby dividing each small square into two triangles.

3,962,817
TOY CONSTRUCTION ELEMENT
Paul Roland Vullierme, 2, rue de la Plaine, Rumilly, France
Filed Jan. 22, 1975, Ser. No. 542,934
Int. Cl.² A63H *33/08*
U.S. Cl. 46—25 **4 Claims**



1. A construction block comprising a generally planar wall having a pair of faces, an apron on the periphery of said wall extending from one of the faces thereof and having an outer edge defining a plane, and a plurality of tubes extending through and secured to said wall, each tube having one end of predetermined inner diameter projecting through said wall beyond the other face thereof and another end lying generally at said plane and having an outer diameter corresponding generally to said inner diameter, whereby two such blocks can be fitted together by engaging said other ends of at least some of said tubes of one block in the one end of at least some of the tubes of the other block with the apron of the one block resting on the wall of the other block, each tube being adapted to penetrate at its said other end the said one end of a tube of the other block to a predetermined length of the said other end, said other ends of said tubes being cleft and having along said length a diameter slightly greater than said inner diameter, each of said other ends having an outer region terminating at said plane and of a diameter substantially equal to said inner diameter, an inner region between said outer region and said wall of a diameter slightly greater than said inner diameter, and a shoulder between said regions.

3,962,818
REACTION TOY ARRANGEMENT AND METHOD
Reginald F. Pippin, Jr., 7806 Ruxway Road, Towson, Md. 21204
Division of Ser. No. 102,294, Dec. 29, 1970, Pat. No. 3,683,544, which is a division of Ser. No. 504,300, Oct. 24, 1965, Pat. No. 3,550,313. This application June 22, 1972, Ser. No. 265,283
Int. Cl.² A63H *27/100*
U.S. Cl. 46—74 D **43 Claims**



1. A jet-propelled toy comprising
a plurality of individual interconnectable separable units,
one of said units having a pressurizable fluid storage chamber and a directionally stable jet propulsion fluid expulsion orifice in fluid connection between said storage chamber and the atmosphere,
and a normally self-closed, fluid-pressure-containing, fluid passage valve in the body of said one unit at other than said fluid expulsion orifice for fluid passage connection between said pressurizable fluid storage chamber and a zone exterior of said one unit when said normally self-closed valve is opened.

3,962,819
DOLL HEAD AND HEAD COVERING ASSEMBLY
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Switzerland
Filed Feb. 10, 1975, Ser. No. 548,792
Int. Cl.² A63H *3/36*
U.S. Cl. 46—164 **1 Claim**



1. A combined doll's head and head gear assembly mounted thereon,

said head being substantially spherical with a projection from the top thereof,

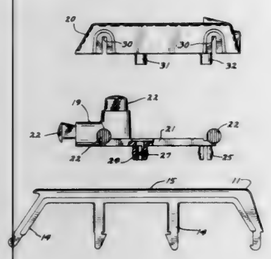
said head gear being adapted to cover the top of said head, the interior of said head gear defining an arcuate groove of a width about equal to the transverse dimension of said projection and adapted to receive said projection, so that said gear may move in a limited guided path over the top of the head, whereby said head gear is movable into a plurality of positions over the top of said head.

3,962,820

CONNECTION FOR MINIATURE TOY VEHICLE PARTS

Thomas W. Good, Minnetonka, and Bernard J. Dehner, Mound, both of Minn., assignors to Tonka Corporation, Hopkins, Minn.

Filed Jan. 6, 1975, Ser. No. 538,679
Int. Cl.² A63H *17/26*
U.S. Cl. 46—221 **3 Claims**



1. A connection for miniature toy vehicle parts comprising,

a. a first toy vehicle component of rigid sheet material having an aperture therein,

b. a second toy vehicle component of molded resilient plastic material,

c. said second component having an expansion collar molded integrally therewith and extending outwardly therefrom formed of two or more arcuate segments arranged in spaced relation about a center axis,

d. said expansion collar having a greater external diameter than said aperture but the segments being relatively contractible to allow the collar to be forced through the aperture and then return to its normal condition, and

e. a third toy vehicle component including a post inserted axially into the collar to prohibit contraction of the segments.

3,962,821

POLLEN DISPENSING APPARATUS

David E. Sharp, Rte. 104, Ji-Meva Farms, North Rose, N.Y. 14516

Filed July 24, 1975, Ser. No. 598,717
Int. Cl.² A01G *7/00*
U.S. Cl. 47—1.41 **5 Claims**

1. Apparatus for dispensing plant pollen to be carried through the air to plants in the vicinity of the apparatus, the latter comprising:

a. a resilient, elongated support member having a base end and a free end;

b. a container having a wall with perforations therein through which pollen may be dispensed and affixed to said support member adjacent said free end; and

c. elongated handle means to which said support member is attached at said base end thereof, said handle means including a manually engagable portion extending from said base end away from said free end and a rigid portion extending in closely spaced relation to said support member from said base end toward said free end to the region of said container, whereby manipulation of said manually engagable portion causes flexure of said support member away from said rigid portion and return movement of said free end to strike said rigid portion with percussive effect to shake pollen from said container.



3,962,822

PLANTING CONTAINERS

John Walters, Whonnock, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Mar. 31, 1975, Ser. No. 563,854
Claims priority, application Canada, Apr. 8, 1974, 196996
Int. Cl.² A01G *23/00*
U.S. Cl. 47—34.11 **13 Claims**



1. A planting container for grouping with a plurality of similar containers into a bundle, said containers comprising:

a. a tubular portion having a square shaped outer cross-section defining four walls and a cavity;

b. a plurality of the walls having a plurality of longitudinally spaced apertures, said apertures being offset to one side of the longitudinal center of each wall whereby the apertures are blocked by a wall of another similar container which is placed contiguous thereto; and

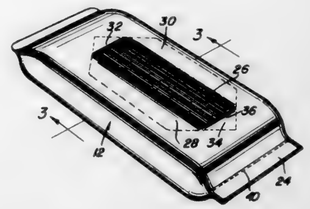
c. an earth penetrating nose portion having at least one surface portion which defines the bottom of said cavity, said surface portion sloping downwardly and outwardly to the lowest of said apertures in a corresponding wall to allow unimpeded tap root egress.

3,962,823

PLANTING BAG

John O. Zipperer, III, P.O. Box 640 Peck at Broadway, Fort Myers, Fla. 33301

Filed Dec. 30, 1974, Ser. No. 537,415
Int. Cl.² A01C *11/02*; **A01G** *9/02*; **B65D** *85/50*, *65/28*
U.S. Cl. 47—37 **6 Claims**



1. A planting bag, comprising, in combination:

a. a sealed bag forming a closed container, said bag constructed from a flexible, non-self-supporting material;

b. indicia means provided on the bag for facilitating the formation of a single large rectangular opening in the bag of more than one-half the size of the bag by cutting along the indicia means, said indicia delineating flaps formed when the bag is cut when forming the opening, said flaps being foldable inwardly into underlying relation to the adjacent portion of the bag to define a lip around the opening; and

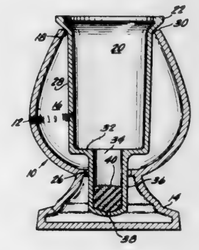
c. means provided for positioning around the central portion of the bag for retaining the bag in a predetermined shape once the opening is made therein and to prevent deformation of the bag when liquids are added thereto through said opening, comprising; an endless member, severable from the bag and constructed from the same material as the bag for positioning around the central portion of the bag.

3,962,824

FLOWER POT

James T. Poston, 8109 Clover Way, Buena Park, Calif. 90620

Filed Oct. 4, 1974, Ser. No. 511,949
Int. Cl.² A01G *27/00*
U.S. Cl. 47—38.1 **5 Claims**



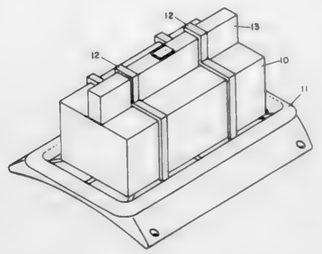
1. A flower pot comprising a water container having a closed base portion and an open upper portion separated by an inwardly directed collar portion, a soil-containing chamber removably received within said container, said chamber having an upper outwardly directed annular collar portion extending over and resting on the upper end of said container, said chamber having an imperforate, substantially cylindrical upper portion and a lower portion of decreased diameter extending through said container collar portion and having an opening therein at the lower portion thereof, a resilient porous plug of greater diameter than said lower portion, received therein, and located directly over said opening, the diameters of said container and chamber upper portions being in a ratio of approximately 2-1 respectively, whereby said container upper portion is adapted to hold a substantial amount of water in addition to that contained in said base portion, which water is wicked through said plug into said soil at a controlled rate for extended periods of time.

3,962,825

HOLDER FOR SUPPORTING FLOWER ARRANGEMENTS

Donald L. O'Connell, Portchester, N.Y., assignor to Floral Innovations, Inc., Port Chester, N.Y.

Filed Jan. 20, 1975, Ser. No. 542,123
Int. Cl.² A01G *5/04*
U.S. Cl. 47—41.12 **9 Claims**



1. A holder for a foam block for supporting flower arrangements comprising:

a hollow double-wall, tray-like member forming a water-confining receptacle for supporting a foam block, the upper wall of said receptacle having at least one aperture for draining excess water from the foam block into the receptacle;

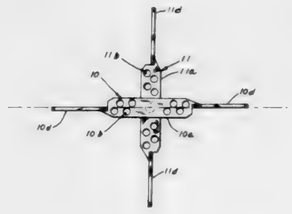
and means for retaining the foam block in a desired position on said member.

3,962,826

COLLAPSIBLE FLOWER STEM HOLDER

Loren C. Kienlen, and Jack H. Poppler, both of Nisswa, Minn., assignors to Doormaid, Inc., Nisswa, Minn.

Filed Aug. 23, 1974, Ser. No. 500,152
Int. Cl.² A01G *5/04*; **A45F** *5/08*; **A47G** *29/00*
U.S. Cl. 47—41.13 **3 Claims**



1. A holder for flower stems particularly designed for use in combination with a narrow mouth vase and comprising

a pair of elongated arms each having a flat horizontally oriented central portion provided with stem receiving openings therethrough,

a pair of generally flat downwardly extending supporting elements respectively provided at the end portions of said arms and disposed at generally right angles to said central horizontally oriented arm portions,

pivot means connecting the central portions together to permit said arms to be collapsed with the flat supporting

elements disposed in compact face-to-face relation to permit insertion into a narrow mouth vase when in collapsed position,

said supporting elements engaging the bottom of the vase to elevate said apertured center portions of the arms above the bottom of the vase when said arms are expanded into operative position within said vase,

the ends of said arms engaging the side walls of the vase to limit lateral movement of the expanded holder when positioned in the vase bottom.

3,962,827

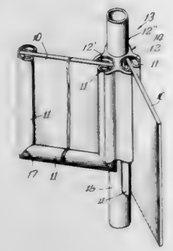
PANEL CONNECTOR

William H. Chaffee, Chicago, Ill., assignor to Model Builders, Inc., Chicago, Ill.

Filed June 18, 1975, Ser. No. 588,068

Int. Cl.² E05D *5/16*

U.S. Cl. 49—384 **14 Claims**



1. In a panel mounting system wherein a panel edge is mounted to a support defining a segmentally cylindrical socket, an improved connector for connecting the panel edge adjustably to said support comprising

a spring clip defining a pair of opposed leg portions and an interconnecting bight portion defining a panel edge receiving space, each of said leg portions defining an inturned, substantially rectilinear distal end having a length at least approximately one-half the dimension of said clip outwardly from an innermost portion of said bight for effectively gripping opposite sides of the panel edge therebetween.

3,962,828

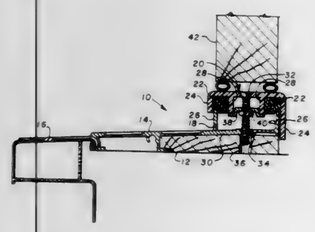
ADJUSTABLE FRAMING MEMBER

Owen Earl McAllister, Oshkosh, Wis., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 1, 1974, Ser. No. 493,597

Int. Cl.² E06B *1/70*

U.S. Cl. 49—468 **4 Claims**



1. An adjustable wall penetration framing member for de-

wherein the wall penetration member comprising:

a. an elongated open trough having spaced sidewalls on each side thereof, said open trough having inner and outer sides and said open trough having its outer side facing said opening of said wall penetration;

b. an elongated base comprising an open channel having relatively spaced side walls on each side thereof, said open channel having its open side facing said open trough and said open channel being adapted to slidingly fit into said open trough;

c. means positioned on said inner side of said open trough between said spaced side walls for effecting a weatherseal between said open trough and said base member; and

d. a plurality of adjustable means positioned along the length of said base and said trough for providing relative adjustment therebetween and for fixing said trough and said base in selected adjusted positions.

3,962,829

MACHINES FOR TEXTURIZING SYNTHETIC POLYMER FILAMENTS

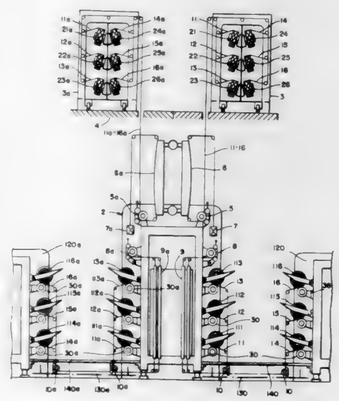
Heinz Schippers, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Oct. 15, 1974, Ser. No. 514,470

Claims priority, application Germany, Oct. 17, 1973, 2352027

Int. Cl.² D01H *13/28*

U.S. Cl. 57—34 HS **10 Claims**



1. A textile machine for texturizing synthetic polymer filaments which comprises a first set of filament-delivery rollers, a second set of filament-delivery rollers, filament heating means and filament texturizing means in the filament path between said sets of rollers, first, second and third substantially parallel machine frame parts in horizontally spaced relationship, a plurality of filament take-up units for the bobbin-winding of the texturizing filaments arranged in sets on each of the three frame parts, said first frame part having mounted thereon said texturizing means, and said second and third frame parts having their respective take-up units opposite to and horizontally spaced from the take-up units on said first frame part.

3,962,830

MACHINING STRUCTURE

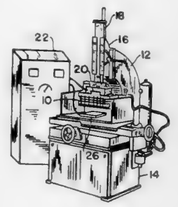
Thomas J. O'Connor, 100 Morgan Road, Ann Arbor, Mich. 48106

Continuation-in-part of Ser. No. 68,711, Sept. 1, 1970, abandoned, which is a division of Ser. No. 545,652, April 27, 1966, Pat. No. 3,663,786. This application Dec. 3, 1973, Ser. No. 420,808

The portion of the term of this patent subsequent to May 16, 1989, has been disclaimed.

Int. Cl.² B24B *7/00*

U.S. Cl. 51—58 **2 Claims**



1. Structure for mechanically producing a desired form in a workpiece of friable material such as carbon or the like comprising a cutting master having a mirror image surface thereon of the form to be produced in the workpiece which is different in size from the form to be produced which surface is abrasive, means for supporting the cutting master, means for supporting the workpiece adjacent to the cutting master and in alignment with the abrasive mirror image surface thereon, means for moving the aligned cutting master and the workpiece with respect to each other toward and into contact with each other under pressure sufficient to cause abrasion of the workpiece by the abrasive mirror image surface on the cutting master on additional relative movement between the cutting master and the workpiece at least part of which additional movement is in a plane which does not include the direction of movement of the cutting master toward the workpiece, means included in at least one of the means for supporting the cutting master and workpiece for imparting an additional repetitive relative movement between the cutting master and workpiece for abrading the workpiece into the different size form to be produced in conjunction with the movement of the cutting master and workpiece toward each other, at least part of which additional relative movement is in a plane which does not include the direction of movement of the abrasive mirror image surface of the cutting master toward the workpiece, including at least one pair of relatively eccentric cylindrical members secured together axially for rotation together, first relatively movable plate means for receiving one of the pair of cylindrical members for orbital movement of the first plate means on rotation of the eccentric cylindrical members, second relatively stationary plate means for supporting the other of the pair of cylindrical members for rotation about the axis of the other of the pair of cylindrical members whereby the first plate means is moved in an orbital motion about the axis of the other of the pair of cylindrical members, in which structure the cutting master mirror image surface is different in size from the form to be produced by an amount related only to the additional relative movement imparted between the cutting master and workpiece in the plane not including the direction of movement of the cutting master toward the workpiece, and means for flushing a solvent fluid through the cutting master between the cutting master and workpiece while the workpiece is abraded into the form to be produced in the absence of electrical machining between the cutting master and workpiece.

3,962,831

AUTOMATIC GRINDING METHOD AND APPARATUS FOR WOOD WORKING

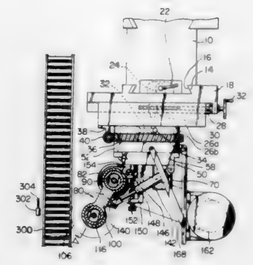
Akira Miki, Fujimi, Japan, assignor to Sanko Mokkoki Co., Ltd. and Western Trading Co., Ltd., both of Tokyo, Japan

Filed May 22, 1975, Ser. No. 580,070

Claims priority, application Japan, May 30, 1974, 49-60252

Int. Cl.² B24B *7/00*

U.S. Cl. 51—78 **9 Claims**



1. An automatic grinding apparatus for wood working, comprising a column; a base plate mounted on said column for vertical and horizontal movement and for rotation; a slider mounted on said base plate for horizontal sliding movement; a means for swinging a grinding wheel, said means including a swing arm pivotally connected at one end to said slider and carrying at the other free end a grinding wheel shaft, and a means for swinging said swing arm toward and away from a material to be ground; and a grinding wheel compensating means including a means for detecting angular displacement of the swing arm above the range of the predetermined angle due to abrasion of the grinding wheel and a means for advancing the slider toward the material the wearing distance of the grinding wheel until the swing arm restores to its initial angular position.

3,962,832

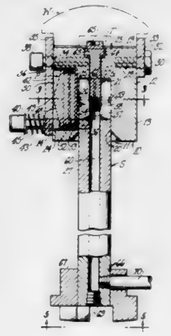
FLUID RESPONSIVE, LEVERAGE OPERATED CHUCK

Ray Howard Strasbaugh, Long Beach, Calif., assignor to R. Howard Strasbaugh, Inc., Long Beach, Calif.

Filed Aug. 26, 1974, Ser. No. 500,530

Int. Cl.² B24B *41/06*

U.S. Cl. 51—217 L **6 Claims**



1. A fluid actuated chuck comprising in combination:

a work support member having work-engaging jaws disposed at opposite sides thereof, which jaws are adapted jointly to hold a workpiece which is located upon the support member, at least one of which jaws is selectively longitudinally tiltable toward and away from the other

along a fulcrum line located closely adjacent said workpiece;

said tiltable jaw comprising an apertured plate loosely carried on short outward projecting lengths of four shafts which traverse respective apertures thereof in a generally quadrangular pattern and are terminally anchored in a side of the chuck, which pattern is spaced from said workpiece with two sides of the quadrangle disposed generally parallel thereto;

a fluid responsive piston transversely carried by said chuck, with its axis generally centered within said quadrangular pattern and having a pointed head normally disposed in apical contact with an adjacent face of said plate and thus disposed to tilt the plate into work-engagement position upon piston extension;

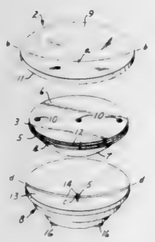
and resilient means adapted for work-disengagement by reverse tilting of the plate upon piston retraction, said means being disposed adjacent the more distant pair of shafts and bearing upon the opposite face of said plate.

3,962,833

METHOD FOR THE ALTERATION OF A LENS AND AN ADHESIVE LENS BLOCKING PAD USED THEREIN

Dee Lynn Johnson, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1975, Ser. No. 563,389
Int. Cl.² B24B *13/00*
U.S. Cl. 51—284 **26 Claims**



19. A lens adhesive blocking pad comprising a conformable substrate having a pressure sensitive adhesive applied to the planar surfaces thereof and having means for accurately aligning the center point and cylinder axis of a lens with the center point of a lens block.

3,962,834

METHOD OF PRODUCING A PITTED, POROUS ELECTRODEPOSITED CHROMIUM COATING

William F. Ostarch, Covina, Calif., assignor to Van Der Horst Corporation of America, Los Angeles, Calif.

Filed Sept. 16, 1974, Ser. No. 506,385
Int. Cl.³ B24B *1/00*; **C25D** *5/48*; **C25F** *3/02*
U.S. Cl. 51—323 **1 Claim**

1. A method for producing a pitted porous layer of an electrodeposited chromium initially deposited in excess of the final layer thickness which comprises the steps of:

honing said chromium layer with fine diamond grit of from about 40–100 grit size to remove from about 55–80% of the total chromium to be removed and to allow for subsequent D.C. reverse and final hone to said final layer thickness;

D.C. reverse etching at a specific a.m.s.i. said honed surface; and

honing said etched surface with an abrasive grit stone of a hardness in the range of I-M and of a grit size in the range of 100–300 to a final dimension, wherein the surface is pitted and wettable, and the pits are nonconnected.

3,962,835

BUILDING UNIT

Philip Andrew Little, 235 Brunswick St., Fortitude Valley, 4004 Australia

Filed July 25, 1974, Ser. No. 491,858
Claims priority, application Australia, July 25, 1973, 4229/73; May 8, 1974, 7502/74
Int. Cl.² E04B *1/34*, *1/348*
U.S. Cl. 52—73 **3 Claims**



1. A building unit including:

a. a substantially rectangular roof section shaped to form longitudinal corrugations between transverse beams at its ends, said transverse beams being intergrally formed with said longitudinal corrugations, said corrugations comprising upwardly extending hollow longitudinal ribs defining channels between them,

b. a substantially rectangular floor section shaped to form longitudinal corrugations between transverse beams at its ends, said transverse beams being integrally formed with said longitudinal corrugations, said corrugations defining downwardly extending channels, and

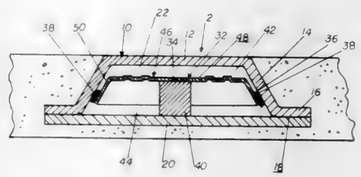
c. supporting means rigidly interconnecting the roof section and the floor section in spaced substantially parallel arrangement, said supporting means comprising a pair of columns each connected at its ends only to the middle parts of said transverse beams of said roof and floor sections, the parts being so made and arranged that when the unit is superimposed on a similar unit the floor section beams of the upper unit bear on the roof section beams of the lower unit and the floor section channels of the upper unit extend into the roof section channels of the lower unit.

3,962,836

GRAVE MARKER

Stephen E. Carnes, 1147 Kimberly Drive, Yuba City, Calif. 95991, and Robert M. Carnes, 2406 Buchanan St., Marysville, Calif. 95901

Filed Apr. 28, 1975, Ser. No. 572,572
Int. Cl.² E04H *13/00*
U.S. Cl. 52—104 **18 Claims**



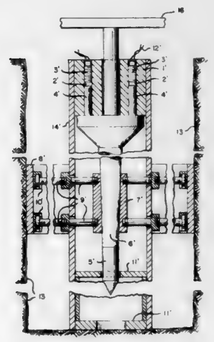
1. A grave marker comprising a cover constructed of a transparent plastic material inert to the atmosphere and to ultraviolet light, the cover being defined by a center portion and a continuous side extending transversely from the center portion to form a hollow interior space within the cover, the side sloping away from the center portion whereby the marker can be mechanically locked in a concrete panel by pouring the panel over the cover side; a base sealingly secured to ends of the sides to hermetically seal the space from the atmosphere; means disposed in the space and spaced apart from the center portion of the cover and defining an inscription for the marker; and a coloring agent visible through the center portion and applied to the inscription defining means and interior marker surfaces spaced from the cover whereby the coloring agent and the inscription defining means are protected from damage caused by atmospheric conditions and ultraviolet light.

3,962,837

APPARATUS FOR EXPANDABLY ENGAGING THE WALLS OF AN EARTHEN HOLE

Samuel J. Sero, 5614 Walnut St., Pittsburgh, Pa. 15232

Filed Oct. 11, 1974, Ser. No. 514,091
Int. Cl.² F02D *5/74*
U.S. Cl. 52—158 **11 Claims**



1. An apparatus for expandably engaging the walls of an earthen hole in order to resist movement urged by an external force, comprising:

a. a head containing a chamber;

b. an explosive charge insertable into the chamber of said head and engageable therein;

c. means for detonating said explosive charge;

d. a guide frame attached to said head;

e. a piston slidably disposed within at least a part of the chamber of said head;

f. a rod connected to said piston, a portion of said rod being tapered in shape the largest cross-sectional area of which is located nearest the part of said rod connected to said piston;

g. means for connecting said piston to said rod;

h. means for engaging said rod with the external force;

i. a plurality of radially movable tapered segmental wedges slidably engageable with the tapered portion of said rod;

j. a plurality of cylindrical segmental bearing plates spaced from the wedges and adapted to be moved from a first closed position in which they form a substantially cylindrical wall to a second radially extended position in which they are circumferentially spaced apart; and

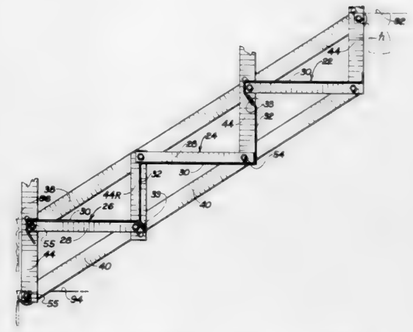
k. means for operably connecting each of said bearing plates to said segmental wedges, slidably through said guide frame, whereby when said charge is detonated the rod and piston act on the wedges to radially move the bearing plates to engage the earthen hole wall.

3,962,838

SHELF-ADJUSTING STAIR

Joe Warren Cox, 504 Rancho Road, Thousand Oaks, Calif. 91360

Filed Mar. 14, 1975, Ser. No. 558,485
The portion of the term of this patent subsequent to May 27, 1992, has been disclaimed.
Int. Cl.² E04F *11/00*, *19/00*
U.S. Cl. 52—183 **15 Claims**



1. A self-adjusting stair framework formed of a plurality of interconnected linkage members, said framework comprising:

a plurality of treads positionable in a substantially horizontal relationship, each of said treads having a front side and a rear side and a pair of lateral sides, each of said treads supported by a pair of tread carriers, a said tread carrier located at each said lateral side of each of said treads;

a pair of upper stringers, each said upper stringer pivotally connected to said tread carriers;

a pair of lower stringers, each said lower stringer pivotally connected to said tread carriers;

a vertical tread spacer located between and pivotally connected to each adjacent pair of said treads; and

at least one longitudinal slot means formed within one of said linkage members, said slot means located at the pivotal interconnection between a pair of said members, said slot means being inclined with respect to the longitudinal axis of the said member which contains said slot, said slot means permitting an adjusting movement of said framework between a minimum rise adjustment position and a maximum rise adjustment position, said maximum adjustment position being displaced horizontally and vertically from said minimum adjustment position throughout the adjusting movement, the direction of said inclined slot means substantially coinciding with the direction of said adjusting movement,

means interconnecting a said stringer and a said tread spacer and a said tread carrier, said means passing through said slot means, said means being movable within said slot means during said adjusting movement.

3,962,839

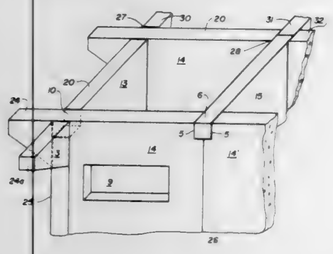
STRUCTURAL WALL ELEMENT, ESPECIALLY LOAD BEARING WALL ELEMENT

Gustav Ickes, Karlsbader Str. 1a, 6462 Gelnhausen-Hailer, Germany

Filed July 24, 1974, Ser. No. 491,490
Claims priority, application Germany, July 28, 1973, 2338390
Int. Cl.² E04C *2/00*; **E04B** *2/74*
U.S. Cl. 52—262 **1 Claim**

1. In a prefabricated building structure comprising four vertical load bearing wall elements, each having a top edge, a bottom edge, and two side edges, joints between adjacent wall elements, each wall element having a height substantially

equal to the height of a story of said building structure, the improvement wherein each of said four wall elements comprises two cantilevers, each cantilever extending from a top corner and from the respective side edge in the plane of the respective wall element, each cantilever having an upper edge extending level with the top edge of the corresponding wall element to form a common top edge, and a lower edge extending above the bottom edge of the corresponding wall element, two of said wall elements having an upwardly opening recess in said common top edge adjacent to each cantilever positioned so that an edge of said upwardly opening recess registers with the respective side edge of the wall element, each of



the remaining two wall elements having a downwardly opening recess in the lower edge of each of its cantilevers adjacent to the respective side edge thereof to which the respective cantilever is joined so that an edge of said downwardly opening recess registers with the adjacent side edge, said recesses having widths substantially equal to the widths of said wall elements and depths substantially equal to one half the height of said cantilevers at the respective side edges of said wall elements, said joints being formed by the interlocking between an upwardly opening recess and a downwardly opening recess, whereby two interlocking cantilevers extend from each corner of the structure to form a ring beam.

3,962,840

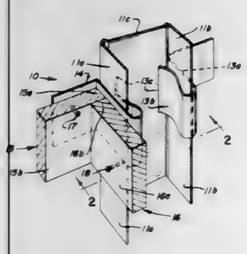
CORNER CONSTRUCTION AND CLIP THEREFOR

Nels Nelsson, Des Plaines, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Mar. 22, 1973, Ser. No. 343,659

Int. Cl.² E04B *1/00*

U.S. Cl. 52—281 **8 Claims**



1. An interior corner construction comprising an elongated metallic supporting flange having an inner surface and an outer surface; a first panel having a broad surface with a portion of the outer surface thereof in proximate side-by-side relation with the outer surface of said flange; a second panel angularly disposed relative to said first panel, one of said panels having a narrow edge thereof in abutting relation with an exposed surface of the other panel, said supporting flange being positioned external of the angle included between said first and second panels; a clip resiliently mounted on said supporting flange and in contact with said first and second panels; said clip including a first portion in resilient gripping relation with the inner and outer surfaces of said flange, a first segment of said clip first portion being sandwiched between the outer surface of said first panel and the outer surface of said flange and a second segment of said clip first portion being bent over said first segment and engaging the inner surface of said flange to provide said resilient gripping relation, and a second portion of said clip being planar with free edges and extending angularly from the first portion first segment and away from said flange in contact engagement with the outer surface of said second panel; and means for securing said second panel to the second portion of said clip in contact therewith, whereby said second panel conceals said clip.

3,962,841

INSULATED DECKING STRUCTURE AND METHOD

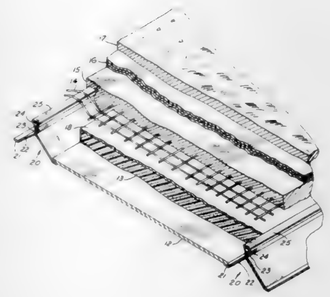
Frank E. Carroll, Barrington, Ill., assignor to Decks, Incorporated, Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 457,996, April 4, 1974. This application Jan. 30, 1975, Ser. No. 545,303

The portion of the term of this patent subsequent to June 29, 1993, has been disclaimed.

Int. Cl.² E04C *1/00*

U.S. Cl. 52—309 **15 Claims**



1. A poured concrete insulated deck structure comprising:
- a series of parallel sheet metal structural shapes which are symmetrical about a vertical bisecting plane having a central vertical web, two legs projecting downwardly from the bottom of said web at an angle of about 45° to about 75° to the horizontal, each leg having a substantially horizontal flange projecting outwardly at its lower extremity, and a stiffening member at the upper edge of said web;
- gypsum formboard resting on said horizontal flanges and extending between adjacent structural shapes;
- rigid synthetic polymer foam having an underside adjacent the upper side of said gypsum form-board and having spaces vertically communicating from the upper side of said formboard to the upper side of said foam, said spaces having an area of more than about 5 percent of the area of the upper side of said formboard; and
- poured concrete adjacent the upper side of said foam and around said stiffener to prevent uplift and extending through said spaces contacting the upper side of said gypsum formboard, said concrete completing drying by escape of moisture through said gypsum formboard.

3,962,842

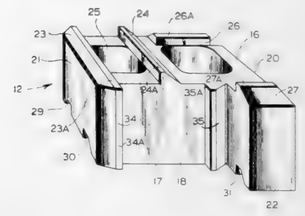
MORTARLESS INTERLOCKING BLOCKS

William D. Wilhelm, 533 San Juan, St. Charles, Mo. 63301

Filed May 30, 1975, Ser. No. 582,160

Int. Cl.² E04B *2/20;* **E04C** *1/12*

U.S. Cl. 52—436 **11 Claims**



1. In a mortarless interlocking block wall assembly made up of multiple courses of stretcher blocks converging into a corner from two directions and interlocking with cooperating corner blocks in each course: the improvement of corner blocks each comprising a generally rectangular body having top and bottom surfaces, interior and exterior faces and opposite ends; a body extension on said interior face adjacent one end face and having top and bottom surfaces matching said first body surfaces; a first pair of ribs, one on said top surface of said body adjacent and parallel to said exterior face and one on said top surface of said body extension parallel to said first one of said ribs; a second pair of ribs on said body top surface in parallel and spaced relation with one of said second pair of ribs being adjacent and parallel to the opposite one of said end faces; three parallel grooves in said corner block, one being in the bottom surface of said body extension and two being in said bottom surface of said body, said grooves being parallel to said first pair of ribs; and separate means on said body interior face and on said one end face, each being adapted to engage and interlock with stretcher blocks.

3,962,843

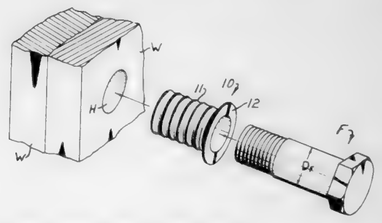
RESILIENT SLEEVE JOINT CONSTRUCTION

John O. King, Jr., 3990 N. Ivy Road, Atlanta, Ga. 30342

Continuation-in-part of Ser. No. 268,478, July 3, 1972, which is a continuation-in-part of Ser. No. 33,281, April 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 711,368, March 7, 1968, abandoned. This application July 12, 1973, Ser. No. 378,443

Int. Cl.² F16B *9/02*

U.S. Cl. 52—758 F **8 Claims**



1. A joint construction comprising:
- a plurality of work pieces having aligned holes therethrough of a nominal first prescribed diameter;
- a fastener through said holes having a second nominal working diameter;
- a sleeve member between said fastener and said work pieces within said holes including a resilient tubular metal side wall having a predetermined thickness, said side wall having formed therein a plurality of outwardly directed bends and a plurality of inwardly directed bends, said outwardly and inwardly directed bends alternating to form external ridges and valleys and internal ridges and valleys, the resiliency of said side wall urging said external ridges toward a substantially constant maximum unrestrained outside diameter along the length of said side wall a prescribed amount larger than said first prescribed diameter of said holes and urging said internal ridges toward a substantially constant minimum unrestrained inside diameter a prescribed amount smaller than said second nominal working diameter of said fastener.

3,962,844

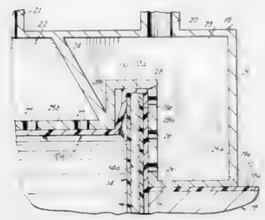
PROCESS FOR FORMING AND APPLYING A HERMETIC, HEAT SEALED CLOSURE

Robert Louis Gordon, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.

Continuation-in-part of Ser. No. 499,177, Aug. 21, 1974, abandoned. This application Mar. 5, 1975, Ser. No. 555,374

Int. Cl.² B65B *51/20, 7/28*

U.S. Cl. 53—39 **12 Claims**



1. A process for forming a hermetic, heat-sealed closure on a filled, thermoplastic or thermoplastic coated container, comprising the steps of:
- providing a web of a thermoplastic material, having a temperature within the drooping and heat-sealing ranges of the thermoplastic material, draped over the mouth of the container;
- urging the web inwardly of the mouth of the container so that the web simultaneously overlies both interior and exterior, thermoplastic surfaces of the mouth of the container; said interior and exterior surfaces comprising first and second thermoplastic surfaces of the mouth of the container; and
- directing a stream of a gas against an exposed surface of the web overlying the first of said thermoplastic surfaces of the mouth of the container to cause the web to contact said first surface and to forcefully press the second of said thermoplastic surfaces of the mouth into contact with a portion of the web which overlies said second surface, to thereby form a heat-sealed bond between the web and both the interior and exterior thermoplastic surfaces of the mouth of the container.

3,962,845

APPARATUS FOR COUNTING AND PACKAGING CAN ENDS

Wallace W. Mojden, Hinsdale; Jose E. Davila, Chicago; George W. Hooper, Western Springs; Gerald M. Kwiatkowski, Dolton, and Howard W. Pantel, Jr., Woodridge, all of Ill., assignors to Fleetwood Systems, Inc., Countryside, Ill.

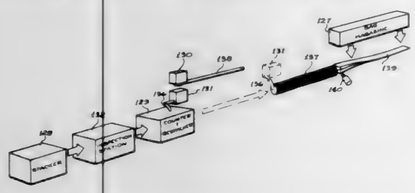
Division of Ser. No. 351,639, April 16, 1973. This application Nov. 7, 1974, Ser. No. 521,842

Int. Cl.² B65B *57/20*

U.S. Cl. 53—59 R **20 Claims**

1. Can end handling apparatus capable of receiving a continuous flow of can ends and automatically counting and separating a stack of ends of a prescribed number disposed in facewise, stacked relation for delivery to a packing station, or the like, said apparatus comprising: a receiving station including elongate trough means for handling a plurality of can ends

in stacked, facewise engagement; means for advancing said can ends longitudinally of said trough means to a preselected location; monitoring means responsive to the passage of said can ends past said preselected location for counting the number of can ends passing said location; and separator means operatively connected with said monitoring means and including a movably mounted element for disposition in the path of said stream of can ends at said location in response to said monitoring means, thereby to isolate a counted stack of can



ends from the continuous stream of ends, such that the downstream portions of the stack of can ends are disposed longitudinally of said separator means and the engaged counted stack, said packing station including horn means disposed relative to said trough such that said counted stack of ends can pass through said horn means and into a bag, said movably mounted element being carried by transport means movably parallel to said trough means while said movable element is in engagement with said counted stack of can ends to effect movement of said ends toward said packing station.

3,962,846

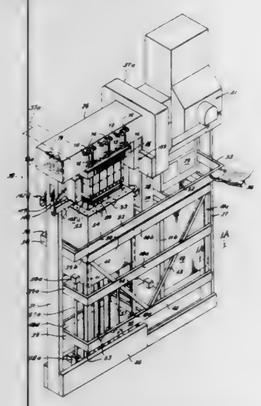
APPARATUS FOR AUTOMATIC WRAPPING OF BALES

Joseph C. Neitzel, Sao Paulo, Brazil; Ronald A. Tomlinson, Garland; Allen R. Hurst, Jr., Denison, both of Tex.; Paul W. Bodovsky, and Arnold E. Krueger, both of Sherman, Tex., assignors to Hardwicke-Etter Company, Sherman, Tex.

Continuation-in-part of Ser. No. 437,515, Jan. 28, 1974. This application Feb. 12, 1975, Ser. No. 549,156

Int. Cl.² B65B *63/02*

U.S. Cl. 53—124 C **20 Claims**



1. The combination with a baling press having charge compression means including opposed platens, of automatic bale wrapping means comprising powered mechanism for applying wrapping material across at least one of said platens prior to compression of a charge thereagainst, a press box normally positioned between and normally spaced from said platens to accommodate said mechanism, wrapper folding means movable along opposite faces of the compressed bale for applying said material to at least one of the faces of the bale, means for applying bale-securing elements about said applied wrapping material, and means for separating said box at least in part, from the bale to provide clearance for said wrapper folding means.

3,962,847

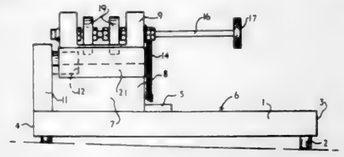
COIN WRAPPING DEVICE

Roger Trudel, 1616 First Ave., Val Caron, Ontario, Canada (P0M 3A0)

Filed Mar. 31, 1975, Ser. No. 563,636

Int. Cl.² B65B *11/04, 49/00*

U.S. Cl. 53—212 **8 Claims**



1. A coin wrapping device comprising a housing incorporating an elongated cylindrical chamber including an arcuate trough and a complementary hinged cover; a manually rotatable shaft mounted in said cover parallel with said chamber; and a friction roller on said shaft with part of its circumference projecting into said chamber in spaced relation to said trough.

3,962,848

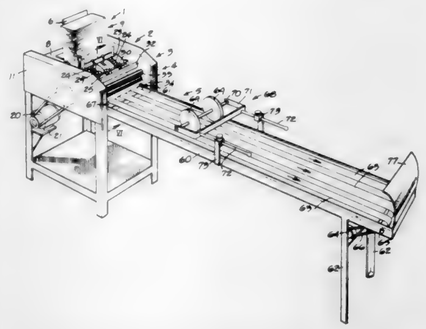
ENVELOPE FLAP PROCESSING APPARATUS

Charles William Hankins, 1218 Mission Road, South San Francisco, Calif. 94080

Filed Mar. 31, 1975, Ser. No. 563,575

Int. Cl.² B65B *7/00;* **B31B** *1/76*

U.S. Cl. 53—266 A **27 Claims**



1. A multi-component apparatus for processing envelope flaps comprising, in series; variable-capacity envelope storage means mounted upon frame means, envelope flap opening means for selectively exerting a fluid pressure force upon said flaps which means is disposed immediately adjacent to said variable capacity envelope storage means, envelope feeder means disposed immediately adjacent to said envelope flap opening means and having inlet and outlet means, said envelope feeder means being adapted to convey envelopes individually from said variable capacity envelope storage means and said envelope flap opening means to said outlet means of said feeder means, means disposed upon said frame means immediately adjacent to said outlet means for operatively supporting envelopes which have been conveyed from said outlet means of said envelope feeder means, drive means for actuating said envelope feeder means, envelope flattening and ejector means mounted upon said frame means for receiving processed envelopes which have been conveyed from said variable capacity envelope storage means to said envelope flap opening means through said envelope feeder means inlet and outlet means, said envelope flattening and ejector means being operative to apply flattening force to said envelopes which force tends to prohibit the reclosure of opened envelopes, conveying means for positively conveying processed envelopes in an orderly fashion from said apparatus to a place of utilization.

3,962,849

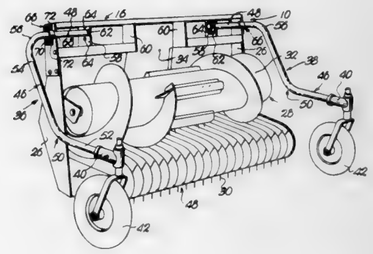
CASTER WHEEL ARM

Herman V. Stoessel; Ronald K. Guinn, and Bernard L. Wells, all of Wichita, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Dec. 5, 1974, Ser. No. 529,852

Int. Cl.² A01D *47/00*

U.S. Cl. 56—10.2 **7 Claims**



1. In an implement having a mobile main frame and a crop header mounted on said frame forwardly of the latter for vertical swinging movement about a horizontal axis extending transversely of the normal path of advancement of the frame, said header having a top, a bottom, and a pair of opposed sides, gauge means for swinging the header about said axis relative to the frame in response to encountering uneven terrain, said gauge means including:

a pair of elongated, generally fore-and-aft extending arms spaced outwardly from said opposite sides of the header and terminating in forwardmost free ends forwardly of the header;

a ground engaging element on each of said arms respectively at said fowardmost ends thereof for detecting rises and falls in the terrain in front of the header,

each of said arms including a first section extending generally upwardly and rearwardly from its ground engaging element toward the header and a second section extending transversely inwardly from the upper rear end of the first section toward the corresponding side of the header; and

structure securing said second section of each arm respectively to the header adjacent said top of the latter and spaced substantially above said axis vertically remote therefrom to prevent buckling under of the header in response to the application of a rearwardly directed force to said elements.

3,962,850

METHOD AND APPARATUS FOR HARVESTING TOBACCO

Bobby G. Moore, Rte. 4, Conway, S.C. 29526

Filed Aug. 1, 1974, Ser. No. 493,866

Int. Cl.² A01D *45/16*

U.S. Cl. 56—27.5 **14 Claims**

1. A mechanical tobacco harvester comprising:

a laterally stationary frame movable in rolling contact with the ground along one of a plurality of laterally spaced rows of tobacco plants;

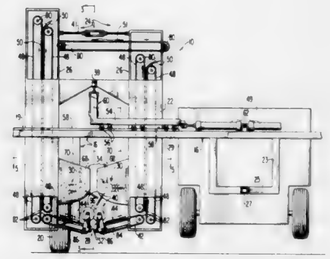
first and second panel members;

support means carried by said frame for supporting said panel members to form therebetween an elongated passage of predetermined width extending in a direction generally parallel to the direction of movement of said frame;

passage width adjusting means interconnecting said panel members for varying the width of the elongated passage therebetween;

first and second defoliating means carried respectively by said panel members for at least partially defoliating successive tobacco plants disposed in a defoliating position relative thereto;

guiding means carried by said panel members for guiding individual tobacco plants into and through the elongated passage in an essentially predetermined spatial relationship with said defoliating means as said frame moves along the row; and,



first and second conveying means carried respectively by said panel members laterally adjacent the elongated passage for collecting tobacco leaves removed from tobacco plants by said defoliating means and for conveying the collected leaves laterally and vertically away from said defoliating means,

said support means including pivotable supporting means for pivotably supporting said panel members to thereby permit rotation of said panel members as a unit about a generally horizontal axis generally parallel to the direction of movement of said frame in response to contact between the tobacco plants and said guiding means,

said support means also including lateral positioning means for positioning said panel members laterally as a unit relative to said frame to thereby selectively position said defoliating means in a defoliating position relative to the tobacco plants of another of the laterally spaced rows of tobacco plants without laterally repositioning said frame relative to the rows of tobacco plants.

3,962,851

SELF-PROPELLED HOP HARVESTING MACHINE

Adolf Liepold, Schwarzenbruck; Hermann Daum, Feucht near Nurnberg, and Helmut Lindner, Rothenbach, all of Germany, assignors to Fella-Werke G.m.b.H., Nurnberg, Germany

Filed Dec. 9, 1974, Ser. No. 531,105

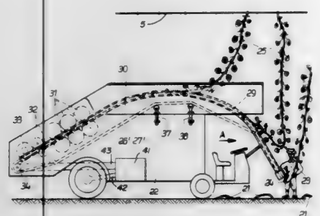
Claims priority, application Germany, Dec. 7, 1973, 2360989

Int. Cl.² A01D *41/08*

U.S. Cl. 56—126 **3 Claims**

1. A self-propelled hop harvesting machine comprising drive means for propelling the machine in a forward direction, a vine draw-through means in the form of two endless chains arranged side-by-side and providing an upper vine-conveying run and a lower return run, an upwardly open U-shaped member extending arcuately over the top of the machine from the front thereof and housing and guiding said upper vine-conveying run of the said chains, means for driving said chains so that

said upper run moves in a rearward direction and picking means located in the path of movement of a vine when con-



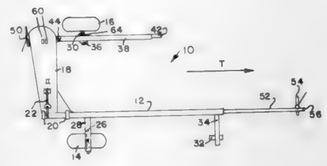
veyed by said upper run of the chains constructed to engage said vine and remove the hop cones therefrom.

3,962,852
GRASS CATCHER AND DEFLECTOR ASSEMBLY
Walter J. Boyer, St. Louis, Mo., assignor to The Perfection Manufacturing Company, St. Louis, Mo.
Filed July 22, 1974, Ser. No. 490,858
Int. Cl.² A01D *35/22*
U.S. Cl. 56—202 **5 Claims**

1. In combination with a lawn mower housing of the type having a discharge opening and an upper wall above the discharge opening, a grass catcher and deflector assembly, said assembly comprising:

a. a bracket adapted to be fixedly attached to said housing upper wall and including:
   1. a first engagement means disposed forwardly of said mower discharge opening and having a portion spaced from said housing upper wall in overlying relation thereto, and
   2. a second engagement means rearwardly spaced from said first engagement means and including a slot means,
b. a deflector including:
   1. arm means mounted to the second engagement means, the arm means being received in pivotal relation within said slot means and pivotally movable below said overlying first engagement means portion, and
   2. a rearwardly extending flap means attached to said arm means and movable away from a lowered deflecting position relative to said discharge opening into a raised, non-deflecting position as said arm means moves below said overlying first engagement means portion, and
c. a removable grass catcher having an opening adapted to receive grass clippings from the discharge opening and including frame means having a first transverse element forwardly disposed of the catcher opening and insertable between said overlying first engagement means portion and said arm means when the arm means is moved to the position below said overlying first engagement means portion to latch said deflector in said non-deflecting position.

3,962,853
METHOD OF CONVERTING AN IMPLEMENT FRAME FROM A FORWARD HARVESTING MODE TO A LATERAL TRANSPORT MODE
Bruce D. Schwalm, Leola, and Bryant F. Webb, Ephrata, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Mar. 29, 1974, Ser. No. 456,416
Int. Cl.² A01D *75/22*
U.S. Cl. 56—228 **8 Claims**



1. A method of converting a mobile frame of a pull-type crop harvesting implement from a forward harvesting mode to a lateral transport mode, comprising the steps of:

supporting said frame at a left forward end thereof at a predetermined elevated position above a field;

pivoting a field tongue connected to said left forward frame end from a fowardly-extending position, in which said tongue may be coupled to a tractor or the like for towing said implement in a forward direction in its harvesting mode, toward a right lateral side of said frame to a transversely-extending fixed position with said frame being stationarily-positioned during said pivoting of said field tongue;

pivoting one of two rotatably spaced-apart ground wheels, which is mounted to and supports said frame at a left rearward end thereof, from a forwardly-directed position to a transversely-directed position;

disposing a transport tongue at said right lateral side of said frame in a fixed position extending outwardly from said right lateral frame side;

supporting said frame at said right lateral side thereof at a predetermined elevated position above the field;

removing the other of said two ground wheels which is mounted in a forwardly-directed position and supports said frame at a right rearward side thereof;

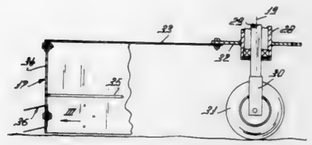
remounting said other wheel in a transversely-directed position along said transversely-extending field tongue; and

removing said support from said left forward frame end.

3,962,854
RAKE MACHINE
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland, and Ary van der Lely, 10, Weverskade, Maasland, Netherlands
Filed Oct. 11, 1974, Ser. No. 514,307
Claims priority, application Netherlands, Oct. 12, 1973, 7314028; Jan. 18, 1974, 7400685; Feb. 18, 1974, 7402172; July 2, 1974, 7407753; June 19, 1974, 7408181; July 2, 1974, 7408894; Sept. 9, 1974, 7411914
Int. Cl.² A01D *79/02*
U.S. Cl. 56—370 **44 Claims**

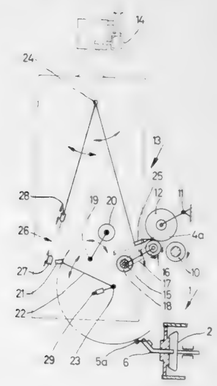
1. A rake machine for displacing crop on the ground comprising a frame and at least one rake member supported on said frame, said member being rotatable about an upwardly extending axis, said member having an outer circumference

and said circumference being formed by a deformable wall, means on said member for restricting the amount of deforma-



tion of at least the lower portion of said wall, crop working means being supported on said wall.

3,962,855
START-SPINNING APPARATUS WHICH TRAVELS ALONG AN OPEN-END SPINNING MACHINE
Fritz Stahlecker, Bad Uberkingen, Germany, assignor to Fritz Stahlecker and Hans Stahlecker, Germany
Filed Dec. 9, 1974, Ser. No. 531,162
Claims priority, application Germany, Dec. 12, 1973, 2361787
Int. Cl.² D01H *15/00*
U.S. Cl. 57—34 R **26 Claims**



1. A start-spinning apparatus which travels along an open-end spinning machine having at least one yarn removal channel connected with a respective at least one spinning rotor, comprising means for lifting away a winding cone of an open-end spinning unit, trimming means, a pair of trapping rollers, a movably arranged suction nozzle for picking up an end of thread from said winding cone and placing said end of said thread into the effective area of said trimming means and said pair of trapping rollers, and movably arranged transfer trapping means for trapping said end of said thread in the area of said trapping means and transferring said end of said thread to the yarn removal channel, whereby said pair of trapping rollers controls the return of said end of said thread into said spinning rotor and withdrawal therefrom again.

3,962,856
DOFFING APPARATUS
Heinrich Weller, Monchen gladbach, and Heinz Kaschewske, Korschenbroich, both of Germany, assignors to Maschinenfabrik Heinz Weller, Monchen gladbach, Germany
Filed Oct. 16, 1974, Ser. No. 515,153
Int. Cl.² D01H *9/04*
U.S. Cl. 57—52 **7 Claims**

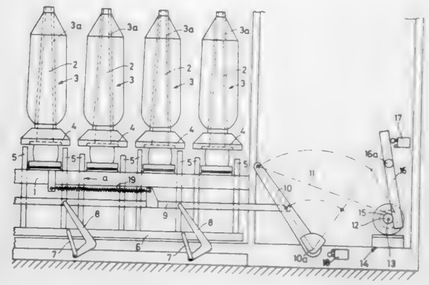
1. In a spinning frame having a plurality of tapered rotatable spindles, each carrying a bobbin upon which fiber is wound, and each spindle having a disc mounted thereon below its respective bobbin, said disc being movable axially with respect to the spindle:

a vertically reciprocable plunger located below each bobbin and engageable with the underside of said disc to lift the bobbin free of the spindle;

linkage means connected to the plungers to move them upwardly in unison;

a lever arm pivoted for angular movement;

said linkage means being connected to said lever arm at a point spaced from said pivot;

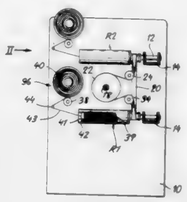


a reversible motor driving a winding reel;

a flexible tension member attached to said lever arm at a point spaced from said pivot, and wrapped around said winding reel, whereby as said motor is operated in one direction, the flexible tension member is wound onto the winding reel, causing said linkage means to raise said plungers and thereby eject said bobbins from said tapered spindles; and

means for stopping said motor automatically when said bobbins have been ejected.

3,962,857
MACHINE FOR SIMULTANEOUSLY TWISTING A PLURALITY OF YARNS
Edmund Hamel, Romanshorn/TG, Switzerland, assignor to Evolution S.A., Rorschach, Switzerland
Filed Oct. 22, 1974, Ser. No. 517,015
Claims priority, application Germany, Oct. 24, 1973, 2353311
Int. Cl.² D01H *7/10, 7/08*
U.S. Cl. 57—59 **17 Claims**



1. An apparatus for twisting a plurality of yarns, said apparatus comprising:

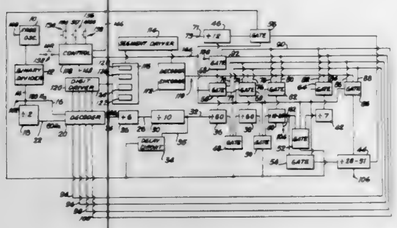
a horizontally elongated support;

a plurality of twisters on said support each having a respective yarn package and a respective rotatable sleeve surrounding said package, said twisters each being rotatable about a respective horizontal axis transverse to said support;

takeup means for drawing respective yarns from said packages of said twisters; and

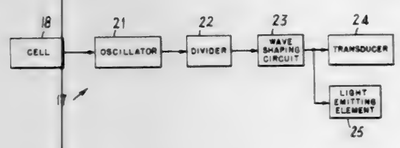
drive means extending longitudinally through said support for rotating said twisters about their respective axes.

3,962,858
ELECTRONIC WATCH
Morris M. Levine, Scarsdale, and Arthur F. Cake, Smithtown, both of N.Y., assignors to Uranus Electronics Inc., Port Chester, N.Y.
Filed Aug. 29, 1973, Ser. No. 392,516
Int. Cl.² G04B 19/24, 19/30
U.S. Cl. 58—4 A 18 Claims



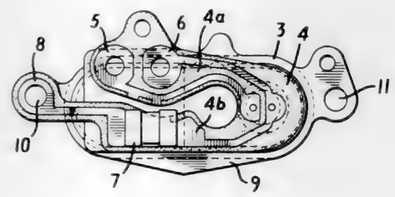
1. An electronic watch having a means to provide a frequency source from a time standard, a first electronic means to decode frequency signals from said source and provide selected digit pulse outputs at predetermined intervals, a digit driver connected to said first means, a display means connected to said digit driver, a binary divider chain connected to said frequency source continuously operable with counter means to provide pulses representative of seconds, minutes, hours, days of the month, days of the week and months in proper sequential order, said divider chain comprised of gate means to advance each portion thereof in accordance with pulses starting with the portion of the counter means providing pulses representative of seconds, said gate means comprised of a differentiator circuit of NOR gates and an advancing and setting circuit of NAND gates, decoder-encoder means connected to said binary divider chain, a segment driver connected to said decoder encoder means and said display means, and a control meas connected to said binary divider chain and said digit driver to control the activation of said display in indicating selected information of hours - minutes, days of the month- seconds, days of the week- months at selected pulses from said decoder.

3,962,859
CELL REPLACEMENT INDICATION DEVICE
Kazuo Ito, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan
Continuation of Ser. No. 281,187, Aug. 16, 1972, abandoned. This application Aug. 21, 1974, Ser. No. 499,206
Claims priority, application Japan, Aug. 20, 1971, 46-74319[U]
Int. Cl.² G04C 3/00; G04B 19/30
U.S. Cl. 58—23 BA 6 Claims



1. In a watch having an electronic circuit powered during use by an electric cell and means in said circuit for developing low-frequency pulses, and time-indicating means responsive to said low-frequency pulses for indicating the time: a device separate from said time-indicating means for displaying visually that the operating life of said cell is near exhaustion comprising a light-emitting element having a threshold voltage selected relative to the output voltage of said cell to indicate by light emissions that said output voltage exceeds a certain value and upon termination of light emissions in dependence upon said output voltage being below said certain value indicating that the cell needs replacement, said output voltage value being selected above a potential level for adequately energizing said electronic circuit and sufficiently close to the exhaustion of the cell to allow normal operation for a short remaining limited time before the output is insufficient to adequately energize said circuit, and means connecting said light-emitting element to said circuit for applying said low-frequency pulses thereto for causing said light-emitting element to emit light intermittently as long as the output voltage of said cell exceeds said certain value and thereafter automatically terminating the light emissions from said light-emitting element due to the dropping of the output voltage of said cell below said threshold voltage to thereby visually indicate by the absence of light emissions that the output of said cell is near exhaustion.

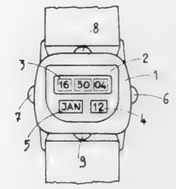
3,962,860
QUARTZ CRYSTAL TIMEPIECE
Kotaro Kato, Tokyo, and Makoto Morimoto, Chiba, both of Japan, assignors to Kabushiki Kaisha Daini, Japan
Filed Aug. 30, 1974, Ser. No. 502,185
Claims priority, application Japan, Aug. 31, 1973, 48-102223
Int. Cl.² G04C 3/00; H03B 5/30
U.S. Cl. 58—23 AC 13 Claims



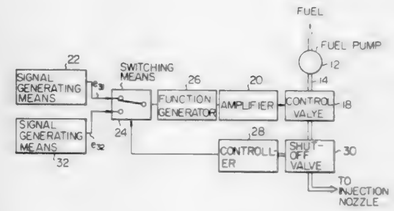
1. A coarsely adjusted quartz crystal vibrator package for use in quartz crystal timepieces comprising: a case having sealed therein a quartz crystal vibrator having its own natural oscillating frequency; and means connected to said case and defining therewith a quartz crystal vibrator package for coarsely compensating for deviation of the natural oscillating frequency of said quartz crystal vibrator from a predetermined time-base standard oscillating frequency thereby providing a coarsely adjusted quartz crystal vibrator package for use in quartz crystal timepieces.

3,962,861
APPARATUS FOR DETERMINING AND LASTINGLY SHOWING THE TIME AT WHICH AN EVENT OCCURS
Jean-Claude Protta, Onex, and Antoine Savary, Chatelaine, both of Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland
Continuation-in-part of Ser. No. 320,675, Jan. 2, 1973, abandoned. This application June 7, 1974, Ser. No. 477,277
Int. Cl.² G04F 10/04; G04B 19/24
U.S. Cl. 58—39.5 9 Claims

1. Apparatus for determining and temporarily recording the time an event occurs, comprising:
A. a time counter,
B. a memory,
C. a time indicator, the time counter being coupled to the memory and the time indicator
D. means for providing an active connection between
a. the counter and the memory, and
b. the counter and the time indicator, wherein the connection is arranged such that when the means for providing said connection with the memory is actuated, the time indicator indicates the time when said connection has become effective
wherein the memory is a storage memory, the connecting means between said memory and said counter being arranged such that when said connecting means becomes operative the counter is temporarily blocked, the counting pulses are bypassed to and collected by the memory and, when the latter is fully loaded, the same number of pulses which are stored in the memory but having a frequency higher than that of the counting pulses are sent to the counter for time resetting purposes.

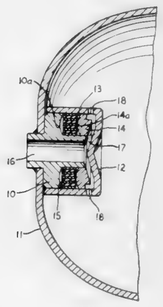


3,962,863
GAS TURBINE ENGINE FUEL SUPPLY CONTROL
Takane Itoh, Yokohama, and Takao Kamide, Zushi, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Nov. 26, 1974, Ser. No. 527,373
Claims priority, application Japan, Nov. 28, 1973, 48-132557; Nov. 28, 1973, 48-132558; Nov. 28, 1973, 48-132559
Int. Cl.² F02C 7/26
U.S. Cl. 60—39.14 11 Claims



1. A fuel supply control for firing a gas turbine engine including a fuel pump provided in a fuel conduit for supplying pressurized fuel into a combustion chamber of said gas turbine engine, which comprises:
an electromagnetic flow control valve provided in said fuel conduit between said fuel pump and said combustion chamber, and responsive to a control signal fed thereto from fuel supply control means for controlling fuel flow to said combustion chamber in accordance with said control signal;
said fuel supply control means operatively connected to said electromagnetic flow control valve for supplying thereto said control signal which increases continuously in magnitude from a first preset value to a second preset value after engine starting operation;
a shut-off valve provided in said fuel conduit between said fuel pump and said combustion chamber for blocking and unblocking delivery of said fuel flow to said combustion chamber;
a shut-off valve controller operatively connected to said shut-off valve for opening and closing the same and for generating therefrom a signal indicative of open and closed conditions of said shut-off valve, said signal being fed to said fuel supply control means to cause the same to develop said control signal when said signal represents the open condition of said shutoff valve;
said fuel supply control means including first control signal generating mean initially connected to function generating means through switching means for applying thereto a first present signal indicative of said first present value,
said switching means receiving said signal from said shutoff valve controller, and disconnecting said first control signal generating means from said function generating means and connecting second control signal generating means to the latter when said signal indicates the open condition of said shut-off valve,
said second control signal generating means generating a second present signal indicative of said second preset value, and
said function generating means electrically interposed between said switching means and said electromagnetic flow control valve, and producing said control signal.

3,962,862
EXPLOSION ENERGY ABSORBER FOR ROCKET MOTOR INJECTORS
Joseph J. Lovingham, Madison, N.J., assignor to Thiokol Corporation, Newtown, Pa.
Filed May 21, 1968, Ser. No. 730,744
Int. Cl.² F02K 9/02
U.S. Cl. 60—39.09 R 1 Claim



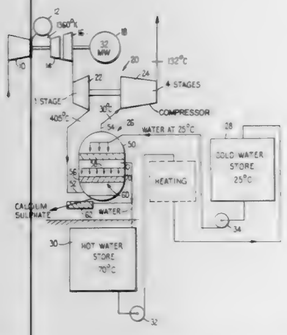
1. In a rocket motor oxidizer injector having a housing and a passage for pressurized oxidizer through said housing, the improvement comprising a free piston slidable in said housing and exposed to the oxidizer passage, a viscoelastic material interposed between the piston and the housing with the piston face adjacent to the viscoelastic material shaped to a predetermined contour and its counterpart face on the housing being of substantially the same contour and with the viscoelastic material bonded between concentric metal rings in alternate layers with the rings substantially parallel to the central axis of the piston.

3,962,864

GAS TURBINE POWER PLANT WITH EXHAUST TREATMENTS FOR SO_2 REMOVAL

David Eyre Williams, Brinklow, and Albert Jubb, Kenilworth, both of England, assignors to Rolls-Royce (1971) Limited, London, England

Filed Sept. 13, 1974, Ser. No. 505,948
Claims priority, application United Kingdom, Sept. 20, 1973, 44079/73
Int. Cl.² F02G 3/00; F02C 7/08; C01B 17/00
U.S. Cl. 60—39.16 R 3 Claims



1. An energy system comprising a gas turbine engine including a first compressor means, a combustion means receiving the output of said first compressor means, a first turbine means connected to said combustion means for driving said first compressor means, a power turbine means, and a load driven by said power turbine means, a second compressor means, a second turbine means for driving said second compressor means, a housing, means within said housing for cooling the exhaust gases from said second turbine means, said cooling means including a heat exchanger matrix positioned in said housing, a cold water store, a hot water store, and means for conveying a supply of cold water from said cold water store to said housing, said cold water cooling the hot exhaust gases from said second turbine means in said heat exchanger matrix positioned in said housing, means in said housing for removing pollutants from said exhaust gases, the hot exhaust gases from said power turbine flowing to said housing by way of said second turbine, and flowing from said housing to the atmosphere by way of said second compressor means, said pollutant removing means receiving said water from said heat exchanger matrix and converting said water into steam which thereafter flows back to said matrix--, said steam condensing in the heat exchanger matrix, and means for collecting and passing said condensed steam to said hot water store.

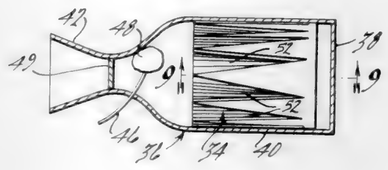
3,962,865

ROCKET MOTOR CONSTRUCTION

Alan I. McCone, Jr., San Francisco, Calif., assignor to MB Associates, San Ramon, Calif.

Continuation of Ser. No. 276,731, July 31, 1972, abandoned. This application Nov. 16, 1973, Ser. No. 416,639
Int. Cl.² F02K 9/04
U.S. Cl. 60—255 5 Claims

1. In a rocket motor, a motor casing having a cylindrical side wall, a flat front wall and a nozzle at the rear thereof, a fuel grain within said closure having a central supporting strip, a pair of propellant strips, means adherring said propellant strips to opposite sides of said supporting strip, one edge of said strips being undulated, the other edge of said central supporting strip being extended beyond the propellant strips, and tapes of greater thickness than said propellant strips secured to the surfaces of said extended edge of said supporting strip so that when rolled up and slid within the casing, spaces will be provided between the propellant in each convolution



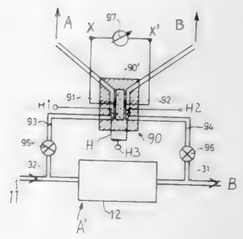
as well as those between the undulations providing axial burning of said propellant.

3,962,866

INTERNAL COMBUSTION EXHAUST CATALYTIC REACTOR MONITORING SYSTEM

Horst Neidhard, Korntal; Ernst Linder, Muhlacker; Josef Wahl, Stuttgart; Peter Jurgen Schmidt, Schwieberdingen, all of Germany, and Peter A. Schoeck, Balzers, Liechtenstein, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Jan. 28, 1974, Ser. No. 436,863
Claims priority, application Germany, Jan. 31, 1973, 2304622
Int. Cl.² F02B 75/10; F01N 3/15; F02M 25/06
U.S. Cl. 60—276 14 Claims



1. Catalytic reactor monitoring system to supervise operation of a catalytic reactor (12) connected to the exhaust system of internal combustion engines, to detoxify exhausted gases from the engine, comrising

at least one oxygen sensor (90) to determine oxygen content in the exhaust gases from the internal combustion engine and comprising an ion conductive solid electrolyte (21) forming an ion concentration chain and which includes two catalytically inactive electrodes (91, 92);

means (93–96) branching the exhaust gases from the internal combustion engine upstream and downstream of the catalytic reactor (12) respectively, one electrode being responsive to the upstream branch and the other electrode being responsive to the downstream branch;

a detection circuit (20) connected to the sensor (90) providing an output signal in dependence on the signal from the sensor;

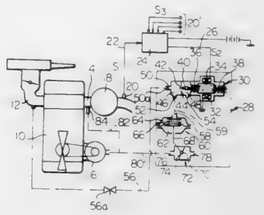
and response means (39, 34) responsive to the output signal from the detection circuit (20).

3,962,867

SECONDARY AIR REGULATING SYSTEM

Kenji Ikeura, Yokohama, and Yoshitaka Hata, Fujisawa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed June 26, 1974, Ser. No. 483,289
Claims priority, application Japan, June 27, 1973, 48-72678
Int. Cl.² F02B 75/10; F01N 3/10
U.S. Cl. 60—276 3 Claims



1. A secondary air regulating system for an exhaust purifying device of an internal combustion engine having an air intake passage and an exhaust passage in which said exhaust purifying device is disposed, which system in combination comprises:

secondary air supply means connected to a portion upstream of said exhaust purifying device in said exhaust passage for supplying secondary air into said portion;

a sensor disposed downstream of said exhaust purifying device in said exhaust passage for generating a first signal in response to a predetermined concentration of a predetermined component being sensed in exhaust gases discharged from said exhaust purifying device;

a controller electrically connected to said sensor for producing a second signal in response to said first signal from said sensor; and

regulating means electrically connected to said controller and connected to said secondary air supply means for controlling said secondary air supply means in response to said second signal, whereby said secondary air supply means supplies the optimal amount of secondary air into the portion upstream of said exhaust purifying device in said exhaust passage, said regulating means comprising,

a three way solenoid valve electrically connectable and respondable to said controller and communicating with said air passage in response to said second signal from said controller, said three-way solenoid valve including a solenoid coil electrically connected with said controller and provided with a bore inside thereof, said coil being variably energizable by either polarity of said second signal and the energizing magnitude of said second signal, an atmospheric chamber adjacent to said bore and provided with an air inlet port communicating with the atmosphere, a vacuum chamber adjacent to said atmospheric chamber through a partition wall having an opening therethrough and provided with a vacuum inlet port communicating with said air intake passage and a vacuum outlet port communicating with said diaphragm assembly, an elongate permanent magnet plunger slidably disposed in said bore inside of said solenoid coil, said plunger being reversably movable therein in dependence on the polarity of solenoid coil and in response to the energizing signal magnitude of said solenoid coil, biasing means biasing said plunger at both ends thereof for holding it at neutral position, and a needle valve integrated with said plunger and being movably disposed in said opening of said partition wall so as to determine the opening area of said opening in accordance with the movement of said plunger,

a diaphragm assembly communicating with said air intake passage through said three-way solenoid valve for actuation by the vacuum regulated by said solenoid valve, and

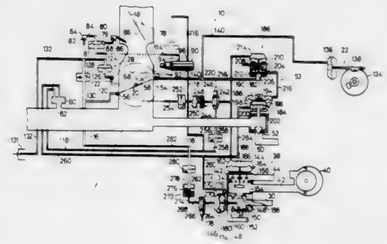
a relief valve mechanically connected to said diaphragm assembly, said relief valve communicating with said air supply means for control of said air supply means in response to said second signal from said controller.

3,962,868

EXHAUST GAS PURIFYING SYSTEM FOR USE IN INTERNAL COMBUSTION ENGINE

Noboru Matumoto; Takao Nonoyama, both of Toyota; Tutomu Tomita, Okazaki, and Yukio Suzuki, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Sept. 12, 1974, Ser. No. 505,572
Claims priority, application Japan, May 24, 1974, 49-57805; May 24, 1974, 49-57806
Int. Cl.² F02M 25/06; F02B 75/10
U.S. Cl. 60—278 10 Claims



1. An exhaust gas purifying system for use in an internal combustion engine, which is provided with an air cleaner, a suction pipe connected to said air cleaner, a choke valve and a throttle valve provided in said suction pipe and means for attaching the throttle valve for movement within the suction pipe, an exhaust manifold and a catalyst converter connected to said manifold, the throttle valve having an idle opening position at which the throttle valve is substantially closed and the engine is in the condition of normal idle running, the throttle valve also having a throttle opening position wherein the throttle valve is substantially open, comprising:

a first port provided between the idle opening position of said throttle valve in said suction pipe and the throttle opening position;

a second port provided in said throttle opening position of said throttle valve in said suction pipe;

a third port provided on the upstream side but in the vicinity of means for attaching the throttle valve in said suction pipe;

a vacuum ignition advancer adapted to be operated due to a negative pressure introduced through said first port;

a throttle positioner adapted to be operated due to negative pressure introduced through said second port for temporarily preventing the throttle valve from assuming the idle opening position;

a choke opener adapted to be operated due to a negative pressure on the downstream side of said suction pipe and a fast idle device;

means for introducing the negative pressure prevailing on the downstream side of said suction pipe, to said choke opener and said fast idle device;

means for controlling the introduction of the negative pressure to the fast idle device according to the temperature at said internal combustion engine;

an air switching device provided with first and second valves;

an air feed pipe connecting said air switching device to said air cleaner;

a pipe for feeding back air from said air cleaner through said first valve to said air cleaner therethrough;
a pipe for feeding air from said air cleaner by way of said first and second valves to said exhaust manifold therethrough;
a pipe for feeding air from said air cleaner by way of said first and second valves to said catalyst convertor;
a first diaphragm mechanism for actuating said first valve;
a second diaphragm mechanism provided with a diaphragm having an orifice therein, and first and second diaphragm chambers positioned on the opposite sides of said diaphragm;
means for introducing a negative pressure prevailing on the downstream side of said suction pipe to the diaphragm chamber in said first diaphragm mechanism;
means for controlling the introduction of a negative pressure to said diaphragm chamber in said first diaphragm mechanism according to the negative pressure fed through said third port as well as to the temperature of said internal valves;
an air feed pipe connecting said air switching device to said air cleaner;
a pipe for feeding back air from said air cleaner through said first valve to said air cleaner therethrough;
a pipe for feeding air from said air cleaner by way of said first and second valves to said exhaust manifold therethrough;
a pipe for feeding air from said air cleaner by way of said first and second valves to said catalyst convertor;
a first diaphragm mechanism for actuating said first valve.
a second diaphragm mechanism provided with a diaphragm having an orifice therein, and first and second diaphragm chambers positioned on the opposite sides of said diaphragm;
means for introducing a negative pressure prevailing on the downstream side of said suction pipe to the diaphragm chamber in said first diaphragm mechanism;
means for controlling the introduction of a negative pressure to said diaphragm chamber in said first diaphragm mechanism according to the negative pressure fed through said third port as well as to the temperature of said internal combustion engine;
means for controlling the pressure in the second diaphragm chamber in said second diaphragm mechanism according to the negative pressure introduced through said second opening as well as to the temperature at said internal combustion engine; and
means for introducing a negative pressure prevailing on the downstream side of said suction pipe to said first diaphragm chamber in said second diaphragm mechanism.

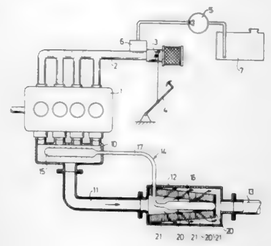
3,962,869

EQUIPMENT FOR EXHAUST GAS DETOXIFICATION IN INTERNAL COMBUSTION ENGINES

Gunter Wossner, Esslingen, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Aug. 28, 1973, Ser. No. 392,311
Claims priority, application Germany, Sept. 4, 1972, 2243428
Int. Cl.² F01N *3/14*
U.S. Cl. 60—298 **3 Claims**

1. In equipment for exhaust gas detoxification of internal combustion engines of the type that includes an exhaust system with an exhaust manifold and an exhaust pipe and at least one thermal or catalytic reactor within the exhaust system, the improvement comprising: a heat pipe within which a working fluid flows, said heat pipe containing three zones, a first zone serving as an evaporation zone, said evaporation zone being disposed in the vicinity of the exhaust valves of the internal combustion engine for accepting heat from the exhaust gas, a second zone serving as the transport zone for the transport of the working medium between the first and third zones, said second zone being of flexible construction, extending along the outside of the exhaust pipe and having insulating material surrounding the outer surface of the respective portion of the heat pipe to substantially prevent heat flow from the second zone to its surroundings, and a third zone serving as a condensation zone and giving off heat to its surroundings, said con-



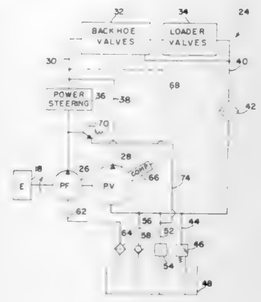
densation zone being disposed within the reactor; and a radially permeable capillary tube formed as a helically wound wire lying within the heat pipe such that through and along its interior the working medium flows in a vapor phase towards the condensation zone and along its outside the working medium flows in a liquid phase toward the evaporation zone.

3,962,870

VARIABLE VOLUME DUAL PUMP CIRCUIT

Richard J. Lech, Lockport, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Apr. 23, 1975, Ser. No. 570,974
Int. Cl.² F15B *13/09*
U.S. Cl. 60—428 **7 Claims**



1. In a hydraulic fluid control circuit for use on a vehicle having an engine means capable of providing driving means, a work circuit composed of a plurality of cylinders, a reservoir and a conduit means for distributing fluid flow, the improvement comprising:
a fixed displacement pump being driven by said driving means for providing fluid to said work circuit by means of said conduit means;
a variable displacement pump being driven by said driving means and providing fluid to said work circuit by means of said conduit means;
an actuating compensator for effecting the displacement output of said variable displacement pump communicating with the output of said variable displacement pump and said conduit means and responsive to fluid pressure in said conduit means whereby higher pressure in said conduit means actuates said actuating compensator to decrease the stroke of said variable displacement pump and whereby low pressure in said conduit means actuates said actuating compensator to increase the stroke of said variable displacement pump;

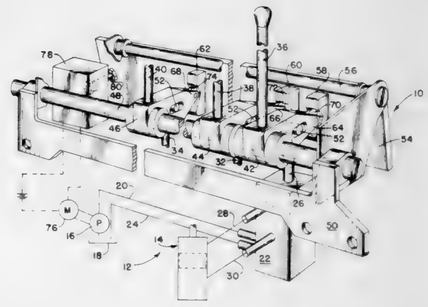
a relief valve responsive to relieve pressure in said conduit means at a pressure higher than the pressure needed to fully destroke said variable displacement pump whereby actuation of said relief valve will allow fluid being pumped by said fixed displacement pump to be passed to the reservoir.

3,962,871

CONTROL MEANS ADJUSTABLY SYNCHRONIZING OPERATION OF A SINGLE PUMP WITH A PLURALITY OF CONTROL VALVES

James G. Blaha, and Richard C. Maher, both of Painesville, Ohio, assignors to Towmotor Corporation, Mentor, Ohio

Filed Apr. 30, 1975, Ser. No. 572,995
Int. Cl.² F15B *15/18, 11/16*
U.S. Cl. 60—433 **7 Claims**



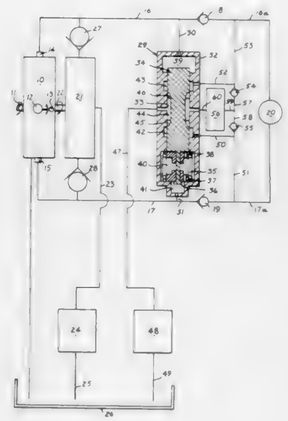
1. In a hydraulic circuit for operating a plurality of hydraulic motors by a single pump, a separate valve being operable to communicate actuating fluid to each respective motor, each of the valves being operable by a separate movable actuating element, the single pump under pressure being in communication with each of the valves, synchronizing means for initiating operation of the pump simultaneously with movement of any one of the valves to communicate fluid from the pump to one of the motors, comprising
a movable gang plate including means for initiating and terminating operation of the pump in response to movement of the gang plate about a fixed pivot point,
a separate cam shoe being associated with each of the actuating elements for the respective control valves, each of the cam shoes forming an actuating surface arranged generally perpendicular to the fixed pivot axis of the gang plate,
means adjustably securing the separate cam shoes to the gang plate, and
a synchronizing lever connected with each actuating element for the respective control valves, each synchronizing lever having a bearing means arranged for engagement with one of the actuating surfaces upon the cam shoes, the synchronizing levers being pivotably movable in response to operation of the respective control valves by their actuating elements to move the bearing means along the actuating surfaces, each of the actuating surfaces having a configuration formed along a plane perpendicular to the fixed pivot of the gang plate for moving the gang plate and causing operation of the single pump in synchronization with the movement of each of the control valves.

3,962,872

HYDROSTATIC TRANSMISSION MIXED LOOP SYSTEM

Tadeusz Budzich, 80 Murwood Drive, Moreland Hills, Ohio 44022

Filed Mar. 3, 1975, Ser. No. 554,619
Int. Cl.² F15B *15/18*
U.S. Cl. 60—453 **38 Claims**



1. A fluid power transmission and control system having a variable delivery fluid pump and a fluid motor, said pump and said motor each having fluid conducting port means and a system reservoir, the improvement which comprises, a fluid distributing and control system interposed between said fluid conducting port means of said pump and said motor, said distributing and control system including a suction fluid conducting means interconnecting said pump and said reservoir to deliver from said reservoir full suction flow requirements of said variable delivery pump, means for phasing full suction flow requirements of said variable delivery pump transmitted through said suction fluid conducting means to a low pressure fluid conducting port means of said pump, a motor exhaust fluid diverting means to selectively divert full flow of motor exhaust fluid to the reservoir, a motor speed synchronizing means to synchronize the motor speed with the fluid flow from the pump, said motor exhaust diverting means and said motor speed synchronizing means including means to operate said motor exhaust diverting means and said motor speed synchronizing means in response to the pressure of the fluid supplied from the pump to the motor.

3,962,873

SOLAR STEAM GENERATOR

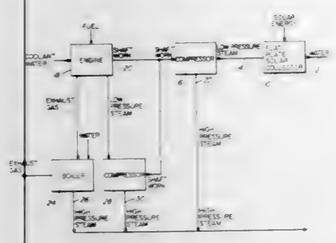
Jerry P. Davis, Concord, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed May 20, 1974, Ser. No. 471,417
Int. Cl.² F03G *7/02*
U.S. Cl. 60—641 **8 Claims**

1. A method for producing process steam comprising the steps of:
a. generating steam by non-focusing solar collector means at pressures below the minimum pressure for useful process steam;
b. pressurizing steam from said solar collector means by a mechanical compressor;
c. driving said compressor by engine means energized as a

result of fuel consumption; and

d. producing and pressurizing steam in addition to the steam



from said solar collector means by using waste heat from said engine means.

3,962,874

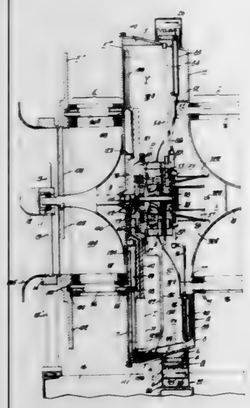
ROTARY HEAT ENGINE POWERED SINGLE FLUID COOLING AND HEATING APPARATUS

William A. Doerner, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 316,851, Jan. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 277,902, Feb. 22, 1972, abandoned. This application Mar. 12, 1975, Ser. No. 557,875

Int. Cl.² F25B *3/00*; **F01K** *11/04*

U.S. Cl. 60—669 **16 Claims**



1. Rotary closed Rankine cycle engine powered heating and cooling apparatus utilizing a single fluid for both engine power and refrigeration comprising

a cylindrical housing mounted for rotation about the axis thereof including an internal boiler for the engine power portion of said single fluid,

means for heating the fluid in said boiler to generate pressure power fluid vapor therein,

means subdividing the interior of said rotatable housing to provide a high pressure fluid compartment and a low pressure fluid compartment,

a first expander in said housing for expanding the pressure power fluid generated in the boiler and discharging the expanded fluid to the high pressure compartment of the housing, including a coaxial driving member rotatably driven at a first predetermined speed by said power fluid,

a compressor rotatably mounted coaxially in the housing driven by said first expander driving member and operable to compress the refrigerant portion of the single fluid in said low pressure fluid compartment and discharge the compressed refrigerant to said high pressure compartment of the housing,

a condenser mounted coaxially of the housing and rotatable therewith comprising a plurality of axially spaced radial annular fins having heat exchange tubes extending longitudinally therethrough an communicating with the high pressure compartment of the housing to receive and condense therein the power and refrigerant portions of said single fluid discharged from the first expander and compressor,

a second expander in said housing for expanding the refrigerant portion of the fluid condensed in said condenser,

means for dividing and supplying the liquid condensed in the condenser to the boiler and to said second expander in predetermined proportions,

an evaporator mounted coaxially of the housing and rotatable therewith comprising a plurality of axially spaced annular fins having heat exchange tubes extending longitudinally therethrough and communicating with the low pressure compartment of the housing to receive the vaporize therein the refrigerant portion of the fluid discharged from said second expander and return the vaporized refrigerant portion to the low pressure compartment of the housing.

and means operable to rotationally drive the housing, condenser and evaporator as a unit at a second predetermined speed operable to cause a gaseous heat exchange fluid to be conveyed and accelerated by viscosity shear forces outwardly between the fins of the condenser and evaporator to the velocity providing optimum heat exchange between said gaseous fluid and the power and refrigerant portions of the fluid in the heat exchange tubes of the condenser and evaporator.

3,962,875

OIL FENCE HAVING A LIMITED FLEXIBILITY

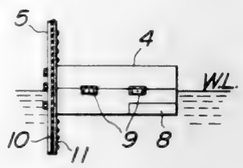
Kuninori Aramaki; Yasuharu Kawaguchi, both of Yokohama, and Hiroshi Kawakami, Kamakura, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 373,222, June 25, 1973, Pat. No. 3,867,817. This application Oct. 23, 1974, Ser. No. 517,576

Claims priority, application Japan, June 29, 1972, 47-64431

Int. Cl.² E02B *15/04*

U.S. Cl. 61—1 F **2 Claims**



1. An oil fence having a limited flexibility in the transverse direction, said oil fence comprising:

a. at least three rigid floats arranged side by side in the longitudinal direction of the fence;

b. a rigid planar skirt attached to a first end of each of said rigid floats along the longitudinal direction of the fence, each of said first ends of said rigid floats being adjacent the first ends of the adjacent floats, said rigid planar skirts being dimensioned to leave a gap between each adjacent pair of rigid planr skirts in the longitudinal direction of the fence, and no skirt being attached to the end of each of said rigid floats opposite the first end;

c. a flexible membrane attached to each adjacent pair of said rigid planar skirts to close the gap therebetween, whereby said rigid planar skirts and said flexible membranes attached to said rigid floats will form a continuous wall capable of inhibiting floating matter from moving thereacross; and

d. hinge means for pivotally connecting each pair of adjacent floats, each of said hinge means comprising a pair of core metal plates, each of which is connected to one of said adjacent floats adjacent to the hinge axis, reinforcing cords wound around said metal plates and crossing the hinge axis transversely thereto, and a vibration-absorbing elastomeric body surrounding said metal plates and said reinforcing cord, said hinge means being rigid so as to permit relative rotational motion about the hinge axis but to substantially prevent relative rotational motion about axes perpendicular to the hinge axis, whereby each pair of adjacent floats is swingable about an axis therebetween which is substantially perpendicular to the longitudinal direction of the fence, permitting the fence to follow any variation of the wave contour on the water surface, but the fence is restricted from flexing in the longitudinal direction of the fence.

3,962,876

FISHWAY

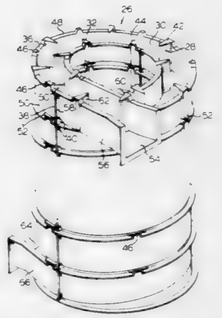
Adrian Phillips, Toronto, Canada, assignor to Aeroceanics Fishways Corporation, Scarborough, Canada

Filed July 15, 1974, Ser. No. 488,380

Claims priority, application United Kingdom, Oct. 6, 1973, 46773/73

Int. Cl.² E02B *8/08*

U.S. Cl. 61—21 **9 Claims**



1. A fishway comprising a channel having spaced-apart side walls and an interconnecting bottom wall for conducting a flow of water therethrough, a plurality of vortex generators formed alternately on the channel side walls a longitudinal distance apart about equal to the channel width by baffles extending from the channel side walls across the channel about one-quarter to about one-half the channel width for providing interconnected reversing vortices in the flow stream of water along the channel, said vortices extending substantially across the channel width, whereby alternately reversing cross-stream water flows and upstream water flows are created, with a minimized downstream flow, to assist fish in upstream travel by use of the said cross-stream and upstream water flows.

3,962,877

OFF-SHORE POWER PLANT

Peter Schiemichen, Hunxe, Germany, assignor to Deutsche Babcock & Wilcox Aktiengesellschaft, Oberhausen, Germany

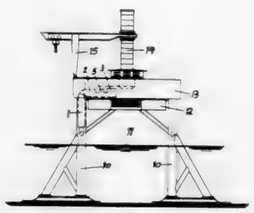
Filed Mar. 6, 1975, Ser. No. 555,898

Claims priority, application Germany, Mar. 16, 1974, 2412662

Int. Cl.² F02C *7/08*; **E02B** *17/00*; **B63B** *35/02*

U.S. Cl. 61—46.5 **9 Claims**

1. An off-shore power plant comprising, in combination, support means for carrying the components of said power plant, and having hollow interior chamber means, steam generator means in said support means; combustion chamber means within said interior chamber means of said support means and having flue gas smokestack means and steam duct means, said combustion chamber means being connected to said steam generator means and operated at superpressure; gas turbine means connected to said flue gas smokestack means; steam turbine means connected to said steam duct means; platform means carried by said support means and having a plurality of decks, said gas turbine and said steam turbine means being located on one of said decks.



3,962,878

STABILIZATION OF MARITIME STRUCTURES

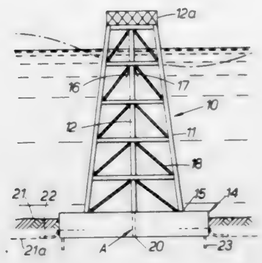
Frode Johan Hansen, Kingswood, England, assignor to Redpath Dorman Long (North Sea) Limited, Bedford, England

Filed July 17, 1974, Ser. No. 489,392

Claims priority, application United Kingdom, July 20, 1973, 34680/73; Oct. 9, 1973, 47095/73

Int. Cl.² E02B *17/00*

U.S. Cl. 61—46.5 **11 Claims**



1. A free standing maritime platform assembly incorporating a foundation raft for founding in water on a sea bed, said raft having underneath it an impermeable base surface, and remote from the edge of that surface an opening, a duct connected between that opening and a reservoir means associated with said platform assembly, and venting means connected to and communicating with the reservoir, said venting means including one way valve means responsive to the movement of waves and capable of permitting the egress of water from the reservoir if the trough of a wave passes over the raft, which one way valve is located at an elevation above said raft and below the lowest mean water level envisaged, whereby pore water pressure at at least one point beneath the raft may be reduced with respect to the hydro-static pressure appropriate to the external depth of water below the mean level of the water in which the raft is to be founded.

3,962,879

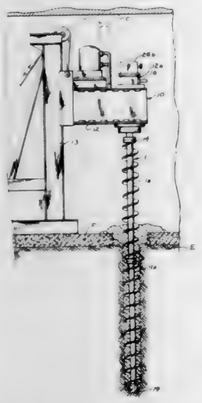
REINFORCED PILE IN EARTH SITUS AND METHOD OF PRODUCING SAME

Lee A. Turzillo, 2078 Glengary Road, Akron, Ohio 44313

Continuation-in-part of Ser. No. 356,760, May 3, 1973, abandoned. This application Sept. 16, 1974, Ser. No. 506,171

Int. Cl.² E02D 5/24

U.S. Cl. 61—53.52 **27 Claims**



1. A method as for forming a concrete pile or like column in an earth situs, comprising the steps of: drilling a first one of a plurality of relatively short sections of a continuous flight auger in screwing direction into the situs, to form a cavity of correspondingly short axial extent; progressively fixedly attaching additional such auger sections to the upper end of the auger to extend the length thereof, and likewise progressively repeating the drilling operation, thereby to extend the cavity depth by increments to requisite full depth thereof; rotating the extended auger in screwing direction within the full-depth cavity to remove the augered earth outwardly therefrom, while retaining the extended auger within the full depth cavity; feeding self-hardenable fluid cementitious material into the cavity to fill the same; and allowing such fluid cementitious material within the cavity to harden as a columnar body with such auger embedded therein.

3,962,880

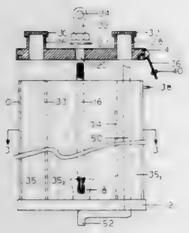
COLUMNS FOR PLATFORMS, PIERS, CAUSEWAYS AND THE LIKE, AND METHOD OF ERECTING SAME

Rud J. Babor, N. Mountain Ave., Bound Brook, N.J. 08805

Filed Aug. 5, 1974, Ser. No. 494,705

Int. Cl.² E02D 7/24

U.S. Cl. 61—53.74 **6 Claims**



4. A supporting column for use in a body of water, comprising

a hollow casing having a central bore closed at one end, and adapted to have said one end embedded in the bottom of a body of water,

at least two spaced partitions each of which extends though and divides said central bore into at least three vertical compartments, each of which extends without interruption between said opposite ends,

a first end cap fixedly secured across one end of said casing and operatively closing said one end of said bore,

a further end cap removably secured over the opposite end of said casing releasably to close the opposite end of said bore,

a duct carried by said casing and extending under said first end cap supplying compressed air beneath said casing,

one of said compartments being disposed centrally of said casing, and

a rigid pillar removably mounted in, and extending between opposite ends of said one compartment, and

said duct having a vertical portion extending through another of said compartments and a horizontal portion extending beneath said first end cap.

3,962,881

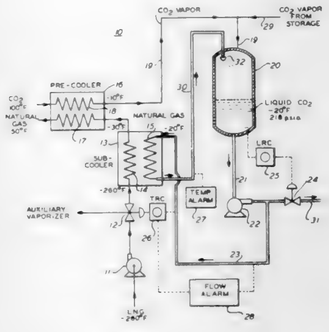
LIQUEFACTION OF A VAPOR UTILIZING REFRIGERATION OF LNG

Allen V. Muska, Berkeley Heights, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Feb. 19, 1974, Ser. No. 443,596

Int. Cl.² F25J 1/00

U.S. Cl. 62—9 **12 Claims**



1. A method of condensing a normally gaseous, cryogenic substance having a boiling point above the boiling point of liquefied natural gas from a vapor phase to a liquid phase comprising the steps of providing said substance in the liquid phase, passing said liquid phase countercurrently in heat exchange relation with liquefied natural gas to sub-cool said liquid phase; introducing the vapor phase of said substance into a condensing vessel; and separately spraying the sub-cooled liquid phase of said substance into said vessel in direct contact with said introduced vapor to condense said vapor to the liquid phase.

3,962,882

METHOD AND APPARATUS FOR TRANSFER OF LIQUEFIED GAS

David E. Gee, Tarporley, and Robert V. Worboys, Chester, both of England, assignors to Shell Oil Company, Houston, Tex.

Filed Sept. 11, 1974, Ser. No. 505,128

Claims priority, application United Kingdom, July 24, 1974, 35195/73

Int. Cl.² F17C 7/02

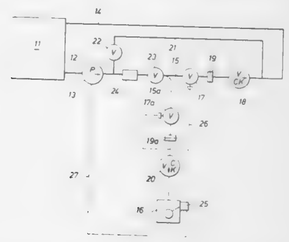
U.S. Cl. 62—55 **5 Claims**

1. A method of transferring a liquefied gas from a first container to a second container without removal of vapor from the second container which comprises the following sequential steps:

a. cooling a multiple part conduit having a disconnectable coupling between two parts thereof by removing liquefied gas from said first container, pressurizing the removed liquefied gas and returning the pressurized liquefied gas to said first container through said conduit;

b. breaking said conduit at the coupling thereof into first and second parts and establishing communication between said first container and said second container through the first part of the cooled conduit while closing off the second part thereof; and

c. transferring liquefied gas under pressure from said first container to said second container through said first part of said conduit.



3,962,883

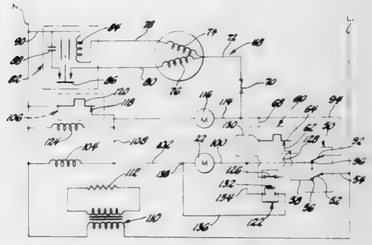
SLAB COMPLETION TIME DELAY RELAY

Robert Smith, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 2, 1975, Ser. No. 592,649

Int. Cl.² F25C 1/12

U.S. Cl. 62—137 **3 Claims**



1. In an ice maker of the type including a mechanical compressor refrigerant system having a refrigerated surface for ice build up and water circulation means operative during an ice making mode to pass water over the refrigerated surface and further including a hot gas defrost system for directing hot refrigerant gas from the compressor to the surface to remove an ice build up therefrom for collection in a bin, the improvement comprising: first circuit means for energizing the compressor including a bin level control switch; second circuit means for energizing the water pump including said bin level control switch and a normally closed ice thickness sensor switch; third circuit for energizing the hot gas defrost system including said ice thickness sensor switch and operative to maintain the hot gas defrost system off when the ice thickness sensor switch is closed; a thermal relay switch having a bimetallic element and a heater; means including said ice thickness sensor switch for maintaining said heater energized to bias said bimetallic element closed during an ice making mode of operation wherein the bin level switch has detected a maximum ice level in the bin, said closed bimetallic element bypassing said bin level control switch to maintain the compressor and water circulation means operative following a build up of a maximum level of ice in the bin; said ice thickness sensor switch being responsive to a desired ice build up to terminate water circulation and to condition said third circuit means to initiate a defrost cycle of operation; said heater being conditioned during the defrost cycle of operation to reduce heat flow to the closed bimetallic element to produce a time delayed energization of said hot gas defrost system through the element dependent upon the cool down characteristics of said bimetallic element to produce a flow of hot gas across the refrigerated surface to cause release of the ice build up therefrom, said bimetallic element opening following the predetermined time delay to concurrently terminate the defrost cycle and maintain deenergization of the compressor and water circulation means.

3,962,884

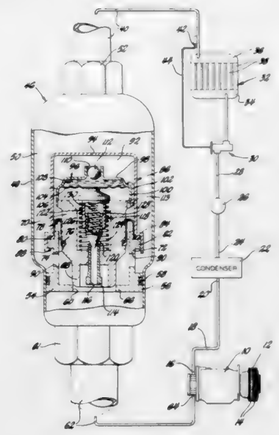
PILOTED FREEZE THROTTLING VALVE

Richard E. Widdowson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1974, Ser. No. 526,741

Int. Cl.³ F25B 41/04

U.S. Cl. 62—217 **2 Claims**



1. A refrigerant control valve for an air conditioning system including an evaporator and a compressor comprising: an elongated housing defining an interior space and having an inlet and an outlet at either end adapted to be connected respectively to the evaporator and the compressor for fluid flow through the elongated housing; a partition member extending across said interior space between said inlet and outlet and having an aperture therethrough encircled by a valve seat portion of said member; said partition member having an annular wall portion encircling said valve seat portion inward from the peripheral edge of said partition member and extending axially toward the inlet end of the housing; a piston valve reciprocally supported within said annular wall portion of said partition member in coaxial alignment with said inlet, outlet and aperture and having a reduced diameter end portion movable with respect to said valve seat portion of said partition member to control refrigerant flow through said aperture; enclosure-forming means including said partition member and said piston valve defining a pressure control chamber whereby a pressure force on said piston valve is produced to position the valve with respect to said valve seat; said enclosure-forming means having a restricted opening between said control chamber and an upstream portion of said interior space for admitting refrigerant to the control chamber and a bleed passage between said control chamber and a downstream portion of said interior space for discharging refrigerant from said control chamber; a bleed valve operable associated with said bleed passage for controlling refrigerant discharge from said control chamber to requlate the pressure in said control

chamber; a temperature responsive sensor-actuator including a housing having a rigid walled portion and a resiliently walled portion with said walled portions closely spaced to define an interior of relatively small volume filled with water whereby ice formation in said interior causes outward movement of said resilient wall with respect to said rigid wall; said sensor-actuator being supported at a peripheral edge of its rigid wall and with said resilient wall adjacent said bleed valve so that movement of said resilient wall caused by ice formation in said sensor interior produces a closing force on said bleed valve whereby the resultant restriction of fluid flow through said bleed passage increases the pressure in said control chamber to produce a pressure force tending to move said piston valve so as to block flow through said aperture in said partition member.

3,962,885

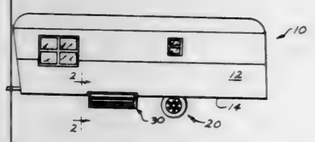
AIR CONDITIONING SYSTEM FOR A MOBILE HOME

Bernard W. Schoenbachler, and Bruce L. Ruark, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Mar. 6, 1975, Ser. No. 555,798

Int. Cl.² B60H *3/04*

U.S. Cl. 62—239 **4 Claims**



1. An air conditioning system including a mobile home having at least one zone to be air conditioned and a base structure, having longitudinally extending spaced parallel support beams being located inwardly of the outer walls of said mobile home for providing a support area therebetween, said distribution means being located between said support beams, said system comprising:

an air conditioning unit including a cabinet being adapted to be removably attached to said mobile home, said cabinet including air moving means, air delivery outlet one one of said cabinet side walls and an air return outlet in the top wall of said cabinet;

said air distribution means including at least one air inlet for receiving air from said air conditioning unit and an air outlet for delivering air into said mobile home zone;

mounting means including an adaptor plate attached to said base structure in said support area for removably receiving said air conditioning unit, a plate attached to said adaptor plate being positioned adjacent said air delivery outlet including a first opening in alignment with said air delivery outlet and, a second opening in said adaptor plate in alignment with said air return outlet when said unit is located in said mounting means;

air communicating means including a first passageway extending from said first opening across the lower distal end of said support beam to said air distribution means air inlet, and a second passageway for connecting said second opening with said mobile home zone so that said air moving means recirculates air through said mobile home.

3,962,886

FREEZER ICE TRAY CONSTRUCTION

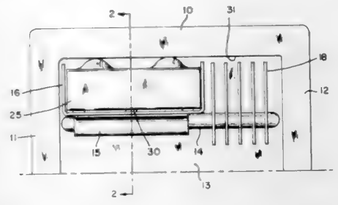
John Rune Hammar, Spanga, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Feb. 5, 1975, Ser. No. 547,266

Claims priority, application Sweden, Feb. 7, 1974, 7401617

Int. Cl.² F25C *1/04*

U.S. Cl. 62—340 **7 Claims**



1. The combination of a freezing compartment of a refrigerator and an ice tray therein provided with a cover comprising: said ice tray having a peripheral flange and said cover being provided with a bent edge rear flange for engaging a part of the peripheral flange of said ice tray; said freezing compartment having a floor and a ceiling; and resilient means on said cover projecting upwardly therefrom; the tray, cover and resilient means having such a height dimension that the ceiling and floor of said freezing compartment act to maintain the cover and its bearing surfaces pressed to said peripheral flange of the ice tray.

3,962,887

INDUSTRIAL REFRIGERATION PLANTS OF THE ABSORPTION TYPE

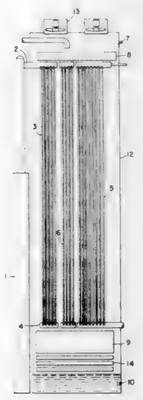
Leon Leopold Breslau Bressendorff, Vanlose, Denmark, assignor to A/S Atlas, Ballerup, Denmark

Filed Mar. 10, 1975, Ser. No. 557,102

Claims priority, application United Kingdom, Mar. 11, 1974, 10748/74

Int. Cl.² F25B *15/00*

U.S. Cl. 62—485 **5 Claims**



1. In a refrigeration plant of the absorption type comprising a circulation system for refrigerant, a circulation system for absorption liquid and chilled surfaces of the absorber, condenser and additional coolers, said surfaces comprising water-sprinkled tube batteries, the improvement comprising that the tube batteries are arranged vertically and in parallel and comprise a common sprinkling system for distributing the water as a film on the outside of the tubes.

3,962,888

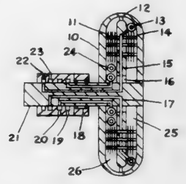
HEAT EXCHANGER

Michael Eskeli, 7994-41 Locke Lee, Houston, Tex. 77042

Continuation-in-part of Ser. No. 393,571, Aug. 31, 1973. This application Apr. 3, 1975, Ser. No. 564,615

Int. Cl.² F25B *3/00*; **F25D** *9/00*

U.S. Cl. 62—499 **3 Claims**



1. In a rotor wherein a working fluid is pressurized by centrifugal force in a set of outward extending passageways, and wherein said working fluid is expanded within a set of inward extending passageways with an accompanying pressure decrease, with said outward extending passageways extending away from a center of rotation of said rotor, and with said inward extending passageways extending inward toward the center of rotation of said rotor, with said outward extending and said inward extending passageways being in communication via passages at their outward ends to allow said working fluid to circulate, the improvement comprising a working fluid heat exchanger placed within said rotor to be in heat exchange relationship with said working fluid while said working fluid is being pressurized within said outward extending passageways, and to be in heat exchange relationship with said working fluid while said working fluid is being expanded within said inward extending passageways thus providing heat exchange between said working fluid being pressurized and said working fluid being compressed.

3,962,889

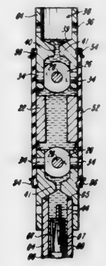
LUBRICATED JOINT ASSEMBLY

George B. Stillwagon, Jr., Dayton, Ohio, assignor to Kenneth G. Fraser, Green Valley, Ariz., a part interest

Filed July 11, 1974, Ser. No. 487,720

Int. Cl.² F16D *3/84*

U.S. Cl. 64—32 F **12 Claims**



1. In a lubricated joint assembly of the type comprising a torque transmitting joint mechanism enclosed by boot means containing a lubricant, said boot means sealingly engaged to said joint mechanism, the improvements wherein said boot means comprises an elastic material, wherein said lubricant supports said boot means in an expanded condition whereby said boot means compresses said lubricant, and wherein no substantial amount of gas resides in said boot means.

3,962,890

STRAIGHT KNITTING MACHINE COMPRISING ROTATING SLIDING HEADS

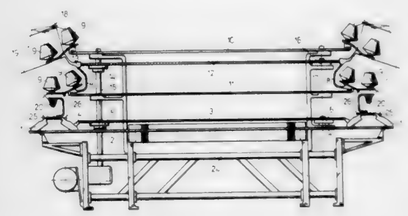
Erich Krause, Bopfingen, Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber KG, Aalen, Germany

Filed Mar. 5, 1975, Ser. No. 555,903

Claims priority, application Germany, May 13, 1974, 2423043; Nov. 29, 1974, 2456557

Int. Cl.² D04B *7/04*

U.S. Cl. 66—64 **9 Claims**



1. A straight knitting machine comprising first endless guide track means, a plurality of head means slidably mounted on said first guide track means for actuating the needles of said machine, first drive means for rotating said head means about said endless track means, second and third endless guide track means disposed above and in parallel spaced apart relation to said first endless guide track means, a plurality of spool holder means each adapted to hold a plurality of spools slidably mounted on said second and third guide track means adjacent respective head means and second drive means operatively connected to said first drive means for moving said head means and said spool holder means synchronously in parallel about said endless track means.

3,962,891

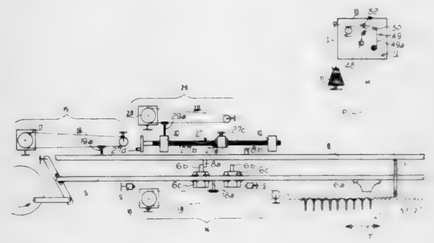
KNITTING MACHINE

Guy Charles Rouzaud, Chatenay-Malabry, France, assignor to Centre Technique Industriel dit: Institut Textile de France, Boulogne-sur-Seine and Societe Anonyme dite: Jaeger, Levallois-Perret, both of, France

Filed Mar. 20, 1975, Ser. No. 560,223

Int. Cl.² D04B *15/48*, *15/50*

U.S. Cl. 66—132 R **20 Claims**



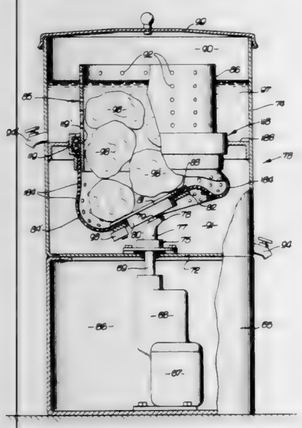
1. For a knitting machine of the type comprising a rectilinear array of needles,

gathering and shaping sinkers for forming stitches in cooperation with said needles,

a cam bar carrying a cam for actuation of said gathering sinkers,

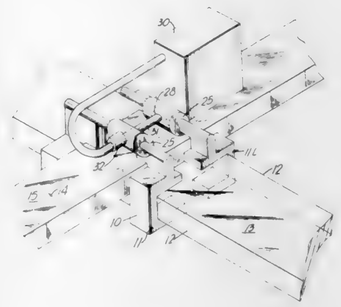
drive means driving said cam bar to reciprocate longitudinally of said rectilinear array of needles,
a thrower bar carrying a thrower which guides the yarn onto the needles in said rectilinear array thereof, and
means drivingly interlinking said cam bar and said thrower bar;
a yarn supply device operating to supply yarn to said thrower for feeding to said needles at a rate depending on the required stitch size, said yarn supply device comprising:
a yarn spool holding a supply of yarn to be knitted by said machine,
a yarn feed unit for drawing yarn from said spool and driving it towards said thrower,
a yarn take-up device for accommodating a temporary slack loop in said yarn as it is fed to said thrower, and
a fixed yarn guide located in a plane extending perpendicular to said rectilinear array of needles at a position midway along the length thereof,
the improvement wherein, said yarn feed unit includes a yarn drive member which is driven by an electrical drive system,
first speed and position sensitive means sensitive to the speed and position of said cam bar, operating to produce electrical output signals in dependence thereon,
second speed and position sensitive means sensitive to the speed and position of said thrower bar operating to produce electrical output signals in dependence thereon, and
electrical control means connected to the outputs of said first and second speed and position sensitive means and operating to control said drive member of said yarn feed unit, whereby said yarn is fed in dependence on both the speed and position of both said cam bar and said thrower bar.

3,962,892
MACHINE FOR CONTROLLED CONDITIONING OF LIQUIDS AND MIXTURES
Leslie H. Garlinghouse, 1585 Sierra Madre Villa, Pasadena, Calif. 91107
Filed May 29, 1973, Ser. No. 364,881
Int. Cl.² D06F *35/00*
U.S. Cl. 68—23 R **9 Claims**



1. A conditioner for liquid-like charges comprising a frame, a closed housing on the frame, a composite container for said charges comprising a lower flexible section located within said housing and an upper rigid section, a wobble plate mounted on the bottom of the flexible section, a wobble drive rotatably journaled in a lower wall of said housing and having a driving relationship with said wobble plate, a motor on said frame at a location below said housing, said motor having a driving connection with the wobble drive whereby to impart an oscillatory motion to the flexible section and liquid-like charge therein, both the lower flexible section and the upper rigid section being within the housing and a partition separating the interior of the housing into a lower chamber surrounding the flexible section and an upper chamber surrounding the rigid section.

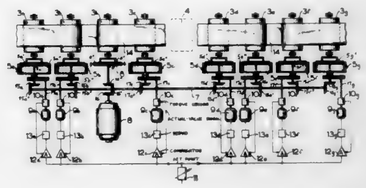
3,962,893
SAFETY SKI LOCK
Roger G. Anderson, San Francisco, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed June 16, 1975, Ser. No. 587,307
Int. Cl.² E05B *73/00*
U.S. Cl. 70—19 **3 Claims**



1. A device for latching a pair of skis in crossed relation to each other comprising
a pair of clamp members, each shaped to fit about one edge of a first ski and over a portion of the top and bottom surfaces of said first ski,
each said clamp member formed of two U-shaped sections joined together by a bar, said bar located so as to fit over a second ski resting in crossed relation to a first ski engaged by the clamp member, together
with locking means for engaging a pair of clamp members in place.

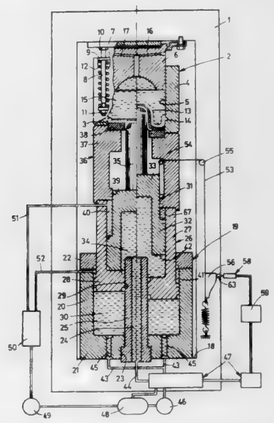
3,962,894
METHOD OF AND APPARATUS FOR STRETCHING A METAL STRIP
Oskar Noe, and Herbert Lux, both of Mulheim (Ruhr), Germany, assignors to BWG Bergwerk-und Walzwerk Maschinenbau G.m.b.H., Duisburg, Germany
Filed May 29, 1975, Ser. No. 581,767
Claims priority, application Germany, Aug. 16, 1974, 2439260
Int. Cl.² B21D *1/05, 1/02*
U.S. Cl. 72—19 **12 Claims**

1. An apparatus for stretching a continuously displaced elongated metal strip, said apparatus comprising:
a pair of spaced-apart frames;
at least two rollers mounted on each of said frames, said strip being spanned over all of said rollers;
a plurality of three-part differential gear assemblies each having a first part connected to a respective roller;
a drive motor;
a drive shaft operatively connected between the second parts of all of said gear assemblies and said drive motor;
a plurality of compensating motors each operatively connected to the third part of a respective assembly; and



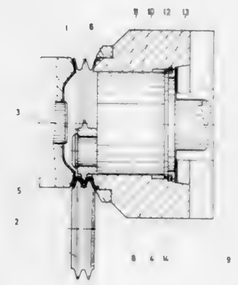
a plurality of control means each connected to a respective compensating motor for operating same so that it applies a predetermined torque to the respective third part.

3,962,895
FLUID FORMING APPARATUS HAVING CONTROLLABLY VARIABLE FORMING PRESSURE
Nils Folke Rydell, Molndal, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden
Filed Dec. 4, 1974, Ser. No. 529,502
Claims priority, application Sweden, Dec. 5, 1973, 7316381
Int. Cl.² B21D *22/12*
U.S. Cl. 72—63 **8 Claims**



1. A fluid forming apparatus having a forming tool comprising a pair of rigid tool parts that are movable in opposite directions, a piston element for each tool part, a cylinder for each piston element, and means defining a constant-volume pressure cavity in which there is confined a quantity of fluid by which force can be exerted over one face of a sheet metal blank to shape the blank to a configuration determined by the forming tool, and wherein each of the tool parts is constrained to move with its piston element and each piston element cooperates with its cylinder to define a pressure chamber at the side of the piston remote from the pressure cavity means, said apparatus being characterized by:
A. pressure control valve means connected with a source of fluid under pressure and having a connection with the pressure chamber of each of said cylinders, said valve means being responsive to demand value signals
1. to direct fluid from said source to one of said pressure chambers, and thus cause one of said tool parts to be moved in a direction inward of the pressure cavity means with resultant displacement of fluid therein, and
2. to maintain pressure in the other pressure chamber at a value signified by a prevailing demand value signal applied to the valve means, while permitting outflow of fluid from said other pressure chamber, so that movement of the other tool part in the opposite direction, due to displacement of fluid in the pressure cavity means, is yieldingly restrained and fluid in the pressure cavity remains under a pressure determined by the demand value signal; and
B. signal generating means for producing pressure demand value signals to which said valve means can respond and which correspond to the pressures desired in the pressure cavity means from instant to instant during a forming operation as related to the instantaneous relative positions of the forming tool parts and in accordance with a predetermined program of pressure variation, said signal generating means comprising
1. cooperating camming elements, one of which is confined to motion in opposite directions and is connected with at least one of the rigid tool parts to move in correspondence with motions of that rigid tool part, and the other of which is movable transversely to said opposite directions,
a. one of said camming elements comprising a cam having a profile denoting said program,
b. the other of said camming elements comprising a cam follower engaged with said profile, and
2. output means connected with said transversely movable camming element for producing an output having a magnitude which corresponds to the instantaneous position of said transversely movable camming element and which constitutes said demand value signal; and
C. means connecting said output means in controlling relation to said valve means.

3,962,896
METHOD OF PRODUCING V-BELT PULLEYS AND SPINNING LATHE FOR CARRYING OUT SUCH METHOD
Joachim H. Bichel, Oeventrop, Germany, assignor to Leifeld & Co., Ahlen, Germany
Filed Nov. 19, 1974, Ser. No. 525,277
Claims priority, application Germany, Nov. 23, 1973, 2358364
Int. Cl.² B21D *22/14*
U.S. Cl. 72—82 **4 Claims**



1. A spinning lathe for producing a cylindrical body having at least two V-shaped peripheral grooves comprising a rotary clamping chuck and a rotary backup disc axially movable relative to said clamping chuck for receiving therebetween said body, a shaping roller for grooving the exterior of said body, an eccentrically mounted and axially movable inner roller forming a back-up roller for the shaping roller, and means for mounting said inner roller for movement along the rotary axis of said clamping chuck.

3,962,897
METAL WORKING APPARATUS AND METHODS OF PIERCING

Lewis A. Way, and Robert C. Williams, both of Columbiana, Ohio, assignors to Columbiana Foundry Company, Columbiana, Ohio

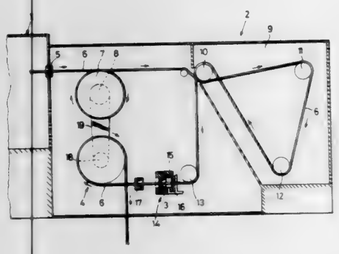
Division of Ser. No. 493,234, Oct. 5, 1965, abandoned. This application May 11, 1970, Ser. No. 36,406
Int. Cl.² B21B 17/10
U.S. Cl. 72—209 4 Claims

1. A method of piercing metal members, particularly members containing slag inclusions comprising the steps of urging said member at a temperature above about 1750°F over an as formed cast piercer point by rolling whereby said point passes through and forms an axial opening in the ingot, said point being formed of an alloy consisting essentially of about 0.015% to 2% carbon, about 5% to 65% cobalt, about 15% to 35% chromium and about up to 30% iron.

3,962,898
APPARATUS FOR THE MANUFACTURE OF WIRE

Klaus Erich Tillmann, Herborn, Germany, assignoer to Berkenhoff & Drebes Gesellschaft mit beschrankter Haftung, Herborn, Germany

Filed Apr. 22, 1974, Ser. No. 463,041
Claims priority, application Germany, Apr. 21, 1973, 2320395
Int. Cl.² B21C 1/04
U.S. Cl. 72—279 4 Claims



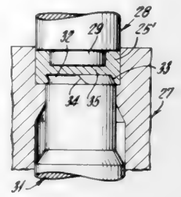
1. In an apparatus for the manufacture of wire, preferably of nonferrous wire such as brass, tombac, or bronze, for Fourdriner machine screens, said apparatus having an input and an output, the improvement comprising first draw-die means adjacent said input for effecting a first cold drawing, said first draw-die means including a first drawing roller for pulling said wire through said first draw-die means, means defining an electric resistance heating zone for applying electrical energy directly to he wire immediately following said first drawing roller, the electrical resistance of said wire effecting a heating of said wire in response to said electrical energy to anneal said wire, second draw-die means for effecting a second cold drawing immediately following said electric resistance heating zone means, said second draw-die means including a second drawing roller for pulling said wire through said second draw-die means; and

coupling means for drivingly coupling said second drawing roller to said first drawing roller, said coupling means having a characteristic of drawing said second drawing roller so that the peripheral speed thereof is higher than the peripheral speed of said first drawing roller.

3,962,899
METHOD AND APPARATUS FOR MAKING AN ECCENTRIC LOCKING COLLAR

Henry Hubbell, Southington, Conn., assignor to Textron, Inc., Providence, R.I.

Filed Mar. 26, 1975, Ser. No. 562,007
Int. Cl.² B21J 13/02
U.S. Cl. 72—334 18 Claims



1. The method of making an eccentric locking collar for locking a bearing ring or the like to a shaft, which comprises die-forming a blank of coinable metal into a cylindrical body having a central radial wall between opposed axially recessed and outwardly open end bores one of which is characterized generally cylindrical and eccentric and the other of which is concentric to the cylinder, thereby defining projecting body annuli at the ends of the blank, the eccentric-bore formation involving insertion of a die element into the blank, said die element being selected for a blank-working profile characterized by a radially outward arcuate projection fully contained within the blank-insertion region and said projection being angularly oriented for minimal radial offset from the concentric-bore axis, so that the body annulus of the eccentric bore is the result of coining into local conformity with said profile, and punching out of the central radial wall a cylindrical bore concentric with the body-cylinder axis and of radius to clear the coined eccentric bore.

3,962,900
FENCE DROPPER AND METHOD OF PRODUCTION

Gordon Francis Leiblich, Kimba, Australia (5641)

Division of Ser. No. 361,993, May 21, 1973, Pat. No. 3,865,349. This application Jan. 3, 1975, Ser. No. 538,367
Claims priority, application Australia, May 23, 1972, 9049/72
Int. Cl.² B21C 37/02
U.S. Cl. 72—379 6 Claims



1. A method of forming a fence dropper having a body portion with a plurality of tongues spaced from one another and lying beyond one edge thereof,

comprising forming a sheet metal blank into two said body portions of similar cross-sectional shape which extend away from a plane and are joined together by a flat bridging web which lies in that plane,

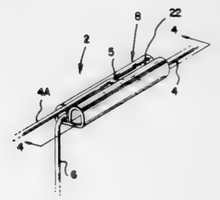
shearing the flat bridging web to simultaneously blank the profiles of said tongues in their flat form, and respective webs joining the roots of the tongues to the body portions such that each tongue is of similar size and shape, and the recess formed between a said tongue and the body portion from which it is spaced by said root and also between that said tongue and an adjacent said tongue has its size and shape similar to the tongue size and shape,

and then forming each said flat tongue to provide therein a return portion which extends forwardly of but terminates rearwardly of said plane to thereby define with said body portion a wire retaining aperture.

3,962,901
ELECTRICAL CONNECTOR TAP ASSEMBLY APPARATUS

Leslie Alan Anderson; Carmen Achille Cea, and John Maury Gentry, all of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 399,035, Sept. 20, 1973. This application July 23, 1975, Ser. No. 598,520
Int. Cl.² H01R 43/00; B21D 9/08
U.S. Cl. 72—410 9 Claims



1. In an apparatus for crimping a connecting device onto each of two wires to electrically connect said wires to each other, said connecting device being of the open-U type having sidewalls which are adapted to be formed inwardly towards each other and into surrounding relationship with said wires, said apparatus being of the type comprising crimping die means and crimping anvil means, said die and anvil means being movable relatively towards and away from each other between open and closed positions, said anvil means having a supporting surface for supporting said connecting device with said sidewalls directed generally towards said die means, said die means having forming surface portions which are opposed to said anvil means, said forming surfaces being adapted to form said sidewalls towards each other and into surrounding relationship to wires located between said die and anvil, a wire receiving slot in said die means extending transversely therein and intersecting said forming surface portions whereby wires can be positioned between said die and anvil means and can extend laterally through said slot intermediate the ends of said die means, a wire shearing member positioned between said die and anvil when said die and anvil are in said open position, said shearing member being movable relatively into said slot to shear wires extending into said slot the improvement to said apparatus comprising:

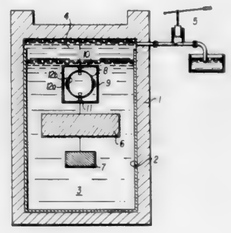
wire clearance means between said shearing member and at least one side of said slot, said clearance means extending generally in the direction of movement of said shearing member into said slot whereby,

the said end of one of said wires can be located in said clearance means and said one wire will not be sheared by said shearing member, and upon crimping said open U-type connecting device onto said wires, said wire will extend continuously into the crimped connecting device and will extend from said connecting device intermediate the ends thereof, and the other one of said wires will be severed and have its end within said connecting device to produce a tap-type electrical connection.

3,962,902
APPARATUS FOR MEASURING VARIATIONS IN FLOATABILITY OF A FLOAT DUE TO VARIATIONS IN PRESSURE

Robert R. Aquilina, Toulon; Robert A. Masson, Carqueiranne, and Norbert A. Jerez, Toulon-Mourillon, all of France, assignors to Etat Francais, represented by Delegation Ministerielle pour l'Armement, France

Filed Sept. 15, 1975, Ser. No. 613,194
Claims priority, application France, Sept. 23, 1974, 74.31947
Int. Cl.² G01N 9/08
U.S. Cl. 73—37 11 Claims



1. An apparatus for measuring variations in floatability of a float with variations in pressure, comprising:

an enclosure which is resistant to high pressures and which is filled with liquid,

means for varying the pressure of said liquid within said enclosure,

a dynamometric ring suspended within said enclosure, said ring comprising a thin elastic blade whose two ends are connected to each other,

strain gauges located substantially vertically on the side faces of the ring,

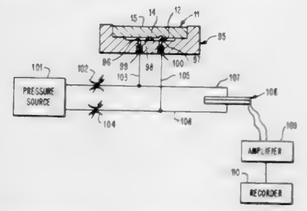
means for suspending a float from said ring,

and noncompressible ballast and means for suspending said ballast from a float suspended from said ring.

3,962,903
METHOD AND SYSTEM FOR SENSING AN IDENTIFYING MEANS

Asad Firdaus, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,263
Int. Cl.² G01B 13/22
U.S. Cl. 73—37.5 17 Claims



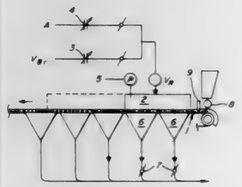
1. A system for sensing the location of a slot or the like in a surface of an element but not extending through the element including:

receiving means to receive the element;

said receiving means having a plurality of spaced restrictive openings having spaced portions of the element disposed adjacent thereto when the element is disposed within said receiving means, said receiving means having said restrictive openings disposed in spaced relation from the element disposed within said receiving means;

means to supply fluid at the same predetermined pressure along a separate path to each of said openings;
and ascertaining means to ascertain if the slot in the element is located in the surface of one of the portions of the element adjacent to one of said openings through determining the fluid pressure in each of the paths.

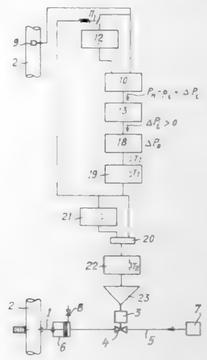
3,962,904
PROCESS FOR MEASURING, CONTROLLING AND OPTIMIZING GAS FLOW THROUGH A SINTER MIXTURE ON TRAVELLING GRATES
Alois Kilian, Frankfurt am Main, Germany, assignor to Dravo Corporation, Pittsburgh, Pa.
Filed June 6, 1975, Ser. No. 584,582
Int. Cl.² G01N *15/08*
U.S. Cl. 73—38 **14 Claims**



1. In a sintering process in which hot gases generated in a furnace by ignition of a fuel-air mixture are drawn by windboxes through the ore-mixture as it passes through the furnace on a travelling grate, the steps of:
a. determining the gas pressure in the furnace above the grate,
b. determining the rate of flow of fuel and air to the furnace,
c. adjusting at least one of said flows to maintain the differential between the gas pressure in the furnace above the grate and the pressure outside the furnace at substantially zero, and
d. determining the rate of gas flow through the ore-mixture as a function of said flows.

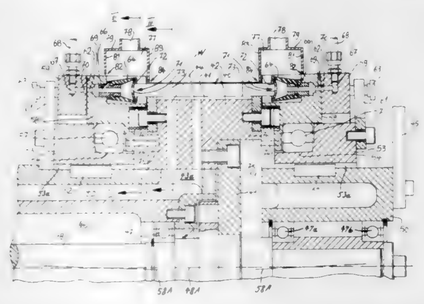
3,962,905
FLUID LEAK DETECTION PROCESS AND INSTALLATION
Philippe Jouve, Pontacq, France, assignor to Societe Anonyme dite: Societe Nationale des Gaz du Sud-Ouest, Pau, France
Filed Jan. 6, 1975, Ser. No. 538,565
Claims priority, application France, Jan. 8, 1974, 74.00617
Int. Cl.² G01M *3/28*
U.S. Cl. 73—40.5 R **13 Claims**

1. A process for the detection of a fluid leak in a pipe subdivided into sealable sections by a series of isolating valves arranged at each end of a section, said process comprising the steps of continuously detecting the instantaneous gas pressure in the pipe, producing a first output signal representative of the instantaneous pressure in the pipe; performing a first comparison cycle including the steps of continuously determining the difference in pressure between a reference signal representative of a reference pressure and the first output signal representative of said instantaneous pressure occurring in the pipe; producing a second output signal proportional to said pressure difference when the reference pressure is greater than the instantaneous pressure; comparing said second output signal with a signal representative of a predetermined pressure difference threshold value; producing a third output signal when the value of said second output signal exceeds the value of said signal representative of a predetermined pressure difference threshold value;
establishing a new reference signal representative of the instantaneous pressure in the pipe in response to said third output signal;
performing a second comparison cycle including all of the steps of the first cycle but using the new reference signal for comparison with said first output signal; and



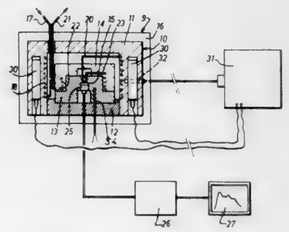
closing at least one of the isolating valves of the pipe if the signal representative of said pressure difference threshold value is again exceeded during said second comparison cycle and within a predetermined time starting from the beginning of the second comparison cycle.

3,962,906
METHOD AND APPARATUS FOR TESTING CIGARETTES OR THE LIKE
Uwe Heitmann, and Heinz-Christen Lorenzen, both of Hamburg, Germany, assignors to Hauni-Werke Korber & Co., KG, Hamburg, Germany
Filed Mar. 28, 1974, Ser. No. 455,814
Claims priority, application Germany, Apr. 6, 1973, 2317295
Int. Cl.² G01M *3/26;* **G01N** *15/08*
U.S. Cl. 73—41 **16 Claims**



1. Apparatus for testing cigarettes or analogous rod-shaped articles wherein an open-ended tubular wrapper surrounds a gas-permeable filler, comprising means for conveying the articles sideways past a testing station, said conveying means comprising a rotary member; means for passing streams of a gaseous testing fluid through the fillers of articles at said testing station whereby at least one characteristic of said streams changes during passage through the fillers of articles having defective fillers and/or wrappers, including (at least one ring-shaped carrier) apertured sealing elements adjacent to one end of each wrapper on said rotary member, said sealing elements being rotatable with said rotary member (about an axis which is inclined with respect to the axis of said rotary member so that successive increments of said carrier), and means for respectively (approach and move) moving said sealing elements toward and away from the neighboring wrapper ends during movement of said (increments) sealing elements toward and away from said testing station, (and apertured) said sealing elements (mounted in said carrier) being in register with the respective wrappers on said rotary member and each thereof being arranged to engage the filler at said one end of the registering wrapper during travel past said testing station; means for monitoring said streams to detect the changes in said one characteristic thereof; and sealing means for subjecting the exterior of at least said one end of each wrapper at said testing station to the static pressure of a gaseous sealing fluid to thereby reduce the extent of or to prevent communication between the respective fluid stream and the atmosphere.

3,962,907
VISCOMETER
André Peyrouset, Ger, and Roland Prechner, Jurancon, both of France, assignors to Ato Chimie, Courbevoie, France
Filed Apr. 9, 1975, Ser. No. 566,435
Claims priority, application France, Apr. 17, 1974, 74.13281
Int. Cl.² G01N *11/08*
U.S. Cl. 73—55 **6 Claims**



1. A viscometer comprising a metallic block defining a measuring chamber therein, pressure sensitive means in said chamber for sensing pressure variations in said chamber, conversion means for converting pressure variations sensed by said pressure sensitive means into displayable signals, heating means coupled to said block for heating said block to an adjustable predetermined temperature, liquid inlet conduit means connected to said chamber including a first coil within said block and surrounding said chamber, capillary liquid outlet conduit means connected to said chamber and including a second coil within said block and surrounding said chamber, temperature measuring means within said block for measuring the temperature of said block, whereby said temperature measuring means also measures the temperature of liquid in said chamber, and heat insulating means surrounding said block.

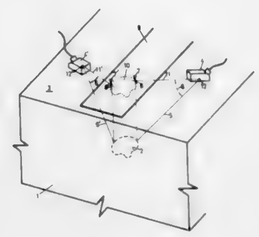
3,962,908
TRANSDUCER ARRANGEMENT FOR ULTRASONIC RAIL TESTER COUPLING CARRIAGES
Ivan L. Joy, 415 Delaware Drive, Ozawkie, Kans. 66070
Continuation-in-part of Ser. No. 445,080, Feb. 25, 1974, Pat. No. 3,937,068. This application June 30, 1975, Ser. No. 591,819
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.7 **18 Claims**

1. In an ultrasonic apparatus for progressive railroad track rail flaw testing for detecting flaws in railroad track rails including a multi-element ultrasonic test signal pulse emitting and reverse path echo receiving assembly riding on the rail head in its operative position and comprising a plurality of separate ultrasonic transducer devices mounted in a carriage adapted to be coupled to the rail head in the assembly operative position by means of damping out surface waves on the rail head, through which means the ultrasonic signals are to act, the improvement wherein:
said transducer device comprise:
a first pair of transducer devices positioned for emitting ultrasonic test signal pulses forwardly and rearwardly of the rail along the center line of the rail head in the operative position of the assembly and for receiving reverse path echos of said pulses,
a second pair of transducer devices positioned for emitting ultrasonic test signal pulses forwardly and rearwardly of the rail in the operative position of the assembly and canted in opposite directions at an angle in the range of 12° to 22° with respect to the center line of the



rail, and in the direction of the rail gauge edge and for receiving reverse path echoes of the pulses of the respective second pair of devices,
said transducer devices being located in the assembly to be disposed, in operative position of assembly, at the center of, and on top of, the top surface of the rail head and to act at an angle of incidence relative to the rail head top surface to produce in the rail as a result of their signal impulses ultrasonic waves travelling in the rail at flat angles on the order of 80° to 85° relative to the level of the rail head top surface. With the carriage being coupled to the rail top surface in the operative position of the assembly.

3,962,909
METHOD AND APPARATUS FOR ULTRASONIC EXAMINATION
Svend Aage Lund, Birkerod, Denmark, assignor to svejsecentralen Akademiet for De Tekniske Videnskaber, Glostrup, Denmark
Filed Sept. 3, 1974, Ser. No. 502,752
Claims priority, application Denmark, Sept. 5, 1973, 4896/73
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.8 S **27 Claims**



1. A method of indicating, or of recording images of internal inhomogeneities in otherwise homogeneous bodies which have a substantially plane or slightly curved surface by ultrasonic examination according to the pulse echo method, including guiding at least one angle probe connected to an ultrasonic apparatus across the surface of the body to scan its interior by emitting and receiving short-duration ultrasonic pulses in directions that form a predetermined angle with the surface of the body, and activating indicating means in response to received reflected sound pulses to produce punctiform markings on a substantially plane recording surface, characterized by the steps of moving the indicating means having an axis of indication along which the markings on the

recording surface are made to thereby move the axis in the plane of the recording surface in such a way that the displacement of a reference point on the axis of indication in relation to the recording surface follows the two-dimensional displacement of the sound emission point of the probe in relation to the surface of the body on a predetermined scale, the axis of indication in relation to the recording surface following the direction of the projection of the sound path on the surface of the body, each of said markings being effected at a distance from the reference point that is proportional to the time interval that has elasped from the emission to the reception of a sound pulse, detecting the amplitude of each of said returned sound pulses, and simultaneously with each of said distance proportional markings being effected, producing a marking having a characteristic subject to a variable modulation as a function of the amplitude of each of said reflected sound pulses whereby the intensity of the reflected sound pulse is recorded in the image of said inhomogeneity.

3,962,910

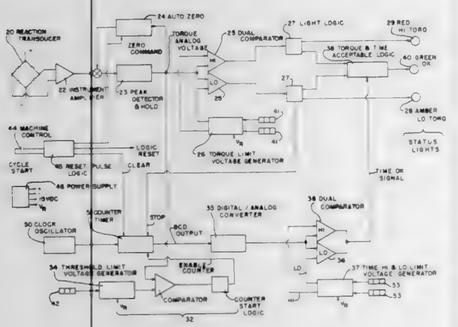
METHOD AND APPARATUS FOR FASTENER TENSION INSPECTION

Emanuel G. Spyridakis, Sayre, Pa.; Edwin E. Rice, Ann Arbor, and Robert J. Seccombe, Detroit, both of Mich., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 20, 1973, Ser. No. 389,704

Int. Cl.² G01L *5/24*

U.S. Cl. 73—88 F **2 Claims**



1. Apparatus for fastener tension inspection comprising:

a power wrench for tightening a fastener;

means for measuring the torque placed on the fastener by said wrench;

means for detecting a predetermined low level of initial torque and creating a signal in response thereto;

means for receiving said signal and in response thereto starting to measure the time associated with the continued tightening of the fastener;

means for continuously receiving the torque load on the fastener and the measurement of said time and comparing the measurements to determine if the torque reaches a predetermined magnitude within a predetermined range of time to detect whether a fastening unit is defective.

3,962,911

METHOD AND APPARATUS FOR COUPLING SIGNALS FROM A ROTATING DEVICE WITH END SHAFTS EXPOSED

Wesley E. Greenlund, Clinton, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Nov. 21, 1974, Ser. No. 525,936

Int. Cl.² G01B *7/16*

U.S. Cl. 73—88.5 R **7 Claims**

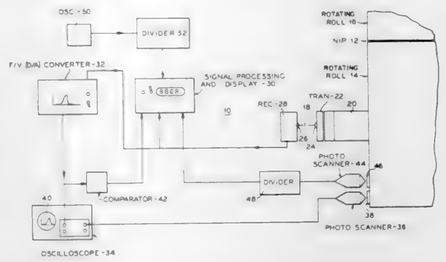
2. Apparatus for displaying nip pressure profile information of a roll having a shell and rotating about an axis, comprising:

a pressure transducer connected to the roll shell and operable to produce a first analog signal representing the pressure profile across the width of the nip;

an analog/digital converter connected to said pressure transducer to change said first analog signal to a digital signal;

a digital data transmitter connected to said analog/digital converter to transmit the digital information of said digital signal along a path;

a signal receiver on the path for receiving the digital information and regenerating the digital signal;



a digital/analog converter connected to said signal receiver for converting the regenerated digital signal to a second analog signal representing the pressure profile across the width of the nip;

a strobe signal generator coupled to the roll for generating a strobe signal while said pressure transducer is in the nip area; and

an oscilloscope connected to said strobe signal generator and to said digital/analog converter for displaying the pressure profile across the width of the nip.

3,962,912

TEST BENCH DEVICE FOR VEHICLES

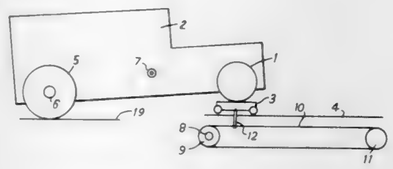
Jean Borie, 3 U Impasse Bonniot, St. Julien, 13012 Marseille, France

Filed Mar. 19, 1975, Ser. No. 559,748

Claims priority, application France, Mar. 27, 1974, 74.11855

Int. Cl.² G01M *17/00*

U.S. Cl. 73—117 **4 Claims**



1. A device for testing road vehicles having a pair of road wheels and a gearbox output shaft, said device comprising, in combination:

i. measuring means moving with said vehicle along a flat road surface,

ii. a first pulse transmitter coupled to said measuring means, and a first pulse counter associated with said first pulse transmitter to indicate the distance moved by the vehicle,

iii. second pulse transmitter means coupled to said pair of road wheels of the vehicle, and a second pulse counter associated with said second pulse transmitter means for determining the extent of rotation of said road wheels,

iv. third pulse transmitter means coupled to said gearbox output shaft, and a third pulse counter associated with said third pulse transmitter means, whereby for a given distance of movement of the vehicle as indicated by the first pulse counter, the second pulse counter indicates the extent of rotation of the road wheels corresponding to that distance of movement, and the third pulse counter indicates the number of rotations of the gearbox output shaft corresponding to said distance of movement and to said extent of rotation of the road wheels.

3,962,913

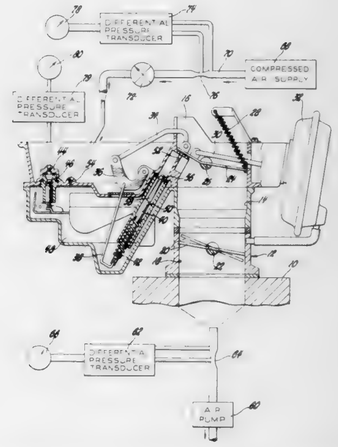
CARBURETOR CALIBRATION

Partab T. Jeswani, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed June 30, 1975, Ser. No. 591,815

Int. Cl.² G01M *19/00*

U.S. Cl. 73—118 **3 Claims**



1. A method of calibrating a carburetor wherein a metering rod is to be positioned in a fuel jet to provide a predetermined fuel flow rate from the carburetor's fuel bowl to the carburetor's mixture conduit comprising the steps of (1) establishing an air flow through the mixture conduit, and (2) supplying air as a calibration fluid to the fuel bowl at a measured flow rate that is sufficient at a particular metering rod setting to offset the depression of the jet to balance fuel bowl pressure with ambient pressure.

3,962,914

MOTOR VEHICLE BRAKE TEST APPARATUS AND METHOD

Hans Lutz, Ebersbach, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 9, 1975, Ser. No. 621,002

Claims priority, application Germany, Oct. 24, 1974, 2450494

Int. Cl.² G01L *5/28*

U.S. Cl. 73—125 **9 Claims**

1. A brake system test apparatus for motor vehicle brakes comprising:

first and second rollers located in spaced parallel relation for supporting engagement with a wheel on a first side of a motor vehicle to be tested in said apparatus,

third and fourth rollers respectively coaxial with said first and second rollers and located in spaced parallel relation for supporting engagement with a wheel on a second side of said vehicle;

inertial rotary dynamic energy storage means for a magnitude suitable for simulating the dynamic energy of rolling vehicle moving at a speed substantially corresponding to the rotary speed of one of said wheels;

clutch means for coupling and decoupling said rotary energy storage means respectively with and from said third roller;

first rotary force measuring means interposed in a driving connection between said third roller and said rotary energy storage means;

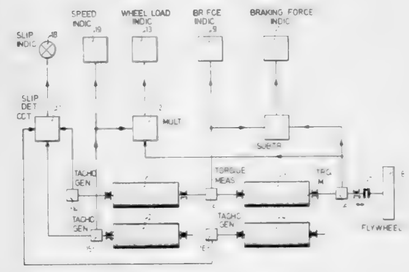
second rotary force measuring means interposed in a driving connection between said first and third rollers, and

means responsive to said first and second force measuring means for separately indicating the braking force applied to each of said wheels,

whereby the braking system of a motor vehicle can be tested with the use of the vehicle's own engine as the principal source of dynamic energy by a transfer of energy from said engine to the energy storage means and from the energy storage means to the vehicle wheels.

7. A method of testing motor vehicle brakes comprising the steps of:

coupling an inertial rotary dynamic energy storage device to rollers arranged to engage a substantially coaxial pair of motor vehicle wheels;



engaging a driven coaxial pair of motor vehicle wheels with said rollers and driving said pair of wheels to store at least a predetermined amount of dynamic energy in said energy storage device;

braking said pair of wheels against the force provided by energy delivered from said energy storage device while measuring the braking force applied to each of said wheels;

again driving said driven pair of wheels to store at least said predetermined amount of energy in said energy storage device;

uncoupling said energy storage device from said rollers and then bringing said rollers substantially to a stop;

removing said driven pair of wheels from engagement with said rollers and bringing an undriven pair of wheels into engagement with said rollers;

recoupling said energy storage device with said rollers, and

braking said undriven pair of wheels while measuring the braking force applied to each of the wheels of said undriven pair.

3,962,915

METHOD OF POSITIONING APPARATUSES FOR MEASURING SOIL CONDITIONS

Jean-Francois Jezequel, Binic, France, assignor to Etat Francais, Paris, France

Continuation of Ser. No. 396,176, Sept. 11, 1973, abandoned. This application Feb. 21, 1975, Ser. No. 551,974

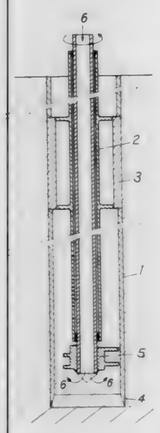
Claims priority, application France, Sept. 15, 1972, 72.33388

Int. Cl.² E21B *49/00*

U.S. Cl. 73—151 **1 Claim**

1. A method for positioning apparatuses for measuring ground conditions below the surface thereof comprising mounting a plurality of measuring apparatuses on a cylindrical probe tube so that said measuring apparatuses form an inter-

mediate portion of the cylindrical wall thereof while maintaining a longitudinal central opening therein for fixedly receiving a second guide tube in spaced relation in the central opening, said probe tube having fragmentation means at the bottom of and coextensive with the cylindrical wall thereof, the lower end of said second tube being above the bottom end of said probe tube, driving the cylindrical probe tube vertically into the ground until the measuring apparatuses are embedded



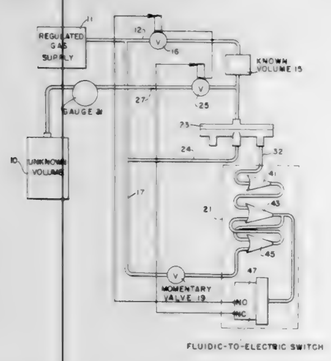
therein by pressure on the second tube, passing an injection fluid downwardly through said second tube to entrain fragmented ground matter at the bottom thereof and passing the fluid with entrained matter upwardly in the space between said second tube and said probe tube, whereby appropriate measurements can be taken in the undisturbed ground surrounding said probe tube which remains in contact with the outer wall of said cylindrical probe tube and said measuring apparatuses.

3,962,916

SYSTEM FOR THE MEASUREMENT OF A CLOSED AIR SPACE

Jean C. Bouchy, and Theodore J. Hardman, both of Cincinnati, Ohio, assignors to McNay Equipment Company, Inc., Cincinnati, Ohio

Filed Jan. 23, 1974, Ser. No. 435,667
Int. Cl.² G01F *17/00*
U.S. Cl. 73—149 **2 Claims**



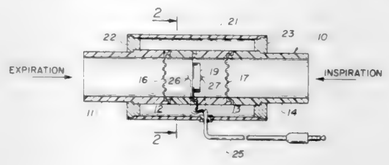
1. A system for measuring an unknown volume comprising a source of predetermined pressure, a vessel of predetermined volume, first valve means having an open condition and a shut condition and being operable to provide a first fluid connection between said source of predetermined pressure and said vessel in said open condition and to interrupt said first fluid connection in said shut condition, second valve means having an open condition and a shut condition and being operable in said open condition to provide a second fluid connection between said vessel and the unknown volume to be measured and to interrupt said second fluid connection in said shut condition, control means for initially setting said first valve means in an open condition and said second valve means in its shut condition and being responsive to the pressure in said vessel and to the said predetermined pressure to switch said said first valve means to its shut condition and switch said second valve means to its open condition in response to the pressure in said vessel becoming equal to said predetermined pressure, and gauge means for measuring the pressure in said unknown vessel when said second valve means is in said open condition, said pressure sensitive control means comprising pressure differential sensing means connected to said vessel and said source of predetermined pressure and generating a pneumatic signal when the pressure in said vessel rises to equal said predetermined pressure, and fluidic means responsive to said pneumatic signal to switch said first valve means to its shut condition and to switch said second valve means to its open condition.

3,962,917

RESPIROMETER HAVING THERMOSENSITIVE ELEMENTS ON BOTH SIDES OF A HOT WIRE

Hideshi Terada, Takatsuki, Japan, assignor to Minato Medical Science Co., Ltd., Osaka, Japan

Filed July 3, 1974, Ser. No. 485,537
Int. Cl.² G01F *1/68*; **A61B** *5/08*
U.S. Cl. 73—204 **10 Claims**



1. A respirometer for use in measuring the rate of an air flow of respiration, comprising:

means for defining a one-dimensional path of air flow of respiration;

a hot wire in said respiration air flow path;

means coupled to said hot wire for maintaining said hot wire substantially at a predetermined temperature;

a pair of temperature sensitive elements in said respiration air flow path on respective opposite sides of said hot wire relative to the air flow of respiration in said air flow path, said temperature sensitive elements having an electrical characteristic which varies as a function of temperature;

first means electrically connected to said hot wire for producing an electrical output signal representative of the rate of said air flow but without discriminating between the senses of the direction of said air flow; and

second means electrically connected to said first means and to said temperature sensitive elements, said second means including:

third means electrically connected to said temperature sensitive elements for producing a control signal that assumes a first value during expiration and a second value during inspiration; and

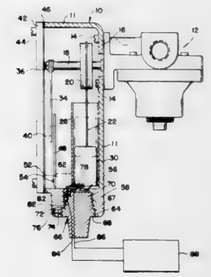
fourth means electrically connected to said first and third means and including: switching means responsive to said control signal; first electrical operating means coupled to said switching means and having a first electrical characteristic for operating on said electrical output signal of said first means during inspiration for providing an inspiration output signal; second electrical operating means coupled to said switching means and having a second electrical characteristic for operating on said electrical output signal of said first means during expiration for providing an expiration output signal, and combining means coupled to said first and second electrical operating means for combining the inspiration and expiration output signals thereof and producing a respiration rate signal representative of the rate of said air flow with discrimination between the senses of the direction of said air flow.

3,962,918

FLOW INDICATOR WITH WEIGHT BIASING MEANS

Nils O. Rosaen, Bloomfield Hills, Mich., assignor to Nancy Rosaen, Ann Arbor, Mich., a part interest

Filed Nov. 15, 1974, Ser. No. 523,999
Int. Cl.² G01F *1/28*
U.S. Cl. 73—228 **1 Claim**



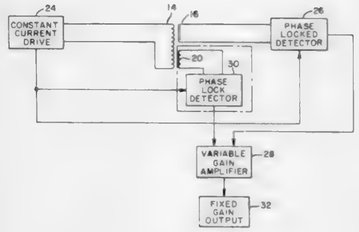
1. A fluid flow meter adapted to provide a visual indication of the fluid flow rate through said flow meter, said flow meter having a housing and being of the type which imparts a rotation to a shaft in response to a variation in the flow rate through said flow meter, said flow meter further comprising indicator means operably connected to said shaft and adapted to give a visual indication of the rotational position of said shaft; means biasing said shaft in a direction opposite to that produced by fluid flow through said flow meter, said biasing means comprising a pulley mounted on said shaft; a weight, and an elongated flexible member having one end secured to said pulley and the other end secured to said weight, the length of said flexible member being such that said weight is suspended by said flexible member through substantially the entire fluid flow range of said indicator means, a channel guide secured to said housing and adapted to receive the weight therein to guide said weight along a substantially vertical axis, and an electrical switch disposed on a plug, said plug being removably mounted in a bore in said housing at the base of said channel guide and including an abutment surface which cooperates with an abutment surface in said bore to thereby vertically position said plug, and wherein said switch further comprises a first resilient contact and a second contact, said contacts having at least a portion of each contact in vertical alignment with the other, wherein at least one of said contacts is disposed under said weight so that said weight engages said last mentioned contact at the lowermost vertical position of said weight and depresses said last mentioned contact to thereby actuate said switch.

3,962,919

TEMPERATURE COMPENSATED INDUCTIVE LIQUID METAL LEVEL DETECTION SYSTEM

Kerwin C. Playfoot, Horseheads, and William H. Todt, Elmira Heights, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 15, 1975, Ser. No. 596,140
Int. Cl.² G01F *23/26*
U.S. Cl. 73—290 R **5 Claims**



1. An inductive liquid metal level probe comprising a bifilar wound transformer coil wrapped about an elongated conductive support mandrel, with the coil formed of coaxial cable with the outer sheath electrically connected to the conductive support mandrel, and wherein a temperature compensation coil is disposed about at least one end of the support mandrel and is inductively coupled to the primary of the bifilar wound transformer, with the temperature compensation coil formed of coaxial cable with the outer sheath electrically connected to the support mandrel.

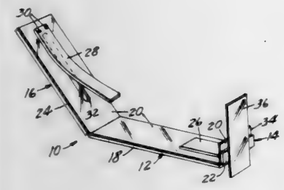
4. An inductive liquid metal level detection system comprising:

a. an inductive probe which is insertable into a sealed tube which is disposed in the depth direction in the liquid metal chamber, which probe comprises a bifilar wound transformer wrapped about an elongated tubular support mandrel, with a temperature compensation coil disposed about at least about one end of the support mandrel and inductively coupled to the primary of the bifilar wound transformer coil;

b. a constant current power supply electrically connected to the primary coil of the bifilar wound transformer coil, the secondary coil of the bifilar wound transformer and the temperature compensation coil are connected to an amplifier means, with the primary coil producing an induced output voltage signal across the secondary coil which is a function of the number of turns of the secondary coil which are effectively short circuited by the presence of liquid metal about the sealed tube within which the probe is disposed, and wherein the induced voltage across the temperature compensation coil varies as a function of the ambient temperature about the temperature compensation coil to provide a temperature indicative output signal,

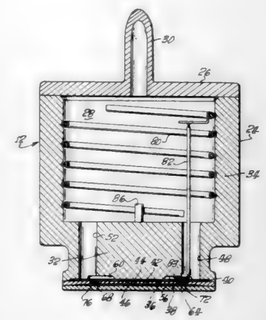
c. amplifier means electrically connected to the secondary coil and the temperature compensation coil with the respective output signals of these coils applied to the amplifier means to generate a temperature compensated output signal which is indicative of the depth of the liquid metal about the probe.

3,962,920
RESERVOIR PAD FOR TIME INDICATOR
Wendell J. Manske, Birchwood Village, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 404,891, Oct. 10, 1973, Pat. No. 3,954,011, which is a continuation-in-part of Ser. No. 400,044, Sept. 24, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 553,003
Int. Cl.² G04F 13/00; G01K 11/12
U.S. Cl. 73—356 10 Claims



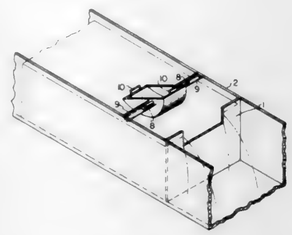
1. An indicating device comprising, in combination,
a base sheet having first and second ends;
a liquid impervious film adhered to a first major surface of said base sheet;
a porous reservoir pad contacting said film and located proximate said first end of said base sheet, said pad containing an indicating material and including means for containing and presenting a controlled amount of liquid to a wick in contact therewith, and including means for selectively limiting the maximum migration rate for a given liquid below the migration rate provided by a free pool of the liquid;
a cover overlying and substantialy coextensive with said base sheet, said cover comprising first and second abutting cover sheet portions with said first cover sheet portion extending from said first end of said base sheet and having its edge abutting said second cover sheet portion transverse of said reservoir pad, and said second cover sheet portion extending to said second end of said base sheet and having a viewing window therein;
a liquid impervious film adhered to the inner surfaces of said cover sheets and connecting said cover sheets to the film-covered base sheet;
a protective strip comprising liquid impervious film underlying the abutting edges of said first and second cover sheet portions and interposed between said reservoir pad and the abutting edges on said first and second cover sheet portions to protect the adjacent edges of said first and second cover sheet portions from the indicating material in the reservoir pad;
a wick adhered to said second cover sheet portion and contained between said second cover sheet portion and said base sheet, at least a portion of said wick being visible through the window in said second cover sheet portion and at least a portion of said wick lapping at least a portion of said reservoir pad;
the sides of the cover sheet and base sheet being sealed together to bias said wick toward said pad; and
a liquid impervious activating strip having one end portion positioned between and covering the adjacent surface portions of said wick and said reservoir pad, and having its opposite end portion extending from said cover sheet to afford manual engagement to pull said activating strip from between said pad and wick and allow migration of said indicating material into said wick.

3,962,921
COMPENSATED PRESSURE TRANSDUCER
Donald C. Lips, San Pedro, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.
Continuation of Ser. No. 223,462, Feb. 4, 1972, abandoned. This application Sept. 7, 1973, Ser. No. 395,320
Int. Cl.² G01L 9/12
U.S. Cl. 73—398 C 13 Claims



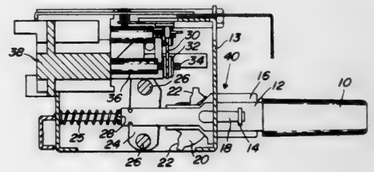
1. A transducer comprising first and second stress force sensing deflection diaphragms mounted in face-to-face relationship for deflection thereof by application thereto of first and second stress forces, the diaphragms having edges in sealing engagement, one of the diaphragms having a recessed deflection surface; means for maintaining zero pressure differential across one of said diaphragms; and signal means electrically coupled with said diaphragms for providing an electrical output related to the deflection of one of said diaphragms to said second stress force, electrical output related to the deflection of said one of said diaphragms to said first stress force being substantially prevented by the deflection of the other of said diaphragms to said first stress force.

3,962,922
SAMPLING APPARATUS FOR FLUID
Kazuhiko Takeuchi, Fujisawa, Japan, assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 30, 1975, Ser. No. 545,545
Int. Cl.² G01N 1/00
U.S. Cl. 73—424 1 Claim



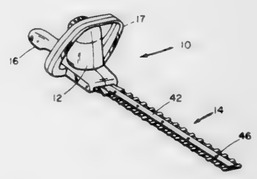
1. A sampling apparatus for sampling a fluid flowing in an open aqueduct provided with a notched weir in which the relation $F = f(h)$ prevails where F is the volume flow rate and h is the height of fluid level above the bottom of the notch in the weir; the improvement comprising:
a rotatable sampling scoop means,
means for supporting said sampling scoop means on an axis of rotation positioned a predetermined distance above the level of the bottom of the notch in said weir and on the upstream side of said weir,
said sampling scoop means having a forward edge at a distance from said axis of rotation equal to the distance from said axis of rotation above the level of the bottom of said notch in said weir,
said sampling scoop means being configured to satisfy the relation $Q = k \cdot F$, where Q is the quantity of fluid in a sample obtained by said sampling scoop means when said scoop means is rotated about said axis, k is a proportionality constant and F is the volume flow rate.

3,962,923
FORCE DIRECTED KEYSLIDE CAM
Alfred Ray Harlan, Garland, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 31, 1974, Ser. No. 537,727
Int. Cl.² F16H 35/18
U.S. Cl. 74—10.33 6 Claims



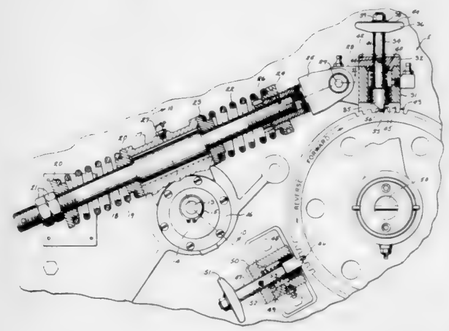
1. A tuning mechanism for a pushbutton radio including a combination;
a treadle bar assembly having parallel rods constrained to rotate about an axis, each rod having an engaging surface,
a cam provided with engaging faces,
a directionally movable coupling means coupling the cam faces to the rod surfaces,
the faces and surfaces of predetermined shape
whereby the point of contact of a rod surface with a cam face is substantially within a plane parallel to the plane of movement of the coupling means and extending through the axial center of the rod.

3,962,924
DOUBLE CAM DRIVE FOR A HEDGE TRIMMER HAVING TWO RECIPROCATING CUTTING BLADES
Richard Warmath Glover, Joppa, and Edward Joseph Oldewurtel, Columbia, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.
Division of Ser. No. 463,749, April 24, 1974, Pat. No. 3,897,630. This application Jan. 10, 1975, Ser. No. 539,971
Int. Cl.² F16H 21/18
U.S. Cl. 74—50 7 Claims



1. An apparatus for simultaneously imparting relative motion to two juxtapositioned driven members comprising:
support means;
first and second driven members having yokes defining cam follower slots, said driven members being carried by said support means for relative movement in a plane with respect to each other with the cam follower slots being held in juxtapositioned relationship with respect to each other;
drive means rotatable about an axis normal to the plane of relative movement;
first cam means mounted upon the drive means, the periphery of said first cam means engaging the cam follower slot on the first driven member and operable to impart relative movement to said first driven member upon rotation of the drive means, the axis of rotation of said drive means passing within the periphery of the first cam means; and
second cam means integral with and laterally off-set from the first cam means, the periphery of said second cam means engaging the cam follower slot on the second driven member and operable to impart relative movement to said second driven member upon rotation of said drive means, the periphery of the second cam means lying within the periphery of the first cam means.

3,962,925
BI-DIRECTIONAL RATCHET DRIVE MECHANISM
George E. Olson, Arlington Heights, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.
Filed Dec. 9, 1974, Ser. No. 531,042
Int. Cl.² F16H 27/02
U.S. Cl. 74—143 3 Claims



1. A ratchet drive mechanism including a motor for rotating an arm or the like in a forward or reverse direction or disconnected therefrom to dispose the arm or the like in a non-rotating position, which comprises a pawl housing adapted to be reciprocated, a shaft extending through the pawl housing, a pawl secured to the lower end of said shaft and the shaft being free to be lifted and rotated within the pawl housing, a transmission housing, an eccentric disc located in the transmission housing and rotated by said motor, a collar secured to the eccentric disc and reciprocated intermittently thereby, a rod extending through the collar and pivoted at one end to the pawl housing, springs assembled on the rod on opposite sides of said collar, abutments secured to said rod and engaged by said springs to effect reciprocation of the rod upon intermittent movement of the collar on the rod to thereby reciprocate the pawl housing and the pawl carried thereby, a ratchet having a plurality of teeth on the outside circumference with the teeth being engaged by the pawl to rotate the ratchet intermittently as the pawl is reciprocated, means connecting the ratchet to said arm to rotate the arm, a spring surrounding the pawl shaft, abutment means confining the spring at opposite ends within the pawl housing to spring plunger the pawl into engagement with the ratchet, means on the outer end of the pawl shaft to lift the pawl shaft outwardly against the tension of the spring and rotate said shaft, a relatively deep slot provided in the outer portion of the abutment means, a generally shallow slot extending in the outer portion of the abutment means above the deep slot at an angle of 90° to said

deep slot, a pin adapted to be lodged in the deep slot and extended through the pawl shaft to hold the pawl in engagement with the ratchet to rotate the ratchet in a forward direction upon reciprocation of the pawl and lodged in the deep slot after rotation of the pawl shaft **180°** from its initial position and extended through the pawl shaft with the pawl engaging the ratchet to rotate the ratchet in a reverse direction and lodged in the shallow slot **90°** from the last position of the pin and extended through the pawl shaft to hold the pawl in a neutral position out of engagement with the ratchet and thereby preventing rotation of said ratchet, and means engaging the ratchet to restrain movement of the ratchet opposite to that in which the ratchet is being driven and adapted to be placed out of engagement with the ratchet when the latter is not being rotated by the driving pawl.

3,962,926
STAMPED SHEET METAL PULLEY
Edward A. Kotlar, 21115 Mack Ave., Grosse Pointe Woods, Mich. 48236
Filed Feb. 3, 1975, Ser. No. 546,615
Int. Cl.² F16H *55/54*
U.S. Cl. 74—230.8 **11 Claims**



1. A stamped sheet metal pulley having at least two grooves comprising:

a. a separate one-piece first cup member of stamped sheet metal having a first cylindrical side wall portion, a flat bottom wall portion integral with said first cylindrical side wall portion and extending generally radially inwardly thereof, a second cylindrical side wall portion having a diameter exceeding the diameter of said first cylindrical side wall portion and being axially spaced from said first cylindrical side wall portion, an annular intermediate wall portion integral with, obliquely inclined to, and interconnecting said first and second cylindrical side wall portions and extending continuously generally radially outwardly of said first cylindrical side wall portion, and an annular flange integral with, obliquely inclined to, and extending generally radially outwardly of said second cylindrical side wall portion of said first cup member adjacent the open end of said first cup member;

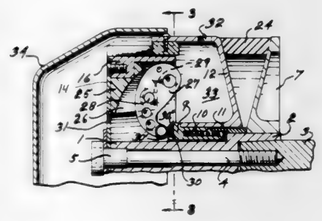
b. a separate one-piece second cup member of stamped sheet metal having a first cylindrical side wall portion telescopically interengaged with an interference fit over said first cylindrical side wall portion of said first cup member, a flat bottom wall portion integral with said first cylindrical side wall portion of said second cup member and extending generally radially inwardly thereof, and an annular flange integral with, obliquely inclined to, and extending generally radially outwardly of said first cylindrical side wall portion of said second cup member, said cup members being interengaged such that said flat bottom wall portions of said cup members are in abutting co-planar engagement and said annular flanges are spaced apart axially to each define at least in part a groove of the pulley;

c. a plurality of circumferentially equally spaced spot welds in and fixing said first cylindrical side wall portions of said cup members together;

d. at least one mounting hole extending through both of said flat bottom wall portions of said cup members;

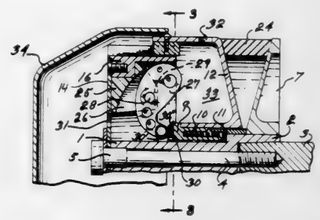
e. a separate one-piece first ring of stamped sheet metal having an obliquely inclined annular flange defining in cooperation with said annular flange of said first cup a groove of the pulley and an integral cylindrical base telescopically interengaged with an interference fit over said second cylindrical side wall portion and fixed thereto by a plurality of circumferentially equally spaced spot welds, said annular flange of said first ring being obliquely inclined to and extending generally radially outwardly of said second cylindrical side wall portion of said first cup member.

3,962,927
VARIABLE DIAMETER PULLEY WITH IMPROVED PUSHER RING
Guy Beaudoin, 1238 Chabanel St., Drummondville South, Quebec, and Marcel Vincent, 320 Hebert St., Wickham, Quebec, both of Canada
Filed Jan. 14, 1975, Ser. No. 541,069
Int. Cl.² F16H *55/52*
U.S. Cl. 74—230.17 E **1 Claim**



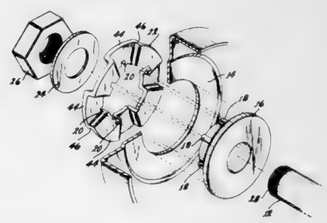
1. A variable diameter pulley comprising an output shaft, first and second conical pulley flanges coaxially mounted on said shaft, a V-belt trained between said two pulley flanges, said first pulley flange secured to said shaft, said second pulley flange axially displaceable on said shaft between a closed position in clutching engagement with said V-belt and an open position releasing and declutching said V-belt, said second pulley flange having a coaxial sleeve extending therefrom away from said first pulley flange, a compression coil spring surrounding said shaft and interposed between said two pulley flanges to urge the second pulley flange to V-belt declutching position, a pusher ring coaxially carried by the outer end of said sleeve and having an exposed surface facing away from said first pulley flange, said exposed surface including a radially inner flat face portion perpendicular to said shaft, followed by a radially outer bevelled, frusto-conical face portion, a support secured to said shaft and centrifugally responsive lever members pivoted on said support intermediate their ends and having radially inner ends engaging the exposed surface of said pusher ring for exerting an axial force thereon in a direction to move said second flange towards V-belt clutching position against the action of said spring, the inner ends of said lever members, during their centrifugally induced progressive pivotal movement, first contacting said bevelled frusto-conical face portion to displace said second pulley flange towards clutching engagement with said V-belt without clutching the same and then contacting said flat face portion to effect clutching engagement with said V-belt.

3,962,928
VARIABLE DIAMETER PULLEY WITH SHIM MEANS COMPENSATING FOR BELT WEAR
Guy Beaudoin, 1238 Chabanel St., Drummondville South, Quebec, and Marcel Vincent, 320 Hebert St., Wickham, Quebec, both of Canada
Filed Jan. 14, 1975, Ser. No. 541,074
Int. Cl.² F16H *55/52*
U.S. Cl. 74—230.17 B **1 Claim**



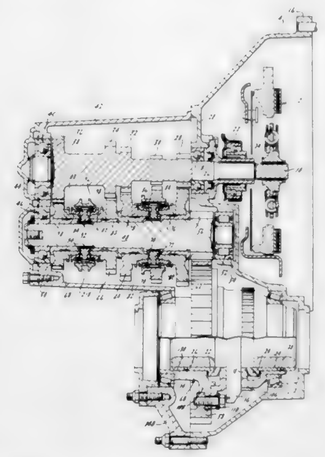
1. A belt wear compensating variable diameter pulley comprising shaft means, a first and a second pulley flanges coaxially mounted on said shaft means, said first pulley flange being axially displaceable along said shaft means toward and away from said second pulley flange, an axial stop provided on said shaft means engageable by said first pulley flange and positioned along said shaft means at a predetermined axial position relative to the pulley flanges and producing a minimum clearance between the latter upon axial engagement by said first pulley flange, and shims removably interposed between said axial stop and said first pulley flange and selectively removable to reduce the spacing between the pulley flanges in relation to the wear of a belt engaging in said spacing.

3,962,929
DRIVE SPROCKET FOR CHAIN SAW
Kay Silvon, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.
Filed Nov. 24, 1972, Ser. No. 308,971
Int. Cl.² F16H *55/30*
U.S. Cl. 74—243 CS **2 Claims**



1. A drive sprocket for a saw chain which includes pairs of tie straps having bottom supporting surfaces and interconnected center drive links having depending drive tangs, said drive sprocket comprising; an integral washer like endless metal band with substantially uniform thickness having a circular central opening and a circular outer periphery, wave like flutes symmetrically formed into said metal band radiating outwardly from said central opening and being formed continuously from the inner edge of the band at the central opening to said outer periphery, said flutes forming wall sections alternating between two planar surfaces and web sections transversely spanning the spacing therebetween whereby the peripheral outer edges of the wall sections in one plane are adapted to support said tie straps on one side of a saw chain entrained on said sprocket and the peripheral outer edges of the wall sections in the other plane are adapted to support said tie straps on the other side of the saw chain, and with the transverse web sections adapted to drivingly engage the drive tangs of the center links of the saw chain.

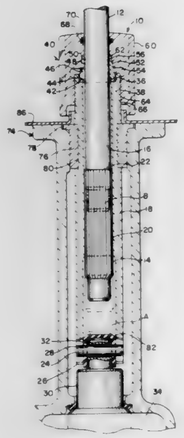
3,962,930
SYNCHRONIZED MANUALLY CONTROLLED MULTIPLE SPEED RATIO TRANSMISSION
William T. Frazee, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 16, 1974, Ser. No. 533,370
Int. Cl.² G05G *9/12*
U.S. Cl. 74—473 R **2 Claims**



1. A multiple speed ratio power transmission mechanism for an automotive vehicle comprising a power input shaft adapted to be clutched to an internal combustion engine, gearing defining multiple torque delivery paths including multiple pairs of gears carried by said input shaft and by said countershaft, synchronizer clutch means associated with one gear of each pair for connecting said one gear to its associated shaft, one pair of said gears meshing with a reverse drive pinion which establishes a geared connection therebetween, said pinion being shiftable into and out of engagement with said last mentioned pair of gears, a differential mechanism, torque output gearing connecting said differential mechanism with said countershaft whereby torque is delievered from said gearing to torque output parts of said differential mechanism, a shift rail mounted in parallel disposition with respect to said input shaft and said countershaft, shift forks carried by said shift rail, one of said shift forks being engageable with said reverse pinion and the other shift forks being engageable with said synchronizer clutch means, said shift forks being mounted slidably on said shift rail, lever means including first and second bellcrank levers for effecting rotary and axial shifting movement of said shift rail, interlock clutch means including drive portions connected to said shift rail and driven portions connected to each of said shift forks whereby said shift forks may be adjusted axially upon axial movement of said shift rail, the driving portions of said interlock clutch means moving into registry with selected ones of said driven portions of said interlock clutch means by rotary adjustment of said shift rail, said linkage mechanism for effecting rotary and axial shifting movement of said shift rail comprising a shift selector shaft mounted on a relatively stationary portion of said mechanism in transverse disposition with respect to said shift rail, said shift selector shaft being adapted for rotary and axial movement, said first bellcrank lever being pivoted on a stationary portion of said mechanism with its operating ends engaged respectively with said shift selector shaft and said shift rail whereby axial movement of said shift lever is translated into

axial movement of said rail, said second bellcrank lever being mounted on a stationary portion of said mechanism with one of its operating ends connected to said shift rail and the other connected to said shift selector shaft whereby rotary motion of said shift selector shaft is translated into rotary motion of said shift rail.

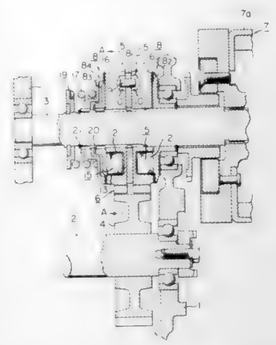
3,962,931
TELESCOPIC STEERING COLUMN
Casimir Moneta, Chicago, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Mar. 21, 1975, Ser. No. 560,905
Int. Cl.² B62D *1/18*; **G05G** *5/22*
U.S. Cl. 74—493 **10 Claims**



1. An adjustable steering column means which comprises:
a steering shaft having an externally splined lower portion and a smooth upper portion;
a tube axially and extensibly accommodating said steering shaft having an upper and lower portion and further having internal splines terminating at the upper portion of said tube with a counterbored recess, the upper portion of said tube being externally threaded;
a steering shaft washer mounted on the recess of said tube that will allow passage therethrough of the smooth portion of said steering shaft and will prevent passage therethrough of the externally splined lower portion of said steering shaft;
a wedge ring positioned on the top of said steering shaft washer;
a steering shaft collar formed to allow passage therethrough of said steering shaft and counterbored to accommodate said wedge ring further counterbored and threaded to accommodate the upper portion of said tube.

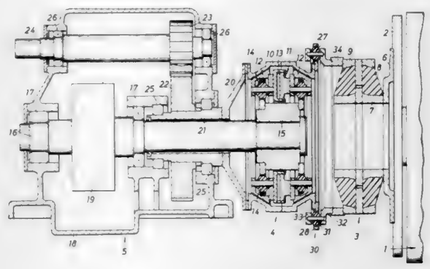
3,962,932
REACTION MOMENT BALANCING DEVICE FOR AN ENGINE
Yoshinori Okamoto, and Takamasa Onda, both of Kawagoe, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 3, 1975, Ser. No. 610,080
Claims priority, application Japan, Sept. 10, 1974, 49-103455
Int. Cl.² F16H *21/22, 55/14*; **F02B** *75/06*
U.S. Cl. 74—604 **4 Claims**

1. A reaction moment balancing device for an engine, comprising:
a balance shaft rotatably supported by the crankcase of the engine in parallel with the engine crankshaft and weighted with a predetermined mass; and
transmission means including a pair of intermeshing driving and driven gears mounted on the crankshaft and the balance shaft, respectively, and having such a gear ratio that the reaction moments exerted on the crankcase by



the rotary systems respectively including the crankshaft and the balance shaft balance with each other;
said transmission means further including:
cushioning means for absorbing shock in gear transmission between the crankshaft and the balance shaft; and
phase-controlling means for limiting the angular phase shift occurring upon operation of said cushioning means within a predetermined range.

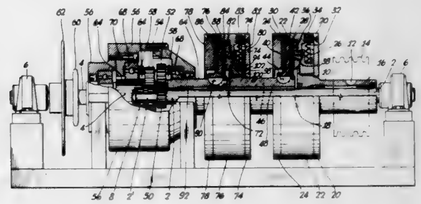
3,962,933
DRIVE SYSTEM, PARTICULARLY FOR SHIPS
Herbert Wedler, Witten, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Jan. 27, 1975, Ser. No. 544,189
Claims priority, application Germany, Feb. 1, 1974, 2405419; Feb. 15, 1974, 2407981
Int. Cl.² F16H *37/06*; **F16D** *3/70, 13/32*
U.S. Cl. 74—665 GA **24 Claims**



1. In a drive system for example for ships having a motor or engine with output shaft, further having a transmission gear with input shaft and being disposed in a casing, there being a clutch interposed between said shafts for causing the input shaft of the gear to be selectively driven from the said output shaft, the clutch having an input element and an output element connected to said input shaft and operating means for selectively connecting the input element of the clutch to the output element thereof, the improvement comprising:
a first coupling having an input element connected to said output shaft and an output element connected to the input element of the first coupling by elastic means;

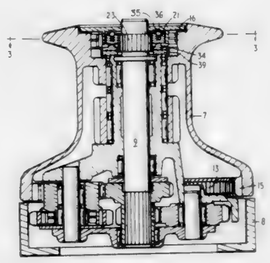
first means for journalling the clutch input element to said casing to be supported therein;
second means for connecting the clutch input element to the output element of the first coupling; and
one of the first and second means constructed as an additional elastic coupling which includes peripherally distributed elastic elements so that at least the first coupling output element is mounted in cardan suspension fashion by operation of the elastic means of the first coupling and by the elastic elements of said additional coupling.

3,962,934
AUTOMATIC VARIABLE SPEED TRANSMISSION
Laurent Boutin, St. Evariste, Quebec, Canada
Filed May 31, 1974, Ser. No. 475,114
Int. Cl.² F16H *3/74*
U.S. Cl. 74—752 E **6 Claims**



1. An automatic variable speed air-cooled transmission assembly comprising
a driving shaft and a driven shaft coaxially mounted end to end with an end of the driving shaft being rotatably received within the end of thd driven shaft,
and a first centrifugal clutch hub in the form of a sleeve rotatably carried by the driving shaft, and means to rotate the first centrifugal clutch hub,
and a first centrifugal clutch assembly integrally secured to the first centrifugal clutch hub and rotatable therewith, the first centrifugal clutch assembly comprising a housing and a number of sliding weights held in inner positions by adjustable reaction springs, each sliding weight having a beveled cam surface for wedging contact with a complementary beveled can surface on a movable pressure plate,
and a second centrifugal clutch hub in the form of a sleeve secured by a key to the driving shaft and rotatable therewith,
and a first friction plate secured to the second centrifugal clutch hub extending into the first centrifugal clutch assembly and adjacent the movable pressure plate,
the first friction plate being engaged and driven by the movable pressure plate of the first centrifugal clutch assembly upon the first centrifugal clutch assembly attaining a preselected speed of rotation to thereby effect rotation of the second centrifugal clutch hub and the driving shaft,
and a driving shaft pinion adjacent the said end of the driving shaft,
the driving shaft pinion engaging first pinions of three first and second pinion groups which are equidistantly spaced around and rotatably mounted in a gear carrier,
the first and second pinions of each group being secured together and the second pinions all being in driving engagement with the driven shaft,
and a second centrifugal clutch assembly integrally secured to the second centrifugal clutch hub and rotatable therewith, the second centrifugal clutch assembly comprising a housing and a number of sliding weights held in inner positions by adjustable reaction springs, each sliding weight having a beveled cam surface for wedging contact with a complementary beveled cam surface on a movable pressure plate,
and a second friction plate integrally secured to the gear carrier,
and extending into the second centrifugal clutch assembly and adjacent the movable pressure plate,
the second friction plate being engaged and driven by the movable pressure plate of the second centrifugal clutch assembly upon the second centrifugal clutch assembly attaining a second faster preselected speed of rotation to thereby effect rotation of the gear carrier to achieve a 1:1 driving shaft to driven shaft speed ratio,
each sliding weight in the second centrifugal clutch assembly having a bore parallel with the axis of the driving shaft and a ball carried in the bore and a ball reaction spring nested in the bore acting upon the ball to normally maintain the ball in an outer position and in a circular groove provided in the housing, movement of the ball out of the circular groove as a result of said second faster preselected speed of rotation effecting snap coupling of the movable pressure plate against the second friction plate,
and means preventing rotation of the gear carrier before driving engagement of the second centrifugal clutch assembly and permitting rotation of the gear carrier with the driving shaft after engagement.

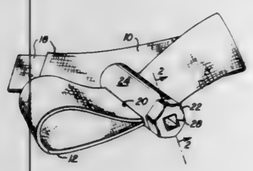
3,962,935
VARIABLE SPEED WINCH
Albert John Hutton; Allen William Hutton, both of Baulkham Hills, near Sydney, and Richard John Dellit, Granville, near Sydney, all of Australia, assignors to Barwin Pty. Limited, Australia
Filed Nov. 8, 1974, Ser. No. 522,123
Claims priority, application Australia, Nov. 12, 1973, 5622/73
Int. Cl.² F16H *5/52*; **B66D** *1/30*
U.S. Cl. 74—812 **4 Claims**



1. A winch comprising, in combination, a unidirectional drum rotatable initially by the clockwise motion of a handle in a clockwise sense only, and a gear selector comprising a control plate rotatable with respect to said drum into an extreme clockwise position wherein a first gear ratio is selected, whereby subsequent clockwise rotation of said handle gives the drum a clockwise speed equal to that of the handle, and wherein subsequent anti-clockwise rotation of said handle causes said drum to continue clockwise rotation at an intermediate higher speed with reference to the handle, up to a point where said control plate is urged into an extreme anti-clockwise position with respect to said drum to select a second gear ratio, whereupon the reversal of the handle and subsequent clockwise rotation thereof causes continued clockwise rotation of said drum at a still higher speed with reference to said handle, and wherein reversal of said handle and subsequent further anti-clockwise rotation thereof causes said drum to revert to said intermediate higher speed whilst continuing to rotate clockwise, said gear selector further comprises ratchet means, splined to a shaft rotatable by said handle, whereby clockwise motion of said handle operates a gear train in said first gear ratio via said shaft, but whereby anti-clockwise motion of said handle operates said gear train in said second

gear ratio via said shaft, said ratchet means being slidable axially with respect to said shaft under the influence of cam means responsive to the relative angular displacement of said handle with respect to said control plate, said control plate has recesses engageable by respective spring-loaded balls captively supported by said ratchet means, and said balls are adapted to enter and lock within said recesses in response to an anti-clockwise rotation of said handle sufficient to cause axial sliding of said ratchet means, with respect to said shaft, under the influence of said cam means whereby said control plate is urged anti-clockwise until said gear train assumes said second gear ratio.

3,962,936
STRAP WRENCH
Wade H. Lewis, Box 3265, Lakeland, Fla. 33802
Filed July 9, 1975, Ser. No. 594,444
Int. Cl.² B25B *13/52*
U.S. Cl. 81—64 **5 Claims**



1. A strap wrench comprising a flexible belt or strap, a rotatable elongated annular fastening-wrenching member having a slot therein passing diametrically through the mid-section and extending from side to side through the annular walls thereof, said slot forming strap gripping edges at each intersection with said annular walls and being sized wider than the combined thicknesses of two strap plies to slidingly receive both ends of the strap and be slidingly positionable thereon to form a bight portion between the strap ends leaving both strap ends free, said strap bight being mountable about and adjusted by the position of said wrenching member to fit about an annular body to be turned herewith, and means upon said fastening-wrench member for receiving and being gripped by the end of a wrench for turning said fastening-wrenching member radially upon its axis into gripping engagement of the edges of said slot with the sides of said strap.

3,962,937
ERROR ADJUSTMENT METHOD AND STRUCTURE FOR LATHES AND THE LIKE
Leo C. Miller, 11119 Dodson Lane, Wheaton, Md. 20902
Filed July 18, 1974, Ser. No. 489,744
Int. Cl.² B23B *25/06, 1/00*
U.S. Cl. 82—1 C **21 Claims**

14. A method for correcting runout and axial errors encountered during rotation of a workpiece about the axis of a lathe or like machine while said workpiece is held by said machine, comprising the steps of:

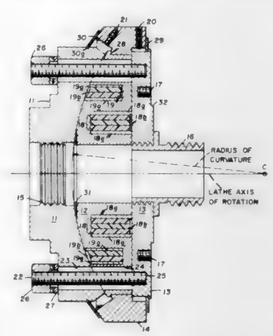
moving the desired axis of rotation of the workpiece substantially radially relative to said axis of rotation of the machine to bring the workpiece axis of rotation into substantial coincidence with said machine axis of rotation at a first selected point within said workpiece substantially at the point along said workpiece where runout error is measured to minimize the runout error at said first selected point, and

subsequently rotating the workpiece axis of rotation substantially about said first selected point to minimize the axial error at a second selected point on said workpiece displaced from said first selected point along the workpiece axis of rotation,

said step of moving the desired axis of rotation of the workpiece radially relative to said axis of rotation of the machine being accomplished without moving relative to said axis of rotation of the machine the point about which the workpiece axis of rotation is subsequently rotated.

17. Apparatus for correcting runout and axial errors enountered during rotation of a workpiece about the axis of a lathe or like machine while said workpiece is held by said machine, comprising:

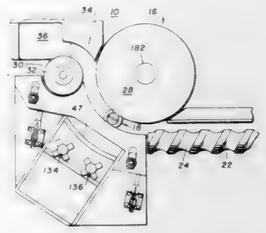
means for moving the desired axis of rotation of the workpiece substantially radially relative to said axis of rotation of the machine to bring the workpiece axis of rotation into substantial coincidence with said machine axis of rotation at a first selected point within the spatial volume defined by the workpiece substantially at the point along said workpiece where runout error is measured to minimize the runout error at said first selected point, and



means for subsequently rotating the workpiece axis of rotation substantially about said first selected point to minimize the axial error at a second selected point displaced from said first selected point along the workpiece axis of rotation,

said means for subsequently rotating the workpiece axis of rotation remaining stationary relative to the axis of rotation of said machine while said other means is moving the workpiece axis of rotation radially relative to the axis of rotation of said machine.

3,962,938
METHOD AND APPARATUS IMPROVEMENTS FOR TRIMMING PLASTIC ARTICLES
Joseph R. Reilly, Naugatuck, and Lars G. Schon, Bloomfield, both of Conn., assignors to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 472,638, May 23, 1974. This application May 23, 1975, Ser. No. 580,538
Int. Cl.² B23B *1/00, 5/14*
U.S. Cl. 82—47 **3 Claims**



1. In apparatus for trimming moils from plastic articles as they move along a cutting path which includes knife means to accomplish said trimming, guide means for engaging and transporting each article along said path while in cutting engagement with the knife means, the improvement which comprises:

moil discharge means downstream of the knife means comprising:

i. a rotatably driven moil discharge wheel; and

ii. an anvil opposite said wheel forming a discharge path with said wheel curving away from said cutting path.

2. In the process of removing a moil from the neck of a plastic article which comprises cutting through the moil while the article and moil are vertically positioned and rolling forwardly about a longitudinal axis, the improvement which comprises:

A. engaging said moil after said cutting with the surfaces of a revolving discharge wheel and a supporting anvil; and

B. conveying said engaged moil along a path away from that taken during said forward rolling movement by means of said revolving wheel.

3,962,939
GLASS GOB SHEARING APPARATUS AND METHOD
Edward J. Stengle, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed May 22, 1975, Ser. No. 579,984
Int. Cl.² B26D *1/06, 7/08*
U.S. Cl. 83—51 **14 Claims**



1. A pair of cooperating shear blades for severing a gob of molten glass from the end of a stream of glass, each blade comprising a metal plate having a rearward end for mounting said plate on a reciprocable shear arm, and a forward forked cutting edge end, raised rib members protruding from one side of said plates and having coplanar surfaces which define a shear plane, said rib members extending rearwardly from adjacent the tips of said forked cutting edge to beyond the rearmost portion of said cutting edge, and a contoured section sloping from said cutting edge rearwardly to the plate surface opposite from said shear plane side.

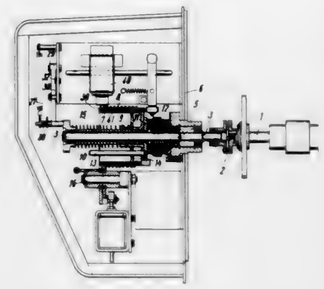
11. A method of severing a stream of molten glass comprising the steps of:

providing a downwardly flowing stream of molten glass;

positioning a pair of shearing blades having a cutting edge in a position to periodically interrupt the flowing stream; and

moving the shearing blades in a reciprocating manner so as to interrupt and shear the stream while maintaining the cutting edges in a non-contacting relationship so that the only frictional contact is between the cutting edge of the shearing blades and the molten glass stream.

3,962,940
APPARATUS FOR METERING COPY MATERIAL IN BLUEPRINT MACHINES
Karl Schleifenbaum, Haiger, and Werner Schweisfurth, Siegen, both of Germany, assignors to Meteor-Siegen Apparatebau Paul Schmeck GmbH, Siegen, Germany
Filed Sept. 10, 1974, Ser. No. 504,834
Claims priority, application Germany, Sept. 10, 1973, 2345538
Int. Cl.² B26D *5/34, 5/00*
U.S. Cl. 83—208 **7 Claims**



1. In a blueprint machine or the like, apparatus for metering copy material, particularly standard length, from a web of copy material fed through said machine, the original material to be copied in said machine being of variable length, said apparatus having a main shaft driven by a shaft forming a part of the main drive of said machine, a threaded sleeve having a rest position, clutch means inter-connecting said main shaft and said threaded sleeve and driving said sleeve in synchronism with said main shaft when said clutch is engaged, follower means received in the threads of said sleeve and displacing said sleeve axially from said rest positin upon driving of said sleeve by said clutch, and means co-acting with said sleeve for generating a signal upon predetermined displacement of said sleeve for controlling severing of said copy material.

3,962,941
PRESS FOR PERFORATING AND TRIMMING BOARDS OF FILAMENTARY MATERIAL
Harald Kober, Wanne-Eickel, Germany, assignor to G. Siempelkamp & Co., Wanne-Eickel, Germany
Filed Feb. 14, 1975, Ser. No. 550,024
Claims priority, application Germany, Feb. 15, 1974, 2407260
Int. Cl.² B26D *5/20*
U.S. Cl. 83—228 **10 Claims**

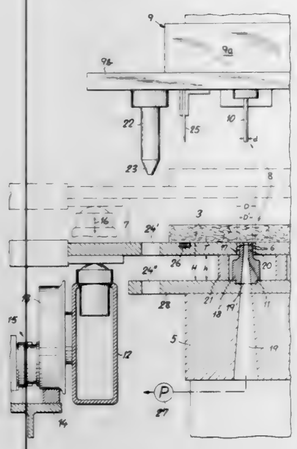
1. A system for punching boards of filamentary material, said system comprising:

a transport tray carrying a sheet of filamentary material and formed with an array of throughgoing holes of predetermined inside diameter, said tray having an upper and lower surface;

a lower press platen receiving said tray carrying said sheet and formed with an array of upwardly opening apertures each of an inside diameter substantially smaller than said holes and registering with a respective hole of said array of throughgoing holes;

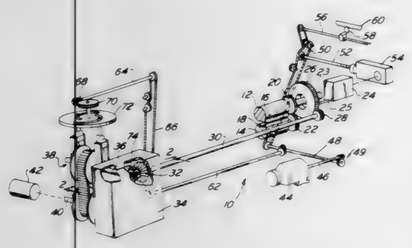
an upper press platen above said lower platen and provided with an array of punch pins each in line with a respective aperture and each of an outside diameter corresponding

substantially to the diameter of said apertures; and
means for relatively displacing said platens together for



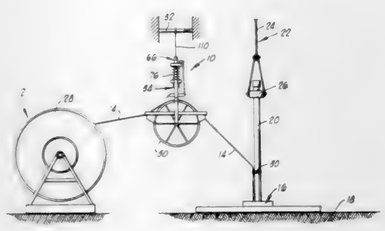
pressing said pins through said sheet, through said holes, and into said apertures for perforating said sheet.

3,962,942
CUTOFF MECHANISM
James T. Ferara, Cherry Hill, N.J., assignor to Molins Machine Company, Inc., Camden, N.J.
Filed Nov. 29, 1974, Ser. No. 528,385
Int. Cl.² B26D *1/56*; **B23D** *25/12*
U.S. Cl. 83—311 **5 Claims**



1. Apparatus for cutting a continuously moving web into sheets comprising
at least one continuously driven cutting blade,
a support for said blade,
a selectively adjustable cyclic mechanism connected to said blade support to cyclically drive said blade so that said blade is at web speed at the instant of cutting,
a drive shaft coupled to said cyclic mechanism for driving the same,
a variable speed drive for rotating said drive shaft at a selectively uniform base speed for cutting sheets having a length within a predetermined range,
a cyclic speed transmission for rotating said drive shaft at a cyclic speed for cutting sheets having a length which is a whole number multiple of sheet lengths in said predetermined range,
said cyclic speed transmission including components for generating said cyclic speed while moving at a speed which is a fraction of said uniform base speed of said drive shaft,
said fraction being unity divided by said whole number, and
clutch means for selectively connecting the output of said variable speed drive directly to said drive shaft and in the alternative indirectly to said drive shaft by way of said cyclic speed transmission.

3,962,943
SAFETY APPARATUS FOR A CABLE FEED SYSTEM
Burl A. Allen, 419 Garrett, Lindsay, Okla. 73052
Filed Aug. 14, 1974, Ser. No. 497,312
Int. Cl.² B26D *5/38*
U.S. Cl. 83—370 **4 Claims**

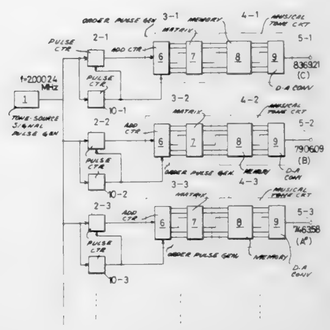


1. A safety apparatus for a cable feed system, comprising:
a frame;
a pulley rotatably supported at one end of the frame, the cable passable over the pulley;
a cutter blade pivotally supported by the frame and positionable in a cutting position and in a non-cutting position relative to the cable;
a spring assembly supported by the frame comprising:
a locking member movable relative to the frame having a lock end, the lock end being positionable in locking engagement with the cutter blade wherein the cutter blade is positioned in the non-cutting position; and
a spring biasing the locking member in locking engagement with the cutter blade; and,
cutter blade biasing means pivoting the cutter blade to the cutting position when the locking member is in non-locking engagement with the cutter blade.

3,962,944
ELECTRONIC MUSICAL INSTRUMENT
Noriji Sakashita, and Seiji Kameyama, both of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan
Filed Feb. 12, 1975, Ser. No. 549,459
Claims priority, application Japan, Feb. 13, 1974, 49-17938
Int. Cl.² G10H *5/06*
U.S. Cl. 84—1.01 **4 Claims**

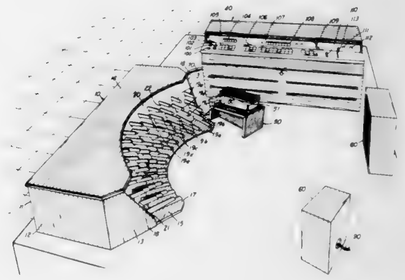
1. An electronic musical instrument comprising a plurality of musical-tone waveform generating means for generating musical tones, a plurality of order pulse generating means for generating order pulses to sample respective of the musical-tone waveform generating means, tone-source-signal generating means for generating a tone-source-signal, and a plurality of counting means coupling said tone-source-signal generating means to respective of said order pulse generating means for dividing the frequency of said tone-source-signal, said counting means including count modifying means to provide for perfecting tone generation, said counting means further including first and second pulse counters each coupled to said tone-source-signal generating means, said first counter being coupled to and supplying count signals to the associated order pulse generating means, said second counter being coupled to

and adapted to reset said first counter, the first and second pulse counters respectively dividing the tone-source-signal by



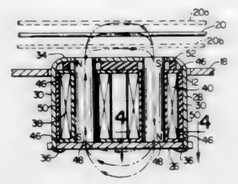
$1/x$ and $1/n$ with the relation of $O<x<n$ with x and n being integral numbers.

3,962,945
FOOT ACTUATED ELECTRONIC ORGAN
Wade E. Creager, and Albert P. Sheppard, both of Atlanta, Ga., assignors to Wade E. Creager, Atlanta, Ga.
Continuation of Ser. No. 372,631, June 22, 1973, abandoned. This application Dec. 11, 1974, Ser. No. 531,479
Int. Cl.² G10H *1/00*, *5/00*
U.S. Cl. 84—1.01 **12 Claims**



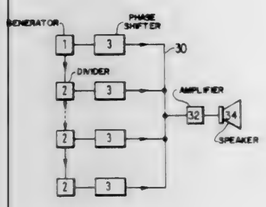
1. In an electronic organ of the type having note generating means, and a bass assembly the combination of:
an array of foot pedals adapted for selection by foot depression;
a control pedal adapted for operation by foot depression;
first logic means connected with said note generating means for producing chords corresponding to selected notes;
second logic means connected with said note generating means for producing chords corresponding to other selected notes;
first switch means actuated by said foot pedals for energizing said first logic means, for enabling said second logic means and for energizing said bass assembly; and
second switch means actuated by said control pedal for energizing said second logic means as enabled by said first switch means, whereby foot operation of said foot pedals and said control pedals provide chord accompaniment so as to free the musician's hands for playing a separate instrument.

3,962,946
MAGNETIC INDUCTION STRINGED INSTRUMENT PICKUP
James H. Rickard, Harwinton, Conn., assignor to Ovation Instruments, Inc., New Hartford, Conn.
Filed Mar. 10, 1975, Ser. No. 556,896
Int. Cl.² G10H *3/00*
U.S. Cl. 84—1.15 **14 Claims**



1. An electrical pickup for a stringed musical instrument, said pickup comprising a hollow housing of electrically conductive non-magnetic material, first and second coils each having an opening with an axis and each having a front end and a rear end, said two coils being arranged side by side and next to one another within said housing with said axes of their openings parallel to one another, a first permanent magnet element extending axially through the opening of said first coil, a second permanent magnet element extending axially through the opening of said second coil, said first magnet element having a front end with a north magnetic pole adjacent said front end of said first coil and a rear end with a south magnetic pole adjacent said rear end of said first coil, and said second magnet element having a front end with a south magnetic pole adjacent said front end of said second coil and a rear end with a north magnetic pole adjacent said rear end of said second coil, said two coils having substantially equal numbers of turns and each having two end leads, and means electrically connecting one end lead of said first coil solely to one end lead of said second coil so that the electrical circuit between the other two of said end leads consists solely of said two coils connected in series with one another in such a way that an electric current in passing serially through said two coils passes clockwise through one coil and counterclockwise through the other of said coils as viewed looking toward said front ends of said coils, said rear ends of said first and second permanent magnet elements being magnetically separated from one another by material having substantially the permeability of air and said front ends of said first and second permanent magnet elements being magnetically separated from one another by material having substantially the permeability of air, and two bobbins of non-magnetic material on each of which a respective one of said two coils is wound, each of said bobbins having a body portion passing through the opening of its associated coil and said body portion having a hole receiving a respective one of said first and second permanent magnet elements, each of said holes being larger in cross section than its associated permanent magnet element and being defined by a major interior surface and a plurality of projections extending radially inwardly from said major interior surface and engaging the associated one of said permanent magnet elements to hold it in spaced relation to said major interior surface, and a material having the resiliency of silicone rubber filling the spaces between each of said permanent elements and said major interior surface of its associated bobbin hole for dampening vibration of said magnet elements relative to said bobbins.

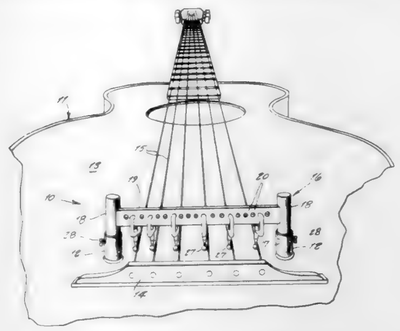
3,962,947
SOUND PRODUCING APPARATUS
Adolf Michel, Ulrichs-Au 1, D-8124 Seeshaupt, Germany
Continuation of Ser. No. 381,554, July 23, 1973, abandoned, which is a continuation of Ser. No. 191,767, Oct. 22, 1971, abandoned. This application Feb. 21, 1975, Ser. No. 551,829
Claims priority, application Germany, Oct. 26, 1970, 2052463; Feb. 27, 1971, 2109438; Aug. 16, 1971, 2140933
Int. Cl.² G10H *1/04, 5/06*
U.S. Cl. 84—1.24 20 Claims



1. An electronic musical instrument having an increased fullness of tone, said instrument comprising:
a. a signal generator for generating a first audio frequency signal corresponding to a single note of the musical scale, said first signal appearing on a first lead;
b. a plurality of serially connected harmonic generators, the first of which receives said first audio frequency signal from said signal generator and each subsequent harmonic generator receiving a new harmonic of the first audio frequency signal from the preceding harmonic generator, each harmonic generator of the series supplying on a respective tone lead an audio frequency signal constituting a new harmonic of said first audio frequency signal and corresponding to a single note of the musical scale;
c. a phase shifter connected to said first lead and a separate phase shifter connected in each said harmonic generator tone lead for subjecting the signal on the lead in which the phase shifter is connected to a cyclic phase shift which is different than the phase shift to which the other of said signals are subjected;
d. means for controlling the period of cycle of each said cyclic phase shifter so the phase shift is not audibly perceptible in the respective individual note; and
e. output means for electrically interconnecting the phase-shifted signals from said phase shifters and converting said signals into audible sound, whereby to the ear of a listener the sound has the character of notes emanating from a plurality of distinct voices.

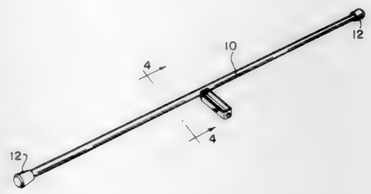
3,962,948
ZITHER-CHORD
Michael Marletta, 278 E. 203rd St., Bronx, N.Y. 10458
Filed June 9, 1975, Ser. No. 585,071
Int. Cl.² G10D *3/02*
U.S. Cl. 84—294 3 Claims

1. In a zither-chord, the combination of a stringed musical instrument such as a guitar, a pair of socket members affixed upon an upper side of a table of said instrument, each socket member having a socket, and a removable bridge mountable in said sockets said bridge straddling a set of strings of said instrument and means depending from said bridge for being



struck by said strings while vibrating when being plucked during playing.

3,962,949
TWIRLING BATON WITH BRAKE
Leonard D. Trowbridge, and Naomi A. Trowbridge, both of 16200 Woodbridge, Harvey, Ill. 60426
Filed Feb. 27, 1975, Ser. No. 553,673
Int. Cl.² G09B *15/02*
U.S. Cl. 84—477 B 4 Claims

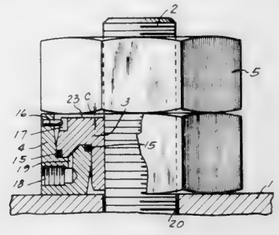


1. A twirling baton comprising in combination an elongated shaft, a spindle anchored at one end in said shaft, midway between its ends, and extending normally therefrom, a handle mounted on said spindle for rotation of said spindle therein, said handle being compressible against said spindle to stop rotation thereof.

3,962,950
BOLT PRETENSIONING DEVICE
Jozsef Piroska, Jarfalla, Sweden, assignor to Eric Rummelhoff, Vallingby, Sweden
Filed Jan. 25, 1974, Ser. No. 433,567
Int. Cl.² F16B *37/00*
U.S. Cl. 85—32 R 3 Claims

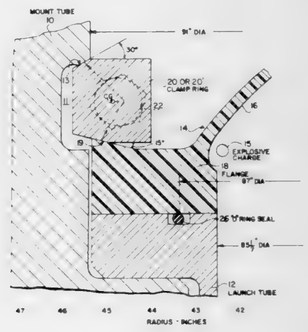
1. A device for tensioning a bolt, having a threaded end projecting from a separate base, during tightening and loosening of a threaded nut carried on the threaded end of the bolt, comprising:
a. an annular piston having a threaded bore for being carried in threaded engagement with said threaded bolt end between said base and said nut in axially spaced relation to said nut, the piston having a stepped external annular surface with a peripheral sealing edge, and the outermost larger diameter piston surface portion converging axially from said step; and
b. an annular cylinder angularly keyed to and slidably receiving and surrounding said piston and defining an annular pressure chamber therewith, said cylinder being adapted to be disposed between and to engage said base and said nut and so sized that the nut can be tightened to

act axially through said cylinder against the base, the cylinder having a stepped annular internal surface comprising a cylindrical larger diameter cylinder surface cooperating with said piston sealing edge and an inner peripheral sealing edge cooperating with a reduced diameter cylindrical surface portion of the piston, and a reduced diameter internal cylinder surface converging axially from the cylinder step, the said sealing edges disposed substantially in a radial plane of the cylinder so



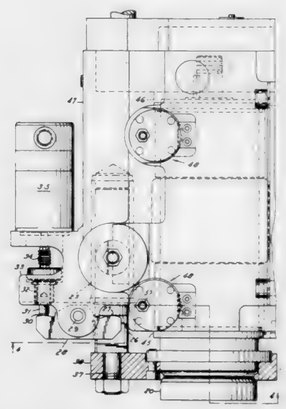
as to enable a slight tilting of the piston in the cylinder, and the said piston-cylinder forming a unit of the same outer configuration as the nut with the ends of the piston spaced axially inwardly of the cylinder end surfaces, said cylinder having fluid inlet means and including a duct extending between said fluid inlet means and said pressure chamber, said piston and said cylinder having sealing means disposed between mating surfaces thereon at the radially innermost and outermost extents of said pressure chamber.

3,962,951
MISSILE LAUNCHING AND HOLD-DOWN DEVICE THEREFOR
Jan M. Schenk, Menlo Park, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 1, 1975, Ser. No. 563,993
Int. Cl.² F41F *3/04*
U.S. Cl. 89—1.81 7 Claims



1. A missile launching device comprising:
a mount tube having a circumferential groove near one end of the mount tube, said groove having a tapered surface;
a launch tube within said mount tube below the location of said groove, said launch tube being adapted to contain therein in a lengthwise direction the missile to be launched;
a shatterable end closure for said device having a circumferential flange resting on said launch tube and predominately below said groove;
and a split ring positioned in said groove engaging both said tapered surface of said groove and said flange below said tapered surface; said split ring having a gap;
an adjustable spreading element in said gap for engaging both ends of said split ring at said gap, said element being rotatable for exerting expanding circumferential pressure on said ring at the location of said gap to thereby increase the diameter of said ring and increase the pressure on said flange.

3,962,952
AUTOMATIC MILLING SLIDE CONTROL
George Carl Bour, Holly, Mich., assignor to The Valeron Corporation, Detroit, Mich.
Filed May 28, 1974, Ser. No. 473,441
Int. Cl.² B23C *1/027*
U.S. Cl. 90—11 A 7 Claims



1. A machine spindle position control system for accurately adjusting from work piece to work piece the effective spindle head axial position and face cutting plane of a cutter comprising;
a spindle head assembly mounted on a machine,
bearings in said assembly supporting the said spindle head for axial movement,
adjustable positive stop means coacting with an abutment surface rigidly associated with said axially displaceable spindle, said adjustable positive stop means being actuatable to establish the limit of spindle head advance to an effective fixed operating position preparatory to starting a machining operation on a given work piece,
actuating means for axial advancing and retracting of said spindle head, and maintaining said spindle in advanced position established by said stop means,
and means for adjusting said positive stop position, during retraction of and preparatory to advancing said spindle head axially for successive machining operations on successive work pieces.

3,962,953
ROTARY TOOL HOLDERS
Philip James Brady, Harrow Weald, and Allen John Alford, London, both of England, assignors to Babb Engineering Company Limited, Waltham Cross, England
Filed Dec. 23, 1974, Ser. No. 535,159
Claims priority, application United Kingdom, Dec. 29, 1973, 60139/73
Int. Cl.² B23C *5/28*
U.S. Cl. 90—11 A 8 Claims

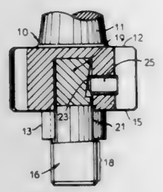
1. In a rotary tool holder of the kind comprising

a rotary body having a forward end which affords an axially extending recess and a radially extending locating face for engagement with a complementary face of a tool to be held, and

a screw threaded member which projects from said recess and is formed with screw thread means for engagement with said tool,

the improvement comprising

a. head means on the screw threaded member, said head means being disposed within said recess for preventing relative rotational movement between the body and the screw thread member, said head means including a transversely extending head to provide a longer transverse head dimension in one direction within a plane than in any other direction within said plane, the head being



slidably received within said recess which is correspondingly configurated to slidably receive the head and to coact with the head to prevent said relative rotational movement,

b. on the head, at least one laterally presented face which is inclined outwardly in a direction away from the forward end of the body, and

c. on the body, at least one locking screw movable in a direction towards said inclined face to a first position and away from said inclined face to a second position, said first position holds the screw threaded member in an axially retracted position by engagement of said locking screw with said inclined face at a position adjacent to the end thereof nearer the forward end of the body, said second position allows the screw threaded member to move axially outwardly relative to the body.

3,962,954

SUPPLY APPARATUS FOR TWO RECEIVING MEANS HAVING A PRESSURE SUMMATION DEVICE

René F. Jacob, Le-Plessis-Belleville, and Pierre C. Fillion, Nanteuil-le-Haudouin, both of France, assignors to Poclain, Le-Plessis-Belleville, France

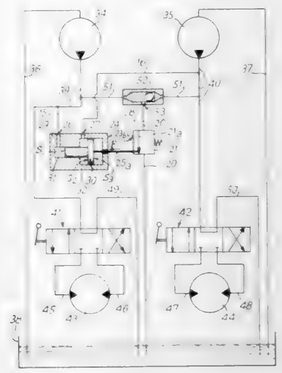
Filed Feb. 3, 1975, Ser. No. 546,830

Claims priority, application France, Feb. 4, 1974, 74.03659

Int. Cl.² F15B *11/16*

U.S. Cl. 91—412 **4 Claims**

1. A hydraulic power supply system for supplying pressurized fluid to first and second fluid operated means such as hydraulic motors, said system comprising pressurized fluid source means, a flow divider having an inlet and first and second outlets, a delivery pipe connecting said pressurized fluid source means to said inlet of said flow divider, first and second main pipes each of which is connected on one end to one of the fluid operated means and on an opposite end to one of the outlets of said flow divider, a pressure summation device having first and second inlets, a first auxiliary pipe connecting one of said main pipes to said first inlet of said pressure summation device, a second auxiliary pipe connecting the other one of said main pipes to said second inlet of said pressure summation device, a shunt discharge pipe connected on one end to said delivery pipe, a calibrated relief valve positioned in said shunt discharge pipe and including a movable valving member mounted for movement between an open position in which flow through said shunt discharge pipe is permitted and a closed position in which flow through said shunt discharge pipe is prevented, said valving member being urged toward said open position by the pressure of fluid in the portion of said discharge pipe located between the connection of the discharge pipe to the delivery pipe and the calibrated relief valve, said pressure summation device including an enclosure defining first and second cylinder sections, a double piston having first and second piston portions of different cross-sectional area, said first piston portion being mounted for reciprocation in said first cylinder section and said second piston portion being mounted for reciprocation in said second cylinder section, said first and second piston portions having faces in first and second chambers of said enclosure, said first and second inlets of said pressure summation device being connected to respective ones of said first and second chambers, wherein said double piston comprises a movable output



member which exerts a force which is indicative of the sum of the pressures supplied to said first and second inlets of the pressure summation device and means mechanically connecting said double piston to said movable valving member of said relief valve for urging said movable member with progressively increasing force toward its open position as the sum of the pressures in the inlets of said pressure summation device increases.

3. An apparatus for supplying pressurized fluid to first and second fluid operated means, said apparatus comprising first and second pressurized fluid sources, a first main pipe connected on one end to said first pressurized fluid source and connected on an opposite end to said first fluid operated means, a second main pipe connected on one end to said second pressurized fluid source and connected on an opposite end to said second fluid operated means, a pressure summation device having first and second pressure input inlets and a movable output member, a first auxiliary pipe connected on one end to said first main pipe and connected on an opposite end to said first pressure input inlet of said pressure summation device, a second auxiliary pipe connected on one end to said second main pipe and connected on an opposite end to said second pressure input inlet of said pressure summation device, connecting pipe means extending between said first main pipe and said second main pipe, shuttle valve means mounted in said connecting pipe means, said shuttle valve means having a discharge outlet, a discharge pipe connected to said discharge outlet of said shuttle valve means, a calibrated relief valve mounted in said discharge pipe, said calibrated relief valve having a movable valving member movable between an open position and in which flow through said discharge pipe is freely permitted and a closed position blocking flow through said open position by the pressure of fluid in the portion of said discharge pipe located between the outlet of said shuttle valve and said calibrated relief valve, said fluid pressure in said portion of said discharge pipe being applied to said movable valving member by a control pipe connected to said portion of said discharge pipe on one end and on an opposite end to the body of said relief valve, said pressure summation device comprising an enclosure providing first and second cylinder sections, a double piston having first and second piston portions respectively mounted in said first and second cylinder sections, said first and second piston portions having faces in first and second chambers in said enclosure, said first and second inlets of said pressure summation device being connected to respective ones of said first and second chambers and means mechanically connecting said double piston to said movable valving member of said calibrated relief valve so that the sum of the pressures in said first and second inlets of the pressure summation device results in a force exerted by said double piston which is in proportion to the sum of said pressures urging said movable valving member toward said open position.

3,962,955

POWER TRIM-TILT SYSTEM

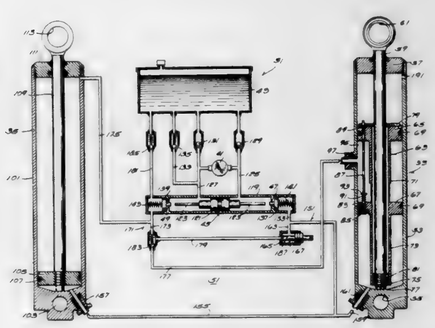
Gaylord M. Borst, Waukegan, and Martin H. Meyer, Libertyville, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 320,913, Jan. 4, 1973, Pat. No. 3,885,517.

This application Mar. 12, 1974, Ser. No. 450,465

Int. Cl.² F15B *15/22*

U.S. Cl. 91—401 **2 Claims**



1. A single acting hydraulic cylinder-piston assembly comprising a cylinder having first and second ends, and a constantly open vent opening adjacent to said second end of said cylinder, a piston assembly located in said cylinder for movement axially thereof and including a first piston sealingly engaged with said cylinder, located adjacent to said first end of said cylinder, and having therein a port, a second piston sealingly engaged with said cylinder and spaced axially from said first piston and located adjacent to said second end of said cylinder, tubular means connecting said first and second pistons said first and second pistons and said tubular means defining therebetween an annular space, a piston rod, said piston rod being mounted within said tubular means for limited axial movement relative to said pistons and cylinder, a first hydraulic fluid fitting adjacent said first end of said cylinder, a second hydraulic fluid fitting on said cylinder intermediate said first and second pistons and communicating with said annular space at all positions of said piston assembly in said cylinder, valve means normally closing said port, and position responsive means for operating said valve means to open said port upon movement of said piston assembly to adjacent said second end of said cylinder, said valve means includes a valve member, and said operating means comprises an axially extending bore in said second piston and a valve stem on said valve member and extending through said bore in said second piston for engagement with said second end of said cylinder upon movement of said piston assembly to adjacent said second end of said cylinder.

3,962,956

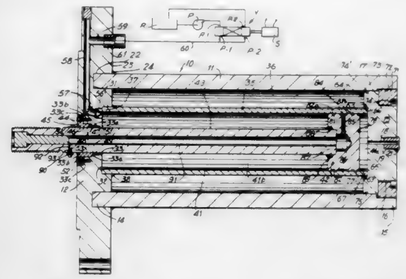
HYDROPNEUMATIC VALVE ACTUATOR

Alphonse A. Jacobellis, Woodland Hills, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed Nov. 19, 1974, Ser. No. 525,203

Int. Cl.² F15B *11/08, 13/04, 21/04*

U.S. Cl. 91—418 **9 Claims**



1. A valve actuator comprising an outer cylindrical casing having a closure member at each end thereof, one of said closure members having an axial bore therethrough, an inner cylindrical casing positioned in said outer casing coaxial therewith and transversely spaced therefrom to define an elongated annular chamber with said outer casing, a piston slidably mounted in said inner casing, said piston having a piston rod extending axially therefrom through said axial bore in said one closure member, means providing communication between said annular chamber and the portion of said inner casing between the other closure member and said piston means for charging said annular chamber and the portion of said inner casing between the other closure member and said piston with gas under pressure, means to supply the portion of said inner casing between said one closure member and the piston with liquid under a pressure higher than said gas under pressure, said piston having a pair of spaced annular sealing members in its outer periphery defining seals with respect to the inner wall surface of said inner casing at least one of said pair of sealing members preventing gas leakage into the portion to be charged with liquid and means to detect liquid leakage past at least one of said pair of said sealing members, said leakage detecting means including passageway means for communicating the outer periphery of the piston between said pair of sealing members with the ambient, said passageway means including normally closed relief valve means for venting liquid in said passageway means by opening at a pressure lower than liquid pressure in said inner casing between said one closure member and the piston, said relief valve remaining closed at pressures between said gas pressure and said liquid pressure such as to prevent venting to ambient of gas leakage past another of said sealing members into said passageway means.

3,962,957

CURLING DEVICE FOR WEBS OF PAPER OR THE LIKE

Alfred Hinzmann, Richmond, Va., assignor to Hauni-Werke Korber & Co., KG, Hamburg, Germany

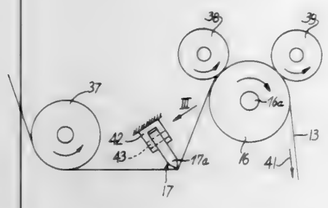
Filed Sept. 10, 1974, Ser. No. 504,757

Int. Cl.² B31F *7/00*

U.S. Cl. 93—1 R **10 Claims**

1. Apparatus for reducing localized stresses in and/or for equalizing the length of lengthwise extending portions of a web consisting of paper of other flexible material, particularly of a web which is stored in the form of a bobbin and is used in the manufacture of smokers' products, comprising means for moving a web lengthwise along a predetermined path; a supporting device adjacent to said path; and a curling device mounted in said supporting device and having an elongated web contacting member extending substantially transversely of and into said path so that one side of the web in said path exerts pressure against and the web is flexed by said member,

at least said member of said curling device being tiltable (movable) with respect to said supporting device in a plane extending transversely of said path in response to unequal distribu-



tion of web pressure lengthwise of said member to thereby promote the equalization of web pressure lengthwise of said member.

3,962,958

TUBE FORMER WITH WEAR INSERT

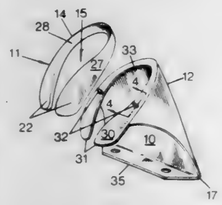
Jack Hobart, 24, Riversleigh Road, Leamington Spa, England

Filed Jan. 21, 1975, Ser. No. 542,815

Claims priority, application United Kingdom, Jan. 24, 1974, 3304/74

Int. Cl.² B31B *1/36, 23/26;* **B65B** *9/06*

U.S. Cl. 93—20 **3 Claims**



1. A former, for manipulating an elongate sheet of packaging material into a tube, comprising the combination of a body and a wear insert, a preformer surface jointly defined by said body and said wear insert over which the sheet is to be pulled, the preformer surface terminating in an edge, said edge defining an aperture through which the sheet is to be drawn in a predetermined direction that is at an acute angle to the preformer surface, the aperture and the preformer surface being so shaped and positioned relative to each other that the portion of the sheet passing through the aperture will be manipulated into a tube having its longitudinal edges slightly overlapped, the wear insert being detachably supported by the body and defining both the aforesaid edge of the preformer surface and a continuous portion of the preformer surface lying immediately adjacent the edge, the wear insert also defining a continuous portion of a surface within the aperture, and the body and the wear insert abutting on a generally flat surface which does not intersect the edge defining the aperture and is positioned so that the wear insert will be substantially symmetrical.

3,962,959

METHOD OF MAKING DISPOSABLE CONTAINER FOR BULK MATERIALS

Robert R. Williamson, Dallas, Tex., assignor to Better Agricultural Goals Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 460,053, April 11, 1974. This application Dec. 16, 1974, Ser. No. 533,461

Int. Cl.² B31B *39/00*

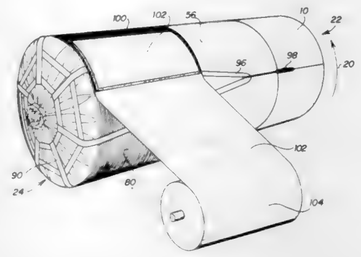
U.S. Cl. 93—35 R **30 Claims**

4. A method of forming a receptacle comprising the steps of:

a. locating a first cylindrical wall of sheet material in a work area;

b. positioning a second cylindrical wall of sheet material concentrically around said first wall;

c. attaching a filament material to the exterior of said second wall to define the body of the receptacle;



d. positioning a sling around the exterior of said second wall with the sling extending longitudinally along the body of the receptacle from one end thereof to the other;

e. positioning a third cylindrical wall of sheet material concentric with said second wall and around the exterior of said sling; and

f. releasably closing the ends of one end of said first and second walls.

3,962,960

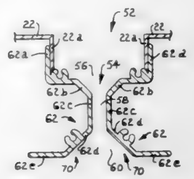
VERTICAL DISCHARGE SLOT DIFFUSER WITH HIGH INDUCTION RATIO

Frank J. Dean, Kansas City, Mo., assignor to Tempmaster Corporation, Kansas City, Mo.

Continuation of Ser. No. 428,333, Dec. 26, 1973, abandoned. This application Feb. 5, 1975, Ser. No. 547,174

Int. Cl.² F24F *13/06*

U.S. Cl. 98—40 C **2 Claims**



1. In an air diffuser device positionable near a wall or window to reduce the effect of thermal leakage through same, the improvement comprising:

a housing having an inlet suitable for connection with a source of conditioned air;

an elongate outlet slot extending substantially the length of said housing to direct air generally vertically therefrom, said outlet slot being of substantially uniform width;

a pair of substantially parallel flanges extending from said housing on opposite sides of said outlet slot to define the width thereof; and diffuser structure including:

a pair of substantially parallel flange sections secured to the respective flanges of said housing in overlapping relation therewith;

first wall portions coupled with said flange sections and spaced apart from one another, said first wall portions being angled to define a converging section for receiving air from said outlet slot;

second wall portions extending in spaced apart relation from said first wall portions, said second wall portions being substantially parallel to define a restricted throat section adjacent said conveying section; and

third wall portions extending in spaced apart relation from said second wall portions, said third wall portions being angled to define a diverging discharge section adjacent said throat section,

said wall portions each forming a substantial part of said diffuser structure and said diverging, throat and converging sections each being symmetrical with respect to a vertical plane passing therethrough.

3,962,961

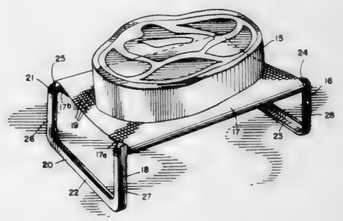
APPARATUS FOR ROASTING MEAT

Leo Peters, 750 Plymouth Road, SE., Grand Rapids, Mich. 49506

Division of Ser. No. 50,374, June 29, 1970. This application Jan. 2, 1975, Ser. No. 537,892

Int. Cl.² A47J *43/18*

U.S. Cl. 99—426 **4 Claims**



1. An apparatus for roasting meat comprising a frame and a flexible, relatively non-heat-retaining web supported by the frame, the web having a length and width greater than the length and width of the meat that is to rest and be roasted thereon and being formed of a material which is sufficiently flexible to permit the web to conform to the contour of meat of various shapes and of a material which is comfortable to the human hand at roasting temperatures of meat, the web being adapted to support the meat out of contact with the frame, the frame being adapted to support the web and the meat within an oven out of contact with the oven's surfaces.

3,962,962

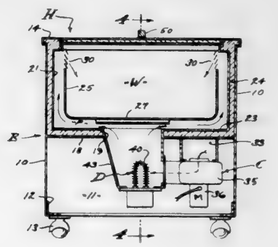
SYSTEM AND HOT CABINET SERVER

William G. Anderson, 5942 Gildred Circle, Huntington Beach, Calif. 92647

Filed Oct. 3, 1974, Ser. No. 511,625

Int. Cl.² A47F *3/04*

U.S. Cl. 99—474 **12 Claims**



4. A Hot Cabinet for conditioning pre-packaged foods and the like and to maintain the same at a predetermined temperature and including; a bin type cabinet body of three dimensional rectangular configuration with corner related side and end and bottom panels, an upwardly open well complementary to and depending into the body in spaced relation to the side and end and bottom panels thereof and forming a plenum therebetween, there being a central opening through the said bottom panel, a temperature responsive heating means in open communication with the plenum through said central opening, and means inducing air from the corners of the well and discharging the same from the sides of the well and thereinto for recirculation.

3,962,963

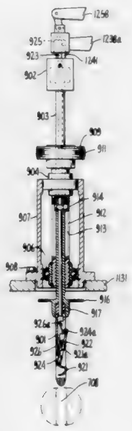
MACHINE FOR SEED CELLING APPLES

Robert G. Ellis, Richmond, Calif., assignor to Atlas Pacific Engineering Company, Emeryville, Calif.

Division of Ser. No. 247,838, April 26, 1972, Pat. No. 3,869,974. This application Jan. 9, 1974, Ser. No. 431,691

Int. Cl.² A23N *4/14, 7/08;* **A47J** *25/00*

U.S. Cl. 99—544 **5 Claims**



1. A seed celling knife comprising a tubular member adapted to be moved axially into and out of a cylindrical core hole cut in a piece of fruit, said tubular member having a slot in one side thereof, means for moving the member into and out of the core hole in the fruit, a seed celling knife means having a cutting edge and mounted pivotally in the tubular member and pivotally movable between a first position wherein the knife cutting edge is confined within the tubular member and a second position wherein the knife cutting edge projects radially outwardly through the slot and beyond the tubular member, and means for moving the knife cutting edge from the first position to the second position as the tubular member is moved into and out of the core hole, said means comprising a reciprocating rod axially reciprocable in the tubular member and having a camming surface thereon engageable with the knife means to effect progressive extension and retraction of the knife cutting edge as the rod is reciprocated.

3,962,964

COMPACTOR CYCLE CONTROL

Einar O. Engebretsen, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Sept. 17, 1974, Ser. No. 506,695

Int. Cl.² B30B *15/14*

U.S. Cl. 100—51 **4 Claims**

1. In a trash compacting machine having a receptacle for material to be compacted within a compacting compartment,

a door enabling placement of the receptacle within and withdrawal of the receptacle from said compacting compartment,

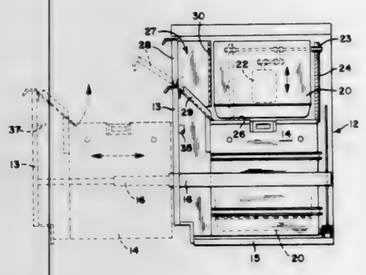
a ram mounted for cyclical movement in a compacting stroke from a starting position outside said receptacle to a compacting position within said receptacle and thereaf-

ter in a retracting stroke to its starting position, said ram in its compacting position preventing deposit of trash in said receptacle,

a storage compartment associated with said machine adjacent said compacting compartment,

an access door for said storage compartment for placement of trash therein, said storage compartment being accessible through said access door to receive and hold trash while said receptacle is within said compacting compartment and said ram is in compacting position within said receptacle and being operable to transfer the held trash into said receptacle when said ram is later moved to said starting position,

means for driving said ram through the compacting and retracting strokes including an induction motor having a



main winding and a phase reversible starting winding controlled by a starting switch,

a control for said motor in which said starting switch has contacts closed when said motor is stopped and further contacts closed when said motor is running,

said further contacts being incorporated in the power supply to the mian motor winding such that said motor stops when stalled at the end of a compacting stroke,

and a cycle selector switch connected when closed to bypass said further contacts to complete a starting circuit causing a retracting stroke of the ram,

said cycle selector switch providing a selection between complete cycle operation and an interrupted cycle in which said ram is stopped at the end of its compacting stroke.

3,962,965

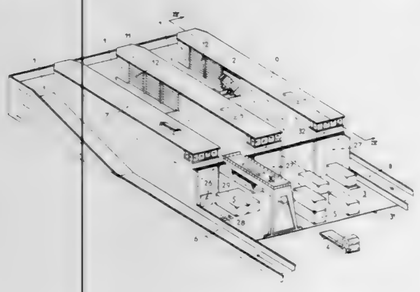
PLANT FOR THE COMPRESSION OF GARBAGE

Antoine Corompt, Saint-Etienne, France, assignor to Bennes Marrel, Saint-Etienne, France

Filed July 18, 1972, Ser. No. 272,839

Int. Cl.² B30B *15/30*

U.S. Cl. 100—99 **14 Claims**



1. A non-transportable plant for the compaction of garbage or refuse and its removal in containers, comprising:

a large capacity storage pit for the unloading of refuse;

compactor means placed at the end of said storage pit for the compaction of garbage or refuse into the container;

a hopper disposed above said compactor means;

transferring means in said storage pit for transferring the garbage from said storage pit to said hopper;

a weighing machine having a scale plate, said scale plate being disposed in front of the outlet of said compactor means so as to align any container employed thereon with said compactor means;

first and second carriers, said first carrier flexibly connected to said second carrier;

longitudinal tracks on each of said carriers for carrying a container thereon;

a transverse track on which said first and second carriers are moveable in a transverse direction, a portion of said transverse track being located upon said scale plate;

alternating translation means for causing said carriers to travel on said transverse track in order to bring each carrier alternately onto said weighing machine and into alignment with said compactor means.

3,962,966

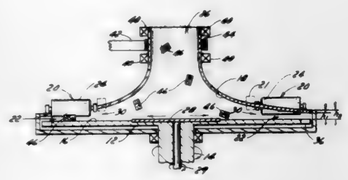
CHIP CRUSHER

Joseph A. LaPointe, Pointe Claire, Canada, assignor to Domtar Limited, Montreal, Canada

Filed Mar. 3, 1975, Ser. No. 554,985

Int. Cl.² B30B *3/02*

U.S. Cl. 100—156 **18 Claims**



1. A crusher comprising a disc, means to rotate said disc on an axis, said disc having a working surface, a housing enclosing said disc, an inlet in said housing for feeding chips to said disc adjacent said axis, an outlet from said housing, at least one roll mounted for rotation on its longitudinal axis, said roll cooperating with an annular area of said working surface to form a nip, the surface of said roll and said annular area being substantially parallel in said nip, means to fling said chips radially outward of said disc whereby to spread said chips in a substantially single thickness layer of said chips and to introduce said chips into said nip.

3,962,967

HORIZONTAL TRASH COMPACTOR

Lewis P. White, 3436 Brookwood Road, Birmingham, Ala. 35223

Continuation-in-part of Ser. No. 246,640, April 24, 1972, Pat. No. 3,893,385, which is a continuation-in-part of Ser. No. 55,706, July 17, 1970, Pat. No. 3,657,999. This application June 26, 1975, Ser. No. 590,513

Int. Cl.² B30B *1/08, 15/32*

U.S. Cl. 100—191 **14 Claims**

1. A trash compactor comprising:

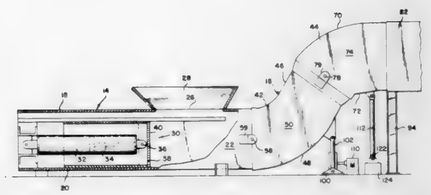
a. an elongated chamber, said elongated chamber including a rectilinear section and a curvilinear section,

b. means for admitting trash to said rectilinear section,

c. power means for moving trash longitudinally through said rectilinear section into said curvilinear section,

d. the trash frictionally engaging the walls of the curvilinear

portion to compress the same, and



e. means for selectively changing the angularity of the curvilinear section to vary the friction between the trash and walls, for controlling the compression of the trash.

3,962,968

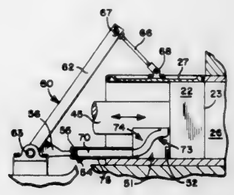
SELF CLOSING DOOR FOR BALING PRESS

Murray C. Tribbett, and Nicholas L. Manko, both of Piqua, Ohio, assignors to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Feb. 10, 1975, Ser. No. 548,393

Int. Cl.² B30B *15/30*

U.S. Cl. 100—215 **5 Claims**



1. In a baling press having means defining a cavity with loading and unloading openings, door means controlling said loading opening, a bolster movably supported in said cavity and arranged to move past said loading opening to reduce the volume of said cavity and compress material loaded therein, a ram connected to reciprocate said bolster within said cavity between a retracted position clear of said loading opening and an advanced position beyond said loading opening,

the improvement comprising means pivotally mounting said door means for movement between an open position extending above said cavity and in a plane transversely of the path of movement of said ram and a closed position extending across said loading opening,

cooperating cam and follower means mounted one to reciprocate with said ram and the other to move said door means to its closed position in response to advancing movement of said bolster from its retracted position in a compression stroke and to hold said door means closed until said bolster returns to its retracted position.

3,962,969

INK MIST TYPE HIGH SPEED PRINTER

Akinori Watanabe; Katsuhide Tanoshima, and Matsusaburo Noguchi, all of Tokyo, Japan, assignors to Oki Electric Industry Company, Ltd., Tokyo, Japan

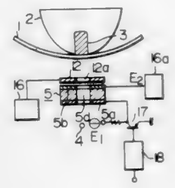
Filed Nov. 22, 1974, Ser. No. 526,387

Claims priority, application Japan, Dec. 3, 1973, 48-134408

Int. Cl.² G01D *15/16*

U.S. Cl. 101—1 **3 Claims**

1. In an ink mist type printer for use in printing information on a printing medium, which printer includes means for generating an ion stream comprising a pair of spaced upper and lower electrodes to which a high voltage is applied, means positioned between said electrodes for modulating said ion stream including an electrically controlled aperture board having a plurality of apertures therein, said apertures being positioned in at least one aligned row through which the ion stream passes and is modulated, means for supplying an ink mist between the aperture board and the upper of said electrodes whereby the modulated ion stream charges the mist according to the pattern to be printed on a printing medium arranged parallel to the flow of said ink mist and between said upper electrode and the aperture board whereby characters



are printed on said medium by the attraction to said upper electrode of the charged ink mist; the improvement which comprises a conductive dust protection board positioned above said aperture board and below said printing medium, said protection board having a plurality of apertures formed therein corresponding to and located in alignment with said apertures of said aperture board, thereby to prevent dust particles from falling downwardly from the printing medium onto said aperture board.

3,962,970

APPARATUS FOR SUPPORTING AND PRINTING NON-CIRCULAR CONTAINERS

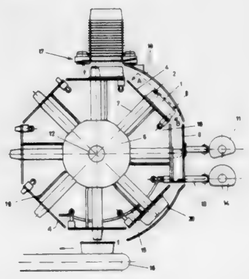
Robert Willem Tielrooy, Amstelveen, Netherlands, assignor to Van Dam Machine Corporation, Amsterdam, Netherlands

Filed Dec. 2, 1974, Ser. No. 528,909

Claims priority, application Netherlands, Dec. 6, 1973, 7316702

Int. Cl.² B41F *17/26*

U.S. Cl. 101—38 A **4 Claims**



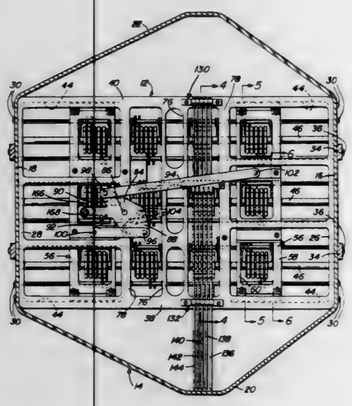
1. In an apparatus for printing on the outer surface of a container having a given cross sectional area by rotating or moving the container surface around rotatable mandrel means which reach into the container for pressing the container surface against a rotating printing surface, the improvement wherein said mandrel means comprise a first mandrel, means rotatably supporting said first mandrel, said first mandrel having a circular cross section smaller in area than said given cross sectional area of said container, said first mandrel being positioned relative to said rotating printing surface to perform said pressing of the outer container wall against the printing surface, a second mandrel located in parallel to and spaced from said first mandrel for cooperation with said first mandrel inside a container to position said container prior to printing, and actuating means operatively connected to said second

mandrel for withdrawing said second mandrel from said container prior and during printing.

3,962,971
GANG-TYPE PRICE MARKER

Ralph L. J. Armstrong, 2202 Monticello Place, Springdale, Ark. 72764, and Jeffrey M. Stockton, 41 Eastwood Drive, Hutchinson, Kans. 67501

Filed Oct. 3, 1974, Ser. No. 511,701
Int. Cl.² B41J *1/32*
U.S. Cl. 101—42 **5 Claims**

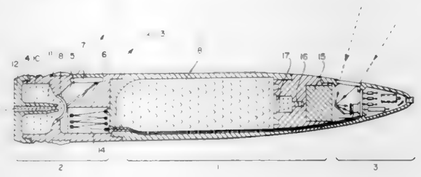


1. A price marker for price stamping all containers in a case or carton at one time, said marker including a frame, at least two sets of price stamp assemblies supported from said frame, each set of assemblies including at least three assemblies spaced apart in a horizontal row and said sets of assemblies being supported from said frame with the rows of assemblies disposed in generally parallel horizontally spaced apart side-by-side relation, each price stamp assembly including a plurality of price stamp wheels supported for independent angular adjustable positioning about an axis extending transversely of said rows and in a plane containing said rows for bringing selected peripheral portions thereof into a lower price stamping position, at least one set of said assemblies being stationarily supported from said frame and at least one set of said assemblies being supported from said frame for adjustable shifting relative to said frame in said plane for varying the spacing between said sets of assemblies, actuator means shiftably supported from said frame and operatively connected to said adjustably shiftable set of assemblies for simultaneously shifting all of the assemblies of said shiftable set relative to said frame, each wheel of each assembly corresponding to a predetermined wheel of each other assembly, and price change adjustment means shiftably supported from said frame and including a shiftable operator associated with each group of corresponding stamp wheels of said sets of assemblies, and connecting drive means operatively connected between each operator and the associated group of stamp wheels of said assemblies, whereby adjustment of each operator will simultaneously adjustably shift the associated stamp wheels of all stamp assemblies, said connecting drive means including means operative to adjust the associated stamp wheels of the stationary assemblies as well as the adjustable sets of assemblies throughout the range of adjustment of said adjustable sets of assemblies relative to said frame

3,962,972
DEVICE FOR EMITTING RADIATION, FOR A PROJECTILE, SHELL ETC.

Lars-Erik Skagerlund, and Rolf Lennart Stalfors, both of Karlskoga, Sweden, assignors to AB Bofors, Bofors, Sweden

Filed July 10, 1974, Ser. No. 487,102
Claims priority, application Sweden, Aug. 3, 1973, 7310678
Int. Cl.² F42C *13/02*
U.S. Cl. 102—70.2 R **9 Claims**

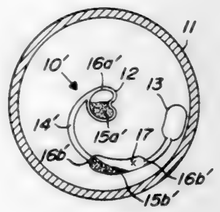


1. A device for emitting radiation from a projectile comprising a pyrotechnical charge located within the body of said projectile, an opening in the body of said projectile, means defining a channel extending between said opening and the space within said body containing said pyrotechnical charge for emitting radiation via said channel and opening when said charge has been ignited, and a membrane located between said pyrotechnical charge and said channel, said membrane comprising a source of radiant energy when heated by said pyrotechnicaL charge.

3,962,973
TIME DELAY CONTROL MECHANISM

Don M. Duel, Phoenix, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Oct. 29, 1974, Ser. No. 518,325
Int. Cl.² F42C *15/26*
U.S. Cl. 102—80 **7 Claims**

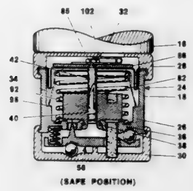


1. A time delay mechanism in a safing and arming device of a spin-projectile, comprising:
first chamber disposed substantially at the center axis of said projectile,
second chamber disposed at a greater radius than said first chamber,
fluent material contained in said first chamber for rendering said spin-projectile safe,
means for retaining said fluent material in said first chamber, said retaining means removable upon application of a set back force applied to the projectile, and
a channel connecting said first chamber to said second chamber, said channel is so formed as to retain said fluent material when acted upon by both the centrifugal force and the force of angular acceleration of said spin-projectile in motion and to allow said fluent material to move to said second chamber when the force of said angular acceleration is removed from said fluent material for arming said spin-projectile.

3,962,974
PRESSURE-ARMED ORDNANCE FUZE

Matthew E. Anderson, and Stephen L. Redmond, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 4, 1973, Ser. No. 322,804
Int. Cl.² F42C *5/00*
U.S. Cl. 102—81 **5 Claims**



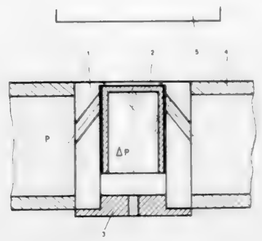
1. A safety, arming and firing device comprising:
a housing having a fluid inlet port;
a rotor mounted within said housing and normally oriented to a "safe" position;
said rotor supporting a detonator;
a firing mechanism mounted in said housing for initiating said detonator when aligned therewith;
rectilinear driving means positioned within the housing and movable a predetermined distance in one direction with respect to the rotor in response to a predetermined external source of fluid pressure admitted through said inlet port to orient the rotor in a "commit-to-arm" position;
said driving means having means for rotating the rotor from the "commit-to-arm" position to an "armed" position where said detonator is aligned with the firing mechanism;
an arming spring energized by said fluid pressure for returning said driving means toward the original position in the absence of said fluid pressure to effect said rotor rotation;
means for locking said driving means in said "safe" position;
said locking means comprising a shoulder on the internal wall of the housing and a crown spring having laterally compressible fingers normally engaging said shoulder;
means responsive to the fluid pressure for releasing said locking means;
said releasing means being a flexible cup-shaped diaphragm extending across said housing to seal the rotor from the inlet port, said diaphragm having a portion extending laterally adjacent said fingers for disengaging the latter under fluid pressure.

3,962,975
FLUIDIC VALVE

Philippe Jean Monserie, Le Monceau, Estouy-par-Pithiviers (Loiret), France

Filed Dec. 23, 1974, Ser. No. 535,210
Claims priority, application France, Dec. 26, 1973, 73.46691
Int. Cl.² B61B *13/08*
U.S. Cl. 104—23 FS **10 Claims**

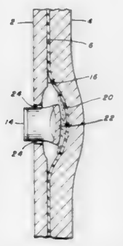
1. A fluidic valve for permitting the propelling and sustaining of a moving body on an air cushion by means of a fluid under pressure, said valve having orifices receiving fluid under pressure, said valve including a hollow piston, a jacket having said piston movable therein, and said jacket including a base, a stopper closing the base of said jacket, there being a vent in said stopper, said jacket including lateral openings that communicate with the fluid under pressure, and wherein said last named openings can be closed by said movable piston.



3,962,976
COMPOSITE ARMOR STRUCTURE

Ronald A. Kelsey, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 16, 1971, Ser. No. 172,132
Int. Cl.² F41H *5/04*
U.S. Cl. 109—82 **6 Claims**



1. A composite armor structure comprising
a frontal plate composed of an aluminum-zinc alloy having an ultimate tensile strength greater than 70 ksi,
a backup plate composed of an aluminum-magnesium alloy having an ultimate tensile strength of about 30 to 70 ksi,
a non-metallic filler material interposed between said frontal plate and said backup plate, and
said filler material being selected from the group consisting of epoxies, phenolics, polyesters, polycarbonates and high density polyvinyls, whereby said composite armor structure resists passage of shell fragments therethrough and resists rearward discharge of spalled material upon frontal plate impact by a projectile.

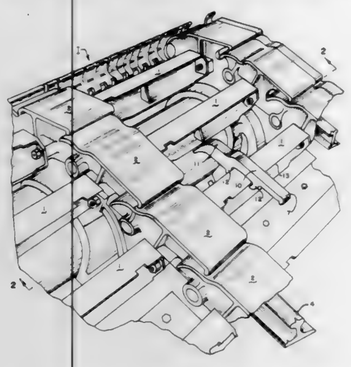
3,962,977
GRATE BAR CASTING FOR INCINERATOR OR OTHER CONVEYOR

Tracy C. Calame, Godfrey, and William A. Cannon, Alton, both of Ill., assignors to Illinois Stoker Company, Alton, Ill.

Filed Dec. 23, 1974, Ser. No. 535,961
Int. Cl.² F23B *1/22*
U.S. Cl. 110—38 **9 Claims**

1. An improvement in a grate bar casting for use as a component in a conveyor and of the type for supporting the links forming the conveyor surface and incorporating a length of web having integral upper and lower flanges to support the weight of said conveyor links and any materials deposited thereon, the improvement which comprises at least one gusset connecting integrally with the web and extending the spacing between and connecting to the upper and lower integral flanges to enhance the load bearing attributes of the grate bar,

said gussets being disposed inwardly from the ends of said grate bar, with one of said gussets being disposed centrally to



one side of the bar web, and a pair of said gussets being arranged off-center to the other side of said bar web.

3,962,978

HANDLING OF HOT PARTICULATE MATERIALS, SUCH AS FOR EXAMPLE, HOT AGGLOMERATED COAL ASH AND COAL ASH CLINKER

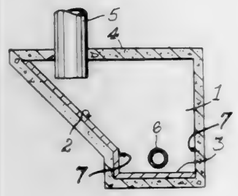
Abraham Daniel Bosman, Sasolburg, South Africa, assignor to South African Coal, Oil and Gas Corporation Limited, Sasolburg, South Africa

Filed Feb. 27, 1975, Ser. No. 553,787

Claims priority, application South Africa, Feb. 27, 1974, 74/1296

Int. Cl.² F23J *1/00*

U.S. Cl. 110—165 R **21 Claims**



1. A method of handling hot particulate material including the steps of producing a flow of liquid coolant of increasing depth over a solid surface, in which there is substantially no increase in the width of flow with increasing depth; introducing hot particulate material into the path of flow of coolant to create a temporary barrier arresting the flow of coolant; and allowing accumulated coolant to breach the barrier and carry away with it particulate material of the temporary barrier, the rate of flow of liquid coolant being sufficiently low that a protective layer of particulate material is formed on said surface to minimize wear of said surface.

4. Means for handling hot particulate material including a longitudinally inclined sluiceway with a cross-sectional configuration such that there is substantially no increase in the width of a flow of liquid therealong with increasing depth; means defining a receiving zone transversely offset from the longitudinal centre line of the sluiceway to receive hot particulate material and to allow such material to enter the sluiceway; and means to introduce liquid coolant into the sluiceway to produce a flow of coolant at a low rate over substantially the entire width of the sluiceway past the region in which particulate material enters the sluiceway from the receiving zone, the sluiceway having a substantially plane bottom and sides, the sides being substantially vertical or inclined to converge upwardly.

3,962,979

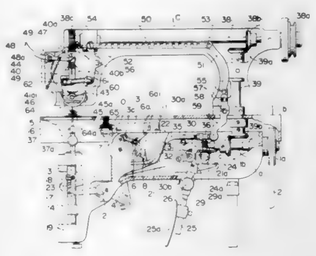
SEWING MACHINE

Yazaki Yoshiharu, 4-11, Shiniuku 1-chome, Shinjuku, Tokyo, Japan

Filed Jan. 14, 1975, Ser. No. 541,063

Int. Cl.² D05C *3/02*

U.S. Cl. 112—98 **3 Claims**



1. A sewing machine comprising an upper main shaft, a lower main shaft, means for rotatably driving said upper and lower main shafts, a bed, a needle bar provided below said bed, means connecting said needle bar to be driven by said lower main shaft to effect vertical and lateral reciprocal movement thereof, a needle affixed to said needle bar for vertical and lateral movement therewith, means for feeding an underthread to said needle, shuttle means provided above said bed for supplying therefrom an embroidery thread to said needle, said shuttle means being driven by said upper main shaft, and means pivotally connected with said needle bar and extending therefrom to above said bed for effecting lateral movement of said shuttle means in synchronism with movement of said needle, said embroidery thread being affixed with said underthread to cloth passed through said sewing maching by operation of said needle.

3,962,980

THREAD CUTTER FOR SEWING MACHINES

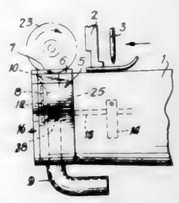
Arne Marius Hedegaard, Hvidovre, and Hugo Sand Jensen, Copenhagen, both of Denmark, assignors to Rothenborg Patent & Licens K/S, Copenhagen, Denmark

Filed Feb. 18, 1975, Ser. No. 550,225

Claims priority, application Germany, Mar. 18, 1974, 2412989

Int. Cl.² D05B *65/02, 65/06*

U.S. Cl. 112—252 **5 Claims**



1. The combination of a cutter attachment for a sewing machine having a free end arm, the attachment comprising a block having a flat upper face and a recessed front face, the block being removably mounted on the free end of the arm, the block having a vertical bore therethrough terminating at its upper end at the junction of the recessed front face of the block and the upper face thereof, the axis of the bore being normal to the plane of the block upper face, a source of negative pressure associated with the machine and connected to the bore through the block at the lower end thereof, a cutter blade mounted on the block within the block recess, a face plate mounted over the recess in air-tight relationship to the vertical bore, a notch in the face plate extending downwardly from the upper edge thereof, the notch communicating with the upper end of the bore, the cutter blade reciprocating across the notch thereby to sever stitch chains suction-drawn down the bore and the face plate notch.

3,962,981

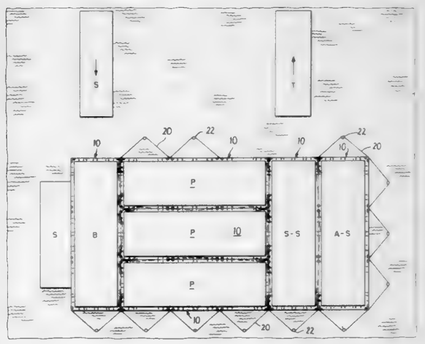
BARGE FACTORY

James O'Kon, Atlanta, Ga., and William Magness, Jackson Heights, N.Y., assignors to Shoreline Precast Company, New York, N.Y.

Filed Jan. 20, 1975, Ser. No. 542,489

Int. Cl.² B63B *35/28*

U.S. Cl. 114—.5 F **6 Claims**



1. A factory for the manufacture of structural components for buildings and of similar large heavy objects comprising a multiplicity of separate floating barges arranged adjacent each other to provide an essentially continuous work area in which the decks of all barges are essentially level and lie substantially in a single plane, bridges connecting the decks of at least some of the side-by-side barges to each other for movement of personnel, materials and products among the several barges, material handling means for transporting materials, equipment and products from place to place in the work area and means for connecting the barges together to provide a generally stable working platform under conditions of water motion, the transfer of live loads from barge to barge and the like characterized in that the connecting means includes in combination cable ties connected between adjacent barges, the cable ties affording controlled tension to restrict relative movement of the barges in response to forces acting horizontally and to transfer horizontal forces between adjacent barges, and shear plate connector means including a structural member associated with each of the respective adjacent barges at a matching position thereon, each member having a socket, and shear plates separate from the structural members, one of the shear plates being received in the respective sockets of at least some of the matching members and bridging the juncture between at least some of the adjacent barges for providing vertical force transfer between the adjacent barges and for retaining the adjacent sides of the connected barges at essentially the same level.

3,962,982

FAIRINGS FOR CABLES FOR THE TOWING OF AN IMMERSED BODY

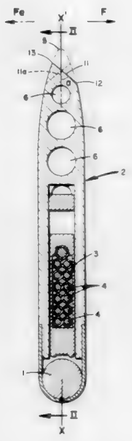
Jean A. R. Marchay, Bourg-la-Reine, and Andre Y. C. Lelievre, Meudon, both of France, assignors to Etat Francais, France

Filed Jan. 28, 1975, Ser. No. 544,681

Claims priority, application France, Mar. 19, 1974, 74.09161

Int. Cl.² B63B *21/00*

U.S. Cl. 114—235 F **13 Claims**



10. A method of preparing cable fairings of the type used in towing immersed objects that comprises producing a bevel on each of a number of fairings, and thereafter assembling said fairings on a cable with the bevels of adjacent fairings oppositely inclined.

3,962,983

CONNECTING STRUCTURE FOR OCEAN-GOING PUSH-BARGE

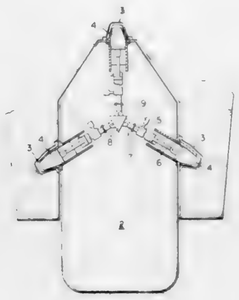
Hiromu Ono, Nishinomiya, Japan, assignor to Aoki Construction Company Limited, Osaka, Japan

Filed Mar. 25, 1975, Ser. No. 561,880

Claims priority, application Japan, Dec. 11, 1974, 49-149304

Int. Cl.² B63B *21/00*

U.S. Cl. 114—235 R **4 Claims**



1. A connecting structure for an ocean-going push-barge combination which comprises, a pusher boat having a bow, sides and a stern, said pusher boat including at least three connecting pins respectively located at the bow and both sides

thereof; said connecting pin at the bow extending generally axially of the boat in a forward direction and said connecting pins on the sides of the boat extending outwardly therefrom in opposite directions and at sweep back angles inclined towards the boat's stern; said pins being slidably mounted in the boat for movement outwardly and inwardly thereof; said connecting pins being located at 120° with respect to each other; an unpowered barge having a longitudinally extending stern including a generally concave notch formed therein which extends entirely through the stern of the barge and has a configuration generally complementary to the bow of the boat to permit entrance thereinto of the bow and both sides of said pusher boat, where said connecting pins are located, said stern of the barge having generally vertically extending side walls defining the notch and said sidewalls having a plurality of ports therein for receiving and holding said connecting pins, when said pins are protruded from said pusher boat, the receiving and holding ports for the pins on the sides of the boats being located in sweep back angles towards the stern of the barge corresponding to the angle of said connecting pins, and means in said boat for extending and retracting said pins into and out of the ports in the barge that are generally aligned therewith, whereby said pusher boat and barge are adapted to be rigidly separably joined to the barge at a plurality of points on the bow and the two sides thereof to form a single ocean going unit when said pins are extended with reduced shearing force imparted to the pins during navigation.

3,962,984

METHOD OF COMBINED NAVIGATION OF A BARGE OR A LIGHTER ON SEA AND INLAND WATERS AND APPARATUS FOR CARRYING OUT THE SAID METHOD

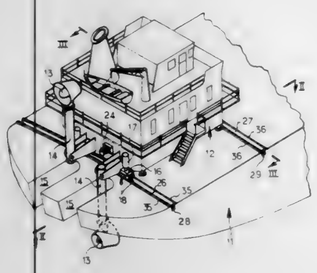
Michel Charles Marie Beghin, Meudon, France, assignor to Societe Nouvelle B.I.P.T. (Bureau International de Prestations Techniques), Ville d'Avray, France

Filed Apr. 11, 1975, Ser. No. 567,131

Claims priority, application France, Apr. 12, 1974, 74.13058

Int. Cl.² B63H *5/00*

U.S. Cl. 115—17 **9 Claims**



1. Method of navigation of a first barge on sea and/or on inland waters, consisting, for the purpose of, for example, allowing the said first barge to navigate on the sea, in securing on the said barge, for example on the after-deck thereof, a removable propelling plant proceeding from a second barge, wherein the improvement consists in that the said first barge and the said second barge are substantially joined together side by side, the said removable propelling plant is detached from the said second barge and is then subjected to a lateral displacement with respect to the said two barges until it reaches a predetermined position on the said first barge before being locked on the latter in the said predetermined position.

3,962,985

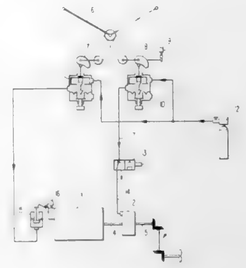
TWIN-SHAFT TYPE PROPULSION ARRANGEMENT FOR A TUG BOAT

Tadamasa Noguchi, Kawasaki; Senzou Ehata, Tokyo, and Masao Matsuura, Ageo, all of Japan, assignors to Niigata Engineering Co., Ltd., Tokyo, Japan

Filed Jan. 20, 1975, Ser. No. 542,629

Int. Cl.² B63H *5/06*

U.S. Cl. 115—34 R **6 Claims**



1. In a twin-shaft Z-type propelling arrangement for a tug boat or the like including: a main engine, a Z-type propeller means connected to said engine for propelling said tug boat, a variable slip transmission means provided between said main engine and said Z-type propelling means, means for regulating the speed of said engine and means for varying the slip of said variable slip transmission means, the improvement comprising: control means for controlling said engine speed regulating means and said means for varying the slip of said variable slip transmission means to limit the slip of said variable slip transmission means such that slip occurs only during the dead slow speed operation of the main engine.

3,962,986

DISPLAY MILEAGE REMINDER DEVICE FOR VEHICLE PARTS SERVICING

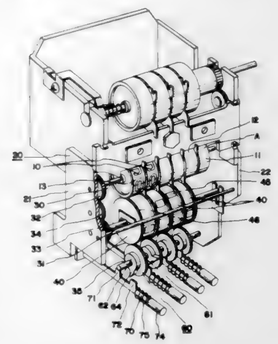
Haruyasu Fujita, Higashi-Ohizumi, and Fumio Muroya, Chofu, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1975, Ser. No. 606,404

Claims priority, application Japan, Aug. 15, 1974, 49-97746; Aug. 15, 1974, 49-97747

Int. Cl.² G01C *22/00*; **G01D** *21/00*

U.S. Cl. 116—114 W **10 Claims**



1. In combination with a vehicle odometer including a set of digit wheels which are rotatable to register the distance traveled by the vehicle, a display device comprising:

a. at least one display wheel having service information thereon and spaced from set of digital wheels, said display wheel including an inner member and an outer member, said outer member having a warning zone at a preselcted location on the peripheral surface thereof;

b. means for imparting the rotation of a selected one of said set of digit wheels of said odometer to said inner member that is fixed on a shaft of said display wheel so that said display wheel shaft rotates in accordance with the distance traveled by the vehicle;

c. clutch means normally connecting said inner member of said display wheel to said outer member to permit the latter to rotate with the former, said clutch means disconnecting said inner member from said outer member when the latter is locked against rotation;

d. locking means coacting with stop means located on reset means for locking said outer member of said display wheel against rotation when said warning zone thereon turns to a predetermined display position; and

e. said reset means coacting with means on the locking means and selectively to unlock said outer member of said display wheel and hence to permit the same to recommence rotation with said inner member.

3,962,987

APPARATUS FOR SPRAYING PROCESSING FLUID ON THE INTERNAL SURFACE OF A GREEN TIRE

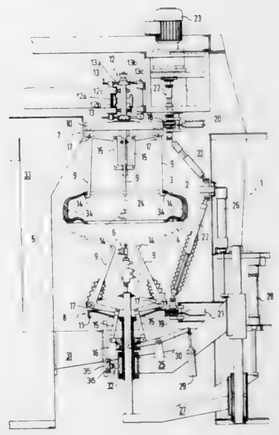
Josef Brandl, Mallersdorf-Pfaffenberg, Germany, assignor to Peter Ilmberger KG, Maschinen-u. Zahnradfabrik, Germany

Filed July 26, 1974, Ser. No. 492,018

Claims priority, application Germany, Dec. 6, 1973, 2343180

Int. Cl.² B05C *7/02*

U.S. Cl. 118—44 **14 Claims**



1. An apparatus for spraying processing liquid on the interior surface of green tires having inwardly inclined sides, said apparatus comprising a spreading means for spreading the green tire as well as spray means for spraying the interior tire surface, characterized in that the spreading means includes two opposite, vertically spaced rotatably mounted grasping means for clamping the tire beads in a horizontal position, the lower of said grasping means being vertically shiftable from a lower standby position into a raised operative position for grasping one of said tire beads whereby said tire bead may be pulled downwardly, in order to spread the beads, and drive means for rotating said grasping means, said spraying means being concentrically arranged within said lower grasping means and vertically shiftable between spraying and non-spraying positions.

3,962,988

ION-PLATING APPARATUS HAVING AN H.F. ELECTRODE FOR PROVIDING AN H.F. GLOW DISCHARGE REGION

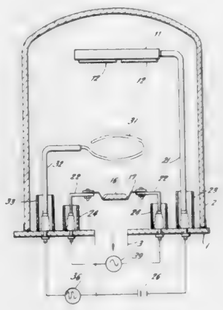
Yoichi Murayama, Tokyo; Masayuki Matsumoto, and Kunihiro Kashiwagi, both of Saitama, all of Japan, assignors to Yoichi Murayama, Nippon Electric Varian Ltd. and Koito Manufacturing Co., Ltd., both of Tokyo, Japan

Filed Mar. 1, 1974, Ser. No. 447,260

Claims priority, application Japan, Mar. 5, 1973, 48-25883; Mar. 20, 1973, 48-32228; Nov. 30, 1973, 48-135164

Int. Cl.² C23C *13/12*

U.S. Cl. 118—49.1 **17 Claims**



1. Apparatus for coating substrate with a material including: a gas-filled space, a source of said material positioned in said gas-filled space, a holder for said substrate enclosed in said gas-filled space, first means for producing a d.c. electric field between said source and said holder for carrying out the coating, and second means for heating said source to evaporate the material thereof, wherein the improvement comprises third means disposed intermediate said holder and source for producing a high-frequency electric field in a selected portion of said gas-filled space intermediate said source and said holder to provide a high-frequency glow discharge region adjacent said source for ionizing said evaporated material, whereby said ionized evaporated material is accelerated toward said holder by said d.c. electric field.

3,962,989

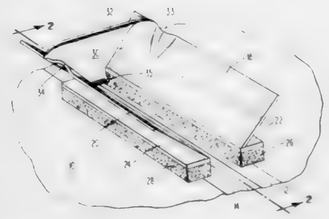
PAINT SPRAY SHIELD

James H. Groff, Sr., Box 292 New Brooklyn Rd., Sicklersville P.O., N.J. 08081

Filed Dec. 11, 1974, Ser. No. 531,691

Int. Cl.² B05C *11/00*

U.S. Cl. 118—504 **8 Claims**



1. Shielding means for use with a coating applicator of the spray type for preventing the spray coating from falling upon adjacent areas, comprising:

a pair of opposing side members separated by an elongate opening, said members converging towards said opening;

first and second resilient members disposed beneath said side members at either side of said openings; and

a support member extending between said side members near one end of said opening, said support means comprising a lower segment substantially closing one end of the opening between said side members, said lower segment being curved inwardly between said side members for deflecting sprayed particles upwardly and away from said opening, and an upper portion curved downwardly toward said side members for deflecting sprayed particles downwardly toward said opening to prevent particles from being expelled upwardly between said divergent wall members.

3,962,990

APPARATUS FOR COATING ELONGATE ARTICLES

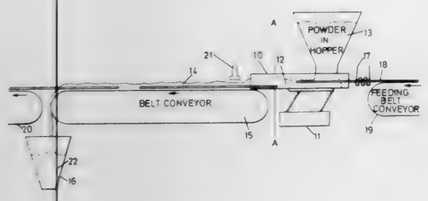
John Alastair Phipps, Farncombe, and Morris James Legg, Farnham, both of England, assignors to Plastic Coatings Limited, Guildford, England

Filed Nov. 4, 1974, Ser. No. 520,853

Claims priority, application United Kingdom, Nov. 29, 1973, 55301/73

Int. Cl.² B05C *5/00*

U.S. Cl. 118—620 **1 Claim**



1. Apparatus for externally coating an elongate article having a low thermal mass comprises a coating channel, means for supplying coating powder to the coating channel to support and immerse an article, the coating channel having a substantially V-form cross-section with opposing sidewalls which converge in the downstream sense to maintain the required depth of coating powder, means for passing the article through the coating channel to an outlet thereof, means for heating the article before it enters the coating channel, means for vibrating the coating channel, and a conveyor which passes beneath the outlet of the coating channel in a direction parallel to the coating channel wherein the conveyor is arranged to receive the article from the coating channel together with a supporting compacted bed of coating powder in which the article remains immersed.

3,962,991

DEVELOPING DEVICE FOR SERIAL ELECTROSTATIC PRINTING

Klaus Brandenburg, Wehbach, Germany, assignor to U.S. Philips Corporation, Briarcliff Manor, N.Y.

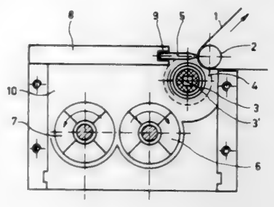
Filed Jan. 24, 1975, Ser. No. 543,820

Claims priority, application Germany, Feb. 20, 1974, 2408077

Int. Cl.² G03G *13/09*

U.S. Cl. 118—635 **5 Claims**

1. A developing device for serial electrostatic printing of alphanumeric characters on a record carrier, in which the latent image is brought into contact, immediately after the printing, with developer which is applied to the record carrier by a rotatable magnetic roller which is arranged parallel to the record carrier, wherein the magnetic roller is divided into a large number of separate magnetic regions which are successively active and non-active depending on the location of the printing head.



3,962,992

DEVICE FOR DEVELOPING AN ELECTROSTATICALLY CHARGED IMAGE

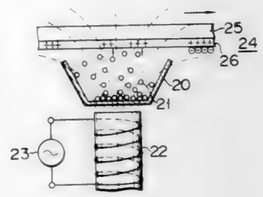
Michiyasu Takagi, Yokohama, and Toshihiko Oguchi, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 25, 1974, Ser. No. 518,211

Claims priority, application Japan, Oct. 26, 1973, 48-119990

Int. Cl.² G03G *15/08*

U.S. Cl. 118—637 **11 Claims**



1. In combination, a device for developing an electrostatically charged image formed on a photoelectroconductive layer, comprising a supporting member disposed at a predetermined interval below the photoelectroconductive layer and including a vessel made of magnetic flux passing material, toner particles placed on the supporting member and bearing a residual magnetization, and alternating magnetic field generating means for applying an alternating magnetic field to said residually magnetized toner particles to cause the latter to be rotated, while repeatedly rebounding on the supporting member, causing the toner particles to be electrically charged to permit the charged toner particles to be deposited onto the electrostatically charged image and a quantity of said residually magnetized toner particles.

3,962,993

TEMPERATURE CONTROLLED ANIMAL HOUSE

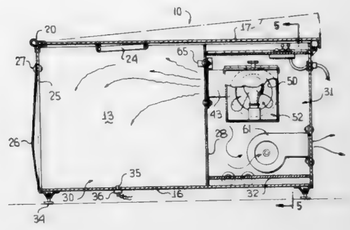
Donald P. Dattilo, 9405 Doral Court, Louisville, Ky. 40220

Filed Feb. 21, 1975, Ser. No. 551,593

Int. Cl.² A01K *1/00*

U.S. Cl. 119—19 **16 Claims**

15. An animal house comprising a housing, means setting off a pair of chambers in said housing, entrance means through which an animal may pass into and out of a first of said chambers, closure means openable to gain access into said chambers, heat generating means located in a second of said chambers for generating heat to heat said first chamber, means for conducting the heat generated by said heat generating means into said first chamber, first and second aperture means through said housing of said second chamber, and conduit means connecting said heat conducting means to said first aperture means whereby air exhausted to atmosphere through said first aperture means is replenished by air drawn into said second chamber through said second aperture means thus precluding stagnation of air in said first chamber.



3,962,994

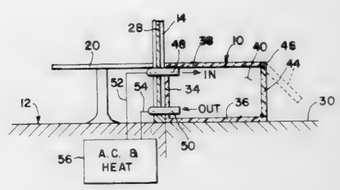
DOG KENNEL MODULE

Ahlene M. Petrucciani, Brookfield, Ill., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Apr. 7, 1975, Ser. No. 565,858

Int. Cl.² A01K *1/02*

U.S. Cl. 119—19 **1 Claim**



1. A restaurant construction comprising: a generally circular building bounded by a generally cylindrical external wall; plural restaurant tables angularly spaced apart along and adjacent the inside of said wall; plural angularly spaced apart transparent solid windows in said wall at the locations of said tables; plural angularly spaced apart transparent solid walled and roofed elongated kennel modules extending radially from the external side of said wall respectively at the locations of said tables; said windows, transparent walls and roof permitting viewing the interior of said kennels from said respective tables; door means formed on an outboard end of said kennel modules for providing ingress to or egress from said kennel modules only from said outboard end; intake and exhaust ducts communicating from the interior to the exterior of said kennel modules; and a central heating and air conditioning system feeding said ducts.

3,962,995

APPARATUS FOR TRAINING CUTTING HORSES

Durwood S. Brinson, 2323 Brownlee Rd., Bossier City, La. 71010

Filed Mar. 18, 1975, Ser. No. 559,535

Int. Cl.² A01K *15/00*

U.S. Cl. 119—29 **8 Claims**

5. An apparatus for training cutting horses, comprising:

a base;

an artificial calf;

means for swiveling the calf selectively about a first vertical axis passing through the calf;

means for retracting and projecting the calf selectively relative to said base; and



means for sweeping the calf in a horizontal plane about a second vertical axis spaced from said first vertical axis.

3,962,996

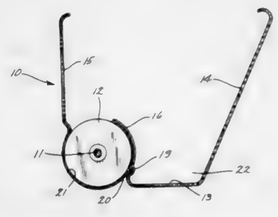
FEEDING TROUGH

Robert D. Jones, and Jerry L. Hall, both of Oskaloosa, Iowa, assignors to Intraco, Inc., Oskaloosa, Iowa

Filed Apr. 7, 1975, Ser. No. 565,859

Int. Cl.² A01K *5/00, 39/00*

U.S. Cl. 119—51 CF **2 Claims**



2. A feeder trough comprising:

an elongated bottom wall;

a first substantially upright wall connected to one side of said bottom wall;

a second substantially upright wall connected to the other side of said bottom wall;

an intermediate wall connected to said bottom wall and extending substantially upwardly intermediate the sides of said bottom wall, said intermediate wall having a plurality of openings therethrough;

a space being formed between said second wall and said intermediate wall, said space being adapted to receive an elongated conveyor member, the bottom of said space being substantially coincident to said bottom wall;

said feeder trough being of one piece sheet metal material construction and said intermediate wall being constructed of a double thickness of said material; and

said intermediate wall having a longitudinally extending crease thereon for holding said double thickness of material together, said crease being substantially aligned with the lowest level of said opening.

3,962,997

ANIMAL FEEDER

Arthur P. Ruth, P.O. Box 11037, Houston, Tex. 77001

Filed July 5, 1974, Ser. No. 485,982

Int. Cl.² A01K *5/02*

U.S. Cl. 119—51.11 **4 Claims**

1. An Animal feeder comprising:

a storage bin adapted to receive and store a supply of granular animal feed and having an opening in the lower portions thereof;

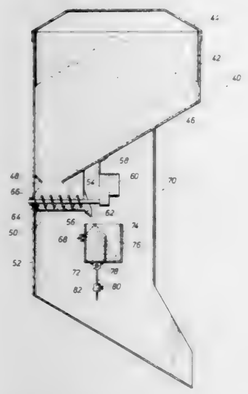
a plate positioned below said opening for accumulating animal feed thereon from said storage bin;

an auger means between said plate and the opening in said storage bin, said auger means having a set of flights thereon for agitating animal feed;

raised side means adjacent to said plate on opposite sides of said auger means for capturing animal feed therebetween, said auger means being positioned to agitate animal feed on said plate;

a fillable container having a specified capacity below an edge of said plate to receive and store animal feed falling from said plate;

means for periodically tilting and dumping feed from said container;



a pivot mounting for said container; and

an internal wall in said container arranged such that an accumulaton of animal feed therein alters the center of gravity and causes said container to pivot about said pivot.

3,962,998

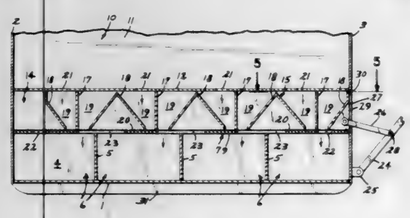
LIMITED FEEDER FOR FARM ANIMALS

Delmar J. Lynch, Burbank, S. Dak. 57010

Filed Jan. 10, 1975, Ser. No. 540,133

Int. Cl.² A01K *5/00*

U.S. Cl. 119—56 R **5 Claims**



1. In a feeder, in combination:

a hopper having at least one outlet opening in the bottom thereof;

a guideway spaced below said hopper having at least first and second discharge openings in the bottom thereof longitudinally spaced in opposite directions from a location directly below said outlet opening; a distributor slide mounted for longitudinal movement on the bottom of said guideway in the space between the bottom of said hopper and the bottom of said guideway, and having at least first and second adjacent, longitudinally aligned topless and bottomless measuring compartments defined by longitudinal walls and transverse panel like partitions, said transverse partitions being supported on relatively thin lower edges to minimize the contact area with said guideway in which feed material may accumulate; and means for reversibly removing said slide longitudinally in said guideway between a first position, in which said first compartment is under said outlet opening and said second compartment is over said first discharge opening, and a second position, in which said first compartment is over said second discharge opening, and said second compartment is under said outlet opening, so that at the end of each movement of the slide one of the compartments is being filled from said hopper and the other compartment is emptying;

said outlet and discharge openings and said transverse partitions being so positioned mutually that at no time in the movement of said slide is there a free path from said outlet opening through either one of said measuring compartments; said measuring compartments being disposed completely out of register with their respective outlet and discharge openings during movement of said compartments through an intermediate position between said first and second positions of said slide.

3,962,999

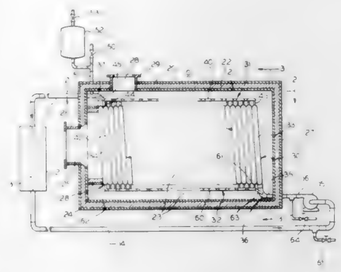
HEAT TRANSFER FLUID HEATER WITH CONTINUOUSLY FLUSHED VENT AND DRAIN

Gustav A. Rehm, Milwaukee, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Sept. 9, 1974, Ser. No. 504,495

Int. Cl.² F22B *37/12*

U.S. Cl. 122—248 **22 Claims**



22. A heat transfer fluid heater comprising:

a furnace chamber defining a heating zone,

helical coil means formed of a tubular material and having a plurality of loops arranged between an inlet loop and outlet loop,

said coil have upper and lower portions, said coil being constructed and arranged for conducting fluid to absorb heat from said heating zone and said coil having an outlet means connected to said oulet loop for discharging heated fluid and inlet means connected to said inlet loop for returning fluid from which heat has been extracted,

pump means external of said heating zone and having an outlet communicated with said inlet means and having an inlet for receiving returned fluid, and

vent conduit means disposed above said coil means and having an outlet in communication with said coil outlet means and a plurality of spaced apart inlets each respectively connected to the upper portion of one coil loop to provide a first flow path parallel to said coil means for continuously flowing through said vent conduit means a proportionate part of the fluid that is delivered to said coil means to thereby continuously flush said vent conduit means,

drain conduit means disposed below said coil means and in communication with said coil inlet means for receiving fluid at from said pump outlet, said drain conduit means having a plurality of spaced apart outlets each respectively connected to the lower portion of one coil loop to provide a second flow path parallel to said coil means for continuously flowing through said drain conduit means a proportionate part of the fluid delivered to said coil means to thereby continuously flush said drain conduit means,

said vent conduit means and said drain conduit means being configured nonlinearly between the respective points of connection with said coil loops to permit expansion and contraction of said vent and drain conduit means.

3,963,000

SYSTEM FOR REFORMING ENGINE FUEL INTO HYDROGEN GAS-CONTAINING MIXTURE BY CATALYTIC REACTION

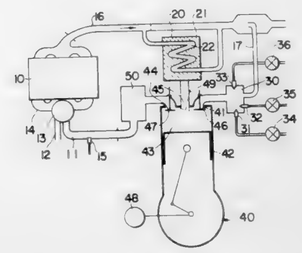
Katuaki Kosaka, Tokyo; Zene Ueno, Fuchu, and Tadahiko Nagaoka, Tokorozawa, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 19, 1974, Ser. No. 534,290

Claims priority, application Japan, Mar. 6, 1974, 49-25915

Int. Cl.² F02B *43/08*

U.S. Cl. 123—3 **8 Claims**



1. A system for the preparation of a fuel mixture to feed into an engine, comprising: first means to prepare a substantially gaseous first mixture at least of an organic fuel, oxygen and water; a reaction chamber containing therein a catalyst capable of converting said first mixture into a gaseous second mixture at least of hydrogene and carbon monoxide at elevated temperatures; second means to heat said catalyst; and a reciprocating compressor having at least one working chamber defined above a piston and provided with an intake valve and a discharge valve; said compressor being fluidly connected with said first means, said reaction chamber and the engine such that both said first means and the engine communicate with said reaction chamber through said working chamber, said compressor being constructed such that said first mixture is compressed in said working chamber and subsequently forced out into said reaction chamber to enhance the efficiencies of the reactions in said reaction chamber, and that said second mixture is drawn into and expanded in said working chamber to reduce the temperature of said second mixture and sustain the operation of said compressor, and subsequently discharged therefrom to the engine.

3,963,001

COMBUSTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Perry Lester Kruckenberg, Los Angeles; Harld Elden Anderson, Redondo Beach, and Ray Lavette Carlson, Lake San Marcos, all of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Continuation of Ser. No. 93,269, Nov. 27, 1970, abandoned, and a continuation-in-part of Ser. No. 739,434, June 24, 1968, Pat. No. 3,543,735. This application Dec. 8, 1972, Ser. No. 313,528

Int. Cl.² F02B *19/16, 3/00*

U.S. Cl. 123—32 D **16 Claims**

1. A method of effecting combustion in internal combustion engines said method comprising:

generating, within engine means, and in energy communicating relation with piston means movable in cylinder means of said engine means, a plurality of generally mutually distinct burning loci, with said burning loci defining generally spaced centers of burning;

concurrently, and during a working stroke of said piston means of said engine means,

transmitting combustion supporting gas, heated by compression and combustion, into said burning loci, and

generating and transmitting streams of combustible fuel into said burning loci,

each said burning loci substantially receiving at least one of said fuel streams and at least some of said heated gas;

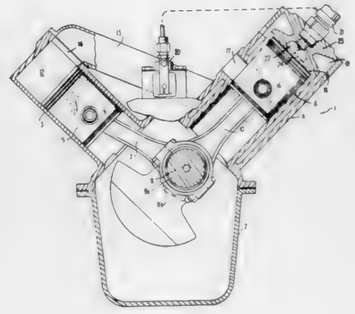
limiting the time duration of the generation of said fuel streams so that at least the majority of fuel in said streams passes into said burning loci during a working stroke of said piston means;

providing a plurality of spaced wall means, with each said wall means peripherally confining and defining

a fuel and heated gas agitation zone individually associated with and communicating with a said burning loci;

each said peripherally confined agitation zone and a burning loci associated therewith receiving fuel from at least one fuel stream directed thereinto during said working stroke of said piston means;

prolonging and evening the burning of fuel in said streams by maintaining the existence and a generally discrete



relation of said burning loci during said working stroke of said piston means;

utilizing energy generated through operation of said burning loci to induce said working stroke of said piston means;

said spaced wall means defining a plurality of discrete and spaced flow path means operable during said working stroke of said piston means to receive said majority of fuel and maintain separate flows of said fuel leading individually to said burning loci, with each flow separately communicating with a said burning loci;

said plurality of discrete and spaced flow path means including said agitation zones, and defining the location of, and being operable in part to generate, said generally mutually distinct burning loci;

said plurality of flow path means being cyclically operable to receive said streams of fuel and permit the passage of said majority of fuel into said burning loci during working strokes of said piston means, concurrent with the passage of said combustion supporting gas therethrough into said burning loci; and

said fuel streams being individually directed so as to pass directly into said flow path means during said working strokes of said piston means, for transmittal directly into said burning loci.

3,963,002
ELECTRONICALLY CONTROLLED FUEL INJECTION SYSTEM

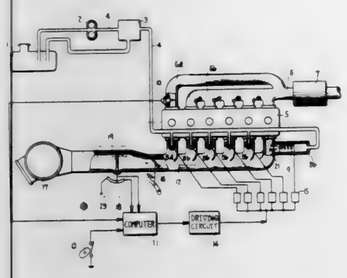
Motoharu Sueishi, Kariya, and Susumu Harada, Obu, both of Japan, assignors to Nippondenso Co., Ltd., Aichi, Japan

Filed Sept. 9, 1974, Ser. No. 504,248

Claims priority, application Japan, Sept. 14, 1973, 48-104429

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 EA **2 Claims**



1. An electronically controlled fuel injection system for an engine exhaust system comprising

an oxygen content detector mounted in said exhaust system for detecting the oxygen content in the exhaust gas to generate a control signal,

computer means connected to said detecting means for producing a fuel injection signal which varies in length as a function of said control signal and

a plurality of fuel injection valves mounted on the intake system of the engine and connected to said computer means for repetitively injecting the fuel into the engine in response to said injection signal, said valves being divided into at least first and second groups, the valves in one group having a diameter of injection opening greater than the valves of the other group so that said valves in said one group each inject a greater quantity of fuel than the valves of said other group

an exhaust line for each of said groups of valves with one of said lines mounting said oxygen content detecting means so that said detecting means produces said control signal as a function of the ratio in that line, thereby controlling the overall air-fuel ratio at a different set value from the theoretical one.

3,963,003
COMBUSTION CHAMBER ARRANGEMENTS FOR I.C. ENGINES

Diarmuid Downs, Hove, England, assignor to Ricardo & Co. Engineers (1927) Ltd., Shoreham-by-Sea, Sussex, England

Filed June 3, 1974, Ser. No. 475,919

Claims priority, application United Kingdom, June 5, 1973, 26855/73

Int. Cl.² F02B *3/00*

U.S. Cl. 123—32 K **7 Claims**

1. An internal combustion engine of the spark-ignited gasoline fuel injection type having

a cylinder block formed with one or more cylinders,

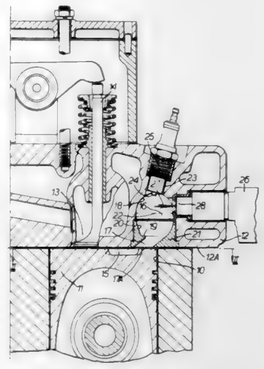
a piston reciprocable in each cylinder,

a cylinder head,

a primary ignition chamber associated with each cylinder and formed in the cylinder head,

a throat through which a substantial part of the air charge drawn into the cylinder on each suction stroke of the piston is forced during each subsequent compression stroke into the chamber, and of which one end opens into the cylinder opposite a shallow recess in the upper surface of the piston crown while the other end opens obliquely into the chamber so that the charge entering the chamber rotates about an axis through the central portion of the chamber, the bottom of the chamber being formed in a plug member inserted in the cylinder head, the total top dead centre clearance being such as to provide a compression ratio not exceeding 12.1:1,

a spark ignition plug projecting into the upper part of the primary ignition chamber,



a fuel injection nozzle opening into the primary ignition chamber at a point of its surface upstream of the ignition plug and downstream of the throat with respect to the direction of rotation of the charge in the chamber,

means for injecting the whole of the gasoline fuel through the injection nozzle into the primary ignition chamber during the compression stroke, and

means for producing a spark at the sparking plug to ignite the swirling mixture of the said gasoline and the air with the air driven into the primary chamber through the throat.

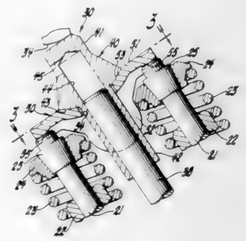
3,963,004
TWO-PIECE VALVE BRIDGE

Glenn W. Lysinger, Detroit, and James S. Sears, Fowlerville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 8, 1975, Ser. No. 575,609

Int. Cl.² F01L *1/18*

U.S. Cl. 123—90.4 **3 Claims**



1. A multi-valve actuating bridge assembly for an internal combustion engine of the type having a cylinder head, a pair of valves including stems slidably received through guide sleeves fitted into the cylinder head, a guide rod fixed to the cylinder head and a rocker arm pivotally mounted in spaced relation from the stems of the valves, said bridge assembly including a guide having a shank slidable on the guide rod, a head engageable by the rocker arm and a semi-spherical shoulder therebetween and, a bridge comprising a web having valve stem engaging end portions, a semi-spherical saddle portion in said web intermediate said end portions, a circular aperture through said semi-spherical saddle portion of said web concentric therewith and depending sides integrally connected to said web on opposite sides thereof, said shank extending through said aperture with said web positioned so that said semi-spherical saddle portion of said bridge socketably receives said semi-spherical shoulder of said guide.

3,963,005
FUEL SUPPLY SYSTEM

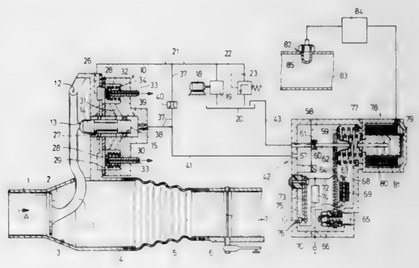
Konrad Eckert, Stuttgart, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 2, 1974, Ser. No. 511,360

Claims priority, application Germany, Oct. 12, 1973, 2351203

Int. Cl.² F02M *7/18*

U.S. Cl. 123—119 R **4 Claims**



1. In a fuel supply system for mixture compressing, externally ignited internal combustion engines including: an induction tube; an air-flow measuring member disposed in the induction tube; an arbitrarily settable butterfly valve mounted within the induction tube in series relation with the air-flow measuring member; a fuel metering and distribution valve assembly containing a fuel metering control slide; connecting means connecting the air-flow measuring member to the control slide thereby transmitting the motion of said air-flow measuring member due to air flowing into the induction tube into axial motion of the control slide; means for conveying pressurized fluid to one side of said control slide so as to exert a force to oppose the axial motions of the control slide; and pressure control valve means including heatable, insulated bi-metallic spring means, electrically heated bracket means connected to said bi-metallic spring means for heating the same, control spring means, whereby the force of said bi-metallic spring means can oppose the force of said control spring means, the improvement comprising:

a. secondary spring means, disposed in said pressure control valve, in substantially parallel relation to said control spring means whereby the force of said bi-metallic spring means can oppose the force of said secondary spring means;

b. support means serving as a common support for both said control spring means and said secondary spring means; and

c. means connected to said secondary spring means for directly varying the compression of said secondary spring means and indirectly varying the compression of said control spring means through said support means in dependence on the magnitude of one or more engine parameters, such that the magnitude of the force to oppose the axial motions of the control slide is increased when the compression of both the control spring means and the secondary spring means is increased and decreased when the compression is decreased.

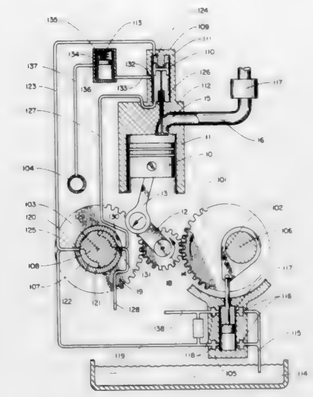
3,963,006
OIL FLOW POSITIVE VALVE DRIVE MECHANISM FOR GASOLINE ENGINES

Joseph Carl Firey, 1554 NE. 95th St., Seattle, Wash. 98115

Filed Sept. 3, 1974, Ser. No. 502,962

Int. Cl.² F01L *9/02*

U.S. Cl. 123—90.12 **5 Claims**



1. The combination of a conventional four stroke cycle gasoline engine, with conventional intake valves and exhaust valves, wherein the improvement comprises replacing the usual torque controlling throttle plate and the conventional intake valve and exhaust valve driving mechanisms with oil flow, positive valve drive mechanisms, said oil flow positive valve drive mechanism comprising, positive displacement oil pump elements one such pump element for each engine intake valve and at least one such pump element for each set of four engine exhaust valves, valve opening elements, valve closing elements, valve actuator elements, and oil reservoir elements, a separate valve opening element and valve closing element and valve actuator element being required for each engine intake valve and each engine exhaust valve, at least one oil reservoir element being required for an engine;

said positive displacement oil pump element being positively driven from an engine shaft so as to positively displace oil via the valve opening element into the opening end of the valve actuator to positively open the engine valve at the proper time relative to the engine piston motion and also so as to positively displace oil via the valve closing element into the closing end of the valve actuator to positively and fully close the engine valve at the proper time relative to the engine piston motion, the displacement of said positive displacement oil pump element being in excess of 4 and preferably in excess of 10 times the valve actuator displacement needed to open the valve and to close the valve, the excess oil thus displaced being directed via spill ports in the valve actuator element into the oil reservoir element and, via the relief ports therein, into the engine oil supply system, said positive displacement pump element being fitted with overpressure relief valves which spill oil back to the sump whenever a pump discharge passage is blocked;

said valve opening element being a pair of valves opened and closed by the camshaft, one valve when open directing the oil from the positive displacement oil pump element to the opening end of the valve actuator element and this supply valve being opened by the camshaft at the time of starting of valve opening and being closed by the camshaft about 90° camshaft thereafter, the other valve when open directing return flow of oil from the closing end of the valve actuator element to the engine oil sump and this latter relief valve being opened by the camshaft when the engine valve has opened sufficiently to cause

the spill ports in the valve actuator element to be covered and being closed by the camshaft about 90° camshaft thereafter;

said valve closing element being of two different kinds, an exhaust valve closing element, used for the closing of the engine exhaust valves, and an intake valve closing element, used for the closing of the engine intake valves at times adjustable, via an engine torque control lever, from the conventional intake valve closing time at engine piston near bottom dead center after the engine intake stroke to anytime later than this up to 85 camshaft degrees minus one half the maximum spark ignition advance angle for the engine in crankshaft degrees before piston top dead center, this angle of adjustment being the torque control angle;

said exhaust valve closing element being a pair of valves opened and closed by the camshaft, one valve when open directing the oil from the positive displacement oil pump element to the closing end of the valve actuator element and this supply valve being opened by the camshaft at the time of starting of valve closing and being closed by the camshaft about 90° camshaft thereafter, the other valve when open directing return flow of oil from the opening end of the valve actuator element to the engine oil sump and this latter relief valve being opened by the camshaft when the engine valve has closed sufficiently to cause the spill ports in the valve actuator element to be covered and being closed by the camshaft about 90° camshaft thereafter;

said intake valve closing element being of the same description as the aforedescribed exhaust valve closing element except in that those portions of the supply valve and the relief valve which do not move integrally with the camshaft are secured to the torque control lever and are angularly adjustable with respect to those portions of the supply valve and the relief valve which do move integrally with the camshaft by adjustment of this torque control lever through the previously described torque control angle, said portions of the supply valve and the relief valve which do not move integrally with the camshaft being fitted with connection means which assure maintenance of connections between the portions of the supply valve and the relief valve which do not move integrally with the camshaft and the appropriate supply and delivery connections from the positive displacement oil pump element, to and from the valve actuator element and to the engine oil sump, throughout the full adjustment of the portions of the supply valve and the relief valve which do not move integrally with the camshaft through the torque control angle;

said valve actuator element being a double acting, piston and cylinder actuator with the piston secured to the valve, and the cylinder secured to the engine block and fitted with pressure supply and relief connections at both ends and spill ports in the center which connect to the oil reservoir element, said spill ports being uncovered as the piston reaches the end of its travel to open the valve and to close the valve, cushion pistons and cylinders being fitted interally to the actuator cylinder and piston so as to slow down the velocity of the valve as it nears the fully open and fully closed positions, these cushion pistons being fitted with by pass passages and check valves which permit full application of oil pressure from the positive displacement oil pump element to the entire actuator piston area;

said oil rservoir element being a closed cylindrical cavity with a spring loaded reservoir piston acting to maintain a high pressure within the reservoir, this high pressure acting via a connection to the actuator spill ports to hold the engine valve open when once opened and to hold the engine valve closed when once closed, the reservoir absorbing the excess flow of the positive displacement oil pump element which comes out the actuator spill ports when the engine valve is fully opened and when the engine valve is fully closed, said excess flow moving the reservoir piston against its spring until the reservoir piston has moved sufficiently to uncover a relief port in the reservoir cylinder, after which the excess flow passes via the relief port into the engine oil supply system, the reservoir cylinder being fitted with piston stops which assure that the piston spring always has a preset compression corresponding to that reservoir pressure adequate to hold the engine valve open and closed;

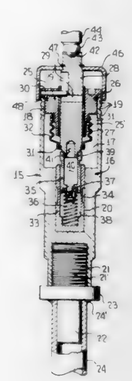
the engine valve driving portion of the engine camshaft consisting of the several drive mechanisms for driving the positive displacement oil pump elements, the portions of the supply valve and the relief valve of the valve opening elements which move integrally with the camshaft, the portions of the supply valve and the relief valve of the valve closing elements which move integrally with the camshaft, all of these being angularly positioned on the camshaft as to open and close the several engine exhaust valves and engine intake valves at the desired time relative to the engine pistons when the camshaft is driven positively, as by gears or chains, at exactly one half the rotative speed of the engine crankshaft.

3,963,007

HYDRAULIC VALVE LIFTER OR ADJUSTER

Weldon S. Baker, P.O. Box 106, Fort Worth, Tex. 76109

Filed Mar. 7, 1975, Ser. No. 556,097
Int. Cl.² F01L *1/34*
U.S. Cl. 123—90.16 **15 Claims**



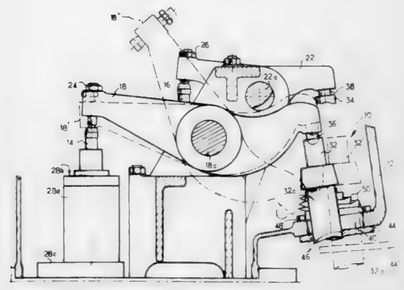
1. In a hydraulic valve lifter for engines and the like, a housing having a fluid reservoir chamber and a bore leading from said chamber, a cap element secured fixedly to the housing and projecting into said chamber and having a bore, a fluid sealing element interposed between the cap element and said chamber, a driver extending through the bore of the cap element and adapted to slide axially therein, a fluid sealing flexible bellows having opposite ends secured to the cap element and a lower end portion of the driver and allowing essential axial relative movement between the driver and cap element, valve lifter means disposed within the bore of the housing which leads from said chamber and including a spring-urged plunger engaged with a lower end portion of the driver, visual indicator means on the upper end portion of the housing, and cooperating indicator means carried by the driver exteriorly of the housing, said housing and driver adapted for connection with push rod elements of engine valve opening mechanism.

3,963,008

METHOD OF REMOVING A VALVE MOUNTED IN AN INTERNAL COMBUSTION ENGINE CYLINDER-HEAD AND ACTUATING DEVICE FOR CARRYING OUT THE SAID METHOD

Jean-Claude Bouquet, Pantin, France, assignor to Societe d'Etudes de Machines Thermiques, Saint Denis, France

Filed Oct. 8, 1974, Ser. No. 513,071
Claims priority, application France, Nov. 9, 1973, 73.39989
Int. Cl.² F01L *1/14*
U.S. Cl. 123—90.61 **4 Claims**



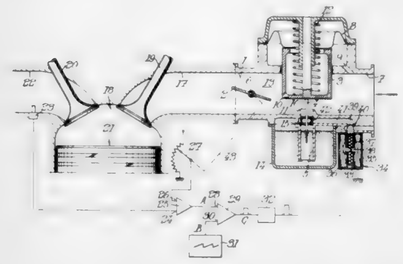
1. In an internal combustion engine including: at least one cylinder head; at least one overhead poppet valve mounted in said cylinder head; a rocker-arm swingingly mounted on said cylinder head and having a drive end freely engaging in releasable relationship the top end of the valve stem and an opposite driven end; and a reciprocable push-rod means enclosed within and projecting upwards from a tubular housing forming a standpipe means, said push-rod means co-operating through its top end in freely fitting and disconnectable relationship with said driven end of said rocker-arm, said push-rod means and stand-pipe assembly means extending upwards with clearance through an opening means formed in said cylinder head; and locking means covering said opening means and removably secured to said cylinder head in engaging relationship with said stand-pipe means to hold same against motion and keep it in substantially registering relation to said driven end of said rocker-arm, the improvement consisting in that said valve is removable upwards from said cylinder head; said drive end of said rocker-arm is provided with an axially adjustable set screw means through the bottom end of which said drive end engages said valve stem, whereas said screw means is, by being unscrewed, retractable upwards relative to said rocker-arm to an extent allowing said driven end of the latter to be disengaged from said push-rod upon tilting said rocker-arm towards said valve; said push-rod means and stand-pipe assembly means being displaceable sidewise in an unconstrained condition; said opening means is of elongated shape for providing said clearance which is large enough for enabling said push-rod means and stand-pipe means assembly, upon retracting said set screw means, tilting said rocker arm and releasing said locking means, to be shifted sidewise away from below said driven end of said rocker-arm so as to clear the path of travel thereof, whereby said drive end of said rocker-arm may, through reverse tilting of the latter, be moved out of the removal way of said valve.

3,963,009

CARBURATION DEVICES FOR INTERNAL COMBUSTION ENGINES

Francois Mennesson, Nanterre, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., France

Filed Apr. 26, 1974, Ser. No. 464,443
Claims priority, application France, May 4, 1973, 73.16218
Int. Cl.² F02M *7/00*
U.S. Cl. 123—119 D **8 Claims**



1. A carburation device for internal combustion engines, comprising: an induction pipe; driver actuated main throttle means in said pipe; auxiliary throttle means located in said induction pipe upstream of said main throttle means and which automatically and progressively open in proportion to the increase in the flow rate of air in said induction pipe; a source of fuel at substantially atmospheric pressure; conduit means for delivery of fuel from said source to a portion of said induction pipe between said main throttle means and auxiliary throttle means; metering means operatively connected to said auxiliary throttle means and metering the flow rate of fuel in said conduit means wherein an air flow section determined by the auxiliary throttle means is in proportion to a fuel flow section metered by said metering means and the mixture of air and fuel delivered to said induction pipe has a substantially constant richness during normal operation; a solenoid valve which, in energized conditions, fully opens an air path to said fuel conduit means and under de-energized conditions fully closes the path; and means responsive to a parameter of the engine exhaust gas and which repetitively energizes the solenoid valve for a fraction of the repetition period which is such that the total time during which the valve is fully open during a predetermined time duration is adjusted in dependence on said exhaust gas parameter.

3,963,010

ENGINE WITH FAST WARM UP HEAT PIPE MIXTURE HEATING

John L. Harned, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 30, 1975, Ser. No. 591,275
Int. Cl.² F02M *31/00*
U.S. Cl. 123—122 AC **5 Claims**

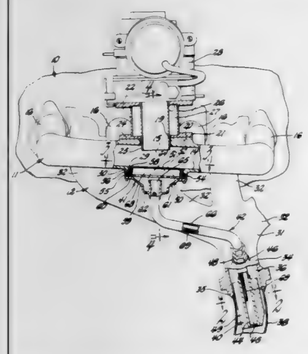
1. In combination with an internal combustion engine
an intake manifold having a generally horizontal inlet mixture passage and means for mounting a carburetor on said manifold above said passage, said mounting means defining an inlet opening in an upper portion of said passage,
an exhaust manifold having an exhaust gas passage extending to a level below said inlet manifold passage and
heat pipe means for transferring heat between said exhaust passage and said inlet passage, said heat pipe means comprising
a boiler in said exhaust passage and including an elongated container formed of heat conductive material capable of withstanding maximum exhaust gas temperatures, said container extending generally lengthwise of said exhaust passage and having a plurality of heat absorbing fins along

the outer surface thereof and extending generally along the line of gas flow within said exhaust passage,

a heat plate mounted in said manifold and forming a portion of the bottom wall of said inlet passage opposite the position of said inlet opening so as to intercept fuel droplets entering said inlet passage through said opening, said heat plate being formed of thin heat conductive material of low mass and secured in an opening in the wall of said manifold passage by means which limit the transfer of heat from said heat plate directly to the manifold walls,

a drain cup sealingly secured to and extending below said heat plate, said drain cup having downwardly angled walls converging at a low point having an opening,

a tubular heat pipe conduit extending between said boiler and said drain cup opening and sealingly secured thereto to provide a sealed passage between said container and the interior of said drain cup below said heat plate,



a limited mass of vaporizable heat transfer fluid within said sealed passage and its connected volumes, a mass of inert gas within and pressuring said sealed passage and its connected volumes to establish a predetermined range of vaporization temperatures for said heat transfer fluid,

wick means extending within said tubular conduit and into said container and adapted to separate the interior thereof into two flow paths comprising a larger path for the flow of vapor upwardly from said boiler to said drain cup and a smaller capillary path for the downward flow of liquid from said drain cup to said boiler, and

a nozzle extending upwardly from said drain cup opening to carry upward flowing vapor above the level of liquid condensate in said drain cup and direct such vapor against the lower surface of said hot plate.

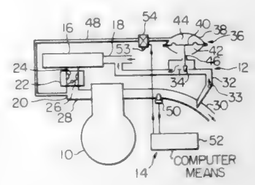
3,963,011

METHOD AND DEVICE FOR ADJUSTING ENGINE EXHAUST GAS RECIRCULATION CONTROL

Masaaki Saito, and Hidehiro Minami, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed July 25, 1974, Ser. No. 491,939
Claims priority, application Japan, July 26, 1973, 48-84272
Int. Cl.² F02N *25/06*
U.S. Cl. 123—119 A **6 Claims**

1. A method of maintaining the flow rate of engine exhaust gas recirculated into an intake system of an internal combustion engine at a desired ratio to the flow rate of air drawn into said engine, comprising the steps of sensing the actual air-fuel ratio of a combustible mixture supplied to an internal combustion engine, comparing said sensed actual air-fuel ratio with a desired air-fuel ratio which corresponds to a desired ratio of the flow rate of engine exhaust gas recirculated into an intake system of said engine to the flow rate of air drawn into said engine, and adjusting the flow of said engine exhaust gas in accordance with the difference between said sensed actual air-fuel ratio and said desired air-fuel ratio to adjust the flow rate of said engine exhaust gas to said desired ratio to the flow



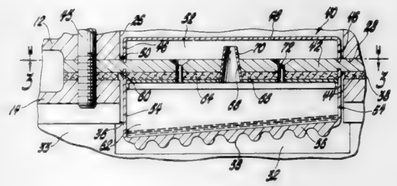
rate of said air concurrently adjust the air-fuel ratio of said combustible mixture to said desired air-fuel ratio.

3,963,012

ENGINE WITH VAPOR HEAT TRANSFER CAPSULE FOR INTAKE MIXTURE HEATING

John L. Harned, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 30, 1975, Ser. No. 591,273
Int. Cl.² F02M *31/00*
U.S. Cl. 123—122 AC **3 Claims**



1. A vapor heat transfer capsule in combination with an internal combustion engine to transfer heat from gases in the exhaust manifold to mixture in the intake manifold, said capsule comprising

a heat conducting plate secured between opposed flanges of the intake and exhaust manifolds of said engine,

first enclosure means having bottom and side walls sealingly secured to the bottom of said plate and forming therewith a boiler chamber beneath the plate and adapted to contain a quantity of vaporizable fluid,

second enclosure means having top and side walls sealingly secured to the top of said plate and defining a condenser chamber above said boiler chamber and separated therefrom by said plate, said top and side walls being formed of thin walled heat conductive material of relatively low mass,

nozzle means extending through and above said plate and defining a passage for directing vapor passing from the boiler chamber into the condenser chamber against the upper wall of said second enclosure means, said nozzle means further defining a dam preventing condensate collected on said plate upper surface from returning to the boiler chamber through said nozzle passage,

a plurality of small capillary passages extending through said plate to connect said condenser and boiler chambers, said capillary passages acting to return condensate collected on said plate upper surface to said boiler chamber, and

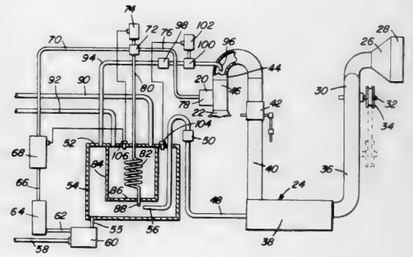
a limited quantity of vaporizable fluid sealed within said chambers, said fluid having a predetermined boiling temperature between the desired inlet fuel mixture temperature and the normal exhaust gas temperatures and below the temperature at which substantial breakdown of the fuel in the intake manifold mixture is likely to occur.

3,963,013

AIR AND FUEL CHARGE FORMING DEVICE

Elmo C. Authement, 103 Nicholls Drive; Gasper G. Varvaro, Box 514, Rte. 2, both of Thibodaux, La. 70301; Frank S. Stupka, Box 142, Rte. 2, Bogalusa, La. 70427; Obierge J. Waguespack, 1020 People St.; Sidney J. Tabor, Box 630-P, Rte. 1, both of Thibodaux, La. 70301, and Mario R. Guell, 617 W. Third St., Bogalusa, La. 70427

Filed July 23, 1974, Ser. No. 490,924
Int. Cl.² F02M *17/18*
U.S. Cl. 123—133 **10 Claims**



1. In combination, a combustion engine including heat dissipating means, air and fuel mixture induction passages having a conventional float chamber equipped carburetor operatively associated therewith including an air inlet and an outlet communicated with said induction passages, a supply of liquid fuel under pressure communicated with said float chamber, a supplemental air and fuel charge forming device, said device including an evaporator chamber including an inlet and an outlet, an air intake, first conduit means for ducting a first portion of air entering said intake into the interior of said chamber, second conduit means for ducting the remaining portion of air entering said intake to said carburetor inlet, third conduit means opening outwardly from said chamber and including an outlet communicated with said carburetor inlet, said engine heat dissipating means including means for heating substantially all of the air entering said air intake, pipe means communicating said supply of fuel under pressure with the carburetor float chamber and with the interior of said evaporator chamber for the discharge of liquid fuel into said evaporator chamber to be rapidly vaporized by the first portion of intake air discharged into said evaporator chamber, and valve means operatively associated with said pipe means for selectively communicating said supply of fuel under pressure with said carburetor float chamber and the interior of said evaporator chamber.

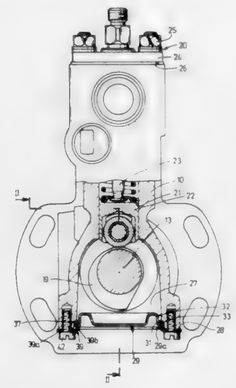
3,963,014

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Heinrich Staudt, Markgroningen-Talhausen; Wolfgang Eckell, Gebersheim; Hartmut Lehmann; Karl Sontheimer, both of Stuttgart, and Eberhard Hofmann, Kirchberg-Murr, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 24, 1974, Ser. No. 508,892
Claims priority, application Germany, Oct. 2, 1973, 2349366
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 R **9 Claims**

1. In a fuel injection pump for internal combustion engines, especially multi-cylinder serial pumps which include pump pistons driven by a cam shaft via cam means, the pump having a chamber within its housing which is in the shape of an elongated recess having side walls, frontal walls and an opening, a single cover over the opening and a sealing means between the housing and the cover, the sealing means including an O-ring, having first and second portions which is tightened between an offset on the circumference of the cover and a seat, defined by a receiving bore, in a region between the chamber and the outer surface of the housing, the improvement comprising two sections of said offset extending in the longitudinal direction of said cover and said seat including two step-shaped extensions, first portions of said O-ring being positioned parallel to said two sections adjacent said extensions, said O-ring being



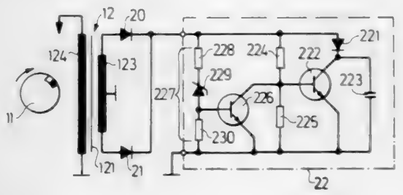
primarily axially stressed in the direction of fastening of said cover between said cover and said extensions; second regions of said O-ring being positioned adjacent said frontal walls and being primarily radially stressed between said cover and said frontal walls; whereby said step-shaped extensions and said frontal walls define transition regions and portions of said O-ring lying adjacent said transition regions are stressed both axially and radially.

3,963,015

SIMPLIFIED AUTOMATIC ADVANCE IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Georg Haubner, Berg; Walter Hofer, and Werner Meier, both of Schwabach, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Dec. 4, 1973, Ser. No. 421,539
Claims priority, application Germany, Dec. 14, 1972, 2261156
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 CC **2 Claims**



1. An ignition system for an internal combustion engine comprising:

a magneto generator driven by the engine and having an ignition circuit armature and windings thereon wound in the form of a built-in spark coil comprising primary and secondary windings;

at least one spark plug connected in circuit with said secondary winding;

electronic circuit means, connected in parallel with at least part of said primary winding and including full wave rectifying means for rectifying the output voltage of said primary winding, said electronic circuit means including

also the switching path of a semiconductor switch arranged in series with a similarly poled diode in a circuit branch substantially short-circuiting said primary winding through said rectifying means except when said semiconductor switch is turned off by a control pulse on a control electrode thereof, said electronic circuit means further including a transistor (226) responsive to the voltage across the combination of said switching path and said similarly poled diode for producing a control pulse and applying it to said control terminal of said semiconductor switch when said voltage exceeds a predetermined voltage, said transistor having its switching path connected in parallel to the control path of said semiconductor switch and having its control electrode connected to a voltage divider energized by the output of said rectifying means and further including a Zener diode (229) so connected that the control path of said transistor (226) is not energized until the output of said rectifying means overcomes the breakdown threshold of said Zener diode (229), and

means for reducing the amplitude of the first of a succession of at least two voltage half waves produced in said primary winding as rectified by said rectifying means, relative to the second of said half waves, said amplitude reducing means including loading, by electrical resistance, of the half wave path of said rectifying means for said first voltage half wave, so that said first voltage half wave of said succession has a lower peak voltage than the immediately succeeding voltage half wave,

whereby at low speeds of said engine, said shortcircuiting circuit branch is not interrupted during said first voltage half wave of said succession, but is interrupted by the second voltage half wave of said succession.

3,963,016

VALVE CHESTS

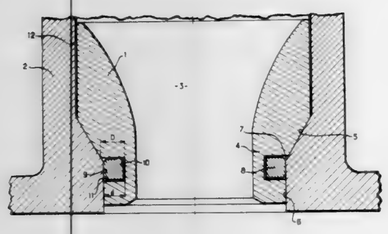
Jean-Claude Bouquet, Pantin, France, assignor to Societe d'Etudes de Machines Thermiques - S.E.M.T.E., Saint Denis, France

Filed Jan. 13, 1975, Ser. No. 540,503

Claims priority, application France, Jan. 29, 1974, 74.02899

Int. Cl.² F01L *3/00*

U.S. Cl. 123—188 S **2 Claims**



1. An overhead valve chest for an internal combustion engine, comprising a portion of cylindro-conical shape adjacent to a lower bearing seat of said valve chest for seating within a cylinder head of the engine said valve chest further comprising an annular groove formed in the said cylindro-conical portion and having a flat upper wall and an opposite flat lower wall, a sealing ring mounted into said groove and having an outer cylindrical surface in continuous bearing engagement on a corresponding inner cylindrical surface of the cylinder head, said groove being formed in overlapping relation to said cylindro-conical portion so that the diameter of the said flat upper wall of the groove is larger than that of the laid flat lower wall of the groove, said larger upper wall being situated on the side of the cylinder head which permits the mounting of the valve chest in the cylinder head, and forming a continuous bearing surface for the sealing ring during the said mounting.

3,963,017

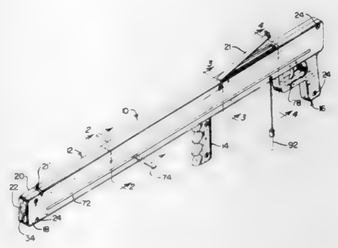
MANUALLY COCKING SPRING-POWERED PROJECTILE LAUNCHER

James M. Pfotenhauer, 1302 N. 19th St., Escanaba, Mich. 49829

Filed Jan. 6, 1975, Ser. No. 538,801

Int. Cl.² F41B *7/00*

U.S. Cl. 124—21 **5 Claims**



1. A projectile launcher comprising:

a housing means for forming a barrel and at least one hand grip;

said housing means including a pair of longitudinal sections secured together by releasable fasteners;

each of said sections being recessed so as to define an inner bore when said sections are secured together;

said bore including a compartment, a projectile launching channel, and a slot portion communicating said launching channel with said compartment;

an elongate cocking bar;

an impact plunger having a projectile discharge portion slidably disposed in said channel and having forward and rearward ends;

said discharge portion including a trigger engaging portion at the bottom thereof;

said plunger including a cocking aperture located in a rear portion thereof and being aligned with slots in said housing sections to removably receive said cocking bar completely through said aperture and slots so as to be grippable by both hands of an operator;

said cocking bar, when drawn rearwardly, being operable to shift said plunger rearwardly toward a cocked position;

said plunger including a web portion extending upwardly from said discharge portion and being slidable in said slot portion of said bore, said discharge portion being of greater thickness than said slot portion to retain said discharge portion in said channel;

an elongate, flexible spring element disposed in said compartment;

one end of said spring element being anchored at a point near the front end of said housing;

the other end of said spring element being operably connected to said web portion so that rearward movement of said plunger toward a cocked position tensions said spring;

trigger means at the rear of said housing for engaging said trigger engaging portion and latching said plunger and said spring element in a cocked condition;

said trigger means being operable to unlatch said plunger to allow said spring element to propel said plunger forwardly; and

a freely rotatable pulley located in said compartment above said launching channel and intermediate the ends of said spring when said spring is tensioned;

said spring passing around and being in contact with said pulley when in a tensioned condition so as to be guided thereby;

said front anchoring point of said spring being disposed above the point of operable connection between said spring and said web portion so that said spring, in a tensioned condition, is inclined so as to apply an upwardly and forwardly directed force to said plunger;

said point of operable connection between said spring and said web portion being spaced from said front and rear ends of said plunger.

3,963,018

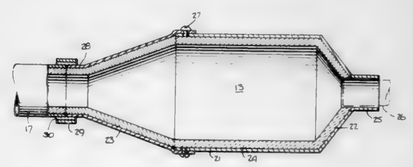
COMBUSTION FURNACE AND INFRA-RED RADIANT HEATING SYSTEM

Russell H. Schultz, West Islip, N.Y., assignor to Natural Resource Systems, Inc., West Islip, N.Y.

Continuation-in-part of Ser. No. 458,350, April 5, 1974, abandoned, which is a division of Ser. No. 350,265, April 11, 1973, abandoned. This application June 12, 1975, Ser. No. 586,171

Int. Cl.² F24C *3/06*

U.S. Cl. 126—91 A **12 Claims**



1. An improved radiant heating system comprising in combination a fluid-fired burner, a combustion chamber and, extending from said chamber, a tubular conduit for receiving the products of combustion from said burner and radiating infrared energy to the surroundings, wherein the improvement comprises a combustion chamber comprising a sheet metal shell and sheet metal end members, said shell being provided with an imperforate lining of a refractory material, whose internal surface is tapered at each end thereof, whereby the tapered surface at one end of said chamber has a high degree of taper to an axially positioned collar for receiving the air tube of a fluid-fired burner, and mounted in said collar, an axially positioned air tube of said fluid-fired burner having means for forcing air through the burner and combustion chamber, and the tapered surface at the other end of said chamber has a low degree of taper to a narrow outlet end, said outlet end having means to mount said tubular heating circuit extending away from said combustion chamber, the tapers of said one and other ends being such that pulsation is essentially eliminated and back pressure in the chamber is minimized.

3,963,019

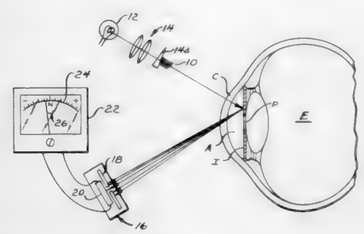
OCULAR TESTING METHOD AND APPARATUS

Robert S. Quandt, 8 Darby Lane, Deerfield, Ill. 60015

Filed Nov. 25, 1974, Ser. No. 526,851

Int. Cl.² A61B *5/00*

U.S. Cl. 128—2 T **11 Claims**



1. Apparatus for detecting changes or variations in a patient's body chemistry comprising means for projecting a beam of plane polarized light through the aqueous humor of a patient's eye, the aqueous humor containing a chemical which rotates the polarization axis of the light beam as it passes therethrough in proportion to the amount of said chemical present in the aqueous humor, and an analyzer positioned to be impinged by said exiting beam of light, said analyzer including means for measuring the angle through which the polarization axis of the light beam has been rotated.

3,963,020

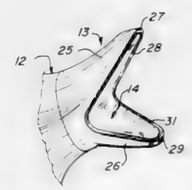
URINAL FOR HUMAN FEMALES

Kenneth F. Hall, 9205 W. 73rd Place, Arvada, Colo. 80005

Continuation of Ser. No. 418,357, Nov. 23, 1973, abandoned. This application Feb. 7, 1975, Ser. No. 547,787

Int. Cl.² A61B *10/00*; **E03D** *13/00*; **A61G** *9/00*

U.S. Cl. 128—2 F **5 Claims**



1. In a disposable urinal and urine specimen collector for adult human females, the combination comprising:

A. a receptacle for containing urine; and

B. a head section in flow communication with the receptacle, said head section having

a. a tubular support portion having a laterally spaced first pair of lip portions, and

b. a generally leaf-shaped upper cup portion supported at one end by the support portion and projecting away from the support portion,

i. said upper cup portion being concavely curved along the inside surface forming a laterally spaced second pair of lip portions that are upper extensions of said first pair of lip portions and are separated from one another to a maximum extent where they merge with said first pair of lip portions, said second pair of lip portions converge inwardly toward one another from the support portion to a leading tip to cup against body tissue to which it is applied,

ii. said upper cup portion having spacing between said second pair of lip portions no greater than about 1.25 inches and a length no greater than about 1.5 inches to lie entirely within the area between the labia and terminate below the clitoris of an adult human female body,

iii. said upper cup portion being relatively shallow in relation to the length thereof and made of a generally soft pliable plastic material to afford a slight degree of flexture in relation to said support portion,

c. a generally leaf-shaped lower cup portion supported at one end by the support portion and projecting away from the support portion,

i. said lower cup portion being laterally concavely curved along the inside surface forming a laterally spaced third pair of lip portions that are lower exten-

sions of said first pair of lip portions and are separated from one another to a maximum extent where they merge with said first pair of lip portions, said third pair of lip portions converge inwardly toward one another from the support portion to a leading tip to cup against body tissue to which it is applied,

ii. said lower cup portion having a spacing between said third pair of lip portions no greater than about 1.25 inches and a length no greater than about 1.125 inches to extend under the pubic arch into a portion of the anterior vaginal wall and engage the mucous membrane of an adult human female body to block contamination of the urine from the vagina and rectum area thereof,

iii. said lower cup portion being relatively shallow in relation to the length and made of a generally soft pliable plastic material to afford a slight degree of flexure in relation to said support portion,

d. the second and third pairs of lip portions diverging away from the support portion at an angle to one another of about 80 degrees to closely conform to the angle of the pubic arch of the adult human female body,

e. said first, second and third pairs of lip portions forming an endless body-engaging lip on the head section that seals against the body tissue to which it is applied throughout the entire perimeter thereof to avoid urine leakage during the use thereof.

3,963,021

RESPIRATORS

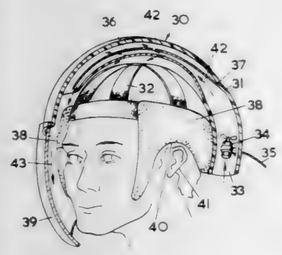
Barrie Bancroft, Dronfield, near Sheffield, England, assignor to Secretary of State for Trade and Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed July 9, 1974, Ser. No. 486,856

Claims priority, application United Kingdom, Jan. 16, 1974, 2095/74

Int. Cl.² A61F *9/06*

U.S. Cl. 128—145 R **6 Claims**



1. A respirator comprising:

a helmet having a top, front, side and rear portions and including only two domed structural layers located one within the other, one of said layers being an apertured support harness for engagement on the head of a wearer, said other layer being an impermeable outer hood structure, and said two layers being sealingly connected to each other along said side portions of said helmet but otherwise located in spaced relation defining therebetween a single open-ended domed passageway extending between the front portion and rear portion of said helmet;

a bag-form filter having a void-forming body predominantly defined by two opposed similarly domed sides, and having a mouth at an edge portion of said sides affording access to said void, said filter extending in said passageway from said rear portion to said front portion and being sealingly connected around its mouth at a location adjacent said rear portion between said helmet layers to laterally fill a rear portion of said passageway with said mouth opening towards the rear portion of said helmet and with said body extending through said passageway in generally conforming disposition therewith towards the front portion of said helmet;

and powered air displacement means connected with the rear portion of said helmet and communicating with said passageway to pass air forcibly through said passageway, by way of said filter, from the rear portion to the front portion of said helmet.

3,963,022

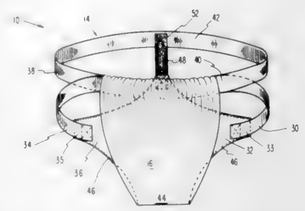
COMFORT ATHLETIC SUPPORTER

Joseph Vincent Rotello, 6052 Welch St., Arvada, Colo. 80004

Filed Sept. 5, 1975, Ser. No. 610,543

Int. Cl.² A61F *5/40*

U.S. Cl. 128—158 **10 Claims**



1. An athletic supporter for wear by males in strenuous and non-strenuous athletic activities comprising:

a. a single fabric panel conforming to the lower human torso and of sufficient length to extend from a lower front abdominal region of the wearer, pass between the wearer's legs and terminate at a mid-posterior area of the wearer;

b. the single fabric panel being shaped with sufficient width at a first end of the fabric piece to substantially cover the lower front abdominal region of the wearer, with sufficient narrowing at a central portion of the fabric panel to fit between the wearer's legs with comfort, and with a fan shaped configuration at a second end of the fabric panel terminating at the mid-posterior area of the wearer; and

c. a single piece elastic waistband having a first end and a second end, the first end being attached to a first side of the fan shaped configuration of the fabric panel and the second end being attached to a second side of the fan shaped configuration of the fabric panel, and a central portion completely encircling the torso of the wearer in the area of the wearer's waist with a single layer of waistband in the area of the wearer's back and a double layer of waistband in the area of the wearer's abdomen, said first end of said fabric panel being loosely secured to said double layer of waistband over the abdomen.

3,963,023

EXTRACORPOREAL BLOOD CIRCULATION SYSTEM AND PUMP

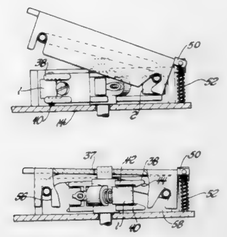
George R. Hankinson, Littleton, Colo., assignor to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Nov. 4, 1974, Ser. No. 520,198

Int. Cl.² A01M *1/02*; **F04B** *43/08, 43/12, 45/06*

U.S. Cl. 128—214 F **14 Claims**

1. An extracorporeal blood circulation system for circulating a patient's blood from and then back to the patient through tubing at least a portion of which is flexible, said system including a pump to cause the blood to circulate through the system, said pump comprising a backing member at least a portion of which is of arcuate shape receiving thereagainst said flexible portion of said tubing when said pump is operable, a rotor having rotatably secured thereto a plurality of rollers for contact with the flexible tubing portion to occlude said tubing portion in the areas of contact of each roller therewith thereby to pump blood through the tubing in the direction of rotation of the rotor, a tube positioning member for positioning said flexible tubing portion adjacent said backing member, and means connected to said rotor to move the flexible tubing portion from its position adjacent said backing



member to a position between said rollers and said backing member upon actuation of said rotor, said tube positioning member comprising a member connected to said backing member and movable from a position away from said backing member to a position adjacent said backing member, and tube securing means on said tube positioning member for removably securing thereto said flexible tubing portion.

3,963,024

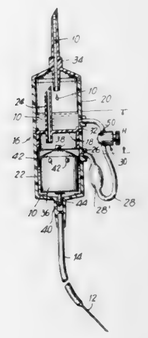
FLUID FLOW REGULATOR

Michael Goldowsky, 222 Martling Ave., Tarrytown, N.Y. 10591

Filed Apr. 8, 1975, Ser. No. 566,076

Int. Cl.² A61M *5/16*

U.S. Cl. 128—214 R **9 Claims**



9. An administration set for the infusion of a supply liquid in a supply container into a separate liquid system comprising a flow tube and a flow restrictor including a frame defining a substantially semi-circular passage for said flow tube and a movable conical wedge for pressing said flow tube against said frame to restrict flow therethrough by squeezing a sufficiently long length of said flow tube to establish laminar flow.

3,963,025

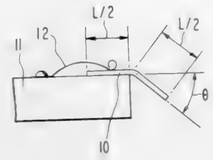
OCULAR DRUG DELIVERY DEVICE

Gordon W. Whitaker, Palo Alto, and Yigal Gad, Mountain View, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 505,629, Sept. 16, 1974, abandoned, which is a continuation of Ser. No. 423,203, Dec. 10, 1973, abandoned, which is a continuation-in-part of Ser. No. 350,062, April 11, 1973, abandoned. This application June 2, 1975, Ser. No. 582,948

Int. Cl.² A61M *31/00*

U.S. Cl. 128—260 **8 Claims**



1. In a sustained release ocular drug delivery device comprising a flexible body that is formed of a bioerodible polymeric material, sized and shaped for insertion in either cul-de-sac of the eye, and contains a drug, the improvement wherein the body has a stiffness and resistivity to bending manifested by a centroidal unsupported bending angle of less than 40° during its drug dispensing lifetime.

3,963,026

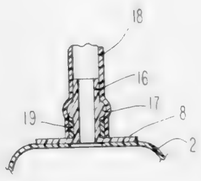
BLOOD COMPONENT STORAGE BAG AND GLYCEROLIZING SET THEREFOR

John R. Herb, Easton, Pa., assignor to Pharmachem Corporation, Bethlehem, Pa.

Filed Nov. 19, 1974, Ser. No. 525,212

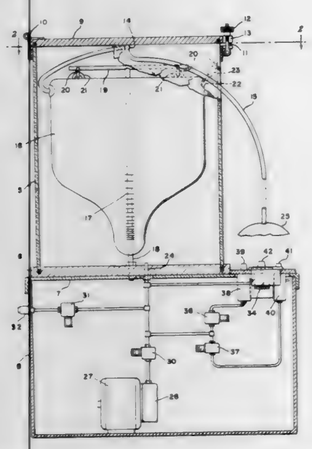
Int. Cl.² A61J *1/00*; **A61M** *5/00*

U.S. Cl. 128—272 **4 Claims**



1. The combination of a bag for storing blood components with a tube member communicating therewith, said combination comprising, a sterilizable, flexible closed container including an inlet therein forming part of said closed container, said inlet being adapted for fluid-tight connection to said tube member through which said blood components are caused to flow, said tube member having an end portion composed of a plastic material which is incompatible for solvent-welding with the material of said inlet, said inlet consisting of a base and a hollow protrusion having on its outer surface an enlarged portion spaced from said base, a sleeve trapped between said enlarged portion and said base, said sleeve being composed of a plastic material which is compatible for solvent-welding with a portion of said tube member, said tube member including a portion compression fitted over said enlarged portion and solvent-welded to said sleeve.

3,963,027
MEDICAL/SURGICAL SUCTION EQUIPMENT
Edward E. Muriot, Horsham, Pa., assignor to Health Technology Labs, Inc., Horsham, Pa.
Continuation-in-part of Ser. No. 497,838, Aug. 16, 1974, abandoned. This application Nov. 15, 1974, Ser. No. 524,052
Int. Cl.² A61M *1/00*
U.S. Cl. 128—276 **12 Claims**



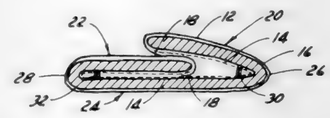
1. Equipment for withdrawing body liquids comprising a vacuum chamber, a suction bag adapted to be removably positioned in the vacuum chamber and having an opening for interconnecting the interior of the bag with the interior of the chamber, the bag further having an inlet connection comprising an inlet tube with the tube wall connected with the wall of the bag and extended therefrom to a point exterior of the vacuum chamber for intake of body liquid, a vacuum line adapted to be connected with a pressure reduction source of substantially constant reduced pressure, said line being connected with the vacuum chamber independently of the bag and being in communication with the interior of the vacuum chamber externally of the bag, and mechanism providing for timed intermittent fluctuation of the suction in said chamber between upper and lower negative pressure limits.

3,963,028
SUCTION WAND
Denton A. Cooley; Charles C. Reed, both of Houston, and Russell G. Sharp, Sugar Land, all of Tex., assignors to Texas Medical Products, Inc., Houston, Tex.
Filed Feb. 6, 1975, Ser. No. 547,529
Int. Cl.² A61M *1/00*
U.S. Cl. 128—276 **2 Claims**



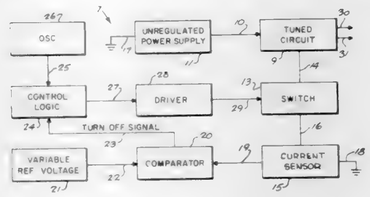
1. A surgical suction wand comprising:
a weighted handle of metal construction, the handle comprising a single axial, generally cylindrical through-bore opening at the leading end and at the trailing end of the handle, the leading end of the through-bore tapering outwardly;
an elongated suction conduit comprising a unitary, generally cylindrical insert having an external configuration which corresponds to the through-bore within the handle, the insert tapering outwardly at its leading end;
the external surface of the insert defining a diameter which is essentially the same as the diameter of the through-bore, said insert being telescopically surmounted by the handle and releasably attached thereto with a press-fit coupling, the through-bore receiving the insert in snug relationship along the entire length of the bore; and
a coupling for flexible suction tubing integral and coextensive with the trailing end of the insert, said coupling projecting beyond the trailing end of the handle when the handle surmounts the insert.

3,963,029
DIAPER PACKAGE
William Victor Hayes Brooks, Toronto, Canada, assignor to Domtar Limited, Montreal, Canada
Filed July 12, 1974, Ser. No. 487,863
Int. Cl.² A61F *13/16*
U.S. Cl. 128—287 **6 Claims**



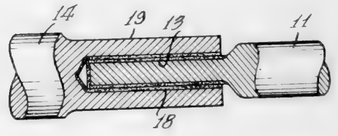
1. A disposable diaper comprising a plastic backing sheet, a porous facing sheet, an absorbent pad interposed between said backing and facing sheets, said backing sheet extending beyond said pad to form a flap on each side of said pad, said flap being folded around the side edge of said pad into overlying relationship with said pad, means for sealing longitudinal end edges of said pad, a pair of longitudinally extending folds dividing said diaper into a central section and a pair of lateral wing sections, one of said pair of lateral wing sections being folded into overlying relationship with said central section with a portion of said facing sheet on said wing section in face-to-face relationship with a portion of said facing sheet on said central section, the other of said pair of lateral wing sections being folded over said one wing section thereby to completely enclose the facing sheet.

3,963,030
SIGNAL GENERATING DEVICE AND METHOD FOR PRODUCING COAGULATION ELECTROSURGICAL CURRENT
David W. Newton, Boulder, Colo., assignor to Valleylab, Inc., Boulder, Colo.
Continuation of Ser. No. 351,232, April 16, 1973, abandoned. This application Nov. 1, 1974, Ser. No. 520,219
Int. Cl.² A61B *17/36*
U.S. Cl. 128—303.17 **3 Claims**



1. An electrosurgical method for coagulating tissue comprising the steps of
generating a D.C. voltage;
generating a pulse train having a predetermined pulse repetition frequency;
repetitively connecting said D.C. voltage across a tank circuit comprising at least a capacitor and a primary winding of a transformer, said capacitor and primary winding being in parallel connection and the resonant frequency of said tank circuit being substantially greater than said predetermined pulse repetition frequency, in response to each occurrence of a pulse of said pulse train to thereby store electrical energy in said tank circuit during each occurrence of said pulses;
repetitively disconnecting said D.C. voltage from said tank circuit in response to each termination of a pulse of said pulse train so that the said electrical energy stored in said tank circuit is coupled through a secondary winding of said transformer as a burst of pulses of decaying amplitude each time one of said pulses of said pulse train terminates, the capacitance of said capacitor and the inductance of said primary winding being such that crest factor of the output signal from said secondary winding is about 5 to 10;
applying said output signal to an electrosurgical instrument; and
coagulating said tissue by positioning said instrument adjacent said tissue.

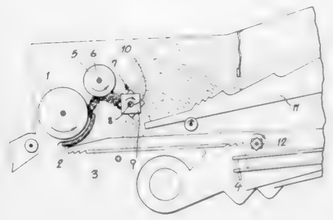
3,963,031
JUNCTURE-LUBRICATED NEEDLE-SUTURE COMBINATION
Alastair W. Hunter, Somerville, N.J., assignor to Ethicon, Inc., Somerville, N.J.
Filed Dec. 11, 1974, Ser. No. 531,561
Int. Cl.² A61B *17/06*
U.S. Cl. 128—339 **9 Claims**



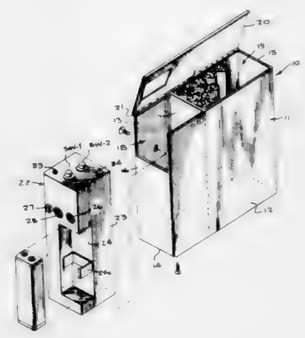
1. In a needle-suture combination having a suture pull out value of from about 3–26 ounces comprising a needle having a sharp end and a blunt end, means forming a recess at the blunt end of said needle and a suture having a tip at one end positioned within said recess, said blunt end being swaged to bring at least a portion of the inner surfaces of said recess into tight engagement with said suture tip to attach said suture to said needle, the improvement comprising having a lubricant layer between said suture tip and said inner surface of said recess in an amount effective to substantially reduce the suture pull-out value relative to the pull-out value in the absence of said lubricant layer.

3,963,032
THRESHING MACHINE
Ernst Rüede, Bietingen, Germany, assignor to Maschinenfabrik Fahr Aktiengesellschaft, Gottmadingen, Germany
Filed Apr. 21, 1975, Ser. No. 569,710
Claims priority, application Germany, Apr. 22, 1974, 2419268
Int. Cl.² A01F *12/00*
U.S. Cl. 130—27 E **9 Claims**

1. In a harvesting-type threshing machine in combination:
a support structure;
a threshing drum rotatable on said support structure about a horizontal axis in one sense for receiving crop material and dislodging grain from a chaff containing straw of the crop material and feeding the mixture of straw and grain in a stream;
a straw-deflecting drum rotated on said structure rearwardly of said threshing drum and above the axis thereof about a further horizontal axis in said sense, said straw-deflecting drum being disposed in the path of said stream for deflecting said stream in rearward direction relative to the direction of displacement of the machine;
a multiple-disk roller rotated about a respective horizontal axis and disposed rearwardly of said straw-deflecting drum below the axis thereof for intercepting the stream of material deflected thereby for separating straw from grain, said roller being rotated in a sense opposite the sense of rotation of said drum; and
a straw shaker rearwardly of said roller and receiving straw cast thereon by said roller.



3,963,033
ELECTRONIC SMOKING INHIBITING DEVICE
John W. Pope, P.O. Box 45246, Dallas, Tex. 75235
Filed May 28, 1975, Ser. No. 581,633
Int. Cl.² A24F *15/06*
U.S. Cl. 131—170 A **8 Claims**



1. Apparatus for inhibiting cigarette smoking, comprising a cigarette case having a cigarette storage compartment, a movable lid normally closing said compartment and movable to an open position permitting access to the compartment for removal of a cigarette, smoking inhibiting means carried by the case administering faradic shock punishment to a user person operating the case under predetermined conditions comprising an electronic circuit housed in said cigarette case including an electrical faradic shock generator for producing a faradic shock electrical signal and an electrical delay means activated upon opening of the lid to establish a predetermined post-opening delay period following opening of said lid and activate said faradic shock generator to produce said faradic shock electrical signal at the end of said delay period, and an electrically conductive shock applying device to be conductively connected to said shock generator and to be supported in contact with the skin of the user for applying the faradic shock signal to the user to produce the shock punishment.

3,963,034
MAKE UP GUARD

Richard K. Runberg, and Shirley M. Runberg, both of 391 Ironpike Circle, Anaheim, Calif. 92807

Filed Jan. 31, 1975, Ser. No. 546,007
Int. Cl.² A45D 4/18
U.S. Cl. 132—9 2 Claims



1. A make up guard for protecting the face of a user from hair spray, said guard when not in use being capable of selectively occupying either a flat configuration or coiled configuration in which it may be wound about a container holding an aerosol type hair spray without obscuring the label on said container, said guard including:

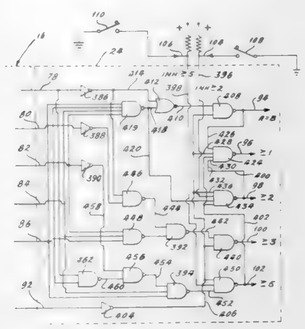
a generally paddle shaped sheet of a resilient polymerized transparent resin that includes a rectangular body portion from which an elongate rectangular handle of narrower width projects, said body portion and handle having laterally spaced pairs of first and second longitudinal edges, said first and second pairs of edges at their adjacents ends being connected by oppositely tapered edges, and first and second pairs of core lines formed in said sheet inwardly from said first and second edges and cooperating therewith to define first and second pairs of elongate flanges therebetween, with said sheet intermediate said flanges having a plurality of score lines therein that cooperate with said pair of tapered edges to define two generally trapezoidal laterally spaced areas on said sheet, and said pair of longitudinal edges when grasped and forced inwardly towards one another resulting in said second pairs of flanges being angularly disposed relative to the balance of said handle and said handle having a generally channel shaped transverse cross section, said handle when so deforming stressing said body portion through said trapezoidal shaped areas that said first flanges are angularly disposed relative to the balance of said body portion to have said body portion assume a channel shaped transverse cross section, said sheet when said handle and body portion are deformed to said transverse channel shaped cross section having substantial longitudinal rigidity to permit said sheet to be adjacently disposed to the face of a user to act as a make up guard when hair spray is being discharged onto the hair of said user and said resilient polymerized resin defining said sheet having a sufficiently good memory that said sheet returns to a substantially flat configuration when exertion of said force on said longitudinal edges is terminated.

3,963,035
COIN CONTROLLED CIRCUITS FOR VENDING AND OTHER COIN CONTROLLED DEVICES

Joseph L. Levasseur, St. Louis, Mo., assignor to H. R. Electronics Company, High Ridge, Mo.

Continuation-in-part of Ser. No. 381,900, July 23, 1973, Pat. No. 3,841,456. This application Oct. 7, 1974, Ser. No. 512,850
Int. Cl.² G07D 1/06
U.S. Cl. 133—2 6 Claims

1. In a coin controlled device having means to accumulate amounts deposited and means to pay back amounts deposited in excess of a vend price including a plurality of coin tubes for respectively accumulating different denomination coins, each of said coin tubes having coin sensing means associated therewith to produce a response whenever the quantity of coins therein has fallen below a predetermined quantity, coin tube actuator means associated with each coin tube and means for energizing the respective coin tube actuator means to pay back coins therefrom, the improvement comprising gate circuit means associated with each coin tube, each of said gate circuit means having an output connected to energize the associated actuator means, means connecting the output of the gate circuit associated with a higher denomination coin tube to an input to gate circuit means associated with a lower

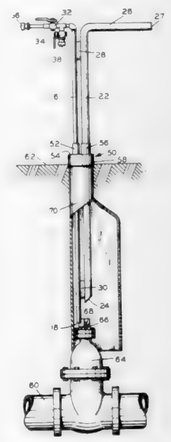


denomination coin tube, circuit means for determining the highest denomination coin that can be paid back, means including the sensing means associated with a higher denomination coin tube to inhibit energizing of the actuator means associated therewith and prevent paying back coins therefrom whenever a response is produced by the coin sensing means associated therewith, said last named means including circuit means to establish a circuit to enable energizing of the actuator means associated with a lower denomination coin tube that contains more than the predetermined quantity of coins therein to make further paybacks therefrom.

3,963,036
SHUT-OFF VALVE EXCAVATOR

Carl Irelan, Jr., 117 E. 36th St., Boise, Idaho 83704

Filed Mar. 7, 1975, Ser. No. 556,242
Int. Cl.² B08B 3/02
U.S. Cl. 134—102 1 Claim



1. Apparatus for cleaning out and flushing away debris from around a shut-off valve located in a closed sleeve to facilitate access to the valve, said apparatus comprising:

an inflow pipe for carrying flushing fluid into the closed sleeve;

an outflow pipe generally parallel to said inflow pipe and secured to said inflow pipe by a pair of spaced apart spacer blocks, said outflow pipe carrying flushing fluid and entrained debris out of the closed sleeve;

means for controllably supplying flushing fluid to said inflow pipe; and

a collar slidably carried on said inflow and outflow pipes between said spacer blocks, said slidable collar being of greater diameter than the sleeve whereby said collar is slidable over an open end of said sleeve to allow outflow of flushing fluid.

3,963,037
DEMOUNTABLE STICK

George Reginald Seymour Clark, Christchurch, New Zealand, assignor to New Zealand Inventions Development Authority, Wellington, New Zealand

Filed Aug. 21, 1974, Ser. No. 499,239
Claims priority, application New Zealand, Aug. 30, 1973, 171844; Jan. 28, 1974, 173204
Int. Cl.² A45B 9/00
U.S. Cl. 135—45 R 1 Claim



1. A stick comprising in combination:

a plurality of hollow shafts including a first and second shaft joined together by joints wherein a first end of a first shaft carries near its tip an O-ring held in a groove and carries at a predetermined fixed distance from the O-ring an inwardly tapering male conical surface coaxial with and surrounding said first end, and a first end of a second shaft carries within said end a female conical surface coaxial with said second shaft, said second shaft being matingly engaged at its complementary female outwardly tapered conical surface by said male conical surface on said first shaft, and a second end of said second shaft carries within it a constriction located at a distance from the female conical surface equal to the distance between said O-ring and male conical surface on said first shaft, said constriction being engaged with said O-ring;

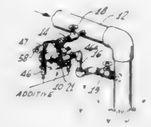
a captive elastic cord within said plurality of hollow shafts; and

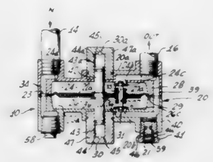
means at one end of said plurality of hollow shafts anchoring said elastic cord and means at the other end of said plurality of hollow shafts connected in a tension-resisting manner to said elastic cord whereby tension may be applied to the cord to define an interlocking, demountable stick.

3,963,038
LIQUID PROPORTIONING PUMP

Raymond W. Jensen, 28081 Ella Rd., Palos Verdes Peninsula, Calif. 90274

Filed Aug. 15, 1974, Ser. No. 497,818
Int. Cl.² G05D 11/03
U.S. Cl. 137—99 12 Claims





1. A hydraulically actuated volumetric proportioning pump, for injecting one liquid into another liquid, comprising:

a main housing;

a diaphragm movably mounted within said main housing and generally centrally located therewithin to form a first main chamber and a second main chamber;

fluid inlet means to each of said first and second main chambers, said fluid inlet means being adapted to be connected to a main fluid source;

first and second outlet ports for said first and second main chambers, respectively;

a main valve means mounted to said diaphragm and movable therewith to alternatively open and close the first and second outlet ports of said first and second main chambers in response to the movement of said diaphragm;

piston housing means mounted to the main housing having bores therein defining a first and second piston chamber means;

a piston means mounted to the diaphragm and movable within said first and second piston chamber means as a result of the movement of said diaphragm;

an additive inlet means, adapted to be connected to a source of additive fluid, communicating with at least one of said piston chamber means;

an additive outlet means, leading from at least one of said piston chambers to at least one of said main chambers;

an additive inlet valve means for said additive inlet means;

an additive outlet valve means for said additive outlet means, whereby as fluid moves into said main chambers from said main fluid source, said diaphragm is moved, under the influence of a pressure differential imposed between said first and second main chambers, towards one side of said main housing, and

said main valve means, mounted to said diaphragm, thereby moves to close said first outlet port and open said second outlet port,

said piston means, mounted to said diaphragm, moves to decrease the volume of the first piston chamber means and increase the volume of said second piston chamber means thereby creating a suction stroke in said second piston chamber means, drawing additive fluid, through said additive valve inlet means and into said second piston chamber means and also creating a delivery stroke, in said first piston chamber means, to eject any additive stored in said first piston chamber through said additive valve outlet means, and into said first main chamber, which additive is evacuated from said first

main chamber with the main fluid during the time that said first outlet port is open,

and, as said first outlet port is closed, said outlet port of said second main chamber is opened, thereby imposing a reverse pressure differential which causes said diaphragm to move in a direction which is the reverse of its previous direction, whereby the main valve means moves to close off said second outlet port,

the reverse movement of said diaphragm causing said piston means to decrease the volume of said second piston chamber means and increase the volume of said first piston chamber means thereby causing any additive fluid stored in said second piston chamber means to be ejected through said additive valve outlet means, into said second main chamber, which additive is then evacuated through said second outlet port with main fluid, during the time that said second outlet port remains open, and whereby the reverse movement creates a suction stroke in said first piston chamber thereby drawing and storing additive fluid in said first piston chamber.

3,963,039

HYDRAULIC INSTALLATION WITH MEANS FOR STORING ENERGY

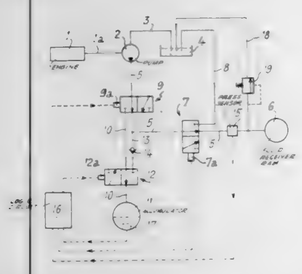
Yves G. Coeurderoy, Lagney-Le-Sec, France, assignor to Societe Anonyme: Poclain, Belleville, France

Filed Jan. 14, 1975, Ser. No. 540,966

Claims priority, application France, Jan. 24, 1974, 74.02411

Int. Cl.² F15B *15/00*

U.S. Cl. 137—118 **4 Claims**



1. A hydraulic installation comprising: at least one pump means for delivering a fluid under pressure through a delivery pipe; a first selectively operable regulator means operatively connected to said delivery pipe for selectively supplying fluid under pressure to a receiver member or a fluid tank; second regulator means operatively connected to said delivery pipe, between said pump means and said first regulator means for establishing, in a first position, communication between the pump means and a first set of auxiliary pipework, including an accumulator of fluid under pressure while preventing fluid flow in said delivery pipe beyond the second regulator means, and in a second position, communication between the said delivery pipe and said first regulator means while preventing fluid flow from the delivery pipe to said first set of auxiliary pipework; said first set of auxiliary pipework including third regulator means for establishing, in a first position, communication between the accumulator and a second set of auxiliary pipework, connected to the delivery pipe between the first and second regulator means while preventing fluid flow from said delivery pipe to said first set of auxiliary pipework and, in a second position, communication between said delivery pipe and said first set of pipework while preventing fluid flow from the accumulator to the second set of auxiliary pipework; pick-up means for emitting a signal indicative of the position of the first regulator means; a pressure-pick-up means for emitting a signal indicative of the pressure in the accumulator; and logic means responsive to said signal indicative of the position of the first regulator and to said signal indicative of the pressure in the accumulator, for controlling the positions of the second and third regulators.

3,963,040

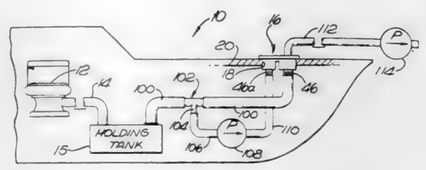
WASTE DISPOSAL SYSTEM

Walter A. Gezari, Killingworth, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 315,410, Dec. 15, 1972, Pat. No. 3,870,084. This application Nov. 25, 1974, Ser. No. 526,965

Int. Cl.² B60N *3/00*

U.S. Cl. 137—344 **7 Claims**



1. A waste disposal system for a boat having a deck and a waste holding tank therebelow comprising:

a dual deck fitting adapted to be mounted in an aperture in the boat deck;

said fitting being formed with first and second pairs of inlet and outlet ports;

pump means for mounting in said boat;

a first conduit having one end connected to the inlet port of said first pair and the other end adapted to be connected to said holding tank;

a second conduit having one end connected to the inlet port of said second pair and the other end connected to the outlet of said pump means; and

a third conduit having one end for flow communication with said tank and the other end connected to the inlet of said pump means.

3,963,041

SAFETY SHUTOFF VALVE

Hugh D. McGillis, Brockton, Mass., assignor to McGillis Engineering, Inc., Brockton, Mass.

Continuation-in-part of Ser. No. 446,530, Feb. 27, 1974, abandoned. This application May 1, 1975, Ser. No. 573,741

Int. Cl.² F16K *31/18*

U.S. Cl. 137—410 **4 Claims**

1. A safety shutoff valve of the type having a housing with an inlet and an outlet, a baffle inside the housing partially closing the passageway between said inlet and outlet, a valve member inside the housing swingable from an open position wherein it underlies the baffle and a closed position wherein it closes the passage between said inlet and outlet, the improvement comprising

A. means for biasing the valve member toward its open position,

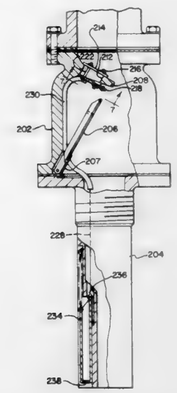
B. an opening through the baffle,

C. a door mounted in the housing and movable between a closed position wherein it closes the opening through the baffle and an open position wherein it permits liquid to flow through the opening,

D. means for biasing the door to its closed position,

E. a movable member mounted on the housing and movable between first and second positions in response to the level of liquid relative to the housing, and

F. means linking the door and the movable member so that when the movable member is in its first position, the door is closed and when the movable member is in its second position, the door is open so that incoming liquid flows



through said opening and engages behind the valve member, driving it to its closed position.

3,963,042

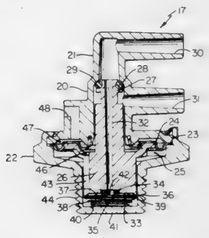
INTERNAL COMBUSTION ENGINE CONTROL SYSTEM AND IMPROVED PNEUMATICALLY OPERATED TEMPERATURE CONTROLLED VALVE CONSTRUCTION THEREFOR OR THE LIKE

Harley V. Bible, Maryville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 21, 1974, Ser. No. 499,176

Int. Cl.² F02P *5/04*

U.S. Cl. 137—468 **10 Claims**



1. A pneumatically operated temperature controlled valve construction adapted for initially interconnecting a pneumatic source to a pneumatically operated device only when said construction senses a certain temperature, said construction having means for thereafter only disconnecting said source from said device when the value of said source falls below a certain level thereof regardless of sensed temperature, said construction having temperature operated pilot valve means adapted for actuating the same to an open condition thereof when said certain temperature is sensed.

3,963,043

PRESSURE SENSING METHOD AND APPARATUS FOR GASES

Mario E. Cota, Scottsdale, and Jerry A. Taylor, Tempe, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Jan. 2, 1975, Ser. No. 538,231

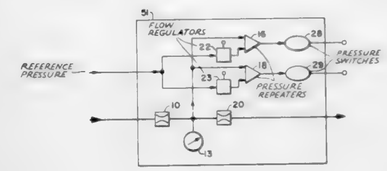
Int. Cl.² F16K *37/00*

U.S. Cl. 137—487.5 **4 Claims**

1. Apparatus for sensing the rate of flow of a gas through a conduit, said apparatus having individual summing junctions for high and low flow limits, each summing junction having a reference flow source, said apparatus comprising:

at least two orifices installed in series within a conduit, normal to the flow of gas, so as to provide a pressure reservoir therebetween; and a pressure tap mounted in the wall of the conduit to supply a sample of the flowing gas, whose pressure is to be sensed.

at least two pressure repeaters respectively providing separate and individual summing junctions for preset high and low pressure limits whereby these preset high and low pressure limits describe a band of acceptable gas flow



rates and these preset high and low pressure limits are some function of respective high and low gas flow rates each including a flexible membrane one side of which is connected to the pressure tap;

a separate and independent reference gas pressure source supplying calibrated static pressure to the other side of each of the flexible membranes mounted within the pressure repeaters; and

at least two pressure switches each operating from a separate and individual pressure repeater indicating the binary state of the monitored gas static pressure.

3,963,044

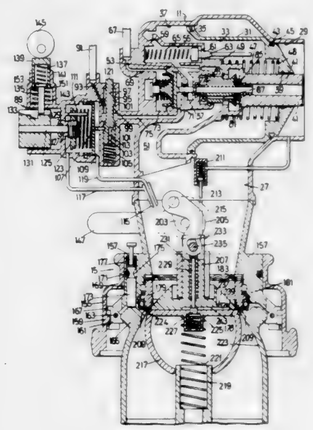
PILOT VALVE OPERATED PRESSURE REGULATOR

Albert W. Brown, Newport Beach, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 344,858, March 26, 1973, abandoned, and a continuation-in-part of Ser. No. 291,894, Sept. 25, 1972, abandoned. This application July 3, 1975, Ser. No. 593,007

Int. Cl.² F16K *31/363*

U.S. Cl. 137—490 **7 Claims**



1. A portable pressure control valve for use in conjunction with a stationary hydrant for automatically precisely regulating the downstream pressure of a fluid flowing from said hydrant at a predetermined pressure level, comprising:

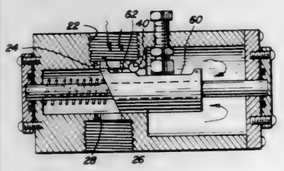
a main valve housing, including a main flow passage;
a main piston, adjustably positioned within said main flow passage to precisely regulate the flow of fluid therethrough;
a control passage for maintaining fluid under pressure for adjusting the position of said main piston; and a pilot valve, responsive to said downstrem pressure of said fluid for automatically regulating the pressure of the fluid in said control passage to precisely regulate said downstream pressure at said predetermined pressure level, said pilot valve located within said main valve housing to protect said pilot valve from damage.

3,963,045

CUSHION CONTROL ACCESSORY FOR PNEUMATIC OR HYDRAULIC CYLINDERS

Vernon Damitz, 347 N. Lincoln, Villa Park, Ill. 60181

Filed Oct. 24, 1974, Ser. No. 517,426
Int. Cl.² F15B *13/042*; **F16K** *31/36, 31/122*
U.S. Cl. 137—505.13 **7 Claims**



1. A cushion control apparatus, for use with a pneumatic cylinder assembly which has a cylinder and a piston, for cushioning the piston as said piston reaches the end of its stroke and for preventing damage to the cylinder assembly, which comprises:

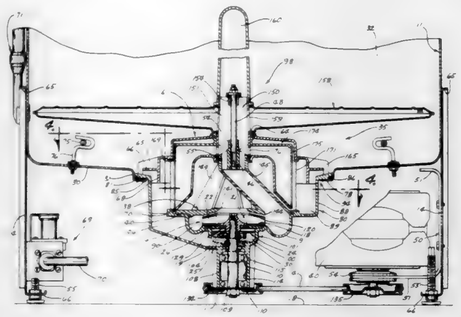
a. a body having: an inlet port on one side of the body which is adapted to receive air flow from a cylinder; an outlet port; expansion chamber means within said body; first branched passageway means within said body interconnecting said inlet port, outlet port and said expansion chamber means; and second passageway means connecting said inlet port and a branch of said first passageway means for cooperating in directing air flow from said inlet port to said chamber means;
b. pressure responsive valve element means for cooperation in directing air flow from said inlet port through said second passageway to said chamber means and for controllably opening said inlet port and closing said inlet port in response to increased pressure in said chamber means so as to cushion said piston, said valve element means being mounted in said first passageway for reciprocal movement therein and said valve element means being generally cylindrical in shape and including land portion means cooperating with said body which means are arranged for providing communication between said second passageway and said expansion chamber means;
c. valve means associated with said chamber means for venting said chamber means to atmosphere so as to controllably release said cushion; and
d. control valve means are provided in association with said second passageway for cooperating in controlling the flow of air from said inlet port to said expansion chamber means.

3,963,046

DISHWASHER

Richard P. Bergeson, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Continuation-in-part of Ser. No. 467,868, May 8, 1974, Pat. No. 3,906,967. This application June 5, 1975, Ser. No. 584,050
Int. Cl.² B08B *3/02*
U.S. Cl. 137—565 **13 Claims**



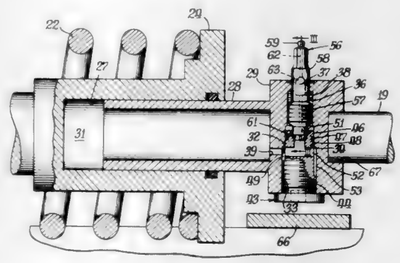
1. In a dishwasher apparatus, the combination comprising: means defining a washing chamber and including a bottom wall defining a generally central opening; washing means disposed at least partially in said opening and including a housing defining at least one pump cavity and further including rotatable means for effecting a washing of articles in said chamber and a draining of washing fluid therefrom; connector means accessible from said washing chamber for connecting said washing means to said bottom wall, said washing means being constructed for assembly into the opening in said bottom wall from within said washing chamber and removably connected to said bottom wall by said connector means; a drive motor disposed below said bottom wall and mounted to said dishwasher apparatus independently of said washing means; and disconnectable drive means for drivingly connecting said drive motor to said washing means, said washing means being disconnectable from said bottom wall and removable from said opening into said washing chamber independently of said drive motor.

3,963,047

FILL AND RELIEF VALVE ARRANGEMENT

Rodger L. Moring, Bristol, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 17, 1975, Ser. No. 614,053
Int. Cl.² F15B *13/04*; **B62D** *55/30*
U.S. Cl. 137—596 **10 Claims**



1. A fill and relief valve arrangement for the introduction of fluid into and the selective venting of fluid from a fluid chamber comprising;

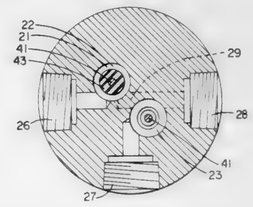
a body having a stepped open-ended bore extending therethrough, an integral annular shoulder formed at one end of the bore, a passageway communicating the bore with such fluid chamber, and a vent port communicating the bore with the atmosphere;
a valve seat element sealingly secured within the other end of the bore and having a passage formed therein communicating with said passageway; and
a fill valve adjustably positioned within the bore and having a first position in engagement with said valve seat element for isolating the fluid chamber from the vent port and a second position for establishing communication between the passageway and the vent port through said passage for venting the fluid chamber to the atmosphere, said fill valve including a fluid flow path extending therethrough and a check valve disposed in the flow path for permitting oneway communication of fluid therethrough in a direction for introducing fluid into the fluid chamber when the fill valve is in said first position, said fill valve being confined between the valve seat element and the annular shoulder.

3,963,048

POPPET VALVE ASSEMBLY

Larry L. Bowman, Kalamazoo County, Mich., assignor to General Gas Light Company, Kalamazoo, Mich.

Filed Feb. 27, 1975, Ser. No. 553,468
Int. Cl.² F15B *13/044*
U.S. Cl. 137—596.17 **4 Claims**



1. A poppet-type valve assembly, comprising:

valve housing means having a pair of opposite end surfaces and also having first and second substantially parallel openings extending therethrough from one end surface to the other end surface thereof;
said housing means including annular means defining first and second annular valve seats associated with said first and second openings respectively, said valve seats being positioned intermediate the opposite ends of the respective opening and disposed so as to surround the respective opening and project radially inwardly relatively thereto, said first valve seat facing toward said one end surface of said housing means and said second valve seat facing toward the other end surface of said housing means;
said first valve seat dividing said first opening into first and second annular chambers located adjacent said one end surface and said other end surface respectively, and said second valve seat dividing said second opening into first and second annular chambers located adjacent said one end surface and other end surface respectively;
said housing means having formed therein (1) an inlet port communicating directly with the first chamber of said first opening for permitting a pressure fluid to be supplied thereto, (2) an exhaust port communicating directly with said first chamber of said second opening for permitting pressure fluid to be discharged therefrom, (3) a load port communicating directly with one of said second chambers for permitting the flow of pressure fluid to or from an external load, and (4) an internal passage providing direct flow communication between the second chamber of said first opening and the second chamber of said second opening;
first and second poppet-valve plunger means movably positioned within said first and second openings, respectively, and being movable for sealingly engaging the respective valve seat, each said poppet-valve plunger means including an elongated valve stem having first and second cylindrical guide portions spaced axially from one another and positioned within the respective first and second chambers of the respective opening;
each said valve stem also having a first annular groove positioned axially adjacent the first cylindrical portion and a second annular groove positioned axially adjacent the second cylindrical portion, said first and second annular grooves being identical and disposed between said first and second cylindrical portions, said first and second grooves also being positioned axially adjacent one another and separated by a narrow annular flange which is fixed to the valve stem and projects radially outwardly thereof;
a first elastomeric seal ring fixedly associated with said first plunger means and disposed within said first annular groove, said first elastomeric seal ring being positioned within the first chamber of said first opening whereby it is movable into sealing engagement with said first valve seat, a second elastomeric seal ring fixedly associated with said second plunger means and being disposed within said second annular groove, said second elastomeric seal ring being disposed within the second chamber of said second opening and positioned for sealing engagement with said second valve seat, each said elastomeric seal ring having an external diameter of a magnitude similar to the diameter of the adjacent cylindrical guide portions associated with the respective plunger means;
first elastomeric seal ring means associated with each of said first and second openings and disposed adjacent said one end surface for creating a slidable sealed relationship between said housing means and the first cylindrical guide portions of said first and second plunger means;
second elastomeric seal ring means associated with each of said first and second openings and disposed adjacent the other end surface of said valve housing means for creating a slidable sealed relationship between said housing means and the second cylindrical guide portions of said first and second plunger means;
each of said valve stems including an elongated rodlike extension projecting axially beyond one of the cylindrical guide portions and projecting outwardly beyond one of the end surfaces of said housing means; and
operator means coacting with said extensions for causing axial shifting movement of said valve plunger means, said operator means comprising solenoid means having an electromagnet fixed relative to said housing means and an armature which is movable relative to said housing means and said electromagnet, said armature being fixedly connected to said extensions whereby energization of said electromagnet causes movement of said armature which in turn causes a corresponding movement of said first and second valve plunger means.

3,963,049

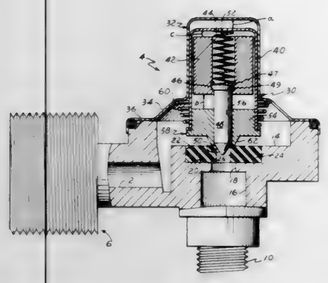
DUAL SEALING SOLENOID VALVE

William W. Beauregard, Agawam, Mass., assignor to Springfield Wire, Inc., Springfield, Mass.

Filed Jan. 17, 1975, Ser. No. 542,070
Int. Cl.² F16K *31/06, 25/00*
U.S. Cl. 137—614.18 **4 Claims**

1. Dual sealing valve comprising a valve seat including an orifice with a sealing surface coaxial and coplanar with the upper stream edge of said orifice, first and second closure members axially movable toward and away from said valve seat, an armature movable in response to actuation of a solenoid coil to retract both said first and second closure members to unseat the same, means associated with each of said closure members independently urging each toward said valve seat,

each closure member having a return stroke from its retracted position to sealing engagement with said orifice and sealing surface of sufficient extent to effect sealing of one independently of the other.



3,963,050

PNEUMATIC RELAY

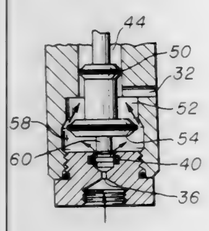
Gerald F. Theriot, and Frank M. Hoofnagle, both of Houma, La., assignors to B.W.B. Controls, Inc., Houma, La.

Continuation of Ser. No. 394,849, Sept. 6, 1973, Pat. No. 3,877,484. This application Apr. 14, 1975, Ser. No. 567,927

The portion of the term of this patent subsequent to Apr. 15, 1992, has been disclaimed.

Int. Cl.² F15B *20/00*; **F16K** *17/00*

U.S. Cl. 137—625.66 **1 Claim**



1. A valve comprising a valve body, an elongated bore within said body, a first fluid inlet port, an outlet port, a bleed port, second fluid inlet port, valve member slidable within said bore, means for positioning said valve member in a first position whereby communication is permitted between said first inlet port and said outlet port but communication is precluded between said bleed port and said outlet port, means for positioning said valve member in a second position whereby communication is permitted between said bleed port and said outlet port but is precluded between said first inlet port and said outlet port, and means for preventing pressure exerted against said valve member through said second inlet port from moving said valve member from said second position to said first position, wherein said preventing means includes first and second enlarged portions of said bore intermediate said second fluid inlet port and said first fluid inlet port, one of said enlarged portions sealingly accommodating said valve member and the other of said enlarged portions being of such greater diameter than said valve member as to not sealingly accommodate said valve member.

3,963,051

SYSTEM FOR THE REMOTE CONTROL OF THE JACK CYLINDERS OF A HYDRAULICALLY OPERATED CRANE

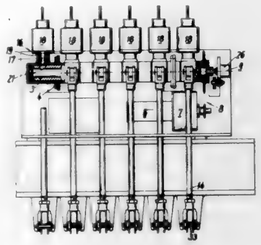
Hans-Jochen Kuhlmann, Bremen, Germany, assignor to Kuhlmann & Rust KG, Maschinenfabrik, Bremen, Germany

Filed Aug. 16, 1974, Ser. No. 498,126

Claims priority, application Germany, Aug. 31, 1973, 2343887

Int. Cl.² F16K *31/42*

U.S. Cl. 137—637 **6 Claims**



1. A system for the remote control of a jack cylinder of a hydraulically operated crane, comprising a regulating valve for connection into the hydraulic circuit of the jack cylinder, said regulating valve including a body part and a movable member, means mounting said movable member in said body part for movement for controlling the regulation of the valve, the system further including a member fixed with respect to said body part of the valve, a shaft, means mounting said shaft for rotation in said fixed member, coupling means for coupling said shaft to said movable member for rendering the position of the movable member of the valve dependent on the angular position of said shaft, said coupling means including a linkage including a first arm having first and second ends, means for releasably coupling said first end of said first arm to said shaft, a connecting link having first and second ends, means pivotally connecting said first end of said connecting link with said second end of said first arm, a second arm generally parallel with said first arm, means mounting said second arm for pivoting about an axis fixed with respect to said fixed member, means pivotally connecting said second end of said connecting link with said second arm, and means connecting said movable valve member with said second arm, a measured value transducer coupled to said shaft for sensing the angular position of the shaft, reversible driving means for rotating said shaft,

control means including a portable actuating unit,

an adjustable set value transducer carried by said actuating unit,

a flexible lead connecting said actuating unit with the remainder of said system, and means in said control means operable to energize said driving means in the event of a difference between the position of said shaft indicated by said measured value transducer and the desired position set on said set value transducer to rotate said shaft so as to eliminate said difference.

3,963,052

PRESSURE VESSEL

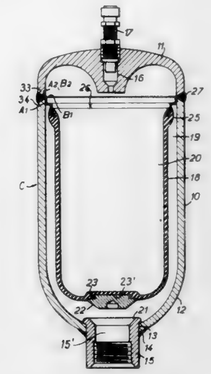
Jacques H. Mercier, 49 rue de Naples, Paris, France

Filed Feb. 20, 1973, Ser. No. 334,155

Int. Cl.² F16L *55/04*

U.S. Cl. 138—30 **14 Claims**

1. In a pressure vessel comprising a rigid container having a substantially cylindrical body portion having a port at one end and a mouth having a rim at the other, and a cover member adapted to close said mouth and having a port, an annular supporting member in said container, a deformable partition having a rim bonded to said annular supporting member and positioned in said container for defining two variable volume fluid chambers therein in communication respectively with said ports, and weld means retaining said body portion, and said cover member in fixed position, the improvement comprising said supporting member having a first positioning means formed integral therewith cooperating with the mouth of said cylindrical body portion to center said supporting member and partition in said container, said supporting member having a second positioning means formed integral therewith and including a portion extending laterally outwardly at least over a portion of the rim of the body portion for cooperating with said cover member to position the latter in axial alignment with said body portion, and wherein said laterally extending portion is generally within said weld.



3,963,053

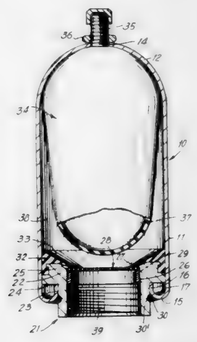
PRESSURE VESSEL

Jacques H. Mercier, 49 rue de Naples, Paris, France

Filed July 10, 1974, Ser. No. 487,167

Int. Cl.² F16L *55/04*

U.S. Cl. 138—30 **1 Claim**



1. A pressure vessel comprising a container of rigid material having a cylindrical portion having an open end reversely bent inwardly relative to the cylindrical portion and terminating in an annular flange having a rim at its free edge, the reversely bent end between said cylindrical portion and said flange defining a semicircular portion, said flange extending substantially parallel to the cylindrical container portion beyond a diametrical line between the ends of the semi-circular portion, a closure assembly in said container, said assembly comprising a cylindrical plug having a reduced diameter sleeve extending axially therefrom and defining an annular shoulder, said shoulder engaging the rim of said flange, said reduced diameter sleeve being received through said annular flange, the latter being restrained from transverse inward movement by abutment against said sleeve, said container having a deformable bladder therein defining a gas chamber on opposed sides thereof and passage means leading into each of said chambers.

3,963,054

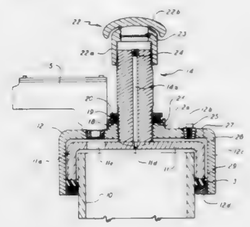
SEAL ASSEMBLIES FOR WATER-WELL CASINGS

Carlyle J. Martin, Pierce Creek Road, R.D. No. 1, Binghamton, N.Y. 13903

Continuation-in-part of Ser. No. 493,526, Aug. 1, 1974, Pat. No. 3,917,292, and a continuation-in-part of Ser. No. 595,851, July 14, 1975. This application Sept. 17, 1975, Ser. No. 614,132

Int. Cl.² F16L *55/10*

U.S. Cl. 138—89 **7 Claims**



1. A well seal assembly for sealing the upper end of a hollow cylindrical well casing, comprising, in combination: a generally-cup-shaped outer member having a downwardly-extending first annular flange portion adapted to surround the outside of the end of said well casing, a second annular flange portion affixed to and extending inwardly from said first flange portion toward said casing and a threaded central bore; a generally cup-shaped inner device disposed within said outer member and having an annular ring means surrounding said end of said casing; a compressible seal ring disposed between said annular ring means of said inner device and said second annular flange portion of said outer member; and shaft means threaded through said central bore of said outer member to engage said inner device, whereby rotation of said shaft means will move said outer member upwardly relative to said inner device to compress said seal ring between said second annular flange portion and said annular ring means, causing inward radial expansion of said seal ring against the outer wall of said casing.

3,963,055

SELF-SEALING FUEL LINE

John DeRosa, P.O. Box 1211, Clear Lake Highlands, Calif. 95422

Filed Dec. 20, 1974, Ser. No. 534,739

Int. Cl.² F16L *9/14, 55/10, 9/00*; **F02B** *77/00*

U.S. Cl. 138—140 **1 Claim**



1. A conduit for a hazardous fluid comprising:

a continuous one-piece outer tubular metallic member with primary lengths thereof of a first diameter being formed of rigid material of a given thickness and having relatively high tensile strength;

rings of a ductile material and of a diameter smaller than said first diameter and of reduced thicknesses less than

the thicknesses of said primary lengths interposed between said rigid lengths at intervals along the length of said tubular member;

the metal of said tubular member having been softened at intervals to form said ductile rings; and

an inner tubular member of a resilient material effective when pinched to block fluid flow therethrough.

3,963,056

CONCRETE PILES, POLES OR THE LIKE

Atsumi Shibuya, Tokyo; Chokichi Sugita, Niiza, and Hiroshi Endo, Chiba, all of Japan, assignors to Nippon Concrete Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1974, Ser. No. 430,074

Int. Cl.² F16L *9/08*

U.S. Cl. 138—175 **3 Claims**



1. Prestressed concrete piles, poles, or the like pillers comprising a tubular body of concrete having an outer surface and a cylindrical periphery, a pair of annular iron discs arranged at opposite ends of said concrete body, reinforcing pretensioned steel wires extending longitudinally through said concrete body and between said annular iron discs, a tubular steel plate covering the outer surface of said concrete body and having first and second ends, said tubular steel plate being welded at said first end thereof to one of said annular iron discs, whereas said second end of said tubular steel plate is free to move in relation to said concrete body, said tubular steel plate being shorter than said body of concrete and terminating in an unattached free end portion, said tubular steel plate covering the outer surface of said concrete body for a major portion of the length thereof, a second tubular steel plate covering a short remaining portion of the outer surface of said concrete body and being welded at one end thereof to the other of said iron discs, a second end of said second tubular steel plate overlapping the free end portion of said tubular steel plate.

3,963,057

METHOD OF MAKING PILE FABRICS AND THE PILE FABRIC MADE THEREBY

Geoffrey Wilson Dewhirst, Broughty Ferry, Scotland, assignor to Thomson Shepherd and Company Limited, Dundee, Scotland

Filed Nov. 29, 1974, Ser. No. 528,127

Claims priority, application United Kingdom, Dec. 4, 1973, 56119/73

Int. Cl.² D03D *39/08*

U.S. Cl. 139—2 **8 Claims**

1. A method of increasing the length of selected tufts in each row of tufts produced by an Axminster gripper loom having yarn carriers and a gripper associated with each carrier, comprising the steps of:

a. gripping a plurality of yarns in the grippers,

b. drawing yarn off the yarn carriers by relative movement between the carriers and grippers, all the drawn yarns being in substantially a single plane in the region between the yarn carriers and the grippers,

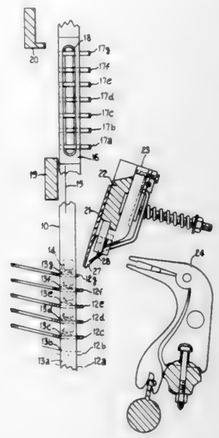
c. moving at least one selected yarn carrier so as to move its respective yarn out of the plane occupied by the unselected yarns in the region between the yarn carriers and the grippers,

d. moving an element crosswise of the yarns along a path such that the element engages only the selected yarn which has been moved out of the plane occupied by the unselected yarns so as to lengthen that yarn by drawing additional yarn off only the selected yarn carrier, and

e. cutting all the yarns.

4. An Axminster gripper loom comprising:

a. yarn carriers and grippers,



b. means for moving said yarn carriers and grippers relative to each other to draw lengths of yarn from the yarn carriers, all the drawn yarns being in substantially a single plane in the region between the yarn carriers and the grippers,

c. means for conditioning only selected ones of said yarn carriers for additional movement,

d. means for moving only said selected yarn carriers to shift their respective yarns out of the plane occupied by the unselected yarns in the region between the yarn carriers and grippers,

e. means for engaging only said selected yarns to lengthen them by drawing additional yarn off the selected yarn carriers, and

f. means for cutting all the yarns.

3,963,058

CARPET LOOMS

Geoffrey Wilson Dewhirst, Dundee, Scotland, assignor to Thomson Shepherd and Company Limited, Dundee, Scotland

Filed Mar. 26, 1975, Ser. No. 562,379

Claims priority, application United Kingdom, Mar. 26, 1974, 13308/74

Int. Cl.² D03D *39/02, 39/08*

U.S. Cl. 139—2 **8 Claims**

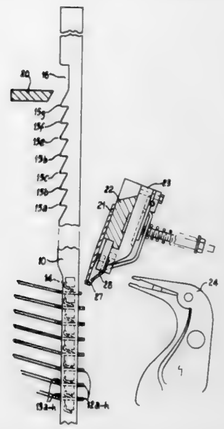
1. A method of increasing the length of selected tufts in each row of tufts produced by an Axminster gripper loom having yarn carriers and a gripper associated with each carrier, comprising the steps of:

a. gripping a plurality of yarns in the grippers,

b. moving all the yarn carriers away from said grippers, to draw yarn off the yarn carriers, and toward a lifting means into a position wherein a part of at least one selected yarn carrier is in the path of upward movement of said lifting means, all the drawn yarns being in substantially a single

plane in the region between the yarn carriers and the grippers,

c. raising said lifting means to move at least one selected yarn carrier so as to move its respective yarn out of the plane occupied by the unselected yarns in the region between the yarn carriers and the grippers,



d. moving an element crosswise of the yarns along a path such that the element engages only the selected yarn which has been moved out of the plane occupied by the unselected yarns so as to lengthen that yarn by drawing additional yarn off only the selected yarn carrier, and

e. cutting all the yarns.

3,963,059

BEATING-UP ARRANGEMENT FOR A WAVE-TYPE WEAVING MACHINE

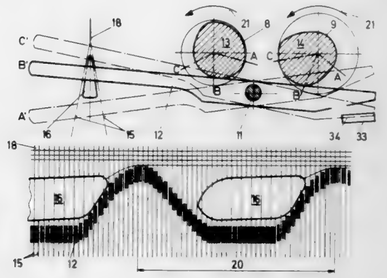
Edgar Strauss, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works Ltd., Ruti, Zurich, Switzerland

Filed Nov. 22, 1974, Ser. No. 526,159

Claims priority, application Switzerland, Nov. 29, 1973, 16790/73

Int. Cl.² D03D *47/26*

U.S. Cl. 139—436 **5 Claims**



1. A travelling wave-type weaving machine with reed teeth arranged along an axis and adapted to be pivoted about the said axis, the reed teeth abutting with some play on driven cam-like guide surfaces which on rotation cause pivoting movement of the reed teeth about the axis, the reed teeth producing movement of shuttles and the beating-up of the weft thread in one of the end positions of the said teeth, the said reed teeth forming in their entirety a wave-like periodic curve formed by the ends of the teeth moving towards their beat-up position, the said cam-like guide surfaces having first section and second section, said first section moving said shuttle and having a profiled guide surface that produces a substantial variation in the spacing of the guide surface from its axis of rotation, the first section merging into said second section that produces the beat-up position of the reed tooth, said second section having a profiled guide surface that immediately produces a linear variation of the spacing of the guide surface from its axis of rotation, which is less than the variation of the first section and extends to the immediate vicinity of the beat-up point so that an abrupt change in movement of the reed teeth from high speed in the first section for shuttle movement to lower speed in the second section is produced to prevent over-shooting of the reed teeth at the beat-up line.

3,963,060

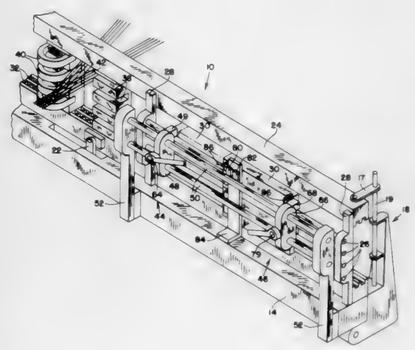
SHUTTLE DRIVE FOR A NARROW WARE LOOM

Raymond F. Dion, Greensboro, N.C., assignor to Crompton & Knowles Corporation, Worcester, Mass.

Filed Jan. 21, 1975, Ser. No. 542,748

Int. Cl.² D03D *35/00, 43/00*

U.S. Cl. 139—137 **18 Claims**



1. In a narrow ware loom having a frame, a warp shed, batten supporting means pivotally mounted on the frame, a batten mounted on said supporting means for vertical movement relative to said supporting means to any one of several positions, and a plurality of shuttles mounted on said batten for vertical movement therewith and for horizontal movement on said batten from a first side of said warp to a second side thereof, said shuttles being vertically spaced from each other so that only one of said shuttles is active by being aligned with said warp shed for each of the several positions of said batten, means for moving said active shuttle through said warp shed comprising:

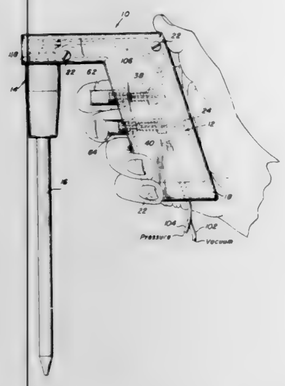
a. means for detecting whether the active shuttle is on the first or second side of said warp shed;

b. first actuating means mounted on said supporting means for horizontal movement relative thereto for moving said active shuttle from the first side of said warp shed to the second side thereof;

c. second actuating means mounted on said supporting means for horizontal movement relative thereto for moving said active shuttle from the second side of said warp shed to the first side thereof;

d. control means operatively connected to said detecting means for activating said first actuating means when said active shuttle is on the first side of said warp shed and for activating said second actuating means when the active shuttle is on the second side of said warp shed.

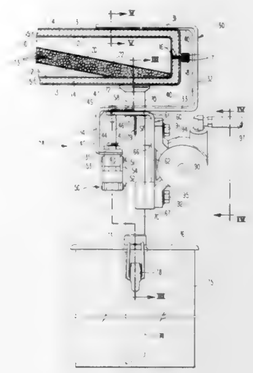
3,963,061
APPARATUS FOR DRAWING LIQUIDS INTO, AND EXPELLING LIQUIDS FROM A PIPETTE
James W. Kenney, West Chester, Pa., assignor to Drummond Scientific Company, Broomall, Pa.
Filed Sept. 16, 1975, Ser. No. 613,894
Int. Cl.² B65B *3/18*
U.S. Cl. 141—21 **16 Claims**



1. Apparatus for drawing liquid into, and expelling liquid from a pipette, including:
a. a housing comprising a hand grip portion and a barrel portion,
b. a pipette-supporting portion connected to said barrel portion,
c. an air pressure source,
d. a vacuum source,
e. duct means connecting said air pressure source and vacuum source to said pipette-supporting portion,
f. a first valve means carried by said hand grip portion in operative engagement with said duct means and operable to selectively establish, and cut off, communication between said pipette-supporting portion, air pressure source and vacuum source, and
g. a second valve means in said pipette-supporting portion for preventing passage of liquid from the pipette through said pipette-supporting portion to said housing but permitting free passage of air therethrough.

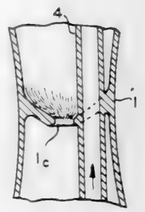
3,963,062
CATALYST CHANGER FOR UNDERFLOOR TYPE CATALYTIC CONVERTER
John F. Stahl, Exton, Pa., assignor to Oxy-Catalyst, Incorporated, West Chester, Pa.
Filed Aug. 16, 1974, Ser. No. 497,946
Int. Cl.² B65B *1/08*
U.S. Cl. 141—67 **8 Claims**

1. A catalyst changer for a catalytic converter having a casing, a supply of catalytic material within the casing and a fill hole in the casing in communication with the supply of catalyst material, said changer including:
a. a vertical conduit for conducting catalyst material from and to the converter, the top portion of said conduit being engageable in said fill hole and having adjacent to the top thereof a fitting adapted for engagement with said fill hole,
b. a frame for supporting said conduit from said converter, said frame including means for engaging the top of said converter and also including a portion disposed below and spaced from said converter, means engageable with said conduit for advancing said conduit toward and retracting it from said fill hole and for squeezing and rigidly clamping said casing between said top engaging means and said conical fitting when said top portion of said conduit is engaged with said fill hole with said conduit disposed in fully advanced position, and



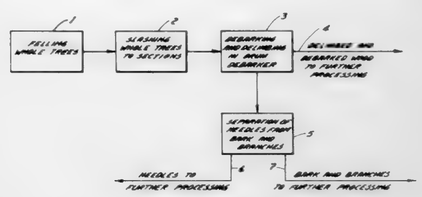
c. a vibrator securely mounted on said conduit for imparting vibrations thereto and through said conduit to said converter during removal and replacement of its supply of catalyst material.

3,963,063
VISCOUS LIQUID TRANSFER DEVICE
Robert S. Pascarella, 600 B Kelly Ave., Pittsburgh, Pa. 15221
Filed Aug. 28, 1974, Ser. No. 501,147
Int. Cl.² B65B *3/06*
U.S. Cl. 141—309 **1 Claim**



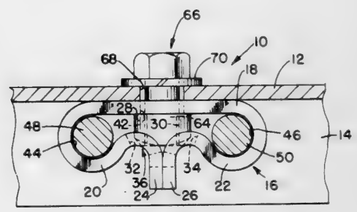
1. A viscuous liquid transfer device comprising a tubular element arcuately flared both upwardly and outwardly as well as downwardly and outwardly from a central portion thereof to accomodate varying sizes of the necks of a bottle to be emptied and one to be filled, respectively, a funnel shaped ring integrally extending from and integrally molded with the inner wall of the central portion of said device, a vent tube extending vertically through a portion of said funnel shaped ring, and having an upper portion extending above said tubular element well into the neck of the bottle to be emptied, and a lower portion totally enclosed in said tubular element whereby it will pierce the contents of the bottle to be emptied, the top portion of said vent tube being closed and a vent opening being provided in the side of the vent tube adjacent to the top portion.

3,963,064
PROCESSING WHOLE TREES
George T. Hayes, Temiscnaning, Canada, assignor to Domtar Limited, Montreal, Canada
Filed Jan. 27, 1975, Ser. No. 544,633
Int. Cl.² B27L *1/00;* **A01G** *23/08*
U.S. Cl. 144—309 AC **4 Claims**



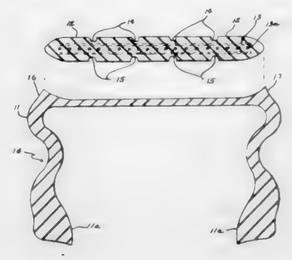
1. A method of harvesting whole trees comprising felling whole trees including the bole section and normally unmerchandizable top section, branches and needles, delivering said whole trees to a mill, slashing each of said whole trees into a top section and at least one bole section having branches feeding said sections into one end of a de-barking drum and de-barking and at least partially de-limbing said sections in said drum; rejecting de-barked wood from the other end of said drum and also rejecting a bark branch and needle fraction through the periphery of said drum and collecting said bark, branch and needle fraction for further processing.

3,963,065
MOUNTING BRACKET
Fred R. Dauwalder, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed May 1, 1975, Ser. No. 573,682
Int. Cl.² F16B *39/00*
U.S. Cl. 151—41.76 **7 Claims**



1. Mounting bracket means comprising a substantially flat bracket body portion, a separate first fastener means portion, a pair of curved bracket body portions on either side of said substantially flat bracket body portion and defining respective openings therethrough, bolt fastener means disposed through said respective openings, and means for capturing said first fastener means portion within said mounting bracket means comprising a pair of extension portions extending toward each other from the respective curved bracket body portions so as to captively and non-rotatably hold thereby said first fastener means portion between said flat bracket body portion and said extension portions.

3,963,066
REVERSIBLE REPLACEABLE TREAD TIRE
Kenneth P. Schwartz, 2604 N. Emerald Drive, Fairborn, Ohio 45324, and Paul M. Wagner, 2268 Andrew Road, Dayton, Ohio 45440
Filed Mar. 25, 1975, Ser. No. 561,768
Int. Cl.² B60C *11/02, 9/18*
U.S. Cl. 152—187 **1 Claim**



1. In a vehicle and/or aircraft tire; an inflatable pneumatic tire carcass adjustable between first, deflated and second, inflated positions, and incorporating a relatively elongated, tire tread-receiving channel terminating in oppositely-disposed, and arcuate-shaped ridges extending upwardly of the said channel; and a relatively enlarged, reversible, replaceable tread belt initially mountable directly over, and in a somewhat spaced relation relative to, the tire carcass when the latter is in its first, deflated position, and having oppositely-disposed outside and inside surfaces made of a relatively enlarged and specific configuration to subsequently precisely accommodate and exactly interfit in a relatively tight-fitting and non-slipping engagement the said tire tread-receiving channel of, and further terminating in opposite ovate-shaped, side-end portions engageable in a snug-fit and substantially streamlined relation to, and still further forming a natural extension from said oppositely-disposed, ridges of said tire carcass when the latter is in its second, inflated position; said tread belt further having a separate and differently configured-tread pattern respectively molded on the said outside and inside surfaces thereof to thereby enable the selective positioning of the particular tread pattern on the ground that is best suited for the specific ground surface or prevailing weather conditions, by the relatively quick manual reversal of said tread belt on said tire carcass to a pre-selected position.

3,963,067
PLEATABLE CURTAIN
Alfred Scholer, Wuppertal, Germany, assignor to Vorwerk & Sohn, Textil- und Gummiwerke, Wuppertal-Barmen, Germany
Filed June 24, 1975, Ser. No. 589,850
Claims priority, application Germany, July 1, 1974, 2431465
Int. Cl.² A47H *13/14*
U.S. Cl. 160—348 **10 Claims**



1. A pleatable curtain comprising:

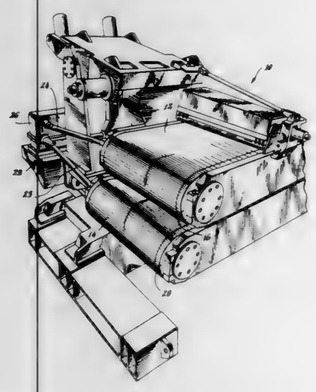
a curtain having a front side, a back side and an upper edge;
hanging means for hanging said curtain affixed at said upper edge; and
pleating means for pleating said curtain, comprising
at least one pull cord worked into said front side at a first fixed distance from said upper edge in a repeat pattern, said repeat pattern comprising a plurality of portions, wherein said pull cord is movably enclosed over at least one of said portions and is freely arranged over at least one other of said portions; and
at least one further pull cord worked into said back side at a second fixed distance from said upper edge in a further pattern being identical with said repeat pattern and being transposed from said repeat pattern by one half the length of said repeat pattern, whereby when said pullcord and said further pull cord are operated said curtain is formed into a series of pleats.

3,963,068

SYMMETRICAL SYNCHRONIZED BELT-STEERING SYSTEM AND APPARATUS FOR TWIN-BELT CONTINUOUS METAL CASTING MACHINES

Robert William Hazelett, Winooski; John Frederick Barry Wood, Burlington, and Robert J. Carmichael, Colchester, all of Vt., assignors to Hazelett Strip-Casting Corporation, Winooski, Vt.

Division of Ser. No. 350,600, April 12, 1973, Pat. No. 3,878,883. This application Apr. 21, 1975, Ser. No. 570,208
Int. Cl.² B22D *11/06*
U.S. Cl. 164—278 **4 Claims**



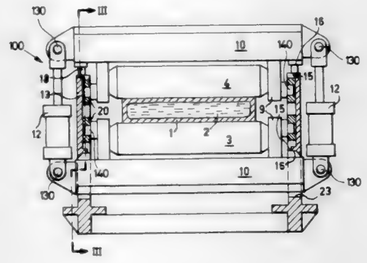
1. A symmetrical synchronized belt-steering system for use in a twin-belt continuous metal casting machine of the type in which a casting region is defined between spaced parallel portions of the two casting belts, said system comprising:
a frame for supporting and revolving a casting belt, said frame having a pair of main rolls at opposite ends, said rolls extending parallel to each other and also parallel to the plane of the casting region for defining an oval shaped path around which the casting belt is revolved,
a first and second bearing for supporting one of said rolls, said first bearing being located near one end of said one roll and said second bearing being located near the other end of said one roll for allowing for rotation of said one roll
first and second mounting means positioned on opposite sides of the frame and associated with said first and second bearings, respectively, for mounting them on the frame,
first and second steering means positioned on opposite sides of the frame for moving said first and second mounting means, respectively toward and away from the plane of the casting region for steering the belt, and
synchronizing means connected between said first and second steering means for causing said first and second mounting means simultaneously to move equal amounts in opposite directions effectively toward and away from the plane of the casting region when said synchronizing means are actuated for skewing said one roll symmetrically with respect to the frame for steering the casting belt.

3,963,069

ROLLER APRON FRAMEWORK FOR SUPPORT- OR DRIVE ROLLS OF A CONTINUOUS CASTING INSTALLATION

Heinrich Marti, Forch, and Markus Schmid, Zurich, both of Switzerland, assignors to Concast AG, Zurich, Switzerland

Filed Aug. 4, 1975, Ser. No. 601,614
Claims priority, application Switzerland, Aug. 16, 1974, 11225/74
Int. Cl.² B22D *11/12*
U.S. Cl. 164—282 **8 Claims**



1. A roller apron framework for support- or drive rolls of a continuous casting installation for casting a strand moving in a predetermined direction of travel along at least one guide path for the strand, a common pivotable yoke, two successive rollers following one another in the direction of travel of the strand located at the region of the at least one guide path in said common pivotable yoke, piston-cylinder means for moving said yoke substantially transversely with respect to a surface of the strand guided by said rollers, said yoke being provided with impact surfaces, support surfaces associated with each roller, a stationary frame, said support surfaces being provided at the stationary frame and limiting the path of application of the rollers with respect to the strand, the yoke provided with the impact surfaces can be applied by the piston-cylinder means in the direction of the support surfaces limiting the path of application of the rollers with respect to the strand.

3,963,070

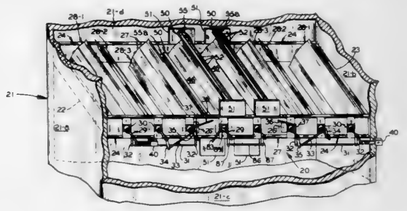
CONDITION CONTROLLING AIR FLOW DAMPER

Raymond L. Alley, Toledo, Ohio, and Miguel A. Ordorica, Temperance, Mich., assignors to American Warming and Ventilating Inc., Toledo, Ohio

Filed Feb. 18, 1975, Ser. No. 550,848
Int. Cl.² F01P *7/10*
U.S. Cl. 165—98 **19 Claims**

1. A multi-blade control damper for a duct through which there flows a varying volume of air for the control of a condition in the duct, said damper comprising
a. a frame,
b. at least one first blade extending across said frame and pivotally mounted therein for movement on an axis extending across said frame, between closed and open positions,
c. means for moving said first blade to adjust for major changes in the condition to be controlled,

d. at least one second blade extending across another portion of said frame and pivotally mounted therein for movement on an axis extending across said frame between closed position and open position,
e. at least one baffle mounted in and extending across said frame parallel to the axis of said second blade,
1. a first edge of said baffle that is adjacent the edge of said second blade when in closed position being spaced from the axis of said second blade a distance substantially equal to the width of said second blade between the axis and that edge thereof,



2. an opposite edge of said baffle being spaced from the axis of said blade a greater distance than the said first edge of said baffle, and
f. means for moving said second blade between closed and open positions and to positions there-between by which movements the changes in the opening between the edge of said blade and said baffle are proportional to minor changes in the condition to be controlled.

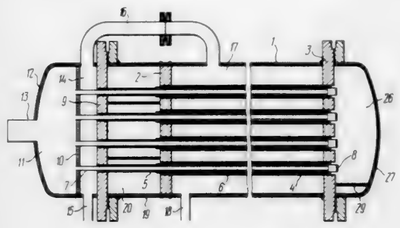
3,963,071

CHELL-AND-TUBE HEAT EXCHANGER FOR HEATING VISCOUS FLUIDS

Evgeny Sergeevich Levin, ulitsa Sofiiskaya, 48, korpus 3, kv. 129; Vladimir Andreevich Permyakov, 2 Murinsky prospekt, 10, kv. 116, both of Leningrad; Nikolai Vasilievich Zozulya, ulitsa Reiterskaya, 30, kv. 6, Kiev; Igor Yakovlevich Shkuratov, ulitsa Semashko, 21, kv. 152, Kiev; Boris Leonidovich Kalinin, Muzeiny pereulok, 2, kv. 9, Kiev; Boris Fedorovich Vakulenko, ulitsa P. Tolyatti, 14, kv. 49, and Pavel Ivanovich Podgorochny, ulitsa P. Tolyatti, 20, kv. 61, both of Taganrog, all of U.S.S.R.

Filed June 14, 1974, Ser. No. 479,590
Int. Cl.² F28D *7/12*
U.S. Cl. 165—142 **6 Claims**

1. A heat exchanger for heating a viscous fluid by a heating medium, the heat exchanger comprising:
a shell;
a plurality of external tubes distributed within said shell and extending longitudinally therewithin;
heating elements in said external tubes, including internal tubes disposed within respective ones of said external tubes to form first clearance spaces therewith, and additional tubes disposed within said internal tubes to form second clearance spaces therewith;
first and second plug means respectively closing said internal and said additional tubes at one of the ends thereof;
plate means securing said external tubes, said internal tubes and said additional tubes within said shell to form a receiver chamber, a front chamber, a main chamber, and an intermediate chamber;
means for introducing the heating medium into said additional tubes, whereby the medium traverses the latter;
said additional tubes being provided with outlet means adjacent said second plug means to permit the heating medium to flow into said second clearance spaces;
said receiver chamber being open to said second clearance spaces; a discharge outlet for condensate in said receiver chamber at the bottom thereof;
means for conveying the heating medium from said receiver chamber, at the top thereof, to said main chamber;
inlet means for supplying the viscous fluid to said front chamber;
said intermediate chamber being open to said first clearance spaces at the end thereof;
partition means in said front and said intermediate chambers, defining successive sections therein for causing the viscous fluid to flow from said front chamber to said intermediate chamber via said first clearance spaces while traversing said main chamber and thence successively back and forth between said intermediate and said front chambers, whereby the viscous fluid is heated in said main chamber by the heating medium flowing around said external tubes and flowing in said first clearance spaces;



outlet means in said main chamber for discharge of spent heating medium, and discharge means in said front chamber for the heated viscous fluid;
said partition means being arranged in said front and said intermediate chamber so that the number of said external tubes and associated heating elements therein is successively reduced in said sections, thereby taking into account the decreased viscosity of the viscous fluid as it is successively heated in said sections.

3,963,072

DOUBLE-FLOW REGENERATOR

Norbert Wagner, Schlederloh, Wolfratshausen, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

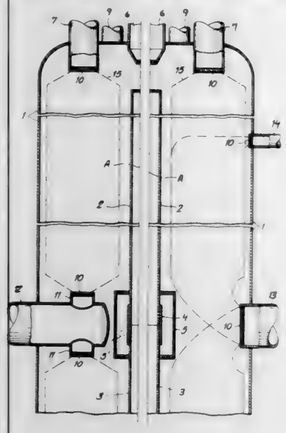
Filed Nov. 21, 1974, Ser. No. 526,007
Claims priority, application Germany, Nov. 22, 1973, 2358276
Int. Cl.² F28D *7/10*
U.S. Cl. 165—157 **2 Claims**

1. A double-flow regenerator for a gas-rectification plant adapted to pass a multiplicity of fluids into mutual indirect heat exchange, said regenerator comprising:
an elongated housing having opposite ends;
a core tube extending longitudinally through said housing centrally thereof;
a pair of coiled-tube bundles axially spaced apart in said housing and surrounding said core tube, each of said

bundles comprising a plurality of coiled tubes, the coiled tubes of said bundles constituting the only heat-exchange tubes extending within said housing;

a regenerator packing filling said housing around said tubes;

a plurality of conduits at each end of said housing, each conduit communicating with a plurality of coiled tubes of a respective bundle for conducting a respective one of



said fluids the conduits at each end being spaced around the axis of said housing;

respective manifolds between said bundles communicating with the tubes thereof for each fluid and leading out of said housing through a side wall thereof; and

duct means connected to said housing at the ends thereof and between said stacks for passing a further fluid through said packing.

3,963,073

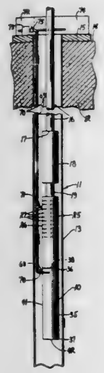
PURGING APPARATUS

Claude C. Laval, Jr., 2444 Farris Ave., Fresno, Calif. 93705

Division of Ser. No. 396,522, Sept. 12, 1973, abandoned. This application June 25, 1975, Ser. No. 590,036

Int. Cl.² E21B *43/00*

U.S. Cl. 166—105.1 **20 Claims**



1. In combination with a pump having a fluid intake adapted for insertion in a well, said pump mounting a particle separating device on the intake thereof, a purging apparatus comprising a particle collection housing mounted on the separating device having a particle receiving opening communicating with the separating device; means mounted on the housing for selectively opening and closing said opening; a source of fluid under pressure connected to the housing; a vortex tube mounted on the housing and having a slot therein communicating with the collection housing, said slot defining a path of fluid travel oblique to the tube; and a discharge conduit secured on the tube.

3,963,074

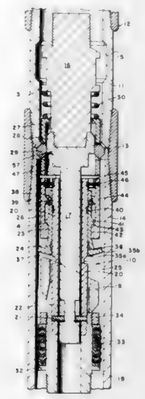
LOCKING DEVICE FOR USE IN WELL TUBING

Dennis Mitchel Spriggs, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 30, 1975, Ser. No. 582,314

Int. Cl.² E21B *23/02*

U.S. Cl. 166—206 **9 Claims**



1. A lock device for suspending flow control means in a landing nipple in an oil well tubing string, said lock device comprising:

an inner mandrel assembly having means at the top for connecting to a wireline;

tubular locking means located on said mandrel assembly in an encircling relationship thereon, said locking means adapted to pass through a tubing string and landing nipple in a first position thereof, and further adapted to engage a landing nipple in a second position thereof;

means on said mandrel assembly for selectively moving said locking member from said first position to said second position; and,

wherein said locking means comprises a tubular, partially rotatable locking member slidably located on said sleeve means and arranged to be rotated into engagement with a landing nipple.

3,963,075

CENTRALIZER FOR ELASTOMER COATED BLAST JOINT

Orde R. Evans, P.O. Box 51303, O.C.S., Lafayette, La. 70501

Filed Mar. 27, 1975, Ser. No. 562,576

Int. Cl.² E21B *17/10*

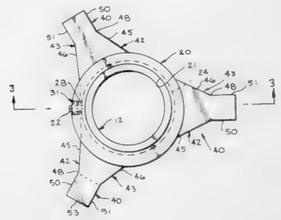
U.S. Cl. 166—241 **1 Claim**

1. A centralizer for an elastomer coated blast joint including:

a. an elastomer body having a split extending longitudinally thereof and an opening extending longitudinally through said body with which the split communicates;

b. a plurality of longitudinally spaced rings molded in said body adjacent said longitudinal opening, said rings being split to coincide with the split in said elastomer body and having portions extending substantially at right angles to said rings at said split with an opening therethrough whereby said elastomer body may be closed and positioned on a blast joint;

c. said elastomer body having three projections extending longitudinally of said body in circumferentially equidistant spaced relationship; and



d. each of said projections having a pair of longitudinally extending side surfaces with each side surface including a first portion extending at an angle from said body to a predetermined point and an additional portion extending parallel from the termination of each of the first portions and in planes perpendicular to said body.

3,963,076

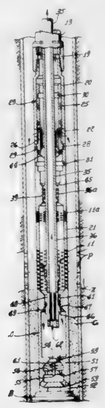
METHOD AND APPARATUS FOR GRAVEL PACKING WELL BORES

Larry K. Winslow, Edmond, Okla., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Mar. 7, 1975, Ser. No. 556,099

Int. Cl.² E21B *43/04, 43/10*

U.S. Cl. 166—278 **19 Claims**



1. Apparatus for use in a subterranean well having a production zone and a packer set in the well above the zone comprising: a tubular liner assembly adapted to depend from the packer within the production zone and to communicate with an outer tubular string operatively associated with the packer and extending to the top of the well, said liner assembly including a tubular portion having perforations through which fluids can flow to the interior of said assembly, said assembly having an upper passage through which fluent material can flow between the interiors of the outer tubular string and liner assembly to the exterior of said liner assembly below the packer, said assembly further having a lower passage through which fluids can flow between the interior and exterior of said assembly, an inner tubular member within said liner assembly adapted for connection to an inner tubular string extending through the outer tubular string to the top of the well, said inner tubular member being communicable with the interior of said assembly, and with said lower passage, said inner tubular member defining an annular space with said assembly communicable with the annular space between the inner and outer tubular strings, and valve means for selectively controlling fluid flow between said inner tubular member and tubular portion, said inner tubular member and lower passage, and said inner tubular member and annular space between the tubular strings.

15. A method of gravel packing a production zone in a subterranean well comprising the steps of lowering a liner assembly provided with a perforated portion on a packer in the well to locate the perforated portion of said liner assembly within the production zone, setting the packer in the well above the production zone, operatively connecting an outer tubular string to the packer with the string extending to the top of the well, lowering an inner tubular string having a lower tubular member within the outer string, with said inner tubular string extending to the top of the well, to position the tubular member within the liner assembly and to provide a first annular space between said strings communicable with a second annular space between said tubular member and said liner assembly and packer, said liner assembly having an upper passage above said perforated portion establishing communication between said second annular space and the exterior of said liner assembly below said packer, circulating fluid downwardly through one of the tubular strings into the region of the well below said packing and surrounding the liner assembly for upward flow through the other of the tubular strings to the top of the well, and pumping gravel down one of the tubular strings into the well surrounding the liner assembly to fill the annular space around the perforated portion of the liner assembly.

3,963,077

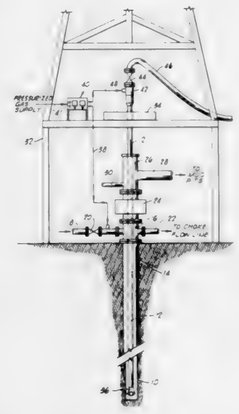
METHOD OF PREVENTING WELL BORE DRILLING FLUID OVERFLOW AND FORMATION FLUID BLOWOUTS

Ben V. Faulkner, 1904 Westbrook Terrace, Norman, Okla. 73069

Filed June 18, 1975, Ser. No. 587,914

Int. Cl.² E21B *23/00*

U.S. Cl. 166—315 **5 Claims**



1. A method of preventing drilling fluid overflow and the occurrence of uncontrolled formation fluid blowouts when removing drill pipe sections from a drill string disposed in a well bore penetrating a subterranean formation and filled with drilling fluid comprising the steps of:

a. introducing a gas into the annulus between the walls of said well bore and said drill string until a predetermined gas pressure is reached therewithin thereby displacing drilling fluid downwardly within said annulus and upwardly through said drill string to lower the level of drilling fluid in said annulus a distance such that upon releasing the gas pressure from said annulus the resulting level of drilling fluid in said drill string is below the level at which said drill pipe sections are disconnected therefrom, but the level of drilling fluid in said well bore is above the level at which the hydrostatic head exerted on said formation by said drilling fluid equals the pressure of fluids contained within said formation;
b. releasing said gas pressure from said annulus;
c. removing a predetermined number of drill pipe sections from said drill string thereby raising said drill string within said well bore and lowering the level of drilling fluid therein, the number of such sections removed being limited so that the level of drilling fluid in said well bore is maintained above the level at which the hydrostatic head exerted on said formation by said drilling fluid equals the pressure of fluids contained within said formation;
d. refilling said annulus with drilling fluid; and
e. repeating steps (a) through (d) until the desired number of drill pipe sections are removed from said drill string.

3,963,078

SOIL CULTIVATING IMPLEMENTS

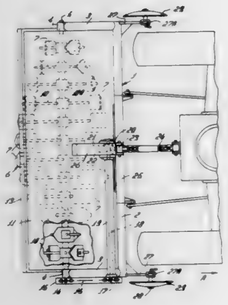
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Filed Nov. 19, 1973, Ser. No. 417,366

Claims priority, application Netherlands, Nov. 22, 1972, 7215773; Mar. 6, 1973, 7303081

Int. Cl.² A01B *33/00*

U.S. Cl. 172—119 **16 Claims**



1. A rotary plow implement attachment for connection to a prime mover, said attachment having at least one rotor and drive means connected to said rotor to revolve same about a substantially horizontal axis, said drive means including an imput shaft connectable to a power take off and said rotor comprising a plurality of tines, said tines each having an elongated active soil working portion which extends substantially tangentially with respect to a circle centered on the axis of rotation of said rotor, said tines extending in V-shaped row relationship and the point of each V-shaped row being directed forwardly with respect to the normal direction of rotation of said rotor to penetrate the soil first, said tines having outer soil engaging means that are substantially flattened in generally horizontal planes, said tines being positioned adjacent one another to act in unison on the ground to cut free slices of soil across the width of said rotor and for lifting the free slices of soil upwardly.

3,963,079

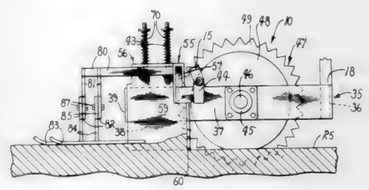
CULTIVATOR

James J. Carlucci, 716 Monroe Ave., Los Banos, Calif. 93635

Continuation-in-part of Ser. No. 369,912, June 14, 1973, abandoned. This application Nov. 11, 1974, Ser. No. 519,331

Int. Cl.² A01B *13/00, 35/18, 35/24, 65/06*

U.S. Cl. 172—200 **4 Claims**



1. A cultivator for scraping to a substantially constant predetermined depth below the earth surface by reacting to elevational variations of the surface, comprising a frame adapted for earth traversing movement in a predetermined direction of travel and having a pair of forwardly convergent frame members; a pair of earth engaging scraper blades having scraper edges; means mounting the scraper blades on the frame members for elevational movement oblique to the intended direction of travel, said blades being horizontally adjustable on their respective frame members to and from engagement with each other, said blade mounting means including a rod fastened on each frame member in upstanding relation and wherein each blade mounts a top plate having a slot defining an axis substantially parallel to its respective blade through which its respective rod extends for horizontal adjustment of the blade relative to the frame member; earth gauge means, having an earth contact surface, secured on each blade with the contact surface disposed in a predetermined elevational position relative to the edge; and resilient means for urging the blade and gauge means into earth engagement including a spring assembly secured on each rod in engagement with its respective top plate.

3,963,080

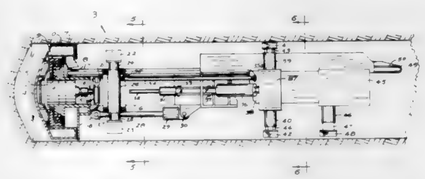
TUNNELING MACHINE FOR BORING A SIDE DRIFT

Ross W. Walker, Beaumont, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 29, 1975, Ser. No. 545,286

Int. Cl.² E21D *9/10*

U.S. Cl. 175—94 **6 Claims**



1. In an earth boring machine for forming an excavation by disintegrating earth formations, said earth boring machine including main beam means, primary gripper means for contacting the sidewalls of the excavation, cutterhead means connected to said main beam means for disintegrating earth formations, and power means coupled to said cutterhead means for providing power to said cutterhead means, said excavation normally having sidewalls, a back and an invert, but occasionally lacking one or both of the sidewalls, the improvement comprising:

secondary gripper means in sliding contact with said main beam means for establishing a reaction base to allow the cutterhead means to be forced into contact with the earth formations under conditions where said excavation lacks one or both of the sidewalls, said secondary gripper means including

a first gripper unit for engaging the invert and back of the excavation,

a second gripper unit for engaging the invert and back of the excavation, and

thrust means operably connected between said second gripper unit of said secondary gripper means and said cutterhead means for forcing said cutterhead means into contact with said earth formations, said thrust means also operably connected between said primary gripper means and said cutterhead means for forcing said cutterhead means into contact with said earth formations.

3,963,081

DOUBLE ACTING MECHANICAL JAR

Edwin A. Anderson, 1104 Chimney Rock Road, Houston, Tex. 77027, and Derrel D. Webb, 802 Axilda, Houston, Tex. 77017

Filed Apr. 24, 1975, Ser. No. 571,093

Int. Cl.² E21B *1/10*

U.S. Cl. 175—304 **19 Claims**



19. In a mechanical jar for connection in a well string having an outer housing with a mandrel longitudinally, but nonrotatably movable relative to the housing whereby a predetermined force may be applied to the mandrel to deliver the jar, the invention comprising:

a. means on the mandrel engagable upon movement of the mandrel relative to the housing in either direction for locking the mandrel and housing together; said means disengaging upon continued movement of the mandrel in the same direction that locked the mandrel and housing together for imparting a jar to the well string; and
b. said means being constructed and arranged so that said means is fully engaged by a predetermined force on the mandrel prior to disengagement to deliver a predetermined jar to the well string, said means including:
1. spaced sleeve means on the housing;
2. spaced annular body means on the mandrel;
3. annular ridges on said sleeve means arranged in unequal, longitudinally spaced increments therein; and
4. annular ridges on said body means arranged in unequal, longitudinally spaced increments whereby as the mandrel moves one of said body means into one of said sleeve means to engage therewith for imparting a jar, only one of said ridges on said body means engages and moves over one of said ridges on said sleeve means until said body means is telescoped in said sleeve means whereupon each of said ridges on said sleeve means is engaged with a corresponding annular ridge on said body means to thereby inhibit premature release of the mandrel and housing until the predetermined force is applied to the mandrel.

3,963,082

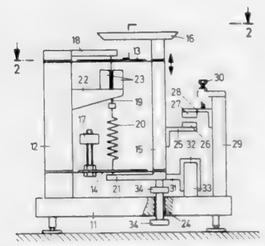
FORCE MEASURING APPARATUS OF THE VIBRATORY STRING TYPE

Eugen Meier, Meilen, Switzerland, assignor to Mettler Instrumente AG, Zurich, Switzerland

Division of Ser. No. 359,258, May 11, 1973, Pat. No. 3,897,681, which is a continuation-in-part of Ser. No. 252,458, May 11, 1972, abandoned. This application May 1, 1975, Ser. No. 573,560

Int. Cl.² G01G *3/14;* **G01L** *5/12*

U.S. Cl. 177—210 **9 Claims**



1. Force measuring apparatus of the type including at least one oscillatory string the frequency of oscillation of which affords an indication of the magnitude of a load to be measured, comprising

a. a stationary frame member;
b. a movable pan carrier member connected for vertical movement between normal no-load and full-load positions relative to said frame member;
c. oscillatory string means connected under tension between said frame and pan carrier members, said string means including at least one string member connected at one end with one of said frame and pan carrier members, and a spring member connecting the other end of said string member with the other of said frame and pan carrier members; and
d. compensating means for applying a corrective force on said string to compensate for the non-linearity of said string and spring members throughout the entire range of travel of said pan carrier member between said no-load and full-load positions, said compensating means including non-linear coil spring means (**35, 37**) connected between said stationary frame and movable pan carrier members for applying to said oscillatory string means a correction force that varies non-linearly with the displacement of said movable member from said no-load position toward said full-load position, thereby to modify the dependency of the frequency change of the string on the load force and to produce a linear variation in the oscillating frequency with respect to load.

3,963,083

SNOWMOBILE CONSTRUCTION HAVING DRIVE BELT OFFSET FROM CENTER LINE OF SKI SPINDLES

Gerald D. Reese, Brooten, Minn., assignor to Scorpion, Inc., Crosby, Minn.

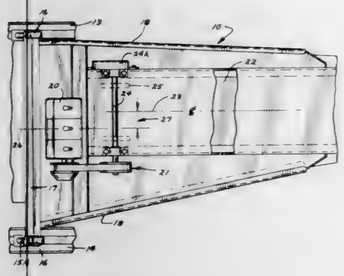
Filed May 23, 1975, Ser. No. 580,298

Int. Cl.² B62M *27/02*

U.S. Cl. 180—5 R **1 Claim**

1. A snowmobile construction for a snowmobile requiring turning at high rates of speed, said construction providing a tendency to turn in one direction or the other when at high

speed including a frame, an endless traction drive belt engaging a supporting surface and driving said snowmobile, said drive belt having a longitudinally extending center line, steering means at the forward end of the snowmobile comprising a pair of skis spaced apart from each other and supporting the forward ends of said snowmobile, a cross axle fixed to said frame at the forward end thereof, a pair of separate supports each having a pivot support, each of said supports being fixed



to said cross axle at opposite ends thereof, means to mount said skis respectively to said supports for steering movement about the axis of the pivot of the supports, said cross axle and supports being nonadjustably fixed together and to the frame in position so that the bisecting plane between said pivot axes of said supports and the longitudinal center line of said drive belt are offset sufficiently to create a steering moment in one direction when the snowmobile is being turned at substantial speeds.

3,963,084

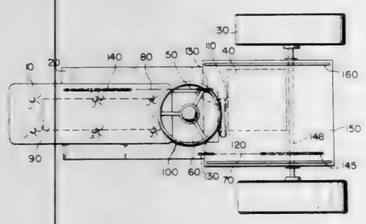
THREE WHEEL AGRICULTURAL TRACTION UNIT

Peter Misan, Nelson, Canada, assignor to The Raymond Lee Organization, New York, N.Y.

Filed June 25, 1975, Ser. No. 590,125

Int. Cl.² B62D *61/06*

U.S. Cl. 180—26 A **1 Claim**



1. An agricultural traction unit, comprising:
a frame,
a hitch attached to the frame,
a seat mounted on the frame,
a storage platform mounted on the frame,
a rail mounted on the storage platform,
a running board mounted on the frame, whereby a user can rest his feet while using the unit,
a driving mechanism attached to the frame, comprising:
a motor driving a sprocket,
a transmission connected to a sprocket, the transmission sprocket connected to the motor sprocket by a chain,
an output of the transmission connected to a sprocket driving a chain that drives a sprocket connected to an axle, a pair of front wheels driven by the axle, and
another output of the transmission connected to another sprocket driving another chain connected to a sprocket attached to a rear wheel, whereby the rear wheel may be driven
a steering mechanism, comprising:
a steering wheel,
a universal joint connected to each front wheel,
a spline connected to the universal joint
another universal joint connected to the spline and connected to the front axle and
means of rotating the front wheels in the horizontal plane driven from the steering wheel.

3,963,085

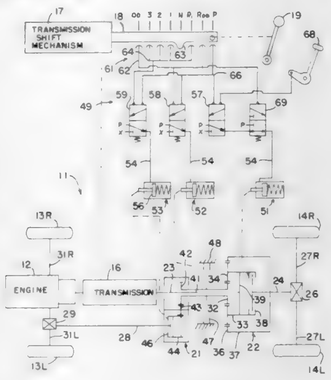
PLANETARY FOUR WHEEL DRIVE SYSTEM HAVING PLURAL MODES OF OPERATION

David S. Vinton, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 17, 1974, Ser. No. 515,482

Int. Cl.² B60K *17/30*

U.S. Cl. 180—44 R **10 Claims**



1. A drive transmitting system for a vehicle which has an engine and first and second sets of drive wheels spaced apart longitudinally along said vehicle, said first and second sets of drive wheels being driven through first and second drive shafts respectively, comprising a planetary gear set having a drive input member and first and second drive output members, means coupling said drive input member to said engine, means coupling said first output member to said first drive shaft, four wheel drive clutch means for selectively coupling said second output member to said second drive shaft, an overdrive brake means selectively engageable to immobilize said second output member whereby said first drive shaft may be selectively caused to rotate at a greater rate than said input member and, lock-up clutch means for selectively coupling said drive input member to said first drive shaft whereby differential action by said planetary gear set may be selectively eliminated and said first and second drive shafts are constrained to rotate at a predetermined rate relative to said input member and relative to each other.

3,963,086

TWIN-ENGINE OVERHUNG SCRAPER HAVING A LEADING ARM SUSPENSION

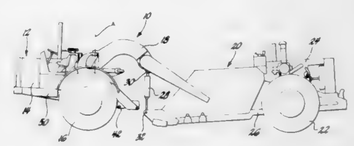
John B. Mason, Hudson, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 20, 1974, Ser. No. 471,299

Int. Cl.² B60G *9/02*; **B60K** *17/32*

U.S. Cl. 180—51 **2 Claims**

1. An earthmoving scraper including an overhung tractor and a trailing scraper bowl respectively provided with a front transverse axle and a rear transverse axle each of which has rotatable wheels at the opposite ends thereof, power means carried by said tractor and said scraper bowl for driving the wheels of the front and rear axles, the front axle being connected to the tractor by a suspension system for cushioning movement thereof and the rear axle being rigidly connected to the scraper bowl, said suspension system comprising a support arm having its front end rigidly secured to said front axle, pivot means connecting the rear end of said support arm to the tractor so as to permit said front axle to oscillate about



a transverse horizontal axis, spring means connected between said front axle and said tractor for cushioning movement of said front axle as the latter oscillates about said transverse horizontal axis, the center of said pivot means being located below a horizontal plane passing through the axis of rotation of the front axle wheels whereby said front axle moves upwardly relative to the tractor when the front wheels encounter a bump and the rear wheels of the scraper are being driven.

3,963,087

PROTECTIVE SCREENS FOR EXHAUST SYSTEMS OF MOTOR VEHICLES

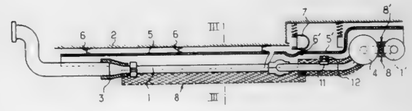
Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Aug. 21, 1974, Ser. No. 499,294

Claims priority, application France, Aug. 22, 1973, 73.31001

Int. Cl.² B60K *13/04*

U.S. Cl. 180—64 A **7 Claims**



2. In a motor vehicle having
a vehicular body and
an exhaust system depending at least in part therefrom including
an exhaust duct for conducting high temperature gases and
a first protective screen, means for mounting said first protective screen in depending relation from said body and positioned in substantially spaced-apart relation between at least a portion of the exhaust duct and the ground, said screen comprising
a first layer in the form of a supporting metallic grid permeable to air flow, and
a second layer in the form of an open mesh metallic fabric in overlying relation to said first layer.

3,963,088

TRACTION CONTROL DEVICE

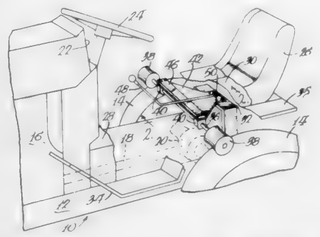
Ralph R. Gunderson, 8212 S. Homan, Chicago, Ill. 60652

Filed Aug. 7, 1975, Ser. No. 602,759

Int. Cl.² B60K *23/04*

U.S. Cl. 180—74 **5 Claims**

1. In a vehicle having a chassis with propelling wheels connected by a differential, a torque transfer device operable from an operator's station on the vehicle for connecting the propelling wheels directly to transfer torque from one wheel to the other when the differential permits relative rotation between the wheels, comprising: a torque transfer assembly including a rotatable shaft, friction elements fixed on the shaft and spaced apart axially to engage the propelling wheels of the vehicle, and bearing means positioned between the friction elements for rotatably supporting the shaft; support means of resiliently flexible material secured at one end to the chassis and connected remotely from said one end to said bearing means, flexure of the resilient support means permitting



movement of the friction elements of the assembly between an inoperative position spaced from the propelling wheels and an operative position in frictional engagement with the propelling wheels; and an actuating means positioned adjacent the operator's station and secured to the support means to flex the support means so as to afford movement of said friction elements between said inoperative and operative positions.

3,963,089

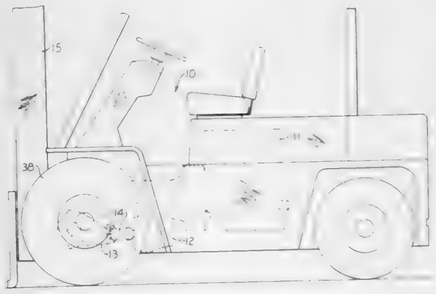
DIFFERENTIAL MOUNTING AND WHEEL DRIVE ARRANGEMENT

John T. Crawford, Lyndhurst, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed June 2, 1975, Ser. No. 583,029

Int. Cl.² B60K *17/16*

U.S. Cl. 180—75 **5 Claims**



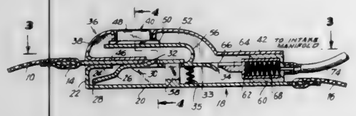
1. A differential mounting and wheel drive arrangement comprising;
an axle beam having a pair of vertically spaced upper and lower plates, a pair of side plates individually secured to the ends of the upper and lower plates with each side plate having an aperture extending therethrough, and a vertically disposed plate secured to the forward edges of the upper and lower plates;
a pair of spindles individually secured to the outer surfaces of the side plates and having a horizontal axis extending therethrough;
a pair of wheel drive gears individually journaled on the spindles;
a differential disposed within the axle beam and secured to one of the plates; and
a pair of jackshafts extending outwardly from opposite sides of the differential and through said apertures in said side plates, each of said jackshafts having a gear formed on its distal end and mating with the wheel drive gear, said jackshafts and said apertures being radially offset from

said horizontal axis a predetermined distance as determined by the mating relation between the gears, and wherein said aperture is located in one of a plurality of positions which are disposed on a pair of diametrically opposite arcs of a circle having said horizontal axis as its center and said predetermined distance as its radius with one of said arcs being disposed forwardly of said horizontal axis.

3,963,090
AUTOMATIC SEAT BELT BUCKLE UNLATCHING MECHANISM

Jesse R. Hollins, 40 Stoner Ave., Great Neck, N.Y. 11021

Filed Jan. 9, 1975, Ser. No. 539,704
Int. Cl.² B60R 21/10
U.S. Cl. 180—82 C **2 Claims**

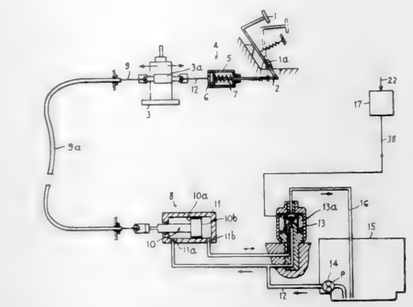


1. An automatic seat belt buckle unlatching apparatus for a motor vehicle having an engine and a chassis, said apparatus comprising a first seat belt strap and a second seat belt strap, said first seat belt strap including a first end and a second end, said first end of said first seat belt strap adapted to be secured to said chassis, a tongue member secured to said second end of said first seat belt strap, said second seat belt strap including a first end and a second end with said first end adapted to be secured to said chassis, a seat belt latching mechanism secured to said second end of said second seat belt strap adapted to receive said tongue member, said latching mechanism including a plate secured to said second seat belt and a rigid latch strip having a latch adapted to engage said tongue member and a forward end pivotably connected to said plate, means biasing said latch strip into a position in which said latch may engage said tongue member when said tongue member is inserted into said latching mechanism, means selectively engaging said latch strip responsive to the operation of said engine, said means operatively engaging said latch strip when said engine is not operating to displace said latch strip from said position in which said latch may engage said tongue member to permit said tongue member to be removed from said latching mechanism, said means being disengaged from said latch strip when said engine is operating to permit said latch strip to be biased into said position in which said latch may engage said tongue member when it is inserted into said latching mechanism to permit said first seat belt strap and said second seat belt strap to be locked together and means independent of said selectively engaging means for manually releasing said tongue member while said motor vehicle engine is operating.

3,963,091
SPEED CONTROL DEVICES

John Noddings, and Norman Hunt, both of Leamington Spa, England, assignors to Associated Engineering Limited, England

Filed Mar. 3, 1975, Ser. No. 554,513
Claims priority, application United Kingdom, Mar. 5, 1974, 9914/74
Int. Cl.² B60K 31/00
U.S. Cl. 180—108 **17 Claims**

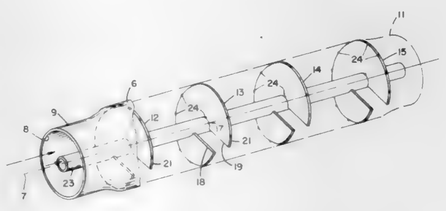


1. A system for enabling a vehicle to maintain a selected vehicle speed, which system comprises; an electrically-operable pressure control valve arranged to be fed with fluid from a source of fluid pressure; an electronic control circuit having a memory in which a selected vehicle speed can be set and which is arranged to supply a signal, representative of the difference between the actual and selected speeds, to the electrically-operable control valve; a differential area piston arrangement, to the smaller working area side of the differential piston of which the fluid source pressure is fed, and to the greater working area side of the differential piston of which the output pressure of the control valve is supplied; and means coupled between the differential piston and the engine of the vehicle, the position of the piston being used to control the vehicle engine in order to maintain said selected vehicle speed.

3,963,092
EXHAUST MUFFLER FOR COMPETITION CAR ENGINES

John M. Soares, 2495 American Ave., Hayward, Calif. 94545

Filed Mar. 5, 1975, Ser. No. 555,387
Int. Cl.² F01N 1/00
U.S. Cl. 181—44 **1 Claim**

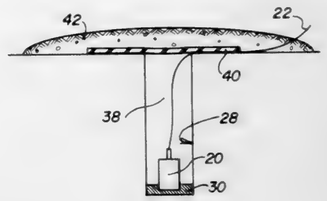


1. An exhaust muffler for competition car engines comprising a circular-cylindrical outer main shell having a predetermined diameter and extending along an axis, said main shell having an inlet at one end of a diameter no larger than said predetermined diameter and having an outlet at the other end of a diameter smaller than said predetermined diameter, a plurality of individual mutually disconnected helical discs forming spiral baffles disposed within said main shell and separated axially from each other, each of said spiral baffles having a pair of axially separated radial edges and having a central opening, means for securing said spiral baffles to said main shell with all of said edges in substantially the same axial plane and with all of said discs extending in substantially the same direction, and a circular-cylindrical tube open at both ends and extending from said inlet through said central openings in each of said spiral baffles in substantial contact with said baffles and to said outlet.

3,963,093
GEOPHONE NOISE REDUCTION METHOD

Harold B. Morris, Houston, Tex., assignor to Seismic Logs, Inc., Houston, Tex.

Filed Aug. 23, 1974, Ser. No. 499,912
Int. Cl.² G01V 1/16
U.S. Cl. 181—122 **12 Claims**

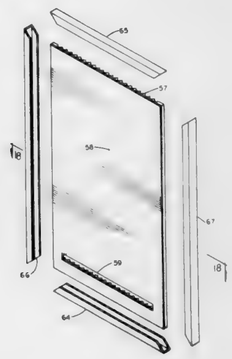


1. In seismic exploration, the method of sensing high frequency low noise seismic signals which comprises:
locating a detector in a shallow hole in an adherent base in the bottom of said hole with said detector spaced from the walls of the hole, and sealing the open end of said hole to provide a quiescent volume of air in said hole surrounding said detector.

3,963,094
MUFFLER STRUCTURES

Walter M. Nowikas, Morris Plaines, N.J., assignor to Donley, Miller & Nowikas, Inc., East Hanover, N.J.

Filed July 11, 1974, Ser. No. 487,571
Int. Cl.² E04B 1/99
U.S. Cl. 181—198 **4 Claims**

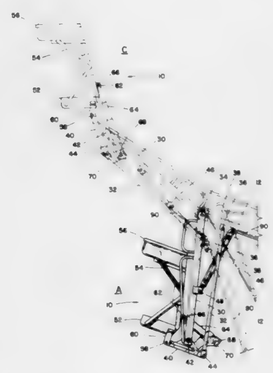


1. An enclosure for providing acoustic isolation from sounds within or without said enclosure formed from a plurality of muffler barriers joined together in contiguous air-tight relation, each said muffler barrier constructed to enclose a principal passage for the free flow of air therethrough in a direction substantially transverse to the principal direction of sound transmission without substantial reduction in the composite sound transmission loss through said enclosure,
at least one said muffler barrier comprising:
a pair of substantially parallel leaves disposed in spaced apart relation, each comprising a rigid backing,
the inwardly directed face of each of said leaves being lined with a layer of sound absorbing material impressed with a series of corrugations of saw-tooth cross-section longitudinally extended in a direction substantially parallel to a major edge of the said leaf, said leaves bonded together with the said corrugations in face-to-face relation at their apexes providing between them a series of longitudinal air channels comprising said principal air flow passage,
air intake and exhaust openings respectively disposed at corresponding opposite positions near the ends of each of said leaves in transverse relationship to said longitudinal air channels, whereby the air intake is at one end of one said leaf and the air exhaust is at the other end of the other said leaf, with the longitudinal air channels extending between said openings.

3,963,095
AUXILIARY EXTENSION PLATFORM ASSEMBLY SUPPORT FRAME DRIVE MEANS FOR AN AERIAL LADDER ASSEMBLY

Melvin R. Hedges, Littlestown, Pa., assignor to Cam Industries, Inc., Hanover, Pa.

Filed Dec. 11, 1974, Ser. No. 531,536
Int. Cl.² B66F 11/04
U.S. Cl. 182—2 **3 Claims**



1. A vehicular mounted multiply-articulated extensible aerial ladder assembly to support a person at an elevated working position comprising, base means attachable to a vehicle, a plurality of rigid elongated ladder members longitudinally extensible relative to each other, one end of one of said ladder members being pivotally and rotatably connected to said base means and another of said ladder members being extensible and retractable relative to said one of said ladder members, and power means on said base means connected to said one of said ladder members and operable to arcuately move the same angularly from a substantially horizontal inoperative position on said base means to an operative position at an obtuse angle to the horizontal position, an auxiliary extension platform assembly support frame comprised of an auxiliary extension ladder member and a plurality of spaced link means the same being respectively pivotally connected at one end thereof to the outer end of said another ladder member and movable between an initial position substantially perpendicular thereto to a position at an obtuse angle thereto, a platform assembly pivotally connected to the opposite end of said auxiliary extension ladder member and said link means the same being substantially equally spaced from and parallel to said auxiliary extension ladder member and mutually cooperative with said auxiliary extension ladder member to rigidly support and maintain said platform assembly substantially in the same relative plane in all positions of angular adjustment of said auxiliary extension platform assembly support frame and longitudinal extension and retraction of said another of said ladder members and upon vertically arcuate angular adjustment of said auxiliary extension platform assembly support frame, in combination with auxiliary extension platform

assembly support frame drive means comprised of a fluid operated cylinder unit extending between and connected at opposite ends thereof respectively to said auxiliary extension ladder member intermediately of its ends and the outer end portion of said another of said ladder members, said cylinder unit beng operable to move said auxiliary extension ladder member from a substantially vertically inoperative position to an operative position at an obtuse angle to said another of said ladder members, and further including a longitudinally extensible and contractable jack screw connected at opposite ends thereof respectively to the outer end portion of said auxiliary extension ladder member and the base of said platform, and operable to simultaneously maintain said platform substantially in said same relative plane through all positions of obtuse angular adjustment of said rigid elongated ladder members.

3,963,096

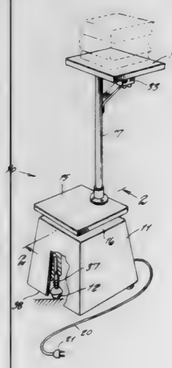
STEPPING STOOL WITH ELEVATING PLATFORM AND CONTROLS

Maude M. Jones, 9 Rosedale Ave., Montclair, N.J. 07042

Filed June 9, 1975, Ser. No. 585,073

Int. Cl.[2] A47C *9/12*; **E06C** *1/397*

U.S. Cl. 182—15 **1 Claim**



1. In a stepping stool, the combination of a hollow boxlike base mounted upon three casters, a top wall of said base having an opening therethrough, a mechanism inside said base protruding upwardly through said opening and having an elevating platform secured thereupon, a post mounted on said platform, a table panel mounted on an upper end of said post, and control means for operating said mechanism to raise or lower said platform, said mechanism including an electric motor attached to an extension cord and plug, a gear reducer driven by said motor driving a gear on an output shaft of said reducer, said gear driving a second gear having a threaded central opening engaged on a vertical screw shaft, said second gear being retained against vertical travel by stationary arms above and below said second gear, a keyway along said screw shaft engaging a stationary lug whereby said screw shaft moves vertically when said second gear is rotated, said keyway extending along a longitudinal central portion of said screw shaft, opposite ends of said screw shaft forming stops for said lug traveling in said keyway, said screw shaft being shorter than a height of said base, a lower end of said screw shaft clearing a floor when said platform is at a lowest elevation, said second gear and said lug engaging said screw shaft being within an upper portion of said hollow base, compression coil springs being fitted between said casters and said base, said casters extending lower than a lower rubber edge of said base when said springs are relaxed in extended positions, said control means comprising a two switch unit mounted on said table panel, said unit being in an electric circuit with said motor and a power source.

3,963,097

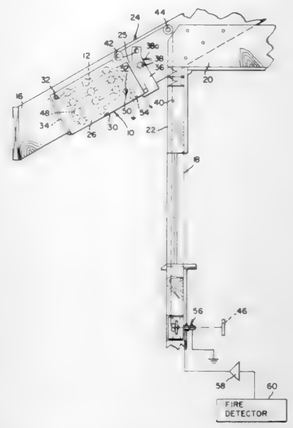
FIRE LADDER

Richard Fisher, New York, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Mar. 26, 1975, Ser. No. 562,198

Int. Cl.[2] E06C *9/14*

U.S. Cl. 182—76 **4 Claims**



1. In combination with a multiple story buildng having an overhanging roof including a plurality of spaced apart downwardly inclined projecting rafters, a stowed flexible escape ladder apparatus comprising: a hopper mounted extending across a pair of said rafters and pivoted to the rafters for selective downward rotation at a location above a window of said building; said hopper being a unitary body having a bottom generally rectangular wall normally inclined extending along and between bottom edges of said rafters, generally planar sidewalls upstanding from opposite sides of said bottom wall, in sliding engagement with sides of said rafters, a rear wall upstanding between said rafters from a rear, normally lower, edge of said bottom wall, a front, normally higher, edge of said bottom wall defining a mouth of said hopper which is adapted to lie below said rear wall in response to downward rotation of said hopper; a folded flexible ladder within said hopper having one end secured to said rafters; catch means biased against the underside of the bottom wall of said hooper for releasably holding said hopper in said normal inclination; a cable having one end connected to said catch means in a manner for articulating said catch means in response to pulling of said cable; and means within said building connected to said cable for pulling said cable for releasing said hopper to rotate downwardly and thereby deploying said ladder.

3,963,098

POSITION MEASUREMENT APPARATUS

Arthur M. Lewis, and Charles L. Winkler, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 7, 1974, Ser. No. 467,698

Int. Cl.[2] B66B *3/02*

U.S. Cl. 187—29 R **25 Claims**

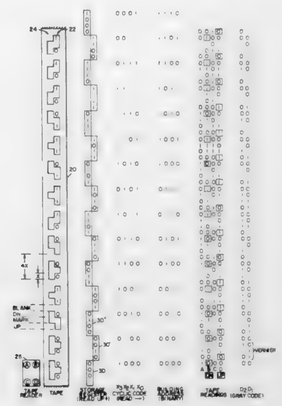
1. Position measurement apparatus for determining the position of a movable member along a travel path, comprising:

a plurality of indicia, said indicia defining the bits of a first digital code,

sensing means responsive to said indicia, said sensing means and said indicia being arranged for relative movement responsive to movement of the movable member,

said indicia defining a serial code which has a non-repeating bit pattern over any N consecutive bits thereof,

said sensing means providing signals indicative of N consecutive bits of the first digital code defined by said indicia, providing an unique combination of N signals each time the next bit of the code is sensed by said sensing means,



and translating means responsive to the signals provided by said sensing means, said translating means determining the position in the first digital code of the N consecutive bits indicated by the signals from said sensing means, and the location in the travel path where the indicia defines the N consecutive bits.

3,963,099

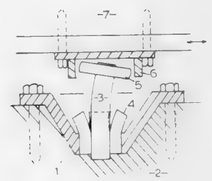
HYSTERETIC ENERGY ABSORBER

Robert Ivan Skinner, and Arnold John Heine, both of Wellington, New Zealand, assignors to New Zealand Inventions Development Authority, Wellington, New Zealand

Filed May 8, 1975, Ser. No. 575,745

Int. Cl.[2] F16F *7/12*

U.S. Cl. 188—1 C **10 Claims**



1. A cyclic energy absorber designed to be interposed between first and second members of a structure which are caused by in-coming energy to move to-and-fro relative to each other, said energy absorber comprising in combination: a thick anchor extending laterally and adapted to be connected rigidly to a first member of the structure; a main beam approximately perpendicular to the lateral extension of the anchor, rigidly connected at one peripheral plane to a first face of said anchor and projecting through a close-fitting hole in said anchor; loading means hingably connecting a second member of the structure to the main beam at a point remote from the connection to said anchor so that relative to-and-fro motion in a direction approximately normal to the beam between said first and second members of the structure causes said main beam to deform cyclically in flexure into the plastic range in a region close to said anchor, and separate from said first face.

3,963,100

INTERNAL SHOE DRUM

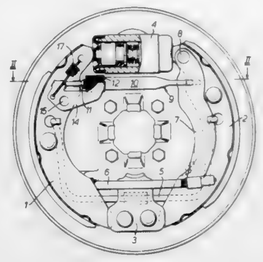
Manfred Kaub, Rhens, Germany, assignor to Girling Limited, Birmingham, England

Filed Feb. 26, 1975, Ser. No. 553,147

Claims priority, application United Kingdom, Feb. 27, 1974, 8987/74

Int. Cl.[2] F16D *65/56*

U.S. Cl. 188—79.5 P **8 Claims**



1. An internal shoe drum brake comprising first and second opposed brake shoes having adjacent ends, an actuator engaging one pair of said adjacent ends of said brake shoes, mechanically operated brake means having an operating arm pivoted on said first shoe and an adjustable length strut having first and second opposed ends respectively in operative engagement with said second shoe and said operating arm, a pawl lever pivotally mounted on said second shoe and having a first arm carrying a pawl and a second arm, a ratchet wheel rotatably mounted on said strut and engaged by said pawl for effecting adjustment of the strut length to compensate for excess wear of said brake shoes, and biasing means biasing the second arm of said pawl lever into permanent engagement with said strut to urge the latter axially in the direction of said operating arm whereby movement of said second shoe relative to said strut effects pivotal movement of said pawl lever.

3,963,101

LENGTHWISE DISPLACEABLE, PRESSURE MEDIUM CHARGED, HYDRAULICALLY BLOCKABLE ADJUSTMENT ASSEMBLY

Ludwig Stadelmann, and Fritz Bauer, both of Altdorf, Germany, assignors to Suspa Federungstechnik Fritz Bauer & Sohne oHG, Altdorf, Germany

Filed July 30, 1975, Ser. No. 600,524

Int. Cl.[2] F16F *9/32*

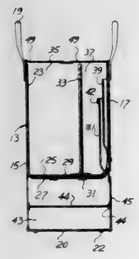
U.S. Cl. 188—300 **13 Claims**



1. A lengthwise-adjustable, pressure-medium charged, hydraulically blockable adjustment assembly comprising:

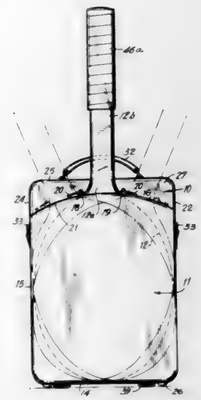
an outer cylinder;
an inner cylinder fitting coaxially within said outer cylinder and having a sealed off face at one end thereof, said sealed off face exposed to the outside;
a piston displaceably mounted within said inside cylinder, said piston separating in a sealing, fluid-tight manner, said inside chamber into first and second housing chambers;
a piston rod connected to said piston and extending sealingly outside of said cylinders at the end opposite said sealed off face;
first and second axially displaceable separating pistons disposed in the annular space between said outer and inner cylinders in a fluid-tight manner and defining a first annular chamber on the side of said first separating piston opposite said second separating piston, a second annular chamber between said first and second separating pistons and a third annular chamber on the side of said second separating piston opposite said first separating piston;
said inner cylinder having a passageway through the wall thereof in the vicinty of the sealed off end thereof;
sealing means for sealing off said passageway in one position of said inner cylinder and for permitting access to said second annular chamber when in a second position;
connecting means for permitting fluid access from said housing chamber on the side of said piston which is connected to said piston rod to at least a portion of said first annular chamber;
pressure means within said second annular chamber for urging said first and second separating pistons apart; and
substantially non-compressible fluid filling said first and second housing chambers and said first and third annular chambers;
whereby said inner cylinder may be axially displaced between a locking position at which said sealing means seals off said passageway and said piston is locked and a releasing position at which said sealing means permits access of said passageway to said second annular chamber and said piston may move.

3,963,102
COMBINATION CARRY-ON LUGGAGE BAG WITH TOTE BAG AND CLUTCH BAG
Bess Carp, Detroit, Mich., assignor to Joseph Carp, Detroit, Mich., a part interest
Filed June 17, 1974, Ser. No. 479,783
Int. Cl.² A45C *3/00, 13/30*
U.S. Cl. 190—51 **11 Claims**



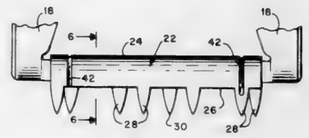
1. A carry-on luggage bag comprising a housing having side, end, bottom and top walls;
a liner spanning the side walls with its bottom wall spaced above said bottom wall, defining a first auxiliary storage chamber with a lateral zippered access thereto in one side wall;
an upright divider upon said liner defining a first storage chamber on one side thereof;
a tote bag nested and enclosed in said first storage chamber;
said tote bag including a housing having side, end, top and bottom walls;
an elongated liner mounted on and spanning the latter side walls and spaced above the tote bag bottom wall, defining a second auxiliary chamber with a lateral zippered access thereto in one side wall;
an umbrella storage tube in said second auxiliary chamber, with zippered access thereto in one end wall of the tote bag;
an upright divider upon the tote bag liner, defining a second storage chamber;
a clutch bag nested and enclosed within said second storage chamber;
said clutch bag comprising a housing having side, end, top and bottom walls;
an upright divider upon the bottom wall of the clutch bag extending to the top wall thereof;
a first series of article-storage pockets upon and along the inner surface of the clutch bag one side wall;
a second series of article-storage pockets upon and along the innersurface of the clutch bag other side wall;
and third and fourth series of article-storage pockets upon opposite sides of said clutch bag divider.

3,963,103
COMBINED CARRYING BAG AND RACKET CARRIER
Arthur T. Cowen, III, 20 W. 75th St., New York, N.Y. 10023
Filed Jan. 8, 1975, Ser. No. 539,332
Int. Cl.² A45C *3/00*
U.S. Cl. 190—52 **4 Claims**



1. A combination carrier for a racket and associated clothing equipment, which comprises
a. a clothing case,
b. a rectangular racket case secured to and extending from one side of said clothing case.
c. said racket case being substantially in the form of an open top pocket having width dimensions generally corresponding to the width of a racket head to be carried therein, and having a height dimension sufficient to accommodate the racket at least up to its throat area said pocket having a top opening side arranged in the form of an arc whose center of radius is near the bottom of the pocket,
d. closure means for said open top side of said racket case to engage and support both sides of said throat area of the racket,
e. said closure means being adjustable along substantially the entire length of said top open side to provide, upon closure, support for the racket to hold it in any one of various angular orientations, and
f. means for carrying said carrier in an upright position.

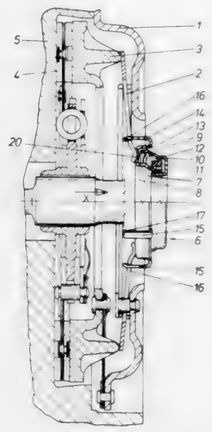
3,963,104
HANDLE AND MEANS FOR SECURING SAME TO A PIECE OF LUGGAGE
Leon Lautin, 43 White Drive North, Cedarhurst, N.Y. 11516
Continuation of Ser. No. 465,601, April 30, 1974, abandoned, which is a continuation of Ser. No. 233,900, March 13, 1972, abandoned. This application Apr. 7, 1975, Ser. No. 565,800
Int. Cl.² A45C *13/22*
U.S. Cl. 190—58 R **1 Claim**



1. An assembly for securing a molded plastic handle including an elongated gripping portion and a side post extending downwardly from each end thereof to a wall of a piece of luggage, said assembly comprising:
a. a rigid bar extending between the ends of the side posts that are remote from the gripping portion of the handle, said bar being spaced from and substantially parallel to the handle gripping portion, said bar including two axially spaced apart undercuts encircling said bar and two axially spaced apart transverse interfaces intermediate the said posts and outwardly spaced from said undercuts along said posts;
b. an elongated metallic strap mounted on said bar, said strap having two integral, deformable tabs spaced inwardly from the ends thereof for engaging said undercuts on said bar and two internally directed ribs spaced inwardly from the ends of said strap and positioned so as to engage said transverse interfaces on said bar to thereby limit axial movement of said strap relative to said bar, said strap including a pair of longitudinally extending, spacedly parallel side edges having a length dimension greater than the axial spacing between said interfaces for concealing said undercuts and said transverse interfaces; and
c. a plurality of deformable finger means integral with and spaced along each said side edge of said strap for securing said strap to the luggage wall, said finger means being alternately positioned on said side edges of said strap, said finger means having pointed ends that are adapted to pierce the luggage wall and to be bent towards each other and against the inside surface thereof, said finger means being sufficiently long so that they overlap each other and extend past the longitudinal axis of said bar after they are bent.

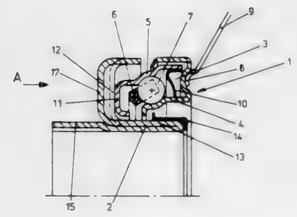
3,963,105
BEARING AND CLUTCH DIAPHRAGM ASSEMBLY
Horst Ernst, Eltingshausen; Manfred Brandenstein, Aschfeld, and Armin Olschewski, Schweinfurt, all of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Amsterdam, Netherlands
Filed May 23, 1974, Ser. No. 472,861
Claims priority, application Germany, May 26, 1973, 2327023
Int. Cl.² F16D *23/14*
U.S. Cl. 192—98 **6 Claims**

1. A clutch release bearing for attachment with a friction clutch having an annular spring release member in which a plurality of slots forming radially inwardly directed arms define a central bore, said clutch release bearing comprising an inner race member and and outer race member, both said race members being made of sheet metal and being arranged concentrically to one another, a plurality of rolling bodies being located between said race members, said inner race member being folded to have a Z-shaped cross section and being formed with an annular shoulder integral therewith and having a plurality of fingers uniformly distributed about its free end



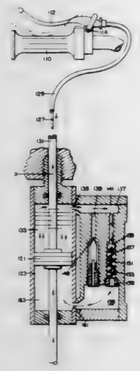
and being folded to extend substantially axially away from said rolling bodies and being adapted to project through the slots of said spring release member into engagement therewith.

3,963,106
CLUTCH DISENGAGER WITH SLIDING SLEEVE
Horst Manfred Ernst, Eltingshausen; Manfred Brandenstein, Aschfeld, and Armin Olschewski, Schweinfurt, all of Germany, assignors to SKF Industrial Trading and Development Company, B.V., Plettenburgerweg, Jutphaas, Netherlands
Filed Dec. 6, 1974, Ser. No. 530,310
Claims priority, application Germany, Dec. 21, 1973, 7345381[U]
Int. Cl.² F16D *19/00*
U.S. Cl. 192—98 **8 Claims**



1. A clutch disengager comprising a sliding sleeve having a radially extending flange, and an antifriction bearing arranged for radial movement thereon, said bearing including a rotating race and a nonrotating race, said nonrotating bearing race adapted to rest against said radial flange of said sliding sleeve, said sliding sleeve including a bore hole, said sliding sleeve being a single part formed by noncutting methods from sheet metal and having a cuff in the region of said bore hole, said cuff resulting in a radial outer wall part forming, on said sleeve, a continuous double wall over a part of said sleeve length, said radial outer wall part of said cuff passing into said radially extending flange for support of said nonrotating bearing race.

3,963,107
MOTORCYCLE CLUTCH WITH DASPOT
Joseph E. Bolger, Summer St., Barre, Mass. 01005
Filed Dec. 12, 1974, Ser. No. 531,909
Int. Cl.² F16D *57/00*
U.S. Cl. 192—109 D **1 Claim**



1. In a clutch assembly of a motorcycle including driving and driven clutch members and cooperant means for effecting the release of the driving engagement between the clutch members inclusive of a handlebar-mounted and operator-operated clutch lever and a clutch cable connecting between the clutch lever and the distant clutch assembly,

the improvement in a clutch control assemblage located between and operative with the clutch cable and the clutch assembly and rendered operative upon any sudden clutch cable rupture for effecting an adequate and measured degree of clutch engagement for enabling the operator to bring his vehicle under renewed operational control comprising:

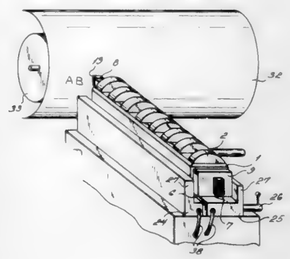
a main cylinder,

a piston connected to the clutch cable and being reciprocable within the main cylinder and dividing the main cylinder into variable clutch in and clutch out chambers as the piston is reciprocated alternately in clutch in and clutch out directions respectively,

an auxiliary cylinder communicating with the main cylinder at each opposite side of the piston and having a ported wall for separating the auxiliary cylinder into clutch in and clutch out chambers, adjacent primary and secondary valve units mounted in the ports of the wall of the auxiliary chamber, with the primary valve unit allowing fluid flow through the clutch in chambers past the primary valve unit and through the clutch out chambers for the actuation of the piston in clutch in direction and with the secondary valve unit allowing fluid flow through the clutch out chambers past the secondary valve unit and through the clutch in chambers for the actuation of the piston in clutch out direction.

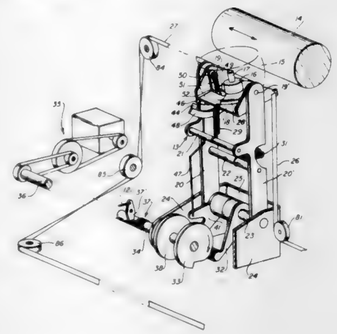
3,963,108
MATRIX PRINTING HEAD
Fritz Steinhausser, Sommerda, Germany, assignor to VEB Kombinat Zentronik Sommerda/TH, Sommerda, Germany
Filed May 20, 1974, Ser. No. 471,263
Claims priority, application Germany, July 2, 1973, 171980
Int. Cl.² B41J *3/50*
U.S. Cl. 197—1 R **2 Claims**

1. A printing head comprising a plurality of flat, straight printing elements of equal length, a plurality of pot-shaped electromagnetic driving elements, each printing element being connected with a different one of said driving elements to be driven in a printing direction upon activation of that driving element to which it is connected, said driving elements being aligned and each having a central opening registering with the central openings of the others of said plurality of driving elements, and each printing element extending through the central opening of each driving element, a carrier supporting said plurality of driving elements and having a front piece and a rear piece, said front and rear pieces each having an opening registering with said central openings of said driving elements, each of said printing elements extending into said openings of said front and rear pieces, spring elements disposed in the openings of the front and rear pieces and engaging and guiding



said plurality of printing elements, each driving element comprising a body, coil means, electrical connector means projecting from the body, a tubular armature, a connector element movable with the armature, return spring means associated with said armature, each said connector element constituting means connecting an associated printing element with said driving element, pedestal means comprising a pair of clamping elements disposed on opposite sides of the carrier movable toward each other to clamp an assembly of carrier, driving elements and printing elements therebetween, said clamping elements constituting heat sink means, said pedestal including electrical contact means for cooperation with said electrical connector means of said driving elements.

3,963,109
SINGLE ELEMENT TYPEHEAD POSITIONING MECHANISM
William J. Smith, West Hartford, Conn., assignor to Royal Business Machines, Inc., Hartford, Conn.
Filed June 9, 1975, Ser. No. 585,051
Int. Cl.² G41J *1/32*
U.S. Cl. 197—55 **10 Claims**



1. In a machine having a positionable type element and translator mechanism for positioning said type element to any of a plurality of selected coordinate positions in response to coded input signals,

means biasing said type element to a zero coordinate position,

a rotatably indexable member,

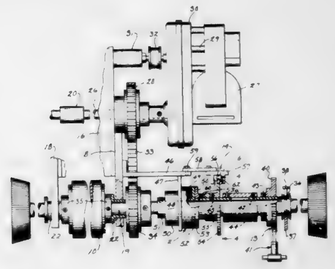
a plurality of pins mounted on said rotatably indexable member at locations spaced from the axis of rotation thereof and movable from unset to set positions in an axial direction,

at least one band anchored at one end and connected at its other end to said type element, said band being located in the path of movement of for displacement by set pins on and incident to indexing of said rotatably indexable member,

means for setting pins in response to input code signals,

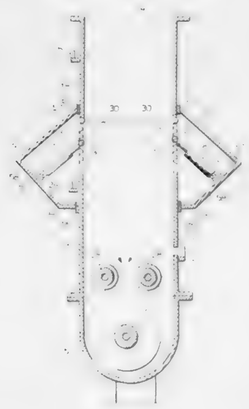
and means responsive to a printing cycle initiating signal for indexing said rotatably indexible member through 90° whereby set pins will displace said band to position said type element to a selected position incident to indexing movement of said rotatably indexable member.

3,963,110
STORAGE MAGAZINE AND SHEET FEEDER FOR TYPING APPARATUS
Francis P. Hyland, Wauwatosa; Phillip J. Tollefson, Milwaukee; Harlan J. Pilon, Waukesha, and Hugo E. Borchert, Milwaukee, all of Wis., assignors to Hy Grip Products Co., West Allis, Wis.
Filed June 26, 1974, Ser. No. 483,403
Int. Cl.² B41J *13/02, 13/10*
U.S. Cl. 197—130 **8 Claims**



1. An automatic sheet feeding apparatus, an automated typing apparatus having a platen, a sheet supply magazine means for storing a plurality of sheet units with an outer exposed sheet unit and having mounting means for mounting the magazine means in overlying relationship to said platen, said magazine means having a lower opening allowing sequential transfer of said sheet units to said platen, said platen mounted on a rotating shaft for successively moving of each of said sheet units through the typing apparatus, a rotating indexing means connected to said platen for sequential moving of each of said sheet units through the typing apparatus in predetermined spaced lines, a feed roller means rotatably mounted to selectively engage said outer sheet unit in the magazine means and moving said outer sheet unit into the platen, an electrical motor, means coupling said motor to said feed roller means and to said platen to provide precise corresponding movement of the platen with the feed roller means, clutch means interposed between the platen and the indexing means of the typing apparatus for coupling and decoupling said platen and indexing means, drive circuit means for energizing the clutch means and motor in timed relation, said clutch means decoupling the indexing means from the platen during the operation of the motor, and encoding means for monitoring the movement of each of said sheet units through the typing apparatus and coupled to the indexing means and rotated in synchronism with the indexing means, said encoding means establishing an output in accordance with the rotation of the indexing means, comparator means having a presettable input means for presetting of the comparator means and being connected to the output of said encoding means and establishing a null signal in response to a selected comparison between said output and said preset input means, and said drive circuit means for said motor and said clutch means connected to the output of the comparator means and having start means responsive to said null signal to activate the motor and clutch means to rotate the feeder roller means and the platen and automatically introduce the outer sheet unit from the magazine means into the typing apparatus, reset means responsive to the null signal to reset the comparator means, stop means to sense the proper location of the last named sheet unit and connected in the drive circuit means to terminate the operation of the motor and the clutch means.

3,963,111
FULL FLOW FEEDER
Edsel A. Harrell, Tifton, Ga.; Zolon M. Looney, and Oliver L. McCaskill, both of Leland, Miss., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed Mar. 12, 1975, Ser. No. 557,844
Int. Cl.² B65G *43/08*
U.S. Cl. 198—37 **7 Claims**



1. An apparatus and method for feeding cotton continuously and uniformally to individual gin stands in a battery of gin stands comprising in combination.

a. an upper section of a rectangular chamber for receiving process material comprising:

1. an open ended top through which process material is received,

2. parallel sides forming an angle of 90° with the horizontal and interrelating with,

b. a lower section of the same rectangular chamber comprising:

1. an open bottom for material discharge,

2. parallel sides which are vertical extensions of the upper rectangular chamber and

3. two parallel movable valves, pivotably mounted on hinges at the top and located on the two chamber sides with the longer dimension, said valves running substantially the full length of said sides and forming part of the chamber sides when in the open position and forming a bottom for the upper section of the rectangular chamber and concurrently a top for the lower section of the rectangular chamber when in the closed position, substantially forming a single chamber in the open position and two separate chambers in the closed position, thus imposing a positive means of controlling the flow of process materials, and

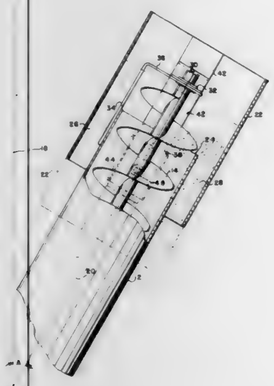
a. a means of opening and closing said valves,
b. a means of energizing the opening and closing mechanism,
c. a means of supporting the valves and the opening and closing means.
4. a means of automatically controlling the level of process materials in the chamber,
5. a means of feeding process material from the chamber at a variable and adjustable rate which is determined by the capacity of the ginning system, and
a. a means of applying power to the said variable and adjustable feeding means.

3,963,112

WINDGUARD FOR GRAIN DISTRIBUTOR

John B. Crego, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Mar. 14, 1975, Ser. No. 558,508
Int. Cl.² B65G *47/44*
U.S. Cl. 198—72 7 Claims



1. Grain distributing means for discharge into a receptacle comprising a grain tube adapted to be mounted in an upstanding manner within or adjacent a receptacle to receive grain from said tube, an auger mounted rotatably within said tube and adapted to conduct grain from the lower end of the tube to the upper end thereof, a windguard mounted upon the upper end of said tube and comprising a wall surrounding the upper end of said tube in radially spaced relation thereto to provide a circumferential discharge space between the upper end of said tube and said wall to receive grain discharged from the upper end of said tube and permit the same to fall by gravity downwardly through said discharge space and exit therefrom at the lower end of said wall, said wall being of limited length adequate to extend beyond the upper end of said tube and at lease a short distance below the upper end of said tube, whereby said wall serves to prevent wind from blowing against grain discharging from the upper end of said tube, and means on the upper end of said tube adjustably engaging said surrounding wall for movement in an axial direction relative to said upper discharge end of said tube, thereby to adapt said discharge means to operate effectively during different grain discharge rates and wind conditions.

3,963,113

CONVEYOR BELTS FOR TRANSPORTING TAR SANDS

Jackson S. Boyer, Wilmington, Del., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 509,205, Sept. 25, 1974. This application Aug. 20, 1975, Ser. No. 606,150
Int. Cl.² B65G *15/30*
U.S. Cl. 198—193 4 Claims

1. A flexible conveyor belt particularly suited for use in transporting tar sands and having limited resistance to swelling when exposed to liquid hydrocarbons containing up to 30 weight percent aromatics said conveyor comprising a rubber belt having a plurality of metal cables longitudinally disposed in said belt and arranged substantially parallel to each other said belt having a rubber surface comprising a vulcanized mixture of:
a. 100 parts by weight of a rubber mixture containing 20 to 95 weight percent nitrile rubber and 80 to 5 weight percent of a second rubber selected from the group consisting of natural rubber, neoprene, polybutadiene, styrene-butadiene copolymer and polyisoprene said rubber mixture having an acrylonitrile content in the range of 5 to 35 weight percent,
b. 1 to 30 parts by weight of a liquid plasticizing agent compatible with said rubber mixture and
c. 30 to 60 parts of a reinforcing agent selected from hard clay and hydrated silica carbon black, said vulcanized mixture characterized as having a volume percent swell after 24 hours at 158°F in ASTM number 3 oil in the range of 1 to 40 as measured according to ASTM D-471 and a Gehman T_{100} stiffness value at a temperature in the range of −30°F to −100°F as measured according to ASTM D-1053.

3. An improved method for transporting tar sands in a manner whereby sticking of the tar sands to the surface of the belt is substantially reduced comprising:
a. providing a continuous flexible rubber surfaced conveyor belt according to the composition of claim 1 between a receiving area and a discharge area said rubber surface being characterized as having a volume percent swell after 24 hours at 158°F in ASTM number 3 oil in the range of 1 to 40 as measured according to ASTM D-471 and a Gehman T_{100} stiffness value at a temperature in the range of −30°F to −100°F according to ASTM D-1053,
b. applying a thin layer of liquid hydrocarbon containing a maximum of 30 weight percent aromatics to the upper surface of said belt immediately before contacting said surface with the tar sands to be transported and thereafter,
c. transporting tar sands on the surface of said belt from a receiving area to a discharge area.

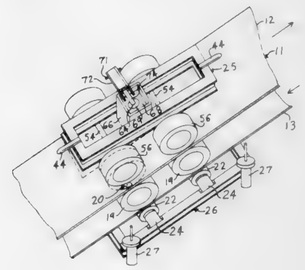
3,963,114

CONVEYOR BELT DRIVE ASSEMBLY

Joseph J. Younger, Paintsville, Ky., assignor to Continental Conveyor and Equipment Company, Winfield, Ala.

Filed May 12, 1975, Ser. No. 576,791
Int. Cl.² B65G *23/00*
U.S. Cl. 198—203 19 Claims

1. Apparatus for driving an endless conveyor belt having upper and lower strands with marginal drive edges thereon,
a. a supporting frame extending transversely of said belt,
b. a pair of drive axles mounted in said supporting frame and spaced from each other in the direction of travel of said belt and extending transversely of the direction of travel of said belt,
c. drive wheels carried by each said drive axle for driving engagement with the under surfaces of the marginal drive edges of the upper strand of said belt and for driving engagement with the upper surfaces of the marginal drive edges of the lower strand of said belt,
d. at least one rotatable support member mounted beneath said lower strand of said belt in position to engage the under surfaces of the marginal drive edges of the lower strand of said belt opposite said drive wheels so that said lower strand is pinched between said rotatable support member and said drive wheels and is driven thereby,
e. a floating frame operatively connected to said supporting frame and adapted for movement relative thereto,
f. upper axles carried by said floating frame and spaced from each other in the direction of travel of said belt and extending transversely of the direction of travel of said belt,



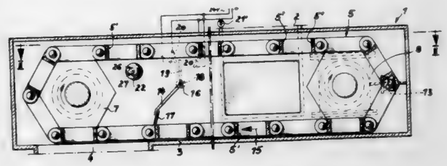
g. upper wheels carried by said upper axles in position to engage the upper surfaces of the marginal drive edges of the upper strand of said belt opposite said drive wheels so that said upper strand is pinched between said upper wheels and said drive wheels and is driven thereby, and
h. means to apply downward pressure to said floating frame at a pivot point substantially equidistant from said upper wheels with said floating frame being adapted to swivel about said pivot point to selected positions relative to said upper strand.

3,963,115

APPARATUS FOR MONITORING THE OPERATION OF A DRAG CHAIN CONVEYOR

Fritz Teske, Industriestrasse 28, and Lothar Teske, Industriestrasse 30, both of Porz-Westhoven, Germany

Filed Oct. 9, 1974, Ser. No. 513,502
Int. Cl.² B65G *15/30*
U.S. Cl. 198—208 12 Claims



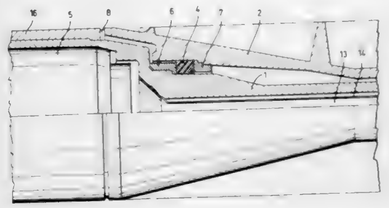
1. In a drag chain conveyor including a trough; an endless conveyor chain disposed in the trough and trained about a drive sprocket and a return sprocket for being supported with a slack and at a height of predetermined magnitude; means for driving the drive sprocket; a rotary shaft on which the return sprocket is mounted; bearing means for the return sprocket; two bearing supports on each end of the rotary shaft; the bearing supports being displaceable along the direction of conveyance; means exerting a force on the bearing supports in a direction oriented away from the drive sprocket for tensioning the conveyor chain with a bias of predetermined magnitude, the improvement comprising a monitoring apparatus including in combination
a. a first and a second cylinder, each having an inner space;
b. a separate piston slidably arranged in each cylinder and dividing the inner space of each cylinder into a first and a second cylinder chamber;
c. a first conduit maintaining communication between said first cylinder chambers of said first and second cylinders for transferring pressure medium between said first cylinder chambers of said first and second cylinders during displacement of either piston in its respective cylinder;
d. a second conduit maintaining communication between said second cylinder chambers of said first and second cylinders for transferring pressure medium between said second cylinder chambers of said first and second cylinders during displacement of either piston in its respective cylinder;
e. a signal transmitter means for emitting a signal;
f. a first piston rod affixed to the piston disposed in said first cylinder and passing through said first cylinder chamber of said first cylinder, said first piston rod being connected to the one of said bearing supports for displacing said piston in said first cylinder in response to a change in the position of said one bearing support;
g. a second piston rod affixed to the piston disposed in said second cylinder and passing through said first cylinder chamber of said second cylinder, said second piston rod being connected to the other of said bearing supports for displacing said piston in said second cylinder in response to a change in the position of said other bearing support;
h. separate dynamic pressure sensing means connected to each conduit for responding solely to dynamic pressures generated in said conduits by a sudden change in the position of said bearing supports, said dynamic pressure sensing means being connected to said signal transmitter means; and
i. signal-responsive means connected to said signal transmitter means for responding to said signal.

3,963,116

FEEDING SCREW FOR SLIDE CASTING MACHINE

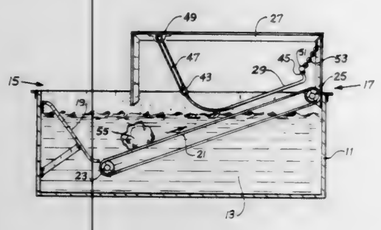
Veli Matti Rautia, Kalamiehentie 8 C 21, and Erkki Kalevi Asplund, Haukanmaki E 32, both of 04300 Hyryla, Finland

Filed June 10, 1975, Ser. No. 585,658
Claims priority, application Finland, June 25, 1974, 1945/74
Int. Cl.² B65G *33/00*
U.S. Cl. 198—213 11 Claims



1. A feeding screw for a slide casting machine. comprising:
a non-rotary, tubular inner part with a widened outer end;
a screw part arranged to rotate coaxially around the inner part;
a vibrator arranged at the widened outer end of the inner part;
power transmission means for the vibrator, arranged inside the tubular inner part;
a reslient means arranged in an annular space between the inner part and the screw part; and
tightening means with which the mutual axial position of the inner part and the screw part can be changed in order to change the resiliency of the resilient means.

3,963,117
ARTICLE BRAKE FOR INCLINED CONVEYOR
Joseph A. Nausedas, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed Apr. 11, 1973, Ser. No. 350,297
Int. Cl.² B65G *47/00*
U.S. Cl. 198—227 **3 Claims**



1. An article roll back brake for an inclined conveyor comprising, in combination,
an array of elongate parallel spaced apart downwardly convexed longitudinal elements disposed longitudinally in the direction of movement of the inclined conveyor,
a brake frame arranged and disposed to support said array at a preselected distance above the inclined conveyor,
a pivot arm having one end pivotally connected to said brake frame and another end pivotally connected to said array, and
stop means disposed to arrest the downward pivotal movement of the other end of said array at a preselected point out of impingement on the conveyor,
whereby dual pivotal movement of said array occurs at the end of said array opposite the end at which said stop means is disposed.

3,963,118
FERTILIZER COMPOSITION CONTAINING FERROUS SALT
Fred Eugene Ferguson, Marysville, Ohio, assignor to O. M. Scott & Sons Company, Marysville, Ohio
Filed Oct. 31, 1974, Ser. No. 519,422
Int. Cl.² B65D *81/00, 5/00;* **C05C** *9/00*
U.S. Cl. 206—84 **10 Claims**

8. A packaged particulate fertilizer composition of enhanced storage life containing a ferrous salt selected from the group consisting of ferrous ammonium sulfate and hydrated ferrous sulfate and subject to the pick-up of excessive free moisture content therein, said fertilizer composition being sealed in a water vapor impervious package, the fertilizer composition containing anhydrous magnesium sulfate in an amount sufficient to tie up the water of hydration of the ferrous salt.

3,963,119
SERUM SEPARATING APPARATUS
Michel J. Lukacs, Goshen, and Ian H. Jacoby, Middletown, both of N.Y., assignors to Lucaks and Jacoby Associates, Middletown, N.Y.
Continuation of Ser. No. 411,287, Oct. 13, 1973, abandoned, which is a division of Ser. No. 270,278, July 10, 1972, Pat. No. 3,780,935. This application Sept. 16, 1974, Ser. No. 505,992
Int. Cl.² B01D *21/26*
U.S. Cl. 206—216 **11 Claims**

1. A dispensing device for holding and dispensing a supply of a sealant used as a separator between serum and clot portions of a blood sample obtained during centrifuging of the sample in an open ended container, said device including:
a hollow body portion holding a supply of sealant therein;
said sealant comprising a supply of thixotropic, water insoluble, substantially non-toxic material consisting essentially of a silicone fluid and an inert filler dispersed therein, said sealant having a specific gravity in the range of 1.026 to 1.092;
said hollow body portion including an integrally formed elongated narrow nozzle portion extending therefrom and containing a portion of the sealant material;
said nozzle having a free end portion adapted to extend into a container having a blood sample therein, said free end portion having an opening therein through which the sealant is dispensed during centrifuging;
said body having an integrally formed annular shoulder extending from the end thereof opposite the free end portion of the nozzle and an annular side wall extending therefrom towards the nozzle, said shoulder being adapted to engage the opened end of the container for



supporting the device in said container, with the side wall of the device received within the container for stabilizing the device therein during centrifuging, whereby upon centrifuging of the blood sample in the container with said device mounted therein, said sealant will separate the blood into serum and clot portions and form a separator between said serum and clot portions of the centrifuged sample.

11. A seal for physically separating the serum and clot portions of a blood sample in a container; said seal comprising a layer of thixotropic water insoluble material substantially chemically inert with respect to the constituents of the serum portion of the blood and comprising a silicone fluid and a filler, said sealant having a specific gravity in the range of about 1.026 to 1.092 and forming a relatively tight, fixed seal against the inner surface of the container at a position between the separated serum and clot portions thereby physically separating the serum and clot portions and enabling the serum portion to be removed by decanting.

3,963,120
CONTAINER FOR DENTAL MATERIALS AND THE LIKE
Alan J. Perfect, Allentown, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.
Filed Feb. 7, 1975, Ser. No. 548,119
Int. Cl.² B65D *51/16, 51/18;* **220**
208;253;256;288;20.5;366–367;377;DIG. 27
U.S. Cl. 206—219 **11 Claims**

1. A container for prepackaging materials which must be kept separate until just prior to use comprising:
a. a generally cylindrical first portion having an open top end and a closed bottom end defining a chamber;
b. a generally cylindrical second portion having an open top end, an open bottom end, an inner surface and valve means intermediate said ends, said second portion having its bottom end secured to the top end of said first portion;
c. a third portion having a chamber therein and one end rotatably connected with the top end of said second portion, said third portion having valve closing means whereby said valve means on said second portion may be temporarily closed and the chambers in said first portion and said third portion temporarily separated from one another;
d. air venting means whereby air may be vented from the chamber in said first portion during assembly of said capsule to prevent accidental disassembly thereof due to heating and consequent expansion of said air.

5. A container for prepackaging materials which must be kept separate until just prior to use comprising;
a. a generally cylindrical first portion having an outer surface, an open top end, and a closed bottom end defining a chamber;
b. a generally cylindrical second portion having an open top end, an open bottom end, an inner surface, and an outer surface and having a barrier spaced between said ends with a constricted opening therethrough adjacent said



inner surface, said barrier having a top surface, and said second portion having its bottom end secured to the top end of said first portion; and
c. a third portion having an axially positioned chamber therein and one end having sliding means adapted to engage the top surface of said barrier in said second portion and close said opening and means for rotatably connecting said one end with the top end of second portion, said third portion also having a conduit extending from said chamber through said sliding means so that rotation of said third portion with respect to said second portion causes said conduit of said third portion to be aligned with said opening in the barrier of said second portion to connect said chamber in said third portion with the chamber in said first portion.

3,963,121
CARRIER CARTON WITH DISPLAY PANEL
Michael A. Kipp, Phoenixville, Pa., assignor to Container Corporation of America, Chicago, Ill.
Filed July 21, 1975, Ser. No. 597,313
Int. Cl.² B65D *5/02, 75/00*
U.S. Cl. 206—434 **1 Claim**

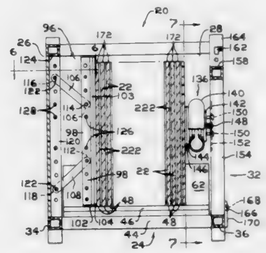
1. In an open ended, sleeve type carrier carton formed from foldable paperboard for holding a plurality of articles arranged in at least one row, the combination of:
a. an opposed pair of top and bottom walls and an opposed pair of side walls foldably joined to each other to form a tubular structure open at the ends thereof;
b. at least one relatively narrow, elongated, advertising display panel foldably connected at its upper edge to an edge of said top wall and disposed to extend outwardly and downwardly therefrom;
c. a pair of gusset panels having certain corresponding side edges foldably connected to opposite side edges of said display panel and having other corresponding edges foldably connected to adjacent edges of respective side walls;

d. said gusset panels being connected to said display panel and said side walls on angularly related fold lines, so that when the carton is in an erected condition, said gusset panels will extend inside of their related side walls and urge said display panel inwardly of said carton tubular structure to a generally vertical position;



e. at least one of said gusset panels having a retaining tab engageable with said display panel to retain it in a generally vertical position;
f. said tab extending outwardly from an edge of said gusset panel immediately adjacent said display panel and being spaced from a side wall, to which said gusset panel is connected, by said gusset panel.

3,963,122
FRONT RESTRAINT DEVICE FOR SHIPPING BINS
Walter E. Pater, New Kensington, and James R. Rowley, Freeport, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed July 15, 1974, Ser. No. 488,851
Int. Cl.² B65D *85/48*
U.S. Cl. 206—448 **10 Claims**



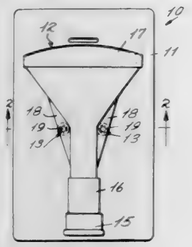
1. In a bin for shipping loose sheets, wherein the bin is of the type having a back support secured to a base for supporting each of the sheets on an edge in a generally vertical position in facing relationship to one another, the improvement comprising:
an inflatable member having an engaging surface;
means mounting said inflatable member for securing said inflatable member in spaced relation to the back support and the base with the engaging surface of said member facing the back support; and
valve means for inflating said inflatable member to move the engaging surface of said member toward the back support wherein the engaging surface engages a one of the plurality of sheets to be shipped farthermost from the back support to urge the sheets to be shipped toward each other against the back support such that the sheets during shipment respond to oscillatory and lateral forces as a unitized pack and said member dampens oscillatory and lateral forces acting on the sheets during shipment.

3,963,123

CARDED HARDWARE ARTICLE PACKAGE

Glenn I. Beal, Somerset, Pa., assignor to R. M. Smith, Inc., Somerset, Pa.

Filed Mar. 20, 1974, Ser. No. 453,100
Int. Cl.² B65D *73/00*
U.S. Cl. 206—495 **5 Claims**



1. A package comprising:
a. a sprinkler component article, said article having an axis of rotation, and said article being generally symmetrical about a center plane passing through the center of said article and the axis of rotation thereof and having a water-receiving socket bisected by said center plane, and said article including a body having a pair of spaced-apart plate portions thereof, one located on each side of said center plane, and said plate portions each having an aperture extending therethrough, said apertures being located near the center of gravity of said article, being specially formed for mounting of said article on a card, and being disposed on opposite sides of the axis of rotation of said article,
b. a display card of an area greater than the outline configuration of said article receiving said article on one surface thereof with said plate portions disposed in spaced parallel relation thereto, and
c. fastening means for fastening said article to said card, said fastening means comprising a fastener shank extending through each aperture, said fastener shanks being engaged through said card, and enlarged generally flat head means integral with each fastener shank, said head means engaging the surface of said card opposite the surface thereof receiving said article, said fastening means securely holding said article to said card and preventing rotation of said article relative to said card.

3,963,124

WEB OF RECORD ASSEMBLIES

Paul J. Banks, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 281,591, Aug. 17, 1972, Pat. No. 3,885,334. This application Jan. 10, 1975, Ser. No. 540,043
Int. Cl.² B65D *73/00*; **G09F** *3/10*
U.S. Cl. 206—527 **23 Claims**

1. A web of record assemblies, comprising: a longitudinally extending web of record material, a web of backing material, and pressure-sensitive adhesive releasably adhering the web of record material and the web of backing material to each other, the record material web being at least partially severed along longitudinally spaced-apart transverse lines to provide a plurality of record assemblies, a plurality of groups of cuts through the record material of each record assembly, the cuts of each group extending at their one ends to a respective transverse line, and means partially severing the record material between the other ends of each group to provide a removable record part in each record assembly.

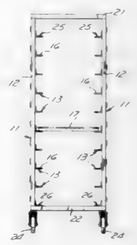


3,963,125

RACK FOR STORING TRAYS OR THE LIKE

George T. Baggott, Cleveland, Ohio, assignor to Crescent Metal Products, Inc., Cleveland, Ohio

Filed Jan. 23, 1975, Ser. No. 543,279
Int. Cl.² A47F *3/14, 47/00*
U.S. Cl. 211—126 **6 Claims**



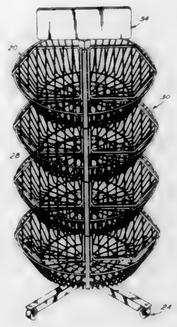
1. A rack for storing trays or the like comprising:
a. at least two laterally spaced parallel assemblies each of which comprises
1. two laterally spaced parallel posts having a plurality of longitudinally spaced slots,
2. a plurality of longitudinally extending support members interposed between the posts, each support member having at least three longitudinally extending angularly related surfaces and a ledge for supporting the side of a tray, each end of each support member having only and able to have only endwise entry and withdrawal into and out of a position of retaining engagement with one of the slots with a central one of said angularly related surfaces being received in said slot, and those of said surfaces either side of said central surface having engagement with opposite sides of said post adjacent said slot to prevent rolling of the support member about its length and out of engagement with said posts, one of the support members at each end of the assembly being secured in the slots;
b. means extending between and attached to the assemblies for positioning and securing the assemblies in a parallel spaced relationship.

3,963,126

REVOLUBLE TIERED BIN STAND

Ronald H. Taub, Highland Park, Ill., assignor to Taub Family Trust U/A, Chicago, Ill.

Filed Nov. 4, 1974, Ser. No. 520,629
Int. Cl.² A47F *3/14*
U.S. Cl. 211—131 **6 Claims**



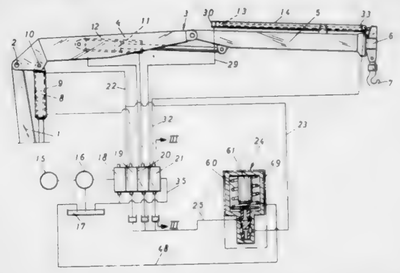
1. In a display stand including
a support pedestal,
vertical shaft means rotatably supported on said pedestal,
a series of vertically-spaced basket-like bin means, each said bin means consisting essentially of a plurality of sector-like trays disposed to abut one another laterally along radially extending side margins thereof, said trays being circumferentially arranged so as completely to encircle said shaft means,
securement means detachably fastening said bin means as a tier in a tiered array on said shaft means for rotation therewith, said securement means comprising a pair of vertically spaced probes constituting rod-like projections unitary with each tray at radially inward extremities of each tray, said projections on each tray being disposed normally to one another with a first projection extending substantially parallel to said shaft means and a second projection extending substantially perpendicular thereto, each projection being adapted to penetrate into and to seat within a corresponding aperture formed in said shaft means, thereby to secure each tray detachably thereon,
tray intercoupling means mechanically interlocking adjacent trays of each tier to one another at side margins thereof to stabilize and brace each tier of the tiered array, said intercoupling means consisting essentially of an L-shaped flange including a horizontally projecting rod-like support and an integrally formed upwardly directed area, means fastening said flange to extend laterally outwardly from a lower framing element of each one of said trays, said flange defining an upwardly opening slot receiving therewithin a lower framing element of an adjacent tray, whereby said flange serves both as an auxiliary support for an adjacent tray and as interlock means for contiguous trays of each tier;
the improvement wherein said display stand further comprises a header card and connector means for mounting said header card on said shaft means to extend upwardly therefrom,
said connector means comprising a web joined to and depending downwardly from said header card, said web being dimensioned laterally to provide a sliding fit of said web downwardly into an axial opening formed at the top of said shaft means, said web having a radially directed slot extending inwardly from an outer edge of said web, and
a web-coupling washer dimensioned to be received within said shaft means and to extend transversely thereof therewithin, said washer being formed with a radially inwardly directed slot adapted matingly to receive said web of said header card therewithin as said washer is simultaneously received within said web upon intercoupling of said web with said washer at respective slots formed therein,
thereby to stabilize said header card against axial tilt upon insertion of said web with the intercoupled said washer into said shaft means.

3,963,127

BLOCKING ARRANGEMENT IN HYDRAULICALLY OPERATED CRANES

Mats Erik Eriksson, Hudiksvall, Sweden, assignor to Hiab-Foco Aktiebolag, Hudisksvall, Sweden

Filed May 2, 1972, Ser. No. 249,564
The portion of the term of this patent subsequent to Feb. 15, 1992, has been disclaimed.
Int. Cl.² B66C *13/48, 23/06*
U.S. Cl. 212—8 R **11 Claims**



1. A hydraulically operated crane including a vertically swingable boom having an extension adapted to carry a load, a first piston-cylinder arrangement adapted to raise and lower said boom, and a further piston-cylinder arrangement adapted to project and retract said extension whereby the moment arm loading on said boom is altered principally incident to such projection and retraction of the extension;
a first control valve means for selectively operaing said first piston-cylinder arrangement;
a further control valve means for selectively operating said further piston-cylinder arrangement, and including a control member having an intermediate position in which operation of said further piston-cylinder arrangement is blocked, a first operative position on one side of said intermediate position in which said extension is moved in projecting direction, and a second operative position on the other side of said intermediate position in which said extension is moved in retracted direction; and
actuator means connected to that side of said first piston-cylinder arrangement which takes up said moment arm loading for forcing said control member from said first operative position thereof to said intermediate position thereof in response to moment arm loading exceeding a predetermined value.

3,963,128

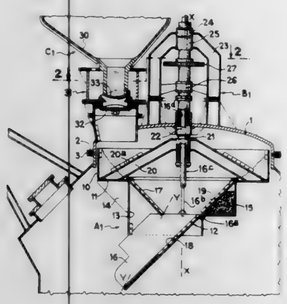
CHARGING DEVICE FOR A BLAST-FURNACE

Henry Voituriez, Dunkerque, and Rene Aymard, Grande Synthe, both of France, assignors to Union Siserugique du Nord et de l'Est de la France, Paris, France

Filed Jan. 13, 1975, Ser. No. 540,424
Claims priority, application France, Jan. 14, 1974, 74.01159
Int. Cl.² F27B *11/12*
U.S. Cl. 214—35 R **5 Claims**

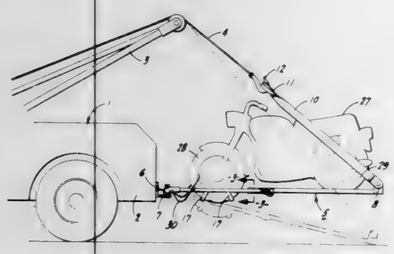
1. A charging device for a blast-furnace having a dome, comprising a frame supported by said dome outside the blast-furnace, a tubular shaft mounted with a sealed joint to extend

through the dome of the blast-furnace and carried by the frame, a rotatable spout structure disposed in the upper part of the blast-furnace and suspended from said tubular shaft through suspension arms, guide, drive and control means for said tubular shaft, disposed outside the blast-furnace, the rotatable spout structure comprising an upper portion formed by a substantially cylindrical wall whose diameter is slightly less than the diameter of the dome of the blast-furnace and substantially centered on the axis of the blast-furnace, and by a substantially horizontal planar ring, a frustoconical intermediate part extending downwardly from said planar ring and having an oblique axis and a substantially vertical generatrix,



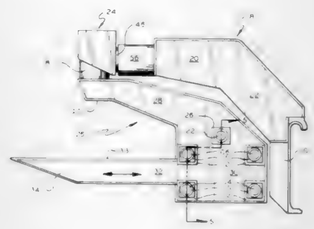
a nose mounted on said intermediate frustoconical part to pivot about a substantially horizontal axis and actuated by an actuating rod slidably mounted with a sealed joint in said shaft, and a deflector located above the substantially vertical generatrix of said frustoconical part and adapted to deflect the charge onto, and distribute it over, the opposite wall of the frustoconical part of the spout, said deflector being upwardly convex and being protected by lining or facing means of resistant material, said charging device further comprising two bins for feeding the charge to the spout structure, each of said bins comprising a discharge hopper which has a substantially vertical axis and opens into the blast-furnace in the vicinity of the periphery of the upper part of the spout structure.

3,963,129
MOTORCYCLE CARRIER
Jack E. Clayton, 2439 E. Oak St., Stockton, Calif. 95205
Filed Jan. 20, 1975, Ser. No. 542,579
Int. Cl.² B60P *3/12*; **B60R** *9/00*
U.S. Cl. 214—86 A **4 Claims**



1. A motorcycle carrier for use with a tow truck including a crane having a lift cable adapted to depend rearwardly of the truck; the carrier comprising a longitudinal boom unit projecting rearwardly from the truck, means coupling the boom unit at its front end to the truck, the boom unit being of a structural configuration to support a motorcycle thereon, and means suspending the boom unit from the lift cable; the suspension means comprising a pair of straps secured at their lower ends to the rear portion of the boom unit and thence extending upwardly therefrom for connection with the lift cable above a motorcycle supported on the boom unit; said pair of straps straddling the supported motorcycle and stabilizing the same against lateral tilting.

3,963,130
COIL UNLOADER
James J. Maynard, Marcellus, N.Y., assignor to Syracuse Supply Co., Inc., Syracuse, N.Y.
Filed May 15, 1974, Ser. No. 470,057
Int. Cl.² B66C *23/00*
U.S. Cl. 214—130 C **3 Claims**

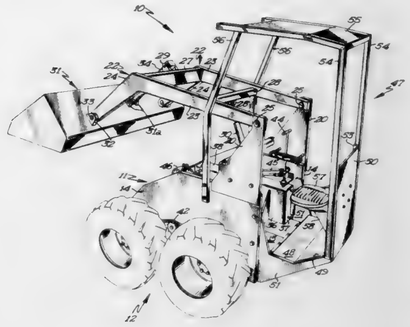


1. An unloading apparatus for use with a truck, said apparatus including:
a stationary member having two ends with one of said ends being spaced from the truck;
means connecting the other of said ends to the truck;
a junction member;
a first connecting means operably connecting said spaced end of said stationary member to said junction member;
a first rotating means forming a part of said first connecting means, whereby said junction member can be rotated relative to said stationary member;
a rotatable member;
a second connecting means operably connecting said rotatable member to said junction member and including a sleeve having two ends with one of said ends fixed to the junction member, a threaded portion on the other end of said sleeve, said threaded portion extending into said rotatable member, a nut screwed on said threaded portion, means on said rotatable member engaged by said nut whereby the sleeve is operably connected to said rotatable member; and
a second rotating means forming a part of said second connecting means, whereby said rotatable member can be rotated relative to said junction member.

3,963,131
FRONT-END SKID STEER LOADER
Donald J. Dimmer, Thief River Falls, Minn., assignor to Hydra-Mac, Inc., Thief River Falls, Minn.
Filed Jan. 6, 1975, Ser. No. 539,015
Int. Cl.² E02F *3/36*
U.S. Cl. 214—140 **4 Claims**

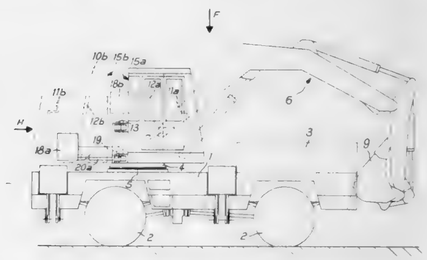
1. A compact skid steer front-end loader comprising:
a body including a pair of substantially similar body sections, each section including a vertical, substantially flat side wall, each having a vertical rear edge, a substantially flat bottom wall portion integral with and having a length corresponding to the length of the associated side wall, each section including a substantially flat front wall portion integral with the associated side wall and bottom wall portion, each front wall portion having a vertical dimension less than the vertical dimension of the associated side wall and having a width dimension corresponding to the width dimension of the associated bottom wall portion,

the bottom wall portions and front wall portions of said sections being disposed in lapped relation, and being fixedly secured together,
a pair of substantially flat, upstanding boom support plates, each affixed to one of said side walls adjacent the rear of and projecting upwardly therefrom,
a boom assembly pivotally connected to the boom support plates and projecting forwardly therefrom, an implement pivotally mounted on the forward end of said boom assembly, means for pivoting the boom assembly about its pivot axis, and means on the boom assembly for pivoting the implement relative thereto,



front and rear pairs of ground-engaging wheels supporting said body for travel over the surface of the ground, means for driving said ground-engaging wheels,
said rear ground engaging wheels being positioned forwardly of the rear vertical edge of each side wall,
a cab structure including a floor plate, a back plate integral with said floor plate and extending upwardly therefrom, means connecting said cab structure to the rear portion of said body, whereby said cab structure is positioned rearwardly of the body, and rearwardly of said ground engaging wheels and said boom support plate.

3,963,132
PUBLIC WORKS APPLIANCE
Serge P. Dufour, Dammartin-en-Goele, France, assignor to Societe Anonyme: Poclain, Le-Plessis-Belleville, France
Filed July 10, 1974, Ser. No. 487,364
Claims priority, application France, July 16, 1973, 73.26009
Int. Cl.² E02F *3/00*
U.S. Cl. 214—142 **3 Claims**



1. A public works appliance comprising: a frame which includes means for displacing the appliance, a chassis mounted on said means and a turret mounted on the chassis for rotation relative to the chassis; a working attachment and a control cab housing a single control station for selectively causing displacement of the appliance and operation of the working attachment, means for mounting said working attachment and said control cab on said turret, the control cab mounting means enabling rotation of the control cab relative to the working attachment so as to be selectively disposed in first and second positions relative thereto which positions are spaced apart from one another by substantially **180°**, a counterweight mounted on said turret, and means for shifting said counterweight between a first position offset laterally and rearwardly with respect to said cab when said cab is in its first position and a second position to permit said cab to be shifted from its first to its second position, said counterweight being disposed at the rear of said cab when said cab is in its second position, the arrangement being such that the working attachment is visible from the one face of the cab when the latter is in the first position, the field of vision from the same face of the cab in the second position thereof being unobstructed by the working attachment.

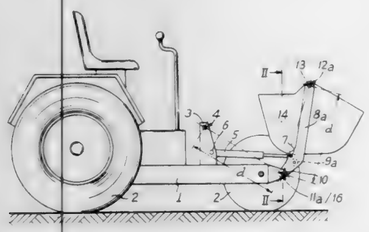
3,963,133
PUBLIC WORKS MACHINE HAVING A REMOVABLE COUNTERWEIGHT AND METHOD OF DISMANTLING SAID COUNTERWEIGHT
Andre M. Gilli, Crepy-en-Valois, France, assignor to Societe Anonyme: Poclain, Le Plessis -Belleville, France
Filed Jan. 7, 1975, Ser. No. 539,181
Claims priority, application France, Jan. 16, 1974, 74.01476
Int. Cl.² E02F *9/18*
U.S. Cl. 214—142 **5 Claims**

1. A public works machine comprising, a frame, a first jib element movably mounted on said frame, means for varying the position of said first jib element with respect to the frame, said jib element extending from one side of said frame, a beam element mounted on said first jib element for movement with respect to said first jib element, means for moving said beam element with respect to said jib element, a counterweight associated with said frame on the side thereof opposite said first jib element, an auxiliary jib element pivotally mounted on said frame adjacent said counterweight; a first connection member of constant length connected between said first jib element and said auxiliary jib whereby movement of said first jib is followed by movement of said auxiliary jib; said auxiliary jib including means for guiding a flexible element, said guiding means being located on the auxiliary jib above the counterweight, and a flexible connection element operatively connected between the counterweight and said beam element and guided on said auxiliary jib by said guide means, whereby said counterweight will move in response to movement of said jib and beam elements by their associated moving means.

3,963,134
MACHINE HAVING A DUAL FUNCTION JIB
Jean E. Leroux, Le Plessis-Belleville, France, assignor to Poclain, Le Plessis-Belleville, France
Filed Apr. 3, 1975, Ser. No. 564,655
Claims priority, application France, Apr. 22, 1974, 74.13944
Int. Cl.² E02F *3/81*
U.S. Cl. 214—145 R **3 Claims**

1. A machine comprising: a frame; a boom; two distinct hinge locations arranged on and fixed relative to the frame for

coupling the boom to the frame; two couplings provided on the boom which correspond one with one of the hinge locations and the execution of one specific operation, and the other with the other hinge location and the execution of an-



other specific operation; said couplings each defining a hinge axis, the separation of the hinge axes being equal to the distance between the hinge locations; and means for adjustment of the relative position of this boom with respect to this frame.

3,963,135

METHOD OF SUBORDINATING THE ORIENTATION OF A GRAB ON A PUBLIC WORKS MACHINE TO THE ROTATION OF THE TURREST OF THIS MACHINE AND TO THE MACHINE

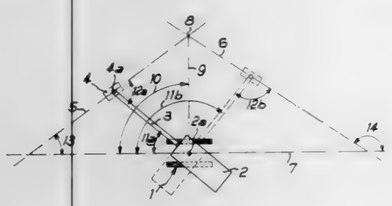
Yves G. Coeurderoy, Lagny-le-Sec, France, assignor to Societe Anonyme: Poclain, Le-Plessis-Belleville, France

Filed Nov. 12, 1974, Ser. No. 523,148

Claims priority, application France, Nov. 21, 1973, 73.41494

Int. Cl.² B65G *47/90*

U.S. Cl. 214—151 **8 Claims**



1. A method of subordinating the orientation of a grab rotatably mounted at the end of a boom supported on the rotatable turret of a Public Works machine, to the rotation of said turret, as a function of the relative locations of loading and unloading zones of said grab and of the axis of rotation of said turret on the frame of said machine, the method being intended to enable presentation of the grab at the said two zones in constant orientations, the method comprising:

choosing three directions, the first direction being determined by the desired orientation of said grab in said loading zone, the second direction being determined by the desired orientation of said grab in said unloading zone, and the third direction passing through said axis of rotation of said turret,

measuring the angle of rotation of the turret starting from said third direction and comparing it with the angle between said third direction and a straight line passing through the point of intersection of said first and second directions and through said axis of rotation of said turret,

determining the angle which said grab must take up with respect to said boom to remain in one or other of said first and second directions,

measuring the angle which said grab actually makes with said boom, comparing it with said determined angle, and controlling the rotation of said grab with respect to said boom in dependence on said comparison to bring said measured angle to equality with said determined angle.

6. In a Public Works machine for transferring material from a loading zone associated with a first direction to an unloading zone associated with a second direction, and comprising a frame, a turret mounted for rotation on said frame, a boom supported on said turret and carrying at its free end a grab which is mounted to rotate relative thereto, drive means for rotating said turret with respect to said frame and drive means for rotating said grab with respect to said boom, the improvement comprising:

a first pick-up means for generating a signal corresponding to the angle of rotation of said turret with respect to a third direction chosen arbitrarily in the working plane of said machine and passing through the axis of rotation of said turret,

means for generating a signal corresponding to the value of the angle between said third direction and a straight line passing through the point of intersection of said first and second directions and said axis of rotation of said turret,

a first element for comparing said signal from said first pick-up means with said generated signal and being adapted to emit selectively one of two signals as a result of said comparison,

means for generating two signals of predetermined value, the first signal corresponding to the desired angle of orientation of said grab with respect to said boom at said loading zone, the second signal corresponding to the desired angle of orientation of said grab with respect to said boom at said unloading zone,

a selector connected to said two signal generating means for emitting a signal selected from said two signals as a function of the value of the signal which it receives from said first comparator element,

a second pick-up means for emitting a signal corresponding to the angle of orientation of said grab with respect to said boom,

a second element for comparing the signal from said selector and said second pick-up means and emitting a signal for controlling said drive means for rotating said grab with respect to said boom so as to nullify the difference between the two signals which said second element compares.

3,963,136

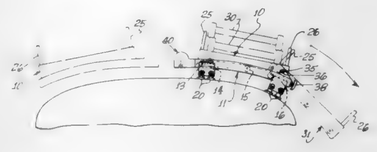
RETRACTABLE LADDER RACK

Theodore J. Spanke, 1834 Dracena, Bakersfield, Calif. 93304

Filed Jan. 10, 1975, Ser. No. 540,153

Int. Cl.² B60R *9/00*

U.S. Cl. 214—450 **16 Claims**



1. A retractable ladder rack assembly for use on the top of vehicles, said rack assembly comprising:

a curved rail comprising a C-shaped channel member having a first end and a second open end;

means for attaching said channel member to the top of the vehicle;

at least three anti-friction members adapted to ride in said channel and positioned so that said anti-friction members are within said channel member when said rack is in a retracted position and so that at least two but not all of said anti-friction members remain within said channel member when said rack is in an extended configuration, the members remaining within said channel being retained members, said retained members being in close proximity to each other;

a rack supported by said anti-friction members and said channel member to permit movement along said channel member from the first end thereof to and partially past the second end thereof when said rack is moved from its retracted position to its extended configuration; and

spring means attached to said rack by flexible cable means positioned within said channel and urging said rack towards the first end of said channel member.

3,963,137

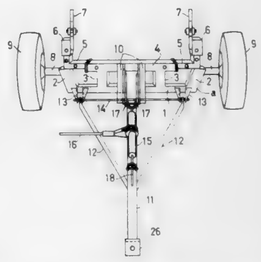
VEHICLE FOR HANDLING MULTI-FURROW PLOUGH

William J. Chayer, Box 99, Cottam, Ontario, Canada

Filed Apr. 21, 1975, Ser. No. 569,775

Int. Cl.² A01B *59/043*

U.S. Cl. 214—501 **4 Claims**



1. A vehicle for handling and transporting multi-furrow ploughs constructed mainly of rectangular box cross-section steel, comprising a main body consisting of a horizontal base beam having an upwardly bent section at a diverging angle at each end thereof, an upper shorter beam spaced from and parallel to said base beam, attached to said base beam by a plurality of upright stays; a rubber tired wheel attached to each of said upwardly bent base sections; an L shaped member sliding in or out of each end of said upper beam; corresponding spaced holes in said upper beam and its contained L shaped member for locking said L shaped member in a required position by passing a pin through lined up holes; a short section sliding telescopically over the top of the upright of each of said L shaped members; corresponding holes in the upright part of the L and the telescopic sections sliding upon it, for locking said telescopic section at the required height by passing a pin through lined up holes; a hook of heavy steel plate rigidly attached to one side of each of said telescopic sections, said hook being provided with a two walled swivably attached snap having a semi-circular cavity in the upper edge thereof in its open position, said snap being capable of folding backwardly to enclose the hook and any item hooked therein; means for drawing the vehicle comprising an elongated arm by means of which the vehicle is drawn having a diverging knee brace extending from each side thereof, said arm and braces being centrally located in relation to said base beam and swivably attached to a bracket consisting of two spaced angle irons attached to said main body; means for lowering and raising the said hooks comprising a ratchet operated cylinder tapped on the inside and containing a screw in each end thereof, said screws being opposite thread to each other, said cylinder being located on top of said arm and swivably attached by one end thereto, the other end of said cylinder being swivably attached to a pair of spaced plates slidably located within said angle iron bracket, and said angle irons of the bracket and contained plates being provided with corresponding holes by means of which the cylinder attachment at the main body can be determined by lining up said bracket and plate holes and passing a pin through them; and the rotation of said ratchet in one direction expands the distance between the ends of the screws so that the said hooks are lowered towards the ground to pick up the free end of a multi-furrowed plough, while the rotation of said ratchet in the opposite direction lifts up the hooks and their captured free end of the plough to make the vehicle and the plough mobile.

3,963,138

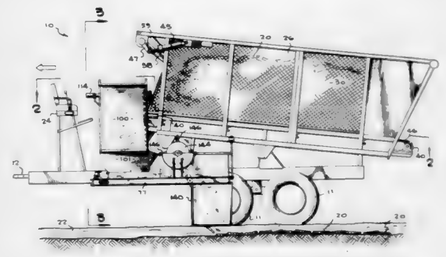
CANE PLANTER

Larry G. Fowler, Belle Glade, Fla., assignor to Sugar Cane Growers Cooperative of Florida, Belle Glade, Fla.

Filed Mar. 10, 1975, Ser. No. 557,169

Int. Cl.² B60P *1/38*

U.S. Cl. 214—519 **8 Claims**



1. A field operated cane planter for depositing cane seed piece segments in first and second parallel furrows, said planter comprising a movable vehicle, storage bin means on said vehicle for holding a mass of cane segments, removal conveyor means for continuously removing cane segments from said storage bin means, distribution conveyor means extending transversely of said vehicle positioned adjacent said storage bin means for receiving cane segments from said removal conveyor means and operable for conveying said cane segments to the sides of said vehicle, first and second dropping conveyors respectively extending along opposite sides of said vehicle for receiving cane segments from said distribution conveyor means and depositiong the cane segments in one of said furrows and drop guide means associated with each of said dropping conveyor means for guiding said cane segments as they fall from the dropping conveyor means into the furrows to cause the cane segments to be oriented generally parallel to the furrows, and distribution conveyor means comprising first and second transversely aligned chain conveyors positioned adjacent the front of said bin means and each including a generally horizontal conveyor leg defining its inner extent from which it feeds outwardly and an upwardly inclined conveyor leg defining its outer extent and first and second inclined chute slide means for guiding cane segments from the outer ends of said inclined conveyor legs onto said dropping conveyors.

3,963,139

TAMPER-INDICATING CLOSURE COMBINATION

Peter Paul Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Aug. 22, 1975, Ser. No. 606,889

Int. Cl.² B65D *55/02, 85/56;* **A61J** *1/00*

U.S. Cl. 215—216 **14 Claims**

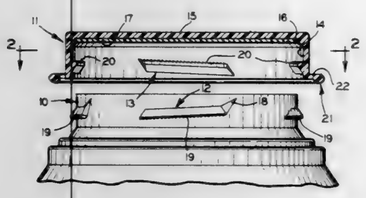
1. A tamper-indicating closure combination for a container having a neck, said combination comprising

a. an inverted generally cup-shaped cap having a flexible skirt that is adapted to fit over said container neck and close the same,

b. cooperating threads on the inner side of said cap skirt and the exterior of said container neck,

c. said cap and container neck having opposed cooperating ratchet teeth on adjacent surfaces which are engaged when said cap is rotated onto said neck thereby preventing retrograde rotation of said cap relative to said neck

without disengagement of said cooperating ratchet teeth, and



d. a manually graspable puller permanently connected to said cap at one side thereof for pulling said cap skirt upwardly and outwardly for flexing said cap skirt in order to disengage said cooperating ratchet teeth and thereby to remove said cap.

3,963,140

BOTTLE CAPS

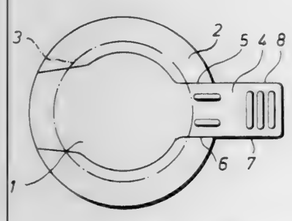
Sune Harding, Partille, Sweden, assignor to AB Wicanders Korkfabriker, Alvangen, Sweden

Filed Dec. 27, 1974, Ser. No. 536,719

Claims priority, application Sweden, May 10, 1974, 7406245

Int. Cl.² B65D *41/42*

U.S. Cl. 215—254 **6 Claims**



1. A cap for a container having a neck defining an opening, said cap comprising an upper wall to overlie the opening and having a peripherally depending skirt to engage the neck to secure the cap in position over the opening and a tear tab projecting radially from said skirt, and score lines on said wall defining a tear portion, said score lines consisting of two weakening lines traversing the cap at least one of which extends across opposite portions of said skirt substantially in line with an edge of said tear tab, each of said weakening lines on said upper wall being arranged substantially adjacent and parallel to the boundary between said upper wall and the skirt, and a peripheral sealing element bonded to the inside surface of the wall and covering said inside surface of the wall along the length of said score lines.

3,963,141

CLOSURE CAP WITH SELF-OPENING MEANS

Ming-Jen Liu, 152, Wen Wu Erh St., Chien Chin District, Kao Hsiung, China /Taiwan

Filed May 21, 1975, Ser. No. 579,439

Int. Cl.² B65D *41/12*

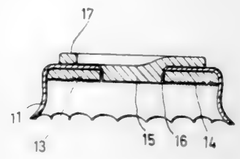
U.S. Cl. 215—254 **3 Claims**

1. A self-opening closure cap for a container comprising:

a metal crown cap body having a hole at the central portion thereof;

a seal placed under said cap body for creating a fluid-tight seal between said cap body and said container, and having a core portion in coincidence with said hole of said cap body; and

a ring shaped portion integral with said seal placed above said cap body and connected to said core portion of said seal through said hole of said cap body, said core portion



being severable from said seal upon the application of a pulling force on said ring-shaped portion to thereby expose the contents of said container through said hole.

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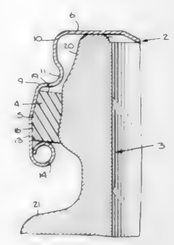
SIDESEAL CLOSURE CAP AND SEALED PACKAGE

Alexander W. Hart, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Continuation of Ser. No. 432,079, Jan. 9, 1974, abandoned. This application June 2, 1975, Ser. No. 582,650

Int. Cl.² B65D *41/22*

U.S. Cl. 215—346 **5 Claims**



1. A closure cap having a cover portion and a generally cylindrical depending skirt portion, said skirt portion having a step in its top portion with a vertical upper portion and a horizontal shoulder joining at an annular inwardly directed bead of U-shaped cross-section with the bead being the radially innermost portion of said skirt portion and extending radially inwardly of said step vertical portion, the lower edge of said skirt portion comprising an inwardly rolled second bead, said beads being connected by a V-shaped portion of said skirt to form a gasket receiving channel, an annular cut gasket positioned within said gasket receiving channel having a rectangular cross-section with the cross-sectional depth exceeding the cross-sectional width, and the radially inward edges of said beads extending more than half way inwardly of the gasket width.

3,963,143

CONTAINER INCLUDING AN ALUMINUM PANEL HAVING A PORTION REMOVABLE BY TEARING

William Albert Anderson, Pittsburgh; Arvil Burke McKee, Lower Burrell, and John Knox McBride, New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed June 30, 1975, Ser. No. 591,700

Int. Cl.² B65D *25/34*

U.S. Cl. 220—64 **24 Claims**

1. In a hermetically sealed container including an aluminum panel, the improvement wherein said panel is composed of a composite aluminum alloy sheet comprising a core and a cladding layer adapted to face the container contents, said core being composed of an aluminum base alloy consisting essentially of 1 to 7 percent total of one or more elements

selected from the group consisting of up to 3% copper, up to 4% magnesium and up to 1.5% manganese, the balance being essentially aluminum and incidental elements and impurities, said cladding alloy consisting essentially of less that 1% zinc, balance essentially aluminum and incidental elements and impurities, the solution potential of the core and cladding being such that the cladding is from 15 to 125 millivolts more anodic than the core.

3,963,144

TRANSPORT CONTAINER FOR DANGEROUS LIQUIDS

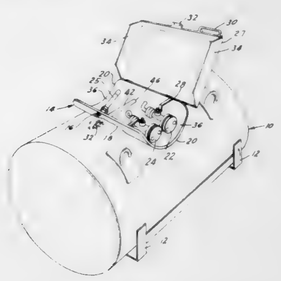
Ernst Berwald, Bergkamen-Heil, Germany, assignor to Schering Aktiengesellschat, Berlin and Bergkamen, Germany

Filed Dec. 12, 1974, Ser. No. 532,004

Claims priority, application Germany, Dec. 20, 1973, 2363471

Int. Cl.² B65D *25/00*

U.S. Cl. 220—85 P **4 Claims**



1. In a generally cylindrical transportation container for dangerous liquids having an upper portion and charging and emptying fittings on said upper portion, an elongated upwardly opening semi-cylindrical protective shell for the fittings positioned chordally on said container with its longitudinal axis transverse to the longitudinal central axis of said container; said shell being generally rectangular in plan and mounted on said upper end portion of said container with its central portion intercepting the periphery of the container and being located within the container; said shell having a pair of exposed end portions which extend outwardly of and beyond the periphery of said container, said end portions being located on opposite sides of said longitudinal central axis of said container in spaced parallel relation to each other and being opened to allow drainage of liquid from the shell; said fittings being positioned in said shell.

3,963,145

ANTI-BURGLARY CHEMICAL DISPENSING DEVICE

Charles R. Fegley, 1606 Frush Valley Road, Laureldale, Pa. 19605, and Werner F. Esselunn, 12 Larchwood Road, Wyomissing, Pa. 19610

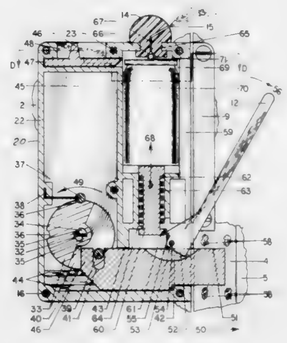
Filed Dec. 6, 1974, Ser. No. 530,131

The portion of the term of this patent subsequent to Apr. 23, 1991, has been disclaimed.

Int. Cl.² B65D *83/14*; **G08B** *15/02*

U.S. Cl. 222—5 **10 Claims**

1. A chemical dispensing anti-burglar device for use with a pressurized container, the device comprising: a body member; means for slideably supporting said pressurized container in said body member; a fluid passageway extending through said body member having an entry section; means for causing the discharge of fluid from said container into said entry section of said fluid passageway; a spring actuating member supported in said body member and arranged to actuate said discharging means upon movement of said slideably supported pressurized container when said biased actuating member is released; means for releasably retaining said biased actuating member in a cocked position; said retaining means including a trigger element; said trigger is element being mounted for movement between an actuation position and a release position; said trigger element in said actuation position being in engagement with said biased actuating member to retain said biased actuating member in a cocked position; said trigger element in said release position allowing said biased actuating member to actuate said discharging through movement of said pressurized container whereby the means for discharging fluid causes discharge; means for locking said trigger element in engagement with said biased actuating member; said locking means being mounted for movement between a locked position and



a release position; said locking means in said locked position securing said trigger element in engagement with said biased actuating member; and said locking means in its release position permitting said trigger element to move to its release position; and means external to said body member for releasably retaining said trigger element in its actuation position; said external retaining means including a latch plate mounted separate from said body member; said body member being movable between a first position in which said external retaining means retains said trigger element in its actuation position; and a second position in which said external retaining means allows said trigger element to move to its release position.

3,963,146

LIQUID-DISPENSING INSTALLATION

Stig Uno Ingvar Esbjornsson, Malmo, Sweden, assignor to Aktiebolaget Ljungmans Verkstader, Malmo, Sweden

Filed June 5, 1974, Ser. No. 476,754

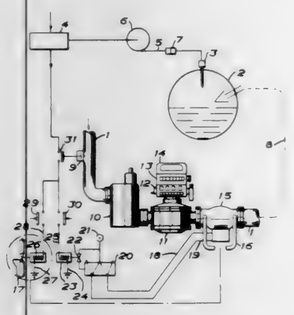
Claims priority, application Sweden, June 5, 1973, 7307889

Int. Cl.² B67D *5/28*

U.S. Cl. 222—59 **7 Claims**

1. An installation for dispensing liquid, such as vehicle fuel, heating oil etc, from a liquid-delivering container to a liquid-receiving container, such as the tank of a vehicle, the oil tank of a building etc, conduit means for communication between said containers including means for air separation, means for metering the liquid volume dispensed, means for interrupting the dispensing operation, having first valve means in said conduit means and second valve means in a conduit by-passing said first valve means, control means responsive to the pressure in the conduit means upstream of said first valve means for closing said first and second valve means when said

pressure sinks below a predetermined value, and for first opening said second valve means and not said first valve means when said pressure rises above said predetermined value after said pressure has been lower than said value.

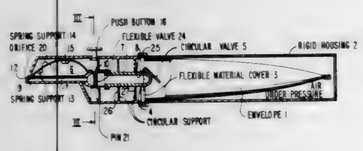


3,963,147

DISPENSER FOR AMORPHOUS MATERIAL

John Lawrence Waters, Los Angeles, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 8, 1975, Ser. No. 539,449
Int. Cl.² B65D *35/28, 35/48*
U.S. Cl. 222—95 **2 Claims**



1. A dispenser for substantially amorphous material stored in a flexible envelope, said dispenser comprising

a substantially rigid housing accommodating a flexible envelope of material, said housing having air under pressure therein and having an open end coincident with the open end of the envelope of material and a housing cover of substantially flexible material enclosing the open end of the housing and having an opening formed through the housing cover and a valve for opening and closing the opening to permit the passage of material from the envelope; and

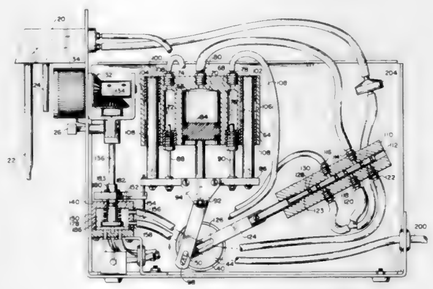
a dispenser unit removably affixed to the housing at the cover thereof and having a substantially tubular member extending at one end into the envelope of material via the opening in the cover of the housing and having valve means in the area of the other end of the tubular member and intermediate both ends, part of said tubular member comprising substantially flexible material, and said valve means comprising substantially arcuate spring means in the dispenser unit having one end in operative proximity with the other end of the tubular member, guide means in the dispenser unit for guiding movement of the spring means and a push-button movably mounted in the dispenser unit and affixed at one end to the other end of the spring means in operative proximity with the flexible material part of the tubular member and extending out of the dispenser unit at the other end of the push-button whereby spring action of the spring means maintains the one end of the spring means in blocking position closing the other end of the tubular member and depression of the push-button moves the spring means in the guide means in a manner whereby the one end of the spring means is moved to open position opening the other end of the tubular member.

3,963,148

APPARATUS FOR DRAWING, MEASURING AND DISCHARGING PROPORTIONAL AMOUNTS OF FLUID

Oscar Proni, Hollywood; Loran Vinson Melnick, and William Taylor Henderson, both of Miami, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 432,348, Jan. 10, 1974, abandoned. This application Mar. 12, 1975, Ser. No. 557,681
Int. Cl.² B67D *5/60*
U.S. Cl. 222—132 **27 Claims**



1. An automatic device for drawing and diluting a first sample with a diluent wherein the sample and diluent are mixed in a precise ratio, including in combination,

a diluent chamber having a first reciprocable plunger therein,

a first sample chamber having a second reciprocable plunger therein,

coupling means coupled to said first and second plungers for moving said plungers an equal distance in said chambers, drive means including a motor having a rotating drive, cam means secured to said motor rotating drive and rotating therewith, said cam means having an eccentric thereon coupled to said coupling means for reciprocating said coupling means between first and second positions whereby said plungers are reciprocally moved equal distances,

said coupling means including eccentric follower means for following rotation of said eccentric, said eccentric follower means reciprocating said coupling means during first particular portions of each rotation of said cam and said eccentric for moving said coupling means to one of said first and second positions, said coupling means maintaining said first and second positions during second particular portions of each rotation of said cam and said eccentric,

said first plunger when moved in said diluent chamber displacing a first volume therein, said second plunger when moved in said sample chamber displacing a second volume therein, said first and second volumes having a fixed precise ratio with respect to one another for any equal distance moved by said first and second plungers in said chambers,

a valve assembly having a valve chamber coupled to said diluent chamber,

diluent intake passage means and diluent discharge passage means coupled to said valve assembly,

said valve assembly including a valve member shiftable between a first position wherein said valve chamber couples said diluent intake passage means to said diluent chamber, and a second position wherein valve chamber couples said diluent discharge passage means to said diluent chamber, and

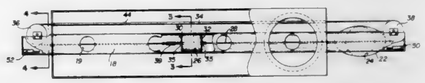
shifting means coupling said valve member to said eccentric for shifting said valve member between said first and second positions during said second particular portions of each rotation of said cam and eccentric.

3,963,149

GRANULAR MATERIAL CONVEYOR

Arthur L. Fassauer, Canyon, Tex., assignor to Fassauer Industries, Inc., Canyon, Tex.

Filed Jan. 31, 1975, Ser. No. 545,809
Int. Cl.² B67D *5/52*
U.S. Cl. 222—142 **11 Claims**



1. An apparatus for combining programmed amounts of different materials comprising:

a tube member adapted to receive the different materials to be combined, said tube member having an opening for receiving each different material and at least one opening for discharging the materials;

at least one metering dispensers each housing a different material and having a discharge opening for transmitting the material contained therein into said tube member;

a piston fitted within said tube member having an outer contour substantially conforming to the inner contour of said tube member;

a first line having one end attached to said piston and the other end attached to a first means for drawing said first line whereby said piston is moved within said tube toward said first drawing means;

a second line having one end attached to said piston and the other end attached to a second means for drawing said second line toward said second drawing means, said second drawing means being at the opposite end of said tube member from said first drawing means whereby said piston may be reciprocated within said tube member by alternately activating said first and said second drawing means; and

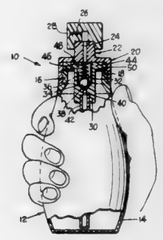
means for selectively operating said metering dispensers to dispense a preselected amount of each different material into said tube member ahead of the movement of said piston such that said different materials deposited within said tube member are combined and removed from said tube member.

3,963,150

PUFF-DISCHARGE SQUEEZE BOTTLE

Wolf Steiman, and Steven W. Beres, both of Bridgeport, Conn., assignors to VCA Corporation, Greenwich, Conn.

Filed May 21, 1974, Ser. No. 471,866
Int. Cl.² B05B *11/04*
U.S. Cl. 222—211 **5 Claims**



1. A squeeze bottle aerosol dispenser comprising, in combination:

a. a container having a neck portion and a movable wall portion adapted to be squeezed by the hand of the user,

b. a cap on said neck portion having an outwardly directed discharge nozzle with a hollow bore,

c. a hollow valve housing extending into said neck portion and having an annular flange supported by the rim of said neck portion and having an outlet communicating with said bore,

d. a spring-charged check valve means including an annular valve seat disposed in the hollow of the housing, a ball movable in the housing and engageable with the seat so as to seal against the same, and a spring carried in the housing normally biasing the ball in engagement with the seat, and

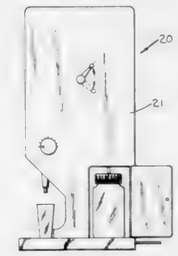
e. venting valve means carried by the container and communicating on the interior thereof for introducing air into the latter and relieving vacuum buildup therein following a discharge of the dispenser and release of the container movable wall, said venting valve means including a passage in said annular flange communicating with the interior of the container and with the hollow of the housing, and an annular, resilient, yieldable flap having its periphery gripped between said rim and the underside of said flange and normally covering one end of the passage but yielding in response to pressure buildup therein.

3,963,151

FLUID DISPENSING SYSTEM

Howard Lincoln North, Jr., Newfoundland, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Aug. 5, 1974, Ser. No. 492,031
Int. Cl.² G01F *11/06*
U.S. Cl. 222—309 **4 Claims**



1. A fluid dispensing system for accurately dispensing precise aliquots of fluid rapidly and efficiently comprising:

a pump adapted to be connected to a reservoir of fluid for transferring precise aliquots of fluid from the reservoir to an outlet orifice for dispensing fluid from the system upon demand;

an inlet tube having a bore therethrough and one open end for fluid communication with a reservoir and the other open end in fluid communication with the pump;

an outlet tube having a bore therethrough and one open end forming the outlet orifice for the system and the other open end in fluid communication with the pump;

control means connected to the pump to precisely regulate the amount of fluid in an aliquot transferred from a reservoir through the inlet tube, pump and outlet tube to the outlet orifice during an operating cycle of the pump;

a valve assembly in the system associated with the inlet and outlet tubes and the pump so as to normally close the bores in the tubes and to automatically shift to open the inlet tube while maintaining the closed outlet tube when the pump draws a precise aliquot from a reservoir, and to automatically close the bore of the inlet tube while opening the bore of the outlet tube when the pump dispenses the precise aliquot through the outlet orifice;

the inlet and outlet tubes being flexible elongated members; and

the valve assembly including a supporting member, a pair of pins extending laterally from the supporting member, the inlet tube resting on one of the pins and the outlet tube resting on the other of the pins, a cam arm pivotally mounted on the support and positioned so as to normally compress the inlet and outlet tubes, the arm being slidable and pivotable so as to be moved to a first acting position wherein the inlet tube is open to permit fluid to flow therethrough while the outlet tube is retained in the closed position and the arm being movable to a second acting position where the inlet tube is retained in closed position and the outlet tube is open to permit fluid to flow therethrough.

3,963,152

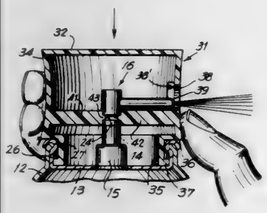
CHILDPROOF CAP FOR AEROSOL DISPENSER

Emanuel Landsman, 245 N. Broadway, Yonkers, N.Y. 10601, and Irving Landsman, 3530 Henry Hudson Parkway, Riverdale, N.Y. 10463

Continuation-in-part of Ser. No. 537,913, Jan. 2, 1975. This application Mar. 10, 1975, Ser. No. 557,229

Int. Cl.² B65D *83/14*

U.S. Cl. 222—402.13 **5 Claims**



1. An aerosol bomb comprisng a pressurized container having a top end wall, said end wall having a longitudinally upstanding annular rim with an annular retaining flange at its free end and having a nozzle extending axially from said end wall and a normally closed valve actuated by inward movement of said nozzle, said nozzle having a portion extending axially from said valve and a portion extending substantially radially from the outer end of said axial portion, said radial portion defining a discharge outlet, a cap having a continuous annular side wall, means at the lower end of said side wall interengaging with said retaining flange for retention of said cap on said rim yet permitting limited relative longitudinal movement between said cap and said rim and nozzle a predetermined distance between a retracted dispensing position and an extending nondispensing position, and inwardly movable actuator means carried by said cap to grip said axial nozzle portion for axial inward movement of said nozzle and actuation of said valve only when said cap is moved from said extended position to said retracted position and said inwardly movable actuator means are actuated, said cap having means in the side wall thereof to permit discharge therethrough of the container contents through the nozzle discharge outlet when the valve is actuated.

3,963,153

LEVER ACTUATED CAPTIVE CAN CLOSURE

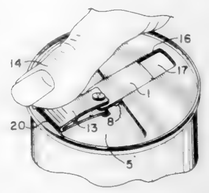
Herbert Arthur Bly, 18 Woodland Drive, East Windsor, N.J. 08520

Filed Feb. 8, 1974, Ser. No. 440,739

Int. Cl.² B65D *47/10*

U.S. Cl. 222—541 **5 Claims**

1. An easy-opening closure for containers comprising a lever member with an integral spring fulcrum member, said lever member affixed to one end of a sliding closure member formed as an integral part of the container lid and retained therein before, during and after opening by guide grooves engaging the lateral edges of said closure member; a depressed pivot notch in the container lid positioned to receive and engage the free end of said spring fulcrum member when the lever-and-fulcrum is raised; a vent at the end of the closure



member attached to the lever member, formed when the lever-and-fulcrum is raised, breaking the closure seal, said elements forming a lever and fulcrum assembly attached to the vented, sliding closure, for the purpose of applying lateral force to displace said closure upon application of downward pressure on the lever face.

3,963,154

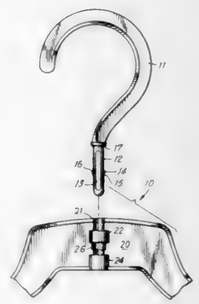
GARMENT HANGER CONSTRUCTION

Michel S. Schwartz, Great Neck, N.Y., and William Blasnik, Demarest, N.J., assignors to Lerner Manufacturing, Inc., Melville, N.Y.

Filed Apr. 3, 1975, Ser. No. 564,957

Int. Cl.² A47J *51/098*

U.S. Cl. 223—85 **9 Claims**



1. A garment hanger construction comprising in combination a hook having an elongated shaft including flexible projecting flanges substantially intermediate the lengthwise extent of said shaft, said flanges being collapsibly flexed together in response to a laterally directed force applied thereto, and a hanger body including a bearing sleeve dimensioned to receive said shaft, said bearing sleeve including recess means disposed intermediate the lengthwise extent of said bearing for nesting said flanges so that portions of said bearing sleeve rotatably secure both lengthwise portions of said elongated shaft adjacent said flanges to thereby journal said elongated shaft in said bearing sleeve.

3,963,155

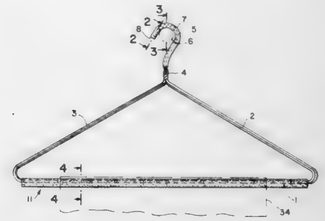
DUAL GARMENT HANGERS

Austin W. Bish, Sherwood Park, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Continuation-in-part of Ser. No. 428,703, Dec. 27, 1975, abandoned. This application Feb. 12, 1975, Ser. No. 549,345

Int. Cl.² A47J *51/094*

U.S. Cl. 223—88 **2 Claims**



1. A garment hanger, which comprises:

a. two wires each forming a closed configuration having a longitudinally extending lower portion, two inclined portions each having a lower end connected opposite ends of said lower portion, the upper ends of said inclined portions being secured together and bent to form a hook;

b. a tubular resilient member closed at one end thereof fitting over said hook ends;

c. an inverted elongated U-shaped member having a top center portion, a pair of downwardly extending legs and an interior surface of said center portion having a pair of parallel elongated groves therein, said lower portions inserted into said groves therein, said lower portions inserting into said groves; and

d. flexible flange members affixed perpendicularly onto said legs, said flange members extending inwardly and overlapping each other.

3,963,156

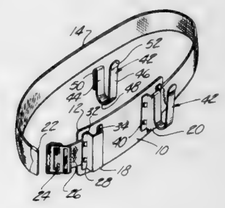
GUN REST CRADLE

Frederick W. Perrin, 6161 Engleman, Warren, Mich. 48091

Filed Apr. 1, 1974, Ser. No. 457,104

Int. Cl.² F41C *33/00*

U.S. Cl. 224—1 R **1 Claim**



1. A gun rest cradle adapted for support about the waist of a wearer, said cradle comprising a substantially rectangular central rigid plate member, a pliable dorsal strap, fastening means at each end of said strap, a pair of substantially U-shaped hook members, means for removably mounting said hook members on said plate member for receiving a stock of a gun in said hook members for supporting said gun at two separated engagement locations along the length of said gun stock, said detachable fastening means comprising a buckle fastened to an end of said plate member and means at the corresponding end of said strap for connection with the buckle, said means for removably mounting said hook members on said plate member comprising a pair of spaced apart gusset members affixed in substantially parallel relationship to said plate member proximate each end thereof, each of said gusset members being in the form of an elongated open U-shaped channel having a substantially flat bottom section and a pair of substantially parallel wall portions each provided with an outwardly extending flange portion for fastening to said plate member wherein one end of said dorsal strap is sandwiched between one of said flange portions and said plate member, said U-shaped hook members each being made of a substantially rigid strip of metal bent over in a generally U-shaped configuration defining a pair of spaced apart substantially parallel sidewalls joined together by a curvilinear section across one longitudinal end of each sidewall and wherein one of said sidewalls includes an integral projecting portion at its other longitudinal end bent substantially at 180° relative to said sidewall and adapted for hooking engagement over either of the open ends of said gusset members by inserting the projecting portion into the U-shaped channel of said gusset members wherein the longitudinal length of said U-shaped channel of said gusset members is at least as long as the longitudinal length of said projecting portion thereby preventing rotation of said hook members in said gusset members, whereby said hook members can be removably mounted in either end of said gusset members and whereby different sized hook members are attachable to said gusset members to accommodate different sized guns, the other sidewall of said hook members having an end portion bent at a diverging angle for facilitating the introduction of said gun stock between said sidewalls and wherein said U-shaped hook members are provided with a resilient and soft surface covering at the area in engagement with said gun stock so as to protect said gun stock when said gun is mounted in said gun rest cradle.

3,963,157

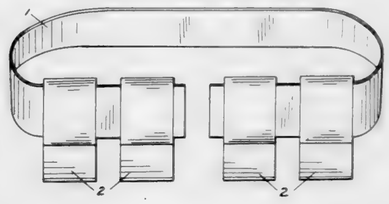
BALL BELT

Nancy Rosbottom Truax, 6708 Glenhurst St., Dallas, Tex. 75240, and Margaret Ann Rosbottom, 731 Pierremont Road, Shreveport, La. 71106

Filed Sept. 25, 1974, Ser. No. 509,104

Int. Cl.² A45C *11/00*

U.S. Cl. 224—5 D **1 Claim**



1. A ball belt to be worn around a users's waist or hips comprising:

a. a length of stretch fabric forming a waist encircling supporter band;

b. at least one holder having two flat loops of stretch fabric, said loops each forming adjacent, double openings having essentially parallel axes, one of said openings removably and adjustably receiving said supporter band, and the other of said openings resiliently and selectively receiving and supporting a ball.

3,963,158

COMBINED EXTENSIBLE CARRIER AND ELECTRICAL WIRE SHEATH

Alain Jean-Marie Clenet, Ventura, Calif., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 16, 1974, Ser. No. 498,044

Int. Cl.² B62J *7/04*

U.S. Cl. 224—31 **2 Claims**

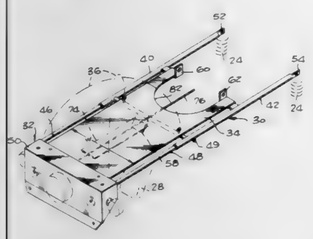
1. In combination with a motorcycle having a seat, the improvement of a carrier comprising:

a front frame section fastened to said motorcycle and lying at the rear of the seat;

a rear frame section positioned behind said front section and slideable forwardly and rearwardly toward and away from said front section;

at least one electric light mounted on said rear frame section for energization from wires leading from the motorcycle;

retainer means for retaining said rear frame means at forward and rearward positions with respect to said front frame section; and



sheet means of tough flexible material having a front portion attached to said front frame section and a rear portion attached to said rear frame section, whereby the sheet means provides a cargo supporting platform when the rear frame section is moved rearwardly and yet the sheet means enables the rear frame section to be moved forwardly to optimize motorcycle handling characteristics;

said flexible sheet means defining a flexible sheath, for holding said wires leading to said light at both said forward and rearward positions of said rear frame section.

3,963,159

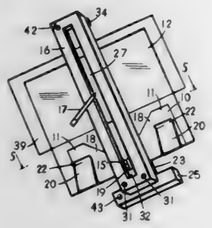
GLASS CUTTING APPARATUS

Lester S. Krulwich, 241 Central Park West, New York, N.Y. 10024

Filed July 16, 1975, Ser. No. 596,390

Int. Cl.² B26F *3/00*

U.S. Cl. 225—96.5 **10 Claims**



1. A glass cutting apparatus comprising two plates adjacent to each other and means attaching said plates to an extension piece so that each plate is allowed to swing up and back from the line formed by the adjacent plate edges, said extension piece having a front section with means mounting a bar thereon, said bar containing an elongated slot extending rearwardly from in front of said plates to substantially the opposite end of the bar, said plates being spaced from and opposing said bar and protruding beyond the sides of the bar with the adjacent edges of said plates being substantially parallel to said bar and said plates having means for releasably clamping a sheet of glass against said plates with the front end portion of said sheet of glass extending between said plates and said bar and with said bar opposing said sheet of glass along substantially the entire length of said sheet of glass, means exerting pressure under and on each plate when said sheet of glass is clamped, said pressure being insufficient to break the glass prior to scoring thereof, and means for scoring said sheet of glass with said bar slot as a guide, said means exerting pressure on said plates being then adapted to exert a severing force on said sheet of glass along the score line.

3,963,160

APPARATUS FOR PERFORMING TWO OR MORE OPERATIONS ON A CONTINUOUS WEB IN A SINGLE PASS

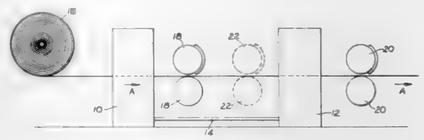
Thomas Desmond Bishop, Solihull, England, assignor to The Deritend Engineering Company Limited, Birmingham, England

Filed Nov. 12, 1974, Ser. No. 523,239

Claims priority, application United Kingdom, Dec. 12, 1973, 57470/73

Int. Cl.² B65H *17/42*

U.S. Cl. 226—115 **4 Claims**



1. Apparatus for treating web material comprising first and second pairs of treatment rolls, said pairs being spaced apart in the direction of travel of the web, each treatment roll pair including one roll having a treatment area which extends over only part of the circumference of the roll and serves, when in confronting relation to the other roll of the pair, to provide a nip by means of which the web is driven forwardly while it is contacted by the treatment area, said roll pairs being synchronized so that their treatment areas contact the web simultaneously, a first feed mechanism located adjacent to the entering side of the first roll pair, a second feed mechanism located adjacent to the entering side of the succeeding roll pair, each feed mechanism constituting means for decelerating the web upon each cessation of contact between the web and said treatment areas, moving the web in the reverse direction, and then accelerating it in the forward direction to synchronize the speed of the web with the linear speed of said treatment areas, and means for synchronizing the operation of said feed mechanisms to cause them to move bodily and maintain under tension the entire span of the web between said feed mechanisms.

3,963,161

SHEET FEEDER FOR CUPPING PRESS

Thomas D. Jerney, and Paul S. Petersen, both of Minnetonka, Minn., assignors to MTS Systems Corporation, Minneapolis, Minn.

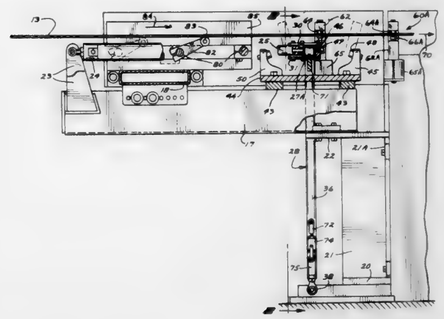
Filed Feb. 10, 1975, Ser. No. 548,612

Int. Cl.² B65H *17/36*

U.S. Cl. 226—150 **12 Claims**

7. A sheet feeder device for feeding thin sheet material into a work press or the like, comprising a first frame member, means to mount said first frame member adjacent an infeed side of a work press, means on said first frame member to support a sheet of material to be fed at a position spaced from the said work press, a second reciprocating frame mounted on said first frame member and positioned between said means to support a sheet of material and the work press, said reciprocating frame including clamp means to engage and hold edge portions of a sheet to be fed, means to reciprocate said reciprocating frame along a feed axis for a sheet of material so that said clamp means are moved back and forth in direction parallel to the feed axis, means to actuate said clamp means

to grip a sheet of material when the reciprocating frame is in a retracted position and to hold a sheet as the reciprocating frame is moved toward the work press to an infeed position, and said clamp means being actuated to release said sheet when the reciprocating frame reaches the infeed position and as the reciprocating frame is reciprocated back to its retracted position, and edge guide means for a sheet to be fed positioned



adjacent said means to support on a side of said reciprocating frame opposite from the work press so that a sheet being fed is pulled by said clamp means through said edge guide means, said second reciprocating frame including flexible supports attached to the first frame which permit said clamp means to move laterally of the feed axis under lateral forces exerted by a sheet of material being fed.

3,963,162

METHOD OF SOLDERING STAINLESS STEEL PIPES BY USING SOFT SOLDERS

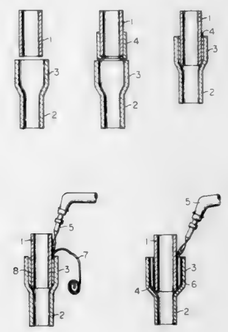
Toshihiko Taguchi, Showa, and Takehiko Ito, Kamagaya, both of Japan, assignors to Senju Metal Industry Co. Ltd. and Nisshin Steel Co., Ltd., both of Tokyo, Japan

Filed July 15, 1974, Ser. No. 488,663

Claims priority, application Japan, Aug. 13, 1973, 48-89991

Int. Cl.² B23K *31/02*

U.S. Cl. 228—134 **7 Claims**



1. A method for joining stainless steel pipes by using soft solder the ythe steps of:

preparing a pipe joint having a diametral clearance of from 0.05 to 1.00 mm,

filling said clearance with paste solder, said paste solder comprising from 20 to 80% by weight of a flux composition and from 80 to 20% by weight of powder solder, and said flux composition comprising a flux component of a mixture comprising from 5 to 50% by weight of phosphoric acid (H_3PO_4) and from 95 to 50% by weight of ammonium dihydrogenphosphate ($NH_4H_2PO_4$) in a vehicle;

heating said pipe joint to melt said paste solder; and

feeding additional soft solder into said clearance immediately after said paste solder is molten by said heating.

3,963,163

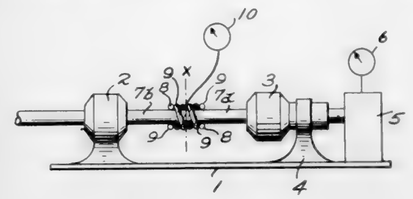
METHOD FOR BONDING BODIES MADE OF METALLIC MATERIAL

Yoshiki Oshida, Yokohama, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1975, Ser. No. 540,413

Int. Cl.² B23K *13/00, 19/00*

U.S. Cl. 228—196 **10 Claims**



1. A method for bonding bodies made of metallic materials, wherein the steps comprise:

placing surfaces of portions of the metallic material to be bonded, in abutting relationship;

applying pressure to the metallic material sufficient to pressure bond the material with super-plastic flow at heated temperature;

simultaneously with the application of pressure, alternately heating and cooling the metallic material in the area where the bond is to be formed through a temperature range extending above and below the transformation temperature or temperatures of the metallic material being bonded; and

continuing said steps of applying pressure and alternately heating and cooling, for a time sufficient to form a permanent bond between the portions of metallic material.

3,963,164

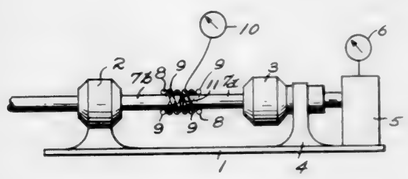
METHOD FOR BONDING BODIES MADE OF METALLIC MATERIALS

Yoshiki Oshida, Yokohama, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1975, Ser. No. 549,412

Int. Cl.² B23K *13/00, 19/00*

U.S. Cl. 228—217 **8 Claims**



1. A method for bonding bodies made of metallic materials, wherein the steps comprise:

sandwiching a bonding insert material that can form a reducible atmosphere upon bonding, between surfaces of portions of the metallic material to be bonded;

applying pressure to the metallic material and the insert material sufficient to pressure bond the material with super-plastic flow at heated temperature;

simultaneously with the application of pressure, alternately heating and cooling the metallic material and the insert

material in the area where the bond is to be formed through a temperature range extending above and below the transformation temperature or temperatures of the metallic metal being bonded; and

continuing said steps of applying pressure and alternately heating and cooling, for a time sufficient to form a permanent bond between the portions of metallic material.

3,963,165

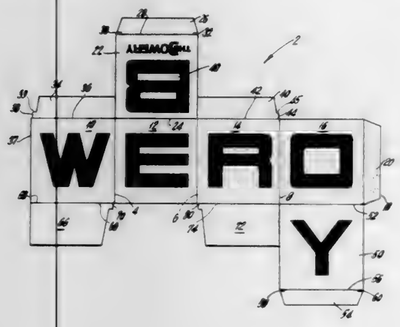
SCORED BLANK TO BE FOLDED INTO DISPOSABLE SAVINGS BANK

Jan Hughes, 548 Riverside Drive, 3A, New York, N.Y. 10027

Filed Dec. 24, 1974, Ser. No. 536,246

Int. Cl.² A45C *1/12*; **A63H** *33/30*; **B65D** *5/08*

U.S. Cl. 229—8.5 **1 Claim**



1. A scored blank adapted to be folded into the form of a closed container suitable for use as a disposable bank comprising when unfolded an elongated blank body of uniform width between longitudinal boundaries scored transversely into a plurality of side panels each having longitudinal and transverse boundaries, the said blank being adapted upon folding along the transverse score lines to be joined in a box-like structure of predetermined peripheral configuration and dimensions;

an adherable tab protruding from the transverse boundary of a side panel at one extremity of the blank body;

adhesive for securing the said tab to the opposite extremity of the blank body to retain the side panels as so joined;

an end panel, conforming in its periphery to the peripheral configuration and dimensions of the said box-like structure, joining the elongated body at one of its longitudinal boundaries along an inner score line co-extensive with one of said side panels and extending laterally therefrom;

an infolding tab joining the said end panel at an outer score line;

locking notches at both ends of said outer score line;

one of the side panels being positioned opposite said inner score line when the side panels are folded into the said box-like structure;

each of the side panels lying contiguous to said opposite panel when so folded having a transverse boundary in engagement with said opposite panel and having a flap which joins the said contiguous side panel at a score line and which extends laterally from the elongated body in the same direction as the said end panel extends, and

a shoulder formed in each of said flaps in proximity to said opposite panel adapted to interlock with said notches to secure the end panel in closed position;

the said shoulder of each flap being recessed from alignment with the said boundary in engagement with said opposite panel to afford a spacing slot for the reception of said infolding tab between the shoulder and the inner surface of said opposite panel;

the blank having two such end panels extending laterally in opposite directions from the said blank body to form the top and bottom closing panels of the box-like structure; and

one of said panels being slotted for the reception of coins.

3,963,166

PACKAGING MEANS FOR FRAGILE ARTICLES

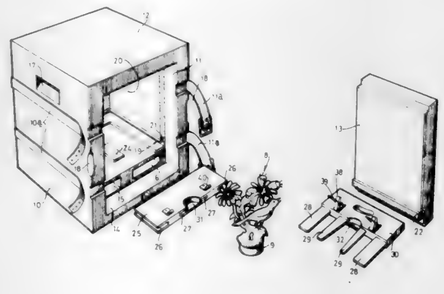
William Sutton Baker Skimming, Worcester, England, assignor to The Worcester Royal Porcelain Co., Ltd., Worcester, England

Filed Dec. 30, 1974, Ser. No. 537,382

Claims priority, application United Kingdom, Jan. 3, 1974, 327/74

Int. Cl.² B65D *5/16*, *5/50*

U.S. Cl. 229—14 C **8 Claims**



1. Packaging means for containing at least one fragile article, such packaging means comprising:

a. a container having walls of a shock absorbing material,

b. supporting means in the interior of the container for positionally controlling the article to maintain such article in spaced relation from the walls of the container, such supporting means incorporating holding parts movable relatively to each other between a holding position in which such parts engage with a relatively robust part of the article concerned to hold the article in position, and a releasing position in which the article is freely removable from the supporting means,

c. means separate from the holding parts for retaining the holding parts in the holding position, and

d. shock absorbing means acting between the supporting means and the container for allowing the supporting means to undergo limited movement relatively to the container.

3,963,167

PACKAGING FILLER DIVIDER

Larry J. Newgaard, II, Lenexa, Kans., assignor to Hallmark Cards, Incorporated, Kansas City, Mo.

Filed Jan. 23, 1975, Ser. No. 543,441

Int. Cl.² B65D *5/56*

U.S. Cl. 229—14 C **5 Claims**

1. In combination:

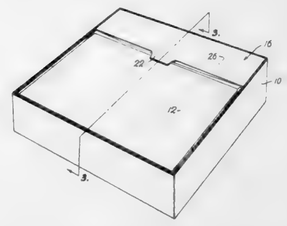
a merchandise container having a bottom wall and upstanding sidewalls for defining a merchandise-receiving space within the container;

a supply of merchandise positioned within said space and of lesser volume than the latter, one marginal edge of said merchandise and the adjacent, opposed sidewall of said container defining a filler-receiving space; and

a filler of dimensions to substantially fill said filler-receiving space positioned within the latter, said filler including

an elongated, hollow body having spaced, opposed, substantially parallel and planar sidewalls respectively adjacent said one marginal edge of the merchandise and said opposed container sidewall for preventing substantial shifting of said merchandise within the container; and

an elongated, substantially planar reinforcing member of a length substantially equal to said sidewalls and positioned within said body in substantially spanning and perpendicular relationship to the body sidewalls,



said member including respective, unitary marginal flaps connected to opposed sides of the member, each of said flaps extending substantially the entire length of the member and adjacent body sidewall and being connected to the latter.

said marginal flaps extending in opposite directions relative to said reinforcing member for rigidifying said filler.

3,963,168

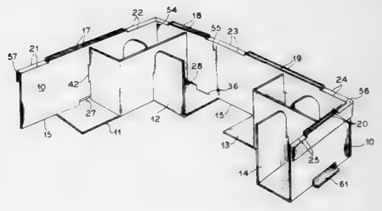
MULTICELL CARTON INSERT

Carlos M. Frum, Chicago, Ill., assignor to Consolidated Packaging Corporation, Chicago, Ill.

Filed Feb. 28, 1975, Ser. No. 553,980

Int. Cl.² B65D *5/48*

U.S. Cl. 229—28 R **10 Claims**



1. A one-piece multicell reinforced carton insert comprising:

an exterior boundary side wall,

a plurality of cell segments integrally formed with said exterior boundary side wall and each being attached to the bottom edge of the side wall at spaced intervals therealong,

each cell segment being folded to form at least a bottom and two interior side walls of two adjacent cells, and

each cell segment being interlockable with at least one another adjacent cell segment to form a total reinforced structure.

3,963,169

PARTITION ARRANGEMENT

Jeffrey M. Gardner, Wheaton, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Aug. 1, 1975, Ser. No. 601,025

Int. Cl.² B65D *5/48*

U.S. Cl. 229—28 R **4 Claims**

1. In a four-cell partition arrangement formed from a unitary blank of foldable paperboard, the combination of:

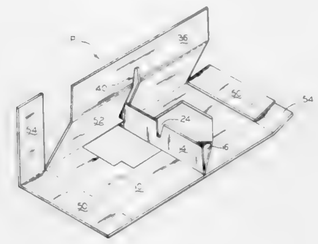
a. a generally rectangular outer bottom panel;

b. a transverse partition member cut from material of said outer bottom panel and including:

i. a first vertical element;

ii. a generally triangular gusset element foldably connected at one edge to a lower edge of said first vertical element on one fold line extending transversely of said outer bottom panel, foldably connected along another edge to said outer bottom panel along another fold line which diverges from said one fold line at an angle of less than 90°, and being disposed in face-to-face engagement with the upper surface of said outer bottom panel;

c. a longitudinal partition member including:



i. a second vertical element;

ii. an inner bottom panel foldably connected at one side edge to a side edge of said outer bottom panel, foldably connected at another side edge to a lower edge of said second vertical element, and being disposed in face-to-face engagement with the upper surface of said outer bottom panel to cover at least a portion of the opening formed by the removal of the material for said transverse partition member;

iii. said second vertical element and said inner bottom panel having aligned slots for receiving a portion of said first vertical element;

d. said first vertical element having a slot extending downwardly from its upper edge for receiving a portion of said second vertical element to provide interlocking engagement therebetween.

3,963,170

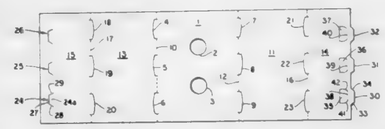
PANEL INTERLOCKING MEANS AND BLANK UTILIZING SAID MEANS

Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 29, 1974, Ser. No. 528,498

Int. Cl.² B65D *65/12*, *65/22*

U.S. Cl. 229—40 **13 Claims**



1. An arrangement for interlocking a pair of panels in overlapping relation, said arrangement comprising a locking slit formed in one of said panels and having a pair of spaced angularly related locking edges which diverge from a base slit, a locking tab struck from a part of the other of said panels and having a pair of spaced angularly related side edge portions and being secured to said other panel along a hinge line which is disposed in substantial coincidence with said base slit, and part of said other panel from which said locking tab is struck being disposed in a direction from said base and hinge lines which is opposite to that in which said locking edges extend,

said locking tab being folded out of the plane of said other panel and being disposed within said locking slit with its angularly related side edge portions in locking engagement respectively with said angularly related locking edges of said locking slit, and said locking edges and said side edge portions being secured in angular locking relation to each other by the inherent bias urging said locking tab toward coplanar relationship with said other panel.

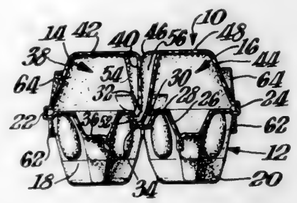
3,963,171
CUSHION PARTITION TRAY FOR INSERTION INTO A BOX
La Vern G. Lindsay, Petersburg, Mich., assignor to Union Camp Corporation, Wayne, N.J.
Filed July 29, 1975, Ser. No. 599,992
Int. Cl.² B65D *5/48*
U.S. Cl. 229—42 **6 Claims**



1. A one sheet blank adapted for folding into a partition tray having center section of rhomboid shape surrounded by smaller rectangular sections comprising:
a generally rectangular bottom panel; and
four rectangular panels forming a frame around the said bottom panel,
each of said rectangular panels having
a. a width equal to the desired height of the sections;
b. a first hinge score line normal to the longitudinal edges of the said rectangular panel dividing the said panel into first and second portions;
c. a slot cut into the said first hinge score line;
d. the first portion thereof connected to a different but corresponding corner of the said bottom panel along a second hinge score line normal to the first hinge score line and extending from the said corner of the said bottom panel to the end of the first hinge score line adjacent the said bottom panel;
e. the said second portion thereof of such length that the free end thereof will extend when the said rectangular panels are folded upward and over the said bottom panel, to the adjacent first hinge score line of the adjacent rectangular panel; and
f. a tongue on the said free end adapted and positioned to engage the said slot in said adjacent first hinge score line of the said adjacent rectangular panel and lock the said panels in position over the said bottom panel.

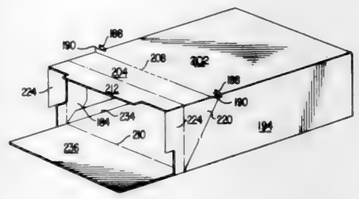
3,963,172
WINDOWED MID-LOCK CARTON WITH POSITIVE CLOSURE LATCH
Henry A. Holzwarth, Bayside, and John D. Wark, Freeport, both of N.Y., assignors to Keyes Fibre Company, Waterville, Maine
Filed Mar. 24, 1975, Ser. No. 561,257
Int. Cl.² B65D *1/36, 43/16, 85/32*
U.S. Cl. 229—44 EC **7 Claims**

1. A molded carton for packaging articles such as eggs comprising a bottom section having a first row and a second row of downwardly dished article receiving pockets with upwardly tapering posts between the rows of pockets, a first cover section hingedly connected to one side of the bottom section for rotation between an open position and a closed position overlying the first row of pockets, a second cover section hingedly connected to the other side of the bottom section for rotation between an open position and a closed position overlying the second row of pockets, the first and second cover sections being dimensioned so that when they are in the open position the empty carton can be nested with other like empty cartons in a stack for shipment and storage, and so that when they are in the closed position overlying the first and second rows of pockets they provide a substantially uninterrupted flat upper cover surface adapted for the display



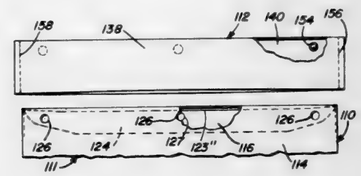
of advertising and content information, and means for locking the cover sections to the bottom section in the closed position characterized by a male locking projection on each cover section which project upwardly and outwardly when the cover sections are in the open position and which project downwardly and inwardly when the cover sections are in the closed position for engagement with female locking ledges formed by the upper edges of apertures located partly through the base and partly through one side of a valley formed in the tops of the posts in parallel alignment with the rows of pockets.

3,963,173
RECLOSABLE CONTAINERS AND BLANKS THEREFOR
Orison W. Stone, Rte. 17, New Haven, Vt. 05472
Continuation-in-part of Ser. No. 458,188, April 5, 1974. This application Sept. 17, 1974, Ser. No. 506,870
Int. Cl.² B65D *5/66*
U.S. Cl. 229—44 CB **7 Claims**



1. A paperboard blank for a paperboard container comprising:
a front panel which includes a detachable portion and a front panel top flap integrally connected to said detachable portion at the upper extremity of said front panel;
a pair of side panels, each side panel being integrally connected to said front panel and including a detachable portion at the upper extremity of said side panel;
a back panel integrally connected to one of said side panels;
a top panel integrally connected to said back panel at the upper extremity thereof;
a pair of side panel top flaps, each side panel top flap integrally connected to the detachable portion of each side panel, being positioned at the upper extremity thereof and having a height substantially less than the top panel; and
a collar disposed adjacent said front panel top flap, including a pair of tabs, and a finger access cut out defined by a single cut line separating the collar from the front panel top flap, each tab being hingedly connected to one of said side flaps.

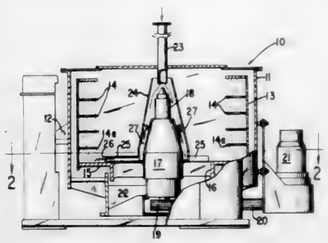
3,963,174
PERMANENT ENVELOPE
Rose T. de Lyra, 9280 Harding Ave., Surfside, Fla. 33154
Continuation-in-part of Ser. No. 363,747, May 5, 1973, abandoned. This application Oct. 10, 1974, Ser. No. 513,932
Int. Cl.² B65D *27/14, 27/34*
U.S. Cl. 229—80 **13 Claims**



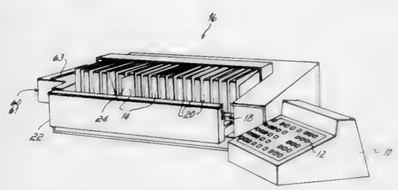
1. A permanent type envelope including front and rear panels and having corresponding opposite side and opposite end edge portions, first means securing said panels together along corresponding end edge portions and one pair of corresponding side edge portions of said panels with the other corresponding side edge portions of said panels defining an opening therebetween and an open side of said envelope, a closure cap including front and rear strips of a length greater than said other pair of edge portions and having corresponding opposite side and opposite end marginal portions, second means securing said strips together along corresponding end marginal portions thereof and along one pair of corresponding side marginal portions with the other side marginal portions of said strips defining an open side of said cap, said envelope defining at least one through opening formed therein adjacent said open side thereof and spaced from the opposite ends of the open envelope side, the open side of said cap being telescoped over the open side of said envelope with predetermined portions of the inner surfaces of said strips registered with said through opening, at least one of said predetermined portions including means displaceable through said through opening for securing said predetermined portions together through said through opening and thereby securing said cap over the open side of said envelope independent of other attachment of said cap to said envelope, said second means including corresponding end edge portions of said strips joined together and to the adjacent portions of said strips along transversely extending weakened zones thereof for removal of said corresponding end edge portions along said weakened zones, the spacing between opposite end weakened zones of said strip being slightly greater than the distance between the remote end edge portions of said front and rear panels.

3,963,175
FEEDCONE WITH ACCELERATOR VANES FOR IMPERFORATE BASKET
Edward A. Daubman, and John W. Sherlock, both of East Moline, Ill., assignors to Ametek, Inc., New York, N.Y.
Filed July 31, 1974, Ser. No. 493,331
Int. Cl.² B04B *11/06*
U.S. Cl. 233—29 **3 Claims**

1. In a centrifugal, the combination of an imperforate basket mounted for rotation about a vertical axis and having a centrally disposed opening therein, a plurality of horizontal baffles on the inner wall surface of said basket, a plurality of substantially radially extending ribs for supporting the bottom wall of the basket, a feedcone mounted within said basket along the rotary axis thereof, and a plurality of discharge tubes extending radially from the lower portion of said feedcone across said opening above and generally aligned with said ribs, and a plurality of vertically extending vanes within said feedcone to accelerate the liquid supplied thereto as the liquid travels toward the discharge tubes.



3,963,176
COMBINED ARTICLE SELECTOR AND CODER
Richard C. O'Brien, Dayton, Ohio, assignor to O.K. Partnership, Cincinnati, Ohio
Filed July 17, 1975, Ser. No. 596,915
Int. Cl.² G06K *1/08*
U.S. Cl. 234—48 **14 Claims**

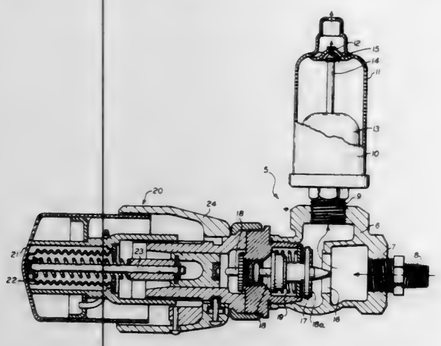


10. A coder for selectively notching the teeth of articles having a sorting edge with alternate registration notches and code notchable teeth, said coder being combined with a selector for selecting such articles from a plurality of such articles supported with their respective sorting edges aligned, said selector being of the type comprising a platen for supporting said articles and having a plurality of spaced parallel slots, a plurality of sorting bars, one of said sorting bars being disposed within each of said slots, and means for selectively displacing said sorting bars in a horizontal and vertical direction, said coder comprising:
a housing including a card-receiving slot for receiving a toothed article to be encoded;
stop means limiting the insertion of said article within said slot;
a knife blade associated with each of said sorting bars, each of said knife blades being movable transversely of said slot and being positioned to sever one tooth from said article;
means responsive to the displacement of a sorting bar for shifting an associated knife blade transversely of said slot to sever the tooth in registry therewith; and
means for returning said knife blades to a retracted position.

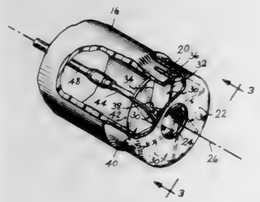
3,963,177
THERMOSTATIC CONTROL VALVE FOR A ONE-PIPE STEAM SYSTEM
Jamie Frank, Roslyn, N.Y., assignor to Flair Manufacturing Corporation, Hauppauge, Long Island City, N.Y.
Filed Mar. 12, 1975, Ser. No. 557,727
Int. Cl.² F28F *27/00*
U.S. Cl. 236—37 **6 Claims**

1. A thermostatic control valve for a one-pipe steam system comprising a vent valve provided with a fitting for connection

to a radiator of a one-pipe steam system, means defining a flow passage from said fitting into said vent valve, and a temperature controlled valve for closing said flow passage at a pre-set ambient temperature.

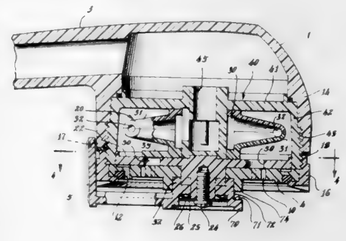


3,963,178
SPRAYER NOZZLE
Dean E. Collins, Lowell, Mich., assignor to Root-Lowell Manufacturing Co., Lowell, Mich.
Filed Sept. 8, 1975, Ser. No. 611,222
Int. Cl.² A01N *17/08*; B05B *7/10*
U.S. Cl. 239—8 **6 Claims**



1. A nozzle in combination with a sprayer having a liquid reservoir and a forced air flow source, said nozzle comprising a housing having an annular side wall formed by an axis and having an end wall, said end wall having a circular opening therein generally concentric with said housing axis, a plurality of vane means each having an outer longitudinal edge and an inner longitudinal edge extending between first and second end edges, said vane means having their first end edges positioned adjacent said side wall at generally equal angularly spaced locations about said housing axis, said vane means having their second end edges projecting partially across said end wall opening to expose portions of said vane means outer longitudinal edges, said vane means second end edges terminating at generally equal angularly spaced locations about said housing axis, each vane means second end edge being offset from a radial line extending between said housing axis and the first end edge of the vane means, a disk spaced from said end wall and overlying said vane means at their inner longitudinal edges, said disk having an outer circumferential edge spaced from said housing side wall and a center opening generally aligned with said housing axis, a liquid conduit means connected to said liquid reservoir and extending into said disk opening for directing spray liquid to said housing, an air hose means enclosing said conduit means and having one end engaging said housing side wall and another end associated with said air flow source for directing air into said housing with said air passing between said disk circumferential edge and housing side wall and along said vane means and out said housing end wall opening, said vane means for imparting a whirling motion to said air as it exits said housing end wall opening to cause liquid emitted from said conduit means to strike said vane means and be blown from the vane means at their second end edges and exposed portions of their outer longitudinal edges through said housing end wall opening in atomized form.

3,963,179
SHOWER HEAD ADAPTED TO PRODUCE STEADY OR PULSATING FLOWS
Patrick M. Tomaro, Maplewood, N.J., assignor to Continental Hair Products, Inc., Edison, N.J.
Filed Sept. 19, 1975, Ser. No. 614,937
Int. Cl.² B05B *1/08*
U.S. Cl. 239—101 **18 Claims**

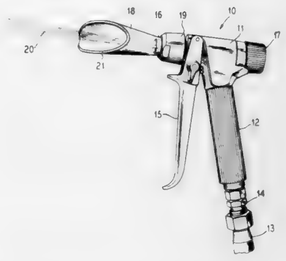


7. A shower head capable of producing a pulsed output, if desired, said shower head including
a housing having a water inlet, an outer cover forming part of said housing and having holes therein forming a water outlet,
the holes in said outer cover forming two sets, one set for pulsed and one set for steady-stream water,
a plenum chamber within said housing to receive all the water entering said inlet and to dispense all the water leaving said water outlet, said chamber having an inlet opening and an outlet opening,
a spinner within said chamber to periodically close said outlet opening to cause pulsation in said water, said spinner being actuated by water entering said inlet opening,
means directing said pulsed water to at least some of the holes in said outer cover,
and means for removing the pulses from the water going to one of said sets,
whereby all of the water used by said shower head passes through said plenum chamber and all is pulsed as it leaves said chamber.

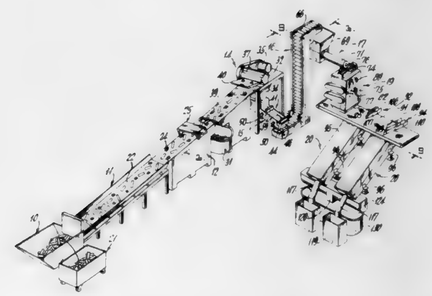
3,963,180
AIRLESS GUN NOZZLE GUARD
Josef Wagner, Friedrichshafen, Germany, assignor to Spray Tech Corporation, Minneapolis, Minn.
Filed Aug. 11, 1975, Ser. No. 603,676
Int. Cl.² B05B *1/28*, *15/04*
U.S. Cl. 239—288.5 **10 Claims**

1. a safety nozzle guard for airless spray pistols comprising: in combination, a spray pistol having a nozzle outlet producing a fanlike spray pattern, a guard, and means for attaching the guard to the pistol adjacent the nozzle, the guard having an attachment end having a substantially circular cross-section attachable to the spray pistol radially of the nozzle outlet and discharge end having a substantially elongated cross-section between top, bottom and two side walls, the discharge end spaced from the attachment end by continuous walls which

are dimensioned similarly to the spray pattern and which increases in internal cross-section downstream of the outlet, the discharge end being curved substantially on a radius generated adjacent the attachment end.



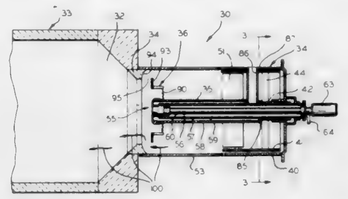
3,963,181
FOOD RECLAIMING SYSTEM
Joseph T. Deloy, Lyndhurst, N.J., and Grant J. Selch, Schenectady, N.Y., assignors to Nabisco, Inc., East Hanover, N.J.
Filed May 19, 1975, Ser. No. 578,616
Int. Cl.² B02C *23/38*
U.S. Cl. 241—76 **10 Claims**



1. A system for producing comminuted edible product by reclaiming baked products in rejected packages comprising in combination means at a first station for receiving the rejected packages, conveyor means feeding the rejected packages to a second station, means at said second station for shredding the packaging materials and dividing the product into pieces, aspirating means for separating unencumbered wrapper shreds from product pieces and wrapper sections encumbered by product pieces, means for transporting the product pieces and encumbered wrapper sections to a third station, means at said third station for comminuting all of the product pieces without cutting the wrapper sections, and means for separating the comminuted product from the wrapper sections.

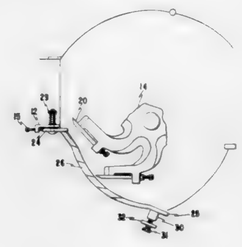
3,963,182
BURNER
Roy M. Rulseh, Milwaukee, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.
Continuation of Ser. No. 317,211, Dec. 21, 1972, abandoned. This application June 24, 1974, Ser. No. 481,999
Int. Cl.² B05B *7/10*
U.S. Cl. 239—404 **29 Claims**

28. Apparatus for burning fuel comprising:
means defining a combustion zone having an inlet, nozzle means including fuel discharge means for injecting a fuel into said combustion zone, the movement of fuel into said zone defining a downstream direction, said fuel discharge means including a generally conical outside surface and a fuel receiving space,
means for delivering combustion supporting gas to said fuel receiving space,
said nozzle means also including flame shaping means disposed adjacent said fuel discharge means and including a generally frusto-conical, concave, outside flame shaping surface diverging outwardly in said downstream direction and terminating on its inner end in a central aperture disposed in a surrounding relation to the conical outside surface of said fuel discharge means and at its outer end in a peripheral margin,
said flame shaping means also including generally conical inside surface disposed adjacent and generally complementary to said conical outside surface of said fuel discharge means,



a plurality of passages formed in one of said inside and outside conical surfaces and extending between said fuel receiving space and the center aperture of said flame shaping surface, said second plurality of passages being arranged in a generally conical array and oriented inwardly in the direction of said inside and outside surfaces and extending from said receiving space to said central aperture to direct said atomized fuel in a generally conical array and closely spaced relative to and in general parallelism with said flame shaping surface whereby the fuel exiting said second plurality of passages moves outwardly along said flame shaping surface whereby said fuel is shaped into a fuel rich core stream.

3,963,183
RESHARPENABLE RECUTTER SCREEN FOR FORAGE HARVESTER
Earl W. Paulsen, Round Lake, Minn., assignor to Leo M. Ling, Worthington, Minn., a part interest
Continuation-in-part of Ser. No. 278,736, Aug. 8, 1972, abandoned. This application Nov. 1, 1974, Ser. No. 514,559
Int. Cl.² B02C *18/06*
U.S. Cl. 241—88.4 **8 Claims**



1. For use in a forage harvester including a rotating cutter carrying blades; a recutter screen comprising an upper flange and a lower base member joined together by substantially arcuate bars extending between said flange and said base member, a series of pieces extending between said bars and spaced from said flange and base member, said bars each having an inner surface adjacent to the path of the blades on

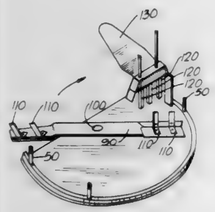
the rotating cutter, said pieces being fixed between said bars, and having inner surfaces coincident with the inner surface of said bars, said pieces being fixed to the bars so that each of the inner surfaces of said pieces intersects another adjacent surface of said piece to form an acute-angled, resharpenable cutting edge adjacent the path described by said blades on the rotating cutter, said cutting edge thereby lying in the plane of the inner surfaces of said bars.

3,963,184

DEVICE FOR CONVERTING A CONVENTIONAL LAWN MOWER TO A LEAF SHREDDER

Helmut Grimm, Mountainside, N.J., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Apr. 28, 1975, Ser. No. 572,162
Int. Cl.² B02C *18/10*
U.S. Cl. 241—101.1 **4 Claims**



1. A detachable device for converting a conventional motorized lawn mower to a leaf shredder, comprising:

a generally flat plate with a periphery taking the shape of a circle truncated by a non-diametrical chord, the plate being detachably securable to the bottom of a conventional lawn mower with the straight portion of the periphery extending transversely across the bottom, so as to expose the rear portion of the bottom of the mower;

an altered mower blade secured at its center to the shaft of the lawn mower and rotating in a plane parallel to the plate;

two like pairs of like fixed blades, each pair disposed at a corresponding end of the mower blade with the pairs being symmetrically disposed about the center of the blade, and with each fixed blade extending upwardly and rearwardly from its point of attachment to the mower blade; and

three like, spaced, straight, fixed fingers suspended above the plate and extending downwardly theretowards, in a manner that the rotating blade can carry each pair of symmetrically mounted blades between the fingers through the spaces therebetween and to shred leaves caught between the fingers and symmetrically mounted blades.

3,963,185

FILAMENT WINDING METHOD

Robert W. Quirk, Los Angeles, Calif., assignor to Hills-McCanna Company, Carpentersville, Ill.

Division of Ser. No. 207,745, Dec. 14, 1971, abandoned, and a continuation-in-part of Ser. No. 108,321, Jan. 21, 1971, abandoned. This application Feb. 11, 1974, Ser. No. 441,358
Int. Cl. B65H *81/08*
U.S. Cl. 242—7.21 **2 Claims**

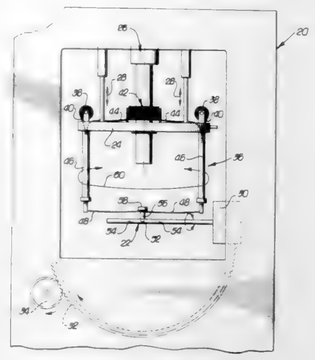
1. A method of winding reinforcing material on a T-shaped mandrel which includes a body having longitudinally spaced end portions providing a longitudinal axis and having a laterally extending neck portion, including the steps of:

a. winding reinforcing material substantially circumferentially around said neck portion;

b. winding reinforcing material substantially circumferentially around each of said end portions while continuously rotating said body through a plurality of revolutions about said longitudinal axis;

c. winding reinforcing material around said body and said end portions at an acute angle to said longitudinal axis and on both sides of said neck portion;

d. changing the orientation of said longitudinal axis while performing the step of subparagraph (c) above so as to



vary said acute angle of said reinforcing material to said longitudinal axis;

e. repeating the foregoing steps until the desired thickness has been achieved; and

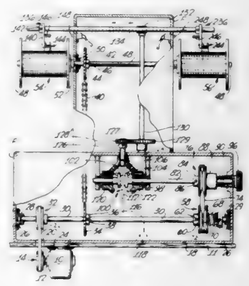
f. forming annular flanges at the extremities of said end portions of said mandrel by substantially circumferentially winding reinforcing material on said mandrel.

3,963,186

TAPE WINDER APPARATUS

Hendrik Van den Aa, Pierrefonds, Canada, assignor to Movatex Products Ltd., Montreal, Canada

Filed May 15, 1974, Ser. No. 470,311
Int. Cl.² B65H *54/04, 54/20, 54/30*
U.S. Cl. 242—18 R **5 Claims**



1. An apparatus suitable for helically winding a tape, comprising a drive module, said drive module comprising drive means, a first shaft rotatably driven by said drive means, a second shaft, a variable pitch pulley interconnecting said first and second shafts, means on said second shaft for varying the speed at which said second shaft is driven relative to said first shaft, a clutch member mounted on said second shaft and rotatably driven thereby, said clutch member having at least one lug on each side thereof, a pair of bevel gears mounted on said second shaft on either side of said clutch member, said pair of bevel gears each having at least one lug on the sides thereof for engagement with the corresponding lug on said clutch member, whereby said clutch member can rotatably drive one of said bevel gears, means for switching said clutch

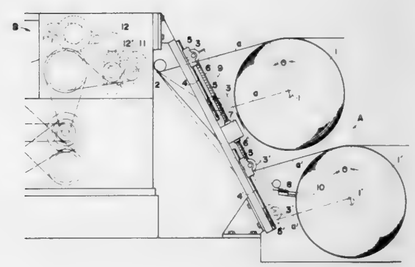
member to selectively drive one of said bevel gears through engagement of respective lugs, a third bevel gear operatively associated with said pair of bevel gears and being driven thereby, at least one winding module comprising a spool mounting shaft directly and rotatably driven by said first drive shaft, at least one spool mounted on each end of said spool mounting shaft, tape guide means linearly driven by said third bevel gear in a direction parallel to the axis of rotation of said spool mounting shaft, microswitches mounted on either side of a frame of said winding module, and adjustable means on said tape guide means for contacting said microswitches, said microswitches being operatively associated with said means for switching said clutch member between said pair of bevel gears, said adjustable means being adjustable such that when the tape guide means is linearly driven in a first direction by mating engagement of said clutch lug and said lug on said first bevel gear and said microswitch is contacted to reverse the direction of travel of said tape guide means, said clutch means, after being switched by said switching means, rotates through substantially 360° before the lug on said clutch means engages the mating lug on said second bevel gear.

3,963,187

WRINKLE-PROOF MECHANISM FOR PAPER ROLL SUPPLY

Tadao Ohi, No. 315, Miyashita, Fuji, Shizuoka, Japan

Filed May 22, 1974, Ser. No. 472,147
Int. Cl.² B65H *19/04, 35/02*
U.S. Cl. 242—55 **6 Claims**



1. A wrinkle-proof apparatus for supplying strips of paper from any of a plurality of paper rolls to a cutter, comprising:

a. a plurality of paper rolls arranged linearly in upper and lower vertical stages, each stage having a foremost paper roll near the cutter;

b. at least one paper strip fed from at least one roll in each stage, said paper strip being guided linearly over the paper rolls between the foremost paper roll and the paper roll feeding the paper strip, said strip fed from each stage being guided only along rollers of the same stage;

c. a movable roller means between the cutter and the upper and lower stage foremost rolls for deflecting the paper strips and causing said paper strips to embrace said foremost rolls over a predetermined embracing angle;

d. detecting means responsive to a change in the diameter of one of the foremost paper rolls; and

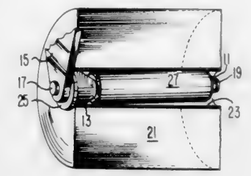
e. movement means activated by said detecting means for causing said movable roller means to change position in correspondence with said diameter change of one of the foremost paper rolls to maintain said embracing angle substantially constant.

3,963,188

LISTING MACHINE ROLL HOLDER

Hilliard R. DiVeto, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 6, 1974, Ser. No. 530,419
Int. Cl.² B65H *19/00, 49/00*
U.S. Cl. 242—55.2 **7 Claims**



1. A listing machine roll holder for multi-tape lister printers or the like for supporting a paper roll having a hollow core, said roll holder comprising:

a spindle adapted to be rigidly supported at one end;

a cylindrical spring flotatably disposed to encompass the spindle at said one end thereof;

confinement means for axially restricting said spring to the proximity of said one end of said spindle;

compression means integrally formed on said spring for compressing said spring by cooperative sliding frictional engagement of said compression means with the inside surface of a core of a roll as the roll is axially moved over said spindle from said other end thereof; and

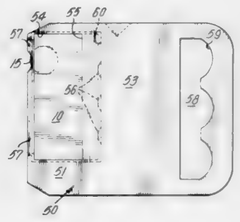
guide means integrally formed on said spring for guiding the core of the roll into frictional engagement with said compression means.

3,963,189

MINIATURE TAPE CARTRIDGE AND ADAPTOR

Andrew Peter Sharp, 5 Dufresne Court, Penthouse No. 4, Don Mills, Ontario, Canada

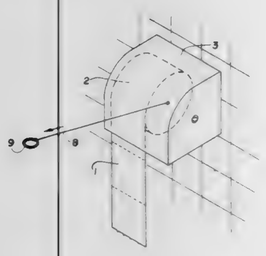
Filed June 4, 1974, Ser. No. 476,329
Int. Cl. G11B *23/10*
U.S. Cl. 242—55.19 A **7 Claims**



1. A miniature tape cartridge comprising a substantially rectangular housing for carrying an endless recording tape therein, said housing having a front end with at least one opening for access to part of said recording tape entrained therein past said opening for engagement of said tape with an external drive source for displacing said tape at a predetermined speed and to permit an external detection means to contact and detect information signals recorded on said tape, a substantially rectangular projection portion projecting concentrically from the outer periphery of said front end of said cartridge to define a recess having a flat alignment wall about said projection portion constituting an alignment means, said alignment wall lying in a plane substantially parallel to an axis extending widthwide in the plane of said tape, said alignment means locating said cartridge in a predetermined position within an adaptor housing whereby said adaptor housing will

position said tape in a predetermined plane with respect to said external detection means.

3,963,190
TISSUE DISPENSING DEVICE FOR A ROLL OF TISSUE
Devon S. Wilson, Phoenix, Ariz., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Feb. 19, 1974, Ser. No. 443,358
Int. Cl.² B65H *19/00*
U.S. Cl. 242—55.53 **2 Claims**



1. A tissue dispensing device for a roll of tissue, said tissue dispensing device comprising

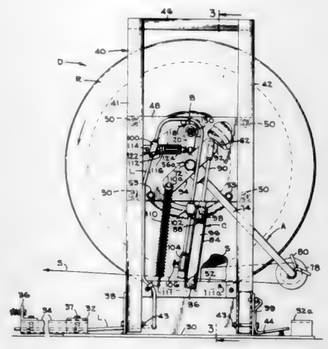
a housing having a slot formed therethrough;

a tissue-supporting spool rotatably mounted in the housing and supporting a roll of tissue therein for rotation therewith; and

spool rotating means affixed to the spool and extending out of the housing for rotating the spool to pass tissue through the slot of the housing, the spool rotating means comprising a first ratchet of predetermined diameter coaxially affixed to the spool and a first pawl affixed to the housing for permitting rotation of the first ratchet in one direction only, a second ratchet having a smaller diameter than the predetermined diameter mounted substantially coaxially with the spool independently therefrom in adjacent relation with the first ratchet, a second pawl affixed to the first ratchet in operative engagement with the second ratchet, spring means affixed to the housing and to the second ratchet, and a cord affixed at one end to the second ratchet and wound thereon and extending out of the housing whereby pulling of the cord rotates the second ratchet free from interference by the second pawl and winds the spring means and when the spring means is wound the second pawl catches the second ratchet and the spring unwinds thereby rotating the spool via the second pawl and the first ratchet.

3,963,191
STRAP DISPENSER FOR AUTOMATIC STRAPPING MACHINE
George F. Goodley, Media, Pa., assignor to FMC Corporation, San Jose, Calif.
Filed Apr. 16, 1975, Ser. No. 569,324
Int. Cl.² B65H *25/22, 75/00*
U.S. Cl. 242—75.43 **6 Claims**

1. A strap dispenser for a strapping machine which machine has a strap feed mechanism for feeding strap around an article and for thereafter tensioning the strap around the article, said dispenser being of the type comprising a frame, a strap reel, a dancer arm pivoted on the frame for guiding strap from said reel to the strap feed and tensioning mechanism and a brake for the reel; the improvement comprising a pneumatic piston and cylinder assembly connected between said dispenser frame and said dancer arm for retracting said dancer arm when air under pressure is applied to said assembly, air line means for supplying air under pressure to said piston and cylinder assembly before said strapping machine feed mechanism starts feeding strap, means for connecting said air line means to exhaust when said strapping machine starts feeding strap and pulls strap from the reel while advancing said dancer arm, a throttle valve for bleeding said piston and cylinder



assembly to exhaust while said dancer arm is being advanced, and control means for applying said reel brake when air under pressure is directed to said piston and cylinder assembly, said brake control means being independent of dancer arm position.

3,963,192
TETHERING DEVICE KIT
Walter H. Haupt, 604 Wayne Road, Kenton Hills, Covington, Ky. 41011
Filed Apr. 10, 1975, Ser. No. 566,807
Int. Cl.² B65H *75/40*
U.S. Cl. 242—86.5 R **5 Claims**



1. A tethering kit for use with self-propelled machines, said kit being connectable with a tire rim having a center flange and lug holes, said kit comprising

a turret head that includes

at least one winding stake fixed in place on and extending upwardly from a base plate, said winding stake being of a length sufficient to extend outwardly beyond the plane of one side edge of said rim when said turret head and said rim are connected,

mounting means adapted through said lug holes to connect said base plate and said rim in fixed relation, said mounting means including at least two slots formed in said base plate, said slots being disposed radially relative to the center axis of said turret head, and bolt means adapted to pass through said base plate's slots and said rim's lug holes,

a first ground stake fixed to said base plate, said first ground stake being located at the center axis of said turret head and being coaxially oriented with said rim when said base plate and said rim are connected, and said first ground stake being of a length sufficient to extend beyond the plane of the other side edge of said rim when said base plate and said rim are connected, and

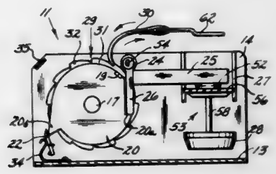
a bearing element located at the center axis of said turret head, said first ground stake being hollow at the upper end thereof to form said turret head bearing element,

a tether cord fixed at one end to said winding stake, said tether cord being adapted to connect with a self-propelled machine at the other end, and

a detachable handle having an end portion in the form of a bearing element, said handle bearing element being rotatably interfitted with said turret head bearing element during transfer of said rim from one location to another, and said handle bearing element being removed from said turret head bearing element after transfer of said rim from one use location to another,

said rim being lifted by said handle from a substantially horizontal use position to a substantially vertical transfer position after said handle bearing element is rotatably interfitted with said turret head bearing element, and said rim being thereafter rolled to a new use location, thereby converting the stationary base to a movable winding reel so as to rewind said tether cord upon said winding stake.

3,963,193
FACE CLUTCH VEHICLE SENSITIVE INERTIAL RETRACTORS
Wallace Carson Higbee, Romeo, and Ronald Albert Willey, Port Huron, both of Mich., assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Apr. 12, 1974, Ser. No. 460,336
Int. Cl.² A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **7 Claims**



1. A face clutch vehicle sensitive inertial retractor for dispensing and retracting webbing and the like for safety harness usage comprising:

a frame supporting a drum with webbing and drum retracting motor, said drum on a shaft and said shaft driven by said motor and said drum including at least one ratchet face, a pawl tiltably supported by said frame and a spring urging said pawl toward locking engagement with said ratchet as webbing is withdrawn from said drum;

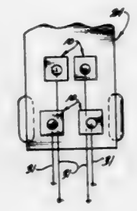
a mass movable omnidirectionally on application of inertial forces and supported by said frame;

a lever normally engaged with said mass and movable by said mass upon inertial displacement of said mass;

a finger element extending from said lever and movable as said lever is moved;

a face clutch plate in coaxial relation with said drum and frictionally driven thereby, said clutch plate having a step-like notch in the periphery thereof engaged by said finger, a cam-like integral extension of said face clutch plate extending radially therefrom in an engagement path with said pawl urging and holding said pawl out of engagement with said ratchet when said finger is in said notch and when said drum is retracting, and a movement limiting stop extending from said clutch plate to engage said frame and said plate thus limited in one direction to engage said finger in said notch and limited in withdrawal direction of said drum to a position of said cam-like extension out of engagement with said pawl.

3,963,194
DISPENSER FOR COILED ELONGATED FLEXIBLE PRODUCT
Charles C. Butts, Hacienda Heights, Calif., assignor to Davis Walker Corporation, Los Angeles, Calif.
Filed June 20, 1974, Ser. No. 481,144
Int. Cl.² B65H *49/00*
U.S. Cl. 242—129 **10 Claims**



1. Apparatus for dispensing an elongated flexible material, such as, wire, cable, rope and the like, from an annular coil of the material, the apparatus comprising a base having a vertical opening therethrough, an upright hollow spindle mounted on the base and over the opening through the base, the spindle being shaped to fit within the annular coil of material so that the top end of the material on the coil can be pulled from the coil, and means for guiding the material from the top of the coil down through the spindle and opening in the base, and out from under the base, the guiding means including an upwardly converging cap mounted on the upper end of the spindle and means for removably clamping the cap on the upper end of the spindle.

3,963,195
ROLL REFERENCE SYSTEM FOR VEHICLES UTILIZING OPTICAL BEAM CONTROL
Frank S. Coxe, Santa Ana; Lyle A. Maxey, Dana Point, and David P. Wahl, Whittier, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.
Filed Jan. 27, 1975, Ser. No. 544,640
Int. Cl.² F41G *7/00*
U.S. Cl. 244—3.11 **6 Claims**



1. In a control system for a vehicle, said system including a control station for transmitting an optical beam for carrying the control information, said beam having polarized waves, means for generating a roll stabilization signal for said vehicle comprising:

polarizing beam splitter means fixedly mounted on said vehicle for receiving said optical beam and providing at least one light output as a function of the angle between the polarization angle of said light waves and the plane of a predetermined side face of said beam splitter means,

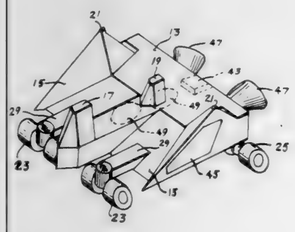
means for transducing said light output to a first electrical signal,
means for amplifying said electrical signal,
means for generating a second electrical signal in accordance with the non-polarized components of the optical beam, and
means for dividing said first electrical signal by said second electrical signal thereby eliminating electrical components representing non-polarized optical components in said first electrical signal,
the output of said dividing means being in accordance with the deviation of the roll angle of said vehicle from a predetermined orientation.

3,963,196

AIRCRAFT/SPACECRAFT GROUND ACCELERATOR

William H. Walker, Bellevue, Wash., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 12, 1974, Ser. No. 478,551
Int. Cl.² B64F *1/10*
U.S. Cl. 244—50 **1 Claim**



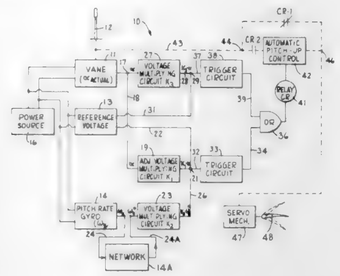
1. A ground accelerator for supporting and accelerating a fully loaded space vehicle mounted thereon along a runway prior to launching, said accelerator comprising a framework of generally rectangular shape, a aerodynamic fairing attached to said framework for providing positive pitch and directional stability to the accelerator, a plurality of support pads on the upper side of said framework for mounting the space vehicle to the ground accelerator, said plurality of support pads including a forward support pad for supporting the forward portion of the space vehicle, an aft support pad for supporting the aft section of the space vehicle, and a pair of stabilizing pads, one each positioned on the upper side edges of the accelerator to provide further support for the space vehicle, a plurality of wheel/tires positioned at each corner of the accelerator in contact with the runway surface for supporting the accelerator and providing mobility thereto, said plurality of wheel/tires including a pair of forward sets positioned one set at each forward corner of the accelerator, and a pair of aft sets each positioned at each rearward corner of the accelerator, each of said wheel/tires including an epoxy glass filled matrix with silastic foam core elements embedded therein and a tire tread around the outer circumferential surface thereof, means for accelerating the ground accelerator along the runway to reach a predetermined critical speed.

3,963,197

CONTROL DEVICE FOR AVOIDING THE PITCHING UP OF MISSILES OR AIRCRAFT

Erhard Oberlerchner, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Continuation-in-part of Ser. No. 315,635, Dec. 15, 1972, abandoned. This application Aug. 14, 1074, Ser. No. 497,504
Claims priority, application Germany, Dec. 16, 1971, 2162349
Int. Cl.² B64C *13/50*
U.S. Cl. 244—181 **11 Claims**



1. A method for avoiding a pitching up of aircraft during flight, comprising the steps of:
detecting the instantaneous angle of attack and producing a first signal;
detecting the rate of change of said angle of attack in response to a change in control surface position initiated by a pilot for said aircraft and producing a second signal;
disconnecting direct command of the control surface movement by the pilot in response to said first and second signals in advance of reaching a permissible angle of attack for said aircraft so that said direct commands from said pilot will ineffective to control the aircraft beyond said permissible angle of attack; and
thereafter modulating said direct commands from said pilot so that the continued performance of said aircraft will be optimized by approaching said permissible angle of attack but not exceeding same, said optimizing occurring only as long as said first and second signals, which indicate the demand of said pilot, indicate that said permissible angle of attack will be exceeded.

5. In an apparatus for avoiding a pitching up of aircraft having a movable control surface thereon controlled by a pilot for said aircraft and control means for modulating direct commands from said pilot so that the performance of said aircraft will be optimized by approaching a permissible angle of attack but not exceeding same, the improvement comprising:
first means for detecting the instantaneous angle of attack and producing a first signal;
second means for detecting the rate of change of said angle of attack in response to a change in control surface position initiated by said pilot and producing a second signal;
trigger circuit means defining said permissible angle of attack and being responsive to said first and second signals for disconnecting a direct command over a control surface movement by said pilot for said aircraft in response to said first and second signals which indicate that said aircraft will travel in a manner to exceed said permissible angle of attack, said direct command over said control surface movement by said pilot being stopped in advance of reaching said permissible angle of attack, said control means being responsive to a stopping of said pilot's direct command over said control surface movement and effecting a modulating of said direct commands from said pilot so that the continued performance of said aircraft will be optimized by approaching said permissible

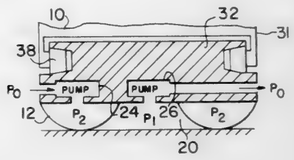
angle of attack but not exceeding the permissible angle of attack, said optimizing occurring only as long as said first and second signals indicate that said permissible angle of attack will be exceeded.

3,963,198

NEGATIVE AIR CUSHION FOR AIRSHIP GROUND HANDLING

John C. Vaughan, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1975, Ser. No. 564,570
Int. Cl.² B60V *3/08*
U.S. Cl. 244—100 A **4 Claims**



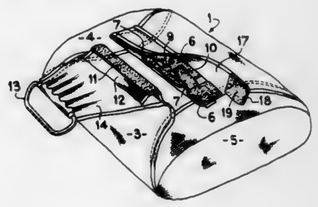
1. A negative air cushion landing and mooring system for an aircraft capable of hovering descent comprising:
a trunk member attached to the bottom of said aircraft;
a central compartment,
said trunk member encircling and forming the side walls of said central member, the top of said compartment being sealed and the bottom of said compartment being open to the atmosphere;
means for inflating said trunk member to a pressure greater than atmospheric, said trunk member being formed from a fluidtight fabric;
means for evacuating said central compartment to a pressure less than atmospheric, whereby suction is created which clamps said aircraft to the ground; and
swivel means mounted between said aircraft and said trunk member,
whereby said aircraft is enabled to rotate and weathervane about the vertical axis of symmetry of said trunk.

3,963,199

CLOSING DEVICE FOR A PARACHUTE PACK

Marcel Pravaz, Clichy, France, assignor to Etudes et Fabrications Aeronautiques, Paris, France

Filed May 20, 1974, Ser. No. 471,705
Claims priority, application France, May 21, 1973, 73.18397
Int. Cl.² B64D *17/46*
U.S. Cl. 244—148 **11 Claims**



1. A closing device for a parachute pack having pack-closing flaps which are capable of moving apart from each other from a pack-closing position to a position in which the flaps define an opening in the pack through which opening the parachute can emerge from the pack, said device comprising first and second gripping bands respectively secured to at least two opposed flaps of the pack, gripping band means for maintaining said first and second gripping bands assembled in a pack-closing position by attachment of the gripping band means to said first and second gripping bands, the gripping band means having an edge by which the gripping band means is to be progressively detached by peeling off from said first and second gripping bands in starting at said edge, pulling means for controlling the opening of the pack by a pull exerted on the pulling means substantially in a given direction, a flexible connecting element having one end connected to the pulling means and an opposite end connected to said edge of the gripping band means, the pulling means being disposed on the opposite side of the gripping band means to said edge and the flexible connecting element being folded at 180° around said edge and extending in a direction which is substantially said given direction in overlapping relation to the gripping band means from said edge to said pulling means when the closing device is operative to close the pack.

3,963,200

KITE WITH A DIVERGING WING STRUTS WITH A CENTER STRUT AND A CROSSING-STRUT SECURED TO BOTH DIVERGING STRUTS AND THE CENTER STRUT

Bennett R. Arnstein, 3049 W. Eight St., Los Angeles, Calif. 90005

Filed Mar. 24, 1975, Ser. No. 551,215
Int. Cl.² B64C *31/06*
U.S. Cl. 244—153 R **7 Claims**



1. A kite comprising:
a body of flat material symmetrical about a center line;
a pair of diverging wing struts secured to said body on opposite sides of said center line;
a center strut disposed on the center line of said body and secured thereto for substantially the full length of said center strut;
a cross-strut;
means on each diverging strut for receiving and securing the respective ends of said cross-strut so that said cross-strut is disposed substantially transverse to said body;
means for securing the center of said cross-strut to said center strut to provide additional stiffness to said cross-strut;
said body of said flat material having a pleat formed therein and disposed on the center line thereof;
said pleat being formed on the side of said body opposite said cross-strut and said center strut; and
a keel portion being fastened to said pleat.

3,963,201

SEQUENTIAL OCCUPANCY RELEASE CONTROL METHOD AND APPARATUS FOR TRAIN VEHICLES

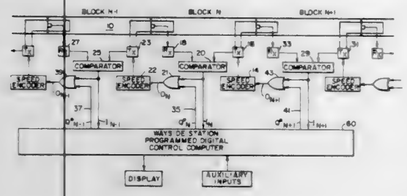
Neil A. Brumberger, Pittsburgh; Bennie C. Auxer, Trafford, and Donald L. Rush, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 3, 1975, Ser. No. 554,781
Int. Cl.² B61L *21/06*
U.S. Cl. 246—34 R **20 Claims**

1. An apparatus for controlling the speed of a plurality of train vehicles along a track including a plurality of signal blocks, the combination of

means for providing an occupancy indication signal in relation to the occupancy of a first signal block by one of said train vehicles,

means for providing first and second protection signals in relation to a second signal block previous to said first



signal block and in response to said occupancy indication signal, and

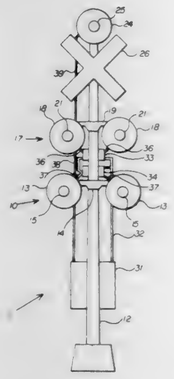
means for providing an occupancy control signal in response to a selected one of said first and second protection signals in accordance with predetermined characteristics of said first signal block.

3,963,202

GRADE-CROSSING MOTORIST WARNING SYSTEM

John B. Hopkins, Cambridge, Mass., assignor to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Mar. 3, 1975, Ser. No. 555,021
Int. Cl.² B61L *29/28*
U.S. Cl. 246—125 **5 Claims**



1. A railroad-highway crossing warning system comprising:

support means for location near a crossing;

a primary warning system mounted on said support means and comprising a pair of incandescent lamp means oriented so as to be visible to a vehicle operator approaching the crossing;

incandescent lamp control means for periodically energizing each of said incandescent lamp means at a given rate;

an auxiliary warning system mounted on said support means and comprising a pair of xenon lamp means oriented so as to be simultaneously visible with said incandescent lamps to the same operator;

xenon control means for periodically energizing each of said xenon lamp means at a predetermined rate;

synchronization means for synchronizing said given and predetermined rates; and

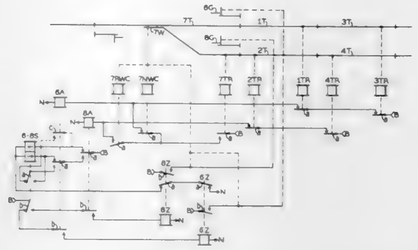
train detector means for producing a train-presence signal to activate said incandescent lamp control means and said xenon control means in response to approach of a train to the crossing.

3,963,203

AUTOMATIC CONTROL SYSTEM FOR RAILROAD INTERLOCKING

Frank T. Pascoe, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Jan. 30, 1975, Ser. No. 545,425
Int. Cl.² B61L *21/04*
U.S. Cl. 246—134 **6 Claims**



1. A control arrangement for automatically alternating the passage of trains from two converging tracks through a track switch into a single track, comprising in combination,

a. a first and a second approach relay coupled for registering the occupancy of the one or the other converging track, respectively, by an approaching train,

b. train detector means coupled for detecting a train occupying a prefixed interlocking area where said tracks converge through said track switch into said single track,

c. an indication means controlled by said switch for registering the established route condition,

d. a sequencing means operable to a first and a second condition corresponding to one and the other converging tracks, respectively,

e. route selection means controlled by said first and second approach relays and by said sequencing means and coupled for enabling the preparation of a route from one or the other converging track as an approaching train is detected in the corresponding track and said sequencing means operates to its corresponding condition,

f. a reset circuit means controlled by said train detection means and said indication means and connected for resetting the approach relay, corresponding to the converging track on which a train, now detected in said prefixed interlocking area, approached, to a non-occupancy condition to register that train's passage into said single track, and

g. an operating circuit means controlled by said first and second approach relays and connected for operating said sequencing means to a condition corresponding to a first approaching train registered occupying a particular converging track and to the other condition when passage of said first train into said single track is registered and a second approaching train is also registered occupying the other converging track.

3,963,204

OUTLET BOXHOLDER

John F. Liss, Duncan, Nebr. 68634

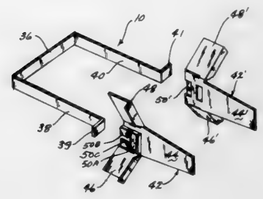
Filed Aug. 29, 1974, Ser. No. 501,592
Int. Cl.² H02G *3/12, 3/18*; **F16B** *5/06*
U.S. Cl. 248—27 R **15 Claims**

1. A means for mounting an electrical outlet box in an opening formed in a wall member, said wall member having inner and outer wall surfaces, comprising,

a substantially U-shaped strap member having a base portion and a pair of depending legs, said strap member adapted to be inserted into the opening in said wall member so that the free ends of said legs extend outwardly therefrom,

a first retainer means slidably mounted on one of said legs and having a first portion thereon for engagement with the said inner wall surface and having a second portion extending outwardly from said opening,

a second retainer means slidably mounted on the other of said legs and having a first portion thereon for engagement with the said inner wall surface and having a second portion extending outwardly from said opening,



said opening, said U-shaped strap member and first and second retainer means adapted to receive outlet box therein, said second portions of said retainer means being deformable so that the second portions of said retainer means may be folded inwardly around the outer edges of said box,

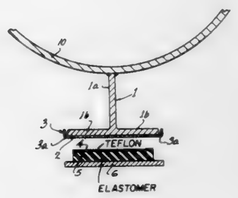
said strap member having free ends on each of said legs for engagement with the outside surface of said wall member.

3,963,205

PIPE SUPPORT SYSTEMS

Drew W. Hageman, P.O. Box 224, Stn. "Q", Toronto, Canada

Filed Apr. 4, 1974, Ser. No. 457,857
Int. Cl.² F16L *3/16*
U.S. Cl. 248—55 **8 Claims**



1. A pipe support comprising

a. a pipe shoe for connection to a pipe;

b. an upper bearing member connected to the pipe shoe to support the same, said member having a horizontal portion that curves upwardly at a pair of opposite edges into a pair of upwardly extending returns, said horizontal portion having a downwardly facing, flat, smooth, horizontal bearing surface fixedly secured thereto; and

c. a lower bearing member beneath the upper bearing member having an upwardly facing, low-friction bearing surface secured to and surmounting a layer of elastomeric material that in turn is secured to and surmounts a base plate for mounting the lower bearing member in a fixed location;

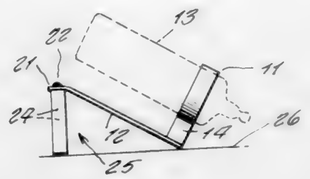
d. said bearing surfaces directly engaging each other in free sliding relationship in any direction in a horizontal plane defined by said surfaces.

3,963,206

BABY BOTTLE HANDLE

Barbara Scolaro, and George Spector, both of 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed May 20, 1975, Ser. No. 579,136
Int. Cl.² A61J *9/06*
U.S. Cl. 248—105 **4 Claims**



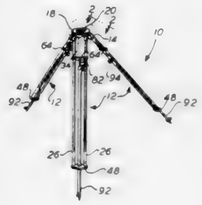
1. In a baby bottle handle device, the combination of a cylindrical ring and a straight handle, said ring being circular and adapted to receive and retain frictionally therethrough a baby bottle, including a transverse spacer fin integrally connecting the ring and one end of said handle wherein said handle is parallel to the ring axis.

3,963,207

ADJUSTABLE SUPPORT LEG

Peter C. Guasti, 48 Crescent Ave., Cliffside Park, N.J. 07010

Filed Sept. 16, 1974, Ser. No. 506,041
Int. Cl.² F16M *11/38*
U.S. Cl. 248—168 **9 Claims**



1. A support leg of the type used as part of a tripod, said tripod having a seat with leg engaging bosses extending therefrom, said leg comprising:

a. a pair of spaced, rod-like members being pivotally securable at one end to the tripod bosses;

b. first spacer means secured to said rod-like members substantially at the end opposed to said end being pivotally securable and having an aperture therethrough;

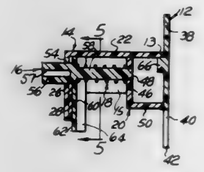
c. second spacer means secured to said rod-like members intermediate said first spacer and said pivotal end;

d. a third rod-like member secured to said second spacer and disposed between said first and second spacers and said pair of rod-like members;

e. a fourth rod-like member slidable through said aperture and engaging said third rod-like member between said first and second spacers and said pair of rod-like members, the end of said fourth rod-like member extending beyond said pair of rod-like members and said first and second spacers and comprising foot means for standing said leg against the ground; and

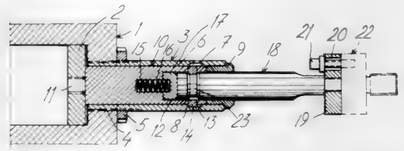
f. engaging means located between said first and second spacer means for adjustably securing said third rod to said fourth rod.

3,963,208
SPRING-PRESSED-PLUNGER ARTICLE HOLDER
Clarence Sova, 2160 Union St., Windsor, Ontario, Canada
Filed Feb. 7, 1975, Ser. No. 547,792
Int. Cl.² A47H *1/10*
U.S. Cl. 248—316 A **1 Claim**



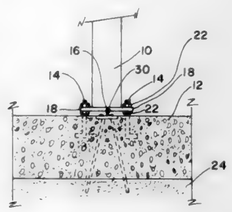
1. A spring-pressed-plunger article holder adapted to be mounted upon an upright wall, said article holder comprising
an elongated hollow open-bottomed support having a top wall and laterally-spaced side walls and a forward end wall,
an article-holder-mounting base plate secured to the rearward end of said support,
said walls and said base plate cooperatively defining an elongated open-bottomed plunger-housing cavity in said support,
said forward end wall having a forward plunger guide hole therethrough and having a fixed article-gripping jaw extending downward therefrom,
a combined rearward spring abutment and plunger guide member disposed in said cavity in direct engagement with said base plate,
said combined abutment and guide member having a rearward plunger guide hole therethrough coaxial with said forward guide hole,
means for securing said rearward spring abutment and plunger guide member within said support cavity with its rearward plunger guide hole in alignment with said forward plunger guide hole,
an elongated plunger slidably mounted in said guide holes and having a push-button portion projecting forwardly from said forward end wall,
said plunger also having a movable article-gripping jaw depending transversely therefrom in parallel relationship to said fixed article-gripping jaw and movable unitarily with said plunger,
and a spring member disposed between said movable jaw and said spring abutment and plunger guide member and adapted to urge said movable article-gripping jaw toward said fixed article-gripping jaw into gripping engagement with an article disposed therebetween,
said combined rearward spring abutment and plunger guide member being of up-ended scoop shaped construction with a front wall, a pair of side walls disposed in spaced parallel relationship, and a bottom wall interconnecting the lower ends of said front wall and side walls,
said plunger being loosely mounted in said rearward guide hole whereby to greatly facilitate tilting and sliding of said abutment and guide member relatively to said plunger during assembly,
said side walls of said abutment and guide member having rounded upper rearward corners adapted to rockably and slidably engage said base plate during tiltable insertion of said member into said cavity.

3,963,209
EJECTOR PIN ASSEMBLY FOR INJECTION MOULDING TOOLS
Hans K. Muller, Krakkarrsgatan 31, 502 40 Boras, Sweden
Continuation-in-part of Ser. No. 245,953, April 21, 1972, abandoned. This application Aug. 21, 1974, Ser. No. 499,545
Claims priority, application Sweden, Apr. 22, 1971, 5240/71
Int. Cl.² B29C *7/00*
U.S. Cl. 249—67 **5 Claims**



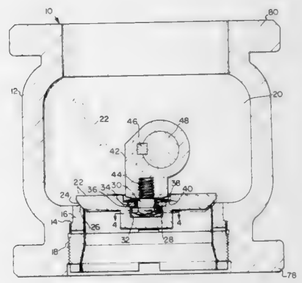
1. An ejector device for a mold for injection molding, comprising a mold having an ejector pin plate located in the mold, a hollow sleeve being secured to the rear end of said mold and projecting backwards therefrom, a sliding member being slidably arranged in said sleeve and having one end thereof positioned for acting upon said ejector plate whereas its opposite end is tubular and is provided with radially extending holes, coupling members slidable in said holes, an ejector rod having a free end portion provided with an annular groove and having at least in said end portion a diameter such that it may be introduced in said tubular part of said sliding member, the wall thickness of said tubular part of said sliding member and the depth of said annular groove of said ejector rod being such that when said groove and said holes are in register and the coupling members are in said annular groove said coupling members do not project outside said sliding member whereas said coupling members project outside said sliding member when said coupling members are in contact with the ungrooved portion of said ejector rod, said sleeve having an internal annular groove provided to receive said coupling members, a spring biassed member being arranged within said tubular part of said sliding member and being provided to hold in its normal outer position said coupling members in their projecting position.

3,963,210
APPARATUS FOR SETTING ANCHOR BOLTS AND OTHER OBJECTS IN CONCRETE SLABS
Charles D. Macklin, 8911 Aldwick Drive, Dallas, Tex. 75238
Filed Mar. 5, 1975, Ser. No. 555,531
Int. Cl.² E04G *17/00*
U.S. Cl. 249—210 **7 Claims**



1. An apparatus for use in setting anchor bolts in concrete, said apparatus comprising a support having a rigid plate, elongate legs extending transversely from one side of said plate for supporting said plate at an elevated position within a concrete form, a pierceable block releasably attached to said plate, a template releasably carrying a plurality of anchor bolts held in a predetermined spacial relationship, and means on said template for releasably attaching said template to said pierceable block whereby said anchor bolts are supported in a predetermined relationship in said form during the pouring of said concrete.

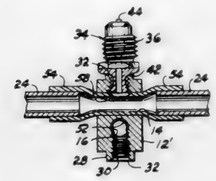
3,963,211
ROTARY VALVE
Edward Bariess Myers, Oreland, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 23, 1974, Ser. No. 517,382
Int. Cl.² F16K *25/00*
U.S. Cl. 251—85 **10 Claims**



1. A control valve for regulating the flow of a fluid, comprising a body portion that forms a valve chamber, an annular seat ring forming an opening in the wall of said chamber, a valve actuator arm mounted at one of its ends for eccentric rocking movement in said chamber about an axis that is radially displaced from the axis of said seat ring, a plug having a spherical shaped seat and a wall forming a recess in a base portion thereof, a connector having a head portion at one end thereof positioned in said recess and a shank extending therefrom that has an end portion connected for movement with said actuator arm, an annular retaining ring positioned in spaced apart relationship to the head portion of said connector, said retaining ring being connected to the recessed wall portion and positioned in spaced relationship about a remaining shank portion of said connector for maintaining said head portion in loose captured relationship in said recess, a biasing means extending between said plug and an outer end of said valve actuator arm to which said shank is connected to apply a biasing force to said plug, said connector and said biasing means enabling said eccentrically mounted plug to be swiveled into line contact with a part of said seat ring and to be jointly tilted and rolled about said seat ring part into and out of fluid tight line surface to surface engagement with an entire annular seating surface on said seat ring.

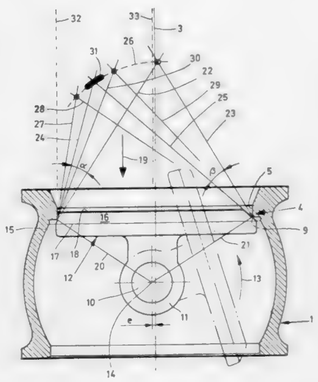
3,963,212
TWO-WAY TEE FOR JOINING REFRIGERANT LINES
John W. Mullins, P.O. Box 20524, Oklahoma City, Okla. 73120
Filed Dec. 23, 1974, Ser. No. 535,630
Int. Cl.² F16K *51/00*
U.S. Cl. 251—145 **1 Claim**

1. A refrigerant line tee, comprising:
an elongated body having a transverse bore;
a tube-like axial extension formed on one end portion of said body,
said extension and said one end portion of said body having a threaded bore communicating with the transverse bore and having an annular outwardly facing seat;
a tube extending through the transverse bore and sealed with said body,
said tube having a lateral aperture communicating with the threaded bore,
the respective end portions of said tube being externally upset adjacent said body; and,
a valve housing threadedly engaged within the threaded bore and having a tapered surface sealing fluid tight with said annular seat,



said valve housing having a central bore and having a depressible valve for opening and closing the central bore.

3,963,213
BUTTERFLY VALVE
Axel Wilhelm Brattberg, Linkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden
Filed Oct. 11, 1974, Ser. No. 514,028
Claims priority, application Sweden, Oct. 15, 1973, 7313937
Int. Cl.² F16K *1/22*
U.S. Cl. 251—306 **6 Claims**



1. A butterfly valve comprising a valve housing defining a valve seat which lies in a plane and a fluid passage which extends through the valve seat and which has an axis normal to said plane, said butterfly valve also comprising a valve member in said housing that is rotatable back and forth about a pivot axis which is spaced in one direction from said passage axis and is parallel to said plane and spaced to one side thereof, such rotation of the valve member carrying it between a closed position in which it sealingly engages the valve seat all around the same and an open position in which the valve member is oriented substantially edgewise to the valve seat, said butterfly valve being characterized by:
A. said valve seat being provided by a radially inner edge on land-like means in the housing, which edge is circular and concentric to the passage axis;
B. said valve member having a peripheral sealing surface cooperable with the valve seat, which surface extends axially from one to the other of a pair of parallel planes and corresponds to the frustum of an oblique circular cone symmetrical to a plane which is normal to the pivot axis and which contains the passage axis, said cone, considering the valve member in its closed position, having its

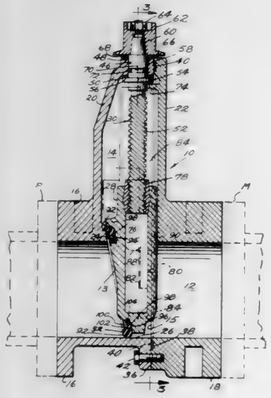
circular base normal to the passage axis and having its apex spaced to the opposite side of the valve seat and spaced in said direction from the passage axis, and said surface thus being circular on each of said pair of planes and on every plane between them that is parallel to them, for close fit with said circular edge that provides the valve seat, and the apex of said cone being further so located that in the plane of symmetry of said cone its generatrices are at wedging angles to valve member rotation tangency lines, said tangency lines intersecting the points of contact in said plane of symmetry between the valve member and the valve seat and being respectively normal to imaginary lines in said plane of symmetry that pass through said points of contact and the pivot axis.

3,963,214

RESILIENT SEATED GATE VALVE WITH SPLIT BODY

Frank C. Hackman, Albertville, Ala.; Lawrence F. Luckenbill, and Joseph L. Daghe, both of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Filed Nov. 26, 1974, Ser. No. 527,493
Int. Cl.² F16K 3/12
U.S. Cl. 251—326 **27 Claims**



1. A gate valve structure for use in mains carrying a fluid, said gate valve structure comprising:

a valve casing having a through-bore for the flow of fluid, an elongated chamber intersecting said through-bore intermediate its ends and defining inlet and outlet ports to the chamber, and a valve seat surrounding one of said ports in said through-bore;

said valve casing being divided into two body members on a plane normal to an axis of said through-bore, and said body members, when secured to each other, defining said elongated chamber and said through-bore, one of said body members containing said valve seat and being provided with a bore to the exterior thereof having an axis normal to said through-bore;

said valve seat in said one body member lying generally in a plane which converges at an acute angle to a plane normal to the axis of the through-bore and towards the other body member, said valve seat further facing said other body member except at a bottom portion thereof where it merges into and forms a portion of said through-bore of said one body member;

a generally flat gate member reciprocable in said elongated chamber from a closed position across said through-bore and seating against said valve seat to an opened portion out of said through-bore, said gate member including an annular resilient seal member having a bulbous portion for engaging said valve seat;

means for adjustably retaining said seal member on said gate member;

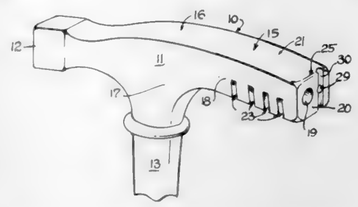
and valve stem means operatively connected to said gate member and extending through said bore in said one body member, said valve stem means being operable to move said gate member between the closed and opened positions.

3,963,215

NAIL EXTRACTOR TOOL

Harry F. Connor, 3066 Alviena Drive, San Jose, Calif. 95133

Filed Oct. 28, 1975, Ser. No. 625,936
Int. Cl.² B66F 15/00
U.S. Cl. 254—26 R **3 Claims**



1. A nail extracting tool for pulling nails having a head portion extending from a surface below which the balance of such nail is embedded comprising:

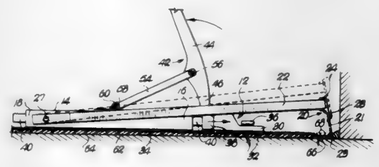
1. a handle;
2. a solid member extending laterally from one end of said handle;
3. a bore formed in said solid member from the free end thereof toward said handle for receiving that portion of a nail extending from and to be extracted from such surface;
4. said solid member having an arcuate contour on its extreme outer face adapted to engage the surface from which the nail is to be pulled;
5. a fulcrum corner between said outer face and the free end of said solid member for initially bending the shank of such nail at the open end of said bore during manipulation of said handle by movement thereof about said fulcrum corner and to thereby create a snubbing action between such nail and the solid member during continued movement of the arcuate outer face of the latter relative to the surface from which the nail is to be extracted; and
6. a slit formed in said solid member from that face thereof opposite its arcuate outer face into communication with the bore formed in said member for receiving the head of a nail disposed in the bore during the initial bending of the shank of such nail.

3,963,216

CARPET STRETCHER

Harold Richard Victor, 1300 E. Elm, Olathe, Kans. 66061

Filed June 23, 1975, Ser. No. 589,434
Int. Cl.² A47G 27/04
U.S. Cl. 254—62 **9 Claims**



1. An adapter for converting a carpet stretcher having an elongate base and a carpet-engaging head telescopically

mounted on the normally front end of the base from a tool that pushes against a rear wall to a tool that pulls against a forward tack strip, said adapter including:

a pair of elongate, laterally spaced apart support arms, each having a first and second end;

a coupler at said first ends for detachably connecting said arms to said base behind said front end; and

an anchor carried by said second ends,

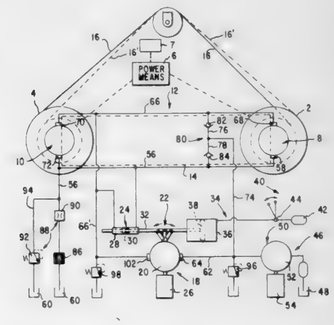
said arms being of sufficient length to position said anchor beyond said carpet-engaging head when the adapter is connected to said base by said coupler, thereby permitting the anchor to engage the remote edge of a tack strip beyond said head to retain the base as the head is shifted away from said base toward said anchor.

3,963,217

LINE TENSIONING SYSTEM

Bernard L. Dwight, 507 W. "M" St., Springfield, Oreg. 97477

Filed Nov. 11, 1974, Ser. No. 522,451
Int. Cl.² B66D 1/26
U.S. Cl. 254—185 R **30 Claims**



1. A line tensioning system, comprising:

powered drum means engaging the line at opposite ends thereof for alternately spooling and unspooling the line;

fluid actuated fixed displacement means connected with at least one of said drum means for applying a force to said one drum means, so as to exert tensioning effort upon the line when unspooled therefrom; and

variable displacement means in fluid communication with said fixed displacement means for supplying fluid to and receiving fluid from said fixed displacement means and for maintaining a constant fluid pressure differential between the pressure of said fluid supplied to said fixed displacement means and said fluid received from said fixed displacement means in spite of fluctuations in the pressure of the fluid either received from or supplied to said fixed displacement means, whereby a uniform tensioning effort is exerted on said line during spooling and unspooling by said one drum means.

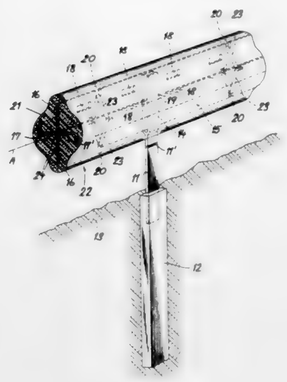
3,963,218

VEHICLE GUARDRAIL WITH METAL CORE

Ernest Glaesener, Dudelange, Luxemburg, assignor to Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED, Luxembourg, Luxemburg

Filed June 26, 1973, Ser. No. 373,867
Claims priority, application Germany, June 29, 1972, 2231763
Int. Cl.² E01F 15/00
U.S. Cl. 256—13.1 **9 Claims**

1. A continuous guardrail assembly comprising: a flexible rail consisting of a core and a sheath, said core comprising a continuous elongated metal core structure of sheet metal of longitudinally extending angularly adjoining plate sections respectively lying in mutually intersecting longitudinal planes, said sheath comprising a continous mass of synthetic-resin foam surrounding said core structure, said structure being fully embedded in said foam mass and said mass completely



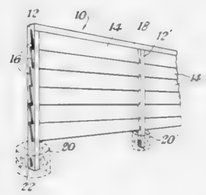
filling said structure; and a plurality of breakaway posts supporting said structure at predetermined intervals, said core structure and said posts being formed with mating means adapted to enable said structure to receive said posts.

3,963,219

FENCE

Anthony J. D'Amico, 10390 NW. 36th St., Coral Springs, Fla. 33065

Filed Apr. 30, 1974, Ser. No. 465,693
Int. Cl.² E04H 17/14
U.S. Cl. 256—24 **2 Claims**



1. A fence comprising:

a plurality of rigid, intermediate vertically oriented aluminum support members, said support members being tubular in construction and having a plurality of obliquely oriented oppositely disposed on each face parallel to slotted portions on opposite side walls, said slotted portions lying in the same plane between adjacent vertical intermediate support members;

a plurality of relatively long, continuous aluminum, relatively thin flexible panels said panels being threaded and disposed through the slotted portions in the same plane of the intermediate vertical support members; and

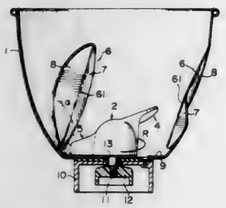
at least two terminal vertical supports, and a means for coupling said flexible panels to said terminal vertically supports having a plurality of oblique slotted parallel side wall portions for receiving said panels therethrough;

said flexible panel end has a cut-away portion forming a tab which is received through and wrapped about one of said terminal posts, and a fastening means for coupling said tabbed end portion of said flexible panel to said terminal vertical support member.

3,963,220
KNEADING MACHINE

Shuzo Ohchi, 39-3, Wada 3-chome, Suginami, Tokyo, Japan

Filed June 23, 1975, Ser. No. 589,778
Claims priority, application Japan, July 5, 1974, 49-76495; July 5, 1974, 49-76496
Int. Cl.² B02C 18/12
U.S. Cl. 259—107 5 Claims



1. A kneading machine comprising:
a pot having an open top and a diameter gradually increasing upward from the bottom thereof;
a rotatable blade centrally installed at the bottom of said pot;
a plurality of projections provided on the inside wall of said pot and inclined to the central vertical axis of said pot;
said rotatable blade comprising a blade body, a small blade and a large blade integrally fitted to said body at a circumferential angle of separation of 180° - 270°;
said small blade comprising a rectangular plate fitted to said body and extending outwardly therefrom and forwardly downwardly inclined relative to said central vertical axis of said body, the bottom of the small blade being on the same horizontal plane as the bottom of said body, said small blade having a top side integrally fitted to said body at a position thereof lower in the vertical direction than the top center of the body;
said large blade having a wing-shaped top surface rising outwardly from a position adjacent the topmost plane of the body, said large blade having a trailing surface on substantially an extension of said top side of said small blade; and
said wing-shaped top surface of said large blade being inclined downwardly from the trailing edge thereof to the leading edge thereof.

3,963,221
MIXING APPARATUS

Chang-Han Yi, Belle Mead, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 28, 1974, Ser. No. 446,783
Int. Cl.² B01F 5/00
U.S. Cl. 259—180 4 Claims

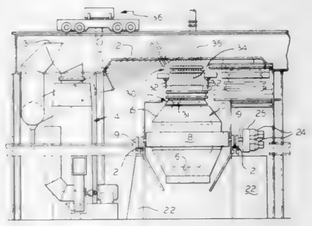


1. A mixing apparatus comprising a conduit of a predetermined length extending along a main flow path, wherein the cross-sectional area of said conduit is substantially constant at all positions along said main flow path, and wherein said mixing apparatus is composed of a plurality of units of predetermined length disposed adjacently and serially along said main flow path, each unit having an ingress end and an egress end, and each unit being composed of a plurality of sub-conduits, each sub-conduit of each unit having a major axis and a minor axis in cross-section at the ingress end thereof, means within each unit to alter each sub-conduit such that the major and minor axes in cross-section are reversed at the egress end of each unit, wherein the cross-sectional area of each sub-conduit of each unit is substantially constant throughout the entire length of each unit, wherein each sub-conduit of each unit is described by planar surfaces, and wherein the major and minor axes in cross-section of each sub-conduit at the egress end thereof are reversed with respect to the major and minor axes in cross-section of each sub-conduit at the ingress end of the next adjacent unit along said main flow path, said mixing apparatus being suitable for use in the gravity feed mixing of granular materials.

3,963,222
GAS COLLECTING HOOD FOR METALLURGICAL VESSEL

Rashed N. Nagati, New Castle, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Feb. 28, 1975, Ser. No. 554,312
Int. Cl.² C21C 5/40
U.S. Cl. 266—158 12 Claims

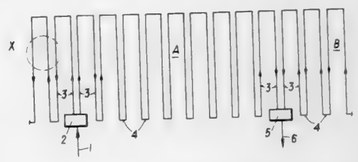


1. A hood for receiving gases from the open end of a metallurgical vessel in which oxygen is delivered to a metal charge wherein substantial quantities of hot gases are evolved,
said hood including a hollow elbow portion having an inlet adapted to be positioned above the open end of said vessel for receiving upwardly directed gases and an outlet, said elbow portion also including a laterally extending upper surface area lying in the path of said upwardly directed gases for intercepting said gases and for redirecting the same generally laterally to said outlet,
and flow divider means disposed in said elbow and positioned in the path of said upwardly directed gases, said flow divider means including a portion arranged in general parallelism with the flow direction defined by said surface area and generally across a portion of the path of said upwardly directed gases and between the inlet of said hood and said area for dividing said elbow into upper and lower flow passages beneath said surface area to divert a substantial portion of said gases to said outlet without direct contact with said surface area.

3,963,223
METALLURGICAL VESSEL, IN PARTICULAR A CONVERTER

Manfred Eysn, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed July 1, 1974, Ser. No. 484,781
Claims priority, application Austria, July 23, 1973, 6469/73
Int. Cl.² C21C 5/46
U.S. Cl. 266—241 12 Claims

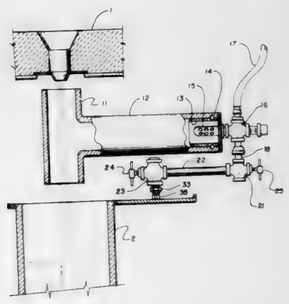


1. A metallurgical vessel, e.g. a converter having a converter mouth, said metallurgical vessel being surrounded by a steel jacket, carried in a carrying ring, rotatable about a trunnion axis, provided with an expansion bearing and a tilt drive, the expansion bearing lying opposite the tilt drive, said metallurgical vessel being provided in zones of heavy thermal wear with a plurality of tubes through which a coolant flows, the tubes having a generally semicircular cross section and being welded to the jacket of the metallurgical vessel, one end of the series of tubes being connected to a coolant distributor and on the other end being connected to a coolant collector, a coolant-supply-conduit and a coolant-discharge-conduit being connected to said distributor and collector, respectively, wherein the improvement comprises a U-shape for the tubes, each U-shaped tube having its own separate base and leg sections, the tubes forming the legs of the U-shape being arranged side by side in the vertical direction with the base of the U-shape at one end when the vessel is in its operating position, said tubes being located along a generatrix of the jacket of the metallurgical vessel and the leg ends of one U-shaped tube being connected with the leg ends of the adjacent tube by connecting conduits.

3,963,224
GAS SHROUD

Bernard Robert Pollard, Aliquippa, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed July 30, 1975, Ser. No. 600,330
Int. Cl.² B22D 11/10
U.S. Cl. 266—207 4 Claims



1. In the combination of shrouding apparatus for establishing and maintaining a protective gaseous atmosphere around a liquid stream during its transfer between distribution means comprising a first container having a liquid exit opening for passing the liquid stream through said shrouding apparatus and into collection means comprising a second container having a liquid entry opening, wherein the improvement comprises:
shrouding apparatus comprising
a. a shroud head having an open-ended tubular member positioned between said first and second containers without contacting said first and second containers and a second tubular member having an open end and its other end connected with said first tubular member so as to form an interconnecting passageway for the passage of a protective gas between said tubular members;
b. an end member releasably connected to and in substantially sealed relationship with the open end of said second tubular member, said end member supported by and connected to linkage positioning means comprising at least two pivot points for positioning said shroud head between said first and second containers; and
c. gas delivery means for passing a protective gas into and through said end member and, thereafter, through said second and first tubular members so as to cause the protective gas to exit from the open ends of said first tubular member.

3,963,225
TELESCOPIC GAS SPRINGS

Lawrence George Nicholls, Birmingham, England, assignor to Girling Limited, Birmingham, England

Division of Ser. No. 259,578, June 5, 1972. This application Apr. 29, 1974, Ser. No. 465,240
Int. Cl.² F16F 5/00
U.S. Cl. 267—65 R 5 Claims



1. A gas spring comprising a cylinder containing gas under pressure and having a closed end and an open end, a piston rod and piston assembly operating in said cylinder, said rod extending slideably and sealingly through the open end of the cylinder and being moveable between a normally fully retracted position within the cylinder and a normally fully extended position, the pressure of the gas in said cylinder acting on the cross sectional area of said rod to urge it at all times towards its normally extended position, said piston being connected to said rod and slidably engaging the wall of said cylinder, damping orifice means extending through said piston, a reduced diameter bore at the closed end of said cylinder and having one end opening into said cylinder and its opposite end closed and immovable relative to said cylinder an extension carried by said piston rod and piston assembly and extending towards and in axial alignment with the open end of said reduced diameter bore, the relative length of said extension and said bore being such that said extension is clear of said reduced diameter bore when said piston rod is in its extended position, with said extension slidably and sealingly

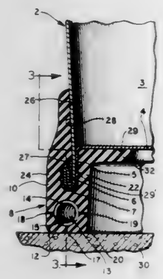
entering said bore during the terminal movement of said rod towards its retracted position to check the same by the increased fluid pressure trapped in said bore by said extension, said increased pressure in said bore thereafter providing an initially higher thrust on said rod during its initial movement from its retracted to its extended position than would be provided by the pressure of the gas alone in the cylinder the quantity of gas under pressure in said cylinder and said bore remaining at all times substantially constant.

3,963,226

REFUSE CONTAINER EDGE PROTECTOR

John J. Jankowski, Jr., 2511 N. Richmond St., Chicago, Ill. 60647

Filed Nov. 11, 1974, Ser. No. 522,587
Int. Cl.² B65D *7/42, 25/26;* **F16F** *3/07, 3/10*
U.S. Cl. 267—116 **10 Claims**



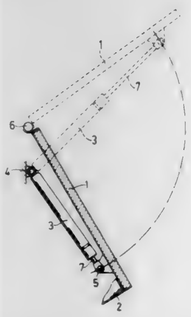
1. An edge protector for a container comprising an elastomer annulus adapted to fit about the lower edge of the container and having an air spring portion and a metal spring associated therewith, said springs disposed to operate conjunctively to absorb drop shocks imposed on the container, and said air spring comprising a tubular chamber formed in the annulus and partially-closed ports communicating the air chamber with the atmosphere.

3,963,227

GAS SPRING WITH DUAL DAMPING ARRANGEMENT

Werner Mölders, Mayen, Germany, assignor to Stabilus GmbH, Koblenz-Neuendorf, Germany

Filed Mar. 18, 1975, Ser. No. 559,515
Claims priority, application Germany, Mar. 26, 1974, 2414457
Int. Cl.² F16F *5/00*
U.S. Cl. 267—120 **8 Claims**



1. A damping arrangement comprising:

a. a support defining an interior space having an open side;
b. a lid member;
c. hinge means securing said lid member to said support for movement about a horizontally extending axis between a first position in which said lid member closes said open side and a second position remote from said first position; and
d. a gas spring including:
1. a cylinder having an axis and defining an axially elongated cavity therein, said cylinder including two axially spaced radial end walls,
2. a piston axially movable in said cavity and dividing the same into two compartments,
3. means defining a throttling passage connecting said compartments,
4. a piston rod attached to said piston and passing axially outward of said cavity in sealing engagement with one of said end walls,
5. a body of gas and a body of liquid jointly filling said cavity, the pressure of said gas being higher than atmospheric pressure,
6. a plunger member secured to said one end wall in said cavity,
7. a receptacle member mounted on said piston, said receptacle member being open toward said plunger member and dimensioned to receive said plunger member during axial movement of said piston rod outward of said cavity;
e. first pivot means pivotally fastening the other end wall to said support; and
f. second pivot means pivotally fastening said piston rod to said cover member,
1. said second pivot means being downwardly spaced from said first pivot means in said first position of said lid member,
2. said second pivot means being upwardly spaced from said first pivot means in said second position of said lid member, and
3. the spacing of said first and second pivot means being sufficiently greater in said second position than in said first position to cause said plunger member to be received in said receptacle member in said second position of said lid member,
4. said plunger member and said receptacle member jointly bounding a throttling aperture open toward said one compartment when said plunger member enters said receptacle member during said axial movement of said piston rod.

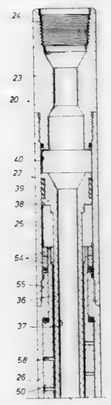
3,963,228

DRILL STRING SHOCK ABSORBER

Arun P. Karle, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,525
Int. Cl.² F16F *1/06*
U.S. Cl. 267—166 **9 Claims**

1. A shock absorber apparatus for use in a drill string, comprising: telescopically disposed and slidably splined mandrel and housing members, one of said members being adapted for attachment to a drill string and the other of said members being adapted for attachment to a drill bit; an elongated, helical coil spring reacting between said members to absorb longitudinal vibrations and shock loads; and a hollow flow tube having one end portion sealingly slidable with respect to said housing member and another end portion sealingly slidable with respect to said mandrel member, said flow tube defining wall surfaces of a chamber that encloses said coil spring and contains a lubricating oil, said flow tube being



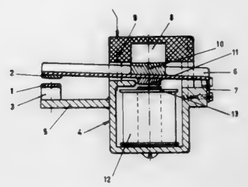
arranged to transmit the pressures of a drilling fluid within said members to said oil.

3,963,229

DEVICE FOR MANIPULATING YARNS

Adrianus Henricus van Duynhoven, Deurne, Netherlands, assignor to Ruti-Te Strake B.V., Deurne, Netherlands

Filed Dec. 20, 1973, Ser. No. 426,798
Claims priority, application Netherlands, Dec. 22, 1972, 7217620
Int. Cl.² B25B *11/00;* **B26D** *7/02*
U.S. Cl. 269—8 **1 Claim**



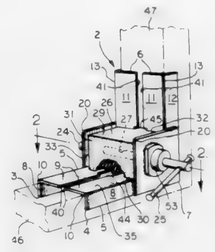
1. A device for high speed manipulation of yarn, comprising a movable yarn-clamping jaw that is movably mounted for movement between an inoperative position and an operative position, wherein the improvement comprises an electric coil mounted adjacent to the inoperative position of said jaw, and a body of conducting, nonmagnetic material mounted on said jaw which approaches most closely to said coil when said jaw is in its inoperative positive, and in which eddy currents are induced by a pulse of current passed through said coil, to repel said jaw away from said coil toward its operative position, said yarn-clamping jaw also carrying an armature of magnetic material, and an electromagnet coil being mounted in a position which is most closely approached by said armature when said jaw is in its operative position, and which when energized maintains said jaw in its operative position.

3,963,230

STUD AND BEAM CLAMP

John J. Jankowski, Jr., 2511 N. Richmond St., Chicago, Ill. 60647

Filed Nov. 11, 1974, Ser. No. 522,588
Int. Cl.² B25B *1/00*
U.S. Cl. 269—41 **6 Claims**



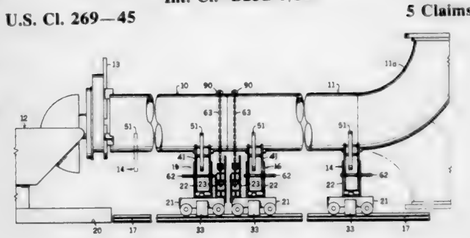
1. A clamp comprising a pair of opposed jaws presenting opposing abutment elements, a deformable elastomer member interposed between said elements, said jaws defining angularly offset passages accommodating deformation of said member therethrough for engagement with associated parts clamped by said jaws, and means for drawing the jaws into clamping position and deforming said member.

3,963,231

PIPE POSITIONING, ROTATING AND FITTING APPARATUS FOR WELDING

Cleveland N. Cooper, Kirkwood, Mo., assignor to The Pandjiris Weldment Co., St. Louis, Mo.

Filed Nov. 25, 1974, Ser. No. 526,708
Int. Cl.² B25B *1/20*
U.S. Cl. 269—45 **5 Claims**

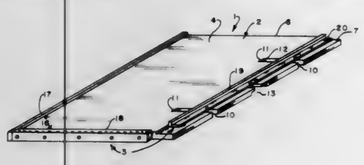


1. In an apparatus for supporting and rotating two pipes for welding adjacent ends thereof, an improved support means for aligning said adjacent ends comprising:

a. a support unit including:
1. base means, and
2. support means carried by the base means and including a pair of transversely spaced support rolls engageable by one of said adjacent pipe ends, and
3. clamping means carried by the base means and including means disposed about said one pipe end for applying a transverse force to said pipe end tending to urge said end into engagement with the support rolls and tending to deform said end relative to said other pipe end to align said pipe ends for welding,
b. the clamping means including means embracingly disposed about the pipe and having opposed ends, and first and second connection means connecting said ends to said base means at transversely spaced points on said base means, and
c. one of said connection means including saddle means carried by the base means, lever means pivotally mounted to the saddle means and connected to one end of said pipe embracing means in spaced relation from the lever

pivot axis, and cam means pivotally mounted to the saddle means and slidably engageable with the lever means upon pivotally movement of the cam means to rotate said lever means and apply a pull to said one end of said pipe embracing means.

3,963,232
TILE BOARD FOR CONSTRUCTING CERAMIC TILE SHEETS
John R. Rumpf, 9233 Litzsinger, St. Louis, Mo. 63144
Filed Oct. 4, 1974, Ser. No. 512,127
Int. Cl.² B25B *11/02*
U.S. Cl. 269—254 CS **8 Claims**



1. A device for aligning a plurality of ceramic tiles to facilitate the application of adhesive grout between adjacent tiles, comprising:

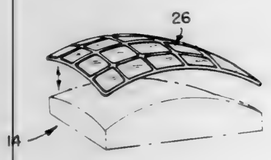
a generally rectangular backer board having at least four edges, an upper surface and a lower surface, said backer board having a channel in it, said channel having a first width along said upper surface, and a second width along the lower surface of said backer board; and

lip means extending above at least three of said edges, said lip means including:

a stationary retaining means attached to two adjacent edges of said backer board; and

manipulative means movably mounted to said backer board along a third edge, said manipulative means comprising a straight edge part, a follower movable in one of said first and said second width portions of said channel, and a hand grip movable in the other of said first and said second width portions, and means for biasing said straight edge part against said third edge of said backer board, said biasing means comprising a pair of springs mounted between said manipulative means and said backer board.

3,963,233
FABRICATING A GLASS LAMPSHADE CONSTRUCTION FORM
Howard L. Worden, P.O. 271, Granger, Wash. 98932
Division of Ser. No. 387,929, Aug. 13, 1973, Pat. No. 3,872,574. This application Nov. 13, 1974, Ser. No. 523,510
Int. Cl.² B23P *17/00;* **B23Q** *3/00*
U.S. Cl. 269—289 R **6 Claims**

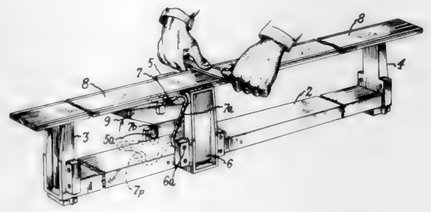


1. A method of constructing a partial lampshade construction form, comprising:

producing an original form which reflects the desired shape of the shade, and

producing from the original form at least one segment defining a partial form which is an integer portion of the original form whereby an integer number of segments identical to said partial form may be joined together to reproduce the shape of the original form.

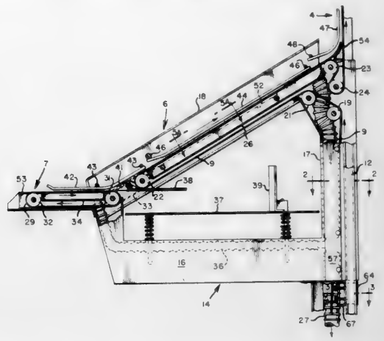
3,963,234
SKI CLAMPING APPARATUS
Leonard M. Bejtlich, 4 Martha Lane, Lenox, Mass. 01240
Filed Feb. 4, 1975, Ser. No. 546,870
Int. Cl.² B23Q *3/00*
U.S. Cl. 269—296 **16 Claims**



1. A ski clamping apparatus for holding a ski in position to facilitate scraping and waxing thereof comprising an oblong support base, a first block and a second block, said blocks being mounted in fixed position respectively adjacent the extreme opposite ends of said base with predetermined portions of the blocks extending upward from one surface of the support base, the predetermined portion of each of said blocks extending upward from the support base being shaped to define a generally flat ski supporting surfact at its uppermost extremity, said generally flat ski supporting surfaces together being operable to support a ski thereon above the support base, a latching means pivotally mounted on the support base to pivot relative to said surface of the support based adjacent the mid-point thereof for engaging a portion of a ski binding on a ski supported on said blocks and for holding the ski in tension bent against its camber on the generally flat surfaces of said blocks, said latching means being pivotable from a first position adjacent said surface on the support base to a second position wherein it is operable to engage a portion of a ski binding on a ski supported on said blocks thereby to hold the ski on the generally flat surfaces of said blocks.

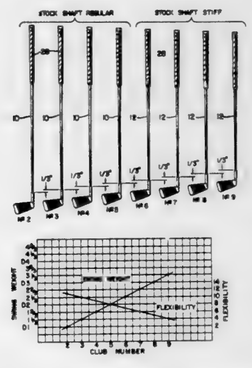
3,963,235
ADJUSTABLE FEED LEVEL FOR SORTING DEVICE
Donald L. Snellman, and Wade C. Vaughn, both of Seattle, Wash., assignors to Norfin, Inc., Seattle, Wash.
Continuation-in-part of Ser. No. 297,357, Oct. 13, 1972. This application July 23, 1973, Ser. No. 381,983
Int. Cl.² B65H *29/16*
U.S. Cl. 271—64 **27 Claims**

1. In combination with a sheet sorting device; a sheet conveyor system for receiving and transporting sheets to receiver bins, said conveyor system including conveyor belt means having a generally vertical run, an infeed section associated with said vertical run, and having guide means for first directing said belt means away from the direction of said vertical run along a lower run and then in a reverse direction along an upper run to return to said vertical run, said upper run being adapted to receive incoming sheets to the conveyor system,



and means mounting said infeed section for vertical reciprocating adjustment along the vertical run of the belt means.

3,963,236
GOLF CLUB SET AND METHOD OF MAKING
Robert S. Mann, P.O. Box 2615, Ormond Beach, Fla. 32074
Filed Aug. 24, 1970, Ser. No. 66,186
Int. Cl.² A63B *53/00*
U.S. Cl. 273—77 A **27 Claims**



1. A matched and correlated set of successively numbered golf irons including at least the series from the No. **2** iron to the No. **9** iron in which the lowest numbered iron has a determinable swing weight, and in which each successively higher numbered iron has a greater swing weight than the preceding iron from the lowest to the highest numbered iron in the set.

27. A method for producing a matched and correlated set of successively numbered golf irons including at least the series from the No. **2** iron to the No. **9** iron wherein the clubs decrease in length and increase in loft angle from the lowest numbered iron to the highest numbered iron in the set which comprises the steps of:

a. providing a series of shafts decreasing substantially uniformly in length to attain the proper finished total length for each iron and the said shafts further having uniformly decreasing flexibility from the lowest to the highest numbered iron in the set;

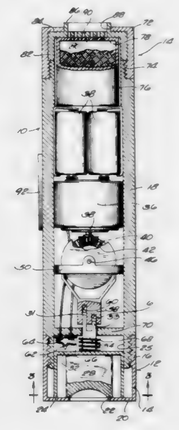
b. providing a series of successively numbered heads from the lowest to the highest number in the set and making each successive higher numbered head heavier than the preceding head by an amount sufficient to increase the swing weight in substantially uniform increments from the lowest to the highest numbered iron in the set;

c. attaching the shaft of greatest length and flexibility to the lowest numbered head;

d. attaching the shaft of next lower flexibility and length to the next higher numbered head, and

e. repeating the procedure of steps (c) and (d) until all of the shafts have been attached to their respective heads.

3,963,237
HAND-HELD POWER CUE STICK CHALKER AND TALCUM POWDER DISPENSER
Todd E. Bushberger, 8429 W. Mitchell, West Allis, Wis. 53214
Filed Sept. 23, 1974, Ser. No. 508,298
Int. Cl.² A63D *15/16*
U.S. Cl. 273—19 **3 Claims**



1. Apparatus of the type described comprising, in combination,

an elongated, generally tubular body having a longitudinal axis and opposite axial ends,

means defining a first opening in one of said axial ends of said body;

means for supporting a chalk cube in said body at said first opening,

drive means in said body spaced along said axis from said chalk cube and connected to said chalk cube for oscillating said chalk cube through a prescribed arc which forms a substantially rectilinear path in a plane generally perpendicular to said axis so that cue chalk is transferred to the end of a cue stick engaged with the chalk cube,

an electric battery arrangement in said body connected to and supplying the power source for said drive means,

means defining a second opening in said body spaced longitudinally on said body from said first opening,

means at said second opening defining a chamber for storage of talcum powder and including means for selectively opening and closing said second opening for selectively dispensing talcum powder from said chamber,

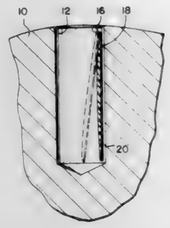
said means for supporting said chalk cube being further operative to support said chalk cube for movement in an axial direction and generally perpendicular to the plane of oscillatory movement of the chalk cube,

and switch means in said body associated with said chalk cube, connected in the electrical circuit of said battery arrangement and said drive means, and responsive to movement of said chalk cube in said axial direction in response to cue stick engagement with and disengagement from the chalk cube to complete and open the electrical circuit to said battery source.

3,963,238
BOWLING BALL AND GRIPPING DEVICE

Jerry M. Patrignani, N. Tarrytown, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Nov. 6, 1975, Ser. No. 629,372
Int. Cl.² A63B *37/00*
U.S. Cl. 273—63 A **8 Claims**

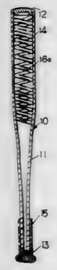


1. A bowling ball finger or thumb hole insert, comprising an elongated rigid member adapted to be inserted into said hole, spring means in communication with said member whereby said member is urged between a forward and relaxed position extending generally diagonally of said hole and a rearward, compressed and tensioned position extending substantially parallel with the inner wall surface of said hole, said finger or thumb adapted to contact said member whereby said spring means is compressed and tensioned.

3,963,239
BASEBALL BAT

Hirokazu Fujii, No. 59, 2-chome, Obiraki-cho, Fukushima, Osaka, Japan

Continuation-in-part of Ser. No. 237,390, March 23, 1972, abandoned. This application June 28, 1974, Ser. No. 484,348
Claims priority, application Japan, Mar. 23, 1973, 46-20827; June 6, 1971, 46-56014
Int. Cl.² A63B *59/06*
U.S. Cl. 273—72 A **5 Claims**

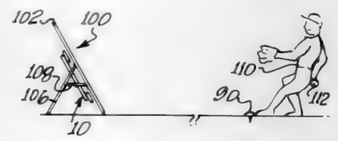


1. A substantially hollow metallic ballbat having a high impact resistance and being adapted to a change in weight, center of gravity and repelling force which comprises a generally cylindrical barrel portion defining a generally cylindrical barrel chamber and a generally cylindrical handle portion defining a generally cylindrical handle chamber, said barrel portion and its associated chamber being larger in diameter than said handle portion and its associated chamber, respectively, said barrel portion being connected to said handle portion by a tapered intermediate portion which contains a tapered intermediate chamber which connects said barrel chamber with said handle chamber, and said barrel portion having an open end, a closure means removably disposed in the open end of said barrel portion and a hard, rigid, lightweight, high impact resistant, coiled, cylindrical reinforcing member removably disposed inside said barrel chamber and extending substantially the entire length of said barrel chamber and into the upper region of said tapered chamber, the outer periphery of said reinforcing member being in tight engaging relationship with the wall of the barrel chamber and the wall of the upper region of said tapered chamber and tending to expand against the increasing pressure of the walls of said barrel chamber and tapered chamber due to the changing diameter of said chambers, said reinforcing member producing a high impact resisting force in said bat.

3,963,240
AIMING AND SCORING ATTACHMENT FOR PITCHBACK NETS

Lynn W. Tidwell, 3056 Quincy, Ogden, Utah 84403

Filed Feb. 12, 1975, Ser. No. 549,137
Int. Cl.² A63B *71/00*
U.S. Cl. 273—102.1 C **16 Claims**



1. An aiming and scoring attachment for a baseball pitchback device comprising an open frame having a central opening therethrough, and elastically deflectable panel spanning said opening and secured about its perimeter to said frame, and means for supporting said frame in a generally upright position of use, wherein a ball may be thrown against the panel to deflect the panel rearwardly, whereby the elastic strain energy developed in the panel during rearward deflection thereof returns the panel forwardly to impel the ball back toward the thrower, said attachment comprising:

mounting means adapted to be secured to said pitchback device behind said panel, at least one arm pivoted on said mounting means for free swinging movement about a given axis,

spring means for urging said arm in one direction of rotation about said axis,

target means at the outer end of said arm including a target member mounted on the arm for extension in said one direction of rotation and retraction in the opposite direction of rotation relative to said arm, a spring for urging said target member in said one direction of rotation relative to the arm, and annunciator means actuated by retraction of said target member relative to the arm to produce a signal, and

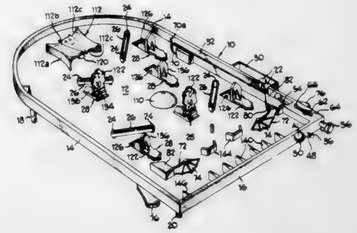
limit stop means for limiting swinging movement of said arm in said one direction of rotation to a normal position wherein said target member is disposed to be located adjacent the rear side of said panel and limiting swinging movement of said arm in said opposite direction of rotation to a retracted position in a manner such that impact of a ball with said panel opposite said target member deflects the panel rearwardly to actuate said annunciator means and drive said arm rearwardly toward its retracted position to permit sufficient deflection of the panel to return the ball toward the thrower.

3,963,241
GAME APPARATUS WITH SOUNDING DEVICE

Burton C. Meyer, Downers Grove, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Division of Ser. No. 325,584, Jan. 22, 1973, Pat. No. 3,884,472. This application Feb. 18, 1975, Ser. No. 550,205
Int. Cl.² A63F *7/00, 7/10*
U.S. Cl. 273—121 R **4 Claims**

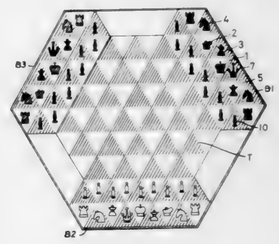
1. In a pinball type game, or the like, which includes means defining a playing surface over which a playing object may be propelled, a playing object to be propelled upon said playing surface, a playing object propelling device located in proximity to said playing surface so as to be capable of propelling a playing object upon said playing surface, said propelling device including flipper means selectively operable by participants of the game to propel the playing object over the playing surface when the playing object moves into contact with said flipper means, and means selectively actuatable by participants of the game and operatively connected to said flipper means to operate the same, the improvement in said propelling device comprising sound means distinct from the operative connection between said means selectively actuatable by participants of the game and said flipper means, and means operatively connecting said sound means to said means selectively actuatable by participants of the game for rendering an audible sound in response to actuation of said means selectively actuatable by participants of the game.



3,963,242
CHESS GAME FOR THREE PEOPLE

Andreas Treugut, Rothenbach, and Jurgen Bottcher, Nurnberg, both of Germany, assignors to Modell-System-Beratung Dietmar Stegmann, Heinrich Koller, Nurnberg, Germany

Filed Feb. 10, 1975, Ser. No. 548,870
Claims priority, application Germany, Feb. 11, 1974, 2406462
Int. Cl.² A63F *3/02*
U.S. Cl. 273—131 L **5 Claims**

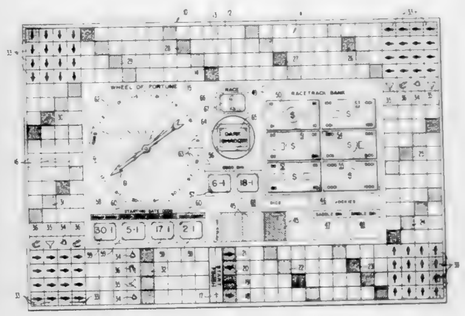


1. A chess game for three persons comprising means having a hexagonal playing surface with three shorter and three intermediate, alternating longer sides, said surface being divided into triangular playing fields of two alternate colors, three sets of chessmen including pawns and officers, the length of the shorter sides of the playing surface being four times the lateral length of the triangular playing fields and serving as groundlines for the three players, the length of said longer sides being five times the lateral length of the triangular playing fields, there being blank portions without triangular playing fields along said longer sides so that the playing surface consists of one-hundred and six playing fields, each set of chessmen including nine of said officers and nine of said pawns, eight officers being the same as in conventional chess and the ninth officer having a shape that is different from all other of said chessmen.

3,963,243
HORSE RACING BOARD GAME APPARATUS

Jerry Contento, 622 W. New York Ave., Somers Point, N.J. 08244

Filed Sept. 3, 1975, Ser. No. 609,926
Int. Cl.² A63F *3/00*
U.S. Cl. 273—134 CH **9 Claims**



1. A horse racing game comprising a game board having a marginal race track area thereon, said race track area divided into plural racing lanes for a corresponding number of race horse game pieces, said racing lanes each divided into a multiplicity of substantially equal size spaces, certain spaces of each lane having penalty indicia thereon and certain spaces having award indicia thereon, each race horse game piece comprising a race horse simulating body portion and accessory elements mounted detachably on said body portion, whereby movement of race horse game pieces onto said penalty and award indicia of the racing lanes during playing of the game may result in the loss or regaining of said accessory elements by players.

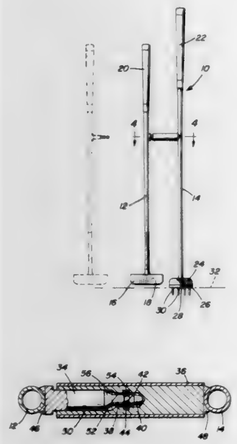
3,963,244
PENDULUM PUTTER

Henry Mierzejewski, 51 Broadview Terrace, Pittsfield, Mass. 01201

Filed Feb. 27, 1975, Ser. No. 553,646
Int. Cl.² A63B *53/00*
U.S. Cl. 273—162 R **7 Claims**

1. A pendulum putter comprising a pair of first and second generally straight upstanding shaft members disposed in side-by-side horizontally spaced apart relation, the lower end of one said shaft members including a putter head having a ball striking surface facing in a direction at substantially right angles relative to a line extending between vertical mid-portions of said shaft members, the lower end of the other of said shaft members including a foot member projecting slightly below the lowermost portion of said putter head, said vertical mid-portions of said first and second shaft members including horizontally laterally outwardly projecting shank and sleeve portions, respectively, removably telescopingly and rotatably engaged with each other for oscillation of said one shaft member relative to said other shaft member, said shank portion being generally cylindrical and including a diametrically reduced outer end portion, said sleeve portion defining an endwise outwardly opening longitudinal bore including a diamet-

rically reduced inner end portion, said shank portion being rotatably received in said bore and said outer end portion of



said shank portion being rotatably received in said diametrically reduced inner end portion of said bore.

3,963,245

APPARATUS FOR AUTOMATICALLY RETURNING A PICK-UP ARM IN A RECORD PLAYER

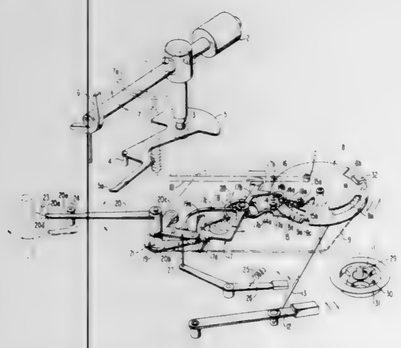
Shizuo Ishida, Tokyo, Japan, assignor to Trio Electronics Incorporated, Tokyo, Japan

Filed Nov. 14, 1974, Ser. No. 523,861

Claims priority, application Japan, Jan. 12, 1974, 49-6839; Jan. 12, 1974, 49-6840

Int. Cl.² G11B *17/06*

U.S. Cl. 274—15 R **11 Claims**



9. An automatic return apparatus for a pick-up arm of a record player, said apparatus comprising

a chassis;

return actuating means connected to said pick-up arm for rotation therewith;

return means movably mounted on said chassis responsive to said return actuating means for returning said pick-up arm to its rest position, said return means being movable from a first position at the start of play of a record to a second position and then back to said first position at end of play of said record;

biasing means for biasing said return means toward said first position;

moving means for moving said return means to said second position against the bias of said biasing means;

a lever rotatably mounted on said chassis having first, second, third and fourth lever arms;

a detector movably mounted on said chassis for detecting said end of play of the record, said detector being movable from a first detector position at the start of play to a second detector position at the end of play; and

said first lever arm being elastic and in response to said return means biasing said lever in a predetermined direction;

said second lever arm (a) being biased against said return means to latch said return means in its said second position;

said third lever arm in response to said return actuating means moving said detector to its second position;

said fourth lever arm, in response to movement of said detector to its second position, rotating said lever in the direction opposite that of said predetermined direction to thereby (a) release said return means from said latching by said second layer arm to permit said return means to be returned to its first position by said biasing means and (b) cause said third lever arm to return said detector to its first position.

3,963,246

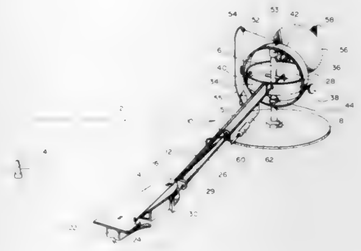
TONE ARM FOR RECORD PLAYER

Jaroslav George Trochimowski, 100 Gamble Ave., Apt. 910, Toronto, Ontario M4K 2H2, Canada

Filed May 7, 1975, Ser. No. 575,473

Int. Cl.² G11B *3/38*

U.S. Cl. 274—23 R **13 Claims**



1. In a record player comprising: a chassis; a turntable mounted for rotation relative to said chassis and adapted to carry a record having a spiral groove; a spindle extending upwardly centrally of said turntable; an articulated tone arm comprising a rigid main beam and a head assembly connected thereto at a pivot point for pivoting in a plane parallel to the turntable; an upright center post secured to the chassis at one side of said turntable; means mounting said tone arm on said center post for movement of said tone arm in a plane perpendicular to the turntable about a first axis perpendicular to the center post and in a plane parallel to the turntable about a second axis through said center post; pick-up means including a stylus, said pick-up means being carried by said head assembly with said stylus to track the spiral groove of a record on the turntable; and control means for moving said head assembly along a curved path such that the path in which the stylus vibrates extends along a radius of said turntable, the improvement wherein said control means comprises a bearing plate fixed to said head assembly at a predetermined angle and a rigid linkage means spaced beside said main beam, one end of said linkage means secured at a point spaced from said center post for pivoting in a plane parallel to the turntable, said linkage means being of predetermined length such that its other end slidably contacts said bearing plate to provide proper orientation of the head assembly during record play,

and means extending between said linkage means and said main beam, intermediate the ends thereof, to co-ordinate pivotal movement of said linkage means with that of said main beam.

3,963,247

SHAFT SEAL

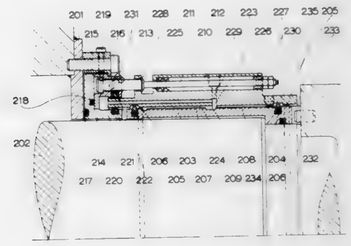
Johan P. Nommensen, Stein, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 203,689, Dec. 1, 1971, abandoned. This application Feb. 19, 1975, Ser. No. 551,298

Claims priority, application Netherlands, Dec. 1, 1970, 7017502; Dec. 1, 1970, 7017503

Int. Cl.² F16J *15/40*

U.S. Cl. 277—16 **8 Claims**



1. A sealing arrangement for a rotatable shaft which projects through a wall comprising:

a sleeve mounted on said shaft for rotation therewith;

a stator member arranged concentrically about said sleeve, fixed to prevent rotation thereof and guided for limited axial movement relative to said sleeve;

said sleeve having helical windings on the outer surface thereof in spaced relationship from the stator member such that will produce a hydraulic pressure between said sleeve and said stator member sufficient to produce axial movement of said stator member by action of said fluid on a surface of said stator member presenting an area perpendicular to said shaft, when said sleeve is rotated;

a thin layer of material sprayed on said sleeve at the ends of the windings so as to reduce the spaced relationship at said ends for aligning said sleeve within said stator member; and

static seal means interposed between said stator member and said sleeve for sealingly engaging said stator member and said sleeve when said sleeve is at rest;

spring means biasing said stator member in an axial direction opposite from the direction of movement of said stator memmber in response to said hydraulic pressure of said fluid, whereby said static seal means sealingly engages said stator member and said sleeve when said sleeve is at rest.

3,963,248

UNITIZED DUAL LIP SEAL

Dean R. Bainard, Clover, S.C., assignor to Garlock Inc., Palmyra, N.Y.

Filed Oct. 7, 1974, Ser. No. 512,205

Int. Cl.² F16J *15/38, 15/54*

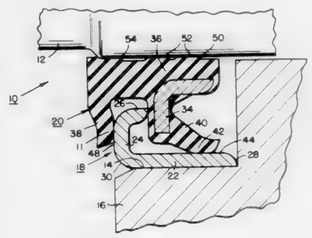
U.S. Cl. 277—92 **17 Claims**

1. A unitized bore seal for providing a seal between a housing and a shaft extending through a bore in the housing comprising:

a. an annular wear sleeve for use on one of a bore and shaft, and having a radial flange extending toward the below-recited elastomeric member,

b. an annular, at least partly elastomeric member for use on the other of a bore and shaft, said member having a cylindrical portion and an auxiliary radial portion including an auxiliary sealing lip extending radially toward said wear sleeve on the outside of said radial flange, and extending into contact with the outside radial surface of said radial flange, and said member having a main radial portion extending radially toward said wear sleeve on the other side of said radial flange and including a main sealing lip,

c. said annular wear sleeve including a cylindrical flange connected to the distal end of said radial flange, said cylindrical flange extending into contact with said main



radial portion when said auxiliary sealing lip is in contact with the outside radial surface of said radial flange, whereby said cylindrical flange ensures that said auxiliary sealing lip will always be in contact with said outside radial surface of said radial flange, whereby said auxiliary sealing lip seals and also prevents formation of a pocket of contaminant and encourages water drainage to wash sludge away from the auxiliary sealing lip, and

d. the distal end of said radial flange being closer to said cylindrical portion of said elastomeric member than are the distal ends of said lips, whereby said seal is unitized.

3,963,249

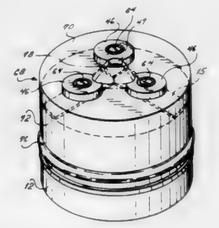
CHUCK SEAL

Anton Fink, 149 Crescent Drive, Albertson, N.Y. 11507

Filed May 21, 1975, Ser. No. 579,414

Int. Cl.² B23B *31/20*

U.S. Cl. 279—1 ME **10 Claims**



1. For a chuck having movable jaws:

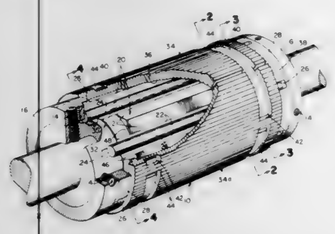
an elastomeric cover adapted to fit about the chuck with said cover having an integral skirt;

aperture means in said cover with each one thereof substantially in registration with a respective jaw of the chuck;

means received in each of said apertures to effect a localized sealing of same on a respective chuck jaw and adapted to hold the workpiece; and,

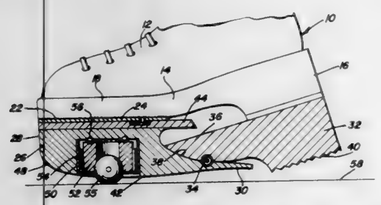
means to seal the skirt perimetrically on the chuck, thereby to isolate the chuck from the ambient environment while permitting movement of the jaws.

3,963,250
CHUCK
Richard Edward Flagg, E. Bridgewater, Mass., assignor to Double E Company, Inc., Brocton, Mass.
Continuation-in-part of Ser. No. 240,435, April 3, 1972, Pat. No. 3,792,868. This application Aug. 24, 1973, Ser. No. 391,327
The portion of the term of this patent subsequent to Feb. 19, 1991, has been disclaimed.
Int. Cl.² B23B 31/40
U.S. Cl. 279—2 R 15 Claims



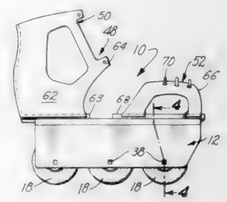
1. In a core chuck comprising an interior member having a longitudinal axis and including a plurality of generally planar exterior surfaces each parallel to said axis, a plurality of rollers, each roller parallel to and in contact with one of said generally planar surfaces, a plurality of jaw members, each jaw member having an arcuate interior surface in contact with at least one of said rollers, and means for resiliently maintaining said jaw members in contact with said rollers, the improvement comprising the provision of jaw orientation means which limit the relative rotational movement, around said axis, between a jaw member and an underlying roller, said jaw orientation means comprising a lug secured to said jaw member and projecting inwardly from the inner surface of said jaw member.

3,963,251
ARTICULATED SHOE SOLE WITH UNIVERSAL SUPPORTIVE WHEEL
Paul P. Miano, Box 246 - Church St., Garyville, La. 70051
Filed July 1, 1975, Ser. No. 592,324
Int. Cl.² A63C 17/08
U.S. Cl. 280—11.1 BR 7 Claims



1. In combination, a shoe including an upper and an underlying flexible sole having front and rear toe and heel portions, a first body attached to and underlying the under surface of said toe portion and including front and rear marginal portions, a second body including front and rear marginal portions underlying said heel portion for abutment therewith, attaching means removably stationarily attaching said first body to said toe portion, pivot means pivotally attaching the front marginal portion of said second body to the rear marginal portion of the first body for limited pivotal movement of said second body relative to said first body about a fixed horizontal transverse axis, spring means connected between said bodies yieldingly urging said second body, in an angular direction relative to said first body, to swing said second body, rearward of said axis, upwardly into abutting engagement with said heel portion, said first body including a single downwardly facing bearing member journaled from said first body for rotation about a horizontal axis as well as an upstanding axis, said second body including at least a rear undersurface portion adapted for movement braking frictional engagement with a horizontal surface upon which said bearing member is disposed and being free of direct attachment to said shoe, whereby said shoe sole heel portion may be elevated above the upper limit of swinging movement of the rear portion of said second body.

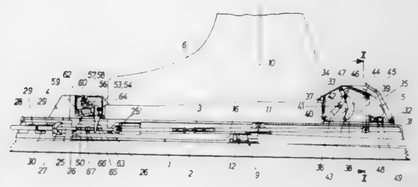
3,963,252
ROLLER SKATE
Ronald G. Carlson, 9524 Otis, Apt. A, South Gate, Calif. 90280
Continuation-in-part of Ser. No. 373,642, June 26, 1973, abandoned, which is a continuation-in-part of Ser. No. 149,908, June 4, 1971, abandoned. This application Oct. 21, 1974, Ser. No. 516,595
Int. Cl.² A63C 17/06, 1/26
U.S. Cl. 280—11.22 12 Claims



1. A roller skate comprising:
a channel shaped frame having an upper normally generally horizontal wall mounting foot receiving means, depending flanges along the longitudinal edges of the wall,
wheels between said flanges each including an axle having ends engaging in slots entering the inner surfaces and opening longitudinally through the bottom edges of said flanges,
compression springs in said slots above said axle ends for yieldably urging said axles downwardly in the slots,
said slots entering the inner surface of said flanges to a depth less than the thickness of said flanges, whereby said flanges position said axles endwise,
retainer bars extending along said bottom edges and overlying the lower open ends of said slots for releasably retaining said axles in their slots, and
means securing said retainer bars to said flanges for movement of the bars to and from axle retaining positions, wherein the bars close the lower ends of said slots to retain the wheel axles in the slots as well as to permit removal and replacement of said wheels.

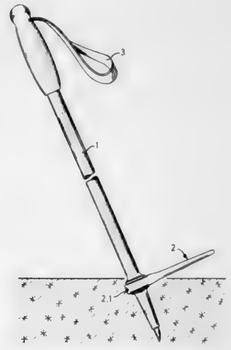
3,963,253
SAFETY SKI BINDING
Hermann Rieger, Immenstaad, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH, Germany
Filed May 13, 1974, Ser. No. 469,674
Claims priority, application Germany, May 12, 1973, 2324078; Jan. 15, 1974, 2401729
Int. Cl.² A63C 9/085
U.S. Cl. 280—616 49 Claims

1. Safety ski binding apparatus comprising:
a first plate fixedly securable to a ski,
a second plate spaced from said first plate,
resilient connecting means connecting said first and second plates to one another while permitting movement of said second plate relative to said first plate about at least one vertical and at least one horizontal axis against the force of resilient members of said resilient connecting means,
ski boot securing means for releasably securing a ski boot to said second plate, said securing means including means responsive to a release signal for effecting an automatic release of said ski boot from said second plate,



and release signal generating means for generating a release signal to release said securing means in direct response to predetermined relative movement of said first and second plates with respect to one another.

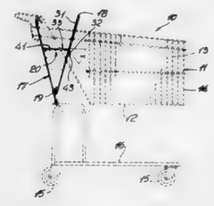
3,963,254
SNOW DISK FOR A SKI STAFF
Yrjo Aho, Westend, Finland, assignor to Exel Oy, Helsinki, Finland
Filed Mar. 24, 1975, Ser. No. 561,771
Claims priority, application Finland, Mar. 28, 1974, 957/74
Int. Cl.² A63C 11/24
U.S. Cl. 280—11.37 Z 7 Claims



1. An asymetric disk for a ski staff with hand straps, said disk having a front edge in close proximity to the staff, at least one of the rear edge and lateral edge of said disk only extending to form the bearing surfaces of the disk, said hand straps being attached to said staff on the side of said rear edge.

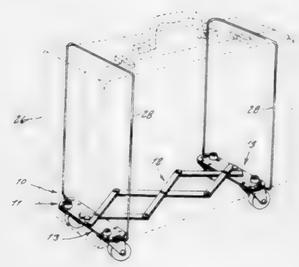
3,963,255
SHOPPING CART SEAT CONSTRUCTION
Antoine Trubiano, 36 Marien St., Montreal East 550, Quebec, Canada
Filed Apr. 4, 1975, Ser. No. 565,219
Int. Cl.² B62B 11/00
U.S. Cl. 280—33.99 B 6 Claims

1. In a shopping cart comprising an open-topped container having a bottom wall, spaced side walls and a front wall, an end gate forming a rear wall for said container and having leg holes in an upper portion thereof, a secondary gate pivotally connected at a lower end thereof to a fixed connecting point on said end gate below said leg holes, and a hinged seat between said gates, the improvement comprising a seat support slide member pivotally secured to a fixed connecting point at one end to said end gate to support and position said seat adjacent a lower edge of said leg holes between said end gate and secondary gate, said secondary gate being slidingly retained at opposed vertical side edges thereof in a respective end channel formed integrally with said seat support slide member whereby said secondary gate is displaceable towards and away from said end gate from its pivotally connected lower end, said seat support slide member being formed by a single wire defining a pair of spaced apart side members and said end channels, said side members being pivotally connected at said one end to said end gate, said seat being supported between said spaced apart side members, each said end channels being formed by an angulated generally U-shaped bend in said single wire, and a common outer arm extending



transversely to the longitudinal axis of said secondary gate between said end channels and outside said secondary gate, each said channels lying in a plane angulated from the longitudinal axis of said side members and defining opposed arms to receive a respective vertical side edge of said secondary gate therebetween whereby to provide free sliding displacement of said channels along a predetermined length of said vertical side edges when said secondary gate is displaced on its pivoted lower end toward said rear wall, said free sliding displacement permitting said seat frame to be positioned substantially horizontal between said secondary gate and said rear wall when said secondary gate is inclined away from said end gate and to lie substantially in the same plane as said secondary gate when said secondary gate is pivoted against and rests on said rear wall.

3,963,256
LUGGAGE WHEELS
Josephine C. Stafford, 3636 N. Campbell, Apt. E-13, Tucson, Ariz. 85419
Filed May 20, 1975, Ser. No. 579,217
Int. Cl.² B62D 21/14
U.S. Cl. 280—35 3 Claims



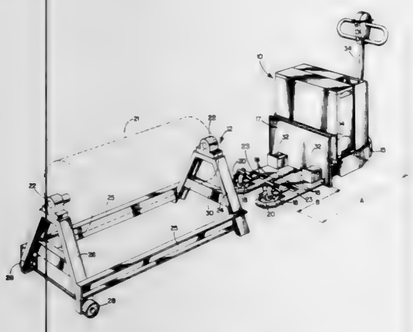
1. In a luggage carrier, the combination of a metal frame comprised of an extendable lazy tongs secured pivotally at each opposite end to a swiveling truck consisting of a flat plate having a caster wheel secured under end thereof, and means whereby said frame is securable to an underside of luggage, said lazy tongs comprising a plurality of crossing bars having a pair of long central bars pivotally attached together at their

centers, and a pair of shorter bars secured pivotally at each opposite end of said longer bars, said shorter bars crossing each other near their outward ends and being freely pivotable about a rivet extending through said plate, said outward ends of said short bars being positioned to clasp a post mounted upon said plate.

3,963,257
ROLL HANDLING

Robert E. Harron, Woburn, Mass., assignor to Brodie, Inc., Woburn, Mass.

Filed Mar. 31, 1975, Ser. No. 563,739
Int. Cl.² B62D *21/18*
U.S. Cl. 280—43.12 **10 Claims**

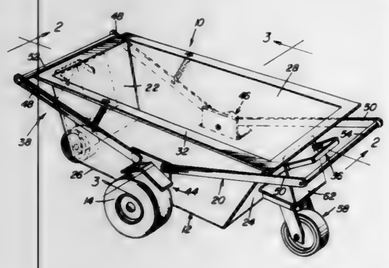


1. Carrier apparatus for elongated loads comprising,
means defining an elongated frame comprising front and rear load carrying members, rear wheels, and a transverse beam at a forward end of said frame,
means defining a tow dolly for towing said frame with a forward drive wheel and at least one rearward extension for engaging and supporting said forward transverse beam,
means defining at least one set of main and auxiliary wheels for said dolly,
means mounting said main wheels and auxiliary wheels from said extension for alternating ground contact,
and means for swivelling said auxiliary wheels.

3,963,258
MATERIAL HANDLING VEHICLE

Guthrie B. Stone, deceased, late of Honeoye, N.Y.; by Alan J. Stone, administrator, Honeoye, N.Y., and Christian T. Tertinek, Canandaigua, N.Y., assignors to Stone Construction Equipment, Inc., Honeoye, N.Y.

Filed June 9, 1975, Ser. No. 585,234
Int. Cl.² B62B *3/02*
U.S. Cl. 280—47.34 **9 Claims**



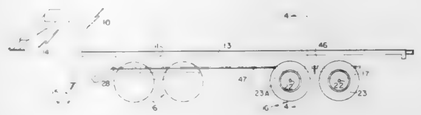
1. A material handling vehicle, comprising, in combination:
a. a load receiving receptacle;
b. a pair of spaced center wheels rotatably mounted on the receptacle for movably supporting the receptacle; and
c. brake means mounted on the receptacle for operation from either end of the vehicle and for normally frictionally engaging the center wheels and restraining the center wheels from rotation, and the brake means includes a framework arranged about the receptacle for grasping at either end of the vehicle and resiliently supported from the receptacle by a pair of laterally spaced tension springs arranged adjacent a common end of the receptacle, and said brake means includes a pair of brake shoes mounted on the framework for normally frictionally engaging the center wheels of the vehicle under the tension of said springs and for release thereof by movement of said framework by an operator at either end of the vehicle.

8. A deadman brake system for use on a material handling vehicle having a plurality of wheels moveably supporting the vehicle, the brake system comprising, in combination:
a. a framework arranged about a load receiving receptacle of the vehicle for operation from either end of the vehicle;
b. a pair of spaced tension springs connected to the receptacle and to the framework for resiliently supporting the framework from the receptacle, the springs arranged adjacent a common end of the receptacle; and
c. a brake shoe mounted on the framework for normally frictionally engaging a one of the wheels movably supporting the vehicle under the tension of said pair of springs and for release thereof by movement of said framework by an operator at either end of the vehicle.

3,963,259
SLIDING AXLE ASSEMBLY FOR FLAT DECK TRAILERS AND THE LIKE

Navarre A. Massey, 542 River Drive, Fort Macleod, Alberta, Canada

Filed Apr. 29, 1975, Ser. No. 572,731
Claims priority, application Canada, Oct. 22, 1974, 211924
Int. Cl.² B60G *5/06*; **B62D** *53/06*
U.S. Cl. 280—80 B **2 Claims**

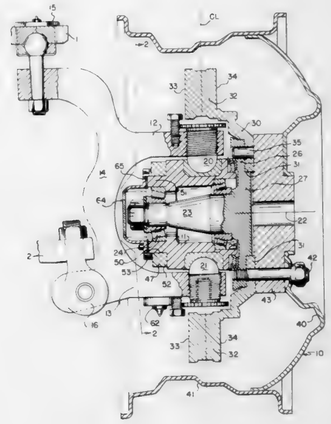


1. In a trailer having an adjustable undercarriage which includes a double axle wheel bogie assembly; the improvement which comprises means to mount said trailer upon said undercarriage for selective sliding movement therebetween, said means including a pair of spaced and parallel tracks secured to the under of said trailer, a plurality of roller assemblies journalled for rotation upon the upper side of said undercarriage, locking means selectively cooperating between said trailer and said undercarriage to detachably lock said trailer to said undercarriage in the desired relationship, and means to retain said trailer upon said undercarriage for relative rolling movement therebetween parallel to the longitudinal axis of said trailer, said track comprising a planar longitudinally extending flange plate secured to the underside of said trailer, a longitudinally extending angle iron including a pair of side flanges and an apex portion at the junction thereof, said angle iron being secured by the side edges thereof to the underside of said flange plate thus forming a triangular configuration when viewed in cross section, said apex portion of said angle iron facing said undercarriage, said rollers having a V groove around the periphery thereof with a cross sectional configuration similar to the cross sectional configuration of said angle iron, said apex portion and part of said side flanges of said angle iron, engaging said grooves.

3,963,260
CENTERLINE STEERING WHEEL ASSEMBLY INCLUDING DISC BRAKE

Melvin R. Inbody, Findlay, Ohio, assignor to Diversified Interests, Inc., Findlay, Ohio

Filed July 29, 1974, Ser. No. 492,438
Int. Cl.² B62D *7/08*
U.S. Cl. 280—96.3 **6 Claims**



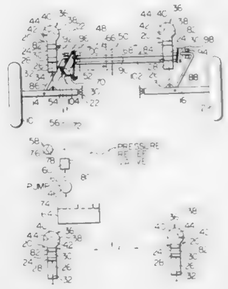
1. A dirigible wheel assembly for a surface vehicle having an axle, an A frame on said axle and a steering tie rod, said assembly comprising: A hub; a wheel spindle journalled in said hub, said spindle including a circular central boss projecting from said hub, and an annular flange extending radially from said boss; a wheel member connected to said annular flange; a yoke member having parallel arms extending above and below said hub; bearing means supporting said hub on said arms for turning movement about a vertical steering axis lying in a plane normal to the center line of said hub and coincident with the vertical center line of said wheel member; an annular brake shoe member attached to said flange, said brake shoe member having an annular brake rotor presenting annular disc brake surfaces lying in vertical planes substantially equally spaced from said center line; a brake caliper assembly straddling said brake rotor, and having brake shoes for pressing against said disc brake surfaces; means for supporting said caliper assembly on said hub; means for connecting said tie rod to said means for supporting said caliper assembly; a ball-socket joint connecting said yoke to the upper end of said A frame; and a hinge joint connecting said yoke to the lower end of said A frame.

3,963,261
VEHICLE SUSPENSION SYSTEM

Mituo Hiruma, Kodaira, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 3, 1975, Ser. No. 554,493
Claims priority, application Japan, Mar. 4, 1974, 49-24581[U]
Int. Cl.² B60G *17/00*
U.S. Cl. 280—683 **8 Claims**

1. A suspension system in a vehicle, comprising first and second retractable and extensible suspension struts each of which has therein a fluid chamber filled with pressurized fluid, each of said fluid chambers being variable in volume in response to increases and decreases in a load applied to the corresponding suspension strut to cause shortening and lengthening of the suspension strut, each of said fluid chambers being fluidly communicable with a pressurized fluid source and a fluid reservoir, and level regulating means operable to normally obstruct fluid communication between the corresponding fluid chamber and said source and between said fluid chamber and said reservoir and to provide fluid communication between said source and said fluid chamber to cause supply of pressurized fluid thereinto for lengthening of the corresponding suspension strut in response to shortening thereof and between said reservoir and said fluid chamber to cause discharge of fluid therefrom for shortening of the suspension strut in response to lengthening thereof thereby maintaining the length of the suspension strut substantially constant independently of the value of said load, control means operable to normally provide fluid communication between the respective level regulating means and said source and to obstruct fluid communication therebetween in response to a difference between the relative distance between a sprung part of the vehicle and a first unsprung part thereof and the relative distance between said sprung part and a second unsprung part of the vehicle which difference is in excess of a predetermined value, and sensing means for sensing said difference to operate said control means to obstruct fluid communication between the respective level regulating means and said source, in which said control means is further operable to normally provide fluid communication between the respective level regulating means and said reservoir and to obstruct fluid communication therebetween when said sensing means senses said difference, in which said control means comprises a control valve having a valve body formed therein with a bore, a first port communicating with said source, a second port communicating with the respective level regulating means, a third port communicating with said reservoir, and a fourth port communicating with the respective level regulating means, a valve spool slidably fitted in said bore and formed therein with first and second annular grooves, and two biasing means urging said valve spool in opposite directions to hold it in a neutral position, said first and second grooves providing fluid communication between said first and second ports and between said third and fourth ports when said valve spool is held in said neutral position.



3,963,262
TOY AUTOMOBILE APPARATUS

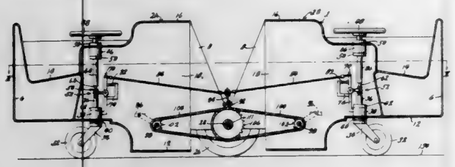
Gertrude Althea Estell, 10200 W. 98th St., Overland Park, Kans. 66212

Filed May 27, 1975, Ser. No. 580,583
Int. Cl.² B62M *1/00*
U.S. Cl. 280—231 **9 Claims**

1. A toy automobile apparatus comprising:
a. a vehicle body having seats for two persons and supported by ground-engaging drive wheels carried rotatably thereby,

b. a pair of manually operable propelling means carried by said vehicle body, each operable by a person occuping one of said seats,

c. a drive train interconnecting each of said propelling means with said drive wheels, and operable when actuated to turn said drive wheels in respectively opposite directions to propel said vehicle body in respectively opposite directions, and



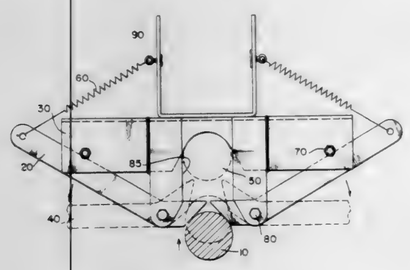
d. a slipping clutch included in each of said drive trains, the output power of each of which is dependent on the force and speed with which the corresponding propelling means is manually operated, whereby one person or the other may determine the direction in which said vehicle body is driven.

3,963,263

AUTOMATIC BOAT-TRAILER LATCH

Russell U. Whitlock, Sacramento, Calif., assignor to The Raymond Lee Organization, New York, N.Y.

Filed Dec. 16, 1974, Ser. No. 532,933
Int. Cl.² B60P *3/10*
U.S. Cl. 280—414 R **2 Claims**



1. A boat latch, comprising:

attached to a trailer bow post, a latch body forming a recess for receiving a boat bow eye,

a striker pivotally mounted on the latch body at a forward end of the body which forms the recess,

stop means of limiting the closing movement of the striker mounted on the latch body, and

means of restraining the striker in the closed position yieldable to the boat bow eye and attached to the striker and the trailer bow post.

3,963,264

DUAL PURPOSE TRAILER TOWING ATTACHMENT

Dennis Llewellyn Richard Down, Elwell Farm, Diptford, Totnes, Devon, England

Filed Jan. 23, 1975, Ser. No. 543,599
Claims priority, application United Kingdom, Jan. 23, 1974, 3046/74
Int. Cl.³ B60D *1/02*
U.S. Cl. 280—415 A **9 Claims**

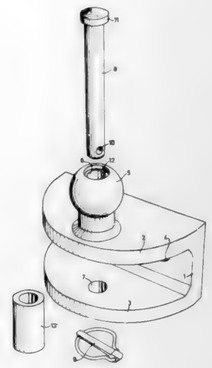
1. A dual purpose trailer towing attachment comprising:

a support plate;

two parallel flat lugs which, when the plate is mounted vertically on a towing vehicle, project rearwardly from the plate and are spaced apart one above the other in respective horizontal planes;

an upstanding boss welded to the upper lug and projecting from the upper surface thereof, said boss being adapted to receive a socket towing fitting of a tow-bar;

means defining a bore extending through the centre of the boss and through the two lugs, and



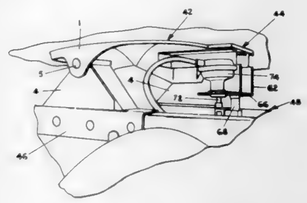
a pin engageable in the bore, said pin having an enlarged head which is substantially flush with the surface of the boss when the pin is fully inserted in the bore and passes through the two lugs.

3,963,265

ANTI-JACKKNIFE MECHANISM

Robert E. Kornoelje, Wyoming, and Dale Van Der Kolk, Hudsonville, both of Mich., assignors to Robert E. Kornoelje, Wyoming, Mich.

Filed June 5, 1975, Ser. No. 584,137
Int. Cl.² B62D *53/08*
U.S. Cl. 280—432 **9 Claims**



1. For use with a fifth wheel coupler and kingpin between a towing tractor and a towed trailer, anti-jackknife apparatus for attachment to a fifth wheel coupler having a bearing plate, locking coupler jaws, and a shaft shiftable forwardly during coupling, comprising:

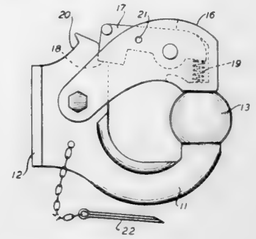
support structure with mounting means for attachment to the front of a fifth wheel coupler; a stop member shiftable normal to the coupler bearing plate, between a lowered inoperative position and a raised operative position; abutment means mountable to a trailer on opposite sides of the kingpin for engagement by said stop member in its raised position, biasing means for biasing said stop member to said raised operative position; latch means for restraining said stop member in said lowered inoperative position; latch trip means for said latch means for tripping said latch means and thereby enable said biasing means to shift said stop member to said raised operative position, said tripping means including shaft engaging means for actuation of said tripping means by the shiftable shaft.

3,963,266

DUPLEX TRAILER HITCH

Mark O. Thelin, Lackawanna Drive, R.D. 2, Stanhope, N.J. 07874

Filed Sept. 9, 1975, Ser. No. 611,703
Int. Cl.² B60D *1/06*
U.S. Cl. 280—504 **4 Claims**



1. A duplex trailer hitch for attachment to a lunette or a coupler comprising

a. a hook,

b. a ball on one end of the hook,

c. a closure pivotably mounted on the other end of the hook, and pivotable from a position spaced away from the ball, to engagement with the top of the ball,

d. means to latch the closure alternately in open position, spaced away from the ball, and in engagement with the ball,

e. the closure in closed position holding a lunette against release,

f. the closure in open position permitting the introduction of a lunette over the ball, and also alternately permitting a coupler to seize the ball.

3,963,267

FLUID CONNECTOR

Andre Legris, St-Maur, France, assignor to Societe Legris France S.A., Ozoir-la-Ferriere, France

Filed May 20, 1974, Ser. No. 471,591
Claims priority, application France, June 5, 1973, 73.20453
Int. Cl.² F16L *17/02*
U.S. Cl. 285—93 **15 Claims**

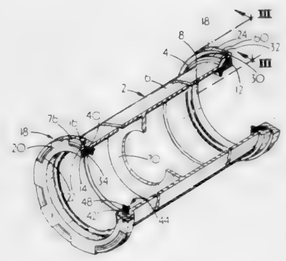
1. A pipe joint comprising a longitudinally extending pipe having an internal bore and having at least one peripherally continuous, peripheral groove adjacent, but spaced from, an end thereof to provide a peripherally continuous throat adjacent said end and of a diameter less than the diameters of the outer surface of a first portion of said pipe intermediate said throat and said end and the outer surface of a second portion of said pipe on the side of said throat longitudinally opposite from said first portion and a longitudinally extending, releasable connector around said pipe at said end thereof, said connector comprising a body member having an internal bore and extending around both said first portion and said second portion of said pipe and having a flared internal surface portion overlying at least one of said groove and said second portion, said flared surface portion decreasing in diameter in a direction away from said end of said pipe, a plurality of individual, separately flexible jaws mounted in side-by-side peripherally spaced relation around the periphery of said pipe and intermediate said body member and said pipe, said jaws having inwardly extending projections extending into said groove to prevent longitudinal movement of said pipe with respect to said body member, said jaws abutting against said flared portion to prevent outward movement of said jaws and said jaws being longitudinally slidable with respect to said body member and having a portion extending outwardly from said body member to permit manual movement thereof inwardly of said body member, and an O-ring of flexible material intermediate said body member and said first portion of said pipe for providing a fluid seal therebetween.

3,963,268

PIPE COUPLINGS

Derek Gordon Widdicombe, Huddersfield, England, assignor to Naylor Brothers (Clayware) Limited, Huddersfield, England

Filed Jan. 28, 1975, Ser. No. 544,893
Claims priority, application United Kingdom, Jan. 31, 1974, 4552/74
Int. Cl.² F16L *21/02*
U.S. Cl. 285—230 **9 Claims**



1. A pipe coupling for plain-ended pipes, comprising

a tubular open-ended sleeve of synthetic material provided on at least one end with a plurality of spaced tongues extending substantially parallel to the longitudinal axis of the sleeve,

each tongue being formed with a projection which extends beyond the body of the tongue,

each projection also extending transversely to the corresponding tongue in a radial direction with respect to the longitudinal axis of the sleeve,

a clamping ring formed with spaced through apertures in which the tongues of said end of the sleeve are adapted to extend,

said apertures being wide enough in a radial direction relative to the longitudinal axis of the sleeve for the clamping ring to be push-fitted on the tongues by movement of the clamping ring towards said end of the sleeve during which the projections enter the apertures first,

said clamping ring having a face portion facing away from said sleeve,

each projection having a face portion facing towards the other end of the sleeve and abutting against said face portion of said clamping ring,

said abutting face portions being in substantially the same plane and extending substantially perpendicular to the longitudinal axis of the sleeve whereby movement of the clamping ring along the said longitudinal axis in a direction away from the sleeve is prevented,

said end of said sleeve and said clamping ring defining between them an annular recess,

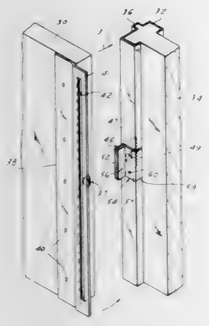
and a sealing ring of rubber-like material clamped in said annular recess between said clamping ring and said end of said sleeve,

each sealing ring comprising a collar and an annular beading attached to the collar and extending around an inside of the sleeve for engaging an end of a pipe inserted into the sleeve through said end of said sleeve.

3,963,269
SECURITY DEVICE

Sheldon R. Rosenberg, 2066 E. 23rd St., Brooklyn, N.Y. 11229

Filed July 25, 1974, Ser. No. 491,934
Int. Cl.² E05B 17/00
U.S. Cl. 292—346 8 Claims



1. Apparatus for preventing unauthorized separation of a door from a cooperating buck assembly, the apparatus comprising, in combination:
- a first plate member carried by the door and extending in a plane parallel thereto;
- locking means separate from said first plate member for securing the door to the buck assembly, the locking means being carried by said door in spaced relationship with said first plate member;
- a second plate member affixed directly to the buck assembly and extending in a plane transverse to the door, the second plate member having an anti-tampering portion projecting beyond the edge of the buck assembly toward the first plate member;
- a Z-shaped support element separately affixed directly to the buck assembly in juxtaposition with the second plate member, the support element including an edge flange in parallel abutting relationship with said anti-tampering portion and an intermediate flange parallel to the first plate member and rigidly affixed to the buck assembly; and
- means on one of the plate members for receiving the other plate member when the door is closed, the plate members cooperating with each other in the door's closed position to prevent movement of the door in its plane.

3,963,270
APPARATUS FOR LIFTING UP AND CARRYING CONCRETE POLES

Takumitsu Mori, Hachioji, and Masao Tanaka, Kamakura, both of Japan, assignors to Nippon Concrete Industries Co. Ltd., Tokyo, Japan

Filed Dec. 30, 1974, Ser. No. 537,371
Int. Cl.² B66C 1/62
U.S. Cl. 294—81 R 9 Claims

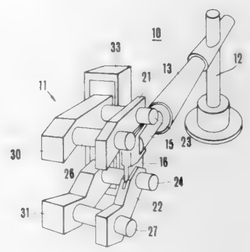


1. Apparatus for lifting up and carrying concrete poles which are tapered in the longitudinal direction so as to define small diameter end portions of said poles and large diameter end portions of said poles, comprising:
- a longitudinal beam; and
- a plurality of cylindrical members dependingly supported from said beam and spaced along said beam in the longitudinal direction, at predetermined positions thereof, so as to define predetermined distances between successive cylindrical members;
- each of said cylindrical members being substantially C-shaped in cross-section with the open portion thereof disposed downwardly, the arms of said C-shaped cylindrical members being integral with each other, so as to define one-piece cylindrical members, and of different sizes so as to define different sized internal open areas, corresponding to different sized outer diameter cross-sectional portions of said poles, at said predetermined positions thereof,
- whereby said beam and said cylindrical members are mounted upon said poles so as to lift and carry the same by moving said beam and cylindrical members longitudinally of said poles from the small diameter end portion toward the large diameter end portion, said cylindrical members gripping said poles when said particularly sized cylindrical members correspond to the particularly sized cross-sectional portions of said poles at said predetermined positions thereof.

3,963,271
FINGER MECHANISMS OF INDUSTRIAL ROBOTS

Yoshide Sugino, Kamakura; Nobuo Okonogi, Chigasaki, and Shinsaku Nokagawa, Yokohama, all of Japan, assignors to Yamatake-Honeywell Company, Limited, Tokyo, Japan

Filed Oct. 15, 1974, Ser. No. 514,452
Int. Cl.² B25J 15/00; F16F 9/00
U.S. Cl. 294—86 R 12 Claims

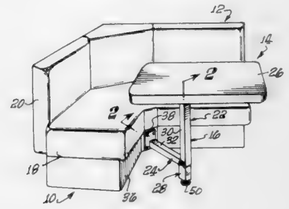


1. In a finger mechanism of an industrial robot of the type comprising a plurality of fingers for clamping an article to be manipulated, a drive source for opening and closing said fingers, a mounting bar for supporting each of said fingers, and cushion mechanisms interposed between respective fingers and said mounting bar, thereby preventing undue forces applied to said fingers from transmitting directly to said mounting bar, the improvement wherein each cushion mechanism comprises a hollow cylindrical housing, a cylinder contained in said housing and extending in the axial direction thereof, a piston slidably contained in said cylinder, a piston rod connected to said piston and extending through one end of said cylinder, a nipple secured to said cylinder for admitting motive fluid into said cylinder, a first supporting member for yieldingly supporting the opposite end of said cylinder by said housing, a second supporting member arranged on said one end of said cylinder for supporting said piston rod, and means for mounting a finger on the outer end of said piston rod.

3,963,272
TABLE WITH ADJUSTABLE FOOT

Ferris E. Jones, 943 Millbury Ave., La Puente, Calif. 91746

Filed Sept. 23, 1974, Ser. No. 508,074
Int. Cl.² A47B 39/00
U.S. Cl. 297—172 25 Claims

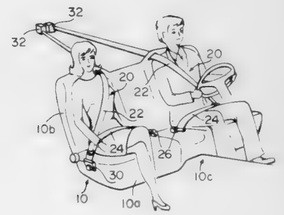


1. A table comprising:
- a normally upright supporting base including a lateral mounting extension rigidly joined at one end to the base and extending laterally from the base at a permanently fixed angle relative to the base,
- means at the other end of said extension for rigidly attaching said extension to a supporting structure in a permanently fixed generally horizontal position for supporting of said table in cantilever fashion by said structure with the bottom of said base spaced above the floor,
- a table top mounted atop said base,
- a supporting foot at the bottom of said base directly below said top, and
- means mounting said foot on said base for movement relative to said base between a lower extended position wherein said foot projects below said base for supporting contact with the floor and an upper retracted position wherein said foot is raised to clear the floor to facilitate cleaning the floor below said base.

3,963,273
SEAT BELT ASSEMBLY

Yasuo Nagazumi, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 10, 1974, Ser. No. 432,339
Claims priority, application Japan, Jan. 12, 1973, 48-486852
Int. Cl.² A62B 35/00
U.S. Cl. 297—389 6 Claims

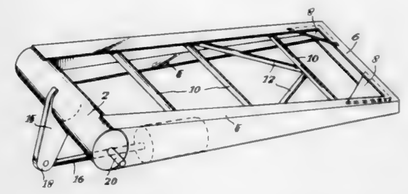


1. A seat belt assembly for protecting a vehicle occupant of a seat mounted on the floor of the vehicle body comprising:
- a support mounted on one side of the seat and provided with a shaft extending longitudinally in the direction of the vehicle and the seat,
- a lap strap having one end fixed around said shaft for pivotal movement of said lap strap between an occupant restraining position and a released position, said shaft being biased for holding said lap strap upright in said released position,
- means engageable with the other end of said lap strap for locking the lap strap to said occupant restraining position,
- an emergency locking retractor fixedly mounted on said vehicle body behind the seat, and
- a shoulder strap having one end connected to said other end of said lap strap and the other end operably connected to said retractor.

3,963,274
TIP-UP FLOORS OF TRANSPORT VEHICLES

Archibald Watson Kidd, Seend Close, Seend, Melksham, Wiltshire, England

Filed Nov. 8, 1974, Ser. No. 522,218
Int. Cl.² B60P 1/16
U.S. Cl. 298—22 R 7 Claims



1. In a trailer, a tip-up floor assembly comprising a floor, a transverse horizontal tubular member located at the rear of said floor, said tubular member being rotatable about a longitudinal axis of rotation, normally generally horizontal arms supporting said floor, said arms being fixed at one of their ends to the tubular member to move therewith upon rotation thereof and having their upper and lower surfaces extending forwardly on respective lines spaced above and below the axis of the tubular member, a normally generally vertically oriented crank bracket, and a single acting ram coupled to said crank bracket to operate it, the upper end portion of said bracket embracing and being fixed to the tubular member and the lower end portion of the bracket being movable forwardly and backwardly by said ram, whereby the floor can be pivoted from a horizontal position to tip up the floor, with the floor being cantilevered outwardly from said tubular member, said bracket and said ram being so oriented as to impose substantially maximum torque on said tubular member during the first part of the tipping movement from horizontal and subsequent diminishing torque as said floor and arms move toward the vertical position.

3,963,275
METHOD OF BREAKING FREE-STANDING ROCK BOULDERS

Charles S. Godfrey, Berkeley, and John D. Watson, San Leandro, both of Calif., assignors to Physics International Company, San Leandro, Calif.

Continuation-in-part of Ser. No. 329,615, Feb. 5, 1973, abandoned. This application Dec. 11, 1974, Ser. No. 531,730
Int. Cl.² E21C 37/00
U.S. Cl. 299—13 9 Claims



1. The method of fragmenting a free-standing boulder comprising

determining the average diameter of said boulder to determine the time required for sound to traverse said average diameter

determining the compressive strength of said boulder,

selecting a projectile having a mass which will establish an impact stress within said boulder greater than the compressive strength of the boulder, when impacted upon said boulder with a velocity which causes an energy transfer to said boulder within a time less than said determined time,

loading said cannon with said selected projectile,

loading said cannon with a charge which when detonated will cause said projectile to impact upon said boulder with said velocity, aiming said cannon at said boulder, and detonating said charge.

3,963,276

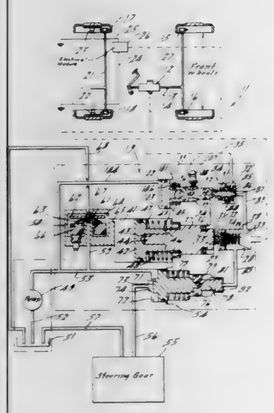
SKID CONTROL SYSTEM EMBODYING FAIL SAFE BYPASS

Thomas M. Atkins, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Aug. 24, 1973, Ser. No. 391,463

Int. Cl.² B60T *8/02*

U.S. Cl. 303—21 AF **15 Claims**



1. A skid control system for a vehicle having at least one wheel brake comprising a brake actuating circuit for delivering an actuating fluid to the one wheel brake under selective operator actuation, skid control means including a member movable from a normal braking position to a skid control position in response to a predetermined signal for relieving the pressure in the one wheel brake to prevent a skid condition, power means for normally holding said movable member in its normal braking position, and fail safe means responsive to the operation of said power means for providing an open path of actuating fluid to the one wheel brake in the event of a failure of said power means for conditioning said system for brake operation prior to generation of pressure in the brake actuating circuit.

3,963,277

VEHICLE BRAKE SYSTEM

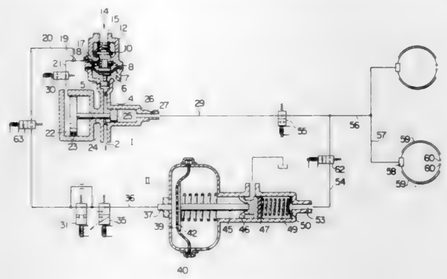
Haruo Chiba, Ageo, Japan, assignor to Sanwa Seiki Mfg. Co. Ltd., Yono, Japan

Filed Feb. 18, 1975, Ser. No. 550,671

Int. Cl.² B60T *8/04*

U.S. Cl. 303—21 F **4 Claims**

1. In a vehicle brake system of the type comprising a master cylinder, a power booster adapted to be operatively coupled to said master cylinder, said power booster having an actuating pressure inlet port through which actuating pressure is normally introduced for actuation of said power booster in response to the pressurized fluid from said master cylinder and having a brake pressure outlet port from which brake pressure is normally fed to wheel cylinders of the vehicle through a first hydraulic line in response to actuation of said power booster by said actuating pressure, and an anti-skid device in said brake system comprising an actuator hydraulically connected in parallel with said power booster for alternately applying and releasing brake pressure to and from said wheel cylinders independently of said power booster when skidding of the vehicle occurs, a second hydraulic line coupling said actuating pressure inlet port of said power booster to said actuator, a third hydraulic line coupling said actuator to said wheel cylinders, first valve means interposed in said first hydraulic line and operable to effect communication between said brake pressure outlet port of said power booster and said wheel cylinders when the brake is normally applied in the absence of



any skidding and operative to interrupt said communication when skidding occurs, second valve means interposed in said second hydraulic line and operable to interrupt communication between said actuating pressure inlet port and said actuator when the brake is normally applied in the absence of any skidding and operative to effect said communication when skidding occurs, discharge valve means interposed in said second hydraulic line between said second valve means and said actuator and operable to effect communication between said second valve means and said actuator when skidding ceases and operative to discharge the pressurized fluid from said actuator when skidding occurs, and third valve means interposed in said third hydraulic line and operable to interrupt communication between said actuator and said wheel cylinders when the brake is normally applied in the absence of any skidding and operative to effect said communication when skidding occurs.

3,963,278

TRACK ROLLER FRAME AND FINAL CASE MOUNTING

Charles M. G. Van Wuytswinkel, Thimeon, Belgium, assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 23, 1975, Ser. No. 543,574

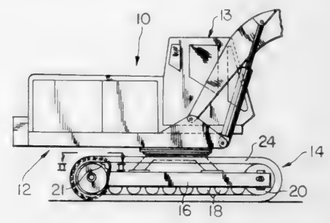
Int. Cl.² B60S *1/62*

U.S. Cl. 305—12 **5 Claims**

1. In track-type vehicle adapted for movement along a longitudinal axis thereof, which comprises a track roller frame having a pair of laterally spaced outer and inner rails, a track which moves over said frame, a sprocket, a sprocket shaft cover and a final drive having a housing, the improvement of mounting the final drive housing while protecting it and the sprocket from accumulation of dirt, comprising:

a guard member secured to a rearward end of said rails and including a sleeve extending rearwardly from the rearward end of the inner of said rails and a support secured to said sleeve and to an inner side of said inner rail, said sleeve being axially disposed about said housing to protect and reduce accumulation of dirt on said final drive housing and on said track; and

a flange extending from adjacent the periphery of one side of said sleeve inwardly radially secured between said



sprocket shaft cover and said final drive housing, said flange serving to secure said housing to said guard member.

3,963,279

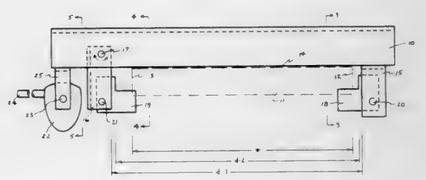
MOVABLE GUIDE BAR

Clifton Joe Eichler, Aransas Pass, Tex., assignor to Loyd W. Richardson Construction Company, Aransas Pass, Tex.

Filed Aug. 14, 1975, Ser. No. 604,537

Int. Cl.² F16C *17/00*

U.S. Cl. 308—3 R **5 Claims**



1. A movable guide for use on a table top having a flat top surface and having sides which are parallel one to the other and each of which sides overhang the means supporting said table top, the perpendicular distance between said side edges being the width of said table top, said guide comprising:

a straight, horizontally disposed rail member adapted to lie flat on a said flat top surface of said table top transversely of the parallel sides of said table top, the length of said rail member being greater than width of said table top, the horizontally disposed bottom edge of said rail member being flat so as to rest on said table top, at least one side edge of said rail member being a flat, vertical, planar guide surface such that articles engaged therewith which are passed across said table top will be guided to travel in a direction perpendicular to the sides of said table top;

said rail member having a downwardly extending, fixedly attached vertical member adjacent one end thereof and a downwardly extending, pivotally attached vertical member adjacent the opposite end thereof, the distance between such vertical members, when the pivotally attached vertical member is in a vertical position, being greater than the width of said table top;

each of said vertical members having pivotally attached thereto and located below the bottom edge of said rail member a gripping member having a notch therein for gripping the bottom edge of the adjacent overhanging side of said table top, the edges of each said notch being substantially perpendicular to each other so as to form an inside corner angle of about 90° therebetween, the length of each edge of a said notch being from about one-fourth to seven-eighths times the thickness of the overhanging portion of said table top, the two gripping members being so pivotally attached that their respective notches may be rotated to face inwardly so as to oppose each other;

each said gripping member being pivotally attached to its respective vertical member and each said vertical member being attached to said rail member such that when the notch of each said gripping member is facing inwardly toward the adjacent overhanging side of said table top with one edge of the notch therein vertically disposed and the other edge of the notch therein horizontally disposed and extending inwardly from the lower end of said vertically disposed edge toward the adjacent overhanging side of said table top, and when the pivotally attached vertical member is in a vertical position, the perpendicular distance from the said horizontally disposed edge of the notch therein to the bottom edge of said rail member will be slightly less than the thickness of the adjacent overhanging side of said table top, with the point of pivotal attachment of each said gripping member being on an imaginary line extending downwardly and outwardly of the inside corner of the notch therein, and the distance between the vertically disposed edges of the two notches will be slightly greater than the width of said table top;

rotatable cam means attached to and below the bottom edge of said rail member for engagement with the outer edge of said pivotally attached vertical member, said rotatable cam means being located outwardly of said pivotally attached vertical member and in such proximity thereto that rotation of said cam means will cause the lobe of said cam means to engage the outer edge of said pivotally attached vertical member and force said pivotally attached vertical member inwardly toward the side edge of said table top adjacent thereto a sufficient distance to cause the opposite sides of said table top to be gripped firmly by and between said gripping members.

3,963,280

PUSHROD GUIDE AND LOCATOR

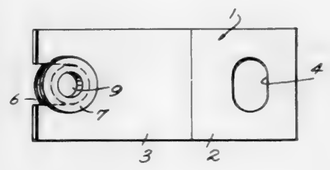
Philip Edward Irving, Warrandyte, Australia, assignor to Jeffrey Robert Hughes, Australia

Filed Feb. 5, 1975, Ser. No. 547,242

Claims priority, application Australia, Aug. 9, 1974, 65483/74

Int. Cl.² F16C *29/02*

U.S. Cl. 308—5 V **9 Claims**

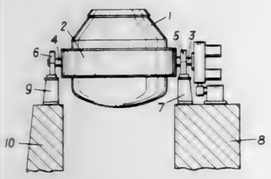


1. A pushrod guide and locator comprising a plate having mounting means enabling it to be mounted to an engine and a bush for receiving a pushrod for reciprocating sliding movement therethrough; the plate and the bush having co-operating guide means mounting the bush to the plate, restricting the bush against movement in the directions of movement of the pushrod through the bush and mounting the bush for reciprocating movement in one and an opposite direction laterally of the movement of the pushrod through the bush.

3,963,281
EXPANSION BEARING ASSEMBLY FOR A CONVERTER CARRYING TRUNNION

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Jan. 2, 1975, Ser. No. 538,203
Claims priority, application Austria, Jan. 10, 1974, 166/74
Int. Cl.² F16C *17/00*
U.S. Cl. 308—6 R **11 Claims**

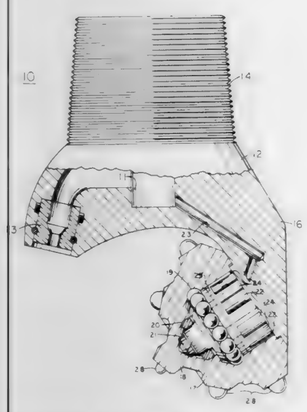


1. An expansion bearing assembly for a converter carrying trunnion, which comprises:
- a bearing housing having a top and bottom and recesses distributed over its inner surface,
- an inner race secured in place on the trunnion,
- an axially displaceable outer race having flattened faces peripherally distributed over its outer surface and lying opposite the recesses of the bearing housing, and
- rollers arranged in the recesses and interacting with the flattened faces that form contact surfaces for the rollers.

3,963,282
CANTILEVERED ROLLER SEPARATOR FOR ROCK BIT BEARINGS

Samuel Lee Penny, Lancaster, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 13, 1975, Ser. No. 549,586
Int. Cl.² F16C *19/04*
U.S. Cl. 308—8.2 **6 Claims**

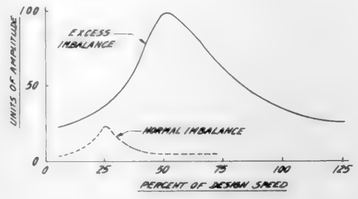


1. A rotary rock bit, comprising:
- a rock bit body;
- at least one bearing pin extending from said rock bit body, said bearing pin having a longitudinal axis;
- a cutter member rotatably positioned on said bearing pin;
- a plurality of cylindrical rollers positioned around said bearing pin between said bearing pin and said cutter member, said cylindrical rollers having a longitudinal axis with the longitudinal axis of the cylindrical rollers being substantially parallel to the longitudinal axis of said bearing pin; and,
- a split bearing cage positioned on said bearing pin, said split bearing cage comprising a plurality of separator elements cantilevered from a first section of an annular spacer element body and from a second section of an annular spacer element body, said separator elements alternately positioned between said cylindrical rollers.

3,963,283
EMERGENCY BEARING

Angelo De Feo, Totowa Boro; Mark R. Kulina, Franklin Lakes, and Earl B. Norwood, Westwood, all of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Division of Ser. No. 394,051, Sept. 4, 1973, Pat. No. 3,880,479. This application Jan. 9, 1975, Ser. No. 539,695
Int. Cl.² C22C *5/00*; **F16C** *17/02, 17/20, 32/00*
U.S. Cl. 308—78 **2 Claims**

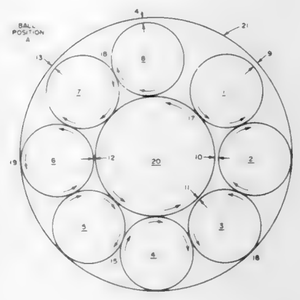


1. An emergency bearing capable of operating without lubrication against the surface of a rotating journal for a limited period, the emergency bearing comprising a generally annular member having a journal-engaging inner surface, a silver alloy entirely coating said journal-engaging inner surface to form a layer spaced thereabove and said journal — engaging surface having a plurality of recessed reservoirs therebelow filled with said silver alloy which when said emergency bearing is operating dampens any imbalance and, as a result of the coating wearing away, sufficient heat is produced to melt the silver alloy in the reservoirs whereupon said melted alloy is wiped into any space between the journal and bearing to lubricate the bearing surface during the short emergency period of operation.

3,963,284
FRICTION REDUCING BEARING

John R. Bouchard, Canton, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Dec. 14, 1973, Ser. No. 425,321
Int. Cl.² F16C *33/00, 19/04*
U.S. Cl. 308—187 **4 Claims**

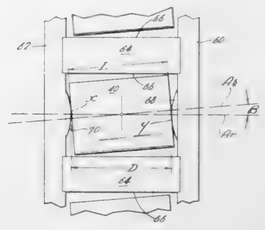


1. A method of reducing friction in a ball-bearing pivot assembly which includes balls of a given density comprising the step of floating said balls within said assembly in a fluid lubricant of density substantially equal to that of said balls.

3,963,285
CAGE CONTROL OF SKEW ANGLE IN ROLLER BEARINGS

Erik Magnus Kellstrom, Partille, Sweden, assignor to SKF Industries, Inc., King of Prussia, Pa.

Filed Oct. 9, 1973, Ser. No. 404,787
Int. Cl.² F16C *19/00, 13/00, 33/58*
U.S. Cl. 308—202 **5 Claims**



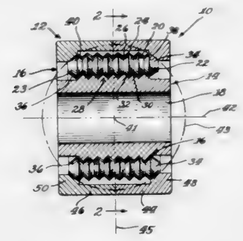
1. A bearing comprising inner and outer members having inner and outer raceways spaced apart to define an annular space therebetween, a plurality of rolling elements in said annular space engaging said raceways at contact zones, operation of said bearing under externally applied load having a radial and axial component normally producing forces creating a negative moment on the rolling elements tending to dispose said rolling elements at a negative skew angle relative to the axis of the bearing wherein the friction force components in the axial direction arising in said contact zones of each raceway act in the same direction as the axial component of the externally applied load on the respective raceways, a cage for circumferentially spacing said rolling elements, the improvement comprising skew control means associated with said cage operable during operation of the bearing for a predetermined relative movement of said members and said rolling elements, to cause all the rolling elements in the load zone to assume a non-negative skew angle within a predetermined angular range, said rolling elements having a finite skew angle when the axis of the rolling element and the axis of the bearing are not coplanar, said means engageable with the rolling elements at predetermined locations during operation of the bearing to develop forces between said cage and rolling elements at said predetermined locations to maintain a non-negatively skewed position of the rolling elements, said rolling elements being positively skewed when the friction force components in the axial direction arising in a contact zone between said rolling elements and raceways and acting on a raceway are so directed that they oppose the axial component of the externally applied load carried by said raceway.

3,963,286
ANTIFRICTION ROLLER BEARING

Richard B. Stanley, 4 Coventry on Duxbury, Rolling Meadows, Ill. 60008

Filed Mar. 11, 1974, Ser. No. 449,699
Int. Cl.² F16C *19/00, 13/00*
U.S. Cl. 308—205 **5 Claims**

1. In a rolling bearing assembly defining a bearing axis and including an inner race, an outer race disposed about the inner race and concentric with the bearing axis, and a plurality of rolling bearings interposed between the inner and outer races, with the rolling bearings each comprising an elongate roller defining a shank intermediate the ends thereof, the improvement wherein:
- the inner race is formed to define an inner raceway thereabout,
- said inner raceway and said shanks of said rollers being formed to define right flanges and right grooves in interfitting relation forming the areas of rolling engagement of the rollers with the inner race raceway,
- said outer race defining an outer raceway thereabout on which said rollers ride in rolling engagement therewith and having its raceway surfacing of circular contour

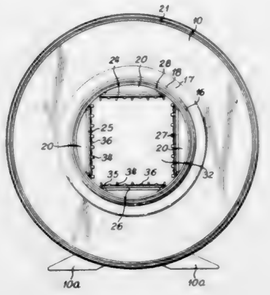


- transversely of the bearing axis and across the area of same that is engaged by said rollers,
- with said outer raceway surfacing area being a surface of revolution that is smoothly contoured axially of the bearing assembly,
- and with the area of engagement of said rollers with said inner race at said inner raceway being at least equal to the area of engagement of said rollers with said outer race outer raceway.

3,963,287
STORAGE DEVICES

Richard Roy Rumble, 47 Orchard Court, Portman Square, London, W.1, England

Filed Jan. 16, 1975, Ser. No. 541,433
Claims priority, application United Kingdom, Jan. 19, 1974, 60244/74
Int. Cl.² A47B *81/00, 81/06*
U.S. Cl. 312—197 **2 Claims**



1. A storage device for housing tape cassettes or the like with the end portions thereof accessible for manipulation and visual inspection, comprising a housing including a pair of spaced parallel side members, a circular flange formed on at least one said side member, said flange extending toward and terminating a predetermined distance from said other side member, said side members including central circular apertures, a cylindrical inner assembly mounted between said side members for rotation about an axis normal to said side members and coincident with the axis of said circular flange, said inner assembly including a hub extending between said side members, said hub including a hollow inner periphery accessi-

ble through said apertures of said side members, a plurality of regularly spaced projections formed on said hub, said projections extending radially outwardly from said hub, at least one radially directed clearance slot formed in said flange, said slot being directed toward said other side member, the transverse distance between said other side member and said slot being greater than said predetermined distance, whereby a cassette may be inserted into and removed from the space bounded by said hub, side members and circular flange only when an appropriate series of said projections is aligned with a said slot, cassettes within said space and out of registry with said slot being blocked from radial outward movement by said flange, the spacing between said hub and said flange being coordinated with the depth dimension of said cassettes in such manner that said cassettes are permitted a range of angular movement relative to said storage device when mounted therein, the limits of said angular movement being defined by engagement of portions of said cassettes and said flange.

3,963,288

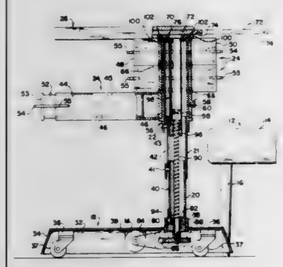
TRANSPORTABLE OVERBED TABLE

John W. Burnett, 1226 Edmer Ave., Oak Park, Ill. 60302

Division of Ser. No. 428,359, Dec. 26, 1973, Pat. No. 3,908,565. This application June 9, 1975, Ser. No. 585,349

Int. Cl.² A47F *5/08*

U.S. Cl. 312—209 **6 Claims**



1. A transportable overbed table and cabinet construction comprising a wheeled base, a tubular column secured to and projecting upwardly from said base, said base presenting a portion which projects forwardly and radially from the column and is designed for disposition in the vicinity of a bed frame, a tubular carriage disposed in coaxial telescopic relationship with respect to said column, a table unit having its proximate end mounted on said carriage and projecting radially outwardly therefrom and overlying the projecting portion of the base, a drawer unit having its proximate end hingedly connected to the carriage beneath the table unit for swinging movement in a horizontal plane throughout an angle of at least 90°, a rotatable elevation screw and cooperating traveling nut disposed within the confines of the tubular carriage and column, effective between the carriage and column, and operable upon rotation of the elevation screw in opposite directions to raise and lower the carriage, and means for rotating said elevation screw.

3,963,289

GREETING CARD DISPLAY

Lois A. Pralle, 14687 Kazan, Irvine, Calif. 92714

Filed Sept. 23, 1974, Ser. No. 508,187

Int. Cl.² A47F *3/00*

U.S. Cl. 312—245 **1 Claim**

1. A greeting card display comprising in combination:

a. a generally rectangular inclosure comprising a transparent imperforate front wall, a pair of transparent imperforate side walls, a transparent top wall, an imperforate bottom wall, and a rear wall;

b. said front and rear walls being substantially wider than said side walls;

c. four substantially similar partitions positioned inside said inclosure and extending substantially from said top wall to said bottom wall with two of said partitions situated on each of said side walls;

d. said partitions being parallel to one another and arranged on said side walls as a forward pair and a rearward pair with one partition from each pair situated on one side wall in alignment with the other partition of that pair on the other side wall;

e. said partitions extending from said side walls substantially the same distance and substantially parallel to said front and rear walls;

f. said forward pair of partitions forming within said inclosure a forward receptacle adjacent said front wall and



said rearward pair of partitions forming a rearward receptacle adjacent said rear wall, said receptacles individually receiving separate portions of a greeting card and said receptacles being spaced from each other;

g. said forward pair of partitions being closer to said forward wall and said rearward pair of partitions being closer to said rearward wall than either pair of partitions is to each other and providing a substantial space between said forward and rearward receptacles to permit viewing a first portion of a greeting card through said front wall and a second portion of the greeting card through that portion of said side walls between said forward and rearward receptacles; and,

h. said top wall covering the substantial space between said forward and rearward receptacles leaving only said forward and rearward receptacles open at the top for insertion of the greeting card portions.

3,963,290

HANGING FITTING FOR FREIGHT RECEPTACLES, KNOWN AS CONTAINERS

Albert Rennemann, Goldbach, Germany, assignor to Johann Birkart, Internationale Spedition, Aschaffenburg, Germany

Filed Mar. 20, 1975, Ser. No. 560,317

Int. Cl.² B65D *7/46*; **A47F** *5/10*

U.S. Cl. 312—321 **12 Claims**

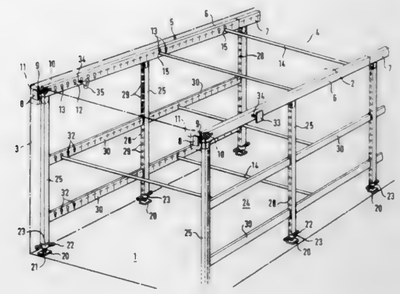
1. A detachable frame assembly capable of being removably mounted on the inside of a shipping container of relatively large capacity without requiring structural alteration of said container to adapt said container to have stored therein hanging objects such as garments, said assembly comprising:

a supporting frame formed of a plurality of longitudinal and transverse straps of an equivalent length which is a fraction of the length of said container, said straps being arranged in groups and connected with each other by

lockable plug connections to form support elements for said frame;

detachable clamping means for bracing said frame against opposite end walls of said container, said detachable clamping means including screw spindle drives for applying oppositely directed forces against said container walls to support said supporting frame within said container;

vertical supports for said straps bearing against said container walls and likewise consisting of a plurality of parts connected together by lockable plug connections and by detachable clamping means including screw spindle drives;



a plurality of suspension rods arranged in a transverse direction of said container and locked on opposite ends thereof with said supporting frame;

said supporting frame being arranged directly beneath the upper wall of said container with said screw spindle drives each containing a supporting plate bearing on a wall of said container, a screw spindle extending to within the support elements of said supporting frame, and a spindle nut including handles and bearing upon an end space of a support element of said supporting frame.

3,963,291

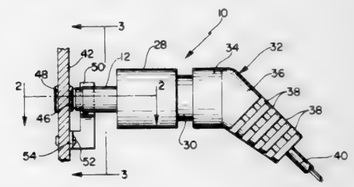
SWIVEL ELECTRICAL CONNECTOR

Robert Edward Maloof, East Greenwich, R.I., assignor to Victor Electric Wire & Cable Corporation, West Warwick, R.I.

Filed Aug. 4, 1975, Ser. No. 601,712

Int. Cl.² H01R *39/00*

U.S. Cl. 339—8 P **6 Claims**



1. A swivel electrical connector comprising a tubular external conductor, a tubular internal conductor located internally of said external conductor in coaxial relation with respect thereto, an insulating material separating the conductors so that each forms part of a separate electrical circuit, a first conducting lead joined to said external conductor, a second conducting lead joined to said internal conductor, the insulating material defining a body that encapsulates the connections of said conducting leads to said conductors therein, said tubular internal conductor defining a socket for receiving a male conductor prong therein and said external conductor being exposed for engagement by a spring contact, wherein said body and conductors mounted thereon are swivally movable about the male prong as received in said internal conductor, said spring contact being maintained in continuous contact with said external conductor during the swivel movement thereof.

3,963,292

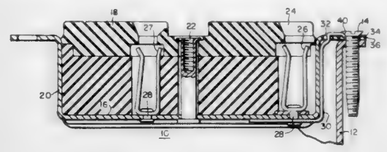
WIRING DEVICE WITH SELF-GROUNDING ELEMENT

Clarence M. Smith, deceased, late of Trumbull, Conn. (by Mary M. Smith, executrix), assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 27, 1972, Ser. No. 266,791

Int. Cl.² H01R *3/06*

U.S. Cl. 339—14 R **4 Claims**



1. A wiring device for mounting in a metal wall box and comprising: an insulating housing; a metal mounting yoke secured to said housing, said yoke having a portion extending away from said housing for mounting the device in the wall box with a fastener aperture in said portion; a grounding element of conductive metal secured to said yoke by a fastener that secures an internal contact element to said yoke, said grounding element having a contact portion normally extending at least partly across a perpendicular projection of said fastener aperture; said contact portion of said grounding element comprising an edge extending partly across said aperture projection for making edge contact with the side of a fastener in said aperture and to retain said fastener prior to installation; said yoke having a U-shaped main portion within which said housing is secured and from which said portion extending away from said housing extends, said grounding element comprising a strap disposed immediately adjacent part of said U-shaped main yoke portion, extending through an additional aperture in said extended yoke portion located nearer said housing than is said fastener aperture, extending over said extended yoke portion between said additional aperture and said fastener aperture, and terminating at an extremity having said edge, and said fastener securing said yoke, said internal contact element and said grounding element being located through the bottom of said U-shaped main yoke portion.

3,963,293

ELECTRICAL EDGE CONNECTOR

William H. McKee, West Covina, Calif., assignor to TRW Inc., Cleveland, Ohio

Filed June 28, 1971, Ser. No. 157,167

The portion of the term of this patent subsequent to June 15, 1993, has been disclaimed.

Int. Cl.² H05K *1/07*

U.S. Cl. 339—17 L **12 Claims**

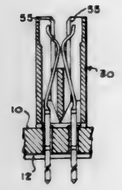
1. A printed circuit board edge connector assembly for use with a mating printed circuit board and mounted on a printed circuit board comprising;

a plurality of elongated connector elements each comprising; a base press fitted in an opening in a printed circuit board and a contact blade connected to the base said contact blade extending generally upwardly from the printed circuit board and terminating in a free end; and

an insulator casting having a chamber with a first end and a second end, said insulator removeably mounted at the first end by frictional emgagement on the contact blade with said connector element holding the insulator casting securely to the printed circuit board, and said second end receiving the free end of said contact blade and adapted

to removeably receive, edgewise, the mating printed circuit board so as to ensure electrical connection between the contact blades and the mating printed circuit board;

the insulator casting having integral means at said first end for releasably spring biasing the contact blade of each



connector element during assembly of the insulator casting over the connector elements and the second end of said insulator casting having means cooperating with the free end of said contact blade for maintaining the spring biasing of the contact blades in a preloaded position as said blade passes beyond said integral means for releasably spring biasing.

3,963,294

ELECTRICAL CURRENT SUPPLY INSTALLATIONS

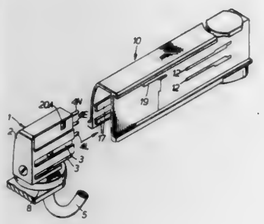
Robert Heritage, Mortlake, England, assignor to Rotaflex (Great Britain) Limited, London, England

Filed Feb. 25, 1975, Ser. No. 553,017

Claims priority, application United Kingdom, Feb. 27, 1974, 8986/74

Int. Cl.² H01R *13/60*

U.S. Cl. 339—22 R **6 Claims**



1. A two part separable adapter for use in electrical current supply installations of the type including an elongated track housing supply conductors, said track including a longitudinally extending, laterally open access slot comprising a housing insertible into said track through said access slot, contact fingers movably mounted on said housing, means on said housing for shifting said contact fingers into engagement with said conductors in the inserted position of said housing in said track, a second unit adapted to be mounted in said housing and including an electrical appliance support means supported thereon, terminal means on said second unit electrically connected to said appliance, said terminal means being positioned to be electrically connected to said contact fingers of said housing responsive to movement of said unit to the mounted position thereof in said housing, complemental locking means on said housing and said second unit manually shiftable between engaging and disengaging positions, respectively locking said second unit to said housing and releasing said second unit for movement relative to said housing, said locking means, in the inserted position of said housing in said track, being disposed within said track and, hence, inaccessible to inadvertent movement to the disengaged position thereof.

3,963,295

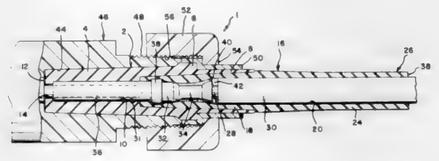
HEAT-SHRINKABLE MOLDED HIGH VOLTAGE CONNECTOR

Jan Philip Askman, Carlisle, and George Warren Wolverton, Elizabethtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 21, 1975, Ser. No. 570,128

Int. Cl.² H01R *13/52*

U.S. Cl. 339—60 R **3 Claims**



1. An electrical connector, comprising:

a molded silicone rubber portion having a cavity therein,

a sleeve of heat-shrinkable material having a first section molded into said cavity of said silicone rubber portion, said first section being pre-shrunk to conform to the surface irregularities of an electrical contact, and

said sleeve having a relatively enlarged heat-shrinkable second section integral with said first section and protruding from said silicone rubber portion and being heat-shrinkable to conform sealably in encirclement over an insulation covered wire terminated to said contact.

3,963,296

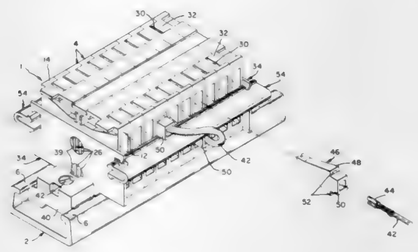
LOCKING BAR ASSEMBLY FOR HIGH VOLTAGE TERMINAL BLOCKS

Douglas Wade Glover, Harrisburg, and Mervin Amos Gardner, Highspire, both of Pa., assignors to AMP Incorporated, Harrisburg,, Pa.

Filed May 9, 1975, Ser. No. 576,069

Int. Cl.² H01R *9/16*

U.S. Cl. 339—75 M **3 Claims**



1. A locking bar assembly, comprising:

a channel shaped track,

a plurality of dielectric blocks serially arranged along said track,

a plurality of electrical leads terminated with corresponding electrical contacts,

a pair of plates receiving therebetween said plurality of blocks,

said plates having mutually aligned notch portions, dielectric housings having enlarged forward portions receiving said contacts and rearward portions of reduced cross-section from which said leads protrude,

said blocks having cavities pluggably receiving corresponding forward portions of said housings therein with said rearward portions protruding from said cavities,

a locking bar having resiliently flexible opposed flanges,

said opposed flanges being resiliently compressed toward each other and thereby latchably received in a corresponding notch portion of each said plate, and

said bar partially overlying said cavities of said blocks preventing withdrawal of said enlarged portions of said housings from said cavities.

3,963,297

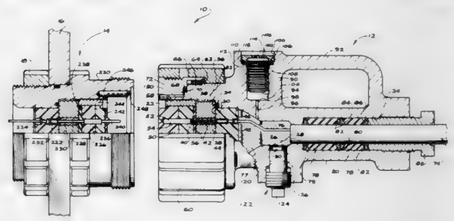
UNDERWATER PRESSURE COMPENSATED ELECTRICAL CONNECTOR

George J. Panek, Phoenix, Ariz., and Gerald J. Selvin, Huntington Beach, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 1, 1975, Ser. No. 618,344

Int. Cl.² H01R *13/52*

U.S. Cl. 339—94 M **6 Claims**



1. An underwater electrical connector member comprising:

a housing containing an insulator and having a chamber therein behind said insulator adapted to hold an electrically nonconductive liquid;

at least one electrical contact mounted in said insulator;

a passage in said housing extending from said chamber to outside said housing for receiving a cable containing a conductor adapted to be connected to said contact;

first and second bores extending through the wall of said housing communicating with said chamber;

a pressure compensating bellows in said first bore having a closed end axially movable in said bore; and

an axially adjustable piston slidably mounted in said second bore for establishing a predetermined pressure on said liquid in said chamber, thereby compressing said bellows.

3,963,298

SOCKET CONNECTION OF TUBES OR TUBULAR ELEMENTS, IN PARTICULAR OF METAL

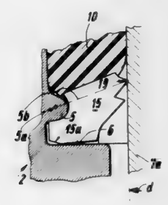
Georg Seiler, Pachmayrplatz II, Munich 81, Germany

Filed Jan. 8, 1973, Ser. No. 321,860

Claims priority, application Germany, May 29, 1972, 2226151

Int. Cl.² H01R *7/08*

U.S. Cl. 339—95 R **11 Claims**



1. Socket connection for a pair of tubular elements, in particular of metal, one of which has a male end and the other of which has a female end accommodating the male end of the one tubular element with radial clearance, said female end having a terminal portion presenting a radially extending inside shoulder, including a sealing and antithrust ring with a foot section positioned within the female end of the other tubular element supported against said inside shoulder, several retaining elements distributed in circumferential direction around the foot section and having an inside edge engaging the outside diameter of the male end of the one tubular member and a head section sealing the annular space between the female end and the male end of the tubular elements, characterized in that each retaining element is firmly embedded in a radially extending groove in a foot section consisting specifically of an elastomeric material harder than that of the head section and in that each retaining element in the assembled condition of the sealing and antithrust ring is directly supported for movement about a pivot axis by the inside wall of the female end of the other tubular member so as to be pivotable and in that each retaining element presents at least two inside edges intended to engage the outside diameter of the male end of the one tubular member which are spaced differently from the pivot axis axially and radially of the tubular members, depending upon the permissible diameter tolerance of the male end of the one tubular member wherein the axial and radial spacings of the two or more inside edges from the pivot axis of the retaining element have a connecting line from the pivot axis to a respective inside edge in engagement with the male end which always has approximately the same inclination relative to the tubular elements.

3,963,299

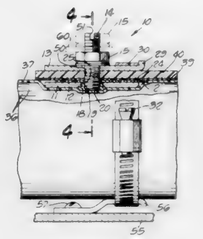
BONDING ASSEMBLY FOR INSTALLATION ON A SHIELDED CABLE

John T. Thompson, 244 Loring St., Los Angeles, Calif. 90024, and George W. Gillemot, 2331 - 20th St., Santa Monica, Calif. 90405

Continuation of Ser. No. 295,509, Oct. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 257,692, May 30, 1972, abandoned. This application Feb. 3, 1975, Ser. No. 546,289

Int. Cl.² H01R *11/20*

U.S. Cl. 339—95 R **20 Claims**



1. That improvement in a solderless bonding assembly for use in completing a high-strength high-capacity bonding connection to a shield jacket of a sheathed cable in an area concealed beneath the cable sheath, said improved bonding assembly comprising: separate inner and outer metal shoes each having a hole in the mid-portion thereof, said hole in said inner shoe being threaded, said inner shoe alone being insertable edgewise directly beneath one end of the cable shield jacket until said threaded hole is in registry with aligned holes spaced inwardly from an end edge of the superimposed portions of the cable sheath and shield jacket and which aligned holes are sized to accommodate a clamping shank for said shoes, an elongated metal shank threaded from end to end thereof and having one threaded end insertable serially first through the hole in said outer show, the aligned holes in the cable sheath and shield jacket and then into the threaded hole of said inner shoe, and retainer means on said shank receiver to hold the cable sheath and shield jacket rigidly and forcibly clamped between said inner and outer shoes to provide a high capacity bonding connection to the cable shield jacket and a high strength mechanical connection to intervening superim-

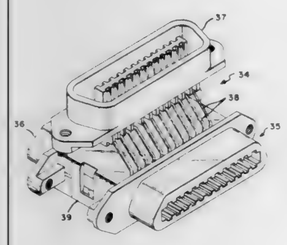
posed portions of the cable sheath and the cable shield jacket, the outer surface of said inner shoe and the inner surface of said outer shoe being complementary and being substantially parallel throughout their entire areas when assembled with said shank and the cable sheath and shield jacket in the manner set forth, the inner surface of the outer shoe being substantially continuous throughout its entire area.

3,963,300

MULTI-CONDUCTOR TAP-CONNECTOR

George Allen Patton, Pfafftown, and John James Tucci, Winston-Salem, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 11, 1974, Ser. No. 514,148
Int. Cl.² H01R *11/32*
U.S. Cl. 339—156 R **9 Claims**



1. A tap connector assembly for making a tap connection at a location in a multi-conductor cable, said cable having multi-contact electrical connectors attached to the ends of wires in said cable at said location, said assembly comprising:

first, second and third separate assembly connectors of the same type employed with said multi-contact electrical connectors attached to said cable ends, said assembly connectors each having similar insulating housings having a mating side and rearward side, said housings having a plurality of terminal receiving cavities arranged in first and second parallel rows extending from said rearward side to said mating side, said housing being asymetric so that said first and second cavity rows are distinct.

a plurality of terminals in said cavities, said terminals having a conductor receiving portion and a contact portion, said conductor receiving portions being identical and being aligned in first and second parallel rows along the rearward sides of said housings,

said housings being arranged in surrounding relationship to a common central axis with said rearward sides parallel to, and closely adjacent to, said common axis, said connectors being in end-to-end alignment, with said rows extending parallel to each other,

a plurality of electrical conductors extending between corresponding terminals in said first and second rows in said first and second connector housings, and a number of conductors extending from said first row in said first housing to said first row in said third housing, and a number of different conductors extending between said second row in said second housing to said second row in said

third housing, whereby

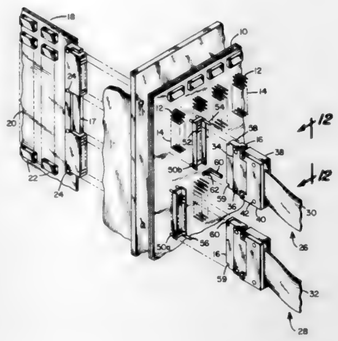
said interconnecting conductors join said connector housings in a latticework pattern rather than a chain and a compact tap connector assembly capable of being attached to multi-conductor cables having similar individual mating connectors mounted thereon is formed.

3,963,301

MOTHER-BOARD INTERCONNECTION SYSTEM

William H. Stark, West St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 20, 1974, Ser. No. 535,074
Int. Cl.² H01R *13/64*
U.S. Cl. 339—186 M **4 Claims**



1. In a mother-board interconnection system in which a keyed electrical connector assembly having a polarizing key assembled in a first one of two polarizing key notches formed in its two opposite short ends is electrically coupled to a pattern of electrical contacts projecting from said mother-board, an insulative keyed connector guide stand-off that generally conforms to, receives and positions said keyed electrical connector assembly a predetermined distance away from said mother-board permitting electrical wiring to pass therebetween, said insulative keyed connector guide stand-off comprising:

a rectangular base member having two opposite long edges and two opposite short edges and a plurality of apertures therethrough, which apertures are arranged in a pattern that conforms to and mates with said pattern of electrical contacts in said mother-board;

two side walls projecting upwardly from said base member and oriented along said two opposite long edges;

a key post projecting upwardly from said base member and oriented along only a second one of said two opposite short edges, said key post generally conforming to a polarizing key notch in said keyed electrical connector assembly, said two side walls and said key post combining to form an open end along the first one of said two opposite short ends and to accept and mate with only said keyed electrical connector assembly;

a pluraity of legs projecting downwardly from said base member for positioning said keyed electrical connected assembly a predetermined distance away from said mother-board and permitting electrical wiring to pass therebetween.

3,963,302

ELECTRICAL CRIMP REMOVABLE SOCKET CONTACT

Charles A. Gourley, Bethel, Conn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Mar. 18, 1974, Ser. No. 451,738
Int. Cl.² H01R *11/22, 13/42*
U.S. Cl. 339—217 S **3 Claims**

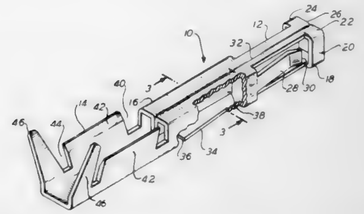
3. An electrical contact for joining two electrically conductive elements, comprising:

a box-like end section for receiving a first conductive element formed from a metal sheet with four side walls, one wall having a longitudinal slot formed by abutting foreshortened ends;

an open barrel crimp section for receiving a second conductive element;

a central box section formed by the extension of said four walls of said box-like end section for joining said box-like section and said open barrel crimp section;

support means formed by the continuations of said foreshortened abutting ends extended into said central box



section having contiguous facing surfaces for strengthening said contact; and

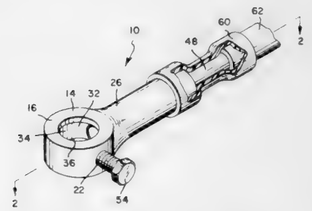
stop means formed by inner and outer edges of said contiguous surfaces of said support means wherein said inner edges provide a stop for said first conductive element and said outer edges provide a stop for said second conductive element.

3,963,303

BATTERY TERMINAL CONNECTOR

Kenneth Scott Hays, Exton, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 15, 1974, Ser. No. 514,346
Int. Cl.² H01R *11/26*
U.S. Cl. 339—237 **2 Claims**



1. A corrosion resistant, light weight battery terminal connector comprising, a collar, said collar including an annular side wall; an aperture, said aperture being disposed in said annular side wall; an elongated hollow member, said hollow member being supported on said collar with the opening in said hollow member being in communication with the aperture in said annular sidewall; said collar and said elongated hollow member being comprised of rigid, electrically nonconductive material; a liner, said liner being comprised of electrically conductive material, one portion of said liner being disposed along the inner surface of said annular wall, a recess in the inner surface of said annular wall, said one portion of said liner normally being disposed in said recess, another portion of said liner extending through said hollow member; means on said other portion of said liner for engaging and enabling an electrical circuit with a battery cable; means for urging said one portion of said liner against a battery post disposed in said collar to enable an electric circuit with the post, said last name means comprising a second aperture in said annular wall, said second aperture including threads, an elongated member with complimentary threads, said elongated member being receivable within said second aperture, said one portion of said liner overlying said second aperture, and means for advancing said elongated member through said second aperture and into engagement with said liner so that it is urged against the battery post.

3,963,304

ARC-SPLITTING FIN TYPE SCREW SET

Eiji Suzuki, 22-11, Kamiyamacho, Shibuya, Tokyo, Japan

Filed Feb. 20, 1975, Ser. No. 551,574
Claims priority, application Japan, Mar. 9, 1974, 49-26776
Int. Cl.² H01R *7/06*
U.S. Cl. 339—245 **12 Claims**



1. A threaded coupling comprising a first disc element having a plurality of equi-spaced radial slits dividing said first disc element into a plurality of circumferential segments each extending in a radial direction and having in the circumferential direction progressively increasing axial height, said radial slits in said first disc element forming junctures between adjacent ones of said segments such that the adjacent edges of the segments are spaced at different elevations, said first disc element thus presenting a first thread, a second disc element provided with radial slits equal in number to those of said first disc element dividing said second disc element into a plurality of circumferential segments, each of said segments of said second disc extending in a radial direction opposite to that of the first disc, the slits of said second disc forming junctures between adjacent segments such that the adjacent edges of the segments thereof are spaced at different elevations, each of the segments of said second disc element having in the circumferential direction a progressively increasing axial height thus presenting a second thread adapted to intermesh with said first thread, a mounting block element positioned in juxtaposed relation to one of said disc elements, said mounting block having a central opening therein, a rotatable stud element having a columnar portion dimensioned to extend through the central opening in said mounting block element in engagement with said one disc element and, means for keying said stud to said one disc to conjointly rotate the same relative to the other disc, whereby the rotation of said one disc causes said thread elements to intermesh and secure said mounting block between said stud and said disc elements.

3,963,305

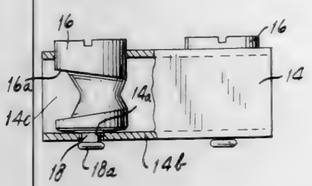
TERMINAL BLOCK CONSTRUCTION

Benjamin Doktor, deceased, late of Englewood, N.J., by Henrietta Doktor, administratrix, 372 Thornton Road, Englewood, N.J. 07631

Filed Nov. 22, 1974, Ser. No. 526,269
Int. Cl.² H01R *7/06*
U.S. Cl. 339—274 **4 Claims**

1. A terminal connector for an electrical conductor comprising a housing element having walls thereof which define a chamber therein, a wedging member mounted for pivotal movement within said housing element, said housing element and said wedging member having conductor contacting surfaces within said chamber which firmly engage an electrical conductor therebetween in a predetermined pivotal position

of said wedging member, said housing element including a support plate with a hole therein, said wedging member including a supporting shaft extending away from the conductor contacting surface of said wedging member and through said hole in said support plate to provide for said pivotal movement of said wedging member, said supporting shaft including an enlarged portion at an end thereof remote from said conductor contacting surface and extending outside said chamber



and of slightly greater diameter than the diameter of said hole in said support plate sufficient to retain said wedging member in place but permitting removal and insertion of said wedging member from and into said housing element by snap-out, snap-in action in a direction along the axis of said supporting shaft, said enlarged end portion not interfering with the conductor contacting function of the wedging member by virtue of its location outside said chamber.

3,963,306

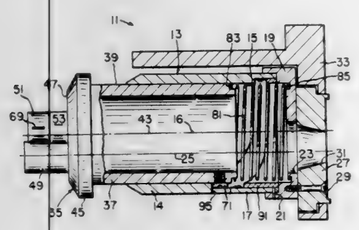
MULTIPLE OBJECTIVE SUPPORTING AND POSITIONING ASSEMBLY FOR A MICROSCOPE

Guy E. Martin, Brighton, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 375,579, July 2, 1973, abandoned. This application Jan. 22, 1975, Ser. No. 542,889

Int. Cl.² G02B 7/16

U.S. Cl. 350—39 **12 Claims**



1. A multiple objective supporting and positioning assembly for a microscope, said assembly comprising:
   a. a support means having an axis;
   b. carrier means including a plurality of objective mounting means; and
   c. means provided on both said support means and said carrier means for permitting rotational movement of said carrier means relative to and without movement of said support means about said support means axis and simultaneous movement of said carrier means relative to and without movement of said support means in a direction parallel to said support means axis, said means including a continuous, unending cam surface fixed to one of said support means and said carrier means and a cam follower fixed to the other of said support means and said carrier means.

3,963,307

SAFETY REFLECTOR DEVICE

Norbert A. Kirk, 43 E. Ohio St., Chicago, Ill. 60611

Filed June 10, 1974, Ser. No. 478,099

Int. Cl.² G02B 5/12; B60R 1/00

U.S. Cl. 350—99 **13 Claims**



1. A safety signal device for a vehicle comprising:
   a rotatable reflector member adapted to be rotated on on axis of rotation by air flow in a direction parallel to the motion of the vehicle,
   a channel-shaped air shield member for deflecting a major portion of the air flow from said rotatable reflector member while permitting a minor portion of said air flow to contact at least a portion of that part of the reflector member which lies on one side of the axis of rotation of said reflector member to cause rotation of said reflector member, the part of said reflector member lying on the other side of said axis of rotation being shielded from said air flow, said air shield member comprising a front portion the front surface of which, in use, faces in the direction of vehicle travel, and first and second side walls which are interconnected by said front portion and extend rearwardly thereof to form a channel therebetween,
   means affixed to the inner surfaces of said side walls for rotatably mounting said reflector in said channel, between said side walls, such that the axis of rotation of said reflector member extends between said side walls and said side walls deflect the major portion of the air which moves past said shield member in the direction of movement of the vehicle, and
   vehicle mounting means for mounting said air shield member on the vehicle.

3,963,308

FOCUSING COUPLING DEVICE FOR MULTI OPTICAL-FIBER CABLE

Robert L. Lebduska, La Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

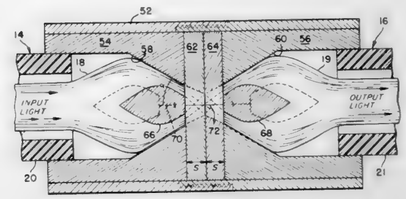
Filed June 25, 1973, Ser. No. 373,583

Int. Cl.² G02B 5/16

U.S. Cl. 350—96 C **2 Claims**

1. A coupling device for a fiber optic cable containing a plurality of bared free fiber ends comprising:
   a connector body having a longitudinal internal bore extending therethrough providing an opening at both ends to receive said cable;

a tapered mandrel positioned within the bore approximately at the longitudinal axis of the cable and centrally to the fibers;
said internal bore being funnel-shaped for bending the free ends of said fibers and to coact with the mandrel as they are freely inserted within said body at predetermined acute angular relation to the longitudinal axis of the



connector body so that the longitudinal centerlines of a substantial number of the fibers when projected will intersect approximately at a common focal point beyond the faces of the fibers' ends and spaced therefrom to enable the light beam patterns emitting from the fiber ends to be substantially superimposed on each other at a transverse plane passing through said common focal point.

3,963,309

REFLEX LIGHT REFLECTOR SHEET AND METHOD FOR ITS MANUFACTURE

Kurt Schwab, Innsbruck, Austria, assignor to D. Swarovski & Co., Glasschleiferei, Wattens, Austria

Filed Dec. 13, 1973, Ser. No. 424,601

Claims priority, application Austria, Dec. 15, 1972, 10745/72

Int. Cl.² G02B 5/12

U.S. Cl. 350—104 **10 Claims**



1. In a reflex light reflector sheet having a front face and a rear face, wherein both said front face and said rear face are provided with a plurality of juxtaposed convex lens surfaces, said rear face being covered by a mirror surface, the improvement which comprises that:
   a. the lens surface of said front face are aspherical, said surface being defined geometrically by the rotation of a meridian section deviating from a circle about an axis;
   b. the lens surfaces of the rear face are Fresnel lens surfaces,
   c. the respective axes of the lens surfaces on said front and rear faces coincide, and
   d. the focal point of the lens which is defined by each lens surface on said front face for axially incident light is located in or in the proximity of the associated lens surface on the rear face.

3,963,310

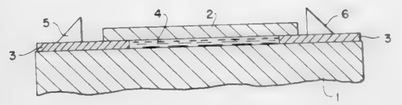
LIQUID CRYSTAL WAVEGUIDE

Thomas G. Giallorenzi, Alexandria, and Joel M. Schnur, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1973, Ser. No. 389,776

Int. Cl.² G02F 1/13

U.S. Cl. 350—160 LC **7 Claims**



1. A liquid crystal optical waveguide, which comprises
   a transparent substrate,
   a transparent plate spaced from said substrate parallel therewith,
   a liquid crystal waveguide medium placed between said transparent substrate and said transparent plate in surface contact therewith and having an index of refraction greater than that of said substrate and said plate,
   means to apply an electric field to said liquid crystal to cause dynamic scattering,
   means to couple light into said liquid crystal waveguide medium so that the light is guided through the liquid crystal medium between said substrate and said transparent plate in a direction paralleling said substrate and said plate, and
   means to couple light out of said liquid crystal medium.

3,963,311

LIQUID CRYSTAL ESTERS

Arthur Boller, Binningen, and Hanspeter Scherrer, Therwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

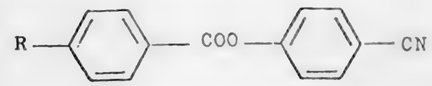
Division of Ser. No. 334,291, Feb. 21, 1973, Pat. No. 3,923,857. This application Aug. 20, 1975, Ser. No. 606,157

Claims priority, application Switzerland, Feb. 23, 1972, 2586/72; Jan. 23, 1973, 920/73

Int. Cl.² G02F 1/13

U.S. Cl. 350—160 LC **1 Claim**

1. An optical cell comprising liquid crystal means comprising one or more compounds selected from the group consisting of compounds of formula

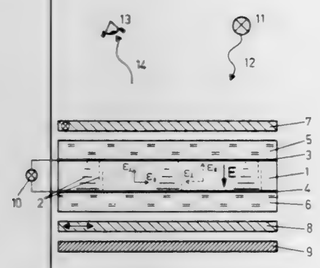


wherein R is straight-chain lower alkyl of 4 to 8 carbon atoms or straight-chain lower alkoxy of 5 to 8 carbon atoms,
disposed between two plate means at least one of which plate means is transparent; means for controlling the optical activity of the cell; and said liquid crystal means having a helical structure in the direction perpendicular to the plate means and the surfaces of the plate means being wall oriented.

3,963,312
CONTROLLABLE LIQUID-CRYSTAL DISPLAY DEVICE

Peter Wild, Wettingen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Sept. 11, 1974, Ser. No. 505,139
Claims priority, application Switzerland, Sept. 27, 1973, 13837/73
Int. Cl.² G02F 1/13
U.S. Cl. 350—160 LC **9 Claims**



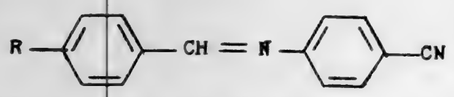
1. A controllable liquid-crystal display device comprising:
first and second transparent support plates,
a transparent electrode on a plane surface of each of said transparent support plates,
a liquid crystal contained between said first and second transparent support plates and said transparent electrodes,
first and second approximately neutral polarizers, positioned on opposite sides of said liquid crystal, said polarizers being of such a type that said first polarizer in conjunction with another polarizer of the same type exhibits a high extinction ratio and said second polarizer in conjunction with another polarizer of the same type exhibits a relatively low extinction ratio; and
a reflector of low light scattering characteristics adjacent said second polarizer.

3,963,313
LIQUID CRYSTAL SCHIFFS BASES

Boller Arthur, Binningen, and Hanspeter Scherrer, Therwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 334,292, Feb. 21, 1973, Pat. No. 3,927,064. This application Sept. 9, 1975, Ser. No. 611,735
Claims priority, application Switzerland, Feb. 23, 1972, 2585/72; Jan. 11, 1973, 355/73
Int. Cl.² G02F 1/13
U.S. Cl. 350—160 LC **1 Claim**

1. An optical cell comprising liquid crystal means comprising one or more compounds selected from the group consisting of compounds of the formula

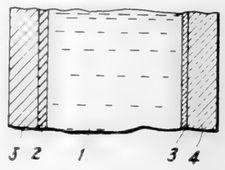


wherein R is ethyl, n-propyl, n-butyl, n-pentyl, n-hexyl, isohexyl, n-heptyl or n-octyl,
disposed between two plate means at least one of which plate means is transparent; means for controlling the optical activity of the cell; and said liquid crystal means having a helical structure in the direction perpendicular to the plate means and the surfaces of the plate means being wall oriented.

3,963,314
COLOR DISPLAY DEVICE

Akio Yamashita, Kawanishi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sept. 18, 1974, Ser. No. 507,204
Claims priority, application Japan, Sept. 29, 1973, 48-109996
Int. Cl.² G02F 1/36
U.S. Cl. 350—160 R **10 Claims**

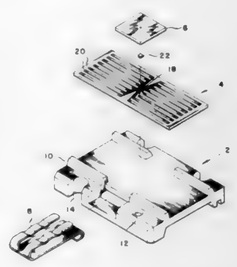


1. A color display device comprising a pair of electrodes, at least one of which is transparent, a dielectric layer provided on the inner face of at least one of those electrodes, and a solution containing at least one electrochromic dye and filled in a space between said electrodes in contact with said dielectric layer.

3,963,315
SEMICONDUCTOR CHIP CARRIER AND TESTING FIXTURE

Scott A. Bonis, Sunnyvale, Calif., assignor to Lockhead Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Apr. 7, 1975, Ser. No. 565,637
Int. Cl.² H05K 1/12
U.S. Cl. 339—17 CF **5 Claims**



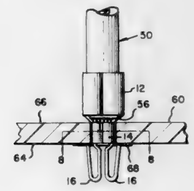
1. A carrier for a microelectronic-circuit chip having beam leads to facilitate handling and testing operations, comprising:
a base including a surface,
a substrate mounted on the surface of said base,
said substrate including a plurality of electrically conductive paths,
said substrate further including a rectangular aperture through said substrate,
each of said electrically conductive paths having an end adjacent said rectangular aperture,
a microelectronic-circuit chip,
said microelectronic-circuit chip further defined as being substantially rectangular in shape and having tapered sides,
said microelectronic-circuit chip including a plurality of beam leads protruding from said circuit chip,
said circuit chip aligned with said substrate entirely by cooperation of said tapered sides and said rectangular aperture,
a cover retaining the circuit chip in said rectangular aperture,

and resilient clip means for releasably holding said cover to said base, and,
wherein said clip means includes a corregated leg and a J-shaped leg.

3,963,316
ELECTRICAL CONNECTOR FOR A PRINTED CIRCUIT BOARD

Benjamin Charles Williams, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 298,995, Oct. 19, 1972, abandoned. This application Nov. 1, 1973, Ser. No. 411,936
Int. Cl.² H05K 1/02
U.S. Cl. 339—17 C **7 Claims**



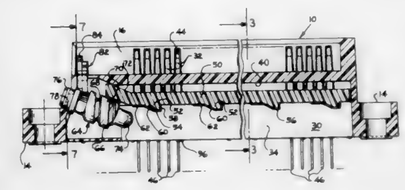
1. In combination, a wire, a substrate having first and second surfaces connected by an opening therethrough and a metal contact for securing said wire to said opening and comprising:
a ferrule portion crimpable around said wire;
a crimped second portion constructed to securely hold a portion of said wire therein and further inserted within said substrate opening in a direction extending from a first surface of said substrate to the second surface of said substrate;
a channel-shaped portion having a concave portion and attached to said second portion and extending beyond said second surface of said substrate and constructed to retain the end of said wire in the concave portion thereof;
said channel-shaped portion comprising resilient finger-like means formed as a part thereof and having at least one free end extending back towards the said crimped second portion of said metal contact;
said ferrule portion constructed to contact said first surface of said substrate when said crimped second portion is inserted into said substrate opening and said channel-shaped portion constructed to have the said at least one free end of said finger-like means abut against said second surface of said substrate when said crimped second portion is inserted into said substrate opening.

3,963,317
ZERO FORCE EDGE CONNECTOR BLOCK

George Thomas Eigenbrode, Mechanicsburg, and Robert Franklin Evans, New Cumberland, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 3, 1975, Ser. No. 564,795
Int. Cl.² H01R 13/62
U.S. Cl. 339—74 R **20 Claims**

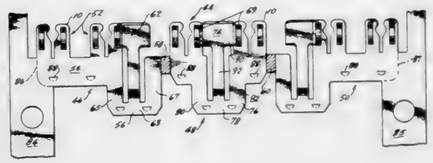
1. A zero force connector block including a support, a row of terminals extending from said support and including contacts, an elongate cam bar extending along said row of terminals, said bar including surface means engageable with said terminals upon diagonal movement of the bar along its length and away from the support to flex the terminals and move the contacts between contact positions where the contacts engage pads on a circuit board or like member located adjacent the block and retracted positions away from the contact positions, a drive mechanism for longitudinally shifting said cam bar, and connection means between said cam bar and support for moving the cam bar away from the support in response to longitudinal movement of the cam bar by the drive mechanism.



3,963,318
CONTACT AND CONTACT ASSEMBLY

Council A. Tucker, Los Angeles, Calif., assignor to American Telecommunications, El Monte, Calif.

Continuation of Ser. No. 443,496, Feb. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 312,609, Dec. 6, 1972, Pat. No. 3,842,395. This application Oct. 28, 1975, Ser. No. 626,130
Int. Cl.² H01R 9/08
U.S. Cl. 339—97 P **9 Claims**



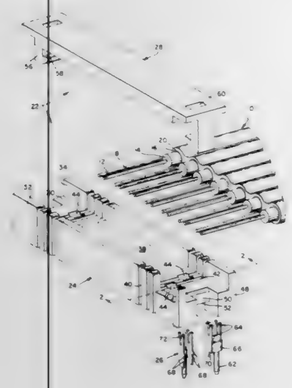
1. An improved contact structure comprising:
a. a generally planar, vertical base;
b. a pair of upstanding, vertical blades extending from the base and in the same plane therewith;
c. the blades defining between them a mouth proximate the top of the blades, an enlarged passage below the mouth and opening into the mouth, and a coining slot below the enlarged passage and opening into the passage, the mouth having a width to compressively engage and hold a lead without damage to a conductor thereof, the enlarged passage having a pair of straight edges which converge towards and terminate at the coining slot, the converging edges being sized to strip insulation contacted by the edges from a lead, the coining slot having generally parallel and spaced apart edges and being sized to coin a conductor of a lead to effect therewith good electrical contact and a mechanical interference lock in a direction perpendicular to the length of the slot and along the axis of the lead, the enlarged passage and coining slot being symmetrical about a vertical line of symmetry; and
d. a pair of thickening ribs for the blades, one rib being on each blade, and both ribs being on the same side of the blades, the external lateral limit of each of the ribs being defined by a face, the thickness of the contact from the face of each rib to the surface of the contact on the side thereof opposite the ribs being substantially the width of the throat of a standard lead installation tool, the ribs being spaced on either side of the mouth, passage and coining slot, and the ribs extending vertically and directly to the sides of the coining slot at least adjacent the meeting of the enlarged passage and the coining slot.

3,963,319

COAXIAL RIBBON CABLE TERMINATOR

William Ludlow Schumacher, Camp Hill, and Robert Volinskie, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 12, 1974, Ser. No. 532,076
Int. Cl.² H01R 11/20
U.S. Cl. 339—176 MF **1 Claim**



1. A device for terminating cable of the type having a plurality of parallel wires, which comprises:

a. a housing consisting of front and rear upright walls bracketing a base member, and a plurality of spaced, parallel grooves extending through the walls and across the upper surface of the base member, further the base member having a plurality of spaced openings extending vertically therethrough with each opening intersecting a groove; and b. a plurality of contact terminals adapted to be positioned in the spaced openings, each terminal having at its lower end a pin adapted to depend from the base for insertion into a printed circuit board or the like, and at its upper end a pair of spaced slotted contact members adapted to extend above the upper surface of the base member and to receive and terminate a wire which may be lying in the groove intersected by the opening, and intermediate the two ends a pair of spaced parallel walls joined on one side by a strip of material integral to the walls and having on each of the two free sides a pair of laterally projecting lances, one over the other, said lances adapted to interfere with the walls of the opening to secure the terminal when such is positioned therein.

3,963,320

CABLE CONNECTOR FOR SOLID-INSULATION COAXIAL CABLES

Georg Spinner, ErzgieBereistr. 33, 8 Munich 2, Germany

Filed June 12, 1974, Ser. No. 478,595
Claims priority, application Germany, June 20, 1973, 2331610
Int. Cl.² H01R 17/04
U.S. Cl. 339—177 R **10 Claims**

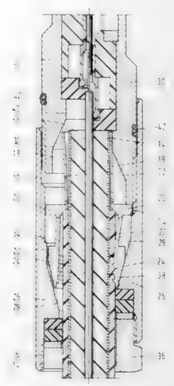
1. A cable plug connector for an insulated coaxial cable:

the cable comprises an internal conductor, a dielectric layer outside the internal conductor and supporting an external conductor, a thin metallic external conductor positioned around and supported on the dielectric layer, and an external protective casing of insulating material around the external conductor; an annular section of the cable casing is removed to faciliate electrical and mechanical contact with the exposed contact section of the external conductor;

said connector comprising:

a resilient spring electric contact ring extending around the contact section of the external conductor; said contact ring having a supported edge portion extending toward a clamping sleeve and having an opposite free edge portion opposite its said supported edge portion; said contact ring being so shaped and oriented that its said free edge portion is normally raised above the contact section of the external conductor and its said free edge portion is radially deflectable inwardly against the contact section of the external conductor;

a contact sleeve having an opening therein into which the cable and said contact ring are movable and which said contact sleeve opening is defined by a contact sleeve opening wall; said contact ring being movable into said



contact sleeve opening, said contact sleeve opening wall being shaped to engage and cause said contact ring free edge portion to deflect radially inwardly as said contact sleeve is moved toward the clamping sleeve and moved toward and into engagement with a gripping sleeve and this causes said contact ring free edge portion to engage the contact section of the external conductor;

a gripping sleeve over the cable extending toward and meeting with said contact sleeve and also extending over said connector; said gripping sleeve being shiftable on and toward said contact sleeve such that said gripping sleeve and said contact sleeve engage and move together a predetermined distance once they engage; a gripping sleeve opening formed in said gripping sleeve for receiving the cable and for receiving a clamping sleeve and having a gripping sleeve opening wall defining said gripping sleeve opening; said gripping sleeve opening facing toward said contact sleeve opening;

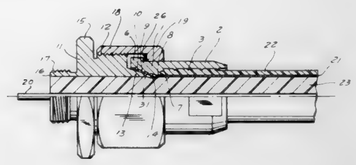
a resilient clamping sleeve having a supported edge portion which is connected with and supported together with said supported edge portion of said contact ring; said clamping sleeve extending away from said contact ring and extending around the cable casing; said clamping sleeve being shaped and oriented to extend into and being movable into said gripping sleeve opening; said clamping sleeve being slit into a plurality of tongues all extending into said gripping sleeve opening; said clamping sleeve tongues having a free edge portion, opposite said clamping sleeve supported edge portion, and said free edge portion is normally raised above the cable and is radially deflectable inwardly against the cable casing; said gripping sleeve opening wall being shaped to engage and cause said clamping sleeve free edge portion to deflect radially inwardly as said gripping sleeve is moved toward and on said contact sleeve and to cause said clamping sleeve to thereby engage the cable casing.

3,963,321

CONNECTOR ARRANGEMENT FOR COAXIAL CABLES

Walter Burger, Bechen, and Hans Leo Ditscheid, Refrath, both of Germany, assignors to Felten & Guilleaume Kabelwerke AG, Cologne, Germany

Filed Aug. 21, 1974, Ser. No. 499,427
Claims priority, application Germany, Aug. 25, 1973, 2343030
Int. Cl.² H01R 17/04
U.S. Cl. 339—177 E **10 Claims**



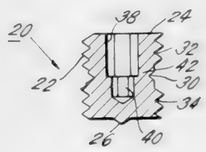
1. In a combination, a coaxial cable having a protective outer sheath, an outer conductor inwards of said outer sheath and an inner conductor inwards of said outer conductor, the coaxial cable having an end comprised of an endmost first portion along which said inner conductor is exposed, a second portion from which both said protective sheath and said outer conductor have been removed, a third portion from which said protective sheath has been removed, and a fourth portion from which said protective sheath has not been removed; a moisture-proof and radiation-impervious connector arrangement connected to said end of said coaxial cable and comprising a connector sleeve having one end surrounding and tightly holding said fourth portion of said cable and provided at its other end with an internal conical cavity surrounding said third portion of said cable, an additional one-piece connector unit including an axially extending portion surrounding said second portion of said cable and having a conically configurated end portion which is located slipped under said outer conductor along at least part of said third portion of said cable, said conically configurated end portion projecting into said conical cavity in said connector sleeve, and said outer conductor along at least said part of said third portion of said cable being outwardly deformed and widened and tightly wedged between the outer surface of said conically configured end portion and the wall of said internal conical cavity all around the circumference of the wedged portion of said outer conductor, said conically configurated end portion, said wall of said internal conical cavity and the wedged portion of said outer conductor together forming a circumferentially complete annular seal, and wherein the material of said additional connector unit at the portion thereof in contact with said wedged part of said outer conductor is electrically conductive so that all around said circumferentially complete annular seal there exists a circumferentially complete annular zone of electrical contact between the wedged portion of said outer conductor and said conically configurated end portion; and means connecting together said connector sleeve and said additional connector unit, wherein said connector sleeve is comprised of a collar portion which constitutes said one end of said connector sleeve and which surrounds and tightly holds said protective outer sheath and an internal shoulder separating the interior of said collar portion from said internal conical cavity, said collar portion being provided on the interior wall thereof with a large-pitch screwthread screwed into the material of said protective sheath of said fourth portion of said cable end, and wherein the end face of said protective sheath at the boundary of said fourth portion of said cable abuts against said shoulder to be thereby properly positioned within said connector sleeve, wherein said connector sleeve at the end thereof provided with said internal conical cavity is further provided with an annular outwardly projecting abutment portion, and wherein said means comprises a connector nut having one end provided with an inwardly projecting ridge-like portion which abuts against said outwardly projecting abutment portion and another end in screwthreaded engagement with said additional connector unit, said screwthreaded engagement being such that when said connector nut is tightened said inwardly projecting ridge-like portion presses against said outwardly projecting abutment portion thereby drawing said connector sleeve and said additional connector unit tightly together, wherein said additional connector unit is an inset which is partially received within said connector nut and partially received within said internal conical cavity, and wherein said cable along said second portion thereof has a predetermined outer diameter, and wherein said inset has an internal bore having a diameter substantially equal to said predetermined outer diameter so as to surround and firmly hold said second portion of said cable end, and wherein said inset at the end thereof facing away from said internal conical cavity is further comprised of an extension provided with an external screwthread for connecting said inset to another component.

3,963,322

TORQUE CONTROLLING SET SCREW FOR USE WITH THE CABLE OF SOLDERLESS CONNECTORS, OR THE LIKE

Carl E. Gryctko, Haddon Heights, N.J., assignor to ITE Imperial Corporation, Spring House, Pa.

Filed Jan. 23, 1975, Ser. No. 543,317
Int. Cl.² H01R 11/10
U.S. Cl. 339—272 R **4 Claims**



1. An integral, unitary set screw adapted for being tightened up to a predetermined maximum torque, comprising:

a helically threaded screw shaft adapted to be tightened in a matingly threaded tapped opening; a head at one end of said shaft; a tip, for engaging an object, at the opposite end of said shaft;

a head portion extending from said head toward and part of the distance to said tip; a tip portion extending from said tip toward said head portion; said tip portion having a top side on the side thereof opposite said tip, and said tip portion top side faces toward said head portion;

a first tightening wrench receiving bore profiled to receive and engage a wrench and also extending from said tip portion top side partially through said tip portion toward said tip;

a second tightening wrench receiving bore profiled to receive and engage a wrench and also extending from said head completely through said head portion to said tip portion top side and meeting, being coaxial with and forming a continuous bore with said first bore; said second bore being of larger cross-section than said first bore thereby enabling said second bore to receive a larger cross-section tightening tool than is receivable by said first bore;

a junction along said shaft and located at the junction between said tip portion top side and said head portion; said first and second bores meeting at said junction; at said junction, between the exterior of said shaft and both of said first and second bores, the material of said shaft has a rduced cross-sectional area, as compared with the

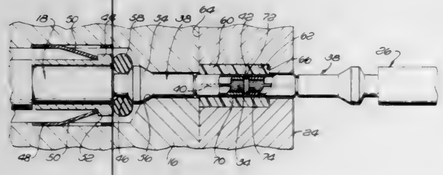
cross-sectional area of the remainder of said shaft, which said reduced cross-sectional area serves to weaken said shaft to an extent that said shaft breaks at said junction to separate said head and said tip upon a tightening wrench fitted in said second bore applying more than said predetermined maximum torque.

3,963,323

FIBER OPTIC CONNECTOR WITH PROTECTIVE CABLE SLEEVES

Bruce K. Arnold, El Toro, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 536,024
Int. Cl.² G02B 5/14
U.S. Cl. 350—96 C **7 Claims**



1. A fiber optic connector for joining the ends of a pair of fiber optic bundles comprising:
first and second fiber optic cables each containing a fiber optic bundle including a plurality of light transmitting fibers terminating in a planar end surface;
first and second mating connector members containing said first and second cables, respectively;
each said cable including a hollow body substantially surrounding the end of its respective bundle and having one end coplanar with said end surface of said bundle;
each said cable also including a sleeve surrounding its respective hollow body, said sleeve having at one end thereof a flat annular flange extending inwardly over said end of said body providing an optical window for said bundle, said flat annular flange lying in a plane parallel to said planar end surface; and
means in said connector members positioning said cables in axial alignment and causing said flanges at the ends of said cables to abut each other when said connector members are mated whereby said planar end surfaces of said bundles are axially spaced apart.

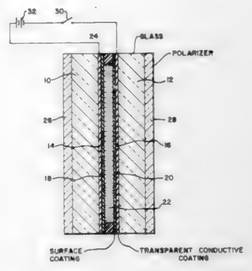
3,963,324

LIQUID CRYSTAL DISPLAY ASSEMBLY

James L. Fergason, Kent, and Duane E. Werth, Stow, both of Ohio, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 250,890, May 8, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,571
Int. Cl.² G02F 1/13
U.S. Cl. 350—160 LC **3 Claims**

1. In a liquid crystal display, the combination of a pair of transparent parallel plates, areas of transparent conductive material on the facing surfaces of said transparent parallel plates, a layer of a water soluble organic polymer selected from the group consisting of polyvinyl alcohol, polyethylene oxide, and polyvinyl pyrrolidone deposited over said transparent conductive material which will facilitate the production of well-defined lines produced upon rubbing, the transparent conductive areas with said material thereon being rubbed unidirectionally, a layer of liquid crystal material between said transparent conductive areas whereby a twisted nematic structure will be produced in the liquid crystal material by virtue of said unidirectional rubbing, polarizers on the sides of said transparent plates opposite said liquid crystal material, and



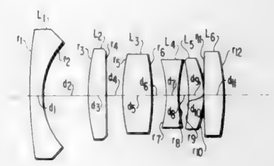
means for establishing an electrical field between said transparent conductive areas.

3,963,325

WIDE ANGLE LENS

Yasuo Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1975, Ser. No. 570,150
Claims priority, application Japan, Apr. 24, 1974, 49-46104
Int. Cl.² G02B 9/62
U.S. Cl. 350—215 **1 Claim**



1. A wide angle lens system comprising six lens components constituted by six lens elements wherein the first lens is a negaive meniscus lens convex to the object, the second lens is a positive lens, the third lens is a positive lens, the fourth lens is a biconcave negative lens, the fifth lens is a positive meniscus lens convex to the image and the sixth lens is a positive lens, wherein the following conditions are satisfied:

1. $F/1.2 < F_1 < F/0.8 \cdot F_1 < 0$
2. $F/1.8 < F_{1.2.3} < F/1.4$
3. $0.2F < d_2 < 0.45F$
4. $0.7F < (d_1 + d_2 + d_3 + d_4 + d_5 + d_6) < 0.9F$
5. $0.2 < (n_2 + n_3/2) - n_1 < 0.32$

wherein the reference characters designate the following dimensions:

F: effective focal length of the whole system
$F_{1.2.....i}$: effective focal length of the lens system comprising the first to the i-th lenses
r_j: radii of curvature of the j-th face
d_k: axial air separations of thicknesses of the k-th air separation or lens thickness
n_i: the refractive indices for the sodium d-line of the i-th lens
ν_i: Abbe numbers of the i-th lens,

the radii r_1 to r_{12}, the thickness and separations d_1 to d_{11}, the refractive indices n_1 to n_6, and Abbe numbers ν_1 to ν_6 of said first to sixth lenses L_1 to L_6, respectively, satisfy the following conditions:

$F = 100$
$F_1 = -100.46 = F/-0.922$
$F_{1.2.3} = 64.31 = F/1.555$

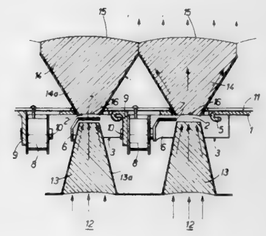
Lens	Radius of Curvature r	Lens Thickness or Distance d	Refractive Index n	Abbe No.
L_1	$r_1 = 227.78$ $r_2 = 44.46$	$d_1 = 7.14$ $d_2 = 28.92$	$n_1 = 1.51633$	$\nu_1 = 64.1$
L_2	$r_3 = 128.22$ $r_4 = 14544.54$	$d_3 = 11.83$ $d_4 = 9.40$	$n_2 = 1.80610$	$\nu_2 = 40.8$
L_3	$r_5 = 92.53$ $r_6 = -137.95$	$d_5 = 18.49$ $d_6 = 8.74$	$n_3 = 1.75700$	$\nu_3 = 47.9$
L_4	$r_7 = -81.74$ $r_8 = 88.40$	$d_7 = 8.23$ $d_8 = 5.94$	$n_4 = 1.80518$	$\nu_4 = 25.4$
L_5	$r_9 = -97.45$ $r_{10} = -48.29$	$d_9 = 9.09$ $d_{10} = 0.57$	$n_5 = 1.75700$	$\nu_5 = 47.9$
L_6	$r_{11} = 1008.30$ $r_{12} = -200.02$	$d_{11} = 11.37$	$n_6 = 1.74320$	$\nu_6 = 49.4$

3,963,326

DATA DISPLAY PANELS

Claude-Charles Buchert, 10, Boulevard Seneuze, 91440-Bures-sur-Yvette, France

Filed Mar. 5, 1974, Ser. No. 448,318
Claims priority, application France, Mar. 7, 1973, 73.08080; Feb. 5, 1974, 74.03792
Int. Cl.² G05D 24/00
U.S. Cl. 350—266 **12 Claims**



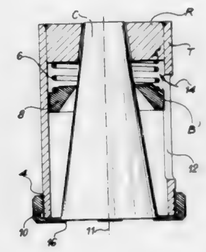
1. A module for a display panel, comprising:
a. a plurality of distinct on-and-off optical systems,
b. each system including an input end, light control means, an output end light transmitting means,
c. said input end including a source surface facing inwardly of said module,
d. said light control means optically associated with said source surface to control the illumination by a light source for selectively illuminating and obscuring said source surface,
e. said output end being spaced from said input end and including an image surface facing outwardly of said module,
f. said image surface being non-coextensive with said source surface, with the plurality of image surfaces being contiguous and having various shapes and sized areas to form a cohesive, substantially continuous display area,
g. said light transmitting means extending between said source surface and said image surface for reverberating the illuminated or obscured state of said source surface to said image surface thereby bringing said image surface to a corresponding state of illumination or obscurity.

3,963,327

DEVICE FOR OPERATING FRUSTO-CONICAL OPTICAL CONCENTRATORS

Albert Poirier, Saint-Benoit, France, assignor to Ulnic France, Paris, France

Filed Nov. 25, 1974, Ser. No. 527,113
Claims priority, application France, Nov. 23, 1973, 73.41871
Int. Cl.² G02B 7/18
U.S. Cl. 350—287 **6 Claims**



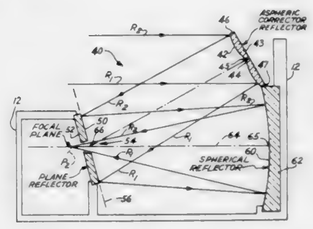
1. A device for operating frusto-conical optical concentrators made of a refringent material of refractive index, n, the major base of which is in the vicinity of a source S, said device comprising, at the upper portion of a frustum of a cone, a frusto-conical reflector surrounding said frustum over a given height along the frustum axis of symmetry, the inner surface of said frusto-conical reflector being parallel to the frustum lateral surface and located at a small distance therefrom, and said given height being at least equal to the ordinate of a point A as measured along the frustum axis of symmetry from the apex of said frustum, point A being the point at which the ray emitted by source S, which is the most inclined ray with respect to the frustum axis of symmetry, undergoes its first reflection on the frustum surface at an angle to the normal to the frusto-conical lateral surface at point A, said angle being smaller than the angle of total reflection.

3,963,328

WIDE FIELD REFLECTIVE OPTICAL APPARATUS

Irving R. Abel, Lexington, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 297,028, Oct. 12, 1972, Pat. No. 3,811,749. This application Jan. 17, 1974, Ser. No. 434,210
Int. Cl.² G02B 17/06
U.S. Cl. 350—294 **3 Claims**



1. A wide field reflective imaging system comprising:
a spherical reflector having a focal plane;
an aspheric reflector tilted around an axis of rotation for reflecting radiation; and
a plane reflector for reflecting radiation received from the aspheric reflector on to the spherical reflector, wherein the plane reflector defines a plane that intersects the optical axis of the spherical reflector at a predetermined

point and wherein the sum of the length of the optical axis between the spherical reflector and said plane and the distance between said point and the center of the aspheric reflector equals the radius of spherical reflector, whereby an image of at least part of the radiation received by the aspheric reflector is formed on the focal plane.

3,963,329
SMALL PUPIL BINOCULAR INDIRECT OPHTHALMOSCOPE

Joseph G. Stumpf, Fairfield, Conn., and Walter M. Lewis, Wilmette, Ill., assignors to Frigitronics of Conn., Inc., Shelton, Conn.

Filed Aug. 5, 1974, Ser. No. 494,820
Int. Cl.² A61B *3/12*; G02B *27/02*
U.S. Cl. 351—6 **6 Claims**



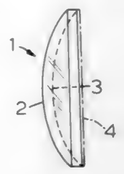
1. In a binocular indirect ophthalmoscope of the type having a horizontal mirror housing surmounted by a vertical lamp housing, a light source within the lamp housing, an illuminating mirror for directing light from the source into a patient's eye, V-shaped side-splitting mirror means centrally positioned in said mirror housing having first and second angled reflective surfaces for receiving light reflected from the patient's eye and directing it toward opposite ends of said mirror housing, and left and right ocular assemblies adjustably mounted in said mirror housing, each of said assemblies including a member defining an aperture for a user's eye and an angled mirror for directing light from a respective one of said reflective surfaces through said aperture, the improvement which comprises: the left and right optical axes between the side-splitting mirror means and a patient's eye including a maximum angle of 1°; the optical axis of the light source and the plane of the left and right optical axes of the ocular assemblies defining a maximum included angle of substantially 2°, measured between the ophthalmoscope and a patient's eye; and said ocular assemblies being sufficiently movable within said mirror housing that said assemblies are adjustable between a first location separated by a distance substantially equal to the user's interpupillary distance and a second location separated by a distance substantially greater than the same user's interpupillary distance, enabling the user's eyes to receive light from portions of said first and second reflective surfaces immediately adjacent the apex of said side-splitting mirror, thereby permitting eye examination through a substantially undilated pupil.

3,963,330
APPARATUS FOR IMPROVING HUMAN VISUAL RESPONSE DURING CONDITIONS OF REDUCED AMBIENT ILLUMINATION

Vivien Boniuk, 200 E. End Ave., Apt. 1C, New York, N.Y. 10028

Filed Dec. 20, 1973, Ser. No. 401,815
Int. Cl.² G02C *7/10*; G02B *5/28*
U.S. Cl. 351—163 **8 Claims**

1. A lens for improving the vision of persons having eyes essentially correctible to the emmetropic state under conditions of relatively low intensity ambient illumination, said lens having curved front and rear surfaces, the sum of the powers of said surfaces being in the range of between about minus 0.12 to 1.50 diopters, and said lens having filter means integral

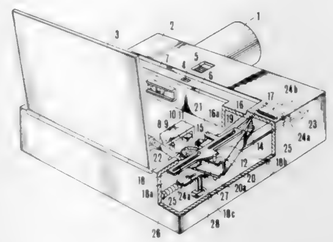


therewith for attenuating radiation transmitted through said lens of wavelengths below about 5000–5500 A.

3,963,331
CAMERA CAPABLE OF SIMULTANEOUS SOUND RECORDING

Yoshio Komine, Tokyo; Kazuya Hosoe, Machida; Mamoru Shimazaki; Toshikazu Ichiyanagi, both of Tokyo, and Kiyoshi Takahashi, Kunitachi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1974, Ser. No. 511,207
Claims priority, application Japan, Oct. 5, 1973, 48-112635
Int. Cl.² G03B *19/18*
U.S. Cl. 352—29 **4 Claims**



1. A motion picture camera capable of recording the image and sound information simultaneously on a photographic film for which a film magazine housing a sound recording band is provided, comprising:

a camera housing having a magazine housing chamber provided with one aperture allowing the loading and unloading of the film magazine;

an opening and closing cover for selectively covering said aperture of said magazine housing chamber;

film driving means;

a release control means for selectively controlling the starting and stopping of said driving means, said release control means being controllable from outside said housing;

an image-forming means for forming image information on said photographic film;

a sound recording means, said means having the following elements disposed on the opposite sides of a film passage with said film pinched therebetween:

a transducing head means capable of recording said sound information on said magnetic recording band incorporated in said film;

a head pad member for contacting with pressure said transducing head means with said film so as to allow an optimum condition, said head pad member being selectively shiftable between a first position in which it functionally is brought into pressurized contact with said transducing head means, a second position in which it keeps a slight gap with regard to said transducing head means and a third position in which said gap between two members becomes wide enough to simplify exchanging the loading and unloading of the film;

a first film transport means for feeding film to the picture image forming position of said picture image forming means;

a second film transport means for said film continuously feeding at least between said transducing head means and said head pad member, said second film transport means having the following elements located respectively at opposite sides pinching said passage of the film therebetween: a capstan, a rotatable pinch roller, said pinch roller being shiftable between a first position in which said pinch roller is functionally engaged with said capstan permitting thereby the feeding of said film, a second position in which a slight gap is set up so as to make impossible the transport of the film, and a third position in which the pinch roller is widely separated from said capstan so that the loading and unloading of the film magazine may be performed, while the feeding of the film is made impossible;

a shift means control for controlling the shifting motion of said head pad member and said pinch roller, said means being selectively shifted between a first position for holding said head pad member and said pinch roller together in said first position, a second position in which said head pad member and said pinch roller are held in said second position and a third position in which said head pad member and said pinch roller are held at said third position;

a first energizing means, for energizing said shift control means which is maintained directed toward said first position by axially directed spring pressure;

a first energizing means for energizing said shift control means always in the direction of said first position;

a first member shiftable from an allowing position in which said shift control means is allowed to shift from said third position to said second position, to an engaging position in which said shift control means is forcedly shifted from said second position to said third position against the energizing force of said first energizing means, said member being mechanically linked to a part of said open-and-close cover so that when said open-and-close cover is closed, said member is forcedly shifted from said engaging position to said allowing position, directly subjected to a closing pressure necessary for the closing operation applied to said open-and-closed cover, and when said open-and-close cover is opened, said member is forcedly shifted from said first position to said second position, directly subjected to an opening pressure necessary for the opening operation applied to said open-and-close cover;

a second member capable of shifting toward a first position in which said shift control means is allowed to shift said second position and a second position in which said shift control means is forcedly shifted from said first position to said second position against the energizing force of said first energizing means, said member being mechanically linked with said release control means, so that said member is shifted to said first position in association with the action of said release control means, and shifted to said second position in relation with the stopping of the operation; and

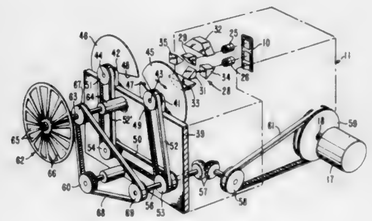
an energizing member for energizing said second member so as to be energized for being shifted in such a manner that said member is always capable of being shifted toward said second position, the energizing force of said energizing member being greater than that of said energizing means of said first means.

3,963,332
3 DIMENSION PROJECTOR

Stewart L. Sheldon, 19 Nona Drive; Wilbur R. Horstman, 6 W. Sherry Drive, and Robert G. Gump, 506 W. Sherry Drive, all of Trotwood, Ohio 45426

Filed May 8, 1972, Ser. No. 251,082
Int. Cl.² G03B *35/08*
U.S. Cl. 352—60 **5 Claims**

1. Projector apparatus embodying a film gate and means for moving film through said gate in intermittent fashion to simultaneously present at said gate right and left eye images of a scene provided in succession on the film, characterized by means for differentially projecting said right and left eye images toward a viewing surface in time spaced superposing relation, said last named means including a pair of rotatable disc shutters, one in the path of each projected right and left eye image, apertures in respective shutters being differentially located in a circumferential sense, the aperture in one of said

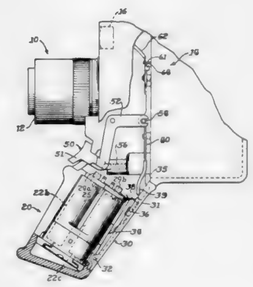


pair of shutters providing for greater angular exposure than the aperture of the other of said pair of shutters for a projection of differential increments of right and left eye images in time spaced superposing relation and said means for differentially projecting right and left eye images further including a rotatable disc shutter common to projected right and left eye images and comprising a plurality of uniformly spaced apertures in annular arrangement.

3,963,333
CAMERA CONTROL SYSTEM

Arthur C. Mueller, Niles, and Erwin E. Figge, Des Plaines, both of Ill., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 371,817, June 20, 1973, abandoned. This application Feb. 25, 1974, Ser. No. 445,469
Int. Cl.² G03B *23/02*
U.S. Cl. 352—72 **11 Claims**



1. In a cassette-load movie camera having a film and shutter drive motor and an exposure control system including a light-sensitive cell for automatically setting the camera exposure in response to the quantity of light incident upon the light-sensitive cell, and an electrical power source for the drive motor and the exposure control system, a camera control system for

adjusting the exposure control system to the sensitivity of the film contained in the cassette and for controlling the energization of the exposure control system in relation to energization of the drive motor comprising:

variable neutral density filter means positioned in optical alignment with said light-sensitive cell for selectively altering the quantity of light incident upon said cell;

filter setting means responsive to indicia provided on the film cassette to effect a particular neutral density setting for said variable neutral density filter means related to the sensitivity of the film in said film cassette;

sensitivity range control means for adjusting said exposure control system alternatively for a range of high film sensitivities or a range of low film sensitivities;

range setting means responsive to other indicia provided on the film cassette to effect setting of said range control means to either said high film-sensitivity range of said low film-sensitivity range as related to the sensitivity of the film contained in said film cassette, said filter setting means and said range setting means being correlated to effect adjustment of said exposure control system to the particular sensitivity of the film contained in said film cassette;

a camera control grip including a master control switch means normally biased to an open condition and adapted in closed condition to connect said exposure control system to said power source and a motor control switch means normally biased to an open condition and adapted in closed condition to connect said power source to said drive means, said master control switch means and said motor control switch means being arranged so that normal manual grasping of said grip closes said master control switch means before said motor switch means can be closed so that said exposure control system is energized before energization of said drive motor; and

an electrical circuit arranged to connect said power source to said drive motor and said exposure control system and effective to render said motor control switch inoperative to energize said drive motor until said master control switch means is closed.

3,963,334

FILM TRANSPORT APPARATUS FOR A MOTION PICTURE CAMERA OR PROJECTOR

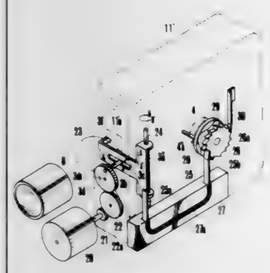
Mamoru Shimazaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1974, Ser. No. 525,628

Claims priority, application Japan, Nov. 27, 1973, 48-137217; Dec. 21, 1973, 49-796

Int. Cl.² G03B *1/22*

U.S. Cl. 352—191 **9 Claims**



1. Film transport apparatus for a motion picture camera, projector, and the like utilizing film housed in a magazine, comprising, in combination:

a. an aperture plate;

b. a film guide means to guide film to a prescribed position on said aperture plate;

c. film binding means for stabilizing said film on said aperture plate;

d. film feeding means for intermittently driving said film on said aperture plate overcoming the film binding force of said film binding means, said film feeding means including

a film advancing member having a film advancing claw thereon and means mounting said film advancing member to enable said film advancing member to effect linear reciprocal movement along the running direction of the film and rotative reciprocal movements in directions perpendicular to said running direction so as to allow the film advancing claw to effect

a first shifting movement in a direction generally perpendicular to the film running direction for engaging perforations in said film,

a second shifting movement through a predetermined distance from said engaged position along the running direction of the film while engaged with the perforations of the film,

a third shifting movement in a direction generally perpendicular to the running direction of film away from the film for disengaging said claw from the film perforations, and

a fourth shifting movement to the position where said first shifting movement is started from the position at which said third shifting movement is completed with said claw disengaged from the film perforations;

a driving motor;

a driving power transmission control means mechanically linked with said driving motor and with said film advancing member for transmitting the output of said driving motor to the film advancing member for controlling shifting of the film advancing member;

e. film take-up means for winding film which has run past said aperture plate at a predetermined position including

a film take-up reel driving member to provide film take-up action,

a first rotating member for rotating said film take-up reel driving member in a forward direction through a rotating locus, said film take-up reel driving member being provided as a part of said first rotating member,

a second rotating member rotatable in a forward or reverse direction in accordance with rotating force delivered thereto, and

one-way clutch means engaged between said first and second rotating members for imparting to said first rotating member forward rotating force from said second rotating member but to prevent driving engagement therebetween during reverse rotation of said second driving member;

f. actuating means for driving said film take-up means including

shifting means for effecting reciprocal movement in a linear path in collabration with the linear reciprocal movement along the running direction of the film by said film advancing member, said shifting means being provided on said film advancing member, and

movement conversion means for converting linear movement of said shifting means to repeated rotating movement and to transmit said movement to said second rotating member, said conversion means being mechanically linked with said shifting means and said second rotating member, said second rotating member being rotated in a forward direction by movement of said shifting means as said film advancing member is shifted to effect said second shfting movement of said film advancing claw while said second rotating member is rotated in a reverse direction by movement of said shifting means as said film advancing member is shifted to effect said fourth shifting movement of said film advancing claw;

said film take-up means being activated only when film is running on said aperture plate, with said film being bound on said aperture plate when said film is not running thereby stabilizing the film on said aperture plate.

3,963,335

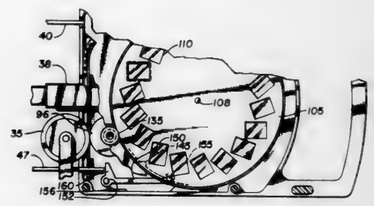
MAGNETIC TAPE CARRIER

Emory Horvath, 7065 Overbrook Drive, Longmont, Colo. 80501

Filed June 5, 1975, Ser. No. 584,178

Int. Cl.² G03B *31/00*

U.S. Cl. 353—15 **21 Claims**



1. An enclosed tape and film cartridge comprising, a casing having a flexible and movable shutter closing an opening at one end of the casing, means in the casing for opening and closing the shutter, an endless magnetic tape system including a tape spool with tape thereon and with guide members and a drive capstan positioned within the casing with the guide members and the drive capstan directing a loop of the tape from the spool across the opening in one end of said casing, a film disc mounted in the casing and adapted to be rotated such that the film therein will be brought into optical alignment with aligned transparent sections with the casing to permit light to be directed through the casing and through the film in the disc therein, a floating post mounting said film disc, drive roller means positioned on said drive capstan for rotating a disc through a frictional type of drive connection, and selectively operated brake means gripping the film disc and restraining said disc against movement of the frictional drive connection until said brake means is released.

3,963,336

FILM STRIP HANDLING APPARATUS AND METHOD

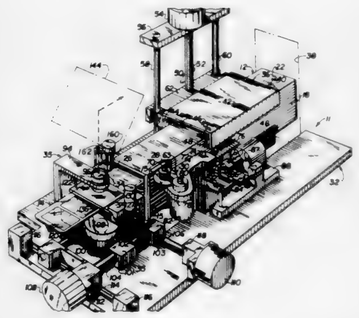
James O. Haning, Palo Alto; Bram Kool, Santa Clara County; Jules G. Moritz, Saratoga, and Robert Mizrahi, El Cerrito, all of Calif., assignors to Microform Data Systems, Inc., Mountain View, Calif.

Division of Ser. No. 313,902, Dec. 11, 1972, Pat. No. 3,909,122, which is a division of Ser. No. 101,224, Dec. 24, 1970, Pat. No. 3,743,400. This application Dec. 26, 1974, Ser. No. 536,510

Int. Cl.² G03B *23/00;* **B65H** *3/06;* **B65D** *85/48*

U.S. Cl. 353—26 A **4 Claims**

1. In information retrieval apparatus: a cassette having an open end, a pair of opposed sides, and means on the inner surfaces of the sides for mounting a number of strips in stacked relationship therewith with each strip being movable relative to the sides at least partially out of the cassette through said open end, said cassette having a recess in one side thereof through which a portion of one side edge of each strip is thus engageable by edge drive means, whereby each strip can be moved relative to said cassette in opposed directions.



3,963,337

STILL PROJECTOR WITH SINGLE-ACTING COMPENSATION DEVICE

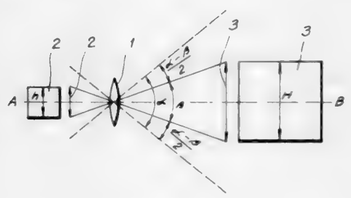
Jan Agnar Lundberg, Torslanda, Sweden, assignor to Fritz Victor Hasselblad, Goteborg, Sweden

Filed May 12, 1975, Ser. No. 576,365

Claims priority, application Sweden, May 21, 1974, 7406706

Int. Cl.² G03B *21/00*

U.S. Cl. 353—70 **6 Claims**



1. A still projector equipped with a device for compensating for angular errors caused by projection deviation from the normal in a vertical plane, wherein the device includes means for rendering possible vertical displacement of the lens of the still projector perpendicular to its optical axis, a lighting means pivotal in a vertical plane about the centre of a transparent original, and means for automatically directing the paraxial ray path of the lighting means to the rear nodal point of the lens, wherein the improvement comprises:

a projector housing (13);

a lens means having a rear model plane, a holder for said lens means (12), wherein said holder (14) is mounted in said housing (13);

a set screw (15) rotatably supported in said housing (13) and threaded with said holder (14);

guide means (17) registered with said holder (14) for limiting said holder (14) to vertical displacement upon rotating said set screw (15), in order to vertically displace said lens (1);

a lamp housing (26) having sides and rotatably supported by the projection housing (13) for rotation about a horizontal axis located through the center (M) of the transparent original (2), in a plane defined by the original;

lamp and optical means (5–10) mounted in said lamp housing for defining an optical axis (26);

coupling means for coupling the lamp housing (26) to the holder (14), wherein said coupling means includes at least one driving arm (30), extending from said lamp housing (26), which engages said holder (14) with a sliding pivot means (25,31), wherein the axis (25) of said pivot is intersected by, and normal to said optical axis, and wherein the axis of said pivot means is in the rear nodal plane (12) of the lens means (1).

3,963,338

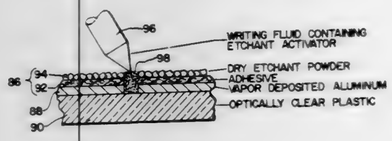
LOW PROFILE EPISCOPIC PROJECTOR AND OPAQUE MATERIALS THEREFOR

Gerald Altman, 41 Westminster Road, Newton Centre, Mass. 02159

Continuation-in-part of Ser. No. 329,574, Feb. 5, 1973, Pat. No. 3,837,739, which is a continuation-in-part of Ser. No. 81,987, Oct. 19, 1970, Pat. No. 3,778,142. This application Sept. 19, 1974, Ser. No. 507,478

Int. Cl.² G03B *21/00*; **G02B** *5/08*; **C23F** *1/00*

U.S. Cl. 353—120 **11 Claims**



1. A visual graphic sheet for receiving indicia for optical projection, said visual sheet comprising, in laminated sequence, an upper diffusely reflecting stratum, an intermediate specularly reflecting stratum, and a lower optically clear polymeric stratum, said specularly reflecting stratum being composed of vapor deposited aluminum ranging in thickness from 500 to 2500 Angstroms, said diffusely reflecting stratum being of such composition and thickness as to be permeable to an aqueous solution of a salt of a metal that is lower in the electromotive series than aluminum, said polymeric stratum being sufficiently thick to be self supporting, said visual sheet being no greater than 15 mils thick, said upper diffusely reflecting stratum and said intermediate specularly reflecting stratum being accessible from above for manual marking by differential application of said aqueous solution, said specularly reflecting stratum being accessible from below to illuminating light transmitted through said optically clear polymeric stratum.

3,963,339

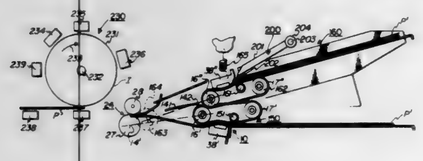
SHEET FEEDING APPARATUS

Thomas N. Taylor, Rochester, and Wayne F. Schoppe, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 5, 1974, Ser. No. 503,221

Int. Cl.² G03G *15/00*; **B65H** *3/04*, *3/44*, *9/06*

U.S. Cl. 355—3 R **26 Claims**



1. A sheet feeding apparatus including:

means for feeding a sheet along a sheet feed path;

stop means for intercepting an edge of said sheet to allow a buckle to form in said sheet;

means for moving said stop means into sheet blocking relationship in said sheet feed path to form said buckle and for moving said stop means out of sheet blocking relationship after buckle formation to allow said sheet to continue along said path;

chute means for guiding said sheet during buckling and for acting on the buckle as said stop means moves out of sheet blocking relationship to assist said sheet in continuing along said path and to assist in flattening said buckle, said chute means being movably mounted and being connected to said stop means so as to move in the sheet feeding direction.

11. A sheet feeding apparatus including:

a first means for feeding a sheet from a first stack of sheets along a sheet feed path;

a second means for feeding a sheet from a second stack of sheets along said sheet feed path;

stop means for intercepting an edge of a sheet fed by either said first feeding means or said second feeding means to allow a buckle to form in said sheet;

means for moving said stop means into sheet blocking relationship in said sheet feed path to form said buckle and for moving said stop means out of sheet blocking relationship after buckle formation to allow said sheet to advance along a sheet feed path, said buckle formed in a sheet fed by said first feeding means forming in a first direction and said buckle formed by a sheet fed by said second feeding means forming in an opposing direction; and

buckle assisting means for flattening said buckle formed in said sheet as said sheet advances along said path, said assisting means comprising at least one member positioned to be biased against a buckle formed in said first direction or a buckle formed in said opposing direction.

3,963,340

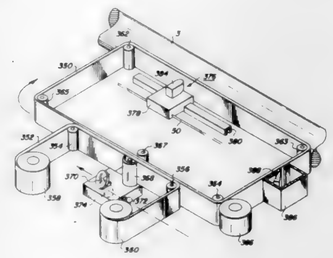
IMAGING APPARATUS FOR TYPEWRITER EMPLOYING ELECTROSTATIC PRINTING PROCESS

Robert E. Gerace, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 18, 1975, Ser. No. 569,239

Int. Cl.² G03G *15/22*

U.S. Cl. 355—3 R **21 Claims**



1. Imaging apparatus comprising:

a. an elongate platen for supporting a receiving medium;

b. a web of electrically insulating material formed into a closed loop supported for translation along a predetermined path, the predetermined path at least, in part, running parallel to and adjacent the surface of said platen;

c. means for bringing a layer of electrically photosensitive marking material structurally fracturable in response to (1) an electrical field less than the electrical breakdown potential of the layer and (2) exposure to electromagnetic radiation to which the layer is sensitive into contact with said insulating web and separating it therefrom prior to reaching that portion of the predetermined path adjacent said platen;

d. means to advance said insulating web through the predetermined path;

e. activation means positioned relative to the predetermined path to activate the photosensitive layer to render it fracturable;

f. imaging means positioned relative to the portion of the predetermined path where the photosensitive layer and said web are in contact to create a latent image in the photosensitive layer;

g. transfer means positioned relative to the predetermined path after separation of said insulating web and the photosensitive layer to transfer the marking material image to the receiving medium, said transfer means comprising web displacement means and web displacement drive means for contacting the web displacement means to said insulating web on the surface opposite the marking material image bearing surface, to temporarily displace the web in a direction substantially transverse to the advancing direction of the web along the predetermined path, to press the marking material image against the receiving medium.

3,963,341

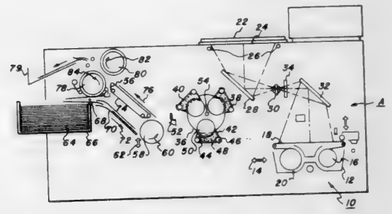
COLOR ELECTROPHOTOGRAPHIC PRINTING MACHINE

Michael J. Tully, Framingham, Mass., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1974, Ser. No. 518,542

Int. Cl.² G03G *15/01*, *15/09*

U.S. Cl. 355—4 **9 Claims**



1. An electrophotographic printing machine for reproducing a colored original document on a sheet of support material including:

a photoconductive member arranged to have a charge pattern recorded thereon without being pre-charged;

means for exposing said photoconductive member to successive color filtered light images to record successive charge patterns thereon, each charge pattern corresponding substantially to a discrete color contained in the original document;

a plurality of magnetic members, each of said magnetic members having differently colored magnetic particles, complementary in color to the filtered light image, adhering thereto;

a frame member mounted rotatably in the printing machine and having said plurality of magnetic members mounted thereon;

means for rotating said frame member to position successive magnetic members closely adjacent to said photoconductive member with the magnetic particles adhering thereto contacting said photoconductive member;

means for transferring, in superimposed registration, successive single color powder images from said photoconductive member to the sheet of support material; and

means for permanently affixing the superimposed powder images to the sheet of support material forming a colored copy of the original document.

3,963,342

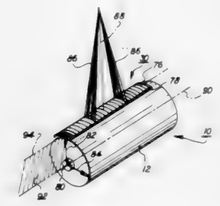
CURVED SCREEN

Howard M. Stark, Webster, and Robert N. Goren, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 10, 1975, Ser. No. 566,886

Int. Cl.² G03G *15/22*

U.S. Cl. 355—4 **10 Claims**



1. An electrophotographic printing machine of the type having an arcuate photoconductive member, including:

an arcuate screen member having a curvature substantially equal to the curvature of the photoconductive member, said screen member being mounted in the printing machine with the centers of curvature of the photoconductive member and said screen member being in substantial coincidence with one another.

3,963,343

CAMMING SYSTEMS

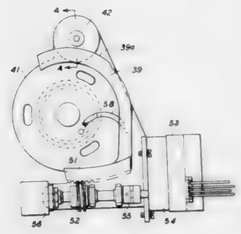
Cornelius J. de Keyzer, Venray, Netherlands, assignor to Rank Xerox Ltd., London, England

Filed Oct. 2, 1974, Ser. No. 511,350

Claims priority, application Netherlands, Jan. 7, 1974, 7400212

Int. Cl.² G03G *15/28*

U.S. Cl. 355—8 **6 Claims**

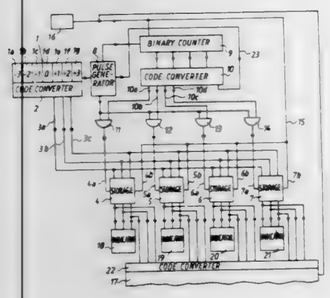


1. A xerographic reproduction machine comprising a movable xerographic plate, scanning means for projecting an image of the object to be reproduced onto the xerographic plate, means for varying magnification of the projected image, the scanning means including an oscillatable mirror and a camming system for oscillating said mirror, said camming system comprising a cam, a cam follower, means to drive the cam follower to and from a start of scan position while in contact with the cam, and means to rotate said cam about an axis outside the cam.

3,963,344
PHOTOGRAPHIC PRINTING APPARATUS WITH REDUCED NUMBER OF INPUT MEANS FOR ENTERING CORRECTION VALUES

Friedrich Hujer, Grunwald; Volker Weinert, Munich, and Harald Fengler, Taufkirchen, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Oct. 17, 1974, Ser. No. 515,630
Claims priority, application Germany, Oct. 20, 1973, 2352765
Int. Cl.² G03B 27/76
U.S. Cl. 355—35 **17 Claims**



1. Photographic printing apparatus for making a print from an original, said printing apparatus having compensating circuits responsive to a plurality of stored correction signals each representing a selected one of a predetermined plurality of values for one of a determined number of correction factors required for compensating for deviations of a corresponding photographic characteristic of said negative from a desired value of said characteristic, the improvement, comprising, in combination, a plurality of input means corresponding in number to said plurality of values but independent of the number of said correction factors, each for furnishing an input signal corresponding to a selected one of said values upon external activation; a plurality of storage means, each having a storage input connected to all of said input means and an enabling input, for storing the signal applied to said storage input only in the presence of a signal at said enabling input; and gating means connected to said input means and said enabling inputs of said storage means, for enabling said storage means in a predetermined sequence, one in response to each activation of said input means, whereby activation of said input means to furnish the selected value of each of said correction factors in a sequence corresponding to said predetermined sequence causes the so-selected values to be entered in turn into the corresponding one of said storage means, the so-stored values constituting said stored correction signals.

3,963,345
PRE-COLLATION COPYING

Denis J. Stemmle, Williamson, and Morton Silverberg, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 24, 1975, Ser. No. 560,756
Int. Cl.² G03B 27/48, 27/50, 27/62, 27/64
U.S. Cl. 355—50 **4 Claims**

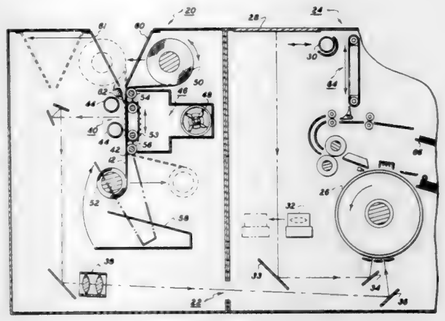
1. In an automatic document handling system of a copying apparatus for making pre-collated copy sheet sets by repeated collated imaging of a set of original documents, the improvement comprising:

an elongated windable document holding web;

means for forming a spaced pair of oppositely wound scrolls of said web for winding up a set of documents on said web therein and retaining said documents between turns of said web on both said web scrolls;

said web having a minor intermediate unwound segment extending between said web scrolls;

means for recirculatingly winding and unwinding said web between one said web scroll and the other said web scroll to recirculatingly expose individual documents on said intermediate segment of said web between said web scrolls in a pre-collated order; and



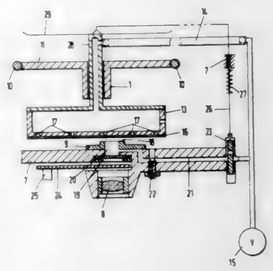
optical imaging means for imaging documents on said intermediate segment of said web between said web scrolls for copying said documents;

wherein said web is air permiable and wherein vacuum means are provided on one side of said intermediate segment of said web for retaining documents on the opposite side of said web.

3,963,346
MICROFILM CAMERAS

Manfred Wiessner, Dresden, Germany, assignor to VEB Pentacon Dresden, Dresden, Germany

Filed Apr. 28, 1975, Ser. No. 572,462
Int. Cl.² G03B 27/60
U.S. Cl. 355—73 **8 Claims**



1. A microfilm camera comprising:

a. a picture gate having film contact surfaces,

b. a suction plate for holding a sheet of film which can be moved in steps across the picture gate,

c. an objective lens,

d. a chamber formed between the objective lens and the contact surfaces of the picture gate,

e. a glass plate forming one end of said chamber,

f. a vacuum pump,

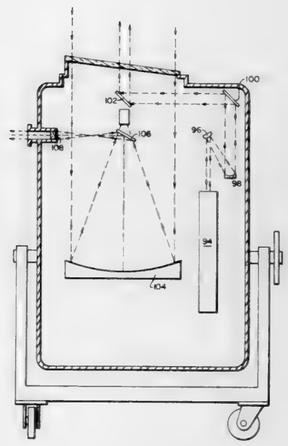
g. a suction conduit connected between said chamber and said vacuum pump, and

h. a valve for closing the path between said chamber and the pump.

3,963,347
ERBIUM LASER CEILOMETER

Joseph Pipo Segre, Newton Center, and Norman R. Truscott, Whitinsville, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed May 9, 1974, Ser. No. 468,342
Int. Cl.² G01C 3/08
U.S. Cl. 356—5 **8 Claims**



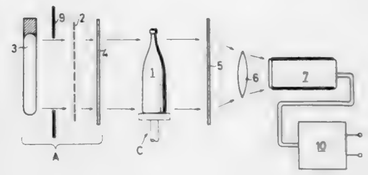
1. A laser rangefinder comprising a laser generator for generating laser light at 1.54 microns comprising an erbium doped laser rod and means for pumping said laser rod, said laser rod being positioned in optical alignment in an optically regenerative laser cavity, said cavity being formed by forward and rearward reflectors, the forward reflector comprising a rotating saphire flat, and the rearward reflector comprising saphire flats and a quartz flat; a monitor for monitoring the outgoing laser pulse emitted by said generator; a detector for detecting light generated by said laser and reflected back to said rangefinder; a parabolic reflector for focusing light onto said detector; said detector being positioned at the focal point of said reflector; an infrared transmitting window in the optical path of laser light reaching said detector, said window allowing no transmission of light in wavebands below 1.2 microns or above 1.6 microns; and means for aligning the outgoing laser pulse along the optical axis of said parabolic reflector to align the outgoing pulse with the detector and thereby reduce parralax, and wherein said window is formed of glass having the following composition:

Component	Amount in % by Weight
SiO_2	51.90
Na_2O	6.50
K_2O	6.80
CaO	6.50
Al_2O_3	1.40
ZnO	2.20
TiO_2	.40
Sb_2O_3	.40
MgO	23.40
Cr_2O_3	.50.

3,963,348
DEVICE FOR DETECTING STRAIN AND FOREIGN MATTERS IN GLASS CONTAINER BY A NON-STORAGE TYPE PICKUP TUBE

Satoshi Nakatani, Nishinomiya, and Yoichi Ito, Amagasaki, both of Japan, assignors to Yamamura Glass Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 379,393, July 16, 1973, abandoned. This application June 5, 1975, Ser. No. 584,047
Claims priority, application Japan, July 14, 1972, 47-71058; Mar. 29, 1973, 48-36464
Int. Cl.² G01B 11/18; G01N 21/04, 21/16
U.S. Cl. 356—33 **9 Claims**



1. A device for detecting strain and foreign matter in a glass container, comprising:

means for moving a glass container;

a light source located on one side of the glass container placed and moving means;

a polarizer transmittting vibration only in one direction of light from said light source and located between the light source and the glass container;

an analyzer placed on the other side of the glass container so that the optical axis of the analyzer intersects that of the polarizer at right angles;

means for rotating said glass container on said moving means.

a non-storage type pickup tube for receiving on a photoelectric surface thereof an image of the glass container placed on said moving means;

position detecting means for detecting from said moving and feed means the position and speed of the glass container;

said non-storage type pickup tube being provided so that the image on the photoelectric surface thereof of the glass container in rotational movement is always scanned along the center line in a longitudinal direction in synchronism with the speed of movement of the glass container, whereby:

an abnormal electrical output of the image of the glass container due to light depolarized by foreign matter in the glass container and double deflection caused by strain in the glass container is detected from a constant electrical output of the image changed photoelectrically by the non-storage type pickup tube to thus ensure the rejection of a defective glass container.

3,963,349
METHOD AND APPARATUS FOR DETERMINING COAGULATION TIMES

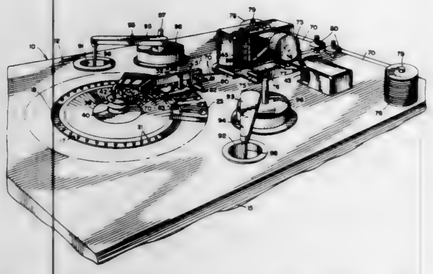
Bill E. Albright, Hialeah, and Stephen M. Meginniss, III, St. Petersburg, both of Fla., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Aug. 27, 1974, Ser. No. 500,910
Int. Cl.² G01N 33/16, 21/16, 31/00
U.S. Cl. 73—64.1 **40 Claims**

1. A method for determining the coagulation time of a fluid following the addition of a coagulating agent thereto, comprising the steps of

supporting a body of said fluid in a recess having a generally smooth non-wettable inclined surface, introducing a predetermined volume of a coagulating agent into said body to initiate a coagulation reaction, simultaneously drawing

a pair of spaced, parallel, and fibrous filaments at the same rate through said body within said recess and in a



direction extending upwardly along said inclined surface, and detecting when a clot has formed between said filaments and is moved thereby along said surface.

3,963,350

APPARATUS FOR SELECTIVELY SEGMENTING RED AND WHITE BLOOD CORPUSCLES CONTAINED IN BLOOD SMEAR

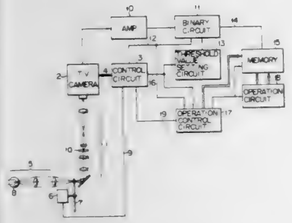
Sadakazu Watanabe, Kawasaki, and Hidenori Shinoda, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Nov. 12, 1974, Ser. No. 523,056

Claims priority, application Japan, Nov. 13, 1973, 48-126782

Int. Cl.² G01M *33/16;* **G01N** *21/06*

U.S. Cl. 356—39 **6 Claims**



5. An apparatus for selectively segmenting red blood corpuscles and white blood corpuscles of a blood sample comprising:

means for successively illuminating said sample with monochromatic light having a first wavelength between 400 nm and 430 nm and with monochromatic light having a second wavelength between 500 nm and 560 nm,

means for detecting light passing through said sample and producing a first detected electrical signal which varies as a function of the intensity of light received at said first wavelength and a second electrical signal which varies as a function of the intensity of light received at said second wavelength,

means for comparing said first detected signal with a first electrical threshold signal and producing a first binary signal having one binary value when said first detected signal is above said first threshold signal and the second value when the first detected signal is below said first threshold signal,

means for comparing said second detected signal with a second electrical threshold signal and producing a second binary signal having one binary value when said second detected signal is above said second threshold signal and the other binary value when said second detected signal is below said second threshold signal,

means for logically combining said first and second binary signals to produce an output indicating whether said second binary signal is produced by illuminating a red or white corpuscle.

3,963,351

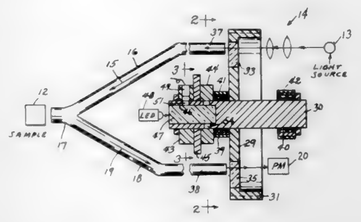
MULTI-CHANNEL OPTICAL TIME-SHARING APPARATUS HAVING A ROTATING FILTER WHEEL WITH POSITION-ENCODING MEANS

Britton Chance; Victor Legallais; John R. Sorge, and Norman C. Graham, Jr., all of Philadelphia, Pa.

Filed Apr. 14, 1975, Ser. No. 567,946

Int. Cl.² G01J *3/30, 3/48*

U.S. Cl. 356—85 **17 Claims**



4. In a multi-wave optical instrument of the type including a plurality of optical channels provided with respective gain equalizer means and respective measure signal detection means, a rotating filter member having a plurality of wavelength filters spaced around its axis to define said optical channels and provided with a supporting shaft having a hollow portion, means to illuminate said hollow shaft portion internally, first signal-generating photosensitive means mounted adjacent said hollow shaft portion, said hollow shaft portion having means formed to illuminate said first photosensitive means so as to generate cyclically relatively long pulses, second signal-generating photosensitive means mounted adjacent said hollow shaft portion, said hollow shaft portion having means formed to illuminate said second photosensitive means so as to generate cyclic sets of short pulses, and means to decode said long pulses and short pulses respectively to derive cyclic gating pulses for said gain equalizer means and cyclic gating pulses for said measure signal detection means.

3,963,352

WHEEL ALIGNMENT APPARATUS

Sigurd A. Rishovd, Golden Valley, and Richard P. Vizenor, Columbia Heights, both of Minn., assignors to Royal Industries, Inc., Pasadena, Calif.

Continuation of Ser. No. 212,773, Dec. 27, 1971, abandoned, Continuation of Ser. No. 706,270, Feb. 19, 1968, abandoned. This application Oct. 24, 1973, Ser. No. 409,134

Int. Cl.² G01B *11/26, 19/80*

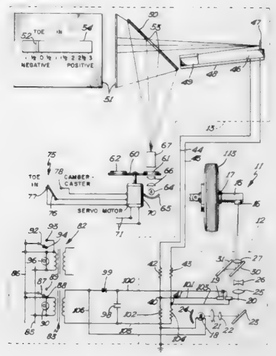
U.S. Cl. 356—152 **24 Claims**

12. Apparatus for determining the alignment of a vehicle wheel comprising:

a. a first means adapted to be disposed upon a wheel of a vehicle;

b. a second means adapted to be disposed adjacent said wheel of a vehicle;

c. one of said means including means for angularly, adjustably disposing said one of said means, one of said means including a source of light radiant energy and a pair of radiant energy sensing means and the other of said means including means for reflecting radiant energy, whereby a beam of radiant energy from one of said means if reflected from the other of said means in equal amount to each of the pair of radiant energy sensing means when the axis of rotation of a wheel is in a predetermined relationship to an axis normal to the effective plane of reflection of the means for reflecting radiant energy on said other of said means; and



d. meter means connected to the pair of radiant energy sensing means and calibrated to indicate units of relative displacement of the axis of rotation of said vehicle wheel from a predetermined attitude.

3,963,353

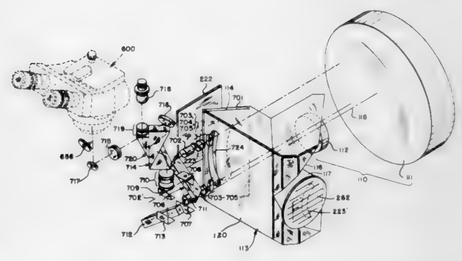
MONOLITHIC BEAM SPLITTER MIRROR ARRANGEMENT

Harold S. Hemstreet, Wilton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sept. 26, 1974, Ser. No. 509,588

Int. Cl.² G01B *11/24;* **G02B** *27/10*

U.S. Cl. 356—168 **4 Claims**



1. In an optical projection system wherein the image of a preselected portion on a master is projected onto a wafer, the projection system including, between the master and the wafer, a plurality of reflective surfaces angularly disposed for folding the optical path of the system, an improved arrangement for viewing the image projected on the wafer comprising:

said reflective surfaces being provided respectively by different reflective faces of a single monolithic structure,

said structure having an aperture therethrough opening through one of said faces, the reflective surface of said one face being provided by a beam splitting plate on the one face and over the opening of said aperture therethrough,

said aperture being aligned for the portion of reimaging light that is reflected back through the system from the wafer and that passes through said beam splitting plate to pass through said structure,

optical correcting means in the path of the portion of reimaging light that passes through said aperture to compensate for distortion introduced in the latter portion of reimaging light by the angle at which this light passes through said beam splitting plate, and

objective lens means and viewing means in the path of light emerging through the optical correcting means for viewing the composite reimage of said portion of the master and the portion of the wafer on which the image of said portion of the master is projected.

3,963,354

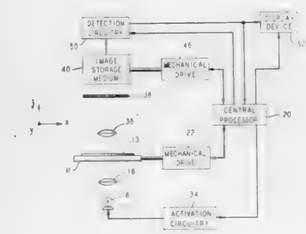
INSPECTION OF MASKS AND WAFERS BY IMAGE DISSECTION

Martin Feldman, Murray Hill, and Donald Lawrence White, Bernardsville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 5, 1975, Ser. No. 574,617

Int. Cl.² G01B *11/24;* **G01N** *21/32*

U.S. Cl. 356—168 **33 Claims**



1. An image dissection system for inspecting a member that contains multiple patterns that are nominally identical to each other, said system comprising

means for momentarily illuminating one pattern at a time of the multiple patterns,

an image storage medium,

means responsive to light emanating from the illuminated pattern for impressing images of only spaced-apart portions of said pattern onto said image storage medium,

and means for positioning the images from successive patterns in an interleaved side-by-side way in said image storage medium.

3,963,355

PROCESS AND APPARATUS FOR ANALYZING SPECIMENS FOR THE PRESENCE OF MICROORGANISMS THEREIN

Clifton Aldridge, Jr., Creve Coeur; Paul W. Jones, St. Charles; Sandra F. Gibson, St. Ann; Richard D. Vannest, St. Charles; James T. Holen, Florissant; George F. Keyser, St. Louis, all of Mo., and Michael C. Meyer, Belleville, Ill., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

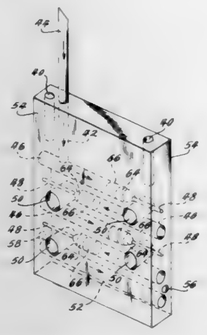
Continuation of Ser. No. 255,533, May 22, 1972, abandoned. This application Apr. 16, 1974, Ser. No. 461,249

Int. Cl.² G01N *21/06, 1/00*

U.S. Cl. 356—201 **36 Claims**

1. A device for detecting the presence of at least one specific microorganism in a specimen, said device comprising: receptacle means for containing a diluted specimen, a flow channel leading from the receptacle means, at least one selective culture medium in the flow channel whereby the diluted specimen will mix with the culture medium to form a diluent mixture, the culture medium being capable of sustaining a specific microorganism in the diluent mixture such that the

continued existence of said living specific microorganism will change the light transmitting characteristics of the diluent

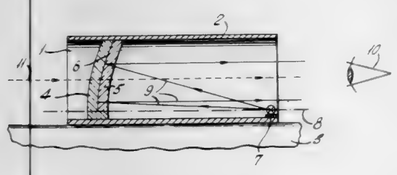


mixture so as to indicate the presence of the specific microorganism in the specimen.

3,963,356
OPTICAL SIGHT

Klas Rudolf Wiklund, Taby, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Dec. 5, 1974, Ser. No. 529,920
Claims priority, application Sweden, Dec. 11, 1973, 7316669
Int. Cl.² G02B *27/34*
U.S. Cl. 356—251 **6 Claims**



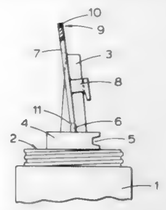
1. An optical sight including a light source and a semi-transparent lens system wherein the lens system gives an image of the light source, serving as an aiming point, said lens system having a reflecting surface for reflection of said image in the direction of a pointer's eye, and means for periodically changing the luminance of the image of the light source with a frequency within the perceptibility range of the eye.

3,963,357
APPLICATOR DEVICE

David John Crisp, London, England, assignor to Beecham Group Limited, Great Britain

Filed July 25, 1974, Ser. No. 491,879
Claims priority, application United Kingdom, Aug. 2, 1973, 36864/73
Int. Cl.² A46B *11/02*
U.S. Cl. 401—191 **8 Claims**

1. An applicator for viscous fluids such as adhesives which comprises a reservoir body for holding the viscous fluid one end of which is closed and the other end of which has a top portion, an elongated discharge nozzle connected to the top portion, which nozzle communicates with the interior of the reservoir body, a collar having a recess at one portion fitted around the base of the nozzle, a spreading member pivotably mounted on the collar, the spreading member being mounted such that it is movable between an operative position adjacent the discharge nozzle and an inoperative position substantially normal to the long axis of the discharge nozzle, and means for clamping the spreading member to the nozzle in the operative

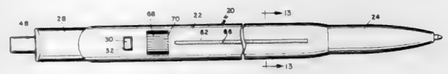


position and for clamping the spreading member to the recess in the collar in a snap-lock relationship.

3,963,358
PAPER DISPENSING PEN

Roy W. Houser, 4060 Mount Brundage Ave., San Diego, Calif. 92111

Filed Feb. 12, 1975, Ser. No. 549,161
Int. Cl.² B43K *29/12, 29/20*
U.S. Cl. 401—195 **12 Claims**



1. A paper dispensing assembly comprising:
a. generally cylindrical sheath substantially defining an enclosure and having a longitudinal slot therein;
b. a generally cylindrical hollow cartridge longitudinally extended within said sheath, said cartridge being self-contained and removable from said sheath and having a longitudinal slot therein to permit the passageway therethrough of paper from a roll contained with the cartridge;
c. said cartridge being spaced from at least a portion of said sheath adjacent to slot therein to define a space for a projecting end of paper extending through the slot in said cartridge;
d. means permitting the limited rotation of said cartridge relative to said sheath;
e. control means operatively connected to said cartridge and accessible from externally of said sheath for rotating said cartridge, whereby the free end of a roll of paper contained within the cartridge and threaded through the slot therein can be positively driven through or retracted from the slot in said sheath by operating said control means to rotate said cartridge.

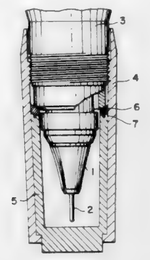
3,963,359
PROTECTIVE SCREW CAP FOR THE WRITING POINT OF A TUBE WRITING PEN

Gerold Anderka, Ellerbek, Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Sept. 30, 1975, Ser. No. 618,179
Claims priority, application Germany, Feb. 25, 1975, 7505779[U]
Int. Cl.² B43K *9/00, 1/00*
U.S. Cl. 401—258 **8 Claims**

1. In a receptacle or protective cap for the writing point of a tube writing pen, the pen comprising a writing cone provided with a writing tube and fitted into a sleeve, there being an ink equalization chamber in the annular space between the cone and the sleeve, wherein the cap itself comprises of an open-ended hollow body adapted to be secured over the sleeve by its open end, the other end of said cap being closed, and wherein the improvement comprises a rigid base within said cap, and further comprising an inner annular sealing face for

axially engaging against an annular projecting end of the sleeve when the cap is secured over the sleeve, said sealing

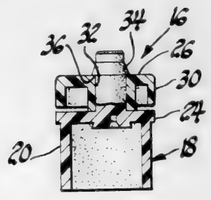


face further comprising an annular layer of soft resilient material axially supported by an annular surface of said rigid base.

3,963,360
CAM LOCK AND METHOD FOR MAKING SAME

A. Fred Fedrigo, 35750 Industrial Road, Livonia, Mich. 48150

Division of Ser. No. 492,190, July 26, 1974, Pat. No. 3,897,621. This application May 27, 1975, Ser. No. 580,582
Int. Cl.² F16B *7/14*
U.S. Cl. 403—14 **1 Claim**

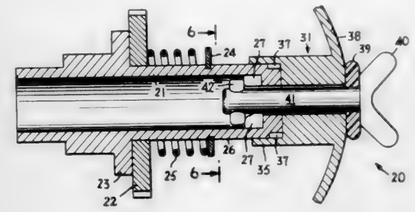


1. A telescopic pole assembly, comprising:
an elongated first hollow pole of a first diameter and an elongated, second pole of a lesser, second diameter, the second pole being receivable in the first pole;
a spindle mounted on the end of the second pole, and having a cylindrical sidewall disposed on an axis parallel to but spaced from the longitudinal axis of the second pole;
an annular shoulder integrally carried on the spindle in a position between the end thereof and the second pole to define a first spindle portion having a cylindrical sidewall and a second spindle portion having a cylindrical sidewall, the shoulder having a wall tapered from a first shoulder diameter adjacent the second spindle portion toward a lesser diameter adjacent the first spindle portion; and
a cam adapted to be rotatably mounted on the spindle and to be receivable in the first pole, the cam having a thickness accommodating the space between the annular shoulder and the second pole, the cam having a spindle-receiving opening with a diameter less than that of the annular shoulder but greater than the first spindle portion such that the cam is adapted to be mounted on the spindle by having the first spindle portion disposed in the spindle-receiving opening and then moving the second pole toward the cam to pass it over the shoulder to a position on the second spindle portion,
whereby the cam is operative to be wedged within the first pole at such times as it is longitudinally twisted with respect to the second pole.

3,963,361
SHAFT ATTACHMENT ASSEMBLY

Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed June 18, 1974, Ser. No. 480,530
Int. Cl.² F16D *1/06;* **B60B** *37/00*
U.S. Cl. 403—255 **6 Claims**



3. A shaft attachment assembly for fastening a member to a shaft comprising:
an elongated shaft having a receptacle end with an axial end opening therein and a stud receiving surface formed integrally therein to provide a one-piece shaft and receptacle;
a stud for engagement with the receptacle end and having a body portion and a head portion;
one of the receptacle end including the stud receiving surface and the body portion having surfaces forming a tapered cam surface terminating in a locking detent and the other of the receptacle end including the stud receiving surface and the body portion having a transverse pin extending laterally therefrom;
the member to be fastened to the shaft having an axial passageway therethrough positioned so that when the member is aligned with the receptacle end of the shaft, the passageway in the member will be aligned with the opening in the shaft;
the body portion of the stud being extendable through the passageway in the member and the opening in the shaft to bring the pin into rotatable engagement with the cam surface;
a resilient tension element on said assembly to permit relative axial movement as the stud is rotated and the pin follows the cam surface to the locking detent thereby rigidly fastening the member to the stud and to permit relative axial movement as the stud is rotated and the pin follows the cam slot from the locking detent to a disengaged position where the stud can be removed and the member and shaft disengaged; and
the member having a downwardly extending skirt adapted to surround the outer surface of the receptacle end portion of the shaft so as to facilitate alignment of the member and the shaft for fastening purposes.

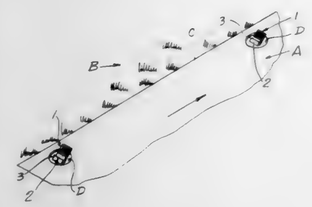
3,963,362
ROAD MARKER

Jack L. Hollis, Mechanicsburg, Pa., assignor to Carlisle Corporation, Carlisle, Pa.

Filed Nov. 27, 1974, Ser. No. 527,873
Int. Cl.² E01F *9/00;* **G02B** *5/132*
U.S. Cl. 404—10 **6 Claims**

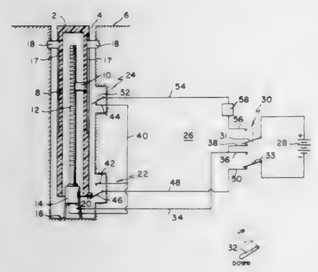
1. A road with light reflective markers comprising a road having at least one hole in the surface thereof, a resilient roadmarker having a hole extending therethrough from one face to an opposite face of said roadmarker, at least one light reflective member mounted on one of said faces of said roadmarker, said roadmarker being partially positioned in said road hole with said light reflective material extending above the road surface, a solid plug being seated on one of said faces of said roadmarker in said road hole and covering the opening

of said roadmarker hole on said one of said faces and retaining means filling said road hole, said roadmarker hole from the



other of said roadmarker faces and extending along said roadmarker and plug portions in said road hole.

3,963,363
TRAFFIC CONTROL DEVICE
David H. Roper, 1732 Hill St., Santa Monica, Calif. 90405
Filed Mar. 4, 1974, Ser. No. 447,929
Int. Cl.² E01F *9/00*
U.S. Cl. 404—11 **5 Claims**



2. A traffic control device retractable into an opening in a roadway comprising:

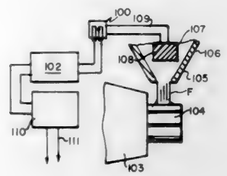
resilient deformable hollow marker means having a longitudinal axis generally orthogonal to the plane of the roadway surface and disposed in said opening for movement in and out of said opening;

rotary motor power means having an output shaft and mounted in said opening;

rotary actuator means connected to the output shaft of said power means for rotation therewith, said actuator means comprising a cylindrical screw means having a longitudinal axis, said screw means being arranged in the hollow interior of said marker means such that its longitudinal axis is generally coincident with the longitudinal axis of said marker means and rotated by said power means; follower means attached to said marker means and in engagement with the threads on said screw means whereby rotation of said screw means causes said marker means to move into and out of the opening; and

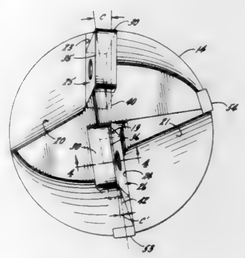
control means operatively related to said motor power means for controlling said power means.

3,963,364
TOOL CONTROL SYSTEM AND METHOD
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of Ser. No. 182,501, Sept. 21, 1971, Pat. No. 3,817,647, which is a continuation-in-part of Ser. No. 775,433, Nov. 13, 1968, Pat. No. 3,605,909, which is a continuation-in-part of Ser. No. 518,616, Jan. 4, 1966, Pat. No. 3,476,481, which is a continuation-in-part of Ser. No. 294,076, July 10, 1963, Pat. No. 3,226,833, which is a continuation-in-part of Ser. No. 477,467, Dec. 24, 1954, abandoned. This application June 14, 1974, Ser. No. 479,515
The portion of the term of this patent subsequent to June 18, 1991, has been disclaimed.
Int. Cl.² B23B *49/00*
U.S. Cl. 408—8 **10 Claims**



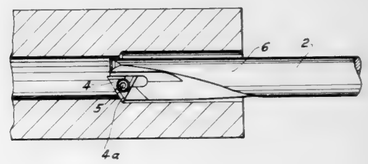
7. An automatic production machine for performing preprogrammed operations on work comprising in combination with a tool head and a spindle rotatably supported by said tool head, a cutting tool supported by said spindle and means for power rotating said spindle to permit said cutting tool to machine work which is predeterminately positioned with respect to said production machine, an inspection transducer supported by said tool head and operable to detect variations in the configuration of said tool as said cutting tool rotates and operates on work, means for generating signals on the output of said transducer, means for receiving said signals generated by said transducer and means for utilizing said received signals for controlling the operation of said tool on said work.

3,963,365
DRILL WITH INDEXABLE INSERTS
Fred T. Shallenberger, Jr., Caledonia, Ill., assignor to Metal Cutting Tools, Inc., Rockford, Ill.
Filed May 7, 1975, Ser. No. 575,334
Int. Cl.² B23B *51/00*
U.S. Cl. 408—186 **6 Claims**



1. A drill comprising an elongated and generally cylindrical body adapted to be rotated in a predetermined direction about its own axis and having a shank end and a tip end, first and second angularly spaced grooves formed in said body and opening out of the tip end thereof, first and second recesses at the tip end portions of the respective grooves, first and second indexable cutting inserts seated in the respective recesses and releasably secured to said body, said first recess locating said first insert such that the active cutting edge of said first insert extends outwardly from the center of said body toward the peripheral surface thereof and is disposed at a positive radial angle, said second recess locating said second insert such that the active cutting edge of said second insert extends inwardly from the peripheral surface of said body toward the center thereof and is disposed at a negative radial angle, the active cutting edge of said first insert being inclined so as to progress away from the shank end of said body as such cutting edge progresses outwardly from the center of said body, the active cutting edge of said second insert being inclined so as to progress away from the shank end of said body as such cutting edge progresses inwardly from the peripheral surface of said body, and the radially outermost point of the active cutting edge of said first insert projecting axially beyond the tip end of said body by a greater distance than the radially innermost point of the active cutting edge of said second insert.

3,963,366
BORING TOOL FOR WORKING BORES OF SMALL DIAMETER
Otto Eckle, Lochgau, and Hans Grzegorz, Besigheim, both of Germany, assignors to KOMET Stahlhalter-und Werkzeugfabrik, Robert Breuning GmbH, Besigheim, Germany
Filed Oct. 17, 1974, Ser. No. 515,670
Claims priority, application Germany, Oct. 29, 1973, 7338797[U]
Int. Cl.² B23B *51/00*
U.S. Cl. 408—199 **15 Claims**



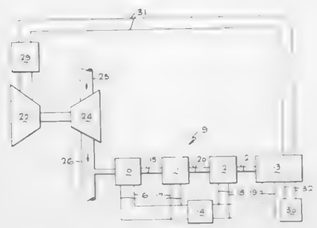
1. A boring tool for working a bore of small diameter in a workpiece comprising:

a shaft of circular cross-section having a clamping part for supporting the tool and a neck part extending from the clamping part and terminating in a foward end;

a cutting plate having cutting points, said cutting plate being completely within the cross-section of said neck part except for minimal projection of a single said cutting point sideways beyond the periphery of said neck part, and means eccentrically locating and removably affixing said cutting plate in snugly recessed relation in said forward end of said neck part for interchanging of cutting plates and replacing of a used cutting point with another cutting point by reorientation of said cutting plate;

a semicircular cross-section cuttings channel in the peripheral surface of said neck part, said cuttings channel opening forwardly of the neck part at and in communication with said cutting plate, said cuttings channel extending rearwardly toward said clamping part and being spiralled in the direction of rotation and feed of the workpiece with respect to the boring tool, the spiralling of said cuttings channel approaching, at maximum, one-third of a pitch, the surface of the cuttings channel being smoothly ground, the angle of pitch (α) of said cuttings channel being about 70° to 80°, the boring tool having only a single cutting plate, the only structure protecting laterally from said neck part to contact the wall of the bore being said single cutting point of said cutting plate, said neck part having only a single said cuttings channel and having, intermediate the ends of said cuttings channel, a cross-section generally of half-moon shape.

3,963,367
TURBINE SURGE DETECTION SYSTEM
Robert W. Stalker, and Bernard Blutinger, both of San Diego, Calif., assignors to International Harvester Company, San Diego, Calif.
Filed Aug. 21, 1974, Ser. No. 499,353
Int. Cl.² F04D *15/02*
U.S. Cl. 415—17 **10 Claims**



1. A gas compressor surge detector system, comprising:

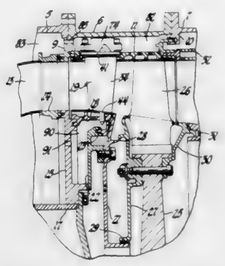
compressor discharge pressure sensing means for connection to a compressor output line for produceing a signal responsive to the magnitude of said discharge pressure;

signal detecting means coupled to said pressure sensing means for producing an electrical output pulse when the magnitude of said signal exceeds a predetermined value;

pulse counting means coupled to said signal detecting means for counting the pulse rate and for producing an output signal in response to receiving a predetermined number of pulses within a given period of time from said signal detecting means; and

signal utilization means coupled to said pulse counting means for emitting a control signal in response to the output signal from said pulse counting means.

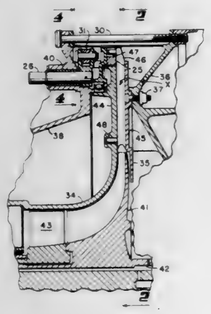
3,963,368
TURBINE COOLING
Calvin W. Emmerson, Mooresville, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 19, 1967, Ser. No. 691,834
Int. Cl.² F01D *5/14*
U.S. Cl. 415—115 **7 Claims**



1. A gas turbine comprising, in combination, means for supplying a hot motive fluid under pressure, means for supplying a cooling fluid at a supply pressure substantially the same as the pressure of the motive fluid, a turbine nozzle including an outer shroud and an inner shroud defining between them a path for the said motive fluid, the nozzle including a ring of vanes extending from one shroud to the other, and means for cooling surfaces of the nozzle exposed to the motive fluid by the said cooling fluid including a facing of sheet metal of controlled perviousness to fluid defining the said surfaces having closely spaced extensively distributed pores through the facing portions so exposed; means for conducting the

cooling fluid from the said source to the facing to flow through the facing, the conducting means including means for delivering the cooling fluid to a portion of the facing at a lower pressure below the supply pressure of the cooling fluid delivered to another portion of the facing, consonant with variations in pressure of the motive fluid exerted against diverse portions of the facing; and means for employing the drop in pressure of the fluid from the supply pressure to the lower pressure to energize cooling fluid jets for impingement cooling of a portion of the nozzle.

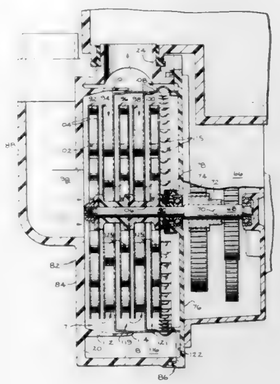
3,963,369
DIFFUSER INCLUDING MOVABLE VANES
Otto E. Balje, Los Angeles, Calif., assignor to Avco Corporation, Williamsport, Pa.
Filed Dec. 16, 1974, Ser. No. 532,932
Int. Cl.² F04D 29/46
U.S. Cl. 415—148 **2 Claims**



1. An annular diffuser for use with a centrifugal compressor having a radial flow impeller whose outer periphery is closely surrounded by the inner circumference of the annular diffuser, said diffuser comprising:
a forward annular end plate;
a rear annular end plate axially spaced from said forward annular end plate;
a plurality of pivotable vanes positioned between said end plates, said vanes and said end plates defining a plurality of channels, the centerlines of said channels being tangent to a circle having approximately the same diameter as said impeller, the innermost end of each of said vanes comprising a wedge having a taper chosen such that adjacent vane members, when abutted by said forward and rear end plates, form a channel therebetween having constant cross-sectional dimensions over a length defined as being between adjacent wedge-shaped inner portions of said vanes, the wedge-shaped innermost end of each of said vanes being followed by an oppositely tapered outer end whereby a multiplicity of said vanes when assembled in substantially radial formation between said end plates form an expanding volume diffuser; and
pivoting means for simultaneously pivoting each of said vanes to vary the cross-sectional area of said channels.

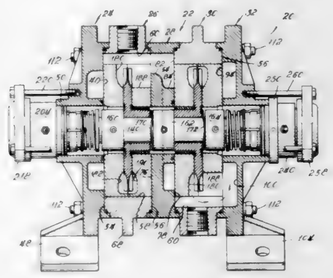
3,963,370
LAUNDRY MACHINE BLOWER MECHANISM
Roy K. Yates, and Charles T. Lutes, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Oct. 16, 1974, Ser. No. 515,160
Int. Cl.² F04D 1/02, 17/12, 29/44
U.S. Cl. 415—199 A **5 Claims**

1. In a multi-stage chamber type blower mechanism having a plurality of bladed rotatable blower wheels in axial alignment to produce an air flow, the improvement comprising:
a. a housing surrounding the blower wheels,
b. an air inlet directed at the center of a first blower wheel,
c. a peripheral walled chamber having an interior wall and an outer wall located circumferentially around all of the lower wheels, the first stage chamber having a stationary



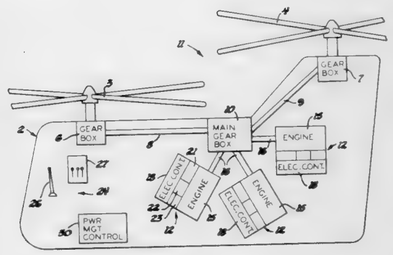
circumferential flange as an air flow restriction wall and the other stage chambers having rotating restriction walls,
d. an air flow passageway leading from the last blower wheel into the peripheral walled circular chamber, and
e. an air outlet from the peripheral walled circular chamber.

3,963,371
MULTI-STAGE PUMP
Leonard J. Sieghartner, Coal Valley, Ill., assignor to Roy E. Roth Company, Rock Island, Ill.
Filed July 24, 1975, Ser. No. 598,564
Int. Cl.² F04D 29/42
U.S. Cl. 415—199 T **19 Claims**



1. A multi-stage regenerative turbine pump comprising: a casing having a plurality of successive-stage casing rings, a transfer plate in intermediate abutment with each adjacent pair of said casing rings and having fluid passageway means presenting an entrance communicating with the interior of the earlier-stage casing ring and an exit communicating with the interior of the later-stage casing ring, a suction end casing section abutting the first-stage casing ring, a discharge end casing section abutting the last-stage casing ring, and means securing the aforesaid casing elements together; a shaft extending axially through said casing; an impeller within the confines of each of said casing rings and keyed to said shaft for rotation therewith; a locating collar secured to said shaft adjacent each of said impellers; spring means biasing each of said impellers into engagement with the adjacent of said locating collars; a pair of liners arranged at the opposite sides of each of said impellers; and each associated casing ring, impeller, pair of liners, locating collar, and spring means, together comprising a module which functions as one stage of the pump.

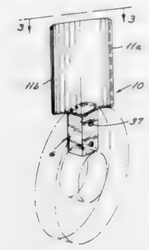
3,963,372
HELICOPTER POWER PLANT CONTROL
Richard D. McLain; Robert E. Nelson; Bernard H. Van Sickle, and Oran A. Watts, III, all of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Jan. 17, 1975, Ser. No. 541,797
Int. Cl.² B64C 11/44
U.S. Cl. 416—30 **3 Claims**



1. An engine control system for a helicopter having plural engines geared to a common lifting rotor system with collective pitch control, the engine control system comprising, in combination, means including a condition control for setting the power level of each engine; a power control for supplying fuel to each engine including engine power level setting means; said power control further including a condition servomotor and a collective pitch servomotor additively coupled to said engine power level setting means in the power control; means coupled to the condition control for transmitting a power level request electrical control signal decreasing with increasing power level request from the condition control to the condition servomotor; and means coupled to the collective pitch control for transmitting an electrical control signal decreasing with increasing collective pitch request from the collective pitch control to the collective pitch servomotor; the servomotors operating in such sense that said engine power level setting means increases fuel supply in response to decreasing power level request signals calling for increased power and also increases fuel supply in response to decreasing collective pitch signals indicative of increased collective pitch, with the result that a failure of transmission of either signal simulates a maximum power request with relation to that signal.

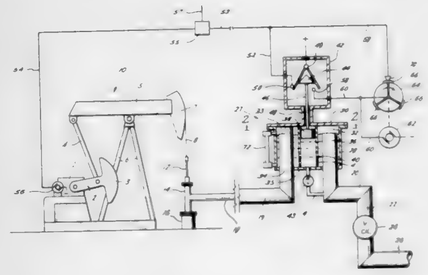
3,963,373
CONTOURED SHEET METAL AIRFOIL FANS
William T. Macauley, West Bloomfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed July 3, 1974, Ser. No. 485,645
Int. Cl.² F04D 29/34
U.S. Cl. 416—214 A **7 Claims**

1. A fan blade and root assembly, comprising:
a. a sheet metal blade useful for impelling air, said blade having an axis with leading and trailing edges, said blade having a predetermined curvilinear airfoil contour transverse to the axis of said blade, and
b. a blade root having a planar web extending from said blade along said axis and disposed between the leading and trailing edges of said blade, said root having symmetrically arranged wing portions extending from leading and trailing edges of said web and folded back toward the web for substantially completing a hollow polygon spaced from said blade, said polygon having spaced securement



walls aligned with the direction said assembly is to be rotated.

3,963,374
WELL PUMP CONTROL
Robert E. Sullivan, 8007 Mullins, Houston, Tex. 77036
Filed Oct. 24, 1972, Ser. No. 300,129
Int. Cl.² F04B 49/00
U.S. Cl. 417—12 **9 Claims**



1. A pump control for a pump driven by an electric motor for pumping liquid from a well through a discharge line comprising,
a float body having a float chamber,
a float in the float chamber,
an inlet line connected to and extending upwardly from the bottom of the float chamber to adjacent its top and provided with an opening directing inflow of liquid away from the float, the inlet line attachable to a first segment of the discharge line,
an outlet line connected to and extending upwardly through the bottom of the float and having an opening spaced above the bottom of the float chamber and attachable to a second segment of the discharge line downstream from the first segment whereby liquid in the discharge line is pumped through the first segment, the inlet line into the float chamber and out the outer line into the second segment of the discharge line and establishes an upper liquid level in the float chamber,
a drain line adjacent the bottom of the float arranged to drain liquid out of the float chamber and to establish a lower liquid level in the float chamber,
the float in the float chamber being disposed out of the direct flow path of fluid entering into the float chamber and arranged for vertical movement with changes in the level of liquid in the float chamber,
a float guide having openings at its lower portion extending vertically upwardly from the bottom to adjacent the top of the float chamber out of the direct flow path of fluid entering into the float chamber surrounding the float and

guiding the float in its vertical movement and shielding the float from surges of gas,

an energizing electric circuit for the electric motor,

a timer in the circuit arranged to periodically close the circuit to the electric motor for predetermined intervals of time, and

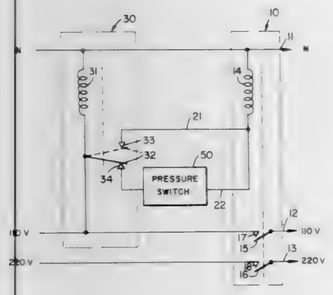
a switch actuated by the vertical movement of the float and arranged to close the circuit to the electric motor and to open the circuit to the timer when the float is in an upper position in response to the upper liquid level and to open the circuit to the motor and to close a circuit to the timer when the float is in a lower position in response to the lower liquid level in the float chamber.

3,963,375

TIME DELAYED SHUT-DOWN CIRCUIT FOR RECIRCULATION PUMP

George C. Curtis, 2701 SE. 87th, Portland, Oreg. 97266

Filed Mar. 12, 1974, Ser. No. 450,300
Int. Cl.² F04B *49/00*
U.S. Cl. 417—12 **1 Claim**



1. A circuit for controlling the application of electrical power to a pump motor, comprising

a plurality of electrical conductors adapted to be connected to an electrical pump motor for applying electrical power thereto,

a first relay having a pair of cooperating contacts in at least one of said conductors for controlling the flow of current therethrough,

a second relay having a coil connected between two of said conductors, said second relay thereby being actuated upon the application of an electrical potential between said two conductors,

one end of the coil of said first relay being connected to a first of said two conductors and the other end thereof being connected to a first fixed contact of said second relay, said other end of said coil of said first relay also being connected to a second fixed contact of said second relay through a pressure-sensitive switch adapted to sense the output pressure of a pump driven by such motor, said pressure-sensitive switch being adapted to open and interrupt the connection between said first relay coil and said second fixed contact of said second relay for sensed pressures less than a predetermined minimum, and

a movable contact on said second relay connected to a second of said two conductors and contacting said first fixed contact when said second relay is first actuated, said second relay being adapted to return to a de-energized condition upon the expiration of a predetermined period of time, moving said movable contact into contact with said second fixed contact,

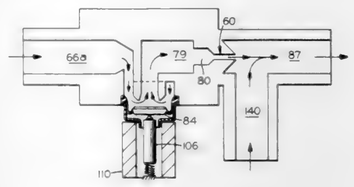
whereby energization of an associated pump motor is assured for a predetermined period of time irrespective of the output pressure of the associated pump, after which period of time the pump motor will be de-energized when such output pressure drops below a predetermined level.

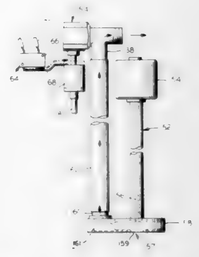
3,963,376

AUTOMATIC WATER POWERED SUMP DRAINER

David M. Miskin, 8 Still Lane, West Hartford, Conn. 06117

Continuation-in-part of Ser. No. 487,904, July 12, 1974, abandoned. This application June 5, 1975, Ser. No. 583,953
Int. Cl.² F04F *5/48*; **F04B** *49/04*
U.S. Cl. 417—40 **13 Claims**





1. An automatic water powered sump drainer operable for removing water from a confined area comprising:

a. valve means supported in spaced relation adjacent to and externally of the confined area, said valve means including a valve body having a fluid passage formed therein, inlet means provided at one end of said fluid passage, outlet means provided at the other end of said fluid passage, said inlet means being connectible to an external water supply for supplying water as a power source to the sump drainer, said outlet means being adapted for connection to a drain outlet for discharging water from the sump drainer into the drain outlet, said valve means further including armature means and having an opening formed in said valve body with one end of said opening communicating with said fluid passage intermediate the ends thereof, said armature means being supported relative to said opening for movement between a first position wherein said armature means is effective to block the flow of water through said fluid passage and a second position wherein said armature means permits water to flow through said fluid passage from said inlet means to said outlet means, said valve means having a first operating condition wherein the flow path in said fluid passage through said valve means between said inlet means and said outlet means thereof is interrupted when said armature means occupies said first position thereof and a second operating condition wherein an uninterrupted flow path is established in said fluid passage through said valve means between said inlet means and said outlet means thereof when said armature means occupies said second position thereof;

b. a float assembly operatively connected to said valve means for controlling the movement of said armature means between said first and second positions thereof and thereby the movement of said valve means between said first and second operating conditions thereof, said float assembly including float means supported within the confined area for movement therewithin in response to a change in the water level within the confined area, said float assembly further including magnet means operable for producing a magnetic field, said magnet means being operatively connected to said float means for movement therewith between a first position wherein said armature means lies outside the effective range of the magnetic field of said magnet means and a second position wherein said armature means lies within the effective range of the magnetic field of said magnet means, said float means being movable between a first position within the confined area wherein said magnet means occupies said first position thereof, said armature means occupies said first position thereof and said valve means is in said first operating condition thereof, and a second position within the confined area wherein said magnet means occupies said second position thereof, said armature means is caused to move from said first position to said second position thereof as a result of the magnetic attraction created between said magnet means and said armature means and said valve means is thereby caused to occupy said second operating condition thereof;

c. venturi means provided in said fluid passage of said valve means at a point therealong located between said opening in said valve body and said outlet means for receiving a flow of water therethrough when said armature means occupies said second position thereof and said valve means is in said second operating condition thereof, said venturi means being operable when water flows therethrough to produce a suction force in said fluid passage on the downstream side of said venturi means; and

d. tube means having one end thereof connected to said valve means and the other end thereof positioned below the level of the water in the confined area, said tube means having said one end thereof connected in fluid flow relation with said fluid passage in said valve means at a point therealong located in juxtaposed relation to the downstream side of said venturi means so as to be exposed to the suction force produced by said venturi means when water flows therethrough, said tube means being operable to draw water from the confined area therethrough by means of suction force produced by said venturi means to which said tube means is exposed and to discharge the water drawn from the confined area into said fluid passage for subsequent discharge into the drain outlet.

3,963,377

PNEUMATICALLY POWERED PUMP SYSTEM

J. Kelly Elliott, Baytown, and Robert W. Dinning, Houston, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed May 20, 1974, Ser. No. 471,277
Int. Cl.² F04F *1/18*; **F04B** *9/12*, *43/10*, *45/00*
U.S. Cl. 417—90 **25 Claims**

1. A system for moving fluid from a first place to a second place comprising:

a. a pump housing means at said first place;

b. gas pressure supply means for providing a pressurized gas;

c. supply conduit means connecting said housing means and said gas supply means for supplying pressurized gas to said housing means;

d. holding chamber means within said housing means for receiving and temporarily holding said fluid;

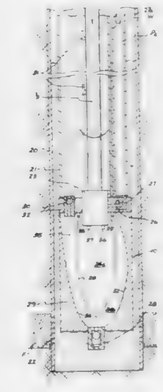
e. one-way inlet flow conduit means for ingress of said fluid into said holding chamber means;

f. one-way outlet flow conduit means for egress of said fluid out of said holding chamber means;

g. expansion chamber means within said housing means for receiving pressurized gas from said supply conduit means;

h. displacing means including a flexible bladder within said housing means disposed between said holding chamber means and said expansion chamber means and dividing the interior of said housing means into said holding chamber means and said expansion chamber means, said displacing means being responsive to force from said pressurized gas in said expansion chamber means to increase the volume of said expansion chamber means and decrease the volume of said holding chamber means thereby causing said fluid to flow from said holding chamber means through said outlet flow conduit means, said displacing means further being selectively responsive to force from said fluid in said holding chamber means to increase the volume of said holding chamber means and decrease the volume of said expansion chamber means thereby causing gas to flow from said expansion chamber means;

i. flow line means connecting said outlet flow conduit means and said second place for conducting said fluid, displaced from said holding chamber means, from said first place to said second place; and



j. subsurface control means comprising inlet control means for ingress of said pressurized gas from said supply conduit means into said expansion chamber means and outlet control means for egress of said gas out of said expansion chamber means, said control means selectively operable to permit said pressurized gas to enter said expansion chamber means through said inlet control means while preventing said gas in said expansion chamber means from leaving said expansion chamber means thereby forcing said fluid out of said holding chamber means through said outlet flow conduit means, said control means further being selectively operable to prevent said pressurized gas from entering said expansion chamber means from said supply conduit means while permitting said gas in said expansion chamber means to be forced out of said expansion chamber means through said outlet control means in response to movement of said displacing means caused by the pressure exerted by the fluid in said holding chamber means.

3,963,378

PART THROTTLE CONTROL — PUMP OVERRIDE

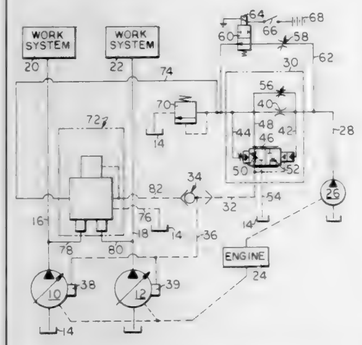
William D. McMillan, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 4, 1975, Ser. No. 583,366
Int. Cl.² F04B *49/00*; **F16D** *31/02*
U.S. Cl. 417—216 **6 Claims**

1. A hydraulic system including the combination of a horsepower-controlling system for controlling the horsepower output of a plurality of variable displacement pumps driven by a single prime mover, said system comprising:

a source of pilot pressure including a fixed displacement pump driven by said prime mover for controlling displacement of said pumps in relation to the speed output of said prime mover;

underspeed control valve means responsive to a deviation from a predetermined normal operating speed of said



prime mover for normally controlling the communication of said pilot control pressure with said pump displacement means to thereby vary the displacement of said pumps in proportion to load thereon; and,

adjustable means for adjusting the response of said underspeed valve to respond to a deviation from at least another speed different from said normal operating speed.

3,963,379

CONVERTIBLE ENGINE-AIR COMPRESSOR APPARATUS FOR DRIVING A VEHICLE

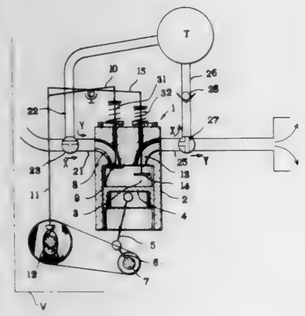
Takahiro Ueno, 5-11, 4-Bancho, Wakayama, Japan

Continuation-in-part of Ser. No. 369,119, June 11, 1973, abandoned. This application June 10, 1974, Ser. No. 477,791

Claims priority, application Japan, June 12, 1973, 48-66500; June 14, 1973, 48-67578

Int. Cl.² F04B *41/04, 7/00*

U.S. Cl. 417—237 **2 Claims**



1. A convertible engine-air compressor apparatus adapted to be mounted on a vehicle for driving said vehicle comprising a body having a plurality of compression chambers in which explosion can take place, each of said compression chamnbers being provided with an inlet opening and an exhaust opening, an inlet valve and an exhaust valve mounted in the body for each compression chamber for opening and closing the inlet and exhaust openings, a piston reciprocably mounted within each compression chamber, crank shaft means rotatably mounted in the body and connected to the pistons for reciprocating the pistons, a cam shaft rotatably mounted on the body, means connecting the cam shaft and the crank shaft means for rotating the cam shaft, an inlet cam for the inlet valve of each compression chamber and an exhaust cam for the exhaust valve of each compression chamber mounted on the cam shaft, each inlet cam having an engine action segment and a compressor action segment spaced apart from each other and a cylindrical segment positioned therebetween, each exhaust cam having an engine action segment, a compressor action segment and an air motor segment positioned therebetween, tappet means for each cam reciprocably mounted on the body for opening and closing each inlet and exhaust valve, each of said engine action segments of each cam being shaped to reciprocate the associted tappet means one during each revolution of the cam shaft, each of said compressor action segments of each cam being shaped to reciprocate the associated tappet means twice during each revolution of the cam shaft, the cylindrical segment of each inlet cam being shaped so that it does not reciprocate the associated tappet means, the air motor segment of each exhaust cam being shaped to reciprocate the associated tapper means twice during each revolution of the cam shaft, the cam shaft being mounted on the body to permit axial adjustment thereof whereby the segments of the cams can be selectively moved into engagement with the associated tappet means.

3,963,380

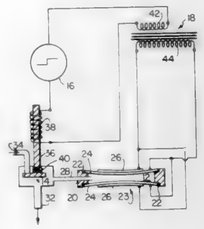
MICRO PUMP POWERED BY PIEZOELECTRIC DISK BENDERS

Lyell J. Thomas, Jr., 1900 Pelican Ave., San Pedro, Calif. 90731, and Samuel P. Bessman, 2025 Zonal Ave., Los Angeles, Calif. 90033

Filed Jan. 6, 1975, Ser. No. 538,945

Int. Cl.² F04B *17/00, 35/00, 39/08, 45/06*

U.S. Cl. 417—322 **11 Claims**



1. A pump having an inlet and an outlet comprising:

a variable volume chamber having a single port and at least one piezoelectric wall;

a single solenoid valve for controlling the communication of said port to said inlet and outlet;

a signal generator; and

a transformer having said solenoid valve and said signal generator connected in series on one side of the transformer and said piezoelectric wall connected to the other side of the transformer;

the sequentral operation of said solenoid valve and said piezoelectric wall needed to produce a pumping effect being produced by the electrical characteristics of the transformer, solenoid valve and piezoelectric wall.

3,963,381

DOUBLE FOOT VALVE FOR CRYOGENIC FLUID CONTAINING TANKS

Keith Kohnen, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 21, 1975, Ser. No. 579,524

Int. Cl.² F04B *35/04*

U.S. Cl. 417—360 **4 Claims**

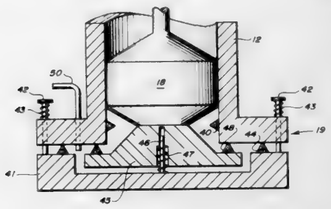
1. In an apparatus for pumping fluids from a storage container and permitting removal of pumping equipment in said container without loss of fluid or pressure comprising:

a fluid transmitting casing extending from the top to the bottom portions of said storage container and communicating with said pumping equipment;

an inlet at the bottom portion defining a passage for liquid to the pumping equipment;

a fluid outlet at the upper portion of the container communicating with said transmitting casing;

a foot valve extending across said inlet for sealing the passageway to said pumping equipment from the storage container when in the closed position, and permitting fluid flow from the container to the pumping equipment and through said casing when in the open position, said foot valve including means responsive to the lifting move-



ment of the pumping equipment for closing said valve; and

a sealing gland at the top of the casing accomodating movement of the pumping equipment to permit opening of the foot valve without venting the casing;

the improvement which comprises:

a foot valve comprising an inner poppet carrying a sealing surface and extending across said inlet for sealing engagement when in a closed position; and

an outer poppet carrying a sealing surface and extending across said inlet for providing a second seal when in the closed position, said outer poppet carrying said inner poppet for independent axial movement; and

means for forcing said inner poppet and outer poppet to a closed position when said pumping equipment is raised.

3,963,382

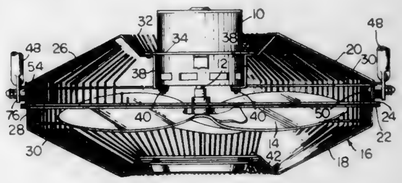
PORTABLE AIR CIRCULATING FAN

Noel Thomas Patton, 8227 Westridge Road, Fort Wayne, Ind. 46825

Filed Jan. 31, 1975, Ser. No. 546,089

Int. Cl.² F04B *49/10*

U.S. Cl. 417—361 **9 Claims**



1. In a fan having a rotary impeller, an electric drive motor having a shaft on which said impeller is mounted, a fan guard provided with radial members surrounding said impeller, said radial members carrying substantially the weight of the motor and impeller, said guard comprising forward and rearward sections separable along a plane substantially perpendicular to the axis of rotation of said impeller, said motor being connected to one of said sections of said guard, said support frame also being connected to one of said sections of said guard, each section of said guard having a rim at the side facing the other section, clip elements receivable over the juxtaposed rims of said sections to hold said sections together, each clip element comprising a bifurcated portion and spacer therebetween at one end to engage over said rims from the radially outer side and portion having a notch therein at the other end to engage over a radial member of at least one of the guard sections, each thus engaged radial member comprising a wire, and a support frame for said fan supportingly connected to said radial members.

3,963,383

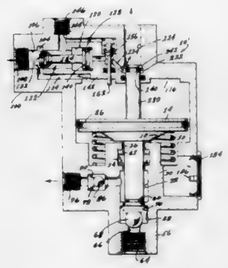
AIR DRIVEN PUMP

David C. Hill, Pasadena, Calif., assignor to Haskel Engineering & Supply Co., Burbank, Calif.

Continuation of Ser. No. 294,906, Oct. 4, 1972, abandoned, which is a division of Ser. No. 88,234, Nov. 9, 1970, abandoned, which is a continuation of Ser. No. 798,900, Feb. 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 690,185, Dec. 13, 1967, Pat. No. 3,489,100. This application Aug. 13, 1974, Ser. No. 497,013

Int. Cl.² F01L *25/06*

U.S. Cl. 417—401 **5 Claims**



1. A fluid driven pump which includes:

a pump housing having a pump chamber therein;

a pump piston reciprocable in said pump chamber;

fluid inlet and outlet means having valving means and connected to said pump chamber for intake and output of fluid from said pump chamber;

driving piston means for reciprocating said pump piston;

driving chamber means enclosing said driving piston means;

driving fluid inlet and outlet means;

shuttle valve means movable between a first position connecting said driving fluid inlet to said driving chamber means, and a second position connecting said driving fluid outlet to said driving chamber means;

valve piston means connected to said shuttle valve means for operating the same, said valve piston means having a first surface whose effective area for moving said shuttle valve means toward said first position is larger than that of a second surface for moving said valve piston means toward said second position;

passageway means for conducting driving fluid under pressure from said fluid inlet to said first surface;

other passageway means for conducting driving fluid under pressure from said fluid inlet to said second surface;

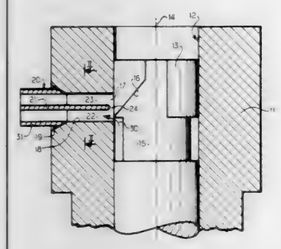
other valve means operated by said driving piston to release pressure applied to said first surface, whereby opening of said other valve means causes movement of said valve piston means and said shuttle valve means to said second position; and

additional valve means operated by said driving piston to supply pressure to said first surface, whereby operation of said additional valve means causes movement of said valve piston means and said shuttle valve means to said first position, said other valve and said additional valve being operated to open at different times in accordance with the movement of said driving piston.

3,963,384
EROSION-PREVENTING DEVICE FOR A LIFT-AND-FORCE PUMP

Dirk Basteshof, Eaubonne, France, assignor to Societe d'Etudes de Machines Thermiques, Saint Denis, France

Filed June 27, 1975, Ser. No. 590,851
Claims priority, application France, July 16, 1974, 74.24747
Int. Cl.² F04B 7/04
U.S. Cl. 417—499 11 Claims

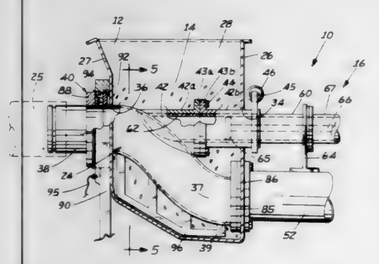


1. A jerk-pump with an adjustable discharge flow rate, of the kind comprising a cylindrical plunger reciprocating longitudinally within a bore formed in a barrel mounted in the pump housing and including a common feed and by-pass duct opening into said bore, a groove-like recess having a substantially helical edge defining the effective delivery stroke of said plunger being formed in the external surface of said plunger, said pump being provided with an erosion-preventing device consisting of a wall portion inserted longitudinally into said common duct and defining a fluid return or by-pass passageway and a supply or feed passageway, wherein the improvement consists in that said wall portion consists of a partition having the shape of a flat plate or strip and inserted into said common duct.

3,963,385
VALVE ASSEMBLY FOR CONCRETE PUMPS

Angel M. Caban, 26431 Via Gorrion, Mission Viejo, Calif. 92675

Filed May 5, 1975, Ser. No. 574,298
Int. Cl.² F04B 15/02, 7/00
U.S. Cl. 417—517 13 Claims



1. A constant, uniform-pressure-discharge, concrete-pump apparatus comprising:

a hopper for receiving a semi-fluid concrete mixture therein, said hopper being defined by a front wall having a centrally disposed opening and a plurality of inlet ports arcuately arranged about said central opening, and a rear wall having an outlet opening oppositely disposed and axially aligned with said central opening and side walls integrally formed therewith;

a valve assembly operably positioned within said hopper, said valve having a main conduit adapted with a receiving end and a discharge end, said discharge end being rotatably supported within said outlet opening in said rear wall, said receiving end thereof being movably positioned adjacent each inlet port during rotation thereof, and an auxiliary conduit integrally connected to said main conduit adjacent the discharge end thereof, the opposite end of said auxiliary conduit being rotatably supported in said central opening in said front wall, whereby said conduits form a substantially Y-shaped configuration;

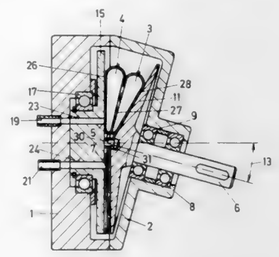
a plurality of concrete-pump assemblies connected to each of said inlet ports for communication with the interior of said hopper, whereby said concrete is sequentially pumped from said hopper through said main conduit of said valve for discharge therefrom; and

an auxiliary concrete-pump assembly connected to said auxiliary conduit for operable communication with said concrete disposed in said valve assembly, whereby said auxiliary-pump assembly is operably synchronized with said other concrete pump assemblies to provide a continuous, uninterrupted flow of concrete from the discharge end of said valve assembly.

3,963,386
ROTARY MOTOR WITH INFLATABLE EXPANSION MEMBER

Georg Hirmann, Zurich, Switzerland, assignor to Inventa AG, Zurich, Switzerland

Filed Sept. 9, 1974, Ser. No. 504,108
Claims priority, application Switzerland, Nov. 9, 1973, 15781/73
Int. Cl.² F01C 5/00; F01B 19/00; F16J 3/00
U.S. Cl. 418—45 4 Claims

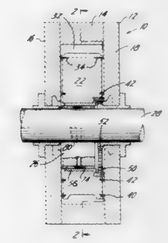


1. A motor actuated by a fluid pressure medium comprising a housing; a rotatable output drive shaft; a first support plate rotatably mounted in said housing having a supporting surface and a first axis of rotation; a second support plate having a substantially conical supporting surface and being rotatably mounted in said housing about a second axis of rotation, said first and second support plate axes being inclined at an intersecting angle and not mechanically connected to each other, said second support plate being connected to the output shaft to cause rotation thereof upon movement of said second support plate; a plurality of multi-lobed rosette shaped structures arranged between the first and second support plates, each rosette structure being divided into a plurality of independent freely distortable expansion chambers, said rosette structures being connected together and only to said first support plate in superimposed relationship between the plates; the rosette structure adjacent to the first plate being connected thereto over a relatively small area compared to the total surface area of the support plate; means providing fluid communication between adjacent chambers of the superimposed rosette structures; and pressure control means for admitting said fuid pressure medium into each expansion chamber of the rosette adjacent the first plate and the adjacent chambers of the superimposed rosettes in fluid communciation therewith sequentially to cause movement of the second support plate and rotation of the output shaft, said pressure control means permitting said fluid pressure medium to be expelled from all communicating expansion chambers simultaneously after the maximum volume of the chambers has been attained.

3,963,387
ROTARY ENGINE WITH SELF-CENTERING ROTOR GEAR

Charles Jones, Hillsdale, and George H. Woodier, Ringwood, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed May 1, 1975, Ser. No. 573,448
Int. Cl.² F01C 1/02; F04C 17/02; F16H 55/00
U.S. Cl. 418—61 A 7 Claims



1. A composite rotor for use in a rotary mechanism including an outer housing having a pair of axially spaced end walls and a peripheral wall interconnecting said end walls to form a cavity therebetween and a shaft co-axial with said cavity and having an eccentric portion disposed within said cavity and upon which said rotor is to be journaled for relative rotation and for cooperation with the inner multi-lobe surface of said peripheral wall to form a plurality of working chambers between the rotor and said peripheral wall surface, said composite rotor comprising:

a. a main outer body portion having a bore extending coaxially therethrough,

b. a sleeve disposed within said bore with said sleeve being tightly secured to said rotor at all operating temperatures of said mechanism,

c. a gear co-axial with and disposed adjacent to one end face of the rotor, and

d. said gear and the adjacent end of said sleeve having cooperating splines with substantially radially engaging faces having a close fit for rotatively locating the gear relative to the rotor while at the same time permitting relative thermal expansion and contraction between the sleeve and gear.

3,963,388
UNITARY APEX SEAL ASSEMBLY

Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

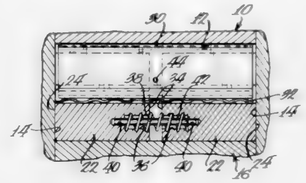
Filed Jan. 20, 1975, Ser. No. 542,532
Int. Cl.² F01C 19/10
U.S. Cl. 418—121 5 Claims

1. An apex seal assembly for rotary engines comprising

a pair of spaced bolts, each adapted to engage a respective side wall of a rotor containing chamber of a rotary engine, each of said bolts having a generally radially extending slot therein, each said slot including an enlarged seal-retaining portion;

resilient means interposed between and interconnecting said bolts and adapted to urge said bolts away from each other when installed in a rotary engine into engagement with a corresponding side wall;

an apex seal received in the slots of both of said bolts, and said seal having an enlarged section within the enlarged seal-retaining portion of each of said slots; and

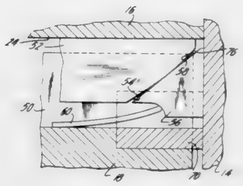


means for precluding substantial lateral relative movement between said bolts and said seal.

3,963,389
MULTI-PIECE APEX SEAL FOR A ROTARY ENGINE

George E. Miller, Libertyville, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 10, 1975, Ser. No. 566,956
Int. Cl.² F01C 19/02
U.S. Cl. 418—121 6 Claims



1. A multi-piece apex seal construction for a rotary mechanism having an outer body with a cavity bounded by a peripheral wall and a pair of axially-spaced end walls and having an inner body mounted within said cavity for rotation relative to said outer body with the inner body having a plurality of apex portions for sealing cooperation with said cavity walls, said multi-piece seal construction comprising:

a. a first seal piece disposed in a groove extending axially across each apex portion of the inner body with at least one end of said first seal piece having an end face inclined to the inner and outer edges of the first seal piece such that the inner edge of said first seal piece is shorter than the outer edge;

b. a second seal piece disposed in said groove adjacent to said inclined end face of the first seal piece and having an end face for sealing engagement with the adjacent end wall of the outer body, said second seal piece also having an inclined face disposed in engagement with said inclined face of the first seal piece;

c. spring means for urging said second seal piece radially outwardly to urge its inclined face into engagement with the adjacent inclined face on the first seal piece; and

d. at least one of said inclined faces being arcuate to permit rocking movement of the second seal piece relative to the first seal piece such that the end face of the second seal piece can be flat against the adjacent end wall of the outer body.

3,963,390

BEARING ARRANGEMENT FOR ROTARY PISTON ENGINE FOR COMPRESSING AND EXPANDING GASES

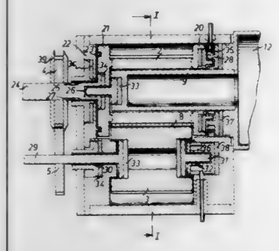
Herwig Labus, Jüelich, Germany, assignor to Kernforschungsanlage Juelich Gesellschaft mit beschräenkfer Haftung, Juelich, Germany

Filed Dec. 19, 1974, Ser. No. 534,418

Claims priority, application Germany, Dec. 19, 1973, 2363066

Int. Cl.² F04C *17/10*; **F16C** *33/38*, *33/46*

U.S. Cl. 418—188 **5 Claims**



1. A bearing combination for a rotary piston engine for compressing or expanding gases and comprising; intersecting partial cups on parallel adjacent axes forming a housing, said cups being open near one region of intersection thereof, a rotary piston in each cup, said pistons having meshing labyrinth seal means and each having a radial projection which runs closely inside the pertaining cup, each piston having a pocket to receive the projection on the other piston, said projections being in side by side relation when disposed in said pockets, a hollow shaft coaxial with one piston and opening outside the housing at one end and having an axial slot, the pocket in said one piston having a port which communicates with said slot in one rotated position of said one piston, means for driving the pistons in rotation in unison in respective directions, and radial bearing means providing radial support for said pistons in the housing, each bearing means comprising inner and outer race rings and rolling bodies between said race rings and an intermediate ring between the inner and outer race rings and having recesses in which said rolling bodies are disposed, the sides of said intermediate ring which faces said outer and inner race rings comprising wedge regions which taper outwardly in both peripheral directions from near the axial planes of said rolling bodies and which approach said race rings intermediate said rolling bodies, lubricant introduced between said rings creating hydrodynamic lubricating conditions when said rings rotate relatively.

3,963,391

METHOD AND APPARATUS FOR CONTROLLING SPEED AND TORQUE OF HAND HELD AIR DRIVEN VANE TYPE MOTORS

Fred E. Thorburn, and T. Michael Thorburn, both of 13117 111th Place NE., Kirkland, Wash. 98052

Filed Nov. 21, 1974, Ser. No. 525,959

Int. Cl.² F04C *15/02*

U.S. Cl. 418—270 **1 Claim**

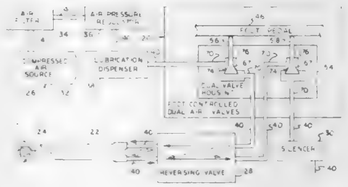
1. A foot operated control for placement on a floor and then to be actuated upon the pivotal movement of a person's foot being pivoted about a heel, to simultaneously regulate the flow of compressed air to and from a vane type air motor mounted within a handpiece for holding and driving rotatable dental laboratory tools, comprising:

a. a rectangular base for placement on the floor, having at one end spaced upstanding hinge supports, integrally derived from the said base following the formation of inwardly directed opposed partial cuts which terminate at respective ninety degree bends where these upstanding hinge supports then commence, and holes are formed at the upper terminus of each upstanding hinge support;

b. a rectangular cover for pivotal hinge attachment to the rectangular base, having at one end spaced depending hinge supports, integrally derived from the said cover following the formation of inwardly directed opposed partial cuts which terminate at respective ninety degree bends where these depending hinge supports then commence, and holes are formed at the lower terminus of each depending hinge support;

c. pivotal fastening subassemblies to join together the respective pairs of spaced upstanding and depending hinge supports which are respectively integral with the rectangular base and rectangular cover;

d. a rectangular housing having internal formed spaces for two valve assemblies and for compressed air passageways leading to and from the respective valve assemblies secured to the rectangular base adjacent the upstanding and depending hinge supports and extending only a partial distance along the said base, and of a height less than the assembled height of the upstanding and depending hinge supports, to thereby permit an unobstructed pivotal motion of the rectangular cover with respect to the rectangular base upon the pivotal movement of a person's foot being pivoted about a heel, before such movement is ultimately limited by the top of the rectangular housing;



e. a first spring positioned valve assembly installable from below within a vertical passageway of the rectangular housing, having sealing means, a compression spring, and a valve stem, which, when raised by the spring, contacts the rectangular cover to be depressed upon the pivotal movement of the said cover, said first valve stem movement interconnecting compressed air passageways respectively bringing compressed air from a compressed air source and delivering compressed air to a vane type air motor of a handpiece;

f. a second spring positioned valve assembly installable from below within a vertical passageway of the rectangular housing, having sealing means, a compression spring, and a valve stem, which, when raised by the spring contacts the rectangular cover to be depressed upon the pivotal movement of the said cover, such second valve stem movement interconnecting compressed air passageways respectively bringing compressed air from the exhaust side of a vane type air motor of a handpiece and directing it to an exhaust to atmosphere discharge opening of the said housing; and

four respective projecting connectors insertable in the rectangular housing to receive respective compressed air lines bringing air to and conducting air away from the said housing, as the respective air flows are controlled by the said first and second valve assemblies.

3,963,392

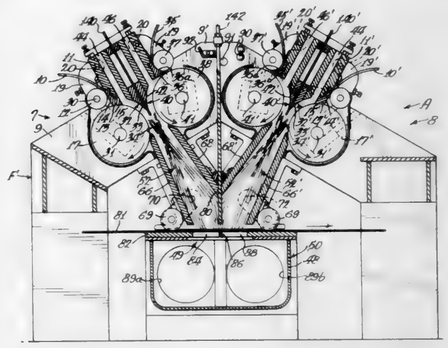
APPARATUS FOR PREPARING AIR-LAID NONWOVEN WEBS FROM COMBINED STREAMS

Prashant K. Goyal, Bombay, India, assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 347,971, April 4, 1973, Pat. No. 3,895,089. This application Feb. 6, 1975, Ser. No. 547,914

Int. Cl.² D01G *25/00*; **B29C** *13/00*

U.S. Cl. 425—83 **11 Claims**



1. Web forming apparatus comprising: frame means; means for feeding a fibrous material to a first fiberizing station at a first location on said frame means; means for feeding a fibrous material to a second fiberizing station at a second location on said frame means; means defining a first mixing zone between said first and second fiberizing stations, said mixing zone having a fiber inlet end and a fiber outlet end; means adjacent the inlet end of said first mixing zone for opening said first mentioned material at said first fiberizing station and producing a supply of individualized fibers that enter said first mixing zone through said inlet end; means adjacent the inlet end of said first mixing zone for opening said second mentioned material at said second fiberizing station and producing a supply of individualized fibers that enter said first mixing zone through said inlet end; means for providing gaseous streams for initially directing said supplies of individualized fibers toward one another and to said first mixing zone; a flow controlling member; means mounting said flow controlling member for movement relative to said first mixing zone to control the extent to which said gaseous streams intermix to produce a first combined gaseous stream; means for feeding a fibrous material to a third fiberizing station at a third location on said frame means; means for feeding a fibrous material to a fourth fiberizing station at a fourth location on said frame means; means defining a second mixing zone between said third and fourth fiberizing stations, said second mixing zone having a fiber inlet end and a fiber outlet end; means adjacent the inlet end of said second mixing zone for opening said third mentioned material at said third fiberizing station and producing a supply of individualized fibers that enter said second mixing zone through its said inlet end; means adjacent the inlet end of said second mixing zone for opening said fourth mentioned material at said fourth fiberizing station and producing a supply of individualized fibers that enter said second mixing zone through its said inlet end; means for providing gaseous streams for initially directing said supplies of individualized fibers toward one another and to said second mixing zone; a second flow controlling member; means mounting said second flow controlling member for movement relative to said second mixing zone to control the extent to which said last mentioned gaseous streams intermix to produce a second combined gaseous stream means defining a third mixing zone between said first and second mixing zones and communicating with the outlet ends thereof, said third mixing zone having a fiber inlet end and a fiber outlet end; third flow controlling member; means mounting said third flow controlling member for movement relative to said third mixing zone to control the extent to which said first and second combined gaseous steams intermix to produce a third combined gaseous stream; and fiber collecting means adjacent the fiber outlet end of said third mixing zone for accumulating fibers to form a web.

3,963,393

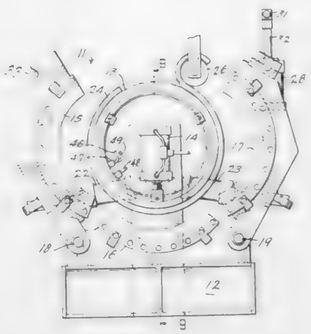
ENDLESS TREAD MOLD APPARATUS

Carlton K. Barefoot, Muncie, Ind., assignor to Tred-X Corporation, Muncie, Ind.

Filed Dec. 18, 1974, Ser. No. 533,944

Int. Cl.² B29H *5/04*, *5/08*

U.S. Cl. 425—20 **9 Claims**



1. An apparatus for molding and curing an endless, seamless annular tire tread from a mold rubber for use in retreading of tire carcasses, comprising:

a base;

a solid center mandrel having a generally cylindrical outer surface, said mandrel forming the inside surface of a mold cavity;

a plurality of arcuate outer mold sections connected to said base and containing a tread pattern, said mold sections when together forming a circular outer mold adapted to cooperate with said center mandrel;

means connected to said base and said outer mold sections for closing said outer mold sections inwardly about said center mandrel to a closed curing position, adjacent ones of said mold sections defining at least one gap cavity when in such curing position, whereby said closing to such curing position substantially seals the resulting mold cavity from leakage of mold rubber except at all such gap cavities defined between said outer mold sections, said gap cavity forming an overflow for excess mold rubber, said closing means including means for applying a clamping force urging the outer mold sections into tight engagement circumjacent the center mandrel to apply pressure to the enclosed mold rubber; and

means for heating the mold rubber to a curing temperature, whereby thermo-expansion increases the curing pressures.

3,963,394

BLADDER FOR SHAPING PNEUMATIC TIRE

Daniel Shichman, Trumbull, Conn., and Edward P. Percarpio, N. Haledon, N.J., assignors to Uniroyal Inc., New York, N.Y.

Filed June 25, 1975, Ser. No. 599,225

Int. Cl.² B29H *3/042*, *5/02*

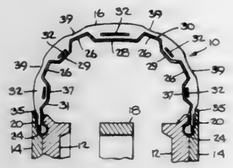
U.S. Cl. 425—51 **12 Claims**

1. An expandable bladder for shaping a pneumatic tire, comprising

a thick, substantially cylindrical center section having a multiplicity of convolutions on the inner surface of said section, said convolutions extending perpendicular to the axis of the cylindrical section and thereby providing local

reductions in thickness and additional axial extensibility to the bladder;

a pair of annular, beaded end sections extending inwardly from each end of the cylindrical center section; and



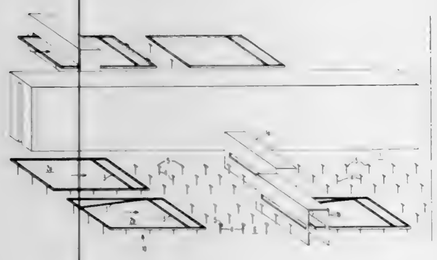
reinforcing material extending through the center section and end sections to limit the axial extensibility of the bladder.

3,963,395

MASS PRODUCTION LINE FOR FABRICATING STRUCTURAL BUILDING MEMBERS

John Lorin Bourdo, Phoenix, Ariz., assignor to Automated Construction Industries, Inc., Phoenix, Ariz.

Filed Feb. 25, 1974, Ser. No. 445,069
Int. Cl.² B29D *27/00*
U.S. Cl. 425—88 **7 Claims**



1. In a production line for fabricating structural building members in mold halves moved through a series of fabrication work stations, the combination comprising:

parallel rows of mold half supporting assemblies positioned in and between the work stations for carrying mold halves in horizontal positions with upwardly facing cavities;

each of said assemblies including roller means, and each of such assemblies supporting said roller means for rotation about an axis in the same horizontal plane as all other assembly roller means; and

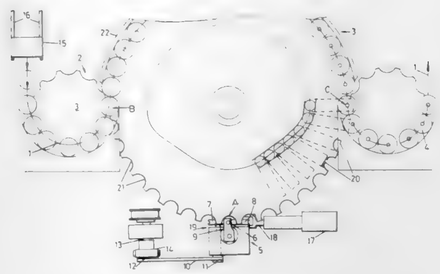
each mating mold half having, on its side opposite the cavity, a plurality of rigid, parallel upright T-shaped bars inhibiting warping of the mold half, the lower edge of each bar adapted to engage and ride on a respective row of supporting assemblies with minimum friction; and on elongated rectangular bar with a slight lower edge welded to the lower edge of each T-shaped bar parallel and level with all other rectangular bar lower edges irrespective of misalignment between T-shaped bar edge due to irregularities in the mold half.

3,963,396

CLOSURE LINING MACHINE

Keith Shotbolt, Gerrards Cross, England, and Gottfried Von Bismarck, Pully, Switzerland, assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Feb. 5, 1974, Ser. No. 439,812
Int. Cl.² B32B *31/00*; **B29C** *13/02*
U.S. Cl. 425—135 **8 Claims**



1. A mechanism for introducing a plastic composition to container closures, comprising:

a. rotatably driveable turret means,

b. a plurality of pellet carriers located on said turret means for movement along a closed path,

c. feed means for supplying solid pellets of plastics composition to said pellet carriers,

d. means for conveying closures around said turret means along a closed path,

e. a pellet transfer station on said turret means, and

f. means at said transfer station for transferring pellets from said pellet carriers into said closures; said closure path and said carrier closed path lying directly above one another at said pellet transfer station, wherein said means for supplying solid pellets to the carriers comprise means for advancing a continuous rod in stepwise manner, means for guiding the leading end of the rod to said carrier closed path, means on said carrier for receiving the advanced leading end of the rod, means adjacent said carrier closed path to sever the leading end of the rod from the remainder of the rod as it enters a passing carrier, and including a sensing unit to detect the absence of a closure on said closure feed means, and means responsive to sad sensing unit for disenabling said rod advancing means when the absence of a closure is detected by said sensing unit.

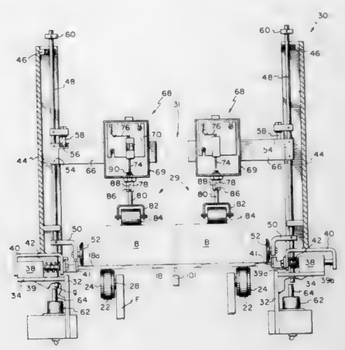
3,963,397

CEMENTITIOUS PRODUCT MAKING SYSTEM WITH PRODUCT HEIGHT GAUGING MECHANISM

Harry F. Cruzen, and Robert W. Gresham, both of Alpena, Mich., assignors to Besser Company, Alpena, Mich.

Filed June 3, 1974, Ser. No. 475,757
Int. Cl.² B28B *17/00*
U.S. Cl. 425—141 **9 Claims**

1. In an improved cementitious product making system having a frame means; a product forming mold mounted thereon at a mold station and having a mold cavity for receiving cementitious material; mechanism mounted by the frame means operably connected to pack material in the mold when cementitious material is supplied thereto, to aid in formation of a product in the mold cavity; product receiving means carried by the frame system for receiving a newly formed product made in the mold and comprising a transfer means and a support surface upon which the product is carried for downstream movement from the molding station; mechanism on the frame system for relatively moving the mold and at least a portion of the product receiving means to release the product from the mold; the improvement comprising: a carrier; means supporting the carrier for vertical movement on the frame means toward and away from the product receiving means; upper and lower sensors, the lower sensor being mounted vertically at the lower end of the carrier at a location to locate on the upper level of the support suface; the upper sensor being supported for vertical movement on the carrier at a location to sense the level of the upper surface of the



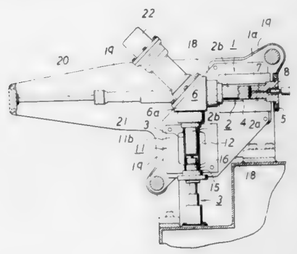
product; means moving said carrier vertically to move the sensors away from sensing position; gauging mechanism reacting to movement of the upper sensor vertically relative to the lower sensor when the sensors are in sensing position; and a control circuit mechanism connected to the gauging mechanism to respond to the magnitude of such relative vertical movement.

3,963,398

INJECTION BLOW MOLDING APPARATUS FOR HOLLOW ARTICLE HAVING OPENINGS AT BOTH ENDS

Katashi Aoki, Sakaki, Japan, assignor to Nissei Plastics Industrial Co., Ltd., Sakaki, Japan

Division of Ser. No. 420,231, Nov. 29, 1973, abandoned. This application Nov. 11, 1974, Ser. No. 522,886
Claims priority, application Japan, Dec. 4, 1972, 47-121385
Int. Cl.² B29D *23/02*, *23/03*
U.S. Cl. 425—242 B **3 Claims**



1. Molding apparatus for forming a hollow article having openings at both ends, said apparatus comprising:

a frame;

an injection mold mounted to said frame and having a first axis, said injection mold comprising:

a first injection mold cavity member mounted on said frame;

a second injection mold cavity member mounted on said frame in confronting face-to-face relationship with said first injection cavity mold member;

a stationary core member mounted to said frame and extending between said first and second injection mold members; and

a movable core member axially aligned with said stationary core member and being axially displaceable with respect thereto, said movable core member, in a first position, extending between said first and second injection mold members and being axially withdrawable therefrom;

hydraulic means mounted to said frame;

motive means mounted to said hydraulic means, said movable core member being mounted to said motive means for axial movement by means of said hydraulic means and spatial shifting by means of said motive means; and

a blow mold mounted to said frame spaced from said injection mold, said blow mold having a second axis and comprising:

a first blow mold cavity member mounted on said frame;

a second blow mold cavity member mounted on said frame in confronting face-to-face relationship with said first blow mold cavity member;

an axially movable closing member mounted to said frame and extending, in its closed position, between said first and second blow mold cavity members; and

said movable core member, when in a second position, being axially aligned with said closing member and extending between said first and second blow mold cavity members;

wherein a parison formed in said injection mold is withdrawn therefrom by axial movement of said movable core by said hydraulic means and shifted to said blow mold by said motive means.

3,963,399

INJECTION-BLOW MOLDING APPARATUS WITH PARISON HEAT REDISTRIBUTION MEANS

Fred J. Zavasnik, Bolingbrook, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 201,823, Nov. 24, 1971. This application June 25, 1973, Ser. No. 373,358
Int. Cl.² B29D *23/03*
U.S. Cl. 425—242 B **2 Claims**

1. Apparatus for forming a biaxially oriented container comprising:

a. support means carrying an injection and expansion mold, said molds being opposite one another, said injection and expansion molds having fluid passages therein for circulating fluid to cool the exterior walls of a parison formed in said mold to a first temperature, and

b. core support means operatively associated with said support means carrying at least four cores radially extending from the support means at 90° intervals and for indexing said cores sequentially to the injection mold, a delay position, the expansion mold and to an ejection station, said cores having fluid passages therein for circulating fluid to cool the interior walls of said parison to a second temperature higher than the first temperature.

3,963,400

APPARATUS AND INSTALLATION FOR POURING PLATES OF ORIENTED WOOD PARTICLES

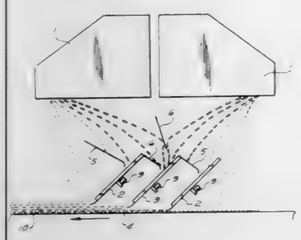
Urman Alexandrov Urmanov, Sofia, Bulgaria, assignor to DSO "Stara Planina", Sofia, Bulgaria

Filed Jan. 4, 1974, Ser. No. 430,909
Claims priority, application Bulgaria, Apr. 25, 1973, 23438
Int. Cl.² B29D *7/00*
U.S. Cl. 425—224 **2 Claims**

1. In an apparatus for orienting particles and depositing same upon a receiving surface in respective layers, wherein a particle separating device produces streams of different-size particles, the improvement which comprises:

a plurality of orienting plates each inclined at an angle to said surface and spaced apart to deposit said particles in respective layers upon said surface without free fall, each of said plates being formed with a base extending downwardly toward said surface, and a plurality of upwardly

open and downwardly converging chutes mounted on said base but terminating short of the lower end thereof;



means for vibrating said plates; and

deflecting means for directing selected streams from said device onto selected ones of said plates whereby said plates deposit the respective layers with particles of different particle sizes.

3,963,401

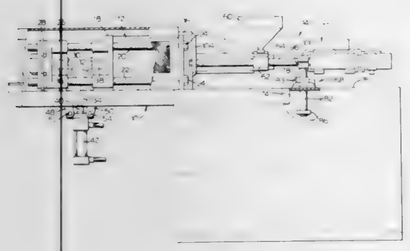
INJECTION MOULDING MACHINE

Geoffrey Latter, Mississauga, Canada, assignor to A. C. Hamilton & Co., Mississauga, Canada

Filed June 5, 1975, Ser. No. 584,091

Int. Cl.² B29F *1/00*

U.S. Cl. 425—242 R **3 Claims**



1. An improved injection moulding machine comprising, in combination, a supporting frame, a mould clamping assembly having a fixed platen mounted on said frame, an injection assembly having an injector and an injection cylinder, support means for vertically raising and lowering said injection assembly relative to said mould clamping assembly whereby the mould clamping assembly is maintained in parallel horizontal alignment with the injection assembly, said support means comprising a pair of parallel spaced tie bars, a pair of spaced vertical slots formed in proximity to each side of said fixed platen adapted to receive one end of said pair of tie bars, means for securing said ends of the pair of tie bars within said slots, a cross head for supporting the said injector mounted for slidable travel on said tie bars, a pair of vertical support rods adapted for vertical adjustment on said support frame and having connecting means securing said tie bars to the upper ends of said support rods substantially at the centre of gravity of said injection assembly, and means for raising and lowering said vertical rods in unison for adjusting the height of said injection assembly supported thereby.

3,963,402

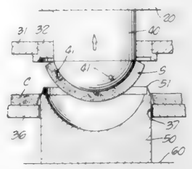
METHOD AND APPARATUS FOR MAKING SHAPED SHELLS FOR HORS D'OEUVRES, SNACKS AND THE LIKE, AND FOOD ARTICLES PREPARED THEREBY

Peter Berta, Downey, Calif., assignor to Fairmont Foods Company, Culver City, Calif.

Filed Apr. 1, 1974, Ser. No. 456,467

Int. Cl.² A21C *11/10*

U.S. Cl. 425—299 **19 Claims**



1. An apparatus for molding food articles from a sheet of dough which is adapted to form a cup-shaped shell suitable for use in making hors d'oeuvres, tarts, and the like, comprising in combination:

a male die member;

a female die member positioned below the male die member with at least one of the male and female die members being adapted to be moved along an axis relatively toward and away from the other;

means for cutting the sheet of dough;

means for moving the die members relatively toward each other for nesting the male die member in the female die member in a forming operation for shaping the cut dough into a cup-shaped shell and for moving the die members relatively away from each other for separating the male die members from the female die member after the forming operation;

means for providing thermal energy to at least one of the die members for heating the shell during the forming operation;

a plurality of pin members spaced apart from each other on the surface of the male die member, with at least one of the pin members being positioned at an acute angle with respect to the axis of movement of the dies, for removing the shell with the male die member during the separation of the male die member from the female die member; and

means for removing the shell from the male die member after the separation of the male die member from the female die member.

3,963,403

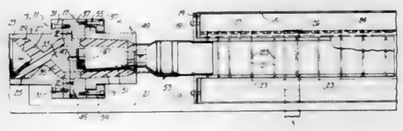
APPARATUS FOR MAKING FOAM PLASTIC PIPE

Roderick E. Hughes, Fullerton, and Michael J. Conway, Bakersfield, both of Calif., assignors to Hughes Processing, Inc., Anaheim, Calif.

Filed Dec. 13, 1974, Ser. No. 532,598

Int. Cl.² B29D *23/04*, *27/00*

U.S. Cl. 425—325 **14 Claims**



1. Extrusion equipment useable for making foam plastic pipe comprising:

a bushing having an internal surface defining a passage extending therethrough;

an internal mandrel at least partially within the passage of the bushing, said internal mandrel having an external surface which is spaced from said internal surface to define a die passage which circumscribes the internal mandrel;

said die passage having an inlet which is adapted to receive cellular plastic compound and an outlet through which the cellular plastic compound can be extruded;

said die passage having a tapered section and an outlet section, the overall width of the tapered section reducing as it extends toward the outlet, the outlet section terminating in said outlet;

the gap dimension of the tapered section being greater than the gap dimension of the outlet section;

said die passage having a transition section which is of progressively reducing thickness to smoothly blend the tapered section and the outlet section; and

an external mandrel downstream of the outlet, the cellular plastic compound extruded through said outlet being adapted to circumscribe the external mandrel.

3,963,404

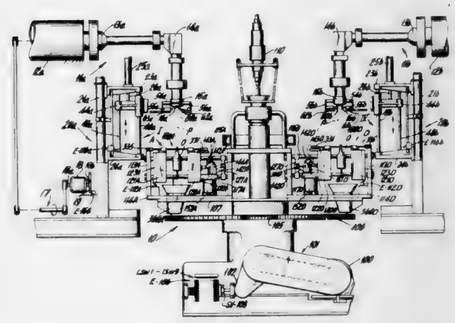
METHOD AND APPARATUS FOR MULTIPLE BLOW MOLDING WITH ROTARY TURNTABLE

Donald M. Pollock, Morristown, and Fulton W. Hallowell, Rumson, both of N.J., assignors to Consupak, Inc., Morristown, N.J.

Division of Ser. No. 368,249, June 8, 1973, Pat. No. 3,854,855. This application July 17, 1974, Ser. No. 489,186

Int. Cl.² B29D *23/03*

U.S. Cl. 425—326 B **10 Claims**



1. A blow molding apparatus comprising a rotary indexing turntable, means to rotatably index the turntable to a predetermined number of circumferentially spaced stations, said turntable having at least one partible mold mounted therewith for each of the circumferentially spaced stations, means to provide opened molds at at least first and second of said spaced stations, means to form a first parison to be operatively positioned at said first station and to form a second parison to be operatively positioned at said second station circumferentially spaced from said first station, means to position said first parison and means to position said second parison between the parted sections of each of the respective molds at the respective first and second stations, means to close said opened molds on said positioned parisons at the respective first and second stations, said each of said means to close said partible molds comprises switch means mounted on said apparatus so as to be actuated by the positioning movement of said positioning means, said switch means in turn actuating means interconnecting parted sections of the opened mold so as to close the mold along a line coincident with the axis of the positioned parison, means to introduce air under pressure to the interior of each of the respective parisons to expand the parisons to conform to the interior of the respective molds so as to form hollow object therein, means to cool each of said objects during rotation of the turntable and circumferential transfer of the molds from at least said respective first and second stations, and means for removing the formed objects from the opened molds at at least said first and second stations so as to permit other parisons to be positioned therebetween.

3,963,405

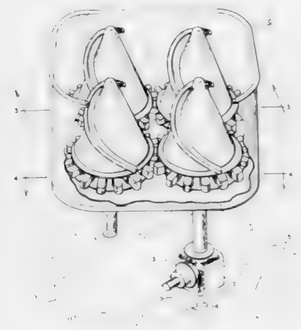
HAY CUBING ASSEMBLY

Glen E. Osborn, Star Rte. Box 265, Moses Lake, Wash. 98837

Continuation-in-part of Ser. No. 230,218, Feb. 29, 1973, Pat. No. 3,859,026. This application Sept. 26, 1974, Ser. No. 509,388

Int. Cl.² A01D *39/00*

U.S. Cl. 425—331 **4 Claims**



1. A hay cubing apparatus, comprising:

a chassis, said chassis having a substantially horizontally oriented table; said table having sidewalls issuing upwardly; and

at least a pair of dies mounted adjacent to said table on shafts, each of said dies including a rim, being fastened to said shafts, said dies including a plurality of teeth mounted distally and radially about said rim, said dies meshing with each other at their outer circumference, means driving at least one of said shafts; and

a feed cone material handling means, comprising: an upstanding cone-shaped body, said body being mounted on the operating side of each of said dies; and an auger, being a band projecting from the exterior walls of said cone-shaped body, and projecting in a spiral pattern from the apex to the base of said cone-shaped body.

3,963,406

SPINNERET ASSEMBLY FOR MULTIFILAMENT YARNS

Joseph Robert Reker, Chattanooga, Tenn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

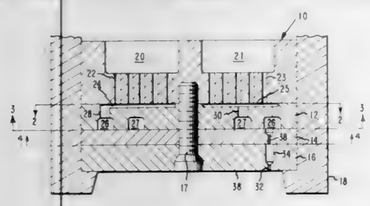
Filed June 20, 1975, Ser. No. 588,843

Int. Cl.² D01D *3/00*

U.S. Cl. 425—463 **2 Claims**

1. A spinneret assembly comprising sandwiched filter block, distribution plate, meter plate and spinneret plate elements, said filter block, said meter plate and said spinneret plate elements having spaced axially aligned flow passages, said distribution plate being provided with a pair of collection chambers in its upper surface and two concentric annular channels in its lower surface, each one of said pair being in communication with a different one of said concentric annular channels, said chambers and said channels defining separate flow paths between the filter block and the meter and spinneret plate passages; said collection chambers having a resistance to melt flow characterized by a flow resistance ratio R

of at least 0.33 wherein $P_r = \Delta P_2/\Delta P_1$ and ΔP_1 is the pressure drop through a set of flow passages in a meter plate and spinneret plate and ΔP_2 is the maximum pressure drop measurable along either collection chamber.



3,963,407

BURNER HAVING PHOTOELECTRICALLY OPERATED FUEL PUMP

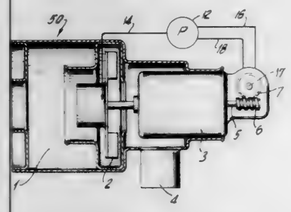
Siegfried Kofink, Zell (Neckar), Germany, assignor to J. Eberspacher, Germany

Filed Mar. 24, 1975, Ser. No. 561,370

Claims priority, application Germany, Mar. 28, 1974, 2415012

Int. Cl.² F23C 3/02

U.S. Cl. 431—1 **3 Claims**



1. A burner, comprising means defining a combustion space, combustion air inlet means connected to said combustion space, a blower associated with said inlet means, a drive motor connected to said blower to rotate said blower and having a blower shaft, a rotatable perforated timing member connected to said blower shaft for rotation thereby in timed relationship to said blower shaft, an electromagnetic fuel pump having a fuel discharge connected to said combustion space and having an electromagnet which is energized periodically to operate said pump, an electric supply circuit connected to said electromagnet, and a photocell switch in said electric supply circuit including a photodiode arranged on one side of said perforated timing member and a photovoltaic cell on the opposite side aligned with said photodiode and positioned to receive the rays from said photodiode through the perforations of said timing member intermittently during the rotation of said timing member and to intermittently operate said pump thereby.

3,963,408

PRECOMBUSTION CONDITIONING DEVICE FOR INTERNAL COMBUSTION ENGINES

Charles A. Youngberg, Prairie View, Ill., assignor to F. D. Farnum Co., Lyons, Ill.

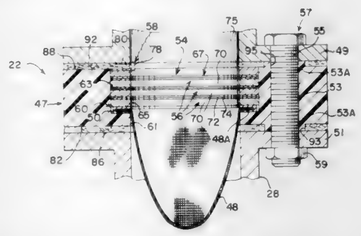
Continuation-in-part of Ser. No. 468,090, May 8, 1974, abandoned. This application Apr. 29, 1975, Ser. No. 570,075

Int. Cl.² F23B 7/00

U.S. Cl. 431—2 **28 Claims**

1. In a precombustion conditioning device for interposition between the carburetor and the fuel-iar inlet of a thermal combustion engine employing a vaporizable liquid fuel, said device including means for electric contact charging the liquid fuel particles of the fuel-air mixture including an electrically conductive foraminous member supported by electrically insulating means in and across the passageway from the carburetor to the fuel-air inlet against which the fuel particles engage, in combination with an electrically conductive surface in the path of flow of the fuel-iar mixture from the carburetor to the combustion zone of the thermal combustion engine downstream of said member, a source of electrical DC energy, means connecting the positive terminal of said source of said member, and means connecting the negative terminal of said source to said surface whereby the liquid fuel particles are contact charged positive on passing through said member and are impelled by electrostatic attraction to flatten against said surface for rapid evaporation, the improvement wherein:

said electrically insulating .neans comprises a carrier member formed from an electrically insulating material and disposed across the passageway,



with said carrier being planar and defining a closed perimeter opening extending transversely of the plane thereof and extending therethrough that is aligned with the passageway.

said carrier member opening defining a socket in circummambient relation about the passageway.

said foraminous member defining a peripheral flange that is lodged in said socket.

an annular electrogenetic voltage producing assembly received in said socket and including a contact element engaging the carburetor and forming the negative terminal,

said assembly comprising said source,

and means for grounding the carburetor to said surface and comprising said connecting means.

3,963,409

CATALYTIC HEATING UNIT

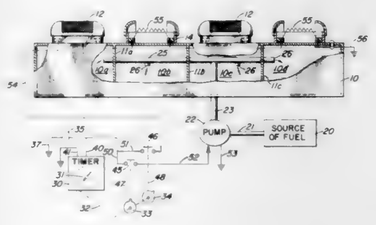
William J. Casto, 319 N. Peachtree, Ponca City, Okla. 74601

Filed Apr. 16, 1973, Ser. No. 351,263

The portion of the term of this patent subsequent to Nov. 15, 1991, has been disclaimed.

Int. Cl.² F23N 5/22

U.S. Cl. 431—28 **2 Claims**



1. A catalytic heater comprising fluid compartment means, catalytic burner element means positioned over said fluid compartment means and in communication therewith, a heating element means positioned between said burner element means and said fluid compartment means, a supply of fuel, means for communicating said fuel to said fluid compartment means, pump means having an input connected to said fuel communication means, means for controlling the fuel flow through said pump including a timer, a first means controlled by said timer for operating said pump for a predetermined period of time, a power means and a second means for operation said power means for a predetermined interval of time, whereby said power means will energize said heating element means thereby initiating said catalytic action.

3,963,410

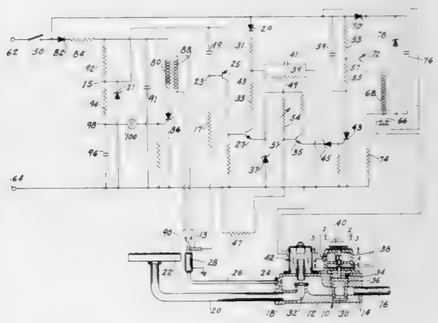
CONTROL SYSTEM FOR DOMESTIC GAS OVEN BURNERS

Robert L. Baysinger, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 20, 1975, Ser. No. 560,126

Int. Cl.² F23Q 9/14

U.S. Cl. 431—46 **14 Claims**



1. In a burner control system,

a pilot burner,

a main burner,

an electrical power source,

electrically operated means operative when energized to cause fuel to be supplied to said main burner,

circuit means including controlled solid state switching means connecting said electrically operated means across said power source,

a gating circuit for said switching means connecting one side of said power source to the controlling electrode of said switching means,

said gating circuit including first and second controlled solid state switching means,

circuit means responsive to the existence of pilot flame operative to effect conduction of said first switching means, and

temperature responsive circuit means operative to effect on and off conduction of said second switching means,

said temperature responsive means comprising:

temperature variable resistance means responsive to change in ambient temperature of a space heated by said main burner,

circuit means connecting said resistance means across said power source and including means operative to apply a predetermined voltage across said resistance means, and

means connecting the control electrode of said second switching means to one side of said resistance means.

3,963,411

PIEZOELECTRIC LIGHTERS NOTABLY FOR DOMESTIC APPLIANCE BURNERS AND THE LIKE

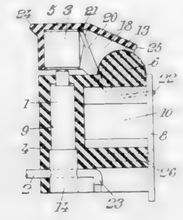
Jacques Challet, Le Puy, France, assignor to Constructions Electriques R.V., France

Filed Dec. 3, 1974, Ser. No. 529,041

Claims priority, application France, Dec. 7, 1973, 73.43829; Nov. 22, 1974, 74.38442

Int. Cl.² F23Q 2/16, 7/06

U.S. Cl. 431—255 **14 Claims**



1. A piezoelectric lighter mountable on a domestic appliance burner or the like, particularly a gas appliance, of the type comprising a piezoelectric module adapted to receive an impact at one end thereof, said lighter comprising a case of insulating material containing said module, an electrode emerging from the case, the end of the module opposite that receiving the impact being connected to said electrode, a hammer lever of insulating material, a percussion hammer borne by said hammer lever, said hammer lever being adapted to pivot around an axle of said case, a spring arranged to cause the pivoting of said hammer lever, and means for providing electrical continuity between said one end of said module and the metallic mass of the applicance, said means for providing electrical continuity including said spring, said spring being connected both to the metallic mass of the percussion hammer and to a metal plate for fixing the lighter to the applicance.

3,963,412

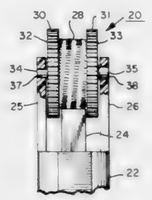
UNITARY SPARK AND THUMB WHEEL

Stephen Peter Chernock, Flax Mill Lane, Milford, Conn. 06460

Filed Dec. 23, 1974, Ser. No. 535,274

Int. Cl.² F23Q 1/02

U.S. Cl. 431—273 **5 Claims**



1. A spark and thumb wheel unit comprising a solid, substantially cylindrical, one-piece single stock, homogeneous member incorporating

A. a spark-producing portion comprising:

a. a first diameter, and

b. an abrasive peripheral surface,

B. a rotation-controlling portion comprising:

a. a second diameter greater than said first diameter, and

b. positioned for easy, controlled rotation of said spark producing portion, and

C. trunnion means integrally formed on the substantially flat sides of said spark and thumb wheel, for cooperation with

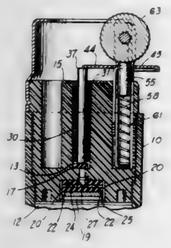
trunnion supports to securely and rotatably hold said spark and thumb wheel unit in a lighter system without necessitating a through-hole member extending through the entire spark and thumb wheel.

3,963,413

CIGARETTE LIGHTER HAVING IMPROVED VALVE MEANS

John C. Lockwood, Atlanta, and Harry L. Vaughan, Lawrenceville, both of Ga., assignors to Scripto, Inc., Atlanta, Ga.

Filed Aug. 19, 1974, Ser. No. 498,457
Int. Cl.² F23Q 2/16
U.S. Cl. 431—276 **5 Claims**



1. A cigarette lighter comprising a body defining a fuel reservoir and a passage way extending from the reservoir to the body exterior said passageway having a stepped inner portion; an elongated sleeve disposed within said passageway being sealed to said body and having a groove extending its length; a solid valve stem movably disposed within said sleeve; resilient sealing means between said valve stem and stepped portion of said passageway for contacting said valve stem and said stepped portion of said passageway for controlling the flow of fuel; and actuation means for allowing varied positioning of said valve stem within said sleeve to control the flow of fuel between the reservoir and body exterior so that said fuel flow is directed adjacent said actuation means.

3,963,414

APPARATUS FOR SEQUESTERING COMBUSTION GAS OF AN OPEN BURNER

Fred H. Jensen, 172 W N. Camano Drive, Camano Island County, Wash. 98292

Division of Ser. No. 339,936, March 9, 1973, abandoned, which is a continuation-in-part of Ser. No. 247,722, April 26, 1972, Pat. No. 3,799,142. This application Dec. 9, 1974, Ser. No. 531,210
Int. Cl.² F23D 13/14
U.S. Cl. 431—329 **5 Claims**



1. A catalytic space heater for heating a living space comprising an upright catalytic bed having one surface openly exposed to the living space and having a sheet gas flow of substantially smokeless gaseous combustion products upward alongside said exposed surface, and a plenum chamber having in one wall thereof a slot extending along the upper margin of said upright catalytic bed exposed surface adjacent to one edge of the sheet gas flow, said exposed surface guiding the flow of gas toward said slot for flow of gas from such sheet gas flow through said slot into said plenum chamber, and said plenum chamber having an outlet leading to a location separated from the living space in which the heater is located, said plenum chamber flaring lengthwise of said slot toward said outlet.

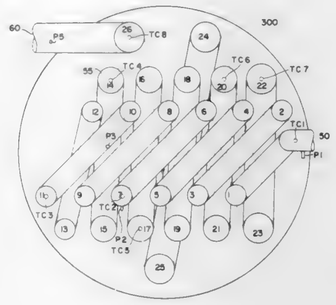
3. A catalytic space heater for heating a living space comprising an upright backing, an upright catalytic bed carried by said backing, having one surface opening exposed to the living space and producing a sheet gas flow of substantially smokeless gaseous combustion products upward alongside said exposed surface, a plenum chamber sealed to the upper portion of said backing, having horizontally-elongated passage means extending along the upper margin of said upright catalytic bed exposed surface and spanning substantially entirely along the width of such sheet gas flow alongside said exposed surface, said passage means having a width perpendicular to said catalytic bed substantially equal to the width of such sheet gas flow, said exposed surface guiding the flow of gas toward said passage means for flow therethrough into said plenum chamber and through said plenum chamber to a location separated from the living space in which the heater is located.

3,963,415

METHOD AND APPARATUS FOR CONVEYING AND/OR HEATING COAL PARTICLES IN A DENSE PHASE FLOW

Charles William Albright, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 10, 1975, Ser. No. 540,220
Int. Cl.² F27B 15/00
U.S. Cl. 432—14 **12 Claims**



1. In a method of transporting coal particles in a dense phase flow through a transfer line, the improvement which comprises:

a. providing a dense phase of coal particles by fluidizing said particles with a non-oxidizing gas;

b. providing a transfer line which comprises at least a plurality of successively linked and serially aligned sections each having a uniform cross-sectional area separated by transition sections each having a varying cross-sectional area which is linearly enlarged a predetermined amount in cross-sectional area;

c. introducing said dense phase into a first one of said sections of uniform cross-sectional area at a predetermined entrance velocity;

d. causing said dense phase to leave said first section and each successive section of uniform cross-sectional area and enter the succeeding transition section linked thereto at a predetermined exit velocity, said exit velocity being greater than said entrance velocity and below the velocity at which significant erosion occurs; and

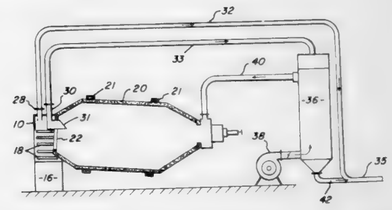
e. causing said dense phase to leave each transition section at said entrance velocity for introduction into the next section of successively larger, uniform cross-sectional area.

3,963,416

FURNACE EXHAUST SYSTEM

Vlastimil Frank Mach, Coon Rapids, Minn., assignor to General Resource Corporation, Hopkins, Minn.

Filed June 19, 1975, Ser. No. 588,189
Int. Cl.² F24F 9/00; F27D 7/00
U.S. Cl. 432—64 **15 Claims**



1. A dust and effluent gas removal system for use with an open end rotary furnace, comprising:

a. a dust collection hood positioned adjacent the furnace open end;

b. a pressurized air duct, including a plurality of air jet holes, positioned adjacent the furnace open end and beneath the dust collection hood;

c. an air receiving duct, including a plurality of air receiving openings in facing relationship to said air jet holes, positioned adjacent the furnace open end and beneath the dust collection hood;

d. means for connecting the air receiving duct to the dust collection hood; and

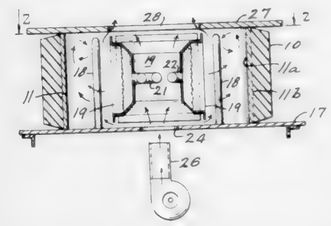
e. an effluent gas removal duct having a first end protruding into said furnace open end and having a second end passing through said dust collection hood.

3,963,417

METHOD AND APPARATUS FOR REMOVING SOLID TIRES FROM RIMS

Eugene W. Placek, Middleburg Heights, Ohio, assignor to International Magna Corporation, Cleveland, Ohio

Filed Dec. 26, 1974, Ser. No. 536,487
Int. Cl.² F24J 3/00
U.S. Cl. 432—225 **5 Claims**



5. Apparatus for removing a solid tire previously severed across its width from a circular band rim by destruction of the bond between the tire and the rim, comprising a base with means for supporting the rim and tire, and a generally annular array of outwardly directed gas-fired infrared heat generators connected to the base and directed toward the inside surface of the rim band, whereby heat applied to such inside surface is conducted through the band to expand the band so that the tire is freed from the band at least in part by slippage of the tire from the expanding band.

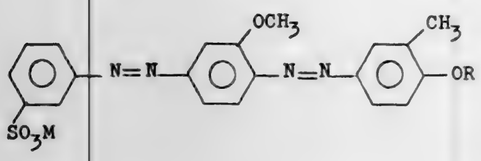
3,963,418
YELLOW DISAZO ACID DYE SOLUTION

Victor Tullio, Wilmington, Del., assignor to E. I. Du pont de Nemours and Company, Wilmington, Del.

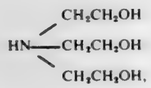
Filed Aug. 1, 1974, Ser. No. 493,972
Int. Cl.² C09B *31/06*; **D06P** *1/39*; **C09B** *31/08*
U.S. Cl. 8—41 B **7 Claims**

1. A hard water-tolerant, storage stable, concentrated, aqueous monosulfonated disazo dye solution which comprises, by weight,

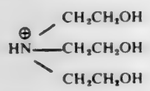
a. 10 to 25 percent of a monosulfonated disazo dye of the formula



where R is $CH_2CH(C_2H_5)OH$, and M is lithium or



b. 5 to 25 percent of N-methyl-2-pyrrolidone,
c. 0.02 to 0.3 part of ethylenediaminetetraacetic acid anion per part of said dye,
d. cations selected from the group consisting of lithium and alkanolammonium of the formula



in an amount sufficient to provide a pH of 6.5 to 12, and
e. at least 50 percent water.

3,963,419
ANTIBACTERIAL LAUNDRY OIL AND DUST CONTROL COMPOSITION

Richard E. Ware, Trainer, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

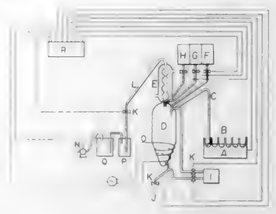
Division of Ser. No. 292,054, Sept. 25, 1972, Pat. No. 3,915,877, which is a continuation-in-part of Ser. No. 174,236, Aug. 23, 1971, abandoned. This application Apr. 15, 1974, Ser. No. 461,070
Int. Cl.² C09K *3/22*
U.S. Cl. 8—142 **3 Claims**

1. A process of laundering fabrics comprising immersing said fabric in a laundry oil composition of a mineral oil containing from about 0.02 to about 2.0% by weight of 8-hydroxyquinoline which can effectively migrate to hydrous dirt particles, causing a flow of the oil composition with respect to the fabric whereby the oil composition removes soil particles from the fabric, and removing the soil particles from the oil by filtration.

3,963,420
METHOD AND APPARATUS FOR AUTOMATICALLY DISSOLVING SAMPLES FOR ANAYLSIS

Ryutaro Matsumoto, Tokyo; Akihiro Ono, Yokohama, and Isamu Taguchi, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 30, 1973, Ser. No. 393,184
Claims priority, application Japan, Aug. 31, 1972, 47-86593; May 28, 1973, 48-59525; May 28, 1973, 48-59526
Int. Cl.² B01F *1/00*; **G01N** *31/00*
U.S. Cl. 23—230 R **8 Claims**



1. A method for automatically dissolving solid analysis samples in powder form comprising the steps of providing a dissolving tank in which said powder samples are dissolved, providing a source of said powder samples externally of said tank, providing condenser means at the top of said tank, applying a vacuum to said tank through said condenser means to effect transfer of said powder samples from said source into said tank, adding a predetermined amount of dissolving solution to said tank, applying heat to said tank, dissolving said powder sample by application of said heat and said dissolving solution to said tank, withdrawing a predetermined amount of said dissolved sample solution from said tank and individually selectively controlling, by automatic control means, application of vacuum to said tank, addition of said dissolving solution, application of said heat to said tank, and withdrawal of said dissolved sample solution in order to effect automatic performance of said method.

3,963,421
TLC METHOD FOR DRUG DETECTION

Donald W. Jones, Auburn, Calif., assignor to Sierra Laboratories, Inc., Auburn, Calif.

Filed July 12, 1974, Ser. No. 487,957
Int. Cl.² B01D *15/08*; **G01N** *31/08*, *33/16*
U.S. Cl. 23—230 B **11 Claims**

1. A thin-layer chromatographic method for detecting acidic, basic amine-containing or neutral drugs in a physiological medium which comprises:

agitating with a halocarbon-containing organic extractant an aqueous water-soluble inorganic salt-containing solution containing said physiological medium at a selected pH, wherein the amount of said salt is sufficient to provide a density of said aqueous medium greater than said organic extractant, whereby a substantial proportion of any of said drug is transferred to said organic extractant, said organic extractant consisting essentially of 40–60 volume percent chloroform, 15–20 volume percent alkanol of from 3 to 4 carbon atoms and 25 to 40 volume percent of an aliphatic hydrocarbon solvent of from 4 to 8 carbon atoms and the volume ratio of organic extractant to aqueous solution being in the range of 1–5:5;

incrementally transferring substantially free of said aqueous solution said organic extractant to an evaporating zone at a mildly elevated temperature containing a small absorbent disc, whereby a substantial proportion of said extractant is evaporated after each addition until completely evaporated and any of said drug present in said extractant is substantially quantitatively transferred to said disc;

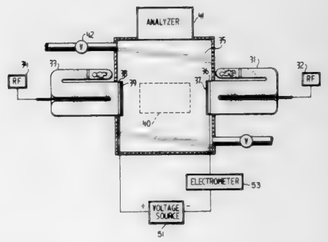
introducing said disc into a scored area adjacent one end of a thin-layer chromatographic plate and developing said thin-layer chromatographic plate using a polar organic developing solvent containing a small amount of ammonium hydroxide;

drying said thin-layer chromatographic plate and treating the dry thin-layer chromatographic plate with reagents for modifying the appearance of any of said drugs, so that colors characteristic of said drugs are produced.

3,963,422
COUNTER FLOWING POSITIVE ION-NEGATIVE ION NEUTRALIZATION CHROMATOGRAPH

Robert A. Young, R.R. No. 2, Loretto, Ontario, Canada

Filed July 12, 1974, Ser. No. 488,187
Int. Cl.² G01J *1/42*; **G01N** *23/00*, *31/08*
U.S. Cl. 23—254 E **4 Claims**



1. A counter flowing positive ion-negative ion neutralization chromatograph for analyzing gas samples containing helium and a species which forms stable negative ions comprising

a channel constructed of electrically non conducting material for receiving said gas sample;
a first helium resonance lamp having an emission at **584A;**
a window in said first lamp partially transparent to radiation at **584A,** said lamp being mounted with said window extending within said channel;
a second helium resonance lamp having an emission at 584A and opposite the first helium lamp;
a window in said second lamp partially transparent to radiation at **584A,** said second lamp being mounted with said window extending within said channel, said windows being spaced in opposing relationship;
means for simultaneously exciting said lamps;
means for maintaining potential difference between the windows; and
means in said channel for measuring the intensity, wavelength, and position of emitted radiation between said windows.

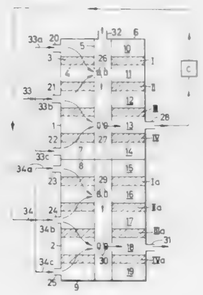
3,963,423
CATALYTIC REACTOR HAVING ANNULAR CATALYST TRAY MEANS

Karl Heinz Dörr, Mainz; Waldemar Weber, Frankfurt am Main; Hugo Grimm, Frankfurt am Main, and Gustav Rowedder, Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 12, 1974, Ser. No. 488,137
Claims priority, application Germany, July 26, 1973, 2337958
Int. Cl.² B01J *8/04*; **C01B** *17/68*
U.S. Cl. 23—288 R **7 Claims**

1. Catalytic reactor for the catalytic reaction of SO_2 to SO_3, comprising

a. a plurality of separate reaction chamber means;
b. each reaction chamber means containing a hollow central column and at least three annular catalyst tray means vertically spaced apart one over the other with the inner edges thereof in contact with said central column;
c. each annular catalyst tray means consisting of catalyst means and gas-permeable plate means;
d. a first gas space before the uppermost catalyst tray means, common gas spaces between adjacent catalyst tray means, and a last gas space after the lowermost catalyst tray means;
e. inlet means for feeding partial streams of SO_2-containing gas into alternate gas spaces starting with said first gas space, the partial streams fed into said common gas spaces being divided such that a portion flows through the upper tray means and the balance through the lower tray means;



f. the gas spaces downstream and adjacent to said alternate gas spaces communicating with inlets in the hollow column for allowing partial streams of gases to enter said hollow column after they pass through a catalyst tray means;
g. said hollow column having a common outlet for combined partial gas streams communicating with a gas space other than an alternate gas space;
h. conduit means for supplying said gases to the inlet means of said alternate gas spaces and conduit means connected to the gas space in communication with the common outlet of the central column; and
i. cooling means for cooling the combined gases flowing from one reaction chamber means to the next via the conduit means connected to the gas space in communication with the common outlet of the central column.

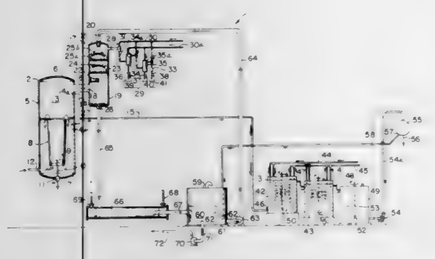
3,963,424
COOLING AQUEOUS ALKALI METAL HYDROXIDE LIQUORS BY VACUUM EVAPORATION WITH SUBSEQUENT SOLIDS PRECIPITATE REMOVAL

Frank Bella, Jr., South Holland, Ill., assignor to Whiting Corporation, Harvey, Ill.

Filed May 14, 1973, Ser. No. 359,985
Int. Cl.² B01D *9/00*
U.S. Cl. 23—296 **18 Claims**

1. The process of treating an aqueous caustic soda liquor-solids slurry having a dissolved sodium chloride concentration of at least 1.5% by weight to reduce the temperature and the sodium chloride concentration thereof, said process comprising the steps of: feeding said aqueous caustic soda liquor-solids slurry to a body of said liquor contained in an initial cooling stage which includes an evaporating chamber maintained at a subatmospheric pressure and equipped with means for circulating said liquor body in a flow pattern adapted to maintain substantial uniformity of concentration throughout said liquor body wherein water vapor is evolved from said slurry body; contacting said evolved water vapor with a stream of relatively solids-free aqueous caustic soda liquor having a

temperature and dissolved sodium chloride content below that of said aqueous caustic soda liquor-solids slurry feed and a vapor pressure below the absolute pressure in said evolved water vapor in a vessel which is in direct communication with said evaporating chamber; withdrawing a liquid caustic soda-solids slurry stream from said body of caustic soda liquor in said evaporating chamber, said withdrawn steam having a temperature below the temperature of said caustic soda-solids slurry feed; cooling said withdrawn caustic soda liquor-solids slurry stream in a second cooling stage, withdrawing a stream of further cooled caustic soda liquor-solids slurry from said cooling stage, said withdrawn stream of further cooled caustic



soda liquor-solids slurry having a solids constituent which includes sodium chloride crystals; feeding said further cooled caustic soda liquor-solids slurry into a liquid-solids separation device wherein a substantial portion of the solids constituent thereof is removed therefrom to produce a relatively solids-free caustic soda liquor; removing said relatively solids-free caustic soda liquor from a first outlet in said liquids-solids separation device, said liquid-solids separation device also including a second outlet through which the solids constituents removed from the slurry are discharged; and, supplying at least a portion of said relatively solids-free caustic soda liquor to said vessel for contact with said water vapor.

3,963,425

COMPOSITE MATERIALS

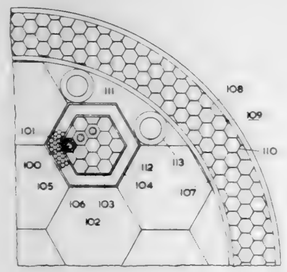
David John Sambrook, Warley, England, assignor to Imperial Metal Industries (Kynoch) Limited, England

Continuation of Ser. No. 242,368, April 10, 1972, abandoned. This application Sept. 20, 1974, Ser. No. 507,993

Claims priority, application United Kingdom, Apr. 15, 1971, 9496/71; Feb. 17, 1972, 7427/72

Int. Cl.² B21C *37/00*; **B21F** *19/00*; **B23P** *3/00*

U.S. Cl. 29—191.4 **8 Claims**



1. A superconducting composite including bundles of longitudinally extending filaments,

i. each bundle including longitudinally extending superconductor filaments

a. each filament being surrounded by and in good electrical contact with a matrix material

b. the matrix material comprising longitudinally extending cells of a metal of high electrical conductivity surrounded by a material of lower electrical conductivity

c. the arrangement of the matrix material within the bundle being such that where at least two superconductor filaments are circumferentially circumscribed by a single annulus of the metal of high electrical conductivity, the annulus is electrically interrupted by a radially extending wall of the material of the lower electrical conductivity

ii. the bundles being surrounded by and in good electrical contact with a further matrix material

a. the further matrix material comprising longitudinally extending cells of a metal of high electrical conductivity surrounded by a material of lower electrical conductivity

b. the arrangement of the further matrix material around the bundles being such that where at least two bundles are circumferentially circumscribed by a single annulus of the metal of high conductivity, the annulus is electrically interrupted by a radially extending wall of the material of the lower electrical conductivity

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3,963,426

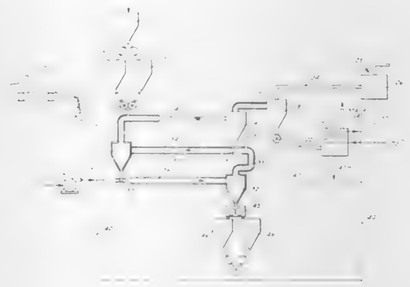
PROCESS FOR GASIFYING CARBONACEOUS MATTER

John W. Hand, Aurora, Colo., assignor to Cameron Engineers, Incorporated, Denver, Colo.

Filed July 22, 1974, Ser. No. 490,775

Int. Cl.² C10J *1/00*

U.S. Cl. 48—197 R **5 Claims**



1. A process for producing synthesis gas from the reaction of solid particulate carbonaceous material with oxygen and steam, wherein the improvement comprises the steps of:

a. drying the solid particulate carbonaceous material to essentially zero water content without pyrolysis or oxidation by direct contact with a fluent stream of hot synthesis gas product from step (g);

b. separating the dried carbonaceous material from the moist synthesis gas;

c. removing the water from the moist synthesis gas from step (b) and heating said water to form steam;

d. mixing said steam with oxygen;

e. heating said steam and oxygen mixture by direct fluent stream contact with hot ash residue from step (g);

f. contacting said dried carbonaceous material directly with said heated steam and oxygen mixture produced in step (e) thereby to gasify said carbonaceous material to produce a hot fluent stream of synthesis gas product and ash residue;

g. separating said hot synthesis gas product from said hot ash residue; and

h. recovering synthesis gas product from step (c).

3,963,427

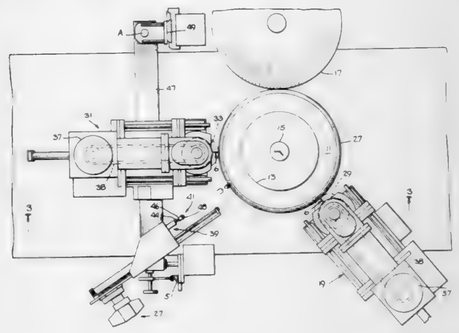
METHOD FOR IMPROVING TIRE UNIFORMITY

John Walter Ugo, Warren, Mich., assignor to Uniroyal Inc., New York, N.Y.

Filed July 26, 1974, Ser. No. 491,979

Int. Cl.² B24B *1/00*

U.S. Cl. 51—281 R **7 Claims**



1. A method of improving the uniformity of an inflated, pneumatic tire in a continuous operation while the tire is continuously rotating, comprising the steps of:

a. simultaneously and continuously measuring both the variation in the free radial run-out of the tire along both shoulders and the center of the tire tread and the variation in the forces generated in the radial direction around the circumference of the tire tread;

b. while continuing step (a), grinding either or both shoulders of the tire tread to correct excessive variation in the radial forces, and simultaneously with said force grinding of the shoulders, grinding the center of said tire tread to correct excessive variation in the free radial run-out; and

c. upon completion of step (b) but while continuing step (a), grinding either or both shoulders of the tire tread to correct excessive variation in the free radial run-out thereof but terminating said shoulder radial run-out grinding if said shoulder radial run-out grinding causes an adverse effect on the radial forces.

3,963,428

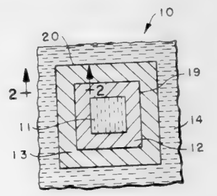
PRINTING OF TEXTILE ARTICLES

Daniel C. Stark, La Grange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 3, 1974, Ser. No. 430,525

Int. Cl.² D06P *3/00*, *5/00*

U.S. Cl. 8—14 **12 Claims**



1. A process for printing a textile material having a relatively porous surface comprising the steps of applying to adjacent surface areas of the material dissimilarly colored liquid dyestuffs so as to produce a boundary line therebetween, and subsequently applying to the boundary line a narrow line of dyestuffs so as to be retained in the upper portion of the porous material adjacent the surface in overlying relation to the boundary line to effectively hide the same from view.

9. A textile material having a relatively porous printed surface comprising adjacent areas of dissimilar colors defining a boundary line therebetween, and a narrow line of color overlying the boundary line to hide the same effectively from view.

3,963,429

COLORING OF ORGANIC MATERIALS WITH ASYMMETRIC THIOINDIGOID COMPOUNDS

Michihiro Tsujimoto, Tachikawa; Kisuke Osawa, Yokohama, and Ichiro Okubo, Hachioji, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

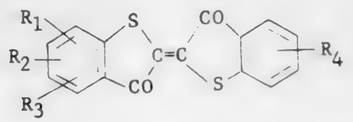
Filed Jan. 9, 1974, Ser. No. 431,696

Claims priority, application Japan, Jan. 17, 1973, 48-7012; May 22, 1973, 48-56328

Int. Cl.² D06P *1/22*

U.S. Cl. 8—38 **24 Claims**

1. In a method of coloring synthetic or semisynthetic organic high molecular weight material in brilliant nuance with characteristic fluorescence by (A) fixation of the coloring material on the synthetic or semisynthetic high molecular weight organic material by (i) heating the organic material in an aqueous dispersion of the coloring material; (ii) printing the coloring material onto the organic material; or (iii) impregnating the organic material with an aqueous dispersion of the coloring material; or (B) admixing the coloring material with the molten synthetic or semisynthetic high molecular weight organic material, the improvement comprising using as said coloring material an asymmetric thioindigoid compound having the formula:



wherein R_1, R_2 and R_3 may be the same or different and are selected from the group consisting of a hydrogen atom, chlorine atom, lower alkyl group, lower alkoxy group, cyclohexyl group, phenyl group, tolyl group, chlorophenyl group, benzyl group, methylbenzyl group, chlorobenzyl group and styryl group, R_1 and R_2 may together form a tetramethylene ring, R_4 is a member selected from the group consisting of a hydrogen atom and methyl group with the proviso that R_4 is a methyl group when R_1, R_2, and R_3 are each a hydrogen atom and R_4 is a hydrogen atom when R_1 is a methyl group and R_2 and R_3 are each a hydrogen atom.

3,963,430

CONCENTRATED SOLUTIONS, MISCIBLE WITH WATER IN ANY RATIO OF ANIONIC DYESTUFFS

Konrad Nonn, and Kuno Wagner, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 8, 1975, Ser. No. 575,703

Claims priority, application Germany, May 9, 1974, 2422386

Int. Cl.² C09B *5/62*; **D06P** *1/02*

U.S. Cl. 8—39 R **5 Claims**

1. Stable, concentrated solutions, miscible with water in any ratio, of azo dyestuffs containing sulphonic acid groups and anthraquinone dyestuffs containing sulphonic acid groups, characterised in that they contain association compounds of lactams with polyalcohols, either in water or in further water-miscible solvents or in a mixture of water and further water-miscible solvents.

3,963,431

METHOD OF DYEING WITH DISPERSIBLE AZO ANILINO DYESTUFFS

Stefan Koller, Ramlinsburg; Dieter Reinker Seltisberg, and Hans Rudolf Schwander, Riehen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

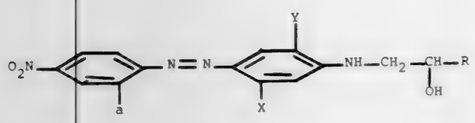
Continuation-in-part of Ser. No. 106,550, Jan. 14, 1971, abandoned. This application Mar. 29, 1974, Ser. No. 456,198

Claims priority, application Switzerland, Oct. 2, 1970, 14665/70

Int. Cl.² D06P *1/02*; **C09B** *29/24*

U.S. Cl. 8—41 C **4 Claims**

1. A method for the dyeing of polyester textile fibers which comprises contacting the said polyester textile fibers with a dyeing composition containing as an essential component a dyestuff of the formula



wherein a is cyano, chlorine or bromine, R is ethyl, phenyl or phenoxymethyl, Y is lower alkoxycarbonyl and X is hydrogen, lower alkyl or lower alkanoylamino.

3,963,432

AQUEOUS COMPOSITIONS FOR USE IN APPLYING DYESTUFFS

Frank Hauxwell, and Henry Roy Murton, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 407,952, Oct. 19, 1973, abandoned. This application Mar. 13, 1974, Ser. No. 450,864

Claims priority, application United Kingdom, Oct. 27, 1972, 49584/72

Int. Cl.² C09B *67/00*; **D06P** *1/58, 1/62*

U.S. Cl. 8—93 **10 Claims**

1. Aqueous surface active agent compositions having improved wetting properties for use in applying dyestuffs to solid surfaces which contain,

one or more cationic surface active agents selected from the group consisting of alkyltrimethylammonium halides, alkylbenzyldimethylammonium halides, alkylpyridinium halides, alkylquinolinium halides, alkylinidazolinium halides and alkylmorpholinium halides, or

one or more anionic surface active agents selected from the group consisting of the sodium salts of alkyl sulphates, aromatic sulphonates, condensates of aldehydes and aromatic sulphonic acids, lignin sulphonates and of sulphated natural oils, and

one or more condensates of from 2 to 3 molar proportions of ethylene oxide with an aliphatic alcohol containing from seven to fifteen carbon atoms,

the ratio of cationic/anionic agent to ethylene oxide condensate in the range of 1:3 to 20:1, the total amount of cationic/anionic agent together with ethylene oxide condensate is from 0.01 to 5% of the aqueous composition and from 0.01 to 5.0% of dyestuff.

3,963,433

FORMATION OF URETHANE CROSSLINKS IN CELLULOSE ETHERS INCORPORATING AMINE GROUPS BY USE OF PROPYLENE OR ETHYLENE CARBONATE

Truman L. Ward, and Ruth R. Benerito, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 23, 1975, Ser. No. 598,466

Int. Cl.² D06M *11/00, 13/10*

U.S. Cl. 8—120 **4 Claims**

1. A process for imparting high conditioned (dry) and high wet wrinkle recovery to partially aminoethylated cotton fabric, the process comprising:

a. impregnating a cotton fabric which has been aminoethylated to a degree of substitution of about 0.05 with a heterocyclic carbonate selected from the group consisting of ethylene carbonate, propylene carbonate, and a mixture of ethylene and propylene carbonate and about 2% of potassium carbonate to a pickup of about 100%,

b. placing the wet, impregnated fabric in a vacuum oven preheated to a temperature of about from 140° to 160°C,

c. evacuating the oven to obtain a pressure of about 35 mm of mercury,

d. maintaining the temperature and vacuum for about from 30 to 180 minutes to obtain reaction wherein urethane-type crosslinks are attained, and

e. releasing the vacuum and washing the reacted fabric to remove all unreacted material.

3,963,434

CARBOXYMETHYLATED COTTON FABRIC WITH IMPROVED CONDITIONED AND WET WRINKLE RECOVERY BY REACTION WITH PROPYLENE OR ETHYLENE CARBONATE

Truman L. Ward; Ruth R. Benerito, and Dorothy M. Perrier, all of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed July 23, 1975, Ser. No. 598,494

Int. Cl.² D06M *13/10, 13/54*

U.S. Cl. 8—120 **4 Claims**

1. A process for imparting high conditioned (dry) and high wet wrinkle recovery to partially carboxymethylated-cotton fabric, the process comprising:

a. impregnating a cotton fabric which has been carboxymethylated to a degree of substitution of about from 0.1 to 0.3 by a non-aqueous procedure, with a neat heterocyclic carbonate selected from the group consisting of ethylene carbonate, propylene carbonate, and a mixture of ethylene and propylene carbonate, to a pickup of about 100%,

b. placing the wet, impregnated CMC fabric in a vacuum oven preheated to a temperature of about from 160° to 180°,

c. evacuating the oven to obtain a pressure of about 35 mm of mercury,

d. maintaining the temperature and vacuum for about from 30 to 120 minutes to obtain reaction, and

e. releasing the vacuum and washing the reacted fabric to remove all unreacted material.

3,963,435

POLYESTER GRAFTS AND CROSSLINKS TO COTTON BY REACTION WITH HETEROCYCLIC CARBONATE, GLYCOL, AND DIBASIC ACID

Truman L. Ward, and Ruth R. Benerito, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 8, 1975, Ser. No. 611,373

Int. Cl.² D06M *11/02, 13/10, 13/16*

U.S. Cl. 8—120 **4 Claims**

1. A process for imparting wrinkle recovery properties to unmodified cellulosic fabric, the process comprising:

a impregnating a cellulosic fabric to about 100% takeup with a solution containing 50 parts by weight of a cyclic carbonate selected from the group consisting of ethylene carbonate and propylene carbonate, 50 parts by weight of diethylene glycol, and 1 part by weight of a dibasic acid soluble in the glycolcarbonate mixture,

b placing the wet impregnated fabric in a vacuum oven preheated to about from 160° to 180°C,

c evacuating the oven to obtain a pressure of about 35 mm of Hg,

d maintaining the temperature of (b) and the pressure of (c) for a reaction time of about from 30 to 120 minutes, and

e washing the reacted fabric with water to remove unreacted material.

3,963,436

BIS NITROPHENYL DIETHYLENE TRIAMINE DYEING OF SYNTHETIC ACID MODIFIED FIBERS

Reinhard Mohr, Offenbach am Main, and Konrad Löhe, Rembrucken, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

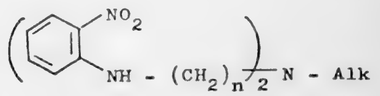
Filed Mar. 17, 1975, Ser. No. 558,784

Claims priority, application Germany, Mar. 21, 1974, 2413515

Int. Cl.² D06P *5/00*

U.S. Cl. 8—168 A **8 Claims**

1. In a process for the dyeing of high-molecular substrates containing acidic groups with basic nitro groups containing dyestuffs the improvement consisting of contacting said substrate with a dyestuff of the formula



wherein Alk is alkyl of 1 to 6 carbon atoms, *n* is 2 to 6 and wherein the phenyl nuclei can be substituted by halogen, carboalkoxy of 2 to 5 carbon atoms, nitro, sulfamoyl, sulfon amide mono- or di-(lower alkyl)-amide, carbamoyl, carboxylic acid mono- or di-(lower alkyl)-amide, cyano, lower alkyl, lower alkoxy, lower alkanoylamino or lower alkylsulfonyl or a mixture of said dyestuffs.

3,963,437

FLAME RETARDANT PROCESS FOR CELLULOSIC MATERIAL INCLUDING CYANAMIDE, PHOSPHONIC ACID, ANTIMONY OXIDE AND POLYMERIC HALOGEN-CONTAINING MATERIAL

Destin A. LeBlanc, and Robert Bruce LeBlanc, both of Wickford, R.I., assignors to Cotton Incorporated, New York, N.Y.

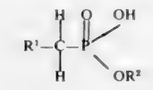
Filed Apr. 15, 1974, Ser. No. 461,106

Int. Cl.² D06M *13/30, 13/44*

U.S. Cl. 8—192 **8 Claims**

1. A process for rendering cellulosic fiber-containing material flame retardant, which process comprises

contacting the material with cyanamide, at least one phosphonic acid represented by the structural formula:



wherein R^1 represents a monovalent radical selected from the group consisting of hydrogen, halogen, hydroxy, lower alkyl and lower alkoxy; and wherein R^2 represents a monovalent radical selected from the group consisting of hydrogen and lower alkyl; antimony oxide and a flame-retardant polymeric halogencontaining material selected from the group consisting of halogenated vinyl and vinylidene polymers and copolymers to deposit on the cellulosic fiber-containing material a flame retarding amount of the phosphonic acid, cyanamide, antimony oxide and polymeric halogen-containing material.

3,963,438

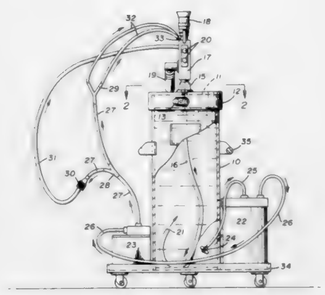
METHOD OF STERILIZING A FIBEROPTIC PROCTOSCOPE

Armin V. Banez, 510 Gypsy Lane, Suite 1, Youngstown, Ohio 44515

Filed June 21, 1974, Ser. No. 482,024

Int. Cl.² A61L *1/00, 3/00*; **B08B** *3/08, 9/02*

U.S. Cl. 21—58 **2 Claims**

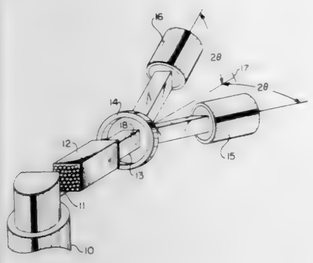


1. The method of sterilizing a fiberoptic scope having a hand-eye piece and an elongated flexible body member having an open end, an exterior surface and an interior first fluid conveying channel comprising the steps of immersing said flexible body member in a sterilizing solution, positioning the open end of said flexible body member to direct solution to emerge towards the exterior surface of another portion of said flexible body member and circulating said sterilizing solution through said fluid conveying channel in said flexible body member for a time sufficient to sterilize said fluid conveying channel and the exterior surface of said flexible body member of said fiberoptic scope.

3,963,439
MULTIELECTRODE APPARATUS AND TECHNIQUES TO PREPARE ALIGNED ASBESTOS FIBERS ON A THIN SUBSTRATE

Laverne S. Birks, Potomac, Md., and Mohammad Fatemi, McLean, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 5, 1975, Ser. No. 610,728
Int. Cl.² B29D *3/02*; **G01N** *23/20*, *31/06*, *31/12*
U.S. Cl. 23—230 PC **3 Claims**



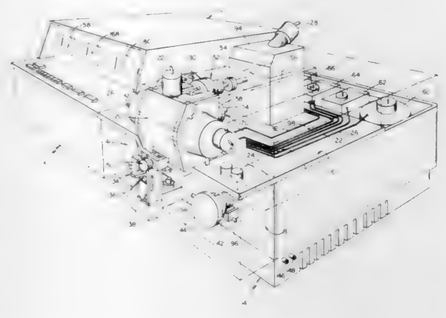
1. A method of preparing a sample containing asbestos for the purpose of determining the amount of asbestos in said sample; which comprises,
collecting pollutant samples which may contain asbestos on a millipore filter,
placing said millipore collected into a test tube and ashing the same for about 2½ hours,
dispersing said ashed sample in an aquous solution of dioctyl sodium sulfosuccinate,
reducing the total mass of particulate material in said solution by mild centrifugation for about 30 seconds to eliminate the largest particles in said solution,
filtering said solution to collect any asbestos and other fine particles and washing with deionized water to remove soluble materials,
placing said filter and any asbestos and particulate matter collected thereon into a container and ashing same,
subsequent to ashing, dropping 30 drops of a solution containing distilled amyl acetate and 0.001%–002% of cellulose nitrate into the ash residue,
sonicating said ash solution to insure a homogeneous distribution of asbestos,
placing one drop of said ash solution onto an electrode grid of parallel spaced electrodes having a spacing of about 0.8 mm,
applying a voltage to said electrode grid to align said asbestos particles perpendicular to the electrodes of said electrode grid and permitting said solution to dry,
spraying a solution of 2.5% cellulose nitrate in amyl acetate onto said dried particles on said electrode grid,
permitting said latter solution to dry to form a thin plastic film with said particles embedded therein,
stripping said particle embedded plastic film from said electrodes and,
placing said particle embedded plastic film onto a ring type holder and permitting same to dry.

3,963,440
ANALYSIS SYSTEM

Bernard Stein, Andover, and Philip Spergel, Lexington, both of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed June 27, 1974, Ser. No. 483,610
Int. Cl.² G01N *27/00*, *31/00*, *33/16*
U.S. Cl. 23—253 R **15 Claims**

1. An analysis system for measuring a plurality of parameters of a fluid sample comprising a tempering chamber for containing a tempering fluid to maintain a stable temperature environment in the chamber,
first and second measuring systems, each said measuring system including an electrode assembly that has an elongated electrode housing and a sensing electrode disposed in said housing, first and second flow through measuring cells corresponding respectively to said first and second measuring systems and mounted in said tempering chamber, each said measuring cell having an inlet port, an outlet port and a flow through passage between said inlet and outlet ports, the sensing electrode of each measuring system being disposed immediately adjacent its corresponding measuring cell, said measuring cells being located centrally within said tempering chamber and said elongated electrode housings extending into said tempering chamber with the axes of said elongated electrode housings disposed generally perpendicular to one another,



system inlet structure including an entrance port, conduit connecting said entrance port of said system inlet structure to the inlet ports of both of said measuring cells,
positive displacement pump structure,
conduit connecting the outlet ports of both of said measuring cells to said positive displacement pump structure, and
flush fluid supply, said system inlet structure being movable between a first position where its said entrance port is exposed to receive a fluid sample to be analyzed and a second position where its said entrance port is immersed in flush fluid in said flush fluid supply, operation of said pump with said system inlet structure in said first position adapted to flow a sample through both of said measuring cells and operation of said pump with said system inlet structure in said second position flowing flush fluid through both of said measuring cells.

3,963,441
ARTICLE WITH A LYOPHILIZED IMMUNOREACTIVE SELF-ADHERING COATING

Rolf Dietrich, Neu-Aesch, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

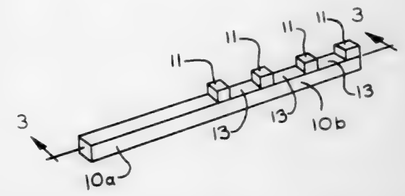
Filed Nov. 18, 1974, Ser. No. 524,430
Claims priority, application Switzerland, Dec. 10, 1973, 17272/73
Int. Cl.² G01N *33/16*
U.S. Cl. 23—253 R **15 Claims**

1. An article useful for immunological determinations which article comprises a carrier material having at least part of one surface thereof physically coated with an immunological reactive material which is provided in stable and self-adhering form in the absence of a bonding reagent by applying a suspension of said immunological reactive material to said carrier material, drying and then lyophilizing.

3,963,442
COLORIMETRIC INDICATOR COMPOSITIONS AND METHOD OF MANUFACTURE

Wade A. Bullard, Sturgis, Mich., and Donald B. Stahlman, Indianapolis, Ind.

Filed Dec. 4, 1974, Ser. No. 529,343
Int. Cl.² G01N *31/22*
U.S. Cl. 23—253 TP **29 Claims**

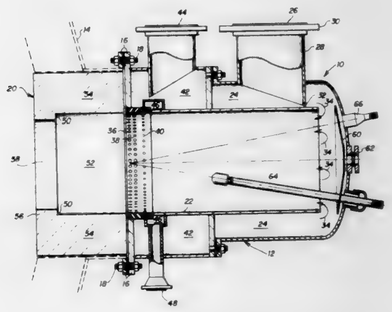


1. The article of manufacture useful as a colorimetric indicator which comprises:
a. a first reagent composition which is reactive with a second reagent composition contained in a liquid carrier to produce an identifiable color; and
b. a solid body of a water soluble thermoplastic resin which is also soluble in the liquid carrier for the second reagent composition at ambient temperatures admixed with the first reagent composition in an amount sufficient for at least a qualitative colorimetric detection of the second reagent composition in the liquid carrier which is applied to an exposed surface of the resin and dissolves the resin at the surface without permeating the body of the resin.

3,963,443
ACID GAS BURNER AND SULFUR RECOVERY SYSTEM

Desmond H. Bond; George W. Taggart, both of Dallas, and Kurt Scott Jaeger, Hurst, all of Tex., assignors to Ford, Bacon & Davis Texas Incorporated, Garland, Tex.

Filed Sept. 23, 1974, Ser. No. 508,671
Int. Cl.² C01B *17/04*; **F23C** *5/28*; **F23D** *15/02*
U.S. Cl. 23—262 **49 Claims**

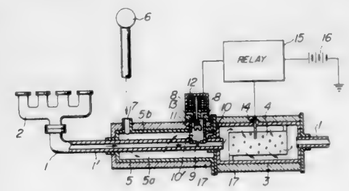


1. In a system for converting hydrogen sulfide into sulfur which includes an acid gas burner furnace combination for converting about one-third of the hydrogen sulfide in said gas stream to sulfur dioxide; means for cooling the products of combustion from said acid gas burner furnace combination and removing liquid sulfur therefrom; catalytic reactor means for converting the resulting mixture of sulfur dioxide and hydrogen sulfide to sulfur; and means for cooling the product from the catalytic reactor means and removing liquid sulfur therefrom, the improvement wherein said acid gas burner comprises:
a. an elongated gas flow chamber having a first end which carries an air inlet thereto and a second end which carries an outlet therefor;
b. a thermal reaction chamber communicating with said outlet of said second end of said elongated gas flow chamber and in axial alignment with said elongated gas flow chamber;
c. an air injection means for injecting air into said elongated gas flow chamber through said air inlet thereof toward said outlet thereof and uniformly about the inner periphery of said elongated gas flow chamber to thereby provide an axial air flow with a substantially parabolic velocity front from said air inlet through said elongated gas flow chamber to said outlet thereof; and
d. a gas nozzle means positioned adjacent said second end and around said elongated gas flow chamber, and directed into said elongated gas flow chamber and toward said thermal reaction chamber for injecting acid gas in a converging direction within said axial air flow to thereby impinge within said thermal reaction chamber.

3,963,444
SECONDARY AIR SUPPLY MEANS OF EXHAUST GAS CLEANING DEVICES

Mitsumasa Yamada, Shizuoka, and Youji Kitamura, Kariya, both of Japan, assignors to Nippondenso Co., Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Division of Ser. No. 425,731, Dec. 18, 1973, which is a division of Ser. No. 191,880, Oct. 22, 1971, abandoned. This application June 13, 1975, Ser. No. 586,649
Claims priority, application Japan, Dec. 26, 1970, 46-140313[U]
Int. Cl.² F01N *3/14*
U.S. Cl. 23—277 C **3 Claims**



1. A secondary air supply control system for use with an exhaust gas cleaning device for an internal combustion engine, said exhaust gas cleaning device having a reaction chamber provided in an exhaust conduit of said engine between the engine and the terminal of said conduit end, said system comprising a portion of said exhaust conduit upstream of said reaction chamber being a double wall structure having an inner wall defining an exhaust gas passage from said engine to said reaction chamber and an outer wall spaced radially outwardly from said inner wall defining an outer chamber between said inner wall and said outer wall,
a first opening in said outer wall adjacent an upstream end thereof,
an air supply pump communicated to said first opening for introducing a secondary air through said first opening into said outer chamber causing said secondary air to be brought into heat-exchange contact with said inner wall,
a second opening in said outer wall adjacent a downstream end thereof for communicating said outer chamber with the surrounding atmosphere,
a third opening in said exhaust conduit for communicating said outer chamber with said exhaust gas passage, said third opening being substantially radially aligned with said second opening,
a valve means including a valve member positioned between and movable radially between said inner and outer walls

between a first position, in which said second opening is closed and said third opening is opened, and a second position, in which said second opening is opened and said third opening is closed,

means disposed in said reaction chamber for detecting the temperature therein, said air supply means being operative independently of said temperature detecting means,

means operable in response to a signal from said temperature detecting means to cause said valve member to be moved from one of said first and second positions to the other of said positions, the arrangement being such that, when the temperature in said reaction chamber is below a predetermined temperature, said valve member is moved said first position supplying secondary air which has been heated in said outer chamber by contacting said exhaust gas passage when heated during operation and, when the temperature in said reaction chamber is higher than said predetermined temperature, said valve member is moved to said second position, the supply of the secondary air from said outer chamber into said exhaust gas passage and then into said reaction chamber and the release of the secondary air from said outer chamber to the atmosphere being automatically controlled.

3,963,445

EXHAUST EMISSION CONTROL DEVICE OF THE CATALYST TYPE

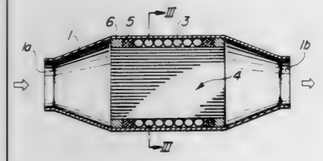
Toshihiko Koyama; Masahiro Nanri, both of Kariya; Kazuma Matsui, Toyota, and Shigeo Hoshino, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Aug. 3, 1973, Ser. No. 385,339

Claims priority, application Japan, Aug. 22, 1972, 47-83941

Int. Cl.² F01N *3/15;* **B01J** *8/00*

U.S. Cl. 23—288 FC **2 Claims**



1. An exhaust emission control device of the catalyst type for internal combustion engines mounted on motor vehicles comprising,

a container having an exhaust inlet and outlet port,

a catalyst element of honeycomb carrier having a catalyst component thereon and a plurality of axially disposed exhaust passages therein and extending between one end and an opposite end of said carrier, said catalyst element being disposed in said container for purifying exhaust gases flowing through said container,

a metallic woven fabric disposed in an annular space between said container and said catalyst element and extending longitudinally between said ends of said carrier, the longitudinal ends of said fabric being short of the ends of said carrier, for absorbing the forces of impact or vibration exerted on said container, and

exhaust leak preventing means made of a fibrous flexible ceramic material and mounted between said container and catalyst element at the opposite ends of said metallic woven fabric for sealing said annular space, each said leak preventing means extending into said annular space and being longitudinally spaced from said preventing means at the other end by said metallic woven fabric for preventing leak of the exhaust gases which might otherwise flow through a gap between said container and catalyst element.

3,963,446

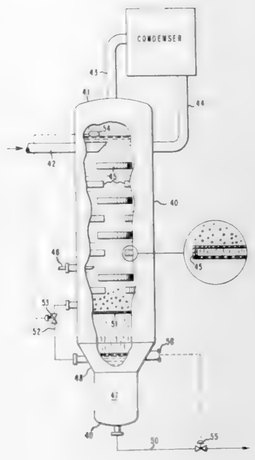
APPARATUS FOR CONDUCTING A CONTINUOUS CHEMICAL REACTION WITH INTERNAL RECYCLE

Donald Nelson Miller, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 442,908, Feb. 15, 1974. This application Jan. 14, 1975, Ser. No. 540,845

Int. Cl.² B01J *8/00;* **B01D** *3/42*

U.S. Cl. 23—288 A **3 Claims**



1. Apparatus for conducting a continuous, catalyzed, reversible chemical reaction in the liquid state under pressure while maintaining internal recycle of the more volatile liquid present comprising:

1. a closed reaction vessel with an upper reaction zone and a lower reboiler zone, said reaction zone having an entrance port for reactants and catalyst, and said reboiler zone having an exit port for reaction product;
2. a perforated barrier plate mounted in the reaction vessel to separate said reaction zone from said reboiler zone;
3. liquid level sensing means mounted in said reaction zone to detect the level of liquid reactants therein;
4. a conduit by-passing the perforated barrier plate to transport liquid from said reaction zone to said reboiler zone;
5. control means mounted in said by-pass conduit responsive to said reaction zone liquid level sensing means to maintain the reaction zone substantially filled with reactants in the liquid state;
6. liquid level sensing means mounted in the reboiler zone to detect the level of liquid therein;
7. a conduit connected to said exit port to remove liquid product from the reboiler zone, said conduit having mounted therein control means responsive to said reboiler liquid level sensing means, maintaining liquid in the reboiler zone at a predetermined level;
8. heating means to maintain liquid in said reboiler zone at a higher temperature than in said reaction zone; and
9. means to inject a catalyst sequestering agent into a lower region of said reaction zone.

3,963,447

CATALYTIC REACTOR FOR EXHAUST GASES

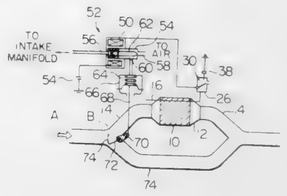
Yoshimasa Hayashi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Japan

Continuation-in-part of Ser. No. 219,402, Jan. 20, 1972, abandoned. This application Feb. 22, 1974, Ser. No. 444,792

Claims priority, application Japan, July 20, 1971, 46-64081

Int. Cl.² F01N *3/15;* **B01J** *8/02*

U.S. Cl. 23—288 FA **5 Claims**



1. A catalytic reactor system for a vehicle, connected in use to an internal combustion engine, said catalytic reactor system comprising means defining an exhaust flow path for the exhaust gases of an internal combustion engine comprising a main flow path and a by-pass flow path, a catalyzer bed in said main flow path, selecting valve means for selecting between said main flow path and said by-pass flow path as the exhaust flow path for said exhaust gases, means defining a secondary flow path through said catalyzer bed and separate from said exhaust flow path for a flow of air to effect heating of the air flow through said secondary flow path by said catalyzer bed to render the temperature of said air flow proportional to the temperature of said catalyzer bed but substantially less than said temperature of said catalyzer bed, temperature sensing means to sense the temperature of said flow of air in said secondary flow path, control means responsive to said temperature sensing means for actuating said selecting valve means to select said main flow path when said temperature sensed is below a predetermined value and to select said by-pass flow path when said temperature sensed is above a predetermined value.

3,963,448

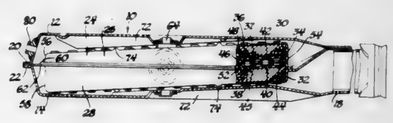
TWO-BED CATALYTIC CONVERTER

Frederick J. Hartley, Waterford, Wis., and Michael R. Foster, Columbiaville, Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 310,717, Nov. 30, 1972, abandoned. This application Nov. 21, 1974, Ser. No. 525,772

Int. Cl.² F01N *3/15*

U.S. Cl. 23—288 FB **4 Claims**



1. A two-bed catalytic converter for automobile use comprising in combination: a top housing plate, a bottom housing plate, and a catalyst retaining means also having top and bottom plates therebetween, said top and bottom housing plates and at least one of said catalyst retaining plates having mating peripheral faces over substantially their entire peripheries to form a layered assembly suitable for sealing substantially along the entire length of the mating peripheries, a partition member within said catalyst retaining means that divides the catalyst retaining means into an upper and lower catalyst bed, said partition comprising upper and lower plates having an air distribution member therebetween, said upper and lower plates and air distribution member each having a plurality of evenly distributed openings through which exhaust gases flow from the upper to the lower catalyst bed, said air distribution member being formed by two overlying plate members with outwardly drawn portions defining a plurality of air nozzle means each having an air outlet adjacent the openings through said air distribution member and with the said nozzle means being connected to similarly formed continuous air passage means between said overlying plates, inlet air passage means including an inlet air nozzle interconnected with said continuous air passage means formed between said overlying plates to supply air from an outside source through said air passage means to said nozzle means, said air outlets of said nozzle means being adjacent each of said openings through said overlying plates of the air distribution member to discharge the air directly into the flow of exhaust gases through the openings in the overlying plates.

3,963,449

SINTERED METALLIC COMPOSITE MATERIAL

Shigeru Seki; Taketoshi Kato; Toshikuni Itou, and Hiroo Sasaki, all of Nagoya, Japan, assignors to Ishizuka Garasu Kabushiki Kaisha, Japan

Filed Apr. 29, 1974, Ser. No. 464,931

Claims priority, application Japan, May 4, 1973, 48-50001

Int. Cl.² B22F *3/00, 1/04;* **C22C** *33/02*

U.S. Cl. 29—182.5 **10 Claims**

1. A sintered metallic composite material which comprises a mixture of

a. sintered particles of a substrate metal selected from the group consisting of copper, iron, aluminum, silver and alloys of these metals, and

b. at least about 1 percent by weight, based on the weight of the composite material, of particles of a glass-ceramic having metallic ions dispersed therein, some of said metallic ions having been caused to migrate through said glass-ceramic and diffuse towards and to the surface in a reducing atmosphere thereby forming the elemental metal corresponding to said metallic ions at the surface of said particles as an integral part thereof, said metallic ions being selected from copper, silver and mixtures thereof, wherein said particles of glass-ceramic (b) are uniformly dispersed in the composite material and firmly retained therein through bonds between the substrate metal (a) and said elemental metal.

6. The sintered metallic composite material of claim 1 wherein said glass-ceramic is selected from the group consisting of silica-alumina-lithia, silica-alumina-lithia-magnesia, silica-alumina-zinc oxide, silica-alumina-magnesia, silica-alumina calcium oxide and silica-lithia.

3,963,450

REINFORCED CAST PRODUCT AND METHOD OF MAKING

Barry J. Davies, Burlington, Canada, assignor to Canron Limited, Montreal, Canada

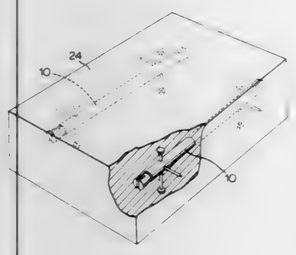
Filed July 24, 1974, Ser. No. 491,460

Int. Cl.² B22D *19/02*

U.S. Cl. 29—191.4 **7 Claims**

1. A reinforced casting comprising a body of cast ferrous metal having enclosed therein at least one composite reinforcing member comprising a tubular metal sheath completely surrounding the central portion of a reinforcing rod slidably

mounted within said sheath, opposite ends of said reinforcing rod projecting outwardly from opposite ends of the tubular



metal sheath and being secured against movement with respect to said casting.

3,963,451

METHOD OF FORMING A HIGH-TEMPERATURE ABRASION-RESISTANT COATING ON A FERROUS METAL SUBSTRATE, AND RESULTING ARTICLE

Robert H. Kachik, Apollo, and Arthur J. Pignocco, Murrysville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 15, 1973, Ser. No. 332,987
Int. Cl.² B32B *15/18*
U.S. Cl. 29—196.1 **5 Claims**

1. An abrasion resistant metal composite comprising a ferrous metal substrate and a hard facing ferrous metal layer thereover having a thickness greater than 0.1 inch metallurgically bonded to said substrate by an aluminothermic reduction reaction, said hard facing layer consisting essentially of iron and from 4 to 7 percent boron to yield a ferrous matrix containing from 45 to 80 volume percent Fe_2B.

3,963,452

CONNECTOR PLATE STOCK

John Calvin Jurelt, Coral Gables, and Gerald E. Robey, Miami, both of Fla., assignors to Automated Building Components, Inc., Miami, Fla.

Filed Oct. 4, 1974, Ser. No. 512,314
Int. Cl.² F16B *15/08*
U.S. Cl. 29—193.5 **9 Claims**

1. Connector stock plate comprising a sheet metal plate having a plurality of teeth formed therefrom to project to one side of said plate and leaving a plurality of elongated openings in said plate, said teeth being provided in a plurality of transversely spaced, longitudinally extending rows of slots, with said teeth and said slots being distributed over substantially the entire surface of said plate, said stock plate having a plurality of transversely spaced score lines extending in longitudinal, generally parallel directions, parallel to and between selected adjacent longitudinally extending rows of teeth and between slots left in the plate by said teeth, said stock plate also having a plurality of longitudinally spaced score lines extending in transverse generally parallel directions, and in a direction generally normal to the slots left in the plate by said teeth and intersecting at least some of said slots, whereby at least four discreet connector plates are defined in said stock plate, said score lines each defining weakened portions along the stock plate whereby the said discreet connector plates are separable one from the other and from the stock plate.

3,963,453

BRAZING MATERIALS

Ogle R. Singleton, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 10, 1974, Ser. No. 531,393
Int. Cl.² B32B *15/20*
U.S. Cl. 29—197.5 **6 Claims**

1. An article which comprises an aluminum alloy core and an outer cladding layer, the outer cladding layer being bonded to one side of the aluminum alloy core and being made of an alloy consisting essentially of 7 to 14% silicon, 0.2 to 2% magnesium, 0.05 to 0.3% tin, less than 0.6% iron, 0.3% manganese and 0.15% incidental impurities, and a balance of aluminum.

3,963,454

BRAZING MATERIALS

Ogle R. Singleton, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 10, 1974, Ser. No. 531,391
Int. Cl.² B32B *15/20*
U.S. Cl. 29—197.5 **6 Claims**

1. An article which comprises an aluminum alloy core and an outer cladding layer, the outer cladding layer being bonded to one side of the aluminum alloy core and being made of an alloy consisting essentially of 7 to 14% silicon, 0.2 to 2% magnesium, 0.05 to 3% lead, less than 0.6% iron, 0.3% manganese and 0.15% incidental impurities, and a balance of aluminum.

3,963,455

ELECTRODEPOSITED GOLD PLATING

Fred I. Nobel, and Barnet D. Ostrow, both of Roslyn, N.Y., assignors to Lea-Ronal, Inc., Freeport, N.Y.

Continuation of Ser. No. 323,287, Jan. 12, 1973, abandoned. This application Feb. 26, 1975, Ser. No. 553,145
Int. Cl.² B32B *15/00*
U.S. Cl. 29—198 **2 Claims**

1. A base metal or base-metal alloy having a tungsten alloyed barrier coating electrodeposited thereon and an electrodeposited gold or gold alloy plating on said barrier coating, wherein the metal alloyed with tungsten is cobalt or nickel and is alloyed therewith in an amount that will affect the electrodeposition of the tungsten in alloyed form on the base metal and containing a sufficient amount of tungsten to significantly inhibit diffusion of the base metal or base-metal alloy into the gold layer electrodeposited thereon at a thickenss of less than about 50 microinches.

3,963,456

AUTOMATIC ASSEMBLY APPARATUS FOR INSERTING ELECTRONIC CONNECTING PINS TO AND/OR FOR MOUNTING ELECTRONIC PARTS ON PRINTED CIRCUIT BOARDS

Noriyuki Tsuchiya, Tokyo; Motohiro Murano, Yokosuka, and Selichiro Murata, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

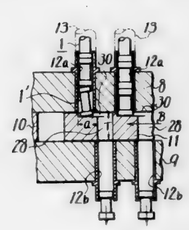
Filed Oct. 9, 1974, Ser. No. 513,519
Claims priority, application Japan, Oct. 15, 1973, 48-115467
Int. Cl.² H05K *3/30*
U.S. Cl. 29—203 B **4 Claims**

1. An automatic assembly apparatus adapted for mounting leadless electronic parts on a printed circuit board, comprising:

a. first and second spaced apart fixed members, said first member having an aperture for receiving electronic parts, said second member having an aperture displaced from a central axis of said first fixed member aperture;

b. a reciprocating movable member slidably disposed between said first and second spaced apart fixed members, said movable member having an aperture for receiving the parts from said first member aperture when aligned with said movable member aperture, said movable member aperture having a recess extending therefrom and adjacent said first fixed member, said recess having a length at least equal to a displacement between the first and second fixed member apertures along which said movable member communicates, said movable member aperture having a depth larger than the maximum length of said parts while the reduced depth of said aperture at said recess is smaller than the minimum length of said parts;

c. one end of a flexible part feeding pipe being connected to said second fixed member aperture on the opposite side from said movable member;



d. a pipe fixing plate having a part receiving aperture, one end of said aperture connecting with the other end of said flexible feeding pipe; and

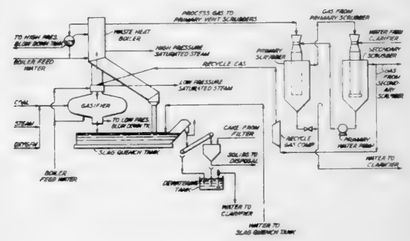
e. mounting means disposed below said pipe fixing plate for mounting said parts on a circuit board aligned with said mounting means, said mounting means comprising a mask plate having a rectangular aperture aligned with said pipe fixing plate aperture and having a length and height at least equal to the length and height of the parts, and a slidable plate disposed under said mask plate for receiving and dispensing said part on the printed circuit board by moving between said mask plate and printed circuit board.

3,963,457

COAL GASIFICATION PROCESS

Martin Hess, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Nov. 8, 1974, Ser. No. 522,257
Int. Cl.² C10J *3/16*
U.S. Cl. 48—202 **4 Claims**



1. A coal gasification process known as the Koppers-Totzek process wherein pulverized coal, oxygen and steam are introduced through opposed burner heads into a gasifier and react therein to produce slag and a product gas that is thereafter scrubbed, wherein the improvement comprises:

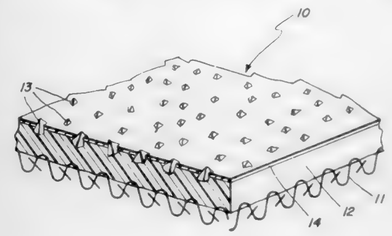
a. recycling scrubbed product gas to mix with and cool said product gas prior to scrubbing.

3,963,458

COATED ABRASIVE MATERIAL

Matthew T. Gladstone, Scotia, and Stanley J. Supkis, Averill Park, both of N.Y., assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 131,027, April 5, 1971, abandoned. This application Sept. 20, 1973, Ser. No. 399,106
Int. Cl.² C09K *3/14*
U.S. Cl. 51—295 **16 Claims**



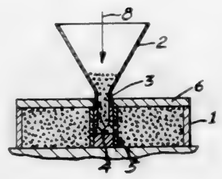
1. In coated abrasive material comprising a flexible backing member, an adhesive bond on the front surface of said backing member, and abrasive grains firmly affixed by the adhesive bond to the backing member, a multiplicity of said abrasive grains extending outwardly from the adhesive bond, the improvement comprising a supersize coating over the adhesive bond which adhesive bond comprises a maker adhesive and a size adhesive, the size adhesive at least comprising a first heat hardened resinous composition, and said supersize coating over said heat hardened coating comprising a dried, fused, elastomeric material selected from the group consisting of polymers of a monomer which when polymerized results in substantial residual unsaturation and copolymers of such aforementioned monomer with at least one monomer copolymerizable therewith, said elastomeric material being active in increasing the cutting ability of the coated abrasive material, and said coating including a sufficient amount of antioxidant therein, at least 4% by weight, said antioxidant selected from the group consisting of napthylamines, alkylated phenols, polyalkyl polyphenols, hydroquinones, and mixtures thereof whereby said elastomeric material is stabilized against decomposition by heat generated while the coated abrasive material is being used, said supersize coat including a solid particulate metal fluoride grinding aid in an amount not more than 60% of the total supersize coating weight.

3,963,459

BLOW MOLDING PROCESS FOR MANUFACTURING GRINDING WHEELS

Daniel Robert Vinard, Enghien-les-Bains, France, assignor to Norton Company, Worchester, Mass.

Filed Oct. 3, 1973, Ser. No. 403,081
Claims priority, application France, Oct. 4, 1972, 72.35126
Int. Cl.² C09K *3/14*; **C04B** *31/16*
U.S. Cl. 51—298 A **3 Claims**



1. A method for manufacturing grinding wheels characterized in that a granulated mixture containing at least abrasive grains and bond grains within a hopper is introduced into a cavity of a closed mold by blowing with a compressed gas, said

mixture having a relatively uniform distribution of grain sizes proportioned within a formula where D is the mean diameter of the grains in the mixture, at least 90% of the grains have a diameter between 0.5 D and 2D, 2% at most have a diameter less than 0.1 D and the remainder a diameter falling in a range between 0.1 D and 0.5 D whereby a homogeneous mass is obtained when said mixture is poured into the hopper and is blown into the cavity of the mold, then compressing and reducing the volume of said mixture in the cavity of the mold to form a grinding wheel of the desired size, and heating the grinding wheel sufficiently to cure the bond.

3,963,460

METHOD AND APPARATUS FOR TREATING WASTE GASES CONTAINING RADIOACTIVE IMPURITIES, PARTICULARLY KRYPTON AND XENON NUCLIDES

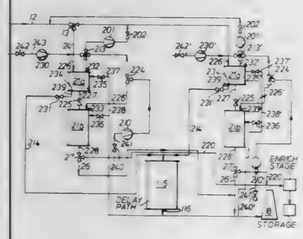
Willy Stumpf, Oberstedten; Horst Queiser, Hochstadt; Harald Jüntgen, Essen; Hans-Jürgen Schröter, Essen, and Karl Knoblauch, Essen, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main and Bergwerksverband GmbH, Essen-Kray, both of, Germany

Filed Apr. 4, 1976, Ser. No. 458,033

Claims priority, application Germany, Apr. 4, 1973, 2316831

Int. Cl.² B01D *53/04*

U.S. Cl. 55—66 **20 Claims**



1. A method of treating waste gases containing radioactive contamination by adsorption in an activated carbon delay path whose output gas stream is discharged to the atmosphere, comprising the steps of: initially passing the waste gas steam to be decontaminated through an adsorptive enrichment system until the first active component of the waste gas breaks through in unpermissible concentration at the outlet of the enrichment system, the gas fraction having been discharged from the enrichment system up to this point being substantially free from the radioactive impurities and constituting the poor gas fraction ; discharging the poor gas fraction at least in part into the atmosphere; after the breakthrough, regenerating the enrichment system by rinsing same with an inactive rinsing gas to desorb the active components, the then discharged desorption gas fraction constituting a rich gas fraction; and conducting only said rich gas fraction obtained by rinsing said enrichment system through the activated carbon delay path.

3,963,461

HUMIDITY CONTROL SYSTEM WITH APPARATUS FOR REMOVING COMBUSTIBLE DUST PARTICLES

William F. Stockford, and Joseph M. Gamewell, both of Salisbury, N.C., assignors to Gamewell Mechanical, Inc., Salisbury, N.C.

Filed Sept. 18, 1974, Ser. No. 506,935

Int. Cl.² B01D *47/00*

U.S. Cl. 55—20 **9 Claims**

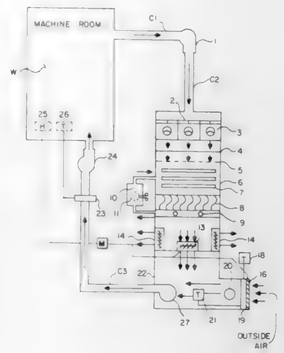
6. Method for maintaining the humidity of air within an enclosed, heat-imparting work area while removing combustible dust particles from contaminated return air removed therefrom comprising the steps of:

a. collecting said contaminated air from said work area and moving it through a conduit to a return air treating apparatus;

b. spraying a fine water mist into all of the dust contaminated return air to simultaneously saturate the air with moisture and to coalesce the combustible dust particles with water droplets;

c. separating said water droplets from the saturated air;

d. mixing a prescribed, regulated portion of the resulting purified, water saturated air with a prescribed, regulated quantity of outside air;



e. conveying the air mixture obtained in step (d) to said work area where said air mixture undergoes a predetermined temperature rise to reduce the relative humidity to a desired level;

f. the relative amount of return air and outside air used in said mixing step being automatically determined responsive to the existing relative humidity of said work area to thereby achieve a desired relative humidity when the mixture is heated in said work area.

3,963,462

METHOD OF PURIFYING A NEON-HELIUM MIXTURE

Georgy Anatolievich Golovko, Pushkin, 8, bulvar A. Tolstogo, 16, kv. 29, and Jury Yakovlevich Ignatov, ulitsa Kolomenskaya, 33/40, kv. 59, both of Leningrad, U.S.S.R.

Filed Feb. 5, 1975, Ser. No. 547,254

Claims priority, application U.S.S.R., Apr. 26, 1974, 2015807

Int. Cl.² B01D *53/02*

U.S. Cl. 55—25 **12 Claims**

1. A method of purifying a neon-helium mixture containing 2 to 7 vol.% of neon, 1 to 3 vol.% of helium, 0.5 to 1 vol.% of hydrogen, 88.5 to 96.5 vol.% of nitrogen, traces of oxygen and traces of hydrocarbons with 1 to 5 carbon atoms by freeing said mixture from the nitrogen, oxygen, hydrogen and said hydrocarbons, which comprises removing the nitrogen from said neon-helium mixture by dephlegmation at a temperature of from 67° to 77° K. and a pressure of 4 to 7 kgf/sq.cm.; obtaining a mixture containing 68 to 74 vol.% of neon, 22 to 74 vol.% of helium, 1.5 to 2 vol.% of hydrogen, 1 to 8 vol.% of nitrogen traces of oxygen and traces of said hydrocarbons; passing said mixture at a pressure of from 4to 7 kgf/sq.cm. through microporous adsorbents having micropores of size from 3 to 9 A, adsorbing the remaining nitrogen, oxygen, hydrogen and said hydrocarbons; desorbing the nitrogen, oxygen, hydrogen and hydrocarbons by a stepwise reduction of the pressure of said mixture from 4 to 7 kgf/sq.cm. down to 10^{-1} to 10^{-2} mm Hg, the adsorption and desorption steps being effected with the microporous adsorbents being thermostated with the aid of a cooling agent, viz. liquid nitrogen.

3,963,463

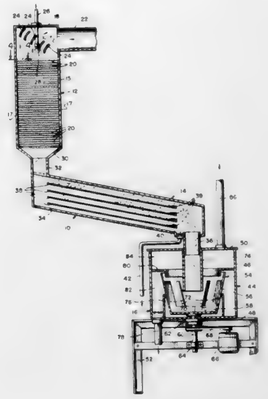
FOAM SCRUBBER

Glen P. Huppke, Land O Lakes, Fla., assignor to Environeering, Inc., Skokie, Ill.

Continuation-in-part of Ser. No. 190,893, Oct. 20, 1971, abandoned. This application Apr. 17, 1972, Ser. No. 244,890

Int. Cl.² B01D *53/14*

U.S. Cl. 55—178 **9 Claims**



1. Apparatus for removing contaminants from a flowing gas stream comprising foam generator means for entrapping small discrete volumes of said gas within liquid film enclosures forming a mass of foam bubbles, said foam generator means including perforated means for supporting a film of liquid foaming material and forming said film into discrete bubbles filled with said gas moving through the perforations therein, said perforated means comprising a perforated member having formed pleats therein arranged with surfaces angularly intersecting said moving gas flow; sizing means for successively reforming said bubbles into smaller bubbles for maintaining a stable mass of small bubbles; soak chamber means for containing said mass of foam bubbles for movement away from said sizing means during a substantial soaking period ofor diffusion and collection of contaminants from said gas into said liquid film of the bubble walls; and foam breaker means receiving bubbles from said mass in soak chamber means for collapsing said foam bubbles to separate cleansed gas and contaminated liquid of said bubble walls.

3,963,464

GAS WASHER AND LIQUID TREATMENT SYSTEM

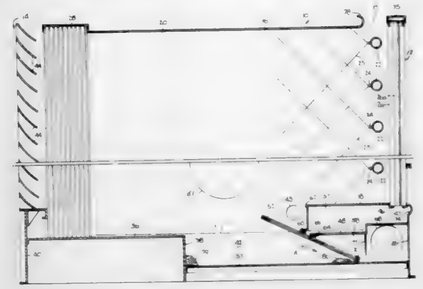
Edward N. Schinner, Silver Spring, Md., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 6, 1974, Ser. No. 448,760

Int. Cl.² B01D *47/06*

U.S. Cl. 55—228 **11 Claims**

1. An evaporative heat exchange apparatus comprising means for mixing atmospheric air and a liquid for evaporative transfer of heat from one to the other, liquid-air separator means downstream of said mixing means for separating the air from the liquid, sump means comprising horizontal bottom wall and upstanding side and end walls, said sump means being positioned to receive the liquid from said liquid-air separator means near one of said end walls and said sump means being formed to direct a substantially horizontal flow of said liquid in a given direction toward the other end wall, a liquid outlet near said other end wall of said sump means, strainer means for removing particulate matter from said flow path and depositing said matter on the bottom of said sump means, said strainer means including a strainer extending across the entire flow path within said sump means, said strainer extending up from the bottom wall of said sump means, strainer mounting means for securing the lower edge of said strainer on said bottom wall and for securing the upper edge of said strainer in the sump such that the strainer is slanted with respect to the horizontal so that its upper edge is positioned upstream of its lower edge in the horizontal flow of liquid through said strainer with the upper edge of said strainer extending at least



up to the upper level of the liquid flowing in said given direction along said flow path so that all of the liquid flowing through the sump must pass through the strainer, and liquid flow control means comprising a liquid flow control plate extending across the sump means between said strainer and said liquid outlet, said liquid flow control plate being configured to maintain an even flow of liquid along the strainer.

3,963,465

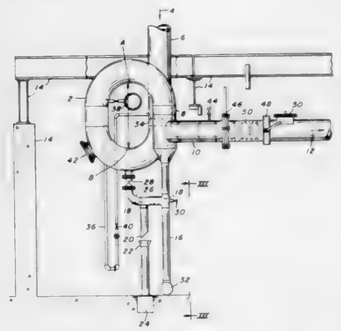
GAS LINE LOOP WATER SEAL

Norman J. Kirby, Worth Township, Cook County, Ill., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 7, 1975, Ser. No. 556,512

Int. Cl.² B01D *47/06*; **F16K** *9/00*

U.S. Cl. 55—238 **5 Claims**



1. A gas line loop water seal comprising

a gas pipe having a vertically disposed loop which has a vertically disposed gas entrance pipe extending upward from the loop and a vertically disposed gas exit pipe extending downward from the loop,

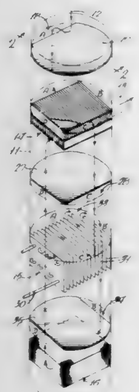
means located on the gas entrance pipe for supplying water to the inside of the pipe loop whereby water may be introduced into the loop to fill the lower part of the loop to a level sufficient to seal the loop against the passage of gas,

a generally horizontal gas outlet pipe connected to the exit pipe and directed away from the loop for directing gas away from the gas line loop,

a generally vertical water discharge line connected to the lower end of the exit pipe and extending downward away from the loop,

a drain line connected to the bottom of the loop and to the water discharge line for draining water from the loop into the water discharge line,
a valve in the drain line for controlling the flow of water from the loop and
means in the water discharge line below the connection to the loop drain line for preventing the flow of gas through the water discharge line.

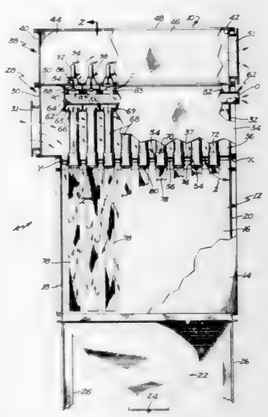
3,963,466
COMPRESSED GAS DRYING APPARATUS
William M. Hynes, 945 S. Spring Ave., La Grange, Ill. 60525
Filed Feb. 18, 1975, Ser. No. 550,624
Int. Cl.² B01D *35/18*
U.S. Cl. 55—269 **4 Claims**



1. A compressed air drying apparatus comprising a cylindrical vessel arranged with its axis substantially vertical; an inlet and an outlet for the vessel; means in the vessel defining a horizontally arranged polygonal heat exchange section having a heat exchanger therein, a horizontally arranged polygonal refrigeration section positioned below the heat exchange section and having a refrigerated heat exchanger including means for introducing a refrigerant thereinto and a polygonal demister section positioned below the refrigeration section and having a demister therein, there being arcuate spaces between the edges of each of said sections and the interior wall of said vessel; baffle means including generally circular plates snugly received within said vessel and associated with each section and having at least one peripheral segment removed to open at least one of said spaces to provide an air flow passage directing air entering the inlet sequentially through the heat exchange section, the refrigeration section, the demister section, and finally again through the heat exchange section to the outlet, said final passage through the heat exchange section being in heat exchange relation to, but out of direct contact with, air making the first passage through the heat exchange section.

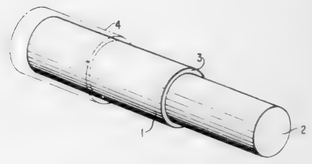
3,963,467
DUST FILTER APPARATUS
David W. Rolschau, 6409 Ryan Ave. South, Minneapolis, Minn. 55435
Continuation of Ser. No. 339,418, March 8, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,248
Int. Cl.² B01D *46/04*
U.S. Cl. 55—284 **1 Claim**

1. A dust filter apparatus comprising:
a. a bag chamber,
b. a head mounted on said bag chamber,
c. said head having a dirty air inlet,
d. an air plenum mounted on said head with a common wall between said head and said air plenum,
e. said air plenum having a clean air discharge opening,
f. a back flow air plenum mounted within said head and extending at one end therefrom,
g. a multiplicity of walled chambers mounted in said head and extending transversely thereof and through which said back flow air plenum extends,
h. a multiplicity of tubular bag supports mounted on and depending from said walled chambers and communicating with said walled chambers and said bag chamber and in alignment with said dirty air inlet,
i. each of said tubular bag supports having a filter bag connected to and depending therefrom into said bag chamber,
j. means mounted on said back flow air plenum and said common wall for selectively communicating the interior of said bag supports with said back flow air plenum or alternatively with said air plenum and the clean air outlet thereof, said selective means including,



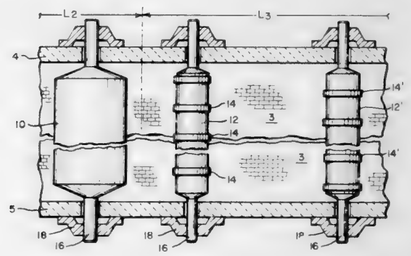
k. first ports formed in said back flow air plenum, and
l. second ports formed in said common wall in alignment with said first ports, and
m. valve means for closing or opening either of said first or second ports,
n. means for causing a low pressure area at said clean air outlet to cause air to flow from said dirty air inlet downwardly upon, through and upwardly within said filter-bags and through said head and said air plenum for exit out said clean air outlet.
o. means for causing a pressurized reverse air flow condition within the bag supports and outwardly through the bags and downwardly with said first mentioned downward airflow,
p. means having apertures through which said bag supports extend, said means being positioned below said dirty air inlet,
q. the area of said apertures being sized so as to create a pressure drop between the head and bag chamber thereby forcing the air to be distributed substantially equally across the head and to flow downwardly through the apertures and into the bag chamber, and
r. a hopper connected to said bag chamber for receiving collected dust.

3,963,468
LIGHT GUIDE FABRICATION
Raymond Edward Jaeger, Basking Ridge; John Burnette MacChesney, Stirling; Douglas Arthur Pinnow, Warren, and LeGrand Gerard Van Uitert, Morris Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 15, 1974, Ser. No. 442,747
Int. Cl.² C03C *25/02, 15/00*
U.S. Cl. 65—3 A **14 Claims**



1. Process for fabricating a light guide which as fabricated comprises a body including a core region and a clad region, the refractive index being graded from a first value within the core region to a lesser value within the clad region in which the variation in refractive index is due to an increasing content of boron oxide, said increasing content corresponding in direction with decreasing refractive index, in which both core region and clad region are constituted of glass comprising heat treating a body consisting essentially of a borosilicate glass composition, said composition having a ratio of SiO_2 concentration to B_2O_3 concentration in the range between 1:1 and 30:1, within the temperature range of from 100°C below the softening point of the said borosilicate glass composition to the softening point of the said borosilicate glass composition so as to result in out-diffusion of boron oxide from the said borosilicate glass thereby producing (1) a core region of lesser boron oxide content than that of the corresponding region of the said borosilicate glass before processing, and (2) a clad region which is of a composition more nearly that of the corresponding region of the said borosilicate glass before processing in which the said body before processing includes 2 borosilicate surfaces and in which out-diffusion is smultaneously from the two surfaces.

3,963,469
GLASS SHEET ANNEALING LEHR
Andre Paul Pierre, Cambronne-les-Ribecourt, France, assignor to Saint-Gobain Industries, France
Filed Nov. 18, 1974, Ser. No. 525,023
Int. Cl.² C03B *18/02, 25/04*
U.S. Cl. 65—194 **7 Claims**



1. In a leer for annealing a continuous sheet or ribbon of float glass, said leer comprising means defining a chamber having an entrance end and an exit end, said chamber being divided into a high temperature portion adjacent the entrance end and a low temperature portion adjacent the exit end, and a plurality of glass supporting rollers in said chamber, the improvement comprising a first plurality of smooth-surfaced glass supporting rollers in said high temperature portion and a second plurality of glass-supporting rollers in said low temperature portion, the rollers of the second plurality having an outside diameter smaller than the rollers of said first plurality and having a surface including metallic-surfaced bearing portions of a common cylindrical surface axially spaced from each other by shallow grooves of a depth sufficient to permit circulation of convection currents between said rollers and glass borne thereon; the outside diameter of said second plurality of rollers being sufficiently smaller than the diameter of said first plurality to permit an increase in the circulation of convection currents about said second plurality of rollers whereby said rollers are more effectively cooled so as to prevent any change in the shape thereof and, in conjunction with said bearing portions, to foster uniformity of temperature around the periphery of the second set of rollers by allowing the heat to penetrate by conductivity from glass supported on said bearing portions into the rollers only in the zones of the bearing portions.

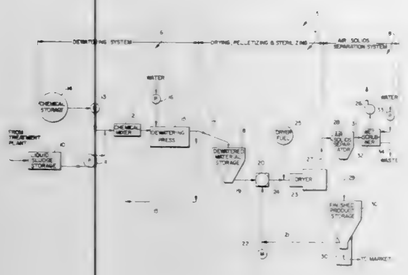
3,963,470
PROCESS FOR TREATING DECOMPOSABLE ORGANIC WASTE MATERIALS
Lester A. Haug, 7725 Anise Ave., Los Angeles, Calif. 90045
Continuation of Ser. No. 327,986, Jan. 30, 1973, abandoned. This application Dec. 27, 1974, Ser. No. 536,854
Int. Cl.² C05F *11/08*
U.S. Cl. 71—9 **5 Claims**

1. A process for the sustained treatment of decomposable wet sewage sludge to produce a partially dry humus-like substance, the steps comprising:
partially drying a first quantity of said wet material, spreading said first quantity of material to form an absorbent pad;
mixing with said first quantity of partially dry material an additional quantity of sewage sludge to produce a mixture having an initial moisture content sufficient to initiate aerobic decomposition;
periodically turning said mixture in ambient uncontrolled atmospheric air to aerate the same by exposure to naturally occurring quantities of ambient air until decomposition substantially ceases and said mixture is partially dry;
successively repeating said steps of adding wet material of the same or similar type and periodically turning the mixture until decomposition ceases; and
from time to time removing from said partially dried mixture a portion of partially dry humus-like substance.

3,963,471
APPARATUS AND PROCESS FOR PRODUCING AN ORGANIC PRODUCT FROM SEWAGE SLUDGE
Quentin L. Hampton, 129 Anchor Drive, Daytona Beach, Fla. 32020
Filed June 19, 1974, Ser. No. 480,745
Int. Cl.² C05F *7/00*
U.S. Cl. 71—12 **5 Claims**

1. A process for producing an organic product from sewage sludge comprising mixing a predetermined quantity of liquid waste sewage sludge with a chemical for coagulating or flocculating the solids contained in the liquid sludge, subjecting the mixture to pressure for extracting a part of the moisture therefrom, draining off the extracted moisture, heat drying and pelletizing the dewatered material to produce pellets, subjecting the dry pelletized material to a suction action for separating dust and fine particles of sludge material from the pellets, discharging the separated pellets by gravity to storage, and mixing the dewatered material with a portion of the previously

produced pellets for drying and preheating the material prior to the heat drying and pelletizing thereof, so as to enable drying temperatures to be low enough to prevent formation of clinkers and the ignition of the organic material.



3,963,472

PROCESS FOR PREVENTING CORROSION BY INCORPORATIVE SOLUBLE METAL CHROMATES IN FERTILIZER SOLUTIONS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed June 27, 1969, Ser. No. 837,295

Int. Cl.² C05B 7/00; C01B 15/16, 25/26; C23C 1/10

U.S. Cl. 71—33 **6 Claims**

1. In the method wherein an aqueous fertilizer solution having a solute concentration from 5 to 60 weight percent and a pH of 4 to about 13 and containing about 10 percent ammonium, expressed as nitrogen and 31 weight percent phosphate, expressed as P_2O_5, with about 50 percent of said phosphate as acyclic polyphosphate and the balance as orthophosphate is prepared, stored and handled and, in such method, contacts a metal which, under quiescent conditions, is passivated against corrosion from said solution by an orthophosphate-containing film, the improved method for preventing corrosion when said contact is under turbulent conditions which erode said film and thereby destroy said passivity that comprises incorporating an inhibitor consisting essentially of a soluble ammonium, alkali metal or alkaline earth metal chromate or dichromate in said solution in an effective amount to inhibit said corrosion.

3,963,473

THIADIAZOLYLIMIDAZOLIDINONE HERBICIDES

John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 441,611, Feb. 11, 1974, Pat. No. 3,932,438, which is a continuation-in-part of Ser. No. 375,203, June 29, 1973, abandoned. This application Feb. 18, 1975, Ser. No. 550,792

The portion of the term of this patent subsequent to Jan. 13, 1993, has been disclaimed.

Int. Cl.² A01N 9/12

U.S. Cl. 71—90 **2 Claims**

1. A herbicidal composition comprising an inert carrier and as an essential active ingredient, in a quantity toxic to weeds, the compound 1-(5-trifluoromethyl-1,3,4-thiadiazol-2-yl)-3-methyl-5-hydroxy-1,3-imidazolidin-2-one.

3,963,474

HERBICIDE MIXTURES OF 3-LOWER ALKYL-2,1,3-BENZOTHIADIAZINONE-(4)-2,2-DIOXIDES OR SALTS THEREOF AND 2-(METHYL, CHLOROPHENOXY)-N-METHOXYACETAMIDES

Adolf Fischer, deceased, late of Mutterstadt, Germany (by Caecilia Emma Fischer, legal representative), assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Division of Ser. No. 432,675, Jan. 11, 1974, abandoned, which is a division of Ser. No. 343,629, March 22, 1973, Pat. No. 3,888,655. This application Feb. 10, 1975, Ser. No. 548,387

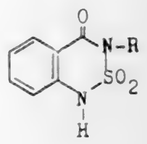
Claims priority, application Germany, Apr. 13, 1972, 2217722

Int. Cl.² A01N 9/12

U.S. Cl. 71—91 **10 Claims**

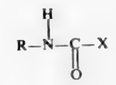
1. A herbicide composition comprising an inert carrier having dispersed therein a herbicidally effective amount of a mixture consisting essentially of

a. a compound of the formula



where R denotes lower alkyl of a maximum of 4 carbon atoms, or an alkali metal, alkaline earth metal, ammonium, lower alkylammonium, lower hyroxyalkylammonium, or hydrazine salt thereof, and

b. a compound of the formula



where R denotes methoxy and X denotes phenoxymethyl bearing chloro and methyl substitutents in the phenyl radical in a weight ratio of *a* : *b* of 3:1 to 1:3.

3,963,475

HERBICIDAL MIXTURES OF 3-LOWER ALKYL-2,1,3-BENZOTHIADIAZINONE-(4)-2,2-DIOXIDES AND 3,5-DIBROMO-4-HYDROXYBENZALDOXIME-0-(NITROPHENYL)ETHERS

Adolf Fischer, deceased, late of Mutterstadt, Germany (by Caecilia Emma Fischer, legal representative), assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Division of Ser. No. 432,676, Jan. 11, 1974, abandoned, which is a division of Ser. No. 343,629, March 22, 1973, Pat. No. 3,888,655. This application Feb. 10, 1975, Ser. No. 548,388

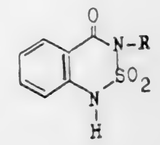
Claims priority, application Germany, Apr. 13, 1972, 2217722

Int. Cl.² A01N 9/12

U.S. Cl. 71—91 **8 Claims**

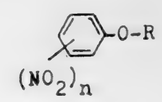
1. A herbicide composition comprising an inert carrier having dispersed therein a herbicidally effective amount of a mixture consisting essentially of

a. a compound of the formula

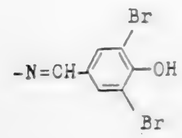


where R denotes lower alkyl of a maximum of 4 carbon atoms, or an alklai metal alkaline earth metal, ammonium, lower alkylammonium, lower hydroxyalkylammonium or hydrazine salt thereof, and

b. a compound of the formula



where *n* denotes one of the integers 1 and 2, and R denotes the radical



in a weight ratio of a:b of 5:1 to 1:5.

3,963,476

3-LOWER ALKYL-2,1,3-BENZOTHIADIAZINONE-(4)-2,2-DIOXIDES OR SALTS THEREOF AND 9-HYDROXYFLUORENECARBOXYLIC ACID-(9) AS HERBICIDAL MIXTURES

Adolf Fischer, deceased, late of Mutterstadt, Germany (by Caecilie Emma Fischer, legal representative), assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation-in-part of Ser. No. 432,686, Jan. 11, 1974, abandoned, which is a division of Ser. No. 343,629, March 22, 1973, Pat. No. 3,888,655. This application Feb. 19, 1975, Ser. No. 548,434

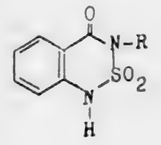
Claims priority, application Germany, Apr. 13, 1972, 2217722

Int. Cl.² A01N 9/12

U.S. Cl. 71—91 **6 Claims**

1. A process for controlling the growth of undesired plants among crop plants which comprises applying to the plants a herbicidally effective amount of a herbicide mixture consisting essentially of

a. a compound of the formula



where R denotes lower alkyl of a maximum of 4 carbon atoms, or an alkali metal, alkaline earth metal, ammonium, lower

hydroxyalkylammonium, lower alkylammonium or hydrazine salt thereof, and

b. 9-hydroxyfluorenecarboxylic acid-(9) in a weight ratio of a:b to 3:1 to 1:3.

3,963,477

HERBICIDAL MIXTURES OF S-HALOBENZYL-N,N-DIALKYLTHIOLCARBAMATES AND 3-LOWER ALKYL-2,1,3-BENZOTHIADIAZINONE-(4)-2,2-DIOXIDES AND SALTS THEREOF

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Division of Ser. No. 343,347, March 21, 1973, abandoned. This application Feb. 19, 1975, Ser. No. 551,129

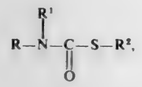
Claims priority, application Germany, Apr. 13, 1972, 2217721

Int. Cl.² A01N 9/12

U.S. Cl. 71—91 **3 Claims**

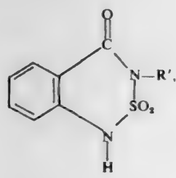
1. A process for controlling the growth of unwanted plants which comprises treating said plants postemergence with a herbicidally effective amount of

a. a compound of the formula



wherein R and R^1 each denote lower alkyl and R^2 denotes benzyl substituted by halogen, and

b. a compound of the formula



wherein R′ denotes lower alkyl of a maximum of four carbon atoms or an alkali metal, alkaline earth metal ammonium, lower alkylammonium, lower hydroxylalkylammonium, or hydrazine salt thereof, the weight ratio of a to b being in the range of 1:3 to 3:1.

3,963,478

HERBICIDE MIXTURES EMPLOYING O,S-DIMETHYLTETRACHLOROTHIOTEREPHTHALATE

Adolf Fischer, deceased, late of Mutterstadt, Germany (by Caecilia Emma Fischer, legal representative), assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation-in-part of Ser. No. 432,686, Jan. 11, 1974, abandoned, which is a division of Ser. No. 343,629, March 22, 1973, Pat. No. 3,888,655. This application Feb. 26, 1975, Ser. No. 553,297

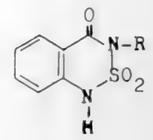
Claims priority, application Germany, Apr. 13, 1972, 2217722

Int. Cl.² A01N 9/12

U.S. Cl. 71—91 **6 Claims**

1. A herbicide composition comprising an inert carrier having dispersed therein a herbicidally effective amount of a mixture consisting essentially of

a. a compound of the formula



where R denotes lower alkyl of a maximum of 4 carbon atoms, or an alkali metal, alkaline earth metal, ammonium, lower alkylammonium, lower hydroxyalkylammonium or hydrazine salt thereof, and

b. O,S-dimethyltetrachlorothioterephthalate, in a weight ratio of a:b, of 5:1 to 1:3.

3,963,479

HERBICIDE MIXTURES OF 3-LOWER ALKYL-2,1,3-BENZOTHIADIAZINONE-(4)-2,2-DIOXIDES OR SALTS THEREOF AND 4-HALOBUTYNYL-N-HALOPHENYL CARBAMATES

Adolf Fischer, deceased, late of Mutterstadt, Germany (by Caecilia Emma Fischer, legal representative), assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Continuation-in-part of Ser. No. 432,685, Jan. 11, 1974, abandoned, which is a division of Ser. No. 343,629, March 22, 1973, Pat. No. 3,888,655. This application Mar. 17, 1975, Ser. No. 559,321

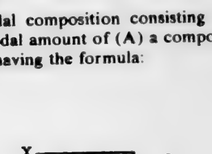
Claims priority, application Germany, Apr. 13, 1972, 2217722

Int. Cl.² A01N 9/12

U.S. Cl. 71—91 **8 Claims**

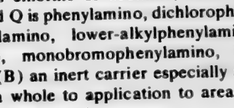
1. A herbicide composition comprising an inert carrier having dispersed therein a herbicidally effective amount of a mixture of herbicides consisting essentially of

a. a compound of the formula



where R denotes lower alkyl of a maximum of 4 carbon atoms, or an alkali metal, alkaline earth metal, ammonium, lower alkylammonium, lower hydroxyalkylammonium, or hydrazine salt thereof, and

b. a compound of the formula



where R denotes chlorophenyl and R^1 denotes 4-chlorobutynyl in a weight ratio of *a:b* of 5:1 to 1:5.

3,963,480

HERBICIDAL PYRROLE-2-CARBOXAMIDES

Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

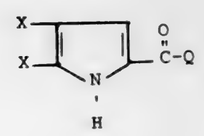
Filed Apr. 11, 1973, Ser. No. 349,973

The portion of the term of this patent subsequent to Feb. 4, 1992, has been disclaimed.

Int. Cl.² A01N 9/22

U.S. Cl. 71—95 **19 Claims**

1. A herbicidal composition consisting essentially of an effective herbicidal amount of (A) a compound as the active ingredient and having the formula:



wherein X is chlorine or bromine, both values of X being identical; and Q is phenylamino, dichlorophenylamino, monochlorophenylamino, lower-alkylphenylamino, monofluorophenylamino, monobromophenylamino, benzylamino, together with (B) an inert carrier especially adapting the composition as a whole to application to areas to be cleared of undesirable plant growth.

3,963,481

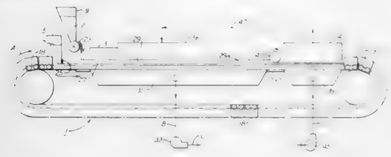
PROCESS FOR COOLING SINTER ON THE STRAND

Robert E. Powers, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Mar. 3, 1975, Ser. No. 555,061

Int. Cl.² C22B 1/24, 1/08

U.S. Cl. 75—5 **6 Claims**



1. A process for preparing a sintered product comprising the steps:

a. continuously depositing on gas-permeable moving sintering conveyor units a hearth layer of screened sinter;

b. continuously depositing on said hearth layer a layer of material to be sintered mixed with a fuel;

c. igniting said fuel;

d. inducing downdraft burning of said fuel in a burning zone whereby said material becomes progressively sintered;

e. removing a portion of the material after it has become sintered;

f. thereafter passing a gas upwardly through the remaining indurating material to cool the same; and

g. conducting said gas after it has passed through the material into said burning zone.

3,963,482

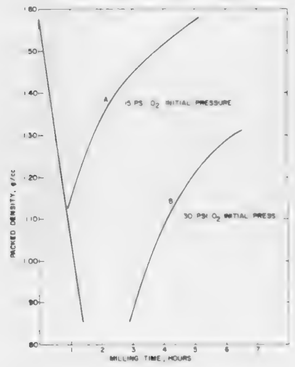
LARGE SIZE ALUMINUM PARTICLE CONTAINING ALUMINUM OXIDE THEREIN

Thomas J. Kondis, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 307,334, Nov. 17, 1972, Pat. No. 3,890,166. This application May 5, 1975, Ser. No. 574,370

Int. Cl.² B22F 9/00

U.S. Cl. 75—0.5 R **3 Claims**



1. A method of producing improved aluminum particulate suitable for powder metallurgy applications comprising:

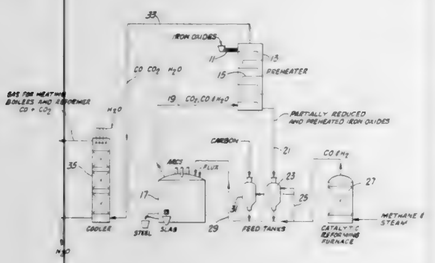
a. milling particulate aluminum in an inert liquid and in the presence of a predetermined amount of oxygen thereby comminuting the aluminum into finer particles while oxidizing the new surfaces of such finer particles; and

b. further milling said oxidized aluminum particles after the supply of oxygen is exhausted to cause the particles to weld together thereby forming an aluminum particle having aluminum oxide dispersed therein.

3,963,483
DIRECT REDUCTION STEELMAKING PROCESS

Walther H. Mathesius, Beaver, and Somerled Macdonald, Sewickley, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 233,446, March 10, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 417,272
Int. Cl.² C21C 5/52; C21B 13/02
U.S. Cl. 75—11 18 Claims



1. A direct reduction process for making steel comprising the steps of:
a. moving iron oxides into a first container at a flow rate per hour between 13,000 and 140,000 pounds;
b. flowing hot gases into said container and into contact with said iron oxides;
c. partially reducing said iron oxides in said first container;
d. moving the partially reduced iron oxides into a second container;
e. flowing carbon monoxide and hydrogen into said second container and into contact with said partially reduced iron oxides;
f. flowing the partially reduced iron oxides and fine particulate carbon having a mesh size less than 10 at a flow rate between 4,000 and 50,000 pounds per hour and the carbon monoxide and hydrogen into a furnace wherein there is a pool of molten metal that is at a temperature between 2750° and 3100° F;
g. bringing the materials entering said furnace into contact with the molten metal whereby the iron oxides are reduced directly to steel;
h. flowing flux material at a rate per hour between 1,000 and 11,000 pounds into the furnace and into contact with the materials in said furnace; and
i. providing heat within said furnace to enhance the reduction of said iron oxides.

3,963,484
DENTAL AMALGAM ALLOYS

Nikhil K. Sarkar, 1415 W. Lunt Ave., Apt. 503, Chicago, Ill. 60626

Filed Aug. 20, 1974, Ser. No. 498,930
Int. Cl.² C22C 5/08
U.S. Cl. 75—173 C 18 Claims

1. An improved dental alloy consisting essentially of a mixture of a first component alloy and a second component alloy suitable for amalgamation with mercury to form an improved dental amalgam,
a. said first component alloy consisting essentially of at least 65% silver, an operable amount of tin up to and including 29% maximum, an operable amount of copper up to and including 6% maximum, and an operable amount of zinc up to and including 2% maximum, by weight of said first component alloy;
b. said second component alloy consisting essentially of a copper-silver alloy containing more than 50.00% copper;
c. said first component alloy comprising about 70 to 90% by weight of said alloy mixture and said second component alloy comprising about 10 to 30% by weight of said alloy mixture.

3,963,485
METHOD OF PRODUCING SINTERED TITANIUM BASE ARTICLES

Edward Louis Thellmann, Walton Hills, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 249,193, May 1, 1972, abandoned. This application July 5, 1973, Ser. No. 376,393
Int. Cl.² B22F 1/02
U.S. Cl. 75—212 15 Claims

1. The method of producing a sintered titanium base article comprising the steps of:
coating particles of an aluminum base pre-alloyed metal with an iron containing compound capable of yielding elemental iron particles;
converting said iron containing compound to elemental iron particles at least some of which coat said pre-alloyed metal particles;
mixing said pre-alloyed metal particles and iron particles with titanium base particles;
compacting the resultant mixture into an article having the desired configuration;
heating said formed article under vacuum conditions to a temperature sufficient to cause the constituent particle thereof to diffuse together;
and cooling said article to produce a solidified, sintered article.

9. A method of producing a sintered titanium base article comprising the steps of:
coating a plurality of carrier metal particles with an iron containing compound which is capable of being converted to finely divided particles of elemental iron;
mixing said coated carrier metal particles with titanium base particles;
compacting the resultant mixture into an article having the desired configuration;
heating said article under vacuum conditions to a temperature sufficient to convert said iron containing compound to elemental iron particles and cause the constituent materials of said article to diffuse together;
and cooling said article to produce a sintered article.

15. A method of producing a sintered titanium base article comprising the steps of:
coating a plurality of metal particles with an iron containing compound which is capable of being converted to finely divided particles of elemental iron;
mixing said coated metal particles with titanium base particles; and
forming the resultant mixture into a compacted article having the desired configuration by the application of suitable pressure at a suitable temperature.

3,963,486
ELECTROPHOTOGRAPHIC IMAGING PROCESS EMPLOYING EPOXY-ESTER CONTAINING LIQUID DEVELOPER

Yasuo Tamai; Hajime Miyatuka, and Satoru Honjo, all of Tokyo, Japan, assignors to Rank Xerox Ltd., London, England

Division of Ser. No. 362,598, May 21, 1973, Pat. No. 3,907,693. This application Mar. 26, 1975, Ser. No. 562,298
Int. Cl.² G03G 13/10
U.S. Cl. 96—1 LY 4 Claims

1. An electrophotographic imaging process comprising charging a photoconductive member, selectively exposing said member to imagewise radiation to which it is sensitive, and developing said member with a liquid developer, said developer consisting essentially of an insulating liquid carrier, a pigment, and a resin mixture, said resin comprising epoxy-ester in a range of from 5 to 70% by weight of the resin and the remainder of the resin mixture is selected from the group consisting of alkyd, resin-modified alkyd, phenol-modified alkyd, styrene-modified alkyd, rosin-modified formaldehyde and polyamide resins.

3,963,487
ELECTROPHOTOGRAPHIC PROCESS USING SEPARATE PHOTOCONDUCTIVE ELEMENTS

Seiji Matsumoto, and Isoji Takahashi, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

Continuation-in-part of Ser. No. 207,810, Dec. 14, 1971, abandoned. This application Mar. 31, 1975, Ser. No. 563,498
Claims priority, application Japan, Dec. 14, 1970, 45-111579
Int. Cl.² G03G 13/04, 13/06, 13/22
U.S. Cl. 96—1 R 6 Claims

1. An electrographic process comprising (1) arranging (*a*) a main photoconductive layer disposed on a conductive base, on the surface of which a charge is uniformly provided, and (*b*) an auxiliary photoconductive layer, disposed on a light transmissive conductive layer, the total percent transmittance of the auxiliary photoconductive layer and the light transmissive conductive layer being 1–80%, on the surface of which auxiliary photoconductive layer is provided uniform charge opposite to that on said main photoconductive layer, to face each other across a small distance of about 0.1 to about 5 mm, (2) simultaneously forming, by image exposure to the same original from the back of said auxiliary photoconductive layer, electrostatic latent images on both said layers where the product of relative sensitivity ratio and amount of exposure ratio of said main photoconductive layer is 2 to 1000 times greater or less than the product of relative sensitivity ratio and amount of exposure ratio of said auxiliary photoconductive layer, and (3) thereafter supplying a developer between said layers while still facing each other for developing the latent image on said main photoconductive layer, the developed image reproducing gradations in tone of the original due to the latent image on said auxiliary photoconductive layer.

3,963,488
CONTRAST OF ELECTROSTATIC LATENT IMAGES WITH A LIGHT FLOODING STEP

Anatoli Brushenko, Elmhurst, Ill., assignor to GAF Corporation, New York, N.Y.

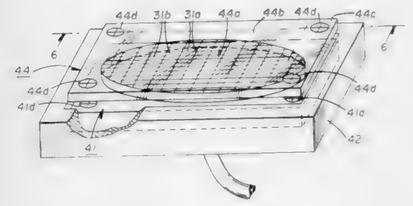
Filed Sept. 3, 1974, Ser. No. 502,627
Int. Cl.² G03G 13/14
U.S. Cl. 96—1 R 11 Claims

1. In a method for the contrast enhancement of an electrostatic latent image on a dielectric surface which comprises: positioning a photoconductive member adjacent said dielectric surface in a manner forming an air gap therebetween, applying an electrical potential between said photoconductive member and said dielectric surface, irradiating selected portions of said photoconductive member while excluding other portions of the photoconductive member from said irradiation, whereby electric charge is caused to form on selected portions of said dielectric surface corresponding to said irradiated photoconductive member portions as a result of charge transfer between said photoconductive member and said dielectric when the voltage drop across said air gap bounded by facing surfaces of said photoconductive member and said dielectric exceeds a predetermined minimum value, said electrical potential being applied as a plurality of discrete pulses of similar polarity, said pulses being of a duration such that said voltage drop across said air gap will exceed said predetermined minimum value in the selected irradiated portions of said photoconductor and will be below said predetermined minimum value in said excluded portions thereof, said pulses of electrical potential being separated by time periods in which said applied electrical potential is essentially zero, said time periods having an average duration of at least the average duration of said applied pulses so that the relative density of electric charge in said selected portions of the dielectric surface is increased by said plurality of pulses over any electric charge density in the non-irradiated portions thereof, the improvement comprising: grounding and uniformly irradiating said photoconductive member during each said time period of essentially zero applied potential which separate said pulses, whereby the intensity and contrast of the electrostatic latent image thus formed is increased, said uniform irradiation being of greater intensity than said irradiation of the selected portions.

3,963,489
METHOD OF PRECISELY ALIGNING PATTERN-DEFINING MASKS

Kon Ho Cho, West Windsor, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 30, 1975, Ser. No. 573,506
Int. Cl.² H01L 21/312
U.S. Cl. 96—27 R 6 Claims



4. A method of producing precisely aligned patterns on opposite sides of an opaque semiconductor wafer comprising the steps of:
applying a resist coating on each of said sides of said wafer;
bonding a first mask temporarily to a first one of said sides with a low-melting bonding material so as to define a particular orientation of a desired pattern on said first mask relative to said wafer, said first mask being dimensioned such that at least two spaced peripheral areas thereof extend appreciably beyond adjacent peripheral edge portions of said wafer when said mask is properly mounted thereon, and with at least said two extended areas each containing at least one alignment indicium;
positioning a second mask containing a pattern thereon at least closely adjacent to the other of said sides of said wafer such that at least two spaced peripheral areas thereof extend appreciably beyond adjacent peripheral edge portions of said wafer, each of said extended areas of said second mask being formed with at least one alignment indicium, and with the resulting spaced relationship of the alignment indicium of said second mask corresponding to the spaced relationship of the alignment indicia of said first mask, thereby causing the pattern of said second mask to be oriented into precise registration with the pattern of said first mask;
exposing each said resist coating to a light source through the patterns of said masks so as to define desired patterns thereon in mutual alignment; and
removing said masks from said substrate, said first mask being removed by at least softening said low-melting bonding material
removing the exposed chip separation grid pattern portion of said resist coating in preparation for any further circuit processing of said wafer, and the sub-dividing thereof by an.

3,963,490
DYE SENSITIZED DICHROMATED GELATIN HOLOGRAPHIC MATERIAL

Andrejs Graube, Canoga Park, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 25, 1974, Ser. No. 509,201
Int. Cl.² G03C *1/10, 1/66*
U.S. Cl. 96—27 H **1 Claim**

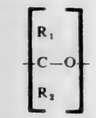
1. A method for increasing the spectral sensitivity of a dichromated gelatin-based hologram which comprises the steps of
   a. preparing an aqueous solution of gelatin and ammonium dichromate;
   b. casting said solution onto a glass substrate to form a substrate having a radiation sensitive dichromated gelatin layer;
   c. exposing said layered substrate to room light to preharden said gelatin layer;
   d. sensitizing said gelatin layer by immersing said layered substrate into a solution containing (1) a spectrally sensitive acid fast violet dye selected from the group consisting of the thiazine and triphenylmethane dyes and, (2) ammonium dichromate;
   e. drying said sensitized gelatin layer and then exposing said dried gelatin layer to the interfering beams of a He-Ne laser to give a 200 mJ/cm² average exposure; and
   f. developing said exposed gelatin layer to form a phase hologram containing a permanent fringe pattern from the said interfering laser beams.

3,963,491
IMAGING METHOD

Dana G. Marsh, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed June 27, 1974, Ser. No. 483,730
Int. Cl.² G03C *5/04, 5/24*
U.S. Cl. 96—27 R **17 Claims**

1. An imaging method which comprises exposing to activating radiation in an imagewise manner a film comprising:
   a. a matrix polymer as the principal ingredient;
   b. a degradable polymeric composition containing segments characterized by the formula:



   wherein R_1 is hydrogen or methyl and R_2 is hydrogen, an alkyl radical of 1 to 6 carbon atoms, a chlorinated or fluorinated aliphatic radical of 1 to 6 carbon atoms or a cyano substituted radical of 1 to 5 carbon atoms provided that when R_1 is methyl, R_2 is also methyl; and
   c. a photo-oxidant which upon activation is capable of abstracting one or more electrons from one or more oxygen atoms of said degradable polymeric composition, thereby causing the degradable polymer to break down into segments of greatly reduced molecular weight and thereby altering the relationship between the matrix polymer and degradable polymer to cause a change in the optical density in the exposed areas and provide a visible image corresponding to the exposed areas.

3,963,492
METHOD FOR PROCESSING SILVER DYE BLEACH MATERIALS

Max Marthaler; Matthias Schellenberg; Herbert Mollet, and Christoph Chylewski, all of Marly, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 1, 1974, Ser. No. 510,967
Claims priority, application Switzerland, Oct. 12, 1973, 14531/73
Int. Cl.² G03C *7/00*
U.S. Cl. 96—53 **10 Claims**

1. Method for processing silver dye bleach materials, including the following process measures
   1. silver developing,
   2. dye bleaching and silver bleaching,
   3. silver fixing and
   4. soaking,

which method comprises using treatment baths corresponding to the treatment stages (1) to (4), and following the sequence (1) to (4), a bleaching bath (2) being used, for the combined dye bleaching and silver bleaching, which contains
   a. a strong acid,
   b. a water-soluble iodide,
   c. as a water-soluble oxidising agent a water-soluble organic nitro compound,
   d. as an anti-oxidant a water-soluble mercapto compound and
   e. as a dye bleach catalyst, in an amount of 0.5 to 5 gram per libre, a pyrazine or quinoxaline compound which is water-soluble both in an alkaline and in an acid medium and has an absorption maximum of less than 450 mm,

and that the entire processing, from entry into the first bath (1) to leaving the last bath (4) takes place at temperatures from 20° to 90°C.

3,963,493
DIRECT-POSITIVE SILVER HALIDE EMULSION FOGGED TO LOW LEVEL AND THE USE THEREOF IN ENERGETIC-SURFACE DEVELOPMENT

Willy Joseph Vanassche, Aartselaar; Herman Alberik Pattyn, Kapellen, and Hendrik Alfons Borginon, Mortsel, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Dec. 27, 1972, Ser. No. 318,989
Claims priority, application United Kingdom, Feb. 18, 1972, 7742/72
Int. Cl.² G03C *5/24, 1/28*
U.S. Cl. 96—64 **34 Claims**

1. A direct-positive silver halide emulsion for the production of direct-positive images having a satisfactory density comprising fogged silver halide grains containing electron-traps selected from the group consisting of
   a. silver halide grains having adsorbed to the surface thereof one or more electron-accepting compounds having an anodic polarographic half-wave potential and a cathodic polarographic half-wave potential which when added together give a positive sum; and
   b. silver halide grains having, in their interior, centers promoting the deposition of photolytic silver,

wherein the silver halide grains have been fogged to such an extent that a test portion of the silver halide emulsion when coated on a support at a coverage of 0.50 to 5.50 g of silver per sq.m., gives a density of less than 0.50 upon processing, without exposure, for 6 minutes at 20°C in a developer of the following composition:

water (52°C.)	500	ml
N-methyl-p-aminophenolsulphate	2.5	g
hydroquinone	2.5	g
anhydrous sodium sulphite	30	g
sodium metaborate	10	g
potassium bromide	0.5	g
water to make	1	liter

and an identical test portion thereof, when coated in an identical way gives a density of at least twice the value of the density of the first test portion and a density of at least 0.50 upon processing, without exposure, for 3 minutes at 20°C. in a developer of the following composition:

hydroquinone	15	g
1-phenyl-3-pyrazolidinone	1	g
trisodium salt of ethylene diamine tetraacetic acid	1	g
anhydrous sodium carbonate	30	g
anhydrous sodium sulphite	70	g
40% aqueous sodium hydroxide	16	ml
water to make	1	liter
	(pH :	11).

25. A process of forming direct-positive images having a satisfactory density by imagewise exposure of an emulsion comprising fogged silver halide grains containing electron-traps selected from the group consisting of
   a. silver halide grains having adsorbed to the surface thereof one or more electron-accepting compounds having an anodic polarographic half-wave potential and a cathodic polarographic half-wave potential which when added together give a positive sum; and
   b. silver halide grains having, in their interior, centers promoting the deposition of photolytic silver, wherein the silver halide grains have been fogged to such an extent that a test portion of the silver halide emulsion when coated on a support at a coverage of 0.50 to 5.50 g of silver per sq.m., gives a density of less than 0.50 upon processing, without exposure, for 6 minutes at 20°C. in a developer (I) of the following composition:

water (52°C.)	500	ml
N-methyl-p-aminophenolsulphate	2.5	g
hydroquinone	2.5	g
anhydrous sodium sulphite	30	g
sodium metaborate	10	g
potassium bromide	0.5	g
water to make	1	liter

and an identical test portion thereof, when coated in an identical way gives a density of at least twice the value of the density of the first test portion and a density of at least 0.50 upon processing, without exposure, for 3 minutes at 20°C. in a developer (II) of the following composition:

hydroquinone	15	g
1-phenyl-3-pyrazolidinone	1	g
trisodium salt of ethylene diamine tetraacetic acid	1	g
anhydrous sodium carbonate	30	g
anhydrous sodium sulphite	70	g
40% aqueous sodium hydroxide	16	ml
water to make	1	liter
	(pH :	11)

and subsequent development in said developer (II) in the absence of a silver halide fogging agent and without giving a light flash during development.

3,963,494
PHOTOGRAPHIC MULTILAYER DIRECT-POSITIVE SILVER HALIDE ELEMENT

Raymond Leopold Florens, Edegem, Belgium, assignor to AGFA-GEVAERT N.V., Mortsel, Belgium

Filed Jan. 11, 1974, Ser. No. 432,532
Claims priority, application United Kingdom, Jan. 25, 1973, 3903/73
Int. Cl.² G03C *1/76, 5/24, 1/28*
U.S. Cl. 96—69 **14 Claims**

1. A photographic multilayer direct-positive silver halide element comprising a support, at least two direct-positive silver halide emulsion layers each containing fogged silver halide grains, wherein the undermost and uppermost emulsion layers of the said direct-positive silver halide emulsion layers comprise at least one non-spectrally sensitizing electron-acceptor, and said uppermost emulsion layer of the said direct-positive silver halide emulsion layers comprise at least one spectrally sensitizing electron-acceptor.

9. A photographic element according to claim 8, wherein the uppermost emulsion layer also comprises the same non-spectrally sensitizing electron acceptor as present in the undermost emulsion layer.

3,963,495
IMAGE-RECEIVING ELEMENT FOR SILVER SALT DIFFUSION TRANSFER WITH LAYER OF MONOACRYLATES OR MONOMETHACRYLATES OF POLYHYDRIC ALCOHOLS

Kazunobu Kato, and Shinji Sakaguchi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan and National Patent Development Corporation, New York, N.Y.

Filed Mar. 20, 1974, Ser. No. 453,104
Claims priority, application Japan, Mar. 20, 1973, 48-31355
Int. Cl.² G03C *1/48, 5/54;* **B27K** *3/15;* **B41M** *1/18*
U.S. Cl. 96—76 R **14 Claims**

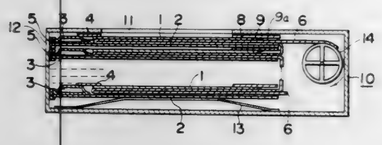


1. An image-receiving material for a silver salt diffusion transfer process comprising (1) a support, (2) on said support a polymer layer containing an imido, mercapto or iodine containing diffusible compound which is a diffusion transfer silver image stabilizer, which can change the property of silver image formed in a binder layer containing silver deposition nuclei, and (3) an alkali permeable and hydrophilic binder layer containing silver deposition nuclei on said polymer layer, said polymer layer comprising at least one water insoluble, alkali permeable hydrophilic polymer selected from the group consisting of homopolymers, copolymers and graft polymers of monoacrylates of polyhydric alcohols and homopolymers, copolymers and graft polymers of monomethacrylates of polyhydric alcohols, and the binder of the binder layer comprising an alkali permeable hydrophilic polymer or an alkali permeable hydrophilic inorganic colloid.

3,963,496
AUTO-PROCESS FILM UNIT WITH REMOVABLE FOLDED SHEET BETWEEN NEGATIVE AND POSITIVE ELEMENTS

Masayuki Arisaka, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed July 18, 1974, Ser. No. 489,652
Claims priority, application Japan, Aug. 3, 1973, 48-87729
Int. Cl.² G03C *1/48*; **G03B** *19/10*; **G03D** *9/02*
U.S. Cl. 96—76 C **6 Claims**

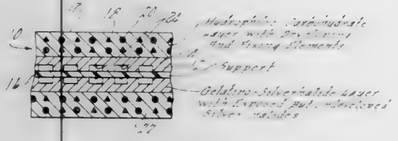


1. In a film unit which comprises a photosensitive sheet, an underlying positive image sheet, and a breakable container at the leading end of said unit in terms of the direction of unit movement during processing and holding a photographic processing solution, and which provides a positive print upon exposure of said photosensitive sheet, and transfer of the film unit forwardly during such movement through pressure means which cause said container to be broken open and processing solution to be spread rearwardly of said pressure means in a thin layer between said photosensitive sheet and said positive image sheet, the improvement wherein; said positive image sheet comprises adhesive portions for bonding thereof to said photosensitive sheet, said photosensitive sheet and said positive image sheet are each attached along one edge to said container, and are separated from one another prior to exposure of said photosensitive sheet by a removable, lightproof, folded, anti-adhesive continous strip including a doubled portion positioned therebetween, each layer of which having dimensions matching those of the light-sensitive portions of said film unit and respectively contacting said photosensitive sheet and said positive image sheet and being removable after exposure of said photosensitive sheet, whereby said photosensitive sheet and said positive image sheet may be then bonded together during passage through a processing pressure means, and processing solution may move easily therethrough.

3,963,497
X-RAY FILM WITH HYDROPHILLIC LAYER CONTAINING DEVELOPING AND FIXING AGENTS

Carl M. Kosti, 704 Foxhall Road, Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 357,998, May 7, 1973, abandoned. This application Jan. 6, 1975, Ser. No. 538,902
Int. Cl.² G03C *1/48*, *5/38*
U.S. Cl. 96—76 R **10 Claims**



1. In a film which comprises an x-ray sensitive, acidic or neutral, silver halide containing emulsion layer on a support the improvement which comprises:

an integral alkaline, hydrophilic, water soluble layer in said film, said hydrophilic layer including both developing and fixing agents homogeneously distributed therethrough.

3,963,498
SILVER HALIDE ELEMENT CONTAINING AN ORGANIC SEMICONDUCTOR

Donald J. Trevoy, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

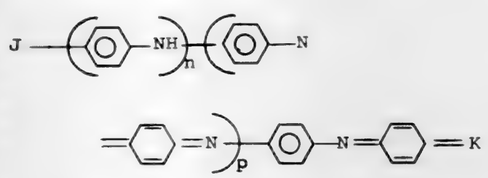
Continuation-in-part of Ser. No. 212,640, Dec. 27, 1971, abandoned, and a continuation-in-part of Ser. No. 455,705, March 28, 1974, abandoned. This application June 25, 1974, Ser. No. 482,960
Int. Cl.² G03C *1/78*, *1/96*
U.S. Cl. 96—87 A **9 Claims**

1. A semiconductor element comprising a support having thereon a silver halide emulsion layer and a layer comprising a semiconductor composition comprising a binder and a semiconductor having organic solvent solubility and represented by the expression:

$$D[A]_q$$

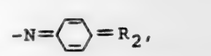
wherein:

D represents a moiety having the structure:

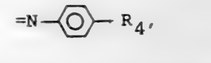


in which:

J represents either R_1 or a group having the formula



K represents either R_5 or a group having the formula



R_1 and R_4 are each selected from the group consisting of a hydrogen atom, a hydroxy radical, a lower alkyl radical, a lower alkoxy radical, an amino radical, an aryl radical, an acyl radical, a carboxylate radical, a thio radical, a nitrate radical, a sulfonate radical, a halogen atom and a cyano radical;

R_2 and R_3 each represent (1) an uncharged radical selected from the group consisting of oxo, imino and thioxo radicals or (2) a charged radical selected from the group consisting of alkoxonium, iminium, and sulfonium, radicals; and

n and *p* are each integers having the following combinations of values:

when J represents		
and K represents R_5,	p = 0	n = 0, 1, 2, 3, 4, 5
	p = 1	n = 0, 1, 2, 3
	p = 2	n = 0, 1
when J represents R_1 and K represents R_5,	p = 0	n = 0, 1, 2, 3, 4, 5, 6
	p = 1	n = 0, 1, 2, 3, 4
	p = 2	n = 0, 1, 2
	p = 3	n = 0
when J represents R_1 and K represents	p = 0	n = 0, 1, 2, 3, 4, 5
	p = 1	n = 0, 1, 2, 3
	p = 2	n = 0, 1;

A is an acid when R_2 and R_3 are each an uncharged radical and when R_2 and/or R_3 is a charged radical, A is an anion derived from an acid; and

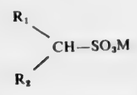
q represents the number of A moieties associated with each D and is a positive integer that is greater than 0 and less than or equal to the number of amine groups in the D moiety.

3,963,499
PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Keisuke Shiba; Hideki Naito; Nobuo Yamamoto, and Masakazu Yoneyama, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 15, 1974, Ser. No. 514,712
Claims priority, application Japan, Oct. 12, 1973, 48-114436
Int. Cl.² G03C *1/40*, *1/38*
U.S. Cl. 96—100 **9 Claims**

1. A photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer with the light-sensitive material containing in a hydrophilic colloid layer thereon at least two surface active agents selected from the compounds represented by the general formula (I)



(I)

and the general formula (II)

$$R_3 - SO_3M \qquad \text{(II)}$$

wherein, R_1 and R_2 each represents an aliphatic residue with the sum of the carbon atoms contained in R_1 and R_2 ranging from about 8 to 32; R_3 represents an aliphatic residue having about 8 and 20 carbon atoms; M represents a cation or a cationic group capable of forming a salt with a sulfonic acid; and compounds (I) are seondary alkane sulfonates and compounds (II) are primary alkane sulfonates.

3,963,500
SEMICONDUCTOR WAFER CORROSION PROTECTION SOLUTION

Dervin L. Flowers, Scottsdale, and V. Louise Rice, Phoenix, both of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Division of Ser. No. 428,499, Dec. 26, 1973. This application Feb. 3, 1975, Ser. No. 546,225
Int. Cl.² C09D *5/08*
U.S. Cl. 106—14 **1 Claim**

1. A coating solution consisting essentially of:

a. 1 to 30 grams per liter of phosphorous pentoxide;

b. 1 to 60 grams per liter of boric anhydride;

c. 0.005 to 5.0 grams per liter of a material selected from the group consisting of gold, platinum, palladium and rhodium salts and oxides;

d. the balance, a solvent selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, and isobutyl alcohol, ethylene glycol, and tetrahydro furfuryl alcohol.

3,963,501
PROCESS FOR PREPARING ANTI-MIST COMPOUNDS FOR PRINTING INKS AND PROCESS FOR PREPARING PRINTING INKS CONTAINING SAME

Norbert G. Zalesky, Cornwells Heights, Pa., assignor to Garlock Inc., Palmyra, N.Y.

Filed July 30, 1974, Ser. No. 493,097
Int. Cl.² C09D *11/00*, *11/06*, *11/10*
U.S. Cl. 106—20 **12 Claims**

1. A process for producing an anti-mist compound adapted for addition to a printing ink to inhibit the misting of said printing ink on a printing press, which comprises:

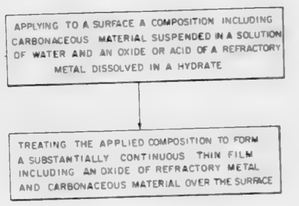
mixing chrysotile particles having an average size exceeding about 0.1 inch with an organic printing ink vehicle to provide a mixture in which said particles are wetted with said vehicle, and

milling said mixture simultaneously to grind said particles into micro-fibrous particles having a particle size of 10 microns or less and to disperse said micro-fibrous particles uniformly throughout said vehicle to provide an anti-mist compound including at least 25% by weight of chrysotile.

3,963,502
COMPOSITION FOR APPLICATION TO DIE CAVITY SURFACE

Alexander S. Borbely, and Jon A. Bereman, both of Indianapolis, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Division of Ser. No. 328,924, Feb. 2, 1973, Pat. No. 3,865,608. This application Sept. 27, 1974, Ser. No. 509,811
Int. Cl.² B28B *7/36*
U.S. Cl. 106—38.28 **6 Claims**



1. A composition including carbon material suspended in a solution of water and an oxide or acid of a refractory metal dissolved in a hydroxide.

3. The composition of claim **1**, wherein the carbon material is graphite, the oxide of the refractory metal is an oxide of tungsten and the hydroxide in which the oxide of tungsten is dissolved is selected from ammonium hydroxide, sodium hydroxide, and potassium hydroxide.

3,963,503
METHOD OF MAKING GLASS PRODUCTS, NOVEL GLASS MIX AND NOVEL GLASS PRODUCT

John D. Mackenzie, Los Angeles, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 268,971, July 5, 1972, Pat. No. 3,900,303. This application Mar. 14, 1975, Ser. No. 558,510
Int. Cl.² C03C *3/00*, *1/00*; **C04B** *21/00*
U.S. Cl. 106—40 V **8 Claims**

1. An improved heat treatable glass mix comprising:

used-container glass having the following approximate concentration of foreign inclusions mixed therewith:

Inclusions	% by wt. in glass
Fe	0.1 to 3
Sn	0.1 to 2
Al	0.1 to 2
Other metals	0.1 to 1
Cellulosics	0.1 to 1
Other organics	0.1 to 1

said used-container glass having an average reflectance of between about 5% and about 95%; and

a carbonate foaming agent mixed therewith in a concentration of about 0.5 to about 10 percent by weight of the mix, said foaming agent being activatable upon heating said used-container glass to a temperature and pressure within a range sufficient to sinter and soften said glass but insufficient to melt said glass.

3,963,504

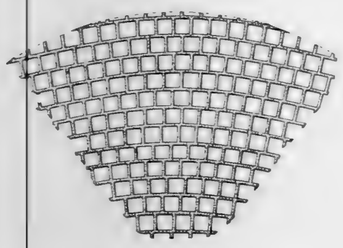
POROUS CERAMIC STRUCTURE

Christian Bent Lundsager, Ashton, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 269,204, July 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 83,020, Oct. 22, 1970, abandoned. This application Dec. 24, 1974, Ser. No. 536,079

Int. Cl.[2] C04B *21/04*; **B01J** *35/00*; **C04B** *21/06, 35/00*

U.S. Cl. 106—41 **3 Claims**



1. A ceramic monolith structure prepared by a process comprising the following steps:

a. homogeneously blending a composition consisting essentially of 15–80 volume percent of a polyolefin having a molecular weight of at least 150,000 and a standard load melt index of substantially zero, 5–67 volume percent of a ceramic filler, 15–80 volume percent of a plasticizer; selected from a group consisting of mineral oils, glycols, triethyl phosphate, polyvinyl alcohol, and polyvinyl pyrrolidone,

b. heating said composition to about 125° to 175°C., molding to form a plastic sheet and impressing ribs thereon,

c. rolling said plastic sheet so that said ribs contact said sheet, heating to about 150°–250°C. to fuse the contacting areas together thermoplastically,

d. extracting the plasticizer with water or an organic solvent,

e. removing said polyolefin by heating to 240°–700°C. to form a porous ceramic structure and burn off the polyolefin and,

f. firing said porous ceramic structure at a temperature of about 1300°–1450°C. for a period of time sufficient to sinter said porous ceramic structure, characterized by:

1. uniform channels of an essentially rectangular cross section laterally through the length of the monolith, varying in size from 0.025 to 0.20 inches; said channels being arranged in a pattern so that in the first direction a given channel adjoins the next channel separated by a common wall, and in a second direction, perpendicular to the first direction, a given channel adjoins one or more of the other channels sharing one wall with the adjacent other channel or channels,

2. a coefficient of thermal expansion of 1.2 to 3.0×10^{-6} per degree Fahrenheit,

3. a porosity of 20–30 percent,

4. A density of about 0.2 to 0.8 grams per cubic centimeter,

5. an average pore size of 4 to 8 microns.

3,963,505

LEAD-ZINC-BORON SEALING GLASS COMPOSITIONS

Maurice E. Dumesnil, Palo Alto, and Ulrich Schreier, San Mateo, both of Calif., assignors to Technology Glass Corporation, Sunnyvale, Calif.

Filed Nov. 23, 1973, Ser. No. 418,247

Int. Cl.[2] C03C *3/10, 3/14, 3/30*

U.S. Cl. 106—47 R **5 Claims**

1. A sealing glass composition comprising a mixture of a finely divided solder sealing glass selected from the group consisting of lead boron glasses and lead zinc boron glasses in which the zinc oxide:lead oxide mol ratio is below 1:2 and a finely divided oxygen containing zinc material selected from the group consisting of zinc silicate, zinc zirconium silicate, zinc oxide, zinc aluminate, zinc zirconate, zinc stannate, zinc zirconium aluminum silicate and mixtures thereof, the zinc material being present in amount in the range 3 to 30% by weight of the total mixture.

3,963,506

FIRED CONSTRUCTION SHAPES AND PROCESS AND BINDER THEREFOR

Thomas Clifford Shutt, Arvada, and Howard Campbell, Golden, both of Colo., assignors to Glass Container Manufacturers Institute, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 303,188, Nov. 2, 1972, abandoned. This application May 6, 1974, Ser. No. 468,574

Int. Cl.[2] C04B *35/64*

U.S. Cl. 106—67 **10 Claims**

1. A process for producing a soda lime glass physically bonded structural product comprising the steps of:

a. forming a moldable, thioxtropic particulate composition of low porosity and high packing density by mixing:

1. particulate inorganic inert aggregate;

2. from 8 to 35 weight per cent finely divided waste soda lime glass whose particles have a size of less than 80 mesh;

3. ball clay in an amount of at least 2 weight per cent and sufficient to render the mixture thioxtropic; and

4. water in an amount not greater than 20 weight per cent to make said mixture moldable, the particle size of said aggregate being greater than the particle size of said finely divided waste soda lime glass and the particle size distribution of said aggregate and said finely divided glass being such that the mixture thereof contains 15 to 35 weight per cent of particles whose size is less than 80 mesh;

b. forming said mixture into a predetermined shape;

c. drying, then firing said shaped mixture at a temperature below 1900°F and sufficient to soften said finely divided soda lime glass and allow it to flow around and physically bond to said particulate aggregate substantially without chemical reaction; and

d. cooling said fired shape.

3,963,507

FOAM-CONTAINING SLURRY TO MAKE POROUS, INORGANIC CONSTRUCTION MATERIAL

Naoya Kuramoto, Hachioji; Hachiro Saito, Hino, and Wataru Yamamoto, Hachioji, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 22, 1974, Ser. No. 472,198

Claims priority, application Japan, May 29, 1973, 48-59313

Int. Cl.[2] C04B *7/02, 7/353, 15/06*

U.S. Cl. 106—86 **12 Claims**

1. A foam-containing slurry for making porous, inorganic construction material comprising 100 parts by weight of water [I], 35 to 350 parts by weight of hydraulic substance [II] selected from the group consisting of cement, siliceous sand and quicklime and mixtures thereof, and 0.02 to 1.20 parts of foaming agent [III], said foaming agent [III] comprising

1. as the foaming component, 0.05 to 20 parts by weight of water-soluble, low-viscosity cellulose ether of which 2 weight % aqueous solution has a viscosity of 25 to 2,000 centipoises at 20° C.,

2. as the foam stabilizer, 1 part by weight of water-soluble, high-viscosity cellulose ether of which 2 weight % aqueous solution has a viscosity exceeding 2,000 centipoises at 20° C., and

3. as the foaming accelerator, at least 1 part by weight of at least 75% saponified polyvinyl alcohol of which 4 weight % aqueous solution has a viscosity of not higher than 70 centipoises at 20° C.

3,963,508

CALCIUM ALUMINATE CEMENT

Joseph S. Masaryk, Castro Valley, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 18, 1974, Ser. No. 524,903

Int. Cl.[2] C04B *7/32*

U.S. Cl. 106—104 **31 Claims**

1. Method of making a refractory calcium aluminate cement comprising: (1) admixing (a) from 40 to 60% of a clinker, at least 80% of which is the CA phase, with (b) from 60 to 40% of an alumina which has a specific surface of from 1 to 30 m^2g, an average pore size of from 0.05 to 0.5 microns, and a brain coral morphology; and (2) grinding the clinker and the alumina, after admixing, so that 80% passes a 325 mesh screen, all percentages being by weight.

3,963,509

ASPHALT HAVING HIGH ADHESION STRENGTH AND ITS PREPARATION

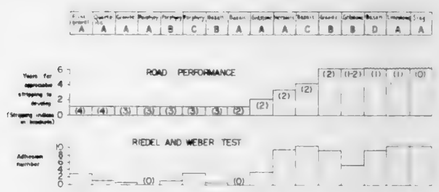
Tadashi Doi, Osaka; Isao Sekido, Wakayama, and Ryoichi Tamaki, Arita, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 415,982, Nov. 15, 1973, abandoned. This application Jan. 13, 1975, Ser. No. 540,695

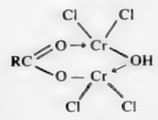
Claims priority, application Japan, Nov. 20, 1972, 47-116448

Int. Cl.[2] C08L *95/00*

U.S. Cl. 106—273 R **3 Claims**



1. An asphalt road-paving composition consisting essentially of road-paving aggregate selected from the group consisting of crushed stone and sand, mixed and coated with an asphalt composition consisting essentially of road-paving asphalt and 0.3 to 2% by weight, based on the weight of asphalt, of a monocarboxylic chromic chloride having the formula:



wherein R is alkyl or alkenyl having 1 to 21 carbon atoms.

3,963,510

PROCESS FOR THE PRODUCTION OF TONED CARBON BLACK

Günter Osswald, Grossauheim, and Josef Reus, Freigericht, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed Nov. 1, 1974, Ser. No. 520,224

Claims priority, application Germany, Nov. 8, 1973, 2355758

Int. Cl.[2] C09C *1/48, 1/44*

U.S. Cl. 106—289 **14 Claims**

1. A process for the production of carbon black toned with a lake forming organic dye comprising dispersing the carbon black in an aqueous solution of the dye and the laking agent, mixing the dispersion obtained with stirring with sodium waterglass, completing the laking by adding sodium molybdate, separating the toned carbon black from the liquid phase and drying the toned carbon black.

3,963,511

MODIFICATION OF MINERAL SURFACES

Jean Drummond Swift, Olinda; David Geoffrey Hawthorne, South Oakleigh; Bryan Clarence Loft, Strathmore, and David Henry Solomon, Glen Waverley, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Division of Ser. No. 222,684, Feb. 2, 1972, Pat. No. 3,849,149. This application Sept. 16, 1974, Ser. No. 506,449

Claims priority, application Australia, Feb. 10, 1971, 3980/71; Feb. 10, 1971, 3982/71; Feb. 10, 1971, 3984/71; Feb. 10, 1971, 3986/71

Int. Cl.[2] C09C *1/00*

U.S. Cl. 106—308 Q **9 Claims**

1. A pigment or filler material consisting of a particulate material other than titanium dioxide having a surface coating with a significant number of acidic sites with pKa values of less than 2.8, on which has been adsorbed an organic base which can act as one of a proton acceptor and an electron donor.

3,963,512

MODIFICATION OF MINERAL SURFACES

Jean Drummond Swift, Olinda; David Geoffrey Hawthorne, South Oakleigh; Bryan Clarence Loft, Strathmore, and David Henry Solomon, Glen Waverley, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Division of Ser. No. 222,684, Feb. 1, 1972, Pat. No. 3,849,149. This application Sept. 16, 1974, Ser. No. 506,448

Claims priority, application Australia, Feb. 10, 1971, 3986/71

Int. Cl.[2] C09C *1/00*

U.S. Cl. 106—308 M **9 Claims**

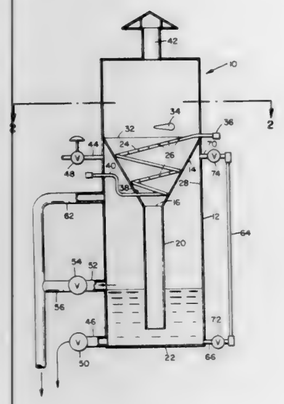
1. A pigment or filler material consisting of a particulate mineral other than titanium dioxide having a surface coating with a significant number of acidic sites with pKa values less than 2.8, and which has been modified by the addition of a polymeric coating formed by in situ acid-catalyzed polymerization of at least one organic monomer, followed by neutral-

ization of the surface with a base which terminates the polymerization reaction.

3,963,513
PROCESS AND APPARATUS FOR TREATMENT OF CANE SUGAR JUICE

John A. Casey, 1755 Beach St., San Francisco, Calif. 94123

Filed Oct. 21, 1974, Ser. No. 516,341
Int. Cl.² C13D *3/02*; **B01F** *5/00*
U.S. Cl. 127—11 **8 Claims**



1. An apparatus for the chemical treatment of a solution to induce controlled growth of undesirable precipitables in said solution which comprises:
   - a treating tower having vapor outlet means in an upper portion of said tower;
   - conical funnel means in an upper portion of said tower communicating with a vertical exit conduit extending to a lower portion of said tower;
   - spiral tubular feeding means, perforated along its length, nesting in said conical funnel and having inlet and outlet conduit means for receiving and discharging a solution;
   - means for introducing a feedstock solution tangentially to an upper portion of said conical funnel means at a velocity sufficient to cause said feedstock to flow in a substantially spiral path in said conical funnel from the upper portion thereof to said vertical exit conduit; and
   - discharging means in a lower portion of said tower for varying the residence time of said feedstock solution.

3,963,514
REMOVAL OF EXCESS METAL FROM THE WELDING SEAM IN THE INTERIOR OF A PIPE

Johann Wassen, Brackwede, Germany, assignor to Mannesmannrohren-Werke AG, Dusseldorf, Germany

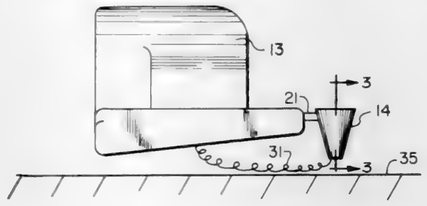
Filed Aug. 14, 1974, Ser. No. 497,253
Claims priority, application Germany, Aug. 17, 1973, 2342169
Int. Cl.² B08B *3/04, 9/04, 9/06*
U.S. Cl. 134—8 **3 Claims**

1. Method of removing the wire-like, internal welding seam burr having been severed and lying in the pipe, comprising the steps of
   - filling the interior of the pipe over its entire length with liquid, adding small particles to the liquid, the particles having dimensions comparable to the thickness of the wire burr for being capable of carrying the burr during any flow of the liquid;
   - pressurizing the liquid in the pipe; and
   - forcing the liquid out of the pipe under high pressure and as a liquid column, whereby the wire-like burr is fluid-dynamically embedded over its entire length in the particles in the liquid and is carried along by the particles and removed from the pipe.

3,963,515
VACUUM CLEANING

Charles W. Haldeman, Concord, and Eugene E. Covert, Belmont, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 2, 1974, Ser. No. 528,747
Int. Cl.² A47L *5/14*
U.S. Cl. 134—21 **10 Claims**



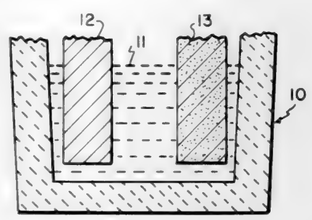
1. In vacuum cleaning apparatus having a source of vacuum and suction nozzle means having an outlet and an inlet defined by a circumferential wall extending toward a surface to be cleaned for withdrawing debris from a surface to be cleaned the improvement comprising,
   - vortex generating means adjacent to a portion of said circumferential wall which separates said vortex generating means from said suction nozzle inlet means for producing at least one vortex having a vortex filament flowing from said vortex generating means along and generally parallel to the surface to be cleaned through the gap between the surface to be cleaned and said circumferential wall portion of said inlet for loosening debris that may then be withdrawn from said surface through said nozzle means which is completely outside the space occupied by said vortex generating means.

2. The improvement in accordance with claim 1 wherein said vortex generating means comprises,
   - vortex nozzle means for initiating said at least one vortex, and means for supporting said vortex nozzle means for directing a vortex towards the surface to be cleaned.

3,963,516
HIGH ENERGY DENSITY FUSED SALT BATTERY AND CATHODE FOR USE THEREIN

Edward S. Buzzelli, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 26, 1974, Ser. No. 446,190
Int. Cl.² H01M *35/02*
U.S. Cl. 136—6 LF **6 Claims**

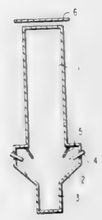


1. A fused electrolytic cell comprising a Li-Al anode, a cathode an integral matrix of about 20 to 80% by weight of a porous current collector material and about 80 to 20% by weight of a metal sulfide selected from the group consisting of antimony sulfide, tungsten disulfide and molybdenum disulfide spaced apart from said anode, and a molten LiCl—KCl electrolyte in contact with said anode and said cathode.

3,963,517
PROCESS FOR THE MANUFACTURE OF LEAD STORAGE BATTERY ELECTRODES AND APPARATUS FOR CARRYING OUT THE PROCESS

Gunnar Eckerbom, Kungalv, and Ove Nilsson, Nol, both of Sweden, assignors to Aktiebolaget Tudor, Stockholm, Sweden

Filed May 30, 1974, Ser. No. 474,675
Claims priority, application Sweden, June 1, 1973, 73077596
Int. Cl.² H01M *39/00*
U.S. Cl. 136—27 **7 Claims**



1. A method for producing active granular material for lead storage battery electrodes which comprises forming a paste from a moistened mixture of lead and lead oxide particles, forcing the resulting paste through a foraminous body, an drying the resulting granular material during free fall.

3,963,518
SOLIDS IONICALLY CONDUCTIVE AT ELEVATED TEMPERATURES

Seymour Senderoff, Fairview Park, and Geoffrey W. Mellors, Strongsville, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed July 16, 1970, Ser. No. 55,584
Int. Cl.² H01M *4/36*
U.S. Cl. 136—83 T **3 Claims**

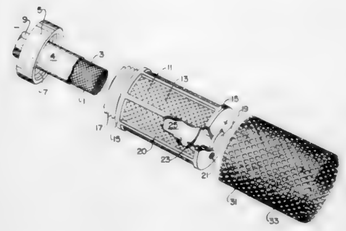
1. A binary composition of copper iodide and an alkali metal cyanide suitable for use in electrochemical devices activatable at temperatures above about 250°C. which composition is ionically conductive in the solid state above such temperature.

3,963,519
METAL/AIR CELL

Hong Po Louie, Brooklyn, N.Y., assignor to Leesona Corporation, Warwick, R.I.

Continuation-in-part of Ser. No. 735,913, June 10, 1968, abandoned. This application Aug. 3, 1971, Ser. No. 168,571
Int. Cl.² H01M *12/06*
U.S. Cl. 136—86 A **18 Claims**

1. A unitary, compact, and completely self-contained cylinder-like metal/air cell of the flashlight type comprising a consumable metal anode, a pressure deformable cathode having a gas-permeable electrolyte impermeable outer face comprising a hydrophobic polymer and an electrocatalytic inner face, said electrocatalytic inner face being spaced in electrically non-conductive contact from said anode, and said cathode substantially completely enclosing said anode to provide a cylinder-like shape, exposed electrical contact means in electrical contact with said anode at one end of said cell and exposed electrical contact means in electrical contact with said cathode at the opposite end of said cell and an electrolyte material between said anode and cathode, said anode and cathode and both said electrical contact means being constructed and arranged to provide an electrolyte-tight seal between said anode, cathode, and electrical contact means, a substantially rigid protective shield having a plurality of perforations therein and being substantially co-extensive with said cathode, and means for spacing said shield from said cathode over substantially the entire surface area of said cathode, said



means including spacer means at opposite ends of said cylinder-like cell constructed and arranged with said protective shield to secure said shield to said cell while providing a space over substantially the entire surface area of said cathode permitting access of air to said cathode through said perforations, said anode includes closure means and said closure means and said spacing means are threadedly engaged.

3,963,520
PRIMARY CELL CORROSION INHIBITOR

Jakob Bauer, Ellwangen-Rotenbach, and Albert Winkler, Ellwangen, both of Germany, assignors to Varta Batterie Aktiengeselischaft, Hannover, Germany

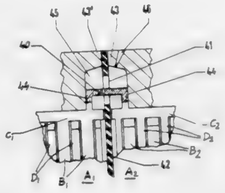
Filed Aug. 6, 1975, Ser. No. 602,394
Int. Cl.² H01M *6/06*
U.S. Cl. 136—107 **9 Claims**

1. A primary cell comprising a negative amalgamated zinc electrode, a positive depolariser electrode and an alkaline electrolyte, a corrosion inhibitor of monocarboxylic acid selected from the group consisting of saturated and unsaturated monocarboxylic acids each having at least two ethanolamide radicals, said inhibitor being present in an amount not exceeding 1 percent based on the weight of the zinc electrode.

3,963,521
LEAKPROOF BONDING OF STORAGE BATTERY COMPONENTS

Otto Jache, Budingen, Hessen, Germany, assignor to Accumulatorenfabrik Sonnenschein GmbH, Germany

Division of Ser. No. 289,862, Sept. 18, 1972, Pat. No. 3,919,371, which is a continuation-in-part of Ser. No. 55,934, July 17, 1970, abandoned. This application Sept. 3, 1975, Ser. No. 609,988
Claims priority, application Germany, July 17, 1969, 1936472
Int. Cl.² H01M *2/26*
U.S. Cl. 136—134 R **3 Claims**



1. In a storage battery the combination of a casing of thermoplastic material having a partition wall dividing the casing

into cell compartments at opposite sides thereof, said partition wall having a transverse opening therethrough, cell groups comprising negative plates and positive plates, each group being electrically connected together by metallic straps, one of said cell groups being positioned in each of said cell compartments, a metallic inter-cell connector electrically connecting adjacent straps of said cell groups and passing through said opening and a one piece molded sealing member of multicellular thermoplastic polymeric material bonded to and confining said inter-cell connector and fused to the partition wall in the region within said opening and to the adjoining areas on opposite surfaces.

3,963,522

METHOD OF IMPROVED TREATMENT RELATING TO THE SURFACE OF THE ELECTROLYTE FOR A SOLID ELECTROLYTE CELL

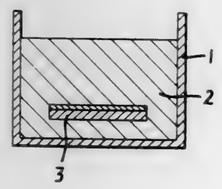
Toyoo Harada, and Shigenori Funayama, both of Sendai, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Japan

Filed Nov. 13, 1974, Ser. No. 523,522

Claims priority, application Japan, Nov. 16, 1973, 48-129015

Int. Cl.² H01M 6/18

U.S. Cl. 136—153 **3 Claims**



1. The method of treatment of surfaces of the β-alumina electrolyte for a solid electrolyte cell of Na^+ ion conductive type to lower the faradaic impedance at the electrode-electrolyte interface and to prevent deterioration of such electrolytes during storage, wherein the conductive paint, containing unoxidized metal powder selected from the group consisting of powdered gold, silver and mixtures thereof is coated on the surface of said solid electrolyte, sintered at a temperature in the range 700°C to 900°C, cooled and then further coated by immersion in a fused sodium nitrate salt bath.

3,963,523

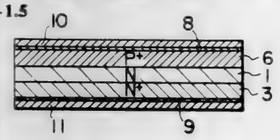
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Yoshimi Tanaka, Kyoto, and Hirotsugu Hattori, Takatsuki, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 354,520, April 26, 1973, abandoned. This application Dec. 24, 1974, Ser. No. 536,240

Int. Cl.² H01L 21/225

U.S. Cl. 148—1.5 **4 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of depositing a coating of platinum having a thickness of 0.1 to 0.4 μ on at least one surface of a silicon substrate having at least one PN junction formed therein, subjecting said substrate to a first heat treatment for increasing the adhesion strength of the plated platinum layer to the silicon substrate, plating a layer of nickel on said silicon substrate coated with platinum, and then subjecting said plated nickel layer to a second heat treatment at a temperature of 800° to 900°C to cause said platinum to diffuse into said silicon substrate.

3,963,524

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE

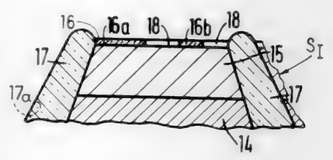
Juergen Graul, Gruenwald, and Helmuth Murrmann, Ottobrunn, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 9, 1975, Ser. No. 594,341

Claims priority, application Germany, July 25, 1974, 2435905

Int. Cl.² H01L 21/265

U.S. Cl. 148—1.5 **16 Claims**



1. In a process for the production of a semiconductor device wherein a first sub-zone of a silicon substrate is covered with a protective layer of silicon nitride, a second sub-zone of the silicon substrate which is adjacent to said first sub-zone is covered with a protective layer of silicon dioxide, and the silicon substrate surface is subjected to a localized doping process in the presence of the silicon nitride layer so that the dopant junctions thus formed in the silicon substrate reaches the substrate surface at least at points within the first sub-zone; the improvement comprising in that:

after the coating of the silicon nitride layer onto said first sub-zone in its final form, the surface of said second sub-zone is oxidized to form silicon dioxide in such a manner that at least said layer of silicon nitride which is directly adjacent to the silicon substrate surface is retained;

that a select part of said silicon dioxide layer and at least an adjacent part of said siicon nitride layer are then covered with a photo-lacquer mask having at least one window therein leaving at least another part of said silicon dioxide layer uncovered; and

subjecting the resultant structure to localized doping whereby the zone of the silicon substrate covered at least by said other part of the silicon dioxide layer is doped.

3,963,525

METHOD OF PRODUCING A HOT-WORKED TITANIUM PRODUCT

Howard B. Bomberger, Jr., Canfield, and Stanley R. Seagle, Warren, both of Ohio, assignors to RMI Company, Niles, Ohio

Filed Oct. 2, 1974, Ser. No. 511,566

Int. Cl.³ C22F 1/18

U.S. Cl. 148—2 **14 Claims**

1. A method of producing a hot-worked titanium product comprising making up a melting charge of titanium or a titanium-base alloy and a workability-enhancing agent selected from the group consisting of the metals yttrium, a rare earth of atomic number 57 to 71, and combinations thereof, the agent being included in an amount of about 0.001 to 0.10 percent of the weight of the charge and being initially in the form of the metal itself or a compound thereof, melting said charge and casting it to form an ingot, heating said ingot to a temperature of about 1700 to 2300F, and hotworking the ingot to achieve about 30 to 90 percent working in the initial working step without reheating and without producing significant surface-cracking in the product.

3,963,526

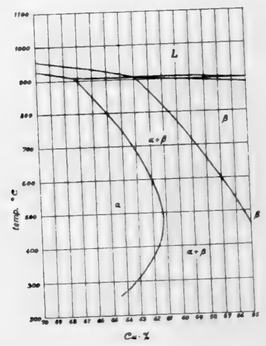
METHOD OF IMPARTING INCREASED DEZINCIFICATION RESISTANCE TO BRASS

Borge Lunn, Rodovre, Denmark, assignor to Aktieselskabet Nordiske Kabel-OG Traadfabriker, Copenhagen, Denmark

Continuation-in-part of Ser. No. 282,864, Aug. 22, 1972, abandoned. This application July 10, 1974, Ser. No. 487,138

Int. Cl.² C22D 1/16

U.S. Cl. 148—2 **7 Claims**



1. The method of making a brass alloy of the type consisting essentially of primary zinc and from 61 to 66 per cent by weight of copper, suitable for casting, extruding and working and of imparting increased dezincification-resistance to the resulting brass product, said method comprising the steps of initially including in the alloy a small proportion of at least 0.02 per cent by weight of an anti-dezincification agent, and subjecting the resulting brass alloy product to heat treatment in the temperature range of from 450° to 600°C., and continuing the heat treatment at the selected temperature for a period of time sufficient to breakup the beta crystal structure normally formed in the brass alloy into individual units in the alloy and without mutual coherence throughout the alloy product.

3,963,527

CHROMATIZING PROCESS AND COMPOSITION

Karl H. Lindemann, Geinsheim, Germany, assignor to Lindemann & Co. GmbH, Geinsheim, Germany

Filed Jan. 2, 1975, Ser. No. 537,915

Claims priority, application Germany, Jan. 4, 1974, 2400354

Int. Cl.² C23F 7/26

U.S. Cl. 148—6.2 **2 Claims**

1. In a process of chromatizing zinc articles and zinc electroplated articles, the step which comprises immersing said articles for a period of less than 60 seconds in an aqueous chromatizing bath containing

a. 12.5 g./l. to 37.5 g./l. of sodium dichromate and 12.5 g./l. to 37.5 g./l. of sodium nitrate, said solution being adjusted to a pH of 0.3 by the addition of nitric acid;

b. 25 g./l. to 70 g./l. of formic acid or chloroformic acid or both;

c. 5 ml./l. to 35 ml./l. of a member of the class consisting of glacial acetic acid, concentrated acetic acid, glycolic acid, glycocoll, chloroacetic acid and trifluoroacetic acid and, optionally

d. 5 ml./l. to 12 ml./l. of formaldehyde, calculated on 100% formaldehyde

the pH-value of said bath being maintained at a pH between 1.4 and 2.7.

3,963,528

OXIDATION OF CHROMIUM SURFACES

Walter Fedrowitz, Wappingers Falls, and Rudolf G. Frieser, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,260

Int. Cl.² C23F 7/02

U.S. Cl. 148—6.14 R **9 Claims**

1. A method for forming an oxidized chromium film on the surface of chromium metal in a controlled manner comprising:

providing a chromium metal surface;

subjecting the said surface to a basic hydrogen peroxide solution;

removing the said surface from said hydrogen peroxide aolurion and immersing said surface in an aqueous permanganate solution maintained at a temperature less than about 100°C for a time less than 10 minutes to form an oxidized film;

the concentration of said permanganate solution is between about 10^{-3} to 10^{-5} molar; and

removing the said surface from said permanganate solution and drying said oxidized chromium film.

3,963,529

SOLDERING FLUX

Eiichi Tsunashima, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 195,865, Nov. 4, 1971, abandoned. This application Feb. 3, 1975, Ser. No. 546,781

Claims priority, application Japan, Dec. 7, 1970, 45-109215

Int. Cl.² B23K 35/34

U.S. Cl. 148—25 **2 Claims**

1. A soldering flux consisting of rosin oil having an average molecular weight of 120 to 80, which is obtained by cracking rosin at a temperature of 180°C to 250°C and then condensing the distillate.

3,963,530

STAINLESS STEELS COATED WITH BLACK OXIDES

Thomas J. Smollett, and Bozidar Stipanovic, both of Waukegan, Ill., assignors to Coral Chemical Company, Waukegan, Ill.

Continuation-in-part of Ser. No. 431,770, Jan. 8, 1974, Pat. No. 3,915,759. This application Oct. 24, 1974, Ser. No. 517,657

Int. Cl.² C23F 7/04

U.S. Cl. 148—31.5 **6 Claims**

1. A chromium-containing martensitic or ferritic stainless steel substrate coated with a firmly adherent compact and smooth black oxide coating consisting essentially of a substantial amount of sodium and $(Fe,Cr)_2O_3$ and Fe_3O_4 of a thickness from about 1.5 to about 4.5 microns.

3,963,531

COLD ROLLED, DUCTILE, HIGH STRENGTH STEEL STRIP AND SHEET AND METHOD THEREFOR

James A. Elias, deceased, late of Middletown, Ohio (by June G. Elias, executrix); John R. Newby, and Marvin B. Pierson, both of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

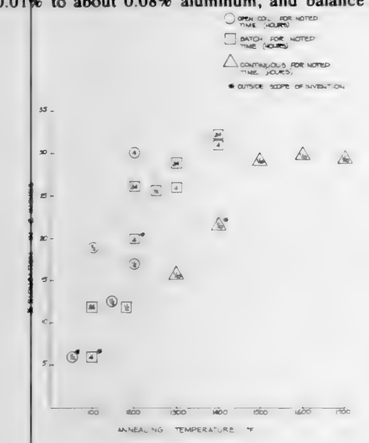
Filed Feb. 28, 1975, Ser. No. 554,158

Int. Cl.² C22C 38/06, 38/12

U.S. Cl. 148—31.5 **10 Claims**

1. Cold reduced and annealed low carbon steel strip and sheet stock having a 0.2% yield strength of 45 to 65 ksi or of at least 90 ksi, with an elongation in 2 inches of greater than 10% for at least 90 ksi yield strength and greater than 25% for 45 to 65 ksi yield strength, consisting essentially of, by weight percent, from 0.02% to about 0.10% carbon, about 0.1% to about 0.9% manganese, 0.02% to about 0.18% columbium,

residual phosphorus, sulfur, silicon, oxygen and nitrogen, about 0.01% to about 0.08% aluminum, and balance essentially iron except for incidental impurities, with the columbium being substantially completely combined.



3,963,532
Fe, Cr FERRITIC ALLOYS CONTAINING Al AND Nb

Joseph J. Demo, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 30, 1974, Ser. No. 474,541
Int. Cl.² C22C *38/06, 38/26*
U.S. Cl. 148—37 **4 Claims**

1. A ferritic alloy having good as-welded ductility in that it passes the standard guided bend test prescribed by the A.S.M.E. Pressure Vessel Code, 1965, Section 9, Page 59 using a bend test jig having a bend radius to sample thickness ratio of 2 without visible cracking, and good corrosion resistance in that it passes the ASTM A-262-70, 1971 Book of Standards, Practice B test consisting of immersion in boiling 50% H_2SO_4 containing 41.6 gm./liter of ferric sulfate as inhibitor in repeated cycles of 24 hours duration each up to a total exposure of 120 hours, after which the specimens tested exhibited a corrosion rate of less than 40 mils (10.16×10^{-2} cm) per year, consisting essentially of the following percentages by weight:

chromium	25–28
molybdenum	0–1.5
aluminum	0.05–1.0
carbon + nitrogen	0.18 max.
niobium	2% max. but at least 11 times the C+N content,

the balance being iron and incidental impurities.

3,963,533
LOW TEMPERATURE MAGNETIC TREATMENT OF FERROMAGNETIC MATERIALS

James D. Collins, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1974, Ser. No. 535,978
Int. Cl.² C21D *1/04*
U.S. Cl. 148—108 **4 Claims**

1. A cryogenic-magnetic method of reducing dislocation density and altering dislocation distribution in an article formed from a polycrystalline ferromagnetic iron based material so as to provide improved mechanical properties, and resistance to corrosion, said method comprising:

a. reducing the temperature of said article to that of a relaxation point detectable by ultrasonic attenuation techniques;
b. imposing an alternating magnetic field on said article, said field having a maximum strength in the range of from about 50 to about 150 oersteds, and alternating at a frequency in the range of from about 2.0 to about 1,000 hertz until the ultrasonic attenuation at 5 Megahertz is reduced by from about 10% to about 50%;
c. removing said magnetic field; and
d. allowing said article to warm to room temperature.

3,963,534
ZIRCONIUM ALLOYS

Jean-Mathieu Frenkel, Paris; Jacques Pelchat, Vitry, and Michel Weisz, Orsay, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Feb. 28, 1974, Ser. No. 446,799
Claims priority, application France, Mar. 2, 1973, 73.7617
Int. Cl.² C21D *1/26*
U.S. Cl. 148—133 **4 Claims**

1. In a method of manufacturing fuel cans and pressure tubes from Zircaloy-2 or Zircaloy-4 for use in nuclear reactors the improvement wherein said fuel cans or pressure tubes are annealed at a temperature from 400°C to 750°C for a sufficient period of time to cause recrystallization, said period being at least ½ hour.

3,963,535
METHOD FOR CONTROLLING QUENCHING

Birger David Lineberg, Koping, Sweden, assignor to AB Volvo, Goteborg, Sweden

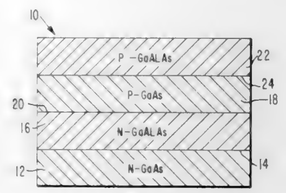
Filed July 20, 1973, Ser. No. 381,068
Claims priority, application Sweden, July 28, 1972, 9914/72
Int. Cl.² C21D *1/18*
U.S. Cl. 148—144 **4 Claims**

1. A method for the regulated quenching of hot steel objects in liquid, comprising submerging a hot steel object in a liquid which is at superatmospheric pressure, and after said hot steel object is submerged in the liquid reducing the pressure of the liquid in which the hot steel object is submerged, thereby to effect a rapid initial quench followed by a slower one down through the temperature range where martensite is formed.

3,963,536
METHOD OF MAKING ELECTROLUMINESCENT SEMICONDUCTOR DEVICES

Michael Ettenberg, Freehold, and Henry Kressel, Elizabeth, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,758
Int. Cl.² H01L *7/38*
U.S. Cl. 148—171 **8 Claims**

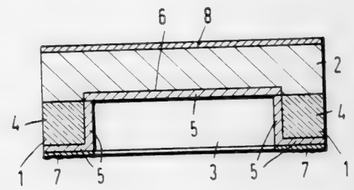


1. A method of fabricating an electroluminescent semiconductor device having a recombination region comprising the step of:
depositing the semiconductor material of the device from the liquid phase wherein at least the portion deposited in the vicinity of the recombination region of the device is deposited from a solution saturated with the semiconductor material at a rate greater than 10 microns per minute by cooling said saturated solution at a rate greater than 18°C. per minute.

3,963,537
PROCESS FOR THE PRODUCTION OF A SEMICONDUCTOR LUMINESCENCE DIODE

Hermann Kniepkamp, Munich, and Guenter Winstel, Ottobrunn, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 27, 1974, Ser. No. 500,844
Claims priority, application Germany, Oct. 2, 1973, 2349544
Int. Cl.² H01L *21/306, 29/06, 33/00*
U.S. Cl. 148—175 **7 Claims**

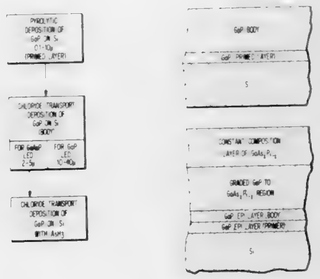


1. In the process of producing a semiconductor luminescence diode in which an epitaxial layer is deposited on a monocrystal composed of a semi-insulating semiconductor material and a pn-junction is formed in the epitaxial layer in such a manner that at least a part of the surface of the pn-junction runs parallel to the boundary area between said monocrystal and said epitaxial layer, the combination of said epitaxial layer and said monocrystal providing a light emitting diode, the improvement which comprises removing a portion of said monocrystal at least up to the level of the epitaxial layer to leave a border of monocrystal material, diffusing a dopant into the thus exposed epitaxial layer and the remaining border of monocrystal material to produce said pn-junction in said epitaxial layer, and finally applying a block-free electrode to each side of the resulting pn-junction.

3,963,538
TWO STAGE HETEROEPITAXIAL DEPOSITION PROCESS FOR GaP/Si

Robert W. Broadie, Hopewell Junction; Bernard M. Kemlage, Kingston, and H. Bernard Pogge, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1974, Ser. No. 533,604
Int. Cl.² H01L *21/205, 33/00*
U.S. Cl. 148—175 **16 Claims**

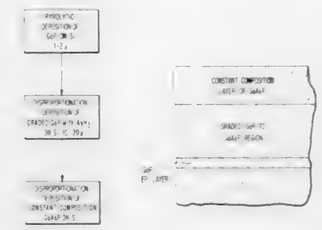


1. A method of growing gallium phosphide on a silicon substrate comprising the steps of:
subjecting the silicon substrate to a high temperature bake cycle in the range of 1100°C for approximately 2 minutes;
pyrolytically depositing a first layer of GaP on Si to form a continuous thin epitaxial film; and
depositing a second layer of GaP onto the first layer by the halide transport process to form an epitaxial layer of GaP on the GaP primed Si suitable for use in the production of light emitting diodes.

3,963,539
TWO STAGE HETEROEPITAXIAL DEPOSITION PROCESS FOR GaAsP/Si LED'S

Bernard M. Kemlage, Kingston, N.Y.; Jerry M. Woodall, Saratoga, Calif., and William C. Wuestenhoefer, Mahopac, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1974, Ser. No. 533,590
Int. Cl.² H01L *21/205, 33/00*
U.S. Cl. 148—175 **6 Claims**

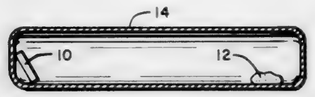


1. A method of making a light emitting diode comprising the steps of:
pyrolytically depositing a first layer of gallium phosphide on silicon to form a thin epitaxial film;
depositing a graded second layer of GaP onto the first layer of GaP by the halide transport process with the bandgap of the GaP being altered by the addition of AsH_3 until a constant composition layer of GaAsP is achieved; and
growing a constant composition layer of GaAsP at an appropriate LED wavelength.

3,963,540
HEAT TREATMENT OF MERCURY CADMIUM TELLURIDE

Russell J. Camp, Jr., St. Louis Park; Maurice L. Hitchell, Bloomington; Joseph L. Schmit, Hopkins, and Ernest L. Stelzer, Minnetonka, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 28, 1975, Ser. No. 554,293
Int. Cl.² C22F *1/02*
U.S. Cl. 148—20.3 **10 Claims**



1. A method of adjusting the stoichiometry of mercury cadmium telluride, the method comprising:
heating a body of mercury cadmium telluride and a quantity of excess constituent in a closed environment to a temperature near the solidus temperature of the body to provide a constituent vapor pressure within the closed environment; and

cooling the closed environment while maintaining a temperature profile within the closed environment to prevent any portion within the closed environment from being cooler than the body.

3,963,541

METHOD OF MANUFACTURING REACTION MIXTURES OF FINELY DIVIDED METALS OR ALLOYS AND SOLID PERHALOGENATED CARBON COMPOUNDS

Udo Klaus Paul Biermann, Eindhoven, and Johann Schroder, Aachen, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 13, 1973, Ser. No. 369,751

Claims priority, application Germany, June 21, 1972, 2230120

Int. Cl.² C06B *45/10*

U.S. Cl. 149—19.92 **2 Claims**

1. A method of manufacturing a mixture of finely divided metals or alloys and solid perhalogenated carbon compounds capable of reaction upon ignition without the formation of gases or vapors, said method comprising forming a solution of said solid polyhalogenated carbon compounds in a solvent consisting of liquid perhalogenated compounds, dispersing said finely divided metal or alloy in said solution and removing said solvent from said solution.

3,963,542

OXIDIZER COMPATIBLE SOLID PROPELLANT FLUORINE ATOM GAS GENERATOR

Donald Pilipovich, Agoura, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 18, 1973, Ser. No. 407,715

Int. Cl.² C06B *31/00, 27/00, 43/00, 45/10*

U.S. Cl. 149—19.3 **8 Claims**

4. A solid propellant fluorine atom gas generator system comprising:

a fluorocarbon as the binder and primary fuel source, and

NF_4BF_4 as a fluorine-containing oxidizer material having the oxidizing power contained substantially in the cation thereof.

7. A solid propellant fluorine atom gas generator system consisting of:

about 50–70 weight percent of a fluorine-containing oxidizer material having the oxidizing power contained substantially in the cation thereof,

about 30–50 weight percent of a fluorocarbon as a binder and primary fuel source, and

more than about 0 but less than about 15 weight percent of a powdered metal auxiliary fuel.

3,963,543

PRIMING FORMULATION FOR RIM FIRE AMMUNITION

Neil Prange, Florissant, Mo., assignor to Olin Corporation, New Haven, Conn.

Filed Sept. 4, 1975, Ser. No. 610,345

Int. Cl.² C06C *7/00*

U.S. Cl. 149—23 **3 Claims**

1. A glassless priming composition for percussion ignition ammunition, said composition comprising: at least one primary explosive constituent; at least one oxidizing constituent, and ground zirconium oxide particles for use as a frictionator and sensitizer.

3,963,544

PRIMING FORMULATION FOR RIM FIRE AMMUNITION

Edward Anthony Staba, Higganum, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Sept. 4, 1975, Ser. No. 610,512

Int. Cl.² C06C *7/00*

U.S. Cl. 149—23 **3 Claims**

1. A glassless priming composition for percussion ignition ammunition, said composition comprising: at least one primary explosive constituent; at least one oxidizing constituent; and a frictionator and sensitizer consisting of particles of ground cupric oxide.

3,963,545

ENERGETIC DOUBLE BASE PROPELLANT COMPOSITION

William E. Thomas, Lacey's Spring, and Thomas E. Martin, Blountsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,161

Int. Cl.² C06B *25/34, 25/24, 25/26, 25/02*

U.S. Cl. 149—92 **2 Claims**

1. An energetic double base, solventless, extrudable propellant composition consisting essentially of about 48-52 weight percent of nitrocellulose, about 40–44 weight percent of nitroglycerin, about 2–4 weight percent of di-n-propyladipate, about 2-2.5 weight percent of 2-nitrodiphenylamine, about 0.1–0.2 weight percent candelilla wax, and about 1.0–1.3 weight percent aluminum.

3,963,546

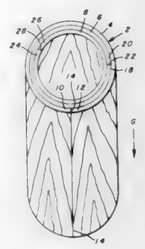
METHOD OF MAKING A MULTIPLE PLY WOOD ARTICLE

Barney Roberti, Mathews Run Road, Youngsville, Pa. 16371

Division of Ser. No. 488,327, July 15, 1974. This application Mar. 25, 1976, Ser. No. 561,750

Int. Cl.³ B29C *27/00*

U.S. Cl. 156—69 **10 Claims**



1. A method of manufacturing a multiple ply wood article comprising

providing a first wood veneer ply and a second wood veneer ply,

immersing said wood veneer plies in water at a temperature above about 200°F for a period sufficient to increase the flexibility of said plies,

removing said plies from said elevated temperature water,

forming a first wood veneer ply into a generally tubular shape with a pair of confronting ends and having a grain oriented generally in a first direction,

forming a second wood veneer ply into a generally tubular shape generally similar to the shape of said first wood veneer ply with a pair of confronting ends and having its grain oriented generally in said first direction,

applying adhesive means to at least one of the exterior surface of said first wood veneer ply and the interior surface of said second wood veneer ply,

placing said second wood veneer ply in exteriorly disposed surface to surface adjacency with respect to said first wood veneer ply with the grain orientations of said first and second wood veneer plies being generally parallel, and

securing said wood veneer plies in such relative position to establish a tubular article.

3,963,547

METHOD OF MANUFACTURING COMPOSITE HEAT-INSULATING MATERIAL

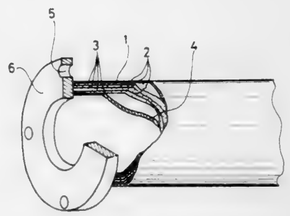
Yasuhisa Kaneko, and Fumiyoshi Noda, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 2, 1974, Ser. No. 457,363

Claims priority, application Japan, Apr. 11, 1973, 48-41075

Int. Cl.² B32B *5/18*

U.S. Cl. 156—79 **6 Claims**



1. A method of manufacturing a composite heat insulating material comprising the steps of

forming on aluminum foil a coating of an unexpanded foamable ceramic material selected from the group consisting of water glass and water glass mixed with aluminum hydroxide, magnesium hydroxide, or alumina while causing said unexpanded material to adhere to said foil,

introducing a plurality of layers of said coated foil into an enclosed space between an inner member and an outer jacket encircling said inner member with said layers parallel to the wall of said jacket, and

then heating said layers to cause foaming of said ceramic material to form an expanded heat insulating body filling said space.

3,963,548

APPARATUS AND METHOD OF FORMING HEMMED CURTAINS AND THE LIKE

Alexander George, Charlotte; Howard Snelson, Hickory; James White, Mooresville, and Jacob D. Lentz, Jr., Troutman, all of N.C., assignors to Miracle Seam, Inc., Charlotte, N.C.

Filed May 28, 1974, Ser. No. 473,426

Int. Cl.² B31F *1/00*

U.S. Cl. 156—88 **24 Claims**

1. Apparatus for forming hemmed curtains and the like from a continuous length of fabric, said apparatus including:

a. means for selectively advancing said continuous length of fabric along a generally horizontal path of movement and stopping said advance after said fabric has moved a predetermined distance to present said fabric at an operating station for processing;

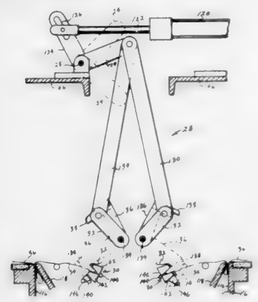
b. means located at said operating station for cutting said fabric into two pieces along a line transverse to said path of movement thereof;

c. means located at said operating station for folding the end portion of each of said cut fabric pieces along a first transverse fold line to overlap a first adjacent portion of said fabric piece and for folding said first adjacent portion along a second transverse fold line to overlap a next adjacent portion of said fabric piece with said end portion disposed between said first and next adjacent portions so as not to expose the cut edge of said end portion, said folding means being arranged to first tuck said fabric along said second transverse fold line after said fabric has been cut and to tuck said fabric along said first transverse fold line at a location between said first tuck and the cut end of said fabric piece, and

d. means located at said operating station for securing said fabric piece to its next adjacent fabric portion along a transverse line located near the cut edge of said end portion and located between said first and second transverse fold lines to thereby form a permanent double-fold in each said fabric piece.

22. A method of forming hemmed curtains and the like from a continuous length of fabric, said method including the steps of

a. selectively advancing said continuous length of fabric along a generally horizontal path of movement and stopping said advance after said fabric has moved a predetermined distance;



b. carrying at least two adhesive filaments transversely across said fabric in spaced parallel relation to one another;

c. cutting said stopped fabric into two pieces along a line transverse to said path of movement thereof, and intermediate said spaced adhesive filaments;

d. folding the end portion of each said stopped fabric pieces along a first transverse fold line to overlap a first adjacent portion of said fabric piece and then folding said first adjacent portion along a second transverse fold line to overlap a next adjacent portion of said fabric piece with said end portion disposed between said first and next adjacent portions so as not to expose the cut edge of said end portion and with one of said adhesive filaments disposed between said end portion and said next adjacent portion of each said fabric piece; and

e. heating said adhesive filaments while said fabric is stopped to melt said adhesive filament and secure said end portions of each fabric piece to said next adjacent portion thereof.

3,963,549

METHOD AND APPARATUS FOR PRODUCING CONTINUOUS SURFACE ELEMENTS

Max Otto Henri Rasmussen, Rabjerg 8, 2690 Karlslunde, Denmark

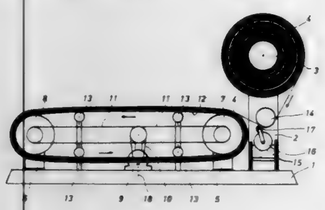
Filed June 13, 1974, Ser. No. 478,958

Int. Cl.² B65H *81/00;* **B29C** *17/00;* **B32B** *7/14*

U.S. Cl. 156—193 **5 Claims**

1. Method for producing continuous surface elements, for instance for the so-called air supported shelters, and consisting of tubular formed units of flexible material lying side by side characterized in winding tubular foil, preferably of plastic material, in several layers between two drums, the distance between which is mainly equal to multiples of said breadth, applying adhesive to the tubular foil immediately before wind-

ing on the drums, such that the outward side of the tubular foil on a preceding winding adheres along a path to the inward side of the tubular foil in the following winding, and cutting the windings, after winding a suitable number of loops depending on the desired length of the surface element, mainly



perpendicular to the longitudinal direction of the tubular foil, pulling the two outer tubular foils in the stack thus obtained from each other along their whole length, and furthermore introducing suitable braces in each individual tubular foil section.

3,963,550

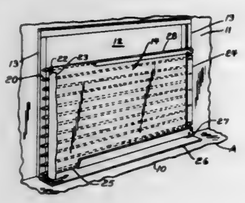
GRAIN DOOR AND METHOD OF MAKING

William E. Bruning, and Michael J. Ford, both of Omaha, Nebr., assignors to Omni Corporation, Omaha, Nebr.

Division of Ser. No. 389,951, Aug. 20, 1973. This application Oct. 21, 1974, Ser. No. 516,216

Int. Cl.² B32B *31/04*

U.S. Cl. 156—252 **1 Claim**



1. In a method of producing grain doors, the steps of advancing a generally rectangular double face corrugated panel along a predetermined path,

applying a plurality of spaced apart stripes of adhesive to one face of said panel with said stripes extending parallel to said path while terminating each stripe a spaced distance inwardly of the adjacent end of said door panel to permit ready development of a side flap,

unwinding a plurality of rolls of metal ribbon, one for each stripe and punching openings in each ribbon in a plurality of longitudinally aligned, equally spaced apart positions only adjacent each strap end to provide areas for nailing each strap end to a car door post, said openings being relatively elongated in the direction of said path,

transversely, arcuately severing each ribbon to provide a strap for each stripe having a length slightly less than the panel dimension parallel to said path, and

pressing a strap into engagement with each stripe.

3,963,551

METHOD FOR BONDING SEMICONDUCTOR CHIPS

Edward J. Marlinski, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Division of Ser. No. 448,330, March 5, 1974, Pat. No. 3,933,187. This application Jan. 17, 1975, Ser. No. 541,831

Int. Cl.² H05K *3/00*

U.S. Cl. 156—295 **3 Claims**

1. In a method for bonding a semiconductor chip to a contact pad in a hybrid circuit using a tubular dispenser having a dispenser tip, comprising the steps of:

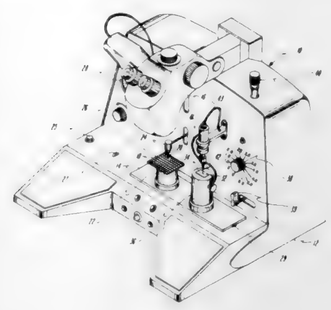
a. pressurizing a conductive epoxy within the dispenser until a small drop forms adjacent the end of the dispenser tip;

b. touching said epoxy drop to said contact pad;

c. releasing the pressure within the dispenser;

d. reciprocating said dispenser tip away from said contact pad, thereby leaving a deposit of epoxy on said pad; and

e. placing a chip on said deposit of epoxy, the improvement comprising the steps of:



f. providing a stop mechanism reciprocatable together with said dispenser tip and spaced apart from and extending downwardly a distance beyond said dispenser tip, and

g. bringing the dispenser tip from a first, upper, position to a second, lower, position at a predetermined distance, which is independent of work and work holder variations and is determined by the distance by which said stop mechanism extends beyond said dispenser tip, from the upper surface of said pad, thereby touching only a predetermined area of said epoxy drop to said contact pad.

3,963,552

METHOD OF FEEDING SHEETS TO A CONTINUOUS LAMINATING PRESS

Arthur L. Troutner; John R. Russell; Alan W. Johnson, and Clifford R. Johnson, all of Boise, Idaho, assignors to Trus Joist Corporation, Boise, Idaho

Division of Ser. No. 258,898, June 1, 1972, Pat. No. 3,841,145. This application May 8, 1974, Ser. No. 467,944

Int. Cl.² B65H *29/66*

U.S. Cl. 156—299 **3 Claims**



1. The method of assembling of sheets of material into a linearly extending stack, comprising the steps of:

a. arranging a first stack of sheets above a rectilinear conveyer with the sheets progressively overlapped by predetermined increments in the direction of conveyer travel with the bottom sheet of the stack forwardmost and with the forward portion of said bottom sheet engaging the rectilinear conveyer,

b. advancing the rectilinear conveyer by a predetermined increment to deposit said bottommost sheet of the first stack upon the rectilinear conveyer,

c. placing a first sheet, which is to form one sheet of a second stack, on the rectilinear conveyer with its leading end overlapping the trailing end of the sheet from the first stack already deposited thereon,

d. advancing the rectilinear conveyer by a predetermined increment to deposit the new bottommost sheet of the first stack on said first sheet of the second stack,

e. placing a second sheet, which is to form part of the second stack, on said new bottommost deposited sheet of the first stack,

f. repeating steps *b*, *c*, *d*, and *e* until all of the sheets of the first stack have been deposited on the rectilinear conveyer and a second stack has been built up thereon with its component sheets progressively overlapped at predetermined intervals with the sheets of the first stack,

g. elevating the trailing end of the second stack above the conveyer, and

h. building up on the rectilinear conveyer in like manner as specified in steps *b* to *g* successive overlapped stacks in a number calculated to produce a continuous sheet assembly of the desired length.

3,963,553

PROCESS FOR SEPARATING A NUMBER OF SHEETS INTO GROUPS

Masataka Kiritani, and Hajime Kato, both of Fujimiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 11, 1974, Ser. No. 531,500

Claims priority, application Japan, Dec. 11, 1973, 48-139417

Int. Cl.² B41L *1/24*

U.S. Cl. 156—305 **9 Claims**

1. A process for separating a number of pressure sensitive copying papers into groups which comprises (1) coating an adhesive composition comprising a naphthalene sulfonic acid-formaldehyde condensation product and a water-soluble metal salt on an edge of a stack assembly of said copying papers and then (2) fanning said copying papers; said naphthalene sulfonic acid-formaldehyde condensation product comprising about 5 to 40% by weight of the adhesive composition and said watersoluble metal salt, which consists of an ammonium salt or a salt of a metal selected from the group consisting of a univalent metal, a divalent metal and a trivalent metal, comprising about 0.1 to 6% by weight of the adhesive composition.

3,963,554

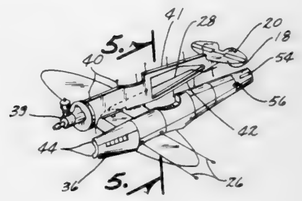
METHOD OF ASSEMBLING MODEL AIRPLANE

Glen Sigafoose, 401 S. Front, Montezuma, Iowa 50171

Division of Ser. No. 95,059, Dec. 4, 1970, Pat. No. 3,699,706. This application Dec. 23, 1971, Ser. No. 211,591

Int. Cl.² A63H *27/00*

U.S. Cl. 156—304 **1 Claim**



1. The method of assembling a model airplane fuselage comprising the steps of,

providing a single balsa wood flat profile fuselage,

positioning a series of pins in the plane of said profile fuselage on the top and bottom longitudinal edges of said profile fuselage substantially along its longitudinal centerline,

positioning one of a pair of plastic convex outwardly half sections of substantially sheet material to the side of said profile fuselage with the longitudinal edges thereof engaging said pins and glue being applied to bond said half section to said profile fuselage longitudinal edges,

removing said pins, and

positioning said other fuselage half section to said profile fuselage with the longitudinal edges of said half sections substantially engaging each other and covering the top and bottom longitudinal edges of said profile fuselage and glue being applied to bond said other half section to said profile fuselage longitudinal edges.

3,963,555

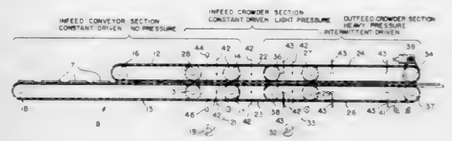
METHOD AND APPARATUS FOR EDGE GLUING

Arnold A. Zweig, Olympia, Wash., assignor to Simpson Timber Company, Seattle, Wash.

Filed Dec. 28, 1973, Ser. No. 429,267

Int. Cl.² B32B *31/00*

U.S. Cl. 156—358 **8 Claims**



1. A crowder mechanism for edge gluing individual sheets of material having non-parallel edges to form a continuous ribbon thereof which issues from the outfeed end of the crowder mechanism in straight line flow regardless of the irregular shape of the individual sheets fed into the infeed end of the crowder mechanism, comprising:

a constantly driven infeed crowder section for conveying the individual sheets into edge abutting relationship with the trailing edge of the continuous ribbon being formed having first pressure means exerting a first pressure on the sheets sufficient to contact and convey the sheets but allowing lateral shift thereof as necessary in order for the leading edge of the sheet being conveyed to abut with the trailing edge of the ribbon being formed;

an outfeed crowder section receiving the abutting individual sheets conveyed by the infeed crowder section having second pressure means acting against the upper and lower faces of the sheets sufficient to prevent any substantial lateral movement of the continuous ribbon being formed and conveyed;

intermittent variable torque, load responsive drive means driving the outfeed crowder section at a speed to create light abutting edge pressure between the abutting sheets as they move through the infeed crowder section to the outfeed crowder section;

sensing and signal means for sensing pressure of an individual sheet into the infeed crowder section; and

means operating the intermittent drive means of the outfeed crowder section responsive to the sensing and signal means to interrupt operation of the outfeed crowder section in the absence of sheets entering the infeed crowder section.

5. In a crowder mechanism for advancement of individual sheets of material into edge abutment with preceding advancing sheets to form a continuous ribbon thereof, said crowder mechanism including:

first and second sets of crowder members, each set including spaced apart upper and lower endless crowder members disposed above and below said advancing sheets with means to pressure said crowder members into contact with the surfaces of the sheets,

a drive and pressurizing system comprising:

first drive means connected to constantly drive said first set of upper and lower crowder members,

intermittent variable torque, load responsive drive means connected to drive the second set of upper and lower crowder members at a speed to create light abutting edge pressure between the abutting

sheets as they move through the first set of crowder members to the second set of crowder members,

sensing and control means responsive to the passage of sheets into said first set of crowder members for controlling the operation of said intermittent drive means so that said second set of crowder members is driven only upon passage of sheets into said first set of crowder members,

first pressure means for exerting a first pressure on said first set of crowder members allowing lateral shift of the individual sheets of material as necessary for the leading edges of the sheets being conveyed to abut with the trailing edge of the continuous ribbon being formed, and

second pressure means for exerting a second pressure in excess of said first pressure on the second set of crowder members, said second pressure being great enough to cause the associated upper and lower crowder members to firmly grip the advancing sheets so as to prevent lateral movement thereof during advancement, the continuous ribbon of sheet material issuing from the outfeed of the second set of crowder members in straight line movement.

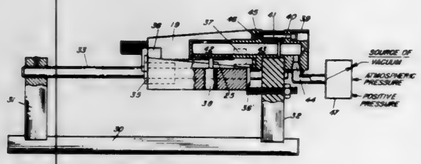
3,963,556
MORTAR CAVITY LINING

Harold A. Patterson, Middle Village, N.Y., and Victor Danylik, Dover, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 376,260, July 3, 1973, which is a division of Ser. No. 220,149, Jan. 24, 1972. This application July 26, 1974, Ser. No. 492,083

Int. Cl.² B69D *3/00*

U.S. Cl. 156—423 **1 Claim**



1. An apparatus for adhesively bonding a metallic foil with the cartridge chamber of a separable mortar shell having flash holes which comprises:

a support for fixedly holding a mandrel means,

a cradle for holding said mortar shell,

a pin disposed in and extending out of said cradle for engagement in one of said flash holes,

fixedly held guide means for supporting said shell cradle for movement toward and from said mandrel means in alignment for insertion of said mandrel means into said chamber, said mandrel means including:

a hollow perforated mandrel having its interior communicating with an inlet port, and sealing means for providing a gaseous seal between said shell and said mandrel when said shell is disposed on said cradle and said mandrel is disposed within said chamber,

whereby said mandrel may be evacuated to retain thereabout an adhesively coated metallic foil, inserted into said chamber, and thereafter have positive pressure applied to blow out said foil against the wall of said chamber.

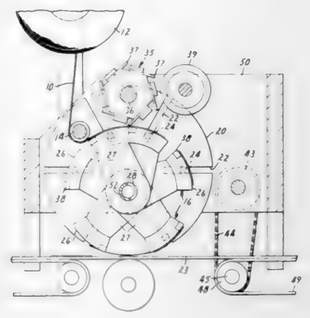
3,963,557
ARTICLE TRANSFERRING APPARATUS

Richard A. Patterson, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 473,327, May 28, 1974, abandoned. This application Apr. 28, 1975, Ser. No. 571,907

Int. Cl.² B32B *31/00*; **B65C** *9/00*

U.S. Cl. 156—519 **9 Claims**



1. An apparatus suitable for receiving articles fed thereto continuously at a first feed rate and transferring said articles to a receiver at a different rate in different spacial relationship, said apparatus comprising:

a frame;

a driving wheel rotatably mounted on said frame on a first axis and having a plurality of generally radially extending cam surfaces;

means for rotating said driving wheel;

a plurality of supporting segments, each having an article supporting surface, rotatably mounted on arms extending radially outward from a second axis in parallel, spaced, fixed relationship to said first axis and supported by said frame;

cam followers attached to said segments and engaged with said cam surfaces on said driving wheel for imparting the rotational force of said driving wheel to said segments to rotate said segments about said second fixed axis;

drive means for feeding a continuous supply of articles to the supporting surface of said segments at an article receiving area;

holding means for holding individual articles in contact with a said supporting surface of each said segment between said receiving area and a transfer area spaced therefrom about the path of rotation of said supporting surfaces about said second axis whereby, upon rotation of said driving wheel, said supporting surfaces are driven about said second axis past said receiving area to receive an article and then to said transfer area to transfer the articles to a receiver in a different spacial relationship.

3,963,558
APPARATUS AND METHOD FOR PRODUCING SOLID POLYMERIC MATERIAL FROM A DILUTE POLYMER SOLUTION

Richard H. Skidmore, Strafford, Pa., assignor to W Bar E, Incorporated, Marianna, Fla.

Filed Dec. 9, 1974, Ser. No. 530,511

Int. Cl.² B01D *1/28*; **B01F** *7/02*; **A01J** *17/00*

U.S. Cl. 159—2 E **13 Claims**

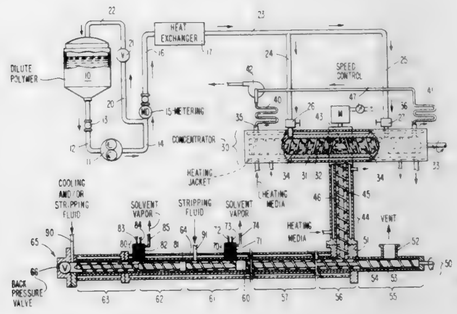
1. In an apparatus for producing solid polymer from a polymer solution which contains about 5 – 50% by weight of solid polymer in about 50 – 95% by weight of a solvent, the combination which comprises:

a. means for heating said polymer solution, and means for feeding it under pressure.

b. a concentrator connected to accept said heated and pressurized solution as a feed solution, including a low pressure chamber portion into which the feed polymer solution is introduced, and a vent means for release of solvent vapor vaporized in said chamber,

c. an extruder connected to receive the concentrated polymer solution from said concentrator, said concentrated polymer solution having a polymer content of about 30 – 80% by weight and about 70 – 20% by weight of solvent,

d. vent means on said extruder upstream of said solution receiving connection for venting further solvent vapor from the concentrated polymer feed,



e. counter-current fluid introducing means positioned downstream of the feed to said extruder and having connecting means for the introduction and flow of fluid counter-current to the movement of said concentrated polymer in said extruder,

f. means on said extruder for removal of said fluid and of materials stripped from said concentrated polymer by said fluid, at a location upstream of the point of introduction of said counter-current fluid but downstream of the point of introduction of said concentrated polymer, and

g. means at the extruder exit for controlling the back pressure of the polymer extruded from said extruder.

3,963,559
SPRAY DRYING DEVICE FOR THE PRODUCTION OF POWDER, E.G. MILK POWDER

Mogens Petersen, No. 31 Tjornevej, 2800 Lyngby, and Klaus Erik Gude, No. 22 Viekaer, 2950 Vedbaek, both of Denmark

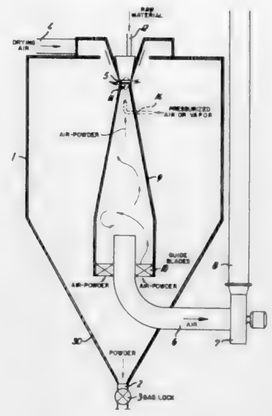
Continuation of Ser. No. 218,367, Jan. 17, 1972, abandoned. This application July 24, 1974, Ser. No. 491,192

Claims priority, application Denmark, Jan. 19, 1971, 209/71

Int. Cl.² B01D *1/16*

U.S. Cl. 159—4 S **7 Claims**

1. A spray drying apparatus for the production of powder, comprising a drying chamber; a vertically axised rotatable atomizer wheel mounted in the upper portion of said chamber; means for supplying a solution or dispersion of solids to said atomizer wheel; means for supplying drying air to said drying chamber adjacent said wheel; an outlet for withdrawing powder from said drying chamber in the lowest thereof; a cyclone mounted vertically in said drying chamber and coaxially with said wheel for separating powder from spent drying air, said cyclone having (i) a bottom, peripheral tangential air-powder inlet communicating directly with the lower portion of said drying chamber, (ii) an air-powder outlet located subjacent to and coaxially with said atomizer wheel so as to provide a passage for air and powder discharge from said cyclone towards said atomizer wheel, (iii) and an air outlet for withdrawing spent drying air from within said cyclone; means for producing inflow of air and powder to said cyclone through



said air-powder inlet; said air outlet providing for outflow of air from said cyclone and drying chamber.

3,963,560
COMPOSITION FOR DEINKING WASTE PAPER

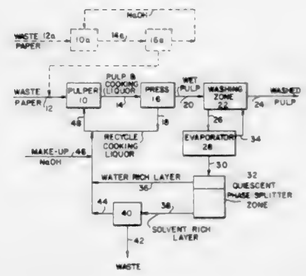
Thomas S. Mestetsky, Belvidere, N.J., and Bruce G. Webster, Cincinnati, Ohio, assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 302,657, Nov. 1, 1972, Pat. No. 3,846,227. This application Oct. 31, 1974, Ser. No. 519,748

The portion of the term of this patent subsequent to Nov. 5, 1991, has been disclaimed.

Int. Cl.² D21C *5/02*

U.S. Cl. 162—5 **9 Claims**



1. A waste paper pulp deinking composition containing between about 1 and about 20 weight percent waste paper based on the weight of the waste paper deinking composition employed and a waste paper deinking composition comprising from about 0.5 to about 200 parts by weight of water, from about 0.05 to about 1 part by weight of a water-soluble nonvolatile, inorganic ionic compound containing a cation taken from the group consisting of sodium, potassium, calcium, iron, aluminum and magnesium, and from about 0.75 to about 25 weight percent of an N-alkyllactam solvent.

3,963,561
RECIRCULATION OF UNCONSUMED OXYGEN PULP BLEACHING GAS

Johan Christoffer Fredrik Carl Richter, St.-Jean-Cap-Ferrat, France, assignor to Kamyr Aktiebolag, Karlstad, Sweden

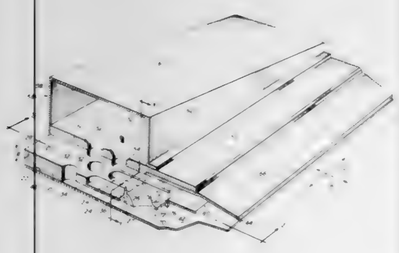
Filed Aug. 26, 1974, Ser. No. 500,899
Claims priority, application Sweden, Aug. 27, 1973, 1150/73
Int. Cl.² D21C 9/10
U.S. Cl. 162—17 4 Claims

1. A method of treating cooked fiber pulp as it comes from a continuous digestor comprising:
a. intensively mixing said fiber pulp with an oxygen containing gas;
b. feeding the mixed pulp to a reaction chamber;
c. passing said mixed pulp upwardly through an upflow funnel within said chamber;
d. allowing the mixed pulp to fall in a cascading down flow manner into a ring chamber between said funnel and the reaction chamber shell; and
e. removing the treated pulp from said reaction chamber, while
f. recirculating surplus oxygen containing gas from the upper portion of said chamber by removing said surplus gas from the chamber and emulsifying the removed gas with said cooked fiber pulp prior to feeding the mixed pulp to the reaction chamber:
whereby unconsumed gas in steps (a) through (d) is returned to the upper portion of said reactor together with said cooked fiber and in said ring chamber no gas is admitted other than that which has been mixed in the pulp.

3,963,562
SLURRY DISTRIBUTOR

Harold E. Dunlap, Auburn, Mass., assignor to Lodding Engineering Corporation, Auburn, Mass.

Filed Jan. 14, 1974, Ser. No. 432,901
Int. Cl.² D21F 1/06
U.S. Cl. 162—343 7 Claims

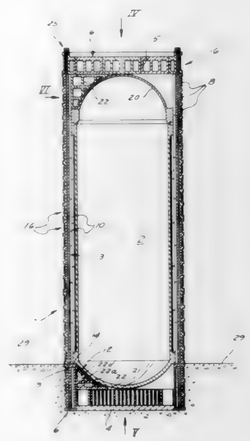


1. A distributor of liquid slurry for a web-forming machine, said distributor comprising means defining a plurality of separated slurry passages, each passage having a slurry-receiving end and a slurry-delivery end, and being continuous between said ends, said passages being distributed in the cross-machine direction, all of said passages having slurry-receiving ends oriented in a first direction for receiving slurry from a common source, each passage making a substantially rectangular direction change between its slurry-receiving end and its slurry-delivery end so as to orient said passage in a second direction prior to its slurry-delivery end, a slurry flow system including turbulence-inducing means and means coupling all of the slurry-delivery ends of the passages to said turbulence-inducing means, and slice means for receiving slurry from said turbulence-inducing means.

3,963,563
BURST SHIELD FOR A PRESSURIZED NUCLEAR-REACTOR CORE AND METHOD OF OPERATING SAME

Burkhard Beine, Tonisvorst, and Franz Schilling, Kempen, both of Germany, assignors to Siempelkamp Giesserei KG, Krefeld, Germany

Filed Feb. 11, 1974, Ser. No. 441,492
Claims priority, application Germany, Feb. 13, 1973, 2306959
Int. Cl.² G21C 17/00
U.S. Cl. 176—19 R 11 Claims



1. A burst shield for a pressurized nuclear-reactor core, said shield comprising:
a base underneath said core;
a closed side wall extending upwardly from said base and spacedly surrounding said core, said wall being formed of a plurality of cast-iron elements and a plurality of elongated prestressing members under tension securing said elements together;
a top removably engaged with said wall over said core;
means for releasably securing said top to said wall over said core; and
a plurality of cast-iron filler bodies in the space between and engaging said wall and said core.

3,963,564
METHOD FOR PREVENTING TRITIUM CONTAMINATION OF SECONDARY SALT AND STEAM IN A MOLTEN SALT REACTOR

Alfred Lecocq, Bures-sur-Yvette, France, assignor to Commissariat a l'Energie Atomique, Paris, France

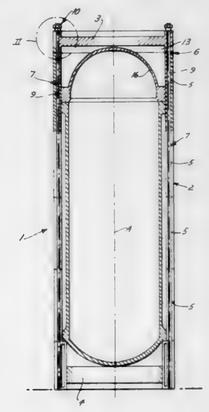
Filed Oct. 21, 1974, Ser. No. 516,421
Claims priority, application France, Oct. 24, 1973, 73.37874
Int. Cl.² G21C 15/00
U.S. Cl. 176—37 2 Claims

1. A method for preventing tritium contamination of the secondary salt and of the steam within a molten salt reactor, wherein said method consists in establishing within the secondary salt circuit a hydrogen pressure such that the hydrogen saturates the secondary salt and diffuses from said secondary salt to the primary salt.

3,963,565
HOLDDOWN ARRANGEMENT FOR REMOVABLE COVER OF A PRESSURIZED NUCLEAR-REACTOR CORE AND METHOD OF USING SAME

Burkhard Beine, Tonisvorst, Germany, assignor to Siempelkamp Giesserei KG, Krefeld, Germany

Filed Feb. 11, 1974, Ser. No. 441,491
Claims priority, application Germany, Feb. 13, 1973, 2306947
Int. Cl.² G21C 9/00
U.S. Cl. 176—38 8 Claims

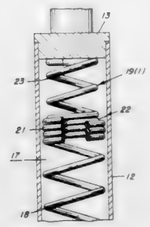


1. A prestressed shield for a nuclear reactor, said shield comprising:
an upright side wall having an upper edge and formed with a plurality of passages opening at said edge;
a cover engaged over said edge and having a plurality of throughgoing holes registrable with said passages;
a spacer element in each of said holes and extending up from said edge;
a stressing member in each of said passages and each having a lower end anchored below said edge and an upper end projecting up through a respective hole past a respective spacer element; and
means on said upper ends of said stressing members engaged selectively with said cover and with said spacer element for prestressing said members selectively against said cover and against said edge.

3,963,566
NUCLEAR FUEL COLUMN RETAINER

Donald F. MacMillan, Tokyo, Japan; Bart A. Smith, San Jose, and Richard P. Dubrule, Escondido, both of Calif., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 295,460, Oct. 6, 1972, abandoned. This application July 24, 1974, Ser. No. 491,276
Int. Cl.² G21C 3/16
U.S. Cl. 176—68 12 Claims

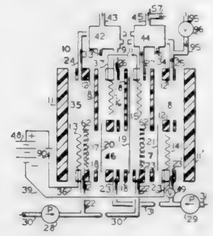


1. In a nuclear reactor fuel element comprising a tube, end plugs sealing the ends of said tube and a column of nuclear fuel disposed in a part of said tube thereby forming a plenum free of said nuclear fuel adjacent one of said end plugs, said one of said end plugs having a surface within said tube, the improvement comprising: a retaining spring extending through said plenum with one end adjacent said column of fuel and its other end short of said surface of said one of said end plugs; and a barrier member formed of a helical coil having a plurality of turns mated inside a plurality of turns of said other end of said retaining spring and extending to said surface of said one of said end plugs, said barrier member being formed of a material different from the material of said retaining spring.

3,963,567
ELECTROLYTICDIALYSIS

Marc Cole, 1057 C Argyll Circle, Lakewood, N.J. 08701

Filed Jan. 9, 1975, Ser. No. 539,632
Int. Cl.² B01K 5/00; C02B 1/82
U.S. Cl. 204—180 P 11 Claims



1. The method for electrolytically dialyzing the solute of a solution of an electrolyte, said solution being contained in each cell of a group of functionally joined cells, each of said cells being provided with an ion-selective membrane, and each of said cells being compartmented by an ion-impervious dielectric membrane, which comprises subjecting the said solution to the action of a common direct electric field in such manner as to cause migration of ions of like charge of said solution thru said ion-selective membrane into a compartment

of a neighboring cell whereas ions of opposite charge are sequestered by said ion-impervious membrane, allowing mutual electric discharge between the migrated and the sequestered groups of ions by electrically conductive means, recovering the resulting atoms, molecules, and reaction products of said atoms and molecules with the solvent of said solution, and also recovering a portion of the said solvent having a changed concentration of ions.

3,963,568

PROCESS FOR COATING ALUMINUM OR ALUMINUM ALLOY

Norio Nikaido; Shinji Shirai; Mototaka Iihashi, and Sueo Umemoto, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Ltd. and Fuji Sashi Industries, Limited, both of, Japan

Filed May 28, 1974, Ser. No. 474,052

Claims priority, application Japan, May 30, 1973, 48-61068; Aug. 24, 1973, 48-95473; Nov. 20, 1973, 48-131095

Int. Cl.² C25D *13/06, 13/10, 13/20*

U.S. Cl. 204—181 **11 Claims**

1. In coating aluminum or an aluminum alloy by contacting the aluminum or aluminum alloy with hot water or steam to form a boehmite layer on its surface and thereafter electrophoretically coating the aluminum or aluminum alloy with an electrophoretic coating composition to form a resin layer, a process which is characterized in that said electrophoretic coating composition contains at least one water-soluble salt of an oxyacid selected from the group consisting of silicic acid, boric acid, phosphoric acid, vanadic acid, tungstic acid, permanganic acid, molybdic acid and stannic acid, wherein said water-soluble salt is contained in an amount of 0.001 to 10 parts by weight, based on 100 parts by weight of the binder resin contained in the electrophoretic coating composition.

3,963,569

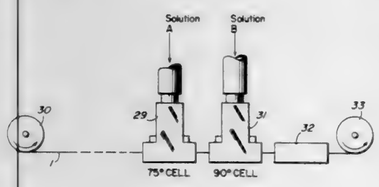
APPARATUS FOR PLATING ELONGATED BODIES

Emil Toledo, Natick, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 422,442, Dec. 6, 1973, Pat. No. 3,894,924, which is a division of Ser. No. 304,692, Nov. 8, 1972, Pat. No. 3,847,759, which is a division of Ser. No. 93,333, Nov. 27, 1970, Pat. No. 3,736,576. This application Dec. 5, 1974, Ser. No. 529,778

Int. Cl.² C25D *5/08, 17/00*

U.S. Cl. 204—206 **2 Claims**



1. Plating apparatus for plating magnetic memory storage wire comprising:

a plurality of plating cells;

each of said cells having a nonconducting body with a bore therein for the passage of said wire therethrough during plating;

each of said bores having a plurality of passages communicating therewith and spaced along said bore, the axes of said passages communicating with a first of said bores forming an angle with the axis of said first bore which is different from the angle of said passages communicating with a second of said bores;

means for producing a flow of plating electrolyte through said passages; and

means for passing a plating current through said electrolyte to a wire in said bores.

3,963,570

ULTRAVIOLET-INITIATED PREPARATION OF N,N-DIBUTYL-9(10)-DIBUTYLPHOSPHONOOCTADECANAMIDE

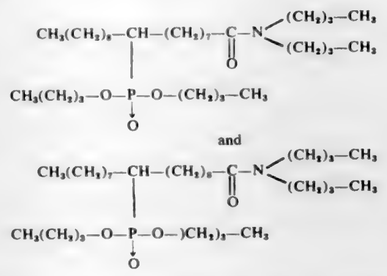
Jett C. Arthur, Jr., Metairie; Robert R. Mod, New Orleans, and James A. Harris, Pearl River, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 26, 1974, Ser. No. 509,584

Int. Cl.² B01J *1/10*

U.S. Cl. 204—158 R **5 Claims**

1. A process for preparing N,N-dibutyl-9(10)-dibutylphosphonooctanamide, which is represented by the general formula:



and

the process comprising exposing a mixture consisting essentially of N,N-dibutyloleamide and dibutyl phosphite in about 1:3 molar ratio to wavelength intensities selected from maximum wavelength group of 2537, 3000, and 3500 angstrom units, for periods of time of about from 5.5 to 17 hours.

3,963,571

OXIDATION OF HYDROXY ACIDS PRODUCED FROM BACTERIAL OXIDATION OF PARAFFINS

Howard W. Bost, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 10, 1974, Ser. No. 459,623

Int. Cl.² C12B *1/00*

U.S. Cl. 195—28 R **9 Claims**

1. A method of producing a macrocyclic ketone which comprises:

a. microbially oxidizing a n-paraffin containing from about 6 to about 22 carbon atoms to produce a fermentation liquor containing a mixture of a diacid and a hydroxy acid;

b. separating said mixture of said diacid and said hydroxy acid from said fermentation liquor;

c. subjecting said mixture to oxidizing conditions so as to oxidize said hyroxy acid to produce additional diacid;

d. esterifying said diacid to produce a diester;

e. condensing intramolecularly said diester to produce a cyclic hydroxy ketone; and,

f. reducing said cyclic hydroxy ketone to produce a macrocyclic ketone.

3,963,572

FERMENTATIVE PROCESS FOR THE PRODUCTION OF L-TRYPTOPHAN AND ITS DERIVATIVES

Sten Vilhelm Gatenbeck, Taby, and Per Olof Hedman, Johanneshov, both of Sweden, assignors to AB Bofors, Bofors, Sweden

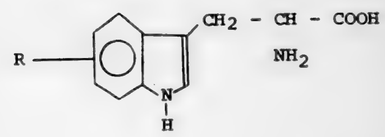
Filed Feb. 28, 1975, Ser. No. 554,344

Claims priority, application Sweden, Mar. 5, 1974, 7402889

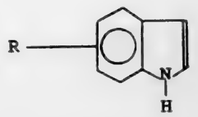
Int. Cl.² C12D *13/06*

U.S. Cl. 195—28 N **21 Claims**

1. Method for fermentative preparation of l-Tryptophan and derivative of the general formula



where R is hydrogen, hydroxyl, alkyl or alkoxy groups from indole or indole derivative of the general formula



where R has the same meaning as above, characterized in that the fermentation is carried out in a substrate consisting essentially of methanol as the main source for carbon and is carried out using methanol using bacteria of a type that assimilates methanol in such a way that the methanol after oxidation reacts with intracellular glycine, whereby serine is formed.

3,963,573

PROCESS FOR PRODUCING N-ACYL-L-METHIONINE

Clyde Eugene Stauffer, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 3, 1975, Ser. No. 554,947

Int. Cl.² C12B *1/00*

U.S. Cl. 195—29 **9 Claims**

1. A process for producing optically pure N-acyl-L-methionine comprising:

1. subjecting a mixture of N-acyl-L-methionine ester and N-acyl-D-methionine ester to the action of a proteolytic enzyme selected from the group consisting of microbially derived serine proteinases; and

2. separating the resulting N-acyl-L-methionine from the unreacted N-acyl-D-methionine ester.

3,963,574

PROCESS FOR PRODUCING 2-KETO-L-GULONIC ACID

Takayasu Sonoyama, No. 13-13, 2-cho, Takeshirodai, Sakai, Osaka Pref.; Hiroyoshi Tani, No. 3, 3-chome, Saigodori, Moriguchi, Osaka Pref.; Bunji Kageyama, No. 2-3, Shimokainijiyokoyama, Nagaokakyo, Kyoto Pref.; Kobee Kobayashi, No. 5-11, Omori-cho, Nishinomiya, Hyogo Pref.; Tahiko Honjo, No. 973, Nline, Minoo, Osaka Pref., and Shigeo Yagi, No. 10-3, 3-chome, Matsugaoka, Takatsuki, Osaka Pref., all of Japan

Filed Mar. 21, 1975, Ser. No. 560,886

Claims priority, application Japan, Sept. 20, 1974, 49-109315

Int. Cl.² C12D *1/02*

U.S. Cl. 195—30 **7 Claims**

1. A process for producing 2-keto-L-gulonic acid or a salt thereof which comprises; contacting the 2-keto-L-gulonic acid producing microorganism strain, *Brevibacterium nov. sp.* ASM-856-4, ATCC 31083, or treated cells of said microorganism strain having the enzyme activity to convert 2,5-diketo-D-gluconic acid to 2-keto-L-gulonic acid, with 2,5-diketo-D-gluconic acid or a salt thereof, under conditions sufficient to produce 2-keto-L-gulonic acid, and recovering the produced 2-keto-L-gulonic acid or any salts thereof from the resulting mixture.

3,963,575

PRODUCING PULLULANASE WITH ORGANISMS HAVING A SUPERIOR CAPACITY TO ELABORATE PULLULANASE

Anthony A. Bulich, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Feb. 25, 1974, Ser. No. 445,190

Int. Cl.² C12D *13/02, 13/10;* **C07G** *7/02*

U.S. Cl. 195—31 R **32 Claims**

1. In a method for producing pullulanase by inoculating an aqueous nutrient medium containing assimilable carbon and assimilable nitrogen sources with an aerobic, pullulanase producing microbial organism to provide a culture thereof, incubating the culture under aerobic conditions conducive to the production of pullulanase and thereby providing production culture media thereof, and thereafter recovering a pullulanase preparation from the production culture media, the improvement which comprises:

A. inoculating a nutrient medium with a pullulanase producing organism derived from the Klebsiella genus, wherein said organism is characterized as:

a. elaborating at least three times more pullulanase when amylopectin of a D.E. of less than 2.0 is employed as the sole carbohydrate source comparative to pullulanase elaboration in a nutrient medium wherein the major carbohydrate (on an equivalent carbohydrate weight basis) is a carbohydrate source member selected from the group consisting of maltose, dextrose, lactose and pullulan;

b. elaborating pullulanase at a ratio of extracellular pullulanase to superficially bound cell pullulanase between about 2:3 to less than 7:3 when said organism is elaborated in a nutrient medium containing amylopectin as the sole carbohydrate source;

c. elaborating pullulanase in a nutrient medium which contains dextrose as a sole carbohydrate source; and

B. incubating the pullulanase producing organism in a nutrient medium for a period of time sufficient to provide a production culture media which contains at least 350 units of pullulanase for each milliliter of production culture media with the production culture media containing a ratio of extracellular pullulanase to superficially bound pullulanase between about 2:3 to less than about 7:3.

26. A pullulanase preparation suitable for use in hydrolyzing alpha-1, 6-glucosidic starch linkages and prepared from a culture media containing at least 500 units of pullulanase for each milliliter of culture media with a ratio of extracellular pullulanase to superficially bound pullulanase from about 3:4 to about 2:1 wherein said preparation is elaborated by a Klebsiella pneumoniae organism characterized as:

a. elaborating at least three times more pullulanase when amylopectin of a D.E. of less than 2.0 is employed as the sole carbohydrate source comparative to pullulanase elaboration in a nutrient medium wherein the major carbohydrate (on an eqivalent carbohydrate weight basis) is a carbohydrate source member selected from the group consisting of maltose, dextrose, lactose and pullulan;

b. elaborating pullulanase at a ratio of extracellular pullulanase to superficially bound cell pullulanase between about 2:3 to less than about 7:3 when said mutant is elaborated in a nutrient medium containing amylopectin as the sole carbohydrate source; and

c. elaborating pullulanase in a nutrient medium which contains dextrose as a sole carbohydrate source.

29. In a method of hydrolyzing the alpha-1,6-glucosidic linkages of a starch to a starch hydrolyzate with a pullulanase preparation, the improvement which comprises conducting the hydrolysis in the presence of a pullulanase preparation derived from Klebsiella organisms characterized as:

a. elaborating at least three times more pullulanase when amylopectin of a D.E. of less than 2.0 is employed as the sole carbohydrate source comparative to pullulanase elaboration in a nutrient medium wherein the major carbohydrate (on an equivalent carbohydrate weight basis) is a carbohydrate source member selected from the group consisting of maltose, dextrose, lactose and pullulan;

b. elaborating pullulanase at a ratio of extracellular pullulanase to superficially bound cell pullulanase between about 2:3 to less than about 7:3 when said mutant is elaborated in a nutrient medium containing amylopectin as the sole carbohydrate source; and

c. elaborating pullulanase in a nutrient medium which contains dextrose as a sole carbohydrate source.

3,963,576

METHOD FOR RENDERING BACTERIA DORMANT AND THE PRODUCT PRODUCED THEREBY

Frank L. Horsfall, III, Cleveland, and Barton Gilbert, University Heights, both of Ohio, assignors to General Environmental Science Corporation, Cleveland, Ohio

Filed Feb. 21, 1975, Ser. No. 551,702
Int. Cl.² C12K *1/00*
U.S. Cl. 195—59 **20 Claims**

1. A method for rendering an aqueous suspension of bacteria dormant which comprises,

a. growing bacteria under aerobic conditions in an aqueous media in such a manner that said bacteria includes at least one species of Pseudemonas bacteria which is capable of enzymatically reducing nitrate to nitrogen and one species of Rhodopseudomonas bacteria which is capable of photosynthetically forming red pigment;

b. dissolving an effective amount of at least one sulfide compound selected from the group consisting of the sulfides of sodium, potassium and mixtures thereof in said bacteria containing media; and

c. exposing said sulfide containing media under anaerobic conditions to light for a period of time sufficient to cause red photosynthetic pigment to develop in the Rhodopseudomonas bacteria.

11. An aqueous suspension of dormant bacteria obtained by:

a. growing bacteria under aerobic conditions in an aqueous media in such a manner that said bacteria includes at least one species of Pseudemonas bacteria which is capable of enzymatically reducing nitrate to nitrogen and one species of Rhodopseudomonas bacteria which is capable of photosynthetically forming red pigment;

b. dissolving an effective amount of at least one sulfide compound selected from the group consisting of the sulfides of sodium, potassium and mixtures thereof in said bacteria containing media; and

c. exposing said sulfide containing media under anaerobic conditions to light for a period of time sufficient to cause red photosynthetic pigment to develop in the Rhodopseudomonas bacteria.

3,963,577

LYTIC ENZYME AND METHOD OF PREPARING SAME

Ljubov Nikolaevna Shinkarenko, ulitsa Komsomolskaya, 64/66, kv. 4; Julia Semenovna Babenko, ulitsa Gogolya, 27a, kv. 35, and Evgeny Fedorovich Grigoriev, ulitsa Darvina, 40, kv. 1, all of Dnepropetrovsk, U.S.S.R.

Filed Sept. 16, 1974, Ser. No. 506,746
Claims priority, application U.S.S.R., Sept. 28, 1973, 1962088
Int. Cl.² C12K *1/00*
U.S. Cl. 195—62 **7 Claims**

1. A method for preparing a lytic enzyme comprising growing *Actinomyces recifensis* var. *lyticus* 2435 in a nutrient medium, containing sources of nitrogen, carbon and mineral salts at a temperature of 25°–28°C for 3–5 days, separating *Actinomyces recifensis* var. *lyticus* 2435 from the culture medium and then isolating the lytic enzyme from the culture medium.

3,963,578

STABILIZATION OF PHOSPHOENOL PYRUVATE CARBOXYLASE

Walter Brent Aitken; Ronald Wayne Bussian, both of Newark; Robert Carroll Menson, and Venkatachalam Narayanswamy, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1974, Ser. No. 535,139
Int. Cl.² C07G *7/02*; G01N *31/14*
U.S. Cl. 195—63 **6 Claims**

1. A stable aqueous enzyme composition wherein the enzyme is phosphoenol pyruvate carboxylase and the stabilizer comprises from about 1 to about 10 m molar aspartate, from about 0.02 to about 0.1 m molar ethylene diamine tetraacetic acid, from about 0.6 to about 3.75 molar ammonium sulfate, and sufficient sodium phosphate to maintain the pH of the composition at from 6.0 to 6.8.

3,963,579

MICROBIOLOGICAL PROCESS FOR THE PRODUCTION OF PEPSTATINS

Hamao Umezawa, Tokyo; Takaaki Aoyagi, Fujisawa; Akira Takamatsu, Yokohama, and Taiji Inui, Chigasaki, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1974, Ser. No. 513,795
Claims priority, application Japan, Oct. 17, 1973, 48-116665; Oct. 20, 1973, 48-118404
Int. Cl.² C21D *13/06*
U.S. Cl. 195—80 R **6 Claims**

1. A process for producing pepstatins having a high content of pepstatin A, which comprises adding at least one member selected from the group consisting of L-leucine plus L-valine, their salts and their esters in the form of pure crystals, crude powder or concentrated solution thereof to a reaction medium comprising a cell growth-promoting system containing a pepstatin-producing microorganism belonging to Streptomyces and also containing an energy source, said at least one member being added to the reaction medium in a total amount of 0.6 to 6.0% of the medium and in a ratio of L-leucine, its salts and its esters to L-valine, its salts and its esters of 0.5 : 1 to 2 : 1 based upon the calculation thereof as free acid, cultivating said microorganism in said reaction medium at a pH between 5 and 8 under aerobic conditions at a temperature between 25° and 35°C whereby pepstatins are produced, and recovering the resulting pepstatins from said reaction medium.

3,963,580

METHOD FOR DETERMINING THE SUITABILITY OF MILK FOR BACTERIAL FERMENTATION ACTIVITY

Ebenezer R. Vedamuthu, Bradenton, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

Filed Feb. 10, 1975, Ser. No. 548,239
Int. Cl.² C12K *1/04*
U.S. Cl. 195—103.5 R **10 Claims**

1. The method of determining the bacterial fermentation activity of skim milk with dairy starter cultures by using a colorimetric oxidation reduction sensitive dye, which comprises:

a. providing the colorimetric dye in at least two separate sterile openable and resealable containers with a standard unadulterated sterile milk in one container and a milk to be tested in the other container;

b. introducing dairy starter cultures of milk fermenting bacteria into the containers in an equivalent amount of at least about 10^5 cells per ml; and

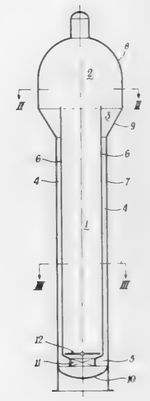
c. comparing the color change between the containers, wherein a fermentation defective milk is determined by a failure of the test milk to rapidly undergo the color change in relation to the color change in the standard milk container.

3,963,581

AIR LIFT FERMENTORS

Francesco Giacobbe, and Giampiero Longobardi, both of Rome, Italy, assignors to Compagnia Tecnica Industrie Petrolie S.p.A., Rome, Italy

Filed Feb. 24, 1975, Ser. No. 552,361
Claims priority, application Italy, Mar. 1, 1974, 48801/74
Int. Cl.² C12B *1/16*
U.S. Cl. 195—142 **6 Claims**



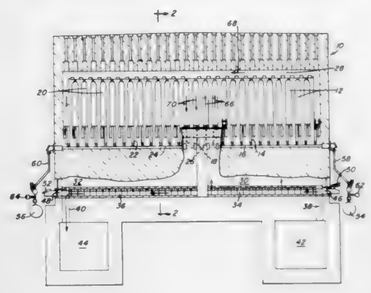
1. An air lift fermentor comprising a vessel including a hollow generally vertically disposed cylindrical body, a pair of spaced diaphragms located within said body and disposed generally longitudinally thereof and subdividing the interior of said body into a central fermentation zone and two lateral recirculation zones, said fermentation zone having an open lower end for receiving liquor to be fermented and said recirculating zones having upper and lower ends communicating with upper and lower ends of said fermentation zone for recirculating the liquor within said body, a heat exchanger mounted within a lower portion of said body, and an air distributor mounted within a lower portion of said fermentation zone for directing air substantially only into said fermentation zone.

3,963,582

METHOD AND APPARATUS FOR SUPPRESSING THE DEPOSITION OF CARBONACEOUS MATERIAL IN A COKE OVEN BATTERY

Edward J. Helm, and Linwood G. Tucker, both of Pittsburgh, Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Nov. 26, 1974, Ser. No. 527,395
Int. Cl.² C10B *43/00, 43/12*
U.S. Cl. 201—2 **11 Claims**



1. In a regenerative coke oven battery the combination comprising,

a pair of flues operable alternately in on and off combustion condition,

a rich fuel gas supply main extending along said coke oven battery,

a second gas supply main extending along said coke oven battery adjacent said rich fuel gas supply main,

a first header and a second header for said flues positioned beneath said flues,

vertical riser ducts connected to said headers and extending vertically into said flues,

first connecting means connecting said rich fuel gas supply main to said headers,

second connecting means connecting said second gas supply main to said first connecting means,

gas flow control valve means in said first connecting means to control the flow of rich fuel gas from said rich fuel gas supply main to said headers,

said gas flow control valve means also operable to simultaneously supply both rich fuel gas and said second gas to one of said headers for admixture in said vertical duct to thereby dilute said rich fuel gas and suppress the deposition of carbonaceous material in said vertical riser ducts, and

means to supply said second gas under pressure to said first connecting means for admixture with said rich fuel gas in one of said headers to thereby dilute said rich fuel gas.

3,963,583

BATTERY OF HORIZONTAL COKE OVENS

Erich E. Pries, Agnesstrasse 53, 463 Bochum, Germany

Continuation of Ser. No. 279,039, Aug. 9, 1972, abandoned. This application July 2, 1975, Ser. No. 485,208
Int. Cl.² C10B *5/00*
U.S. Cl. 202—263 **7 Claims**

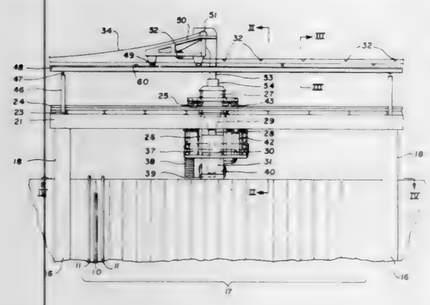
1. A coal charging apparatus in combination with a battery of horizontal coke ovens formed by a plurality of coke oven chambers which include an oven roof having a plurality of charging holes for loading coal into each oven chamber, the combination comprising:

a plurality of intermediate walls each of which extends horizontally between two adjacent oven chambers in a separate and independent manner to the masonry for said adjacent oven chambers, said intermediate walls dividing said battery of horizontal coke ovens into a plurality of

coke oven units each consisting of a plurality of coke oven chambers;

support beams integral with the horizontal ends of said intermediate walls and extending vertically therefrom, said support beams being mechanically isolated from said coke oven chambers by said intermediate walls;

vertically arranged anchoring pillars at the horizontal ends of said coke oven chambers for bracing the masonry forming said chambers, said support beams and said anchoring pillars projecting substantially equal distances



in a horizontal direction from the masonry for the battery of coke ovens;

a horizontal frame carried by said support beams in a spaced relation above said battery of horizontal coke ovens;

a coal charging car carried by said frame for positioning into a coal charging relation with a coke oven chamber, and

a plurality of hoppers carried by said transfer car for transferring coal through the charging holes of an oven chamber.

3,963,584

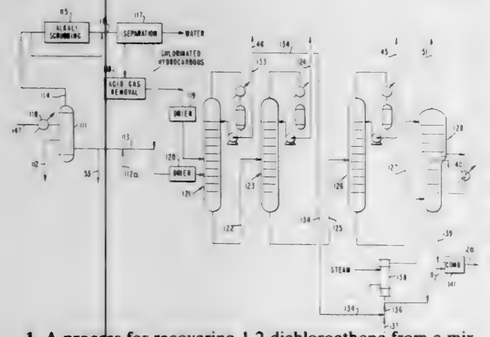
RECOVERY OF 1,2-DICHLOROETHANE FROM VINYL CHLORIDE PRODUCTION EFFLUENT

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed Aug. 16, 1974, Ser. No. 498,081

Int. Cl.² B01D *3/34*

U.S. Cl. 203—49 **3 Claims**



1. A process for recovering 1,2-dichloroethane from a mixture of 1,2-dichloroethane and at least one chlorinated hydrocarbon heavier than 1,2-dichloroethane selected from the group consisting of trichloroethane, tetrachloroethane, tetrachloroethylene, trichloroethylene, chlorinated butanes and chlorinated butenes, comprising:

introducing said mixture into a stripping column operated at an overhead temperature from about 225° to about 350°F, a bottoms temperature from about 270° to about 410°F and a pressure from about 20 psig to about 130 psig to separate and recover 1,2-dichloroethane from the mixture as overhead;

introducing into the bottoms of said stripping column, as stripping gas, a member selected from the group consisting of ethane, ethylene and mixtures of ethane and ethylene to strip 1,2-dichloroethane from said mixture, said stripping gas being introduced in a molar amount sufficient to reduce the partial pressure of 1,2-dichloroethane over the heavier chlorinated hydrocarbons and provide a bottoms containing no greater than 1 wt.% of 1,2-dichloroethane;

recovering as overhead from said stripping column 1,2-dichloroethane and said stripping gas; and

recovering a bottoms from the stripping column having a 1,2-dichloroethane content of no greater than 1 wt. %.

3,963,585

DISTILLATION OF TITANIUM TETRACHLORIDE IN SOLUTION WITH SELECTED AMINES

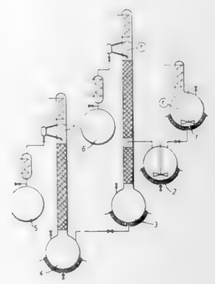
Gerhard Winter, Krefeld; Walter Deissmann, Krefeld-Bockum; Walter Gutsche, and Peter Woditsch, both of Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 1, 1974, Ser. No. 465,954

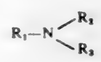
Claims priority, application Germany, May 22, 1973, 2325924

Int. Cl.² B01D *3/34*

U.S. Cl. 203—38 **6 Claims**



1. In the purification of impure vanadium-containing titanium tetrachloride comprising adding an agent to said titanium tetrachloride to react with the vanadium impurity and thereafter removing purified titanium tetrachloride as distillate while leaving the vanadium impurity-agent reaction product in the distillation residue, the improvement which comprises employing as said agent an amine of the formula



in which

R_1 and R_2 each independently is selected from the group consisting of hydrogen, alkyl of up to 6 carbon atoms, alkenyl of up to 6 carbon atoms, cycloalkyl of 5 to 7 carbon atoms, and aryl, and

R_3 is selected from the group consisting of cycloalkyl of 5 to 7 ring carbon atoms, and aryl.

3,963,586

EXTRACTIVE DISTILLATION OF A DIMETHYL CARBONATE FEED WITH WATER

Alessandro Ginnasi, San Donato Milanese, and Giovanni Passoni, San Giuliano Milanese, both of Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Oct. 25, 1974, Ser. No. 518,192

Claims priority, application Italy, Oct. 26, 1973, 30596/73

Int. Cl.² B01D *3/34, 3/38*

U.S. Cl. 203—96 **1 Claim**

1. The process of separating dimethyl carbonate from a mixture thereof with methyl alcohol and water through an extractive distillation comprising the steps of feeding said mixture to an intermediate zone of an extractive distillation column, feeding solvent water in an amount equal to at least 10 times the column reflux rate to said column at a point in proximity to its top, withdrawing a stream of methyl alcohol and water from the bottom of said column, withdrawing from the top of said column a stream having an organic phase containing dimethylcarbonate and an aqueous phase, and separating said organic phase from the aqueous phase.

3,963,587

PROCESS FOR ELECTROFORMING NICKEL FOILS

Douglas A. Kreckel, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 19, 1975, Ser. No. 578,782

Int. Cl.² C25D *1/02, 3/56*

U.S. Cl. 204—9 **20 Claims**

1. In a method of electroforming a smooth surface of nickel cobalt or alloy thereof on a conductive substrate from which it may subsequently be removed from a nickel sulfamate electroforming solution, the improvement comprising increasing the current density from zero at an average rate of between about 75 to 600 ASF per minute over the first 2 to 20 percent of the plating cycle to an ultimate current density of between about 200 and about 600 ASF, and the ultimate current concentration is between about 5 and about 15 amperes per gallon of electroforming solution.

3,963,588

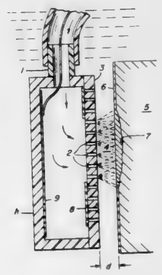
COALESCENT-JET APPARATUS AND METHOD FOR HIGH CURRENT DENSITY PREFERENTIAL ELECTROPLATING

Richard C. Glenn, Hempfield Township, Westmoreland County, Pa., assignor to United States Steel Corporation

Filed Apr. 21, 1975, Ser. No. 570,061

Int. Cl.² B23K *28/00;* **C25D** *5/02*

U.S. Cl. 204—16 **12 Claims**



1. Apparatus for the high current density electroplating of a recessed configuration within a metal substrate, comprising

a. a housing member, which includes;

i. a front face composed of an electrically non-conductive material, said front face having a number of ports, closely spaced and properly distributed for the discharge of electrolyte in the form of coalescent jets,

ii. enclosure elements connected to said front face so as to form a substantially enclosed container, wherein one of said elements is fitted with inlet means for entrance of electrolyte into said housing, and

iii. a non-consumable electrode, supported within said housing and spaced rearwardly from said front face,

b. tank means for the storage of electrolyte,

c. conduit and pump means for conducting electrolyte from the tank means to said housing member, said pump means being of sufficient power to urge the electrolyte through said ports with an impingement force sufficient to support said high current densities at the base of the recessed configuration,

d. a source of electromotive force of sufficient voltage to effect said high current densities, the positive pole of which is in electrical connection with said non-consumable electrode, as anode,

e. means connecting the negative pole of said electromotive source to said substrate, as cathode,

f. means for maintaining said front face within a plating distance of less than three inches from said substrate,

said housing ports being spaced and distributed so that, in the plane of said front face, (i) the maximum spacing between the edges of adjacent ports is less than said plating distance and (ii) the normal distance from the border B_s around said recessed configuration to a border B_a around said ports, is about 0.5 to 1.5 times said plating distance, and wherein the total cross-sectional area of the port openings is no greater than about four times the cross-sectional area of said inlet means, whereby the jets of electrolyte issuing from said front face are caused to coalesce prior to substantially perpendicular impingement onto said recessed configuration.

3,963,589

PROCESS FOR THE MANUFACTURE OF A DECORATIVE ALUMINUM PRODUCT

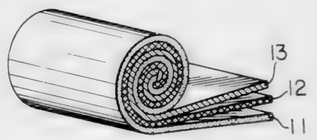
Hachiro Kushida, Higashi-yamato; Tsuneji Takasugi, Iruma; Shinji Ikeda, Tokyo, and Takashi Shiono, Chofu, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1973, Ser. No. 429,291

Claims priority, application Japan, Feb. 26, 1973, 48-22917; May 31, 1973, 48-60323; June 9, 1973, 48-64932; June 26, 1973, 48-72019

Int. Cl.² C25D *11/16, 11/18*

U.S. Cl. 204—29 **6 Claims**



1. A process for the manufacture of a decorative aluminum alloy product, comprising in combination:

a. bringing a plurality of different aluminum alloy material stocks into a mutually tightly contacting relationship so as to provide a composite stock;

b. subjecting this composite stock to a plastic deformation at least substantial part thereof, so as to provide therein an irregular flow pattern;

c. removing at least part of the surface of said composite stock by mechanical prefabrication so as to expose a new and decorative surface and to provide a semi-product;

d. subjecting said semiproduct to an anodically oxidizing step; and

e. subjecting at least part of the thus treated semiproduct to a mirror-finishing step.

3,963,590
PROCESS FOR ELECTROPLATING POLYOXYMETHYLENE

Edward Johnson Deyrup, Northeast, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 25, 1975, Ser. No. 552,999
Int. Cl.² C25D 5/56
U.S. Cl. 204—30 **2 Claims**

1. In a process for electroplating a shaped article of polyoxymethylene by the sequential steps of etching the surface of said article with an acid etchant, neutralizing the etched surface of said article with a base solution, treating said article with a catalyst for electroless deposition, depositing by electroless plating a metal coating on said article, and depositing by electroplating a metal coating on said article, the improvement which comprises contacting said article with a liquid comprising quinoline or γ-butyrolactone before etching the surface of said article.

3,963,591
METHOD OF COLORING OF ANODIZED ALUMINUM AND ALUMINUM ALLOYS BY ELECTROLYTIC TREATMENT IN THE METAL SALT SOLUTIONS

Walter Zweifel, Neuhausen am Rheinfall, and Fritz Schneeberger, Schaffhausen, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 411,437, Oct. 31, 1973, abandoned, which is a continuation of Ser. No. 262,009, June 12, 1972, abandoned. This application Aug. 25, 1975, Ser. No. 607,250
Claims priority, application Switzerland, June 17, 1971, 8845/71
Int. Cl.² C25D 11/18
U.S. Cl. 204—35 N **10 Claims**

1. In an improved method for coloring anodically produced oxide layers on aluminum and aluminum alloys by electrolytic treatment in a metal salt solution electrolyte containing nickel salts and/or cobalt salts and being operable to obtain bronze colorations normally obtained in said oxide layers with the use of said salts,

the steps comprising

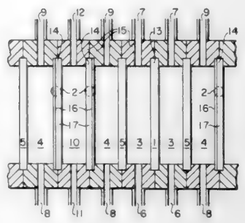
adding a quantity of copper salt such as to establish, in the solution, a concentration of about 0.02 to about 0.75 grams of copper per liter of solution, said concentration being sufficiently large to promote uniformity of color and sufficiently small to restrain the occurrence of reddish tint normally associated with the presence of copper ions in said electrolyte.

3,963,592
METHOD FOR THE ELECTROLYTIC PRODUCTION OF ALKALI

Olle Lindström, Taby, Sweden, assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 293,623, Sept. 29, 1972, Pat. No. 3,864,236. This application Sept. 30, 1974, Ser. No. 510,210
Int. Cl.³ C25B 1/16, 1/02, 1/26, 1/22
U.S. Cl. 204—98 **2 Claims**

1. In the process for electrolyzing an aqueous solution of an alkali metal chloride to form an alkali metal hydroxide at the cathode and chlorine at the anode by the oxidation of chloride ions in the anolyte, the improvement which comprises introducing hydrogen gas at the anode, preferentially anodically oxidizing said hydrogen gas in the presence of a catalyst to hydrogen ions by passing said hydrogen gas through a porous anode containing the catalyst into the anolyte and reacting the thus-formed hydrogen ions with the chloride ions in the anolyte, the porous anode through which the hydrogen gas is passed being formed in two layers, said first layer being a porous sintered coarse layer of platinized titanium and said second layer being a porous sintered finer layer of titanium,



the hydrogen gas being passed initially through said first layer and then through said second layer into the anolyte.

3,963,593
ELECTRODES HAVING SILICIDE SURFACE

Harlan B. Johnson, Rittman, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

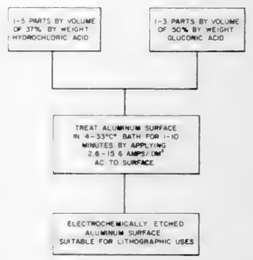
Division of Ser. No. 289,700, Sept. 15, 1972, Pat. No. 3,862,023. This application Nov. 13, 1974, Ser. No. 523,397
Int. Cl.² C25B 1/34, 11/08, 11/10
U.S. Cl. 204—98 **10 Claims**

1. In a method of electrolysis comprising the steps of feeding a brine to an electrolytic cell and causing an electrical current to flow from an anode of said electrolytic cell to a cathode of said electrolytic cell, the improvement wherein said anode consists of a surface of an electroconductive, electrocatalytic silicide chosen from the group consisting of the silicides of the platinum group metals, on a valve metal substrate.

3,963,594
ELECTROCHEMICAL TREATMENT OF ALUMINUM SURFACES WITH AN AQUEOUS SOLUTION OF HYDROCHLORIC ACID AND GLUCONIC ACID

Peter Brasko, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed June 3, 1975, Ser. No. 583,438
Int. Cl.² C25F 3/00
U.S. Cl. 204—129.95 **6 Claims**

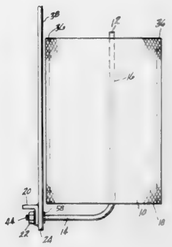


1. A process for treatment of aluminum to provide a roughened surface thereon suitable for lithographic uses which comprises electrolytically etching the aluminum with a mixture of hydrochloric acid and gluconic acid.

3,963,595
ELECTRODE ASSEMBLY FOR AN ELECTROLYTIC CELL

Peter A Danna, Devonshire, Bermuda, assignor to Olin Corporation, New Haven, Conn.

Filed June 24, 1974, Ser. No. 482,301
Int. Cl.² C25B 1/26, 1/34, 9/02, 11/02
U.S. Cl. 204—258 **9 Claims**



1. An electrode assembly comprising:

a. an electrode plate positioned vertically,

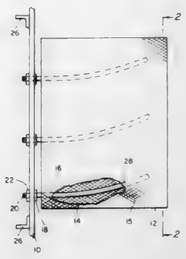
b. an electrically-conductive surface, and

c. at least one conductive support having a first section and a second section, said first section being attached to and substantially perpendicular to said electrode plate, said first section being spaced from and not attached to said electrically-conductive surface, said second section being substantially parallel to said electrode plate, and attached to said first section and to said electrically-conductive surface, said conductive support conducting electric current between said electrode plate and said electrically-conductive surface.

3,963,596
ELECTRODE ASSEMBLY FOR AN ELECTROLYTIC CELL

Morton S. Kircher, Oakville, Canada, assignor to Olin Corporation, New Haven, Conn.

Filed June 24, 1974, Ser. No. 482,296
Int. Cl.² C25B 1/26, 1/34, 9/02, 11/02
U.S. Cl. 204—258 **21 Claims**



1. An electrode suitable for use in a cell for the electrolysis of alkali metal chloride solutions which comprises:

a. two vertical electrode surfaces positioned in parallel and having a space between said electrode surfaces,

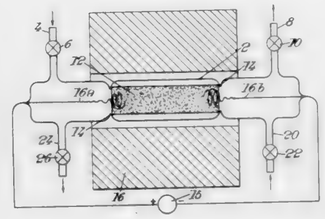
b. at least one conductive support attached to said electrode surfaces and positoned in said space between and parallel to said electrode surfaces, said conductive support having a portion having a curvature of from about 2 to about 30 degrees from the horizontal, and

c. a gas directing element positioned immediately below said conductive support and attached to a side of said electrode surfaces.

3,963,597
ELECTRICALLY REGENERATIVE OXYGEN TRAP

Michel Kleitz; Pierre Fabry, both of Grenoble, and Jacques Fouletier, St. Martin d'Heres, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Mar. 25, 1974, Ser. No. 454,705
Claims priority, application France, Mar. 30, 1973, 73.11572
Int. Cl.² C25B 9/00; H01J 7/18
U.S. Cl. 204—277 **30 Claims**



1. An electrically regenerable oxygen trap, having a closed enclave, the internal space thereof being free of oxygen or gaseous oxygen containing compounds, means for admitting into the enclave a gas containing traces of oxygen to be eliminated; means for evacuating the purified gas from the enclave, a body of material located within the enclave, and formed of a solid solution of metal oxides in a reduced state and having a strong affinity for oxygen, said solution of metal oxides being of the type which upon absorption of oxygen yields a solid solution of metal oxides, having both an ionic conductivity through O^{2-} ions and a nonzero electrical conductivity.

3,963,598
FLASH HYDROGENATION OF COAL

Bernard Manowitz, Brightwaters; Meyer Steinberg, Huntington Station; Thomas V. Sheehan, Hampton Bays; Warren E. Winsche, Bellport, and Chad J. Raseman, Setauket, all of N.Y., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 15, 1974, Ser. No. 514,876
Int. Cl.² C10G 1/02
U.S. Cl. 208—8 **3 Claims**

1. A process for the hydrogenation of coal to maximize the production of liquid hydrocarbons, comprising contacting in a rotating fluidized bed substantially dry powdered coal having a particle size in the range of about 50–500 microns with hydrogen gas at temperatures to produce a reaction temperature between about 500° C and 800° C, at a pressure in the range of about 68 to 280 atmospheres for a coal residence time of not in excess of five seconds and hydrogen contact time not in excess of 0.2 sec to produce liquid hydrocarbons, followed by rapid cooling to a temperature sufficiently low to prevent further cracking of the liquid products.

3,963,599
RECOVERY OF BITUMEN FROM AQUEOUS STREAMS VIA SUPERATMOSPHERIC PRESSURE AERATION

H. James Davitt, Edmonton, Canada, assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Nov. 11, 1974, Ser. No. 522,379
Int. Cl.² C10G 1/04
U.S. Cl. 208—11 LE **20 Claims**

2. An improved process for recovering bitumen from tar sands comprising:

a. forming a mixture of tar sands and water;
b. aerating said mixture in an aeration zone at a pressure above atomspheric;
c. suddenly reducing the pressure on said mixture;
d. settling said aerated mixture at said reduced pressure to provide a recoverable upper bitumen froth layer, a sand tailings layer, and a middlings layer containing bitumen, clay, water, and some silt; and
e. recovering said froth layer.

3,963,600

COMBINATION PROCESS FOR THE CONVERSION OF HEAVY DISTILLATES TO LPG

Lee Hilfman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 489,014, July 16, 1974, Pat. No. 3,917,562. This application June 9, 1975, Ser. No. 585,288

Int. Cl.² B01J *29/22;* **C01G** *13/08;* **C10G** *37/02*

U.S. Cl. 208—59 **9 Claims**

1. A process for the conversion of sulfur-containing, heavy distillate hydrocarbons boiling above about 600°F. to produce LPG, which process comprises the steps of:
a. reacting said sulfur-containing, heavy distillate in a first reaction zone containing a catalytic composite comprising a porous carrier material, a Group VI-B metal component and a Group VIII metal component at hydrocracking conditions selected to convert the heavy distillate into lower boiling hydrocarbons;
b. reacting at least a portion of said lower boiling hydrocarbons containing less than about 50 ppm. sulfur in a second reaction zone containing a catalytic composite comprising a Group VIII metal component combined with an alumina carrier material containing a uniform distribution of finely divided mordenite particles which catalytic composite is prepared by commingling said mordenite with an aluminum halide sol, gelling the resultant mixture then calcining the gelled mixture wherein said alumina carrier material contains from about 20 to about 30 weight percent mordenite, at hydrocracking conditions selected to produce LPG; and,
c. recovering said LPG from the resulting first and second reaction zone effluents.

3,963,601

HYDROCRACKING OF HYDROCARBONS WITH A CATALYST COMPRISING AN ALUMINA-SILICA SUPPORT, A GROUP VIII METALLIC COMPONENT, A GROUP VI-B METALLIC COMPONENT AND A FLUORIDE

Lee Hilfman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 390,146, Aug. 20, 1973, abandoned. This application July 15, 1974, Ser. No. 488,348

Int. Cl.² C10G *13/02, 23/04*

U.S. Cl. 208—111 **3 Claims**

1. A process for the hydrocracking of a hydrocarbon at a pressure of about 400 psig. to about 3000 psig.; a temperature of about 400°F. to about 900°F.; a LHSV of about 0.1 hr.$^{-1}$ to about 10 hr.$^{-1}$; and hydrogen circulation rates of about 1000 to about 15,000 s.c.f. per barrel of charge which comprises contacting the hydrocarbon with a catalyst consisting essentially of an alumina-silica support containing from about 10 weight percent to about 90 weight percent alumina, a Group VIII metallic component present in an amount of from about 0.01 percent to about 10 percent by weight of said catalyst, a Group VI-B metallic component present in an amount of from about 0.01 percent to about 20 percent by weight of said catalyst and a fluoride, said composition having been prepared by initially impregnating said support with a Group VIII metal compound and a Group VI-B metal compound, drying at a temperature of from about 200°F to about 600°F and calcining at a temperature of about 700°F to about 1100°F for a period of about 0.5 to about 10 hours the resultant impregnated composite and then impregnating said composite with aqueous hydrofluoric acid solution to associate said fluoride with said catalyst, followed by further calcining, said catalyst having a surface area of from about 50 to about 700 square meters per gram, a pore diameter of about 20 to about 300 Angstroms, and an apparent bulk density within the range of from about 0.10 to about 0.30 gram/cc.

3,963,602

CRACKING OF HYDROCARBONS WITH SEPTECHLORITE CATALYSTS

Alan C. Wright, and Hsien-Dao Chang, both of Houston, Tex., assignors to NL Industries, Inc., New York, N.Y.

Division of Ser. No. 431,028, Jan. 7, 1974, Pat. No. 3,917,541. This application July 7, 1975, Ser. No. 593,922

Int. Cl.² C10G *11/04;* **B01J** *8/24*

U.S. Cl. 208—111 **2 Claims**

1. The process of cracking hydrocarbons which comprises contacting them under cracking conditions with a catalyst consisting essentially of a calcined precursor synthetic septechlorite having a chemical composition represented by the following:

$$(6-x)\ A^{2+}O \cdot x\ L_2^{3+}O_3 \cdot (4-x)\ SiO_2 \cdot (4-y)\ H_2O \cdot yHF$$

wherein:
A is Ni, Mg, Co, Fe^{2+}, Cu^{2+}, Mn^{2+}, Zn, or mixtures thereof:
L is Al, Cr, Fe^{3+}, or mixtures thereof:
$0 \leq x \leq 2$
$0 \leq y \leq 1$
$x + y \geq 0.1$
$0 \leq Co \leq 5.75$
$0 \leq Fe^{2+} \leq 5.25$
$0 \leq Zn \leq 4$
$4 \leq (Ni + Mg + Co + Fe^{2+} + Cu + Mn + Zn) \leq 6$
$Cu \leq 0.5$
$Mn \leq 0.5$
$(Cr + Ni + Co + Cu + Mn) > 0.1$
$Fe^{3+} \leq 1$,
said precursor septechlorite prior to calcining being a 1:1 trioctahedral phyllosilicate having equal degrees of trivalent ion substitution in both octahedral and tetrahedral layers, and thus having a balanced framework with no exchangeable ions needed for neutrality.

3,963,603

FLUID CATALYTIC CRACKING

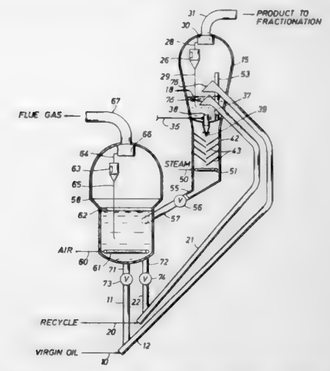
Dorrance P. Bunn, Jr., and H. Blandin Jones, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 368,165, June 8, 1973, abandoned, which is a division of Ser. No. 182,030, Sept. 20, 1971, Pat. No. 3,784,360. This application Nov. 11, 1974, Ser. No. 522,394

Int. Cl.² C10G *9/32*

U.S. Cl. 208—164 **10 Claims**

1. In a fluidized catalytic cracking process comprising a dilute phase riser reactor, a reaction vessel, a stripping zone below said reaction vessel; a valve means responsive to the weight of catalyst connecting the lower portion of said reaction vessel with the upper portion of said stripping zone, and a regeneration zone, wherein regenerated catalyst and hydrocarbon charge are combined in the lower portion of said riser reactor under catalytic cracking conditions, wherein catalyst and hydrocarbon vapors discharge downwardly from the upper end of said riser reactor into said reaction vessel at a point intermediate to the height of said reaction vessel for separation into a dense phase fluidized catalyst bed and a hydrocarbon vapor phase containing a minor amount of entrained catalyst, wherein hydrocarbon vapor is recovered overhead from said reaction vessel, and wherein catalyst from said dense phase bed is transferred via said valve means from the lower portion of said reaction vessel into said stripping zone at a rate equivalent to the rate catalyst enters said reaction vessel; the improvement which comprises:
a. maintaining, by action of said valve means responsive to the weight of catalyst, a preselected weight inventory of catalyst in said dense phase fluidized bed such that at a bulk density of about 35 lb/cu. ft. the upper surface of said dense phase fluidized catalyst bed is below said riser discharge and at a bulk density of about 18 lb/cu. ft. the upper surface of said dense phase fluidized catalyst bed is above said riser discharge;



b. Charging a fluidization vapor to the lower portion of said reaction vessel at a rate sufficient to maintain a superficial vapor velocity within said dense phase fluidized bed from about 1.5 ft/sec. to about 3.4 ft/sec. and to maintain a bulk density of said dense phase fluidized catalyst bed within the range of from about 35 lb/cu. ft. to about 18 lb/cu. ft.; and
c. adjusting the flow of fluidization vapor for adjusting the bulk density of said dense phase fluidized catalyst bed within the range of about 35–18 lb/cu. ft., and obtaining a selected conversion of hydrocarbon within said reaction vessel.

3,963,604

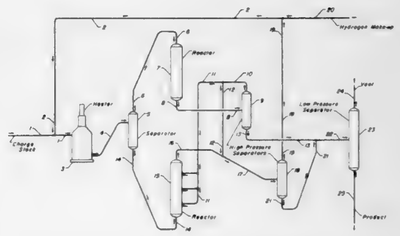
COMBINATION PROCESS FOR HYDROREFINING AN ASPHALTENIC HYDROCARBONACEOUS CHARGE STOCK

Leroi E. Hutchings, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 413,132, Nov. 5, 1973, abandoned. This application Sept. 30, 1975, Ser. No. 618,200

Int. Cl.² C10G *23/00*

U.S. Cl. 208—211 **3 Claims**



1. A combination process for hydrorefining an asphaltenic hydrocarbonaceous charge stock containing sulfurous compounds and nitrogeneous compounds to produce a fuel oil product containing less than 1% by weight of sulfur which process comprises the steps of:
a. admixing said charge stock with hydrogen in an amount of from 2000 to about 6000 S.C.F./bbl. and heating the resulting mixture to a temperature of 600°F. to 800°F. and a pressure of about 1000 psig. to about 4000 psig.;
b. separating the heated mixture in a first separation zone to provide a first vapor phase and a first liquid phase containing hydrogen dissolved therein;
c. hydrorefining said first vapor phase with a first hydrorefining catalyst and substantially at said pressure in a first hydrorefining zone to obtain a first hydrorefined effluent;
d. hydrorefining the first liquid phase with a second hydrorefining catalyst in a second hydrorefining zone comprising a fixed bed of said second catalyst to obtain a second hydrorefined effluent;
e. separating said first hydrorefined effluent, in a second separation zone at a temperature of from about 60°F. to about 140°F., and a pressure substantially the same as that of said first hydrorefining zone to provide a hydrogen-rich second vapor phase and a second liquid phase;
f. passing a portion of said hydrogen-rich second vapor phase to said hydrorefining step (d) in an amount of from 200 to about 2000 S.C.F./bbl. of liquid charge;
g. separating said second hydrorefined effluent in a third separation zone to provide a hydrogen-rich third vapor phase and a third liquid phase; and,
h. recovering said fuel oil product from said second liquid phase and said third liquid phase.

3,963,605

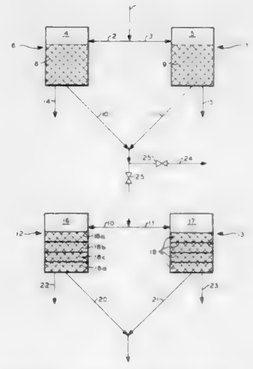
COATED SHAKER SCREEN APPARATUS AND METHOD

Ed O. Seabourn, Great Yarmouth, England, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 14, 1974, Ser. No. 451,024

Int. Cl.² B03B *9/00*

U.S. Cl. 209—2 **6 Claims**



1. A metal substrate comprising openings to form a screen, said substrate coated with a cured blend comprising from about 99 to 25 percent by weight poly(arylene sulfide) and from about 1 to 75 percent by weight fluoroethylene.

3,963,606

SEMI-AUTOMATIC ADJUSTING DELAY FOR AN ELECTRONIC PARTICLE SEPARATOR

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

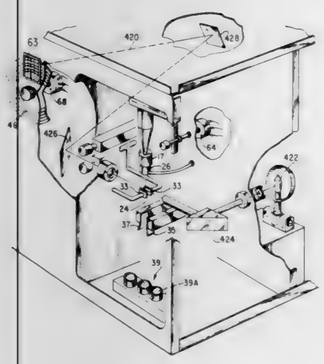
Filed June 3, 1974, Ser. No. 475,670

Int. Cl.² B07C *5/34*

U.S. Cl. 209—3 **13 Claims**

1. A device for adjusting an electrical delay to a time interval between two occurrences of a moving particle in an apparatus for classifying particles suspended in a fluid, in which said apparatus comprises:

A. nozzle means including a nozzle connected to a fluid reservoir for generating a fluid jet,
B. means connected to the nozzle means for pulsating the fluid jet so as to separate same into droplets at a break-off point,
C. sensing means located at the outlet of the nozzle means for producing an electric quantity in response to a selected parameter of a passing particle,
D. means disposed adjacent the fluid downstream of the sensing means for charging each droplet with a potential related to the electric quantity produced by the sensing means,
E. electrical delay means, the input thereof being coupled to the sensing means and the output thereof being coupled to the charging means,
F. first and second means associated with the electrical delay means for adjusting the delay of said electrical delay means,
G. means situated downstream of the charging means for deflecting each droplet by an amount related to said parameter of the particle,



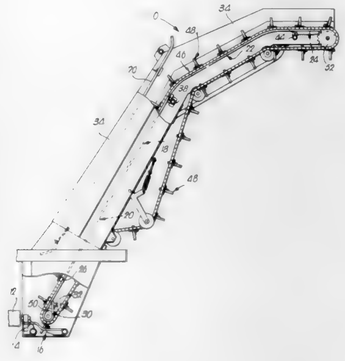
H. collecting means supported downstream of the deflecting means for collecting the droplets in relation to the amounts of deflection,
I. microscope means arranged in front of the nozzle means and means for illuminating same in synchronization with said pulsating means,
J. movable scale means associated with the microscope means and including a graticule having a reference line and at least one nonparallel comparison line,
K. position adjusting means connected to the nozzle means for raising or lowering the nozzle until the image of the breakoff point of the jet is on said reference line,
L. graticule adjusting means associated with the graticule for aligning said at least one comparison line with the image of at least one of said droplets, and
M. means for coupling said first and second delay adjusting means to said position and graticule adjusting means, respectively.

wherein, upon completion of said adjustments, the image of the train of droplets is rendered visible, stationary and measurable, and the electrical delay is substantially equal to the time interval between the passage of a particle through the sensing means and the arrival thereof at the break-off point.

3,963,607
LOADING AND CLEANING ELEVATOR FOR HARVESTERS

Thomas A. Bedwell, Providence, and Doyle D. Zollinger, Millville, both of Utah, assignors to Hesston Corporation, Hesston, Kans.

Filed May 28, 1974, Ser. No. 473,997
Int. Cl.² B65G *19/18*
U.S. Cl. 209—73 **2 Claims**

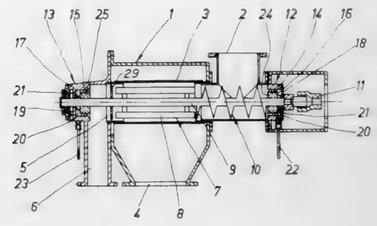


1. In crop conveying apparatus;
a support having a normally upper crop engaging surface upon which crops are moved during conveyance; and
a mover shiftable along the entire length of said support and including pushing structure having a forwardly facing crop engaging portion above said surfaces and extending continuously across the support for tumbling said crops while simultaneously advancing the same to dislodge refuse therefrom,
said support being provided with means defining a plurality of refuse discharge openings along the path of travel of the crops for removing refuse dislodged from said crops during conveyance,
said opening-defining means including a plurality of elongated, laterally spaced-apart members extending along said path beneath said mover, said members being mounted for vibration thereof as said crops are tumbled therealong whereby to augment the refuse-dislodging action of said mover,
said mover having means for clearing said openings of clogged refuse, said refuse-clearing means including a plurality of fingers projecting downwardly between adjacent members of the support,
said support being further provided with a transversely extending undersupport for said members,
each of said members having a downwardly extending ear securing said members to said undersupport in upwardly-spaced relationship to present a clearance trough for said fingers permitting the latter to pass unhindered over said undersupport.

3,963,608
APPARATUS FOR THE TREATMENT OF SYNTHETIC RESIN POWDER

Adolf Zimmermann; Adolf Lesk; Walter Jordan, all of Osterburken, and Rudi Baumann, Rosenberg, all of Germany, assignors to AZO-Maschinenfabrik Adolf Zimmermann, Germany

Filed July 30, 1974, Ser. No. 493,107
Claims priority, application Germany, July 31, 1973, 2338731
Int. Cl.² B07B *1/20*
U.S. Cl. 209—300 **16 Claims**



1. Apparatus for reclaiming synthetic resin powder contaminated with foreign matter, said apparatus comprising a substantially horizontal and cylindrical screen, housing means housing said screen and defining a discharge opening for synthetic resin powder passing through said screen, feeding means for feeding contaminated synthetic resin powder to the interior of said screen, recovery means for withdrawing foreign matter too large to fit through said screen from the interior of said screen, rotor means in said screen comprising at least two spaced and generally parallel bars connected to a shaft, bearing means mounting said rotor means for rotation in said screen, said bearing means including fluid seal means for preventing synthetic resin powder from coming into contact with engaging parts of said bearing means by the flow of a fluid, and a resilient disc mounted on said shaft, said bearing means constructed so that fluid from said fluid seal means (a) flows away from engaging parts of said bearing means so that synthetic resin powder is blown away from said engaging parts and (b) acts on said resilient disc to seal off any communication between the interior of said screen and the engaging parts of said bearing means.

3,963,609
INTEGRAL CIRCULAR WASTEWATER TREATMENT PROCESS

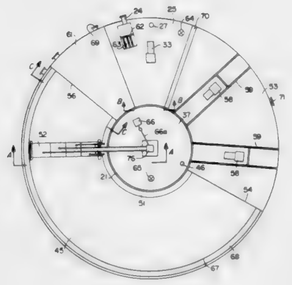
Louis Maynard La Clair, Grand Island, N.Y.; John Ruben McWhirter, Westport, Conn., and William Lawrence Ross, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 347,398, April 2, 1973, Pat. No. 3,890,231. This application Feb. 4, 1975, Ser. No. 546,908
Int. Cl.² C02C *1/06*
U.S. Cl. 210—7 **5 Claims**

1. In a method for treatment of BOD-containing waste water by aeration with at least 50% oxygen gas in the presence of recycled activated sludge for biological oxidation to reduce the BOD content of said waste water in at least two covered aeration zones wherein the oxygen feed gas, waste water and activated sludge are mixed and one fluid is simultaneously recirculated in a first aeration zone, oxygen partially depleted gas and partially oxygenated liquor from the first aeration zone are each separately introduced to a second aeration zone for continuous mixing and fluid recirculation therein, and the further oxygenated liquor from the final aeration zone having a reduced BOD content is separated into effluent water and activated sludge in a clarification zone with at least part of the sludge being returned to the first aeration zone as said recycled sludge, the improvement comprising:
a. mixing said oxygen feed gas, waste water and recycled activated sludge in an arcuate first aeration zone;
b. mixing oxygen partially depleted gas and partially oxygenated liquor in a circular final aeration zone;
c. flowing the further oxygenated liquor radially across an arcuate clarification zone of between 90° and 330° arc length from an inner smaller diameter inlet arc to an outer concentric larger diameter liquid effluent discharge arc at radial velocities and volumetric flow rates such that V_E/V_I is between 0.1 and 0.5, wherein

$$\frac{V_E}{V_I} = \left(\frac{Q}{Q+R}\right)\left(\frac{R_1}{R_2}\right);$$

and
V_E = radial liquid velocity at said outer concentric larger diameter liquid effluent discharge arc,



V_I = radial liquor velocity at said inner smaller diameter inlet arc,
Q = volumetric flow rate of liquid effluent from clarification zone,
R = volumetric activated sludge recycle flow rate,
R_1 = radius of said inner smaller diameter inlet arc, and
R_2 = radius of said outer concentric larger diameter liquid effluent discharge arc.

3,963,610
METHOD OF REMOVING PHENOL FROM WASTE WATER

Bruno Hauschulz, Gladbeck; Heinrich von Barneveld, Kirchhellen; Wilfried Jordan; Josef Mertmann, both of Gladbeck; Gerhard Rasner, Recklinghausen, and Harri Brenienek, Gladbeck, all of Germany, assignors to Phenolchemie GmbH, Gladbeck, Germany

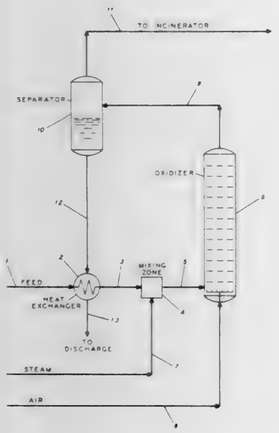
Filed Oct., 1973, Ser. No. 381,126
Claims priority, application Germany, July 20, 1972, 2235493
Int. Cl.² B01D *11/04*
U.S. Cl. 210—21 **5 Claims**

1. Method of dephenolizing waste waters occurring in the manufacture of phenol by the cumene process using cumene as extractant which comprises treating the cumene which is used for extracting the phenol from the waste water and which thereafter is washed with sodium hydroxide to remove the phenol, prior to this washing with an aqueous solution of 1 to 20 wt-% sodium carbonate.

3,963,611
OXIDATION PROCESS FOR IMPROVING THE ENVIRONMENTAL QUALITY OF WATER CONTAINING SULFUR AND/OR INORGANIC SUB-SIX-SULFUR-CONTAINING IMPURITIES

Walter Dardenne-Ankringa, Jr., El Sobrante, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 410,147, Oct. 26, 1973, abandoned, which is a continuation-in-part of Ser. No. 306,116, Nov. 10, 1972, abandoned. This application Mar. 4, 1975, Ser. No. 555,332
Int. Cl.² C02C 5/04
U.S. Cl. 210—63 R 10 Claims



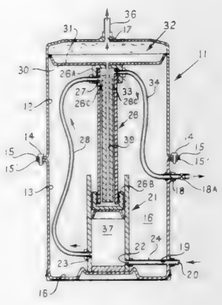
1. In the method of improving a water stream containing inorganic sub-six-sulfur-containing impurities by oxidizing said sulfur to sulfate using a gas comprising molecular oxygen, the improvement which comprises using as feed a stream containing said impurity in an amount, calculated as sulfur and per million parts (weight) of water, in the range from about 100 to 20,000 parts (weight), and said impurity being at least one of the group consisting of elemental sulfur and inorganic compounds consisting of sub-six sulfur plus at least one element of the group consisting of oxygen, hydrogen, and carbon, and water-soluble salts of acids included in said compounds, and oxidizing said sub-six sulfur to sulfate by contacting said stream with molecular oxygen for a period in the range from about 0.1 to 5 hours and sufficient for at least a 90 percent conversion of said sub-six sulfur to sulfate, said oxidation being effected by carrying out the contacting in the presence of at least enough strong base to provide at least one equivalent of hydroxyl ion per gram atom of sub-six sulfur in said impurity, said contacting being effected in the substantial absence of heavy metal sub-six sulfur oxidation catalysts and said oxidation being effected by maintaining the stream in the liquid phase:

a. at a standard pH of at least about 9.6;
b. at a temperature in the range of from about 90° to 180°C; and
c. at a partial pressure of molecular oxygen gas of at least about 0.5 atmosphere.

3,963,612
SYSTEM OF WATER PURIFICATION AND PRODUCT DISTRIBUTION

Charles W. Gossett, 14025 Crenshaw Blvd., Hawthorne, Calif. 90250, and William J. Dauenhauer, P.O. Box 487, Gualala, Calif. 95445

Filed Sept. 16, 1974, Ser. No. 506,739
The portion of the term of this patent subsequent to Aug. 27, 1991, has been disclaimed.
Int. Cl.² B01D 13/00, 31/00
U.S. Cl. 210—143 5 Claims

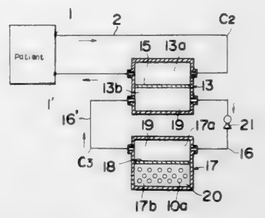


1. A system of water purification and product distribution comprising, in combination with a water service line, a hollow vessel having an inlet communicating with said water service line and also having a pair of outlets including a product outlet and a drain outlet, a cylinder fixedly secured within said vessel; said cylinder having an inlet port communicating with the inlet of said vessel and also having an outlet port, a reservoir supported within said vessel and in communication with said product outlet of said vessel, a reverse osmosis module mounted for reciprocation within said cylinder; said module having an inlet in communication with said water service line through said outlet port of said cylinder and also having a pair of outlets including a product outlet in communication with said reservoir and a drain outlet for repetitively delivering nearly pure product water through said product outlet thereof to said reservoir and for delivering separated out impurities through said drain outlet thereof to said drain outlet of said vessel, upon the downward movement of said module into said cylinder to close said outlet port of said cylinder and thereby shut off supply of raw water from said water supply line, a valve controlled drain line establishing communication between said drain outlet of said vessel and said drain outlet of said module for creating back pressure therein, and a valve-controlled product dispensing line in communication with said reservoir through said product outlet of said vessel,; depletion of the supply of nearly pure product water in said reservoir by opening said dispensing line reducing the hydraulic pressure above said module and increasing hydraulic pressure below the same to effect upward movement of said outlet port of said cylinder to open said outlet port of said cylinder and said inlet of said module thereby causing flow of raw water into said module and the refilling of said reservoir with nearly pure product water from said module.

3,963,613
BLOOD PURIFICATION MEANS

Ichiro Chibata, Suita; Tetsuya Tosa, Kyoto, and Takao Mori, Takatsuki, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Dec. 26, 1974, Ser. No. 536,641
Claims priority, application Japan, Dec. 29, 1973, 49-608; Dec. 29, 1973, 49-609
Int. Cl.² B01D 31/00
U.S. Cl. 210—195 R 2 Claims

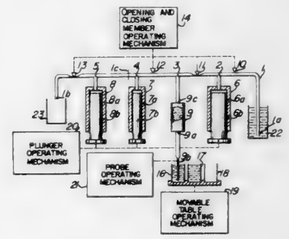


1. A blood purification means comprising
a first cannula circuit for transport of blood having both ends which are adapted to be connected to the blood stream of a patient to be treated,
a hemodialysis unit having a first dialysate provided in said first circuit, the first dialysate being effected with the blood of said first cannula circuit through a semi-permeable membrane,
a second cannula circuit for transport of the first dialysate of said hemodialysis unit having both ends connected to said hemodialysis unit,
a dialyzer having a second dialysate provided in said second cannula circuit, the second dialysate containing additions of fumarate and an aspartase preparation and being selectively effected with said first dialysate through a semipermeable membrane which permits diffusion therethrough of ammonia molecules, but not of aspartic acid molecules, and
a pump for driving said first dialysate around said second cannula circuit.

3,963,614
APPARATUS FOR REMOVING UNNECESSARY COMPONENTS FROM SAMPLES

Kyoichi Ozawa, Mito, Japan, assignor to Hitachi, Ltd., Japan

Filed Nov. 5, 1971, Ser. No. 195,996
Claims priority, application Japan, Nov. 9, 1970, 45-97877
Int. Cl.² B01D 15/08
U.S. Cl. 210—198 C 28 Claims

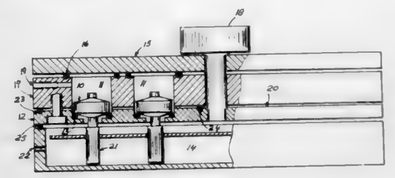


1. An apparatus for removing unnecessary components from samples, comprising a column filled with a porous material which allows the unnecessary components in a sample to pass therethrough but retains a component which it is desired to analyze, a probe connected with one end of said column, means for sucking the sample through said probe into said column, means for sucking an auxiliary liquid through said probe and said column successively after the suction of the sample thereby urging the unnecessary components to pass through the column while retaining the component desired to be analyzed within said column, and means for passing a discharging liquid through said column and said probe to discharge the component desired to be analyzed from said column.

3,963,615
MULTIFILTRATION UNIT

Chris J. Plakas, 8510 Conover Place, Alexandria, Va. 22308

Filed Oct. 31, 1974, Ser. No. 519,621
Int. Cl.² B01D 35/02
U.S. Cl. 210—203 4 Claims



1. A device for simultaneously filtering a plurality of separate samples on a corresponding plurality of filters, comprising:
A. a chambered plate having a plurality of chambers in a pattern therein,
B. a support plate adapted to be fitted under the chambered plate comprising a plurality of recessed means for mounting disposable filter holders therein in a corresponding pattern,
C. a pressure cover adapted to be fitted over the chambered plate,
D. a low pressure chamber adapted to be fitted under the support plate for receiving filtrate from the plural filter holders,
E. first sealing means fitted between the chambered plate and the pressure cover for separately sealing off each of the plurality of chambers at its end adjacent to the pressure cover,
F. means for fitting together adjacent sides of the chambered plate and the support plate, thereby separating from the ambient air an upper chamber comprising all of said plurality of chambers and interconnecting undercut spaces,
G. second sealing means in each of the plurality of recessed means for mounting filter holders for sealing each recessed means when a filter holder or plug is inserted therein, thereby preventing flow of air between the upper chamber and the low pressure chamber except through the filters,
H. removable manual means for tightening the support plate, the chambered plate and the pressure cover into a tightly sealed sandwich for use on top of the low pressure chamber,
I. means for introducing pressurized air into the upper chamber, and
J. means for removing air from the low pressure chamber.

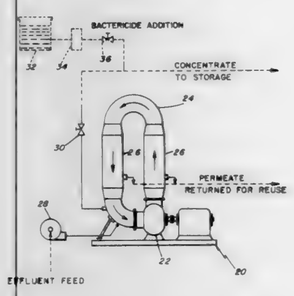
3,963,616
SEALING ARRANGEMENT FOR HYPERFILTRATION

Gary L. Parsons, Gastonia, and James Keith Turner, Lincolnton, both of N.C., assignors to Gaston County Dyeing Machine Company, Mount Holly, N.C.

Filed July 26, 1974, Ser. No. 492,267
Int. Cl.² B01D 31/00
U.S. Cl. 210—232 4 Claims

1. A hyperfiltration module having a bundle of elongate, porous tubes lined with semipermeable membranes and fixed in sealed relation within a chamber so that liquid to be filtered

is directed in parallel therethrough, and wherein an improved arrangement is provided for effecting said sealed relation of said tube ends within said chamber comprising flat closure members fixed adjacent each end of said chamber and having a pattern of apertures formed therein for respective slip fit disposition of end portions of each tube of said bundle therethrough, a resilient O-ring sealing member disposed around each tube end portion at the outer face of each of said closure members, and a face flange at each closure member having a

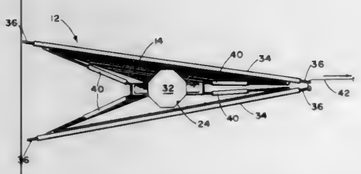


corresponding pattern of apertures formed therein for receiving said tube end portions, said face flanges being bolted at the outer face of each closure member over said O-ring members with spacer elements interposed between said face flanges and closure members at a thickness proportioned to limit compression of said O-ring members by said bolted face flanges against destructive stressing of said tube end portions while allowing enough compression of said O-ring members for effective external sealing of said tube end portions at said closure members.

3,963,617
RETRIEVAL MEANS FOR A FLOATING LIQUID SPILLING

William P. Kirk, 22 Glenhaven Circle, Saco, Maine 04072, and Dwight W. Reynolds, R.F.D. 1, Box 49, Pownal, Maine 04069

Filed Jan. 22, 1975, Ser. No. 543,169
Int. Cl.² E02B *15/04*
U.S. Cl. 210—242 S **12 Claims**



1. Retrieval means for a floating liquid spilling comprising the combination of

a flexible sheet having edges forming a polygonal periphery and flotation means attached to a portion of the sheet inwardly of said periphery,

first and second weight means each extending along an edge of the sheet with the flotation means therebetween, each said weight means being elongate, relatively inflexible and attached along its length to one said edge, and

third and fourth weight means each comprising a first elongate portion having one end hinged to the first weight means and a second elongate portion having one end hinged to the second weight means, the other ends of the first and second portions being mutually hinged, each of said first and second portions being attached along its length to the sheet, said third and fourth weight means extending between the first and second weight means with the flotation means therebetween and being adapted, upon the sheet falling freely on to the spilling while spread out generally parallel to the spilling surface, to permit the first and second portions to fold together in response to the sinking of the first and second weight means and movement thereof together, thereby confining and concentrating a quantity of the spilling at the region of the flotation means.

3,963,618
NOVEL POLYMER MEMBRANES FOR REVERSE OSMOSIS

William McClements Muir, Gartmore, England, assignor to Babcock & Wilcox Limited, London, England

Filed July 25, 1974, Ser. No. 491,852
Int. Cl.² B01D *39/00, 39/14*
U.S. Cl. 210—500 M **7 Claims**

1. A semi-permeable membrane for use in the treatment of feed solutions by reverse osmosis, ultrafiltration or related techniques consisting essentially of a polyvinyl coacetal resin having a backbone chain of the general formula

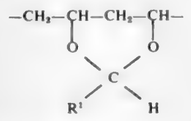
$$-X^1-X^2-X^3-X^4-X^5\ldots X^n-$$

wherein each X of X^1, X^2 . . . X^n is selected from the group consisting of

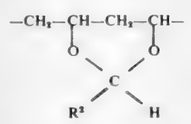
hydroxy-bis-methylene $-CH_2-CH(OH)-$,

acetoxy-bis-methylene $-CH_2-CH(OCOCH_3)-$,

a first acetal group



and a second acetal group



provided that said first and second acetal groups are both present and together comprise 25 to 100% of the chain, said groups R^1 and R^2 being different and each being selected from the group consisting of a hydrogen atom, straight or branched alkyl or alkenyl groups containing up to 6 carbon atoms and phenylalkyl or phenylalkenyl groups wherein the alkyl or alkenyl group is straight or branched and contains up to 6 carbon atoms.

3,963,619
APPARATUS FOR THE PREVENTION OF SCALING IN DESALINATION APPARATUS

Andre Caillaud, Garches; Pierre Charuit, Montpellier; Claude Duffau, Toulon, and Jean Ravoire, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique and Compagnie des Salins du Midi et des Salines de l'Est, both of Paris, France

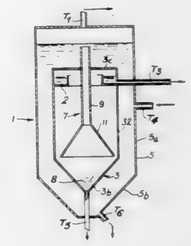
Filed Feb. 28, 1974, Ser. No. 501,299
Claims priority, application France, Sept. 7, 1973, 73.32373
Int. Cl.² B01D *21/02*
U.S. Cl. 210—256 **4 Claims**

1. An apparatus for the separation of solids from a liquid suspension to produce a solids stream and a stream of clarified liquid, said apparatus comprising:

a closed inner vessel mounted within an outer vessel and spaced therefrom to define a continuous liquid space, said liquid space enabling the inner vessel to be totally covered and surrounded by a continuous body of the liquid dispersion;

an inverted funnel member comprising a lower cone portion disposed within and opening into said inner vessel and an upper duct portion extending into and opening into said outer vessel at an inlet point within the liquid space covering said inner vessel, thereby providing fluid communication between said inner and outer vessels;

means for introducing the liquid suspension into said outer vessel;



first solids discharge means for removing solids which collect at the bottom of said outer vessel, said inner vessel being interposed between said first discharge means and said inlet point;

second solids discharge means for removing solids which collect at the bottom of said inner vessel; and

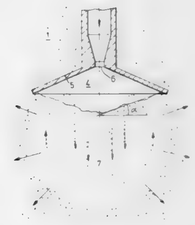
liquid discharge means for removing the clarified liquid from the upper interior of said inner vessel, said liquid discharge means comprising a gutter member mounted within said upper interior of said inner vessel and duct means, in communication with said gutter means for removing liquid from said gutter member;

said second solids discharge means and said duct means extending through the walls of said outer vessel.

3,963,620
PURIFICATION FILTER FOR LIQUIDS

Zdenek Vor, Akersberga, Sweden, assignor to Allmanna Ingenjorsbyran AB, Stockholm, Sweden

Filed July 26, 1974, Ser. No. 492,165
Int. Cl.² B01D *23/16, 23/20*
U.S. Cl. 210—279 **5 Claims**

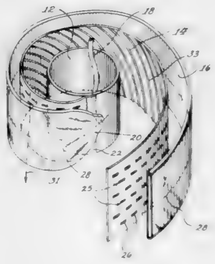


1. An upstream filtering means for liquids having a bed of granular material therein, the grains of which are of approximately uniform mean grain size, and having means embedded in the granular bed for fluidizing the whole bed during a rinsing step comprising a housing, a filter bed of such granular material located within the housing, at least one liquid distributor means that forms a part of said means for fluidizing embedded within the granular material, said distributor means having an enlarged body closed at the top for supporting some of the granular material in the housing above the body and open at the bottom for defining a cavity within said filter bed, said enlarged body being constructed and arranged to cause the granular material to repose under the enlarged body of said distributor means in a manner to generally define the lower wall of said cavity, said lower wall of the cavity being shaped to increase the size of said cavity beyond said space enclosed by said body, said distributor means supporting a downwardly directed nozzle in said cavity, the diameter of said nozzle being larger than the mean grain size of the granular material, a fluid conduit connected to the top of said body and communicating with said cavity through said nozzle, said nozzle having an outlet opening to produce a jet stream of fluid that has a small cross-sectional area as compared with the average cross-sectional area of said cavity, means to supply liquid to said filtering means through said conduit to produce said jet stream flow, said nozzle outlet being situated in said cavity above said lower wall and said jet stream being in a filtration step directed downwardly through said nozzle to flow through said cavity as a concentrated jet and reach the granular material at a local point to fludize only a portion of the bed under the enlarged body and in a rinsing step the stream flow of the liquid being substantially increased through said bed to fluidize the entire bed.

3,963,621
MEMBRANE DIFFUSION DEVICE HAVING RIBBED MEMBRANE SUPPORT

Ferris E. Newman, Libertyville, Ill., assignor to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Oct. 21, 1974, Ser. No. 516,527
Int. Cl.² B01D *31/00*
U.S. Cl. 210—321 B **10 Claims**



1. In a membrane diffusion device which comprises a flat, tubular, semi-permeable membrane and a flexible, ribbed, membrane support sheet positioned against said tubular membrane, said tubular membrane and support sheet being coiled together into a spiral with coils of membrane being positioned between coils of said support sheet, the improvement comprising:

a first set of membrane-supporting rib sections arrayed in a series of lines on one side of said support sheet, said linear array of rib sections of the first set being disposed in longitudinal relation to the axis of said tubular membrane, said rib sections of the first set being spaced from each other to define a plurality of spaces between the rib sections to permit fluid flow transversely across said membrane between said rib sections in linear array; and a second set of membrane-supporting ribs on the other side of said membrane support sheet, said ribs of the second set defining an angle with said tubular membrane axis.

3,963,622
FLUID TREATMENT APPARATUS

Jacques Baudet, Roussillon; Michel Salmon, Mions, and Andre Sausse, Sceaux, all of France, assignors to Rhone-Poulenc S.A., Paris, France

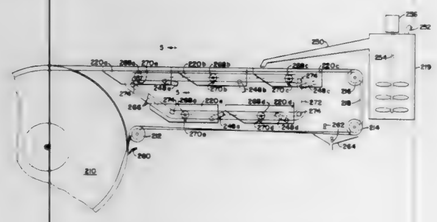
Filed May 31, 1974, Ser. No. 475,277
Claims priority, application France, June 1, 1973, 73.20040; Apr. 2, 1974, 74.11674
Int. Cl.² B01D *31/00*
U.S. Cl. 210—321 R **16 Claims**

9. Fluid fractionating apparatus comprising:
a. at least one cord consisting of at least two hollow fibres of macromolecular material twisted together wherein the degree of twisting of each individual fibre on itself is less than one sixth of a revolution per turn of twist of fibre to form a cord;
b. a jacket enclosing said at least one cord;
c. means separating the interiors of the various hollow fibres from the exteriors of the hollow fibres within the jacket;
d. at least one passage connecting the interior of the jacket outside the hollow fibres to the exterior; and
e. at least one passage connecting the interior of the hollow fibres to the exterior of the jacket.

3,963,623
ROTARY VACUUM DRUM FILTER

Stephen Alan Buss, and Benjamin Alvin Buss, both of 1315 - 23rd Ave. Court, East Moline, Ill. 61244

Filed Jan. 6, 1975, Ser. No. 538,605
Int. Cl.² B01D *33/14*
U.S. Cl. 210—401 **13 Claims**

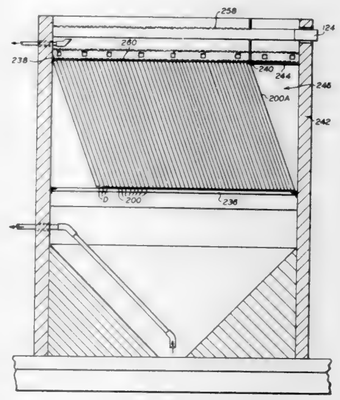


1. A rotary drum filter arrangement comprising:
a. a vacuum drum mounted for rotation about a substantially horizontal axis;
b. a rotatable member spaced from the vacuum drum and mounted for rotation about an axis parallel to the axis of the filter drum with the upper portion of its periphery in substantially horizontal alignment with the upper portion of the periphery of the vacuum drum;
c. a roller mounted for movement about an axis parallel to the axis of the vacuum drum in a position generally between the vacuum drum and rotatable member, closely adjacent to the vacuum drum and above a horizontal plane passing through the axis of rotation of the vacuum drum;
d. an endless flexible filter belt trained about the vacuum drum and rotatable member to form upper and lower reaches with the lower reach thereof passing between the vacuum drum and roller and over the roller whereby the filter belt is in engagement with at least 270 degrees of the periphery of the vacuum drum;
e. means for rotating the vacuum drum in a direction to move the upper reach of the filter belt toward the vacuum drum;
f. means for applying a slurry to the filter belt remote from the drum; and
g. means including a vacuum means for forming a cake on the filter belt from the slurry applied thereto prior to the belt moving the slurry to the vacuum drum.

3,963,624
CLARIFIER

Angus D. Henderson, Bayside, N.Y.; Francis H. Verhoff, South Bend, Ind., and John M. Periale, Central Islip, N.Y., assignors to Telecommunications Industries, Inc., Copiague, N.Y.

Filed Jan. 7, 1974, Ser. No. 431,013
Int. Cl.² B01D *21/02*
U.S. Cl. 210—521 **17 Claims**



1. A clarifier, comprising:
a tank having an inlet and an outlet for a liquid having entrained solids;
a lamina including a plurality of spaced apart substantially parallel plates disposed at an angle to the horizontal and vertical, said lamina being disposed between said inlet and outlet so that said liquid passes between said plates as it progesses from said inlet to said outlet, and throttling means at the outlet ends of said plates for equalizing flow within said plates, said throttling means comprising a screen disposed on the outlet edges of said plates.

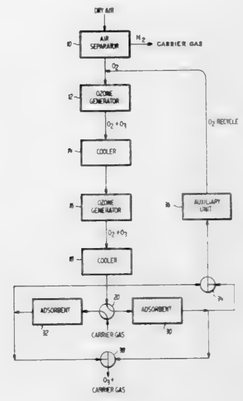
3,963,625
OZONE GENERATION AND RECOVERY SYSTEM

Frank E. Lowther, Severna Park, Md., assignor to W. R. Grace & Co., Columbia, Md.

Filed Mar. 12, 1975, Ser. No. 557,595
Int. Cl.² C01B *13/11*
U.S. Cl. 250—533 **7 Claims**

1. A continuous ozone generation and recovery system which comprises:
a. means for separating air into an oxygen-rich gas stream and a nitrogen-rich gas stream;
b. at least one corona discharge ozone generator;
c. means for passing the oxygen-rich gas streams through said ozone generator to synthesize ozone in low concentration;
d. means for cooling the ozone containing oxygen-rich gas stream from means (c);
e. means for contacting the cooled gas stream from means (d) with a solid ozone adsorbent to adsorb ozone therefrom;

f. means for recycling the oxygen-rich gas stream from means (e) to the ozone generator; and



g. means for desorbing the adsorbed ozone from the adsorbent using said nitrogen-rich gas stream from means (a).

3,963,626
FIRE EXTINGUISHANT FOR FISSIONABLE MATERIAL

Charles R. Schmitt, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation-in-part of Ser. No. 356,865, May 3, 1973, Pat. No. 3,938,012. This application Mar. 22, 1974, Ser. No. 454,027
Int. Cl.² A62D *1/00*
U.S. Cl. 252—2 **9 Claims**

1. A method for extinguishing a radioactive or fissionable metal fire comprising the step of placing carbon microspheroids on said fire, said microspheroids having as an impregnant a neutron absorber selected from the group consisting of boron, cadmium, and gadolinium.

3,963,627
SURFACE TREATMENT OF PARTICULATE SOLIDS

Arnold George Cottrell, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 263,213, June 15, 1972, Pat. No. 3,830,738, which is a division of Ser. No. 109,568, Jan. 25, 1971, abandoned. This application June 11, 1974, Ser. No. 478,333
Claims priority, application United Kingdom, Feb. 16, 1970, 7385/70
The portion of the term of this patent subsequent to Aug. 20, 1991, has been disclaimed.
Int. Cl.² A62D *1/12*
U.S. Cl. 252—4 **2 Claims**

1. A fire-fighting foam compatible fire-fighting powder composition consisting essentially of an acidic or neutral fire-extinguishing powder and from 0.1% to 5% of a partially-hydrophobic powdered silica having a surface area of at least 10 square meters per gram and carrying a surface treatment with a silane of the formula $(R)_n - Si - (L)_{4-n}$ where n has the value of 1, 2 or 3 and R is a hydrophobic group which is non-reactive to the silanol groups on the silica surface and is a hydrocarbon group or a substituted hydrocarbon group, the hydrocarbon group being selected from alkyl and alkenyl of up to 20 carbon atoms, phenyl, benzyl, tolyl, cyclopentyl and cyclohexyl, the substituent being selected from chlorine, fluorine, trifluoromethyl, or alkyl ether and L is a group which is reactive to the silanol groups on the silica surface and is a chlorine or an alkoxy group containing up to 5 carbon atoms, and possessing a degree of hydrophobicity measured by the methanol titration test in the range 5 to 35.

3,963,628
FIBER LUBRICANT COMPOSITION

Kisoon Park, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 7, 1974, Ser. No. 477,416
Int. Cl.² D06M *13/18*
U.S. Cl. 252—8.8 **10 Claims**

1. An emulsifiable textile lubricant composition comprising:
A. from 40 to 80 weight percent of mineral oil having a viscosity of from 60 to 140 SUS at 100°F.,
B. from 10 to 50 weight percent of a copoly(oxyethylene-oxypropylene) monoether of the formula:

$$RO(CH_2CH_2O)_x(\overset{CH_3}{\overset{|}{C}}HCH_2O)_yH$$

wherein R is alkyl of 8 to 18 carbon atoms, the sum of x plus y is from 5 to 9 with x constituting from 25 to 75 weight percent of said sum of x plus y,
C. from 1 to 20 weight percent of an organic phosphate of the formula:

$$\left[R'O(CH_2CH_2O)_n\right]_m P(OH)_{3-m}$$

wherein R' is alkyl of from 8 to 18 carbon atoms, or alkaryl or aralkyl of from 12 to 18 carbon atoms in which the alkyl group contains from 6 to 12 carbon atoms, n has a value of 3 to 25 and m has a value of 1 to 3, and
D. from zero to 10 weight percent of an alkanolamine having a molecular weight of 120 to 240.

3,963,629
FABRIC SOFTENER COMPOSITION FOR USE IN A CLOTHES DRYER AND METHOD

James Hugh McLaughlin, Chatham, Mass., assignor to Center for New Product Development, New York, N.Y.

Division of Ser. No. 164,835, July 21, 1971, Pat. No. 3,806,359. This application Dec. 6, 1973, Ser. No. 422,193
Int. Cl.² D06M *13/46*
U.S. Cl. 252—8.8 **5 Claims**

1. A pressurized, self-propellant composition suitable to be dispensed from an aerosol container for use in a clothes dryer comprising, by weight of the total composition (a) from about 1.0 to 30.0 percent of a fabric softener, (b) from about 50.0 to 94.0 percent of a solubilizer, and (c) from about 5.0 to 25.0 percent of a propellant, and wherein the solubilizer includes water in an amount comprising at least 40.0 percent of the total composition, said (a), (b) and (c) providing a stable, substantially form-sustaining, substantially non-penetrating, surface adherent, easily distributable foam when dispensed from said aerosol container.

3,963,630
LEAD ZIRCONATE-TITANATE POWDER OF PARTICLE SIZES BETWEEN 0.02 AND 0.2 MICRON, PROCESS FOR PRODUCING SAME, AND HIGH-DENSITY PIEZOELECTRIC CERAMICS MADE OF POWDER

Masatomo Yonezawa; Tomeji Ohno, both of Tokyo; Keizo Iwase, Shiga; Toshio Takada, Kyoto; Masao Kiyama, Kyoto, and Toshikazu Akita, Kyoto, all of Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Feb. 7, 1975, Ser. No. 547,806

Claims priority, application Japan, Nov. 21, 1974, 49-134663

Int. Cl.² C04B *35/46, 35/48*

U.S. Cl. 252—62.9 **4 Claims**

1. A process for producing crystalline powder of a composition given by the chemical formula: $Pb\,Ti_q\,Zr_p\,O_3$, where y and z represent mol ratios, the sum of q and p being equal to 1.00, the mol ratio q being not smaller than 0.45 and not greater than 0.90, the mol ratio p being not smaller than 0.10 and not greater than 0.55, comprising the steps of:

preparing an acidic aqueous solution of the metallic elements in the mol ratios given in said formula,

neutralizing said aqueous solution to provide a suspension of hydroxides of the metallic elements,

subjecting said suspension in an autoclave under pressure to a temperature between 150° and 300°C for a time sufficient to produce crystalline precipitate of said composition and of an average particle size between 0.02 and 0.2 micron in a mother liquor, and

separating said precipitate from said mother liquor.

2. A process for preparing a composition represented by the chemical formula: $Pb(Mn_{1/3}Sb_{2/3})_x\cdot Ti_y\cdot Zr_z\cdot O_3$, where x, y and z represent mol ratios, the sum of x, y and z being equal to 1.00, and x, y, and z fall on the boundary of and within a heptagon ABCDEFG in a triangular compositional diagram of a ternary-system solid solution shown in FIG. **1**, the vertices A, B, C, D, E, F, and G of said heptagon being given by:

	x	y	z
A	0.10	0.80	0.10
B	0.01	0.71	0.28
C	0.01	0.09	0.90
D	0.05	0.05	0.90
E	0.30	0.05	0.65
F	0.30	0.50	0.20
G	0.20	0.70	0.10,

said process comprising the steps of:

preparing an aqueous solution of the metallic elements in the mol ratios given in said formula,

neutralizing said aqueous solution to provide a suspension of hydroxides of said metallic elements,

subjecting said suspension in an autoclave under pressure to a temperature between 150° and 300°C for a time sufficient to produce crystalline precipitate of said composition and of an average particle size between 0.02 and 0.2 micron in a mother liquor, and

separating said precipitate from said mother liquor.

3,963,631
METHOD OF PREPARING FERROELECTRIC CERAMICS

Hiromu Ouchi, Toyonaka; Masamitsu Nishida, Osaka, and Kazunori Numata, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Feb. 3, 1975, Ser. No. 546,780

Claims priority, application Japan, Feb. 20, 1974, 49-20823

The portion of the term of this patent subsequent to May 11, 1993, has been disclaimed.

Int. Cl.² C04B *35/46, 35/48*

U.S. Cl. 252—62.9 **6 Claims**

1. A method of preparing a ferroelectric ceramic selected from the group consisting of:

I. $Pb([B_1]_A Ta_{1-A})O_3—PbTiO_3—PbZrO_3$, where $[B_1]$ is one member selected from the group consisting of Mg, Zn, Cd, Sn, Mn, Fe, Co and Ni when A=⅓, and $[B_1]$ is one member selected from the group consisting of Li and Cu when A=¼,

II. $Pb([B_2]_B Ta_{1-B})O_3—Pb[B_3]_C Ta_{1-C})O_3—PbTiO_3—PbZrO_3$, where each of $[B_2]$ and $[B_3]$, $[B_2] \neq [B_3]$, is one member selected from the group consisting of Mg, Zn, Cd, Sn, Mn, Fe, Co and Ni for when B and C=⅓, and each of $[B_2]$ and $[B_3]$, $[B_2] \neq [B_3]$, is one member selected from the group consisting of Li and Cu when B and C=¼,

III. $Pb([B_1]_A Ta_{1-A})O_3—PbTiO_3—PbZrO_3$ with MnO_2, where $[B_1]$ is one member selected from the group consisting of Mg, Zn, Cd, Sn, Fe, Co and Ni when A=⅓, and $[B_1]$ is Li and Cu when A=¼, and

IV. $Pb([B_2]_B Ta_{1-B})O_3—Pb([B_3]_C Ta_{1-C})O_3—PbTiO_3—PbZrO_3$ with MnO_2, where each of $[B_2]$ and $[B_3]$, $[B_2] \neq [B_3]$, is one member selected from the group consisting of Mg, Zn, Cd, Sn, Fe, Co and Ni when B and C=⅓, and each of $[B_2]$ and $[B_3]$, $[B_2] \neq [B_3]$, is one member selected from the group consisting of Li and Cu when B and C=¼, said method comprising: calcining at 700° to 900°C a powdered mixture of the oxides, hydroxides, or carbonates of the metals to be contained in the ceramics to form a solid solution and then sintering at 1200° to 1300°C, then heat treating at a temperature lower by about 100° to 400°C than the sintering temperature, maintaining said heat treating for about 1 to 60 hours, and then cooling the material subjected to said heat treatment at a cooling rate of from about 300°C per hour to about 10°C per hour, so as to increase the tensile strength and decrease the resonant impedance of said ceramics.

3,963,632
INSULATING COMPOSITIONS

Koji Tanaka, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 198,764, Nov. 5, 1971, abandoned, which is a continuation-in-part of Ser. No. 885,175, Dec. 15, 1969, abandoned. This application Jan. 7, 1974, Ser. No. 431,308

Claims priority, application Japan, Dec. 17, 1968, 43-92585

Int. Cl.² H01B *3/02*

U.S. Cl. 252—63.2 **10 Claims**

1. An electrical insulating coating composition of improved surface insulating qualities in the presence of moisture and ionizible salts comprising an electrically insulating resinous matrix component having incorporated therein both a cationic ion-exchanger component and an anionic ion-exchange component wherein each of said anionic exchanger component and said cationic exchanger component is incorporated in said coating composition in the amount of from 5.0 to 35% based on the total weight of said coating composition.

7. A method of restoring the surface insulating qualities of contaminated electrical insulators which comprises applying to the exposed surfaces of said insulator a liquid film of the composition according to claim **1** via a solution or suspension of said coating composition in a solvent vehicle and then removing said vehicle and leaving a coating of said composition.

9. A method of providing electrical insulation to electrical conductors which comprises the steps of coating said conductors with the composition according to claim **1** in a solvent vehicle and removing said vehicle to provide the insulating conductor coated with the composition according to claim **1.**

3,963,633
GAS DISCHARGE DEVICE DIELECTRIC CONTAINING SELENIUM, TELLURIUM AND/OR POLONIUM

Michael E. Fein; Bernard W. Byrum, Jr., both of Toledo, and Roger E. Ernsthausen, Luckey, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 6, 1971, Ser. No. 205,275

Int. Cl.² H01B *3/00, 3/10*

U.S. Cl. 252—63.2 **3 Claims**

1. As an article of manufacture, a dielectric material body for a gaseous discharge panel, said dielectric body containing a surface deposit of at least one oxide selected from the group consisting of selenium oxide, tellurium oxide, and polonium oxide, said oxide deposit having a thickness of at least about 200 angstrom units to about 10,000 angstrom units.

3,963,634
POWDERY BLEACHING DETERGENT COMPOSITION

Kyozaburo Tachibana, Sakura, and Takashi Fujino, Yokohama, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1974, Ser. No. 460,911

Claims priority, application Japan, Apr. 17, 1973, 48-43331

Int. Cl.² C11D *9/42*

U.S. Cl. 252—96 **2 Claims**

1. In a powdery bleaching detergent composition consisting of a mixture of particles of sodium percarbonate and detergent component, said detergent component consisting of a surfactant selected from the group consisting of anionic surfactants, nonionic surfactants and mixtures thereof, neutral or alkaline inorganic builders and other conventional detergent additives, the improvement which comprises; at least 60 percent by weight of said detergent component has particle diameters larger than 250μ, the copper content of said detergent component being less than 2 ppm and the iron content of said detergent component being less than 5 ppm, and at least 60% by weight of said sodium percarbonate has particle diameters larger than 250μ.

3,963,635
DISHWASHING COMPOSITIONS

Peter Leonard Dawson, Chester, and Michael Tom Rothwell, Bromborough, both of England, assignors to Lever Brothers Company, New York, N.Y.

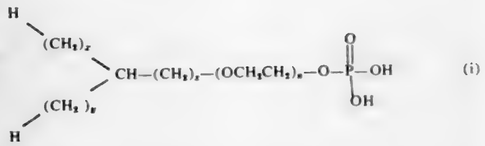
Filed Oct. 1, 1973, Ser. No. 402,420

Claims priority, application United Kingdom, Oct. 16, 1972, 47675/72

Int. Cl.² C11D *7/08;* **C23G** *1/02*

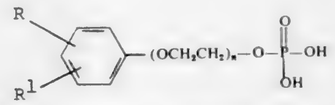
U.S. Cl. 252—142 **6 Claims**

1. In a liquid hand dishwashing composition of the type having a pH of not more than 7 and comprising from about 10 to about 50% by weight of a detergent active compound from 5 to 40% by weight of which is a calcium/magnesium sensitive anionic synthetic detergent selected from the group consisting essentially of C_{11-18} α and random alkene sulphonates, random C_{13-18} alkane sulphonates, C_{10}–C_{15} alkyl benzene sulphonates, C_{11}–C_{15} primary and secondary alcohol sulphates and mixtures thereof, and water the improvement which comprises in incorporating in the composition from 0.01 to 2% by weight of a phosphate monoester having the general formulae

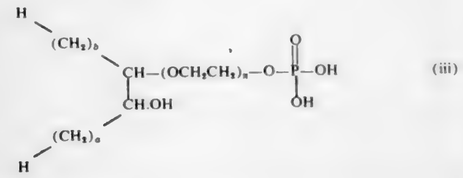


(i)

wherein $x + y + z$ is from 9–17 and one of x,y and z may be zero, and n is zero or 1,



wherein R and R^1 are C_8–C_{18} alkyl groups and one of R and R^1 may be hydrogen,



(iii)

where $a + b$ is from 10–16 and one of a and b may be zero and n is zero or 1,

and (iv) analogues of said esters having the formulae (i), (ii) and (iii), the alkyl groups being substituted by alkenyl groups, and from 1 to 40% by weight of a nonionic or anionic solubilizer, a 0.05% aqueous solution of which will remain clear at 24°H of hardness and neutral pH at temperatures of from 20°–45°C the ratio of the total amount of detergent active compound and solubilizer to the amount of phosphate monoester in the composition being from 1500:1 to 30:1 when the phosphate monoester is derived from a linear primary alcohol, from 1000:1 to 50:1 when the phosphate monoester is derived from a branched chain primary alcohol, and from 600:1 to 150:1 when the phosphate monoester is derived from a linear secondary alcohol.

3,963,636
TREATMENT OF WATER OR AQUEOUS SYSTEMS

Arthur Harris, Poynton; John Burrows, Congleton, and Thomas Ivor Jones, Poynton, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 312,019, Dec. 4, 1972, Pat. No. 3,897,209. This application May 8, 1975, Ser. No. 575,690

Int. Cl.² C02B *5/06;* **C23F** *11/18, 11/12*

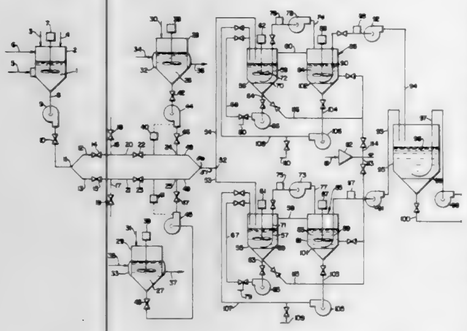
U.S. Cl. 252—181 **8 Claims**

1. A composition for inhibiting the corrosion and scale forming tendencies of water or an aqueous system comprising from 2.5 to 80% by weight of zinc (calculated as Zn^{++}) and 97.5 to 20 percent by weight of hydrolyzed polymaleic anhydride, or of a water soluble salt of such a hydrolyzed polymaleic anhydride.

3,963,637
COMPOSITIONS FOR TREATING DOMESTIC AND INDUSTRIAL LIQUID WASTES

George M. Chappell, Wells, Maine, assignor to Chemlan Company, Inc., Biddeford, Maine

Division of Ser. No. 169,739, Aug. 6, 1971, Pat. No. 3,812,032. This application Nov. 5, 1973, Ser. No. 414,611
Int. Cl.² C02B 9/00; C02C 5/06
U.S. Cl. 252—181 8 Claims



1. An acid formula composition for flocculating domestic, municipal, and industrial liquid waste said composition consisting essentially of:

a. about 30–98 weight percent aluminum sulfate,
b. about 2–20 weight percent of an alkali metal chloride,
c. about 0.0005 – 0.1 weight percent of sodium or potassium hypochlorite,
d. about 10–25 weight percent of an inorganic acid selected from the group consisting of phosphoric, hydrochloric, sulfuric and nitric acids, and
e. about 1–25 weight percent of an organic acid selected from the group consisting of oxalic, formic, acetic and lactic acids.

3,963,638
LIQUID CRYSTAL COMPOSITIONS, METHODS AND DEVICES

Hermann K. Bucher, and Thomas R. Criswell, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 8, 1974, Ser. No. 431,648
Int. Cl.² C09K 3/34; G02F 1/13
U.S. Cl. 252—299 11 Claims

1. A nematic liquid crystal composition which exhibits dynamic scattering upon subjecting a thin film of said composition to an electrical potential, said composition comprising:

at least one nematic liquid crystalline compound having a negative dielectric anisotropy and an amount of an organic salt effective to aid dynamic scattering, said salt being soluble in said composition and having the formula:

$$M^+RX^-$$

wherein M^+ is a cation aiding solubility of said salt in said composition, said cation having the structure $(R''')_4N^+$ in which (a) each R''' is an alkyl group with the total carbon atom content of all four R''' groups being at least 11 or (b) any three of R''' taken together represent the carbon atoms necessary to complete a 6- to 10-membered heterocyclic nucleus and the fourth R''' represents an alkyl group of about 8 to 24 carbon atoms; and RX^- represents an anion selected from the group consisting of p-chlorobenzenesulfonate, p-nitrobenzenesulfonate, 2,5-dichlorobenzenesulfonate, p-bromobenzenesulfonate, 2-chloro-5-methylbenzenesulfonate, 2-methyl-5-nitrobenzenesulfonate, 2-chloro-5-nitrobenzenesulfonate, 2-chloro-3,5-dinitrobenzenesulfonate, pentafluorobenzoate, and 2-naphthalenesulfonate.

3,963,639
FLUORESCENT LAMP AND METHOD FOR THE MANUFACTURE THEREOF

Richard M. Klein, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

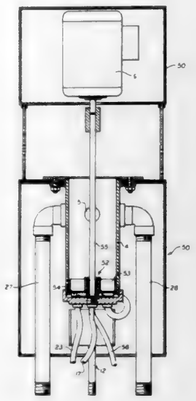
Division of Ser. No. 364,568, May 29, 1973, Pat. No. 3,890,522. This application Oct. 23, 1974, Ser. No. 513,804
Int. Cl.² C09K 11/08
U.S. Cl. 252—301.36 5 Claims

1. An aqueous suspension comprising water; finely-divided phosphor particles; a temporary organic binder which can be essentially completely removed from a lamp envelope, on which the suspension has been coated, upon firing under appropriate conditions; and a minor amount of an additive which will yield a phosphate glass coating on said phosphor particles when a lamp envelope, on which the suspension has been coated, is fired under appropriate conditions, said additive comprising a mixture of orthophosphoric acid and zinc nitrate.

3,963,640
PROCESS OF PREPARING SODIUM-ALUMINUM SILICATE DISPERSION COMPLEX AND COMPOSITION

Fred Smith, Norwich, England, assignor to Anglian Water Authority, Norwich, England

Continuation-in-part of Ser. No. 461,077, April 15, 1974, abandoned, which is a continuation-in-part of Ser. No. 262,865, June 14, 1972, abandoned. This application Feb. 14, 1975, Ser. No. 549,273
Claims priority, application United Kingdom, June 24, 1971, 29737/71; Mar. 23, 1972, 13644/72
Int. Cl.² B01J 13/00
U.S. Cl. 252—313 R 9 Claims



1. A process in which a complex sodium aluminium silicate polymeric material that is completely soluble in hydrochloric acid and that is a stable dispersion in water is made by feeding an aqueous solution of sodium silicate and an aqueous solution of aluminium sulphate separately through separate inlets arranged around the base of a cylindrical chamber into the chamber, and rotating at a speed of about 1,000 to 5,000 r.p.m. rotor blades that are at least two-thirds the diameter of the chamber and that are mounted close to the base of the chamber not more than about 6 mm above the inlets, the proportions of sodium silicate and alumium sulphate and the total amount of water introduced into the chamber being such that in the product of the process the amount of silicate, measure as SiO_2, is 0.5 to 5% and the pH is from 3 to 7.5.

3,963,641
PROCESS FOR INTERRUPTING NORMAL OPERATION OF A HYDROCARBON GASIFICATION REACTOR

Günter Pockrandt, Bad Homburg, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 29, 1974, Ser. No. 518,836
Claims priority, application Germany, Dec. 6, 1973, 2360756
Int. Cl.² C01B 2/14
U.S. Cl. 252—373 7 Claims

1. In a process for operating a reactor for the gasification of hydrocarbons with oxygen and water vapor under a pressure of about 3–100 kilograms per square centimenter and at temperatures between about 1000°C and 1500°C to produce a product gas which contains mainly hydrogen and carbon monoxide, wherein the hydrocarbons are fed under pressure to a burner and are sprayed from the lance of said burner in atomized form into the reactor where said atomized hydrocarbons react with a mixture of oxygen and water vapor supplied to the reactor, the improvement for interrupting normal operation and holding the reactor at temperatures above 800°C during interrupted operation which comprises shutting off the supply of said mixture of oxygen and water vapor and feeding to said burner lance used in normal operation a mixture of hydrocarbons and water vapor, said water vapor being fed under a pressure of about 10–60 kilograms per square centimeter, feeding said hydrocarbons used during said interrupted operation at a rate which is less than 10% of the rate used for normal operation by means of a feed pump and a succeeding metering pump and adjusting the pressure of said water vapor to be mixed with said hydrocarbons so that the pressure loss in the burner lance is higher than the feed pressure of the hydrocarbons between the feed pump and the metering pump, spraying an atomized mixture of hydrocarbons and water vapor into said reactor and burning at least part of said hydrocarbons together with compressed air fed into the reactor.

3,963,642
PROCESS FOR PRODUCING A REDUCING GAS

Heinz Jockel, Kelin-Gerau, and Hans-Joachim Renner, Neider-Erlenbach, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 278,672, Aug. 7, 1972, abandoned. This application July 25, 1974, Ser. No. 491,896
Claims priority, application Germany, Aug. 20, 1974, 2141875
Int. Cl.² C01B 2/16
U.S. Cl. 252—373 3 Claims

1. In a process for producing a reducing gas containing carbon monoxide and hydrogen and low amounts of carbon dioxide and water vapor wherein natural gas is reacted with water vapor under super-atmospheric pressures of 5 to 15 kilograms per square centimeter, the improvement which comprises

a. first reacting a partial amount of the natural gas feedstock with at least part of the water vapor to be used at temperatures of 350°–500°C in a shaft reaction zone in the presence of a high-nickel catalyst containing 10–50% by weight nickel on a magnesium silicate support to form a gas containing hydrogen and methane;
b. mixing said gas containing hydrogen and methane with the remaining amount of natural gas feedstock and any remaining amount of water vapor to be used, the overall ratio of water vapor to natural gas for steps (a) and (b) being in the range of 1.5:1 to 1:1; and
c. reacting said mixture at temperatures of 975°–1000°C in a tubular reaction zone in the presence of an indirectly heated nickel-containing catalyst on an alumina support thereby producing said reducing gas.

3,963,643
METHOD OF CATALYST MANUFACTURE

Dalia Germanas, Des Plaines, and Ernest L. Pollitzer, Skokie, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 462,891, April 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 293,237, Sept. 28, 1972, abandoned. This application June 30, 1975, Ser. No. 592,134
Int. Cl.² B01J 27/08, 27/10
U.S. Cl. 252—442 11 Claims

1. In a method of catalyst manufacture, the steps of compositing from about 0.1 to about 5 wt. % platinum group metal with alumina, reacting the resultant composite with a Friedel Crafts metal halide in an amount sufficient to introduce from about 2 to about 15 wt. % combined halogen into the composite, and thereafter contacting the composite at a temperature of from about 100° to about 600° C. in a non-reducing atmosphere with a polyhalo compound containing at least 2 chlorine atoms selected from the group consisting of methylene halide, haloform, methylhaloform, carbon tetrahalide, sulfur dihalide, sulfuryl halide, thionyl halide, and thiocarbonyl tetrahalide in sufficient amount to add at least 0.1 wt. % combined halogen to the composite.

3,963,644
CONVERSION CATALYSTS

Rowland C. Hansford, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 84,141, Oct. 26, 1970, Pat. No. 3,836,454, which is a continuation of Ser. No. 643,353, June 5, 1967, Pat. No. 3,547,807, which is a continuation-in-part of Ser. No. 343,932, Feb. 11, 1964, Pat. No. 3,324,047, which is a continuation-in-part of Ser. No. 150,129, Nov. 6, 1961, abandoned, which is a continuation-in-part of Ser. No. 72,325, Nov. 29, 1960, abandoned. This application Jan. 9, 1974, Ser. No. 433,739
Int. Cl.² B01J 29/06
U.S. Cl. 252—455 Z 7 Claims

1. A hydrocracking catalyst composition prepared by intimately admixing a Y zeolite component with an amorphous component selected from the class consisting of alumina, magnesia and hydrogen montmorillonite clays, and consolidating the resulting mixture into granular form, at least about 20% of the exchange capacity of the zeolite component appearing in the final composition being decationized and/or satisfied by hydrogen ions, the final composition also containing a minor proportion of at least one Group VI-B and/or Group VIII metal, metal oxide or metal sulfide hydrogenating promoter supported on said amorphous component, said amorphous component comprising at least about 10 weight-percent of the final composition.

3,963,645
SUPPORTED METAL OXIDES

Abraham P. Gelbein, Plainfield, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 803,074, Feb. 27, 1969, abandoned. This application May 26, 1971, Ser. No. 147,159
Int. Cl.² B01J 29/06, 23/14, 23/16
U.S. Cl. 252—455 R 20 Claims

1. A composition of matter comprising:

a metal oxide selected from the group consisting of vanadia, molybdena, and mixtures thereof, supported on a porous support selected from the group consisting of silica-alumina and gamma-alumina, said metal oxide being present in an amount to provide a metal oxide to support weight ratio ranging from about 0.3:1 to about 3:1 substantially entirely within the pores of the support, said metal oxide having been placed in molten form substantially within the pores of a support having a surface area greater than about 50 meter square per gram and a porosity greater than about 0.4cc per gram.

16. A process for producing a supported metal oxide comprising:

mixing at least one member selected from the group consisting of the oxides and salts of vanadium and molybdenum with a support having a surface area greater than about 50 meter square per gram and a porosity greater than about 0.4cc per gram, said support being selected from the group consisting of gamma-alumina and silica-alumina, said member having a fusion temperature no greater than about 1500°C and being mixed in an amount to provide from about 25% to about 75%, by weight, metal oxide in the final product, heating the mixture to a temperature above the fusion temperature of the salt whereby the member is drawn substantially, entirely into the pores of the support and further treating the supported member when the member is a metal salt to convert the salt to the metal oxide.

3,963,646
METHODS FOR THE MANUFACTURE OF COMPOSITE CATALYSTS CONTAINING A COMPOSITION OF A TRANSITION METAL ON A SUPPORT

Stanislas Teichner, and Gérard Gardes, both of Villeurbanne, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Aug. 2, 1973, Ser. No. 384,836

Claims priority, application France, Aug. 18, 1972, 72.29580

Int. Cl.² B01J *29/10, 29/20*

U.S. Cl. 252—459 **12 Claims**

1. A method for the preparation of a composite catalyst, starting from a solution in a non-aqueous solvent of a compound of at least one transition metal and of a salt of at least one metal able to provide a refractory oxide, each of said compounds being selected among those of said metals which are both hydrolysable by water to form the corresponding hydroxides and soluble in said non-aqueous solvent, which method comprises adding to said solution an amount of water sufficient to cause hydrolysis of said salts and treating the reaction medium with a non-aqueous and volatile solvent in an amount and under conditions of temperature and pressure that result in the critical point of said solvent being reached and even exceeded thereby causing all the solvent to be in the form of vapor and removing the solvent vapor from said reaction medium.

3,963,647
ELECTROSTATICALLY PAINTABLE INJECTION MOLDABLE BLEND OF PROPYLENE POLYMER, ETHYLENE/HIGHER α-OLEFIN COPOLYMER RUBBER AND CARBON BLACK

Robert Michael Straub, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 22, 1974, Ser. No. 499,555

Int. Cl.² C08K *3/04;* **H01B** *1/04*

U.S. Cl. 252—511 **11 Claims**

1. In an injection moldable, electrostatically paintable polyolefin composition comprising about 100 parts of an ethylene/higher α-olefin copolymer rubber, about 20–100 parts of crystalline propylene polymer, and carbon black, the improvement which comprises said carbon black having a mean particle diameter of from about 15–30 millimicrons and an oil absorption number (A) having a minimum value of about 40 cc/100 g. and a maximum value wherein A is calculated from the formula:

$A = 0.3116D^2 - 18.708D + 359.67$,

wherein D is the mean particle diameter, with the proviso that the maximum value of A is never greater than 130 cc/100 g., said carbon black is present within a range determined by the following formulas:

Minimum parts carbon black = $2.157D - 0.0145D^2 - 0.0067AD - 5.03$;

Maximum parts carbon black = $0.863D - 0.0050D^2 - 0.0025AD - 0.3663A + 0.00159A^2 + 49.19$;

wherein A and D have the values given hereinabove and parts of carbon black is based upon the total weight of polymers.

3,963,648
PERFUME CHEMICALS

Barry Nicholas Jones, Ingrove; Hifzur Rahman Ansari, London; Brian George Jaggers, Romford, and John Francis Janes, Epping, all of England, assignors to Bush Boake Allen Limited, Walthamstow, England

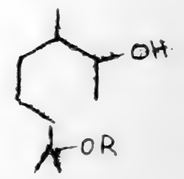
Continuation-in-part of Ser. No. 311,710, Dec. 7, 1972, abandoned. This application May 15, 1974, Ser. No. 470,282

Claims priority, application United Kingdom, Sept. 8, 1972, 41845/72

Int. Cl.² A61K *7/46;* **C11B** *9/00*

U.S. Cl. 252—522 **19 Claims**

1. A compounded perfumery composition comprising component A and component B, component A comprises a plurality of perfumery ingredients other than the perfumery ingredients defined as component B component B comprises at least one compound of the formula



where R is at least one group selected from methyl, ethyl, propyl, iso-propyl, n-butyl, sec-butyl, tert-butyl, pentyl or hexyl, component B being from 0.1 to 95% by weight based on the weight of said compounded perfumery composition.

3,963,649
LIQUID DETERGENT COMPOSITION

Gianfranco Luigi Spadini, Strombeek-Bever, and Bob Dekker, Beigem, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sept. 5, 1973, Ser. No. 394,589

Claims priority, application Luxemburg, Sept. 11, 1972, 66053; Oct. 9, 1972, 66258

Int. Cl.² C11D *3/02, 3/16*

U.S. Cl. 252—546 **16 Claims**

1. A liquid dishwashing detergent composition comprising:

a. from about 2% to about 40% by weight of a water-soluble organic nonionic surface-active agent selected from the group consisting of:

1. tertiary oxides of the formula

$$R_1R_2R_3Y \rightarrow O \qquad (I)$$

wherein R_1 is a straight or branched, saturated or unsaturated, aliphatic hydrocarbon, hydroxyhydrocarbon, or alkyloxyhydrocarbon radical containing in total from 8 to 24 carbon atoms; and R_2 and R_3 are each a methyl, ethyl, hydroxymethyl, or hydroxyethyl radical; and Y is an N or P atom;

2. amides of the formula

$$R_4—CO—N(H)_{m-1}(R_5OH)_{3-m} \qquad (II)$$

wherein R_4 is a saturated or unsaturated, aliphatic hydrocarbon radical containing from 7 to 21 carbon atoms; R_5 represents a methylene or ethylene group; and *m* is 1, 2, or 3;

. a condensation product of from about 3 to about 25 moles of ethylene oxide and one mole of an organic, hydrophobic compound containing from about 8 to about 24 carbon atoms selected from the group consisting of C_{10}–C_{18} aliphatic alcohols, mono- and poly-C_5–C_{18} alkyl phenols, fatty acid esters of sorbitol, manitol and hexitol, C_{10}–C_{20} aliphatic and C_5–C_{18} alkyl aromatic carboxylic acids, C_7–C_{17} mono- and dialkanolamides and C_6–C_{18} alkyl- and alkenyl- and C_5–C_{18} alkaryl amines;

and mixtures thereof;

b. from about 0.1% to about 5% by weight of a water-soluble gelatin, having a molecular weight of at least 15,000, an iso-electric point between about pH 4.5 and about pH 9.2; and a gel strength between 50 and 300 Bloom grams;

c. from about 5% to about 95% by weight of water.

3,963,650
PROCESS FOR MAKING IMPROVED UREA/FORMALDEHYDE FOAMS

Dennis Henry Ogden, Penn, England, assignor to British Industrial Plastics Limited, Manchester, England

Continuation-in-part of Ser. No. 280,164, Aug. 14, 1972, abandoned, which is a continuation of Ser. No. 52,789, July 7, 1970, abandoned. This application Sept. 4, 1974, Ser. No. 503,530

Claims priority, application United Kingdom, July 16, 1969, 36069/69

Int. Cl.² C08J *9/00*

U.S. Cl. 260—2.5 F **14 Claims**

1. A method of producing a low-density, self-sustaining urea/formaldehyde foam comprising foaming a mixture including an aqueous solution of thermosetting material comprising a urea/formaldehyde resin having a theoretical solids content of at least 40% and less than about 60% and a foaming agent to produce a first foam; foaming a mixture including an aqueous solution of a hardener for the resin and a foaming agent to form a second foam; and mixing the first foam with the second foam so that the liquid feed ratio of resin to hardener is from about 4:1 up to at most about 50:1.

3,963,651
METHOD OF CROSS LINKING AND HARDENING OF GRAPHITIC FORMED BODIES

Hubertus Nickel, Julich; Hartmut Luhleich, Duren, and Francesco Dias, Julich, all of Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Dec. 9, 1974, Ser. No. 531,036

Int. Cl.² C08J *9/00*

U.S. Cl. 260—2.5 F **2 Claims**

1. A method of cross-linking and hardening with the aid of heat to effect quick stabilizing of outside surface of a formed porous body of synthetic graphitic material that is bonded by means of a synthetic resin binding agent on a novolak basis, which includes in combination the steps of exclusively gassing the formed body at a temperature of from 100°C to 200°C with a quantity of formaldehyde which depends on a predetermined extent of cross-linking of said formed body, while causing said formaldehyde to advance from the outside surface of said formed body into the interior thereof.

3,963,652
ADHESION OF RUBBER TO REINFORCING MATERIALS

Syozo Tanimura, Minoo; Yutaka Terada, Nishinomiya, and Hiroshi Fukuhara, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Mar. 27, 1974, Ser. No. 455,126

Claims priority, application Japan, Mar. 27, 1973, 48-35455

Int. Cl.² C09J *3/14, 3/16;* **C09L** *9/00, 61/12*

U.S. Cl. 260—3 **6 Claims**

1. A vulcanizable rubber composition containing a rubber component, a formaldehyde-donor selected from the group consisting of di- to hexa-methylolmelamines, completely or partially etherified or esterified derivatives thereof and hexamethylenetetramine and a formaldehyde-acceptor, wherein the formaldehyde-acceptor is a co-condensate of formaldehyde with a mixture of resorcinol and a phenol selected from the group consisting of m-cresol, p-cresol, tertbutylphenols and tert-octylphenols, the molar ratio of formaldehyde and the mixture of resorcinol and the phenol being 0.4–1.3 : 1, and the weight ratio of resorcinol and the phenol being from 95:5 to 50:50, or a mixture of a condensate of resorcinol with formaldehyde and a condensate of the phenol with formaldehyde, the molar ratio of resorcinol and formaldehyde in the condensate of resorcinol with formaldehyde being 0.4–1.0 : 1, and the molar ratio of formaldehyde and the phenol in the condensate of the phenol with formaldehyde being 0.5–1.4 : 1, and the weight ratio of the condensate of resorcinol with formaldehyde and the condensate of the phenol with formaldehyde being from 95:5 to 50:50

3,963,653
PROCESS FOR PRODUCING HYDROCARBON RESIN AND PRESSURE-SENSITIVE ADHESIVES CONTAINING SAME

Shigeru Katayama; Izuru Yokoyama, and Katsuhiko Tasaka, all of Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 452,577, March 19, 1974. This application June 17, 1975, Ser. No. 587,563

Claims priority, application Japan, Mar. 19, 1973, 48-30853

Int. Cl.² C08L *7/00, 53/02, 47/00, 9/00*

U.S. Cl. 260—4 AR **6 Claims**

1. A pressure-sensitive adhesive composition mainly comprising the hydrocarbon resin (C) produced by the process which comprises copolymerizing 100 parts by weight of vinyl aromatic hydrocarbons (A) comprising about 80 to 100% by weight isopropenyltoluene and 0 to 20% by weight vinyl aromatic hydrocarbons having 8 to 9 carbon atoms and from about 5 to 100 parts by weight of a fraction (B) having a boiling point range from about −15°C to 45°C and comprising a major proportion by weight of unsaturated hydrocarbons having 4 to 5 carbon atoms, which is the by-product in the refining or cracking of petroleum, in the presence of a Friedel-Crafts catalyst and a rubber (D).

3. The pressure-sensitive adhesive composition as claimed in claim 1, wherein said rubber (D) is selected from the group consisting of natural rubber, a styrene-butadiene copolymer rubber, polybutadiene, polyisoprene, polyisobutylene, a butyl rubber, polychloroprene, a butadiene-acrylonitrile copolymer rubber and a polyvinyl ether.

3,963,654
IMPRESSION MATERIAL FOR USE IN AN IMPRESSION PACKER

Stanley O. Hutchison, Bakersfield; Glenn W. Anderson, Oildale, and Gordon L. Newby, Bakersfield, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 373,341, June 25, 1973, Pat. No. 3,855,854. This application July 29, 1974, Ser. No. 492,377

Int. Cl.² E21B *47/00;* **C08L** *7/00*

U.S. Cl. 260—5 **12 Claims**

1. An impression material for use in an impression packer comprising a smooth rolled sheet containing about 60 to 80% by weight partially cured synthetic nitrile rubber including cure chemicals, said nitrile rubber being a butadiene crylonitrile co-polymer and said cure chemicals comprising sulfur, stearic acid and zinc oxide present in an amount from about one-third to three-fourths the amount of said chemicals required for full cure, about 10 to 20% by weight natural rubber smoked sheet, about 5 to 15% by weight hydrated amorphous silica, and about 2 to 6% by weight of rubber processing oil.

3,963,655
AMYLOSE PECTIN ADHESIVE COMPOSITION FOR ADHESIVE TAPES

Robert W. Monte, Merrimack, N.H., assignor to Nashua Corporation, Nashua, N.H.

Division of Ser. No. 484,596, July 1, 1974. This application July 24, 1975, Ser. No. 598,830
Int. Cl.² C08L *3/12*
U.S. Cl. 260—17.4 ST **4 Claims**

1. An adhesive composition suitable for application to a paper backing to form an adhesive tape which comprises an aqueous mixture of:

amylose pectin medium molecular weight starch	2.0 to 10.0 wt.%
urea	1.5 to 6.0 wt.%
sugar or sugar alcohol	5.0 to 10.0 wt.%
neutralized polyacrylate to molecular weight	1.0 to 6.0 wt.%

wherein the weight percents are based upon the weight of amylose pectin.

3,963,656
THERMOPLASTIC POLYURETHANES AND A TWO-STAGE PROCESS FOR THEIR PREPARATION

Ernst Meisert, Leverkusen, and Wilhelm Goyert, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 400,782, Sept. 26, 1973, Pat. No. 3,875,118. This application Jan. 31, 1975, Ser. No. 546,062
Claims priority, application Germany, Oct. 3, 1972, 2248382
Int. Cl.² C08G *18/32*
U.S. Cl. 260—18 TN **2 Claims**

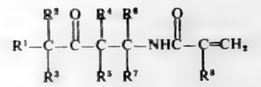
1. A multi-stage process for the production of polyurethane elastomers that can be worked up thermoplastically and processed as a millable gum comprising the steps of:
   a. reacting in a first reaction stage a polyol having a molecular weight of between 700 and 1750 with 0.2 to 0.7 equivalents, per equivalent of polyol, of an aliphatic, cycloaliphatic or aromatic polyisocyanate to produce a diolurethane having a molecular weight of between 900 and 5300,
   b. reacting in a second reaction stage the diolurethane of step (a) with 4,4′-diisocyanatodiphenylmethane and a diol having a molecular weight below 500 at an equivalent ratio of from 0.87 to 0.97 of 4,4′-diisocyanatodiphenylmethane to the total equivalents of diol-urethane and diol, and
   c. mechanically mixing about 0.2 to 2.0 weight % of lubricant and mold release waxes selected from the group consisting of fatty acid esters, fatty acid amides, oxidized polyethylenes, microcrystalline waxes and silicone oil with the elastomer or any of its precursor reactants.

3,963,657
CURABLE WATER-BASE COMPOSITIONS

Eugene Richard Farone, Mentor, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 235,086, March 15, 1972, abandoned, which is a continuation-in-part of Ser. No. 210,130, Dec. 20, 1971, abandoned. This application Oct. 10, 1974, Ser. No. 513,681
Int. Cl.² C08L *61/20*
U.S. Cl. 260—29.4 UA **22 Claims**

1. A curable composition comprising (A) at least one thermosetting acrylic polymer or aminoplast composition and (B) a water-soluble composition of matter consisting essentially of:
   1. compounds of the formula



wherein each of R^1, R^2, R^3, R^4 and R^5 is hydrogen, a hydrocarbon radical, a substituted hydrocarbon radical wherein the substituents are halide, ether, keto, carboxy, ester, amide, nitro, cyano, thioether, sulfoxy or sulfone groups, a hydroxyalkyl radical having not more than 4 carbon atoms, or an alkoxy derivative of said hydroxyalkyl radical, at least one of R^1, R^2, R^3, R^4 and R^5 being a hydroxyalkyl radical of alkoxy derivative thereof; each of R^6 and R^7 is hydrogen, a hydrocarbon radical or a substituted hydrocarbon radical wherein the substituents are selected from those listed hereinabove; and R^8 is hydrogen, halogen, a lower alkyl radical or a substituted lower alkyl radical wherein the substituents are selected from those listed hereinabove; and

   2. condensation dimers and trimers of said compounds.

3,963,658
LUBRICANT FOR POLYVINYL CHLORIDE MATERIALS

Walter Brotz, Gersthofen; Günther Illmann, Stadtbergen; Alfred Riedel, Gersthofen, and Friedrich Zinnert, Aystetten, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 18, 1975, Ser. No. 559,519
Claims priority, application Germany, Mar. 22, 1974, 2413827
Int. Cl.² C08L *91/00*
U.S. Cl. 260—28.5 D **1 Claim**

1. Transparent composition of matter comprising
   a. polyvinyl chloride and
   b. 0.2 to 3.0 % by weight, calculated on the weight of component a), of a modified candelilla wax as lubricant obtained by saponifying candelilla wax by treating it with calcium, barium, magnesium, zinc or aluminium hydroxide to such a degree that a product is obtained having substantially no acid number and having a saponification number 5 to 20 units below that of the starting wax.

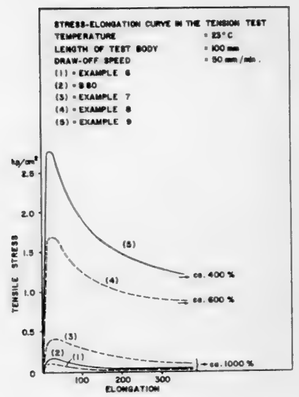
3,963,659
PRODUCTION OF BITUMEN COMPOSITIONS CONTAINING ETHYLENE-α-OLEFIN RUBBER

Gerhard Binder; Harald Blumel, and Helmut Krol, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Continuation of Ser. Nos. 421,961, Dec. 5, 1973, abandoned, Ser. No. 291,162, Aug. 22, 1972, abandoned, and Ser. No. 61,663, Aug. 6, 1970, abandoned. This application Apr. 25, 1975, Ser. No. 571,725
Claims priority, application Germany, Aug. 6, 1969, 1939926
Int. Cl.² C08L *95/00*
U.S. Cl. 260—28.5 AS **3 Claims**

1. A process for the production of a homogeneous thermoplastic composition consisting essentially of on a 100 parts by weight basis about 75–99.5 parts bitumen and about 0.5–25 parts of an ethylene-α-olefin rubber having a Mooney viscosity (ML-4) of 35–90 and comprising on a mol basis 45–75% ethylene and 25–55% of propylene and having cross linkable double bonds said process comprising the steps of:
   premasticating the ethylene-α-olefin rubber and during said premasticating adding a small amount of bitumen to obtain preliminary homogenization;
   adding a small amount of bitumen to the premasticated rubber and masticating the resultant mixture to disperse the bitumen as a dispersed phase into the rubber as a continuous phase and continuing the mastication to form a homogeneous mixture;
   and adding additional bitumen either in incremental batches, or gradually in a continuous manner and at a rate

such that each charge of bitumen is first homogeneously mixed before adding additional bitumen, and changing the type of added bitumen from a less viscous type to a more viscous type during the step of adding same, and continuing the mastication to produce the homogeneous thermoplastic composition.

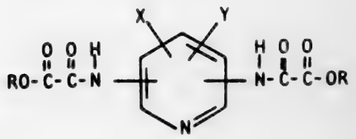


3,963,660
PYRIDINE DIOXAMIC ACIDS AND ESTERS

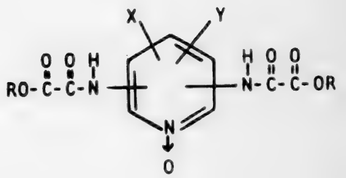
Charles M. Hall, and Herbert G. Johnson, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 403,677, Oct. 4, 1973, abandoned. This application Mar. 31, 1975, Ser. No. 563,919
Int. Cl.² C07D *213/55*
U.S. Cl. 260—295 R **35 Claims**

1. A compound of the formula



and



wherein each



group is located anywhere on the carbon ring with the proviso that one group cannot be ortho to the other group;
R is selected from the group consisting of hydrogen, alkyl from one through six carbon atoms, phenyl, and a pharmaceutically acceptable metal or amine cation;
X and Y are the same or different and are selected from the group consisting of hydrogen, alkyl from one through four carbon atoms, phenyl, alkoxy from one through three carbon atoms, nitro, amino, trifluoromethyl, halogen, and



wherein D is selected from the group consisting of hydrogen and alkyl from one through six carbon atoms, and a pharmaceutically acceptable metal or amine cation with the proviso that when R is hydrogen or a pharmaceutically acceptable metal or amine cation, then D is the same as R and when R is alkyl from one through six carbon atoms or phenyl, then D is alkyl from one through six carbon atoms, phenyl or hydrogen;
and pharmaceutically acceptable acid addition salts thereof.

3,963,661
DIALLYL PHTHALATE RESIN-CONTAINING AQUEOUS EMULSIONS WITH THERMOSETTING VINYL EMULSIONS

Akio Suzui, Amagasaki; Shinji Nose, Kobe; Takashi Kodama, Matsuyama; Kenji Yokoyama, Amagasaki; Kazuya Matsumoto, Kobe, and Yoshiharu Fujio, Amagasaki, all of Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

Filed July 16, 1974, Ser. No. 488,926
Claims priority, application Japan, May 31, 1974, 49-62406
Int. Cl.² C08L *31/08, 35/02, 35/04*
U.S. Cl. 260—29.4 UA **3 Claims**

1. A diallyl phthalate resin-containing aqueous emulsion product containing:
   A. an aqueous emulsion of a diallyl phthalate resin having a degree of conversion of monomer to polymer of from 30 to 75 weight percent, said diallyl phthalate resin consisting of
      1. diallyl phthalate present in from 50 to 100 weight percent, and
      2. an alkyl acrylate present in from 50 to 0 weight percent; and
   B. an aqueous emulsion of a thermosetting vinyl resin consisting of a copolymer of
      1. a vinyl compound present in from 10 to 1 weight percent and containing a thermosetting functional moiety selected from the group consisting of glycidyl, N-methylol, N-alkoxymethyl, carboxyl, hydroxyl, amino, and amide, and
      2. a vinyl compound present in from 90 to 99 weight percent and not containing a thermosetting functional moiety and selected from the group consisting of C_{1-8} alkyl esters of α,β-unsaturated carboxylic acid, vinyl esters, aromatic vinyl compounds, and α,β-unsaturated nitriles,

said product containing from 10 to 70 weight percent of the resin of A) and from 90 to 30 weight percent of the resin of B), based on the total resin content.

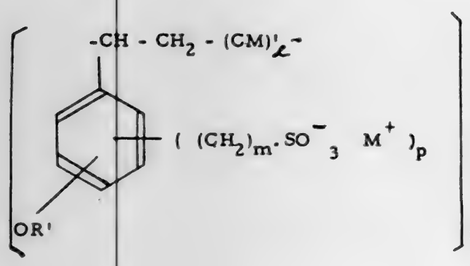
3,963,662
POLYION COMPLEX AND PROCESS FOR PREPARATION THEREOF

Hiroshi Fujiwara, Soka; Masaaki Sekiya, Satte, and Hiroshi Suzuki, Ichikawa, all of Japan, assignors to Maruzen Oil Co. Ltd., Osaka, Japan

Filed Mar. 13, 1974, Ser. No. 450,641
Claims priority, application Japan, Mar. 13, 1973, 48-29830; Mar. 13, 1973, 48-29831
Int. Cl.² C08L 61/10, 27/22
U.S. Cl. 260—29.6 WB 18 Claims

1. A process for preparing a polyion complex, which comprises reacting at 0° to 100°C

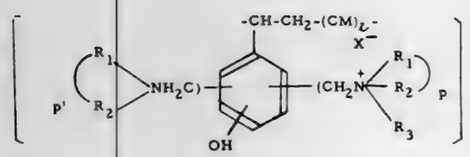
a. a polyanion selected from the group consisting of polymers expressed by the following general formula



wherein p, l and n are the same as defined in section b) below m is 0 or 1; M is —H, an ammonium group, an alkali metal, or an alkaline earth metal; R′ is H, or $—SO_3^-M^+$, M^+ or a combination thereof; OR′ is para or meta to the vinyl group of the starting hydroxystyrene; and (CM)′ is styrene, methyl methacrylate, methyl acrylate, acrylonitrile, or maleic anhydride,

polystyrene sulfonic acid, polyvinyltoluene sulfonic acid, polyvinylsulfonic acid, and alkali metal salts or alkaline earth metal salts of the above acid-type polyanions; with

b. a polycation with a polycation of the following general formula



wherein OH is para or meta to —CH—CH_2, each of R_1, R_2 and R_3 is an alkyl group, cycloalkyl group, alkenyl group, benzyl group, substituted benzyl group, or any of these groups in which a hydroxyl group has been introduced;



forms a nitrogen-containing or oxygen-containing heterocyclic group, or represents a dialkanolamine or N-alkylalkanolamine; R_3 is CH_2COOH, H, or O forming a coordination bond with N of a quaternary ammonium group; X is halogen or $ROSO_3$, wherein R is a lower alkyl group; p is above 0 but below 2, p' is at least 0 but below 2, and the sum of p and p' is above 0 but below 2; n is at least 3; (CM) represents a vinyl monomer; and l is any number including 0 in a solvent wherein the concentration of the polycation and the polyanion in the solvent is 0.01 to 80% by weight.

3,963,663
ELECTRODEPOSITION OF THERMOSETTING COATINGS AT THE CATHODE

Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Apr. 26, 1974, Ser. No. 464,411
Int. Cl.² C08L 61/06
U.S. Cl. 260—29.3 14 Claims

1. An aqueous coating composition comprising water having dispersed therein an hydroxy functional cationic polyamine resin comprising resinous hydroxy functional polyepoxide having a 1,2-epoxy equivalency of at least about 1.4, said polyepoxide being adducted with a stoichiometric deficiency of diisocyanate with respect to hydroxy and in a molar ratio of diisocyanate to polyepoxide of from 0.8:2 to 1.1:2 to provide an epoxy urethane containing unreacted epoxy groups, said epoxy urethane being adducted with a diprimary amine in which the two primary amine groups are the only functionality present, in an amount of about 1 mol of the diamine per equivalent of epoxy functionality, to consume substantially all of the epoxy functionality of said polyepoxide and generate hydroxy and terminal amine groups, said polyamine resin being condensed with from 2 to 60percent, based on the total weight of resin, of a water dispersible heat-hardening phenol-formaldehyde resin, and said condensed resin being dispersed in said water with the aid of water miscible organic solvent and an acid which solubilizes said resin.

3,963,664
METHOD OF PREPARING AROMATIC POLYAMIDE SOLUTIONS

Shuji Ozawa; Akihiro Aoki, and Hiroshi Fujie, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 452,329, March 18, 1974, abandoned, which is a continuation of Ser. No. 253,802, May 16, 1972, abandoned. This application May 12, 1975, Ser. No. 576,661
Int. Cl.² C08K 5/34
U.S. Cl. 260—30.2 8 Claims

1. A method of preparing a homogeneous solution of a polymer whose recurring structural units are predominantly metaphenylene isophthalamide units, comprising:

A. blending at a temperature of from −20°C to 10°C,

1. a fiber-forming polymer in which at least 90 mol percent of the total recurring structural units are metaphenylene isophthalamide units, and
2. A solvent consisting of at least 80% by weight of N-methyl-2-pyrrolidone, in the substantial absence of inorganic salts and at a polymer concentration of from 15 to 30 percent by weight based on the total weight of the polymer and the solvent, to form a uniform slurry, and

B. heating the slurry to a temperature between not below the temperature T_1 and not exceeding the temperature T_2 but not higher than 130°C, thus forming the solution;

wherein

$$T_1 = -18 + 3C - 1.5X,$$

and

$$T_2 = 330 - 10C + 7X,$$

both T_1 and T_2 being in degrees centigrade, C being the weight percent of polymer in the blend, and X being the mol percent of recurring structural units other than metaphenylene isophthalamide.

3,963,665
NONEL CONVEYOR BELTS FOR TRANSPORTING TAR SANDS

Jackson S. Boyer, Wilmington, Del., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Sept. 25, 1974, Ser. No. 509,205
Int. Cl.² C08K 5/06, 5/12
U.S. Cl. 260—31.8 C 8 Claims

1. An improved rubber composition suitable for use over a wide range of temperatures and resistant to excess swelling when exposed to liquid hydrocabons containing up to 30 volume percent aromatics comprising a vulcanized mixture of:

a. 100 parts of a rubber mixture comprised of 20 to 95 weight percent nitrile rubber and 80 to 5 weight percent of a second rubber selected from the group consisting of polybutadiene, styrene-butadiene copolymer, neoprene, polyisoprene and natural rubber, said rubber mixture having an acrylonitrile content in the range of 5 to 35 weight percent and

b. 1 to 30 parts by weight of a liquid plasticizing agent selected from the group consisting of di(butoxy-ethoxy ethyl) formal and di(butoxy-ethoxy ethyl) adipate, said vulcanized mixture being characterized as having a volume percent swell after 24 hours at 158°F in ASTM number 3 oil in the range of 1 to 40 as measured according to ASTM D-471 and a Gehman T_{100} stiffness value in the range of −30°F to −100 °F as measured according to ASTM D-1053.

3,963,666
STORAGE-STABLE, QUICK-CURING EPOXIDE RESIN MOULDING MATERIALS

Bruno Schreiber; Wolfgang Seiz, both of Basel, and Ewald Forster, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 257,749, May 30, 1972, abandoned.
This application Apr. 24, 1975, Ser. No. 571,143
Claims priority, application Switzerland, June 15, 1971, 8703/70
Int. Cl.² C08L 63/00
U.S. Cl. 260—37 EP 14 Claims

1. Storage-stable, one package quick-curing epoxide resin moulding materials consisting essentially of:

a. pre-adducts containing aromatic constituents and free epoxide groups and formed from epoxide resins and polyamines,

b. pre-adducts containing free amino groups and formed from polyamines containing cycloaliphatic or heterocyclic groups with polyglycidyl compounds, as curing agents, wherein the ratio of the number of reactive hydrogen atoms of the polyamine on the amine nitrogen atoms to that of the epoxide groups of the epoxide is in the range of 3:1 to 5:1, and

c. mineral or organic pulverulent or fibrous fillers, with the epoxide resin pre-adducts and the curing agents softening between 45° and 120°C, and melting 5° to 30°C above the softening point, and the resin pre-adducts and the curing agents being present in the moulding materials predominantly as discrete particles.

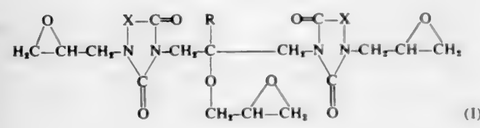
3,963,667
STORAGE-STABLE MOULDING COMPOSITIONS FOR THE MANUFACTURE OF LIGHT-STABLE, TRACKING-RESISTANT PLASTICS

Bruno Schreiber, Basel; Hermann Diethelm, Aesch; Jurgen Habermeier, Pfeffingen, and Ewald Forster, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 31, 1974, Ser. No. 519,489
Claims priority, application Switzerland, Nov. 6, 1973, 15599/73
Int. Cl.² C08L 63/00
U.S. Cl. 260—37 EP 24 Claims

1. Storage-stable moulding composition, characterized in that it contains

a. an adduct, containing epoxide groups, of a triglycidyl compound of the formula I



(I)

wherein X denotes a divalent alkylene group required to form a 5-membered or 6-membered heterocyclic structure and R denotes hydrogen or an alkyl group with 1 to 4 carbon atoms, and an organic compound possessing two or more active hydrogen atoms, selected from the group consisting of an aromatic primary monoamine, an aliphatic primary monoamine with 2 to 10 carbon atoms, a cycloaliphatic primary monoamine, a cycloaliphaticaliphatic primary monoamine, a heterocyclic-aliphatic primary monoamine, a mononuclear or binuclear hydantoin, a mononuclear or binulcear dihydrouracil, a dialcohol, a mononuclear or polynuclear phenol with 2 hydroxyl groups or a dicarboxylic acid, as the resin,

b. an adduct, containing amino groups, of a cycloaliphatic, aliphatic-cycloaliphatic, aromatic or heterocyclic polyamine and a polyglycidyl compound, as the curing agent, and

c. a mineral or organic, pulverulent or fibrous filler, and that the resin adduct and the curing agent adduct soften at between 45° and 120°C and melt 5° to 30°C above the softening point.

3,963,668
REINFORCED POLYOXYMETHYLENE MOLDING COMPOSITIONS

Rolf Wurmb, Heidelberg; Franz Schmidt, Mannheim, and Harro Petersen, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Feb. 13, 1975, Ser. No. 549,660
Int. Cl.² C08K 9/04
U.S. Cl. 260—37 AL 4 Claims

1. An improved glass-fiber reinforced polyoxymethylene which contains, in addition to said polyoxymethylene and said glass fibers from 0.1 to 5% by weight based on the total weight of the composition of an alkoxymethyl urea.

3,963,669
GLASS-FIBER-REINFORCED POLYESTER MOLDING COMPOSITIONS OF REDUCED FLAMMABILITY

Rolf Wurmb, Heidelberg; Joachim Kunde, Frankenthal, and Wolfgang Seydl, Hamburg, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

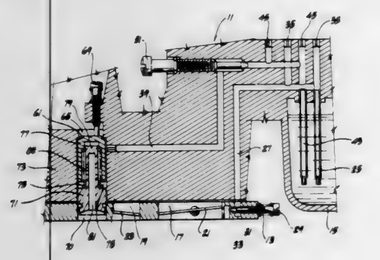
Filed Feb. 13, 1975, Ser. No. 549,659
Int. Cl.² C08K *3/34, 3/40*
U.S. Cl. 260—40 R **4 Claims**

1. Glass-fiber-reinforced molding compositions of reduced flammability consisting of
A. a linear saturated polyester resin,
B. from 10 to 60% by weight of glass fibers,
C. from 3 to 30% by weight of a flame retardant and, additionally,
D. from 2 to 10% by weight, based on the total weight of the molding composition, of a particulate water-insoluble silicate having a bulk density of more than 100 g/l.

3,963,670
INTEGRATED IDLE AND BY-PASS SYSTEM

Ralph E. Kalert, Granite City, Ill., and Robert J. Smith, Florissant, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Mar. 7, 1975, Ser. No. 556,250
Int. Cl.² F02M *3/02*
U.S. Cl. 261—41 D **3 Claims**



1. A carburetor to be mounted on an intake manifold of an internal combustion engine to provide a fuel/air mixture to be sucked into the intake manifold by an intake manifold vacuum, said carburetor including:
a main fuel/air mixing bore in communication with outside atmosphere;
a fuel supply bowl;
a throttle valve located in said mixing bore for moving between an open and a closed position and thereby controlling fluid flow through said mixing bore, wherein, when said throttle valve is in said "closed" position, fluid flow through said main fuel/air mixing bore is virtually prevented;
an idle fuel supply circuit for providing communication between said fuel supply bowl and said main fuel/air mixing bore, said idle fuel supply circuit entering said main fuel/air mixing bore at a dynamic air idle port which is located adjacent said throttle valve so that fluid flow in said main fuel/air mixing bore past said dynamic air idle port is effected by movement of said throttle valve, and fuel flow from said dynamic air idle port into said main fuel/air mixing chamber is, in turn, effected; and
a supplementary fuel/air supply circuit comprising:
an air passageway defining means for defining a supplementary air passageway leading from a point upstream of said throttle valve to a point downstream of said throttle valve;
a fuel passageway defining means for defining a separate supplementary fuel passageway from said fuel supply bowl to said supplementary air passageway, said supplementary fuel passageway entering said supplementary air passageway at a mixing intersection;
a piston valve located in a piston chamber portion of said supplementary air passageway upstream of said mixing intersection, said piston valve being movable in said piston chamber portion between a blocking position wherein said piston valve substantially blocks air flow through said supplementary air passageway, and an open position wherein said piston valve allows substantial free air flow through said supplementary air passageway;
a biasing spring for biasing said piston valve toward said blocking position;
a manifold vacuum passageway defining means for defining a manifold vacuum passageway between said piston chamber portion and said intake manifold, said manifold vacuum passageway entering said piston chamber portion at such a location that a predetermined high manifold vacuum acting through said manifold vacuum passageway under idle conditions overcomes said biasing spring and moves said piston valve toward an open position; and
a plug which is screwed into a main housing of said carburetor behind said piston valve, said plug including a protruding portion thereof which extends into a hollow portion of said piston valve, said plug defining a central bore and an opening communicating with said central bore through said protruding portion of said plug so that said opening provides communication between said central bore and said hollow portion of said piston valve, and wherein said central bore communicates with an intake manifold vacuum and the length of said protruding portion is calibrated so as to provide a stop for said piston valve when it is in an open position.

3,963,671
FIRE-RETARDANT THERMOSETTING RESINOUS COMPOSITIONS

Roy G. Turnbo, Deer Park, Tex., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Aug. 28, 1974, Ser. No. 501,348
Int. Cl.² C08K *1/00*
U.S. Cl. 260—45.7 R **5 Claims**

1. A fire-retardant composition that comprises a thermosetting organic resin selected from the group consisting of epoxy resins, polyesters, phenolic resins, amino-aldehyde resins, and mixtures thereof and a fire-retarding amount of hexabromobutadiene.

3,963,672
FLAME-RETARDANT POLYVINYL FLUORIDE FILM

Donald Eugene Brasure, Tonawanda, N.Y., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed July 16, 1975, Ser. No. 596,232
Int. Cl.² C08J *3/20*
U.S. Cl. 260—45.75 B **5 Claims**

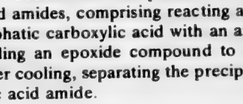
1. A flame-retardant polyvinyl fluoride flim containing, as the sole flame-retardant additive, about 3 to 30% by weight of at least one sodium antimonate, potassium antimonate, zinc antimonate, magnesium antimonate, or aluminum antimonate.

3,963,673
POLYMER CROSSLINKING WITH COUPLED PEROXIDES

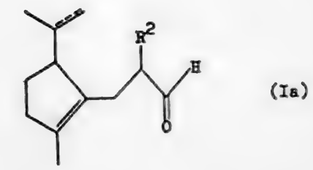
Antonio Joseph D'Angelo, Buffalo; Orville Leonard Mageli, and Chester Stephen Sheppard, both of Kenmore, all of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 342,106, March 16, 1973, Pat. No. 3,846,396, which is a division of Ser. No. 737,359, June 17, 1968, Pat. No. 3,725,455. This application June 25, 1974, Ser. No. 482,942
Int. Cl.² C08F *8/00, 210/16;* **C08G** *18/86;* **C08J** *3/24*
U.S. Cl. 260—46.5 G **11 Claims**

1. In the process of crosslinking elastomers capable of being crosslinked by free radicals using as the crosslinking agent a free radical affording compound, the improvement which comprises using as said agent a peroxide of the formula R—W—R′ where:
a. W is selected from —C(=O)—, —C(=O)R⁴C(=O)—, —C(=O)C(=O)—,



b. R and R′ are identical and are selected from $R_3OO—C(R_1)(R_2)—R^3O—$, $(R_3OO)_2C(R_4)—R^2O—$, $R_3OOC(=O)R^3O—$, $R_3OOC(=O)OR^3O—$, $R_1OC(=O)OO—C(R_1)(R_2)—R^2O—$, and $R_1C(=O)OO—C(R_1)(R_2)—R^2O—$;
c. R_1 and R_2 are aliphatic having 1–12 carbon atoms, cycloaliphatic having 3–12 carbon atoms, or aromatic having 6–12 carbon atoms;
d. R_3 is aliphatic or cycloaliphatic, each having 4-10 carbon atoms and the carbon atom joined to the peroxy oxygen atom is a tertiary carbon atom;
e. R_4 is aliphatic having 1–10 carbon atoms or cycloaliphatic having 3–12 carbon atoms;
f. R_5 is lower alkyl, cycloalkyl, aryl, alkoxy, cycloalkoxy, aralkoxy, or aryloxy;
g. R_6 is H or lower alkyl;
h. Y is the diradical O, S, or N—R_6;
j. R^2 is an aliphatic diradical having 1–10 carbon atoms or a cycloaliphatic diradical having 3–12 carbon atoms;
k. R^3 is an aliphatic diradical having 1–10 carbon atoms, cycloaliphatic diradical having 3–12 carbon atoms, aromatic diradical having 6–12 carbon atoms, or araliphatic diradical having 7–16 carbon atoms;
l. R^4 is selected from R^3, YR^3Y, $R^3C(=O)YR^3YC(=O)R^3$, $YR^3YC(=O)YR^3YC(=O)YR^3Y$, $YR^3YC(=O)R^3C(=O)YR^3Y$, $YR^3C(=O)YR^3C(=O)YR^3Y$, $YR^3C(=O)YR^3YC(=O)R^3Y$, $YR^3YC(=O)YR^3Y$, $YR^3YC(=O)R^3Y$ and YR^3YR^3Y; and
m. R_7 and R_8 are selected from H, alkyl of 1–10 carbons and cycloalkyl of 3–12 carbons and, when R_7 is H, R_8 can also be aryl of 6–12 carbons, and R_7 and R_8 when taken together form alkylene of 2–11 carbons.



(Ia)

wherein R^2 represents a hydrogen atom or a lower alkyl or lower alkylidene group and the broken line denotes an optional bond.

3,963,676
NOVEL PROCESS FOR PREPARING OXYMETHYLENE POLYMER AND RESULTING PRODUCT

Masaru Yoshida; Yoshiaki Nakase, and Akihiko Ito, all of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Japan

Division of Ser. No. 315,792, Dec. 18, 1972, Continuation-in-part of Ser. No. 144,636, May 18, 1971, Pat. No. 3,719,637. This application July 18, 1974, Ser. No. 489,548
Claims priority, application Japan, May 20, 1970, 45-42381; July 4, 1970, 45-58143
Int. Cl.³ C08G *2/10, 2/02*
U.S. Cl. 260—67 FP **7 Claims**

1. A process for preparing a heat-stabilized oxymethylene polymer, consisting essentially of
polymerizing tetraoxane using as a polymerization initiator an organic nitro-compound selected from the group consisting of tetranitromethane, nitrobenzene, m-dinitrobenzene, 1,3,5-trinitrobenzene, and diphenyl picryl hydrazil, said nitro-compound being present in an amount of about 10^{-5} to 70% by weight of the tetraoxane.

3,963,674
PROCESS FOR THE PRODUCTION OF HALOGENATED CARBOXYLIC ACID AMIDES

Otto Konigstein, and Herbert Jenkner, both of Cologne, Germany, assignors to Chemische Fabrik Kalk GmbH, Germany

Filed Mar. 7, 1975, Ser. No. 556,429
Claims priority, application Germany, Mar. 13, 1974, 2411904
Int. Cl.² C07C *103/02*
U.S. Cl. 260—561 HL **9 Claims**

1. Process for the production of halogenated carboxylic acid amides, comprising reacting an amide of an unsaturated aliphatic carboxylic acid with an anhydrous hydrogen halide, adding an epoxide compound to the reaction mixture, and after cooling, separating the precipitated halogenated carboxylic acid amide.

3,963,675
CYCLOPENTENES, PROCESS THEREFOR AND ODORANT COMPOSITIONS THEREWITH

Peter Naegeli, Wettingen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 338,730, March 7, 1973, abandoned. This application July 19, 1974, Ser. No. 490,166
Int. Cl.² C07C *47/40*
U.S. Cl. 260—598 **6 Claims**

1. A cyclopentene of the formula

3,963,677
IMPERMEABLE SILICONE COMPOSITION

Carl C. Enger, 12700 Lake Ave., Lakewood, Ohio 44107

Filed Nov. 21, 1974, Ser. No. 525,925
Int. Cl.² C08L *91/00*
U.S. Cl. 260—28.5 D **28 Claims**

1. A plastic composition substantially impermeable to electrolytes comprising:
A. between about 50% and 95% by weight of a silicone polymer,
B. between about 1% and 40% by weight of a fluorocarbon polymer and
C. between about 0.1% and 25% by weight of a wax.

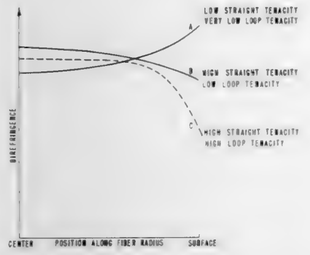
3,963,678
LARGE DENIER POLYETHYLENE TEREPHTHALATE MONOFILAMENTS HAVING GOOD TRANSVERSE PROPERTIES

Roddy Merl Conrad, Hamm, Germany, and Lyman Lyle Holland, Kinston, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 17, 1974, Ser. No. 480,289
Int. Cl.² C08G *63/18, 63/70*
U.S. Cl. 260—75 T **2 Claims**

1. A polyethylene terephthalate monofilament having an intrinsic viscosity of 0.6 to about 1, a denier of 1000 to 10,000, a straight tenacity of 6.0 to 10.0 grams per denier, a loop tenacity of 5.0 to 7.0 grams per denier, and an internal structure which is substantially uniform except for lower polymer chain segment orientation near the surface as evidenced

by birefringence measurements along a diameter, the structure being characterized by an average birefringe ($\overline{\Delta n}$) of



0.190 to 0.196, and an average difference factor (δ) of 90 to 200.

3,963,679

PROCESS FOR THE PRODUCTION OF POLYURETHANE ELASTOMERS

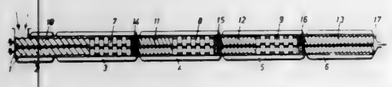
Martin Ulrich; Ernst Meisert, both of Leverkusen, and Alfred Eitel, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 433,589, Jan. 15, 1974, abandoned. This application July 17, 1974, Ser. No. 489,204

Claims priority, application Germany, Jan. 19, 1973, 2303564

Int. Cl.² C08G *18/08*; **D01F** *6/26*

U.S. Cl. 260—75 NE **17 Claims**



1. In a process for the continuous production of polyurethane (urea) elastomers by simultaneous reaction and extrusion in screw extruders, wherein polyisocyanates, polyols and/or polyamines, optionally other compounds which contain an average of at least 1.8 Zerewitinoff-active groups and optionally a lubricant are

a. admixed to form a reaction mixture

b. the reaction mixture is mixed under the action of high shearing forces, and

c. thereafter, the reaction mixture is formed by extrusion,

the improvement comprising kneading the reaction mixture at kneading frequencies of 1 to 20 Hertz and high velocity gradients in the radial clearance between the comb and housing wall of more than 2000 sec^{-1} during the time that the reaction mixture has a viscosity of between 100 Poises and 1000 Poises.

3,963,680

ONE-PART, ROOM-TEMPERATURE LATENT, CURABLE ISOCYANATE COMPOSITIONS

Donald R. O'Keefe, St. Paul, and A. Joseph Gasper, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 17, 1975, Ser. No. 559,238

Int. Cl.² C08G *18/18, 18/82, 18/00*

U.S. Cl. 260—77.5 NC **19 Claims**

1. In a one-part, room-temperature latent, curable isocyanate composition comprising:

an aromatic polyisocyanate material; and

an encapsulated liquid trimerization catalyst dispersed throughout said polyisocyanate, said liquid catalyst comprising a solution of a metal salt of an organic acid in a lower polyhydric alcohol and having a viscosity of greater than about 5,000 centipoise at 25°C, said liquid catalyst being encapsulated in capsules having a shell wall comprising partially polymerized isocyanate, said capsule shell wall being impermeable to said liquid catalyst at room temperature but permeable to said catalyst when activated by heat or solvent means;

the improvement comprising the inclusion in said liquid catalyst of a primary or secondary organic polyfunctional amine in an amount of from about 1 to 25% by weight of said liquid catalyst, wherein said partially polymerized isocyanate contains linkages selected from the group consisting essentially of urea, urethane and isocyanate linkages.

3,963,681

URETHANE ELASTOMERS PREPARED FROM POLYETHERS HAVING A CERTAIN MOLECULAR WEIGHT DISTRIBUTION

Yoshio Kaneko, Higashi Murayama; Yoji Watabe, Kodaira; Tsutomu Matsunaga, Murayama; Shigeyuki Toki, Kodaira, and Yutaka Iseda, Tachikawa, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed June 27, 1974, Ser. No. 483,535

Claims priority, application Japan, July 3, 1973, 48-75551

Int. Cl.² C08G *18/48*

U.S. Cl. 260—77.5 AM **14 Claims**

1. Polyether urethane elastomer composition having improved mechanical properties prepared by using polyfunctional isocyanate, curing agent and polyether having active hydrogen terminal groups which can react with the isocyanate group, wherein weight average molecular weight of said polyether is within the range of 1,000 to less than 4,500 and the molecular weight distribution curve of said polyether has at least two peaks, at least one of which is located in the higher molecular weight region and at least another one of which is located in the lower molecular weight region than the critical molecular weight of said polyether and wherein the equivalent ratio (d) of active hydrogen of a curing agent to the isocyanate group of said polyfunctional isocyanate is in the range of $0.9<d<1.2$.

3,963,682

POLYMERIC FUNGICIDAL COMPOSITIONS CONTAINING THE TRICHLOROMETHYL THIOIMIDE MOIETY

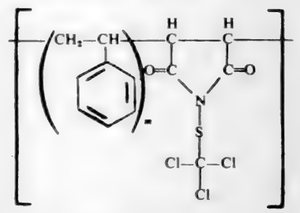
Wayne L. Gindrup, Houston, Tex., assignor to Napko Corporation, Houston, Tex.

Filed Feb. 26, 1973, Ser. No. 335,665

Int. Cl.² C08F *12/08, 22/40*

U.S. Cl. 260—78 UA **2 Claims**

1. A Polymeric, resinous fungicide consisting essentially of repeating units having the formula:



where n is 2 to 6 and m is 1 to 3.

3,963,683

RUBBER FORMULATIONS CONTAINING VULCANIZATION INHIBITING THIOFORMAMIDINE COMPOUNDS

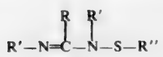
Marion J. Gattuso, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 464,584, April 26, 1974, Pat. No. 3,879,459. This application Dec. 17, 1974, Ser. No. 533,574

Int. Cl.² C08C *11/54*; **C08D** *9/00*

U.S. Cl. 260—79.5 A **10 Claims**

1. A vulcanizable diene rubber composition containing, as an inhibitor against the premature vulcanization thereof, a substituted thioformamidine having the formula:



in which the R's are independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl and aralkyl radicals.

3,963,684

VINYL BENZYL ETHERS AND NONIONIC WATER SOLUBLE THICKENING AGENTS PREPARED THEREFROM

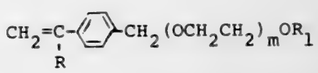
Syamalarao Evani, and Frederick P. Corson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 267,571, June 29, 1972. This application July 18, 1974, Ser. No. 489,876

Int. Cl.² C08F *220/56*

U.S. Cl. 526—303 **2 Claims**

1. A nonionic water soluble polymeric thickening agent comprising in polymerized form about 1 to 5 mole percent of a vinyl benzyl ether monomer and the balance to make 100 percent of acrylamide, said ether monomer having the formula



wherein R is hydrogen or methyl, m is about 10 to 100 and R_1 is an alkyl, alkaryl or aralkyl group of Lb **10** to about 22 carbon atoms.

3,963,685

ALCOHOL SOLUBLE HYDROPHILIC POLYMER VIA AQUEOUS POLYMERIZATION

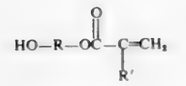
Robert A. Abrahams, 12 Amherst Road, Malboro, N.J. 07746

Filed May 13, 1974, Ser. No. 469,161

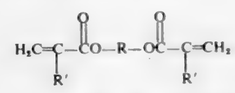
Int. Cl.² C08F *216/04, 220/20*

U.S. Cl. 526—230 **16 Claims**

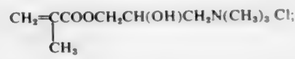
1. A process for preparing a solid waterinsoluble, methanol-soluble hydrophilic polymer which consists essentially of polymerizing in water, monomers consisting essentially of (a) a monomer of the formula



where R is an alkylene group of 2 to 3 carbon atoms, and wherein R′ is hydrogen or methyl; with not more than 0.035 weight percent, based on the weight of said monomer of formula (1), of a diester of the formula



wherein R and R′ have the above meanings or (b) said monomers of formula (1) and formula (2) together with a third monomer in an amount as high as 10%, said third monomer being methacrylic acid or



initiating polymerization by irradiation or a free radical initiator employing a ratio of total monomer to water from 10:90 to 70:30, conducting the polymerization for a period of time sufficient to produce said polymer, and recovering said polymer from the resulting reaction product mixture.

3,963,686

HEAT-CURABLE PULVERULENT COATING AGENT CONSISTING OF A MIXTURE OF COMPOUNDS CONTAINING GLYCIDYL GROUPS, DICARBOXYLIC ACID ANHYDRIDES, CURING ACCELERATORS, FLOW CONTROL AGENTS AND OPTIONALLY FURTHER CUSTOMARY ADDITIVES

Themistoklis Katsimbas, Hamburg, Germany, assignor to Hoechst Aktiengesellschaft, Germany

Filed May 30, 1974, Ser. No. 474,532

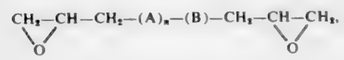
Claims priority, application Switzerland, June 26, 1973, 9315/73

Int. Cl.² C08G *45/04*

U.S. Cl. 260—837 R **1 Claim**

1. Pulverulent coating agent of a mixture of

A. a component which consists of 84 to 94 percent by weight of polyepoxides which have Durran softening points of about 90°–110°C and are soluble in organic solvents, and have the general formula



wherein

if A is $(-OOC-R_1-COO-CH_2-CHOH-CH_2-)$

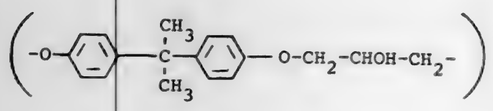
then B represents $(-OOC-R_1-COO)$,

wherein R_1 represents an aliphatic or aromatic hydrocarbon radical and n is zero or a small number from zero to eight; or

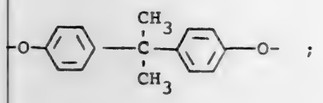
if A is $(-O-R_1-O-CH_2-CHOH-CH_2-)$,

then B denotes $(-O-R_1-O-)$ and R_1 has the meaning already mentioned, or

if A represents



then B is



B. consisting of 6 to 16 percent by weight of at least one dicarboxylic acid anhydride with melting point of about 60°–140°C in an amount corresponding to 0.4 – 1.0 anhydride groups per epoxy group (glycidyl group) of the component (A),

C. a curing accelerator in the form of an organic base and optionally

D. a flow control agent in an amount of at least 0.05 percent by weight of the mixture, which agent is a polymer of molecular weight (M_n) of at least 1,000 and has a glass transition temperature which is at least 50°C lower than the glass transition temperature of the component (A), characterized in that the component (C) consists of 0.5 – 1.8 percent by weight of N′,N′-bis-(dimethylaminoisobutylidene)-melamine.

3,963,687

TWO STEP CONTINUOUS POLYMERIZATION METHOD TO FORM ACRYLONITRILE COPOLYMERS

Ronald Luther Saxton, West Grove, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 2, 1975, Ser. No. 538,160

Int. Cl.² C08F *2/16, 220/44*

U.S. Cl. 526—66 **29 Claims**

1. A method of polymerization comprising

a. into a first reactor continuously feeding a free radical initiator and aqueous emulsified chain transfer agent, acrylonitrile and at least one monomer of styrene; 4-methyl styrene; 4-(t-butyl)styrene; 3-methyl styrene; 2,4-dimethyl styrene; 2,6-dimethyl styrene and 2,4-diisopropyl styrene or alpha-methyl styrene in combination with one of the above monomers; whereby at least 95% of the reaction time the monomer content relative to acrylonitrile in the reactor is maintained within 25% of a ratio required to be maintained to produce a polymer with an average composition of 65% to 85% by weight polymerized units of acrylonitrile and 35 to 15% by weight polymerized units of said monomer, said first reactor having a reaction temperature between 50 to 75°C.,

b. from said first reactor continuously withdrawing an outlet stream containing a polymer solids content of 15 to 20% by weight, an emulsifier content of 4 to 7% by weight of polymer, and unreacted acrylonitrile of 45 to 60% by weight of acrylonitrile feed to the first reactor;

c. into a second reactor continuously feeding the outlet stream from step (b) together with free radical initiator and added aqueous emulsified chain transfer agent, acrylonitrile and said monomer with emulsifier present in an amount of at least 0.2% by weight of added water exclusive of water from step (b) whereby at least 95% of the reaction time a monomer content relative to acrylonitrile is maintained in the second reactor within 25% of a ratio required to be maintained to produce a polymer with an average composition of 65% to 85% by weight polymerized units of acrylonitrile and 35 to 15% polymerized units of said monomer, said second reactor having a reaction temperature between 50° to 75°C.;

d. from said second reactor continuously withdrawing an outlet stream containing a polymer solids content of 20 to 30% by weight, an emulsifier content of 1.3 to 2.5% by weight of polymer, and unreacted acrylonitrile of 10 to 30% by weight of acrylonitrile feed to the second reactor, a ratio of polymer production in the second reactor to the first reactor maintained in a range of 1:1 to 6:1; the polymer possessing a melt stability of at least 10 minutes, an inherent viscosity of 0.3 to 1.0 deciliter/g as measured on a 0.5 g/deciliter solution of the polymer in gamma-butyrolactone at 35°C., a melt viscosity of 10^4 to 10^6 poises at 220°C. and a carbon dioxide permeability of less than 0.045 barrer and containing 65 to 85% by weight polymerized units of acrylonitrile and 35 to 15% by weight polymerized units of said monomer.

3,963,688

METHOD OF EMULSION POLYMERIZATION USING PHOSPHATE ESTERS OF NORMAL ALKANOLS AS SURFACTANT

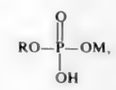
Donald H. Lorenz, Basking Ridge, N.J., and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

Filed Aug. 2, 1974, Ser. No. 494,333

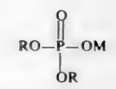
Int. Cl.² C08F *14/06, 214/06, 218/08*

U.S. Cl. 526—193 **12 Claims**

1. In a process for the emulsion polymerization of at least one olefinic monomer containing at least one olefinic carbon-to-carbon double bond, wherein said monomer is polymerized in an aqueous medium in the presence of a surfactant and a water-soluble initiator, the improvement wherein the surfactant is selected from the group consisting of phosphate esters having the formula

(I) 

and

(II) 

and mixtures of (I) and (II) thereof, wherein M is hydrogen, alkali metal, or an ammonium or amino cation having the formula



wherein R^1, R^2 and R^3 are independently hydrogen, alkyl of 1 to 6 carbon atoms, hydroxyalkyl of 1 to 6 carbon atoms or cycloalkyl of 3 to 6 carbon atoms and R is a straight chain alkyl of 8 to 10 carbon atoms.

3,963,689

POLYMERIC MATERIALS

Gerardus Johannes Van Veersen, Gaude, Netherlands, assignor to Emery Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 327,287, Jan. 29, 1973, Pat. No. 3,881,867. This application Jan. 28, 1975, Ser. No. 544,724

Int. Cl.² C08L *23/12, 67/00*

U.S. Cl. 526—6 **8 Claims**

1. A polymeric material comprising a synthetic resin selected from the group consisting of polypropylene and polyester; and from 0.5 to 15 parts, per hundred parts of the resin a polymerized fatty acid nitrile containing 20 to 75 carbon atoms, 2 to 4 nitrile groups and a maximum of two carbon-carbon double bonds.

3,963,690

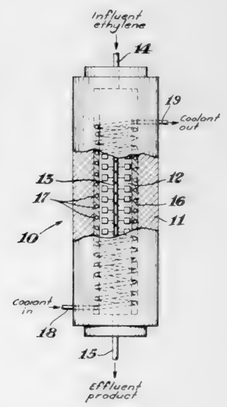
POLYMERIZATION OF ETHYLENE IN STIRRED AUTOCLAVE WITH COOLED INNER WALL

Malcolm E. Pruitt, Midland, Mich., and Joe B. Lovett, Sweeny, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 7, 1974, Ser. No. 512,642

Int. Cl.² C08F *4/28, 110/02*

U.S. Cl. 526—65 **1 Claim**



1. In a process of polymerizing ethylene under free-radical initiating conditions and in continuous manner at pressure of at least about 500 atmospheres and temperatures between about 125° and about 325°C at which the exothermic reaction of addition polymerization of ethylene is sustained without decomposition in a stirred autoclave comprising a relatively thick sidewall capable of withstanding the reaction pressure and defining at least one polymerization reaction zone, said continuous manner comprising continuously feeding ethylene to the reaction zone while stirring the resulting polymerization reaction mixture therein and continuously removing therefrom a portion of the resulting polymerization reaction mixture and sustaining the polymerization reaction in a substantially steady state,

the improvement wherein the polymerization reaction zone is bounded in part by a relatively thin heat conductive wall means having a first surface in contact with the polymerization reaction mixture contained in that zone and a second surface near to the first surface but separated therefrom by said heat conductive wall, the said heat conductive wall means being supported by the said autoclave sidewall and lying between said autoclave sidewall and the said polymerization reaction zone, the dimensions of said heat conductive wall means and said autoclave sidewall being thin and thick, respectively, relative to each other, and the process is carried out while passing a heat exchange fluid in contact with said second surface, said heat exchange fluid being at a temperature below that of the polymerization reaction mixture, thereby removing part of the heat generated by the exothermic polymerization reaction occurring in the reaction zone from the reaction mixture therein through the said heat conductive wall means to the said heat exchange fluid.

3,963,691

SYNTHETIC ANTIGENS OF LUTEINIZING HORMONE RELEASING HORMONE

Carl H. Hoffman, Scotch Plains, N.J.; Harvey Schwam, Lafayette Hill; Stephen F. Brady, Meadowbrook, both of Pa.; Martin Hichens, Somerville, N.J., and Ruth F. Nutt, Green Lane, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 7, 1974, Ser. No. 512,563

Int. Cl.³ C07C *103/52;* **C07G** *7/00*

U.S. Cl. 260—112.5 LH **7 Claims**

1. The antigen 1-N -glutaryl-LH-RH-[2-10]-carrier wherein the peptide 1-N -glutaryl-LH-RH-[2-10], having the amino acid sequence glutaryl-his-trp-ser-tyr-gly-leu-arg-pro-gly-NH_2, is linked to a carrier selected from the group consisting of α, β and γ globulins, thyroglobulins, Keyhole Limpet Hemocyanin, poly-L-glutamic acid, and poly-L-lysine by a peptide linkage between the carboxyl group of the glutaryl moiety and the amino groups of said carrier.

3,963,692

SULFUR-CHLORINATED POLYNUCLEAR AROMATIC AND FAT MIXTURE

Herbert D. Ivey, Jr., Pasadena, Calif., assignor to Lubricaton Company of America, Los Angeles, Calif.

Filed June 27, 1974, Ser. No. 483,657

Int. Cl.² C07G *17/00*

U.S. Cl. 260—125 **7 Claims**

1. An extreme pressure additive comprising the reaction product of, as a first ingredient, a cyclic oil obtained from the cracking of petroleum containing in major proportions polynuclear aromatics boiling between 350° and 800°F and having separated therefrom by sulfuric acid treatment the majority of impurities which form a permanent sludge when reacted with a normally liquid sulfur halide, and as a second ingredient, a fat product, said first and second ingredients being in a ratio of 1:1 to 4:1 and being reacted with a normally liquid sulfur halide to produce a sulfur-chlorinated product useful as an extreme pressure additive.

3,963,693

QUINOLONE AZO BARBITURIC ACID PIGMENTS

Rudolf Mory, Dornach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

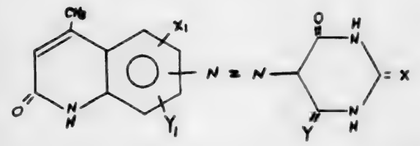
Filed Apr. 22, 1974, Ser. No. 462,834

Claims priority, application Switzerland, May 3, 1973, 6321/73

Int. Cl.² C09B *29/36;* **D06P** *1/08, 3/24, 3/60*

U.S. Cl. 260—154 **5 Claims**

1. A monoazo pigment of the formula



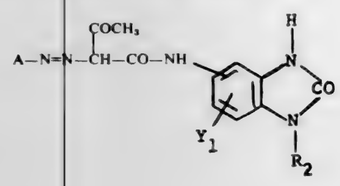
wherein X is O, S, or imino; Y is O or imino; and X_1 and Y_1 are hydrogen, chloro, alkyl containing 1–4 carbon atoms, or alkoxy containing 1–4 carbon atoms.

3,963,694
HYDROXYQUINOLYL- AND QUINAZOLONYLAZOACETOACETYLBENZIMIDAZOLONE PIGMENTS

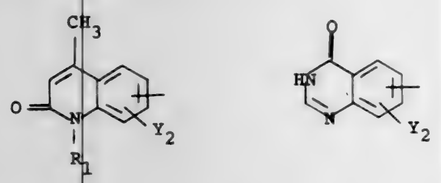
Rudolf Mory, Dornach, and Rolf Müller, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 230,978, March 1, 1972, abandoned. This application Aug. 19, 1974, Ser. No. 498,830
Claims priority, application Switzerland, Mar. 3, 1971, 3125/71
Int. Cl.² C09B 29/36; D06P 1/08, 1/44
U.S. Cl. 260—154 4 Claims

1. An azo pigment of the formula



wherein A is an aryl selected from the group



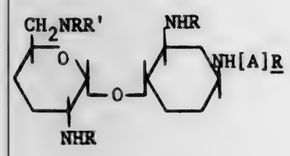
wherein Y_1 and Y_2 is hydrogen, chloro, bromo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or nitro, R_1 is hydrogen, alkyl of 1 to 6 carbon atoms, cyclohexyl, phenyl, or phenyl substituted by chloro, methyl or methoxy, R_2 is alkyl of 1 to 6 carbon atoms, cyclohexyl, phenyl, or phenyl substituted by chloro, alkyl of 1 to 6 carbon atoms, or alkoxy of 1 to 6 carbon atoms.

3,963,695
TETRADEOXYNEAMINE AND DERIVATIVES THEREOF

David J. Cooper, Downingtown, Pa., and Francis R. Pfeiffer, Cinnaminson, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Dec. 19, 1974, Ser. No. 534,247
Int. Cl.² C07H 15/22
U.S. Cl. 260—210 AB 6 Claims

1. A compound of the formula



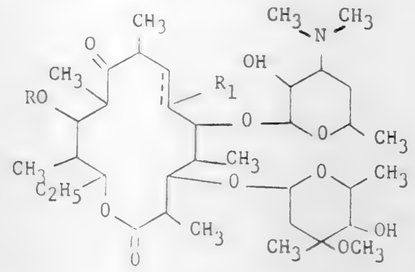
where
R is hydrogen or a removable amino protecting group; and
R′ is hydrogen, methyl or ethyl
or a non-toxic pharmaceutically acceptable salt thereof.

3,963,696
6,6A-AND 6,7-ANHYDROERYTHROMYCIN B AND DERIVATIVES THEREOF

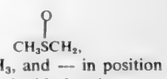
Jerry Roy Martin; John Soloman Tadanier, both of Waukegan, and Alma Whitman Goldstein, Lake Bluff, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 21, 1975, Ser. No. 551,818
Int. Cl.² C07H 17/08
U.S. Cl. 260—210 E 5 Claims

1. A compound having the formula



wherein R is hydrogen or



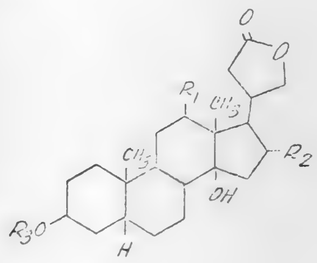
R_1 is $=CH_2$ or $-CH_3$, and --- in position 6,7 indicates the presence of a possible double bond.

3,963,697
LABELLED CARDIOTONIC GLYCOSIDES FOR USE IN RADIOIMMUNOASSAY

Robert F. Coombes, La Habra, Calif., assignor to Curtis Nuclear Corporation, Los Angeles, Calif.

Filed Aug. 29, 1974, Ser. No. 501,619
Int. Cl.² C07J 19/00
U.S. Cl. 260—210.5 21 Claims

1. A radioactive glycoside useful in radioimmunoassay of the formula:



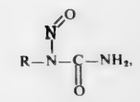
wherein R_1 and R_2 are selected from the group consisting of hydroxyl or hydrogen and R_3 is selected from the group consisting of mono-, di-, tri-, and tetrasaccharides bonded to an ^{125}L-labeled substituent through a sugar hydroxyl group.

3,963,698
ALKYLATIONS EMPLOYING IN SITU GENERATION OF DIAZOALKANE ALKYLATION REAGENTS

Sidney M. Hecht, Cambridge, and John W. Kozarich, Newton, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 17, 1974, Ser. No. 434,142
Int. Cl.² C07B 27/00
U.S. Cl. 260—211.5 R 21 Claims

1. A process for in situ alkylation of a substrate comprising contacting a source of said substrate with an N-substituted, N-nitrosourea, said source being sufficiently basic to deprotonate said urea, and said urea being represented by the structural formula,



wherein
R represents the group to be added to said substrate and is selected from alkyl; cycloalkyl; heteroalkyl; aralkyl; and, heterocyclic;
whereby a diazo alkylation reagent is generated in the presence of said substrate and the diazo alkylation reagent and substrate react to alkylate said substrate at a rate at least equal to the rate at which said diazoalkyl alkylation reagent is generated so that significant amounts of the diazoalkyl alkylation reagent do not build up.

3,963,699
SYNTHESIS OF HIGHER POLYOL FATTY ACID POLYESTERS

George Peter Rizzi, and Harry Madison Taylor, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 10, 1974, Ser. No. 432,386
Int. Cl.² C08B 37/00
U.S. Cl. 260—234 R 13 Claims

1. A solvent-free, low temperature process for synthesizing polyol fatty acid polyesters consisting essentially of:
1. Heating a mixture of a polyol selected from the group consisting of monosaccharides, disaccharides and sugar alcohols, a fatty acid C_{1-3} alkyl ester, an alkali metal fatty acid soap, and a basic catalyst selected from the group consisting of alkali metal, alloys of alkali metals, alkali metal hydrides and alkali metal alkoxides to a temperature of from about 110°C to about 180°C at a pressure of from about 0.1 mm of Hg to about 760 mm of Hg to form a homogenous melt of partially esterified polyol and unreacted starting materials;
2. Under the conditions of Step (1) adding excess fatty acid lower alkyl esters to the reaction product of Step (1) to form the polyol fatty acid polyester; and
3. Separating the polyol fatty acid polyester from the reaction product of Step (2).

3,963,700
RECOVERY OF ANTHOCYANIN FROM PLANT SOURCES

Thomas Philip, Tucson, Ariz., assignor to University Patents, Inc., Stamford, Conn.

Filed July 1, 1974, Ser. No. 484,656
Int. Cl.² C07G 3/00; A23L 1/27
U.S. Cl. 260—236.5 7 Claims

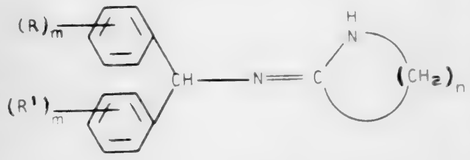
1. A method of separating anthocyanin from botanical sources which comprises drying said botanical sources to a moisture content not greater than 10%, extracting said sources with a solution of tartaric acid in a water-soluble alkanol containing not more than two carbon atoms, neutralizing 80–95% of the tartaric acid in the resulting extract with a potassium compound which reacts with the tartaric acid to yield potassium acid tartrate, removing the potassium acid tartrate from the extract, and then removing the alkanol to form an aqueous anthocyanin concentrate.

3,963,701
SUBSTITUTED BENZHYDRYL LACTAMIMIDE DERIVATIVES

Johann Martin Grisar, and Norbert Leonard Wiech, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 244,873, April 17, 1972, abandoned. This application Aug. 27, 1973, Ser. No. 391,573
Int. Cl.² C07D 207/22, 211/72, 223/12
U.S. Cl. 260—239 B 9 Claims

1. A compound selected from a base of the formula



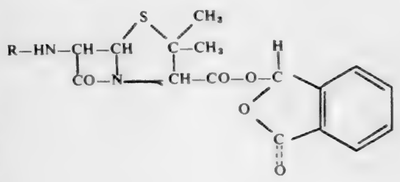
wherein m is a positive whole integer of from 1 to 3; n is a positive whole integer of from 3 to 7; each of R and R^1 is selected from the group consisting of hydrogen, a straight or branched lower alkyl chain of from 1 to 4 carbon atoms, a halogen atom, trifluoromethyl, trifluoromethylthio, trifluoromethoxy, phenyl, phenoxy, a lower alkoxy group of from 1 to 4 carbon atoms, with the proviso that both R and R^1 are not hydrogen and with the proviso that when m is equal to 1 and one of R and R^1 is hydrogen, the other of R or R^1 is not lower alkoxy of from 1 to 4 carbon atoms; and pharmaceutically acceptable acid addition salts thereof.

3,963,702
PHTHALIDE PENICILLIN ESTER INTERMEDIATES

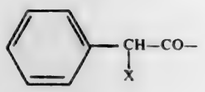
Harry Ferres, and John Peter Clayton, both of Horsham, England, assignors to Beecham Group Limited, Brentford, England

Division of Ser. No. 259,560, June 5, 1972, Pat. No. 3,860,579. This application Mar. 4, 1974, Ser. No. 447,672
Claims priority, application United Kingdom, June 9, 1971, 19604/71
Int. Cl.² C07D 499/32
U.S. Cl. 260—239.1 2 Claims

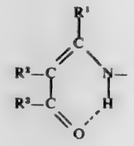
1. A compound of the formula:



wherein R is hydrogen or



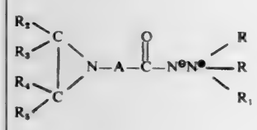
in which X is NH_3^+, benzyloxycarbonylamino, N_3 or an enamine of the formula:



wherein
R^1 is lower alkyl,
R^2 is H,
R^3 is lower alkyl, lower alkoxy or phenyl, or R^2 together with R^1 completes a fused 5- or 6-membered carbocyclic ring.

3,963,703
TRIALKYLAMMONIUM -N-[β(1-AZIRIDINYL)] PROPIONOYLIMINES
Billy M. Culbertson, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.
Filed Sept. 13, 1971, Ser. No. 180,098
Int. Cl.² C07D *203/12, 295/14*
U.S. Cl. 260—239 E **11 Claims**

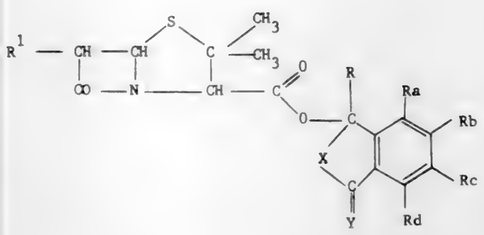
1. A compound of the formula



wherein A represents the ethylene or propylene radical; R is alkyl; R_1 is alkyl or hydroxyalkyl; and R_2, R_3, R_4 and R_5 each represents hydrogen, aryl or alkyl.

3,963,704
PENICILLIN ESTERS
Harry Ferres, Horsham, England, assignor to Beecham Group Limited, Great Britain
Division of Ser. No. 524,776, Nov. 18, 1974, which is a continuation of Ser. No. 259,941, June 5, 1972, abandoned.
This application Dec. 9, 1974, Ser. No. 530,763
Claims priority, application United Kingdom, June 9, 1971, 19604/71
Int. Cl.² C07D *499/44, 499/46, 499/48, 499/70*
U.S. Cl. 260—239.1 **4 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable acid addition salt thereof:

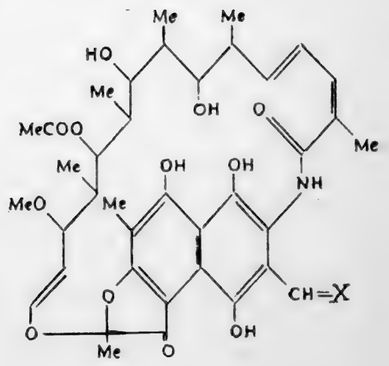


(I)

wherein
a. X and Y are both sulphur; or
b. X is sulphur and Y is oxygen; or
c. X is oxygen and y is sulphur; and
wherein R is hydrogen, methyl or phenyl; Ra, Rb, Rc and Rd are selected from hydrogen, lower alkyl, lower alkoxy, halo and nitro and R^1 is an acylamino group selected from: phenylacetamido; p-hydroxyphenylacetamido; p-heptylphenylacetamido; phenoxyacetamido; α-phenoxypropionamido; α-phenoxybutyamido; 2,6-dimethoxyphenylacetamido; 3-phenyl-5-methyl-isoxazole-4-carbamido; 3-(2-chlorophenyl)-5-methyl-isoxazole-4-carbamido; 3-(2,6-dichlorophenyl)-5-methyl-isoxazole-4-carbamido; 3-(2-chloro-6-fluorophenyl)-5-methyl-isoxazole-4-carbamido; 2-ethoxy-naphthyl-1-carbamido; o, m or p-aminophenlyacetamido; 3-carboxy-quinoxalin-2-carbamido; 2-furylacetamido; 2-thienylacetamido; 3-thienylacetamido; 3-pyridylacetamido; isothiazolyacetamido; 3-hexenamido; 2-biphenylamido; n-hexanamido; n-octanamido; propionamido; α-aminophenylacetamido; α-amino-2-thienylacetamido; α-amino-3-thienylacetamido; α-methylaminoacetamido; α-amino-2- or -3-or -4-chlorophenylacetamido; α-amino-2-methoxyphenylacetamido; α-amino-2,4-dichlorophenylacetamido; α-amino-3,4-dichlorophenylacetamido; α-amino-α-methylphenylacetamido; α-amino-4-hydroxyphenylacetamido; α-amino-3-chloro-4-hydroxyphenylacetamido; α-methylphenylacetamido; α-hydroxyphenylacetamido; α-carboxyphenylacetamido; α-(5-tetrazolyl)phenylacetamido; α-guanidino-2-thienylacetamido; α-guanidino-4-hydroxyphenylacetamido; α-guanidino-4-hydroxy-2- or -3-methylphenylacetamido; α-carboxy-3-thienylacetamido; α-sulphaminophenylacetamido; α-sulphamino-3-thienylacetamido; α-(N-methylsulphamino)-phenylacetamido; α-azidophenylacetamido; 1-aminocyclohexylcarbamido; 1-aminocyclopentylcarbamido; 5-amino-5-carboxypentanamido; α-phenoxyphenylacetamido; α-phenyl-β-sulphaminopropionamido; α-sulphophenylacetamido; α-guanidinophenylacetamido; β-amino-β-cyclohexylpropionamido; α-(benzyloxycarbonyl)phenylacetamido.

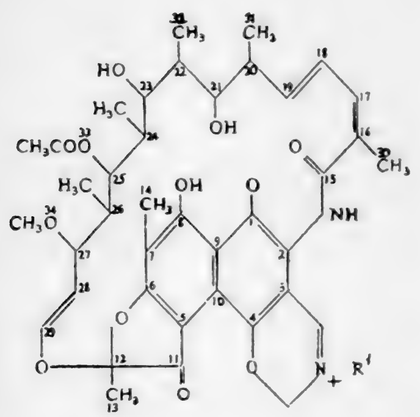
3,963,705
PROCESS FOR THE PREPARATION OF 3-IMINOMETHYL DERIVATIVES OF RIFAMYCIN SV
Leonardo Marsili, and Carmine Pasqualucci, both of Milan, Italy, assignors to Archifar Industrie Chimiche del Trentino S.p.A., Rovereto, Italy
Filed May 23, 1974, Ser. No. 472,887
Claims priority, application Italy, July 25, 1973, 27066/73; Jan. 24, 1974, 19774/74
Int. Cl.² C07D *498/04*
U.S. Cl. 260—239.3 P **10 Claims**

1. A process for the preparation of 3-iminomethyl derivatives of rifamycin SV of formula



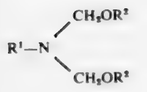
(III)

which comprises reacting rifamycin S of formula



(II)

with a compound of formula



(V)

in which R^1 is lower alkyl, lower alkenyl, cycloalkyl having from 5 to 6 carbon atoms, phenyl, benzyl or α - or β - phenethyl and R^2 is hydrogen or lower alkyl, in a first inert organic solvent at a temperature ranging from 0°C to the boiling temperature of the solvent to give a solution of 1,3-oxazino(5,6-c)rifamycins of formula

(IV)

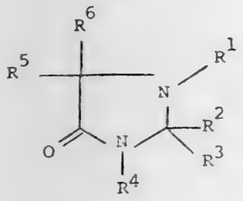
in which R^1 is as above defined, treating said solution with water and a second inert organic solvent immixible with water at a pH adjusted at a value from 4 to 6, then discharging the aqueous phase and treating the organic phase with a primary amine, hydrazine, mono-substituted hydrazine or asymmetric di-substituted hydrazine at a temperature from about 20°C to about 80°C under basic conditions, the derivatives (III) being finally isolated from the organic phase according usual techniques.

3,963,706
SULPHAMOYLPHENYL-IMIDAZOLIDINONES

Rolf Wilhelm Pfirrmann, Lucerne, Switzerland, assignor to Ed. Geistlich Sohne A.G. fur Chemische Industrie, Wolhusen, Switzerland

Filed Nov. 19, 1973, Ser. No. 416,854
Claims priority, application United Kingdom, Nov. 20, 1972, 53437/72
Int. Cl.² C07D *233/88*
U.S. Cl. 260—239.9 12 Claims

1. A compound of the formula



in which R^1 is phenyl; phenyl substituted with alkoxy, lower alkyl or halogen; or a cycloalkyl or cycloalkenyl group having 5–10 carbon atoms or a sulphamoylphenyl group, R^4 represents a sulphamoylphenyl or phenyl group; R^2 and R^3 each represent hydrogen atoms or an oxo group; and R^5 and R^6 are hydrogen atoms or lower alkyl or cycloalkyl groups; with the proviso that one of R^1 and R^4, but not both is a sulphamoylphenyl group.

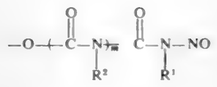
3,963,707
NOVEL N-NITROSO COMPOUNDS, COMPOSITIONS CONTAINING SUCH COMPOUNDS, PROCESSES FOR THEIR PREPARATION AND METHODS OF TREATMENT THEREWITH, AND NOVEL INTERMEDIATES

Knut Bertil Högberg; Hans Jacob Fex, both of Helsingborg; Imre Konyves, Hittarp, and Anders Robert Stamvik, Helsingborg, all of Sweden, assignors to Aktiebolaget Leo, Helsingborg, Sweden

Filed Feb. 25, 1974, Ser. No. 445,572
Claims priority, application United Kingdom, Mar. 5, 1973, 10613/73
Int. Cl.² C07J *1/00*
U.S. Cl. 260—239.55 D 62 Claims

1. Novel compounds having the general formula ti AR_n (I)

wherein R is



where R^1 is a β- or γ-halogen substituted alkyl group having 2 to 4 carbon atoms, inclusive; where the halogen of R^1 is selected from the group consisting of fluorine, chlorine and bromine; where m is an integer selected from the group consisting of zero and one; where R^2, when m is one, is selected from the group consisting of R^1, hydrogen, lower alkyl, 5- to 6-membered cycloalkyl, 5- to 6-membered cycloalkyl substituted with one or two substituents selected from the group consisting of halogen, lower alkyl and lower alkoxy, phenyl and phenyl substituted with one or two substituents selected from the group consisting of halogen, lower alkyl and lower alkoxy;

wherein n is one or two; and

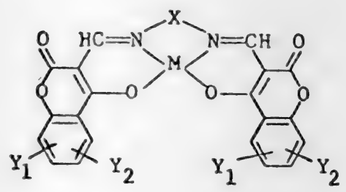
wherein A is the radical of a steriod having a cyclopentanophenanthrene carbon-carbon skeleton containing up to a maximum of 40 carbon atoms, inclusive of substituents, said carbon-carbon skeleton including a nucleus selected from the group consisting of saturated and unsaturated gonane nuclei having up to a maximum of four double bonds, said steroid radical being attached to R in at least one and not more than two of the 3-, 11-, 16-, 17- and 21-positions thereof, said positions being identified according to steriod nomenclature.

3,963,708
BIS-AZOMETHINE METAL COMPLEX COLORANTS FROM HYDROXYCOUMARIN DERIVATIVES OR HYDROXYCHROMONE DERIVATIVES

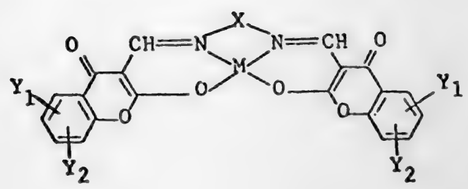
Francois L'Eplattenier; Laurent Vuitel, both of Therwill, and Andre Pugin, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 28, 1975, Ser. No. 599,445
Claims priority, application Switzerland, July 31, 1974, 10584/74
Int. Cl.² C07D *493/04*
U.S. Cl. 260—240 G 10 Claims

1. Bis-azomethine metal complex colorants of the formulae



or



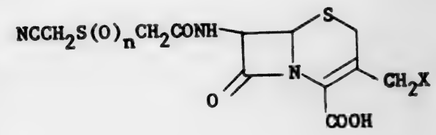
wherein M denotes a divalent transition metal cation, zinc ion or cadmium ion, X denotes an isocyclic or heterocyclic aromatic radical to which the two nitrogen atoms are bonded in the o- or peri-position to one another and Y_1 and Y_2 denote hydrogen, halogen, alkyl, aryl, nitro, alkoxy, phenoxy or hydroxyl.

3,963,709
CYANOMETHYL SULFINYL- AND SULFONYL-ACETAMIDO CEPHALOSPORINS

Robert M. DeMarinis, King of Prussia, Pa., assignor to Smith-Kline Corporation, Philadelphia, Pa.

Division of Ser. No. 389,407, Aug. 17, 1973, Pat. No. 3,883,520. This application Feb. 11, 1975, Ser. No. 548,950
Int. Cl.² C07D *501/28*
U.S. Cl. 260—243 C 7 Claims

1. A compound of the formula



where
n is 1, or 2; and
X is OCH_3, or SCH_3
or a non-toxic pharmaceutically acceptable salt thereof.

3,963,710
FINELY DIVIDED BLOCKED ISOCYANATES PREPARED IN THE PRESENCE OF SURFACTANTS

Carl Albert Aufdermarsh, Jr., Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 28, 1974, Ser. No. 501,456
Int. Cl.² C07D *295/00*
U.S. Cl. 260—247.2 A 11 Claims

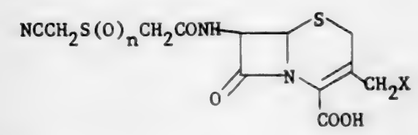
1. A process for the preparation of finely divided blocked isocyanates consisting of reacting a polyisocyanate and an active hydrogen-containing compound, or mixture of compounds, selected from the group consisting of a primary alcohol, a secondary alcohol, a secondary amine, and a phenolic compound in solution in the presence of a surfactant, whereupon the product precipitates in exceptionally finely divided form.

3,963,711
CYANOMETHYL SULFINYL- AND SULFONYL-ACETAMIDO CEPHALOSPORINS

Robert M. DeMarinis, King of Prussia, Pa., assignor to Smith-Kline Corporation, Philadelphia, Pa.

Division of Ser. No. 389,407, Aug. 17, 1973, Pat. No. 3,883,520. This application Feb. 11, 1975, Ser. No. 548,951
Int. Cl.² C07D *501/28*
U.S. Cl. 260—243 C 7 Claims

1. A compound of the formula



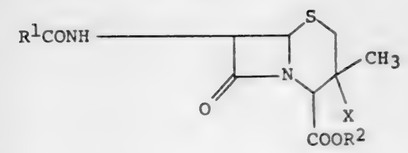
where
n is 1, or 2; and
X is hydrogen, or acetoxy
or a non-toxic pharmaceutically acceptable salt thereof.

3,963,712
3-HALO-CEPHALOSPORINS

Masao Koyama, and Shigeo Seki, both of Tokyo, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Filed Apr. 11, 1973, Ser. No. 350,199
Claims priority, application Japan, Apr. 14, 1972, 47-36850
Int. Cl.² C07D *501/14*
U.S. Cl. 260—243 C 11 Claims

1. A compound of the formula:



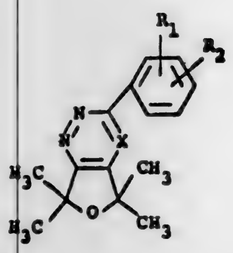
wherein R^1 represents benzyl or phenoxymethyl, R^2 represents hydrogen, methyl, benzyl, p-nitrobenzyl or 2,2,2-trichloroethyl, and X is chlorine, bromine or iodine.

3,963,713
FURO(3,4-e)-AS-TRIAZINES AND CORRESPONDING 4-OXIDES

Gregory B. Bennett, Mendham, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 541,721, Jan. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 496,578, Aug. 12, 1974, abandoned, which is a continuation-in-part of Ser. No. 465,759, May 1, 1974, abandoned. This application June 12, 1975, Ser. No. 586,349
Int. Cl.² C07D *253/08*
U.S. Cl. 260—248 AS 16 Claims

1. A compound of the formula



wherein

R_1 and R_2 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl, straight chain lower alkoxy, amino, nitro or trifluoromethyl, and

X represents $\diagup\!\!=\!\!\diagdown$ N or $\diagup\!\!=\!\!\diagdown$ N → O

provided that

i. when one of R_1 and R_2 represents nitro, the other is other than nitro or trifluoromethyl;

ii. when R_1 and R_2 represent trifluoromethyl, they are on other than adjacent carbon atoms, and

iii. when R_1 and R_2 represent t-butyl, they are on other than adjacent carbon atoms,

iv. when one of R_1 and R_2 is trifluoromethyl and the other is t-butyl, they are on other than adjacent carbon atoms.

3,963,714

QUATERNARY AMMONIUM SALTS

Jozsef Gerendas, Neustadt; Herbert Fleischer, Beindersheim; Rolf Fikentscher, Ludwigshafen, all of Germany, and Herbert Helfert, Trenton, Mich., assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

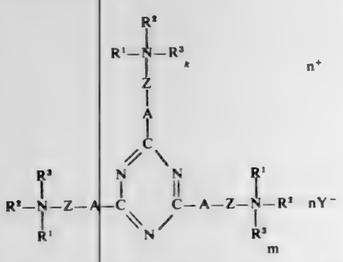
Filed Dec. 6, 1974, Ser. No. 530,305

Claims priority, application Germany, Dec. 13, 1973, 2361949

Int. Cl.² C07D *251/70, 251/52, 251/46*

U.S. Cl. 260—249.6 **11 Claims**

1. A compound of the formula:



(I)

wherein A is an oxygen atom or a group of the formula RN< in which R is hydrogen or alkyl of 1 to 4 carbon atoms, R^1, R^2 and R^3 are, each independently straight-chain or branched optionally hydroxysubstituted alkyl of 1 to 30 carbon atoms optionally interrupted by oxygen or nitrogen or benzyl or chlorobenzyl or R^1 and R^2 together form alkylene of 4 to 6 carbon atoms, *k* and *m* are, each independently, zero or 1, Z is optionally hydroxy- or methyl-substituted alkylene of 2 to 6 carbon atoms optionally interrupted by oxygen, Y^- is a monovalent organic or inorganic anion or is the *x*-th part of a *x*-valent organic or inorganic anion, *n* equals the sum of $1 + k + m$, provided that the total number of carbon atoms in R^1, R^2 and R^3 is from 9 to 60 and the total number of carbon atoms in R^1, R^2 and R^3 of at least one ammonium group is not less than 5.

3,963,715

SUBSTITUTED PYRAZINES

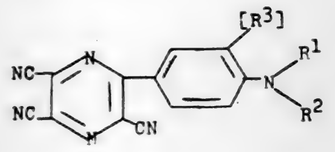
Donald R. Baer; Allan Cairncross, both of Wilmington, Del., and Michael Smith, North Tonawanda, N.Y., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 240,296, March 31, 1972, abandoned. This application May 25, 1973, Ser. No. 363,804

Int. Cl.² C07D *241/14*

U.S. Cl. 260—250 BN **10 Claims**

1. A compound having the formula



wherein:

R^1 and R^2, alike or different, are:

alkyl of 1-12 carbon atoms, cycloalkyl of 3-7 carbons, phenyl, p-chlorophenyl, or p-bromophenyl;

p-(lower alkyl)phenyl, p-(lower alkoxy)phenyl, or p-(lower alkylthio)phenyl, any lower alkyl being of up to 6 carbons; or

aralkyl, aroxyalkyl, aroyloxyalkyl, alkanoyloxyalkyl or trifluoroacetoxyalkyl of up to 15 carbons with the provisos that (1) any aryl moiety in any of these five groups is phenyl substituted with up to two alkyl groups of up to six carbons each and that (2) the alkylene group of aroyloxyalkyl, alkanoyloxyalkyl or trifluoroacetoxyalkyl is of at least 2 carbons in length.

3,963,716

NOVEL 1-PHTHALAZONE DERIVATIVE, A PROCESS FOR ITS PREPARATION AND A PHARMACEUTICAL COMPOSITION CONTAINING IT

Michiro Inoue, 6-26-3, Kokuryo, Chofu, Tokyo; Masayuki Ishikawa, 3-14-13, Akatsustrumi, Setagaya, Tokyo; Takashi Tsuchiya, 5-17-25, Minamikoiwa, Edogawa, Tokyo, and Takio Shimamoto, 13, Kitamachi, Shinjuku, Tokyo, all of Japan

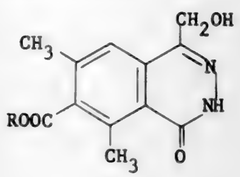
Filed Sept. 10, 1974, Ser. No. 504,745

Claims priority, application Japan, Oct. 30, 1973, 48-121260; Oct. 31, 1973, 48-121757

Int. Cl.² C07D *237/32, 491/04*

U.S. Cl. 260—250 P **3 Claims**

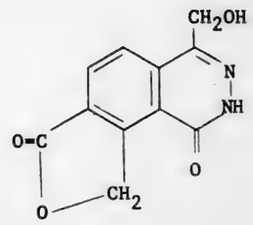
1. A compound of the formula:



(I)

wherein R is a member selected from the group consisting of alkyl of from 1 to 5 carbon atoms.

3. A compound of the formula:



3,963,717

TRICYCLIC FURO-QUINAZOLINONES

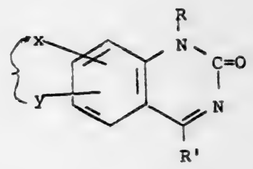
George A. Cooke, Denville, and William J. Houlihan, Mount Lakes, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Filed Mar. 10, 1975, Ser. No. 556,574

Int. Cl.² C07D *491/04*

U.S. Cl. 260—251 QB **88 Claims**

1. A compound of the formula:

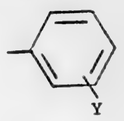


wherein

$\widehat{x\ y}$ is $-OCH_2CH_2-$ or $-CH_2CH_2O-$,

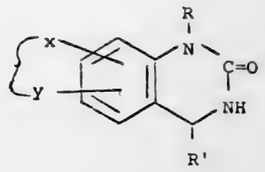
R is alkyl of 1 to 6 carbon atoms, allyl, methallyl or cycloalkylalkyl of 4 to 8 carbon atoms in which the cycloalkyl portion is of 3 to 6 carbon atoms and the alkyl portion is of 1 to 2 carbon atoms,

R′ is



Y is hydrogen, fluoro, chloro, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or trifluoromethyl.

73. A compound of the formula:

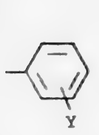


wherein

$\widehat{x\ y}$ is $-OCH_2CH_2-$ or $-CH_2CH_2O$,

R is alkyl of 1 to 6 carbon atoms, allyl, methallyl or cycloalkylalkyl of 4 to 8 carbon atoms in which the cycloalkyl portion is of 3 to 6 carbon atoms and the alkyl portion is of 1 to 2 carbon atoms,

R′ is



and

Y is hydrogen, fluoro, chloro, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or trifluoromethyl.

3,963,718

TETRAHYDROPYRIMIDINES

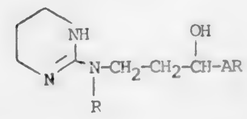
Josephus Ludovicus Hubertus Van Gelder; Alfons Herman Margaretha Raeymaekers, both of Beerse; Leopold Frans Cornell Roevens, Rijkevorsel, and Willy Joannes Van Laerhoven, Ravels, all of Belgium, assignors to Janssen Pharmaceutica, Beerse, Belgium

Division of Ser. No. 499,743, Aug. 13, 1974, Pat. No. 3,925,383, which is a division of Ser. No. 313,285, Dec. 8, 1972, Pat. No. 3,865,834. This application Apr. 16, 1975, Ser. No. 568,744

Int. Cl.² C07D *239/14*

U.S. Cl. 260—256.4 H **2 Claims**

1. A chemical compound having the formula:



wherein:

R is a member selected from the group consisting of hydrogen and benzyl; and

Ar is a member selected from the group consisting of phenyl, loweralkylphenyl, halophenyl and dihalophenyl.

3,963,719

6-SPIROCYCLOALKYLAMINO 5-NITROPYRIMIDINES

Hamish Christopher Swan Wood, Bearsden, Scotland, and Irene Stirling, Worcester Park, England, assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

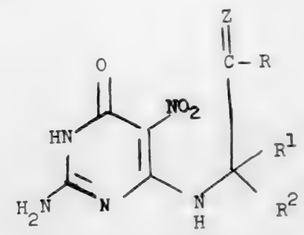
Filed July 30, 1973, Ser. No. 383,698

Claims priority, application United Kingdom, Aug. 1, 1972, 35814/72

Int. Cl.² C07D *239/22*

U.S. Cl. 260—256.4 C **2 Claims**

1. A compound of the formula, or a tautomeric form thereof



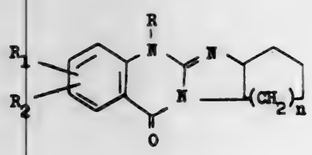
wherein Z is oxygen or a protecting group therefore, R is lower alkyl or hydroxylower alkyl, and R^1 and R^2, having in total 4 to 6 carbon atoms, form a spirocycloalkyl group together with the carbon atom substituted by said R^1 and R^2.

3,963,720
TETRACYCLIC IMIDAZO [2,1-b] QUINAZOLINONE DERIVATIVES

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

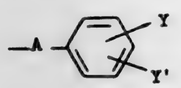
Continuation-in-part of Ser. No. 301,648, Oct. 27, 1972. This application June 21, 1974, Ser. No. 481,698
Int. Cl.² C07D 471/04, 487/04
U.S. Cl. 260—256.4 F 18 Claims

1. A compound of the formula:



wherein

R is alkyl of 1 to 8 carbon atoms, alkenyl of 3 to 10 carbon atoms, alkynyl of 3 to 6 carbon atoms or



n is 0 or 1,

A is a direct bond or a straight chain or branched alkylene of 1 to 3 carbon atoms;

each of R_1 and R_2 is, independently, hydrogen, halo of atomic weight not greater than 36, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 2 carbon atoms; or one is hydrogen and the other bromo or trifluoromethyl, and

each of Y and Y' is, independently, hydrogen, halo of atomic weight not greater than 36, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 2 carbon atoms, or one is hydrogen and the other bromo or trifluoromethyl,

or a pharmaceutically acceptable acid addition salt thereof.

3,963,721
2-(PIPERAZINOETHYL)-6,7-DIHYDROINDOLO)[1,7-ab][1]BENZAZEPINE

Ernest John Alexander, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 475,455, June 3, 1974. This application June 19, 1975, Ser. No. 588,416
Int. Cl.² C07D 403/14
U.S. Cl. 260—268 PC 3 Claims

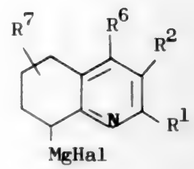
1. 2-[(4-Phenyl-1-piperazinyl)ethyl]-1-methyl-6,7-dihydroindolo[1,7-ab][1]benzazepine or a medicinally acceptable acid-addition salt thereof.

3,963,722
MAGNESIUM HALIDE DERIVATIVES OF TETRAHYDROQUINOLINES

Adrian Charles Ward Curran, Newcastle-upon-Tyne, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

Filed Nov. 22, 1974, Ser. No. 526,353
Claims priority, application United Kingdom, Nov. 26, 1973, 54728/73; Mar. 27, 1974, 13516/74
Int. Cl.² C07D 215/16; C07F 3/02
U.S. Cl. 260—283 R 4 Claims

1. A compound of formula (II)



wherein

R^1, R^2 and R^6 are independently hydrogen, trifluoromethyl, alkyl of 1 to 6 carbon atoms, phenylalkyl of 7 to 12 carbon atoms, phenyl, alkylphenyl of 7 to 12 carbon atoms, alkoxyphenyl of 7 to 12 carbon atoms, halophenyl, nitrophenyl or trifluoromethylphenyl;

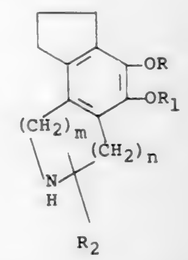
R^7 is hydrogen, alkyl of 1 to 6 carbon atoms, gem-dimethyl (at the 5, 6 or 7 position), phenylalkyl of 7 to 12 carbon atoms, and Hal represents chlorine, bromine or iodine, with the proviso that when R^1 and R^2 and R^6 are both alkyl they are selected from normal and secondary alkyl groups.

3,963,723
CYCLOPENTANO (H) OR (F) 1,2,3,4-TETRAHYDROISOQUINOLINES

Ian William Mathison; William Ebenezer Solomons, both of Memphis, Tenn., and Raymond Henry Jones, Northport, N.Y., assignors to Marion Laboratories, Inc., Kansas City, Mo.

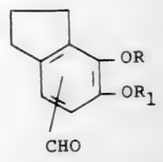
Filed Mar. 28, 1974, Ser. No. 455,574
Int. Cl.² C07D 217/00
U.S. Cl. 260—286 R 9 Claims

1. A compound of the formula

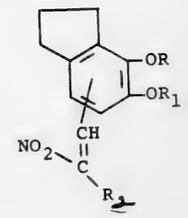


wherein R and R_1 are the same or different lower alkyl groups having one to six carbon atoms, R_2 is hydrogen or a lower alkyl group having one to six carbon atoms, *m* is 1 or 2, *n* is 1 or 2 and $m+n$ equals 3, and nontoxic acid addition salts thereof.

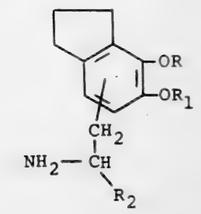
6. The process which comprises the steps of reacting a compound of the formula



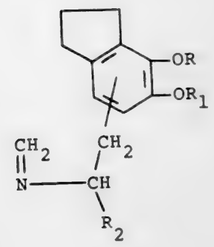
with a compound of the formula $R_2CH_2NO_2$ in glacial acetic acid in the presence of ammonium acetate to produce a compound of the formula



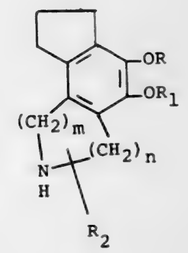
reacting said compound with lithium aluminum hydride to produce a compound of the formula



reacting said compound with formaldehyde to produce a compound of the formula



and then cyclizing said compound by reacting the compound with hydrochloric acid to produce a compound of the formula



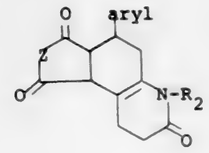
wherein R and R_1 are the same or different alkyl groups having one to six carbon atoms, R_2 is hydrogen or a alkyl group having one to six carbon atoms, *m* is 1 or 2, *n* is 1 or 2 and $m+n$ equals 3, and if desired converting said compound to an acid addition salt.

3,963,724
INTERMEDIATES USEFUL IN THE PREPARATION OF ARYLDECAHYDROPYRROLO[3,4-F]QUINOLINES

Frederic Peter Hauck, Somerville, and Joseph E. Sundeen, Trenton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 374,593, June 28, 1973, Pat. No. 3,891,652. This application Feb. 13, 1975, Ser. No. 549,581
Int. Cl.² C07D 491/04, 471/04
U.S. Cl. 260—287 CF 7 Claims

1. A compound of the formula:



wherein Z is



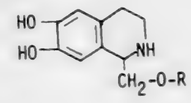
or —O—; R_1 and R_2 are lower alkyl; and aryl is phenyl or p-methoxyphenyl.

3,963,725
1,2,3,4-TETRAHYDROISOQUINOLINE DERIVATIVES AND THE PREPARATION THEREOF

Teiji Kishimoto, Kawanishi, and Yoshiyuki Kaneda, Osaka, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed July 19, 1974, Ser. No. 490,019
Claims priority, application Japan, July 20, 1973, 48-82003; July 20, 1973, 48-82004
Int. Cl.² C07D 217/16
U.S. Cl. 260—289 D 3 Claims

1. A 1,2,3,4-tetrahydroisoquinoline having the formula:



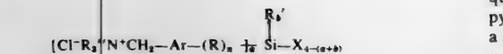
wherein R is phenyl having a lower alkylthio substituent, and pharmaceutically acceptable salts thereof, wherein "lower" refers to 1–6 carbon atom(s).

3,963,726
QUATERNARY AMMONIUM SALTS OF CHLOROMETHYLATED SILICON COMPOUNDS

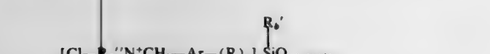
Enrico James Pepe, Amawalk, and Bernard Kanner, West Nyack, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 803,973, March 3, 1969, Pat. No. 3,661,963, which is a continuation-in-part of Ser. No. 423,414, Dec. 31, 1964, abandoned. This application Nov. 9, 1971, Ser. No. 197,112
Int. Cl.² C07D 213/20, 215/10
U.S. Cl. 260—290 S 11 Claims

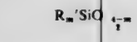
1. A quaternary ammonium salt selected from the group consisting of (A) silanes represented by the formula



wherein Ar is a phenylene radical, R is an alkylene radical having from 1 to 8 carbon atoms; R′ is an alkyl radical having from 1 to 20 carbon atoms, X is a radical selected from the group consisting of chlorine, fluorine and OR′ wherein R′ is as defined above; R_3″N taken collectively represents a heterocyclic tertiary amine containing from 3 to 13 carbon atoms wherein the amino nitrogen represented by N is the nitrogen atom in said heterocyclic radical; *n* has a value of from 0 to 1; *a* is an integer having a value of from 1 to 3; and *b* has a value of from 0 to 2, provided, however, that the sum of (*a*+*b*) does not exceed 3; and (B) siloxanes consisting of at least one siloxy unit represented by the formula



wherein Ar, R, R′, R_3″N, *n*, *a*, *b*, and (*a*+*b*) are the same as defined above; and at least one siloxy unit represented by the formula



wherein R′ is the same as defined above and *m* is an integer from 1 to 3.

3,963,727

1,2 DISUBSTITUTED BENZIMIDAZOLE DERIVATIVES

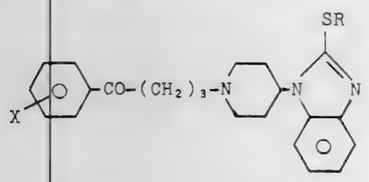
Katsujiro Ueno; Makoto Sato; Masahiro Arimoto; Hiroshi Kojima; Terukiyo Yamasaki, and Takeo Sakurai, all of Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed June 6, 1975, Ser. No. 584,347

Int. Cl.² C07D *401/04*

U.S. Cl. 260—293.6 **3 Claims**

1. A compound having the formula:



wherein R represents a hydrogen atom or a lower alkyl group and X represents a halogen atom; or the acid-addition salts thereof.

3,963,728

METHOD FOR PREPARING ACYLATED PRODUCTS

Yasuo Fujimoto, and Nobuhiro Nakamizo, both of Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 49,918, June 25, 1970, Pat. No. 3,867,424. This application Aug. 16, 1974, Ser. No. 498,125

Claims priority, application Japan, June 30, 1969, 44-51061

Int. Cl.² C07D *295/18*

U.S. Cl. 260—293.74 **11 Claims**

1. In a process for preparing a carboxylic acid amide which comprises acylating a heterocyclic amine with an ester derived from an aliphatic or aromatic carboxylic acid, the improvement which comprises carrying out said acylation in the presence of an alkali-metal salt, an alkaline earth metal salt or a quaternary ammonium salt of a pyridine compound whose pyridine nucleus is directly substituted by a hydroxy group or a mercapto group, and optionally by at least one member selected from the group consisting of an alkyl group having from 1 to 6 carbon atoms, an aryl group, an aralkyl group, an alkoxy group having from 1 to 6 carbon atoms, a nitro group, a cyano group and a fused benzene ring.

3,963,729

PHARMACOLOGICALLY ACTIVE PYRIDINE DERIVATIVES

Maurice Ward Gittos, Slough, and David Anthony Amey, Luton, both of England, assignors to Aspro-Nicholas Limited, England

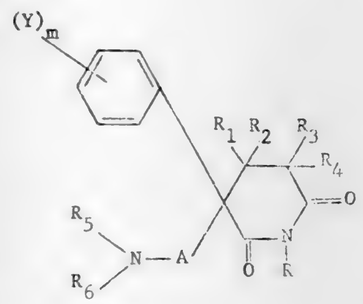
Filed Dec. 18, 1973, Ser. No. 425,876

Claims priority, application United Kingdom, Dec. 28, 1972, 59761/72

Int. Cl.² C07D *295/00*

U.S. Cl. 260—293.86 **3 Claims**

1. Compounds having the formula



wherein

R represents hydrogen or C_1–C_4 alkyl, R_1, R_2 and R_3 independently represent hydrogen or C_1–C_4 alkyl, R_4 represents hydrogen, or C_1–C_4 alkyl, provided that at least one of R_1, R_2, R_3, and R_4 represents alkyl, or R_1 together with R_3 represents a second valency bond joining their immediately adjacent ring carbon atoms, and R_2 and R_4 independently represent hydrogen or C_1–C_4 alkyl;

Y represents C_1–C_4 alkyl optionally substituted by hydroxy, or C_1–C_4 alkoxy, halogen or trifluoromethyl;

m represents zero or an integer up to 5;

A represents C_1–C_6 alkylene;

R_5 represents C_1–C_4 alkyl, optionally substituted by C_3–C_6 cycloalkyl, or C_3–C_6 cycloalkyl and R_6 represents hydrogen or C_1–C_4 alkyl or R_5 together with R_6 represents an alkylene radical optionally interupted by oxygen or nitrogen and which together with the amino nitrogen atom constitute a saturated five or six membered heterocyclic ring, and pharmaceutically acceptable acid addition salts and quaternary amine salts thereof.

3,963,730

PROCESS FOR PREPARING TRIACETONAMINE

Keisuke Murayama; Syoji Morimura; Takao Yoshioka, and Tomoyuki Kurumada, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed June 21, 1974, Ser. No. 481,839

Claims priority, application Japan, June 26, 1973, 48-72014; July 16, 1973, 48-80200; July 16, 1973, 48-80201; July 16, 1973, 48-80202; July 16, 1973, 48-80203; May 30, 1974, 49-61148

Int. Cl.² C07D *211/74*

U.S. Cl. 260—293.89 **44 Claims**

1. A process for preparing triacetonamine, comprising reacting acetonine with a compound selected from the group consisting of acetone, diacetone alcohol and combinations thereof in the presence of at least 12.5 mol-% based on acetonine of an acid catalyst under anhydrous conditions.

3,963,731

PYRIDYL CONTAINING 1-BENZENESULFONYL TRIAZOLES

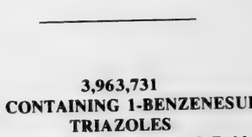
Frederick C. Novello, Berwyn, and John J. Baldwin, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 361,915, May 21, 1973, Pat. No. 3,892,762, which is a continuation-in-part of Ser. No. 75,784, Sept. 25, 1970, abandoned. This application Feb. 6, 1975, Ser. No. 547,847

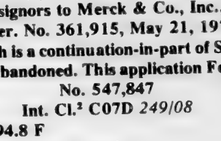
Int. Cl.² C07D *249/08*

U.S. Cl. 260—294.8 F **3 Claims**

1. A compound of the formula:



or



wherein R_1 is benzenesulfonyl;

R_3 is phenyl, lower alkylphenyl, tri-lower alkylphenyl, pyridyl, mono-lower alkylpyridyl or di-lower alkylpyridyl; and

R_5 is pyridyl, mono-lower alkylpyridyl or di-lower alkylpyridyl.

3,963,732

PROCESS FOR PREPARING DIHYDROXYDIPHENYLMETHANE DERIVATIVES

Tiberio Bruzzese, 8, Via Biella, 20143 Milan, and Rodolfo Ferrari, 7, Via Monte Cervino, 20149 Milan, both of Italy

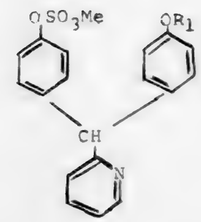
Division of Ser. No. 375,477, July 2, 1973, Pat. No. 3,878,218. This application Aug. 21, 1974, Ser. No. 499,433

Claims priority, application United Kingdom, May 30, 1973, 25633/73

Int. Cl.² C07D *213/30*, *213/32*

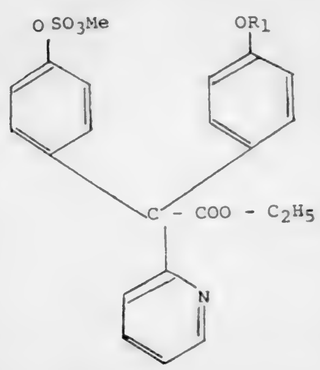
U.S. Cl. 260—294.8 R **6 Claims**

1. A process for the preparation of an ester of the formula



(I)

in which R_1 is a hydrogen atom or a suphoxy group or is alkanoyl having up to 6 carbon atoms and Me is a pharmaceutically acceptable inorganic or organic non-toxic cation, wherein a compound of the formula



(II)

in which Me and R_1 have the same meaning as above, is selectively hydrolyzed and then decarboxylated, in a basic medium to produce the objective compound I wherein R_1 is hydrogen or a sulphoxy group and, when desired, acylating said compound with an organic acid to produce a compound I wherein R_1 is alkanoyl having up to 6 carbon atoms.

3,963,733

3-(P-METHOXYBENZYLTHIO)2-NON-OXOCARBONYLIC PYRIDINES

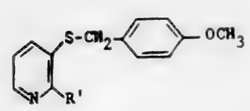
Benjamin Blank, Trevose, and John G. Gleason, Cornwell Heights, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 363,237, May 23, 1973, Pat. No. 3,873,552. This application Dec. 5, 1974, Ser. No. 529,785

Int. Cl.² C07D *213/79*, *213/81*

U.S. Cl. 260—294.8 G **1 Claim**

1. A compound of the formula:



in which R′ is carboxy, COO-lower alkyl or $CONH_2$.

3,963,734
LOWER ALKYLSULFONYL 2-AMINO, 3-NITRO PYRIDINES

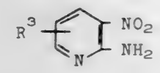
George O. P. Doherty, Greenfield, Ind., and Kenneth H. Fuhr, Columbus, Ohio, assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 181,574, Sept. 17, 1971, Pat. No. 3,813,408, which is a continuation-in-part of Ser. No. 21,535, March 20, 1970, abandoned. This application Feb. 15, 1974, Ser. No. 443,075

Int. Cl.² C07D *213/71*

U.S. Cl. 260—294.8 F 5 Claims

1. A compound selected from the group consisting of the compounds of the formula



wherein R^3 represents loweralkylsulfonyl of C_1–C_4.

3,963,735
ACYLATED 2-AMINOTHIAZOLE DERIVATIVES

Lajos Farkas; Endre Kasztreiner; Ferenc Andrasi; Jozsef Borsi; Istvan Elekes, and Istvan Polgari, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

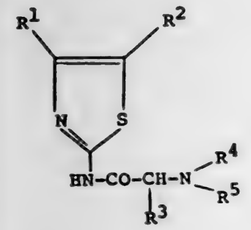
Filed Oct. 29, 1974, Ser. No. 518,732

Claims priority, application Hungary, Nov. 9, 1973, GO 1250

Int. Cl.² C07D *213/56*

U.S. Cl. 260—294.8 D 2 Claims

1. An acylated 2-aminothiazole derivative selected from the group consisting of a compound of the formula



in which

R^1 is pyridyl,

R^2 is a member selected from the group consisting of hydrogen and lower alkyl,

R^3 is a member selected from the group consisting of hydrogen, methyl and ethyl,

R^4 is hydrogen,

R^5 is a member selected from the group consisting of hydrogen, C_{1-6} alkyl, allyl, hydroxyalkyl, C_{3-6} cycloalkyl, β-dimethylaminoethyl, β-diethylaminoethyl, benzyl, 2-furylmethyl, unsubstituted phenyl, phenyl substituted with a member selected from the group consisting of halogen, methyl, methoxy and trifluoromethyl, or

both R^4 and R^5 are hydroxyalkyl,

and a pharmaceutically acceptable acid addition salt thereof.

3,963,736
PREPARATION OF 1-(LOWER ALKYL)-1,4-DIHYDRO-7-METHYL-4-OXO-1,8-NAPHTHYRIDINE-3-CARBOXYLIC ACIDS

Takenari Nakagome, Toyonaka; Hideo Agui, Minoo; Toru Mitani, Nishinomiya, and Mitsuo Nakashita, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

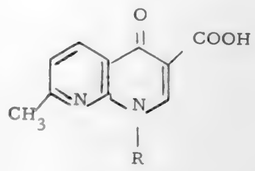
Division of Ser. No. 110,586, Jan. 18, 1971, Pat. No. 3,849,421. This application June 10, 1974, Ser. No. 478,118

Claims priority, application Japan, Jan. 28, 1970, 45-7895; Feb. 18, 1970, 45-14355; Feb. 23, 1970, 45-15721; Feb. 24, 1970, 45-16004; Feb. 24, 1970, 45-16005

Int. Cl.² C07D *471/04*

U.S. Cl. 260—295.5 B 11 Claims

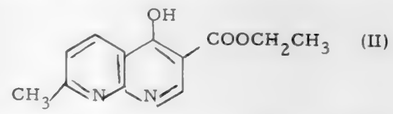
1. A process for the production of a 1,4-dihydro-7-methyl-4-oxo-1,8-naphthyridine-3-carboxylic acid represented by the formula I



(I)

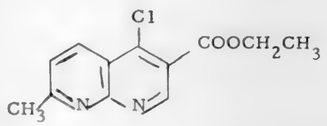
wherein R is a C_1–C_4 alkyl group, which process comprises

a. reacting the compound represented by the formula II



(II)

with a halogenating agent to provide the compound represented by the formula III



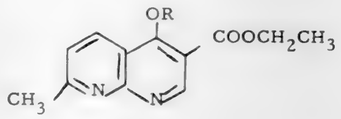
(III)

b. reacting the compound III so formed in the presence of a base selected from the group consisting of an alkali metal hydroxide, an alkali metal carbonate, a metal salt of an alcohol represented by the formula ROH

wherein R is as described above and pyridine with an alcohol represented by the formula

ROH

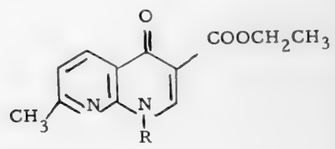
wherein R is as described above, to provide a compound represented by the formula IV



(IV)

wherein R is as described above:

c. heating the compound IV in the presence of absence of an alkylating agent or an acid to provide a compound represented by the formula V, wherein said alkylating agent is an alkyl halide, an alkenyl halide, an alkyl p-toluene sulfonate, a cycloalkyl halide, an hydroxy alkyl halide, a dialkyl sulfate or triethyloxonium fluoroborate and wherein said acid is a strong, non- oxidizing inorganic or organic acid or a Lewis acid



(V)

and

d. then hydrolyzing the compound V to provide a 1,4-dihydro-7-methyl-4-oxo-1,8-naphthyridine-3-caboxylic acid represented by the formula I.

3,963,737
1,3-DIHYDROCARBYL-PYRAZOLE COMPOUNDS AS STABILIZERS FOR ORGANIC MATERIALS

Lajos Ávár, Binningen, and Kurt Hofer, Munchenstein, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed July 2, 1975, Ser. No. 592,369

Claims priority, application Switzerland, July 9, 1974, 9418/74

Int. Cl.² C07F *15/04*; C08K *5/33*

U.S. Cl. 260—299 8 Claims

1. A 1,3-dihydrocarbyl-pyrazole compound, having a 5-hydroxyl group in nickel salt form, characterized by a ketoxyimino group bound directly to the 4-position of the pyrazole ring through the ketoxyimino functional carbon atom.

3,963,738
BIS-OXADIAZOLYL PHENYL AROMATIC DIESTER COMPOUNDS AND THEIR USE AS ULTRAVIOLET STABILIZERS IN ORGANIC COMPOSITIONS

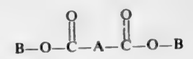
Gether Irick, Jr., and Charles A. Kelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 1, 1974, Ser. No. 484,843

Int. Cl.² C07D *271/10*

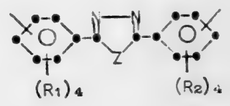
U.S. Cl. 260—307 G 14 Claims

1. A composition of matter of the formula:



wherein

A is a member having the structure

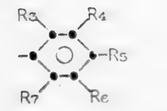


wherein

Z is an oxygen atom;

R_1 and R_2 are hydrogen, chloro, bromo, lower alkyl, and cyano and are present on all positions of the benzenoid rings, except the carbon atoms attached to the carboxyl group connecting the heterocyclic aromatic A group with the aromatic B group, said carboxyl connecting group is attached to the benzenoid ring in either the meta or para position from the carbon atom connected to the heterocyclic ring;

B is a group having the formula



wherein at least one R_3 or R_7 is hydrogen and the other R_3, R_4, R_5, R_6 and R_7 are hydrogen, lower alkyl, hydroxy, nitrile, chloro and bromo.

3,963,739
3-AMINO-4,5,6-TRICHLORO-7-NITRILOINDAZOLES

Klaus-Dieter Steffen, Troisdorf-Oberlar, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

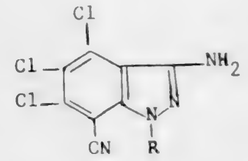
Continuation of Ser. No. 398,629, Sept. 19, 1973, abandoned. This application Aug. 4, 1975, Ser. No. 601,950

Claims priority, application Germany, Sept. 30, 1972, 2248175

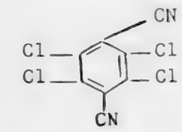
Int. Cl.² C07D *231/56*

U.S. Cl. 260—310 C 3 Claims

1. In a method of preparing a 3-amino-4,5,6-trichloro-7-nitriloindazole of the general formula



wherein R represents hydrogen, alkyl of from 1 to 6 carbon atoms, chloroalkyl of from 1 to 6 carbon atoms, phenyl or alkyl-substituted phenyl, the alkyl portion of which is an alkyl of from 1 to 6 carbon atoms by contacting a tetrachloroisophthalicaciddinitrile having the formula



with a hydrazine compound of the formula

H_2N-NHR

the improvement which comprises carrying out said process at a temperature between 10° and 50°C in the presence of a solvent for the reaction mixture, which solvent is selected from the group consisting of dioxane, methyl alcohol, ethyl alcohol, o-dichlorobenzene, ethyl ether and toluene and thereafter recovering a 3-amino-4,5,6-trichloro-7-nitriloindazole.

3,963,740
BENZO AND BENZOTHIOPYRANOINDAZOLE N-OXIDES

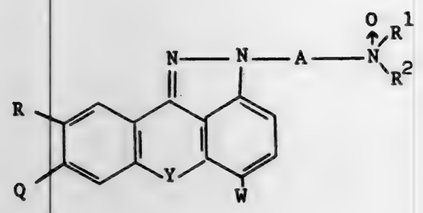
Edward Faith Elslager, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Continuation-in-part of Ser. No. 379,779, July 16, 1973, abandoned. This application Sept. 20, 1974, Ser. No. 507,634

Int. Cl.² C07D *231/56*; A61K *31/415*

U.S. Cl. 260—310 C 8 Claims

1. A compound of the formula



and acid addition salts thereof; wherein:

A is an alkylene radical containing 2 to 4 carbon atoms;

R^1 and R^2 are the same or different and represent C_1-C_4 alkyl;

W is methyl, hydroxymethyl or acyloxymethyl wherein said acyl fragment contains from one to eight carbon atoms,

Y is sulfur or oxygen; and

one of Q and R is hydrogen and the other is hydrogen, halo or alkoxy having from one to four carbon atoms.

3,963,741

4-ALKYL-1,2-DIMETHYL-3,5-DIPHENYLPYRAZOLIUM SALTS AND DERIVATIVES THEREOF AS FUNGICIDAL AGENTS

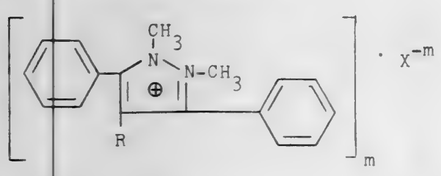
Barrington Cross, Rocky Hill, and Bryant Leonidas Walworth, Pennington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 574,067, May 2, 1975. This application Oct. 2, 1975, Ser. No. 619,092

Int. Cl.² C07D *231/12*; A01N *9/22*

U.S. Cl. 260—311 **9 Claims**

1. A compound having the formula:



wherein R is a member selected from the group consisting of alkyl C_1-C_8, allyl, propargyl, benzyl and carbethoxymethyl; X represents an anion having a charge of from 1 to 3; and m represents an integer from 1 to 3.

3,963,742

1,2-DIALKYL-3,4,5-TRISUBSTITUTED PYRAZOLIUM SALTS AS HERBICIDAL AGENTS

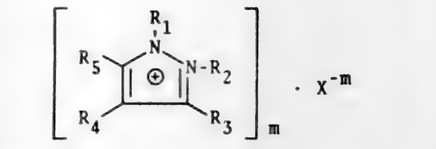
Barrington Cross, Rocky Hill, and Bryant Leonidas Walworth, Pennington, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 487,826, July 12, 1974, abandoned. This application June 6, 1975, Ser. No. 584,686

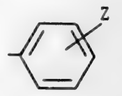
Int. Cl.² C07D *231/12*; A01N *9/22*

U.S. Cl. 260—311 **24 Claims**

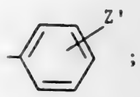
1. A compound having the formula:



wherein R_1 represents a member selected from the group consisting of alkyl C_1-C_8, allyl and benzyl; R_2 is alkyl C_1-C_5; R_3 represents a member selected from the group consisting of

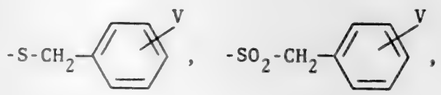


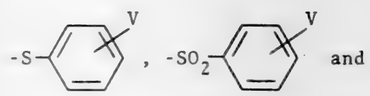
and naphthyl; R_5 is



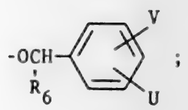
;

R_4 represents a member selected from the group consisting of alkoxy C_1-C_{22}, alkenyloxy C_3-C_4, halogen substituted alkenyloxy C_3-C_4, alkynyloxy C_3-C_4, $-O-(CH_2)_a-W$, alkylthio C_1-C_{22}, alkylsulfonyl C_1-C_{22},





and



wherein R_6 represents a member selected from the group consisting of hydrogen, methyl and phenyl; U and V each represent members selected from the group consisting of hydrogen, halogen, alkyl C_1-C_4, alkoxy C_1-C_4, NO_2 and CF_3; W represents a member selected from the group consisting of halogen, cyano, carbalkoxy C_1-C_7,

alkoxy C_1-C_7, alkylthio C_1-C_7, alkylsulfonyl C_1-C_7, benzylthio and benzylsulfonyl; Z and Z' each represent members selected from the group consisting of hydrogen, halogen, alkyl C_1-C_{12}, alkoxy C_1-C_4 and phenyl; X is an anion with a charge of from 1 to 3; *m* represents an integer selected from 1, 2 and 3; and *n* represents an integer selected from 1, 2, 3 and 4.

3,963,743

METHOD OF CONDITIONING PHTHALOCYANINE PIGMENTS AND PRODUCT THEREOF

James Dial Stepp, Holland, Mich., assignor to Chemetron Corporation, Chicago, Ill.

Filed Oct. 1, 1973, Ser. No. 402,094

Int. Cl.² C09B *47/02*

U.S. Cl. 260—314.5 **12 Claims**

1. A method of conditioning a phthalocyanine pigment selected from the class consisting of phthalocyanine, a metal phthalocyanine, a halogenated phthalocyanine and a halogenated metal phthalocyanine, said method consisting essentially of mixing the pigment with 4-sulfophthalic acid or anhydride at a temperature of from about 50° to about 100°C.

3,963,744

SILICONE-COMPATIBLE PHTHALOCYANINE DYESTUFFS

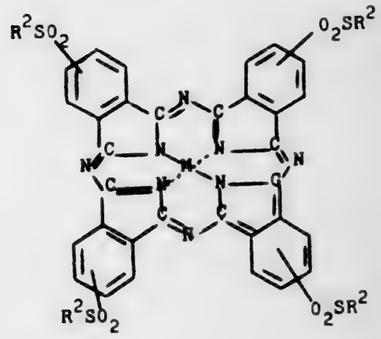
Carl Mayn Smith, Sun City, Ariz., and George V. D. Tiers, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 501,265, Aug. 28, 1974, abandoned, which is a division of Ser. No. 275,190, July 26, 1972, Pat. No. 3,888,891. This application Aug. 8, 1975, Ser. No. 604,651

Int. Cl.² C09B *47/02*

U.S. Cl. 260—314.5 **1 Claim**

1. A metal phthalocyanine of the formula:



wherein M is a metal of the group of copper, nickel or cobalt and R^2 is tris(trimethylsilyloxy)silylalkylamino

$R^1-N(R)-R-Si[OSi(CH_3)_3]_3$ in which R is straight or branched chain unsubstituted alkylene of 1–6 carbon atoms and R^1 is hydrogen or unsubstituted lower alkyl or 1 to 6 carbon atoms.

3,963,745

METHOD FOR CONTROLLING EMESIS WITH N-(1-SUBSTITUTED-3-PYRROLIDINYL)BENZAMIDES AND THIOBENZAMIDES

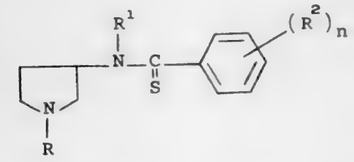
Albert Duncan Cale, Jr., Mechanicsville, and Charles Arthur Leonard, Richmond, both of Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 340,417, March 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 240,840, April 3, 1972, abandoned. This application Oct. 25, 1974, Ser. No. 518,124

Int. Cl.² C07D *207/14*; A61K *31/40*

U.S. Cl. 260—326.5 S **3 Claims**

1. A compound of the formula:



wherein;

R is cycloalkyl of four to 12 carbon atoms,

R^1 is hydrogen and lower alkyl of 1–8 carbon atoms,

R^2 is nitro, amino, halogen, sulfamoyl, methoxy and ethoxy,

n is an integer from zero to three inclusive, and the pharmaceutically acceptable acid addition salts thereof.

3,963,746

4,5 DIHALOPYRROL 2-YL DI AND TRI HALOMETHYL KETONES

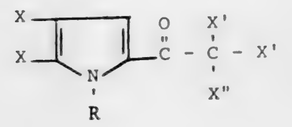
Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 350,086, March 11, 1973, Pat. No. 3,918,954. This application Apr. 28, 1975, Ser. No. 572,430

Int. Cl.² C07D *207/36*

U.S. Cl. 260—326.5 J **18 Claims**

1. A compound having the formula



wherein each X is chlorine, bromine, or iodine, both values of X being identical; X' is chlorine or fluorine, both values of X'

being identical; X'' is either hydrogen or chlorine or fluorine identical with X'; and R is hydrogen or lower-alkyl.

3,963,747

BASIC ARYLMERCAPTONAPHTHOLACTAM DYES

Ernst Schefczik, Ludwigshafen, and Klaus Grychtol, Bad Duerkheim, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

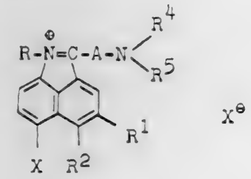
Filed May 30, 1974, Ser. No. 474,598

Claims priority, application Germany, June 2, 1973, 2328163

Int. Cl.² C07D *209/62*

U.S. Cl. 260—326.27 5 Claims

1. A dye of the formula



in which

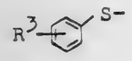
A is p-phenylene or 1,4-naphthylene,

R is hydrogen, alkyl of 1 to 4 carbon atoms, hydroxyalkyl of 2 or 3 carbon atoms, cyanoethyl, carbamoylethyl, carbalkoxyethyl with 1 to 4 carbon atoms in the alkoxy or benzyl,

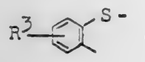
R^1 is hydrogen, methoxy or ethoxy,

R^2 is hydrogen or methoxy,

X is



X and R^2 together are



S being para to the nitrogen,

R^3 is hydrogen, chlorine, methyl, methoxy or ethoxy,

R^4 is alkyl of 1 to 4 carbon atoms, chloroalkyl of 2 or 3 carbon atoms, cyanoethyl, benzyl, phenylethyl, cyclohexyl, phenyl, methoxyphenyl or ethoxyphenyl,

R^5 is hydrogen, alkyl of 1 to 4 carbon atoms or chloroalkyl of 2 or 3 carbon atoms,

R^4 and R^5 together with the nitrogen are pyrrolidino, and

X^- is an anion.

3,963,748

1-PHENYL-3-AZACARBOCYCLIC-UREAS

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 266,695, June 27, 1972, abandoned, which is a division of Ser. No. 82,799, Oct. 21, 1970, Pat. No. 3,717,648, which is a continuation-in-part of Ser. No. 733,323, May 31, 1968, abandoned. This application Dec. 27, 1974, Ser. No. 536,755

Int. Cl.² C07D *207/14*

U.S. Cl. 260—326.47 6 Claims

1. A compound selected from 1-(4-chlorophenyl)-3-(1-pyrrolin-2-yl)urea and 1-(4-bromophenyl)-3-(1-pyrrolin-2-yl) urea and pharmaceutically acceptable acid-addition salts thereof.

3,963,749

1-METHYL-2,3-DIHYDRO-1,4-DITHIINIUM METHOSULFATE

Klaus Naumann, Cologne; Klaus Lürssen, Groszkoenigsdorf, and Klaus Sasse, Schildgen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 5, 1974, Ser. No. 476,765

Claims priority, application Germany, June 19, 1973, 2331186

Int. Cl.² C07D *339/08*

U.S. Cl. 260—327 P 1 Claim

1. 1methyl-2,3-dihydro-1,4-dithiinium methosulfate.

3,963,750

THIOPHENE DERIVATIVES

Alexander Crossan Goudie, Harlow, England, assignor to Beecham Group Limited, Great Britain

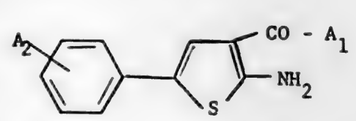
Filed July 23, 1974, Ser. No. 491,060

Claims priority, application United Kingdom, Aug. 9, 1973, 37699/73

Int. Cl.² C07D *333/24*

U.S. Cl. 260—332.2 C 4 Claims

1. A compound of the formula (II):



(II)

or a pharmaceutically acceptable non-toxic salt thereof, wherein A_1 is NHA_3 wherein A_3 is hydrogen or alkyl of 1–6 carbon atoms; and A_2 is fluorine.

3,963,751

CHLORINATION OF BUTADIENE SULFONE TO 3,3,4,4-TETRACHLOROTETRAHYDROTHIOPHENE-1,1-DIOXIDE

Alex Hlynsky, Mentor; Jan M. Griggs, Madison, and Edmond R. Osgood, Mentor, all of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed July 14, 1975, Ser. No. 595,531

Int. Cl.² C07D *333/48*

U.S. Cl. 260—332.1 6 Claims

1. A process for preparing 3,3,4,4-tetrachlorotetrahydrothiophene-1,1-dioxide which comprises initially adding chlorine across the ethylenic double bond of butadiene sulfone by chlorinating said butadiene sulfone with chlorine in an inert solvent medium at a temperature no greater than 50°C; secondly chlorinating the obtained saturated 3,4-dichlorotetrahydrothiophene-1,1-dioxide with chlorine in the presence of an organic peroxy compound as the chlorination catalyst, said chlorination being conducted in an inert solvent medium, at a temperature of 75°–90°C and under a pressure of 40–60 psig, said organic peroxy compound being benzoyl peroxide or succinic acid peroxide; and finally recovering 3,3,4,4-tetrachlorotetrahydrothiophene-1,1-dioxide product in greater than 70% yield.

3,963,752

DISUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

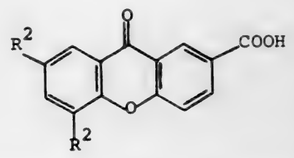
Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 431,794, Jan. 8, 1974, Pat. No. 3,894,049, which is a continuation-in-part of Ser. No. 259,852, June 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 217,287, Jan. 12, 1972, Pat. No. 3,849,565. This application Mar. 13, 1975, Ser. No. 558,024

Int. Cl.² C07D *311/86*

U.S. Cl. 260—335 14 Claims

1. A compound selected from those represented by the following formula:



and the pharmaceutically acceptable, non-toxic alkyl or glycerol esters, amides, and salts thereof;

wherein one R^2 group is selected from alkoxy containing from one to twelve carbon atoms and the other R^2 group is selected from the group



in which *n* is the integer 1 or 2, R is lower alkyl when *n* is 1 and R is lower alkyl, hydroxy, amino, monolower alkylamino, or dilower alkylamino when *n* is 2.

3,963,753

DISUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

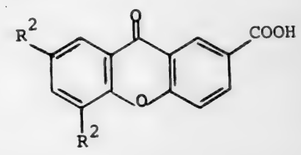
Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 431,794, Jan. 8, 1974, Pat. No. 3,894,049, which is a continuation-in-part of Ser. No. 259,852, June 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 217,287, Jan. 12, 1972, Pat. No. 3,849,565. This application Mar. 13, 1975, Ser. No. 558,023

Int. Cl.² C07D *311/86*

U.S. Cl. 260—335 7 Claims

1. A compound selected from those represented by the following formula:



and the pharmaceutically acceptable, non-toxic alkyl or glycerol esters, amides, and salts thereof;

wherein one R^2 group is alkoxy and the other R^2 group is lower alkanoyl.

3,963,754

2-VINYL-5-METHYL-1,3-DIOXANE

Charles C. Cumbo, Wilmington, and Kamlesh K. Bhatia, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 31, 1974, Ser. No. 493,741

Int. Cl.² C07D *319/06*; C07C *29/00*

U.S. Cl. 260—340.7 1 Claim

1. 2-vinyl-5-methyl-1,3-dioxane.

3,963,755

MIXTURE OF 2(2'-PROPANAL)-5-METHYL-1,3-DIOXANE AND 2(3'-PROPANAL)-5-METHYL-1,3-DIOXANE

Charles C. Cumbo, Wilmington, and Kamlesh K. Bhatia, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 31, 1974, Ser. No. 493,742

Int. Cl.² C07D *319/06*; C07C *29/00*

U.S. Cl. 260—340.7 1 Claim

1. The cyclic acetal-aldehyde mixture of 2(2'-propanal)-5-methyl-1,3-dioxane and 2(3'-propanal)-5-methyl-1,3-dioxane.

3,963,756

DERIVATIVES OF 6-METHYL-2H-PYRAN-2,4(3H)-DIONE

Masaji Ohno, and Mutsuo Kataoka, both of Kamakura, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

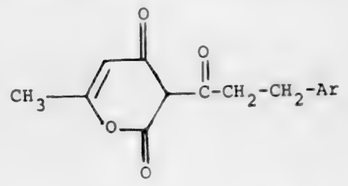
Filed May 24, 1973, Ser. No. 363,559

Claims priority, application Japan, May 24, 1972, 47-50776

Int. Cl.² C07D *309/30*

U.S. Cl. 260—343.5 17 Claims

1. A hypotensive compound selected from the group consisting of 6-methyl-2H-pyran-2,4-(3H)-diones of the formula:



wherein Ar is phenyl substituted by at least one member selected from the group consisting of halogen, hydroxyl, alkyl of 1–4 carbon atoms and alkoxy of 1–4 carbon atoms, provided that said substituted phenyl is not 3,4-dimethoxyphenyl, and the physiologically acceptable salts thereof.

3,963,757

PROCESS FOR THE PREPARATION OF LACTONES

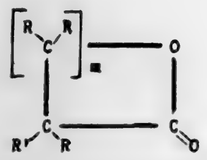
Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 888,867, Dec. 29, 1969, abandoned. This application Aug. 21, 1972, Ser. No. 282,253

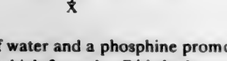
Int. Cl.² C07D *307/32*, *309/30*

U.S. Cl. 260—343.6 12 Claims

1. A process for the preparation of a lactone represented by the formula



wherein a cyanide repesented by the formula $M(CN)_n$ is reacted with a haloalkanol represented by the formula



in the presence of water and a phosphine promoter having the formula R''_3P in which formulae R' is hydrogen, alkyl, cycloalkyl, aryl, alkaryl or aralkyl having from 1 to 8 carbon atoms per R' group; R is hydrogen or alkyl having from 1 to 3 carbon atoms per R group, the total number of carbon atoms in all R groups per molecule is not greater than 6; R'' is alkyl, aryl, cycloalkyl, aralkyl or alkaryl having from 1 to 8 carbon atoms in each group; M is an alkali or alkaline earth metal, X is a halogen; n is 1 or 2 and m is 2 or 3.

3,963,758

2-(BENZOFUROYL)PHENYL ACETIC ACIDS

Henri Pinhas, Paris, and Monique Susini, Bretigny, both of France, assignors to Serdex - Societe d'Etudes, de Recherches, de Diffusion et d'Exploitation, Puteaux, France

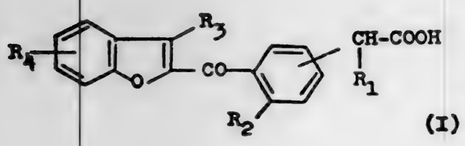
Filed June 14, 1974, Ser. No. 480,135

Claims priority, application United Kingdom, June 26, 1973, 30196/73

Int. Cl.² C07D *307/78*

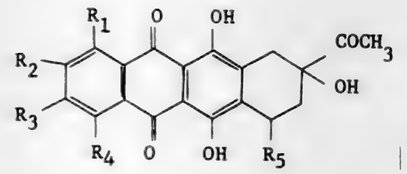
U.S. Cl. 260—346.2 R **4 Claims**

1. A compound selected from the group consisting of a compound of the formula



(I)

wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, chlorine, bromine and methoxy group, with the proviso that at least one of R_1, R_2, R_3 and R_4 is methoxy; and wherein R_5 is selected from the group consisting of hydrogen, OH, OR and OCOR, in which R is an alkyl group of 1 to 4 carbon atoms; said process comprising reacting a compound of the formula



(I)

in which

R_1 is selected from the group consisting of hydrogen and alkyl having 1–6 carbon atoms,

R_2 is selected from the group consisting of hydrogen, alkyl having 1–6 carbon atoms, alkoxy having 1–6 carbon atoms and halogen,

R_3 is selected from the group consisting of hydrogen, alkyl having 1–6 carbon atoms, phenyl and

R_4 is selected from the group consisting of hydrogen, alkyl having 1–6 carbon atoms, alkoxy having 1–6 carbon atoms, hydroxy, halogen and trifluoromethyl and their pharmacologically acceptable salts and lower alkanol esters.

3,963,759

OXIDATION OF MESITYL OXIDE TO CITRACONIC ANHYDRIDE

Edwin J. Strojny, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 7, 1973, Ser. No. 367,912

Int. Cl.² C07D *307/56*

U.S. Cl. 260—346.8 A **8 Claims**

1. The process of making citraconic anhydride comprising contacting a gaseous mixture of mesityl oxide and air or oxygen with a catalyst comprising vanadium oxide, a vanadate salt or a vanadyl salt at reaction temperature, said gaseous mixture containing at least about 10 moles of oxygen per mole of mesityl oxide.

3,963,760

SELECTIVE DEMETHYLATION OF ANTHRACYCLINE DERIVATIVES

Luigi Bernardi, and Bianca Patelli, both of Milan, Italy, assignors to Societa' Farmaceutici Italia S.p.A., Milan, Italy

Filed Sept. 15, 1975, Ser. No. 613,423

Claims priority, application United Kingdom, Sept. 20, 1974, 41015/74

Int. Cl.² C07C *87/10*

U.S. Cl. 260—365 **4 Claims**

1. A process for preparing an anthracycline derivative of the formula

(I)

wherein R_1, R_2, R_3, R_4 and R_5 are as defined above with an aluminum halide in the presence of a solvent selected from the group consisting of chlorobenzene, bromobenzene, and nitrobenzene, at a temperature of from 0° to 50°C., and isolating the demethylated product from the reaction mixture.

3,963,761

PROCESS FOR THE PRODUCTION OF DINITRO-ANTHRAQUINONES

Axel Vogel, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 4, 1974, Ser. No. 503,197

Claims priority, application Germany, Sept. 14, 1973, 2346317

Int. Cl.² C07C *49/68*

U.S. Cl. 260—369 **11 Claims**

1. Process for the production of dinitro-anthraquinones, which comprises nitrating an anthraquinone in the presence of from 0.4 to 25 by volume, per part by weight of the anthraquinone, of an inert inorganic solvent which is an aliphatic or alicyclic hydrocarbon having up to 12 carbon atoms and substituted once or several times by halogen or by the nitro group.

3,963,762

PROCESS FOR PRODUCING 1,5-DINITROANTHRAQUINONE AND 1,8-DINITROANTHRAQUINONE

Walter Hohmann, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 10, 1974, Ser. No. 513,907

Claims priority, application Germany, Oct. 13, 1973, 2351590; Aug. 16, 1974, 2439280

Int. Cl.² C07C *49/68*

U.S. Cl. 260—369 **16 Claims**

1. Process for recovering substantially pure 1,5-and/or 1,8-dinitroanthraquinone from dinitration mixtures optionally containing sulphuric acid or a perfluoralkane sulphonic acid which comprises

i. adjusting the nitric acid concentration in the nitration mixture to a value of 91 to 96% for a ratio by weight of nitric acid to solids of from 2.5 : 1 to 10 : 1;

ii. separating off the insoluble crude 1,5-dinitroanthraquinone at 15° to 50°C;

iii. taking up the 1,5-dinitroanthraquinone with 90 to 100% nitric acid in a ratio by weight of nitric acid to solids of from 0.5 : 1 to 3.5 : 1;

iv. stirring at 15° to 80°C;

v. separating off the insoluble pure 1,5-dinitroanthraquinone thus obtained;

vi. adjusting the mother liquid left following separation of the crude 1,5-dinitroanthraquinone to a nitric acid concentration of from 88 to 94% for a ratio by weight of nitric acid to solids of from 3.0 : 1 to 12 : 1, with the proviso that the nitric acid concentration is at least 1.5% lower than in the preceding separation of crude 1,5-dinitroanthraquinone; and

vii. separating off the pure 1,8-dinitroanthraquinone obtained in this way at a temperature in the range of from 20° to 50°C and freeing it from the nitric acid adhering thereto.

3,963,763

ANTHRAQUINONE DYESTUFFS

Volker Hederich, Cologne; Friedrich Wilhelm Kröck, Opladen; Güenter Gehrke, Cologne, and Rütger Neeff, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

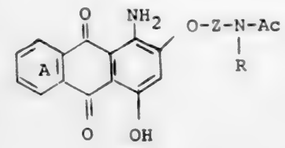
Filed Oct. 9, 1974, Ser. No. 513,485

Claims priority, application Germany, Oct. 13, 1973, 2351517

Int. Cl.² C07C *49/68*

U.S. Cl. 260—376 **5 Claims**

1. Anthraquinone dyestuffs of the formula



wherein

R comprises hydrogen; unsubstituted straight chain branched alkyl radicals having 1-9 carbon atoms; or C_1–C_4 alkyl radicals substituted by hydroxyl, nitrile, C_1–C_8 alkoxy, C_1–C_8 alkyl mercapto, C_1–C_6 dialkylamino; cyclohexylamino; phenyloxy wherein the phenyl group is unsubstituted or substituted with C_1–C_8 alkyl, C_1–C_4 alkoxy, C_1–C_4-alkylmercapto or halogen; phenylmercapto wherein the phenyl group is unsubstituted or substituted with C_1–C_8 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylmercapto, or halogen; napthyloxy, wherein the naphthyl group is substituted or unsubstituted with C_1–C_8 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkyl mercapto, or halogen; or napthylmercapto wherein the napthyl group is substituted or unsubstituted with C_1–C_8 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylmercapto, or halogen;

Z comprises an alkylene radical having 2–6 carbon atoms in the main chain;

Ac is UV wherein U is —CO—, $-SO_2-$, $-CO_2-$ or —CO—NH—, and

V is alkyl or alkenyl having 1–17 carbon atoms unsubstituted or substituted with a lower alkoxy or a phenoxy group or with halogen or with nitrile; cycloalkyl; phenyl; phenyl substituted with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylmercapto, nitrile, phenyl, or cyclohexyl; napthyl; napthyl substituted with halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylmercapto, nitrile, phenyl, or cyclohexyl; or hydrogen and wherein the nucleus A is not further substituted; with the proviso that V can only be hydrogen if U is —CO— or —CONH—.

3,963,764

INDOANILINES

Grégoire Kalopissis, Paris; Andrée Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 249,227, May 1, 1972, abandoned, which is a continuation-in-part of Ser. No. 213,750, Dec. 29, 1971, Pat. No. 3,867,094. This application May 27, 1975, Ser. No. 580,830

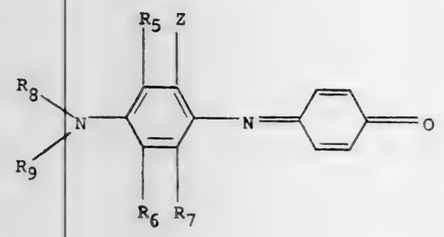
Claims priority, application Luxemburg, May 10, 1971, 63145; May 10, 1971, 63144; Dec. 30, 1970, 62348

Int. Cl.² C07C *119/14;* **C07D** *265/36*

U.S. Cl. 260—396 N **4 Claims**

1. An idoaniline selected from the group consisting of

a. an indoaniline having the formula



wherein Z is selected from the group consisting of amino, acetylamino and hydroxy; R_5, R_6 and R_7 each independently are selected from the group consisting of hydrogen, lower alkyl having 1–6 carbon atoms and lower alkoxy having 1–16 carbon atoms; R_8 is selected from the group consisting of hydrogen, lower alkyl having 1–6 carbon atoms and together with R_5 and the nitrogen atom to which R_8 is attached form dihydro-paroxazine; R_9 is selected from the group consisting of hydrogen, lower alkyl having 1–6 carbon atoms and together with R_6 and the nitrogen atom to which R_9 is attached form dihydro-paroxazine, with the proviso that at least two of R_5, R_6, R_7, R_8 and R_9 are other than hydrogen when Z is NH_2 and that only one of R_8 and R_9 form dihydro-paroxazine and

b. an acid salt of said indoaniline in (a).

3,963,765

PREPARATION OF DERIVATIVES OF CHOLESTEROL

Yehuda Mazur, 14 Haknesset Hagdola St., Tel Aviv, and Avner Rotman, 8 Hagoren St., Rehovot, both of Israel

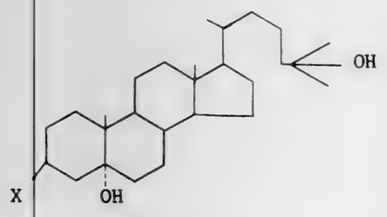
Continuation-in-part of Ser. No. 454,394, March 25, 1974, Pat. No. 3,920,531. This application July 11, 1974, Ser. No. 487,432

Claims priority, application Israel, Apr. 1, 1973, 41923

Int. Cl.² C07J *9/00*

U.S. Cl. 260—397.2 **12 Claims**

1. A process for preparing derivatives of cholestane of the formula



wherein X is —OH or $—OCOCH_3$, said process comprising subjecting 3β-acetoxy-5α-hydroxy cholestane, dissolved in a solvent, in the presence of peracetic acid to irradiation with ultra-violet light having a wavelength of less than 350 mμ, to form 3β-acetoxy-5α, 25-dihydroxy cholestane, removing the solvent, separating said 3β-acetoxy-5α,25-dihydroxy cholestane and converting same to the corresponding trihydroxy-derivative by treatment with an aqueous solution of an alkali metal hydroxide in a lower alkanol and dioxane.

3,963,766

PROCESS FOR SEPARATION OF 19-NOR-Δ⁴-ANDROSTENE-3,17-DIONE

Ken-ichi Wakabayashi, and Susumu Kanno, both of Machida, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

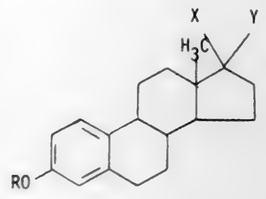
Filed Jan. 31, 1975, Ser. No. 545,900

Claims priority, application Japan, Feb. 26, 1974, 49-22534

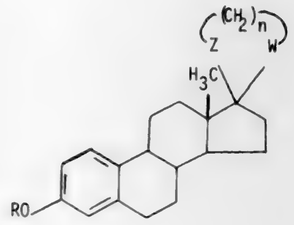
Int. Cl.² C07J *1/00, 43/00*

U.S. Cl. 260—397.3 **15 Claims**

1. In a process for separating 19-nor-Δ⁴-androstene-3,17-dione from a mixture of steroids which is obtained by the Birch reduction of an alkyl or an aralkyl ether of estrone acetal having the following formula (I),



wherein R is selected from the group consisting of an alkyl group containing 1 to 10 carbon atoms and an aralkyl group containing a side chain of 1 to 5 carbon atoms; X and Y are selected from the group consisting of O-alkyl and S-alkyl groups, respectively, containing 1 to 10 carbon atoms; or the following formula (II):



wherein R is as defined above; Z and W are selected from the group consisting of oxygen atom and sulfur atom; and *n* represents an integer of from 2 to 10; followed by the hydrolysis of the obtained reduction product of said Birch reduction, the improvement which comprises:

1. reacting said mixture of steroids containing 19-nor-Δ⁴-androstene-3,17-dione with a secondary amine selected from the group consisting of pyrrolidine piperidine, morpholine and dimethylamine, to form the C_3-enamine of 19-nor-Δ⁴-androstene-3,17-dione;
2. extracting the resultant C_3 enamine of 19-nor-Δ⁴-androstene-3,17 dione with an aqueous solution of an inorganinc acid selected from the group consisting of hydrochloric acid, sulfuric acid, nitric acid, hydrobromic acid, hydroiodic acid, phosphoric acid, sodium hydrogen sulfate and sodium hydrogen sulfite, and then;
3. hydrolyzing the separated C_3-enamine of 19-nor-Δ⁴-androstene-3,17-dione.

3,963,767

METHOXYPERFLUOROCYCLOALKENIUM HEXAFLUOROANTIMONATE SALTS

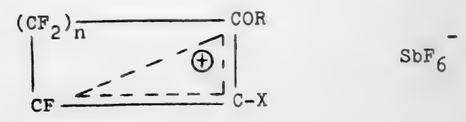
Bruce Edmund Smart, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 3, 1975, Ser. No. 609,997

Int. Cl.² C07F *9/90*

U.S. Cl. 260—446 **15 Claims**

1. A compound of the formula



wherein
R is alkyl of 1–4 carbons;
X is F, Cl, Br or OH;
n is 0, 1 or 2; and
the dotted lines indicate ring unsaturation.

3,963,768

PROCESS FOR THE PREPARATION OF THIOCARBAMIC ACID O-ESTERS

Hans Millauer, Eschborn, Taunus, and Gerhard Edelmann, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

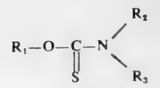
Filed Dec. 13, 1974, Ser. No. 532,412

Claims priority, application Germany, Dec. 22, 1973, 2364316

Int. Cl.² C07C *155/02*

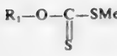
U.S. Cl. 260—455 A **5 Claims**

1. Process for the preparation of thiocarbamic acid-O-esters of the formula



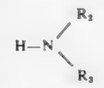
I

in which R_1 stands for a linear or branched alkyl radical of 1 to 8 carbon atoms or a cycloalkyl radical of 4 to 6 carbon atoms, and R_2 and R_3 independently from each other stand for a linear or branched radical of 1 to 6 carbon atoms or such an alkyl radical is substituted by a group selected from $—(O—CH_2—CH_2)_n—OH$, $—(O—CH_2—CH_2)_n—O—CH_3$ and $—O—(CH_2)_m—CH_3$, *n* being 0, 1 or 2 and *m* being 1 or 2, or stand for cycloalkyl radical of 4 to 6 carbon atoms and one of the radicals R_2 and R_3 also stands for hydrogen, which process consists essentially of reacting at a temperature ranging between 20° and 120°C in an aqueous or water-containing medium 1 mol of a xanthogenate of the formula



II

in which R_1 is defined as above and Me is an alkali metal with a primary or secondary aliphatic amine of the formula



III

in which R_2 and R_3 are defined as above, and 1.2 to 5 gram atoms of elementary sulfur.

3,963,769

SUBSTITUTED TRIMETHYLENE CYCLOPROPANES, SALTS THEREOF, INTERMEDIATES AND METHODS OF MAKING THE SAME

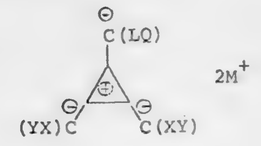
Tadamichi Fukunaga, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1974, Ser. No. 535,138

Int. Cl.² C07C *120/00, 121/46, 121/48*

U.S. Cl. 260—464 **23 Claims**

1. A compound having the formula



wherein X and Y are selected from cyano, -COO(lower alkyl) or -CO(lower alkyl) and L and Q are independently selected from cyano, —COO(lower alkyl) or —CO(lower alkyl) or pairwise from H and nitro; lower alkyl and nitro; hydrogen and lower alkyl sulfono or lower alkyl and lower alkyl sulfono, and M^+ is one equivalent of an inert cation, said compound containing at least one cyano.

3,963,770

SYNTHESIS OF ORTHO-CHLOROBENZALMALONONITRILE

John S. Knapp, Pittsburgh, Pa., assignor to Federal Laboratories, Inc., Saltsburg, Pa.

Continuation-in-part of Ser. No. 292,490, Sept. 27, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,571

Int. Cl.² C07C *121/70*

U.S. Cl. 260—465 G **10 Claims**

1. A batch process for the synthesis of ortho-chlorobenzalmalononitrile, comprising, the steps of:

a. mixing in methanol malononitrile with o-chlorobenzaldehyde in the presence of a catalytic amount of a basic amine catalyst;
b. heating the resulting solution to 35° to 55°C;
c. physically separating the resulting product crystals from said methanol;
d. washing the product crystals with fresh methanol;
e. combining the resulting methanol washings with said methanol filtrate;
f. reusing the combined methanol in another similar series of steps *a* – *e* as above defined;
g. and repeating a batch series of such synthesis until said methanol contains an excessive amount of impurities; whereby less volume of methanol solvent is used overall and associated problems of effluent treatment and air pollution are minimized.

3,963,771

AMINE ACRYLATE ADDITION REACTION PRODUCTS

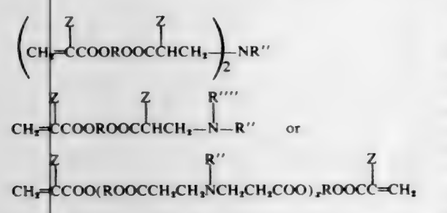
John Howard Robson, and Erich Marcus, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 69,136, Sept. 2, 1970, Pat. No. 3,845,056, which is a continuation-in-part of Ser. No. 6,939, Jan. 29, 1970, abandoned. This application Aug. 22, 1974, Ser. No. 499,636

Int. Cl.² C07C *101/20, 101/44*

U.S. Cl. 260—482 R 7 Claims

1. An amine acrylate addition reaction product of a primary or secondary organic amine and a polyacrylate, said reaction product being selected from the group of:



wherein Z is hydrogen or methyl;

R″ is alkyl of from 1 to 5 carbon atoms, cycloalkyl of from 5 to 10 carbon atoms, or aryl or aralkyl or alkaryl of from 6 to 12 carbon atoms;

R′′′′ is hydrogen or alkyl of from 1 to 5 carbon atoms; and

R is the residue of a diol of the group of saturated aliphatic diols having from 2 to 20 carbon atoms, bicyclo[2.2.1-]hept-2-ene diols, cyclohexyl diols, phenyl and mono- and di- lower alkyl phenyl diols, polyalkylene ether diols having from 2 to 4 carbon atoms in the alkylene group and ester glycols having from 1 to an average of 17.5 ester groups; and

x has a value of from 1 to 4.

3,963,772

ALTERNATING ALKYLENE/ACRYLIC TELOMERS

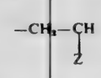
Tsuneichi Takeshita, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 9, 1973, Ser. No. 331,208

int. Cl.² C07C *69/34*

U.S. Cl. 260—485 H 1 Claim

1. A liquid telomeric composition of the structural formula $Br(D—A)_xY$ where Y is $—CCl_3$, $—CH_2Br$ or $—C(CH_3)_2CO_2H$, wherein D is $—CH_2—CR_4R_5—$, R_4 and R_5 are independently selected from H, Br, Cl and alkyl having a length of 1 to 22 carbon atoms, and A is



where Z is selected from $—CO_2R_6$ where R_6 is an alkyl of 1 to 8 carbon atoms, and wherein *n* is an integer large enough to give a molecular weight of about 300 to 50,000.

3,963,773

PROCESS FOR THE PRODUCTION OF PERACETIC ACID

Toshiharu Ishi, Otake; Akira Asahi, Yamaguchi; Hiroaki Fujita, Otake; Takeshi Sato, Otake, and Nobusuke Urabe, Otake, all of Japan, assignors to Daicel, Ltd., Osaka, Japan

Continuation of Ser. No. 888,321, Dec. 29, 1969, abandoned. This application June 13, 1974, Ser. No. 479,031

Int. Cl.² C07C *179/12*

U.S. Cl. 260—502 A 5 Claims

1. In a process for the production of peracetic acid by the catalytic reaction of acetaldehyde with gaseous molecular oxygen or molecular oxygen-containing gas, in which a liquid mixture of acetaldehyde with an inert organic solvent and gaseous molecular oxygen or molecular-oxygen containing gas is fed into the bottom of an upright cylindrical reactor vessel means and is flowed upwardly therethrough to produce a reaction product containing peracetic acid, the improvement which comprises: employing upright cylindrical reactor vessel means containing therein internal upright cooling tube means spaced from the internal wall of the vessel means to provide a vertical reaction zone between the internal wall means of the vessel means and the external wall means of said cooling tube means, said reaction zone being divided into at least three small reaction zone sections by at least two horizontal partition plates each having a plurality of perforations therethrough, each perforation having an equivalent diameter (equivalent diameter = 4 × cross-sectional area of the perforation ÷ circumferential length of the perforation) of not more than 8 mm., the height of each small reaction zone section being in the range of from 0.3 to 5 times the square root of its horizontal cross-sectional area, continuously feeding into the bottom small reaction zone section (1) the liquid mixture of acetaldehyde with an inert organic solvent and (2) gaseous molecular oxygen or molecular oxygen-containing gas, flowing the liquid and the gas upwardly in series through the reaction zone sections in concurrent flow relationship, at an average flow velocity of the gas within the range of 0.4 – 6.0 m. per second through the perforations and within the range of 0.04 – 0.15 m. per second calculated as the superficial column velocity, with the liquid and gas passing upwardly in unidirectional flow through the perforations of each partition plate into the next higher small reaction zone section while forming and substantially uniformly dispersing the gas bubbles in the liquid in each small reaction zone section to effect turbulent agitation of the contents of each reaction zone section, removing the reaction heat by passing a coolant through the cooling tube means, and withdrawing from the uppermost reaction zone section a reaction product containing peracetic acid and a gas containing unreacted oxygen.

3,963,774

ANILINO DERIVATIVES OF CHELOCARDIN

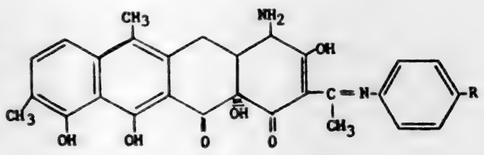
Daniel Tim-Wo Chu, Greenfield Park, and David Lyon Garmaise, Montreal, both of Canada, assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 378,305, July 11, 1973, Pat. No. 3,894,061. This application Mar. 3, 1975, Ser. No. 554,849

Int. Cl.² C07C *97/10, 101/48*

U.S. Cl. 260—519 3 Claims

1. A compound of the formula:



wherein R is hydrogen, carboxymethyl, or carboxy, or the corresponding tautomeric forms or a pharmaceutically acceptable acid addition salt thereof.

3,963,775

PROCESS FOR THE PRODUCTION OF 3-OXOGLUTARIC ACID

Nico Heyboer, Dieren, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed Feb. 26, 1974, Ser. No. 445,941

Claims priority, application Netherlands, Mar. 1, 1973, 7302863

Int. Cl.² C07C *59/12*

U.S. Cl. 260—535 P 10 Claims

1. A process for the preparation of 3-oxoglutaric acid and derivatives comprising

a. reacting ketene with phosgene in an organic solvent having a dielectric constant between 2 and 22 measured at 20°C,

b. reacting the product of (a) with a compound containing an active hydrogen atom according to Zerewitinoff, and

c. isolating the resulting product, with the proviso that the molar ratio between the total amount of ketene and the total amount of phosgene is less than 2.

3,963,776

AMINE FLUOROACYLIMIDE SURFACTANTS

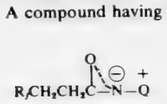
William J. Middleton, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 24, 1974, Ser. No. 482,576

Int. Cl.² C07C *103/38*

U.S. Cl. 260—561 H 7 Claims

1. A compound having the formula



wherein R_f is a straight chain fluorocarbon radical of 6 to 16 carbon atoms and Q^+ is derived from a water-soluble tertiary amine Q having from 3 to 6 carbon atoms and up to 3 oxygen atoms in the form of oxa or hydroxy groups.

3,963,777

1-POLYHYDROXY ALKYL-1,4-BENZODIAZEPIN-2-ONES

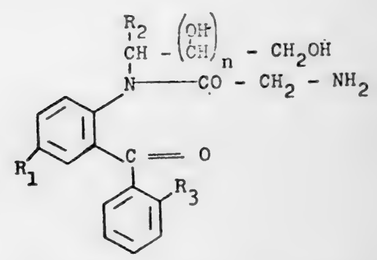
Joseph Hellerbach, Basel; Henri Hoffmann, and Guido Zanetti, both of Reinach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 397,043, Sept. 13, 1973, abandoned. This application Oct. 20, 1975, Ser. No. 624,132

Int. Cl.² C07C *103/32*

U.S. Cl. 260—562 N 1 Claim

1. A compound of the formula



wherein R_1 signifies halogen, R_2 signifies hydrogen or lower alkyl, R_3 signifies hydrogen or halogen and *n* is an integer from 1–2.

3,963,778

BASIC OXIMES AND THEIR PREPARATION

Siegismund Schütz; Otto Behner, and Friedrich Hoffmeister, all of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Germany

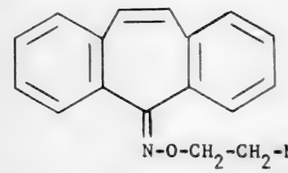
Continuation of Ser. No. 587,696, Oct. 19, 1966, abandoned. This application July 14, 1969, Ser. No. 849,539

Claims priority, application Germany, Nov. 10, 1965, 47635

Int. Cl.² C07C *131/06*

U.S. Cl. 260—566 AE 3 Claims

1. A compound selected from the group consisting of



and pharmaceutically acceptable non-toxic acid salts thereof.

3,963,779

NOVEL ORGANIC PHOTOCONDUCTIVE COMPOUND

Hirokazu Tsukahara, and Kazuhiro Emoto, both of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Japan

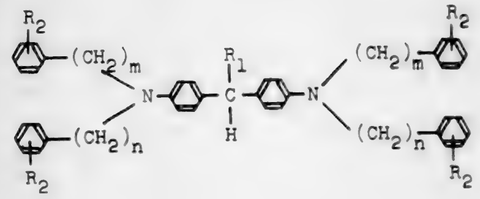
Filed Sept. 5, 1972, Ser. No. 286,140

Claims priority, application Japan, Sept. 10, 1971, 46-70618

Int. Cl.² C07G *87/28*

U.S. Cl. 260—570 R 6 Claims

1. A novel photoconductive compound having the general formula,



wherein R_1 is an alkyl group having 1–11 carbon atoms, R_2 is a member selected from the group consisting of hydrogen, methyl, nitro and halogens and n and m are integers of 1 or 2 and may be the same or different.

3,963,780

N,N'-DISUBSTITUTED-P-PHENYLENEDIAMINES

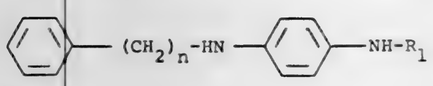
Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Division of Ser. No. 211,109, Dec. 22, 1971, Pat. No. 3,819,708, and a continuation-in-part of Ser. No. 118,517, Feb. 24, 1971, abandoned, and a continuation-in-part of Ser. No. 118,518, Feb. 24, 1971, abandoned. This application Feb. 14, 1974, Ser. No. 442,615

Int. Cl.² C07C *87/29*

U.S. Cl. 260—570.8 R **4 Claims**

1. A compound of the formula



where

n is 2, 3, or 4, and

R_1 is a straight or branched chain alkyl having 5 to 11 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

3,963,781

METHOD OF PREPARING 2-HYDROXY-3-ALKYL-2-CYCLOPENTEN-1-ONE

Hiroyuki Kyomori, Yachiyo; Kazuhiro Sasaki, Fuchu, and Mitsuhiro Takahashi, Tokyo, all of Japan, assignors to Kobayashi Perfumery Co., Ltd., Tokyo, Japan

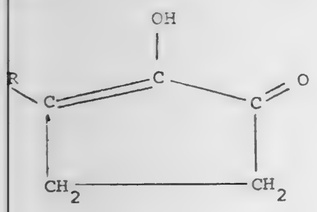
Filed Dec. 18, 1974, Ser. No. 534,000

Claims priority, application Japan, Mar. 5, 1974, 49-25518; Dec. 6, 1974, 49-139607

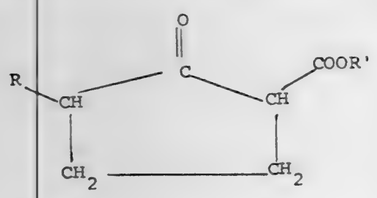
Int. Cl.² C07C *45/00*

U.S. Cl. 260—586 R **13 Claims**

1. A method of preparing 2-hydroxy-3-alkyl-2-cyclopenten-1-one whose chemical structure may be expressed by the general formula



which comprises: reacting (a) 2-alkyl-5-carboalkoxycyclopentanone having a structure represented by the general formula:



R and R' in the foregoing formulae representing lower alkyl radicals selected from the group consisting of methyl, ethyl, n-propyl and butyl,

with (b) a nitrite selected from the group consisting of potassium nitrite and sodium nitrite at a temperature between about 0° to 60°C for a period ranging between about 1 to 60 hours, the mol ratio of nitrite to reactant (a) being between 1:1 and 3:1, in the presence of (c) water in an amount of 200 to 2000 ml per mol of reactant (a) and (d) alkali selected from the group consisting of sodium hydroxide, potassium hydroxide, sodium carbonate and potassium carbonate, the mol ratio of alkali to reactant (a) being between about 1:1 and 3:1,

rendering the reaction system acidic at a temperature level lower than room temperature by adding an acid selected from the group consisting of hydrochloric acid and sulfuric acid to the reaction system in an amount of 2.3 to 11 equivalents per mol of reactant (a), and

thermally treating the reaction system for hydrolysis at a temperature between about 40° and 100°C.

3,963,782

5-ACETYL-1,2,6-TRIMETHYLTRICYCLO[5,3,2,0^{2,7}]DODECA-5-ENE

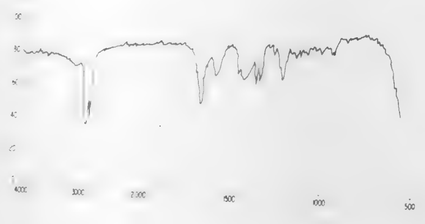
Akira Nagakura, Kawaguchi; Susumu Akutagawa, Yohohama, and Haruki Kurihara, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1974, Ser. No. 537,002

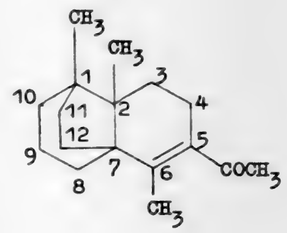
Claims priority, application Japan, Apr. 1, 1974, 49-36747

Int. Cl.² C07C *49/61*

U.S. Cl. 260—586 G **1 Claim**



1. 5-Acetyl-1,2,6-trimethyltricyclo[5,3,2,0^{2,7}]dodeca-5-ene having the formula (I)



(I)

3,963,783

4-METHYL-8-VINYL-4,7- AND -4,8-NONADIENALS

George Hermann Büchi; Hans Wüest, both of Mattapan, Mass.; Günther Ohloff, Bernex, Geneva, and Hugo Strickler, Onex, Geneva, both of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Filed June 12, 1968, Ser. No. 736,267

Claims priority, application Switzerland, June 15, 1967, 8529/67; Dec. 14, 1967, 17568/67

Int. Cl.² C07C *47/20*

U.S. Cl. 260—601 R **3 Claims**

1. As a new composition of matter, a nonadienal selected from the group consisting of 4-methyl-8-vinyl-4,7-nonadienal and 4-methyl-8-vinyl-4,8-nonadienal.

3,963,784

PROCESS FOR THE PREPARATION OF ALDEHYDES

Philip E. Pfeffer, Warrington, and Leonard S. Silbert, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 203,917, Dec. 1, 1971, abandoned, which is a division of Ser. No. 853,505, Aug. 27, 1969, Pat. No. 3,652,612. This application Dec. 19, 1973, Ser. No. 426,159

Int. Cl.² C07C *45/18*

U.S. Cl. 260—601 R **1 Claim**

1. A direct process for the preparation of aldehydes, comprising the steps of:

a. metalating with lithium diisopropylamide in a mixed solvent system of tetrahydrofuranhexane-hexamethylphosphoramide at a temperature below 0°C., a carboxylic acid selected from the group consisting of unsubstituted straight chain saturated and olefinically unsaturated straight chain hydrocarbyl carboxylic acids having from 7 to 18 carbon atoms, the point of unsaturation of said unsaturated acids being at least four carbon atoms from the carboxylic acid function, to form a dianion of said carboxylic acid;

b. reacting said dianion in the aforesaid mixed solvent system with ethyl formate at a temperature of from about −5° to 0°C. to form an alpha-aldehyde salt and lithium ethoxide;

c. warming the alpha-aldehyde acid salt in the mixed solvent system to a temperature below 55°C. to effect decarboxylation; and

d. acidifying with a dilute acid solution the product of step (c) to obtain a free aldehyde in slightly acidic media.

3,963,785

MERCAPTANS BY ADDITION OF HYDROGEN SULFIDE TO OLEFINS IN PRESENCE OF CARBON DISULFIDE

Donald H. Kubicek, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 1, 1975, Ser. No. 573,505

Int. Cl.² C07C *148/00, 149/26, 149/06*

U.S. Cl. 260—609 B **5 Claims**

1. In the preparation of mercaptans by contacting a reaction mixture of hydrogen sulfide and ethylenically unsaturated compounds in the presence of a sulfactive catalyst a method for increasing the total conversion of reactants to mercaptans comprises adding carbon disulfide to the reaction mixture in a molar ratio of hydrogen sulfide to carbon disulfide of from about 5/1 to about 30/1.

3,963,786

PHENOXYPHENYLALKOXY-, ALKENYLOXY-, ALKINYLOXY- AND BENZYLOXY-ALKOXY ETHERS

Friedrich Karrer, Basel, and Saleem Farooq, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

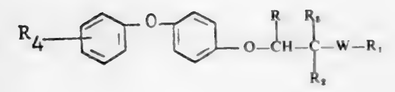
Filed Apr. 17, 1975, Ser. No. 569,040

Claims priority, application Switzerland, Apr. 18, 1974, 5364/74; Mar. 12, 1975, 3123/75

Int. Cl.² C07C *43/20*

U.S. Cl. 260—613 R **16 Claims**

1. A compound of the formula



wherein

W represents —O—,

R_1 represents C_1–C_6-alkyl, C_3–C_6-cycloalkyl or C_5–C_6-cycloalkenyl, C_2–C_4-haloalkenyl, C_3–C_5-alkynyl, C_5–C_6-alkenyl or benzyl,

R_2 represents hydrogen, methyl or ethyl,

R_3 represents hydrogen or methyl, or

R_2 and R_3 together with the chain represent a 5- or 6-membered saturated ring, and

R_4 and R_5 each represent hydrogen or methyl.

3,963,787

PROCESS FOR PRODUCING DIPHENYLS

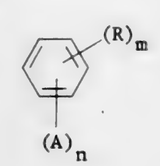
Yataro Ichikawa, and Teizo Yamaji, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 60,945, Aug. 4, 1970, abandoned. This application Jan. 24, 1973, Ser. No. 326,523

Int. Cl.² C07C *43/20, 25/00, 15/14*

U.S. Cl. 260—613 R **4 Claims**

1. A process for producing diphenyls which comprises contacting benzene or a benzene derivative expressed by the following formula



wherein R's may be the same or different and represent alkyl having 1 to 4 carbon atoms;

m is a positive integer of 0 to 4;

A's may be the same or different and represent alkoxy having 1 to 4 carbon atoms or a halogen atom;

n is a positive integer of 0 to 2; and the sum of *m* and *n* does not exceed 3, and when *m* is 0 or *n* is 0, $-(R)_m$ or $-(A)_n$ respectively represents a hydrogen atom,

with molecular oxygen, at a pressure of from 3 to 300 atmospheres calculated as the partial pressure of oxygen and at a temperature in the range of 100° to 300°C., in the presence of a catalyst comprising

1. at least one organic carboxylate of palladium (II) in an amount of 1×10^{-5} to 1×10^{-1} gram-atom, calculated as metallic palladium, per gram-mol of the benzene of the benzene derivative,

said organic carboxylate of palladium (II) being selected from palladium salts of mono- basic unsubstituted aliphatic carboxylic acids having not more than 20 carbon atoms which can be substituted by at least one of chlorine and fluorine, cyclohexane monocarboxylate, methyl cyclohexane monocarboxylate, benzoate, o-toluate, m-toluate, p-toluate, p-tertiary butylbenzoate, o-methoxybenzoate, m-methoxybenzoate, p-methoxybenzoate, chlorobenzoate and naphthoate, and

2. at least one zirconium (IV) compound in an amount of 0.01 – 100 gram-atoms, calculated as zirconium metal, per gram-atom of the palladium;

said zirconium (IV) compound being selected from the group consisting of

A. zirconium (IV) salts of oxyformic acid, oxyacetic acid, oxypropionic acid, oxy-n-butyric acid, oxy-isobutyric acid; and

B. oxychloride of zirconium (IV).

3,963,788
POLYHYDRIC ALCOHOL PRODUCTION USING RUTHENIUM ZEOLITE CATALYST

Walter M. Kruse, 1 Woodbury Court, and Leon W. Wright, 215 Oakwood Road, both of Wilmington, Del. 19803

Continuation-in-part of Ser. No. 498,969, Aug. 20, 1974, abandoned. This application Nov. 5, 1974, Ser. No. 520,926
Int. Cl.² C07C *31/18*
U.S. Cl. 260—635 C **13 Claims**

1. A process for the production of a polyhydric alcohol from a carbohydrate selected from the group consisting of monosaccharides, readily hydrolyzable polysaccharides and mixtures thereof, which comprises contacting said carbohydrate in an aqueous medium with hydrogen at a temperature in the range of about 100° to about 200°C and a pressure of at least about 100 psig. in the presence of a ruthenium-containing aluminosilicate zeolite catalyst of the molecular sieve type having pores of uniform size and having a silica/alumina mol ratio of at least about 3.

3,963,789
POLYHYDRIC ALCOHOL PRODUCTION USING RU ON CLAY SUPPORTS

Walter M. Kruse, 1 Woodbury Court, and Leon W. Wright, 215 Oakwood Road, both of Wilmington, Del. 19803

Filed Dec. 12, 1974, Ser. No. 531,972
Int. Cl.² C07C *31/18*
U.S. Cl. 260—635 C **9 Claims**

1. A process for the production of a polyhydric alcohol or mixture thereof which comprises contacting an essentially water soluble polysaccharide-containing carbohydrate in aqueous medium with hydrogen at a temperature in the range of about 100° to about 200° C., a pressure of at least about 100 psig, and a pH in the range of about 2.5 to about 4.5, in the presence of a catalyst comprising ruthenium wherein the catalyst contains about 0.1% to about 5% by weight of ruthenium, based on the total catalyst weight, an acid activated crystalline aluminosilicate clay having base exchange capacity and having a layer structure comprising a plurality of sheet-like layers, said layers including at least one tetrahedral silica layer and at least one octahedral alumina layer.

3,963,790
NON-INFLAMMABLE FILAMENTS COMPRISING ACRYLONITRILE/VINYLIDENE CHLORIDE COPOLYMERS

Paul Couchoud, Dardilly, France, assignor to Rhone-Poulenc-Textile, Paris, France

Division of Ser. No. 377,199, July 9, 1973, abandoned. This application Sept. 3, 1974, Ser. No. 502,833
Claims priority, application France, Aug. 9, 1972, 72.29009
Int. Cl.² C08L *33/20*
U.S. Cl. 260—898 **7 Claims**

1. Non-inflammable filaments of at least two incompatible copolymers of acrylonitrile and vinylidene chloride, said filaments having:

a. a sticking temperature of at least 215°C.,
b. a shrinkage of less than 32% when subjected to steam at 130°C. in the unrestrained state,
c. two distinct phases, a continuous phase and a dispersed phase, the average size of the dispersed phase particles being less than 3 microns,
d. the following composition:
   i. at least about 50 weight percent of the filament being a copolymer of about 79.5 to about 58 weight percent of acrylonitrile, 20 to about 40 weight percent of vinylidene chloride, and about 0.5 to about 2 weight percent of a comonomer which enhances dyeability, and
   ii. less than about 50 weight percent of a second copolymer of about 20 to about 50 weight percent of acrylonitrile and about 50 to about 80 weight percent of vinylidene chloride,
e. and a chlorine content of 25 to about 40% by weight.

3,963,791
PROCESS FOR TRANSFORMING HYDROCARBON POLYMERS INTO PHOTODEGRADABLE POLYMERS

Luigi Giuffre; Italo Pasquon, both of Milan; Enrico Cernia, Rome; Vittorio Pozzi, and Arthur Silvers, both of Milan, all of Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Nov. 15, 1974, Ser. No. 524,310
Claims priority, application Italy, Nov. 21, 1973, 31500/73
Int. Cl.² C08F *8/30*
U.S. Cl. 526—22 **3 Claims**

1. A process for rendering a hydrocarbon polymer photodegradable which consists in reacting the polymer with a member of the group consisting of NOCl, $NOHSO_4$, N_2O_3, NO and RO-NO wherein R is alkyl or aryl, in the heterogeneous phase in an acid environment and in the temperature range of from −80° to 100°C so that —NO groups are introduced into the polymer chain which are converted into >N—OH groups, and then subjecting the resultant polymer to hydrolysis so that the >N—OH groups are converted into photosensitive >C=O groups.

3,963,792
PROCESS FOR PRODUCTION OF CYCLIC POLYENES

Yasuhiro Takeshita, Chiba, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1974, Ser. No. 500,700
Claims priority, application Japan, Aug. 30, 1973, 48-96626
Int. Cl.² C07C *3/10, 13/00*
U.S. Cl. 260—666 A **8 Claims**

1. A polymerization process for producing cyclic polyenes having the general formula

$$\left[CH_2—CH=CH—CH_2—CH_2 \right]_n$$

wherein n is from 2 to 4, comprising polymerizing cyclopentene by contacting it with a catalyst consisting essentially of a composition of (i) trialkyl aluminum containing as the alkyl group a C_1–C_6 alkyl group, (ii) tungsten hexahalide; and (iii) allyl halide or methallyl halide at a temperature between about −20° to 100°C; in the said catalyst, the molar ratio of trialkyl aluminum to tungsten hexahalide is between about 4:1 and 15:1, the molar ratio of allyl halide or methallyl halide to tungsten hexahalide is between about 40:1 and 120:1, and the amount of tungsten hexahalide is from 0.0001 to 0.1 moles per 1 mole of cyclopentene.

3,963,793
PROCESS FOR PREPARING DEHYDRODIMERIZATION PRODUCTS

Cornelis A. M. Weterings, Stein, Netherlands, assignor to Stamicarbon B.V., Geleen, Netherlands

Filed Dec. 18, 1974, Ser. No. 534,100
Claims priority, application Netherlands, Dec. 18, 1973, 7317293
Int. Cl.² C07C *15/18, 11/12*
U.S. Cl. 260—668 R **18 Claims**

1. In a process for dehydrodimerization compounds of the formula $CH_3—R$,

wherein R represents a group that is not reactive under the dehydrodimerization reaction: wherein R contains a carbon atom which is unsaturated, wherein CH_3— and R are attached to each other by bonding of said methyl group to said unsaturated carbon atom;

comprising contacting $CH_3—R$ with a dehydrodimerization catalyst at elevated temperatures,

the improvement comprising, contacting $R—CH_3$ at temperatures between 300°–400°C with a catalytic composition comprising a catalyst on a support, wherein said catalyst is thallium trioxide, bismuth trioxide or mixtures thereof; said support comprising an oxide of an element of Group II of the Periodic Table of Elements and having a surface area of at least 20 m^2/g wherein the catalyst comprises 10–80% by weight of the support.

3,963,794
PRODUCTION OF BENZENE

John W. Myers, and William C. Lanning, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

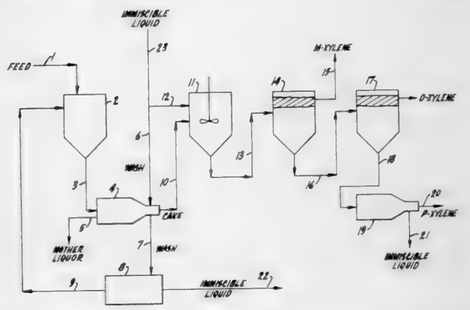
Continuation-in-part of Ser. No. 121,016, June 30, 1961, Pat. No. 3,296,323. This application Dec. 7, 1965, Ser. No. 512,100
Int. Cl. C07c *3/58, 15/04*
U.S. Cl. 260—672 NC **4 Claims**

1. In a process for hydrodealkylating alkylated monocyclic aromatic hydrocarbons in an alkylated monocyclic aromatic-containing hydrocarbon fraction wherein such fraction is subjected to thermal conversion in a reaction zone devoid of catalytically active material in the presence of hydrogen at a temperature ranging from 950°F to 1,450°F at a pressure ranging from 400 pounds per square inch to 10,000 pounds per square inch for a time ranging from 1 second to 600 seconds with the amount of hydrogen ranging from 1.0 to 20.0 moles of hydrogen per mole of the normally liquid hydrocarbon charge, the improvement which comprises increasing the yield of recoverable monocyclic aromatic hydrocarbons by introducing diphenyl into the reaction zone together with the alkylated monocyclic aromatic-containing hydrocarbon fraction, said diphenyl being in an amount ranging from 1 mole percent to 15 mole percent based on the total moles of normally liquid hydrocarbon charge to the reaction zone, and recovering the monocyclic aromatic hydrocarbons.

3,963,795
SEPARATION OF ISOMERS BY SELECTIVE MELTING IN AN IMMISCIBLE LIQUID

George R. Wood, Winfield, and Chang-Man Park, Naperville, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 20, 1974, Ser. No. 535,032
Int. Cl.² C07C *7/14*
U.S. Cl. 260—674 A **9 Claims**



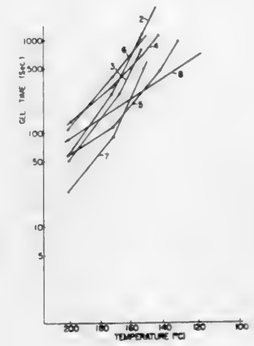
1. A process for separating at least one isomer from a mixture of isomers, said isomers having distinct melting points, which process comprises the steps of:

a. cooling said mixture of isomers to a temperature below the crystallization temperature of the isomer to be separated to obtain crystals of discrete isomers in mother liquor;
b. separating said crystals from said mother liquor;
c. displacing adhering mother liquor from said crystals and admixing said crystals with an immiscible liquid cooled to a temperature below the melting point of the isomer to be separated and having a specific gravity that is higher than the specific gravity of the liquid phase of the isomer to be separated but lower than the specific gravity of the crystalline phase of said isomers;
d. heating the mixture of step (c) to at least the melting point of said isomer to be separated to selectively melt said isomer to be separated and form said liquid phase of said isomer to be separated, said liquid phase of said isomer to be separated being distinct from both the immiscible liquid and the remaining of said crystals; and
e. separating said liquid phase of said isomer to be separated from the product of step (d).

3,963,796
EPOXY RESIN COMPOSITION HAVING EXCELLENT LATENT HARDENING CHARACTERISTICS

Hitoshi Yokono, Katsuta; Akio Nishikawa, Hitachi; Ritsuro Tada, Mitoshi, and Yasuo Miyadera, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., Japan

Filed Jan. 6, 1971, Ser. No. 104,398
Claims priority, application Japan, Jan. 6, 1970, 45-2386
Int. Cl. C08g *45/06*
U.S. Cl. 260—830 TW **8 Claims**



1. An epoxy resin composition comprising an epoxy resin selected from the group consisting of polyglycidyl ethers of bis-phenol A and epichlorohydrin, polyglycidyl ethers of a novolac resin and combinations thereof and diaminodiphenylmethane dicarboxylic acid in an amount of substantially equivalent ratio with respect to said epoxy resin.

3,963,797
ACRYLIC ELASTOMER COMPOSITIONS WITH IMPROVED AGING PROPERTIES

Rudolf Adolf Behrens, Gladstone, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 27, 1974, Ser. No. 527,672
Int. Cl.² C08G *45/04*
U.S. Cl. 260—837 R **3 Claims**

1. An acrylate elastomer composition which is a copolymer of one or more acrylic acid esters and from about 0.5 to 15 weight percent based on the elastomer composition of vinyl chloroacetate comprising from about 1 to 20 weight percent, based on the weight of said elastomer, of a compound containing at least one epoxy group and having an epoxide equivalent, defined as the grams of said compound containing 1 gram equivalent of epoxide, of from about 70 to 500.

3,963,798
THIXOTROPIC, RADIATION CURABLE COMPOSITIONS

Lewis S. Miller, Bellevue, Wash., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 304,222, Nov. 6, 1972, Pat. No. 3,839,076, which is a continuation-in-part of Ser. No. 93,855, Nov. 30, 1970, abandoned. This application June 14, 1974, Ser. No. 479,295

Int. Cl.² C08L *63/00*

U.S. Cl. 260—837 R **17 Claims**

1. A thixotropic coating composition curable by exposure to high-energy radiation produced by incorporating into a hydrophobic, essentially solvent-free resin that is liquid at ambient temperature, curable by exposure to high-energy radiation and essentially free of reactive carboxylic acid groups (1) an additive selected from the group consisting of ZnO, MgO, CaO, SrO, BaO, HgO, PbO, Pb_3O_4, CuO, CdO, NiO, Sb_2O_3, MnO_2, SnO_2, ZrO_2, Fe_2O_3, Co_2O_3, alkali metal oxides and the hydroxides corresponding thereto, said additive being dispersible in said resin in a finely divided state and (2) an acid selected from the group consisting of acrylic acid and methacrylic acid, said additive being reactive with said acid to form a metal salt thereof and water, the amount of said additive being at least 3% by weight of said composition and the amount of said acid being at least the lesser of 0.3 mole per equivalent of said additive and 0.5% by weight of said composition, the amounts of said additive and acid being sufficient to render said composition thixotropic.

3,963,799
GRAFT COPOLYMER IN POLYAMIDE POLYETHYLENE BLENDS

Howard Warner Starkweather, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1974, Ser. No. 523,467

Int. Cl.² C08L *77/02, 77/06*

U.S. Cl. 260—857 L **15 Claims**

1. A polymeric blend comprising 60 to 90 parts by weight of a polyamide selected from the group consisting of polyhexamethylene adipamide, polycaprolactam and copolymers thereof and 40 to 10 parts by weight of polyethylene, characterized in that there is present in the blend 1.8 to 8.0 parts by weight of a plastic graft copolymer consisting essentially of a trunk copolymer derived from 70 to 99 percent by weight ethylene and a comonomer providing amine-reactive sites and polycaprolactam side chains having an average degree of polymerization of about 5 to 30 and having end groups selected from the class consisting of N-alkyl amide where alkyl is in the range of 1 to 20 carbon atoms and carboxylic acid, said side chains being linked to said reactive sites through amide or imide linkages, said graft copolymer having a polyamide content of 15 to 50 percent by weight based on the weight of graft copolymer and having two DTA melting points, one at 80° to 115°C. and the other at at least 165°C.

3,963,800
THERMOPLASTICALLY PROCESSABLE ELASTOMERIC COPOLYESTER

Roland Gipp, Cologne; Erwin Müller, Leverkusen, and Wolfgang Oberkirch, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Nov. 29, 1974, Ser. No. 528,087

Claims priority, application Germany, Dec. 4, 1973, 2360287

Int. Cl.² C08L *67/02*

U.S. Cl. 260—860 **7 Claims**

1. A segmented thermoplastically processable elastomeric copolyester which consists essentially of a plurality of recurring polyalkylene terephthalate units and of higher molecular weight polyesters carrying ether groups produced by the process of gradually heating

a. 10–75% by weight of terephthalic acid dialkyl esters having 1 to 4 carbon atoms in the alkyl moieties,

b. 9–70% by weight of a glycol having 2 to 15 carbon atoms and

c. 6–70% by weight of polyesters containing ether groups and having a molecular weight of greater than 6,000 or

i. 10–60% by weight of polyesters containing ether groups and having a molecular weight of greater than 6,000 and

ii. 40–90% by weight of bis-(hydroxyalkyl) terephthalate having 1 to 15 carbon atoms in the alkyl moieties

in the presence of a transesterification catalyst to a temperature of 240°–260°C. initially at atmospheric pressure and subsequently under reduced pressure until the maximum viscosity of the reaction mixture is obtained.

3,963,801
BLENDS OF COPOLYESTERS, ETHYLENE/CARBOXYLIC ACID COPOLYMERS AND A POLYCARBODIIMIDE

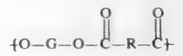
Aaron Chung Liong Su, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 23, 1975, Ser. No. 580,511

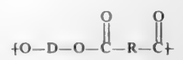
Int. Cl.² C08L *67/06*

U.S. Cl. 260—873 **12 Claims**

1. A blend containing 80 to 99.8% by weight of a copolyester consisting essentially of recurring intralinear long chain ester units and short chain ester units randomly joined head-to-tail through ester linkages, the long chain ester units being represented by the formula



and the short chain ester units being represented by the formula



where G is a divalent radical remaining after the removal of terminal hydroxyl groups from at least one long chain glycol having a molecular weight of about 400–6000; R is a divalent radical remaining after removal of carboxyl groups from at least one dicarboxylic acid having a molecular weight less than about 300; and D is a divalent radical remaining after removal of hydroxyl group from at least one low molecular weight diol having a molecular weight of less than 250, said short chain ester units being present in the polyester to the extent of between about 15 and 95% by weight of the polyester, and 0.2 to 20% by weight of a copolymer containing ethylene units and carboxylic acid containing units, said copolymer containing between about 25 and 98.5% by weight ethylene units, and about 1.5 and 30% by weight carboxylic acid containing units, said carboxylic acid units being from 0 to 10% neutralized with metallic ions, said blend also containing at least one substantially linear polycarbodiimide, said blend having a melt tension of at least 0.4 gm.

3,963,802
BLEND OF ETHYLENE COPOLYMER ELASTOMER AND A COPOLYETHERESTER ELASTOMER

Chi-Kai Shih, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed June 20, 1975, Ser. No. 588,844

Int. Cl.² C08L *67/06*

U.S. Cl. 260—873 **9 Claims**

1. An elastomeric blend of (A) an ethylene copolymer in which the comonomer is selected from the group consisting of an alpha-olefin, a nonconjugated diolefin, and a mixture of both, said copolymer having a melting point not greater than

85°C., and (B) a segmented copolyetherester consisting of 15–95% by weight of short chain ester units which can be derived from a dicaboxylic acid having a molecular weight not greater than 300 and a diol having a molecular weight not greater than 250, and 5–85% by weight of long chain ester units which can be derived from a dicarboxylic acid having a molecular weight not greater than 300 and a poly(oxyalkylene)glycol having a molecular weight of 400–6000, said copolyetherester having a melting point of at least 100°C.; the weight ratio of A:B in said blend being 1:20 to 20:1, with thw provisos that (a) when said copolyetherester contains less than 20% by weight of long chain ester units, the ratio of A:B is less than 1:2 or greater than 2:1 and (b) when said ethylene copolymer has a melting point not greater than 25°C., the ratio of A:B is not greater than 1:1.

3,963,803
ANTISTATIC ACRYLIC FIBER

Hiroyoshi Tanaka; Haruo Obara; Teruo Koseki; Hajime Machida; Michihiko Tanaka, and Shigeru Fujii, all of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

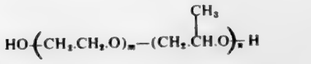
Filed Sept. 24, 1973, Ser. No. 400,207

Claims priority, application Japan, Sept. 26, 1972, 47-95734; Mar. 8, 1973, 48-26623

Int. Cl.² C08G *39/10*

U.S. Cl. 260—873 **5 Claims**

1. An antistatic acrylic fiber consisting essentially of a polymer composition which comprises: (a) a polymer (A) consisting of polyacrylonitrile only or being a copolymer containing at least 60 mol % of acrylonitrile and at least one other copolymerizable monofunctional vinyl monomer selected from the group consisting of acrylic acid, methacrylic acid or alkyl substitutes, thereof; α-substituted, β-substituted and nucleus substituted styrene; vinyl carboxylates, vinyl chloride, vinylidene chloride, vinyl acetate, vinyl benzoate and vinyl chloroacetate; 2-vinyl pyridine and 2-methyl-5-vinyl pyridine or alkyl substitutes thereof; N,N-dimethylamino methyl methacrylate, N,N-diethylamino ethyl methacrylate, alkenyl aromatic sulfonic acid, vinyl sulfonic acid, allyl sulfonic acid, methallyl sulfonic acid and salts thereof, (b) a polymer (B) a majority of which consists of a polyether-polyester block copolymer consisting of about 60–95% by weight of a compound represented by the general formula (1) and about 5–40% by weight of a linear saturated polyester based on dibasic acids and dihydric alcohols



(1)

(wherein each of m and n is 0 or a positive integer, but if one is zero the other is a positive integer, 25 $m+n$ 1000 and m 10), said linear saturated polyester being selected from the group consisting of polyethylene terephthalate, polyethylene adipate, polybutylene adipate, polybutylene terephthalate, polybutylene isophthalate, polyethylene azelate, polyethylene sebacate, polyethylene decandicarboxylate, polybutylene azelate, polybutylene sebacate, polyethylene terephthalate/adipate, polybutylene isophthalate/adipate, polyethylene adipate/azelate, polyethylene adipate/sebacate and polyethylene adipate/azelate/sebacate, said polymer composition containing about 0.3–10% by weight of said compound represented by the general formula (1), based on the total weight of the composition.

3,963,804
THERMOPLASTIC BLEND COMPOSITION

Eiichi Yonemitsu, Kashiwa; Akitoshi Sugio, Tokyo; Takanari Nawata, Tokyo; Masanobu Masu, Tokyo; Masaharu Kimura, Tokyo, and Norio Sayama, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 18, 1974, Ser. No. 462,177

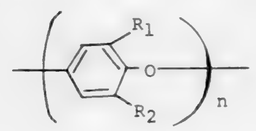
Claims priority, application Japan, Apr. 18, 1973, 48-43815

Int. Cl.² C08L *67/06;* **260** *873;876 R;876 B*

U.S. Cl. 260—873 **5 Claims**

1. In a thermoplastic blend composition having especially superior impact strength and fatigue resistance comprising

A. 15 to 80% by weight of a polyphenylene oxide having a polymeric structure expressed by the following formula



wherein R_1 and R_2 are the same or different, and each represents a methyl or ethyl group, and n is a positive integer of at least 85,

B. 16 to 75% by weight of a rubber-modified polystyrene having polymeric units of a conjugated diene monomer and polymeric units of an aromatic vinyl monomer, obtained by polymerizing the aromatic vinyl monomer in the presence of one member selected from the group consisting of a polymer of the conjugated diene monomer and a rubbery polymer which is a copolymer of the conjugated diene monomer and at least one monomer selected from the group consisting of ethylene, propylene, acrylonitrile and styrene, the content of said polymeric units of the conjugated diene monomer in the rubber-modified polystyrene being 2 to 15% by weight, and

C. 2 to 15% by weight of an aromatic polycarbonate, the improvement wherein the composition further comprises

D. 2 to 15% by weight of a high styrene rubber having polymeric units of a conjugated diene monomer and polymeric units of an aromatic vinyl monomer, obtained by copolymerizing the conjugated diene monomer and an aromatic vinyl monomer, the content of said polymeric units of the aromatic vinyl monomer in the high styrene rubber being 35 to 65% by weight,

the sum total of the proportions of the components (A), (B), (C) and (D) being 100% by weight.

3,963,805
WATER SWELLABLE POLY(ALKYLENE OXIDE)

Nan S. Chu, Hartsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 30, 1974, Ser. No. 519,268

Int. Cl.² C08L *71/02*

U.S. Cl. 260—874 **8 Claims**

1. A process for producing water swellable poly(alkylene oxide) which comprises introducing into a reaction zone an admixture of poly(alkylene oxide), having a molecular weight of at least 100,000 and an inert hydrocarbon solvent containing a free radical catalyst; adding to said reaction zone from 1% to 50% of acrylic acid, based on the weight of poly(alkylene oxide), the major portion to be added continuously, heating said reaction zone at a temperature within the range of 40°C to about 100°C for a time sufficient to produce said water swellable poly(alkylene oxide), and thereafter recovering said water swellable poly(alkylene oxide) from said reaction zone.

3,963,806
REACTION PRODUCT OF POLYALKYLENE IMINE AND EPOXY, HALO, ETHYLENIC SUBSTITUTED DIFUNCTIONAL COMPOUNDS

Ralph William Dornte, Lower Southampton Twp., Pa., assignor to ESB Incorporated, Philadelphia, Pa.

Filed May 14, 1973, Ser. No. 359,990
The portion of the term of this patent subsequent to Oct. 16, 1990, has been disclaimed.
Int. Cl.² C08L *39/04*
U.S. Cl. 260—874 **10 Claims**

1. A resinous composition having a high degree of cross-linking to attain water insolubility which comprises the reaction product of a polyalkylene imine polymer and at least two polyfunctional cross-linking compounds, one of said cross-linking compounds containing an epoxy group and an ethylenic unsaturated group and another of said cross-linking compounds containing a plurality of functional groups selected from the group consisting of a halogen group and an ethylenic unsaturated group, and said polyalkylene imine polymer being present in an amount of at least about 15% by weight, said cross-linking compound containing an epoxy group is present in an amount ranging from about 20 to about 60% by weight, said other cross-linking compound containing either a halogen group, an ethylenically unsaturated group or both is present in an amount ranging from about 10 to about by 40% by weight.

3,963,807
POLYMERS OF ACRYLONITRILE AND AROMATIC OLEFINS WHICH CONTAIN GRAFTED RUBBER

King Lau Howe, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 199,766, Nov. 17, 1971, Pat. No. 3,819,762. This application Nov. 6, 1972, Ser. No. 304,014
Int. Cl.² C08L *51/04*
U.S. Cl. 260—876 R **39 Claims**

1. A polymer composition formed by the steps comprising

A. polymerizing acrylonitrile and an aromatic olefin selected from monomers consisting of styrene; 4-methyl styrene; 4-(t-butyl)-styrene; 3-methyl styrene; 2,4-dimethyl styrene; 2,6-dimethyl styrene and 2,4-diisopropyl styrene or α-methyl styrene in combination with said monomer in the presence of a free radical initiator, adding said olefin throughout said polymerization to a reaction medium containing acrylonitrile and said olefin to continuously maintain a ratio of said olefin to acrylonitrile in the reaction medium within 25 percent of the ratio required to produce a polymer containing an average composition selected from the range of 76 to 85 percent by weight acrylonitrile and 24 to 15 percent by weight of said olefin, said polymer having a melt viscosity of 10^4 to 10^6 poises at 220°C., and an inherent viscosity of 0.3 to 1.0 deciliter per gram as measured on a 0.5 gram per deciliter solution of the polymer in gamma-butyrolactone at 35°C.; and a carbon dioxide permeability of less than 0.02 barrer;

B. polymerizing 30 to 50 percent by weight of a graft polymer consisting essentially of 61 to 85 percent by weight acrylonitrile polymerized units and 39 to 15 percent polymerized units of at least one aromatic olefin selected from monomers consisting of styrene; 4-methyl styrene; 4-(t-butyl)-styrene; 3-methyl styrene; 2,4-dimethyl styrene; 2,6-dimethyl styrene and 2,4-diisopropyl styrene or α-methyl styrene in combination with said monomer with 50 to 70 percent by weight rubber, with the acrylonitrile portion of the graft polymer in (B) being no more than 15 percent absolute by weight less than the acrylonitrile content of (A);

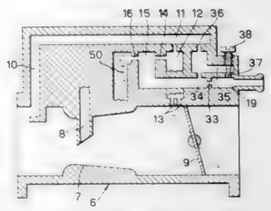
C. blending 65 to 99 percent by weight of the polymer of (A) with 1 to 35 percent by weight of polymer (B); and

D. recovering a polymer having a carbon dioxide permeability of less than 0.045 barrer.

3,963,808
CARBURETORS FOR INTERNAL COMBUSTION ENGINES

Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Dec. 13, 1973, Ser. No. 424,608
Claims priority, application Italy, Dec. 15, 1972, 33018/72
Int. Cl.² F02M *3/00*
U.S. Cl. 261—41 D **2 Claims**

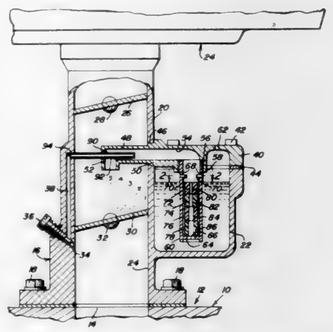


1. An internal combustion engine, in which the air-fuel mixture is produced in a carburetor and introduced through an intake duct to each induction valve opening into each explosion chamber, said carburetor comprising at least a passage port for the feeding fluid; a butterfly throttling valve for controlling said passage port for the feeding fluid; at least a first premixing chamber communicating through calibrated ports with a fuel induction duct and with a cavity, said cavity communicating with the atmosphere through a calibrated port and with the intake duct through at least a progression passageway, said progression passageway opening in the vicinity of the edge of said throttle, so as to be upstream of the edge when the throttle is in its minimum opening position, and downstream of the edge when the throttle is partially open, said premixing chamber being connected by an auxiliary duct to said intake duct downstream of said carburetor, said first premixing chamber being connected to said auxiliary duct through a restricted passageway, and including further a compensation chamber communicating through calibrated ports with said first chamber, with the atmosphere and with said auxiliary duct downstream of the restricted passageway.

3,963,809
VACUUM CONTROLLED FUEL METERING DEVICE

Alois Steiner, 250 Sixth Ave., St. Petersburg, Fla. 33701

Filed Dec. 1, 1975, Ser. No. 636,430
Int. Cl.² F02M *7/04*
U.S. Cl. 261—69 R **6 Claims**

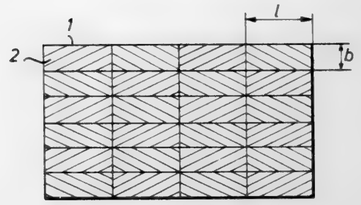


1. In combination with a carburetor body of the type including a tubular portion defining an air and fuel mixture passage extending through said body, said body defining a float chamber along one side of said passage, a fuel delivery passage communicated at one end with the interior of the fuel chamber above the fuel level therein and at the other end with the interior of said mixture passage, an upstanding body in said chamber defining an upstanding fluid passage therethrough whose upper end is in sealed communication with the inlet end of said delivery passage and whose lower end opens outwardly into said chamber below the fuel level therein, said fluid passage being provided with a centrally apertured seat in its lower end, a plurality of vertically stacked pressure differential and fluid dynamic pressure valve members disposed in said fluid passage for free independent reciprocation therein between upper limit positions and lower limit positions defined by seated engagement of the lowest valve member with said seat and each valve member with the valve member immediately therebelow, said valve members having vertical bores formed therethrough aligned with each other and the aperture in said seat, said valve members each including peripherally spaced outer side guide surface portions spaced further radially outwardly from the corresponding bore than the remaining outer side surfaces of said valve members for guiding engagement with the inner surfaces of said fluid passages and for minimum surface to surface guiding contact between said valve members and the inner surfaces of said fluid passage.

3,963,810
CONTACT BODY FOR COOLING TOWERS

Roy Holmberg, and Ove Strindehag, both of Jonkoping, Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Dec. 16, 1974, Ser. No. 533,227
Claims priority, application Sweden, Dec. 20, 1973, 7317317
Int. Cl.² B01D *47/00*
U.S. Cl. 261—112 **11 Claims**

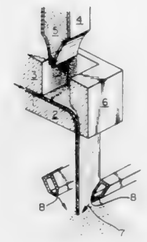


1. A contact body for water and air, comprising a plurality of contact plates, which stand vertically in parallel and are provided with folds or corrugations constituting a so-called fine structure with a fold height of 1 to 5 mm and a wave length of the folds below 12 mm, characterized in that each contact plate shows a plurality of fine-structured fields both along its extension in the horizontal direction and along its extension in vertical direction, in each field the folds being parallel relative to each other, the folds for two adjacent fine-structured fields both horizontally and vertically having opposite inclination to the vertical plane, the folds in said fields forming an angle to the vertical plane of between 65° and 88° for obtaining a good adhesion and favorable distribution of the water thereby that the surface tension force acting upon the liquid agrees in magnitude closely with the gravity force acting on the liquid.

3,963,811
PROCESS FOR PRODUCING A COMPOSITE METAL POWDER

Kiyoshi Tamura, Kawasaki, and Tohru Takeda, Sagamihara, both of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Mar. 14, 1974, Ser. No. 451,047
Claims priority, application Japan, June 4, 1973, 48-61867
Int. Cl.² B01J *2/02*
U.S. Cl. 264—7 **5 Claims**



1. A process for producing a composite metal powder comprising a nucleus of a first metal and a coating of a second metal, said process comprising

a. mixing powder having a particle size not greater than 200 mesh of a first metal with a melt of a second metal, said metal having a temperature lower than the melting point of said metal powder, the amount of powder to melt by volume not exceeding 50%,

b. flowing as a continuous stream the resulting molten mixture of said first and second metals,

c. jetting a stream of a fluid against said continuous stream of molten mixture at a rate of 30 to 200 meters per second to atomize said continuous stream of molten mixture into fine particles, and

d. cooling and solidifying the resulting fine particles to thereby obtain a composite metal powder in which the surfaces of the particles of said first metal, as the nucleus, are coated with said originally molten second metal.

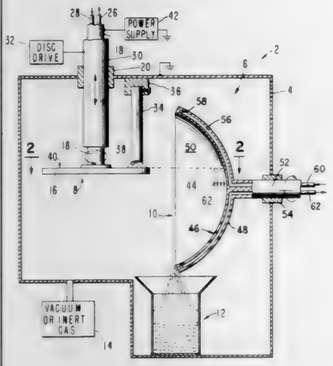
3,963,812
METHOD AND APPARATUS FOR MAKING HIGH PURITY METALLIC POWDER

Max P. Schlienger, San Rafael, Calif., assignor to Schlienger, Inc., San Rafael, Calif.

Filed Jan. 30, 1975, Ser. No. 545,635
Int. Cl.² B22D *23/08*
U.S. Cl. 264—8 **20 Claims**

1. A method for powderizing a solid metal object having a first transverse dimension comprising the steps of: rotating a disc electrode, the electrode having a second transverse dimension parallel to the first dimension which is substantially larger than the first transverse dimension; positioning the object between the axis of rotation of the electrode and a periphery thereof in close proximity with the electrode; applying an electrical potential between the object and the disc to form an arc and melt portions of the object proximate the disc; whereby molten metal droplets drop onto the disc and such droplets are thrown off the disc by centrifugal forces; impinging thrown off metal droplets on a surface having a temperature substantially less than the temperature of the molten droplets so that the droplets solidify without adhering to each

other and to the surface; moving the surface in a direction generally transverse to the direction in which the molten



droplets are thrown off the disc; and collecting the solidified droplets.

3,963,813

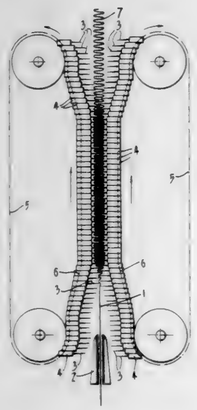
CUSPATED SHEET FORMING

Donald George Keith, Mount Eliza, Australia, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 536,291, Dec. 24, 1974, abandoned, which is a continuation-in-part of Ser. No. 307,211, Nov. 16, 1972, abandoned. This application May 12, 1975, Ser. No. 576,782

Int. Cl.² B29B *3/02*; B29C *17/03*

U.S. Cl. 264—167 **9 Claims**



1. A forming process of manufacturing an unperforated cuspated sheet comprising deforming a sheet of melt spinnable thermoplastic material by pressing against one face of a hot sheet of the material the cold outer tips of a first array of pointed pins and simultaneously pressing against the second face of the material the cold outer tips of a second array of projections so that the arrays interpenetrate in such a manner that the projections are spaced from the pins by a distance greater than the thickness of the sheet, thereby deforming the sheet so as to exhibit a plurality of hollow cusps having tips and side walls, the initial temperature of the hot sheet being in the range between the melting point of the thermoplastic material and the temperature at which the material becomes unworkable, the initial temperature of the tips of the arrays being less than the melting point of the thermoplastic material and the speed of interpenetration of the arrays being in the range above the speed at which the tips of the cusps of the product are punctured and below the speed at which the side walls of the cusps of the product are perforated, and subsequently withdrawing the pins and projections from the sheet.

3,963,814

METHOD FOR HERMETICALLY SEALING A RIGID PANEL

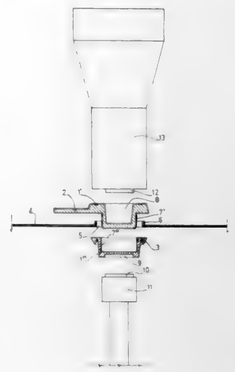
Jean Cospen, Cachan, and Bernard Baumann, Paris, both of France, assignors to Cebal GP, France

Continuation of Ser. No. 256,308, May 24, 1972, abandoned, which is a division of Ser. No. 110,964, Jan. 29, 1971, Pat. No. 3,713,956. This application June 23, 1975, Ser. No. 589,197

Claims priority, application France, Feb. 6, 1970, 70.04278

Int. Cl.² B29C *27/00*

U.S. Cl. 264—23 **5 Claims**



1. A method for hermetically sealing an opening in a panel, said panel being substantially rigid but capable of vibrating, comprising the steps of providing a pair of thermoplastic members capable of being heat sealed to said panel and adapted to be threadedly engaged one to the other, positioning each of the members in the opening whereby portions of the members engage opposite sides of the panel adjacent the opening, and threadably engaging one element with the other about an edge of the opening to generate an internal tension between said members while leaving the panel free to vibrate, applying ultrasonic vibration to said members to heat and soften thermoplastic material adjacent to the opening, and subjecting the members to a second mechanical tension by further threading one member into the other, whereby the members are heat sealed to the panel adjacent to the opening while leaving threads of said members free from located fusion.

3,963,815

METHOD OF LINING MOLTEN METAL VESSELS AND SPOUTS WITH REFRACTORIES

Toshiyuki Ezaki; Kunio Furukawa, both of Kagogawa, and Yasushige Enomoto, Himeji, all of Japan, assignors to Nippon Steel Corporation, Tokyo and Harima Refractory Co., Ltd., both of, Japan

Continuation of Ser. No. 269,425, July 6, 1972, abandoned. This application June 20, 1974, Ser. No. 481,319

Claims priority, application Japan, July 10, 1971, 46-51263

Int. Cl.² F27D *1/16*

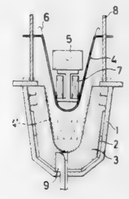
U.S. Cl. 264—30 **1 Claim**

1. A method for lining metal vessels and spouts to be used for molten metals with refractories comprising the steps of:

A. introducing a particulate refractory material composed of 30% to 70% by weight of aggregate particles having a grain size from 1 to 8 mm and 70% to 30% by weight of matrix particles not larger than 1 mm into the spout or vessel;

B. placing a molding frame having a desired lining profile on the refractory material;

C. subjecting the refractory material to vibration of a frequency from 1500 to 9000 v.p.m. and an amplitude of 0.2 to 3.0 mm to place the refractory in a fluidic state; and



D. applying a load of 1.5 to 12 tons per cubic meter based on the volume of the molding frame to the molding frame during said vibration whereby the molding frame settles to a predetermined position to displace a portion of the refractory material which fills the space thus created between the side of the vessel or spout and the molding frame and forms a homogeneous and dense lining.

3,963,816

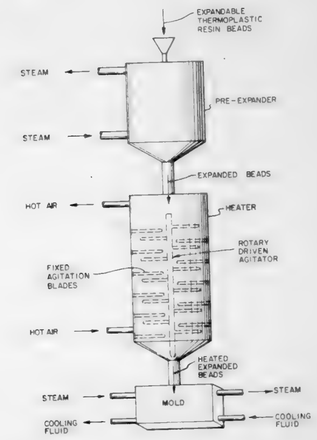
PROCESS FOR MOLDING EXPANDABLE THERMOPLASTIC MATERIAL

Stuart B. Smith, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.

Filed Sept. 2, 1971, Ser. No. 177,476

Int. Cl.² B29D *27/00*

U.S. Cl. 264—53 **11 Claims**



1. A method of preparing expanded, shaped thermoplastic articles comprising:

a. pre-expanding, by means of live steam, a synthetic thermoplastic resin in bead form containing an expanding agent having a boiling point of above 15° – 100° C. to a density of about 0.05 to 40 lbs. per cubic foot, the steam contacting the particles and resulting normally in some wetting of the resulting pre-expanded beads;

b. heating the pre-expanded beads, by means of hot substantially dry gas to a temperature above both the boiling point of the expanding agent and above the softening temperature of the thermoplastic resin beads but below the fusion temperature of the thermoplastic resin beads for a period of time sufficient to remove substantially all the moisture from the surfaces of the beads, the beads being substantially continuously agitated during any period of time during the hot gas heating period when the beads are heated to a temperature above their softening temperature;

c. transferring the heated pre-expanded beads into a closed mold;

d. forming a shaped article from the beads by heating them to at least their fusion temperature causing said beads to expand and fuse together; and

e. cooling the shaped articles to a temperature below the softening temperature of the thermoplastic material and removing the article from the mold;

the temperature of the beads being continuously maintained above the boiling point of the expanding agent from the time the beads are pre-expanded to the time they are expanded to form the shaped article.

3,963,817

SYSTEM FOR REHYDRATION OF CURING OF SHAPED ACTIVATED GREEN CERAMIC STRUCTURES

Marlyn D. Ballain, Belleville, Ill., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed July 11, 1974, Ser. No. 487,642

Int. Cl. C04b *35/10*

U.S. Cl. 264—56 **4 Claims**



1. A system for rehydration of an activated green ceramic material capable of preventing cracking or premature drying of green ceramic material which has been previously extruded into a thin-wall structure comprising immersing the green ceramic material into a fluid bath maintained at a temperature of 50°–100°C comprising a liquid wherein the specific gravity of the liquid is less than that of said green ceramic material so as to allow immersion of said green ceramic material in said liquid and further such that said material will not rise above the surface of said liquid and which is not a solvent for any ingredients in said green ceramic material for a period of from 2–16 hours to thereby permit controlled rehydration of the green ceramic without injury to the structure thereof.

3,963,818

WATER SOLUBLE CORE FOR PRESSURE DIE CASTING AND PROCESS FOR MAKING THE SAME

Tadami Sakoda, and Tetsuhiko Suzuki, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Continuation of Ser. No. 193,983, Oct. 29, 1971, abandoned. This application Mar. 27, 1974, Ser. No. 455,091

Int. Cl. C04b *35/64*; B29c *1/02*

U.S. Cl. 264—56 **2 Claims**

1. A process for preparing a water-soluble core to act as a cavity former in a pressure die casting process which comprises the steps of:

1. preparing an inorganic water-soluble salt consisting predominantly of sodium chloride or potassium chloride and having a grain size of 40 to 100 American Foundary

Standard Grain Fineness Number, said salt containing a moisture content of less than 1% in weight,
2. placing said salt from step 1 in a mold,
3. compressing said salt with a pressure between 1.8 and 4.0 tons per cm^2, and
4. removing the completed core from the mold, thereby obtaining a core characterized by a bending strength of between 200 and 230 Kg/cm^2 for use as a cavity former in a pressure die casting process.

3,963,819
METHOD OF PREPARING COLORED FIBROUS SHEET MATERIALS

Karl Kristian Kobs Kroyer, Vestre Kongevej 80, 8260 Viby J., and Torben Borup Rasmussen, Tousvej 18, 8230 Abyhoj, both of Denmark

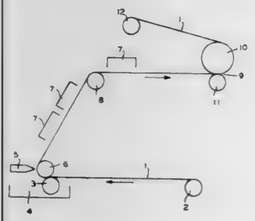
Continuation of Ser. No. 57,325, July 22, 1970, abandoned. This application July 20, 1973, Ser. No. 380,980
Int. Cl.² D06P *7/00*
U.S. Cl. 264—78 **13 Claims**

1. A method of preparing a colored fibrous sheet from an organic fiber pulp, comprising:
a. introducing an organic fiber pulp into a defibrator to form the pulp into individual fibers,
b. introducing into the defibrator an amount of dye material selected from the group consisting of dry dyes and dye solutions, the amount being sufficient to impart a desired color to the individual fibers, wherein the amount of solvent in the dye solution is less than that which would render the formed fibers tacky and cause adherence of the fibers to one another as well as to the walls and moving parts of the defibrator,
c. contacting the organic fiber pulp with the dye material to dye all individual fibers,
d. suspending the dyed fibers in a formed gaseous stream and passing the stream through a gas-permeable forming surface to form a fibrous layer wherein the dye is uniformly distributed,
e. incorporating a binder into the fibrous layer, and
f. binding the fibers of the layer into a colored fibrous sheet.

3,963,820
COATED SUBSTRATES PRODUCTION

Rene C. Blakey, Preston, England, assignor to Star Paper Limited, Feniscowles, Blackburn, England

Continuation-in-part of Ser. No. 337,239, March 1, 1973, abandoned. This application Jan. 9, 1975, Ser. No. 539,684
Int. Cl.² B29D *9/02*
U.S. Cl. 264—134 **11 Claims**



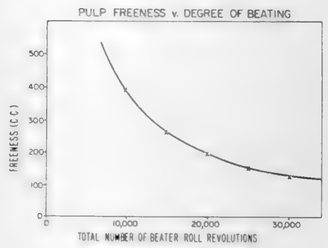
1. A continuous process for making a cast coated high gloss moulded polymeric coating on a permeable sheet substrate selected from the group consisting of paper and paperboard, which comprises the following sequential steps (a) applying to the substrate an aqueous coating comprising an aqueous emulsion or dispersion of a polymeric material having a second order transition temperature below 40°C selected from the group consisting of polyvinyl acetate, polyvinylidene chloride, copolymers of vinyl chloride and vinyl acetate, polystyrene copolymers, polyurethanes, polyacrylates, polymethacrylates, polyacrylonitriles, polyamides and polyethylene, (b) heating the aqueous coating without application of pressure to a temperature above the film-forming temperature of the polymeric material by passage through a drying zone, and thereby forming a continuous film of the polymeric material in the presence of water and subsequently evaporating water until the moisture content of the coated substrate is from 8 to 18%, based on the weight of substrate, (c) moulding the film by passing the coated substrate having a moisture content of 8 to 18% through a nip between a pressure roll exerting a moulding pressure above 10 kg/cm^2 and a heated polished moulding cylinder with the film in contact with the moulding cylinder, the moulding cylinder having a moulding temperature which is between 105° and 150°C and at which the polymeric material has a viscosity of 40 to 80 Mooney viscosity units, and maintaining the film in contact with the moulding cylinder without any relative movement between the film and the cylinder while the cylinder moves through 45° to 270°C and (d) separating the substrate carrying the resultant high gloss moulded polymeric coating from the cylinder.

3,963,821
METHOD FOR PRODUCING SYNTHETIC FIBER FOR PAPER

Hiromu Takeda; Takuichi Kobayashi; Koichiro Oka, all of Otsu, and Kazumi Tanaka, Kusatsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 488,486, July 15, 1974. This application Nov. 4, 1974, Ser. No. 520,538
Claims priority, application Japan, July 19, 1973, 48-80469; July 26, 1973, 48-83609; Aug. 2, 1973, 48-86384
Int. Cl.² B29H *7/18*
U.S. Cl. 264—147 **5 Claims**

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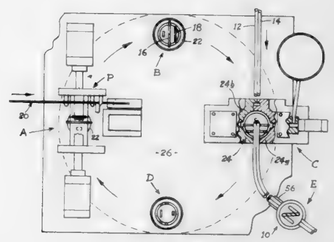


1. A method for producing a synthetic fiber capable of being fibrillated for forming paper, which comprises dissolving a composition consisting essentially of:
A. about 5–40 percent by weight of a graft copolymer consisting of
a. about 20–80 percent by weight of polyvinyl alcohol having an average degree of polymerization of about 500–3400 chemically bonded to
b. about 80–20 percent by weight of acrylonitrile, and
B. about 60–95 percent by weight of a copolymer consisting of
c. about 55–95 percent by weight of styrene, and
d. about 5–45 percent by weight of acrylonitrile at a concentration of about 8–40 percent by weight, based upon the weight of the solvent, in a solvent selected from the group consisting of dimethyl sulfoxide and dimethyl acetamide, and wet spinning the resulting solution into an aqueous spinning bath.

3,963,822
METHOD OF MOLDING ELECTRICAL LAMP SOCKETS

Henry T. Beck, Toronto, and Rudolph Koehler, Willowdale, both of Canada, assignors to Noma Lites Canada Limited, Scarborough, Canada

Filed Sept. 12, 1969, Ser. No. 857,452
Int. Cl.² B29D *3/00*
U.S. Cl. 264—251 **4 Claims**



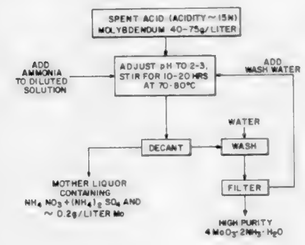
1. A method of molding lamp sockets onto paired insulated conductors comprising the steps of:
a. assembling at a first work station a pair of pointed electrical lamp contacts on a core member, said contacts being in spaced relation and having their points exposed, with margins of said contacts, when so assembled on said core, extending from said core,
b. transferring said core member with said contacts thereon to a molding station.
c. orienting in said molding station said pair of insulated conductors in a position to be penetrated by the contact points,
d. assembling said core and a plunger with other mold parts at said molding station to form a mold cavity into which said core projects and which is subsequently sealed by said plunger,
e. applying pressure to said contact points and conductors between said core and plunger to cause penetration of said contact points through the insulation of said conductors to establish electrical contact therewith, and
f. injecting molding material into said cavity to form said socket while pressure is maintained on said conductors, said conductors and said margins of said contacts being imbedded in said molding material.

3,963,823
MOLYBDENUM RECOVERY FROM SPENT ACID SOLUTION

Avinash D. Kulkarni, Montclair, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1975, Ser. No. 552,835
Int. Cl.² C01G *39/00*; **C22B** *34/34*
U.S. Cl. 423—56 **3 Claims**

1. The method of recovering molybdenum in a form substantially free from other metals from a mixed sulfuric acid-nitric acid aqueous solution having substantial quantities of molybdenum dissolved therein, and which mixed acid solution has been used to dissolve molybdenum mandrels from coiled tungsten filaments, which method comprises:
a. adding sufficient ammonium hydroxide to said acidic solution to partially neutralize same and raise the pH thereof to a value of from about 1.5 to about 3;
b. agitating the resulting partially neutralized solution while maintaining same in a heated condition at a temperature less than about 95°C, and maintaining said solution agitation and said solution heated condition for a predetermined period of time sufficient to precipitate therefrom substantially all dissolved molybdenum as ammonium molybdate complex; and



c. separating the resulting precipitate from residual solution.

3,963,824
PROCESS FOR EXTRACTING CHROMIUM FROM CHROMIUM ORES

Roland Bachelard, Lyon, France, assignor to Produits Chimiques Ugine Kuhlmann, Paris, France

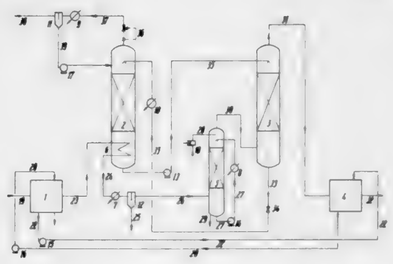
Continuation of Ser. No. 362,677, May 22, 1973. This application June 10, 1975, Ser. No. 585,812
Claims priority, application France, June 14, 1972, 72.21356
Int. Cl.² C01G *37/14*
U.S. Cl. 423—61 **9 Claims**

1. A process for extracting chromium in the form of a chromate from ore or concentrate by the suspension oxidation thereof to the chromate state which comprises suspending finely crushed ore or concentrate containing the chromium in a molten liquid bed of an alkali metal salt in the ratio of 1 part by weight of ore to 5 to 20 parts by weight of salt; subjecting the suspension to agitation with an oxygen-containing gas at a temperature and for a time sufficient to convert the chromium to alkali metal chromates; and leaching with water to separate out the water soluble chromates from insoluble residue.

3,963,825
PROCESS OF DESULFURIZING HOT GASES

Karl Bratzler, Bad Homburg; Alexander Doerges, Frankfurt am Main; Georg Kempf, Schoneck; Paul Rudolph, Bad Homburg, and Johann Schlauer, Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 23, 1972, Ser. No. 265,057
Claims priority, application Germany, June 4, 1971, 2127768
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—223 **9 Claims**



1. Process for selectively desulfurizing gases which comprises:

a. reacting liquid or solid carbonaceous fuels with oxygen-containing gases and water vapor under pressure to produce a hot raw gas under superatmospheric pressure, said raw gas substantially containing hydrogen, carbon monoxide, carbon dioxide, methane, water vapor and hydrogen sulfide;
b. cooling the hot raw gas from (a) and removing condensate;
c. removing hydrogen sulfide from the cooled raw gas from (b) by scrubbing said raw gas in packed or plate columns with a recycled, regenerated aqueous solution containing potassium carbonate as the main component with additives of alkali salts of weak inorganic acids selected from the group of boric acid, phosphoric acid and vanadium acid at a temperature near the atmospheric-pressure boiling point of the solution while maintaining a volume ratio of from 0.2 to 2.0 cubic meters of said solution per standard cubic meter hydrogen sulfide in the raw gas from (b);
d. regenerating aqueous scrubbing solution from (c) by heating; and
e. recycing regenerated solution from (d) to step (c).

3,963,826

LOW TEMPERATURE, LOW PRESSURE HYDROGEN GETTERING

D. Richard Anderson; Robert L. Courtney, and Larry A. Harrah, all of, Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Division of Ser. No. 443,077, Feb. 15, 1974, Pat. No. 2,896,042. This application Mar. 21, 1975, Ser. No. 560,846
Int. Cl.² C01B *1/26;* **B01J** *1/14*
U.S. Cl. 423—248 **9 Claims**

1. In the method of gettering hydrogen and its isotopes including deuterium and tritium, by preparing a hydrogen getter which comprises coating a hydrogenation catalyst selected from the group of metals consisting of group VIII of the periodic table and alloys thereof with an active unsaturated organic material taken from the group consisting of dimerized propargyl phenyl ether, dimerized benzylacetylene, dimerized phenylpropiolate, dimerized biphenyl propargyl ether and polydipropargyl ether of bisphenol-A polymer.

3,963,827

CATALYSIS

Gary James Keith Acres, and Barry John Cooper, both of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Oct. 26, 1972, Ser. No. 300,980
Claims priority, application United Kingdom, Oct. 28, 1971, 50144/71; Oct. 28, 1971, 50145/71
Int. Cl.² B01D *53/34*
U.S. Cl. 423—239 **37 Claims**

1. A process for the reduction of an oxide of nitrogen present in a gas including passing at an elevated temperature the gas together with a gaseous fuel through a supported catalyst comprising an inert material impregnated or coated with a mixture or alloy comprising, apart from impurities, 5 to 75 wt% ruthenium, some up to 30 wt% base metal selected from the group consisting of Al, Mg, Cr, Mo, W, Mn, Fe, Re, Co, Ni, Ti, V, Th, U, Cu, Ag, Zn, Cd, Hg, In, Tl, Bi, Sn, Pb, Sb, the lanthanides and the actinides and balance platinum in an amount not less than 5 wt%.

2. A process for the oxidation of carbon monoxide or one or more organic compounds present in a gas including passing, at elevated temperature, the gas together with oxygen through a supported catalyst comprising an inert material impregnated or coated with a mixture of alloy comprising, apart from impurities, 5 to 75 wt% ruthenium, some up to 30 wt% base metal selected from the group consisting of Al, Mg, Cr, Mo, W, Mn, Fe, Re, Co, Ni, Ti, V, Th, U, Cu, Ag, Zn, Cd, Hg, In, Tl, Bi, Sn, Pb, Sb, the lanthanides and the actinides and balance platinum in an amount not less than 5 wt%.

3,963,828

MANUFACTURE OF URANIUM DIOXIDE POWDER

Manfred Becker, Eichenhain, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 6, 1973, Ser. No. 394,861
Int. Cl.² C01G *43/02*
U.S. Cl. 423—261 **3 Claims**

1. Manufacture of UO_2 powder in which UF_6 is transformed into gaseous phase, the latter is hydrolized in water with the simultaneous addition of NH_3 and CO_2 to precipitate ammonium uranyl carbonate which is separated from the mother liquor by filtering and washing and the UO_2 is formed by decomposition and reduction of the separated ammonium uranyl carbonate by heating in a water vapor/hydrogen atmosphere; wherein the improvement comprises, after separation from the mother liquor, washing the ammonium uranyl carbonate with a solution selected from the class consisting of an ammonium hydrogen carbonate solution and NH_4OH solution, and thereafter washing the ammonium uranyl carbonate with an alcohol which reduces the surface tension of its residual water.

3,963,829

RARE EARTH MANGANESE SILICIDES

Vancliff Johnson, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed July 12, 1974, Ser. No. 488,236
Int. Cl.² C01F *17/00;* **C01B** *33/00*
U.S. Cl. 423—263 **8 Claims**

1. A ferromagnetic compound having the formula $GdMn_{1-x}Fe_xSi$ or LnMnSi wherein $0<x \leq 0.5$ and Ln is at least one of Gd, La or Y characterized by a tetragonal Cu_2Sb-type crystal structure and a Curie temperature in the range of about 275°–330°K.

2. A compound of claim 1 having the formula $GdMn_{1-x}Fe_xSi$.

3. A compound of claim 1 having the formula LnMnSi.

4. A compound of claim 3 wherein Ln is Gd.

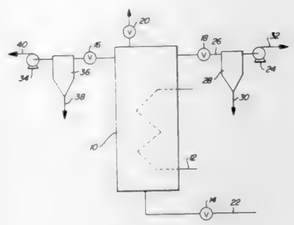
5. A compound of claim 3 wherein Ln is La.

3,963,830

THERMOLYSIS OF WATER IN CONTACT WITH ZEOLITE MASSES

Paul Haruo Kasai, White Plains, and Roland Justin Bishop, Jr., Hauppage, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 16, 1975, Ser. No. 587,387
Int. Cl.² C01B *13/00*
U.S. Cl. 423—579 **6 Claims**



1. Process for producing oxygen which comprises providing a closed reaction zone containing a three-dimensional crystalline zeolitic molecular sieve having pore diameters large enough to adsorb oxygen, said zeolite containing as non-framework structural members, trivalent metal cations having a standard electrode reduction potential more positive than −2.0, said molecular sieve containing insufficient water of hydration to stabilize the said trivalent metal cations against reaction with water, and contacting said zeolite at a temperature of at least 200°C. up to the crystal destruction temperature of the zeolite with water molecules whereby the trivalent metal cations are reduced and oxygen is evolved, and collecting the evolved oxygen.

3,963,831

PROCESS FOR THE MANUFACTURE OF ALKALI METAL HYDRIDES IN COARSE POWDER FORM

Arnold Lenz, Cologne-Stammheim, and Walter Rogler, Bonn, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Continuation-in-part of Ser. No. 263,071, June 15, 1972, abandoned, which is a continuation-in-part of Ser. Nos. 57,415, June 16, 1970, abandoned, and Ser. No. 202,654, Nov. 26, 1971, Pat. No. 3,919,405, which is a continuation-in-part of Ser. No. 730,942, May 21, 1968, abandoned. This application Dec. 5, 1973, Ser. No. 422,057
Claims priority, application Germany, Aug. 14, 1973, 2340997
Int. Cl.² C01B *6/04*
U.S. Cl. 423—646 **15 Claims**

1. In a process for the continuous preparation of an alkali metal hydride which process comprises continuously reacting a liquid alkali metal with hydrogen in the presence of pre-introduced alkali metal hydride, the improvement which comprises employing the hydrogen and alkali metal reactants and the pre-introduced and formed alkali metal hydride as the sole constituents of the reaction mixture, introducing substantially stoichiometric quantities of liquid alkali metal and hydrogen into a closed reaction vessel in amounts per unit time no larger than the corresponding amount of alkali metal hydride formed in such unit time, the hydrogen pressure in said reaction vessel being between 2 and 10 atmospheres gauge, agitating the vessel contents, and maintaining an alkali metal concentration of not more than 3 percent by weight, based on the alkali metal hydride present in the reactor, to produce alkali metal hydride in colorless coarsely crystalline powder form of 100 to 1000 micron average particle size, the particles having a layer-like and non-porous compact structure and being non-self-igniting in air.

14. Process as claimed in claim 1 wherein said alkali metal hydride produced in coarsely crystalline powder form is ground to approximately 10 to 15μ in a hydrocarbon mixture of a high-boiling liquid saturated hydrocarbon boiling in the range of about 220°C to 400°C and a lower boiling hydrocarbon boiling in the range of 20°C to 160°C, to form a finely granular alkali metal hydride, the amount of the high-boiling hydrocarbon in grams per gram of alkali metal hydride being 2.5 divided by the ground particle size in microns, and thereafter removing said lower boiling hydrocarbon.

3,963,832

LIQUID OR PASTY DENTIFRICE AND PROCESS FOR ITS PREPARATION

Shigeru Hashimoto, Suita; Eizi Ninomiya, Tokyo, and Junko Kuroda, Kyoto, all of Japan, assignors to Teijin Limited and Sunstar Dentifrice Co., Ltd., both of Osaka, Japan

Continuation-in-part of Ser. No. 435,184, Jan. 21, 1974, abandoned. This application July 24, 1975, Ser. No. 598,846
Claims priority, application Japan, Jan. 24, 1973, 48-9447
Int. Cl.² A61K *7/16, 7/26*
U.S. Cl. 424—56 **2 Claims**

1. A liquid putrefaction resistant thixotropic gel dentifrice that is stable against phase separation of solid abrasive dentifrice particle ingredients which essentially consists of:
25 to 35% by weight of water,
20 to 35% by weight of humectants, selected from the group consisting of glycerol, sorbitol, maltitol, glucose, propylene glycol, polyethylene glycol and sodium pyrrolidone carboxylate,
0.5 to 2% by weight of a member selected from the group consisting of sodium lauryl sulfate, sodium N-lauroyl sarcosinate, α-olefin sulfonate, sodium 2-hydroxyalkyl sulfate, sodium laurylether sulfate, sodium coconut monoglyceride sulfate, sodium coconut monoglyceride sulfonate, a sodium salt of a monoester of lauroylethanolamide sulfosuccinic acid, polyoxyethylene fatty acid esters such as polyoxyethylene sorbitan monopalmitate, polyoxyethylene sorbitan monostearate, or polyoxyethylene stearate having a degree of polymerization of at least 25, and a polyoxyethylene polyoxypropylene block copolymer,
0.3 to 2% by weight of a polysaccharide having a number average molecular weight of not less than 100,000 and the molecule of said polysaccharide containing D-glucose, D-mannose, D-galactose and D-glucuronic acid in the molar ratio of about 3:3:1:2, and
20 to 35% by weight of solid particles of abrasives, selected from the group consisting of dicalcium phosphate dihydrate, calcium pyrophosphate, anhydrous dicalcium phosphate, insoluble sodium methaphosphate, hydrated alumina, calcium carbonate, magnesium carbonate, magnesium oxide, and silica, whereby said thixotropic gel dentifrice flows easily under low pressure and with good flowability, and when extruded loses its flowability upon removal of extrusion pressure while retaining the shape as extruded.

3,963,833

ANTIPERSPIRANT COMPOSITION AND METHOD CONTAINING A DIHYDRO-BENZOFURAN AND AN ASTRINGENT METAL SALT

Salvatore Joseph DeSalva, Somerset, and Christopher H. Costello, Millington, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 262,146, June 2, 1972, which is a continuation-in-part of Ser. No. 106,587, Jan. 14, 1971, Pat. No. 3,775,538. This application June 27, 1974, Ser. No. 483,792
Int. Cl.² A61K *7/34, 7/36, 7/38*
U.S. Cl. 424—68 **16 Claims**

1. An antiperspirant composition comprising 3-phenyl-3-carbo-(di-lower alkylamino)-lower alkoxy-2,3-dihydrobenzofuran or a salt thereof selected from the group consisting of hydrohalic, sulfuric, sulfurous, acetic, phosphoric, boric, nitric, lactic, gluconic, and carbonic acid salts and mixtures thereof, and an antiperspirant metal salt selected from the group consisting of aluminum chlorhydrate, aluminum chloride, aluminum sulfate, aluminum sulfamate, aluminum sulfonate, zinc phenolsulfonate, zinc sulfate, zinc chloride, zirconium oxychloride, zirconium chloride, zirconium sulfate, alkaline earth metal chloride, and alkaline earth metal sulfate and mixtures thereof, in which the proportion of the 3-phenyl-3-carbo-(di-lower alkylamino)-lower alkoxy-2,3-dihydrobenzofuran compound to the antiperspirant metal salt is from 1:2 to 1:50 and wherein the total of said dihydrobenzofuran compound and said antiperspirant metal salt in the composition is from 1 to 50%, and the balance being a cosmetic vehicle.

3,963,834

PHARMACEUTICAL COMPOSITIONS FOR THE TREATMENT OF HYDROPIC CONDITIONS

Rolf Kuhn, Manheim-Waldhof; Klaus Hardebeck, Ludwigshafen (Rhine); Helmut Henemann, Heidelberg, and Knut Osmers, Viernheim, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldorf, Germany

Filed Apr. 18, 1975, Ser. No. 569,635
Claims priority, application Germany, May 15, 1974, 2423550
Int. Cl.² A61K *31/56*
U.S. Cl. 424—240 **24 Claims**

1. A pharmaceutical composition for treating hydropic conditions, comprising diuretically effective amounts of

a. at least one member of the group consisting of 5-(4-chloro-5-sulfamoyl-2-thenylaminophenyl)-tetrazole and the pharmacologically compatible salts thereof

b. at least one member of the group consisting of 3-(3-oxo-17β-hydroxy-4,6-androstadien-17β-yl)-propionic acid-γ-lactone and the pharmacologically compatible salts of 3-(3-oxo-17β-hydroxy-4,6-androstadien-17α-yl)-propionic acid,

and a pharmaceutically acceptable carrier.

3,963,835

FERMENTED FLOUR AND METHOD OF PREPARATION

Alfred J. Gryczka, Sarasota, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

Continuation of Ser. No. 438,749, Feb. 1, 1974, abandoned. This application Apr. 24, 1975, Ser. No. 571,232

Int. Cl.² A23L *1/10*; **A21D** *2/08*; **A23L** *1/23*

U.S. Cl. 426—18 **5 Claims**

1. The method for fermenting sugars in flour to provide an acid flour which comprises:

a. fermenting at a temperature between about 21.1°C and 45°C for between about 12 to 24 hours a mixture of a flour selected from rye and wheat flours and water with a concentrate of a non-toxic *Lactobacillus* which has been cultured while maintaining the pH between about 5.0 and 6.0 to produce a concentration of at least about 1×10^8 cells per ml as a single species of *Lactobacillus* before being mixed in the flour and allowing the fermentation mixture pH to drop due to the formation of lactic acid and acetic acid from the sugars in the fermentation mixture; and

b. drying the fermentation mixture in air at a temperature between about 45°C and less than about 200°C to a moisture content of less than about 14 percent by weight of the mixture so as to produce a finely divided flour.

3,963,836

PREPARATION OF YOGURT AND QUARK

Alec Frank Henson, Twickenham, England, and Gerard Marcel Marius Bret, The Hague, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 358,441, May 8, 1973, abandoned. This application Jan. 3, 1975, Ser. No. 538,426

Claims priority, application United Kingdom, May 10, 1972, 21793/72

Int. Cl.² A23C *19/02*, *23/00*

U.S. Cl. 426—40 **2 Claims**

1. Process for the preparation of whipped quark having at least 200% unaided overrun comprising the steps of

a. pasteurizing milk at a temperature of from about 55 to 80°C for about one half of 1 minute to about 30 minutes,

b. cooling the pasteurized milk to a temperature of about 5°C to 50°C,

c. filtering the cooled pasteurized milk through a semi-permeable membrane which is permeable with respect to mineral salts and has a rejection characteristic of at least 0.8 with respect to milk proteins at a pressure of from 1 to 50 kg/cm² to obtain a protein-rich residue separated from a mineral salt-rich filtrate,

d. discontinuing the filtration when the volume of the residue is from 25 to 80 volume percent of the original volume of the milk, said residue containing from about 4% to about 15% protein,

e. adjusting the temperature of the residue to 20° to 35°C,

f. inoculating the residue with 0.1 to 5 weight percent of a quark culture lactic acid starter,

g. incubating the inoculated residue for a period from 12 to 24 hours to a pH of about 4.5 to coagulate milk proteins,

h. discontinuing further inoculation when coagulation is substantially complete and removing any whey separated, and

i. whipping the coagulum obtained to an overrun of at least 200%.

3,963,837

PREPARATION OF CHEESE FROM ULTRAFILTERED MILK

Jean-Louis Joseph Maubois, 35 Rennes; Germain Pierre Charles Gabriel Mocquot, 78 Versailles, and Louis Jean Vassal, 78 Jouy-en-Josas, all of France

Continuation-in-part of Ser. No. 53,002, July 7, 1970, abandoned, and a continuation-in-part of Ser. No. 299,837, Oct. 24, 1972, and a continuation-in-part of Ser. No. 321,125, Jan. 5, 1973, Pat. No. 3,914,435, said Ser. No. 299,837, is a continuation-in-part of Ser. No. 53,002, , said Ser. No. 321,125, is a continuation-in-part of Ser. Nos. 53,002, and Ser. No. 299,837,. This application Feb. 27, 1974, Ser. No. 446,392

Claims priority, application France, Feb. 28, 1973, 73.07117

Int. Cl.² A23C *19/02*

U.S. Cl. 426—40 **6 Claims**

1. A method for making a cheese from milk, which comprises:

separating said milk into a first liquid filtrate component and a second retained liquid retentate component by contacting said milk with a semi-permeable membrane, the average pore diameter of which is from 3 to 30 mμ, at a pressure of from 1 to 50 kg/cm², said first liquid filtrate component passing through said semi-permeable membrane and said second liquid retentate not passing through said semi-permeable membrane, said second liquid retentate having a higher concentration of proteins than said first liquid component, said semi-permeable membrane and said pressure as set forth above being selected so that the lactose and mineral salts in the aqueous phase of the milk pass through the semi-permeable membrane in substantially the proportions they appear in said aqueous phase of said milk;

maintaining and continuing contact of said second liquid retentate at said pressure and under agitated conditions adjacent said membrane until a filtrate has been separated in substantial amount, and a liquid milk retentate is obtained having protein, lactose, and mineral salt contents substantially equal to that known to exist in a desired organoleptically acceptable cheese;

partially drying said second liquid retentate and adding lactic starter thereto at a temperature less than 13°C;

drying said partially dried retentate containing said starter; and

rehydrating said dried retentate and transforming said rehydrated product into cheese by the addition of rennet thereto.

3,963,838

METHOD OF OPERATING A QUARTZ FLUIDIZED BED REACTOR FOR THE PRODUCTION OF SILICON

H. S. N. Setty; Carl L. Yaws, both of Dallas; Bobby Ray Martin, Plano, and Daniel Joseph Wangler, Irving, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 24, 1974, Ser. No. 473,033

Int. Cl.² B05D *7/00*

U.S. Cl. 427—213 **3 Claims**

1. A method of operating a quartz wall fluidized bed deposition reactor for depositing silicon on a bed of silicon seed particles comprising the steps of:

forming a bed of silicon seed particles in said reactor;

charging said reactor with an inert gas stream;

heating said reactor to a deposition temperature between 950°–1250° C;

gradually removing said inert gas stream and charging said reactor with a gaseous reactant stream comprised of silicon chloride and/or a chlorosilane, said reactant stream maintaining said particles in fluidized suspension;

maintaining said deposition temperature for a predetermined length of time, whereby deposition of said silicon material on said quartz wall does not exceed a thickness of 2 mils;

gradually removing said reactant stream and charging said reactor with said inert gas;

cooling said reactor to a temperature between 30–600° C whereby silicon material deposited on said quartz reactor wall shatters and peels from said wall;

3,963,840

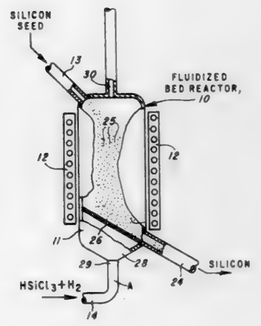
CEMENT LASTING THE SIDE AND HEEL PORTIONS OF A SHOE ASSEMBLY

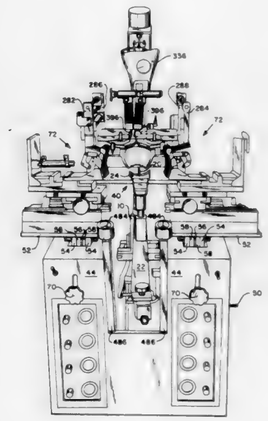
Walter Vornberger, Tewksbury, Mass., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed May 6, 1974, Ser. No. 467,522

Int. Cl.² B05C *11/10*, *5/02*

U.S. Cl. 427—284 **3 Claims**





reheating said reactor to said deposition temperature;

again gradually removing said inert gas stream and charging said reactor with said gaseous reactant stream; and charging said reactor with said gaseous reactant stream;

maintaining said deposition temperature; and

continuously adding new silicon particles to said bed while removing from said reactor larger silicon particles upon which sufficient silicon material is deposited without reactor breakage.

3,963,839

METHOD FOR THE PREPARATION OF THIN LAYERS OF TUNGSTEN AND MOLYBDENUM

Helmut Freller, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 29, 1974, Ser. No. 501,660

Claims priority, application Germany, Sept. 14, 1973, 2346394

Int. Cl.² C23C *11/02*

U.S. Cl. 427—251 **5 Claims**

1. Method for the preparation of thin layers of a heavy metals selected from the group consisting of tungsten and molybdenum on a highly temperature-resistant substrate comprising:

a. heating a heavy metal oxide selected from the group consisting of tungsten VI oxide and molybdenum VI oxide under high vacuum to form an evaporated metal oxide;

b. contacting said evaporated metal oxide with a temperature-resistant substrate heated at a temperature sufficient to decompose said evaporated metal oxide whereby said metal oxide is decomposed at the vicinity of or at the surface of said substrate into a solid heavy metal phase and a gaseous oxygen phase, said heavy metal phase being deposited as a thin layer on said substrate; and

c. removing said gaseous oxygen phase from said evaporated metal oxide as it is formed.

2. A method of applying cement in the corner between a portion of an upper margin and the corresponding portion of an insole periphery comprising: supporting a shoe assembly comprised of a last having the upper mounted thereon and the insole located on its bottom; initially retaining a cement applying member in an inner position spaced inwardly from said corner; thereafter yieldably urging the cement applying member outwardly under relatively high pressure to move the cement applying member into said corner; thereafter yieldably urging the cement applying member outwardly under relatively low pressure to retain the cement applying member in said corner; and thereafter moving the cement applying member lengthwise of the shoe assembly while it is retained in said corner by being yieldably urged outwardly under relatively low pressure.

3,963,841

CATALYTIC SURFACE PREPARATION FOR ELECTROLESS PLATING

Morris Anschel, Carmel, and Stephen Anthony Shear, Greenfield Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 6, 1975, Ser. No. 539,206

Int. Cl.² C23C *3/02*

U.S. Cl. 427—304 **13 Claims**

1. A catalyst solution for making surfaces receptive to electroless deposition of adherent metal layers consisting essentially of:

a complex of a salt of a precious metal of period 5 and 6 of group VIII of the periodic table with dimethyl sulfoxide; at least a stoichiometric amount based on the group VIII salt of a group IV metal salt capable of reducing the precious metal ion to an elemental form, the group IV metal being selected from the group consisting of tin, titanium and germanium; and an organic solvent.

3,963,842
DEPOSITION OF COPPER

Christian Sivertz, London, Canada, and Anthony J. Basilone, Guilford, Conn., assignors to London Laboratories Limited Co., Woodbridge, Conn.

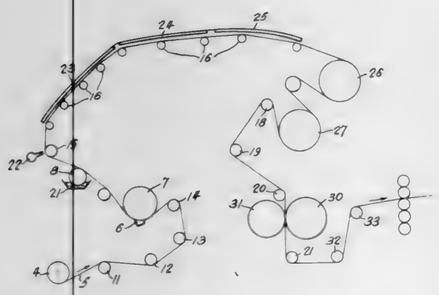
Continuation-in-part of Ser. No. 481,332, June 20, 1974, abandoned. This application Nov. 6, 1974, Ser. No. 521,338
Int. Cl.² B05D 3/04, 3/10
U.S. Cl. 427—305 13 Claims

1. In a process for the deposition of metallic copper on a catalytically activated surface by disproportionation of cuprous ions in an aqueous solution to effect deposition of metallic copper on said surface, the improvement which comprises rapidly reducing cupric tetraamino ions in aqueous solution substantially completely to cuprous diammino ions and thereafter effecting controlled disproportionation of the resultant cuprous ions by adding an activator-modifier, which activator-modifier brings about the deposition of metallic copper principally on said catalytically activated surface.

3,963,843
PRODUCTION OF COATED PAPER

John R. Hitchmough, Baie d'Urfe, and Clyde Arthur Wetmore, Cornwall, both of Canada, assignors to Domtar Limited, Montreal, Canada

Filed Jan. 10, 1974, Ser. No. 425,101
Int. Cl.² B05D 3/12
U.S. Cl. 427—361 9 Claims



1. A method of producing a coated paper having a finished surface of high smoothness and improved printability and glueability comprising coating a fibrous cellulosic web with an aqueous coating composition consisting essentially of a major proportion of an inorganic filler, a minor proportion of a thermoplastic alkali-swelled water retentive synthetic resin binder and a small amount of a release agent, gradually drying said coated web substantially uniformly to a moisture content of not more than 6% and to obtain a relatively uniform distribution of binder through the coating layer, thereafter directly passing said dried coated web through a pressure nip with said coating layer in contact with a finishing roll having a surface heated to a temperature of between 200° to 300°F, and discontinuing contact of said web with said finishing roll immediately past said nip, said small amounts of release agent being sufficient to prevent sticking of the coated surface to the heated roll surface.

3,963,844
EXTRUSION-MOLDED ARTICLE HAVING GOOD THERMAL STABILITY

Sakae Shimotsuma, Atsugi; Masahiro Hosoi, Sagamihara; Takatoshi Kuratsuji, Iwakuni; Shoji Kawase, Iwakuni, and Takeo Shima, Iwakuni, all of Japan, assignors to Teijin Limited, Osaka, Japan

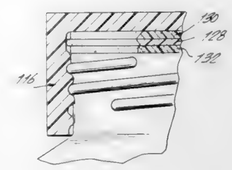
Filed June 10, 1974, Ser. No. 478,101
Claims priority, application Japan, June 13, 1973, 48-65779; Aug. 29, 1973, 48-96229
Int. Cl.² F16L 9/12
U.S. Cl. 428—36 9 Claims

1. A thermally stable unstretched extrusion-molded article comprising an extrusion-molded, unstretched substantially linear polyester in which at least 90 mol% of the total recurring units consist of tetramethylene 2,6-naphthalate units, having a density not in excess of 1.318 g/cm³.

3,963,845
HIGH FREQUENCY HEAT SEALING CONTAINER CLOSURE

Joseph Dukess, 931 Greacen Point, Mamaroneck, N.Y. 10543

Continuation-in-part of Ser. No. 222,614, Feb. 1, 1972, abandoned. This application Sept. 3, 1974, Ser. No. 502,424
Int. Cl.² B32B 31/20; B65D 53/04
U.S. Cl. 428—64 1 Claim



1. Liner material adapted to be removably mounted in a cap comprising a disc including a pair of outer layers and an intermediate layer sandwiched between said outer layers and bonded thereto, said outer layers being of a relatively nonresilient thermoplastic resinous material and containing metal powder selected from the group consisting of iron, copper and steel therein, said outer layers, due to the presence of said metal powder, being capable of being bonded to the mouth of a plastic or glass container when exposed to high frequency radiation to provide an effective bond seal and closure for the contents of the container, said intermediate layer being of a resilient, compressible foam thermoplastic rubber-like material capable when compressed of exuding a tongue beyond the peripheral edges of said outer layers to frictionally seal said liner with said cap, said liner, when uncompressed, being freely rotatable within said cap after breaking said bonded seal.

3,963,846
MARBLE-FACED COMPOSITE SURFACE ELEMENT

Patrick Terence Bourke, Earl of Mayo, Doon House, County Galway, Maam, Ireland

Filed Sept. 4, 1973, Ser. No. 394,138
Claims priority, application United Kingdom, Sept. 4, 1972, 40839/72; Jan. 19, 1973, 2795/73
The portion of the term of this patent subsequent to Mar. 27, 1990, has been disclaimed.
Int. Cl.² B32B 3/12; E04C 1/00, 2/00
U.S. Cl. 428—73 3 Claims

1. A composite surface element comprising a lamina of natural facing stone 2 to 5 millimeters in thickness bonded by adhesive to a backing sheet consisting of a multicellular resin-impregnated paper core of substantially greater thickness than

said lamina and having a skin of sheet material of greater tensile strength than said core bonded to the side of said core

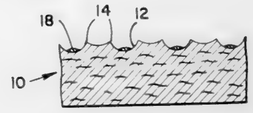


opposite said lamina, the cell walls of said multicellular paper core being perpendicular to the plane of the sheet.

3,963,847
SURFACE TEXTURE FOR FIBROUS BOARDS

Fred C. Norgard, Somerville, N.J., assignor to Johns-Manville Corporation, Denver, Colo.

Division of Ser. No. 241,161, April 5, 1972, Pat. No. 3,870,540, which is a continuation-in-part of Ser. No. 49,325, June 24, 1970, abandoned. This application Dec. 23, 1974, Ser. No. 539,195
Int. Cl.² B32B 19/00
U.S. Cl. 428—147 8 Claims



1. A fibrous board having a decorative, randomly textured surface on one face comprising:
a water laid compressed mat of entangled fibers having one surface containing surface graders produced by a method comprising:
a. forming a water laid lap of entangled fibers;
b. substantially uniformly distributing a layer of discreet particles of a foamed synthetic organic thermoplastic resinous material on one surface of the water laid lap of entangled fibers such that most of the particles abut one another before pressing the wet lap;
c. pressing the particles into the wet lap to embed the particles in the wet lap; and
d. heating the wet lap to reduce the volume of the foam material and leave said craters in the surface which produce a unique random surface texture;
with substantially all of said craters containing a small volume of said synthetic organic thermoplastic resinous material, and, said board containing in those areas where said particles did not abut, fibrous areas positioned between adjacent craters, the fibrous areas possessing a substantially rougher exterior surface than the walls of the craters.

3,963,848
FLEXIBLE COATED SHEET MATERIAL

John Bentley, Maidenhead; Brian Robert Letchford, Flackwell Heath, and Thomas Whitehead Stafford, Hyde, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 15, 1974, Ser. No. 451,691
Claims priority, application United Kingdom, Mar. 26, 1973, 14348/73
Int. Cl.² B32B 3/00
U.S. Cl. 428—172 5 Claims

1. A decorative sheet material comprising a flexible sheet material provided on its decorative surface with a flexible coating such that the decorative sheet material is sufficiently flexible to allow it to be rolled up for storage without damage to said coating, said flexible coating having a thickness in excess of 0.0025 centimeters and being an organic material which is curable on exposure to actinic light, said organic material being a blend of a thermoplastic polymer and one or more ethylenically unsaturated monomers which are capable of being polymerised by free radical addition polymerisation in the presence of a photosensitive catalyst on exposure of the blend to actinic light, the coated sheet being rolled up in the absence of actinic light whereby when the coated sheet is unrolled and attached to a wall or other surface so exposing the coating to actinic light a less flexible coating on said flexible sheet results.

3,963,849
FIREPROOF PRODUCT USING MAGNESIUM OXYCHLORIDE CEMENT

Henry Clark Thompson, Saratoga, Calif., assignor to Thompson Chemicals, Inc., Palo Alto, Calif.

Division of Ser. No. 194,557, Nov. 1, 1971, Pat. No. 3,778,304, which is a continuation-in-part of Ser. No. 811,616, March 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 589,808, Oct. 27, 1966, abandoned. This application Sept. 17, 1973, Ser. No. 397,835
Int. Cl.² B32B 3/28, 5/18, 17/00
U.S. Cl. 428—182 7 Claims

1. An article of manufacture comprising a burnable porous substrate impregnated substantially throughout its cross section with a fireproofing amount of foamed magnesium oxychloride cement formed by mixing aqueous magnesium chloride having a specific gravity of between 21.5° and 22.5° Baume with between 5 and 6.5 pounds magnesium oxide per gallon of aqueous magnesium chloride and a frothing agent reactive with said mixture to produce bubbles, in an amount between 2 and 40% of the weight of the substrate.

6. An article of manufacture comprising glass fibers and a fireproofing amount of foamed magnesium oxychloride cement made by mixing aqueous magnesium chloride having a specific gravity between 21.5° and 22.5° Baume with between 5 and 6.5 pounds magnesium oxide per gallon of aqueous magnesium chloride and a metallic frothing agent reactive with said mixture to produce bubbles, said cement being present in an amount between 2 and 40% of the weight of the glass fibers.

3,963,850
ADHESIVE FORMULATION IMPROVED WITH SOLID FILLERS

Richard C. Doss, Bartlesville, and Faber B. Jones, Nowata, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 29, 1970, Ser. No. 76,608
Int. Cl.² C08K 7/12
U.S. Cl. 428—286 2 Claims

1. A laminate consisting of at least one substrate of porous web-like material bonded to at least one other web-like substrate by an adhesive composition consisting essentially of a carboxylated styrene-butadiene and at least one of casein and soy bean protein adhesives said composition having incorporated therein up to about 5 percent by weight of a high surface area asbestos filler material.

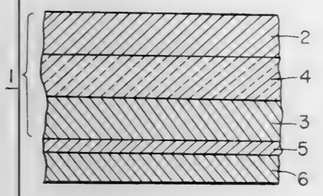
3,963,851
PAPER FOR ADHESIVE STICKERS AND THE LIKE

Takashi Toyoda, Ibaraki, Japan, assignor to Kabushiki Kaisha Oji Yuka Goseishi Kenkyujo, Tokyo, Japan

Continuation of Ser. No. 273,964, July 21, 1972, abandoned. This application Oct. 9, 1974, Ser. No. 513,473
Claims priority, application Japan, Aug. 6, 1971, 46-59485
Int. Cl.² B32B 3/26, 5/18
U.S. Cl. 428—305 5 Claims

1. A stock paper for adhesive use comprising, in combination as a laminated structure, a papery layer of a synthetic-resin film having a filler content of 8 – 20% by volume of the papery layer and having a void content of from 20 to 60

percent, a substrate layer of a synthetic-resin film having a filler content of 0.5 – 8% by volume of the substrate layer and having a void content of from 2 to 30 percent and having a surface to adhere to a backing paper and at least one intermediate layer of a synthetic-resin film interposed between the



paper layer and the substrate layer, each of said papery substrate layers being monoaxially stretched to an elongat of at least 3.5 times and said intermediate layer being ... ally stretched, said filler content and void content of the ... pery layer being higher than the filler content and void content of the substrate layer.

3,963,852

CLAY-COATED RECORD MATERIAL OF IMPROVED IMAGE DURABILITY

George Baxter, Font Hill, Canada, assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Continuation of Ser. No. 357,261, Aug. 4, 1973, abandoned, which is a continuation-in-part of Ser. No. 125,075, March 17, 1971, abandoned. This application Mar. 6, 1975, Ser. No. 555,742

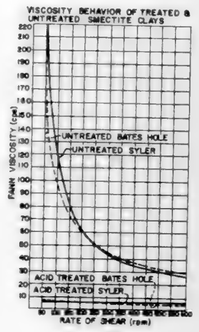
Int. Cl.² B41M *5/00, 5/12*

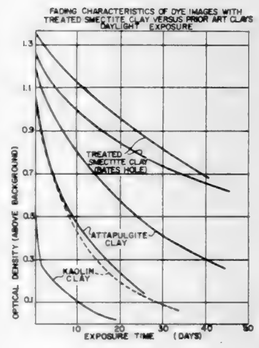
U.S. Cl. 428—325 **26 Claims**

1. Record material for forming a colored image of improved resistance to fading on imagewise contact with an image-forming material consisting essentially of an electron-donating colorless dye precursor compound, comprising a support carrying a uniform even distribution throughout a recording area thereof of a multitude of finely divided particles of a clay consisting essentially of at least about 15% by weight of montmorillonite clay mineral having an expanding three-layer lattice molecular structure exhibiting when analyzed in the presence of benzyl ether of Michler's hydrol by X-ray diffraction at least a discernible peak at a 2 θ value of 5.6–5.7, a sufficient proportion of said molecular structure having been irreversibly chemically altered to impart substantially Newtonian viscosity behavior to an aqueous suspension containing at least about 15% by weight of said clay particles.

18. The method of making a record material useful for producing images having improved resistance to fading on contact with an organic electron-donating dye precursor compound reactive to produce color with an electron-acceptor solid comprising the steps of:

1. Contacting a clay consisting essentially of at least about 15% by weight of montmorillonite clay mineral having an expanding three-layer lattice molecular structure with an aqueous solution of an acid effective to alter the molecular structure of said clay for a time of at least about one hour but less than the time required to so alter the molecular structure of said clay that on examination by X-ray diffraction in the presence of benzyl ether of Michler's hydrol no discernible peak appears at a 2 θ value of about 5.6–5.7,
2. Dispersing said acid-treating clay in an aqueous medium to give a concentration therein of said acid-treated clay at least about 10% by weight,
3. Applying said clay dispersion to a supporting web or sheet to give a uniform even distribution of clay particles





at one surface of said web or sheet, and

4. Drying the resultant web or sheet.

3,963,853

PRESSURE SENSITIVE TRANSFER SHEET

Nigel Hughes, and Andrew Hunter Morris Renfrew, both of Manchester, England, assignors to Wiggins Teape Limited, London, England

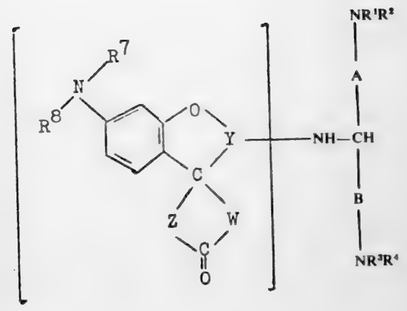
Filed Dec. 27, 1972, Ser. No. 318,774

Claims priority, application United Kingdom, Dec. 30, 1971, 60730/71

Int. Cl.² B41C *1/06;* **B41M** *5/16*

U.S. Cl. 428—326 **26 Claims**

1. A transfer sheet, for use in a pressure-sensitive copying system, comprising a support material having on one surface thereof a coating composition containing at least one colourless colour former, wherein said colourless colour former comprises a single organic compound having the structural formula:

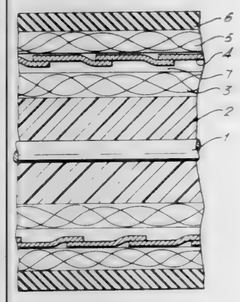


wherein Y represents a phenylene or naphthylene or substituted phenylene or naphthylene radical, Z represents a 1,2-phenylene or substituted 1,2-phenylene radical, W represents oxygen or a group of the formula -NR^6- wherein R^6 is selected from the group consisting of hydrogen, lower alkyl, aryl, substituted lower alkyl, and substituted aryl radicals, A and B each independently represents a 1,4-phenylene residue, R^1, R^2, R^3 and R^4, each is selected from the group consisting of lower alkyl, substituted lower alkyl, aralkyl, substituted aralkyl, cycloalkyl and substituted cycloalkyl radical or forms part of a divalent organic chain which together with the attached nitrogen atom constitutes a heterocyclic ring, R^7 and R^8 each independently represents a lower alkyl or substituted lower alkyl radical, and the -NH- group is either attached to Y or is attached as one substituent or the sole substituent of R^6 when said R^6 is a substituted aryl radical, said organic compound thus containing within the same molecule at least two potential chromophoric systems, each of said potential chromophoric systems being capable of being activated substantially immediately when the compound is brought into contact with one or more acidic activating substances.

3,963,854
SHIELDED CABLES

Eliot Patrick Fowler, Studland, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 5, 1974, Ser. No. 529,721
Int. Cl.² H01B *9/02*
U.S. Cl. 174—36 **10 Claims**

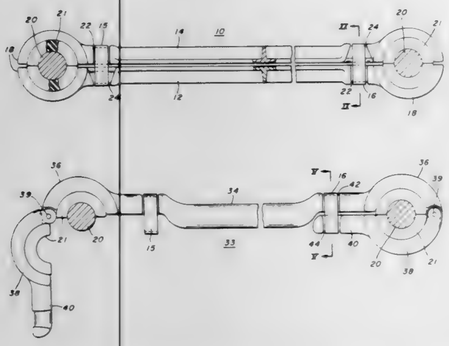


1. A shielded electrically conducting cable comprising at least one inner electrical conductor electrically insulated from a surrounding wire braid, and a lengthwise flexible metal tube surrounding the wire braid with an annular clearance between the tube and the braid.

3,963,855
BOLTLESS SPACER CLAMP

Ronald G. Hawkins, and Charles R. Russ, both of Massena, N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 5, 1975, Ser. No. 610,527
Int. Cl.² H02G *7/12*
U.S. Cl. 174—40 R **11 Claims**



1. A boltless device for spacing at least two parallel, spaced-apart conductors, the device comprising rigid clamping structures adapted to be secured to the two conductors, with at least one of the structures having two outwardly facing planar ledges inclined toward the other clamping structure when the structures are placed together in face-to-face relation, two resilient clips adapted to secure said clamping structures together on said conductors at the location of the inclined planar ledges, each of said clips being made from flat metal, resilient stock and having a configuration which provides a center portion disposed to engage one of the clamping structures, and two integral leg portions extending from the center portion to engage the other clamping structure and having planar configurations that tend to prevent rotation of the clip on the one clamping structure, the other of said clamping structures having the inclined planar ledges, the leg portions of said clip having opposed, planar extensions adapted to extend over and respectively engage the inclined planar ledges.

3,963,856
FLEXIBLE, CORRUGATED, PLASTIC TUBING HAVING CONDUCTIVE HELICAL BEAD

Lennart L. Carlson, Tustin, and Douglas I. Hoiberg, Fullerton, both of Calif., assignors to Steward Plastics, Inc., Orange, Calif.

Filed Nov. 25, 1974, Ser. No. 526,671
Int. Cl.² F16L *11/12*
U.S. Cl. 174—47 **12 Claims**

1. In a flexible, corrugated, electrically conductive, plastic tubing, the combination of:

a. a flexible, thin-walled synthetic organic plastic tube;

b. an electrically conductive, helical bead on and secured to the outer surface of said tube;

c. said bead being a flexible synthetic organic plastic having mixed therewith an electrically conductive particulate material;

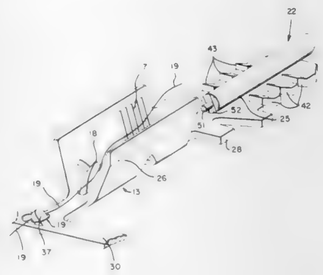
d. said bead, and the outer surface of said tube intermediate the convolutions of said bead, constituting the outer surface of said tubing; and

e. the inner surface of said tube constituting the inner surface of said tubing.

3,963,857
SMALL MAGNET WIRE TO LEAD WIRE TERMINATION

Charles Edward Reynolds, Mechanicsburg, and Charles Harry Weidler, Lancaster, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 12, 1974, Ser. No. 505,422
Int. Cl.² H01P *5/08*
U.S. Cl. 174—84 C **3 Claims**



1. In combination, a terminal connecting together a magnet wire having a first insulation coating thereon to a larger diameter wire having an inner conductor and a second insulation thereon and comprising:

barrel means having an irregularly shaped inner surface formed integrally therewith;

said barrel means comprising insulation piercing tangs formed integrally with said barrel means and extending inwardly into said barrel means;

said insulation piercing tangs offset with respect to said irregularly shaped surface along the axis of said barrel means;

said magnet wire positioned within said barrel means across said irregularly shaped inner surface thereof;

said larger diameter wire, including its insulation coating, positioned within said barrel means across said irregularly shaped inner surface and across said insulation piercing means;

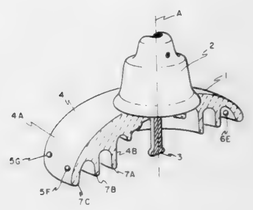
said terminal being crimped to cause the insulation of said larger diameter wire to force said magnet wire into said irregularly shaped inner surface to rupture said first insulation coating thereon to create an electrical connection between said magnet wire and said barrel means;

said crimped terminal further positioning said insulation piercing means through the insulation of said larger diameter wire and into electrical contact with said inner conductor thereof.

3,963,858
HIGH-VOLTAGE ELECTRICAL INSULATOR ADAPTED TO PREVENT FLASHOVER

Tsen-Chung Cheng, Los Angeles, Calif.; Gerald L. Wilson, Wayland, and David C. Jolly, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 21, 1975, Ser. No. 570,147
Int. Cl.² H01B *17/42*
U.S. Cl. 174—141 R **16 Claims**



1. An insulator that comprises, in combination: electrically insulating shell means having a convex upper surface and a concave lower or under surface formed in such a way that an arc in the course of flashover with respect to the shell means must occur by moving generally radially across one surface and to the other surface; and a plurality of discrete, circumferentially-spaced conductive regions disposed at one said surface and arranged in a configuration and sufficient in number to intercept an arc in the event of incipient flashover from proceeding radially past the discrete conductive regions at the one said surface of the shell, thereby to prevent said flashover, the entire exposed portion of each discrete conductive region having a smooth surface to reduce electric field intensification and to reduce the prospect of initiating an arc.

3,963,859
SUPPORT ASSEMBLY FOR ELECTRIC HEATING UNIT

Robert E. Petersen, Grafton, and Roger F. Chesebro, Bay Village, both of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

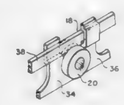
Filed Oct. 28, 1975, Ser. No. 626,412
Int. Cl.² H05B *3/02*
U.S. Cl. 174—148 **5 Claims**

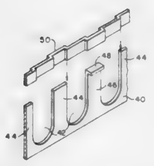
1. A support member carrying insulating bushings for supporting an open coil electrical heating element, comprising:

a strip having a number of spaced-apart, open-sided cutouts with intervening webs;

an insulating bushing in each said cutout, said bushings each having a circumferential groove seating in the cutout to hold said bushing against transverse disengagement from the strip;

a locking bar closing the open sides of said cutouts to hold said bushings against upward disengagement from said cutouts, said locking bar lying on alternating sides of successive webs along the length of the strip; and



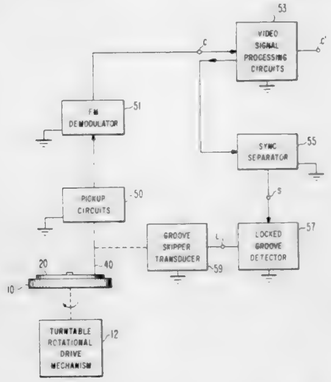


at least two of said webs including end margin portions displaced to overlie the top edge of said bar at those web locations to hold said bar against disengagement upwardly away from the cutouts.

3,963,860
LOCKED GROOVE DETECTION AND CORRECTION IN VIDEO DISC PLAYBACK APPARATUS

Thomas William Burrus, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 12, 1974, Ser. No. 522,817
Int. Cl.² G11B *3/28*; **H04N** *5/76*
U.S. Cl. 178—6.6 R **11 Claims**



1. In video disc playback apparatus for use with a video disc having a spiral information track containing representations of recorded composite video signal information inclusive of regularly recurring sync signals with sync signal recording locations non-radially aligned in successive convolutions of the spiral track; said playback apparatus including a signal pickup for sensing said information representations along said spiral information track as said disc is rotated, and means coupled to said signal pickup for providing a composite video signal output corresponding to the recorded information sensed by said signal pickup, wherein normal operation involves the sensing of said information representations along successive convolutions of said spiral track in a regular progression toward one spiral extremity; the combination comprising:

means, responsive to the composite video signal output of said output providing means, for separating said sync

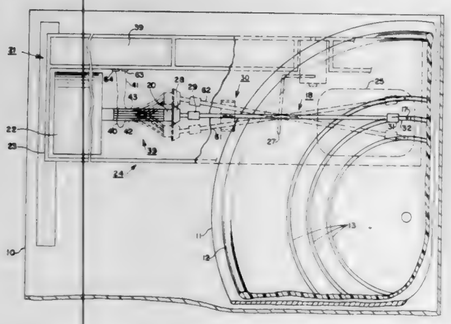
signals from other components of said composite video signal;
a voltage controlled oscillator;
a phase detector, responsive to said separated sync signals and to an output of said oscillator, for developing an output having an amplitude and a polarity indicative of the magnitude and sense, respectively, of departures, if any, from a predetermined phase relationship between said separated sync signals and said oscillator output;
a low pass filter responsive to said phase detector output for developing an error voltage;
means for applying said error voltage to said oscillator to vary the frequency thereof in a direction tending to oppose said departures from said predetermined phase relationship; and
means for developing an output pulse indicative of a disruption of said regular progression by a shift of the radial location of said signal pickup sensing in a direction away from said one spiral extremity;
said output pulse developing means including a voltage comparator responsive to said error voltage and providing said output pulse only when said error voltage is indicative of a given sense of departure from said predetermined phase relationship and reaches an amplitude exceeding a selected threshold level.

3,963,861

DISC RECORD GROOVE SKIPPER APPARATUS

Horatio Nelson Crooks, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 12, 1974, Ser. No. 522,818
Int. Cl.² H04N *5/76*
U.S. Cl. 178—6.6 R **8 Claims**



1. In a playback system for recovering prerecorded information encoded in successive convolutions of a continuous spiral groove disposed on the surface of a rotatable disc record, said playback system including a supporting structure; a groove skipper apparatus comprising:

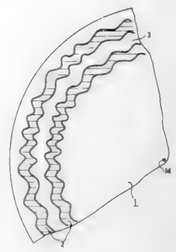
1. a replaceable pickup arm unit which comprises:
   A. a signal pickup having a stylus adapted for entry in the spiral groove of the rotating disc record during playback, and normally subject upon the entry to retention within the groove by the walls of the groove during the disc record rotation so that the information encoded in successive convolutions of the spiral groove is recovered in sequence by the stylus; and
   B. a pickup arm having the signal pickup fixedly secured at one end thereof;
2. means for selectively changing the groove convolution in which the pickup stylus is retained comprising:
   A. a support member for releasably securing an end of the pickup arm remote from the signal pickup, wherein the support member permits arcuate motion of the pickup arm in order to accommodate vertical and lateral motion of the signal pickup stylus in the disc record spiral groove during playback;
   B. a bimorph element having a first end and a second end which are fixedly secured respectively to (*a*) the support member, and (*b*) the supporting structure, wherein the bimorph element is not subject to the arcuate motion of the pickup arm, and wherein the bimorph element, in response to a control signal application thereto, deflects the support member in order to change the groove convolution in which the pickup stylus is retained;
   C. means for generating the control signal; and
   D. means mounted on the supporting structure for electrically coupling the control signal generating means to the bimorph elements.

3,963,862

RECORD CARRIER FOR A TELEVISION SIGNAL

Gijsbertus Bouwhuis, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1974, Ser. No. 530,164
Claims priority, application Netherlands, Sept. 25, 1974, 7412634
Int. Cl.² H04N *5/76*
U.S. Cl. 178—6.6 R **5 Claims**



1. A record carrier of the type on which a television signal is stored in tracks in the form of a radiation modulating information structure of constant track width recorded along an average track path, which structure modulates the phase of a read beam of radiation, the stored television signal comprising a first carrier wave which is frequency modulated with the luminance information, and further carrier waves which are modulated with additional information, the improvement wherein the tracks of the information structure are continuous tracks which in the plane of said structure exhibit undulation transverse to the average track path, the amplitude, frequency and phase characteristics of said undulation being determined by both the first and the additional modulated carrier waves, the undulation amplitude being substantially smaller than the period of the track structure in a direction transverse to the average track path, the tracks comprising a means for providing a difference in optical pathlength in the read beam which is approximately equal to an odd multiple of a quarter of the wavelength of the read beam of radiation.

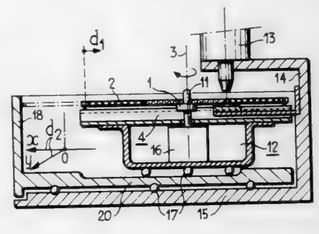
3,963,863

DEVICE FOR READING OUT INFORMATION RECORDED UPON A SUBSTRATE

Roland Malissin, and Lucien Lainez, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Filed Mar. 14, 1974, Ser. No. 451,371
Claims priority, application France, Mar. 19, 1973, 73.09717
Int. Cl.² G11B *17/00*
U.S. Cl. 178—6.6 R **14 Claims**

1. A device for the optical read-out of a recording substrate, constituted by a flexible disc comprising at least one track carrying information, said device comprising: a base; a pick-up comprising a radiant energy source and a head, receiving said radiant energy and projecting a reading spot on said track, said pick-up being fixed on said base and having no contact with said substrate; a plate designed to receive said substrate and comprising a driving gear of said substrate, and means for displacing said substrate, designed for maintaining said spot on said tract during the reading out, said driving gear being movable in relation to said base, under the action of said displacing means, and having a travel long enough to make it possible to retract said substrate beyond said pick-up; said



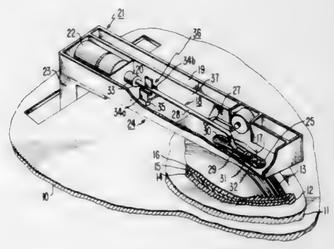
driving gear comprising a shaft with a shoulder against which said flexible disc seats, and a set of two flat supporting surfaces inclined in relation to a plane perpendicular to axis of rotation of said shaft; said displacing means comprising first means for producing a rectilinear displacement on the plate, comprising said gear and said inclined surfaces, so that said spot can remain on said track during the rotation of said disc, and second means producing a rectilinear displacement enabling said substrate to be retracted, whatever the position of said substrate be.

3,963,864

PICKUP ARM ASSEMBLY

Jack Selig Fuhrer, Princeton Jct., N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 522,813, Nov. 12, 1974, abandoned. This application Aug. 12, 1975, Ser. No. 603,805
Int. Cl.² G11B *3/02*
U.S. Cl. 178—6.6 R **3 Claims**



1. In a playback system for recovering prerecorded signals from a disc record, said system including a signal pickup having a tip adapted for entry in a spiral groove of a disc record mounted on a surface of a rotatable turntable, said signal recovery being effected by said signal pickup when relative motion between said pickup and the record groove is established, said playback system also including a supporting structure and signal processing circuitry; a pickup arm assembly comprising:

a pickup arm having first and second ends; said pickup arm including a first straight portion terminating at said first end and disposed in a direction substantially parallel to said turntable surface when said pickup tip is positioned for disc groove entry;

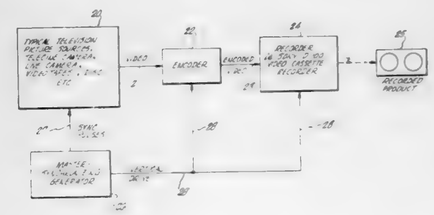
means, secured to said supporting structure, for providing pivotal support for said pickup arm at said first end;
a signal pickup holder, said signal pickup being supported at one end of said holder;
means, secured to said second end of said pickup arm, for providing pivotal support for said signal pickup holder at an end of said holder remote from said one end; said signal pickup holder extending between said remote end and said one end in a direction substantially parallel to said straight portion of said pickup arm;
said pickup arm also including a further portion angled toward said turntable surface when said pickup tip is positioned for disc groove entry, and serving to locate said second end of said pickup arm, during record playback, in a position establishing an angle between (a) the record surface, and (b) a line joining the signal pickup tip and the effective pivot point provided for said signal pickup holder by said second-named pivotal support providing means, which angle is significantly smaller than the angle that would be established, during record playback, between (A) the record surface, and (B) a line joining the signal pickup tip and the effective pivot point provided for said signal pickup holder by said second-named pivotal support providing means if said pickup arm and said holder extended in a straight line between said pickup arm first end and said holder one end.

3,963,865

ANTI-PIRACY METHOD AND SYSTEM

Jimmie D. Songer, Hollywood, Calif., assignor to Trans-American Video, Inc., Hollywood, Calif.

Filed June 4, 1975, Ser. No. 583,649
Int. Cl.² H04N *3/16, 1/44;* **H04M** *1/70;* **H04N** *5/78*
U.S. Cl. 178—7.1 **23 Claims**



1. A method of encoding video signals in a manner to allow display of video picture information on a television receiver or monitor and to hamper playback thereof from a video tape made therefrom on a video tape recorder, comprising the steps of

generating a composite video signal train from a video information source, said composite video signal train comprising video picture information and a vertical interval, the vertical interval including in time a first equalizing pulse interval, a vertical sync pulse interval, a second equalizing pulse interval, and horizontal pulses, and
encoding the vertical interval of said composite video signal train by changing at least a portion of said vertical sync pulse interval after approximately the first one and one half pulses of said vertical sync pulse interval, said change being insufficient to prevent display upon receipt of the resulting encoded composite video signal train by a television receiver or monitor, but being sufficient to prevent normal operation of vertical circuit means of a video tape recorder to thereby hamper proper recording by said recorder on tape of necessary synchronizing information for proper playback of the tape.

3,963,866

SYSTEM FOR DETERMINING THE CONTOUR OF A PLANE FORM

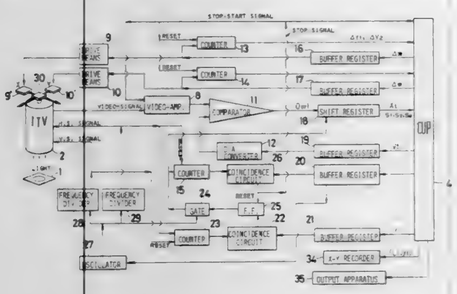
Kazuo Tanie, Yokohama, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Sept. 11, 1973, Ser. No. 396,326

Claims priority, application Japan, Sept. 11, 1972, 47-91574

Int. Cl.² H04N *5/38*

U.S. Cl. 178—7.2 **15 Claims**



1. Method for generating distance signals signifying the distance along a line from a determined starting location of contour points on the contour of a plane form on a background surface, said surface having a first scannable characteristic value at points inside said contour and a second scannable characteristic value at points outside of said contour, comprising in combination, the steps of scanning said line in a predetermined direction and creating a plurality of sampling signals each having a first or second characteristic signal value in correspondence to the value of said scannable characteristic at a corresponding one of a plurality of sampling points spaced at predetermined equal intervals along said line, whereby a change from said first to said second characteristic signal value occurs following the one of said scanning signals created at the one of said sampling points immediately preceding the first of said contour points in said predetermined direction along said line; creating incremental distance signals at predetermined incremental distances each less than one of said predetermined equal intervals along said line from said one of said sampling points until a so-created incremental distance signal has said second characteristic signal value; and computing said distance signal as a function of the number of sampling signals preceding said one of said sampling signals and the number of incremental distance signals following said one of said sampling signals.

3,963,867

METHOD FOR INDICATING A FREE-LINE STATE IN A BINARY DATA COMMUNICATION SYSTEM

Hendrik Cornelis Anthony Van Duuren, Wassenaar, and Herman da Silva, Voorburg, both of Netherlands, assignors to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie, Netherlands

Continuation-in-part of Ser. No. 340,345, March 12, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,474

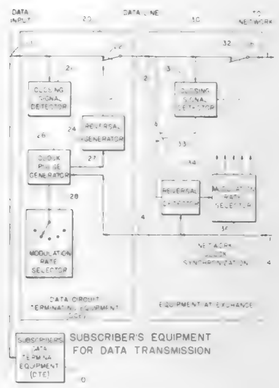
Int. Cl.² H04L *11/08*

U.S. Cl. 178—69 G **9 Claims**

1. In a two-way data telecommunication system between a subscriber's station and an exchange, a method for indicating to the exchange a free-line state to said subscriber's station, comprising:

A. detecting a closing signal to the data communication at both said subscriber's station and said exchange,

B. generating and transmitting a fixed pattern of "1" and "0" bits per byte in response to the detection of said closing signal at said subscriber's station, and



C. detecting said fixed pattern of bits at said exchange for indicating a free and unfaulted line to said subscriber's station.

3,963,868

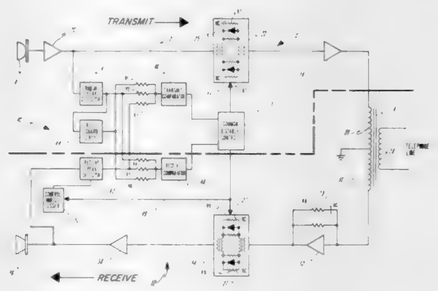
LOUDSPEAKING TELEPHONE HYSTERESIS AND AMBIENT NOISE CONTROL

Uno Randmere, Victor, and Morris A. Suntop, Rochester, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed June 27, 1974, Ser. No. 483,591

Int. Cl.² H04M *9/08*

U.S. Cl. 179—1 HF **7 Claims**



1. For use in a loudspeaking telephone system including transmit and receive channels, a control circuit for switching between said transmit and receive channels, comprising:

a. selection control means responsive to transmit and receive seizure commands for effectively selecting between said transmit and receive channels, respectively, by reducing the gain of the unselected channel,

b. input control means for producing said receive seizure commands and said transmit seizure commands, said input control means including:

c. a first means for deriving a first d.c. input control signal which varies in accordance with the signal level in the transmit channel, and a second means for deriving a second d.c. input signal which varies in accordance with the signal level in the receive channel,

d. transmit comparator means and receive comparator means for producing, respectively, receive and transmit seizure commands,

e. transmit summing junction means connected to operate said transmit comparator means, said transmit summing junction means comprising a first set of at least a first and a second summing impedances connected to a common junction point, the magnitude of impedance of said first summing impedance being larger than that of said second summing impedance, said transmit summing junction means being operative to apply said first d.c. input control signal to said junction point through said first summing impedance and to apply said second d.c. input control signal to said junction point through said second summing impedance, the respective d.c. input control signals being applied to said junction point in opposed d.c. polarity relationship to one another, and

f. receive summing junction means connected to operate said receive comparator means, said receive summing junction means comprising a second set of at least a third and a fourth summing impedances connected to another common junction point, the magnitude of impedance of the third summing impedance being larger than that of said fourth summing impedance, said receive summing junction means being operative to apply said second d.c. input control signal to said another junction point through said third summing impedance and to apply said first d.c. input control signal to said another junction point through said fourth summing impedance, the respective d.c. input control signals being applied to said another junction point in opposed d.c. polarity relationship to one another.

3,963,869

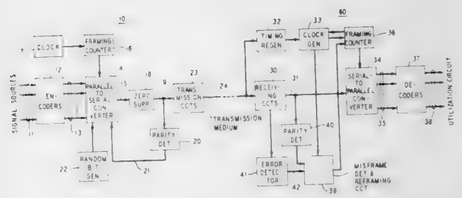
PARITY FRAMING OF PULSE SYSTEMS

James Lewis Caldwell, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 2, 1974, Ser. No. 528,727

Int. Cl.² H04J *3/06*

U.S. Cl. 179—15 BS **13 Claims**



1. A multiplex pulse transmission terminal comprising:

means for interleaving a plurality of pulse streams into a single pulse stream,

means for dividing said single pulse stream into successive frames of pulses including preselected sequences of pulses from said plurality of pulse streams,

means for inserting a randomly-valued pulse derived independently of said pulse streams into each said frame of pulses,

means for ascertaining the parity of each said frame of pulses, and

means for inserting a parity pulse in each said frame of pulses.

3,963,870

TIME-DIVISION MULTIPLEX SWITCHING SYSTEM

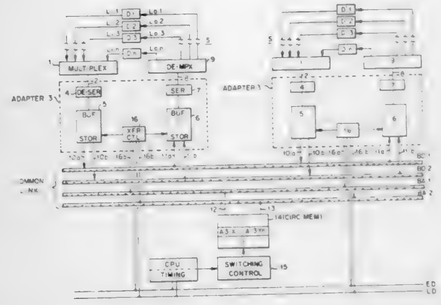
Alain Audre Couder, La Gaude, and Gerald Lebizay, Cagnes-sur-Mer, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1974, Ser. No. 446,044

Claims priority, application France, Mar. 1, 1973, 73.08009

Int. Cl.² H04J *3/00*

U.S. Cl. 179—15 AT **10 Claims**



1. A switching system for a communications network consisting of a plurality of sub-systems comprising each several devices which transmit and receive information over a transmission multiplex link and a reception multiplex link, said system being characterized in that it includes:

a link common to all sub-systems and comprising a first and a second information buses, a first and a second address buses, and a synchronization bus;

a circulating memory comprising two storage areas in which are sequentially stored the addresses of said devices forming part of different sub-systems and desiring to communicate with one another, said two storage areas being respectively connected to said two address buses to provide coordinate addresses thereto;

one adapter per sub-system to which are connected said transmission multiplex link and said reception multiplex link, and which is itself connected to said two information buses and said two address buses, said adapter comprising means responsive to the address information sent over said address buses by said circulating memory to allow information to be periodically exchanged between two of said devices forming part of two sub-systems via said two information buses.

3,963,871

ANALYSIS DEVICE FOR ESTABLISHING THE BINARY VALUE OF ASYNCHRONOUS DATA SIGNALS

Per-Olaf Thyselius, Tyreso; Burghardt Herman Josef Vollmer, Handen, and Knut Per Johansen, Huddinge, all of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 5, 1974, Ser. No. 494,701

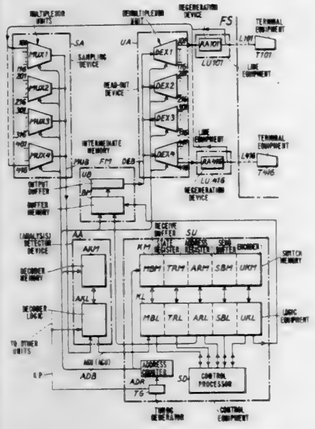
Claims priority, application Sweden, Aug. 10, 1973, 109688/73

Int. Cl.² H04J *3/02;* **H04B** *1/16*

U.S. Cl. 179—15 BA **5 Claims**

1. Apparatus for indicating the binary value of a data element which is represented by a signal switching from a first state to a second state and, after a duration of time, switches from the second state to the first state, said apparatus comprising: sampling pulse generating means adapted to receive a data element for generating sampling pulses periodically recurring at a rate such that a plurality of such pulses should occur while the signal representing the data element is in the second state, said means having output means for transferring such sampling pulses only while the signal representing the data elements is in the second state; sensing means for indicat-

ing the transition of the signal representing the data element from the first state to the second state; time interval generating means connected to said sensing means and activated thereby for generating a time interval related to a nominal duration of time the signal representing the data element should be in the second state; counting means for counting the number of sampling pulses transferred from said sampling

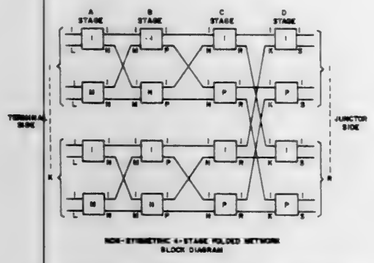


pulse generating means only when the signal representing the data element is in the second state; and binary value signal transmitting means connected to said counting means and said interval generating means for transmitting a particular binary value indicating signal at the end of the time interval generated by said interval generating means only if the number of sampling pulses counted by said counting means during said time interval is greater than a certain value.

3,963,872
NON-SYMMETRIC FOLDED FOUR-STAGE SWITCHING NETWORK

Kenneth Lavern Hagstrom, and Sushil Gajendrarai Munshi, both of Galion, Ohio, assignors to North Electric Company, Galion, Ohio

Filed June 3, 1974, Ser. No. 475,962
Int. Cl.² H04Q *3/52*
U.S. Cl. 179—18 GF **19 Claims**



NON-SYMMETRIC 4-STAGE FOLDED NETWORK BLOCK DIAGRAM

1. A non-symmetric folded four-stage switching network comprising a first stage A having K groups of switching matrices, each group being comprised of 1-M matrices, a second stage B having K groups of switching matrices, each group in said second stage being comprised of 1-N matrices, the matrices of corresponding ones of said groups in said first and second stages A, B being interconnected, a third stage C having K groups of switching matrices, each group in said third stage C being comprised of 1-P matrices, the matrices of corresponding ones of said groups K in said second and third stages B, C being interconnected thereby providing a plurality K of ABC switching groups, and a fourth stage D comprising a distribution stage having a plurality of switching matrices, each of which switching matrices in said D stage is interconnected with a matrix in each of said K groups in said C stage, and each of which switching matrices in said D stage is connected to an associated plurality of junctors to provide a folded matrix.

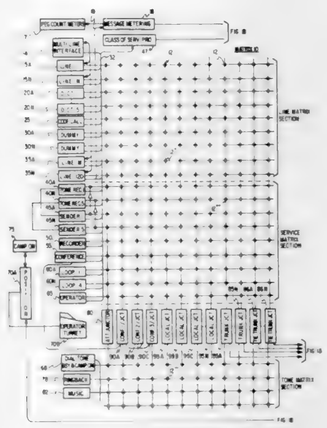
12. A method of searching for an idle path between calling and called terminals in a four-stage folded ABC+D non-symmetric switching network having AB, BC and CD links and junctors comprising the steps of:

a. searching the CD links for a pair of idle CD links which through the D-stage have an idle junctor accessible thereto and which may be connected to extend a path between the calling and called terminals;
b. searching for a path from one of the idle CD links of the pair through the BC and AB links of the ABC stages to the calling terminal;
c. closing the path to the calling terminal; and
d. searching for a path from the other CD link of the pair through the BC and AB links of the ABC stages to the called terminal.

3,963,873
LOCAL TRANSFER ARRANGEMENT FOR ELECTRONIC PRIVATE AUTOMATIC BRANCH EXCHANGE

Uwe A. Pommerening, Webster, and Glenn L. Richards, Caledonia, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Mar. 25, 1975, Ser. No. 561,745
Int. Cl.² H04M *3/54*
U.S. Cl. 179—18 BD **6 Claims**



1. In a private automatic branch exchange having a solid state switching matrix for connecting calling local stations to called local stations therethrough and including a common control for effecting said connections by a plurality of local junctors having a memory associated with said local junctors, a local transfer arrangement comprising:

holding circuit means, responsive to a local transfer indication from a transferring station connected to a transferred station by a first local junctor, for placing the transferred station in a holding status;

forwarding circuit means, responsive to said local transfer indication, for forwarding said transferring station to a second local junctor while said transferred station is in said holding status;

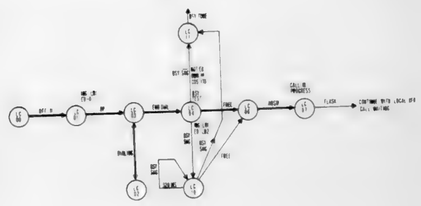
signaling circuit means, directed by said transferring station while connected to said second local junctor, for signaling a transferee station of an impending local transfer; and

connecting circuit means, responsive to receipt of an impending local transfer signal by said transferee station, for effecting a connection between said transferred station and said transferee station.

3,963,874
BUSY-TEST ARRANGEMENT FOR ELECTRONIC PRIVATE AUTOMATIC BRANCH EXCHANGE

Uwe A. Pommerening, Webster, and Glenn L. Richards, Caledonia, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Jan. 22, 1975, Ser. No. 543,042
Int. Cl.² H04Q *3/54*
U.S. Cl. 179—18 AB **15 Claims**



1. In an electronic private automatic branch exchange including a switching matrix for effecting connections between calling and called circuits, each calling and called circuit being associated with a junctor, and a common control for controlling the sequence of operations for the establishment of a call between a calling and a called circuit, the improvement wherein said commmon control includes

a memory, having a prescribed number of storage locations, for storing the number of each respective calling and called circuit associated with a call, and

means, responsive to a request for a connection from a calling circuit to a prescribed called circuit, for scanning said memory and determining whether or not the number of said prescribed called circuit is stored in said memory,

whereby an indication of the busy status of said prescribed called circuit can be determined from the contents of said memory.

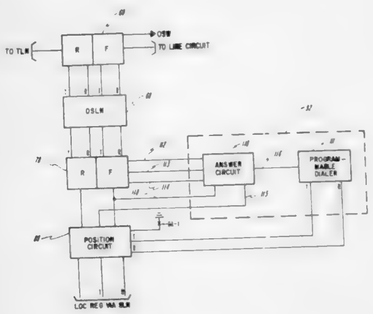
3,963,875
UNIVERSAL ANSWER ARRANGEMENT FOR A PABX

Klaus Gueldenpfennig, Penfield, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,828
Int. Cl.² H04M *3/54*
U.S. Cl. 179—27 CA **8 Claims**

1. An answer arrangement for use in a private automatic branch exchange having a plurality of trunks each with a first port for connection to a transmission path from one subscriber and a second port for connection to a transmission path to another subscriber, a switching network through which the trunks may be connected to an operator console via a position circuit in the absence of a position busy indication at the position circuit, common control means responsive to service requests from the trunks for marking a trunk for connection through the switching network and further responsive to the service requests for generating request signals, easn of the plurality of trunks having a trunk circuit means which is actuated for connecting the first and second ports to the switching network and which is deactuated for disconnecting the first and second ports from the switching network and interconnecting the two ports within the trunk, the trunk circuit means being initially actuated when its respective trunk is first marked by the connon control means, and an operator circuit means including first and second transmission pairs for connection, respectively, to the first and second ports of a connected trunk, means responsive to a request signal from the common control for connecting the loop circuit through the switching network to the marked trunk, the answer arrangement comprising:

first circuit means for overriding a position busy indication at a position circuit and for permitting a trunk to be connected to the position circuit via the switching network,



second circuit means for inhibiting the transmission of an answer supervision signal from the position circuit to the marked trunk,

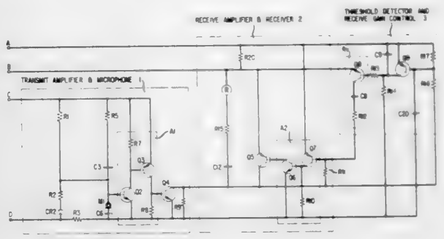
third circuit means for utilizing the existing operator circuitry for connecting the marked trunk to a designated destination, and

programmable circuit means arranged to selectively modify the designated destination.

3,963,876
AMPLIFIER CIRCUIT FOR INCREASING TRANSMIT AND RECEIVE LEVELS IN A TELEPHONE HYBRID NETWORK

Roger Edward Holtz, Indianapolis, and Roger Allen Radosevich, Noblesville, both of Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 30, 1975, Ser. No. 591,956
Int. Cl.² H04M *1/60, 1/58*
U.S. Cl. 179—81 B **18 Claims**



1. Amplifier circuitry for a telephone hybrid network comprising a speech transmit port and a speech receive port having a common terminal with said transmit port, the improvement characterized in that said amplifier circuitry comprises a first amplifier means connected to said transmit port, a second amplifier means connected to said receive port, attenuating means connected to said second amplifier means for attenuating the gain of said second amplifier means, and voice-switching means adapted to supply a control signal to said attentuating means in response to the sum of the amplitude of the speech signals at said receive port and at said

transmit port whereby the amplification of the speech signals by said second amplifier is attenuated for providing sidetone control and gain control.

3,963,877

SYNCHRONIZING SIGNAL TRANSMISSION SYSTEM

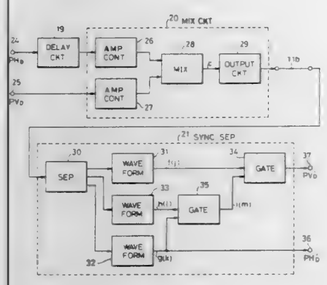
Ken Miyazaki, Tokyo, and Kenji Nakajima, Yokohama, both of Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Oct. 7, 1974, Ser. No. 512,608

Claims priority, application Japan, Oct. 11, 1973, 48-113203

Int. Cl.² H04L *7/00*

U.S. Cl. 178—69.5 TV **4 Claims**



1. A synchronizing signal transmission system comprising:

synchronizing signal generating means for generating a horizontal synchronizing signal and a vertical synchronizing signal;

controlling means for controlling the amplitudes of the horizontal and vertical synchronizing signals respectively thereby to cause the controlled amplitude of the horizontal synchronizing signal to be greater than the controlled amplitude of the vertical synchronizing signal;

mixing means for mixing the horizontal and vertical synchronizing signals controlled in amplitude by said controlling means and for producing a mixed synchronizing signal having a first voltage-level range corresponding to the pulse height of the amplitude-controlled vertical synchronizing signal in which range horizontal synchronizing pulses exist in only a period corresponding to the pulse width of the vertical synchronizing signal, a second voltage-level range corresponding to the difference between the pulse heights of the amplitude-controlled horizontal synchronizing signal and the amplitude-controlled vertical synchronizing signal under the first voltage-level range in which second voltage-level range the horizontal synchronizing pulses exist in all periods, and a third voltage-level range corresponding to the pulse height of the amplitude-controlled vertical synchronizing signal under the second voltage-level range in which third voltage-level range the horizontal synchronizing pulses do not exist in a period corresponding to the pulse width of the vertical synchronizing signal and exist in other periods;

transmission means for transmitting the mixed synchronizing signal thus produced;

first separation means for separating a signal including only the first voltage-level range from the mixed synchronizing signal thus transmitted;

second separation means for separating a signal including only the second voltage-level range from the mixed synchronizing signal thus transmitted to derive the original horizontal synchronizing signal;

third separation means for separating a signal including only the third voltage-level range from the mixed synchronizing signal thus transmitted; and

processing means for processing the output signals of the first, second and third separation means to reproduce the original vertical synchronizing signal.

3,963,878

SIGNAL INTERPRETING SYSTEM FOR FREQUENCY SELECTIVE MULTIFREQUENCY TONE DIALING

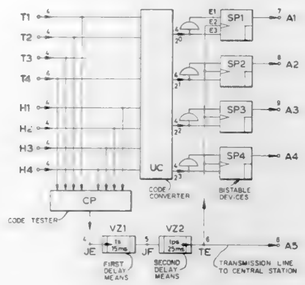
Arthur Kessler, Koppern, Germany, assignor to Telefonbau und Normalzeid G.m.b.H., Frankfurt am Main, Germany

Filed June 26, 1974, Ser. No. 483,470

Claims priority, application Germany, July 6, 1973, 2334426

Int. Cl.² H04M *1/50*

U.S. Cl. 179—84 VF **3 Claims**



1. A signal interpreting system for frequency-selective multifrequency tone dialing including

a. a code tester (CP) for determining that one and only one frequency of each of two frequency groups is received and a code converter (UC) for converting signals received in a 2×1-out-of-4 signal code into another code, said code tester and said code converter having inputs T1 to T4 and H1 to H4) supplied with signals from signal receivers during the times of reception by said signal receivers of resonant frequencies;

b. a first delay means (VZ1) supplied with an output voltage (JE) from said code tester for the duration of said signals if in a correct 2×1-out-of-4 code, said first delay means having output signals (JF) delayed for fixed predetermined periods of time (*ts*), and said first delay means being adapted to delay only the leading edges of said output signals thereof relative to the leading edges of said output voltage of said code tester and to transmit the trailing edges of said output voltage of said code code tester without delay;

c. a second delay means (VZ2) whose input are said output signals (JF) of said first time delay means (VZ1), said second time delay means having output signals (TE) which start instantly with any input and terminate after a fixed period of time (*tps*) following cessation of said output signals (JF) of said first time delay means (VZ1), said second time delay means being adapted to transmit the leading edge of said output of said first time delay means without time delay and to transmit the trailing edge of said output of said first time delay means with time delay;

d. a plurality of bistable logic elements (SP1 to SP4) supplied with de-coded information from output terminals (2^0, 2^1, 2^1, 2^3) of said code converter (UC), each of said plurality of bistable logic elements having a dynamic input (E2) supplied by said output signals (TE) of said second time delay means (VZ2) and said plurality of bistable logic elements having output terminals (A1–A4) where the inputs thereof remain normally stored and released only in response to the leading edge voltage of said output signals of said second time delay means; and

e. a transmission line connected to an output terminal (A5) of said second time delay means (ZV2) for transmitting said output signals (TE) thereof along said transmission line to a central station.

3,963,879

TELEPHONE DIAL ASSEMBLY

Gerhart F. Klaiber, Deal, and Donald Foggia, Oakhurst, both of N.J., assignors to TIE/Communications, Inc., Stamford, Conn.

Filed July 19, 1974, Ser. No. 490,076

Int. Cl.² H04M *1/50*

U.S. Cl. 179—90 K **10 Claims**



1. A telephone pushbutton dial assembly which comprises:

a. an upper frame including a plurality of apertures arranged in rows and columns and further including a downwardly extending appendage having a plurality of notches and its perimeter;

b. a pushbutton mounted for movement in each aperture, each of said pushbuttons including a plurality of shoulder portions and a singular axially extending appendage;

c. a guide plate including an appendage having the same perimeter as said upper frame appendage and including means for mounting said plate to said upper frame;

d. a plurality of longitudinal and transverse rods, rotatably mounted in a first and second plane, respectively, between corresponding opposite ones of said notches and retained in said notches when said guide plate is mounted to said upper frame, each of said rods including a plurality of appendages transverse to the longitudinal axis of their respective rod, certain ones of said appendages adapted to cause rotational movement of its associated rod through cooperative action with said shoulder portions of corresponding ones of said buttons;

e. first switching means, including a first switching board having at least a first set of switches mounted thereon cooperating with certain other of said appendages and adapted to make or break in response to the rotational movement of the rods; and

f. second switching means including,

i. a second switching board positioned in a plane parallel to and below the plane of said first switching board, said first and second switching boards having a plurality of corresponding openings each aligned with a corresponding one of said axially extending appendages,

ii. a plurality of leaf-spring switches fixedly secured to said second switching board, each of said leaf-spring switches aligned with a corresponding one of said axially extending appendages, each of said leaf-spring switches making an electrical connection between two points of electrical potential on said board, and

iii. means aligned with each of said axially extending appendages and its corresponding openings in said first and second board, and operatively connected between said appendage and its corresponding leaf-spring switch, whereby said electrical connection is broken when the corresponding push-button is depressed.

3,963,880

MOVING COIL-TYPE CARTRIDGE

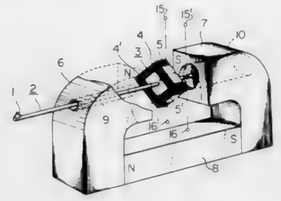
Isamu Ikeda, Tokyo, Japan, assignor to Fidelity-Research Inc., Tokyo, Japan

Filed Apr. 9, 1975, Ser. No. 566,247

Claims priority, application Japan, July 24, 1974, 49-85387; Sept. 6, 1974, 49-106568[U]

Int. Cl.² H04R *9/12*

U.S. Cl. 179—100.41 D **23 Claims**



1. An moving coil-type cartridge comprising a cantilever of a nonmagnetic material and having at an end a stylus, a bobbin made of a nonmagnetic and electrically insulative material including mutually parallel two surfaces and mounted at least adjacent the other end of said cantilever along an axis passing substantially through the center of said two surfaces, at least a pair of coils wound on said bobbin so as to have substantially parallel sections respectively disposed on each of said two surfaces and intersect one another, means of a nonmagnetic material for supporting said cantilever at a fulcrum position thereof for allowing said stylus and bobbin to rotate in synchronism with each other, a magnetic circuit which comprises a permanent magnet and a pair of pole pieces respectively arranged so that one end thereof will be magnetically coupled to each of N-pole and S-pole ends of said permanent magnet and polarized the other end will form a magnetic gap between one another, said bobbin being positioned substantially at the center of said magnetic gap so that the two parallel surfaces will oppose said the other ends of the pole pieces, respectively, and a base member of a nonmagnetic material to which said magnetic circuit is secured at least at said permanent magnet and having an electric terminal connected to both ends of said coils,

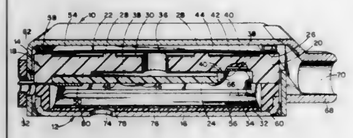
said supporting means for said cantilever being fixed to one of said pair of pole pieces so that said fulcrum will be disposed substantially on the axial line of the magnetic gap, and

said polarized end at least of the pole piece to which said supporting means is fixed having a cavity expanding in all directions around said fulcrum so that magnetic fluxes flowing in the magnetic gap through the coil bobbin will be distributed as converged in said directions so as to be away from the fulcrum, whereby said sections of the coils on one of the two surfaces of the bobbin on the side remote from the fulcrum will be disposed within the fluxes of a larger range than that of the fluxes in which the other coil sections on the side closer to the fulcrum is disposed and, when the bobbin including the coils is rotated about the fulcrum as a center, said coil sections on the side remote from the fulcrum will transverse the fluxes at a larger velocity than the other coil sections.

3,963,881
UNIDIRECTIONAL CONDENSER MICROPHONE

Freeman W. Fraim, Lexington; Preston V. Murphy, Weston, and Alan P. Woodard, Newtonville, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed May 29, 1973, Ser. No. 364,997
Int. Cl.² H04R *1/38, 19/04*
U.S. Cl. 179—111 E **21 Claims**



2. A miniature unidirectional condenser microphone having a fore and aft orientation, said microphone comprising:

a. a housing;

b. diaphragm means dividing said housing into front and rear chambers;

c. means forming a front sound inlet port for said front chamber;

d. means forming a rear sound inlet port for said rear chamber;

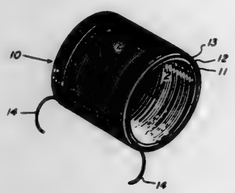
e. a continuous acoustical resistance sheet of non-absorbant, hydrophobic, sound permeable material covering said rear sound inlet port and having a thickness not in excess of 0.020 inches; and

f. means for rendering said sheet acoustically effective over an area thereof significantly greater than the area of said rear sound inlet port.

3,963,882
BORON OR GRAPHITE REINFORCED VOICE COIL AND MANUFACTURING PROCESS

Raymond M. Lewis, Burnsville, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Mar. 14, 1975, Ser. No. 558,615
Int. Cl.² H01F *5/02, 41/06;* **H04R** *1/00*
U.S. Cl. 179—115.5 VC **18 Claims**



1. A cylindrically shaped voice coil armature having a conductor helically wound into a hollow, approximately cylindrical shape, a stiffening layer coextensive and coaxial with and snugly fitted to the conductor cylinder and formed of a multiplicity of turns of graphite fiber, and a matrix bonding each of the individual conductor and fiber turns all firmly to all other adjacent conductor and fiber turns.

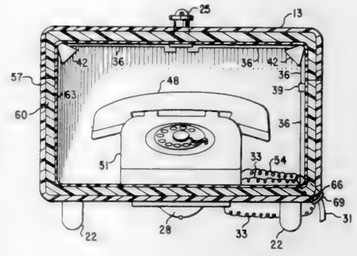
3,963,883
TELEPHONE ENCLOSURE WITH SOUND PREVENTION MEANS

Thomas S. Kulka, 200 Film Bldg., 2108 Payne Ave., Cleveland, Ohio 44114

Filed July 29, 1974, Ser. No. 492,673
Int. Cl.² H04M *1/19*
U.S. Cl. 179—179 **5 Claims**

1. An apparatus for preventing the unauthorized use for surveillance purposes of a telephone when said telephone is not in use, wherein said telephone has a base and a handset, comprising:

a. a sound inhibiting housing of sufficient size as to completely enclose said telephone base and handset, said housing including a base portion having an open upper end and a cover mating with said open upper end of said base portion thereby to define therewith an enclosure for said telephone base and handset, said base portion and said cover being constructed of material for acoustically



isolating said enclosed telephone base and handset from reception of sounds external to said housing,

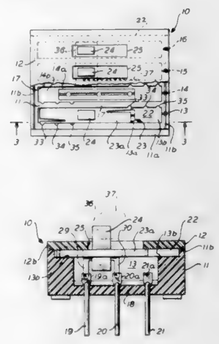
b. signal means for providing a signal to indicate when said enclosed telephone is ringing, and

c. signal generator means mounted within said housing for generating sounds within said housing when said housing is closed and said telephone is not in use, so as to prevent surveillance of those sounds in the vicinity of said housing.

3,963,884
MINIATURE MULTIPOLE DOUBLE-THROW SLIDE SWITCH

Robert William Pollock, Manchester, N.H., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Jan. 21, 1975, Ser. No. 542,727
Int. Cl.² H01H *15/02*
U.S. Cl. 200—16 D **3 Claims**

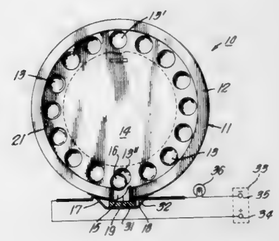


1. A miniature slide switch for integrated circuit systems comprising an insulating housing having a shallow height dimension relative to its length and a narrow cavity lengthwise of the housing for an individual single-pole switch, said switch comprising a plurality of terminal pins extending outwardly through the bottom wall of said cavity for plug-in connection with a printed circuit board and projecting into said cavity to provide a plurality of fixed contacts therein lengthwise of the housing, said cavity having also side recesses at the upper end thereof forming a rectangular guideway traversing the cavity parallel to the line of said contacts, an insulating pole-switch holder mounted slidably in said guideway for movement along said cavity, said holder having a slide-actuator button on its upper side extending through a clearance opening in an upper wall of said housing and having a pair of adjacent parallel stub-like lugs extending from its bottom side downwardly into said cavity, a switch pole having a central bridge portion secured to said holder in a wedged relationship between said lugs and having a pair of spring blades at each end depending from said bridge portion in an inverted V-arrangement, said blades having rounded inwardly-projecting contact faces at their lower ends in line with said terminal contacts and having a spacing therebetween the same as between adjacent terminal pins whereby upon shifting said holder slidably along said guideway into an "on" position said pairs of switch blades are cammed into embracing relation with a pair of said terminal contacts to interconnect the respective terminal pins, and upon shifting said holder from said "on" position said blades are disengaged from said contacts.

3,963,885
GRAVITY ACTUATED MINIATURE SWITCH FOR WATCH HAVING SWITCH ACTUATOR MAGNETIC RETAINING STRUCTURE

Andre Guy Brien, 3110 Germain St., Fabreville, Quebec, Canada

Continuation-in-part of Ser. No. 438,165, Jan. 30, 1974, abandoned. This application Feb. 4, 1975, Ser. No. 547,042
Int. Cl.² H01H *35/02;* **G04C** *23/00*
U.S. Cl. 200—52 R **12 Claims**



1. A switch device for use in a wristwatch, said device comprising a switch housing; a cavity defined within said switch housing; said cavity having a top wall, a bottom wall and a side wall with at least a portion thereof being arcuately extending; a spherical displaceable element, of magnetically attractable material located for movement within said cavity; said side wall, top wall and bottom wall being spaced apart a distance sufficient to permit free displacement of said displaceable element therebetween; at least one magnetic element associated with said cavity and located in a portion of said side wall whereby to retain said spherical displacement element thereto by magnetic attraction when said spherical element is displaced thereagainst in said cavity, said spherical element, when retained by said magnetic element, being dislodged therefrom by an external force created by a predetermined movement of a wearer's arm to release said spherical element in said cavity by gravity, and switch contact means in said arcuately extending portion of said side wall and actuable by said spherical displaceable element when in contact therewith and when said wristwatch is in a particular position.

3,963,886
SWITCH FOR FLASHLIGHT

Ting Shen Yen, 40, Bedford Road, 7th Floor, Taikoktsui, Kowloon, Hong Kong

Filed Dec. 4, 1974, Ser. No. 529,278
Claims priority, application United Kingdom, Sept. 10, 1974, 39500/74
Int. Cl.² F21V *23/04;* **H01H** *1/34*
U.S. Cl. 200—60 **8 Claims**

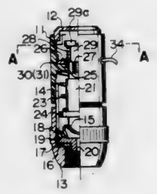


5. An electric flashlight comprising a first circuit contact, a second circuit contact spaced from said first contact, a switch for selectively connecting and disconnecting said first and second circuit contacts, said switch including a casing having spaced end and side walls, a leaf spring forming the switch contact strip pivoted intermediate its ends on said casing to form a first spring portion movable into and out of engagement with said first circuit contact and a second spring portion in permanent engagement with said second circuit contact, spaced protuberances on said spring which engage the inner surfaces of said casing end walls, the distance between said end walls being less than the distance between said protuberances which causes flexture of said spring, and nonlatching actuating members operative on said spring to selectively effect said movement of the first spring portion into and out of engagement with said first circuit contact.

3,963,887
PRESSURE-RESPONSIVE SWITCH DEVICE FOR PNEUMATIC TIRES

Takashi Takusagawa, Ome; Akira Fujikawa, Kodaira; Akira Matsuda, Higashimurayama; Masaaki Kaida, Kodaira, and Shigeo Yasuda, Musashino, all of Japan, assignors to Bridgestone Tire Company Limited and Mitaka Instrument Company Limited, both of Tokyo, Japan

Filed Aug. 1, 1974, Ser. No. 494,347
Claims priority, application Japan, Sept. 20, 1973, 48-109964[U]; Sept. 20, 1973, 48-10965[U]
Int. Cl.² H01H *35/34*
U.S. Cl. 200—83 L **18 Claims**



6. A pressure-responsive switching device for pneumatic tires, comprising:

a pneumatic tire;

a cylindrical upper casing of an insulating material;

a spring retainer of a conductive material having a skirt portion threaded into one end of said cylindrical upper casing and a rod-guide sleeve formed axially thereof;

a cylindrical lower casing of a conductive material having one end internally threaded for connection to an air valve attached to said pneumatic tire;

a cylindrical connecting member of a conductive material having opposite ends thereof securely fitted into the other ends of said upper and lower casings and having an annular contact surface;

a diaphragm securely mounted in said lower casing and having one side thereof held in communication with the internal air pressure of said tire through a valve core depressing member disposed at the internally threaded end of said lower casing;

a rod member axially movably mounted in a cylindrical cavity defined by said upper and lower casings and normally held by said diaphragm in a retracted position wherein one end of said rod member is remotest from said one end of said lower cylindrical casing with its other end slidably received in said rod-guide sleeve of said cylindrical upper casing;

a contact ring loosely fitted over said rod member and normally rested on a radially protruding surface on said rod member; and

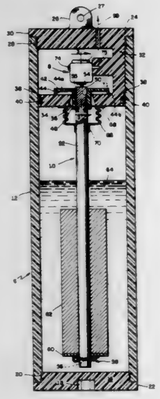
a conical compression spring mounted in a prestressed state between said spring retainer and said contact ring for urging said rod member toward said diaphragm;

said rod member being moved from said retracted position into a protruded position by the action of said conical spring when the internal pressure of said pneumatic tire drops below a predetermined level, said one end of said rod member being nearest from said one end of said lower casing inversely deflecting said diaphragm and securely closing said contact ring on said annular contact surface of said connecting member to complete a power circuit of a warning device.

3,963,888
MULTI-ANGLE TILT SWITCH DEVICE WITH ADJUSTABLE OSCILLATING CONTROLLER

John R. Riede, White Bear Lake, Minn., assignor to Riede Systems, Inc., Minneapolis, Minn.

Filed Feb. 28, 1975, Ser. No. 554,315
Int. Cl.² H01H *35/14*
U.S. Cl. 200—61.48 **2 Claims**

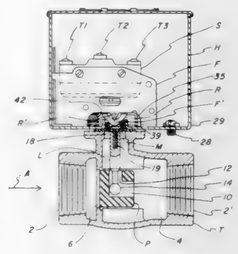


1. A tilt switch device comprising an elongated casing, a circular disc provided with a downwardly directed flange having a semicircular peripheral knife edge, said disc having a centrally threaded vertical passage extending completely therethrough, a rod having its upper end portion threadedly received in said passage to permit vertical adjustment of said rod with respect to said disc, said rod extending downwardly from said disc, a weight member carried by said rod adjacent its lower end, a platform fixedly located in the upper portion of said casing for supporting the peripheral knife edge of said disc, said platform having a hole through which said rod depends downwardly, a switch unit having an operating member disposed generally above the center of said disc, the upper end of said rod being engageable with said operating member so that when said disc is rocked relative to said platform said operating member is actuated by said rod end to operate said switch unit, and a damping fluid contained in the lower portion of said casing to retard relative movement of said weight member.

3,963,889
LOW VELOCITY FLOW SWITCH

Elwood Harold Stonich, Chicago, Ill., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 30, 1974, Ser. No. 493,039
Int. Cl.² H01M *35/40*
U.S. Cl. 200—81.9 R **7 Claims**



1. In a flow switch adapted to respond operatively to fluid flowing in a pipeline,

a housing including a base portion adapted for connection to a pipeline,

said base portion including an opening for communication with the interior of a pipeline,

first lever means extending through said opening to enable a first end of the lever means to be positioned in the interior of a pipeline and a second end to be positioned within the housing,

pressure responsive means supported on said first end of the lever means to establish contact with fluids and move in response to fluid flow,

flexible seal means including an outer edge sealed to said base portion, flexible seal means including an opening through a central portion enabling said lever means to extend therethrough and providing a seal preventing fluids from entering said housing,

rocker means, including a pivot bearing, coupled to the second end of said lever means to enable motion of said first end to be transmitted by the second end,

pivot bearing means integral to a bracket fastened in said housing in engagement with said pivot bearing to provide a fulcrum about which the first lever means may rotate,

second lever means fastened at one end to said rocker means, and

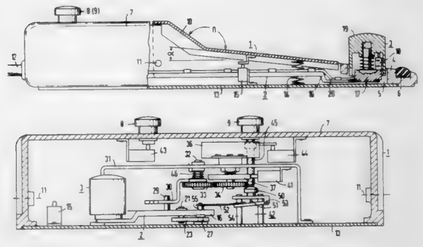
a switch assembly including a plunger operated switch unit mounted on said bracket,

said second lever means responding to motion imparted through said first lever means to the rocker means to operate said plunger.

3,963,890
FOOT OPERATED SWITCH ASSEMBLY WITH LATCHING STRUCTURE FOR OPERATOR

Reinhard Straihammer, Kirschhausen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed June 19, 1973, Ser. No. 371,543
Claims priority, application Germany, June 26, 1972, 2231266
Int. Cl.² H01H *3/14*; **G05G** *1/14*
U.S. Cl. 200—86.5 **11 Claims**



1. A foot control installation for drives and the like, comprising a housing; actuating means supported in said housing and having an end portion projecting therefrom, said actuating means being movable between an initial inoperative position and at least one operative position; foot contact means being mounted on the projecting portion of said actuating means; a control element for said drive being operatively connected to said actuating means; first and second switching means for effecting the in-and-out switching of said drive; a selector switch for selectively connecting said switching means to said actuating means; said first switching means being operatively connected with said actuating means so as to be actuated upon displacement of the latter from its initial position, and said second switching means including an actuating element in spaced relationship with said first switching means and actuated through foot pressure, said actuating element for said second switching means including a foot pressure plate articulatedly fastened to said housing and positioned at the upper surface thereof, said pressure plate, as viewed from the foot contact means, extending towards the opposite end of said housing, said pressure plate being located proximate the path of movement of said foot contact means defined by the displacement of said actuating means from its initial position into its operative end positions, means in said housing for biasing said actuating means into its initial position; and a locking arrangement in said housing for arresting said actuating means in its operative end position upon pressure being exerted on said foot contact means.

3,963,891
CHOKED CONDITION DETECTOR FOR AN AIR-PURIFYING DEVICE

Maurice de Magondeaux, Neuilly-sur-Seine, France, assignor to Sofiltra, Societe Industrielle de Filtration, Courbevoie, France

Filed Oct. 2, 1974, Ser. No. 511,106
Claims priority, application France, Oct. 3, 1973, 73.35328
Int. Cl.² H01H *3/00*; **G01D** *13/00*
U.S. Cl. 200—308 **6 Claims**

2. A device for detecting the choked condition of an air purifier for a combustion engine, the device comprising, in combination:

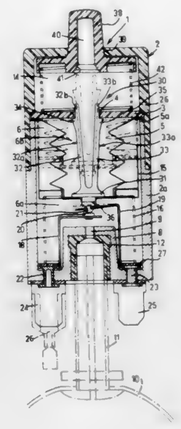
a casing having a wall including a transparent portion and an opaque portion;

a transverse partition mounted within the casing and defining an opening;

a flexible diaphragm carried by the transverse partition, the diaphragm dividing the interior of the casing into first and second compartments;

means for supplying the pressure within said purifier to the first compartment, the second compartment being exposed to a reference pressure;

an indicator connected to the diaphragm within the casing, the indicator being normally located in a nonvisible position adjacent the opaque portion of said wall but being movable by said diaphragm to a visible position adjacent said transparent portion in response to a predetermined difference in pressure between the two compartments;



switch means located in the first compartment in position to be actuated by the diaphragm, the switch means being movable between an open position and a closed position; and

locking means for releasably maintaining the indicator in its visible position and the switch means in its closed position, the locking means including a control knob and a resilient member connected to the diaphragm, the control knob being movably mounted on the casing in position to engage the resilient member.

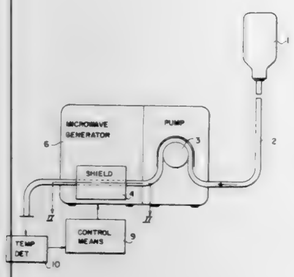
3,963,892
CONTROLLING THE MICROWAVE HEATING OF FLOWING BLOOD AS A FUNCTION OF HEATED BLOOD TEMPERATURE

Sven Erik Camph, Hollviksnas, and Kjell Ake Bertil Holmgren, Trelleborg, both of Sweden, assignors to Camph Engineering Company AB, Malmo, Sweden

Filed June 13, 1973, Ser. No. 369,437
Claims priority, application United Kingdom, June 14, 1972, 27759/72
Int. Cl.² H05B *9/06*
U.S. Cl. 219—10.55 M **1 Claim**

1. A method of heating blood for on line use directly into a patient, characterized by the steps of introducing a continuous flow of blood into a shield chamber through a microwave preamble flexible hose to pass therethrough, exposing the blood flowing within said chamber to the heating action of microwaves, and controlling the duration of exposure and

energy of the microwaves from the microwave generator in response to the temperature of the blood which has passed



through said chamber so that the blood is heated to the desired temperature.

3,963,893

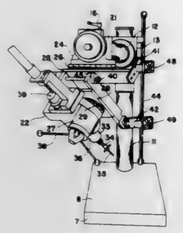
ADJUSTMENT DEVICE FOR METAL DISINTEGRATORS

Jere H. Roach, Rocky River, Ohio, assignor to Cammann Mfg., Co., Inc., Bay Village, Ohio

Continuation-in-part of Ser. No. 541,270, Jan. 15, 1975. This application Mar. 17, 1975, Ser. No. 558,894

Int. Cl.² B23K *9/16;* **B23C** *1/12*

U.S. Cl. 219—69 R **14 Claims**



1. An adjustment device for mounting a disintegrator head to a support, comprising in combination:

a first housing;

means for mounting said first housing to the support;

a second housing;

means for mounting the disintegrator head to said second housing;

one of said first and second housings having a mounting member and a plate member;

means for relatively journaling said mounting member and said plate member about a first axis;

hinge means interconnecting said first and second housings for enabling movement between said first and second housings about a hinge axis substantially perpendicular to and offset from said first axis;

and locking means for locking the position on said hinge axis of said first housing relative to said second housing.

3,963,894

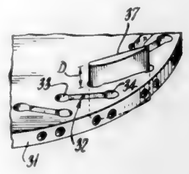
TURBINE-NOZZLE MANUFACTURING APPARATUS

Richard L. Wachtell, Tuxedo Park, and Edward C. Palmenberg, Nanuet, both of N.Y., assignors to Chromalloy American Corporation, Orangeburg, N.Y.

Division of Ser. No. 436,369, Jan. 24, 1974, Pat. No. 3,920,947, which is a continuation-in-part of Ser. No. 221,306, Jan. 27, 1972, Pat. No. 3,802,046. This application Apr. 14, 1975, Ser. No. 567,553

Int. Cl.² B23P *1/08*

U.S. Cl. 219—69 E **5 Claims**



1. An EDM tool holder comprising a plate with a through opening having one elongated flat wall, and an electrode element of predetermined airfoil section accommodated in said opening with at least one end of the span dimension of said element projecting outside said plate, a portion of a convex surface of said section having a flat-bottomed recess in the region of reception in the opening, the flat bottom of said recess abutting said flat wall, and clamp means acting between said plate and said element for holding a firmly referencing abutment of said flat bottom and wall surfaces.

3,963,895

DEVICE FOR EFFECTING THE GUIDING AND OSCILLATION MOVEMENTS OF A WELDING HEAD EQUIPPED WITH AN ELECTRODE-CARRIER NOZZLE

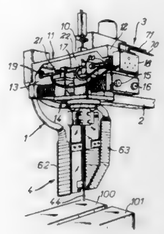
Jean Maurice Hennion, Saint-Nazaire, France, assignor to Fives-Cail Babcock S.A., Paris, France

Filed Dec. 18, 1973, Ser. No. 425,846

Claims priority, application France, Dec. 21, 1972, 72.45579

Int. Cl.² B23K *9/12*

U.S. Cl. 219—125 R **29 Claims**



1. Tool-holding apparatus for the reciprocated coursing of a welding-electrode or the like tool element between lateral limits of the bottom of a channel during the longitudinal progression of the holder along the channel, said apparatus including a tool-supporting element of smaller transverse extent than the channel at the region of holder insertion into the channel, said apparatus comprising a frame with means supporting the tool-holder element for tool-element insertion in the channel and for transversely guided reciprocation between the channel walls, drive means for imparting successive transverse reciprocating displacements to said tool-holder element in opposite directions with respect to said frame, means responsive to tool-supporting-element contact with a channel wall and effective to arrest motion of said drive means upon attainment of each limit of transverse reciprocation, and means operative to establish a predetermined dwell of said electrode-holder element at each arrested limit of transverse reciprocation.

3,963,896

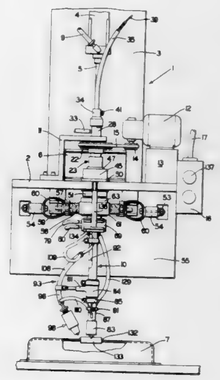
ROTARY WELDING EQUIPMENT WITH CONSUMABLE ELECTRODE WIRE

Corwin E. Lucas, Alliance, Ohio, assignor to Standard Alliance Industries, Alliance, Ohio

Filed Feb. 24, 1975, Ser. No. 552,553

Int. Cl.² B23K *9/12*

U.S. Cl. 219—125 R **19 Claims**



1. Rotary welding equipment including support means; spindle means rotatably mounted on the support means, said spindle means having an open first end and a second end; a bore formed in a portion of the spindle means extending from the open first end of the spindle means; opening means formed in the spindle means and communicating with the bore of the spindle means; means for rotating the spindle means; workpiece centering means mounted on the second end of the spindle means; a welding tip; means for mounting the welding tip on the spindle means offset from the axis of rotation of the spindle means; means providing a passage for supplying consumable electrode weld wire through the spindle means first end, through the bore and opening means of the spindle means, and through the welding tip mounting means to the welding tip; commutator means mounted on the spindle for electrically connecting the welding tip in an arc power circuit; fluid cooling means operatively connected to the spindle means and extending to at least adjacent the welding tip for circulating fluid to cool the welding tip and to cool the spindle means; and means for supplying arc shielding gas to the welding tip.

3,963,897

ELECTRICALLY HEATED SOLDER REMOVING BIT

Katumasa Wakita, Yokohama; Issei Yunoki, and Mitunari Yoshida, both of Tokyo, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 289,562, Sept. 15, 1972, Pat. No. 3,842,240. This application May 9, 1974, Ser. No. 468,368

Claims priority, application Japan, Sept. 17, 1971, 46-84514[U]; Oct. 4, 1971, 46-91013[U]; Jan. 13, 1972, 47-6428[U]; Sept. 27, 1971, 46-75310

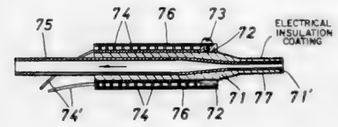
Int. Cl.² B23K *3/02;* **H05B** *1/00*

U.S. Cl. 219—230 **3 Claims**

1. A solder removing bit for use in melting solder by the heat of the bit and for removing the melted solder, comprising:

an elongated hollow suction pipe having a suction bore extending through its length; said suction pipe having an open end serving as an inlet to said bore, and a portion of said pipe defining an end portion extending toward said open end;

a metallic bit substantially completely surrounding said pipe end portion; a heater connected in heat exchange relation



with said bit and spaced from said open end to define an end portion on said bit;

said end portion of said bit being coated with an electrically insulative material completely from said open end to said heater.

3,963,898

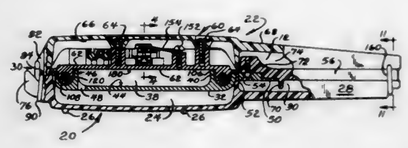
ELECTRIC COOKING APPLIANCE

Clayton K. Tuckwell, Eau Claire, Wis., assignor to National Presto Industries, Inc., Eau Claire, Wis.

Filed July 7, 1975, Ser. No. 593,573

Int. Cl.² H05B *1/00;* **A47J** *37/00;* **B29C** *3/00*

U.S. Cl. 219—524 **13 Claims**



1. An electric appliance for simultaneously cooking hamburgers and the like on both sides while removing the separating grease as the hamburger cooks, said appliance comprising a concave base and a separable cover thereover, both said cover and concave base being of heat insulating material, a pan of heat conductive metal having a heat insulated handle, said pan embodying a concave cooking portion having a surrounding wall portion and a continuous channel outwardly of and about said wall portion, said pan being removably seated within the cover-facing side of the base with its concave cooking portion spaced off the bottom wall of the base and its heat insulated handle extending outwardly of the base, said concave cooking portion having apertures in its bottom wall inwardly of said surrounding wall portion through which grease drains during cooking for collection therebelow in the concave base, the cover supporting a cooking element of heat conductive metal on its underside, said cooking element having a surrounding depending rib which received within said channel in close proximity therewith when the cover is closed against the base, the rib containing an electrical heating element in effective heat transfer relation therewith, and releasable locking means on the cover and base for firmly holding of the cover in engaged heat conductive relation with portions said rib against the base of the channel when the cover is closed against the base, the single heating element thereby simultaneously heating the pan and the cooking element of the cover.

3,963,899

VOTING MACHINE

John MacDuff, 232 Astor Court, Villa Park, Ill. 60181

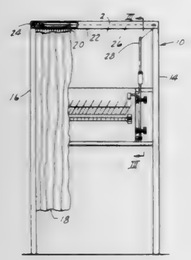
Filed May 9, 1975, Ser. No. 576,145

Int. Cl.² G07C *13/00*

U.S. Cl. 235—50 B **11 Claims**

1. A voting machine comprising: an enclosure;

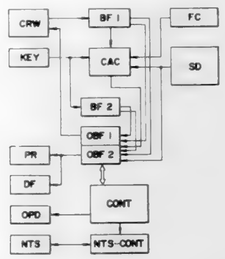
a panel mounted in said enclosure including a front surface and a rear surface and having a slot therein;
a movable door mounted adjacent said panel and movable to cover and uncover said slot;
a record mounted adjacent said rear surface for movement relative said slot said record bearing indicia in rows thereacross in first and second perpendicular directions, said first row direction being the same as the direction of said slot so that such first direction rows may be revealed on-at-a-time through said slot;
said record including a multi-layer structure comprising a first layer bearing said indicia and to be marked by a voter, a second layer responsive to making pressure on said first layer to produce corresponding makings, a tear-out section along each row to the first direction to receive the voter markings, and an aperture through said multi-



layer structure having a filling therein, wherein said filling is removed upon removal of each of said tear-out sections, the filled apertures aligned in the second direction;
a lever connected to said door and operable in alternate directions to move said door to respectively uncover and cover said slot;
switch means mounted adjacent said multi-layer structure in the area of said apertures including switch contacts and a member movable toward and away from said structure, said member operated by said lever to move said member against said multi-layer structure and through an aperture to operate said switch contacts when a tear-out section has been removed; and
a latch mechanism connected to and operated by said switch contacts to prevent opening of said door when a row with a tear-out section removed is aligned with said slot.

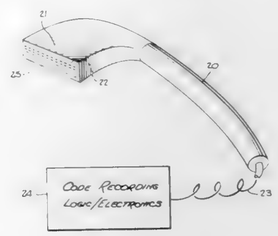
3,963,900
NIGHT DEPOSITORY CONTROL SYSTEM
Yoji Sawaguchi, Tokyo, and Katsumasa Ogawa, Yokohama, both of Japan, assignors to Fujitsu Ltd., Japan
Filed Sept. 30, 1974, Ser. No. 510,755
Claims priority, application Japan, Sept. 28, 1973, 48-108994
Int. Cl.² G06K *5/00, 7/00;* **H04N** *9/00*
U.S. Cl. 235—61.7 B **4 Claims**

1. A night depository control system for use with an automatic banking transaction system providing at least one of cash dispensing and depositing functions and employing a card having data recorded thereon including at least a coded identification of a customer account for the customer to whom the card is issued and a transaction code identifying each type of transactions authorized for that customer account, the transaction system including means for reading data from the card, means operable, by the customer, for entering the type of transaction desired, data concerning the transaction, and a secret number corresponding to a given customer account, means for authorizing the customer to perform a transaction, said authorizing means including means for determining the existence of a predetermined relation of the entered transaction type and the authorized transaction type recorded on the card and for determining the existence of a predetermined relation of the secret number entered by the customer and the coded identification of the customer account read from the card, means for issuing a receipt for a transaction when authorized and performed by the transaction system, and means for storing data concerning the transaction in accordance with data read from the card and data entered by the customer, said night depository control system including
night depository apparatus being selectively controllable from a state of non-acceptance to a state for acceptance of a deposit, to enable placement of a deposit in said apparatus,
said transaction entering means including a night depository transaction entering means and said card including a



position thereon for recording a night depository authorized transaction code,
control means responsive to a determination by said determining means of the entry of an authorized night depository transaction code, for controlling said night depository apparatus to said state for acceptance of a deposit for permitting placement of a deposit therein,
means for detecting placement of a deposit in said night depository apparatus and for issuing a deposit detection signal in response thereto, and
said control means responding to the deposit detection signal to actuate said receipt issuing means for issuing a receipt for the deposit to the customer and to enable said storing means for storing the data concerning the transaction entered by operation of said data entering means by the customer.

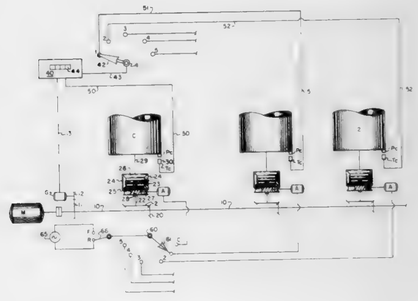
3,963,901
DATA PROCESSING SYSTEM
James Constantine Gevas, Roseland, N.J., assignor to Intelcom Industries Incorporated, San Diego, Calif.
Filed Aug. 26, 1974, Ser. No. 500,512
Int. Cl.² G06K *7/08, 19/06*
U.S. Cl. 235—61.11 D **15 Claims**



1. A data processing system for recording data in machine readable form in a recording medium in multiple parallel spaced apart channels and reading said data from said medium with a scanning sensor, characterized by a sensor for scanning

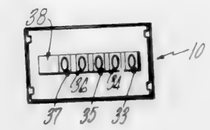
simultaneously said parallel channels in said recorded medium at least in the general direction of said parallel channels but with less than perfect spatial restraint, means coupled to said sensor responsive to signals detected thereby in said parallel channels for determining when signals have been detected in all of said channels, and means activated by said last mentioned means for reading the data from all of said channels in spite of any shifting relative registration and skew between said sensor and said recorded medium.

3,963,902
METHOD AND APPARATUS FOR PRE-REGISTRATION OF A MULTIPLE CYLINDER ROTARY PRINTING PRESS
Daniel J. Dowd, Williamsport, Pa., assignor to Westvaco Corporation, New York, N.Y.
Filed Apr. 29, 1975, Ser. No. 572,727
Int. Cl.² G06M *3/00*
U.S. Cl. 235—92 MP **9 Claims**



1. A method of setting, to a predetermined order, the rotational phase relationship between a plurality of rotating elements having a precise rotational ratio relationship with a common rotary power transmission line, each of said rotating elements having a rotational phase angle adjusting mechanism disposed between said common transmission line and the respective rotating element, said method comprising the steps of:
A. Rotatively driving said rotating elements with said rotary transmission line;
B. Generating a large, finite number of pacing pulse signals respective to each revolution of said rotary power transmission line;
C. Generating a reference pulse signal for each revolution of each rotating element when a respective rotating element passes a predetermined fixed angular position;
D. Selecting the reference pulse signal respective to a first of said rotating elements as a starting signal;
E. Digitally accumulating with counting means the number of said pacing pulses emitted from the instant of said start signal generation.
F. Stopping said pacing pulse accumulating when a reference pulse signal is generated from a respective second rotating element.
G. Comparing the total number of pacing pulses accumulated between said starting and stopping reference pulse signals to a predetermined quantity which relates uniquely to the desired registration alignment of said first and second rotating elements within the full rotative cycle thereof; and,
H. Shifting the angular relationship of said second rotating element relative to said first rotating elemet until the digital accumulation of said total number of pacing pulses substantially equals said predetermined quantity.

3,963,903
RESETTABLE COUNTING MECHANISM
Dominick Anthony Pirro, Avon, and Paul Levere Kennedy, Meriden, both of Conn., assignors to Veeder Industries, Inc., Hartford, Conn.
Filed Apr. 14, 1975, Ser. No. 567,489
Int. Cl.² G06C *15/42, 25/02*
U.S. Cl. 235—144 R **11 Claims**

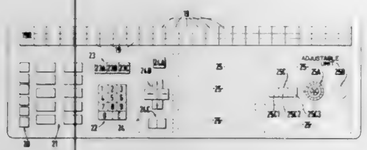


1. In a resettable counting mechanism having a frame, a wheel shaft supported for resetting rotation relative to the frame and having a pawl-engaging slot therein, a set of coaxial number wheels rotatably mounted on said shaft in side-by-side ascending order for count advancing rotation in one direction of angular rotation, at least one of the higher order wheels including reset pawl means for detenting engagement with said slot in said shaft in one direction of angular rotation at a relative angular positioning corresponding with a zero reset position when said shaft is at its reset position, transfer pinions for transferring the count between adjacent number wheels, selectively actuable means for driving the lowest order wheel of said set; the improvement wherein said shaft includes a detenting member fixedly connected thereto and extending transversely thereof and a detent seat is operatively positioned and stationary relative to said frame for releasably retaining said detenting member and said shaft at the reset rotational position.

3,963,904
MODELING WITH A MANUALLY INTERACTIVE COMPUTER CONSTRAINT VIOLATION MONITORING MEANS
Wilfred Norman Blackwood; Finbar Joseph Gallagher, both of Dundalk; Kenneth Rutherford Richey, Bangor, and William Marshall, Belfast, all of Ireland, assignors to Oeleq Limited, Dundalk, Ireland
Filed Dec. 4, 1974, Ser. No. 529,636
Claims priority, application United Kingdom, Dec. 7, 1973, 56922/73
Int. Cl.² G06F *15/06;* **G06G** *7/48*
U.S. Cl. 235—152 **5 Claims**

1. A computing system having a computing section for computing according to a predetermined programme, an input unit coupled to feed information into said computing section and a display unit coupled to said computing section to display information contained therein, and wherein said input unit includes first means to apply to said computing section quantities representative of predetermined values of problem constraints, second means to apply to said computing section quantities representative of the initial conditions of

variables of said information, manually-actuable third means to vary the value of the quantity representing a designated variable from its initial condition, and monitoring means having a warning element responsive to the occurrence during



computation of a computed value equal to the predetermined constraint value applied by said first means, the monitoring means being effective during actuation of the manually-actuable third means to permit evaluation of the problem undergoing computation.

3,963,905

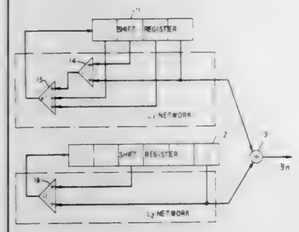
PERIODIC SEQUENCE GENERATORS USING ORDINARY ARITHMETIC

Bhaskarpillai Gopinath, Berkeley Heights, N.J., and Robert Paul Kurshan, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 504,858, Sept. 11, 1974, abandoned. This application May 2, 1975, Ser. No. 573,962

Int. Cl.² G06F *7/38*

U.S. Cl. 235—152 **16 Claims**



1. A circuit comprising:

a shift register;

means for multiplying the output signals of selected stages of said shift register by predetermined integers to cause the characteristic function of said circuit to be a cyclotomic polynomial;

means for forming a non-modulo sum signal of said integer multiplied signals; and

means for applying said sum signal to the first stage of said shift register.

3,963,906

COMPACT ELECTRONIC CALCULATOR

Katsumi Yamamura; Kouji Kakizawa, and Minoru Hosokawa, all of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

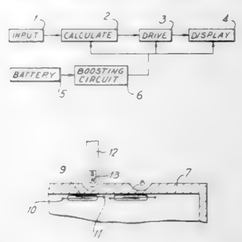
Continuation of Ser. No. 199,189, Nov. 16, 1971. This application Nov. 9, 1973, Ser. No. 414,477

Claims priority, application Japan, Nov. 17, 1970, 45-100708

Int. Cl.² G06F *15/2*

U.S. Cl. 235—152 **4 Claims**

1. A compact electronic calculator comprising input circuit means having a base plate formed with an operative surface on an outer side thereof, said operative surface having a plurality of recesses formed at predetermined locations thereon, a reed switch positioned on an inner side of said base plate adjacent each of said predetermined locations on said base plate, and a permanent magnet unconnected to said base plate and manually manipulatable by a user toward and away from said recesses, said permanent magnet actuating only the reed switch associated with the recess in which it is received, said reed switch returning to its unactuated state upon removal of said permanent magnet; calculating circuit means coupled to



said input circuit means for receiving signals therefrom, said calculating means being formed from an LSI circuit; display means coupled to said calculating circuit means for receiving a signal therefrom, said display means including liquid crystal display elements; and a battery power source coupled to said calculating circuit means and display means for driving same.

3,963,907

DEVICE FOR INSTANTANEOUS DECIMAL CREDIBILITY CHECK FOR DATA PROCESSING

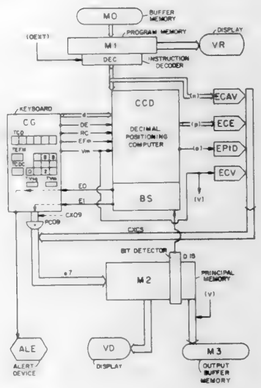
Robert Rene Durand-Vienne, Noisy-le-Roi, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed July 2, 1974, Ser. No. 485,146

Claims priority, application France, July 3, 1973, 73.24393

Int. Cl.² G06F *11/00*

U.S. Cl. 235—153 B **3 Claims**



1. A device for instantaneous decimal credibility checking of digital numerical data, comprising:

a. a program memory for storing a program comprising a sequence of instruction characters, said program memory including decoders for decoding the instructions characters;

b. a principal memory for storing numerical data and service characters therein; said principal memory including a bit detector for detecting the contents of the penultimate memory position thereof;

c. a plurality of service character transmitters including blind code transmitter means for filling n memory positions in said principal memory with *n* blind codes, space code transmitter means for filling *p* memory positions following said *n* memory positions in said principal memory with *p* space codes, decimal point character transmitter means for filling a memory position in said principal memory with a decimal point character, and flag character transmitting means for filling the last memory position in said principal memory with a flag character;

d. a keyboard having a plurality of keys operable for developing control signals and numerical character signals representative of numbers; and

e. a decimal positioning computer comprising decimal positioning means responsive to outputs of said program memory decoders and receptive of a keyboard control signal representative of the maximum integer position of a decimal number to be stored in said principal memory and a sequence of keyboard numerical character signals representative of the digits of said decimal number to be stored in said principal memory for enabling said decimal point character transmitter means to fill a memory position in said principal memory at the proper position of said sequence of keyboard numerical characters as said numerical characters are stored in said principal memory.

3,963,908

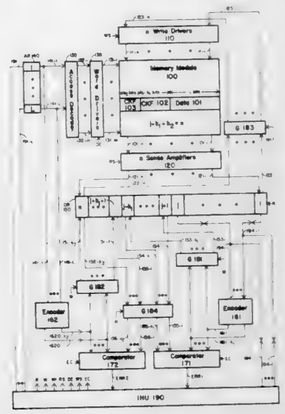
ENCODING SCHEME FOR FAILURE DETECTION IN RANDOM ACCESS MEMORIES

Santanu Das, Columbus, Ohio, assignor to North Electric Company, Galion, Ohio

Filed Feb. 24, 1975, Ser. No. 552,304

Int. Cl.² G06F *11/10*

U.S. Cl. 235—153 AM **14 Claims**



1. A method for detecting errors in a digital information storage system, said system including memory means, wherein said memory means includes a plurality of individually-addressable words and wherein each individually-addressable word is further comprised of a data field, a first code field related to the data field, and a second stored code field related to the address at which the word is located, and reading means for extracting said words, said method comprising the steps of:

a. extracting, via said reading means, one of said words;

b. generating a first check code field suitable for use in detecting all multiple unidirectional errors in the data field of said extracted word;

c. generating a second check code field suitable for use in detecting at least a single error in the address of said extracted word;

d. comparing said first stored code field with said first check code field;

e. comparing said second stored code field with said second check code field;

f. and generating an error indication whenever said stored code fields are not identical to their corresponding generated check code fields.

3,963,909

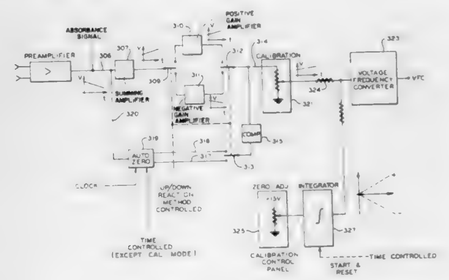
METHOD AND APPARATUS FOR COMPUTATION IN A KINETIC ANALYZER

John G. Atwood, Redding, and Peter H. Heinz, Trumbull, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Aug. 22, 1974, Ser. No. 499,616

Int. Cl.² G06G *7/18*; **G01N** *21/22*; **G01J** *3/42*

U.S. Cl. 235—151.35 **34 Claims**



17. Apparatus for computing the reaction rate in a sample cell from a signal proportional to absorbance therein, comprising:

a. means for establishing an observation period;

b. means for integrating the absorbance signal in a first direction during the first half of said observation period;

c. means for integrating the absorbance signal in the opposite direction during the second half of said observation period; and

d. means for determining the difference between the two integrations, said difference being proportional to both the average change in the absorbance signal and the reaction rate in the cell over said observation period.

3,963,910

AUTOMATIC TAX CALCULATING APPARATUS

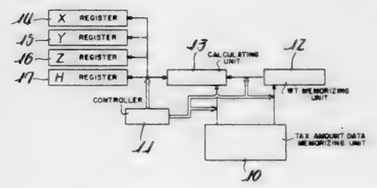
Akio Enomoto, 237-3, Ohhito, Ohhitocho, and Yuji Tadakuma, 80-Z, Mifuku, Ohhitocho, both of Tagata, Shizuoka, Japan

Filed Aug. 5, 1974, Ser. No. 494,879

Claims priority, application Japan, Aug. 10, 1973, 48-89715; Aug. 10, 1973, 48-89716; Aug. 10, 1973, 48-89717

Int. Cl.² G06F *7/38*

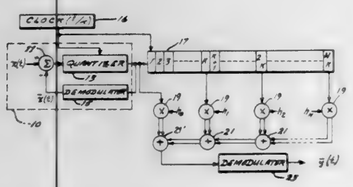
U.S. Cl. 235—156 **4 Claims**



1. An automatic tax calculating apparatus for automatically calculating a tax amount for a taxable amount in a tax system having an unproportional portion for taxable amounts up to a predetermined value where tax amounts are unproportionally set and a proportional portion for taxable amounts greater than the predetermined value where tax amounts are proportionally and repeatedly set comprising:

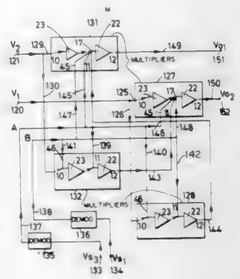
a tax amount data memorizing unit,
a WT memorizing unit,
a calculating unit,
a first register,
a second register,
the tax amount data memorizing unit having stored therein the maximum taxable amounts of each stage of the unproportional portion and the corresponding tax amounts and the maximum taxable amounts of each stage of the lowest range of the proportional portion and the corresponding tax amounts,
the WT memorizing unit having stored therein the proportional portion repeated amount W and the step number T, the step number T being equal to the tax amount of a taxable amount equal to W,
the first register having stored therein a taxable amount α,
the second register having stored therein the maximum taxable amount A of the unproportional portion,
the calculating unit being connected to the first and second registers, to the tax amount data memorizing unit and the WT memorizing unit to perform the calculation $\alpha - A = C$, to calculate N by determining the number of times W can be subtracted from C, to perform the calculation $NT = E$, to perform the calculation $\alpha - WN = F$ and to retrieve from the tax amount data memorizing unit the tax amount G for the taxable amount F, and to determine the tax amount K for the taxable amount α by performing the calculation $E + G = K$.

3,963,911
HYBRID SAMPLE DATA FILTER
Lewis E. Franks, Amherst, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Apr. 22, 1975, Ser. No. 570,975
Int. Cl.² H03H 7/10; H03K 13/22; G06F 7/38
U.S. Cl. 235—156 **2 Claims**



1. A nonrecursive sample data filter comprising:
a. a delta modulator;
b. a shift register fed by the delta modulator having a series of selected output taps;
c. a clock pulsing the delta modulator and the shift register;
d. means for scaling the series of outputs of the shift register, the scaling means including
1. a reference voltage source,
2. a counter pulsed by the clock and having a series of complementary pairs of outputs,
3. a plurality of coefficient multipliers each fed by the plurality of complementary pairs of outputs of the counter and each including
a. a plurality of coefficient setting switches each having an output terminal and a pair of selected input terminals, each of the pairs of input terminals connecting one of the complementary output pairs of the counter,
b. a NAND gate fed by the output terminals of the plurality of coefficient setting switches,
c. a flip-flop fed by one of the selected output taps of the shift register, triggered by the clock, and having a clearing terminal connected to the output of the NAND gate,
d. a programmable switch having an input terminal connected to the reference voltage source and an output terminal, the programmable switch being activated by the output of the flip-flop; and
e. a coefficient sign switch having an input terminal and a pair of selectable output terminals with the input terminal connected to the output terminal of the progammable switch,
4. means for summing the outputs of the coefficient multipliers, the summing means being connected to the coefficient sign switches; and
e. a demodulator connector to the output of the summing means.

3,963,912
SIGNAL RESOLVING APPARATUS
Kenneth Robson Brown, Kirknewton, and Colin Keith Sharp, Edinburgh, both of Scotland, assignors to Ferranti, Limited, Lancashire, England
Filed Sept. 19, 1974, Ser. No. 507,422
Claims priority, application United Kingdom, Sept. 22, 1973, 44550/73
Int. Cl.² G06G 7/22
U.S. Cl. 235—189 **4 Claims**

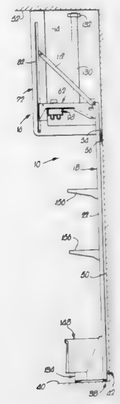


1. Signal resolving apparatus comprising first input terminals for applying coordinate input signals in a first set of axes, second input terminals for applying further input signals which, when combined with one another in predetermined ways, give trigonometric functions required to translate between the first set of axes and a second set of axes, output terminals for supplying output signals in said second set of axes, and multiplier circuits, one for each coordinate of each signal to be resolved, connected to respond to the appropriate coordinate signal and to combinations of the further input signals representing particular trigonometric functions to produce outputs representing the product of the inputs, and means for additively combining the outputs to give the desired output signals in the second axes.

3,963,913
WALL MOUNTED DISPLAY SYSTEM
Robert W. Donovan, Ridgefield, Conn.; Harvey L. Kolster, Grain Valley, Mo.; Herbert H. Broeker, and George W. Bailey, both of Overland Park, Kans., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.
Division of Ser. No. 414,640, Nov. 12, 1973, Pat. No. 3,865,248. This application Nov. 7, 1974, Ser. No. 521,837
Int. Cl.² F21V 33/00
U.S. Cl. 240—2 AD **9 Claims**

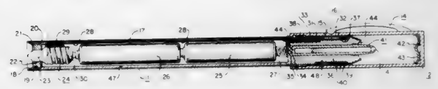
1. In article display apparatus for an area having an upright wall surface extending upwardly from the floor thereof to an overhead ceiling, the improved combination comprising:
a pair of upright standards adapted to be located adjacent the wall surface in disposition to be supported by the floor;

at least one tie element adapted to be mounted on the wall surface intermediate the ends of the standards;
means for coupling the standards to the tie element for preventing swinging movement of the standards away from the wall surface;
means mounted on the standards for receiving articles to be displayed;
a soffit and valance assembly carried by the standards above the article receiving means and including support structure extending forwardly from each standard, upright



valance means mounted on the support structure and extending upwardly therefrom toward said ceiling, and soffit defining means carried by the support structures in disposition extending rearwardly from the valance means to a location proximal to the standards; and
illuminating means carried by the support structures above the soffit defining means and behind the valance means, said soffit defining means being light pervious to permit light from the illuminating means to be directed downwardly therefrom onto articles carried by said article receiving means.

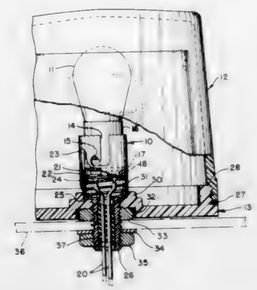
3,963,914
COMBINATION WRITING IMPLEMENT AND FLASHLIGHT
Scott M. Browning, 3269 Polk Ave., Ogden, Utah 84403, and Gregory F. Klomp, 2500 Fillmore, Ogden, Utah 84401
Filed Apr. 9, 1975, Ser. No. 566,371
Int. Cl.² F21L 1/00; B43K 29/10
U.S. Cl. 240—6.46 **7 Claims**





1. A self-illuminating writing device including, in combination, a writing implement having a reverse end and a forwardly oriented writing tip, said reverse end being provided with light means, and a cap selectively positioned over said writing tip and also removable therefrom for selective positionment over said reverse end having said light means, said light means facing away from said tip for emitting observable light energy in a direction reverse to the forward orientation of said tip when said cap is removed from said reverse end, said implement including translucent structure transmitting said light energy proximate said tip, said cap including an internal reflector means, facing said light means when said cap is disposed on said reverse end of said writing implement, for reflecting light energy through said implement to said tip when said cap is so disposed on said reverse end of said implement, said implement including an internal battery and switching means for selectively coupling said battery to said light means.

3,963,915
WATERTIGHT LIGHT ASSEMBLY
Jack B. Spivey, 300 Casper St., Edmonds, Wash. 98020
Filed Feb. 15, 1974, Ser. No. 443,087
Int. Cl.² B63B 45/04
U.S. Cl. 240—7.1 R **4 Claims**

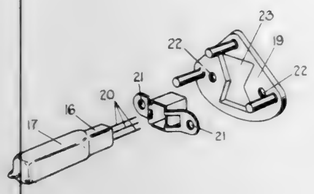


1. A light socket assembly, comprising:
a socket member having an annular spring seat opposite the mouth of the socket and having a hollow stud extending from the set, said socket having bayonet slots for receiving prongs on a light bulb,
watertight conductor lead means passing axially through the stud to a terminal end in the socket,
an elastomeric watertight diaphragm plug in the stud bonded to the stud and to the lead means, said bonding between the plug and stud preventing the plug from sliding along the stud and said bonding between the plug and lead means transmitting axial forces from the lead means to the plug to axially deform the plug when an axial force is exerted on the lead means,
a thrust member in the socket fastened to the terminal end of the lead means and adapted to contact a conducting portion of a light bulb in the socket, and
compression spring means extending between the seat and thrust member urging the thrust member away from the stud, thereby placing an axial force on the lead means and axially deforming the diaphragm plug when a light bulb is not in the socket.

3,963,916
BULBHOLDER
Kenneth Leonard Morton, Market Harborough, England, assignor to British Sealed Beams Limited, Corby, England
Filed Nov. 20, 1974, Ser. No. 525,454
Claims priority, application United Kingdom, Jan. 16, 1974, 2074/74
Int. Cl.² F21V 21/00
U.S. Cl. 240—52 R **6 Claims**

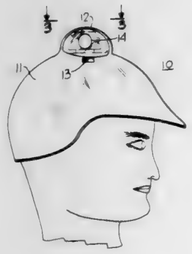
1. A bulbholder comprising a body adapted to receive a base of a bulb, at least one flange for mounting said body on a support, and a plurality of deformable legs connecting said flange with said body, said legs serving to support said body on

said flange and being deformable to enable said body to be adjusted in more than one direction relative to said flange for



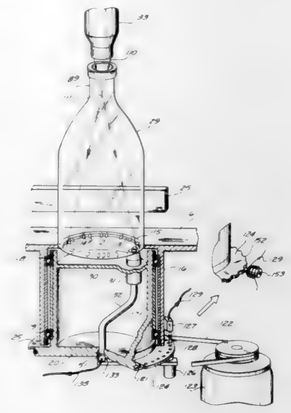
bulb filament orientation purposes, and said legs holding said body in the required position relative to said flange after deformation of said legs.

3,963,917
ILLUMINATED SAFETY HELMET
James Romano, Staten Island, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Mar. 7, 1975, Ser. No. 556,107
Int. Cl.² A42B 1/24; F21V 7/02
U.S. Cl. 240—60 **4 Claims**



1. An illuminated safety helmet comprising:
a. a hard, tough convex shell adapted for serving as a protective cover for the head of the wearer, which shell possesses a transparent bubble-like protrusion at its apex, which protrusion is adapted for visibility from any unobstructed lateral aspect;
b. an adjustable harness affixed to the inner periphery of the helmet to keep the head of the wearer from contacting the inner surface of the shell;
c. an incandescent bulb rotatably mounted in the transparent protrusion, upon which incandescent bulb is fixed a vertically oriented mirror-like partition visually separating the bulb into differently colored halves, said bulb adapted to be coupled to a source of energy;
d. driving means for rotating the bulb, adapted to be coupled to said source of energy;
e. a switch electrically connected to be capable of interrupting the source of energy and mounted on the shell and conveniently reachable by the wearer.

3,963,918
IDENTIFICATION DEVICE FOR MACHINE MOULDED PRODUCTS
Claes-Goran Jensen, Malmo, and Lars Olof Hansson, Oxie, both of Sweden, assignors to Aktiebolaget Platmanufaktur, Malmo, Sweden
Filed June 17, 1974, Ser. No. 479,647
Claims priority, application Sweden, June 21, 1973, 7308779
Int. Cl.² G01D 21/04
U.S. Cl. 250—223 B **5 Claims**

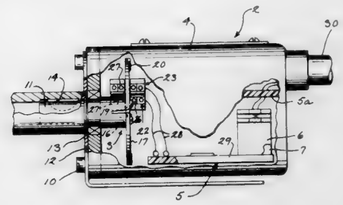


1. Apparatus for identifying which of a plurality of moulds moulded a particular light transparent container comprising containers formed by the moulds, each container having integrally moulded in a line along its bottom a coded combination of lens members for focussing light projected onto the inner surface of the bottom of the container to a focal plane opposite the outer surface of the bottom of the container, each of said coded combinations being associated with a different mould; light source means for projecting light onto said inner surface of the bottom of the container; light detector means including a short focus objective lens focused at said focal plane, a photo-sensitive transducer for generating signals whose amplitude is a function of received light, guiding means for guiding light from said short focus objective lens to said photo-sensitive transducer and means for emitting a pulse each time the generated signal exceeds a given amplitude; and moving means for causing a relative movement along said line between said lens members and said short focus objective lens.

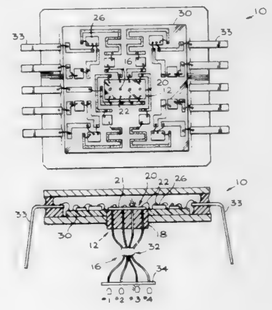
3,963,919
MOTION RESPONSIVE DETECTOR APPARATUS
Fred E. Sells, Milwaukee, Wis., assignor to National Controls Corporation, Addison, Ill.
Filed Aug. 7, 1974, Ser. No. 495,507
Int. Cl.² G01D 5/34
U.S. Cl. 250—231 SE **16 Claims**

15. A motion monitoring means for selectively determining the motion of a rotating element comprising a housing having a mounting means for mounting upon a driven apparatus, a shaft rotatably mounted in said one wall of said housing and having an outer shaft portion adapted to be directly coupled to the monitored motion of the rotating elements, a coding disc formed of the light transmitting plastic, means firmly mounting said disc on the inner end of said shaft, the outer periphery of said disc being formed with alternate opaque and light transmitting equicircumferentially spaced radial sections, a pair of photodetector assemblies mounted in circumferentially spaced relation within said housing and each including

a pair of oppositely projecting arms defining a slot through which the radial sections of the encoding disc rotate, a light emitting diode being mounted in one of said arms and a phototransistor being mounted in the opposite of said arms in alignment with the output of the light emitting diode whereby the conductivity of the phototransistor is alternately increased and decreased in accordance with the rotation of the encoding discs, a solid state signal processing circuit mounted within said housing and including a pair of signal processing channels, each of said channels including a dual input Schmitt trigger circuit having an inverting input and a non-inverting input, a retriggerable monostable multivibrator having an input connected to the output of said trigger circuit and having a positive output and a not-output, each of said monostable multivibrators having an adjustable presettable timing means to determine the width of the output pulse of the monostable multivibrator having an inhibit input to prevent retriggering of the monostable multivibrator and thereby establishing a single output pulse in response to an input pulse, and circuit means interconnected of the said channels to each other and to the encoding means to selectively provide an output responsive to the motion detected, a signal integrating circuit having a signal integrating capacitor connected to the output of at least one of said monostable multivibrators to integrate the variable width pulse signals, a transistor connected in said integrating circuit and particularly across said integrating capacitor and responsive to a selected voltage on the capacitor to conduct and provide an output related to the total summed variable width pulse signals.



3,963,920
INTEGRATED OPTICAL-TO-ELECTRICAL SIGNAL TRANSDUCING SYSTEM AND APPARATUS
John P. Palmer, Pomona, Calif., assignor to General Dynamics Corporation, Pomona, Calif.
Filed Mar. 10, 1975, Ser. No. 556,612
Int. Cl.² H01J 39/12; G02B 5/16
U.S. Cl. 250—239 **18 Claims**

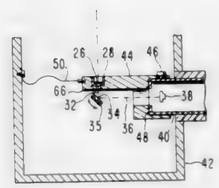


1. Integrated optical-to-electrical signal transducing apparatus comprising, in combination:
a container including a first wall;
an optical fiber terminating plug supporting a plurality of spaced first ends of optical fibers and carried in said first wall, said plug having a terminating surface ground optically smooth and polished in a plane normal to the longitudinal axis of the fibers and including the first ends of the fibers in said surface;
an array of photo-sensitive elements supported in said container with said elements opposing respective ones of said spaced ends of said optical fibers, said array comprising a single detector substrate having a first planar surface aligned with and in contact with said plug terminating surface and a thin semiconductor layer vacuum deposited over an area of the detector substrate encompassing the ends of the fibers, selected regions of said layer in respective registration with corresponding ones of said fiber ends being sensitized to form said photo-sensitive elements as light-sensitive barriers to current flow through said regions;
preamplifier means carried in said container and coupled to respective ones of said photo-sensitive elements for responding to current through a selected barrier region in response to light at a corresponding fiber end; and
means for taking output signals from said preamplifier means.

3,963,921
METHOD FOR PRODUCING URANIUM ATOMIC BEAM SOURCE
Oscar H. Krikorian, Danville, Calif., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.
Filed Apr. 16, 1974, Ser. No. 462,016
Int. Cl.² G01N 27/78; B01D 57/00
U.S. Cl. 250—251 **7 Claims**

1. A method for producing a beam of neutral uranium atoms comprising the step of vaporizing uranium from a uranium-bearing compound composed essentially of uranium and a metal M whose vapor pressure is negligible compared to the vapor pressure of uranium at vaporization temperature and selected from the group consisting of rhenium, osmium, iridium, and niobium.

3,963,922
X-RAY FLUORESCENCE DEVICE
Hans R. Zulliger, and Lee M. Middleman, both of Portola Valley, Calif., assignors to Nuclear Semiconductor, Menlo Park, Calif.
Filed June 9, 1975, Ser. No. 584,937
Int. Cl.² G21K 7/00, 1/00; G01N 23/00, 23/20
U.S. Cl. 250—272 **10 Claims**



1. Apparatus for adapting an electron column instrument for X-ray fluorescence analysis of a sample, the electron column instrument being of the type having means for generating an electron beam and a surrounding evacuated chamber, the adapting apparatus comprising:
a target foil positioned to be struck on one side by the electron beam to thereby produce a fluorescent, primary X-ray beam directed to impinge upon the sample,

energy dispersive X-ray spectrometer means for detecting X-rays fluoresced from the sample by the primary X-ray beam, and wherein

the target foil, sample, and detecting means are contained within the evacuated chamber.

3,963,923

ION MICROPROBES

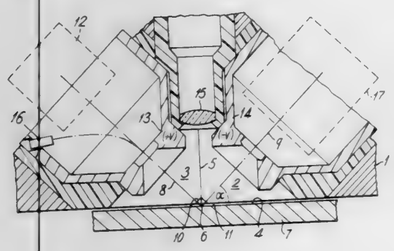
John Neil Coles, Trumpington, and James Victor Percival Long, Haslingfield, both of England, assignors to National Research Development Corporation, London, England

Filed Apr. 1, 1975, Ser. No. 564,084

Claims priority, application United Kingdom, Apr. 2, 1974, 14532/74

Int. Cl.² H01J *37/26*

U.S. Cl. 250—309 **6 Claims**



1. An ion microprobe including an ion extraction arrangement comprising two separate paths for ions and electrons diverging from a common point, a generally cone-shaped guard electrode surrounding each path, the apex angles of which guard electrodes are equal to each other and the apexes coinciding with the said point, said guard electrodes being positioned to lie tangentially to each other and to a planar surface including the said point, an aperture for said paths at the common apex of both guard electrodes, electrical connection between the guard electrodes for enabling the same potential to be applied to both guard electrodes, means for generating electric fields within the guard electrodes oppositely polarised with respect to each other, and means for allowing a focussed ionising beam to strike the said point without suffering astigmatism.

3,963,924

METHOD AND APPARATUS FOR TAKING X-RAY PICTURES

John Wilson Boag, Sutton; Paul Nelson Jeffery, Chandler's Ford, both of England, and Harold Elford Johns, Toronto, Canada, assignors to National Research Development Corporation, London, England

Filed June 26, 1974, Ser. No. 483,432

Claims priority, application United Kingdom, June 23, 1973, 30682/73

Int. Cl.² G03B *41/16*

U.S. Cl. 250—315 A **7 Claims**

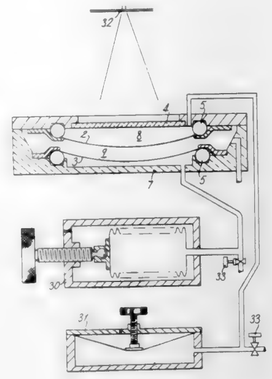
1. An apparatus for taking X-ray pictures of an object comprising:

a source of ionizing radiation,

a housing,

a pair of electrodes in said housing defining an ionization chamber, at least one of said electrodes being in the form of a flexible sheet which includes a conductive layer and an insulating layer for collecting on the surface thereof ions generated in said chamber, both of said electrodes having substantially spherically curved surfaces with their respective centers of curvature being located at said source of ionizing radiation,

means for establishing a differential gas pressure across said at least one flexible sheet for forming said at least one flexible sheet into a spherically curved shape having a center of curvature at said source of ionizing radiation,



means for applying a potential difference across said electrodes, and

means for introducing into said ionization chamber an ionizing radiation absorbing gas.

3,963,925

PHOTOCONDUCTIVE DETECTOR AND METHOD OF FABRICATION

Billy H. Breazeale, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 26, 1975, Ser. No. 553,346

Int. Cl.² G01J *1/00*

U.S. Cl. 250—338 **8 Claims**

1. An improved infrared detector comprising:

a. a slab of photoconductive material;

b. a pair of spaced electrodes mounted adjacent opposing sides of said slab, said spaced electrodes forming an interelectrode dimension across the slab;

c. a layer of anti-reflecting and insulating material covering the slab between the spaced electrodes; and

d. means for forming a detector element active region between the electrodes selectively on the interelectrode dimension of the slab.

3,963,926

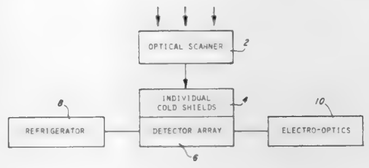
DETECTOR COLD SHIELD

Sebastian R. Borrello, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 9, 1975, Ser. No. 539,893

Int. Cl.² H01J *31/49*

U.S. Cl. 250—338 **8 Claims**



1. A thermal energy receiver comprising:

a. an optical scanner for scanning a scene emanating thermal energy, said optical scanner producing a field of view of the scene;

b. an array of thermal energy semiconductor detectors mounted in the path of the field of view of the optical scanner for porducing electrical signals representative of the thermal energy impinging thereon;

c. an array of thermal energy absorbing semiconductor elements mounted on the substrate of the array of semiconductor detectors with edges in preselected juxtaposition to the field of view path for absorbing any interfering thermal energy generated outside the field of view of the optical scanner to improve the signal to noise ratio of the semiconductor detector array;

d. cooling means for cooling the array of detectors and array of thermal energy absorbing semiconductor elements; and

e. electro-optics coupled to the electrical output of the array of semiconductor detectors for forming a display of the scene scanned by the optical scanner.

3,963,927

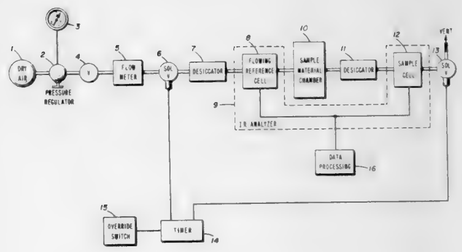
DETECTION OF HIDDEN INSECTS

William A. Bruce, and Marion W. Street, Jr., both of Savannah, Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 18, 1975, Ser. No. 588,108

Int. Cl.² G01N *21/34*

U.S. Cl. 250—338 **10 Claims**



1. A method for detecting hidden insects in agricultural material comprising:

a. placing a sample of said material in a substantially enclosed zone;

b. purging said zone with dry air;

c. sealing said zone for a time interval to allow the buildup of CO_2 in said zone from hidden insects in said material therein;

d. again purging said zone with dry air;

e. measuring by infrared analysis the CO_2 content of said dry air in step (d), prior to introduction into said zone;

f. measuring by infrared analysis the CO_2 content of gas which is purged from said zone in step (d);

g. comparing the measurements in steps (e) and (f) so as to determine the amount of CO_2 which has been imparted to said dry air by said hidden insects in said zone;

h. sealing said zone for the same time interval as in step (c) to again allow the buildup of CO_2 in said zone from said hidden insects; and

i. thereafter repeating steps (d), (e), (f), and (g).

3,963,928

MULTIPLE CHAMBER CHEMILUMINESCENT ANALYZER

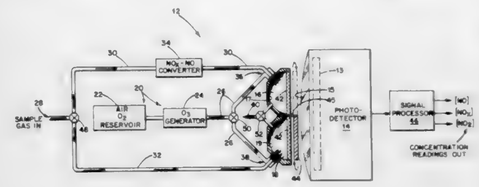
William J. Zolner, Westford, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Continuation of Ser. No. 470,876, May 17, 1974, Pat. No. 3,882,028. This application Mar. 17, 1975, Ser. No. 558,749

The portion of the term of this patent subsequent to May 6, 1992, has been disclaimed.

Int. Cl.² G01T *1/20*

U.S. Cl. 250—361 C **20 Claims**



1. Apparatus for observing chemiluminescent reaction comprising:

a plurality of reaction chambers having optical openings therein;

means for supplying reagents and samples to each of said reaction chambers;

a photodetector spatially arranged to observe sites of reaction in each of said chambers for detecting radiant energy given off as a result of chemiluminescent reaction in said chambers and for generating an output responsive to said detected energy; and

means periodically coupling and uncoupling radiant energy from each of said chambers to said photodetector for forming in said output a sequence of discrete time-wise interlaced signals.

3,963,929

IONIZATION ANALYZING AIR POLLUTION, SMOKE AND FIRE ALARM DEVICE

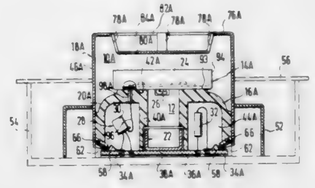
Hartwig Beyersdorf, Bad Oldesloe, Germany, assignor to GEBA-Gesellschaft fur elektronische Brandmeldeanlagen mbH & Co., Hamburg, Germany

Division of Ser. No. 460,041, April 11, 1974. This application Mar. 10, 1975, Ser. No. 556,931

Claims priority, application Germany, Apr. 24, 1973, 2320604; Jan. 24, 1975, 2403418

Int. Cl.² G08B *21/00*

U.S. Cl. 250—384 **19 Claims**



1. An ionization analyzing air pollution and fire alarm signal device comprising:

a housing including an outer wall and a peripheral cover with a central opening permitting passage of ambient air therethrough;

at least two electrodes;

a first electrode, having a substantially planar portion mounted in said housing adjacent said cover of a size and surface shape conforming to those of said opening in said cover; and

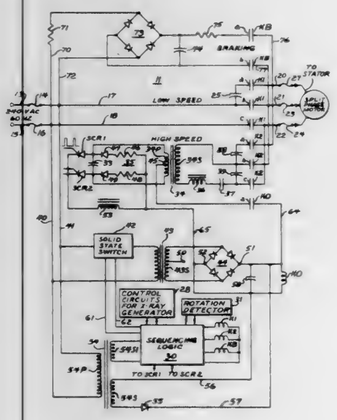
a second electrode located within said housing;
one end of said outer wall of said housing projecting axially beyond said first electrode and forming a sealing support for the outer edge of said cover;
spacers with apertures between them connecting said housing with said first electrode;
said cover defining together with said first electrode a baffle zone;
said cover, the planar portion of said first electrode and said second electrode mounted in planes parallel to each other and spaced from each other distances permitting passage of ambient air from said baffle zone and from there between said two electrodes;
the walls of said housing defining together with the said two electrodes a partially closed first chamber protected from excessive fluctuations of ambient air by said baffle zone;
a radio-active source for ionizing said chamber, and
an electrical circuit connected to said electrodes and being responsive to changes in electrical characteristics of the atmosphere in said first chamber,
an insulator forming a base for said housing,
said second electrode mounted on said insulator;
said outer wall of said housing being tubular;
at least a portion of the outer wall of said insulator being tubular and of a diameter mating with the tubular shape of said housing and permitting slipping on of said housing over the insulator;
said insulator having an outside wall of cuplike shape, open on its rear which faces away from the said second electrode, and an inside wall spaced from the said outside wall, and connected thereto in the area of the bearing surface of the second electrode, and
a signal transmitter circuit responsive to changes in electrical characteristics of the atmosphere in said first chamber in circuit connection with said electrodes, and having its circuit elements arranged within the insulator.

3,963,930

SYSTEM FOR CONTROLLING OPERATION OF THE ROTATING ANODE OF AN X-RAY TUBE

Louis L. Fiocca, Bensenville; Joel J. Schmutzer, Oak Park, and John I. Klusendorf, Schaumberg, all of Ill., assignors to Advanced Instrument Development, Inc., Melrose Park, Ill.

Filed Dec. 5, 1974, Ser. No. 529,735
Int. Cl.² H05G *1/70*
U.S. Cl. 250—402 **7 Claims**



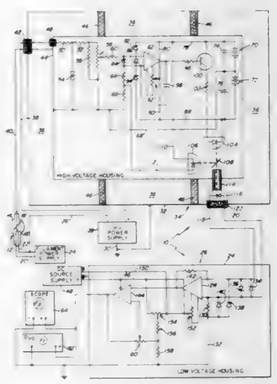
1. In an X-ray system, said system having an X-ray tube with a rotatable anode and an alternating current induction motor having a stator and a rotor for rotating said anode, said X-ray tube having an X-ray generator, control circuits for said generator, said system being connectable to a source of alternating current power at line frequency, the improvement comprising, closed loop control circuitry means for said X-ray system, including the X-ray generator control circuits, vibration responsive means for sensing the actual rotating speed of the anode and providing an output responsive thereto, and motor control means selectively operable to connect said source of power to said stator in response to the output from said sensing means, and means inter-connecting the X-ray generator control circuits, the sensing means, and the motor control means to provide said closed loop control circuitry means for regulating the rotor rotation at a selected speed, for enabling operation of said X-ray generator at least at said selected speed and for braking said rotor rotation.

3,963,931

X-RAY TUBE CURRENT MONITOR

Jonathan Salem Shapiro, Greenwich, Conn., assignor to The Machlett Laboratories, Incorporated, Stamford, Conn.

Filed Apr. 10, 1975, Ser. No. 566,890
Int. Cl.² G01R *31/00*; G02B *27/00*; H05G *1/30*
U.S. Cl. 250—416 R **10 Claims**



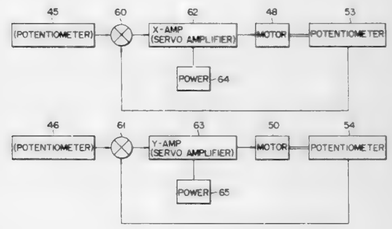
1. An X-ray tube monitoring apparatus comprising:
current sensing means disposed for electrical connection between an electrode of an X-ray tube and a direct current source for producing an electrical output signal indicative of a unidirectional current flowing through the tube;
opto-electronic isolating means coupled to the current sensing means for transmitting the signal therefrom in an electrically insulating manner to a respective output terminal of the isolating means; and
instantaneous display means electrically connected to the output terminals of the opto-electronic isolating means for indicating instantaneous changes in the value of a current flowing through the X-ray tube.

3,963,932

X-RAY TOMOGRAPHY APPARATUS

Hidemaru Ohno, Tokyo, and Yutaka Hayashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed July 17, 1974, Ser. No. 489,406
Claims priority, application Japan, July 20, 1973, 48-81354; Aug. 31, 1973, 48-102311[U]
Int. Cl.² G03B *41/16*
U.S. Cl. 250—445 T **2 Claims**



1. An X-ray tomography apparatus comprising a bed on which an object is laid; X-ray emitting means for irradiating X-rays onto the cross section of an object; an iris diaphragm having a diaphragm aperture through which the X-rays pass; means for holding an X-ray film for receiving the X-rays penetrating through the cross section of the object to form an X-ray image thereon; and operating means for moving said X-ray emitting means in a given orbit so as to cause the central axis of the X-rays therefrom to always pass through a prescribed reference point of the cross section of the object, for displacing said film holding means so as to cause the film to always receive the X-rays from said cross section while the film is kept parallel to the cross section, and for driving said iris diaphragm such that the iris aperture is always positioned parallel to the film whereby the X-ray paths from the X-ray emitting means to the diaphragm aperture and therefrom to the prescribed reference point are maintained constant during movement of the X-ray emitting means, said iris diaphragm including a blade to regulate the diaphragm aperture, an inside frame holding said blade and rockable about one horizontal axis and an outside frame rockable about another horizontal axis normal to said one horizontal axis, said operating means including a link mechanism rockable about the longitudinal and lateral axes of the bed, said link mechanism having a first link mounting said X-ray emitting means and iris diaphragm on an extended end portion and a second link mounting the film holding means on an extended end portion, said two links always being kept parallel to each other, means for swinging said iris diaphragm to rock said iris diaphragm to thereby hold the diaphragm aperture always parallel to the X-ray film during the movement of the diaphragm, said swinging means including a first motor for rocking the outside frame and a second motor for swinging the inside frame, and a first detector for detecting a swung angle of the link mechanism in one direction, a second detector for detecting a swung angle in the other direction, and an electric circuit for driving said first and second motors in response to output signals from these detectors.

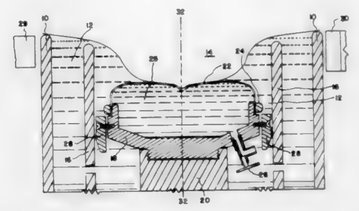
3,963,933

MAMMOGRAPHY FIXTURE

John L. Henkes, Jr., Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 18, 1975, Ser. No. 605,418
Int. Cl.² G03B *41/16*
U.S. Cl. 250—456 **11 Claims**

1. A fixture for compressing a pendant breast during tomographic mammography procedures comprising:
a substantially circular pan having an upwardly directed concave surface;
a thin, elastic membrane disposed over said concave surface and sealably affixed to the circumference of said pan; and



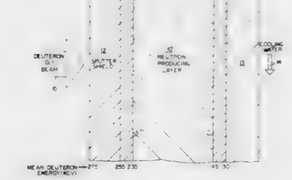
a first fluid transmission medium disposed between said pan and said membrane whereby a pendant breast compressed against said membrane is conformally pressed into a substantially cylindrical form.

3,963,934

TRITIUM TARGET FOR NEUTRON SOURCE

John H. Ormrod, Deep River, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 340,336, March 12, 1973, abandoned. This application Nov. 20, 1974, Ser. No. 525,515
Claims priority, application Canada, May 16, 1972, 142273
Int. Cl.² G21G *4/02*
U.S. Cl. 250—499 **5 Claims**



1. A tritium target for use in conjunction with a beam of deuterons to provide a neutron source that comprises a target layer of tritiated titanium sandwiched between first and second layers of a metal oxide which act to inhibit diffusion of tritium out of the target layer and diffusion back into the target of deuterons that have passed therethrough, the said first metal oxide layer being on the beam side of the target layer, a layer of aluminum on the first metal oxide layer to protect the metal oxide layer from sputtering action by direct impingement of the deuteron beam, a metallic backing layer on the second metal oxide layer, said backing layer being of a metal having a high diffusion coefficent, and cooling means adjacent the backing layer for cooling the said target and absorbing and diffusing stopped deuterons.

3,963,935

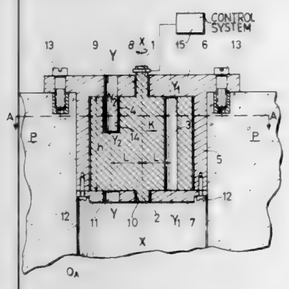
SHUTTER DESIGNED TO BLOCK HIGH-ENERGY PARTICLE BEAMS

Bernard Donnadille, Paris, France, assignor to C.G.R.-Mev., Paris, France

Filed Apr. 4, 1975, Ser. No. 565,137
Claims priority, application France, Apr. 9, 1974, 74.12472
Int. Cl.² G21F *5/04*; G21K *1/02*
U.S. Cl. 250—514 **5 Claims**

1. A shutter for a high-energy particle beam, which makes it possible to close off an opening formed in a wall of a given

thickness, comprising a metal block K of cylindrical form having a radius R and an axis XX, said block K being equipped at each of its ends and on the axis XX, with pivots, said block K being arranged in a cylindrical metal cage closed at its ends respectively by a first plate and by a second plate, each of said plates being equipped with a central hole in which there can engage one said pivots of the block K, and with an eccentric hole, said eccentric holes being disposed mutually opposite one another and having a common axis YY parallel to the axis XX of said central hole located at an interval L therefrom,



said cylindrical block K being provided with longitudinal passage of cylindrical form, having a diameter d and axis Y_1Y_1 parallel to said axis XX and located at an interval L from the latter, and also containing a blind hole, referred to as a "pit," having a diameter substantially equal to said diameter d and having an axis Y_2Y_2 parallel to said axis XX and symmetrical with said axis Y_1Y_1 in relation to said axis XX, said distance L being chosen in such a fashion that the relationship:

$$\frac{d}{2} < L < L - \frac{d}{2}$$

is satisfied.

3,963,936

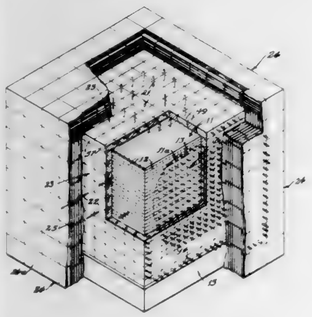
NEUTRONIC REACTOR THERMAL SHIELD

Paul E. Lowe, Blue Ash, Ohio, assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Mar. 14, 1955, Ser. No. 494,298

Int. Cl.² G21F *3/04*

U.S. Cl. 250—517 **1 Claim**



1. The combination with a plurality of parallel horizontal members arranged in horizontal and vertical rows, the spacing of the members in all horizontal rows being equal throughout, the spacing of the members in all vertical rows being equal throughout; of a shield for a nuclear reactor comprising two layers of rectangular blocks through which the members pass generally perpendicularly to the layers, each block in each layer having for one of the members an opening equally spaced from vertical sides of the block and located closer to the top of the block than the bottom thereof, whereby gravity tends to make each block rotate about the associated member to a position in which the vertical sides of the block are truly vertical, the openings in all the blocks of one layer having one equal spacing from the tops of the blocks, the openings in all the blocks of the other layer having one equal spacing from the tops of the blocks, which spacing is different from the corresponding spacing in the said one layer, all the blocks of both layers having the same vertical dimension or length, the blocks of both layers consisting of relatively wide blocks and relatively narrow blocks, all the narrow blocks having the same horizontal dimension or width which is less than the horizontal dimension or width of the wide blocks, which is the same throughout, each layer consisting of vertical rows of narrow blocks and wide blocks alternating with one another, each vertical row of narrow blocks of each layer being covered by a vertical row of wide blocks of the other layer which wide blocks receive the same vertical row of members as the said each vertical row of narrow blocks, whereby the rectangular perimeters of each block of each layer is completely out of register with that of each block in the other layer.

3,963,937

INFORMATION SEARCHING DEVICE

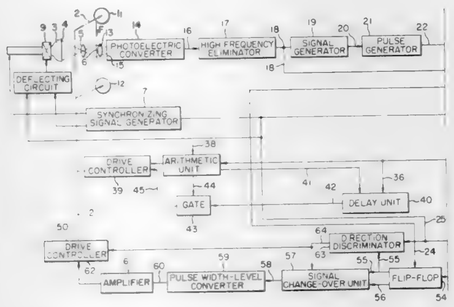
Mutsuhiro Inoue, Sagamihara; Akira Konno, Tokyo, and Yukio Izaka, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1974, Ser. No. 500,394

Claims priority, application Japan, Aug. 29, 1973, 48-97087

Int. Cl.² G01N *21/30*

U.S. Cl. 250—548 **30 Claims**



1. An arrangement for searching a desired frame, or frames, of an image on a film having marks associated with the frames comprising:

means for feeding the film;

means for repeatedly scanning, at a constant repetition rate, a scanned area which the film runs through, to detect the mark, said scanning means being adapted to scan the mark a plurality of times to produce, in each scanning, a detection signal when detecting the mark, so that a plurality of the detection signals associated with the mark are produced while the scanned area contains the mark;

means operative in response to the detection signals for making, from the plurality of detection signals, a mark signal which is for use in identifying the marks that have passed through the scanned area; and

means operative in response to the mark signals for controlling the feeding of the film when receiving the mark signal associated with a desired frame, or frames, of an image on the film.

3,963,938

APPARATUS FOR SCANNING CANTS TO DETERMINE OPTIMUM EDGING CUTS

Benkt Sanglert, Jonkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

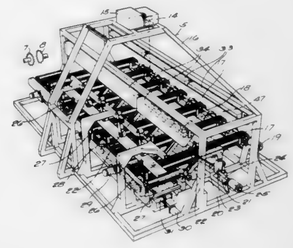
Filed Apr. 16, 1975, Ser. No. 568,608

Claims priority, application Sweden, Apr. 22, 1974, 7405346

The portion of the term of this patent subsequent to May 27, 1992, has been disclaimed.

Int. Cl.² G01N *21/30*

U.S. Cl. 250—561 **8 Claims**



1. Apparatus for scanning an unfinished elongated workpiece having a substantially flat top surface that terminates at a pair of opposite, longitudinally extending side edges and having a pair of generally downwardly extending side surfaces that extend along its length and meet said top surface at the respective side edges, said apparatus producing signals as a result of such scanning that are related to the orientation and configuration of said side edges and their spacing from one another, said apparatus comprising:

A. workpiece supporting means defining an elongated scanning station which extends lengthwise in one horizontal direction and at which a workpiece can be held stationary with its top surface horizontal;

B. a reflector having a flat reflecting surface;

C. means mounting the reflector for flatwise swinging motion about a fixed horizontal axis which is parallel to said reflecting surface, said axis also being

1. transverse to said one direction and

2. so spaced above the supporting means that the reflector can reflect to a location above the supporting means an image of a zone which extends entirely across a workpiece on the supporting means and which moves lengthwise along the scanning station as the reflector swings about said axis;

D. photoresponsive detector means fixed at said location to receive the image reflected by the reflector and arranged for repetitive electronic scanning at a predetermined rate along a line parallel to said axis;

E. lens means located in an optical path between said reflector and said detector means and arranged to bring into focus at said detector means said image reflected in said reflecting means;

F. actuating means for swinging the reflector about said axis towards and from a defined starting position and through at least one scanning traverse which starts with the reflector in said starting position, said actuating means maintaining a rate of swing of the reflector during said scanning traverse that is so related to the rate of repetitive scanning as to advance the imaged zone lengthwise along the scanning station from scan to scan; and

G. lighting means comprising a plurality of light sources located at a level above the supporting means to cast illumination along the full length of the scanning station and to so illuminate a workpiece on the supporting means as to delineate each of said side edges thereon by illuminating only one of the two surfaces which meet at said side edge.

3,963,939

ANALYZING GASES BY TESTING THE OPTICAL CHARACTERISTICS OF EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES

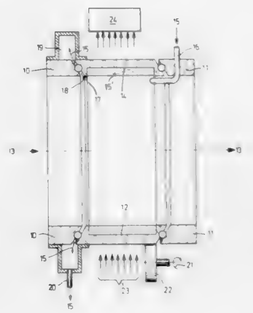
Josef Zweng, Warmbronn, and Iwan Komaroff, Regensburg, both of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Aug. 27, 1975, Ser. No. 608,277

Claims priority, application Germany, Sept. 7, 1974, 2442968

Int. Cl.² G01N *21/26*

U.S. Cl. 250—576 **16 Claims**



1. In an apparatus to determine the soot content in the exhaust gases (13) of an internal combustion engine, a gas optical transmissivity analysis system connected into the exhaust stream of the engine, said system comprising

a rotatable tubular element (12) of material transparent to radiation, connected in the stream of the gas (13);

means (15, 16) introducing a liquid transparent to radiation to the inside wall of the tubular element (12) to form a film (15) of liquid thereon by centrifugal force upon rotation of said element;

means (23) directing radiation across said tubular element (12) through the liquid film (15) centrifugally adhering to the inner wall of the tubular element (12) and through the gas stream flowing therein;

and means (24) analyzing the radiation received after having passed through said stream to provide a measure representative of the optical characteristics of the gas flowing through the tubular element (12) and hence of the soot content of the exhaust gas.

3,963,940

AUTOMATIC HEADLIGHT CONTROL CIRCUIT

Michael R. Adamian, P.O. Box 223, Naperville, Ill. 60540

Filed Feb. 4, 1975, Ser. No. 547,002

Int. Cl.² B60Q *1/08*

U.S. Cl. 307—10 LS **6 Claims**

1. Automatic control apparatus for use in an automotive vehicle having one or more lamps, an electrical power source, and a source of engine ignition pulses, said control apparatus comprising:

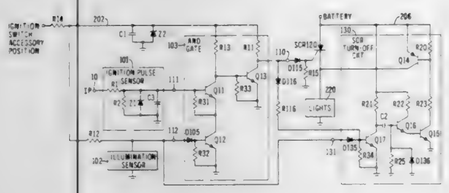
circuit means connected to said source of ignition pulses for generating a first series of output signals corresponding to said ignition pulses at least in duration;

light sensitive means responsive to changes in ambient illumination for indicating level of ambient illumination;

gate circuit means responsive to said light sensitive means and said first series of signals for generating a second series of output signals corresponding to said ignition

pulses, at least in duration, when ambient illumination is below a selected level;

a gate controlled bi-stable semi-conductor device having a control terminal, a current input terminal, and a current output terminal, and connected at its current input and output terminals in series in a current path from said power source to said lamps and responsive to one of said second series of signals from said gate circuit means corresponding to said ignition pulses at least in duration, applied to said control terminal, to switch from a non-conducting state to a conducting state; and



circuit means for selectively switching said semi-conductor device from the conducting state to the non-conducting state comprising a transistor connected between said input terminal and said output terminal for shunting current there-between external to said semi-conductor device, and a capacitor connected to said transistor for temporarily placing said transistor in a conducting mode for shunting current external to said semi-conductor device when said lamps are to be extinguished.

3,963,941

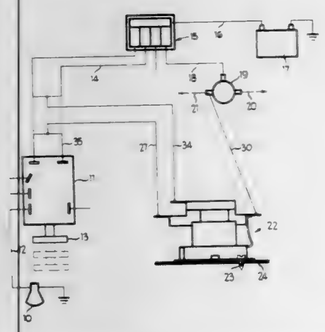
AUTOMATIC LIGHT SWITCH AND BATTERY DISCONNECT

Oscar H. Banker, 261 Breezewood Drive, Bay Village, Ohio 44140

Filed Apr. 16, 1975, Ser. No. 568,693

Int. Cl.² H01H *47/18*

U.S. Cl. 307—10 BP **9 Claims**



1. In a vehicle having lights, a control switch for the lights, a source of electric current, an ignition circuit for an internal combustion engine and an ignition switch in the ignition circuit having "on" and "off" positions, said ignition switch in its "on" position energizing both the ignition and accessories circuits, a thermally responsive relay switch having a heating element and a single pole, double throw switch responsive to the temperature of said heating element, the pole of said last-mentioned switch being connected at one end to the control switch for the lights, one contact of the double throw switch being connected to the accessories circuit and the other contact of said double throw switch being connected to the source of electric current, whereby upon setting the ignition switch in its "on" position, the source of electric current is connected to the light control switch through the accessories circuit and thereafter the source of electric current to the light switch is dependent only upon the thermally responsive relay switch for supplying current to the light control switch.

3,963,942

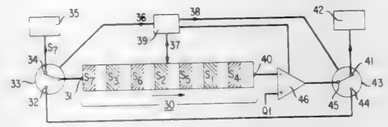
SEMICONDUCTOR CHARGE TRANSFER DEVICES WITH DARK CURRENT BACKGROUND CANCELLATION

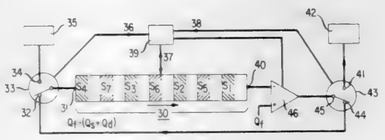
Carlo Heinrich Sequin, New Providence, and Peter Van Dyke Wilde, Bernardsville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 6, 1975, Ser. No. 556,135

Int. Cl.² H03K *3/353*; **H01L** *29/78*

U.S. Cl. 307—221 D **8 Claims**





1. Semiconductor apparatus which comprises:

a. a semiconductor charge transfer device having a single input transfer device terminal and a single output transfer device terminal;

b. an inverter having an inverter output terminal, said output device terminal connected to an input terminal of the inverter;

c. a single input signal source terminal;

d. an input feedback terminal;

e. an output feedback terminal connected to the input feedback terminal;

f. first electrical switching means for connecting the input device terminal in periodic alternate succession to one of the input signal source terminal and the input feedback terminal;

g. second electrical switching means for connecting the inverter output terminal alternately to one of a utilization means terminal and the output feedback terminal which is connected to the input feedback terminal; and

h. clock cycle means for producing periodic cycles of charge transfer in the device and for controlling the first and second switching means, each cycle comprising a phase from each of a first and second periodic sequence of clock phases, such that the inverter output terminal is connected to the input device terminal through the input feedback terminal during the first periodic sequence of clock phases and is connected to the utilization means during the second periodic sequence of clock phases interlaced with and complementary to the first sequence, and such that the input device terminal is connected to the input signal source during said second sequence of clock phases.

3,963,943

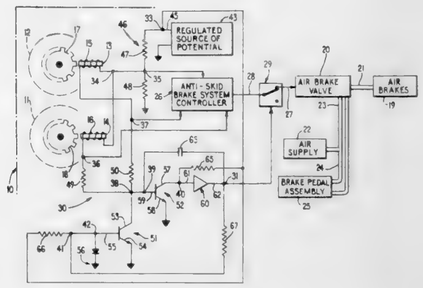
ANTI-SKID BRAKE CONTROL SYSTEM AND FAILSAFE CIRCUIT THEREFOR

Said Sapir, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 495,227, Aug. 6, 1974, Pat. No. 3,917,359. This application Apr. 2, 1975, Ser. No. 564,489

Int. Cl.² H03K *5/20*

U.S. Cl. 307—235 T **1 Claim**



1. In electrical apparatus, the combination comprising: first and second circuit components for producing first and second variable currents, respectively; and amplifier means connected from said first and second circuit components for producing a first predetermined output signal when the sum of said first and second currents is greater than the magnitude of a predetermined constant current, and for producing a second predetermined output signal different from said first predetermined output signal when the sum of said first and second currents falls below the magnitude of said predetermined constant current, a regulated source of potential being provided having a first output lead connected to a point of reference potential, and a second output lead, said circuit components each having a first lead connected from the second output lead of said source, and a second lead, first and second transistors each having a collector, an emitter and a base, a first resistor connected from the second output lead of said source to said first transistor base, an amplifier having an input lead and an output lead, a second resistor connected from said amplifier input lead to the second output lead of said source, a third resistor connected from said amplifier output lead to said first transistor base, a diode connected from said first transistor base to said point of reference potential, both of said emitters being connected to said point of reference potential, a fourth resistor connected from the second lead of said first circuit component to said second transistor base, a fifth resistor connected from the second lead of said second circuit component to said second transistor base, a capacitor connected from said amplifier output lead to said second transistor base, said amplifier means output signals being produced on said amplifier output lead, said first transistor collector being connected from said second transistor base, said second transistor collector being connected to said amplifier input lead.

3,963,944

DEVICE FOR CONVERTING AN ANALOGOUS SIGNAL INTO A PULSE-LENGTH-MODULATED PULSE SERIES

Leif Kristiansen, Trangsund, Sweden, assignor to Cemo Instruments AB, Vallingby, Sweden

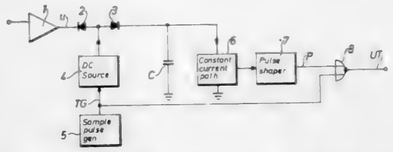
Filed Nov. 20, 1974, Ser. No. 525,452

Claims priority, application Sweden, Nov. 23, 1973, 7315915

Int. Cl.² H03K *1/12*, *1/18*

U.S. Cl. 307—265 **3 Claims**

1. Device for converting an analogous signal having a varying amplitude into a pulse series having a pulse width proportional to the prevailing amplitude of the analogous signal, comprising means responsive to said analogous signal for providing an electric potential proportional to the prevailing amplitude of the analogous signal; a capacitor; a current source; a sample pulse generator for generating repetitive sample pulses; means responsive to said sample pulses for connecting said capacitor operatively to said potential and said current source for the duration of each sample pulse for charging said capacitor from said current source up to said potential; a constant current discharge path having a constant



current value lower than the current value of said current source and permanently connected directly across said capacitor; current detecting means for detecting the presence and absence of a current flow in said constant current discharge path and producing an output signal in the absence of a current flow in said constant current discharge path; and NOR circuit means having a first input receiving said sample pulses and a second input receiving said output signal of said current detecting means and an output on which said pulse series having a pulse width proportional to the prevailing amplitude of the analogous signal is provided.

3,963,945

DEVICE FOR PRODUCING ELECTRICAL PULSES

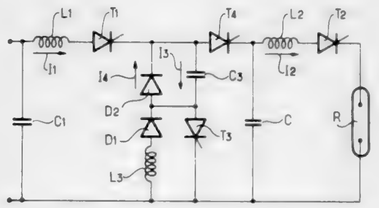
Roland Colyn, Le Perreux-sur-Marne, France, assignor to Compagnie Generale d'Electricite, Paris, France

Filed Mar. 13, 1976, Ser. No. 558,100

Claims priority, application France, Mar. 14, 1974, 74.08745

Int. Cl.² H01S *3/09*; **H03K** *3/57*

U.S. Cl. 307—268 **1 Claim**



1. A device for producing electrical pulses in a load element connected to the device, and comprising:

a first capacitor;

a charging circuit for the first capacitor and comprising an alternating current voltage source rectified by a bridge, a second capacitor the plates of which are connected respectively to the outputs of the bridge, the plates of the second capacitor also being connected respectively to the plates of the first capacitor;

a first branch connected in parallel with said first capacitor between said first and second capacitors, the first branch comprising, in series, a third capacitor and a first thyristor, said first thyristor allowing a current to pass through said third capacitor when the thyristor is on;

a second branch connected in parallel with said first capacitor between said first and second capacitors, the second branch comprising in series a first inductance, a first diode, and a second diode, the first diode and the first inductance being in parallel with the first thyristor, said

first diode allowing a current to pass in said third capacitor when said first thyristor is off, that current flowing in the opposite direction to that which crosses said third capacitor when said first thyristor is on, said first and second diodes being poled in the same direction in said second branch;

a second inductance and a second thyristor connected in series in the charging circuit between said second capacitor and said branches, the second thyristor allowing the charging current to pass when the thyristor is on; and

a third thyristor connected in series in the charging circuit between said branches and said first capacitor, the third thyristor allowing the charging current to pass when the thyristor is on;

whereby, the selective turning on and off of said first, second and third thyristors repetetively stores energy in said third capacitor and transfers it to said first capacitor for subsequent discharge into said load element as the electrical pulses.

3,963,946

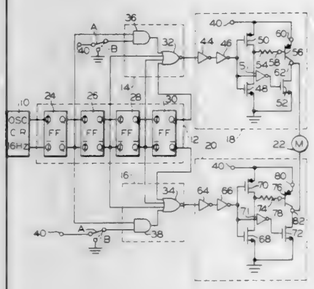
DRIVER CIRCUIT FOR STEP MOTOR

Chester J. Zajac, Litchfield, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 21, 1975, Ser. No. 551,866

Int. Cl.² H07K *17/00*

U.S. Cl. 307—270 **8 Claims**



1. A driver circuit for a step motor comprising

a binary divider circuit having a plurality of at least first, second and third serially connected binary stages and an input responsive to signals of a first frequency, said stages having respective outputs upon which pulses having respective decreasing frequencies corresponding to succeeding divisions of the first frequency are generated;

first gating means having a plurality of at least first, second and third inputs with the first and second inputs of the first gating means connected to the outputs of the respective second and third stages, said first gating means having an output upon which pulses of a frequency determined by the frequency on the output of the third stage are produced;

amplifier means connected to the output of the first gating means for generating motor driving pulses;

second gating means having a first input, a second input, and an output, the first input of the second gating means connected to the output of the first stage of the divider circuit, the output of the second gating means connected to the third input of the first gating means; and

means, connected to the second input of the second gating means, for selecting the operation of the second gating means to determine the width of pulses produced by the amplifier means.

3,963,947

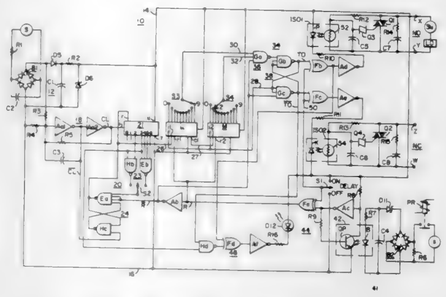
DIGITAL TIME DELAY RELAY UTILIZING LOGIC ELEMENTS

George F. Bogel, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 29, 1974, Ser. No. 501,430

Int. Cl.² H03K *5/13;* **H01H** *47/18;* **G05F** *1/40*

U.S. Cl. 307—293 **10 Claims**



1. A solid-state relay, comprising:

a. control means for actuating solid-state contact means to change state; and

b. a pair of complementary solid-state contact means interconnected with said control means one of which is generally opened and the other of which is generally closed, said control means actuating each of said solid-state contact means to change state in which case said contact means which is closed will always open before said contact means which is opened will close, each said solid-state contact means comprising a light emitting means interconnected with said control means which produces light in relationship to a signal from said control means, each said contact means also comprising light sensitive resistance means disposed in light accepting relationship with said light emitting means for changing resistance between a higher and lower value of resistance in relationship to the change of light in the vicinity of said resistance means, said light sensitive resistive means controlling the state of said contact means, a predetermined amount of change of said resistance causing said associated contact means to change state, said change of said resistance from said lower value of resistance to said higher value of resistance occurring at a different rate than said change of resistance from said higher value of resistance to said lower value of resistance consequently causing one said contact means to open before said other contact means closes.

3,963,948

MAGNETIC PULSE GENERATOR

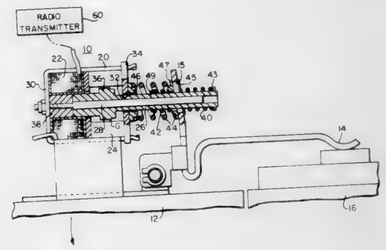
Walter V. Bratkowski, McKeesport, and John A. Wafer, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1975, Ser. No. 552,833

Int. Cl.² H02K *35/06*

U.S. Cl. 310—15 **4 Claims**

1. A bi-stable magnetic pulse generator assembly, comprising an elongated armature adapted for lineal movement along the longitudinal axis, a single magnet assembly having pole pieces positioned in a radial relationship with respect to said armature to establish an air gap therebetween and provide a passage therebetween to support the lineal movement of said armature, electrical coil means operatively associated with said magnet assembly, magnetic circuit means for magnetically latching said armature through said single magnet assembly in both a first and second stable position, and actuator means coupled to said armature to respond to an actuating force which is applied in a direction opposing the magnetic force latching said armature in either said first or second stable position to rapidly move said armature to said other stable position when the actuating force exceeds said magnetic force independent of the rate at which the actuating force is applied, said magnetic circuit means providing a first and second magnetic circuit through said single magnet assembly, said first magnetic circuit corresponding to the magnetic flux path established between said armature and said single magnet assembly when said armature is in said first stable position, and said second magnetic circuit corresponding to the magnetic flux path between said armature and said single magnet assembly when said armature is in said second



stable position, said single magnet assembly producing a magnetic flux transfer from said first magnetic circuit to said second magnetic circuit in response to movement of said armature from said first stable position to said second stable position and producing a magnetic flux transfer from said second magnetic circuit to said first magnetic circuit in response to movement of said armature from said second stable position to said first stable position, said magnetic flux transfer enhancing the movement of said armature from said one stable position to the other stable position, said electrical coil means responding to the changes in magnetic flux caused by the movement of said armature between said first and second stable positions by producing electrical pulses.

3,963,949

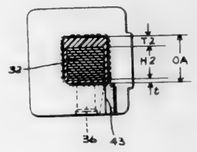
LAMINATED STRUCTURE WITH INSULATING MEMBER FORMED IN SITU THEREON

Ralph E. Church, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 301,162, Oct. 26, 1971, Pat. No. 3,813,763, which is a division of Ser. No. 99,049, Dec. 17, 1970, Pat. No. 3,709,457. This application Feb. 6, 1974, Ser. No. 439,895

Int. Cl.² H02K *1/04*

U.S. Cl. 310—43 **13 Claims**



1. An insulated magnetizeable laminated core assembly for use in a dynamoelectric machine having a stator and rotor; the insulated core assembly comprising a plurality of magnetizeable laminations arranged in a stack having an actual stack height within a preselected range; and a molded in situ body of insulation supported on the stack of magnetizeable laminations; said molded in situ body of insulation having a portion along one surface of the stack of laminations with a first thickness, and at least one other portion having a thickness greater than the first thickness by an amount that is dependent on the actual stack height.

3,963,950

STATOR OF ROTARY ELECTRIC MACHINE

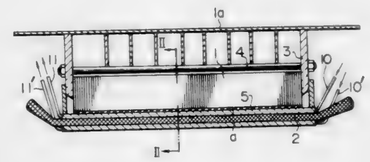
Masatoshi Watanabe; Noriyoshi Takahashi, and Miyoshi Takahaski, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 15, 1974, Ser. No. 514,958

Claims priority, application Japan, Oct. 17, 1973, 48-115908; Nov. 30, 1973, 48-133501

Int. Cl.² H02K *1/20*

U.S. Cl. 310—54 **2 Claims**



1. A stator for a rotary electric machine comprising an annular stator core, a stator winding including a plurality of fine strands and arranged at the inner surface of said stator core, and a plurality of cooling pipes in the form of a separate cylindrical frame fitted onto the inner surface of said stator core, said strands of said winding being supported by said cylindrical frame of said cooling pipes, in which said cylindrical frame of cooling pipes includes in at least double layers of cooling pipes, said strands of said winding being securely supported between said double layers of said cylindrical frame of cooling pipes, and in which said strands of said windings are disposed in winding sections, each of said sections being securely supported between respective adjacent ones of said plurality of cooling pipes in each of said double layers of said cylindrical frame.

3,963,951

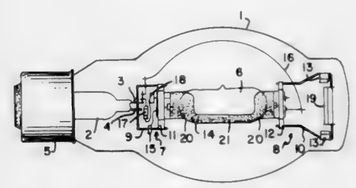
METAL HALIDE DISCHARGE LAMP HAVING A REFLECTIVE COATING

William I. Ramberg, Medford, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 20, 1975, Ser. No. 588,578

Int. Cl.² H01J *61/52*

U.S. Cl. 313—44 **3 Claims**

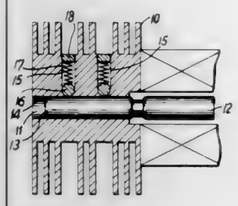


1. In a metal halide arc discharge lamp of the type having an arc tube having electrodes at each end thereof and containing a fill including mercury, metal halide and a starting gas, the improvement which comprises a stripe of heat reflecting material longitudinally extending across the bottom of the arc tube when the arc tube is in a horizontal position.

3,963,952
HEAT-DISSIPATING DEVICE FOR THE COLLECTOR OF TRAVELING-WAVE TUBE

Ryuzo Orui; Genichi Goto, and Toshio Yamaguchi, all of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed May 19, 1975, Ser. No. 578,942
Claims priority, application Japan, May 29, 1974, 49-60756[U]
Int. Cl.² H01J 7/24
U.S. Cl. 313—45 4 Claims

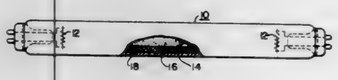


1. A heat-dissipating device for the collector of a traveling-wave tube of the type in which the collector is loosely fitted in an axial aperture formed in a solid heat-dissipating member, said heat-dissipating device comprising at least one radial hole formed in the wall of said axial aperture and opening thereto, a contacting element accommodated in said radial hole and having a spherical surface for contacting engagement with the collector fitted in said axial aperture, and biasing means arranged in said radial hole radially outwardly of said contacting element and fixed at one end to act at the other end to urge said contacting element into pressure contact with said collector.

3,963,953
COLOR MISMATCH ACCENTUATING DEVICE

William A. Thornton, Jr., Cranford, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 29, 1975, Ser. No. 572,815
Int. Cl.³ H01J 63/04
U.S. Cl. 313—487 6 Claims



1. A device which generates light of a quality which will accentuate the mismatch in color appearance of objects having different spectral reflectance curves but which appear at least generally similar in color under illumination by daylight, said device comprising:

a. a light generating medium for generating visible radiations which are substantially confined to at least two of the four color mismatch accentuating wavelength ranges and which are not substantially confined to two complementary color wavelength ranges, said color-mismatch-accentuating wavelength ranges consisting of:
   i. from 405 to 435 nm,
   ii. from 475 to 505 nm,
   iii. from 565 to 595 nm,
   iv. from 645 to 675 nm; and
b. means for energizing said light generating medium to a light generating condition.

3,963,954
FLUORESCENT LAMP HAVING INDIUM OXIDE CONDUCTIVE COATING AND A PROTECTIVE COATING THEREFOR

Howard W. Milke, Danvers, and Tadius T. Sadoski, Salem, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

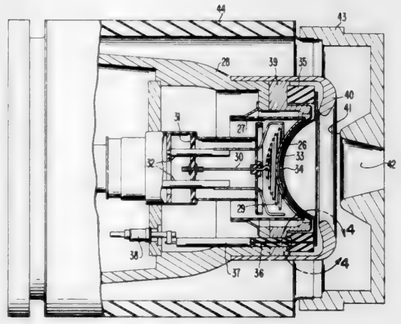
Filed Nov. 25, 1974, Ser. No. 526,557
Int. Cl.² H01J 61/35, 61/42, 61/54
U.S. Cl. 313—489 2 Claims

1. In a fluorescent lamp having a glass envelope containing low pressure mercury vapor and an internal coating of luminescent material, the improvement comprising a thin transparent conductive layer of indium oxide on the inner surface of the glass envelope, a thin transparent layer of particulate titanium dioxide on the indium oxide, the titanium dioxide layer improving the conductivity of the indium oxide, a thin transparent protective layer of aluminum oxide on the titanium dioxide and the luminescent material coated on the aluminum oxide layer.

3,963,955
MEANS AND METHOD FOR SUPPRESSING OSCILLATIONS IN ELECTRON GUNS

George V. Miram, Atherton, and Gordon T. Hunter, Mountain View, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Apr. 15, 1974, Ser. No. 460,860
Int. Cl.² H01J 23/08
U.S. Cl. 315—5.34 7 Claims



1. An electron gun comprising a plurality of electrodes shaped to generate a stream of electrons and direct said stream emergent from said gun, support means positioning said electrodes said support means including a member of direct current dielectric material forming an insulating support between two of said electrodes for maintaining a fixed spaced relationship therebetween, said material presenting high loss at radio frequencies so as to reduce the resonant impedance of at least one electromagnetic mode of said electrodes and said support means, said mode comprising fields interacting with the electron stream.

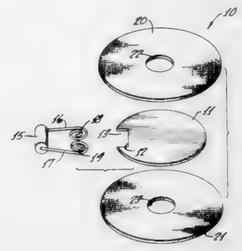
3,963,956
ARTICLE FOR INCREASING THE LIFE EXPECTANCY OF FILAMENT LIGHT BULBS

August H. Beining, 818 N. Adlena Drive, Fullerton, Calif. 92633

Filed Apr. 16, 1975, Ser. No. 568,502
Int. Cl.² H01K 1/62
U.S. Cl. 315—71 8 Claims

1. An article positionable in a conventional light bulb socket comprising:

a wafer of insulating material having a width smaller than the inside diameter of the base of said light bulb socket;
a power decreasing device positioned adjacent to or in contact with a portion of the perimeter of said wafer, the leads of said device extending radially inwardly, on opposite sides of said wafer, into contact with electrical terminals at the center of said wafer;

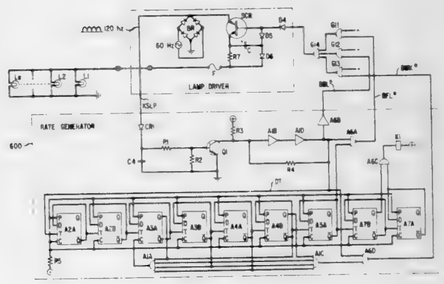


a pair of flexible pads of insulating material having widths approximately equal to said inside diameter of said base of said light bulb socket, said pads being positioned on opposite sides of said wafer, each pad having a central opening therein to expose said electrical terminals; and
an adhesive securing the central portions of said pads to opposite sides of said wafer and the outer portions thereof to opposite sides of said device and to each other.

3,963,957
LAMP POWER SUPPLY ARRANGEMENT FOR KEY TELEPHONE SYSTEM

Dieter John Henry Knollman, Arvada, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 7, 1974, Ser. No. 521,648
Int. Cl.² H05B 37/00; H04L 11/14; H03K 17/68
U.S. Cl. 315—200 A 10 Claims

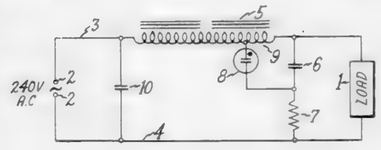


1. A lamp rate generator for driving a load including a variable number of key line lamps without abrupt current changes, comprising
a source of unfiltered full-wave half-sinusoids,
means for detecting zero-crossings of said half-sinusoids,
means for counting predetermined numbers of said zero-crossings,
SCR means having its source and drain electrodes interposed between said source and said lamp load, and
means controlled by said counting means for delivering control signals to the gate electrode of said SCR in synchronism with said zero-crossings.

3,963,958
STARTING AND OPERATING CIRCUIT FOR GASEOUS DISCHARGE LAMPS

Joe A. Nuckolls, Hendersonville, N.C., assignor to General Electric Company, New York, N.Y.

Continuation of Ser. No. 674,508, Oct. 11, 1967, abandoned. This application Nov. 18, 1974, Ser. No. 524,654
Int. Cl.² H05B 37/00
U.S. Cl. 315—276 9 Claims

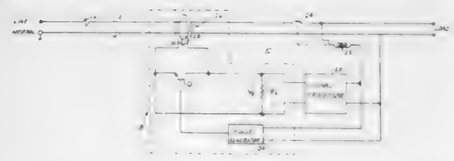


1. A starting and operating circuit for gaseous discharge lamps comprising a source of alternating current, ballasting means connected at its input side to said alternating current source, discharge lamp means connected to the output side of said ballasting means, and high voltage starting means having a series discharge loop including a portion of said ballasting means connected to said ballasting means at its output side for providing a high voltage starting pulse on said discharge lamp means, said ballasting means comprising inductance coil means having a plurality of turns, said high voltage starting means comprising a charging capacitor and a resistor connected in series across said discharge lamp means, and voltage sensitive symmetrical switch means having a predetermined breakdown voltage connected across said charging capacitor and a predetermined number of turns of said inductance coil means at its output side and forming therewith a series discharge loop, said inductance coil means stepping up the voltage produced across said predetermined number of turns by operation of said discharge loop, said ballasting means comprising a linear reactor connected in series between said alternating current source and said discharge lamp means.

3,963,959
GROUND FAULT CIRCUIT INTERRUPTING DEVICE AND DIFFERENTIAL CURRENT SENSOR THEREFOR

Edward Keith Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Continuation-in-part of Ser. No. 509,462, Sept. 9, 1974. This application Apr. 28, 1975, Ser. No. 571,930
Int. Cl.² H02H 3/28
U.S. Cl. 317—9 R 11 Claims



1. A sensor for utilization in a ground fault circuit interrupting device wired into a power distribution circuit comprising at least one line conductor and a neutral conductor, said sensor comprising, in combination:
A. a differential current transformer including
   1. a core in which is developed a magnetic flux occasioned by a current imbalance in the line and neutral conductors of the distribution circuit, and
   2. a secondary winding wound on said core;
B. an output element connected across said secondary winding for developing a signal voltage indicative of the magnitude of secondary current developed as the result of the current imbalance;

C. a switch connected across said secondary winding in shunt with said output element; and

D. means controlling said switch to convert from a closed condition, short circuiting said secondary winding and shunting secondary current from said output element, to an open condition, diverting said secondary current through said element pursuant to developing said signal voltage.

3,963,960

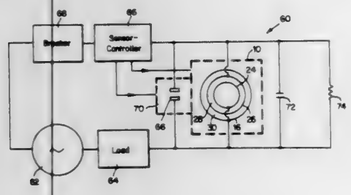
BIPOLAR CROSSED-FIELD SWITCH TUBE AND CIRCUIT

Hayden E. Gallagher, and Wolfgang Knauer, both of Malibu, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation-in-part of Ser. No. 507,094, Sept. 18, 1974. This application Feb. 28, 1975, Ser. No. 553,965

Int. Cl.² H02H *7/22*; **H01J** *1/50*

U.S. Cl. 317—11 A **10 Claims**



1. A bipolar crossed-field switch tube for installation in an electric power system where voltage of either polarity may be applied to the switch tube comprising:

an outer tubular electrode to act as cathode during one polarity of the power system;

an intermediate tubular electrode positioned within said outer tubular electrode to act as cathode during the other polarity of the power system and to define an outer annular inter-electrode space;

an inner electrode positioned within said intermediate electrode to define an inner annular inter-electrode space;

means for selectively providing a concave outward shaped magnetic field in both of said inter-electrode spaces; and

means for connecting said inner and said outer electrodes together into one power system pole and means for connecting said intermediate electrode to the other power system pole so that one of said connected together electrodes acts as a cathode during one polarity of the power system and said intermediate electrode acts as a cathode during the other polarity of the power system said magnetic field means providing a field which is concave toward both of said electrodes acting as a cathode for trapping of electrons in glow discharge, and said switch tube being nonconductive in the absence of the magnetic field.

3,963,961

CATHODE RAY TUBE PHOSPHOR PROTECTION CIRCUIT

Thomas J. Ray, Yonkers, N.Y., and Glenn C. Waehner, Riverside, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 23, 1974, Ser. No. 536,042

Int. Cl.² H01J *29/52*

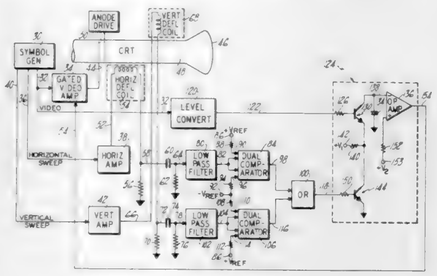
U.S. Cl. 315—381 **4 Claims**

1. Apparatus for protecting against damage of a CRT phosphor screen which provides a visual image in response to video, horizontal sweep, and vertical sweep input signals in a system having a source of video signals, a source of horizontal sweep signal, and a source of vertical sweep signal, comprising:

a gated video amplifier connected for response to the video source and having a gate signal input, said video amplifier selectively operable in response to a gating signal applied to said gate input to provide video signals to the CRT;

means connected to the horizontal and vertical sweep signal sources for providing an enable signal in response to the presence of either of the sweep signals having a rate of change in excess of a given magnitude; and

means connected for response to the source of video signals and to said enable signal, and having an output connected



to said gate input, said output normally providing said gating signal to said video amplifier in response to the absence of video signals and in response to the concurrent presence of video signals and said enable signal, said output cutting off said gating signal within a determined time interval in response to the presence of video signals in the absence of a concurrent enable signal within said determined time interval, the duration of said determined time interval being less than that required for unswept video to damage the phosphor screen of the CRT in the absence of said enable signal.

3,963,962

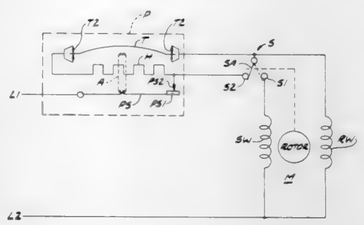
MOTOR PROTECTOR

Walter T. Sutton, Lexington, Ky., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 18, 1973, Ser. No. 425,897

Int. Cl.² H02H *7/08*

U.S. Cl. 317—13 B **4 Claims**



1. A motor protector for a split-phase motor having start and run windings and a start switch having a switch arm connected to the run winding and which moves from a first position in engagement with a first contact to energize the start winding into a second position in engagement with a second contact thereby to deenergize said start winding upon the motor attaining a predetermined starting speed, said protector comprising a thermostatic element adapted to be positioned in heat-exchange relationship with said windings and to be heated by the flow of electrical current therethrough, said element having a first curvature position at ambient temperatures and moving to a second curvature position at an elevated predetermined temperature, and a switch having contacts which are opened in response to movement of said thermostatic element into its second curvature position, said thermostatic element adapted to be serially connected with the contacts of the last said switch in a circuit between one terminal of an a.c. power source and the switch arm, said thermostatic element adapted to be shunt-connected across said switch arm and said second contact whereby while the motor is operating below its starting speed the thermostatic element is responsive to motor overcurrent conditions that cause self-heating of the element to the elevated predetermined temperature thereby to open the contacts of the last said switch and deenergize the motor windings, and whereby while the motor is operating at speeds in excess of said starting speed the motor current is shunted around the thermostatic element and is responsive to its temperature rising above the predetermined elevated temperature substantially as a sole function of the temperature of said windings thereby to move into its second position and open the contacts of the last said switch to deenergize the motor windings.

3,963,963

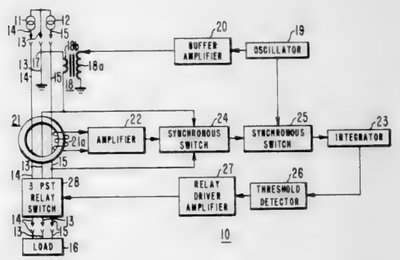
GROUND-FAULT DETECTION SYSTEM

Otto Heinrich Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 22, 1975, Ser. No. 570,434

Int. Cl.² H02H *3/28*

U.S. Cl. 317—18 D **5 Claims**



1. A ground-fault detector for an alternating current power system, employing a plurality of conductors, the neutral one of said conductors being connected to ground at one point, said detector comprising, in combination;

means responsive to the connection to ground of said neutral conductor at a second point for inducing a flow of current in said neutral conductor at a frequency substantially higher than the alternating current power frequency;

means responsive to a connection to ground of a conductor other than the neutral conductor for producing a ground fault signal at the alternating current power frequency; and

ground fault sensing means including means responsive to said induced current at said substantially higher frequency for synchronously detecting the same at said higher frequency, and means responsive to said ground fault signal at the alternating current power frequency for synchronously detecting the same at said alternating current power frequency.

3,963,964

SEGREGATED PHASE COMPARISON SYSTEM

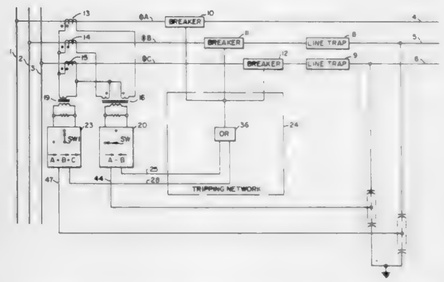
Kalyan K. Mustaphi, Minneapolis, Minn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 7, 1975, Ser. No. 548,130

Int. Cl.² H02H *3/28*

U.S. Cl. 317—27 R **6 Claims**

1. A phase comparing relay for protecting a line section of a three phase power transmitting network, said relay comprising, a plurality of current sensing means, a first and a second and a third of said sensing means being individually associated with the phase conductors of said line section at a first location therealong and providing output current quantities proportional to the phase and magnitude of the current in the said phase conductor with which it is associated, first current quantity summing means connected to said first and said second sensing means and providing a first output signal which is a measure of the phasor difference of said current quantities of said first and second sensing means, second current quantity summing means connected to said first and second and third sensing means and providing a second output signal which is a measure of the phasor sum of said current quantities of said first and second and third sensing means, a first and a



second signal comparing means, a first signal receiving means adapted to receive a first and a second transmitter signal, circuit means interconnecting said first and second comparing means with said first and second summing means respectively and with said first receiving means for energization of said first comparing means with said first output signal and said first transmitted signal and for energization of said second comparing means with said second output signals and said second transmitted signal, a first actuating circuit connected to said first and second comparing means, each of said first and second comparing means being effective to actuate said first actuating circuit at predetermined relationships of the said signals supplied thereto.

3,963,965

SURGE ARRESTER CONSTRUCTION

Ned T. Kunkle, Bloomington, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 22, 1974, Ser. No. 516,922

Int. Cl.² H02H *9/06*

U.S. Cl. 317—61 **5 Claims**

1. An electrical surge arrester comprising: first, second and third conductive plates, each generally planar and parallel spaced from each other; first and second columns of arrester elements between said first and second plates, said first column having a first extremity in conductive engagement with said first plate and a second extremity spaced by a first insulator from said second plate, said second column having a first extremity spaced by a second insulator from said first plate and a second extremity in conductive engagement with said second plate; and third and fourth columns of arrester elements between said second and third plates, said third column having a first extremity in conductive engagement with said second plate and a second extremity spaced by a third insulator from said third plate, said fourth column having a first extremity spaed by a fourth insulator from said second plate and a second extremity in conductive engagement with said third plate; a first connector connecting said second extremity of said first column with said first extremity of said second column and a second connector connecting said second extremity of said third column and said first extremity of said fourth column to form a series electrical connection in sequence including said first plate, said first column, said first connector, said second column, said second plate, said third

column, said second connector, said fourth column and said third plate.

3,963,966

HAMMER FOR A PIEZOELECTRIC IGNITER

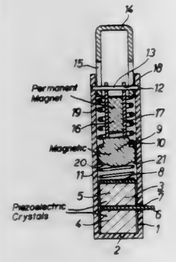
Walter Mohr, Frankfurt am Main, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 14, 1974, Ser. No. 469,746

Claims priority, application Germany, May 14, 1973, 2324227; May 14, 1973, 2324229

Int. Cl.² F23Q *3/00*; H01L *41/08*

U.S. Cl. 317—81 **7 Claims**



1. A piezoelectric igniter for lighters, including a cylindrical housing having a closed bottom, a piezoelectric transducer positioned adjacent the bottom of said housing, a hammer of magnetic material axially movably guided in said housing towards impact with said piezoelectric transducer, an actuating member at the top of said housing and axially movable with respect to said housing, a compression spring disposed between said actuating member on the one hand and said hammer on the other hand, and a magnetic retentive means comprising a magnet having pole plates fixed to opposite sides thereof, said magnetic retentive means being fixedly supported by said housing between said actuating member and said hammer, said magnetic retentive means being magnetically coupled to said hammer to retain said hammer in a rest position, said compression spring surrounding said magnetic retentive means, and a retraction means for returning said hammer to said rest position after impact with said piezoelectric transducer.

3,963,967

CONTACTOR INTERLOCK CIRCUITS

David Gurwicz, and Albert Everett Sloan, both of Gateshead, England, assignors to Sevcon Engineering Limited, Gateshead, England

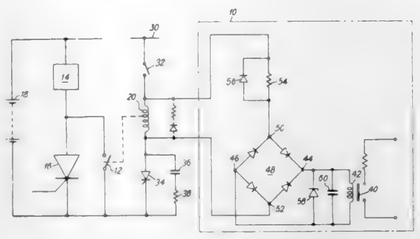
Filed Nov. 21, 1974, Ser. No. 526,060

Claims priority, application United Kingdom, Nov. 23, 1973, 54475/73

Int. Cl.² H01H *47/00*

U.S. Cl. 317—123 **9 Claims**

1. A contactor interlock circuit for use with an electromagnetically actuated contactor having an actuating coil which is connectible through switch means to a d.c. source and has an armature which moves on energisation of the actuating coil to close the contactor tips and which on de-energisation of the actuating coil moves to open the contactor tips and to create an air-gap in the magnetic circuit of the coil, the interlock circuit comprisng a voltage sensing circuit connected in parallel with the actuating coil of the contactor in such a manner as to provide a unidirectional current path through which inductive energy in the coil is dissipated when the switch means is operated to disconnect the coil from the d.c. source, the voltage sensing circuit sensing the voltage across the actuating coil and providing an output signal when the modulus of said voltage exceeds a predetermined value which is lower than the modulus of said voltage appearing across the coil at



the instant when the contactor tips open after opening of the switch means.

3,963,968

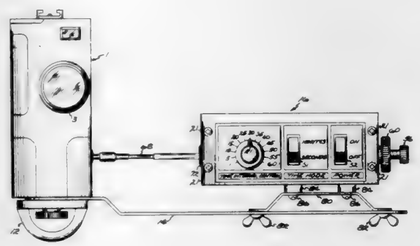
INTERVALOMETER APPARATUS

John M. Pierini, 103 Cambridge St., Winchester, Mass. 01890, and Leon E. Brown, 11017 Carissa Drive, Dallas, Tex. 75218

Filed Apr. 22, 1974, Ser. No. 462,989

Int. Cl.² H01H *47/18*

U.S. Cl. 317—141 S **7 Claims**



1. Shutter operating apparatus comprising a housing; shutter actuating means mounted in the housing; magnetomotive force generating means mounted in the housing for providing linear motion to the shutter actuating means; and circuit means coupled to the magnetomotive force means; the circuit means comprising a quadruple, two input positive NOR gate, the output of the first gate connected to the input of the second gate, a limiting first resistor and serially connected first capacitor connected across the first and second gates, variable resistance means connected between a point intermediate the limiting resistor and the first capacitor, and a point intermediate the first and second gates; a fourteen stage counter circuit, the output of the second gate connected to the input of the counter circuit; a double pole switch, a first pole of the switch connected to the eighth output stage of the counter circuit and a second pole connected to the fourteenth output stage of the counter circuit; the output of the third gate serially connected to a second capacitor which in turn is serially connected to the input of the fourth gate, the output of the fourth gate connected to the input of the third gate, a second resistor, the input of the fourth gate connected to ground through the second resistor, solid state switching means, the output of the third gate coupled to the solid state switching means, the solid state switching means connected to the magnetomotive force generating means and a source of power to energize the circuit means.

3,963,969

APPARATUS FOR WASHING AND WIPING VEHICLE WINDSCREENS AND HEADLAMPS

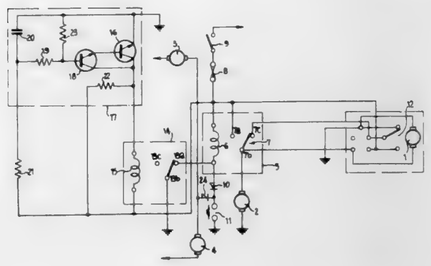
Harry Nottingham, Crewe, England, assignor to Rolls-Royce Motors Limited, Crewe, England

Filed Feb. 25, 1975, Ser. No. 553,064

Claims priority, application United Kingdom, Mar. 16, 1974, 11766/74

Int. Cl.² B60S *1/50*

U.S. Cl. 318—443 **12 Claims**



1. Apparatus for washing and wiping vehicle windscreens and headlamps comprising first supply means for supplying cleaning fluid to the windscreen, second supply means for supplying cleaning fluid to the headlamp, first driving means for driving a wiping element for the windscreen, second driving means for driving a wiping element for the headlamp, and control means operative automatically to actuate the second supply means and the second driving means when the headlamp is initially switched on and to deactuate them after a predetermined time and operative to actuate the first and second supply means and the first and second drive means simultaneously when the headlamp is switched on and the first supply means and first drive means only when the headlamp is switched off.

3,963,970

CONTROL CIRCUIT FOR SERVO-MOTORS

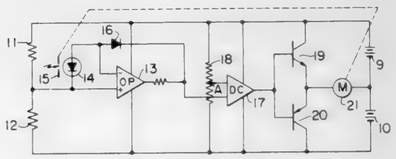
Yoshihiro Satake, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Sept. 4, 1974, Ser. No. 503,528

Claims priority, application Japan, Sept. 6, 1973, 48-100695

Int. Cl.² G05B *1/06*; G03B *7/08*

U.S. Cl. 318—640 **3 Claims**



1. A control circuit for servo-motors comprising an operational amplifier, a photoelectric element having a diaphragm means in front thereof and connected between two input terminals of said operational amplifier, a logarithmic conversion element connected between one input terminal and an output terminal of said operational amplifier, a direct current amplifier having an input terminal connected to the output terminal of said operational amplifier, a bleeder resistor for setting information having a movable terminal connected to another input terminal of said direct current amplifier, and a servo-motor mechanically interlocked with said diaphragm means and connected to an output of said direct current amplifier, said control circuit being capable of controlling rotation and stopping of said servo-motor by making comparison between voltage at the movable terminal of said bleeder resistor and voltage at the output terminal of said operational amplifier.

3,963,971

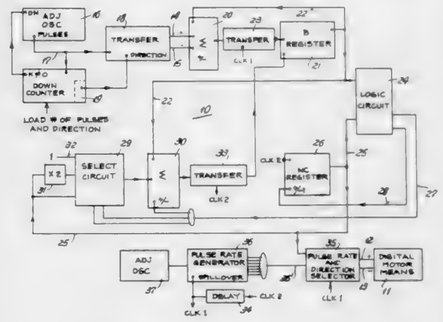
VELOCITY CHANGE CIRCUIT FOR A DIGITAL MOTOR

Albert C. Leenhouts, Harwinton; Peter Senak, Jr., and Arthur Emery, both of Bristol, all of Conn., assignors to The Superior Electric Company, Bristol, Conn.

Filed Dec. 19, 1974, Ser. No. 534,565

Int. Cl.² G05B *19/40*, *19/28*

U.S. Cl. 318—696 **14 Claims**



1. A circuit for accepting commands for a movement defined by a number of input pulses each representing an incremental step comprising digital motor means for receiving motor pulses and producing an incremental step for each motor pulse received with there being one motor pulse produced for each input pulse, means for subdividing the motor pulses into a plurality of consecutive groups, means for providing motor pulses at a plurality of different rates and means for selecting one of the rates for each of the groups, said selecting means including a first register means for maintaining a count of the number of pulses in a present group and a second register means for maintaining a count that varies in accordance with the difference between the number of input pulses remaining for which a motor pulse is to be produced and the number of motor pulses required to decelerate the motor to the end of the movement.

3,963,972

PORTABLE POWER PACKAGE

Gregory M. Todd, 1301 Hallbrook Drive, Columbia, S.C. 29210

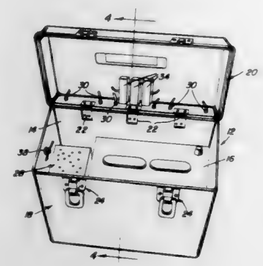
Filed Mar. 14, 1975, Ser. No. 558,304

Int. Cl.² H02J *7/00*

U.S. Cl. 320—2 **2 Claims**

1. A portable power package, comprising, in combination:
   a. a supporting box having a cavity arranged for receiving an electric battery;
   b. an electric battery removably disposed in the cavity;
   c. charger means removably disposed in the cavity and electrically connected to the battery for selectively charging the battery;
   d. jack means mounted on the box and electrically connected to the battery for selectively receiving plugs of electrical devices; and
   e. switch means mounted on the box and electrically connected between the jack means and battery for selectively connecting and disconnecting the jack means to the bat-

tery; and the box includes a container portion and a cover portion hinged to the container portion, the jack means



and switch means being mounted on the cover portion for access thereto from the outside of the box.

3,963,973

NONSATURATING ASYMMETRIC DC/DC CONVERTER

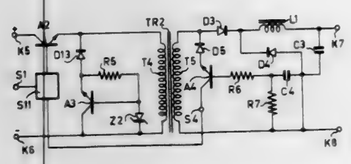
Johannes Volkert Vermolen, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 26, 1974, Ser. No. 483,136

Claims priority, application Netherlands, June 29, 1973, 7309056

Int. Cl.² H02M *3/335*

U.S. Cl. 321—2 **9 Claims**



1. A direct current converter, comprising a series connection of a first direct current input terminal, current interrupting means active in one direction, a first transformer winding connected to a gating circuit, and a second direct current input terminal, a second series connection of a first direct current output terminal, a rectifying element, a second transformer winding electromagnetically coupled to the first transformer winding, and a second direct current output terminal, means connecting the said second series connection to a smoothing circuit elememt, closure of the current interrupting means enabling first asymmetrical current pulses to be passed through the first transformer winding thereby blocking the gating circuit, the said pulses inducing at the same time second asymmetrical current pulses in the second transformer winding, opening of the current interrupting means inducing third asymmetrical current pulses in the first transformer winding which are oppositely directed from the first asymmetrical current pulses to open the gating circuit, means including an electric energy storage member connecting the direct current input terminals, the current interrupting means including a current interrupting member in each of the connection leads to the first transformer winding, the gating circuit comprising two branches which are cross-wise connected between connection leads from the first transformer winding to the current interrupting members and from the current interrupting members to the two direct current input terminals, respectively.

3,963,974

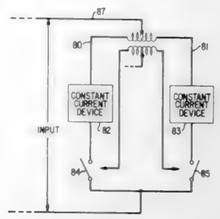
POWER SUPPLY CIRCUIT

William Emil Hess, Jr., Piscataway, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 29, 1975, Ser. No. 544,960

Int. Cl.² H02M *3/335*

U.S. Cl. 321—2 **5 Claims**



1. For connection to a source of varying electrical characteristics, a multivibrator circuit responsive to said characteristics for providing a constant a-c current output, said circuit including first and second electrical paths including first and second constant-current devices and first and second switches, respectively, and means for driving said first and second switches to open and closed or closed and open conditions in the alternative; wherein

said first and second constant-current devices and first and second switches comprise first and second transistors in said first and second electrical paths, respectively, and means for operating said transistors in a constant-current mode;

in combination with a rectifier circuit for providing a constant d-c current and a first capacitor responsive to said d-c current for providing a constant voltage, said combination also including a regulator circuit responsive to variations in said constant voltage for adjusting said constant a-c current output.

3,963,975

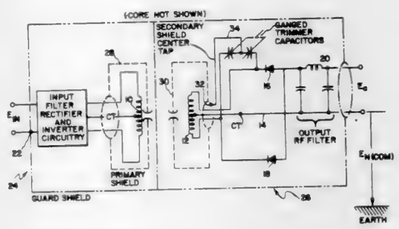
ELECTROMAGNETICALLY SHIELDED ELECTRICAL POWER SUPPLY WITH REDUCED COMMON MODE ELECTROMAGNETIC INTERFERENCE OUTPUT

Harold A. Gauper, Jr., Scotia, and John P. Walden, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 5, 1975, Ser. No. 555,424

Int. Cl.² H02M *3/22*

U.S. Cl. 321—2 **19 Claims**



1. An electromagnetically shielded electrical power supply comprising:

an inverter driven transformer having primary and secondary windings,

an electrostatic shield about the secondary windings of the transformer,

other electrostatic shielding associated with other components of the power supply,

said secondary winding shield being electrically isolated from said other electrostatic shielding thereby giving rise to potential common mode interference signal superimposed on the electrical output from said secondary windings with respect to said other shielding,

signal pickup means for producing a cancellation signal substantially equal in magnitude and of substantially opposite phase with respect to said interference signal,

said signal pickup means being connected to said secondary winding and to said secondary winding shield so as to effectively add said cancellation signal to said interference signal and to thereby substantially reduce unwanted common mode signal emanations from the output of said power supply.

3,963,976

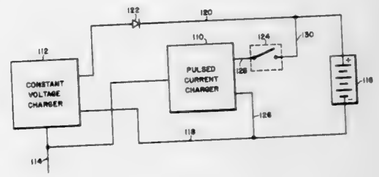
PULSED CURRENT BATTERY CHARGING METHOD AND APPARATUS

William H. Clark, Salt Lake City, Utah, assignor to Utah Research & Development Co., Salt Lake City, Utah

Continuation-in-part of Ser. No. 486,308, July 8, 1974, abandoned, which is a continuation of Ser. No. 302,027, Oct. 30, 1972, abandoned. This application Apr. 3, 1975, Ser. No. 564,825

Int. Cl.² H02J *7/04*

U.S. Cl. 320—21 **3 Claims**



1. A battery charging apparatus comprising:

a. an external source of electrical power;

b. a conventional battery charging apparatus to supply a conventional charging current as an output and conductively connected to said external source of electrical power;

c. a pulse current generator having an output to supply a pulse of electrical current which is of large amplitude as compared to the amplitude of small charging currents applied to said battery when battery overcharging procedures are being employed, said pulse current generator being conductively connected to said external source of electrical power;

d. switching means conductively connected to said conventional battery charger, to said pulse current generator and to a battery to switch the output of said conventional battery charging apparatus and the output of said pulse current generator into electrical circuit with said battery; and

e. control means connected to said switching means to cause said switching means to switch the output of said conventional battery charging apparatus and the output of said pulse current generator to be in electrical circuit with said battery to impart to said battery a preselected program of conventional and pulsed charging current wherein said conventional charging current and said pulse charging current alternate at a selected constant rate.

3,963,977

FREQUENCY MULTIPLIER WITH NONLINEAR SEMICONDUCTOR ELEMENT

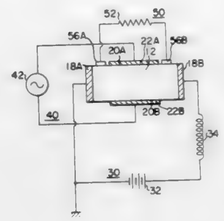
Shigeru Mitsui, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 345,591, March 28, 1973, abandoned. This application Dec. 23, 1974, Ser. No. 535,022

Claims priority, application Japan, Mar. 31, 1972, 47-32207

Int. Cl.² H02M *5/20*

U.S. Cl. 321—69 NL **8 Claims**



1. A semiconductor device for multiplying a frequency of an applied electrical signal, comprising, in combination, a body of semiconductive material having a single conductivity type throughout and having an electric field-to current characteristic including a nonlinear region, biasing means comprising a first pair of electrodes in ohmic contact with said body and spaced in a first direction for establishing a biasing electric field in said first direction within said body, input means receptive in use of an alternating signal and coupled to said body for establishing an alternating input electric field in a second direction substantially orthogonal to said first direction within said body, said input means comprising a pair of dielectric films and a second pair of electrodes spaced in said second direction and disposed on said body with a respective one of said dielectric films disposed between each of the electrodes comprising said second pair and said body, and output means in ohmic contact with said body for providing a current component flowing in said first direction through said body, said output means comprising a third pair of electrodes spaced in said first direction and disposed on a surface of said body having one of the electrodes comprising said second pair disposed thereon, said biasing electric field and said alternating electric field forming a resultant time-varying electric field variable in at least said nonlinear region of the electric field-to-current characteristic in response to variations in said alternating input electric field whereby said current component provided by said output means has a frequency equal to a multiple of the frequency of said alternating input electric field.

3,963,978

REACTIVE POWER COMPENSATOR

Fred W. Kelley, Jr., Media, and Charles H. Titus, Newtown Square, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

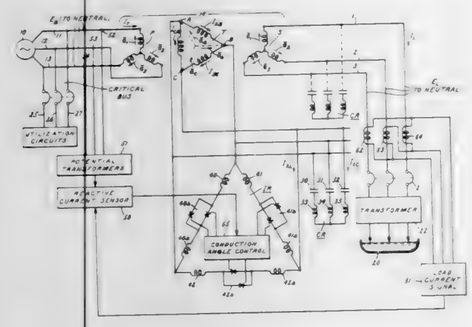
Filed Feb. 14, 1975, Ser. No. 550,090

Int. Cl.² H02J *3/18*

U.S. Cl. 323—102 **8 Claims**

1. Reactive current compensating apparatus for a multiphase alternating current electric power circuit having load terminals and load conductors and subject to varying reactive current demand at said load terminals comprising, a multiphase compensating reactor of controllable effective reactance, phase shifting means for coupling said compensating reactor to said load conductors effectively in shunt circuit relation across said load terminals, said phase shifting means supplying to said reactor a multiphase system of terminal voltages displaced in phase with respect to the line voltages at

said load conductors, means for generating signals proportional in each phase to the reactive component of current traversing each phase of a reactive multiphase electrical load connected to said load terminals, and means responsive to said



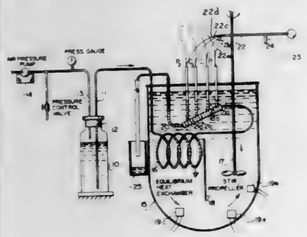
signals for maintaining the net effective reactance of each phase of said compensating reactor effectively substantially equal and opposite to the reactance of the associated phase of said electrical load.

3,963,979

LIQUID CONDUCTIVITY MEASURING APPARATUS

Thomas M. Dauphinee, Ottawa, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

Filed Aug. 5, 1974, Ser. No. 495,100
Int. Cl.² G01N 27/42
U.S. Cl. 324—30 **6 Claims**



1. A liquid conductivity measuring apparatus for measuring the salinity of a liquid sample from a standard sample bottle or other container comprising:

a. an elongated tube having one end adapted for insertion into a sample bottle or container,

b. a measuring cell for measuring the conductivity of a water sample formed of a tube having an elongated main body portion connected at one end to the elongated tube and at the other to waste, four upwardly extending branch tubes connected to the main tube and having liquid seals at their upper ends, electrodes mounted inside the four branch tubes, two of the electrodes forming potential electrodes and the other two forming current electrodes, electrical leads passing through the seals and connected to the four electrodes,

c. means for controlling the temperature of said cell,

d. means for flushing the contents of the cell to waste between sample measurements, and

e. air pressure means for connection to the sample holder for positively forcing a portion of the liquid sample out of the sample holder into and through the said tube and into the means for measuring the conductivity, and

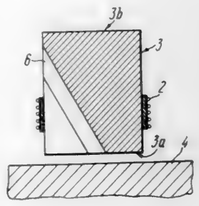
f. a conductivity measuring circuit connected to the potential and current electrode leads for measuring the conductivity of the liquid sample in the cell said circuit comprising: a standard resistance, a current source connected in series with the standard resistance and the current electrodes of the cell, a voltage comparator connected to the potential electrodes of the cell and to a source of regulated square wave voltage such as to compare the voltage across the potential electrodes and the square wave voltage such as to cause it to provide a current through the standard resistance and the current electrodes such that the voltage comparator is brought to a null, a linear voltage comparator connected across the standard resistance and to a voltage related to the regulated square wave voltage to compare this voltage and the voltage across the standard resistance and provide an output square wave voltage related to the conductivity of the cell, a square wave to DC amplifier connected to the linear voltage comparator for changing the output voltage to DC, a DC amplifier connected to the square wave to DC amplifier, and readout means connected to the DC amplifier.

3,963,980

ULTRASONIC INSTRUMENT FOR NON-DESTRUCTIVE TESTING OF ARTICLES WITH CURRENT-CONDUCTING SURFACE

Jury Mikhailovich Shkarlet, Lefortovsky val, 12, kv. 40, Moscow, U.S.S.R.

Filed Aug. 29, 1973, Ser. No. 392,789
Int. Cl.² G01R 33/14
U.S. Cl. 324—40 **8 Claims**



1. An ultrasonic instrument for non-destructive testing of articles with a current-conducting surface, comprising: a generator generating current pulses; an electromagnetoacoustic transducer connected to said generator and having at least one inductance coil; a member with a current-conducting surface making up a closed loop, arranged between the inductance coil of said transducer and an article being tested in such a way that one portion of said surface of that member is inductively connected to said inductance coil and the other is arranged close to the surface of the article being tested; said member being made of a mechanically durable material in order to protect said inductance coil from mechanical damage; a recording system connected to said transducer and receiving signals from it, the member with a current-conducting surface being in the form of a cylinder, with the current-conducting surface thereof being formed by the lateral surface of that cylinder wound upon which is an inductance coil and by a channel provided in the zone of the winding of that coil which is opened at least at one of the end faces of the cylinder and communicates with the lateral surface thereof by means of a longitudinal slot.

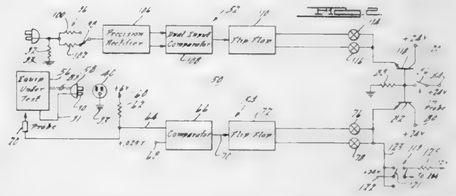
3,963,981

LEAKAGE AND CONTINUITY TESTER

Vincent A. Vis, Brighton, Mich., assignor to J. M. Richards Laboratories, Grosse Points Park, Mich.

Filed Oct. 9, 1974, Ser. No. 513,222
Int. Cl.² G01R 31/02
U.S. Cl. 324—51 **19 Claims**

1. A test unit for testing the ground continuity and leakage characteristics of an electrical unit under test having a ground circuit and a chassis comprising a housing, means mounted on said housing adapted to be connected to the ground circuit of the unit under test, means adapted to be connected to the chassis, ground continuity test circuit means connected to said chassis connection means including a power supply and a conductor connected to said chassis for supplying electrical current though said chassis to said ground circuit to establish an electrical potential signal across the impedance of said ground circuit, said continuity test circuit means including comparator circuit means including an input signal from said chassis connection means and a fixed input signal, a go-no go type ground output indicator circuit including digital output



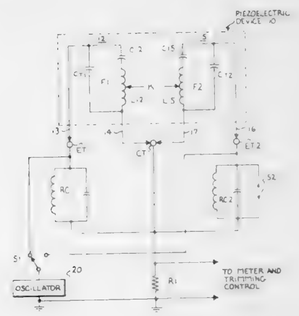
means to indicate the acceptable or defective condition of said ground circuit as determined by said comparator circuit, and leakage current test means including input circuit means connected to the leakage current circuit under test including dual comparator means for comparing positive and negative polarity leakage signals with a standard signal, said input circuit means including an operational amplifier connected as a precision rectifier to sense positive and negative polarity input signals, and go-no go leakage output indicator circuit including digital output means to indicate the acceptable or defective condition of said leakage circuit as determined by said dual comparator circuit.

3,963,982

APPARATUS FOR MEASURING THE RESONANT FREQUENCY AND COEFFICIENT OF COUPLING OF A PLURALITY OF COUPLED PIEZOELECTRIC RESONATORS

Gerald E. Roberts, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Sept. 17, 1974, Ser. No. 506,800
Int. Cl.² G01R 29/22
U.S. Cl. 324—56 **5 Claims**



1. Apparatus for measuring the resonant frequency of each of a plurality of coupled piezoelectric resonators each having a separate electrode and a common electrode, and for measuring the coefficient of coupling between adjacent pairs of said resonators, said apparatus comprising:

a. a plurality of electrode terminals, each of said electrode terminals being adapted to be connected to a respective separate electrode of said resonators;

b. a common terminal adapted to be connected to said common electrodes of all said resonators;

c. a plurality of parallel resonant circuits, each of said parallel resonant circuits having a selected resonant frequency characteristic;

d. means connecting each of said parallel resonant circuits between one of said electrode terminals and said common terminal respectively, said selected resonant frequency characteristics of each of said parallel resonant circuits resonating with its respective resonator to produce a relatively high impedance in the vicinity of the resonant frequency of the adjacent resonators;

e. first and second signal input terminals adapted to receive a signal;

f. switch means having an input terminal and a plurality of output terminals;

g. means connecting said switch means input terminal to said first signal terminal;

h. means connecting each of said switch means output terminals to one of said electrode terminals respectively;

i. An impedance connected between said second signal input terminal and said common terminal;

j. at least one short-circuiting switch;

k. means connecting one of said short-circuiting switches in parallel with one of said parallel resonant circuits respectively;

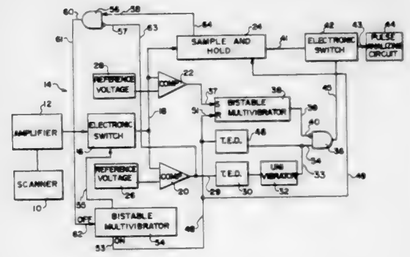
l. means connected to said impedance for measuring resonant frequencies in response to signals applied to said first and second signal input terminals.

3,963,983

PULSE AMPLITUDE DISCRIMINATING CIRCUIT

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 352,361, April 18, 1973, Pat. No. 3,810,011, which is a continuation-in-part of Ser. No. 40,231, May 25, 1970, Pat. No. 3,757,213. This application Oct. 16, 1973, Ser. No. 406,919
Int. Cl.² G01N 27/00; H03K 5/20
U.S. Cl. 324—71 CP **12 Claims**

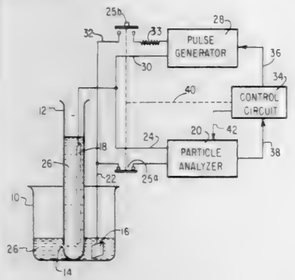


1. In a system where particles in a fluid are caused to flow through a sensing zone and a particle pulse is generated for each particle sensed with the amplitude of each pulse being related to the size of the particle sensed, the improvement comprising electric circuit means for determining which pulses having an amplitude falling between predetermined upper and lower amplitude levels, for remembering each pulse while said determination is being made and for passing to a pulse analyzing circuit only the pulse heights of those remembered pulses which have an amplitude falling between the predetermined upper and lower amplitude levels.

3,963,984
METHOD AND SYSTEM FOR CLEANING AN APERTURE IN A PARTICLE STUDY DEVICE

Wallace H. Coulter, Miami Springs, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Nov. 4, 1974, Ser. No. 520,711
Int. Cl.² B08B *3/10*; **G01N** *27/02*
U.S. Cl. 324—71 CP **12 Claims**



1. In a particle study device having an aperture through which particles to be studied pass, which aperture clogs with debris, and wherein the particles are suspended in an electrically conductive fluid which flows through said aperture, an aperture cleaning system including in combination,

a first electrode positioned in said fluid an on one side of said aperture,

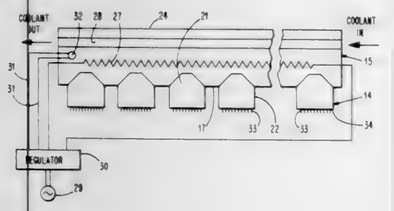
a second electrode positioned in said fluid and on the second side of the said aperture,

Pulse generation means for developing combinations of pulses, having a repetition rate approximately in the range of 5 to 100 KHz said electrodes being coupled to said pulse generation means and operative to couple said combinations of pulses through said fluid and said aperture between said first and second electrodes, said fluid in said aperture being responsive to said pulses passing therethrough to remove said debris clogging said aperture.

3,963,985
PROBE DEVICE HAVING PROBE HEADS AND METHOD OF ADJUSTING DISTANCES BETWEEN PROBE HEADS

Pieter Geldermans, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 12, 1974, Ser. No. 532,079
Int. Cl.² G01R *31/02*
U.S. Cl. 324—158 F **19 Claims**



1. A probe device including:

support means formed of a material having a known coefficient of expansion;

said support means having a plurality of probe heads mounted thereon;

each of said probe heads having a plurality of probes arranged thereon in accordance with the arrangement of terminals in an area of a device with which said probes are to cooperate;

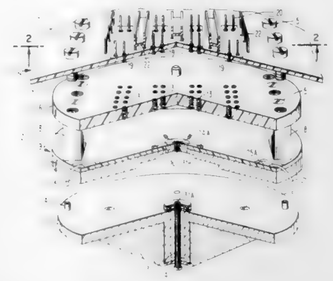
each of said probe heads being a selected distance from each of the adjacent of said probe heads in accordance with the design spacing of the areas on the device;

and means to change at least one of the length and width dimensions of said support means to change the selected distance of each of said probe heads from the adjacent of said probe heads in accordance with the change in spacing from each other of the areas on the device relative to the design spacing from each other of the areas on the device.

3,963,986
PROGRAMMABLE INTERFACE CONTACTOR STRUCTURE

Robert M. Morton, Hopewell Junction, and Ariel L. Perlmann, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 10, 1975, Ser. No. 548,659
Int. Cl.² G01R *31/02*, *1/06*
U.S. Cl. 324—158 F **10 Claims**



1. A Programmable Interface Contactor Structure used in a test system for testing semiconductor devices having high circuit density and where said devices each include a substantially planar surface having an array of conductive pads disposed thereon, said Programmable Interface Contactor Structure comprising:

a part number printed circuit board having first and second planar surfaces,

a plurality of electrical connectors extending from said first surface of said part number printed circuit board,

a first orderly array of discrete conductive surfaces disposed upon said second planar surface of said part number printed circuit board,

electrically conductive means connecting each of said discrete conductive surfaces to a predetermined one of said plurality of electrical connectors;

a space transformer structure having a first planar member and a second planar member in parallel spaced relationship to said first planar member,

said second planar member having an inwardly disposed and an outwardly disposed surface,

a plurality of electrical contacts contained within and extending through said first planar member and providing a second orderly array of discrete conductive areas respectively in physical contact with the conductive surfaces of said first orderly array of discrete conductive surfaces,

a densely spaced pattern of conductive lands contained on said outwardly disposed surface of said second planar member,

circuit means electrically connecting predetermined ones of said densely spaced conductive lands to predetermined ones of said electrical contacts contained within said first planar members; and

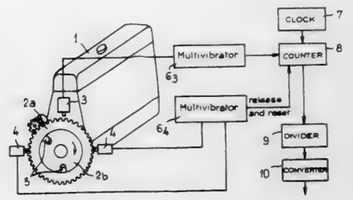
probe assembly means having a plurality of discrete electrical probes for connecting each of said densely spaced conductive lands to predetermined ones of said array of

conductive pads disposed on said substantially planar surface of said device under test.

3,963,987
METHOD AND APPARATUS FOR DIGITAL CALCULATION OF ROTATIONAL SPEED OF AN INTERNAL COMBUSTION ENGINE

Jean-Pierre Rivere, Billancourt, France, assignor to Regie Nationale des Usines Renault and Automobiles Peugeot, both of, France

Continuation-in-part of Ser. No. 463,503, April 24, 1974, abandoned, which is a continuation of Ser. No. 261,974, June 12, 1972, abandoned. This application June 26, 1974, Ser. No. 483,313
Claims priority, application France, June 14, 1971, 71.21514
Int. Cl.² G01P *3/48*, *3/54*
U.S. Cl. 324—166 **11 Claims**



1. A digital method for calculating the speed of an internal combustion engine, using electric pulses produced with revolving parts of the engine, the revolving parts each having a series of detection elements, comprising the steps of producing a number of asynchronous pulses using a plurality of pickups, one of said pickups associated with a series of said detection elements, one of said pickups corresponding to a first series of detection elements having teeth all equally spaced on the periphery of one revolving part and two of said pickups corresponding to a second series of unequally spaced detection elements on the periphery of another revolving part, said asynchronous pulses being different for each revolution of the engine for said one pickup and said two pickups, respectively, wherein said first series has more detection elements than said second series and if n is the number of detection elements of said first series giving the higher pulse frequency for a corresponding pickup due to engine revolution, and q is the total number of pickups associated with the second series, then angular location of said second series of detection elements is obtained to the nearest 360° /qn, shaping the asynchronous pulses, comparing said shaped pulses to a fixed clock reference frequency to count said shaped pulses, dividing the counted pulses and then converting the divided pulses into signal information for use in an automatic engine control device.

3,963,988
CIRCUIT ARRANGEMENT FOR SELECTING A DIVERSITY CHANNEL

Dieter Niethammer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Dec. 2, 1974, Ser. No. 528,725
Claims priority, application Germany, Dec. 6, 1973, 2360929
Int. Cl.² H04B *7/02*
U.S. Cl. 325—56 **5 Claims**

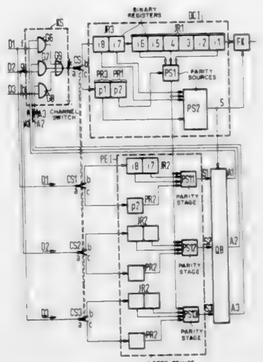
1. In a data transmission system, a circuit arrangement for selecting a diversity channel over which data is transmitted, wherein a channel switch and a code frame switch are provided for coupling received parity and information bits into, respectively, a parity bit register and an information bit register and wherein a number in parity bits are dependent on a number n of information bits, comprising:

a first parity stage having inputs connected to a number $m1$ cells of a first part of said parity bit register and to a number $n1$ cells of a first part of said information bit register,

a plurality of diversity channels,

code frame switch means connecting each said diversity channel to inputs of a second part of said parity bit register and to inputs of a second part of said information bit register,

a plurality of second parity stages, one of which is assigned to each said diversity channel,



means connecting $m2$ cells of said second part of said parity bit register, $n2$ cells of said second part of said information bit register and the output of said first parity stage to inputs of each of said second parity stages, the number m being equal to $m1 + m2$ and the number n being equal to $n1 + n2$,

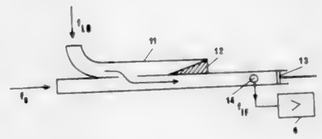
channel switch means for selectively coupling said information bits and parity bits to one of said diversity channels and

quality evaluation means for producing control signals for operating said channel switch means in dependence on the relative quality of the diversity channels.

3,963,989
MIXER STAGE FOR MICROWAVE RECEIVERS

Florian Sellberg, and Peter Weissglas, both of Djursholm, Sweden, assignors to Institutet for Mikrovigsteknik, Stockholm, Sweden

Filed Apr. 18, 1974, Ser. No. 461,975
Claims priority, application Sweden, May 7, 1973, 7306344
Int. Cl.² H04B *1/26*; **H02M** *5/16*
U.S. Cl. 325—449 **6 Claims**



1. In a mixer for a microwave receiver and being responsive to a local oscillator signal and a received signal, the improvement comprising in combination:

a pair of coupled waveguides respectively having said local oscillator signal and said received signal applied thereto;

at least one barrier injection and transit time diode located in one of said pair of waveguides, said diode being oper-

ated in a non-oscillatory mode for mixing said local oscillator signal and said received signal to produce an intermediate frequency signal thereby; and

means connected to said diode for coupling said intermediate frequency signal from said diode.

3,963,990

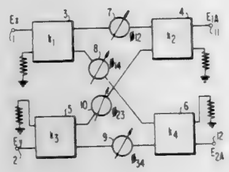
INTERFERENCE REDUCTION CIRCUIT

Daniel F. DiFonzo, Rockville, Md., assignor to Communications Satellite Corporation (Comsat), Washington, D.C.

Filed Feb. 27, 1974, Ser. No. 446,459

Int. Cl.² H04B *15/00*

U.S. Cl. 325—476 **13 Claims**



1. An interference reduction circuit for use in a receiver of frequency reuse communications systems wherein a plurality of signals of the same frequency at predetermined different polarizations are transmitted from a remote location and the transmission media alters the relative polarizations between said plurality of signals thereby introducing cross-talk between the signals when they are received, said interference reduction circuit comprising:

a. a first plurality of hybrid coupling networks each receiving one of said transmission media altered signals and dividing each of said signals into a number of circuit paths equal in number to the number of received signals,

b. phase-shift means in each of said circuit paths for producing phase shifts in each of said signals, and

c. a second plurality of hybrid coupling networks each connected to one of said circuit paths from each of said first plurality of hybrid coupling networks after said phase-shift means for cross-coupling said circuit paths and thereby adding a sample of all other signals of equal amplitude, but opposite phase, to the cross-talk interference in each signal and thereby substantially cancelling the cross-talk interference in each signal to provide uncorrupted output signals at the outputs of said second plurality of hybrid coupling networks.

3,963,991

APPARATUS FOR DISCRIMINATING A PEAK LEVEL OF A VIDEO SIGNAL

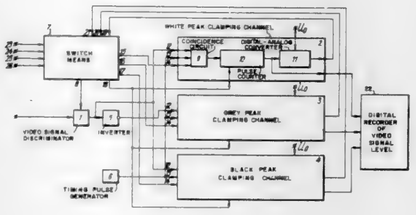
Imant Karlovich Alien, ulitsa Raunas, 45, kv. 32; Anatoly Vasilievich Nikonenko, ulitsa Lokomativas, 98, kv. 16; Jury Olegovich Popov, ulitsa Veidenbauma, 24, kv. 3; Boris Albertovich Yanson, ultisa B. Altonovas, 8, kv. 1, and Arkady Yakovlevich Khesin, ulitsa Suvorova, 16, kv. 18, all of Riga, U.S.S.R.

Filed July 30, 1974, Ser. No. 493,664

Int. Cl.² H03K *5/13, 4/02;* **H04N** *5/04*

U.S. Cl. 328—150 **6 Claims**

1. An apparatus for discriminating a peak level of a video signal, comprising: a video signal discriminator with two inputs, a first being the video signal input, and an output; a switch means with four switch inputs and three switch outputs, the first switch input receiving frame synchronizing pulses, the second switch input receiving line synchronizing pulses, the third switch input being the input through which the apparatus is triggered, and the first of said switch outputs connected to the second input of said discriminator; a timing pulse generator; a plurality of video signal peak clamping channels each of which includes: a coincidence circuit with three inputs and an output, the first input of said coincidence circuit connected to the output of said discriminator, the second input thereof connected to the second switch output of said switch means, and the third input connected to said timing pulse generator; a pulse counter having two inputs, one connected to the output of said coincidence circuit and the other connected to the third switch output of said switch means, and an output; a digital-analog converter having two d/a inputs and a d/a output, one of said d/a inputs receiving a reference voltage and the other connected to the output of said pulse counter, the d/a output connected to the fourth switch input of said switch means.



3,963,992

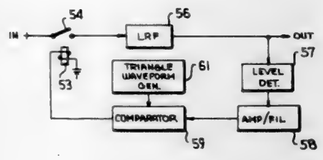
LINEAR AGC CIRCUIT WITH CONTROLLED DUTY CYCLE SAMPLING MEANS

Norris C. Hekimian, Rockville, Md., and James F. Turner, Oakton, Va., assignors to Hekimian Laboratories, Inc., Rockville, Md.

Division of Ser. No. 352,552, April 19, 1973, Pat. No. 3,862,380. This application Aug. 14, 1974, Ser. No. 497,483

Int. Cl.² H03G *3/00*

U.S. Cl. 330—127 **8 Claims**



1. A linear automatic gain control circuit, comprising:

an input terminal;

an output terminal;

sampling means, having a fixed sampling frequency and a voltage-controlled duty cycle, for passing discrete periodic samples of signals applied to said input terminal, said samples having said sampling frequency and the same duty cycle as said sampling means;

low pass filter means for receiving the signal passed by said sampling means and passing to said output terminal only frequency components of the received signal which are below said sampling frequency; and

control means responsive to the level of signal passed by said low pass filter means for applying a corresponding control voltage to said sampling means to adjust the duty cycle at said sampling means.

3,963,993

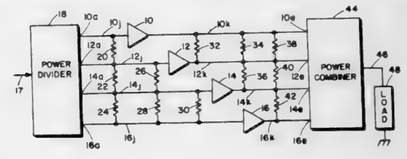
POWER AMPLIFIER USING A PLURALITY OF PARALLEL CONNECTED AMPLIFIER ELEMENTS AND HAVING BURN-OUT PROTECTION

Garry R. Hoffman, Baltimore, and William P. Rinkers, Baltimore, both of Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jan. 31, 1975, Ser. No. 546,153

Int. Cl.² H03F *3/68*

U.S. Cl. 330—124 R **24 Claims**



1. An amplifier for amplifying a frequency signal comprising:

a plurality of amplifying elements for amplifying said frequency signal;

input means for receiving an input frequency signal to be amplified and for distributing the signal power of said input frequency signal in accordance with a predetermined arrangement to each of said amplifying elements for amplification thereby, said input means being comprised of a plurality of input tranmission lines, each having a first end for receiving a predetermined portion of the signal power of said input frequency signal and a second end for delivering said predetermined portion of the signal power of said input frequency signal to an associated one of said amplifying elements, each of said input transmission lines having a different phase delay between its first and second ends to signals traversing therethrough;

at least one means for resistively connecting a first point of a first of said input transmission lines with a second point of a second of said input transmission lines, said first and second points being arranged such that the signals traversing said first and second of said input transmission lines are normally in phase and of equal amplitude at said first and second points; and,

output means connected to receive the output of each of said amplifying elements for effecting phase coherent addition of the signal outputs of said amplifying elements.

3,963,994

SLIT INJECTION DEVICE

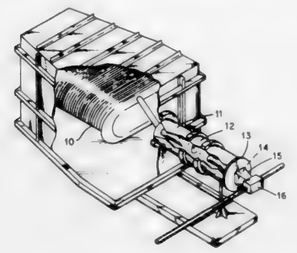
Terry W. Alger; Leland G. Schlitt, and Laird P. Bradley, all of Livermore, Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 15, 1975, Ser. No. 541,178

Int. Cl.² H01S *3/097*

U.S. Cl. 331—94.5 PE **3 Claims**

1. In an electron beam-excited laser system comprising an elongated laser cavity containing a gaseous lasing medium and having a foil window therein through which a beam from an electron beam source passes transversely to excite the lasing medium; the improvement comprising: a beam injection device positioned intermediate said laser cavity and said electron beam source for passing a suitably shaped electron beam through said foil window into said cavity and for varying the current density of the injected electron beam, said injection device being composed of a member positioned closely adjacent the foil window and functioning as a support structure for said foil window, said member being provided with a single elongated slit therethrough substantially parallel to a longitudinal axis of the laser cavity, and a plurality of movably mounted plate means positioned adjacent said member on a side thereof opposite from the foil window and defining an elongated aperture substantially parallel to said elongated slit



in said member, and means for moving said plurality of plate means for varying said elongated aperture.

3,963,995

NON-RETURN OPTICAL FARADAY EFFECT SYSTEM AND APPLICATION TO A LASER AMPLIFIER

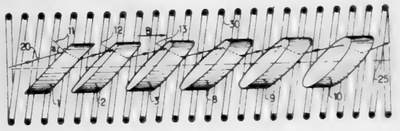
Louis Jacob, Bretigny-Sur-Orge, France, assignor to Compagnie Generale d'Electricite, Paris, France

Filed Feb. 25, 1975, Ser. No. 552,900

Claims priority, application France, Mar. 12, 1974, 74.08356

Int. Cl.² H01S *3/10*

U.S. Cl. 331—94.5 C **2 Claims**



1. In a non-return optical system, comprising: a number of plates having parallel faces made of a material having a Verdet constant, and means for setting up a magnetic field crossing the faces of these plates with a first plate directed, in relation to a laser beam, such that the angle of incidence be close to the Brewster angle, the improvement wherein: the planes of the various other plates are set in directions such that, on the one hand, the angle of incidence of the laser beam received on each plate is close to the Brewster angle and that, on the other hand, the angle between the normal to the plane of that plate and the normal to the plane of the plate situated upstream thereof is equal to the angle of rotation of the vector of polarization of said laser beam in crossing said upstream plate owing to the Faraday effect, and wherein; the number of plates, the material of which they are made, their thickness and the value of the magnetic field is chosen such that the total rotation angle undergone by the laser beam polarization vector between the input of the system and the output is approximately 45°.

3,963,996

OSCILLATION SYSTEM FOR INTEGRATED CIRCUIT

Peter Constantine Skerlos, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Sept. 5, 1974, Ser. No. 503,220

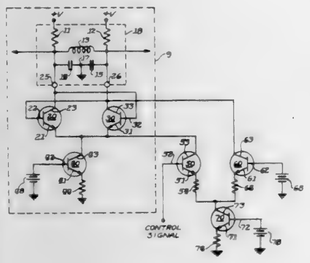
Int. Cl.² H03B *5/12*

U.S. Cl. 331—117 R **8 Claims**

1. A signal controllable variable frequency oscillation system, suitable for fabrication in an integrated circuit, producing oscillatory signals comprising:

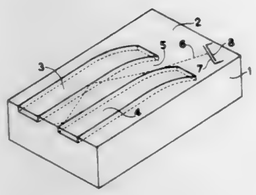
an oscillator including a first amplifying device having a reactive impedance which varies as a function of said first

amplifying device conduction level, said reactive impedance determining the frequency of said oscillatory signal;
a load impedance coupled to said first amplifying device;
means changing said first amplifying device conduction level in response to an applied control signal;
means maintaining the DC level of said oscillatory signals substantially constant despite changes in said conduction level including:



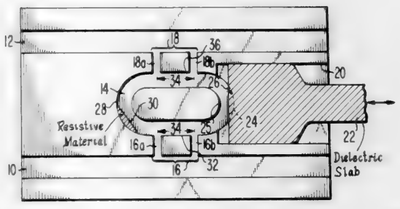
shunting means, coupled to said load impedance, providing a conductive path substantially paralleling said first amplifying device; and
balance means causing the respective current changes in said first amplifying device and said shunting means produced by said control signal to vary oppositely.

3,963,997
DEVICE FOR THE DIRECTIVE TRANSMISSION OF ELASTIC SURFACE WAVES AND PROCESS FOR MAKING THE SAME
Pierre Hartemann, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Oct. 25, 1974, Ser. No. 518,218
Claims priority, application France, Oct. 30, 1973, 73.38638
Int. Cl.² H03H *9/26, 9/30;* **H01L** *41/18, 41/22*
U.S. Cl. 333—30 R **19 Claims**



1. A device for the directive transmission of elastic surface waves, comprising: a crystalline substrate having a surface for propagating said elastic surface waves, and at least one directive zone formed in a portion of said substrate, said directive zone extending immediately below said surface; said directive zone having a permanently modified structure lacking to a substantially degree the regular arrangement of atoms of the lattice structure of the adjacent portions of said substrate, for causing a change in the phase velocity of said elastic surface waves within the extent of said directive zone.

3,963,998
VARIABLE BANDWIDTH TUNABLE DIRECTIONAL FILTER
Edwin William Richter, Acton, Mass., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 13, 1975, Ser. No. 558,002
Int. Cl.² H01P *1/20*
U.S. Cl. 333—73 W **8 Claims**

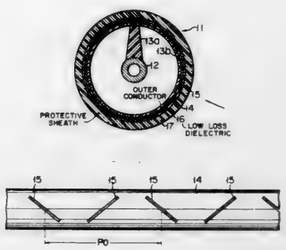


1. A variable bandwidth tunable directional filter for controlling and processing signals in data handling systems, comprising:
an input waveguide transmission line;
an output waveguide transmission line;
a ring resonator directionally coupled to said input and said output waveguides, said ring resonator being a waveguide formed to an annular ring within which an electromagnetic wave is propagated, the circumference of said resonator being an integral number of wavelengths, the resonant frequency of said resonator being tunable by adjusting the electrical length of the guided wave in said resonator, said directionally coupled ring resonator being capable of resonating with waves progressing in one direction, the frequency response at said resonance being characteristic of a band-pass filter;
a directional coupler to couple said ring resonator to said input waveguide;
a directional coupler to couple said ring resonator to said output waveguide;
dielectric means introduced into said resonator for adjusting the guided wavelength to tune said ring resonator; and
discrete attenuating means disposed within said ring resonator for attenuating said wave within said ring resonator for broadening the bandwidth of said directional filter and for decreasing the insertion loss of coupling said resonator to said waveguides to retain thereby a portion of said signal in said input transmission line to allow for additional coupling of other lines within said frequency bandwidth.

3,963,999
ULTRA-HIGH-FREQUENCY LEAKY COAXIAL CABLE
Iwao Nakajima, Ichihara; Takayoshi Maezawa, Tokyo, and Takeshi Fukazawa, Ichihara, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan
Filed May 29, 1975, Ser. No. 581,872
Int. Cl.² H01P *3/06;* **H01Q** *13/10*
U.S. Cl. 333—84 L **6 Claims**

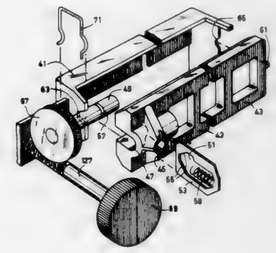
1. An ultra-high-frequency leaky coaxial cable comprising an inner conductor, an insulator disposed on the inner conductor, an outer conductor provided on the insulator in a coaxial relation to the inner conductor and having a plurality

of slots formed at a predetermined pitch, and a protective sheath adapted to cover the outer conductor, characterized in



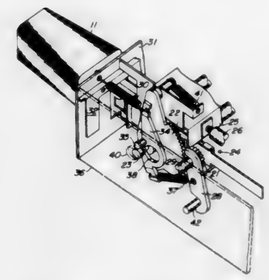
that a dielectric layer with an electrically low loss is disposed between the outer conductor and the protective sheath.

3,964,000
PUSHBUTTON DEVICE FOR MECHANICAL PRESELECTION TUNING
Lucas Wilhelmus Martinus Schijven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, Briarcliff Manor, N.Y.
Filed Jan. 7, 1975, Ser. No. 539,118
Claims priority, application Netherlands, Feb. 1, 1974, 7401404
Int. Cl.² H03J *5/06, 5/08, 5/32*
U.S. Cl. 334—7 **4 Claims**



1. A pushbutton device for mechanical preselection tuning in radio receivers, comprising a frame, an adjusting member having a longitudinal axis, means for mounting said member for rotation in said frame about said axis, means for coupling to receiver tuning means responsive to the angular position of said adjusting member, first means for rotating said member in response to a tuning control, said first means comprising a slip clutch, and second means for rotating said member to a selected one of a number of preselected positions responsive to pushbutton operation,
wherein said adjusting member and said slip clutch form portions of an elongated unit having two ends, said unit being rotatably journalled in said frame near said two ends, said slip clutch coupling between one of said ends and said adjusting member, such that upon rotation of said member by said second means only one journalled end of said unit rotates.

3,964,001
ANTI BACKLASH AND TREADLE BAR LINKAGE SYSTEM
Alfred James Clark, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed May 2, 1975, Ser. No. 574,064
Int. Cl.² H03J *5/32*
U.S. Cl. 334—7 **9 Claims**

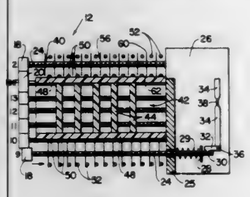


1. A pushbutton type tuner assembly for a radio receiver, the assembly having a supportive structure, a plurality of tuning coils, a plurality of tuning cores, each one of the cores being movable longitudinally within one of the coils, a reciprocatingly movable carriage for holding the cores, and tuning means for predetermining specific positions of the cores within the coils for automatically selecting one of the predetermined positions of the cores and for manually selecting any desired position of the cores, the tuning means comprising:
a gear supporting shaft rotatably mounted on the supportive structure;
first gear means fixedly mounted on the supporting shaft;
manually operable means for rotating the gear supporting shaft;
actuating means rotatably mounted on the supportive structure for moving the core carriage;
second gear means integral with the actuating means and positioned to coact with the first gear means;
first lever means pivotably mounted on the supportive structure and positioned to apply a moment to the gear supporting shaft;
second lever means pivotably mounted on the supportive structure and positioned to apply a moment to the supporting shaft of the actuating means, thereby causing the first gear to mesh with the second gear;
first spring means for biasing the first lever means toward the second lever means;
second spring means connected to the second lever means for biasing the second lever means toward the first lever means.

3,964,002
PUSH-BUTTON T.V. TUNER
Emmanuel Eugene, Brooklyn, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed July 14, 1975, Ser. No. 595,712
Int. Cl.² H03J *5/08*
U.S. Cl. 334—7 **3 Claims**

1. A push button multi-channel tuner module for a signal receiver comprising an elongated core containing electrical components, a plurality of longitudinally directed contact strips spaced around the periphery of said core, said strips being electrically connected to said components in a manner that each contact strip is associated with a different channel, fixed contact means positioned about said core and adapted to be connected to said receiver, a plurality of longitudinally directed channel selector plungers spaced around said core along said contact strips, said plungers passing along said fixed

contact means, and translatable contact means carried by each plunger for electrically bridging between a correspond-



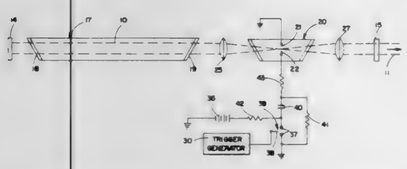
ing one of said contact strips and said fixed contact means upon depression of said plunger.

3,964,003

ARC OPERATED Q SWITCH FOR LASER

David B. Cohn, Torrance; Vaughn G. Draggoo, Huntington Beach; William B. Lacina, Los Angeles; Laurence E. Brown, Huntington Beach, and Merrill M. Stone, Rolling Hills Estates, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Feb. 26, 1975, Ser. No. 553,270
Int. Cl.² H01S *3/11*
U.S. Cl. 331—94.5 Q **8 Claims**



1. In a laser having a lasing medium, a pair of mirrors positioned on opposite sides of said lasing medium for effecting the oscillation of a light beam through said medium, means for switching the laser beam in response to a trigger signal comprising:

a pair of electrodes positioned opposite each other between said mirrors;

means for focusing said beam so as to pass between said electrodes; and

means for generating an arc between said electrodes in response to said trigger signal whereby material from at least one of said electrodes is ablated to form a metallic vapor spot, said vapor spot interrupting the path of at least a portion of said beam, said beam output being switched off while said metal vapor spot is present.

3,964,004

THERMOSTATIC SWITCH WITH STANDBY CONTACTS

Charles S. Mertler, 1012 Briarwood Road, Mansfield, Ohio 44907

Continuation-in-part of Ser. No. 445,778, Feb. 25, 1974, Pat. No. 3,913,048. This application June 19, 1975, Ser. No. 588,496
Int. Cl.² H01H *71/16*
U.S. Cl. 337—67 **31 Claims**

1. A thermostatic switch comprising, in combination,

a base,

at least first, second, and third contacts,

said first and second contacts constituting a first set of contacts,

said third contact and another contact constituting a second set of contacts,

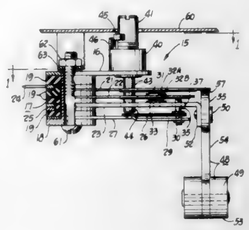
at least first and second electrical terminals,

conductive means forming a series electrical circuit from said first terminal through said first and second sets of contacts to said second terminal,

temperature responsive means movable with changes of temperature,

attitude responsive means movable with changes of attitude relative to said switch,

first mounting means mounting on said switch one of said responsive means relative to the contact sets to relatively actuate the contacts of one of said sets of contacts,



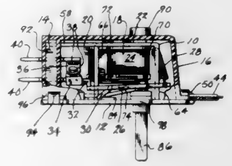
and second mounting means mounting on said switch the other of said responsive means relative to the contact sets to relatively actuate the contacts of said first contact set to an open condition and to relatively actuate on a standby basis the contacts of said second contact set in a direction toward an open condition upon failure of said first contact set to be actuated to an open condition, the opening of either contact set opening the series electrical circuit in the switch.

3,964,005

ELECTRO-MAGNETIC ASSEMBLY

Spencer C. Schantz, 16608 W. Rogers Drive, New Berlin, Wis. 53151

Division of Ser. No. 306,638, Nov. 15, 1972, Pat. No. 3,824,329. This application June 28, 1974, Ser. No. 484,203
Int. Cl.² H01H *67/02*
U.S. Cl. 335—124 **9 Claims**



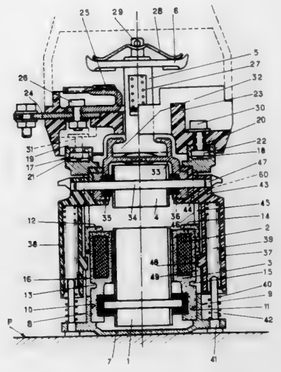
1. In an electromagnetic device having a ferromagnetic frame, having a ferromagnetic core mounted on said frame, having an electrical coil wound on said core, having a ferromagnetic armature pivoted to said frame adjacent to said core for movement toward and away from the end thereof, a base plate, a terminal strip mounted on and projecting from said base plate at right angles thereto, first legs projecting from said frame, means between said legs and terminal strip connecting said legs thereto, and second legs projecting at right angles from said frame and engaged with said base plate, said first legs being in the condition of being elastically formed to absorb tolerances between the frame, base plate, and terminal strip.

3,964,006

ELECTRICAL APPARATUS

Guy Lacan, Carrieres-sous-Bois, France, assignor to La Telemecanique Electrique, France

Filed Dec. 26, 1974, Ser. No. 536,570
Claims priority, application France, Jan. 3, 1974, 74.00159
Int. Cl.² H01H *50/04*
U.S. Cl. 335—132 **5 Claims**



1. An electrical commutation apparatus comprising:

i. a frame having two substantially plane parallel wings and a base at one extremity of each of said wings, each of said wings having at its other extremity remote from said base one component of a respective first coupling assembly extending parallel to the base, at least one of said wings including a guiding opening extending normal to said base;

ii. a plurality of contact assemblies each comprising an insulating support containing at least one fixed contact and a carrier with a movable contact, said carrier having one component of a second coupling assembly extending parallel to the base, said insulating support having the other component of each of said first coupling assemblies;

iii. an assembly of a magnetic core and an associated energising coil secured in said frame and serving as the fixed portion of an electromagnetic motor;

iv. an armature positioned to coact with said core and constituting the other portion of said motor, said armature being secured to a carriage having the other component of said second coupling assembly, said carriage including means engaged in said guiding opening for movement therein normal to said base during movement of said armature towards and away from said base.

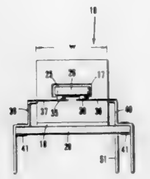
3,964,007

NOISELESS AUTOMOTIVE RELAY

Rodney Hayden, Stoney Creek, Canada, assignor to TRW Inc., Cleveland, Ohio

Filed Apr. 3, 1975, Ser. No. 564,588
Int. Cl.² H01H *3/00*
U.S. Cl. 335—187 **6 Claims**

1. A sliding contact relay comprising: an insulate coil form part having an axial bore of rectangular section extending therethrough; a coil mounted on said coil form part; a stationary core formed of magnetizable material substantially enclosing said coil and said coil form part; a rigid insulate base; means fastening said stationary core part to said base; openings in said stationary core in registry with the bore in said coil form part; an armature member having a cross section corresponding to the cross section of said bore and slidably seated therein; said armature including a magnetizable movable core part defining a portion of said armature and having a length not greater than the length of said bore and an insulate bar portion defining the remainder of said armature member and having a head portion of a larger corss sectional area than the cross section of said bore, said head portion having an insulate fixed contact engaging surface and said bar having secured thereto an electrically conductive metal contact bar having a contacting surface which lies coplanar with the undersurface of said head portion and is located on said insulate bar portion between said head portion and said movable core part of said



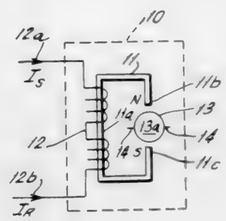
armature; two spaced apart fixed electrical contacts including means for supporting same for engagement with said contact engaging surfaces responsive to energization or deenergization of said coil; and spring means normally biasing said armature to a position wherein the contacting surface of said head portion of said insulate bar portion contacts said fixed contacts and a portion of the movable core part of said armature projects out of one end of said bore.

3,964,008

TARGET RESET MECHANISM

Lee A. Davis, Audubon, N.J., assignor to ITE Imperial Corporation, Spring House, Pa.

Filed Feb. 3, 1975, Ser. No. 546,626
Int. Cl.² H01H *85/38*
U.S. Cl. 335—272 **4 Claims**



1. A combination comprising:

an indicator device, including a target disc having a first and a second surface and a magnetic yoke having a magnetization winding wound thereon; said target disc being magnetically actuated by said yoke to visibly present said first surface responsive to a first pulse of current flowing through said yoke winding in a first direction; said target disc being magnetically actuated by said yoke to visibly present said second surface responsive to a second pulse of current flowing through said coil winding in a second direction; and

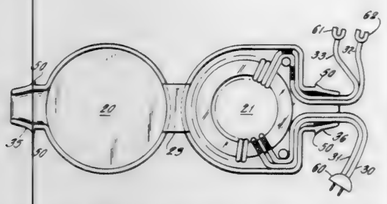
external means for selectably inducing a magnetic flux in said yoke when said external means is closely positioned thereto, whereby said target disc is magnetically actuated and one of said first and said second surfaces is caused to be visibly presented.

3,964,009

AC RADIATION CHOKE INSULATOR

Elliot Bernstein, Rockville Center, N.Y., and Richard Rosenberg, Paramus, N.J., assignors to Bel Fuse Inc., Jersey City, N.J.

Filed Nov. 3, 1975, Ser. No. 628,327
Int. Cl.² H01F *27/02*
U.S. Cl. 336—90 **3 Claims**



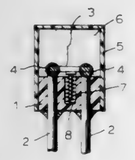
1. In a toroidal choke coil encased in a metal container; an opening in the container; said coil having leads; said leads extending through said opening in the container; the improvement comprising:
   an insulating receptacle receiving said toroidal choke coil, said insulating receptacle comprising two sections enclosing said coil;
   said sections of said insulating receptable encasing and positioning said coil between them;
   said combined sections fitting within said metal container; each section of said insulating receptacle being provided with a part tubular extension; said part tubular extensions of each said sections combining to form a tubular member;
   said leads extending through said tubular member, said tubular member extendng through said opening in said metal container.

3,964,010

SIMPLE, SMALL-SIZED FUSE

Okazaki Tasuku, 353-81, Nishi 3-chome, Nakayama-cho, Nara, Japan

Filed Oct. 8, 1974, Ser. No. 513,165
Claims priority, application Japan, Mar. 16, 1974, 49-30726
Int. Cl.² H01H *71/20*
U.S. Cl. 337—148 **3 Claims**



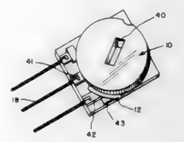
1. A fuse comprising:
   a casing frame having one open side;
   a heat resistant and insulative support base fitted into said open side;
   a plurality of parallel lead wires fitted through said support base and held thereby in a stationary position with one end of each wire inside said casing and one end exposed outside of said casing;
   conductive bridging means between said parallel wires for conductively connecting said lead wires to each other;
   low temperature fusing means at the connecting points of said bridging means and said lead wires for fusibly joining said bridging means to said wires;
   heat resistive biasing means fitted into said support base and biased against said bridging means for urging said bridging means away from said wires when said low temperature fusing means is fused; and
   an anti-oxidant insulative filler filling the open space within said casing and surrounding said bridging means, fusing and biasing means.

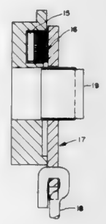
3,964,011

SINGLE TURN VARIABLE RESISTANCE DEVICE HAVING A SPLIT SHAFT ROTOR

Randall C. Ragan, Rancho Santa Fe, Calif., assignor to North American Philips Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,130
Int. Cl.² H01C *10/32*
U.S. Cl. 338—166 **2 Claims**





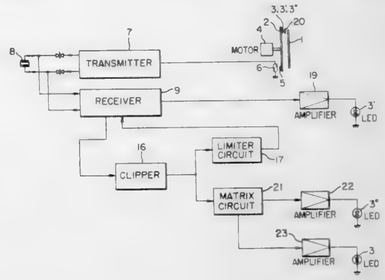
1. A single-turn variable resistance device comprising:
   a substrate, having an opening therein, said substrate including a central collector ring and an arcuate resistance element;
   terminal means on said substrate for connection to at least one end of the resistance element and the central collector ring;
   a rotor having an integral split shaft extending therefrom, said shaft extending through said opening and journalled to rotate in said opening of said substrate;
   means for separating the ends of the split shaft extending through the opening for enlarging the shaft and to rotatably secure said rotor to said substrate;
   conductor leads affixed to said terminal means, at least the central conductor lead having a portion protruding above the surface of the substrate;
   said rotor including a protrusion which will interfere with the portion of the conductor lead protruding above the surface of the substrate to act as a stop to prevent the rotor from exceeding 360° of travel;
   each of the terminal means including a hole therethrough, the ends of each of the conductors being wrapped around the portion of the substrate extending from each hole to the end of the substrate;
   said substrate also including a semi-hole at the end of the substrate below each terminal means hole to enable axial alignment of the main conductor portion;
   said rotor including a recess in said rotor facing said resistance element; and
   a resilient support inserted in said recess and a helical coil spring wiper also inserted in said recess and pressed against said resistance element and collector ring by the resilience of the support element and stored compressive force of the spring.

3,964,012

COLOR DISPLAY SYSTEM IN ULTRASONIC SONAR

Takeshi Yamamoto, and Keisuke Honda, both of Toyohashi, Japan, assignors to Keisuke Honda, Japan

Filed Aug. 6, 1974, Ser. No. 495,221
Claims priority, application Japan, Aug. 6, 1973, 48-88142
Int. Cl.² G01S *9/68, 7/56, 9/70*
U.S. Cl. 340—3 C **10 Claims**



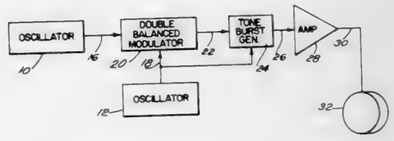
1. A color display device for a fish detection sonar comprising a sonar transmitter, a sonar receiver, and a sonar transducer, said display device comprising
   a. target intensity detecting means for detecting from the output of said receiver whether the target intensity of each target is higher or lower than one of a plurality of predetermined intensity levels, thereby detecting whether each target is within predetermined intensity level ranges,
   b. a rotary disk driven by driving means in synchronism with the transmission of sound by said transducer,
   c. a transparent, fixed scale disk with graduated scales disposed coaxially of and in opposed relation with said rotary disk, and
   d. at least two display elements each capable of emitting light in a different color when energized and disposed upon said rotary disk in closely spaced apart relation,
means electrically coupling said display elements to said target intensity detecting means for energizing each display element when the target intensity of each target is within an intensity level range assigned to said each display element,
whereby the targets may be displayed in different colors depending on the target intensity thereof.

3,964,013

CAVITATING PARAMETRIC UNDERWATER ACOUSTIC SOURCE

William L. Konrad, Niantic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1974, Ser. No. 516,858
Int. Cl.² H04B *11/00*; **G01S** *9/66*
U.S. Cl. 340—5 R **5 Claims**



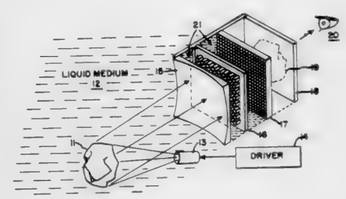
1. A cavitating parametric underwater acoustic source for generating acoustic power efficiently in water which comprises:
   a first oscillator means for generating electrical signals of a first output frequency;
   a second oscillator means for generating electrical signals of a second output frequency;
   a modulator means having inputs from the output of said first oscillator means and from the output of said second oscillator means and for having an output thereof with electrical signals having frequencies equal to the sum and difference of said first output frequency and said second output frequency and eliminating said first and second output frequencies in the output thereof;
   a toneburst generator means having the output of said modulator means to be an input thereof and for having an output comprising electrical signals of frequencies equal to the sum and difference of said first output frequency and said second output frequency; and
   a transducer means for producing cavitation near the surface of said transducer means and generating electrical signals having a frequency equal to the difference of said first output frequency and said second output frequency efficiently in the water resulting from non-linearity caused by cavitation.

3,964,014

SONIC TRANSDUCER ARRAY

Stephen W. Tehon, Clay, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Oct. 15, 1974, Ser. No. 514,617
Int. Cl.² H04R *1/44, 17/00*
U.S. Cl. 340—9 **10 Claims**



1. A sonic transducer array for use in a liquid medium comprising:
   a. a plurality of elongated piezoelectric transducers of substantially equal resonant frequency, designed to vibrate in a longitudinal mode with an intermediate nodal region and antinodes at either end,
   b. supporting means comprising:
      1. a thin sheet-like web having a thickness of less than one-eighth wavelength; said transducers being supported by said web at their nodal regions in a position orthogonal to said web, spaced over said web at regular intervals; and
      2. a frame attached to said web for mechanically supporting said transducers in position in said liquid medium,
   c. means for coupling the antinodal regions of the transducers on one face of said array to said liquid medium for mechanical interaction therewith, and
   d. electrode means coupled to said transducers for electrical interaction therewith.

3,964,015

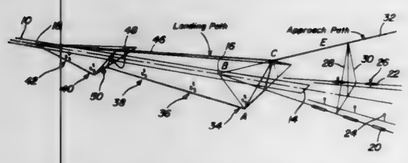
AIRCRAFT APPROACH AND LANDING LIGHT SYSTEM

William O. Collins, 6258 N. Kensington St., McLean, Va. 22101

Filed Feb. 21, 1974, Ser. No. 444,353
Int. Cl.² G08G *5/00*
U.S. Cl. 340—26 **2 Claims**

1. A visual approach guidance system for guiding an aircraft toward an aiming point on a runway comprising a plurality of indicating light units spaced equally on each side of the correct approach path for the aircraft with the light units converging toward the aiming point, each of the light units includ-

ing at least two light members oriented in laterally and vertically spaced relation with the inner light members being above the outer light members, the outer light members being in the form of a longitudinal light bar and the inner light members being a dot-type light for direct viewing of the bars from the approach path as closely spaced solid line segments in longitudinal alignment and converging toward the aiming point and direct viewing of the dot-type lights from the approach path as being in alignment with the bars, a vertical plane including the dot-type lights in a pair of light units disposed in transversely aligned relation on opposite sides of the correct approach path for the aircraft and being defined by a base line extending between the outer light members and sides extending from the outer light members through the dot-type light members having its apex coinciding with the approach path of an aircraft whereby the pilot of an aircraft following the approach path will observe two converging segmental lines of light with the dot-type lights being aligned with the light bars, an inclined triangular plane surface being defined by the approach path extending to the aiming point, the outer light



members along one side of the approach path extending to the aiming point and a base line extending from an outer light member along said one side of the approach path and through a corresponding inner light member to the approach path with the aiming point defining the apex of the inclined triangular surface, and a guidance system for guiding an aircraft during the flare out and touchdown portion of the approach path in which the touchdown point is longitudinally inwardly on the runway from the aiming point, said guidance system for the flare out portion including a plurality of indicating light units spaced along the runway and converging toward the touchdown point, each indicating light unit in the guidance system for the flare out portion of the approach path including three elongated bars with two of said bars in longitudinal alignment with each other and the third bar disposed in spaced parallel relation thereto and centrally between said two of the bars for direct viewing of the bars themselves as closely spaced solid line segments in apparent longitudinal alignment with each other while following the flare out portion of the approach path toward the touchdown point.

3,964,016

RECORDING SYSTEM FOR VEHICLE OCCUPANT PROTECTING APPARATUS

Takashi Yamada, Anjo; Kazuo Oishi, Oobu; Toshiaki Kato, Nishio, and Kazuo Iwase, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 14, 1974, Ser. No. 451,293

Claims priority, application Japan, Mar. 16, 1973, 48-31101

Int. Cl.² B60R *21/08*

U.S. Cl. 340—52 H **9 Claims**

1. A recording system for a vehicle occupant protecting apparatus comprising:

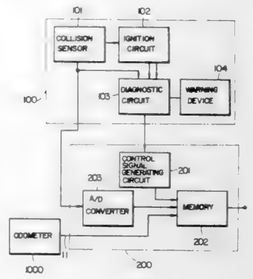
a collision sensor for detecting a collision of the vehicle to produce a collision signal;

an occupant protecting apparatus ignition circuit connected to said collision sensor for receiving said collision signal to actuate, in response thereto, said occupant protecting apparatus;

a diagnostic circuit connected to said collision sensor and said ignition circuit, said diagnostic circuit, being responsive to any of:

1. the occurrence of a fault in said collision sensor,
2. the occurrence of a fault in said ignition circuit, and
3. operation of said ignition circuit for actuating the occupant protecting apparatus, to produce a diagnostic signal;

driving condition indicating means for producing a signal indicative of a driving condition of said vehicle; and



a recording circuit connected to said collision sensor, the diagnostic circuit and said driving condition indicating means, said recording circuit being responsive to the occurrence of the diagnostic signal to record said signal indicative of the driving condition and any collision signal produced by said collision sensor.

3,964,017

TEST SYSTEM FOR SKID CONTROL APPARATUS

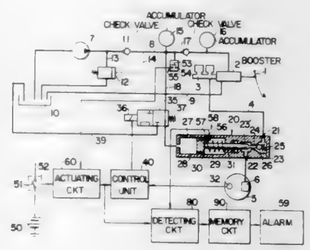
Hiroshi Arai, and Juichi Shibatani, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed July 24, 1974, Ser. No. 491,322

Claims priority, application Japan, Mar. 20, 1974, 49-30912

Int. Cl.² B60T *8/02*

U.S. Cl. 340—52 C **36 Claims**



1. For a skid-control system having a hydraulic modulator adapted to modulate the hydraulic brake pressure from a master cylinder to a wheel cylinder in a vehicle having an engine, and means for actuating said hydraulic modulator when wheels start to lock, an operational test system, comprising:

A. first detecting means for detecting whether the engine is started or not and producing an output signal in response to the engine being started so as to establish a starting time for the test;

B. an actuating circuit coupled to said first detecting means to cause the hydraulic modulator actuating means to actuate the hydraulic modulator in response to the output signal from said first detecting means;

C. second detecting means coupled to said modulator for detecting the operation of said modulator and producing output signals indicative of the operation of the hydraulic modulator;

D. a detecting circuit coupled to said second detecting means and said actuating circuit for detecting whether the operation of said skid control system is normal or abnormal in response to the output signals from said second detecting means and said actuating circuit and producing signals indicative of normal or abnormal operation of said skid control system;

E. a memory circuit coupled to said detecting circuit to store therein the output signal from said detecting circuit and to generate an output signal when the operation of said skid control system is abnormal, and

F. an alarm device coupled to said memory circuit to generate an alarm signal in response to the output signal from said memory circuit.

3,964,018

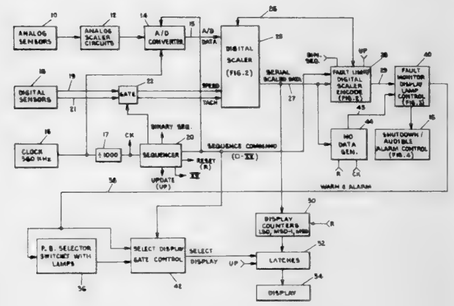
VEHICLE MONITORING SYSTEM WITH FAULT OVERRIDE

Ronald E. Strait, and Willard A. Hall, both of Cadillac, Mich., assignors to Kysor Industrial Corporation, Cadillac, Mich.

Filed Oct. 29, 1974, Ser. No. 518,778

Int. Cl.² G08B *19/00*

U.S. Cl. 340—52 F **24 Claims**



1. A monitor system for vehicle parameters comprising:

means for providing continuous parameter value information for a plurality of vehicle parameters;

sequencing means for providing a series of sequence commands defining a data sequence for each parameter during a scan interval;

scaler circuit means coupled to said providing means and to said sequencing means for providing serial scaled data during each scan interval;

means for storing preselected parameter limits;

correlating means coupled to said storage means and to said scaler circuit means for correlating data received from said scaler circuit means with corresponding parameter limits from said storage means and for providing an event occurred output signal if data from said scaler circuit means for a parameter reaches a predetermined stored limit for said parameter;

means coupled to said scaler circuit and means for selecting and displaying at least one parameter value; and

fault circuit means coupled to said correlating means and to said selecting and displaying means and responsive to said event occurred signal for overriding a parameter selected for display in the event a different parameter reaches its associated stored limit indicating a system fault by displaying the fault parameter.

3,964,019

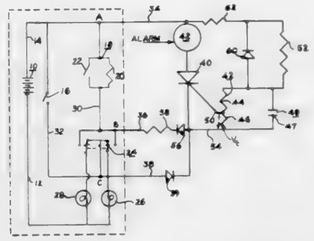
TIMER

David A. Wethe, 1570 N. Coast Highway, Laguna Beach, Calif. 92651; Charles W. Behn, 1646 E. 14th St., Santa Ana, Calif. 92701, and Richard B. Willetts, 282 Forest Ave., Laguna Beach, Calif. 92651

Filed Dec. 19, 1973, Ser. No. 426,203

Int. Cl.² B60Q *1/34*

U.S. Cl. 340—73 **6 Claims**



1. An electric circuit means useful for timing of the duration of a turn signal circuit of a vehicle having turn signal and brake lights energized by a battery through flasher and manual turn signal switches to generate an intermediate electrical potential and a brake switch which comprises:

first and second conductor means in circuit with said flasher for input of said intermittent electrical potential to said electrical circuit means;

an electronic switch circuit connected across said first and second conductor means and including alarm means and a silicon controlled rectifier having its electrodes in series connection with said alarm means and having a gate terminal;

a timer circuit to operate said electronic switch circuit comprising:

capacitive means in series with a first current limiting resistance means also connected between said first and second conductor means;

voltage divider means including resistance means in parallel connection to said capacitive means and connected across the terminals of said capacitive means;

connector means extending from the gate terminal of said silicon controlled rectifier to an intermediate position on said voltage divider means;

a holding circuit comprising diode means in series with second current limiting resistor means connected between said capacitive means and one side of said electronic switch means and operative to permit discharging current flow from said capacitive means through said electronic switch means during the off portions of the input intermittent potential whereby said electronic switch means is maintained in a conducting mode for a plurality of pulses of said input intermittent potential; and

conductor means connecting said brake switch in circuit with said capacitive means and including diode means to permit discharge of said capacitive means when said brake switch is closed.

3,964,020

HIGH VOLTAGE SYSTEM WITH SELF-TEST CIRCUITRY

Arthur F. Dickerson, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

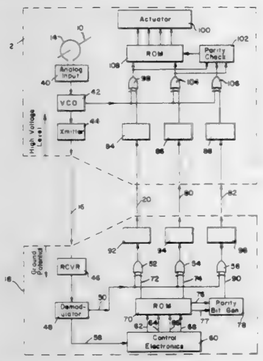
Filed Mar. 6, 1975, Ser. No. 556,074

Int. Cl.² G08C *25/00, 23/00*; **H04B** *9/00, 17/00*

U.S. Cl. 340—146./AG **6 Claims**

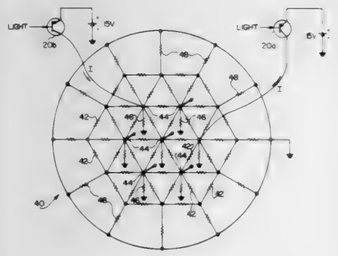
1. A high voltage system which automatically and continuously self-tests its communication links to check for malfunctions, comprising:

sensing means for sensing the value of electrical conditions in a high voltage line;
control electronics;
a communication link;
signal processing means for generating a voltage signal representing the value sensed by said sensing means, said signal being sent along said communication link to said control electronics and also as a digital clock;
fault correction means for compensating for faults in said system;
a plurality of communications paths;



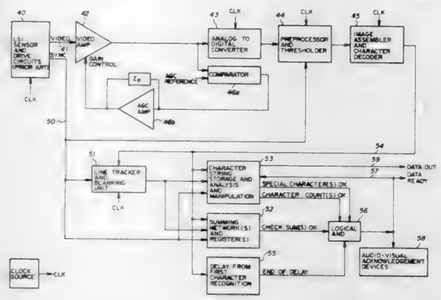
said control electronics for delivering control commands to said fault correction means via said plurality of communication paths having a first and second end;
clocked encoding means at said first end of said communication paths and clocked decoding means at said second end of said communication paths;
parity bit generator connected between said control electronics and one of said encoding means for producing an appropriate parity bit;
parity checking means connected between one of said decoding means and said fault correction means for comparing that the digital information going into said encoding means is the same information being outputed from said decoding means.

3,964,021
PREPROCESSING SYSTEM AND METHOD FOR PATTERN ENHANCEMENT
Ilan Tamches, Greenbelt, Md., assignor to Visionetics Limited Partnership, Riverdale, Md.
Filed July 27, 1973, Ser. No. 383,282
Int. Cl.² G06K 9/12
U.S. Cl. 340—146.3 MA **36 Claims**



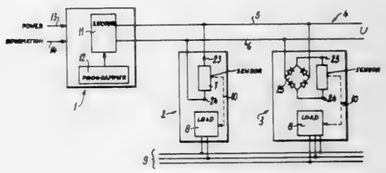
1. A method of preprocessing an optical pattern in a spatially-modulated scene to provide an enhanced pattern for use with an optical pattern recognition system and the like, comprising:
a. converting the light energy received from said scene into electrical signals proportional to the energy of the received light, and providing said signals at a plurality of first outputs in parallel;
b.
1. simultaneously receiving at a plurality of hexagonally disposed input nodes the signals provided at said parallel first outputs,
2. band-pass filtering said signals in the spatial domain for deriving further signals representative of an enhanced optical pattern with respect to the carrier in the spatially-modulated scene, and
3. providing said further signals at a plurality of hexagonally-disposed output nodes in parallel;
c. simultaneously peak detecting the further signals provided at said second output nodes by
1. selectively comparing the further signals at each of a plurality of pairs of adjacent output nodes with two signals at another pair of adjacent output nodes, each two pairs of output nodes in the hexagonal output pattern whose signals are compared being those for which imaginary lines connecting the two nodes in each pair are substantially perpendicular, and
2. providing a series of peak output signals whose locus defines line elements representative of an output pattern enhanced with respect to said input and derived immediately upon the receipt of light energy from said scene.

3,964,022
HAND-HELD SCAN DATA HANDLING SYSTEM
Charles E. Martin, Roswell, N. Mex., assignor to Recognition Equipment Incorporated, Irving, Tex.
Continuation of Ser. No. 431,376, Jan. 7, 1974, abandoned.
This application Apr. 18, 1975, Ser. No. 569,692
Int. Cl.² G06K 9/12
U.S. Cl. 340—146.3 J **36 Claims**



1. A method for optically reading and automatically processing alphanumeric data utilizing a hand-held wand, which comprises the steps of:
passing a two-dimensional array of photosensitive elements horizontally along a line of data to be read,
focusing an optical image of the data upon said array,
digitizing the output signals produced by said array,
thresholding said digitized outputs to produce a 1 bit binary code indicating black data cells and white data cells,
storing said binary codes in registers to form a plurality of character images,
shifting the binary codes in the register to simulate vertical movement of said array relative to the line,
combining the binary codes indicating black cells the binary codes indicating white cells to provide an identification of the presence of a character image along the line, and
processing the character images for character recognition at intervals related to the time required for movement of the array a preset distance along the line for each simulated increment of vertical movement.

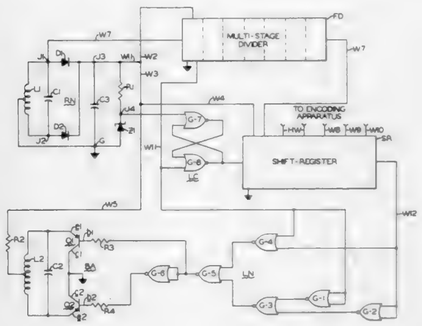
3,964,023
METHOD OF AND APPARATUS FOR SELECTIVELY CONTROLLING A PLURALITY OF REMOTELY LOCATED LOADS
Jean-Jacques Fauchez, Saint-Egreve, France, assignor to Anvar, Agence Nationale de Valorisation de la Recherche, Neuilly-sur-Seine, France
Filed Feb. 19, 1975, Ser. No. 551,051
Claims priority, application France, Feb. 20, 1974, 74.06553
Int. Cl.² H04Q 9/00
U.S. Cl. 340—147 PC **11 Claims**



1. A system for operating a plurality of variously remotely located loads from a single master location, said system comprising:
a master controller at said master location including means for generating a succession of voltage signals each of positive or negative polarity and of a voltage level either above or below a predetermined threshold;
at least four slave units connected in parallel to said master controller and each at and connected to a respective load;
means including a conductor extending between said master controller and all of said slave units for feeding said signals to all of said units;
priority means in one of said slave units for operating the respective load on reception over said conductor of a signal having either of said polarities;
handicap means in another of said slave units for operating the respective load only on reception over said conductor of a signal of at least one of said polarities and having a voltage level above said threshold;
negative-responsive means in yet another of said slave units for operating the respective load only on receptin over said conductor of a signal of negative polarity; and
positive-responsive means in yet another of said slave units for operating the respective load only on reception over said conductor of a signal of positive polarity.

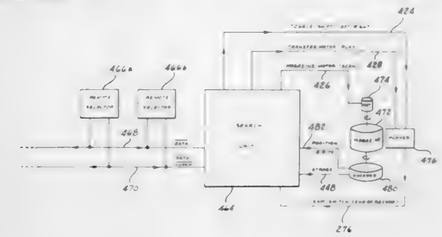
3,964,024
TRANSPONDER FOR AN AUTOMATIC VEHICLE IDENTIFICATION SYSTEM
Thomas J. Hutton, and John W. Kramer, both of Pittsburgh, Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Nov. 15, 1974, Ser. No. 524,138
Int. Cl.² H04Q 9/00; G01S 9/56
U.S. Cl. 340—152 T **10 Claims**

1. A transponder for an automatic identification system comprising, a receiving coil tuned to the frequency of an interrogating signal, a rectifier for rectifying the interrogating signal to provide a source of d.c. operating potential for the transponder, a multi-stage divider for dividing the frequency of the interrogating signal into an *f/n* frequency signal wherein n is an integer, a logic circuit including a plurality of gates receiving said *f/n* frequency signal, an amplifier is supplied with said *f/n* frequency signal by said gates of said logic circuit for amplifying said *f/n* frequency signal, a shift register encoded with binary data, a latching circuit for enabling the shift register to transfer the encoded binary data to said logic circuit and in turn to said amplifier for phase modulating said *f/n* frequency signal in accordance with said binary data, and a



transmitting coil coupled to said amplifier and tuned to said *f/n* frequency signal.

3,964,025
SOLID STATE SEARCH UNIT FOR AUTOMATIC PHONOGRAPH
Gerard J. Oosterhouse, Grand Rapids, Mich., assignor to Rowe International Inc., Whippany, N.J.
Filed Nov. 22, 1974, Ser. No. 526,098
Int. Cl.² G11B 19/08; G06F 11/00; H04Q 9/14
U.S. Cl. 340—162 **19 Claims**



1. In an automatic phonograph system in which selections are identified by respective multidigit selection identification numbers, apparatus including
a. user actuated selector means for generating a selection signal representing a desired selection,
b. display means responsive to a display signal corresponding to a particular selection for displaying the identification number of particular selection,
c. means for generating a position signal representing the selection in position for play, each of said selection, display, and position signals comprising a binary coded representation of a selected identification number,
d. a shift register capable of storing a signal representing the selection identification number,
e. transmitting means for cyclically loading the shift register with the position signal and then shifting the position signal out of said register and transmitting the same as a display signal to the display means,
f. receiving means responsive to the generation of a selection signal by the selector means for inhibiting said transmitting means and loading the selection signal into the shift register,
g. a memory having a plurality of normally blank locations corresponding to the number of selections offered, said locations adapted to be loaded with positive play signals to indicate that the corresponding selection is to be played, and

h. means responsive to the loading of a complete selection signal into the shift register for writing a play signal into the memory location corresponding to the number represented by said selection signal.

3,964,026

SEQUENCE BLOCK DISPLAY SYSTEM

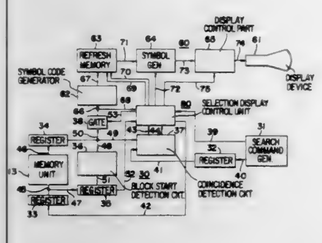
Nobuharu Yamauchi; Masaji Matsumura; Katsuhide Morimoto, all of Amagasaki; Haruo Koyanagi, Musashimurayama; Iwao Sato, Komae; Buhei Yasuhara, Tokyo , and Jiro Sakai, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Tokyo and Mitsubishi Denki Kabushiki Kaisha, both of, Japan

Filed May 20, 1974, Ser. No. 471,552

Claims priority, application Japan, May 22, 1973, 48-57454; May 22, 1973, 48-57455

Int. Cl.² G06F *3/14*

U.S. Cl. 340—172.5 **4 Claims**



1. A sequence block display system used with a sequence controller for controlling a controlled-objective in a predetermined sequence wherein the sequence controller comprises a memory unit which stores a control sequence, and wherein the control sequence includes a plurality of sequence blocks, each sequence block comprising a plurality of instructions, said display system comprising:

a search section for searching a sequence block from the control sequence stored in the memory unit, the search section being capable of generating a coincidence signal when coincidence is detected between the instruction read in succession from the memory unit and the instruction included in the sequence block to be retrieved;

a sequence block display section including a display device;

a memory for storing the instructions of a sequence block in a form suited for display;

a control unit which receives the coincidence signal from the search section and causes said memory to store, according to the coincidence signal, the instructions of the sequence block in a form suited for display, the control unit being capable of repeatedly reading the data in the memory and displaying them on the display device;

said search section comprising a first register to which the last instruction of a sequence block to be retrieved is given, a coincidence detection circuit which generates a coincidence signal when coincidence is detected between the instruction read from the memory unit and the instruction registered in the first register, and a second register which generates, when the coincidence signal is generated, a signal of the address in the memory unit where the first instruction of the searched sequence block is stored;

said control unit being capable of designating, according to the coincidence signal, the addresses in succession until the coincidence signal is generated again from the address in the second register, and causing the memory of the display section to store the instructions read for the period from the first coincidence signal to the next coincidence signal;

said display section comprising a symbol generator for converting the read output from the memory into a symbol pattern;

a display control part for controlling the display device according to said read output from the memory;

said display section being arranged to be capable of displaying the instructions of each sequence block in the form of a sequence diagram comprising control elements;

a state indicating circuit for adding additional data to the instructions of the sequence block which are stored in the memory of said display section;

said additional data comprising input and/or output signals to the sequence controller;

said display section displaying the states of said control elements according to said additional data.

3,964,027

APPARATUS AND METHOD FOR RECORDING AND USING MICROPROGRAMMES IN A DATA PROCESSING SYSTEM

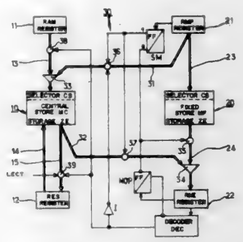
Ginette Laure Dalmasso, Bagnolet, France, assignor to Compagnie Honeywell Bull (Societe Anonyme), Paris, France

Filed Apr. 10, 1974, Ser. No. 459,842

Claims priority, application France, Apr. 19, 1973, 73.14402

Int. Cl.² G06F *9/06*

U.S. Cl. 340—172.5 **9 Claims**



1. Apparatus for providing the function of a control store of a data processing system, comprising in combination:

a fixed store for holding microinstructions in respective locations thereof;

a central store of said data processing system for holding microinstructions in respective locations thereof;

each of said stores responding to an address received thereby which represents a respective location in said store for delivering at an output connection thereof the microinstruction held in said location;

the microinstructions held in said fixed store and said central store having a common format;

a first register for holding a store address;

first transfer means for transferring the address contents of said first register to said fixed store;

second transfer means; said second transfer means being controllable for transferring the address contents of said first register to said central store;

a second register for holding a microinstruction for controlling a respective operation to be carried out by said data processing system;

third transfer means, said third transfer means being controllable for transferring a microinstruction from said output connection of said fixed store to said second register;

fourth transfer means, said fourth transfer means being controllable for transferring a microinstruction from said output connection of said central store to said second register; and

selectively operable switching means coupled to said first register and responsive to the contents thereof for operating in one of first and second states, said switching means

when operating in said first state controlling said third transfer means to enable transfer therethrough and when operating in said second state controlling said second and fourth transfer means to enable transfer therethrough.

3,964,028

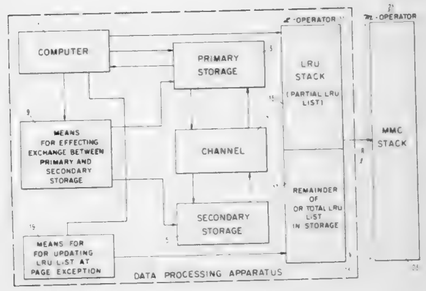
SYSTEM AND METHOD FOR EVALUATING PAGING BEHAVIOR

Laszlo A. Belady, Yorktown Heights, N.Y., and Frank P. Palermo, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 2, 1973, Ser. No. 385,223

Int. Cl.² G06F *13/00*

U.S. Cl. 340—172.5 **5 Claims**



1. A system for use in data processing apparatus which is operated as a paging machine and wherein program is considered as a page reference string, for determining the minimum memory capacities of the pages of said string, said data processing apparatus including means for maintaining a first list of the names of the pages of said program ordered in accordance with a least recently used (LRU) criterion, said first list being constituted by the names of said pages and least recently used (LRU) integers respectively having one of the different discrete values of 1 to n, respectively, associated with each of said names according to said criterion, wherein n is equal to the total number of said pages in said program, said system comprising:

means for maintaining a second list of said names, said second list being constituted by an ordered sequence of 1st to nth addresses, there being located at each of said addresses a different integer, C, from which the minumum memory capacity (MMC) of a page can be determined, each of said integers, C, of said second list having a different discrete value of 1 to n;

means responsive to said means for maintaining said second list for determining said minimum memory capacity of a given referenced page comprising;

means responsive to the referencing of said given page for dividing said second list into a first group of addresses having the values of 1 to (l1), respectively, and a second group of addresses having the values of l to n, respectively, wherein l is equal to the LRU integer associated with said given referenced page;

means responsive to said means for dividing of said second list for determining the address, k, in said second group having the lowest value integer, C, in said second group,

means responsive to said means for determining said address, k, for marking the series of addresses in said second group included in the subgroup containing the addresses l, $(l+1)$, . . . , $(k-1)$, which have the following values, viz. l, $(l+a)$, $(l+b)$, $(l+c)$, . . . , up to address $(k-1)$, if necessary, wherein $(l+a)$ has the smallest address value greater than l such that $C(l+a) < C(l)$, wherein $(l+b)$ has the smallest address value greater than $(l+a)$ such that $C(l+a)$, etc., wherein $C(i)$ is the integer, C, at address ,

means responsive to said means for dividing said second list for incrementing each of the addresses 2 - $(l-1)$ in said first group by 1 to constitute the addresses 3 to l,

means responsive to said means for the determining of said address, k, for assigning the address value of 2 to said smallest MMC integer originally at address, k, said smallest integer being said minumum capacity of said given referenced page, and

means responsive to said means for assigning said address value of 2 for respectively assigning to each of the series of said marked addresses of said second group, the value of the next address in said series, the highest value address in said series being assigned the value of k.

3,964,029

INFORMATION RETRIEVAL SYSTEMS

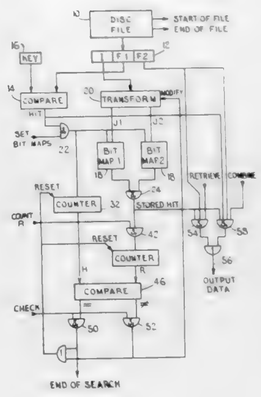
Edward Babb, Stevenage, England, assignor to International Computers Limited, London, England

Filed Apr. 14, 1975, Ser. No. 567,643

Claims priority, application United Kingdom, June 19, 1974, 27093/74

Int. Cl.² G06F *1/00*

U.S. Cl. 340—172.5 **8 Claims**



1. An information retrieval system comprising: a file store holding a plurality of records each having an index which identifies that record, a plurality of storage areas each having a plurality of individually addressable bit locations, the total number of such locations being smaller than the number of records in the file; means for operating on an index in a plurality of different ways to produce a plurality of addresses, one for each storage area; means for searching the file to compare each record with a search criterion and to produce a hit indication whenever a record is found which satisfies the search criterion; means responsive to a hit indication to write a predetermined pattern of bits into the addressed locations of the storage areas; and means for reading out the contents of the addressed bit locations of the storage areas to produce a stored hit indication in the event that those locations contain the predetermined pattern of bits.

3,964,030

SEMICONDUCTOR MEMORY ARRAY

James Teh-Zen Koo, Wescosville, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

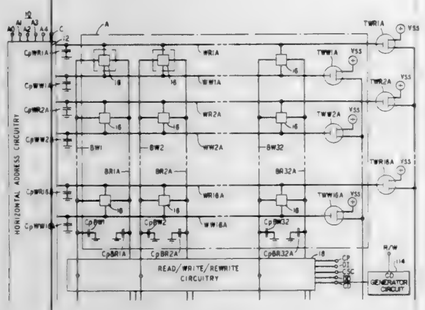
Continuation of Ser. No. 423,295, Dec. 10, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,636

Int. Cl.² G11C *13/00*, *11/40*

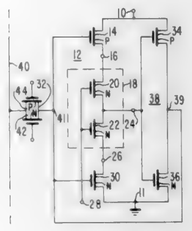
U.S. Cl. 340—173 R **8 Claims**

1. A semiconductor memory system comprising:

a first array of n-rows and m-columns of interconnected memory cells;
a second array of n-rows and m-columns of interconnected memory cells;
each of the memory cells comprises three field effect transistors, the drain of the first transistor being coupled to the gate of the second transistor, the drain of the second transistor being coupled to the source of the third transistor;
a WR, WW, BR, and BW terminal being coupled to the gate of the third transistor, the gate of the first transistor, the drain of the third transistor, and the source of the first transistor, respectively;
the WR terminal of each memory cell of a given row of memory cells being coupled to a WR line, the WW terminal of each memory cell of a given row of memory cells being coupled to a WW line, the BR terminal of each memory cell of a given column of memory cells being coupled to a BR line, the BW terminal of each memory cell of a given column of memory cells being coupled to a BW line;
a first plurality of $2n$ field effect transistors, the gate of each of the $2n$ transistors of the first plurality being coupled to a separate one of the WW lines, the drains of the first plurality of $2n$ transistors being coupled together to a y terminal;
a second plurality of $2n$ field effect transistors, the gate of each of the $2n$ transistors of the second plurality being coupled to a separate one of the WR lines, the drains of the second plurality of $2n$ transistors being coupled together to a terminal X;
the drain of a transistor TLX being coupled to terminal X;
the drain of a transistor TLY being coupled to terminal Y;
a plurality of first capacitors, a separate one of each of the first capacitors being coupled to a WW line;
plurality of second capacitors, a separate one of each of the second capacitors being coupled to a WR line;
a plurality of third capacitors, a separate one of each of the third capacitors being coupled to a BW line;
a plurality of fourth capacitors, a separate one of each of the fourth capacitors being coupled to a BR line;
all WR lines and WW lines being coupled to horizontal address circuitry which is adapted to select a WW and WR coupled to the same row of transistors of the first or second array and set the potential ofthe selected WR and WW to a different value than all other WRs and WWs;
read/write/rewrite circuitry comprising:
m-subcircuits, each of the m-subcircuits comprising four circuits $m1$, $m2$, $m3$, and $m4$, circuit $m1$ comprising:
first, second, third and fourth transistors T1A, T2A, T3A, and T4A, the gate of T1A and the drains of the T3 and T4 being coupled to a separate one of the BR lines of array A, the drain of T1 being coupled to the source of T2, the drain of T2 being coupled a separate one of the BW lines, circuit $m2$ comprising first, second, third and fourth transistors, T1B, T2B, T3B, and T4B, the gate of T1B and the drains of T3A and T4A being coupled to a separate one of the BR lines of array B;
$m3$ comprising a single transistor, the source of which is coupled to a separate one of the BW lines;
$m4$ comprising four transistors, T11, T12, T13, and T14, the gates of T11 and T14 being coupled together to a separate one of m-date select lines, the drain of T11 being coupled to a $\overline{DO}$ line, the source of T14 being coupled to a $\overline{DI}$ lines, the source of T11 being coupled to the drain of T12, the gate of T12 being coupled to a separate one of the BW lines and to the drain of T13, the source of T13 being coupled to the drain of T14;
the drain of a transistor TD1 being coupled to line DI, and the source of a transistor $\overline{TDO}$ being coupled to line $\overline{DO}$;
the m-data select lines being coupled to vertical address circuitry which is adapted to select one of the data selected lines and set the potential of the selected line at a different value than the nonselected lines.



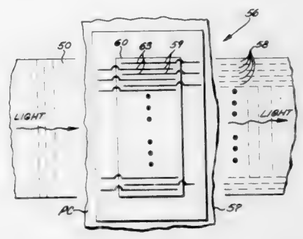
3,964,031
MEMORY CELL
Sargent Sheffield Eaton, Jr., Phillipsburg, N.J., assignor to RCA Corporation, New York, N.Y.
Filed May 5, 1975, Ser. No. 574,686
Int. Cl.[2] G11C *11/40*
U.S. Cl. 340—173 R **8 Claims**



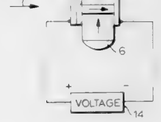
1. A memory cell comprising, in combination:
first and second inverters, each having an input node and an output node, each coupled at its output node to the input node of the other;
a digit line;
means responsive to a read command for coupling said digit line to the input node of the first of said inverters; and
means responsive to a strobe signal concurrent with said read command for disconnecting the input node of the second of said inverters from the first of said inverters.

3,964,032
OPTICAL SYSTEM FOR STORING INFORMATION
Andrew M. Bardos, Indian Harbour Beach, Fla., assignor to Harris Corporation, Cleveland, Ohio
Division of Ser. No. 452,071, March 18, 1974. This application Nov. 27, 1974, Ser. No. 527,618
Int. Cl.[2] G11C *13/04, 11/44*
U.S. Cl. 340—173 LM **24 Claims**

1. An information storage system comprising a light transmissive member on which a record of information is spatially distributed, means for directing a light beam onto said member, said member having a thickness longitudinally of said beam that varies across a transverse dimension of said beam so that said member prismatically deflects said beam upon transmission thereof, means for sensing said deflection including light sensistive means for detecting the position of the output beam after said prismatic deflection and for producing a position signal responsive to said output beam position, and means for receiving said light beam and responsive to said signal for compensatorily deflecting said beam to substantially correct for said prismatic deflection and maintain said output beam position constant at a place proximate said light sensitive means.



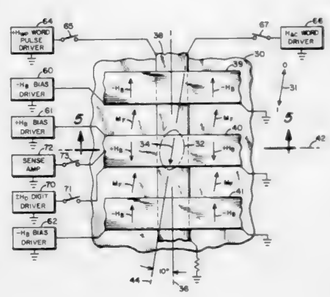
3,964,033
ELECTROOPTIC STORAGE DEVICE
Kiyotaka Wasa, Nara; Shunichiro Kawashima, Amagasaki, and Shigeru Hayakawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 2, 1974, Ser. No. 528,868
Int. Cl.[2] G11C *11/22, 13/08*
U.S. Cl. 340—173.2 **8 Claims**



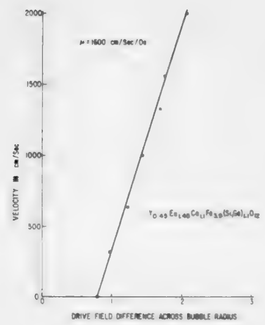
1. An electrooptic storage device comprising a ferroelectric plate, one pair of writing electrodes on opposite surfaces of said ferroelectric plate, respectively, and one pair of erasing electrodes on opposite edges, respectively, of said ferroelectric plate, said writing electrodes comprising a thermally sensitive transparent resistor material having a switching characteristic at a switching temperature Ts and said switching temperature Ts being lower than the Curie temperature Tc of the material of said ferroelectric plate.

3,964,034
OLIGATOMIC FERROMAGNETIC FILM MEMORY SYSTEM UTILIZING FIELD STABILIZED DOMAINS
Ernest J. Torok, St. Paul; Roger E. Lund, Cottage Grove, and William J. Simon, Shakopee, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed July 1, 1974, Ser. No. 484,833
Int. Cl.[2] G11C *11/14*
U.S. Cl. 340—174 TF **10 Claims**

3. In a thin-ferromagnetic-planar-film memory in which the film is substantially continuous in two orthogonal directions and is of a thickness that is insufficient to permit the existence of interdomain Bloch walls of cross-tie walls, said film having an easy axis and in which information is stored in magnetic domains located at associated memory areas that are defined by the intersections of a word line and orthogonally oriented digit lines, the method of stabilizing said magnetic domains, comprising inductively coupling to said film an in-plane static, spatially alternating bias field that is substantially parallel to said word line and in the memory areas at said intersections is oriented in a first direction, but in the area between said intersections is oriented in a second direction opposite to said first direction.



3,964,035
MAGNETIC DEVICES UTILIZING GARNET EPITAXIAL MATERIALS
Stuart Lawrence Blank, Madison, and Roy Conway Le Craw, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Sept. 23, 1974, Ser. No. 508,071
Int. Cl.[2] G11C *11/14;* **C04B** *35/40*
U.S. Cl. 340—174 TF **11 Claims**



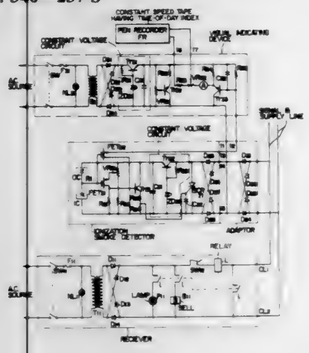
1. Memory device comprising a substrate supporting at least a first epitaxial layer, the said layer being capable of evidencing uniaxial magnetic anisotropy capable of supporting local enclosed regions of magnetic polarization opposite to that of surrounding material, provided with first means for magnetically biasing said layer to stabilize said regions, second means for positioning such oppositely polarized local and enclosed regions, and third means for propagating such local regions, said material being of the garnet structure, characterized in that at least 75 percent of the total net moment of the material is contributed by europium as a dodecahedral site occupant, the said net moment being at least 100 Gauss.

3,964,036

IONIZATION SMOKE DETECTOR CO-USED TO ISSUE FIRE ALARM AND DETECT AMBIENT ATMOSPHERE

Yasaburo Adachi, and Hiroaki Tsuru, both of Machida, Japan, assignors to Hochiki Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 306,678, Nov. 15, 1972, abandoned. This application Oct. 24, 1974, Ser. No. 517,673
Int. Cl.² G08B 17/10
U.S. Cl. 340—237 S 17 Claims



1. A measuring apparatus co-using an ionization smoke detector operative to initiate a fire alarm and to detect the ambient atmosphere, which comprises:
a main circuit comprising
a line adapted to be connected to a power source including an ionization smoke detector having an outer ionization chamber and an inner ioniation chamber connected in series with an intermediate electrode,
a field effect transistor connected to said line in parallel to the ionization smoke detector for control by the relative potential of said intermediate electrode located between said two chambers, and
an alarm device connected to the power line in parallel to both the field effect transistor and the ionization smoke detector, a relay connected in the power line to operate said alarm device when said relay is energized by an increase of current conducted from said field effect transistor in response to potential change in said electrode and an auxiliary circuit comprising
a second field effect transistor controlled by the relative potential of said intermediate electrode,
a second power line associated with said second transistor,
a visual indicating device connected to said second power line in parallel to said second transistor by which potential change at the intermediate electrode is converted to change of a current in said second power line and to display the change at the visual indicating device.

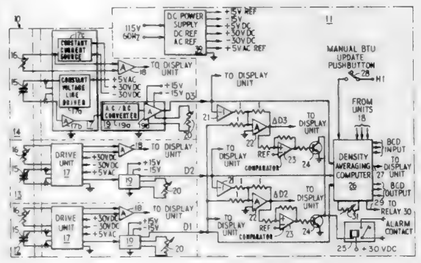
3,964,037

FUEL TANK ALARM SYSTEMS

David A. Lamphere, Milton, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Sept. 5, 1974, Ser. No. 503,440
Int. Cl.² G08B 21/00
U.S. Cl. 340—244 R 13 Claims

1. A system for indicating an abnormal density variation in a mass of liquid contained within a storage tank, comprising:
at least two density sensing means mounted in said tank at different respective heights for producing respective density output signals proportional to the density of the liquid at each respective height when said density sensing means are immersed in said liquid,
at least one density gradient sensing means connected to two of said density sensing means, for comparing the density output signals of the two density sensing means and for producing a density gradient output signal proportional to the density gradient in the liquid between the two density sensing means, and



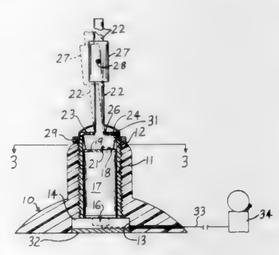
alarm means connected to said density gradient sensing means, for producing an alarm indication when said density gradient output signal indicates an inverse density gradient in the liquid exceeding a predetermined value.

3,964,038

WIND INDICATOR

Talmadge O. Rutherford, P.O. Box 903, Rte. 1, Clanton, Ala. 35045

Filed July 7, 1975, Ser. No. 593,633
Int. Cl.² G08B 21/00
U.S. Cl. 340—241 7 Claims



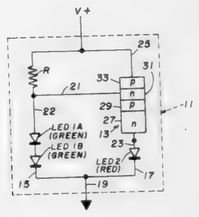
1. A wind indicator for indicating a predetermined increase in wind velocity comprising:
a. a movable arm supported adjacent one end and carrying a vertically extending cylindrical portion in spaced relation to said one end in position for wind to contact as wind passes thereby,
b. an actuator member carried by said one end of said movable arm and having a round, flat surface at one end thereof adapted to move to selected pivotal positions in response to a predetermined increase in wind velocity sufficient to move said cylindrical portion laterally from a vertical position,
c. a support member mounted in a supporting housing for vertical movement and having a flat surface in contact with said round flat surfaces of said actuator member supporting said actuator member for rocking movement in response to pivotal movement of said movable arm in any direction with said support member being movable in a vertical direction in response to said rocking movement of said actuator member, and
d. means operatively connecting said support member to a warning device so that said warning device is actuated in response to said predetermined increase in wind velocity to move said cylindrical portion laterally.

3,964,039

LUMINESCENT SOLID STATE STATUS INDICATORS

Magnus George Craford, St. Louis, and David Lee Keune, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 24, 1974, Ser. No. 536,145
Int. Cl.² G08B 21/00
U.S. Cl. 340—248 A 7 Claims



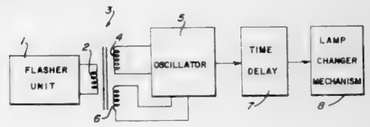
1. A luminescent solid state status indicator including at least first and second light emitting diodes adapted to emit first and second colors, respectively, common terminal means connected commonly to one side of both of said light emitting diodes and adapted to be connected to one of a pair of terminals of a source of DC energizing voltage, said energizing voltage being subject to variation in magnitude, first terminal means connected to the other side of the first light emitting diode, second terminal means connected to the other side of the second light emitting diode, wherein the improvement comprises a semiconductor circuit switching device having first, second, and third electrodes, the first electrode being interconnected with the first terminal means, the second electrode being interconnected with the second terminal means, the third electrode being connected to the other of said pair of terminals of the source of DC energizing voltage, said first and second electrodes being adapted selectively to energize the first and second light emitting diodes corresponding respectively to discrete magnitudes of said energizing voltage thereby to display different colors corresponding to the magnitude of said energizing voltage said switching device being operative to cause change from said first color to said second color when said energizing voltage reaches a preselected magnitude.

3,964,040

CIRCUIT FOR DETECTING BURNED-OUT LAMP FOR A BUOY LAMP CHANGER

Ravi Behl, Montreal, Canada, assignor to Vapor Corporation, Chicago, Ill.

Filed Oct. 29, 1974, Ser. No. 518,257
Int. Cl.² G08B 21/00; H05B 39/10
U.S. Cl. 340—251 11 Claims



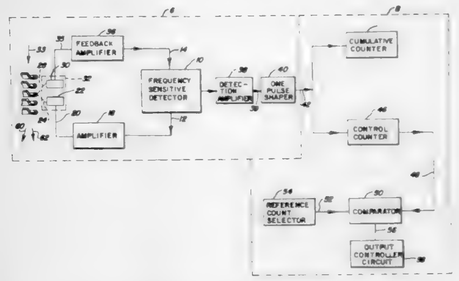
1. A circuit for detecting inoperative lamps in an automatic lamp changer having a lamp change actuator for replacing said lamps with stored operative lamps, the circuit comprising:
a flashing lamp;
ocsillator means inductively coupled to the flashing lamp for generating an output signal when the lamp becomes inoperative; and
means for delaying the transmission of the output signal to said lamp change actuator until an output signal of predetermined duration occurs, thus precluding erroneous actuation due to transients.

3,964,041

ARTICLE DETECTION SYSTEM AND METHOD

James J. Hinds, La Grange, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed July 1, 1974, Ser. No. 484,768
Int. Cl.² G08B 13/18
U.S. Cl. 340—258 B 8 Claims



1. An article sensing and detection system comprising:
first transducer means for generating a sensing signal adapted to impinge on an article to be sensed;
frequency sensitive circuit means generating a continuous fixed frequency modulating signal, said frequency sensitive circuit means being responsive to a signal of said fixed frequency at its input for generating a first output and being responsive to the absence of a signal of said fixed frequency at its input for generating a second output;
first circuit means for applying said fixed frequency modulating signal to said first transducer means to effect oscillation of said sensing signal at said fixed frequency;
second transducer means for sensing said oscillating sensing signal, said second transducer means being responsive to said oscillating sensing signal impinging on an article to be sensed for generating a feedback signal respresentative thereof and oscillating at said frequency;
second circuit means for coupling said oscillating representative feedback signal to the input of said frequency sensitive circuit means;
said frequency sensitive circuit means being responsive to the presence a predetermined number of cycles of said oscillating representative feedback signal at its input for generating one of said first and second outputs indicative of the detection of said article.

3,964,042

STATIC MAGNETIC FIELD METAL DETECTOR

William L. Garrott, Gainesville, Fla., assignor to Sperry Rand Corporation, New York, N.Y.

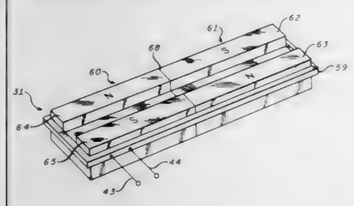
Division of Ser. No. 373,565, June 25, 1973, Pat. No. 3,896,608. This application Nov. 11, 1974, Ser. No. 522,378
Int. Cl.² G08B 21/00
U.S. Cl. 340—258 R 5 Claims

1. Apparatus responsive to passage of a metal object through one or the other of discrete contiguous portions of a region of space comprising:
first and second elongate magnetic-field generation means for producing respective first and second unidirectional magnetic fields in said discrete contiguous portions of said region of space,
said first unidirectional magnetic field being opposite in sense to said second unidirectional magnetic field,
said first elongate magnetic field-generation means comprising first elongate permanent magnet means having

first and second elongate substantially parallel-disposed magnetic poles at one face thereof,

said second elongate magnetic-field generation means comprising second elongate permanent magnet means having third and fourth elongate substantially parallel-disposed magnetic poles at one face thereof,

said first, second, third and forth magnetic poles being characterized by production of said first unidirectional magnetic field of one sense adjacent said one face of said first elongate permanent magnet means and said second unidirectional magnetic field of opposite sense adjacent said one face of said second elongate permanent magnet means, said unidirectional magnetic fields being substantially equal in magnitude,



multiple conductor magnetic field pick-up coil means disposed substantially equally in stationary relation in said first and second unidirectional magnetic fields for providing a substantial detection signal in the presence of said object passing adjacent said first or adjacent said second elongate magnetic field-generation means while affording substantial cancellation of spurious magnetic field responses, and

utilization means coupled to said multiple conductor magnetic field pick-up coil means thereby responsive to the passage of said metal object through one or the other of said discrete contiguous portions of said region of space.

3,964,043

ELECTRONIC ALARM BOLT

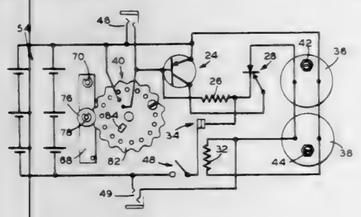
Georges R. Gratacap, Cannes, France, assignor to Seymour Gillman, New York, N.Y.

Filed Aug. 16, 1974, Ser. No. 498,180

Claims priority, application France, Sept. 14, 1973, 73.34417

Int. Cl.² G08B *13/08*

U.S. Cl. 340—274 R **8 Claims**



1. A self-contained electrically operated device for operation when a normally closed control circuit external to the device is opened comprising: first and second control terminals across which the control circuit is connected; a source of an operating voltage having first and second output terminals; a first switching means energized by said source of operating voltage and connected across said first and second control terminals for assuming a first operating state as long as a closed circuit exclusive of said first switching means exists across said first and second control terminals and for switching to a second operating state when said closed circuit does not exist; a second switching means energized by said source of operating voltage and having a trigger input means connected to said first switching means, a resetting means, and an output means, said second switching means for being triggered to a first operating state the first time said first switching means assumes its second operating state and remaining in said first operating state until the operating of said resetting means; an alarm means connected to the output means of said second switching means for giving an alarm as long as said second switching means is in its first operating state; and manually operable multiple position switching means for controllably connecting a closed circuit across said first and second control terminals when in a particular selected position.

3,964,044

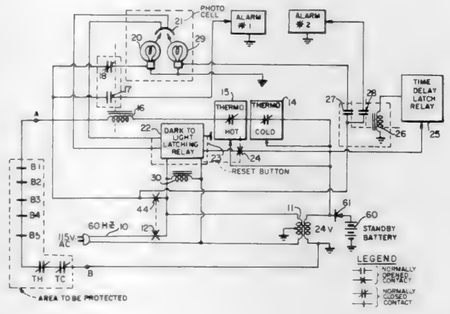
MULTIPLE OPERATING ALARM SYSTEMS EMPLOYING OIL BURNER FLAME MONITORING RELAYS

Anthony R. Busco, 15 Prospect St., Jamesburg, N.J. 08831

Filed Nov. 29, 1974, Ser. No. 527,953

Int. Cl.² G01D *21/04*; **G08B** *13/10*

U.S. Cl. 340—276 **10 Claims**



1. A multiple alarm system for monitoring the status of an area to be protected, comprising:

a. a series path sensor string including a relay coil in said path, said relay coil associated with at least a first contact, said contact capable of being in either one of two states; wherein is one of said states, said contact is closed and in said other state, said contact is opened,

b. first illumination means coupled to said contact and said illumination means operative to provide a light beam, when said coil is energized,

c. light responsive means responsive to said light beam to detect a transition from dark to light to provide upon detection of said condition, an output signal of an indefinite duration and operative upon detection of a light to dark condition to provide a predetermined duration signal, which signal will undesireably reset said light responsive means,

d. time delay means responsive to said predetermined signal and operative after a delay less then said predetermined duration signal to provide an output signal before the termination of said predetermined delay,

e. second illumination means responsive to said output signal of said time delay means to illuminate said light responsive means independent of said first illumination means to thereby assure that said predetermined duration signal does not reset said light responsive means whereby when said series string is broken and said coil is no longer energized, said light responsive means produces said indefinite duration signal, and

f. alarm means responsive to said indefinite duration signal to provide an indication when said series sensor string is broken.

3,964,045

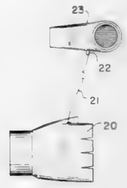
OPERATOR ALERTING DEVICE

Cecil Conley, 9-S-675 Western Ave., Hinsdale, Ill. 60521

Continuation-in-part of Ser. No. 280,958, Aug. 16, 1972, Pat. No. 3,861,349. This application Dec. 9, 1974, Ser. No. 530,717

Int. Cl.² G08B *21/00*

U.S. Cl. 340—279 **2 Claims**



1. Means for alerting an operator of a motor vehicle who has drowsed off, comprising, in combination, an attention-producing means including trigger or switch means for setting off the same, means for mounting said attention-producing means on a fixed part of said vehicle generally above the steering wheel thereof, a glove or hand-worn member of the operator's hand, and a cord or other flexible member interconnecting said trigger means and said glove or hand-worn member, said cord or other flexible member having a length such that it is not taut when the operator's hand is on the steering wheel but becomes taut before the operator's hand drops to his thigh and said glove including a thumb-receiving pocket and an index finger-receiving pocket with said pockets being attached to each other in juxtaposed relationship so that the wearer's thumb cannot by itself hook over the rim of the steering wheel.

3,964,046

CONTROL DEVICE FOR A PORTABLE MACHINE

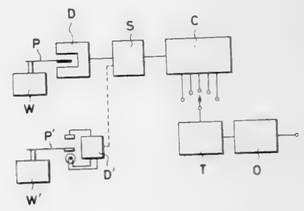
Kiyoshi Takahashi, Kunitachi, and Noritsugu Hirata, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 184,691, Sept. 29, 1971, abandoned. This application May 20, 1974, Ser. No. 471,560

Claims priority, application Japan, Oct. 2, 1970, 45-86941; Oct. 2, 1970, 45-98497

Int. Cl.² G08B *1/00*

U.S. Cl. 340—309.1 **9 Claims**



1. A control device for actuating a portable machine, comprising portable timepiece means having a first indicating member which repeats one cycle of movement over one time, and a second indicating member which repeats one cycle of movement over a second time period shorter than the first time period, detecting means including a first detector for detecting each repetition of movement of the first indicator member and a second detector for detecting each repetition of movement of the second indicating member, a single retaining circuit connected to said first detector to be set thereby and to produce an electrical mark in response to the output of the first detector, a gate circuit responsive to the output of said signal retaining circuit and said second detector circuit for passing the next output from said second circuit when the signal retaining circuit is set, said signal retaining circuit being responsive to the gate circuit and being reset thereby so as to close the gate in response to passage by the gate of the first one of the outputs from said second detector after the output from the first detector, a counter coupled to the gate and responding to the output of the gate for counting a predetermined number of signals from the gate, delay means connected to the counter for selecting a predetermined number of output signals of the counter to generate a first starting signal, and to generate a second starting signal delayed by a predetermined period of time from the generation of the first starting signal, and output control means connected to said delay means and said counter for actuating a first portion of the portable machine in response to the first starting signal and actuating the second portion of the machine in response to the second starting signal.

3,964,047

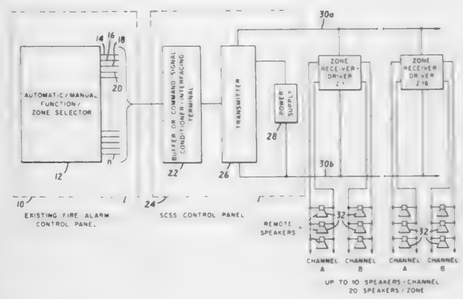
FIRE-ALARM AUDIBLE SIGNALING SYSTEM PERMITTING SELECTIVE COMMUNICATIONS AND SIGNALING

Joseph C. Antonaccio, Hazlet, N.J., assignor to Wheelock Signals, Inc., Long Branch, N.J.

Filed June 19, 1974, Ser. No. 480,867

Int. Cl.² H04Q *9/00*

U.S. Cl. 340—310 R **10 Claims**



1. A fire-alarm audible signaling system permitting selective communications and signaling and comprising transmitter means, receiver-driver means, and circuit means connecting said transmitter means and said receiver-driver means, wherein said transmitter means comprises logic means for generating information in digital form, a ones oscillator for continuously generating a tone of a first frequency representing digital ones, a zeros oscillator for continuously generating a tone of a second frequency representing digital zeros, a pair of field-effect transistor switch means electrically connected between said circuit means and said oscillators, respectively, and a pair of NAND-gates having outputs respectively connected to gate said field-effect transistor switch means, whereby said respective field-effect transistor switch means open and close in accordance with said digital information generated by said logic means in order to impress on said circuit means a series of tone bursts of different frequencies conveying said information.

3,964,048

COMMUNICATING OVER POWER NETWORK WITHIN A BUILDING OR OTHER USER LOCATION

Joe F. Lusk, Medford, and William H. Rood, Acton, both of Mass., assignors to General Public Utilities Corporation, New York, N.Y.

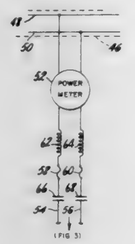
Filed Jan. 28, 1974, Ser. No. 437,184

Int. Cl.² H04M *11/04*

U.S. Cl. 340—310 R **7 Claims**

1. Apparatus comprising an external power grid for delivering electrical power at a given frequency to a user location

such as a building, power lines within the user location connected to the external power grid for distributing electrical power within the user location, communications means at at least two stations within the user location connected to the power lines within the user location and adapted to transmit communications signals over the power lines, the communications signals having a frequency different from the frequency of the electrical power supplied by the external power grid,



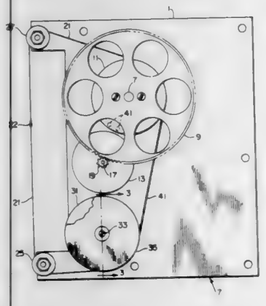
and filter means inserted in series between the external power grid and the power lines within the user location, the filter means being tuned to present a closed circuit to the electrical power and thus to pass the electrical power but present substantially an open circuit to the communications signals and thus substantially to block passage of the communications signals, whereby the user location is isolated from the external power grid at the frequency of the communications signals.

3,964,049

VERTICAL SCALE TAKE UP MECHANISM

Casimer Frank Remus, Tunkhannock, Pa., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Mar. 13, 1975, Ser. No. 558,19
Int. Cl.² G08B *23/00;* **F16H** *35/18*
U.S. Cl. 340—317 **6 Claims**



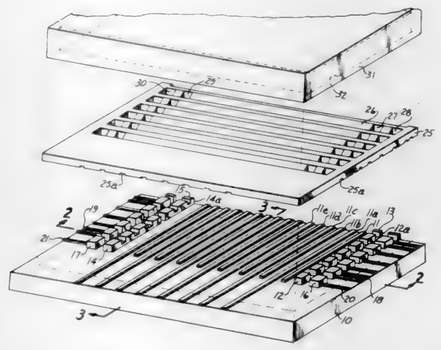
1. An indicator comprising scale means and index means movable relative to one another for indicating a condition sensed by a signal condition device, a servomotor responsive to signals from said device, a pair of drums, a flexible band having one of the scale means or index means thereon wound on the drums, means other than the flexible band drivably connecting the servomotor to the drums for positively rotating one drum in a direction for winding the flexible band thereon and for positively rotating the other drum in the opposite direction for winding the flexible band thereon to move the scale means or index means in both directions, said driving means including spring means between the driving means and only one drum for accommodating only relative rotation between the drums as the flexible band winds from one drum to the other when the drums rotate through different angles in accordance with the amounts of flexible band wound on the drums.

3,964,050

PLASMA DISPLAY PANEL

William N. Mayer, White Bear Lake, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed May 21, 1975, Ser. No. 579,642
Int. Cl.² H01J *17/48*
U.S. Cl. 340—324 M **15 Claims**



1. A display device having a plurality of display elements, said display device comprising a substrate supporting a plurality of elongated conductors in a substantially planar array, each of said conductors being substantially parallel to the others of said conductors; a plurality of first cell means adjacent an end one of said conductors, each of said first cell means including first and second electrodes; dielectric means overlying said conductors, said dielectric means having a plurality of elongated surfaces extending substantially normal to the length of said conductors, one end of each of said surfaces being adjacent to a respective one of each of said first cell means; confining means for confining a gaseous atmosphere contiguous to said dielectric surfaces and said first cell means, each of said display elements being defined by a region of each of said dielectric surfaces between respective pairs of said conductors, whereby upon application of a discharge potential to a first cell means and a selected shift voltage to the one conductor adjacent said first cell means, said respective first cell means discharges to transfer a charge to the dielectric surface adjacent the said one conductor adjacent said first cell means and whereby upon application of a display voltage to the pair of conductors of a display element, a charge difference accumulated on the dielectric surface adjacent said pair of conductors initiates a discharge in said gaseous atmosphere to reverse the charge accumulation and to sustain display of said element.

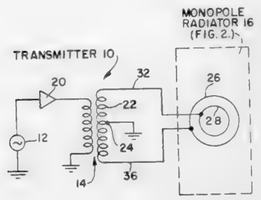
3,964,051

ELECTROSTATIC COMMUNICATION SYSTEM

Lewey O. Gilstrap, Jr., Washington, D.C., assignor to Infodyne, Inc., Arlington, Va.

Continuation-in-part of Ser. No. 331,567, Feb. 12, 1973, abandoned. This application June 6, 1974, Ser. No. 476,887
Int. Cl.² H04B *13/00*
U.S. Cl. 340—4 A **6 Claims**

1. An underwater electrostatic wave antenna, comprising a monopole radiator including a pair of concentric electrically conductive spheres, a dielectric material separating said spheres, means on said outer sphere to insulate said sphere from water when submerged in water, and means for applying



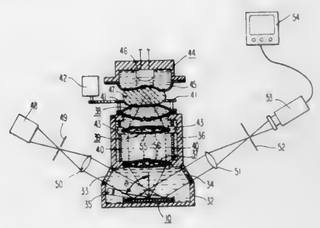
varying voltages of opposite polarity to said spheres respectively.

3,964,052

ACOUSTICAL IMAGING SYSTEM

Gary Norris Langlois, Richland, Wash., assignor to Holosonics, Inc., Richland, Wash.

Filed Mar. 28, 1975, Ser. No. 563,219
Int. Cl.² G01N *29/04*
U.S. Cl. 340—5 H **19 Claims**



1. An acoustical imaging system comprising:
a first enclosure for confining a liquid therein and having an opening in an upper surface thereof;
a detector disposed beneath said opening and within said first enclosure and having a surface exhibiting a pattern of deformations when impinged upon by acoustic energy;
a first source of acoustic energy adapted to direct a first beam of said energy upon said detector surface at an oblique angle thereto;
a first yieldable acoustically transparent member closing said opening in said first enclosure for coupling the interior of said first enclosure to an object to be examined;
a second enclosure for confining a liquid therein and including a second yieldable acoustically transparent portion for coupling the interior of said second enclosure to the object;
a second source of acoustic energy disposed within said second enclosure and adapted to direct a second beam of said energy through the object toward and substantially normal to said detector surface;
means for directing illuminating radiation upon the surface of said detector; and
means for observing said surface.

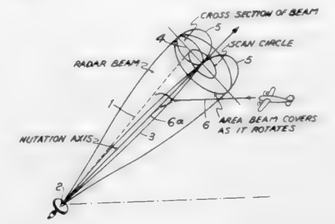
3,964,053

AIRCRAFT GUIDING SYSTEM

William H. Heiser, Ramsey, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Mar. 15, 1957, Ser. No. 646,496
Int. Cl.² G01S *1/08*
U.S. Cl. 343—108 M **5 Claims**

1. A system adapted to guide an aircraft along a path defined by frequency modulated signals of a transmitted conical scan pattern, comprising a receiver carried by said aircraft to receive said signals, means to detect from said signals and the amplitude modulation of said signals carried by the movement of said aircraft relative to the axis of said conical scan pattern any rate of change of the direction of movement of said aircraft with respect to the nutation axis of said conical scan pattern, and means responsive to said detected rate of change to direct the movement of said aircraft along a path within said conical scan pattern defined by any line of constant scan modulation.

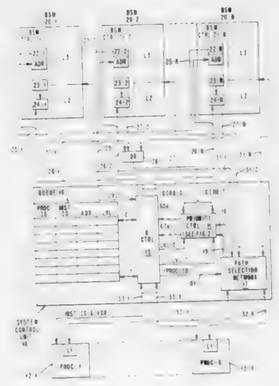


3,964,054

HIERARCHY RESPONSE PRIORITY ADJUSTMENT MECHANISM

Eugene Joseph Annunziata, Hyde Park, and Neal Taylor Christensen, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1975, Ser. No. 589,228
Int. Cl.² G06F *9/18*
U.S. Cl. 340—172.5 **6 Claims**



1. A system for controlling the priority of simultaneous responses to plural requests for data from different levels of a computer storage hierarchy, including a plurality of different levels having different data access rates, the hierarchy including means for initially responding with a level signal indicating which level is to respond to the request for data transfer, simultaneous responses competing for a common transfer path for moving the requested data, comprising
a queue in a priority control network, the queue including a plurality of indexed slots, the indexed slots receiving requests for data from a computer,
level-determining means in said hierarchy providing the level signal to the priority control network for indicating the hierarchy level which is to respond to each request put into a queue slot at a particular index in the queue,

a plurality of basic storage modules in said hierarchy, each module containing at least two different access-time levels in the hierarchy,

register means in each module for storing an index signal from the priority control network indicating the particular index of the queue slot containing the request to be responded to,

response control signal means in each module for providing to the priority control network index signal stored in the register means when the module is ready for a transfer of data, each response control signal means operating independently of other response control signal means in other modules, the priority control network also including:

a plurality of intra-level priority control circuits receiving each provided index signal from a responding module, each respective intra-level priority control circuit servicing a different level in the hierarchy,

inter-level connecting means between the intra-level priority control circuits to disable each higher-level priority control circuit when a slower-level priority control circuit is receiving the level signal from the level determining means, one of the intra-level priority control circuits being activatd by the level signal,

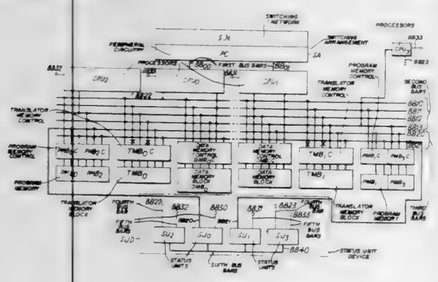
means receiving the output of the activated intra-level priority control circuit to provide to the queue an index output signal corresponding to a selected one of one or more provided index signals received from one or more respective response control signal means, thereby giving priority to a data transfer by the module assigned to the selected index signal.

3,964,055

DATA PROCESSING SYSTEM EMPLOYING ONE OF A PLURALITY OF IDENTICAL PROCESSORS AS A CONTROLLER

Valére Jean Marie Carruet, Mechelen, and Freddy Josse Melanie Verspecht, Vlezenbeek, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,741
Claims priority, application Belgium, Oct. 9, 1972, 789828
Int. Cl.² G06F *11/00*
U.S. Cl. 340—172.5 **11 Claims**



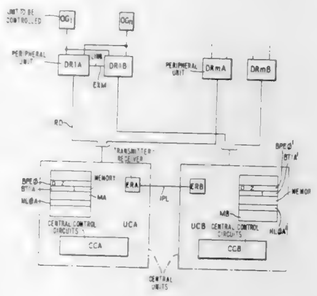
1. A data processing control system adaptable to be connected to a plurality of processors which are substantially all alike, a plurality of memory units, which are substantially all alike, a plurality of memory units, a status unit device, a group of said processors being pre-selectable to execute programs stored therein, and first channel means coupled from the status unit device to said pre-selectable processors over which a single one of said pre-selectable processors from said group of pre-selectable processors may be selected as the most suitable one to execute said programs, a switching arrangement coupled to each of said pre-selectable processors by an individual second channel, means coupling each of said processors to a plurality of said memory units via an individual third channel, means coupling each of said pre-selectable processors to all said memory units via an individual first channel and means including a control circuit coupled via a fourth channel with a pre-selected processor to enable a pre-selected processor to calculate for each processor, itself included, the value of a function which is dependent on a plurality of variables which determine the operative or non-operative conditions of the processor and the availability or non-availability to the respective processor of a first channel, a second channel and a third channel, and means coupled to said control circuit to enable pre-selection of another pre-selectable processor as the most suitable one.

3,964,056

SYSTEM FOR TRANSFERRING DATA BETWEEN CENTRAL UNITS AND CONTROLLED UNITS

Jean Charpentier, Issy-les-Moulineaux; Genevieve Cancian, and Francois Selz, both of Paris, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 8, 1974, Ser. No. 458,691
Int. Cl.² G06F *15/16, 11/04*
U.S. Cl. 340—172.5 **3 Claims**



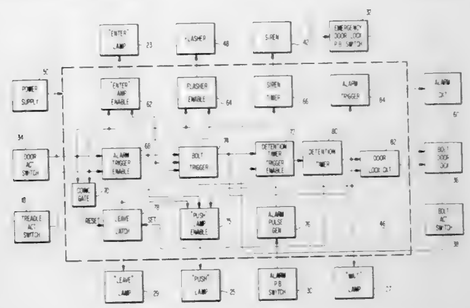
1. A system enabling the transfer of data between central units and controlled units comprising at least two central units, a plurality of groups of controlled units, a plurality of peripheral units including one peripheral unit per group of controlled units and per central unit, means connecting said peripheral unit to receive orders from the central units and retransmit them to the controlled units; means linking the two central units including an information-transmission link, each central unit including central control circuits, each central unit including a first storing device for each peripheral unit assigned to the central unit for storing information indicating whether the corresponding periperal unit is accessible by the central unit or not; whereby when a central unit is preparing to transmit an order to a peripheral unit, the central control circuits read the information provided by the first storing device corresponding to the peripheral unit and, according to the read information, control either the transmission of the order directly to the peripheral unit, or the transmission to the other central unit, through the transmission-link, of a message containing the order and the identity of the peripheral units, each central unit including a second storing device for every periperal unit assigned to the other central unit for storing information indicating whether the other central unit has access to that peripheral unit; means arranged so that when a central unit has an order to transmit to a group of controlled units, but lacks access to its peripheral unit, the central control circuits read the information contained in the second storing device corresponding to the analogous peripheral unit of the other central unit and, according to the read information, they enable the transmission of the order to the other central unit, through the transmission-link, each central unit including a third storing device for every peripheral unit assigned to the central unit for storing characteristic information when the central unit transmits, for the account of the other central unit, an order to the peripheral unit; the central control circuits examining, at the end of the execution of an order by the peripheral, the information contained in the third storing device, which will then enable it to determine whether the order has been executed for its own account or for the account of the other central unit; and, in this latter case, the central control circuits transmit to the other central unit, through the transmission link, a message informing of the end of execution of the order.

3,964,057

FIRE ALARM AND PROTECTION BOOTH

Ronald H. Wells, Baltimore, Md., assignor to Fire Alarm Marketing Corporation, Cockeysville, Md.

Filed May 28, 1975, Ser. No. 581,434
Int. Cl.² G08B *21/00*
U.S. Cl. 340—304 **16 Claims**



1. In a control circuit for a booth type enclosure adapted to actuate an alarm circuit for signalling an alarm, for example to the local fire department, as well as providing an emergency refuge, wherein said enclosure (**10**) includes a door (**12**) having an electrically operated door lock (**36**) adapted to detain a person in the enclosure for a predetermined time period after the signalling of the alarm, a floor treadle (**16**), first switch means (**34**) actuated by the opening and closing of the door (**12**), second switch means (**18**) adapted to be actuated by the person's weight upon the floor treadle (**16**), third switch means (**36**) actuated by the door lock, and fourth switch means (**30**) actuated by the person in the enclosure for initiating an alarm signal, the improvement comprising:

first binary logic circuit means (**82**) adapted to cause energization of the door lock (**36**) and having a first and second input signal applied thereto, each of said input signals being adapted to provide a respective control signal for energizing the door lock;

circuit means (**76**) coupled to said fourth switch (**30**) means for providing an output signal upon one actuation of said fourth circuit means and thereafter being insensitive to further actuation;

second binary logic circuit means (**74**) coupled to and responsive to said output signal and at least one enabling signal and being operable to provide said first input signal to said first binary logic circuit means for initially energizing said door lock temporarily to insure operational capability of the door lock and thereby actuating said third switch means (**38**);

third binary logic circuit means (**68**) coupled to said first and second switch means (**34** and **18**) and being responsive to the binary operating states thereof to provide said at least one enabling signal when the door (**12**) is closed and the foot treadle (**18**) is actuated;

fourth binary logic circuit means (**72**) coupled to and responsive to said first input signal and to the binary operating state of said third switch means (**38**) when actuated to provide a timer circuit actuating signal;

detention timer circuit means (**80**) coupled to and responsive to said actuating signal and generating said second input signal to said first binary logic circuit means (**82**) and continuously energizing said door lock for a predetermined time period following said first input signal and thereafter deenergizing said door lock; and

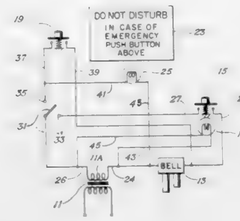
alarm trigger circuit means (**84**) coupled to said detention timer circuit means (**80**) and being rendered operative thereby when actuated to operate said alarm circuit (**60**).

3,964,058

DO NOT DISTURB DOORBELL

Billy G. Winston, 1900 E. 4th St., Fort Worth, Tex. 76104

Filed May 28, 1974, Ser. No. 473,561
Int. Cl.² G08B *3/00*
U.S. Cl. 340—330 **2 Claims**



1. A doorbell system for a business or residence comprising:

an electrical transformer,

an electrically actuated bell located in said business or residence and coupled to said electrical transformer,

switch means coupled to said electrical transformer and movable to first and second positions,

a first push button switch located on the outside of the business or residence at a convenient location,

said first push button switch being electrically coupled to said switch means and to said electrical transformer by way of said bell for energizing said bell when pushed and when said switch means is moved to said first position,

message holding means located on the outside of the business or residence for holding a message,

an electrical light located on the outside of the business or residence for illuminating the message held by said message holding means,

circuit means coupling said electrical light to said electrical transformer to allow said electrical light to be energized when said switch means is moved to said second position,

a second push button switch located on the outside of the business or residence at a position spaced from said first push button switch,

said second push button switch being coupled to said switch means and to said electrical transformer by way of said bell for energizing said bell when pushed and when said switch means is moved to said second position.

3,964,059

METHOD AND APPARATUS FOR STATISTICAL COUNTING

Robert Morris, Millington, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 19, 1974, Ser. No. 480,639
Int. Cl.² H03K *13/00*
U.S. Cl. 340—347 DD **9 Claims**

1. A method for recording the count of electrical pulse signals comprising the steps of:

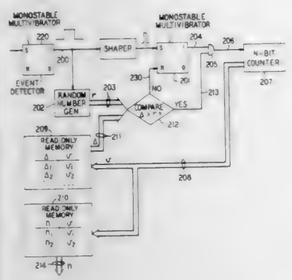
detecting that an electrical pulse has occurred,

generating a sequence of random numbers,

storing a count bearing a desired relation to the number of the detected pulses,

generating a comparison number having a preselected relation to said count,

for each detected pulse, comparing one of said random numbers with said comparison number, and



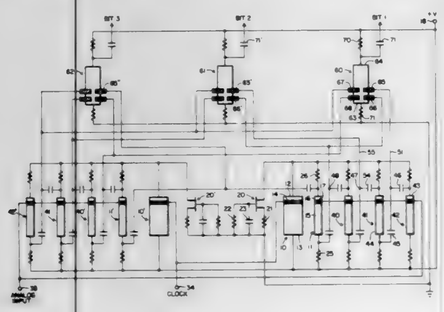
selectively incrementing the value of said count depending on the outcome of said comparison.

3,964,060

ANALOG-TO-DIGITAL CONVERTERS UTILIZING GUNN EFFECT DEVICES

Dale H. Claxton, Hawthorne, and Chauncey S. Miller, Rancho Palos Verdes, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed July 2, 1975, Ser. No. 592,421
Int. Cl.² H03K 13/17
U.S. Cl. 340—347 AD **30 Claims**



1. In a comparator circuit for an analog-to-digital converter, a differential amplifier pair comprising:

a. a first and a second transferred electron device, each having two ohmic electrodes and a Schottky barrier electrode;

b. a constant current device common to both of said devices for biasing said ohmic electrodes to provide a cathode and an anode for each device, each of said Schottky electrodes being disposed adjacent the associated cathode;

c. means for applying a clock pulse to the Schottky electrode of said first device; and

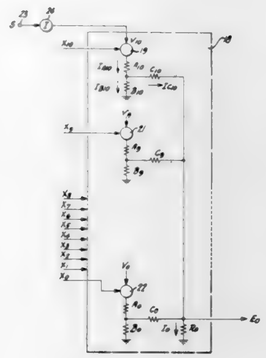
d. means for applying an analog signal to be converted to the Schottky electrode of said second device, each of said devices having a current-voltage characteristic including a negative resistance branch preceded by a knee said first device being biased near the knee of the current-voltage characteristic, and said second device being biased further from the knee of the current-voltage characteristic, whereby a clock pulse will bias said first device into the negative resistance branch and said second device near the knee so as to be able to respond to the analog signal.

3,964,061

SUCCESSIVE APPROXIMATION ANALOG TO DIGITAL CONVERTER

Howard H. Aiken, 1511 S. Ocean Drive, Fort Lauderdale, Fla. 33316

Continuation of Ser. No. 437,479, Jan. 28, 1974, abandoned, which is a division of Ser. No. 288,957, Sept. 14, 1972, Pat. No. 3,815,144. This application Aug. 26, 1975, Ser. No. 607,992
Int. Cl.² H03K 13/17
U.S. Cl. 340—347 AD **4 Claims**



1. An analog to digital converter for converting an analog electrical voltage to a digital number comprising a plurality of (0 to *i*) voltage generating means connected in parallel with each other for generating a plurality of trial voltages of a polarity opposite to that of the signal voltage addition means for adding said trial voltages one at a time in decreasing order of magnitude to said signal voltage to form cumulative sum voltages at each addition step, each of said voltage generating means comprising reference voltage means S*m*, a voltage divider gating means selectively actuated to couple said reference voltage to said voltage divider, each said voltage divider comprising a first resistor A*i*, a second resistor B*i* connected in series therewith to ground, and a third resistor C*i* connecting the junction of A*i* and B*i* to said addition means, the values of A*i*, B*i* and C*i* for each of the *i* voltage dividers being related to each other and satisfying the equations

$$\frac{Bi}{Ai + Bi} = 2^{1-10} \text{ and } \frac{Ai\ Bi}{Ai + Bi} + Ci = K$$

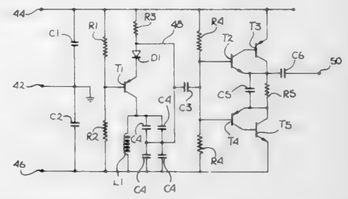
where *K* is a constant, polarity sensing means for determining at each addition step the polarity of said cumulative sum voltage, digit generating means for generating a logical 1 if the cumulative sum voltage after a particular addition step is of one polarity and generating a logical 0 if said cumulative sum voltage after that particular addition step is of a polarity opposite to said one polarity, means responsive to the generation of said logical 1 to continue adding that particular trial voltage to said cumulative sum voltage at succeeding addition steps, whereby each addition step directly and sequentially generates one digit of a digital number corresponding to the magnitude of the signal voltage.

3,964,062

KEYBOARD SWITCH SYSTEM

Delbert Flagg, Huntington Beach, and Miroslaw Balodis, Garden Grove, both of Calif., assignors to Signal Laboratories, Inc., Orange, Calif.

Filed Dec. 9, 1974, Ser. No. 530,936
Int. Cl.² G08C 1/00
U.S. Cl. 340—365 L **14 Claims**



1. A sensor for sensing key positions in a keyboard system comprising:

a coil means having a coil of wire with first and second coil leads,

a capacitance means having first and second leads coupled to said first and second leads of said coil means so that said coil means and said capacitance means define a tuned circuit,

a plunger means disposed generally coaxial with said coil means and being slideable between first and second locations with respect thereto, said plunger means being fabricated of a selected material so as to result in an impedance of said coil means when said plunger is in said second location which is substantially different from the impedance of said coil when said plunger is in said first location,

means for supply electrical power at a fixed frequency to said tuned circuit, and

means for providing an output signal at said fixed frequency and modulated in amplitude responsive to the changes in said tuned circuit due to changes in the impedance of said coil.

3,964,063

TRAFFIC-SURVEILLANCE SYSTEM

Jean-Raymond Narbaits-Jaureguy, and Henri Billottet, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed July 2, 1973, Ser. No. 375,444
Claims priority, application France, July 6, 1972, 72.24465
Int. Cl.² G01S 9/00
U.S. Cl. 343—5 PD **7 Claims**



1. A system for the surveillance of traffic along a route traversed by a succession of vehicles to be monitored comprising:

a radar installation provided with a source of high-frequency signals, transmission means connected to said source for emitting said signals, reception means for signals reflected by extraneous objects, and indicator means for reflect signals connected to said reception means;

antenna means including a hollow elongate conductor extending along said route for radiating said signals and picking up reflections thereof from passing vehicles, said conductor being connected at one end to said transmission and reception means; and

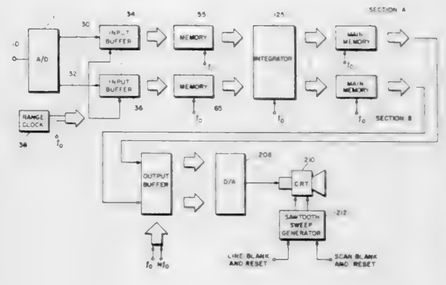
a load connected to the other end of said conductor, said load having an impedance matching the characteristic impedance of said antenna means, said conductor having a longitudinally extending slot diverging from said one end to said other end at a rate providing a substantially uniform radiating field along said route.

3,964,064

DATA DISPLAY SYSTEM HAVING A MULTILEVEL VIDEO STORAGE DEVICE

Ruy L. Brandao; Robert A. Taylor, Jr., both of Fort Lauderdale, Fla., and The Bendix Corporation, 02, Southfield, Mich.

Continuation-in-part of Ser. No. 291,116, Sept. 21, 1972, abandoned. This application Nov. 21, 1973, Ser. No. 418,154
Int. Cl.² G01S 7/04
U.S. Cl. 343—5 SC **29 Claims**



1. A display device for a radar system wherein a train of first signals corresponding to radar transmissions is generated and which receives a sequence of radar return signals, said device including a master oscillator means for generating a plurality of coherent control signals, comprising:

an analog to digital converter for converting each said radar return signal into at least first and second parallel binary words, each said word being comprised of a train of serial binary bits;

a plurality of input means, each associated with an individual one of said binary words and each said input means having a capacity to store a predetermined number of binary bits;

a main memory including a plurality of individual circulating memories, each associated with an individual one of said input means;

first gate means responsive during a first period to said first signals for communicating each said binary word to its associated input means whereby said binary words are stored in a bit-by-bit manner, and for communicating each said input means to its associated circulating memory in response to said coherent control signals whereby a binary word previously stored in said input means is stored in said main memory;

a plurality of output means, each associated with an individual one of said circulating memories;

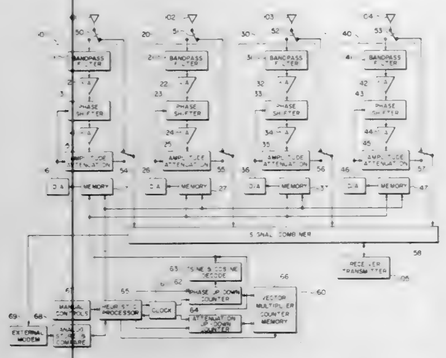
utilization means responsive to said coherent control signals for displaying binary data applied thereto; and

second gate means responsive to said coherent control signals for communicating each said circulating memory to its associated output means whereby binary words stored in said circulating memories are stored in said output means, and for applying the binary words stored in said output means to said utilization means.

3,964,065
STEERABLE ANTENNA NULL COMBINER SYSTEM

Eugene L. Roberts, Maitland, and Thomas J. Steffancin, Orlando, both of Fla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 17, 1974, Ser. No. 533,562
Int. Cl.² H04B *7/00*
U.S. Cl. 343—100 LE **16 Claims**



1. For use with a radio frequency receiver, a steerable antenna null combiner system for enhancing reception of a desired radio frequency signal, characterized by a phase component and an amplitude component, while at the same time nulling out at least one interference radio frequency signal, characterized by a second phase component and a second amplitude component, over a broad band comprising:

a. external decision means for providing external control instructions, said external decision means responsive to the enhanced reception of said desired radio frequency signal and the decreased reception of said interference radio frequency signal as received by said radio frequency receiver;

b. control processor means responsive to said external decision means for converting said external control instructions into a sequence of control signals;

c. a plurality of input means for accepting said radio frequency signals;

d. respective adjustment means connected to all but one of said input means and responsive to said control signals from said control processor for adjusting said phase components and said amplitude components of said ratio frequency signals;

e. second adjustment means connected to said one of said input means and responsive to said control signals from said control processor for adjusting at least said amplitude components of said radio frequency signals; and

f. combiner means connected to the outputs of all of said adjustment means for combining said radio frequency signals and for conveying said combined radio frequency signals to said receiver.

3,964,066
ELECTRONIC SCANNED CYLINDRICAL-ARRAY ANTENNA USING NETWORK APPROACH FOR REDUCED SYSTEM COMPLEXITY

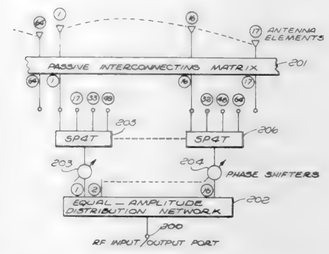
Jeffrey T. Nemit, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 2, 1975, Ser. No. 538,193
Int. Cl.² H04B *7/00*
U.S. Cl. 343—100 SA **12 Claims**

1. A switching and interconnecting system for discretely exciting one of q groups comprising a fraction n/q contiguous elements of the total circumferentially arranged radiating elements n of an array of antenna elements extending over coupling least a portion of said circumference matrix producing a beam directive in the plane containing said circumference and for controllable coarse and fine pointing of said beam, comprising:

a passive interconnecting matrix having n output ports each connected discretely to a corresponding one of said n antenna elements and also having n feed ports, said matrix including a plurality of interconnecting hybrid devices for couplign energy extant at each of said matris feed ports to and from at least two contiguous radiating elements;

an equal-amplitude distribution network having a single RF input-output port and n/q distribution ports, said input-



output port constituting the input-output terminal for said switching and interconnecting system;

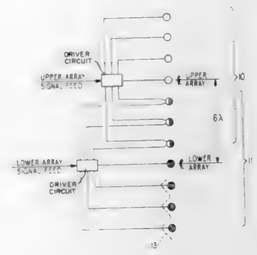
n/q phase shifters, one of said phase shifters being connected to each of said distribution ports of said equal-amplitude distribution network to provide a set of n/q discretely phase shifted RF drive signals for producing a corresponding predetermined fine beam pointing angle;

and n/q single pole, q position selector switches each arranged for switching a corresponding one of said phase-shifted RF drive signals among the like-positioned elements in each of said q groups of elements discretely to provide said coarse beam positioning with respect to which said fine beam pointing is effected.

3,964,067
GLIDE PATH SIGNAL TRANSMISSION SYSTEM

James Godfrey Lucas, 12, Woniora Ave., Wahroonga, N.S.W. 2076, Australia

Continuation-in-part of Ser. No. 295,931, Dec. 4, 1974, abandoned. This application Oct. 23, 1974, Ser. No. 517,303
Claims priority, application Australia, Oct. 11, 1971, 6592/71
Int. Cl.² G01S *1/16, 1/18*
U.S. Cl. 343—108 R **3 Claims**



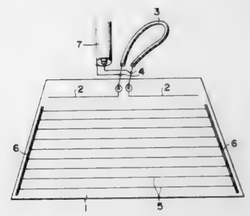
1. A glide path signal transmission system for indicating to an aircraft a perdetermined glide path within an aircraft guidance region comprising: carrier wave radio frequency generating means for generating a carrier wave; modulating means connected to receive and modulate the carrier wave and to

provide at a first output terminal a first modulated signal comprising the carrier wave modulated with a first modulating frequency and to provide at a second output terminal a second modulated signal comprising the carrier wave modulated with a second different modulating frequency; hybrid signal combining means connected to receive said first and second modulated signals and to provide from them two different output signals having a predetermined relationship to one another and in each of which a constant but different relationship exists between said modulating frequencies; first signal drive means connected to receive one of said two different output signals and second signal drive means connected to receive the other of said two different output signals and to develop therefrom a distribution of signal currents; and an antenna arrangement comprising a first antenna array connected to receive signal currents from said first signal means, a second antenna array connected to receive signal currents from said second signal drive means, said antenna arrays having their centres separated in a vertical direction and being individually constituted by antenna elements of which a predetermined number are common to both arrays such that each of said signal drive means supplies the elements of its associated array with a distribution of signal currents in such manner as to substantially obviate reflected radiation of the transmitted radiation within said aircraft guidance region, and said elements unique to the first and second arrays are fed by their respective drive means with first and second drive signals respectively whereas the elements which are common to the two arrays are fed with a combination of signals from said drive means.

3,964,068
WINDOW ANTENNA AND DEFROSTER FOR USE IN MOTOR VEHICLE

Taketsugu Toril, 1827-2, Fujiyama, Shiroyama-cho, Kasugai, Aichi, and Minoru Nishio, 44, Kawara, Tenpaku-cho, Okazaki, Aichi, both of Japan

Filed Jan. 6, 1975, Ser. No. 538,901
Claims priority, application Japan, Jan. 14, 1974, 49-7432[U]
Int. Cl.² H01Q *1/32*
U.S. Cl. 343—704 **3 Claims**



1. A window antenna device for use in a motor vehicle, comprising:

a balanced type antenna secured to the rear window of said vehicle, said window having a moisture preventive heating wire;

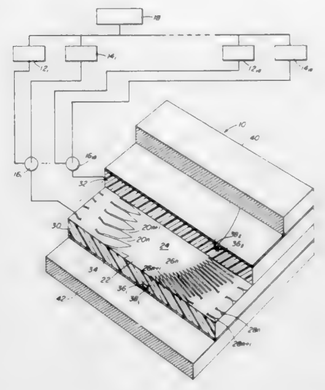
a coaxial feeder connected to said antenna;

a gain compensating circuit connected to connections between said antenna and said feeder to balance the current flow in said antenna, said circuit being adapted to function at an average FM frequency between the lowest frequency and the highest frequency to which FM radio equipment connected to said coaxial feeder can be tuned, and said circuit being embedded in the roof of the motor vehicle.

3,964,069
CONSTANT BEAMWIDTH ANTENNA

Robert J. McDonough, Ventura, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed May 1, 1975, Ser. No. 573,697
Int. Cl.² H01Q *19/06*
U.S. Cl. 343—754 **3 Claims**

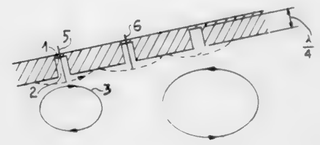


1. In an antenna assembly for producing a plurlity of directive beams of electromagnetic energy, a printed circuit lens having a plurality of feedports coupled to the antenna elements in the array through constrained electrical paths, and wherein frequency dependent attenuator means are included for varying, in accordance with the frequency of the electromagnetic energy, the amplitude of such electromagnetic energy in such constrained paths, the improvement characterized by such frequency dependent attenuator means including a radio frequency energy absorbing material disposed in portions of the constrained electrical paths the physical size of such material varying progressively in accordance with the frequency-amplitude variation of such frequency dependent attenuator means.

3,964,070
CORRUGATED HORN HAVING MEANS FOR EXTRACTING DIVERGENCE-MEASURING MODES

Serge Drabowitch, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 18, 1974, Ser. No. 533,772
Claims priority, application France, Dec. 20, 1973, 73.45822
Int. Cl.² H01Q *13/02*
U.S. Cl. 343—786 **10 Claims**



1. A horn for an antenna system, comprising a wall centered on an axis with an inner peripheral surface diverging from said axis from one end to the other, said wall being provided on said surface with a multiplicity of circumferential grooves having a depth on the order of a quarter wavelength of an operating frequency, the axial spacing of said grooves being a substantial fraction of said wavelength up to substantially half

said wavelength, and divergence-measuring circuitry responsive to odd modes derived from a hybrid fundamental mode propagated along said axis, said circuitry having input formations in the shape of discontinuities of said surface, the extent of said discontinuities in the direction of said axis being substantially less than the axial spacing of said grooves.

3,964,071

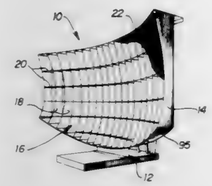
RADAR ANTENNA HAVING A SCREEN SUPPORTED BY SHAPED SLATS

William E. Townes, Jr., Irving, and Stanley P. Svedeman, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 420,196, Nov. 28, 1973, Pat. No. 3,886,557. This application Mar. 11, 1975, Ser. No. 557,442

Int. Cl.[2] H01Q *15/16*

U.S. Cl. 343—840 **11 Claims**



1. A radar antenna comprising:

a first set of spaced apart parallel flat ribs interlocked with a second set of spaced apart flat ribs, said first and second sets of ribs extending at an angle to one another to form a rigid lattice network, the forward edges of said ribs defining an inwardly contoured support surface for a reflecting surface, and screen means attached to the inwardly contoured support surface for forming an antenna reflector.

3,964,072

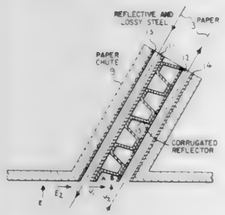
SUPPRESSION OF UNWANTED RADIATION FROM UNAVOIDABLE OPENINGS IN SHIELDED ENCLOSURES

Emery A. White, Charlottesville, Va., assignor to General Electric Company, Waynesboro, Va.

Filed Feb. 25, 1975, Ser. No. 552,989

Int. Cl.[2] H01P *1/22*

U.S. Cl. 346—146 **6 Claims**



1. In a data processor wherein a record medium in the form of a sheet is required to be moved through an opening in the processor, means for minimizing electromagnetic waves generated within the processor from escaping through said opening comprising an elongated waveguide forming said opening, the cross-sectional width of said waveguide dimensioned to correspond substantially with the width of said medium to maximize overall wave attenuation and to limit propagation of lower frequencies, a wave reflective, lossy material provided along at least the wide surfaces of said waveguide, a reflector included in said waveguide, said reflector comprising a wave reflective sheet of material extending along the length of the waveguide and dimensioned with wave reflecting corrugations along its length, sheets of wave reflective, lossy material positioned adjacent the extremities of the corrugations of said reflector, said corrugations dimensioned in a geometrical pattern to cause repeated multiple reflections of incident waves between the various surfaces of the wave reflective, lossy material.

3,964,073

EXPOSURE CONTROL DEVICES FOR PHOTOGRAPHIC CAMERAS

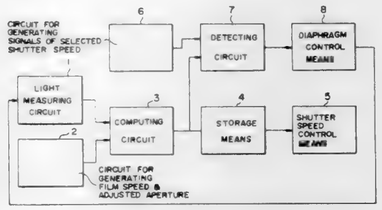
Toshio Kobori, Sakai; Kayoshi Tsujimoto, Osaka; Yasuhiro Nanba, and Seiji Yamada, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 8, 1974, Ser. No. 486,427

Claims priority, application Japan, July 17, 1973, 48-81089

Int. Cl.[2] G03B *7/14, 7/08*

U.S. Cl. 354—29 **12 Claims**



1. An exposure control device for a photographic camera comprising:

an objective lens;

a diaphragm;

diaphragm controlling means movable from an initial to a terminal position for varying the aperture size of said diaphargm;

manually selectable diaphragm setting means for pre-setting a first position to stop the movement of said diaphragm controlling means;

means for manually selecting shutter speed and for generating an electrical signal representative thereof;

means for measuring the scene light transmitted through said objective lens and diaphragm to produce a light measuring output;

a circuit generating an output signal commensurate with said light measuring output;

automatic diaphragm setting means for determining a second position to stop the movement of said diaphragm controlling means in accordance with said electrical signal and said output signal while said first position is preset by said manual diaphragm setting means, whereby said diaphragm controlling means is stopped at said first position when said first position is closer to said initial position than said second position to be determined and said diaphragm controlling means is stopped at said second position when said second position is determined between said initial position and said first position;

means for storing said output signal prior to the commencement of the exposure; and

means for controlling the shutter speed according to said stored output signal upon exposure.

3,964,074

FLASH UNIT FOR USE WITH CAMERAS HAVING DIFFERENT TYPES OF DIAPHRAGMS AND ACCESSORY SHOES

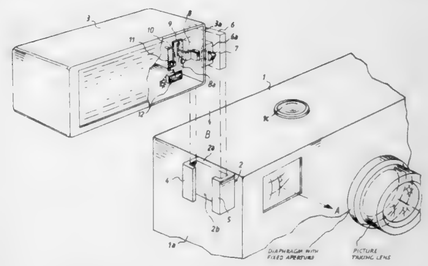
Karl Wagner, Ottobrunn, Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed May 29, 1974, Ser. No. 474,430

Claims priority, application Germany, May 30, 1973, 2327584

Int. Cl.[2] G03B *7/00*

U.S. Cl. 354—32 **9 Claims**



1. The combination of a camera having a fixed diaphragm and an accessory shoe with a source of artificial light including adjustable illuminating means, said illuminating means comprising a photoelectric transducer which is normally exposed to scene light; a foot which is insertable into said shoe; adjusting means for said illuminating means, said adjusting means having a filter and being actuatable by said camera to thereby adjust said illuminating means in automatic response to insertion of said foot into said shoe; and displaceable actuating means for said adjusting means, said actuating means being provided on said foot and being displaceable by said camera in response to insertion of said foot into said shoe, said filter being movable in front of said transducer in response to displacement of said actuating means.

3,964,075

PHOTOGRAPHING APPARATUS

Syohei Ohtaki, Machida; Mithutoshi Ogiso, Kawasaki; Takehiko Kiyohara, Zama, and Taizo Mitani, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

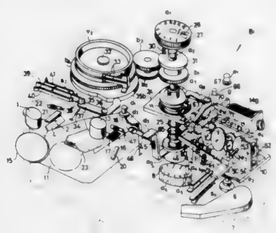
Continuation of Ser. No. 291,211, Sept. 22, 1974, which is a continuation of Ser. No. 31,491, April 24, 1970. This application Oct. 29, 1974, Ser. No. 518,984

Claims priority, application Japan, Apr. 30, 1969, 44-33961; Apr. 2, 1970, 45-28122; Apr. 7, 1970, 45-29219

Int. Cl.[2] G03B *9/58, 7/08, 19/12*

U.S. Cl. 354—51 **22 Claims**

1. An exposure control system for a camera, comprising shutter means, first control means for operating said shutter means over a predetermined range of shutter times, second control means for causing said first control means to operate said shutter means over a second range outside the first range, changeover means for actuating said second control means and deactivating said second control means, a camera body, said first control means and said shutter means being mounted in said camera body, an adaptor housing removably mounted on said camera body, said second control means and said changeover means being mounted on said housing, viewer means mounted in said housing for viewing the subject to be photographed, first photoelectric indicating means in said body responsive to subjects in one range of brightness and second photoelectric indicating means in said housing responsive to subjects in a second range of brightness, and optical means in said housing responsive to said second control means for displaying the response of said second indicating means in said viewer means when said changeover means actuates said second control means and for displaying the response of said first control means in said viewer means when said changeover means deactivates said second control means.



3,964,076

SHUTTER SPEED DISPLAY DEVICES FOR ELECTRIC SHUTTER OPERATING CIRCUITS

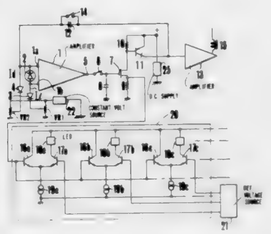
Osamu Ichihashi, Machida, and Sadao Muramatsu, Sagamihara, both of Japan, assignors to Yashica Co., Ltd., Tokyo, Japan

Filed July 11, 1974, Ser. No. 487,850

Claims priority, application Japan, July 27, 1973, 48-89128[U]

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—51 **10 Claims**



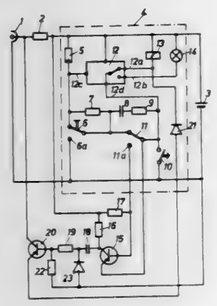
1. In a shutter speed control and display device including in combination an electric shutter operating circuit for a photographic camera comprising a photosensitive element for producing an electric signal corresponding to the brightness of an object, a first differential amplifier for amplifying said electric signal having the photoelement connected across the input terminals thereof, a second amplifier connected to amplify the output from said first amplifier, a first impedance element connected between one terminal of said photosensitive element and one pole of a DC source of voltage, a second impedance element connected in parallel circuit relationship with the series circuit comprised by said photosensitive element and said first impedance element, and a transistor having its base connected to the output of said second amplifier and its collector connected back to one input of the first amplifier for feeding back the output signal from said second amplifier to the input of said first amplifier for nulling the voltage across the input terminals of said first differential amplifier due to said photosensitive element, wherein said second amplifier comprises a field effect transistor amplifier having respective source and drain resistors, and having the gate electrode thereof connected to the output from said first amplifier, said drain resistor being connected across the base-emitter of said feedback transistor, and shutter speed display means connected across said source resistor.

3,964,077

FLASH SYNCHRONIZING MECHANISM FOR CAMERAS

Karl-Peter Strauss, Volkmarode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Oct. 2, 1974, Ser. No. 511,192
Claims priority, application Germany, Oct. 5, 1973, 2350048
Int. Cl.² G03B 15/03
U.S. Cl. 354—141 15 Claims



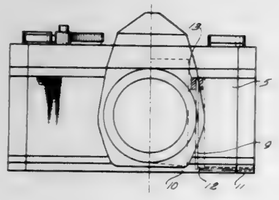
1. Photographic flash synchronizing mechanism for cameras for selective operation either with a current-ignited combusion flash unit or with an electronic flash unit, comprising
   a. means forming a single bi-polar synchronous contact;
   b. means for applying to said synchronous contact, during one exposure cycle of a camera, a first voltage variation in predetermined timed relation to the commencement of said exposure cycle;
   c. means responsive to said first voltage variation for causing ignition of an associated current-ignited combustion flash unit, if such unit is attached;
   d. means for applying to said synchronous contact, during during the same exposure cycle of said camera, a second voltage variation at a determinable time interval after said first voltage variation; and
   e. means responsive to said second voltage variation for causing ignition of an associated electronic flash unit, if such unit is attached.

3,964,078

ELECTRO-MECHANICAL ARRANGEMENT IN A SINGLE LENS REFLEX CAMERA HAVING A DETACHABLE BOTTOM COVER PLATE FOR PROVIDING ACCESS TO A CIRCUIT BOARD OF THE ARRANGEMENT

Hiroshi Kurei, Kawagoe, and Keisuke Haraguchi, Kamifukuoka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1974, Ser. No. 519,832
Claims priority, application Japan, Nov. 7, 1973, 48-128103
Int. Cl.² G03B 19/12, 9/28
U.S. Cl. 354—152 1 Claim



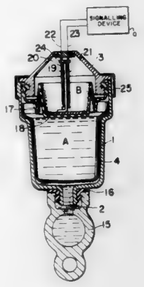
1. In a single lens reflex camera having an elongated camera body which includes a detachable longitudinally extending bottom cover plate and which houses a mirror box, a film supply spool and a take-up spool with said spools defining parallel axes that are spaced on opposite longitudinal sides of the mirror box, an electro-mechanical arrangement comprising:
   a focal plane shutter of the vertically-operating type comprisng a plurality of blades that are movable relative to each other to define an exposure slit that extends in a direction perpendicular to said axes;
   a shutter block comprising a mechanism for directly controlling the mechanical operation of the blades, the shutter block being disposed in the housing adjacent to the take-up spool;
   a first, elongated circuit board,
   a second circuit board,
   a flexible print wiring plate electrically interconnecting the first circuit board with the second circuit board;
   the circuit boards including circuitry for electrically controlling the operation of the blades, the first circuit board including circuit elements forming a portion of said circuitry, the second circuit board including circuit elements forming the remaining portion of said circuitry, all of the circuit elements of the first circuit board having pre-fixed electrical operating characteristics and the circuit elements of the second circuit board providing adjustable electrical operating characteristics corresponding to variable photographic factors, the first circuit board being disposed in the housing so as to extend longitudinally in parallel with said axes at a position between the mirror box and the film supply spool, and the second circuit board being disposed in the housing between the film supply spool and the detachable cover plate so as to be readily accessible.

3,964,079

BRAKE FLUID RESERVOIR INCLUDING FLUID LEVEL INDICATOR

Masayoshi Katagiri, and Jiro Kizaki, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Mar. 25, 1975, Ser. No. 561,688
Claims priority, application Japan, Aug. 28, 1974, 49-97968
Int. Cl.² G08B 21/00
U.S. Cl. 340—244 E 2 Claims



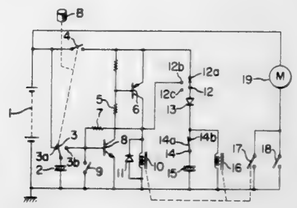
1. A fluid reservoir particularly suited for containing brake fluid of a vehicle comprising container means, diaphragm means separating said container means into a liquid chamber and a vapor chamber, means mounting said diaphragm means to move in accordance with the quantity of liquid contained within said liquid chamber, an elongated rod having a portion of its length composed of electrically conductive material and another portion of its length composed of electrically nonconductive material, said rod being mounted at one end thereof for movement together with said diaphragm means, a pair of generally elongate contact members both composed of electrically conductive material fixed relative to said container means and extending generally along the direction of movement of said diaphragm means alongside said rod on opposite sides thereof, a contact portion on each of said contact members each located on an opposite side of said rod and engaging said rod therebetween in sliding abutment therewith, slot means defined in each of said contact members and extending therealong in the general direction of movement of said diaphragm means, a stop member affixed to said rod extending to within said slot means and adapted to slide therealong as a result of relative movement between said rod and said contact members, said stop member being arranged to abut the ends of said slot means to limit the degree of relative movement which may be effected between said rod and said contact members by movement of said diaphragm means in response to changes of the liquid level within said liquid chamber, and electrical circuit means including electrical signal generating means electrically connected across said contact members to generate a signal indicative of the liquid level within said liquid chamber, said rod being engaged between said contact portions of said contact members such that said electrically conductive and said electrically nonconductive portions of said rod may be individually placed in abutting relationship between said contact portions as said diaphragm means moves in response to changes of said liquid level within said liquid chamber, with operation of said electrical signal generating means to emit a signal indicative of said liquid level being controlled in accordance with the portion of said rod in engagement between the contact portions of said contact members.

3,964,080

ELECTROMAGNETIC TRIGGER DEVICE IN A CAMERA CAPABLE OF EFFECTING TIME PHOTOGRAPHY

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 17, 1975, Ser. No. 542,083
Claims priority, application Japan, Jan. 22, 1974, 49-8947
Int. Cl.² G03B 9/08, 21/38, 17/38
U.S. Cl. 354—234 27 Claims



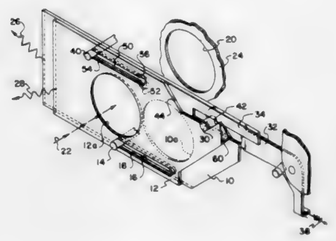
1. An electromagnetic trigger device in a camera capable of effecting time photography, said device comprising:
   1. a trigger switch;
   2. an electrical power source;
   3. a shutter driving mechanism;
   4. a motor for rotating the shutter driving mechanism;
   5. restraining means movable between a restraining position and a non-restraining position, said restraining means being adapted, when in said restraining position, to restrain said shutter driving mechanism in fully closed shutter position and in fully open position;
   6. a motor switch adapted to be closed to connect the power source to said motor when said restraining means is in said non-restraining position;
   7. an actuating coil energized to attract said restraining means for a predetermined time interval when said trigger switch is closed, said coil moving said restraining means to said non-restraining position upon energization of said coil, said predetermined time being shorter than the shorter of the time required for said shutter driving mechanism to move from the fully closed shutter position to the fully open shutter position and the time required for said shutter driving mechanism to move from the fully open shutter position to the fully closed shutter position;
   8. a selector member for selecting continuous photography and time photography;
   9. a holding coil responsive, when the continuous photography is selected, to closing of said trigger switch to be energized to hold said restraining means in said non-restraining position; and
   10. a current generating circuit including a timing switch connected between said trigger switch and said power source, said switch being adapted to be opened for a part of time interval from fully opening to fully closing of the shutter, said current generating circuit being adapted, when said trigger switch is opened during continuous photography, to flow a current through said timing switch to maintain said holding coil energized and hold said restraining means in said non-restraining position.

3,964,081

ANTI-BOUNCE SHUTTER

Charles E. Pickering, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 19, 1975, Ser. No. 559,940
Int. Cl.² G03B 9/40
U.S. Cl. 354—246 3 Claims



1. In a camera, shutter apparatus, comprising:
   a first shutter blade having a notch therein and being movable from an initial, light blocking position to a terminal, light unblocking position;
   a second shutter blade having a notch therein and being movable from an initial, light unblocking position to a terminal, light blocking position;
   means for moving said first and second shutter blades from said initial to said terminal positions; and
   a pin disposed in the path of movement of the first and second blade and being located to engage the notches upon arrival of the blades at the light unblocking position and blocking positions respectively to arrest the motion thereof.

3,964,082

CAMERA AUTO/MANUAL EXPOSURE CONTROL SELECTOR DIAL ASSEMBLY

Kunio Mita, Kamifukuoka, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

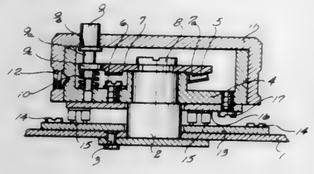
Filed Nov. 20, 1974, Ser. No. 525,459
Claims priority, application Japan, Nov. 21, 1973, 48-133693[U]
Int. Cl.² G03B 17/00
U.S. Cl. 354—289 2 Claims

1. A selector dial assembly in a camera that is operable in either an automatic exposure control mode or a manual mode in accordance with a setting of the dial assembly, wherein the selector dial assembly comprises:
   an indicator dial, and means for rotatably supporting it on the camera body, the indicator dial having a hole radially

spaced from its axis of rotation, and a surface with exposure setting indicia thereon;

a stationary member having a notched marginal end portion, and means for affixing the stationary member to the camera body with the notched marginal end portion radially spaced from said axis of rotation;

an elongated pin including an end portion and a locking means portion, the locking means portion including first and second axially spaced-apart flanges and a reduced diameter portion therebetween, the pin having a lock position and a release position and being slidably engaged in the hole so that it can slide between its lock and release positions, the end portion of the pin being positioned out of the hole when the pin is in its lock position so as to be accessible to be manually pushed to force the pin toward its release position;



means for resiliently urging the pin to slide in a longitudinal direction from its release position to its lock position; and

the pin being operative when the dial is rotatably oriented at a predetermined angular position to respond to the urging of the biasing means to slide to its lock position automatically and bring the first flange of the locking means into abutting engagement with the indicator dial and bring the second flange of the locking means into engagement with the notched marginal end portion so as to cause the dial to be locked at the predetermined angular position until the pin is deliberately pushed to its release position to disengage the locking means from the notched marginal end portion to enable manual rotation of the dial.

3,964,083

PUNCHTHROUGH RESETTING JFET IMAGE SENSOR

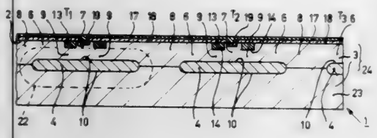
Jan Lohstroh, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 30, 1974, Ser. No. 474,694

Claims priority, application Netherlands, June 14, 1973, 7308240

Int. Cl.² H01L *27/14, 31/00, 29/80*

U.S. Cl. 357—30 **13 Claims**



1. A semiconductor imaging device, comprising a common semiconductor body comprising an array of plural field effect transistors each having a first gate electrode, a source region and a drain region of one type conductivity adjoining the first gate electrode and defining therebetween a one type conductivity channel region, said first gate electrode comprising a zone of the opposite type conductivity forming a photosensitive p-n junction with the channel region, said first gate zones being electrically floating, some of said field effect transistors having different threshold voltages, and means for electrically charging the first gate zones of each transistor to a reverse potential substantially equal to its threshold voltage producing a depletion region extending from the photosensitive p-n junction in each transistor that just blocks the channel region, whereby the absorption of substantially equal quantities of radiation by each transistor will cause substantially the same change in conduction of its channel.

3,964,084

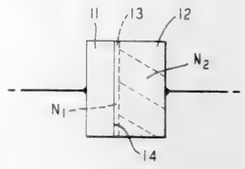
SCHOTTKY BARRIER DIODE CONTACTS

John Marshall Andrews, Jr., South Whitehall, PA; Robert Morgan Ryder, Summit, and Simon Min Sze, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 12, 1974, Ser. No. 478,506

Int. Cl.² H01L *29/48, 29/56, 29/64*

U.S. Cl. 357—15 **5 Claims**



1. A semiconductive device which comprises a semiconductive member and a pair of electrode connections thereto defining a path of current flow therebetween through said member of which at least one of the connections forms in the member in the path of current flow both a rectifying barrier and an internally generated depletion layer characterized in that said one connection contacts a region of the semiconductive member which has along the path of current flow a thickness smaller than the thickness of the internally generated depletion layer and also has a carrier concentration at least ten times that of the portion of the member adjacent said region in the path of current flow, and the other of said connections is so located that said portion is serially in the current path between the two connections.

3,964,085

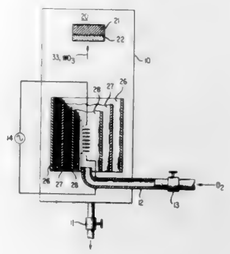
METHOD FOR FABRICATING MULTILAYER INSULATOR-SEMICONDUCTOR MEMORY APPARATUS

Dawon Kahng, Bridgewater Township, Somerset County; Ernest Edward La Bate, South Plainfield; Martin Paul Lepselter, Summit, and Joseph Raymond Ligenza, Califon, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 18, 1975, Ser. No. 605,312

Int. Cl.² H01L *11/00, 15/00;* **B05D** *5/12*

U.S. Cl. 357—23 **16 Claims**



1. A semiconductor-insulator$_1$-insulator$_2$ layered structure made by a process which includes the step of depositing an oxide of a metallic impurity on the then exposed surface of the insulator$_1$ layer, prior to the fabrication of the insulator$_2$ layer,

in an amount yielding between about 10^{14} and 4×10^{15} metallic impurity nuclei per square centimeter.

5. In a method for fabricating a memory apparatus comprising a semiconductor insulator$_1$-insulator$_2$-metal layered structure which contains metallic impurities in a predetermined molecularly dispersed surface concentration, without clumping which would form a Fermi level of the metallic impurities, in an interface insulator region (including the interface of the insulator layers), said impurities in a concentration supplying suitable states for the capture of electronic charges in said region, the step of depositing molecules of an oxide of the metallic impurity on the then exposed surface of the insulator$_1$ layer in an amount yielding said surface concentration of metallic impurities.

3,964,086

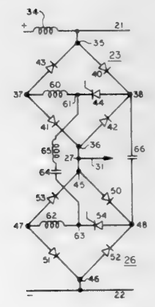
COMPLEMENTARY COMMUTATION CIRCUIT FOR BIPOLAR INVERTER

David James Gritter, Elmhurst, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 30, 1975, Ser. No. 591,364

Int. Cl.² H02M *7/515*

U.S. Cl. 321—45 R **4 Claims**



1. A bipolar power conversion circuit capable of passing energy to a load irrespective of the polarity of an energizing potential difference applied to a pair of bus conductors over which the power conversion circuit is energized, in which each leg of the power conversion circuit comprises:

a first power switch, coupled between one of the bus conductors and a load connection, including a pair of load terminals, a pair of switching terminals, four diodes connected to conduct current between the load terminals when a d-c circuit is completed between the switching terminals, and a first thyristor connected to complete the d-c circuit as it is gated on;

a second power switch, coupled between the load connection and the other bus conductor, including a pair of load terminals, a pair of switching terminals, four diodes connected to conduct current between the load terminals when a d-c circuit is completed between the switching terminals, and a second thyristor connected to complete the d-c circuit as the thyristor is gated on; and

a complementary commutation circuit, including a first inductor, coupled in series with the first thyristor between the switching terminals in the first power switch, a second inductor, coupled in series with the second thyristor in the second power switch, a first capacitor, with one plate coupled to the common connection between the first thyristor and the first inductor and the other plate coupled to the common connection between the second thyristor and the second inductor, and a second capacitor, coupled between one switching terminal of the first power switch and one switching terminal of the second power switch, which complementary commutation circuit is effective to turn off the conducting one of the first and second thyristors when the other of the thyristors is gated on.

3,964,087

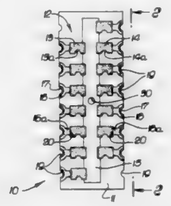
RESISTOR NETWORK FOR INTEGRATED CIRCUIT

Marvin C. Mallon, Canoga Park, Calif., assignor to Interdyne Company, Van Nuys, Calif.

Filed May 15, 1975, Ser. No. 577,725

Int. Cl.² H01C *7/00*

U.S. Cl. 338—306 **14 Claims**



1. An electrical resistance package comprising

a. an insulative substrate,

b. a network in film form on the substrate, the network including resistance branches,

c. there being terminals on the substrate and associated with the respective branches for registration with contact pins, whereby the resistance branches may be selectively electrically connected via said terminals with the pins in registration therewith, said terminals comprising electrically conductive pads located at the ends of the branches, the substrate forming edge notches to receive the pins and each pad extending proximate a notch edge but everywhere offset therefrom away from the notch edge so as to remain out of direct contact with the pin in the notch, whereby means may be received on selected pins to closely overlie selected pads and to have soldered connections to the selected pins and pads.

3,964,088

MULTI-UNIT EQUIPMENT MAINTENANCE SYSTEM

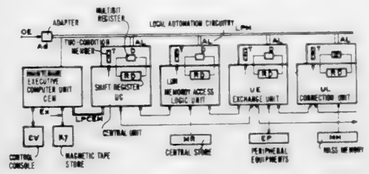
Claude Ducrocq, Le Pecq; Robert Hacques, Plaisir; Maurice Hubert, Versailles, and Robert Touze, Noisy-le-Roi, all of France, assignors to Compagnie Internationale pour l'Informatique, Louveciennes, France

Filed Dec. 16, 1974, Ser. No. 533,458

Claims priority, application France, Dec. 27, 1973, 73.46458

Int. Cl.² G06F *11/00*

U.S. Cl. 340—172.5 **10 Claims**



1. In an information handling system comprising a plurality of diversified processing units interconnected by normal data paths, one of said units being a maintenance and diagnostic signal source and data processing station which is connected by a special data exchange communication link to the other processing units, each processing unit other than said station having internal means responsive to error and failure detections, the combination in each of the processing units interconnected by said special link and station of;

shift registers, each one connectable to said link and each comprising a hard wired series connection of multi and single bit members at least some of which are functional in the unit and others which copy the conditions of functional members of the unit, and

automaton circuit means responsive to command signals from the said station and from said error and failure detection means for controlling the actuation of said shift registers for write-in and read-out operations thereof.

3,964,089

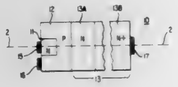
JUNCTION TRANSISTOR WITH LINEARLY GRADED IMPURITY CONCENTRATION IN THE HIGH RESISTIVITY PORTION OF ITS COLLECTOR ZONE

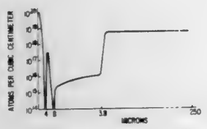
Hin-Chiu Poon, Gillette, and Donald Lee Scharfetter, Mendham, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 290,976, Sept. 21, 1972, abandoned. This application June 11, 1975, Ser. No. 586,056

Int. Cl.² H01L *29/72, 29/167*

U.S. Cl. 357—34 **6 Claims**





1. A transistor comprising a semiconductive wafer including emitter, base and collector zones, the collector zone comprising a relatively lightly doped portion adjacent the base zone and a relatively heavily doped portion spaced from the base zone by said relatively lightly doped portion characterized in that over at least half of its thickness the lightly doped portion has a substantially linearly graded impurity concentration appropriate for reducing the nonlinearity of the cutoff frequency characteristic of the transistor, and the profile of concentration versus thickness, when plotted on rectangular coordinates having linear scales for both ordinate and abscissa, takes the shape of essentially a straight line.

3,964,090

SEMICONDUCTOR CONTROLLED RECTIFIER

Gunter Jakob, Schwabach, Eichwasen, Germany, assignor to Semikron Gesellschaft fur Gleichrichterbau und Elektronid m.b.H., Nurnberg, Germany

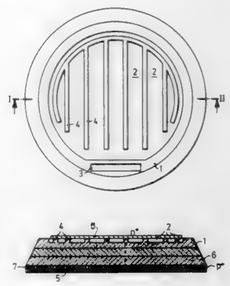
Continuation of Ser. No. 318,409, Dec. 26, 1972, abandoned. This application June 20, 1974, Ser. No. 481,317

Claims priority, application Germany, Dec. 24, 1971, 2164644

Int. Cl.² H01L *29/74*

U.S. Cl. 357—38 **7 Claims**

1. In a semiconductor controlled rectifier having a semiconductor body with a planar outer surface and at least four zones of alternatingly opposite conductivity types including an outer highly doped emitter zone of a first conductivity type at said outer surface and an adjacent inner weakly doped zone of the opposite conductivity bordering the outer emitter zone and having a first portion which extends to said outer surface adjacent said emitter zone and further portions which extend through said outer emitter zone up to said outer surface completely within the perimeter of said emitter zone at said outer surface, said first portion being separated from said further portions at said outer surface by said emitter zone, a control electrode disposed on said outer surface and contacting said first portion of said weakly doped inner zone, and a conductive coating disposed on said outer surface over said emitter zone and serving as a single emitter contact electrode, said



single contact electrode being directly connected to said emitter zone and only said further portions of said inner zone so as to form a shorted emitter, the improvement wherein said further portions of said weakly doped inner zone which extend to said outer surface through said emitter zone comprise a plurality of interconnected bar-shaped sections, which are elongated in the plane of said outer surface, and which form a connected geometric pattern at said outer surface, whereby a controlled rectifier with an improved dv/dt behavior is achieved.

3,964,091

TWO-WAY SEMICONDUCTOR SWITCH

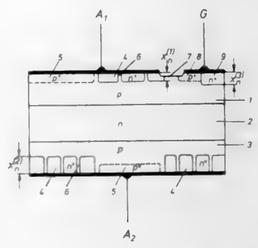
Günter Berndes, Heppenheim, and Horst Krassin, Hemsbach, both of Germany, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Oct. 11, 1974, Ser. No. 514,101

Claims priority, application Germany, Oct. 16, 1973, 2351783

Int. Cl.² H01L *29/747*

U.S. Cl. 357—39 **1 Claim**



1. In a two-way semiconductor switch comprising a semiconductor body structure having at least five superposed zones alternating in conductivity types, the three inner zones forming the basic interior structure, and the two outer zones each of which includes subzones of different conductivity types located at the opposite end faces of the semiconductor body forming the emitter and anode boundary zones respectively and one of an n-p-n-p-structure and a p-n-p-n-structure together with the three inner zones, the outer zones having a main electrode in ohmic contact therewith and one end face

of said semiconductor body including means providing first and second control zones of different conductivity types and in ohmic contact with a control electrode common to both control zones, the improvement wherein the penetration depth of said second control zone and the penetration depth of the part of the outer zone at the opposite end of said semiconductor body structure having the same type of conductivity as said second control zone are made greater than the penetration depth of the part of the outer zone of the same type of conductivity at the end face at which said second control zone is located, and a greater emitter short-circuit density is provided at the main electrode in contact with said opposite end face than at the other main electrode, thereby to maintain commutation stability.

3,964,092

SEMICONDUCTOR DEVICES WITH CONDUCTIVE LAYER STRUCTURE

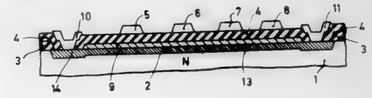
Eric Wadham, Winchester, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 11, 1974, Ser. No. 522,583

Claims priority, application United Kingdom, Nov. 23, 1973, 54392/73

Int. Cl.² H01L *19/00*

U.S. Cl. 357—68 **12 Claims**



1. A semiconductor device, in particular an integrated circuit, comprising:

a. a semiconductor body comprising an insulating layer present on a surface thereof,

b. at least a first electric connection comprising a first conductive layer extending over said insulating layer, and

c. a second electric connection present at least partly below said first connection, said second connection crossing said first connection and being electrically insulated therefrom, said second electric connection comprising a second conductive layer that comprises a first component layer in the form of semiconductor material which is locally deposited on said body surface and is doped with an impurity and a second component layer formed by a surface region of said body underlying said first component layer, said second component layer beind doped with said impurity introduced into said body via the first component layer.

3,964,093

BONDING OF DISSIMILAR WORKPIECES TO A SUBSTRATE

Alexander Coucoulas, Bridgewater Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 413,006, Nov. 5, 1973, Pat. No. 3,914,850. This application July 15, 1974, Ser. No. 488,860

Int. Cl.² H01L *23/48, 29/44, 29/52, 29/60*

U.S. Cl. 357—70 **2 Claims**

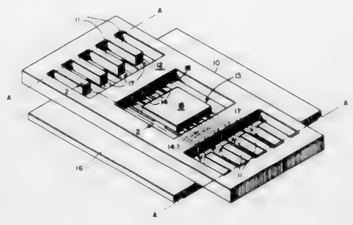
1. A lead frame for the fabrication of an article of manufacture, said article comprising a substrate and first and second leads bonded to first and second sites, respectively, on said substrate, said second lead initially being an integral part of said lead frame and said first lead not forming a portion thereof, said lead frame further comprising:

a support member having integral therewith:

a. a compliant bonding portion having a surface thereof for engagement with said first lead for the compliant bonding of said first lead to said first site when pressure is applied to said first lead through said bonding portion, said bonding portion being of a material softer than said first lead, and said bonding portion surface being of a bond inhibiting material so as not to adhere to said first lead or said substrate during the bonding operation; and

b. a second portion comprising said second lead projecting from said support member;

said lead frame being configured to enable engagement of said compliant bonding portion with said first lead and



the simultaneous engagement of a portion of said second portion with said second site on said substrate for the simultaneous bonding of said first and second leads to said first and second sites, respectively; and

said second portion being detachable from the remainder of said frame including said compliant bonding portion to provide said second lead after the bonding of said leads to said substrate and to provide said article upon detachment and removal of said remainder of said frame therefrom.

3,964,094

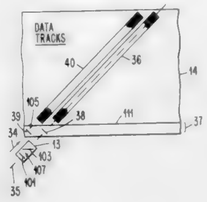
SERVO INFORMATION PATTERN FOR ROTATING HEAD MAGNETIC TAPE UNIT INDEPENDENT OF AMPLITUDE

Gary Allen Hart, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 7, 1974, Ser. No. 521,722

Int. Cl.² G11B *21/10, 21/04*

U.S. Cl. 360—77 **20 Claims**



1. In a rotating head magnetic tape unit wherein a head wheel is being positioned to rotate in space relationship between upper and lower mandrel halves, the improvement in combination comprising:

a length of magnetic media helically wrapped about said upper and lower mandrel halves, said length of magnetic media having servo track and data track thereon;

said servo track including a servo format having first flux transition being parallel to the longitudinal edge of the magnetic media and second flux transition being inclined to said first flux transition and being parallel to said data track flux transitions;

a single reading means operably associated with said magnetic media for reading the servo track to derive head/-track alignment time dependent data and reading the data track for information data; and

detection means operably connected to said reading means for receiving the time dependent information and using said time dependent information for proper head track alignment.

3,964,095

VIDEO RECORDING AND/OR REPRODUCING APPARATUS

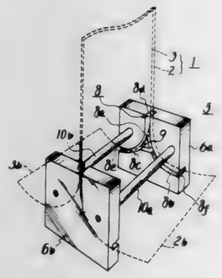
Nobutoshi Kihara, and Osamu Shimada, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed July 3, 1974, Ser. No. 485,549

Claims priority, application Japan, July 11, 1973, 48-78600

Int. Cl.² G11B *5/52, 5/80, 21/04*

U.S. Cl. 360—81 **20 Claims**



1. An apparatus for recording and/or reproducing at least video signal information on a sheet assembly including at least two flexibly resilient sheets kept oriented and aligned with respect to each other and normally disposed in closely adjacent, confronting relation, said apparatus comprising: separator means for receiving said sheet assembly and separating only a substantial portion of each of said sheets from the other of said sheets; a guide drum; guiding means for receiving the separated portion of one of said sheets from said separator means and guiding said separated portion of said one sheet in an arcuate path about at least a portion of the circumference of said drum; rotary signal transducer means associated with said guide drum for movement in a circular path substantially coinciding with said circumference of the drum; and means for moving said sheet assembly and said rotary signal transducer means relative to each other in a direction transverse to said path of the rotary signal transducer means so that the latter scans successive parallel record tracks on said separated portion of said one sheet disposed in said arcuate path.

3,964,096

CASSETTE EJECTING DEVICE FOR CASSETTE-TYPE VIDEO RECORDING AND/OR REPRODUCING APPARATUS

Atsuo Matsuyama, Machida, Japan, assignor to Sony Corporation, Tokyo, Japan

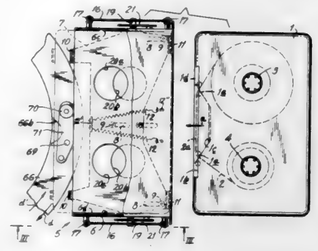
Filed Dec. 2, 1974, Ser. No. 528,691

Claims priority, application Japan, Nov. 30, 1973, 48-135157

Int. Cl.² G11B *23/08, 15/66, 5/78*

U.S. Cl. 360—85 **13 Claims**

1. In a cassette-type recording and/or reproducing apparatus that includes a tape guide drum with at least one rotary magnetic head moved in a circular path substantially coinciding with the periphery of said drum, a cassette holding device spaced from said drum and having a holder displaceable between a first position at which a tape cassette is insertable in, and removable from said holder and a second position at which the cassette in said holder is operatively positioned, a tape loading and unloading device operative, in a loading operation thereof, to withdraw tape from the operatively positioned cassette and wrap the withdrawn tape about at least a portion of the periphery of said guide drum for scanning by each said rotary head and, in an unloading operation, to unwrap the tape from said guide drum and return the tape to the operatively positioned cassete, and a motor which is energizable for operating the apparatus: the combination of motor control means for initiating the energizing of said motor upon the displacement of said holder to said second position and continuing said energizing of the motor until said holder is returned to said first position; and a cassette ejecting device comprising holder displacing means operative to return said holder from said second position to said first position, a drive



member which is rotatable for effecting operation of said holder displacing means, transmission means having an operative state in which said drive member is connected with said motor so as to be rotated by the motive force of the latter for operating said holder displacing means and an inoperative state in which said drive member is disconnected from said motor, and control means responsive to a condition of said tape loading and unloading device for permitting establishment of said operative state of the transmission means only when the condition of said tape loading and unloading device corresponds to that at the completion of said unloading operation thereof.

3,964,097

MULTI-CARTRIDGE APPARATUS FOR RECORDING AND REPRODUCING AUDIO SIGNALS AUTOMATICALLY AND SUCCESSIVELY

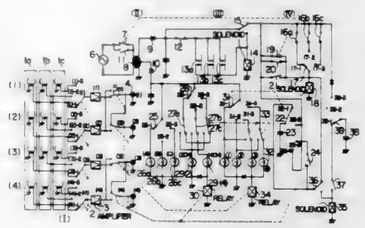
Tamio Kobayashi, Hirakata, and Tadashi Torama, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 18, 1973, Ser. No. 425,796

Claims priority, application Japan, Dec. 30, 1972, 48-3963; Dec. 30, 1972, 48-3964; Dec. 30, 1972, 48-3965; Dec. 30, 1972, 48-3966; Dec. 30, 1972, 48-3967; Dec. 30, 1972, 48-3968; Dec. 30, 1972, 48-3969; Dec. 30, 1972, 48-3970; Dec. 30, 1972, 48-3971; Dec. 30, 1972, 48-3972; Dec. 30, 1972, 48-3973; Dec. 30, 1972, 48-3974; Dec. 30, 1972, 48-3975; Dec. 30, 1972, 48-3976

Int. Cl.² G11B *15/68*

U.S. Cl. 360—92 **13 Claims**



1. An apparatus for recording and reproducing audio signals

automatically and successively from a plurality of cartridges, comprising:

cartridge receiving means having a plurality of spaces defined by at least one partition wall provided between upper and lower base plates, each space receiving one cartridge therein;

transducing head means and cartridge sensing switch means mounted in each cartridge receiving space;

bias means mounted in each cartridge receiving space for normally urging a cartridge in a cartridge receiving space out of engagement with the corresponding transducing head means and sensing switch means;

cartridge moving means mounted in each cartridge receiving space for selectively moving a cartridge in that space into an operating position in contact with the corresponding transducing head means and against the force of said bias means, said cartridge moving means including a locking lever pivotally mounted for movement in the corresponding cartridge receiving space and having a lock roller mounted at one end portion for engagement with a recess in the corresponding cartridge, means coupled to said lock lever for urging the lock lever in a direction of movement such that said lock roller contacts said cartridge, a locking cam having a cam slope which contacts the other end portion of said locking lever, each locking cam being mounted on a common control cam shaft such that the cam slope of each locking cam is angularly offset from each other locking cam slope; and

control means coupled to said control cam shaft to rotate said cam shaft upon a predetermined control signal to selectively control the movement of said cartridges into and out of engagement with their corresponding transducing head means.

3,964,098

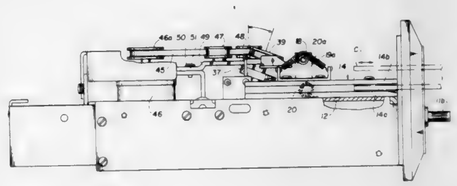
TAPE DECK WITH DRIVE MOTOR REMOTE FROM DRIVE ROLLER

Joel Kramer, Woodbury; David Fialkow, Farmingdale, and W. Sterling Gorrill, Manhasset, all of N.Y., assignors to North Atlantic Industries, Inc., Plainview, N.Y.

Filed Nov. 15, 1974, Ser. No. 524,045

Int. Cl.² G11B *15/28*

U.S. Cl. 360—93 **15 Claims**



1. A tape deck mechanism for accommodating and actuating record tapes in cartridges having at least one external positioning reference plane, an input capstan and means to expose sequential sections of the tape to a transducer, comprising a cartridge housing, positioning reference means to engage the reference plane of the inserted cartridge, means to releasably secure the cartridge on the reference means, a drive roller to engage the capstan in the cartridge, a yieldable support for the drive roller to maintain driving relationship with the capstan of an inserted cartridge, a drive motor remote from the drive roller, and an endless belt coupling the motor to the roller, the limbs of the belt which drive the roller being oriented at substantially right angles to the direction of movement of the support for the roller when the roller and capstan are in driving engagement.

3,964,099

CASSETTE ADAPTER

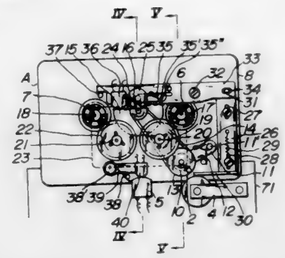
Masaaki Sato, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed June 5, 1974, Ser. No. 476,720

Claims priority, application Japan, June 6, 1973, 48-66863[U]; Sept. 19, 1973, 48-109457[U]; Dec. 29, 1973, 49-3548

Int. Cl.² G11B *23/04*

U.S. Cl. 360—94 **9 Claims**



1. A cassette adapter for tape recorders using relatively large conventional cassettes, the tape recorder including a first capstan shaft with a first pinch roller as well as first delivery and take-up reels, the adapter being substantially equal in size to the large cassettes and being capable of mounting thereon relatively small cassettes, to be played on the tape recorder through the intermediary of the adapter, the small cassette including second delivery and take-up reels, the adapter comprising: a second capstan shaft, a second pinch roller associated with the second capstan shaft, a first power-transmission mechanism for driving the second capstan shaft from said first capstan shaft; a second power-transmission mechanism for selectively driving said second delivery and take-up reels from at least one of said first delivery and take-up reels; and means for moving an operating mechanism into a condition for reproducing recording on the small cassette, said operating mechanism including a first magnetic head for the adapter and said second pinch roller, by means of a reproduction operating member on the tape recorder.

3,964,100

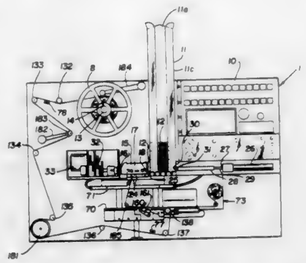
AUTOMATIC TAPE LOADING APPARATUS FOR CASSETTES AND THE LIKE

William P. Bennett, and Jacob Haller, both of Northbrook, Ill., assignors to Programming Technologies, Inc., Chicago, Ill.

Division of Ser. No. 296,255, Oct. 10, 1972, Pat. No. 3,814,343. This application May 29, 1974, Ser. No. 474,238

Int. Cl.² G11B *15/00*

U.S. Cl. 360—95 **10 Claims**



1. An apparatus for automatically positioning a section of tape or the like on a surface comprising, in combination, a housing having an internal chamber open along one side, an entrance passage for receiving a loop of said tape into said chamber, and at least one outlet port in communication with said chamber; a block having a surface for receiving a section of said tape movable into a first position to sealably engage the

open side of the housing to enclose the internal chamber and into a second position out of engagement with the housing; and a vacuum source connected to the outlet port to reduce the pressure within the chamber to create a suction force to act upon the tape introduced via the entrance passage in a manner such that the tape forms a loop conforming in shape to the internal configuration of the chamber with one section of said loop in contact with the surface of the block; said block having a plurality of passages formed therein connecting the tape receiving surface and the vaccuum source to hold said one section of tape in nonmoving contact with said surface upon movement of the block from the first to the second position.

3,964,101

MAGNETIC RECORDING DISC

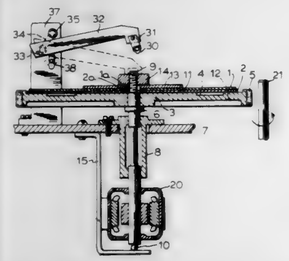
Tetsuo Hino, Osaka, and Susumu Hashiguchi, Izumi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 15, 1973, Ser. No. 370,453

Claims priority, application Japan, June 20, 1972, 47-62230; 47-62231; 47-62233

Int. Cl. G11b *5/16*

U.S. Cl. 360—99 **5 Claims**



1. A magnetic recording apparatus comprising:

a rotating disc adapted to be rotated by a driving means, said rotating disc having a first surface and a second surface indented from said first surface;

a flexible sheet mounted on said first surface of said rotating disc and extending over said first surface and above said second surface of said rotating disc;

a separate magnetic sheet readily separable from and mounted on said flexible sheet;

means attachable to said rotating disc for holding at least a part of said separate magnetic sheet together with said flexible sheet on said rotating disc over said first surface, whereby said separate magnetic sheet and said flexible sheet rotate with said rotating disc; and

a magnetic head assembly for recording signals on and reproducing signals from said separate magnetic sheet, said magnetic head assembly including magnetic recording and reproducing head means positionable in close contact with said separate magnetic sheet at a position thereon above said second surface and arranged for movement in the vertical direction to follow any surface deflection of said separate magnetic sheet upon rotation thereof while maintaining close contact therewith.

3,964,102

DATA RECORDING INSTRUMENT HAVING A MOVING RECORDING HEAD

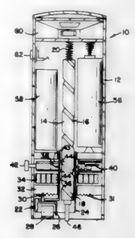
James D. Holder, 707 Graycroft Drive SW., Huntsville, Ala. 35802

Filed Dec. 23, 1974, Ser. No. 535,340

Int. Cl.² G11B *5/82, 25/04, 21/04*

U.S. Cl. 360—101 **6 Claims**

1. A data recording instrument for recording information on a magnetic disc having a center cup therein, said instrument comprising: a case; means to ready the instrument for use and position a record/play head to its starting position; said means including an elongated body disposed centrally within said case, a coaxial spring connected to said case and said body to suspend the body, a helical groove on the outer surface of said body and a center point at its other end; an armature including a cylindrical portion enclosing said body; a runner pin attached to said cylindrical portion and engaging said helical groove, said armature further including a mounting plate and



a record/play head attached to said plate; a bulkhead having a spiral cut groove thereon and disposed above said mounting plate; a guide pin attached to said mounting plate and engaging said spiral cut groove; a drive spring disposed around said armature cylindrical portion, said spring having one end attached to said cylindrical portion and its other end attached to said case, and a regulator means connected to said drive spring to control rotation of the armature and move the record/play head in a manner to erase previous messages and record new ones or to play a previous message.

3,964,103

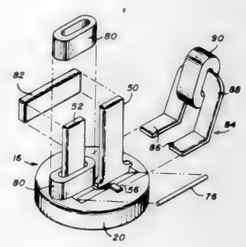
MAGNETIC TRANSDUCER WITH TRIM ERASE AND HOUSING THEREFOR

Herbert E. Thompson, and David A. Brown, both of Los Gatos, Calif., assignors to Shugart Associates, Inc., Sunnyvale, Calif.

Filed May 19, 1975, Ser. No. 578,649

Int. Cl.² G11B *5/105, 5/27, 5/42*

U.S. Cl. 360—129 **7 Claims**



1. A magnetic head assembly comprising:

a generally cylindrical housing having a tapered portion at one end thereof terminating in a circular aperture having an inner diameter;

a circular body forming a slider having an outer diameter slighly less than said inner diameter, a media engaging surface and an internal surface, said body further having a first elongated slot disposed along a first diameter and extending through said body, a second slot disposed along a second diameter normal to said first diameter and extending part way into said body from said internal surface and across said first slot, and a central aperture extending through said body at the intersection of said first and second slots, said body being disposed within said circular aperture and affixed to said housing;

first means forming a read/write transducer having a pair of read/write pole pieces separated to provide a read/write gap, said read/write pole pieces extending into said first slot to a point substantially flush with said media engaging surface, said read/write gap being positioned within said central aperture;

second means forming an erase transducer and including a pair of erase pole pieces disposed in said second slot, one on each side of said first slot, the ends of said erase pole pieces nearest said read/write pole piece extending into said central aperture to a point proximate said media engaging surface, said erase pole pieces being separated from said read/write pole pieces to form first and second erase gaps; and

means bonding said slider, said read/write transducer and said erase transducer together.

3,964,104

INTERMITTENT CLEANER FOR ROTATING MAGNETIC HEAD

Christopher C. Herron, and Clyde R. Williams, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1975, Ser. No. 563,889

Int. Cl.² G11B *5/41;* **A47L** *25/00*

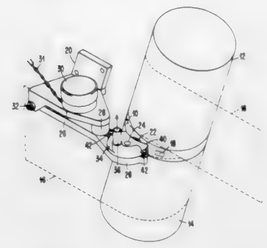
U.S. Cl. 360—128 **9 Claims**

1. Apparatus for cleaning a magnetic head mounted on a rotor in a rotating-head magnetic tape recorder comprising:

an idler brush wheel rotatably mounted about a shaft and having bristles in contact with the rotor carrying the magnetic head;

said shaft of said idler brush wheel mounted relative to the rotor so that the rotor penetrates into the brush causing the bristles of the brush to flex and brush dirt from the surface of the rotor;

means for driving the rotor during the cleaning operation



whereby the drive of the rotor in contact with the rotatably mounted idler brush wheel causes said idler brush wheel to rotate;

the axis of said rotor and the axis of said idler brush wheel having an acute angle therebetween whereby the rotary motion of the rotor and said idler brush wheel create a brushing action across the surface of the rotor and the head carried by the rotor.

DESIGNS

JUNE 15, 1976

240,280
SPORT SHOE
Jonas Senter, Greenwich, Conn., assignor to CITC Industries Inc.
Filed Oct. 15, 1974, Ser. No. 515,033
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



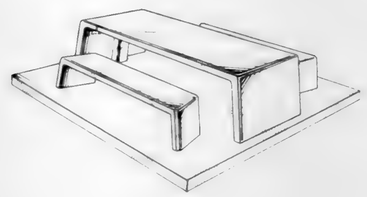
240,281
BOOT SOLE
Robert E. Russell, Holden, Mass., assignor to Quabaug Rubber Company, North Brookfield, Mass.
Filed Mar. 21, 1975, Ser. No. 560,807
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



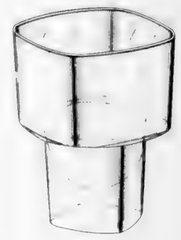
240,282
HEEL OF A SHOE
Jack Horowitz, 48—53 208th St., Bayside, N.Y. 11364, and Arthur Goldman, 67—66 108th St., Forest Hills, N.N.Y. 11375
Filed July 19, 1974, Ser. No. 489,911
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—325



240,283
COMBINED PICNIC TABLE AND MULTIPLE BENCH UNIT
James E. Miller, Birmingham, Mich. (12900 W. Ten Mile Road, South Lyon, Mich. 48178)
Filed July 5, 1974, Ser. No. 485,849
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—45



240,284
DRINKING GLASS
Timo Tapani Sarpaneva, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Iittala, Finland
Filed Aug. 26, 1974, Ser. No. 500,655
Claims priority, application Finland Feb. 25, 1974
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—11



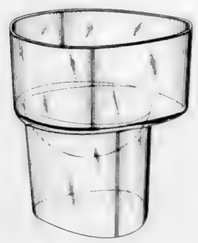
240,285
DRINKING GLASS
Timo Tapani Sarpaneva, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Iittala, Finland
Filed Aug. 26, 1974, Ser. No. 500,658
Claims priority, application Finland Feb. 25, 1974
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—11



240,286
DRINKING GLASS
Timo Tapani Sarpaneva, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Iittala, Finland
Filed Aug. 26, 1974, Ser. No. 500,659
Claims priority, application Finland Feb. 25, 1974
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—11

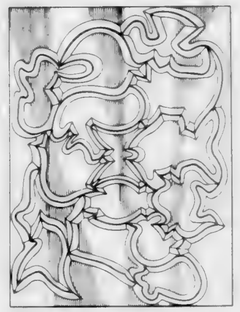


240,287
DRINKING GLASS
Timo Tapani Sarpaneva, Helsinki, Finland, assignor to A. Ahlstrom Osakeyhtio, Iittala, Finland
Filed Aug. 26, 1974, Ser. No. 500,660
Claims priority, application Finland Feb. 25, 1974
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—11



240,288
ROLLING PIN CUTTER
Jeffrey D. Wright, 1706 Gold SE., Albuquerque, N. Mex. 87106
Filed Sept. 13, 1974, Ser. No. 505,751
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—43





240,289
CONTAINER LID LIFTING TOOL
Warren Skinner, 1045 Clarendon 39, Sheridan, Wyo. 82801
Filed Jan. 20, 1975, Ser. No. 542,223
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—40



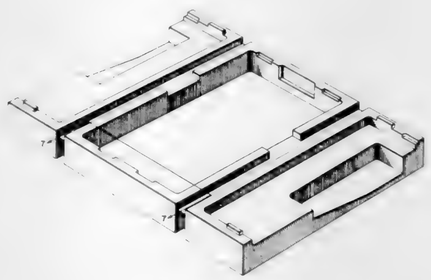
240,290
DOOR PROP FOR PREVENTING OPENING OF THE DOOR
James W. Nash, 1310 S. Catalina, Redondo Beach, Calif. 90277
Filed Sept. 30, 1974, Ser. No. 510,597
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—203



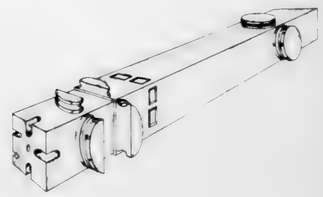
240,291
BOTTLE
Albert Eric Victor Page, St. Albans, England, assignor to Schenley Industries Inc.
Filed July 3, 1974, Ser. No. 485,553
Claims priority, application Great Britain Feb. 26, 1974
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—47



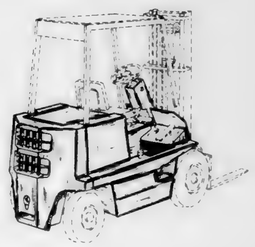
240,292
CONTAINER FOR A PHOTOGRAPHIC CAMERA OR SIMILAR ARTICLE
John A. Beaumont, Walpole, Mass., assignor to Polaroid Corporation
Continuation-in-part of design application Ser. No. 268,153, June 30, 1972. This application Feb. 28, 1974, Ser. No. 446,589
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—232



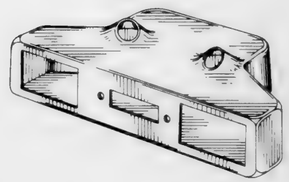
240,293
O-RING MEASURING GAUGE
James S. Bogart, Farmington Hills, Mich., and John M. Wilcox, Columbia, S.C., assignors to Federal-Mogul Corporation, Southfield, Mich.
Filed Oct. 29, 1974, Ser. No. 518,611
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—70



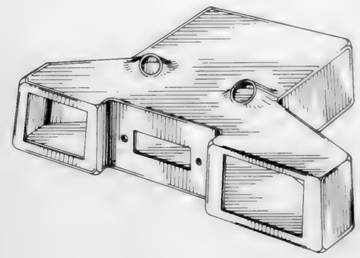
240,294
LIFT TRUCK BODY
Donald J. De Priester and Darrell C. Fuller, Niles, Mich., assignors to Clark Equipment Company
Filed Nov. 27, 1974, Ser. No. 527,787
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—61



240,295
ACCESSORY CONSOLE FOR MOTORCYCLES
Tommy W. Dixson, 1509 W. Willetta, Phoenix, Ariz. 85007
Filed Feb. 24, 1975, Ser. No. 552,301
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114

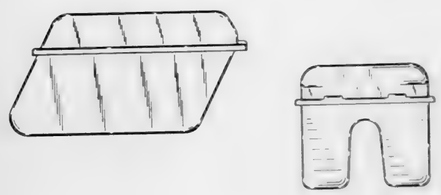


240,296
ACCESSORY CONSOLE FOR MOTORCYCLES
Tommy W. Dixson, 1509 W. Willetta, Phoenix, Ariz. 85007
Filed Feb. 21, 1975, Ser. No. 551,536
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114

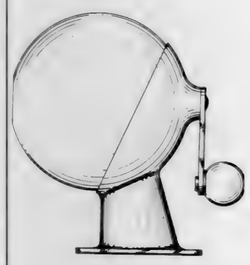


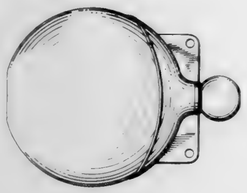
240,297
NESTABLE STROLLER
Antoine Trubiano, 36 Marien St., Montreal East 550, Quebec, Canada
Continuation-in-part of abandoned design application Ser. No. 452,936, Mar. 20, 1974. This application Mar. 13, 1975, Ser. No. 557,912
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—129

240,298
BICYCLE SADDLE BAG
Melbert A. Kline, 1157 Silverdale, Wichita, Kans. 67218
Filed Oct. 16, 1974, Ser. No. 515,240
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158

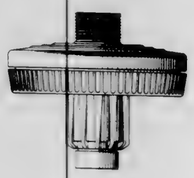


240,299
PENCIL SHARPENER
Wayne C. Hoffman, Chalybes Road, Roxbury, Conn. 06783
Filed Feb. 6, 1975, Ser. No. 547,755
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—74



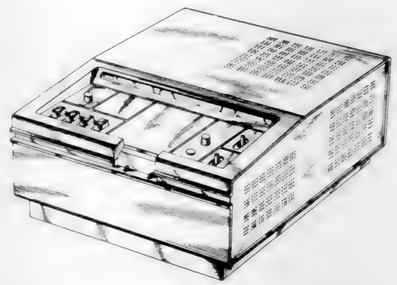


240,300
WATER FILTER OR SIMILAR ARTICLE
Charles Gelman and Attila Vadnay, Ann Arbor, Mich., assignors to Gelman Instrument Company
Filed June 27, 1975, Ser. No. 590,904
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4





240,301
MAGNETIC VIDEO REPRODUCER
Takao Takanashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 20, 1975, Ser. No. 542,418
Claims priority, application Japan July 22, 1974
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



240,302
POLE TELEPHONE
Douglas P. Montague, Chicago, and Howard J. Morrison, Deerfield, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Sept. 30, 1975, Ser. No. 618,071
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



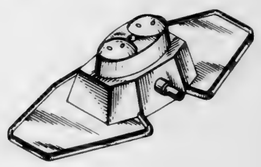
240,303
LIGHTER
Guy Neyret, Francheville, Rhone, France, assignor to Etablissements Genoud & Cie, Venissieux, Rhone, France
Filed Aug. 30, 1974, Ser. No. 502,229
Claims priority, application France Mar. 13, 1974
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



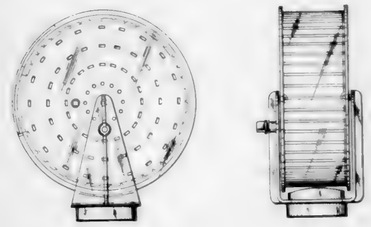
240,304
LIGHTER
Guy Neyret, Francheville, Rhone, France, assignor to Etablissements Genoud & Cie, Venissieux, Rhone, France
Filed Aug. 30, 1974, Ser. No. 502,230
Claims priority, application France Mar. 13, 1974
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42



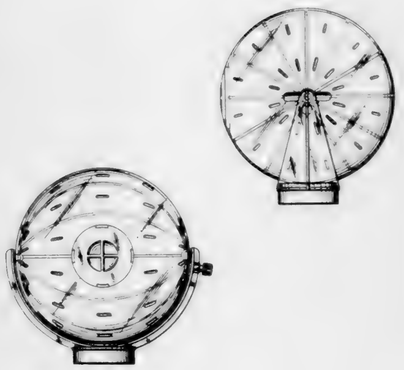
240,305
COMBINED AQUARIUM AERATOR AND ORNAMENT HOLDER
Bernard Suchowski, Marlboro, David D. Lovitz, Short Hills, and Claud W. Kissin, Fort Lee, N.J., assignors to The Hartz Mountain Corporation, Harrison, N.J.
Filed Jan. 30, 1975, Ser. No. 545,627
Term of patent 14 years
Int. Cl. D30—*99*
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240,306
ROTARY PLAY EXERCISER FOR A PET ANIMAL
Bernard Suchowski, Marlboro, David D. Lovitz, Short Hills, and Claud W. Kissin, Fort Lee, N.J., assignors to The Hartz Mountain Corporation, Harrison, N.J.
Filed Jan. 30, 1975, Ser. No. 545,367
Term of patent 14 years
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240,307
ROTARY PLAY EXERCISER FOR DOMESTIC ANIMALS
Bernard Suchowski, Marlboro, David D. Lovitz, Short Hills, and Claud W. Kissin, Fort Lee, N.J., assignors to The Hartz Mountain Corporation, Harrison, N.J.
Filed Jan. 30, 1975, Ser. No. 545,629
Term of patent 14 years
Int. Cl. D30—*07*
U.S. Cl. D30—42



240,308
TOY DOG FIGURE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Feb. 10, 1975, Ser. No. 548,631
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



240,309
TOY PIG FIGURE
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Feb. 10, 1975, Ser. No. 548,643
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R



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Baysinger, Robert L., to Emerson Electric Co. Control system for domestic gas oven burners. 3,963,410, Cl. 431-46.000.

BBC Brown Boveri & Company Limited: *See—*
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Wild, Peter, 3,963,312.

Beal, Glenn I., to R. M. Smith, Inc. Carded hardware article package. 3,963,123, Cl. 206-495.000.

Beaudoin, Guy; and Vincent, Marcel. Variable diameter pulley with improved pusher ring. 3,962,927, Cl. 74-230.17E.

Beaudoin, Guy; and Vincent, Marcel. Variable diameter pulley with shim means compensating for belt wear. 3,962,928, Cl. 74-230.17B.

Beauregard, William W., to Springfield Wire, Inc. Dual sealing solenoid valve. 3,963,049, Cl. 137-614.180.

Beck, Henry T.; and Koehler, Rudolph, to Noma Lites Canada Limited. Method of molding electrical lamp sockets. 3,963,822, Cl. 264-251.000.

Becker, Manfred, to Siemens Aktiengesellschaft. Manufacture of uranium dioxide powder. 3,963,828, Cl. 423-261.000.

Becton, Dickinson and Company: *See—*
North, Howard Lincoln, Jr., 3,963,151.

Bedwell, Thomas A.; and Zollinger, Doyle D., to Hesston Corporation. Loading and cleaning elevator for harvesters. 3,963,607, Cl. 209-73.000.

Beecham Group Limited: *See—*
Crisp, David John, 3,963,357.
Ferres, Harry; and Clayton, John Peter, 3,963,702.
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Beghin, Michel Charles Marie, to Societe Nouvelle B.I.P.T. (Bureau International de Prestations Techniques). Method of combined navigation of a barge or a lighter on sea and inland waters and apparatus for carrying out the said method. 3,962,984, Cl. 115-17.000.

Behl, Ravi, to Vapor Corporation. Circuit for detecting burned-out lamp for a buoy lamp changer. 3,964,040, Cl. 340-251.000.

Behn, Charles W.: *See—*
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Behrens, Rudolf Adolf, to American Cyanamid Company. Acrylic elastomer compositions with improved aging properties. 3,963,797, Cl. 260-837.00R.

Beine, Burkhard; and Schilling, Franz, to Siempelkamp Giesserei KG. Burst shield for a pressurized nuclear-reactor core and method of operating same. 3,963,563, Cl. 176-19.00R.

Beine, Burkhard, to Siempelkamp Giesserei KG. Holddown arrangement for removable cover of a pressurized nuclear-reactor core and method of using same. 3,963,565, Cl. 176-38.000.

Beining, August H. Article for increasing the life expectancy of filament light bulbs. 3,963,956, Cl. 315-71.000.

Bejtlich, Leonard M. Ski clamping apparatus. 3,963,234, Cl. 269-296.000.

Bel Fuse Inc.: *See—*
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Belady, Laszlo A.; and Palermo, Frank P., to International Business Machines Corporation. System and method for evaluating paging behavior. 3,964,028, Cl. 340-172.500.

Bell Telephone Laboratories, Incorporated: *See—*
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Bella, Frank, Jr., to Whiting Corporation. Cooling aqueous alkali metal hydroxide liquors by vacuum evaporation with subsequent solids precipitate removal. 3,963,424, Cl. 23-296.000.

Beloit Corporation: *See—*
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Bendix Corporation, The: *See—*
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Bennett, Gregory B., to Sandoz, Inc. Furo(3,4-e)-as-triazines and corresponding 4-oxides. 3,963,713, Cl. 260-248.0AS.

Bennett, William P.; and Haller, Jacob, to Programming Technologies, Inc. Automatic tape loading apparatus for cassettes and the like. 3,964,100, Cl. 360-95.000.

Bentley, John; Letchford, Brian Robert; and Stafford, Thomas Whitehead, to Imperial Chemical Industries Limited. Flexible coated sheet material. 3,963,848, Cl. 428-172.000.

Bereman, Jon A.: *See—*
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Bergeson, Richard P., to Maytag Company, The. Dishwasher. 3,963,046, Cl. 137-565.000.

Bergwerksverband GmbH: *See—*
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Bernardi, Luigi; and Patelli, Bianca, to Societa' Farmaceutici Italia S.p.A. Selective demethylation of anthracycline derivatives. 3,963,760, Cl. 260-365.000.

Berndes, Gunter; and Krassin, Horst, to BBC Brown Boveri & Company Limited. Two-way semiconductor switch. 3,964,091, Cl. 357-39.000.

Bernstein, Elliot; and Rosenberg, Richard, to Bel Fuse Inc. AC radiation choke insulator. 3,964,009, Cl. 336-90.000.

Berta, Peter, to Fairmont Foods Company. Method and apparatus for making shaped shells for hors d'oeuvres, snacks and the like, and food articles prepared thereby. 3,963,402, Cl. 425-299.000.

Berwald, Ernst, to Schering Aktiengesellschat. Transport container for dangerous liquids. 3,963,144, Cl. 220-85.00P.

Besser Company: *See—*
Cruzen, Harry F.; and Gresham, Robert W., 3,963,397.

Bessman, Samuel P.: *See—*
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Better Agricultural Goals Corporation: *See—*
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Beyersdorf, Hartwig, to GEBA-Gesellschaft fur elektronische Brandmeldeanlagen mbH & Co. Ionization analyzing air pollution, smoke and fire alarm device. 3,963,929, Cl. 250-384.000.

Bhatia, Kamlesh K.: *See—*
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Cumbo, Charles C.; and Bhatia, Kamlesh K., 3,963,755.

Bible, Harley V., to Robertshaw Controls Company. Internal combustion engine control system and improved pneumatically operated temperature controlled valve construction therefor or the like. 3,963,042, Cl. 137-468.000.

BICC Limited: *See—*
Moore, Alexander Joseph; Taylor, David Alexander; and Greene, David James, 3,962,781.

Bichel, Joachim H., to Leifeld & Co. Method of producing V-belt pulleys and spinning lathe for carrying out such method. 3,962,896, Cl. 72-82.000.

Bien, Alfred A.; and Glover, Robert W., to Chrysler Corporation. Locking and sealing washer apparatus. 3,962,744, Cl. 15-250.340.

Biermann, Udo Klaus Paul; and Schroder, Johann, to U.S. Philips Corporation. Method of manufacturing reaction mixtures of finely divided metals or alloys and solid perhalogenated carbon compounds. 3,963,541, Cl. 149-19.920.

Billottet, Henri: *See—*
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Binder, Gerhard; Blumel, Harald; and Krol, Helmut, to Chemische Werke Huls Aktiengesellschaft. Production of bitumen compositions containing ethylene-α-olefin rubber. 3,963,659, Cl. 260-28.5AS.

Birks, Laverne S.; and Fatemi, Mohammad, to United States of America, Navy. Multielectrode apparatus and techniques to prepare aligned asbestos fibers on a thin substrate. 3,963,439, Cl. 23-230.0PC.

Bish, Austin W., to Lawrence Peska Associates, Inc., a part interest. Dual garment hangers. 3,963,155, Cl. 223-88.000.

Bishop, Roland Justin, Jr.: *See—*
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Bishop, Thomas Desmond, to Deritend Engineering Company Limited, The. Apparatus for performing two or more operations on a continuous web in a single pass. 3,963,160, Cl. 226-115.000.

Black and Decker Manufacturing Company, The: *See—*
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Blackwood, Wilfred Norman; Gallagher, Finbar Joseph; Richey, Kenneth Rutherford; and Marshall, William, to Oeleq Limited. Modeling with a manually interactive computer constraint violation monitoring means. 3,963,904, Cl. 235-152.000.

Blaha, James G.; and Maher, Richard C., to Towmotor Corporation. Control means adjustably synchronizing operation of a single pump with a plurality of control valves. 3,962,871, Cl. 60-433.000.

Blakey, Rene C., to Star Paper Limited. Coated substrates production. 3,963,820, Cl. 264-134.000.

Blank, Benjamin; and Gleason, John G., to SmithKline Corporation. 3-(P-methoxybenzylthio)2-non-oxocarbonylic pyridines. 3,963,733, Cl. 260-294.80G.

Blank, Stuart Lawrence; and Le Craw, Roy Conway, to Bell Telephone Laboratories, Incorporated. Magnetic devices utilizing garnet epitaxial materials. 3,964,035, Cl. 340-174.0TF.

Blasnik, William: *See—*
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Blume, Frank R., to United States of America, Navy. Method for determining initial velocity for a rapid fire gun. 3,962,793, Cl. 33-143.00R.

Blumel, Harald: *See—*
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Blutinger, Bernard: *See—*
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Bly, Herbert Arthur. Lever actuated captive can closure. 3,963,153, Cl. 222-541.000.

Boag, John Wilson; Jeffery, Paul Nelson; and Johns, Harold Elford, to National Research Development Corporation. Method and apparatus for taking X-ray pictures. 3,963,924, Cl. 250-315.00A.

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Bogel, George F., to Westinghouse Electric Corporation. Digital time delay relay utilizing logic elements. 3,963,947, Cl. 307-293.000.

Bolger, Joseph E. Motorcycle clutch with daspot. 3,963,107, Cl. 192-109.00D.

Boller, Arthur; and Scherrer, Hanspeter, to Hoffmann-La Roche Inc. Liquid crystal esters. 3,963,311, Cl. 350-160.0LC.

Boller Arthur; and Scherrer, Hanspeter, to Hoffmann-La Roche Inc. Liquid crystal Schiffs bases. 3,963,313, Cl. 350-160.0LC.

Bomberger, Howard B., Jr.; and Seagle, Stanley R., to RMI Company. Method of producing a hot-worked titanium product. 3,963,525, Cl. 148-2.000.

Bond, Desmond H.; Taggart, George W.; and Jaeger, Kurt Scott, to Ford, Bacon & Davis Texas Incorporated. Acid gas burner and sulfur recovery system. 3,963,443, Cl. 23-262.000.

Bonis, Scott A., to Lockhead Missiles & Space Company, Inc. Semiconductor chip carrier and testing fixture. 3,963,315, Cl. 339-17.0CF.

Boniuk, Vivien. Apparatus for improving human visual response during conditions of reduced ambient illumination. 3,963,330, Cl. 351-163.000.

Borbely, Alexander S.; and Bereman, Jon A., to P. R. Mallory & Co., Inc. Composition for application to die cavity surface. 3,963,502, Cl. 106-38.280.

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Borie, Jean. Test bench device for vehicles. 3,962,912, Cl. 73-117.000.

Borrello, Sebastian R., to Texas Instruments Incorporated. Detector cold shield. 3,963,926, Cl. 250-338.000.

Borsi, Jozsef: *See—*
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Borst, Gaylord M.; and Meyer, Martin H., to Outboard Marine Corporation. Power trim-tilt system. 3,962,955, Cl. 91-401.000.

Bosman, Abraham Daniel, to South African Coal, Oil and Gas Corporation Limited. Handling of hot particulate materials, such as for example, hot agglomerated coal ash and coal ash clinker. 3,962,978, Cl. 110-165.00R.

Bost, Howard W., to Phillips Petroleum Company. Oxidation of hydroxy acids produced from bacterial oxidation of paraffins. 3,963,571, Cl. 195-28.00R.

Bottcher, Jurgen: *See—*
Treugut, Andreas; and Bottcher, Jurgen, 3,963,242.

Bouchard, John R., to Northrop Corporation. Friction reducing bearing. 3,963,284, Cl. 308-187.000.

Bouchy, Jean C.; and Hardman, Theodore J., to McNay Equipment Company, Inc. System for the measurement of a closed air space. 3,962,916, Cl. 73-149.000.

Boughner, Robert L. Casket having improved corner brackets. 3,962,761, Cl. 27-10.000.

Bouquet, Jean-Claude, to Societe d'Etudes de Machines Thermiques. Method of removing a valve mounted in an internal combustion engine cylinder-head and actuating device for carrying out the said method. 3,963,008, Cl. 123-90.610.

Bouquet, Jean-Claude, to Societe d'Etudes de Machines Thermiques - S.E.M.T.E. Valve chests. 3,963,016, Cl. 123-188.00S.

Bour, George Carl, to Valeron Corporation, The. Automatic milling slide control. 3,962,952, Cl. 90-11.00A.

Bourdo, John Lorin, to Automated Construction Industries, Inc. Mass production line for fabricating structural building members. 3,963,395, Cl. 425-88.000.

Bourke, Patrick Terence, Earl of Mayo. Marble-faced composite surface element. 3,963,846, Cl. 428-73.000.

Boutin, Laurent. Automatic variable speed transmission. 3,962,934, Cl. 74-752.00E.

Bouwhuis, Gijsbertus, to U.S. Philips Corporation. Record carrier for a television signal. 3,963,862, Cl. 178-6.60R.

Bowman, Larry L., to General Gas Light Company. Poppet valve assembly. 3,963,048, Cl. 137-596.170.

Boyer, Jackson S., to Sun Oil Company of Pennsylvania. Conveyor belts for transporting tar sands. 3,963,113, Cl. 198-193.000.

Boyer, Jackson S., to Sun Oil Company of Pennsylvania. Novel conveyor belts for transporting tar sands. 3,963,665, Cl. 260-31.80C.

Boyer, Walter J., to Perfection Manufacturing Company, The. Grass catcher and deflector assembly. 3,962,852, Cl. 56-202.000.

Bradley, Laird P.: *See—*
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Brady, Philip James; and Alford, Allen John, to Babb Engineering Company Limited. Rotary tool holders. 3,962,953, Cl. 90-11.00A.

Brady, Stephen F.: *See—*
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Brandao, Ruy L.; Taylor, Robert A., Jr.; and Bendix Corporation, The. Data display system having a multilevel video storage device. 3,964,064, Cl. 343-5.0SC.

Brandenburg, Klaus, to U.S. Philips Corporation. Developing device for serial electrostatic printing. 3,962,991, Cl. 118-635.000.

Brandenstein, Manfred: *See—*
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Ernst, Horst Manfred; Brandenstein, Manfred; and Olschewski, Armin, 3,963,106.

Brandl, Josef, to Peter Ilmberger KG, Maschinen-u. Zahnradfabrik. Apparatus for spraying processing fluid on the internal surface of a green tire. 3,962,987, Cl. 118-44.000.

Branscum, Tony E.: *See—*
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Brasko, Peter, to Aluminum Company of America. Electrochemical treatment of aluminum surfaces with an aqueous solution of hydrochloric acid and gluconic acid. 3,963,594, Cl. 204-129.950.

Brasure, Donald Eugene, to Du Pont de Nemours, E. I., and Company. Flame-retardant polyvinyl fluoride film. 3,963,672, Cl. 260-45.75B.

Bratkowski, Walter V.; and Wafer, John A., to Westinghouse Electric Corporation. Magnetic pulse generator. 3,963,948, Cl. 310-15.000.

Brattberg, Axel Wilhelm, to Saab-Scania Aktiebolag. Butterfly valve. 3,963,213, Cl. 251-306.000.

Bratzler, Karl; Doerges, Alexander; Kempf, Georg; Rudolph, Paul; and Schlauer, Johann, to Metallgesellschaft Aktiengesellschaft. Process of desulfurizing hot gases. 3,963,825, Cl. 423-223.000.

Braun Aktiengesellschaft: *See—*
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Breazeale, Billy H., to Texas Instruments Incorporated. Photoconductive detector and method of fabrication. 3,963,925, Cl. 250-338.000.

Brenienek, Harri: *See—*
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Bressendorff, Leon Leopold Breslau, to A/S Atlas. Industrial refrigeration plants of the absorption type. 3,962,887, Cl. 62-485.000.

Bret, Gerard Marcel Marius: *See—*
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Bridgestone Tire Company Limited: *See—*
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Kaneko, Yoshio; Watabe, Yoji; Matsunaga, Tsutomu; Toki, Shigeyuki; and Iseda, Yutaka, 3,963,681.
Takusagawa, Takashi; Fujikawa, Akira; Matsuda, Akira; Kaida, Masaaki; and Yasuda, Shigeo, 3,963,887.

Brien, Andre Guy. Gravity actuated miniature switch for watch having switch actuator magnetic retaining structure. 3,963,885, Cl. 200-52.00R.

Brinson, Durwood S. Apparatus for training cutting horses. 3,962,995, Cl. 119-29.000.

British Industrial Plastics Limited: *See—*
Ogden, Dennis Henry, 3,963,650.

British Sealed Beams Limited: *See—*
Morton, Kenneth Leonard, 3,963,916.

Broadie, Robert W.; Kemlage, Bernard M.; and Pogge, H. Bernard, to International Business Machines Corporation. Two stage heteroepitaxial deposition process for GaP/Si. 3,963,538, Cl. 148-175.000.

Brodie, Inc.: *See—*
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Broeker, Herbert H.: *See—*
Donovan, Robert W.; Kolster, Harvey L.; Broeker, Herbert H.; and Bailey, George W., 3,963,913.

Brooks, William Victor Hayes, to Domtar Limited. Diaper package. 3,963,029, Cl. 128-287.000.

Brotz, Walter; Illmann, Gunther; Riedel, Alfred; and Zinnert, Friedrich, to Hoechst Aktiengesellschaft. Lubricant for polyvinyl chloride materials. 3,963,658, Cl. 260-28.50D.

Brown, Albert W., to International Telephone and Telegraph Corporation. Pilot valve operated pressure regulator. 3,963,044, Cl. 137-490.000.

Brown, David A.: *See—*
Thompson, Herbert E.; and Brown, David A., 3,964,103.

Brown, Kenneth Robson; and Sharp, Colin Keith, to Ferranti, Limited. Signal resolving apparatus. 3,963,912, Cl. 235-189.000.

Brown, Laurence E.: *See—*
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Brown, Leon E.: *See—*
Pierini, John M.; and Brown, Leon E., 3,963,968.

Browning, Scott M.; and Klomp, Gregory F. Combination writing implement and flashlight. 3,963,914, Cl. 240-6.460.

Bruce, William A.; and Street, Marion W., Jr., to United States of America, Agriculture. Detection of hidden insects. 3,963,927, Cl. 250-338.000.

Brumberger, Neil A.; Auxer, Bennie C.; and Rush, Donald L., to Westinghouse Electric Corporation. Sequential occupancy release control method and apparatus for train vehicles. 3,963,201, Cl. 246-34.00R.

Bruning, William E.; and Ford, Michael J., to Omni Corporation. Grain door and method of making. 3,963,550, Cl. 156-252.000.

Brushenko, Anatoli, to GAF Corporation. Contrast of electrostatic latent images with a light flooding step. 3,963,488, Cl. 96-1.00R.

Bruzzese, Tiberio; and Ferrari, Rodolfo. Process for preparing dihydroxydiphenylmethane derivatives. 3,963,732, Cl. 260-294.80R.

Bucher, Hermann K.; and Criswell, Thomas R., to Eastman Kodak Company. Liquid crystal compositions, methods and devices. 3,963,638, Cl. 252-299.000.

Buchert, Claude-Charles. Data display panels. 3,963,326, Cl. 350-266.000.

Buchi, George Hermann; Wuest, Hans; Ohloff, Gunther; and Strickler, Hugo, to Firmenich S.A. 4-Methyl-8-vinyl-4,7- and -4,8-nonadienals. 3,963,783, Cl. 260-601.00R.

Budzich, Tadeusz. Hydrostatic transmission mixed loop system. 3,962,872, Cl. 60-453.000.

Bugaut, Andree: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,963,764.

Bulich, Anthony A., to A. E. Staley Manufacturing Company. Producing pullulanase with organisms having a superior capacity to elaborate pullulanase. 3,963,575, Cl. 195-31.00R.

Bullard, Wade A.; and Stahlman, Donald B. Colorimetric indicator compositions and method of manufacture. 3,963,442, Cl 23-253.0TP.

Bunn, Dorrance P., Jr.; and Jones, H. Blandin, to Texaco Inc. Fluid catalytic cracking. 3,963,603, Cl. 208-164.000.

Burger, Walter; and Ditscheid, Hans Leo, to Felten & Guilleaume Kabelwerke AG. Connector arrangement for coaxial cables. 3,963,321, Cl. 339-177.00E.

Burnett, John W. Transportable overbed table. 3,963,288, Cl. 312-209.000.

Burroughs Corporation: *See—*
DiVeto, Hilliard R., 3,963,188.

Burroughs Wellcome Co.: *See—*
Wood, Hamish Christopher Swan; and Stirling, Irene, 3,963,719.

Burrows, John: *See—*
Harris, Arthur; Burrows, John; and Jones, Thomas Ivor, 3,963,636.

Burrus, Thomas William, to RCA Corporation. Locked groove detection and correction in video disc playback apparatus. 3,963,860, Cl. 178-6.60R.

Buschini, Anthony Alan; and Swarsbrick, Douglas Edward, to Parsons Controls Limited. Link component for trawling gear. 3,962,755, Cl. 24-201.0HL.

Buschini, Anthony Alan; and Swarsbrick, Douglas Edward, to Parsons Controls Limited. Stopper for use in trawling gear. 3,962,810, Cl. 43-8.000.

Buschini, Anthony Alan; and Swarsbrick, Douglas Edward, to Parsons Controls Limited. Chain component. 3,962,811, Cl. 43-8.000.

Busco, Anthony R. Multiple operating alarm systems employing oil burner flame monitoring relays. 3,964,044, Cl. 340-276.000.

Bush Boake Allen Limited: *See—*
Jones, Barry Nicholas; Ansari, Hifzur Rahman; Jaggers, Brian George; and Janes, John Francis, 3,963,648.

Bushberger, Todd E. Hand-held power cue stick chalker and talcum powder dispenser. 3,963,237, Cl. 273-19.000.

Buss, Benjamin Alvin: *See—*
Buss, Stephen Alan; and Buss, Benjamin Alvin, 3,963,623.

Buss, Kenton A.; and Branscum, Tony E., to Gott Manufacturing Co., Inc. Hinge construction. 3,962,750, Cl. 16-168.000.

Buss, Stephen Alan; and Buss, Benjamin Alvin. Rotary vacuum drum filter. 3,963,623, Cl. 210-401.000.

Bussian, Ronald Wayne: *See—*
Aitken, Walter Brent; Bussian, Ronald Wayne; Menson, Robert Carroll; and Narayanswamy, Venkatachalam, 3,963,578.

Butts, Charles C., to Davis Walker Corporation. Dispenser for coiled elongated flexible product. 3,963,194, Cl. 242-129.000.

Buzzelli, Edward S., to Westinghouse Electric Corporation. High energy density fused salt battery and cathode for use therein. 3,963,516, Cl. 136-6.0LF.

BWG Bergwerk-und Walzwerk Maschinenbau G.m.b.H.: *See—*
Noe, Oskar; and Lux, Herbert, 3,962,894.

Byerley, Wilbur M.; Glatthorn, Raymond H.; and Lock, Emil P., to Westinghouse Electric Corporation. Method for repairing a heat exchanger tube. 3,962,767, Cl. 29-157.30R.

Byrum, Bernard W., Jr.: *See—*
Fein, Michael E.; Byrum, Bernard W., Jr.; and Ernsthausen, Roger E., 3,963,633.

C.G.R.-Mev.: *See—*
Donnadille, Bernard, 3,963,935.

Caban, Angel M. Valve assembly for concrete pumps. 3,963,385, Cl. 417-517.000.

Caillaud, Andre; Charuit, Pierre; Duffau, Claude; and Ravoire, Jean, to Commissariat a l'Energie Atomique; and Compagnie des Salins du Midi et des Salines de l'Est. Apparatus for the prevention of scaling in desalination apparatus. 3,963,619, Cl. 210-256.000.

Cairncross, Allan: *See—*
Baer, Donald R.; Cairncross, Allan; and Smith, Michael, 3,963,715.

Cake, Arthur F.: *See—*
Levine, Morris M.; and Cake, Arthur F., 3,962,858.

Calame, Tracy C.; and Cannon, William A., to Illinois Stoker Company. Grate bar casting for incinerator or other conveyor. 3,962,977, Cl. 110-38.000.

Caldwell, James Lewis, to Bell Telephone Laboratories, Incorporated. Parity framing of pulse systems. 3,963,869, Cl. 179-15.0BS.

Cale, Albert Duncan, Jr.; and Leonard, Charles Arthur, to A. H. Robins Company, Incorporated. Method for controlling emesis with N-(1-substituted-3-pyrrolidinyl)benzamides and thiobenzamides. 3,963,745, Cl. 260-326.50S.

Cam Industries, Inc.: *See—*
Hedges, Melvin R., 3,963,095.

Cameron Engineers, Incorporated: *See—*
Hand, John W., 3,963,426.

Cammann Mfg., Co., Inc.: *See—*
Roach, Jere H., 3,963,893.

Camp, Russell J., Jr.; Hitchell, Maurice L.; Schmit, Joseph L.; and Stelzer, Ernest L., to Honeywell Inc. Heat treatment of mercury cadmium telluride. 3,963,540, Cl. 148-20.300.

Campbell, Howard: *See—*
Shutt, Thomas Clifford; and Campbell, Howard, 3,963,506.

Camph Engineering Company AB: *See—*
Camph, Sven Erik; and Holmgren, Kjell Ake Bertil, 3,963,892.

Camph, Sven Erik; and Holmgren, Kjell Ake Bertil, to Camph Engineering Company AB. Controlling the microwave heating of flowing blood as a function of heated blood temperature. 3,963,892, Cl. 219-10.55M.

Canadian Patents and Development Limited: *See—*
Dauphinee, Thomas M., 3,963,979.
Walters, John, 3,962,822.

Cancian, Genevieve: *See—*
Charpentier, Jean; Cancian, Genevieve; and Selz, Francois, 3,964,056.

Cannon, William A.: *See—*
Calame, Tracy C.; and Cannon, William A., 3,962,977.

Canon Kabushiki Kaisha: *See—*
Inoue, Mutsuhiro; Konno, Akira; and Izaka, Yukio, 3,963,937.
Komine, Yoshio; Hosoe, Kazuya; Shimazaki, Mamoru; Ichiyanagi, Toshikazu; and Takahashi, Kiyoshi, 3,963,331.
Ohtaki, Syohei; Ogiso, Mithutoshi; Kiyohara, Takehiko; and Mitani, Taizo, 3,964,075.
Shimazaki, Mamoru, 3,963,334.
Takahashi, Kiyoshi; and Hirata, Noritsugu, 3,964,046.

Canron Limited: *See—*
Davies, Barry J., 3,963,450.

Carlisle Corporation: *See—*
Hollis, Jack L., 3,963,362.

Carlson, Lennart L.; and Hoiberg, Douglas I., to Steward Plastics, Inc. Flexible, corrugated, plastic tubing having conductive helical bead. 3,963,856, Cl. 174-47.000.

Carlson, Ray Lavette: *See—*
Kruckenberg, Perry Lester; Anderson, Harld Elden; and Carlson, Ray Lavette, 3,963,001.

Carlson, Ronald G. Roller skate. 3,963,252, Cl. 280-11.220.

Carlucci, James J. Cultivator. 3,963,079, Cl. 172-200.000.

Carmichael, Robert J.: *See—*
Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., 3,963,068.

Carnes, Robert M.: *See—*
Carnes, Stephen E.; and Carnes, Robert M., 3,962,836.

Carnes, Stephen E.; and Carnes, Robert M. Grave marker. 3,962,836, Cl. 52-104.000.

Carp, Bess, to Carp, Joseph, a part interest. Combination carry-on luggage bag with tote bag and clutch bag. 3,963,102, Cl. 190-51.000.

Carp, Joseph: *See—*
Carp, Bess, 3,963,102.

Carroll, Frank E., to Decks, Incorporated. Insulated decking structure and method. 3,962,841, Cl. 52-309.000.

Carruet, Valere Jean Marie; and Verspecht, Freddy Josse Melanie, to International Standard Electric Corporation. Data processing system employing one of a plurality of identical processors as a controller. 3,964,055, Cl. 340-172.500.

Casey, John A. Process and apparatus for treatment of cane sugar juice. 3,963,513, Cl. 127-11.000.

Cassani, Nino: *See—*
Riitano, Francesco; and Cassani, Nino, 3,962,790.

Casto, William J. Catalytic heating unit. 3,963,409, Cl. 431-28.000.

Caterpillar Tractor Co.: *See—*
Dauwalder, Fred R., 3,963,065.
Goloff, Alexander, 3,963,388.
McMillan, William D., 3,963,378.
Moring, Rodger L., 3,963,047.
Van Wuytswinkel, Charles M. G., 3,963,278.
Vinton, David S., 3,963,085.

Cea, Carmen Achille: *See—*
Anderson, Leslie Alan; Cea, Carmen Achille; and Gentry, John Maury, 3,962,901.

Cebal GP: *See—*
Cospen, Jean; and Baumann, Bernard, 3,963,814.

Cemo Instruments AB: *See—*
Kristiansen, Leif, 3,963,944.

Center for New Product Development: *See—*
McLaughlin, James Hugh, 3,963,629.

Centre Technique Industriel dit: Institut Textile de France: *See—*
Rouzaud, Guy Charles, 3,962,891.

Cernia, Enrico: *See—*
Giuffre, Luigi; Pasquon, Italo; Cernia, Enrico; Pozzi, Vittorio; and Silveri, Arthur, 3,963,791.

Chaffee, William H., to Model Builders, Inc. Panel connector. 3,962,827, Cl. 49-384.000.

Challet, Jacques, to Constructions Electriques R.V. Piezoelectric lighters notably for domestic appliance burners and the like. 3,963,411, Cl. 431-255.000.

Chance, Britton; Legallais, Victor; Sorge, John R.; and Graham, Norman C., Jr. Multi-channel optical time-sharing apparatus having a rotating filter wheel with position-encoding means. 3,963,351, Cl. 356-85.000.

Chang, Hsien-Dao: *See—*
Wright, Alan C.; and Chang, Hsien-Dao, 3,963,602.

Chappell, George M., to Chemlan Company, Inc. Compositions for treating domestic and industrial liquid wastes. 3,963,637, Cl. 252-181.000.

Charpentier, Jean; Cancian, Genevieve; and Selz, Francois, to International Standard Electric Corporation. System for transferring data between central units and controlled units. 3,964,056, Cl. 340-172.500.

Charuit, Pierre: *See—*
Caillaud, Andre; Charuit, Pierre; Duffau, Claude; and Ravoire, Jean, 3,963,619.

Chase, Ascher, to General Foam Plastics Corporation. Thermoformed wading pool with integral slide and handrail. 3,962,734, Cl. 4-172.000.

Chayer, William J. Vehicle for handling multi-furrow plough. 3,963,137, Cl. 214-501.000.

Cheiten, Marvin H.: *See—*
Cheiten, Samuel S., 3,962,731.

Cheiten, Samuel S., to Cheiten, Marvin H. Flapper-type discharge valve for flush tanks. 3,962,731, Cl. 4-56.000.

Chemetron Corporation: *See—*
Stepp, James Dial, 3,963,743.

Chemische Fabrik Kalk GmbH: *See—*
Konigstein, Otto; and Jenkner, Herbert, 3,963,674.

Chemische Werke Huls Aktiengesellschaft: *See—*
Binder, Gerhard; Blumel, Harald; and Krol, Helmut, 3,963,659.

Chemlan Company, Inc.: *See—*
Chappell, George M., 3,963,637.

Cheng, Tsen-Chung; Wilson, Gerald L.; and Jolly, David C., to Massachusetts Institute of Technology. High-voltage electrical insulator adapted to prevent flashover. 3,963,858, Cl. 174-141.00R.

Chernock, Stephen Peter. Unitary spark and thumb wheel. 3,963,412, Cl. 431-273.000.

Chesebro, Roger F.: *See—*
Petersen, Robert E.; and Chesebro, Roger F., 3,963,859.

Chevron Research Company: *See—*
Dardenne-Ankringa, Walter, Jr., 3,963,611.
Hutchison, Stanley O.; Anderson, Glenn W.; and Newby, Gordon L., 3,963,654.

CHI Systems, Inc.: *See—*
Pantone, Anton M., 3,962,807.

Chiba, Haruo, to Sanwa Seiki Mfg. Co. Ltd. Vehicle brake system. 3,963,277, Cl. 303-21.00F.

Chibata, Ichiro; Tosa, Tetsuya; and Mori, Takao, to Tanabe Seiyaku Co., Ltd. Blood purification means. 3,963,613, Cl. 210-195.00R.

Cho, Kon Ho, to Western Electric Company, Inc. Method of precisely aligning pattern-defining masks. 3,963,489, Cl. 96-27.00R.

Christensen, Neal Taylor: *See—*
Annunziata, Eugene Joseph; and Christensen, Neal Taylor, 3,964,054.

Christensen, Peter. Storage container for spools of fishing line. 3,962,815, Cl. 43-54.50R.

Christiansen, Godtfred Kirk, to Interlego A.G. Doll head and head covering assembly. 3,962,819, Cl. 46-164.000.

Chromalloy American Corporation: *See—*
Wachtell, Richard L.; and Palmenberg, Edward C., 3,963,894.

Chrysler Corporation: *See—*
Bien, Alfred A.; and Glover, Robert W., 3,962,744.

Chu, Daniel Tim-Wo; and Garmaise, David Lyon, to Abbott Laboratories. Anilino derivatives of chelocardin. 3,963,774, Cl. 260-519.000.

Chu, Nan S., to Union Carbide Corporation. Water swellable poly-(alkylene oxide). 3,963,805, Cl. 260-874.000.

Church, Ralph E., to General Electric Company. Laminated structure with insulating member formed in situ thereon. 3,963,949, Cl. 310-43.000.

Chylewski, Christoph: *See—*
Marthaler, Max; Schellenberg, Matthias; Mollet, Herbert; and Chylewski, Christoph, 3,963,492.

Ciba-Geigy AG: *See—*
Koller, Stefan; Reinker, Dieter; and Schwander, Hans Rudolf, 3,963,431.
Marthaler, Max; Schellenberg, Matthias; Mollet, Herbert; and Chylewski, Christoph, 3,963,492.

Ciba-Geigy Corporation: *See—*
Harris, Arthur; Burrows, John; and Jones, Thomas Ivor, 3,963,636.
Karrer, Friedrich; and Farooq, Saleem, 3,963,786.
L'Eplattenier, Francois; Vuitel, Laurent; and Pugin, Andre, 3,963,708.
Mory, Rudolf, 3,963,693.
Mory, Rudolf; and Muller, Rolf, 3,963,694.
Schreiber, Bruno; Seiz, Wolfgang; and Forster, Ewald, 3,963,666.
Schreiber, Bruno; Diethelm, Hermann; Habermeier, Jurgen; and Forster, Ewald, 3,963,667.

Citizen Watch Co., Ltd.: *See—*
Kushida, Hachiro; Takasugi, Tsuneji; Ikeda, Shinji; and Shiono, Takashi, 3,963,589.

Clark, Alfred James, to Motorola, Inc. Anti backlash and treadle bar linkage system. 3,964,001, Cl. 334-7.000.

Clark, George Reginald Seymour, to New Zealand Inventions Development Authority. Demountable stick. 3,963,037, Cl. 135-45.00R.

Clark, William H., to Utah Research & Development Co. Pulsed current battery charging method and apparatus. 3,963,976, Cl. 320-21.000.

Claxton, Dale H.; and Miller, Chauncey S., to TRW Inc. Analog-to-digital converters utilizing gunn effect devices. 3,964,060, Cl. 340-347.0AD.

Clayton, Jack E. Motorcycle carrier. 3,963,129, Cl. 214-86.00A.

Clayton, John Peter: *See—*
Ferres, Harry; and Clayton, John Peter, 3,963,702.

Clenet, Alain Jean-Marie, to W. R. Grace & Co. Combined extensible carrier and electrical wire sheath. 3,963,158, Cl. 224-31.000.

Cobe Laboratories, Inc.: *See—*
Hankinson, George R., 3,963,023.

Coeurderoy, Yves G., to Societe Anonyme: Poclain. Hydraulic installation with means for storing energy. 3,963,039, Cl. 137-118.000.

Coeurderoy, Yves G., to Societe Anonyme: Poclain. Method of subordinating the orientation of a grab on a public works machine to the rotation of the turrest of this machine and to the machine. 3,963,135, Cl. 214-151.000.

Cohn, David B.; Draggoo, Vaughn G.; Lacina, William B.; Brown, Laurence E.; and Stone, Merrill M., to Northrop Corporation. Arc operated Q switch for laser. 3,964,003, Cl. 331-94.50Q.

Cole, Marc. Electrolyticdialysis. 3,963,567, Cl. 204-180.00P.

Coles, John Neil; and Long, James Victor Percival, to National Research Development Corporation. Ion microprobes. 3,963,923, Cl. 250-309.000.

Colgate-Palmolive Company: *See—*
DeSalva, Salvatore Joseph; and Costello, Christopher H., 3,963,833.

Collier, Sydney Wellington. Wall rug cleaning machine. 3,962,745, Cl. 15-322.000.

Collins, Dean E., to Root-Lowell Manufacturing Co. Sprayer nozzle. 3,963,178, Cl. 239-8.000.

Collins, James D., to General Motors Corporation. Low temperature magnetic treatment of ferromagnetic materials. 3,963,533, Cl. 148-108.000.

Collins, William O. Aircraft approach and landing light system. 3,964,015, Cl. 340-26.000.

Columbiana Foundry Company: *See—*
Way, Lewis A.; and Williams, Robert C., 3,962,897.

Colyn, Roland, to Compagnie Generale d'Electricite. Device for producing electrical pulses. 3,963,945, Cl. 307-268.000.

Combustion Engineering, Inc.: *See—*
McAllister, Owen Earl, 3,962,828.

Commissariat a l'Energie Atomique: *See—*
Caillaud, Andre; Charuit, Pierre; Duffau, Claude; and Ravoire, Jean, 3,963,619.
Frenkel, Jean-Mathieu; Pelchat, Jacques; and Weisz, Michel, 3,963,534.
Lecocq, Alfred, 3,963,564.

Commonwealth Scientific and Industrial Research Organization: *See—*
Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, 3,963,511.
Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, 3,963,512.

Communications Satellite Corporation (Comsat): *See—*
DiFonzo, Daniel F., 3,963,990.

Compagnia Tecnica Industrie Petrolie S.p.A.: *See—*
Giacobbe, Francesco; and Longobardi, Giampiero, 3,963,581.

Compagnie des Salins du Midi et des Salines de l'Est: *See—*
Caillaud, Andre; Charuit, Pierre; Duffau, Claude; and Ravoire, Jean, 3,963,619.

Compagnie Generale d'Electricite: *See—*
Colyn, Roland, 3,963,945.
Jacob, Louis, 3,963,995.

Compagnie Honeywell Bull (Societe Anonyme): *See—*
Dalmasso, Ginette Laure, 3,964,027.

Compagnie Internationale pour l'Informatique: *See—*
Ducrocq, Claude; Hacques, Robert; Hubert, Maurice; and Touze, Robert, 3,964,088.

Concast AG: *See—*
Marti, Heinrich; and Schmid, Markus, 3,963,069.

Conley, Cecil. Operator alerting device. 3,964,045, Cl. 340-279.000.

Conlin, John R., Jr.: *See—*
Means, Donald J.; and Conlin, John R., Jr., 3,962,812.

Connor, Harry F. Nail extractor tool. 3,963,215, Cl. 254-26.00R.

Conrad, Roddy Merl; and Holland, Lyman Lyle, to Du Pont de Nemours, E. I., and Company. Large denier polyethylene terephthalate monofilaments having good transverse properties. 3,963,678, Cl. 260-75.00T.

Consolidated Packaging Corporation: *See—*
Frum, Carlos M., 3,963,168.

Constructions Electriques R.V.: *See—*
Challet, Jacques, 3,963,411.

Consupak, Inc.: *See—*
Pollock, Donald M.; and Hallowell, Fulton W., 3,963,404.

Container Corporation of America: *See—*
Gardner, Jeffrey M., 3,963,169.
Kipp, Michael A., 3,963,121.

Contento, Jerry. Horse racing board game apparatus. 3,963,243, Cl. 273-134.0CH.

Continental Can Company, Inc.: *See—*
Zavasnik, Fred J., 3,963,399.

Continental Conveyor and Equipment Company: *See—*
Younger, Joseph J., 3,963,114.

Continental Hair Products, Inc.: *See—*
Tomaro, Patrick M., 3,963,179.

Control Data Corporation: *See—*
Lewis, Raymond M., 3,963,882.
Mayer, William N., 3,964,050.

Conway, Michael J.: *See—*
Hughes, Roderick E.; and Conway, Michael J., 3,963,403.

Cook, Dudley W., to H. D. Lee Company, Inc., The. Zipper fly construction for garments. 3,962,729, Cl. 2-234.000.

Cooke, Barbara M., administrator: *See—*
Cooke, Melvin B., deceased; and Pritchard, Eric Kaiser, 3,962,752.

Cooke, George A.; and Houlihan, William J., to Sandoz, Inc. Tricyclic furo-quinazolinones. 3,963,717, Cl. 260-251.0QB.

Cooke, Melvin B., deceased (by Cooke, Barbara M., administrator); and Pritchard, Eric Kaiser, to Innovative Seafood Systems, Inc. Method and apparatus for removing meat from crabs. 3,962,752, Cl. 17-71.000.

Cooley, Denton A.; Reed, Charles C.; and Sharp, Russell G., to Texas Medical Products, Inc. Suction wand. 3,963,028, Cl. 128-276.000.

Coombes, Robert F., to Curtis Nuclear Corporation. Labelled cardiotonic glycosides for use in radioimmunoassay. 3,963,697, Cl. 260-210.500.

Cooper, Barry John: *See—*
Acres, Gary James Keith; and Cooper, Barry John, 3,963,827.

Cooper, Cleveland N., to Pandjiris Weldment Co., The. Pipe positioning, rotating and fitting apparatus for welding. 3,963,231, Cl. 269-45.000.

Cooper, David J.; and Pfeiffer, Francis R., to SmithKline Corporation. Tetradeoxyneamine and derivatives thereof. 3,963,695, Cl. 260-210.0AB.

Copal Company Limited: *See—*
Satake, Yoshihiro, 3,963,970.

Coral Chemical Company: *See—*
Smollett, Thomas J.; and Stipanovic, Bozidar, 3,963,530.

Corbett, Andrew Neville. Attaching a tooth crown to un-parallel tooth root systems. 3,962,787, Cl. 32-15.000.

Corompt, Antoine, to Bennes Marrel. Plant for the compression of garbage. 3,962,965, Cl. 100-99.000.

Corson, Frederick P.: *See—*
Evani, Syamalarao; and Corson, Frederick P., 3,963,684.

Cospen, Jean; and Baumann, Bernard, to Cebal GP. Method for hermetically sealing a rigid panel. 3,963,814, Cl. 264-23.000.

Costello, Christopher H.: *See—*
DeSalva, Salvatore Joseph; and Costello, Christopher H., 3,963,833.

Cota, Marlo E.; and Taylor, Jerry A., to Motorola, Inc. Pressure sensing method and apparatus for gases. 3,963,043, Cl. 137-487.500.

Cotton Incorporated: *See—*
LeBlanc, Destin A.; and LeBlanc, Robert Bruce, 3,963,437.

Cottrell, Arnold George, to Imperial Chemical Industries Limited. Surface treatment of particulate solids. 3,963,627, Cl. 252-4.000.

Couchoud, Paul, to Rhone-Poulenc-Textile. Non-inflammable filaments comprising acrylonitrile/vinylidene chloride copolymers. 3,963,790, Cl. 260-898.000.

Coucoulas, Alexander, to Western Electric Company, Inc. Bonding of dissimilar workpieces to a substrate. 3,964,093, Cl. 357-70.000.

Couder, Alain Audre; and Lebizay, Gerald, to International Business Machines Corporation. Time-division multiplex switching system. 3,963,870, Cl. 179-15.0AT.

Coulter Electronics, Inc.: *See—*
Coulter, Wallace H., 3,963,984.
Hogg, Walter R., 3,963,606.
Hogg, Walter R., 3,963,983.
Proni, Oscar; Melnick, Loran Vinson; and Henderson, William Taylor, 3,963,148.

Coulter, Wallace H., to Coulter Electronics, Inc. Method and system for cleaning an aperture in a particle study device. 3,963,984, Cl. 324-71.0CP.

Courtney, Robert L.: *See—*
Anderson, D. Richard; Courtney, Robert L.; and Harrah, Larry A., 3,963,826.

Covert, Eugene E.: *See—*
Haldeman, Charles W.; and Covert, Eugene E., 3,963,515.

Cowen, Arthur T., III. Combined carrying bag and racket carrier. 3,963,103, Cl. 190-52.000.

Cox, Joe Warren. Shelf-adjusting stair. 3,962,838, Cl. 52-183.000.

Coxe, Frank S.; Maxey, Lyle A.; and Wahl, David P., to Northrop Corporation. Roll reference system for vehicles utilizing optical beam control. 3,963,195, Cl. 244-3.110.

Craford, Magnus George; and Keune, David Lee, to Monsanto Company. Luminescent solid state status indicators. 3,964,039, Cl. 340-248.00A.

Crawford, John T., to Towmotor Corporation. Differential mounting and wheel drive arrangement. 3,963,089, Cl. 180-75.000.

Creager, Wade E.; and Sheppard, Albert P., to Creager, Wade E. Foot actuated electronic organ. 3,962,945, Cl. 84-1.010.

Crego, John B., to Sperry Rand Corporation. Windguard for grain distributor. 3,963,112, Cl. 198-72.000.

Crescent Metal Products, Inc.: *See—*
Baggott, George T., 3,963,125.

Crisp, David John, to Beecham Group Limited. Applicator device. 3,963,357, Cl. 401-191.000.

Criswell, Thomas R.: *See—*
Bucher, Hermann K.; and Criswell, Thomas R., 3,963,638.

Crockett, Lou Anne. Bedsheeting arrangement. 3,962,739, Cl. 5-334.00C.

Crompton & Knowles Corporation: *See*—
Dion, Raymond F., 3,963,060.

Crooks, Horatio Nelson, to RCA Corporation. Disc record groove skipper apparatus. 3,963,861, Cl. 178-6.60R.

Cross, Barrington; and Walworth, Bryant Leonidas, to American Cyanamid Company. 4-Alkyl-1,2-dimethyl-3,5-diphenylpyrazolium salts and derivatives thereof as fungicidal agents. 3,963,741, Cl. 260-311.000.

Cross, Barrington; and Walworth, Bryant Leonidas, to American Cyanamid Company. 1,2-Dialkyl-3,4,5-trisubstituted pyrazolium salts as herbicidal agents. 3,963,742, Cl. 260-311.000.

Cruzen, Harry F.; and Gresham, Robert W., to Besser Company. Cementitious product making system with product height gauging mechanism. 3,963,397, Cl. 425-141.000.

Culbertson, Billy M., to Ashland Oil, Inc. Trialkylammonium -N-[β(1-aziridinyl)] propionoylimines. 3,963,703, Cl. 260-239.00E.

Cumbo, Charles C.; and Bhatia, Kamlesh K., to Du Pont de Nemours, E. I., and Company. 2-Vinyl-5-methyl-1,3-dioxane. 3,963,754, Cl. 260-340.700.

Cumbo, Charles C.; and Bhatia, Kamlesh K., to Du Pont de Nemours, E. I., and Company. Mixture of 2(2'-propanal)-5-methyl-1,3-dioxane and 2(3'-propanal)-5-methyl-1,3-dioxane. 3,963,755, Cl. 260-340.700.

Curran, Adrian Charles Ward, to John Wyeth & Brother Limited. Magnesium halide derivatives of tetrahydroquinolines. 3,963,722, Cl. 260-283.00R.

Curtis, George C. Time delayed shut-down circuit for recirculation pump. 3,963,375, Cl. 417-12.000.

Curtis Nuclear Corporation: *See*—
Coombes, Robert F., 3,963,697.

Curtiss-Wright Corporation: *See*—
De Feo, Angelo; Kulina, Mark R.; and Norwood, Earl B., 3,963,283.
Jones, Charles; and Woodier, George H., 3,963,387.

D. Swarovski & Co., Glasschleiferei: *See*—
Schwab, Kurt, 3,963,309.

Daghe, Joseph L.: *See*—
Hackman, Frank C.; Luckenbill, Lawrence F.; and Daghe, Joseph L., 3,963,214.

Daicel, Ltd.: *See*—
Ishi, Toshiharu; Asahi, Akira; Fujita, Hiroaki; Sato, Takeshi; and Urabe, Nobusuke, 3,963,773.

Daiichi Seiyaku Co., Ltd.: *See*—
Ueno, Katsujiro; Sato, Makoto; Arimoto, Masahiro; Kojima, Hiroshi; Yamasaki, Terukiyo; and Sakurai, Takeo, 3,963,727.

Dake, Roger O.: *See*—
Dooley, James P.; and Dake, Roger O., 3,962,770.

Dalmasso, Ginette Laure, to Compagnie Honeywell Bull (Societe Anonyme). Apparatus and method for recording and using microprogrammes in a data processing system. 3,964,027, Cl. 340-172.500.

D'Amico, Anthony J. Fence. 3,963,219, Cl. 256-24.000.

Damitz, Vernon. Cushion control accessory for pneumatic or hydraulic cylinders. 3,963,045, Cl. 137-505.130.

D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, to Pennwalt Corporation. Polymer crosslinking with coupled peroxides. 3,963,673, Cl. 260-46.50G.

Danna, Peter A, to Olin Corporation. Electrode assembly for an electrolytic cell. 3,963,595, Cl. 204-258.000.

Danylik, Victor: *See*—
Patterson, Harold A.; and Danylik, Victor, 3,963,556.

Dardenne-Ankringa, Walter, Jr., to Chevron Research Company. Oxidation process for improving the environmental quality of water containing sulfur and/or inorganic sub-six-sulfur-containing impurities. 3,963,611, Cl. 210-63.00R.

Das, Santanu, to North Electric Company. Encoding scheme for failure detection in random access memories. 3,963,908, Cl. 235-153.0AM.

da Silva, Herman: *See*—
Van Duuren, Hendrik Cornelis Anthony; and da Silva, Herman, 3,963,867.

Dattilo, Donald P. Temperature controlled animal house. 3,962,993, Cl. 119-19.000.

Daubman, Edward A.; and Sherlock, John W., to Ametek, Inc. Feedcone with accelerator vanes for imperforate basket. 3,963,175, Cl. 233-29.000.

Dauenhauer, William J.: *See*—
Gossett, Charles W.; and Dauenhauer, William J., 3,963,612.

Daum, Hermann: *See*—
Liepold, Adolf; Daum, Hermann; and Lindner, Helmut, 3,962,851.

Dauphinee, Thomas M., to Canadian Patents and Development Limited. Liquid conductivity measuring apparatus. 3,963,979, Cl. 324-30.000.

Dauwalder, Fred R., to Caterpillar Tractor Co. Mounting bracket. 3,963,065, Cl. 151-41.760.

Davidson, Dekkers H. Movable bulkhead with guiding and overcanting prevention means. 3,962,735, Cl. 4-172.120.

Davies, Barry J., to Canron Limited. Reinforced cast product and method of making. 3,963,450, Cl. 29-191.400.

Davila, Jose E.: *See*—
Mojden, Wallace W.; Davila, Jose E.; Hooper, George W.; Kwiatkowski, Gerald M.; and Pantel, Howard W., Jr., 3,962,845.

Davis, Jerry P., to Thermo Electron Corporation. Solar steam generator. 3,962,873, Cl. 60-641.000.

Davis, Lee A., to ITE Imperial Corporation. Target reset mechanism. 3,964,008, Cl. 335-272.000.

Davis Walker Corporation: *See*—
Butts, Charles C., 3,963,194.

Davitt, H. James, to Sun Oil Company of Pennsylvania. Recovery of bitumen from aqueous streams via superatmospheric pressure aeration. 3,963,599, Cl. 208-11.0LE.

Dawson, Peter Leonard; and Rothwell, Michael Tom, to Lever Brothers Company. Dishwashing compositions. 3,963,635, Cl. 252-142.000.

De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie: *See*—
Van Duuren, Hendrik Cornelis Anthony; and da Silva, Herman, 3,963,867.

Dean, Frank J., to Tempmaster Corporation. Vertical discharge slot diffuser with high induction ratio. 3,962,960, Cl. 98-40.00C.

Decks, Incorporated: *See*—
Carroll, Frank E., 3,962,841.

Deering Milliken Research Corporation: *See*—
Stark, Daniel C., 3,963,428.

De Feo, Angelo; Kulina, Mark R.; and Norwood, Earl B., to Curtiss-Wright Corporation. Emergency bearing. 3,963,283, Cl. 308-78.000.

Dehner, Bernard J.: *See*—
Good, Thomas W.; and Dehner, Bernard J., 3,962,820.

Deissmann, Walter: *See*—
Winter, Gerhard; Deissmann, Walter; Gutsche, Walter; and Woditsch, Peter, 3,963,585.

de Keyzer, Cornelius J., to Rank Xerox Ltd. Camming systems. 3,963,343, Cl. 355-8.000.

Dekker, Bob: *See*—
Spadini, Gianfranco Luigi; and Dekker, Bob, 3,963,649.

Dellit, Richard John: *See*—
Hutton, Albert John; Hutton, Allen William; and Dellit, Richard John, 3,962,935.

Deloy, Joseph T.; and Selch, Grant J., to Nabisco, Inc. Food reclaiming system. 3,963,181, Cl. 241-76.000.

de Lyra, Rose T. Permanent envelope. 3,963,174, Cl. 229-80.000.

de Magondeaux, Maurice, to Sofiltra, Societe Industrielle de Filtration. Choked condition detector for an air-purifying device. 3,963,891, Cl. 200-308.000.

DeMarinis, Robert M., to SmithKline Corporation. Cyanomethyl sulfinyl- and sulfonyl-acetamido cephalosporins. 3,963,709, Cl. 260-243.00C.

DeMarinis, Robert M., to SmithKline Corporation. Cyanomethyl sulfinyl- and sulfonyl-acetamido cephalosporins. 3,963,711, Cl. 260-243.00C.

Demo, Joseph J., Jr., to Du Pont de Nemours, E. I., and Company. Fe, Cr ferritic alloys containing Al and Nb. 3,963,532, Cl. 148-37.000.

Dennison Manufacturing Company: *See*—
Robinson, Eric Richard, 3,962,730.

Deritend Engineering Company Limited, The: *See*—
Bishop, Thomas Desmond, 3,963,160.

DeRosa, John. Self-sealing fuel line. 3,963,055, Cl. 138-140.000.

DeSalva, Salvatore Joseph; and Costello, Christopher H., to Colgate-Palmolive Company. Antiperspirant composition and method containing a dihydro-benzofuran and an astringent metal salt. 3,963,833, Cl. 424-68.000.

DeSoto, Inc.: *See*—
Sekmakas, Kazys, 3,963,663.

Deutsche Babcock & Wilcox Aktiengesellschaft: *See*—
Schiemichen, Peter, 3,962,877.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Osswald, Gunter; and Reus, Josef, 3,963,510.

Dewhirst, Geoffrey Wilson, to Thomson Shepherd and Company Limited. Method of making pile fabrics and the pile fabric made thereby. 3,963,057, Cl. 139-2.000.

Dewhirst, Geoffrey Wilson, to Thomson Shepherd and Company Limited. Carpet looms. 3,963,058, Cl. 139-2.000.

Deyrup, Edward Johnson, to Du Pont de Nemours, E. I., and Company. Process for electroplating polyoxymethylene. 3,963,590, Cl. 204-30.000.

Diamond Shamrock Corporation: *See*—
Hlynsky, Alex; Griggs, Jan M.; and Osgood, Edmond R., 3,963,751.

Diana, Guy D., to Sterling Drug Inc. 1-Phenyl-3-azacarbocyclic-ureas. 3,963,748, Cl. 260-326.470.

Dias, Francesco: *See*—
Nickel, Hubertus; Luhleich, Hartmut; and Dias, Francesco, 3,963,651.

Dickerson, Arthur F., to Hughes Aircraft Company. High voltage system with self-test circuitry. 3,964,020, Cl. 340-146.0AG.

Diethelm, Hermann: *See*—
Schreiber, Bruno; Diethelm, Hermann; Habermeier, Jurgen; and Forster, Ewald, 3,963,667.

Dietrich, Rolf, to Hoffmann-La Roche Inc. Article with a lyophilized immunoreactive self-adhering coating. 3,963,441, Cl. 23-253.00R.

DiFonzo, Daniel F., to Communications Satellite Corporation (Comsat). Interference reduction circuit. 3,963,990, Cl. 325-476.000.

Dimmer, Donald J., to Hydra-Mac, Inc. Front-end skid steer loader. 3,963,131, Cl. 214-140.000.

Dinning, Robert W.: *See*—
Elliott, J. Kelly; and Dinning, Robert W., 3,963,377.

Dion, Raymond F., to Crompton & Knowles Corporation. Shuttle drive for a narrow ware loom. 3,963,060, Cl. 139-137.000.

Ditscheid, Hans Leo: *See*—
Burger, Walter; and Ditscheid, Hans Leo, 3,963,321.

Diversified Interests, Inc.: *See*—
Inbody, Melvin R., 3,963,260.

DiVeto, Hilliard R., to Burroughs Corporation. Listing machine roll holder. 3,963,188, Cl. 242-55.200.

Dr. -Ing. H.c.F. Porsche Aktiengesellschaft: *See*—
Soffge, Friedhelm, 3,962,747.

Doerges, Alexander: *See*—
Bratzler, Karl; Doerges, Alexander; Kempf, Georg; Rudolph, Paul; and Schlauer, Johann, 3,963,825.

Doerner, William A., to Du Pont de Nemours, E. I., and Company. Rotary heat engine powered single fluid cooling and heating apparatus. 3,962,874, Cl. 60-669.000.

Doherty, George O. P.; and Fuhr, Kenneth H., to Eli Lilly and Company. Lower alkylsulfonyl 2-amino, 3-nitro pyridines. 3,963,734, Cl. 260-294.80F.

Doi, Tadashi; Sekido, Isao; and Tamaki, Ryoichi, to Kao Soap Co., Ltd. Asphalt having high adhesion strength and its preparation. 3,963,509, Cl. 106-273.00R.

Doktor, Benjamin, deceased; and by Doktor, Henrietta, administratrix. Terminal block construction. 3,963,305, Cl. 339-274.000.

Doktor, Henrietta, administratrix: *See*—
Doktor, Benjamin, deceased; and Doktor, Henrietta, administratrix, 3,963,305.

Domtar Limited: *See*—
Brooks, William Victor Hayes, 3,963,029.
Hayes, George T., 3,963,064.
Hitchmough, John R.; and Wetmore, Clyde Arthur, 3,963,843.
Lapointe, Joseph A.; and Sheel, Ronald S., 3,962,799.
LaPointe, Joseph A., 3,962,966.

Donley, Miller & Nowikas, Inc.: *See*—
Nowikas, Walter M., 3,963,094.

Donnadille, Bernard, to C.G.R.-Mev. Shutter designed to block high-energy particle beams. 3,963,935, Cl. 250-514.000.

Donovan, Robert W.; Kolster, Harvey L.; Broeker, Herbert H.; and Bailey, George W., to Hallmark Cards, Incorporated. Wall mounted display system. 3,963,913, Cl. 240-2.0AD.

Dooley, James P.; and Dake, Roger O., to A. B. Chance Company. Elbow puller. 3,962,770, Cl. 29-203.00H.

Doormaid, Inc.: *See*—
Kienlen, Loren C.; and Poppler, Jack H., 3,962,826.

Dornte, Ralph William, to ESB Incorporated. Reaction product of polyalkylene imine and epoxy, halo, ethylenic substituted difunctional compounds. 3,963,806, Cl. 260-874.000.

Dorr, Karl Heinz; Weber, Waldemar; Grimm, Hugo; and Rowedder, Gustav, to Metallgesellschaft Aktiengesellschaft. Catalytic reactor having annular catalyst tray means. 3,963,423, Cl. 23-288.00R.

Doss, Richard C.; and Jones, Faber B., to Phillips Petroleum Company. Adhesive formulation improved with solid fillers. 3,963,850, Cl. 428-286.000.

Double E Company, Inc.: *See*—
Flagg, Richard Edward, 3,963,250.

Dow Chemical Company, The: *See*—
Evani, Syamalarao; and Corson, Frederick P., 3,963,684.
Miller, Lewis S., 3,963,798.
Pruitt, Malcolm E.; and Lovett, Joe B., 3,963,690.
Strojny, Edwin J., 3,963,759.

Dowd, Daniel J., to Westvaco Corporation. Method and apparatus for pre-registration of a multiple cylinder rotary printing press. 3,963,902, Cl. 235-92.0MP.

Down, Dennis Llewellyn Richard. Dual purpose trailer towing attachment. 3,963,264, Cl. 280-415.00A.

Downs, Diarmuid, to Ricardo & Co. Engineers (1927) Ltd. Combustion chamber arrangements for I.C. engines. 3,963,003, Cl. 123-32.00K.

Drabowitch, Serge, to Thomson-CSF. Corrugated horn having means for extracting divergence-measuring modes. 3,964,070, Cl. 343-786.000.

Draggoo, Vaughn G.: *See*—
Cohn, David B.; Draggoo, Vaughn G.; Lacina, William B.; Brown, Laurence E.; and Stone, Merrill M., 3,964,003.

Dravo Corporation: *See*—
Kilian, Alois, 3,962,904.

Dresser Industries, Inc.: *See*—
Penny, Samuel Lee, 3,963,282.
Spriggs, Dennis Mitchel, 3,963,074.
Walker, Ross W., 3,963,080.

Drummond Scientific Company: *See*—
Kenney, James W., 3,963,061.

DSO "Stara Planina": *See*—
Urmanov, Urman Alexandrov, 3,963,400.

Dubrule, Richard P.: *See*—
MacMillan, Donald F.; Smith, Bart A.; and Dubrule, Richard P., 3,963,566.

Ducrocq, Claude; Hacques, Robert; Hubert, Maurice; and Touze, Robert, to Compagnie Internationale pour l'Informatique. Multi-unit equipment maintenance system. 3,964,088, Cl. 340-172.500.

Duel, Don M., to Motorola, Inc. Time delay control mechanism. 3,962,973, Cl. 102-80.000.

Duffau, Claude: *See*—
Caillaud, Andre; Charuit, Pierre; Duffau, Claude; and Ravoire, Jean, 3,963,619.

Dufour, Serge P., to Societe Anonyme: Poclain. Public works appliance. 3,963,132, Cl. 214-142.000.

Dukess, Joseph. High frequency heat sealing container closure. 3,963,845, Cl. 428-64.000.

Dumesnil, Maurice E.; and Schreier, Ulrich, to Technology Glass Corporation. Lead-zinc-boron sealing glass compositions. 3,963,505, Cl. 106-47.00R.

Dunlap, Harold E., to Lodding Engineering Corporation. Slurry distributor. 3,963,562, Cl. 162-343.000.

Dunn, John W., to Owens-Corning Fiberglas Corporation. Method of making glass fiber mats and controlling pressure drop across web by varying perforated plate beneath web. 3,962,753, Cl. 19-156.300.

Du Pont de Nemours, E. I., and Company: *See*—
Aitken, Walter Brent; Bussian, Ronald Wayne; Menson, Robert Carroll; and Narayanswamy, Venkatachalam, 3,963,578.
Aufdermarsh, Carl Albert, Jr., 3,963,710.
Baer, Donald R.; Cairncross, Allan; and Smith, Michael, 3,963,715.
Brasure, Donald Eugene, 3,963,672.
Conrad, Roddy Merl; and Holland, Lyman Lyle, 3,963,678.
Cumbo, Charles C.; and Bhatia, Kamlesh K., 3,963,754.
Cumbo, Charles C.; and Bhatia, Kamlesh K., 3,963,755.
Demo, Joseph J., Jr., 3,963,532.
Deyrup, Edward Johnson, 3,963,590.
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Eigenbrode, George Thomas; and Evans, Robert Franklin, 3,963,317.
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Howe, King Lau, 3,963,807.
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Johnson, Vancliff, 3,963,829.
Middleton, William J., 3,963,776.
Miller, Donald Nelson, 3,963,446.
Reker, Joseph Robert, 3,963,406.
Saxton, Ronald Luther, 3,963,687.
Shih, Chi-Kai, 3,963,802.
Smart, Bruce Edmund, 3,963,767.
Starkweather, Howard Warner, Jr., 3,963,799.
Su, Aaron Chung Liong, 3,963,801.
Takeshita, Tsuneichi, 3,963,772.
Tullio, Victor, 3,963,418.

Durand-Vienne, Robert Rene, to Agence Nationale de Valorisation de la Recherche (ANVAR). Device for instantaneous decimal credibility check for data processing. 3,963,907, Cl. 235-153.00B.

Dwight, Bernard L. Line tensioning system. 3,963,217, Cl. 254-185.00R.

Dynamit Nobel Aktiengesellschaft: *See*—
Lenz, Arnold; and Rogler, Walter, 3,963,831.
Steffen, Klaus-Dieter, 3,963,739.

Dzus Fastener Co., Inc.: *See*—
Schenk, Peter, 3,963,361.

E. I. Du Pont de Nemours and Company: *See*—
Straub, Robert Michael, 3,963,647.

E. R. Squibb & Sons, Inc.: *See*—
Hauck, Frederic Peter; and Sundeen, Joseph E., 3,963,724.

Eastman Kodak Company: *See*—
Bucher, Hermann K.; and Criswell, Thomas R., 3,963,638.
Irick, Gether, Jr.; and Kelly, Charles A., 3,963,738.
Pickering, Charles E., 3,964,081.
Trevoy, Donald J., 3,963,498.

Eaton, Sargent Sheffield, Jr., to RCA Corporation. Memory cell. 3,964,031, Cl. 340-173.00R.

Ebata, Hiroyuki, to Yoshida Kogyo Kabushiki Kaisha. Continuous coupling element for slide fasteners. 3,962,756, Cl. 24-205.16C.

Eby, Devon L., to Tyme and Tydings Inc. Rotating message device. 3,962,806, Cl. 40-33.000.

Eckell, Wolfgang: *See*—
Staudt, Heinrich; Eckell, Wolfgang; Lehmann, Hartmut; Sontheimer, Karl; and Hofmann, Eberhard, 3,963,014.

Eckerbom, Gunnar; and Nilsson, Ove, to Aktiebolaget Tudor. Process for the manufacture of lead storage battery electrodes and apparatus for carrying out the process. 3,963,517, Cl. 136-27.000.

Eckert, Konrad, to Robert Bosch G.m.b.H. Fuel supply system. 3,963,005, Cl. 123-119.00R.

Eckle, Otto; and Grzegorz, Hans, to KOMET Stahlhalter-und Werkzeugfabrik, Robert Breuning GmbH. Boring tool for working bores of small diameter. 3,963,366, Cl. 408-199.000.

Ed. Geistlich Sohne A.G. fur Chemische Industrie: *See*—
Pfirrmann, Rolf Wilhelm, 3,963,706.

Edelmann, Gerhard: *See*—
Millauer, Hans; and Edelmann, Gerhard, 3,963,768.

Edwards, Roger; Evans, William Joshua; Grant, Wesley Norman; and Murphy, Bernard Thomas, to Bell Telephone Laboratories, Incorporated. Method for fabricating oxide isolated integrated circuits. 3,962,779, Cl. 29-577.000.

Egyt Gyogyszervegyeszeti Gyar: *See*—
Farkas, Lajos; Kasztreiner, Endre; Andrasi, Ferenc; Borsi, Jozsef; Elekes, Istvan; and Polgari, Istvan, 3,963,735.

Ehata, Senzou: *See*—
Noguchi, Tadamasa; Ehata, Senzou; and Matsuura, Masao, 3,962,985.

Eichler, Clifton Joe, to Loyd W. Richardson Construction Company. Movable guide bar. 3,963,279, Cl. 308-3.00R.

Eigenbrode, George Thomas; and Evans, Robert Franklin, to Du Pont de Nemours, E. I., and Company. Zero force edge connector block. 3,963,317, Cl. 339-74.00R.

Eitel, Alfred: *See*—
Ullrich, Martin; Meisert, Ernst; and Eitel, Alfred, 3,963,679.

Elekes, Istvan: *See—*
Farkas, Lajos; Kasztreiner, Endre; Andrasi, Ferenc; Borsi, Jozsef; Elekes, Istvan; and Polgari, Istvan, 3,963,735.

Eli Lilly and Company: *See—*
Doherty, George O. P.; and Fuhr, Kenneth H., 3,963,734.

Elias, James A., deceased (by Elias, June G., executrix); Newby, John R.; and Pierson, Marvin B., to Armco Steel Corporation. Cold rolled, ductile, high strength steel strip and sheet and method therefor. 3,963,531, Cl. 148-31.500.

Elias, June G., executrix: *See—*
Elias, James A., deceased; Newby, John R.; and Pierson, Marvin B., 3,963,531.

Elliott, J. Kelly; and Dinning, Robert W., to Schlumberger Technology Corporation. Pneumatically powered pump system. 3,963,377, Cl. 417-90.000.

Ellis, Robert G., to Atlas Pacific Engineering Company. Machine for seed celling apples. 3,962,963, Cl. 99-544.000.

Elslager, Edward Faith, to Parke, Davis & Company. Benzo and benzothiopyranoindazole N-oxides. 3,963,740, Cl. 260-310.00C.

Emerson Electric Co.: *See—*
Baysinger, Robert L., 3,963,410.

Emery, Arthur: *See—*
Leenhouts, Albert C.; Senak, Peter, Jr.; and Emery, Arthur, 3,963,971.

Emery Industries, Inc.: *See—*
Van Veersen, Gerardus Johannes, 3,963,689.

Emmerson, Calvin W., to General Motors Corporation. Turbine cooling. 3,963,368, Cl. 415-115.000.

Emoto, Kazuhiro: *See—*
Tsukahara, Hirokazu; and Emoto, Kazuhiro, 3,963,779.

Endo, Hiroshi: *See—*
Shibuya, Atsumi; Sugita, Chokichi; and Endo, Hiroshi, 3,963,056.

Engebretsen, Einar O., to Hobart Corporation. Compactor cycle control. 3,962,964, Cl. 100-51.000.

Enger, Carl C. Impermeable silicone composition. 3,963,677, Cl. 260-28.50D.

Enomoto, Akio; and Tadakuma, Yuji. Automatic tax calculating apparatus. 3,963,910, Cl. 235-156.000.

Enomoto, Yasushige: *See—*
Ezaki, Toshiyuki; Furukawa, Kunio; and Enomoto, Yasushige, 3,963,815.

Environeering, Inc.: *See—*
Huppke, Glen P., 3,963,463.

Eriksson, Mats Erik, to Hiab-Foco Aktiebolag. Blocking arrangement in hydraulically operated cranes. 3,963,127, Cl. 212-8.00R.

Ernst, Horst; Brandenstein, Manfred; and Olschewski, Armin, to SKF Industrial Trading and Development Company, B.V. Bearing and clutch diaphragm assembly. 3,963,105, Cl. 192-98.000.

Ernst, Horst Manfred; Brandenstein, Manfred; and Olschewski, Armin, to SKF Industrial Trading and Development Company, B.V. Clutch disengager with sliding sleeve. 3,963,106, Cl. 192-98.000.

Ernsthausen, Roger E.: *See—*
Fein, Michael E.; Byrum, Bernard W., Jr.; and Ernsthausen, Roger E., 3,963,633.

ESB Incorporated: *See—*
Dornte, Ralph William, 3,963,806.

Esbjornsson, Stig Uno Ingvar, to Aktiebolaget Ljungmans Verkstader. Liquid-dispensing installation. 3,963,146, Cl. 222-59.000.

Eskeli, Michael. Heat exchanger. 3,962,888, Cl. 62-499.000.

Esseluhn, Werner F.: *See—*
Fegley, Charles R.; and Esseluhn, Werner F., 3,963,145.

Estell, Gertrude Althea. Toy automobile apparatus. 3,963,262, Cl. 280-231.000.

Estradier, Francoise: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,963,764.

Etat Francais: *See—*
Jezequel, Jean-Francois, 3,962,915.
Marchay, Jean A. R.; and Lelievre, Andre Y. C., 3,962,982.

Etat Francais, represented by Delegation Ministerielle pour l'Armement: *See—*
Aquilina, Robert R.; Masson, Robert A.; and Jerez, Norbert A., 3,962,902.

Ethicon, Inc.: *See—*
Hunter, Alastair W., 3,963,031.

Ettenberg, Michael; and Kressel, Henry, to RCA Corporation. Method of making electroluminescent semiconductor devices. 3,963,536, Cl. 148-171.000.

Etudes et Fabrications Aeronautiques: *See—*
Pravaz, Marcel, 3,963,199.

Eugene, Emmanuel, to Lawrence Peska Associates, Inc., a part interest. Push-button T.V. tuner. 3,964,002, Cl. 334-7.000.

Evani, Syamalarao; and Corson, Frederick P., to Dow Chemical Company, The. Vinyl benzyl ethers and nonionic water soluble thickening agents prepared therefrom. 3,963,684, Cl. 526-303.000.

Evans, Orde R. Centralizer for elastomer coated blast joint. 3,963,075, Cl. 166-241.000.

Evans, Robert Franklin: *See—*
Eigenbrode, George Thomas; and Evans, Robert Franklin, 3,963,317.

Evans, William Joshua: *See—*
Edwards, Roger; Evans, William Joshua; Grant, Wesley Norman; and Murphy, Bernard Thomas, 3,962,779.

Evolution S.A.: *See—*
Hamel, Edmund, 3,962,857.

Exel Oy: *See—*
Aho, Yrjo, 3,963,254.

Eysn, Manfred, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Metallurgical vessel, in particular a converter. 3,963,223, Cl. 266-241.000.

Ezaki, Toshiyuki; Furukawa, Kunio; and Enomoto, Yasushige, to Nippon Steel Corporation; and Harima Refractory Co., Ltd. Method of lining molten metal vessels and spouts with refractories. 3,963,815, Cl. 264-30.000.

F. D. Farnum Co.: *See—*
Youngberg, Charles A., 3,963,408.

Fabry, Pierre: *See—*
Kleitz, Michel; Fabry, Pierre; and Fouletier, Jacques, 3,963,597.

Fairmont Foods Company: *See—*
Berta, Peter, 3,963,402.

Farkas, Lajos; Kasztreiner, Endre; Andrasi, Ferenc; Borsi, Jozsef; Elekes, Istvan; and Polgari, Istvan, to Egyt Gyogyszervegyeszeti Gyar. Acylated 2-aminothiazole derivatives. 3,963,735, Cl. 260-294.80D.

Farone, Eugene Richard, to Lubrizol Corporation, The. Curable water-base compositions. 3,963,657, Cl. 260-29.4UA.

Farooq, Saleem: *See—*
Karrer, Friedrich; and Farooq, Saleem, 3,963,786.

Fassauer, Arthur L., to Fassauer Industries, Inc. Granular material conveyor. 3,963,149, Cl. 222-142.000.

Fassauer Industries, Inc.: *See—*
Fassauer, Arthur L., 3,963,149.

Fatemi, Mohammad: *See—*
Birks, Laverne S.; and Fatemi, Mohammad, 3,963,439.

Fauchez, Jean-Jacques, to Anvar, Agence Nationale de Valorisation de la Recherche. Method of and apparatus for selectively controlling a plurality of remotely located loads. 3,964,023, Cl. 340-147.0PC.

Faulkner, Ben V. Method of preventing well bore drilling fluid overflow and formation fluid blowouts. 3,963,077, Cl. 166-315.000.

Fedele, Margaret T. Device for moving or positioning a patient in a bed. 3,962,736, Cl. 5-81.00R.

Federal Laboratories, Inc.: *See—*
Knapp, John S., 3,963,770.

Fedrigo, A. Fred. Cam lock and method for making same. 3,963,360, Cl. 403-14.000.

Fedrowitz, Walter; and Frieser, Rudolf G., to International Business Machines Corporation. Oxidation of chromium surfaces. 3,963,528, Cl. 148-6.14R.

Fegley, Charles R.; and Esseluhn, Werner F. Anti-burglary chemical dispensing device. 3,963,145, Cl. 222-5.000.

Fein, Michael E.; Byrum, Bernard W., Jr.; and Ernsthausen, Roger E., to Owens-Illinois, Inc. Gas discharge device dielectric containing selenium, tellurium and/or polonium. 3,963,633, Cl. 252-63.200.

Feldheim, Robert J. Teaching device particularly adapted for the game of blackjack. 3,962,800, Cl. 35-8.00B.

Feldman, Martin; and White, Donald Lawrence, to Bell Telephone Laboratories, Incorporated. Inspection of masks and wafers by image dissection. 3,963,354, Cl. 356-168.000.

Fella-Werke G.m.b.H.: *See—*
Liepold, Adolf; Daum, Hermann; and Lindner, Helmut, 3,962,851.

Felten & Guilleaume Kabelwerke AG: *See—*
Burger, Walter; and Ditscheid, Hans Leo, 3,963,321.

Fengler, Harald: *See—*
Hujer, Friedrich; Weinert, Volker; and Fengler, Harald, 3,963,344.

Ferara, James T., to Molins Machine Company, Inc. Cutoff mechanism. 3,962,942, Cl. 83-311.000.

Fergason, James L.; and Werth, Duane E., to Hoffmann-La Roche Inc. Liquid crystal display assembly. 3,963,324, Cl. 350-160.0LC.

Ferguson, Fred Eugene, to O. M. Scott & Sons Company. Fertilizer composition containing ferrous salt. 3,963,118, Cl. 206-84.000.

Ferranti, Limited: *See—*
Brown, Kenneth Robson; and Sharp, Colin Keith, 3,963,912.

Ferrari, Rodolfo: *See—*
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Ferres, Harry; and Clayton, John Peter, to Beecham Group Limited. Phthalide penicillin ester intermediates. 3,963,702, Cl. 260-239.100.

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Fex, Hans Jacob: *See—*
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Fiocca, Louis L.; Schmutzer, Joel J.; and Klusendorf, John I., to Advanced Instrument Development, Inc. System for controlling operation of the rotating anode of an X-ray tube. 3,963,930, Cl. 250-402.000.

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Fischer, Adolf, deceased (by Fischer, Caecilia Emma, legal representative), to BASF Aktiengesellschaft. Herbicide mixtures of 3-lower alkyl-2,1,3-benzothiadiazinone-(4)-2,2-dioxides or salts thereof and 2-(methyl, chlorophenoxy)-N-methoxyacetamides. 3,963,474, Cl. 71-91.000.

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Fischer, Adolf, deceased (by Fischer, Caecilie Emma, legal representative), to BASF Aktiengesellschaft. 3-Lower alkyl-2,1,3-benzothiadiazinone-(4)-2,2-dioxides or salts thereof and 9-hydroxy-fluorenecarboxylic acid-(9) as herbicidal mixtures. 3,963,476, Cl. 71-91.000.

Fischer, Adolf, deceased (by Fischer, Caecilia Emma, legal representative), to BASF Aktiengesellschaft. Herbicide mixtures employing O,S-dimethyltetrachlorothioterephthalate. 3,963,478, Cl. 71-91.000.

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Flatland, Lloyd P. Dental handpiece. 3,962,789, Cl. 32-27.000.

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Frank, Jamie, to Flair Manufacturing Corporation. Thermostatic control valve for a one-pipe steam system. 3,963,177, Cl. 236-37.000.

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Gattuso, Marion J., to Universal Oil Products Company. Rubber formulations containing vulcanization inhibiting thioformamidine compounds. 3,963,683, Cl. 260-79.50A.
Gauper, Harold A., Jr.; and Walden, John P., to General Electric Company. Electromagnetically shielded electrical power supply with reduced common mode electromagnetic interference output. 3,963,975, Cl. 321-2.000.
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Grisar, Johann Martin; and Wiech, Norbert Leonard, to Richardson-Merrell Inc. Substituted benzhydryl lactamimide derivatives. 3,963,701, Cl. 260-239.00B.
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Groff, James H., Sr. Paint spray shield. 3,962,989, Cl. 118-504.000.
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Gryctko, Carl E., to ITE Imperial Corporation. Torque controlling set screw for use with the cable of solderless connectors, or the like. 3,963,322, Cl. 339-272.00R.
Gryczka, Alfred J., to Microlife Technics, Inc. Fermented flour and method of preparation. 3,963,835, Cl. 426-18.000.
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Hagstrom, Kenneth Lavern; and Munshi, Sushil Gajendrarai, to North Electric Company. Non-symmetric folded four-stage switching network. 3,963,872, Cl. 179-18.0GF.
Haldeman, Charles W.; and Covert, Eugene E., to Massachusetts Institute of Technology. Vacuum cleaning. 3,963,515, Cl. 134-21.000.
Hall, Charles M.; and Johnson, Herbert G., to Upjohn Company, The. Pyridine dioxamic acids and esters. 3,963,660, Cl. 260-295.00R.
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Hampton, Quentin L. Apparatus and process for producing an organic product from sewage sludge. 3,963,471, Cl. 71-12.000.
Hamu, Kaino Johannes. Gripping device. 3,962,805, Cl. 38-102.500.
Hand, John W., to Cameron Engineers, Incorporated. Process for gasifying carbonaceous matter. 3,963,426, Cl. 48-197.00R.
Haning, James O.; Kool, Bram; Moritz, Jules G.; and Mizrahi, Robert, to Microform Data Systems, Inc. Film strip handling apparatus and method. 3,963,336, Cl. 353-26.00A.
Hankins, Charles William. Envelope flap processing apparatus. 3,962,848, Cl. 53-266.00A.
Hankinson, George R., to Cobe Laboratories, Inc. Extracorporeal blood circulation system and pump. 3,963,023, Cl. 128-214.00F.
Hansen, Frode Johan, to Redpath Dorman Long (North Sea) Limited. Stabilization of maritime structures. 3,962,878, Cl. 61-46.500.
Hansford, Rowland C., to Union Oil Company of California. Conversion catalysts. 3,963,644, Cl. 252-455.00Z.
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Harlan, Alfred Ray, to Motorola, Inc. Force directed keyslide cam. 3,962,923, Cl. 74-10.330.

Harned, John L., to General Motors Corporation. Engine with fast warm up heat pipe mixture heating. 3,963,010, Cl. 123-122.0AC.

Harned, John L., to General Motors Corporation. Engine with vapor heat transfer capsule for intake mixture heating. 3,963,012, Cl. 123-122.0AC.

Harrah, Larry A.: *See—*
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Harrell, Edsel A.; Looney, Zolon M.; and McCaskill, Oliver L., to United States of America, Agriculture. Full flow feeder. 3,963,111, Cl. 198-37.000.

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Harris Corporation: *See—*
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Hart, Alexander W., to Anchor Hocking Corporation. Sideseal closure cap and sealed package. 3,963,142, Cl. 215-346.000.

Hart, Gary Allen, to International Business Machines Corporation. Servo information pattern for rotating head magnetic tape unit independent of amplitude. 3,964,094, Cl. 360-77.000.

Hartemann, Pierre, to Thomson-CSF. Device for the directive transmission of elastic surface waves and process for making the same. 3,963,997, Cl. 333-30.00R.

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Hashimoto, Shigeru; Ninomiya, Eizi; and Kuroda, Junko, to Teijin Limited; and Sunstar Dentifrice Co., Ltd. Liquid or pasty dentifrice and process for its preparation. 3,963,832, Cl. 424-56.000.

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Hauck, Frederic Peter; and Sundeen, Joseph E., to E. R. Squibb & Sons, Inc. Intermediates useful in the preparation of aryldecahydropyrrolo[3,4-f]quinolines. 3,963,724, Cl. 260-287.0CF.

Haug, Lester A. Process for treating decomposable organic waste materials. 3,963,470, Cl. 71-9.000.

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Hauxwell, Frank; and Murton, Henry Roy, to Imperial Chemical Industries Limited. Aqueous compositions for use in applying dyestuffs. 3,963,432, Cl. 8-93.000.

Hawkins, Ronald G.; and Russ, Charles R., to Aluminum Company of America. Boltless spacer clamp. 3,963,855, Cl. 174-40.00R.

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Hayakawa, Shigeru: *See—*
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Hayden, Rodney, to TRW Inc. Noiseless automotive relay. 3,964,007, Cl. 335-187.000.

Hayes, George T., to Domtar Limited. Processing whole trees. 3,963,064, Cl. 144-309.0AC.

Hays, Kenneth Scott, to AMP Incorporated. Battery terminal connector. 3,963,303, Cl. 339-237.000.

Hazelett, Robert William; Wood, John Frederick Barry; and Carmichael, Robert J., to Hazelett Strip-Casting Corporation. Symmetrical synchronized belt-steering system and apparatus for twin-belt continuous metal casting machines. 3,963,068, Cl. 164-278.000.

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Hecht, Sidney M.; and Kozarich, John W., to Massachusetts Institute of Technology. Alkylations employing in situ generation of diazoalkane alkylation reagents. 3,963,698, Cl. 260-211.50R.

Hedegaard, Arne Marius; and Jensen, Hugo Sand, to Rothenborg Patent & Licens K/S. Thread cutter for sewing machines. 3,962,980, Cl. 112-252.000.

Hederich, Volker; Kroeck, Friedrich Wilhelm; Gehrke, Guenter; and Neeff, Rutger, to Bayer Aktiengesellschaft. Anthraquinone dyestuffs. 3,963,763, Cl. 260-376.000.

Hedges, Melvin R., to Cam Industries, Inc. Auxiliary extension platform assembly support frame drive means for an aerial ladder assembly. 3,963,095, Cl. 182-2.000.

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Heinz, Peter H.: *See—*
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Heiser, William H., to International Telephone and Telegraph Corporation. Aircraft guiding system. 3,964,053, Cl. 343-108.00M.

Heitmann, Uwe; and Lorenzen, Heinz-Christen, to Hauni-Werke Korber & Co., KG. Method and apparatus for testing cigarettes or the like. 3,962,906, Cl. 73-41.000.

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Hellerbach, Joseph; Hoffmann, Henri; and Zanetti, Guido, to Hoffmann-La Roche Inc. 1-Polyhydroxy alkyl-1,4-benzodiazepin-2-ones. 3,963,777, Cl. 260-562.00N.

Helm, Edward J.; and Tucker, Linwood G., to Koppers Company, Inc. Method and apparatus for suppressing the deposition of carbonaceous material in a coke oven battery. 3,963,582, Cl. 201-2.000.

Hemstreet, Harold S., to Perkin-Elmer Corporation, The. Monolithic beam splitter mirror arrangement. 3,963,353, Cl. 356-168.000.

Henderson, Angus D.; Verhoff, Francis H.; and Periale, John M., to Telecommunications Industries, Inc. Clarifier. 3,963,624, Cl. 210-521.000.

Henderson, William Taylor: *See—*
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Henkes, John L., Jr., to General Electric Company. Mammography fixture. 3,963,933, Cl. 250-456.000.

Hennion, Jean Maurice, to Fives-Cail Babcock S.A. Device for effecting the guiding and oscillation movements of a welding head equipped with an electrode-carrier nozzle. 3,963,895, Cl. 219-125.00R.

Henson, Alec Frank; and Bret, Gerard Marcel Marius, to Lever Brothers Company. Preparation of yogurt and quark. 3,963,836, Cl. 426-40.000.

Herb, John R., to Pharmachem Corporation. Blood component storage bag and glycerolizing set therefor. 3,963,026, Cl. 128-272.000.

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Heritage, Robert, to Rotaflex (Great Britain) Limited. Electrical current supply installations. 3,963,294, Cl. 339-22.00R.

Herron, Christopher C.; and Williams, Clyde R., to International Business Machines Corporation. Intermittent cleaner for rotating magnetic head. 3,964,104, Cl. 360-128.000.

Hess, Martin, to Koppers Company, Inc. Coal gasification process. 3,963,457, Cl. 48-202.000.

Hess, William Emil, Jr., to Bell Telephone Laboratories, Incorporated. Power supply circuit. 3,963,974, Cl. 321-2.000.

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Higbee, Wallace Carson; and Willey, Ronald Albert, to Firestone Tire & Rubber Company, The. Face clutch vehicle sensitive inertial retractors. 3,963,193, Cl. 242-107.40A.

Hilfman, Lee, to Universal Oil Products Company. Combination process for the conversion of heavy distillates to LPG. 3,963,600, Cl. 208-59.000.

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Hill, David C., to Haskel Engineering & Supply Co. Air driven pump. 3,963,383, Cl. 417-401.000.

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Hino, Tetsuo; and Hashiguchi, Susumu. Magnetic recording disc. 3,964,101, Cl. 360-99.000.

Hinzmann, Alfred, to Hauni-Werke Korber & Co., KG. Curling device for webs of paper or the like. 3,962,957, Cl. 93-1.00R.

Hirata, Noritsugu: *See—*
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Hiruma, Mituo, to Nissan Motor Co., Ltd. Vehicle suspension system. 3,963,261, Cl. 280-683.000.

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Hlynsky, Alex; Griggs, Jan M.; and Osgood, Edmond R., to Diamond Shamrock Corporation. Chlorination of butadiene sulfone to 3,3,4,-4-tetrachlorotetrahydrothiophene-1,1-dioxide. 3,963,751, Cl. 260-332.100.

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Hoffman, Carl H.; Schwam, Harvey; Brady, Stephen F.; Hichens, Martin; and Nutt, Ruth F., to Merck & Co., Inc. Synthetic antigens of luteinizing hormone releasing hormone. 3,963,691, Cl. 260-112.5LH.

Hoffman, Gary R.; and Rinkers, William P., to Bendix Corporation, The. Power amplifier using a plurality of parallel connected amplifier elements and having burn-out protection. 3,963,993, Cl. 330-124.00R.

Hoffmann, Henri: *See—*
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Hogberg, Knut Bertil; Fex, Hans Jacob; Konyves, Imre; and Stamvik, Anders Robert, to Aktiebolaget Leo. Novel N-nitroso compounds, compositions containing such compounds, processes for their preparation and methods of treatment therewith, and novel intermediates. 3,963,707, Cl. 260-239.55D.

Hogg, Walter R., to Coulter Electronics, Inc. Semi-automatic adjusting delay for an electronic particle separator. 3,963,606, Cl. 209-3.000.

Hogg, Walter R., to Coulter Electronics, Inc. Pulse amplitude discriminating circuit. 3,963,983, Cl. 324-71.0CP.

Hohmann, Walter, to Bayer Aktiengesellschaft. Process for producing 1,5-dinitroanthraquinone and 1,8-dinitroanthraquinone. 3,963,762, Cl. 260-369.000.

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Hollins, Jesse R. Automatic seat belt buckle unlatching mechanism. 3,963,090, Cl. 180-82.00C.

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Holtz, Roger Edward; and Radosevich, Roger Allen, to Bell Telephone Laboratories, Incorporated. Amplifier circuit for increasing transmit and receive levels in a telephone hybrid network. 3,963,876, Cl. 179-81.00B.

Holzwarth, Henry A.; and Wark, John D., to Keyes Fibre Company. Windowed mid-lock carton with positive closure latch. 3,963,172, Cl. 229-44.0EC.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Kane, Michael J., to Xerox Corporation. Educational device. 3,962,802, Cl. 35-19.00B.

Kaneda, Yoshiyuki: *See—*
Kishimoto, Teiji; and Kaneda, Yoshiyuki, 3,963,725.

Kaneko, Yasuhisa; and Noda, Fumiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of manufacturing composite heat-insulating material. 3,963,547, Cl. 156-79.000.

Kaneko, Yoshio; Watabe, Yoji; Matsunaga, Tsutomu; Toki, Shigeyuki; and Iseda, Yutaka, to Bridgestone Tire Company Limited. Urethane elastomers prepared from polyethers having a certain molecular weight distribution. 3,963,681, Cl. 260-77.5AM.

Kanner, Bernard: *See—*
Pepe, Enrico James; and Kanner, Bernard, 3,963,726.

Kanno, Susumu: *See—*
Wakabayashi, Ken-ichi; and Kanno, Susumu, 3,963,766.

Kansai Paint Company, Ltd.: *See—*
Nikaido, Norio; Shirai, Shinji; Iihashi, Mototaka; and Umemoto, Sueo, 3,963,568.

Kao Soap Co., Ltd.: *See—*
Doi, Tadashi; Sekido, Isao; and Tamaki, Ryoichi, 3,963,509.
Tachibana, Kyozaburo; and Fujino, Takashi, 3,963,634.

Karle, Arun P., to Schlumberger Technology Corporation. Drill string shock absorber. 3,963,228, Cl. 267-166.000.

Karrer, Friedrich; and Farooq, Saleem, to Ciba-Geigy Corporation. Phenoxyphenylalkoxy-, alkenyloxy-, alkinyloxy- and benzyloxy-alkoxy ethers. 3,963,786, Cl. 260-613.00R.

Kasai, Paul Haruo; and Bishop, Roland Justin, Jr., to Union Carbide Corporation. Thermolysis of water in contact with zeolite masses. 3,963,830, Cl. 423-579.000.

Kaschewske, Heinz: *See—*
Weller, Heinrich; and Kaschewske, Heinz, 3,962,856.

Kashiwagi, Kunihiro: *See—*
Murayama, Yoichi; Matsumoto, Masayuki; and Kashiwagi, Kunihiro, 3,962,988.

Kasztreiner, Endre: *See—*
Farkas, Lajos; Kasztreiner, Endre; Andrasi, Ferenc; Borsi, Jozsef; Elekes, Istvan; and Polgari, Istvan, 3,963,735.

Katagiri, Masayoshi; and Kizaki, Jiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Brake fluid reservoir including fluid level indicator. 3,964,079, Cl. 340-244.00E.

Kataoka, Mutsuo: *See—*
Ohno, Masaji; and Kataoka, Mutsuo, 3,963,756.

Katayama, Shigeru; Yokoyama, Izuru; and Tasaka, Katsuhiko, to Mitsui Petrochemical Industries, Ltd. Process for producing hydrocarbon resin and pressure-sensitive adhesives containing same. 3,963,653, Cl. 260-4.0AR.

Kato, Hajime: *See—*
Kiritani, Masataka; and Kato, Hajime, 3,963,553.

Kato, Kazunobu; and Sakaguchi, Shinji, to Fuji Photo Film Co., Ltd.; and National Patent Development Corporation. Image-receiving element for silver salt diffusion transfer with layer of monoacrylates or monomethacrylates of polyhydric alcohols. 3,963,495, Cl. 96-76.00R.

Kato, Kotaro; and Morimoto, Makoto, to Kabushiki Kaisha Daini. Quartz crystal timepiece. 3,962,860, Cl. 58-23.0AC.

Kato, Taketoshi: *See—*
Seki, Shigeru; Kato, Taketoshi; Itou, Toshikuni; and Sasaki, Hiroo, 3,963,449.

Kato, Toshiaki: *See—*
Yamada, Takashi; Oishi, Kazuo; Kato, Toshiaki; and Iwase, Kazuo, 3,964,016.

Katsimbas, Themistoklis, to Hoechst Aktiengesellschaft. Heat-curable pulverulent coating agent consisting of a mixture of compounds containing glycidyl groups, dicarboxylic acid anhydrides, curing accelerators, flow control agents and optionally further customary additives. 3,963,686, Cl. 260-837.00R.

Kaub, Manfred, to Girling Limited. Internal shoe drum. 3,963,100, Cl. 188-79.50P.

Kawaguchi, Yasuharu: *See—*
Aramaki, Kuninori; Kawaguchi, Yasuharu; and Kawakami, Hiroshi, 3,962,875.

Kawakami, Hiroshi: *See—*
Aramaki, Kuninori; Kawaguchi, Yasuharu; and Kawakami, Hiroshi, 3,962,875.

Kawase, Shoji: *See—*
Shimotsuma, Sakae; Hosoi, Masahiro; Kuratsuji, Takatoshi; Kawase, Shoji; and Shima, Takeo, 3,963,844.

Kawashima, Shunichiro: *See—*
Wasa, Kiyotaka; Kawashima, Shunichiro; and Hayakawa, Shigeru, 3,964,033.

Keisuke Honda: *See—*
Yamamoto, Takeshi; and Honda, Keisuke, 3,964,012.

Keith, Donald George, to United States of America, Navy. Cuspated sheet forming. 3,963,813, Cl. 264-167.000.

Kelley, Fred W., Jr.; and Titus, Charles H., to General Electric Company. Reactive power compensator. 3,963,978, Cl. 323-102.000.

Kellstrom, Erik Magnus, to SKF Industries, Inc. Cage control of skew angle in roller bearings. 3,963,285, Cl. 308-202.000.

Kelly, Charles A.: *See—*
Irick, Gether, Jr.; and Kelly, Charles A., 3,963,738.

Kelsey-Hayes Company: *See—*
Atkins, Thomas M., 3,963,276.

Kelsey, Ronald A., to Aluminum Company of America. Composite armor structure. 3,962,976, Cl. 109-82.000.

Kemlage, Bernard M.; Woodall, Jerry M.; and Wuestenhoefer, William C., to International Business Machines Corporation. Two stage heteroepitaxial deposition process for GaAsP/Si LED's. 3,963,539, Cl. 148-175.000.

Kemlage, Bernard M.: *See—*
Broadie, Robert W.; Kemlage, Bernard M.; and Pogge, H. Bernard, 3,963,538.

Kempelmann, Reinhold: *See—*
Knappe, Heinrich; Nolte, Karl Heinz; and Kempelmann, Reinhold, 3,962,758.

Kempf, Georg: *See—*
Bratzler, Karl; Doerges, Alexander; Kempf, Georg; Rudolph, Paul; and Schlauer, Johann, 3,963,825.

Kennedy, Paul Levere: *See—*
Pirro, Dominick Anthony; and Kennedy, Paul Levere, 3,963,903.

Kenney, James W., to Drummond Scientific Company. Apparatus for drawing liquids into, and expelling liquids from a pipette. 3,963,061, Cl. 141-21.000.

Kernforschungsanlage Juelich Gesellschaft mit beschraenkfer Haftung: *See—*
Labus, Herwig, 3,963,390.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Nickel, Hubertus; Luhleich, Hartmut; and Dias, Francesco, 3,963,651.

Kessler, Arthur, to Telefonbau und Normalzeid G.m.b.H. Signal interpreting system for frequency selective multifrequency tone dialing. 3,963,878, Cl. 179-84.0VF.

Keune, David Lee: *See—*
Craford, Magnus George; and Keune, David Lee, 3,964,039.

Keyes Fibre Company: *See—*
Holzwarth, Henry A.; and Wark, John D., 3,963,172.

Keyser, George F.: *See—*
Aldridge, Clifton, Jr.; Jones, Paul W.; Gibson, Sandra F.; Vannest, Richard D.; Holen, James T.; Keyser, George F.; and Meyer, Michael C., 3,963,355.

Khesin, Arkady Yakovlevich: *See—*
Alien, Imant Karlovich; Nikonenko, Anatoly Vasilievich; Popov, Jury Olegovich; Yanson, Boris Albertovich; and Khesin, Arkady Yakovlevich, 3,963,991.

Kidd, Archibald Watson. Tip-up floors of transport vehicles. 3,963,274, Cl. 298-22.00R.

Kienlen, Loren C.; and Poppler, Jack H., to Doormaid, Inc. Collapsible flower stem holder. 3,962,826, Cl. 47-41.130.

Kihara, Nobutoshi; and Shimada, Osamu, to Sony Corporation. Video recording and/or reproducing apparatus. 3,964,095, Cl. 360-81.000.

Kilian, Alois, to Dravo Corporation. Process for measuring, controlling and optimizing gas flow through a sinter mixture on travelling grates. 3,962,904, Cl. 73-38.000.

Kima, Keisuke; and Sugitani, Yasuo, to Sumitomo Metal Industries, Ltd. Automatic roll position measuring apparatus for continuous casting machine. 3,962,794, Cl. 33-182.000.

Kimura, Masaharu: *See—*
Yonemitsu, Eiichi; Sugio, Akitoshi; Nawata, Takanari; Masu, Masanobu; Kimura, Masaharu; and Sayama, Norio, 3,963,804.

Kindig, Alan L., to General Electric Company. Methods and apparatus for making electrical interconnections. 3,962,780, Cl. 29-596.000.

King, John O., Jr. Method of forming a joint using a guide fastener. 3,962,775, Cl. 29-445.000.

King, John O., Jr. Resilient sleeve joint construction. 3,962,843, Cl. 52-758.00F.

Kipp, Michael A., to Container Corporation of America. Carrier carton with display panel. 3,963,121, Cl. 206-434.000.

Kirby, Norman J., to United States Steel Corporation. Gas line loop water seal. 3,963,465, Cl. 55-238.000.

Kircher, Morton S., to Olin Corporation. Electrode assembly for an electrolytic cell. 3,963,596, Cl. 204-258.000.

Kiritani, Masataka; and Kato, Hajime, to Fuji Photo Film Co., Ltd. Process for separating a number of sheets into groups. 3,963,553, Cl. 156-305.000.

Kirk, Norbert A. Safety reflector device. 3,963,307, Cl. 350-99.000.

Kirk, William P.; and Reynolds, Dwight W. Retrieval means for a floating liquid spilling. 3,963,617, Cl. 210-242.00S.

Kishimoto, Teiji; and Kaneda, Yoshiyuki, to Fujisawa Pharmaceutical Co., Ltd. 1,2,3,4-Tetrahydroisoquinoline derivatives and the preparation thereof. 3,963,725, Cl. 260-289.00D.

Kitamura, Youji: *See—*
Yamada, Mitsumasa; and Kitamura, Youji, 3,963,444.

Kiyama, Masao: *See—*
Yonezawa, Masatomo; Ohno, Tomeji; Iwase, Keizo; Takada, Toshio; Kiyama, Masao; and Akita, Toshikazu, 3,963,630.

Kiyohara, Takehiko: *See—*
Ohtaki, Syohei; Ogiso, Mithutoshi; Kiyohara, Takehiko; and Mitani, Taizo, 3,964,075.

Kizaki, Jiro: *See—*
Katagiri, Masayoshi; and Kizaki, Jiro, 3,964,079.

Klaiber, Gerhart F.; and Foggia, Donald, to TIE/Communications, Inc. Telephone dial assembly. 3,963,879, Cl. 179-90.00K.

Klein, Richard M., to GTE Laboratories Incorporated. Fluorescent lamp and method for the manufacture thereof. 3,963,639, Cl. 252-301.360.

Kleitz, Michel; Fabry, Pierre; and Fouletier, Jacques, to Agence Nationale de Valorisation de la Recherche (ANVAR). Electrically regenerative oxygen trap. 3,963,597, Cl. 204-277.000.

Klomp, Gregory F.: *See—*
Browning, Scott M.; and Klomp, Gregory F., 3,963,914.

Klusendorf, John I.: *See—*
Fiocca, Louis L.; Schmutzer, Joel J.; and Klusendorf, John I., 3,963,930.

Knapp, John S., to Federal Laboratories, Inc. Synthesis of orthochlorobenzalmalononitrile. 3,963,770, Cl. 260-465.00G.

Knappe, Heinrich; Nolte, Karl Heinz; and Kempelmann, Reinhold, to Herbert Kannegiesser Kommanditgesellschaft. Clip for retaining a shirt or similar article of clothing in folded position on an insert. 3,962,758, Cl. 24-255.0GP.

Knauer, Wolfgang: *See—*
Gallagher, Hayden E.; and Knauer, Wolfgang, 3,963,960.

Kniepkamp, Hermann; and Winstel, Guenter, to Siemens Aktiengesellschaft. Process for the production of a semiconductor luminescence diode. 3,963,537, Cl. 148-175.000.

Knoblauch, Karl: *See—*
Stumpf, Willy; Queiser, Horst; Juntgen, Harald; Schroter, Hans-Jurgen; and Knoblauch, Karl, 3,963,460.

Knollman, Dieter John Henry, to Bell Telephone Laboratories, Incorporated. Lamp power supply arrangement for key telephone system. 3,963,957, Cl. 315-200.00A.

Kobayashi, Kobee: *See—*
Sonoyama, Takayasu; Tani, Hiroyoshi; Kageyama, Bunji; Kobayashi, Kobee; Honjo, Tahiko; and Yagi, Shigeo, 3,963,574.

Kobayashi Perfumery Co., Ltd.: *See—*
Kyomori, Hiroyuki; Sasaki, Kazuhiro; and Takahashi, Mitsuhiro, 3,963,781.

Kobayashi, Takuichi: *See—*
Takeda, Hiromu; Kobayashi, Takuichi; Oka, Koichiro; and Tanaka, Kazumi, 3,963,821.

Kobayashi, Tamio; and Torama, Tadashi, to Matsushita Electric Industrial Co., Ltd. Multi-cartridge apparatus for recording and reproducing audio signals automatically and successively. 3,964,097, Cl. 360-92.000.

Kober, Harald, to G. Siempelkamp & Co. Press for perforating and trimming boards of filamentary material. 3,962,941, Cl. 83-228.000.

Kobori, Toshio; Tsujimoto, Kayoshi; Nanba, Yasuhiro; and Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Exposure control devices for photographic cameras. 3,964,073, Cl. 354-29.000.

Kodama, Takashi: *See—*
Suzui, Akio; Nose, Shinji; Kodama, Takashi; Yokoyama, Kenji; Matsumoto, Kazuya; and Fujio, Yoshiharu, 3,963,661.

Koehler, Rudolph: *See—*
Beck, Henry T.; and Koehler, Rudolph, 3,963,822.

Kofink, Siegfried, to J. Eberspacher. Burner having photoelectrically operated fuel pump. 3,963,407, Cl. 431-1.000.

Koh-I-Noor Rapidograph, Inc.: *See—*
Anderka, Gerold, 3,963,359.

Kohnen, Keith, to Air Products and Chemicals, Inc. Double foot valve for cryogenic fluid containing tanks. 3,963,381, Cl. 417-360.000.

Koito Manufacturing Co., Ltd.: *See—*
Murayama, Yoichi; Matsumoto, Masayuki; and Kashiwagi, Kunihiro, 3,962,988.

Kojima, Hiroshi: *See—*
Ueno, Katsujiro; Sato, Makoto; Arimoto, Masahiro; Kojima, Hiroshi; Yamasaki, Terukiyo; and Sakurai, Takeo, 3,963,727.

Koller, Stefan; Reinker, Dieter; and Schwander, Hans Rudolf, to Ciba-Geigy AG. Method of dyeing with dispersible azo anilino dyestuffs. 3,963,431, Cl. 8-41.00C.

Kolster, Harvey L.: *See—*
Donovan, Robert W.; Kolster, Harvey L.; Broeker, Herbert H.; and Bailey, George W., 3,963,913.

Komaroff, Iwan: *See—*
Zweng, Josef; and Komaroff, Iwan, 3,963,939.

KOMET Stahlhalter-und Werkzeugfabrik, Robert Breuning GmbH: *See—*
Eckle, Otto; and Grzegorz, Hans, 3,963,366.

Komine, Yoshio; Hosoe, Kazuya; Shimazaki, Mamoru; Ichiyanagi, Toshikazu; and Takahashi, Kiyoshi, to Canon Kabushiki Kaisha. Camera capable of simultaneous sound recording. 3,963,331, Cl. 352-29.000.

Kondis, Thomas J., to Aluminum Company of America. Large size aluminum particle containing aluminum oxide therein. 3,963,482, Cl. 75-0.50R.

Konigstein, Otto; and Jenkner, Herbert, to Chemische Fabrik Kalk GmbH. Process for the production of halogenated carboxylic acid amides. 3,963,674, Cl. 260-561.0HL.

Konno, Akira: *See—*
Inoue, Mutsuhiro; Konno, Akira; and Izaka, Yukio, 3,963,937.

Konrad, William L., to United States of America, Navy. Cavitating parametric underwater acoustic source. 3,964,013, Cl. 340-5.00R.

Konyves, Imre: *See—*
Hogberg, Knut Bertil; Fex, Hans Jacob; Konyves, Imre; and Stamvik, Anders Robert, 3,963,707.

Koo, James Teh-Zen, to Bell Telephone Laboratories, Incorporated. Semiconductor memory array. 3,964,030, Cl. 340-173.00R.

Kool, Bram: *See—*
Haning, James O.; Kool, Bram; Moritz, Jules G.; and Mizrahi, Robert, 3,963,336.

Koppers Company, Inc.: *See—*
Helm, Edward J.; and Tucker, Linwood G., 3,963,582.
Hess, Martin, 3,963,457.
Mathesius, Walther H.; and Macdonald, Somerled, 3,963,483.
Powers, Robert E., 3,963,481.

Kornoelje, Robert E.; and Van Der Kolk, Dale, to Kornoelje, Robert E. Anti-jackknife mechanism. 3,963,265, Cl. 280-432.000.

Kosaka, Katuaki; Ueno, Zene; and Nagaoka, Tadahiko, to Nissan Motor Co., Ltd. System for reforming engine fuel into hydrogen gas-containing mixture by catalytic reaction. 3,963,000, Cl. 123-3.000.

Koseki, Teruo: *See—*
Tanaka, Hiroyoshi; Obara, Haruo; Koseki, Teruo; Machida, Hajime; Tanaka, Michihiko; and Fujii, Shigeru, 3,963,803.

Koss, George A.; and Gurta, Daniel J., to Ford Motor Company. Laminating interlayer expanding apparatus. 3,962,760, Cl. 26-72.000.

Kosti, Carl M. X-ray film with hydrophillic layer containing developing and fixing agents. 3,963,497, Cl. 96-76.00R.

Kotlar, Edward A. Stamped sheet metal pulley. 3,962,926, Cl. 74-230.800.

Koyama, Masao; and Seki, Shigeo, to Meiji Seika Kaisha, Ltd. 3-Halocephalosporins. 3,963,712, Cl. 260-243.00C.

Koyama, Toshihiko; Nanri, Masahiro; Matsui, Kazuma; and Hoshino, Shigeo, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Exhaust emission control device of the catalyst type. 3,963,445, Cl. 23-288.0FC.

Koyanagi, Haruo: *See—*
Yamauchi, Nobuharu; Matsumura, Masaji; Morimoto, Katsuhide; Koyanagi, Haruo; Sato, Iwao; Yasuhara, Buhei; and Sakai, Jiro, 3,964,026.

Kozarich, John W.: *See—*
Hecht, Sidney M.; and Kozarich, John W., 3,963,698.

Kramer, Joel; Fialkow, David; and Gorrill, W. Sterling, to North Atlantic Industries, Inc. Tape deck with drive motor remote from drive roller. 3,964,098, Cl. 360-93.000.

Kramer, John W.: *See—*
Hutton, Thomas J.; and Kramer, John W., 3,964,024.

Krassin, Horst: *See—*
Berndes, Gunter; and Krassin, Horst, 3,964,091.

Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber KG. Straight knitting machine comprising rotating sliding heads. 3,962,890, Cl. 66-64.000.

Kreckel, Douglas A., to Xerox Corporation. Process for electroforming nickel foils. 3,963,587, Cl. 204-9.000.

Krenzer, John, to Velsicol Chemical Corporation. Thiadiazolylimidazolidinone herbicides. 3,963,473, Cl. 71-90.000.

Kressel, Henry: *See—*
Ettenberg, Michael; and Kressel, Henry, 3,963,536.

Krikorian, Oscar H., to United States of America, Energy Research and Development Administration. Method for producing uranium atomic beam source. 3,963,921, Cl. 250-251.000.

Kristiansen, Leif, to Cemo Instruments AB. Device for converting an analogous signal into a pulse-length-modulated pulse series. 3,963,944, Cl. 307-265.000.

Kroeck, Friedrich Wilhelm: *See—*
Hederich, Volker; Kroeck, Friedrich Wilhelm; Gehrke, Guenter; and Neeff, Rutger, 3,963,763.

Krol, Helmut: *See—*
Binder, Gerhard; Blumel, Harald; and Krol, Helmut, 3,963,659.

Kroyer, Karl Kristian Kobs; and Rasmussen, Torben Borup. Method of preparing colored fibrous sheet materials. 3,963,819, Cl. 264-78.000.

Kruckenberg, Perry Lester; Anderson, Harld Elden; and Carlson, Ray Lavette, to McCulloch Corporation. Combustion system for internal combustion engines. 3,963,001, Cl. 123-32.00D.

Krueger, Arnold E.: *See—*
Neitzel, Joseph C.; Tomlinson, Ronald A.; Hurst, Allen R., Jr.; Bodovsky, Paul W.; and Krueger, Arnold E., 3,962,846.

Krulwich, Lester S. Glass cutting apparatus. 3,963,159, Cl. 225-96.500.

Kruse, Walter M.; and Wright, Leon W. Polyhydric alcohol production using ruthenium zeolite catalyst. 3,963,788, Cl. 260-635.00C.

Kruse, Walter M.; and Wright, Leon W. Polyhydric alcohol production using RU on clay supports. 3,963,789, Cl. 260-635.00C.

Kubicek, Donald H., to Phillips Petroleum Company. Mercaptans by addition of hydrogen sulfide to olefins in presence of carbon disulfide. 3,963,785, Cl. 260-609.00B.

Kuhlmann, Hans-Jochen, to Kuhlmann & Rust KG, Maschinenfabrik. System for the remote control of the jack cylinders of a hydraulically operated crane. 3,963,051, Cl. 137-637.000.

Kuhlmann & Rust KG, Maschinenfabrik: *See—*
Kuhlmann, Hans-Jochen, 3,963,051.

Kuhn, Rolf; Hardebeck, Klaus; Heinemann, Helmut; and Osmers, Knut, to Boehringer Mannheim G.m.b.H. Pharmaceutical compositions for the treatment of hydropic conditions. 3,963,834, Cl. 424-240.000.

Kulina, Mark R.: *See—*
De Feo, Angelo; Kulina, Mark R.; and Norwood, Earl B., 3,963,283.

Kulka, Thomas S. Telephone enclosure with sound prevention means. 3,963,883, Cl. 179-179.000.

Kulkarni, Avinash D., to Westinghouse Electric Corporation. Molybdenum recovery from spent acid solution. 3,963,823, Cl. 423-56.000.

Kunde, Joachim: *See—*
Wurmb, Rolf; Kunde, Joachim; and Seydl, Wolfgang, 3,963,669.

Kunkle, Ned T., to Westinghouse Electric Corporation. Surge arrester construction. 3,963,965, Cl. 317-61.000.

Kuramoto, Naoya; Saito, Hachiro; and Yamamoto, Wataru, to Teijin Limited. Foam-containing slurry to make porous, inorganic construction material. 3,963,507, Cl. 106-86.000.

Kuratsuji, Takatoshi: *See—*
Shimotsuma, Sakae; Hosoi, Masahiro; Kuratsuji, Takatoshi; Kawase, Shoji; and Shima, Takeo, 3,963,844.

Kurei, Hiroshi; and Haraguchi, Keisuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electro-mechanical arrangement in a single lens reflex camera having a detachable bottom cover plate for providing access to a circuit board of the arrangement. 3,964,078, Cl. 354-152.000.

Kurihara, Haruki: *See—*
Nagakura, Akira; Akutagawa, Susumu; and Kurihara, Haruki, 3,963,782.

Kuroda, Junko: *See—*
Hashimoto, Shigeru; Ninomiya, Eizi; and Kuroda, Junko, 3,963,832.

Kurshan, Robert Paul: *See—*
Gopinath, Bhaskarpillai; and Kurshan, Robert Paul, 3,963,905.

Kurumada, Tomoyuki: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 3,963,730.

Kushida, Hachiro; Takasugi, Tsuneji; Ikeda, Shinji; and Shiono, Takashi, to Citizen Watch Co., Ltd. Process for the manufacture of a decorative aluminum product. 3,963,589, Cl. 204-29.000.

Kwiatkowski, Gerald M.: *See—*
Mojden, Wallace W.; Davila, Jose E.; Hooper, George W.; Kwiatkowski, Gerald M.; and Pantel, Howard W., Jr., 3,962,845.

Kyomori, Hiroyuki; Sasaki, Kazuhiro; and Takahashi, Mitsuhiro, to Kobayashi Perfumery Co., Ltd. Method of preparing 2-hydroxy-3-alkyl-2-cyclopenten-1-one. 3,963,781, Cl. 260-586.00R.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Fujimoto, Yasuo; and Nakamizo, Nobuhiro, 3,963,728.

Kysor Industrial Corporation: *See—*
Strait, Ronald E.; and Hall, Willard A., 3,964,018.

La Telemecanique Electrique: *See—*
Lacan, Guy, 3,964,006.

La Bate, Ernest Edward: *See—*
Kahng, Dawon; La Bate, Ernest Edward; Lepselter, Martin Paul; and Ligenza, Joseph Raymond, 3,964,085.

Labus, Herwig, to Kernforschungsanlage Juelich Gesellschaft mit beschraenkter Haftung. Bearing arrangement for rotary piston engine for compressing and expanding gases. 3,963,390, Cl. 418-188.000.

Lacan, Guy, to La Telemecanique Electrique. Electrical apparatus. 3,964,006, Cl. 335-132.000.

Lacina, William B.: *See—*
Cohn, David B.; Draggoo, Vaughn G.; Lacina, William B.; Brown, Laurence E.; and Stone, Merrill M., 3,964,003.

La Clair, Louis Maynard; McWhirter, John Ruben; and Ross, William Lawrence, to Union Carbide Corporation. Integral circular wastewater treatment process. 3,963,609, Cl. 210-7.000.

Lainez, Lucien: *See—*
Malissin, Roland; and Lainez, Lucien, 3,963,863.

Lamphere, David A., to Simmonds Precision Products, Inc. Fuel tank alarm systems. 3,964,037, Cl. 340-244.00R.

Landsman, Emanuel; and Landsman, Irving. Childproof cap for aerosol dispenser. 3,963,152, Cl. 222-402.130.

Landsman, Irving: *See—*
Landsman, Emanuel; and Landsman, Irving, 3,963,152.

Langlois, Gary Norris, to Holosonics, Inc. Acoustical imaging system. 3,964,052, Cl. 340-5.00H.

Lanning, William C.: *See—*
Myers, John W.; and Lanning, William C., 3,963,794.

Lapointe, Joseph A.; and Sheel, Ronald S., to Domtar Limited. Air bearing moisture profiler. 3,962,799, Cl. 34-54.000.

LaPointe, Joseph A., to Domtar Limited. Chip crusher. 3,962,966, Cl. 100-156.000.

Latter, Geoffrey, to A. C. Hamilton & Co. Injection moulding machine. 3,963,401, Cl. 425-242.00R.

Lautin, Leon. Handle and means for securing same to a piece of luggage. 3,963,104, Cl. 190-58.00R.

Laval, Claude C., Jr. Purging apparatus. 3,963,073, Cl. 166-105.100.

Lawrence Peska Associates, Inc.: *See—*
Bish, Austin W., 3,963,155.
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Macklin, Charles D. Apparatus for setting anchor bolts and other objects in concrete slabs. 3,963,210, Cl. 249-210.000.

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Mallon, Marvin C., to Interdyne Company. Resistor network for integrated circuit. 3,964,087, Cl. 338-306.000.

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Manske, Wendell J., to Minnesota Mining and Manufacturing Company. Reservoir pad for time indicator. 3,962,920, Cl. 73-356.000.

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Martin, Jerry Roy; Tadanier, John Soloman; and Goldstein, Alma Whitman, to Abbott Laboratories. 6,6a-and 6,7-Anhydroerythromycin B and derivatives thereof. 3,963,696, Cl. 260-210.00E.

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Matsumoto, Seiji; and Takahashi, Isoji, to Fuji Photo Film Co., Ltd. Electrophotographic process using separate photoconductive elements. 3,963,487, Cl. 96-1.00R.

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Matumoto, Noboru; Nonoyama, Takao; Tomita, Tutomu; and Suzuki, Yukio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas purifying system for use in internal combustion engine. 3,962,868, Cl. 60-278.000.

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McLaughlin, James Hugh, to Center for New Product Development. Fabric softener composition for use in a clothes dryer and method. 3,963,629, Cl. 252-8.800.

McMillan, William D., to Caterpillar Tractor Co. Part throttle control — pump override. 3,963,378, Cl. 417-216.000.

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Means, Donald J.; and Conlin, John R., Jr. Signaling device for a fishing rod. 3,962,812, Cl. 43-17.000.

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Meisert, Ernst; and Goyert, Wilhelm, to Bayer Aktiengesellschaft. Thermoplastic polyurethanes and a two-stage process for their preparation. 3,963,656, Cl. 260-18.0TN.

Meisert, Ernst: *See—*
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Menditto, Barbara. Stroller blanket. 3,962,738, Cl. 5-334.00R.

Mennesson, Francois, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Carburation devices for internal combustion engines. 3,963,009, Cl. 123-119.00D.

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Mercier, Jacques H. Pressure vessel. 3,963,053, Cl. 138-30.000.

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Meyer, Burton C., to Marvin Glass & Associates. Game apparatus with sounding device. 3,963,241, Cl. 273-121.00R.

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Michel, Adolf. Sound producing apparatus. 3,962,947, Cl. 84-1.240.

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Microform Data Systems, Inc.: *See—*
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Middleton, William J., to Du Pont de Nemours, E. I., and Company. Amine fluoroacylimide surfactants. 3,963,776, Cl. 260-561.00H.

Mierzejewski, Henry. Pendulum putter. 3,963,244, Cl. 273-162.00R.

Mikami, Yasuo, to Nippon Oil Seal Industry Co., Ltd. Method of making an oil seal. 3,962,776, Cl. 29-458.000.

Miki, Akira, to Sanko Mokkoki Co., Ltd.; and Western Trading Co., Ltd. Automatic grinding method and apparatus for wood working. 3,962,831, Cl. 51-78.000.

Milke, Howard W.; and Sadoski, Tadius T., to GTE Sylvania Incorporated. Fluorescent lamp having indium oxide conductive coating and a protective coating therefor. 3,963,954, Cl. 313-489.000.

Millauer, Hans; and Edelmann, Gerhard, to Hoechst Aktiengesellschaft. Process for the preparation of thiocarbamic acid O-esters. 3,963,768, Cl. 260-455.00A.

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Miller, George E., to Outboard Marine Corporation. Multi-piece apex seal for a rotary engine. 3,963,389, Cl. 418-121.000.

Miller, Leo C. Error adjustment method and structure for lathes and the like. 3,962,937, Cl. 82-1.00C.

Miller, Lewis S., to Dow Chemical Company, The. Thixotropic, radiation curable compositions. 3,963,798, Cl. 260-837.00R.

Mills, Kenneth Wilson. Disposable bedpans. 3,962,732, Cl. 4-112.000.

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Miram, George V.; and Hunter, Gordon T., to Varian Associates. Means and method for suppressing oscillations in electron guns. 3,963,955, Cl. 315-5.340.

Misan, Peter, to Raymond Lee Organization, The. Three wheel agricultural traction unit. 3,963,084, Cl. 180-26.00A.

Miskin, David M. Automatic water powered sump drainer. 3,963,376, Cl. 417-40.000.

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Monte, Robert W., to Nashua Corporation. Amylose pectin adhesive composition for adhesive tapes. 3,963,655, Cl. 260-17.4ST.
Moon, Paul G. Target fishing rod. 3,962,813, Cl. 43-19.000.
Moore, Alexander Joseph; Taylor, David Alexander; and Greene, David James, to BICC Limited. Electromagnetic waveguides. 3,962,781, Cl. 29-600.000.
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Morton, Kenneth Leonard, to British Sealed Beams Limited. Bulbholder. 3,963,916, Cl. 240-52.00R.
Morton, Robert M.; and Perlmann, Ariel L., to International Business Machines Corporation. Programmable interface contactor structure. 3,963,986, Cl. 324-158.00F.
Mory, Rudolf, to Ciba-Geigy Corporation. Quinolone azo barbituric acid pigments. 3,963,693, Cl. 260-154.000.
Mory, Rudolf; and Muller, Rolf, to Ciba-Geigy Corporation. Hydroxyquinolyl- and quinazolonylazoacetoacetylbenzimidazolone pigments. 3,963,694, Cl. 260-154.000.
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Murayama, Yoichi; Matsumoto, Masayuki; and Kashiwagi, Kunihiro, to Yoichi Murayama, Nippon Electric Varian Ltd.; and Koito Manufacturing Co., Ltd. Ion-plating apparatus having an h.f. electrode for providing an h.f. glow discharge region. 3,962,988, Cl. 118-49.100.
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Myers, Edward Bariess, to Honeywell Inc. Rotary valve. 3,963,211, Cl. 251-85.000.
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Nagakura, Akira; Akutagawa, Susumu; and Kurihara, Haruki, to Takasago Perfumery Co., Ltd. 5-Acetyl-1,2,6-trimethyltricyclo[5,3,2,$0^{2,7}$]dodeca-5-ene. 3,963,782, Cl. 260-586.00G.
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Neitzel, Joseph C.; Tomlinson, Ronald A.; Hurst, Allen R., Jr.; Bodovsky, Paul W.; and Krueger, Arnold E., to Hardwicke-Etter Company. Apparatus for automatic wrapping of bales. 3,962,846, Cl. 53-124.00C.
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Newton, David W., to Valleylab, Inc. Signal generating device and method for producing coagulation electrosurgical current. 3,963,030, Cl. 128-303.170.
Nicholls, Lawrence George, to Girling Limited. Telescopic gas springs. 3,963,225, Cl. 267-65.00R.
Nickel, Hubertus; Luhleich, Hartmut; and Dias, Francesco, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of cross linking and hardening of graphitic formed bodies. 3,963,651, Cl. 260-2.50F.
Niethammer, Dieter, to Siemens Aktiengesellschaft. Circuit arrangement for selecting a diversity channel. 3,963,988, Cl. 325-56.000.
Niigata Engineering Co., Ltd.: *See—*
Noguchi, Tadamasa; Ehata, Senzou; and Matsuura, Masao, 3,962,985.
Nikaido, Norio; Shirai, Shinji; Iihashi, Mototaka; and Umemoto, Sueo, to Kansai Paint Company, Ltd.; and Fuji Sashi Industries, Limited. Process for coating aluminum or aluminum alloy. 3,963,568, Cl. 204-181.000.
Nikonenko, Anatoly Vasilievich: *See—*
Alien, Imant Karlovich; Nikonenko, Anatoly Vasilievich; Popov, Jury Olegovich; Yanson, Boris Albertovich; and Khesin, Arkady Yakovlevich, 3,963,991.
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Nippon Concrete Industries Co. Ltd.: *See—*
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Nippon Concrete Kogyo Kabushiki Kaisha: *See—*
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Nippon Electric Company Ltd.: *See—*
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Nippon Soken, Inc.: *See—*
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Nishikawa, Akio: *See—*
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Nobel, Fred I.; and Ostrow, Barnet D., to Lea-Ronal, Inc. Electrodeposited gold plating. 3,963,455, Cl. 29-198.000.
Noda, Fumiyoshi: *See—*
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Noddings, John; and Hunt, Norman, to Associated Engineering Limited. Speed control devices. 3,963,091, Cl. 180-108.000.
Noe, Oskar; and Lux, Herbert, to BWG Bergwerk-und Walzwerk Maschinenbau G.m.b.H. Method of and apparatus for stretching a metal strip. 3,962,894, Cl. 72-19.000.
Noguchi, Matsusaburo: *See—*
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Noguchi, Tadamasa; Ehata, Senzou; and Matsuura, Masao, to Niigata Engineering Co., Ltd. Twin-shaft type propulsion arrangement for a tug boat. 3,962,985, Cl. 115-34.00R.
Nokagawa, Shinsaku: *See—*
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Beck, Henry T.; and Koehler, Rudolph, 3,963,822.

Nommensen, Johan P., to Stamicarbon B.V. Shaft seal. 3,963,247, Cl. 277-16.000.

Nonn, Konrad; and Wagner, Kuno, to Bayer Aktiengesellschaft. Concentrated solutions, miscible with water in any ratio of anionic dyestuffs. 3,963,430, Cl. 8-39.00R.

Nonoyama, Takao: *See—*
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Norfin, Inc.: *See—*
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Norgard, Fred C., to Johns-Manville Corporation. Surface texture for fibrous boards. 3,963,847, Cl. 428-147.000.

Noro, Tadaomi. Method of interlocking a lateral member and the end of a hollow post. 3,962,774, Cl. 29-432.000.

North American Philips Corporation: *See—*
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North Atlantic Industries, Inc.: *See—*
Kramer, Joel; Fialkow, David; and Gorrill, W. Sterling, 3,964,098.

North Electric Company: *See—*
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Hagstrom, Kenneth Lavern; and Munshi, Sushil Gajendrarai, 3,963,872.

North, Howard Lincoln, Jr., to Becton, Dickinson and Company. Fluid dispensing system. 3,963,151, Cl. 222-309.000.

Northrop Corporation: *See—*
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Cohn, David B.; Draggoo, Vaughn G.; Lacina, William B.; Brown, Laurence E.; and Stone, Merrill M., 3,964,003.
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Nottingham, Harry, to Rolls-Royce Motors Limited. Apparatus for washing and wiping vehicle windscreens and headlamps. 3,963,969, Cl. 318-443.000.

Novello, Frederick C.; and Baldwin, John J., to Merck & Co., Inc. Pyridyl containing 1-benzenesulfonyl triazoles. 3,963,731, Cl. 260-294.80F.

Nowikas, Walter M., to Donley, Miller & Nowikas, Inc. Muffler structures. 3,963,094, Cl. 181-198.000.

Nuckolls, Joe A., to General Electric Company. Starting and operating circuit for gaseous discharge lamps. 3,963,958, Cl. 315-276.000.

Nuclear Semiconductor: *See—*
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Numata, Kazunori: *See—*
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O.K. Partnership: *See—*
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Obara, Haruo: *See—*
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Oberkirch, Wolfgang: *See—*
Gipp, Roland; Muller, Erwin; and Oberkirch, Wolfgang, 3,963,800.

Oberlerchner, Erhard, to Messerschmitt-Bolkow-Blohm GmbH. Control device for avoiding the pitching up of missiles or aircraft. 3,963,197, Cl. 244-181.000.

O'Brien, Charles F., to National Car Rental System, Inc. Dredging head. 3,962,803, Cl. 37-66.000.

O'Brien, Richard C., to O.K. Partnership. Combined article selector and coder. 3,963,176, Cl. 234-48.000.

O'Connell, Donald L., to Floral Innovations, Inc. Holder for supporting flower arrangements. 3,962,825, Cl. 47-41.120.

O'Connor, Thomas J. Machining structure. 3,962,830, Cl. 51-58.000.

Oeleq Limited: *See—*
Blackwood, Wilfred Norman; Gallagher, Finbar Joseph; Richey, Kenneth Rutherford; and Marshall, William, 3,963,904.

Ogawa, Katsumasa: *See—*
Sawaguchi, Yoji; and Ogawa, Katsumasa, 3,963,900.

Ogden, Dennis Henry, to British Industrial Plastics Limited. Process for making improved urea/formaldehyde foams. 3,963,650, Cl. 260-2.50F.

Ogiso, Mithutoshi: *See—*
Ohtaki, Syohei; Ogiso, Mithutoshi; Kiyohara, Takehiko; and Mitani, Taizo, 3,964,075.

Oguchi, Toshihiko: *See—*
Takagi, Michiyasu; and Oguchi, Toshihiko, 3,962,992.

Ohchi, Shuzo. Kneading machine. 3,963,220, Cl. 259-107.000.

Ohi, Tadao. Wrinkle-proof mechanism for paper roll supply. 3,963,187, Cl. 242-55.000.

Ohloff, Gunther: *See—*
Buchi, George Hermann; Wuest, Hans; Ohloff, Gunther; and Strickler, Hugo, 3,963,783.

Ohno, Hidemaru; and Hayashi, Yutaka, to Tokyo Shibaura Electric Co., Ltd. X-ray tomography apparatus. 3,963,932, Cl. 250-445.00T.

Ohno, Masaji; and Kataoka, Mutsuo, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Derivatives of 6-methyl-2H-pyran-2,4(3H)-dione. 3,963,756, Cl. 260-343.500.

Ohno, Tomeji: *See—*
Yonezawa, Masatomo; Ohno, Tomeji; Iwase, Keizo; Takada, Toshio; Kiyama, Masao; and Akita, Toshikazu, 3,963,630.

Ohtaki, Syohei; Ogiso, Mithutoshi; Kiyohara, Takehiko; and Mitani, Taizo, to Canon Kabushiki Kaisha. Photographing apparatus. 3,964,075, Cl. 354-51.000.

Oishi, Kazuo: *See—*
Yamada, Takashi; Oishi, Kazuo; Kato, Toshiaki; and Iwase, Kazuo, 3,964,016.

Oka, Koichiro: *See—*
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Okamoto, Yoshinori; and Onda, Takamasa, to Honda Giken Kogyo Kabushiki Kaisha. Reaction moment balancing device for an engine. 3,962,932, Cl. 74-604.000.

Okazaki Tasuku. Simple, small-sized fuse. 3,964,010, Cl. 337-148.000.

O'Keefe, Donald R.; and Gasper, A. Joseph, to Minnesota Mining and Manufacturing Company. One-part, room-temperature latent, curable isocyanate compositions. 3,963,680, Cl. 260-77.5NC.

Oki Electric Industry Company, Ltd.: *See—*
Watanabe, Akinori; Tanoshima, Katsuhide; and Noguchi, Matsusaburo, 3,962,969.

O'Kon, James; and Magness, William, to Shoreline Precast Company. Barge factory. 3,962,981, Cl. 114-.50F.

Okonogi, Nobuo: *See—*
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Okubo, Ichiro: *See—*
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Ernst, Horst Manfred; Brandenstein, Manfred; and Olschewski, Armin, 3,963,106.

Olson, George E., to A. O. Smith Harvestore Products, Inc. Bi-directional ratchet drive mechanism. 3,962,925, Cl. 74-143.000.

Olympus Optical Co., Ltd.: *See—*
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Omark Industries, Inc.: *See—*
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Omni Corporation: *See—*
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Onda, Takamasa: *See—*
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Ono, Akihiro: *See—*
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Ono, Hiromu, to Aoki Construction Company Limited. Connecting structure for ocean-going push-barge. 3,962,983, Cl. 114-235.00R.

Oosterhouse, Gerard J., to Rowe International Inc. Solid state search unit for automatic phonograph. 3,964,025, Cl. 340-162.000.

Ordorica, Miguel A.: *See—*
Alley, Raymond L.; and Ordorica, Miguel A., 3,963,070.

Ormrod, John H., to Atomic Energy of Canada Limited. Tritium target for neutron source. 3,963,934, Cl. 250-499.000.

Orui, Ryuzo; Goto, Genichi; and Yamaguchi, Toshio, to Nippon Electric Company Ltd. Heat-dissipating device for the collector of traveling-wave tube. 3,963,952, Cl. 313-45.000.

Osaka Soda Co., Ltd.: *See—*
Suzui, Akio; Nose, Shinji; Kodama, Takashi; Yokoyama, Kenji; Matsumoto, Kazuya; and Fujio, Yoshiharu, 3,963,661.

Osawa, Kisuke: *See—*
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Osborn, Glen E. Hay cubing assembly. 3,963,405, Cl. 425-331.000.

Osgood, Edmond R.: *See—*
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Oshida, Yoshiki, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for bonding bodies made of metallic material. 3,963,163, Cl. 228-196.000.

Oshida, Yoshiki, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for bonding bodies made of metallic materials. 3,963,164, Cl. 228-217.000.

Osmers, Knut: *See—*
Kuhn, Rolf; Hardebeck, Klaus; Heinemann, Helmut; and Osmers, Knut, 3,963,834.

Osswald, Gunter; and Reus, Josef, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of toned carbon black. 3,963,510, Cl. 106-289.000.

Ostarch, William F., to Van Der Horst Corporation of America. Method of producing a pitted, porous electrodeposited chromium coating. 3,962,834, Cl. 51-323.000.

Ostrow, Barnet D.: *See—*
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Ouchi, Hiromu; Nishida, Masamitsu; and Numata, Kazunori, to Matsushita Electric Industrial Co., Ltd. Method of preparing ferroelectric ceramics. 3,963,631, Cl. 252-62.900.

Outboard Marine Corporation: *See—*
Borst, Gaylord M.; and Meyer, Martin H., 3,962,955.
Miller, George E., 3,963,389.

Ovation Instruments, Inc.: *See—*
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Owens-Corning Fiberglas Corporation: *See—*
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Owens-Illinois, Inc.: *See—*
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Stengle, Edward J., Jr., 3,962,939.

Oxy-Catalyst, Incorporated: *See—*
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Ozawa, Kyoichi, to Hitachi, Ltd. Apparatus for removing unnecessary components from samples. 3,963,614, Cl. 210-198.00C.

Ozawa, Shuji; Aoki, Akihiro; and Fujie, Hiroshi, to Teijin Limited. Method of preparing aromatic polyamide solutions. 3,963,664, Cl. 260-30.200.

P. R. Mallory & Co., Inc.: *See—*
Borbely, Alexander S.; and Bereman, Jon A., 3,963,502.

Palermo, Frank P.: *See—*
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Palmenberg, Edward C.: *See—*
Wachtell, Richard L.; and Palmenberg, Edward C., 3,963,894.

Palmer, John P., to General Dynamics Corporation. Photodetector array and method of manufacturing same. 3,962,778, Cl. 29-572.000.

Palmer, John P., to General Dynamics Corporation. Integrated optical-to-electrical signal transducing system and apparatus. 3,963,920, Cl. 250-239.000.

Pandjiris Weldment Co., The: *See—*
Cooper, Cleveland N., 3,963,231.

Panek, George J.; and Selvin, Gerald J., to International Telephone and Telegraph Corporation. Underwater pressure compensated electrical connector. 3,963,297, Cl. 339-94.00M.

Pantel, Howard W., Jr.: *See—*
Mojden, Wallace W.; Davila, Jose E.; Hooper, George W.; Kwiatkowski, Gerald M.; and Pantel, Howard W., Jr., 3,962,845.

Pantone, Anton M., to CHI Systems, Inc. X-ray film coded identification system. 3,962,807, Cl. 40-78.150.

Park, Chang-Man: *See—*
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Park, Kisoon, to Union Carbide Corporation. Fiber lubricant composition. 3,963,628, Cl. 252-8.800.

Parke, Davis & Company: *See—*
Elslager, Edward Faith, 3,963,740.

Parry, Edward, to Thermal Conduction Engineering Corporation. All weather safety shower. 3,962,733, Cl. 4-145.000.

Parsons Controls Limited: *See—*
Buschini, Anthony Alan; and Swarsbrick, Douglas Edward, 3,962,755.
Buschini, Anthony Alan; and Swarsbrick, Douglas Edward, 3,962,810.
Buschini, Anthony Alan; and Swarsbrick, Douglas Edward, 3,962,811.

Parsons, Gary L.; and Turner, James Keith, to Gaston County Dyeing Machine Company. Sealing arrangement for hyperfiltration. 3,963,616, Cl. 210-232.000.

Pascarella, Robert S. Viscous liquid transfer device. 3,963,063, Cl. 141-309.000.

Pascoe, Frank T., to Westinghouse Air Brake Company. Automatic control system for railroad interlocking. 3,963,203, Cl. 246-134.000.

Pasqualucci, Carmine: *See—*
Marsili, Leonardo; and Pasqualucci, Carmine, 3,963,705.

Pasquon, Italo: *See—*
Giuffre, Luigi; Pasquon, Italo; Cernia, Enrico; Pozzi, Vittorio; and Silvers, Arthur, 3,963,791.

Passoni, Giovanni: *See—*
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Patelli, Bianca: *See—*
Bernardi, Luigi; and Patelli, Bianca, 3,963,760.

Pater, Walter E.; and Rowley, James R., to PPG Industries, Inc. Front restraint device for shipping bins. 3,963,122, Cl. 206-448.000.

Patrignani, Jerry M., to Lawrence Peska Associates, Inc., a part interest. Bowling ball and gripping device. 3,963,238, Cl. 273-63.00A.

Patterson, Harold A.; and Danylik, Victor, to United States of America, Army. Mortar cavity lining. 3,963,556, Cl. 156-423.000.

Patterson, Richard A., to Minnesota Mining and Manufacturing Company. Article transferring apparatus. 3,963,557, Cl. 156-519.000.

Patton, George Allen; and Tucci, John James, to AMP Incorporated. Multi-conductor tap-connector. 3,963,300, Cl. 339-156.00R.

Patton, Noel Thomas. Portable air circulating fan. 3,963,382, Cl. 417-361.000.

Pattyn, Herman Alberik: *See—*
Vanassche, Willy Joseph; Pattyn, Herman Alberik; and Borginon, Hendrik Alfons, 3,963,493.

Paulsen, Earl W., to Ling, Leo M., a part interest. Resharpenable recutter screen for forage harvester. 3,963,183, Cl. 241-88.400.

Pavlinik, Claudia S., to Lawrence Peska Associates, Inc. Head turban. 3,962,728, Cl. 2-174.000.

Pelchat, Jacques: *See—*
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Pennsylvania Engineering Corporation: *See—*
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Pennwalt Corporation: *See—*
D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, 3,963,673.

Penny, Samuel Lee, to Dresser Industries, Inc. Cantilevered roller separator for rock bit bearings. 3,963,282, Cl. 308-8.200.

Pepe, Enrico James; and Kanner, Bernard, to Union Carbide Corporation. Quaternary ammonium salts of chloromethylated silicon compounds. 3,963,726, Cl. 260-290.00S.

Percarpio, Edward P.: *See—*
Shichman, Daniel; and Percarpio, Edward P., 3,963,394.

Perfect, Alan J., to Johnson & Johnson. Container for dental materials and the like. 3,963,120, Cl. 206-219.000.

Perfection Manufacturing Company, The: *See—*
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Periale, John M.: *See—*
Henderson, Angus D.; Verhoff, Francis H.; and Periale, John M., 3,963,624.

Perkin-Elmer Corporation, The: *See—*
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Perlmann, Ariel L.: *See—*
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Levin, Evgeny Sergeevich; Permyakov, Vladimir Andreevich; Zozulya, Nikolai Vasilievich; Shkuratov, Igor Yakovlevich; Kalinin, Boris Leonidovich; Vakulenko, Boris Fedorovich; and Podgorochny, Pavel Ivanovich, 3,963,071.

Perrier, Dorothy M.: *See—*
Ward, Truman L.; Benerito, Ruth R.; and Perrier, Dorothy M., 3,963,434.

Perrin, Frederick W. Gun rest cradle. 3,963,156, Cl. 224-1.00R.

Peter Ilmberger KG, Maschinen-u. Zahnradfabrik: *See—*
Brandl, Josef, 3,962,987.

Peters, Leo. Apparatus for roasting meat. 3,962,961, Cl. 99-426.000.

Petersen, Harro: *See—*
Wurmb, Rolf; Schmidt, Franz; and Petersen, Harro, 3,963,668.

Petersen, Mogens; and Gude, Klaus Erik. Spray drying device for the production of powder, e.g. milk powder. 3,963,559, Cl. 159-4.00S.

Petersen, Paul S.: *See—*
Jerney, Thomas D.; and Petersen, Paul S., 3,963,161.

Petersen, Robert E.; and Chesebro, Roger F., to Westinghouse Electric Corporation. Support assembly for electric heating unit. 3,963,859, Cl. 174-148.000.

Petrucciani, Ahlene M., to Lawrence Peska Associates, Inc., a part interest. Dog kennel module. 3,962,994, Cl. 119-19.000.

Peyrouset, Andre; and Prechner, Roland, to Ato Chimie. Viscometer. 3,962,907, Cl. 73-55.000.

Pfeffer, Philip E.; and Silbert, Leonard S., to United States of America, Agriculture. Process for the preparation of aldehydes. 3,963,784, Cl. 260-601.00R.

Pfeiffer, Francis R.: *See—*
Cooper, David J.; and Pfeiffer, Francis R., 3,963,695.

Pfirrmann, Rolf Wilhelm, to Ed. Geistlich Sohne A.G. fur Chemische Industrie. Sulphamoylphenyl-imidazolidinones. 3,963,706, Cl. 260-239.900.

Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc. Disubstituted xanthone carboxylic acid compounds. 3,963,752, Cl. 260-335.000.

Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc. Disubstituted xanthone carboxylic acid compounds. 3,963,753, Cl. 260-335.000.

Pfotenhauer, James M. Manually cocking spring-powered projectile launcher. 3,963,017, Cl. 124-21.000.

Pharmachem Corporation: *See—*
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Phenolchemie GmbH: *See—*
Hauschulz, Bruno; von Barneveld, Heinrich; Jordan, Wilfried; Mertmann, Josef; Rasner, Gerhard; and Brenienek, Harri, 3,963,610.

Philip, Thomas, to University Patents, Inc. Recovery of anthocyanin from plant sources. 3,963,700, Cl. 260-236.500.

Phillips, Adrian, to Aeroceanics Fishways Corporation. Fishway. 3,962,876, Cl. 61-21.000.

Phillips Petroleum Company: *See—*
Bost, Howard W., 3,963,571.
Doss, Richard C.; and Jones, Faber B., 3,963,850.
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Phipps, John Alastair; and Legg, Morris James, to Plastic Coatings Limited. Apparatus for coating elongate articles. 3,962,990, Cl. 118-620.000.

Physics International Company: *See—*
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Pickering, Charles E., to Eastman Kodak Company. Anti-bounce shutter. 3,964,081, Cl. 354-246.000.

Pierini, John M.; and Brown, Leon E. Intervalometer apparatus. 3,963,968, Cl. 317-141.00S.

Pierre, Andre Paul, to Saint-Gobain Industries. Glass sheet annealing lehr. 3,963,469, Cl. 65-194.000.

Pierson, Marvin B.: *See—*
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Pilon, Harlan J.: *See—*
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Pinhas, Henri; and Susini, Monique, to Serdex - Societe d'Etudes, de Recherches, de Diffusion et d'Exploitation. 2-(Benzofuroyl)phenyl acetic acids. 3,963,758, Cl. 260-346.20R.

Pinnow, Douglas Arthur: *See—*
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Pippin, Reginald F., Jr. Reaction toy arrangement and method. 3,962,818, Cl. 46-74.00D.

Piroska, Jozsef, to Rummelhoff, Eric. Bolt pretensioning device. 3,962,950, Cl. 85-32.00R.

Pirro, Dominick Anthony; and Kennedy, Paul Levere, to Veeder Industries, Inc. Resettable counting mechanism. 3,963,903, Cl. 235-144.00R.

Placek, Eugene W., to International Magna Corporation. Method and apparatus for removing solid tires from rims. 3,963,417, Cl. 432-225.000.

Plakas, Chris J. Multifiltration unit. 3,963,615, Cl. 210-203.000.

Plastic Coatings Limited: *See—*
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Playfoot, Kerwin C.; and Todt, William H., to Westinghouse Electric Corporation. Temperature compensated inductive liquid metal level detection system. 3,962,919, Cl. 73-290.00R.

Pockrandt, Gunter, to Metallgesellschaft Aktiengesellschaft. Process for interrupting normal operation of a hydrocarbon gasification reactor. 3,963,641, Cl. 252-373.000.

Poclain: *See—*
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Poel, Hendrik, to U.S. Philips Corporation. Electric trimmer. 3,962,785, Cl. 30-90.000.

Pogge, H. Bernard: *See—*
Broadie, Robert W.; Kemlage, Bernard M.; and Pogge, H. Bernard, 3,963,538.

Poirier, Albert, to Ulnic France. Device for operating frusto-conical optical concentrators. 3,963,327, Cl. 350-287.000.

Polaroid Corporation: *See—*
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Pollard, Bernard Robert, to Jones & Laughlin Steel Corporation. Gas shroud. 3,963,224, Cl. 266-207.000.

Pollitzer, Ernest L.: *See—*
Germanas, Dalia; and Pollitzer, Ernest L., 3,963,643.

Pollock, Donald M.; and Hallowell, Fulton W., to Consupak, Inc. Method and apparatus for multiple blow molding with rotary turntable. 3,963,404, Cl. 425-326.00B.

Pollock, Robert William, to McGraw-Edison Company. Miniature multipole double-throw slide switch. 3,963,884, Cl. 200-16.00D.

Pommerening, Uwe A.; and Richards, Glenn L., to Stromberg-Carlson Corporation. Local transfer arrangement for electronic private automatic branch exchange. 3,963,873, Cl. 179-18.0BD.

Pommerening, Uwe A.; and Richards, Glenn L., to Stromberg-Carlson Corporation. Busy-test arrangement for electronic private automatic branch exchange. 3,963,874, Cl. 179-18.0AB.

Pompidor, Guy; and Serriere, Jean-Luc, to Pont-A-Mousson S.A. Process for assembling tubes of plastics material and assemblies resulting from said process. 3,962,766, Cl. 29-157.30B.

Pont-A-Mousson S.A.: *See—*
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Poon, Hin-Chiu; and Scharfetter, Donald Lee, to Bell Telephone Laboratories, Incorporated. Junction transistor with linearly graded impurity concentration in the high resistivity portion of its collector zone. 3,964,089, Cl. 357-34.000.

Pope, John W. Electronic smoking inhibiting device. 3,963,033, Cl. 131-170.00A.

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Poston, James T. Flower pot. 3,962,824, Cl. 47-38.100.

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Pozzi, Vittorio: *See—*
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PPG Industries, Inc.: *See—*
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Pralle, Lois A. Greeting card display. 3,963,289, Cl. 312-245.000.

Prange, Neil, to Olin Corporation. Priming formulation for rim fire ammunition. 3,963,543, Cl. 149-23.000.

Pravaz, Marcel, to Etudes et Fabrications Aeronautiques. Closing device for a parachute pack. 3,963,199, Cl. 244-148.000.

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Proni, Oscar; Melnick, Loran Vinson; and Henderson, William Taylor, to Coulter Electronics, Inc. Apparatus for drawing, measuring and discharging proportional amounts of fluid. 3,963,148, Cl. 222-132.000.

Protta, Jean-Claude; and Savary, Antoine, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Apparatus for determining and lastingly showing the time at which an event occurs. 3,962,861, Cl. 58-39.500.

Pruitt, Malcolm E.; and Lovett, Joe B., to Dow Chemical Company, The. Polymerization of ethylene in stirred autoclave with cooled inner wall. 3,963,690, Cl. 526-65.000.

Pugin, Andre: *See—*
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Quandt, Robert S. Ocular testing method and apparatus. 3,963,019, Cl. 128-2.00T.

Queiser, Horst: *See—*
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Quirk, Robert W., to Hills-McCanna Company. Filament winding method. 3,963,185, Cl. 242-7.210.

R. Howard Strasbaugh, Inc.: *See—*
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Ragan, Randall C., to North American Philips Corporation. Single turn variable resistance device having a split shaft rotor. 3,964,011, Cl. 338-166.000.

Ramberg, William I., to GTE Sylvania Incorporated. Metal halide discharge lamp having a reflective coating. 3,963,951, Cl. 313-44.000.

Randmere, Uno; and Suntop, Morris A., to Stromberg-Carlson Corporation. Loudspeaking telephone hysteresis and ambient noise control. 3,963,868, Cl. 179-1.0HF.

Rank Xerox Ltd.: *See—*
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Raseman, Chad J.: *See—*
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Rasmussen, Torben Borup: *See—*
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Rautia, Veli Matti; and Asplund, Erkki Kalevi. Feeding screw for slide casting machine. 3,963,116, Cl. 198-213.000.

Ravoire, Jean: *See—*
Caillaud, Andre; Charuit, Pierre; Duffau, Claude; and Ravoire, Jean, 3,963,619.

Ray, Thomas J.; and Waehner, Glenn C., to United Technologies Corporation. Cathode ray tube phosphor protection circuit. 3,963,961, Cl. 315-381.000.

Raymond Lee Organization, The: *See—*
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Reed, Charles C.: *See—*
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Reese, Gerald D., to Scorpion, Inc. Snowmobile construction having drive belt offset from center line of ski spindles. 3,963,083, Cl. 180-5.00R.

Regie Nationale des Usines Renault: *See—*
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Rehm, Gustav A., to Aqua-Chem, Inc. Heat transfer fluid heater with continuously flushed vent and drain. 3,962,999, Cl. 122-248.000.

Reilly, Joseph R.; and Schon, Lars G., to Monsanto Company. Method and apparatus improvements for trimming plastic articles. 3,962,938, Cl. 82-47.000.

Reinker, Dieter: *See—*
Koller, Stefan; Reinker, Dieter; and Schwander, Hans Rudolf, 3,963,431.

Reker, Joseph Robert, to Du Pont de Nemours, E. I., and Company. Spinneret assembly for multifilament yarns. 3,963,406, Cl. 425-463.000.

Remus, Casimer Frank, to Bendix Corporation, The. Vertical scale take up mechanism. 3,964,049, Cl. 340-317.000.

Renfrew, Andrew Hunter Morris: *See—*
Hughes, Nigel; and Renfrew, Andrew Hunter Morris, 3,963,853.

Rennemann, Albert, to Johann Birkart, Internationale Spedition. Hanging fitting for freight receptacles, known as containers. 3,963,290, Cl. 312-321.000.

Renner, Hans-Joachim: *See—*
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Rentema, Albertus Pieter, to U.S. Philips Corporation. Trimming unit. 3,962,783, Cl. 30-34.100.

Reus, Josef: *See—*
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Reynolds, Charles Edward; and Weidler, Charles Harry, to AMP Incorporated. Small magnet wire to lead wire termination. 3,963,857, Cl. 174-84.00C.

Reynolds, Dwight W.: *See—*
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Ricardo & Co. Engineers (1927) Ltd.: *See—*
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Rice, Edwin E.: *See—*
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Blackwood, Wilfred Norman; Gallagher, Finbar Joseph; Richey, Kenneth Rutherford; and Marshall, William, 3,963,904.

Richter, Edwin William, to RCA Corporation. Variable bandwidth tunable directional filter. 3,963,998, Cl. 333-73.00W.

Richter, Johan Christoffer Fredrik Carl, to Kamyr Aktiebolag. Recirculation of unconsumed oxygen pulp bleaching gas. 3,963,561, Cl. 162-17.000.

Rickard, James H., to Ovation Instruments, Inc. Magnetic induction stringed instrument pickup. 3,962,946, Cl. 84-1.150.

Riede, John R., to Riede Systems, Inc. Multi-angle tilt switch device with adjustable oscillating controller. 3,963,888, Cl. 200-61.480.

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Riedel, Alfred: *See—*
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Rieger, Hermann, to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH. Safety ski binding. 3,963,253, Cl. 280-616.000.

Riegler, Ernst; and Schmidt, Manfred, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Expansion bearing assembly for a converter carrying trunnion. 3,963,281, Cl. 308-6.00R.

Riitano, Dott. Francesco: *See—*
Riitano, Francesco; and Cassani, Nino, 3,962,790.

Riitano, Francesco; and Cassani, Nino, to s.r.l. C.I.R. (Cooperativa Industriale Romagnola); and Riitano, Dott. Francesco. Endodontic instrument. 3,962,790, Cl. 32-40.00R.

Rinkers, William P.: *See—*
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Rishovd, Sigurd A.; and Vizenor, Richard P., to Royal Industries, Inc. Wheel alignment apparatus. 3,963,352, Cl. 356-152.000.

Rivere, Jean-Pierre, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Method and apparatus for digital calculation of rotational speed of an internal combustion engine. 3,963,987, Cl. 324-166.000.

Rizzi, George Peter; and Taylor, Harry Madison, to Procter & Gamble Company, The. Synthesis of higher polyol fatty acid polyesters. 3,963,699, Cl. 260-234.00R.

RMI Company: *See—*
Bomberger, Howard B., Jr.; and Seagle, Stanley R., 3,963,525.

Roach, Jere H., to Cammann Mfg., Co., Inc. Adjustment device for metal disintegrators. 3,963,893, Cl. 219-69.00R.

Robert Bosch G.m.b.H.: *See—*
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Roberti, Barney. Method of making a multiple ply wood article. 3,963,546, Cl. 156-69.000.

Roberts, Eugene L.; and Steffancin, Thomas J., to United States of America, Army. Steerable antenna null combiner system. 3,964,065, Cl. 343-100.0LE.

Roberts, Gerald E., to General Electric Company. Apparatus for measuring the resonant frequency and coefficient of coupling of a plurality of coupled piezoelectric resonators. 3,963,982, Cl. 324-56.000.

Robertshaw Controls Company: *See—*
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Robey, Gerald E.: *See—*
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Robson, John Howard; and Marcus, Erich, to Union Carbide Corporation. Amine acrylate addition reaction products. 3,963,771, Cl. 260-482.00R.

Rockwell International Corporation: *See—*
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Roevens, Leopold Frans Cornell: *See—*
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Rolschau, David W. Dust filter apparatus. 3,963,467, Cl. 55-284.000.

Romano, James, to Lawrence Peska Associates, Inc., a part interest. Illuminated safety helmet. 3,963,917, Cl. 240-60.000.

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Rosenberg, Sheldon R. Security device. 3,963,269, Cl. 292-346.000.

Ross, Cecil J., to W. R. Weaver Company. Erector assembly retainer for telescopic rifle sights. 3,962,795, Cl. 33-246.000.

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Rotaflex (Great Britain) Limited: *See—*
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Rotello, Joseph Vincent. Comfort athletic supporter. 3,963,022, Cl. 128-158.000.

Rothenborg Patent & Licens K/S: *See—*
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Rouzaud, Guy Charles, to Centre Technique Industriel dit: Institut Textile de France; and Societe Anonyme dite: Jaeger. Knitting machine. 3,962,891, Cl. 66-132.00R.

Rowe International Inc.: *See—*
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Ruede, Ernst, to Maschinenfabrik Fahr Aktiengesellschaft. Threshing machine. 3,963,032, Cl. 130-27.00E.

Rulseh, Roy M., to Aqua-Chem, Inc. Burner. 3,963,182, Cl. 239-404.000.

Rumble, Richard Roy. Storage devices. 3,963,287, Cl. 312-197.000.

Rummelhoff, Eric: *See—*
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Rumpf, John R. Tile board for constructing ceramic tile sheets. 3,963,232, Cl. 269-254.0CS.

Runberg, Richard K.; and Runberg, Shirley M. Make up guard. 3,963,034, Cl. 132-9.000.

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Runberg, Richard K.; and Runberg, Shirley M., 3,963,034.

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Russ, Charles R.: *See—*
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Ruth, Arthur P. Animal feeder. 3,962,997, Cl. 119-51.110.

Rutherford, Talmadge O. Wind indicator. 3,964,038, Cl. 340-241.000.

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Rydell, Nils Folke, to Saab-Scania Aktiebolag. Fluid forming apparatus having controllably variable forming pressure. 3,962,895, Cl. 72-63.000.

Ryder, Francis E.; and Mueller, Theodore H., to Ryder International Corporation. Checklist device. 3,962,808, Cl. 40-104.020.

Ryder International Corporation: *See—*
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Ryder, Robert Morgan: *See—*
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Milke, Howard W.; and Sadoski, Tadius T., 3,963,954.

Saint-Gobain Industries: *See—*
Pierre, Andre Paul, 3,963,469.

Saito, Hachiro: *See—*
Kuramoto, Naoya; Saito, Hachiro; and Yamamoto, Wataru, 3,963,507.

Saito, Masaaki; and Minami, Hidehiro, to Nissan Motor Co., Ltd. Method and device for adjusting engine exhaust gas recirculation control. 3,963,011, Cl. 123-119.00A.

Sakaguchi, Shinji: *See—*
Kato, Kazunobu; and Sakaguchi, Shinji, 3,963,495.

Sakai, Jiro: *See—*
Yamauchi, Nobuharu; Matsumura, Masaji; Morimoto, Katsuhide; Koyanagi, Haruo; Sato, Iwao; Yasuhara, Buhei; and Sakai, Jiro, 3,964,026.

Sakashita, Norijt; and Kameyama, Seiji, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 3,962,944, Cl. 84-1.010.

Sakoda, Tadami; and Suzuki, Tetsuhiko, to Toyo Kogyo Co., Ltd. Water soluble core for pressure die casting and process for making the same. 3,963,818, Cl. 264-56.000.

Sakurai, Takeo: *See—*
Ueno, Katsujiro; Sato, Makoto; Arimoto, Masahiro; Kojima, Hiroshi; Yamasaki, Terukiyo; and Sakurai, Takeo, 3,963,727.

Salmon, Michel: *See—*
Baudet, Jacques; Salmon, Michel; and Sausse, Andre, 3,963,622.

Sambrook, David John, to Imperial Metal Industries (Kynoch) Limited. Composite materials. 3,963,425, Cl. 29-191.400.

Sandoz, Inc.: *See—*
Bennett, Gregory B., 3,963,713.
Cooke, George A.; and Houlihan, William J., 3,963,717.
Hardtmann, Goetz E., 3,963,720.
Manning, Robert E., 3,963,780.

Sandoz Ltd.: *See—*
Avar, Lajos; and Hofer, Kurt, 3,963,737.

Sanglert, Benkt, to Saab-Scania Aktiebolag. Apparatus for scanning cants to determine optimum edging cuts. 3,963,938, Cl. 250-561.000.

Sanko Mokkoki Co., Ltd.: *See—*
Miki, Akira, 3,962,831.

Sankyo Company Limited: *See—*
Murayama, Keisuke; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 3,963,730.

Sanraku-Ocean Co., Ltd.: *See—*
Umezawa, Hamao; Aoyagi, Takaaki; Takamatsu, Akira; and Inui, Taiji, 3,963,579.

Sanwa Seiki Mfg. Co. Ltd.: *See—*
Chiba, Haruo, 3,963,277.

Sapir, Said, to International Telephone and Telegraph Corporation. Anti-skid brake control system and failsafe circuit therefor. 3,963,943, Cl. 307-235.00T.

Sarid, Iris. Foldable structure. 3,962,816, Cl. 46-1.00R.

Sarkar, Nikhil K. Dental amalgam alloys. 3,963,484, Cl. 75-173.00C.

Sasaki, Hiroo: *See—*
Seki, Shigeru; Kato, Taketoshi; Itou, Toshikuni; and Sasaki, Hiroo, 3,963,449.

Sasaki, Kazuhiro: *See—*
Kyomori, Hiroyuki; Sasaki, Kazuhiro; and Takahashi, Mitsuhiro, 3,963,781.

Sasse, Klaus: *See—*
Naumann, Klaus; Lurssen, Klaus; and Sasse, Klaus, 3,963,749.

Satake, Yoshihiro, to Copal Company Limited. Control circuit for servo-motors. 3,963,970, Cl. 318-640.000.

Sato, Iwao: *See—*
Yamauchi, Nobuharu; Matsumura, Masaji; Morimoto, Katsuhide; Koyanagi, Haruo; Sato, Iwao; Yasuhara, Buhei; and Sakai, Jiro, 3,964,026.

Sato, Makoto: *See—*
Ueno, Katsujiro; Sato, Makoto; Arimoto, Masahiro; Kojima, Hiroshi; Yamasaki, Terukiyo; and Sakurai, Takeo, 3,963,727.

Sato, Masaaki, to Olympus Optical Co., Ltd. Cassette adapter. 3,964,099, Cl. 360-94.000.

Sato, Takeshi: *See—*
Ishi, Toshiharu; Asahi, Akira; Fujita, Hiroaki; Sato, Takeshi; and Urabe, Nobusuke, 3,963,773.

Sausse, Andre: *See—*
Baudet, Jacques; Salmon, Michel; and Sausse, Andre, 3,963,622.

Savary, Antoine: *See—*
Protta, Jean-Claude; and Savary, Antoine, 3,962,861.

Sawaguchi, Yoji; and Ogawa, Katsumasa, to Fujitsu Ltd. Night depository control system. 3,963,900, Cl. 235-61.70B.

Saxton, Ronald Luther, to Du Pont de Nemours, E. I., and Company. Two step continuous polymerization method to form acrylonitrile copolymers. 3,963,687, Cl. 526-66.000.

Sayama, Norio: *See—*
Yonemitsu, Eiichi; Sugio, Akitoshi; Nawata, Takanari; Masu, Masanobu; Kimura, Masaharu; and Sayama, Norio, 3,963,804.

Schade, Otto Heinrich, Jr., to RCA Corporation. Ground-fault detection system. 3,963,963, Cl. 317-18.00D.

Schantz, Spencer C. Electro-magnetic assembly. 3,964,005, Cl. 335-124.000.

Scharfetter, Donald Lee: *See—*
Poon, Hin-Chiu; and Scharfetter, Donald Lee, 3,964,089.

Schefczik, Ernst; and Grychtol, Klaus, to BASF Aktiengesellschaft. Basic arylmercaptonaphtholactam dyes. 3,963,747, Cl. 260-326.270.

Schellenberg, Matthias: *See—*
Marthaler, Max; Schellenberg, Matthias; Mollet, Herbert; and Chylewski, Christoph, 3,963,492.

Schenk, Jan M., to United States of America, Navy. Missile launching and hold-down device therefor. 3,962,951, Cl. 89-1.810.

Schenk, Peter, to Dzus Fastener Co., Inc. Shaft attachment assembly. 3,963,361, Cl. 403-255.000.

Schering Aktiengesellschat: *See—*
Berwald, Ernst, 3,963,144.

Scherrer, Hanspeter: *See—*
Boller, Arthur; and Scherrer, Hanspeter, 3,963,311.
Boller Arthur; and Scherrer, Hanspeter, 3,963,313.

Schiemichen, Peter, to Deutsche Babcock & Wilcox Aktiengesellschaft. Off-shore power plant. 3,962,877, Cl. 61-46.500.

Schijven, Lucas Wilhelmus Martinus, to U.S. Philips Corporation. Pushbutton device for mechanical preselection tuning. 3,964,000, Cl. 334-7.000.

Schilling, Franz: *See—*
Beine, Burkhard; and Schilling, Franz, 3,963,563.

Schinner, Edward N., to Merck & Co., Inc. Gas washer and liquid treatment system. 3,963,464, Cl. 55-228.000.

Schippers, Heinz, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Machines for texturizing synthetic polymer filaments. 3,962,829, Cl. 57-34.0HS.

Schlauer, Johann: *See—*
Bratzler, Karl; Doerges, Alexander; Kempf, Georg; Rudolph, Paul; and Schlauer, Johann, 3,963,825.

Schleifenbaum, Karl; and Schweisfurth, Werner, to Meteor-Siegen Apparatebau Paul Schmeck GmbH. Apparatus for metering copy material in blueprint machines. 3,962,940, Cl. 83-208.000.

Schlienger, Inc.: *See—*
Schlienger, Max P., 3,963,812.

Schlienger, Max P., to Schlienger, Inc. Method and apparatus for making high purity metallic powder. 3,963,812, Cl. 264-8.000.

Schlitt, Leland G.: *See—*
Alger, Terry W.; Schlitt, Leland G.; and Bradley, Laird P., 3,963,994.

Schlumberger Technology Corporation: *See—*
Elliott, J. Kelly; and Dinning, Robert W., 3,963,377.
Karle, Arun P., 3,963,228.

Schmid, Markus: *See—*
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Schmidt, Franz: *See—*
Wurmb, Rolf; Schmidt, Franz; and Petersen, Harro, 3,963,668.

Schmidt, Manfred: *See—*
Riegler, Ernst; and Schmidt, Manfred, 3,963,281.

Schmidt, Peter Jurgen: *See—*
Neidhard, Horst; Linder, Ernst; Wahl, Josef; Schmidt, Peter Jurgen; and Schoeck, Peter A., 3,962,866.

Schmit, Joseph L.: *See—*
Camp, Russell J., Jr.; Hitchell, Maurice L.; Schmit, Joseph L.; and Stelzer, Ernest L., 3,963,540.

Schmitt, Charles R., to United States of America, Energy Research and Development Administration. Fire extinguishant for fissionable material. 3,963,626, Cl. 252-2.000.

Schmitz, Joseph F.: *See—*
Johnson, Milton J.; and Schmitz, Joseph F., 3,962,746.

Schmutzer, Joel J.: *See—*
Fiocca, Louis L.; Schmutzer, Joel J.; and Klusendorf, John I., 3,963,930.

Schneeberger, Fritz: *See—*
Zweifel, Walter; and Schneeberger, Fritz, 3,963,591.

Schnur, Joel M.: *See—*
Giallorenzi, Thomas G.; and Schnur, Joel M., 3,963,310.

Schoeck, Peter A.: *See—*
Neidhard, Horst; Linder, Ernst; Wahl, Josef; Schmidt, Peter Jurgen; and Schoeck, Peter A., 3,962,866.

Schoenbachler, Bernard W.; and Ruark, Bruce L., to General Electric Company. Air conditioning system for a mobile home. 3,962,885, Cl. 62-239.000.

Scholer, Alfred, to Vorwerk & Sohn, Textil- und Gummiwerke. Pleatable curtain. 3,963,067, Cl. 160-348.000.

Schon, Lars G.: *See—*
Reilly, Joseph R.; and Schon, Lars G., 3,962,938.

Schoppe, Wayne F.: *See—*
Taylor, Thomas N.; and Schoppe, Wayne F., 3,963,339.

Schreiber, Bruno; Seiz, Wolfgang; and Forster, Ewald, to Ciba-Geigy Corporation. Storage-stable, quick-curing epoxide resin moulding materials. 3,963,666, Cl. 260-37.0EP.

Schreiber, Bruno; Diethelm, Hermann; Habermeier, Jurgen; and Forster, Ewald, to Ciba-Geigy Corporation. Storage-stable moulding compositions for the manufacture of light-stable, tracking-resistant plastics. 3,963,667, Cl. 260-37.0EP.

Schreier, Ulrich: *See—*
Dumesnil, Maurice E.; and Schreier, Ulrich, 3,963,505.

Schroder, Johann: *See—*
Biermann, Udo Klaus Paul; and Schroder, Johann, 3,963,541.

Schroter, Hans-Jurgen: *See—*
Stumpf, Willy; Queiser, Horst; Juntgen, Harald; Schroter, Hans-Jurgen; and Knoblauch, Karl, 3,963,460.

Schultz, Russell H., to Natural Resource Systems, Inc. Combustion furnace and infra-red radiant heating system. 3,963,018, Cl. 126-91.00A.

Schumacher, William Ludlow; and Volinskie, Robert, to AMP Incorporated. Coaxial ribbon cable terminator. 3,963,319, Cl. 339-176.0MF.

Schutz, Siegismund; Behner, Otto; and Hoffmeister, Friedrich, to Bayer Aktiengesellschaft. Basic oximes and their preparation. 3,963,778, Cl. 260-566.0AE.

Schwab, Kurt, to D. Swarovski & Co., Glasschleiferei. Reflex light reflector sheet and method for its manufacture. 3,963,309, Cl. 350-104.000.

Schwalm, Bruce D.; and Webb, Bryant F., to Sperry Rand Corporation. Method of converting an implement frame from a forward harvesting mode to a lateral transport mode. 3,962,853, Cl. 56-228.000.

Schwam, Harvey: *See—*
Hoffman, Carl H.; Schwam, Harvey; Brady, Stephen F.; Hichens, Martin; and Nutt, Ruth F., 3,963,691.

Schwander, Hans Rudolf: *See—*
Koller, Stefan; Reinker, Dieter; and Schwander, Hans Rudolf, 3,963,431.

Schwartz, Kenneth P.; and Wagner, Paul M. Reversible replaceable tread tire. 3,963,066, Cl. 152-187.000.

Schwartz, Michel S.; and Blasnik, William, to Lerner Manufacturing, Inc. Garment hanger construction. 3,963,154, Cl. 223-85.000.

Schweisfurth, Werner: *See—*
Schleifenbaum, Karl; and Schweisfurth, Werner, 3,962,940.

Scolaro, Barbara; and Spector, George. Baby bottle handle. 3,963,206, Cl. 248-105.000.

Scorpion, Inc.: *See—*
Reese, Gerald D., 3,963,083.

Scripto, Inc.: *See—*
Lockwood, John C.; and Vaughan, Harry L., 3,963,413.

Seabourn, Ed O., to Phillips Petroleum Company. Coated shaker screen apparatus and method. 3,963,605, Cl. 209-2.000.

Seagle, Stanley R.: *See—*
Bomberger, Howard B., Jr.; and Seagle, Stanley R., 3,963,525.

Sears, James S.: *See—*
Lysinger, Glenn W.; and Sears, James S., 3,963,004.

Seccombe, Robert J.: *See—*
Spyridakis, Emanuel G.; Rice, Edwin E.; and Seccombe, Robert J., 3,962,910.

Segre, Joseph Pipo; and Truscott, Norman R., to American Optical Corporation. Erbium laser ceilometer. 3,963,347, Cl. 356-5.000.

Seiler, Georg. Socket connection of tubes or tubular elements, in particular of metal. 3,963,298, Cl. 339-95.00R.

Seismic Logs, Inc.: *See—*
Morris, Harold B., 3,963,093.

Seiz, Wolfgang: *See—*
Schreiber, Bruno; Seiz, Wolfgang; and Forster, Ewald, 3,963,666.

Seki, Shigeo: *See—*
Koyama, Masao; and Seki, Shigeo, 3,963,712.

Seki, Shigeru; Kato, Taketoshi; Itou, Toshikuni; and Sasaki, Hiroo, to Ishizuka Garasu Kabushiki Kaisha. Sintered metallic composite material. 3,963,449, Cl. 29-182.500.

Sekido, Isao: *See—*
Doi, Tadashi; Sekido, Isao; and Tamaki, Ryoichi, 3,963,509.

Sekiya, Masaaki: *See—*
Fujiwara, Hiroshi; Sekiya, Masaaki; and Suzuki, Hiroshi, 3,963,662.

Sekmakas, Kazys, to DeSoto, Inc. Electrodeposition of thermosetting coatings at the cathode. 3,963,663, Cl. 260-29.300.

Selch, Grant J.: *See—*
Deloy, Joseph T.; and Selch, Grant J., 3,963,181.

Sellberg, Florian; and Weissglas, Peter, to Institutet for Mikrovigstekniik. Mixer stage for microwave receivers. 3,963,989, Cl. 325-449.000.

Sells, Fred E., to National Controls Corporation. Motion responsive detector apparatus. 3,963,919, Cl. 250-231.0SE.

Selvin, Gerald J.: *See—*
Panek, George J.; and Selvin, Gerald J., 3,963,297.

Selz, Francois: *See—*
Charpentier, Jean; Cancian, Genevieve; and Selz, Francois, 3,964,056.

Semikron Gesellschaft fur Gleichrichterbau und Elektronid m.b.H.: *See—*
Jakob, Gunter, 3,964,090.

Senak, Peter, Jr.: *See—*
Leenhouts, Albert C.; Senak, Peter, Jr.; and Emery, Arthur, 3,963,971.

Senderoff, Seymour; and Mellors, Geoffrey W., to Union Carbide Corporation. Solids ionically conductive at elevated temperatures. 3,963,518, Cl. 136-83.00T.

Senju Metal Industry Co. Ltd.: *See—*
Taguchi, Toshihiko; and Ito, Takehiko, 3,963,162.

Sequin, Carlo Heinrich; and Wilde, Peter Van Dyke, to Bell Telephone Laboratories, Incorporated. Semiconductor charge transfer devices with dark current background cancellation. 3,963,942, Cl. 307-221.00D.

Serdex - Societe d'Etudes, de Recherches, de Diffusion et d'Exploitation: *See—*
Pinhas, Henri; and Susini, Monique, 3,963,758.

Sero, Samuel J. Apparatus for expandably engaging the walls of an earthen hole. 3,962,837, Cl. 52-158.000.

Serriere, Jean-Luc: *See—*
Pompidor, Guy; and Serriere, Jean-Luc, 3,962,766.

Setty, H. S. N.; Yaws, Carl L.; Martin, Bobby Ray; and Wangler, Daniel Joseph, to Texas Instruments Incorporated. Method of operating a quartz fluidized bed reactor for the production of silicon. 3,963,838, Cl. 427-213.000.

Sevcon Engineering Limited: *See—*
Gurwicz, David; and Sloan, Albert Everett, 3,963,967.

Seydl, Wolfgang: *See—*
Wurmb, Rolf; Kunde, Joachim; and Seydl, Wolfgang, 3,963,669.

Shallenberger, Fred T., Jr., to Metal Cutting Tools, Inc. Drill with indexable inserts. 3,963,365, Cl. 408-186.000.

Shapiro, Jonathan Salem, to Machlett Laboratories, Incorporated, The. X-ray tube current monitor. 3,963,931, Cl. 250-416.00R.

Sharp, Andrew Peter. Miniature tape cartridge and adaptor. 3,963,189, Cl. 242-55.19A.

Sharp, Colin Keith: *See—*
Brown, Kenneth Robson; and Sharp, Colin Keith, 3,963,912.

Sharp, David E. Pollen dispensing apparatus. 3,962,821, Cl. 47-1.410.

Sharp, Russell G.: *See—*
Cooley, Denton A.; Reed, Charles C.; and Sharp, Russell G., 3,963,028.

Shear, Stephen Anthony: *See—*
Anschel, Morris; and Shear, Stephen Anthony, 3,963,841.

Sheehan, Thomas V.: *See—*
Manowitz, Bernard; Steinberg, Meyer; Sheehan, Thomas V.; Winsche, Warren E.; and Raseman, Chad J., 3,963,598.

Sheel, Ronald S.: *See—*
Lapointe, Joseph A.; and Sheel, Ronald S., 3,962,799.

Sheldon, Stewart L.; Horstman, Wilbur R.; and Gump, Robert G. 3 Dimension projector. 3,963,332, Cl. 352-60.000.

Shell Oil Company: *See—*
Gee, David E.; and Worboys, Robert V., 3,962,882.

Sheppard, Albert P.: *See—*
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Sheppard, Chester Stephen: *See—*
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Sherlock, John W.: *See—*
Daubman, Edward A.; and Sherlock, John W., 3,963,175.

Shiba, Keisuke; Naito, Hideki; Yamamoto, Nobuo; and Yoneyama, Masakazu, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material. 3,963,499, Cl. 96-100.000.

Shibatani, Juichi: *See—*
Arai, Hiroshi; and Shibatani, Juichi, 3,964,017.

Shibuya, Atsumi; Sugita, Chokichi; and Endo, Hiroshi, to Nippon Concrete Kogyo Kabushiki Kaisha. Concrete piles, poles or the like. 3,963,056, Cl. 138-175.000.

Shichman, Daniel; and Percarpio, Edward P., to Uniroyal Inc. Bladder for shaping pneumatic tire. 3,963,394, Cl. 425-51.000.

Shih, Chi-Kai, to Du Pont de Nemours, E. I., and Company. Blend of ethylene copolymer elastomer and a copolyetherester elastomer. 3,963,802, Cl. 260-873.000.

Shima, Takeo: *See—*
Shimotsuma, Sakae; Hosoi, Masahiro; Kuratsuji, Takatoshi; Kawase, Shoji; and Shima, Takeo, 3,963,844.

Shimada, Osamu: *See—*
Kihara, Nobutoshi; and Shimada, Osamu, 3,964,095.

Shimamoto, Takio: *See—*
Inoue, Michiro; Ishikawa, Masayuki; Tsuchiya, Takashi; and Shimamoto, Takio, 3,963,716.

Shimazaki, Mamoru, to Canon Kabushiki Kaisha. Film transport apparatus for a motion picture camera or projector. 3,963,334, Cl. 352-191.000.

Shimazaki, Mamoru: *See—*
Komine, Yoshio; Hosoe, Kazuya; Shimazaki, Mamoru; Ichiyanagi, Toshikazu; and Takahashi, Kiyoshi, 3,963,331.

Shimotsuma, Sakae; Hosoi, Masahiro; Kuratsuji, Takatoshi; Kawase, Shoji; and Shima, Takeo, to Teijin Limited. Extrusion-molded article having good thermal stability. 3,963,844, Cl. 428-36.000.

Shinkarenko, Ljubov Nikolaevna; Babenko, Julia Semenovna; and Grigoriev, Evgeny Fedorovich. Lytic enzyme and method of preparing same. 3,963,577, Cl. 195-62.000.

Shinoda, Hidenori: *See—*
Watanabe, Sadakazu; and Shinoda, Hidenori, 3,963,350.

Shiono, Takashi: *See—*
Kushida, Riichiro; Takasugi, Tsuneji; Ikeda, Shinji; and Shiono, Takashi, 3,963,589.

Shirai, Shinji: *See—*
Nikaido, Norio; Shirai, Shinji; Iihashi, Mototaka; and Umemoto, Sueo, 3,963,568.

Shkarlet, Jury Mikhailovich. Ultrasonic instrument for non-destructive testing of articles with current-conducting surface. 3,963,980, Cl. 324-40.000.

Shkuratov, Igor Yakovlevich: *See—*
Levin, Evgeny Sergeevich; Permyakov, Vladimir Andreevich; Zozulya, Nikolai Vasilievich; Shkuratov, Igor Yakovlevich; Kalinin, Boris Leonidovich; Vakulenko, Boris Fedorovich; and Podgorochny, Pavel Ivanovich, 3,963,071.

Shoreline Precast Company: *See—*
O'Kon, James; and Magness, William, 3,962,981.

Shotbolt, Keith; and Von Bismarck, Gottfried, to W. R. Grace & Co. Closure lining machine. 3,963,396, Cl. 425-135.000.

Shugart Associates, Inc.: *See—*
Thompson, Herbert E.; and Brown, David A., 3,964,103.

Shutt, Thomas Clifford; and Campbell, Howard, to Glass Container Manufacturers Institute, Inc. Fired construction shapes and process and binder therefor. 3,963,506, Cl. 106-67.000.

Sieghartner, Leonard J., to Roy E. Roth Company. Multi-stage pump. 3,963,371, Cl. 415-199.00T.

Siemens Aktiengesellschaft: *See—*
Becker, Manfred, 3,963,828.
Freller, Helmut, 3,963,839.
Graul, Juergen; and Murrmann, Helmuth, 3,963,524.
Kniepkamp, Hermann; and Winstel, Guenter, 3,963,537.
Niethammer, Dieter, 3,963,988.
Straihammer, Reinhard, 3,963,890.

Siempelkamp Giesserei KG: *See—*
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Beine, Burkhard, 3,963,565.

Sierra Laboratories, Inc.: *See—*
Jones, Donald W., 3,963,421.

Sigafoose, Glen. Method of assembling model airplane. 3,963,554, Cl. 156-304.000.

Signal Laboratories, Inc.: *See—*
Flagg, Delbert; and Balodis, Miroslaw, 3,964,062.

Silbert, Leonard S.: *See—*
Pfeffer, Philip E.; and Silbert, Leonard S., 3,963,784.

Silverberg, Morton: *See—*
Stemmle, Denis J.; and Silverberg, Morton, 3,963,345.

Silvers, Arthur: *See—*
Giuffre, Luigi; Pasquon, Italo; Cernia, Enrico; Pozzi, Vittorio; and Silvers, Arthur, 3,963,791.

Silvon, Kay, to Omark Industries, Inc. Drive sprocket for chain saw. 3,962,929, Cl. 74-243.0CS.

Simmonds Precision Products, Inc.: *See—*
Lamphere, David A., 3,964,037.

Simon, William J.: *See—*
Torok, Ernest J.; Lund, Roger E.; and Simon, William J., 3,964,034.

Simpson Timber Company: *See—*
Zweig, Arnold A., 3,963,555.

Singer Company, The: *See—*
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Singleton, Ogle R., Jr., to Reynolds Metals Company. Brazing materials. 3,963,453, Cl. 29-197.500.

Singleton, Ogle R., Jr., to Reynolds Metals Company. Brazing materials. 3,963,454, Cl. 29-197.500.

Sivertz, Christian; and Basilone, Anthony J., to London Laboratories Limited Co. Deposition of copper. 3,963,842, Cl. 427-305.000.

Skagerlund, Lars-Erik; and Stalfors, Rolf Lennart, to AB Bofors. Device for emitting radiation, for a projectile, shell etc. 3,962,972, Cl. 102-70.20R.

Skerlos, Peter Constantine, to Zenith Radio Corporation. Oscillation system for integrated circuit. 3,963,996, Cl. 331-117.00R.

SKF Industrial Trading and Development Company, B.V.: *See—*
Ernst, Horst; Brandenstein, Manfred; and Olschewski, Armin, 3,963,105.
Ernst, Horst Manfred; Brandenstein, Manfred; and Olschewski, Armin, 3,963,106.

SKF Industries, Inc.: *See—*
Kellstrom, Erik Magnus, 3,963,285.

Skidmore, Richard H., to W Bar E, Incorporated. Apparatus and method for producing solid polymeric material from a dilute polymer solution. 3,963,558, Cl. 159-2.00E.

Skimming, William Sutton Baker, to Worcester Royal Porcelain Co., Ltd., The. Packaging means for fragile articles. 3,963,166, Cl. 229-14.00C.

Skinner, Robert Ivan; and Heine, Arnold John, to New Zealand Inventions Development Authority. Hysteretic energy absorber. 3,963,099, Cl. 188-1.00C.

Sloan, Albert Everett: *See—*
Gurwicz, David; and Sloan, Albert Everett, 3,963,967.

Smart, Bruce Edmund, to Du Pont de Nemours, E. I., and Company. Methoxyperfluorocycloalkenium hexafluoroantimonate salts. 3,963,767, Cl. 260-446.000.

Smida, George R. Hydraulic chuck. 3,962,769, Cl. 29-202.00D.

Smith, Bart A.: *See—*
MacMillan, Donald F.; Smith, Bart A.; and Dubrule, Richard P., 3,963,566.

Smith, Carl Mayn; and Tiers, George V. D., to Minnesota Mining and Manufacturing Company. Silicone-compatible phthalocyanine dyestuffs. 3,963,744, Cl. 260-314.500.

Smith, Clarence M., deceased (by Smith, Mary M., executrix), to Westinghouse Electric Corporation. Wiring device with self-grounding element. 3,963,292, Cl. 339-14.00R.

Smith, Fred, to Anglian Water Authority. Process of preparing sodium-aluminum silicate dispersion complex and composition. 3,963,640, Cl. 252-313.00R.

Smith, Mary M., executrix: *See—*
Smith, Clarence M., deceased, 3,963,292.

Smith, Michael: *See—*
Baer, Donald R.; Cairncross, Allan; and Smith, Michael, 3,963,715.

Smith, Robert, to General Motors Corporation. Slab completion time delay relay. 3,962,883, Cl. 62-137.000.

Smith, Robert J.: *See—*
Kalert, Ralph E.; and Smith, Robert J., 3,963,670.

Smith, Stuart B., to Foster Grant Co., Inc. Process for molding expandable thermoplastic material. 3,963,816, Cl. 264-53.000.

Smith, William J., to Royal Business Machines, Inc. Single element typehead positioning mechanism. 3,963,109, Cl. 197-55.000.

SmithKline Corporation: *See—*
Blank, Benjamin; and Gleason, John G., 3,963,733.
Cooper, David J.; and Pfeiffer, Francis R., 3,963,695.
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DeMarinis, Robert M., 3,963,711.

Smollett, Thomas J.; and Stipanovic, Bozidar, to Coral Chemical Company. Stainless steels coated with black oxides. 3,963,530, Cl. 148-31.500.

Snam Progetti S.p.A.: *See—*
Ginnasi, Alessandro; and Passoni, Giovanni, 3,963,586.
Giuffre, Luigi; Pasquon, Italo; Cernia, Enrico; Pozzi, Vittorio; and Silvers, Arthur, 3,963,791.

Snellman, Donald L.; and Vaughn, Wade C., to Norfin, Inc. Adjustable feed level for sorting device. 3,963,235, Cl. 271-64.000.

Snelson, Howard: *See—*
George, Alexander; Snelson, Howard; White, James; and Lentz, Jacob D., Jr., 3,963,548.

Soares, John M. Exhaust muffler for competition car engines. 3,963,092, Cl. 181-44.000.

Societa' Farmaceutici Italia S.p.A.: *See—*
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Societe Anonyme Automobiles Citroen: *See—*
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Societe Anonyme dite: Jaeger: *See—*
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Societe Anonyme dite: Societe Nationale des Gaz du Sud-Ouest: *See—*
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Societe d'Etudes de Machines Thermiques: *See—*
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Societe d'Etudes de Machines Thermiques - S.E.M.T.E.: *See—*
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Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See—*
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Societe Legris France S.A.: *See—*
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Societe Nouvelle B.I.P.T. (Bureau International de Prestations Techniques): *See—*
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Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
Protta, Jean-Claude; and Savary, Antoine, 3,962,861.

Soffge, Friedhelm, to Dr. -Ing. H.c.F. Porsche Aktiengesellschaft. Installation for anchoring the ramp ends of bridges. 3,962,747, Cl. 14-69.500.

Sofiltra, Societe Industrielle de Filtration: *See—*
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Solomon, David Henry: *See—*
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Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, 3,963,512.

Solomons, William Ebenezer: *See—*
Mathison, Ian William; Solomons, William Ebenezer; and Jones, Raymond Henry, 3,963,723.

Songer, Jimmie D., to Trans-American Video, Inc. Anti-piracy method and system. 3,963,865, Cl. 178-7.100.

Sonoyama, Takayasu; Tani, Hiroyoshi; Kageyama, Bunji; Kobayashi, Kobee; Honjo, Tahiko; and Yagi, Shigeo. Process for producing 2-keto-L-gulonic acid. 3,963,574, Cl. 195-30.000.

Sontheimer, Karl: *See—*
Staudt, Heinrich; Eckell, Wolfgang; Lehmann, Hartmut; Sontheimer, Karl; and Hofmann, Eberhard, 3,963,014.

Sony Corporation: *See—*
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South African Coal, Oil and Gas Corporation Limited: *See—*
Bosman, Abraham Daniel, 3,962,978.

Sova, Clarence. Spring-pressed-plunger article holder. 3,963,208, Cl. 248-316.00A.

Spadini, Gianfranco Luigi; and Dekker, Bob, to Procter & Gamble Company, The. Liquid detergent composition. 3,963,649, Cl. 252-546.000.

Spanke, Theodore J. Retractable ladder rack. 3,963,136, Cl. 214-450.000.

Spector, George: *See—*
Scolaro, Barbara; and Spector, George, 3,963,206.

Spergel, Philip: *See—*
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Garrott, William L., 3,964,042.
Schwalm, Bruce D.; and Webb, Bryant F., 3,962,853.
Stark, William H., 3,963,301.
Torok, Ernest J.; Lund, Roger E.; and Simon, William J., 3,964,034.

Spinner, Georg. Cable connector for solid-insulation coaxial cables. 3,963,320, Cl. 339-177.00R.

Spivey, Jack B. Watertight light assembly. 3,963,915, Cl. 240-7.10R.

Spray Tech Corporation: *See—*
Wagner, Josef, 3,963,180.

Spriggs, Dennis Mitchel, to Dresser Industries, Inc. Locking device for use in well tubing. 3,963,074, Cl. 166-206.000.

Springfield Wire, Inc.: *See—*
Beauregard, William W., 3,963,049.

Spyridakis, Emanuel G.; Rice, Edwin E.; and Seccombe, Robert J., to Ingersoll-Rand Company. Method and apparatus for fastener tension inspection. 3,962,910, Cl. 73-88.00F.

Staba, Edward Anthony, to Olin Corporation. Priming formulation for rim fire ammunition. 3,963,544, Cl. 149-23.000.

Stabilus GmbH: *See—*
Molders, Werner, 3,963,227.

Stachel, Charles Peter; and Weingarten, Morris Robert, to RCA Corporation. Method of installing a mount assembly in a multi-beam cathode ray tube. 3,962,765, Cl. 29-25.130.

Stadelmann, Ludwig; and Bauer, Fritz, to Suspa Federungstechnik Fritz Bauer & Sohne oHG. Lengthwise displaceable, pressure medium charged, hydraulically blockable adjustment assembly. 3,963,101, Cl. 188-300.000.

Stafford, Josephine C. Luggage wheels. 3,963,256, Cl. 280-35.000.

Stafford, Thomas Whitehead: *See—*
Bentley, John; Letchford, Brian Robert; and Stafford, Thomas Whitehead, 3,963,848.

Stahl, John F., to Oxy-Catalyst, Incorporated. Catalyst changer for underfloor type catalytic converter. 3,963,062, Cl. 141-67.000.

Stahlecker, Fritz, to Stahlecker, Fritz; and Stahlecker, Hans. Start-spinning apparatus which travels along an open-end spinning machine. 3,962,855, Cl. 57-34.00R.

Stahlecker, Hans: *See—*
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Stahlman, Donald B.: *See—*
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Stalfors, Rolf Lennart: *See—*
Skagerlund, Lars-Erik; and Stalfors, Rolf Lennart, 3,962,972.

Stalker, Robert W.; and Blutinger, Bernard, to International Harvester Company. Turbine surge detection system. 3,963,367, Cl. 415-17.000.

Stamicarbon B.V.: *See—*
Nommensen, Johan P., 3,963,247.
Weterings, Cornelis A. M., 3,963,793.

Stamvik, Anders Robert: *See—*
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Standard Alliance Industries: *See—*
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Standard Oil Company: *See—*
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Stanley Electric Co., Ltd.: *See—*
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Stanley, Richard B. Antifriction roller bearing. 3,963,286, Cl. 308-205.000.

Stapp, Paul R., to Phillips Petroleum Company. Process for the preparation of lactones. 3,963,757, Cl. 260-343.600.

Star Paper Limited: *See—*
Blakey, Rene C., 3,963,820.

Stark, Daniel C., to Deering Milliken Research Corporation. Printing of textile articles. 3,963,428, Cl. 8-14.000.

Stark, Howard M.; and Goren, Robert N., to Xerox Corporation. Curved screen. 3,963,342, Cl. 355-4.000.

Stark, William H., to Sperry Rand Corporation. Mother-board interconnection system. 3,963,301, Cl. 339-186.00M.

Starkweather, Howard Warner, Jr., to Du Pont de Nemours, E. I., and Company. Graft copolymer in polyamide polyethylene blends. 3,963,799, Cl. 260-857.00L.

Staudt, Heinrich; Eckell, Wolfgang; Lehmann, Hartmut; Sontheimer, Karl; and Hofmann, Eberhard, to Robert Bosch G.m.b.H. Fuel injection pump for internal combustion engines. 3,963,014, Cl. 123-139.00R.

Stauffer, Clyde Eugene, to Procter & Gamble Company, The. Process for producing N-acyl-L-methionine. 3,963,573, Cl. 195-29.000.

Steffancin, Thomas J.: *See—*
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Steffen, Klaus-Dieter, to Dynamit Nobel Aktiengesellschaft. 3-Amino-4,5,6-trichloro-7-nitriloindazoles. 3,963,739, Cl. 260-310.00C.

Steiman, Wolf; and Beres, Steven W., to VCA Corporation. Puff-discharge squeeze bottle. 3,963,150, Cl. 222-211.000.

Stein, Bernard; and Spergel, Philip, to Instrumentation Laboratory, Inc. Analysis system. 3,963,440, Cl. 23-253.00R.

Steinberg, Meyer: *See—*
Manowitz, Bernard; Steinberg, Meyer; Sheehan, Thomas V.; Winsche, Warren E.; and Raseman, Chad J., 3,963,598.

Steiner, Alois. Vacuum controlled fuel metering device. 3,963,809, Cl. 261-69.00R.

Steiner, Henry William. Humane trap. 3,962,814, Cl. 43-86.000.

Steinhausser, Fritz, to VEB Kombinat Zentronik Sommerda/TH. Matrix printing head. 3,963,108, Cl. 197-1.00R.

Stelzer, Ernest L.: *See—*
Camp, Russell J., Jr.; Hitchell, Maurice L.; Schmit, Joseph L.; and Stelzer, Ernest L., 3,963,540.

Stemmle, Denis J.; and Silverberg, Morton, to Xerox Corporation. Precollation copying. 3,963,345, Cl. 355-50.000.

Stengle, Edward J., Jr., to Owens-Illinois, Inc. Glass gob shearing apparatus and method. 3,962,939, Cl. 83-51.000.

Stepanek, Karel; and Ruckl, Vaclav, to Vyzkumny ustav obrabechlich stroju a obrabeni. Apparatus for measuring the diameter of a workpiece. 3,962,792, Cl. 33-143.00L.

Stepp, James Dial, to Chemetron Corporation. Method of conditioning phthalocyanine pigments and product thereof. 3,963,743, Cl. 260-314.500.

Sterling Drug Inc.: *See—*
Alexander, Ernest John, 3,963,721.
Bailey, Denis M., 3,963,480.
Bailey, Denis M., 3,963,746.
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Steward Plastics, Inc.: *See—*
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Stewart, John Franklin; Alleman, Raymond Arthur; and Weingarten, Morris Robert, to RCA Corporation. Method of installing a mount assembly in a multi-beam cathode ray tube. 3,962,764, Cl. 29-25.130.

Stillwagon, George B., Jr., to Fraser, Kenneth G., a part interest. Lubricated joint assembly. 3,962,889, Cl. 64-32.00F.

Stipanovic, Bozidar: *See—*
Smollett, Thomas J.; and Stipanovic, Bozidar, 3,963,530.

Stirling, Irene: *See—*
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Stockford, William F.; and Gamewell, Joseph M., to Gamewell Mechanical, Inc. Humidity control system with apparatus for removing combustible dust particles. 3,963,461, Cl. 55-20.000.

Stockton, Jeffrey M.: *See—*
Armstrong, Ralph L. J.; and Stockton, Jeffrey M., 3,962,971.

Stoessel, Herman V.; Guinn, Ronald K.; and Wells, Bernard L., to Hesston Corporation. Caster wheel arm. 3,962,849, Cl. 56-10.200.

Stoilov, Nikola Dimov, to Institute za Metalloobraborvashti Machini. Tool clamping device for multiple-operation machines. 3,962,777, Cl. 29-568.000.

Stolz, Hermann, to MATO Maschinen-und Metallwarenfabrik Curt Matthaei GmbH & Co. KG. Plate connectors for belts. 3,962,754, Cl. 24-33.00B.

Stone, Alan J., administrator: *See—*
Stone, Guthrie B., deceased; and Tertinek, Christian T., 3,963,258.

Stone Construction Equipment, Inc.: *See—*
Stone, Guthrie B., deceased; and Tertinek, Christian T., 3,963,258.

Stone, Guthrie B., deceased (by Stone, Alan J., administrator); and Tertinek, Christian T., to Stone Construction Equipment, Inc. Material handling vehicle. 3,963,258, Cl. 280-47.340.

Stone, Merrill M.: *See—*
Cohn, David B.; Draggoo, Vaughn G.; Lacina, William B.; Brown, Laurence E.; and Stone, Merrill M., 3,964,003.

Stone, Orison W. Reclosable containers and blanks therefor. 3,963,173, Cl. 229-44.0CB.

Stonich, Elwood Harold, to International Telephone and Telegraph Corporation. Low velocity flow switch. 3,963,889, Cl. 200-81.90R.

Straihammer, Reinhard, to Siemens Aktiengesellschaft. Foot operated switch assembly with latching structure for operator. 3,963,890, Cl. 200-86.500.

Strait, Ronald E.; and Hall, Willard A., to Kysor Industrial Corporation. Vehicle monitoring system with fault override. 3,964,018, Cl. 340-52.00F.

Strasbaugh, Ray Howard, to R. Howard Strasbaugh, Inc. Fluid responsive, leverage operated chuck. 3,962,832, Cl. 51-217.00L.

Straub, Robert Michael, to E. I. Du Pont de Memours and Company. Electrostatically paintable injection moldable blend of propylene polymer, ethylene/higher α-olefin copolymer rubber and carbon black. 3,963,647, Cl. 252-511.000.

Strauss, Edgar, to Ruti Machinery Works Ltd. Beating-up arrangement for a wave-type weaving machine. 3,963,059, Cl. 139-436.000.

Strauss, Karl-Peter, to Rollei-Werke Franke & Heidecke. Flash synchronizing mechanism for cameras. 3,964,077, Cl. 354-141.000.

Street, Marion W., Jr.: *See—*
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Strick Corporation: *See—*
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Strickler, Hugo: *See—*
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Strindehag, Ove: *See—*
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Strojny, Edwin J., to Dow Chemical Company, The. Oxidation of mesityl oxide to citraconic anhydride. 3,963,759, Cl. 260-346.80A.

Stromberg-Carlson Corporation: *See—*
Gueldenpfennig, Klaus, 3,963,875.
Marlinski, Edward J., 3,963,551.
Pommerening, Uwe A.; and Richards, Glenn L., 3,963,873.
Pommerening, Uwe A.; and Richards, Glenn L., 3,963,874.
Randmere, Uno; and Suntop, Morris A., 3,963,868.

Stumpf, Joseph G.; and Lewis, Walter M., to Frigitronics of Conn., Inc. Small pupil binocular indirect ophthalmoscope. 3,963,329, Cl. 351-6.000.

Stumpf, Willy; Queiser, Horst; Juntgen, Harald; Schroter, Hans-Jurgen; and Knoblauch, Karl, to Licentia Patent-Verwaltungs-G.m.b.H.; and Bergwerksverband GmbH. Method and apparatus for treating waste gases containing radioactive impurities, particularly krypton and xenon nuclides. 3,963,460, Cl. 55-66.000.

Stupka, Frank S.: *See—*
Authement, Elmo C.; Varvaro, Gasper G.; Stupka, Frank S.; Waguespack, Obierge J.; Tabor, Sidney J.; and Guell, Mario R., 3,963,013.

Su, Aaron Chung Liong, to Du Pont de Nemours, E. I., and Company. Blends of copolyesters, ethylene/carboxylic acid copolymers and a polycarbodiimide. 3,963,801, Cl. 260-873.000.

Sueishi, Motoharu; and Harada, Susumu, to Nippondenso Co., Ltd. Electronically controlled fuel injection system. 3,963,002, Cl. 123-32.0EA.

Sugar Cane Growers Cooperative of Florida: *See—*
Fowler, Larry G., 3,963,138.

Sugino, Yoshide; Okonogi, Nobuo; and Nokagawa, Shinsaku, to Yamatake-Honeywell Company, Limited. Finger mechanisms of industrial robots. 3,953,271, Cl. 294-86.00R.

Sugio, Akitoshi: *See—*
Yonemitsu, Eiichi; Sugio, Akitoshi; Nawata, Takanari; Masu, Masanobu; Kimura, Masaharu; and Sayama, Norio, 3,963,804.

Sugita, Chokichi: *See—*
Shibuya, Atsumi; Sugita, Chokichi; and Endo, Hiroshi, 3,963,056.

Sugitani, Yasuo: *See—*
Kima, Keisuke; and Sugitani, Yasuo, 3,962,794.

Sullivan, Robert E. Well pump control. 3,963,374, Cl. 417-12.000.

Sumitomo Chemical Company, Limited: *See—*
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; and Nakashita, Mitsuo, 3,963,736.
Tanimura, Syozo; Terada, Yutaka; and Fukuhara, Hiroshi, 3,963,652.

Sumitomo Metal Industries, Ltd.: *See—*
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Sun Oil Company of Pennsylvania: *See—*
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Sunbeam Plastics Corporation: *See—*
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Sunstar Dentifrice Co., Ltd.: *See—*
Hashimoto, Shigeru; Ninomiya, Eizi; and Kuroda, Junko, 3,963,832.

Suntop, Morris A.: *See—*
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Superior Electric Company, The: *See—*
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Supkis, Stanley J.: *See—*
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Susini, Monique: *See—*
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Suspa Federungstechnik Fritz Bauer & Sohne oHG: *See—*
Stadelmann, Ludwig; and Bauer, Fritz, 3,963,101.

Sutton, Walter T., to Texas Instruments Incorporated. Motor protector. 3,963,962, Cl. 317-13.00B.

Suzui, Akio; Nose, Shinji; Kodama, Takashi; Yokoyama, Kenji; Matsumoto, Kazuya; and Fujio, Yoshiharu, to Osaka Soda Co., Ltd. Diallyl phthalate resin-containing aqueous emulsions with thermosetting vinyl emulsions. 3,963,661, Cl. 260-29.4UA.

Suzuki, Eiji. Arc-splitting fin type screw set. 3,963,304, Cl. 339-245.000.

Suzuki, Hiroshi: *See—*
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Suzuki, Tetsuhiko: *See—*
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Svedeman, Stanley P.: *See—*
Townes, William E., Jr.; and Svedeman, Stanley P., 3,964,071.

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Buschini, Anthony Alan; and Swarsbrick, Douglas Edward, 3,962,810.
Buschini, Anthony Alan; and Swarsbrick, Douglas Edward, 3,962,811.

Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, to Commonwealth Scientific and Industrial Research Organization. Modification of mineral surfaces. 3,963,511, Cl. 106-308.00Q.

Swift, Jean Drummond; Hawthorne, David Geoffrey; Loft, Bryan Clarence; and Solomon, David Henry, to Commonwealth Scientific and Industrial Research Organization. Modification of mineral surfaces. 3,963,512, Cl. 106-308.00M.

Swiss Aluminium Ltd.: *See—*
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Syntex (U.S.A.) Inc.: *See—*
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Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,963,753.

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Tabor, Sidney J.: *See—*
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Tachibana, Kyozaburo; and Fujino, Takashi, to Kao Soap Co., Ltd. Powdery bleaching detergent composition. 3,963,634, Cl. 252-96.000.

Tada, Ritsuro: *See—*
Yokono, Hitoshi; Nishikawa, Akio; Tada, Ritsuro; and Miyadera, Yasuo, 3,963,796.

Tadakuma, Yuji: *See—*
Enomoto, Akio; and Tadakuma, Yuji, 3,963,910.

Tadanier, John Soloman: *See—*
Martin, Jerry Roy; Tadanier, John Soloman; and Goldstein, Alma Whitman, 3,963,696.

Taggart, George W.: *See—*
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Taguchi, Isamu: *See—*
Matsumoto, Ryutaro; Ono, Akihiro; and Taguchi, Isamu, 3,963,420.

Taguchi, Toshihiko; and Ito, Takehiko, to Senju Metal Industry Co. Ltd.; and Nisshin Steel Co., Ltd. Method of soldering stainless steel pipes by using soft solders. 3,963,162, Cl. 228-134.000.

Takada, Toshio: *See—*
Yonezawa, Masatomo; Ohno, Tomeji; Iwase, Keizo; Takada, Toshio; Kiyama, Masao; and Akita, Toshikazu, 3,963,630.

Takagi, Michiyasu; and Oguchi, Toshihiko, to Tokyo Shibaura Electric Co., Ltd. Device for developing an electrostatically charged image. 3,962,992, Cl. 118-637.000.

Takahashi, Isoji: *See—*
Matsumoto, Seiji; and Takahashi, Isoji, 3,963,487.

Takahashi, Kiyoshi; and Hirata, Noritsugu, to Canon Kabushiki Kaisha. Control device for a portable machine. 3,964,046, Cl. 340-309.100.

Takahashi, Kiyoshi: *See—*
Komine, Yoshio; Hosoe, Kazuya; Shimazaki, Mamoru; Ichiyanagi, Toshikazu; and Takahashi, Kiyoshi, 3,963,331.

Takahashi, Mitsuhiro: *See—*
Kyomori, Hiroyuki; Sasaki, Kazuhiro; and Takahashi, Mitsuhiro, 3,963,781.

Takahashi, Noriyoshi: *See—*
Watanabe, Masatoshi; Takahashi, Noriyoshi; and Takahaski, Miyoshi, 3,963,950.

Takahashi, Yasuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Wide angle lens. 3,963,325, Cl. 350-215.000.

Takahaski, Miyoshi: *See—*
Watanabe, Masatoshi; Takahashi, Noriyoshi; and Takahaski, Miyoshi, 3,963,950.

Takamatsu, Akira: *See—*
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Takasago Perfumery Co., Ltd.: *See—*
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Takasugi, Tsuneji: *See—*
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Takeda, Hiromu; Kobayashi, Takuichi; Oka, Koichiro; and Tanaka, Kazumi, to Toray Industries, Inc. Method for producing synthetic fiber for paper. 3,963,821, Cl. 264-147.000.

Takeda, Tohru: *See—*
Tamura, Kiyoshi; and Takeda, Tohru, 3,963,811.

Takeshita, Tsuneichi, to Du Pont de Nemours, E. I., and Company. Alternating alkylene/acrylic telomers. 3,963,772, Cl. 260-485.00H.

Takeshita, Yasuhiro, to Idemitsu Kosan Co., Ltd. Process for production of cyclic polyenes. 3,963,792, Cl. 260-666.00A.

Takeuchi, Kazuhiko, to Honeywell Inc. Sampling apparatus for fluid. 3,962,922, Cl. 73-424.000.

Takusagawa, Takashi; Fujikawa, Akira; Matsuda, Akira; Kaida, Masaaki; and Yasuda, Shigeo, to Bridgestone Tire Company Limited; and Mitaka Instrument Company Limited. Pressure-responsive switch device for pneumatic tires. 3,963,887, Cl. 200-83.00L.

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Vanassche, Willy Joseph; Pattyn, Herman Alberik; and Borginon, Hendrik Alfons, to AGFA-GEVAERT N.V. Direct-positive silver halide emulsion fogged to low level and the use thereof in energetic-surface development. 3,963,493, Cl. 96-64.000.
Van den Aa, Hendrik, to Movatex Products Ltd. Tape winder apparatus. 3,963,186, Cl. 242-18.00R.
Van Der Kolk, Dale: *See—*
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van der Lely, Ary: *See—*
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van der Lely, Cornelis. Methods for the manufacture of prefabricated building sections or room units and factories for the implementation of such methods. 3,962,773, Cl. 29-430.000.
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van der Lely, Cornelis. Soil cultivating implements. 3,963,078, Cl. 172-119.000.
Van Duuren, Hendrik Cornelis Anthony; and da Silva, Herman, to De Staat der Nederlanden, te Dezen Vertegenwoordigd Door de Directeur-Generaal der Posterijen, Telegrafie en Telefonie. Method for indicating a free-line state in a binary data communication system. 3,963,867, Cl. 178-69.00G.
van Duynhoven, Adrianus Henricus, to Ruti-Te Strake B.V. Device for manipulating yarns. 3,963,229, Cl. 269-8.000.
Van Gelder, Josephus Ludovicus Hubertus; Raeymaekers, Alfons Herman Margaretha; Roevens, Leopold Frans Cornell; and Van Laerhoven, Willy Joannes, to Janssen Pharmaceutica. Tetrahydropyrimidines. 3,963,718, Cl. 260-256.40H.
Van Laerhoven, Willy Joannes: *See—*
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Van Veersen, Gerardus Johannes, to Emery Industries, Inc. Polymeric materials. 3,963,689, Cl. 526-6.000.
Van Wuytswinkel, Charles M. G., to Caterpillar Tractor Co. Track roller frame and final case mounting. 3,963,278, Cl. 305-12.000.
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Varian Associates: *See—*
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Vaughan, John C., to United States of America, Navy. Negative air cushion for airship ground handling. 3,963,198, Cl. 244-100.00A.

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Velsicol Chemical Corporation: *See—*
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Vendur, John. Hair styling brush. 3,962,742, Cl. 15-201.000.

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Victor Electric Wire & Cable Corporation: *See—*
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Victor, Harold Richard. Carpet stretcher. 3,963,216, Cl. 254-62.000.

Vinard, Daniel Robert, to Norton Company. Blow molding process for manufacturing grinding wheels. 3,963,459, Cl. 51-298.00A.

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Vinton, David S., to Caterpillar Tractor Co. Planetary four wheel drive system having plural modes of operation. 3,963,085, Cl. 180-44.00R.

Vis, Vincent A., to J. M. Richards Laboratories. Leakage and continuity tester. 3,963,981, Cl. 324-51.000.

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Voituriez, Henry; and Aymard, Rene, to Union Siserugique du Nord et de l'Est de la France. Charging device for a blast-furnace. 3,963,128, Cl. 214-35.00R.

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Vornberger, Walter, to International Shoe Machine Corporation. Cement lasting the side and heel portions of a shoe assembly. 3,963,840, Cl. 427-284.000.

Vorwerk & Sohn, Textil- und Gummiwerke: *See—*
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Vullierme, Paul Roland. Toy construction element. 3,962,817, Cl. 46-25.000.

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Wadham, Eric, to U.S. Philips Corporation. Semiconductor devices with conductive layer structure. 3,964,092, Cl. 357-68.000.

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Wagner, Josef, to Spray Tech Corporation. Airless gun nozzle guard. 3,963,180, Cl. 239-288.500.

Wagner, Karl, to AGFA-Gevaert, A.G. Flash unit for use with cameras having different types of diaphragms and accessory shoes. 3,964,074, Cl. 354-32.000.

Wagner, Kuno: *See—*
Nonn, Konrad; and Wagner, Kuno, 3,963,430.

Wagner, Norbert, to Linde Aktiengesellschaft. Double-flow regenerator. 3,963,072, Cl. 165-157.000.

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Wakita, Katumasa; Yunoki, Issei; and Yoshida, Mitunari, to Stanley Electric Co., Ltd. Electrically heated solder removing bit. 3,963,897, Cl. 219-230.000.

Walden, John P.: *See—*
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Walker, Ross W., to Dresser Industries, Inc. Tunneling machine for boring a side drift. 3,963,080, Cl. 175-94.000.

Walker, William H., to United States of America, Air Force. Aircraft/-spacecraft ground accelerator. 3,963,196, Cl. 244-50.000.

Walters, John, to Canadian Patents and Development Limited. Planting containers. 3,962,822, Cl. 47-34.110.

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Ward, Truman L.; and Benerito, Ruth R., to United States of America, Agriculture. Formation of urethane crosslinks in cellulose ethers incorporating amine groups by use of propylene or ethylene carbonate. 3,963,433, Cl. 8-120.000.

Ward, Truman L.; Benerito, Ruth R.; and Perrier, Dorothy M., to United States of America, Agriculture. Carboxymethylated cotton fabric with improved conditioned and wet wrinkle recovery by reaction with propylene or ethylene carbonate. 3,963,434, Cl. 8-120.000.

Ward, Truman L.; and Benerito, Ruth R., to United States of America, Agriculture. Polyester grafts and crosslinks to cotton by reaction with heterocyclic carbonate, glycol, and dibasic acid. 3,963,435, Cl. 8-120.000.

Ware, Richard E., to Sun Oil Company of Pennsylvania. Antibacterial laundry oil and dust control composition. 3,963,419, Cl. 8-142.000.

Wark, John D.: *See—*
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Wasa, Kiyotaka; Kawashima, Shunichiro; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Electrooptic storage device. 3,964,033, Cl. 340-173.200.

Wassen, Johann, to Mannesmannrohren-Werke AG. Removal of excess metal from the welding seam in the interior of a pipe. 3,963,514, Cl. 134-8.000.

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Watanabe, Akinori; Tanoshima, Katsuhide; and Noguchi, Matsusaburo, to Oki Electric Industry Company, Ltd. Ink mist type high speed printer. 3,962,969, Cl. 101-1.000.

Watanabe, Masatoshi; Takahashi, Noriyoshi; and Takahaski, Miyoshi, to Hitachi, Ltd. Stator of rotary electric machine. 3,963,950, Cl. 310-54.000.

Watanabe, Sadakazu; and Shinoda, Hidenori, to Tokyo Shibaura Electric Co., Ltd. Apparatus for selectively segmenting red and white blood corpuscles contained in blood smear. 3,963,350, Cl. 356-39.000.

Waters, John Lawrence, to Raymond Lee Organization, Inc., The, a part interest. Dispenser for amorphous material. 3,963,147, Cl. 222-95.000.

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Wethe, David A.; Behn, Charles W.; and Willetts, Richard B. Timer. 3,964,019, Cl. 340-73.000.

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White, Emery A., to General Electric Company. Suppression of unwanted radiation from unavoidable openings in shielded enclosures. 3,964,072, Cl. 346-146.000.

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White, John W. Survival kit attachment for a boat. 3,962,740, Cl. 9-14.000.

White, Lewis P. Horizontal trash compactor. 3,962,967, Cl. 100-191.000.

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Whitlock, Russell U., to Raymond Lee Organization, The. Automatic boat-trailer latch. 3,963,263, Cl. 280-414.00R.

Widdicombe, Derek Gordon, to Naylor Brothers (Clayware) Limited. Pipe couplings. 3,963,268, Cl. 285-230.000.

Widdowson, Richard E., to General Motors Corporation. Piloted freeze throttling valve. 3,962,884, Cl. 62-217.000.

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Wild, Peter, to BBC Brown Boveri & Company Limited. Controllable liquid-crystal display device. 3,963,312, Cl. 350-160.0LC.

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Williams, Clyde R.: *See—*
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Williams, David Eyre; and Jubb, Albert, to Rolls-Royce (1971) Limited. Gas turbine power plant with exhaust treatments for SO_x removal. 3,962,864, Cl. 60-39.16R.

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Williamson, Robert R., to Better Agricultural Goals Corporation. Method of making disposable container for bulk materials. 3,962,959, Cl. 93-35.00R.

Wilson, Devon S., to Raymond Lee Organization, Inc., The, a part interest. Tissue dispensing device for a roll of tissue. 3,963,190, Cl. 242-55.530.

Wilson, Gerald L.: *See—*
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Winstel, Guenter: *See—*
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Winston, Billy G. Do not disturb doorbell. 3,964,058, Cl. 340-330.000.

Winter, Gerhard; Deissmann, Walter; Gutsche, Walter; and Woditsch, Peter, to Bayer Aktiengesellschaft. Distillation of titanium tetrachloride in solution with selected amines. 3,963,585, Cl. 203-38.000.

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Wood, Hamish Christopher Swan; and Stirling, Irene, to Burroughs Wellcome Co. 6-Spirocycloalkylamino 5-nitropyrimidines. 3,963,719, Cl. 260-256.40C.

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Worden, Howard L. Fabricating a glass lampshade construction form. 3,963,233, Cl. 269-289.00R.

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Wright, Alan C.; and Chang, Hsien-Dao, to NL Industries, Inc. Cracking of hydrocarbons with septechlorite catalysts. 3,963,602, Cl. 208-111.000.

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Wurmb, Rolf; Kunde, Joachim; and Seydl, Wolfgang, to BASF Aktiengesellschaft. Glass-fiber-reinforced polyester molding compositions of reduced flammability. 3,963,669, Cl. 260-40.00R.

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Yamada, Mitsumasa; and Kitamura, Youji, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Secondary air supply means of exhaust gas cleaning devices. 3,963,444, Cl. 23-277.00C.

Yamada, Seiji: *See—*
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Yamada, Takashi; Oishi, Kazuo; Kato, Toshiaki; and Iwase, Kazuo, to Nippon Soken, Inc. Recording system for vehicle occupant protecting apparatus. 3,964,016, Cl. 340-52.00H.

Yamaguchi, Toshio: *See—*
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Yamamoto, Takeshi; and Honda, Keisuke, to Keisuke Honda. Color display system in ultrasonic sonar. 3,964,012, Cl. 340-3.00C.

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Yamamura Glass Kabushiki Kaisha: *See—*
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Yamamura, Katsumi; Kakizawa, Kouji; and Hosokawa, Minoru, to Kabushiki Kaisha Suwa Seikosha. Compact electronic calculator. 3,963,906, Cl. 235-152.000.

Yamasaki, Terukiyo: *See—*
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Yamashita, Akio, to Matsushita Electric Industrial Co., Ltd. Color display device. 3,963,314, Cl. 350-160.00R.

Yamatake-Honeywell Company, Limited: *See—*
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Yamauchi, Nobuharu; Matsumura, Masaji; Morimoto, Katsuhide; Koyanagi, Haruo; Sato, Iwao; Yasuhara, Buhei; and Sakai, Jiro, to Nissan Motor Co., Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Sequence block display system. 3,964,026, Cl. 340-172.500.

Yanson, Boris Albertovich: *See—*
Alien, Imant Karlovich; Nikonenko, Anatoly Vasilievich; Popov, Jury Olegovich; Yanson, Boris Albertovich; and Khesin, Arkady Yakovlevich, 3,963,991.

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Yaws, Carl L.: *See—*
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Yen, Ting Shen. Switch for flashlight. 3,963,886, Cl. 200-60.000.

Yi, Chang-Han, to Union Carbide Corporation. Mixing apparatus. 3,963,221, Cl. 259-180.000.

Yoichi Murayama, Nippon Electric Varian Ltd.: *See—*
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Yokono, Hitoshi; Nishikawa, Akio; Tada, Ritsuro; and Miyadera, Yasuo, to Hitachi, Ltd.; and Hitachi Chemical Company, Ltd. Epoxy resin composition having excellent latent hardening characteristics. 3,963,796, Cl. 260-830.0TW.

Yokoyama, Izuru: *See—*
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Yokoyama, Kenji: *See—*
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Yoneyama, Masakazu: *See—*
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Yonezawa, Masatomo; Ohno, Tomeji; Iwase, Keizo; Takada, Toshio; Kiyama, Masao; and Akita, Toshikazu, to Nippon Electric Company Limited. Lead zirconate-titanate powder of particle sizes between 0.02 and 0.2 micron, process for producing same, and high-density piezoelectric ceramics made of powder. 3,963,630, Cl. 252-62.900.

Yoshida Kogyo Kabushiki Kaisha: *See—*
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Yoshida, Masaru; Nakase, Yoshiaki; and Ito, Akihiko, to Japan Atomic Energy Research Institute. Novel process for preparing oxymethylene polymer and resulting product. 3,963,676, Cl. 260-67.0FP.

Yoshida, Mitunari: *See—*
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Yoshioka, Takao: *See—*
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Young, Donald C., to Union Oil Company of California. Process for preventing corrosion by incorporative soluble metal chromates in fertilizer solutions. 3,963,472, Cl. 71-33.000.

Young, Robert A. Counter flowing positive ion-negative ion neutralization chromatograph. 3,963,422, Cl. 23-254.00E.

Youngberg, Charles A., to F. D. Farnum Co. Precombustion conditioning device for internal combustion engines. 3,963,408, Cl. 431-2.000.

Younger, Joseph J., to Continental Conveyor and Equipment Company. Conveyor belt drive assembly. 3,963,114, Cl. 198-203.000.

Yunoki, Issei: *See—*
Wakita, Katumasa; Yunoki, Issei; and Yoshida, Mitunari, 3,963,897.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Ohno, Masaji; and Kataoka, Mutsuo, 3,963,756.

Zajac, Chester J., to Robertshaw Controls Company. Driver circuit for step motor. 3,963,946, Cl. 307-270.000.

Zalesky, Norbert G., to Garlock Inc. Process for preparing anti-mist compounds for printing inks and process for preparing printing inks containing same. 3,963,501, Cl. 106-20.000.

Zanetti, Guido: *See—*
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Zavasnik, Fred J., to Continental Can Company, Inc. Injection-blow molding apparatus with parison heat redistribution means. 3,963,399, Cl. 425-242.00B.

Zdarsky, Eduard. Stop for the shaft of a root-canal instrument. 3,962,791, Cl. 32-57.000.

Zenith Radio Corporation: *See—*
Skerlos, Peter Constantine, 3,963,996.

Zimmermann, Adolf; Lesk, Adolf; Jordan, Walter; and Baumann, Rudi, to AZO-Maschinenfabrik Adolf Zimmermann. Apparatus for the treatment of synthetic resin powder. 3,963,608, Cl. 209-300.000.

Zinnert, Friedrich: *See—*
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Zipperer, John O., III. Planting bag. 3,962,823, Cl. 47-37.000.

Zollinger, Doyle D.: *See—*
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Zolner, William J., to Thermo Electron Corporation. Multiple chamber chemiluminescent analyzer. 3,963,928, Cl. 250-361.00C.

Zozulya, Nikolai Vasilievich: *See—*
Levin, Evgeny Sergeevich; Permyakov, Vladimir Andreevich; Zozulya, Nikolai Vasilievich; Shkuratov, Igor Yakovlevich; Kalinin, Boris Leonidovich; Vakulenko, Boris Fedorovich; and Podgorochny, Pavel Ivanovich, 3,963,071.

Zulliger, Hans R.; and Middleman, Lee M., to Nuclear Semiconductor. X-ray fluorescence device. 3,963,922, Cl. 250-272.000.

Zweifel, Walter; and Schneeberger, Fritz, to Swiss Aluminium Ltd. Method of coloring of anodized aluminum and aluminum alloys by electrolytic treatment in the metal salt solutions. 3,963,591, Cl. 204-35.00N.

Zweig, Arnold A., to Simpson Timber Company. Method and apparatus for edge gluing. 3,963,555, Cl. 156-358.000.

Zweng, Josef; and Komaroff, Iwan, to Robert Bosch G.m.b.H. Analyzing gases by testing the optical characteristics of exhaust gases from internal combustion engines. 3,963,939, Cl. 250-576.000.

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 24,017	3,914,140	Oct. 21, 1975	B 288,627	3,916,179	Oct. 28, 1975
B 24,018	3,914,206	Oct. 21, 1975	B 288,638	3,925,132	Dec. 9, 1975
B 64,868	3,914,141	Oct. 21, 1975	B 289,175	3,924,309	Dec. 9, 1975
B 78,331	3,914,142	Oct. 21, 1975	B 289,471	3,917,184	Nov. 4, 1975
B 112,422	3,913,484	Oct. 21, 1975	B 289,523	3,921,166	Nov. 18, 1975
B 150,560	3,913,654	Oct. 21, 1975	B 289,883	3,925,063	Dec. 9, 1975
B 176,995	3,915,773	Oct. 28, 1975	B 290,328	3,924,838	Dec. 9, 1975
B 178,475	3,944,602	Mar. 16, 1976	B 291,104	3,925,007	Dec. 9, 1975
B 189,772	3,925,367	Dec. 9, 1975	B 291,694	3,925,339	Dec. 9, 1975
B 189,773	3,925,405	Dec. 9, 1975	B 292,054	3,915,877	Oct. 28, 1975
B 190,679	3,925,346	Dec. 9, 1975	B 292,126	3,914,465	Oct. 21, 1975
B 198,810	3,916,043	Oct. 28, 1975	B 292,140	3,914,340	Oct. 21, 1975
B 204,161	3,924,605	Dec. 9, 1975	B 292,300	3,927,167	Dec. 16, 1975
B 207,272	3,914,123	Oct. 21, 1975	B 292,563	3,923,653	Dec. 2, 1975
B 211,786	3,914,300	Oct. 21, 1975	B 293,378	3,923,725	Dec. 2, 1975
B 213,211	3,925,269	Dec. 9, 1975	B 293,437	3,913,414	Oct. 21, 1975
B 220,683	3,914,471	Oct. 21, 1975	B 294,103	3,924,396	Dec. 9, 1975
B 222,188	3,914,739	Oct. 21, 1975	B 294,579	3,916,737	Nov. 4, 1975
B 223,621	3,925,526	Dec. 9, 1975	B 294,673	3,916,023	Oct. 28, 1975
B 224,323	3,925,476	Dec. 9, 1975	B 295,481	3,921,593	Nov. 25, 1975
B 233,383	3,925,424	Dec. 9, 1975	B 295,674	3,916,107	Oct. 28, 1975
B 233,741	3,925,326	Dec. 9, 1975	B 295,860	3,923,880	Dec. 2, 1975
B 235,011	3,925,086	Dec. 9, 1975	B 299,267	3,917,106	Nov. 4, 1975
B 235,925	3,924,949	Dec. 9, 1975	B 300,353	3,921,734	Nov. 25, 1975
B 236,609	3,925,187	Dec. 9, 1975	B 302,271	3,929,130	Dec. 30, 1975
B 237,953	3,924,051	Dec. 2, 1975	B 302,692	3,924,598	Dec. 9, 1975
B 239,289	3,922,711	Nov. 25, 1975	B 302,836	3,923,573	Dec. 2, 1975
B 241,433	3,923,711	Dec. 2, 1975	B 302,998	3,928,233	Dec. 23, 1975
B 245,194	3,919,179	Nov. 11, 1975	B 303,011	3,930,188	Dec. 30, 1975
B 248,916	3,920,862	Nov. 18, 1975	B 303,655	3,924,642	Dec. 9, 1975
B 251,109	3,914,148	Oct. 21, 1975	B 303,702	3,914,131	Oct. 21, 1975
B 251,635	3,914,149	Oct. 21, 1975	B 304,687	3,924,783	Dec. 9, 1975
B 252,947	3,923,803	Dec. 2, 1975	B 305,417	3,915,882	Oct. 28, 1975
B 254,211	3,917,677	Nov. 4, 1975	B 305,868	3,921,463	Nov. 25, 1975
B 254,708	3,923,878	Dec. 2, 1975	B 305,881	3,923,478	Dec. 2, 1975
B 255,756	3,923,781	Dec. 2, 1975	B 306,829	3,925,411	Dec. 9, 1975
B 256,334	3,924,988	Dec. 9, 1975	B 306,938	3,916,050	Oct. 28, 1975
B 256,936	3,925,513	Dec. 9, 1975	B 307,677	3,915,276	Oct. 28, 1975
B 258,687	3,914,221	Oct. 21, 1975	B 308,661	3,924,349	Dec. 9, 1975
B 259,236	3,924,874	Dec. 9, 1975	B 308,892	3,919,624	Nov. 11, 1975
B 259,274	3,928,688	Dec. 23, 1975	B 309,207	3,914,743	Oct. 21, 1975
B 260,455	3,925,634	Dec. 9, 1975	B 309,499	3,922,002	Nov. 25, 1975
B 260,945	3,925,250	Dec. 9, 1975	B 309,681	3,927,374	Dec. 16, 1975
B 261,378	3,913,468	Oct. 21, 1975	B 309,755	3,919,468	Nov. 11, 1975
B 261,828	3,925,551	Dec. 9, 1975	B 309,756	3,914,136	Oct. 21, 1975
B 262,241	3,925,528	Dec. 9, 1975	B 309,860	3,922,485	Nov. 25, 1975
B 262,287	3,921,209	Nov. 18, 1975	B 310,149	3,924,705	Dec. 9, 1975
B 262,378	3,914,410	Oct. 21, 1975	B 310,271	3,923,689	Dec. 2, 1975
B 264,257	3,928,665	Dec. 23, 1975	B 311,313	3,925,142	Dec. 9, 1975
B 264,833	3,923,566	Dec. 2, 1975	B 311,317	3,918,975	Nov. 11, 1975
B 265,369	3,925,245	Dec. 9, 1975	B 311,413	3,925,515	Dec. 9, 1975
B 265,727	3,914,479	Oct. 21, 1975	B 311,910	3,924,357	Dec. 9, 1975
B 265,862	3,915,915	Oct. 28, 1975	B 311,911	3,925,233	Dec. 9, 1975
B 266,195	3,923,599	Dec. 2, 1975	B 312,139	3,925,530	Dec. 9, 1975
B 269,673	3,914,377	Oct. 21, 1975	B 312,477	3,923,714	Dec. 2, 1975
B 270,089	3,923,875	Dec. 2, 1975	B 313,098	3,925,045	Dec. 9, 1975
B 271,104	3,925,400	Dec. 9, 1975	B 313,531	3,925,548	Dec. 9, 1975
B 274,945	3,924,992	Dec. 9, 1975	B 313,594	3,924,626	Dec. 9, 1975
B 275,426	3,925,168	Dec. 9, 1975	B 313,900	3,915,932	Oct. 28, 1975
B 276,271	3,916,028	Oct. 28, 1975	B 314,049	3,920,588	Nov. 18, 1975
B 276,560	3,916,030	Oct. 28, 1975	B 314,255	3,923,764	Dec. 2, 1975
B 276,993	3,948,823	Apr. 6, 1976	B 314,271	3,921,845	Nov. 25, 1975
B 277,449	3,924,048	Dec. 2, 1975	B 314,489	3,925,016	Dec. 9, 1975
B 278,491	3,921,170	Nov. 18, 1975	B 314,800	3,930,087	Dec. 30, 1975
B 278,991	3,914,469	Oct. 21, 1975	B 314,977	3,923,459	Dec. 2, 1975
B 279,583	3,923,749	Dec. 2, 1975	B 315,363	3,920,673	Nov. 18, 1975
B 280,015	3,925,378	Dec. 9, 1975	B 315,397	3,923,963	Dec. 2, 1975
B 280,395	3,919,604	Nov. 11, 1975	B 315,731	3,914,108	Oct. 21, 1975
B 281,341	3,920,643	Nov. 18, 1975	B 316,014	3,920,861	Nov. 18, 1975
B 281,943	3,924,013	Dec. 2, 1975	B 316,239	3,913,546	Oct. 21, 1975
B 282,081	3,913,483	Oct. 21, 1975	B 316,917	3,925,494	Dec. 9, 1975
B 282,252	3,924,997	Dec. 9, 1975	B 317,080	3,925,324	Dec. 9, 1975
B 283,124	3,923,512	Dec. 2, 1975	B 317,347	3,923,552	Dec. 2, 1975
B 283,300	3,925,011	Dec. 9, 1975	B 317,624	3,925,167	Dec. 9, 1975
B 284,297	3,913,722	Oct. 21, 1975	B 318,195	3,915,699	Oct. 28, 1975
B 284,427	3,952,812	Apr. 27, 1976	B 318,618	3,915,365	Oct. 28, 1975
B 285,200	3,923,680	Dec. 2, 1975	B 318,640	3,925,186	Dec. 9, 1975
B 285,796	3,914,303	Oct. 21, 1975	B 318,745	3,916,571	Nov. 4, 1975
B 286,499	3,914,129	Oct. 21, 1975	B 319,226	3,925,082	Dec. 9, 1975
B 286,614	3,924,696	Dec. 9, 1975	B 319,339	3,916,056	Oct. 28, 1975
B 286,913	3,928,696	Dec. 23, 1975	B 319,402	3,919,568	Nov. 11, 1975
B 287,164	3,914,139	Oct. 21, 1975	B 319,414	3,928,666	Dec. 23, 1975
B 287,270	3,924,825	Dec. 9, 1975	B 320,261	3,924,033	Dec. 2, 1975
B 287,275	3,925,141	Dec. 9, 1975	B 320,452	3,925,083	Dec. 9, 1975
B 287,373	3,918,568	Nov. 11, 1975	B 320,603	3,915,571	Oct. 28, 1975
B 288,018	3,925,239	Dec. 9, 1975	B 321,018	3,921,623	Nov. 25, 1975

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DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 321,101	3,917,163	Nov. 4, 1975	B 346,350	3,915,824	Oct. 28, 1975
B 321,938	3,923,889	Dec. 2, 1975	B 346,487	3,927,406	Dec. 16, 1975
B 322,182	3,925,390	Dec. 9, 1975	B 346,585	3,913,820	Oct. 21, 1975
B 322,239	3,920,973	Nov. 18, 1975	B 346,613	3,923,545	Dec. 2, 1975
B 322,564	3,914,373	Oct. 21, 1975	B 346,901	3,915,583	Oct. 28, 1975
B 322,611	3,920,863	Nov. 18, 1975	B 348,083	3,923,774	Dec. 2, 1975
B 322,777	3,924,382	Dec. 9, 1975	B 348,383	3,923,452	Dec. 2, 1975
B 323,127	3,923,967	Dec. 2, 1975	B 348,495	3,914,654	Oct. 21, 1975
B 323,191	3,914,566	Oct. 21, 1975	B 348,558	3,914,109	Oct. 21, 1975
B 323,203	3,916,165	Oct. 28, 1975	B 349,141	3,915,363	Oct. 28, 1975
B 323,568	3,920,536	Nov. 18, 1975	B 349,177	3,914,033	Oct. 21, 1975
B 323,666	3,924,568	Dec. 9, 1975	B 349,231	3,915,831	Oct. 28, 1975
B 324,495	3,928,664	Dec. 23, 1975	B 349,321	3,916,103	Oct. 28, 1975
B 324,503	3,928,524	Dec. 23, 1975	B 349,948	3,914,557	Oct. 21, 1975
B 324,505	3,925,294	Dec. 9, 1975	B 350,025	3,927,415	Dec. 16, 1975
B 324,739	3,924,990	Dec. 9, 1975	B 350,143	3,924,419	Dec. 9, 1975
B 324,879	3,923,538	Dec. 2, 1975	B 350,219	3,917,802	Nov. 4, 1975
B 325,102	3,924,355	Dec. 9, 1975	B 350,245	3,914,331	Oct. 21, 1975
B 325,262	3,921,304	Nov. 25, 1975	B 350,523	3,924,726	Dec. 9, 1975
B 326,514	3,925,080	Dec. 9, 1975	B 350,589	3,927,419	Dec. 16, 1975
B 327,109	3,925,350	Dec. 9, 1975	B 350,708	3,923,871	Dec. 2, 1975
B 327,363	3,923,504	Dec. 2, 1975	B 350,843	3,915,461	Oct. 28, 1975
B 327,612	3,925,620	Dec. 9, 1975	B 351,055	3,914,074	Oct. 21, 1975
B 327,674	3,918,540	Nov. 11, 1975	B 351,218	3,914,186	Oct. 21, 1975
B 327,899	3,925,674	Dec. 9, 1975	B 351,222	3,921,179	Nov. 18, 1975
B 328,164	3,914,703	Oct. 21, 1975	B 351,348	3,923,563	Dec. 2, 1975
B 328,200	3,916,031	Oct. 28, 1975	B 351,421	3,914,733	Oct. 21, 1975
B 328,205	3,914,106	Oct. 21, 1975	B 351,493	3,914,758	Oct. 21, 1975
B 328,210	3,914,275	Oct. 21, 1975	B 351,535	3,915,239	Oct. 28, 1975
B 328,870	3,916,486	Nov. 4, 1975	B 351,665	3,919,701	Nov. 11, 1975
B 329,115	3,924,727	Dec. 9, 1975	B 351,672	3,914,000	Oct. 21, 1975
B 329,476	3,920,562	Nov. 18, 1975	B 351,735	3,913,385	Oct. 21, 1975
B 329,612	3,925,128	Dec. 9, 1975	B 351,863	3,914,700	Oct. 21, 1975
B 329,787	3,920,688	Nov. 18, 1975	B 351,883	3,924,657	Dec. 9, 1975
B 329,816	3,923,947	Dec. 2, 1975	B 351,926	3,914,133	Oct. 21, 1975
B 330,536	3,925,452	Dec. 9, 1975	B 351,939	3,913,480	Oct. 21, 1975
B 330,828	3,913,589	Oct. 21, 1975	B 352,445	3,928,746	Dec. 23, 1975
B 331,417	3,914,157	Oct. 21, 1975	B 352,934	3,913,692	Oct. 21, 1975
B 331,557	3,916,577	Nov. 4, 1975	B 352,950	3,922,590	Nov. 25, 1975
B 331,895	3,916,403	Oct. 28, 1975	B 352,965	3,921,926	Nov. 25, 1975
B 332,527	3,924,017	Dec. 2, 1975	B 353,317	3,916,446	Nov. 4, 1975
B 332,811	3,924,359	Dec. 9, 1975	B 353,387	3,924,404	Dec. 9, 1975
B 333,876	3,921,208	Nov. 18, 1975	B 353,546	3,913,273	Oct. 21, 1975
B 333,928	3,927,172	Dec. 16, 1975	B 354,008	3,925,081	Dec. 9, 1975
B 334,251	3,924,719	Dec. 9, 1975	B 354,098	3,925,547	Dec. 9, 1975
B 334,868	3,919,469	Nov. 11, 1975	B 354,145	3,927,279	Dec. 16, 1975
B 334,985	3,923,912	Dec. 2, 1975	B 354,296	3,914,580	Oct. 21, 1975
B 335,670	3,928,686	Dec. 23, 1975	B 354,510	3,928,658	Dec. 23, 1975
B 335,741	3,925,615	Dec. 9, 1975	B 354,889	3,913,204	Oct. 21, 1975
B 335,773	3,920,953	Nov. 18, 1975	B 354,979	3,914,251	Oct. 21, 1975
B 336,129	3,923,606	Dec. 2, 1975	B 355,095	3,925,656	Dec. 9, 1975
B 336,243	3,925,422	Dec. 9, 1975	B 355,269	3,914,561	Oct. 21, 1975
B 336,345	3,925,179	Dec. 9, 1975	B 355,510	3,913,704	Oct. 21, 1975
B 336,652	3,914,211	Oct. 21, 1975	B 355,595	3,925,649	Dec. 9, 1975
B 336,902	3,918,897	Nov. 11, 1975	B 355,876	3,925,685	Dec. 9, 1975
B 336,946	3,919,425	Nov. 11, 1975	B 356,032	3,928,636	Dec. 23, 1975
B 336,978	3,923,968	Dec. 2, 1975	B 356,253	3,925,025	Dec. 9, 1975
B 337,235	3,919,386	Nov. 11, 1975	B 356,602	3,927,393	Dec. 16, 1975
B 337,409	3,925,258	Dec. 9, 1975	B 356,724	3,924,586	Dec. 9, 1975
B 337,442	3,913,658	Oct. 21, 1975	B 357,039	3,924,406	Dec. 9, 1975
B 337,703	3,914,690	Oct. 21, 1975	B 357,057	3,913,738	Oct. 21, 1975
B 337,787	3,923,506	Dec. 2, 1975	B 357,131	3,924,453	Dec. 9, 1975
B 339,057	3,924,822	Dec. 9, 1975	B 357,402	3,914,180	Oct. 21, 1975
B 339,218	3,925,121	Dec. 9, 1975	B 357,682	3,924,973	Dec. 9, 1975
B 339,699	3,933,527	Jan. 20, 1976	B 357,803	3,919,470	Nov. 11, 1975
B 339,838	3,930,221	Dec. 30, 1975	B 358,174	3,924,958	Dec. 9, 1975
B 340,212	3,922,645	Nov. 25, 1975	B 358,244	3,913,411	Oct. 21, 1975
B 340,833	3,925,208	Dec. 9, 1975	B 358,311	3,923,561	Dec. 2, 1975
B 341,579	3,913,363	Oct. 21, 1975	B 358,939	3,924,713	Dec. 9, 1975
B 342,084	3,928,694	Dec. 23, 1975	B 359,174	3,914,117	Oct. 21, 1975
B 342,423	3,925,334	Dec. 9, 1975	B 359,187	3,924,525	Dec. 9, 1975
B 342,886	3,923,507	Dec. 2, 1975	B 359,540	3,915,235	Oct. 28, 1975
B 343,136	3,919,453	Nov. 11, 1975	B 359,740	3,936,212	Feb. 3, 1976
B 343,240	3,925,693	Dec. 9, 1975	B 359,791	3,929,430	Dec. 30, 1975
B 343,506	3,916,021	Oct. 28, 1975	B 359,825	3,921,344	Nov. 25, 1975
B 343,577	3,921,165	Nov. 18, 1975	B 359,946	3,914,132	Oct. 21, 1975
B 344,203	3,928,719	Dec. 23, 1975	B 359,947	3,914,653	Oct. 21, 1975
B 344,479	3,924,042	Dec. 2, 1975	B 360,208	3,923,750	Dec. 2, 1975
B 345,060	3,916,018	Oct. 28, 1975	B 360,296	3,916,720	Nov. 4, 1975
B 345,384	3,916,146	Oct. 28, 1975	B 360,719	3,915,715	Oct. 28, 1975
B 345,390	3,940,343	Feb. 24, 1976	B 360,910	3,925,696	Dec. 9, 1975
B 345,422	3,914,392	Oct. 21, 1975	B 361,265	3,923,569	Dec. 2, 1975
B 345,527	3,927,365	Dec. 16, 1975	B 361,443	3,927,405	Dec. 16, 1975
B 345,567	3,913,985	Oct. 21, 1975	B 361,569	3,914,554	Oct. 21, 1975
B 346,165	3,913,293	Oct. 21, 1975	B 361,604	3,922,702	Nov. 25, 1975
B 346,210	3,916,142	Oct. 28, 1975	B 361,734	3,915,764	Oct. 28, 1975

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 362,589	3,914,012	Oct. 21, 1975	B 386,592	3,925,305	Dec. 9, 1975
B 363,205	3,923,744	Dec. 2, 1975	B 387,039	3,924,510	Dec. 9, 1975
B 363,337	3,928,639	Dec. 23, 1975	B 387,331	3,913,701	Oct. 21, 1975
B 363,457	3,922,595	Nov. 25, 1975	B 387,363	3,927,378	Dec. 16, 1975
B 363,674	3,929,716	Dec. 30, 1975	B 387,687	3,918,151	Nov. 11, 1975
B 363,892	3,913,395	Oct. 21, 1975	B 387,761	3,914,245	Oct. 21, 1975
B 363,962	3,921,826	Nov. 25, 1975	B 387,790	3,925,380	Dec. 9, 1975
B 364,022	3,913,499	Oct. 21, 1975	B 387,818	3,918,935	Nov. 11, 1975
B 364,163	3,916,092	Oct. 28, 1975	B 388,580	3,923,712	Dec. 2, 1975
B 364,241	3,916,668	Nov. 4, 1975	B 389,070	3,914,171	Oct. 21, 1975
B 364,334	3,924,670	Dec. 9, 1975	B 389,285	3,914,631	Oct. 21, 1975
B 364,528	3,919,510	Nov. 11, 1975	B 389,327	3,924,504	Dec. 9, 1975
B 364,786	3,921,673	Nov. 25, 1975	B 389,639	3,914,626	Oct. 21, 1975
B 364,910	3,925,335	Dec. 9, 1975	B 389,726	3,921,010	Nov. 18, 1975
B 365,490	3,918,527	Nov. 11, 1975	B 389,807	3,922,623	Nov. 25, 1975
B 365,834	3,914,702	Oct. 21, 1975	B 389,932	3,913,268	Oct. 21, 1975
B 365,841	3,925,628	Dec. 9, 1975	B 389,933	3,913,267	Oct. 21, 1975
B 365,855	3,917,258	Nov. 4, 1975	B 390,679	3,913,668	Oct. 21, 1975
B 366,287	3,924,946	Dec. 9, 1975	B 390,732	3,913,878	Oct. 21, 1975
B 366,402	3,928,053	Dec. 23, 1975	B 391,184	3,914,214	Oct. 21, 1975
B 366,589	3,914,719	Oct. 21, 1975	B 391,210	3,914,220	Oct. 21, 1975
B 367,021	3,914,752	Oct. 21, 1975	B 391,437	3,915,416	Oct. 28, 1975
B 367,040	3,924,775	Dec. 9, 1975	B 391,509	3,925,175	Dec. 9, 1975
B 367,661	3,914,158	Oct. 21, 1975	B 391,675	3,916,017	Oct. 28, 1975
B 367,739	3,923,648	Dec. 2, 1975	B 392,154	3,923,809	Dec. 2, 1975
B 367,812	3,924,789	Dec. 9, 1975	B 392,242	3,926,636	Dec. 16, 1975
B 368,081	3,924,691	Dec. 9, 1975	B 392,696	3,916,175	Oct. 28, 1975
B 368,387	3,924,923	Dec. 9, 1975	B 392,732	3,914,903	Oct. 21, 1975
B 368,392	3,913,812	Oct. 21, 1975	B 392,753	3,916,341	Oct. 28, 1975
B 368,397	3,914,677	Oct. 21, 1975	B 392,894	3,914,763	Oct. 21, 1975
B 368,862	3,925,549	Dec. 9, 1975	B 393,163	3,914,535	Oct. 21, 1975
B 369,563	3,924,449	Dec. 9, 1975	B 393,970	3,914,638	Oct. 21, 1975
B 369,607	3,923,786	Dec. 2, 1975	B 394,088	3,914,740	Oct. 21, 1975
B 369,997	3,913,533	Oct. 21, 1975	B 394,188	3,924,591	Dec. 9, 1975
B 370,453	3,964,101	Jun. 15, 1976	B 394,300	3,914,159	Oct. 21, 1975
B 370,706	3,925,242	Dec. 9, 1975	B 394,712	3,916,306	Oct. 28, 1975
B 371,073	3,930,135	Dec. 30, 1975	B 395,478	3,922,577	Nov. 25, 1975
B 371,085	3,923,783	Dec. 2, 1975	B 395,496	3,919,435	Nov. 11, 1975
B 371,787	3,921,217	Nov. 18, 1975	B 395,671	3,920,418	Nov. 18, 1975
B 371,805	3,914,433	Oct. 21, 1975	B 395,889	3,913,190	Oct. 21, 1975
B 371,836	3,923,541	Dec. 2, 1975	B 396,025	3,913,869	Oct. 21, 1975
B 372,823	3,924,660	Dec. 9, 1975	B 396,551	3,921,929	Nov. 25, 1975
B 373,297	3,924,436	Dec. 9, 1975	B 397,027	3,923,736	Dec. 2, 1975
B 373,326	3,920,433	Nov. 18, 1975	B 397,527	3,913,488	Oct. 21, 1975
B 373,428	3,915,511	Oct. 28, 1975	B 397,990	3,914,848	Oct. 28, 1975
B 375,220	3,920,417	Nov. 18, 1975	B 398,262	3,913,481	Oct. 21, 1975
B 375,652	3,921,303	Nov. 25, 1975	B 398,551	3,924,924	Dec. 9, 1975
B 376,504	3,914,570	Oct. 21, 1975	B 398,597	3,913,743	Oct. 21, 1975
B 376,654	3,922,513	Nov. 25, 1975	B 398,625	3,920,996	Nov. 18, 1975
B 376,742	3,924,392	Dec. 9, 1975	B 399,292	3,914,810	Oct. 28, 1975
B 376,799	3,913,955	Oct. 21, 1975	B 399,304	3,919,567	Nov. 11, 1975
B 377,172	3,918,255	Nov. 11, 1975	B 399,349	3,925,694	Dec. 9, 1975
B 377,683	3,924,433	Dec. 9, 1975	B 399,766	3,915,667	Oct. 28, 1975
B 377,833	3,913,884	Oct. 21, 1975	B 400,080	3,925,163	Dec. 9, 1975
B 377,869	3,917,002	Nov. 4, 1975	B 400,293	3,923,719	Dec. 2, 1975
B 378,621	3,923,840	Dec. 2, 1975	B 400,310	3,915,507	Oct. 28, 1975
B 379,038	3,923,994	Dec. 2, 1975	B 401,133	3,924,443	Dec. 9, 1975
B 379,172	3,914,379	Oct. 21, 1975	B 401,992	3,924,898	Dec. 9, 1975
B 379,282	3,913,462	Oct. 21, 1975	B 402,065	3,925,413	Dec. 9, 1975
B 379,955	3,913,157	Oct. 21, 1975	B 402,555	3,914,688	Oct. 21, 1975
B 380,014	3,921,915	Nov. 25, 1975	B 403,140	3,913,486	Oct. 21, 1975
B 380,141	3,925,161	Dec. 9, 1975	B 403,355	3,913,352	Oct. 21, 1975
B 380,310	3,921,048	Nov. 18, 1975	B 403,990	3,914,684	Oct. 21, 1975
B 380,312	3,913,953	Oct. 21, 1975	B 403,996	3,916,016	Oct. 28, 1975
B 380,338	3,924,873	Dec. 9, 1975	B 404,290	3,924,918	Dec. 9, 1975
B 380,446	3,923,836	Dec. 2, 1975	B 404,437	3,915,200	Oct. 28, 1975
B 380,900	3,913,307	Oct. 21, 1975	B 405,136	3,915,565	Oct. 28, 1975
B 380,926	3,925,095	Dec. 9, 1975	B 405,137	3,915,566	Oct. 28, 1975
B 381,074	3,919,583	Nov. 11, 1975	B 405,160	3,924,821	Dec. 9, 1975
B 381,632	3,914,732	Oct. 21, 1975	B 405,248	3,926,294	Dec. 16, 1975
B 381,847	3,921,152	Nov. 18, 1975	B 405,305	3,922,111	Nov. 25, 1975
B 382,018	3,929,742	Dec. 30, 1975	B 405,360	3,913,403	Oct. 21, 1975
B 382,021	3,913,212	Oct. 21, 1975	B 405,495	3,924,577	Dec. 9, 1975
B 382,261	3,914,991	Oct. 28, 1975	B 405,938	3,920,109	Nov. 18, 1975
B 382,290	3,924,717	Dec. 9, 1975	B 406,065	3,914,199	Oct. 21, 1975
B 382,783	3,919,527	Nov. 11, 1975	B 406,357	3,924,529	Dec. 9, 1975
B 382,798	3,924,435	Dec. 9, 1975	B 406,800	3,952,708	Apr. 27, 1976
B 382,840	3,922,007	Nov. 25, 1975	B 407,736	3,924,463	Dec. 9, 1975
B 383,465	3,927,412	Dec. 16, 1975	B 407,357	3,924,614	Dec. 9, 1975
B 383,532	3,914,246	Oct. 21, 1975	B 407,728	3,925,240	Dec. 9, 1975
B 383,581	3,925,318	Dec. 9, 1975	B 408,487	3,924,046	Dec. 2, 1975
B 384,499	3,925,135	Dec. 9, 1975	B 408,749	3,914,116	Oct. 21, 1975
B 384,658	3,913,452	Oct. 21, 1975	B 409,026	3,925,497	Dec. 9, 1975
B 384,773	3,915,416	Oct. 28, 1975	B 409,220	3,915,648	Oct. 28, 1975
B 385,210	3,913,406	Oct. 21, 1975	B 409,251	3,922,620	Nov. 25, 1975
B 386,403	3,924,895	Dec. 9, 1975	B 409,657	3,927,362	Dec. 16, 1975

CROSS REFERENCE OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

JANUARY 28, 1975 NOW ISSUED AS PATENTS—CONTINUED

DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE	DOCUMENT NUMBER	PATENT NUMBER	ISSUE DATE
B 409,816	3,921,317	Nov. 25, 1975	B 425,345	3,922,015	Nov. 25, 1975
B 410,062	3,923,855	Dec. 2, 1975	B 425,470	3,923,796	Dec. 2, 1975
B 410,168	3,914,717	Oct. 21, 1975	B 425,539	3,916,742	Nov. 4, 1975
B 411,145	3,914,168	Oct. 21, 1975	B 425,541	3,914,051	Oct. 21, 1975
B 411,356	3,919,649	Nov. 11, 1975	B 425,572	3,923,822	Dec. 2, 1975
B 411,483	3,925,196	Dec. 9, 1975	B 427,631	3,921,433	Nov. 25, 1975
B 411,633	3,914,741	Oct. 21, 1975	B 428,177	3,914,624	Oct. 21, 1975
B 412,516	3,927,417	Dec. 16, 1975	B 428,795	3,921,056	Nov. 18, 1975
B 412,619	3,925,292	Dec. 9, 1975	B 429,442	3,923,485	Dec. 2, 1975
B 412,867	3,924,587	Dec. 9, 1975	B 430,106	3,918,941	Nov. 11, 1975
B 413,006	3,914,850	Oct. 28, 1975	B 430,140	3,922,084	Nov. 25, 1975
B 413,546	3,924,314	Dec. 9, 1975	B 430,798	3,918,204	Nov. 11, 1975
B 414,129	3,925,484	Dec. 9, 1975	B 430,944	3,922,096	Nov. 25, 1975
B 414,288	3,925,537	Dec. 9, 1975	B 432,373	3,919,670	Nov. 11, 1975
B 415,113	3,915,717	Oct. 28, 1975	B 433,587	3,914,567	Oct. 21, 1975
B 415,124	3,915,944	Oct. 28, 1975	B 435,343	3,919,244	Nov. 11, 1975
B 415,845	3,925,076	Dec. 9, 1975	B 435,844	3,925,170	Dec. 9, 1975
B 415,847	3,914,208	Oct. 21, 1975	B 437,173	3,924,627	Dec. 9, 1975
B 415,957	3,925,635	Dec. 9, 1975	B 437,172	3,913,251	Oct. 21, 1975
B 415,977	3,927,359	Dec. 16, 1975	B 437,195	3,914,618	Oct. 21, 1975
B 416,598	3,923,473	Dec. 2, 1975	B 437,450	3,922,479	Nov. 25, 1975
B 416,832	3,924,975	Dec. 9, 1975	B 438,053	3,916,013	Oct. 28, 1975
B 416,710	3,923,746	Dec. 2, 1975	B 438,706	3,925,050	Dec. 9, 1975
B 416,933	3,924,968	Dec. 9, 1975	B 439,168	3,919,676	Nov. 11, 1975
B 417,299	3,918,235	Nov. 11, 1975	B 439,669	3,921,499	Nov. 25, 1975
B 418,121	3,925,023	Dec. 9, 1975	B 440,898	3,921,789	Nov. 25, 1975
B 418,153	3,925,251	Dec. 9, 1975	B 441,024	3,913,629	Oct. 21, 1975
B 418,302	3,913,252	Oct. 21, 1975	B 441,416	3,913,851	Oct. 21, 1975
B 419,327	3,921,197	Nov. 18, 1975	B 442,280	3,914,054	Oct. 21, 1975
B 419,481	3,924,970	Dec. 9, 1975	B 442,859	3,918,570	Nov. 11, 1975
B 420,016	3,914,572	Oct. 21, 1975	B 442,919	3,925,483	Dec. 9, 1975
B 420,148	3,927,414	Dec. 16, 1975	B 444,614	3,927,996	Dec. 23, 1975
B 420,514	3,923,929	Dec. 2, 1975	B 445,471	3,914,711	Oct. 21, 1975
B 420,568	3,925,069	Dec. 9, 1975	B 445,740	3,923,612	Dec. 2, 1975
B 421,026	3,914,785	Oct. 21, 1975	B 448,571	3,924,760	Dec. 9, 1975
B 421,362	3,924,817	Dec. 9, 1975	B 449,647	3,916,797	Nov. 4, 1975
B 421,383	3,925,047	Dec. 9, 1975	B 450,499	3,920,526	Nov. 18, 1975
B 421,797	3,914,023	Oct. 21, 1975	B 450,546	3,924,417	Dec. 9, 1975
B 422,399	3,928,656	Dec. 23, 1975	B 450,927	3,913,844	Oct. 21, 1975
B 422,467	3,924,804	Dec. 9, 1975	B 455,520	3,922,543	Nov. 25, 1975
B 422,949	3,921,873	Nov. 25, 1975	B 455,775	3,914,356	Oct. 21, 1975
B 424,415	3,919,458	Nov. 11, 1975	B 456,346	3,914,531	Oct. 21, 1975
B 424,462	3,920,522	Nov. 18, 1975	B 459,425	3,928,773	Dec. 23, 1975
B 424,572	3,924,979	Dec. 9, 1975	B 461,872	3,919,586	Nov. 11, 1975
B 424,748	3,924,395	Dec. 9, 1975	B 467,684	3,915,119	Oct. 28, 1975
B 425,035	3,914,025	Oct. 21, 1975	B 468,198	3,925,340	Dec. 9, 1975

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 15TH DAY OF JUNE, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Andral, Guillaume; Carmassi, Michel; Louvel, Bernard; Maurice, Jacques; and Vandesande, Georges, to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine. Process and apparatus for automated regulation of sulphur production units. Re. 28,864, Cl. 23-255.00R.

Andriessen, Wilhelmus: *See—*
Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, Re. 28,863.

Arnold, Peter: *See—*
Marshall, Peter W.; Arnold, Peter; and Dunn, Francis P., Re. 28,860.

Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi, to Sumitomo Electric Industries, Ltd. Moving object communication control system. Re. 28,867, Cl. 325-51.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, Re. 28,863.

Beaumont, Richard W., to Joy Manufacturing Company. Rock drill. Re. 28,859, Cl. 173-105.000.

Brown & Williamson Tobacco Corporation: *See—*
Litzinger, Elmer Francis, Re. 28,858.

Campbell, Jack B., to Eli Lilly and Company. Selective dehalogenation. Re. 28,865, Cl. 260-251.00R.

Carmassi, Michel: *See—*
Andral, Guillaume; Carmassi, Michel; Louvel, Bernard; Maurice, Jacques; and Vandesande, Georges, Re. 28,864.

Cosmopolitan Textile Company, Ltd.: *See—*
Wildeman, Arno Edgar, Re. 28,857.

Cryogenic Engineering Company: *See—*
Leonard, Kenneth R., Re. 28,856.

Dunn, Francis P.: *See—*
Marshall, Peter W.; Arnold, Peter; and Dunn, Francis P., Re. 28,860.

Eli Lilly and Company: *See—*
Campbell, Jack B., Re. 28,865.

Fitterer, Horst: *See—*
Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, Re. 28,863.

Garriques, Alfred L.: *See—*
Siemonsen, Frederik A.; and Garriques, Alfred L., Re. 28,862.

Haefele, Joseph E.; Hawkins, Cecil R.; and Kubec, Ronald E., to International Business Machines Corporation. Magnetic recording coating. Re. 28,866, Cl. 428-336.000.

Hall, Samuel, Jr., to Plastic Container Corporation. Safety medicine bottle closure. Re. 28,861, Cl. 215-204.000.

Hawkins, Cecil R.: *See—*
Haefele, Joseph E.; Hawkins, Cecil R.; and Kubec, Ronald E., Re. 28,866.

International Business Machines Corporation: *See—*
Haefele, Joseph E.; Hawkins, Cecil R.; and Kubec, Ronald E., Re. 28,866.

Joy Manufacturing Company: *See—*
Beaumont, Richard W., Re. 28,859.

Kubec, Ronald E.: *See—*
Haefele, Joseph E.; Hawkins, Cecil R.; and Kubec, Ronald E., Re. 28,866.

Leonard, Kenneth R., to Cryogenic Engineering Company. Low-loss closed-loop supply system for transferring liquified gas from a large container to a small container. Re. 28,856, Cl. 62-54.000.

Litzinger, Elmer Francis, to Brown & Williamson Tobacco Corporation. Selective gas phase filter material. Re. 28,858, Cl. 131-267.000.

Louvel, Bernard: *See—*
Andral, Guillaume; Carmassi, Michel; Louvel, Bernard; Maurice, Jacques; and Vandesande, Georges, Re. 28,864.

Marshall, Peter W.; Arnold, Peter; and Dunn, Francis P., to Shell Oil Company. Curved offshore well conductors. Re. 28,860, Cl. 175-9.000.

Maruhama, Tetsuro: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi, Re. 28,867.

Maurice, Jacques: *See—*
Andral, Guillaume; Carmassi, Michel; Louvel, Bernard; Maurice, Jacques; and Vandesande, Georges, Re. 28,864.

Montrella, Anthony James. Swim training paddle. Re. 28,855, Cl. 9-307.000.

Nakahara, Tsuneo: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi, Re. 28,867.

Owens-Illinois, Inc.: *See—*
Siemonsen, Frederik A.; and Garriques, Alfred L., Re. 28,862.

Plastic Container Corporation: *See—*
Hall, Samuel, Jr., Re. 28,861.

Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Guide elements for magnetic tapes wound or to be wound in the form of packs on flangeless spools. Re. 28,863, Cl. 242-199.000.

Schnell, Georg: *See—*
Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, Re. 28,863.

Shell Oil Company: *See—*
Marshall, Peter W.; Arnold, Peter; and Dunn, Francis P., Re. 28,860.

Shibuya, Kenji: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi, Re. 28,867.

Siemonsen, Frederik A.; and Garriques, Alfred L., to Owens-Illinois, Inc. Easy open means for bottles and the like. Re. 28,862, Cl. 215-255.000.

Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine: *See—*
Andral, Guillaume; Carmassi, Michel; Louvel, Bernard; Maurice, Jacques; and Vandesande, Georges, Re. 28,864.

Sumitomo Electric Industries, Ltd.: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi, Re. 28,867.

Uhl, Karl: *See—*
Schaeffer, Norbert; Fitterer, Horst; Uhl, Karl; Schnell, Georg; and Andriessen, Wilhelmus, Re. 28,863.

Vandesande, Georges: *See—*
Andral, Guillaume; Carmassi, Michel; Louvel, Bernard; Maurice, Jacques; and Vandesande, Georges, Re. 28,864.

Wildeman, Arno Edgar, to Cosmopolitan Textile Company, Ltd. Apparatus for producing stitch bonded fabric. Re. 28,857, Cl. 112-438.000.

Yoshida, Kenichi: *See—*
Baba, Takeshi; Shibuya, Kenji; Maruhama, Tetsuro; Nakahara, Tsuneo; and Yoshida, Kenichi, Re. 28,867.

LIST OF PLANT PATENTEES

Byrum, Roy L., to Joseph H. Hill Co. Rose. 3,910, 6-15-76, Cl. 26.

Duffett, William E.: *See—*
Jessel, Walter H., Jr., and Duffett. 3,906.
Jessel, Walter H., Jr., and Duffett. 3,907.
Jessel, Walter H., Jr., and Duffett. 3,908.

Hill, E. G. Co., Inc.: *See—*
Jelly, Robert G. 3,914.

Joseph H. Hill Co.: *See—*
Byrum, Roy L. 3,910.

Jelly, Robert G., to E. G. Hill Co., Inc. Rose plant named festive (seedling #8-69-RS). 3,914, 6-15-76, Cl. 29.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,906, 6-15-76, Cl. 74.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,907, 6-15-76, Cl. 78.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,908, 6-15-76, Cl. 77.

Mikkelsens Inc.: *See—*
Mikkelsen, James C. 3,911.
Mikkelsen, James C. 3,912.
Mikkelsen, James C. 3,913.

Mikkelsen, James C., to Mikkelsen Inc. Begonia plant. 3,911, 6-15-76, Cl. 68.

Mikkelsen, James C., to Mikkelsen Inc. Poinsettia plant. 3,912, 6-15-76, Cl. 86.

Mikkelsen, James C., to Mikkelsen Inc. Begonia plant. 3,913, 6-15-76, Cl. 68.

Vaughn Girazian: *See—*
Yamada, Yoshio. 3,915.

Weeks, O. L. Climbing rose plant. 3,909, 6-15-76, Cl. 4.

Yamada, Yoshio, to Vaughn Girazian. Nectarine tree. 3,915, 6-15-76, Cl. 41.

Yoder Brothers, Inc.: *See—*
Jessel, Walter H., Jr., and Duffett. 3,906.
Jessel, Walter H., Jr., and Duffett. 3,907.
Jessel, Walter H., Jr., and Duffett. 3,908.

LIST OF DESIGN PATENTEES

A. Ahlstrom Osakeyhtio: *See*—
Sarpaneva, Timo T. 240,284.
Sarpaneva, Timo T. 240,285.
Sarpaneva, Timo T. 240,286.
Sarpaneva, Timo T. 240,287.

Beaumont, John A., to Polaroid Corp. Container for photographic camera or similar article. 240,292, 6–15–76, Cl. D9—232.

Bogart, James S., and J. M. Wilcox, to Federal-Mogul Corp. O-Ring measuring gauge. 240,293, 6–15–76, Cl. D10—70.

CITC Industries, Inc.: *See*—
Senter, Jonas. 240,280.

Clark Equipment Co.: *See*—
DePriester, Donald J., and Fuller. 240,294.

DePriester, Donald J., and D. C. Fuller, to Clark Equipment Co. Lift truck body. 240,294, 6–15–76, Cl. D12—61.

Dixson, Tommy W. Accessory console for motorcycles. 240,295, 6–15–76, Cl. D12—114.

Dixson, Tommy W. Accessory console for motorcycles. 240,296, 6–15–76, Cl. D12—114.

Etablissements Genoud & Cie: *See*—
Neyret, Guy. 240,303.
Neyret, Guy. 240,304.

Federal-Mogul Corp.: *See*—
Bogart, James S., and Wilcox. 240,293.

Fuller, Darrell C.: *See*—
DePriester, Donald J., and Fuller. 240,294.

Gelman, Charles, and A. Vadnay, to Gelman Instrument Co. Water filter or similar article. 240,300, 6–15–76, Cl. D23—4.

Gelman Instrument Co.: *See*—
Gelman, Charles, and Vadnay. 240,300.

Goldman, Arthur: *See*—
Horowitz, Jack, and Goldman. 240,282.

Hartz Mountain Corp., The: *See*—
Suchowski, Bernard, Lovitz, and Kissin. 240,305.
Suchowski, Bernard, Lovitz, and Kissin. 240,306.
Suchowski, Bernard, Lovitz, and Kissin. 240,307.

Hoffman, Wayne C. Pencil sharpener. 240,299, 6–15–76, Cl. D19—74.

Horowitz, Jack, and A. Goldman. Heel of a shoe. 240,282, 6–15–76, Cl. D2—325.

Kissin, Claud W.: *See*—
Suchowski, Bernard, Lovitz, and Kissin. 240,305.
Suchowski, Bernard, Lovitz, and Kissin. 240,306.
Suchowski, Bernard, Lovitz, and Kissin. 240,307.

Kline, Melbert A. Bicycle saddle bag. 240,298, 6–15–76, Cl. D12—158.

Lovitz, David D.: *See*—
Suchowski, Bernard, Lovitz, and Kissin. 240,305.
Suchowski, Bernard, Lovitz, and Kissin. 240,306.
Suchowski, Bernard, Lovitz, and Kissin. 240,307.

Marvin Glass & Associates: *See*—
Montague, Douglas P., and Morrison. 240,302.

Miller, James E. Combined picnic table and multiple bench unit. 240,283, 6–15–76, Cl. D6—45.

Montague, Douglas P., and H. J. Morrison, to Marvin Glass & Associates. Pole telephone. 240,302, 6–15–76, Cl. D26—14.

Montreal, Antoine T. Nestable stroller. 240,297, 6–15–76, Cl. D12—129.

Morrison, Howard J.: *See*—
Montague, Douglas P., and Morrison. 240,302.

Nash, James W. Door prop for preventing opening of the door. 240,290, 6–15–76, Cl. D8—203.

Neyret, Guy, to Etablissements Genoud & Cie. Lighter. 240,303, 6–15–76, Cl. D22—42.

Neyret, Guy, to Etablissements Genound & Cie. Lighter. 240,304, 6–15–76, Cl. D27—42.

Orenstein, Henry. Toy dog figure. 240,308, 6–15–76, Cl. D34—2.

Orenstein, Henry. Toy pig figure. 240,309, 6–15–76, Cl. D34—2.

Page, Albert E. V., to Schenley Industries Inc. Bottle. 240,291, 6–15–76, Cl. D9—47.

Polaroid Corp.: *See*—
Beaumont, John A. 240,292.

Quabaug Rubber Co.: *See*—
Russell, Robert E. 240,281.

Russell, Robert E., to Quabaug Rubber Co. Boot sole. 240,281, 6–15–76, Cl. D2—320.

Sarpaneva, Timo T., to A. Ahlstrom Osakeyhtio. Drinking glass. 240,284, 6–15–76, Cl. D7—11.

Sarpaneva, Timo T., to A. Ahlstrom Osakeyhtio. Drinking glass. 240,285, 6–15–76, Cl. D7—11.

Sarpaneva, Timo T., to A. Ahlstrom Osakeyhtio. Drinking glass. 240,286, 6–15–76, Cl. D7—11.

Sarpaneva, Timo T., to A. Ahlstrom Osakeyhtio. Drinking glass. 240,287, 6–15–76, Cl. D7—11.

Schenley Industries Inc.: *See*—
Page, Albert E. V. 240,291.

Senter, Jonas, to CITC Industries, Inc. Sport shoe. 240,280, 6–15–76, Cl. D2—310.

Skinner, Warren. Container lid lifting tool. 240,289, 6–15–76, Cl. D8—40.

Sony Corp.: *See*—
Takanashi, Takao. 240,301.

Suchowski, Bernard, D. D. Lovitz, and C. W. Kissin, to The Hartz Mountain Corp. Combined aquarium aerator and ornament holder. 240,305, 6–15–76, Cl. D30—12.

Suchowski, Bernard, D. D. Lovitz, and C. W. Kissin, to The Hartz Mountain Corp. Rotary play exerciser for a pet. 240,306, 6–15–76, Cl. D30—42.

Suchowski, Bernard, D. D. Lovitz, and C. W. Kissin, to The Hartz Mountain Corp. Rotary play exerciser for domestic animals. 240,307, 6–15–76, Cl. D30—42.

Takanashi, Takao, to Sony Corp. Magnetic video reproducers. 240,301, 6–15–76, Cl. D26—14.

Vadnay, Attia: *See*—
Gelman, Charles, and Vadnay. 240,300.

Wilcox, John M.: *See*—
Bogard, James S., and Wilcox. 240,293.

Wright, Jeffrey D. Rolling pin cutter. 240,288, 6–15–76, Cl. D7—43.

CLASSIFICATION OF PATENTS

ISSUED JUNE 15, 1976

NOTE.—First number, class; second number, subclass; third number, patent number

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174 3,962,728
234 3,962,729
243B 3,962,730

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230R 3,963,420
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254E 3,963,422
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157.3R 3,962,767
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191.4 3,963,425
3,963,450
193.5 3,963,452
196.1 3,963,451
197.5 3,963,453
3,963,454
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202D 3,962,769
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203B 3,953,456
203H 3,962,770
283 3,962,771
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430 3,962,773
432 3,962,774
445 3,962,775
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568 3,962,777
572 3,962,778
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596 3,962,780
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623 3,962,782

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43.6 3,962,784
90 3,962,785
168 3,962,786

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27 3,962,788
3,962,789
40R 3,962,790
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143L 3,962,792
143R 3,962,793
182 3,962,794
246 3,962,795
288 3,962,796
324 3,962,797

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9 3,962,798
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CLASS 35
8B 3,962,800
17 3,962,801
19B 3,962,802

CLASS 37
66 3,962,803
126AA 3,962,804

CLASS 38
102.5 3,962,805

CLASS 40
33 3,962,806
78.15 3,962,807
104.02 3,962,808

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66 3,962,809

CLASS 43
8 3,962,810
3,962,811
17 3,962,812
19 3,962,813
54.5R 3,962,815
86 3,962,814

CLASS 46
1R 3,962,816
25 3,962,817
74D 3,962,818
164 3,962,819
221 3,962,820

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34.11 3,962,822
37 3,962,823
38.1 3,962,824
41.12 3,962,825
41.13 3,962,826

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202 3,963,457

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384 3,962,827
468 3,962,828

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58 3,962,830
78 3,962,831
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281R 3,963,427
284 3,962,833
295 3,963,458
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323 3,962,834

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73 3,962,835
104 3,962,836
158 3,962,837
183 3,962,838
262 3,962,839
281 3,962,840
309 3,962,841
436 3,962,842
758F 3,962,843

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59R 3,962,845
124C 3,962,846
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266A 3,962,848

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25 3,963,462
66 3,963,460
178 3,963,463
228 3,963,464
238 3,963,465
269 3,963,466
284 3,963,467

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10.2 3,962,849
27.5 3,962,850
126 3,962,851
202 3,962,852
228 3,962,853
370 3,962,854

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34HS 3,962,829
34R 3,962,855
52 3,962,856
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4A 3,962,858
23AC 3,962,860
23BA 3,962,859
39.5 3,962,861

CLASS 60
39.09R 3,962,862
39.14 3,962,863
39.16R 3,962,864
255 3,962,865
276 3,962,866
3,962,867
278 3,962,868
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433 3,962,871
453 3,962,872
641 3,962,873
669 3,962,874

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21 3,962,876
46.5 3,962,877
3,962,878
53.52 3,962,879
53.74 3,962,880

CLASS 62
9 3,962,881
54 Re.28,856
55 3,962,882
137 3,962,883
217 3,962,884
239 3,962,885
340 3,962,886
485 3,962,887
499 3,962,888

CLASS 64
32F 3,962,889

CLASS 65
3A 3,963,468
194 3,963,469

CLASS 66
64 3,962,890
132R 3,962,891

CLASS 68
23R 3,962,892

CLASS 70
19 3,962,893

CLASS 71
9 3,963,470
12 3,963,471
33 3,963,472
90 3,963,473
91 3,963,474
3,963,475
3,963,476
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3,963,478
3,963,479
95 3,963,480

CLASS 72
19 3,962,894
63 3,962,895
82 3,962,896
209 3,962,897
279 3,962,898
334 3,962,899
379 3,962,900
410 3,962,901

CLASS 73
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3,962,902
37.5 3,962,903
38 3,962,904
40.5R 3,962,905
41 3,962,906
55 3,962,907
64.1 3,963,349
67.7 3,962,908
67.8S 3,962,909
88F 3,962,910
88.5R 3,962,911
117 3,962,912
118 3,962,913
125 3,962,914
149 3,962,916
151 3,962,915
204 3,962,917
228 3,962,918
290R 3,962,919
356 3,962,920
398C 3,962,921
424 3,962,922

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143 3,962,925
230.17B 3,962,928
230.17E 3,962,927
230.8 3,962,926
243CS 3,962,929
473R 3,962,930
493 3,962,931
604 3,962,932
665GA 3,962,933
752E 3,962,934
812 3,962,935

CLASS 75
.5R 3,963,482
5 3,963,481
11 3,963,483
173C 3,963,484
212 3,963,485

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64 3,962,936

CLASS 82
1C 3,962,937
47 3,962,938

CLASS 83
51 3,962,939
208 3,962,940
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311 3,962,942
370 3,962,943

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3,962,945
1.15 3,962,946
1.24 3,962,947
294 3,962,948
477B 3,962,949

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32R 3,962,950

CLASS 89
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CLASS 90
11A 3,962,952
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20 3,962,958
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CLASS 96
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27H 3,963,490
27R 3,963,489
3,963,491
53 3,963,492
64 3,963,493
69 3,963,494
76C 3,963,496
76R 3,963,495
3,963,497
87A 3,963,498
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CLASS 99
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474 3,962,962
544 3,962,963

CLASS 100
51 3,962,964
99 3,962,965
156 3,962,966
191 3,962,967
215 3,962,968

CLASS 101
1 3,962,969
38A 3,962,970
42 3,962,971

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70.2R 3,962,972
80 3,962,973
81 3,962,974

CLASS 104
23FS 3,962,975

CLASS 106
14 3,963,500
20 3,963,501
38.28 3,963,502
40V 3,963,503
41 3,963,504
47R 3,963,505
67 3,963,506
86 3,963,507
104 3,963,508
273R 3,963,509
289 3,963,510
308M 3,963,512
308Q 3,963,511

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82 3,962,976

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38 3,962,977
165R 3,962,978

CLASS 112
98 3,962,979
252 3,962,980
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CLASS 114
.5F 3,962,981
235F 3,962,982
235R 3,962,983

CLASS 115
17 3,962,984
34R 3,962,985

CLASS 116
114W 3,962,986

CLASS 118
44 3,962,987
49.1 3,962,988
504 3,962,989
620 3,962,990
635 3,962,991
637 3,962,992

CLASS 119
19 3,962,993
3,962,994
29 3,962,995
51CF 3,962,996
51.11 3,962,997
56R 3,962,998

CLASS 122
248 3,962,999

CLASS 123
3 3,963,000
32EA 3,963,002
32D 3,963,001
32K 3,963,003
90.12 3,963,006
90.16 3,963,007
90.4 3,963,004
90.61 3,963,008
119A 3,963,011
119D 3,963,009
119R 3,963,005
122AC 3,963,010
3,963,012
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91A 3,963,018

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158 3,963,022
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276 3,963,027
3,963,028
287 3,963,029
303.17 3,963,030
339 3,963,031

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170A 3,963,033
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CLASS 132
9 3,963,034

CLASS 133
2 3,963,035

CLASS 134
8 3,963,514
21 3,963,515
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45R 3,963,037

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83T 3,963,518
86A 3,963,519
107 3,963,520
134R 3,963,521
153 3,963,522

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99 3,963,038
118 3,963,039
344 3,963,040
410 3,963,041
468 3,963,042
487.5 3,963,043
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505.13 3,963,045
565 3,963,046
596 3,963,047
596.17 3,963,048
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625.66 3,963,050
637 3,963,051

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3,963,053
89 3,963,054
140 3,963,055
175 3,963,056

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2 3,963,057
3,963,058
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21 3,963,061
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309 3,963,063

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309AC 3,963,064

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2 3,963,525
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6.14R 3,963,528
6.2 3,963,527
20.3 3,963,540
25 3,963,529
31.5 3,963,530
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37 3,963,532
108 3,963,533
133 3,963,534
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171 3,963,536
175 3,963,537
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19.3 3,963,542
19.92 3,963,541
23 3,963,543
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187 3,963,066

CLASS 156
69 3,963,546
79 3,963,547
88 3,963,548
193 3,963,549
252 3,963,550
295 3,963,551
299 3,963,552
304 3,963,554
305 3,963,553
358 3,963,555
423 3,963,556
519 3,963,557

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2E 3,963,558
4S 3,963,559

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348 3,963,067

CLASS 162
5 3,963,560
17 3,963,561
343 3,963,562

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278 3,963,068
282 3,963,069

CLASS 165
98 3,963,070
142 3,963,071
157 3,963,072

CLASS 166
105.1 3,963,073
206 3,963,074
241 3,963,075
278 3,963,076
315 3,963,077

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119 3,963,078
200 3,963,079

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68 3,963,566

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210 3,963,082

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6.6R 3,963,860
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7.2 3,963,866
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15BS 3,963,869
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18BD 3,963,873
18GF 3,963,872
27CA 3,963,875
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115.5VC 3,963,882
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64A 3,963,087
74 3,963,088
75 3,963,089
82C 3,963,090
108 3,963,091

CLASS 181
44 3,963,092
122 3,963,093
198 3,963,094

CLASS 182
2 3,963,095
15 3,963,096
76 3,963,097

CLASS 187
29R 3,963,098

CLASS 188
1C 3,963,099
79.5P 3,963,100
300 3,963,101

CLASS 190
51 3,963,102
52 3,963,103
58R 3,963,104

CLASS 192
98 3,963,105
3,963,106
109D 3,963,107

CLASS 195
28N 3,963,572
28R 3,963,571
29 3,963,573
30 3,963,574
31R 3,963,575
59 3,963,576
62 3,963,577
63 3,963,578
80R 3,963,579
103.5R 3,963,580
142 3,963,581

CLASS 197
1R 3,963,108
55 3,963,109
130 3,963,110

CLASS 198
37 3,963,111
72 3,963,112
193 3,963,113
203 3,963,114
208 3,963,115
213 3,963,116
227 3,963,117

CLASS 200
16D 3,963,884
52R 3,963,885
60 3,963,886
61.48 3,963,888
81.9R 3,963,889
83L 3,963,887
86.5 3,963,890
308 3,963,891

CLASS 201
2 3,963,582

CLASS 202
263 3,963,583

CLASS 203
38 3,963,585
49 3,963,584
96 3,963,586

CLASS 204
9 3,963,587
16 3,963,588
29 3,963,589
30 3,963,590
35N 3,963,591
98 3,963,592
3,963,593
129.95 3,963,594
158R 3,963,570
180P 3,963,567
181 3,963,568
206 3,963,569
258 3,963,595
3,963,596
277 3,963,597

CLASS 206
84 3,963,118
219 3,963,120
434 3,963,121
448 3,963,122
495 3,963,123
527 3,963,124

CLASS 208
8 3,963,598
11LE 3,963,599
59 3,963,600
111 3,963,601
3,963,602
164 3,963,603
211 3,963,604

CLASS 209
2 3,963,605
3 3,963,606
73 3,963,607
300 3,963,608

CLASS 210
7 3,963,609
21 3,963,610
63R 3,963,611
143 3,963,612
195R 3,963,613
198C 3,963,614
203 3,963,615
216 3,963,119
232 3,963,616
242S 3,963,617
256 3,963,619
279 3,963,620
321B 3,963,621
321R 3,963,622
401 3,963,623
500M 3,963,618
521 3,963,624

CLASS 211
126 3,963,125
131 3,963,126

CLASS 212
8R 3,963,127

CLASS 214
35R 3,963,128
86A 3,963,129
130C 3,963,130
140 3,963,131
142 3,963,132
3,963,133
145R 3,963,134
151 3,963,135
450 3,963,136
501 3,963,137
519 3,963,138

CLASS 215
204 Re.28,861
216 3,963,139
254 3,963,140
3,963,141
255 Re.28,862
346 3,963,142

CLASS 219
10.55M 3,963,892
69E 3,963,894
69R 3,963,893
125R 3,963,895
3,963,896
230 3,963,897
524 3,963,898

CLASS 220
64 3,963,143
85P 3,963,144

CLASS 222
5 3,963,145
59 3,963,146
95 3,963,147
132 3,963,148
142 3,963,149
211 3,963,150
309 3,963,151
402.13 3,963,152
541 3,963,153

CLASS 223
85 3,963,154
88 3,963,155

CLASS 224
1R 3,963,156
5D 3,963,157
31 3,963,158

CLASS 225
96.5 3,963,159

CLASS 226
115 3,963,160
150 3,963,161

CLASS 228
134 3,963,162
196 3,963,163
217 3,963,164

CLASS 229
8.5 3,963,165
14C 3,963,166
3,963,167
28R 3,963,168
3,963,169
40 3,963,170
42 3,963,171
44CB 3,963,173
44EC 3,963,172
80 3,963,174

CLASS 233
29 3,963,175

CLASS 234
48 3,963,176

CLASS 235
50B 3,963,899
61.11D 3,963,901
61.7B 3,963,900
92MP 3,963,902
144R 3,963,903
151.35 3,963,909
152 3,963,904
3,963,905
3,963,906
153AM 3,963,908
153B 3,963,907
156 3,963,910
3,963,911
189 3,963,912

CLASS 236
37 3,963,177

CLASS 239
8 3,963,178
101 3,963,179
288.5 3,963,180
404 3,963,182

CLASS 240
2AD 3,963,913
6.46 3,963,914
7.1R 3,963,915
52R 3,963,916
60 3,963,917

CLASS 241
76 3,963,181
88.4 3,963,183
101.1 3,963,184

CLASS 242
7.21 3,963,185
18R 3,963,186
55 3,963,187
55.19A 3,963,189
55.2 3,963,188
55.53 3,963,190
75.43 3,963,191
86.5R 3,963,192
107.4A 3,963,193
129 3,963,194
199 Re.28,863

CLASS 244
3.11 3,963,195
50 3,963,196
100A 3,963,198
148 3,963,199
153R 3,963,200
181 3,963,197

CLASS 246
34R 3,963,201
125 3,963,202
134 3,963,203

CLASS 248
27R 3,963,204
55 3,963,205
105 3,963,206
168 3,963,207
316A 3,963,208

CLASS 249
67 3,963,209
210 3,963,210

CLASS 250
223B 3,963,918
231SE 3,963,919
239 3,963,920
251 3,963,921
272 3,963,922
309 3,963,923
315A 3,963,924
338 3,963,925
3,963,926
3,963,927
361C 3,963,928
384 3,963,929
402 3,963,930
416R 3,963,931
445T 3,963,932
456 3,963,933
499 3,963,934
514 3,963,935
517 3,963,936
533 3,963,625
548 3,963,937
561 3,963,938
576 3,963,939

CLASS 251
85 3,963,211
145 3,963,212
306 3,963,213
326 3,963,214

CLASS 252
2 3,963,626
4 3,963,627
8.8 3,963,628
3,963,629
62.9 3,963,630
3,963,631
63.2 3,963,632
3,963,633
96 3,963,634
142 3,963,635
181 3,963,636
3,963,637
299 3,963,638
301.36 3,963,639
313R 3,963,640
373 3,963,641
3,963,642
442 3,963,643
455R 3,963,645
455Z 3,963,644
459 3,963,646
511 3,963,647
522 3,963,648
546 3,963,649

CLASS 254
26R 3,963,215
62 3,963,216
185R 3,963,217

CLASS 256
13.1 3,963,218
24 3,963,219

CLASS 259
107 3,963,220
180 3,963,221

CLASS 260
2.5F 3,963,650
3,963,651
3 3,963,652
4AR 3,963,653
5 3,963,654
17.4ST 3,963,655
18TN 3,963,656
28.5AS 3,963,659
28.5D 3,963,658
3,963,677
29.3 3,963,663
29.4UA 3,963,657
3,963,661
29.6WB 3,963,662
30.2 3,963,664
31.8C 3,963,665
37AL 3,963,668
37EP 3,963,666
3,963,667
40R 3,963,669
45.7R 3,963,671
45.75B 3,963,672
46.5G 3,963,673
67FP 3,963,676
75NE 3,963,679
75T 3,963,678
77.5AM 3,963,681
77.5NC 3,963,680
78UA 3,963,682
79.5A 3,963,683
112.5LH 3,963,691
125 3,963,692
154 3,963,693
3,963,694
210AB 3,963,695
210E 3,963,696
210.5 3,963,697
211.5R 3,963,698
234R 3,963,699
236.5 3,963,700
239B 3,963,701
239E 3,963,703
239.001 3,963,704
239.1 3,963,702
239.3P 3,963,705
239.55D 3,963,707
239.9 3,963,706
240G 3,963,708
243C 3,963,709
3,963,711
3,963,712
247.2A 3,963,710
248AS 3,963,713
249.6 3,963,714
250BN 3,963,715
250P 3,963,716
251QB 3,963,717
251R Re.28,865
256.4C 3,963,719
256.4F 3,963,720
256.4H 3,963,718
268PC 3,963,721
283R 3,963,722
286R 3,963,723
287CF 3,963,724
289D 3,963,725
290S 3,963,726
293.6 3,963,727
293.74 3,963,728
293.86 3,963,729
293.89 3,963,730
294.008 3,963,735
294.8F 3,963,731
3,963,734
294.8G 3,963,733
294.8R 3,963,732
295R 3,963,660
295.5B 3,963,736
299 3,963,737
307G 3,963,738
310C 3,963,739
3,963,740
311 3,963,741
3,963,742
314.5 3,963,743
3,963,744
326.27 3,963,747
326.47 3,963,748
326.5J 3,963,746
326.5S 3,963,745
327P 3,963,749
332.1 3,963,751
332.2C 3,963,750
335 3,963,752
3,963,753
340.7 3,963,754
3,963,755
343.5 3,963,756
343.6 3,963,757
346.2R 3,963,758
346.8A 3,963,759
365 3,963,760
369 3,963,761
3,963,762
376 3,963,763
396N 3,963,764
397.2 3,963,765
397.3 3,963,766
446 3,963,767
455A 3,963,768
464 3,963,769
465G 3,963,770
482R 3,963,771
485H 3,963,772
502A 3,963,773
519 3,963,774
535P 3,963,775
561HL 3,963,674
561H 3,963,776
562N 3,963,777
566AE 3,963,778
570R 3,963,779
570.8R 3,963,780
586G 3,963,782
586R 3,963,781
598 3,963,675
601R 3,963,783
3,963,784
609B 3,963,785

613R 3,963,786
3,963,787
635C 3,963,788
3,963,789
666A 3,963,792
668R 3,963,793
672NC 3,963,794
674A 3,963,795
830TW 3,963,796
837R 3,963,686
3,963,797
3,963,798
857L 3,963,799
860 3,963,800
873 3,963,801
3,963,802
3,963,803
3,963,804
874 3,963,805
3,963,806
876R 3,963,807
898 3,963,790

CLASS 261
41D 3,963,670
3,963,808
69R 3,963,809
112 3,963,810

CLASS 264
7 3,963,811
8 3,963,812
23 3,963,814
30 3,963,815
53 3,963,816
56 3,963,817
3,963,818
78 3,963,819
134 3,963,820
147 3,963,821
167 3,963,813
251 3,963,822

CLASS 266
158 3,963,222
207 3,963,224
241 3,963,223

CLASS 267
65R 3,963,225
116 3,963,226
120 3,963,227
166 3,963,228

CLASS 269
8 3,963,229
41 3,963,230
45 3,963,231
254CS 3,963,232
289R 3,963,233
296 3,963,234

CLASS 271
64 3,963,235

CLASS 273
19 3,963,237
63A 3,963,238
72A 3,963,239
77A 3,963,236
102.1C 3,963,240
121R 3,963,241
131L 3,963,242
134CH 3,963,243
162R 3,963,244

CLASS 274
15R 3,963,245
23R 3,963,246

CLASS 277
16 3,963,247
92 3,963,248

CLASS 279
1ME 3,963,249
2R 3,963,250

CLASS 280
11.1BR 3,963,251
11.22 3,963,252
11.37Z 3,963,254
33.99B 3,963,255
35 3,963,256
43.12 3,963,257
47.34 3,963,258
80B 3,963,259
96.3 3,963,260
231 3,963,262
414R 3,963,263
415A 3,963,264
432 3,963,265
504 3,963,266
616 3,963,253
683 3,963,261

CLASS 285
93 3,963,267
230 3,963,268

CLASS 292
346 3,963,269

CLASS 294
81R 3,963,270
86R 3,963,271

CLASS 297
172 3,963,272
389 3,963,273

CLASS 298
22R 3,963,274

CLASS 299
13 3,963,275

CLASS 303
21AF 3,963,276
21F 3,963,277

CLASS 305
12 3,963,278

CLASS 307
10BP 3,963,941
10LS 3,963,940
221D 3,963,942
235T 3,963,943
265 3,963,944
268 3,963,945
270 3,963,946
293 3,963,947

CLASS 308
3R 3,963,279
5V 3,963,280
6 3,963,281
8.2 3,963,282
78 3,963,283
187 3,963,284
202 3,963,285
205 3,963,286

CLASS 310
15 3,963,948
43 3,963,949
54 3,963,950

CLASS 312
197 3,963,287
209 3,963,288
245 3,963,289
321 3,963,290

CLASS 313
44 3,963,951
45 3,963,952
487 3,963,953
489 3,963,954

CLASS 315
5.34 3,963,955
71 3,963,956
200A 3,963,957
276 3,963,958
381 3,963,961

CLASS 317
9R 3,963,959
11A 3,963,960
13B 3,963,962
18D 3,963,963
27R 3,963,964
61 3,963,965
81 3,963,966
123 3,963,967
141S 3,963,968

CLASS 318
443 3,963,969
640 3,963,970
696 3,963,971

CLASS 320
2 3,963,972
21 3,963,976

CLASS 321
2 3,963,973
3,963,974
3,963,975
45R 3,964,086
69NL 3,963,977

CLASS 323
102 3,963,978

CLASS 324
30 3,963,979
40 3,963,980
51 3,963,981
56 3,963,982
71CP 3,963,983
3,963,984
158F 3,963,985
3,963,986
166 3,963,987

CLASS 325
51 Re.28,867
56 3,963,988
449 3,963,989
476 3,963,990

CLASS 328
150 3,963,991

CLASS 330
124R 3,963,993
127 3,963,992

CLASS 331
94.5PE 3,963,994
94.5C 3,963,995
94.5Q 3,964,003
117R 3,963,996

CLASS 333
30R 3,963,997
73W 3,963,998
84L 3,963,999

CLASS 334
7 3,964,000
3,964,001
3,964,002

CLASS 335
124 3,964,005
132 3,964,006
187 3,964,007
272 3,964,008

CLASS 336
90 3,964,009

CLASS 337
67 3,964,004
148 3,964,010

CLASS 338
166 3,964,011
306 3,964,087

CLASS 339
8P 3,963,291
14R 3,963,292
17CF 3,963,315
17C 3,963,316
17L 3,963,293
22R 3,963,294
60R 3,963,295
74R 3,963,317
75M 3,963,296
94M 3,963,297
95R 3,963,298
3,963,299
97P 3,963,318
156R 3,963,300
176MF 3,963,319
177E 3,963,321
177R 3,963,320
186M 3,963,301
217S 3,963,302
237 3,963,303
245 3,963,304
272R 3,963,322
274 3,963,305

CLASS 340
3C 3,964,012
4A 3,964,051
5H 3,964,052
5R 3,964,013
9 3,964,014
26 3,964,015
52C 3,964,017
52F 3,964,018
52H 3,964,016
73 3,964,019
146AG 3,964,020
146.3MA 3,964,021
146.3J 3,964,022
147PC 3,964,023
152T 3,964,024
162 3,964,025
172.5 3,964,026
3,964,027
3,964,028
3,964,029
3,964,054
3,964,055
3,964,056
3,964,088
173LM 3,964,032
173R 3,964,030
3,964,031
173.2 3,964,033
174TF 3,964,034
3,964,035
237S 3,964,036
241 3,964,038
244E 3,964,079
244R 3,964,037
248A 3,964,039
251 3,964,040
258B 3,964,041
258R 3,964,042
274R 3,964,043
276 3,964,044
279 3,964,045
304 3,964,057
309.1 3,964,046
310R 3,964,047
3,964,048
317 3,964,049
324M 3,964,050
330 3,964,058
347AD 3,964,060
3,964,061
347DD 3,964,059
365L 3,964,062

CLASS 343
5PD 3,964,063
5SC 3,964,064
100LE 3,964,065
100SA 3,964,066
108M 3,964,053
108R 3,964,067
704 3,964,068
754 3,964,069
786 3,964,070
840 3,964,071

CLASS 346
146 3,964,072

CLASS 350
39 3,963,306
96C 3,963,308
3,963,323
99 3,963,307
104 3,963,309
160LC 3,963,310
3,963,311
3,963,312
3,963,313
3,963,324
160R 3,963,314
215 3,963,325
266 3,963,326
287 3,963,327
294 3,963,328

CLASS 351
6 3,963,329
163 3,963,330

CLASS 352
29 3,963,331
60 3,963,332
72 3,963,333
191 3,963,334

CLASS 353
15 3,963,335
26A 3,963,336
70 3,963,337
120 3,963,338

CLASS 354
29 3,964,073
32 3,964,074
51 3,964,075
3,964,076
141 3,964,077
152 3,964,078
234 3,964,080
246 3,964,081
289 3,964,082

CLASS 355
3R 3,963,339
3,963,340
4 3,963,341
3,963,342
8 3,963,343
35 3,963,344
50 3,963,345
73 3,963,346

CLASS 356
5 3,963,347
33 3,963,348
39 3,963,350
85 3,963,351
152 3,963,352
168 3,963,353
3,963,354
201 3,963,355
251 3,963,356

CLASS 357
15 3,964,084
23 3,964,085
30 3,964,083
34 3,964,089
38 3,964,090
39 3,964,091
68 3,964,092
70 3,964,093

CLASS 360
77 3,964,094
81 3,964,095
85 3,964,096
92 3,964,097
93 3,964,098
94 3,964,099
95 3,964,100
99 3,964,101
101 3,964,102
128 3,964,104
129 3,964,103

CLASS 401
191 3,963,357
195 3,963,358
258 3,963,359

CLASS 403
14 3,963,360
255 3,963,361

CLASS 404
10 3,963,362
11 3,963,363

CLASS 408
8 3,963,364
186 3,963,365
199 3,963,366

CLASS 415
17 3,963,367
115 3,963,368
148 3,963,369
199A 3,963,370
199T 3,963,371

CLASS 416
30 3,963,372
214A 3,963,373

CLASS 417
12 3,963,374
3,963,375
40 3,963,376
90 3,963,377
216 3,963,378
237 3,963,379
322 3,963,380
360 3,963,381
361 3,963,382
401 3,963,383
499 3,963,384
517 3,963,385

CLASS 418
45 3,963,386
61A 3,963,387
121 3,963,388
3,963,389
188 3,963,390
270 3,963,391

CLASS 423
56 3,963,823
61 3,963,824
223 3,963,825
239 3,963,827
248 3,963,826
261 3,963,828
263 3,963,829
579 3,963,830
646 3,963,831

CLASS 424
56 3,963,832
68 3,963,833
240 3,963,834

CLASS 425
20 3,963,393
51 3,963,394
83 3,963,392
88 3,963,395
135 3,963,396
141 3,963,397
224 3,963,400
242B 3,963,398
3,963,399
242R 3,963,401
299 3,963,402
325 3,963,403
326B 3,963,404
331 3,963,405
463 3,963,406

CLASS 426
18 3,963,835
40 3,963,836
3,963,837

CLASS 427
213 3,963,838
251 3,963,839
284 3,963,840
304 3,963,841
305 3,963,842
361 3,963,843

CLASS 428
36 3,963,844
64 3,963,845
73 3,963,846
147 3,963,847
172 3,963,848
182 3,963,849
286 3,963,850
305 3,963,851
325 3,963,852
326 3,963,853
336 Re.28,866

CLASS 431
1 3,963,407
2 3,963,408
28 3,963,409
46 3,963,410
255 3,963,411
273 3,963,412
276 3,963,413
329 3,963,414

CLASS 432
14 3,963,415
64 3,963,416
225 3,963,417

CLASS 526
6 3,963,689
22 3,963,791
65 3,963,690
66 3,963,687
193 3,963,688
230 3,963,685
303 3,963,684

CLASSIFICATION OF DESIGNS

D2—	310	240,280			240,285		203	240,290		114	240,295	D22—	42	240,303
	320	240,281			240,286	D9—	47	240,291			240,296	D23—	4	240,300
	325	240,282			240,287		232	240,292		129	240,297	D26—	14A	240,302
D6—	45	240,283		43	240,288	D10—	70	240,293		158	240,298		B	240,301
D7—	11	240,284	D8—	40	240,289	D12—	61	240,294	D19—	74	240,299	D27—	42	240,304

D30—	12	240,305												
	42	240,306												
		240,307												
D34—	2R	240,308												
		240,309												

CLASSIFICATION OF PLANTS

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This is to certify that the records of the Patent and Trademark Office show that an application was filed in said Office for registration of the Mark shown herein, a copy of said Mark and pertinent data from the Application being annexed hereto and made a part hereof.

And there having been due compliance with the requirements of the law and with the regulations prescribed by the Commissioner of Patents and Trademarks.

Upon examination it appeared that the applicant was entitled to have said Mark registered under the Trademark Act of 1946, and the said Mark has been duly registered this day in the Patent and Trademark Office on the

SUPPLEMENTAL REGISTER

to the registrant named herein.

This registration shall remain in force for Twenty Years unless sooner terminated as provided by law.

In Testimony Whereof I have hereunto set my hand and caused the seal of the Patent and Trademark Office to be affixed this

C. Marshall Dann

COMMISSIONER OF PATENTS AND TRADEMARKS



No.

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

WHEREAS THERE HAS BEEN PRESENTED TO THE

COMMISSIONER OF PATENTS AND TRADEMARKS

A PETITION PRAYING FOR THE GRANT OF LETTERS PATENT FOR AN ALLEGED NEW AND USEFUL INVENTION THE TITLE AND DESCRIPTION OF WHICH ARE CONTAINED IN THE SPECIFICATIONS OF WHICH A COPY IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PATENT AND TRADEMARK OFFICE IN THE CLAIMANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID CLAIMANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A PATENT UNDER THE LAW.

NOW, THEREFORE, THESE LETTERS PATENT ARE TO GRANT UNTO THE SAID CLAIMANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID CLAIMANT(S) FOR THE TERM OF SEVENTEEN YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF ISSUE FEES AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM MAKING, USING OR SELLING THE SAID INVENTION THROUGHOUT THE UNITED STATES.

IN TESTIMONY WHEREOF *I have hereunto set my hand and caused the seal of the* **PATENT AND TRADEMARK OFFICE** *to be affixed at the City of Washington this day of in the year of our Lord one thousand nine hundred and seventy-six and of the Independence of the United States of America the two hundredth and first.*

Ruth C. Mason
Attesting Officer

C. Marshall Dann
Commissioner of Patents and Trademarks

PATENT NOTICES

Certificates of Correction for the Week of June 22, 1976

P.P. 3,845	3,888,164	3,929,464	3,941,428
Re. 28,649	3,890,146	3,929,782	3,941,578
3,276,651	3,890,226	3,930,045	3,941,782
3,552,511	3,891,642	3,930,628	3,942,949
3,632,328	3,892,788	3,930,736	3,943,087
3,774,441	3,894,930	3,930,835	3,943,402
3,791,378	3,897,566	3,930,878	3,943,416
3,796,565	3,902,065	3,930,974	3,943,451
3,806,509	3,903,184	3,931,107	3,943,500
3,806,528	3,903,541	3,931,126	3,943,823
3,807,235	3,904,240	3,931,171	3,943,893
3,808,256	3,905,697	3,932,175	3,943,957
3,809,498	3,906,203	3,932,318	3,943,996
3,809,717	3,907,952	3,932,362	3,944,382
3,812,028	3,908,494	3,932,424	3,944,544
3,817,935	3,910,874	3,932,469	3,945,356
3,819,749	3,912,603	3,932,535	3,945,365
3,826,639	3,912,795	3,932,824	3,945,434
3,826,800	3,913,579	3,933,936	3,945,817
3,829,782	3,914,181	3,934,926	3,945,893
3,842,427	3,914,501	3,934,969	3,946,559
3,845,774	3,915,812	3,935,149	3,946,807
3,846,432	3,916,130	3,935,257	3,947,497
3,851,220	3,916,627	3,935,548	3,947,498
3,854,637	3,917,062	3,935,614	3,947,525
3,855,516	3,918,565	3,936,211	3,947,571
3,860,654	3,919,103	3,936,710	3,947,608
3,862,111	3,919,364	3,936,949	3,947,695
3,867,416	3,919,546	3,937,228	3,947,942
3,868,466	3,919,981	3,937,252	3,948,281
3,869,647	3,922,612	3,937,843	3,948,455
3,869,721	3,922,993	3,937,878	3,948,892
3,871,373	3,923,271	3,938,111	3,948,955
3,873,457	3,923,324	3,938,962	3,949,033
3,873,907	3,923,414	3,939,289	3,949,259
3,876,912	3,923,615	3,939,392	3,949,394
3,879,158	3,924,630	3,939,551	3,949,786
3,880,282	3,925,720	3,940,029	3,950,561
3,880,506	3,926,391	3,940,178	3,951,100
3,880,946	3,926,782	3,940,276	3,951,525
3,880,947	3,927,767	3,940,390	3,951,775
3,881,703	3,928,760	3,940,397	3,953,178
3,885,778	3,928,836	3,940,461	3,953,570
3,887,647	3,928,859	3,940,981	

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,510,558, K. Hamuro, INSECTICIDAL COMPOSITION OF 5-BENZYL-3-FURYLMETHYL dl-CIS, TRANS-CHRYSANTHEMATE AND 3,4,5,6-TETRAHYDROPHTHALIMIDOMETHYL dl-CIS, TRANS-CHRYSANTHEMATE, Interference No. 98,813, decided Mar. 19, 1976, claim 1.

Patent No. 3,575,846, G. P. Hamner and R. B. Mason, CATALYSTS FOR THE SELECTIVE CONVERSION OF STRAIGHT-CHAIN HYDROCARBONS, Interference No. 98,229, decided Mar. 25, 1976, claim 13.

Patent No. 3,653,065, A. D. Brown, Jr., ELECTROGRAPHIC RECORDING SYSTEM WITH INTERLEAVED ELECTRODE GROUPS, Interference No. 98,422, decided Nov. 25, 1975, claims 2, 3, 4 and 5.

Patent No. 3,660,360, D. K. Ray-Chaudhuri and C. P. Iovine, WATER- AND OIL REPELLENCY AGENTS, Interference No. 98,869, decided Apr. 6, 1976, claims 1, 2 and 12.

Patent No. 3,668,211, A. Crabtree, CERTAIN 6-HYDROXY 2-(1H) PYRIDONES, Interference No. 98,958, decided Mar. 26, 1976, claims 1 and 2.

Patent No. 3,691,509, S. J. Krol, SHIELDED FLAT CABLE CONNECTOR ASSEMBLY, Interference No. 98,421, decided Aug. 29, 1974, claims 2 and 3.

Patent No. 3,745,504, J. B. Mooney, IMPREGNATED POROUS PHOTOCONDUCTIVE DEVICE AND METHOD OF MANUFACTURE, Interference No. 98,812, decided Mar. 11, 1976, claims 8, 9, 10, 11, 12, 13 and 14.

Patent No. 3,752,668, E. S. Baltazzi, ORGANIC PHOTOCONDUCTIVE MEMBERS COMPRISING DICYANOMETHYLENE SUBSTITUTED FLUORENE SENSITIZERS, Interference No. 98,754, decided Mar. 26, 1976, claim 3.

Patent No. 3,757,401, H. R. Beisch and W. C. Trute, METHOD OF MANUFACTURING VEHICLE WHEEL TRIM, Interference No. 98,917, decided Mar. 17, 1976, claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 17, 18, 19, 20, 23, 24, 30, 31, 32, 33, 34 and 35.

Patent No. 3,788,129, G. C. Trussell, SELECT SIGNAL ENGINE DIAGNOSING APPARATUS, Interference No. 98,891, decided Apr. 16, 1976, claims 1 and 5.

Patent No. 3,796,843, G. H. Durkee, P.G. Wareberg, A. C. Yoder, CALCULATOR KEYBOARD SWITCH WITH DISC SPRING CONTACT AND PRINTED CIRCUIT BOARD, Interference No. 99,108, decided Mar. 26, 1976, claims 1 and 7.

Patent No. 3,867,645, P. K. Weimer, CIRCUIT FOR AMPLIFYING CHARGE, Interference No. 99,007, decided Apr. 6, 1976, claims 1, 3, 4, 6, 7, 10 and 11.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 5, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-2-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-12-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-14-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-4-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-1-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-1-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-6-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-5-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	6-16-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	2-18-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	11-3-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-26-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-19-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	11-7-75

Expiration of patents: The patents within the range of numbers indicated below expire during June 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,888,679 to 2,893,004 inclusive
Plant Patents..... Numbers 1,838 to 1,849 inclusive

REISSUES

JUNE 22, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,868

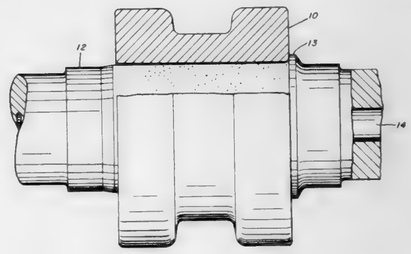
METHOD OF FORMING COMPOSITE ROLLS

Carl E. Spaeder, Jr., Monroeville Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Original No. 3,820,212, dated June 28, 1974, Ser. No. 295,390, Oct. 5, 1972. Application for reissue Sept. 18, 1974, Ser. No. 507,037

Int. Cl.² B23P *11/00*; **B21H** *1/14*

U.S. Cl. 29—148.4 D **10 Claims**



1. A method of forming a composite roll which has a hard wear-resistant metal shell and a tough shock-resistant arbor *encircled by said shell*, said method comprising:

relatively machining the shell and arbor to provide a total clearance therebetween of 0.003 to 0.005 inch based on diameter when the parts are at room temperature;

applying an adhesive to *the cylindrical surface of the body of* said arbor;

assembling the shell and arbor;

heating the adhesive to its curing temperature;

slowly cooling the assembled shell and arbor; and dressing the shell to its finished dimensions.

Re. 28,869

CARTRIDGE MAGAZINE FOR POWER TOOLS

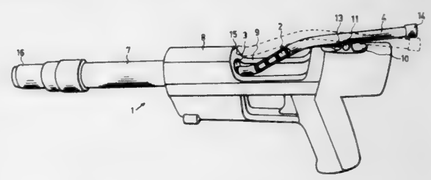
Karl Erich Samuel Erixon, Huskvarna, Sweden, assignor to Gunnebo Bruks Aktiebolag, Gunnebobruk, Sweden

Original No. 3,808,723, dated May 7, 1974, Ser. No. 319,395, Dec. 29, 1972. Application for reissue Feb. 14, 1975, Ser. No. 550,148

Claims priority, application Sweden, Apr. 4, 1972, 4292/72

Int. Cl.² F41C *25/00*

U.S. Cl. 42—6 **8 Claims**



12. A cartridge magazine for loading cartridges into a cartridge chamber disposed in an inner end of a barrel of a power tool, said magazine being adapted to be fixed on the outside of the tool in a holder means and being provided with a rotatable drum having a multitude of channels lying next to one another in which cartridges are contained in series behind one another, wherein the drum is mounted inside a casing which is mounted in said holder means and tiltable between two end positions, and wherein one of the channels in one of said end positions of the casing communicates with the cartridge chamber of the tool to effect loading thereof.

Re. 28,870

COPING STRUCTURE

Julian J. Attaway, and Randolph W. Driggers, both of Tucker, Ga., assignors to MM Systems Corporation, Tucker, Ga.

Original No. 3,862,531, dated Jan. 28, 1975, Ser. No. 395,277, Sept. 7, 1973. Application for reissue Aug. 20, 1975, Ser. No. 606,088

Int. Cl.² E04F *19/02*

U.S. Cl. 52—300 **19 Claims**

1. In a coping structure for capping a wall, the combination which includes; a pair of inverted channel-like coping members having contiguous longitudinal end portions forming a transverse seam and said pair of coping members each comprising a web disposed over the top of said wall, and front and rear legs projecting from said web and extending adjacent to said wall outside front and rear sides of said wall respectively, said front and rear legs of each of said pair of coping members including portions to be engaged for restraining said coping member at least against upward movement forwardly and rearwardly in said coping structure; and splice and first support means, said means including a splice member comprising front and rear legs and a web interconnecting said splice member legs, said splice member legs and web being across said seam and in overlap with said legs and webs of said pair of coping members inside the channels of said pair of coping members, and splice support structure securely on said wall and including a web and front and rear legs interconnected by said web of said splice support structure, said front and rear legs and web of said splice support structure being disposed intermediately of said wall and said front and rear legs and web of said splice member, said front leg of said splice support structure having a portion to be engaged with said front leg portions of said pair of coping members for arresting at least upward movement of said pair of coping members, and said rear leg of said splice support structure having a portion for being engaged with said rear leg portions of said pair of coping members for arresting at least upward movement of said pair of coping members, said splice support structure web comprising a raised forward web portion supported by said front leg of said splice support structure for said splice support structure to sustain said splice member web while said splice member web is contiguous to said webs of said pair of coping members forwardly in said coping structure and impede said pair of coping members forwardly against downward movement, having said pair of coping members arrested at least against upward movement through said portions of said front legs of said pair of coping members and said front leg portion of said splice support structure being engaged, and said splice support structure further being characterized by said web thereof having a lower rearward portion adjacent to the top of said wall, and said splice and first support means further including resilient biasing means extending deflected intermediately of said web of said splice support structure and said splice member web for supporting said splice member web while said splice member web is against said webs of said pair of coping members at least rearwardly of said forward raised web portion of said splice support structure and said front leg portions of said pair of coping members are engaged with said front leg portion of said splice support structure at least against upward movement of said pair of coping members forwardly in said coping structure and said rear leg portions of said pair of coping members and said rear leg portion of said splice support structure are engaged at least against upward movement of said pair of coping members rearwardly in said coping structure.

Re. 28,871

PROCESS AND APPARATUS FOR SPINNING STAPLE FIBERS

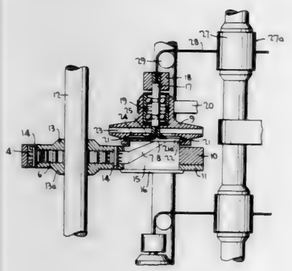
Julius Meimberg, Muenster, and Clemens Schlösser, Bremen, both of Germany, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Original No. 3,324,642, dated June 13, 1967, Ser. No. 422,996, Jan. 4, 1965. Application for reissue Sept. 5, 1974, Ser. No. 503,465

Claims priority, application Germany, Jan. 8, 1964, 59477

Int. Cl.² D01H *1/12*

U.S. Cl. 57—58.95 **19 Claims**



1. A process for spinning staple fibers comprising the steps of:

a. continuously delivering a sliver to a separation roller,

b. separating individual fibers from said sliver in said separation roller,

c. accelerating the individual fibers by means of an air current surrounding these individual fibers approximately to the peripheral velocity of the inner wall of a *quickly rotating* hollow body member prior to delivery of said individual fibers to said hollow body member,

d. then delivering said individual fibers approximately tangentially to the inner wall of [a] *the* quickly rotating hollow body member and forming thereat a fiber ring,

e. and axially withdrawing a yarn out of said fiber ring.

Re. 28,872

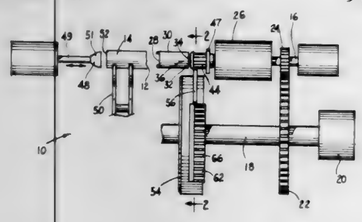
TRIMMING APPARATUS FOR TUBULAR BODIES

Daniel J. Larkin, Seattle, and Robert L. Hunt, Bellevue, both of Wash., assignors to National Can Corporation, Chicago, Ill.

Original No. 3,838,653, dated Oct. 1, 1974, Ser. No. 353,401, Apr. 23, 1973. Application for reissue Feb. 21, 1975, Ser. No. 551,859

Int. Cl.² B21D *51/26*

U.S. Cl. 113—7 R **9 Claims**



1. Apparatus for trimming uneven edges from drawn and ironed tubular metal bodies, comprising:

two substantially parallel shafts including a body-turning shaft and a tool shaft, said body-turning shaft having a free end;

a body-supporting member concentrically attached to said body-turning shaft at said free end;

an annular cutter member mounted concentrically on said body-turning shaft axially inwardly of said body-supporting member, said cutter member having a circumferential surface with an edge closest to said free end of radial dimension less than said supporting member, said surface tapering outwardly from said edge to a cutter edge axially remote from said free end;

a knurling roller mounted on said body-turning shaft axially inwardly of and adjacent to said cutter member, said knurling roller having circumferentially spaced teeth each extending radially to a position radially inward of said cutter edge, said supporting member, cutter member and knurling roller having a constant, rigid overall axial dimension;

means to fully load a tubular body on said supporting member with said uneven edge extending over said knurling roller and to hold said body in fixed axial position during operations thereon;

a rotating wheel mounted on said tool shaft;

a blade circumferentially mounted on a first sector of said wheel and having a peripheral edge aligned to cooperate with said cutter edge to trim from a tubular body and endless ring of metal having said uneven edge; and

a knurling member circumferentially mounted on a second sector of said wheel, adjacent said first sector, and having a peripheral portion with radially extending teeth aligned to mesh with said knurling roller to break and knurl said endless ring, said teeth of said knurling member and roller being configured such that [the intersections of] all planes *extending through said knurling roller and knurling member, perpendicular to the axes of said knurling roller and knurling member and* normal to said shafts [with each individual tooth] are substantially congruent, and teeth on said knurling member closest said blade extend radially further than the remaining teeth thereon to mesh more deeply with said roller whereby to entrap and break said ring across its entire width.

Re. 28,873

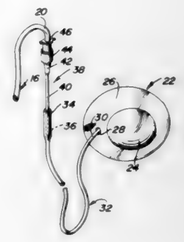
SCLERAL LENS WITH ATTACHED TUBE

Loran B. Morgan, 138 Linda Vista, Torrington, Wyo. 82240

Original No. 3,664,340, dated May 23, 1972, Ser. No. 867,198, Oct. 17, 1969. Application for reissue May 13, 1974, Ser. No. 469,414

Int. Cl.² A61M *7/00*

U.S. Cl. 128—249 **4 Claims**



2. Apparatus for administering a continuously flowing supply of a liquid medicated solution to at least the corneal portion of a patient's eyeball, comprising:

a cup-like eye shield having a concave inner face of predetermined size and shape to overlie the frontal portion of the eyeball and having a smooth peripheral margin adapted to initially engage corresponding marginal portions of the eyeball;

the outer surface of the shield being adapted to contact the inner surfaces of the eyelids and maintain them separated from the eyeball;

the shield being provided with an inlet port extending therethrough to define a flow path for entry of liquid between the shield and the eyeball;

a length of flexible tubing having one end connected with the inlet port and an opposite end free for connection to the discharge end of a second length of tubing which is adapted to supply a medicated liquid from a suitable source of supply;

said free end being provided with an adapter; and

said adapter comprising a rigid hollow needle-like stem open at its ends, one open end being fitted communicatively into the bore of said free end, the other open end having a communicating socket member, said socket member being designed and adapted to receive the aforementioned discharge end.

Re. 28,874

MOLDED BARREL

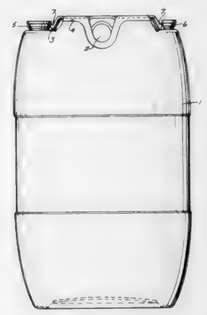
Wilhelm Hammes, Munich, Germany, assignor to Mauser Kommanditgesellschaft, Cologne, Germany

Original No. 3,647,110, dated Mar. 7, 1972, Ser. No. 27,629, Apr. 6, 1970. Application for reissue Feb. 25, 1974, Ser. No. 445,680

Claims priority, application Germany, Apr. 23, 1969, 1920515

Int. Cl.² B65D *7/42*

U.S. Cl. 220—72 **10 Claims**



1. A barrel of thermoplastic material comprising a circumferential wall; a pair of spaced end walls one of which has a general plane; at least two depressions in said one end wall at opposite diametric sides thereof; a tubular [projections] *projection* located in each depression and being of one piece with said one end wall, each of said tubular projections communicating with the interior of said barrel and terminating in said general plane; and reinforcing webs in the respective depressions at that side of the associated projection which faces the middle of said one end wall, said reinforcing webs being of one piece with said one end wall and the respective projection, *each reinforcing web having an upper section* connected to [said] *its respective* projection [only] within the upper region *of said respective projection.* [thereof so as to bridge the depression between said one end wall and the respective projection.]

Re. 28,875

MANUFACTURE OF THIN-WALLED CONTAINERS

Lindsay Maitland Thomas, Chisworth, England, assignor to Fairey Stainless Limited, Middlesex, England

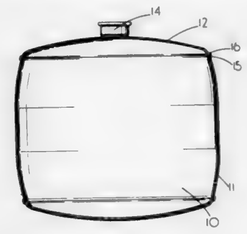
Original No. 3,729,812, dated May 1, 1973, Ser. No. 204,250, Dec. 2, 1971. Application for reissue Aug. 16, 1974, Ser. No. 498,141

Claims priority, application United Kingdom, Dec. 2, 1970, 57247/70

Int. Cl.² B23K *31/02*

U.S. Cl. 228—157 **23 Claims**

1. A method of making a double wall container comprising an inner vessel of thin walled stainless steel surrounded by a rigid outer vessel [in which the inner vessel is a thin-walled vessel of stainless steel], comprising the steps of forming two or more co-operating pieces of the inner vessel from sheet stainless steel and forming the mating edges to enable the pieces to be welded together in a manner which permits subsequent flattening, straightening or smoothing of the welded seams, welding an entry boss to one of the pieces, holding the pieces together in correct relationship and welding the pieces to form a liquid tight container, inserting the inner vessel in [said] *a larger* surrounding rigid outer vessel, and admitting fluid under pressure to the interior of the inner vessel to expand it [and cause it] to conform substantially to the internal shape of the outer vessel [.] *and to flatten, straighten, or*



smooth [thereby flattening, straightening or smoothing] to a substantial degree the welded seam or seams of the inner vessel, *the mating edge of at least one of the pieces being flanged outwards so that, in the area of the weld, the adjacent pieces are substantially parallel to each other, or make a small included angle, and the inner vessel being formed of two dome shaped pieces which are outwardly flanged at the rims and, after the rims are brought together, the two flanges are seam welded to give a liquid-tight joint.*

Re. 28,876

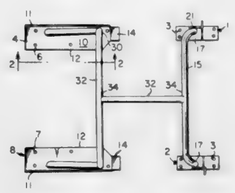
ROLL BAR CAGE FOR VEHICLES

Richard Lee Notestine, and Lee F. Coleman, both of Portland, Oreg., assignors to Richard Lee Notestine, Portland, Oreg.

Original No. 3,622,177, dated Nov. 23, 1971, Ser. No. 867,462, Oct. 20, 1969. Continuation of Ser. No. 263,163, June 15, 1972. Application for reissue July 17, 1974, Ser. No. 489,139

Int. Cl.² B60R *27/00*

U.S. Cl. 280—756 **4 Claims**



1. In a vehicle having a body mounted upon a frame and comprising a forward section, a rearward section, and an operator's space between said sections, the rearward end of said front section defined by vertical vehicle body members interconnected by a dashboard, a framed windshield extending upwardly from the dashboard, and said rearward section having a downwardly opening wheel housing at each side thereof, the improvement comprising:

a flat plate secured to and extending along the top wall of each of said wheel housings on the interior of the vehicle body,

a roll bar cage comprising a first inverted U-shaped frame member secured at its bottom end to said vehicle frame,

said inverted U-shaped member extending upwardly and bearing forwardly against said windshield frame,

means fixedly securing said legs of said first U-shaped member to said rearward vertical ends of said forward section of the vehicle body,

a second roll bar frame of inverted U-shape coextensive in height and width with said first roll bar and secured at its bottom ends to said flat plates of said wheel housings,

said second roll bar reinforced by rearwardly extending right-angular members welded one each to each leg of said second roll bar and to said flat plates, and

a forwardly and rearwardly extending reinforcing bar welded at its forward end to said first roll bar and at its rearward end to said second roll bar.

Re. 28,877

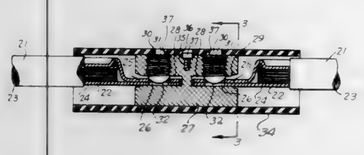
ELECTRIC CABLE CONNECTOR

John R. Pertuit, Luling, La. 70070

Original No. 3,693,138, dated Sept. 19, 1972, Ser. No. 116,761, Feb. 19, 1971. Application for reissue Sept. 6, 1974, Ser. No. 503,671

Int. Cl.² H01R *13/50*

U.S. Cl. 339—213 R **5 Claims**



1. An electric cable connector for connecting electric cables of the type having a lug secured to the end thereof with the lug having a flat tongue extending outwardly therefrom and a transverse bore extending through the tongue comprising an elongate conductive body, transverse generally flat slots formed in opposite ends of said body and extending transversely thereacross to receive the tongues of the lugs said slots having flared outer ends for guiding said tongues on inserting said tongues in said slots, a pair of set screws threaded in said body for clamping said tongue in said slot, said set screws having domed inner ends for engagement in the transverse bores of said tongues, a generally cylindrical insulating sleeve encompassing said body and said lugs, and set screw means for locking said sleeve to said body.

Re. 28,878

HIGH-STRENGTH LOW-ALLOY STEELS

Michael Korchynsky; John David Grozier; John L. Mihelich, all of Bethel Park, Pa.; John R. Bell, Grosse Isle, Mich., and Leon Luyckx, McMurray, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Original No. 3,666,452, dated May 30, 1972, Ser. No. 842,345, July 16, 1969. Application for reissue Nov. 11, 1974, Ser. No. 522,527

Int. Cl.² C22C *38/06, 38/12*; **C21D** *7/14*

U.S. Cl. 75—123 E **6 Claims**

1. A killed, low-alloy high-strength steel hot-rolled finished in the temperature range 1550° F. to 1650° F., cooled at a rate within the range 20° F. to 135° F. per second, and collected within a temperature range of 1025° F. to 1175° F., the steel being characterized in a hot-rolled condition by a yield strength in excess of 80,000 p.s.i., an ultimate tensile strength in excess of 95,000 p.s.i., ductility as measured by percent elongation (2 inches) in excess of 18%, and good toughness, said steel consisting essentially of at least about .12% carbon, a maximum of about 1.65% manganese, at least about .05% vanadium, .005% to .025% nitrogen, .04% maximum phosphorus, .025% maximum sulfur, .60% maximum silicon, .01% to .10% of a rare earth or mixture of rare earths, balance iron.

PLANT PATENTS

GRANTED JUNE 22, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,916

YELLOW CHRYSANTHEMUM

Cleveland Ott, 677 Grater Ave., Graterford, Pa. 19426

Filed Mar. 6, 1975, Ser. No. 555,975

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct variety of yellow chrysanthemum, substantially as illustrated and described, characterized particularly by: a deeper hue of yellow color in the blossom relative to the parent Yellow Paragon chrysanthemum; petals of the blossom which maintain an incurving form during the entire flowering period; and a bloom which appears three days later than the parent Yellow Paragon chrysanthemum.

3,917

POINSETTIA PLANT

Alexander Hrebeniuk, 7 Corner Road, Perkasie, Pa. 18944

Filed Mar. 20, 1975, Ser. No. 560,227

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—86 **1 Claim**

1. A new and distinct variety of poinsettia plant substantially as illustrated and described, characterized particularly as to novelty by its compact growth, self-branching habit, non-drooping foliage, and its ability to maintain its beauty and life at a temperature range of 50° F. to 60° F.

3,918

IMPATIENS PLANT

Claude Hope and Rafael Angel Montoya Murillo, Cartago, Costa Rica, assignors to Goldsmith Seeds Inc., Gilroy, Calif.

Filed June 16, 1975, Ser. No. 587,091

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive cultivar of *Impatiens sultani*, substantially as herein shown and described, characterized particularly as to novelty by its large, highly double flowers and distinct brilliant solid orange color.

3,919

IMPATIENS PLANT

Claude Hope and Rafael Angel Montoya Murillo, Cartago, Costa Rica, assignors to Goldsmith Seeds Inc., Gilroy, Calif.

Filed June 16, 1975, Ser. No. 587,092

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive cultivar of *Impatiens sultani*, substantially as herein shown and described, characterized particularly as to novelty by its large, highly double flowers and distinct bright clear red color.

3,920

IMPATIENS PLANT

Claude Hope and Rafael Angel Montoya Murillo, Cartago, Costa Rica, assignors to Goldsmith Seeds Inc., Gilroy, Calif.

Filed June 16, 1975, Ser. No. 587,261

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive cultivar of *Impatiens sultani*, substantially as herein shown and described, characterized particularly as to novelty by its large, highly double flowers and distinct white with a faint pink blush color.

3,921

IMPATIENS PLANT

Claude Hope and Rafael Angel Montoya Murillo, Cartago, Costa Rica, assignors to Goldsmith Seeds Inc., Gilroy, Calif.

Filed June 16, 1975, Ser. No. 587,381

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive cultivar of *Impatiens sultani*, substantially as herein shown and described, characterized particularly as to novelty by its large, highly double flowers and distinct light pink color.

3,922

IMPATIENS PLANT

Claude Hope and Rafael Angel Montoya Murillo, Cartago, Costa Rica, assignors to Goldsmith Seeds Inc., Gilroy, Calif.

Filed June 16, 1975, Ser. No. 587,438

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive cultivar of *Impatiens sultani*, substantially as herein shown and described, characterized particularly as to novelty by its large, highly double flowers and distinct two-tone coral pink color.

3,923

ROSE PLANT

Jan Andries Herholdt, Roselandia, Eikenhof, Transvaal, Republic of South Africa

Filed June 20, 1975, Ser. No. 588,942

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—14 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein described and shown, characterized particularly as to novelty by the unique combination of a vigorous growing plant with disease resisting foliage and exceptionally free flowering nature and the production of well formed extra large scented flowers, with perfect pointed buds borne on long rigid stems which hold the flowers upright, said flowers having the ability to retain their color and beauty in hot sun as well as in rainy weather.

3,924

ROSE PLANT

O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91762

Filed June 24, 1975, Ser. No. 589,867

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—21 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described,

characterized particularly as to novelty by the unique combination of an attractive plant habit which is particularly attributable to its good height, density and compact canes which make it an ideal and useful garden rose plant; a distinctive blackish-red flower color, with the inside petals having a very velvety sheen and texture; and a distinctive and exceptionally heavy, sweet rose perfume flower fragrance which is quite often totally absent in many new rose varieties.

3,925
PLUM TREE
Claron O. Hesse, Kingsburg, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed July 7, 1975, Ser. No. 593,391
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—38 **1 Claim**

1. The new and distinct variety of plum tree herein described and illustrated, and identified by the characteristics enumerated above.

PATENTS

GRANTED JUNE 22, 1976

ERRATA

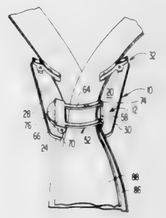
For CLASS	See PATENT NO.
250–468	3,964,107
017–032	3,964,114
029–182	3,964,145
074–471 R	3,964,318
030–381	3,964,333
090–011 C	3,964,367
242–007.22	3,964,522
043–021.2	3,964,706
239–662	3,964,714
241–007	3,964,715
241–028	3,964,716
241–071	3,964,717
241–079	3,964,718
241-101.7	3,964,719
241–186	3,964,720
242–018 PW	3,964,721
242–018 PW	3,964,722
242–035.5 A	3,964,723
134–117	3,964,926
060–039.32	3,965,066
526–154	3,965,078
526–068	3,965,079
526–183	3,965,080
526–009	3,965,081
526–019	3,965,082
526–065	3,965,083
424–279	3,965,274
424–279	3,965,275
178–007.3 D	3,965,299

PATENTS

GRANTED JUNE 22, 1976

GENERAL AND MECHANICAL

3,964,105
KNOT SIMULATOR
Thomas R. Gideon, P.O. Box 399, Aztec, N. Mex. 87410
Filed Mar. 24, 1975, Ser. No. 561,425
Int. Cl.² A41D *25/14*
U.S. Cl. 2—152 R **1 Claim**



1. A decorative necktie knot simulator for use with a necktie having first and second tie panels, the simulator comprising:

a shield of generally inverted triangular form having angularly related straight side portions connected together at a central bend section and extending therefrom at obtuse angles each of said side portions having inner and outer surfaces;

the shield having a top edge and a bottom edge, the top edge being elongated in relation to the bottom edge;

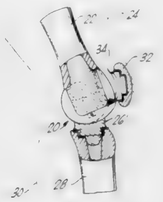
an upper clip assembly on the inner surface of each of the side portions adjacent the top edge of the shield;

each upper clip assembly comprising a pair of upstanding legs fixedly secured to the side portion, a pivot axle between said legs, a clip arm having an inwardly extended elongated gripping section and an outwardly extended lever section pivotally mounted on said axle between said gripping and lever sections, and a coil spring about the axle having spring ends contacting the lever section and the inner surface of the shield and constantly urging the gripping section against the shield;

a lower main clasp assembly comprising a concave/convex plate fixedly secured to the inner surfaces of the shield side portions adjacent the bottom edge with the convex portion thereof in contact with the shield inner surface, the plate having a pivot end and a free end, a clasp member having a cross bar pivoted on said pivot end of the plate, an actuating knob extending from the cross bar, a pair of elongated, curved retaining bars extending from the cross bar across the shield, the retaining bars each having an outer lip which extends about the free end of the plate, and coil springs about the pivot end of the plate with spring ends contacting the shield inner surface and the actuating knob to urge the retaining bars against the plate; and

the tie panels being positioned in knot simulating, superposed positions with the first and second tie panels in overlapping relation, one of the upper clip assemblies engaging each of the sections, and the lower clasp engaging the superposed tie panels.

3,964,106
THREE-PART TOTAL KNEE PROSTHESIS
Charles G. Hutter, Jr., and Luigi Gentile, both of North Hollywood, Calif., assignors to Physical Systems, Inc., North Hollywood, Calif.
Filed Mar. 3, 1975, Ser. No. 554,484
Int. Cl.² A61F *1/24*
U.S. Cl. 3—1.911 **5 Claims**



1. A knee prosthesis which includes:

a femoral cap having a proximal surface adapted to bear against the cortex of the femur to transmit the load carried by the femur to the cap, and a distal surface having a plurality of curvatures, said cap having a vertical groove in its anterior surface;

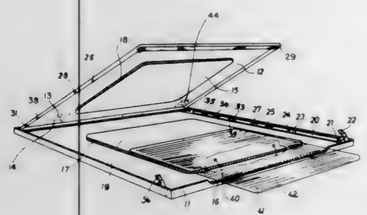
a tibial plateau having a distal surface adapted to bear against the cortex of the tibia, with a boss extending away from said femur and toward said tibia for attachment to the latter, and having a proximal surface adapted to cooperate with the distal surface of said femoral cap, said proximal surface of said plateau having a central curved surface having a radius of curvature less than that of the adjacent proximal surface, said curvature of said femoral cap and said tibial plateau being coordinated so that the tibia rotates about a constant center when flexing, and the difference between said central and adjacent radii of curvature of said tibial plateau effects a limiting stop when said tibia is extended; and

a patellar block adapted to be mounted on the posterior of the patella, the posterior surface of said block being curved to cooperate with the adjacent surface of said femoral cap, and having a vertically extending cusp fitting into said vertical groove of said femoral cap.

3,964,107
RADIOGRAPHIC FILM CASSETTE
Emile Frans Stievenart, Hoboken; Leo Paul Van Bouwel, Mortsel, and Hendrik Sylvester Plessers, Boechout, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium
Division of Ser. No. 319,062, Dec. 27, 1972, Pat. No. 3,836,783. This application Apr. 1, 1974, Ser. No. 456,859
Claims priority, application United Kingdom, Dec. 29, 1971, 60344/71
Int. Cl.² G11B *1/00*
U.S. Cl. 250—468 **8 Claims**

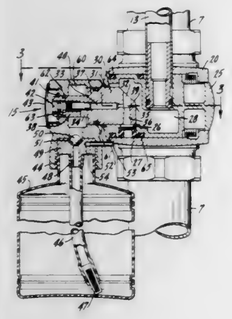
1. An apparatus for unloading under daylight conditions radiographic sheet film cassets of the type having exteriorly projecting cocking levers at their side into a processing apparatus having an entrance slot, comprising a tunnel in communication with said entrance slot for the reception of said cassette, a resilient strip disposed in said tunnel extending substantially over the tunnel width, said strip being fixed along one edge on the tunnel and projecting at the opposite free end into the interior of the tunnel in the path of said cassette

locking levers for engagement with said levers as said cassette is introduced into said tunnel to open said cassette for the removal of the exposed film from the cassette and delivery to



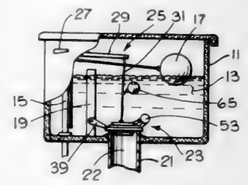
said entrance slot and light screening means to prevent ambient light from entering into said tunnel after said cassette is introduced therein.

3,964,108
DEOSEPTIC ASSEMBLY FOR BEDPAN RINSER
Frederic Lissau, Chicago, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.
Filed Nov. 20, 1974, Ser. No. 525,357
Int. Cl.² A47K *3/22, 11/08*
U.S. Cl. 4—7 **16 Claims**



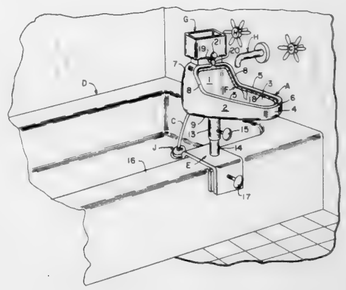
1. In combination, a flush valve together with a bedpan rinsing apparatus, a flush tube connecting said flush valve and a toilet fixture whereby operation of said flush valve causes water to flow into the toilet fixture, a diverter valve assembly supported on said flush tube, said assembly including a valve member rotatable therein, and having a spray arm attached to said valve member, said spray arm movable into and out of position with respect to said bedpan, said diverter valve member rotatable with said spray arm and having a flow passage therein arranged to permit water flow from said flush tube into said spray arm in one position of said spray arm, and to close off water flow in another position of said spray arm, a deoseptic assembly supported upon said diverter valve member and having a part rotatable therewith, said deoseptic assembly including a container of sanitizing liquid, means in said diverter valve responsive to movement of said spray arm into bedpan rinsing position and operation of said flush valve for causing water flow into the toilet fixture and into said spray arm, and means in said rotatable part of said deoseptic assembly responsive to said water flow for causing the sanitizing liquid in said container to mix with the water flow passing through said spray arm.

3,964,109
FLUSH VALVE ASSEMBLY
William M. Street, P.O. Box 225, Vancouver, Wash. 98660, and David L. Edmonds, 457 SW. Washington No. 5, Corvallis, Oreg. 97330
Filed June 11, 1974, Ser. No. 478,205
Int. Cl.² E03D *1/34, 5/02*; **A61B** *19/00*
U.S. Cl. 4—67 A **7 Claims**



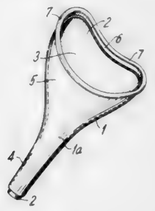
1. A flush valve assembly adapted to be operated by a valve opening means for controlling the flow of a fluid from a tank having an outlet conduit providing a first valve seat, the flush valve assembly comprising:
a first valve element heavier than an equivalent volume of the fluid cooperating with the first valve seat formed by the conduit to control flow of the fluid into the conduit, said first valve element defining
a passage therethrough and
a second valve seat;
a second valve element heavier than an equivalent volume of the fluid cooperating with said second valve seat formed by said first valve element to control flow of the fluid into said passage in said first valve element;
means for mounting said first valve element in the flush tank for pivotal movement between a closed position in which said first valve element seats against the first valve seat to inhibit the flow of the fluid through the conduit and an open position in which said first valve element is spaced from the first valve seat to facilitate flow of the fluid into the conduit;
means for mounting said second valve element on said first valve element for pivotal movement of said second valve element between a closed position in which said second valve element seats against said second valve seat to inhibit flow of the fluid into said passage and an open position in which said first valve element is spaced from the first valve seat to permit the flow of the fluid into said passage;
a valve opening means attached to said second valve element and being operable to selectively move said second valve element to the open position thereof to permit a first volume of the fluid to flow into the conduit, and being operable to selectively move said first valve element to open position thereof to permit a second volume of the fluid greater than the first volume of the fluid to flow into the conduit,
a first float operatively attached to said second valve element and having characteristics for assuming a location above said second valve element, at least when the tank is full of the fluid, and for descending with the fluid in the tank to permit movement of said second valve element from the open position thereof to the closed position thereof; and
a second float adapted for attachment to said first valve element and having characteristics for assuming a location above said first valve element at least when the tank is full of the fluid and for descending with the reducing level of the fluid in the tank to thereby permit movement of said first valve element from the open position thereof to the closed position thereof.

3,964,110
PORTABLE UNISEX URINAL
Wynn Kapit, 2452 15th St., San Francisco, Calif. 94114
Filed June 18, 1975, Ser. No. 587,832
Int. Cl.² A47C *29/00*
U.S. Cl. 4—99 **3 Claims**



1. A portable unisex urinal comprising:
a. a urinal bowl having an outlet;
b. adjustable means supporting said bowl and connecting it to a fixture having a drain;
c. a drain tube communicating with the outlet for said bowl and extending to the drain for conveying any liquid in the bowl to the drain;
d. said urinal bowl having a rim;
e. a perforated hose extending around the interior of the bowl and adjacent to the rim; and
f. a water containing reservoir removably supported by said bowl and having an outlet valve connectible to said hose;
g. whereby said valve may be opened for feeding water from said reservoir into said hose, the perforations in said hose directing the water against the inner surfaces of said bowl for flushing the bowl.

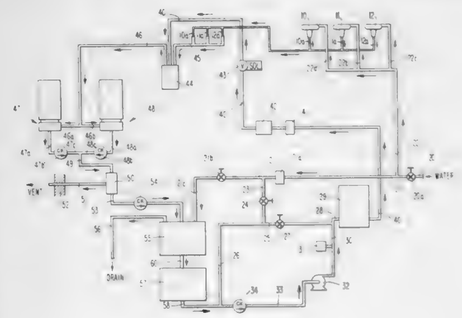
3,964,111
URINE CONDUCTING APPARATUS
Paul R. Packer, 140 Lockwood Ave., New Rochelle, N.Y. 10801
Filed Jan. 7, 1975, Ser. No. 539,164
Int. Cl.² E03D *13/00*
U.S. Cl. 4—110 **7 Claims**



1. Urine conducting apparatus for use by females comprising an outer portable urine conductor having a tapered body with a wide inlet mouth at one end contoured to fit against and envelop the female perineum and having a narrow spout at the other end to direct the urine outlet flow, said conductor also having a thickened rim around its inlet mouth and its tapered body being made of thin pliable plastic material foldable around the rim when the conductor is not in use, and a thin portable and disposable liner of water repellent material having the same size and configuration as the interior surface of said conductor to removably fit within and substantially entirely cover the interior surface of said conductor, said liner being sturdy enough to help support said conductor body in extended condition when inserted within the conductor during use thereof.

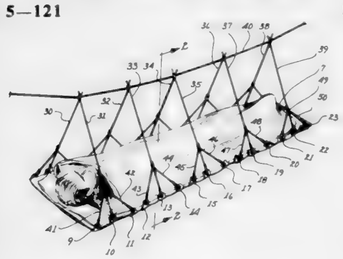
5. A urine conductor for use by females comprising a tapered body having a wide inlet mouth region at one end contoured to fit snugly against and envelop the female perineum and having a narrow spout at the other end to direct the urine outlet flow, and a thickened rim around said inlet mouth edge containing internal metal spring means for providing a stiffening outward spring bias to said rim, whereby said rim presses tightly against the legs of a user to support said conductor when inserted within her crotch.

3,964,112
DENTAL CUSPIDOR WITH FLUID RECIRCULATION SYSTEM
Richard E. Plowman, York, Pa., assignor to Dentsply Research & Development Corporation, Milford, Del.
Filed May 27, 1975, Ser. No. 581,059
Int. Cl.² A61C *17/04*
U.S. Cl. 4—262 **6 Claims**



1. A fluid system comprising:
a. a cuspidor;
b. a fresh water supply for the cuspidor;
c. vacuum means for removing wastewater from said cuspidor;
d. a vacuum pump for said vacuum means;
e. means for rendering said wastewater reuseable;
f. means for passing said wastewater into the vacuum pump while bypassing said cuspidors whereby said vacuum pump is continuously maintained in a primed condition during operation.

3,964,113
SLEEPING BAG SUSPENSION SYSTEM
Leslie Byron Dean, II, 5125 Williams Fork Trail No. 108, Boulder, Colo. 80301
Filed Jan. 9, 1975, Ser. No. 539,791
Int. Cl.² A45F *3/22*; **A41G** *9/00*
U.S. Cl. 5—121 **5 Claims**



1. A light weight compactly storable suspension system for supporting a sleeping bag above gr[illegible], said sleeping bag

having a top panel and a bottom panel, said system comprising:

a. webbing means attached in proximity to the upper surface of the bottom panel of said sleeping bag and oriented transverse to said sleeping bag for supportingly transmitting a load placed upon the bottom panel without compressing the bottom panel, said webbing means being of resiliently flexible material to permit general conformation of the bottom panel to the occupant of said sleeping bag and reduce the width of said sleeping bag during occupancy;

b. a tab disposed at each end of said webbing means for transmitting an external supporting force to each of said webbing means, said tabs being of a length sufficient to extend external to the respective side of said sleeping bag;

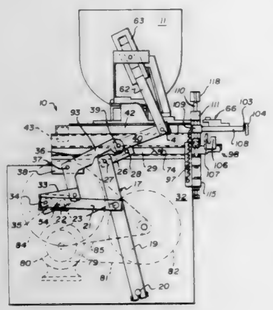
c. an overhead line for supporting said sleeping bag;

d. a plurality of pairs of load bearing lines depending from said overhead line at spaced intervals therealong for interconnecting said tabs with said overhead line, each said pair of load bearing lines being of a predetermined length to position said sleeping bag in a generally horizontal plane while said overhead line defines a curve; whereby, said sleeping bag is supported above ground without crushing or compacting the insulating material contained within the bottom panel and the sway of said sleeping bag is minimized during occupancy, ingress and egress.

3,964,114
MOLDING APPARATUS

James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Filed July 5, 1973, Ser. No. 376,627
Int. Cl.² A22C *7/00*
U.S. Cl. 17—32 **12 Claims**

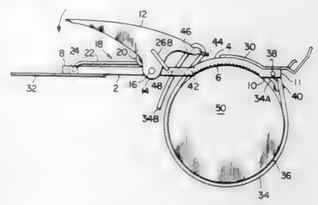


1. High capacity molding apparatus, comprising: supply means for retaining a supply of moldable material; a rotatable drive shaft; means for rotating said shaft; a movable mold adjacent to said supply means having a shaping opening for forming shaped articles; continuously operable means comprising a first lever system including a single continuously rotatable member extending radially from said drive shaft for moving said mold in a path between an opening filling position in communication with said supply means and a discharge position for said shaped articles out of communication with said supply means, and return; pressure means for forcing material from said supply at said filling position; continuously movable means comprising a second lever system also including the same said continuously rotatable member operable through successive pressure cycles for operating said pressure means; and means including said continuously rotatable member for operating said mold moving means out of time phase with said pressure operating means for initiating said mold movement prior to the completion of a said pressure cycle.

3,964,115
ADJUSTABLE JAR CAP ROTATOR INCLUDING IN COMBINATION CAN PERFORATOR AND BOTTLE OPENER

Stanley F. Platek, 187 Maplewood Ave., Maplewood, Essex County, N.J. 07040

Filed Aug. 26, 1974, Ser. No. 500,462
Int. Cl.² B67B *7/44*
U.S. Cl. 7—14.25 **10 Claims**



1. A device for rotating jar caps comprising:

a base having an arcuate member at one end thereof with serrations on the underside of said member for engaging at least a portion of the jar cap;

a handle pivotally supported intermediate its ends by the base and extending toward the opposite end thereof;

means for biasing the handle away from the base at said opposite end;

a flexible member of indeterminant length having one end secured to the base at the end thereof having the arcuate member, and having another free end threaded through the base and handle adjacent said arcuate member and forward of said pivotal support for forming a loop adjustable in accordance with the periphery of the jar cap;

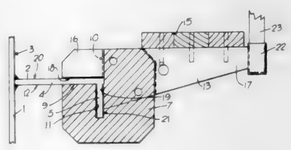
the flexible member having a friction surface for engaging at least part of the periphery of the jar cap and being drawn taut thereabout upon operator-operation of the handle toward the base in opposition to the biasing means; and

the friction surface of the flexible member and the arcuate serrated member cooperating to grip the jar cap, with operator twisting of the device being effective for rotating said cap.

3,964,116
SCAFFOLD SUPPORTING DEVICE

Don Black, 1256 E. 13th St., Brooklyn, N.Y. 11230

Filed Aug. 7, 1975, Ser. No. 602,637
Int. Cl.² E04G *3/04*
U.S. Cl. 9—1.7 **2 Claims**



1. A scaffold supporting device for a ship's hull having bulkheads, stiffeners affixed to and extending from the inside surfaces of the hull and from the bulkheads, each stiffener comprising a plank-type part affixed to the hull and bulkheads and a ledge part extending downward from the free edge of the plank-type part, said scaffold supporting device comprising

a pair of clip members, each comprising a plate-type member of substantially rectangular configuration having a substantially rectangular corner cutout forming a pair of substantially perpendicular edges and a channel formed therein and extending substantially perpendicularly to one of the edges and substantially linearly with the other of the edges for accommodating the ledge part of a stiffener of the hull and bulkhead with said one of the edges abutting the underside of the plank-type part of the stiffener;

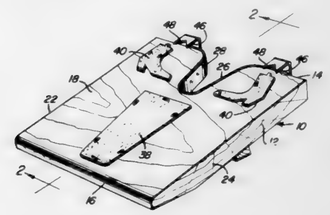
a pair of bracket members for supporting a scaffold platform between them, each comprising a plate-type member having a substantially rectangular part tapering downward to a narrow part and a substantially rectangular corner cutout in the rectangular part forming a pair of substantially perpendicular edges; and

fastening means for releasably affixing a bracket member to a clip member in a manner whereby one of the edges of the bracket member abuts the topside of the plank-type part of the stiffener and the other of the edges of the bracket member abuts the outside of the ledge part of the stiffener thereby securing the clip members to the stiffener.

3,964,117
COMBINED BOOT JACK AND SHAPER

Dale H. Fox, 10218 Eden Court, NE., Albuquerque, N. Mex. 87112

Filed Apr. 7, 1975, Ser. No. 565,661
Int. Cl.² A43D *5/00*; **A47J** *51/02*
U.S. Cl. 12—120.5 **8 Claims**

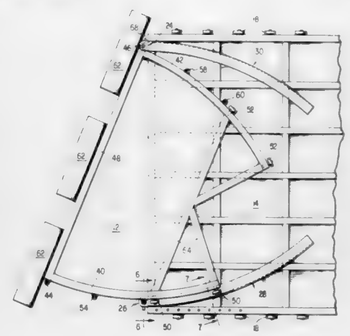


1. A combined boot jack and shaper including a generally horizontal panel member having upper and lower surfaces and a first pair of opposite marginal edge portions interconnected at corresponding ends by a second pair of opposite marginal edge portions extending therebetween, one edge portion of said first pair of marginal edge portions having an edgewise outwardly opening generally U-shaped notch formed therethrough intermediate and spaced inwardly of said second pair of edge portions and adapted to seatingly receive the heel portion of a boot therein with the toe portion of the boot projecting outwardly of said one edge portion, said one edge portion of said panel member, on opposite sides of said notch, including means defining a pair of abutment surfaces spaced above and facing downwardly toward the portions of said upper surface disposed therebeneath, said boot jack and shaper being free of obstructions between at least the marginal portions of said downwardly facing surfaces adjacent the other edge portion of said first pair of marginal edge portions and said upper surface and the spacing between said downwardly facing abutment surfaces and the opposing portions of said upper surface being slightly greater than the thickness of the toe portion of the sole of a conventional pair of boots, whereby the forward extremities of the soles of a pair of boots may be received between said downwardly facing abutment surfaces and said upper surface with the heel portions of the boots resting upon said upper surface to prevent upward curling of the forward sole portions of said boots.

3,964,118
CARGO TRANSFER VEHICLE WITH DOUBLE ANGLE CATWALK ADJUSTMENT

Henry W. Meyers, and John Quinby, both of Long Island City, N.Y., assignors to Marriott Corporation, Washington, D.C.

Filed Apr. 28, 1975, Ser. No. 572,510
Int. Cl.² B65G *11/00*
U.S. Cl. 14—72.5 **12 Claims**

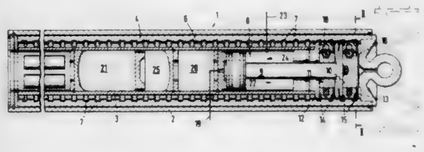


3. A cargo transfer vehicle having an elevatable platform assembly terminating at the outer cargo transfer end thereof in a linearly adjustable platform and an angularly adjustable catwalk; spaced pivot axes on opposite sides of said linearly adjustable platform; a pair of arcuate load supporting tracks secured to opposite sides of said platform; each of said tracks extending along arcs of equal radii originating at the pivot axis on the opposite side of said platform; spaced sets of bearing means mounted on said catwalk along arcs geometrically similar to said arcuate tracks; and means for selectively, pivotally interconnecting one side of said catwalk with one of said spaced pivot axes for effecting outward angular adjustment of the other side of said catwalk about said one pivot axis and along the arcuate track on the side of said platform opposite said one pivot axis.

3,964,119
SUPPORT LEG FOR BRIDGES

Friedhelm Soffge, Kornwestheim, and Gerhard Albrecht, Illingen, both of Germany, assignors to Dr. -Ing. H.c.F. Porsche Aktiengesellschaft, Germany

Filed May 12, 1975, Ser. No. 576,443
Claims priority, application Germany, May 11, 1974, 2422895
Int. Cl.² E01D *19/02*
U.S. Cl. 14—75 **18 Claims**



1. Support leg apparatus for bridges and the like, especially for portable bridges; said apparatus comprising:

housing means,

a stanchion disposed at said housing means for longitudinal movement with respect thereto,

stanchion length adjusting means for forcibly moving said stanchion longitudinally with respect to said housing means, said adjusting means including a movable member

and means for moving said movable member with respect to said housing means,

first locking means for selectively locking said stanchion in respective adjusted positions with respect to said housing means,

and second locking means for selectively locking said stanchion to said movable member,

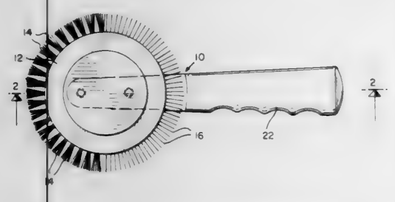
wherein each of said first and second locking means are fluidly controlled and include locking members movable into and out of engagement with detent stop means of said stanchion.

3,964,120

COMB CLEANER

Thurman R. Woodford, South Plainfield, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Oct. 4, 1974, Ser. No. 511,928
Int. Cl.² A45D *24/44*
U.S. Cl. 15—104.5 **2 Claims**



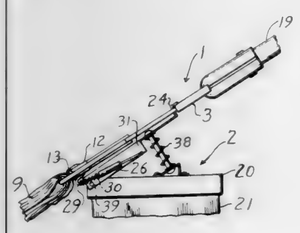
1. A comb cleaning implement comprising: a generally circular planar member having bristle tufts extending radially from a plurality of points along one half of the circumference of said member and a plurality of tines extending radially from a plurality of points along the other half of the circumference of said member, an elongated handle extending radially of said member and mutally engageable fastener means carried by said member and said handle for securing said member to said handle selectively in either of two opposite angular orientations.

3,964,121

MOP HOLDER AND BRUSH COMBINATION

Kwan Chi Kim, 133 Mauna Kea St., Hilo, Hawaii 96720

Filed Jan. 18, 1971, Ser. No. 107,291
The portion of the term of this patent subsequent to June 22, 1991, has been disclaimed.
Int. Cl.² A47L *13/12*
U.S. Cl. 15—115 **3 Claims**



1. A combination mop holder and brushing means comprising:

a. a mop holder of the open frame type with a handle attached to one end of the open frame and a mop attached to the other end of the open frame; and

b. a brushing means comprising:

1. a generally flat brush;

2. a generally flat base member;

3. a resilient biasing means operably connecting the base member and the brush; and

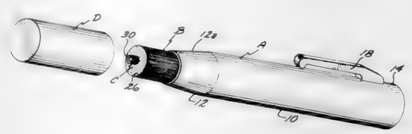
4. quick connect means fixed to the base member operably connecting the base member to the mop holder comprising two sets of hooking means, one set of which engages the handle end of the open frame, and the other set of which engages the mop end of the open frame, said quick connect means also comprises a spring means which constantly urges the latter set of hooking means towards and against the mop end of the frame.

3,964,122

DENTAL HYGIENE DEVICE

George Kurdy, 454 W. 6th St., Long Beach, Calif. 90802

Filed Oct. 15, 1974, Ser. No. 514,639
Int. Cl.² A46B *9/04, 17/04*
U.S. Cl. 15—184 **1 Claim**



1. A dental hygiene device of the type that includes an elongate solid handle that has first and second end portions, tooth brushing means supported from said first end portion, and a cap that is removably mounted on said first end portion and envelops said brushing means when the latter is not in use, wherein the improvement is in said brushing means, said improvement comprising:

a. a plurality of first and second bristles, said second bristles of greater length than said first bristles, said first and second bristles having second free ends and first end portions, said first bristles adjacently disposed in parallel relationship to define an annulus shaped body, said second bristles adjacently disposed in parallel relationship within said annulus shaped body to define a cylindrical body, with said second free ends of said second bristles disposed outwardly from said second ends of said first bristles a substantial distance, said first end portions of said first and second bristles disposed in a cavity in said first end of said handle and axially aligned with said handle; the said free ends of the first and second bristles terminating in spaced parallel substantially perpendicular to the length of the handle and

b. a body of bonding agent in said cavity that holds said first end portions of said first and second bristles together therein as an integral unit, said device when said cap is removed therefrom capable of being manually used to clean the teeth of a user when said second free ends of said bristles are brought into pressure rubbing contact therewith, with said second ends of said first bristles when said contact is so made contacting the exterior surfaces of the teeth, and said second ends of said second bristles as said contact is so made entering the spaces between said teeth to dislodge foreign material therefrom.

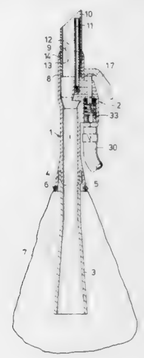
3,964,123

DEVICE FOR A COMBINED SUCTION AND BLOW-OFF NOZZLE CONNECTABLE TO A SOURCE OF COMPRESSED AIR

Henry A. Pettersson, Kvarngatan 7, S-811 Sandviken, Sweden

Filed July 3, 1974, Ser. No. 485,533
Claims priority, application Sweden, July 13, 1973, 7309869
Int. Cl.² A47L *5/14*
U.S. Cl. 15—345 **7 Claims**

1. A combination suction and air blowing nozzle connectable to a source of compressed air comprising a tube shaped casing having open ends, a venturi nozzle being mounted on one of said casing open ends, a valve housing being mounted on and extending through said casing, said valve housing having a compressed air inlet passage, at least two lateral openings, and a valve bore extending across said lateral openings to said air inlet passage, a tubular slide valve being closed at both ends and slideably extending in said housing valve bore, said slide valve having an opening positioned in a portion of said slide valve for communicating with said housing air inlet passage when said slide valve portion is in said air inlet passage and a pair of side openings each positioned for communicating with one of said valve housing lateral openings when aligned therewith during movement of said slide valve, a tube adjustably mounted in said valve housing in communication with one of said valve housing lateral



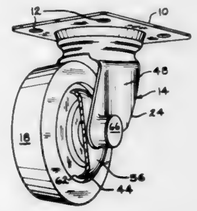
openings and extending in said casing towards the other end thereof for blowing air out of said casing other end when said tube is adjusted to a position opening its respective valve housing lateral opening and said slide valve is positioned with one of its side openings in communication with said respective valve housing lateral opening and said slide valve first mentioned opening is in communication with said housing air inlet passage, means for moving said slide valve in said valve bore as desired, and said valve housing having a passage communicating with the other of said valve housing lateral openings and extending in said casing towards said venturi nozzle whereby air from said valve housing passage will draw air in said casing other end creating a suction therein when said slide valve is positioned placing said valve housing passage in communication with said valve housing air inlet passage.

3,964,124

SEALED CASTER

Thomas A. Crawford, Jackson, Mich., assignor to Midwest-Precision Corporation, Jackson, Mich.

Filed Dec. 30, 1974, Ser. No. 537,101
Int. Cl.³ B60B *33/00*
U.S. Cl. 16—21 **9 Claims**



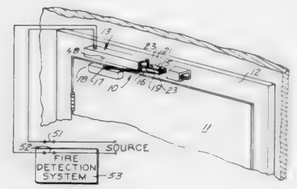
1. A sealed caster comprising, in combination, a body, support means for attaching said body to the caster supported apparatus, said body including a pair of spaced legs, an axle supported on said legs extending therebetween, a wheel mounted intermediate said legs rotatably supported upon said axle and having opposite sides, a resilient seal coating mounted upon each of said legs adjacent said axle, said seal coating on each leg defining an annular flexible skirt portion extending toward said wheel having a peripheral edge engaging a side of said wheel to seal said axle adjacent said wheel.

3,964,125

ELECTROMAGNETIC DOOR HOLDING DEVICE

Henry William Tansley, 602 - 1315 Cardero St., Vancouver, British Columbia, Canada (V6G 2J2)

Filed June 12, 1975, Ser. No. 586,253
Int. Cl.² E05F *15/20*
U.S. Cl. 16—48.5 **6 Claims**



1. A door hold-open and closing assembly comprising:

a. a track adapted to be mounted horizontally to a door frame above a door, the track having detent engaging means,

b. an electromagnet in the track,

c. a slider mounted for free sliding movement along the track,

d. a spring-operated door closing device adapted to be mounted on the door and having a rotatable arm connected to the slider,

e. detent means mounted on the slider for movement into and out of latching engagement with the detent engaging means when the door is in its normal open position,

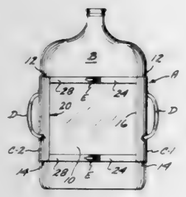
f. a moveable cam mounted on the slider operable between a latching and a release position for moving the detent means into and out of corresponding latching and release engagement with the detent engaging means,

g. a spring normally urging the cam to its release position,

h. an armature on the cam for engaging the electromagnet when the slider is moved a distance, passed the normal door open position, equal to the travel of the cam between its latching and release positions for holding the cam immovable when the door is returned to the normal open position so that the cam moves the detent means into latching engagement with the detent engaging means so as to prevent movement of the slider in the track and maintain the door in the open position against the action of the door closing device,

i. normally closed heat sensitive switch means in the electromagnet circuit for opening the circuit upon sensing of heat so as to de-energize the electromagnet to enable the spring to move the cam to its release position out of latching engagement with the detent means and allow the slider to move freely in the track so as to enable the door closing device to return the door to the closed position.

3,964,126
HANDLE ATTACHMENT FOR DRINKING WATER BOTTLE
Fred C. Madsen, 844 San Pablo St., Long Beach, Calif. 90813
Filed June 30, 1975, Ser. No. 591,780
Int. Cl.² B65D 63/18
U.S. Cl. 16—114 R **4 Claims**



1. A handle assembly that is removably attachable to a carboy bottle of the type that has a straight cylindrical side wall to permit said bottle to be lifted and placed in an inverted position, which assembly includes:

a. first and second transversely arcuate rigid sheets that may be disposed on opposite sides of said carboy bottle and in abutting contact therewith, said first and second sheets each having upper and lower circumferential edges, said first sheet when said carboy bottle is in an upright position having vertical first and second edges that extend between said upper and lower circumferential edges thereof, and said second sheet having third and fourth vertical edges that extend between said upper and lower edges thereof;

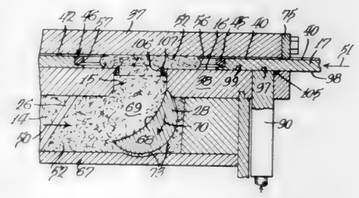
b. first and second handles secured to said first and second sheets;

c. first, second, third and fourth pairs of pliable horizontal bands, said first and second pairs of bands connected to said first sheet and extending in opposite directions from said first and second edges thereof, said third and fourth pairs of bands connected to said second sheet and extending in opposite directions from said third and fourth edges thereof, said first and third pairs of bands having free ends that are separated by a first space, and said second and fourth bands having free ends that are separated by a second space;

d. a pair of first manually operable locking means connected to said free ends of said first and third pairs of bands and disposed in said first spaces, said first manually operable locking means capable of occupying first and second positions, said first manually operated locking means when in said first positions holding said free ends of said first and third pairs of bands a minimum distance from one another, and said first manually operable locking means when in a second position holding said free ends of said first and third pairs of bands in a maximum distance from one another; and

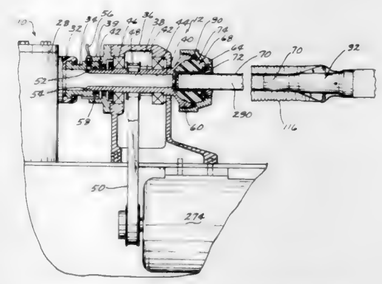
e. a pair of manually adjustable means connected to said free ends of said second and fourth pairs of bands disposed in said second spaces for so adjusting the lengths of said second spaces that when said first manually operable locking means are moved from said second to said first position said first and second sheets and said first, second, third and fourth bands are forced into pressure frictional contact with said cylindrical side wall to the extent said carboy bottle may be lifted by said first and second handles and disposed in an inverted position, and said first manually operable locking means when in said second position increasing the length of said second spaces that said handle assembly may be moved longitudinally relative to said cylindrical side wall of said carboy bottle to be mounted on or removed from the latter.

3,964,127
MOLDING APPARATUS
Harry H. Holly, Olympia Fields, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.
Filed Dec. 30, 1974, Ser. No. 537,400
Int. Cl.² A22C 7/00
U.S. Cl. 17—32 **15 Claims**



1. Apparatus for pressure molding an article from moldable material, comprising: a mold having a mold opening for receiving a pressurized charge of said material; an entrance means to said mold opening for flow therethrough of said material; means for moving said mold for movement of said mold opening from the entrance means to a location for removing the shaped article and return to the entrance means; an air vent means from the mold opening for venting air displaced by the pressurized charge entering the mold opening; an air valve in said air vent means movable between open and closed positions; a moldable material valve in said entrance means mounted for movement between entrance means opening and closing positions; means for opening said material valve for passage of said pressurized charge of material into the mold opening; means for closing said air valve when said mold opening is substantially filled with said moldable material and prior to said moving of said mold opening from said entrance means; and means for closing said material valve also when said mold opening is substantially filled with said pressurized charge and prior to said moving of said mold opening from said entrance means, the material in said mold opening thereby being held under pressure between the closed air valve and the closed material valve.

3,964,128
APPARATUS FOR ENCASING A PRODUCT
Ray T. Townsend, and Donald L. Beasley, both of Des Moines, Iowa, assignors to Townsend Engineering Company, Des Moines, Iowa
Filed Dec. 14, 1972, Ser. No. 315,100
The portion of the term of this patent subsequent to Sept. 17, 1991, has been disclaimed.
Int. Cl.² A22C 11/00
U.S. Cl. 17—33 **20 Claims**



1. Apparatus for encasing a product comprising,

a support,

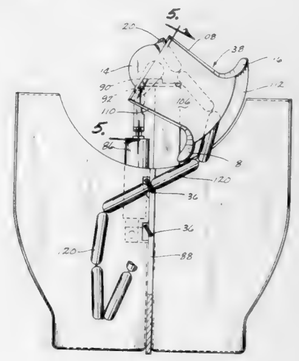
an elongated stuffing tube having a product receiving rearward end and a discharge forward end, said tube being rotatably mounted on said support for rotation about its longitudinal axis, said forward end of said stuffing tube being adapted for protruding within and supporting a folded casing whereby rotation of said stuffing tube causes rotation of said folded casing;

means for introducing said product into said rearward end of said tube and for forcing said product out of said tube through said forward end into said casing; and

drive means for rotating said stuffing tube thereby imparting a rotation to said casing both before and after it is filled;

said stuffing tube being operatively selectively pivotally secured at its rearward end to said support, the forward end of said stuffing tube being movable at least upwardly from said support so that the folded casing may be slipped thereover.

3,964,129
APPARATUS FOR LOOPING AND CONVEYING AN ENCASED PRODUCT
Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Filed Mar. 27, 1974, Ser. No. 455,252
Int. Cl.² A22C 11/00
U.S. Cl. 17—33 **3 Claims**



1. Looping and conveying apparatus for use with means adapted to issue forth an elongated linked casing, said apparatus comprising;

a support,

a guide means pivotally movably mounted on said support adapted to move between first and second positions, said guide means having first and second ends and a central area extending therebetween for receiving and supporting said casing, said first end adapted to receive said casing,

a conveyor comprising a plurality of spaced apart casing supports thereon and also comprising carrying means for moving said casing supports along a predetermined path, said conveyor being positioned so that said casing supports will pass adjacent said second end of said guide means when being moved by said carrying means,

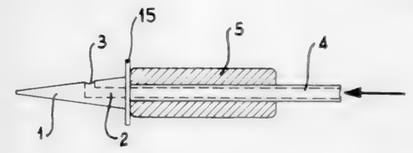
power means for moving said guide means between its first and second positions to cause said casing supports to catch said casing at spaced points along the length of said casing,

and selectively adjustable control means operatively connecting said carrying means and said power means to coordinate the movement of said guide means and said carrying means, so that said casing supports will catch and carry away said casing at predetermined spaced points along the length of said casing as said casing passes out of said second end of said guide means,

said guide means being a pan means comprising a bottom having side walls extending upwardly therefrom, said bottom being disposed in an inclined plane so that its second end is disposed below its first end,

a stub shaft operatively secured to said bottom of said pan means, said stub shaft being rotatably mounted on said support, an arm secured to said stub shaft and extending therefrom, said power means comprising an air cylinder operatively connected to said arm to pivotally move said pan means.

3,964,130
METHOD OF AND DEVICE FOR OPENING BIVALVULAR MOLLUSKS
Henri Bertrand, 20, rue d'Alsace-Lorraine, 45000 Orleans, France
Filed July 3, 1974, Ser. No. 485,581
Claims priority, application France, July 16, 1973, 73.25946
Int. Cl.² A22B 3/00
U.S. Cl. 17—45 **13 Claims**



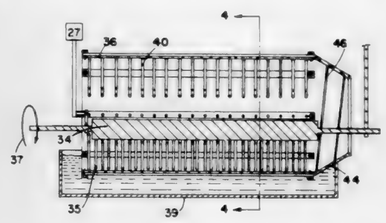
1. A method of opening bivalvular mollusks, notably flat oysters (*Ostrea edulis*) and Portuguese oysters (*Gryphaea* or *Crassostrea angulata*), said method comprising:

providing an elongated member having a sharpened end and a passage extending longitudinally within said member, said passage opening at a first end thereof into an orifice on a lateral surface of said member;

introducing said member between the mollusk valves or shells; and

feeding compressed air through said passage and said orifice against one of said shells and releasing the mollusk muscle normally closing said mollusk, thereby forcing apart said mullusk shells.

3,964,131
METHOD AND APPARATUS FOR EVISCERATING CLAMS
Harold F. Snow, Scarborough, Maine, assignor to Borden, Inc., Columbus, Ohio
Filed July 26, 1973, Ser. No. 382,836
Int. Cl.² A22C 21/00
U.S. Cl. 17—53 **22 Claims**



1. Method of treating clam meats comprising the steps of subjecting clam meats to a sufficient force applied at random points by multiple impacts to sever the connecting tissue between the various parts of a clam in order to partition the clam into its component parts of uneviscerated tongue, muscles, straps, siphons and occasional spines; separating the uneviscerated tongues from the remainder of clam parts to form a first product stream composed of uneviscerated tongues and a second product stream composed of remaining parts of a clam; removing viscera from the tongues by subjecting uneviscerated tongues to a sufficient shearing force applied at random points by multiple impacts to expel the viscera from the tongues;

9. Apparatus for treating clam meats comprising a cylindrical member having a lower region and said cylindrical member disposed substantially horizontally having an inlet and an outlet into which the clam meats are introduced through the inlet of said member;

plurality of elongated means extending inwardly from said cylindrical member for engaging the clam meats in the lower region of said cylindrical member;

an elongated member extending through said cylindrical member substantially parallel to its longitudinal axis but spaced from the longitudinal axis of said cylindrical member;

plurality of elongated means extending outwardly from said elongated member in intermeshing relationship with said elongated means on said cylindrical member for engaging the clam meats in the lower region of said cylindrical member; and

means for imparting rotation through 360° to said elongated means on said cylindrical member and means for imparting rotation through 360° to said elongated means on said elongated member to apply shearing forces to the clam meats.

3,964,132

APPARATUS FOR SEPARATING THE FILLETS OF A FLATFISH

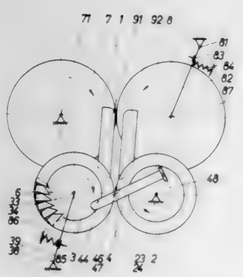
Horst Backhaus, and Heinz Schroder, both of Lubeck, Germany, assignors to Nordischer Maschinenbau Rud. Baader, Lubeck, Germany

Filed Sept. 6, 1974, Ser. No. 503,714

Claims priority, application Germany, Oct. 9, 1973, 2350561

Int. Cl.² A22C *25/16*

U.S. Cl. 17—57 **2 Claims**



1. An apparatus for separating the fillets of a flatfish from its skeleton in the region of its belly cavity and along its main backbone, said apparatus including

a pair of circular belly filleting knives rotating about a fixed axis and located on one side of a path for the main backbone of the fish,

a pair of curcular back filleting knives located on the other side of said path in alignment with said pair of belly filleting knives,

a first arm rotatably mounted on a fixed axis and rotatably mounting said back filleting knives thereon,

spring means biasing said first arm against an adjustable strip to locate said back filleting knives in an operative position closely spaced from said belly filleting knives,

a pair of backside conveyor disks on one side of said path downstream from said filleting knives, and rotating about two stationary axes,

a pair of belly side conveyor disks on the other side of said path in alignment with said backside conveyor disks, said belly side conveyor disks rotating about two axes supported by a second arm pivotable about a stationary axis and biased to an operating position against a second adjustable stop,

two pairs of backbone guides, one pair located on the belly side of said path beneath the outer surface of the belly filleting knives, and the other pair located on the opposite side of said path beneath the outer surfaces of the back filleting knives,

and a separating tool crossing said path at an oblique angle near the line connecting the centers of the backside and belly side conveyor disks, said separating tool including two rib scraping tools each having a scraping edge,

the lower edge of each pair of backbone guides entering between the two conveyor disks of a respective disk pair, and the backside conveyor disks and belly side conveyor disks being inclined towards one another to thereby define narrow gaps between the inner sides of a disk pair.

3,964,133

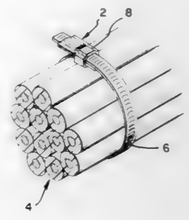
BUNDLE TIE DEVICE

Henry George Wasserlein, Jr., Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 21, 1973, Ser. No. 399,644

Int. Cl.² B65D *63/06*

U.S. Cl. 24—23 R **2 Claims**



1. A stamped and formed metal bundle tie device, said device being in situ on a bundle, said device comprising:

an elongated relatively narrow and relatively thin strip of sheet metal, said strip having a leading end and a trailing end,

a plurality of punched out slots in said strip, said slots extending transversely across said strip at equally spaced intervals, each of said slots having a central portion of reduced and uniform width and having enlarged ends proximate the sides of said strip, said central portion of each slot having two spaced apart transversely extending parallel edges, one of said edges being a leading edge and being proximate to said leading end of said strip and the other one of said edges being a trailing edge and being proximate to the trailing end of said strip,

said enlarged ends of each slot being circular, said ends extending from said leading edge rearwardly towards and past said trailing edge to a point between said trailing edge and the leading edge of the adjacent slot, said leading edge of each slot merging tangentially with said enlarged ends of each slot,

the sections of said strip between said enlarged ends of each slot being formed outwardly in one direction from the plane of said strip to provide a plurality of spaced apart vanes, all of said vanes extending from said strip on only one side of said strip, said vanes being substantially parallel, each of said vanes having an outer edge formed by the trailing edge of the associated slot and each of said vanes sloping toward said strip,

said leading end of said strip over-lapping said trailing end of said strip with said vanes proximate to said trailing end of said strip extending through said central portions of said slots proximate to said leading end, and said tangential leading edge of said slots proximate to said leading end bearing against said enlarged end portions of said slots proximate to said trailing end, at a location in said last mentioned slots between said trailing edge and

said leading edge of the adjacent slot whereby, said vanes and said slots are interlocked to form a bundle tie in which the vanes do not project inwardly where they might damage the conductors.

3,964,134

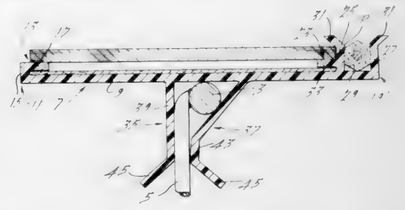
GROCERY CART CLIP ATTACHMENT

Gary L. Newtson, 752 Robinhood Circle, Bloomfield Hills, Mich. 48013

Filed Mar. 10, 1975, Ser. No. 557,188

Int. Cl.² A44B *21/00*; **B62D** *39/00*

U.S. Cl. 24—81 PC **15 Claims**



1. A clip adapted to be removably attached to a grocery cart of the type having an upper rim rod extending along the side of the cart and a plurality of wire members attached to said rim rod and extending downwardly therefrom, said clip comprising a base, paper pad retaining means for holding a paper pad having a cardboard backing and a plurality of sheets connected to said backing on said base, and attaching means extending downwardly from said base, said attaching means comprising a pair of legs, said legs being adapted to be spread apart to be slipped over said rim rod and engage said wire members for removably attaching said clip to said cart, said legs when engaging said wire members, maintaining said clip in a substantially stable position on said rim rod.

3,964,135

SLIDE-FASTENER HALVES

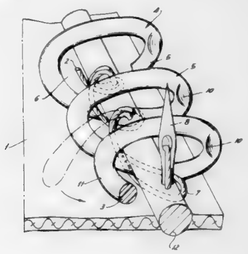
Helmut Heimberger, Grenzach, Germany, assignor to Opti-Holding AG, Glarus, Switzerland

Division of Ser. No. 381,441, July 23, 1973, Pat. No. 3,884,168. This application May 31, 1974, Ser. No. 475,263

Claims priority, application Germany, July 21, 1972, 2235828

Int. Cl.² A44B *19/12*, *19/40*

U.S. Cl. 24—205.1 C **3 Claims**



1. A slide-fastener half comprising:

an elongated stringer tape;

a monofilamentary coil supported on said tape, said coil having turns with lower shanks resting on said tape, upper shanks spaced from said tape and intervening coupling heads overhanging an edge of said tape;

a filler cord extending longitudinally through said coil; and

stitching securing said coil to said tape, said stitching consisting of loops of thread emerging at longitudinally spaced locations from the top of said cord and passing underneath said upper shanks approximately half-way around said cord to points between said cord and said tape, said loops being interliked at said points to form a chain stitch.

3,964,136

SLIDING CLASP FASTENERS

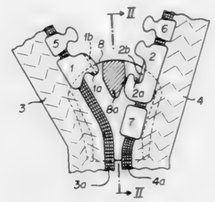
Maria Luisa Panzeri, Via Vanvitelli 41, 20100 Milan, Italy

Filed Mar. 5, 1975, Ser. No. 555,635

Claims priority, application Switzerland, Mar. 8, 1974, 3335/74; Italy, May 13, 1974, 22630/74

Int. Cl.² A44B *19/00*

U.S. Cl. 24—205.14 R **3 Claims**



1. In a zipper including two opposing flexible tapes, each having a row of interlockable teeth, and a channeled sliding clasp having a handpull and an inner wedge and adapted to lock and release said teeth, the improvement comprising: a three-piece automatic bottom stop attached to said tapes at one end of the row of interlockable teeth, and comprising a first bottom stop piece having a first-tape engaging side and a male member side, said male member side extending downwardly between the opposing tapes and in the path of the sliding clasp, a second bottom stop piece having a second-tape engaging side and a female member side comprising a cavity extending downwardly and being adapted to receive the male member in a hook lock, the upper end of said female member having a tooth shaped portion allowing this member to act as a continum of the row of zipper teeth, and a third bottom stop piece oblique parallelepiped form defining a pair of opposite parallelogram faces and including a tape engaging groove extending in the entire length of one of said parallelogram faces substantially at right angles to the base of the parallelepipedic piece, said third bottom stop piece being positioned on one of said tapes by means of said groove at a distance from said first and second bottom stop pieces, the edge of said third bottom stop piece extending between the lower acute angles of said parallelogram faces being bevelled, said third bottom stop piece being sized so as to be capable of fully passing through the channel in said sliding clasp during initial installation of said sliding clasp on said zipper tapes.

3,964,137

SLIDE FASTENER

Toshiyuki Kihara, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Japan

Filed May 1, 1974, Ser. No. 465,997

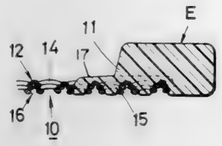
Claims priority, application Japan, May 8, 1975, 48-51479

Int. Cl.² A44B *19/40*

U.S. Cl. 24—205.16 R **2 Claims**

1. A slide fastener comprising a pair of oppositely disposed stringer tapes of a warp-knitted structure having wales and interstices between adjacent knitting threads and a series of discrete fastener elements made of a thermoplastic material attached to one longitudinal marginal edge of each of said stringer tapes, said fastener elements being secured to one surface of the tape and said marginal edge thereof in such a manner that the material of the fastener elements penetrates

into and through said interstices to fill the latter up and is extended further up to the region of the wales on the reverse

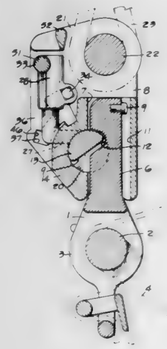


of the tape thereby forming an integral bond with the wales underlying said fastener elements.

3,964,138
LOCKING MEANS FOR RELEASABLE STRAP CONNECTORS

Jack A. Gaylord, 12578 Nacido Drive, San Diego, Calif. 92128

Filed Sept. 29, 1975, Ser. No. 617,325
Int. Cl.² A44B *19/00*
U.S. Cl. 24—230 A **21 Claims**



1. In a releasable strap connector, a female member having a socket therein, and a male member having at least one prong fitting into said socket, said prong having a pocket therein, a rocking bar journalled in said female member intersecting said socket, means to position said prong so that said pocket faces said rocking bar at the intersection thereof, a portion of said rocking bar at the intersection being cutaway so as to leave said socket and said pocket unobstructed in one position of said rocking bar thereby to permit insertion and withdrawal of said prong, and in another position to project into said pocket thereby to interlock with said prong, and means for turning said rocking bar from interlocking position to unobstructing position at will,

the improvement of manipulatable means for rocking said rocking bar into and out of the interlocking position and means for locking said rocking bar, comprising

a handle lever connected to the rocking bar for rocking the same,

coacting guide elements between said female member and said handle lever guiding said handle lever between locking and releasing positions,

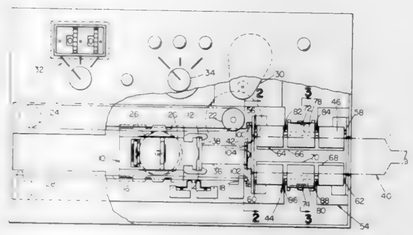
locking means related to said coacting guide elements to lock said handle lever in interlocking position,

and resilient means to urge said coacting elements toward locking position.

3,964,139
SYRINGE HOLDER

Aaron Joseph Kleinmann, Lexington; Robert Leo Norton, Norfolk, and Morton Irving Radis, Framingham, all of Mass., assignors to Harvard Apparatus Company, Inc., Millis, Mass.

Filed June 16, 1975, Ser. No. 587,114
Int. Cl.² A44B *21/00*; A61M *5/22*
U.S. Cl. 24—254 **8 Claims**



1. A syringe holder comprising:

a pair of clamp members spaced apart for receiving a syringe therebetween and having facing, generally concave surfaces for gripping said syringe in a clamping position of said clamp members, said clamp members pivotally mounted for rotation thereof from said clamping position to an open position thereof with one pair of adjacent edges of said surfaces farther apart than in said clamping position to permit insertion and removal of said syringe between said surfaces, and said clamp members having first latch means connected thereto;

first biasing means connected to said clamp members urging rotation thereof to said open position;

a pair of levers pivotally mounted, one adjacent each clamp member, said levers having second latch means engageable with said first latch means and moveable with said levers between a latching position engaging said first and second latch means locking said clamp members in said clamping position and an unlatched position in which said first and second latch means are disengaged whereby said first biasing means rotates said clamp members to said open position thereof; and

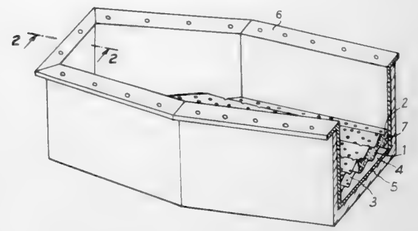
second biasing means connected to said levers urging movement thereof to said latching position.

3,964,140
COFFIN

Fernand Gauchard, Parc du Beau, Santeny (Val-de-Marne), France

Filed Nov. 26, 1974, Ser. No. 527,294
Claims priority, application France, Nov. 26, 1973, 73.41952
Int. Cl.² A61G *17/00*
U.S. Cl. 27—2 **2 Claims**

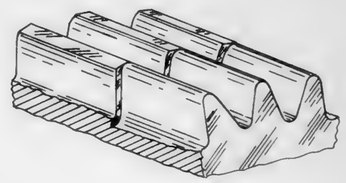
1. A coffin having a bottom and side walls and a pair of rigid corrugated and perforated superposed sheets in the bottom of the coffin parallel to but spaced between said bottom and the lower of said sheets, both said corrugated sheets being substantially parallel to but spaced apart from each other so as to form an intermediate chamber between said sheets, an absorbent material filling said intermediate chamber, and a drain fitting opening at the bottom of the lower chamber.



3,964,141
CRIMPING GEARS AND PROCESS

Alan Keith Dunnell, Pinelands, South Africa; Thomas Cyril James Wade, Kibworth-Harcourt, and David Greenwood, Oadby, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 325,762, Jan. 22, 1973, abandoned. This application Oct. 9, 1974, Ser. No. 513,444
Int. Cl.² D02G *1/14*
U.S. Cl. 28—1.8 **3 Claims**



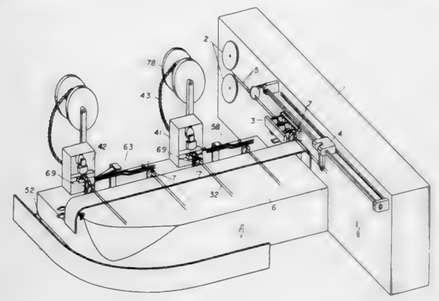
1. Crimping gears comprising two or more gears in meshing engagement, one or more of said gears being driven, characterized in that at least one of the said gears is an integral structure having timing gear teeth and crimping gear teeth of the same outside diameter, the tooth thickness of the crimping teeth being less than the tooth thickness of the timing teeth at any given diameter of the structure.

3,964,142
APPARATUS FOR CUTTING AND STRIPPING INSULATED WIRE

Akira Ogawa, Kawanishi, and Masashi Sakao, Nishinomiya, both of Japan, assignors to Shin Meiwa Industry Co., Ltd., Nishinomiya, Japan

Filed Feb. 14, 1975, Ser. No. 550,125
Claims priority, application Japan, Feb. 20, 1974, 49-20766; Sept. 18, 1974, 49-108088
Int. Cl.² H01R *11/08*
U.S. Cl. 29—33 M **15 Claims**

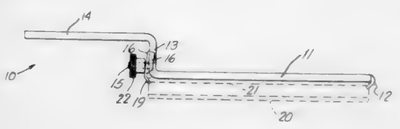
1. An apparatus for cutting an insulated electric wire into lengths and processing the ends of the resulting wire lengths comprising means for intermittently supplying said insulated electric wires through a predetermined distance in the direction of the axis of the wire, wire cutting means for cutting said supplied wire at a predetermined position during interruption of supplying operation of said wire supplying means to provide said wire length of a predetermined length, insulator cutting means for cutting substantially only the insulator of said cut wire length at a position spaced forwardly of the cutting position of said wire cutting means during interruption of supplying operation of said wire cutting means, wire length transfer means for intermittently transferring transversely of said wire supplying means the successive wire lengths in association with the intermittent supply of the wire, said transfer means including a plurality of gripping means disposed at predetermined intervals for gripping said wire lengths, one of said gripping means gripping the wire length during the interruption of the supplying operation of said wire supplying means, said transfer means having one end arranged close to said wire cutting means and insulator cutting means, at least said one of said transfer means being movable between a normal position and a shifted position spaced forwardly of said normal position, the end of said transfer means opposite said one end being remote from said wire cutting means and insulator cutting means, and shifting means for shifting said transfer means between said normal and shifted position, said shifting means being adapted to shift said transfer means forwardly from said normal position to said shifted position after one of said gripping means grips the wire length during the interruption of supplying operation of said wire supplying means, whereby the insulator portion disposed rearwardly of said insulator cutting means is stripped from said wire length, thereafter said one interval transferring of said wire length transfer means being started, said wire length transfer means being returned to said normal position such that the subsequent gripping means grips the subsequently supplied wire length.



3,964,143
HANDLE FOR HOLLOW FILE

James A. Coon, 929 Drever St., West Sacramento, Calif. 95691

Filed July 8, 1974, Ser. No. 486,437
Int. Cl.² B23D *71/04*
U.S. Cl. 29—80 **1 Claim**



1. A hollow file replaceable handle comprising an elongate bar, a hook integrally formed on one end of said bar, a second hook positioned adjacent the opposite end of said bar in opposed relation to said first hook, an integral upstanding portion on said bar, a threaded stud extending perpendicularly from said upstanding portion with said second hook mounted thereon, a thumb nut threaded on said threaded stud for engaging said second hook to move said second hook toward said first hook, said second hook being channel shaped and having a downward extending curved tang extending inside the hollow file toward the first hook and having opposing flanges along its insides to straddle the upstanding portion,

and hand grip means extending integrally from said upstanding portion.

3,964,144
CAST ONE-PIECE ANNULAR RIM MEMBER FOR A VEHICLE WHEEL

Hans Kopp, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Oct. 15, 1974, Ser. No. 514,912
Claims priority, application Switzerland, Oct. 16, 1973, 14612/73
Int. Cl.² B21H *1/10*; B21K *1/38*; B22C *9/28*
U.S. Cl. 29—159.1 **8 Claims**



1. Process for the manufacture of an annular rim member to established radial dimensions for use in a vehicle wheel equipped with a pneumatic tire and, in particular, a tubeless tire, with the rim member forming a one-piece annular rim or an annular rim part including a wheel lip, supporting lugs or a support ring, comprising the steps of forming a mold cavity for the rim member with at least one of a radial overdimension and a radial underdimension of an amount other than the customary excess dimension provided for shrinkage or as a processing allowance, at least over an annular portion of the rim cross-section and with the outer surface of the rim member arranged to face the tire having an unitary annular area, pouring an iron-carbon melt into the mold cavity for forming the rim member with a ductile structure, removing the cast rim member from the mold cavity and radially plastic cold working the solidified cast rim member for plastically deforming the rim member during which plastic deformation the yield point of the cast ductile structure is exceeded and attain the established radial dimensions of the rim member for removing the at least one of a radial overdimension and a radial underdimension.

3,964,145
APEX SEAL MATERIAL

Yeshwant P. Telang, Grosse Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

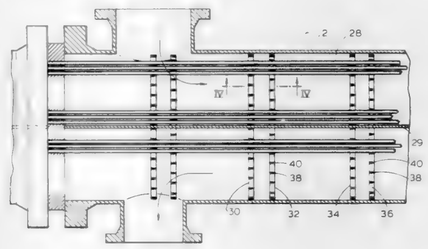
Filed Mar. 6, 1974, Ser. No. 448,797
Int. Cl.² B22F *3/00*, *5/00*, *1/04*; F01C *21/00*
U.S. Cl. 29—182 **4 Claims**

1. A sintered apex seal, for use in a rotary internal combustion engine, comprising:
a. a sintered powdered body effective to be resiliently urged into dynamic rubbing sealing engagement with another surface of said engine, said body being particularly characterized by a copper matrix containing by weight 0.1–0.6% chromium and free carbon in the range of 0.5–1.5%, said chromium substantially being in a precipitate form in said copper matrix rendering a surface hardenability level for said compact in the range of 50–75 R_B.

3,964,146
MEANS FOR ASSEMBLY OF TUBE BANKS IN HEAT EXCHANGERS

Rasmus Vestre, Oslo, and Oddvar Kaurin Augland, Osteras, both of Norway, assignors to Norsk Hydro A.S., Oslo, Norway

Filed Apr. 10, 1974, Ser. No. 459,852
Claims priority, application Norway, Apr. 10, 1973, 1466/73
Int. Cl.² B23P *15/26*
U.S. Cl. 29—202 R **8 Claims**

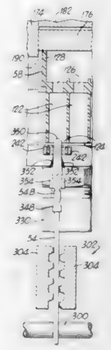


1. An arrangement of fixation of parallel spaced tubes in tube banks in heat exchangers with longitudinal flow externally of the tubes, said arrangement comprising:
a plurality of tube support grates spaced along the axes of said tubes, each grate having bars located within spacings between said tubes, said grate bars extending transversely of the direction of the axes of said tubes, said grate bars being positioned such that bars in any one grate contact and contribute to the support of said tubes by a resultant pressure from substantially only one direction and directed transversely of, and at points within less than one-half the circumference of each contacted tube, the support of each tube contributed by each next adjacent axially spaced grate being alternatingly oppositely directed.

3,964,147
CONNECTOR ASSEMBLY MACHINE

Vito A. Fusco, Palos Hills, Ill.; Ove Christian Carlsen, Round Rock, Tex., and Steven F. Wright, Glen Ellyn, Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jan. 2, 1975, Ser. No. 538,188
Int. Cl.² H01R *43/00*
U.S. Cl. 29—203 B **43 Claims**



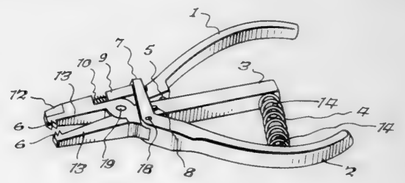
1. In a connector assembly machine for assembling terminated wires into connector housings, the combination comprising:

a loading station disposed adjacent the front of the machine for receiving terminated wires;
insertion means spaced from said loading station for inserting terminated wires into connector housings;
a transfer assembly for moving terminated wires from said loading station to said insertion means;
said transfer assembly including a transfer structure movable between said loading station and said insertion means;
a pair of transfer gripping means mounted at spaced positions on said transfer structure each for gripping a terminated wire at said loading station; and
control means for positioning one said transfer gripping means at said loading station and simultaneously positioning the other said transfer gripping means at said insertion means.

3,964,148
CONDENSER LUG EXTRACTOR

Rodney Lee Sturtevant, 16 Broughton, Tonawanda, N.Y. 14150

Filed Jan. 13, 1975, Ser. No. 540,528
Int. Cl.² B25B *7/00*
U.S. Cl. 29—203 H **6 Claims**



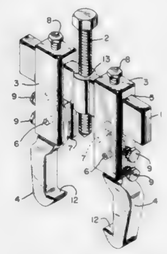
1. An extracting tool for removing a lug from an electronic part which comprises a pair of handle members, one of which, a gripping handle member, has a handle portion at one end thereof and a gripping jaw portion at the other end thereof and the other of which, a ram actuating handle member, has a handle portion at one end thereof and includes at the other end thereof means for actuating a ram, a gripping member separately pivotally connected to the handle members and having a gripping jaw portion at an end thereof, means for transmitting force between the gripping member and the handle portion of the ram actuating handle member and a ram positioned adjacent to one of the jaws to be moved substantially transversely to the direction of jaw movement of the ram actuating means as the handles are squeezed to be moved closer together after gripping of the lug, so that when the handles are squeezed together the jaws of the gripping member and the gripping handle member are brought together to grip the lug of the electronic part and the ram presses against the electronic part to pull the lug therefrom.

3,964,149
REVERSIBLE PULLER

Melvin D. Hugh, Wilmington, Calif., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 5, 1975, Ser. No. 574,387
Int. Cl.² B23P *19/04*
U.S. Cl. 29—261 **5 Claims**

1. A pulling device comprising:
a cross block;
a forcing screw threadably engaged in said cross block for relative perpendicular movement thereto;
a plurality of pivot blocks disposed on said cross block for relative longitudinal movement thereto;
a gripping jaw having a work engaging surface on one side of said jaw pivotally mounted on each of said pivot blocks;
means to adjustable secure said gripping jaw from pivotal rotation in both the clockwise and counterclockwise directions;
said pivot blocks are reversible on said cross block and said gripping jaws are reversible in said pivot block;
said gripping jaws have bearing surfaces on both sides of the jaw about the pivot for engagement with said means to adjustably secure said gripping jaw from rotation about its

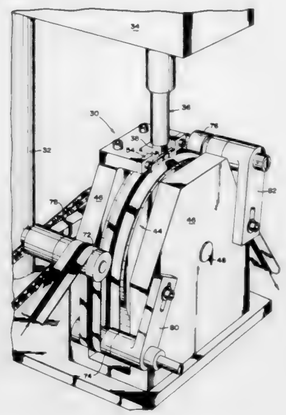


pivot to allow for reversal of said gripping jaw and its secure adjustment in both reversible positions; and
said means to adjustably secure said gripping jaw is two positioning screws and wherein one of said positioning screws secures said gripping jaw against rotation about its pivot in a clockwise direction and the other of said positioning screws secures said gripping jaws against rotation about its pivot in a counterclockwise direction.

3,964,150
METHOD FOR MAKING SLIDE FASTENERS

George B. Moertel, Conneautville, Pa., assignor to Textron, Inc., Providence, R.I.

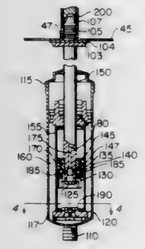
Division of Ser. No. 289,852, Sept. 18, 1972, Pat. No. 3,885,276. This application May 22, 1975, Ser. No. 579,982
Int. Cl.² B29D *5/00*
U.S. Cl. 29—408 **6 Claims**



1. A method of making tape of a slide fastener chain comprising the steps of
constructing a tape made of a fabric having a textile matrix of interlaced warp and weft threads of generally circular configuration,
moving the tape at uniform speed along a predetermined path,

guiding the tape during its movement, and
changing the circular configuration of the warp and weft threads along a portion of the tape to non-circular configuration by physically compacting the portion of the tape during its movement to form a channelized section on the tape.

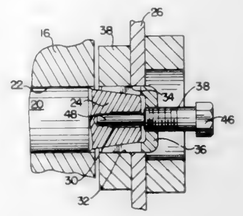
3,964,151
TOOL FOR ADJUSTING MOTOR VEHICLE SUSPENSION SYTEMS, AND METHOD OF USING SAME
William N. Thrasher, 14205 Cantrell Road, Silver Spring, Md. 20904
Filed Aug. 8, 1975, Ser. No. 603,241
Int. Cl.² B23P *19/00*; **B25B** *13/02*
U.S. Cl. 29—426 **7 Claims**



1. A tool for adjusting the shock absorption characteristics of a strut-type motor vehicle suspension system having a shock absorber with an axially extending piston rod end for attachment to the vehicle chassis, said rod end having a threaded outer surface and a shaped tip with the shock absorber characteristic being adjustable by rotating the piston rod about its axis while said shock absorber is fully depressed, comprising:
hollow sleeve means for threadedly engaging at one end the end portion of said piston rod when said rod end is detached from said vehicle chassis;
inner core means for insertion into said sleeve means and having a connector end formed with means for non-rotatably engaging the shaped tip of said rod end; and
means for securing said sleeve means and said core means in relative non-rotational position and for permitting simultaneous rotation of said sleeve means and said core means, whereby said tool may be connected to said piston rod end for depressing and rotating said piston rod to adjust said shock absorber characteristic, the subsequent detachment of said tool and raising of said rod end permitting the latter to be re-attached to said vehicle chassis.

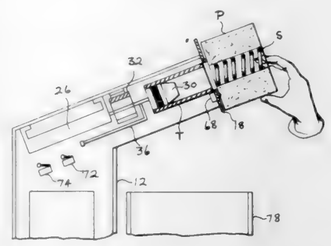
3,964,152
TAPERED HINGE PIN ASSEMBLY AND REMOVAL MEANS
Robert F. Shankwitz, Oswego, and Anthony L. Garman, Stevensville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 318,516, Dec. 26, 1972, Pat. No. 3,841,711. This application July 16, 1974, Ser. No. 488,897
Int. Cl.² B23P *19/02*
U.S. Cl. 29—427 **3 Claims**

1. A method of disassembling a hinge pin assembly of the type comprising an arm and a member located adjacent said arm, means defining a bore through said arm and said member, said bores being in concentric alignment, a hinge pin in said bores having a generally cylindrical center portion fitted within the bore in said member and having a tapered end portion bore of said arm, a generally cup-shaped collar defining generally cylindrical sidewalls and an end wall fitted within said arm bore, the interior wall of said collar being tapered so as to be in engagement with the tapered end portion of said hinge pin, an axially disposed threaded bore in the tapered end of said hinge pin, and end wall opening formed through the end wall of said collar, said opening being in concentric alignment with said hinge pin bore, first bolt means passing through said end wall bore in spaced relation thereto and threadedly engaged in said hinge pin bore and having head means thereon contacting said collar end wall whereby said collar is drawn toward said hinge pin so as to wedge the end portions thereof in said arm bore, and threads formed within said collar end wall opening, comprising the steps of:



removing said first bolt means from said bore in the end of said hinge pin,
providing a second bolt means so as to be threadedly engageable in the threaded opening in the collar end wall, and
engaging said second bolt means in said collar opening and turning said second bolt means so as to advance toward said hinge pin end and move said collar out of wedged relationship in said arm bore and thereby facilitate removal of said hinge pin assembly.

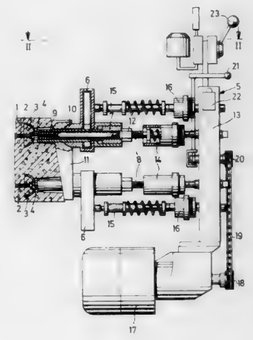
3,964,153
METHOD FOR TRANSFERRING YARN PACKAGES FROM A WINDING TUBE TO A CORE FOR DYEING
Graham Frank Clifford, Stanley, N.C., and Mack W. Spurrier, Clover, S.C., assignors to Gaston County Dyeing Machine Company, Stanley, N.C.
Division of Ser. No. 443,629, Feb. 19, 1974, Pat. No. 3,899,817. This application Feb. 21, 1975, Ser. No. 551,760
Int. Cl.² D06B *3/04, 5/16*; **B23P** *11/02, 19/02*
U.S. Cl. 29—427 **6 Claims**



1. The method of transferring a yarn package from a core tube on which it has been wound to a core suitable for supporting the package for dyeing, which method comprises inserting the dye core within the winding tube having said package wound thereon, supporting said package endwise with an end portion of said winding tube at the supported package end located over an expandable and reciprocable chuck while maintaining the dye core free of said chuck, and then causing said chuck to grip said winding tube interiorly and withdraw the same from the supported package while concurrently causing the dye core to assume a proper supporting position within the package.

5. The method defined by claim 1 wherein the recited method steps are repeated after dyeing for removing said dye core and replacing the same with a tube core of the sort initially used for winding the package.

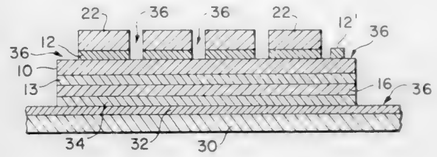
3,964,154
DEVICE FOR SIMULTANEOUSLY STRESSING A NUMBER OF TENSION ELEMENTS
Peter Auer, Ottobrunn, Germany, assignor to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Germany
Filed June 30, 1975, Ser. No. 591,328
Claims priority, application Germany, July 10, 1974, 2433035
Int. Cl.² B21D *39/00*
U.S. Cl. 29—452 **3 Claims**



1. Device for the simultaneous tensional stressing of a plurality of elongated tension elements for prestressing a concrete member, such as rod-shaped tension elements where each tension element includes an anchor element mounted thereon and an anchor nut adjustably positionable on the tension element into engagement with the anchor element, a puller for each tension element, a mechanically driven spindle connected to each said puller, said spindle arranged to be connected to a tension element to be stressed, a mechanically driven wrench sleeve associated with each said spindle and arranged to adjust the anchor nut associated with the tension element to which said spindle associated with said wrench sleeve is arranged to be connected, a drive means for mechanically rotationally driving each of said spindles and each of said wrench sleeves, said drive means including a power source and a drive train connected to and extending between said power source and said spindles and wrench sleeves, and a safety clutch located in said drive train, wherein the improvement comprises that a separate said safety clutch is provided for each said spindle and each said wrench sleeve.

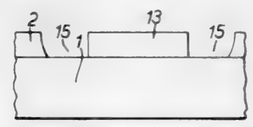
3,964,155
METHOD OF PLANAR MOUNTING OF SILICON SOLAR CELLS
Charles Z. Leinkram, Bowie, Md.; William D. Oaks, Midland, Va.; John A. Eisele, Oxon Hill, Md., and Bruce J. Faraday, Annandale, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Division of Ser. No. 228,593, Feb. 23, 1972, Pat. No. 3,833,425. This application June 8, 1973, Ser. No. 368,405
Int. Cl.² B01J *17/00*
U.S. Cl. 29—572 **7 Claims**

1. A method of mounting solar cells on a metallic panel to provide a direct thermal path between the cells and the panel comprising the steps of:
coating an electrically insulative wafer with an electrically and thermally conductive coating on the top and bottom surfaces thereof;
removing the conductive coating on the top surface of the coated wafer except on predetermined areas to form a number of prominences thereon, the number of said prominences being at least equal to the number of said cells;
attaching said cells on said prominences, each cell being located on a different prominence;



coating the surface of said panel with a coating to which it is easy to solder, said coating being thermally conductive;
coating the panel coating with a soft solder capable of absorbing mechanical stresses due to thermally induced expansions, said solder being thermally conductive; and
soldering the bottom surface of said solar-cell-bearing wafer to the soft-solder surface of said panel.

3,964,156
ELECTRICAL SOLID-STATE DEVICES
Brian David Williams, Cogenhoe; David Perkins, Wootton, and Dennis George Dale, Northampton, all of England, assignors to Plessey Handel und Investments A.G., England
Continuation of Ser. No. 425,896, Dec. 18, 1973, abandoned. This application Mar. 25, 1975, Ser. No. 561,831
Claims priority, application United Kingdom, Feb. 24, 1973, 9195/73
Int. Cl.² B01J *17/00*
U.S. Cl. 29—579 **2 Claims**



1. A method of manufacturing an electrical solid-state device comprising a substrate supporting a film material which is divided into lands by demarcation gaps in which method the width of the demarcation gaps is determined by the following stages:
i. forming on a substrate a film or film material having a given thickness;
ii. covering the film with a layer of photo-resist;
iii. photographically forming in said layer a trace channel having walls constituted by defined edges of photo-resist and a floor of film material;
iv. forming a trough in the film material by presenting an etchant into the trace channel, the etchant reducing the film thickness until such time as the substrate is exposed over a width equal to the width between said defined edges, the etchant performing an incidental etching action during this time at the walls of the trough;
v. continuing the incidental action after the expiry of said time for a spell during which the trough walls are caused to recede to an extent dependent partly on the spell duration and partly on the film thickness, the recession of a wall forming at the floor of the trough a margin of exposed substrate material which is overhung by photo-resist, the width of the margin being dependent partly on the duration of said spell, and partly on the thickness of said film;
vi. introducing further film material from a source above the substrate and the photo-resist, the introduced material forming on the substrate a deposit which replaces material which was removed by the etchant to form a trough,

the photo-resist which overhangs the margin preventing the formation of a deposit at the margin, the margin serving as a floor of a demarcation gap separating the deposit from film material which was not attacked by the etchant, and

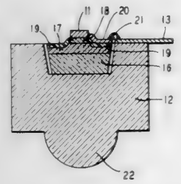
vii. removing the entire photo-resist and redundant further film material deposited thereon, to leave the substrate supporting film material which is divided into lands by a demarcation gap having width of said margin.

3,964,157

METHOD OF MOUNTING SEMICONDUCTOR CHIPS

Matthew Kuhn, Manotick, Canada, and Norman Edwin Schumaker, North Plainfield, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 31, 1974, Ser. No. 519,594
Int. Cl.² H01L 21/00
U.S. Cl. 29—591 **12 Claims**



1. A method of mounting a semiconductor chip structure including a first set of conductor paths thereon onto an insulating substrate comprising the steps of:

forming a recess in said insulating substrate;

forming a second set of conduction paths on the surface of said substrate extending to the edge of the recess;

bonding said chip structure into said recess so that the set of conduction paths on the chip are aligned with associated conduction paths on the substrate and the conduction paths are essentially co-planar at the edges of the chip and substrate, thereby forming a gap between the associated conduction paths; and

applying to said associated conduction paths a liquid conducting material which is different from the material of the conduction paths and which is unsupported by any material in the gap such that the surface tension exerted by each pair of associated conduction paths on the liquid forms a conductive bridge over the gap between said pair of associated conduction paths.

3,964,158

METHOD OF MAKING A LIQUID CRYSTAL DISPLAY CELL

John L. Janning, 332 Vindale Drive, Dayton, Ohio 45440

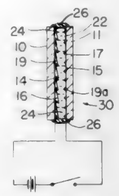
Division of Ser. No. 386,472, Aug. 7, 1973, Pat. No. 3,834,792, which is a continuation of Ser. No. 242,675, April 10, 1972, abandoned. This application June 19, 1974, Ser. No. 480,665
Int. Cl.² G02F 1/13
U.S. Cl. 29—592 **18 Claims**

1. A method of forming a liquid crystal display cell, comprising:

a. positioning at least a portion of a surface of a transparent container so that it makes a selected acute angle with respect to the direction from a deposition source for a selected material;

b. depositing a transparent alignment film from said deposition source onto said portion of said surface of said container in order to form a transparent film growth at approximately said selected acute angle to said inner surface of said container; then

c. forming a container including said portion such that the transparent alignment film faces the interior of the container;



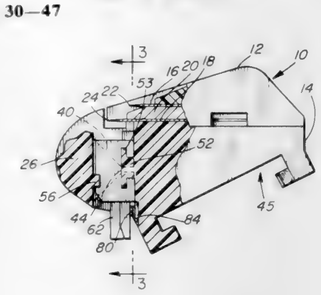
d. filling said container with liquid crystal material in contact with the alignment film whereby molecules of the liquid crystal material adjacent the alignment film are aligned in a direction parallel to the film growth.

3,964,159

ADJUSTABLE SAFETY RAZOR

Frank A. Ferraro, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 466,600, May 3, 1974, abandoned. This application Nov. 22, 1974, Ser. No. 526,080
Int. Cl.² B26B 21/06
U.S. Cl. 30—47 **12 Claims**



1. An adjustable safety razor comprising:

a. a blade seat member,

b. at least one blade positioned on said blade seat member, said at least one blade comprising at least one cutting edge,

c. an elongated guard structure parallelly spaced forwardly of said at least one cutting edge,

d. means for hinging said guard structure to said blade seat member, said hinging means defining an axis parallel to said guard structure,

e. a manually operable slide member,

f. means slidably interconnecting said slide member and said blade seat member for guiding said slide member in a direction parallel to said axis, and

g. means slidably interconnecting said slide member and said guard structure in an angular direction with respect to said axis for moving said guard structure about said axis to adjust said guard structure with respect to said at least one cutting edge upon manual operation of said slide member.

3,964,160

SAFETY RAZOR WITH AN ANGULARLY ADJUSTABLE HEAD

Garron Gordon, 3051-C Via Serrena South, Laguna Hills, Calif. 92653

Filed Apr. 2, 1975, Ser. No. 564,538
Int. Cl.² B26B 21/52
U.S. Cl. 30—89 **1 Claim**

1. A safety razor comprising in combination,

a handle formed with a relatively square cross section,

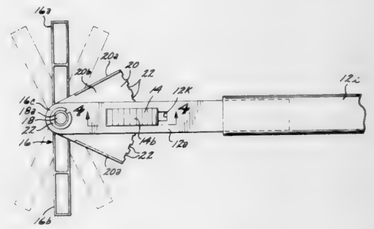
a head adapted to receive and retain a safety razor blade and formed with a relatively flat boss for cooperation with one side of said square cross section of said handle,

a pivot pin fixed to said head and extending from said relatively flat boss,

said handle being formed with an opening for receiving said pin,

said pivot pin being generally cylindrical permitting pivotal movement of said head relative to said handle and formed with a longitudinal flat surface,

a relatively flat indexing member interposed between said boss and said handle and being formed with a generally



circular through opening for receiving said pin, said opening having a non-circular portion for cooperation with the flat surface of said pin to prevent relative rotation between said head and said indexing member, said indexing member being preformed with offset marginal opposite edges which constitute limit stops for limiting the amount of rotational movement of said head on said handle,

one of said sides of said cross section of said handle being formed with a rectangular cutout,

locking means rectilinearly movable on said handle within said rectangular cutout between positions of engagement and disengagement with said indexing member,

and means biasing said locking member toward said position of engagement with said indexing member.

3,964,161

WOODEN CAMPING TOOL

Colleen M. Wise, 233 W. Macarthur, South Saint Paul, Minn. 55075

Filed Sept. 15, 1975, Ser. No. 613,346
Int. Cl.² A47J 43/28
U.S. Cl. 30—142 **5 Claims**



1. A unitary wooden cooking tool having a shank portion with a spoon-bowl at one end and a spatula at the other, said tool having a longitudinal axis lengthwise thereof extending through said shank portion, the side of said tool facing upwardly when said spoon-bowl is used as a serving spoon being the ventral surface of said tool, and the opposing side of said tool being the dorsal surface thereof, said tool being characterized by the following features in combination:

a. said spoon-bowl is contoured to blend into said shank portion and extends symmetrically from said shank portion, is contoured so that its outermost end projects ventrally relative to said axis, is free of sharp lip edges, is wider than it is deep, is approximately one-half cup in size, and is in excess of 5 millimeters thickness at the bottom portion thereof and tapers along the sides thereof to a narrower thickness at said non-sharp lip edges thereof, said contoured shape and size and thickness and non-sharp lip edges of said spoon-bowl being such that said spoon-bowl serves a dual function, one function being that of a spoon-bowl per se and the other function being that of a handle member when said spoon-bowl is turned upside down so that the dorsal side of said tool faces upwardly for said tool to be used for spatula purposes, said upside down spoon-bowl, as a handle member, being gripped by one's hand with the fingers inside the convex portion of the spoon-bowl and the palm on the concave portion thereof;

b. said spatula is contoured to blend into said shank portion and, except for its end most remote from the said spoon-bowl, extends as a symmetrical structure from said shank portion, is a gradually fanned structure curved away from said axis to project dorsally relative to said axis, is free of sharp edges except at its said most remote end, is at least 5 millimeters thick except for the distance up to approximately 4 centimeters inwardly from its said most remote end, and is tapered toward its said most remote end into a termination as a relatively sharp substantially straight edge which slopes at an angle other than perpendicular to said axis, said slope of said straight edge being between 5° and 25° from a line perpendicular to said axis, and said slope of said straight edge being further characterized by the fact that the off-center lateral outwardmost portion of said slope is on the lateral side of said tool most remote from an individual gripping said spoon-bowl as aforesaid and using said tool for spatula purposes, said gradually fanned structure of said spatula being also functional as a handle member for gripping when said tool is used as a serving spoon; and

c. said shank portion of said tool is, in cross-section, at least about one centimeter in thickness in all directions through the center thereof.

3,964,162

BLADE SCRAPER

Ronald L. Gerson, Newton, and Lawrence A. Caprio, Whitman, both of Mass., assignors to Louis M. Gerson Co., Inc., Middleboro, Mass.

Filed June 25, 1975, Ser. No. 590,278
Int. Cl.² B26B 1/08
U.S. Cl. 30—162 **7 Claims**



1. A razor blade cutting device comprising,

a hand gripping casing having an enclosed blade storage compartment closed by a cover,

a slide carrying means for mounting and carrying a cutting blade,

said slide being mounted in a chamber defined by said casing with said chamber defining an opening at an end of said casing,

pressure activated locking means for locking said slide and blade in a first retracted position with said blade wholly within and encased by said chamber and a second position with said blade moved toward said opening,

pressure actuated first safety means providing a safety lock to hold said slide and blade in said first position while permitting release of said slide upon pressure actuation thereof whereby pressure must be applied to said first safety means and said locking means to expose said blade,

and second safety means comprising a stop means for preventing opening of said cover unless said locking means and safety means are actuated to move said slide from said first position.

3,964,163

SURGICAL SAW BLADE FASTENING MEANS

Anthony Russo, La Habra, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 4, 1975, Ser. No. 610,100

Int. Cl.² B26D *1/06*; A61B *17/14*; B23D *49/10*

U.S. Cl. 30—166 R **5 Claims**



1. A surgical saw blade fastening means comprising in combination:

a surgical saw blade member having a plurality of cutting teeth along one edge of said saw blade member,

the other edge of said saw blade member being smooth and sloped adjacent one end to intersect the toothed edge of said saw blade member.

the other end of said saw blade member having a locating and locking means for securely holding said saw blade member in position,

a chuck assembly having a shank portion for attachment to a surgical instrument,

a body portion having at least one axial slot therein of a width sufficient to accept said saw blade member therewithin,

the base of said slot having a locating and locking means complementary to the locating and locking means on said saw blade member, and

an internally threaded collar carried on said body portion,

the lands and grooves of the threads of said internally threaded collar being adapted to engage the lands and grooves of the teeth of said saw blade member thereby firmly engaging the locating and locking means of said saw blade member and said body portion and clampingly compressing the body portions on either side of said axial slot against said saw blade member.

3,964,164

METHOD OF APPLYING PREVENTIVE AND THERAPEUTIC AGENTS

Sven-Gunnar Hesselgren, Angsholmen, S-170 11 Drottningholm, Sweden

Filed Jan. 25, 1974, Ser. No. 436,737

Claims priority, application Sweden, Feb. 5, 1973, 73015448

Int. Cl.² A61C *19/00*; A61K *9/00*

U.S. Cl. 32—1 **5 Claims**

1. A method for local application of a therapeutic agent on the teeth and the tissues surrounding the teeth, comprising the steps of admixing an active therapeutic agent with a carrier formed of an inert solid composition capable of being converted to a highly viscous shape retaining elastic consistency, forming said admixture into a moldable mass, introducing said mass into the mouth and applying it onto the teeth and the tissues surrounding the same, allowing said mass to solidify in situ about said teeth and surrounding tissues and leaving said solidified mass in contact with the teech and said surrounding tissues for a time period sufficient for migration of said active agent from said carrier onto the teeth and said surrounding tissues to effect therapeutic treatment thereof and then removing the solidified mass from the mouth.

3,964,165

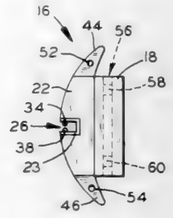
ELASTOMERIC ORTHODONTIC APPARATUS

Lee W. Stahl, 4325 Mockingbird Lane, Toledo, Ohio 43623

Filed May 23, 1974, Ser. No. 472,618

Int. Cl.² A61C *7/00*

U.S. Cl. 32—14 A **8 Claims**



1. An orthodontic apparatus for use with an arch wire in straightening teeth comprising:

a band for attaching the orthodontic apparatus to a tooth;

a bracket formed of an elastomeric material and attached to said band, said bracket including a base portion and at least one arch wire receiving means integral with said base portion, said arch wire receiving means having a horizontal slot defined in the buccal surface thereof; and

a liner retained in the horizontal slot of said arch wire receiving means and formed of a material substantially more rigid than said elastomeric material, said liner defining an opening at the buccal surface thereof and having a plurality of retaining tips formed on the upper and lower walls of the opening at a distance which is slightly less than the diameter of the arch wire whereby said liner is resiliently yieldable for snap engagement of the arch wire and said elastomeric arch wire receiving means is deflected during said snap engagement.

3,964,166

DENTAL PROPHYLAXIS IMPLEMENT

Donald B. Stahlman, Indianapolis, Ind., assignor to Mynol, Inc., Broomall, Pa.

Filed Oct. 21, 1974, Ser. No. 516,399

Int. Cl.² A61C *3/06*

U.S. Cl. 32—59 **60 Claims**

1. A dental prophylaxis implement adapted for removable mounting on a dental hand piece and comprising

a unitary body formed of resilient material,

said unitary body having an applicator portion for performing a dental prophylaxis,

said resilient material having incorporated therein an anticariogenic agent and a water-soluble polymer, and

means in association with said unitary body for removably mounting the unitary body on the dental hand piece.

3,964,167

DISPOSABLE TOOTH SHADE GUIDE

John G. Yerkes, P.O. Box 502, Bloomfield, Conn. 06002

Filed Oct. 24, 1974, Ser. No. 517,481

Int. Cl.² A61C *13/00*

U.S. Cl. 32—71 **8 Claims**



1. A tooth shade guide member operable for use by a dentist in determining by comparison the particular shade of an artificial tooth that may be substituted for a natural tooth of patient comprising:

a. a tooth-simulating member having at least a front face dimensioned and configured to provide the appearance of a natural tooth, said tooth-simulating member being formed of a non-toxic material and having a preselected visible coloration;

b. an alongated mounting member operable as a support for said tooth-simulating member and formed of a non-toxic material;

c. means pivotably mounting said tooth-simulating member adjacent one end of said mounting member for pivotal movement relative thereto; and

d. translucent cover means detachably secured on said front face of said tooth-simulating member, said cover means being formed of a non-toxic material transmitting light therethrough, said cover means when mounted on said front face of said tooth-simulating member having a coloration effective to alter said visible coloration of said tooth-simulating member so as to produce a variation in the shade of the apparent coloration of said tooth-simulating member from that seen when said cover means is dismounted from said front face of said tooth-simulating member.

3,964,168

SCANNING MECHANISM FOR A LASER SCRIBER

Teiji Uchida, and Takayuki Mizutani, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

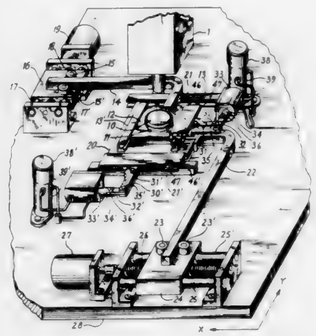
Filed Jan. 6, 1975, Ser. No. 538,783

Claims priority, application Japan, Jan. 8, 1974, 49-5875[U]; June 26, 1974, 49-75262[U]; June 26, 1974, 49-75263[U]

Int. Cl.² G03B *23/08*

U.S. Cl. 33—1 M **10 Claims**

1. A scanning mechanism for a laser scriber comprising a stationary base plate, a first table arranged in overlying relation to said base plate and movable relative thereto in the X direction, a second table arranged in overlying relation to said first table and movable relative thereto in the Y direction independently of said first table, means for driving said first and second tables to cause mutually independent X- and Y-scannings of the plane of said second table with respect to a stationary laser head, first locking means having a first actuator mounted on said first table and operable during the period of said Y-scanning so as to be brought into pressure engagement with said second table upon the energization of said first



actuator to hold said second table against displacement relative to said first table, second locking means having a second actuator mounted on said base plate and operable during the period of said X-scanning so as to be brought into pressure engagement with said first table upon the energization of said second actuator, thereby to hold said first table against displacement relative to said base plate.

3,964,169

GARMENT FITTING AID

Roberta F. Bush, 232 Sierra Drive, Walnut Creek, Calif. 94596

Filed Sept. 23, 1974, Ser. No. 508,552

Int. Cl.² A41H *1/02*

U.S. Cl. 33—15 **1 Claim**



1. A garment fitting aid for determining body contours from the waist in front through the crotch to the waist in back, said fitting aid comprising:

a. a plurality of links, means pivotally joining together said links so as to form a chain of links with two free ends;

b. said chain of links having a first series of links with curved edge portions adapted for engagement with the front of the body;

c. a second series of links with curved edge portions adapted for engagement with the back of the body; and

d. a plurality of links intermediate said first and second series of links, each of said intermediate links being

shorter in length than the links in said first and second series and having opposite edge portions formed to the same curvature whereby said intermediate links may be folded back upon themselves to vary the length of the chain of links and,

e. said two free ends terminating in links with straightedges with distance indicia thereon.

3,964,170

GAUGE FOR POSITIONING A STOP ON THE SHAFT OF A ROOT-CANAL INSTRUMENT

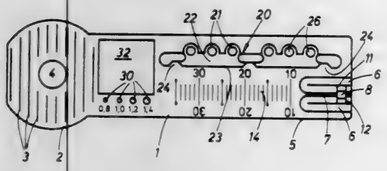
Eduard Zdarsky, Brautigamstr. 5, 8 Munich 71, Germany

Filed Jan. 22, 1975, Ser. No. 542,935

Claims priority, application Germany, Apr. 3, 1974, 2416275

Int. Cl.² G01B *5/18*

U.S. Cl. 33—169 B **5 Claims**



1. A gauge for setting the position of a stop member on a shaft of a root-canal instrument, said gauge comprising:

an elongated base plate formed at one end with a longitudinally extending groove, and formed at the opposite end with a handle;

a seat recessed in the flanks of said groove and defined between a pair of walls transverse to the axis of said groove whereby said walls can abut against respective end faces of said stop member when the latter is positioned in said seat, one of said walls being disposed further inwardly from said end than the other of said walls; and

an elongated scale formed on said plate in line with said groove and provided with distance-measuring indicia having a scale origin at said one of said walls whereby the insertion of said tool into said groove with said stop member in said seat and in abutment with said one of said walls will display on said scale the precise distance from said stop member to a free end of said tool overlying said scale.

3,964,171

DEVICE FOR STEPLESSLY DETECTING THE OVALIZATIONS AND THE PROJECTIONS ON TWO ORTHOGONAL PLANES OF THE CURVED GEOMETRICAL CONFIGURATION OF A SUBMERGED PIPELINE

Arnaldo Gambini, and Demetrio Terenziani, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed June 3, 1974, Ser. No. 475,924

Claims priority, application Italy, June 4, 1973, 24986/73

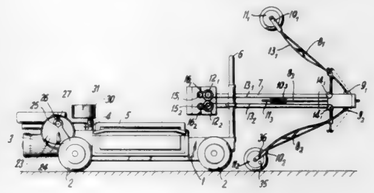
Int. Cl.² G01B *7/12*

U.S. Cl. 33—178 E **5 Claims**

1. Apparatus for steplessly detecting the ovalizations and the projections on two orthogonal planes of the curved geometrical configuration of a pipeline being laid underwater comprising: a self-propelled carriage adapted to run within a pipeline, said carriage having mounted on it driving wheels and means for detecting deformations on the inner surface of said pipeline, means for measuring the distance covered by the carriage in the pipeline, means for sensing the slope in a vertical plane of the pipeline, and means for sensing the shiftings in a horizontal plane of the pipeline wherein:

a. said means for feeling the inner surface of said pipeline comprises a set of at least four feelers resiliently mounted, two by two opposed, on a head vertically adjustable, each feeler being constituted by a lever backwardly inclined as to the running direction of the carriage, to the free end of which there is pivotally mounted a small sliding and feeling wheel which is adapted to be resiliently pressed against the inner surface of the pipeline, the said lever being connected by an inextensible wire to a first spring-loaded gear on which the said wire is wound and which meshes a second gear which is integral with the wiper of a potentiometer;

b. said means for sensing the slope in a vertical plane of the pipeline comprises a gravity inclinometer for sensing the slope in a vertical plane of the carriage which comprises



a moving element pivoted on a tooth pin meshing a gear which is integral with the wiper of a potentiometer;

c. said means for sensing the shiftings in a horizontal plane of the pipeline comprises a gyroscope; and

d. said means for measuring the distance covered by the carriage inside the pipeline comprises a pulse tachometer including contact switch which is mounted on one of the small sliding and feeling wheels and which closes at every complete revolution of said one small sliding and feeling wheel, an electric circuit thereby delivering a voltage pulse, said circuit comprising two diodes connected in parallel, oriented in opposite directions, and which at their turn are connected in series to a resistance.

3,964,172

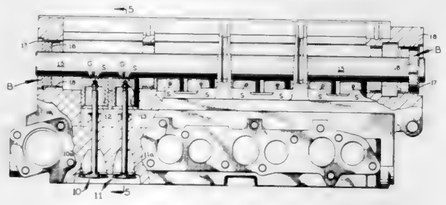
CALIBRATION SHAFT ASSEMBLY FOR ENGINE VALVE ADJUSTMENT

Thomas H. Wright, 4249 SW. 62nd Ave., Miami, Fla. 33155

Filed May 30, 1975, Ser. No. 582,171

Int. Cl.² G01B *5/14*

U.S. Cl. 33—181 AT **4 Claims**



1. An apparatus for use in adjusting individual valves in an automotive engine having an overhead camshaft operating directly on tappets for the valves, said apparatus comprising:

a calibration shaft having an elongated cylindrical periphery of a length sufficient to span the engine valve tappets simultaneously, the radius of said calibration shaft being equal to the minimum radius of each cam on the overhead camshaft for the engine;

and two bushings spaced apart along said calibration shaft for supporting said shaft on the engine with its elongated cylindrical periphery spanning the valve tappets;

said calibration shaft having a plurality of diametrical openings therein spaced apart along its length in accordance with the spacings of the valve tappets;

and further comprising a plurality of cross pins slidably received snugly in said openings for adjustment diametrically beyond said openings at the bottom of said calibration shaft;

and means for releasably clamping said pins in place individually in said openings.

3,964,173

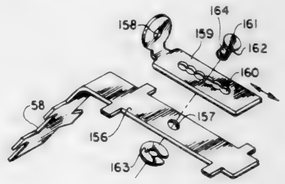
ADJUSTABLE SIGHT FOR FIREARM APPARATUS

Maxwell G. Atchisson, 55 Old Yellow Springs Road, Apt. H, Fairborn, Ohio 45324

Division of Ser. No. 250,006, May 3, 1972, Pat. No. 3,850,076. This application Nov. 18, 1974, Ser. No. 524,522

Int. Cl.² F41G *1/18, 1/28*

U.S. Cl. 33—254 **4 Claims**



1. Sighting mechanism for use with a firearm of the type firing a projectile along a path, comprising:

a first member mounted on the firearm to define a ramp disposed in angular relation to the path of projectile travel;

a second member mounted for selective movement along said ramp;

said second member having a structural portion defining a visual sight;

a plurality of intersecting apertures contiguously disposed on one of said first and second members;

an engagement member disposed on the other of said first and second members for selective inclined movement into and out of retaining engagement with each individual one of said plurality of apertures to retain said second member in each of a plurality of discrete positions relative to said first member;

resilient means yieldingly biasing said engagement member into engagement with a one of said apertures and yieldable in response to predetermined force applied to said second member for inclined movement out of said retaining engagement, so that said engagement member can be selectively moved for retaining engagement with the next contiguous one of said apertures;

said second member having an elongate portion which is movable along said ramp, and said plurality of apertures being disposed along said elongate portion;

said first member having an aperture which is selectively alignable with each individual one of said plural apertures as said second member is moved along said ramp; and

said engagement member extending through said aperture in said first member and into said retaining engagement with an individual one of said plural apertures.

3,964,174

CONTROLLED HUMIDITY FREEZE DRYING PROCESS

Cary J. King, Kensington, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed June 6, 1975, Ser. No. 584,597

Int. Cl.² F26B *5/06*

U.S. Cl. 34—5 **9 Claims**

1. A method for limited freeze drying of foods comprising cooling the food to freeze water contained therein into ice, subliming the ice from the food in an atmosphere at a predetermined relative humidity, stabilizing the relative humidity in said atmosphere during the sublimation of ice from the food by continually contacting the atmosphere with a quantity of a hydrating salt.

3,964,175

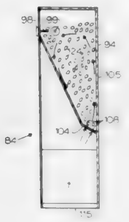
COFFEE ROASTING SYSTEM

Michael Sivetz, 3635 NW. Elmwood Drive, Corvallis, Oreg. 97330

Filed Nov. 11, 1974, Ser. No. 522,485

Int. Cl.² F26B *17/10*

U.S. Cl. 34—57 A **24 Claims**



17. A coffee bean roaster comprising:

a. a roasting chamber formed by a wide shallow rectangular base plate with a multiplicity of spaced apart orifices therein, a front wall meeting said plate at an acute angle and extending upwardly therefrom, a back wall extending upwardly from said plate and diverging away from said front wall and side walls extending upwardly from said plate and joined to said front wall and said back wall;

b. a plenum connected to said chamber and communicating with said base plate;

c. a blower in said plenum and adapted to collect air and force it through said orifices with sufficient velocity to levitate a charge of coffee beans in said chamber in a dense, recirculating fluidized mass of beans; and

d. a heater element in said plenum and adapted to heat said collected air to a predetermined coffee bean roasting temperature not greater than 530°F., before said air is forced through said orifices.

20. Coffee bean processing apparatus comprising:

a. housing means forming at least one processing chamber for holding a quantity of coffee beans, said chamber having means for defining an undraft portion and a recirculation portion, said housing means connected to blower means and containing airstream directing means creating a controlled updraft in said updraft portion of said chamber;

b. said blower means to collect ambient air and force it into said chamber through said airstream directing means with sufficient velocity so that said updraft lifts coffee beans in said updraft portion of said chamber to move said quantity of coffee beans into said recirculation portion as a dense, recirculating fluidized mass; and

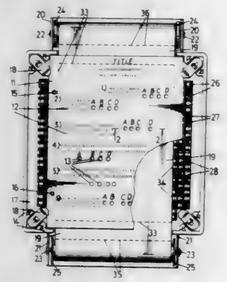
c. heater means for heating said collected air before entry into said chamber as said controlled updraft to a predetermined coffee bean processing temperature, said heater means including limiting means for providing said heated air updraft with a temperature not in excess of 530°F;

d. coffee bean temperature sensor means positioned within said chamber in said recirculation portion and completely outside of said controlled updraft portion, said sensor means for contacting said dense recirculating mass of coffee beans and operable for sensing the occurrence of pyrolitically induced thermal rise in said quantity of coffee beans undergoing heating; and

e. temperature indicator means connected to said temperature sensor means and operable for indicating measured virtual coffee bean temperature in said chamber and the

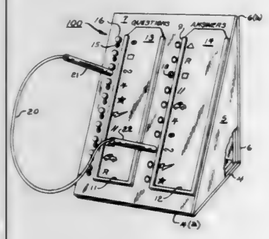
occurrence of pyrolitically induced thermal rise in said quantity of heated coffee beans.

3,964,176
INSTRUCTIONAL APPARATUS WITH MOVABLE BLANK SHEET
James Richard Harte, 10 W. Concord, Kansas City, Mo. 64112
Filed Oct. 15, 1974, Ser. No. 514,492
Int. Cl.² G09B *3/08*
U.S. Cl. 35—9 R **7 Claims**



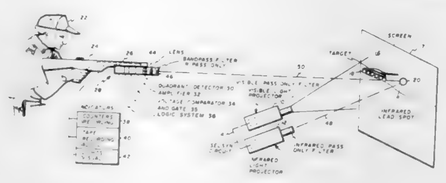
1. An instructional apparatus comprising:
a holding mechanism provided with an upper surface having depressions therein of at least two different depths;
a printed format presenting a holding margin and having holes therethrough inside said margin indicating answer choices,
said mechanism having means engageable with said margin for holding said printed format on said upper surface in overlying relationship thereto with the holes in the format in alignment with corresponding depressions in said upper surface, said holes and said depressions being adapted to receive a stylus used by a student to make answer selections; and
a blank response sheet freely sandwiched between said printed format and said upper surface and movable in a predetermined direction in increments therebetween, said sheet being narrower than said format transversely of said direction of movement to present opposed edges inside and clear of said holding means whereby, after holes are punched in the blank sheet by the student in making answer selections, the sheet may be repositioned to permit the sheet and said printed format to be reused.

3,964,177
REINFORCING TEACHING SYSTEM
Thomas J. Wright, 630 Country Club Drive, Itasca, Ill. 60143
Filed Nov. 1, 1974, Ser. No. 519,817
Int. Cl.² G09B *7/06*
U.S. Cl. 35—9 C **9 Claims**



1. A teaching device for presenting a series of inquiry data and a corresponding number of responses comprising:
first display means for presenting a series of inquiry data, each of said inquiry data having an electrical terminal corresponding thereto,
second display means for presenting a series of responses to the data presented, each of said responses having an electrical terminal corresponding thereto,
probe means for electrically coupling the terminal corresponding to one of said inquiry data to one of the terminals corresponding to the selected response, and
an electrical control circuit means coupled to said terminals including indicator means corresponding to each inquiry data for providing a constantly activated signal to said indicator means in response to the coupling of the electrical terminal corresponding to the correct response to the electrical terminal corresponding to the selected data,
said electrical circuit means further including scrambler means for electrically changing the terminal corresponding to a correct response to the selected inquiry data to present at least a second series of responses corresponding to the inquiry data presented by said first display means and means for terminating all signals produced by the coupling of terminals corresponding to correct responses to terminals corresponding to selected data upon the coupling of an electrical terminal corresponding to an incorrect response to the electrical terminal corresponding to a selected inquiry data.

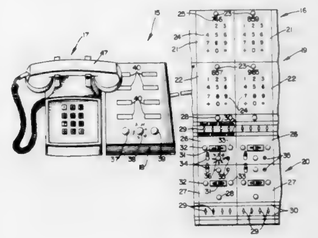
3,964,178
UNIVERSAL INFANTRY WEAPONS TRAINER
Albert H. Marshall, Maitland; Frank J. Oharek; John H. Dillard, both of Orlando, and Robert J. Entwistle, Winter Park, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 3, 1975, Ser. No. 593,071
Int. Cl.² F41G *3/26*
U.S. Cl. 35—25 **8 Claims**



1. A weapon fire simulation system comprising
projection apparatus and film, said film being processed to provide from a first series of film frames a background scene including a target area and from a second series of film frames a lead aim spot;
said projection apparatus having a source of visible light for passing through said first series of film frames and a source of infrared light for passing through said second series of film frames;
drive means for coordinately driving said film frames in a desired degree of non-registration between said aim spot and said target area representative of the correct lead and elevation for a proper aiming of said weapon;
a projector screen for viewing said film frames;
a filter selected and positioned to filter all except infrared light from passing from said second film frames to said screen to provide an infrared aim spot on said screen and a filter selected and positioned to filter infrared light from passing from said first film frames to said screen;
a plurality of infrared sensor circuits, each forming a sensor channel and each comprising an infrared sensor and amplifier and voltage comparator means;
said sensor being arranged in a geometrical pattern to develop from each sensor when the weapon is aimed and fired, a channel output signal indicative of hit or miss; and

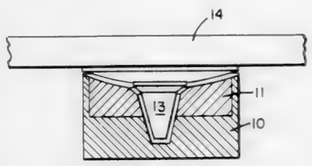
a logic circuit for receiving the output signals of each sensor channel to produce from the combined sensor signals an ultimate output signal indicative of hit, miss, and specific area of near miss.

3,964,179
TELEPHONE SYSTEM TEACHING APPARATUS
Stanley W. Bennett, 5227 Thunder Hill Road, Columbia, Md. 21045
Filed Nov. 7, 1974, Ser. No. 521,927
Int. Cl.² G09B *19/00*
U.S. Cl. 35—31 R **5 Claims**



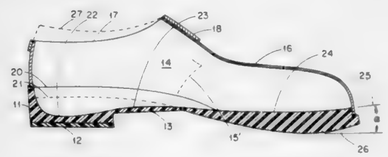
1. A teaching apparatus for use in teaching number discrimination, mathematical concepts, letter discrimination, reading and various verbal concepts, comprising a telephone switchboard having a plurality of signal display sections and a plurality of signal transmitting sections, a plurality of telephones each including a cradle and handset, electric circuits including switches electrially connecting each telephone to one of said signal display sections and to signal transmitting section associated with said signal display section, signal generating means connected to said electric circuits whereby when any telephone handset is removed from its cradle visual signals will be illuminated on the signal display section and the signal transmitting section associated therewith, a signal box associated with each telephone and electrically connected to the signal transmitting section thereof, said signal box having a plurality of light sources each disposed beneath an indicia bearing window, said signal transmitting section having a plurality of switches by which the light sources beneath said windows can be selectively energized for visually transmitting instructions to the student telephone user, said signal display section having symbols corresponding to the dialing symbols of the telephone and each associated with a light source electrically connected to said telephone symbol whereby the student telephone user can visually transmit to the student operator through said signal display section the designation of a telephone to be called, each of said transmitting sections having a plug and a jack whereby the student operator can remove the plug from the transmitting section connected with a calling telephone and apply it to the transmitting section connected to the telephone to be called, and a switch mounted on each transmitting section and connected to an audible and visual signal of the signal box associated therewith, said last mentioned switch being movable to one position for actuating the audible signal and thereafter to another position for actuating the visual signal of the signal box of the telephone being called.

3,964,180
STANCE CONTROL SUPPORTS FOR, AND COMBINATION THEREOF WITH, A GOLF SHOE
Anthony M. Cortese, 327 Applehill Drive, Sagamore Hills, Ohio 44067
Filed Sept. 9, 1974, Ser. No. 504,545
Int. Cl.² A43B *5/00*
U.S. Cl. 36—135 **10 Claims**



1. In combination with a golf shoe for the right foot and having a sole and spikes carried by the sole and protruding downwardly therefrom and arranged in inner and outer rows, respectively, extending from near the front of the sole to and including the heel of the shoe, and arranged in laterally spaced relation to the central portion of the shoe and heel with the inner row near the inner lateral limit of the sole and heel and the outer row near the outer lateral limit of the sole and heel;
stance control supports for the sole and heel;
each support being a relatively rigid body and having a cavity open through the upper face and in which an associated spike of said inner row is received in the installed position of the support, said lower face being of an area several times the area of the maximum cross section of the normal ground penetrating portion of the associated spike and each support, in installed condition, being in endwise load transmitting relation to its associated spike;
magnetic means carried by the upper portion of the body and magnetically cooperative with the associated spike and detachably holding the body in said installed position;
a plurality of said supports being installed on spikes, respectively of said outer row only; and
the inner row of spikes being free from said supports, and unobstructed so that they can normally penetrate into the ground.

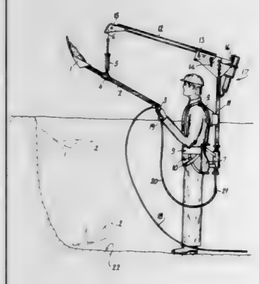
3,964,181
SHOE CONSTRUCTION
Cressie E. Holcombe, Jr., 1613 Blackwood Drive, Knoxville, Tenn. 37921
Filed Feb. 7, 1975, Ser. No. 548,142
Int. Cl.² A43B *13/00*
U.S. Cl. 36—91 **5 Claims**



1. A shoe construction for improving the posture of a wearer, which comprises:
a sole member having a top surface with an exposed peripheral edge of substantially uniform thickness, the peripheral edge being more elevated at a heel portion of the sole than at a toe portion;
a heel integrally formed with the sole and depending therefrom at the heel portion to form a tread plane with the sole at the toe portion;

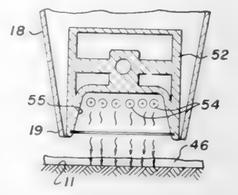
a bridge integrally formed with the heel and sole extending forwardly from the heel in a shank portion of the sole;
a shoe upper secured to the top surface of the sole at substantially the peripheral edge; and
wherein the top surface of the sole is provided with a longitudinal depression extending downwardly into the heel and forwardly into the bridge to a depth sufficient to create a foot-supporting surface inclined continously upwardly from the depression in the heel to a most forwardly position of the toe portion of the sole, said surface being planar in the forepart.

3,964,182
MECHANICAL SHOVEL
Jean-Claude Pomeret, Saint.Lager, Belleville, and Henry Bonnevaux, 98, rue Bechevelin, Lyon, both of France
Filed Oct. 29, 1974, Ser. No. 519,000
Claims priority, application France, Oct. 31, 1973, 73.39465
Int. Cl.² E02F *3/02, 3/46;* **A01B** *1/02;* **A01D** *11/00*
U.S. Cl. 37—1 **4 Claims**



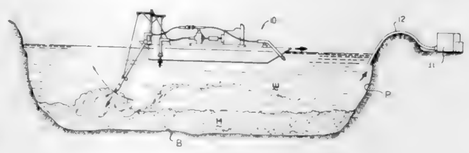
1. A mechanical shovel to be carried by and manipulated by an operator, said mechanical shovel comprising:
a harness to be carried by said operator and including a back plate which rests against the lower back of the operator, a pair of shoulder pieces which engage over the shoulders of the operator and straps which retain said back plate and said shoulder pieces on the torso of the operator, said straps including a ventral strap and a pair of leg straps which extend around the thighs of the operator;
a first substantially vertical boom mounted at its lower end on said back slate and secured by said harness onto the operator, said first boom having an upper end disposed above the head of the operator;
a second boom extending from said upper end of said first boom over the operator and having a free extremity disposed forwardly of the operator;
pivot means articulating said second boom to said upper end of said first boom and means for locking said first and second booms relatively in an angular relationship;
a winch having a motor carried by one of said booms;
a cable mounted to said winch and passing along said second boom and extending downwardly from said free extremity ahead of the operator to an end, and drawn in upon operation of said motor;
a digging tool having a ground-engaging working end, a handle extending from said working end, and a pair of spaced-apart handle grips secured to said handle remote from said working end;
means for securing said cable end to said handle intermediate said working end and said hand grips; and
control means on at least one of said hand grips for operating said motor.

3,964,183
METHOD AND APPARATUS FOR DETACHING COATINGS FROZEN ON TO SURFACES
Thomas W. Mouat, Vancouver, Canada, assignor to B. C. Research, Canada
Continuation of Ser. No. 321,721, Jan. 8, 1973, abandoned. This application June 4, 1974, Ser. No. 476,200
Int. Cl.² E01H *5/10;* **E01C** *23/14*
U.S. Cl. 37—12 **13 Claims**



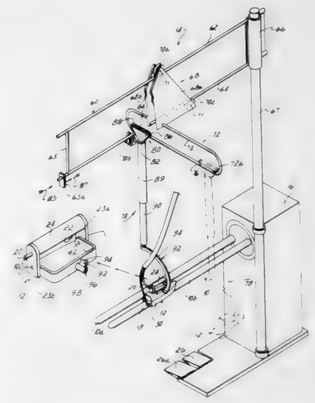
1. The method of freeing a coating of ice, snow or frost from a surface to which said coating is frozen, which comprises providing an artificial source of radiant energy which produces an intense beam consisting of radiant energy primarily in the visible light range so that the beam can pass relatively unimpeded through said coating and focussing said beam produced by said source on the interface between said coating and said surface while moving said beam over said surface to transport energy through the frozen coating to the interface such as to heat the surface to raise the temperature of the interface above the freezing point of water to thereby disrupt the bond between the coating and the surface to detach the latter from the former, while substantially all of the material of said coating apart from that at said interface remains below its melting temperature.

3,964,184
METHOD OF REMOVING MATERIAL FROM A BED OF A BODY OF WATER
Thomas A. Mathieu, 2204 Justice, Office A, Monroe, La. 71201
Division of Ser. No. 373,140, June 25, 1973, Pat. No. 3,885,331. This application Apr. 21, 1975, Ser. No. 569,924
Int. Cl.² E02F *3/88;* **B63H** *11/04*
U.S. Cl. 37—195 **10 Claims**



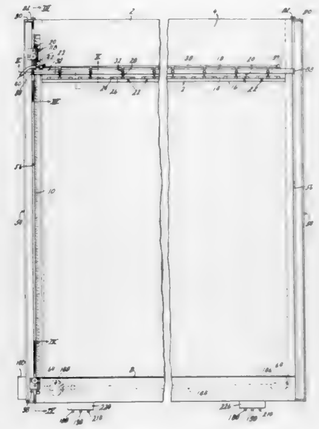
1. A method of removing material from the bed of a pond, lake or like body of water utilizing a floating hull having a bow and stern comprising the steps of drawing water from the body of water at a point closely adjacent the hull, forming the drawn water into a plurality of generally parallel pressurized streams inclined to the horizontal and directed rearwardly from the stern, releasing the pressurized streams in the body of water at points substantially removed and generally equidistant from the hull and adjacent the material thereby creating a material-water admixture and simultaneously propelling the hull in a forward bow-leading direction, changing the distance of the last-mentioned points relative to the hull depending upon the distance of the material from the hull, forming the drawn water into two additional pressurized streams, selectively releasing one or both of the additional pressurized streams in the body of water at points sidewise removed from the hull adjacent the bow and below the water surface for steering the hull during its forward bow-leading motion, selectively moving one or both of the additional streams to move the point or points of impingement thereof with the water along an arc materially outboard of the hull and having a center on said hull medially of sternmost and bowmost points of impingement of each additional stream, and withdrawing the material-water admixture from the body of water.

3,964,185
SEAMBUSTING APPARATUS AND METHOD
Norman J. Bullock, Prospect; Frank A. Wendt, Jeffersontown; Laddie A. DePas, Louisville, all of Ky., and Walter P. Goodman, New Albany, Ind., assignors to W. M. Cissell Manufacturing Company, Louisville, Ky.
Filed July 31, 1975, Ser. No. 600,827
Int. Cl.² D06F *69/00*
U.S. Cl. 38—14 **12 Claims**



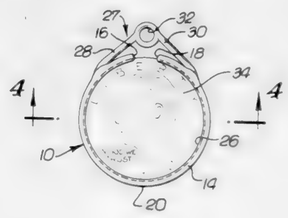
1. Apparatus for opening and flattening a seam having mating edges of fabric joined together along an elongated seam line, comprising:
an elongated buck having a convex outer surface adapted to support the seam with the mating fabric edges thereof outboard, said buck having an outer free end over which said fabric is drawn in the process of dressing said seam on said convex outer buck surface, said outer free end provided with a smoothly contoured notch therein oriented to guide said seam to a position atop said convex outer buck surface as said fabric is drawn over said buck in said dressing process, and
an iron having a sole plate including a central elongated bottom surface region terminating at a forward edge in a pointed nose configuration to spread apart and thereby open the mating fabric edges of a seam when moved forwardly thereover along the seam line thereof, said central elongated bottom surface region having a length substantially less than the length of said buck and being concavely configured to correspond to said convex outer buck surface for overbusting a seam, which is sandwiched therebetween with the melting edges thereof adjacent said sole plate, by pressing said edges to form an angle along said seam line which substantially exceeds 180°,
said convex and concave surfaces each having a radius of curvature of less than approximately two inches and more than approximately one-half inch to facilitate appreciable overbusting and avoid spring-back while minimizing criticality in alignment of said seam line on said buck.

3,964,186
POWERED DRAPERY TABLE
Robert V. Strickland, 9021 Wedd, Overland Park, Kans. 66212
Filed June 27, 1975, Ser. No. 591,142
Int. Cl.² D06C *3/08*
U.S. Cl. 38—102.1 **15 Claims**



1. A drapery table comprising:
a. a rectangular planar table top having front, rear and side edges,
b. a straight clamp bar extending across said table top at right angles to its side edges,
c. a series of clamp devices carried by said clamp bar at intervals along its length, and operable to secure an edge of a sheet of drapery fabric to said clamp bar,
d. a pair of drive units carried respectively at the opposite side edges of said table top and each including a drive member movable in a direction parallel to the associated side table edge,
e. power means operable to move said drive members selectively and concurrently in either direction in their lines of travel, and
f. a connector joining each of said drive members to the adjacent end of said clamp bar, whereby said drive units move said clamp bar transversely of itself.

3,964,187
ADJUSTABLE COIN DISPLAY DEVICE
Elmer J. Stumpf, Los Angeles, Calif., assignor to Beemak Plastics, Los Angeles, Calif.
Filed May 16, 1975, Ser. No. 578,022
Int. Cl.² G09F *3/02*
U.S. Cl. 40—27.5 **4 Claims**



1. An adjustable coin display device comprising an annular split ring having a set diameter yet yieldable to an enlarged annular diameter, said ring including an annular coin receiving means adapted to engage the peripheral edge of a coin; a

suspension means extending from said annular split ring whereby said last means may be engaged to suspend said device so that both faces of said coin may be viewed,

said annular split ring including spaced apart aligned ends when in said set diameter position and when said ring is yieldable to an enlarged annular, diameter position,

said suspension means bridging said aligned ends of said split ring.

3,964,188

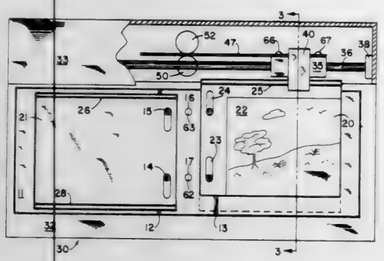
AUDIOVISUAL BOOK SYSTEM

Panayotis C. Dimitracopoulos, Lyford Cay, P.O. Box N-7776, Nassau, Bahamas

Filed Mar. 14, 1975, Ser. No. 556,321

Int. Cl.² G09F *27/00*

U.S. Cl. 40—28.1 **10 Claims**



1. An audiovisual book including:

a. book-cover means substantially similar to a loose-leaf binder;

b. at least one audiovisual sheet having an area wherein visual information may be placed and an audio information track disposed about a linear axis, said sheet also having at least one elongated perforation, said elongated perforation having a lengthwise axis substantially perpendicular to said linear axis;

c. binder means on said book-cover means passing through said elongated perforation retaining said sheet but also allowing it to be displaced along said lengthwise axis.

3,964,189

ADVERTISING DISPLAY

Paul Belokin, Jr., Rte. 4, Hayward, Wis. 54843

Continuation-in-part of Ser. No. 507,711, Sept. 20, 1974, abandoned. This application Sept. 8, 1975, Ser. No. 611,237

Int. Cl.² G09F *19/10*

U.S. Cl. 40—33 **12 Claims**



1. An animated display device comprising:

an object to be displayed;

overhead suspension means for supporting said object for rotation about a vertical axis;

motor means carried by said object providing a rotatable shaft extending therefrom for rotation about a second axis spaced from and eccentric to said vertical axis; and

elongated flexible ribbon means connected to and depending from said shaft for rotation by said motor means, the lateral portions of the ribbon means adjacent the shaft having an effective area diameter and leverage on the shaft against the surrounding air when moving through an arc remote from the vertical axis than when moving nearest the vertical axis for moving the shaft to rotate said object about the vertical axis.

3,964,190

ADVERTISING DISPLAY DEVICE

Daniel W. Leo, 322 S. Merrick Ave., Merrick, N.Y. 11566

Filed May 30, 1975, Ser. No. 582,180

Int. Cl.² G09F *11/02*

U.S. Cl. 40—39 **1 Claim**



1. An advertising display device comprising: a relatively fixed support element including a vertically disposed pole having an upper end, a rotating element supported by said pole upon said upper end for rotation thereon about a vertical axis; said rotating elment including a cylindrical wall having an outer surface for the display of advertising indicia thereon, and an upper planar wall engaging an inner surface of said cylindrical wall; vein means extending from said cylindrical wall; said upper wall having a centrally disposed magnet thereon, and means concentrically disposed with respect to said magnet defining a conical recess; the upper end of said pole having a second coaxially disposed magnet thereon, and a pin coaxially disposed relative to said second magnet extending upwardly therefrom, whereby engagement of said pin within said recess serves to provide a self-centering supportive action; said first and second magnets being arranged to present adjacent surfaces of like polarity whereby the magnetic repelling action existing therebetween lessens the effective weight supported by said pin, and correspondingly reduces rotational friction of said rotating element.

3,964,191

APPARATUS FOR SIMULTANEOUS VIEWING OF BOTH SIDES OF WEBS OF PHOTOGRAPHIC PAPER OR THE LIKE

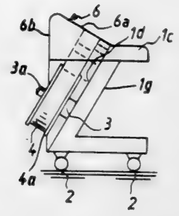
Werner Sieber, Munich; Friedrich Ganser, Feldkirchen; Thomas Hammer; Wolfgang Viehrig, both of Munich; Hans-Dieter Frick, and Viktor Osegowitsch, both of Taufkirchen, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Sept. 24, 1975, Ser. No. 616,412

Claims priority, application Germany, Sept. 26, 1974, 2445996

Int. Cl.² G09F *11/29*

U.S. Cl. 40—86 A **17 Claims**



1. Apparatus for viewing of front and rear surfaces of a web of photographic paper or the like while the web is being withdrawn from a supply reel and is collected by a takeup reel, comprising a frame having front and rear sides; a light-transmitting pane mounted on said frame and being inclined with respect to a horizontal plane so that one surface thereof is exposed and slopes upwardly and rearwardly with respect to said front side, said frame having a portion located at the rear side thereof; spaced-apart first and second rotary mounting means on said portion of said frame for respectively supporting a supply reel and a takeup reel so that the axes of the reels are substantially parallel to said one surface of said pane and the rear surface of the web portion between the reels on said mounting means lies against said one surface of said pane whereby the front surface of such web portion is observable from the front side of said frame; and mirrors mounted on said frame behind said pane for imaging the rear surface of said web portion so that the image of said rear surface of said web portion is observable through said pane from the front side of said frame.

3,964,192

REFERENCE INDEXING DEVICE

Tsutomu Nonaka, 1-30-16-703, Hongoh, Bunkyo, Tokyo, Japan

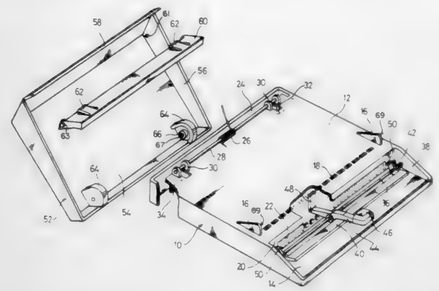
Filed Dec. 27, 1974, Ser. No. 536,980

Claims priority, application Japan, Apr. 10, 1974, 49-40781

Int. Cl.² G09T *11/06*

U.S. Cl. 40—104.01 **4 Claims**

1. In a card indexing device which includes a base member, means for supporting a stack of cards, at least one card selection lever arm pivotably mounted at the front portion of the base member and having a plunger at one end thereof positioned below the front portions of the cards and a push button at the other end thereof whereby actuation of the push button serves to pivot the plunger upwardly into engagement with the cards juxtaposed thereabove and lift such cards, a cover member pivotably connected at the rear end thereof to said base member and including a top wall and a depending front wall, means for biasing the card selection lever arm such that the push button is urged upwardly, means for releasably locking said cover member and base member, and means for applying an upwardly directed biasing force to said cover member tending to urge the cover member into an open position, the improvement comprising: at least one guide tab projecting upwardly from said card support means and having a forward camming surface including a lower vertical portion and an upper rearwardly and upwardly inclined portion; and a substantially L-shaped card hanger pivotably mounted in said cover member in close proximity to the front wall thereof, said card hanger including a generally vertically extending portion having at least one forwardly projecting tongue element struck from the material thereof and an inwardly directed lip portion at the lower extremity thereof, said at least one tongue element being cooperable with said front wall during the upward movement of the cover member to thereby urge said lip portion into camming engagement with the camming surfaces of



said at least one guide tab to position the lip portion beneath the front portion of the cards lifted by said plunger for support of such cards during the continued upward movement of the cover member, said at least one tongue element being engageable with the front wall to limit the clockwise pivotal movement of the card hanger when the cover member is in a fully open position such that said lip portion is engageable with the camming surfaces of said at least one guide tab during downward movement of the cover member for guidance of the card hanger into a depending position in front of the stack of cards when the cover member is in its closed position.

3,964,193

APPARATUS FOR SIMULTANEOUSLY VIEWING DIAPOSITIVES AND FRONT VIEWED PICTURES

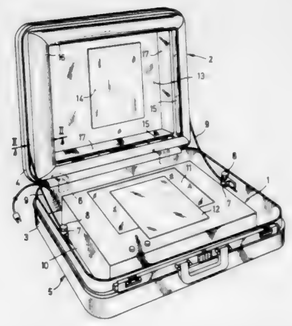
Günter Degenhardt, Heidelberg, and Tino Cello, Ambrl, Switzerland, assignors to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Dec. 23, 1974, Ser. No. 535,821

Claims priority, application Switzerland, June 28, 1974, 8928/74

Int. Cl.² G09F *13/10*

U.S. Cl. 40—106.1 **3 Claims**



1. An apparatus for simultaneously viewing diapositives and front viewed images, especially transparent printed copies and

prints produced therefrom, under standardized illumination conditions, comprising

a. a case-like housing having a cover portion and a floor portion and means for hingedly interconnecting said two portions and for selectively fixing said two portions in an adjustable mutual angular position relative to one another;

b. a rear viewing device being arranged in one of the housing's portions and incorporating a support for supporting a transparent image and light source means arranged behind said support; and

c. a front viewing device being arranged in the other of the housing's portions and incorporating a support for supporting a front viewed image and light source means arranged forwardly of said support for the front viewed image;

ca. said light source means of said front viewing device surrounding said support of said front viewing device at all sides and comprising substantially tubular-shaped illumination means and trough-shaped reflector means, said illumination means being arranged at the edges of the support of said front viewing device and relative to the dimensions of said last-mentioned support at a small spacing above the same;

cb. said rear viewing device and said front viewing device being so arranged within the respective portions of the case-like housing that their respective supports substantially coincide when the case-like housing is closed.

3,964,194

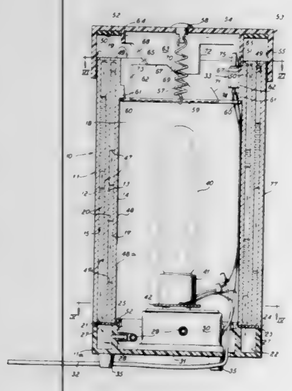
CHANGEABLE COLOR DISPLAY DEVICE

William G. Gugeler, 200 S. Vance, Lombard, Ill. 60148

Filed Jan. 22, 1975, Ser. No. 543,116

Int. Cl.² G09F *13/24*

U.S. Cl. 40—106.21 **18 Claims**



1. A changeable color display device, comprising:

an upright tubular body having a plurality of differentially dimensioned translucent wall sections defining upright working chambers containing a liquid through which air can bubble upwardly;

said tubular body defining a substantial hollow space within the innermost of said wall sections;

annular manifold means concentric with the lower ends of said chambers and defining a central bottom opening from said space;

a base structure accessible through said opening;

means on said base structure for supplying air under pressure into said manifold;

orifices communicating said manifold with the lower ends of said chambers for intruding bubble air into the liquid material in the chambers;

a head sealing the upper ends of the chambers and having air venting ports opening therefrom;

and means supported by said base and carrying a selectively operable source of illumination extending upwardly in said space within the tubular body.

3,964,195

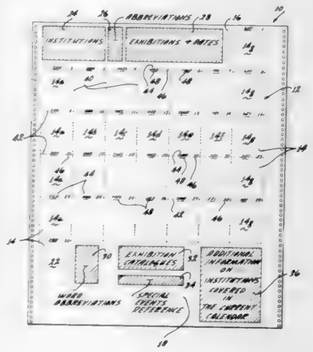
EVENT CALENDAR

Mary Ann McClurkin Jordan, 2165 Fern Dell Place, Los Angeles, Calif. 90068

Filed Apr. 25, 1975, Ser. No. 571,807

Int. Cl.² G09D *3/00*

U.S. Cl. 40—107 **6 Claims**



1. An event calendar, said calendar comprising:

A. a rectangular sheet of paper upon which are arranged rows, vertically aligned, of defined rectangular spaces, each representing one of the days in a given month, or part thereof, on a weekly basis in block form with the spaces representing Sundays disposed on the left side, and Saturdays, on the right side, of the array and the defined spaces representing each of the other five days of the week disposed in order horizontally between the Sunday and Saturday spaces in a conventional monthly calendar format; each of the rectangular spaces representing a Sunday having on its left side a sequence of designator numbers, one for each line from top to bottom of said space, one line or a portion thereof being provided for each event or exhibition to be described; there being provided on each said line commencing in the rectangular Sunday space in each row of spaces after the date when an event has opened, an abbreviated description of the event extending continuously on the same line in the remainder of the rectangular spaces in the same row and on a corresponding line in each subsequent row of spaces through the space representing the date when the event closes, and repetitively to the extent said abbreviated description does not extend through all of the last said spaces; and each space representing a day when a site, or event is not open being appropriately marked so to indicate such fact; said description of the event and the site at which it is held utilizing abbreviations, acronyms and-/or code symbols; and

B. at least one free area on said rectangular sheet outside of said array of spaces, but in the vicinity thereof, in which area information relating to events, and/or sites described in the spaces constituting said array, is further detailed with references to the abbreviations, acronyms or code symbols utilized in said spaces to describe the events and sites and the time periods during which they are open for attendance or closed.

3,964,196

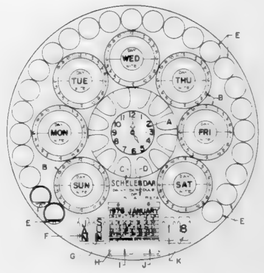
SCHELENDAR

Luis A. Ureta, 1116½ S. Menlo Ave., Los Angeles, Calif. 90006

Filed June 4, 1975, Ser. No. 570,275

Int. Cl.² G09D *3/00*

U.S. Cl. 40—107 **4 Claims**



1. An activity schedule display device comprising: a display board having seven discrete schedule areas thereon, each schedule area having indicia thereon representing a different day of the week and each schedule area further having indicia representing the time in hourly increments from beginning to end of the day each of said increments being associated with engaging means, said board further having a plurality of discrete activity indicating areas thereon each provided with both a pictorial and a symbolic representation of an indicated activity; a plurality of activity pin-like elements each having a symbolic representation of an indicated activity on one side thereof, and means on the opposite side whereby each of said elements is adapted to engage with a selected one of said engaging means; and, a clock is mounted on said board, whereby, the clock permits correlation between a time frame and an indicated activity.

3,964,197

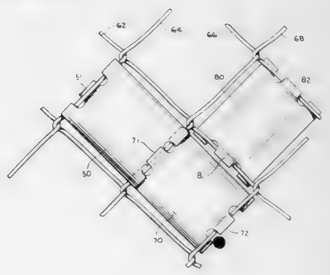
VERSATILE OUTDOOR SIGN

Robert F. Tucker, deceased, late of Cassleberry, Fla., and Ruth L. Tucker, executrix, 291 Lake Griffin Circle, Cassleberry, Fla. 32707

Filed June 24, 1974, Ser. No. 482,504

Int. Cl.² G09F *7/02*

U.S. Cl. 40—125 E **24 Claims**



1. A self-locking chip usable on a wire mesh with a number of other like chips in order to display intelligence, which mesh has numerous apertures of essentially square configuration therein to receive such chips, a given chip having a pair of oppositely disposed attachment edges configured to engage opposite sides of a given aperture in locking relationship, each attachment edge involving a tab located between a pair of corner portions, with such tab being bent out of the plane of said corner portions such that said tab can engage a different side of the contacted wire of a wire mesh than do the respective corner portions, the dimension of said chip measured between said attachment edges being slightly greater than the distance between corresponding sides of the aperture in which the chip is to be installed, said chip being of resilient material, and possessing a considerable amount of stiffness, but nevertheless being flexible enough to be able to be bent by finger pressure to an extent sufficient to materially decrease the distance between its attachment edges, said chip, when in such bent condition, being able to be inserted in a selected aperture in the mesh, and when released therein, returning to its normal length condition and becoming locked into such aperture by the interaction of said tabs and corner portions.

3,964,198

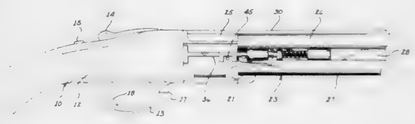
FIREARM EXTRACTOR/EJECTOR SYSTEM

Richard G. Waddell, Phoenix, Ariz., assignor to The Innovation Resources Corporation, Tempe, Ariz.

Filed Sept. 5, 1974, Ser. No. 503,299

Int. Cl.² F41C *15/06*

U.S. Cl. 42—48 **4 Claims**



1. In a break-open type firearm action having a barrel and using a gas propelled projectile fired from a cartridge held in a breech of said barrel, an extraction/ejection system comprising:

a. an extractor/ejector slidably positioned along the breech of said barrel for longitudinal movement along said barrel and including a portion thereof positioned to engage said cartridge for extracting or ejecting said cartridge from the breech of said barrel;

b. an extractor/ejector spring contacting and urging said extractor/ejector to an extracting position when said action is broken;

c. sear means for latching said spring in an energy storage position, said sear means responsive to the breaking of said action for unlatching said spring and permitting said spring to rapidly force said extractor/ejector rearward of said barrel to effectively eject said cartridge from said breech;

d. a cylinder secured to said barrel;

e. a piston slidably mounted in said cylinder;

f. a gas port in said barrel communicating with said cylinder for transporting gas under pressure from said barrel during firing of said cartridge to said cylinder to force said piston along said cylinder;

g. means connected to said piston and contacting said sear for forcing said sear to a spring latching position when said piston moves along said cylinder in response to gas pressure from said barrel.

3,964,199

ADJUSTABLE SPRING ASSEMBLY

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Filed June 2, 1975, Ser. No. 582,772

Int. Cl.² F41C *25/02*; **F16F** *1/22*

U.S. Cl. 42—50 **10 Claims**

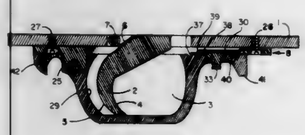
10. A firearm magazine comprising: a case for storing cartridges having a pair of lips with an exit port therebetween; a floor; a follower for engaging said cartridges; an adjustable spring assembly positionally adapted for engaging said follower and for reacting against said floor and comprising, a stack of interleaved folded leaf springs each having a pair of parallel flat portions extending from a pair of nested arcuate

portions connected by a vertex, each successive spring being positioned with its vertex disposed at an opposite end of said stack, means for engaging each interleaved flat portion of one of said springs with an adjacent flat portion of another of said



springs, and means for inserting wedge means between each said pair of arcuate portions thereby separating said pair and tending to expand said stack in a direction substantially perpendicular to the major flat plane of said flat portions.

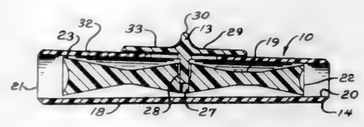
3,964,200
LOCKING TRIGGER GUARD
Leslie A. Patterson, 565 Sagamore Ave., Apt. 15, Portsmouth, N.H. 03801
Filed Apr. 7, 1975, Ser. No. 565,341
Int. Cl.² F41C *17/02, 27/10*
U.S. Cl. 42—70 E **10 Claims**



1. A locking mechanism for a firearm having a frame and having a movable trigger depending from the firearm frame, said mechanism comprising:
an elongated base plate attachable to the firearm frame;
a locking member carried by said base plate having an upper portion being in longitudinal sliding engagement with said base plate, and a lower portion comprising a trigger guard enclosing the trigger in the plane of motion of the trigger, said locking member being movable between a forward locked position wherein the trigger guard blocks the rearward motion of the trigger, and a rearward unlocked position allowing full motion of the trigger; and
latch means cooperating with the locking member to releasably engage the locking member in the locked and unlocked positions.

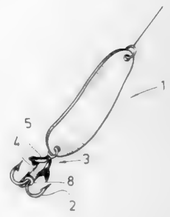
3,964,201
FISH BAIT DEVICE AND METHOD
Leo Biliunas, 926 Hickory Lane, Darien, Ill. 60559, and Allan SunPano, 4101 W. Parker St., Chicago, Ill. 60639
Filed Mar. 28, 1975, Ser. No. 562,908
Int. Cl.² A01K *97/04*
U.S. Cl. 43—4 **1 Claim**

1. A device for baiting fishhooks comprising a relatively elongated tubular member having at least one open end, a plunger mounted in said member for slidable movement longitudinally thereof from a first position removed from said one end to adapt said tubular member to receive fish bait dough to a second position adjacent said one end for ejecting said fish bait dough, an opening in said tubular member, and finger manipulatable means on said plunger extending through said opening, said tubular member being open at both ends and



having a tapered bore extending from one end to the other to produce dough plugs of different diameters, said opening being an elongated slot positioned midway the length of said member to adapt said plunger and finger means to move toward both tubular ends.

3,964,202
FISHING LURE
Aaro Arvo Ruppa, Konhionkatu 75, Jyvaskyla, Finland
Filed May 20, 1975, Ser. No. 579,328
Int. Cl.² A01K *83/00*
U.S. Cl. 43—42.1 **4 Claims**

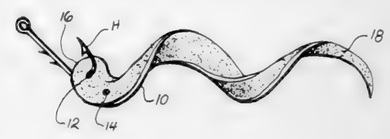


1. Improved fishing lure, comprising pointed hooks having stem portions and projecting in different directions; protective means which prevent said hooks from catching on plants, stones and other underwater obstacles; said protective means consisting of a body part having an aperture admitting the passage of said stem portions, and of elongated, elastic protective members attached by one end to said body part, and which members project from said body part in different directions to the sides thereof, in front of the points of said hooks, and constituting an elastic catching guard; wherein said protective members consist of vanes positioned at an oblique angle against a plane passing through the longitudinal axis of the fishing lure; said protective means being freely rotatable with reference to said stem portions; and wherein said body part has a slit therein, allowing said stem portions to be introduced into said body part, and constituting means for selectively attaching and detaching said protective means to and from the fishing lure without detaching said hooks.

3,964,203
FISHING LURE
William O. Williams, Jr., 1309 Lynhurst Drive, Gastonia, N.C. 28052
Filed Jan. 27, 1975, Ser. No. 544,036
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.02 **9 Claims**

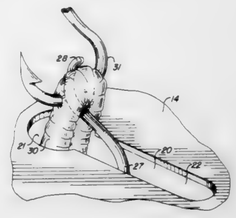
1. A fishing lure comprising a strip of material having toughness, flexibility, and blood particle absorption and exudation characteristics similar to chamois, said material being impregnated with a water soluble fish attracting substance such as animal blood that exudes slowly from said material during use of the lure in water to combine with the appearance and action of said strip of material for enhanced fish attraction,

and said strip having a curved flat tail portion that is capable of movement during use in water from a flat disposition to a



contoured disposition for enhanced exudation of the impregnated substance under the action of the water thereagainst in a fish attracting action.

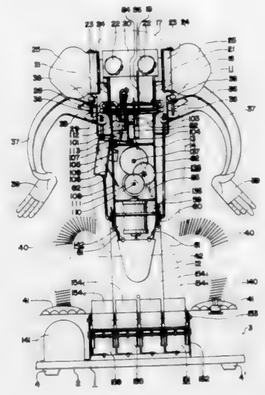
3,964,204
CONTAINER AND DISPENSER FOR FISH BAIT
Francis W. McKinley, 1421 W. Colter, Phoenix, Ariz. 85013
Filed Feb. 27, 1975, Ser. No. 553,682
Int. Cl.² A01K *97/04*
U.S. Cl. 43—55 **5 Claims**



1. A container for storing a quantity of fish bait and for singularly dispensing and holding said bait while a fishhook is passed therethrough, said container comprising:
a. an enclosure for holding said quantity of bait and including a pair of spaced end walls, an elongate generally arcuate side wall extending between said end walls and an openable cover;
b. means defining an aperture in said cover;
c. an elongate shaft extending between said end walls and rotatably journalled therein;
d. cranking means for rotating said shaft; and
e. an arm extending radially from said shaft and rotatable therewith and having an end extendable beyond said cover for engaging said bait and lifting said bait through said aperture means.

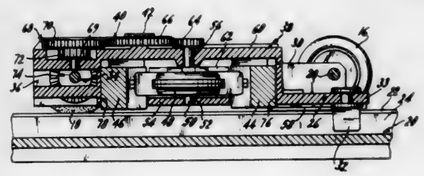
3,964,205
FIGURE WITH MOVABLE TRUNK, HEAD ETC., HAVING DRIVING DEVICE AND INDIVIDUAL OPERATION MEANS
Shigeaki Kuramochi, No. 24-17, Kolshikawa 5-chome, Bunkyo, Tokyo, Japan
Filed June 17, 1974, Ser. No. 480,278
Claims priority, application Japan, Aug. 23, 1973, 48-93892
Int. Cl.² A63H *13/00*
U.S. Cl. 46—120 **3 Claims**

1. A motion-toy comprising a fixed frame, a movable frame having a trunk and mounted movably freely with respect to said fixed frame, a head-frame having a head and mounted rotatably freely on said movable frame, an eye-frame having eyes and mounted rotatably freely on said head-frame, arms mounted rotatably freely at both sides of said movable frame, a driving device for moving up and down said movable frame, operation means for operating with said driving device to operate said trunk, head, eyes and arms respectively in association with said up and down movements of said movable frame, and respective operating devices for operating selectively each of said operation means, said operation means comprising an operating plate supported movably freely up and down by said fixed frame and having an operating part engaging with an engaging portion provided on said movable frame in a down position, an operating framework mounted



rotatably freely on said movable frame and energized downwards so as to contact with said operating part of the operating plate, interlocking levers connected rotatably freely between the base portions of said arms and said operating framework, and said operating devices including an individual operating device for moving up and down said operating plate.

3,964,206
MINIATURE VEHICLE WITH MAGNETIC FORCE
Robert Bernhard, Hollywood, Calif., assignor to Aurora Products Corporation, West Hempstead, N.Y.
Filed Feb. 3, 1975, Ser. No. 546,523
Int. Cl.² A63H *33/26*
U.S. Cl. 46—251 **11 Claims**

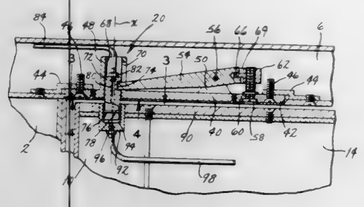


1. In a miniature, electrically powered vehicle of the type having an electric motor operatively connected to driving wheels on the vehicle and energized through a pair of electrical pick-up shoes and a track having electric power means therein and engageable with said pick-up shoes, the improvement comprising:
a. a pair of permanent magnets mounted in said vehicle forming the stationary magnetic portions of the electric motor of said vehicle;
b. said pair of magnets extending downwardly to a distance above said power means in the range of approximately 0.00 to approximately 0.02 inches;
c. said electric power means being formed of magnetic material; and
d. said magnets and said power means providing a magnetic force urging said vehicle downwardly toward said track to provide increased normal force on said car against said track thereby providing increased driving traction between said wheels and said track.

3,964,207
PIVOT ARRANGEMENT FOR TRANSFERRING PRESSURIZED AIR INTO A PIVOT DOOR

Francis C. Peterson, St. Louis County, Mo., assignor to C. Hager & Sons Hinge Manufacturing Company, St. Louis, Mo.

Filed Mar. 24, 1975, Ser. No. 561,048
Int. Cl.² E05D 7/08
U.S. Cl. 49—388 **4 Claims**



1. In an entry structure including a door frame having spaced apart jambs and a header at the upper ends of the jambs, and a pivot device at the bottom of the door, the pivot device supporting the door and enabling the door to pivot about a vertical axis spaced slightly inwardly from one of the jambs, the improvement comprising: first means on the door at the upper end thereof defining a vertical bore which opens upwardly out of the door and having an opening therethrough, said opening communicating with said bore; a first fluid conduit connected with said opening in said first means so as to communicate with the bore, the first conduit leading to a fluid operated appliance on the door; second means on the header defining a vertical bore which is fixed in position with respect to the header and opens downwardly, the axis for the vertical bore of the second means being coincident with the axis of rotation for the door; a pin received in the bore of the second means and projecting downwardly therefrom into the bore of the first means so that the two bores are coaxial, the pin having a passageway extending axially through it with the lower end of the passageway opening into that portion of the bore in the first means which is located below the pin so that the passageway always communicates with the bore in the first means and the first fluid conduit irrespective of the angular position of the door; a second fluid conduit connected to the pin and communicating with the passageway therein seal means located between the pin and the walls of the bore in the first means to form a fluid barrier between the pin and the walls of that bore so as to prevent pressurized fluid from escaping along the pin, the seal means being positioned above said opening and also above the location at which the passageway in the pin opens into the bore of the first means, whereby the pressurized fluid will be transferred through the pin and into the second conduit without loss of pressure at the pin; and means for retracting the pin from the bore of the first means to free the upper end of the door from the header.

3,964,208
DOOR FOR VEHICLE, ESPECIALLY PASSENGER MOTOR VEHICLE

Hermann Renner, Magstadt, and Dieter Weidemann, Weil der Stadt, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed May 28, 1975, Ser. No. 581,958
Claims priority, application Germany, June 1, 1974, 2426705
Int. Cl.² B60J 1/17
U.S. Cl. 49—502 **16 Claims**

1. A door for vehicles which comprises an outer door panel means and an inner door panel means, and which is equipped with a lowerable window means, characterized in that the inner door panel means extends through the plane formed by the lowered window in such a manner that above the place where it extends through said plane, the inner door panel means is disposed on the side of said plane facing the interior space of the vehicle and below this place, on the side of said

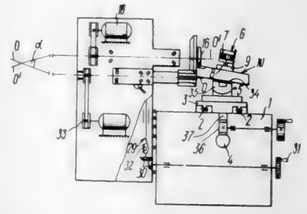


plane facing the outer door panel means, and said inner door panel means being provided with an aperture means for the windowpane of said window means within the area where the inner door panel means extends through said plane.

3,964,209
SEMIAUTOMATIC DIAMOND TOOL-GRINDING MACHINE

Mikhail Naumovich Konnikov, ulitsa Kosmonavtov, 5, kv. 35, Vitebsk; Ivan Savvich Nakul, ulitsa Vyshgorodskaya 33, kv. 35, Kiev; Leonid Kuzmich Novikov, Smolenskoe shosse, 58, kv. 49, Vitebsk; Evgeny Stepanovich Zemlyansky, ulitsa Osipovskogo, 13, kv. 14, and Peter Tankhomovich Shulman, ulitsa Dorogozhitskaya, 26, kv. 58, both of Kiev, all of U.S.S.R.

Filed Mar. 12, 1974, Ser. No. 450,497
Int. Cl.² B24B 3/34
U.S. Cl. 51—5 R **4 Claims**



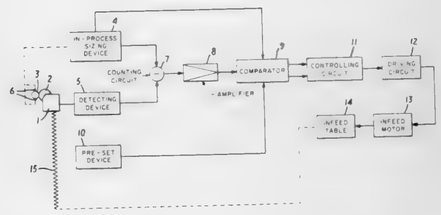
1. A semiautomatic diamond tool-grinding machine for tools having a holder fitted with a hard-alloy element, comprising: a base (**1**); a work table (**3**) on said base; drive means (**4**) kinematically linked with said table for reciprocating the same; means (**5**) for setting a tool (e.g. **10**) to be ground, installed on said table at an angle ensuring a preset rear cutting angle therefor; means (**6**) secured to said table for automatically clamping and releasing the tool; a flexible element (**28**) installed on said table; a horizontally displaceable stop (**19**) for adjusting the amount of cut-off allowance removed from the rear surface of the tool, said stop contacting the front surface of the tool by biasing the latter toward said flexible element; a grinding head (**17**) installed on said base and having a spindle; drive means (**18**) for rotating the latter; diamond wheels (**20, 21**) fixed to said spindle, one (**20**) of said wheels serving to grind a hardalloy element (e.g. **15**) over its rear surfaces, and the other wheel (**21**) to grind a chip-breaking groove for the tool, said wheels being installed with freedom of adjusting the distance between them; and a milling head (22) installed on said base for dressing a tool holder (e.g. **14**)

and having a spindle whose geometrical axis is inclined in relation to that of said spindle of the grinding head.

3,964,210
GRINDING APPARATUS

Sadao Moritomo, Ichikawa, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed Sept. 27, 1974, Ser. No. 509,851
Claims priority, application Japan, Oct. 1, 1973, 48-110371
Int. Cl.² B24B 49/04
U.S. Cl. 51—165.71 **4 Claims**



1. A grinding apparatus comprising, presetting means to preset a reference signal having a value varying in time and corresponding to a desired size of a workpiece at points in time as the workpiece is ground, size-sensing means for sensing the varying size of the workpiece and developing an output signal having values corresponding to the varying size of the workpiece being ground, infeed means for infeeding a grinder to said workpiece for grinding thereof, detecting means for detecting the infeed of the infeed means to said workpiece and developing an output signal representative of the infeed speed of the grinder to the workpiece, a reduction rate-determining circuit receptive of the output signal of the size-sensing means and the output signal of the detecting means for developing a deviation signal representative of the reduction rate of the workpiece while being ground, a comparator circuit receptive of the preset reference signal, the deviation signal and the output signal of said size-sensing means for developing a difference signal when a difference obtained between the deviation signal representative of the reduction rate and the reference signal, and means comprising a control circuit for controlling the rate of feeding of the infeed means to maintain the deviation signal corresponding to a reduction rate signal equal to the reference signal, thereby to control the grinding of the workpiece to maintain the desired infeed speed of said infeed means.

3,964,211
STONE WEAR INDICATION ON A HONING MACHINE

Robert C. Engle, Holland, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed July 31, 1975, Ser. No. 600,697
Int. Cl.² B24B 49/00
U.S. Cl. 51—165.87 **10 Claims**

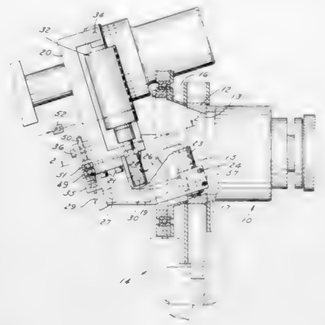
1. In a honing machine having an abrasive mounted to automatically feed by action of a lever in conjunction with a feed cylinder and a fluid operated stone wear indicator switching apparatus comprising:

a. a lever pivotally mounted to contact said abrasive in said feed cylinder and a plunger;

b. said plunger disposed in a valve body with rod end of said plunger extending therefrom;

c. said plunger making a seal against said valve body; and

d. communication conduit between said valve body and

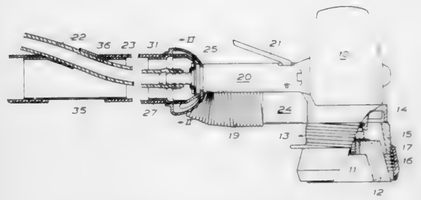


pressure switch communication thereto a fluid pressure supply.

3,964,212
PNEUMATIC GRINDING MACHINE PROVIDED WITH DUST REMOVING MEANS

Karl Gösta Kårdén, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Mar. 10, 1975, Ser. No. 557,116
Claims priority, application Sweden, Mar. 22, 1974, 74038837
Int. Cl.² B24B 23/00
U.S. Cl. 51—170 PT **13 Claims**



1. Dust removing device for a hand held pneumatic grinding machine, comprising:

a machine housing carrying a rotatable grinding tool,

a dust collector which is attached to the machine housing and arranged to at least partly surround the grinding tool, and means for coupling a pressure air supply conduit to the machine and a dust conveying conduit in communication with said dust collector,

the improvement wherein said coupling means comprises swivel means for rotatably coupling the dust conveying conduit and the pressure air supply conduit to the machine with the dust conveying conduit and the pressure air supply conduit substantially coaxial with each other and rotatable about a common axis relative to the machine.

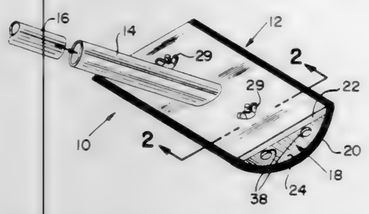
3,964,213
ABRASIVE CLEANING TOOL

Alton E. Tobey, 2203 Mission St., Santa Cruz, Calif. 95060

Filed Mar. 17, 1975, Ser. No. 559,328
Int. Cl.² B24D 15/04
U.S. Cl. 51—392 **10 Claims**

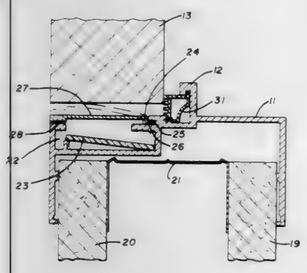
10. A cleaning tool comprising a handle element and a coupled head assembly including a substantially rigid screen support member, a wire mesh screen having a limited degree

of flexibility, said screen having a plurality of abrasive particles attached thereto, and means for locally attaching said screen to said support member, said screen support member



having means for backing a portion of said screen by displacing said screen from said support member and thus allowing matter to flow through said screen.

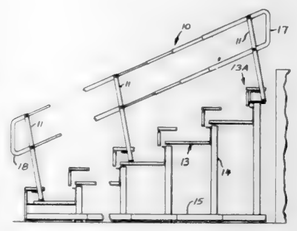
3,964,214
SMOKE STOP
Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.
Filed June 25, 1975, Ser. No. 590,247
Int. Cl.² E04H *9/00*
U.S. Cl. 52—1 **7 Claims**



1. A smoke stop for doors comprising: a metal frame with a slot therein extending along substantially the entire length of the frame on the door side thereof; a movable lid pivotably attached along one outer edge of the metal frame and releasably attached to a second outer edge of the metal frame thereby completely enclosing the slot in the metal frame; and an intumescent material completely enclosed within the enclosed slot, whereby when the door is closed and the frame is subjected to flames the intumescent material expands causing the movable lid to release along one edge thereof and pivot about the other edge thereof to enter into contact engagement with the door along an edge thereof thereby providing a smoke stop between the door and the frame.

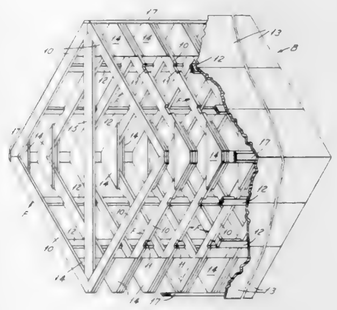
3,964,215
FOLDING HANDRAILS FOR TELESCOPING SEATING SECTIONS
Arlin P. Hartman, and Richard A. Vance, both of Champaign, Ill., assignors to Universal Bleacher Company, Champaign, Ill.
Filed Feb. 18, 1975, Ser. No. 550,478
Int. Cl.² F04H *3/12*
U.S. Cl. 52—9 **6 Claims**

1. In a telescoping seating system having a plurality of row sections movable between a closed storage position in which said row sections are in superposed relation and an open use position in which said row sections are in stepped relation and including a folding handrail secured to said row sections and movable therewith between said closed and open positions, said handrail including a plurality of posts and upper and lower telescoping rail means pivotally connected between adjacent posts, the improvement comprising: bracket means secured to a row section for each of said posts and extending laterally thereof, each bracket means holding an associated post inclined at an acute angle relative to the vertical with the upper end of a post extending upwardly and outwardly of an



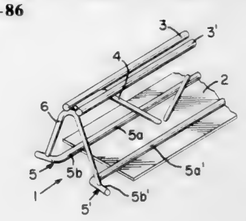
associated bracket means; and pivot connection means for mounting said upper and lower rail means to the same side of said posts, whereby the axes of said upper and lower rail means lie in the same vertical plane and said rail means do not extend in front of said seating system when said system is in closed position.

3,964,216
MODULAR BUILDING CONSTRUCTON
Roger A. Hummel, Suttons Bay, Mich., assignor to G. Tsutomu Arai and Roger A. Hummel, Architects. Suttons Bay, Mich.
Filed Oct. 31, 1974, Ser. No. 519,611
Int. Cl.² E04B *1/34*
U.S. Cl. 52—79 **13 Claims**



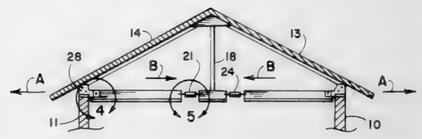
1. A modular building construction, comprising a plurality of generally similar basic block units each including at least two parallel, generally similar quadrilateral frames each having straight sides in effect intersecting one another in a common plane thereof, said frames being in a spaced relation to one another lengthwise and perpendicular to the planes of the same and having parallel vertical diagonals between opposed apices, means interconnecting said frames to one another to constitute the block unit, and bracket means adjacent an angular apex of a block unit outline to connect said unit to an adjacent block unit in major part by said bracket means, said basic block units, as thus bracket-connected together, having sides lying generally parallel to one another but being sufficiently spaced transversely from another adjacent block unit and throughout the length thereof to afford an elongated service or like space between said adjacent block units.

3,964,217
LOAD BEARING BEAM FOR FLOORS AND THE LIKE
Salvatore Leone, Residenza al Parco No. 11.3.301, Milan 2 - 20090 Segrate, Italy
Filed Jan. 9, 1975, Ser. No. 539,578
Claims priority, application Italy, Sept. 26, 1974, 27717/74
Int. Cl.² E04B *1/32*; **E04H** *12/10*
U.S. Cl. 52—86 **8 Claims**



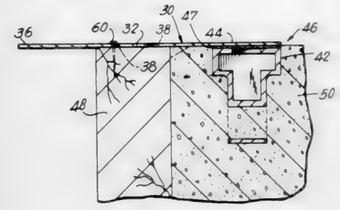
1. A structural load bearing beam for floors and the like comprising
a base disposed on a longitudinal median axis thereof,
stiffening means secured at a lower end thereof to said base and projecting upwardly therefrom,
stringer means secured on an upper end of said stiffening means, and
a pair of L-shaped and transversely spaced support elements substantially co-planar with respect to said base and each having a first segment secured and confined on an end and outer surface of said base and a second segment projecting in cantilevered relationship beyond the end of said base, the second segments of said support elements extending away from each other and outwardly from said axis.

3,964,218
PREFABRICATED ROOFING STRUCTURE
Jack H. Y. Ho, Haig Road, Singapore, assignor to Unifab Housing, Inc., Los Angeles, Calif.
Filed Jan. 31, 1975, Ser. No. 545,725
Int. Cl.² E04B *7/02*, *5/52*
U.S. Cl. 52—90 **2 Claims**



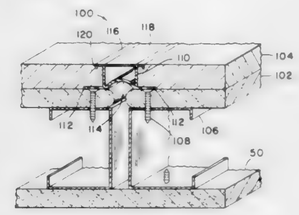
1. A prefabricated roofing structure for a building having opposite bearing walls comprising, in combination:
a. a center ridge member;
b. roof sheets secured to and slanting downwardly from said ridge member to overlie the upper edges of said opposite bearing walls;
c. a plurality of inverted T-bars extending transversely of said ridge member between the upper edges of said bearing walls in horizontal spaced parallel relationship;
d. vertical hangers extending from said ridge member to the centers of the T-bars to support the T-bars;
e. bracket means securing the ends of the T-bars, the upper edges of the bearing walls and the lower end portions of the roof sheets together;
f. turnbuckle means in each of the T-bars so that a contracting force pulling the ends of the bars towards each other can be applied; and,
g. ceiling panels extending between the T-bars and supported by the inverted cross portions of the T-bars.

3,964,219
INSERT AND ANCHOR POSITIONING AND LOCATING DEVICE
Alfred A. Hala, Islip, N.Y., assignor to Hohmann & Barnard, Inc., Hauppauge, N.Y.
Filed May 5, 1975, Ser. No. 574,395
Int. Cl.² E04B *1/38*
U.S. Cl. 52—105 **66 Claims**



1. An insert positioning and locating device for initially positioning said device with respect to a concrete form in order to locatingly secure said insert in a predetermined orientation with respect to a thereafter poured concrete structure, said device comprising
a tab member, and
an insert member,
means for detachably securing said insert member to said tab member in predetermined relationship,
said device including means for lateral and longitudinal positioning thereof with respect to said concrete form,
said tab member having means for permitting removable positional securement thereof to said concrete form, and
said removal of said tab member from said concrete form and detachment thereof from said insert permitting of predetermined locational securement of said insert with respect to said resultant concrete structure.

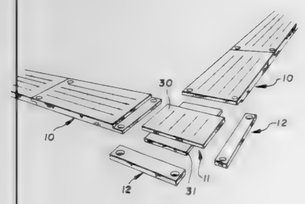
3,964,220
CONTROL JOINT WITH TEAR STRIP
Edward J. Rutkowski, Kenmore, and Gerard T. Sowinski, Lancaster, both of N.Y., assignors to National Gypsum Company, Buffalo, N.Y.
Division of Ser. No. 28,906, April 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 701,164, Jan. 29, 1968, abandoned. This application Mar. 7, 1972, Ser. No. 232,598
Int. Cl.² E04B *1/41*
U.S. Cl. 52—100 **1 Claim**



1. In a wall structure including a support and a pair of separate slabs of plaster-like material cast in situ on said support, the combination therewith of a unitary elongated expansible hollow separator between said slabs:
a. said separator having a front wall, a rear wall and opposite side walls;
b. said rear wall including a pair of planar flanges for attaching said separator to said support with said front wall facing outwardly, said flanges respectively extending laterally in opposite directions, said side walls serving as screeds to establish the thickness of said slabs;

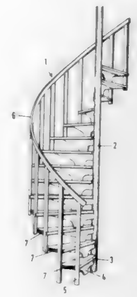
c. the center portion of said rear wall being inwardly arched to allow movement of said side walls toward and away from each other in response to expansion and contraction of said separate slabs;
d. said front wall being joined to the side walls by fracture webs of weaker cross-sectional strength than said front wall whereby said front wall forms a tear strip removable after said slabs are formed, said fracture webs being defined by lines of relative structural weakness at the junction of the outer ends of the sidewalls and said front wall, said front wall being substantially flush with said side wall outer edges so that upon removal of said front wall said separator is exposed only at the region of its hollow interior and the screed areas on the outer edges of said side walls; and
e. each said side wall being provided with an anchor means extending laterally outwardly from that side wall, the outer end of each anchor being a substantially perpendicularly flanged head locking the side wall to its associated slab for conjoint movement therewith.

3,964,221
PLATFORM SECTIONS
DeWayne Donald Berquist, Anoka, Minn., assignor to Aggressive Industries Inc., St. Paul, Minn.
Continuation-in-part of Ser. No. 391,063, Aug. 24, 1973, abandoned. This application Feb. 18, 1975, Ser. No. 550,518
Int. Cl.² E04F *11/16*; **E04C** *1/30*
U.S. Cl. 52—177 **4 Claims**



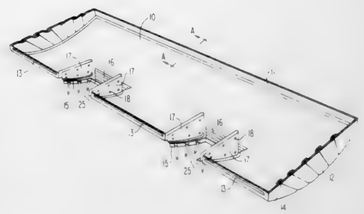
1. A support structure including a plurality of individual first support sections, each such first section including:
a. an upper generally planar surface;
b. a lower surface spaced from said upper surface;
c. side walls extending between said upper and lower surfaces;
d. end walls extending between said upper and lower surfaces, said end walls, side walls, upper and lower surfaces defining a stepped portion extending entirely transversely across said section; and,
e. said stepped portion of each of said end walls being respectively oppositely directed whereby next adjacent first sections may overlap upon the stepped portion;
f. each of said support sections being provided with a plurality of longitudinally and transversely aligned axial columns formed between said upper and lower surfaces connecting the same and defining an axial passage therethrough;
g. longitudinally extending grooves being formed in one of said surfaces and connecting the aligned axial passages on said surface; and,
h. transversely extending grooves being formed in the other of said surfaces and connecting the aligned passages on said surface.

3,964,222
WOODEN SPIRAL STAIRCASE
Johannes Geleijnse, and Machiel Geleijnse, both of Vlaardingen, Netherlands, assignors to Firma M. Geleijnse & Zoon, Vlaardingen, Netherlands
Filed Jan. 27, 1975, Ser. No. 544,283
Int. Cl.² E04F *11/00*
U.S. Cl. 52—187 **6 Claims**



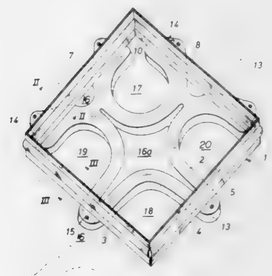
1. A wooden spiral staircase comprising
a central column having a vertical axis;
a plurality of vertically spaced treads, each tread having longitudinally spaced ends and extending transversely with respect to said column, one said end spaced remotely from said column, and the other said end spaced closely adjacent to said column;
a plurality of risers, one each located to extend vertically between said spaced adjacent treads, each said riser including an upper edge and a lower edge with said edges connected by a T-shaped portion;
each said tread on a lower surface thereof having a first elongated recess formed therein extending from said end adjacent said column for a distance approximately two-thirds the length of said tread, and said upper edge of said riser being fitted into said first recess;
each said tread on an upper surface thereof having a second elongated recess formed in an intermediate portion of said tread located in the tread portion closest to said column, and said lower edge of said riser being fitted into said second recess;
adjacent treads having equal spacing therebetween measured vertically along the column surface parallel to said axis of said column;
each said vertical spacing along said column surface having an elongated vertical opening formed therein, each said opening having a vertical measurement approximately half of said vertical spacing;
said plurality of openings corresponding in number to said treads and respectively positioned in alignment with each said riser;
each said riser at the upper part of its T-shaped portion including a tenon fitted into one of said openings, each said tenon extending past said axis of said column to terminate at a distance approximately half-way between said axis and the surface of said column; and
means connecting vertically adjacent treads at the ends remote from said column.

3,964,223
WATERPROOF SHEET FOR AIRCRAFT CARGO CHAMBER
Takashi Sato, Chigasaki; Katuyuki Saita, Yokohama; Tadashi Naito, Hatano, and Harumi Takeda, Yokohama, all of Japan, assignors to The Yokohama Rubber Co. Ltd., Tokyo, Japan
Filed June 13, 1975, Ser. No. 586,777
Int. Cl.² E04B *5/00*
U.S. Cl. 52—273 **7 Claims**



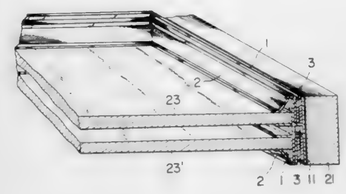
1. A waterproof sheet for cargo chambers of aircraft comprising a base sheet adapted to lie on the floor of said chamber and having notched portions at positions corresponding to the doors of said chamber; door sill flaps provided to said base sheet around said notched portions and adapted to be folded up and down at the time of opening and closing of said door; door sill protectors provided to said base sheet at said notched portions for protecting said door sill flaps; side sheets provided at the longitudinal sides of said base sheet and having tape fasteners for securing said base sheet to the wall of said chamber; and end sheets provided at the longitudinal ends of said base sheet and said side sheets and having tape fasteners for tucking the end sheets when said base sheet and side sheets are positioned properly in said chamber.

3,964,224
PLATE-SHAPED MODULE UNITS
Sofus Georg Christensen, 103 Hovedvejen, 2600 Glostrup, Denmark
Filed Sept. 9, 1974, Ser. No. 504,246
Int. Cl.² E04F *13/08*; **E04C** *1/30*
U.S. Cl. 52—387 **5 Claims**



1. A square or rectangular module unit for covering walls, ceilings, and similar surfaces with slabs, the back of said module unit being provided with a fastening member, which has lateral projections to align identical module units, said projections extending beyond two adjacent edges of the module unit and at the two other edges being provided with similar indentations for receiving projections of the fastening member of the adjacent module unit, said indentations facing the center of the module unit, wherein the fastening member is connected to a square or rectangular frame, of which the sides form protective means all along the periphery of the module unit, two adjacent sides having longitudinal tongues projecting therefrom and the other two adjacent sides having longitudinal grooves for connecting the module unit to adjacent module units.

3,964,225
DEVICE FOR FIXEDLY CONNECTING PANELS FOR USE IN BUILDING
Tsukasa Yoshida, Nikko Danchi 15-202 Nikko-cho No. 1-3, Fuchu, Tokyo, Japan
Filed Dec. 26, 1973, Ser. No. 428,044
Int. Cl.² E06B *3/24*
U.S. Cl. 52—500 **1 Claim**

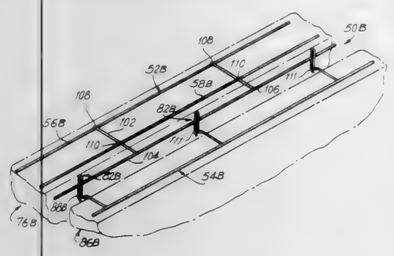


1. A dual panel mounting frame comprising at least one edge frame member having a first pair of parallel spaced apart plates, connecting means extending transversely between said first pair of plates intermediate the edges thereof to define two opposed edge opening recesses between said plates, a second pair of parallel spaced apart plates integral with and extending perpendicular to one of said first pair of plates adjacent said connecting means, a pair of substantially V-shaped pressing frame members, each pressing frame member having a first plate adjustably extending into one of said recesses in engagement with one of said first pair of plates and a second plate extending towards said second pair of plates to grip a pair of panels between said second pair of plates and said pressing members and expandable plug means disposed in said recesses to force said first plate of each of said pressing frame members into tight engagement with said one of said first pair of plates; said expandable plug means being provided with an aperture and further comprising wedge means adapted to be driven into said aperture to expand said plug means.

3,964,226
ADJUSTABLE WALL-TIE REINFORCING SYSTEM
Alfred A. Hala, Islip, and Bernard J. Schwalberg, Brooklyn, both of N.Y., assignors to Hohmann & Barnard, Inc., Hauppauge, N.Y.
Filed Sept. 27, 1974, Ser. No. 510,054
Int. Cl.² E04B *2/30*
U.S. Cl. 52—562 **20 Claims**

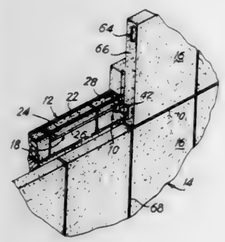
1. A wall-tie reinforcing apparatus for use in the construction of wall structures having spaced inner and outer wythes and comprising
a wall-tie reinforcing assembly, and
a wall-tie reinforcing element,
means securing said wall-tie reinforcing assembly with respect to one of said inner and outer wythes,
means securing said wall-tie reinforcing element with respect to the other of said inner and outer wythes,
said wall-tie reinforcing assembly having a substantially planar construction and comprising
a pair of spaced parallel reinforcing members positionally secured within said one of said wythes, and
a plurality of U-shaped members extending laterally of said pair of parallel reinforcing members,

each of said U-shaped members having a pair of arms and a base,
each of said arms being secured to each of said reinforcing members,
the base of each of said laterally extending U-shaped members comprising the outer ends thereof and being disposed in the space between said wythes,
said wall-tie reinforcing element comprising
at least one longitudinal reinforcing rod positionally secured within said other of said wythes, and
a plurality of rods extending laterally from said longitudinal reinforcing rod,
means securing the inner end of each of said lateral rods to said longitudinal reinforcing rod,



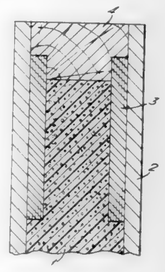
the outer end of each of said lateral rods being disposed in the space between said wythes,
said base of each of said laterally extending U-shaped members comprising locking means,
said outer end of each of said lateral rods having engaging means thereat,
said engaging means being vertically adjustable with respect to said base locking means and disposed in locking engagement therewith, and
said locking engagement of the outer ends of respective ones of said laterally extending members with respective ones of the outer ends of said lateral rods providing laterally immovable locking engagement of said wall-tie reinforcing element with respect to said wall-tie reinforcing assembly.

3,964,227
ANCHORING APPARATUS FOR FIXEDLY SPACING MULTIPLE WALL CONSTRUCTIONS
Alfred A. Hala, Islip, N.Y., assignor to Hohmann & Barnard, Inc., Hauppauge, N.Y.
Filed Sept. 27, 1974, Ser. No. 510,053
Int. Cl.² E04B *2/30*
U.S. Cl. 52—568 **94 Claims**



1. An anchoring apparatus for use in the construction of wall structures having an inner wythe and an outer wythe in spaced apart relationship and comprising
a longitudinal member,
a multiplicity of lateral members each having one of the ends thereof secured to one of said inner and outer wythes and each having the other end thereof fixedly secured to said longitudinal member fixedly securing said longitudinal member in the space between said wythes,
a wall-tie element having connecting means on the outer end thereof providing fixed adjustable securement of said wall-tie element to said longitudinal member, and
said wall-tie element having connecting means on the inner end thereof providing securement of said inner end to the other of said inner and outer wythes.

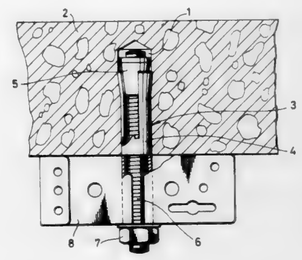
3,964,228
WALL ELEMENT
Walter Nilsen, Lier, Norway, assignor to Den Norske Gipsplatefabrikk A/S, Drammen, Norway
Filed Nov. 22, 1971, Ser. No. 200,908
Claims priority, application Norway, Nov. 24, 1970, 4513/70
Int. Cl.² E04B *2/28*
U.S. Cl. 52—620 **4 Claims**



1. A wall element having an upper edge and comprising first and second parallel spaced apart stiff outer layers extending to said upper edge, a U-shaped wall element load absorbing means extending between said layers at said upper edge and being affixed thereto, said layers and load absorbing means defining a cavity, and a porous material filling said cavity, said load absorbing means comprising a wooden beam having sides affixed to said layers and a top edge extending to the upper edge of said wall element, and a separate plywood strip extending from the bottom of said beam on each side thereof and affixed to the respective adjacent layer, the bottoms of the side of said beam being notched to receive said plywood strips, whereby said load absorbing means forms the upper contact surface of said wall element.

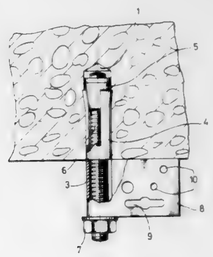
3,964,229
EXPANSION ANCHOR FOR SUSPENDED CEILINGS AND OTHER SUSPENDED ELEMENTS
Artur Fischer, Altheimer Str. 219, D-7241 Tumlingen, Germany
Filed Aug. 7, 1974, Ser. No. 495,523
Claims priority, application Germany, Aug. 30, 1973, 2343713
Int. Cl.² E04C *5/12, 5/16*; **B42F** *13/00*
U.S. Cl. 52—698 **6 Claims**

1. An expansion anchor device comprising, in combination, an expansion sleeve having a leading end and a trailing end; an expander member located at said leading end; a threaded member having an axis and coaxially extending through said expansion sleeve and connected with said expander member for drawing the latter into said leading end to expand said expansion sleeve, said threaded member having a portion projecting outwardly from said trailing end; and a sheet-material bracket having a circumferentially incomplete arcuate first portion bounding an axial slot and a passage for coaxially freely receiving said projecting portion of said threaded member, two second portions each located in a general plane which is substantially parallel to said axis, and two transition



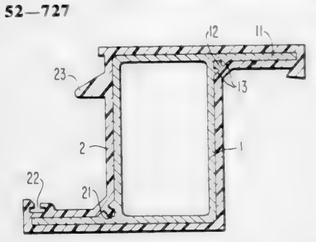
portions extending axially parallel to one another at said slot and each rigidly connecting one of said second portions to said first portion of said bracket, said second portions being formed with apertures for connecting thereto a component to be attached to a support in which the device is anchored.

3,964,230
EXPANSION ANCHOR DEVICE
Artur Fischer, Altheimer Strasse 219, D-7241 Tumlingen, Germany
Filed July 29, 1974, Ser. No. 492,733
Claims priority, application Germany, July 30, 1973, 7327898[U]
Int. Cl.² E04C *5/12, 5/16*; **B42F** *13/00*
U.S. Cl. 52—698 **4 Claims**



1. An expansion anchor device comprising, in combination, an expansion sleeve having a leading end and a trailing end; an expander member located at said leading end of said expansion sleeve; a threaded member having an axis and coaxially extending through said expansion sleeve and connected with said expander member for drawing the latter into said leading end of said expansion sleeve to expand the same, said threaded member having a portion projecting outwardly from said trailing end of said expansion sleeve; a nut threaded onto said projecting portion; and a sheet metal bracket having a bent first portion circumferentially bounding a passage for coaxially receiving said projecting portion of said threaded member intermediate said nut and said trailing end of said expansion sleeve, and at least one second portion rigidly connected to said first portion and located in a general plane which is substantially parallel to said axis, said second portion being formed with apertures for connecting thereto a component to be attached to a support in which said device is anchored.

3,964,231
PLASTIC-ENCASED METALLIC HOLLOW PROFILE MEMBER
Wolfgang Budich; Robert Krah, both of Siegiar, and Hans Theissen, Eschmar, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany
Filed Nov. 29, 1973, Ser. No. 420,053
Claims priority, application Germany, Nov. 29, 1972, 2258420
Int. Cl.² E04C *3/30*
U.S. Cl. 52—727 **26 Claims**



1. A frame element, especially for door and window constructions, comprising:
a metallic profile member of hollow cross-sectional configuration formed by a plurality of interconnected side walls which surround and enclose a hollow space, said profile member including an outer flange formed as an extension of a first of said side walls such that a corner is formed on the outside of said profile member at the junction of said outer flange and a second of said side walls,
a plastic sheath extrueded onto enclosing said profile member, and,
attaching means for fixedly attaching said sheath to said profile member at said corner, said attaching means are constructed such that the sheath, as seen in cross section of the element, contacts the exterior surface of said profile member flush at all points thereof.

3,964,232
METHOD OF PACKAGING FIBROUS MAT STRUCTURE
David John Bender, Toledo, and Frank Steve Kubovich, Rossford, both of Ohio, assignors to Johns-Manville Corporation, Denver, Colo.
Continuation of Ser. No. 403,682, Oct. 4, 1973, abandoned, which is a continuation of Ser. No. 203,410, Nov. 30, 1971, abandoned. This application May 19, 1975, Ser. No. 578,589
Int. Cl.² B65B *63/04, 63/02*
U.S. Cl. 53—21 FW **1 Claim**



1. In a method for packaging a continuous length of bonded glass fiber insulating mat product having a facing of sheet material bonded to one major surface of the mat wherein the mat is advanced toward a winding operation having a winding axis normal to the direction of advance, the mat is perforated normal to a major face of the mat and in a line transverse of its direction of advance whereby subsequent separation of the mat into discrete lengths at the point of use is facilitated, and the mat is turned solely upon itself in the winding operation to form a multi-layered roll, the improvement comprising:
a. guiding and turning the mat solely upon itself to form a roll with an open center core which is defined by the mat

and permits the roll to assume an elliptical shape after it has been formed,

b. driving the mat being wound on the roll and forming a peripheral layer of the roll at a speed substantially the same as the speed at which mat is fed into the winding operation to loosely wind the mat on the roll,

c. confining the roll being formed to a volume which increases in diameter at a rate substantially equal to the rate that the diameter of the roll being formed increases to loosely wind the mat on the roll, producing a compression of the mat of less than 2:1,

d. compressing the open-centered roll of mat formed in steps (a), (b), and (c) in a direction normal to its wound axis, to compress the mat under a compression ratio of at least 6:1 without separating the mat into discrete lengths, and

e. applying constraining means to the compressed roll.

3,964,233

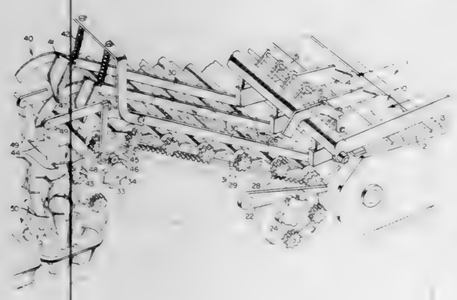
EGG PACKING METHOD AND APPARATUS

Leslie P. Thomas, Plymouth, Mich., assignor to Diamond International Corporation, New York, N.Y.

Filed May 15, 1974, Ser. No. 470,314

Int. Cl.² B65B *21/06, 35/54*

U.S. Cl. 53—26 **39 Claims**



1. A method of packing articles such as eggs in the pockets of a carton or tray comprising the steps of

separating the eggs into rows,

feeding the eggs in each row one at a time to an inclined conveyor,

moving the eggs in the direction of their pointed ends while also moving them up the inclined conveyor,

turning the eggs to a point down position near the top of the inclined conveyor, by contacting each egg and turning it toward the point down position on the inclined conveyor upper end,

and supportingly carrying the eggs after they assume and while maintained in the point down position to the pockets therebelow.

3,964,234

CAPPING MACHINE

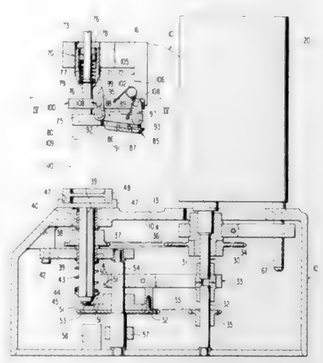
Richard F. Hurst, Malvern, Pa., assignor to Sidney Rosen, Baltimore, Md.

Filed Jan. 7, 1975, Ser. No. 539,044

Int. Cl.² B67B *3/18*; **B65B** *7/28, 57/00*

U.S. Cl. 53—77 **38 Claims**

1. A capping machine for crimping the caps of containers, which is operable to carry out automatically one complete cycle of operation, once initiated by an operator, comprising housing means, container-receiving platform means, drive means including first means for rotating said platform means and second means for controllably raising and lowering said platform means in timed relation to the operating cycle, and a crimping mechanism above the platform means and operable to engage the cap of a container on the platform means when being raised and rotated by said drive means, including crimping roller means and mechanical means for positively controlling the movement of said crimping roller means



toward and away from the edge of the cap in dependence on the raising and lowering movements of the container and cap on the platform means.

3,964,235

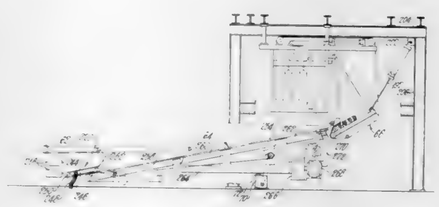
ROLL-UP COMPRESSIVE PACKAGING APPARATUS

Ward B. Miller, Waterville, and Daniel A. McCartan, Heath, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 412,236, Nov. 2, 1973, Pat. No. 3,911,641. This application Aug. 26, 1974, Ser. No. 500,795

Int. Cl.² B65B *63/04, 27/12*

U.S. Cl. 53—118 **16 Claims**



1. Apparatus for rolling and compressing a flexible, compressible strip, said apparatus comprising an endless belt, a portion of said belt defining a loop, means for feeding an end of the strip into the loop, means for moving said belt, means for placing said belt under tension to place the strip in compression as it is rolled in the loop, means for discharging the rolled strip from said loop by opening said loop after the strip is rolled up, tape-dispensing means for feeding tape toward said loop, a pivotable suction conveyor between said tape-dispensing means and said loop, said tape-dispensing means comprising two groups of tape dispensers on two different levels, and said pivotable suction conveyor being pivotably movable between the groups of dispensers.

3,964,236

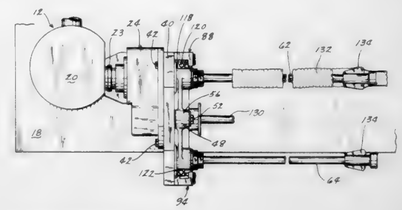
STUFFING TUBE APPARATUS FOR AN ENCASING MACHINE

David W. Smith, West Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Apr. 7, 1975, Ser. No. 566,035

Int. Cl.² B65B *3/10*

U.S. Cl. 53—122 **11 Claims**



8. In combination,

an encasing machine comprising, a metering product pump in communication with a source of plastic meat product and having an outlet conduit extending thereform to continuously pump a plastic meat product therethrough,

a support means on said encasing machine,

a stuffing tube assembly mounted on said support means comprising a support member selectively movably mounted on said support means and having at least a pair of elongated stuffing tubes mounted thereon in a spaced apart relationship, each of said stuffing tubes having inlet and discharge ends,

and means for selectively moving said support member so that the inlet end of one of said stuffing tubes is placed in operative communication with said outlet conduit and so that the other stuffing tube is moved to a loading position to enable a folded casing to be mounted thereon,

and means for rotating said one stuffing tube about its longitudinal axis when said one stuffing tube is in operative communication with said outlet conduit.

3,964,237

APPARATUS FOR THE PRODUCTION OF A PRODUCT FILLED CONTAINER

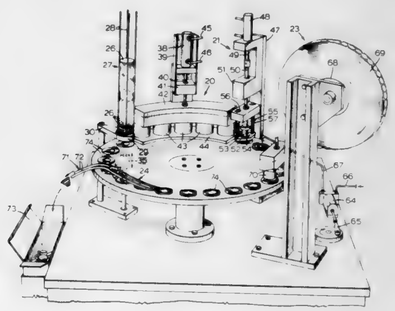
Poul Egon Johansen, West Hill, Canada, assignor to Portion Packaging Limited, Rexdale, Canada

Continuation-in-part of Ser. No. 357,785, May 7, 1973, abandoned. This application Jan. 24, 1975, Ser. No. 543,977

Claims priority, application United Kingdom, May 10, 1972, 21976/72

Int. Cl.² B65B *3/02, 47/02, 47/10*

U.S. Cl. 53—141 **15 Claims**



1. Apparatus for producing an individual rimmed plastic container preparatory to the filling and closing thereof from a relatively stiff resilient blank of predetermined shape formed entirely of heat formable material which is essentially rigid at normal ambient temperatures comprising means for supporting a supply of blanks, a rigid blank holder mounted for translating movement and means for translating same, said holder having an opening therethrough corresponding to the shape of but slightly smaller than said blank and presenting a support ledge therearound, means for delivering a blank from a supply supported on said support means and seating the outermost peripheral portion of said blank on said support ledge at a first position of said holder, said holder having means for engaging said outermost peripheral blank portion to preclude movement thereof relative to said holder, means at a second position of said holder displaced from said first position for uniformly heating the blank portion bridging said holder opening to a formable temperature while leaving said seated outermost peripheral blank portion rigid, means at a third position of said holder displaced from said second position for clamping a heated peripheral portion of the blank immediately adjacent to said seated rigid outermost peripheral portion against movement out of the plane of said outermost rigid peripheral portion and further means at said third holder position for forming a cavity from the heated blank portion within said clamped peripheral portion while same remains clamped.

3,964,238

DEVICE FOR MANUFACTURING, FILLING AND SEALING CONTAINERS

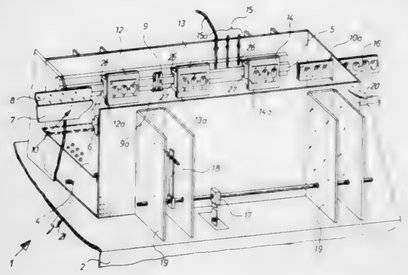
Walter Bippus; Hermann Gernlein, both of Ettlingen, and Manfred Horst Simon, Ettlingen-Spessart, Germany, assignors to Industriewerke Karlsruhe-Augsburg Aktiengesellschaft, Germany

Filed Nov. 8, 1974, Ser. No. 522,316

Claims priority, application Germany, Nov. 9, 1973, 2356055

Int. Cl.² B65B *3/02, 31/00*

U.S. Cl. 53—167 **11 Claims**



1. In a device for manufacturing, filling and sealing containers serving, particularly, to receive aseptic pharmaceuticals having a liquid to pasty consistency, from two constantly parallel facing supplied webs, of deformable and sealable foil material, which has already been subjected to a preliminary aseptic treatment, in a plurality of preferably linearly arranged container-working stations and a container-filling station, the improvement comprising, in combination, respective pairs of mutually displaceable, mirror-reversed mating tool parts at each container-working station respectively operable on both webs of the foil material, in sequence, to form therefrom a predetermined number of containers simultaneously in advance of said filling station, to simultaneously seal the side and bottom edges of said predetermined number of containers in advance of said filling station, and to simultaneously sealingly close said predetermined number of containers after simultaneous filling thereof at said filling station; means maintaining germ-free conditions in said device; said tool parts cooperating with said means before and during the manufacturing process; and a pair of elongated guide members extending in

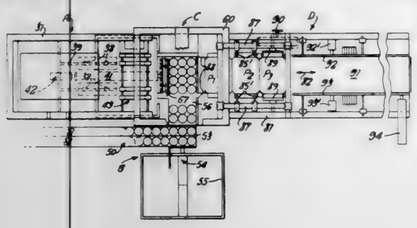
laterally spaced parallel relation to each other longitudinally of the direction of linear arrangement of said stations; said pairs of tool parts being mounted on said guide members for adjustment therealong; said filling station including a number of container-filling needles, equal to said predetermined number of containers, mounted on said device; both said webs being stepped longitudinally of all said stations for forming, filling and sealing said containers; the step distance between said stations being simultaneously a function of two parameters, one of which is the desired width of an individual container and the other of which is the number of containers to be formed simultaneously.

3,964,239

PACKAGING MACHINE

Peter Ellice Elford, 3 Wincroft Road, Caversham, Reading, Berkshire, England

Filed Jan. 23, 1975, Ser. No. 543,529
Int. Cl.² B65B *5/02, 5/06*
U.S. Cl. 53—196 **13 Claims**



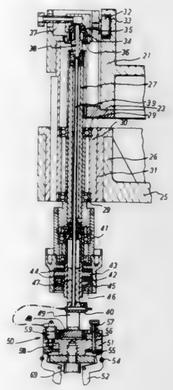
1. A packaging machine for forming packages, each comprising an array of articles in a carton, from supplies of the articles and of carton blanks, the machine comprising a first carton blank positioning arrangement adjustable to suit carton blanks of different dimensions, such arrangement serving to receive and locate a blank and, upon such blank, one or more articles or groups of articles sufficient to form the desired array, such positioning arrangement including a downwardly movable platform for supporting the blank as the array of articles is formed thereon and a forming-die-less pair of adjustable opposed members arranged, upon downward movement of the loaded platform, to erect an opposed pair of wall portions of the blank around the array and to hold such wall portions in the erected position, at least one of the opposed members being movable to allow the blank with the array thereon to move from the platform to a second positioning arrangement for erection of another opposed pair of wall portions of the blank.

3,964,240

BOTTLE CLOSING APPARATUS

Ernest L. Evrard, Charenton, France, assignor to Societe Anonyme Machines Automatiques Cilliotta, Morangis, France

Filed Jan. 13, 1975, Ser. No. 540,493
Claims priority, application France, Feb. 27, 1972, 72.06616
Int. Cl.² B65B *7/28;* **B67B** *1/06*
U.S. Cl. 53—306 **15 Claims**



1. Apparatus for stoppering and providing sealing closures for containers and the like which have threaded neck openings and which are adapted to receive for their stoppering corresponding pre-threaded stopper closure elements each of which make screwed engagement with the neck opening to effect the sealing of the container, which apparatus comprises in cooperative combination:

mechanical conveyor means for feeding into the apparatus the containers to be stoppered;

a generally vertically disposed rotatable drum adapted to be turned when driven and further adapted to hold and carry containers with it when said containers are fed into the apparatus to the drum;

means associated in engagement with said drum for driving same;

a frame fixed with the drum having at least one stoppering head element regularly distributed on its periphery;

each of said stoppering heads being in association with a corresponding stopper feed arm that is adapted to receive individual stoppers fed to it;

means for feeding stoppers to each of said stopper feed arms;

each of said stoppering heads having a drive cylinder that is in integral association with said drum and further adapted to move both parallel with and rotatable about the axle of said drum;

an intermediate limiting means in connection with each of said stoppering heads for effecting its integral association with said drum driving means;

each of said stoppering heads having a pivoting jaws support having jaws thereon adapted to grasp individual stoppers fed thereto from said stopper feed arms;

each of said pivoting jaws supports being provided thereon with a non-flexible concentric ring and at least one associated fluid powdered cylinder jack, said ring being so located as to be subject to the actions of said associated fluid-powered cylinder jack and an associated coil spring which automatically moves said jaws into their open position;

each of said pivoting jaws supports being also provided with means to move same by said drive cylinder which means consists of an associated, engaged grooved piece with which each support is given both axial and radial movement; means for closing each of said jaws supports to grasp each stopper fed to it and hold it secure for sealing screwing thereof with the threaded neck opening of each container to be sealed while being carried by said drum upon rotation of said drum;

means for releasing each of said jaws supports at the appropriate point of rotation of the drum when each stopper has been screwed to the container neck opening, whereupon

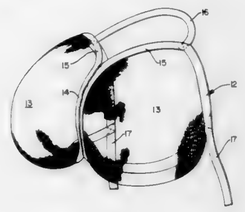
said drum then discharges each of said stoppered and sealed containers to mechanical conveyor discharge means for removing same from the apparatus.

3,964,241

EYE PROTECTIVE DEVICE

Elaine Allen, and Eileen Schrier, both of 9223 Overland Road, Boise, Idaho 83705

Filed July 29, 1974, Ser. No. 492,746
Int. Cl.² B68C *5/00*
U.S. Cl. 54—80 **3 Claims**



1. A device for the protection of the eyes of a large animal such as a horse or cattle without material restraint or obstruction of vision comprising a flexible frame having a central relatively narrow portion adapted to overlie the head of the animal and extend along the surface of the front of the head between the eyes substantially midway normal to a line connecting the eyes and loops extending laterally outwardly from said central portion each adapted to engage the head of the animal above, below and laterally outwardly of the eyes, said loops being continuous and said central portion serving as a common side of each loop, upper and lower straps connecting the loops, the upper strap being adapted to pass over the animal's head behind the ears or poll and the lower strap being adapted to pass around the underside of the head below the level of the eyes, at least one of said straps being of the adjustable multipart type, and means providing a vision permitting panel of mesh material on each loop, said panels each being fixed at their perimeters to its loop and each of said panels being of considerably larger area than the space enclosed by its loop and each panel being formed of a material that is flexible but sufficiently stiff to provide an outwardly bulged retained shape whereby when the device is installed on an animal the frame will be drawn into snug conformance with the animal's head by said straps so that insects and the like cannot penetrate to the head regions at and around the eyes while the panels bulge in substantially self supporting fashion outwardly from the loops so as not to interfere with normal eye movements, each side of said frame surrounding an eye of the animal comprising a single length of fabric formed into said loop with one end extending beyond the loop to provide part of said adjustable strap, and adjacent sides of said loops being secured together to provide said central portion, with said loops and central portion forming individual insect-sealed regions around the respective eyes.

3,964,242

COTTON HARVESTING MACHINE

G. W. (Charles) Stone, Dyess, Ark., assignor to Agriculture Research Incorporated, Williamsburg, Va.

Filed May 28, 1975, Ser. No. 581,696
Int. Cl.³ A01D *46/10*
U.S. Cl. 56—30 **15 Claims**

1. An intake manifold for an apparatus for gleaning cotton comprising:

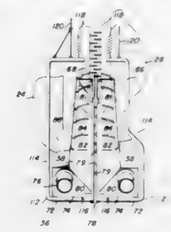
a floor member,

a frontward end wall and a rearward end wall fixed to opposite ends of the floor member,

an outside wall fixed to an outside edge of the floor member and to the frontward and rearward end walls,

an inside wall having a height significantly less than the outside wall, the inside wall fixed to the floor member parallel to, but some distance from, a running edge of the floor member,

a downfall sheet fixed to a top edge of the outside wall, the frontward and rearward end walls, and the inside wall so as to be spaced from and inclined with respect to the floor member,



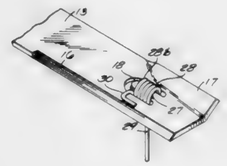
the inside wall further comprising a plurality of apertures, each aperture opening into a forwardly- and upwardly-inclined duct.

3,964,243

ROTARY MOWER BLADE WITH DETACHABLE TINES

Earl Albert Knipe, Warsaw, Ill., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Mar. 10, 1975, Ser. No. 556,576
Int. Cl.² A01D *43/02*
U.S. Cl. 56—17.5 **10 Claims**



1. The combination for use with a powered rotary lawn mower comprising:

1. a horizontal flat bar having sharpened end sections and central means for its mounting on the lower end of the vertical drive shaft of the mower, each said end section having a U-shaped cut-out area defining a radially inward-extending tab surrounded by the bar, at least a substantial portion of said tabs lying in the planes of the adjacent portions of said bar, and
2. two tine devices, each device being formed of spring wire and consisting of a series of coils, a tang extending laterally from the first coil and a tine extending downwardly from the last coil, said coils of each device being removably mounted on one of said tabs with the tine projecting downwardly therefrom, each said tine being disposed to be pivotally displaced upwardly and rearwardly respecting rotation of the blade, each said tang engaging the bar and preventing rotation of the device on the tab in one direction, whereby the several coils function as a spring to return the tine to its downward position following such displacement.

3,964,244

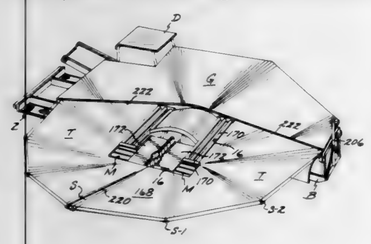
TREE SHAKER AND FRUIT AND NUT HARVESTER

Rolando M. Vallicella, Rte. 2, Box 562, Bakersfield, Calif. 93307

Filed Dec. 30, 1974, Ser. No. 537,251
Int. Cl.² A01D *46/24*
U.S. Cl. 56—329 **7 Claims**

1. A device that may be moved longitudinally along a space between trees that have the trunks thereof arranged in rows to

sequentially subject each of said trees including those with low hanging branches on one side of said space to a shaking operation to displace fruit or nuts therefrom, to harvest said fruit or nuts, and to deliver said fruit or nuts to a container that travels with said device, said device being of the type that includes an elongate, power driven, wheel supported, manually guidable chassis having first and second ends; an elongate dimensionally stable first fruit and nut deflector longitudinally supported on said chassis and extending under a portion of the branches of a tree when said chassis is in a harvesting position relative thereto; a first longitudinal conveyor belt assembly supported on said chassis under said deflector; a transversely movable carriage disposed between said deflector and said first conveyor belt assembly, said carriage capable of occupying either first or second positions, said carriage when in said first position extending across said first conveyor belt assembly and said carriage when in said second position extending from said first conveyor belt assembly towards said tree that is to be harvested; two longitudinally spaced, transverse elonge rigid members having first and second ends, said first ends pivotally connected to said carriage; two power operated tree shakers supported from said second ends of said members; two longitudinally spaced transverse frames supported from said carriage with said two members situated therebetween, with the longitudinal spacing between said frames being such that said members and tree shakers may be disposed to angle away from one another when said shakers are not in a tree trunk engaging position, and said frames having outwardly disposed longitudinally extending first ends, two second conveyor belt assemblies supported in said frames; first power means for moving said carriage between said first and second position; second power means for pivoting said elongate members towards one another to dispose said tree shakers in gripping pressure contact with the trunk of a tree; third power means for driving said first and second conveyor belt assemblies; two expandable sheet deflectors that may be extended under a tree to cooperate with said first deflector to receive nuts and fruit shaken from a tree, said first deflector and sheet deflectors when expanded defining fruit and nut receiving surfaces that slope towards said second conveyor belt assemblies whereby fruit or nuts falling on said surfaces roll by gravity thereon to said second conveyor belt assemblies to be transported to said first conveyor belt assembly towards said first end of said chassis to be delivered to said container, the improvement for so supporting said two expandable sheet deflectors that they can be extended under trees with low hanging branches to receive fruit and nuts therefrom when said shakers are actuated, said improvement comprising:



a. two transverse, longitudinally spaced rails supported from said chassis above said first conveyor belt assembly, said rails having upwardly inclined first portions above said first conveyor belt assembly and downwardly inclined second portions;

b. roller means on said carriage that movably engage said rails and on at least a portion of the journey from said first to said second position are in engagement with both said first and second portions to cause said shakers as they initially move transversely relative to said chassis to move downwardly at a substantial angle to pass under low overhanging branches of a tree and as said journey continues for said shakers to move downwardly but at a less angle as said roller means rest entirely on said second portions;

c. two slides movably supported from said first ends of said frames;

d. fourth power means for concurrently moving said slides towards and away from one another;

e. two elongate first supports of angular shape pivotally mounted on said slides, said first supports having free edges of said expandable sheet deflectors secured thereto;

f. linkage means operatively associated with said first supports and said first ends of said frames that automatically pivot said first supports from first positions substantially parallel to said first ends of said frames to second positions where said first supports are adjacently disposed when said slides are moved from first positions to second positions by said fourth power means, with said first supports due to the angular shape thereof moving said expandable sheet deflectors upwardly relative to branches of a tree when they move about the trunk of said tree; and

g. a plurality of second supports pivotally supported from said first ends of said frames that are connected to said expandable sheet deflectors and swing outwardly and inwardly relative to said first ends of said frames in conformity with the pivoting movement of said first supports, said second supports serving to assist said first supports in maintaining said expandable sheet deflectors in a fruit and nut receiving position.

3,964,245

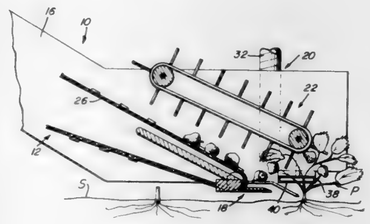
AIR PICKUP SYSTEM FOR STRAWBERRY PICKERS

Charles L. Hecht, Scio, Oreg., assignor to S.K.H. & S., Inc., Scio, Oreg.

Filed Sept. 17, 1974, Ser. No. 506,898

Int. Cl.² A01D *46/00*

U.S. Cl. 56—331 **10 Claims**



8. In combination with a strawberry harvesting machine having a pickup head with severing means thereon at a predetermined level and adjacent the surface of the ground, a lifting arrangement at said predetermined level for the pickup head of the strawberry harvesting machine, comprising two pneumatic ducts arranged for directing a gas under pressure at right angles to a row of strawberries and toward each other and thereby bringing the strawberries into the desired position for cutting of the stems by the severing means, the ducts being arrangeable on the pickup head for upward and downward adjustment.

3,964,246

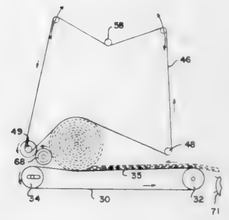
ROTARY BALER

Arnold F. Kopaska, Guthrie Center, Iowa, assignor to Koehring Company, Milwaukee, Wis.

Filed Dec. 17, 1974, Ser. No. 533,647

Int. Cl.² A01D *39/00*

U.S. Cl. 56—341 **25 Claims**



12. A rotary baler for forming a round bale of windrowed material comprising:

a. a chassis movable along the ground and having spaced apart first and second side walls;

b. a hitch attached to the front of said chassis adapted for attaching the baler to a vehicle;

c. a first roller mounted on said chassis adjacent to the front and bottom thereof for rotation about a substantially horizontal transverse axis;

d. a second roller mounted on said chassis adjacent to the rear and bottom thereof for rotation about a substantially horizontal transverse axis;

e. a first conveyor belt extending transversely substantially between said first and second side walls and drivingly mounted on said first and second rollers forming a first upper run extending between and on the top of said first and second rollers and a first lower run between and below said first and second rollers, said runs being supported only by said rollers;

f. means for driving said first conveyor belt such that said first upper run moves in a direction from the front toward the rear of the baler;

g. roller mounting means for mounting one of said first and second rollers to permit translational movement thereof toward and away from the front of said baler in order to permit downward deflection of said first upper run by the bale being formed in said baler, the extent of deflection being proportioned to the weight of the bale;

h. a third roller mounted on said chassis adjacent to the front thereof and spaced upwardly from said first roller, said third roller being mounted for rotation about a substantially horizontal, transverse axis;

i. a fourth roller mounted on said chassis adjacent to the rear thereof and spaced upwardly from said second roller, said fourth roller being mounted for rotation about a substantially horizontal, transverse axis, the axes of said third and fourth rollers being fixed during formation of the bale;

j. a second conveyor belt extending transversely substantially between said first and second side walls and drivingly mounted on said third and fourth roller forming a second upper run extending between and above said third and fourth rollers and a second lower run between the lower surfaces of said third and fourth rollers, said second lower run being spaced apart from and, prior to formation of said bale, substantially parallel to said first upper run;

k. means for driving said second conveyor belt such that said second lower run moves in a direction from the rear toward the front of the baler;

l. means for extending the length of said second lower run to enable said second lower run to be deflected vertically upwardly;

m. means mounted on said chassis for starting the formation of a round bale;

n. pick-up means at the front of said chassis for picking up the windrowed material from the ground and delivering it to the first upper run.

3,964,247

FALSE TWIST SPINDLE

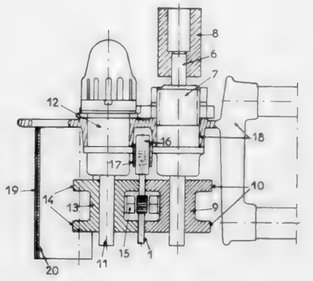
Yves Derail, Ambierle, France, assignor to Chavanoz S.A., Chavanoz, France

Filed Oct. 10, 1974, Ser. No. 513,625

Claims priority, application France, Oct. 25, 1973, 73.38408

Int. Cl.² D02G *1/06*

U.S. Cl. 57—77.45 **4 Claims**



1. A false twist spindle assembly comprising a twist tube having twist locking means for engaging the yarn to be twisted, at least one rotatable drive roller, magnetic means for holding said tube in contact with the surface of said roller for rotation thereby, and sound reducing means comprising an insulating plate partly surrounding said spindle assembly and an insulating cylinder positioned in closely spaced, coaxial surrounding relation about the portion of the twist tube containing said twist locking means.

3,964,248

FALSE TWISTING DEVICES

Friedrich Schuster, Hammelburg, Germany, assignor to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

Filed June 12, 1975, Ser. No. 586,377

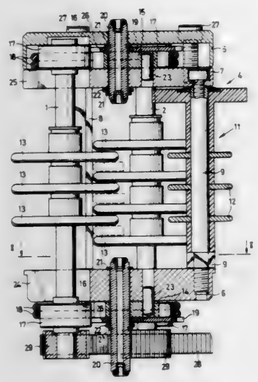
Claims priority, application Germany, June 12, 1974, 2428513

Int. Cl.² D02G *1/04, 1/00*

U.S. Cl. 57—77.4 **12 Claims**

1. An apparatus for false twisting threads by crimping whcih comprises three spindles each rotatably mounted at both ends in a common frame and each provided with at least one rotationally symmetrical friction element, the spindles lying at the corners, in plan view, of an equilateral triangle, means for

passing a thread which is to be provided with a false twist between the friction elements in a zig-zag path, two mutually



aligned removable spacers, one at each end of the frame, and means for resiliently urging the spindles against the spacers.

3,964,249

YARN WITH RANDOM DENIER FLUCTUATIONS

Helmut Werner, Elsenfeld, and Hans Stapp, Momlingen, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 630,819, April 14, 1967, Pat. No. 3,478,143. This application Nov. 6, 1969, Ser. No. 369,151

Claims priority, application Germany, Apr. 27, 1966, V 30940; Apr. 27, 1966, V 18921

Int. Cl.² D02G *3/34*; **D01D** *5/20*

U.S. Cl. 57—140 J **6 Claims**

1. A yarn having random denier fluctuations consisting essentially of polyester filaments having an elongation at breaking point of 30 to 80 percent, a boiling shrinkage capacity of 20 to 50 percent and about 15 to 35 nodules per meter at intervals of about 0.5 to 8 centimeters.

3,964,250

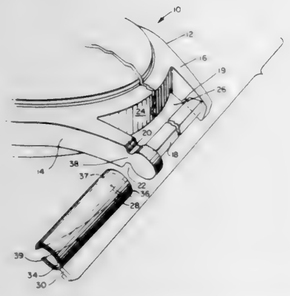
WRISTWATCH CASE

Isaac F. Manchester, Jr., South Dartmouth, Mass., assignor to FAS/CON Systems, Inc., South Dartmouth, Mass.

Filed Mar. 24, 1975, Ser. No. 561,268

Int. Cl.² G04B *37/00*

U.S. Cl. 58—88 R **13 Claims**



1. A wristwatch case and a band for detachably maintaining the watch case including the operating parts of the watch on the wrist of the wearer, said wristwatch case comprising a body portion for the operating parts of the watch and pairs of spaced lugs integral with and extending laterally from the watch case body portion, a bar extending between and integral with the lugs and spaced outwardly from the body portion, one of the lugs having a portion of reduced thickness adjacent the bar, and a watch band having means secured at each end thereof for detachably securing the band upon the bars extended between each pair of lugs, said means comprising a split tube, said tube having a generally diagonally extended slot, the tube adapted to be slipped over the reduced diameter portion of one lug and onto the bar with the lug passing through the slot such that the tube and band are urged outwardly and upwardly as the tube moves onto the bar and between the lugs to thereby operatively secure the band to the watch case.

3,964,251

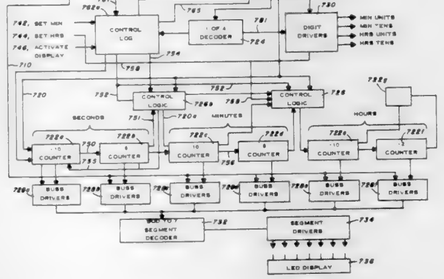
WATCH SYSTEM HAVING ASYNCHRONOUS COUNTERS IMPLEMENTED BY D AND INVERTED D FLIP-FLOPS

Clark R. Williams, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 19, 1974, Ser. No. 443,894

Int. Cl.² G04C *3/00*; **G04B** *19/30*

U.S. Cl. 58—23 R **13 Claims**



1. A pair of serially connected D type flip-flops, each flip-flop having D and clock inputs, and first and second outputs, with the first flip-flop further having a set terminal which sets its first output at a high level upon actuation, the second flip-flop having a reset terminal which sets its first output to a low level upon actuation, said first D flip-flop having its second output coupled into the clock terminal of said second flip-flop, and said set input utilized at a reset input for generating a logic one at said second output of said first flip-flop.

3,964,252

ADJUSTABLE HINGE BAND

Kok-Kit Ho, Kowloon, Hong Kong, assignor to Timex Corporation, Waterbury, Conn.

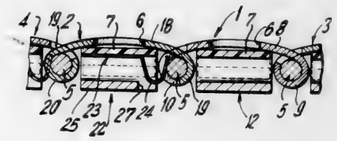
Filed Sept. 4, 1975, Ser. No. 610,467

Int. Cl.² F16G *13/18*

U.S. Cl. 59—80 **7 Claims**

1. In a hinge band for a wristwatch or the like, of the type comprising a plurality of links connected by pins, said links having a top plate with opposite sides folded over to provide nesting coaxial collars for holding said pins and also with opposite ends folded to provide a box structure, said hinge band having a plurality of improved removable links, wherein the improvement comprises:

said collars on one side of each of said removable links being only partially closed to permit disengagement of the



pin when the link is pivoted, and spring means biasing said pins into said partial collars.

3,964,253

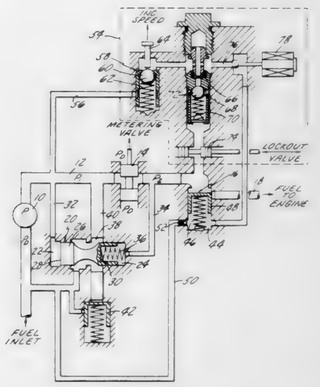
FUEL ENRICHMENT AND HOT START CONTROL APPARATUS IN A FUEL CONTROL

Stanley Raymond Paduch, Somers, and Kenneth Peter Hansen, Enfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed July 3, 1975, Ser. No. 593,087

Int. Cl.² F02C *9/08*

U.S. Cl. 60—39.14 **6 Claims**



1. In a fuel control for a turbine type power plant having a combustion section, a pump for pressurizing fuel, main passage means connecting the discharge end of said pump to said combustion section, a throttle valve located in said passage means for metering fuel flow therein, shutoff valve movable between an open and a closed position in said main passage means downstream from said throttle valve, the improvement which comprises a fuel enrichment and hot start control system comprising:

first passage means in parallel relation with said main passage means communicating the upstream side of said throttle valve with the downstream side thereof for flowing additional fuel therethrough;

valve means in said first passage means responsive to turbine speed for permitting flow of said additional fuel when turbine speed is below idle;

an orifice member downstream of said speed responsive valve means through which the flow of said additional fuel is caused by a pressure drop substantially equal to the pressure drop across said throttle valve;

a manually operated valve in said first passage means for controlling said additional flow; and

means responsive to an engine parameter for shunting said additional flow around said orifice member to said shutoff valve to activate said shutoff valve.

3,964,254

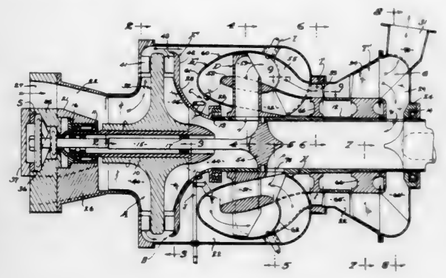
LOW VELOCITY GAS TURBINE WITH EXHAUST GAS RECYCLING

Ward A. St. John, 3684 San Vicente Court, Newbury Park, Calif. 91320

Filed May 12, 1975, Ser. No. 576,591

Int. Cl.² F02C *7/08*; **F02G** *3/00*

U.S. Cl. 60—39.52 **20 Claims**



12. A low velocity high torque producing gas turbine including, a compressor having a working fluid inlet and means delivering compressed working fluid, a compressor-diffuser separating the compressed working fluid into external and internal columns thereof, primary fuel injection means charging the internal column with a combustible mixture, a shaft rotatably supporting a distributing means having radially disposed tubular blading with peripheral and axially disposed discharging nozzles, ignition means igniting said combustible mixture in a burner, energy absorbing turbine blading carried on said shaft and receiving the working fluid through nozzels from the burner, there being an exhaust diffuser receiving working fluid from the turbine blading and with means returning a portion thereof within said shaft driven by said turbine blading and driving said compressor, a mixer comingling the returning portion of exhaust with the said external column, and secondary fuel injection means charging the comingled exhaust and external column with a combustible mixture, and said distributing means comingling the said combustible mixture with the said internal working fluid and combustible mixture thereof for subsequent ignition and burning therewith.

3,964,255

METHOD OF INFLATING AN AUTOMOBILE PASSENGER RESTRAINT BAG

Vincent Owen Catanzarite, Las Vegas, Nev., assignor to Specialty Products Development Corporation, Medina, Ohio

Continuation-in-part of Ser. No. 234,312, March 13, 1972, abandoned. This application Oct. 17, 1973, Ser. No. 407,268

Int. Cl.² C06D *5/00*; **C06B** *29/00*, *29/02*; **B60R** *27/00*

U.S. Cl. 60—205 **12 Claims**

1. A method of inflating an automobile passenger restraint bag comprising the step of substantially completely inflating the bag with the gaseous combustion products of combustion reaction of a composition consisting essentially of an oxidizer compound selected from the group consisting of the chlorates and perchlorates of sodium, potassium, lithium, barium, magnesium and calcium; and an oxygen bearing metal organic compound, said oxygen bearing metal organic compound selected such that a stoichiometric reaction between the oxidizer compound and the metal organic compound yields gaseous products selected from the group consisting of carbon dioxide and water vapor and non-gaseous products of at least a binary mixture of metal salts having a melting point substantially below the melting point of any of the resultant metal salts and having a net heat of reaction of less than about 1,000 calories per gram, the production of oxidizer compound being no less than the stoichiometric proportion; and wherein the

metal organic compound is selected from the group consisting of metal formates and metal acid oxalates.

3,964,256

PRODUCTION OF NON-TOXIC GAS BY COMBUSTION OF SOLID PROPELLANT

Bernard E. Plantif; Bernard J. Doin, and Jean S. Beaumont, all of Saint-Medard-en-Jalles, France, assignors to Societe Nationale des Poudres et Explosifs

Filed Oct. 10, 1973, Ser. No. 405,062

Claims priority, application France, Oct. 17, 1972, 72.36739

Int. Cl.² C06D *5/00*

U.S. Cl. 60—219 **11 Claims**

1. A process for the rapid production of a substantial volume of non-toxic gas at a moderate temperature, which comprises the steps of:

a. effecting combustion of a pyrotechnic charge consisting of a composite solid propellant having a high content of inorganic non-nitrogenous oxidant in excess of 80 percent said inorganic oxidant being selected from the group consisting of alkali metal and alkaline earth metal perchlorates and a low content of a carbonaceous, oxygen-containing, binder not exceeding 17 percent, said binder being selected from the group consisting of cellulose triacetate and silicone resins, the remaining ingredients being free of nitrogenous compounds; in a combustion chamber to produce a substantial volume of combustion gases at an elevated temperature,

b. passing the hot combustion gases through a first cooling phase in which the hot combustion gases are diluted with oxygen obtained by the thermal decomposition of an oxygen-containing inorganic compound which has a low thermal stability and liberates, in gaseous form, only oxygen, whereby the combustion gases are cooled to a temperature of from 225° to 700°C, and

c. passing the gaseous mixture from step (b) to a second cooling phase in which the gas mixture from the first cooling phase is cooled by contact with cooling means to the temperature of utilization.

3,964,257

DEVICE FOR BOOSTING AND BLEEDING A GAS TURBINE ENGINE

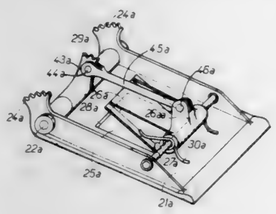
Alain Marie Joseph Lardellier, Melun, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, France

Filed Feb. 7, 1975, Ser. No. 548,147

Claims priority, application France, Feb. 11, 1974, 74.04489

Int. Cl.² F02C *3/06*; **F02K** *3/06*

U.S. Cl. 60—226 R **14 Claims**



1. A device for boosting and bleeding a gas turbine engine such as a gas turbine jet engine used for aircraft propulsion, said engine being of the kind comprising at least two independent rotating stages, namely a low-pressure rotating stage comprising a low-pressure compressor, and a high-pressure rotating stage comprising a high-pressure compressor, said engine comprising a primary duct through which, in operation, there flows a primary airflow passing successively across the low-pressure compressor and the high-pressure compressor, said primary duct being separated by a casing, from an air space located outside the duct, said device for boosting and venting comprising at least one main duct starting in the primary duct section defined between the low-pressure compressor and the high-pressure compressor, and establishing communication, across said casing, between said primary duct section and said air space and, at least one main shutter element, movable in relation to said main duct and capable of occupying an open position, in which said main duct is open, and a closed position in which said main duct is closed, at least one auxiliary duct formed across said main shutter element and likewise placing said primary duct section in communication with said air space, and at least one auxiliary shutter element movable in relation to said auxiliary duct and capable of occupying an open position in which said auxiliary duct is open, and a closed position in which said auxiliary duct is closed which auxiliary shutter element is part of said main shutter element.

3,964,258

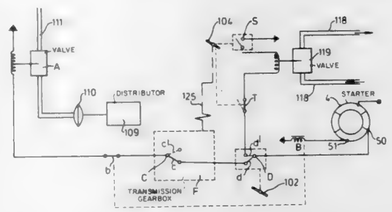
REDUCING UNDESIRABLE COMPONENTS OF AUTOMOTIVE EXHAUST GAS

Gaetano Romano, and Bruno Gorietti, both of Rome, Italy, assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 1, 1973, Ser. No. 384,749

Int. Cl.² F02B *75/10*

U.S. Cl. 60—274 **8 Claims**



1. A method of operating an automotive engine system having a carburetor for producing an air-fuel mixture, choke means for enriching the air-fuel mixture, an intake manifold for passing the air-fuel mixture to the engine, a throttle for regulating the passage of the air-fuel mixture to the engine, a spark ignition system for igniting air-fuel mixture in the engine, an exhaust system comprising an exhaust conduit and an exhaust gas purifying reactor; and means for recycling a part of the exhaust gas from the exhaust conduit to the engine, comprising the steps of: providing communication of the intake manifold pressure to a pressure responsive device which is operative on the timing of the spark ignition system when said choke means is operative and the engine system is in at least one of the following predetermined operating conditions comprising idling, low load, and said reactor having a temperature below its minimum effective working temperature, for exerting a retarding action on the ignition spark timing of said spark ignition system in accordance with the communicated intake manifold pressure by means of said pressure responsive device; interrupting the communication of the intake manifold pressure with said pressure responsive device when the engine is in at least one of the following conditions comprising said choke means being inoperative, the engine system operating mode being at a speed exceeding idling, the engine system operating mode being at a load exceeding low load, and the reactor temperature being at least at its minimum effective working temperature; recirculating said exhaust gas when the engine is in at least one of the following conditions comprising said choke means being inoperative, the engine system operating mode being a driving mode, the engine system operating mode being at a load exceeding low load, and the reactor being at least at its minimum effective working temperature; and interrupting the recirculation of said exhaust gas when the engine is in at least one of the following conditions comprising said choke means being operative, the engine system operating mode being substantially at an extreme load condition, the engine system operating mode being substantially at an extreme speed condition, and the reactor temperature being below its minimum effective working temperature.

3,964,259

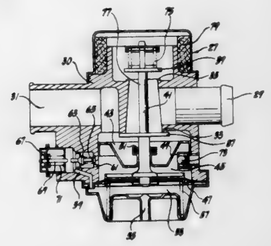
MULTI CONDITION RELIEF VALVE

John B. Fitzgerald, St. Louis, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 6, 1973, Ser. No. 385,967

Int. Cl.² F02B *75/10*

U.S. Cl. 60—290 **2 Claims**



1. For use in a combustion engine exhaust system of the type wherein forced air is injected into an exhaust pipe through a forced-air passage, an automatically-actuated bypass valve for controlling the flow of said forced-air through said forced-air passage, said automatically-actuated bypass valve comprising:

a valve body having inlet, outlet and bypass ports, said inlet port for communicating with a forced-air source, said outlet port for communicating with said exhaust pipe, and said bypass port for communicating with atmosphere;

a main valve seat located between said inlet and outlet ports;

a bypass-valve seat located between said inlet and bypass ports;

a passage between said seats;

a valve stem located in said passage having affixed thereto a main valve head and a bypass valve head, one for each of the respective seats;

a valve-stem actuating means for holding said valve stem in a position wherein said main valve head is unseated and said bypass valve head is seated under conditions of steady state combustion engine speeds but for responding to high engine accelerations, and high engine decelerations by moving said valve stem to a position where said main valve head is seated and said bypass valve head is unseated;

said valve-stem actuating means further comprising a diaphragm assembly secured to an end of said stem, a first biasing means for urging said diaphragm assembly toward a main-valve-head-seated position, said diaphragm assembly being secured to said valve body, with said valve body defining a manifold-vacuum chamber for communicating with an inlet manifold of said combustion engine on one side of said diaphragm assembly and a reference vacuum chamber on the other side of said diaphragm assembly, said manifold-vacuum chamber and said reference vacuum chamber communicating with one another via an equalizing passage; and,

an equalizing valve located in said equalizing passage including a second biasing means for biasing said equalizing valve toward a closed position, and an equalizing valve actuating means for opening said equalizing valve in response to an increase in vacuum by a predetermined amount in said manifold-vacuum chamber;

wherein a low manifold vacuum corresponding to a high acceleration of said combustion engine, in said manifold-vacuum chamber is insufficient to overcome said first biasing means and said first biasing means maintains said main valve head in a closed position, a high manifold vacuum, corresponding to a high deceleration of said combustion engine, acts on said equalizing-valve actuating means to open said equalizing valve so that said first biasing means maintains said main valve head in a closed position and, intermediate manifold-vacuums corresponding to intermediate steady-state speeds of said combustion engine act on said diaphragm to overcome said first biasing means and open said main valve.

3,964,260

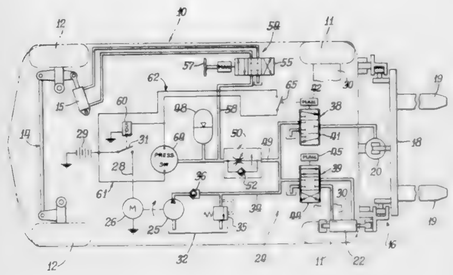
ENERGY CONSERVATION APPARATUS FOR AN ELECTRIC VEHICLE

Thomas O. Williams, Dunlap, Ill., and Arthur F. Grant, Pittsburgh, Pa., assignors to Towmotor Corporation, Mentor, Ohio

Filed May 27, 1975, Ser. No. 581,405

Int. Cl.² F15B *1/02*

U.S. Cl. 60—413 **8 Claims**



8. A hydraulic system for an electric vehicle including an electric motor and a battery for driving such motor, comprising:

a single hydraulic pump operatively driven by said motor;

a first hydraulic circuit for a work implement disposed within said hydraulic system and having a manually actuatable control valve, said control valve being infinitely positionable between a closed center position and a fully actuated position for selectively controlling fluid pressure from the hydraulic system to its work implement;

means for automatically energizing said motor when the control valve is moved past a predetermined intermediate position toward its fully actuated position so as to provide fluid pressure from said pump to the hydraulic circuit under such conditions;

a second hydraulic circuit disposed within said hydraulic system in parallel with said first circuit; and

means including a hydraulic accumulator disposed within said hydraulic system for storing fluid energy produced by said pump in excess of that needed for said first hydraulic circuit for subsequent use in powering the second hydraulic circuit without the necessity of running said pump so as to reduce the energy drain on the battery by minimizing the frequency of pump start-ups during operation.

3,964,261

AUXILIARY HYDRAULIC POWER CIRCUIT FOR A HYDRAULIC POWER TRANSMISSION SYSTEM

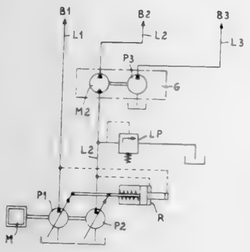
Bernard M. J. Zukauskas, Saint Quentin Falavier, France, assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 24, 1975, Ser. No. 543,710

Claims priority, application France, Jan. 24, 1974, 74.04421

Int. Cl.² F16H *39/46*; **F15B** *13/09*

U.S. Cl. 60—445 **1 Claim**



1. In a hydraulic power transmission system having a first pump feeding fluid to a first hydraulic power line; a fluid motor connected in the first line and being powered by fluid therein; a pressure regulating valve connected in the first line between the first pump and motor; a second pump coupled to the motor and being run thereby and feeding fluid to a second hydraulic power line which is in parallel relationship to the first line; the discharge flow of the motor feeding fluid to a downstream continuation of the first line; a third pump feeding fluid to a third hydraulic power line; the first and third pumps being coupled together and driven from a common power source; and a hydraulic servo means connected in the first and third lines for sensing differential pressure therebetween and for simultaneously setting the displacements of the first and third pumps in accordance with a preselected pressure differential value.

3,964,262

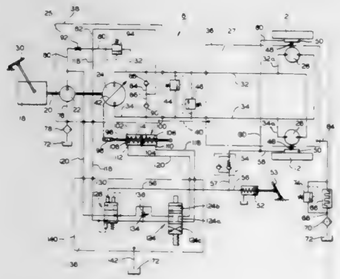
HYDROSTATIC TRANSMISSION CONTROL SYSTEM

Jon R. Patton, Jackson, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed June 10, 1975, Ser. No. 583,921

Int. Cl.² F16H *39/46*

U.S. Cl. 60—447 **5 Claims**



1. In a control system, including a brake device, for a vehicle having a hydrostatic transmission of the type which includes a main hydraulic circuit comprising a variable displacement propulsion pump having a pivotable adjusting member and including a spring-centered adjusting device, and hydraulic motor means, said control system also including a hydraulic control circuit comprising a driving engine, a control pump drivingly connected to said engine so as to rotate at a speed proportional to the speed of said engine, said control pump being in fluid communication with said main hydraulic circuit and said hydraulic control circuit, said hydraulic control circuit including fluid reservoir means in fluid communication therewith, a first or high pressure control conduit, a second or low pressure control conduit, said first and second control conduits being substantially parallel to each other and communicating with said spring-centered adjusting device, directional control valve means interposed in said first and second control conduits, differential pressure regulator valve means interposed in said first and second control conduits upstream from said directional control valve means, said differential pressure regulator valve means being continuously biased to an open position, with said differential pressure regulator valve being operatively connected to said brake device so as to be progressively movable to a closed position in proportion to the degree of actuation of said braking device, and fixed orifice means interposed in said second control conduit upstream from said differential pressure regulator valve, wherein the improvement comprises:

a. a branch conduit, downstream from said fixed orifice means, for connecting said first and second control conduits; and

b. adjustable orifice means interposed in said branch conduit for adjusting the differential pressure between said first and second control conduits.

3,964,263

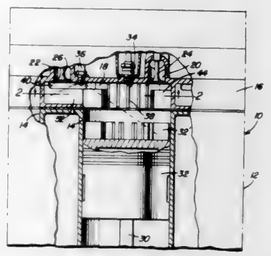
SIX CYCLE COMBUSTION AND FLUID VAPORIZATION ENGINE

Robert C. Tibbs, Hospital Drive, Cleveland, Miss. 38732

Filed Dec. 31, 1974, Ser. No. 537,657

Int. Cl.² F01K *27/00*; **F01B** *29/04*

U.S. Cl. 60—618 **4 Claims**



1. In a combustion engine of the type including a cylinder having a piston reciprocal therein and defining an expansion chamber at one end of said cylinder in constant communication therewith and equipped with intake and exhaust valve means, said expansion chamber having a plurality of heat absorptive fin portions therein, said piston having a plurality of heat absorptive fin portions thereon which project into said chamber during the end portions of the strokes of said piston in said cylinder toward and away from said chamber, injection means operative to inject a measured quantity of atomized readily vaporizable liquid into said expansion chamber for contact with said fin portions, said engine being of the 6-stroke cycle type including a first intake stroke during which said intake and exhaust valve means are open and closed, respectively, second and third compression and power strokes during which said intake and exhaust valve means are closed, a fourth stroke during which said intake and exhaust valve means are closed and open, respectively, a fifth stroke during which said intake and exhaust valve means are closed and said injector means is operable to inject atomized liquid into said expansion chamber, and a sixth stroke during which said intake and exhaust valve means are closed and open, respectively, said fin portions on said piston and at least a majority of said fin portions in said chamber being disposed, at least generally, in radial planes of the center axis of said cylinder, the piston fin portions and said majority of fin portions in said chamber being disposed in spaced overlapped interdigitated relation during the end portions of the strokes of said piston toward and away from said chamber at the adjacent end of said cylinder, said fin portions on said piston and said fin portions in said chamber being spaced radially outwardly from the longitudinal center line of said cylinder, and ignition means communicated with the interior of said chamber at a point spaced inwardly of the radial innermost ends of said fin portions.

3,964,264

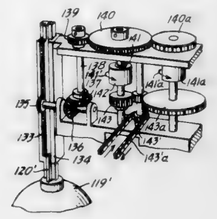
WAVE-ACTION UNDERSEA-DRILLING RIG

Michael G. Tornabene, c/o Amanda Machine Corp., 285 Oak Neck Lane, West Islip, N.Y. 11795

Continuation-in-part of Ser. No. 457,075, April 1, 1974. This application Oct. 11, 1974, Ser. No. 514,004

Int. Cl.² E02B *9/00*; **F16G** *11/00*

U.S. Cl. 61—20 **20 Claims**



1. A wave-action device comprising in combination: a clamp means for intermittently drivably engaging and for thereby transmitting force in a first predetermined direction to a drivable element when engaged with the clamp means, and for intermittently disengaging from engagement with the drivable element during movement of the clamp means in an opposite second direction relative said first direction; float means for effecting an intermittent force to the clamp means being adapted to have predetermined size and mass and buoyancy arranged such that wave-action initiated momentum thereof is sufficient to effect the intermittent force and such that the float means is maintained substantially at water surface level.

3,964,265

METHOD AND APPARATUS FOR MINING AND SUPPORTING THE MINE ROOF

Will B. Jamison, Bethel Park, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Division of Ser. No. 391,032, Aug. 23, 1973, Pat. No. 3,871,707, which is a continuation-in-part of Ser. No. 286,744, Sept. 6, 1972, abandoned. This application Oct. 7, 1974, Ser. No. 512,673

Int. Cl.² E21D *15/44*

U.S. Cl. 61—45 C **3 Claims**

1. A temporary roof support for use in a mine comprising,

a pair of spaced parallel side beams,

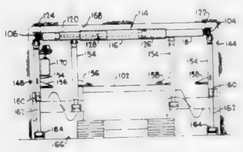
a plurality of spaced parallel telescopic transverse members connecting said side beams and forming a frame member,

a first pair of leg members connected to one of said beam members in spaced relation to each other,

a second pair of leg members connected to the other of said beam members in spaced relation to each other,

each of said leg members having telescopic means to extend and retract said leg members and move said frame member into abutting relation with a mine roof and said leg members into abutting relation with a mine floor to thereby provide support for said mine roof,

support means secured to certain of said leg members and extending outwardly therefrom, said support means arranged to abut portions of a self-propelled mining machine so that said mining machine is operable to support, carry and transport said temporary roof support,



fluid pressure operated means associated with said telescopic means to extend and retract said pairs of leg members and urge said frame member into abutting relation with said roof,

a circuit for said telescopic means and said fluid pressure operated means, and

a pressure accumulator in said circuit to provide a reserve of fluid under pressure for said fluid pressure operated means.

3,964,266

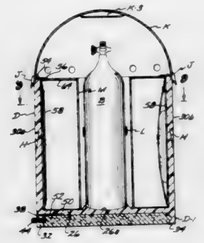
BUOYANCY COMPENSATING BACK PACK ASSEMBLY

Ronald D. Bartlett, c/o Metropolitan Water District, Earp, Calif. 92242

Filed July 21, 1975, Ser. No. 597,347

Int. Cl.² B63C *11/22*

U.S. Cl. 61—70 **7 Claims**



1. In combination with a container for pressurized air having a first end portion on which a depth-sensitive control valve is mounted that has first and second air outlets; a first pliable hose having first and second ends, said first end being connected to said first outlet; a first diver's mouthpiece connected to said second end of said first hose; a second pliable hose having first and second ends, said first end of said second hose being connected to said second outlet; a third pliable hose having first and second ends, said third hose having said second hose entering the interior thereof intermediate said first and second ends; a first manually operated valve for controlling the flow of air from said second end of said second hose into the interior of said third hose; a second diver's mouthpiece mounted on said second end of said third hose; a second manually operated valve that may be used to establish communication between said second mouthpiece and the interior of said third hose, said first and second valves being normally closed; a first tubular fitting on said first end of said third hose, a buoyancy compensating back pack assembly that in a first position that is removably securable to a diver to permit him to descend or ascend in a body of water by control of the air-water ratio in said assembly and said asembly when in a

second position being portable and serving as a carrier for a diver's gear such as fins and the like, said assembly including:

a. first and second open-top housings, said first housing including a bottom, said second housing slidably and sealingly engaging the interior of said first housing, said second housing including a transverse cross piece, said second housing when disposed in an inverted first position in said first housing cooperating with the latter to define a confined space, said second housing when disposed in a second upright position in said first housing providing space in which a diver's gear may be stored, said first and second housings having first openings formed therein that are axially aligned when said second housing is in said first position;

b. first means for removably supporting said container in said first housing with said control valve disposed thereabove, with said second housing being of such shape that when in said first position it cooperates with said first housing to define a compartment in which said container is disposed, said first housing having a second opening therein that at all times maintains communication between said compartment and the exterior of said first housing;

c. a diver's harness secured to the exterior of said first housing;

d. second means for removably locking said second housing to said first housing in either said first or second positions;

e. a weight;

f. third means for releasably supporting said weight from said first housing; and

g. a second tubular fitting on said cross piece that may be connected to said first fitting to establish communication between said third hose and confined space when said second housing is in said first position, with a diver wearing said assembly having positioned buoyancy when he first enters the water due to air trapped in said confined space, said assembly providing negative buoyancy to a diver when the diver assumes a diving position to allow at least a portion of said trapped air to escape through said aligned first openings, and said assembly after the diver has assumed at least a slightly upright position providing a desired buoyancy due to the air-water ratio in said confined space that is controlled either by the diver exhaling into said second mouthpiece with said second valve in an open position or opening said first valve to permit air to discharge from said third tube into said confined space, and said assembly serving as a carrier for diver's gear after a diving operation by disposing said second housing in said second position.

3,964,267

REFRIGERATION CHARGING CYLINDER

Clyde G. Phillips, R.R. No. 2, Box 148-G, Angola Beach, Lewes, Del. 19958

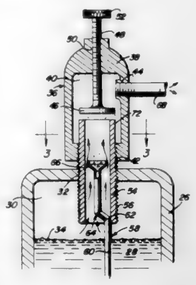
Filed Mar. 14, 1975, Ser. No. 558,305
Int. Cl.² F17C *7/02*
U.S. Cl. 62—51 **8 Claims**

1. A refrigerant charging cylinder for refrigeration systems, comprising, in combination:

means for drawing liquid refrigerant from the cylinder effected by the flow of saturated vapor flowing from the cylinder comprising;

a. a tank containing a partially liquid and partially gaseous refrigerant and having an opening arranged spaced from a maximum liquid level of the refrigerant when the tank is arranged for charging a refrigeration system;

b. a valve mounted on the tank and arranged partially in the tank opening, the valve including a housing an inlet port and an outlet port provided in the housing, a valve element disposed in the housing between the inlet port and the outlet port for selectively blocking and unblocking passage between the ports, and a saturated vapor pipe connected to the housing and surrounding the inlet port and arranged extending into the tank through the tank opening, the saturated vapor pipe terminating in the tank short of a maximum level of liquid refrigerant in the tank; and



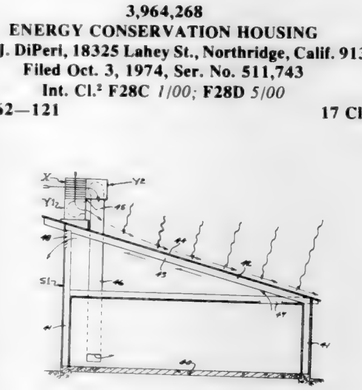
c. a liquid refrigerant pipe having a fluid nozzle thereon arranged in the saturated vapor pipe and extending into the liquid refrigerant in the tank, the liquid refrigerant being carried through the liquid refrigerant vapor pipe by a flow of gaseous refrigerant through the saturated vapor pipe and mixed with the gaseous refrigerant to form a saturated vapor.

3,964,268

ENERGY CONSERVATION HOUSING

Leonard J. DiPeri, 18325 Lahey St., Northridge, Calif. 91324

Filed Oct. 3, 1974, Ser. No. 511,743
Int. Cl.² F28C *1/00*; **F28D** *5/00*
U.S. Cl. 62—121 **17 Claims**



1. A process of rejecting heat at the exterior surface of a building structure, comprising the moving of a blanket of evaporatively cooled humidified air coextensively contiguous to and across the exterior surface thereof subject to the penetration of radiant heat, whereby heat radiating toward the exterior surface is absorbed by evaporative drying of the humidified air and carried off thereby.

3,964,269

SENSING ARM WATER FILL SHUT OFF FOR ICE MAKER

William J. Linstromberg, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Nov. 21, 1974, Ser. No. 525,791
Int. Cl.² F25C *5/18*
U.S. Cl. 62—137 **9 Claims**

1. Refrigeration apparatus comprising:

cooling means;

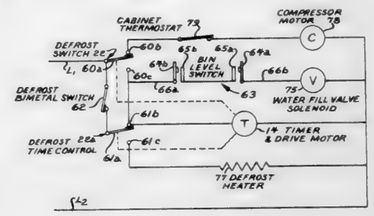
ice making means for automatically making ice bodies including a mold,

water delivery means for delivering water to the mold for cooling thereof by said cooling means to form ice bodies in said mold,

drive motor means;

harvesting means driven by said motor for cyclically harvesting the ice bodies from said mold including a collecting bin for removably storing the harvested ice bodies; and

shut off means preventing operation of said water delivery means whenever the level of ice bodies in said collecting bin is at a preselected full level thereof to permit continued operation of the ice making means by said drive motor while preventing forming of ice bodies thereby, said shut off means including,



a switch means having a plurality of switch contacts for electrically completing a circuit for said water delivery means, said switch means having a spring means for biasing said contacts for making said electrical connection,

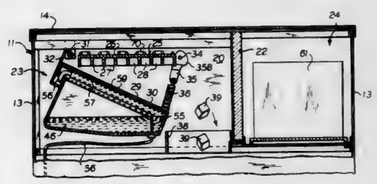
and a bin level sensing arm, said arm having a first end in association with said bin for detecting said preselected full level and a second end biased by said spring means and operable in response to detection of said preselected full condition by said first end to prevent said contacts from completing said circuit.

3,964,270

ICE MAKING MACHINE

Thomas A. Dwyer, Green Bay, Wis., assignor to Liquid Carbonic Corporation, Chicago, Ill.

Filed Feb. 28, 1975, Ser. No. 554,394
Int. Cl.² F25C *1/08*
U.S. Cl. 62—138 **7 Claims**



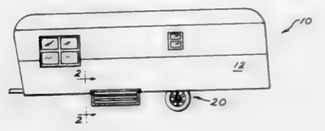
1. In an ice making machine having an ice forming enclosure, a refrigeration system having an evaporator in heat exchange relationship with said enclosure to cool said ice forming enclosure during the freezing cycle; valve means in said refrigeration system permitting the flow of hot refrigerant gas to said evaporator to heat said ice forming enclosure to harvest the ice therefrom during a harvest cycle; water supply means supplying water to said ice forming enclosure; and control means for automatically cycling the machine through freezing and ice harvesting cycles, said control means comprising: a thermostatic switch responsive to temperatures in said ice forming enclosure, a timer in an electrical circuit with said thermostatic switch and said valve means to discontinue freezing of ice and initiate the harvesting of ice after a given time interval, whereby the freezing cycle may be maintained for a period sufficient to insure freezing of water in said ice forming enclosure.

3,964,271

AIR CONDITIONING SYSTEM MOUNTING ARRANGEMENT FOR A MOBILE HOME

James L. Schulze, Sr., Middletown, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 6, 1975, Ser. No. 555,799
Int. Cl.² B60H *3/04*
U.S. Cl. 62—239 **3 Claims**



1. An air conditioning system including a mobile home having at least one zone to be air conditioned and a base structure including an interior floor and having longitudinally extending spaced parallel support beams being located inwardly of the outer walls of said mobile home for providing a support area therebetween, distribution means being located between said support beams, said system comprising:

an air conditioning unit being adapted to be removably attached to said mobile home, including a cabinet having air moving means, an air delivery outlet, and air return outlet in the top wall of said cabinet;

said air distribution means including at least one air inlet for receiving air from said air conditioning unit and air outlet for delivering air into said mobile home zone;

mounting means including an adaptor plate attached to said base structure in said support area for removably receiving said air conditioning unit including a first opening aligned with said air conditioning air delivery outlet and a second opening in alignment with said unit's air return outlet when said unit is located in said mounting means;

a first passageway positioned around the peripheral edge portion of said second opening extending upwardly from said plate;

means on the rear edge portion of said adaptor plate being vertically positioned on said mobile home base structure relative to said floor; and

support elements secured between said adaptor plate and said base structure forward of said means on the rear edge of said adaptor plate for positioning said adaptor plate horizontally relative to the mobile home floor and vertically so that the upper free peripheral edge of said first passageway is adjacent the mobile home interior floor.

3,964,272

AIR CONDITIONING MOUNTING SYSTEM FOR A MOBILE HOME

Edward Raleigh, Fern Creek, and Bruce L. Ruark, Louisville, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Mar. 20, 1975, Ser. No. 560,504
Int. Cl.² B60H *3/04*
U.S. Cl. 62—239 **8 Claims**

1. An air conditioning system including a mobile home having at least one zone to be air conditioned and a base structure, air distribution means associated with said base structure, said system comprising:

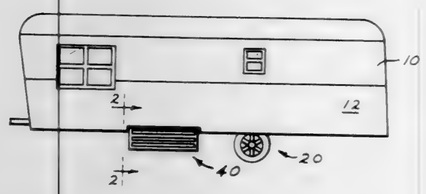
an air conditioning unit including a cabinet having air moving means, air delivery and air return outlets, and being adapted to be removably attached to said mobile home;

said air distribution means including at least one air inlet for receiving air from said air conditioning unit and air outlet for delivering air into said mobile home zone;

mounting means attached to said base structure for removably receiving said air conditioning unit including a first and second opening;

air communicating means including a first passageway connecting said first opening and with said air distribution means for delivering air into said mobile home and a second passageway for connecting said second opening with said mobile home interior so that said air moving means recirculates air through said mobile home;

guide members arranged along the side walls of said air conditioner cabinet;



support members on said mounting means adapted to receive said guide members for removably supporting said air conditioning unit; and

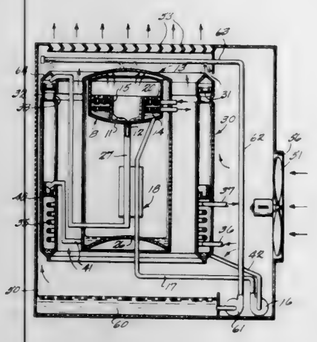
means associated with and interacting between said members for lifting said air conditioning unit into initimate position with said mounting means and for positioning said air conditioner so that said air conditioning unit's air delivery and air return outlets are aligned with said first and second openings respectively in said mounting means during the insertion of said guide members into said support members.

3,964,273

COMPACT ABSORPTION REFRIGERATION APPARATUS

Richard H. Merrick, Evansville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.

Filed Feb. 13, 1975, Ser. No. 549,805
Int. Cl.² F25B *15/06*
U.S. Cl. 62—476 **10 Claims**



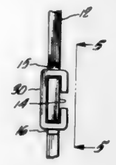
1. An absorption refrigeration apparatus comprising a vapor generator for vaporizing refrigerant from an absorbent liquid to leave a hot stripped solution, a condenser vessel enclosing said generator to condense the refrigerant vapor, a unitary means including an absorber-evaporator vessel for vaporizing the condensed refrigerant and for contacting the stripped solution with the refrigerant vapor flowing from the evaporator to form an enriched solution, said unitary means surrounding the condenser, conduit means to convey the liquid refrigerant to the evaporator and other conduit means to feed the stripped solution to the absorber-evaporator vessel, and apparatus including a pump for circulating the enriched solution flowing from the absorber-evaporator vessel back to the generator together with means for heating the solution in the generator and means for circulating a medium to be cooled in heat-exchanger relationship with the vaporizing refrigerant in the absorber-evaporator vessel.

3,964,274

NEEDLE FOOT SHOE FOR KNITTING NEEDLE

Edward C. Stivers, Atherton, and Christopher L. Fischer, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 221,906, Jan. 31, 1972, Pat. No. 3,842,626. This application July 24, 1974, Ser. No. 491,327
The portion of the term of this patent subsequent to July 23, 1991, has been disclaimed.
Int. Cl.² D04B *35/04*
U.S. Cl. 66—123 **9 Claims**



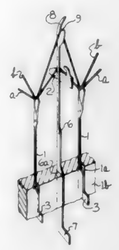
1. A knitting machine needle of the type which has a hook at one end and a shaft extending from the hook and a needle foot extending outwardly from said shaft and adapted to ride in a needle foot guide channel having side walls wherein the improvement comprises shoe means positioned over at least that portion of said foot which contacts the side walls of said needle foot guide channel, said shoe means having a shear modulus of at least 1,000,000 pounds per square inch and a loss tangent of at least 0.01.

3,964,275

TERRY LOOP FORMING INSTRUMENT FOR CIRCULAR KNITTING MACHINE

Giovanni Busi, and Pierluigi Belli, both of Brescia, Italy, assignors to Officina Meccanica Giovanni Busi, Sera (Brescia), Italy

Filed June 26, 1975, Ser. No. 590,618
Int. Cl.² D04B *35/00*
U.S. Cl. 66—91 **4 Claims**



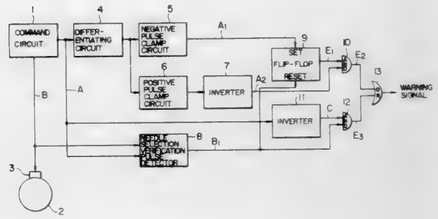
1. In a circular hosiery knitting machine including a needle cylinder adapted for rotation and reciprocation, spaced apart vertically extending slots in said needle cylinder for slideably receiving needles therein, and a knitting station including stitch cams for moving said cylinder needles through stitch forming motions and first and second yarn feed guides at said knitting station for respectively feeding terry yarn and body yarn to said cylinder needles, the combination therewith of terry loop forming instruments positioned between said cylinder needles, vertically extending slots in said needle cylinder between said cylinder needles for slideably supporting said terry loop forming instruments, and cam means supported at said knitting station for raising and maintaining said terry loop instruments at a predetermined level as said cylinder needles are lowered to form stitch loops of both yarns and to form terry loops of the terry yarn.

3,964,276

KNITTING ERROR DETECTING APPARATUS FOR CIRCULAR KNITTING MACHINE

Osamu Nishio, Nagoya, and Nokihisa Adachi, Kasugai, both of Japan, assignors to Okuma Machinery Works, Ltd., Nagoya, Japan

Filed Sept. 3, 1975, Ser. No. 610,086
Int. Cl.² D04B *15/88*
U.S. Cl. 66—154 A **3 Claims**



1. In a circular knitting machine comprising a command circuit for processing a pattern signal for a desired knitting pattern and a needle selecting system disposed in opposition to each yarn feeder on the periphery of a cylinder, said pattern signal being applied to said needle-selecting system after being processed by said command circuit thereby accomplishing a pattern-forming knitting operation while: a knitting error-detecting apparatus comprising a needle selection verification pulse detector impressed with a needle-selecting coil-exciting voltage B and a needle-selecting coil command voltage A and producing a needle selection verification pulse B_1, said needle-selecting coil-exciting voltage B making up said pattern signal and being affected by a pulse component induced in a needle-selecting coil when a needle selector in said needle selecting system moves, said needle-selecting coil command voltage A having the same value as said exciting voltage B but being not affected by said pulse component induced in said needle selecting coil, said needle selection verification pulse B_1 being a pulse component induced in said needle-selecting coil by the movement of said needle selector in said needle-selecting system, said apparatus indicating a knitting error when the presence and absence of said needle-selecting coil command voltage A does not coincide with the presence and absence of said needle selection verification pulse B_1 respectively.

3,964,277

WEFT KNIT FABRIC WITH DEFLECTED INLAID YARN

Thomas E. Miles, Box 1307, Lincolnton, N.C. 28092

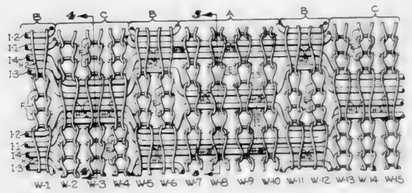
Filed July 3, 1974, Ser. No. 485,524
Int. Cl.² D04B *7/14*
U.S. Cl. 66—190 **7 Claims**

1. A weft knit fabric having courses and wales of forwardly facing stitch loops on the face side thereof and courses and wales of rearwardly facing stitch loops on the reverse side thereof, the face side of said fabric including

a. first groups of held stitch loops extending over several courses and in spaced apart groups of adjacent wales,

b. second groups of held stitch loops extending over several courses and in spaced apart groups of adjacent wales, said second groups of held stitches being staggered coursewise relative to said first groups of held stitches, said second groups of held stitches being positioned between said first groups of held stitches, and

c. a plurality of inlaid yarns extending behind said first groups of held stitch loops and being held in position by said rearwardly facing stitch loops therebehind, certain of said inlaid yarns extending behind said first groups of held stitch loops also extending behind said held stitch loops of said second groups of held stitch loops so that said certain inlaid yarns are deflected and extend diagonally between said first and second groups of held stitch loops.

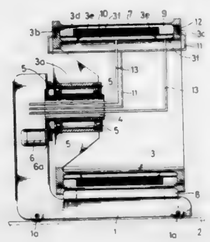


3,964,278

APPARATUS FOR TREATING TEXTILE MATERIALS

Alfred Korsch, Krefeld, and Friedrich Schneiders, Monchengladbach, both of Germany, assignors to D. Dupuis & Co., Monchengladbach, Germany

Filed Sept. 30, 1974, Ser. No. 510,389
Claims priority, application Germany, Mar. 16, 1974, 2412731; July 14, 1973, 2335993
Int. Cl.² D06B *5/18*
U.S. Cl. 68—5 E **6 Claims**



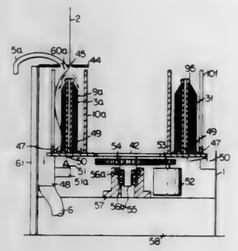
1. Apparatus for the treatment of textile fibers with a fluid medium, comprising coaxial inner and outer cylinders;

support means on said inner cylinder, upon which said textile fiber is wound; one of said cylinders being rotatable, and the other being non-rotatable; means for driving said rotatable cylinder; one of said cylinders being movable axially with respect to the other between a first position in which the inner cylinder is telescoped within the outer cylinder, and a second position wherein the inner cylinder is entirely removed from the outer cylinder; said inner cylinder having axially spaced radial flanges defining end walls that extend outwardly to the inner surface of the outer cylinder; said inner cylinder and flanges cooperating with said outer cylinder to define an enclosed annular treatment chamber for said textile fiber; and means for circulating treatment fluid through said annular chamber as the rotatable cylinder turns relative to said non-rotatable cylinder.

3,964,279
APPARATUS FOR CONTINUOUSLY WASHING A YARN WITH A WASHING LIQUID

Yasunori Nagata; Hirotaka Itoh; Susumu Yazaki, all of Osaka; Takayuki Hamamura, Kyoto, and Shigeo Yoshiya, Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Apr. 30, 1974, Ser. No. 465,611
Claims priority, application Japan, May 7, 1973, 48-50514; July 4, 1973, 48-75567; Nov. 21, 1973, 48-131306
Int. Cl.² D06B *1/04, 23/04*
U.S. Cl. 68—205 R 2 Claims



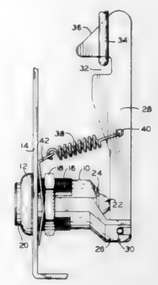
1. An apparatus for continuously washing a yarn with a washing liquid, comprising, in combination,
a. a horizontal circular carriage which is rotatable around the center of said circular carriage;
b. a plurality of vertical cylinders for respectively receiving a yarn supply package, in which a yarn is wound on an upright standing bobbin, said vertical cylinders being arranged on said rotatable carriage, each cylinder having a vertical slit formed on its side wall and said slit being open at the upper end of said cylinder,
c. means for securing said yarn packages upright in said vertical cylinders,
d. at least one spout for a washing liquid opening toward the top end of at least one of said packages, so as to allow said washing liquid spouted through said spout to flow down from said top end to the bottom over the outer surface of said package,
e. means for discharging said washing liquid from said cylinders,
f. means for continuously drawing off said yarn upwardly from each of said packages successively.

3,964,280
LOCKING MECHANISM

Grady A. Kelton, Greeneville, Tenn., assignor to Avis Industrial Corporation, Greeneville, Tenn.

Filed Apr. 7, 1975, Ser. No. 565,392
Int. Cl.² E05B *27/00, 65/06, 65/44*
U.S. Cl. 70—84 10 Claims

1. In a lockable latch device; a lock body having a key plug rotatable and reciprocable therein, means for receiving a key in said plug at one end to unlock the plug for rotation between locked and unlocked position in the lock body, interengageable cooperating elements on said lock body and plug preventing axial movement of the plug toward the other end thereof in the lock body when in locked position including means forming a shoulder in said body and a lug on said plug which is disposed in opposed relation to said shoulder when the plug is in locked position, the end of said key plug facing the shoulder in said body being adapted to engage the shoulder when the key plug is in unlocked position and is pushed inwardly into the lock body thereby to limit the said inward movement of the key plug in the lock body, a latch lever having one end pivotally supported near said other end of the plug and extending across said other end of the plug to be engaged and pivoted thereby when the plug is moved axially in the direction of the said plug other end, said lever being mounted so that said one end is at one side of the lock body and a free end of the lever being disposed at the opposite side of the lock body, and a spring having one end connected to said lever and

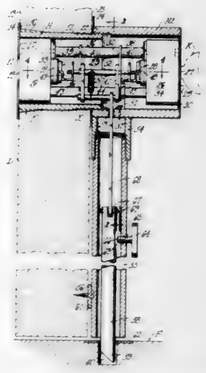


biasing said lever toward said other end of said plug, said body having an axial recess extending therein from the lever end of said body and registering with said lug in unlocked position of said plug.

3,964,281
DOUBLE CYLINDER LOCK BOLT ASSEMBLY

Paul Shipman, 3835 Ridgeley Drive, Los Angeles, Calif. 90008

Filed Mar. 27, 1975, Ser. No. 562,631
Int. Cl.² E05B *63/15*
U.S. Cl. 70—120 10 Claims



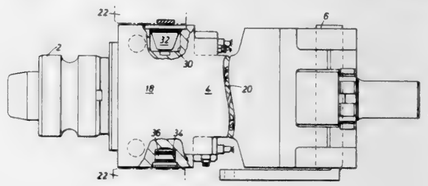
1. A lock assembly comprising in combination:
a pair of axially aligned, individually rotatable operating cylinders having means for selective anchorage spaced-apart opposite ends of a transverse bore of a closure, which closure carries a projectable lock bolt, the adjacent inner ends of each cylinder carrying a generally diametrically disposed contact surface projecting toward the adjacent spaced-apart cylinder and extending laterally to both sides of the common axis of said cylinders.
arcuately reciprocable shift means for moving the lock bolt between alternate locked and unlocked positions, said means being located between the spaced-apart cylinders and having a coupling portion arcuately swingable from a pivot point along said common axis with the arcuate portion thereof disposed in operative connection with the lock bolt,
intermediate activating means connecting the inner end of each operating cylinder to the adjacent shift means therebetween, said activating means comprising a pair of crank members each secured to a respective end of said shift means at points coaxial with and adjacent to a respective cylinder, each crank member having an arm laterally

extending to one side of the common axis and disposed to contactingly overlie the adjacent contact-surface and thus to be turned by rotation of said surface, thereby arcuately moving the shift means plus its connected lock bolt between locked and unlocked positions in response to rotation of either operating cylinder.

3,964,282
ROLLING MILLS

Dennis Stubbs; Jack Maltby, both of Sheffield, and Roy Ronald Oxlade, London, all of England, assignors to British Steel Corporation and The British Iron and Steel Research Association, both of London, England

Continuation of Ser. No. 511,375, Oct. 2, 1974, abandoned, Continuation of Ser. No. 358,843, May 10, 1973, abandoned.
This application Dec. 12, 1975, Ser. No. 640,154
Claims priority, application United Kingdom, May 19, 1972, 23715/72
Int. Cl.² B21B *37/06*
U.S. Cl. 72—19 10 Claims



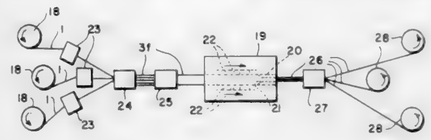
1. A rolling mill stand, comprising: a frame, a sub-assembly removable from said frame comprising two driveable work rolls, two work roll arms carrying said work rolls, and means for pivotally mounting the two work roll arms so that they are pivotally movable relative to one another to permit adjustment of the work roll gap,
at least one of said work roll arms being movable to a limited extent in the direction of the stock pass line, and
latch means independent of the pivotal mounting means extending between the mill frame and the sub-assembly for releasably holding the sub-assembly to the frame,
two support rolls rotatably carried in said frame and bearing upon said work rolls, said support rolls being mounted on arms pivoted for movement relative to one another,
two load sensing devices disposed between said one work roll arm and their associated support roll arm and on the upstream side of said one work roll arm, one load sensing device being closer to the stock pass line than the other, said devices providing in use signals embodying a measure of the tension in the stock adjacent said mill stand, and
a hydraulic loading device disposed on the opposite side of said one work roll arm from the load sensing devices and on the center line passing between said load sensing devices engageable with said work roll arm for urging said one work roll arm in the upstream direction to apply an equal load to each of said load sensing devices.

3,964,283
PRODUCTION OF MULTIPLE ELONGATED PRODUCTS SUCH AS WIRE

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 13, 1974, Ser. No. 523,401
Int. Cl.² B21B *45/02*
U.S. Cl. 72—42 56 Claims

1. Method of simultaneously producing a plurality of elongated products from billet material, said method comprising:
a. coating the billet material with die lubricating material; and
b. passing the coated billet material through a die having a plurality of die apertures extending therethrough in such manner that the billet material and the die lubricating

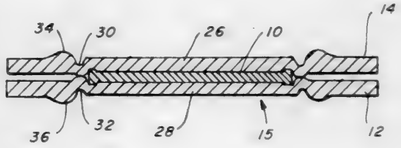


material are substantially evenly distributed to all of said die apertures, whereby each die aperture is lubricated by the die lubricating material and the billet material is deformed in passing through the die apertures to produce simultaneously a plurality of elongated products therefrom.

3,964,284
METHOD OF EXPANDING COINS FOR DECORATIVE PURPOSES

George Boultinghouse, Bartlesville, Okla., assignor to Harold D. Boultinghouse, Bartlesville, Okla., a part interest

Filed Nov. 21, 1974, Ser. No. 525,771
Int. Cl.² B21D *26/02*
U.S. Cl. 72—54 5 Claims



1. A method of expanding coins having stamping definitions thereon to a larger diametric size than the original size thereof and retaining the stamping definitions thereon which comprises placing the original coin in a carrier means of a larger planar dimension than the coin, applying pressure against the carrier means and coin in a direction substantially perpendicular to the plane of the coin whereby the carrier means and coin flow whereby the coin stretches radially outwardly, and stopping the application of pressure when the carrier means begins to flow outwardly independently of the coin.

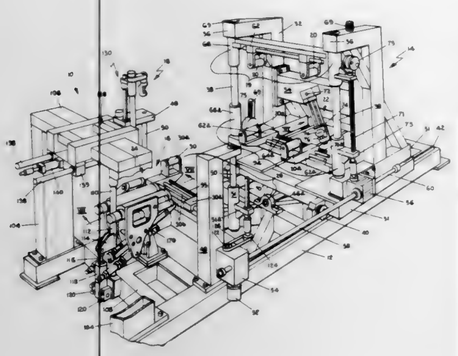
3,964,285
PIPE CAGE END FORMING MACHINE AND METHOD

Daniel J. Borodin, Detroit, and Wilbur E. Tolliver, Holland, both of Mich., assignors to New York Wire Mills Corporation, Tonawanda, N.Y.

Filed Jan. 20, 1975, Ser. No. 542,342
Int. Cl.² B21F *33/00;* B21B *5/00*
U.S. Cl. 72—69 49 Claims

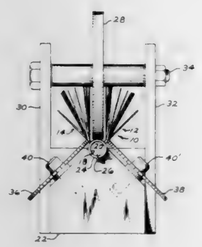
1. An apparatus for forming an end on a pipe reinforcing cage or the like of a different cross section than the rest of the cage, said cage having circumferential reinforcing means, said apparatus comprising: means for engaging said circumferential reinforcing means at one end of said cage, said engaging means including force means for applying a force between two points on said circumferential reinforcing means; and means for applying heat along said circumferential reinforcing means between said two points; said heating means being adapted to generate sufficient heat to lower the yield point of said circumferential reinforcing means sufficiently to allow changing the cross section of the circumferential reinforcing means at

the force level generated between said two points to form said end by changing the length of said circumferential reinforcing



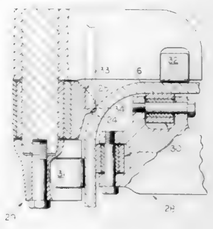
means and thereby changing the cross section of the cage at said one end.

3,964,286
APPARATUS FOR POSITIONING PIN FINS OF A FINNED-TUBE HEAT EXCHANGER
Charles J. Oerther, and Joseph B. Osborn, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed June 23, 1975, Ser. No. 589,410
Int. Cl.[2] B21D *53/02, 5/08*
U.S. Cl. 72—176 **2 Claims**



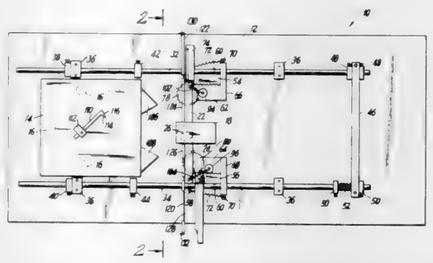
1. Apparatus for bending individual pin fins of a finned-tube heat exchanger to preselected locations, said finned-tube heat exchanger having first and second rows of pin fins extending radially outwardly from a tube, comprising:
a base having an opening for receiving and slidably supporting the tube;
a wheel connected to the base adjacent the base opening, said wheel being of dimensions sufficient for contacting a portion of the tube between the rows of pin fins and urging the tube into forcible engagement with the base opening; and
first and second toothed wheels connected to the base on opposed sides of the base opening, each of said toothed wheels being of dimensions sufficient for contacting and bending preselected pin fins of a respective pin fin row to preselected locations in response to sliding the finned-tube heat exchanger through the base opening.

3,964,287
APPARATUS FOR FORMING A GROOVE AND BACK-UP DAM FOR WELDS
Thomas P. Casey, Burlington, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 469,337, May 13, 1974, Pat. No. 3,921,728. This application Feb. 28, 1975, Ser. No. 554,247
Int. Cl.[2] B21D *13/04;* **B23K** *31/02*
U.S. Cl. 72—210 **3 Claims**



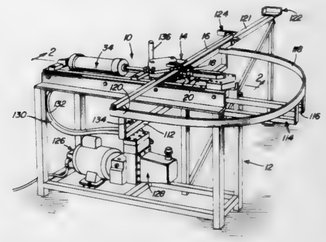
1. An apparatus for forming an elongated groove and contiguous dam on the surface of a member comprising
a first support and guide assembly,
a second support and guide assembly disposed adjacent to and in spaced relationship with respect to said first support and guide assembly to define a space of generally constant thickness to support and guide a formed member of generally constant thickness therebetween, and
forming roller means, having an annular cutting edge formed on the periphery thereof, rotatably mounted on one of said first and second support and guide assemblies for forming a groove in and a contiguous dam on a surface of a member.

3,964,288
APPARATUS FOR ASSEMBLING A FRAME
Julius M. Minkow, 69 Washington St., Brooklyn, N.Y. 11205
Filed May 22, 1975, Ser. No. 579,837
Int. Cl.[2] B21D *53/74*
U.S. Cl. 72—306 **19 Claims**



1. Apparatus for assembling a frame including first, second, third and fourth sides having their ends secured together to define a strip member before assembly thereof with the first and fourth sides being at opposite ends of the strip, said apparatus comprising a base member, a first pair of arms, first mounting means disposed on said base member for pivotally securing said arms to permit said arms to pivot towards each other, said arms including holding means for holding the second and third sides of the frame so that the second and third sides pivot with said arms, a second pair of arms, and second mounting means disposed on said base member for pivotally securing said second pair of arms to permit said second pair of arms to pivot towards each other after said first pair of arms have been pivoted, whereby said second pair of arms move the first and fourth sides of the frame together to provide an enclosed frame structure.

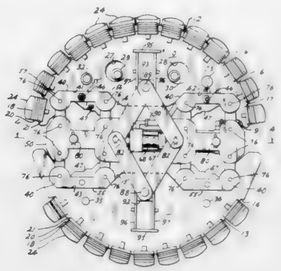
3,964,289
RECTANGULAR METAL-TUBING BENDER
John C. Williamson, Jr., 2318 Louise Lane, Billings, Mont. 59102
Filed Dec. 3, 1974, Ser. No. 529,215
Int. Cl.[2] B21D *5/02*
U.S. Cl. 72—381 **7 Claims**



1. A rectangular tubing bender, comprising, in combination:
a. a frame;
b. holding means for locking a rectangular tube to be bent in place on the frame;
c. squeezing means for forming depressions on opposite sides of the tube;
d. forming means for bending the tube into a closed corner about the depressions therein; and the holding means (b) includes a carriage mounted on the frame for reciprocal movement with respect to the frame, and a support member mounted on the carriage, the support member including a pair of pivotally mounted portions, each portion including a pair of substantially parallel, opposed, spaced flanges connected together by a web, the flanges being arranged for receiving therebetween a tube to be bent, and the web being arranged for forming substantially a V-shape to conform to the tube as same is being bent by the forming means; and the forming means (d) further includes a forming point member affixed to the frame and arranged for cooperating with the support member to bend a tube to be bent, and the holding means (b) further including drive means for sequentially moving the carriage toward the forming point member; and the squeezing means (c) includes a pair of rockers pivotally mounted on the carriage about substantially parallel axes arranged between ends of the rockers for providing each rocker with a pair of arms, a squeezing jaw mounted on one arm and a cam follower mounted on the other arm, the jaws, and cam followers, arranged opposite one another, and cam means mounted on the frame for operatively engaging the cam followers and pivoting the jaws toward one another and forming depressions in the tube.

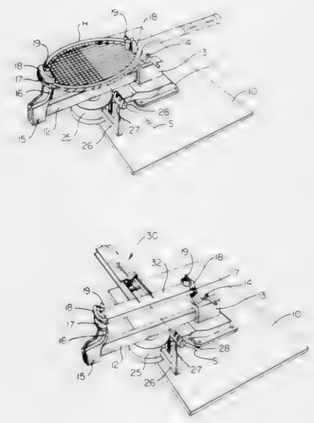
3,964,290
INTERNAL PIPE BENDING MANDREL
Marvin L. Auxer, P.O. Box 1551, Houston, Tex. 77001
Filed Dec. 20, 1974, Ser. No. 534,822
Int. Cl.[2] B21D *9/00*
U.S. Cl. 72—466 **30 Claims**

1. Internal mandrel for supporting the walls of a pipe while the pipe is bent, comprising first plate means having a generally arcuate edge generally conforming to one side of the interior wall of the pipe, second plate means spacedly aligned across the pipe from said first place means having a generally arcuate edge generally conforming to the other side of the interior wall of the pipe, means for moving said first and second plate means between retracted more closely spaced positions relatively farther spaced from the pipe wall and expanded less closely spaced positions relatively closer spaced from the pipe wall comprising body means disposed between the first and second plates of each set thereof, plural knuckle member means pivotally connected between said body means and each of said first and second plate means and each having oppositely facing load bearing surfaces bearing against said



body means and one of said first and second plates, and drive means for moving said body means parallely of said first and second plate means to change the angles of said knuckle member means to force said first and second plate means apart against the walls of a pipe, whereby said mandrel may be moved through the pipe to the location of a bend with said first and second plate means in said retracted positions and said first and second plate means may be moved to said expanded positions to support the pipe walls while the pipe is bent.

3,964,291
TENNIS RACQUET STRINGING CALIBRATOR
John M. Ogden, 6540 Parkland, Cincinnati, Ohio 45233
Filed Oct. 2, 1975, Ser. No. 618,791
Int. Cl.[3] G01L *5/06*
U.S. Cl. 73—1 B **11 Claims**



1. A device for calibrating a tennis racquet stringing machine where during stringing a racquet is secured on the machine and racquet strings are installed at a preset number of pounds of tension comprising:

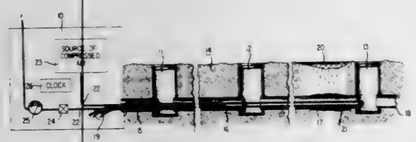
a. a cross member that is securable to the stringing machine;
b. a frame secured to said cross member and extending outwardly therefrom;
c. a resistance member secured to said frame and being preset to offer a certain resistance to pull along said frame; and
d. an elongated element secured to said resistance member and being pullable axially with respect to said frame in the same general plane that a racquet string would be pulled, whereby upon handling said element in similar fashion to a string being installed in a racquet, the resistance member will indicate the pounds of pull on said member which can then be compared to settings on said tennis racquet stringing machine for calibration of same.

3,964,292

GAS DETECTING APPARATUS AND METHODS

Jesse Milne Jackson, Greensboro, N.C., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 27, 1975, Ser. No. 553,522
Int. Cl.² G01M *3/04*
U.S. Cl. 73—40.5 R **3 Claims**



1. In a gas monitoring apparatus comprising tubing for extension into an environment to be monitored, means for causing at least some gases to exit from said tubing and means for monitoring the exiting gases to detect the presence of a particular gas, the wall of said tubing being readily permeable to said particular gas and, furthermore, said tubing is structured so that said particular gas can enter said tubing only by permeating its wall, an improvement characterized in that
said tubing extends through an environment which is of a character so that said particular gas may occur at a location adjacent to said tubing,
means are provided for selectively blocking the passage of gases along the interior of said tubing, and means are provided for measuring the time interval beginning from the unblocking of the passage and ending when said means for monitoring indicates the substantial maximum intensity of said particular gas.

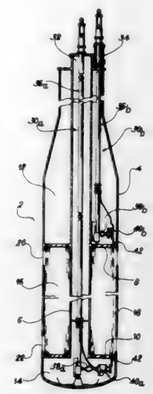
3,964,293

DEVICE FOR LOCATING AND/OR OBTURATING LEAKY TUBES IN HEAT-EXCHANGERS

Jean-Pierre Faure, Aix-en-Provence, and Gilbert Michot, Pertuis, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed June 30, 1975, Ser. No. 591,444
Claims priority, application France, July 8, 1974, 74.23715
Int. Cl.² G01M *3/24*; F28F *11/04*
U.S. Cl. 73—40.5 A **9 Claims**

3. A device for locating leaky tubes and obturating said tubes, characterized in that it comprises a vertical stem provided, at the lower end thereof, with an arm at right angles to said stem end of variable length, the free end of said arm being integral with an assembly carrying a vertical axis deformable capsule capable of penetrating into one of said tubes and of obturating said tube once deformed, and at least one ultrasonic transducer, the said transducer or transducers having vertical axes, means integral with said assembly for causing said capsule to be deformed, means for dissociating said capsule from said assembly, means for causing said arm to rotate



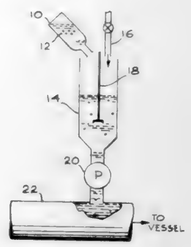
about the vertical axis of said stem, means for moving said arm vertically and means for causing the length of said arm to vary.

3,964,294

TECHNIQUE AND SYSTEM FOR CODING AND IDENTIFYING MATERIALS

Frederick H. Shair, Altadena; Peter G. Simmonds, La Canada; Robert B. Leighton, Altadena, and Peter J. Drivas, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 234,201, March 13, 1972, abandoned. This application Nov. 1, 1974, Ser. No. 519,990
Int. Cl.² G01N *31/08*
U.S. Cl. 73—53 **12 Claims**



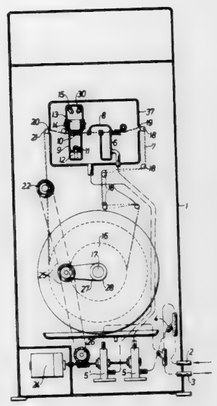
1. A method of tagging a material for future identification, said material being selected from the group consisting of petroleum crude oil and refined liquid products thereof, comprising the steps of adding to said material microcapsules encapsulating a detectable amount of a readily analyzable coded substance not normally present as a component of said material, dispersing said microcapsules uniformly throughout said material, said microcapsules having low solubility in said material and low permeability to said substance, collecting a sample of said material containing said microcapsules dispersed therein, concentrating said microcapsules, releasing said tag substance from said microcapsules and analyzing said substance by electron-capture gas chromatography.

3,964,295

METHOD AND DEVICE FOR ASCERTAINING SMALL AMOUNTS OF OIL IN WATER

Börje Harald Stenstrom, Enebyberg, Sweden, assignor to Salen & Wicander AB, Sundbyberg, Sweden

Continuation-in-part of Ser. No. 340,152, March 12, 1973, abandoned. This application Aug. 6, 1974, Ser. No. 495,179
Int. Cl.² G01N *21/06*
U.S. Cl. 73—61.1 R **8 Claims**



1. A method for continuously determining the oil content of a water stream containing small amounts of oil, comprising the steps of:
a. continuously removing a representative sample of said water stream,
b. continuously passing said representative sample of said water stream through a moving mass of filter material which is capable of removing at least a portion of the oil contained in said representative sample,
c. subjecting said moving mass of filter material containing removed oil to photo-electric analysis to thereby obtain an indication of the color changes in the filter material, and
d. passing said filter material through a zone where hydrocarbon gases can evaporate from said filtering material,
e. obtaining an indication of the amount of hydrocarbon gases evaporated in said zone by gas detecting means, and
f. correlating the oil color change indication obtained by photo-electric analysis with the indication of the amount of hydrocarbon gases to arrive at an indication of the oil content of the water.

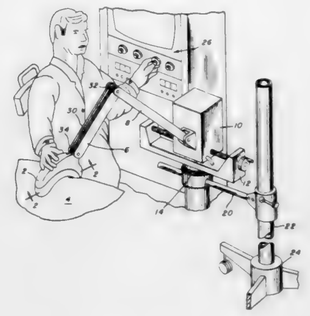
3,964,296

INTEGRATED ULTRASONIC SCANNING APPARATUS

Terrance Matzuk, 154 Eileen Drive, Pittsburgh, Pa. 15214

Filed June 3, 1975, Ser. No. 583,242
Int. Cl.² A61B *10/00*; G01N *29/04*
U.S. Cl. 73—67.5 R **140 Claims**

1. An integrated closed ultrasonic scanner comprising
a sealed housing having at least one mechanically compliant wall,
an acoustically conductive liquid disposed within said sealed housing,
an endless belt disposed within said housing and mounted for orbital movement therewithin,
at least two piezoelectric transducers secured to said endless belt,
drive means disposed within said sealed housing for driving said endless belt to establish orbital movement of said transducers,
magnetic commutation means for energizing said transducers and transferring acoustical function electrical signals to the exterior of said sealed housing,
electrical cable means operatively associated with said magnetic commutation means and said drive means and being in communication with the exterior of said sealed



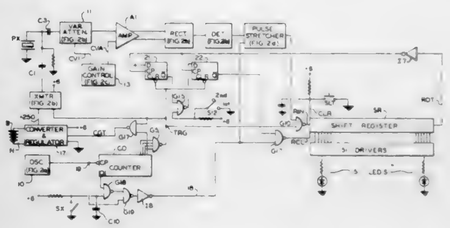
housing for cooperation with external signal processing means and an electrical energy source,
a fresnel deflecting lens disposed between said endless belt and said mechanically compliant wall, and
means for reciprocating said fresnel lens in a direction generally perpendicular to the direction of travel of said orbiting transducers.

3,964,297

ULTRASONIC INSPECTION APPARATUS

Hans G. Jorgensen, and B. Wendell Hautaniemi, both of Ithaca, N.Y., assignors to Ithaco, Incorporated, Ithaca, N.Y.

Filed Dec. 16, 1974, Ser. No. 532,889
Int. Cl.² G01N *29/04*
U.S. Cl. 73—67.8 R **27 Claims**

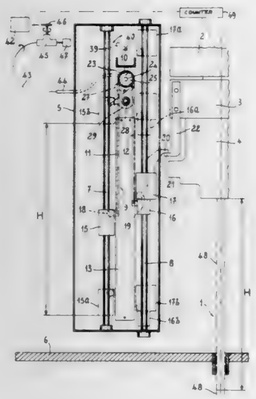


1. Ultrasonic inspection apparatus, comprising, in combination: ultrasonic transducer means for repetitively applying pulses of ultrasonic energy to an object to be inspected and receiving reflected ultrasonic energy from said object to provide trains of first electrical signals; amplifying and detecting means for detecting those of said electrical signals of each train which have amplitudes exceeding a selected threshold value to provide respective logic signals; storage means having a plurality of stages for storing the logic signals resulting from said trains of signals with a distribution among said stages in accordance with their respective times of occurrence during a given train; and a linear array of light-emitting elements controlled by respective stages of said storage means to be illuminated in accordance with the signals stored in said storage means to provide an operator-observable display.

3,964,298
APPARATUS FOR MEASURING PENETRATION OF TUBES OF A PENETROMETER

Charles Marc Marie Saint-Remy Pellissier, Avignon, France, assignor to Societe Anonyme Fondasol-Technique, Avignon, France

Filed Aug. 4, 1975, Ser. No. 601,447
Claims priority, application France, Aug. 2, 1974, 74.27657
Int. Cl.² G01N 3/42
U.S. Cl. 73—84 10 Claims

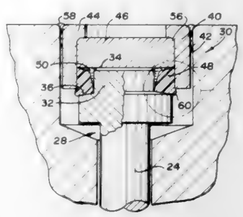


1. An apparatus for measuring the penetration of the tubes driven in by the anvil of a penetrometer, said apparatus comprising:
- a housing adjacent said penetrometer;
- a wheel rotatable in said housing about a horizontal axis;
- a chain reeved over said wheel and having an end hanging to each side of said wheel;
- a pair of upright guides in said housing each adjacent a respective end of said chain;
- a first counterweight secured to one end of said chain and slideable vertically along the respective guide;
- a slide secured to the other end of said chain and slideable vertically along the respective guide, said slide weighing less than said first counterweight;
- a second counterweight slideable along the guide of said slide above said slide, said second counterweight and said slide together weighing more than said first counterweight;
- an abutment on said second counterweight engageable with said anvil on upward travel thereof, whereby lifting of said anvil lifts said second counterweight;
- ratchet means connected to said wheel and displaceabel between an actuated position for preventing rotation of said wheel in a sense corresponding to dropping of said first counterweight and an unactuated position for allowing rotation of said wheel in said sense;
- means engageable with said ratchet means for displacing same into said actuated position only after upward displacement of said second counterweight from a predetermined bottom position through a distance equal to the length of one such tube; and
- means including a unidirectional clutch for measuring angular displacement of said wheel in a rotational direction opposite said sense.

3,964,299
STRAIN INDICATOR

Robert Carol Johnson, Pittsburgh, Pa., assignor to Modulus Corporation, Cleveland, Ohio

Filed June 20, 1974, Ser. No. 481,042
Int. Cl.² F16B 31/02
U.S. Cl. 73—88 F 5 Claims

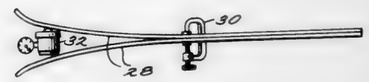


1. An optical stress-strain indicator comprising in combination:
- a first member subject to stress-strain and having a recess extending from an external surface of said member into said member;
- a pin member received within said recess and having a first end and a second end, said first end being secured to said first member at an interior portion thereof;
- a fluid holding member having a wall portion and a window;
- said fluid holding member being at least partially received within said first member and secured to said first member at said wall portion with said window positioned with respect to said first member so as to be visible;
- said second end of said pin member received in said fluid holding member;
- a light absorbing indicator fluid in said fluid holding member substantially filling said fluid holding member while remaining out of contact with said first member;
- an indicator member in said fluid holding member having an indicator area disposed substantially adjacent said window;
- sealing means between said pin member and said fluid holding member, said sealing means comprising a sealing member having a portion thereof secured to said fluid holding member with another portion thereof secured to said pin member, said sealing member being flexible to permit relative movement of said pin member with respect to said window;
- means permitting the cross-sectional shape of said sealing member to change upon relative movement of said pin member with respect to said window such that the internal space occupied by said fluid in said fluid holding member is always constant with or without movement of said pin member;
- means operatively connecting said indicator member with said second end of said pin member, whereby;
- upon application of stress to said first member there is accomplished a change in length of said first member with the result that said pin is caused to move axially thereby causing said second end and said indicator member to move simultaneously in the same direction with the consequence that said indicator area moves from said window and indicator fluid is caused to flow between said indicator area and said window, the volume of the space within said fluid holding member containing said fluid remaining constant.

3,964,300
SKI GAUGE

John G. Howe, Jamestown Star Route, Boulder, Colo. 80301

Filed Mar. 17, 1975, Ser. No. 558,696
Int. Cl.² G01N 3/20
U.S. Cl. 73—100 4 Claims

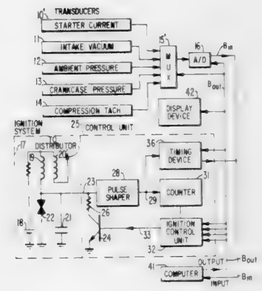


1. A method for measuring the deflection stiffness of a ski, comprising:
- clamping a running surface of said ski against an additional surface at a central portion of said ski; and
- positioning a substantially non-deflective measuring device between said surfaces at a selected location intermediate said central portion and an end of the ski, said device being responsive to force exerted thereon by said ski to provide an indication of said deflective stiffness.

3,964,301
ENGINE BRAKE HORSEPOWER TEST WITHOUT EXTERNAL LOAD

Richard Eric Hanson, Woburn, and Thomas Edward Nolan, Jr., Medfield, both of Mass., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 21, 1974, Ser. No. 516,503
Int. Cl.² G01M 15/00
U.S. Cl. 73—116 10 Claims

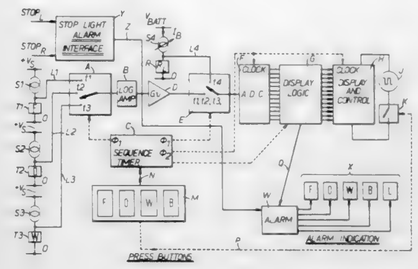


1. Apparatus for testing an internal combustion engine, comprising
- means to operate the engine at an equilibrium speed determined by friction torque with all but one of n ignitions inhibited,
- means to decelerate the engine without any ignition, and
- means to measure the average rate of deceleration of the engine during a predetermined deceleration speed range including the equilibrium speed,
- whereby the brake torque of the engine is obtained by multiplying the average rate of deceleration by the known inertia of the engine and by $n - 1$.

3,964,302
VEHICLE MONITORING SYSTEM

James Sneddon Gordon, and Carl Siegmund den Brinker, both of Bedford, England, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 27, 1974, Ser. No. 527,552
Claims priority, application United Kingdom, Dec. 5, 1973, 56388/73
Int. Cl.² G01M 17/00
U.S. Cl. 73—117.3 20 Claims



1. A monitoring system having a single display means for displaying successively the values of a plurality of variables to be monitored; a plurality of signal channels; analog to digital conversion means having a single analog input channel common to all of said signal channels; for each signal channel, individual means for monitoring a respective one of said variables to produce an analog signal having an amplitude characteristic of said variable; means for adjusting the amplitudes of said analog signals to lie within a range of values common to all of said channels; sequence timer means; multiplexer means operable by said sequence timer means to apply said adjusted amplitude analog signals in succession to said common input channel of said analog-digital conversion means for generation of successive digital outputs respectively representing the monitored values of said variables; and display control means for applying said digital outputs (under control) said sequence timer means without storage to said display means for generating successive displays characteristic of the monitored values of said variables.

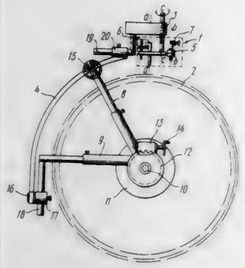
3,964,303
TIRE WEAR MEASURING ARRANGEMENT

Ilya Volfovich Vexelman, ulitsa Kubinka, 5, korpus 2, kv. 192; Leonid Davydovich Sljudikov, ulitsa Bazhova, 15, korpus 2, kv. 167; Alexandr Grigorievich Kutilin, ulitsa Sharikopodshipnikovskaya, 36/18, kv. 306, and Oleg Mikhallovich Kalugin, 2 Novoostankinskaya ulitsa, 2, kv. 10, all of Moscow, U.S.S.R.

Filed Sept. 10, 1973, Ser. No. 396,126
Int. Cl.² G01B 5/08, 5/20; G01M 17/02
U.S. Cl. 73—146 4 Claims

1. A tyre wear measuring arrangement, incorporating: a measuring device adapted to be brought to the tyre tread being measured for measuring the distance from the tyre circmferential surface to the center axis of the tyre; an optical view-finder for locating a point on said tyre circumference; a swivel carrier; means mounting said swivel carrier at a predetermined radial distance relative to the center axis of said tyre, said measuring device and said optical view-finder being mounted on said swivel carrier so that the measuring axis is parallel to and in spaced relationship with the optical axis and both axes are spaced equidistantly from the axis of rotation of said carier, said optical view-finder and said measuring device adapted to be pivoted about said axis of rotation after location

of said point by said view-finder so as to position said measuring device above said point and said measuring device being



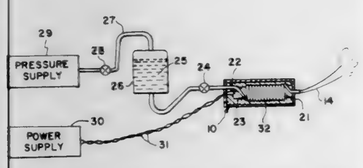
axially displaceable towards and into contact with the said tyre for measurement thereof.

3,964,304

SMOKE GENERATOR

Kemp L. Parrish, 35 N. Juniper St., Hampton, Va. 23669

Continuation of Ser. No. 463,924, April 24, 1974, abandoned.
This application Apr. 25, 1975, Ser. No. 571,895
Int. Cl.² G01M *9/00*
U.S. Cl. 73—147 **6 Claims**



1. In combination, a wind tunnel for testing models in a moving airflow and a smoke generator disposed within the wind tunnel to produce smoke for visually indicating the airflow in the wind tunnel during a test comprising:

a test section in said wind tunnel containing a model to be tested;

a smoke generator positioned in said test section upstream from the model in such position as not to impede the airflow in said wind tunnel over the model including:

a. an elongated heating means,

b. a liquid conduction means in the form of a coiled tubular conduit encompassing and in close proximity to said heating means and having an inlet and an outlet, and

c. a liquid supply means supplying a smoke-producing liquid to said liquid conducting means and disposed in fluid connection with the inlet of said conduit,

whereby, during a wind tunnel test fluid is supplied to said conduit by said liquid supply means and heated by said heating means to vaporize and produce smoke that exits through the conduit outlet to become entrained in the wind tunnel airflow and pass over the test model to thereby visually indicate tunnel flow over the model.

3,964,305

APPARATUS FOR TESTING OIL WELLS

Gary Q. Wray, and John C. Holden, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 335,980, Feb. 26, 1973. This application Feb. 19, 1974, Ser. No. 443,598
Int. Cl.² E21B *47/00*
U.S. Cl. 73—151 **9 Claims**

1. An apparatus for use in a test string in an oil well bore for converting applications of fluid pressure in the well annulus between the test string and the well bore into axial movement within said test string, comprising:

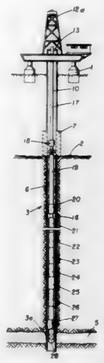
a cylindrical tubular external housing assembly having a cylindrical bore therethrough;

a tubular inner barrel assembly having an open bore therethrough and spaced within said housing assembly forming an annular chamber between said inner barrel and said housing assembly for containing a pressurized inert gas;

annulus pressure responsive piston means slidably located within said housing and exposed on one side to fluid pressure in said well annulus and on the second side to the pressure in said annular chamber;

supplementing means between said inner barrel and said housing assembly for supplementing the pressure in said annular chamber with hydrostatic pressure in the well annulus as the apparatus is lowered into the well bore;

valve means having an open position and a closed position for selectively isolating said supplementing means such that hydrostatic pressure in the well annulus while said



valve means is in the open position will actuate said supplementing means, and increases in the well annulus pressure subsequent to the closing of said valve means will move said annulus pressure responsive piston means; and

an annular inert gas filler valve in the wall of said housing assembly having a filler port communicating with said chamber and an activation port in the wall thereof, and including a sleeve having a piston area communicating with said activation port such that said sleeve is moved from a first position closing said filler port to a second position opening said filler port by selective application of hydraulic pressure through said activation port, and a second piston area communicating with said annular chamber for moving said sleeve from said second position to said first position responsive to pressure within said annular chamber when said hydraulic pressure is removed thereby facilitating communication of pressurized inert gas with said annular chamber.

3,964,306

SYSTEM FOR MEASURING REYNOLDS IN A TURBULENTLY FLOWING FLUID

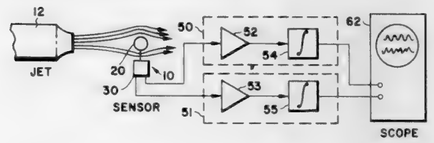
James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Dah Yu Cheng, Palo Alto, Calif.

Continuation-in-part of Ser. No. 424,013, Dec. 12, 1973, abandoned. This application Jan. 29, 1975, Ser. No. 545,284
Int. Cl.² G01M *9/00*
U.S. Cl. 73—194 R **10 Claims**

1. A system for measuring Reynolds stress wave in a turbulent fluid comprising:

a sensor with a probe movable about a mainstream direction u and a transverse direction v, said sensor having means for generatiang first and second signals representative of the time varying drag forces on said probe about said u and v directions, respectively;

means for generating a third signal proportional to the average density of said fluid; and



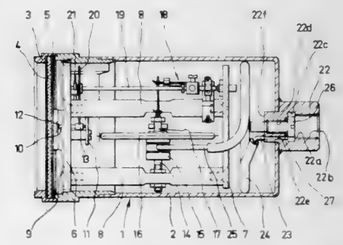
circuit means for converting said first, second, and third signals into a signal proportional to the Reynolds stress wave $\rho_0 u' v'$ wherein ρ_0 is the average density of the fluid, u' is the instantaneous velocity of the fluid in the u direction, and v' is the instantaneous velocity of the fluid in the v direction.

3,964,307

VARIOMETER COMPRISING A MEASURING BOX

Dirk Hühne, Frenkendorf, Switzerland, assignor to Revue Thommen AG, Switzerland

Filed May 28, 1975, Ser. No. 581,479
Claims priority, application Switzerland, Dec. 30, 1974, 17362/74
Int. Cl.² G01C *21/00*
U.S. Cl. 73—179 **7 Claims**



1. In a variometer including a measuring chamber communicating with the atmosphere through a first passageway and an elastically deformable measuring box, positioned within the measuring chamber, communicating with the atmosphere through a second passageway, with one of the passageways being provided with a system of orifice inserts serving to delay the pressure equalization between the measuring chamber and the measuring box, the system of orifice inserts including at least two orifice inserts with successive orifice inserts being separated from each other by an intermediate space, the improvement comprising, in combination, at least one of said orifice inserts being displaceable to vary the volume of one of said intermediate spaces.

3,964,308

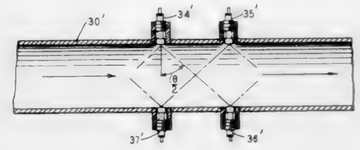
ULTRASONIC FLOWMETER

Thomas J. Scarpa, Edison, N.J., assignor to Scarpa Laboratories, Inc., Metuchen, N.J.

Division of Ser. No. 394,407, Sept. 4, 1973, Pat. No. 3,891,869. This application Apr. 1, 1975, Ser. No. 564,037
Int. Cl.² G01F *1/66*
U.S. Cl. 73—194 A **6 Claims**

5. An ultrasonic fluid flowmeter system comprising in combination at least two substantially identical separate transducer assemblies interposed into the pipe section bearing the test fluid in spaced apart relation with their principal axes in a direction substantially normal to the direction of fluid flow in said pipe and oriented to respectively transmit and receive ultrasonic signals directed to and from one another along a path which obliquely intersects the path of fluid flow in said pipe,

circuit means including a source of electrical power in energy transfer relation with each of said transducer assemblies and means for generating and imposing on said transducer assemblies high frequency alternating current electrical signals and for responding to the ultrasonic signals received by said transducer assemblies to form high frequency alternating current electrical signals



and for comparing the signals received in each of said transducer assemblies, said circuit means including a meter calibrated to measure fluid flow in said pipe section as a function of the difference between the signals received by said transducer assemblies,

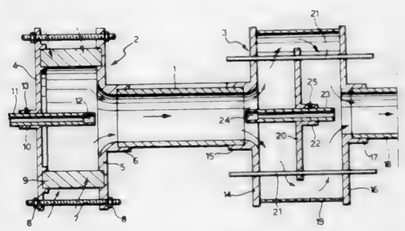
means including said transducer assemblies each constructed and arranged to generate from each of their radiating faces a radiation pattern comprising a pair of major lobes each oppositely directed at an acute angle to a normal plane relative to the radiating face of said transducer assembly, the principal direction of at least one said lobe conforming to the transmitting and/or receiving path of said signals.

3,964,309

DEVICE FOR DETERMINING MASS AIR FLOW IN A CONDUIT

Massimo Husse, and Mauro Lagonigro, both of Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed May 20, 1975, Ser. No. 579,285
Claims priority, application Italy, Aug. 1, 1974, 69440/74
Int. Cl.² G01F *1/66*
U.S. Cl. 73—194 A **4 Claims**



1. In a device for the ultrasonic determination of air speed through a conduit, such as the induction manifold of an internal combustion engine, comprising:

a duct through which passes the air flow to be determined, and

two ultrasonic piezoelectric transducers, one at each end of said duct, adapted to receive and provide signals for computing the air speed in said duct,

the improvement wherein:

said transducers are respectively located in first and second chambers, one at each end of said duct and communicating therewith, said chambers having a greater diameter than said duct,

said first chamber having a peripheral opening such that air flows through said chamber to said duct substantially radially with respect to the axis of said duct, and

a baffle plate in said second chamber, said baffle plate extending transverse the axis of said duct such that air flow through said second chamber, at least in the region between said duct and said baffle plate, is substantially radial with respect to said axis of said duct.

3,964,310

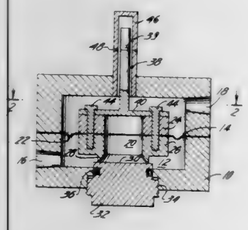
LINEAR RESPONSE FLOW METER

Nyyrikki K. Stenberg, Roslyn, Pa., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed May 17, 1974, Ser. No. 470,784

Int. Cl.² G01F 1/22

U.S. Cl. 73—207 **13 Claims**



1. A fluid flow measuring device characterized by a highly linear response and substantially constant differential pressure operation comprising a main casing with a flexible partition member peripherally mounted from the lateral walls of said casing, said partition member having a large open area in the central portion thereof and being sufficiently flexible to present negligible structural resistance to measurable vertical motion of its central portion; a rigid, symmetrical collar-shaped fluid control element concentrically mounted on said partition member and extending downwardly therefrom; a cooperating fluid flow control surface on the floor of said casing in directly opposed uniform alignment to and adjacent to said downwardly extending collar-shaped element; a fluid inlet into said casing below said partition member and at a point outside said cooperating fluid control surface; a fluid outlet from said casing above said partition member; and means for measuring said vertical motion.

3,964,311

MEASURING APPARATUS

Hans Kristian Holmen, Sandvika, Norway, assignor to A/S Tele-Plan, Lysaker, Norway

Filed Jan. 24, 1975, Ser. No. 543,855

Claims priority, application Norway, Feb. 1, 1974, 329/74

Int. Cl.² G01F 23/22

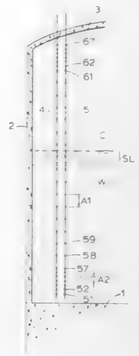
U.S. Cl. 73—295 **12 Claims**

1. Measuring apparatus for determination of the level of a boundary layer between oil and water in a tank, comprising a plurality of electrical sensing units distributed vertically in the tank and adapted to be responsive to the liquid and to deliver measuring signals to electrical measuring circuits with associated display devices for indicating and possibly recording the level, each sensing unit comprising:

a. a body having good heat conducting properties and adapted to be in good thermal contact with the surrounding liquid;

b. an electrical heating resistor in good thermal contact with said body and adapted to be supplied with an electrical current; and

c. a plurality of thermo-couples connected in series, each thermo-couple having a measuring junction part in good thermal contact with said body and a reference junction part in good thermal contact with the surrounding liquid,



the reference junction parts being spaced vertically from the measuring junction parts so that no significant heat transfer can take place from said body to the reference junction parts, the vertical distance between the reference junction parts and said body being not so great that vertical temperature variations in the liquid influence the measurement,

and the apparatus also comprising a plurality of separate electrical connection means for feeding signals from the sensing units respectively to the electrical measuring circuits.

3,964,312

MAGNETICALLY ACTUATED FLUID-LEVEL INDICATOR

Rolf Sebek, Oberkinzig, Germany, assignor to Phoenix Armaturen Werke Bregel GmbH, Frankfurt am Main, Germany

Filed Apr. 4, 1975, Ser. No. 565,124

Claims priority, application Germany, Apr. 8, 1974, 7412308[U]

Int. Cl.² G01F 23/12

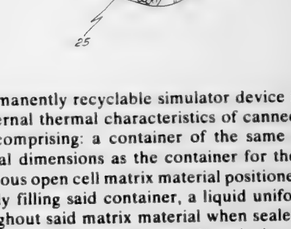
U.S. Cl. 73—314 **16 Claims**

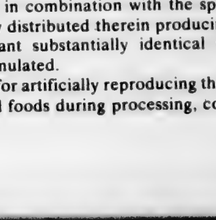
1. An element adapted for mass production and being suitable for construction of a variable length magnetically actuated fluid-level indicator for indicating the level of a fluid contained in a vessel having a gauge tube attached thereto and having a magnet-containing float freely floating in the gauge tube, the indicator length being readily adaptable to correspond to the maximum expected variation of fluid level in said vessel, said element being adapted for interlocking with similar elements and comprising:

a. a support body having a substantially U-shaped cross section and comprising a first and a second coupling surface;

b. the first of said coupling surfaces including an attaching means;

c. the second of said coupling surfaces including a receiving means for receiving attaching means of a first coupling surface of a second similar element; and





d. an indicating means comprising a magnetically actuatable platelet rotatably supported by said support body.

3,964,313

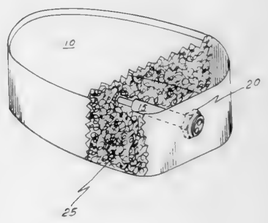
CANNED FOOD RECYCLABLE THERMAL SIMULATOR

Francis G. Connick, Downers Grove, Ill., assignor to Swift & Company, Chicago, Ill.

Filed Aug. 21, 1974, Ser. No. 499,296

Int. Cl.² G01K 1/08

U.S. Cl. 73—343 B **12 Claims**



1. A permanently recyclable simulator device for duplicating the internal thermal characteristics of canned foods, said simulator comprising: a container of the same composition and physical dimensions as the container for the food simulated, a porous open cell matrix material positioned within and substantially filling said container, a liquid uniformly distributed throughout said matrix material when sealed under vacuum, and a suitable thermal recording device permanently attached and extending through a wall of said container to 1/16th inch of a point equal distance from the interior walls thereof, the density and the percentage of open cells of the matrix material in combination with the specific heat of the liquid uniformly distributed therein producing a thermal-conductivity constant substantially identical with that of the canned food simulated.

9. A method for artificially reproducing the internal temperature of canned foods during processing, comprising:

interdispersing permanently recyclable artificial canned food simulators with each batch of canned food requiring a heating step during processing,

said simulators having a container housing of substantially similar composition and physical dimension as the canned food simulated,

said container being filled with a porous open celled matrix material and a liquid system uniformly distributed throughout the matrix material when sealed under partial vacuum,

said container being equipped with a suitable thermal indicator positioned to externally record the internal temperature from a point equal distance from all interior walls thereof,

the physical characteristics of the matrix material and the liquid system when packed in combination under a partial vacuum being adjusted to accurately duplicate the thermal characteristics of the particular canned food simulated,

simultaneously subjecting the interdispersed simulators to the identical heat processing procedures as the canned foods being simulated, and

externally measuring the internal thermal conductivity of the food simulated during the heat processing procedures by reading said thermal indicator.

3,964,314

TEMPERATURE-MEASURING INSTRUMENT

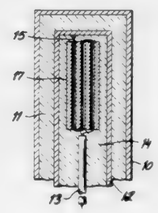
Heing Brixy, Julich, Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Mar. 28, 1972, Ser. No. 238,834

Claims priority, application Germany, Mar. 29, 1971, 2115033

Int. Cl.² G01K 7/30

U.S. Cl. 73—359 R **4 Claims**

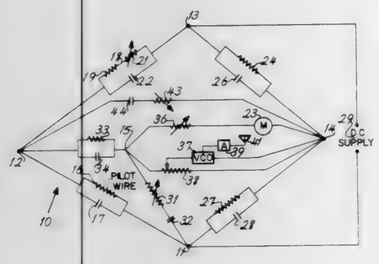


1. In a noise-signal temperature-sensing device, the improvement which comprises a temperature sensor including an elongated housing, a thermal-noise-generating strand composed of a metal and wound in a plurality of turns along the length of the housing and received therein, said strand being composed of a metal selected from the group which consists of tungsten, tantalum, molybdenum, niobium, titanium, zirconium, platinum, chromium, nickel and iron, and chromium-nickel-iron alloys, said strand having a cross-section corresponding to a circle with a diameter between 5 and 50 μ, a body of electrically insulating material separating said turns from each other and composed of at least one ceramic selected from the group which consists of alumina, beryllia, thoria and magnesia, and conductors extending into said housing and connected to said strand at spaced apart locations thereof, said strand being a metal film deposited upon an insulating support.

3,964,315
APPARATUS INCLUDING NOVEL BRIDGE CIRCUIT

John S. Engelhardt, Hartsdale, N.Y., assignor to The Anaconda Company, New York, N.Y.

Filed Jan. 11, 1974, Ser. No. 432,778
Int. Cl.² G01K 7/20; G01R 17/10, 27/16
U.S. Cl. 73—362 AR 14 Claims



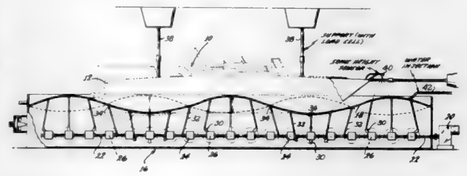
1. An apparatus for measuring the D.C. resistance of a resistive element carrying an A.C. current component comprising:
A. first, second, third, fourth and fifth conductor junctions, said element being joined to said first and said second junction,
B. a first resistor and a first capacitor, said first resistor and capacitor being joined, in series, to said first and said fifth junction,
C. a second resistor and a second capacitor, said second resistor and capacitor being joined, in parallel, to said second and said fifth junction,
D. a third resistor and a third capacitor, said third resistor and capacitor being joined, in series, to said second and said fourth junction,
E. a fourth resistor, said fourth resistor being joined to said third and said fourth junction,
F. a fifth resistor, said fifth resistor being joined to said first and said fourth junction,
G. a fourth capacitor, said fourth capacitor being joined to said fourth junction and to at least one of said third and said first junctions and in parallel with said resistor joined therebetween,
H. A sixth resistor, said sixth resistor being joined to said second and said third junction,
I. a D.C. power supply, said supply being joined to said third and said first junction, and
J. potential measuring means, said measuring means being joined to said fifth and said fourth junction, whereby said first, second, third and fourth junctions form the terminal points of a D.C. bridge for measuring said resistance and said first, second, fourth and fifth junctions form the terminal points of an A.C. bridge for balancing out said A.C. current component.

3,964,316
WAVE MOTION SIMULATOR

Kyoichi Abe, Chula Vista, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Dec. 23, 1974, Ser. No. 535,504
Int. Cl.² G01M 10/00; B63B 9/08; G01N 3/32
U.S. Cl. 73—432 SD 18 Claims

6. Apparatus to generate a wave-like pattern of forces on the underside of a surface effect ship which comprises a flexible membrane activated to simulate water waves, the crests of said waves active on the underside of said ship to transfer forces thereto, and undulating means to undulate said membrane, said undulating means comprising a drive motor, drive shaft means extending the length of the membrane and a

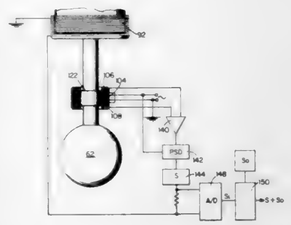


plurality of linkage means interconnecting said drive shaft means and said flexible membrane.

3,964,317
DENSIMETER

Robert L. Blanchard, Lexington, Mass., assignor to Foxboro/-Trans-Sonics, Inc., Burlington, Mass.

Continuation of Ser. No. 353,573, April 23, 1973, abandoned.
This application Nov. 18, 1974, Ser. No. 524,913
Int. Cl.² G01N 9/18
U.S. Cl. 73—453 4 Claims



1. A densimeter, comprising:
A. a housing for complete immersion in a cryogenic liquid whose density is to be measured and ported to admit to the interior thereof said liquid;
B. a float in said housing, said float having a neutral buoyancy position in said housing at the center of a range of densities of the liquid to be measured and mounted for vertical movement in response to changes in the density of said liquid;
C. a permanent magnet in said housing;
D. a force coil in said housing carrying a restoring current mounted for movement with said float and positioned to cooperate with said magnet to apply both upward and downward forces to said float to restore it to its neutral buoyancy position in response to deparatures therefrom caused by its immersion in liquids of lesser and greater density respectively, said coil carrying a current proportional to the difference between the density of said liquid and the density corresponding to the neutral buoyancy position of said float and generating heating losses corresponding to such difference only.

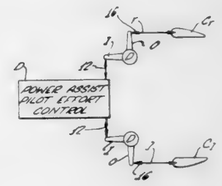
3,964,318
DISCONNECT DEVICE FOR AIRCRAFT PITCH OR ROLL CONTROL SYSTEM

Donald P. Shutt, Long Beach, Calif., assignor to Western Gear Corporation, Lynwood, Calif.

Filed Mar. 3, 1975, Ser. No. 554,509
Int. Cl.² G05G 9/00; F16D 67/02, 11/06
U.S. Cl. 74—471 R 17 Claims

1. In a normally locked disconnect device for use in an aircraft control linkage:
a bell crank adapted for pivotal mounting on an axis on an aircraft structural part, and having input arm means and an output arm interposed in said linkage;

said bell crank having an inner hub rotatable on said axis by said input arm means,
said inner hub having a plurality of circumferentially spaced radial outwardly opening slots in its periphery,
said output arm of said bell crank including an outer hub concentric with said axis, with a plurality of circumferentially interspaced lugs thereon around said inner hub, and with radial slots therebetween adapted for radial alignment with the slots in the aforesaid inner hub,
locking plungers rectilinearly slidable in said radial slots between said lugs of said outer hub and positioned normally in radially inward locking positions wherein they are disposed partially in said outer hub slots and project threfrom into locking reception in said inner hub slots to lock said inner hub and said outer hub against relative rotation,

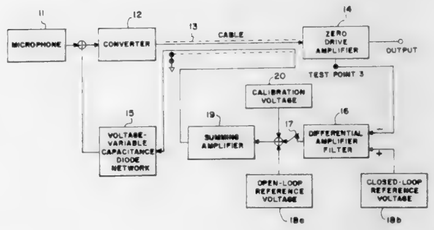


a lock ring encircling and relatively rotatable about the outer perimeter of said outer hub, with internal arcuate concentric slots adjacent and in engagement with the outer extremities of said locking plungers when said plungers are engaged in said inner hub slots,
said lock ring having a concentric interior circular bearing surface engageable with and rotatable on the outer extremities of said locking plungers to hold them in their said radially inward locking positions in said inner hub slots, said circular bearing surface having circumferentially spaced, radially outwardly extending plunger receiving recesses therein at a circumferential spacing such as to be capable of alignment with said radial slots between said lugs, said recesses being of a depth in the radially outward direction to accommodate complete radially outward extraction of said plungers from said inner hub slots.

3,964,319
INSTRUMENTATION FOR MEASURING AIRCRAFT NOISE AND SONIC BOOM

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Allan J. Zuckerwar, Newport News, Va.

Filed July 1, 1975, Ser. No. 592,159
Int. Cl.² G01L 11/00
U.S. Cl. 73—557 10 Claims

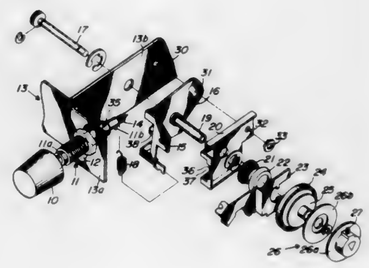


1. Instrumentation for measuring aircraft and sonic boom comprising:
a condenser microphone means for varying a capacitor in accordance with the noise picked up by said microphone means;
an oscillator for generating a carrier frequency;
a tank circuit including said capacitor;
voltage-responsive means for tuning said tank circuit to said carrier frequency;
means for applying a voltage to said voltage-responsive means;
a field-effect transistor means connected to receive the outputs from said oscillator and said tank circuit for producing an electrical signal containing said carrier frequency and the variations of said capacitor; and
means for removing said carrier frequency from said electrical signal to obtain an electric current that is proportional to the sound pressure at the microphone.

3,964,320
ADAPTABLE TUNER ASSEMBLY

Frank John Gordon, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 2, 1975, Ser. No. 574,123
Int. Cl.² F16H 35/18
U.S. Cl. 74—10.8 7 Claims

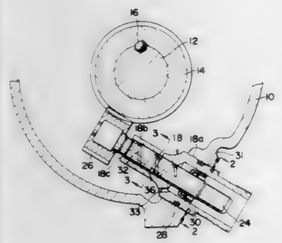


1. A radio tuner assembly having a support structure, tuning means mounted on the support structure for selecting a desired station, and tuning drive means adapted to position the tuning means by manual or by pushbutton means, the tuning drive means comprising:
first shaft means rotatably and slideably mounted on the support structure and including a pivot means intermediate the ends of the shaft means for changing the angle of the axis of rotation of a first portion of the shaft means relative to the axis of rotation of a second portion;
manual control means fixedly mounted on the second portion of the shaft means for causing rotation of the latter;
second shaft means rotatably mounted on the support structure;
first gear means mounted on a portion of the second shaft means;
second gear means fixedly mounted on the free end of the first portion of the first shaft means for rotation therewith, the second gear means being adapted to cause rotation of the first gear means; and
guide bracket means pivotably mounted on the support structure for cooperating with the pivot means of the first shaft means to position the axis of the second gear means in radial alignment with the first gear means.

3,964,321
FIXING DEVICE FOR SPEED METER DRIVEN GEAR

Nobuaki Katayama, Toyota; Isao Tsuzuki, Kariya, and Mikio Kaneko, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 7, 1974, Ser. No. 495,420
Claims priority, application Japan, June 6, 1974, 49-64302
Int. Cl.² F16H 37/00
U.S. Cl. 74—12 5 Claims

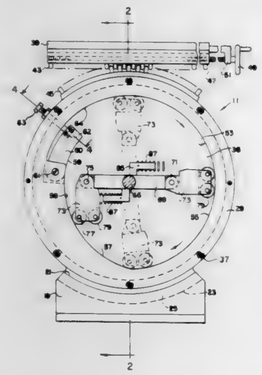


1. An assembly for connecting to a vehicle housing for driving a speedometer, said assembly comprising a sleeve secured to said vehicle housing and having a slit extending therethrough, a drive gear adapted for operative engagement with an output shaft of said vehicle and disposed in a spaced relation to one end portion of said sleeve to define a gap, a drive shaft secured to said drive gear for rotation therewith, said shaft extending from said gear, across said gap and into said sleeve for support by said sleeve, a spiral oil groove formed on the outer surface of said shaft and communicating with said gap to permit lubrication between said shaft and said sleeve, an annular groove provided on said shaft in alignment with said slit, and a resilient clip having an arcuate retaining portion extending around said sleeve and a straight locking portion extending from said retaining portion and into said annular groove and said slit to restrain axial movement of said shaft relative to said sleeve.

3,964,322
POWER TRANSMISSION

Reinhold R. Kieper, 19160 Wood St., Melvindale, Mich. 48122

Filed Feb. 27, 1975, Ser. No. 553,598
Int. Cl.² F16H 25/08
U.S. Cl. 74—55 8 Claims

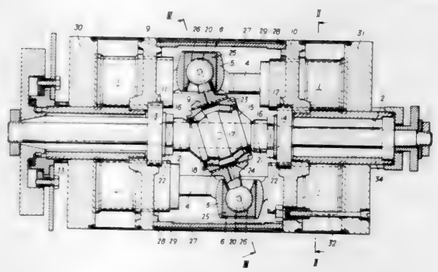


1. A power transmission comprising a base support;
a chambered cylindrical housing mounted on said support, having an end wall and a removable front plate with aligned apertures in said wall and plate on a horizontal axis;
a rotatable crankshaft axially disposed through said housing with portions of said crankshaft journalled and mounted on supports on the exterior and independent of said housing;
at least one pair of equally spaced rods on and projecting radially from said crankshaft within said housing;
a radially adjustable piston pivotally mounted on each rod on an axis parallel to the crankshaft and yieldably biased outwardly in axial alignment with said rod on rotation of said crankshaft;
spring means on each rod engagable with its piston when pivoted approximately 90° with respect to said rod adapted to bias said piston toward alignment with its rod;
cam rollers journalled upon said pistons on axes parallel to the housing axis;
said housing having an arcuate cam bore operatively engaging said rollers;
said bore including a circular portion of uniform maximum radius throughout 225°, approximately; merging into a cam surface of reduced minimum dimension which merges into a circular portion of minimum radius for 90°, approximately;
and a run out arcuate sector of 45°, approximately starting from said minimum radius, at one end pivotally mounted on said housing and at its other end, having a radial step surface extending towards said cam bore at its maximum radius;
each piston as it traverses the circular cam bore portion of maximum radius, being in alignment with its rod, and as it progressively traverses the cam surface of reduced minimum dimension and said run out sector, being pivoted progressively at angles up to 90° relative to its rod;
whereby one piston when traversing the bore of maximum radius has an increased leverage with respect to the other piston simultaneously traversing the cam portions and reduced radius portions of said bore and sector.

3,964,323
DRIVING MECHANISM FOR A RECIPROCATING ENGINE

Josef Seibert, Leitgebgasse 2a/11, 1050 Vienna, Austria

Filed Apr. 22, 1974, Ser. No. 462,620
Claims priority, application Austria, Apr. 24, 1973, 3619/73
Int. Cl.² F16H 23/00
U.S. Cl. 74—60 5 Claims

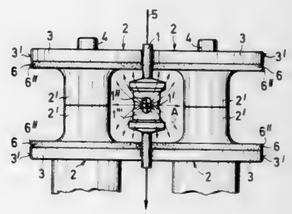


1. A driving mechanism for a reciprocating piston engine, comprising a casing, a drive shaft which is rotatably mounted in said casing, and a transmission means for power transmission from at least two coaxially opposed reciprocating pistons fixedly connected to a common piston rod, to said drive shaft, the axis of which is arranged parallel to the axis of the pistons, said transmission means being formed of inner and outer coaxial ring members which are movable in relation to one another by means of a steep angle bearing around an axis which is inclined to said drive shaft, and which are adjustable with respect to each other axially of their common axis, said inner ring member being fixedly mounted on said drive shaft, and said outer ring member being provided with at least one extension which is reciprocably mounted in said piston rod of said reciprocating pistons essentially transverse to the moving direction of said pistons.

3,964,324
FRICTION ROLLERS FOR TWIST TUBES IN FALSE-TWISTING APPARATUS

Hans Gassner, Schweinfurt, and Manfred Kress, Grafenrheinfeld, both of Germany, assignors to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany

Filed Apr. 3, 1975, Ser. No. 564,864
Claims priority, application Germany, Apr. 10, 1974, 2417627
Int. Cl.² D01H 7/92; B21B 27/00
U.S. Cl. 74—215 14 Claims

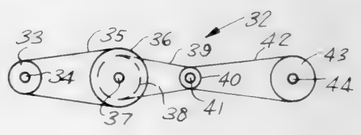


1. a friction roller for driving a high-speed twist tube in false-twisting apparatus comprising:
a carrier of an inelastic material;
a radial friction ring peripherally securedaround said carrier, and formed from an elastic material; and
a protective layer having a slinger edge disposed on at least one side of the friction ring.

3,964,325
POWER TRANSMISSION DEVICE

Robert Rogers, 6 East Lane, Hughestown, Pa. 18640

Filed Mar. 17, 1975, Ser. No. 559,242
Int. Cl.² F16H 7/00
U.S. Cl. 74—219 1 Claim

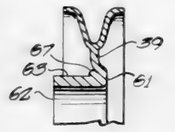


1. A power transmission device, comprising in combination, a central shaft having a large sprocket and a small sprocket mounted fixedly thereupon in axially spaced apart relation, an endless chain around said large sprocket and around a front sprocket affixed on a front shaft, an endless chain around said small sprocket and around a new rear double sprocket affixed on a rear shaft, said central shaft being located between said front and rear shafts, said rear double sprocket also having a second endless chain therearound and around a second sprocket affixed on a second rear shaft spaced from the first said rear shaft, and the first said rear shaft being secured to a drive wheel of a vehicle.

3,964,326
ONE PIECE STAMPED PULLEY

Frank Mickus, Stickney Township, Cook County, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 425,453, Dec. 17, 1973, Pat. No. 3,893,818. This application Dec. 30, 1974, Ser. No. 537,232
Int. Cl.² F16H 55/44, 55/36
U.S. Cl. 74—230.05 2 Claims

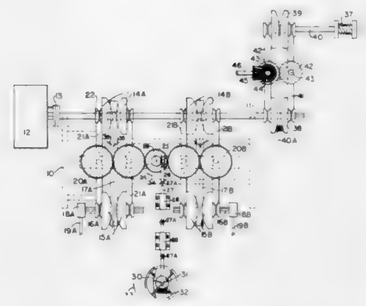


1. A rotary member including an annular web portion surrounding an integral hub portion extending axially outwardly of each side surface of said web portion, said web portion merging into said hub portion adjacent one side surface thereof, said hub portion including an integral protuberant ridge portion abutting said web portion adjacent the other side surface thereof defining a collar portion supporting said web portion.

3,964,327
AUTOMATIC SYNCHRONIZED PITCH CONTROLS FOR PAIRS OF DRIVER AND DRIVEN V PULLEY DRIVES

Andrew Oscar Siren, 1011 Fairmount Drive SE., Calgary, Alberta, Canada

Filed Oct. 21, 1974, Ser. No. 516,381
Claims priority, application Canada, Oct. 23, 1973, 49282
Int. Cl.² F16H 55/52; B62D 11/02
U.S. Cl. 74—230.17 A 12 Claims



1. A drive mechanism for vehicles and the like having a source of power, comprising in combination with supporting structure, first and second drive pulley assemblies and first and second driven pulley assemblies, a belt operatively extending around said first drive and driven pulley assembly, a further belt operatively extending around said second drive and driven pulley assembly, each of said pulley assemblies including a shaft and a pair of pulley halves splined to said shaft for rotation thereby and endwise movement therealong, means to move the pulley halves of said first drive pulley assembly and said second driven pulley assembly in one direction, and the pulley halves of said second drive pulley assembly and said first driven pulley assembly in the other direction by the same amount and vice versa, said means including a pair of gear components for said first drive and driven pulley assemblies and a pair of gear components for said second drive and driven pulley assemblies, mounted for partial rotation within said supporting structure, each of the gear components of said first drive and driven pulley assemblies being in meshing engagement one with the other, each of said gear

components of said second drive and driven components also being in meshing engagement one with the other, a lever operatively connected intermediate the ends thereof to each of said gear components and being operatively connected by one end thereof to the corresponding halves of said first and second drive pulley assemblies and by the other ends thereof to the corresponding halves of said first and second driven pulley assemblies, control means mounted in said supporting structure and means operatively connecting said control means to each pair of meshing gear components, said last mentioned means including a gear in meshing engagement with one of said gear components of said first drive and driven pulley assemblies and with a corresponding one of said gear components of said second drive and driven pulley assemblies whereby partial rotation of said gear causes simultaneous and equal partial rotation of all of said gear components.

3,964,328

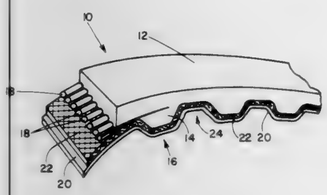
ELASTOMER-FREE FABRIC SURFACE FOR POWER TRANSMISSION BELT TOOTH FACING

John D. Redmond, Jr., Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 395,084, Sept. 7, 1973, Pat. No. 3,772,929. This application Feb. 28, 1975, Ser. No. 554,262

Int. Cl.² F16G *5/00, 5/20;* **B29H** *7/22*

U.S. Cl. 74—231 C **16 Claims**



10. An endless positive drive power transmission belt adapted to be engaged in a cooperating sprocket(s) comprising:

a body portion comprising a liquid cast elastomer material;

a tensile section embedded within the body portion and extending longitudinally with respect to the intended direction of travel of the belt;

a plurality of spaced teeth disposed along the inner periphery of the body portion and containing said elastomeric material therein;

a band of wear-resistant fabric comprised of fibers positioned along the outer surface of the teeth, the fibers on the outermost, sprocketengaging surface of the fabric band being substantially free from total encapsulation by said elastomeric material.

3,964,329

ENDLESS POWER TRANSMISSION BELT

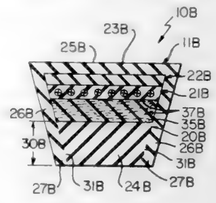
Jerry D. Wolfe, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Sept. 24, 1975, Ser. No. 616,335

Int. Cl.² F16G *5/16, 5/00*

U.S. Cl. 74—233 **22 Claims**

1. An endless power transmission belt of trapezoidal cross section and made primarily of elastomeric material, said belt having a corrosion resistant cover made solely of elastomeric material, said cover when viewed in cross section being defined by a U-shaped portion having a bight and a pair of legs extending from opposite ends of said bight with said legs terminating in outer ends, and a strip disposed between said outer ends, said U-shaped portion and strip being a unitary



elastomeric mass which serves to isolate and shield the entire belt.

3,964,330

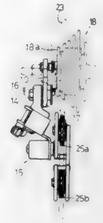
CHAIN GUIDE CONNECTOR DEVICE FOR USE IN BICYCLE DERAILLEURS

Nobuo Ozaki, Sakai, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

Filed Nov. 8, 1974, Ser. No. 522,125

Int. Cl.² F16H *7/22, 7/18*

U.S. Cl. 74—240 **7 Claims**



1. A protective device for use in bicycles including a rear derailleur containing a shifter body and a hook-shaped bracket and a multi-stage free wheel assembly containing a plurality of sprocket wheels, said protective device comprising

an internally threaded cylindrical portion and

a flange portion extending integrally from one end of said cylindrical portion,

said cylindrical portion being in screw engagement with a mounting bolt which is employed for clamping said shifter body to the hook-shaped bracket in the bicycle rear derailleur,

said flange portion having a smooth outer surface which extends substantially parallel with the opposite surface of the smallest sprocket wheel of said multi-stage free wheel assembly when the device is incorporated in a rear derailleur, and

said flange portion having an outer surface which has a sufficient size and shape to prevent the chain of the mutlistage free wheel assembly from becoming disengaged from the smallest sprocket wheel.

3,964,331

DAMPER APPARATUS

Benjamin Duncan Oldfield, Cheadle Hulme, England, assignor to Renold Limited, Manchester, England

Filed June 23, 1975, Ser. No. 589,528

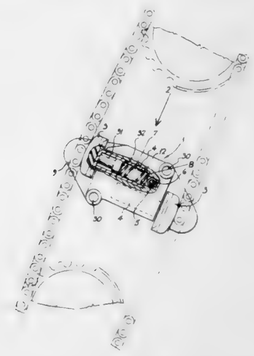
Claims priority, application United Kingdom, June 26, 1974, 28254/74

Int. Cl.² F16H *7/12, 7/10*

U.S. Cl. 74—242.1 FP **4 Claims**

1. Compact damper apparatus for applying a tensioning force directly or indirectly to a member such as a drive chain

or belt comprising a first spring influenced plunger movable in a first cylinder which is to contain an hydraulic fluid, the plunger extending from the cylinder to an outer end through which the tensioning force is to be applied to the member, in use of the apparatus, the plunger being hollow and extending from a closed outer end to an open inner end, a first plunger influencing spring which is received in the open inner end of the plunger, an hydraulic fluid chamber, and a restricted passage communicating said hydraulic fluid chamber with said cylinder to provide for flow of hydraulic fluid into and out of said cylinder with movement of said plunger, in use of the apparatus, hydraulic fluid supplied into said cylinder entering the hollow plunger as the plunger applies the required force to the member under the action of the plunger influencing spring, the plunger then moving out of the cylinder, and the



reaction of the member on the plunger being likewise transmitted through the plunger to the spring and deflection of the spring, and resulting movement of the plunger back into the cylinder, causing hydraulic fluid to flow out of the cylinder, the plunger having a hollow interior spring housing part which extends over part only of the plunger length and the inner open end of the plunger opening into said hollow interior spring housing part of the plunger, said plunger further having an air bleed hole which opens from said hollow interior part of the plunger at the highest intended level therein to the outer surface of the plunger, the clearance of the plunger in the cylinder and the position of the bleed hole along the plunger being such that, within the designed stroke of the plunger, there is always sufficient resistance to the passage of air along the cylinder/plunger clearance to prevent air being sucked back therealong and through said bleed hole.

3,964,332

DRIVER FOR NUTS AND SCREWS

Albrecht Schnizler, Jr., Nurtingen, Germany, assignor to Metawerke KG Closs, Rauch & Schnizler, Nurtingen, Germany

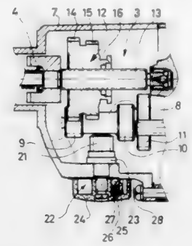
Filed Jan. 17, 1975, Ser. No. 541,331

Claims priority, application Germany, Jan. 17, 1974, 2402099

Int. Cl.² F16H *3/08*

U.S. Cl. 74—325 **12 Claims**

1. A power nut and screw driver comprising: a housing; an output shaft rotatably journalled in said housing; a motor; means for transmitting motion from said motor to said output shaft, including a variable gear transmission having at least two selectable gear ratios, said gear transmission comprising a first shaft carrying two pinions and a second shaft extending along said first shaft, and a selector gear shiftable on said second shaft for selectively meshing with one or the other of said two pinions, said selector gear being formed with a circumferential groove; a bifurcated shifting member engaged at one end thereof in said groove; and a handle connected with said member and accessible outside said housing for effecting the axial shifting of said selector gear, said handle having a



toothed portion, and said member having a rack portion which meshes with said toothed portion.

3,964,333

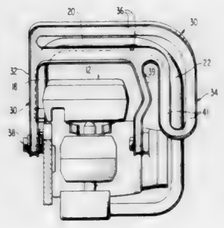
SAFETY BRAKING MECHANISM FOR A PORTABLE CHAIN SAW

Sidney Hirschkoff, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Oct. 15, 1974, Ser. No. 515,047

Int. Cl.² B25B *7/12*

U.S. Cl. 30—381 **14 Claims**



1. In a manually portable chain saw having housing means; manual gripping handle means mounted on said housing means; engine means carried by said housing means; a cutting chain; support bar means projecting forwardly from said housing means for supporting said cutting chain for endless movement; rotation transmitting means for driving said cutting chain; and safety braking means for stopping said cutting chain, said safety braking means comprising:

sensing arm means mounted on said housing means for swinging movement;

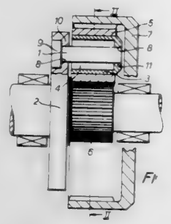
a portion of said sensing arm means being located in front of said gripping handle means during operation of said chain saw and arranged to be swung in a first direction in response to being struck by an arm or hand of an operator;

a flexible brake band including a first end anchored to said housing means and a second end coupled to said sensing arm means for movement therewith such that as said arm means is swung in said first direction, it shifts said brake band into frictional braking relationship with said rotation transmitting means to stop said cutting chain; and

a spring having first and second ends;

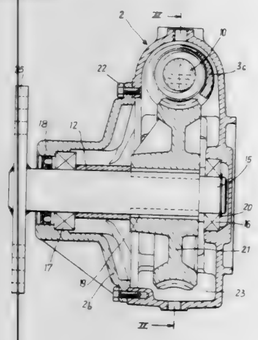
said first spring end being arranged to constantly bias said sensing arm means toward said first direction of movement; and said second spring end being arranged to impose yieldable latching forces on said sensing arm means to resist movement of said sensing arm means in said first direction and thereby prevent premature brake activation.

3,964,334
GEARS
Raymond John Hicks, Llanwrthwl near Llandrindod Wells, Wales, assignor to Vickers Limited, London, England
Filed Apr. 3, 1975, Ser. No. 564,754
Claims priority, application United Kingdom, Apr. 18, 1974, 17144/74
Int. Cl.² F16H *57/00, 1/28*
U.S. Cl. 74—410 **3 Claims**



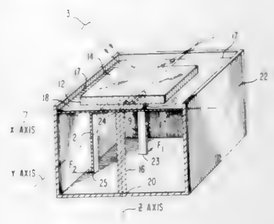
1. A flexible cantilevered, gear wheel support comprising
a. a gear wheel support sleeve;
b. a flexible spindle united at one end to said sleeve by electron beam weld and defining a sleeve zone; and
c. a carrier having at least one recessed base defining a carrier zone and having united to said base opposite said recess by electron beam weld, the other end of said flexible spindle, whereby the zones of the carrier and the sleeve are of diaphram form so as to be capable of flexing relative to the remainder of the carrier and sleeve, flexure of these zones in use of the support being additive to flexure of the spindle united therewith.

3,964,335
DISENGAGEABLE REDUCTION GEAR UNIT
Pierre Y. Gérard, 6 rue Donizetti, 75016 Paris, France
Filed Dec. 10, 1974, Ser. No. 531,306
Claims priority, application France, Nov. 21, 1974, 74.38303
Int. Cl.² F16H *1/16*
U.S. Cl. 74—425 **3 Claims**



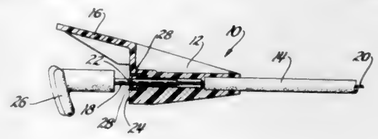
1. A reduction gear unit comprising a driven wheel and a driving element such as a pinion or worm within a gear-box, wherein the driving element is rotatably mounted within the bore of a cage constituted by two coaxial cylindrical end bodies which are capable of rotating within corresponding respective housings formed in the gear-box and rigidly connected to each other by means of a semi-cylindrical cheek, the axis of said bore being eccentric with respect to a periphery of the end bodies and being displaceable with respect to the axis of the end bodies in a direction substantially at right angles to the diametral plane on each side of which the cheek extends so that in a first relative angular position of the cage with respect to the casing the driving element is engaged with the driven wheel and that in an angular position displaced by 180° with respect to the first the driving element is disengaged from the driven wheel and means for immobilizing the cage for each of said positions.

3,964,336
STEERABLE MOUNT
Wayne Arthur Harmening, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Sept. 3, 1974, Ser. No. 502,673
Int. Cl.² G03B *17/26*
U.S. Cl. 74—501 M **6 Claims**



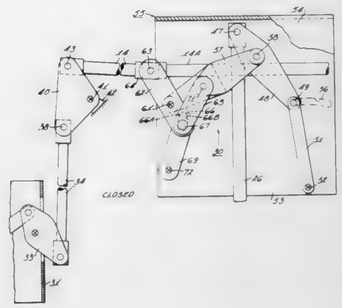
1. A mount suspension system comprising:
a housing;
a mount;
a flexible planar diaphragm joined to said mount and said housing for supporting said mount;
a flexible strut having one end joined to said housing and an end opposite said one end joined to said mount for supporting said mount;
a lever having one end joined to said mount, said lever being responsive to a force applied to the lever end opposite said one end for establishing a torque about an axis in the plane of said diaphragm for angularly displacing said mount about said axis.

3,964,337
MOTION TRANSMITTING REMOTE CONTROL ASSEMBLY
Lawrence D. Pardington, Rochester, Mich., assignor to Teleflex Incorporated, North Wales, Pa.
Filed Nov. 25, 1974, Ser. No. 526,575
Int. Cl.² F16C *1/10*
U.S. Cl. 74—501 P **8 Claims**



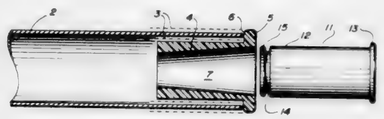
1. A motion transmitting remote control assembly comprising; guide means having a slideway extending therethrough, said guide means including a hanger body made of organic polymeric material and adapted for attachment to a support structure, said slideway extending completely through said hanger body, a core element movably supported by said guide means for transmitting motion and including a rod slidably disposed in said slideway, at least one bore extending into said hanger body adjacent to and spaced from said slideway and in a direction generally parallel to said slideway and coextensive with only a portion of the length of said slideway to define a flexible membrane between said slideway and said bore for engaging said rod.

3,964,338
POLE UNIT MECHANISM FOR CLOSING THE CONTACTS IN AN OIL CIRCUIT BREAKER
John C. Benson, Hyde Park, and George L. Hossfield, Jr., Walpole, both of Mass., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed Apr. 10, 1974, Ser. No. 459,846
Int. Cl.² G05G *1/04*
U.S. Cl. 74—520 **6 Claims**



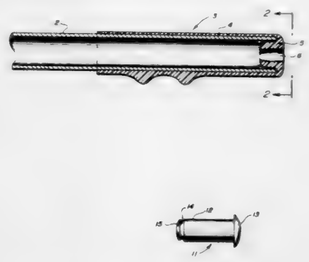
1. In a circuit breaker having stationary contacts and movable contacts movable into and out of engagement with said stationary contacts;
a frame;
a lift rod operably connected to effect the movement of said movable contacts into and out of engagement with said stationary contacts;
linkage mechanism supported by said frame and operatively connected to said lift rod;
a swing link operatively connected to provide for an adjustment in the linkage mechanism so that laterally acting forces are not applied to said lift rod as it is moved in a contact closing operation;
operating means remote from said lift rod to effect the operation of said lift rod;
interconnecting means operatively connecting said operating means with said lift rod;
a force-coupled mechanism comprising a scissor-toggle supported by said frame and operatively connected to said linkage mechanism and to said interconnecting means, said scissor-toggle including a first link and a second link, said links each having first and second ends;
a common pivot pin to which the first ends of said first and second links are pivotally connected;
a first fixed pivot pin carried by said frame to which the second end of said first link is pivotally connected;
a pivot pin carried by said linkage mechanism to which the second end of said second link is pivotally secured;
an adjusting guide means on said frame operably connected to provide limited lateral adjustment in said linkage mechanism and operable to effect the axial movement of said lift rod in a straight line path of travel as it is moved axially; and,
an input lever pivotally supported on said frame and operatively connected to said scissor-toggle and to said interconnecting means;
whereby the operation of said operating means is transmitted to said input lever through said interconnecting means and said input lever operates said scissor-toggle to actuate said linkage mechanism to effect a forceful movement of said contacts to a closed or open position.

3,964,339
END HOLDERS FOR HANDLE BARS
Anthony I. Antonio, Somerville, N.J., and Fernando V. Guerrero, Yardley, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed May 19, 1975, Ser. No. 578,587
Int. Cl.² B62K *21/26*
U.S. Cl. 74—551.9 **2 Claims**



1. A holder for a tape wound about and fastened at an end of a tubular shaped cylindrical bar for hand guided equipment which comprises:
an expandble hub having a generally cylindrical shaped body of slightly smaller diameter than said tubular bar, a rounded cap section having a brim of sufficient diameter for abutting the end of said tubular bar, and an aperture through said hub and said cap section, said aperture tapering from said cap section to the other end of said hub with the largest dimension at the cap section and its narrowest at the other end; and
a solid cylindrical core having a slightly smaller diameter than said aperture at said cap section but a slightly larger diameter than said aperture at its narrowest dimension, a rounded face section at one end of said core for sealing engagement with said cap section of said hub, and a groove spaced apart from said face section and extending circumferentially about the exterior of said core for defining a lip, the distance between said face section and said lip section on said core being slightly greater than the length of said hub, whereby when said core is inserted into said hub, the face section of said core is in sealing engagement with the cap section of said hub and said lip section is engagement with the other end of said hub.

3,964,340
HAND GRIP HAVING AN INNER HUB
Anthony I. Antonio, Somerville, N.J., and Fernando V. Guerrero, Yardley, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed May 19, 1975, Ser. No. 578,453
Int. Cl.² B62K *21/26*
U.S. Cl. 74—551.9 **2 Claims**



1. A hand grip for a tubular bar adapted for handguided equipment which comprises:
a tubular grip section having an outer shell slightly larger in diameter than said tubular bar so said bar can be inserted into said tubular grip, and an inner expandable hub having a generally cylindrically shaped body of slightly smaller diameter than said tubular bar and communicating with an end of the grip section for providing a space

between said outer shell and said inner hub to permit insertion of the tubular bar therebetween, said inner hub having a tapered aperture with the largest dimension at the end where said hub communicates with said grip section to its narrowest dimension of its other end; and

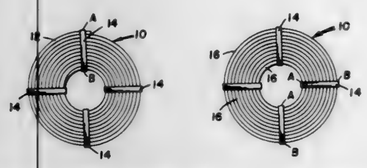
a solid generally circular core having a slightly smaller diameter than said tapered aperture at its largest dimension but a slightly larger diameter than said aperture at its narrowest dimension, a rounded face section at one end of said core for sealing engagement with the end of said grip section, and a groove spaced apart from said face section and extending circumferentially about the exterior of said core for defining a lip section, the distance between said face section and said lip section being slightly greater than the length of said inner hub, whereby when said core is inserted into said hub, the face section of said core is in sealing engagement with the end of said grip section and said lip section is in engagement with the other end of said hub.

3,964,341

MULTI-RING FILAMENT ROTOR

David W. Rabenhorst, Clarksville, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Continuation-in-part of Ser. No. 451,923, March 18, 1974, abandoned. This application Feb. 26, 1975, Ser. No. 553,113
Int. Cl.² F16C *15/00*
U.S. Cl. 74—572 **26 Claims**



1. An inertial energy storage rotor device for rotation about a shaft comprising, in combination,

rim means comprised of a plurality of annular rim elements formed of essentially anisotropic material having substantial tensile strength along longitudinal axes thereof;

rim constraining means for restraining radially outward movement, relative to the shaft, of the rim elements, the rim constraining means being disposed at selected locations of the rim means; and

hub means for carrying the rim means, the hub means being attached to the shaft.

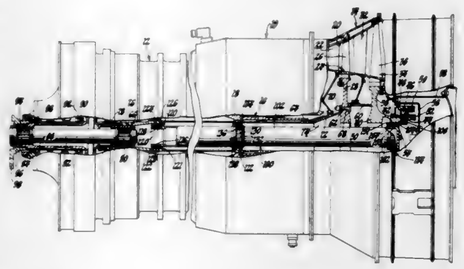
3,964,342

TURBINE SHAFT BALANCING

Paul E. Beam, Jr., Indianapolis, and Charles K. Meyers, Danville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed July 22, 1974, Ser. No. 490,907
Int. Cl.² F01D *3/00*; **F16C** *1/00*; **F16F** *15/22*
U.S. Cl. 74—573 R **5 Claims**

1. In a gas turbine engine having multi-drive shafts including an inner shaft having one end thereof directed exteriorly of the front of the engine to be coupled to a load and an aft end covered by a bearing sump cover and an inner exhaust cone, the improvement comprising: a tubular extension on the inner shaft having an open end thereon for providing access into the interior of the tubular extension, a turbine wheel including a hub located inboard of the bearing sump cover, first bearing means for rotatably supporting said hub so as to support one end of said tubular extension for rotation about its longitudinal axis, second bearing means for rotatably supporting the opposite end of said tubular extension for rotation about said longitudinal axis, said first bearing means including an access opening from the aft end of the engine when the inner exhaust cone and bearing sump cover are removed, a balance tube located interiorly of said tubular extension and being removable through said access opening, a plurality of axially spaced index surfaces formed circumferentially around said balance tube, a balance weight mounted on each of said index surfaces including an outer peripheral surface thereon engageable with the inner surface of said tubular extension to locate said balance tube radially inwardly of the inner surface of said tubular extension concentrically of the longitudinal axis thereof and



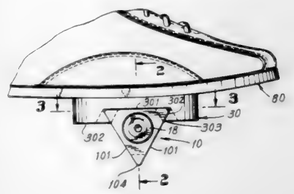
coacting means on one end of said balance tube and said hub for securing said balance tube axially within said inner shaft and against relative rotation therebetween whereby said inner shaft and balance tube are concurrently driven by said turbine wheel about the longitudinal axis of said shaft, said weights being arcuately adjusted with respect to said balance tube to produce a multi-plane, in-situ balance of the rotating mass of said inner shaft and said turbine wheel coupled in driving relationship therewith.

3,964,343

COMBINATION MEANS FOR RIGIDLY ATTACHING SHOE TO A PEDAL FOR A FOOT-DRIVEN CRANK-OPERATED MACHINE

James H. Lauterbach, The Carriage House, 90 Gregory Ave., West Orange, N.J. 07052

Filed June 9, 1975, Ser. No. 585,187
Int. Cl.² G05G *1/14*; **B62M** *3/08*
U.S. Cl. 74—594.6 **10 Claims**



1. Combination means for rigidly securing the foot of an operator to a pedal for a foot-driven cycle, or the like, the combination comprising:

a. a pedal having a substantially prismatic configuration, comprising two polygonal end surfaces and at least three substantially mutually congruent side faces extending transversely to and between the end faces;

b. connecting means, at least at one end face of the pedal, for rotatably connecting the pedal to a crank;

c. pedal connector means adapted to be secured to the sole of a shoe; and

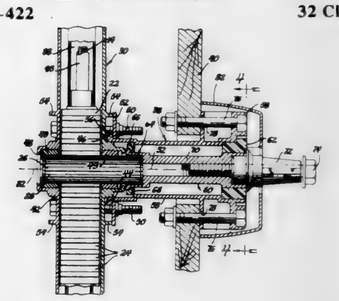
d. shoe connecting means formed on each side face of the pedal, the shoe connecting means being mutually lockably interengageable with the pedal connector means.

3,964,344

ACTUATOR ASSEMBLY

Louis T. Horvath, Solon, and Clifford H. Allen, Chesterland, both of Ohio, assignors to Teleflex Incorporated, North Wales, Pa.

Division of Ser. No. 387,937, Aug. 13, 1973. This application May 2, 1974, Ser. No. 466,385
Int. Cl.² F16H *57/02*
U.S. Cl. 74—422 **32 Claims**



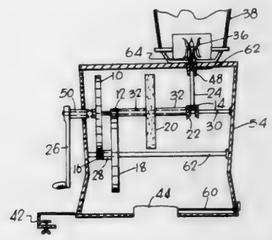
1. An improved actuator assembly comprising; a rack, a pinion engaging said rack for moving said rack, a rack and pinion housing supporting said pinion for rotation about an axis and supporting said rack for movement tangentially of said pinion, said housing extending from said axis in one direction farther than in the opposite direction, mounting means adapted for attachment to a support structure and including a shaft for rotating said pinion, said housing being connectable to said mounting means in spaced planes transverse to said axis and alternatively at either side of said housing so that said shaft may be disposed coaxially with said pinion alternatively from either side of said housing.

3,964,345

MANUALLY OPERABLE BLENDER

Jacob J. Le Van, Seattle, Wash., assignor to The Raymond Lee Organization, Inc., a part interest

Filed Mar. 10, 1975, Ser. No. 556,785
Int. Cl.² F16H *37/06*, *1/20*; **B01F** *7/00*
U.S. Cl. 74—665 P **5 Claims**



1. A device wherein a manually rotated handle can cause an output shaft to rotate at much higher speed, said device comprising:

a hollow housing having top and side holes;

first and second vertically spaced horizontal members disposed in the housing, one end of the first member extending through the side opening;

a hollow sleeve with said handle secured at one end slidably receiving said one end of the member at its other end, said sleeve being rotatable about the first member;

a first gear rotatable about the first member;

coupling means detachably connecting said sleeve to said first gear;

a second gear rotatable on the second member and coupled to the first gear;

a third gear rotatable on the second member;

a first hollow shaft rotatable on the second member and interconnecting the second and third gears;

a fourth gear freely rotatable on the first member and coupled to the third gear;

a fifth bevel gear rotatable on the first member;

a second hollow shaft rotatable on the first member and interconnecting the fourth and fifth gears;

means supporting said output shaft vertically with its upper end disposed in the top hole; and

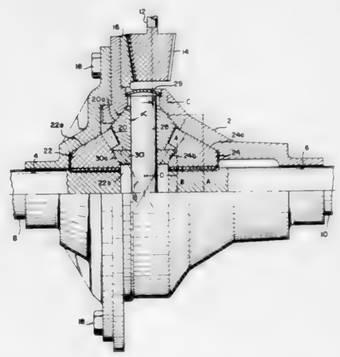
a sixth bevel gear secured to said output shaft and coupled to the fifth gear.

3,964,346

LIMITED SLIP DIFFERENTIAL INCLUDING CONICAL PINION AND SIDE GEARS

Albert F. Myers, Sr., Warren, Mich., assignor to Aspro, Incorporated, Westport, Conn.

Filed Nov. 20, 1974, Ser. No. 525,484
Int. Cl.² F16H *1/44*
U.S. Cl. 74—711 **9 Claims**



1. A limited slip differential assembly for connecting a driving shaft with a pair of driven shafts, comprising

a. a differential casing containing a chamber, and a pair of aligned bores communicating with said chamber for receiving the adjacent ends of the driven shafts, respectively;

b. means adapted for connection with said driving shaft for rotating said casing about the axis of said aligned bores;

c. differential gearing means contained in said casing chamber for connecting said casing with the driven shafts, including

1. a plurality of differential pinion gears rotatable relative to said casing; and

2. a pair of side gears adapted for non-rotatable connection with said driven shafts, respectively, said pinion and side gears having enmeshing teeth; and

d. torque-responsive means for applying friction torque bias to the driven shafts via said side gears, each of said pinion and side gears having conical back surfaces which converge toward the adjacent wall surface of the casing chamber, said casing chamber wall surface having conical portions which correspond with the conical back surfaces of said pinion and side gears, respectively, the cone angle of the conical back surface of said pinion gears and the corresponding conical portion of the casing chamber wall surface being such that said pinion gears are displaced axially inwardly toward said side gears upon the application of torque to said casing, and wedge means responsive

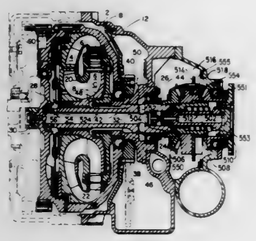
to the inward movement of said pinion gears for displacing said side gears axially apart into frictional engagement with the corresponding casing chamber conical wall surfaces.

3,964,347

TORQUE CONVERTER TRANSMISSION HAVING ROTATING CASING, AND RELEASABLE PUMP

Karl Gustav Ahlen, Stockholm, Sweden, assignor to S.R.M. Hydromekanik Aktiebolag, Stockholm-Vallingby, Sweden

Division of Ser. No. 262,514, June 14, 1972, Pat. No. 3,893,551. This application Feb. 14, 1975, Ser. No. 550,144
Claims priority, application United Kingdom, June 25, 1971, 29886/71; Sept. 9, 1971, 42130/71
Int. Cl.² F16H *57/10*; **F16D** *33/02*
U.S. Cl. 74—733 **26 Claims**



1. A transmission system including a torque converter of the type having a rotating casing adapted to be connected to a drive source and forming therein a working chamber having therein a pump part including at least one ring of pump blades, a reaction part including at least one ring of guide blades and a turbine part including at least one ring of turbine blades, at least one of said pump part and said casing being a movable member movable axially towards and away from the other, such that the pump part and the casing are relatively movable axially between at least a first position in which the pump part is connected to the said casing for rotation therewith and a second position in which the pump part is released from the casing to rotate in relation thereto, a servo-motor means for moving the movable member between said first and second positions, the pump part being the piston of said servo-motor, such that a fluid pressure differential on opposite sides of said pump part effects movement of said movable member between said first and second positions, said turbine part being operatively connected to a turbine shaft, and including a mechanical gear transmission operatively connected to the turbine shaft downstream from the torque converter.

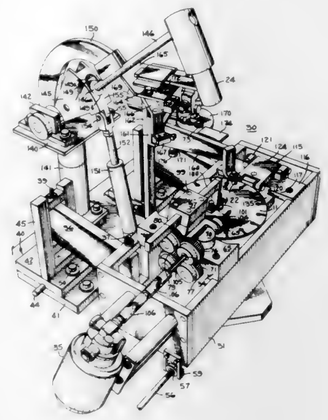
3,964,348

METHOD AND MACHINE FOR STRAIGHTENING AND TENSIONING SAW BLADES

Chester H. Dawson, Danbury, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Mar. 4, 1975, Ser. No. 555,155
Int. Cl.² B23D *63/18*
U.S. Cl. 76—26 **28 Claims**

1. A method of straightening and tensioning a saw blade having a normally-planar surface, comprising the steps of elastically bowing the blade to cause said surface thereof to deflect toward the locus of a segment of the surface of a curved geometric solid having a preselected contour, to which said blade surface would conform if the blade is properly tensioned and straightened; sensing the deflected blade surface in a manner to detect local deviations thereof from said



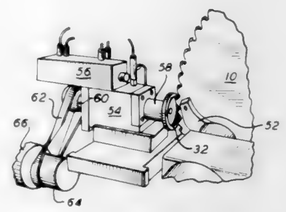
locus; and hammering the sensed local deviations of said blade surface to conform them to said preselected contour.

3,964,349

METHOD AND APPARATUS FOR GRINDING THE TEETH OF A CIRCULAR SAW TO AN IMPROVED CONTOUR

Horst Von Arnauld, and Daniel Joseph Murphy, both of Oakland, N.J., assignors to Von Arnauld Corporation, Franklin Lakes, N.J.

Filed Jan. 13, 1975, Ser. No. 540,449
Int. Cl.² B23D *63/14*; **B24B** *3/40*
U.S. Cl. 76—41 **20 Claims**



1. An apparatus for automatically grinding the teeth of a circular saw to an improved contour, the apparatus comprising:

a means for holding said circular saw;

a grinding means for grinding a portion of the face of a tooth of a circular saw to a continuous curved contour having a more negative rake angle than the remaining portion of the face of said tooth, said grinding means comprising a cup-shaped grinding wheel having an inner abrasive rim;

a transport means for bringing said inner abrasive rim and said face of said tooth into grinding contact; and,

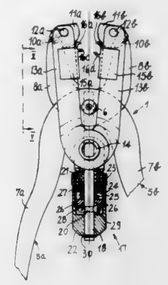
a sequencing means for controlling the automatic relative movements of the moving elements of said apparatus.

3,964,350

CABLE STRIPPER

Roberto Casadio, Via Molinelli, 37, Bologna, Italy

Filed Jan. 13, 1975, Ser. No. 540,758
Claims priority, application Italy, Jan. 15, 1974, 3304/74
Int. Cl.² H02G *1/12*
U.S. Cl. 81—9.5 A **5 Claims**



1. Stripper for stripping a cable with one or more conductor wires coated with an insulation sheath, said stripper comprising a pair of levers articulated about an axis and defining two actuation handles and two jaws approachable towards each other when said handles are actuated against the action of a return spring, a pair of blades fixed on said jaws and cooperating with each other so as to incise the insulation sheath of the cable in diametrically opposite points when the jaws are approached towards each other, two cylindrical sectors having longitudinally knurled outside surfaces, said sectors being articulated on the ends of said jaws about axes parallel to the axis of articulation of the said levers so that the knurled surfaces are arranged opposite to each other, a pair of fork elements each of which consisting of two articulated arms whose extremities are articulated on said sectors at the center of curvature of the knurled surfaces, the arms of the fork elements having a common articulation axis extending between the said handles and parallel to the axis of articulation of said levers, the line which joints the articulation points of the cylindrical sectors on the extremities of the jaws being disposed between the line which joints the articulation points of the said sectors on the extremities of the arms of the fork elements and the axis of articulation of said levers, said stripper being characterized in that it further comprises a tubular element hinged about the axis of articulation of the arms of the fork elements, a bushing associated to said tubular element and defining a cavity, a rod hinged about the axis of articulation of said levers and extending axially through said cavity, an annular groove provided on said rod in the zone of said cavity, a bush slidable on said rod and having a collar, said bush being received in said cavity and biased by return spring means, said collar being formed in such a manner as to retain a plurality of balls arranged in said cavity in engagement within said groove.

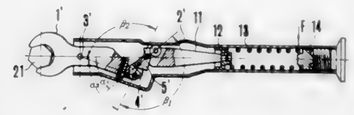
3,964,351

TORQUE WRENCH

Hiroshi Tsuji, Tokyo, Japan, assignor to Tonichi Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1975, Ser. No. 602,230
Claims priority, application Japan, Aug. 7, 1974, 49-94426[U]
Int. Cl.² B25D *23/142*, *23/145*, *23/147*
U.S. Cl. 81—52.4 R **2 Claims**

1. A preset type torque wrench comprising that the end of a head, which is engaged with a bolt to be screwed, is connected with a toggle link, the other end of which is so connected with a thruster as to compress a spring, whereby when the torque reaches a preset value, the toggle link is actuated to compress the spring, so that the head turns relatively to a grip part, applied with a manual force, characterized in that another link is arranged in series to said toggle link between



the head and the thruster, so that after the toggle link is actuated, said another link is further actuated, whereby the head continues to turn at a large angle relatively to the grip part.

3,964,352

BACK-UP WRENCH FOR THREADED CONNECTORS

Bobby Wayne Dukes, Houston, Tex., assignor to N-S-W Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 456,569, April 1, 1974, abandoned. This application Feb. 7, 1975, Ser. No. 547,842
Int. Cl.² B25B *7/02*
U.S. Cl. 81—426 **3 Claims**

1. A plier-type wrench for gripping an hexagonally-shaped member, comprising:

a first handle,

a first jaw forming integral part with said handle and consisting of a first wall, extending generally in the direction of said handle, and of a second wall extending inwardly and at an angle of approximately 120° from said first wall, said first jaw being adapted to grip one angle of said member;

a plate having a bottom end pivotally mounted on said first handle below said first wall and a top end forming a first external cylindrical bearing surface;

a second jaw having a second external cylindrical bearing surface rotatably mounted on said first bearing surface, said second jaw consisting solely of two spaced-apart lobes at the opposite ends thereof and having a large concavity therebetween such that only said lobes can grip a second angle of said member which is directly opposite to said first angle;

a second handle pivotally mounted on a rearward extension of said plate;

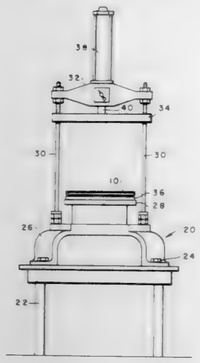
spring means coupled between said plate and said first handle tending to move said jaws apart; and

manually-operated means in and between said handles for pivoting said plate toward said first handle, thereby causing said second jaw to forcibly push said member against said first jaw.

3,964,353
CARPET TILE MACHINE

James E. Fowler, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 542,110, Jan. 20, 1975. This application Aug. 8, 1975, Ser. No. 603,070
Int. Cl.² B26D 3/08
U.S. Cl. 83—1 9 Claims

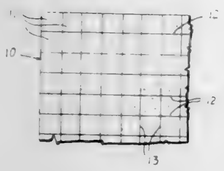


1. Apparatus to cut the hardened back surface of a carpet tile in a pressure mold having a support member to receive the carpet tile, a pressure actuated cutting die member and a means to move and apply pressure to the cutting die member, the improvement comprising: a cutting die operably associated with said pressure actuated cutting die member, said cutting die having a plurality of substantially parallel and continuous serrated die cutters, said adjacent die cutters adjacent the edges of said pressure actuated die member being spaced closer to each other than the die cutters interior of said edges.

3,964,354
FLEXILE CORE MATERIAL FOR LAMINATED STRUCTURES AND METHOD OF PRODUCING THE SAME

Thomas J. Johannsen, 216A Major St., Toronto, Ontario, Canada

Division of Ser. No. 338,538, March 6, 1973, Pat. No. 3,867,238. This application Jan. 16, 1975, Ser. No. 541,460
Int. Cl.² B26D 3/08
U.S. Cl. 83—39 2 Claims

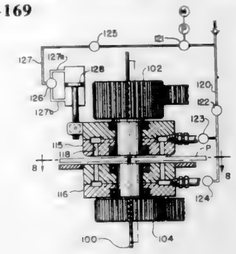


1. A method of producing a flexile core material for laminated structures which comprises:
providing a sheet of rigid elastic foam plastic material having a pair of opposite sides,
slotting the sheet from one side thereof to form a plurality of linearly extending, intersecting, slots, said slots dividing the sheet into an array of block-like elements,
each slot being formed by piercing the sheet from said one side using a cutting blade providing a row of wedge-shaped cutting projections, and to a depth such that the slot is continuous on said one side of the sheet and is interrupted at intervals on the opposite side of the sheet, the interruptions defining hinge connections on said opposite side of the sheet by which the block-like elements are articulately interconnected.

3,964,355
AIR CUSHION SHEET SUPPORT

Dennis Daniels, Bellevue, Wash., assignor to U.S. Amada, Ltd., City of Industry, Calif.

Division of Ser. No. 386,064, Aug. 6, 1973, which is a continuation-in-part of Ser. No. 359,983, May 14, 1973, abandoned. This application Feb. 18, 1975, Ser. No. 550,438
Int. Cl.² B23D 53/04, 59/00
U.S. Cl. 83—169 6 Claims

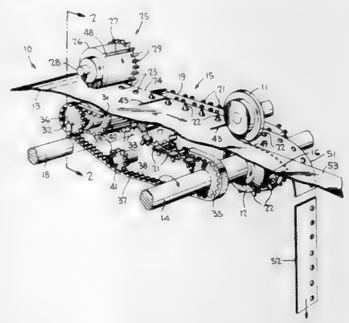


6. The apparatus of claim 1, said self-compensating means including means for initially positively moving one of said air cushion means away from the other air cushion means to position a workpiece between the air cushion means.

3,964,356
PAPER WEB TRIMMING APPARATUS HAVING FEED BAND CHOPPER

John Joseph Dineen, Durham, N.H., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Dec. 16, 1974, Ser. No. 533,744
Int. Cl.² B26D 9/00
U.S. Cl. 83—302 5 Claims

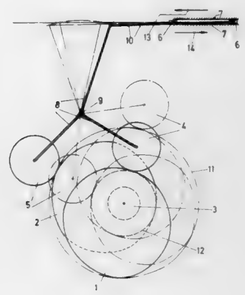


1. In an apparatus for trimming a band of marginal feed holes from the marginal edge of a continuous paper web, comprising a pair of rotary slitters disposed for slitting the web parallel to its marginal edge, a web feed device having tractor pins for engaging the feed holes to transfer the web toward said rotary slitters, the apparatus including web chopping means located upstream of said feed device, said means having a chopper blade for repeatedly chopping the web from its marginal edge inwardly of the feed holes, and said blade having an inner end in alignment with said slitters, whereby the web is chopped along its marginal edge during the feeding thereof into said slitters which serve to thereafter slit along the web thereby separating the feed hole band from the web into short strips.

3,964,357
DRIVE MECHANISM FOR A RECIPROCATING FEED

Helmut Fetzer, Goeppingen; Hans Braun, Weilheim-Teck; Günter Cieslok, and Otto Rasenberger, both of Goeppingen, all of Germany, assignors to L. Schuler GmbH, Germany

Filed Jan. 31, 1975, Ser. No. 546,011
Claims priority, application Germany, Feb. 2, 1974, 2405123
Int. Cl.² B23D 25/02
U.S. Cl. 83—318 12 Claims

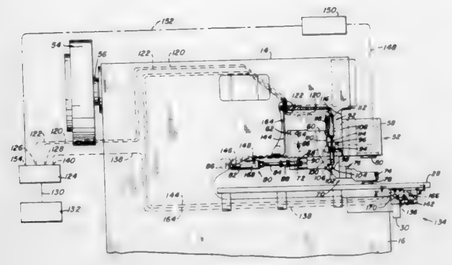


1. Driving apparatus for imparting movement to a component such as a flying shear or the like, comprising:
a rotatably drivable axle
a first control disk carried by and rotatable with said axle, said first disk having a first cam surface thereon,
a second control disk carried by and rotatable with said axle, said second dish having a second cam surface thereon,
a lever having first, second and third lever arms extending from a common lever pivot axis in respective different directions,
pivot means pivotally supporting said lever at the lever pivot axis,
said first and second lever arms extending at different angles from said lever pivot axis and including respective cam followers engageable with the respective first and second cam surfaces, said first and second cam surfaces including means for imparting a predetermined pivotal movement of said lever upon rotation of said axle,
linkage means interconnecting said third lever arm with a component, said lever including means for imparting movement to said component upon pivotal movement of said lever,
and component guide means for guiding the movement of said component in a feeding direction and a substantially opposite return stroke direction,
wherein said first and second cam surfaces include means for imparting sequential movement to said component during rotation of said axle, in said feeding direction with a first feed segment of increasing velocity, a second feed segment of constant velocity, and a third feed segment of decreasing velocity, and in said return stroke direction with a first return segment of increasing velocity, and a second return segment of decreasing velocity, without the interposition of a constant velocity return segment similar to said second feed segment between said first and second return segments.

3,964,358
PUNCHING APPARATUS WITH MECHANICALLY MOVABLE TOOL SUPPORT ARM

Rocco L. Stefano, East Amherest, and Robert J. Galland, Cheektowago, both of N.Y., assignors to Unipunch Products, Inc., Buffalo, N.Y.

Filed May 7, 1975, Ser. No. 575,376
Int. Cl.² B26D 7/26
U.S. Cl. 83—400 12 Claims



1. A punching apparatus comprising,
a press frame having an upper portion and a lower portion forming a longitudinal recess therebetween for receiving a workpiece supported by said lower portion,
a tool support arm having a front end portion and a rear end portion, said rear end portion connected to said press frame upper portion for pivotal movement about a vertical axis thereon,
a tool holder releasably secured to said tool support arm front end portion,
actuator means for laterally pivoting said tool support arm about said vertical axis to said press frame upper portion between a tool punching position and a tool changing position to permit replacement of said tool holder and tools in said tool holder,
said actuator means pivotally connected to said press frame upper portion and said tool support arm rear end portion, and
valve means for controlling said actuator means to laterally pivot said tool support arm between said tool punching position and said tool changing position.

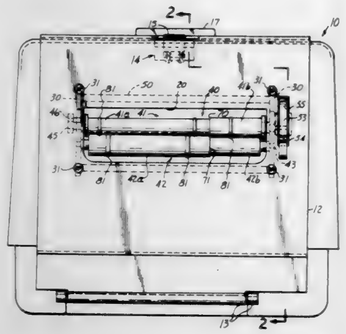
3,964,359
APPARATUS FOR CUTTING SHEET MATERIAL

Dwight G. Westover, Sierra Madre, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Oct. 24, 1974, Ser. No. 517,553
Int. Cl.² B26D 1/28
U.S. Cl. 83—430 49 Claims

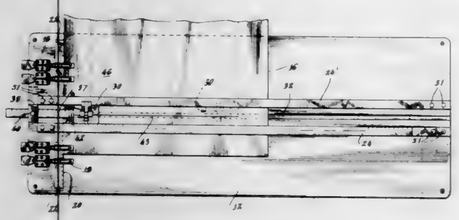
1. Apparatus for cutting sheet material, comprising:
roller means including first and second rollers, each of said rollers being formed by at least two side by side longitudinally aligned concentric cylindrical portions having relatively larger and smaller diameters whereby on each of said rollers the end edge of said larger cylindrical portion adjacent said smaller cylindrical portion defines a circular cutting edge;
means for positioning said rollers in a cooperating substantially parallel disposed relationship with respect to each other with said defined circular cutting edges overlapping and positioned adjacent each other whereby a piece of sheet material fed between said rollers is engaged thereby and slit into separate parts by the rotating action of said cutting edges; and

motor means responsive to the positioning of said rollers for driving said rollers whenever said rollers are positioned in



said material engaging position thereby to feed a piece of sheet material therebetween.

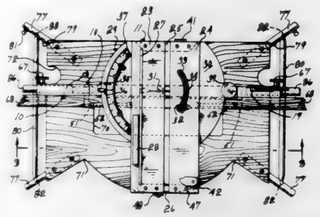
3,964,360
SHEET MATERIAL CUTTING APPARATUS
Joseph Schwartz, 841A Heritage Village, Southbury, Conn. 06488
Filed Dec. 22, 1975, Ser. No. 643,248
Int. Cl.² B26D *3/02, 5/10*
U.S. Cl. 83—464 **17 Claims**



1. A mat cutting apparatus comprising
a cutting board to support a mat to be cut on a surface of the board, said cutting board being provided with a pair of parallel longitudinal guide bars affixed to and spaced above the cutting board to enable a mat to fit between the guide bars and said cutting board surface, said parallel guide bars being selectively laterally spaced from each other to form lateral guide surfaces for a mat cutting block adapted to snugly fit between the guide bars for longitudinal movement along the guide bars, and cutting board further having a groove parallel to and located between the guide bars to receive a knife edge protruding from the mat cutting block; and
a mat cutting block formed with a guide block and a knife assembly movably mounted to the guide block for movement from a retracted position to a mat cutting position, said guide block being formed with a cutter base having a flat surface for planar movement across a mat to be cut and being sized to snugly fit and slide between the guide bars.

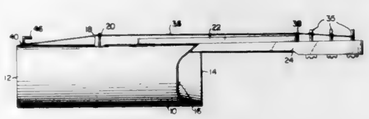
3,964,361
MITER TABLE ASSEMBLY
Joseph Paul Allaire, 228 NE. 22nd Ave. Apt. 4, Pompano Beach, Fla. 33062
Filed July 30, 1975, Ser. No. 600,291
Int. Cl.² B27B *9/04*
U.S. Cl. 83—471.3 **10 Claims**

1. A miter table assembly for a portable power-operated saw comprising a table top, an elongated base secured over said table top and having a channel extending transversely through said base and also opening upwardly thereof, a guide frame supported on top of said elongated base, pivotably relative thereto about an upright pivot axis, defining a straight slot upwardly registering with said channel, and adapted to support and guide a portable power handsaw with the blade of the latter in downward projection into said slot and said transverse channel, for operative guided displacement of the saw



from one end to the other of said guide frame, a pair of stopping devices secured to said guide frame at relatively opposite ends respectively of said straight slot, one of said stopping devices being fixedly secured in the path of displacement of the base plate of the portable power handsaw and the other of said stopping devices including an arm pivoted to said guide frame and a spring connected to said arm and pivotably biasing the latter toward and in the path of the power handsaw and in overlying relationship with the base plate of the latter.

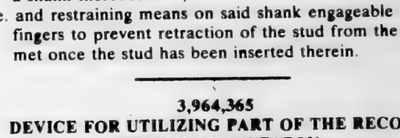
3,964,362
VIOLIN CONSTRUCTION
William J. Quemore, Sr., 149 E. Church St., Blackwood, N.J. 08012
Filed Jan. 3, 1975, Ser. No. 538,362
Int. Cl.² G10D *1/02*
U.S. Cl. 84—173 **9 Claims**



1. In a violin having a hollow resounding body, a bridge, string attaching means, a neck, a fingering board, the improvement therein of:
said resounding body including a hollow cylindrical tube of sheet material with said neck and fingering board attached to said tube longitudinally and extending from one end of said tube, and said string attaching means including means for stretching the strings between the extended end of said neck and the other end of said tube, and a bridge positioned between the ends of said tube and resting on the inside curved surface for support thereby and for supporting said strings.

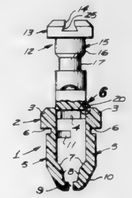
3,964,363
HIGH NOTE INTENSIFIER FOR BRASS MUSICAL INSTRUMENTS
Anthony F. Armento, 505 Cassingham Road, Fairless Hills, Pa. 19030
Filed June 30, 1975, Ser. No. 591,525
Int. Cl.³ G10D *9/02*
U.S. Cl. 84—399 **4 Claims**

1. An intensifier for insertion loosely within the mouthpiece of a brass musical instrument and within an instrument tube carrying the mouthpiece which comprises
an elongated wire having a central portion and one end thereof angularly disposed with respect to the central portion for insertion in the mouthpiece,



said wire having an enlarged tongue thereon at the other end and freely oscillatable within the instrument tube.

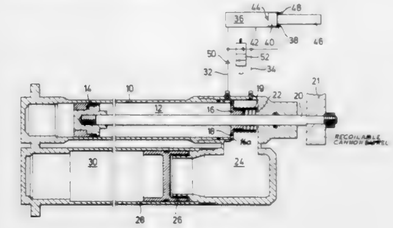
3,964,364
INITIALLY SINGLE PIECE ROTATABLE FASTENER
L. Richard Poe, Placentia, Calif., assignor to Hartwell Corporation, Placentia, Calif.
Filed Apr. 17, 1975, Ser. No. 568,909
Int. Cl.² F16B *13/04*
U.S. Cl. 85—72 **14 Claims**

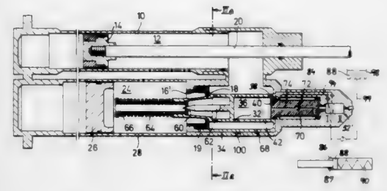


1. A fastener for detachably securing a pair of members having mating perforations shaped to receive the fastener, said fastener comprising:
a. a grommet including a head having an opening therethrough and a pair of spreadable essentially parallel stems extending axially from opposite sides of the opening for insertion through the mating perforations;
b. and a stud including a head and a shank, the shank being insertable through the grommet head opening and between the stems;
c. The sides of the shank and grommet stems having mutually engageable means operable, on relative turning movement of the stud and grommet, to spread the stems apart for interlocking engagement with the margins of the mating perforations in the members;
d. a pair of laterally offset yieldable fingers extending inwardly from the stems along respectively opposite sides of a shank therebetween;
e. and restraining means on said shank engageable by the fingers to prevent retraction of the stud from the grommet once the stud has been inserted therein.

3,964,365
DEVICE FOR UTILIZING PART OF THE RECOIL ENERGY OF A WEAPON
Erich Zielinski, Grulten, Germany, assignor to Rheinmetall G.m.b.H., Dusseldorf, Germany
Filed July 8, 1974, Ser. No. 486,514
Claims priority, application Germany, July 13, 1973, 2335649
Int. Cl.² F41F *19/02*
U.S. Cl. 89—43 R **8 Claims**

1. A weapon comprising:
a recoilable barrel;
a hydraulic cylinder having a main piston connected to said barrel:
a primary accumulator containing a compressed gas and connected to said cylinder for displacement by hydraulic fluid forced from said cylinder into said accumulator by said piston upon movement of said barrel, the gas in said primary accumulator storing recoil energy of the barrel in the form of gas pressure and enabling retrieval of recoil energy;
an auxiliary energy accumulator having an auxiliary piston exposed to a pressure difference during retrieval of energy from said primary accumulator, said auxiliary piston having small and large effective surfaces, said pressure difference displacing said auxiliary piston in the direction of said large surface, said auxiliary accumulator being formed with first and second chambers on opposite sides of said auxiliary piston;





means connected to said hydraulic cylinder for transmission of fluid pressure in said hydraulic cylinder to said chambers during a firing position of said barrel, said auxiliary accumulator being formed as an auxiliary cylinder having a third chamber; and
an actuating cylinder connected to said third chamber, said third chamber acting selectively as a pumping-pressure and vacuum chamber of said actuating cylinder.

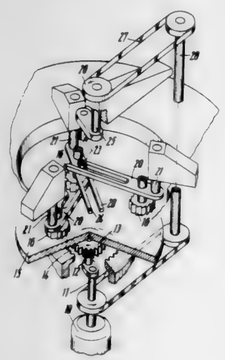
3,964,366
SAFETY MECHANISM FOR A FIREARM
Maxwell G. Atchisson, 55 Old Yellow Springs Road, Apt. H, Fairborn, Ohio 45324
Division of Ser. No. 250,006, May 3, 1972, Pat. No. 3,850,076.
This application Oct. 29, 1974, Ser. No. 518,348
Int. Cl.² F41D *11/02*
U.S. Cl. 89—148 **6 Claims**



1. Safety mechanism for a firearm including a firing mechanism, comprising:

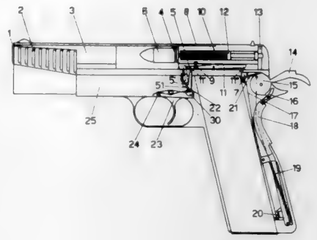
a safety actuating member;
means mounting said safety actuating member for selective movement along a first path and for concurrent movement along a second path, said first path movement being between a first position which prevents firing operation of the firing mechanism and a second position which permits such firing operation;
said mounting means comprising a slot formed in said safety actuating member, said slot being elongated in the direction of said second path;
a member extending through said slot to provide a pivot about which said safety actuating member is moved along said first path;
means urging said safety actuating member in one direction along said second path to place said one end of said slot in contact with said member extending therethrough; and
cam means positioned to engage and displace said safety actuating member along said second path in opposition to said urging means as said safety actuating member is moved along said first path between said first and second positions, so that said cam means tends to retain said safety actuating member in either of said first and second positions along said first path.

3,964,367
DEVICE FOR MACHINING TROCHOIDAL INNER WALLS, ESPECIALLY FOR THE CYLINDERS OF WANKEL ENGINES
Theodor Stoferle, Seeheim; Jochen Klaar, Hamburg; Bernhard Bellmann, Pfungstadt, and Paul-Heinz Theimert, Weiterstadt, all of Germany, assignors to Theodor Stoferle, Seeheim and Jochen Klaar, Hamburg, both of, Germany
Filed Aug. 9, 1973, Ser. No. 387,131
Claims priority, application Germany, Aug. 11, 1972, 2239568
Int. Cl.² B23C *3/04*
U.S. Cl. 90—11 C **20 Claims**



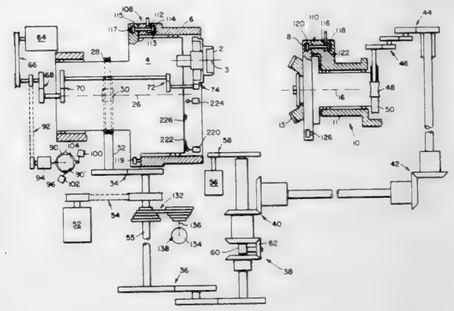
10. The method of machining a substantially trochoidal surface on the inside of a cylinder for a Wankel engine which comprises: rotating the cylinder in one direction about a first axis while rotating said first axis in a circular path about a second axis in the opposite direction, engaging the inside of the cylinder with at least two cutting tools engaging at spaced positions on the inside of the cylinder during movement of the cylinder, each of said tools being supported about an axis on a pivoted member, the axis of each pivoted member being spaced from the axis of the tool thereon and coinciding with the position of engagement of the tool with the cylinder, and pivoting the tools simultaneously about the respective axes of said pivoted members in a manner to maintain a substantially constant angular relation between a first plane containing the axis of each respective tool and the position of engagement of the tool with the cylinder and a second plane tangent to the surface being machined at said position of engagement.

3,964,368
AUTOMATIC PISTOL
Jorge Antonio Zimeri Safie, 13 Avenida 14/26 Zona 10, Guatemala City, Guatemala
Filed June 18, 1974, Ser. No. 480,594
Claims priority, application Italy, Oct. 24, 1973, 30488/73
Int. Cl.² F41D *11/02, 11/20*
U.S. Cl. 89—141 **6 Claims**



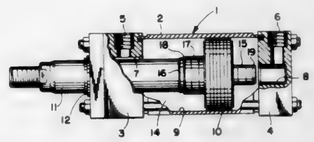
1. An automatic pistol having repeat and burst firing modes of operation comprising:
a pistol frame, a barrel carried by said frame, a slide carried by said frame for reciprocating movement between a pistol firing position and a recoil position, means for firing said pistol including a striker pin carried by said slide, a hammer and a sear carried by said frame, said sear being mounted for movement between a first position normally engaged with said hammer to prevent said hammer from striking said pin and a second position disengaged from said hammer for release thereof to enable said hammer to strike said pin, a trigger carried by said frame, a disconnector carried by said slide for reciprocating movement therewith and for movement between first and second positions, said disconnector in said second position being engageable with said sear enabling said sear to move into its second position thereby to release said hammer for firing said pistol, means carried by said trigger and responsive to a pull on said trigger to move said disconnector from said first position into said second position thereby enabling the pistol to be fired and, in response, said slide to be reciprocated from said firing position to said recoil position and back, said sear being movable into its first position upon movement of said slide from said firing position to again engage said hammer and prevent it from striking said pin for a second shot, means biasing said disconnector for movement into said first position, said disconnector lying in its first position under the action of said biasing means when, after firing, said slide returns to its firing position thereby preventing the pistol from firing until the trigger is once again pulled to move said disconnector into its second position, and a manually movable selector member carried by said frame for selecting a repeat firing or burst firing mode of operation for said pistol, said selector member, when moved to said burst firing mode of operation, being cooperable with said moving means for automatically moving said disconnector into said second position upon each return of said slide to its firing position thereby repeatedly moving said sear into its second position, releasing said hammer, and enabling burst firing of said pistol.

3,964,369
LARGE GEAR MANUFACTURE
Ernst J. Hunkeler, Fairport, N.Y., assignor to The Gleason Works, Rochester, N.Y.
Filed Oct. 6, 1975, Ser. No. 619,885
Int. Cl.² B23F *9/10*
U.S. Cl. 90—5 **13 Claims**



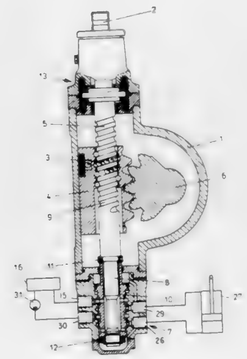
1. In the known generating roll method for producing a bevel or hypoid gear by (a) cutting a workpiece with a rotating face-mill cutter supported by a cradle oscillating in a cradle housing and having a plurality of radially disposed blades spaced from each other, and (b) rotating the workpiece in a work-holder in timed relation to the oscillation of the cradle during the generation of each gear tooth slot, the improvement comprising the steps of:
spacing the cutter blades so that there can be intervals during tooth slot generation when no blade is in cutting engagement with the workpiece,
interrupting the generating roll and clamping the work-holder and cradle to prevent, respectively, rotation and oscillation thereof whenever a blade is in cutting engagement with the workpiece, and
continuing said generating roll by incrementally rotating the workpiece and oscillating the cradle only when no blade is in cutting engagement with the workpiece.

3,964,370
CUSHIONING MEANS FOR HYDRAULIC CYLINDER
Beldon R. Rich, Northbrook, Ill., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed July 15, 1974, Ser. No. 488,715
Int. Cl.² F15B *15/22*
U.S. Cl. 91—395 **2 Claims**



1. Cushioning means for cushioning the terminal portion of the stroke of a piston in a hydraulic cylinder wherein said cylinder has a cylindrical bore in one end through which fluid is displaced from said cylinder during movement of the piston therein; said cushioning means comprising a cylindrical member on said piston extending axially therefrom to enter said bore to throttle the flow of fluid through said bore during the terminal portion of said stroke; said member having a series of first, second, and third coaxial cylindrical steps which define with said bore successive first, second, and third annular orifices of stepwise progressively decreasing cross-section area as said piston moves in the terminal portion of its stroke; said first and second orifices being of approximately equal axial length which is substantially greater than the axial length of said third orifice at the end of the stroke of said piston, and said second orifice being of radial width several times that of said third orifice and about one-half that of said first orifice to effect a substantially constant pressure drop across the respective annular orifices thus to decrease the piston velocity at substantially uniform rate and constant deceleration.

3,964,371
POWER BOOST STEERING MECHANISM
Heinrich Wagner, Schwabisch Gmund; Karl-Friedrich Karcher, Lorch, Wurtt., and Otto Merkle, Schwabish Gmund, all of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany
Filed May 29, 1975, Ser. No. 581,979
Int. Cl.² B62D *5/08*; **F15B** *13/14*
U.S. Cl. 91—434 **8 Claims**



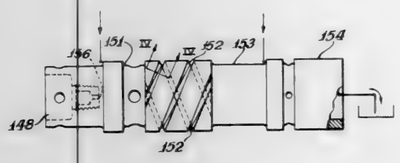
1. Booster steering apparatus comprising:
a housing (**1**) having a reciprocal sleeve valve (**10**) therein wherein said housing and sleeve valve have coacting flow control elements for selectively effecting passage of pressure and exhaust flow to actuate a servomotor;
said housing having pressure inlet connection means (**30**) and exhaust outlet connection means (**15**) and a connection means (**26, 28**) for each chamber of a double acting servomotor;
a steering spindle (**5**) in said housing having an end (**8**) within said sleeve valve;
means comprising a thrust bearing (**11, 12**) engaged with each end of said sleeve valve to axially secure said end of said steering spindle therein wherein a first reaction piston (**R**) comprised of the terminal end of said steering spindle and the respective end of said valve sleeve is effected to receive road reaction pressure;
closure means (**K**) for the end of said housing to effect a first reaction chamber (**18**) in which said first reaction piston is disposed;
a second reaction chamber (**19**) comprised of an enlarged space (**23**) in said housing surrounding said sleeve valve;
a second reaction piston (**20**) comprising a shoulder on said sleeve valve slidably engaged within said second reaction chamber;
said reaction chambers having connection to respective servomotor connection means (**26, 29**).

3,964,372

CLUTCH CYLINDER CIRCUIT AND CHARGING VALVE THEREFOR

Probir K. Chatterjea, Des Plaines, Ill., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 347,096, April 2, 1973. This application June 6, 1974, Ser. No. 477,128
Int. Cl.² F15B *11/08, 13/042*
U.S. Cl. 91—471 **1 Claim**



1. Procedure involving a control spool having a double helix defined by two helical grooves on the surface of the spool so as to form long orifice means, for use with a source of fluid pressure and a drain to collect spent pressure fluid, for utilizing modulation in the operation of a work performing element so as to actuate same by pressure having an essentially linear rate of rise, comprising the steps of:

directing pressure developed by fluid flow in a first fluid path to the work performing element;

inserting in the first fluid path a control spool with long orifice means defined by two surface helical grooves of general V-shape in cross section, and forming a double helix with the grooves 180° out of phase with one another and with the same lead angle, by connecting a portion of the length of the orifice means defined by the double helix in the first path for restricting rate of rise of pressure to the work performing element to limit the rate of actuating same;

directing flow in a second fluid path from the remaining portion of the length of the orifice means defined by the double helix to drain;

said procedure further characterized by tapping pressure from a pressure tap point communicatively intersecting the orifice means, said tap point to the orifice means defined by the double helix defining the junction between the first and second paths and locatable with respect to the one end of the length of the orifice means defined by the double helix connected to drain, the characteristic of said location of the pressure tap point from said one end being such that the tap point at any given distance along the length of the orifice means defined by the double helix yields a tapped off pressure the magnitude of which is formed as a substantially linear function of the distance;

connecting the tap point to the work performing element;

causing relative movement at a constant rate of the pressure tap point with respect to the tapped orifice means defined by the double helix so that said one end of the latter and said point separate at a constant rate, insuring that the tapped off pressure to the work performing element has a rapid, essentially linear rate of rise, said work performing element comprising a fluid motor; and

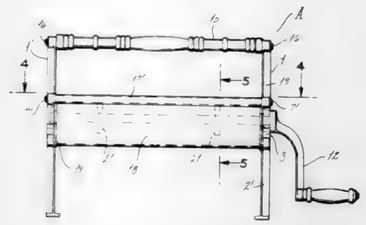
restricting the second fluid path into drain to yield an initially tapped off motor pressure of approximately 30 psi, the transition due to said rapid, essentially linear rate of raising motor pressure being from the 30 psi to approximately 250 psi final motor pressure and occurring within about one-half second.

3,964,373

PAPER LOG ROLLER

Louis J. Christen, Jr., and John J. Latal, both of St. Louis, Mo., assignors to Christen Incorporated, St. Louis, Mo.

Filed Mar. 19, 1975, Ser. No. 559,753
Int. Cl.² B31C *1/00*
U.S. Cl. 93—1 C **6 Claims**



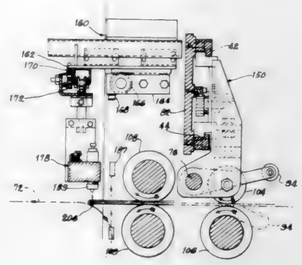
1. A device for making log-simulative members from flexible sheet material comprising spaced apart first and second end frames, said frames having aligned bearings, a shaft journaled in said end frame bearings for rotation therein and extending between said end frames, means for effecting rotation of said shaft, means for detachably engaging an end portion of the flexible sheet material to said shaft whereby upon rotation of said shaft said sheet material will be wound thereabout, a pan-forming member mounted upon said end frames and extending therebetween for disposition beneath said shaft and for cooperating with said end frames to define a volume for receiving the log-simulative member during formation, elongated leaf springs provided within said pan-forming member and having one end affixed to one side portion of said pan-forming member and with their other ends being free and normally disposed adjacent the opposite side portion of said pan-forming member, said leaf springs extending beneath said shaft for bearing against the log-simulative member during formation for urging the material into tightly wound condition about said shaft.

3,964,374

CARTON FOLDING AND GLUEING DEVICE

Walter J. Stolkin, Chicago; William A. Riley, Woodridge, both of Ill., and Henry Sejda, Munster, Ind., assignors to Stolmar Corporation, Chicago, Ill.

Filed Sept. 12, 1974, Ser. No. 505,451
The portion of the term of this patent subsequent to May 20, 1992, has been disclaimed.
Int. Cl.² B31B *1/36, 1/52, 1/62*
U.S. Cl. 93—36 MM **24 Claims**



1. In an apparatus for producing a folded carton from a carton blank a folding device comprising:

a. flipper means reciprocating between a raised position and a lowered position engaging the leading edge of said blank during upward movement for flipping upwardly a portion of said leading edge;

b. means for mounting said flipper means to said apparatus; and

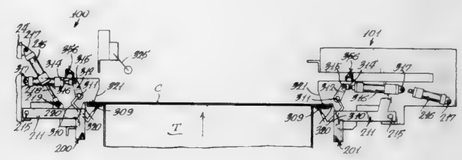
c. means for reciprocating said flipper means between said raised and lowered positions.

3,964,375

METHOD AND APPARATUS FOR PROVIDING CONTAINERS WITH FOLDED CAPS

Stanley R. Norbutas, Glenview; Thomas B. Domenz, Schaumburg, and Jan Mieleszuk, Chicago, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Oct. 18, 1974, Ser. No. 516,035
Int. Cl.² B31B *49/02*
U.S. Cl. 93—36.5 R **8 Claims**



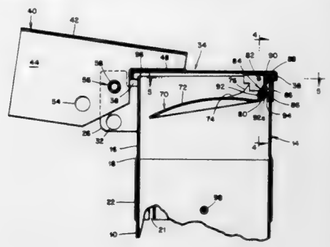
1. Method of providing and securing a cap to a flanged open end container comprising the steps of selecting a cap corresponding to the size of the container tube, inserting a cap on a cap conveyor and sensing the transverse dimension of the folding area, lifting the cap and conveying the cap over the open end of the container, which cap includes an outer peripheral portion extending outwardly of the container flange, folding the peripheral portion of the cap extending outwardly of the container flange, elevating the container into position under the cap wherein the container flange is disposed within the peripheral portion of said cap, folding the cap flange to encompass the container flange to form a flange assembly, folding said cap and container flange assembly into parallel relationship with the sidewalls of said container and securing a ligature about the cap and container flange assembly to affix the cap to the container.

3,964,376

TAMPER-PROOF WEATHER COVER DEVICE FOR EXHAUST PIPES

William R. Janke, Rte. No. 3, Northfield, Minn. 55057

Filed Dec. 11, 1974, Ser. No. 531,758
Int. Cl.² F23L *17/02*
U.S. Cl. 98—59 **25 Claims**



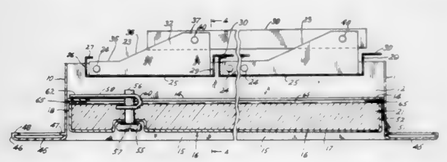
6. A tamper-proof weather cover device comprising a lid member of a size larger than the upper end of a substantially vertical exhaust pipe so that said lid member can overlie and close the upper end of said pipe, means for pivotally attaching one edge portion of said lid member adjacent said upper pipe end at a location outside said pipe end so that the peripheral edge of said lid member extends laterally beyond said pipe end, a vane member of a smaller size than said pipe end so as to fit within said pipe end, means pivotally attaching one edge portion of said vane member to the underside of said lid member at a location spaced inwardly from said peripheral edge so that said vane member resides within said pipe end and extends in a cantilever manner beneath said lid member, and latch means within said pipe end operable by said vane member to latch said lid member closed when there is no exhaust gas flow and said vane member is permitted to pivot downwardly due to gravity, and to unlatch said lid member when there is a sufficient exhaust gas flow to pivot said vane member upwardly to permit said lid member to open.

3,964,377

INSULATED CLOSURES FOR ATTIC FANS, AND SEALS THEREFOR

Lael Ogden Chapman, P.O. Box 13524, Houston, Tex. 77019

Filed Nov. 22, 1974, Ser. No. 526,123
Int. Cl.² F04D *25/08, 25/14*
U.S. Cl. 98—116 **11 Claims**



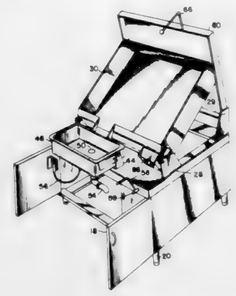
1. Insulated closure for an attic fan air inlet, comprising an attic fan having an air inlet, said attic fan having plural parallel elongate vanes across said air inlet rotatable to open and closed positions with respect to said air inlet, a frame around said air inlet at the entrance to said air inlet, said vanes being spaced from said entrance to said air inlet to provide a recess space over the area of said air inlet, insulated panel means conforming in shape to said air inlet and disposable in a closed position within said recess space of said air inlet and flush with the entrance to said air inlet to cover said vanes and to close said air inlet, said panel means being movable from said closed position covering said vanes to open said air inlet, and peripheral seal means around at least one of said panel means and air inlet to seal therebetween when said panel means is in said closed position.

3,964,378

TILTING FRYPAN WITH DRAIN SYSTEM

Robert L. Dunkelman, Shreveport, La., assignor to The Frymaster Corporation, Shreveport, La.

Filed Mar. 22, 1974, Ser. No. 453,767
Int. Cl.² A47J *37/10*
U.S. Cl. 99—425 **9 Claims**

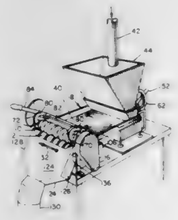


1. A tilting frypan apparatus comprising in combination:

a free-standing cabinet having a support frame mounted above said cabinet;

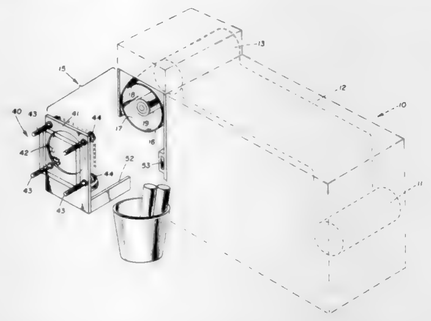
a frypan pivotally mounted on said support frame with brackets spacing said frypan from a pivotal axis extending in front of said frypan and parallel to the front side thereof;
means for tilting said frypan about said axis forward toward the front of said cabinet;
a pouring lip integral with the front rim of said frypan and forming a continuous channel extending forward from the front side of said frypan to a point above said axis to pour out fluid from said frypan;
a drain pan having a fluid outlet in the bottom and removably mounted in front of said frypan to substantially instantaneously receive a substantial surge of said fluid in said frypan as said frypan is tilted, a side of said drain pan adjacent to said frypan disposed between said axis and said front side of said frypan with said pouring lip overlying said drain pan side; and
a swivel drain spout in communication with said fluid outlet to selectively direct the fluid discharged from the drain pan to a storage reservoir or to a floor drain.

3,964,379
MACHINE FOR SLITTING NUT SKINS
James W. Gardner, 309 Washington Ave., Tyrone, Pa. 16686
Filed Jan. 13, 1975, Ser. No. 540,512
Int. Cl.² B02B *3/08*; **A23N** *5/01*
U.S. Cl. 99—541 **10 Claims**



1. A machine for slitting the skins of edible nuts, comprising
a. at least a pair of rolls disposed in a vertical plane one above the other and spaced apart from one another to define a nut receiving gap between their peripheries,
b. slitting means disposed adjacent said gap for engaging nuts passing through said gap,
c. upper and lower parallel arbors rotatably supporting said rolls,
d. frame means including bearings supporting opposite ends of said arbors,
e. parallel guide means on said frame means engaging the ends of at least one of said arbors and extending along parallel paths intersecting the axes of both the upper and lower rolls, and,
f. adjusting means connected to both ends of said one arbor and to said frame for moving both ends of said one arbor simultaneously along said guide means for selectively changing the size of said gap,
g. said adjusting means including a crank pivoted to said frame means at each end of said one arbor, each of said cranks connected to the opposite ends of said one arbor,
h. said cranks being connected to one another for simultaneous movement and lever means connected to said cranks for pivoting said cranks and moving said one arbor along said paths,
i. said lever means including a handle extending outwardly from machine whereby it may be aligned with the handles of other similar machines arranged in a row.

3,964,380
APPARATUS FOR SECURING A SHEET OF MATERIAL INTO A ROLL
Charles H. Meyer; Donald H. Sheffield, and George N. Willman, all of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.
Filed May 16, 1975, Ser. No. 578,046
Int. Cl.² B65B *13/02*
U.S. Cl. 100—9 **6 Claims**



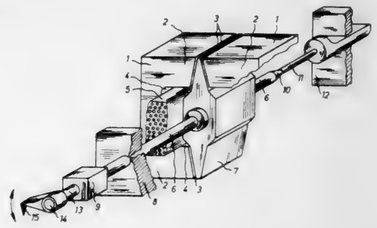
1. A take-up apparatus for handling sheet material as it is fed from a source, said apparatus comprising:
a housing having a chamber therein, said chamber being open at one end;
an opening in said housing adapted to receive the material and direct it into said chamber;
a roller rotatably mounted within said chamber and extending substantially throughout the length of said chamber;
means to rotate said roller;
means for guiding said material onto said roller;
means for ejecting said material from said roller and out said open end of said chamber after said material has been rolled on said roller; and
means for securing said material in its rolled condition as said material is ejected from said roller.

3,964,381
APPARATUS FOR TYING BUNDLES
Clayton J. Coenen, 2646 W. Spencer Road, Appleton, Wis. 54911
Filed Jan. 15, 1975, Ser. No. 541,191
Int. Cl.² B65B *13/04*, *67/00*
U.S. Cl. 100—34 **6 Claims**



1. An apparatus for binding bundles, the combination comprising
a hopper for holding a bundle to be bound, having a floor approximately the size of said bundle with two pairs of opposite edges, and having a pair of diagonally opposite corner structures located adjacent diagonally opposite top corners of said bundle;
a supply of cord mounted on said apparatus for binding said bundle;
releasable cord retainers mounted centrally of each of said edges of said floor and on each of said pair of diagonally opposite corner structures to receive and hold said cord drawn from said supply and strung diagonally from each of said corner structures to said releasable cord retainers mounted centrally of said floor edges on opposite sides of said floor and transversely across said floor;
said cord strung about said releasable cord retainers having a free end fastened to itself to form a completed loop of cord with ends of said loop at said diagonally opposite corner structures;
said releasable cord retainers positively retaining said cord loop and said releasable cord retainers mounted centrally of each of said edges of said floor having means external of said hopper for releasing said cord when said bundle is to be tied.

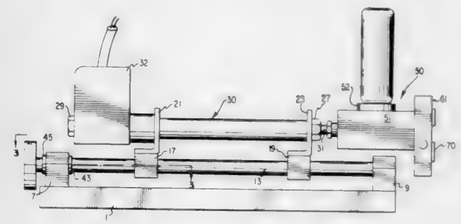
3,964,382
ENGRAVING DEVICE FOR A PRINTING FORM ENGRAVING MACHINE
Walter Baar, Kiel; Herbert Koehler, Trappenkamp, and Walter Muecke, Klausdorf, all of Germany, assignors to Dr. -Ing Rudolf Hell GmbH, Germany
Filed July 10, 1974, Ser. No. 487,283
Claims priority, application Germany, July 16, 1973, 2336089
Int. Cl.² G11B *3/18*
U.S. Cl. 101—1 **12 Claims**



1. In an engraving device for a machine to engrave printing forms, said device comprising a shaft having an end supporting a lever supporting an engraving needle, bearing means adjacent the lever for supporting the shaft for rotary movement with the end extending therefrom, means for oscillating the shaft through very small rotary angles and means acting upon the shaft for dampening rotational movement thereof, the improvement comprising said dampening means being connected to said shaft between said bearing means and said lever and closely adjacent to said lever, and said dampening means applying the dampening force symmetrically to the shaft so that the dampening forces are applied to the shaft to dampen both torsional and bending forces applied to the end of the shaft.

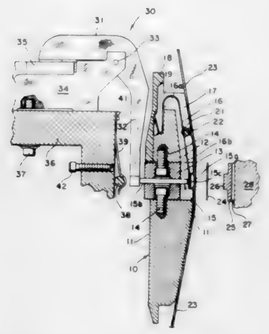
3,964,383
RECIPROCATING SELF-CONTAINED MARKING DEVICE
Patrick Delligatti, c/o Dalemark Industries, Inc., 950 Airport Road, Lakewood Industrial Road, Lakewood, N.J. 08701
Filed Sept. 24, 1974, Ser. No. 508,858
Int. Cl.² B41F *17/24*, *31/24*
U.S. Cl. 101—44 **4 Claims**

1. A printing device for encoding production data on moving articles comprising a plate-like base, a slide guide means on said base; a slide assembly carried by said slide guide means and movable toward and away from one edge of said base; said slide assembly including a printing head for imprinting moving articles and a motor means connected to said printing head for reciprocating said printing head from a null position into contact with the article and returning said printing head to the null position;
means for independently advancing or retracting said slide assembly along said base in the same path of reciprocation as that of said printing head;
said printing head being of the capillary action-wettable type, including a source of printing ink located adjacent



the back of said type and means for feeding ink from said source to the back of said type for inking thereof;
said feeding means includes a chamber for receiving ink from said ink source, said chamber being filled with a porous capillary action-wettable filler, a port in said chamber leading to the outside of said chamber behind said capillary wettable porous type, a uniformly permeable pad disposed between said port and the back of said porous type and wick means in said port to convey ink from the wettable filler through said port and to said permeable pad, said permeable pad acting to distribute ink uniformly behind the entire type area.

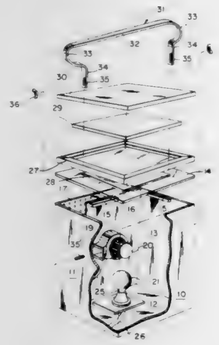
3,964,384
HIGH SPEED PRINTING MECHANISM
Ross W. Johnston, Norristown, Pa., assignor to Sperry Rand Corporation, Blue Bell, Pa.
Filed Mar. 11, 1974, Ser. No. 450,123
Int. Cl.² B41J *9/02*
U.S. Cl. 101—93.48 **2 Claims**



1. A high-speed impact printing mechanism having a free flight hammer adapted to be moved from a ready position toward a predetermined type character on juxtaposed moving type to a free flight impact position comprising:
hammer mounting means,
bearing means supported on said hammer mounting means,
hammer means slidably mounted in said bearing means opposite said moving type,

impact head means on said hammer means,
guide means on said hammer means,
actuator means adapted to move said hammer means from said ready position toward said moving type and to a free flight impact position when a selected type character is juxtaposed said hammer means,
cantilever spring means mounted at a fixed end on said hammer mounting means and having a free end slidably guided in said guide means, said cantilever spring means being normally spring loaded to return said hammer means and said actuator means to a ready position, and
front damper means mounted on said hammer mounting means for engaging a short portion of said cantilever spring means intermediate said free end and said fixed end effectively providing a shortened cantilever spring between said hammer means and said damper means when said hammer means is moved from said ready position to said free flight impact position by said actuator means, whereby said free end of said cantilever spring means is damped, its natural frequency is raised and the initial return force of said spring means on said hammer means is increased.

3,964,385
UNITARY DEVICE AND METHOD FOR SCREEN MANUFACTURE AND PRINTING
Ralph Knight, 3108 McColloch St., Wheeling, W. Va. 26003
Filed Apr. 3, 1975, Ser. No. 564,856
Int. Cl.² B41C *1/14*; **B41F** *15/20*
U.S. Cl. 101—128.4 **12 Claims**



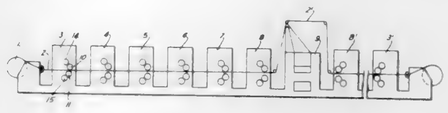
1. Apparatus for use in manufacturing a printing screen and printing with the screen, comprising: a generally rectangular box having six sides forming an enclosed interior; said box including means for manufacturing a printing screen, with said means including a glass plate forming a first side of said box for receiving thereon film positives and a light sensitive stretched screen for reproducing the pattern of the positives, means for uniformly holding the light sensitive screen and positives onto the outside of said glass plate and shielding the light sensitive screen from light to the exterior of said box, and electric light means for producing an exposure light within said box that will shine through said glass plate and the positives to the light sensitive screen for exposure; and means for printing with the printing screen, with said means including a vacuum plate forming a second side of said rectangular box and being air permeable throughout the major portion of its extent, blower means for pulling outside environment air through said second side vacuum plate and into the box, and means for mounting the printing screen to overlie the exterior of said vacuum plate with the material to be printed on between said screen and the vacuum plate.

3,964,386
METHOD AND APPARATUS FOR REMOVING SURPLUS INK ON PRINTING CYLINDERS
Mamiliano Dini, Island of Elba, Italy, assignor to European Rotogravure Association, Munich, Germany
Filed Nov. 14, 1973, Ser. No. 415,788
Claims priority, application Germany, Dec. 11, 1972, 2257102
Int. Cl.² B41F *35/00*; **A46B** *15/00*
U.S. Cl. 101—169 **11 Claims**



1. In a process wherein a layer of liquid is transferred onto a surface in a surplus amount and all but a predetermined residual portion of the liquid layer is stripped off, a method of stipping off all but the residual portion comprising the steps of:
providing a stripping member having a mass sufficiently low so as to permit rapid oscillation thereof, said stripping member also having a stripping edge adjacent to but at all times spaced from the surface by a predetermined distance,
disposing said stripping edge in a plane generally parallel to a tangent plane of the surface,
causing relative movement between the surface and the stripping member, and
oscillating the stripping edge of said stripping member in a plane generally perpendicular to said tangent plane of the surface sufficiently so as to create a hydrodynamic barrier in the liquid layer to block passage of all but the residual portion of the liquid layer past the stripping edge.

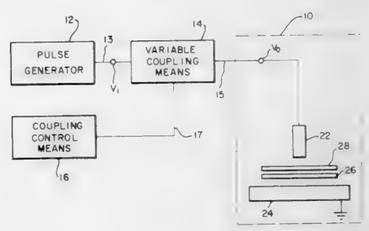
3,964,387
APPARATUS FOR CONTINUOUSLY PRINTING UNCASED FOLDED BOOKS
Hans-Dieter Werner, Leipzig, Germany, assignor to VEB Polygraph Druckmaschinenwerke Leipiz, Leipzig, Germany
Division of Ser. No. 285,521, Aug. 31, 1972, abandoned. This application Dec. 11, 1973, Ser. No. 423,815
Int. Cl.² B41F *5/06*, *13/50*
U.S. Cl. 101—224 **4 Claims**



1. Apparatus for continuously printing uncased folded books, comprising a series of printing machines, each printing machine including a printing roller set located along a path and movable between an inoperative position and a printing position; each of said printing roller sets including a pair of printing rollers spaced from each other in said inoperative position, and in contact with opposite sides of said web, respectively, in said printing position so that both sides of each web section are imprinted; transporting means for continuously transporting a length of a paper web along said path so that consecutive web sections cooperate with the printing roller sets of consecutive ones of said printing machines and so that the printing roller set of each of said printing machines makes an imprint on a correlated web section when the respective printing roller set is in said printing position, and

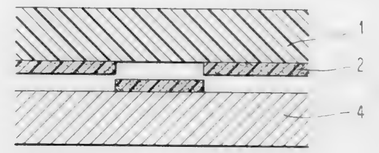
makes no imprint when it is in said inoperative position; control means for operating said printing roller sets of the respective printing machines between said inoperative and printing positions in a predetermined sequence so that each web section of said length is imprinted with a different imprint and only by the correlated printing roller set of one of said printing machines but is not imprinted by the printing roller sets of any of the other machines of said series, said control means including a series of control devices operatively connected with said pairs of printing rollers, respectively, for moving said printing rollers between said inoperative and printing positions so that each printing roller is in said printing position during one revolution, each control device including a pair of shafts supporting said printing rollers of each pair of printing rollers, respectively, a pair of arm means pivotally mounted about an axis spaced from the printing cylinders and supporting said shafts for movement with said printing rollers toward and away from each other, a pair of toggle levers having first inner articulated ends located in the plane of symmetry of said each said pair of printing rollers and outer ends connected with said shafts, respectively, and a pair of spring means each acting on one of said outer ends and on said shafts to move said printing rollers to said printing position, said toggle levers having an aligned straight line position spacing said shafts and printing rollers in said inoperative position, and an angular position in which said spring means move said printing rollers to said printing position, and operating means including a cyclically reciprocable rod connected with said first articulated ends for moving said both toggle levers between said aligned and angular position; and cutting, assembling, and folding means following said series of printing machines in the direction of movement of said web for cutting the imprinted web sections into sheets, and for assembling and folding said sheets to form an uncased folded book.

3,964,388
METHOD AND APPARATUS FOR HIGH SPEED NON-IMPACT PRINTING WITH SHADE-OF-GREY CONTROL
James C. Maxwell, Winchester, Mass., assignor to The Carter's Ink Company, Cambridge, Mass.
Filed Mar. 4, 1974, Ser. No. 447,669
Int. Cl.² G01D *15/10*; **H04N** *1/00*
U.S. Cl. 101—426 **27 Claims**



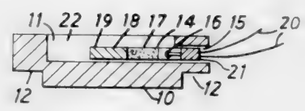
22. A method for non-impact printing comprising the steps of:
A. generating a print signal at a print signal generating means,
B. applying said print signal by way of a variable coupling means to the field shaping electrode of a non-impact printer having a field shaping electrode and a base electrode, a recipient sheet, said recipient sheet being positioned between said field shaping and base electrodes a donor sheet, said donor sheet being positioned between said field shaping and base electrodes and having printing particles dispersed near the surface of said donor sheet adjacent to said recipient sheet,
C. controlling the signal coupling between said signal generating means and the field shaping electrode of said printer, said signal coupling being provided by said variable coupling means so that a substantially amplitude scaled replica of said print signal is applied to said associated field shaping electrode.

3,964,389
PRINTING PLATE BY LASER TRANSFER
John O. H. Peterson, Cape Elizabeth, Maine, assignor to Scott Paper Company, Philadelphia, Pa.
Filed Jan. 17, 1974, Ser. No. 434,256
Int. Cl.² B41C *1/06*, *1/10*; **G01D** *15/14*
U.S. Cl. 101—467 **1 Claim**



1. The method of making an imaged printing plate comprising the steps of:
providing a transparent substrate having thereon a coating comprising
a. particles which absorb laser energy
b. a self-oxidizing binder and
c. a cros-linking agent or a cross-linking agent in combination with a cross-linkable resin
placing said coating in intimate contact with a lithographic printing surface,
selectively transferring the coating to said lithograhic printing surface by directing laser energy through the film to the surface,
and cross-linking the binder or resin by heating.

3,964,390
BURSTING DISC ASSEMBLY
Leslie Ernest Medlock, Alloway, Scotland, assignor to Imperial Chemical Industries Limited, London, England
Filed Mar. 13, 1972, Ser. No. 233,899
Claims priority, application United Kingdom, Mar. 31, 1971, 8298/71
Int. Cl.² F42D *1/00*; **A62C** *35/02*
U.S. Cl. 102—1 R **8 Claims**



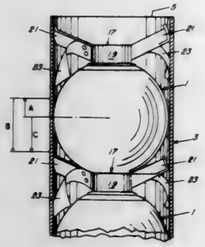
1. A bursting disc assembly comprising a bursting disc having a shear line defining a line of minimum thickness around a destructible portion of the disc and charge of detonating explosive positioned sufficiently close to the said destructible disc portion to break the disc around the shear line and destroy the said destructible portion when the charge is exploded, said destructible portion of the bursting disc being made from a material which is selected from the group consisting of nylon, resin laminated glass fiber, resin laminated paper and polytetrafluoroethylene and which is shattered to a powder by the detonation of the explosive charge.

3,964,391

DISPENSER-LAUNCHED MUNITION WITH TWO-STAGE SPIN-IMPARTING VANES

Alexey T. Zacharin, Parsippany, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 4, 1973, Ser. No. 394,223
Int. Cl.² F42B *13/32*
U.S. Cl. 102—4 **3 Claims**



1. A munition, adapted to be launched from a tubular dispenser, comprising a hollow body containing a payload and having a spin axis, and means for reacting to the airstream after launch to impart a high spin velocity to said body during a short flight, said means comprising:

a primary vane structure including a diameter of outwardly-extending rigid primary vanes rigidly attached to said body, said primary vanes being helically oriented to said spin axis and capable of imparting a predetermined spin velocity to said body, the diamter of the outer envelope of said primary vanes being no larger than that of said body;

a like plurality of helically-oriented resilient, flexible, secondary vanes each rigidly attached at its inner end to one of said primary vanes and normally extending outwardly a substantial distance therebeyond, to substantially increase the total effective vane area and thereby impart to said body a spin velocity substantially higher than said predetermined spin velocity; said secondary vanes being adapted to be folded inwardly toward said body to permit insertion with said body and said primary vanes into a launch tube and to spring outwardly after launch; and

means for removably attaching said flexible vanes to said rigid vanes in such manner that said flexible vanes will be separated from said rigid vanes by the airstream at a predetermined spin rate.

3,964,392

LAND MINE (U)

Irving L. Kintish, Rockaway, and Irwin Marcus, Pompton Plains, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 1, 1967, Ser. No. 666,235
Int. Cl.² F42B *23/16*
U.S. Cl. 102—8 **10 Claims**

1. A mine for firing fragments in a 360° pattern and at a proper burst height, said mine comprising

a container,

a coiled explosive ribbon seated within said container,

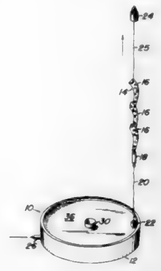
a plurality of fragments affixed to said ribbon,

projecting means mounted in the center of said explosive ribbon and secured to one end thereof,

launching means secured to said projecting means for launching said projecting means vertically in a plane perpendicular to the plane of said coiled explosive ribbon,

a detonator secured to the other end of said explosive ribbon, and

flexible means connected at one end to said detonator and at the other end to said container,



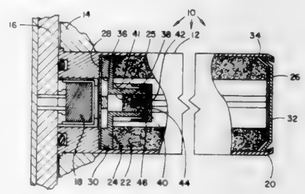
whereupon launching of said projecting means uncoils said explosive ribbon to form a spiral configuration for firing said fragments in said 360° pattern.

3,964,393

IGNITER

Kenneth R. Foote, China Lake, Calif.; Joseph W. Hanzel, Grenada, Miss., and Warren P. Froehner, China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 21, 1974, Ser. No. 481,624
Int. Cl.² F42B *4/22, 4/26*
U.S. Cl. 102—37.6 **2 Claims**



1. In a bore safe flare system wherein a flare candle is adapted to be ignited only after it is expulsed from a housing by an explosive charge, and including:

a casing;

a flare candle in said casing;

a piston in said casing rearwardly of said flare candle;

ignition means fastened in the after end of said flare candle and extending into a portion of said piston;

said piston and said ignition means being interfitted such that separation thereof must take place before ignition may be accomplished;

and stop means forming part of the forward end of said casing to stop said piston for separation from said ignition means when said flare system is actuated; the improvement comprising:

said ignition means comprising a cup shaped body having a centrally located flanged post with a pyrotechnic ignition mix consolidated on said post to form a solid cylindrical plug;

said piston having a forwardly extending tube with a central bore; and

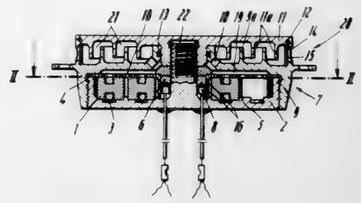
said plug closely fitting within the bore of said tube.

3,964,394

PYROCHEMICAL GAS GENERATOR

Siegfried Wolf, Taufkirchen, Germany, assignor to Bayern-Chemie Gesellschaft fur Flugchemische Antriebe mit beschrankter Haftung, Germany

Filed Sept. 18, 1974, Ser. No. 507,134
Claims priority, application Germany, Oct. 5, 1973, 2350104
Int. Cl.² F42B *3/04*
U.S. Cl. 102—39 **8 Claims**



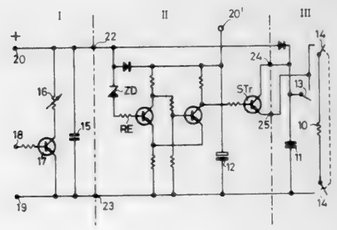
1. A pyrochemical gas generator, comprising a cylindrical receptacle having upper and lower parts, said lower part having a bottom interior wall with a plurality of concentric grooves defined therein and also a plurality of cylindrical recesses arranged in spaced relationship around each groove and defining annular charge support ledges above the grooves which extend beyond each side of the associated groove, a plurality of preformed explosive charges each having a predetermined defined burning surface and each being seated on a respective support ledge above the associated grooves with substantially their outer peripheries exposed for burning, said grooves forming communicating gas passages for the combustion gases during burning of said charges, a firing grate having a gas passage therethrough engaged over said lower part and over said charges, and a gas outlet connected to said receptacle upper part above said grate.

3,964,395

ELECTRICAL PRIMER FOR PROJECTILES

Hans Kaiser, Konigsfeld, and Arthur Kopf, Schramberg-Sulgen, both of Germany, assignors to Gebruder Junghans GmbH, Schramberg, Germany

Filed Oct. 11, 1972, Ser. No. 298,432
Claims priority, application Germany, Oct. 14, 1971, 2151245
Int. Cl.² F42C *11/06*
U.S. Cl. 102—70.2 R **22 Claims**



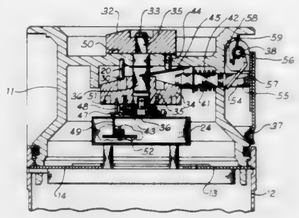
1. In an electrical primer for projectiles with an electrical igniting element and with an ignition circuit system having at least one condenser connected to the igniting element through an electronic switch element, the improvement wherein the electronic switch element is an electronic triggering element having control input terminals and a timing element for generating electrical pulses for application to the control input terminals of said tilting element.

3,964,396

SPIN ACTUATED RELEASE MECHANISM

Stanley J. Herold, Switz City; Donald E. Lagrange, Washington, and John E. Laswell, Bloomfield, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 19, 1975, Ser. No. 559,959
Int. Cl.² F42B *4/12;* **F42C** *15/22*
U.S. Cl. 102—79 **4 Claims**



1. A release mechanism for use with an aircraft parachute flare comprising,

a housing,

a plurality of arms for removably attaching said housing to an aircraft parachute flare,

means for actuating said arms for uncoupling said housing from said aircraft parachute flare,

an ertia arm pivotally mounted in said housing for locking said means for actuating said arms,

a pin attached to said inertia arm,

an actuator slidably mounted to said housing and engageable with said pin attached to said inertia arm,

spring means for disengaging said actuator from said pin attached to said inertia arm,

a plurality of shafts slidably positioned in said housing engageable with said actuator for holding said actuator in a locking position with said pin attached to said inertia arm, and

means for disengaging said plurality of shafts from said actuator and pivoting said inertia arm whereby said means for actuating said arms is unlocked.

3,964,397

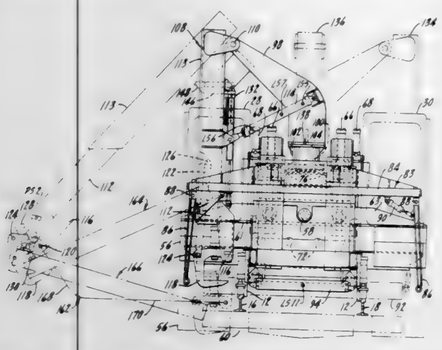
RAILROAD TIE HANDLING MACHINE AND METHOD

Andrew M. Dieringer, Waterford, and Gunars Eidemanis, Milwaukee, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Continuation of Ser. No. 131,128, April 5, 1971, abandoned. This application Aug. 5, 1974, Ser. No. 494,611
Int. Cl.² E01B *29/10*
U.S. Cl. 104—9 **35 Claims**

1. A method of inserting new ties under the rails or railroad track, including the steps of initially laying the new ties on top of the rails, grasping the new ties, one at a time, by one end only, drawing the tie laterally to one side of the rails until the free end of the tie is laterally outside of the rails, lowering at least the free inner end of the tie until it is generally aligned

under the rails, inserting the tie laterally inwardly under the rails, and performing the drawing, lowering and inserting steps



while grasping and supporting the tie during such steps only by the said one end thereof.

3,964,398

MAGNETIC-SUSPENSION VEHICLE SYSTEM HAVING SWITCH TRACKS

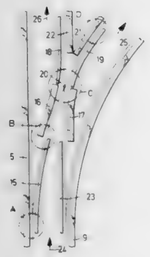
Ulrich Breitling, Berlin, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Feb. 19, 1975, Ser. No. 551,055

Claims priority, application Germany, Mar. 9, 1974, 2411434

Int. Cl.² B61B *13/08*

U.S. Cl. 104—148 MS **8 Claims**



1. A magnetic suspension transport system comprising a track having a switch portion, a vehicle displaceable along said track, a respective main magnet system and auxiliary magnet system provided along each side of the vehicle and track for magnetically suspending said vehicle from and guiding said vehicle along said track, each of said systems comprising an electromagnetic primary part and an armature rail secondary part generating suspending forces between them upon energization of the electromagnet part, the primary part of each of said systems being mounted on said vehicle and the secondary part of each system being mounted on said track, said track parts having a junction site at a switch portion of the track defined as the point at which the line described by a center between the parts on one side of the vehicle intersects the line described by the center between the parts on the other side of said vehicle for passage along a spur of the switch portion and straight passage through the switch portion respectively, and means for reducing, as said vehicle approaches said intersection, the magnetic interaction between the parts of each system on the side of the vehicle traversing said intersection and the parts of the other system at the same side of said vehicle at a rate greater than the decrease in magnetic interaction between the primary and secondary parts of the same system on the side of the vehicle traversing said intersection, the armature rails of the main and auxiliary electromagnets diverging away from their respective lines toward said intersection.

3,964,399

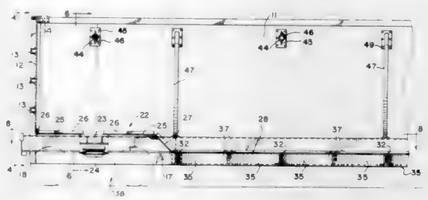
RAILWAY GONDOLA CAR

Roy W. Miller, Highland, and Jack E. Gutridge, Dyer, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed May 5, 1975, Ser. No. 574,481

Int. Cl.² B61D *17/10*

U.S. Cl. 105—406 R **10 Claims**



1. A railway car supported on spaced car trucks and including a body having vertical sides and end walls, the improvement comprising,

an underframe including a longitudinally extending center sill,

floor portions disposed at opposite ends of said car providing first elevated floor structures,

a bolster structure connected to said sides, floor portions and to said center sill on opposite sides thereof,

a second central depressed floor structure positioned between the ends and below said first floor structures,

said second structure including a floor having inner end portions connected to said center sill adjacent lower portions thereof,

a plurality of longitudinally spaced vertical and continuous cross members connected at opposite ends to said side walls and having upper portions thereof connected to the underneath side of said floor for supporting the same,

said cross members having vertical walls extending downwardly from said center sill,

diagonal support members extending diagonally below said center sill and connected to said depressed floor structure for supporting the same,

said support members having first end portion connected to said cross members adjacent their connection to said side walls, and

means connecting intermediate portions of said support members to each other and to said center sill whereby said support members provide a criss-cross configuration between said cross members.

3,964,400

PALLET OF SYNTHETIC MATERIAL

Albertus Brand, Bussum, Netherlands, assignor to B.V. Houtindustrie "De Phoenix", Halfweg, Netherlands

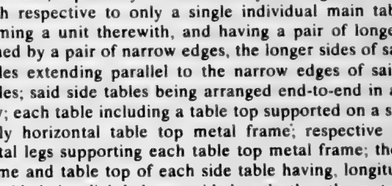
Filed Aug. 28, 1974, Ser. No. 501,284

Claims priority, application Netherlands, June 17, 1974, 7408025

Int. Cl.² B65D *19/32*

U.S. Cl. 108—51 **8 Claims**

1. A pallet of synthetic material comprising an upper platform; a lower platform having locking holes therein, nine upright hollow columns interconnecting said upper and said lower platform, each column having an upright outer wall defining the periphery thereof, said columns comprising eight outer columns and a central inner column, four of said outer columns being positioned in the corners of the pallet and the other four outer columns being each positioned intermediate two corners of the pallet, downwardly extending locking hooks at the lower ends of each of said column, said hooks being snapped through said locking holes in said lower platform, said upper platform and said columns jointly forming an integral unit, said lower platform forming an integral unit, each said locking hook being located within the cross-sectional dimensions of its respective column, said lower platform including a perforated top wall, nine downwardly extending main stiffening ribs being formed underneath said top wall, the upright outer wall of each said column being aligned with one each of said main stiffening ribs of the lower platform, each main stiffening rib defining a periphery corresponding to that of the aligned upright outer wall of its corresponding column, auxiliary downwardly extending stiffening ribs extending between each main stiffening rib and a central junction, said locking holes in the lower platform being located proximate said main stiffening ribs and having a rectangular cross-sec-



tion, said locking hooks engaging underneath the perforated top wall, said top wall of said lower platform including a rectangular framework portion, the width of said framework portion substantially corresponding to the width of said other four outer columns positioned thereabove, central strips joining in the central zone of said top wall above which said central inner column is located, connecting the central area of opposite sides of said framework portion to each other, said framework portion of the top wall of the lower platform including outer downwardly and outwardly extending guide edges positioned between successive main stiffening ribs, the upper platform comprising a perforated top wall, and downwardly extending stiffening ribs formed underneath said top wall, and a plurality of downwardly extending stiffening ribs being formed within each column extending between the upright wall of said column and a central junction.

3,964,401

TYPEWRITER AND BOOKKEEPING MACHINE WORK UNIT FOR THE FORMATION OF A WORK UNIT CHAIN

Karl Gutmann, Jr., Unterkirnach, and Rupert Eder, Villingen, both of Germany, assignors to Firma Karl Gutmann KG, Germany

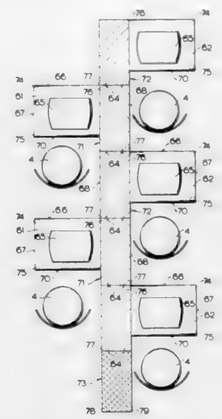
Filed June 25, 1971, Ser. No. 156,915

Claims priority, application Germany, June 25, 1970, 2031450; Mar. 10, 1971, 2111419

Int. Cl.² A47B *57/00, 17/00*

U.S. Cl. 108—64 **16 Claims**

1. A rectilinear work place unit chain comprising, in combination, a plurality of individual workplace units, for business machines such as typewriters, bookkeeping machines, and the like, each including a machine supporting substantially rectangular main table having a pair of longer sides joined by a pair of narrow edges, the main tables of successive workplace units extending laterally in opposite directions from the chain with their longer sides substantially perpendicular to the length of the chain; a plurality of substantially rectangular side tables each respective to only a single individual main table and forming a unit therewith, and having a pair of longer sides joined by a pair of narrow edges, the longer sides of said side tables extending parallel to the narrow edges of said main tables; said side tables being arranged end-to-end in a single row; each table including a table top supported on a substantially horizontal table top metal frame; respective tubular metal legs supporting each table top metal frame; the metal frame and table top of each side table having, longitudinally of said chain, slightly longer side lengths than the metal frame and table top of the associated main table; means disengageably interconnecting the narrow edges of the metal frames of said side tables; said side tables including second substantially horizontal metal frames supported on the associated metal legs in spaced relation below their table top metal frames; and respective shelves supported on each said second metal frame; the table top and shelf of each side table defining an empty inter-space opening in a lateral direction away from the associated main table; said interconnected side tables defining a continuous rectilinear table band extending substantially centrally between said main tables with each said empty interspace being laterally aligned with, and opening toward, a main table seating position on the opposite side of said band from the main table associated with the respective side table; the table tops of said side tables being substantially coplanar and at a level higher than the table tops of said main tables.



3,964,402

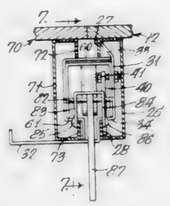
PORTABLE STAGE

James F. Jenne'; Irvin E. Dorschner, both of Owatonna; Harvey M. Urch, West Concord, and Jerry A. Wenger, Owatonna, all of Minn., assignors to Wenger Corporation, Owatonna, Minn.

Filed May 1, 1974, Ser. No. 465,925

Int. Cl.² F16B *1/00*

U.S. Cl. 108—64 **10 Claims**



1. A portable stage having plural separable stage units and means for holding adjacent stage units in fixed relation including a pair of elongate grooved members attached one to each stage unit and opening outwardly therefrom and with a pair of inturned flanges on each member, a clamp mechanism positioned within the grooves of both of said grooved members and including rigid members between and in engagement with said pairs of flanges to define a tongue and groove connection between units for imparting rigidity to said grooved members and having pivotally mounted means to move behind and engage a flange on each of said grooved members and hold said grooved members locked to each other.

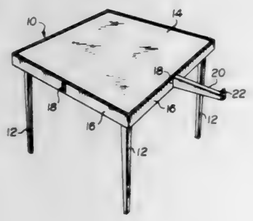
7. A portable stage having clamp mechanism for attaching adjacent stage units, said clamp mechanism comprising a generally L-shape elongate mounting plate, a pair of plates associated with said mounting plate at spaced locations to define a pair of rectangular housings, a pivotable clamp member pivotally mounted at each housing and including a U-shaped member with a pair of spaced legs, a handle connected to said clamp member, and means for holding said clamp member in either a clamping or nonclamping position.

3,964,403

THREE-WAY TABLE

Milton Schankman, Valley Stream, N.Y., assignor to Stakmore Co., Inc., New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,791
Int. Cl.² A47B *13/08*
U.S. Cl. 108—90 **10 Claims**



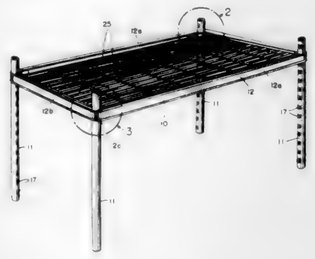
1. A convertible table combination having three alternatively usable table tops, said combination including a basic table structure with a fixed top portion having a table top as a permanent part thereof, and legs connected with the fixed top portion for supporting said structure from a floor or other underlying support, a conversion top that fits over the fixed top portion extending beyond the perimeter of the fixed top portion, the conversion top having opposite surfaces, either of which can rest on the fixed top portion and either of which is used as the top surface of the table, when the opposite surface rests on said fixed top portion, each of said opposite surfaces of the conversion top having different surface treatment in accordance with its intended use and one of the surfaces of the conversion top having a surface treatment that makes it a game table, the conversion top comprising hinged panels that fold together when not in use to reduce its size for storage, said panels having edge faces confronting one another and substantially in contact with one another when the conversion top is unfolded and the panels are in alignment with one another, and invisible hinges recessed into said edge faces and securing the panels to one another, said hinges being hidden from view when the conversion top is unfolded and either surface of the conversion top is uppermost, and the invisible hinges having sliding and pivotal portions that move far enough to bring the sections into substantially parallel relation with one another when said panels are folded into parallel relation with one another, the fixed top portion having supports movably attached thereto and extending outwardly therefrom under the conversion top, and restraining elements at the outer ends of the supports in position to extend upward at angularly spaced locations and into contact with the perimeter of the conversion top for holding the conversion top against horizontal movement with respect to the fixed top.

3,964,404

SHELF AND CORNER POST ASSEMBLY

Floyd F. Mueller, and William A. Gelbuda, both of Two Rivers, Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed May 9, 1975, Ser. No. 576,038
Int. Cl.² A47B *9/00*
U.S. Cl. 108—144 **25 Claims**



1. A shelf and corner post combination, said post having at least one series of vertically-spaced recesses, said shelf including a perimetric frame having adjacent frame members merging to define a corner section, said shelf also including a horizontal brace spanning said adjacent frame members and spaced inwardly from said corner section, said post being freely receivable between said corner section and said brace for selective adjustment of the elevation of said shelf, a U-shaped clip having spaced upper and lower arms joined by a connecting portion, at least one of said arms being provided at the free end thereof with bearing means selectively receivable in each of the recesses of said series, and adjustable connecting means for securing said clip and brace together and for urging said bearing means into engagement with said recessed post to clamp said post between said clip and the corner section of said frame.

3,964,405

PERENNIAL WEED CONTROL BY DEEP PLACEMENT OF VOLATILE SOIL FUMIGANTS

William A. Haglund, P.O. Box 693, Mount Vernon, Wash. 98273, and Theodore P. Reiling, 500 Boright Apt. 101, Le Sueur, Minn. 56058

Filed Mar. 5, 1971, Ser. No. 121,576
Int. Cl.² A01C *23/02*
U.S. Cl. 111—6 **13 Claims**

1. A method of controlling deep rooted perennial weeds such as bind-weed and Canadian thistle by the deep injection of volatile soil fumigants at least fourteen inches below the soil surface at a horizontal spacing under thirty inches and at least at a rate of two and one half gallons per acre.

3,964,406

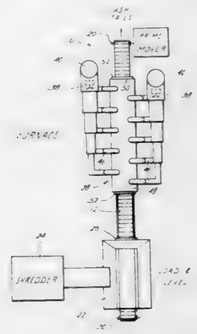
WASTE DISPOSAL APPARATUS

Arnold Brown Partridge, 3315 Maroneal St., Houston, Tex. 77025, and Joseph Frank Woerner, 823 Azalea, Houston, Tex. 77018

Filed Jan. 24, 1975, Ser. No. 543,956
Int. Cl.² F23G *5/00*
U.S. Cl. 110—8 A **9 Claims**

1. Apparatus for disposing of waste by substantially complete combustion thereof comprising:
furnace means for burning the waste;
conveyor means for moving said waste through said furnace means;
means for depositing said waste on said conveyor means for movement through said furnace means; and

means for removing resulting residue from said conveyor means after said waste has passed through said furnace means;
said furnace means comprising an elongated primary burning area through which said conveyor means passes and



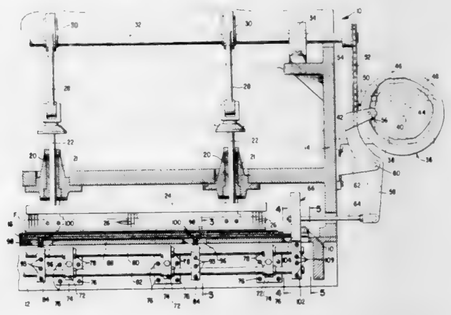
an elongated secondary burner area directly above said primary burner area for burning any emissions remaining after burning in said primary burner area, said primary and secondary burner areas communicating with each other through vertical passageways therebetween longitudinally spaced along the length of said furnace means.

3,964,407

SHIFTABLE NEEDLE PLATE

Gary L. Ingram, Ooltewah; Jimmie D. Scott, Harrison, and Randel P. Smith, Chattanooga, all of Tenn., assignors to The Singer Company, New York, N.Y.

Filed Jan. 12, 1976, Ser. No. 648,602
Int. Cl.² D05C *15/30*
U.S. Cl. 112—79 R **2 Claims**



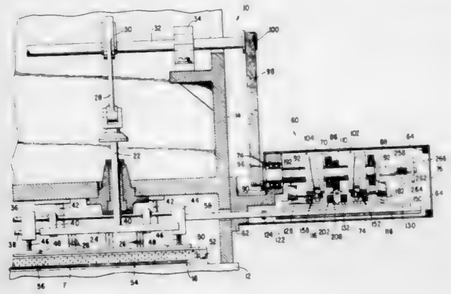
1. In a tufting machine having a plurality of needles arranged substantially in a row laterally across the machine, a needle plate for supporting a backing fabric relative to said needles, means for feeding the backing fabric longitudinally of the machine over the needle plate, means for actuating said needles for penetrating said backing fabric to insert loops of yarn therein upon each penetration of the needles, and patterning means for shifting the needle plate and backing fabric laterally of the machine and relatively to the needles comprising: a plurality of laterally spaced bearing blocks secured to the machine below the needle plate, a plurality of spaced linear bearings in each bearing block, each bearing in each block being aligned with a corresponding bearing in the other blocks, a rod received in corresponding bearings of each block, clamping means for securing said rods to the needle plate, means for imparting lateral movement to the rods in accordance with a pattern, and laterally extending roller means including means supporting said roller means for rotation relative to and for movement with the needle plate, said roller means including a multiplicity of picks for engaging the backing fabric.

3,964,408

PATTERNING DEVICE FOR TUFTING MACHINES OR THE LIKE

Randel P. Smith, Chattanooga, Tenn., assignor to The Singer Company, New York, N.Y.

Filed Oct. 8, 1975, Ser. No. 620,526
Int. Cl.² D05C *15/26*
U.S. Cl. 112—79 A **21 Claims**



1. A patterning device for a tufting machine having a plurality of reciprocating needles disposed laterally across the machine and adapted to penetrate a backing fabric moving longitudinally of the machine to insert a plurality of stitches upon each penetration of the backing fabric, and shiftable means including a drive bar for providing relative lateral movement between the needles and the backing fabric, said patterning device comprising: a housing, carriage means supported in said housing for oscillatory translational movement, means for driving said carriage means in a first direction and in a second direction opposite to said first direction in timed relationship with the reciprocation of said needles, said carriage means moving in said first direction while said needles are free of said backing fabric, a motion transferring member mounted in said housing, complementary coupling means carried by said carriage means and said motion transferring member for coupling the motion transferring member selectively to the carriage only when the carriage means is moving in said first direction, pattern control means for actuating said coupling means selectively prior to movement of said carriage means in said first direction, said motion transferring member including a keeper member, a locking tooth journalled in said housing for engagement with said keeper member for securing said motion transferring member, locking tooth control means operable in timed relationship with the reciprocation of said needles for holding said locking tooth in locking engagement with said keeper member and, for releasing said tooth from said keeper member only when said carriage means is moving in said first direction and means for connecting said motion transferring member to said drive bar.

3,964,409

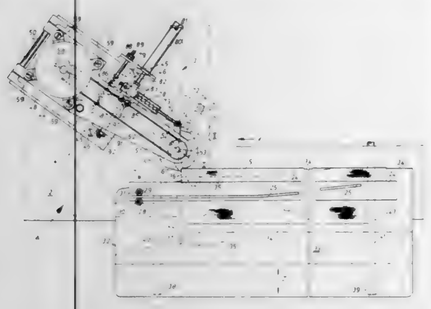
DEVICE FOR SEWING AND CUTTING-OPEN TUCKS ON CUT PIECES OF GARMENTS

Gunther Mall, and Werner Striegler, both of Kaiserslautern, Germany, assignors to Pfaff Industriemaschinen GmbH, Germany

Filed Sept. 18, 1974, Ser. No. 507,135
Claims priority, application Germany, Oct. 12, 1973, 7336850
Int. Cl.² D05B *37/08*
U.S. Cl. 112—121.15 **5 Claims**

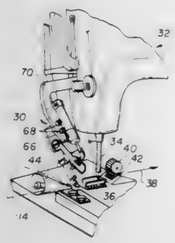
1. A device for use on a sewing unit in sewing and cutting open tucks of cut pieces of garments, comprising a sewing machine having a stitch formation zone, and a work advance table having an edge around which the work is folded, a tem-

plate rail extending over said table which is conformable to the shape of the seam and adapted to be engaged on the work and which extends past the stitch formation zone of the sewing machine, a cutting knife which is introduceable between the fabric layers of the folded work, said work advance table being formed, at least partly, with a forked cross-section with spaced



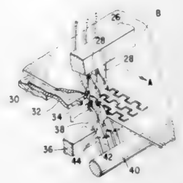
apart top and bottom legs having an opening therebetween, a guide spur having a flattened end engageable between the fabric of the folded work and having a slot therein for accommodating said cutter, and mounting means mounting said cutting knife and said guide spur for movement toward and away from said table.

3,964,410
ELASTIC INSERTER FOR A SEWING MACHINE
Ronald J. Boser, 19 Branwood Drive, Dix Hills, N.Y. 11746, and Gerald Gluckin, 440 E. 57th St., New York, N.Y. 10022
Filed Jan. 24, 1975, Ser. No. 543,663
Int. Cl.² D05B *23/00*
U.S. Cl. 112—121.26 **10 Claims**



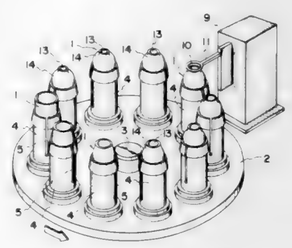
1. In combination, a sewing machine including a sewing needle and feed dogs defining a sewing station, means defining a fabric feed path into said sewing station, a fabric hemming device located along said fabric feed path in advance of said sewing station, and an elastic inserter located adjacent the exit end of said fabric hemming device for inserting elastic into said hem for sewing attachment to the fabric fed into said sewing station, said elastic inserter comprising a supply of elastic, means defining an elastic feed path oriented transversely of said fabric feed path, an elastic-tensioning means disposed along said elastic feed path mounted for movement between movement-resisting contact with said elastic for tensioning the same and a clearance position in relation therewith, a rigid enclosure member about the supply length of elastic movable from a ready position along said elastic feed path simultaneously with said elastic positioned therein through an elastic-feed stroke into abutting contact with said elastic-tensioning means incident to urging said elastic-tensioning means into said clearance position thereof, an elastic-engaging means operable to further urge said elastic through said rigid enclosure member along said feed path to thereby locate the leading edge of said elastic at said sewing station and under the feed control of said feed dogs, and means withdrawing said enclosure member back into said ready position thereof incident to permitting movement-resistant contact of said elastic-tensioning means with said elastic, whereby during subsequent feed movement of said elastic as produced by said feed dogs said elastic is tensioned by said elastic-tensioning means.

3,964,411
DENSE PILE FABRIC
Randel P. Smith, Chattanooga, Tenn., assignor to The Singer Company, New York, N.Y.
Division of Ser. No. 467,335, May 6, 1974. This application July 9, 1975, Ser. No. 594,844
Int. Cl.² D05C *17/02*
U.S. Cl. 112—410 **1 Claim**



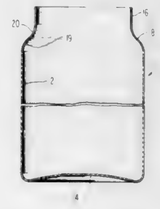
1. A tufted pile fabric comprising a backing fabric having a plurality of longitudinally extending lateral rows of tufts extending from a first surface thereof to form a tufted pile surface, each of said tufts extending from a point in the backing fabric, and rows of backstitch on a second surface thereof opposite from said first surface, said backstitch comprising a single strand of yarn extending between at least two points in the same lateral row and from one of said points longitudinally to a point in the adjacent lateral row.

3,964,412
SHAPING APPARATUS AND A METHOD FOR PRODUCING A SEAMLESS CONTAINER
Kaname Kitsuda, 115, Shinshu, Hiratsuka, Kanagawa, Japan
Filed Apr. 9, 1974, Ser. No. 459,353
Int. Cl.² B21D *51/24*
U.S. Cl. 113—7. R **14 Claims**



1. In an apparatus for converting a hollow cylindrical blank workpiece into a seamless container having a trunk and a neck portion connected by a shoulder portion, particularly a container able to withstand high internal pressures, a combination comprising a carrier having a plurality of spaced work stations; means for successively indexing said carrier to respective ones of said work stations; a plurality of workpiece-holding frames on said carrier and each having a cylindrical portion adapted to receive and firmly support the entire portion of a blank which will correspond to the trunk portion of the finished container; shaping means at some of said work stations adapted to move axially of the respective workpiece-holding frames for successively shaping an upper portion of the blank to form the shoulder and neck portions of the container; and clamping means at said working stations at which said shaping means are located for securely holding said workpieces during their shaping, including first cooperating means on said cylindrical portions and second cooperating means movable axially towards said cylindrical portions with said shaping means and into engagement with said first cooperating means so as to generate a radial clamping force on said cylindrical portions, whereby the firmly supported trunk portion of a blank is prevented from wrinkling under the effect of the axial movement of said shaping means during the conversion of the blank into a finished container.

3,964,413
METHODS FOR NECKING-IN SHEET METAL CAN BODIES
William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.
Filed July 22, 1974, Ser. No. 490,281
Int. Cl.² B21D *51/00*
U.S. Cl. 113—120 AA **5 Claims**



1. In the manufacture of a sheet metal container, a multistage die-forming method for necking-in the open end of a can body to provide flanging metal free of wrinkles, comprising the steps of

providing an open-ended can body having a sidewall of substantially cylindrical configuration about a longitudinally extended central axis,

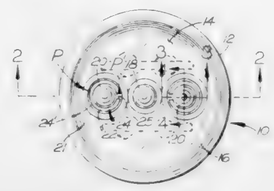
the sidewall defining an open end having a peripheral edge,

die-forming a strengthening member in the sheet metal contiguous to the open-end with a first set of dies including an outer strengthening-member die cooperating with an inner pilot die by turning such peripheral edge inwardly with such outer strengthening-member die toward the central axis of the can body about a radius of curvature of a dimension in the range of about ten to fifteen times the thickness of the sheet metal being die formed, the peripheral edge being turned inwardly about the full circumference of such peripheral edge and then turning such peripheral edge with the inner pilot die toward such open end to extend in a direction parallel to the central axis, such extension of sheet metal in the direction parallel to the central axis having a longitudinal dimension of less than .0625 inch, and then

die-forming such open end with strengthening member to form a reduced diameter neck with a second set of dies including an outer necking-in die and an inner pilot-type die by contacting the can body sidewall at a location adjacent to but spaced longitudinally from the strengthening member with the outer necking-in die to form a curvilinear configuration transition zone between the original can body and the reduced diameter neck and to form wrinkle-free flanging metal, such transition zone being formed about a radius of curvature which is greater than fifteen times the thickness gage of the sheet metal being die formed,

such necked-in flanging metal having a longitudinal dimension which is a plurality of times greater than the corresponding longitudinal dimension of the initially formed strengthening member.

3,964,414
EASY OPEN END METHOD AND APPARATUS
Gordon R. Gane, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Division of Ser. No. 478,407, June 11, 1974, Pat. No. 3,902,627, which is a continuation-in-part of Ser. No. 448,157, March 4, 1974, abandoned. This application Apr. 7, 1975, Ser. No. 565,494
Int. Cl.² B21D *51/44*
U.S. Cl. 113—121 C **38 Claims**



1. A method for producing an easy open closure member having at least one depressible tab comprising the steps of selecting a closure blank of ductile metal and provided with a main panel and an outer peripheral reinforcing rib, initially working and simultaneously subjecting a portion of the panel closer to the center of the panel than to said rib and at least one additional portion of the panel located intermediate a selected part of the said rib and first mentioned portion of the panel to selective drawing pressures and forming an embossment in said first mentioned panel portion and a shallow outwardly disposed dimple in said second mentioned panel portion without at the same time effecting any significant thinning of the metal in the wall of the said dimple except in the extreme top portion thereof, then without materially disturbing at least the major part of the embossment and while controlling the flow of the metal making up the dimple and directing the metal in the top of the dimple slightly outwardly into a confined arcuate opening, reworking and reshaping the metal in the peripheral base portion of the said dimple to form selectively offset concentric inner and outer dimple base sections interconnected by a web and then without effecting any material thinning of any part of the dimple located in the arcuate opening and at least most of said base sections subjecting said web to compressive forces and materially thinning all but a selected amount of the material in the said web to provide an embrittled thin tear line section in the web and while effecting said thinning of the web and forming said tear line section allowing the terminal ends of the tear line section to form and recede into a depressible tab hinge portion.

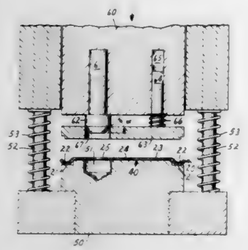
3,964,415
CAN CLOSURE
Harris W. Viker, Roseville, and William E. Kropp, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 393,001, Aug. 30, 1973, Pat. No. 3,889,844. This application Jan. 14, 1975, Ser. No. 540,980
Int. Cl.² B21D *51/44*
U.S. Cl. 113—121 C **3 Claims**

1. A method of making an end piece for use in fabricating a sealed pressurized container, comprising the steps of

obtaining a pre-formed circular end piece of the type used in fabricating metal cans, said end piece having a depressed center portion with a pour hole therein and a circumferential lip for clamping over and sealing to one end of an annular can body,

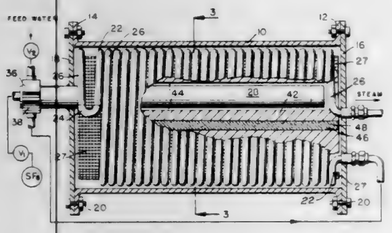
applying a strip of normally tacky and pressure-sensitive tape to the depressed center portion so as to overlie the pour hole and be sealed to the circumjacent surface,

supporting the taped side of the end piece with a support means in an area adjacent to but spaced slightly radially outward from the pour hole,
firmly gripping the end piece in said area, and
providing a blunt punch with a tapered head which has a varying cross-sectional diameter in planes taken at right angles to its axis, the distal end of the punch head having a cross-sectional diameter smaller than the corresponding



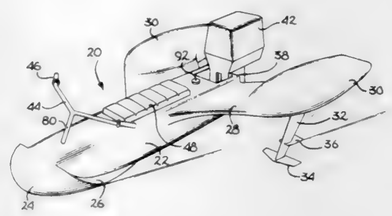
diameter of the pour hole and the main body of the punch head having a corresponding diameter larger than that of the pour hole, and
forcing the punch head into the pour hole, thereby imparting an outwardly tapered configuration to the taped side of the end piece in the area circumjacent the pour hole, simultaneously stretching the tape and leaving it firmly adhered to the end piece.

3,964,416
BOILER REACTOR
Raymond J. Kiraly, Highland Heights; Bernard H. Affeldt, Auburn, and Charles R. Anspach, Willoughby Hills, all of Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed July 19, 1965, Ser. No. 473,573
Int. Cl.² B63H *21/08*
U.S. Cl. 114—20 A **2 Claims**



1. A steam boiler-reactor comprising;
a. a cylindrical casing having closures at opposite ends thereof,
b. a steam generating tube, formed in a helical coil, disposed adjacent the inner surface of said casing and extending substantially between its opposite ends, said coil having an inlet end to which feed water may be delivered and an outlet end from which steam may be delivered to a steam engine,
c. a cylindrical screen disposed within and adjacent the helical coil,
d. an elongated oxidant injector nozzle tube, having a row of axially spaced injection orifices, extending longitudinally of said casing and within the space within said screen,
e. a solid grain of cast lithium substantially filling the remainder of the space within said screen,
f. an oxidant comprising a source of sulphur hexafluoride under pressure communicating with said nozzle tube through a valve adapted to control the rate of flow of same,
g. said nozzle tube having longitudinally extending conduits therein through which water may be circulated for cooling it,
h. means for supplying feed water to said conduits and thence to the inlet end of said steam generating tube,
i. and a source of heat for melting said grain of lithium,
j. the construction and arrangement being such that when said source of heat has melted the lithium, the oxidant may be injected into the latter for reaction with the molten lithium, the products of reaction occupying substantially the same space as the original volume of lithium, said screen preventing undesired reactions adjacent the walls of the steam coil.

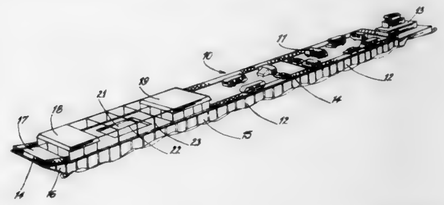
3,964,417
WATER VEHICLES
Marshall L. Williams, Santa Monica, and William P. Peschel, Venice, both of Calif., assignors to Hydrobike Incorporated, Venice, Calif.
Continuation of Ser. No. 469,633, May 14, 1974, abandoned, which is a continuation of Ser. No. 305,302, Nov. 10, 1972, abandoned. This application Aug. 22, 1975, Ser. No. 606,768
Int. Cl.² B63B *1/20*
U.S. Cl. 114—66.5 H **26 Claims**



1. A water vehicle comprising:
a hull member having a means for receiving at least one person to be transported, said hull member providing substantial flotation when said vehicle is at rest in the water;
planing surface means forward of the center of gravity of said vehicle, said planing surface means being the primary support for said vehicle forward of said center of gravity when said vehicle is propelled over the water at a suitably high speed; and
hydrofoil means disposed at a lower elevation than said hull member and at longitudinal position aft of the center of gravity of said vehicle, said hydrofoil means being the primary support for said vehicle aft of said center of gravity when said vehicle is propelled over the water at a suitably high speed.

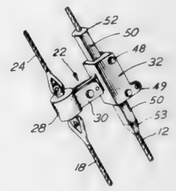
3,964,418
FLOATING CAMPGROUND
Stanley D. Karnik, 374 Limestone Road, Ridgefield, Conn. 06877, and Terry E. Morgan, 2094 Maple Ave., Peekskill, N.Y. 10566
Filed Mar. 6, 1974, Ser. No. 448,739
Int. Cl.² B63B *27/14*
U.S. Cl. 114—70 **10 Claims**

1. A floating campground for recreational vehicles comprising:
at least one camping barge unit having a substantially flat upper deck surface and including utility hookups and services at predetermined intervals and means for securing recreational vehicles in a fixed position on said surface with sufficient space therebetween to simulate an actual campground,
at least one recreational barge unit including a pool on the upper surface thereof and at least one enclosed structure



mounted on the deck and having recreational facilities therein,
flexible means for coupling the barge units together in a predetermined arrangement, and, propulsion means connected to one of said barge units for transporting the coupled units over waterways.

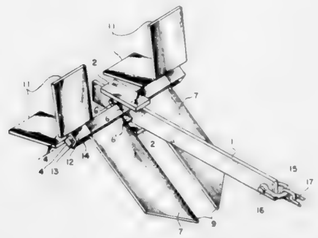
3,964,419
ANTI-FOULING ROLLER FURLING GEAR UPPER ASSEMBLY
Ronald L. Uecker, 915 Grant St., Wausau, Wis. 54401
Filed Nov. 27, 1974, Ser. No. 527,771
Int. Cl.² B63H *9/10*
U.S. Cl. 114—106 **59 Claims**



1. Anti-fouling roller furling sail handling apparatus comprising:
a. a stay bushing member adapted to be secured to a stay member;
b. a stay slide member having an elongated portion with an axial bore therethrough adapted to receive a stay;
c. said stay slide being adapted to slidably engage said stay bushing;
d. means for attaching said stay slide to sail tackle;
e. cooperating means on said stay slide and stay bushing adapted for controlling the amount of rotation of said stay slide about said stay bushing within preselected limits; and
f. said apparatus thereby reducing fouling of sail and/or sail tackle around said stay when said sail is in a raised position during roller furling of the sail.

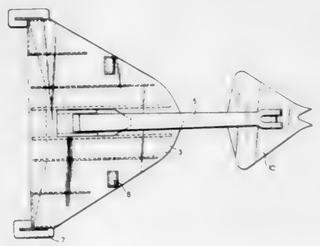
3,964,420
ADJUSTABLE ANCHOR
William Taylor Stelling, 175 W. 72nd St., New York, N.Y. 10023
Filed Aug. 18, 1975, Ser. No. 605,790
Int. Cl.² B63B *21/44*
U.S. Cl. 114—208 R **9 Claims**

1. An exchangeable anchor assembly, comprising
a stem having a free end adapted to be connected to a line,
two parallel plates disposed at an opposite end of said stem sandwiching said stem therebetween,
a cross bar rotatably disposed between said plates perpendicular to said stem, said cross bar having an unround cross section,
two flukes each having an opening substantially the same as the cross section of said cross bar and slidable thereon from opposite ends thereof,
two stabilizers each comprising two vane plates angularly disposed relative to each other and a sleeve connected to each of said vane plates and having an opening substan-



tially equal to that of said cross bar and disposed on the ends thereof,
means for securing said two stabilizers on said cross bar, thereby holding said flukes therebetween, and
projection cam means operatively mounted on said cross bar and having cam projections cooperating with said plates, permitting relative rotatable movement of said cross bar and for limiting the rotatable movement of said cross bar when said cam projections abut said plates.

3,964,421
ANCHOR
Rob van den Haak, Allegro 114, Krimpen aan den Ijssel, Netherlands
Filed Apr. 28, 1975, Ser. No. 572,687
Claims priority, application United Kingdom, Dec. 10, 1974, 53338/74
Int. Cl.² B63B *21/40*
U.S. Cl. 114—208 R **4 Claims**

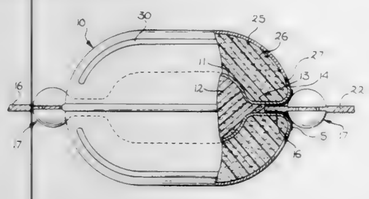


1. An anchor having a pointed fluke, a shank which is pivotally connected to the fluke, and a ground slide, wherein the fluke has a delta-shaped, closed hollow structure of a forwardly and downwardly curved configuration terminating in a single central point, combined with a ground slide comprising a pair of slide plates, one on each side of its centerline.

3,964,422
MARINE FENDER
Harold B. Boyd, 9771 Via Zibello, Burbank, Calif. 91504
Filed Sept. 18, 1975, Ser. No. 614,483
Int. Cl.² B63B *59/02*
U.S. Cl. 114—219 **9 Claims**

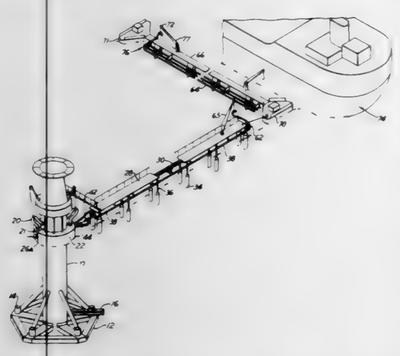
1. A marine fender comprising the combination of:

an inner core having open-opposite ends leading into a first chamber defined by the inner wall surface of said core;
each of said open opposite ends of said core provided with an integral outwardly flared portion terminating in a circular edge;
an outer shell coaxially disposed with respect to said inner core having circular opposite ends joined to said flared portions circular edges respectively so as to provide an integral joint therewith;



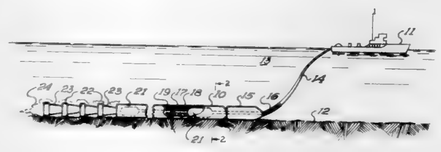
said outer shell and said inner core defining a second chamber coaxially disposed with said first chamber and defined between the opposing wall surfaces of said inner core and said outer shell respectively;
a first plastic foam filler material of a given density occupying said first chamber and a second plastic foam filler material of a density less than said given density of said first foam filler material occupying said second chamber; and
swivel means carried on a rope passing through said core at opposite ends of said fender.

3,964,423
OFFSHORE TERMINAL
Paul L. Gassett, and Wilfred R. McLeod, both of Houston, Tex., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Continuation of Ser. No. 426,355, Dec. 19, 1973, abandoned, which is a continuation of Ser. No. 297,564, Oct. 13, 1972, abandoned, which is a division of Ser. No. 126,661, March 22, 1971, Pat. No. 3,765,463. This application Feb. 24, 1975, Ser. No. 552,465
Int. Cl.² B63B *21/56*
U.S. Cl. 114—230 **7 Claims**



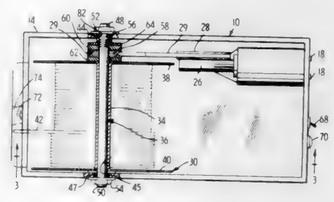
1. In an offshore terminal for delivering oil from one to the other of a tanker and an elongated floating station adapted to rotate about a terminal unit connected by delivery lines to onshore storage, said floating station having an outer end remote from the terminal unit and an inner end connected to the terminal unit for delivery of oil thereto, an improved loading boom comprising an elongated framework spaced from the terminal unit and movable independently thereof, a power unit at each end of the framework for movement of each end of the loading boom independently of the other end, a plurality of pipes supported by the framework and extending substantially the full length of said framework, float means extending downwardly into the water at intervals located between the power units to support the framework above the water, first flexible conduit means at one end of the framework for connecting one end of the pipes to the tanker, and second flexible conduit means at the other end of the framework for connecting the other end of the pipes to the outer end of the floating station, said power units having power adequate to move the tanker to the desired position and to resist wind and wave forces to maintain the tanker at the desired location during loading operations.

3,964,424
INFLUENCE DETECTING GEAR WITH IMPROVED TOWING CHARACTERISTICS
Julius Hagemann, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 2, 1958, Ser. No. 726,019
Int. Cl.² B63B *21/56*
U.S. Cl. 114—235 B **4 Claims**



1. A towable detecting gear adapted for dragging over a water-submerged surface comprising a tail portion, a towing cable having its trailing end enclosed in the tail portion and having at least one insulated conductor, a weight member secured to said cable at the forward end of the tail portion and having sufficient negative buoyancy to drag along said submerged surface when under tow, a plurality of detecting devices disposed at intervals along the cable in said tail portion and in electrical communication with a conductor therein, said detecting devices being substantially larger in cross section than the diameter of said cable, a layer of buoyant material surrounding said cable between said devices and having a thickness such that its diameter is at least equal to the diameter of said detecting devices, and an outer covering of wear resistant flexible material enclosing said tail portion.

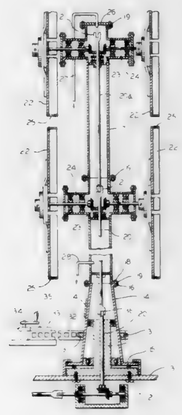
3,964,425
WATER SKI LINE RETRACTOR
Nelson C. Septor, Sr., 269 Sunnybrook Road, Springfield, Pa. 19064
Filed Jan. 27, 1975, Ser. No. 544,309
Int. Cl.² B63B *21/56*
U.S. Cl. 114—235 WS **4 Claims**



1. In a water ski line retractor to vary the distance between the tow end of a ski line and a boat, the combination of
A. a frame;

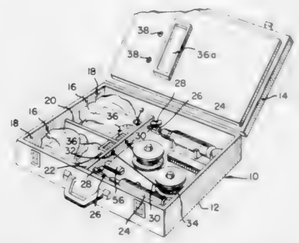
B. a motor mounted upon the frame,
C. a spool shaft rotatably mounted upon the frame in spaced relationship from the motor,
1. a spool pulley mounted on said spool shaft and being rotatable by said motor for spool rotating purposes;
2. said spool pulley including means to permit the spool shaft to rotate relative to said spool pulley;
D. a spool mounted upon the spool shaft,
1. said water ski line winding upon and unwinding from the spool in response to operation of the motor,
2. said spool being connected to the spool shaft by means to prevent rotation of the spool relative to the spool shaft; and
E. first friction clutch means interposed between the spool pulley and the spool to permit the spool to slip relative to the spool pulley upon the application of a drag weight to the water ski line.

3,964,426
WIND DRIVEN MECHANICAL DRIVE
Fred C. Lindsey, 1100 Carrington Ave., South Milwaukee, Wis. 53272
Filed Mar. 24, 1975, Ser. No. 561,553
Int. Cl.² B63H *13/00*
U.S. Cl. 115—3 **5 Claims**



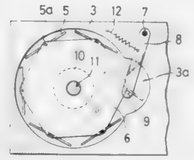
3. Wind driven apparatus for using wind to activate the screw shaft of a ship, comprising:
a plurality of propellers,
said propellers being arranged in oppositely disposed pairs;
a plurality of vertical standards rotatably mounted to the deck of said ship,
said pairs of propellers rotatably supported by said vertical standards,
said propellers in each said pair disposed on opposite sides of one of said plurality of vertical standards;
transmitting means to transmit the rotary motion of said propellers to said screw shaft,
said transmitting means including a plurality of selectively interconnectable vertical shafts, with each of said vertical shafts transmitting the rotary motion of one of said pairs of propellers; and
means for simultaneously adjusting the rotation of said vertical standards; wherein said adjusting means comprises crank and pinion means, gear-type teeth integral with and horizontally disposed about the periphery of the base of each of said vertical standards, and chain means simultaneously engaging said teeth on each of said vertical standards, said chain means being connected to said crank and pinion means, whereby rotation of said crank and pinion means simultaneously rotates said vertical standards.

3,964,427
SURVIVAL APPARATUS
Norma M. Murphy, Kirkland lake, Canada, assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Nov. 18, 1974, Ser. No. 524,468
Int. Cl.² G08B *5/00*
U.S. Cl. 116—124 B **3 Claims**



1. Apparatus for marking a physical location which comprises: a case; an assembly within said case comprising a balloon; a bottle containing pressurized helium; valve means coupled to said bottle and configured for accepting a mouth of said balloon for enabling selective inflation of said balloon; a cord secured at one end to said balloon; means in said case for storing said cord; cord measuring means mounted in said case and engaging said cord; said measuring means including a digital indication of the linear quantity of cord removed from said storing means; said case having a transparent area in register with said measuring means for enabling viewing said digital indication through said case.

3,964,428
INDICATING DEVICE HAVING A PLURALITY OF OVERTURNABLE FLAPS
Kiyoyuki Arai, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan
Filed Mar. 25, 1975, Ser. No. 561,995
Claims priority, application Japan, Mar. 26, 1974, 49-34294[U]
Int. Cl.² G09F *7/22*
U.S. Cl. 116—129 H **6 Claims**



1. Indicating device comprising a plurality of overturnable indicating flaps rotatably mounted by their longitudinal central shafts along the periphery of a rotating drum, said flaps having indicating surfaces at their both sides, respectively, a guide plate located adjacent to one end of said drum and having a circular guide hole concentrically positioned with respect to the axis of said drum so as to engage at its inner periphery with side edges of the respective flaps which are parallel to the axis of said drum thereby guiding said flaps with the flaps being kept oriented in the tangential direction to the circumference of said drum as said drum rotates, said circular guide hole being formed at a portion thereof with a recess

extending outwardly of the inner periphery of said circular guide hole so as to permit the respective flaps to be overturned about their longitudinal central shafts within said recess when the flaps are brought in succession to said recess as said drum rotates, an actuating lever pivotally supported by one end thereof upon a stationary portion of said indicating device and positioned adjacent to said one end of said drum so as to be swung in a plane parallel to said one end of said drum with the free end terminating within said recess, said actuating lever being formed with a lateral projection at its free end adapted to engage with the periphery of said one end of said drum within said recess as well as with the respective flaps when brought into said recess, and a spring connected between a stationary portion of said indicating device and said actuating lever so as to urge said lateral projection against the periphery of said one end of said drum in sliding contact therewith, thereby permitting said lateral projection to abut against the respective flaps in succession as said drum rotates so that the respective flap is positively overturned in said recess for exposing the indicating surface thereof which had been faced toward the interior of said drum.

3,964,429

DEVELOPER REPLENISHMENT DEVICE FOR COPYING MACHINES

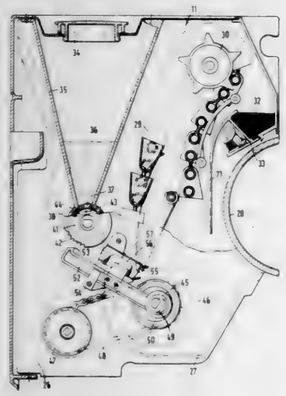
Werner Salger, Hamburg-Langenhorn, Germany, assignor to Lumoprint Zindler KG, Hamburg, Germany

Filed Sept. 9, 1975, Ser. No. 611,809

Claims priority, application Germany, Sept. 12, 1974, 2443653

Int. Cl.² B05C *11/00*; F16D *4/12*

U.S. Cl. 118—7 **13 Claims**



1. A device for replenishing the developer material in a copying machine, particularly for replenishment of the supply of toner to a developing unit of an electrophotographic copying machine, the device comprising a supply reservoir having a bottom opening, roller means rotatably mounted at the bottom opening of the reservoir to form a closure for the reservoir, said roller means being arranged to be driven in accordance with the required toner replenishment, first drive means comprising a rotatable shaft associated with the developing unit, conveyor means for developer material arranged to be driven from said shaft, and second drive means to drive said roller means in dependence upon the rotation of said shaft, each movement step of the roller means being a consequence of a revolution of said shaft, said second drive means comprising a toothed pawl arranged to be driven in reciprocating manner from the shaft, an associated ratchet wheel connected to said roller means and provided with a toothed peripheral portion for engagement with the pawl, and yieldable lifting means arranged to cooperate with the pawl to lift it into engagement with the ratchet wheel.

3,964,430

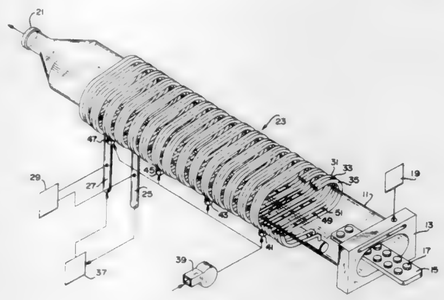
SEMI-CONDUCTOR MANUFACTURING REACTOR INSTRUMENT WITH IMPROVED REACTOR TUBE COOLING

Gerald W. Purmal, San Carlos, Calif., assignor to Unicorp Incorporated, Sunnyvale, Calif.

Filed Nov. 14, 1974, Ser. No. 523,807

Int. Cl.² C23C *13/08*

U.S. Cl. 118—49 **6 Claims**



1. A reactor for manufacturing semi-conductor wafers by chemical vapor deposition, comprising:

a hollow reactor tube forming a reaction chamber therein,

at least one hollow electrically conductive elongated continuous tube formed in a shape of a coil with a plurality of turns positioned about said tube in a non-contacting relationship therewith, said coil having a plurality of holes through the wall thereof at intervals along its length in positions facing the outside surface of said reactor tube,

a radio frequency source of electrical energy connected to said hollow tubing, whereby wafers positioned within the reactor tube and said coil become heated,

means for directing gaseous material inside said reactor tube, thereby permitting reaction of desired gaseous material with a heated semi-conductor wafer, and

means connected to said hollow tube for providing gas thereinto at a pressure much above atmospheric pressure, whereby streams of gas escape from the plurality of holes of said tubing and are directed against the outside surface of said reactor tube.

3,964,431

DEVICE FOR SUPPLYING AN OFFSET PREVENTING LIQUID TO A FIXING ROLLER

Ryoichi Namiki, Hino, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed May 17, 1974, Ser. No. 471,132

Claims priority, application Japan, June 1, 1973, 48-65619

Int. Cl.² G03G *15/20*

U.S. Cl. 118—60 **3 Claims**

1. A fuser device in electrophotographic copying apparatus, comprising:

a. a fuser roller having a surface of silicone rubber;

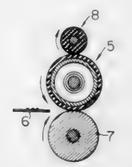
b. a pressure roller engaging said fuser roller to provide a nip therebetween through which is passed a copy sheet electrostatically bearing a toner image oriented for contact with the peripheral surface of the fuser roller;

c. means for heating said toner image in said nip to fuse the image into the copy sheet; and

d. an applicator roller disposed in rolling contact with said surface of said fuser roller and including

i. means for retaining an offset-preventing liquid, and

ii. a liquid-permeable material layer forming the periphery of said applicator roller for permitting said liquid to pass therethrough and to be supplied to said surface of the fuser roller at a very slow rate,



e. said retaining means being made from a material capable of being impregnated with a substantial amount of said offset-preventing liquid.

3,964,432

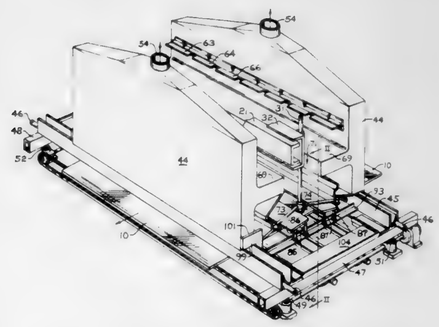
APPARATUS FOR COATING CONTINUOUSLY ADVANCING SUBSTRATE

Ronald L. Schwenninger, Cumberland, Md., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 309,049, Nov. 24, 1972, Pat. No. 3,885,066. This application Jan. 6, 1975, Ser. No. 538,988

Int. Cl.² B05C *5/00*

U.S. Cl. 118—314 **25 Claims**



1. Apparatus for producing substantially uniformly thick coatings across the width of an advancing substrate, comprising:

a spray chamber having an upstream end and a downstream end;

transporting means for advancing the substrate through said spray chamber in a downstream direction;

first exhaust means disposed at the upstream end of said spray chamber for exhausting the atmosphere within said spray chamber at a substantially uniform rate across the width of the substrate, said exhaust moving over the substrate substantially only in the upstream direction;

second exhaust means disposed at the downstream end of said chamber for exhausting the atmosphere within said spray chamber at a substantially uniform rate across the width of the substrate, said exhaust moving over the substrate substantially only in the downstream direction;

means in said spray chamber for applying a coating composition onto the upper surface of the substrate, said means including plurality spray orifices mounted above the substrate for cyclical traverse perpendicular to said downstream direction; and

baffle means spanning said spray chamber beyond the side edges of the substrate for preventing the atmosphere surrounding said spray chamber from moving transversely over the substrate in a direction other than said upstream and downstream directions.

3,964,433

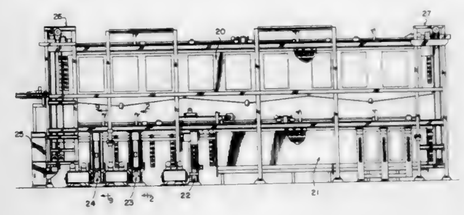
LOAF MOLD WASHING AND RELEASE AGENT APPLYING MECHANISMS

Robert L. Swartz, Madison, Wis., assignor to Oscar Mayer & Co. Inc., Madison, Wis.

Filed Mar. 11, 1975, Ser. No. 557,309

Int. Cl.² B05B *7/08*; B05C *7/08*

U.S. Cl. 118—314 **13 Claims**



1. In a continuous loaf processing system for producing a molded loaf food product from a stuffable raw food material including a plurality of wheel supported magazines of tubular loaf molds being driven step-by-step at predetermined time intervals along tracks through a closed loop of work stations, each magazine of molds having a plurality of interconnected vertically aligned and horizontally extending molds, each mold having a plug at one end movably positionable within the mold and a removable cover for the other end, said plug coacting with a ratchet take-up device for regulating expansion and contraction of the food material during processing, means on the molds for hanging the removable covers, and wheels connected to the molds for movably supporting the magazine on rails for movement thereof along a path transverse the longitudinal axis of the molds, mechanism for treating said magazines preparatory to stuffing comprising: a housing into which a magazine of molds is driven for treatment and out of which it is driven following a treatment cycle and which includes a treatment chamber, doors for the chamber, means driving the doors between open and closed positions during ingress and egress of a magazine, a wand assembly having a plurality of wands with spray nozzles, one wand for each mold, means mounting the wand assembly for movement to cause the wand spray nozzles to traverse the interior of the molds, and means supplying a treatment material to the nozzles for treating the insides of the molds.

3,964,434

COATING APPARATUS INCLUDING LIQUID SEALANT BETWEEN COMPARTMENTS

Stanford L. Adler, Monsey, and Alexander M. Saunders, Bedford Village, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Nov. 4, 1974, Ser. No. 520,586

Int. Cl.² B05C *3/15*

U.S. Cl. 118—405 **7 Claims**

1. Apparatus for treating a continuous surface of a web with different fluids including reactants comprising:

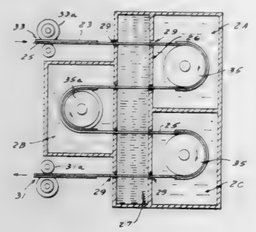
at least a pair of treating chambers having a common wall therebetween and an entry and an exit slot disposed in respective side walls lying in the same general plane;

a sealing chamber defined in part by said side walls;

at least a third treating chamber having in common with said sealing chamber a wall opposed to said side walls;

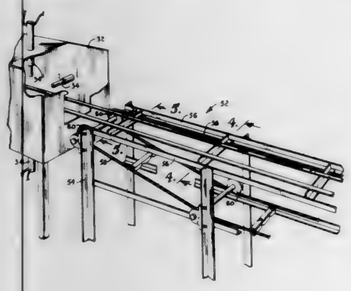
a first pair of slots in said opposed wall, each of said last mentioned slots being alined with one of said entry or exit slots of a separate prior recited treating chamber;

a second pair of slots in said opposed wall which are external to said third treating chamber and each of said last mentioned slots being alined with a separate one of the other of said entry or exit slots;
a treating fluid in each of said treating chambers at a level above said slots associated therewith;
a liquid sealant disposed in said sealing chamber to a level above each of said slots, having a high-surface-tension



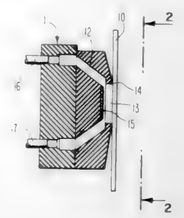
characteristic and being immersible and inert with respect to each of said treating fluids;
each of said slots being of a dimension whereby to retain said sealant by surface tension; and
roller guide means operatively associated with each of said chambers whereby said web may enter and exit from said apparatus through said sealing chamber and travel sequentially through each of the alined pairs of slots for treatment in each of the three recited treating fluids.

3,964,435
APPARATUS FOR COATING ELONGATED OBJECTS OF SMALL DIAMETER
Roy L. Horn, Philadelphia, and M. Jack Lane, Langhorne, both of Pa., assignors to H. C. Price Co., Bartlesville, Okla.
Filed Feb. 26, 1975, Ser. No. 553,245
Int. Cl.² B05B *5/02*
U.S. Cl. 118—630 **12 Claims**



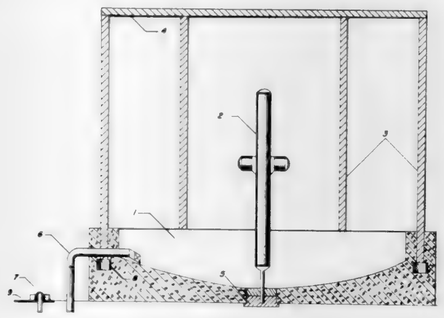
1. Structure for conveying an elongated object of small diameter, sais structure comprising:
closed conveyor means adapted for movement;
a power source coupled with said conveyor means for moving the latter;
a plurality of first flights coupled with said conveyor means in spaced apart relationship,
each of said first flights presenting a first groove for contiguously receiving said object in supporting relationship and
a second conveyor flight coupled with said conveyor means intermediate said first flight,
said second flight presenting a second groove which is normally disposed in spaced relationship to said object when the latter is supported by said first grooves, while also being adapted to receive said object in supporting relationship.

3,964,436
ELECTROPHOTOGRAPHIC DEVELOPMENT APPARATUS
John D. Plumadore, Westfield, Mass., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Apr. 8, 1974, Ser. No. 459,193
Int. Cl.² G03G *15/10*
U.S. Cl. 118—637 **3 Claims**



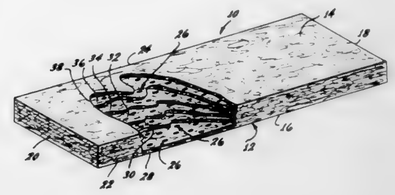
1. An apparatus for developing an electrostatic latent image on a frame of a larger multi-frame electrophotographic film wherein the photoconductive layer of the film is not discharged to zero in any part of the imaged frame, the apparatus comprising an electrically floating development electrode positioned close to and parallel to the frame being developed and means for providing electrostatically charged toner particles between the development electrode and the frame being developed, the development electrode being no greater than 10% larger in area than the area of the charged frame being developed.

3,964,437
DOG OR ANIMAL TOILET
Kenneth Jewett Brown, 39 Blackford Ave., Yonkers, N.Y. 10704
Filed Dec. 9, 1974, Ser. No. 530,678
Int. Cl.² A01K *29/00*
U.S. Cl. 119—1 **10 Claims**



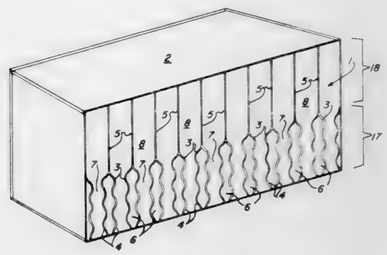
1. A dog or animal toilet comprising:
an empty receptacle with a funnel like shape slanting down towards a drain at the bottom for connection to a sewerage disposal system;
a selectively operable flushing system with pipe means delivering water to the receptacle in a centripetal direction, with whirlpool action so as to wash down excrement and to clean and scour its surface;
a control means to activate the flushing system;
a protective barrier for the receptacle;
an upright member located over the drain hole for the animals to urinate on and said urine will drain by gravity into the sewerage disposal system and because of the upright member's location over the drain it will prevent the animal from stepping into the drain.

3,964,438
FOOD BLANKET FOR ANIMALS
Donald James Rodemeyer, City Island, N.Y., assignor to Metaframe Corporation, Elmwood Park, N.J.
Filed June 30, 1975, Ser. No. 591,267
Int. Cl.² A01K *39/00*
U.S. Cl. 119—1 **7 Claims**



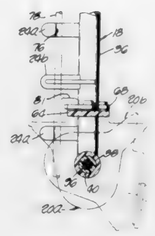
1. A food blanket for feeding and nesting an animal, comprising:
a pad of soft, fluffy fibrous material, said pad having at least two plies; and
edible material distributed in said pad between said plies.

3,964,439
NON-CLIMBABLE POULTRY CAGE FRONT
Roger L. Fleshman, 10360 W. 74th Place, Arvada, Colo. 80005
Continuation-in-part of Ser. No. 513,992, Oct. 11, 1974, abandoned. This application Nov. 27, 1974, Ser. No. 527,708
Int. Cl.² A01K *31/06*
U.S. Cl. 119—17 **13 Claims**



1. A cage front for a poultry cage comprising:
a. a plurality of parallel, spaced cage bars mounted vertically along a side of a poultry cage;
b. each of said bars includes an upper straight stem section and a lower bifurcated section having a pair of generally parallel legs, each of said legs being formed in a back and forth, sinuous configuration, with the curves of each leg arranged to complement the other whereby an alternating series of wide and constricted openings are formed between said legs and
c. said bars are horizontally aligned so that similar wide and constricted openings are formed between the sides of the legs of said bars and wider slotted openings are formed between the stem sections of said bars;
d. the openings between said legs and bars allow poultry of any size to freely feed and water through the front without providing horizontal surfaces which would allow smaller poultry to climb the bars and escape through the wider upper openings.

3,964,440
POULTRY WATERING DEVICE
Harold W. Hart, Glendale, Calif., assignor to H. W. Hart Mfg. Co., Glendale, Calif.
Division of Ser. No. 342,382, March 19, 1973, Pat. No. 3,870,022. This application Dec. 16, 1974, Ser. No. 532,761
Int. Cl.² A01K *39/02*
U.S. Cl. 119—18 **13 Claims**



1. In securing a poultry drinking cup in a desired position with respect to a wire, the improvement comprising:
means providing a support surface for the poultry drinking cup;
a plurality of wire engaging clips projecting at substantially a right angle from said support surface;
a positioning line on said support surface;
said wire engaging clips being individually positioned with respect to said positioning line on said support surface;
each of said wire engaging clips having a wire contacting surface with each wire contacting surface being generally parallel with said positioning line and in close proximity to said positioning line, and
wire contacting surfaces of adjacent wire engaging clips facing in generally opposite directions,
whereby the wire contacting surfaces of adjacent clips grip opposite sides of the wire when the support surface is brought into contiguous relation with the wire with said wire aligned with said positioning line on the support surface.

3,964,441
CANE AND LEASH WINDING ASSEMBLY
Thomas P. Wall, 1551 30th Ave. West, Seattle, Wash. 98199
Filed Apr. 2, 1975, Ser. No. 564,330
Int. Cl.² A01K *27/00*
U.S. Cl. 119—109 **7 Claims**



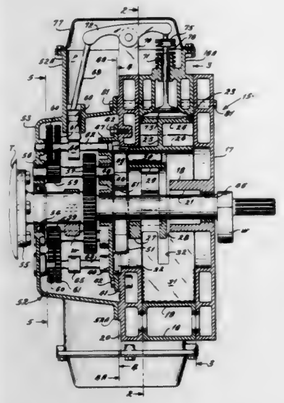
4. In combination:
a cane
a leash carried by the cane, hook means on one end of the leash for connecting the leash to a ring on a dog collar, and
a reel mounted on the cane and connected to the other end of the leash for paying out and taking up the leash relative to the cane, said reel having a handle for manually turning

the reel and a stop loop arranged to be looped over said handle to prevent turning of the reel.

3,964,442
INTERNAL COMBUSTION ENGINE

Lee Hunter, 13501 Ladue Road, Creve Coeur, Mo. 63141

Filed Feb. 4, 1974, Ser. No. 439,220
Int. Cl.² F02B *55/14*
U.S. Cl. 123—8.45 **7 Claims**



1. An internal combustion engine comprising: a stationary housing defining an annular chamber having a peripheral wall and spaced side face plates, said peripheral wall being formed with recessed flats in circumferentially spaced relation and one of said side face plates being formed with a fixed member located in the axial center of said annular chamber and formed with flat faces presented one to each of said recessed flats, a core member movable in said annular chamber to surround said fixed member, a plurality of crankshafts spaced about said fixed member, each crankshaft having a bearing shaft supported by one of said side face plates, a crank arm extending therefrom and a crankshaft pin on said crank arm and engaged in said core member such that said core member is constrained to move in an orbital path within said annular chamber, partition means in said housing dividing said annular chamber into cells, each partition means extending through said core member and being engaged at one end in a recessed flat and at its opposite end on a flat face and all of said partition means being movable from side-to-side on said flats as said core member orbits in said annular chamber, means to seal said partition means with said recessed flats and said core member and to seal said core member with said side faces, valve means on said housing for each of said cells to admit a combustion medium and exhaust the products of combustion, and power output shaft means driven by all of said crankshafts to transmit power from the combustion medium to the exterior of said engine, said drive shaft means being suppported by said fixed member and the other one of said side face plates.

3,964,443
DIGITAL ENGINE CONTROL SYSTEM USING DDA SCHEDULE GENERATORS

Thomas William Hartford, Livonia, Mich., assignor to The Bendix Corporation, Southfield, Mich.

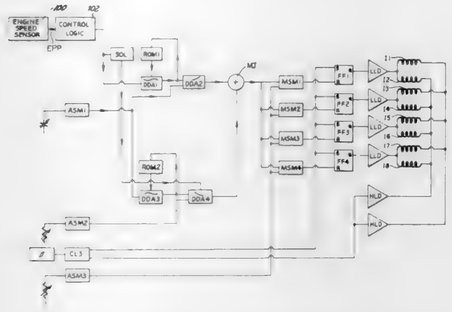
Continuation of Ser. No. 363,919, May 25, 1973, abandoned. This application June 7, 1973, Ser. No. 367,990
Int. Cl.² F02B *3/00*; **F02D** *19/10*
U.S. Cl. 123—32 EA **31 Claims**

1. An engine control apparatus for controlling an internal combustion engine control device in accordance with a pulsed control signal having an incrementally variable pulse width determined in accordance with a first engine parameter and a second engine parameter, said engine control apparatus comprising:

a. means for generating a first engine parameter dependent number of clock pulses varying with said first engine parameter and a second engine parameter dependent number of clock pulses varying with said second engine parameter;

b. first DDA interpolating means for interpolating from a first start point value to a first pulse width value in accordance with a first predetermined engine characteristic for a number of first iterations varying with said first engine parameter dependent number of clock pulses, said first engine characteristic comprising a first segment and a second segment;

c. second DDA interpolating means for interpolating from a second start point value to a second pulse width value in accordance with a second predetermined engine characteristic for a number of second iterations varying with said second engine parameter dependent number of clock pulses, said second predetermined engine characteristic comprising the formula



$$T_{i+1} = T_i + (1nB)T_i\Delta P,$$

wherein

1. T_i and T_{i+1} are successive said second pulse width values,
2. ΔP is the change in values of said second engine parameter between said successive pulse width values, and
3. 1nB comprises a factor having a value of 2^{-n};

d. control means for establishing one of said first and second start point values at one of said first and second pulse width values; and

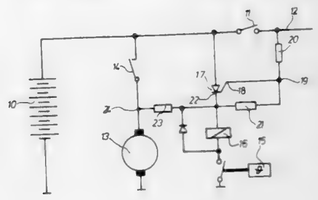
e. utilization means for generating said pulsed control signal in accordance with the other of said first and second pulse width values.

3,964,444
CONTROL CIRCUIT FOR AN ELECTROMOTOR

Rainer Hemmann, Markgroningen, and Helmut Steinmann, Baden-Baden, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Oct. 15, 1974, Ser. No. 515,043
Claims priority, application Germany, Oct. 19, 1973, 2352525
Int. Cl.² F01P *7/10*
U.S. Cl. 123—41.49 **9 Claims**

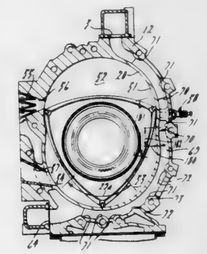
1. In a motor vehicle having an engine including an ignition circuit, a source of electric energy, ignition switch means having an activated and a de-activated state for, respectively, connecting and disconnecting said ignition circuit from said source of electric energy, a fan for cooling said engine, an electromotor for driving said fan, and control circuit means for energizing said electromotor independently of said state of said ignition switch means when said temperature of said engine exceeds a predetermined temperature: limiting means connected to said control circuit means and said ignition switch means for limiting the operation of said control circuit to a predetermined time period or a predetermined number of times following switching of said ignition switch means from said activated to said de-activated state.



3,964,445
WATER COOLING SYSTEM – WANKEL ENGINE

Robert P. Ernest, Dearborn Heights; Charles M. Jones, Detroit; Edwin J. Ounsted, Dearborn, and Hai Wu, Northville, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 3, 1974, Ser. No. 466,652
Int. Cl.² F02B *55/10*
U.S. Cl. 123—8.01 **19 Claims**



1. In a rotary internal combustion engine having variable volume combustion chambers defined by a rotary piston and a surrounding housing, said engine having means for igniting a combustible mixture introduced to said chambers at a combustion zone thereof, said engine further having means for defining an exhaust zone for withdrawing combusted gases, a cooling system for said engine, comprising:

a. at least one flow channel for carrying a cooling medium and extending along an arcuate portion of said combustion chamber,

b. a heat transfer wall separating said flow channel from said combustion chamber and having a smooth surface forming part of said channel, said heat transfer wall extending at least between said combustion zone and said exhaust zone and having a variable thickness therealong which is comprised of a taper at the leading and trailing portions of said wall separated by a uniformly thin section, said wall being so tapered in thickness from a minimum of 0.22 inches at said thin section adjacent said combustion zone to a maximum of at least six times the thin section thickness at said exhaust zone,

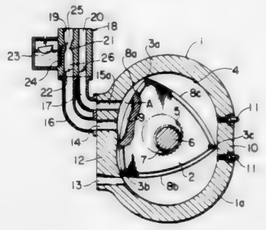
c. means in said channel to control said flow therethrough and said passage to insure a controlled flow against said smooth surface of said wall without detachment, and

d. means in said channel to disrupt ebullience that may develop along any portion of said wall surface, said system insuring that the operating temperature of said heat transfer wall does not vary greater than 60°F.

3,964,446
ROTARY PISTON INTERNAL COMBUSTION ENGINE

Toshiyuki Kohno, Toyoake, and Kenichi Imaizumi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jan. 2, 1975, Ser. No. 538,165
Claims priority, application Japan, Aug. 27, 1974, 49-97503
Int. Cl.² F02B *53/10*
U.S. Cl. 123—8.13 **2 Claims**

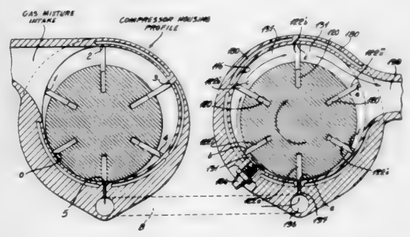


1. A rotary piston engine comprising a rotor housing with a trochoidally shaped inner peripheral wall defining the peripheral wall of a rotary piston chamber, said trochoidally shaped inner wall including a pair of opposed short axis sides, a rotary piston including a plurality of apex seals mounted within said rotary piston chamber for rotation therein in a given direction with said apex seals slidably engaged against said peripheral wall, first port means opening through said peripheral wall at one of said short axis sides, second port means opening through said peripheral wall at the same short axis side thereof as said first port means, air-fuel mixture supply means in flow communication with said first port means for introducing air-fuel mixture therethrough into said piston chamber, and air supply means in flow communication with said second port means for introducing air therethrough into said piston chamber, both said first and said second port means being located on a forward portion of said one short axis side of said inner peripheral wall taken in the direction of rotor rotation, said second port means opening at said one short axis side adjacent said first port means and on a forward side of said first port means taken in the direction of rotor rotation.

3,964,447
VANE-TYPE ROTARY INTERNAL COMBUSTION ENGINE

Michel Normandin, 1328 Nelles, Ste-Foy, Quebec, Canada

Filed Aug. 12, 1974, Ser. No. 496,809
Int. Cl.² F02B *53/08*
U.S. Cl. 123—8.41 **15 Claims**



1. In a vane-type rotary internal combustion engine

a motor stage including a motor housing having an interior profile of a first order of configuration with constant diametrical chord,

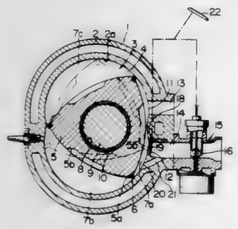
a rotor rotatably mounted in said housing and including a series of arc-shaped segments disposed in circular align-

ment in said housing and spaced to define therebetween a series of elongated radial openings,
a symmetrical system of unbalanced vanes slidably mounted in said openings and bearing at each extremity against said interior profile, said system including N vanes wherein N is an integer greater than 1, whereby said constant diametrical chord is equal to the length of said vanes, each of said vanes including a pair of blades disposed at 180° with respect to each other,
each vane defining in said housing, between said interior profile and said segments, chambers of variable volume depending on the relative rotational position of each segment with respect to said housing profile,
means mounted at opposite ends of said rotor associated with each blade of each individual vane and in line therewith for balancing the effect of centrifugal and inertial forces acting on said vanes,
intake means for introducing a compressed gas mixture in one of said chambers,
means for igniting said compressed gas mixture in said one chamber, and
exhaust means for discharging burnt gases from another of said chambers.

3,964,448
ROTARY PISTON TYPE ENGINE

Masato Eda, Iwata, Japan, assignor to Yamaha, Hatsudoki Kabushiki Kaisha, Japan

Filed Dec. 10, 1974, Ser. No. 531,351
Claims priority, application Japan, Dec. 12, 1973, 48-140907[U]
Int. Cl.² F02G *55/14*
U.S. Cl. 123—8.45 **8 Claims**

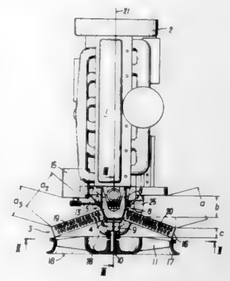


1. Rotary piston type engine comprising a casing which includes a rotor housing having a cavity of multi-lobed profile defined by an inner wall thereof and a pair of side housings gas-tightly secured to the opposite sides of the rotor housing; a multi-lobed rotor having a plurality of circumferentially spaced apex portions and disposed in said cavity for rotation with the apex portions in sealing engagement with the inner wall of the rotor housing to define a plurality of working chambers of variable volume in said cavity; intake means including a main intake port provided in said rotor housing and a main intake passage leading to said main intake port; and exhaust means including an exhaust port provided in said rotor housing; the improvement comprising valve means for controlling communication between said cavity and said main intake passage; said valve means including a rotatable valve shaft extending in a transverse direction of said main intake passage, said rotor housing having a recess from said main intake passage on one side of said main intake passage closely adjacent to said exhaust port; and a valve member connected at one end to said valve shaft and movable to open and close said main intake port, said valve shaft being rotatable to move said valve member between a first position in which said main intake port is closed and a second position in which said main intake port is open, said valve member lying completely in said recess in said second position, whereby said main intake passage is free of any obstruction by said valve means when said valve member is in said second position.

3,964,449
COOLER-CUM-BLOWER ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

Gerhard Thien; Heinz Fachbach, and Josef Greier, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Sept. 19, 1974, Ser. No. 507,525
Claims priority, application Austria, Apr. 8, 1974, 2934/74
Int. Cl.² F01P *3/20*
U.S. Cl. 123—41.51 **2 Claims**



1. A cooler-cum-blower assembly in internal combustion engines, in particular for automative engines, comprising a water-cooler including two upright cooler elements located in front of a front end of the internal combustion engine opposite each other in relation to a longitudinal median plane of the engine, each of the cooler elements forming an acute angle with said longitudinal median plane on the side facing away from the engine, an axial blower actuated by the engine and arranged in front of the two cooler elements, said axial blower comprising a blower shaft, a blower impeller mounted thereon, and an outer ring encompassing the blower impeller, further comprising a central bracket attached to said front end of the engine, a bearing for the blower shaft located on the central bracket, an intermediate housing attached to said central bracket and extending from the cooler elements as far as the axial blower, said intermediate housing closing the space between the cooler elements and the blower in an upward and downward direction and comprising a flange on its side facing away from the engine, said outer ring of the blower being attached to said flange.

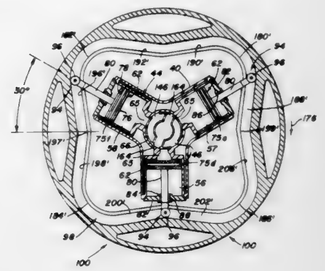
3,964,450
ROTARY CAM INTERNAL COMBUSTION RADIAL ENGINE

John E. Lockshaw, 519 Las Riendas Drive, Fullerton, Calif. 92632

Filed Nov. 19, 1973, Ser. No. 417,218
Int. Cl.² F02B *75/22*
U.S. Cl. 123—55 AA **16 Claims**

1. A rotary-cam, internal-combustion, radial engine, comprising:
a stationary motor block having a first and a second group of piston cylinders positioned radially outwardly from a centrally disposed longitudinal bore arranged normal to said groups of said cylinders, each of said cylinders including a reduced opening terminating in said central bore;
a first and a second group of pistons operably disposed within respective groups of piston cylinders, each of said pistons including a piston rod extending outwardly from said cylinder;
an explosive chamber within each of said cylinders disposed within the cylinder portion adjacent said longitudinal bore;

a hollow, tubular, drive shaft disposed for rotation within said longitudinal bore;
a fuel-intake system including a fuel-intake means arranged within said tubular drive shaft for operable communication with said cylinders;

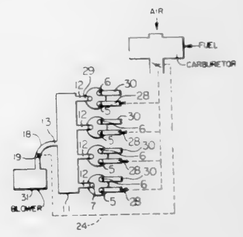


an exhaust system including an exhaust means arranged within said tubular drive shaft for operable communication with said cylinders;
a rotatable housing fixedly connected to said drive shaft; and
a cam means secured to said housing and operably attached to each of said piston rods, for operable rotation of said housing and reciprocating movement of said pistons.

3,964,451
INTERNAL COMBUSTION ENGINE WITH A SUPERCHARGER

Kenji Goto, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Dec. 13, 1973, Ser. No. 424,204
Claims priority, application Japan, Aug. 9, 1973, 48-93103
Int. Cl.² F02D *33/02*
U.S. Cl. 123—75 B **2 Claims**

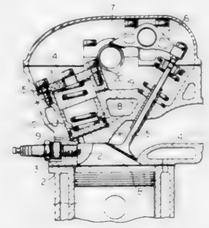


1. A spark ignition four stroke cycle internal combustion engine of the type that includes a plurality of cylinders, pistons reciprocal in the cylinders; a carburetor having a throttle valve; a cylinder head mounted on the cylinders, said cylinder head having a combustion chamber defined therein for each cylinder, an inlet port leading to each combustion chamber, an intake valve for supplying fuel and air mixture from the carburetor through each intake port, an exhaust port leading from each combustion chamber, and an exhaust valve for exhaust of burnt gas through each exhaust port wherein the improvement comprises:
the carburetor being adjusted to supply a rich fuel and air mixture to the combustion chambers through the intake ports and
supercharging means,
the supercharging means comprising
an air blower for supplying said pressurized intake air,
subordinate ports in the cylinder head opening into each combustion chamber,
an air chamber for temporarily storing said pressurized intake air supplied from said air blower, said air chamber being connected to each of said subordinate ports of said cylinder head,
a vent pipe connecting said air blower and said air chamber,
a regulating valve disposed in said vent pipe, said regulating valve being interconnected with the throttling valve of said carburetor for regulating the amount of pressurized air supplied through the subordinate ports to the combustion chambers in proportion to the amount of fuel and air mixture supplied from the carburetor through the intake ports,
an air valve in each subordinate port for said pressurized intake air to flow into the corresponding combustion chamber when the valve of said subordinate port is open, and
means for actuating each air valve of said subordinate ports to be open only during a period in each cycle from before the end of the intake stroke through a portion of the compression stroke by the piston in the corrsponding cylinder for supplying sufficient additional air under pressure to the combustion chamber for thoroughly mixing with the fuel and air mixture to produce a combustible supercharged lean fuel and air mixture prior to the commencement of the expansion stroke.

3,964,452
HIGH COMPRESSION INTERNAL COMBUSTION ENGINE USING A LEAN CHARGE

Norihiko Nakamura, and Toyokazu Baika, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Sept. 27, 1973, Ser. No. 401,459
Claims priority, application Japan, Aug. 4, 1973, 48-87226
Int. Cl.² F02B *75/04*
U.S. Cl. 123—78 AA **6 Claims**



1. An improved low pollution spark ignition gasoline engine of the type that includes a housing having a chamber defined therein, a power member sealingly fitted in the chamber for cyclical movement between a first position in which the volume of a closed combustion space defined between the power member and a portion of the chamber surface is a maximum and a second position in which said combustion space is a minimum, the ratio betwee said maximum volumes defining the compression ratio of the engine; means for supplying air and fuel in selectable amounts to the combustion space for combustion therein; means connected to the power member for transmitting power developed by the pressure of the combusted air-fuel mixture against the member as the member moves from the second position to the first position; and means forming part of the surface of the chamber portion of the combustion space that is displaceable from a normal position to increase the volume of the combustion space, wherein the improvement comprises:
an engine compression ratio higher than that of a conventional spark ignition engine, in the range of approximately 14 to 17, the means for supplying air and fuel in select-

able amounts being adjusted to produce a lean mixture in the combustion space, and

spring for biasing the displaceable means into the normal position until the pressure of the ignited gases in the combustion space reaches a predetermined value greater than the maximum pressure attained during compression before ignition and for allowing displacement of the displaceable means to prevent the gas pressure from exceeding a predetermined maximum value, the excess energy of said gas being stored by the spring for delivering useful work as the displaceable means returns during each expansion cycle to the normal position, whereby the formation of noxious components in the exhaust gas of said engine is substantially diminished.

3,964,453

INTERNAL COMBUSTION ENGINE ELECTRIC IGNITION BREAKER CONTACT STRUCTURE

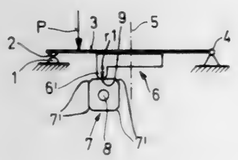
Harald Kalippke, Hohenacker, and Gunter Brand, Stuttgart, both of Germany, assignors to Robert Bosch G.m.b.H., Gerlingen-Schillerhohe, Germany

Filed Oct. 9, 1974, Ser. No. 513,224

Claims priority, application Germany, Oct. 9, 1973, 2350562

Int. Cl.² H01H *19/62*; **F02P** *7/02*

U.S. Cl. 123—146.5 A **7 Claims**



1. Internal combustion engine ignition apparatus including an ignition breaker contact structure comprising a fixed contact (1), a movable contact (2), a contact arm (3) carrying the movable contact, a cam (7) and an engagement element (6) connected to the contact arm (3) and in engagement with the cam (7), and moving the contact arm (3) between open, and closed position, in dependence on the position of the cam (7) with respect to the engagement element (6),

wherein the improvement comprises

the portion (6') of the engagement element (6) bearing against the cam (7) comprising polyimide; and

the engagement element (6) in the region engaging the cam (7) is formed with a rounded, or curved surface (9) to engage the cam (7) therewith, said surface (9) being rounded in two transverse directions, the radius of curvature (r1, r2) in the respective directions being selected such that, in operation, wear of said surface, upon engagement of said surface (9) with the cam (7), approximately matches the flattening of the contacts (1, 2) upon repeated opening and closing of the contacts due to movement of the contact arm in dependence on the position of the cam (7) with respect to said engagement element (6).

3,964,454

DIFFERENTIAL IGNITION TIMING FIRING CONTROL SYSTEM

Torazo Nishimiya, Mito, Japan, assignor to Hitachi, Ltd., Japan

Filed June 21, 1974, Ser. No. 481,825

Claims priority, application Japan, July 6, 1973, 45-75679; Sept. 28, 1973, 45-108414

Int. Cl.² F02P *3/02*; **F02B** *75/10*

U.S. Cl. 123—148 DS **18 Claims**

1. An ignition timing control system for a reciprocating internal combustion engine having a first spark plug and a second spark plug in each combustion chamber comprising;

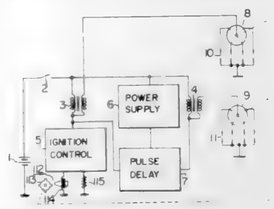
first means for generating an output representative of an operating parameter of the engine;

ignition timing detecting means for generating a trigger signal;

a pulse amplifier generating a first pulse signal for actuating the first spark plug in response to the trigger signal from said ignition timing detecting means; and

a pulse delay amplifier having

a. a first pulse generator for generating a second pulse signal in response to said first pulse signal, said second



pulse signal having a pulse width which is continuously variable substantially in accordance with the output of said first means, and

b. a second pulse generator generating a third pulse signal for actuating the second spark plug in response to the trailing end of the second pulse signal, the initiation of the third pulse signal being delayed from the first pulse signal by the time interval corresponding to the width of the second pulse signal, so that the interval of time between operations of said first and second spark plugs is varied with the variation of the output of said first means.

3,964,455

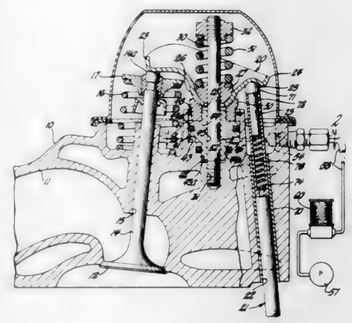
VALVE CONTROL MECHANISM

Donald R. Brown, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 19, 1974, Ser. No. 534,211

Int. Cl.² F01L *1/18*

U.S. Cl. 123—90.43 **6 Claims**



1. In an internal combustion engine having a cylinder head and reciprocally journailed therein a poppet valve with a return spring connected thereto and a reciprocally driven member for operating the poppet valve in a direction opposed by its spring with each stroke of the member in a direction substantially opposite that of the poppet valve, a rocker for normally transmitting valve operating movement from the member to the poppet valve, said rocker having spaced apart surfaces on one side thereof engageable with oppositely facing surfaces of the member and the poppet valve and a bearing

portion intermediate its ends with a bearing surface on the opposite side of said rocker from said spaced apart surfaces, said bearing portion having an aperture therethrough, support means including a stud extending through said aperture and fixed to said cylinder head, said seat means including a seat movable from a first position at which said seat pivotally journals said bearing surface about the rocking axis of said rocker to a second position at which said rocker is movable to a position at which it is pivotally supported by the oppositely facing surface of the poppet valve and, said support means having power means, including hydraulic actuator means, responsive to engine operating conditions, operably connected thereto to effect movement of said seat between said first position and said second position.

3,964,456

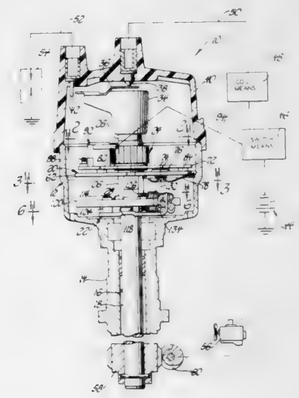
IGNITION DISTRIBUTOR

Philip V. Eshelman, Southfield, Mich., assignor to Colt Industries Operating Corporation, New York, N.Y.

Filed Dec. 24, 1974, Ser. No. 536,194

Int. Cl.² F02D *5/04*

U.S. Cl. 123—117 R **14 Claims**



1. An ignition distributor for an internal combustion engine, comprising drive shaft means adapted to be driven in accordance with the speed of said engine, switching rotor means operatively carried by said drive shaft means and effective to cause an opening and closing of associated electrical circuit means, said rotor means being generally coaxial with said shaft means and adapted to be angularly adjustable relative thereto and about the axis of rotation of said drive shaft means, means responsive to changes of engine operating conditions for angularly adjusting said rotor means relative to said drive shaft means, said means responsive to changes of engine operating conditions comprising a single centrifugal weight operatively carried by said drive shaft means and operatively connected to said rotor means, said centrifugal weight being effective to move radially outwardly from said axis of said shaft means in response to rotation of said shaft means and thereby cause said angular adjustment of said rotor means relative to said shaft means, at least first and second spring means located respectively above and below said single centrifugal weight and operatively connected to said single centrifugal weight for resiliently resisting said radially outward movement of said centrifugal weight bearing means having an axis for pivotally securing said single centrifugal weight and for permitting angular rotation of said single centrifugal weight about said axis, said first and second spring means being mounted with respect to each other in a manner so that the lines of resisting forces of said first and second spring means pass through a plane normal to said axis near the center of said bearing means so as to eliminate internal forces related to centifugal force between said drive shaft means and said switching means.

3,964,457

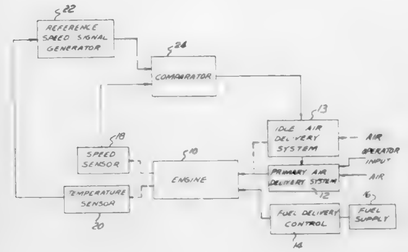
CLOSED LOOP FAST IDLE CONTROL SYSTEM

Charles M. Coscia, Columbus, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed June 14, 1974, Ser. No. 479,234

Int. Cl.² F02D *1/04*, *1/06*

U.S. Cl. 123—119 F **10 Claims**



1. An idle air delivery system for maintaining the idle speed of an internal combustion engine at a rate determined by the engine temperature comprising:

sensor means generating a speed signal indicative of the actual speed of an internal combustion engine;

sensor means generating a temperature signal indicative of the engine temperature;

reference speed generating circuit means receiving said temperature signal for generating a reference speed signal having a temperature dependent value indicative of an idle speed required to sustain the operation of the engine at the sensed engine temperature;

means comparing said actual speed signal with said reference speed signal for generating a control signal indicative of the change in the idle air flow to the engine to reduce the difference between the actual engine speed signal and the reference speed signal to zero; and

means for controlling the idle air flow to the engine in response to said control signal to change the idle speed of the engine and reduce the difference between said actual speed signal and said reference speed signal to zero.

3,964,458

SERVICE VEHICLE FOR MANHOLE OPERATION

Robert F. Strauss, Cary, and Carl F. Lawrenz, Skokie, both of Ill., assignors to Service Dynamics, Inc., Lake Bluff, Ill.

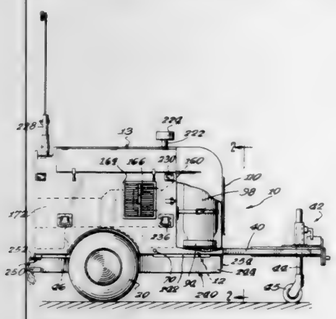
Division of Ser. No. 229,642, Feb. 28, 1972, Pat. No. 3,799,244. This application Mar. 25, 1974, Ser. No. 454,660

Int. Cl.² F02M *31/00*

U.S. Cl. 123—122 H **15 Claims**

6. A vehicle for manhole operation and comprising a chassis frame mounting wheels and having means for coupling the same to a truck or the like to be towed thereby, power and powered equipment mounted on said chassis frame and including a liquid cooled prime mover having a radiator for cooling the liquid and a fan blowing air through the radiator, a housing for said vehicle and covering the power and powered equipment, vertical partition means in said vehicle and forming compartments, there being at least one compartment for storing a fuel container for said prime mover and the prime mover in a different compartment, fuel feed means connected between said one compartment and prime mover, said vertical

partition means having structure for selectively directing at least some of the air blown through the radiator into said one



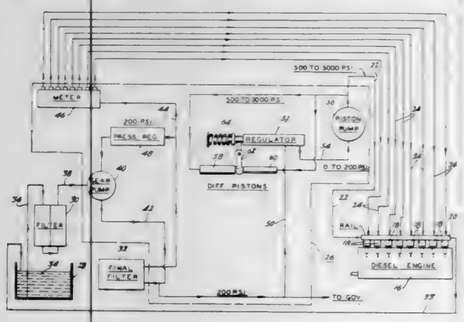
compartment whereby to impinge against a fuel container which would be installed therein.

3,964,459

UNIVERSAL FUEL INJECTION SYSTEM CONTROLLER

John A. Kimberley, East Granby, Conn., assignor to Ambac Industries, Inc., Springfield, Mass.

Filed June 23, 1975, Ser. No. 589,034
Int. Cl.² F02D *11/06*
U.S. Cl. 123—140 FG **13 Claims**



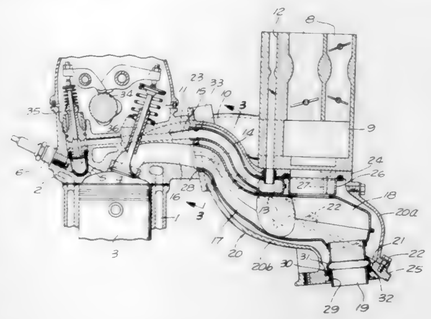
1. A controller for a diesel engine fuel injection system having an injector for each engine cylinder actuated by a variable high pressure fuel common rail, said controller including fuel metering and distributing means for deliverying metered quantities of fuel to said injectors, a high pressure fuel pump for supplying said variable common rail pressure, said common rail output pressure of said pump varying with the fuel input flow thereto, a regulator for regulating the output pressure of said high pressure pump in accordance with engine load, and a low pressure fuel pump for delivering fuel from a fuel supply source to said fuel metering and distributing means and to said regulator for passage into said high pressure pump, said regulator being adapted to sense said common rail output pressure of said high pressure pump and to regulate the flow of fuel into said high pressure pump to thereby vary said common rail output pressure as a function of engine load, said regulator including a regulator sleeve slidably disposed for axial movement within a cylindrical bore, a regulator piston disposed within said sleeve, passage means cooperatively arranged within said regulator sleeve and piston defining a variable orifice for regulating fuel flow through said regulator to said high pressure pump, means for positioning said sleeve within said bore as a function of said high pressure pump common rail output pressure, said latter means comprising differential piston means, and means for positioning said regulator piston within said bore as a function of engine load, whereby the size of said variable orifice is increased or decreased as required to maintain the high pressure pump common rail output pressure at a predetermined level in accordance with engine load.

3,964,460

HEATING OF INTAKE MIXTURE FOR AUXILIARY CHAMBER OF INTERNAL COMBUSTION ENGINE

Soichi Nakano, Kawagoe; Yoshitoku Iizuka, Toda, and Masao Watanabe, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha Tokyo, Japan

Filed Nov. 19, 1973, Ser. No. 417,261
Claims priority, application Japan, Dec. 4, 1972, 47-120680
Int. Cl.² F02B *19/10*
U.S. Cl. 123—191 S **3 Claims**



1. In a multi-cylinder internal combustion engine in which each cylinder has a main combustion chamber and an auxiliary combustion chamber connected by a torch nozzle, and having a first passage for supplying a rich mixture to the auxiliary chamber and a second passage for conveying hot exhaust gases from the main combustion chamber, the improvement comprising, in combination: a plurality of thin wall intake pipes each connected to one of the first passages, respectively, a plurality of thin wall exhaust pipes each connected to one of the second passages, respectively, pairs of intake and exhaust pipes being curved and contiguous, a thick wall housing having portions enclosing each pair of said pipes, each of said intake pipes being integrally connected to a common auxiliary riser enclosed within said housing, and each of said exhaust pipes being integrally connected to a common exhaust chamber enclosed within said housing, the exhaust chamber having an exit pipe projecting through said housing, said housing having a flange provided with a central opening, and means including a bracket spacing the exhaust chamber from the flange, the chamber and the bracket having openings aligned with the central opening in the flange.

3,964,461

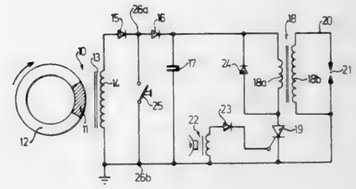
CAPACITOR TYPE MAGNETO IGNITION SYSTEM WITH DIODE-PROTECTED SHUTDOWN SWITCH

Jürgen Wesemeyer, Nurnberg-Reichelsdorf; Hans Schrumpf, Oberasbach; Werner Meier, Schwabach, and Georg Haubner, Berg, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Nov. 26, 1974, Ser. No. 527,501
Claims priority, application Germany, Dec. 15, 1973, 2362472
Int. Cl.² F02P *1/00, 9/00*
U.S. Cl. 123—198 DC **1 Claim**

1. In a magneto ignition system for an internal combustion engine comprising a capacitor (**17**) arranged to be charged in a half-wave rectifier circuit through a charging diode (**15**) by a magneto generator (**10**) having an armature winding connected to said circuit, a controllable switching element (**19**) under control of ignition timing means (**22**) arranged for discharging said capacitor at the timed ignition moment through a transformer (**18**) that feeds at least one sparkplug (**21**) and also a shutdown switch (**25**) bridging the capacitor

charging circuit, the improvement constituted by the provision of an additional diode (**16**) in series with said charging diode (**15**), said charging diode being a diode element of a half-wave rectifier circuit which is the only rectification cir-



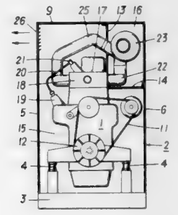
cuit with said armature winding of said magneto generator, and the connection of said shutdown switch (**25**) between the common connection (**26***a*) of said diodes and the connection (**26***b*) of said magneto generator remote from said generator.

3,964,462

SOUND-PROOFED INTERNAL COMBUSTION ENGINE

Gerhard Thien, and Heinz Fachbach, both of Graz, Austria, assignors to Hans List, Austria

Filed Dec. 10, 1974, Ser. No. 531,445
Int. Cl.² F02B *77/00;* **F01P** *1/02*
U.S. Cl. 123—198 E **3 Claims**



1. An internal combustion engine having a soundproofing casing therearound and defining a chamber therebetween through which air is circulated from a blower mounted adjacent to an inlet opening in a first front wall of the casing to remove generated heat from the engine, the improvement in which comprises

at least one partition wall dividing the chamber into two separate cooling air ducts which are sealed from each other,

a first one of the cooling air ducts containing all fuel carrying parts of the engine including a fuel injection pump, fuel pressure pipes and fuel injection nozzles,

the second one of the cooling air ducts containing at least the major portions of those components of the engine exhaust system which are located within the soundproofing casing including an exhaust manifold and an exhaust tube, and

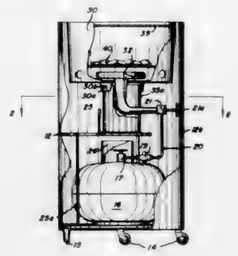
the soundproofing casing having two separated cooling air outlet ports therein each of which is connected to a separate one of the two cooling air ducts whereby any combustible materials carried by the cooling air from the fuel carrying parts of the engine are prevented from encountering hot exhaust system surfaces thereby significantly reducing any danger of fire.

3,964,463

OUTDOOR COOKING ARRANGEMENT

Donald E. Dailey, Evansville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.

Continuation of Ser. No. 253,447, May 15, 1972, abandoned.
This application May 28, 1974, Ser. No. 473,872
Int. Cl.² A47J *37/00;* **F24C** *3/00*
U.S. Cl. 126—41 R **5 Claims**



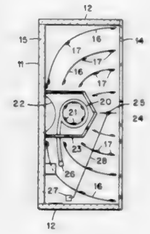
1. A cooking arrangement characterized by a cooking vessel surrounded by an outer housing including a base member proximate the bottom thereof, said cooking vessel defined by a side and a bottom, a source of fuel disposed above said base member within said outer housing, control means for said source of fuel, a plate member disposed within said outer housing and mounting said cooking vessel, a burner within said cooking vessel communicating through an opening in said bottom of said cooking vessel with said source of fuel, and a cooking grid positioned above said burner within said cooking vessel, said outer housing being spaced apart from said side of said cooking vessel to define a blanket of insulating neutral air.

3,964,464

SOLAR RADIATION COLLECTOR AND CONCENTRATOR

Vernon J. Hockman, Oak Ridge, Tenn., assignor to Oak Ridge Solar Engineering, Inc., Oak Ridge, Tenn.

Filed Apr. 8, 1975, Ser. No. 566,104
Int. Cl.² F24J *3/02*
U.S. Cl. 126—270 **6 Claims**



1. A solar radiation collector and concentrator comprising:

a. an enclosure assembly formed from weatherproof metal and defining a generally rectangular mounting surface;

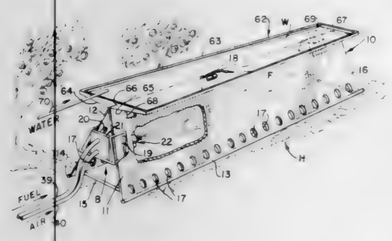
b. a transparent cover portion for said enclosure assembly;

c. a longitudinal plurality of aligned curved reflective surfaces supported within said mounting surface and being operable to reflect incident solar radiation toward a common focal axis extending longitudinally of said enclosure assembly;

d. multiple vertical reflectors positioned perpendicular to said plurality of longitudinal aligned curved reflective surfaces and being operable to reflect low-angle solar radiation toward said common focal axis;

e. a helicoidal fluid-bearing tube longitudinally mounted within said enclosure assembly and being positioned at the common focal axis of solar radiation reflected from said longitudinal plurality of aligned curved reflective surfaces and at the common focal axis of low-angle solar radiation reflected from said multiple vertical reflectors;
f. a convex radiation reflector longitudinally mounted below and along an axis parallel to said helicoidal fluid-bearing tube and being operable to reflect incident and low-angle solar radiation upward onto said helicoidal fluid-bearing tube;
g. a transparent coil housing assembly within said enclosure assembly longitudinally mounted above and along an axis parallel to both the helicoidal fluid-bearing tube and the convex radiation relector; and
h. means for preventing excess solar radiation from striking said transparent coil housing assembly.

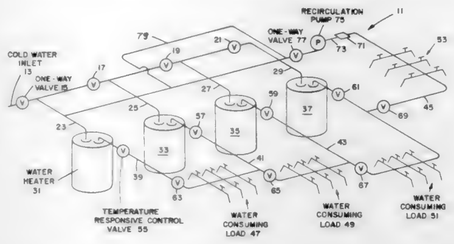
3,964,465
HEATER AND VAPOR GENERATOR
Richard E. Diggs, 12A Road, Carthage, Mo. 64836
Filed May 7, 1975, Ser. No. 575,231
Int. Cl.² F24H *1/34*
U.S. Cl. 126—350 B **8 Claims**



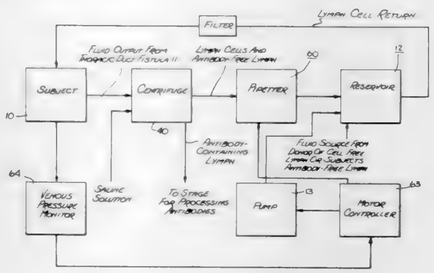
1. A heater for warming crops such as fruit trees and vineyards and the like comprising an elongate housing having inclined side walls and opposite open ends; a burner means supported in the housing at one end thereof; air supply means and fuel supply means connected with the burner means to supply fuel and air thereto; said burner means having air and fuel outlet orifice means arranged to produce atomized fuel spray and obtain efficient and substantially pollution free combustion of the fuel and to produce a turbulent flame within the housing extending substantially the length of the housing; the angular disposition of said side walls being such that radiant heat is radiated in a generally horizontal direction onto the crops; and a vapor generator and heat reflector supported on top of said housing, said vapor generator and heat reflector comprising an elongate, shallow tray having opposite, upwardly and outwardly inclined bottom surfaces to reflect heat rising from the housing outwardly toward the crops, and water supply means to supply water to the tray whereby the upwardly rising heat heats the water and produces a quantity of vapor which forms a blanket of fog to retain the heat near the ground.

3,964,466
PARALLEL FLUID HEATING SYSTEM
Jack G. Ohringer, 175 Rodgers, Vallejo, Calif. 94590
Filed Mar. 31, 1975, Ser. No. 563,910
Int. Cl.² F24H *1/00*
U.S. Cl. 126—361 **7 Claims**

1. A parallel fluid heating system comprising:
a. at least first and second fluid heaters;
b. at least one load that consumes heated fluid;
c. at least first and second cold fluid inlet conduits respectively connected to the inlets of said at least first and second fluid heaters;
d. at least first and second hot fluid outlet conduits respectively connected to the outlets of said first and second fluid heaters;
e. said at least first and second hot fluid outlet conduits being connected to said at least one load;
f. at least first and second temperature responsive control valves respectively positioned in said at least first and second hot fluid outlet conduits for respectively controlling the hot fluid flow rate therein in response to the temperature of the hot fluid contained therein; and
g. each of said at least first and second temperature responsive control valves are open when said fluid temperature is above a first predetermined value and closed when said fluid is below a second predetermined value and said first predetermined value being greater than said second predetermined value.



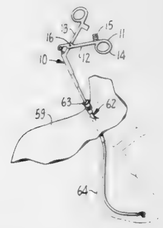
3,964,467
METHODS AND APPARATUS FOR AUGMENTATION OF THE PRODUCTION OF ANTI-BODIES IN ANIMALS AND HUMANS AND THE COLLECTION THEREOF
Sam Rose, Eggertsville, N.Y., assignor to BIO Response Inc., Scarborough, N.Y.
Continuation-in-part of Ser. No. 328,048, Jan. 30, 1973, which is a division of Ser. No. 136,476, April 22, 1971, Pat. No. 3,179,182. This application Apr. 9, 1973, Ser. No. 349,330
The portion of the term of this patent subsequent to Mar. 6, 1990, has been disclaimed.
Int. Cl.² A61B *19/00*
U.S. Cl. 128—1 R **45 Claims**



1. A method for the augmentation of production of a specific antibody from a patient which comprises:
selecting a patient making antibodies to a specific antigen selected from the group consisting of endogenous and non-administered exogenous antigens;
performing a thoracic duct fistula on the patient;
raising the patient's central venous pressure to a preselected level to eliminate alternate lymphatico venous channels;
collecting lymph from said fistula;
centrifuging said collected lymph to separate the lymph cells therein from the lymph fluid and to form a thin elongated layer of cells;

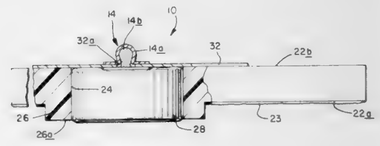
treating said thin elongated layer of lymph cells to assure that they are substantially free of the antibody produced by the patient in response to said specific antigen;
dispersing said cells in a physiologically balanced saline solution;
returning said dispersed cells and solution to the patient; and
providing replacement therapy to the patient intravascularly.

3,964,468
BIOPTOME
Werner P. Schulz, San Bruno, Calif., assignor to The Board of Trustees of Leland Stanford Junior University, Stanford, Conn.
Filed May 30, 1975, Ser. No. 582,210
Int. Cl.² A61B *5/00, 17/32, 17/28*
U.S. Cl. 128—2 B **6 Claims**



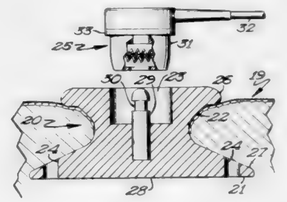
1. In a bioptome comprising: tongs; a rotational joint socket mounted on the working end of one of the legs of the tongs; a rigid tubular barrel mounted at one of its ends to the working end of the other leg of the tongs; an elongated flexible spiral wire catheter attached at one of its ends to the other end of said barrel; an elongated center wire that extends axially through the bores of said barrel and said catheter and has a joint on its one end that is received in said socket; a seal between the center wire and the catheter at each end of the catheter; a pair of hinged jaws one of which is mounted on the other end of the catheter and the other of which is attached to the other end of the center wire; and a heat-shrunk plastic sleeve about the catheter that seals the radial exterior surface of the catheter and prevents the catheter from substantial axial expansion, the improvement comprising: a heat-shrunk plastic inner sleeve about the barrel and a segment of the catheter that together with said sleeve forms a double sleeve about said barrel and said segment, the end of the inner sleeve that is about the segment being bias-cut.

3,964,469
DISPOSABLE ELECTRODE
Arthur G. Manley, Andover, Mass., assignor to Eastprint, Inc., Andover, Mass.
Filed Apr. 21, 1975, Ser. No. 570,077
Int. Cl.² A61B *5/04*
U.S. Cl. 128—2.1 E **7 Claims**



1. A medical electrode comprising
A. a flexible support layer having a top surface and an adhesive bottom surface,
B. means defining a through opening in the support layer extending between its top and bottom surfaces,
C. a flexible, resilient collar
1. projecting from the bottom surface of the support layer, and
2. surrounding said opening,
D. a thin nonporous sheet
1. adhered to the top surface of the support layer, and
2. covering a substantial portion of said opening,
E. a gel pad snugly received in said opening and collar, said gel pad having a top surface contacting the nonporous sheet and a bottom surface exposed at the rim of said collar, and
F. a conductive contact element
1. supported by the nonporous sheet,
2. having a first portion thereof in conductive contact with the top surface of the gel pad, and
3. having a second portion thereof projecting above the nonporous sheet.

3,964,470
PERCUTANEOUS INTRADERMAL ELECTRICAL CONNECTION SYSTEM AND IMPLANT DEVICE
Michael A. Trombley, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed July 25, 1974, Ser. No. 491,785
Int. Cl.² A61B *5/04;* **A61N** *1/36*
U.S. Cl. 128—2.1 E **24 Claims**

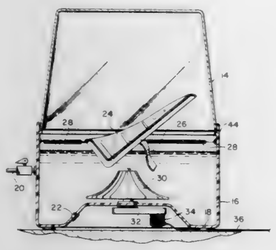


1. In a percutaneous electrical connection system of the type having a conductive lead, having an implant device including a flange and a neck extending from the flange a sufficient distance to pass an end thereof through the skin, the neck being provided with a cavity in said end and said implant device including an electrical conduction path from its neck cavity to at least one location at the surface of its flange, and having means for operatively connecting said lead to said implant device, the improvement wherein said connecting means includes first and second means for releasably establishing a mechanical and electrical connection between said lead and said implant device conduction path while allowing said lead to rotate through 360° relative to said implant device, said first means being secured within said cavity in electrical communication with said implant device conduction path and said second means being secured to said lead in electrical communication therewith.

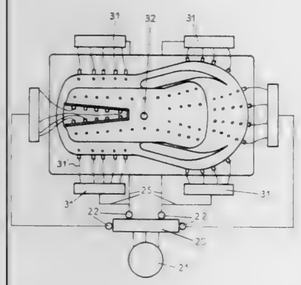
3,964,471
CHILD'S BATHING CABINET
Magnus Saethre, Brooklyn, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed June 16, 1975, Ser. No. 587,368
Int. Cl.² A61H *9/00*
U.S. Cl. 128—65 **2 Claims**

1. A bathing cabinet for children comprising a base member which includes a continuously extending closed wall section having a floor element joined to the lower extremity thereof, a dome member consisting essentially of a side wall portion

and a top enclosure supported by the upper portion of said wall section, at least a substantial segment of said side wall portion of said dome being constructed so as to provide visual access to the interior of the cabinet, seating means being positioned within the cabinet within full view of the transparent segment of said dome, water inlet and outlet means connected to said base member for supplying water thereto and for draining water therefrom, water agitator means mounted within said base member, and means for imparting movement to said agitator means.

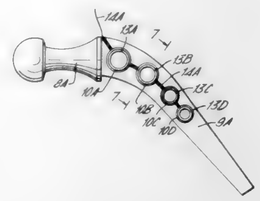


3,964,472
AUTOMATIC DEVICE FOR SUBAQUEOUS MASSAGE
Michel Nicollet, 6, rue Oberlin, Strasbourg, (Bas-Rhin), France
Filed Mar. 20, 1974, Ser. No. 452,840
Claims priority, application France, Mar. 20, 1973, 73.11007
Int. Cl.² A61H 9/00
U.S. Cl. 128—66 **15 Claims**



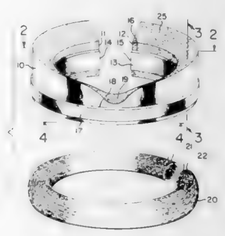
1. An automatic device for underwater massage, comprising a tub specially shaped to place a human body in a relaxing position, a motor-driven pump recycling water in a closed circuit in the tub through a dispatching system comprising a general water distributor manifold at the outlet of the pump, said manifold being connected to several secondary distributor manifolds, each of said secondary manifolds feeding water to several water outlets located in the walls of the tub.

3,964,473
BONE PROSTHESIS
Geoffrey Gordon Wickham, and Allen Frederick Dwyer, both of Sydney, Australia, assignors to Telectronics Pty. Limited, New South Wales, Australia
Filed Sept. 19, 1973, Ser. No. 398,880
Claims priority, application Australia, Sept. 21, 1972, 516/72
Int. Cl.² A61N 1/00; A61F 1/04
U.S. Cl. 128—82.1 **2 Claims**



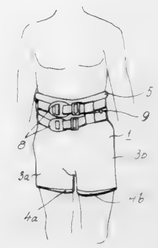
1. A bone prosthesis comprising a core, said core including a head and a shaft, said shaft defining a hole pierced therein, a keying electrode substantially lining the surface of said hole and an insulating layer disposed between the core and electrode securing each to each whereby said electrode includes key formations into which bone may grow for locking engagement therewith.

3,964,474
UNIVERSAL CERVICAL COLLAR
J. DeWitt Fox, 1894 Carla Ridge, Beverly Hills, Calif. 90210
Filed May 27, 1975, Ser. No. 580,926
Int. Cl.² A61F 5/04
U.S. Cl. 128—87 B **7 Claims**



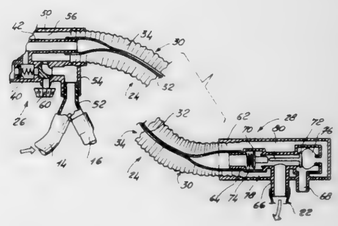
1. A cervical collar comprising, in combination:
a. a plastic foam member curved into an annular shape with its ends terminating in the rear in spaced opposed relationship; and,
b. at least one band of resilient plastic material different from said plastic foam biased into a desired annular shape with its ends terminating in spaced opposed relationship secured to said foam member to hold the foam member in its annular configuration, said annular configuration being circumferentially expandable against the bias of said band by increasing the separation space of its ends so that the foam member will fit snugly about a person's neck, the upper front portion of said member including a front depression for receiving and comfortably cradling the forward under portion of a patient's jaw.

3,964,475
PROTECTING HOSE
Anna-Lisa Holm, Prologgatan 14, 42241 Hisings-Backa Goteborg, Sweden
Filed May 17, 1974, Ser. No. 471,017
Int. Cl.² A61F 13/00
U.S. Cl. 128—132 R **1 Claim**



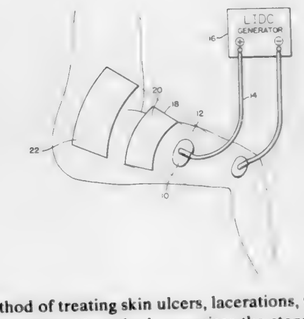
1. Protecting pants intended to insulate in a water and a gas proof manner a body portion of a person wearing said pants from the medium surrounding him comprising pants being made from an elastical, liquid and gas proof and heat insulating material, said pants having legs with the lower portions of said pant legs being provided with inwardly folded cuffs made from a thin and pliable material such as rubber, wherein said cuffs are capable of forming a tight connection between the thighs of the wearer and said pants in the inwardly folded position of said cuffs, said pants having a waist portion having an inflatable zone extending all around said waist portion, an adjustable strap assembly, said strap assembly extending around said inflatable zone of said waist portion to press said inflatable zone of said pants against the waist of the wearer.

3,964,476
RESPIRATION SYSTEM AND DEVICE
Roberto Palleni, 18, Villaggio Aurelia, 20060 Cassina de' Pecchi, Italy
Filed Nov. 5, 1974, Ser. No. 521,148
Claims priority, application Italy, Nov. 5, 1973, 30902/73
Int. Cl.² A61M 16/00
U.S. Cl. 128—145.6 **10 Claims**



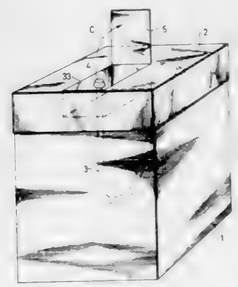
1. In a device for administering a gaseous medium from a remotely located source to a patient, a combination, comprising elongated, bendable but shape-retaining tubular means having one end arranged adjacent the patient and its other end spaced therefrom and adapted to communicate with said source, said tubular means including an inner, flexible collapsible first tube bounding an interior space and an outer, bendable but shape-retaining second tube surrounding said first tube and defining a pumping chamber therewith; inlet means at said other end and having an inlet port in communication with said source of gaseous medium to be conveyed to the patient and with said interior space; outlet means at said one end communicating with said interior space and having an outlet port adapted to be in communication with the patient; and pumping means in communication with said pumping chamber and with an alternately-cycled source of pressurized medium for intermittently compressing said flexible first tube and thereby pumping during each compression a quantity of the gaseous medium therein via said inlet means towards said outlet means and from there to the patient.

3,964,477
METHOD OF USING ELECTRODES HAVING ANTISEPTIC PROPERTIES FOR LIDC THERAPY
Franklin H. Ellis, and Stephen W. Andrews, both of Rochester, N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Filed Jan. 30, 1975, Ser. No. 545,609
Int. Cl.² A61N 31/00
U.S. Cl. 128—172.1 **2 Claims**



1. A method of treating skin ulcers, lacerations, wounds and the like, wherein said method comprises the steps of:
a. maintaining a first side of a silver-silver choride bearing porous electrode in substantially direct contact with the skin;
b. providing an electrolyte solution on the second side of said electrode so that said electrolyte is carried through the porous electrode; and
c. maintaining a positive direct current flow through said electrode so that said electrode is an anode.

3,964,478
INHALER APPARATUS
Georg Kropfhammer, Seebruck, Germany
Filed July 19, 1974, Ser. No. 489,898
Int. Cl.² A61M 16/00
U.S. Cl. 128—203 **22 Claims**



1. An inhaler apparatus comprises a housing and a breathing system mounted within said housing;
said breathing system includes a source of gas, an applicator for said gas, a feed hose connected between said source and said applicator, and valve means for controlling the flow of said gas to said applicator;

said housing includes a lid which is movable between an open position in which said applicator can be withdrawn from said housing and a closed position which prevents access to said applicator;

locking means to hold said lid in said closed position, and unlocking means to disengage said locking means;

timer means connected to said valve means for actuating said valve means for a predetermined period of time;

actuating means connected to said timer means for actuating said timer means; and

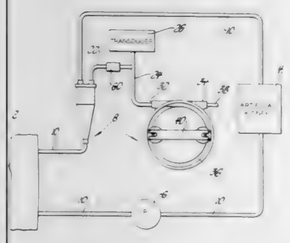
connecting means connecting said lid and said timer means, said connecting means including a shaft fixedlly connected to said lid; a first member fixedly connected to said shaft and extending radially outwardly therefrom, and first lever means connected between said first member and said actuating means whereby when said lid is moved into an open position said timer means actuates the valve means and thereby communicates the source with the applicator for said predetermined period time.

3,964,479

EXTRACORPOREAL BLOOD CIRCULATION SYSTEM AND DRIP CHAMBER WITH ADJUSTABLE BLOOD LEVEL

James T. Boag, Conifer, and Brian E. Morgan, Wheatridge, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Nov. 20, 1974, Ser. No. 525,426
Int. Cl.² A61M *1/03*
U.S. Cl. 128—214 K **3 Claims**



1. An extracorporeal blood circulation system comprising tubing for conducting blood to and from a patient and including a chamber having a blood inlet at the top thereof and a blood outlet at the bottom thereof, said chamber during operation containing blood in its bottom portion and air in its top portion, an air passage communicating at one end thereof with the top portion of the chamber, an air pump communicating with said passage for pumping air through said passage from the chamber into the atmosphere or from the atmosphere into the chamber, and means for selectively actuating the pump to either pump air into or out of the chamber, said pump sealing said chamber from the atmosphere when said pump is not in operation.

3,964,480

APPARATUS FOR STEROTAXIC LATERAL EXTRADURAL DISC PUNCTURE

Edward C. Froning, 215 N. San Mateo Drive, San Mateo, Calif. 94401

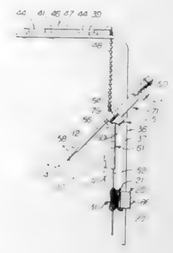
Continuation-in-part of Ser. No. 511,655, Oct. 3, 1974. This application Apr. 21, 1975, Ser. No. 569,867
Int. Cl.² A61M *5/00*; **A61B** *17/00*
U.S. Cl. 128—215 **9 Claims**

1. Apparatus for lateral extradural disc puncture comprising a bridge adapted to be fixed in position along the back of the patient parallel to and below the spinous processes,

at least one frame having a first stretch and a second stretch angularly related to said first stretch,

cooperating first means on said bridge and said first stretch for adjustably positioning said frame vertically and horizontally relative to said bridge so that said second stretch overlies the patient,

a stem,



an cannula angle guide connecting said stem relative to said bridge to determine the position of said cannula angle guide both from the midsagittal plane of the patient and longitudinally relative to the intervertebral discs of said patient,

a heading guide,

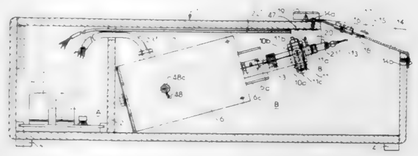
cooperating third means adjustably positioning said heading guide relative to said second stretch substantially horizontally and longitudinally relative to said patient.

3,964,481

AUTOMATIC INJECTION DEVICE

Albert Joseph Gourlandt; Georges Charles Gourlandt, both of Les Gresillons, 78750 Gambais; Yves Bernard Cauquelin, 1, Square Montmorency, Residence Auteuil, 78150 Le Chesnay Parly 2, and Jean Francois Lafon, Moulin de Fourcon, Saint-Germain-les-Arpajon, 91290 Arpajon, all of France

Continuation-in-part of Ser. No. 349,979, April 11, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,447
Claims priority, application France, Apr. 28, 1972, 72.15380; July 3, 1974, 74.23153
Int. Cl.² A61M *5/00*
U.S. Cl. 128—218 A **16 Claims**



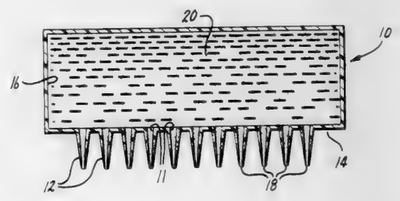
1. Automatic injection device comprising a casing formed by a plurality of peripheral walls, syringe support means rigidly mounted in said casing, an injection syringe located within said casing and including a syringe body slidably mounted on said syringe support means and provided with a lateral injection-liquid supply tubulure, a syringe piston provided with a piston rod and adapted to slide in said syringe body, and an injection needle rigidly secured to said syringe body, retention means for immobilizing a part of an animal to be treated, said retention means comprising at least one retention plate formed by one of said peripheral walls and having an external surface which is a part of the outer surface of the casing, and at least one stop member rigidly secured to said retention plate and extending outside of said casing, parallel to and in contact with a part of the external surface of said retention plate, said stop member having a plane elongated main abuutment face and at least one auxiliary abutment face, each face being substantially perpendicular to said retention plate and being angularly related one to the other, first displacement means for advancing and withdrawing the syringe body, at each injection, with respect to said retention means, and piston displacement means for displacing said piston with respect to said syringe body, said retention plate being provided with an aperture which opens at a point located close to said main abutment face and in the vicinity of said auxiliary abutment face, on a part of the external surface of said retention plate which is clear of said stop member, through which aperture said injection needle may be displaced with respect to said retention plate by said first displacement means so as to protrude outwardly beyond the external surface of the retention plate in the advanced position of the syringe body thereby enabling injection, said injection needle being inwardly disposed relative to said external surface in the withdrawn position of the syringe body.

3,964,482

DRUG DELIVERY DEVICE

Martin S. Gerstel, and Virgil A. Place, both of Palo Alto, Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed May 17, 1971, Ser. No. 144,061
Int. Cl.² A61M *7/00*
U.S. Cl. 128—260 **1 Claim**



1. A drug delivery device for percutaneously administering a drug comprising,

a. a plurality of puncturing projections, formed of a drug release rate controlling material permeable to passage of a drug by diffusion, and

b. a reservoir communicating with said projections containing the drug and whereby drug from the reservoir enters the projections and by diffusion through the projections is percutaneously administered through the stratum corneum of the epidermis.

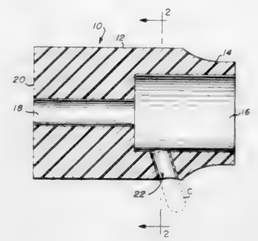
3,964,483

INHALATION DEVICE

Stanley Mathes, Mountain View, Calif., assignor to Syntex Puerto Rico, Inc., Humacao, P.R.

Filed Jan. 13, 1975, Ser. No. 540,623
Int. Cl.² A61M *13/00*
U.S. Cl. 128—266 **16 Claims**

1. An inhalation device for dispensing a medicament from a medicament-holding container comprising an elongate housing having a passageway for the movement of air therethrough, one end of said housing being an output end adapted for insertion into the mouth or nasal passages of a user thereof; said passageway terminating in an emptying chamber located adjacent the output end of said housing, the cross-sectional area of said passage-way being less than the cross sectional area of said emptying chamber; and means extending through a side wall of said housing from the outside and opening into said emptying chamber for receiving a medicament-holding container, said container receiving means being tilted at an angle toward said passageway, whereby, during inhalation, a component of the air flowing through said passageway flows into the container receiving means whereby the medicament held in a medicament-holding container is dispensed therefrom.

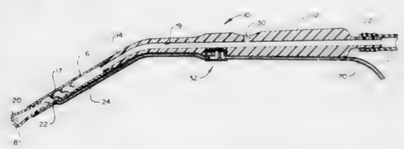


3,964,484

ANTICOAGULANT METERING DEVICE AND METHOD

Gordon S. Reynolds, and A. Boyd Hansen, both of Bountiful, Utah, assignors to Sorenson Research Co., Inc., Salt Lake City, Utah

Filed Mar. 3, 1975, Ser. No. 555,008
Int. Cl.² A61M *1/100, 27/00*
U.S. Cl. 128—276 **11 Claims**



1. A blood aspiration wand assembly for metering anticoagulant to aspirated blood comprising:

an elongated wand comprising a perforated suction tip and an interior passageway which is selectively evacuated to accommodate aspiration of blood at the tip and displacement of the blood through the passageway toward a receiving container;

conduit means for carrying anticoagulant from a source to the passageway;

valve means interposed in the conduit means; and

means communicating the passageway with the valve means, the valve means comprising means displaceable between open and closed positions responsive to changes in pressure in the passageway communicated to the valve means through the communicating means for metering the quantity of anticoagulant passing through the conduit.

3,964,485

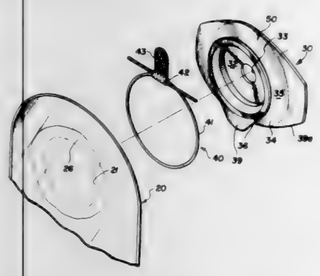
ENTEROSTOMY APPLIANCES

Erich Neumeier, Mosinee, Wis., assignor to Marsan Manufacturing Company, Inc., Wausau, Wis.

Filed Sept. 20, 1974, Ser. No. 507,734
Int. Cl.² A61F *5/44*
U.S. Cl. 128—283 **6 Claims**

1. In an ostomy appliance assembly including a gasket element, a waste material collection pouch and flexible band means for releasably securing the collection pouch in sealed relation with the gasket element and wherein the gasket element includes a gasket body having operative front and back walls, the operative front wall including an outwardly-extending flange means for attachment and support of the collection pouch and the operative back wall including an outwardly-extending convex portion with a centrally disposed stoma-accommodating opening therein, an improvement in the gasket element comprising:

a gasket front wall and flange means composed of a material having a hardness greater than that of the material of which said back wall convex portion is composed, said convex portion consequently being relatively more flexible than said front wall and flange means, and wherein the



surface of said gasket body front wall adjacent said flange means is substantially planar and said flange means is frusto-conical in shape, having an outer surface forming an acutely angled circumferential groove with said gasket body planar front wall surface.

3,964,486

DISPOSABLE DIAPER CONTAINING AMMONIA INHIBITOR

Ted Lee Blaney, West Chester, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 498,497, Aug. 19, 1974, abandoned, which is a continuation-in-part of Ser. No. 406,426, Oct. 15, 1973, abandoned. This application Jan. 27, 1975, Ser. No. 544,471

Int. Cl.² A61F *13/16*

U.S. Cl. 128—284 **8 Claims**

1. In a disposable diaper comprising an absorbent core, a topsheet superposed or co-extensive with one face of said core, and a liquid impervious backsheet superposed or co-extensive with the face of said core opposite the face covered by said topsheet, the improvement comprising incorporating therein from about 0.5 to about 4.0 grams of adipic acid.

3,964,487

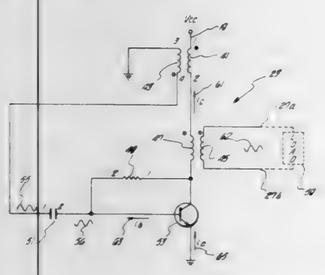
UNCOMPLICATED LOAD-ADAPTING ELECTROSURGICAL CUTTING GENERATOR

Donald W. Judson, Simi Valley, Calif., assignor to The Birtcher Corporation, Los Angeles, Calif.

Filed Dec. 9, 1974, Ser. No. 530,701

Int. Cl.² A61N *3/00*

U.S. Cl. 128—303.14 **13 Claims**



1. In an electrosurgical device having a power supply, a cutting signal generator driven by said power supply, and switching means for selecting the output signal of said generator for supply to a varying impedance cutting electrode load, the improvement therein being a cutting signal generator comprising:

amplifier means having an input and output circuit for supplying an output current in its output circuit which varies inversely with the impedance variation of said load; and

means coupling the output current variation of said amplifier means to the input circuit of said amplifier means for causing said amplifier means to controllably reinforce the current variation in its output circuit.

3,964,488

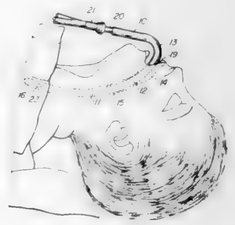
TRACHEAL TUBE

Wallace H. Ring; John C. Adair, and Richard A. Elwyn, all of Salt Lake City, Utah, assignors to Wallace H. Ring, Salt Lake City, Utah

Filed Nov. 13, 1974, Ser. No. 523,250

Int. Cl.² A61M *16/00*

U.S. Cl. 128—351 **10 Claims**



1. A preformed, flexible, elongate, tracheal tube made of flexible material having a memory so said tube will return to its preformed shape following flexure, comprising a proximal or machine end portion of the length of the tube having its terminal end open and adapted for connection with a source of gas to be introduced into the lungs of a patient; a distal or patient end portion of the length of the tube having its terminal end portion open and beveled; an intermediate portion of the length of the tube; and a preformed abrupt bend portion of the length of the tube; said distal or patient end portion and said intermediate portion merging into each other along the length of the tube and including curvature such they will positionally conform approximately to the shape of a patient 's posterior pharynx and trachea and extend therealong when said tracheal tube is installed for use, and said bend portion interconnecting said proximal or machine end portion and said intermediate portion along the length of the tube at an angle substantially no greater than 90° so said proximal or machine end portion will be located exteriorly of the body opening of the patient and will extend along the face of the patient exteriorly of said body opening when said tracheal tube is installed for use, said proximal or machine end portion terminating in a free end adapted for attachment to a machine with which the tracheal tube is to be used, the entire tube being of substantially uniform diameter externally and internally prior to attachment to a machine connector, and said proximal or machine end being sufficiently long in any given size of tracheal tube to position the bend portion at the location of emergence of the tube from a patient's body opening through which the tracheal tube extends and the machine connector well away from said body opening.

3,964,489

SOOTHING TEAT

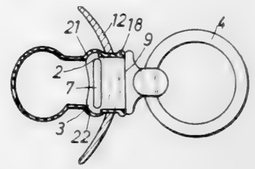
Lutz Kesselring, Zeven, Germany, assignor to MAPA GmbH, Hannover, Germany

Filed Sept. 6, 1974, Ser. No. 503,866

Claims priority, application Germany, Sept. 27, 1973, 2348562

Int. Cl.² A61J *17/00*

U.S. Cl. 128—360 **4 Claims**



1. A soothing teat comprising a teat nipple made of a resilient material such as rubber, the teat nipple including a mouthpiece portion and an integral hollow shaped neck portion having a free end spaced from the mouthpiece portion with an annular bead extending around the free end; a clamp member fitted into and mounting the neck portion of the teat nipple, said clamp member having a first end and a second end with the first end located within the neck portion, the clamp member having a cross-sectional configuration conforming to the shaped neck portion of the teat nipple, the clamp member having a pair of outwardly projecting spaced lugs at its first end, the neck portion of the teat nipple including a pair of spaced interiorly concave first vaulting ridges; a curved mouth-plate mounted on said neck porton of the teat nipple intermediate said pair of first vaulting ridges and said annular bead at the free end of said neck portion wherein the said neck portion of said teat nipple having a pair of narrow side walls and a pair of longitudinal side walls extending between said narrow side walls and said clamp member comprises a body of a substantially flat parallelepiped configuration having a pair of narrow side walls and a pair of longitudinal side walls extending between said narrow side walls, said longitudinal side walls of said neck portion and of said clamp member being wider than the narrow side walls thereof, the lugs extending at least from the narrow side walls of the clamp member body, the interior surfaces of said first vaulting ridges on the neck portion of the teat nipple mating with said lugs and defining attachment and alignment means for mounting the neck portion of the teat nipple on the clamp member and thus positioning the mouthpiece portion with respect to the clamp member and for retaining the mouth-plate or shield at a predetermined spacing from the mouthpiece portion of the teat nipple, the clamp member further includes outwardly extending ridge shaped protrusions from the longitudinal side walls of the clamp member body in the vicinity of the lugs at the first end of said clamp member, and the neck portion of the teat nipple includes a pair of spaced interiorly concave second vaulting ridges mating with the protrusions on the longitudinal side walls of the clamp member body, the second vaulting ridges located along a line interconnecting the first vaulting ridges and positioned on the wider longitudinal side walls of the neck portions.

3,964,490

LEAD STORAGE APPARATUS FOR ELECTROMEDICAL DEVICE

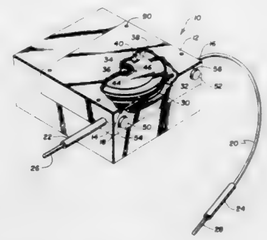
George E. Nelms, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 14, 1975, Ser. No. 540,807

Int. Cl.² A61N *1/00*

U.S. Cl. 128—419 R **1 Claim**

1. In an electromedical device having main housing means housing power supply means and electronic signal circuitry electrically connected to said power supply means; reel means; and elongated lead means associated with said reel means for electrically connecting said electronic signal circuitry to a remote situs; the improvement which comprises: reel housing means detachably connected to said main housing means, said reel housing means housing said reel means, said reel means comprising at least two reels mounted on a common axis, an equivalent number of said lead means each associated with a single reel, said reels being electrically insulating and independently rotatable in opposing directions to allow withdrawal of a length of its respective lead means therefrom, retracting means adapted to exert a retracting force capable of causing said length of said lead means to retract into storage relationship on its respective reel, said reel housing means having port means providing a passage for each of said lead means from said reel means to the exterior of said reel housing means, and selectively activatable locking means communicating with said port means to prevent movement of



each of said lead means through said port means, the number of port means and locking means being equivalent to the number of said reels and said lead means, and an equivalent number of aperture means in said reel housing means for slidably receiving each of said locking means, each of said locking means comprising plunger means having a channel extending through said plunger means dimensioned to allow passage therethrough of said lead means, each of said channels communicating with its respective port means, and spring means located in each of said aperture means positioned to enable operation of said plunger means, said spring means in its relaxed state maintaining said channel of said plunger means such that said locking means is in a locking position preventing movement of said lead means through said port means, and said spring means in its loaded state maintaining said channel of said plunger means such that said locking means is in a nonlocking position wherein movement of said lead means through said port means is permitted.

3,964,491

BRASSIERE CONSTRUCTION

George Martini, Brooklyn, N.Y., assignor to Glamorise Foundations, Inc., New York, N.Y.

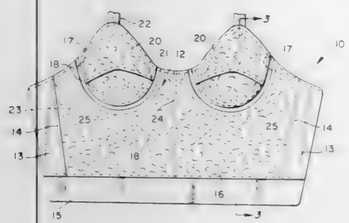
Continuation-in-part of Ser. No. 345,967, March 29, 1973, abandoned. This application Aug. 16, 1974, Ser. No. 498,237

Int. Cl.² A41C *3/10*

U.S. Cl. 128—476 **3 Claims**

1. In a brassiere, a front section, a pair of side sections, and lines of stitching connecting said side sections to opposite side edges of the front section, said front section comprising a fixed outer panel having an upper portion with a pair of transversely spaced substantially semi-circular recesses therein, an elastic inner panel underlying the upper portion of the outer panel, a pair of breast cups provided on the inner panel, lower portions of said cups projecting forwardly through the recesses in the outer panel, a pair of substantially semi-circular reinforcing wires embedded in the edges of the outer panel defining said recesses in fixed, non-pivotable relationship to said outer panel, the sides of said inner panel being connected to said outer panel by said lines of stitching, and the lower edge of said inner panel being secured to the outer panel by further

lines of stitching along lines which are spaced downwardly from said recesses so as to define substantially crescent-shaped pockets between the inner and outer panels around the

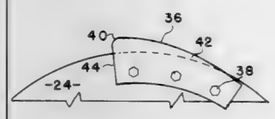


lower portion of said cups, and isolating said breast cups from said reinforcing wires such that the breast cups are in free-floating relationship with respect to said reinforcing wires.

3,964,492
PROJECTIONS ON ROTOR AUGER OF AXIAL FLOW COMBINE

John B. Crego, New Holland; Everett C. Cowan, Jr., Parkesburg; John D. Riffanacht, Leola; Larimer J. Knepper, New Holland, and Edward W. Rowland-Hill, Lancaster, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Mar. 20, 1975, Ser. No. 560,266
Int. Cl.² A01F *12/20*
U.S. Cl. 130—27 T **9 Claims**



1. A rotor for an axial flow combine having one end comprising an inlet end and rasp bars extending longitudinally thereof from said inlet end toward the other end for coaction with a complementary concave to thresh and separate grain from crop material, and an auger fixed to and extending forwardly from said inlet end of said rotor and concave and having a continuous spiral flight of predetermined length provided with a relatively smooth peripheral edge, in combination with a series of wear-resistant projections attached to said flight in circumferentially spaced relation to each other along the periphery of said flight and extending beyond the peripheral edge of said flight, the outer profile of each of said projections having at least one curved portion projecting radially farther than other portions of said profile of said projections to effect aggressive intermittent engagement with crop material when rotated in a direction for said auger to feed the same toward said rasp bars and concave for threshing thereby while minimizing wear upon the periphery of said flight.

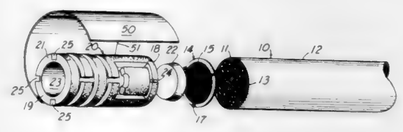
3,964,493
CIGARETTE FILTER

Jack C. Baker, Atlanta, Ga., assignor to Baker-Alpha Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 286,851, Sept. 7, 1972, abandoned. This application Oct. 30, 1973, Ser. No. 411,047
Int. Cl.² A24B *15/02*; **A24D** *1/04*
U.S. Cl. 131—10.5 **11 Claims**

1. In a filtered cigarette of the type wherein tobacco is contained in a sheath in the forward portion of the cigarette, the distal end of which is lighted so that the smoke will be drawn through the tobacco and the proximal end of the cigarette into the rear portion of the cigarette by the person smoking the cigarette, the combination therewith of a filter in the rear portion of said cigarette, said filter being characterized by:

a. a rigid core having a path for said smoke from the distal end of said core to the proximal end thereof and including a plurality of longitudinally spaced encircling grooves in the surface of said core encircling said core, at least one interconnecting groove means in the surface of said core interconnecting said encircling grooves, an inlet port groove means leading from the forward edge of the distal end of said core to the forwardmost encircling groove and



forming essentially the only path for a major portion of said smoke from said tobacco to said forwardmost encircling groove, one of the aforesaid groove means including a plurality of longitudinally and transversely extending passageways for separating and recombining the entire stream of smoke before the smoke enters one of the encircling grooves and discharge port means communicating with the rearmost encircling groove and through which the smoke can be withdrawn by a person; and

b. a cover overlying the surface of said core for closing the open portions of said encircling and interconnecting grooves, said inlet port and said discharge port means.

3,964,494
COMPOSITIONS FOR SMOKING

Jackie L. White, Pfafftown, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Oct. 21, 1974, Ser. No. 516,743
Int. Cl.² A24B *3/14*, *13/00*, *15/08*
U.S. Cl. 131—17 R **11 Claims**

1. A smoking material which contains comminuted puffed milo in a form resembling cut cigarette filler tobacco or cut pipe tobacco.

3,964,495
SMOKING COMPOSITIONS

Jackie L. White, Pfafftown, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 15, 1974, Ser. No. 460,782
Int. Cl.² A24B *3/14*, *13/00*, *15/08*
U.S. Cl. 131—17 R **11 Claims**

1. A smoking material which contains comminuted popped corn in a form resembling cut cigarette filler tobacco or cut pipe tobacco.

3,964,496
COMPOSITIONS FOR SMOKING

Jackie L. White, Pfafftown, N.C., assignor to R. J. Reynolds Tobacco Company, Wintston-Salem, N.C.

Filed Aug. 1, 1974, Ser. No. 493,535
Int. Cl.² A24B *3/14*, *13/00*, *15/08*
U.S. Cl. 131—17 R **11 Claims**

1. A smoking material which contains comminuted puffed rice in a form resembling cut cigarette filler tobacco or cut pipe tobacco.

3,964,497
SMOKING COMPOSITIONS

Jackie L. White, Pfafftown, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Aug. 1, 1974, Ser. No. 493,534
Int. Cl.² A24B *3/14*, *13/00*, *15/08*
U.S. Cl. 131—17 R **11 Claims**

1. A smoking material which contains comminuted puffed wheat in a form resembling cut cigarette filler tobacco or cut pipe tobacco.

3,964,498
SMOKING MATERIALS

Jackie L. White, Pfafftown, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Aug. 1, 1974, Ser. No. 493,552
Int. Cl.² A24B *3/14*, *13/00*, *15/08*
U.S. Cl. 131—17 R **11 Claims**

1. A smoking material which contains comminuted puffed millet in a form resembling cut cigarette filler tobacco or cut pipe tobacco.

3,964,499
PROCESS FOR PERMANENTLY SHAPING HAIR

Theodor Wajaroff; Eugen Konrad, both of Darmstadt, and Dieter Hoch, Pfungstadt, all of Germany, assignors to Wella AG, Darmstadt, Germany

Filed Oct. 15, 1974, Ser. No. 515,371
Int. Cl.² A45D *7/04*
U.S. Cl. 132—7 **8 Claims**

1. Process for permanently waving or straightening human hair comprising the steps of pretreating the hair with a detergent solution containing an alkali-metal or ammonium sulfite, wetting the hair with an alkaline solution of a mercaptocarboxylic acid salt, winding the hair up on perforated hollow curlers having a diameter of 10–24 mm, rinsing the hair with water and removing the excess water from the hair, in separate steps or in a combined step treating the hair with hydrogen peroxide for fixing the same and with a polymerizate for setting the same, drying the hair, unwinding the hair, from the curlers, and combining the hair in accordance with a desired hair fashion.

3,964,500
LUSTERIZING SHAMPOO CONTAINING A POLYSILOXANE AND A HAIR-BODYING AGENT

Raymond Drakoff, New York, N.Y., assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 428,288, Dec. 26, 1973, abandoned. This application June 18, 1975, Ser. No. 588,120
Int. Cl.² A61K *7/06*
U.S. Cl. 132—7 **16 Claims**

1. A lusterizing shampoo composition comprising:

i. about 5% to about 25% of an anionic or amphoteric surfactant,

ii. about 3% to about 60% of a polydimethylsiloxane having a viscosity of about 1000 to about 2,500,000 centistokes at 25°C,

iii. about 1% to about 25% of a hair-bodying agent selected from the group consisting of:

A. A wood rosin having a softening point of about 96°C to about 125°C and a Gardner-Holt viscosity of between about 20 and 40;

B. Bleached and dewaxed shellac;

C. Sucrose acetate isobutyrate; and

D. A cationic amino cellulose compound; and

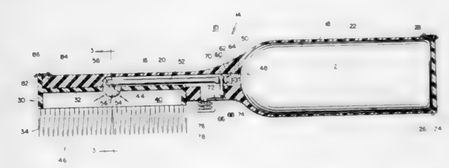
iv. about 30% to about 91% of a solvent, said solvent comprising 0% to about 50% ethanol, basis by weight of said solvent, the balance being water.

16. A process for imparting luster to hair on the human head, comprising washing said hair with the shampoo composition defined in claim 14 in a sufficient amount for depositing on the hair said polydimethylsiloxane and to impart visual luster with substantially no tactile feel of oiliness, and rinsing to thereby remove substantially all foaming components from the hair.

3,964,501
HAIR GROOMING APPARATUS

Robert R. Matchett, R.R. 2, Box 275, Carmel, Ind. 46032

Filed Feb. 3, 1975, Ser. No. 546,681
Int. Cl.² A45D *24/00*
U.S. Cl. 132—11 A **10 Claims**

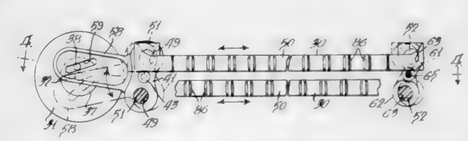


1. Apparatus for grooming the hair while spraying a liquid thereon comprising: an elongated member having a support portion connected to a handle portion, said member having an elongated passage formed therein extending between said portions, a hair grooming device carried by said support portion and having a plurality of hair grooming elements thereon, said device having an elongated chamber therein communicating with said passage and elements, an elongated tube in said passage and having opposite ends, said tube having dispensing means thereon adjacent one end thereof for dispensing liquid into said chamber for distribution to said elements, said chamber providing attachment for at least two longitudinal rows of elements; one of said rows being laterally spaced in one direction from said dispensing means and another of said rows being laterally spaced in the opposite direction of said dispensing means; whereby said elements are in interceptive distributive relation on either lateral side of said dispensing means, the other end of said tube being adapted to be connected to a source of liquid, and control means on said support portion intermediate said handle portion and device and coupled to said source for causing a flow of liquid in said tube.

3,964,502
COMBINED HAIR STYLER AND DETANGLER

Ikuo I. Komatsu, Winona, Minn., assignor to Sunbeam Corporation, Chicago, Ill.

Filed July 14, 1975, Ser. No. 595,459
Int. Cl.² A45D *24/00*
U.S. Cl. 132—11 A **10 Claims**



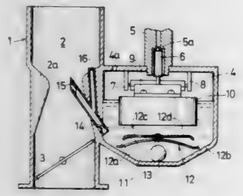
1. In a combination hair styling and detangling appliance of the type which is characterized by a housing having a handle, air inlet means, and an elongated air discharge outlet, by a tangential fan for directing a flow of air from said inlet means to said discharge outlet and a first motor for driving said fan, by a pair of combs mounted longitudinally of said discharge outlet and in the path of air flow therefrom for reciprocating movement in an out-of-phase relationship to provide a hair detangling function, and by a second motor for reciprocating said combs, the improvement which comprises first comb support and drive means pivotally mounted in said housing at one end of said air discharge outlet for releasably supporting one end of each of said combs, said first comb support and

drive means being drivingly connected to said second motor in a manner such that said support and drive means is rockable about a vertical axis to impart out-of-phase reciprocating movement to said combs, second comb support means pivotally mounted in said housing at the other end of said air discharge outlet for releasably supporting the other ends of said combs, and a manually operable comb ejector slidably mounted on said housing adjacent said air discharge outlet for ejecting said combs from said first and second comb support means.

3,964,503
CARBURETOR

Kunio Kikuchi, Odawara, Japan, assignor to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 2, 1975, Ser. No. 592,654
Claims priority, application Japan, July 6, 1974, 49-79263
Int. Cl.² F16K *17/36*
U.S. Cl. 137—39 **9 Claims**



1. A carburetor comprising a float chamber formed to be U-shaped as seen in the longitudinal direction of the car on the bottom surface, a float floatably contained in said float chamber, a needle valve capable of opening and closing a fuel inflow port to said float chamber in association with the movement of said float, a rocking member rockably arranged in said float chamber and capable of contacting the lower surface of said float, and a ball capable of rolling on the bottom surface of said float chamber to rotate said rocking member, said float being pushed up by said rocking member rotated by said ball and said fuel inflow port being thereby forcibly closed with said needle valve when said float chamber inclines by an angle larger than a predetermined angle from its normal position.

3,964,504
LEVELING VALVE

Harold G. Inhofer, Hopkins, Minn., assignor to Integrated Power, Incorporated, St. Louis Park, Minn.

Filed May 7, 1974, Ser. No. 467,655
Int. Cl.² B66F *11/04*; **F15B** *13/042*; **F16K** *11/00*
U.S. Cl. 137—39 **4 Claims**

1. A valve member for maintaining an article at a predetermined level, said valve member including:

a. a body to be mounted for tilting movement and having at least, an inlet, a pair of fluid directing and receiving passages and an outlet;

b. a first valving passage between said inlet and said pair of fluid directing passages;

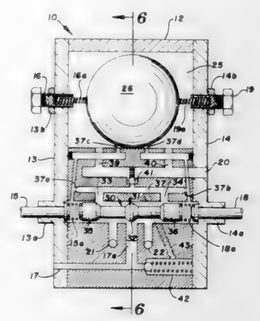
c. a first spool valve within said first valving passage and permitting communication between said inlet and said fluid directing passages when in a first position and when in a second position permitting communication between said inlet and one of said fluid directing passages while also permitting communication between the other of said fluid directing passages and said outlet;

d. a longitudinally extending, generally cylindrical control passage formed in said body;

e. a generally spherical tilt responsive control member having a diameter less than the diameter of said cylindrical control passage and arranged for rolling movement within said control passage on a surface thereof;

f. resilient means engaging said control member for positioning said control member generally longitudinally centrally of said passage when the valve body is in a level position and permitting said control member to roll within said passage when the body is tilted;

g. a first pair of inlet passages spaced longitudinally within said control passage and opening on said surface and being positioned respectively on either side of said control member when the same is centrally positioned and communicating with said inlet;



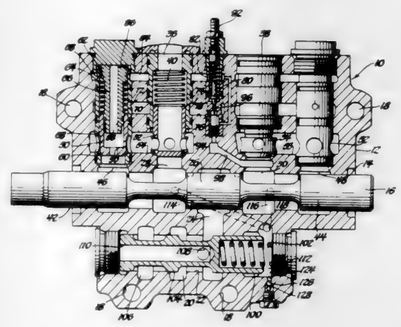
h. a first pair of outlet passages spaced longitudinally within said control passage and opening on said surface and being positioned resectively exteriorally of said said pair of inlet passages and communicating with said outlet; and,

i. a pair of interconnecting passages communicating respectively with said pair of inlet passages and the ends of said spool valve whereby movement of said control member on said surface to close either of said inlet passages will provide a pressure increase to the respective end of the spool valve to shift the same and direct inlet fluid to one of said fluid directing and receiving passages.

3,964,505
POWER TRANSMISSION

Dennis J. McAvoy, Lake Orion, Mich., assignor to Sperry Rand Corporation, Troy, Mich.

Filed Feb. 10, 1975, Ser. No. 548,651
Int. Cl.² F15B *13/04*
U.S. Cl. 137—106 **3 Claims**

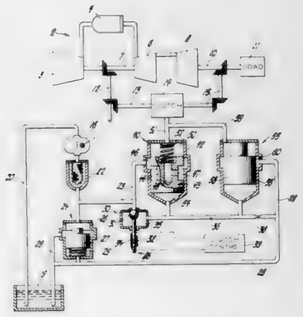


1. A directional valve assembly for hydraulic power systems comprising a body having a sliding spool of the closed center type arranged to selectively direct inlet fluid to either of two motor ports, load holding check valves between the spool and each motor port, combined counter balance and relief check valves, one connected between each motor port and a return port and each having a control piston exposed through a restriction to its respective motor port pressure, pilot valves for relieving the pressures on the respective control pistons at a predetermined pressure level, and a secondary operating means for the pilot valves each connected directly to the sliding spool valve at a point upstream from the load holding check valve for the opposite motor port, whereby each pilot valve controls one check valve to open it, either for limiting maximum pressure in its own motor port or in response to operating pressure at an opposite motor port.

3,964,506
PRESSURE CONTROL SYSTEM

Richard G. Grundman, Coopersville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 2, 1973, Ser. No. 356,292
Int. Cl.² H01M *4/36*; **F16D** *25/00*
U.S. Cl. 137—85 **2 Claims**



1. A system for supplying an actuating fluid to an operated device and maintaining the supplied fluid at a variably controllable pressure comprising, in combination, a source of fluid under pressure; externally controllable pilot valve means supplied from the source and effective to provide pilot fluid at a pressure varying substantially solely as a function of the external control input to the pilot valve means; an outlet line for delivering the fluid to the operated device; constantly open variable area throttling valve means connecting the source to the outlet line for flow from the source to the outlet line; by-pass valve means connecting the outlet line to a drain line; actuating means for each valve means responsive to pilot fluid pressure and outlet line pressure acting in opposition on the valve means, the throttling valve means being biased toward closing by outlet line pressure and the by-pass valve means being biased to open by outlet line pressure.

3,964,507
SLIDE VALVE WITH INTEGRATED REMOVABLE INTERNALS

Frank J. Jandrasi, and Howard A. Purvis, both of Houston, Tex., assignors to Tapco International, Inc., Houston, Tex.

Filed Jan. 13, 1975, Ser. No. 540,674
Int. Cl.³ F16K *3/30*
U.S. Cl. 137—375 **15 Claims**

1. A slide valve with removable integrated internals comprising,

a body provided with a flow passage therethrough including an enlarged internal portion,

a body portion connected at one end to the body and having a projecting portion extending into the enlarged internal portion, the projecting portion having its sides spaced from internal walls of the enlarged internal portion thereby forming a transverse space on each side of the projecting portion out of direct flow through the flow passage,

a valve seat having a valve surface releasably secured on the projecting portion,

a slide valve slidable in the enlarged internal portion adjacent the valve surface and having side members extending transversely into the transverse space, and

interfitting guides and slides operable for guiding the slide valve into open and closed positions adjacent the valve surface,

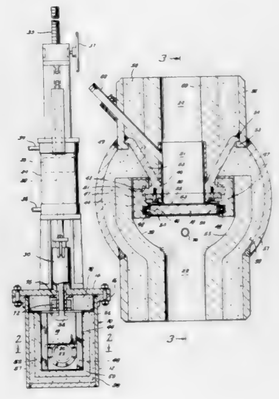
the slides being disposed on the side members of the slide valve,

the guides being releasably secured to the projecting portion and being disposed in the transverse space and spaced from the internal walls of the enlarged internal portion and out of the direct flow through the flow passage,

whereby the valve seat and guides are integrated by both being releasably secured to the projecting portion and are out of direct contact with the body thereby permitting external setable clearances between the valve seat and the slide valve which remain fixed under temperature or pressure excursions,

the body provided with an opening of a size permitting insertion in and withdrawal from the body of the valve seat, the slide valve and its slides, and the guides therethrough, and

a closure removably secured to the body closing the opening.



3,964,508
SAFETY CAP ASSEMBLY FOR PRESSURIZED VESSELS

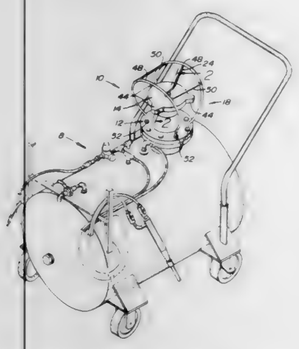
Galen R. Miller, Tallmadge, Ohio, assignor to Chemidyne Corporation, Macedonia, Ohio

Filed July 17, 1974, Ser. No. 489,266
Int. Cl.² B65D *51/16*; **F16P** *1/00*
U.S. Cl. 137—377 **1 Claim**

1. A safety cap assembly comprising:

a filler member having a lower portion for attachment to a pressurizable vessel and an upper portion, a complementary closure cap received on said filler member upper portion, said cap having an elongated skirt portion and a transverse planar portion, thread means on said filler member and said closure cap skirt for non-releasably interacting such that said cap cannot be normally unscrewed from said filler member when said vessel is pressurized;

gasket means mounted between said filler member upor. portion and said cap planar portion for establishing sealing engagement between said filler member and said cap;
means for achieving the release of vessel pressure when said cap is unscrewd including a plurality of bleed holes spaced within said cap adjacent said cap planar portion and extending through said skirt of said cap;
at least one circumferentially located venting channel positioned at the externally threaded upper portion of said filler member which has a greater depth than the root depth of the threads of said filler member;



a cage-type safety means operatively attached to said filler member lower portion and extending about said cap with said cap in place such that said cap is disposed within the region circumscribed by said safety means, said cage-type safety means including ring members and connecting bar members forming a grid having open areas smaller than the cap in order to restrain the cap if it should be expelled from the filler member; and
a chain operatively attached to and extending between said closure cap and safety means.

3,964,509
CHECK VALVE
Charles B. Daubenberger, and Charles J. Daubenberger, both of Van Nuys, Calif., assignors to Da/Pro Rubber, Inc., Van Nuys, Calif.
Filed Feb. 14, 1975, Ser. No. 549,988
Int. Cl.² F16K *15/14*
U.S. Cl. 137—525.1 **3 Claims**



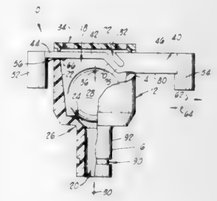


1. A check valve, comprising:
a single integral body of an elastomeric material having an externally shaped portion substantially that of a hemisphere of given radius R, and an inlet passage passing into the base of the hemisphere and terminating in a normally closed inner end to define a wall thickness to the exterior of said hemisphere of a given value T, said inner end being cut through to the outer forward periphery of the hemisphere to define a slit at a given acute angle A to a plane normal to the axis of the inlet passage, said slit having a given transverse dimension D and a given length L measured from the interior to the outer periphery of said hemisphere, the inner end of said inlet passage terminating in a V-shape, the vertex of the V defining an angle equal to said given acute angle, said Slit initiating at the vertex of said V, and wherein:

$$.125R<T<.75R$$
$$20°<A<50°$$
$$.25R<D<1.25R, \text{ and}$$
$$.0625R<L<.375R$$

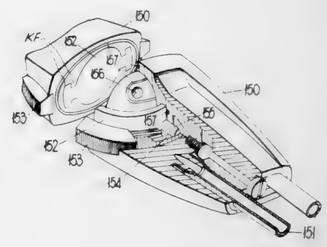
whereby when fluid pressure across the hemisphere between said inlet passage and the exterior exceeds a given differential value, said slit will be opened to pass fluid from the interior to the exterior, said slit closing when the differential pressure reverses to block any reverse flow of fluid through said body.

3,964,510
LIVE WELL VALVE
William G. Roller, Purdy, Mo., assignor to G & R Industries, Inc., Purdy, Mo.
Filed Nov. 25, 1974, Ser. No. 526,705
Int. Cl.² F16K *31/52, 15/04*
U.S. Cl. 137—528 **5 Claims**



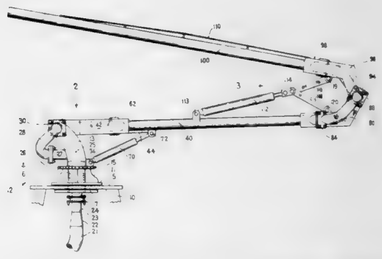
5. In a valve comprised of a valve body having ball member compartment, a valve seat, a ball member and a connecting conduit, the improvement comprising:
an actuator bar positionable in a first position wherein the ball member has moving clearance and positionable in a second position wherein the ball member is forced thereby in sealing engagement with the valve seat, the actuator bar slidingly supported in opposingly aligned grooves in the valve body, the actuator bar characterized as having:
a clearance end;
a wedge end having a ball member engage side and a notch in the opposite side;
tab means protruding from the actuator bar clearance end and cooperating with the one of the grooves for retaining the actuator bar in the first actuator bar position; and,
the actuator bar has a retaining seat formed in the ball member engage side generally opposite the notch in the opposite side.

3,964,511
PARTIALLY ROTATED FASTENER COMPRISING CIRCULAR FASTENER HALVES CAPTURED IN COMPLEMENTARY CAVITY
David Christopher Cattermole, Enfield, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England
Division of Ser. No. 293,342, Sept. 29, 1972. This application Nov. 11, 1974, Ser. No. 522,774
Claims priority, application United Kingdom, Nov. 30, 1971, 55510/71
Int. Cl.² F16L *29/00*
U.S. Cl. 137—614.06 **13 Claims**



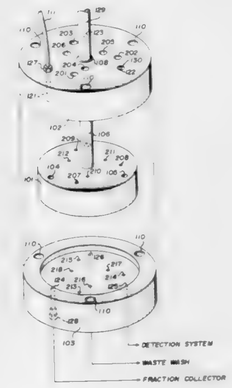
11. A fastening system comprising first and second fastener halves, each of said halves being a solid of revolution formed about a circular plane surface, said halves coming together in face-to-face relationship to form a generally O-shaped solid having a generally circular cross section in any plane between the two sides of the O-shaped solid, the circular plane surfaces of said two halves being substantially identical in shape and size, means for keying said two halves together so that they rotate as a unit, and first and second object parts respectively containing mating socket halves which come together to form a generally O-shaped cavity also having a generally circular cross section in any plane between the two sides of the O-shaped cavity, said sockets having internal contours which are substantially complementary to the external contours of the corresponding fastener half, and complementary passageways formed in at least one fastener half and at least one of the object parts.

3,964,512
SELF-SUPPORTING PIPE BOOM
Odilon Dumas, 964 Papineau St., Laval, Quebec, Canada
Filed Aug. 26, 1974, Ser. No. 500,686
Claims priority, application United Kingdom, Sept. 10, 1973, 42512/73
Int. Cl.² F16L *3/00*
U.S. Cl. 137—615 **10 Claims**



1. In a self-supporting pipe boom, gooseneck yoke means for pivotally interconnecting the adjacent ends of two pipe sections, comprising:
a first pair of side plates fixedly secured to the outboard end of a first pipe section on opposite sides thereof, the plates of said first pair projecting away from the intermediate region of said first pipe section and being parallel to one another,
a second pair of side plates fixedly secured to the inboard end of a second pipe section on opposite sides thereof, the side plates of said second pair projecting away from the intermediate region of said second pipe section and being parallel to one another, a circular aperture in each one of said plates of said first and second pairs in the free ends thereof, said apertures being aligned on an axis normal to the longitudinal axis of each pipe section,
hollow pivot means extending through said apertures in said plates for interconnecting said first and second pipe sections
a first gooseneck extension leading from the outboard region of said first pipe section to one side of said pivot means and coupled therewith,
a second gooseneck extension leading from the inboard region of said second pipe section to the other side of said pivot means and coupled therewith,
and rotatable coupling means centered upon the axis of said hollow pivot means and disposed at one end of said hollow pivot means for permitting relative rotation between said hollow pivot means and one of said gooseneck extensions around the axis of said hollow pivot means.

3,964,513
ROTATING SAMPLING VALVE
Stanley Frank Molner, Morristown, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Apr. 8, 1975, Ser. No. 566,634
Int. Cl.² G01N *1/20*
U.S. Cl. 137—624.18 **5 Claims**



1. In a rotating sample valve comprising:
a. a cylindrical plate containing a plurality of channels parallel to its longitudinal axis, said channels being symmetrically disposed about the center axis of said cylindrical plates;
b. an upper and lower fixed plate between which said cylindrical plate is rotatably mounted, said upper plate and lower plate each containing the same plurality of channels symmetrically disposed around their respective center axis so that such channels are in operative flow relation with corresponding channels in said cylindrical plate;
c. a stepping motor means which is operatively connected to said cylindrical plate;

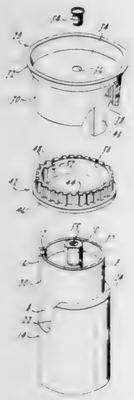
the improvement which comprises providing said channels in said cylindrical plate in a number of concentric sets the channels of any set being disposed at a different azimuth from the channels of the other sets wherein the volume of the channels in each set is equal while the volume of the channels in different sets may vary, providing corresponding channel sets in said upper and lower fixed plates, providing detachably attached inlet and outlet means to one of the sets of channels in each of the said upper and lower plates respectively which correspond with a channel set in said cylindrical plate thus allowing the selection of a variable sample volume from the volumes of the channels in each of said channel sets in said cylindrical plate and providing said stepping motor means with a step proportional to the number of channel sets.

3,964,514

PUSH-PULL SINGLE HANDLE WATER FAUCET VALVE

Alex Manoogian, Groose Pointe Farms, and Eric V. Pullen, Southfield, both of Mich., assignors to Masco Corporation of Indiana, Greensburgh, Ind.

Filed July 1, 1974, Ser. No. 484,989
Int. Cl.² F16K *11/00*
U.S. Cl. 137—625.17 **6 Claims**



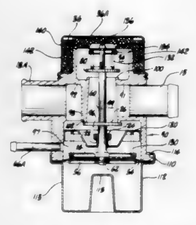
1. A single handle hot and cold water mixing and flow control faucet valve of the type having a main body enclosing relatively movable valve means selectively operable to connect or isolate hot and cold water sources with water outlet means and an elongate manually movable operating stem operably connected to said valve means for movement therewith and projecting from said main body, said stem being reciprocally movable along its longitudinal axis between a retracted off position and an extended full volume position to vary the flow volume through said faucet valve and rotatable about its own axis between a cold water only position and a hot water only position to vary the proportions of hot and cold water passing through said faucet valve. the improvement comprising: first and second fixed stop means spaced apart on the outer periphery of said main body and extending substantially parallel to said axis, third fixed stop means adjacent said second fixed stop means on the outer periphery of said main body and extending at an angle from said second stop means, and first movable stop means secured to said stem for movement therewith, said third fixed stop means and said first movable stop means cooperating to prevent axial movement of said stem to the retracted off position unless said stem is in the cold water only rotational position, said first movable stop means in said retracted off position being received between said first and second fixed stop means and cooperating therewith to prevent rotation of said stem from the cold water only position while permitting axial movement of said stem towards the extended full volume position, said first movable stop and said first fixed stop means cooperating to prevent rotation of said stem in a first rotational direction from said cold water only position when said stem is in all axial positions.

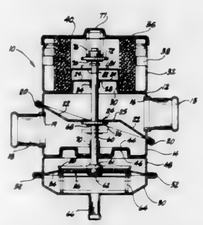
3,964,515

BY-PASS VALVE WITH PRESSURE RELIEF FEATURE

Edward T. May, St. Louis County, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,644
Int. Cl.² F16K *11/02, 31/145*
U.S. Cl. 137—625.27 **3 Claims**





1. An air by-pass and pressure relief valve having a valve body, an inlet port, an outlet port and a by-pass port in said valve body, a wall dividing said valve body, said wall having an opening therethrough to define a main valve seat, a diaphragm housing secured to a first end of said valve body, a diaphragm secured to said valve body by said diaphragm housing, said diaphragm defining a vacuum chamber and a second chamber, a vacuum inlet fitting into said vacuum chamber, a valve stem secured to said diaphragm by a pair of backing plates, one on each side of said diaphragm, a biasing spring abutting one of said backing plates to bias said diaphragm in a first direction opposing the bias of vacuum applied to said vacuum inlet fitting, biasing spring confining means constituting a vacuum chamber closure, said air by-pass and pressure relief valve further comprising

A. an outlet valve head slideably mounted on said valve stem and positioned by a first shoulder on said stem, said outlet valve head operable to open and close said main valve seat,

B. a by-pass valve head slideably mounted on said valve stem and positioned by a second shoulder on said stem, said by-pass valve head operable to open and close a by-pass valve seat port defined by a by-pass valve seat in a partition separating said valve body from at least one by-pass discharge opening, and

C. a by-pass valve biasing spring abutting said by-pass valve head to bias said by-pass valve head toward the said by-pass valve seat during normal operation but moveable away from said by-pass valve seat on over pressure conditions, said by-pass valve biasing spring also abutting a spring retaining member fastened to an end of said stem opposite said diaphragm.

3,964,516

FLOW CONTROL VALVE FOR DECOKING

Robert Merrill Purton, and Robert Brent Maddock, both of Cerritos, Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 9, 1975, Ser. No. 611,762
Int. Cl.² F16K *47/08*
U.S. Cl. 137—625.38 **4 Claims**

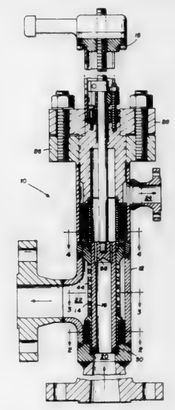
1. An improved flow control valve comprising:

a hollow valve body having an inlet port and first and second outlet ports;

sleeve means mounted in said body having an open end located adjacent said inlet port, a closed end located adjacent said second outlet port, a plurality of first apertures near said open end extending through said sleeve means and arranged to be, at times, in communication with said inlet port, a plurality of second apertures extending through said sleeve means and arranged to be, at times, in communication with said second outlet port, and a plurality of perforations extending therethrough adjacent said first outlet and between said first and second apertures;

an annular valve seat in said body encircling said inlet port;

an elongated valve member movably located in said sleeve, said valve member having a longitudinally extending passageway therethrough providing communication between the open and closed ends of said sleeve and being of sufficient length to close said perforations, said valve member being engageable with said valve seat to prevent flow from said inlet port to said first outlet port;



valve operating means operably connected with said valve member for moving said valve member to a first position in engagement with said seat wherein said first apertures and perforations are closed to flow and said second apertures are open permitting restricted flow from said inlet port to said second outlet port, to a second position wherein said first and second apertures are open permitting restricted flow from said inlet port to both said outlet ports while preventing flow through said perforations, and to a third position wherein said perforations are open and said second apertures are closed permitting substantially unrestricted flow from said inlet port through said perforations into said first outlet port while preventing flow through said second apertures into said second outlet port.

3,964,517

FOUR WAY DIVERTER VALVE

Harvard G. Dickenson, 649 North Waco, Tulsa, Okla. 74127

Filed Jan. 14, 1975, Ser. No. 540,843
Int. Cl.² F16K *11/06*
U.S. Cl. 137—625.43 **8 Claims**

1. A flow diverter valve comprising:

a base having four openings, the centers of the openings forming the corners of a square;

a housing sealably secured to said base providing an enclosure into which said openings in said base communicate;

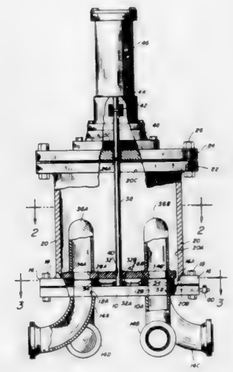
a pair of uninterrupted circumferential spaced apart seals surrounding each of said base openings, each pair of seals providing a space therebetween;

a conduit means connecting the space between each pair of seals to the exterior of the valve;

a support plate supported within said housing parallel with and adjacent said base, said support plate having four openings therethrough on centers equivalent with said base openings, said support plate being rotatable relative to said base whereby said opening in said support plate may be sealably registered with said base openings;

a pair of U-tube members positioned in said housing in spaced paralleled relationship, each U-tube member having open ends registering with adjacent pairs of openings in said support plate whereby each said opening in said base communicates with the interior of a said U-tube member; and

means of rotating said support plate whereby said opening therein may be registered with different of said base openings.

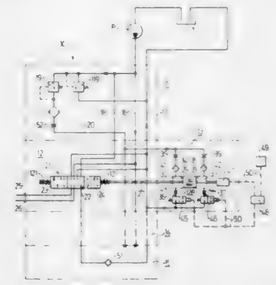


3,964,518

ELECTROHYDRAULIC CONTROL UNIT

Horst Hesse, Stuttgart; Walter Kobald, Schwieberdingen; Heinz Gand, Stuttgart; Rainer Hoheisel, Aldingen; Klaus Sopha, Stuttgart; Heinz Flaschar, Asperg; Heinz Kleinschmidt, Stuttgart; Winfried Arnold, Hochdorf, and Werner Zeuch, Waiblingen, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 11, 1975, Ser. No. 612,577
Claims priority, application Germany, Oct. 2, 1974, 2446963
Int. Cl.² F15B *11/12, 13/043*
U.S. Cl. 137—625.64 **10 Claims**



1. In a control unit for selecting one of several positions for a controlled component, particularly in an electrohydraulic control unit for selecting any one of several positions for the spool in a multi-way directional control valve, a combination comprising a source of pressurized fluid; a reservoir; a cylinder; a piston reciprocable in and dividing the interior of said cylinder into first and second chambers, said piston including

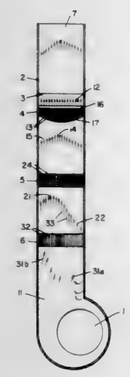
first and second end faces having identical areas and being respectively adjacent to said first and second chambers; first conduits connecting said chambers with said source; second conduits connecting said chambers with said reservoir; first flow restrictors in said first conduits; check valves provided in said first conduits to prevent the fluid from flowing out of the respective chambers via said first conduits; and means for regulating the outflow of fluid from said chambers via said second conduits, including second flow restrictors in said second conduits and auxiliary valves provided in said second conduits, each of said auxiliary valves having a valve member movable between open and closed positions and said first and second flow restrictors together constituting a hydraulic bridge circuit.

3,964,519

FLUID VELOCITY EQUALIZING APPARATUS

Kenneth W. De Baun, Santa Rosa, Calif., assignor to Air Monitor Corporation, Santa Rosa, Calif.

Filed Nov. 18, 1974, Ser. No. 524,740
Int. Cl.² F15D *1/02*
U.S. Cl. 138—37 **8 Claims**



1. Apparatus for equalizing the velocity of flowing fluid including duct means defining a flowing stream of fluid; at least one open-ended honeycomb equalizing section substantially coaxial with said duct means, intercepting and conducting the fluid therethrough, said honeycomb section having a plurality of parallel passages across substantially the entire duct cross-section wherein the ratio of surface area of each passage to the cross-sectional area of each passage is at least **30.**

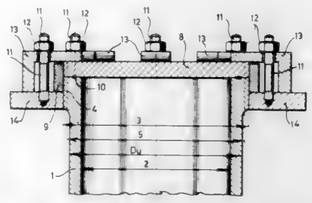
3,964,520

CONNECTION BETWEEN TWO INTER ENGAGING ELEMENTS

Hendrik Bernhard Baas, Vreeland, Netherlands, assignor to Verenigde Machinefabrieken N.V., The Hague, Netherlands

Filed June 19, 1974, Ser. No. 480,878
Claims priority, application Netherlands, June 20, 1973, 7308591
Int. Cl.² F16L *55/10, 41/00*
U.S. Cl. 138—89 **10 Claims**

1. A fluid-tight connection between two interengaged elements comprising an elongated pipe element having an end, and a plate element with a hole receiving the end of the pipe element, said pipe element having a constant internal diameter, said end of the pipe element having a greater wall thickness and a greater outer diametral extent as compared to the remainder of the pipe element and having a non-circular shape in a plane perpendicular to the axis of the pipe element, said hole in the plate element being complementary in shape to the non-circular shape of the pipe end and receiving a first portion of said pipe end for transmitting torsional force therebetween, a lid on said pipe end to close the same, said lid having an outer surface of the same shape as the pipe end, a



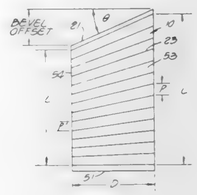
ring engaging both the lid and a second portion of the pipe end to transmit torsional force therebetween, and an annular seal between said lid and said pipe end and means holding said ring on said pipe end and holding said lid against said pipe end with said seal interposed therebetween to form a liquid-tight connector.

3,964,521

BEVEL PIPE WINDING METHOD AND PRODUCT

Paul W. Kao, Covina, and Homer C. Lamborn, Glendora, both of Calif., assignors to United States Pipe and Foundry Company, Birmingham, Ala.

Division of Ser. No. 181,824, Sept. 20, 1971, abandoned. This application Sept. 16, 1974, Ser. No. 506,438
Int. Cl.² 138 *9/08*
U.S. Cl. 138—176 **4 Claims**



1. A prestressed concrete article comprising a substantially cylindrical body of concrete having a beveled end forming a pipe body having a short side and a long side substantially 180° displaced from said short side, and a wrapping of wire under tension around said body substantially from one end to the other of the body, said wrapping having a uniform spacing all along said short side of said body and a different but uniform spacing all along said long side of said body.

4. A method of applying wire under tension to the periphery of a concrete body in the manufacture of concrete pipe or the like wherein the concrete body has a beveled end with a bevel offset thereby forming a pipe body having a short side and a long side substantially 180° displaced from the short side, comprising the steps of

determining a bevel ratio for a pipe body, said bevel ratio being directly proportional to said bevel offset divided by the length of the long side of said pipe body,

securing wire near a first end of said pipe body, and

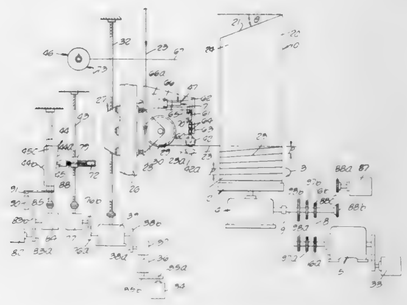
wrapping said pipe body with said wire under tension while causing periodic deviation of said wire upon wrapping as a function of said bevel ratio to provide a modified helical wrapping on said body having a uniform spacing on the short side of the said body and a different but uniform spacing on the long side of said body, said wire being periodically and successively deviated as it is applied to said body substantially from one end to the other of said body.

3,964,522

BEVEL PIPE WINDER

Paul W. Kao, Covina, and Homer C. Lamborn, Glendora, both of Calif., assignors to United States Pipe and Foundry Company, Birmingham, Ala.

Filed Sept. 20, 1971, Ser. No. 181,824
Int. Cl.² B65H *1/00;* **242** *7.21;7.22;7.23;7.16*
U.S. Cl. 242—7.22 **3 Claims**



1. Apparatus for applying wire under tension to the periphery of a concrete body having a beveled end in the manufacture of concrete pipe or the like comprising

rotatable means for supporting and rotating a concrete pipe body substantially about the axis of said body,

carriage means for supplying wire under tension to the periphery of said pipe body to form a generally helical wrapping thereon, said carriage means including leadscrew means coupled with a carriage for driving the carriage substantially parallel to the axis of said body in supplying said wire to the periphery of said body,

displacement means on said carriage means for causing a controlled periodic deviation of said wire as it is applied to said pipe body from one end to the other thereof to provide a helical wrapping having a uniform spacing along the entire length of a first side of said body and a different but uniform spacing along the entire length of a second side of said body substantially one hundred and eighty degrees from the first side,

cam means for supplying signals to affect the operation of said displacement means, said cam means including cam and cam follower means synchronized in operation with the rotation of said pipe body and movement of said carriage means, said cam and cam follower means including a cam rotated in synchronism with the rotation of said pipe body, and including a cam follower engaging the periphery of said cam and moved with respect to the cam by second leadscrew means operated in synchronism with said leadscrew means, said cam follower including a transducer for supplying said signals to affect the operation of said displacement means, and

control means responsive to the signals from said cam means for controlling the operation of said displacement means in causing said controlled deviation of said wire, said control means including selector means for selecting portions of said signals and for applying control signals to said displacement means for controlling the magnitude of said deviation of wire as it is applied to said pipe body.

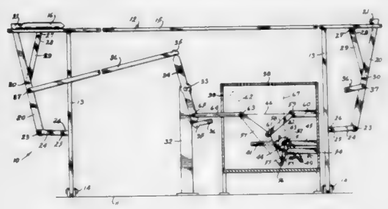
3,964,523

SHUTTLE DRIVE LINKAGE FOR LOOMS

Charles E. Benedict, Tallahassee, Fla., assignor to Wayne H. Coloney Co., Inc., Tallahassee, Fla.

Filed Dec. 12, 1974, Ser. No. 532,119
Int. Cl.² D03D *49/24*
U.S. Cl. 139—142 **11 Claims**

1. In a weaving loom having a frame, a lay mounted on a pair of swords which are swingably mounted on said frame, a pick head movably mounted on at least one end of said lay, and a weft thread carrying member adapted to be thrown from one end of said lay to the other by said pick head, the improvement comprising a housing, a drive crank rotatably supported within said housing, means for continuously driving said crank at a substantially constant speed, a drag link rotatably connected at one end to said drive crank and rotatably connected at the other end to a follower, said follower being fixed to a shaft rotatably mounted within said housing, a driven crank fixed to said shaft and rotated thereby, an elongated coupler swingably connected at one end to said driven crank and the other end of said coupler being free to move, a rocker swingably connected at one end to said housing and swingably



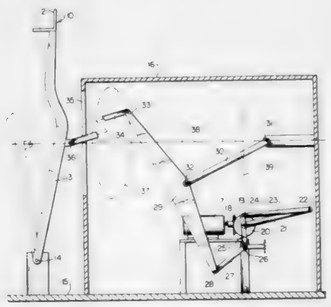
connected at the other end to an intermediate portion of said coupler so that the free end of said coupler moves in an elliptical coupler curve when said driven shaft is rotated, drive link means swingably connected at one end to the free end of said coupler, said drive link means having a length corresponding generally to the radius of one side of said coupler curve, and means drivingly connecting the other end of said drive link means to the pick head, whereby rotation of said drive crank causes the free end of said coupler to follow a first half of the coupler curve during most of the rotation and causes the free end of said coupler to follow a second half of the coupler curve during the remaining portion of the rotation of said drive crank to extend and retract said drive link means and the pick head.

3,964,524

LOOM LAY DRIVE LINKAGE

Charles E. Benedict, Tallahassee, Fla., assignor to Wayne H. Coloney Co., Inc., Tallahassee, Fla.

Filed Jan. 8, 1975, Ser. No. 539,546
Int. Cl.² D03D *49/60*
U.S. Cl. 139—190 **4 Claims**



1. Apparatus for intermittently advancing and retracting the lay of a weaving loom and providing an extended dwell period after the lay has been retracted, the apparatus comprising a first four-bar linkage mounted on said loom, said first linkage including a drive crank rotatably mounted on said loom,

means for rotating said crank at a substantially constant speed, a drag link pivotally connected to said drive crank, a follower swingably connected to said drag link in spaced relationship to said crank pivot, a shaft rotatably supported by said loom, said follower being attached to said shaft in a manner such that rotation of said crank causes rotation of said shaft, a second four-bar linkage including a driven crank fixed to said shaft, a rocker swingably mounted on said loom in spaced relationship to said shaft, an elongated coupler pivotally connected at one end to said driven crank and pivotally connected intermediate its ends to said rocker, the opposite end of said coupler defining an elliptical symmetric coupler curve which has a circular arc on at least one side thereof, drive link means swingably connected at one end to the free end of said coupler and swingably connected at the other end to the lay, said drive link means being of a length corresponding generally to the radius of the circular arc of said coupler curve, and the free end of said coupler defining said circular arc during substantially three-fourths of the rotation of said drive crank and defining the other portion of said coupler curve during substantially one-fourth of the rotation of said drive crank, whereby the lay dwells in a substantially fixed position when the free end of the coupler travels the circular arc portion of said coupler curve and is extended and retracted when the free end of the coupler traverses the other portion of the coupler curve.

3,964,525

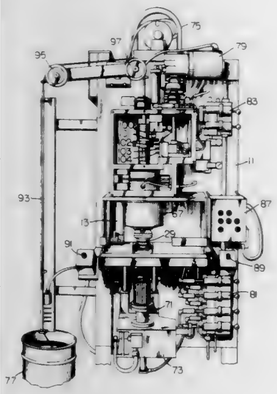
MECHANISM FOR USE IN WINDING APPARATUS

Richard B. Arnold, and Dallas F. Smith, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 359,502, May 11, 1973, abandoned, which is a division of Ser. No. 130,399, April 1, 1971, Pat. No. 3,732,897. This application May 7, 1975, Ser. No. 575,225

Int. Cl.² B21F *3/04*

U.S. Cl. 140—92.1 **19 Claims**



1. A mechanism for use in apparatus utilized while developing turns of winding material for ultimate assembly with a magnetic core, the mechanism including winding turn receiving means, a device, including shaping means, locked against rotation relative to the winding turn receiving means for at least assisting in the formation of winding turns; a flyer mechanism rotatable about the shaping means about a first axis of rotation for developing winding turns about the first axis of rotation; at least one winding material guide means for at least assisting in directing winding material in a direction generally radially relative to the first axis of rotation; at least one nonrotating locking member; at least one movable locking mechanism interconnecting said nonrotating locking member and said device so that said device is locked against rotation about the first axis of rotation during movement of the flyer mechanism and for establishing an unobstructed generally radially directed shutter passage, continuously movable along a predetermined path in synchronism with the flyer means, through which winding material may be fed generally radially relative to the first axis of rotation; said locking mechanism including first and second gear surfaces spaced axially apart along the first axis of rotation and a carriage controlling the instantaneous location of the first and second gear surfaces relative to said device and said nonrotatable locking member; said mechanism providing a first wire path extending in a generally axial direction relative to the first axis of rotation and a second wire path extending in a generally radial direction relative to the first axis of rotation; said shaping means having different portions for developing, in co-operation with the flyer means, winding turns of at least two different diameters, said shaping means being movable axially relative to the turn receiving means and to the nonrotating locking member; and means for effecting axial movement of the shaping means relative to the turn receiving means during development of at least two winding turns of different diameters so that winding turns of different diameters are successively movable into the turn receiving means during rotation of the flyer mechanism.

3,964,526

METHOD AND APPARATUS FOR CLEANING ROTARY FILLING MACHINES

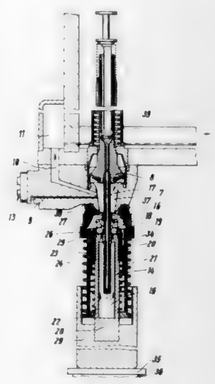
Siegmar Sindermann, Pelkum, Germany, assignor to Holstein & Kappert Maschinenfabrik Phonix GmbH, Dortmund, Germany

Filed Feb. 19, 1974, Ser. No. 443,883

Claims priority, application Germany, Feb. 20, 1973, 2308190

Int. Cl.² B65B *3/04*; B67D *1/08*

U.S. Cl. 141—1 R **7 Claims**



1. A method of cleaning and sterilizing a rotary backpressure filling machine by introducing, securing and detaching a rinsing vessel to effect rinsing, said filling machine including at least one filling element, a tank in communication with said filling element and containing a cleaning fluid, fluid valve means in said filling element to control flow from said tank, and pressure actuated conveyor means associated therewith and adapted to support said rinsing vessel, said method comprising the steps of during rotation of said filling machine introducing said rinsing vessel to said conveyor means, centering and raising said rinsing vessel upon said pressure actuated conveyor means toward said filling element and fastening said rinsing vessel to said filling element, increasing pressure in said rinsing vessel to achieve equalization of pressure within said rinsing vessel and within the tank of said filling machine, causing the fluid valve means of said filling machine to open as a result of said pressure equalization thereby commencing the flow of cleaning fluid from said tank into said rinsing vessel, lowering said pressure actuated conveyor means and thereby closing said fluid valve means while maintaining said rinsing vessel fastened to said filling element, and recommencing said rinsing by continued rotation of said filling machines by raising said pressure actuated conveyor means against said rinsing vessel and reopening said fluid valve means.

3,964,527

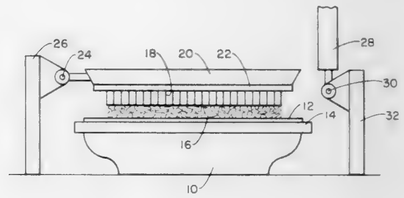
METHOD AND APPARATUS FOR FILLING SPACING CORE

Robert L. Zwart, Cypress, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 204,101, Dec. 2, 1971, abandoned. This application May 24, 1974, Ser. No. 473,008

Int. Cl.² B65B *31/00*

U.S. Cl. 141—8 **3 Claims**



1. A method for filling spacing core with fibrous material comprising the steps of:

1. placing a layer of compressible fibrous material on a flat base,
2. placing a sheet of rigid open cell core stock on said fibrous material,
3. placing a weight over said core stock,
4. vibrating said base until the lower edges of said core stock cut through said layer of fibrous material so that the resulting cut portions of said compressible fibrous material expands into the open cells of said cell core stock and,
5. subjecting said core stock to a partial vacuum from the top thereof to uniformly fill the cells of said core with cut portions of said fibrous material.

3,964,528

CATALYST CHANGING SYSTEM

Harold Smithson, Westtown, and John F. Stahl, Exton, both of Pa., assignors to Oxy-Catalyst, Incorporated, West Chester, Pa.

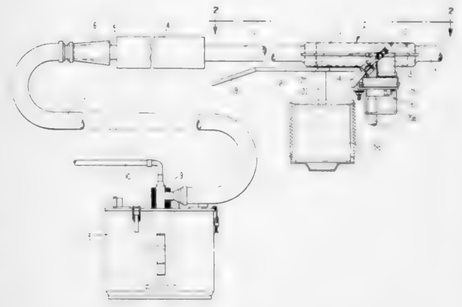
Filed May 10, 1974, Ser. No. 468,746

Int. Cl.² B65B *1/08*

U.S. Cl. 141—67 **23 Claims**

1. In a system for exchanging catalytic particles in a horizontally disposed catalytic exhaust converter having external longitudinal flanges containing a catalyst bed and a bottom fill hole therein, said system having at least one canister assembly constructed and arranged to selectively receive or supply said catalytic particles, vacuum means for creating negative pressure within said converter, means supported from said converter arranged to engage said canister assembly in connection with said fill hole, and means for shaking said converter,

the improvement wherein said shaking means is fixedly carried by a removable gripping means arranged to selectively engage said converter at spaced-apart points along a transverse line which is longitudinally spaced from said fill hole, said gripping means comprising a transverse first supporting member spacedly suspended from said converter, a second supporting member affixed to and extending upwardly from said first supporting member, and a second gripping member pivotally attached to and extending upwardly from said second supporting member, said gripping members having their upward ends shaped for engagement with said flanges.



3,964,529

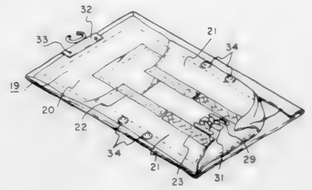
PURSE KIT

William F. Brod, 236 Wildwood Ave., Pitman, N.J. 08071

Continuation-in-part of Ser. No. 188,683, Oct. 4, 1971, abandoned. This application Jan. 18, 1973, Ser. No. 324,856

Int. Cl.² B65D *3/00*

U.S. Cl. 150—32 **1 Claim**



1. A purse kit permitting the purchaser of the kit to assemble a hand purse having an outside covering material chosen and supplied by the purchaser including:

a substantially flat stiffening member prescored to permit subsequent folding into a purse configuration having at least front, back and closure panels and adapted to be covered on one side by the purchaser's choice of covering material;

a preformed liner having a first panel of peripheral configuration approximating the peripheral configuration of the stiffening member and adapted to be secured to the stiffening member on the opposite side thereof from the covering material and including two side panels each formed of an inwardly folded flap secured along one edge at opposite edges of the liner and each including securing means along the opposite edge thereof which permits the liner to be disposed flat while being secured to the stiffening member and to form a pocket by folding engagement of the opposite edge of each flap with itself as the stiffening member is folded into purse configuration.

3,964,530

LOCKING CUP WASHER

Lawrence H. Nickles, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

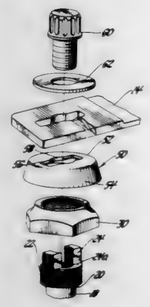
Filed May 30, 1972, Ser. No. 257,885

Int. Cl.² F16B *39/08*

U.S. Cl. 151—29 **5 Claims**

1. In combination with a threaded fastener having a tang at its free end and a nut having flat side surfaces meeting at

corner edges to define a polygonal periphery thereabout, threaded thereon, a nut lock of deformable material having an annular base portion with a slot therein slidably received over the tang in locking engagement therewith and having a depending annular skirt portion integral therewith, said skirt portion having an internal diameter at its free end so as to just

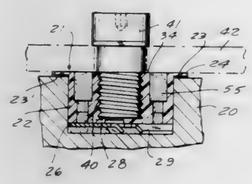


engage over the corner edges of the nut and, means including threaded means secured to said threaded fastener for moving said nut lock axially on said threaded fastener to move said skirt portion further over said nut while deforming said skirt portion around said corner edges of said nut and to retain said nut lock as then deformed axially on said threaded fastener relative to said nut.

3,964,531
PANEL INSERT

Peter Schenk, West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Continuation-in-part of Ser. No. 374,345, June 28, 1973, abandoned, which is a division of Ser. No. 223,455, Feb. 4, 1972, Pat. No. 3,781,961. This application Aug. 14, 1974, Ser. No. 497,465
Int. Cl.² F16B *39/02*
U.S. Cl. 151—41.7 **7 Claims**

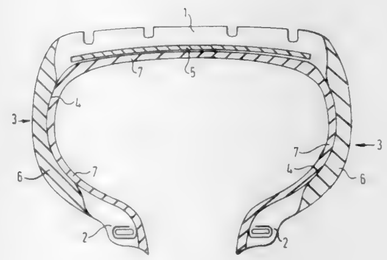


1. A small insert adapted for single use to be mounted in a thin lightweight panel of low density core material to form a fastener receptacle for interengagement with a fastener element comprising:
- a body portion having a forward end for insertion into the panel and a rear end;
- a single use cutting surface on the forward end for forming a recess in the panel to receive the insert when a predetermined force is applied to the insert in order to position the insert through a substantial cross section of the panel without the necessity of preforming the recess;
- surfaces forming at least one passageway through the insert in alignment and in communication with the cutting surface and extending to the rear end of the inset for conducting material removed from the panel in forming the recess from the cutting surface to beyond the panel surface independent of other forces when the insert is positioned within the panel so as to permit the recess to be formed as the insert is simultaneoulsy positioned in the panel;
- the surfaces forming at least one passageway including a beveled portion to facilitate guidance and removal of material from the insert end panel without the necessity of the application of additional force while the predetermined force is being applied to the insert to position the insert in the panel;
- surfaces on the insert forming openings to receive a potting compound while the insert is positioned in the recess to mount the insert therein;
- means on the insert adapted to be releasably engaged by insertion means so that the insert may be held in the desired manner during insertion and fastening in the panel and then released thereafter prior to assembly with the fastened element; and
- receiving surfaces on the insert adapted for interengagement with the fastener element.

3,964,532
PNEUMATIC TIRES

Wilfred Henry Harrington, West Midlands, England, assignor to Dunlop Limited, London, England

Filed Oct. 29, 1974, Ser. No. 518,998
Claims priority, application United Kingdom, Nov. 7, 1973, 51754/73
Int. Cl.² B60C *17/00*
U.S. Cl. 152—330 RF **8 Claims**

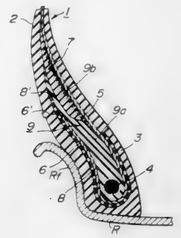


1. A pneumatic tire having an aspect ratio in the range 50 – 75% and comprising a tread portion having a substantially flat ground contacting surface, beads and sidewalls, said sidewalls including rubber compounds of resilience greater than 85% measured by the Dunlop Pendulum Test at 50°C, the beads of the tire comprise rubber compound having a hardness greater than 70 Shore A and a resilience of greater than 60% as measured by the Dunlop Pendulum Test at 50°C, the tread portion being braced by a breaker assembly and having a width, when the tire is in use and inflated, less than the overall tire section width, the overall tire section width being a maximum in the mid-sidewall region of the tire, but at least 20% wider than the distance between the heels of the beads, the sidewalls each having a thickness at their thinnest part of at least 5% of the overall tire section width, the tire containing a carcass reinforcement consisting of a single layer ply of substantially radially extending textile cords extending from one tire bead to the other, and the carcass is made of cords comprising a heat resistant textile selected from the class consisting of rayon and aromatic polyamide fibers.

3,964,533
PNEUMATIC RADIAL TYPE TIRE HAVING AN IMPROVED DURABILITY IN BEAD SECTION

Iwao Arimura, Kodaira; Akio Sato, Higashi-Murayama, and Hironori Hirano, Akigawa, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Feb. 21, 1975, Ser. No. 551,951
Claims priority, application Japan, Feb. 28, 1974, 49-22880
Int. Cl.² B60C *15/06, 9/10*
U.S. Cl. 152—362 R **14 Claims**



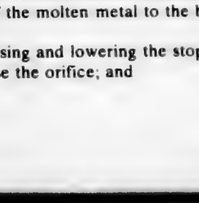
1. A pneumatic radial type tire having at least one carcass ply composed of metal cords in a substantially radial arrangement and a pair of bead sections, each of said sections comprising a turned-over portion folded carcass ply around a bead core from inward to outward of the tire, at least one chafer consisting of rubberized metal cords arranged along and adjacent to the turned-over portion of the carcass ply, a rubber stiffener disposed between the carcass ply and its turned-over portion with the chafer and extending outwardly from the vicinity of the bead core beyond outermost cord ends of the turned-over portion and of the chafer in radial direction of the tire, and a carcass reinforcing member composed of at least two rubberized cord fabrics or organic fibers secured to the surface of the carcass ply and being crossed with each other in their laminate interface; said carcass reinforcing member being located opposite to the outermost cord ends of the turned-over portion of the carcass ply and of the chafer in radial direction of the tire by a given width and having a cord angle of at least **60°** with respect to the direction of the cord of the carcass ply in each cord fabric, said angle being larger at the outer portion than at the inner portion in radial direction of the tire, and said rubber stiffener disposed between the turned-over portion of the carcass ply with the chafer and the carcass secured with the carcass reinforcing member being composed of a composite of a hard rubber stock in the side of the turned-over portion and a composite of a relatively soft rubber stock, the difference in hardness between the hard rubber stock and the soft rubber stock being more than **10** of Shore A hardness, in the side of the carcass reinforcing member, the relatively soft rubber stock extending along the carcass reinforcing member from its corresponding inside portion to outward beyond upper portion thereof in radial direction of the tire to protect the outermost cord ends of the turned-over portion and the chafer from distortion of the stiffener which yields by pressure between the carcass ply and a rim flange and from divergence between the cords of the carcass ply when the inflated radial type tire is subjected to service under load.

3,964,534
CASTING METHOD WITH A VACUUM BONDED DRY SAND CORE

Stephen Rabinowitz, Huntington Woods, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 4, 1974, Ser. No. 448,159
Int. Cl.² B22C *15/22;* **B22D** *29/00*
U.S. Cl. 164—7 **8 Claims**

1. A method of casting an object requiring cored inserts:
- a. prepare core box elements having walls for defining a core cavity with an opening at one location,
- b. insert a consumable impermeable thin ply of continuous material onto and throughout said cavity walls in a manner to conform identically to the contours of said cavity walls and form an enclosed shape,
- c. inject ceramic particulate material through said opening into the interior of said impermeable thin ply shape, continue said injection in sufficient quantity to form a material shape which occupies the entire cavity space except for the ply of material separating said cavity walls from said particulate material,
- d. while drawing a vacuum on said continuous material shape sufficient to draw the continuous material intimately about the sand shape, permanently close said continuous material at said opening through which said sand is inserted so that the particulate material will not deviate from the intended outer contour of said core, said assembly forming a tight durable self-supporting wrapped core with the consumable continuous material forming the outer skin thereof,
- e. place said wrapped core shape into a porous molding cavity and introduce molten metal to displace said consumable continuous material and define a casting thereabout, and
- f. subsequent to definition of the casting, disintegrate said particulate material by impact strip from the interior of said casting.



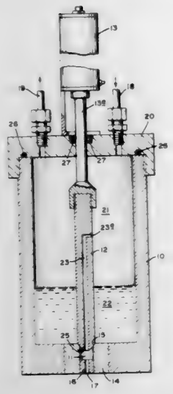
3,964,535
STOPPER ROD TAPPING ASSEMBLY AND FILAMENT FORMING PROCESS

John R. Bedell, Sparta, and Robert W. Smith, Flanders, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 20, 1975, Ser. No. 551,557
Int. Cl.² B22D *11/10*
U.S. Cl. 164—66 **2 Claims**

1. Metal filament forming apparatus comprising:
- a. a top-sealed crucible provided with a chamber adapted to contain molten metal and including a tapping orifice and nozzle in the bottom thereof;
- b. means for introducing inert gas under pressure into the upper part of said chamber;
- c. a stopper rod mounted in said crucible provided with an interior channel extending within the crucible from an egress vent in communication with said chamber above the surface of the molten metal to the bottom tip of the stopper rod;
- d. means for raising and lowering the stopper rod so as to open and close the orifice; and

e. a valve seat surrounding the orifice for seating the stopper rod and closing the orifice, whereby undesired residues

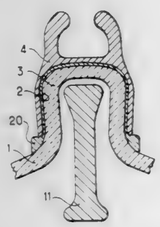


are flushed from the orifice by the pressurized inert gas when the stopper rod is seated against the valve seat.

3,964,536
METHOD FOR FIXING A METALLIC ARMATURE OF A NON-METALLIC PART

Michel Willem, Cusset, France, assignor to Ceraver, Paris, France

Filed Dec. 11, 1973, Ser. No. 423,825
Claims priority, application France, Dec. 12, 1972, 72.44170
Int. Cl.² B22D *19/00*
U.S. Cl. 164—98 **2 Claims**



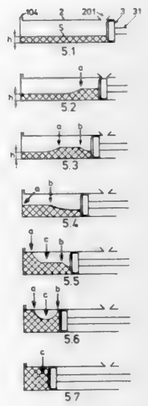
1. A method of fixing a metallic connecting cap of an electrical insulator of the rod-and-cap type on a non-metallic part, said metallic connecting cap comprising a lower part to be fitted around the nonmetallic dielectric part and an upper part containing a cavity for receiving the lower part of a rod, said method comprising the steps of:

1. Closely applying a first thin metallic part
   a. to at least a part of the outer surface of said nonmetallic dielectric part on which said lower part of a first metallic connecting cap is to be fixed,
   b. Which is in the form of a sleeve made of a metal which is a good conductor of heat,
   c. which is crimped on the surface of said non-metallic dielectric part on which said first metallic connecting cap is to be fixed, and
   d. the edge of which is in the form of a flange which functions as a seal between the mould and said nonmetallic dielectric part, thus limiting the mould volume, and
2. moulding said first metallic connecting cap on said first thin metallic part while the material of which said first metallic connecting cap is to be composed is in the melted state.

3,964,537
METHOD FOR PRESSURE CASTING

Peter Koch, Niederuzwil, and Eduard Beyer, Gossau, both of Switzerland, assignors to Gebrueder Buehler AG, Switzerland

Filed Oct. 3, 1974, Ser. No. 511,801
Claims priority, application Switzerland, Oct. 8, 1973, 14300/73; May 3, 1974, 6026/74
Int. Cl.² B22D *17/04*
U.S. Cl. 164—136 **16 Claims**



1. In a method of pressure casting, into a mold cavity, a melt quantity metered out in accordance with the volume of the cavity, by diminishing a space, receiving the metered quantity and extending between a casting gate, leading into the mold cavity, and a filling inlet in two-phase manner including a shot pre-filling phase followed by a mold-filling phase, the improvement comprising, in the shot pre-filling phase, diminishing such space by moving the metered quantity of melt toward the casting gate at an accelerating rate continuously throughout the shot prefilling phase so as to prevent formation of a standing wave and to maintain the casting gate clear of melt; and, in the mold-filling phase, beginning when the melt has reached the casting gate and immediately following the shot pre-filling phase, diminishing such space to a minimum by displacing the metered quantity of melt from such space into the mold cavity.

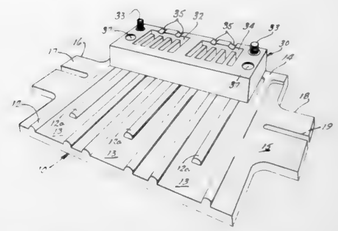
3,964,538
CORE BOX MOUNTING PLATES IN A SHELL CORE MACHINE

Harry Noordhof, Grand Haven, Mich., assignor to Lucille E. Noordhof, Grand Haven, Mich.

Filed May 22, 1975, Ser. No. 579,954
Int. Cl.² B22C *7/06, 13/12*
U.S. Cl. 164—228 **10 Claims**

1. In a shell core machine, a pair of core box mounting plates, each of which comprises:

a plate including a plurality of spaced ribs extending from a surface thereof to define exhaust channels therebe-

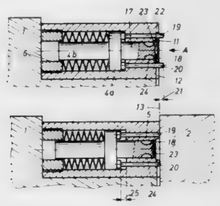


tween; and
means for mounting said plate to the shell core machine.

3,964,539
PRESSURE DIE CASTING APPARATUS PROVIDED WITH A PRESSURE ATTENUATING DEVICE

Fritz Hodler, Chemin du Chatagny 3, CH 1842 Montreux-Territet, Switzerland

Filed June 4, 1975, Ser. No. 583,664
Claims priority, application Germany, June 21, 1974, 24-29920
Int. Cl.² B22D *17/32*
U.S. Cl. 164—303 **5 Claims**



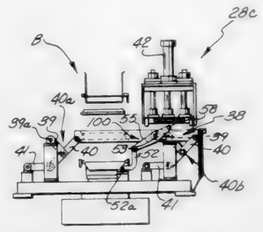
1. A pressure die casting block comprising two block halves assembled together along a plane defining a parting plane of the blocks to provide an internal cavity for performing a casting operation, a device disposed in one of the block halves for damping pressure forces which occur in the block due to pressure surges during a casting operation, said device having a piston which is slidingly guided in a guide cylinder and biased by the action of a spring system for absorbing the pressure forces, said piston being provided with a constriction in the region of its crown, said constriction being disengageable from the front edge of the guide cylinder nearest to the block parting plane when the block halves are disassembled and by the provision of operating means which return the piston into a stand-by position when the block halves are in the assembled condition so that the constriction is situated completely in the guide cylinder, the crown being retracted by a few tenths of a millimeter from a front edge of the guide cylinder.

3,964,540
MOLDING SYSTEM

Edward D. Abraham, 6695 Farview Road, Brecksville, Ohio 44141

Filed Jan. 2, 1974, Ser. No. 429,544
Int. Cl.² B22D *5/04*; **B25J** *3/04*; **B65G** *47/74*
U.S. Cl. 164—323 **24 Claims**

1. In a molding system, apparatus for moving a flask from one portion of a conveyor system and for transferring it therefrom and depositing a mold at another portion of the conveyor system, said apparatus comprising a first structure located between said portions for picking up the flask from the one portion of the conveyor system, a feeder adjacent said first structure for a flask and a mold and movable transverse of the conveyor system toward and away from said portions of the conveyor system, means supporting said first structure for movement from a flask pickup position to a position where a flask is deposited on said feeder, means supporting said feeder for said transverse movement to move the flask to a molding station and to transfer a mold to a mold removal station, a second structure located adjacent said feeder for picking up

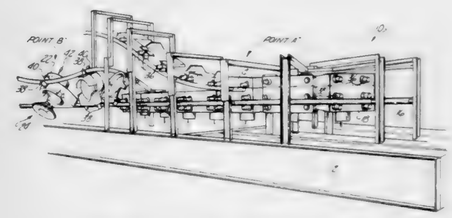


the mold from said feeder at said mold removal station, means supporting said second structure for movement from said mold removal station to a position where the mold is deposited on the other portion of the conveyor system, a fluid cylinder, and means interconnecting said fluid cylinder with said first and second structures and said feeder to effect said movements of said first and second structures and said feeder upon operation of said fluid cylinder.

3,964,541
APPARATUS FOR METAL CASTING

Donald G. Brunner, Waupaca, Wis., assignor to The Budd Company, Troy, Mich.

Filed June 10, 1974, Ser. No. 478,014
Int. Cl.² B22D *5/04*; **B29C** *3/02*
U.S. Cl. 164—323 **3 Claims**



1. A molten metal casting apparatus comprising support means, a lower continuous closed track mounted on said support means, an upper track portion aligned with said lower track and mounted on said support means above said lower track, a plurality of mold assemblies each mold assembly includes a cope, a drag matingly supporting said cope, said drag being supported on said lower track by a plurality of said support arms and said cope having a plurality of said support arm for cooperating with said upper track portion for removal of said cope for said drag, a cavity formed between said drag and said cope, an aperture in said cope extending between said cavity and the outer surface thereof, a destructible mold liner positioned and supported within said cavity having an outer surface matingly engaging and being supported by said cavity, said mold liner including a pouring basin extending through said aperture for receiving and conducting molten metal into said mold liner, and an inner cavity in said mold liner in communication with said pouring basin for receiving the molten metal and confining the molten metal until it solidifies, a plurality of support arms extending from each of said mold assemblies for mounting said mold assemblies on said tracks and cooperating therewith for movement there along, a plurality of stations along said tracks, means for moving said

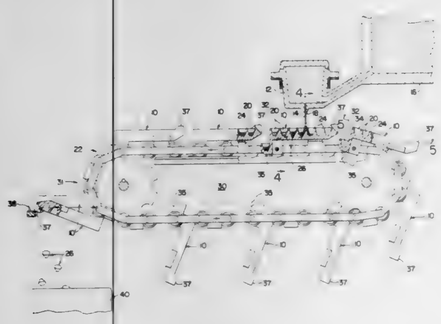
mold assemblies along said tracks to said stations, said stations including a loading station for placing a mold liner within each of said mold assemblies, a pouring station adjacent said assembly station for pouring molten metal within the mold liner, a cooling station adjacent said pouring station for holding the mold assemblies while the molten metal solidifies, an unloading station adjacent said cooling station for removing the mold liner with solidified casting from said mold assemblies, and a cleaning station positioned between said unloading station and said loading station for cleaning said mold assemblies.

3,964,542

APPARATUS FOR CONTINUOUSLY CASTING METAL NUGGETS

Richard Skurko, c/o Garfield Company, Inc.,21862 Cromwell Ave., Fairview Park, Ohio 44126

Filed Dec. 13, 1974, Ser. No. 532,627
Int. Cl.² B22D *5/04, 11/06*
U.S. Cl. 164—329 **16 Claims**



1. Apparatus for continuously casting individual active metal nuggets comprising:

a. a tundish having a fixed pouring orifice in the bottom thereof to provide a continuous narrow veritical stream of molten metal;

b. means adjacent said tundish for directing molten metal thereto, and

c. a plurality of consecutive connected and spaced nugget molds each nugget mold having a plurality of nugget cavities longitudinally aligned for consecutive presentation beneath the fixed pouring orifice of said tundish, said cavities being of substantially greater depth than width and being positioned with respect to each other to minimize the top surface of said mold exposed to said tundish pouring orifice; each said nugget mold further including intercepting means comprising a subjacent stepped portion integrally secured to the front wall of each said mold, the top surface of said stepped portion being positioned beneath the top surface of said molds, and a nugget cavity in said stepped portion in longitudinal alignment with said plurality of nugget cavities whereby the flow of molten metal between consecutive molds is intercepted.

3,964,543

UNDERWATER WELLHEAD COMPLETIONS WITH PORTABLE ATMOSPHERIC CELLAR

James T. Rodgers, New Orleans, La., assignor to Standard Oil Company (Indiana), Chicago, Ill.

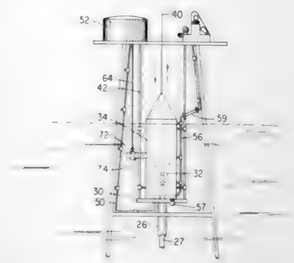
Filed Nov. 18, 1974, Ser. No. 525,046
Int. Cl.² E21B *43/01*
U.S. Cl. 166—.5 **7 Claims**

1. A marine installation for producing fluids from an underground reservoir beneath the bottom of a body of water which comprises:

a deck;

support means supporting said deck above said body of water;

a wellhead base impermeable to water and supported by said support means beneath said deck below the surface of said body of water and above said bottom;



a wellhead supported on said wellhead base;

a producing line from said wellhead to said deck;

a portable cellar for placing over said wellhead, the lower edge of said cellar forming a watertight seal at said wellhead base; and

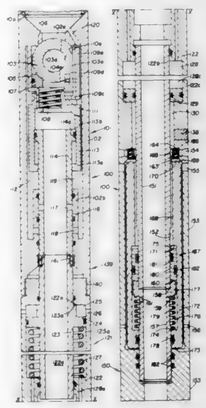
a flowline from said wellhead to said underground reservoir.

3,964,544

PRESSURE OPERATED ISOLATION VALVE FOR USE IN A WELL TESTING AND TREATING APPARATUS, AND ITS METHOD OF OPERATION

David L. Farley, and Burchus Q. Barrington, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed June 20, 1975, Ser. No. 588,990
Int. Cl.² E21B *43/00, 49/00*
U.S. Cl. 166—315 **12 Claims**



1. A valve for use in a tubing string located in an oil well bore and having a packer arranged for selectively sealing the well bore thereby isolating that portion of the oil well bore above the packer from that portion of the oil well bore below the packer, comprising:

valve means, incorporated in the wall of said tubing string and having a normally open position and a closed position, for controlling fluid communication between the interior of said tubing string and the oil well bore exterior of said tubing string;

pressure responsive operating means, operably connected to said valve means, for moving said valve means from the normally open position to the closed position when the pressure in that portion of the well bore above said packer is increased by a specified amount over the pressure in that portion of the well bore below the packer; and

means within said operating means, for maintaining said valve means in the closed position responsive to subsequent increases in the pressure in that portion of the well bore below the packer.

9. In an oil well having a tubing string in the bore of the well, said tubing string having a packer arranged for selectively sealing the well bore thereby isolating that portion of the oil well bore above the packer from that portion of the oil well bore below the packer, and a normally open valve located in the wall of said tubing string; a method of controlling fluid communication between the interior of said tubing string and the oil well bore exterior of said tubing string comprising the steps of:

sealing the bore of said oil well with said packer thereby isolating that portion of the oil well above the packer from that portion of the oil well below the packer;

increasing the pressure in that portion of the oil well bore above the packer, thereby creating a pressure differential between that portion of the well bore above the packer and that portion below the packer;

closing said normally open valve responsive to said pressure differential, thereby interrupting fluid communication between the interior of said tubing and the oil well bore exterior of said tubing;

additionally increasing the pressure in that portion of the oil well bore above the packer;

creating a second pressure responsive to said additional pressure increases whose value is a predetermined amount less than said pressure in that portion of the bore above the packer;

increasing the pressure in that portion of the oil well bore below the packer to a value higher than said second pressure; and,

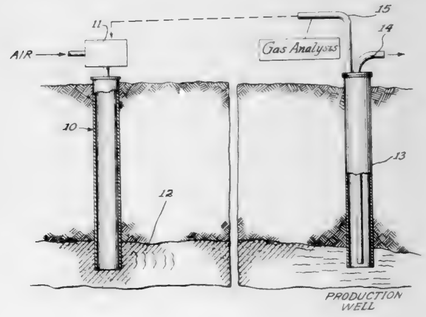
maintaining said valve in the closed position responsive to the pressure differential between said pressure in that portion of the well above the packer and said second pressure, and nullifying the effect on said valve of said pressure increases in that portion of the bore below the packer, thereby allowing said pressure in that portion of the bore below the packer to be increased as desired.

3,964,545

PROCESSES FOR SECONDARILY RECOVERING OIL

Frank N. Speller, Jr., Tyler, Tex., assignor to Esorco Corporation, Boston, Miss.

Continuation-in-part of Ser. No. 309,063, Nov. 24, 1972, abandoned. This application June 10, 1974, Ser. No. 477,846
Int. Cl.² E21B *43/00, 43/24*
U.S. Cl. 166—256 **5 Claims**



1. The method of secondary recovery of oil from a reservoir including the steps of injecting air in a reservoir at a point spaced from a production well, maintaining the volume and pressure of the injected air so that a reservoir pressure of at least 500 p.s.i.g. is maintained, causing oxidation of reservoir material which results in the production of an effluent gas containing oxygen and carbon dioxide, reducing the surface tension of said oil in the reservoir by dissolving the carbon dioxide in the reservoir oil to render the high-gravity, paraffin-base oils more mobile and susceptible of being driven to the production well, keeping the dissolved carbon dioxide in the oil by maintaining said pressure and volume of the injected air, controlling the oxygen content of said effluent gas to a level of less than three percent by volume, withdrawing said effluent gas and oil separately from the production well.

3,964,546

THERMAL RECOVERY OF VISCOUS OIL

Joseph C. Allen, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Filed June 21, 1974, Ser. No. 481,580
Int. Cl.² E21B *43/24*
U.S. Cl. 166—261 **9 Claims**

1. In the method of in-situ combustion for recovering heavy oils and bitumen from subterranean hydrocarbon-bearing formations traversed by at least one injection well and at least one production well and having a low permeability, the improvement comprising:

a. injecting into said formation via said injection well a mixture of an oxygen-containing gas and steam to effect a controlled low-temperature combustion in the range of temperature from about 400° to about 800°F thereby heating said formation and establishing a gas saturation therein,

b. terminating injection of said steam and continuing injection of said oxygen-containing gas to initiate an in-situ combustion in the vicinity of said injection well,

c. continuing injection of said oxygen-containing gas to propagate said in-situ combustion through said formation toward said production well,

d. producing said hydrocarbons via said production well.

3,964,547

RECOVERY OF HEAVY HYDROCARBONS FROM UNDERGROUND FORMATIONS

Karol L. Hujsak, Tulsa, Okla., and Thomas S. Buxton, Calgary, Canada, assignors to Amoco Production Company, Tulsa, Okla.

Continuation of Ser. No. 323,542, Jan. 15, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 518,680
Int. Cl.² E21B *43/16*
U.S. Cl. 166—269 **2 Claims**

1. A method of injecting both a heating fluid and an insulating fluid and producing a heated hydrocarbon through a single well drilled through a formation having an upper high permeability part lean in hydrocarbons, and a lower low permeability part rich in hydrocarbons which comprises:

a. establishing within said single well a first channel extending from the surface to said lower part of said formation,

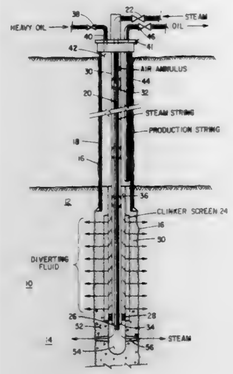
b. establishing a second channel within said well surrounding the first channel and extending from the surface to an upper part of said formation, said second channel having no fluid communication within said well with said first channel;

c. injecting a heating fluid through said first channel to said lower part of said formation to heat the hydrocarbons therein;

d. injecting an insulating fluid through said second channel into said upper part of said formation simultaneously with the injection of said heating fluid to insulate said upper part of said formation from said heating fluid in said first channel, and to block the upward flow of said heating

fluid in said formation;

e. establishing a producing channel through said said single



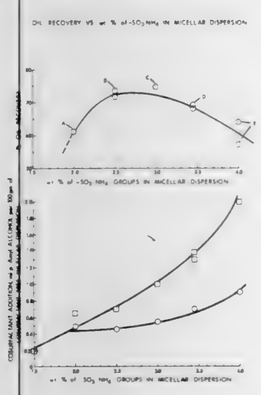
well extending from the surface to said formation and producing hydrocarbons through said producing channel.

3,964,548

METHOD FOR OIL RECOVERY BY FLOODING WITH MICELLAR DISPERSIONS CONTAINING CRUDE OIL SULFONATES

Donald E. Schroeder, Jr.; Mark A. Plummer, and Wayne O. Roszelle, all of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Mar. 27, 1975, Ser. No. 562,520
Int. Cl.² E21B *43/22*
U.S. Cl. 166—273 **19 Claims**



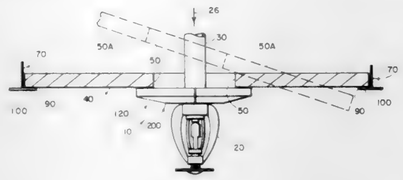
1. In a process for recovering hydrocarbon from a subterranean formation having at least one injection means in fluid communication with at least one production means and wherein a micellar dispersion comprised of water, hydrocarbon, cosurfactant, electrolyte, and petroleum sulfonate obtained by sulfonating whole or topped crude oil is injected into the formation and displaced toward the production means to recover therethrough and wherein the cosurfactant concentration is present in excess of that concentration required to produce in the micellar dispersion a viscosity maximum, the improvement comprising incorporating within the micellar dispersion about 1.5 to about 4.5 weight percent of active sulfonate groups which are attached to the petroleum sulfonate within the micellar dispersion and thereafter injecting the micellar dispersion into the formation.

3,964,549

FIRE SPRINKLER AND CEILING PANEL ASSEMBLY

Paul F. McGill, 2298 Country Club Ave., Omaha, Nebr. 68104

Filed Nov. 8, 1974, Ser. No. 522,256
Int. Cl.² A62C *37/10*
U.S. Cl. 169—37 **7 Claims**



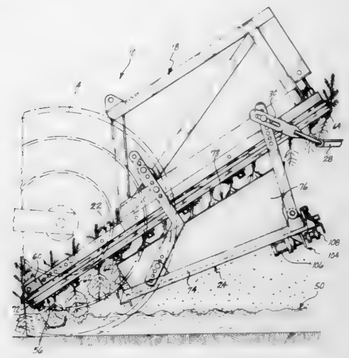
1. A fire sprinkler and panel ceiling assembly comprising: a fire sprinkler head having a construction for spreading a fire prevention fluid over a wide area, a vertical pipe attached to and carrying said fluid to said head, a horizontal ceiling panel having a head passage extending vertically therethrough, a panel supporting assembly having a panel opening extending generally vertically therethrough, said supporting assembly having panel-engaging portions extending under edges of said panel and supporting said panel and disposed at edges of said panel opening, and said head passage hole being large enough to permit a tilting and a rotating of said panel with respect to said panel opening and a passing of said panel down over said head for removal of said panel from the remainder of said assembly, and a panel hole cover having a perforation therethrough receiving said pipe and of a size as measured in a horizontal plane which latter size is large enough to substantially cover said head passage hole as seen from therebeneath except for the portion of said perforation occupied by said pipe, said cover having a plurality of separable parts so that said cover can be removed from said pipe by movements of certain parts of said cover in directions laterally of said vertical pipe, disconnectable means holding said cover parts together in a manner permitting sufficient separation of said cover parts for removing said cover from said pipe in directions other than vertically off of an upper portion of said pipe; said cover comprising a first part having a main portion having a concave undersurface and having a pipe reception indentation disposed substantially centrally of one side thereof as seen in bottom plan view for receiving a part of said pipe, the other side of said main portion having a generally convex edge configuration as seen in bottom plan view, said first part having an offset portion disposed in use position offset upwardly from said main portion and projecting from said one side thereof on one side of said pipe indentation, said offset portion having an edge farthest from said pipe indentation, said farthest edge being offset toward said indentation from the adjacent part of the said generally convex edge of said main portion, said cover having a second part having a shape describable in the same way said first part is above described, said two cover parts being disposed with their said one sides adjacent each other and their pipe indentations adjacent each other, and their concave sides both facing upwardly so that said indentations from a pipe opening, said second part having its offset portion on an opposite side of said pipe opening from the said offset portion of said first part, said parts each having a tab attached thereto and disposed on one side of said pipe opening and each having a tab-receiving notch on a side of said pipe opening which is opposite to said tab, said tabs extending downwardly through said notches respectively whereby said cover parts are substantially limited as regards horizontal movements with respect to each other.

3,964,550

TREE SEEDLING HARVESTER

James G. Storms, Garfield, Wash., assignor to J. E. Love Company, Garfield, Wash.

Filed Sept. 16, 1974, Ser. No. 506,292
Int. Cl.² A01D *25/00*
U.S. Cl. 171—61 **15 Claims**



1. In a mobile device for harvesting seedlings including means for subsurface cutting to loosen the earth adjoining the roots of said seedlings, means for grasping the seedlings and pulling them out from the loosened earth and then conveying them along a path to a receiver, and means for removing the earth from the roots of said seedlings, the improvement comprising:

said means for removing the earth from the roots of said seedlings comprising an elongated root beater means extending along one side of the path of travel of the seedlings, means supporting said root beater means for oscillatory movement in a direction substantially transverse to both the longitudinal axis of said beater means and the path of travel of said seedlings, and drive means for oscillating said root beater means an amount such that root beater means makes slapping contact with the roots of each seedling passing by said root beater means, to in that manner dislodge earth from the roots of the seedling.

3,964,551

PNEUMATIC IMPACT DRILLING TOOL

Grey Bassinger, San Antonio, Tex., assignor to Reed Tool Company, Houston, Tex.

Filed Sept. 20, 1974, Ser. No. 507,968
Int. Cl.² E21B *21/00*
U.S. Cl. 173—73 **14 Claims**

1. An impact drilling tool for connection in a string of drilling pipe, said tool comprising:

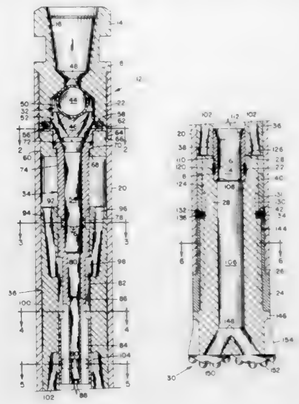
an upper sub for connection to said drilling pipe; a casing with an upper end connected to said upper sub;

anvil means slideably received in a lower end of said casing, said anvil means being connected to bit means;

hammer means carried in said casing above said anvil means, said hammer means reciprocating along the elongated axis of said tool for striking said anvil means during each cycle;

means for feeding pressurized pneumatic fluid from said drilling pipe through the center portion of said hammer means, said feeder means being retained by said upper sub and extending downwardly therefrom for providing slideable valve type passages that open and close on each cycle for pressurization below said hammer means, for pressurization above said hammer means, and for exhaust above said hammer means; and

exhaust means carried by said anvil means and located between said hammer means and said anvil means for exhausting during each cycle the pressurization below said hammer means through a space separating said feeder means and said exhaust means and subsequently



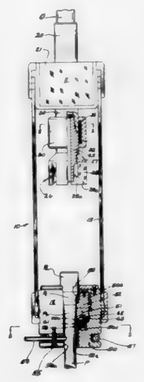
exhausting through said exhaust means to said bit means, said feeder means terminating above said exhaust means to form said separating space.

3,964,552

DRIVE CONNECTOR WITH LOAD COMPENSATOR

Damon T. Slator, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Jan. 23, 1975, Ser. No. 543,329
Int. Cl.³ E21B *3/00*
U.S. Cl. 173—164 **22 Claims**



1. A well drilling or completion system for manipulating well equipment comprising:

a. a power drive assembly for providing rotary and vertical movement in a well derrick;

b. a longitudinally extending output shaft means rotatably powered by said power drive assembly and movable vertically therewith;

c. a connector assembly carried by said power drive assembly and rotatably powered thereby, for carrying and supporting weight of said well equipment;

d. elevator means included in said connector assembly for engaging said well equipment; and
e. load compensating means included in said connector assembly for cushioning and supporting said weight of said well equipment supported by said connector assembly.

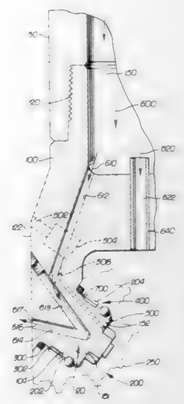
3,964,553
BOREHOLE TOOL ORIENTING APPARATUS AND SYSTEMS
Edward R. Basham, and William D. Smith, both of Fort Worth, Tex., assignors to Go International, Inc., Fort Worth, Tex.
Filed Sept. 4, 1975, Ser. No. 610,284
Int. Cl.² E21B 43/119, 43/11
U.S. Cl. 175—4.51 **12 Claims**



1. Borehole tool orienting apparatus comprising:
a. a downhole assembly and means for lowering same to a predetermined depth in a borehole; said downhole assembly including:
i. a permanent magnet assembly made up of one or more permanent magnets,
ii. means for imparting motion to said permanent magnet assembly to generate a moving magnetic field,
iii. receiver means disposed in relation to said moving magnetic field so that substantially no signals are induced therein under the condition when said moving magnetic field is substantially undistorted but measurable signals may be induced therein under the condition when said moving magnetic field is distorted due to the presence of a ferrous anomaly,
iv. means for rotating said receiver means to produce an azimuthal scan whereby there is induced in said receiver means signals which are a function of the azimuthal location of a ferrous anomaly.

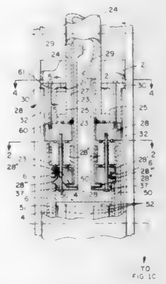
3,964,554
TEMPERATURE-REGULATED, SEALED BEARING SYSTEM FOR ROCK DRILL BITS
Robert E. Ricks, Los Angeles, and William P. Robinson, Palos Verdes, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.
Filed Dec. 30, 1974, Ser. No. 537,191
Int. Cl.² E21B 9/08
U.S. Cl. 175—17 **6 Claims**

1. A rock drill bit assembly adapted for boring in the earth, and comprising:
a rock drill main body having at least one journal;
a cone disposed about said journal and adapted to rotate relative thereto, said journal and cone having opposing facial surfaces, portions of which mutually define a clearance space therebetween;
bearing means positioned within said clearance space for rotatably supporting said cone relative to said journal; and
heat exchange means for inducing the transfer of heat between said journal and a circulating fluid, said heat exchange means including a passageway within said journal



for conducting said circulating fluid through said journal, said passageway being in close proximity to but physically separated from said opposing facial surfaces, and further including an expansion chamber means for permitting the thermodynamic expansion of said circulating fluid to increase the cooling capacity of said heat exchange means.

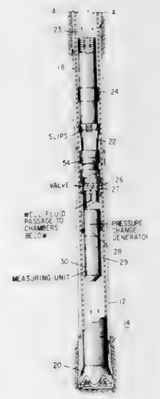
3,964,555
APPARATUS FOR OBTAINING EARTH CORES
Wesley D. Franklin, 1005 D Pleasant Oaks Road, Baltimore, Md. 21234
Filed Nov. 14, 1975, Ser. No. 632,083
Int. Cl.² E21B 9/20
U.S. Cl. 175—44 **10 Claims**



1. A core collecting apparatus for obtaining and retrieving samples of earth from the bottom of a previously earth-drilled hole, comprising:
a. a plurality of telescoped circular casings comprising an outer and inner casing and an intermediate casing;
b. an assembly positioned within the outer casing for supporting the intermediate and inner casings, means for restricting rotation of the assembly relative to the outer casing, and means affording limited axial movement of the assembly relative to the outer casing;

c. a plurality of earth boring bits positioned on the outer end of the intermediate casing adapted to cut a circular downward path through the earth at the bottom of the said hole when the intermediate casing is rotated leaving a center core portion extending upwardly into the inner casing;
d. a rotatable hollow shaft adapted to extend into the previously bored hole for rotating the intermediate casing and for supplying a drill fluid to the apparatus;
e. means for anchoring the outer casing to the side wall of the bored hole;
f. means for retaining the core within the inner casing as the apparatus is being withdrawn from the bored hole.

3,964,556
DOWNHOLE SIGNALING SYSTEM
Marvin Gearhart; David W. King; Rudolph R. Mendoza; Serge A. Scherbatskoy, and James D. Young, all of Fort Worth, Tex., assignors to Gearhart-Owen Industries, Inc., Fort Worth, Tex.
Filed July 10, 1974, Ser. No. 487,099
Int. Cl.² E21B 47/02
U.S. Cl. 175—45 **17 Claims**

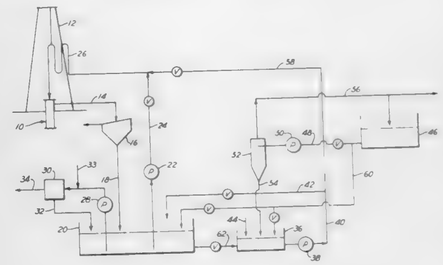


1. A method of transmitting data from the bottom of a fluid-filled drill string in a borehole drilled in the earth, which comprises:
a. closing the main path of fluid in said drill string to fluid passage at the bottom of said drill string and at the surface of the earth;
b. applying fluid pressure at the top of the closed string;
c. generating data by measurements in said borehole;
d. relieving said pressure in timed sequences in said closed string in response to said data without opening said main path of fluid;
e. monitoring said pressure at the surface of the earth.

3,964,557
TREATMENT OF WEIGHTED DRILLING MUD
Hans C. Juvkam-Wold, Monroeville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Oct. 11, 1974, Ser. No. 513,998
Int. Cl.² C09K 7/00; E21C 7/00
U.S. Cl. 175—66 **6 Claims**

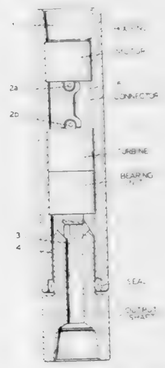
1. A system for the rotary drilling of wells utilizing a weighted drilling mud comprising a shale shaker, a mud pit, means for delivering drilling mud discharged from the well onto the shale shaker and means for transferring drilling mud passing through the shale shaker to the mud pit, a return line from the mud pit to the well, pumping means for delivering drilling mud from the mud pit through the return line to the well, a storage tank for storage of previously used weighted drilling mud, a cyclone separator adapted to withstand a high pressure, pumping means for delivering weighted drilling mud from the storage tank into the cyclone separator at a high velocity causing a pressure drop of at least 500 psi through the cyclone separator, and circulating means for delivering underflow from the cyclone separator to the well without passing through the mud pit.

3. In the rotary drilling of wells with a weighted drilling mud in which drilling mud discharged from the well is passed through a shale shaker to remove cuttings therefrom, delivered from the shale shaker to a mud pit and circulated by



circulating means from the mud pit to the well for circulation through the well, said shale shaker, mud pit, and circulating means comprising a circulating system, an improved method of increasing the density of drilling mud in the well comprising maintaining outside of the circulating system a supply of weighted drilling mud having a density of 12 to 14 pounds per gallon obtained from a previously drilled well, passing a stream of the 12 to 14 pounds per gallon drilling mud through a cyclone separator at a rate causing a pressure drop of at least 500 psi in the cyclone separator to separate the 12 to 14 pounds per gallon drilling mud into an underflow stream having a density of 16 to 20 pounds per gallon and an overflow stream, and delivering the underflow stream to the well without passing through the mud pit.

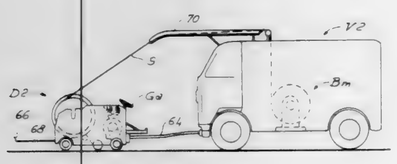
3,964,558
FLUID ACTUATED DOWNHOLE DRILLING DEVICE
Stephen Fuller Fogle, Houston, Tex., assignor to Texas Dynamatics, Inc., Dallas, Tex.
Filed Nov. 13, 1974, Ser. No. 523,218
Int. Cl.² E21B 3/08
U.S. Cl. 175—107 **5 Claims**



1. A prime mover for downhole use to convert fluid power to rotational power in earth bore hole operations comprising; a housing with a top and a bottom end having means at the top

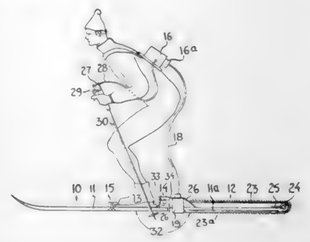
to attach to a drill string with a bore through which fluid moving down the drill string will flow, a hydro-mechanical energy converter means to transmit energy between a moving fluid stream and a rotating shaft with a reasonably consistant ratio between shaft rotation rate and rate of flow of fluid through said converter means (a positive displacement fluid motor having a rotor and a stator) situated within said housing with such fluid channels that at least part of the fluid moving through said housing will move through said converter means (motor to produce rotational speed controlling effort in both rotational directions), a fluid turbine having a rotor situated in and axially and radially supported for rotation within the bore of said housing (for rotation about the general centerline of said housing), and a stator, the turbine having fluid channels through which at least part of said fluid moving down the drill string flows to produce rotational effort, means extending from the lower end of said housing to drive a drill bit, means to conduct the rotational motion (effort) of said shaft (motor) and said rotor (turbine) to said bit driving means such that said shaft (motor), said rotor (turbine) and said bit driving means rotate with a reasonably fixed speed relationship to the rate of flow of fluid moving through said converter means. (whereby with a fixed fluid flow rate a reasonably fixed rotational speed of said bit driving means is accomplished.)

3,964,559
APPARATUS FOR APPLYING TAPE MARKING MATERIAL ON ROAD SURFACES
Ludwig Eigenmann, Vacallo, Ticino, Switzerland
Filed Nov. 20, 1974, Ser. No. 525,373
Claims priority, application Italy, Nov. 22, 1973, 31633/73
Int. Cl.² B60D *3/00*
U.S. Cl. 180—1 AP **7 Claims**



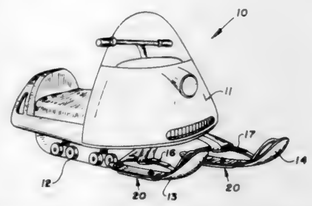
1. An apparatus for applying tape material along a predetermined path defined by a marking line as outlined by a predetermined marking trace, in combination, comprising a service unit comprising a motor-van and a subassembly including a tape applicator device, said tape applicator device being located ahead of said service unit, said service unit having first steering means adapted to be operated by a first operator for driving said unit at a given speed along a first path approximately concurrent with said marking line, said subassembly having second steering means adapted to be operated by a second operator; sight and collimating means operative for collimation with said predetermined marking trace, said second steering means and said sight and collimating means being interconnected to provide the positioning of said tape applicator device upon said marking line as said sight and collimating means are collimated with said predetermined marking trace; and means for permitting relative lateral displacement between said service unit and said interconnected subassembly so as to compensate for differences between the path actually followed by said service unit and that of said tape applicator device upon and along said marking trace, said means for permitting relative lateral movement including pushing means for pushing said tape applicator device ahead of said service unit.

3,964,560
POWER DRIVEN SKI
Royce H. Husted, Wheaton, Ill., assignor to Saroy Engineering, Wheaton, Ill.
Filed Feb. 20, 1975, Ser. No. 551,111
Int. Cl.² B62M *27/00*
U.S. Cl. 180—5 R **1 Claim**



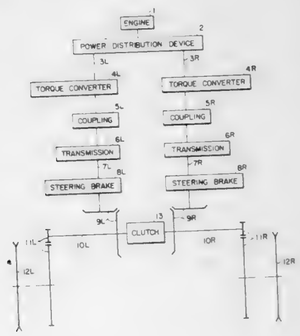
1. In a power driven ski having in combination;
an anterior elongated sliding ski surface portion for slidingly contacting the snow,
a posterior one-way snow engaging endless belt portion for driving said ski,
means for connecting said anterior portion to said posterior portion,
means for attaching said ski to a skier's boot, and
motor means for powering said endless belt portion, said motor means being coupled to said endless belt portion,
the improvement wherein said one-way snow engaging belt has outwardly protruding means which automatically disengage from the snow and flatten against the belt during power-less skiing and automatically erect into and engage with snow during power skiing.

3,964,561
SNOWMOBILE SKI WEAR ROD
Leo M. Lunzer, and Allan Evgen, both of Forest Lake, Minn., assignors to Allee Manufacturing, Inc., Forest Lake, Minn.
Continuation of Ser. No. 241,345, April 5, 1972, abandoned. This application Sept. 11, 197[illegible] Ser. No. 504,975
Int. Cl.² B62M *27/02*
U.S. Cl. 180—5 R **3 Claims**



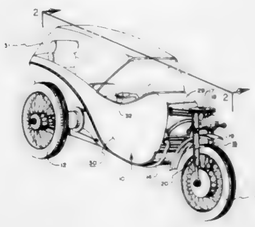
1. In combination with a motorized snow vehicle having frame means, drive track means for propelling said vehicle, and controllable turning ski means for guiding said vehicle and having a longitudinal ski axis and a running surface on the bottom thereof; an elongated rod secured along the bottom of said ski means and with the axis thereof extending generally parallel to the longitudinal axis of the ski, said elongated rod means comprising:
a. a rod having a closed generally circular cross-section and with a forward tip end, a rear tip end, and a shank portion extending therebetween and providing a generally convex running surface;
b. said shank portion having a generally inwardly directed radially extending groove formed therein to provide an axially arranged slot with parallely disposed laterally extending edge surfaces formed along the convex running surface thereof and extending along the length thereof; and
c. mounting means arranged along the shank portion for securing said rod to the underside of said ski means, and means for maintaining axial alignment between said elongated rod and said ski means.

3,964,562
STEERING SYSTEM FOR AN ENDLESS TRACK TYPE TRACTOR
Eiji Kawamura; Yoshitaka Nishimura, and Hisashi Fukumoto, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed June 10, 1975, Ser. No. 585,671
Claims priority, application Japan, June 10, 1974, 49-64916
Int. Cl.² B62D *11/08*
U.S. Cl. 180—6.7 **4 Claims**



1. A steering system for an endless track type tractor having an engine, a power distribution device connected to said engine for equally distributing the power of said engine to two output shafts of said power distribution device, a pair of power trains each connected to the respective one of said output shafts and including a torque converter, a coupling, a transmission, a steering brake for applying braking force to the output shaft of the transmission when the same is shifted to neutral position, a bevel gear mechanism connected to the output shaft of said transmission, a lateral output shaft connected to said bevel gear mechanism so as to be driven by the power of said torque converter through said transmission when said steering brake is in the disengaged position and a final reduction gear mechanism for transferring the power from said lateral output shaft to a sprocket for driving the endless track engaging around a portion of said sprocket, the braking by said steering brake of the output shaft of either one transmission when shifted to neutral position effecting the turning of the tractor rightwardly or leftwardly, a hydraulic fluid source, an electric source, a first pair of hydraulic cylinders each connected to said hydraulic fluid source and coupled with the respective transmission for shifting the same to neutral position upon actuation of said hydraulic cylinder, a second pair of hydraulic cylinders each connected to said hydraulic fluid source and coupled with the respective steering brake for braking said output shaft of said transmission upon actuation of said hydraulic cylinder, a first pair of electromagnetic valves connected to said electric source and each connected between the hydraulic fluid source and the respective hydraulic cylinder of said first pair for actuating the same upon energization of said valve, a second pair of electromagnetic valves connected to said electric source and each connected between said hydraulic fluid source and the respective hydraulic cylinder of said second pair for actuating the same upon energization of said valve, a manually operable steering switch mechanism connected to said electric source and said first and said second pair of electromagnetic valves for selectively energizing either one of said first pair of electromagnetic valves and either one of said second pair of electromagnetic valves so as to apply braking force to the output shaft of either one of said transmissions while the same is shifted to neutral position so that said tractor is turned rightwardly or leftwardly at a rate determined by the hydraulic fluid pressure of said hydraulic fluid source supplied to said second pair of hydraulic cylinders coupled with the respective steering brakes, wherein the improvement comprises a pair of adjustable pressure reducing valves each connected between said hydraulic fluid source and the respective one of said second pair of hydraulic cylinders in parallel to the respective electromagnetic valve of said second pair and a coupled switch mechanism operably coupled with the respective one of said adjustable pressure reducing valves and connected to said electric source and said first and said second pair of electromagnetic valves in parallel to said manually operable steering switch mechanism thereby permitting a selected one of said second pair of hydraulic cylinders to be actuated by one of said adjustable pressure reducing valves while said second pair of electromagnetic valves are regulated by said manually operable steering switch mechanism so as to supply no fluid to said second pair of hydraulic cylinders with the one of said first pair of hydraulic cylinders related to said selected one of said second pair of hydraulic cylinders being actuated to shift said transmission to neutral position so that said tractor is turned rightwardly or leftwardly at a rate determined by the fluid pressure adjusted depending upon the degree of actuation of said adjustable pressure reducing valve.

3,964,563
WHEEL-SUPPORT STRUCTURE IN VEHICLES
Carling D. Allen, 581 N. 640 West, Orem, Utah 84057
Filed Jan. 29, 1975, Ser. No. 545,192
Int. Cl.² B60G *19/02*
U.S. Cl. 180—27 **6 Claims**



1. A vehicle including, in combination, a frame, an engine mounted to said frame, a first wheel, means coupled to said frame for pivotally supporting said first wheel proximate an extremity of said frame, second and third wheels having stub axles disposed in a mutual, horizontally-shifting vertical plane, said stub axles each being provided with driven power means, differential structure having transmission drive line structure coupled to said engine and a pair of axially aligned, oppositely extending axles each having drive power means coupled to said driven power means, a pair of housing arms disposed on opposite sides of said vehicle and respectively encasing said drive and driven power means, a pair of pulleys fixed to respective ones of said housing arms and being journaled with respect to said oppositely extending axles, a pair of pulley sets each having a fixed vertical axle and upper and lower idler pulleys horizontally mounted thereto, flexible elongate connector means keyed to and intercoupling said housing pulleys and having upper and lower courses traversing about said upper pulleys and said lower pulleys of said pulley sets, respectively, whereby a vertical movement of one of said second and third wheels will produce an opposite, compensating vertical movement in the remaining of said second and third wheels such that said oppositely extending axles always remain essen-

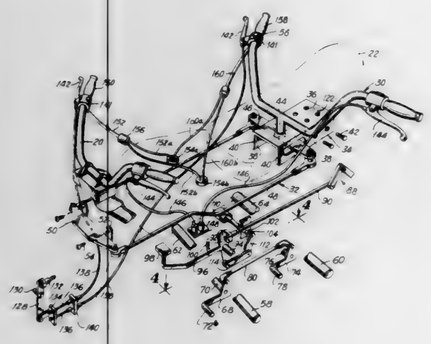
tially horizontal, and means for releasably locking said flexible elongate connector means against movement, whereby to temporarily essentially fix the relative mutual disposition of said housing arms.

3,964,564

SYSTEM FOR TRAINING MOTORCYCLE OPERATORS

James A. Pittarelli, Howard Beach, N.Y., assignor to Driver's Agency Ltd., Ridgewood and James A. Pittarelli, Howard Beach, both of, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,201
Int. Cl.² B62D *61/02*
U.S. Cl. 180—33 R **5 Claims**



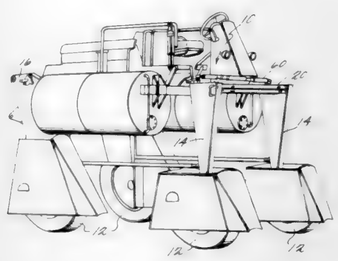
1. In a system for training motorcycle operators, a conventional motorcycle having front and rear wheels, a frame connected therebetween, handlebar means operatively connected to said front wheel for steering purposes, an engine carried by the frame and operatively connected to the rear wheel for driving the motorcycle, and control means carried by the frame and handlebar means for controlling the motorcycle, said frame carrying a seat means large enough to accommodate a student for operating the conventional motorcycle in a conventional manner and an instructor behind the student, said seat means having a front student-accommodating area and a rear instructor-accommodating area situated rearwardly of said front student-accommodating area with a predetermined space situated between said area, additional handlebar means pivotably mounted on said frame at the region of said space, and transmission means extending between said additional handlebar means and the conventional handlebar means connected to the front wheel for compelling both of the handlebar means to operate identically, and additional control means operatively connected with said frame and said additional handlebar means to be accessible for operation by the instructor to control the motorcycle, said transmission means being in the form of a parallelogram linkage, said frame including at said space a channel having an upper wall and a pair of side walls extending downwardly from opposed side edges of said upper wall and respectively formed with aligned slots, said additional handlebar means being pivotally connected to said upper wall while said parallelogram linkage includes a rear transverse bar extending through said slots and beyond said channel and having an intermediate portion connected to said additional handlebar means for turning movement therewith, a front transverse bar connected to the conventional handlebar means, and a pair of elongated side rods respectively disposed on opposite sides of said frame and each connected between and pivotally connected to the front and rear transverse bars.

3,964,565

HIGH CLEARANCE VEHICLE WHEEL SPACING ADJUSTMENT

Wesley J. Cagle, and Ronald F. Hodge, both of Huntsville, Ala., assignors to John Blue Company Division of Subscription Television, Inc., New York, N.Y.

Filed July 18, 1974, Ser. No. 489,714
Int. Cl.² B62D *21/14, 61/00*
U.S. Cl. 180—70 R **11 Claims**



1. A self-propelled, high-clearance vehicle comprising a platform, a plurality of drop axles, a ground engaging wheel mounted at the lower end of each of said drop axles, drive means for driving said vehicles and means connecting the upper end of each of said drop axles to said platform for adjusting the lateral position of the drop axles and ground engaging wheels, wherein each of said adjusting means comprises support means secured to said platform and a cooperating laterally adjustable element secured to the drop axle for each of said wheels, said laterally adjustable elements having bearings secured thereto, said bearings adapted to engage said support means during lateral adjustment of said laterally adjustable elements, means for moving each of the laterally adjustable elements within said support means on said bearings relative to said platform and holding means for holding said laterally adjustable element in a fixed stationary adjusted position relative to said platform and co-acting with each of said laterally adjustable elements and said support means to disengage said bearings from their engagement with said support means after adjustment.

2. A structure as in claim 1 wherein said drive means comprises laterally extending drive shafts connected to at least the rear drop axles, said drop axles being drivingly connected to their respective wheels, wherein said shafts are slidably connected to said drive means for transmitting power to the rear ground engaging wheels in all of their laterally adjusted positions.

3,964,566

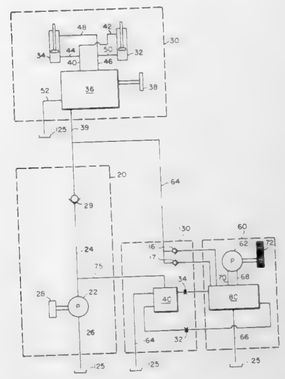
SYSTEM FOR PROVIDING AUXILIARY POWER

William E. Smith, Climax, and Charles J. Bowden, Galesburg, both of Mich., assignors to General Signal Corporation, Rochester, N.Y.

Division of Ser. No. 475,212, May 31, 1974, Pat. No. 3,896,618. This application July 21, 1975, Ser. No. 597,604
Int. Cl.² B62D *5/06*
U.S. Cl. 180—133 **31 Claims**

1. A system for providing auxiliary power which comprises:
a primary means including a primary pump, an output line to provide primary power to a work function means, and a return line;
an auxiliary means including an auxiliary pump, an output line to provide said auxiliary power, a return line, a valve means for controlling fluid flow in said output and return lines of said auxiliary means , and a drive means connected to a vehicle for operating said auxiliary pump whenever said vehicle is moving;

a reservoir connected to said primary return line and said auxiliary return line;
a controlled leakage means for cooling said auxiliary pump being connected to said auxiliary means, said reservoir and said primary means and being responsive to fluid



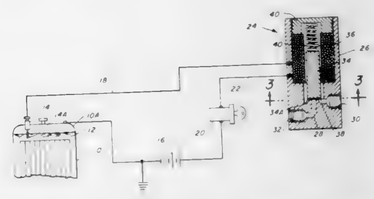
pressure from said primary means for directing a portion of auxiliary output fluid to said reservoir when the primary means provides a predetermined pressure and directing a desired amount of said auxiliary output fluid to said auxiliary output line when said primary means provides less than said predetermined pressure.

3,964,567

LOW COOLANT LEVEL PROTECTION SYSTEM

Otto Wayne McGinty, Box 2961, Ripley, Okla. 74062

Filed Dec. 23, 1974, Ser. No. 535,498
Int. Cl.² F02B *77/08*
U.S. Cl. 180—103 R **1 Claim**



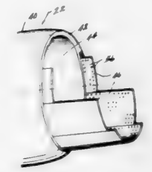
1. In a vehicle having a radiator, the radiator having liquid coolant therein, the vehicle having an engine operated on fluid fuel, a fuel source and a conduit connecting the fuel source to the engine, a low coolant level protection system comprising:
a. a probe extending within the upper portion of the radiator and insulated from it, the probe having conductive contact with the coolant when the coolant is at normal operating levels;
b. a battery having one pole connected to ground and to the radiator providing continuity with the coolant herein;
c. a relay having a coil, a normally open switch and a normally closed switch, the relay coil being in electrical series with said battery, said probe and to ground, whereby said coil is energized when continuity is made between said probe and coolant in said radiator;
d. a solenoid valve having:
1. a fluid passageway therethrough connected in said conduit between said fuel source and engine of the vehicle;
2. a valve seat forming a part of said fluid passageway;
3. a solenoid in electrical series with said relay normally open switch, said battery and ground;
4. a plunger acted upon by said solenoid, the plunger having a sealing face engagable with said valve seat when the valve is in the closed position, the plunger sealing face having a shallow depth groove therein permitting restricted flow of fuel through the valve when the valve is in the closed position; and
5. a spring normally retaining the valve plunger in closed position except when said solenoid is energized to withdraw said plunger against said spring in which case unrestricted flow of fuel through the valve is provided;
an indicator light in series with said relay normally closed switch said battery and ground;
whereby when said coolant level in said radiator is at a normal operating level continuity is provided through said radiator, coolant and probe to energize said relay to close said normally open switch and thereby energize said valve solenoid, moving said plunger to the opened position allowing unrestricted fuel flow to said engine and wherein low coolant level causes continuity to be lost between said coolant and said probe, de-energizing said relay to open said normally open switch thereby de-energizing said valve solenoid, said spring serving to close said plunger against said valve seat, permitting only restricted fuel flow through said shallow depth groove in said plunger to said engine, said indicator light being energized when said relay coil is de-energized to indicate the condition of low coolant level.

3,964,568

GAS TURBINE ENGINE NOISE SHIELD

Gerhard Neumann, Swampscott, Mass., assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 503,750, Sept. 6, 1974. This application Feb. 14, 1975, Ser. No. 550,130
Int. Cl.² E04B *1/99*
U.S. Cl. 181—33 HA **1 Claim**



1. A turbofan engine comprising:
a core engine including, in series flow relationship, an axial flow compressor, a combustor to which pressurized air from the compressor and fuel are delivered for combustion therein to provide a hot gas stream, a first turbine downstream of said combustor adapted to be rotatably driven by said hot gas stream, and a shaft drivingly connecting said compressor rotor and said first turbine; a second turbine rotatable independently of the rotatable elements of the core engine, said second turbine disposed downstream of said first turbine and adapted to be rotatably driven by said hot gas stream; an inlet assembly for selectively reducing noise propagation, said inlet assembly comprising an inlet duct, said duct disposed about at least a portion of said core engine; and a fan assembly disposed in said duct for pressurizing air flow through said duct, said fan drivingly connected to said second turbine; said inlet assembly further comprising movable deflector means, said deflector means operatively connected to an actuating means whereby said deflector means is axially positionable at a first effective operating position within a first sector of said inlet duct, and further axially posi-

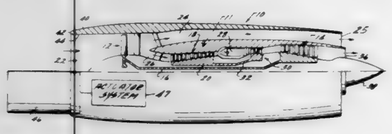
tionable at at least a second effective operating position within a second sector of said inlet duct, wherein said second sector is circumferentially disposed from said first sector.

3,964,569

GAS TURBINE ENGINE NOISE SHIELD

Gerhard Neumann, Swampscott, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Sept. 6, 1974, Ser. No. 503,750
Int. Cl.² E04B *1/99*
U.S. Cl. 181—33 HA **14 Claims**



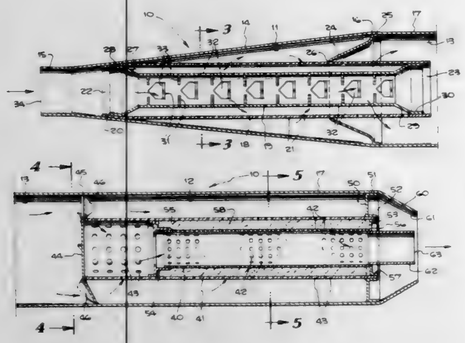
1. A gas turbine engine inlet assembly for selectively reducing noise propagation, said inlet assembly including: an inlet duct and movable deflector means, wherein said deflector means are operatively connected to an actuating means such that said deflector means are axially positionable at a first effective operating position within a first sector of said inlet duct, and further axially positionable in at least a second effective operating position within a second sector of said inlet duct, and said second sector is circumferentially disposed from said first sector.

3,964,570

SILENCER FOR COMBUSTION ENGINES

Raymond A. Morrow, 601 S. East St., Anaheim, Calif. 92805

Filed Aug. 22, 1975, Ser. No. 606,867
Int. Cl.² F01N *1/10*
U.S. Cl. 181—56 **8 Claims**



1. A silencer for attachment to the exhaust pipe of relatively low horsepower combustion engines comprising an elongated jacket with a chamber therein having an upstream entrance end and a down stream exhaust outlet end, said chamber having an upstream chamber section, a downstream chamber section and an intermediate vestibule section, a pair of mutually spaced concentric tubes in the upstream chamber section, with the outer tube diametrically spaced from the jacket, both said tubes having perforations through the walls, and an imperforate annular collar extending around and in engagement with the outer tube adjacent the downstream end and in sealing angagement with the jacket, a deflecting baffle extending across the downstream end of the vestibule section, said baffle havng a circumferentially disposed series of deflector vanes with openings therebetween, the vanes being pitched obliquely relative to the longitudinal axis of the downstream section whereby to impart a spiral direction to exhaust gas passing therethrough, a pair of diametrically spaced concentric tubes in the downstream section, both said last identified tubes having perforations through the respective walls, the outer tube being spaced radially inwardly from the jacket forming a substantially cylindrical space, and a collar between the jacket and the tubes closing the cylindrical space and the space between said tubes, said collar having a central opening therein for the inner tube and an annular outflow deflector on the downstream end of the jacket extending to an annular edge forming an opening spaced radially outwardly with respect to the circumference of the inner tube.

3,964,571

ACOUSTIC SYSTEM

Peter Garland Snell, 25 Barton St., Newburyport, Mass. 01950

Filed Apr. 1, 1975, Ser. No. 564,153
Int. Cl.² H05K *5/00*; G10K *11/00*
U.S. Cl. 181—150 **12 Claims**



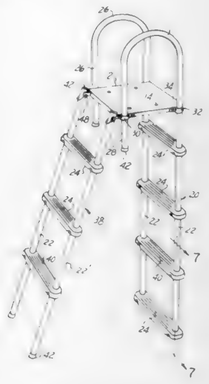
1. An acoustic system for dispostion proximate to an acoustical boundary comprising at least one acoustic transducer, with a diaphragm, for directing acoustic energy away from the boundary and an acoustic reflector surface extending from proximate to the center of said diaphragm to said boundary without substantial acoustic discontinuity along its extent and at the junction of said boundary and surface.

3,964,572

ADJUSTABLE SAFETY LADDER FOR ABOVE-THE-GROUND SWIMMING POOLS

Peter F. Gannon, 8301 16½ Mile Road, Sterling Heights, Mich. 48077

Continuation-in-part of Ser. No. 399,393, Aug. 15, 1973. This application Mar. 3, 1975, Ser. No. 554,469
Int. Cl.² E06C *1/39*
U.S. Cl. 182—86 **5 Claims**



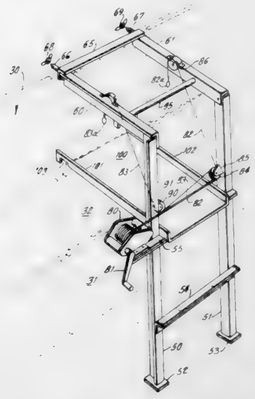
1. A safety ladder for an above-the-ground swimming pool provided with a peripheral wall forming a separation between a water side and a ground side, said safety ladder comprising a platform; means for fastening said platform on the top of said wall, with a side of said platform projecting on the water side of said pool and an opposite side projecting on the ground side; a pivotal detachable ladder section having a pair of substantially parallel spaced apart side rail members and a plurality of steps fastened intermediate said side rail members; connecting means for pivotally detachably attaching said pivotal detachable ladder section to said platform, said connecting means comprising a pair of brackets permanently attached to said platform on the ground side of said pool, aligned apertures at the end of each of said side members and at the end of each of said brackets, and a pin having a generally U-shaped resilient retainer pivotally attached to one end of said pin and having a loop on its other end adapted to springingly engage and lock onto the other end of said pin; a permanently attached ladder section mounted on said platform and disposed on said water side, said permanently attached ladder section comprising a pair of substantially parallel spaced apart side rail members and a plurality of steps fastened intermediate said side rail members, each of said side rail members having an integral end portion devoid of steps bent over in the form of an inverted U with a rectilinear end section disposed substantially parallel to said side rail members, and means for adjustably fastening said tubular side rail members and the rectilinear end portion thereof proximate the corners of said platform, the inverted U portion of said side rail members projecting above said platform.

3,964,573

CIRCUIT BREAKER ELEVATOR

George A. Wilson, Pineville, Pa., assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Oct. 23, 1973, Ser. No. 408,286
Int. Cl.² E06C *7/16*
U.S. Cl. 182—116 **5 Claims**



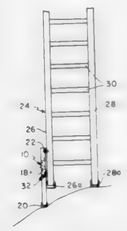
1. A removable circuit breaker elevator for lifting and lowering circuit breakers from each of a plurality of vertically stacked circuit breaker compartments entered to a maximum predetermined depth behind a front panel of one of a plurality of switchboards; said elevator comprising: first and second elongated vertical frame members which are parallel with one another and with the front of said switchboard; a plurality of spaced horizontal frame members secured to and extending between said spaced vertical frame members and permanently disposed at vertical positions each generally aligned with the bottoms of each of said vertically stacked circuit breaker compartments in each said switchboard; first and second end frame members pivotally connected at one of their ends to the upper end of said first and second vertical frame members respectively, each said end frame member having a length greater than said maximum predetermined depth; switchboard attachment means connected to the opposite ends of said first and second end frame members, respectively, for temporarily immovable attachment to the top of said switchboard when said end frame members are pivoted to a horizontal position; a pan member; said pan member having a generally flat bottom and a length longer than the distance between the front of said switchboard and said first and second spaced vertical frame members; said pan member being removably seatable at one end thereof on one of said plurality of spaced horizontal frame members and being removably connectable at its other end to the bottom of said given compartment in said switchboard; said bottom of said given compartment being in vertical alignment with said one of said plurality of spaced horizontal frame members; and winch means connected to said elevator and having flexible lifting cable means extending downwardly from at least one of said first and second end frame members, whereby said elevator is storable in a minimum volume away from said plurality of switchboards when said end frame members are pivoted to a vertical position and is positionable in front of a given circuit breaker compartment of given switchboard with said first and second vertical frame members spaced at least said maximum predetermined distance from and in front of said given compartment when said end frame members are temporarily immovably connected to the top of said switchboard, and said winch means raises and lowers a circuit breaker to be installed or removed, respectively, in said given compartment.

3,964,574

LADDER LEVELING DEVICE

Pasquale P. Bentivegna, 56 Gladstone St., East Boston, Mass. 02128

Filed Oct. 29, 1974, Ser. No. 518,220
Int. Cl.² E06C *7/44*
U.S. Cl. 182—204 **7 Claims**



1. A ladder leveling device for attachment to a ladder having two legs spaced laterally apart and a number of rungs spacedly extending between the legs, said device comprising, in combination;

two oppositely disposed sides,

a foot arranged at the bottom end of the sides and extending between the sides to at least partially support the sides in an upright substantially parallel position,

a plurality of connector walls coupled between the sides in spaced apart relationship and tilted at an angle to the vertical to provide slots at predetermined heights of the device,

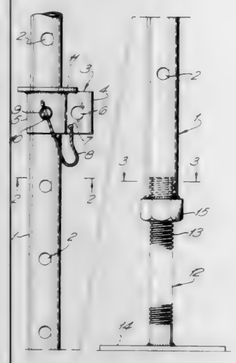
a tongue means having a downwardly depending end secured to a side surface of one of the legs of the ladder at the lower end of the one leg,

said tongue means for fitting with one of said connector walls with the depending end fitting within one of the slots,

said sides, foot and connector walls forming a unitary structure interlocked by said tongue means adjacent the one leg,

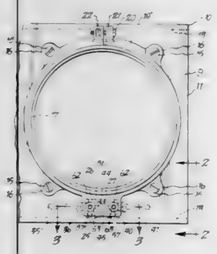
and fastener means including two parts, one secured to said one leg above the tongue means and the other part secured to one of said sides.

3,964,575
BUILDERS SCAFFOLDING
Peter Eric Gostling, Sutton Coldfield, England, assignor to C. Evans & Sons Limited, Gants Hill, Ilford, Great Britain
Filed Aug. 8, 1974, Ser. No. 495,890
Claims priority, application United Kingdom, Aug. 13, 1973, 38212/73
Int. Cl.² E04G 5/02
U.S. Cl. 182—230 5 Claims



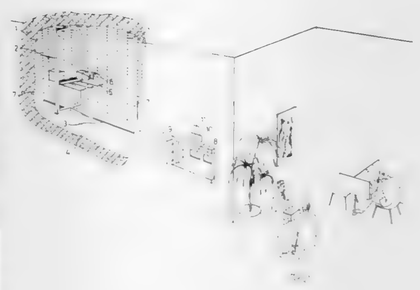
1. A base jack for the standards of a scaffold structure, which comprises a tube having a plurality of spaced transverse holes, a support bracket slidable lengthwise of said tube and having a transverse hole arranged to coincide with any one of said holes in said tube, said support bracket comprising a metal strip which is shaped to present a box-like projection, the free ends of said strip being of arcuate formation to closely fit around said tube and to be fixed to said tube, a locking pin provided to extend through said coincident holes in said bracket and said tube, and a base plate supporting a screw-threaded rod which is in threaded engagement with one end of said tube, the other end of said tube being adapted telescopically to engage one end of a tubular standard or other tubular member, wherein said support bracket is in direct sliding engagement with said tube.

3,964,576
LUBRICATION BLOCK AND SYSTEM FOR SPINNING AND TWISTING RINGS
Hyatt B. Atwood, Buffalo, and James N. McLean, Tonawanda, both of N.Y., assignors to Herr Manufacturing Company, Inc., Tonawanda, N.Y.
Filed Sept. 9, 1974, Ser. No. 504,343
Int. Cl.² D01H 7/62
U.S. Cl. 184—7 A 22 Claims



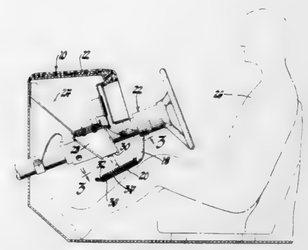
1. A spinning ring system comprising a rail, a plurality of holders, means mounting said holders on said rail, a spinning ring mounted on each of said holders, individual lubricant block means for each of said holders including lubricant feeder means in each of said lubricant block means for metering lubricant to a respective spinning ring, first conduit means in each of said individual lubricant block means for conducting lubricant into said lubricant block means and to said lubricant feeder means, securing means for securing each of said individual lubricant block means directly to a respective holder in lubricant-conducting relationship, second conduit means in each of said holders for conducting lubricant from each of said lubricant feeder means therein to a respective spinning ring, and third conduit means for conducting lubricant to said first conduit means from a lubricant source.

3,964,577
AUTOMATED HANDLING SYSTEM FOR BANK DEPOSIT BOXES
Sture B. Bengtsson, Goteborg, Sweden, assignor to Robur Konsult AB, Goteborg, Sweden
Filed Aug. 12, 1974, Ser. No. 496,835
Claims priority, application Sweden, Aug. 22, 1973, 7311405
Int. Cl.² B65G 1/06
U.S. Cl. 186—1 R 21 Claims



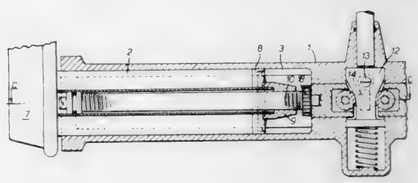
1. In a system for the automatic programmed handling of coded safety deposit boxes and other objects having book receiving members and stored in a storage room having rows of shelves, the improvement which comprises stacking means movable along said shelves for the removal and insertion of said boxes, gripping means movably mounted on said stacking means for movement in the vertical direction and on the horizontal plane for removal and insertion of said boxes, said gripping means including hook means for communication with said hook receiving means of said boxes for transporting said boxes, programming means cooperating with said stacking means and said gripping means for automatically directing said stacking means and said gripping means to a desired box by way of a predetermined program, said programming means including control means for keying-in the desired box and initiating box hand-out and hand-in positions, transport means for transporting a handed-in deposit box to a temporary storage magazine for subsequently returning said box by means of stacking means to a storage position, and at least one issuing and receiving opening disposed adjoiningly in the wall of said storage room for receiving and returning said boxes, whereby upon receipt of instructions by the programming means of the desired box, the stacking means is actuated and moves automatically along the shelves to the proper position, the gripping means at the proper location engages or disengages the hook means and the hook receiving means in the box hand-out and hand-in positions and delivers or retrieves the box at the issuing and receiving openings.

3,964,578
ENERGY ABSORBER
Lewis B. Campbell, Centerville; Robert E. Huffman, Tipp City, and Robert L. Jones, Bellbrook, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 27, 1975, Ser. No. 608,155
Int. Cl.² F16F 7/12; B60R 21/04
U.S. Cl. 188—1 C 3 Claims



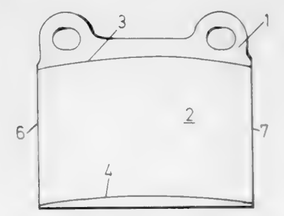
1. An energy absorber adapted to be interposed between a rigid support element and an impact receiving element movable relative to the support element under impact loads comprising, in combination, a member of plastically deformable material including a continuous integral outer portion for securement to one of said elements, said member also including a like shaped continuous inner portion within the outer portion, the inner portion being integrally connected at two spaced locations to the outer portion to divide the inner portion into two separate units foldable relative to each other and to the outer portion, said member further including a like shaped center portion within the inner portion for securement to the other of said elements, the center portion being integrally connected to the inner portion of two spaced locations intermediate the first locations for folding of the center portion relative to the units of the inner portion as the units of the inner portion fold relative to the outer portion, said absorber being so proportioned and arranged that the outer portion, inner portion and center portion of said member in plan view along a line drawn between said elements nest within each other whereby the absorber may be made from a flat sheet pierced to define said portions in said plan view and then formed in one direction out of the plane of the sheet in a generally trapezoidal elevational configuration capable of collapsing when said elements move towards each other.

3,964,579
RAILWAY BRAKES
Anthony William Harrison, Tyseley, England, assignor to Girling Limited, Birmingham, England
Continuation of Ser. No. 430,692, Jan. 4, 1974. This application Aug. 29, 1975, Ser. No. 609,106
Claims priority, application United Kingdom, Jan. 5, 1973, 852/73
Int. Cl.² F16D 65/56
U.S. Cl. 188—71.9 13 Claims



1. A brake comprising a rotor having a friction surface thereon, means for braking said rotor by applying a braking torque to said friction surface comprising an elongated body of friction material moveable into engagement with the friction surface to apply the brake and which prior to use has a length in its direction of movement substantially greater than its dimension transverse to its direction of movement, said body being disposed wholly on one side of said friction surface and having and second opposed ends, a support for said body of friction material also disposed wholly to said one side of said rotor friction surface and aligned therewith, said support terminating in a torque sustaining end part facing the friction surface of the rotor in close spaced adjacency thereto and laterally supporting said body of friction material adjacent its first end to sustain braking torque exerted thereon when it is moved into engagement with the frictional surface of the rotor, and means for moving said body towards and away from said friction surface to apply and release the brake comprising an axially movable adjusting member extending at least partially alongside said body of friction material to said one side of said rotor friction surface, an element having an axially adjustable connection with said adjusting member and extending rigidly laterally from said connection into operative engagement with the second opposed end of said friction material, means exclusively to said one side of said rotor friction surface for selectively exerting an axial force on said adjusting member in the direction of said rotor friction surface, said element transmitting said force from said adjusting member to said body of friction material for moving its first end into braking engagement with said rotor friction surface in response to the axial force exerted on said adjusting member, and means for operating said adjusting member to move said axially adjustable connection and said element relative to said adjusting member in the direction of said rotor surface to adjust the position of the body of friction material relative to said support.

3,964,580
BRAKE SHOE FOR SPOT-TYPE DISC BRAKES
Heinz Gunter Hahm, Frankfurt am Main, and Nedo Igor Pocci, Neuenhain, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Continuation of Ser. No. 448,767, March 6, 1974, abandoned.
This application Mar. 6, 1975, Ser. No. 555,914
Claims priority, application Germany, Mar. 24, 1973, 2314823
Int. Cl.² F16D 69/04
U.S. Cl. 188—73.1 5 Claims



1. A brake shoe for spot-type disc brakes, said disc brakes having a brake disc rotating about an axis, said brake disc including an arcuate friction surface having a radially inner and outer edge with respect to said axis, comprising:
a one piece steel backing plate having two lateral faces;
a recess disposed in said backing plate, said recess having radially inner and outer walls with respect to said axis extending toward said disc and between said two lateral faces of said backing plate, each of said inner and outer walls having a different predetermined configuration; and
a friction pad wholly embedded in and fastened to said recess, said pad extending to at least said two lateral faces of said backing plate, said friction pad having radially inner and outer walls with respect to said axis extending toward said disc which contact and conform to said dif-

ferent predetermined configurations of said inner and outer walls of said recess to receive directly from said pad all brake torque exerted on said pad by said disc, said pad being fastened at at least one point to the bottom of said recess by retaining means to retain said pad in said recess without brake torque being exerted on said retaining means;

said configuration of said inner wall of said recess being a first curvature in a first direction; and

said configuration of said outer wall of said recess being a second curvature in the same direction as said first direction;

each of said first and second curvatures having a radius of curvature less than infinity.

3,964,581

DISC BRAKE ASSEMBLY HAVING A RELEASABLE DRAG-TAKING MEMBER

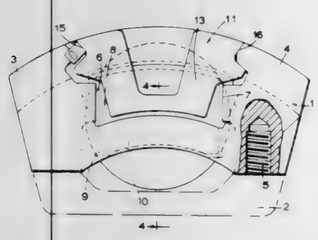
Gordon Alfred Habgood, Shipston-on-Stour, England, assignor to Girling Limited, Birmingham, England

Filed Apr. 24, 1974, Ser. No. 463,613

Claims priority, application United Kingdom, Apr. 24, 1973, 19459/73

Int. Cl.² F16D *65/20*

U.S. Cl. 188—73.3 **3 Claims**



1. A disc brake for a vehicle comprising a rotatable disc, a caliper straddling a portion of the peripheral edge of said disc, and having opposed limbs, friction pad assemblies for engagement with opposite faces of said disc located in said caliper, a drag-taking member adapted to be secured to a fixed part adjacent to said disc and on which said caliper is guided for axial sliding movement relative to said disc, and actuating means in one limb of said caliper for applying one of said friction pad assemblies directly to said disc, the other of said friction pad assemblies being applied to said disc by the other limb of said caliper by the reaction of said actuating means which causes said caliper to move axially with respect to said drag-taking member, said drag-taking member having opposed axial ends and comprising a pair of separate spaced arms forming first drag-taking means for said directly actuated friction pad assembly and second separate guide means for said caliper, said arms having separate, free, circumferentially spaced radially innermost ends, each of the innermost ends of said arms having an opening whose axis is substantially parallel with a radius of the disc passing through the circumferential midpoint of said drag-taking member, fastening means cooperating with each of said openings for releasably connecting said drag-taking member to said fixed part in a direction substantially perpendicular to a line of action of the drag forces taken by the respective arms in the application of the brake, and a bar disposed at one of said axial ends of said member and separate from said opening and fastening means integrally interconnecting said spaced arms to maintain them in a circumferentially spaced relationship, said bar forming the sole integral connections between the arms.

3,964,582

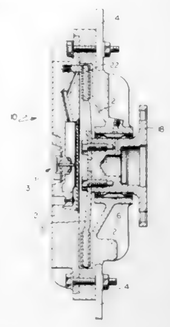
FAN DRIVE HYDRAULIC COUPLING

Roland J. Mitchell, Indianapolis, Ind., assignor to Wallace-Murray Corporation, New York, N.Y.

Filed July 26, 1974, Ser. No. 492,260

Int. Cl.² F16D *31/00*; **B44D** *1/34*

U.S. Cl. 192—58 B **6 Claims**



1. A shear type hydraulic coupling adapted for use in the cooling system of an internal combustion engine, a housing having a cavity therein containing a shear fluid, a drive disc adapted to be rotated by an engine, said drive disc positioned within said cavity to transmit torque from the disc through the shear fluid to the housing, the housing adapted to carry a fan, a portion of the sides of said drive disc being contiguous to at least a portion of the interior surfaces of said housing cavity, the improvement comprising, a polyarylene sulfide material coating on at least a portion of the sides of said drive disc.

4. The coupling of claim 1 wherein said material is polyphenylene sulfide.

3,964,583

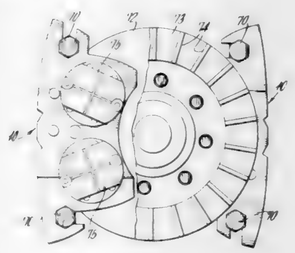
MOUNTING OF CYLINDERS IN FRICTION BRAKES AND CLUTCHES

Edwin J. Montalvo, Jr., 283 Anderson St., Hackensack, N.J. 07601

Filed Jan. 15, 1975, Ser. No. 541,126

Int. Cl.² F16D *25/00*

U.S. Cl. 192—85 AA **9 Claims**



1. A pivotable and removable pod assembly for use in a friction coupling mechanism of the type wherein relative rotation between two bodies is controlled by selective engagement of friction members comprising, a pod having at least one bore therethrough for housing a fluid activated friction device, said pod having a slot opening outwardly near each of the ends of the pod, the slots being substantially perpendicular to each other whereby one end of the pod can be pivoted about a mounting pin in one of said slots while the other of said slots continues to surround a pin in said other slot.

3,964,584

SPEED-CHANGING SYSTEM WITH TWO FLUID-ACTUATED CLUTCHES

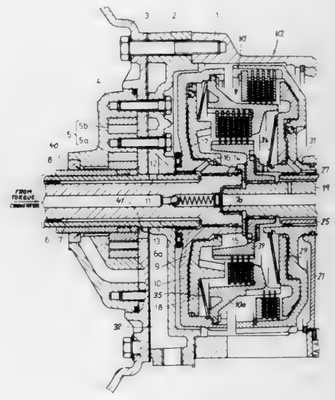
Manfred Bucksch, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed Dec. 23, 1974, Ser. No. 535,702

Claims priority, application Germany, Dec. 24, 1973, 2364541

Int. Cl.² F16D *25/10*

U.S. Cl. 192—87.11 **6 Claims**



1. A speed-changing system comprising:

an engine-driven input shaft;

an inner output shaft and a surrounding outer output shaft coaxial with said input shaft;

planetary-gear means connecting said output shafts to a load;

a transmission housing surrounding parts of said input and output shafts;

a first clutch in said transmission housing including a first clutch housing positively connected with an extremity of said input shaft, first coacting annular friction elements in said clutch housing and on an extremity of said inner output shaft, and a first piston in said first clutch housing actuatable for making said first friction elements effective to couple said input shaft with said inner output shaft;

a second clutch in said transmission housing including a second clutch housing positively connected with an extremity of said outer output shaft, second coacting annular friction elements on said first clutch housing and in said second clutch housing, and a second piston in said second clutch housing actuatable for making said second friction elements effective to couple said input shaft with said outer output shaft,

a source of high-pressure fluid provided with valve means for selectively admitting said fluid to a first and a second passage in said transmission housing respectively leading to said first and second clutch housings for selectively actuating said first and second pistons; and

a tube secured to said transmission housing surrounding said input shaft, said tube being provided with bearing means for rotatably supporting said first clutch housing thereon, said tube defining with said input shaft an annular clearance forming part of said first passage, said first clutch housing being provided with a bore communicating with said clearance.

3,964,585

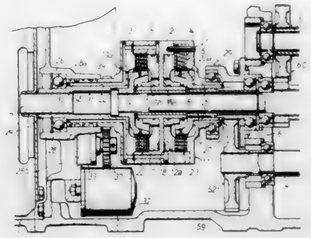
HYDRAULIC DOUBLE CLUTCH OF THE WET TYPE WITH PRESSURE CONTROL VALVES

Yoshinobu Murayama, and Yashunori Uchibori, both of Sakai, Japan, assignors to Kubota Tekko Kabushiki Kaisha, Osaka, Japan

Filed Mar. 13, 1975, Ser. No. 557,964

Int. Cl.² F16D *25/10*

U.S. Cl. 192—87.13 **5 Claims**



1. A hydraulic double clutch of the wet type comprising a drive shaft, a driven shaft coaxial with the drive shaft and having a double shaft construction, a clutch casing fixedly mounted on the drive shaft and rotatably mounted on the driven shaft, the clutch casing accommodating a wheel-driving clutch unit and a power takeoff clutch unit independent of the clutch unit, hydraulic pumps for forcing working oil into the clutch units to engage the clutch units individually independently, oil passages for forcing the working oil form the hydraulic pumps into the corresponding clutch units individually independently, control valve means independent of each other and provided for the oil passages each at an intermediate portion of the passage, the control valve means being openable and closable to control the pressure of the working oil, and a clutch housing accommodating the aforesaid members and means and serviceable also as a tank for the working oil, the clutch casing being rotatably supported by bearing cases at its front and rear portions respectively with bearings interposed between the casing and the bearing cases, the clutch casing having a gear in meshing engagement with the hydraulic pumps to drive the pumps, the hydraulic pumps being arranged at the opposite sides of the gear respectively, the oil passages being formed independently of each other in one of the bearing cases and in the clutch casing, the control valve means being automatically openable when the oil pressure on the clutch units builds up to excess to control the pressure.

3,964,586

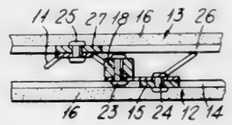
CLUTCH DISC

Ronald Derek Barrett, Hockley, and Michael Rol Howard, Brentwood, both of England, assignors to Ford Motor Company, Dearborn, Mich.

Filed July 2, 1973, Ser. No. 375,551

Int. Cl.² F16D *13/60, 69/00*

U.S. Cl. 192—107 C **9 Claims**



1. A clutch disc constructed to be used in a vehicle clutch assembly,

said clutch disc comprising a pair of annular friction members,

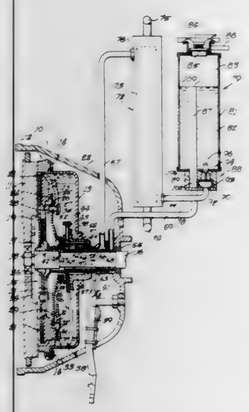
said members each comprising an annular backing plate and a friction material facing affixed to said backing plate,
a carrier constructed to be connected to a rotatable shaft,
leaf spring means interposed between said backing plates,
fastener means connecting said backing plates and said carrier to said leaf spring means,
said fastener means including first rivet means securing one of said backing plates to said leaf spring means and second rivet means securing said carrier to said leaf spring means,
said first rivet means and said second rivet means being disposed radially inwardly of and spaced apart from said friction material facing,
said leaf spring means exerting a spring force urging the separation of said backing plates.

3,964,587

CONTROL VALVE FOR A WET CLUTCH

Ting M. Wang, Warren, Mich.; Walter H. Richardson, deceased, late of Sterling Heights, Mich., and by Gregory R. Richardson, administrator, Mount Clemens, Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 2, 1973, Ser. No. 385,029
Int. Cl.² F16D *13/72*
U.S. Cl. 192—113 B **22 Claims**



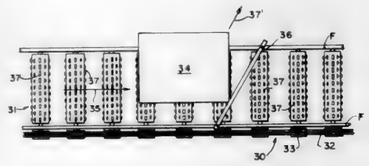
1. In a liquid cooled friction clutch system including a rotatable driving member connected to a prime mover, a driven member adapted to be connected to an output shaft, friction surfaces carried by said driven member, a cover plate assembly connected to said driving member, a housing enclosing said driving and driven members, pressure applying means drivingly associated with said cover plate assembly and adapted to place said driven member into engagement with said driving member, resilient means associated with said pressure applying means adapted to normally urge said driving and driven members into engagement, a non-rotatable support member carried by said housing, non-rotatable releasing means coaxial with said output shaft and axially slidable on said non-rotatable support member, said releasing means adapted to disengage said driving and driven members, and pumping means comprising a fluid conduit having an inlet end in communication with an inner periphery of said cover plate assembly and an outlet end connected to said releasing means, a first fluid conduit from said pumping means and a second fluid circuit leading to said friction surfaces, the improvement comprising a fluid reservoir interposed between said first and second fluid circuits and receiving cooling fluid from said pumping means and first fluid circuit, valve means communicating with said reservoir, a standpipe extending upwards into said reservoir and terminating short of the upper end thereof to define the static fluid level in said reservoir, said valve means including an inlet chamber communicating with said first fluid circuit and said standpipe, an outlet chamber communicating with said reservoir and said second fluid circuit, and a by-pass orifice which connects the lower end of the standpipe to said outlet chamber to allow priming of said pumping means by return of excess fluid from the reservoir through the standpipe.

3,964,588

CONVEYOR HAVING PROVISION FOR DISCHARGING LOADS AT AN ANGLE GENERALLY TRANSVERSE TO THE LINE OF TRAVEL OR THE CONVEYOR

Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Division of Ser. No. 667,492, Sept. 13, 1967, Pat. No. 3,550,756. This application Aug. 6, 1970, Ser. No. 61,789
Int. Cl.² B65G *13/10, 39/02*
U.S. Cl. 193—36 **10 Claims**



1. A conveyor system, comprising: an input article conveyor having an article conveying direction; an article transfer support adjacent and aligned in the conveying direction with said first article conveyor; diverter abutment means for engaging articles being moved onto said article transfer support by said first article conveyor and providing a component of force to said articles transverse to said article conveying direction; said diverter abutment means providing a stationary article surface generally lying within a vertical plane intersecting the conveying direction of said first article conveyor means at an acute angle; said article tranfer support having a plurality of first rollers mounted transversely of the conveying direction for rotation about axes generally parallel with each other; a plurality of second rollers mounted on each of said first rollers for rotation about axes transverse to the axes of said first rollers; and said second rollers being mounted around the periphery of said first rollers so that the upper-most ones of said second rollers have upper-most surfaces lying within a common article support plane spaced above the upper-most surface of said first rollers and being generally coplanar with the article supporting surface of said first article conveyor.

3,964,589

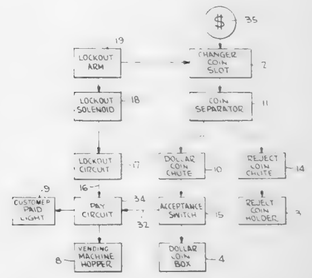
VENDING MACHINE COIN CHANGER

Roderick R. Temple, 2220 Jessie Ave., Sparks, Nev. 89431

Filed Apr. 17, 1973, Ser. No. 352,085
Int. Cl.² G07F *11/02*
U.S. Cl. 194—10 **6 Claims**

1. A vending machine having a pay circuit for discharging coins and a coin changer therefor comprising:
a vending machine comprising:
a first coin acceptance slot for accepting only a coin of a predetermined first denomination,
a vending machine hopper,
a pay circuit for simultaneously discharging a plurality of coins of said predetermined first demonination into said vending machine hopper, a coin changer connected to said vending machine comprising:
a second coin acceptance slot for accepting a coin to be changed of a second predetermined denomination,

a coin reservoir,
means for conveying said coin to be changed from said second coin acceptance slot to said coin reservoir,
means for detecting the passage of said coin to be changed through said conveying means and for transmitting a pay



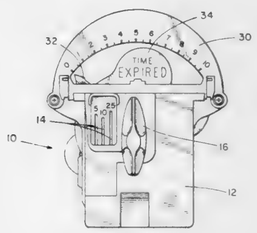
signal to said pay circuit of said vending machine to discharge into said vending machine hopper coins of said first predetermined denomination in return for said coin to be changed of said second predetermined denomination.

3,964,590

PARKING METER WITH AUTOMATIC READING MEANS

Kenneth D. May, Buffalo Grove; Elmer E. Dodson, and Claude C. Cohee, both of Des Plaines, all of Ill., assignors to Qonaar Corporation, Elk Grove Village, Ill.

Filed May 16, 1975, Ser. No. 578,153
Int. Cl.² G07F *5/00*
U.S. Cl. 194—83 **13 Claims**



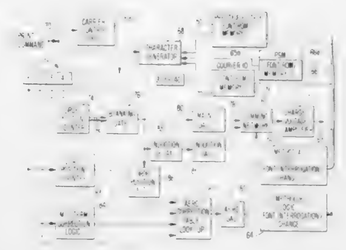
1. In a coin controlled meter construction including coin receiving means, manually controlled drive means for said receiving means, a movable cam adapted to be drivingly engaged by said receiving means, indicator means for displaying the time purchased, and a cam follower associated with said indicator means, said cam defining a surface for engagement with said cam follower, movement of said cam by said receiving means selectively positioning the cam depending upon the amount of time purchased, the improvement comprising a link having one end operatively connected to said manually controlled drive means and the other end connected to said indicator means, first means normally urging said manually controlled drive means in one direction whereby said link pulls the cam follower of said indicator means out of engagement with said surface to thereby prevent accurate reading of the time remaining on said meter, second means normally urging the cam follower of said indicator means into engagement with said cam surface, said first means applying a greater force than said second means, and wherein operation of said manually controlled drive means overcomes said first means whereby said indicator means is temporarily moved by said second means to a position for accurately reading the time remaining on the meter.

3,964,591

FONT SELECTION SYSTEM

James David Hill; Gene Austin Isbell, and Thomas Hampton Williams, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 10, 1975, Ser. No. 585,555
Int. Cl.² B41J *5/30;* **G01D** *15/10;* **G06K** *9/00*
U.S. Cl. 197—1 R **32 Claims**



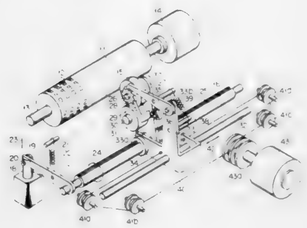
1. A printing system comprising:
means to print a multiplicity of type fonts;
individual font storage means for determining printing characteristics of each of said fonts;
a plurality of receptacle means in said printing system for insertion and interconnection of said individual font storage means to said system, said receptacle means accommodating any of said font storage means on a randomly insertable basis; and
interrogation means for determining the font storage means inserted in a specific receptacle means.

3,964,592

PRINTING MECHANISM FOR PRINTING CHARACTERS

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 452,972, March 20, 1974, abandoned. This application Oct. 20, 1975, Ser. No. 623,562
Claims priority, application Japan, Mar. 24, 1973, 48-33722; Oct. 18, 1973, 48-117295
Int. Cl.² B41J *1/32, 27/00*
U.S. Cl. 197—49 **2 Claims**



1. A printing mechanism for printing characters responsive to a printing signal, comprising:
a cylindrical character pattern bearing body having a plurality of character patterns embossed in a predetermined array on its surface and adapted to be rotated so that a character pattern to be printed is located in a printing position;
a rotatable hammer driven so as to confront the character pattern to be printed through a recording paper and urged to strike the character pattern through the recording paper to print the character on the recording paper in a colored printing material supplied to the peripheral surface of the hammer;

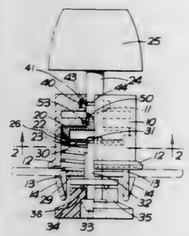
a driving mechanism for driving the rotatable hammer which comprises a fixed first shaft parallel to the cylinder axis of said cylindrical pattern bearing body, a slide member slideably mounted to the first shaft and slideable along the first shaft, a rotatable second shaft parallel to the cylinder axis of said cylindrical pattern bearing body and which is rotated responsive to a printing signal and which supports the slide member to allow the slide member to move along the second shaft, a hammer lever coupled to the sliding member and slideably movable along the second shaft together with the sliding member and coupled to the second shaft so as to rotate along with the second shaft, said rotatable hammer being rotatably supported at the free end of the hammer lever, a toothed ratchet rotated with the rotation of the rotatable hammer, an anchoring lever one end of which is pivotally supported at the sliding member and the other end of which is engaged with a tooth of the ratchet to rotate the rotatable hammer by a predetermined rotation angle for each character printing, and an elastic member one end of which is pivotally supported on the hammer lever and the other end of which is engaged with a tooth of the ratchet to prevent reverse rotation of the rotatable hammer; and

a mechanism adapted to be contacted with the peripheral surface of the rotatable hammer so as to supply the colored printing material to the peripheral surface of the rotatable hammer.

3,964,593
KEYBOARDS

Peter Pointon, West Molesey, England, assignor to Alphameric Keyboards Limited, West Molesey, England

Filed Apr. 8, 1974, Ser. No. 459,233
Claims priority, application United Kingdom, Apr. 9, 1973, 16940/73
Int. Cl.² B41J *5/08, 5/18, 5/26*
U.S. Cl. 197—98 **13 Claims**



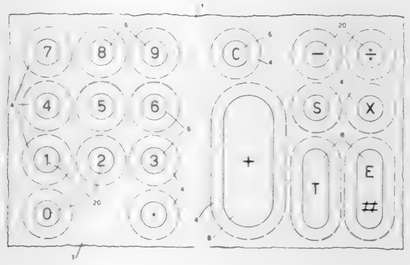
12. A key for an electronic keyboard comprising a body, an abutment fixed with respect to said body, a plunger slidable in said body, a helical spring in said body acting between said body and said plunger to oppose depression movement of the plunger, a key top on said plunger, a striker stem movable within the body, a striker mounted on said stem, the stem being at least partially within said helical spring, resilient means connecting said plunger and said stem which resilient means are located within the helical spring and permit overtravel of the plunger against the resistance of said resilient means after the further movement of the striker has been inhibited by contact with said abutment, and a snap-action device engaging between said plunger and said body to resist relative movement therebetween until a predetermined extent of movement has occurred, said snapaction device then operating to decrease resistance to movement, which snap-action device comprises an annular groove in the plunger above the top of the spring, and a member having at least one resilient radial arm, said member being retained in said body and extending around the plunger with the arm engaging in said groove so that, on depression of the plunger, the arm will deflect as the groove is moved downwardly but will eventually move out of the groove thereby decreasing resistance to plunger movement.

13. A key for an electronic keyboard comprising a body, an abutment fixed with respect to said body, a plunger slidable in said body, a helical spring in said body acting between said body and said plunger to oppose depression movement of the plunger, a key top on said plunger, a striker stem movable within said body, a striker mounted on said stem, the stem being at least partially within said helical spring, resilient means connecting said plunger and said stem, which resilient means are located within the helical spring and permit overtravel of the plunger against the resistance of said resilient means after the further movement of the striker has been inhibited by contact with said abutment, and latching means for latching the key in a depressed position, which latching means comprise a face plate cam on said plunger and an annular cam follower around said plunger, said cam follower loosely fitting in an annular, inwardly facing groove on said body and having an inwardly extending projection engaging said cam, the cam and cam follower being cooperatively shaped to engage on upward movement of the key with relative rotational displacement and to limit upward travel on alternate key operations whereby the key is latched down on one depression stroke and the next depression stroke releases the key.

3,964,594
KEYBOARD OF ELASTIC MATERIAL FOR OFFICE MACHINES

Luigi Gabbrielli, and Piero Giovanetti, both of Ivrea (Turin), Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Nov. 16, 1973, Ser. No. 416,599
Claims priority, application Italy, Dec. 1, 1972, 70784/72
Int. Cl.² B41J *5/08, 5/12*
U.S. Cl. 197—98 **5 Claims**



1. An office machine keyboard comprising:

a continuous layer of elastic material,

a plurality of key areas defined in said layer,

a fingering surface on each one of said areas,

a plurality of inserts, one of said inserts being located in each of said areas and being formed of a material differing in elasticity from said elastic material of said continuous layer, whereby said layer flexibly holds said inserts, said inserts being depressible to function as keys for the keyboard of said office machine,

a relief on each one of said inserts to represent an identifying character for each of said keys,

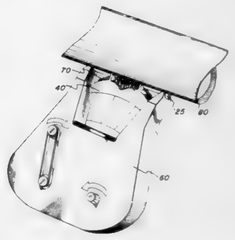
and at least a passage internal to each one of said inserts and extending entirely through said insert below said relief,

each one of said inserts being embedded in the associated key defining area of said layer, said elastic material including mechanical interlocking means comprising struts filling said passages to interlock said inserts into the elastic layer.

3,964,595
RIBBON GUIDE FOR A SERIAL PRINTER

Andrew H. Edstrom, Oahu, Hawaii, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 23, 1975, Ser. No. 543,560
Int. Cl.² B41J *31/12, 35/04*
U.S. Cl. 197—170 **9 Claims**



1. In a serial printer having a platen, a laterally movable carrier for traversing a printing line, a print wheel supported on said carrier and including a plurality of spokes extending radially outwardly and terminating in a character slug for impacting with said platen at a print position to print characters, ribbon supply means and a ribbon feed means for feeding an ink ribbon past said print wheel including ribbon exit and entrance areas having ribbon guides thereat and said print position; an improved ribbon guide member comprising:

a first concave portion,

a second concave portion laterally spaced from said first portion by a convex portion;

said first and concave second portions being positioned on opposite sides of the print position between the ribbon supply guides in a juxtaposed relation with the character slugs, said first and second concave portions defining a concave surface which is transverse to the plane formed by the print wheel spokes and extends over a portion of the print wheel periphery to assist in guiding the ribbon during printing,

a mounting portion, and

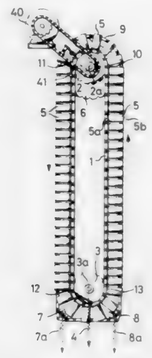
a connecting portion extending from the mounting portion to the first and second portions in an outwardly sloping direction toward the outer periphery of the character slugs of the print wheel said concave and convex portions being concave and convex as viewed from said mounting portion.

3,964,596
CONVEYOR, ESPECIALLY AUTOWALKS FOR PERSONS

Helmut Heusler, Dortmund-Kirchhorde; Emil Braun, Castrop-Rauxel, and Peter Hofling, Dortmund, all of Germany, assignors to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Germany

Filed Jan. 24, 1975, Ser. No. 543,827
Claims priority, application Germany, Jan. 25, 1974, 2403529
Int. Cl.² B61B *13/14*
U.S. Cl. 198—16 MS **10 Claims**

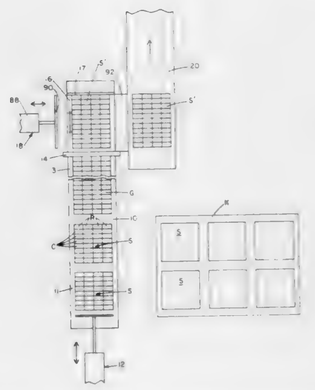
1. A conveyor, especially roller foot path, for conveying persons, which includes: a first endless link chain movable in one and the same plane and with one section of said link chain movable in one direction and the other section of said link chain simultaneously movable in the opposite direction, a second endless link chain movable in one and the same plane and with one section of said link chain movable in a first direction and the other section of said link chain simultaneously movable in the opposite direction to said first direction, driving means drivingly connected to said first and second link chains for driving the same in the same direction and in synchronism with each other, and a plurality of pallet carriages having opposite end portions respectively connected to said first and second link chains, said first link chain forming the inner chain while said second link chain forms the outer chain, and ball joints and hinge joints being interposed between said first chain and the respective adjacent end portions of said pallet carriages, said last mentioned end portions of said pallet carriages being connected to said first chain by said ball joints and said hinge joints.



3,964,597
METHOD AND APPARATUS FOR ARRANGING BRICKS INTO PROPER ROW SIZE FOR STACKING AND PACKAGING

John J. Brown; William F. Milholen, both of Pine Forest Drive, Siler City, N.C. 27344, and Cletue E. Lineberry, Rte. 1, Box 106, Staley, N.C. 27355

Filed July 29, 1974, Ser. No. 492,516
Int. Cl.² B65G *47/74*
U.S. Cl. 198—21 **11 Claims**



1. Apparatus for altering the row sizes of brick courses removed from a kiln car in preparation for stacking and strapping comprising:

a. table means having a receiving end and a discharge end;

b. means for accumulating and moving courses of bricks removed from said kiln cars and deposited on said receiving end toward the discharge end, said courses comprising a plurality of rows and columns with a known number of bricks therein;

c. carriage means slidably attached to the discharge end of said table means for reciprocation longitudinally thereof between a first, retracted position beneath said discharge

end and a second, partially extended position beyond said discharge end responsive to the movement of said means for moving bricks deposited on said receiving end toward the discharge end;

d. a pushing means connected to said carriage means for moving said carriage means to a third, fully extended position responsive to the completion of the movement of said carriage to said second position; and

e. push-off means positioned adjacent said carriage means when in said third, fully extended position for moving the bricks collected on said carriage means transversely thereof.

3,964,598

STACKING MECHANISM AND METHOD

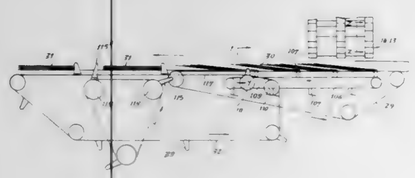
Arthur Graham Alsop, Bristol, England, assignor to Strachan & Henshaw Limited, Speedwell, England

Filed July 17, 1974, Ser. No. 489,442

Claims priority, application United Kingdom, Apr. 19, 1974, 17356/74

Int. Cl.² B65G *57/00*

U.S. Cl. 198—35 **10 Claims**



1. A mechanism for converting a shingled batch of articles to a vertically stacked batch of articles comprising:

a. A conveyor means constrained to move continuously at a first predetermined speed;

b. A means for depositing articles successively on a conveyor section of said conveyor means to produce a shingled array of successive articles thereon, said successive articles having the same length;

c. A pusher means including a plurality of pushers adapted to move into the path of said shingled articles on said conveyor means and adapted to engage behind a plurality of shingled articles on said conveyor means and being constrained to move in a predetermined direction at a second predetermined speed greater than said first predetermined speed, said pushers being adapted to push said articles in front of said pushers;

d. A retarder means including a plurality of retarders adapted to move into the path and ahead of said shingled articles on said conveyor means and constrained to be moved continuously therealong in the same predetermined direction as said pusher means at a third predetermined speed greater than zero and less than said second predetermined speed, said retarders being removable from said path and having a generally vertical rear face when in said path, whereby a batch of articles pushed by the pushers is assembled behind said moving generally vertical rear face; and,

e. Means for removing said retarders from said path when the distance between said retarders and said next approaching pushers is substantially equal to the length of each of said articles, said mechanism thereby leaving a batch of articles assembled in a stack to be taken forward on said conveyor means.

3,964,599

PROCESS AND APPARATUS FOR THE CONTROLLING OF THE CONVEYANCE OF LOOSE BULK MATERIAL

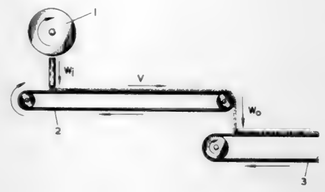
Jean Marie van Langen, Bergen; Gerardus Wilhelmus Cornelis Jacobs, Alkmaar, and Gerrit de Jong, Velsen, all of Netherlands, assignors to Koninklijke Nederlandsche Hoogovens en Staalfabriken N.V., Ijmuiden, Netherlands

Filed Sept. 10, 1971, Ser. No. 179,491

Claims priority, application Netherlands, Sept. 10, 1970, 7013421

Int. Cl.² G01G *11/12*

U.S. Cl. 198—39 **3 Claims**



1. In a process of conveying loose bulk material by a conveyor belt, which material is supplied to the belt in a fluctuating quantity independent of the speed of the belt, and has to be delivered from the belt in a flow which is as constant as possible, the improvement which comprises:

a. Supplying the material at said fluctuating rate to a single conveying belt having a non-variable length, and conveying the material to a delivery station thereby,

b. measuring the quantity of material being carried by the belt per unit of time in a region close to its said delivery station, and deriving from such measurement a first signal representative of said measurement,

c. feeding the first signal through a high-permeable filter to a proportion control device to produce a second signal representative of fluctuations in said measurement

d. providing a third signal representative of the belt speed calculated for a desired average belt load, and

e. combining said second and third signals and applying the same to adjust the belt drive in the direction to maintain said flow as nearly constant as possible.

3,964,600

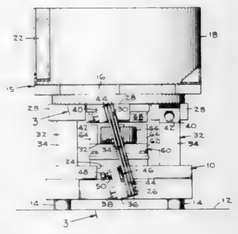
NATURAL FREQUENCY ADJUSTMENT FOR VIBRATORY FEEDER

Perry M. Vensel, Penn Run, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 17, 1974, Ser. No. 515,784

Int. Cl.² B65G *27/00*

U.S. Cl. 198—220 CA **3 Claims**



1. In an oscillating feeder of the spring coupled two mass torsional pendulum type comprising a base, a frame positioned above the base, at least three sets of leaf springs lying in separate planes inclined from vertical with one end of each leaf spring set being mounted to the base and the opposite end of the leaf spring set being mounted to the frame for supporting the frame on the base in a manner that enables oscillatory movement of the frame in both horizontal and vertical planes, each leaf spring set including a plurality of spaced apart leaf spring arranged to twist about their longitudinal axes and bend transversely of their longitudinal axes without contacting an adjacent leaf spring,

the improvement therein comprising means clamped adjacent the base end of each set of leaf springs for adjusting the torsional natural frequency of the feeder by changing the effective length of each leaf spring set,

said adjusting means having a movable member adjacent said feeder base for adjusting said spring effective length while said springs remain mounted and effective for supporting said feeder for continuing feeder operations,

said leaf springs in each said set remaining in spaced apart relationship.

3,964,601

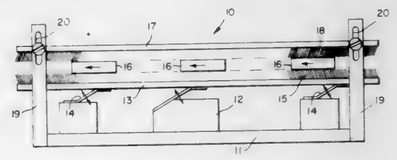
POSITIVE FLOW VIBRATORY FEEDER

Jack W. Armstrong, Baldwinsville, N.Y., assignor to Lipe-Rollway Corporation, Syracuse, N.Y.

Continuation-in-part of Ser. No. 481,125, June 20, 1974, abandoned. This application July 18, 1975, Ser. No. 597,010

Int. Cl.² B65G *27/00*

U.S. Cl. 198—220 BA **16 Claims**



1. A positive flow vibratory feeder for objects having uniform thickness, said feeder comprising:

a. a base;

b. a support element extending along a feed path and lying generally in a first plane;

c. means mounted on said base for vibrating said support element in a second plane generally perpendicular to said first plane and extending along said feed path, the direction of the vibration produced by said vibrating means being at an angle between said first plane and a third plane generally perpendicular to both said first plane and said second plane and transverse to said support element;

d. said support element being covered with a feed pile material along said feed path, said feed pile material having resilient bristles of uniform length;

e. said feed pile bristles being uniformly inclined by 5° to 25° toward the direction of feed from said third plane;

f. a holder mounted on said base and fixed relative to said support element, said holder extending generally parallel with said support element in a fourth plane generally parallel with said first plane so said holder is uniformly spaced from said feed pile material;

g. holding pile material arranged on said holder and having resilient bristles of uniform length extending toward said feed pile bristles.

h. the tips of said holding pile bristles being spaced from the tips of said feed pile bristles by slightly less than said thickness of said objects to hold said objects in engagement with the tips of said feed pile bristles during said vibration; and

i. said holding pile bristles being inclined toward said direction of feed at an angle between said third plane and said fourth plane to flex periodically as said objects move against said holding pile bristles in response to one stroke of said vibration and to urge said objects periodically toward said feed pile bristles in response to the other stroke of said vibration.

3,964,602

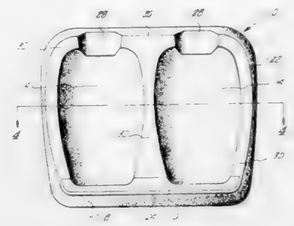
MULTI-PURPOSE RECEPTACLE

Harold P. Ashton, Providence, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 5, 1974, Ser. No. 494,671

Int. Cl.² B65D *1/34*

U.S. Cl. 206—75 **6 Claims**



1. A multi-purpose receptacle particularly adapted to support, retain and restrain a variety of culinary implements used during meal preparation or service and comprising:

a curvilinear tray bounded at its peripheral edge by a supporting wall structure, said peripheral edge and supporting wall structure having a first portion that extends above all other portions thereof and a second portion that extends above some other portions thereof all along the peripheral edge of the supporting wall structure opposite that of said first portion,

said curvilinear tray having therein at least one elongated recess and a ledge adjacent one end of such recess having a continuous back wall portion formed by said supporting wall structure, said ledge in like fashion being adjacent the first portion of said peripheral edge and supporting wall structure and,

at least one opening in the second portion of said peripheral edge and supporting wall structure that extends to said recess.

3,964,603

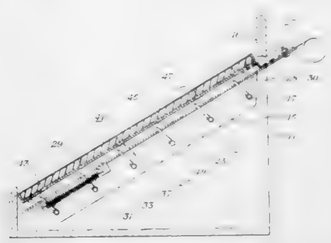
RING DISPLAY WITH LOCKING MECHANISM

H. R. Sandler, 4914 Brassvalley St., Houston, Tex. 77035

Filed Jan. 16, 1975, Ser. No. 541,502

Int. Cl.² B65D *1/34*; E05B *73/00*

U.S. Cl. 206—76 **1 Claim**



1. A ring display with locking mechanism which comprises:

a case;

a plate supported by the case and including ring receiving slots;

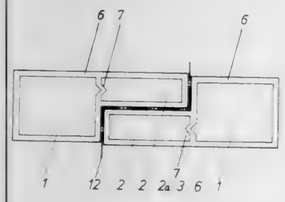
at least one rod rotatably carried by the case and having its axis aligned generally below said slots;

a hook connected with said rod for rotation of the hook below the slots between a ring release and a ring retaining position;

an actuator carried movably by the plate, positioned between the plate and rod, movable in a plane parallel to the

plate and in directions substantially perpendicular to the axis of the rod;
a linkage bar attached to the rod extending upwardly through an aperture in the actuator and forming a pivotal connection, whereby moving the actuator perpendicular to the axis of the rod rotates the hook between said positions;
a spring connected between the actuator and case urging the actuator inwardly in a ring retaining position.

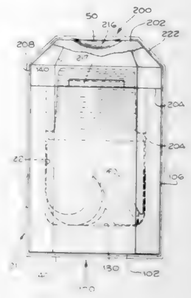
3,964,604
FLEXIBLE COMPARTMENTED PACKAGE
Kurt Prenntzell, Ferdinand-Tonnies-Strasse 8, 242 Eutin, Germany
Filed Dec. 23, 1974, Ser. No. 535,304
Claims priority, application Germany, Dec. 21, 1973, 2363904
Int. Cl.² B65D *25/08, 81/32;* **G03C** *1/48*
U.S. Cl. 206—219 **10 Claims**



1. A flexible compartmented package comprising a primary chamber constituting a reaction or mixing chamber and at least one secondary chamber adapted to be filled with a substance to be transferred to the primary chamber, a sealed seam separating said primary chamber from said secondary chamber and having an intergral rupturable seam portion capable of being destroyed for establishing communication between said primary and secondary chambers, said rupturable seam portion being in the form of a nose protruding into said secondary chamber and having a tapered tip, said secondary chamber being entirely enclosed by said sealed seam to provide a pressure compartment for rupturing said nose and forcing said contained substance from said secondary chamber toward said first chamber when the walls of said secondary chamber are depressed.

3,964,605
PROTECTIVE CONTAINER PACKAGE FOR A ROCK DRILL BIT ASSEMBLY
Edward Vezirian, Fountain Valley, Calif., assignor to Smith International, Inc., Newport Beach, Calif.
Filed Nov. 1, 1974, Ser. No. 519,981
Int. Cl.² B65D *85/54, 65/02, 43/12*
U.S. Cl. 206—349 **13 Claims**

8. A packaged rock drill bit assembly comprising:
a two-piece shipping container made of molded plastic material including a box having a central cavity therein and a plurality of gussets disposed around the lower periphery of said central cavity, a cover having a downwardly depending cylindrical flange adapted for vertical sliding insertion within said box cavity, and means provided on said box and said cover for rotationally indexing said cover to said box;
a rock drill bit assembly having a lower portion of relatively greater diameter disposed within said box cavity, and an upper portion of relatively lesser diameter disposed within said cover flange, said lower portion having bottom surfaces received upon and supported by respective ones of said gussets;
a relatively thin heat shrinkable plastic envelope disposed about said container and being shrunk thereupon;
a strap wrapped vertically about said container and plastic envelope; and



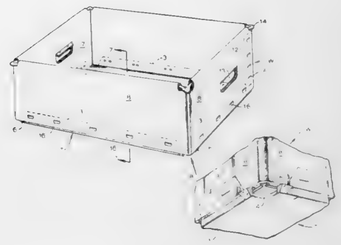
said container cover having a recess in its upper surface beneath said strap;
whereby said strap may be utilized for lifting said container, and a person's fingers may then be inserted under said strap and within said recess.

3,964,606
PACKAGE, DISPLAY AND DISPENSING DEVICE AND BLANK THEREFOR
James W. Hogg, and Donald E. Burton, both of Nashville, Tenn., assignors to Anchor Wire Corporation of Tennessee, Goodlettsville, Tenn.
Filed Mar. 31, 1975, Ser. No. 565,729
Int. Cl.² B65D *85/671, 85/04*
U.S. Cl. 206—395 **10 Claims**



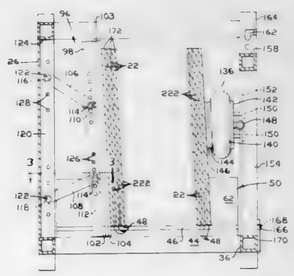
1. A package and dispensing device for a spool having material wound thereon comprising front and rear panels connected to each other along the top and bottom thereof, a closing flap along each side edge of each said panel and connected thereto by arcuate fold lines, the outer edge of each flap being arcuate, one said flap at each side being folded inwardly on one said arcuate fold line and having its outer arcuate edge engaged against the inside surface of the opposite panel, and the other flap at said side overlying the last mentioned flap, said flaps form concave side walls, at least one of said panels having a window therein, and a spool having material wound thereon positioned between said concave side walls, adjacent said window which permits removal of said material from said spool, said window has a greater length than the axial length of the spool and has a width less than the maximum diameter of the spool to permit projection of a portion of said spool therethrough.

3,964,607
BOTTLE CARRIER CASE AND SUPPORT TRAY THEREFOR
Gary L. Wagner, Covington, La., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Aug. 6, 1973, Ser. No. 385,856
Int. Cl.² B65D *15/22, 81/00, 1/36*
U.S. Cl. 206—427 **4 Claims**



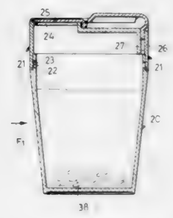
1. A bottle carrier case comprising a paperboard wall part and a bottle support tray part of integrally molded moisture-proof plastic material fixedly attached together; the wall part comprising connected walls each formed of inner and outer wall panels forming a space therebetween; the tray part comprising a bottom panel having an integral upstanding flange along each edge positioned between the inner and outer wall panels of a wall, and a plurality of spaced apart ledges integral with and projecting laterally outwardly beyond the outer faces of said tray flanges with each ledge substantially in alinement with the bottom panel of the tray at an end of an upstanding tray flange, said ledges having support surfaces above the plane of the bottom of said tray part engaging the bottom edges of the outer paperboard wall panels of the wall part to maintain said panel edges out of contact with a surface upon which the case may be supported and thus preclude wicking through said edges of moisture which may be on said support surface; and means securing the tray flanges and the wall panels together.

3,964,608
ADJUSTABLE BACK SUPPORT FOR SHIPPING BINS
James R. Rowley, Freeport, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed July 15, 1974, Ser. No. 488,347
Int. Cl.² B65D *85/48*
U.S. Cl. 206—451 **9 Claims**



1. A back support for an article shipping bin, the bin being of the type having a backwall secured to a base, comprising:
a rigid support member;
fixed point means mounting the backwall of the bin and said rigid support member; and
means for maintaining said rigid support member in spaced relation to the backwall of the bin, said maintaining means comprising:
a first strut having a first end secured to the backwall of the bin at a first one of said fixed point means and the opposite end of said first strut secured to said rigid support member at a second one of said fixed point means;
a second strut having a first end secured to the backwall of the bin at a third one of said fixed point means and the opposite end of said second strut secured to said rigid support member at a fourth one of said fixed point means; and
said first and second struts in spaced relation to each other and the distance between the first and third ones of said fixed point means is different than the distance between the second and fourth ones of said fixed point means.

3,964,609
DISPENSING CONTAINER ASSEMBLY
Emilio Perrella, via S. Carlo, Segrate (Milan), Italy
Filed Dec. 3, 1973, Ser. No. 420,898
Claims priority, application Italy, Dec. 28, 1972, 33773/72
Int. Cl.² B65D *83/04, 43/16*
U.S. Cl. 206—540 **8 Claims**



1. A container assembly for dispensing small articles such as pills, lozenges or the like, comprising:
a container body;
a dispensing-cap on said container body including a closure wall overlying said container body, said dispenser-cap including a dispensing-aperture at one side of said closure wall and above said closure wall; and
a manually-operable lid assembly mounted on said dispensing-cap, said lid assembly comprising a lid juxtapositonable over said dispensing aperature for retaining the contents of the container in the container.
transverse hinge means on said lid and pivotally mounted on said dispenser-cap adjacent the juncture of the dispensing-aperture and the closure wall,
an operating arm operatively connected to said transverse hinge means and overlying said closure wall, and
a second arm operatively connected to said operating arm and depending therefrom and mounted on said dispensing-cap, said arms including a resilient portion therebetween whereby manual pressure on said operating arm depresses the arm toward said closure wall pivots the lid off said dispensing-aperture at the transverse hinge means, and release of manual pressure on the operating arm tends to cause the lid to pivot onto the dispensing aperture and the operatng lever to overly the closure wall.

3,964,610
LOCKING BICYCLE RACK
Arnold F. Deiner, 388 Ave. X, Brooklyn, N.Y. 11223
Continuation-in-part of Ser. No. 413,535, Nov. 7, 1973, abandoned. This application Nov. 25, 1974, Ser. No. 526,947
Int. Cl.² B62H *3/08*
U.S. Cl. 211—5 **12 Claims**

1. A locking bicycle rack comprising:
a. a U-shaped member having first and second parallel side walls and a bottom portion, said first and second parallel

side walls being of a length greater than the nominal spacing between the axles on the largest bicycle to be protected by the bicycle rack and of a height greater than the height of said axles from the ground;

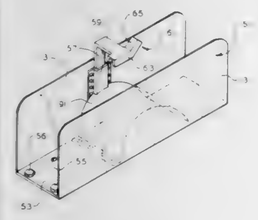
b. means for securing said bottom portion of said U-shaped member to a solid base, thereby securing said side walls to permit a bicycle to be placed therebetween;

c. a vertically adjustable locking bar comprising an L-shaped member having a vertical portion, said vertical portion being held against one of said side walls by a channel-shaped member attached to said side wall, and a horizontal portion extending to a position over the mid-point between said side walls, said horizontal portion having means thereon for engaging the frame of a bicycle comprising a channel-shaped member having a horizontal portion and an angled portion, the former adapted to engage the horizontal bar on a boy's bicycle and the latter to engage the angled bar on a girl's bicycle; and

d. means to lock said locking bar in place, whereby said locking bar may be moved up to permit placing a bicycle between said walls and then lowered against the bicycle frame to prevent it or portions thereof from being stolen.

7. A locking bicycle rack comprising:

a. a U-shaped member having first and second parallel side walls and a bottom portion, said first and second parallel



side walls being of a length greater than the nominal spacing between the axles on the largest bicycle to be protected by the bicycle rack and of a height greater than the height of said axles from the ground;

b. means for securing said bottom portion of said U-shaped member to a solid base, thereby securing said side walls to permit a bicycle to be placed therebetween;

c. a vertically adjustable locking bar comprising an L-shaped member having a vertical portion, said vertical portion being held against one of said side walls by a channel-shaped member attached to said side wall, and a horizontal portion extending to a position over the mid-point between said side walls, said horizontal portion having means thereon for engaging the frame of a bicycle; and

d. means to lock said locking bar in place comprising a coin-operated lock having a bolt, said lock being attached to the side of said side wall opposite said locking bar, said side wall having a hole formed therein through which the bolt extends, and the vertical portion of said locking bar containing a plurality of holes which said bolt can engage, whereby said locking bar may be moved up to permit placing of bicycle between said walls and then lowered against the bicycle frame to prevent it or portions thereof from being stolen.

3,964,611

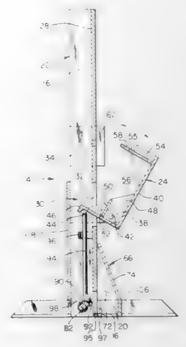
BICYCLE RACK

Ralph W. Galen, 131 Mount Auburn, Cambridge, Mass. 02138, and John A. Vanderpoel, Crescent Road, Concord, Mass. 01742

Continuation-in-part of Ser. No. 406,016, Oct. 12, 1973, Pat. No. 3,865,244. This application Feb. 10, 1975, Ser. No. 548,533

Int. Cl.² A47F *7/04*; **B62H** *3/08*

U.S. Cl. 211—5 **11 Claims**



1. A device for supporting and holding a bicycle comprising:

channel means for receiving the front and rear wheels of a bicycle;

a support member fixed with respect to said channel means and extending at an angle thereto;

clamp means pivotally mounted to said support member for locking a portion of the frame of said bicycle to said support member and

wheel locking means cooperative with said clamp means for engaging at least one of said bicycle wheels received by said channel means and locking said wheel to said channel means, said wheel-locking means being movable into and out of wheel locking position responsively to the pivotal movement of said clamp means.

3,964,612

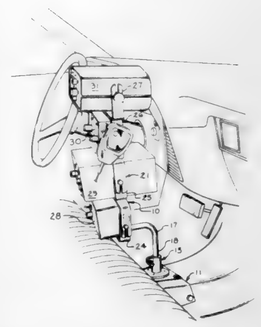
EQUIPMENT SUPPORT ASSEMBLY

Robert T. Skilliter, Jr., and Anthony P. Pietrowski, both of Genoa, Ohio, assignors to Acme Specialty Manufacturing Company, Toledo, Ohio

Filed Jan. 27, 1975, Ser. No. 544,373

Int. Cl.² B60R *7/04, 7/00, 11/02*

U.S. Cl. 211—26 **11 Claims**



1. An equipment support assembly, comprising, in combination, a mounting bracket defining a first generally vertical axis, a post having first and second ends, a generally vertical portion adjacent said first end and a generally horizontal portion adjacent said second end, said first end of said post being adjustably mounted on said mounting bracket for rotation about such first vertical axis, a deck assembly adjustably mounted adjacent said second end of said post for rotation about a second generally vertical axis, said deck assembly including at least one holder unit, said holder unit including a generally U-shaped base assembly having spaced vertical arms which are laterally adjustable.

3,964,613

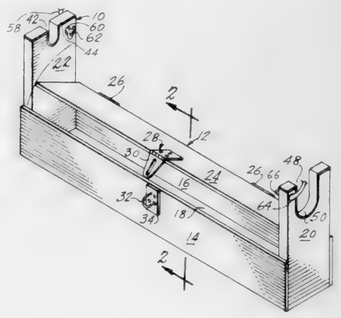
RIFLE SUPPORT

William R. Anderson, Jr., 1648 Bethesda Court NE., Atlanta, Ga. 30341

Filed Jan. 20, 1975, Ser. No. 542,099

Int. Cl.² A47F *07/00*

U.S. Cl. 211—64 **7 Claims**



1. In a rifle support for a rifle having a stock and a barrel: an elongated base having spaced, opposed rifle supports thereon consisting only of end panels extending substantially vertically upwardly above the top of the base when the bottom of the base is resting on a surface and each of said panels terminating a short distance above the base and having an open top leading into a substantially vertical depression therein for supporting respective ends of a rifle placed with part of the stock of the rifle in one depression and part of the barrel of the rifle in the other depression, the end panel depression having the stock of the rifle therein being shaped to fit the rifle stock snugly and being larger than the other depression thereby to accommodate the stock portion of the rifle snugly in the larger depression whereas the other smaller depression supports the fore end of the rifle barrel so that the rifle extends between the said end panels in a stable elongated position whereby work may be performed thereon without the rifle moving significantly, and means for carrying said rifle support comprising a carrying member attached to said base providing a means for lifting and carrying the entire rifle support from one location to another.

3,964,614

LIFTING ATTACHMENT FOR A CRANE

Forrest D. Welch, 1715 Stone St., Saginaw, Mich. 48602

Division of Ser. No. 251,926, May 10, 1972, Pat. No. 3,907,142, which is a continuation-in-part of Ser. No. 175,170, Aug. 26, 1971, Pat. No. 3,760,963. This application Nov. 14, 1974, Ser. No. 523,703

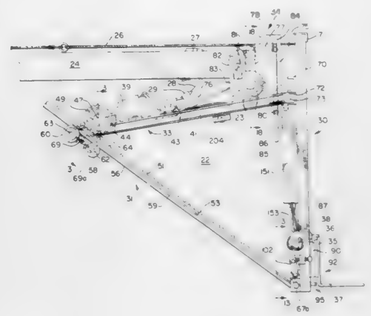
Int. Cl.² B66F *9/06*

U.S. Cl. 212—9 **2 Claims**

1. In combination with a boom on a crane characterized as including a control line, the improvement comprising a materials handling apparatus which is mobile with said boom to provide a lift capability to the crane, said apparatus being free from supportive engagement with any support member of the crane other than the free end of the boom and comprising:

lift means, said lift means including a lift member operable by said control line for receiving loads on said lift member;

automatic leveling means for positively and mechanically selectively orienting said lift means independent of said boom to maintain said lift member and any loads thereon in about a predetermined orientation, said leveling means being operable while said boom is mobile and in response to the position of either said boom or a selected portion of said apparatus sensed by sensor means and further characterized in that said leveling means automatically



maintains the orientation of said lift means and any loads thereon substantially throughout the range of throw of said boom;

power means for selectively actuating said leveling means, said power means being responsive to said sensor means; and

securing means for securing said apparatus to the boom of the crane, said securing means serving to rigidly attach said apparatus to the free end of the boom and being the only means for supporting and securing the apparatus to the boom.

3,964,615

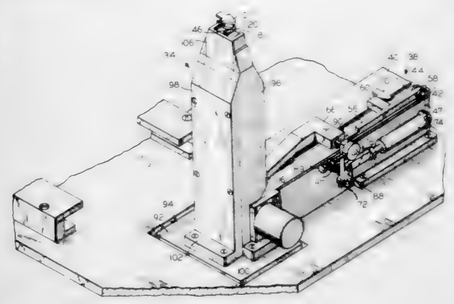
APPARATUS FOR POSITIONING SLIDERS

Richard R. Silvis, Meadville, and John A. Ettinger, Conneaut Lake, both of Pa., assignors to Textron, Inc., Providence, R.I.

Filed July 1, 1974, Ser. No. 484,906

Int. Cl.² B23P *19/04*

U.S. Cl. 214—1 B **7 Claims**



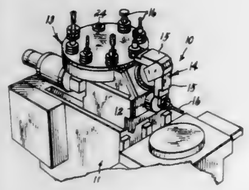
1. An apparatus for positioning a slider in a slider assembly station, comprising

support means defining a work area,

guide means forming a vertical slide path extending upward from the support means,

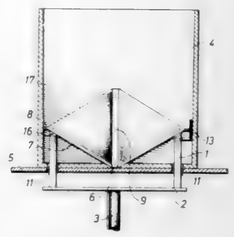
an elongated member,
means for longitudinally moving the elongated member from a lowered position to a raised position in the vertical slide path,
said elongated member having means for receiving and supporting a slider on the upper end of the elongated member,
means for transferring a slider to the receiving and supporting means of the elongated member when the elongated member is in the lowered position,
said elongated member in the raised position protruding substantially above the support means,
said elongated member having a cavity and a slot for receiving a pull tab of a slider,
a lever pivotally mounted within the cavity,
spring means for biasing the lever to urge one end against a slider pull tab in the slot,
said lever having a first camming surface for being engaged by a pull tab of a slider as it is transferred to the receiving and supporting means of the elongated member to pivot the lever against the spring means, and
said lever further having a second camming surface for engaging a bottom of an aperture in the pull tab to urge the pull tab downward.

3,964,616
MACHINE TOOL INTERCHANGE ARM
Tadeusz Wiktor Piotrowski, Cincinnati, Ohio, assignor to Cincinnati Milacron, Inc., Cincinnati, Ohio
Filed Sept. 29, 1975, Ser. No. 617,960
Int. Cl.² B23Q *5/32, 3/157*
U.S. Cl. 214—1 BD **2 Claims**



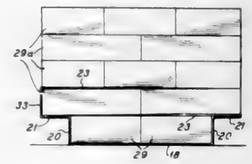
1. In an automatic tool changer utilized on machine tools and employing arms rotatably carried on a rotary trunion within said tool changer, an improved interchange arm, comprising in combination:
a. a housing, journaled at one end about said rotary trunion;
b. a key block, slidably maintained within a track along the centerline in said housing, wherein said key block can be moved with respect to said housing to an advanced position, proximate to a tool holder, and alternately retracted within said housing, and further wherein said key block is adapted to engage a tool holder at said advanced position to maintain orientation of the tool holder relative to said keyblock;
c. a pair of jaws, disposed parallel to one another and equally disposed about the center line of said housing, said jaws slidable within said housing under the action of said keyblock;
d. means to move said keyblock and said jaws simultaneously;
e. biasing means to urge said keyblock to an advanced position towards a tool holder; and
f. means adapted to drive said trunion and housing simultaneously in a first arcuate direction to a first position and further wherein said means is adapted to alternatively drive said trunion and said housing simultaneously in a second arcuate direction to a second position, wherein said housing is held stationary at said second position and said trunion is driven in said second arcuate direction through an overtravel increment, wherein said overtravel increment is converted into retraction movement of said keyblock and said jaws, overcoming said biasing means.

3,964,617
ARRANGEMENT FOR THE STACKING IN A SPACE-SAVING MANNER OF TETRAHEDRAL PACKING UNITS IN A PRISMATIC COLLECTIVE CONTAINER
Leif B. Pettersson, Staffanstorp, Sweden, assignor to AB Ziristor, Lund, Sweden
Filed Nov. 13, 1974, Ser. No. 523,543
Claims priority, application Sweden, Dec. 18, 1973, 73170532
Int. Cl.² B65D *85/54*; **B65G** *1/14*
U.S. Cl. 214—10.5 R **7 Claims**



1. A device for stacking a plurality of tetrahedral packing units in a space saving manner in a prismatic container therefor in which the tetrahedral packing units are arranged in a plurality of superposed layers, in the bottom layer of which a corresponding edge of each package unit extends vertically substantially along the vertical axis of the prismatic container and parallel to each other, the lower end of the corresponding edges resting on the bottom of the prismatic container, the upper layers being arranged in alternate nesting relation with the bottom layer, said device comprising a plurality of retractable support means for insertion into and withdrawal from the prismatic container through openings provided therein for receiving said retractable support means, said support means, when inserted into the prismatic container during stacking of the tetrahedral units therein, supporting each tetrahedral packing unit in the bottom layer on the lower surface of each such unit, and means for inserting and subsequently withdrawing said support means after stacking said plurality of tetrahedral packing units in said prismatic container the upper layers of the tetrahedral packing units preventing displacement of the units in the bottom layer when said support means is withdrawn.

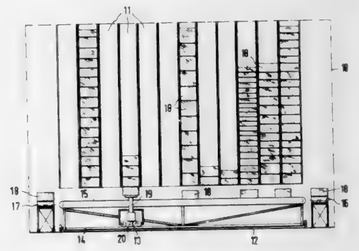
3,964,618
PALLET DEVICES AND METHOD
John E. Dreyer, R.R. 1, Sugar Grove, Ill. 60554
Filed Dec. 12, 1974, Ser. No. 531,881
Int. Cl.² B65G *1/14*
U.S. Cl. 214—10.5 R **11 Claims**



1. A pallet device formed from sheet-form semi-rigid material, comprising:

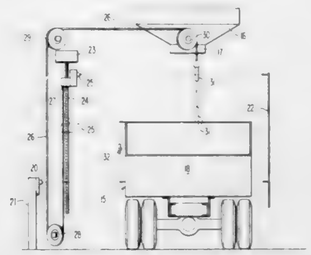
a base panel adapted to be placed for loading into a form jig having a horizontal base and upstanding spaced apart rigid form flange means;
respective riser panels connected along opposite sides of the base panel and adapted to be held upright by said form flange means;
a fork lift shoulder panel connected to the edge of each of said riser panels which is remote from said base panel, and adapted to project in overhanging relation laterally outwardly from the associated form flange in the jigged relation of the device for engagement by lift fork arms;
respective retainer panels wider than the shoulder panels arranged to overlie each of the shoulder panels and to extend inwardly into overhanging relation to the base panel and to engage with objects loaded onto said base panel between said riser panels, and the retainer panels then being interlocked with said objects by placing other objects in loading relation on top of the retainer panels;
means attaching said retainer panels to said shoulder panels;
and at least one of said retainer panels lying in mutually reinforcing laminar relation over its underlying shoulder panel whereby lift fork arm lifting force is applied directly through the laminar panels to objects lying on said one retainer panel.

3,964,619
ARRANGEMENT FOR STORAGE OF GOODS IN PACKAGES IN AN UPRIGHT DEPOSITORY
Felix Irmler, Oberdorstrabe 21, CH - 8820, Wadenswil, Switzerland
Continuation of Ser. No. 339,965, March 9, 1973, abandoned.
This application July 25, 1975, Ser. No. 599,189
Claims priority, application Germany, Mar. 13, 1972, 2212085; Oct. 26, 1972, 2252584; Feb. 1, 1973, 2304975
Int. Cl.² B65G *1/04*
U.S. Cl. 214—16 B **7 Claims**



1. Apparatus for storing and removing packages of goods at an upright depository comprising:
a floor;
a plurality of upright storage units;
means mounting said plurality of storage units in side-by-side relation to form a row, there being a plurality of adjacently located rows of storage units defining a matrix;
each storage unit defining a vertical storage chamber having a cross section sized to receive and store a single stack of said packages;
said storage units each having selectively releasable support means projecting into the cross section of the storage unit adjacent a lower end thereof, said support means being arranged to support an entire stack of packages in such storage unit independently of packages stored in other storage units in the same row;
means mounting said storage units at a distance above said floor at a predetermined distance;
a transfer conveying system for delivering and removing packages to and from said storage units comprising:
a bridge conveyor disposed on said floor beneath said matrix of storage units, said bridge conveyor including an endless conveyor belt means;
means for moving said bridge conveyor from one row to another so that said conveyor belt means is selectively alignable with a plurality of the rows of storage units so as to extend beneath and across each selected row;
means mounting said endless conveyor belt means from the lower ends of said storage units by a distance which is at least equal to the height of at least one of said packages;
loading and unloading conveyors located at opposite ends of said bridge conveyor and at substantially the same height thereof for delivering and removing packages to and from said bridge conveyor;
means for moving said conveyor belt means to convey a package from said loading conveyor belt along a row of storage units to a selected storage unit thereof, and to receive a package from a selected storage unit and convey such package to said unloading conveyor; and
a traveling loading-unloading unit mounted on said bridge conveyor for movement relative to said bridge conveyor and relative to said storage units along a path of travel disposed below a selected row of storage units beneath which row said bridge conveyor is disposed, said path of travel of said loading-unloading unit extending below and along a plurality of storage units in said selected row so that said loading-unloading unit is selectively locatable below said plurality of storage units in said selected row, said loading-unloading unit including a raisable and lowerable member oriented relative to said endless conveyor belt means to:
raise a package from said endless conveyor belt means into a selected one of said storage units, exclusive of other storage units in said selected row, to a height therein at least above the level of said releasable support means of said selected storage unit so that said package lifts and supports packages located thereabove and is then itself supported by said releasable support means, and lower a bottom package from a selected storage unit exclusive of other storage units in said selected row onto said endless conveyor belt means for conveyance to said unloading conveyor belt.

3,964,620
VEHICLE LOADING APPARATUS AND METHOD
Ward H. Parsons, 1202 Green Glen Road, Birmingham, Ala. 35216
Filed Jan. 13, 1975, Ser. No. 540,338
Int. Cl.² B65G *67/06*
U.S. Cl. 214—41 R **19 Claims**



7. A method for loading open top vehicles in succession with flowable solids from an overhead source of such solids comprising advancing each vehicle to a loading station below said overhead source and in so doing detecting the presence of the vehicle at the loading station, stopping the vehicle, and lowering a vehicle load level sensor, detecting the top edge of

the vehicle body while lowering said sensor and thereby stopping said lowering with the sensor positioned properly relative to the vehicle to regulate the load level therein, delivering flowable solids from said overhead source into the top of the stopped vehicle and continuing the delivery until the level of solids in the vehicle displaces the load level sensor, and then terminating said delivery, and advancing the vehicle sufficiently to allow the load level sensor to return to a non-sensing position separated from the solids in the vehicle, and again delivering said solids from said overhead source until the load level sensor is again displaced.

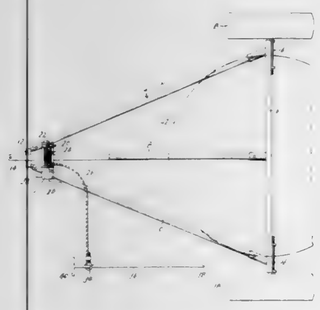
10. Apparatus for loading vehicles with flowable solids comprising a supply source of said solids at a vehicle loading station, a first detector means adjacent the loading station to detect the presence of a vehicle entering the loading station, a second detector means and a coordinated vehicle load level sensor, means to lower and to raise the second detector means and said load level sensor in unison responsive to the operation of the first detector means, and means responding to the operation of the second detector means when the latter detects the top of a vehicle body to be loaded at the loading station to terminate the lowering of the second detector means with the load level sensor with the sensor at a proper elevation to regulate the level of flowable solids in said vehicle body and to initiate delivery of flowable solids from said supply source to said vehicle body.

3,964,621

BALE LIFTER AND CARRIER

John H. Youngkamp, Sedalia, Mo., assignor to Leland B. Bock, Sedalia, Mo.

Filed Jan. 27, 1975, Ser. No. 544,405
Int. Cl.² B60P *1/00*
U.S. Cl. 214—85.5 **1 Claim**



1. A lifter and carrier for large bales of hay or the like each having, when resting on the ground, generally planar and vertical end surfaces of a generally uniform height, said lifter and carrier comprising:

a. a generally planar, horizontal wheeled bed having a generally straight, horizontal exposed edge spaced above ground level at a height less than one half that of said bales, said exposed bed edge being adapted by movement of said bed to be disposed against one end surface of one of said bales,

b. a cable winch carried by said bed remotely from said exposed bed edge, and including a cable extendable over said exposed bed edge, and over said bale to the opposite end of said bale,

c. anchor means operable to secure the extended end of said cable to said opposite end of said bale, whereby as said cable is retracted by said winch, said bale will first be pulled against said exposed edge of said bed, and then tilted upwardly and inwardly over said exposed edge to be lifted to and supported by said bed, and whereby as said bale is tilted over the exposed edge of said bed, it will slip downwardly laterally of said edge to a position wherein it is generally balanced on said edge when tilted sufficiently to rest on said bed, said anchor means comprises an elongated rod adapted to be inserted horizontally into said opposite end of said bale and to project therefrom, the free end of said cable being attached to the projecting end portion of said rod, and

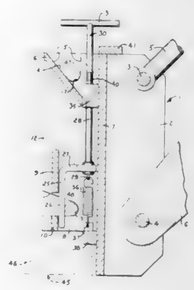
d. means operable to lock said cable winch at any desired extension of said cable therefrom.

3,964,622

QUICK CHANGE MOUNTING BRACKET FOR LOADER ARMS

Calvin B. Blair, Barnard, and Donald C. Hokr, Lincoln, both of Kans., assignors to Kent Manufacturing Co., Inc., Tipton, Kans.

Filed Mar. 17, 1975, Ser. No. 558,831
Int. Cl.² E02F *3/70*
U.S. Cl. 214—145 A **8 Claims**



1. A locking bracket for loader arms and adapted to engage an implement bracket having upper and lower, spaced apart, transverse pins, said locking bracket comprising:

a. a pair of laterally spaced, forwardly projecting plates together having a pair of aligned upper slots and a pair of aligned lower slots therein, said upper and lower slots each having a seat for receiving said respective transverse pins,

b. said upper slot opening generally upwardly of said forwardly projecting plates and said lower slots opening generally forwardly of said forwardly projecting plates,

c. at least one block located near said lower slot and spaced forwardly of said lower slot seats, a locking member including a shaft spaced rearwardly of said upper slot seats and a locking plate mounted on said shaft and having a locking portion spaced forwardly of said lower seats and rearwardly of said block, said shaft being adapted for selectively moving said locking portion to a slot blocked position between said block and one of said lower pins with said lower pins in said lower slot seats, and

d. means for securing said forwardly projecting plates to said loader arms,

e. whereby said upper and lower pins are selectively locked in said forwardly projecting plates when received in said seats.

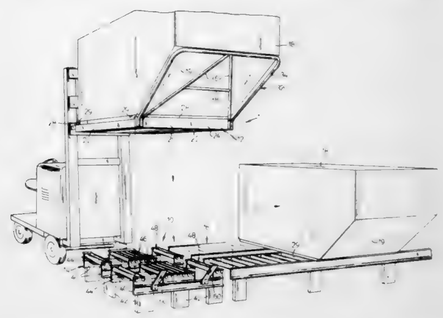
3,964,623

PALLET-PALLETIZER ASSEMBLY

Gene D. Verhein, 2435 Mill Road, and Donald Verhein, 2116 Peninsula Road, both of Oconomowoc, Wis. 53066

Filed Feb. 12, 1975, Ser. No. 549,298
Int. Cl.² B65G *47/04*
U.S. Cl. 214—310 **7 Claims**

1. A pallet palletizer assembly for positively locating a pallet in alignment with a conveyor, said assembly comprising a pallet and a palletizer, said pallet including a frame, a pair of tine ways located within said frame in a parallel spaced relation, said tine ways being open at the ends to receive the tines of a fork lift truck, said palletizer including a pair of rectangular frames, a number of roller assemblies mounted on each of said frames in parallel spaced relation to define spaces for



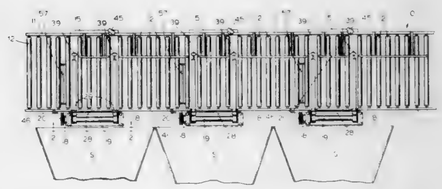
receiving said tine ways, and means on one of said rectangular frames for guiding said pallet into the spaces between said roller assemblies, whereby said pallet can be seated on the palletizer frame below the level of the upper surfaces of the roller assembly and in alignment with the conveyor.

3,964,624

CONTAINER DUMPING APPARATUS

Albert W. Werder, St. Louis, Mo., assignor to Alvey Inc., St. Louis, Mo.

Filed Dec. 18, 1974, Ser. No. 533,880
Int. Cl.² B65G *65/04*
U.S. Cl. 214—314 **4 Claims**



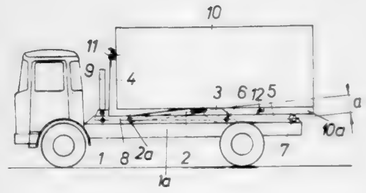
1. In container dumping apparatus, the combination comprising: a conveyor having a series of spaced rollers forming a continuous path for the travel of open top tote pans; roller drive means in said conveyor in driving engagement with said rollers at one side of the path of pan travel; a frame in said conveyor defining a pan dump station, said frame having a column disposed at the opposite side of the path of pan travel from said roller drive means; a shaft supported in said column with its axis parallel to the path of pan travel; reversible motor means operably connected to said shaft to oscillate said shaft between raised dump position and lowered home position; tote pan dump means having a pair of arms carried by said shaft in spaced apart relation with pan lift portions which in the shaft home position normally extend toward said roller drive means and are recessed between said conveyor rollers to be below the pans, and support arm portions carried on an extending outwardly at right angles to said pan lift portions and disposed adjacent said opposite side of said path of pan travel adjacent said shaft; first pan engaging vacuum means carried by each of said support arm portions in fixed positions; second pan engaging vacuum means operably mounted on each of said pan lift arms portions to move between retracted positions and pan engaging positions; resilient means connected to said second vacuum means urging them toward pan engaging positions; position control means connected to said second vacuum means and to said frame and operable to oppose said resilient means and move said second vacuum means to retracted positons; vacuum lines connected to said first and second pan engaging vacuum means to develop a suction grip upon a tote pan by and between said first and second vacuum means; and control means in said vacuum lines responsive to oscillation of said shaft in a direction to raise the pan lift arm portions out of the normally lowered home position recessed between said conveyor rollers to establish a vacuum at each of said first and second vacuum means, said raising of said pan lift arm portions causing the pan to shift against said first pan engaging vacuum means and causing said position control means to yield to said resilient means and allow said second pan engaging vacuum means to move into pan engagement.

3,964,625

APPARATUS PROVIDED AT A VEHICLE FOR TILTING AND LOADING AND UNLOADING A RECEPTACLE BY A ROLLING ACTION

Herbert A. Wirz, Uetikon am See, Switzerland, assignor to Ernst Wirz AG, Kipper- & Maschinenfabrik, Uetikon am See, Switzerland

Filed Jan. 6, 1975, Ser. No. 538,434
Claims priority, application Switzerland, Jan. 15, 1974, 511/74
Int. Cl.² B60P *1/28*
U.S. Cl. 214—502 **4 Claims**



1. An apparatus for a vehicle, especially a truck, for tilting a container and for loading and unloading the container by a rolling action, comprising at least one hydraulic lift mechanism pivotably connected at one end to the truck chassis, a tiltable front frame pivotably connected to the other end of said lift mechanism, an extensible and retractable hook arm guided in said tiltable frame, means on the front end of said container for engaging a hook on said hook arm, a rear tiltable frame pivotably connected to the front frame by means of a pivot axle and to said chassis by a pivot axle, locking elements for locking said rear frame with said container, rollers on said last named pivot axle for rolling the container during loading and unloading; an auxiliary support hingedly connected at one end to said front frame, and a hydraulic auxiliary lift mechanism hingedly connected to the other end of said support, said auxiliary lift mechanism acting via said auxiliary support both at the start of the tilting movement and also at the start of the unloading movement upon the hook arm and the container and assisting both the start of the tilting movement as well as also the start of the unloading movement.

3,964,626

TRUCK FOR HANDLING CONTAINERS

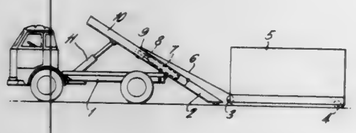
Jose Luis Loidi Arregui, Bilbao, Spain, assignor to Asteko S/A, Bilbao, Spain

Continuation of Ser. No. 321,276, Jan. 5, 1973, abandoned. This application Nov. 8, 1974, Ser. No. 522,089

Claims priority, application Spain, Jan. 8, 1972, 175995[U]; Apr. 26, 1972, 179781[U]

Int. Cl.² B60P *1/28*

U.S. Cl. 214—505 **3 Claims**



1. Apparatus for loading and unloading containers onto and from a vehicle comprising:

a. a tilting frame mounted on said vehicle and having a plurality of longitudinal beams, the outermost beams having at least one outward projection positioned towards the vehicle rear which has at least its end located towards the vehicle rear beveled;

b. means for tilting said frame;

c. means for loading a container onto and unloading a container off said frame including:

i. a single fluid cylinder and piston disposed longitudinally on said frame;

ii. at least one first pulley mounted on said piston and at least one second pulley mounted on said cylinder;

iii. first guide means associated with said piston and beams for guiding said piston and said at least one first pulley during extension of the piston, said first guide means comprising guide plates integral with the inside of said beams and fork means connected to said piston and operative to engage said guide plates;

d. second guide means associated with said container and said frame for guiding said container during said extension, said second guide means comprising side flanges associated with said container operative to mate with said beveled projections as said container is rolled onto and slid on said frame; and

e. said frame further comprising an extension having beveled portions at the remote end thereof and wheels mounted thereon, said beveled portions and wheels being operative to permit said extension to roll on the surface on which the vehicle stands when said frame is tilted.

3,964,627

CONTAINER FOR AN INJECTION LIQUID, IN THE FORM OF A FLASK CLOSED BY A CURL-ON CAP

Werner Hennings, Bunde, Germany, assignor to Bunde Glass GmbH, Bunde, Germany

Filed Oct. 15, 1973, Ser. No. 406,428

Claims priority, application Germany, Dec. 15, 1972, 7245858[U]

Int. Cl.² B65D *41/50*

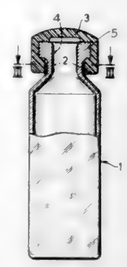
U.S. Cl. 215—247 **9 Claims**

1. A container for an injection liquid comprising:

a. a bottle including a mouth having an outwardly extending flange disposed completely around said mouth. and a reduced neck portion having an outer surface area with a plurality of parallel axially aligned recesses disposed around the circumference of said neck portion, and

b. a cap composed of a material that is flowable when heat is applied thereto and having an external and an internal surface,

c. said material of the cap being conformed in contiguous relationship along its internal surface to the recesses of the outer surface area of the neck portion,



d. whereby the cap is firmly seated on the bottle and is prevented from being twisted while disposed on the neck portion.

3,964,628

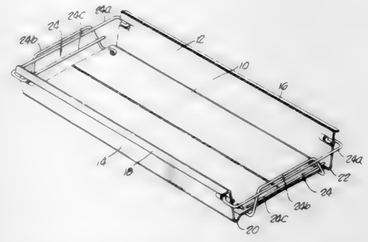
COOKING PAN

James D. Wilson, Newport Beach, Calif., assignor to Banner Metals Division of Intercole Automation, Inc., Compton, Calif.

Filed Jan. 14, 1975, Ser. No. 540,816

Int. Cl.² B65D *7/20*, *1/34*

U.S. Cl. 220—19 **5 Claims**



1. A cooking pan comprising: a rectangular rigid sheet-like member defining a bottom for the pan and having a pair of turned-up portions at the respective side edges thereof defining side members for the pan; and a wire-formed member at each end of the pan loosely crimped into oversize holes in the ends of the bottom and of the side members, each wire-formed member including a first wire rod extending transversely across the end of the pan and having its ends crimped into oversize holes in the ends of the side members so that the wire rod forms a loose, sliding fit with the side members in a point contact relationship, and each wire-formed end member including a further wire rod which has its ends crimped into oversize holes in the bottom to form point contacts with the bottom, so as to minimize the formation of any area which could harbor bacteria.

3,964,629

COMBINED DECANTER AND TRAY

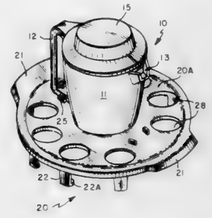
John H. McCabe, Worcester, Mass., assignor to Fox Specialty Co., Inc., Worcester, Mass.

Filed June 23, 1975, Ser. No. 589,071

Int. Cl.³ B65D *1/02*; **A47G** *19/32*, *23/08*

U.S. Cl. 220—23.86 **7 Claims**

1. A combined decanter and tray, the tray comprising a generally flat upper surface and an arcuate substantially centrally disposed orifice having slot means extending outwardly from the arcuate side wall of said central orifice towards the outer side of the tray and the decanter having an outer wall which is substantially arcuate in horizontal cross section, the lower portion of said side wall being of smaller diameter than the upper portion, outwardly extending substantially horizontal flange means connecting the upper end of the side wall of said lower portion of the decanter and the lower end of the side wall of said upper portion of the decanter, key means projecting outwardly from the periphery of the lower portion of the side wall below said substantially horizontal flange means, said key means being sideable through said slot means when the lower portion of said decanter is inserted through



said substantially centrally disposed orifice of the tray, and a handle for said decanter, whereby upon sliding said key means downwardly through said slot means and rotating said decanter by its handle the upper portion of the key means is located below a portion of the tray which is adjacent to the central orifice and the tray may be lifted by grasping the handle of the decanter permitting transportation of the combined decanter and tray, but upon rotation of said decanter to a position wherein said key means registers with said slot means the decanter may be removed from the tray.

3,964,630

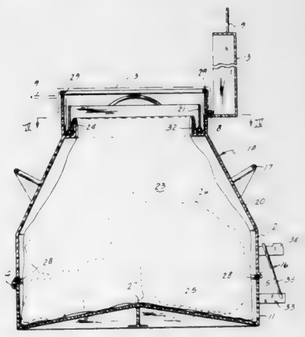
GARBAGE CAN FOR USE WITH DISPOSABLE BAGS

Donald J. Getz, 1741 Sycamore, Hanover Park, Ill. 60103

Filed Oct. 16, 1974, Ser. No. 515,147

Int. Cl.² B65D *25/16*

U.S. Cl. 220—63 R **6 Claims**



1. A container for encasing and releasably supporting a disposable garbage bag in position to be filled through a reduced size open top that is easily tied closed and accommodating expansion of the bag along a gradually increasing intermediate portion to a full size bottom portion which comprises a rigid body having an upstanding open top peripheral wall with an inturned grooved ledge spaced below the open top, an intermediate section depending from said wall along a diverging path and a separate bottom section depending below the bottom end of the intermediate section, a cover for the open top of the peripheral wall, a hinge swingably mounting said cover on said wall, a handle on the cover to swing the cover from opened to closed positions, an annular locking member fitting in the open top of the bag and in the groove of said ledge depressing the top end of the bag into the groove and suspending the bag from the ledge, said locking member being removeable from the ledge through the open top of the bag when the bag is filled to permit the bag to be tied closed, a second hinge connecting the separate bottom to the bottom of the intermediate section, a locking means opposite said second hinge securing the bottom section in closed position to cover the bottom of the intermediate section, and said locking means being releasable to permit the intermediate section and peripheral wall to swing free of a filled bag in the container when said annular locking member is removed to thereby expose the bag for easy removal.

3,964,631

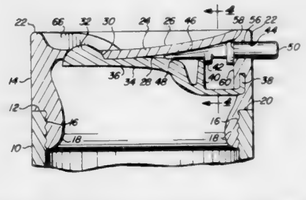
DRINKING RECEPTACLE

Kenneth J. Albert, 7212 Sunset Blvd., Hollywood, Calif. 90046

Filed June 24, 1974, Ser. No. 482,363

Int. Cl.² A47G *19/22*

U.S. Cl. 220—90.4 **4 Claims**



1. A drinking receptacle provided with a generally cup like body having a normally upper open end; a cover for said body removably and sealingly secured to said upper open end of said cup like body; said cover having a peripheral drinking rim and a top plate portion surrounded by said rim; said top plate portion having upper and lower sides; said top plate portion having a drinking opening therein; said drinking opening being at a first location near the proximity of said rim; an openable valve disposed and adapted to close and open said drinking opening; a finger engageable valve actuator movably mounted on said cover at a second location near the proximity of said rim; said valve actuator disposed engageably to operate said valve for opening and closing the same; said valve having a poppet head disposed at said lower side of said top plate portion adapted to open and close said opening; a resilient arm means coupled to said cover and carrying said poppet head; said resilient arm means disposed adjacent said lower side of said top plate portion and tending to hold said poppet head in closed position relative to said drinking opening; said cover having a peripheral side provided with a valve actuator bearing opening therein; said actuator reciprocally mounted in said bearing opening; said valve actuator having a finger engaging portion projecting radially outward beyond said peripheral side of said cover; said valve actuator having an inwardly directed valve actuating portion disposed below said top plate of said cover; said inwardly directed valve actuating portion engageable with said resilient arm of said valve and disposed to deflect said resilient arm in a direction away from said lower side of said top plate to thereby open said poppet head of said valve relative to said drinking opening.

3,964,632

CLOSURE WITH A SLOTTED PULL TAB

John S. Bozek, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

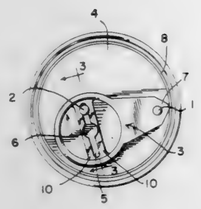
Filed Sept. 16, 1974, Ser. No. 506,064

Int. Cl.² B65D *41/32*

U.S. Cl. 220—270 **10 Claims**

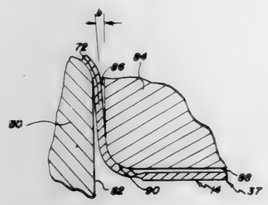
1. An improved safety closure for use on a can or similar container comprising an end panel having an opening flap therein, a tab movably attached to said end panel for move-

ment in a plane generally parallel to said end panel from a non-opening position to an opening position and having means for opening said flap, said tab in the opening position being operative to open said flap, and means for restraining said tab from movement to said opening position from said non-opening position, said restraining means comprising interengaging means on said end panel and on said tab and formed and



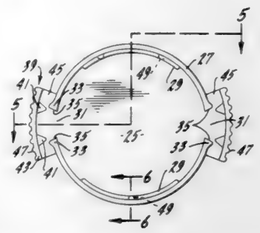
arranged to hold said tab against said end panel for the entire extent of movement from said non-opening position to said opening position, one of said restraining means being distortable consequent to said movement of said tab from said non-opening position to said opening position preventing disengagement of said interengaging means until said tab is disposed in said opening position.

3,964,633
FULL OPEN END
Arthur P. Zundel, Cary, Ill., assignor to National Can Corporation, Chicago, Ill.
Division of Ser. No. 325,361, Jan. 22, 1973, Pat. No. 3,875,884, and a continuation-in-part of Ser. No. 195,095, Nov. 3, 1971, Pat. No. 3,712,503. This application Dec. 12, 1974, Ser. No. 531,861
Int. Cl.² B65D *41/32*
U.S. Cl. 220—273 **12 Claims**



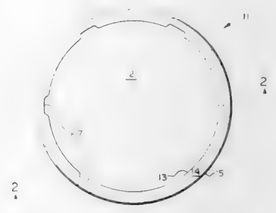
1. An easy open container end, comprising a panel having a frangible connection of reduced cross-section dividing said panel into a removable section and a permanent section adapted to be connected to a container body, said frangible connection having two opposed concave surfaces producing an area of constantly reducing cross-section between said removable section and said permanent section, and a bead deformed from the panel in the removable section, said bead circumscribing substantially the entire periphery of said removable section and being located a substantially constant dimension from said frangible connection, said bead having pairs of interrupted portions to allow said section to be bent during removal.

3,964,634
CHILD RESISTANT SAFETY CAP
Andrew S. Jasinski, Grayslake, and Robert A. McKirnan, Winnetka, both of Ill., assignors to Knight Engineering and Molding Co., Arlington Heights, Ill.
Filed Sept. 2, 1975, Ser. No. 609,224
Int. Cl.² B65D *43/04*
U.S. Cl. 220—281 **14 Claims**



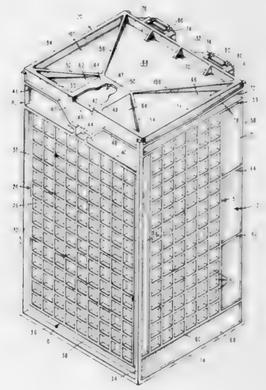
1. A child resistant safety cover for a cylindrical container having a generally annular undersurface located adjacent the top thereof,
said safety cover being formed of a resilient and flexible plastic and including:
a circular top wall,
a tubular wall depending from said circular top wall,
at least one locking flange projecting inwardly from the lower edge of said tubular wall and positioned to engage said undersurface of said container when said cover is positioned on the container,
at least one slit formed in said tubular wall and extending through said lower edge of said tubular wall to allow distortion and movement of said locking flange, and
wedging means carried by said cover and located adjacent to and outwardly of said slit,
said wedging means being resiliently movable into said slit to engage and distort said tubular wall and thereby move said locking flange away from engagement with said undersurface of said container.

3,964,635
RECESSED, RIM-LOCKING CONTAINER CLOSURE
Rodney E. Ludder, Glen Head, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 26, 1973, Ser. No. 427,985
Int. Cl.² B65D *43/10*
U.S. Cl. 220—306 **5 Claims**



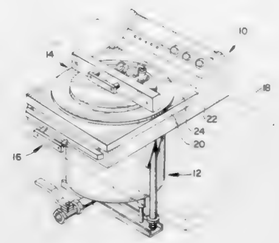
1. A closure adapted to be affixed to the mouth of a container of the type having laterally outwardly projecting means disposed in an annular pattern surrounding said mouth, said closure being integrally formed by thermoforming from sheet-like thermoplastic material in a female mold and comprising in combination: a laterally extending central panel; an axially extending peripheral wall attached to, surrounding and extending upwardly from said central panel; an annular member attached to said peripheral wall at a location above the juncture of said peripheral wall and said central panel, said annular member extending laterally outwardly from said peripheral wall; and a peripheral skirt attached to said annular member at a location laterally outwardly of the juncture of said annular wall and said peripheral wall, said peripheral skirt extending axially downwardly, said skirt being provided with laterally inwardly projecting means which are adapted to securely engage the outwardly projecting means surrounding the mouth of the container to retain the closure in place with respect to the container to which it is adapted to be affixed, said peripheral wall being provided with a circumferentially spaced apart series of lugs which project radially outwardly thereform toward said peripheral skirt and which terminate short of said peripheral skirt, said peripheral skirt being attached to the annular member at a location spaced outwardly of the juncture of the annular member and the peripheral wall by a distance which is not substantially less than the axial depth of the peripheral skirt.

3,964,636
BOX FOR ENCASING A BAG CONTAINING LIQUID
Houston Rehrig, 4010 E. 26 St., Los Angeles, Calif. 90023
Filed Feb. 27, 1974, Ser. No. 446,477
Int. Cl.² B65D *25/34*, *21/02*
U.S. Cl. 220—306 **18 Claims**



1. A box for encasing a thin film bag containing liquid comprising:
first, second, third and fourth side panels and an end panel each of substantially rectangular shape attached together along their contiguous side edges to form a substantially quadratic box having an open and opposite said end panel, said first and third side panels and said second and fourth side panels, respectively, being opposite one another,
a plurality of first strengthening corner members, one of said first corner members being at the intersection of each adjacent pair of said side panels,
a plurality of second strengthening corner members, one of said second corner members being located at the intersection of said end panel with each of said side panels, said first and second corner members being integrally joined together,
said first side panel being substantially entirely of first open lattice construction of sufficient strength to support the weight of said bag and the contents thereof when said box rests upon said first side panel,
said third side panel being substantially of open lattice construction,
said second and fourth side panels each comprising a first portion adjacent to said first side panel and extending along the entire distance between said end panel and said open end, said first portion being of solid construction of sufficient strength to withstand the pressure of said bag and the contents thereof when said box rests upon said first side panel, and a second portion of open lattice construction adjacent to said third side panel and extending along a major portion of the distance between said end panel and said open end,
said end panel comprising a first end panel portion adjacent to said first side panel and extending along substantially the entire length of said end panel, said first end panel portion being of solid construction of sufficient strength to withstand the pressure of said bag and the contents thereof when said box rests upon said first side panel, and a second end panel portion substantially entirely of open lattice construction adjacent to said third side panel,
said open lattice of said first side panel being of heavier construction than said open lattice of said second, fourth and end panels,
a lid panel hingedly attached to one of said side panels at said open end and movable between an open position and a closed position, said lid panel being of sufficient strength to support the weight of said bag and the contents thereof when said box rests upon said lid panel,
hinge means for hingedly attaching said lid panel to one of said side panels,
fastening means for releasably fastening said lip panel in said closed position,
first support means on said first side panel to support said box when said box rests upon said first side panel, and
second support means on said lid panel to support said box when said box rests upon said lid panel.

3,964,637
DEEP FRYER RECEPTACLE COVER AND OPERATING MECHANISM THEREFOR
Clem J. Luebke, Beloit, Wis.; Norman L. Beck, Rockton, and Lowell W. Daniels, Rockford, both of Ill., assignors to The Broaster Co., Rockton, Ill.
Filed Sept. 11, 1975, Ser. No. 612,272
Int. Cl.² B65D *45/28*
U.S. Cl. 220—314 **22 Claims**



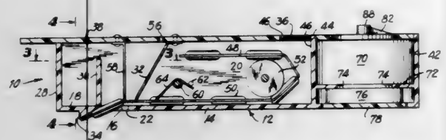
1. Cooking apparatus comprising, cooking vessel means having an opening thereinto, frame means supporting said cooking vessel means, a cover for said opening extending transverse to the axis of said opening, cover support means supporting said cover for reciprocating movement relative to said frame means and cooking vessel means and axially of said opening between open and closed positions with respect thereto, means biasing said cover to move toward said open position, and means for interengaging said frame means and said cover support means to releaseably hold said cover in said closed position.

3,964,638

DISPENSER FOR BODIES IN SEALED SHEET MATERIAL COMPARTMENTS

Frank S. Dimauro, 4829 Atlantic Ave., Ventnor, N.J. 08406

Filed Dec. 19, 1974, Ser. No. 534,657
Int. Cl.² G07F 11/68; B65G 29/00
U.S. Cl. 221—3 **15 Claims**



1. In a device for dispensing, one by one, a series of bodies arranged in a row within sealed compartments of an elongated sheet material which must be severed between said compartments for individually releasing the bodies in their sealed compartments, container means for housing a strip of the sheet material and the bodies carried thereby in sealed compartments thereof, said container means having a wall formed with a discharge opening, manually operable means carried by said container means opposite said wall thereof for reciprocating movement by the operator from a rest position first in a forward direction away from said rest position and then in a rearward direction back to said rest position, and means connected at least in part to said manually operable means for responding to said forward movement thereof for feeding the strip of sheet material in a direction which will advance a body in a compartment of the sheet material out through said discharge opening and for cutting across the sheet material between the compartment thereof housing the latter body and the compartment thereof housing the next body so that the body which is fed through said discharge opening will be severed to drop from said container means, said manually operable means cooperating with at least the part of said feeding and cutting means which is connected thereto for retracting the latter part of said feeding and cutting means with said manually operable means when said manually operable means is returned to its rest position and for placing at least said part of said feeding and cutting means in readiness for feeding the next body to said discharge opening when the manually operable means is again moved forwardly from said rest position thereof, said manually operable means itself forming at least part of a wall of said container means.

3,964,639

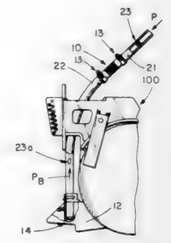
SEED TUBE DIFFUSER FOR A PNEUMATIC SEED PLANTER

A. Lowell Norris, Downers Grove, and Darlo E. Lienemann, Darien, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 5, 1975, Ser. No. 547,314
Int. Cl.² B65G 53/58
U.S. Cl. 221—278 **8 Claims**

1. An air diffuser for use in a pressurized seed delivery tube of a pneumatic type of seed planter having the seed delivery tube connected to a ground furrow opener, the seed delivery tube being cut at a determinant length from the furrow opener and the air diffuser being spliced into the parted ends of the tube and secured thereto; the air diffuser comprising a short cylindrical duct member having a plurality of spaced-apart holes therethrough within a determined axial span, the effective open area of the holes being approximately 50% greater than an open area inside the duct member taken on a cross-section of the duct member within the span of holes; and

wherein the duct member has an air-seed inlet end and an air-seed outlet end, the inlet end having an annular internal stepped portion forming a shoulder before the span of holes, and the outlet end having a venturi portion extending axially after the span of holes and forming a second shoulder, the parted ends of the tube being inserted into the inlet and outlet ends up to the shoulders.

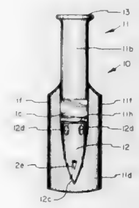


3,964,640

CAN SPOUT

Loran L. Laughlin, 701 Deseret Bldg., Salt Lake City, Utah 84111

Filed Mar. 14, 1975, Ser. No. 558,465
Int. Cl.² B67B 7/24
U.S. Cl. 222—81 **1 Claim**



1. A spout for use with cans containing ground coffee and the like, comprising

a body portion formed from a single blank of metal, centrally drawn to have a finger projecting from a flat face of a tongue and a skirt portion, with the ends of said finger being open;

a cutter portion formed from a single blank of metal material of generally triangular configuration, and with shoulders formed at one side thereof, said shoulders being rolled on a line extending from their inner edges towards a point of said blank, holes through the cutter portion between the shoulders and the point, and a pointed projection punched from the cutter portion adjacent the point thereof and extending inwardly of the rolled shoulders; and

a pin extending through the finger and said shoulders when said shoulders are inserted into said finger and said tongue is bent downwardly over the cutter portion, to secure said cutter portion within said body portion with the point of the cutter portion extending downwardly and against the skirt portion of the body portion; and

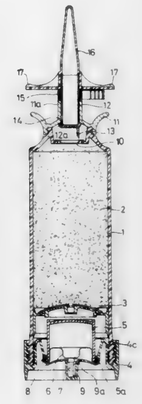
a portion of the tongue of the body portion extending substantially normal to and away from the cutter portion to serve as a seal extending over a portion of the opening formed by insertion of the spout into the top of a can when the spout is fully inserted into the can.

3,964,641

DEVICE FOR DISPENSING FLOWABLE MATERIALS

Gert Langensiepen, Runderoth, and Werner Bruning, Wallefeld, both of Germany, assignors to Alfred Fischbach KG Kunststoff-Spritzgusswerk, Runderoth, Germany

Filed Oct. 2, 1974, Ser. No. 511,260
Claims priority, application Germany, Oct. 3, 1973, 2349656
Int. Cl.² B67B 7/24
U.S. Cl. 222—82 **19 Claims**



1. A dispensing receptacle comprising an elongated substantially cylindrical housing having a closed end and a dispensing end longitudinally spaced from said closed end, and provided with a chamber; valve means connected to said dispensing end of said housing and operative for establishing communication between said chamber and the exterior of said housing; a piston mounted in said chamber for displacement longitudinally of said housing and sealingly subdividing said chamber into a first compartment containing the material to be dispensed, and a second compartment; a substantially cylindrical container for a pressurized medium situated in said second compartment and connected to said housing coaxially therewith in the reginon of said closed end thereof, and having a valve formed with an actuating element; and actuating means including an elastically yieldable hollow projection extending centrally and exteriorly of said closed end, said actuating element of said valve of said container extending into said hollow projection and cooperating therewith so as to open said valve when said hollow projection is elastically deformed to thereby release a predetermined quantity of the pressurized medium into said second compartment for displacing said piston toward said valve means with attendant dispensing of said material through the latter.

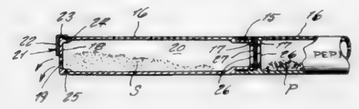
3,964,642

MINI CADDY

Robert C. Lesh, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed June 30, 1975, Ser. No. 591,483
Int. Cl.² B47G 19/12
U.S. Cl. 222—142.4 **2 Claims**

1. In a mini caddy, the combination of a body comprised of two cylindrical cases detachably screwed together at their one ends, each said end having a large refilling opening therethrough, a solid disc between said ends to separate the content of one case from the content of the other, an opposite end of each said case having an end wall a portion of which has perforated openings for dispensing said content, and a rotatable end cap adjacent said case end wall, said end cap partly covering said case end wall so to selectively expose or close said dispensing perforated openings.



3,964,643

UNPRESSURIZED CONTAINER FOR HOLDING A PLURALITY OF PRODUCTS SEPARATELY AND DISPENSING THEM SIMULTANEOUSLY

Bruno R. Morane, and Jean-Louis H. Gueret, both of Paris, France, assignors to L'Oreal, Paris, France

Filed Dec. 23, 1974, Ser. No. 537,106
Claims priority, application France, Dec. 27, 1973, 73.46537; Dec. 3, 1974, 74.39496
Int. Cl.² B65D 37/00
U.S. Cl. 222—145 **19 Claims**



1. Unpressurized container for holding at least two products separately and distributing them simultaneously, at least one of said products being a liquid, said container comprising a rigid closed tube and an outer jacket surrounding said tube, said jacket being provided with at least one dispensing orifice and made at least in part of a deformable material, said tube having a section smaller than that of the jacket and a frangible central neck, one of the products to be dispensed being located inside said tube and another of said products inside said outer jacket but outside said tube, said outer jacket being provided with at least one relatively rigid portion positioned to exert a neck-fracturing pressure against said tube when brought into contact with said tube by deformation of said outer jacket.

3,964,644

ADHESIVE DISPENSING APPARATUS

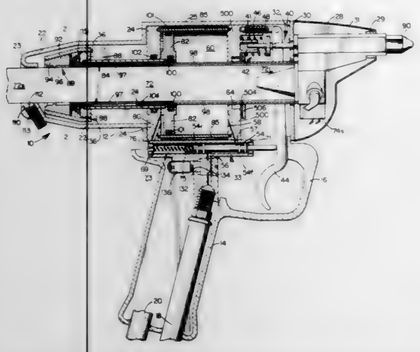
Ray H. Wallace, Rockland, Mass., assignor to Transworld Adhesive & Chemical Corporation, Rockland, Mass.

Filed Sept. 26, 1974, Ser. No. 509,335
Int. Cl.² B67D 5/62
U.S. Cl. 222—146 HE **13 Claims**

1. In a hot-melt manually-operated adhesive applicator for receiving a continuous solid rod of hot-melt adhesive material and dispensing said adhesive in melted form, said applicator comprising a central passageway for moving a solid rod of adhesive through said apparatus into a heating zone from which it is dispensed in melt form, the improvement wherein:

a. an annular pneumatic cylinder is arranged around said central passageway, said cylinder comprising an annular piston adapted for reciprocal motion in response to air pressure alternately admitted into and relieved from said cylinder; said piston forming means to actuate an advancement assembly for intermittent engagement and advancement of said adhesive on the forward stroke of said piston;

b. and wherein said pneumatic cylinder comprises, when said piston is retracted, a conduit for conduction of cool-



ing air around said adhesive rod between said heating zone and said retracted piston.

3,964,645

APPARATUS FOR MELTING AND DISPENSING THERMOPLASTIC MATERIAL

Charles H. Scholl, Vermilion, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Feb. 12, 1975, Ser. No. 549,189

Int. Cl.² B67D *5/62*; **F27B** *14/00*

U.S. Cl. 222—146 HE **23 Claims**



1. An apparatus for converting solid thermoplastic material to molten thermoplastic material and for dispensing the molten thermoplastic material comprising,

a grid melter having a continuous side wall, a bottom wall, and an open top for receiving said solid thermoplastic material,

at least one discharge opening in said bottom wall,

a reservoir mounted beneath said grid melter, and adapted to receive molten material from said discharge opening,

means for heating said bottom wall of said grid melter,

a dispenser selectively operable to dispense said molten thermoplastic material,

a pump at least partially mounted within said reservoir for supplying said molten thermoplastic material from said reservoir to said dispenser,

the improvement which comprises,

plurality of rows and columns of heating elements extending upwardly from said bottom wall of said grid melter, each of said heating elements having a base portion and an upper end portion, each of said upper end portions being shaped as a truncated cone, each of said truncated cone shaped portions of each of said heating elements having a bottom of at least twice the cross sectional area as the top and having a substantial taper between said bottom and top.

3,964,646

ELECTRIC SIEVE

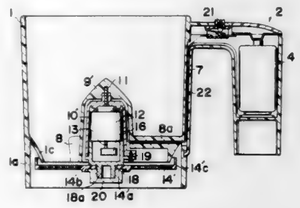
Toshio Yazawa, and Fumi Yazawa, both of Kawaguchi, Japan, assignors to Toshio Yazawa, Kawaguchi, Japan

Filed Dec. 30, 1974, Ser. No. 537,178

Claims priority, application Japan, Mar. 14, 1974, 49-29642

Int. Cl.² B07B *1/32*

U.S. Cl. 222—189 **5 Claims**



1. An electric sieve comprising:

a casing adapted to contain fine particles or a powdered substance to be sifted,

a handle portion connected to said casing adapted to be grasped by one hand of an operator, for holding the sieve,

a supporting arm extending from the inner wall of said casing to the center portion thereof,

a motor cover connected to said supporting arm at the center portion of said casing,

an electric motor secured within said motor cover and having an output shaft extending downwardly therefrom,

a weight member eccentrically connected to said output shaft of said motor,

a meshed member disposed within said casing adjacent the lower end portion thereof,

means for mounting said meshed member for vibration by rotation of said output shaft upon actuation of said motor,

means for supplying electric current to said motor for actuation thereof,

inner and outer annular flange members at the lower part of said casing and spaced apart to provide an annular recess therebetween, and

a vertically extending annular flange around the periphery of said meshed member partially received within said annular recess.

3,964,647

SPRAY DISPENSING DEVICE

Harry S. Dearling, 25 E. 83rd St., New York, N.Y. 10028

Filed Mar. 11, 1975, Ser. No. 557,320

Int. Cl.² B67D *5/64*

U.S. Cl. 222—174 **5 Claims**

1. A spray dispensing device for dispensing a spray comprising, in combination,

a container for dispensing a quantity of a desired spray including valve means associated with said container and actuation means to operate said valve means to dispel a spray from said container,

a first housing for said container comprising a substantially frusto-conically shaped segment within which is disposed said container,

said container being disposed within said first housing and said first housing including an access opening therein to permit the spray when dispelled from said container to clear said housing,

said housing segment including a tapered axially disposed slot therein along the extent of said segment to accommodate the valve housing of said container when said container is inserted therein and said segment being resilient to outwardly expand upon insertion of said container therein to frictionally grip and retain said container therein,



means within said first housing to cooperatively contact the actuation means on said container, and

second housing means cooperatively interrelated with said first housing means and movable from a first position wherein no compressive force is exerted on said container to a second position wherein a compressive force is exerted on said container thereby to exert a force on said container actuation means to dispel a spray from said container.

3,964,648

TONER SUPPLY DEVICE FOR COPYING APPARATUS

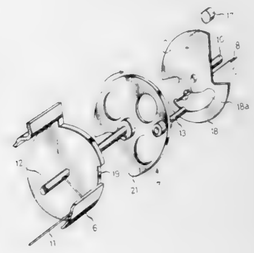
Shigeru Suzuki, and Minoru Suzuki, both of Yokohama, Japan, assignors to Ricoh Co., Ltd., Japan

Filed June 20, 1975, Ser. No. 588,801

Claims priority, application Japan, June 28, 1974, 49-73244

Int. Cl.² G01F *11/20*

U.S. Cl. 222—333 **6 Claims**



1. In a copying apparatus of a type in which images are fixed on a sheet of copy by magnetically positioning a toner material, the improvement comprising a material container having a cylindrical interior wall with a discharge opening above the bottom of said wall on one side thereof, a rotatable scooping member having a portion extending longitudinally through at least a portion of said container adjacent said interior wall and being rotatable around said container in closely spaced relationship to said wall to pick up material from said container and discharge it through said discharge opening, and drive means connected to said scooping member to rotate said scooping member and including a rotatable drive member having a resilient transmission portion acting on said scooping member to rotate it, and a holding member disposed in the path of movement of said resilient transmission portion and temporarily blocking the movement thereof to bend said resilient member to effect the build up of resilient force therein whereby the resilient member becomes clear of said blocking member to release said resilient force which acts in the direction of rotation of said scooping member to accelerate it at a location where its rotation approaches the discharge opening and to cause the material picked up by the longitudinally extending portion thereof to be hurled through the discharge opening.

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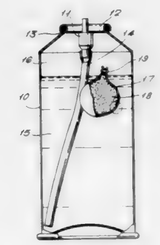
PRESSURIZED DISPENSING CONTAINER

David John Alexander, Twickenham, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 30, 1975, Ser. No. 545,290

Int. Cl.² B65D *83/14*

U.S. Cl. 222—399 **5 Claims**



5. In a pressurized dispensing device containing a fluid product to be dispensed, the improvement comprising a reservoir containing a liquefied propellant gas selected from the group consisting of liquefied hydrocarbons, liquefied chlorohydrocarbons, liquefied fluorohydrocarbons, the propellant being sorbed by a particulate hydrophobic silica, the reservoir comprising a vapour permeable envelope of fibrous material selected from the group consisting of polypropylene fibres and cellulose fibres, to permit propellant gas to pass through and pressurize the headspace of the device.

3,964,650

BAG FILLING MACHINE HAVING COMBINED INLET VALVE AND LEVEL CONTROL

Erwin M. Lau, Dolton, Ill., assignor to Black Products Co., Chicago, Ill.

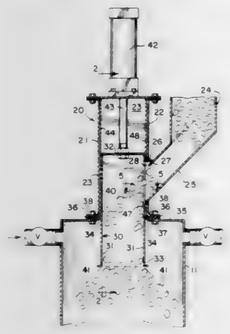
Filed Oct. 18, 1974, Ser. No. 515,825

Int. Cl.² G01F *11/28*

U.S. Cl. 222—450 **8 Claims**

1. A bag filling machine adapted for receiving material from a supply means comprising a chamber, a bag-filling spout connected with the lower part of said chamber, an inlet valve for admitting material from a supply source to said chamber, said inlet valve comprising an outer casing mounted on a top wall of said chamber and communicating therewith, an inner casing slidably mounted for movement within said outer casing between an upper and a lower position, the inner casing being of a length such that its lower edge extends downwardly into said chamber when in said lower position to limit the level of material being fed into said chamber in order to provide a free space in the upper portion of said chamber, said outer and

inner casings each having an opening which are aligned with each other when said inner casing is in said lower position communicating the interior of said inner casing with said supply source, the wall of said inner casing being imperforate beneath the opening therein to provide an upwardly sliding gate operative to close the opening in said outer casing to cut



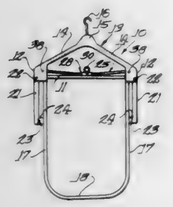
off the flow of material from said supply source through said opening in said outer casing, the upward movement of said lower edge incident to valve closing permitting the material within said inner casing to drop into said chamber, and means for slidably moving said inner casing between said lower and said upper positions.

3,964,651

TAMPER-PROOF GARMENT HANGER

Rose B. Hamilton, 95 Brookfield St., Manchester, Conn. 06040, and Joan R. Yarus, 37 Beals St., Brookline, Mass. 02146

Filed Oct. 23, 1974, Ser. No. 517,159
Int. Cl.² A47J *51/14*
U.S. Cl. 223—91 **4 Claims**



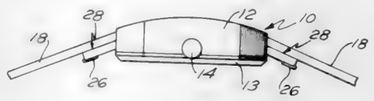
1. A tamper-proof garment hanger comprising:
an inverted V-shaped yoke of hollow construction formed of a pair of hollow converging leg members with a top member defined at the converging ends thereof and with shoulder portions defined at the spaced apart ends thereof;
a rigid horizontal cross-member extending in the plane of the yoke and interconnecting the shoulder portions;
a suspension hook having a curved hook portion and a shank extending vertically into the top member, the shank being rotatably affixed to the top member for rotation of the hook relative thereto about its axis;
vertically extending depending side members affixed to each shoulder portion and extending downwardly therefrom parallel to each other;
a pair of elongated rigid clamp arms each associated with one of the shoulder portions and pivotally attached thereto intermediate its ends and spaced outwardly from respective ones of the side members, the clamp arms being pivotably movable in the plane of the side members, the clamp arms each having a top end and a bottom end;
a pad affixed to the bottom end of each of the clamp arms extending outwardly therefrom in the direction of the associated side member;
a pad affixed to each side member in a position thereon to be engaged by an associated pad of the associated clamp arm;
a toggle mechanism consisting of a pair of complemental identical link elements each of a generally L-shaped configuration and having the outer ends of their long leg portions pivotally connected together at a point intermediate the ends of the cross-member, the terminal end of the short leg portion extending vertically downwardly from the long legs inwardly of an associated shoulder portion and being pivotally attached to the shoulder portion for guiding the pivotal movement of the toggle between a first position adjacent the cross-member and a second position spaced from the cross-member;
a connecting member formed integrally with the short leg portion of each of the link elements and extending downwardly and outwardly at an angle thereto from the point of pivot connection to a point adjacent the lower edge of the associated shoulder portion;
a connecting link member having one end pivotally connected to the terminal end of the short leg portion extension and having its opposite end pivotally connected to the top end of the associated clamp arm;
movement of the pivot joint interconnecting the adjacent ends of the link elements to a position adjacent the cross-member effecting pivotal movement of the clamp arms in a direction to engage the terminal ends thereof with the pads of the side members, and movement of the toggle to the second position spaced upwardly and away from the cross-member effecting the outward pivotal movement of the terminal ends of the link members away from the side members, these positions being referred to as the clamping positions and the unclamping positions respectively; and
locking means associated with each of the link elements when in the clamping position to prevent unauthorized movement of the toggle to the unclamping position, the locking means being operable to an unlocking position to permit free movement of the toggle between the clamping and unclamping positions.

3,964,652

WATCH BAND AND CONNECTOR THEREFOR

Kenneth Fuld, New York, N.Y., assignor to Kestenman Bros. Mfg. Co., Providence, R.I. and Major Watch Case Co., Inc., Brooklyn, N.Y., part interest to each

Filed Jan. 17, 1972, Ser. No. 218,247
Int. Cl.² A44C *5/16*
U.S. Cl. 224—4 E **10 Claims**



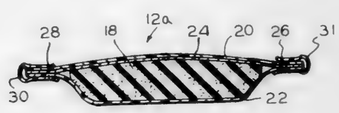
1. A watch band construction comprising a band member that includes opposed ends for engagement with a casing of a wrist watch, at least one lug attached to said casing and extending outwardly therefrom, a connector assembly for joining one end of said band member to said casing including a lock element located on said lug and normally projecting outwardly therefrom prior to connection of said one end of the band member to said casing, a connector member joined to said one end of the band member and being shaped and proportioned for securement to said lug and lock element, wherein the connector member abuts said casing and locates said one end of said band member in abutting relation with said casing, said lock element being reversely foldable into engagement with said connector member to lock said connector member and said one end of the band member to said lug and watch casing.

3,964,653

PADDED CARRYING STRAP CONSTRUCTION

Glenn L. Strutz, Madras, Oreg., assignor to Tote Pak Co., Madras, Oreg.

Division of Ser. No. 379,716, July 16, 1973, Pat. No. 3,882,914. This application Sept. 18, 1974, Ser. No. 506,965
Int. Cl.² A45C *1/04*
U.S. Cl. 224—5 P **12 Claims**



1. A carrying strap construction comprising:
a first thin, soft, pliable strip forming a first surface layer of said strap;
a second thin, soft, pliable strip overlying said first strip and forming a second surface layer of said strap;
a resilient layer of padding material of greater thickness than said surface layers sandwiched between said surface layers;
a thin, flexible strip of high-strength material resistant to stretching forming an inner load-bearing layer of said strap between said padding layer and one of said surface layers and extending across the full width of said padding layer,
said inner load-bearing layer having substantially the same overall width edge-to-edge of said strap as the adjacent said surface layer,
and edge securing means securing together said first and second surface layers and said load-bearing inner layer at the opposite side edge portions of said strap and along the length thereof to bind together said surface and inner layers and enclose said layer of padding, such that said surface and inner layers extend together throughout substantially the full width and length of said strap end securement means attaching said surface layers and said load bearing inner layer to each other at their ends and for attachment to a load carrying means

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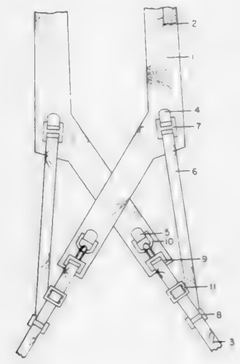
3,964,654

PACK STRAPS

Donald B. Wittenberger, P. O. Box 1551, Seattle, Wash. 98103

Continuation of Ser. No. 336,014, Feb. 26, 1973, abandoned. This application July 25, 1975, Ser. No. 598,760
Int. Cl.² A45F *3/08*
U.S. Cl. 224—8 R **12 Claims**

1. A pack strap apparatus for use in combination with back packs or the like, comprising:
a. first and second pack strap means adapted to be secured to the back pack near the top and toward the opposite sides thereof and to extend over the shoulders of a wearer when the combination of the back pack and said pack strap apparatus is in place;
b. first and second channeling means adapted to be secured to said back pack in the vicinity of opposite sides of said back pack near the bottom thereof, such that said first and second channeling means tend to extend toward each other in the vicinity of the wearer's waist;
c. first and second connecting strap means, each having first and second ends and secured respectively, at their first ends, to said first and second pack strap means, said first and second connecting strap means extending substantially vertically downwardly from said first and second pack strap means and slidably passing through, respectively, said first and second channeling means, the positions of first and second channeling means, respectively, relative to said first and second connecting strap means defining first and second sections thereof, wherein said first section of each connecting strap extends from said first end thereof to the point there along where each connecting strap passes through its associated channeling means and wherein said second section of each connecting strap extends for the remainder thereof, the lengths of said first and second sections of each connecting strap means varying with movement of the wearer, said first



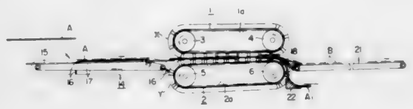
and second connecting strap means extending across the wearer's chest at an angle such that said first and second connecting strap means cross each other in the vicinity of the middle of the wearer's chest; and
d. first securing means securing said second end of said first connecting strap means to said second pack strap means, and second securing means securing said second end of said second connecting strap means to said first pack strap means such that said first and second pack strap means and said first and second channeling means tend to be drawn toward each other in response to movement of the wearer, thus maintaining the back pack in place on the wearer's back and tending to prevent movement of the back pack during movement of the wearer.

3,964,655

APPARATUS FOR CONTINUOUS PUSHING OUT OF SHEET PRODUCT FROM BLANK

Matumoto Kotaro, Osaka, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 25, 1975, Ser. No. 616,562
Int. Cl.² B26F *3/02*
U.S. Cl. 225—97 **10 Claims**



1. Apparatus for continuous pushing out of at least one sheet product from a blank comprising at least one sheet formed in advance with cut lines corresponding to the contour of the sheet product, said apparatus comprising:

a pair of endless moving means (**1, 2**) having respective spans thereof disposed in opposed relationship and driven in the same direction from one end thereof to the other end, said spans being arranged in mutually converging relationship with respect to said direction;

means (**14**) for supplying the blank (A) between said spans at the one ends thereof so as to be conveyed along the spans;

blank holding members (**7**) secured to one of said endless means (**1**) in spaced apart relationship with respect to the moving direction thereof and disposed at positions enabling the holding members (**7**) to abut on that part of the blank (A) outside of said contour (C) of the sheet product at one side of the blank while the blank is being conveyed between said spans;

sheet product pushing out members (**8**) secured to the other endless means (**2**) in spaced apart relationship with respect to the moving direction thereof and disposed at positions enabling the pushing out members (**8**) to abut on that part of the blank inside of said contour (C) of the sheet product (B) at the other side of the blank (A) while the blank is being conveyed between said spans;

blank backup means (**10, 13**) yieldably supported on the other endless means (**2**) at positions opposing said holding members (**7**), respectively, and cooperating with the holding members to grip the blank (A) therebetween while it is being conveyed between said spans; and

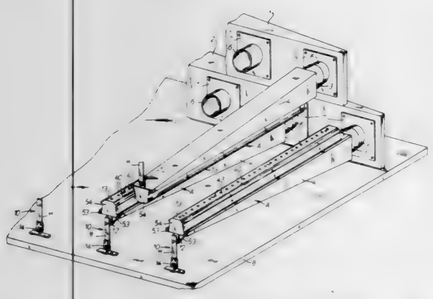
sheet product backup means (**9, 12**) yieldably supported on the one endless means (**1**) at positions opposing at least some of said pushing out members (**8**), respectively, and cooperating with the pushing out members to grip the part of the blank inside of said contour (C) while the blank is being conveyed between said spans, the converging relationship between said spans being such that the loci (X, Y) of the blank holding members (**7**) and the sheet product pushing out members (**8**) are spaced apart in the region of said one end of the spans and partially overlap each other in the region of said other end, whereby the part (B) of the blank inside of said contour (C) is gradually pushed out from the remaining part (A_1) of the blank transversely to said direction with resultant yielding of said blank backup means (**10, 13**) and said sheet product backup means (**9, 12**) while the blank is conveyed between the spans.

3,964,656

AIR BAR ASSEMBLY FOR WEB HANDLING APPARATUS

Terry A. Hella, Appleton, Wis., assignor to TEC Systems, Inc., DePere, Wis.

Filed Apr. 14, 1975, Ser. No. 567,685
Int. Cl.² B65H *17/32*
U.S. Cl. 226—97 **14 Claims**



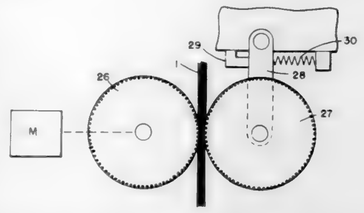
1. An air bar assembly for web handling apparatus comprising an air supply header having an elongated discharge opening along one side thereof, guide track means on said header and arranged along opposite sides of said opening, an air bar including an air discharge nozzle arranged longitudinally thereof, said air bar having means for being slideably engaged in said header track means whereby said air bar can be slideably removed in a longitudinal direction from said header.

3,964,657

YARN TRANSPORTING APPARATUS

Erich Lenk; Karl Bauer, and Herbert Turk, all of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed July 3, 1974, Ser. No. 485,614
Claims priority, application Germany, July 4, 1973, 2365328, May 4, 1974, 2422563
Int. Cl.² B65H *17/22*
U.S. Cl. 226—177 **6 Claims**



1. In a high speed yarn transporting apparatus having two transporting nip rolls mounted rotatably at adjustably positioned intervals between their axes of rotation to exert a clamping or gripping effect on the yarn running therebetween, the improvement which comprises:

yarn contacting circumferential surfaces on each of said rolls which contain a plurality of grooves distributed thereover;

means to drive each of said nip rolls at about the same speed of rotation with respect to each other when gripping said yarn therebetween;

means to resiliently urge one nip roll toward the other in yarn contacting relationship; and

stop means to maintain a gap space between the yarn contacting circumferential surfaces of said nip rolls.

3,964,658

ROLLER REPLACING

Edwin L. Edwards, 24 York Terrace, Brookline, Mass. 02146

Filed Sept. 4, 1974, Ser. No. 503,115
Int. Cl.² B65H *17/20*
U.S. Cl. 226—190 **6 Claims**



1. Web drawing roller assembly for drawing plastic film comprising,

means defining an elongated central shaft support for carrying roll segments,

means defining a plurality of flexible surfaced roll segments arranged in longitudinal array along nearly the entire length of the shaft for bearing against a plastic film web to be guided with a gap between each pair of adjacent segments that is less than the actual length of each segment,

means for detachably securing each of said roll segments to said central shaft whereby any of said roll segments may be replaced when worn,

each roll segment including means defining a central stiffening core of annular form fitting over said shaft support,

said means for detachably securing comprising means for keying together the central stiffening cores and said shaft support to prevent relative rotation therebetween while allowing longitudinal sliding therebetween for assembly and disassembly of the roll segments with the shaft,

and means for separating axially adjacent roll segments to establish the gaps between each pair of adjacent segments,

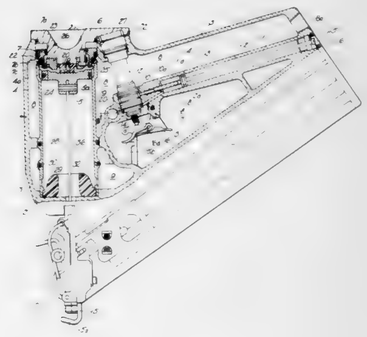
each of said roll segments comprising multiple flexible surfaced portions separated by notched depressions in the segment.

3,964,659

SAFETY FIRING CONTROL MEANS FOR A FLUID OPERATED TOOL

Frank J. Eiben; Eric H. Halbert, both of Cincinnati; William T. Jobe, Bethel, all of Ohio, and Carl Siegmann, Bremen, Germany, assignors to Senco Products, Inc., Cincinnati, Ohio

Filed Mar. 12, 1975, Ser. No. 557,756
Int. Cl.² B25C *1/04*
U.S. Cl. 227—8 **29 Claims**



1. In a pneumatically actuated fastener applying tool with a fastener containing magazine, the tool being of the type having firing control means comprising two separate and independent triggering means shiftable independently and in any order between normal and firing positions and required to be concurrently in their firing positions to actuate said tool, the improvement comprising safety means providing a time limit within which both of said triggering means must achieve their firing positions to fire said tool.

3,964,660

SNAP ATTACHING TOOL

Donald W. Hensley, 1822 Park Ave., Alton, Ill. 62002

Filed Mar. 13, 1975, Ser. No. 557,943
Int. Cl.² A41H *37/04*
U.S. Cl. 227—15 **9 Claims**

1. A snap attaching tool comprising a barrel having a pin resiliently biased to extend from a first end and a second end adapted to receive a driving force, said pin adapted to be received in a socket of a female snap member and said barrel



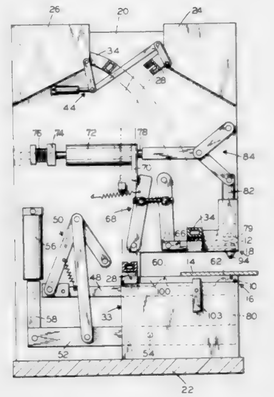
having a central bore with a recess at the first end for receiving the stud of the male snap member.

3,964,661

APPARATUS FOR ATTACHING PRONGED AND MATING ELEMENTS TO ARTICLES

Erich A. Schmidt, and Volker E. Schmidt, both of Lexington, Ky., assignors to Textron, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 509,629, Oct. 23, 1974, abandoned. This application July 18, 1975, Ser. No. 597,076
Int. Cl.² A41H *37/10*
U.S. Cl. 227—18 **12 Claims**



1. An apparatus for attaching first and second mating elements to articles wherein one of the first and second elements has a deformable prong extending therefrom for securing the one element through the article to the other of the first and second elements, said apparatus comprising

a lower station for supporting a first element,

an upper station vertically aligned with the lower station and spaced above the lower station for supporting a second element,

ram means for forcing the first and second elements at the lower and upper stations toward each other,

a first hopper and feeding means for containing a plurality of first elements and for feeding first elements sequentially to the lower station,

means forming a slide path extending horizontally to the upper station,

a second hopper and feeding means for containing a plurality of second elements and for feeding second elements

sequentially to a point in the slide path spaced from the upper station,

a slide bar mounted for sliding movement in the slide path,

means for operating the ram means and the slide bar to assemble first and second elements on an article between the lower and upper stations and to advance the slide bar after operation of the ram means to push a second element down the slide path to the upper station, and

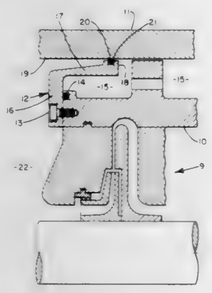
an indicator including means mounted on the slide bar for movement therewith, said indicator means being in vertical alignment with the upper and lower stations when the slide bar is advanced.

3,964,662

SEALING APPARATUS

Donald P. Ravicchio, Appolo, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 3, 1975, Ser. No. 546,576
Int. Cl.² F16J *9/00*
U.S. Cl. 277—58 **5 Claims**



1. In a rotary machine of the type wherein an inner casing, which substantially encompasses the machine components, is mounted within an outer casing to provide a chamber therebetween for containing a high pressure fluid, the improvements comprising

a pressure deformable member responsive to the high pressure fluid introduced into the chamber between the casings, the member having a mounting flange secured in fluid-tight relation with the inner casing, a sealing flange dependent upon the mounting flange positioned adjacent to the inner wall of the outer casing and a resilient arm connecting the two flanges being responsive to the high pressure fluid so as to move the sealing flange from a first position when the chamber is unpressurized to a second position when high pressure fluid is introduced therein, and

a sealing element supported within the sealing flange, said element being in noncontiguous relation with the inner wall of the outer casing when the flange is supported in said first position and seated in positive sealing contact against the inner wall of the outer casing when the flange is supported in said second position.

3,964,663

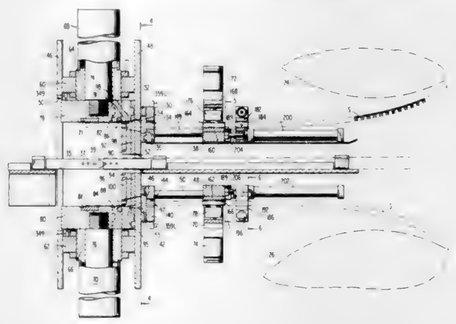
APPARATUS FOR FORMING WOODEN JOINTS

John Calvin Jureit, Coral Gables; Roy Leutwyler, Miami; Larry Brodsky, Sunrise; Benjamin Kushner, Miami; Andrew G. Seipos, Miami, and Adolfo Castillo, Miami, all of Fla., assignors to Automated Building Components, Inc., Miami, Fla.

Filed Sept. 26, 1974, Ser. No. 509,567
Int. Cl.² B27F *7/02*
U.S. Cl. 227—95 **19 Claims**

1. Apparatus for cutting elongated sheet metal connector stock of the type having a plurality of teeth struck integrally therefrom to form a discrete connector plate and embedding the teeth of the connector plate into a pair of adjoining elongated wooden members disposed in longitudinally aligned end-to-end butting relation comprising:

a support sturcture, a presshead carried by said support structure for movement along a predetermined path, means for moving said presshead along said predetermined path, means carried by said support structure for feeding the connector stock into the path of movement of said head and from one side thereof, cooperable means carried by said support structure and said presshead including a cutting edge for cutting the stock as said presshead moves along said path thereby to form a connector plate of predetermined length, means for supporting one of the wooden members adjacent said one side of said head, means for supporting the other wooden member adjacent the opposite side of said head remote from said feeding means, means carried by said apparatus for locating the butting ends of the longitudinally aligned adjoining wooden members and the joint line therebetween in opposition to said presshead, means carried by said apparatus on the opposite sides of said head and adjacent said supporting means respectively for clamping the wooden members in longitudinally aligned end-to-end butting relation with their butting ends and the joint line therebetween in opposition to said presshead, said head being adapted to press the teeth of the connector plate into one side of the endwise butted wooden members upon continued movement of said head along said path.

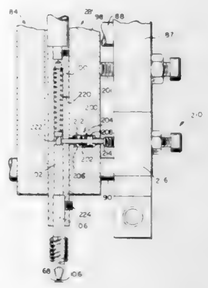


3,964,664

BEAM LEADED DEVICE WELDING MACHINE

Steven J. Butler, Frankfort; Arthur Harley Clawson, Jr., and Robert Jackie Ward, both of Attica, all of Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 450,563, March 13, 1974, Pat. No. 3,920,949. This application Aug. 20, 1975, Ser. No. 605,990
Int. Cl.² B23K *31/00*
U.S. Cl. 228—6 A **3 Claims**



1. Apparatus for attaching elements to a substrate comprising:

a. a first heated platform receiving base members each having a multiplicity of said elements thereon,

b. means indexing said first platform in two directions substantially normal to each other,

c. a second heating platform receiving said substrate,

d. transfer means transferring at least one element from said first heated platform to said second heated platform comprising:

1. a sleeve,
2. a tool holder movable within said sleeve,
3. a heating rod carried by said holder,
4. a bore extending through a central axis of said heating rod,
5. a spring biased sleeve slideably carried in said bore,
6. means applying a vacuum pressure to said bore and said spring biased sleeve,
7. holding means carried by said first named sleeve and engaging said spring biased sleeve to maintain same in a predetermined position, and
8. an adjustable stop means carried by a frame holding said transfer means engaging said holding means, and

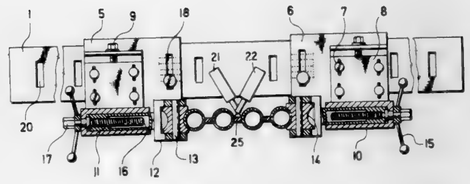
e. adjusting means carried by said second heated platform for adjusting the position of said element in relation to said heating rod means so as to enable substantially equal pressure to be applied to said element.

3,964,665

ADDITIONAL DEVICE FOR AN AUTOMATIC WELDING EQUIPMENT FOR FULLY WELDED TUBE WALLS

Juraj Cervenka, Brno, and Jaroslav Olesovsky, Ricmanice, both of Czechoslovakia, assignors to Prvni Brnenska strojirna, Brno, Czechoslovakia

Filed June 10, 1974, Ser. No. 477,768
Claims priority, application Czechoslovakia, June 11, 1973, 4177-73
Int. Cl.² B23K *37/04*
U.S. Cl. 228—44.1 R **2 Claims**



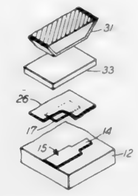
1. A device for automatic welding equipment for fully welded tube walls joined by a strip comprising a first and second pair of draw rolls, a cross member provided with a guide, two welding heads placed between the first pair and the second pair of draw rolls wherein into the space between the said first pair and the said second pair of draw rolls the cross member is fixed to the frame of the automatic equipment, profile rollers pushing the tubes into the strip, bodies, screws in said bodies for selectively affixing said bodies to said guide in a plurality of vertical positions, a hub on the bottom of each of said bodies, a horizontally displaceable sleeve in each of said hubs, a fork on an end of each of said sleeves, and a pin in each of said forks, said profile rollers being pivotably mounted in said pins, said bodies, screws, hubs, sleeves, forks and pins constituting adjustable supports on the guide of said cross member.

3,964,666

BONDING CONTACT MEMBERS TO CIRCUIT BOARDS

Donald Dinella, Union, and Richard M. Kovaric, Verona, both of N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 31, 1975, Ser. No. 564,007
Int. Cl.² H05K *3/24, 1/06*
U.S. Cl. 228—106 **7 Claims**



1. A method of bonding a contact member to a conductor, which comprises:

positioning a solar-coated surface member against an exposed surface of the conductor;

placing a resilient sheet adjacent the contact member;

applying pressure through the sheet against the member to urge the member into contact with the conductor; and

maintaining such pressure while liquefying and resolidifying the solder to bond the member to the conductor.

3,964,667

DIFFUSION BONDING

Robert C. Anderson, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 19, 1966, Ser. No. 521,747
Int. Cl.² B23K *31/02*
U.S. Cl. 228—194 **10 Claims**

1. A method for joining beryllium to beryllium by diffusion bonding, comprising the steps of coating at least one surface portion of at least two beryllium pieces with nickel, positioning a coated surface portion in a contiguous relationship with an other surface portion, subjecting the contiguously disposed surface portions to an environment having an atmosphere at a pressure lower than ambient pressure, applying a force upon the beryllium pieces for causing the contiguous surface portions to abut against each other, heating the contiguous surface portions to a maximum temperature less than the melting temperature of the beryllium, substantially uniformly decreasing the applied force while increasing the temperature after attaining a temperature substantially above room temperature, and maintaining a portion of the applied force at a temperature corresponding to about maximum temperature for a duration sufficient to effect the diffusion bond between the contiguous surface portions.

3,964,668

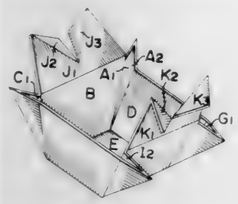
SIMPLE FOLDABLE CONTAINER FOR FOOD AND BEVERAGES

Tenhon Lin, No. 53, Tai Ping Road, Hsin Tien, Taipei Hsien, China /Taiwan

Filed Sept. 23, 1975, Ser. No. 615,938
Int. Cl.² B65D *5/26*
U.S. Cl. 229—35 **1 Claim**

1. A simple foldable container for foods and beverages characterized in that said container is formed from a blank made of a paper sheet of suitable hardness which is in the shape of a generally rectangular 16 sided polygon having roll-pressed thereon a plurality of inwardly and outwardly folding lines dividing the surface of the blank into one square

six trapezoids and eight triangles, said square being centrally located to serve as the base for the assembled container and adjacent symetrical trapezoids to serve as side walls, said symetrical trapezoids having pairs of symetrical triangles adjacent to the corners thereof to serve as holding members, one pair of oppositely located trapezoids having extending therefrom symetrical trapezoids to serve as locking panels having a slot cut at the central portion of the outer edge thereof, said slot being in the shape of a straight line, a triangle or a trapezoid, said locking panel also having roll-pressed thereon between the apex of the slot and the outside corners of the said

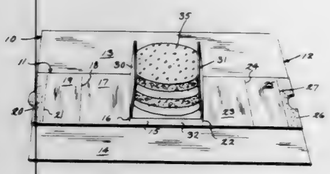


trapezoid folding lines dividing both sides of said trapezoid into two symetrical triangles with said folding lines as the base thereof; first said symetrical trapezoids being inwardly folded around said inwardly folding lines to form wall panels, above said corner triangles being inwardly folded around said inwardly folding lines toward the side walls connected to said locking panels, above said locking panels being outwardly folded along outwardly folding lines, the said triangular portions thereof being inserted into the space between said triangular corner holding members and said side wall of locking panel to form a non-leaking container with the opening being larger than the base.

3,964,669
COMPOSITE WRAPPER COMBINING RIGID AND FLEXIBLE ELEMENTS

Glenn R. Sontag, Oconomowoc, and Benjamin M. Tranholm, Milwaukee, both of Wis., assignors to Milprint, Inc., Milwaukee, Wis.

Filed Sept. 2, 1975, Ser. No. 609,253
Int. Cl.² B65D *5/08*
U.S. Cl. 229—40 **6 Claims**

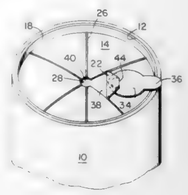


1. A composite wrapper comprising, in combination:
a rigid foldable member joined to a flexible packaging film member,
the rigid foldable member including a base panel having a pair of opposed edges and liftable flaps that are foldable to an upright position relative to the flexible member,
the rigid foldable member also including wall panels connected to said opposed edges of the base panel and foldable to an upright condition to enclose an article carried between the liftable flaps when upright to form a sleeve about such article, and
the flexible member having marginal portions extending beyond either side of the rigid member that are foldable to close each end of the sleeve formed upon folding of the rigid member and thereby complete the package enclosure.

3,964,670
CLOSURE

John Sigfrid Amneus, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 9, 1974, Ser. No. 530,590
Int. Cl.² B65D *5/54*
U.S. Cl. 229—51 ST **24 Claims**

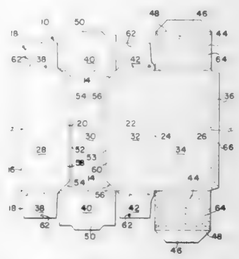


1. Manually openable captive container closure comprising, in combination, a cover portion of a manually tearable sheet material with high deadfold characteristics having an integral margin portion extending peripherally therearound together with means for enabling said margin portion to be attached contiguously around the mouth of a container to extend said cover portion sealingly across such container mouth, means for enabling manual opening of a perforation through a generally central region of said cover portion and means for directing manual tearing of said cover portion outwardly along a plurality of tear lines radiating from said perforation to said margin portion to separate said cover portion into a plurality of captive segments attached to said margin portion so that bunching of said segments against said margin portion provides a generally open and unobstructed fenestration substantially contermineous the container mouth.

3,964,671
CARTON FOR A PACKAGE CONVERTIBLE TO A BAKING PAN

Thomas C. Steel, Oak Brook Terrace, Ill., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed May 12, 1975, Ser. No. 576,888
Int. Cl.² B65D *5/54, 5/48*
U.S. Cl. 229—51 TS **2 Claims**

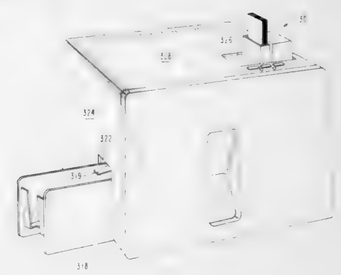


1. A carton for packaging a product, said carton being initially formed as a tube comprising top, bottom and connecting side wall panels, each with oppositely disposed end edges, end closure panels hingedly connected to said top, bottom and side wall panel end edges, which end closure panels are foldable to closed position so as to form an end wall structure, the end closure panels which are connected to said top side wall panel being secured in overlying relation to end closure panels which are connected to adjoining side wall panels and being secured to the underlying panels by means which enables at least a middle portion thereof to be readily torn loose without destroying the end wall structure, and said top wall forming panel having laterally spaced tear line formations which are disposed in spaced, parallel relation to the side edges of the top wall forming panel and which extend between the associated end wall panels, whereby the outermost end wall panels and a major portion of the top wall forming panel may be torn loose and discarded so as to convert the carton to an open top tray structure having narrow flange formations hinged to the top edges of the side walls which serve to reinforce the top edges of the side wall panels, and said end wall forming closure panels which are hingedly connected to said bottom wall panel having tuck flaps on the margin opposite their hinged connection with said bottom wall panel which serve as top edge flanges and reinforce the top edges of the end wall panels when said major portion of said top wall forming panel is torn loose and pulled free of said top wall forming panel.

3,964,672
PUNCHING, READING AND PRINTING MACHINE FOR DOCUMENT CARDS

William Kenneth Aylsworth, Rochester; Willard Leon Gudgel, Byron, and Richard William Luoma, Chatfield, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 24, 1974, Ser. No. 473,250
Int. Cl.² G06K *1/20*
U.S. Cl. 234—35 **3 Claims**

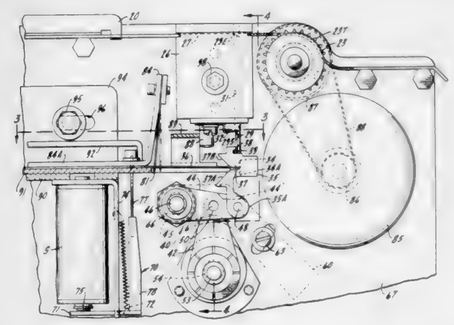


1. A processing machine for document cards having a first, hopper end and second, opposite end and comprising:
means forming a hopper at said first end of the machine for holding document cards vertically disposed and in the form of a horizontal card deck and including a horizontal hopper base on which said cards are disposed, said hopper base being provided with a throat gap through it at said first end of the machine through which a said card of the deck at said first machine end may pass moving downwardly, and means forcing said card deck along said horizontal hopper base in the direction from said second machine end to said first machine end so that said cards may feed one at a time downwardly through said throat gap,
a flat horizontal document card bed disposed at a lower level and at least partially below said hopper base,
means for changing the direction of movement of a said card passing through said throat gap from vertical to horizontal and disposing said card for forward travel in a path on said horizontal card bed toward a distal end of the card bed, said direction changing means including a rotatable roll disposed beneath said hopper base and above said horizontal bed around which the card is constrained to travel for approximately 90° of rotation,
a first operative means for operating on a said card and located beyond said distal end of said horizontal bed and in said path of travel of the card,
a second operative means for operating on a said card in said path of travel and located beyond said first means in said card path, said second operative means including a printer roll having an axis of rotation parallel with said card path, means for driving said printer roll, a row of print hammers extending parallel with the axis of said print roll and with said card path, and an electromagnet for actuating each of said print hammers each including a moveable armature, said electromagnets for alternate ones of said print hammers in said row being positioned on opposite sides of said path of card travel and said armatures of said electromagnets correspondingly being positioned on opposite sides of said row of print hammers and extending transversely of said path of card travel, and
means for moving a said card forwardly of said card bed and consecutively through said first operative means and then through said second operative means for operating on a said card.

3,964,673
TAPE PUNCH MACHINE

Gerhard Cless, and Edward L. Kaplan, both of Northbrook, Ill., assignors to Extel Corporation, Northbrook, Ill.

Filed July 5, 1974, Ser. No. 485,906
Int. Cl.² G06K *1/02*
U.S. Cl. 234—115 **19 Claims**



8. A cyclically operable tape punch machine for punching a tape in accordance with command signals and comprising:
a plurality of punch elements arranged in a die block for advancing and restoring movement;
a reciprocal driver bar having apertures receiving the shanks of the punch elements, said driver bar having a slot intersecting said apertures, said punch elements being supported to have the shank ends thereof exposed to the slot;
interposers moveable from a restored to an actuated position for selecting the punch elements and having the selector ends thereof disposed at the entry to said slot in the restored position;
means for actuating the interposers to move the end of an actuated interposer into the slot to support a punch element for movement with the driver bar;
said interposers and the means for actuating the interposers being supported as a unit on a bracket slidably mounted on a frame element of the machine; and
adjustable stop means for locating the bracket so that the selector ends of the interposers may be located at a predetermined restored position relative to said slot.

3,964,674
MENSTRUAL CYCLE CALCULATOR

Harry Van der Gaast, 289 N. Hibiscus Drive, Miami Beach, Fla. 33139

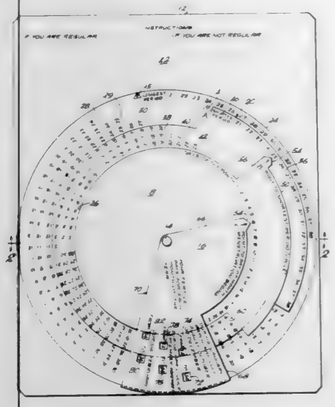
Filed May 9, 1975, Ser. No. 576,047
Int. Cl.² G06C *3/00;* **G04B** *19/24*
U.S. Cl. 235—88 RC **2 Claims**

1. A calculator for computing menstrual cycles comprising:

A. a base panel, a first dial, a second dial, and a pointer and reader member, and dial pin means connecting said base, dials and pointer member for rotation about a common center and relative to said base panel, and said panel, dials and member having indicia arranged thereon in equi-angularly spaced scale units about said dial pin,

B. said base panel having:

indicia arranged in an outer arcuate strip portion defining a period scale composed of a plurality of equiangularly spaced cardianal number figures in progressively increasing order each figure being in a separate adjacent scale unit within the range of about 20 and 40 and each figure representing a different length, commonly encountered, menstrual period, and



indicia arranged in an inner circular strip portion adjacent said arcuate strip portion and the indicia on said circular strip portion defining concentric adjacent inner, outer and intermediate circular paths,

each said path defining a separate month scale composed of a series of equi-angularly spaced cardinal number figures each in an adjacent separate scale unit in progressively increasing order and each of said month scales being angularly spaced with respect to said period scale a predetermined number of scale units,

C. said first dial being circular and of a radius less than that of the inner path of said base panel and said first dial having an arcuate segment of a radius of curvature greater than the radius of the outer path of said base panel and less than the radius of the outer arcuate strip portion of said base panel,

said arcuate segment of the said first dial having indicia arranged in an outer arcuate strip portion defining a second period scale composed of a plurality of equiangularly spaced cardinal number figures in progressively increasing order each figure being in a separate adjacent scale unit within the range of about 20 to 40 and each figure representing a different length commonly encountered menstrual period, and

indicia arranged in an inner circular strip portin adjacent said arcuate strip portion and the indicia on said circular strip portin defining concentric adjacent inner, outer and intermediate circular paths,

each said path defining a separate month scale composed of a series of equi-angularly spaced cardinal number figures each in an adjacent separate scale unit in progressively increasing order and each of said month scales being angularly spaced with respect to said period scale a predetermined number of scale units, and

a pointer means on said second dial to be positioned so as to point toward a figure in the period scale of the base panel to indicate the longest length of period experienced by the user,

D. a second generally circular dial of a radius less than the diameter of the first dial and having a days of the month scale composed of a series of numbers in a circular path said numbers being in progressive order and including the numerals 1 and 31 comprising a calendar scale representing the days of a month and said second dial including a pointer to be positioned so as to point toward a figure in the period scale of the second dial to indicate the shortest period experienced by the user, and

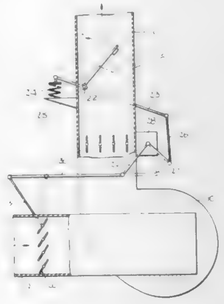
E. a pointer and reader member having a pointer to point to the day in the calendar scale corresponding to the date of the month on which the period of the user commenced and a reader segment at a predetermined fixed angular distance from said second pointer means and extending radially outwardly and over said paths for use in reading the figures on the paths.

3,964,675

APPARATUS FOR LIMITING VACUUM AND PRESSURE IN A FURNACE

Perry C. Euchner, Jr., 8 Tracy Drive, Huntington, N.Y. 11743

Filed Oct. 15, 1974, Ser. No. 514,408
Int. Cl.² F23N *1/08*
U.S. Cl. 236—15 C **11 Claims**



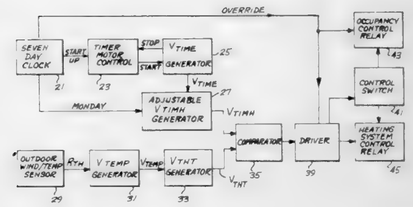
1. In a furnace system having a combustion chamber, fan means and duct means connected to said chamber for moving gas along a path extending from exteriorly of and into said chamber, through said chamber and then outwardly from and away from said chamber, said fan means including at least one fan having an inlet and an outlet and the gas pressure internally of said chamber being at least partially dependent upon the level of flow of the gas which is supplied to and removed from said chamber, said chamber being subject to damage when said gas pressure internally of said chamber reaches a predetermined value, gas flow modifying means in said path for modifying the flow of gas through said chamber and control means comprising measuring means in said path and connected to at least part of said gas flow modifying means for normally maintaining the flow of said gas at predetermined levels required for normal operation of said system, the combination therewith of gas flow measuring means in the path of said gas outside said chamber and adjacent said fan, said last-mentioned measuring means being responsive to changes in the flow of said gas at one of said inlet and said outlet, and gas flow limiting means interconnecting said last-mentioned measuring means and at least part of said gas flow modifying means for changing the flow of said gas from said predetermined levels to further predetermined levels which are dependent upon the rate of flow of said gas exteriorly of said chamber, said further predetermined levels being higher with an increasing rate of flow of said gas exteriorly of said chamber and lower with a decreasing rate of flow of said last-mentioned gas but being less than the gas flow level which will cause the gas pressure internally of said chamber to reach said predetermined value.

3,964,676

ELECTRONIC MORNING START-UP CONTROL FOR A BUILDING TEMPERATURE CONTROL SYSTEM

Albert H. Rooks, and Everette E. Vermilion, both of Seattle, Wash., assignors to Albert H. Rooks, Seattle, Wash.

Filed Sept. 30, 1974, Ser. No. 510,490
Int. Cl.² F23N *5/20*
U.S. Cl. 236—46 R **30 Claims**



1. An electronic morning start-up control for a building temperature control system comprising:

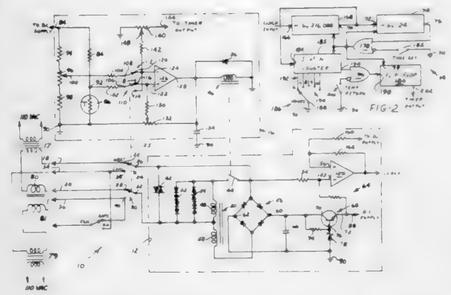
1. electronic time signal generating means for generating a modified time signal having either one of at least two predetermined forms, said electronic time signal generating means including:
   a. a time signal generator for generating: (i) a time signal at predetermined intervals, and, (ii) a control signal at predetermined intervals different than said time signal intervals; and,
   b. a signal modifier connected to said time signal generator for receiving said time signal and said control signal and for modifying said time signal such that: (i) the first of said at least two predetermined forms of said modified time signal occurs in the absence of a control signal occurring simultaneously with the ocurrence of a time signal; and, (ii) the other of said at least two predetermined forms of said modified time signal occurs when a control signal occurs simultaneously with the occurrence of a time signal;
2. temperature sensing means for sensing the temperature in predetermined regions related to the building whose temperature is to be controlled and for generating a temperature signal related thereto;
3. electronic temperature signal modifying means connected to said temperature sensing means for electronically modifying said temperature signal to create a modified temperature signal;
4. comparison means connected to said electronic time signal generating means and to said electronic temperature signal modifying means for comparing said modified time signal with said modified temperature signal and for generating an output signal having a predetermined state when said modified time signal and said modified temperature signal compare in a predetermined manner; and,
5. control signal means connected to said comparison means for creating a control signal adapted to shift the building temperature control system of said building whose temperature is to be controlled from one mode of operation to another mode of operation when the output of said comparison means indicates that said modified time signal and said modified temperature signal compare in said predetermined manner.

3,964,677

ENERGY CONSERVING THERMOSTATIC CONTROL

Rudolph D. Schalow, and John T. Link, both of Fort Wayne, Ind., assignors to Energystics Corporation, Huntertown, Ind.

Filed Apr. 17, 1975, Ser. No. 568,846
Int. Cl.² F23N *5/20*
U.S. Cl. 236—46 R **19 Claims**



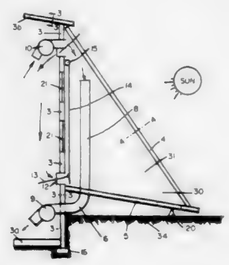
1. A thermostatic control for use with a heating/cooling system which includes a source of low voltage operating potential and a system control relay connected electrically in series therewith, a thermostatic control comprising source means connected electrically in series with said low voltage source for providing a continuous source of operating energy for said control irrespective of the operating state of said relay, and for generating a continuous clock pulse train of predetermined frequency, timing means coupled to said source means for cyclically generating a temperature set point shifting signal at predetermined time intervals, said timing means including means for selecting the time duration of said shifting signal and means for selecting the magnitude thereof, temperature regulating circuit means including temperature set point means for generating a set point control signal and temperature sensing means for generating a variable control signal proportional to the temperature in said area for generating a modulating signal to control the system, and thereby the temperature, in said area, said regulating circuit being connected to said timing means to receive said temperature shifting signal and being responsive thereto to alter one of said control signals and thereby the regulated temperature in said area.

3,964,678

SOLAR AIR CONDITIONER

Edward J. O'Hanlon, Assembly Point, Lake George, N.Y. 12845

Filed Nov. 4, 1974, Ser. No. 520,773
Int. Cl.² F24J *3/02*
U.S. Cl. 237—1 A **1 Claim**



1. In a solar air conditioner having a minimum of moving mechanism, and positioned on the outside of a shelter structure whose interior is to be heated or cooled by said solar air conditioner, said air conditioner comprising a substantially

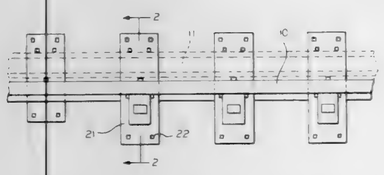
flat platform extending outwardly from and connected to the outer wall of said shelter structure, a relatively thin yet substantially rigid corrugated sunlight penetrating sheet member forming a slanting roof over said platform member and of similar width, and connected to the outer wall of said shelter structure and connected along its lower edge to said platform member adjacent to the lower edge of said platform member, two similar triangular and closure end members being of heat insulating construction namely plastic foam between two rigid sheet skins each closure member fastened in a reasonably air tight manner to both side ends of said platform and said roof member, thus closing in a sizeable solar air conditioner space, an upper aperture or opening in and through the wall of said shelter structure, said upper aperture positioned near the upper portion of said air conditioner roof member, said upper aperture permitting the passage of air through said shelter structure wall, and a lower aperture or opening in and through the wall of said shelter structure permitting the passage of air through said same shelter structure wall, said lower aperture located not far from the upper edge of said platform member, said trangular air conditioning air space closed in sufficiently tightly as to prevent any flow of air elsewhere except through both said mentioned apertures, and a black pull down shade fastened to the outer wall of said shelter structure.

3,964,679

RAILROAD GUARD RAILS

Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, New York, N.Y.

Filed May 6, 1974, Ser. No. 467,403
Int. Cl.² E01B *5/18*
U.S. Cl. 238—17 **6 Claims**



1. In combination with a traffic rail, a guard rail spaced laterally therefrom and so supported by a shim plate as to have the head thereof spaced above the head of the traffic rail, brace means located on the side of the guard rail away from the traffic rail, said brace means having an upper surface engaging the outer face of the guard rail head, said brace means having a portion beneath said upper surface engaging the web of the guard rail, a shim plate so supporting the base of the guard rail and having an upwardly extending lip in engagement with an inner face of the guard rail base, a tie plate underlying and supporting the rails, brace means and shim plate, said brace means and shim plate each being welded to the tie plate by weldments located outwardly of the base of the guard rail on the side opposite the traffic rail, and said shim plate also being welded to the tie plate by a weld located at said lip.

3,964,680

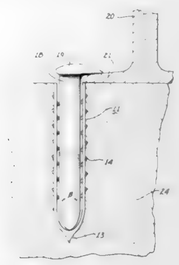
RAILROAD SPIKE RETAINER

David M. Arthur, 4020 N. 14th Ave., Phoenix, Ariz. 85013

Filed Feb. 3, 1975, Ser. No. 546,264
Int. Cl.² E01B *9/12*
U.S. Cl. 238—366 **9 Claims**

1. Apparatus for maintaining a fixed, yet resilient orientation between a railroad rail and a supporting cross-tie, the apparatus comprising, in combination:

a. a load carrying rail including a flanged base;
b. a penetrable cross-tie for supporting the flanged base of said rail;
c. a spike for forceable insertion into said cross-tie, said spike including
   1. an elongated shaft; and
   2. an enlarged head portion located at one end of the elongated shaft for engaging the flanged base of said rail to secure said rail against substantial movement relative to said cross-tie; and
d. retention means between the elongated shaft of said spike and the cross-tie into which said spike is forceably inserted for semiresiliently retaining said spike in fixed relationship to said cross-tie, said retention means including



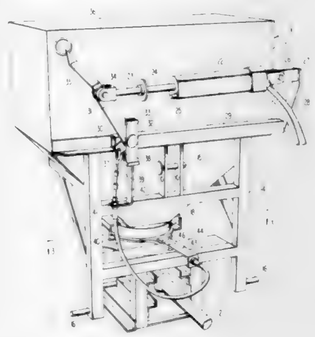
1. a pair of elongated planar legs;
2. a reinforced web for connecting the legs to form a U-shaped structure corresponding generally to the configuration of opposing sides of the elongated shaft of said spike; and
3. a plurality of spaced louvers disposed laterally across both legs for engaging the elongated shaft of said spike and said cross-tie, selected ones of said louvers including
   i. means for resiliently connecting the louver to a leg while permitting limited relative movement between the louver and the connected leg; and
   ii. an edge for deformably engaging the shaft of said spike.

3,964,681

AGRICULTURAL BROADCASTING APPARATUS

Elmer R. Herd, P.O. Box 448, Logansport, Ind. 46947

Filed Sept. 4, 1975, Ser. No. 610,294
Int. Cl.² A01C *19/00*
U.S. Cl. 239—650 **9 Claims**



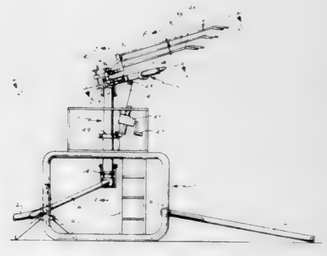
1. Remotely controlled operating mechanism for a tractor mounted broadcaster, said broadcaster having a material discharge opening, a shiftable gate valve element adjacent said opening to regulate the size of the same and a rotary material spreader element beneath the opening and gate valve element, said operating mechanism comprising a support means attached to said broadcaster, a crank arm pivotally mounted on said support means, a remotely controlled power operated extensible and retractable device interconnecting said crank arm and support means, and a shiftable means interconnecting said crank arm and said gate valve element and responding directly to movements of the crank arm to vary the position of the gate valve element relative to said material discharge opening.

3,964,682

METHOD AND APPARATUS FOR MAKING SNOW PRODUCED BY CUMULATIVE CRYSTALLIZATION OF SNOW PARTICLES

Philip L. Tropeano, 12 Revere St., and Joseph C. Tropeano, 20 Revere St., both of Lexington, Mass. 02173

Filed Mar. 17, 1975, Ser. No. 558,821
Int. Cl.² F25C *3/04*
U.S. Cl. 239—2 S **11 Claims**



1. In a method of making snow in which a mixture of compressed air and water under pressure is ejected from snow-making nozzle means in a cold ambient atmosphere and the mixture is expanded and cooled to form a stream of falling snow particles, the steps which include discharging high velocity chilled fluid jets into the falling snow particles from a plurality of jet nozzles occurring one above another in forwardly spaced relationship under a pressure of approximately 50 lb. p.s.i. to form vacuum pockets immediately in the rear of each nozzle extremity, spacing the jet nozzles apart from one another distances at which vacuum pockets of forwardly located nozzles induce acceleration of fluid jets discharged from jet nozzles located immediately rearwardly of the said forwardly positioned nozzles, and increasing the velocity of falling snow particles into which the accelerated fluid jets are discharged.

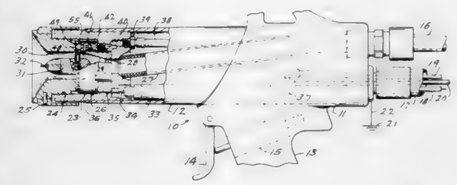
8. Improved snow-making apparatus comprising means for furnishing independently supplied flows of compressed air and pressurized water, tubular nozzle means for ejecting a mixture of the air and water into a cold ambient atmosphere to form a stream of snow particles, a plurality of jet nozzles located one above another in forwardly spaced relationship in a position to discharge fluid jets into the said stream of particles, means for conducting from the said supply of pressurized water, flows of fluid under pressures ranging upwardly to 50 lbs. p.s.i. into the said jet nozzles from which nozzles high velocity chilled fluid jets are discharged to form vacuum pockets immediately in the rear of each nozzle extremity, said nozzle extremities being spaced apart from one another distances at which vacuum pockets of forwardly located nozzles induce acceleration of fluid jets discharged from jet nozzles located immediately rearwardly of the said forwardly positioned nozzles.

3,964,683

ELECTROSTATIC SPRAY APPARATUS

James J. Gimple, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio

Filed Sept. 2, 1975, Ser. No. 609,669
Int. Cl.² B05B *5/02, 1/28*
U.S. Cl. 239—15 **7 Claims**



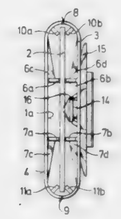
1. An improved electrostatic spray gun for the deposition of a coating material on a workpiece comprising, in combination, a nozzle having a passage for emitting a flow of the coating material toward the workpiece, a housing, means releasably attaching said nozzle to said housing, means for supplying a flow of the coating material through said housing to said nozzle passage, means for electrostatically charging the material emitted from said nozzle passage, means for supplying gas at a predetermined high pressure to a passage having an end closed by said nozzle when said nozzle is attached to said housing, the pressure of such gas in said passage decreasing when said nozzle is loosened on said attaching means, means for sensing a drop in the pressure of such gas in said passage to below a predetermined low pressure lower than said predetermined high pressure, and means responsive to said pressure sensing means sensing a pressure drop to below said predetermined low pressure for interrupting said charging means from charging the coating material.

3,964,684

DEODORIZING OR PERFUMING ASSEMBLY

Georg Schimanski, Hagen, Germany, assignor to Globol-Werk GmbH

Filed Oct. 15, 1975, Ser. No. 622,462
Claims priority, application Germany, Apr. 21, 1975, 281
Int. Cl.² A61L *9/04*
U.S. Cl. 239—56 **11 Claims**



1. A deodorizing or perfuming assembly comprising
a casing consisting of a mantle having two open ends and two flattened side walls opposite one another.
means for affixing the assembly to a supporting surface which means are attached to one of the said flattened side walls and which latter flattened side wall has provided a slot or slots for the access of air therethrough to the interior of said mantle,
a plate or sheet of absorbent material being impregnated with a deodorizing or perfuming substance free from or having an insect repellent adjuvant, said sheet or plate being located in the interior of said mantle, and
clamping means protruding at least from one of the interior faces of said flattened side walls, and being adapted for

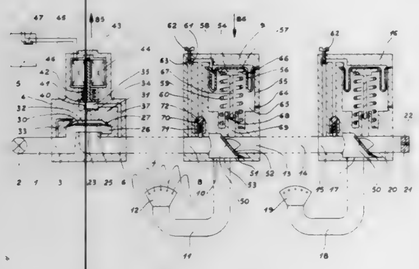
clampingly engaging said plate or sheet, to hold the latter fast with its surface spaced from the inside wall surface of said mantle.

3,964,685

LAWN SPRINKLING AND SIMILAR INSTALLATIONS

Michel Chauvigne, Cluses, France, assignor to Carpano & Pons S.A., France

Filed Apr. 3, 1975, Ser. No. 564,593
Claims priority, application France, Apr. 9, 1974, 74.12478
Int. Cl.² B05B *12/04*
U.S. Cl. 239—66 **11 Claims**



1. A sprinkling or similar liquid-distribution installation comprising a plurality of dosing valves each having an inlet and first and second outlets, a liquid supply pipe connected to the inlet of a first dosing valve, a gate valve controlling the delivery of liquid through said supply pipe, the first outlet of each dosing valve being connected in operation to at least one sprinkler, piping connecting the second outlet of each dosing valve except a last dosing valve being to the inlet of a next sequential dosing valve, a plug in the second outlet of said last dosing valve, means having an orifice for discharging liquid from said piping connecting the dosing valves, said orifice communicating with the exterior to discharge liquid from said piping after closing of said gate valve, after closing of the first outlet of said last dosing valve, each dosing valve including a clapper, means for biasing the clapper to close the second outlet and leave the first outlet open, volumetric dosing means for closing the first outlet and simultaneously opening the second outlet after passage of a given quantity of liquid, said volumetric dosing means including a pusher having a first advanced position after passage of said given quantity of liquid in which first position it holds said clapper against the action of said biasing means to open said second outlet orifice and close said first outlet orifice, and a second withdrawn position in response to a drop in the pressure in said piping after opening of said discharge outlet, in which second position said pusher allows the clapper to move under the action of said biasing means to close said second outlet orifice and open said first outlet orifice.

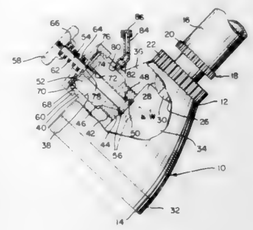
3,964,686

SHOWERHEAD WITH SECONDARY LIQUID DISPENSER

Victor D. Lopez, Woodside, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Apr. 10, 1975, Ser. No. 567,000
Int. Cl.² B05B *7/24*
U.S. Cl. 239—74 **9 Claims**

1. In a showerhead comprising a hollow body member having an inlet at one end for connecting to a plumbing conduit to receive a stream of water, an outlet spaced from the inlet for discharging the water, and a dispensing chamber defined intermediate said inlet and outlet, a thickened wall portion formed in the body member in the vicinity of said dispensing chamber, a reservoir comprising a cavity formed in said thickened wall portion and closure means for enclosing said cavity for storing a hygienic liquid, said thickened wall portion including an annular boss raised on the exterior of the body member, said boss having a passageway formed through a wall thereof, a filler port including a hollow tube disposed externally of the body member communicating with the reservoir for supplying liquid to the reservoir, coupling means connecting said tube to the boss with the hollow of the tube



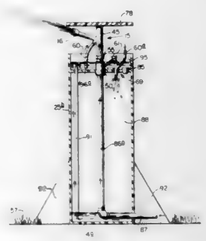
opening into the passageway, said reservoir having an orifice opening into said chamber, a valve normally closing the orifice, and a valve operator for selectively moving the valve to open the orifice to dispense said liquid into the chamber, whereby a controlled amount of said liquid is mixed with and discharged with the water.

3,964,687

LAWN, FARM, AND ORCHARD SPRINKLERS

Kerney T. Sheets, P.O. Box 637, Duplessis, La. 70806

Division of Ser. No. 439,323, Feb. 4, 1974, abandoned. This application Aug. 11, 1975, Ser. No. 603,496
Int. Cl.² B05B *3/02*
U.S. Cl. 239—226 **18 Claims**



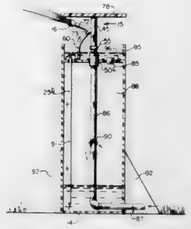
1. A lawn, farm, and orchard sprinkler comprising:
A. housing means having top means and bottom means, said housing means having bowl means connected to the top thereof for containing liquids or solids;
B. sprinkler head means connected to said top means for spraying fluids, said sprinkler head means comprising:
i. nozzle means for spraying fluids;
ii. liquid supply means connected to said nozzle means for supplying a steam of liquids under pressure to said nozzle means;
iii. first pump means connected to said nozzle means for pumping fluids from said bowl means into said nozzle means;
C. means connected to said top means for pumping fluids into the interior of said housing means;
D. tube means connected to said top means for conveying fluids from said interior of said housing means to the interior of said bowl means, and
E. hole means in said top means for introducing liquids or solids into the interior of said housing means.

3,964,688

LAWN, FARM, AND ORCHARD SPRINKLERS

Kerney T. Sheets, P.O. Box 637, Duplessis, La. 70806

Division of Ser. No. 439,323, Feb. 4, 1974, abandoned. This application Aug. 11, 1975, Ser. No. 603,495
Int. Cl.² B05B *3/02*
U.S. Cl. 239—226 **13 Claims**



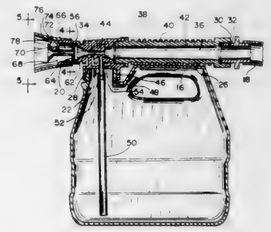
1. A lawn, farm and orchard sprinkler comprising:
A. housing means having top means and bottom means, said housing means having bowl means connected to the top thereof for containing liquids or solids;
B. sprinkler head means connected to said top means for spraying fluids, said sprinkler head means comprising:
i. nozzle means for spraying fluids;
ii. liquid supply means connected to said nozzle means for supplying a stream of liquids under pressure to said nozzle means, said liquid supply means having hole means therein for supplying liquid to the interior of said housing means, and
iii. pump means connected to said nozzle means for pumping fluids from said bowl means into said nozzle means;
C. tube means connected to said top means for conveying fluids from said interior of said housing means to the interior of said bowl means, and
D. hole means in said top means for introducing liquids or solids into the interior of said housing means.

3,964,689

HOSE-END DISPENSER DEVICE

Stephen R. Horvath, Jr., Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Apr. 10, 1975, Ser. No. 567,029
Int. Cl.² B05B *7/30*
U.S. Cl. 239—318 **5 Claims**



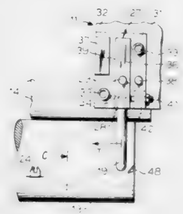
1. A hose-end dispenser device comprising:
a container defining an outlet opening;
a handle rigidly attached to said container and extending therealong adjacent said opening;
a rigid tube for carrier fluid flow overlying said handle and said opening, said tube having two ends and having insulating means along said handle;
fluid connection means from said container into said tube via said opening;
hose attachment means at one end of said tube; and
discharge means at the other end of said tube, said discharge means comprising a fixed cylindrical member forming an extension of said tube, said fixed member defining at least one lateral air inlet; an insert piece within said cylindrical member restricting the flow through said fixed member, said piece defining at least one restricted flow orifice upstream of said at least one air inlet; a cone-shaped deflector member attached to said insert piece in axial alignment with said fixed member and having an outside flow deflecting surface flaring radially outwardly in a downstream direction at a point downstream of said at least one air inlet; and an axially adjustable outwardly flaring nozzle member connected to said fixed member, said axial adjustability varying the size of an annular flow channel between said nozzle and said flow deflecting surface to provide foam spray patterns of varying width.

3,964,690

APPARATUS FOR FORMING A PIECING END ON A YARN WINDING

Rene Tauleigne, Valence, France, assignor to Rhone-Poulenc Textile, Paris, France

Filed Sept. 20, 1973, Ser. No. 399,111
Claims priority, application France, Sept. 22, 1972, 72.33927
Int. Cl.² B65H *54/02, 54/34*
U.S. Cl. 242—18 PW **1 Claim**



1. An apparatus for forming a piecing end for a main winding of yarn wound on a rotating spool, comprising:
a vertically extending pivot;
an arm means mounted for rotation about said pivot in a horizontal plane and at a point intermediate the opposite ends thereof, wherein said pivot divides said arm means into a first section and a second section of magnetic material;
a projection extending from one section of the arm means for engaging the yarn when the yarn is initially engaged with the spool prior to forming the main winding on the spool;
magnetic control means for engaging the second section of the arm means to both arrest pivotal motion of the arm means at a first position where the projection extends substantially normal to the axis of the spool and to hold the arm means in the first position while overlapping coils of yarn are formed on the spool, said control means holding said arm means until the yarn applies a predetermined threshold force to the projection to pivot the arm means, whereupon the yarn forms coils of increasing pitch on the spool until the yarn disengages from the spool to start forming the main winding, said magnetic control means including a magnet which magnetically attracts said second section of the arm means of magnetic material;
an adjustment means positioned to engage the first section of the arm to control the proximity of the second section to the magnet and thereby determine the magnitude of the predetermined force; and

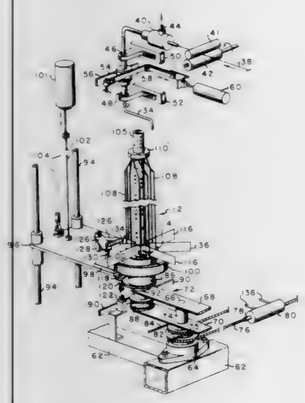
stop means spaced from the control means for engaging the second section of the arm means to arrest pivotal motion of the arm means at a second position and to rebound the arm means to the first position as the yarn disengages from the projecting portion whereby the piecing end being formed by orienting the arm means initially at an angle substantially perpendicular to the spool.

3,964,691

METHOD AND APPARATUS TO TREAT YARN

Larry N. Pearce, and Grady H. Sanders, both of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 776,534, Nov. 18, 1968, Pat. No. 3,618,184. This application Apr. 2, 1971, Ser. No. 130,585
Int. Cl.² B65H *54/00, 54/80, 75/24*
U.S. Cl. 242—47 **11 Claims**



1. Apparatus to provide a substantially tensionless yarn package comprising: a turntable, means rotably supporting said turntable, a spindle operably associated with said turntable, a rotably supported fiber supply means mounted above said spindle and said turntable, means to supply fiber to said fiber supply means and means operably associated with said turntable to lower said turntable at a predetermined rate, said spindle comprising a hollow center member, collar members secured to said center member at the top and bottom thereof, and a plurality of wire members pivotally secured in said collar members.

3,964,692

WINCH SPOOL WITH DISC BRAKE SYSTEM

Earl M. Pendleton, Houston, Tex., assignor to Mattco, Inc., Houston, Tex.

Continuation of Ser. No. 385,333, Aug. 3, 1973, Continuation-in-part of Ser. No. 180,569, Sept. 15, 1971, abandoned. This application Feb. 10, 1975, Ser. No. 548,669
Int. Cl.² B65H *75/00, 23/06, 59/38*
U.S. Cl. 242—54 R **18 Claims**

1. A winch spool and brake assembly comprising:

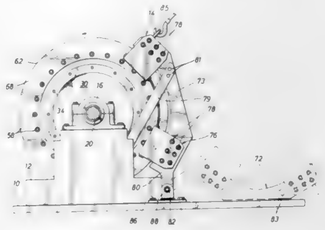
a winch spool having cable wound thereabout, said cable winding and unwinding relative to said spool upon rotation of said spool;

a pair of flanges one of which is disposed at each extremity of said spool for containing said cable as the cable is wound about the spool;

base means supporting said cable spool;

brake disc means extending from at least one of said flanges and having peripheral portion thereof disposed in spaced relation with said one of said flanges, said peripheral portion defining an inner brake surface spaced from and facing said one of said flanges and an outer brake surface facing away from said one of said flanges;

an elongated brake caliper means including a supporting arm means being of substantially the same thickness as the thickness of said brake disc, said supporting arm means having a connector portion at one extremity thereof, said connector portion being pivotally connected to said base means and supporting at least one pair of spaced brake shoe carrier blocks disposed one on each side of said arm means, so that when said supporting arm means is in an operative position, one of said brake shoe carrier blocks is disposed between one of said flanges and said brake discs and in juxtaposed relation with said inner brake surface and the other of said brake shoe carrier blocks is disposed outwardly of said brake disc in juxtaposed relation with said outer brake surface, said arm means being pivotable about the pivotal connection to said base means from an operative position, where said pair of spaced brake shoe carrier blocks receives the



periphery of said brake disc therebetween, and an inoperative position, where said caliper means rests upon said base means with said brake disc carrier blocks positioned for removal and replacement of brake shoe means;

brake shoe means being carried by each of said brake shoe carrier blocks for respective braking engagement with said inner and outer brake surfaces;

hydraulic actuator means being carried by each of said brake shoe carrier blocks and, upon being energized, causing braking movement of said brake shoe means;

hydraulic means for controllably energizing said hydraulic actuator means and being connected to each of said brake shoe blocks and causing simultaneous actuation of said hydraulic actuator means and said brake shoe means; and

releasable locking means supporting said arm means in a position relative to said brake disc that causes said caliper supporting arm means to be placed in tension by the force applied thereto during braking in one direction of the said spool's rotation.

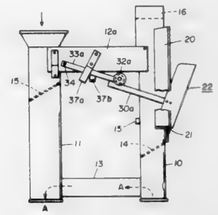
3,964,693

COUNTERBALANCED DOOR MECHANISM FOR TELLER CARRIER RECEIVE TUBE OF A PNEUMATIC BANKING SYSTEM

William D. Thomas, c/o LeFebure Corporation, 308-29th St., NE., Cedar Rapids, Iowa 52406

Filed Dec. 23, 1974, Ser. No. 535,178
Int. Cl.² B65G *51/30*
U.S. Cl. 243—24 **5 Claims**

1. In the teller station of a pneumatic tube system for banking and the like including a carrier receive assembly having a carrier receive tube with a vertically disposed portion, an aperture in the side wall of said tube portion for removal of a carrier from the tube, a generally vertically disposed door hinged at its lower edge normally closing said aperture, and a stop to arrest a received carrier in a generally vertically disposed attitude in the tube so that the carrier is in a tilted position against the door, the improvement comprising: counterbalance means connected to the door, the counterbalance means including lifting means extending generally horizontally from the door and past the receive tube when the door is closed, the lifting means moving in a generally vertical plane upon opening and closing movement of the door, and weighted means carried by the carrier receive assembly effective to be engaged and raised by the lifting means, the structure of the door and the location of its hinge being effective



so that the weight of a carrier when in said position against the door overcomes the counterbalance means and swings the door with the carrier thereon to an open position for removal of the carrier by a teller, the lifting means and the weighted means being thereafter effective to return the door to its closed position upon removal of the carrier from the door by the teller.

3,964,694

AERIAL ACOUSTIC TARGET SEEKER

Arthur C. Metzger, Wayland, Mass., and William Hadden, New Providence, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 14, 1967, Ser. No. 617,763
Int. Cl.² F42B *15/02*
U.S. Cl. 244—3.15 **1 Claim**



1. In a target-seeking flight vehicle having electrical signal-responsive flight-control means for guiding said vehicle vertically and laterally to intercept a target,

a detection-guidance control system therefor attuned to sounds in a frequency range below one thousand cycles per second,

said detection-guidance system comprising, a first and second pairs of spaced low-frequency sound-receiving electrical transducers carried by said vehicle for operation in vertically and laterally disposed relation in pairs and mounted and acoustically-shielded to receive sound waves from a target forward of said vehicle each over a limited angle,

means providing a pair of electrical signal control channels connected from each pair of sound transducers and with said flight-control means,

signal amplifier and rectifier circuits included in each of said channels and operative to produce directional-control output signals from each of said pairs of transducers dependent upon the received signal intensity thereon as determined by the location of a sound-emitting target with respect to said sound transducers and the angular limitations of the shielding thereon,

said rectifier circuits being phase dependent and each including a diode connected to receive and rectify signals from a related one of said amplifier circuits,

a clipper circuit connected to each of said rectifier circuits to clip the signal output therefrom,

a normally-open switching circuit connected to receive the amplified and rectified output of each sound transducer following each clipper circuit and connected together in pairs related to said pairs of sound transducers, each of said switching circuits including a normally-open bistable switch and an AND gate connected therein to control and close said switch and thereby the switching circuit periodically in response to a clipped sound signal from one clipper circuit of a pair and not the other, the periodic ON time of said bistable switch being representative of the phase difference between the sound received by said transducers of a pair, thereby to pass clipped direction control output signals to said flight control means in response to received sound signals from one transducer of each pair and not the other, and

signal integrator circuits connected with said switching circuits in pairs to produce said directional control signals from each pair of transducers for said flight-control means,

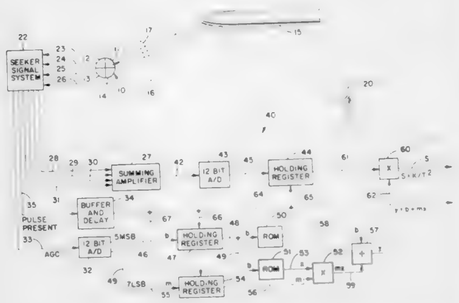
thereby to maintain said vehicle on course to the target.

3,964,695

TIME TO INTERCEPT MEASURING APPARATUS

James C. Harris, 2646 Albert Drive, Grand Rapids, Mich. 49506

Continuation-in-part of Ser. No. 298,051, Oct. 16, 1972, abandoned. This application Oct. 10, 1974, Ser. No. 513,602
Int. Cl.² F41G *7/00;* **F42B** *15/02;* **G06F** *15/50*
U.S. Cl. 244—3.16 **20 Claims**



1. An apparatus for providing an output signal which varies in accordance with the time period from an instant position of a first body to the point of closest approach of the first body to a second body moving in paths to approach one another; said apparatus including:

sensor means on said first body for detecting radiation coming from the second body and providing a first signal which varies in accordance with a predetermined characteristic of the detected radiation; and

first means responsive to said first signal for providing a second signal which varies in accordance with the ratio of the instantaneous value of said first signal to the average value of said first signal, from an initial instant of time when said values are substantially equal, during the movement of said bodies toward one another as the distance

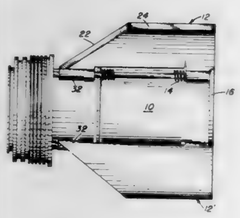
between said bodies decreases during their movement toward one another.

3,964,696

METHOD OF CONTROLLING THE SPIN RATE OF TUBE LAUNCHED ROCKETS

Casimir T. Orzechowski, Kensington; Nat Seiden, Brandywine, and Anthony Mycka, Jr., Waldorf, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1974, Ser. No. 519,371
Int. Cl.² F42B *13/32*
U.S. Cl. 244—3.23 **4 Claims**



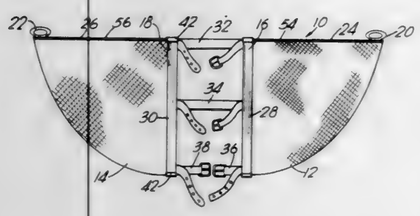
1. Means for improving the ballistic accuracy of a missile comprising:
a set of fins located around the body of a missile, said fins being curved in the radial direction of the missile and being formed with a bevel along the concave side of the leading edge of the fin,
the leading edge of said fin also being formed with a sweep-back angle along the entire leading edge.

3,964,697

DEPLOYABLE WING BACK PACK

Kittrell W. Mays, Miami, Fla., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Apr. 30, 1975, Ser. No. 573,134
Int. Cl.² B64C *31/04*
U.S. Cl. 244—64 **8 Claims**



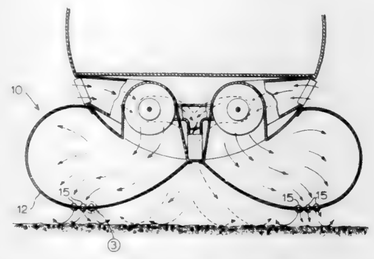
1. Wing apparatus adapted to be worn by a man comprising: a pair of wings, said wings, adapted to be operatively manipulated by opposite arms of a man via a pair of handle means respectively carried by said pair of wings, housing means for storing said wings, said housing means having a pair of opposed external sides, each side having an elongated opening for the introduction of a wing into said housing means with said handle means protruding from said housing means and harness means for securing said housing means to the back of a man with said openings running along the sides of the man whereby said wings may be deployed by pulling said handle means.

3,964,698

AIR CUSHION TYPE UNDERCARRIAGE FOR AIRCRAFT

T. Desmond Earl, Buffalo, N.Y., assignor to Textron, Inc., Providence, R.I.

Filed June 5, 1974, Ser. No. 476,387
Int. Cl.² B64C *25/56*
U.S. Cl. 244—100 A **9 Claims**



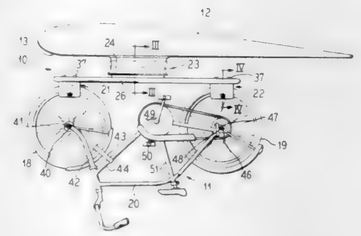
8. An air cushion undercarriage for supporting a vehicle relative to a reaction surface and comprising, in combination:
an air inflatable cell fabricated from elastic material and adapted to be inflated from a relaxed condition to an inflated, stretched condition circumscribing an air cushion space and presenting a footprint area around said air cushion space which may contact and scrub against the reaction surface, said cell having a pattern of openings in said footprint area at least some of which are adapted to discharge jets of air from internally of the cell to supply superatmospheric air to said air cushion space; and
a plurality of protective devices positioned in at least certain of said openings throughout said footprint area to protect said cell from damage due to scrubbing against said reaction surface, each such device comprising a body having an intermediate neck portion slidably received in an opening and capped at one end by an enlarged head portion and subtended at its other end by an enlarged diameter wearing portion, said head portion and said wearing portion presenting mutually opposed substantially flat surfaces surrounding said neck portion which are in face-to-face contact with the inner and outer surfaces of said cell surrounding an opening therein when the cell is in relaxed condition, and said neck portion tapering inwardly from said flat surface of the head portion to said flat surface of the wearing portion to produce a wedging action which causes said neck portion to slide within an opening and maintain said flat surfacee of the wearing portion in intimate contact with said outer surface of the cell when said cell is stretched thinner due to inflation thereof.

3,964,699

DEVICE TO HANG A BICYCLE ON AN AIRPLANE WING

Frank M. Stankovich, 945 Pitner Ave., Evanston, Ill. 60202

Filed Aug. 14, 1975, Ser. No. 604,664
Int. Cl.² B64D *9/00*
U.S. Cl. 244—118 R **5 Claims**



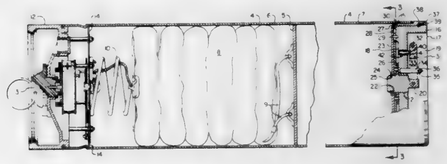
1. A device for hanging a bicycle in an inverted position beneath a wing of an airplane comprising first means for rigidly engaging each wheel of a bicycle and for locking the wheels against rotation, and second means for mounting the first means beneath the lower surface of the wing with the wheels aligned with the direction of flight of the airplane, said second means including pivot means to allow the bicycle to swing in a limited arc in a direction perpendicular to the direction of flight.

3,964,700

AIRDROP CANISTER

Gary V. Adams, and Roy T. Minert, both of Brigham City, Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed Aug. 26, 1974, Ser. No. 500,413
Int. Cl.² B64D *1/02*
U.S. Cl. 244—138 R **7 Claims**



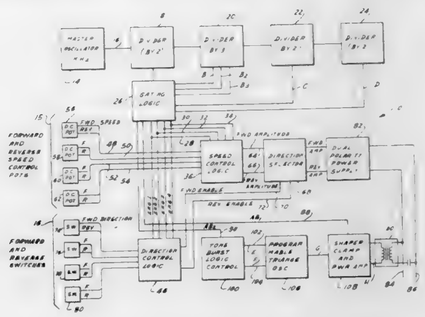
1. An airdrop canister comprising:
a cylindrical case having an intermediate partition therein that divides the case into a housing and a canister;
a parachute in the housing and attached thereto;
means for deploying the parachute;
a timer in the housing, operatively connected to the means for deploying the parachute so that the parachute may be deployed thereby after a predetermined time interval;
an end cap engageable to the housing for retaining the contents therein; and
a removable end cap on the canister that creates a hermetic seal therewith; and
a pressure relief valve in the canister end cap, in communication with the interior of the canister and operable from outside the end cap, whereby air pressure on both sides of the end cap may be equalized to facilitate removal thereof.

3,964,701

MODEL RAILROAD TRAIN CONTROL SYSTEM

John Kacerek, 97 Ravine Ave., West Caldwell, N.J. 07006

Filed May 27, 1975, Ser. No. 580,990
Int. Cl.² B61L *3/24*
U.S. Cl. 246—2 F **4 Claims**



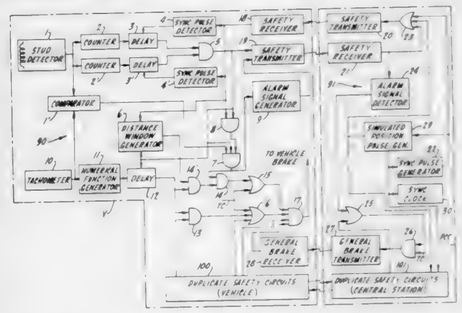
1. A system for simultaneously driving dc motor driven electric trains at speeds and directions independent of each other along a track to which power is fed, said circuit comprising:
means for generating a repetitive ultimate duty cycle;
means connected to said aforementioned means for dividing said duty cycle into a plurality of spaced apart timewise time slots, said time slots being separated from one another by an equal plurality of time gaps;
an equal plurality of variable amplitude and polarity dc voltage sources;
means for interconnecting one of said voltage sources with said track during each of said time slots;
means for generating signals of differing discrete frequencies during each of said time gaps of the ultimate cycle;
a dc motor and a sensor mounted in each of said trains, said sensor including frequency responsive means tuned to one of said discrete frequencies;
a dual polarity latching subcircuit connected in series with said train dc motor across said track; and,
latch driving means interconnecting said frequency responsive means and said latching subcircuit to latch said latching subcircuit and motor across said track during the time slot following the gap in which said discrete frequency signal was generated.

3,964,702

ANTI-COLLISION SAFETY DEVICE FOR A PASSENGER TRANSPORT SYSTEM ON TRACKS

Regis Lardennois, Verriere-le-Buisson; Michel Robert, Gif-sur-Yvette; Robert Gabillard, Lille, and Edouard Rubin, Bures-sur-Yvette, all of France, assignors to Engins Matra, Paris, France

Continuation-in-part of Ser. No. 432,811, Jan. 14, 1974, abandoned. This application Jan. 29, 1975, Ser. No. 544,916
Claims priority, application France, Jan. 15, 1973, 7301345
Int. Cl.² B61L *27/04*
U.S. Cl. 246—4 **10 Claims**



1. An anti-collision safety control for a plurality of vehicles moving along a track away from a given terminal point, including a corresponding plurality of vehicle control units, one on each vehicle, and a central control station, in which the central control station comprises:
central safety receiver means for receiving position signal from the vehicles;
a synchronization signal generator for generating a series of sync signals; and
central safety transmitter means for transmitting the sync signals and the received position signals to all of the vehicles; and in which each vehicle control unit comprises:
distance measuring means for continuously measuring the distance of the vehicle from the terminal point;
vehicle safety receiver means for receiving the sync signals and position signals from the central control station;
position signal generator means, coupled to the distance measuring means and to the vehicle safety receiver means, for generating a local position signal for the vehicle carrying the control unit, following a received sync signal, at a time representative of the distance of the vehicle from the terminal;
vehicle safety transmitter means for transmitting the local position signal to the central control station to complete a control loop linking the vehicle and the central control station;

stop distance means, coupled to the position signal generator means, for generating a vehicle stop distance signal, following the local position signal, at a time representative of a safe stopping distance for the vehicle;

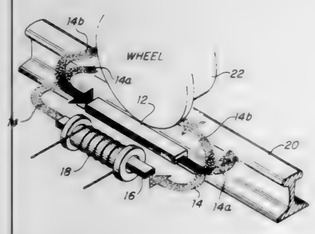
and vehicle brake control means, coupled to the vehicle safety receiver means and the stop distance means, for actuating the brakes of the vehicle whenever the next position signal following the local position signal is received prior to the stop distance signal.

3,964,703

MAGNETIC OBJECT DETECTION

Joseph R. Wilkas, Walpole; Christos B. Kapsambelis, Canton; Richard H. Tuhro, Norwood, and Christopher C. Reynolds, Stoughton, all of Mass., assignors to Computer Identics Corporation, Westwood, Mass.

Filed Mar. 17, 1975, Ser. No. 559,252
Int. Cl.² B61L 1/16
U.S. Cl. 246—34 R **10 Claims**



1. A variable permeability magnetic object detection device comprising:

an electromagnetic sensing coil;

a core disposed in said electromagnetic sensing coil and having a first permeability when said core is magnetically saturated and a second, different, permeability when said core is magnetically unsaturated;

a magnetic member proximate said electromagnetic sensing coil for providing a magnetic field in said core for operating said core in a magnetically saturated state without a magnetic object to be detected present in the area proximate said electromagnetic sensing coil, interacting with said magnetic field, and for operating said core in a magnetically unsaturated state with a magnetic object to be detected present in the area proximate said electromagnetic sensing coil, interacting with said magnetic field; and

means, responsive to said electromagnetic sensing coil, to detect the presence of a magnetic object.

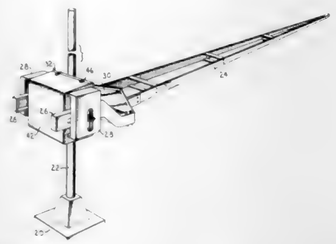
3,964,704

OPERATING MECHANISM FOR RAILROAD CROSSING GATE

Jerry W. Karr, Blue Springs, Mo., assignor to Harmon Industries, Inc., Grain Valley, Mo.

Filed Sept. 23, 1974, Ser. No. 508,670
Int. Cl.² B61L 29/22
U.S. Cl. 246—125 **12 Claims**

1. In a gate mechanism having a gate member mounted for swinging movement about a generally horizontal axis between a raised position and a lowered position corresponding to open and closed conditions of the gate respectively, and where drive means is employed for rotating said gate member about said axis to swing the member from said lowered to said raised position, the improvement comprising force transmitting means coupling said drive means with said member and providing high mechanical advantage at the start of upward movement thereof, substantially lower mechanical advantage after the member is in motion, and progressively increased mechanical advantage as the member approaches its raised position, whereby to minimize the starting load on the drive means, accelerate the member once it is in motion, and then reduce the speed of the member as it nears the end of its travel, said force transmitting means including an operating arm extending transversely of said axis and secured to said member, said arm having first and second angularly spaced positions corresponding to said raised and lowered positions



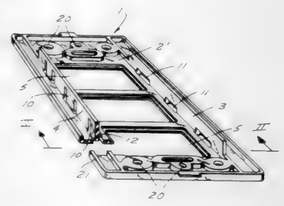
of the member respectively, a rotatable crank connected with said drive means, and a coupling device pivotally secured to said crank and reciprocable on said arm longitudinally thereof, said drive means being operable to rotate said crank in a direction to swing said arm from said second to said first position thereof to thereby swing said member to its raised position.

3,964,705

FRAME FOR THE MOUNTING OF INTERCHANGEABLE ELECTRICAL UNITS

Zago Giovanni, Milan, Italy, assignor to Bassani S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 210,663, Dec. 22, 1971, abandoned. This application Oct. 24, 1974, Ser. No. 517,830
Claims priority, application Italy, Dec. 23, 1970, 23782/70
Int. Cl.² A47F 5/08, 7/00; H01R 9/00
U.S. Cl. 248—27 R **7 Claims**



1. As a novel article of manufacture for mounting interchangeable electrical units having oppositely directed first and second projections, a one-piece mounting frame consisting of electrically insulating synthetic plastic material and having a front surface, a rear surface, a row of openings extending between said surfaces, an abutment provided in each of said openings to limit the extent to which an electrical unit can be inserted into the respective opening in a direction from one toward the other of said surfaces, a first elongated frame-stiffening member projecting upwardly from and extending longitudinally of a substantial portion of said one surface along one side of said row of openings and having recesses which are located adjacent to the openings of said row and adapted to receive the first projections of electrical units which are being insertted into the adjoining openings, a second elongated frame-stiffening member projecting upwardly from and extending longitudinally of a substantial portion of said one surface along the other side of said row of openings and having elastic tongues which face said recesses and are deformable by the second projections of electrical units from first to second positions during insertion of such units into the adjacent openings while the first projections of the units extend into the

corresponding recesses of said first member, to subsequently reassume said first positions and to thereby overlie the respective second projections so as to retain the units in their openings, and passages extending between said front and rear surfaces and each in line with a portion of one of said tongues in the first position of the respective tongue so that a tool which is inserted into a passage in a direction from said other toward said one surface can engage and move the corresponding tongue from the first to the second position thereof and to thus permit removal of an electrical unit from its opening.

3,964,706

HOLDER ASSEMBLY FOR FISHING RODS AND FISHING ACCESSORIES

John R. Adams, 835 Summit Ave., Franklin Lakes, N.J. 07417

Filed Nov. 1, 1974, Ser. No. 520,169
Int. Cl.² A01K 97/10
U.S. Cl. 43—21.2 **14 Claims**



1. A holder assembly for fishing rods and like fishing accessory devices, comprising a mounting base having at least one tubular socket fixed thereon, said mounting base including at least one flat portion and a pair of keyhole slots therein each slot having a portion of small width to receive the shank and a portion of larger width to pass the head of a keyhole screw or nail for readily securing and detaching the base to and from a supporting surface, said socket having an upper part of given diameter and a lower part of lesser diameter, said lower part being open at the bottom for passage of part of the tapered butt end of a fishing rod, a sleeve for slidably receiving and holding a fishing rod handle or the like, a pair of bayonet slots disposed diametrically in the upper rim of said socket, a pair of pins protruding from said sleeve for detachable securement in said slots whereby the sleeve is also readily securable and detachable, and a resilient washer seated on a shoulder formed between said upper and lower parts of the socket and serving to resiliently press the base of said sleeve upwardly to exert a retaining force on said sleeve pins in the bayonet slots of the socket.

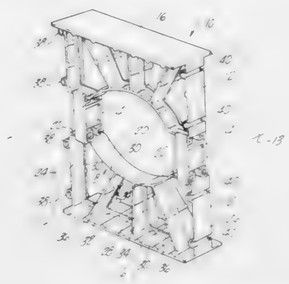
3,964,707

UNDERGROUND CONDUIT HOLDER

Gerald F. Lewis, 1850 Columbia, Berkley, Mich. 48072

Filed Dec. 23, 1974, Ser. No. 535,664
Int. Cl.² A47G 29/02
U.S. Cl. 248—49 **2 Claims**

1. An underground conduit holder comprising a pair of holding frames, each of said holding frames having a conduit engaging portion to engage an outer surface of a conduit in diametrically opposed relation to each other and being disposed in a common plane transverse to the axis of said conduit, each of said frames including a flange portion adjacent opposite ends of said conduit engaging portion, a pair of clamp structures each of which includes a body member, a pair of latch elements extending from one end of said body member for engagement with one of said flange portions of one of said frames, and a pair of latch elements extending from the other end of said body member for engagement with the corresponding one of the flange portions of the other of



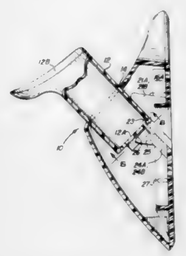
said frames to prevent separation of the said frame members relative to each other axially and radially of said conduit, each of said latch elements including a hook element and a stop element connected to said hook element, said stop and hook elements presenting facing surfaces deflectable relative to each other to engage opposite surfaces of said flange portions for accommodating varying thicknesses of said flange portions.

3,964,708

HAIR DRYER CRADLE

Michael G. Reeves, Scottsdale, Ariz., assignor to Gloria J. Reeves, Phoenix, Ariz.

Filed Mar. 14, 1975, Ser. No. 558,212
Int. Cl.² A47F 5/08
U.S. Cl. 248—126 **5 Claims**



1. A cradle for supporting a hand held beauty appliance comprising in combination:

a supporting base,

a contoured hollow housing for mounting on said base and defining an aperture extending through its surface for detachably receiving a cylindrically shaped chamber in a sliding fitting arrangement therein,

a cylindrically shaped chamber slidingly fitted into said aperture of said housing,

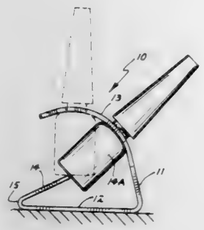
means mounted on said chamber for interconnecting said chamber at one end thereof with said base for controlling the positioning of said chamber in said housing,

said chamber being formed to receive and support therein a hand held beauty appliance,

said means for interconnecting said chamber at one end thereof with said base comprising an apertured plate mounted at said one end of said chamber, and

a protrusion mounted on said base,
said protrusion penetrating said apertured plate in one of two inserted positions of said chamber in said aperture of said housing for detachably interconnecting said chamber with said base.

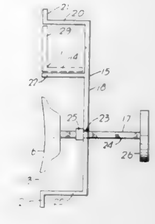
3,964,709
NAIL POLISH BOTTLE RETAINER
Joan P. LaBelle, and George Ketz, Jr., both of Minneapolis, Minn., assignors to Joseph Jay, by said Joan P. LaBelle and George Ketz, Jr. Kopstein, Tampa, Fla., a part interest
Filed Oct. 24, 1975, Ser. No. 625,505
Int. Cl.² A47F 5/12; A47G 29/00
U.S. Cl. 248—133 **3 Claims**



1. Support means for retaining and adjustably positioning and securing cosmetic bottle receptacles in predetermined disposition about an arc extending from a generally upright disposition to a tilted disposition generally 65° from said upright disposition, said support means comprising:
a. an elongated continuous flexible support body having a base pad portion, a bottle engaging support leg in a plane disposed at an acute angle from the plane of said base pad portion and extending from one end of said base pad portion, and a bottle retaining portion extending from the opposed end of said base pad portion;
b. said bottle engaging support leg portion terminating along a terminal edge disposed in elevated disposition relative to the plane of said base pad portion;
c. said bottle retaining portion having a generally arcuate configuration with the center of arc being generally coincidental with said terminal edge and with said bottle retaining portion being elevated above said terminal edge and having a surface in opposed disposition to said terminal edge, and slot means being formed within said bottle retaining portion between lateral edge strip zones, said slot being arranged to receive and retain only the neck portion of a cosmetic bottle therewithin, and with the base of said lateral edge strips being arranged to abut against the shoulder of a bottle being retained therewithin;
d. the arrangement being such that upon inserting a bottle within said support means and upon said terminal edge, said bottle retaining portion flexes resiliently away from said terminal edge so as to grip the bottle between said terminal edge and the inner surface of said arcuate bottle retaining portion.

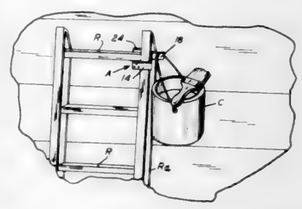
3,964,710
SUSPENDED CEILING LEVELING DEVICE
Andrew Conroy, Newark, N.J., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Dec. 6, 1974, Ser. No. 530,190
Int. Cl.² F16B 47/00
U.S. Cl. 248—206 R **1 Claim**

1. A suspended ceiling leveling device for leveling a 90° angle component of a guide assembly of a suspended ceiling which comprises:
a. an elongated rectangularly shaped plate having a center transverse hole therethrough;
b. L-shaped flange members affixed perpendicularly to each end of said plate, each said L-shaped flange member having a longer leg and a shorter leg, said longer leg joined perpendicularly to said plate, said shorter leg of each said member parallel to said plate and extending away from said plate, each said shorter leg adapted to engage a vertical wall;
c. a smaller flat rectangularly shaped plate affixed perpendicularly to said elongated rectangularly shaped plate between one said L-shaped flange member and said hole, said smaller plate positioned on the same side of said larger plate as each said L-shaped flange member, said 90° angle component adapted to rest on top of said smaller plate and engage against said vertical wall;



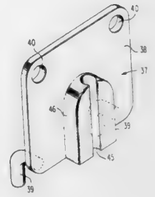
d. a guide assembly mounted onto larger plate at said transverse hole, said guide assembly positioned on the same side of said larger plate as said L-shaped flange members;
e. a rod member slidably contained in said guide assembly, said rod member extending through said guide assembly and said transverse hole;
f. a circular disc handle affixed to one end of said rod member, said handle being positioned on an opposite side of said large plate to that of L-shaped flange members; and
g. a suction cup member affixed to another end of said rod member, said suction cup member positioned on said same side of said larger plate as said L-shaped flange members, said suction cup positioned between one said flange member and said smaller plate, said suction cup member engaging said vertical wall.

3,964,711
BRACKET FOR ENGAGEMENT WITH THE RUNG AND RAIL OF A LADDER FOR SUPPORTING AN ARTICLE
Ordell R. Lund, 1915 E. Ninth St., Duluth, Minn. 55812
Filed June 25, 1975, Ser. No. 590,022
Int. Cl.² B44D 3/14
U.S. Cl. 248—210 **2 Claims**



1. A device for mounting articles on a ladder comprising:
a. a pair of brackets each having a main arm which terminates in
b. a first angularly disposed end portion for engagement with the rung of a ladder and which terminates in a lip angularly disposed to said first end portion and overlying said main arm to form a hook formation, for engagement with the rung of a ladder,
c. said main arm terminating at its second end in a second angularly disposed end portion,
d. a bar connected to said second angularly disposed end portion of each of said brackets for positioning across the rails of a ladder,
e. a tray, and
f. means for mounting a tray on said bar.

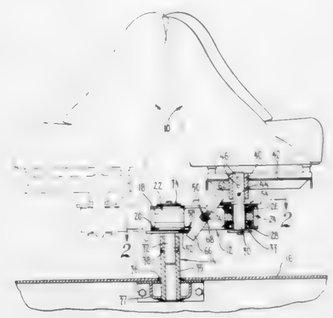
3,964,712
APERTURED PANEL BRACKET
Walter J. Staudte, Jr., 514 S. 15th, Sunnyside, Wash. 98944
Division of Ser. No. 387,625, Aug. 13, 1973, Pat. No. 3,879,006. This application Feb. 5, 1975, Ser. No. 547,119
Int. Cl.² E06B 7/28; A47F 5/00
U.S. Cl. 248—223 **4 Claims**



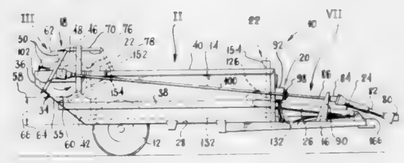
1. An article support assembly comprising an apertured panel body having plural vertical rows of apertures formed therethrough, an intermediate hanger stabilizing device adapted to engage the forward face of said panel body and lying between the panel body and an article hanger, said device having a vertical groove means therein adapted to receive and seat a vertical portion of an article hanger, said device comprising a flat base plate spanning two vertical rows of apertures in said panel body and having a pair of laterally spaced openings near its top adapted to register with a pair of apertures in laterally adjacent rows on the panel body, said base plate having a pair of laterally spaced studs near its bottom engageable within a pair of laterally spaced apertures in said panel body, an article hanger having a vertical part engageable releasably within said vertical groove means and seated therein and being stabilized thereby, and a pair of studs on said article hanger near its top engageable through said openings of the base plate and through a registering pair of apertures in said panel body.

3,964,713
REVERSIBLE SEAT LOCK
Gerald L. Joslyn, Auburn Heights, Mich., and George W. Bingley, Kankakee, Ill., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed Jan. 16, 1975, Ser. No. 541,675
Int. Cl.² B60N 1/02
U.S. Cl. 248—418 **2 Claims**

1. A movable seat for a vehicle comprising a horizontally disposed support, means mounting said support on said vehicle for pivotal movement about a first vertical axis, a seat, means mounting said seat on said support for pivotal movement about a second vertical axis, a first disc element mounted in a stationary position relative to said first axis, a second disc element mounted on said seat for movement with the latter about said second axis, a lock member mounted on said support for swinging movement about a horizontal axis between a first position engaging said first and second disc elements to prevent pivotal movement of said support relative to said vehicle and said seat relative to said support and a second position in which said support and said seat are free to pivot relative to each other and to said vehicle about said first and second axes, said first and second disc elements disposed at opposite upper and lower sides of said support, said lock member confined to the space between the first and second vertical axes.



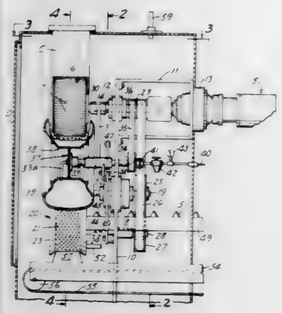
3,964,714
MATERIAL UNLOADING IMPLEMENTS
Alexander Crawford, Guy's, and Alfred J. Bailey, Berkswell, both of England, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands
Filed May 8, 1975, Ser. No. 575,566
Claims priority, application United Kingdom, May 10, 1974, 20667/74; Dec. 11, 1974, 53600/74
Int. Cl.² A01C 23/00
U.S. Cl. 239—662 **7 Claims**



1. A material unloading implement comprising
a material container;
a material unloading rotor mounted on the material container and operable to unload material therefrom;
material feed means operable to feed material within the container to the material unloading rotor;
characterized in that
the material container includes an upwardly extending rear wall at the rear thereof below the material unloading rotor, said rear wall sloping downwards and forwards from the material unloading rotor;
the material unloading rotor is mounted on the container at the rear of the implement for rotation about a horizontal axis extending transverse to the direction of usual forward motion of the implement, adjacent and upwardly extending wall of the container and is operable to unload material from within the container over said wall, the material unloading rotor being mounted at a level such that when the material unloading implement is in its working attitude and is standing on horizontal ground, a horizontal plane touching the lowest point on the circular path described by the radially outermost portions of the rotor is spaced above a horizontal plane touching the lowest point in the material container; and
the material feed means comprises a material pushing member mounted in the material container so as to be movable towards the material unloading rotor, and drive means to move the material pushing member whereby the

material pushing member moves material within the container towards the material unloading rotor.

3,964,715
FLESH AND SKIN SEPARATING APPARATUS AND METHOD FOR FRUIT AND VEGETABLE PRODUCTS
Ralph D. Burgess, Jr., Excelsior, Minn., assignor to Food Engineering Corporation, Minneapolis, Minn.
Filed Aug. 9, 1974, Ser. No. 496,079
Int. Cl.² A23N 7/02; B02C 4/30; B07C 4/40
U.S. Cl. 241—7 **26 Claims**

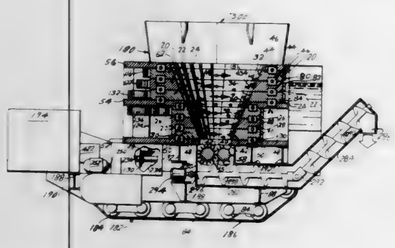


26. The method of separating skins from the flesh of fruits and vegetable products consisting in:

a. passing such products between a rotating perforated product-receiving surface and an oppositely rotating directly pneumatically supported flexible, resilient surface in engagement therewith under pressure less than 150 p.s.i. whereby the flesh of such products remain on such product receiving surfaces, and

b. pneumatically loosening the separated skins on the product-receiving surface preparatory to removing same.

3,964,716
WOOD PROCESSING UNIT FOR REDUCING AIR POLLUTION
Alfred S. McCorkle, Kirkland, Wash., and Charles L. Hoar, Portland, Oreg., assignors to McCorkle Children Trust, Kirkland, Wash.
Filed Sept. 3, 1970, Ser. No. 69,268
Int. Cl. B02c 19/12
U.S. Cl. 241—28 **28 Claims**



A process for reducing the size of an object, said process comprising:

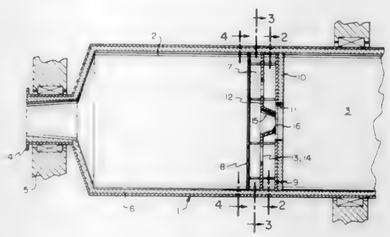
a. contracting said object with a rotating abrasive means to divide said object into smaller pieces of said object;

b. introducing said object to an abrasive means having through passageway so that said object is reduced in size to pass through said passageway;

c. introducing said object to a first rotating abrasive means having a through passageway; and,

d. introducing said object after leaving said first rotating abrasive means to a second rotating abrasive means having a through passageway.

3,964,717
TUBE MILL
Ib Hansen, Copenhagen Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.
Filed Sept. 5, 1974, Ser. No. 503,306
Claims priority, application United Kingdom, Sept. 10, 1973, 42365/73
Int. Cl.² B02C 17/00, 17/18
U.S. Cl. 241—71 **18 Claims**



1. A tube mill for dry grinding a granular material and the like comprising at least one grinding compartment charged with grinding bodies, a relatively short compartment positioned downstream of said grinding compartment and bounded on the downstream portion by a dam ring defining a central opening and on the upstream portion by a sieving means capable of retaining the grinding bodies in said grinding compartment, said short compartment being so configured to permit fluidized ground material to flow at least from the upstream grinding compartment to the short compartment, said short compartment having an intermediate plate defining upstream and downstream compartments therewithin, and at least one opening remote from the peripheral wall of the mill, said opening being positioned to correspond to the intended level of fluidized material in the upstream compartment of the short compartment and in the downstream grinding compartment, said upstream compartment of the short compartment being devoid of any lifters and said downstream compartment of the short compartment having lifting means, said lifting means being so configured as to assist in transporting the material from the downstream compartment of the short compartment into a downstream grinding compartment or out of the mill.

3,964,718
APPARATUS FOR CRUSHING MATERIAL
Peter A. Balistrieri, 1412 S. Park Ave., Buffalo, N.Y. 14220
Filed Sept. 6, 1974, Ser. No. 503,711
Int. Cl.² B02C 4/32
U.S. Cl. 241—79 **7 Claims**

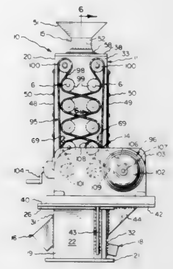
1. Apparatus for crushing material, comprising:

a housing having a conduit for directing an advance of said material therealong, said conduit having an inlet opening for admitting material to be crushed and having an outlet opening for discharging crushed material;

a plurality of cooperative pairs of rotatable crush rollers journalled on said housing and spaced longitudinally along said conduit, the rollers, of each of said pairs having portions arranged within said conduit and spaced operatively from one another transversely of the longitudinal

axis of said conduit to crush material passing therebetween, the rollers of any one pair arranged closer to said outlet opening being more closely spaced than the rollers of any other pair arranged further from said outlet opening;

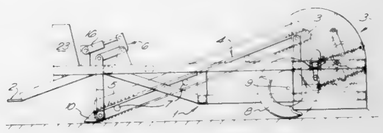
adjustment means operatively arranged between said housing and one of said rollers for enabling adjustment of the operative spacing between the pair including such adjustable roller; said adjustment means including a disc-like



cam member rotatably mounted on said housing and provided with a plurality of circumferentially-spaced radially-extending recesses, and a holding member adapted to be received in any of such cam recesses to hold said cam member immovable at a selected angular position, said adjustable roller being journalled at an eccentric position on said roller,

whereby material advancing along said conduit may be progressively crushed between the rollers of each successively encountered pair.

3,964,719
MOBILE STONE CRUSHING PLANT
William Whytock Hally, Les-Na-Creive, Strathmore Terrace, Alyth, Perthshire, and Thomas Pate, Jr., South Powrie Farm, Dundee, Angus, both of Scotland
Filed Apr. 11, 1974, Ser. No. 459,948
Claims priority, application United Kingdom, Apr. 18, 1973, 18724/73
Int. Cl.² B02C 4/08
U.S. Cl. 241—101.7 **11 Claims**



1. A stone crushing unit comprising two crushing zones one above the other with at least one crushing roller at each crushing zone and further crushing means at each zone co-operating with the respective roller to define at each zone a nip through which stones pass for crushing, mounting means mounting each of said rollers for positioning said rollers relative to their respective co-operating crushing means by the force of gravity directly onto said rollers, said mounting means allowing passage of uncrushable material through each of said nips through the movement of the respective roller against the force of gravity, and spring dampening means associated with each crushing roller for dampening movement of each crushing roller towards and away from its cooperating crushing means.

3,964,720
APPARATUS FOR FEEDING MATERIALS INTO A HAMMERMILL OR THE LIKE
Aquila D. Mast, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Apr. 17, 1975, Ser. No. 569,021
Int. Cl.² B02C 13/286
U.S. Cl. 241—186 A **16 Claims**



1. Apparatus for feeding baled roughages, grains and other feed materials into a hammermill or the like which includes a housing having a material receiving opening defined therein, said apparatus comprising:

elongated feeding means for receiving feed materials at an upper side thereof and being mounted at one end portion to said housing adjacent a lower side of said opening therein and operable to convey feed materials into said housing through said opening;

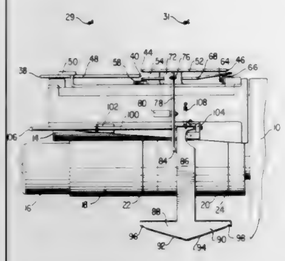
closure means disposed adjacent said housing opening and adjacent and above said one end portion of said elongated feeding means, said closure means including a first surface portion which extends along a path near said housing opening to normally substantially close the same, said closure means being movably upwardly away from said elongated feeding means upon being engaged by feed material, such as baled roughage, as the latter is fed by said elongated feeding means toward said housing opening, said upward movement of said closure means causing its first surface portion to move upwardly along said path relative to said housing opening and thereby open a sufficient portion of said housing opening for allowing passage of said feed material into said housing through said portion of said housing opening; and

operative feeding assist means mounted in said housing at a location spaced above said one end portion of said elongated feeding means and adjacent an upper portion of said housing opening, said feeding assist means for engaging upper portions of feed material, such as baled roughage, to thereby assist the feeding thereof through said housing by said elongated feeding means.

3,964,721
APPARATUS FOR FORMING A TRANSFER TAIL

Malcolm P. Owens; Edgar E. Barnes, and Dennis Ray Burton, all of Charlotte, N.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Filed Apr. 30, 1974, Ser. No. 465,720
Int. Cl.² B65H 54/02
U.S. Cl. 242—18 PW **6 Claims**



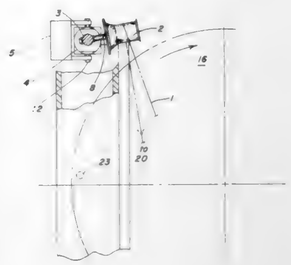
1. An improved apparatus for forming transfer tails of a pair of yarns on first and second bobbins having first and second yarn engaging means and carried in axial alignment on the chuck of a winding apparatus comprising
   a. yarn guiding and separating means for guiding first and second yarns to first and second positions;
   b. first and second transfer tail forming means located at said first and second positions adapted to form transfer tails of said yarns on said bobbins upon actuation;
   c. first and second yarn guiding means moveable between an initial position through an intermediate position to a final position, said first yarn engaging means being located intermediate and in a common plane with said first transfer tail forming means and said first yarn guide means, and said second yarn engaging means being located intermediate and in a common plane with said second transfer tail forming means and said second yarn guide means; and
   d. actuator means for moving said yarn guide means from said initial position through said intermediate position to engage said first and second yarns with said first and second yarn engaging means and to said final position to actuate said first and second transfer tail forming means.

3,964,722
TRANSFER TAIL APPARATUS AND METHOD FOR VERTICAL SPINDLE WINDER

Beryl Aaron Boggs, Chester; Robert David Carr, Hopewell; Lawrence Edward Cary, Richmond; Clarence Albert Forman, Hopewell; Wayne Henry Murray, Chester; Weldon Herbert Peterson, Colonial Heights, and Everett Gray Montgomery, Chester, all of Va., assignors to Allied Chemical Corporation, Petersburg, Va.

Filed June 3, 1974, Ser. No. 475,365
Int. Cl.² B65H 54/02
U.S. Cl. 242—18 PW **13 Claims**

1. An apparatus for forming a transfer tail during string-up of a winder for winding yarn on a bobbin having a flange comprising in combination
   a thrustable, tail forming string-up aid,
   a tail storage mechanism,
   a pin at the outer edge of the outer face of said flange,
   a tail cutter, and
   means to thrust said aid,
   said aid being located adjacent to the outer edge of the periphery of said flange of said bobbin
   said storage mechanism being locate adjacent to the outer face of said flange of said bobbin and inside the outer edge of the periphery of said flange
   said tail cutter being located adjacent said winder, but at a distance dowstream from said aid,
   said yarn passing across the inside of said bobbin flange to said string-up aid, then across the outer face of said bobbin flange, said cutter located to contact said yarn after said yarn crosses the outer face of the bobbin flange,

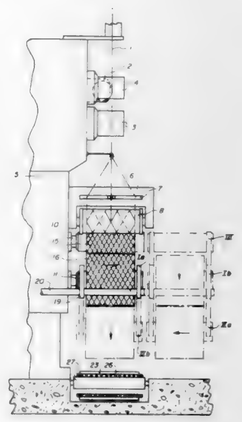


   said aid having a locked, thrustable position holding said yarn out of contact with said pin, flange and storage mechanism, and an activated position, said activated position being located so as to cause yarn to be brought into contact with said pin and storage upon said storage mechanism as a tail, and so as to activate said tail cutter by reversal of direction of yarn travel between said pin and said cutter, said activated position also bringing about winding of said yarn on said bobbin.

3,964,723
AUTOMATIC SPOOL-CHANGING APPARATUS

Heinz Schippers; Karl Bauer; Erich Lenk; Manfred Mayer, all of Remscheid-Lennep, and Hans Jochen Busch, Remscheid, all of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed June 4, 1975, Ser. No. 583,849
Claims priority, application Germany, June 4, 1974, 2427016
Int. Cl.² B65H 67/04
U.S. Cl. 242—35.5 A **16 Claims**

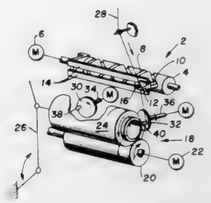


1. In a textile machine including:
   a plurality of winding apparatus, disposed in a horizontal array along the front of the machine, for winding a multifilament synthetic yarn which is continuously fed to said apparatus at a constant high velocity, each said apparatus having, in a corresponding spool-changing position, a spool holder journaled in said machine with the axis of said holder projecting from the front of said machine;
   a spool conveyor mounted for horizontal movement along the machine front; and
   an automatic spool changing apparatus having a gripping means movable between the conveyor and the spool-changing position of the spool holder;
   the improvement:
   that said conveyor is disposed in substantially the same vertical plane with, and at a level below, said spool holders, and
   that said gripping means is mounted for movement along a spool-doffing path which extends forwardly of the machine front and comprises three legs, the first leg of said path extending from said spool-changing position of the spool holder, along a line parallel to the axis of said holder, forwardly to an upper out-of-the-way position, the second leg extending, in a plane perpendicular to the axis of said holder, from said upper out-of-the-way position to a lower out-of-the-way position, and the third leg extending from said lower out-of-the-way position, along a line parallel to the axis of said holder, rearwardly to a conveyor discharge zone.

3,964,724
TRAVERSE WINDING METHOD

Don E. Fisher; Paul A. Knauff, and David Bowen, Jr., all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 798,082, Feb. 10, 1969, abandoned. This application Nov. 2, 1970, Ser. No. 85,930
Int. Cl.² B65H 54/30
U.S. Cl. 242—43 R **4 Claims**

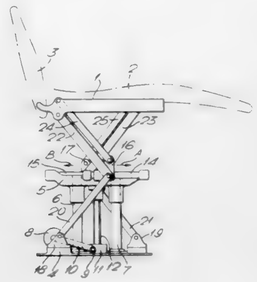


1. A traverse winding method comprising the steps of:
   a. traversing a yarn in a traverse plane back and forth between reversals in one zone of said traverse plane;
   b. collecting the traversing yarn in a second zone of said traverse plane;
   c. during said reversals, engaging said traversing yarn with a secondary traverse device between said one and said second zones whereby said yarn forms a trail angle and a trail length between said secondary traverse device and said second zone; said trail angle varying from a first given value in a first direction at the beginning of a reversal period through 90° to a second given value in the opposite direction at the end of said reversal period; and
   d. decreasing said trail length during at least part of the period beginning when said trail angle becomes 90° and ending when said trail angle reaches said second value, said step of decreasing being accomplished by moving said secondary traverse device toward said second zone after said trail angle has become 90°.

3,964,725
DENTAL CHAIR

Takahiro Matsui, and Osamu Uwamori, both of Kyoto, Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Apr. 5, 1974, Ser. No. 458,222
Claims priority, application Japan, Apr. 17, 1973, 48-43369
Int. Cl.² A61G 15/00
U.S. Cl. 248—421 **3 Claims**



1. A dental chair, comprising:
   a base;
   a seat for the dental chair;
   first raising and lowering means carried by said base member;
   a frame member supported by said first raising and lowering means so that said frame member is raised and lowered thereby; and,
   second raising and lowering means, said second raising and lowering means operative to raise and lower said seat and comprising, on each side of said chair,
   a first link means having two ends and a movable joint at a point therebetween, said first link means being rotatably connected at one end thereof to said base by pivot means fixed relative to said base and rotatably connected at the other end thereof to said seat by pivot means fixed relative to said seat, and,
   slidable supporting means carried by said frame for slidably supporting said movable joint such that said movable joint slides substantially horizontally along said slidable supporting means as said first raising and lower means raises and lowers said frame member, said seat being raised or lowered as said frame member is raised or lowered by an amount equal to the amount said frame member is raised or lowered plus an additional amount resulting from movement of said movable joint in said slidable supporting means;
   one of said first link means being rotatably connected at one end thereof to said seat toward the rear thereof and the other of said first link means being rotatably connected at one end thereof to said seat toward the front thereof, said one of said first link means being rotatably connected to said base toward the rear thereof and said other of said first link means being rotatably connected to said base toward the front thereof, said slide members moving in opposite directions when said chair is raised or lowered.

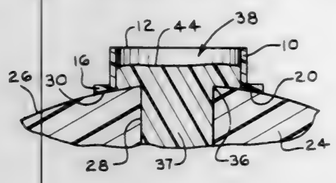
3,964,726
BOWLING BALL HOLE FONT

Norman D. Ott, 619 Cherry St., Lansing, Mich. 48933, and Richard D. Foster, 4250 Pinch Highway, Potterville, Mich. 48876

Filed Mar. 27, 1974, Ser. No. 455,298
Int. Cl.² B28B 7/00
U.S. Cl. 249—90 **2 Claims**

1. A font for use in the plugging of bowling ball finger holes comprising a circular annular body formed of an easily machinable rigid material having first and second open ends, a radially outwardly extending flange defined on said first end defining a base, said second end defining an opening having a

diameter equal substantially to the inner diameter of said body, a concave spherical supporting surface defined upon



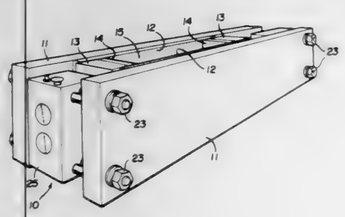
said base having a configuration conforming to the surface of a bowling ball and adhesive means mounted upon said base for affixing said body to a bowling ball surface.

3,964,727

ADJUSTABLE WIDTH CONTINUOUS CASTING MOLD

Floyd R. Gladwin, 21000 E. River Road, Grosse Ile, Mich. 48138

Filed June 30, 1975, Ser. No. 591,531
Int. Cl.² B22D *19/00;* **B28B** *7/02*
U.S. Cl. 249—158 **7 Claims**



1. Apparatus for adjusting the width of a continuous casting mold formed of a pair of spaced apart, substantially parallel, rigid, plate-like members, forming opposed casting faces, and side members arranged between the mold members at the opposite sides thereof to provide a roughly rectangular shaped, in cross-section, open ended casting cavity for continuous casting of metal therethrough, comprising:

at least one of said side members being located a distance inwardly of the adjacent edges of the mold members, and bolt-like members extending between the mold members, between said one side member and its adjacent mold member side edges, and loosely holding the two mold members together and towards said one side member;

a spring means arranged between the bolt-like members and at least one of the mold members for normally forcing said one mold member towards the other for clamping the mold members against said one side member and for normally resisting separation of the two mold members, but permitting limited separation of the two mold members for releasing th clamping of said one side member against the resistance of said spring means;

a mounting block supported between the mold members and outwardly of said one side member and adjustable length connector members interconnecting said mounting block and said one side member;

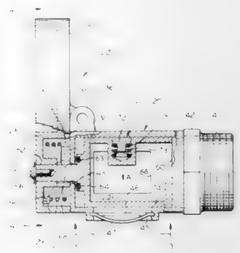
pressure members mounted upon said mounting block for engaging and for selectivly exerting a separating pressure upon the mold members for overcoming the force of the spring means and thereby releasing the side member, whereby said one side member may be adjusted inwardly or outwardly of the mold casting cavity for adjusting the width of said casting cavity and said pressure members may be released for reclamping said one side member between the mold members.

3,964,728

SELF CLOSING SAFETY GATE VALVE FOR VISCOUS FLUIDS

Frank S. Flider, Chicago, Ill., assignor to Justrite Manufacturing Company, Chicago, Ill.

Filed July 22, 1974, Ser. No. 490,685
Int. Cl.² F16K *25/00*
U.S. Cl. 251—183 **1 Claim**



1. A valve for controlling the flow of heavy viscous fluids comprising, a main housing, said main housing having a cylindrical interior chamber with circular ends and side walls extending between said ends, an end housing opening at one of said ends, a housing release opening in the wall of said cylindrical housing, rotor means located within said main housing, said rotor being cylindrical and having circular ends and side walls extending between said ends, said rotor means being rotatable between a valve closed position and a valve open position to control the flow of the fluids as a function of the position of said rotor means, a first rotor opening at one end of said rotor means in communication with said end housing opening, a rotor release opening in the side wall of said rotor means, said rotor release opening and said housing release opening being aligned when said rotor is rotated to said open position with no portion of said rotor release opening and said housing release opening being aligned when said rotor is rotated to the closed position, thrust means for exerting a lateral force pushing said rotor means against said housing release opening when said rotor means is in the closed position to force the side walls of said rotor means against the housing release opening for effectively closing the valve, said thrust means comprising a spring loaded button compressed in a blind bore within said rotor means by the side wall of said housing, rotating means for rotating said rotor means from the normally closed position to align said housing release opening and said rotor release opening to enable the flow of said fluids though said valve, and said rotating means including spring biased safety handle means for controlling the rotation of said rotor means and for automatically returning the rotor means to the normally closed position where the thrust means presses the rotor body against the housing release opening thereby sealing said housing release opening.

3,964,729

ELEVATING DEVICE FOR SNOWMOBILES

Ronald Harlow, 261 Indian Trail, Columbiaville, Mich. 48421

Filed Dec. 26, 1974, Ser. No. 536,461
Int. Cl.² B66F *3/00*
U.S. Cl. 254—131 **9 Claims**

1. A vehicle elevating device, comprising:

a. a ground engaging base support,

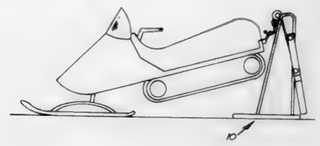
b. an upstanding support means secured to the base support, the support means comprising;

a pair of spaced apart inverted U-shaped support members, each having a first leg, a second leg and a connecting leg,

c. an over center rotatable lever pivotally connected to the second legs of the support means,

d. guide means secured to the first legs of the support means,

e. vehicle grasping means secured at one end thereof to the rotatable lever and passing over the guide means, the



vehicle grasping means including vehicle engaging means at the other end thereof,

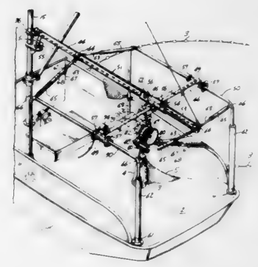
and wherein rotation of the lever arm between an upward position and a downward position elevates a vehicle in engagement with the vehicle engaging means.

3,964,730

SEINE-HAULING POWER BLOCKS

Lawrence E. Demmert, 1275 E. Bakerview Road, Bellingham, Wash. 98225

Continuation of Ser. No. 221,933, Jan. 31, 1972, abandoned, and a continuation-in-part of Ser. No. 701, Jan. 5, 1970, Pat. No. 3,643,365, which is a continuation-in-part of Ser. No. 759,693, Sept. 13, 1968, Pat. No. 3,535,811. This application Sept. 30, 1974, Ser. No. 510,733
Int. Cl.² A01K *73/06*
U.S. Cl. 254—138 **6 Claims**



1. A seine-hauling power block for a fishing boat, comprising a Puretic-type sole seine-hauling sheave having a peripheral groove, mobile hanger means suspending said sheave in an elevated position, power means for rotating said sheave in a predetermined direction to haul in a seine wrapped in said sheave peripheral groove, two guide rollers each having a maximum diameter much smaller than the maximum diameter of said sheave, two cantilever shafts on said hanger means lower than the axis of said sheave and mounting said guide rollers, respectively, closer to said sheave than the greatest radial depth of said peripheral sheave groove but spaced from the lower periphery of said sheave, said rollers being spaced from each other circumferentially of said sheave for engaging said guide roller with the side of the seine opposite that engaged with the sheave groove and for effecting wrapping of the seine in the sheave groove around an arc greater than the arc of wrap produced by the effect of gravity on the seine, and power means for driving at least one of said guide rollers to rotate in the direction opposite the direction of rotation of said sheave.

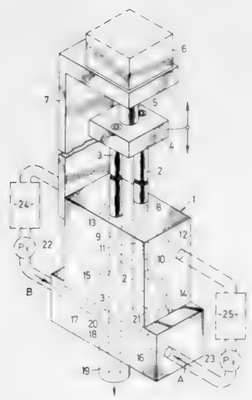
6. The method of hauling a seine by the use of an elevated Puretic-type power block having a sole power-rotated, peripherally-grooved, seine-hauling sheave, which comprises power-rotating the sheave, draping the seine in the upper portion and the downwardlymoving portion of the power-rotated sheave groove, wrapping the seine in the downwardlymoving portion of the power-rotated sheave groove around an arc greater than the arc of wrap produced by the effect of gravity on the seine by passing the downwardly-moving portion of the seine between such sheave and a guide roller having its axis lower than the axis of the power-rotated sheave and the roller being located closer to the powerrotated sheave than the depth of the sheave groove, and power-rotating such guide roller to rotate in the direction opposite to the direction of rotation of the power-rotated sheave.

3,964,731

MIXING APPARATUS FOR MULTI-COMPONENT PLASTICS, PARTICULARLY POLYURETHANE

Rudolf Ernst, Munich-Solln, Germany, assignor to Firma Elastogran Maschinenbau GmbH & Co., Munich, Germany

Filed Apr. 9, 1975, Ser. No. 566,446
Claims priority, application Germany, Apr. 10, 1974, 2417513
Int. Cl.² B01F *5/00, 15/02*
U.S. Cl. 259—4 R **4 Claims**



2. A mixing apparatus for multi-component plastics such as polyurethanes, including a housing providing a mixing chamber with component inlet ports, inlet conduits for supplying components from component reservoirs to the inlet ports under pressure, bypass conduits for recirculating the components to the reservoirs, a valve piston movable to and fro in the mixing chamber and opening or closing the inlet ports as the piston moves through mixing chamber purging and return strokes, means driving the piston through purging and return strokes, the housing including a separate bore communicating the inlet conduits with the bypass conduits, and a plunger driven by the driving means and movable in the bore parallel to and in unison with the piston, the plunger having return flow grooves oriented to provide return flow communication for the respective conduits through the bore when the piston blocks the inlet ports, and the plunger preventing return flow of components through the bore when the inlet ports are unblocked by the piston.

3,964,732

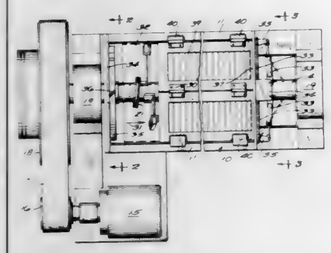
APPARATUS FOR MIXING MOLDING SAND

Nelson Hartley, Towson, Md., assignor to Hartley Controls Corporation, Neenah, Wis.

Filed Dec. 30, 1974, Ser. No. 537,817
Int. Cl.² B01F *7/06*
U.S. Cl. 259—10 **11 Claims**

1. A molding sand mixer comprising an elongated tub having an arcuate bottom, an elongated shaft extending axially

within the tub, a series of paddles mounted on the shaft and extending radially toward the tub wall, power means for rotating said shaft, said paddles having blade and shank portions, at least said blade portions being disposed at an oblique angle to the tub axis to advance sand along the tub when the shaft rotates, the blade portions of the paddles having a greater circumferential extent than the shank portions, the aggregate circumferential extent of said blade portions at least almost filling the space around the periphery of said arcuate bottom

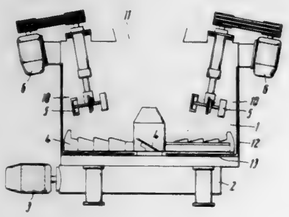


of the tub when viewed in end elevation, there being substantial gaps between said shank portions of the paddles when viewed in end elevation, whereby the blade portions will substantially completely sweep the arcuate bottom of the tub, but some of the sand in the vicinity of the shanks may be missed by the shanks and be bypassed, said tub wall being lined with a resilient material and the paddle blade portions being provided with a resilient edge, said resilient material and said resilient edge coacting to inhibit sand encrustation of said wall.

3,964,733
MIXER FOR MOLDING SAND

Rudolf Lutzschky, and Fritz Lenzinger, both of Karlsruhe, Germany, assignors to Badische Maschinenfabrik GmbH, Germany

Filed Apr. 15, 1974, Ser. No. 460,998
Claims priority, application Germany, Apr. 13, 1973, 2318692
Int. Cl.² B01F *7/00, 7/04*
U.S. Cl. 259—103 **29 Claims**

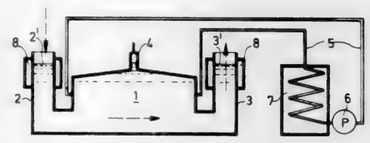


1. Mixer for molding sand and the like comprising:
a stationary mixer bowl having a central bowl axis,
a central tool for imparting rotational movement to the contents of the bowl with respect to the bowl axis,
central tool drive means for driving said central tool rotatably about said bowl axis,
at least one centrifugal tool disposed eccentrically to the bowl axis for imparting mixing effect to said contents as said contents are rotated by said central tool,
centrifugal tool drive means for rotatably driving each of said at least one centrifugal tools,
and centrifugal tool support means for supporting each of said at least one centrifugal tools at a fixed position with respect to said bowl and such that each of said at least one centrifugal tools is in facing spaced relationship with respect to the central tool plane within which said central tool rotates,
wherein each of said at least one centrifugal tools is positioned with its axis of rotation inclined such that rotational movement of said centrifugal tool imparts a greater material movement velocity component in directions parallel to the central tool plane than in directions perpendicular to the central tool plane, whereby said at least one centrifugal tool effects rapid mixing movement of said contents including substantial movement of said contents in directions away from those side wall portions of said mixer bowl which are closest to the respective centrifugal tool.

3,964,734
APPARATUS FOR THERMALLY TREATING METAL COMPONENTS

Alfred Kreidler, Postfach 367, CH-8053, Zurich, Switzerland, and Klaus Viessmann, Friedrich-Ebertstr 110, D-7014 Kornwestheim, Germany

Filed Aug. 10, 1973, Ser. No. 387,278
Claims priority, application Germany, Aug. 11, 1972, 2239552
Int. Cl.² C21D *1/50*
U.S. Cl. 266—133 **18 Claims**

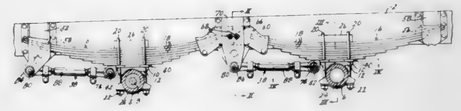


1. In an apparatus for thermally treating metal components, enclosure means having a hollow interior space for containing in said space a liquid at an elevated temperature in which the metal components are thermally treated, inlet means connected to and communicating with the interior of said enclosure means for introducing components to be treated into the interior space of said enclosure means, outlet means spaced from said inlet means and connected to and communicating with the interior of said enclosure means for discharging components out of the interior space of said enclosure means, said inlet and outlet means forming the only passages through which the components can travel into and out of the interior of said enclosure means and both having interior hollow spaces for receiving liquid extending completely across the latter spaces for preventing communication between the interior spaces of said enclosure means and the outer atmosphere, said inlet and outlet means both extending to an elevation higher than the hollow interior space in said enclosure means where the treating liquid is located, said enclosure means having a wall which at least substantially closes off the entire interior of said enclosure means except for said inlet and outlet means, and conveyer means situated in said enclosure means for conveying components to be treated along a predetermined horizontal path in a treating liquid contained in said hollow interior space of said enclosure means with said predetermined path being situated above the bottom of the treating liquid and having a predetermined length, and said enclosure means providing for the treating liquid a a depth which is less than the length of said path.

3,964,735
TORSION BAR ADAPTOR FOR VEHICLE SPRINGS

Oliver L. Wright, P.O. Box 206, Lincoln, Mo. 65338, and Wilbur D. Wright, P.O. Box 81, Lincoln, Mo. 65338

Filed Mar. 3, 1975, Ser. No. 554,570
Int. Cl.² B60G *11/44*
U.S. Cl. 267—25 **6 Claims**

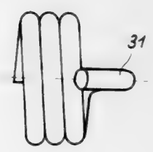


1. For use in converting a vehicle spring suspension system to include torsion bars, said system including an elongated spring supporting the vehicle chassis at its ends and supported intermediate its ends on the generally planar top surface of a spring mount welded to an axle housing of said vehicle which carries rotatable ground-engaging wheels, and including suitable clamping means for affixing said spring against said top surface of said mount, and said torsion bars each constituting a rigid link vertically pivoted at one end to said vehicle chassis and adapted to be vertically pivoted to said spring mount at its opposite end, said mount not normally being provided with connections for said opposite end of said torsion bar, an adaptor comprising a planar plate portion adapted to be inserted between said axle spring mount and said spring, and to be secured therebetween by said clamping means, and extending portions integral with said plate portion and providing means for pivotal attachment of said opposite torsion bar end to said adaptor.

3,964,736
HELICAL EXTENSION SPRING AND METHOD OF MAKING SAME

Joachim Walter Gerhard Huhnen, Blankensteinstr. 24, D-7141 Steinheim, Murr, Germany

Filed June 3, 1974, Ser. No. 475,805
Claims priority, application Germany, June 1, 1973, 2327796
Int. Cl.² F16F *1/12*
U.S. Cl. 267—166 **7 Claims**



1. A helical tension spring having a spring body and two preformed terminal eyelets formed integrally therewith, the free ends of the eyelets contacting the respective end coils of the spring body, each such eyelet exhibiting a localized outward bend in a substantially axial plane of the spring for exerting an initial axial pre-stress force which has to be overcome in order to lift the eyelets off from the adjacent end coils of the spring body, such initial axial pre-stress force being larger than a force normally applied at the eyelet during the use of the spring, which force causes in the spring body a torsion stress which is on the order of a tenth of the tensile strength of the spring wire.

3,964,737
BELLEVILLE SPRING

Michael A. Schober, Palatine, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

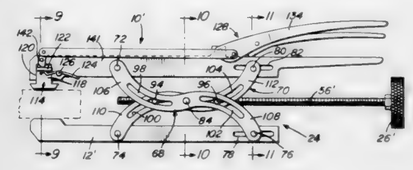
Filed Aug. 23, 1974, Ser. No. 500,212
Int. Cl.² F16F *1/34*
U.S. Cl. 267—161 **6 Claims**

1. An improved Belleville spring formed of a low carbon steel having an original carbon content not higher than 0.40% carbon and provided with a case hardened surface to a depth in the range of 0.010 to 0.040 inches and having residual compressive stresses in the surface of the spring, said spring surface having a carbon content of at least approximately twice the carbon content at the core of the spring.

3,964,738
CLAMP

Walter L. Owen, Rte. 2, Box 540, Gridley, Calif. 95948

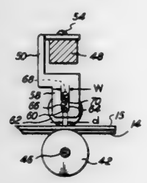
Continuation-in-part of Ser. No. 473,292, May 24, 1974, abandoned. This application Aug. 6, 1975, Ser. No. 602,308
Int. Cl.³ B25B *5/12*
U.S. Cl. 269—221 **12 Claims**



8. A clamping device for workpieces comprising a pair of jaws, a pair of links, means pivotally connecting each of said links to the jaws, each of said links having arcuate sections of opposite curvature, means pivotally interconnecting said links between the arcuate sections, a pair of nut elements, pin and slot connecting means interconnecting said nut elements with overlapping arcuate sections of said links, and actuating screw means threadedly engageable with said nut elements.

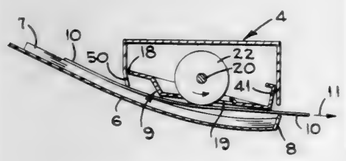
10. A clamping device for workpieces comprising a pair of spaced apart opposing jaws, force multiplying means interconnecting the jaws for relative displacement of said jaws toward and away from each other, a work engaging element movably mounted on one of the jaws in confronting relation to the other of the jaws, actuating means operatively connected to said work engaging element for displacement thereof between retracted and clamping positions, said one jaw and said work engaging element including first coacting means supporting said element from said one jaw for guided movement of said element relative to said one jaw toward and away from the other jaw and second coacting abutment means establishing a limit position of movement of said element relative to said one jaw away from the other jaw, disconnectable spring means operatively connected between said element and said one jaw yieldingly biasing said element toward said limit position, said first coacting means including relatively telescoped portions of said element and said one jaw readily disengageable with each other upon disconnection of said spring means and movement of said element, relative to said first jaw, in excess of a predetermined amount away from said limit position and toward said other jaw, said one jaw including opposite side outwardly opening recesses extending toward and away from said other jaw and opening endwise outwardly toward said other jaw, said element including a pair of spaced furcations slidably and guidingly received in said recesses, said recesses and furcations comprising said first coacting means and defining said relatively telescoped portions.

3,964,739
SELF-ALIGNING AND SELF-LEVELING PINCH ROLL FOR MAGNETIC CARD TRANSPORT SYSTEM
Valentine Garcia, San Jose, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 30, 1974, Ser. No. 537,794
Int. Cl.² B65H 5/06
U.S. Cl. 271—3 6 Claims



1. A card transport system comprising a card support member having a top surface, stationary guide means extending along one longitudinal edge of said support member and extending above said top surface, an opening in said member extending through said top surface, a drive roll supported for rotation about an axis which is generally parallel to said top surface and having a portion thereof extending into said opening with a plane tangent to the periphery thereof being substantially coplaner with said top surface, means for driving said roll in opposite directions, a rotatable pinch roll located above said top surface opposite said drive roll and forming a card receiving nip with said drive roll, resilient means urging said pinch roll towards said drive roll, and means loosely mounting said pinch roll for pivotal movement thereof that its axis pivots between about ½° and 3° relative to said support member in opposite directions from a line substantially perpendicular to said guide means about a vertical axis substantially normal to its axis of rotation and substantially normal to said top surface, said means loosely mounting said pinch roll comprising a stationary bracket located above said top surface and having a pair of spaced members extending toward said surface, an opening in each of said spaced members, a shaft, said pinch roll being located between said members and rotatably connected to said shaft, said shaft extending between said spaced members and having a respective portion thereof extending into a respective one of said openings, the width of said opening being of a dimension which is larger than the width of said shaft extending therein to allow relative movement therebetween to permit said pivotal movement of said pinch roll such that its axis pivots between about ½° and 3° in opposite directions from a line substantially perpendicular to said guide means about said vertical axis.

3,964,740
SHEET-FEEDING APPARATUS
Reginald T. Lamb, 1491 Jopar Ave., Los Altos, Calif. 94022
Filed Jan. 13, 1975, Ser. No. 540,314
Int. Cl.² B65H 3/06, 3/08, 9/16
U.S. Cl. 271—11 21 Claims



1. A sheet-feeding apparatus comprising: means forming a vacuum chamber having at least one movable wall;

an aperture disposed within said movable wall, said movable wall being freely movable to a first position adjacent a top sheet of a stack of sheets;

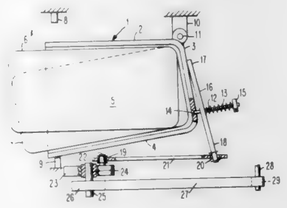
means for evacuating air from said chamber and drawing said top sheet into contact with said movable wall about said aperture and sealing said aperture, said sealing of said aperture causing a partial differential pressure on opposite surfaces of said movable wall and said top sheet for forcing said movable wall and said top sheet to a second position away from a next adjacent sheet in said stack of sheets;

wherein said movable wall moves freely from said second position to said first position upon a predetermined reduction of said partial differential pressure in said chamber when said top sheet is removed a predetermined amount from said aperture;

means for translating said top sheet in a direction parallel to the longitudinal axis of said stack of sheets; and

wherein said translating means comprises means forming a rolling means disposed within said chamber for contacting said top sheet when said top sheet has been moved from said first position to said second position and means coupled to said rolling means for rotating said rolling means and translating said top sheet from said second position to a predetermined third position.

3,964,741
TRANSLATABLE STACKER APPARATUS
Elmer Leroy Bob Kroeker, Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 27, 1975, Ser. No. 590,762
Int. Cl.² B65H 33/08
U.S. Cl. 271—213 9 Claims



1. An apparatus for causing sheets to be stacked offset relative to one another, said apparatus comprising:

a. means for receiving said sheets fed from a sheet feeding apparatus, said receiving means being translatable between a first position and a second position;

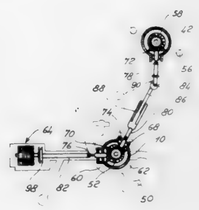
b. means for holding said receiving means in said first position;

c. means for releasing said holding means;

d. means for biasing and urging said receiving means toward said second position when said receiving means is in the vicinity of said first position; and

e. means, upon said holding means being released by said releasing means and after said receiving means has been urged away from said first position by said biasing and urging means, for causing said receiving means to be translated to said second position, and including means for causing said receiving means to be translated from said second position to said first position after said receiving means has been translated to said second position.

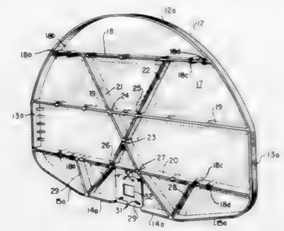
3,964,742
PHYSIOLOGICAL ACTIVE AND PASSIVE EXERCISING APPARATUS
Guido Carnielli, 28, Piazzale Luigi di Savoia, Milan, Italy
Filed Oct. 16, 1974, Ser. No. 515,422
Claims priority, application Italy, Oct. 17, 1974, 30220/74
Int. Cl.² A63B 21/00
U.S. Cl. 272—73 8 Claims



1. An apparatus for the active and passive exercising of a user, comprising a bicycle frame assembly including a seat and a forward and a rear upstanding tubular component, said frame being selfstanding and having a vertical plane; a pair of crank pedals on said frame in a lower region thereof and rotatable about a horizontal first axis, said crank pedals including means for braking their rotation; a pair of crank handles on said frame spaced upwardly of said crank pedals and being rotatable about a horizontal second axis which is in substantial parallelism with said first axis; means for independently adjusting the vertical and horizontal relative orientation of said seat and said crank handles with respect to said crank pedals so as to determine the body attitude of a user positioned on said seat, said adjusting means including forward and rear tubular members respectively connected with said crank handles and said seat and being respectively slidingly received within said forward and rear tubular components of said frame for respectively adjusting the vertical and horizontal position of said crank handles and said seat in said vertical plane, and pivotable members mounted on said forward and rear tubular members operative for respectively adjusting the horizontal orientation of said crank handles and said seat; means for driving said crank handles and said crank pedals for passively exercising a user, said means for driving including a power unit, first means for rotatably connecting said power unit, said crank handles and said crank pedals with each other, and second means for permitting universal movement of said crank pedals with respect to said crank handles, said second means including a universal joint; and means for selectively decoupling said power unit and said crank pedals for actively exercising a user.

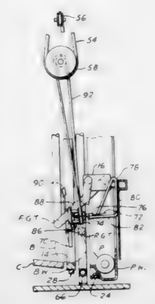
3,964,743
BASKETBALL BACKBOARD STRUCTURE
Peter W. Salsich, Sr., Webster Grove, Mo., assignor to Playground Corporation of America, Long Island City, N.Y.
Filed June 24, 1975, Ser. No. 589,766
Int. Cl.² A63B 63/02
U.S. Cl. 273—1.5 R 10 Claims

1. In a basketball backboard of cast material having a planar play/rebound surface on one side and a reverse surface reinforced by a plurality of projecting ribs integrally cast therewith projecting from said reverse surface, the improvement wherein said ribs comprise a central generally horizontal rib and upper and lower ribs parallel thereto and defining together with said central rib generally vertically equal parts of the reverse side of said backboard, two diagonal ribs each conjoined with the upper rib at points equi-distant from edge portions of the backboard, each diagonal rib crossing the other centrally of the backboard and extending thereafter to the lower edge of said backboard, each diagonal rib being conjoined with said central and lower horizontal ribs such that



their lateral rigidizing effect is transmitted particularly throughout the central part of the play/rebound surface.

3,964,744
BOWLING PIN AND BALL SORTING APPARATUS
Darwin D. Sonnenberg, Rte. No. 1, Hamler, Ohio 43524
Filed July 7, 1975, Ser. No. 593,657
Int. Cl.² A63D 5/02
U.S. Cl. 273—43 E 7 Claims



6. A striker bar for bowling balls, comprising:

a bracket having an abutment surface for fastening to the frame of an automatic pin setting machine, a stub shaft having a centerline extending forwardly and downwardly at an angle relative to said abutment surface, a drive pulley constructed and arranged for rotation in a plane that is perpendicular to said stub shaft centerline, a plastic striker bar having inner and projecting ends and the inner end of which is secured to said drive pulley at an angle wherein the locus of rotation of the projecting end of said striker bar is positioned axially forwardly of its inner end, and whereby rotation of said drive pulley rotates said striker bar in a generally conical path.

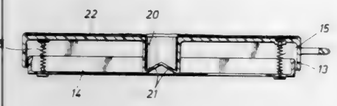
3,964,745
SPRING MOUNTED PITCHING DECK AND PROJECTILE FOR IMPACTING THEREON
Andrew L. Ogg, 801 Tanglewood, Bryan, Tex. 77801
Filed Feb. 24, 1975, Ser. No. 552,692
Int. Cl.² A63B 71/00
U.S. Cl. 273—95 R 8 Claims

1. A game apparatus comprising:

a horizontal upper frame structure affixed to a lower support with resilient mountings, said upper frame structure having a flat upper surface with a target area in the approximate center thereof;

a pad affixed to the flat upper surface of said frame structure, said pad having surface frictional characteristics closely approximating a dirt surface, and a space in prox-

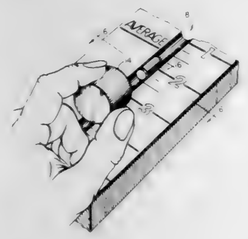
imity to the target area of said upper frame support member; and



a projectile for directing at said target area, said projectile having surface frictional characteristics which in combination with the pad and the resiliently mounted upper frame support cause the projectile to travel a minimum distance after impacting the pad.

3,964,746
MAGNETIC GAME DEVICE
Ronald L. MacMurdo, 931 Southern Artery, Quincy, Mass. 02169

Filed June 9, 1975, Ser. No. 584,864
Int. Cl.² A63F *9/00*
U.S. Cl. 273—108 **9 Claims**

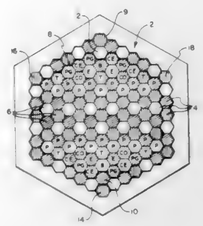


1. A magnetic game device for determining the skill of a player, said game device comprising:
a. a game board composed of a non-magnetic material, said game board formed with a channel; and
b. a pair of magnetically cooperating playing pieces, one of said playing peices composed of a magnetized material, the other of said playing pieces composed of a magnetically responsive material, said playing pieces slidably received within said channel;
c. one of said playing pieces constrained for movement within said channel along a longitudinal axis thereof, said one playing piece moved along said channel by the player maneuvering the other of said playing pieces relative to said one playing piece while said playing pieces are disengaged, a portion of said one playing piece and a portion of said other playing piece disposed in a common, substantially horizontal plane.

3,964,747
GAME APPARATUS
Ernest Lynn Balmforth, 515 E. 3400 North, Provo, Utah 84601

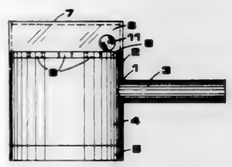
Filed Feb. 10, 1975, Ser. No. 548,568
Int. Cl.² A63F *3/02*
U.S. Cl. 273—131 AB **7 Claims**

1. A game for two or three players comprising
a game board including a hexagonal playing area having a plurality of contiguous, uniformly distributed hexagonal playing spaces thereon, each of the six sides of the playing area composed of a fixed number of playing spaces to form an outer row of spaces, each playing space including one of three indicia such that no two adjacent spaces have the same indicia, said game board further including markings to distinguish the outer row of playing spaces from the remaining playing spaces interior thereto,
three sets of playing pieces, each including indicia corresponding to a different one of said three indicia,
whereby two of the sets of playing pieces are positioned on and moved among the said interior playing spaces when two players use the apparatus, and the three sets of playing pieces are positioned on and moved among all the playing spaces when three players use the apparatus, and
wherein each set of playing pieces includes a plurality of subsets, each of which includes a number of different playing pieces having different moving capabilities, said different playing pieces of a subset having a common feature identifying common type moves on the playing area of the board which may be made with such pieces.



3,964,748
MALLET GAME
David C. Harvey, Jr., 1801-12th St., Phenix City, Ala. 36867

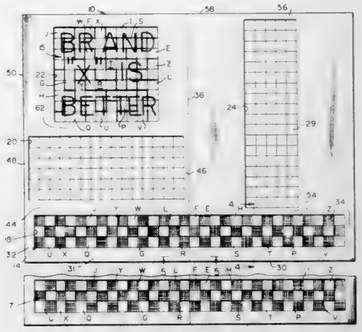
Filed Apr. 28, 1975, Ser. No. 572,461
Int. Cl.² A63F *7/04*
U.S. Cl. 273—138 R **1 Claim**



1. A mallet-like device for playing a game of chance comprising, in combination: a mallet-head of elongated substantially cylindrical outward shape having flat circularly shaped enclosed ends and including a central section of solid material, a lower section of resilient material firmly affixed thereto, and a hollow open-space portion at the upper end of said central section and having a flat imperforate clear transparent top surface thereon; a flat scoring face having nine equi-spaced ball-receiving indentures therein, arranged in an outwardly square formation firmly positioned within and delineating the bottom of said open-space upper portion and viewable through the transparent upper surface thereof; a handle firmly attached to said central section of said mallet-head and extending outwardly normal therefrom; and a ball freely movable within said open-space upper portion of said mallet-head and viewable through the transparent top surface thereof.

3,964,749
PENTOMINO PUZZLES
William Kent Wadsworth, 876 E. 900 North No. 15, Provo, Utah 84601

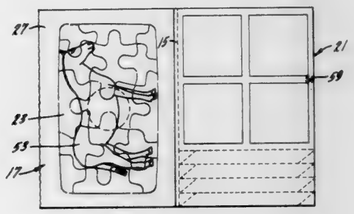
Filed Apr. 10, 1970, Ser. No. 27,312
Int. Cl.² A63F *9/10*
U.S. Cl. 273—157 R **1 Claim**



1. Two distinguishable sets of pentomino pieces, each set comprising 18 one-sided pentominoes, each pentomino in the set being different from all the other pentominoes in the set and having on one side alternate squares of different appearances capable of being arranged in a rectangle of 3 × 30 squares in a perfect checkerboard pattern, in which said pieces of each set are capable of being arranged in the same relation to each other in a rectangle of 3 × 30 squares in perfect but opposite checkerboard patterns.

3,964,750
JIGSAW PUZZLE PAINT SET
Lyman J. Brown, LaGrange, Ill., assignor to Bates Printing Specialties, Inc., Cicero, Ill.

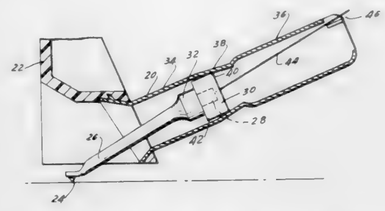
Division of Ser. No. 521,949, Nov. 8, 1974, abandoned. This application July 3, 1975, Ser. No. 592,928
Int. Cl.² A63F *9/10*
U.S. Cl. 273—157 R **4 Claims**



1. An educational toy including:
an elongated rectangular paperboard blank divided by laterally extending lines of weakness into three generally equal sized panels, including a center panel with an end panel on each side thereof, with said end panels being foldable over said center panel,
one of the end panels having a jigsaw puzzle die-cut therein with said puzzle being at least partially surrounded by an uncut peripheral border of said panel,
said jigsaw puzzle containing panel being folded over and adhered to said center panel by an adhesive applied to said panels in the area of said peripheral border,
an aperture formed in said center panel and aligned with said jigsaw puzzle portion of said end panel when said panels are folded over and adhered together,
a plurality of water soluble color containing areas formed on said other end panel, and
a portion of said color containing end panel subdivided by perforations into removable elongated strips of paperboard.

3,964,751
PHONOGRAPH CARTRIDGE REPLACEABLE STYLUS ASSEMBLY
Paul Vitale, West Babylon, N.Y., assignor to Pickering & Company, Inc., Plainview, N.Y.

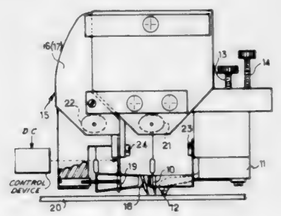
Filed July 31, 1975, Ser. No. 600,815
Int. Cl.² G11B *3/02*
U.S. Cl. 274—37 **4 Claims**



1. A phonograph cartridge stylus assembly comprising: a housing; a nonmagnetic tube affixed to said housing, said tube having a forward end, a rear end extending outwardly away from said housing; a forward section extending rearwardly from said end, a rear section extending forwardly from said rear end, and an intermediate section interposed between said forward and rear sections and said intermediate section tapers rearwardly and radially inwardly; a nonmagnetic stylus arm extending through said tube forward end, said arm having a forward end outside said housing and a rear end within said tube; a stylus tip mounted to said arm forward end; and elastomeric damper positioned within said tube supporting said arm rear end, said damper comprising a cylindrical member having a forward edge and a rear edge and only said damper rear edge engages said tube tapered section the other of said edges being free of said tube; and a magnetic member positioned within said tube secured to said arm and adapted to move therewith.

3,964,752
METHODS AND DEVICES FOR RECORDING, ENGRAVING AND REPRODUCING MODULATED INFORMATION IN TETRAPHONY
André Marie Bernard Charlin, 119 Avenue Emile Zola, 75015 Paris, France

Filed Dec. 19, 1973, Ser. No. 426,116
Claims priority, application France, Dec. 19, 1972, 72.45329
Int. Cl.² G11B *3/04*
U.S. Cl. 274—46 R **7 Claims**



5. A device for tetraphonically engraving a microgroove disk with information from four separate sources of electrical

information signals, the signals varying at least in response to the magnitude of the information, the device comprising

first means for cutting a groove in the disk including

a first sterophonic recording stylus,

first drive coils for operating the stylus in response to electrical information signals from the two of the sources, the operating of the first stylus including movement thereof transversely with respect to the length of the first groove, and

first means for adjusting the depth of the first groove,

second means for simultaneously cutting a second groove adjacent and parallel to the first groove in the disk including

a second sterophonic recording stylus positioned at a predetermined mean distance from the first stylus in a direction transverse to the length of the grooves, second drive coils for operating the stylus in response to electrical information signals from the remaining two sources, the operating of the second stylus including movement thereof transversely with respect to the length of the second groove, and

second means for adjusting the depth of the second groove,

means for sensing the amplitude of the information represented by the electrical information signals, and

means for varying the distance between the first stylus and the second stylus as a function of the amplitude of the information being sensed by the sensing means, the distance being varied greater and less than the predetermined mean distance between the first stylus and the second stylus.

3,964,753

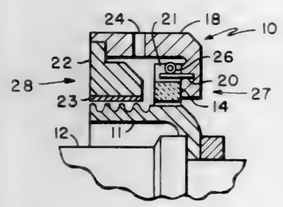
CONTROLLED APERTURE SEAL

Arnold E. Junker, Bridgeport, Conn., and Anthony J. Massaro, St. Marys, Pa., assignors to Avco Corporation, Stratford, Conn.

Filed Jan. 9, 1975, Ser. No. 539,621

Int. Cl.² F16J 15/30

U.S. Cl. 277—26 **15 Claims**



1. A seal for use on a high-speed rotating shaft, the combination comprising:

a seal runner on said shaft;

a seal housing;

a seal ring within said housing, said seal ring having an inner diameter greater than the outer diameter of said runner when said shaft is cold and essentially equal to the diameter of said runner during normal operating conditions;

a radial slot in said ring;

means pivoting said seal ring to said housing through said slot for permitting radial and pivotal movement of said ring;

a radial fracture in said ring; and

means retaining said seal ring within said housing.

3,964,754

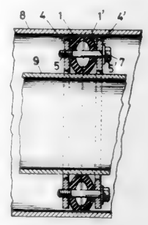
DEVICE FOR SEALING THE END OF SHEATH PIPE

Masayo Murai, Kawasaki, and Hiroki Monno, Tokyo, both of Japan, assignors to Nishiyama Gomu Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1975, Ser. No. 578,992

Int. Cl.² F16L 21/04; F16J 15/00

U.S. Cl. 277—101 **2 Claims**



1. Sealing means whereby a main pipe can be concentrically supported inside a sheath pipe that has an inside diameter substantially larger than the outside diameter of the main pipe, and whereby the main pipe is protected against vibration and the like imparted to the sheath pipe and entry of foreign matter into the space between the pipes is prevented, said sealing means comprising:

A. a pair of annular sealing elements of resiliently yieldable material, each of said sealing elements

1. being substantially cup-shaped in cross section to have

a. a concave surface that faces in one axial direction and terminates at substantially coplanar inner and outer edges of the sealing element and

b. a convex surface that faces in the opposite direction,

2. each sealing element when in relaxed condition having

a. an inside diameter to loosely fit around a main pipe and

b. an outside diameter to loosely fit inside a sheath pipe, and

3. each sealing element having a plurality of circumferentially spaced bolt holes therethrough, the bolt holes in the two sealing elements being located to align with one another when said sealing elements are concentrically disposed with their concave surfaces facing one another;

B. a pair of annular flange members of substantially rigid material, each of said flange members having

1. an inside diameter at least as large as the inside diameter of the sealing elements,

2. an outside diameter no larger than the outside diameter of the sealing elements, and

3. bolt holes therethrough arranged to align with the bolt holes in the sealing elements when the flange member is disposed in concentric relation to the sealing elements;

C. threaded means on one of said flange members cooperable with bolts received in its bolt holes; and

D. a plurality of bolts, each extending through aligned bolt holes in both flange members and both sealing elements and holding them in concentric relation with said inner and outer edges on the two sealing elements respectively engaging one another and with the flange members overlying the opposite convex surfaces of the sealing elements, said bolts

1. having threaded shanks engaged with said thread means on said one flange member and

2. having heads overlying the other flange member

so that tightening of said bolts resiliently deforms the sealing elements in axial compression and thus expands them radially inwardly and outwardly.

3,964,755

LIQUID FUEL SUPPLY SYSTEMS

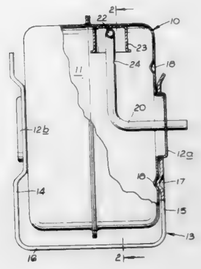
Frederick Thomas Riddy, 187 Marsh Lane, Erdington, Birmingham 23, Warwickshire, England

Filed Dec. 26, 1974, Ser. No. 536,618

Claims priority, application United Kingdom, Jan. 17, 1974, 2321/74

Int. Cl.² B65D 25/00

U.S. Cl. 280—5 A **10 Claims**



1. An auxiliary fuel supply device comprising structure defining a reservoir with an inlet and an outlet for forming an operatively enclosed connection leading from a main fuel supply to a fuel consuming device by way of the reservoir in use, and means permitting selective angular movement of at least the part of said structure which defines said outlet between a main feed position at which the outlet is positioned in an upper region of the reservoir and a reserve feed position at which said same outlet is positioned in a lower region thereof.

3,964,756

SKI BINDING

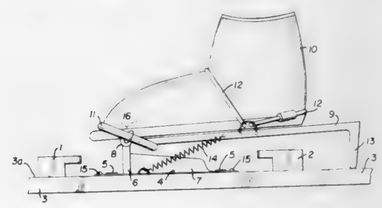
Walter Mory, Peintenstrasse 5, A-9800 Spittal, Drau, Austria

Filed May 14, 1974, Ser. No. 469,811

Claims priority, application Austria, May 15, 1973, 4226/73

Int. Cl.² A63C 9/00

U.S. Cl. 280—614 **5 Claims**



1. In a ski binding adapted to be mounted on the upper surface of a ski and to hold a shoe on the ski, the shoe having a sole with a tip and therebehind a portion supporting the ball of a foot of a skier, the binding comprising a plate for supporting the shoe sole and having two ends, and a pivot extending transversely of, and substantially parallel to, the upper ski surface, one of the plate ends associated with the tip of the sole being pivotally mounted on the transversely extending pivot, and a flange extending transversely of the plate and projecting downwardly from the plate in the region of the other end for support on the upper ski surface: a vertically extending part mountable on the upper ski surface and carrying the pivot at an upper end thereof, and means for affixing the shoe to the plate so that the tip projects forwardly of the one plate end and the shoe sole portion supporting the ball of the foot of the skier is in substantially vertical alignment with the pivot, the vertical extension of the binding part being about equal to the distance of the tip of the shoe sole from the binding part.

3,964,757

HEEL HOLD-DOWN MECHANISM FOR SAFETY SKI BINDINGS

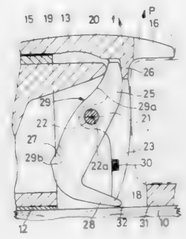
Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Germany

Filed Aug. 8, 1974, Ser. No. 495,910

Claims priority, application Germany, Aug. 9, 1973, 2340416

Int. Cl.² A63C 9/08

U.S. Cl. 280—626 **28 Claims**



1. A heel hold-down mechanism for safety ski bindings comprising:

housing means,

heel hold-down means supported for movement with respect to said housing means between a heel hold-down position in engagement with a ski boot heel and a heel release position,

resiliently biased movable detent means guided at said housing means for movement along a predetermined path,

and spur means in the form of a lever pivotally supported at said heel hold-down means, said spur means including a spur element engageable with a ski boot heel during placement of a ski boot thereon with said heel hold-down means in said heel release position,

wherein said detent means is engageable with a cam surface of said spur means to effect transfer of forces and movement between said housing means and said heel hold-down means.

3,964,758

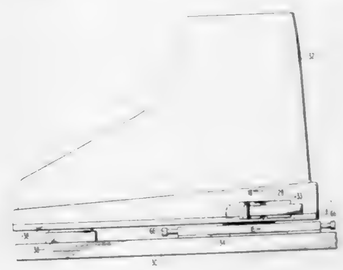
SKI BINDING

James A. Kent, 3424 62nd Ave. SW., Seattle, Wash. 98116

Filed Aug. 21, 1974, Ser. No. 499,540

Int. Cl.² A63C 9/086

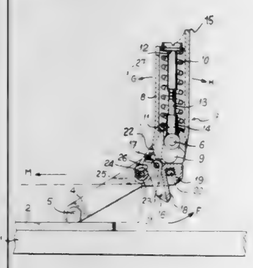
U.S. Cl. 280—613 **21 Claims**



1. A ski binding comprising:

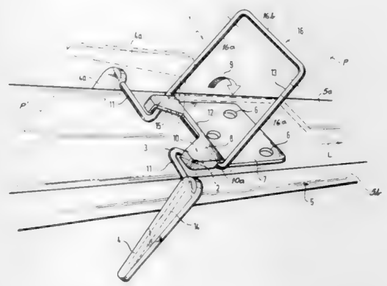
a. a ski assembly adapted for attachment to a ski and including:
i. housing means having an opening therein;
ii. a cam member positioned within the opening of said ski assembly housing means and having a slot therein adapted to receive a hook, said cam member rotatable within the opening of said ski assembly housing means between a hook-retaining position and a hook-releasing position;
iii. first bias means for restraining said cam member from rotating from the hook-retaining position to the hook-releasing position; and
iv. second bias means for restraining a hook within the cam member slot from removal therefrom; and
b. a boot assembly including:
i. a plate member
ii. attachment means for attaching the plate member to a ski boot; and
iii. a hook connected to said plate member and adapted for insertion into said cam member slot; said hook normally assuming a retained position in which said hook is retained within the cam member slot by said second bias means and so long as said cam member is in the hook-retaining position; said hook in response to application thereto of a twisting force in a horizontal plane, applying a force to said cam member to act against said first bias means until said first bias means is overcome, permitting said cam member to rotate to the hook-releasing position to release said hook from said ski assembly; said hook, in response to application thereto of a twisting force in a vertical plane applying a force to said second bias means until said second bias means is over-come, releasing said hook from said ski assembly.

3,964,759
SKI BINDING FOR SKI BOOT
Georges Pierre Joseph Salomon, Annecy, France, assignor to Etablissements Francois Salomon et Fils, Annecy, France
Filed Mar. 7, 1975, Ser. No. 556,439
Claims priority, application France, Mar. 14, 1974, 74.08717
Int. Cl.² A03C *9/08*
U.S. Cl. 280—626 **10 Claims**



1. A safety binding for holding one end of a boot on a ski, comprising: a pair of lateral arms each mounted at one end thereof for pivotal movement with respect to the ski; a retaining element pivotally mounted at the other end of said lateral arms and including a boot holding jaw and a resilient element; guide means operatively located between said lateral arms and said retaining element for guiding the trajectory of said jaw relative to said lateral arms when said jaw is urged by the boot against said resilient element, said guide means including an element mobile with respect to one of the following two elements: the lateral arms and the retaining element; and a manual operating means for actuating said mobile element against the action of a resilient means whereby, when said guide means are located between said lateral arms and said retaining element, the trajectory of said jaw is always substantially the same, and, when said mobile element is actuated by said manual operating means, said retaining element is free to pivot with respect to said lateral arms, and the skier may release his boot from the binding.

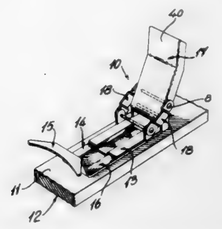
3,964,760
SKI BRAKE
Tilo Riedel, Eching, Germany, assignor to S.A. Etablissements Francois Salomon & Fils, Annecy, France
Continuation-in-part of Ser. No. 557,476, March 12, 1975. This application July 24, 1975, Ser. No. 598,628
Claims priority, application Germany, July 26, 1974, 2436117
Int. Cl.² A63C *7/10*
U.S. Cl. 280—605 **9 Claims**



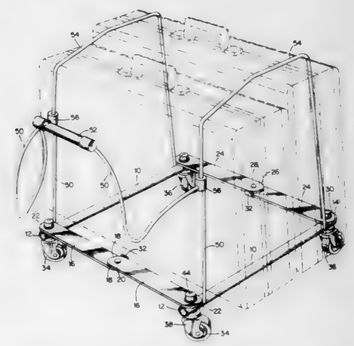
1. A brake for a ski adapted to be actuated by a skiboot, said brake comprising:
a holder secured to said ski and defining a pair of passages parallel to the upper surface of said ski;
a resiliently deformable wire having a central bight portion defining a plane, a pair of pivot portions respectively received in said passages and bent inwardly toward each other out of said plane from said bight portion, a pair of connecting portions bent away from said pivot portions and extending outwardly away from each other toward the sides of said ski, and a pair of leg portions extending generally parallel to each other from said connecting portions and lying out of said plane, said passages including an inner edge shaped to contact and guide said pivot portion to resiliently deform said wire and cause said leg portions to swing inwardly and upwardly upon depression of said bight portion by said skiboot, the resilient deformation of said wire causing the leg portions to swing outwardly and downwardly upon release of the bight portion by said skiboot; and
a braking element on each of said leg portions, said holder being formed with a pair of slots which taper toward the outside edge of said ski and each constituting one of said passages.

3,964,761
SKI BOOT HEEL ATTACHMENT DEVICE
George Eugen Syrovatka, 4998 Maisonneuve St., Montreal, Quebec, Canada
Filed Aug. 28, 1975, Ser. No. 608,634
Int. Cl.² A63C *9/08*
U.S. Cl. 280—623 **10 Claims**

1. A ski boot heel attachment device comprising a base plate attachable to a ski and adapted for sliding retention of a clamp member, said clamp member having a clamp head and an elongated slide section rearwardly thereof for displaceable sliding engagement with said base plate, a lever having a pivot connection to an end of said slide section opposite said clamp head, and a pivotal link connection secured between said lever and said base plate to provide longitudinal sliding displacement of said clamp member relative to said base plate by arcuate displacement of said lever about said pivot connection.



3,964,762
FOLDING LUGGAGE CARRIER
John F. Adams, 55 Lee Road, Chestnut Hill, Mass. 02167
Continuation of Ser. No. 490,904, July 22, 1974. This application Oct. 16, 1975, Ser. No. 622,989
Int. Cl.² B62B *3/04*
U.S. Cl. 280—439 **6 Claims**



1. A folding portable luggage carrier comprising:
a. a horizontal pair of spaced-apart side rails having vertical apertures adjacent to their front and rear ends;
b. a horizontal pair of front links pivoted together at their inner ends, said front links having vertical apertures adjacent to their outer ends;
c. a horizontal pair of rear links pivoted together at their inner ends, said rear links having vertical apertures adjacent to their outer ends;
d. said front link outer end apertures being vertically aligned with said side rail front end apertures, and said rear link outer end apertures being vertically aligned with said side rail rear end apertures;
e. a pair of swiveling front casters having their vertical shafts extending upwardly through said aligned front link-side rail apertures, and front retaining means engaging said caster shafts for fixing said caster shafts against downward displacement from said aligned apertures;
f. a pair of non-swiveling rear casters having their vertical shafts extending upwardly through said aligned rear link-side rail apertures, and rear retaining means engaging said caster shafts for fixing said caster shafts against downward displacement from said aligned apertures;
g. said front links and said rear links folding towards each other so that their pivoted inner ends converge and said side rails draw together in parallel relation to form a folded, portable compact unit having the same overall length as said side rails, said front links and said rear links unfolding away from each other so that their pivoted inner ends diverge and said side rails extend apart in parallel relation to form a rectangular luggage carrying platform;
h. the distance from the bottom of said casters to the extreme top of said luggage carrier being less than three times the diameter of said casters;
i. tie-down means affixed to said luggage carrier for securing luggage on the luggage carrying platform; and
j. pull cord means affixed to said luggage carrier and adapted to be gripped for pulling said luggage carrier across a surface.

3,964,763
WHEELED PUSH-CART HAVING THE UPPER PORTION OF THE HANDLE LOWERABLE FOR CONVENIENCE OF CARRYING
Jacques Dominique Stelniceanu, Room 309, 1911 Jefferson Davis Highway, Arlington, Va. 22202
Continuation-in-part of Ser. No. 209,105, Dec. 17, 1971, Pat. No. 3,774,391. This application Nov. 26, 1973, Ser. No. 418,864
Int. Cl.² B62B *1/12*
U.S. Cl. 280—47.17 **3 Claims**

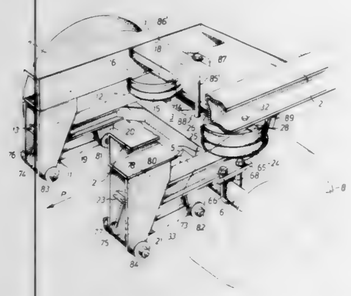


1. In a handle for a push-cart having wheels, an article support area, and a two-part handle for optionally raising the upper part, to guide, or lowering said upper part, to carry, said cart, the improvement of said handle comprising a lower handle comprising a pair of parallel side members connected at their lower ends to the said article support area, and an upper handle, comprising a second pair of parallel side members pivotally connected to said lower handle, each of said pairs of parallel side members having an integrally connected transverse member at its upper end, and securing means comprising clip members disposed upon the inner portions of the lower side members, at the upper ends thereof, for engagement of the upper side members, to maintain the latter in raised position; said engagement being releasable by the lateral compression of said upper side members to free the same from said securing means.

3,964,764
AIR SPRING AXLE ASSEMBLY FOR SPRING SUSPENSION AND SWAY RESTRAINING OF VEHICLE CHASSIS
Erik Georg Rickardsson, Industrigatan 14, 732 00 Arboga, Sweden
Filed Dec. 26, 1974, Ser. No. 536,442
Claims priority, application Sweden, Jan. 11, 1974, 7400362
Int. Cl.² B60G *11/62*
U.S. Cl. 280—702 **6 Claims**

1. A sway-restraining air spring axle assembly for a vehicle chassis comprising in combination: a U-shaped girder member including a pair of laterally spaced parallel legs and a web portion connected therebetween adjacent the rear end of said

legs; an air suspension spring supported on each of said legs adjacent said web; means for connecting said air suspension spring to said girder member and to said chassis; a pair of first laterally spaced shackles connected to and depending from the chassis and adapted to respectively receive therein the front end portions of said girder legs; a pair of second laterally spaced shackles connected to and depending from the respec-

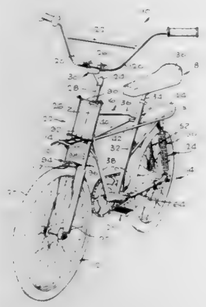


tive legs of said girder member intermediate said web and front end portions of the legs; a pair of laterally spaced draw links mounted pivotally respectively in said first and second shackles; means for resiliently securing the front end portions of said girder legs to said draw links within said first shackles and for adjustably controlling such resiliency; a rigid wheel axle assembly connected rigidly to said girder member.

3,964,765
BICYCLE

Darwin Zenser, El Monte, Calif., assignor to Yamaha International Corporation, Buena Park, Calif.

Continuation of Ser. No. 387,669, Aug. 13, 1973, Pat. No. 3,865,402. This application Nov. 15, 1974, Ser. No. 523,988
The portion of the term of this patent subsequent to Feb. 11, 1992, has been disclaimed.
Int. Cl.² B62M *3/00*
U.S. Cl. 280—276 **1 Claim**

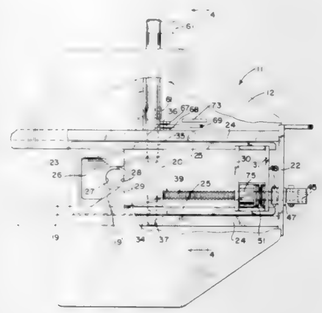


1. A bicycle comprising:
front and rear wheels (**12, 14**) having axles;
a frame (**16**) having forward and rearward ends, the forward end having a pair of front mount locations above the level of the front wheel axle and the rearward end having a pair of rear mount locations above the level of the rear wheel axle, the frame having a multiple connector (**70**) located between the wheels and forming a pedal bearing and a swing arm bearing, and the frame including a tubular rear frame member (**32**) extending upwardly and rearwardly from the multiple connector and a tubular lower frame member (**38**) extending forwardly and upwardly from the multiple connector, said multiple connector connecting said rear and lower frame members;
a seat assembly (**18**) mounted on the frame for holding a rider, said seat assembly including a shaft (**34**) adjustably mounted in said tubular rear member and including a seat (**130**) at the top;
a pedal assembly (**20**) rotatably mounted on the pedal bearing, for rotational driving by the rider;
chain means (**80**) coupling the pedal assembly to the rear wheel;
a swing arm (**64**) having a forward end pivotally mounted on the swing arm bearing and a rearward end rotatably connected to the rear wheel;
a pair of telescoping rear shock absorbers (**50, 52**) connecting the rear mount locations of the frame to the rearward end of the swing arm;
a pair of telescoping front shock absorbers (**94, 96**) having upper portions connected to the front mount location of the frame and having lower portions rotatably coupled to the front wheel, said lower portions being of greater diameter than said upper portions and slideably receiving the lower ends of said upper portions;
the frame including a front member (**26**) coupled to the front end of the lower frame member and also including a pair of elongated shock-mount members (**40, 42**) extending rearwardly from a location near the front of the lower frame member, said mount members extending on opposite sides of the rear frame member and joined thereto and said mount members extending behind the rear frame member with each of said rear shock absorbers coupled to a different one of the mount members; and
a rear fender mounted on the rear end of said mount members, said mount members joined together at their rearward ends (**44**), and their rearward ends angled upward to extend over said rear fender.

3,964,766
FIFTH WHEEL PLATE ASSEMBLY

Ray L. Ferris, Thornton, Ill., and Walter J. Marulic, Gary, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Feb. 12, 1975, Ser. No. 549,255
Int. Cl.² B62D *53/10*
U.S. Cl. 280—433 **6 Claims**



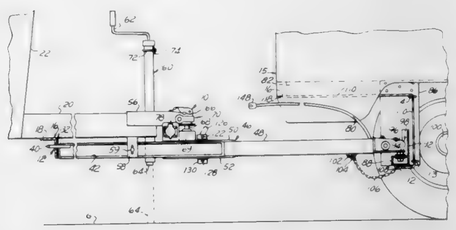
1. A fifth wheel for connection to the kingpin of a highway trailer comprising:
a top plate having a substantially rectangular opening including parallel side walls and converging walls terminating in a kingpin receiving seat,
slide supports below said top plates,
a clamping member slidable on said supports, said clamping member having clamping recess forming with said kingpin receiving seat a kingpin retaining means,

slide means connected to said clamping member supported on said slide supports and movable longitudinally with respect thereto,
and means for moving said slide means and clamping means between kingpin engaging and non-engaging positions,
a lock assembly including a locking bolt having manual operating means,
guide means slidably supporting said locking bolt below said top plate,
keeper means on said slide means adapted to be engaged by said slide bolt during manual operation of said operating means to lock said clamping means in said kingpin engaging position, the improvement comprising:
signalling means for indicating locking and unlocking positions of said locking bolt including
an indicating member having an arm,
bracket means supported by and below said top plate,
pivot means connecting said arm to said bracket means on an axis substantially parallel to the axis of said locking bolt,
said locking bolt including a recess on said bolt providing a stop seat engaging a portion of said arm,
said arm portion having a camming surface thereon engaging said seat when said bolt is in said locked position and having a second surface thereon engaging said bolt when said bolt is in said unlocked position, and
the other end of said arm having a signal portion which is gravitationally urged downwardly when said camming surface engages said seat to indicate said locked position of said bolt.

3,964,767
ANTI-SWAY TRAILER HITCH

Berdell Williams, P.O. Box 104, Tipton, Mich. 49287

Filed Mar. 19, 1975, Ser. No. 559,919
Int. Cl.² B60D *1/00*
U.S. Cl. 280—446 B **9 Claims**

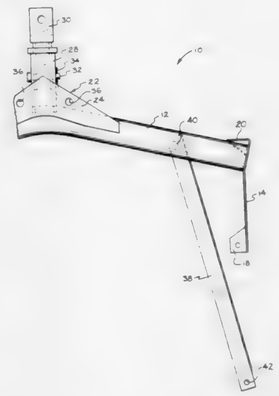


1. An anti-sway trailer hitch construction adapted to be connected between the forward portion of the frame of a trailer and the rearward portion of the frame of a conventional towing vehicle having a rear axle with a transverse axis or rotation and differential gearing within a differential housing, said construction comprising
an elongated tow bar having a forward portion and a rearward portion,
means on said rearward portion of said tow bar for attaching said tow bar to the forward portion of the trailer frame,
a forward coupling device support structure adapted to be secured to and depend from the rearward portion of the towing vehicle frame and extending downward therefrom into a position immediately behind and adjacent the differential housing,
and a forward coupling device having a first coupling element mounted on said support structure immediately behind and adjacent the differential housing and disposed in substantially the same horizontal plane as the axis of rotation of the rear axle,
said forward coupling device support structure and said first coupling element being movable unitarily with the rearward portion of the towing vehicle frame but movable independently of the towing vehicle differential housing and rear axle,
said forward coupling having a second coupling element mounted on said forward portion of said tow bar and separably engageable with said first coupling element in coupling relationship therewith.

3,964,768
HITCH ASSEMBLIES

Donald F. Reynolds, 4415 E. Textile Road, Ypsilanti, Mich. 48197

Filed Feb. 14, 1975, Ser. No. 550,164
Int. Cl.² B60D *1/00*
U.S. Cl. 280—495 **10 Claims**



1. A hitch assembly for mounting on the frame of a motor vehicle, comprising a tubular transverse support member, end plates mounted on opposite ends of said transverse support member, each plate extending upward above and forward of the transverse support member and having means at the upper and forward ends for mounting them on the sides of a motor vehicle frame with the transverse member positioned to the rear of and below said frame, tension arms secured at their after ends to the underside of said transverse support member between the opposite ends of the transverse center thereof, said tension arms being relatively long and having means at their forward ends for securing them to opposite sides of said vehicle frame forward of the mountings of said end plates, and a hitch platform including a female hitch receptacle mounted on said transverse support member at the transverse center thereof, said hitch platform having two generally triangular platform plates mounted on the upper and lower surfaces of said transverse support member with the apex of each triangle extending rearwardly, and said female hitch receptacle being secured between said platform plates and having an open end to the rear of said platform plates for receiving a drawbar.

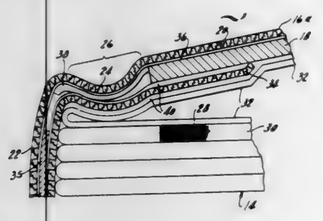
3,964,769
BOOK BINDING METHOD

Leonard Shatzkin, Croton-on-Hudson, N.Y., assignor to William C. Heller, Jr., Milwaukee, Wis.

Filed May 23, 1973, Ser. No. 362,918
Int. Cl.² B42C *9/00, 11/00*
U.S. Cl. 281—21 R **10 Claims**

1. A method of securing a book body along the hinge area of a book case, said hinge area having a surface presenting an exposed layer of polyamide glue in the wet state, said method comprising the steps of:
applying an adhesive primer comprised of a polyvinyl acetate adhesive carried in a water base to the layer of glue before the glue has dried, said primer being compatable

with said polyamide glue and a bonding agent of the synthetic resin type;
thereafter drying the primer and the glue;
applying said bonding agent of the synthetic resin type to one of the primed hinge areas of the case and the book body said bonding agent having a thermally induced period of liquidity;

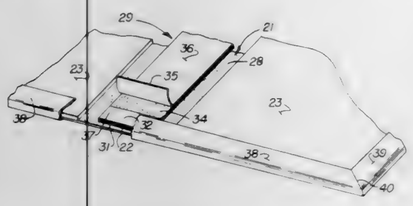


allowing said bonding agent to assume a solid state;
applying liquifying heat to the bonding agent;
bringing the primed hinge area of the case and the book body into contact with the bonding agent in the liquid state; and
allowing the bonding agent to cool for forming a bond between the hinge area of the book case and the book body.

3,964,770
CASE FOR BOOK WITH PRESSURE SENSITIVE RESILIENT SPINE PAD

William H. Abildgaard, Los Altos Hill, and Charles T. Groswith, III, Los Altos, both of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 206,001, Dec. 8, 1971, abandoned, which is a continuation-in-part of Ser. Nos. 79,086, Oct. 8, 1970, Pat. No. 3,730,560, and Ser. No. 146,648, May 25, 1971, Pat. No. 3,749,423. This application Feb. 3, 1975, Ser. No. 546,606
Int. Cl.² B42D *3/00*
U.S. Cl. 281—29 **1 Claim**

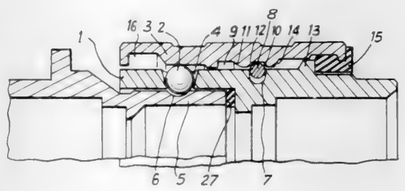


1. A case for a book for adherence to an uncased book, said case comprising a flexible outer cover, a board on each side of said case, said boards adhering to said cover and being spaced apart to provide a longitudinal central spine area between said boards and a pad attached centrally of said spine area extending longitudinally of said spine area with hinge forming areas on either side between said pad and said boards, said hinge forming areas comprising said flexible outer cover, each said hinge forming area being of substantially equal width, said pad comprising a layer of foam plastic backing material and being resiliently deformable to accommodate unevenness in the spine of the uncased book to which said pad is to be adhered said pad being attached to said spine area by a layer of adhesive on one side of said backing material, a layer of vinyl material of a length equal to that of said backing material, means securing said vinyl material to said backing material on the side of said backing material opposite the side attached to the spine area, a layer of pressure-sensitive adhesive on the outer surface of said vinyl material opposite said backing material, said layer of adhesive being thin and of substantially lesser thickness than the thickness of said foam plastic backing material, and a strip of release paper over said adhesive, the pressure-sensitive adhesive being of a type which adheres on contact without the necessity of air-drying, the width of each said hinge forming area being great enough to accommodate turning said pad over an outer spine edge of an uncased book and also to provide a thin area for the formation of a bead in the finished book, the top and bottom edges of said outer cover being turned in to conceal the top and bottom edges of said boards and of said pad, said pad being of substantially the same length as said boards and the turned-in top and bottom edges of said outer cover adhering to the top and bottom edges of said layer of vinyl material of said pad, said layer of pressure sensitive adhesive extending substantially to the inner edges of said turned-in top and bottom edges and said release paper being longer than said layer of pressure-sensitive adhesive to provide a short tab of release paper which is not in contact with adhesive, said tab comprising a pull tab for stripping said release paper from said pad.

3,964,771
PUSH PULL CONNECTOR

Jean Pierre Baudouin, Evreux, France, assignor to Compagnie Deutsch, Saint Cloud, France

Filed Sept. 27, 1974, Ser. No. 509,832
Claims priority, application France, Oct. 19, 1973, 73.37329
Int. Cl.² F16L *37/22*
U.S. Cl. 285—315 **10 Claims**

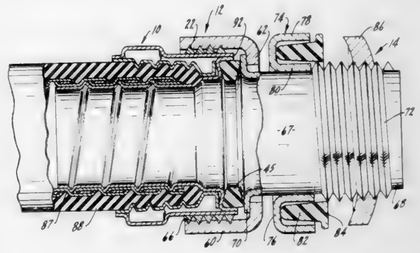


1. A connector comprising a sleeve, a spigot for interfitting with said sleeve, a locking ball mounted on said sleeve, a recess on said spigot for engagement by the ball, a tubular member axially slidably mounted on said sleeve for travel in opposite directions between a first and a second position relative to said sleeve, the outer face of said sleeve having an annular ring of compressible material mounted thereon, a pair of spaced circumferential grooves separated by a projection formed on the inner surface of said slidable member, said projection having a peaked central area and oppositely inclined surfaces on each side thereof, means on said sleeve for locking the ball in the recess on the spigot when the sleeve is in said second position relative to said slidable member and unlocking the ball from the recess when in said first position, said peaked area of the projection engaging the compressible ring in an unstable manner so that it compresses the ring and rides thereover to place the ring in one of said pair of grooves to determine the first position of the slidable member and to place the ring in the other of said pair of grooves to determine the second position of the slidable member.

3,964,772
CONNECTOR FOR FLEXIBLE METALLIC CONDUIT AND METHOD

John A. Cox, Jr., Sycamore, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Continuation-in-part of Ser. No. 818,905, April 24, 1969, abandoned. This application May 17, 1971, Ser. No. 143,896
Int. Cl.² F16L *35/00*
U.S. Cl. 285—39 **12 Claims**

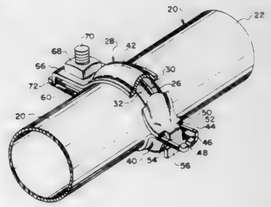


1. A body member for use in joining a connector for flexible conduit to a terminus, including a tubular sleeve with a thread form on the exterior of one end for connection to a terminus and a mounting at the other end for joining a connector, a octagon on the outside of the sleeve having a hollow annular interior opening toward the thread form, and an annular seal in the hollow of the octagon extending beyond the opening thereof so as to engage and seal against the wall of the terminus when the said one end of the sleeve is inserted through an opening in the terminus, the octagon being U-shaped in cross section with inner and outer flanges, the inner flange being circular and brazed to the outer surface of the sleeve, and the outer flange being in the form of a octagon.

3,964,773
ANTI-EMISSION EXHAUST PIPE JOINT AND CLAMP THEREFOR

Bertil Stade, Wood Dale, and Edward Hoglund, Park Ridge, both of Ill., assignors to Mercury Metal Products, Inc., Schaumburg, Ill.

Filed Sept. 13, 1974, Ser. No. 505,749
The portion of the term of this patent subsequent to Jan. 29, 1991, has been disclaimed.
Int. Cl.² F16L *21/06*
U.S. Cl. 285—367 **16 Claims**

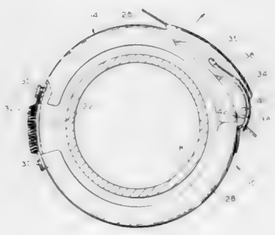


1. A clamped joint comprising:
A. a pair of pipes, each pipe having a rolled end forming a beaded formation directly thereon at an axial end thereof, said beaded formations including respectively axially facing flange surfaces and the flange surfaces being engaged in abutment on at least respective circular contact areas substantially coaxial with the pipes to dispose said beaded formations parallel and side by side,
B. a pipe clamp formed of two generally semicircular halves each formed of a single piece of metal and having a semicircular medial portion and two ends extending respectively generally radially outwardly from the medial portions so that when the halves are mated to form a loop of the medial portions the juxtaposed ends will be generally parallel to one another at least where they connect with their respective medial portion,
C. the medial portion of each half having an arcuate cross section throughout a substantial extent of its circumferential length arranged so that there are radially inwardly facing concave groove means on the interior of each half, the concave groove means straddling and engaging the beaded formations at locations spaced from their contact area to apply wedging forces if the halves are constricted which wedging forces tend to move the beaded formations toward one another to force the flange surfaces tightly into engagement,
D. the first ends of each half being arranged on the same circumferential side of the loop resulting when the halves are mated and being generally planar and having cooperating tongue and slot means forming an articulated connection providing limited swinging movement of the halves relative to one another, said limited swinging movement being sufficient to expose the entire medial section, said swinging movement provided generally in a plane normal to the axis of said loop, the tongue means being integral with one first end and bent at an angle relative thereto toward the other first end, the slot means comprising a passageway through the other first end in a portion thereof which is planar and having a wide portion and a narrow portion to an edge of said other first end, the tongue means being engaged into the passageway and having an enlarged end protruding beyond the plane of the said other first end remote from the one first end, said tongue means being dimensioned to prevent withdrawal of said tongue means from said slot means, and
E. the second ends of each half being arranged on the circumferential side of said loop diametrically opposite the first ends and being generally planar and having cooperating fastening means to bring said second ends together to constrict said halves on said beaded formations.

3,964,774
IRRIGATION LINE COUPLER

David W. Wollin, Eugene, Oreg., and James E. Cook, Oakland, Calif., assignors to IRECO Industries, Inc., Eugene, Oreg.

Filed Mar. 14, 1975, Ser. No. 558,270
Int. Cl.² F16L *23/00*
U.S. Cl. 285—409 **2 Claims**



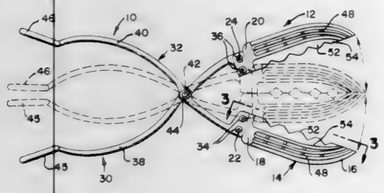
1. In an improved irrigation coupler,
a pair of coupler halves having end flanges,
and locking band means including a pair of rigid, channel-like arcuate segments, hinge means comprising a coiled tension spring connecting one end of each segment together and latching means for releasably connecting the other ends of the segments together,
the tension spring having eye end portions and rivets securing the eye end portions to the arcuate segments in positions in which the eye portions are flat against the arcuate segments.

3,964,775

TONGS

Leonard E. Boyd, 4443 Pleasant Valley Court, Oakland, Calif. 94611

Filed Jan. 3, 1975, Ser. No. 538,375
Int. Cl.² A01B *1/18*; B25B *7/02*
U.S. Cl. 294—16 **5 Claims**



1. Tongs for the grasping of solid material comprising:

a. first jaw having a plurality of inwardly curved tines substantially parallel to each other, said tines having lateral extensions taking the form of lateral nubs oppositely oriented to and substantially touching one another to prevent the passage of solid material therebetween, said nubs partially occupying the space between said tines,

b. first handle fixedly attached to said first jaw;

c. second jaw having a plurality of inwardly curved tines substantially parallel to each other, said tines having lateral extensions taking the form of lateral nubs oppositely oriented to and substantially touching one another to prevent the passage of solid material therebetween, said nubs partially occupying the space between said tines, said second jaw cooperative with said first jaw for grasping solid materials therebetween;

d. second handle fixedly attached to said second jaw

e. pivot connecting said first handle with said second handle for relative rotation of said handles and said jaws such that separation of said handle effects separation of said jaws and vice versa.

3,964,776

LIFT BAIL ASSEMBLY FOR LOG TRUCK TRAILERS

Robert C. Stott, 3609 E. 17th St., Eugene, Oreg. 97403

Filed Jan. 6, 1975, Ser. No. 538,712
Int. Cl.² B66C *1/20*
U.S. Cl. 294—74 **6 Claims**



1. A lift bail assembly for attachment to a log truck trailer fore and aft of the trailer center of gravity for lifting same, and lift bail assembly comprising,

a replaceable bail including enlarged means secured to each end of the bail,

a pair of unitary fittings adapted to be detachably mounted in a spaced apart manner on the trailer fore and aft of the trailer center of gravity, each fitting including socket defining side walls and a top wall, said side walls and said top wall defining transversely directed openings in communication with the socket for bail passage permitting bail separation from the fitting, said openings of lesser width than said socket, each fitting adapted for attachment at its lower end to the trailer in a manner blocking the socket lower end thereby preventing bail separation in a downward direction from the fitting, and

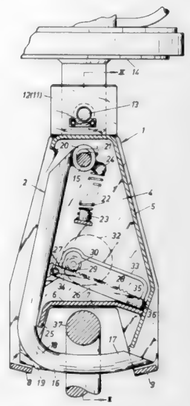
said replaceable bail being disengageable without the aid of tools from each of said fittings upon fitting removal from the trailer.

3,964,777

REMOTE-CONTROLLED LOADING HOOK

Jonas Herman Lindqvist, Hudiksvall, Sweden, assignor to Hiab-Foco Aktiebolag, Hudiksvall, Sweden

Filed Mar. 7, 1975, Ser. No. 556,341
Claims priority, application Sweden, Mar. 7, 1974, 7403025
Int. Cl.² B66C *1/34*
U.S. Cl. 294—83 R **8 Claims**



1. In a remote controlled loading hook, a hook-shaped member, a casing on said hook-shaped member journalled with its upper end on a pin in the upper portion of said casing, a driving element adapted to swing said hook-shaped member with its lower end, shaped as a hook, into said casing, said casing freely suspended in a cable, a chain or the like, said hook-shaped member provided with a locking abutment and adapted to bridge an opening in the lower part of said casing, a seat arranged on either side of said opening, said seats arranged to support said hook-shaped member in position of use, said hook-shaped member suspended on said pin in such a way that at the lifting of said casing and the loading of the hook-shaped member the latter can move in vertical direction relative to said casing to a position in which one of said seats catches behind said locking abutment of said hook-shaped member, said hook-shaped member being provided with a ratchet, one end of said ratchet being pivoted to said hook-shaped member so as to cooperate with a cogged wheel on the shaft of an electric motor arranged on said casing.

3,964,778

GRAPPLE

Eino J. Jouppi, Isabella, Minn. 55607

Filed Dec. 12, 1974, Ser. No. 531,856
Int. Cl.² B66C *3/16*
U.S. Cl. 294—88 **2 Claims**

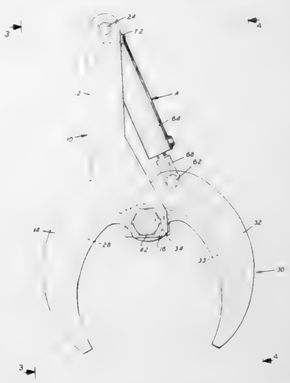
1. A grapple comprising:

a. a pair of stationary jaws each including a straight support portion having an upper and a lower end, said lower end terminating in

b. an arcuate portion depending from said lower end and offset from the longitudinal axis of said straight support portion and having

c. an extension substantially at the juncture of the support portion and the arcuate portion, said extension being short relative to the length of said straight support portion,

d. a pair of movable jaws each having an arcuate portion with an upper and lower end, said upper end terminating in



e. an extension, said extension being short relative to the length of said arcuate portion,

f. a pin pivotally mounting said extension portions of said movable jaws upon said extension portions of said stationary jaws.

g. a single hydraulic ram connected to the upper end of said straight portions of said stationary jaws and the upper ends of said arcuate portions of said movable jaws, and

h. means for actuating said ram to move said jaws relative to each other,

i. a pair of spaced ears secured to one of said stationary jaws at said pin including

j. means for connecting said ears to the end of an operative boom device.

3,964,779

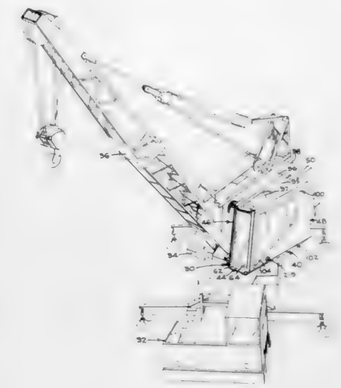
EXPANSIBLE OPERATOR'S CAB

William Merle Benson, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Sept. 23, 1974, Ser. No. 508,474
Int. Cl.² B62D *25/02*
U.S. Cl. 296—27 **4 Claims**

1. An operator's cab for machinery that is mounted upon a highway vehicle, said cab having a stationary unit and an expansion wall section coupled with the stationary unit for movement sideways of the vehicle to increase the interior cab space by moving outwardly for an operator controlling the machinery and to decrease the overall width of the vehicle by moving inwardly to within maximum limits for clearance purposes during highway travel; said expansion wall section being hinged at its end located forwardly of the vehicle to the stationary unit so as to pivot about a generally vertical axis; said expansion wall section including a side frame and flanges projecting from the top, rear end, and bottom edges of the side frame towards the stationary unit; said stationary unit being shaped to receive the flanges projecting inwardly from the side frame and to maintain a dust proof sealing engagement therewith regardless of the inward or outward positioning of the expansion wall section; said flange projecting from the top of the expansion wall section being in overlapping relationship with the roof of the stationary unit and said expansion wall section further including a roller mounted at the rear end portion of the top flange to roll upon the roof of the stationary unit and thereby support the expansion wall section rearwardly of the forward hinge.

2. In construction machinery of the type having a transport vehicle, material handling equipment mounted upon the transport vehicle, and an operator's cab mounted beside the material handling equipment to provide an overall width dimension of the equipment and the cab that is limited by clearance requirements for highway travel; said operator's cab having an inward side wall section that is located adjacent the material handling equipment and front, top, bottom and back panels extending laterally outward from the inward side wall section



wherein the improvement comprises an expansion wall section having a vertical side frame being hingedly connected to the cab front panel adjacent the outermost edge thereof, flanges stiffening the frame and projecting laterally inward from the frame to envelope the outermost edges of the top, bottom and back panels of the cab, and an operator s control console for the material handling equipment being mounted on the inward side of the frame; said expansion wall section being movable outward to increase the interior cab space for an operator controlling the material handling equipment and being movable inward to decrease the overall width dimension of the equipment and the cab to meet clearance requirements; said expansion wall section flanges maintaining a dust proof sealing engagement with the top, bottom and back panels of the cab in either the outward or inward positions.

3,964,780

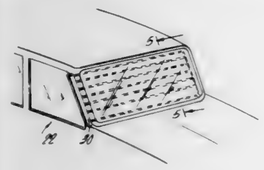
SNOW PROTECTORS FOR WINDSHIELDS

Panjeti Babu Naidu, 89-15 Parsons Blvd., New York, N.Y. 11432

Filed May 17, 1974, Ser. No. 470,816
Int. Cl.² B60J *1/20*
U.S. Cl. 296—95 C **2 Claims**

1. A wind-shield snow protector comprising a flexible plastic protection sheet, a plurality of flexible cord reinforcing elements bonded to and substantially along the entire length of the rearward side of said protection sheet, said plurality of cord reinforcing elements extending outwardly beyond the periphery of said protection sheet in at least one direction, at least one handle located beyond the periphery of said protection sheet, the free ends of said plurality of extending cord elements being secured to said handle, an adhesive coating on the rearward side of said protection sheet and at least along the outer edges thereof for detachably securing said protec-

tion sheet to a windshield, said adhesive preventing frost from creeping underneath the protective sheet said cord reinforcing elements being located inwardly of the periphery of said protection sheet except where said reinforcing elements extend



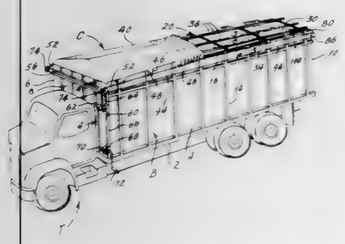
outwardly beyond the periphery of said sheet and are affixed to said handle, and a easily removable paper backing sheet engaging said coating of adhesive and being in overlying relation to said protection sheet.

3,964,781

COVER ASSEMBLY FOR OPEN TOP TRUCK BODIES

Russell R. Fenton, P.O. Box 151, Bucklin, Kans. 67834

Filed June 3, 1974, Ser. No. 475,950
Int. Cl.² B60P *7/04*
U.S. Cl. 296—100 **1 Claim**



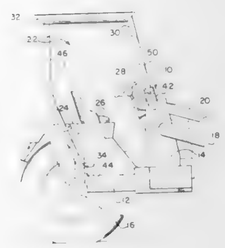
1. In combination with an open top truck body having upstanding spaced apart sidewalls, a cover assembly for covering the open top of the truck body; said cover assembly comprising: a plurality of rigid cross members extending across the truck body generally from one sidewall to the other sidewall at the top of the truck body, the cross members being fixed in position with respect to the truck body; a plurality of rigid and substantially inflexible stringers secured to the cross members and extending longitudinally of the truck body, the stringers extending over the cross members so that each stringer at the location where it crosses one of the underlying cross members is located above that underlying cross member; sheaves adjacent to the sidewalls at the front and rear ends of the stringers; an endless cable looped around the sheaves and extended along each sidewall opposite the outwardly presented faces of the sidewalls so as to have a driving pass and a return pass; a flexible cover extending over and supported on the stringers, the cover having ends and sides, one of the ends of the cover being fixed in position with respect to the truck body, the other end being attached to the driving passes of the endless cables, the cover having tabs along its sides with the tabs being connected to the endless cables such that the cables can slide along and can move relative to the sides of the cover but cannot be withdrawn from the cables, whereby the cables prevent the sides of the cover from moving inwardly away from the sidewalls of the truck body, the tabs near the ends of the cover being longer than the tabs near the center of the cover, whereby the cable will assume an upwardly bowed configuration when the cover is unfolded and will maintain the center of the cover taut; and means for rotating the sheaves to drive the cables in unison and in both directions so as to cause the cover to slide over the stringers, whereby the cover folds in one direction of movement and unfolds and spreads out over the top of the truck body in the other direction of movement.

3,964,782

INTERLOCKING WELDED CONSTRUCTION FOR ROLL OVER PROTECTIVE STRUCTURES

Henry A. Pernicka, Glen Ellyn, and R. Dale Moore, Aurora, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 5, 1975, Ser. No. 547,297
Int. Cl.² B62D *25/06*
U.S. Cl. 296—102 **11 Claims**



1. In a tractor having a mobile frame with steerable wheels and traction wheels including a main frame, a main frame termination plate, an operator's work area, an upwardly extending frame stanchion positioned forward of the operator's work area, providing rear attachment location for front loader boom pivotal attachment means and housing means for the tractor firewall and dashboard; the improvement comprising:

a first pair of mounting means fixedly attached to the main frame termination plate of the tractor;

a rear pair of upwardly extending posts secured at one end to said first pair of mounting means, said posts being of hollow square metal tubing;

a second pair of mounting means fixedly attached to the left and right side of the upwardly extending frame stanchion;

a front pair of upright posts secured at one end to said second pair of mounting means, said front pair of upright posts being of hollow square metal tubing;

a pair of transverse members extending fore-and-aft from each rear upright post and each front upright post;

said pair of transverse members being of hollow square tubing with each end of each said member being cut on a bias angle;

said transverse members being formed of square tubing having the inside dimension of said tubing equivalent to the exterior dimension of the square tubing of said rear and front pairs of upright posts;

each of said transverse members positioned over the uppermost end of one of each pair of said front and rear upright posts thereby linking one of each said front posts to one of each said rear upright posts through the insertion of said posts into said biasly cut end of said transverse members;

weld means securing said upright posts to said transverse members;

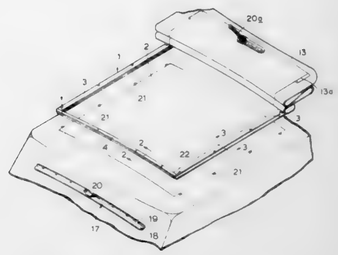
a pair of cross members of square tubing each fixedly attached at one end to the right said transverse member and at the other end to the left said transverse member.

3,964,783

OPENING ROOF ASSEMBLIES FOR VEHICLES

John Albert Fisher, Sutton Coldfield, England, assignor to Weathershields Limited, Birmingham, England

Filed Dec. 16, 1974, Ser. No. 533,304
Claims priority, application United Kingdom, Dec. 22, 1973, 59685/73; Jan. 25, 1974, 3462/74
Int. Cl.² B60J *7/10*
U.S. Cl. 296—137 C **4 Claims**



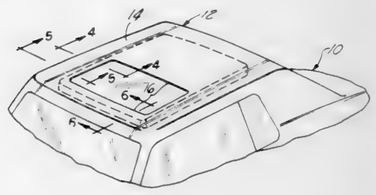
1. An opening roof assembly for vehicles comprising a flexible fabric covering, a number of slidably mounted cross-members supporting said covering, a unitary frame comprising spaced guide rails in which said slidably mounted cross-members are guided at their ends, and spaced front and rear end rails interconnecting opposite ends of said guide rails, said guide rails and said front and end rails being so constructed and arranged that said frame can be received in an opening in a roof with said guide rails extending along each side thereof, said fabric covering being movable manually between a closed position in which said opening is covered and an open position in which substantially the complete opening is exposed, wherein said guide rails comprise upper and lower spaced flanges which are directed outwardly from a vertical web with said upper flanges extending outwardly by greater distances than said lower flanges, the distances between free edges of said lower flanges being slightly greater than the spacing between corresponding side edges of said opening whereby, by tilting and slewing said frame with respect to the opening, said frame can be received therein with said upper flanges overlying roof portions on opposite sides of said opening.

3,964,784

SLIDING ROOF CONSTRUCTION

Heinz C. Prechter, Grosse Ile, and Milton C. Kaltz, Allen Park, both of Mich., assignors to American Sun Roof Corporation, Southgate, Mich.

Filed July 11, 1974, Ser. No. 487,593
Int. Cl.² B60J *7/00*
U.S. Cl. 296—137 E **10 Claims**



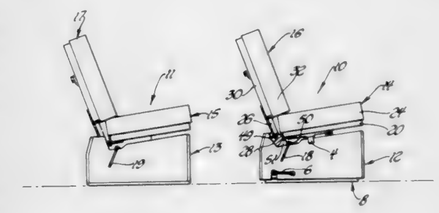
1. In a vehicle having a roof with an opening therein, a sliding roof construction for selectively opening and closing the roof opening comprising: a glass roof assembly, a frame assembly, first support means for slidably supporting said glass roof assembly in said frame assembly for sliding said glass roof assembly to first positions opening or closing the roof opening, drive means operatively connected with said first support means and said frame assembly for selectively sliding said glass roof assembly to said first positions, said glass roof assembly comprising a glass panel, a molding located about said glass panel and having a groove for grippingly receiving said glass panel, a reinforcing frame receiving said glass panel and said molding, and fastening means securing said molding to said reinforcing frame whereby said glass panel is secured to said reinforcing frame, said molding having a leg depending from said groove, said reinforcing frame having a raised portion generally matching the shape of said molding, said depending leg extending about the side of said raised portion, said fastening means securing said depending leg to said side of said raised portion.

3,964,785

REVERSIBLE SEAT AND BED APPARATUS

Robert W. Plume, Sterling Heights, Mich., assignor to Travel Products, Inc., Washington, Mich.

Filed June 21, 1974, Ser. No. 481,604
Int. Cl.² A47C *1/032*
U.S. Cl. 297—64 **30 Claims**



1. A reversible seat adapted to face one direction in a normal seat orientation and adapted to face the other direction in a reverse seat orientation, said seat comprising a base, first and second seat members, one of said members being a seat bottom while the other is a seat back in the normal orientation and vice versa in the reverse orientation, the first and second members including first and second support frames, respectively, connecting means including a linkage extending between said frames to provide a connection therebetween at a desired angularity so as to form a rigid structure with the back edge of the seat bottom frame being adjacent the bottom edge of the back frame, said connecting means being mounted on said base by a pivotal connection adjacent said back edge and said bottom edge, first and second cushion holders shiftably mounted on said first and second support frames, respectively, for motion toward and away from said pivotal connection, first and second means connected with the first and second cushion holders, respectively, for shifting them toward and away from, respectively, said pivotal connection when said members are moved from said normal orientation to said reverse orientation and vice versa.

3,964,786

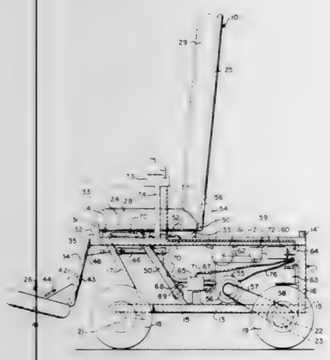
MECHANIZED WHEELCHAIR

David Mashuda, R.D. No. 1, Evans City, Pa. 16033

Filed Dec. 20, 1974, Ser. No. 535,035
Int. Cl.² A61G *5/04*
U.S. Cl. 297—330 **2 Claims**

1. In a wheelchair of the type comprising a body frame supported on front and rear pairs of wheels, the improvement which comprises a pair of vertically extending brackets secured on each side of the body frame at the forward end thereof, a rectangular seat frame substantially shorter in length than said body frame the forward end of which is pivotally mounted on said pair of brackets and the rear end of which rests on the top of the body frame, said seat frame being

swingable upwardly from said horizontal position through an arc to a position substantially at a right angle to the top of the body frame and vice versa, a back member having a substantially rectangular frame, means pivotally mounting one end of said back member frame to the free end of said seat frame, said back member being swingable with respect to said seat frame from a horizontal positon in which it is supported in coplanar relation to said seat frame by the top of said body frame through an arc to a position substantially at a right angle to said seat frame and vice versa, a pair of leg rest frame members, means pivotally mounting the upper ends of said leg rest frame members on said brackets for rotation on a common axis paralleling the axis of rotation of said seat frame, said leg rest frame members being swingable from a downwardly extending position at at substantial angle to the seat frame to



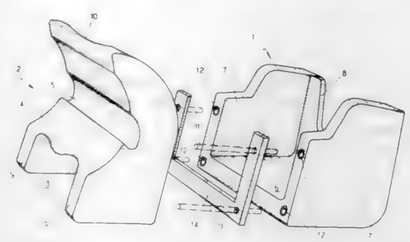
a position in substantial coplanar relation thereto, one fluid pressure motor means having one end pivotally mounted on the body frame and connected at the other end to said seat frame for raising and lowering said seat frame and said back frame with respect to said body frame, a second fluid pressure motor means having one end pivotally mounted on the underside of said seat frame and having the other end connected to said back member for pivotally moving said back member between said coplanar position and said angular position with respect to the said seat frame and a third fluid pressure motor means having one end thereof pivotally mounted on the body frame and connected at the other end to said leg rest frame members for swinging said leg rest frame members from said downwardly extending positions thereof into the position in substantial coplanar relation to said seat frame and vice versa.

3,964,787
CHILD'S SAFETY CHAIR

Jean Francois Labadie; Armand R. Bernard; Olivier P. de la Taille, all of Etampes, and Christian Thary, Lure, all of France, assignors to Etablissements Bertrand Faure, Le Chesnay, France

Filed Mar. 11, 1975, Ser. No. 557,343
Claims priority, application France, Mar. 15, 1974, 74.08866
Int. Cl.² B60R *21/10*; **A62B** *35/00*
U.S. Cl. 297—390 **3 Claims**

1. A child's safety chair for vehicles, comprising:
a seat member;
a retaining member disposed in front of said seat member and having within the lower portion thereof means defining an opening through which a child's legs may pass, said retaining member being separable from said seat member and having a height and width substantially the same as that of said seat member so as to restrain substantially the entire torso of a child under deceleration conditions of the vehicle; and
means interposed between said seat member and said retaining member for facilitating movement of said retaining member away from said seat member and for variably adjusting the distance between said seat and retaining

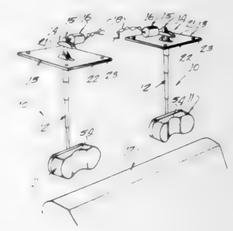


members whereby different sized children may be accommodated within said safety chair.

3,964,788
HEADREST FOR VEHICLES

Joseph Kmetyko, 922 Windsor St., Chicago, Ill. 60604

Filed July 3, 1974, Ser. No. 485,743
Int. Cl.² A47C *1/10*
U.S. Cl. 297—395 **8 Claims**



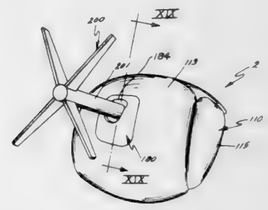
1. A headrest device intended for mounting to the ceiling of a vehicle in association with the position of a vehicle seat and above the same for preventing injury to an occupant of the vehicle occupying such seat upon impact of an external object with the vehicle, the headrest device comprising:
a ceiling mounting bracket adapted to be mounted to the ceiling of the vehicle above the vehicle seat and with respect to the head of an occupant of the vehicle, a slot extending through said ceiling mounting plate, and pivot boss means mounted on said mounting plate in association with said slot;
a telescopic shaft having a base end section and a terminal end section telescopically interconnected, such sections disposed concentrically about a common axis and adapted for axial reciprocal movement into and out of each other between a collapsed position and an extended position, said base section having a top end portion disposed furthest from said terminal end section, said base top end portion received in said ceiling plate slot and pivotally secured relative thereto adjacent said pivot boss members providing swinging movement of said telescopic shaft between forward and rearward positions in a plane extending through the longitudinal axis of said slot and taken normal to the plane of said slot itself;
a segment gear affixed centrally thereof to said top end of said base section and projecting outwardly therefrom, said segment gear having an arcuate convex outer surface with gear teeth disposed longitudinally therealong;
a head engaging portion affixed to the terminal end section of said telescopic shaft and adapted for engagement with

the head of an occupant of the seat in a manner to cradle the head for the comfort of the occupant as well as to cradle the head should the vehicle be struck by an external object with the occupant's head being thrust backward during the impact; and
a reversable direct current electric motor having a gear mounted on the shaft thereof, said gear in engagement with said teethed portion of said segment gear to effect the reciprocal movement of said segment gear relative to said motor upon energization of said motor from a suitable source of electrical energy;
whereby said motor effects the swinging movement of said telescopic shaft and associated head engaging portion relative to said ceiling mounting plate for adjustment thereof, and said telescopic shaft provides for the vertical adjustment of said head engaging portion relative to said ceiling mounting plate.

3,964,789
CHAIR

Warren Platner, New Haven, Conn.; Earl G. Ursul; Stephen B. Kolk, both of Grand Rapids, Mich., and Ronald L. Whitwam, Caledonia, Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Division of Ser. No. 344,851, March 26, 1973, Pat. No. 3,841,704. This application July 12, 1974, Ser. No. 488,054
Int. Cl.² A47C *7/00*
U.S. Cl. 297—445 **4 Claims**



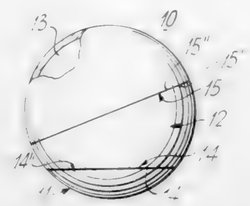
1. In a chair having a body mounted on a supporting base, said base including a supporting post, the improvement comprising: a plastic cover molded to a desired design configuration and secured to the bottom of said chair body and having dimensions sufficiently large for covering the upper portions of said supporting base but smaller than the dimensions of said bottom of said chair body, said cover having sufficient thickness to hold its said configuration independently of its securance to said chair body; said cover having an aperture therein through which said supporting post of said supporting base can pass; said cover including a slot extending from an edge of said aperture to the periphery of said cover, said slot being narrower in width than said supporting post and said cover being sufficiently flexible that it can be spread apart at said slot a sufficient distance to allow said cover to be slipped around said supporting post of said base during assembly of said chair; attachment means for securing said cover to said chair body.

3,964,790
BALL FURNITURE

Gaetan G. Bergeron, Box 1324, Assiniboia, Saskatchewan, Canada (S0H 0B0)

Filed Feb. 24, 1975, Ser. No. 552,054
Claims priority, application Canada, Feb. 11, 1975, 219796
Int. Cl.² A47C *1/12*
U.S. Cl. 297—445 **5 Claims**

1. A piece of furniture formed from a closed hollow shell of bulbous form having a curvilinear outer surface comprising
a. a base consisting of a minor segment of the hollow shell having a lower planar edge for resting flatwise on a supporting surface, and an upper continuous peripheral edge spaced from said supporting surface; and

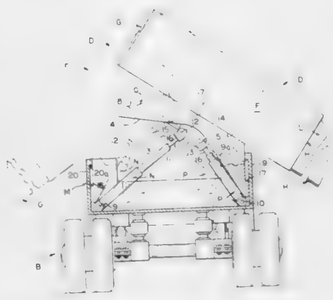


b. a main body consisting of a major segment of said hollow shell having the curvilinear outer surface thereof seated freely on and in substantially continuous contact with the upper peripheral edge of said base.

3,964,791
LATERALLY TILTABLE TRUCK OR TRAILER DUMP BODY WITH HINGED SIDE PANELS AND HYDRAULICALLY OPERATED MEANS FOR OPENING EITHER SIDE PANEL AND AT DIFFERENT ELEVATIONS OF THE DUMP BODY

Juniper Griffis, Bowie, Tex., assignor to Harold E. Lyst, Tulare, Calif., a part interest

Filed May 12, 1975, Ser. No. 576,966
Int. Cl.² B60P *1/28*
U.S. Cl. 298—11 **4 Claims**



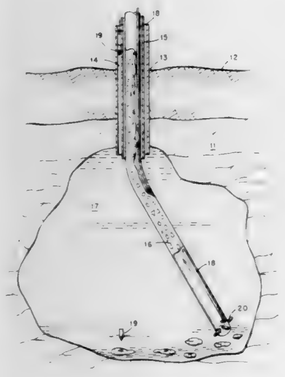
1. A vehicle having a frame:
a. a dump body mounted on said frame and having at least one transversely extending plate depending below the bottom of said body;
b. said frame having a housing for receiving said transversely extending plate when said dump body rests on said frame, said housing having side walls with inwardly extending flanges at their upper ends;
c. the ends of said transversely extending plate having hook-shaped portions that slidably contact with the inner surfaces of the housing side walls;
d. hydraulic means for tilting said dump body laterally either to the right or to the left so as to incline the dump body from a horizontal position, said means including hydraulic cylinders with telescopic piston rods; and
e. hydraulic valve controlled means for delivering added fluid to said cylinders for raising said dump body to a higher elevation, the operator controlling said valves for causing the desired hook-shaped portion of said plate to engage with its associate inwardly extending flange for stopping the raising of this end of said transverse plate;
f. whereby the hydraulic means will act on said dump body to cause it to swing about the engaged hook-shaped portion and to tilt said body laterally into dumping position.

3,964,792

EXPLOSIVE FLUID TRANSMITTED SHOCK METHOD FOR MINING DEEPLY BURIED COAL

Paul B. Archibald, Pleasanton, Calif., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Jan. 28, 1975, Ser. No. 544,715
Int. Cl.² E21C *37/12*
U.S. Cl. 299—13 **9 Claims**



1. A method for recovering coal from a buried coal seam which comprises:

a. establishing a water-filled cavity in communication with said coal seam,

b. periodically detonating in said water-filled cavity an explosive charge effective to interact with the water and generate an underwater shock wave of sufficient pressure to fracture and dislodge a portion of the coal seam and form a suspension of loose coal in water, and

c. extracting said suspension from the coal seam, thereby forming a progressively enlarging cavity in the coal seam.

3,964,793

CONTINUOUS FLOW PNEUMATIC CONVEYOR SYSTEM EMPLOYING A FLUIDIZED BED COLUMN FOR THE PURPOSES OF CONTROL AND REGULATION

Jacky Volpellere, Mimet, France, assignor to Aluminium Pechiney, Lyon, France

Filed July 1, 1974, Ser. No. 484,669
Claims priority, application France, July 2, 1973, 73.24134
Int. Cl.² B65G *53/66*, *53/18*
U.S. Cl. 302—3 **4 Claims**

1. A system for the pneumatic conveyance of powdered materials comprising:

a. a fluidizing feed column;

b. valve means for metering powdered material into said feed column;

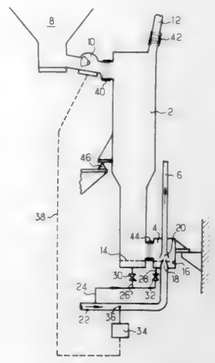
c. means for fluidizing said materials;

d. a pneumatic conveyor duct having an inlet;

e. a transfer chamber through which the fluidized materials pass from the feed column to the pneumatic conveyor duct inlet;

f. a gas injector connected to a source of pressurized gas for conveying the fluidized materials in the transfer chamber into the conveyor duct inlet; and

g. means for detecting the pressure of the gas injected by said injector and for controlling said valve means to regulate the rate of entry of powdered material into said feed column in proportion to the detected gas pressure.

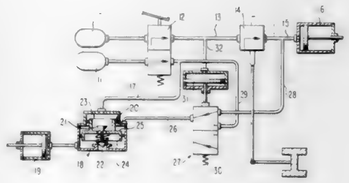


3,964,794

LOAD-DEPENDENT TWO-CIRCUIT BRAKE FOR VEHICLES, ESPECIALLY FOR TRUCKS, BUSSES OR THE LIKE

Helmuth Scholz, Bischweier, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Oct. 4, 1973, Ser. No. 403,532
Claims priority, application Germany, Oct. 5, 1972, 2248923
Int. Cl.² B60T *8/18*, *8/26*
U.S. Cl. 303—6 C **13 Claims**



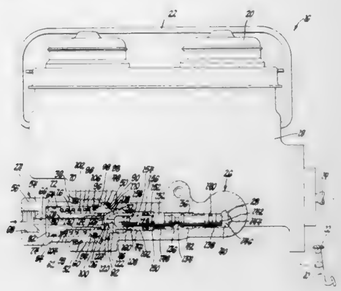
8. A load-dependent two-circuit brake for vehicles, which comprises means for providing a first brake circuit associated with rear wheel brakes, means for providing a second brake circuit associated with front wheel brakes, and a regulating valve means arranged in the first brake circuit means which is controlled in dependence of the load for producing a controlled pressure which varies in accordance with the load, characterized in that a control valve means for controlling the second brake circuit means is operatively connected with the second brake circuit means, said control valve means having a predetermined transmission ratio, and connecting means for actuating said control valve means by the controlled pressure in the first brake circuit means for changing the transmission ratio of the control valve means in the same sense as the variation of the controlled pressure in the first brake circuit means, the control valve means being constructed as a no-load valve means having a differential piston controlling an inlet valve and an outlet valve, said differential piston having a small piston area on which acts a feed pressure, a large piston area on which acts the brake pressure in the second brake circuit means and a differential area on which acts the control pressure.

3,964,795

MODULAR PROPORTIONER

Thomas P. Mathues, Miamisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1975, Ser. No. 607,200
Int. Cl.² B60T *8/26*
U.S. Cl. 303—6 C **2 Claims**



1. A brake pressure proportioner valve assembly adapted for removal and replacement in a housing as a preassembled unit, said assembly comprising:

a proportioner support first member having a pressure outlet and means for attaching and removing said assembly relative to a housing,

a proportioner piston preassembled in said first member and having a proportioner valve element formed thereon and having differential areas responsive to brake fluid pressures for proportioning action,

a proportioner valve seat second member secured to and preassembled with said first member and having a proportioner valve seat formed thereon for coaction with said proportioner valve element to provide a proportioner valve,

a spring acting on said second member and the proportioner piston and in said first member to continually urge said members in opposite directions toward opening of said proportioner valve;

and a brake pressure inlet passage formed in said second member and adapted to receive brake pressure to be proportioned, said inlet passage being in continuous fluid communication with one side of said proportioner valve and with the smaller of said proportioner piston differential areas, said first member pressure outlet being in continuous fluid communication with the other side of said proportioner valve and the larger of said proportioner piston differential areas, whereby brake pressure above a predetermined value in said inlet passage is proportioned to a lesser value at said pressure outlet.

3,964,796

ADAPTIVE ANTI-LOCK BRAKE CONTROL APPARATUS

Richard J. Bremer, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 27, 1975, Ser. No. 562,509
Int. Cl.² B60T *8/02*
U.S. Cl. 303—21 BE **3 Claims**

1. A control apparatus for an anti-lock brake system for a vehicle with braked wheels comprising

means providing a speed signal which represents wheel speed,

a control circuit for producing an on/off control signal,

release means activated by the control signal to effect brake release when the control signal is initiated and brake reapplication when the control signal is terminated,

the control circuit including means responsive to the speed signal for deriving a velocity error signal representing the difference between wheel speed and an estimated vehicle speed and means for producing the control signal when the velocity error signal exceeds a first threshold indicative of incipient wheel lock and terminating the control signal when the velocity error signal drops below a second threshold lower than the first threshold,



reapply means effective during brake release for terminating the control signal when the wheel experiences low acceleration for at least a minimum time period,

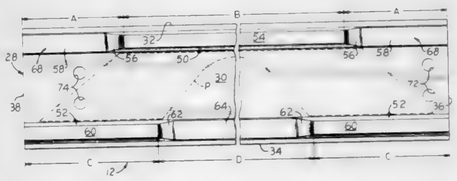
and means responsive to the instantaneous value of the velocity error signal for retarding the action of the reapply means and extending the time period when the velocity error signal is large.

3,964,797

TRACK SHOE WITH STAGGERED GROUSERS

Fred T. Swanson, Trivoli, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 3, 1975, Ser. No. 555,334
Int. Cl.² B62D *55/28*
U.S. Cl. 305—54 **4 Claims**



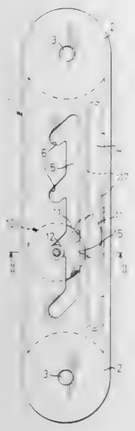
1. A track shoe with staggered grousers comprising;

an elongated rectangular planar body portion having a predetermined leading edge, a trailing edge, a pair of side edges, and a flat outer wear surface therewithin;

a leading grouser having a width of approximately 70% of the overall width of the shoe which extends integrally outwardly from said wear surface in parallel juxtaposed relation to said leading edge centrally thereof; and

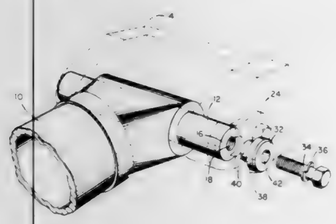
a pair of laterally spaced trailing grousers having a collective width of approximately 40% of the overall width of the shoe which extends integrally outwardly from said wear surface in parallel juxtaposed relation to said trailing edge and laterally inwardly from said side edges to provide an overlap relationship of approximately 5% of the overall width with respect to said leading grouser and to cause adhering mud or the like to be released from entrapment between said leading grouser, said trailing grousers, and said outer wear surface for improved penetration and traction.

3,964,798
SAFETY BELT ANCHORAGES
David William Burleigh, Yateley, England, assignor to Britax (London) Limited, Byfleet, England
Filed Feb. 7, 1975, Ser. No. 548,031
Claims priority, application United Kingdom, Feb. 14, 1974, 6695/74
Int. Cl.² F16C *29/02*
U.S. Cl. 303—1 A **15 Claims**



1. An anchorage member for a safety belt, said anchorage member comprising an elongated load bearing support having a series of abutment means along its length, a slide member mounted on said support for anchoring a safety belt, said slide member being manually movable for selective engagement with said abutment means, and biasing means serving to maintain the slide member in engagement with the selected abutment means, said elongated load bearing support being formed with a slot with zones of increased width at at least two spaced locations along its length, said slide member having a width greater than the width of said slot, and said slide member being manually movable along said slot for selective engagement with said zones of increased width, said zones of increased width being in the form of notches spaced along one side of said slot; and said biasing means being spring means biasing the slide member towards the notched side of the slot.

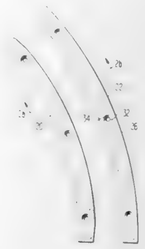
3,964,799
PIVOT PIN ADAPTER ASSEMBLY
Peter A. Knapp, 17 Albany St., Wollaston, Mass. 02170
Filed June 9, 1975, Ser. No. 585,180
Int. Cl.² F16C *7/00*
U.S. Cl. 308—2 R **10 Claims**



1. For use with a cylindrical pivot pin having an axially bored, internally threaded end, an adapter assembly comprising:

a. a stepped cylindrical adapter element having a head portion and a contiguous, axially aligned, reduced diameter neck portion, said adapter element having an axial bore throughout its entire length; and
b. a bolt having an externally threaded shank sized to fit the pivot pin threaded end, said shank having a length greater than the axial length of said adapter element;
c. said bolt being inserted into the head portion end and through the axial bore of said adapter element and being threadably engaged into the threaded end of the pivot pin.

3,964,800
WEAR STRIP
Donald D. Grimes, Waukesha; Roger M. Hahn, Whitefish Bay, and Jerome F. Sheldon, Milwaukee, all of Wis., assignors to Rexnord Inc., Milwaukee, Wis.
Filed Aug. 20, 1975, Ser. No. 606,253
Int. Cl.² F16C *5/00*
U.S. Cl. 308—3 R **11 Claims**

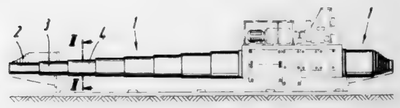


1. A wear strip for conveyor chains, said wear strip comprising:

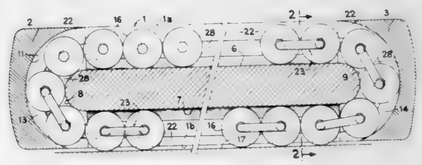
a. a flat upper wear member, the upper surface of which is adapted to contact and guide conveyor chains, said flat upper wear member having at least two holes therethrough for the reception of connection means, said holes being spaced apart along the length of said flat upper wear member;
b. at least one linear support member joined to said flat upper wear member along the underside thereof and adapted to contact the surface of a structure over which conveyor chains are to be run in order to provide support for said flat upper wear member; and
c. at least two base members joined to said flat upper wear member on the underside thereof at the location of said at least two holes in said flat upper wear member, each of said base members having at least one hole therethrough for the reception of connection means, said at least one hole in each of said base members being in registry with the corresponding hole in said flat upper member.

3,964,801
WIPING DEVICE FOR TELESCOPICALLY DISPLACEABLE COVER BOXES OF COVERING DEVICES ON SLIDING AND GUIDING PATHS OF MACHINE TOOLS
Dietmar Steinmetz, Siegen, Germany, assignor to Kabelschlepp Gesellschaft mit beschrankter Haftung, Siegen, Germany
Filed Jan. 13, 1975, Ser. No. 540,713
Claims priority, application Germany, Jan. 15, 1974, 2401674
Int. Cl.² F16C *23/02*
U.S. Cl. 308—3.5 **5 Claims**

1. For use in connection with a machine tool having a sliding and guiding path, a covering device for covering such path, which includes: a plurality of telescopically interengaging cover boxes movable relative to each other, each of said cover boxes being provided with a rear wall for resting on such sliding and guiding path, wiper means respectively interposed between two cover boxes adjacent to each other and one above the other, each of said wiper means including a carrier member connected to the top portion of the respective adjacent cover box and having its lower surface resting on the respective next lower cover box for conveying the weight of the former onto the latter, each of said carrier members defining with the cover box pertaining thereto a gap open at one end, and a plurality of sealing means respectively arranged in said gaps and respectively connected to said carrier members, each of said sealing means being firmly connected to the respective pertaining carrier member, each of said carrier members being provided with teeth and each of said sealing means consisting of elastic material and having an outer wiping lip and having teeth positively engaging the teeth of the respective adjacent carrier member.

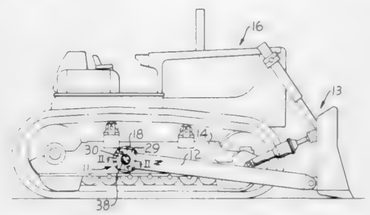


3,964,802
BEARING FOR RECTILINEAR MOTION
Alfred Pitner, Paris, France, assignor to Nadella, France, a part interest
Continuation-in-part of Ser. No. 317,360, Dec. 21, 1972, abandoned. This application Aug. 5, 1974, Ser. No. 494,889
Claims priority, application France, Aug. 7, 1973, 73.28819
Int. Cl.² F16C *17/00*
U.S. Cl. 308—6 C **26 Claims**



1. In a rolling bearing for guiding two parts subjected to a relative movement of translation, comprising a row of rolling elements having planar end surfaces, a body structure defining two rectilinear and parallel inner raceways, two semi-circular inner raceways which interconnect the rectilinear inner raceways, two part-circular outer raceways defining with the semi-circular inner raceways two passages for the re-circulation of the rolling elements and planar guide surfaces for guiding the planar end surfaces of the rolling elements; the improvement comprising retaining means for retaining the rolling elements to within a predetermined distance from the rectilinear inner raceways, which retaining means comprise means defining blind axial apertures in opposite ends of the rolling elements, the rolling elements being solid in a part of the rolling elements intermediate the blind apertures, said retaining means further comprising grooves in the body structure adjacent the planar guide surfaces and retaining elements extending axially of the rolling elements into the apertures and axially beyond the planar guide surfaces and into the grooves, the grooves defining surfaces which are engageable by the retaining elements axially of the rolling elements for retaining the retaining elements in the apertures.

3,964,803
SELF-ALIGNING TRUNNION BEARING ASSEMBLY
Larry G. Eftefield, and Leon A. Wirt, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 22, 1974, Ser. No. 526,284
Int. Cl.² F16C *11/06, 23/04, 25/04, 33/08*
U.S. Cl. 308—72 **6 Claims**



1. A trunnion bearing for securing a pivotable element to a supporting element comprising:
a trunnion shaft having means for attachment to said supporting element at one end and having an annular shoulder facing the other end,
a replaceable sleeve disposed coaxially on said trunnion shaft in abutment with said shoulder thereof, said sleeve having an outer surface of spherical configuration,
a pair of bearing cap members secured together by releasable means and having inner surfaces which jointly form a spherical surface conforming to said outer surface of said sleeve and which is in contact therewith, one of said bearing cap members having means for attachment to said pivotable element,
a circular retainer member abutted against said other end of said trunnion shaft in coaxial relationship therewith and being of greater diameter than said other end of said trunnion shaft to form a radially outwardly extending surface adjacent said other end of said trunnion shaft in order to hold said replaceable sleeve thereon, and
disengageable threaded fastener means extending from said other end of said trunnion shaft into said retainer member to hold said retainer member in abutment against said other end of said trunnion shaft.

6. A trunnion bearing for securing a pivotable element to a supporting element comprising:
a trunnion shaft having means for attachment to said supporting element at one end and having an annular shoulder facing the other end,
a replaceable sleeve disposed coaxially on said trunnion shaft in abutment with said shoulder thereof, said sleeve having an outer surface of spherical configuration, wherein said replaceable sleeve extends a distance outwardly from said other end of said trunnion shaft and has an annular recess forming an extension of the end surface of said trunnion shaft,
a pair of bearing cap members secured together by releasable means and having inner surfaces which jointly form a spherical surface conforming to said outer surface of said sleeve and which is in contact therewith, one of said bearing cap members having means for attachment to said pivotable element,
a circular retainer disposed against said other end of said trunnion shaft in coaxial relationship therewith and being of greater diameter than said other end of said trunnion shaft in order to hold said replaceable sleeve thereon, wherein said circular retainer is a flat disc disposed against said end surface of said shaft and against said extension of said end surface formed by said sleeve recess and being transpierced by a plurality of spaced-apart stepped bores, and
disengageable fastener means extending from said other end of said trunnion shaft into said retainer to hold said re-

tainer thereon, wherein said disengageable fastener means are a plurality of threaded bolts each extending into one of said bores and being engaged in said other end of said trunnion shaft, said bolts being substantially wholly contained within said other end of said trunnion shaft and said bores of said retainer.

3,964,804

APPARATUS FOR LUBRICATING BEARING RINGS LOOSELY MOUNTED ON A ROTARY DRUM

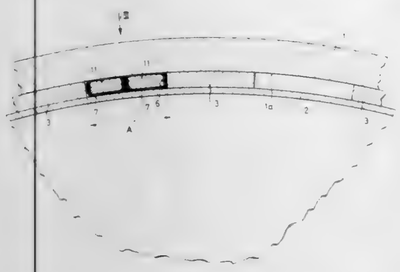
Kurt Henning, and Horst Bonisch, both of Neubeckum, Germany, assignors to Polysius AG, Neubeckum, Germany

Filed May 9, 1975, Ser. No. 575,955

Claims priority, application Germany, Mar. 27, 1974, 7418335[U]

Int. Cl.² F16C *1/24*

U.S. Cl. 308—109 **9 Claims**



1. Apparatus comprising a rotary drum casing, support plates affixed to said casing at regular intervals around its periphery, and a bearing ring which is carried by the support plate and is free to rotate relative to said casing, wherein the improvement comprises at least one box which is disengageably mounted in the space between two adjacent support plates and is open on the side facing the inner surface of the bearing ring, and a graphite plate for lubricating such inner surface which is loosely held in said box.

3,964,805

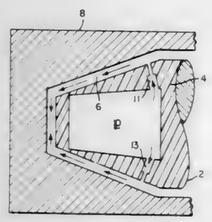
DYNAMIC FLUID RESERVOIR BEARING

Howard E. Schullen, Montville, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 27, 1974, Ser. No. 509,777

Int. Cl.² F16C *1/24*, *3/02*, *32/06*, *33/66*

U.S. Cl. 308—122 **6 Claims**



1. Lubricating apparatus for a bearing of the type including a generally conical member carrying a plurality of spiral grooves and rotating in a relatively close fitting sleeve, comprising:

a lubricant reservoir internal to the bearing and rotating therewith, and orifices leading from the reservoir to the bearing, the reservoir including an air evacuation port and packed with a lubricant absorbant for permitting air evacuation through the port without lubricant leakage in a predetermined gravitational field;

the lubricant flowing through the orifices and to the bearing by the pumping action effected by the spiral grooves on the rotating bearing; and

pumping means in a predetermined pressure flow arrangement and initially operative to augment the pumping action effected by the spiral grooves for providing a bearing having improved starting conditions and for insuring continuous lubricant flooding of the bearing.

3,964,806

THRUST DEVICES

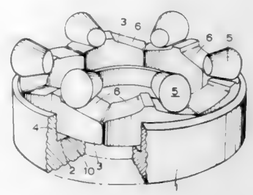
Anthony William Harrison, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Oct. 31, 1974, Ser. No. 519,774

Claims priority, application United Kingdom, Nov. 2, 1973, 51085/73

Int. Cl.² F16C *33/38*

U.S. Cl. 308—235 **14 Claims**



1. A thrust device comprising two parallel axially aligned thrust plate members angularly movable relative to each other about their mutual axis, at least one ramp member carried by the adjacent face of each of said plate members and opposite to one another, said ramp members each having a ramp surface of which said surfaces are opposed and oppositely inclined, means preventing circumferential movement of said ramp members relative to their respective plate members, bearing elements co-operating with said ramp surfaces of said opposed ramp members whereby upon relative angular movement of said thrust plate members they are forced apart by said bearing elements, and wherein permanently deformable means are provided between at least one of said ramp members and its thrust plate member for allowing said ramp member under working loads to adjust its position substantially axially so as to share the axial load more equally between said bearing elements during subsequent actuations of the device.

3,964,807

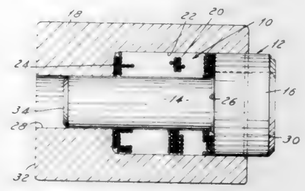
LOW FRICTION BUSHING AND METHOD

Charles S. White, Palmdale, Calif. 93550

Continuation of Ser. No. 321,566, Jan. 8, 1973, abandoned, and a continuation-in-part of Ser. No. 76,110, Sept. 28, 1970, abandoned. This application May 5, 1975, Ser. No. 574,397

Int. Cl.² F16C *27/00*

U.S. Cl. 308—238 **4 Claims**



1. A low friction bushing comprising:

a hollow cylindrical element consisting essentially of a plurality of layers of continuous turns of a strand of low friction thread comprised of bondable filaments and polytetrafluoro ethylene filaments, wherein the thread is impregnated with a bondable resin;

said threads compressed together axially of the cylindrical element and held in radially expanded integrated relation by a matrix of solidified and cured bonding resin distributed throughout the layers;

and one of the cylindrical surfaces of the hollow cylindrical element comprising a bearing surface of low friction thread presenting a substantially uniform layer of juxtaposed turns of the thread bonded together by said resin.

3,964,808

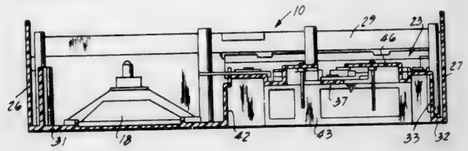
ALL-PLASTIC HOUSING FOR A SMALL COMPACT TAPE REPRODUCER AND RECORDER

Nobuo Suzuki, Sagamihara, Japan, assignor to Technical Incorporated, Japan

Filed Dec. 4, 1974, Ser. No. 529,401

Int. Cl.² G11B *1/00*

U.S. Cl. 312—8 **5 Claims**



1. A housing for a tape reproducer/recorder maching comprising a molded plastic housing member having external walls, a raised internal chassis portion of said housing member being attached to at least one of said external walls by an internal wall connected to said chassis portion which connects to said one external wall by a connection member to form a double wall structure to isolate said chassis portion from said at least one external wall and at least one other internal wall connecting said raised chassis portion to said housing.

3,964,809

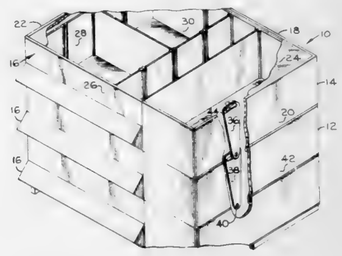
MODULAR CABINET STRUCTURE

Chester Wirbilowicz, Clifton, and H. Theodore Young, Union, both of N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Filed May 21, 1975, Ser. No. 579,377

Int. Cl.² A47B *87/00*

U.S. Cl. 312—111 **4 Claims**



1. A modular cabinet structure comprising:

a. a first level framework having a rear wall; a pair of sidewalls extending transversely from opposite ends of said rear wall; each of said sidewalls having a lower end and an upper end, a pin extending inwardly from at least one of said sidewalls adjacent one of said ends, a locking tab pivotally mounted to said one sidewall by said pin, and a slot extending through portions of said tab;

b. a second level framework having a rear wall; a pair of sidewalls extending transversely from opposite ends of said rear wall; each of said sidewalls having a lower end and an upper end, a pin extending inwardly from at least one of said sidewalls adjacent one of said ends; said second framework pin having an enlarged head at its inner end and said first framework slot having a first section sufficiently large to receive said pin enlarged head and a second section smaller than said pin head whereby said pin head can pass through said slot first section to be captured by said slot second section to lock said frameworks together; and,

c. one of said frameworks being stacked one on top of the other of said frameworks with said first framework lock tab slot engaging said second framework pin whereby to secure said frameworks to one another; said first framework slot defining a camming surface for said second framework pin, whereby rotation of said tab produces a camming action between said slot and pin tending to draw said frameworks toward one another.

3,964,810

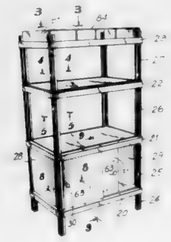
MODULAR SHELF AND CABINET SYSTEM

Thomas V. Murphy, P.O. Box 156, Oradell, N.J. 07649

Filed May 15, 1975, Ser. No. 577,901

Int. Cl.² A47B *13/02*

U.S. Cl. 312—257 R **13 Claims**



1. In a modular structural system for the assembly of display shelving and the like and of the type including separable shelf panels and spacer columns, the improvement characterized by

a. said spacer columns being formed of extruded sections and being of relatively uniform hollow cross section throughout,

b. said shelf panels being of molded plastic construction and including generally flat panel sections and integral, downwardly extending peripheral flanges along all sides,

c. said shelf panels having, at a plurality of spaced points, integral, upwardly extending lug posts,

d. said lug posts being of such dimensions and of such cross sectional configuration as to be tightly received within the hollow interior of said spacer columns,

e. said shelf panels further having integral, downwardly opening sockets at a plurality of spaced points, and

f. said sockets being of such dimensions and of such cross sectional configuration as to tightly receive an end portion of a spacer column.

3,964,811

TENSION ROD CABINET SYSTEMS

Robert G. McClelland, Grand Rapids, Mich., assignor to E. H. Sheldon and Company, Muskegon, Mich.

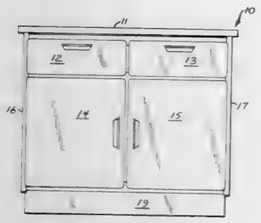
Filed Feb. 20, 1975, Ser. No. 551,336

Int. Cl.² A47B *48/00*

U.S. Cl. 312—265 **14 Claims**

1. In a cabinet system including at least two upright sidewalls of generally rectangular shape and a plurality of stretcher rail assemblies securing said sidewalls together at

upper front, upper rear, lower front and lower rear corners thereof, each assembly including a stretcher rail and a tension rod, the improvement comprising: each of said stretcher rails being a channel rail of modified C shape with stiffened flanges formed of light gauge metal and defining a continuous elongated opening along one side for permitting access to the



interior of the rail, and including an outwardly extending fastening flange extending along said opening; and a spacer plate located at each end of said rails and fixed to said rails, each spacer plate defining an aperture for snugly centrally receiving and positioning an associated tension rod, whereby load is transmitted from a rail through said spacer plates to the tension rod and thence to said cabinet side walls.

3,964,812

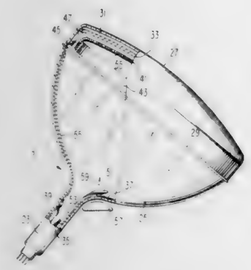
METHOD FOR PRODUCING A STRONTIUM METAL FILM ON INTERNAL SURFACES OF A CRT

John Coryell Turnbull, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 394,841, Sept. 6, 1973, abandoned. Division of Ser. No. 532,729, Dec. 13, 1974, Pat. No. 3,952,226. This application Nov. 19, 1975, Ser. No. 633,465

Int. Cl.² H01J *7/18*

U.S. Cl. 316—25 **10 Claims**



1. A method for producing within an evacuated electron tube a strontium metal film for sorbing residual gases comprising positioning within said envelope a mass comprising an alloy consisting essentially of about 40 weight parts strontium metal and about 55 to 65 weight parts aluminum metal, sealing said envelope, heating said mass until a substantial proportion of the strontium in said mass is liberated and vaporized, and condensing said vaporized strontium as a metal film on surfaces within said envelope.

3,964,813

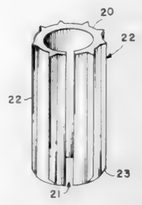
CONNECTOR

Donald E. Pizzeck, Hampton, Va., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 10, 1975, Ser. No. 548,468

Int. Cl.² H05K *1/10*; **H01R** *25/00*

U.S. Cl. 339—17 M **3 Claims**



1. A multi-layer printed circuit board having a hole through it with circuits on different layers of the board extending to the periphery of the hole;

a connector in said hole for connecting said circuits on different layers of said board comprising:

a cylindrical conductor hollow throughout its entire length having an outside diameter slightly larger than the diameter of said hole and made from a conductive, springy material;

several teeth on the outside surface of said conductor with each tooth extending the full length of said conductor; and

a single slit in said conductor extending the full length of the conductor whereby the springback of said conductor forces said teeth into contact with all of said circuits extending to the periphery of said hole.

3,964,814

PLUGGABLE HIGH-AMPERAGE CONTACT

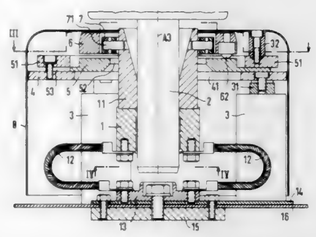
Wolfgang Kalbitz; Erwin Keyl, both of Erlangen; Herbert Nitsche, Spardorf, and Friedrich Scherbaum, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 5, 1974, Ser. No. 458,406

Claims priority, application Germany, Apr. 6, 1973, 2317419

Int. Cl.² H01R *13/62*

U.S. Cl. 339—64 R **12 Claims**



1. An improved high-amperage connector receptacle of the type wherein the cylindrical plug is inserted into a funnel-like connector receptacle comprising:

a. base means;

b. a connector receptacle having a funnel shaped entrance portion;

c. first means to suspend said receptacle for rotation about two mutually perpendicular axis which axes are mutually orthogonal to an axis normal to the plane of said base means;

d. second means resting on said base means and supporting said first means, said second means mounted for lateral motion in the plane of said base means and for rotation about said axis normal to said base means whereby said receptacle will be orientatable in all directions and movable laterally in the plane of said base means.

3,964,815

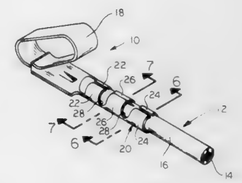
INSULATION PIERCING TERMINAL

Cletus McDonough, Elmhurst, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Feb. 26, 1975, Ser. No. 553,083

Int. Cl.² H01R *11/08*

U.S. Cl. 339—97 C **3 Claims**



1. An insulation piercing terminal for use with insulation clad wire, said terminal including a contact portion and a wire gripping portion that is adapted to be crimped onto said wire, the improvement in said wire gripping portion comprising:

a central elongated wire supporting area having a longitudinal axis and defining a bottom support for the wire;

a pair of insulation piecing wings having sharp ends, each extending outwardly in opposite directions from the wire supporting area around half the wire, meeting at a location on top of the wire, piercing the insulation at said top location so that the ends of the wings extend downwardly into and contact the wire, and contacting the wire supporting area so that each piercing wing encloses substantially one half of the cross section of the wire; and

two pairs of insulation gripping wings one on either side of and spaced from said piercing wings, each insulation gripping wing of each pair extending outwardly in opposite directions from the wire supporting area a lesser distance than the insulation piercing wings each gripping wing being wrapped about the clad wire.

3,964,816

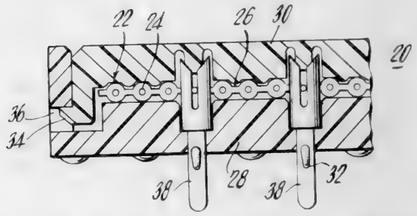
ELECTRICAL CONTACT

Ronald S. Narozny, Panorama City, Calif., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Aug. 22, 1974, Ser. No. 499,588

Int. Cl.² H01R *13/38*

U.S. Cl. 339—99 R **12 Claims**



1. An electrical contact for piercing through the insulation of an insulated electrical conductor to make electrical contact with the conductor itself comprising: a longitudinally slotted, generally cylindrical body portion formed of a flat, resilient, conductive material having a top edge and a bottom edge, said longitudinal slot extending from said top edge to said bottom edge, the edges of said body portion defining said longitudinal slot being spaced apart to bite into the insulation of said conductor causing said longitudinal slot defining edges to move apart further and maintain a continuous contact therewith due to the attempt of the resilient material to recover its original configuration and provide strain relief for an insulated conductor forced into said contact; a further slot formed in said body portion directly opposite said longitudinal slot and extending from said top edge of said body portion towards said bottom edge of said body portion and terminating intermediate said top and bottom edges of said body portion, said further slot proportioned to cut through the insulation about said insulated conductor and engage the conductor to made a good electrical contact therewith when an insulated conductor is forced into said further slot, the entry of an insulated conductor into said further slot forcing the edges of said body portion defining said further slot to separate further, the resiliency of said material attempting to axially return said body portion to its original configuration to maintain continuous engagement between said edges defining said further slot and the conductor of the insulated conductor placed therein; the arcuate segments formed by said longitudinal slot and said further slot providing first and second arms terminating in sharp points at said top edge of said body portion, and having shoulder portions sloping from said point to each side of said first and second arms to guide an insulated electrical conductor into said longitudinal slot and said further slot; and a tail portion coupled to said body portion bottom edge to permit said contact to be coupled to a further electrical terminal point.

3,964,817

OPTICAL STABILIZER HAVING SPACE REFERENCED MOTION

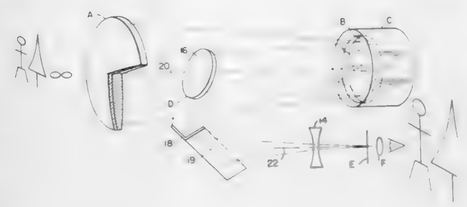
William E. Humphrey, Oakland, Calif., assignor to Optical Research and Development Corporation, Berkeley, Calif.

Continuation-in-part of Ser. Nos. 75,965, Sept. 28, 1970, Pat. No. 3,711,178, and Ser. No. 215,485, Jan. 5, 1972, Pat. No. 3,761,157. This application Oct. 16, 1972, Ser. No. 298,050

The portion of the term of this patent subsequent to Jan. 16, 1990, has been disclaimed.

Int. Cl.² G02B *23/00*

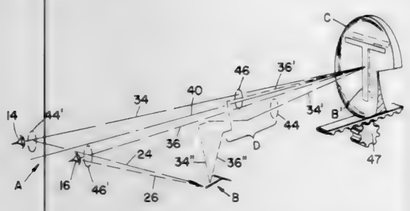
U.S. Cl. 350—16 **7 Claims**



1. An optical stabilizer for use in combination with an optical instrument for stabilizing rapid angular vibration comprising: walls defining a chamber having a transparent portion; a fluid within said chamber; means for optical ray deflecting immersed in said fluid; means for mounting said deflecting means for movement in said fluid; means for biasing said deflecting means toward a neutral deflecting position with respect to a transparent portion of said chamber-defining wall; and means for coupling including a surface moveable with said walls and a surface moveable with said deflecting means for coupling said deflecting means to said wall through said fluid to act on said biasing means through said deflecting means and also to act on inertia of said fluid deflecting means; said surface moveable with said walls acting upon and moving said fluid, and said surface moveable with said deflecting means being moveable in response to said movement of said fluid to produce space referenced angular orientation of said deflecting means at a rate proportional to but different from the

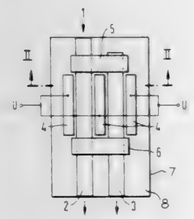
vibrational angular orientation of said walls with respect to a point in space.

3,964,818
REMOTE STEREO MICROSCOPE WITH FIELD MIRROR REFLECTED OCULAR PATHS
William E. Humphrey, Oakland, Calif., assignor to Humphrey Instruments, Inc., Berkeley, Calif.
Filed Mar. 28, 1975, Ser. No. 563,281
Int. Cl.² G02B *21/20, 17/00, 27/24;* **G03B** *21/00*
U.S. Cl. 350—36 **15 Claims**



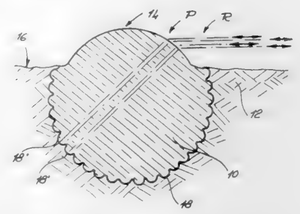
1. A microscope for projecting magnified stereo images of an object to eyes of a viewer at binocular locations in space removed from said object, said microscope comprising: a stereo magnifier with paired magnified paths; each path having a magnifier viewing pupil, said stereo magnifiers addressed to said object at a distance to project stereo images of said object at a preselected distance away from said magnifier along an optical path; a field mirror having an axis aligned to receive the projected image from each magnified path of said stereo magnifier in substantially the plane of said mirror; said paired magnified paths from said stereo magnifier between said field mirror and said magnifier including means for relaying one magnified path from one side of said mirror axis to the other side of said mirror axis and the other magnified path from said other side of said mirror axis to said one side of said mirror axis and said field mirror disposed with respect to the eyes of said viewer to relay the light of said images to the eyes of the viewer and to relay the conjugate location of the viewing pupils of said magnifier so that the eyes of the viewer when positioned at the relayed viewing pupils view the image in the plane of the mirror for one eye without viewing the image for the other eye.

3,964,819
INTEGRATED OPTICAL MODULATOR
Franz Auracher, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany
Filed May 1, 1975, Ser. No. 573,439
Claims priority, application Germany, May 9, 1974, 2422401
Int. Cl.² G02B *5/14*
U.S. Cl. 350—96 WG **2 Claims**



1. In an integrated optical modulator for modulating optical signals in dielectric wave guides, said modulator having a substrate with a surface supporting two wave guides extending in parallel spaced relationship with each other and having their upper and lower surfaces being a pair of co-planar surfaces, said modulator including three parallel extending electrodes supported on the surface of the substrate with an electrode adjacent each edge of the two wave guides, and extending parallel thereto, the improvement comprising the modulator including two short couplers, said short couplers being short coupling wave guides and being spaced from one another on said parallel wave guides and extending at right angles thereto and being separated from the said parallel wave guides by a dielectric low loss film.

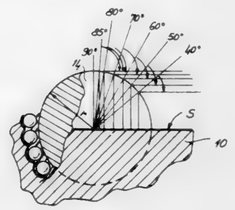
3,964,820
RETRO-REFLECTING ELEMENT AND METHOD
Ludwig Eigenmann, Vacallo, Ticino, Switzerland
Filed Mar. 19, 1974, Ser. No. 452,996
Claims priority, application Italy, Mar. 21, 1973, 21913/73
Int. Cl.² G02B *5/126*
U.S. Cl. 350—104 **10 Claims**



1. A substantially spherical reflecting element, comprising a transparent reflective body having a first portion bounded by a first surface section adapted to be impinged by rays from a source external to said body, a substantially part-spherical second portion, and a plurality of substantially part-spherical third portions projecting radially outwardly of said second portion and each bounded by a second surface section adapted to be impinged by rays from within said body; and a reflective material provided at least on some of said second surface sections, whereby a ray impinging said first surface section at an angle thereto is refracted into said body to pass therethrough in a first direction to one of said second surface sections to be reflected by said reflective material and to return through said body, in a second direction substantially opposite to said first direction, to said first surface section and ultimately towards said source, said body having substantially the same index of refraction throughout so that additional refractions and reflections within said body due to differential indices of refraction are substantially eliminated.

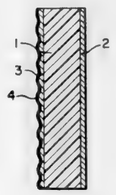
3,964,821
REFLEX REFLECTING SYSTEM FOR ROAD SURFACE MARKING
Ludwig Eigenmann, Vacallo, Canton Ticino, Switzerland
Filed Dec. 27, 1973, Ser. No. 428,909
Claims priority, application Italy, Dec. 28, 1972, 33710/72
Int. Cl.² G02B *5/12*
U.S. Cl. 350—105 **14 Claims**

1. A marked road, comprising a roadway pavement; and a traffic-regulating indicium provided on said pavement and including a layer of material having an upwardly facing surface the entire extent of which is approximately planar, said indicium further including reflective aggregates partially embedded in said layer, and at least one of said aggregates comprising a substantially spherical transparent element having an exposed portion projecting upwardly of said surface and another portion projecting downwardly from said surface into said layer, said element having an index of refraction such that rays impinging said exposed portion at large angles of incidence are at least partially refracted into said element, and said one aggregate further comprising a transparent binder substance contacting said other portion of said element, and reflecting means for the reflection of rays refracted into said element associated with said other portion of said element and spaced from the same by said binder substance, said binder substance having an index of refraction which approximately



equals that of said element so that the reflex reflextivity of said one aggregate is reduced from that of similar units wherein the index of refraction of the spherical lens exceeds that of the binder while the total transparency parameter of said one aggregate is substantially increased over that of said similar units.

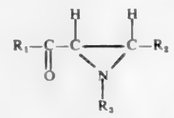
3,964,822
PROJECTION SCREEN AND PROCESS FOR PRODUCTION THEREOF
Akira Yamashita, Iwakuni, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Filed Oct. 7, 1974, Ser. No. 512,994
Claims priority, application Japan, Oct. 12, 1973, 48-113872; Oct. 19, 1973, 48-116863
Int. Cl.² G03B *21/56, 21/60*
U.S. Cl. 350—117 **6 Claims**



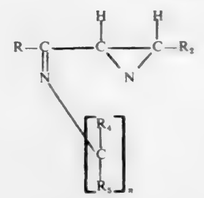
1. A projection screen which comprises:
a substrate having a metallic aluminum surface,
a transparent film overlaying said metallic aluminum surface,
said metallic aluminum surface having a fine, dense pattern of directional irregularities and a pattern of nondirectional craters provided thereon; and
said transparent film having a thickness of from 0.5 to 10 microns and a roughness expressed as a maximum height (R max) of from 0.2S to 25S.

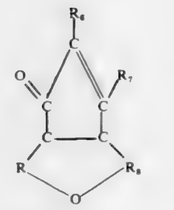
3,964,823
ARTICLES EMPLOYING PHOTOCHROMIC MATERIALS
Anthony Marion Trozzolo, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 18, 1974, Ser. No. 451,839
Int. Cl.² G02B *5/23*
U.S. Cl. 350—160 P **14 Claims**

1. An optically sensitive article which includes at least one element containing photochromic material in which said article changes absorption characteristics at a wavelength range of a first radiation on exposure to a second radiation of a given wavelength range characterized in that the photochromic material is at least partially crystalline and partially crystallographically oriented and contained in an amorphous medium stress distorted to partially align the crystals of photochromic material consists essentially of cyclic aziridine compound with up to three cyclic rings which can be represented by an atomic formula selected from the group consisting of

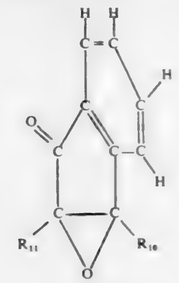


and





Bicyclic Oxirane



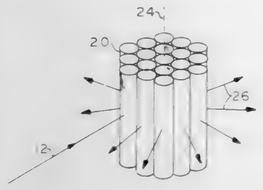
Tricyclic Oxirane

in which R_1 and R_2 are aromatic substituents with up to three rings, R_3 is a substituted or unsubstituted benzyl group, R_4 and R_5 are hydrogen or alkyl groups with up to 5 carbons, n is from 1 to 5, whereby the change in the said absorption characteristic produced by the said second radiation is relatively large for one plane of polarization of the second radiation and the change in the said absorption characteristic is more pronounced for one plane of polarization of the first radiation.

3,964,824
LIGHT TRANSMITTER
Robert L. Dixon, Rte. 1, Winchester, Tenn. 37398
Filed Oct. 3, 1974, Ser. No. 511,698
Int. Cl.² G02B *3/08*
U.S. Cl. 350—190 **5 Claims**

1. A light transmitter comprising:

a supporting frame;
light source means supported by said frame for generating and projecting a collimated beam of light; and
a bundle of straight parallel lengths of fiber optics supported by said frame and spaced from said light source means, said bundle of fiber optics being positioned in the path of



said beam with the beam intersecting a side of the bundle of optics normal (90°) to the central axis of said bundle;
whereby the beam is reflected and refracted by surfaces of said fiber optics of said bundle in a substantially solid plane of light extending 360° around said bundle and being coincident with said beam of light from said light source means.

3,964,825

APPARATUS AND PROCESS FOR DEFLECTING THE DIRECTION OF LIGHT BEAMS IN A CONTROLLABLE FASHION

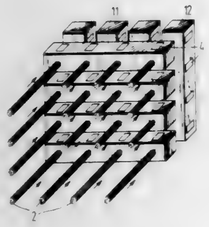
Hans Eschler, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 27, 1974, Ser. No. 527,893

Claims priority, application Germany, Nov. 29, 1973, 2359556

Int. Cl.² G02F *1/33*

U.S. Cl. 350—161 **9 Claims**



1. In an apparatus for handling light beams from a source of light beams, and including a plurality of acousto-optic light deflector units, the improvement comprising said plurality of light deflector units consisting of a matrix of transparent bodies, each body being provided with a piezoelectric transducer for each unit in the body to create a high frequency ultrasonic wave having a frequency range of between 30 and 200 MHz in each of the deflector units, the body for each unit having a shape so that the sound wave formed by the piezoelectric transducer is a standing sound wave running in a direction at right angles to the direction of the propagation of the light through the unit to create an optical phase grating in each deflector unit and the apparatus including beam-shaping means disposed between a plane and the matrix of light deflector units for focusing all of the beams deflected in the same direction to a spot on the plane.

3,964,826

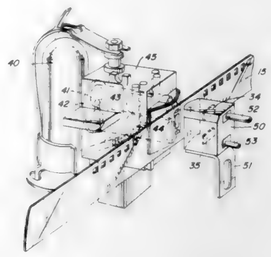
DUAL SOUND SYSTEM

John S. Joseph, Los Alamitos, and Edwin B. Levinson, Tustin, both of Calif., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Nov. 30, 1973, Ser. No. 420,684

Int. Cl.² G03B *31/02*

U.S. Cl. 352—10 **6 Claims**



1. Scanning apparatus for longitudinally extending optical sound track on a movie film, comprising:
a lamp;
a body adjacent said lamp and having a bore therethrough to conduct a light beam from said lamp to said film;
a mask to establish the light beam dimension longitudinally of said sound track;
a lens carrier in said bore and movable longitudinally and rotationally thereof;
a lens carried by said carrier;
an actuating arm extending outwardly from said lens carrier through a hole in said body which is larger than the arm to accommodate a limited movement of the arm and carrier;
first adjusting means engaging the arm to move the carrier axially of the bore, adjusting the focus of the light beam on said sound track;
second adjusting means engaging the actuating arm at a point displaced from the engagement of the first adjusting means by 90° to rotate the carrier in said bore, orienting the light beam with respect to the sound track;
a spring urging said arm into engagement with the first and second adjusting means; and
means for receiving the light beam modulated by the optical sound track.

3,964,827

ION MODULATED IMAGE FORMING APPARATUS

Hidetoshi Tanaka, Musashino; Toshiro Kasamura, Kawasaki, and Tadashi Sato, Kokubunji, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 19, 1974, Ser. No. 525,196

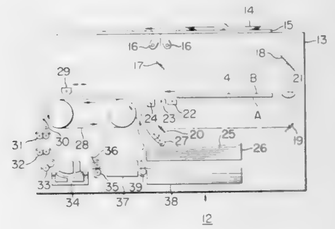
Claims priority, application Japan, Nov. 29, 1973, 48-134619

Int. Cl.² G03G *15/044*

U.S. Cl. 355—3 R **18 Claims**

8. An ion modulation copying system comprising in combination,
a photosensitive screen supported in a plane and having a multitude of openings therein;
drive means for reciprocating said screen in said plane between a starting point and a turning point, wherein a secondary electrostatic latent image forming position is disposed between said starting and turning points;
means for forming a primary electrostatic latent image on said screen, said primary electrostatic latent image forming means being disposed between said starting point and said secondary electrostatic latent image forming position;

a chargeable member capable of bearing a secondary electrostatic latent image, said chargeable member being disposed for movement through said secondary electrostatic latent image forming position, in a spaced parallel relation with respect to the plane of said screen;
drive means for moving said chargeable member at the same speed and in the same direction as said screen as the latter moves through said secondary electrostatic latent image forming position toward said turning point;
corona discharging means movably disposed at said secondary electrostatic latent image forming position in spaced apart relationship with a side of said screen opposite to the side thereof facing said chargeable member, wherein said discharge means is for providing an ion source for modulation; and
drive means for driving said discharging means reciprocally through said secondary electrostatic latent image forming position between first and second points;



wherein said first point is nearer to said starting point and said second point is nearer to said turning point;
wherein said ion modulation is carried out between said first and second points during movement of said screen and said chargeable member in the direction from said first point to said second point and movement of said corona discharge means in the direction from said second point to said first point; and wherein (a) said drive means for driving said discharging means includes means for returning said corona discharge means from said first point to said second point, (b) said drive means for said screen includes means for returning said screen from said turning point to said second point, and (c) said drive means for said chargeable member includes means for moving a portion of said chargeable member at which a subsequent said secondary electrostatic latent image is to be formed to said second point, whereby a plurality of secondary electrostatic latent images can be formed from a single primary electrostatic image on said screen.

3,964,828

APPARATUS FOR PREPARING ELECTROPHOTOGRAPHIC MICROFILM

Hiroshi Yamada, Ichikawa; Hisanori Ataka, and Yukio Shirai, Kawasaki, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

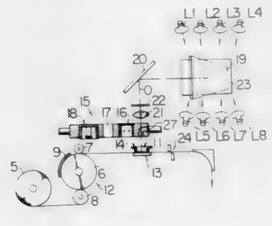
Filed Dec. 21, 1973, Ser. No. 427,240

Claims priority, application Japan, Dec. 29, 1972, 47-3743[U]

Int. Cl.² G03G *15/10*

U.S. Cl. 355—10 **18 Claims**

1. A system for forming microfilm electrophotographic images of originals, comprising:
a pressure plate located at an imaging position;
means for delivering a length of film corresponding to one microfilm frame to the imaging position against the pressure plate;
an original receptacle and means for illuminating an original placed thereon;
an optical system for focusing the light image of an original placed on the original receptacle onto the microfilm frame on the pressure plate;
a movable unit including a charger, an exposure window and developing means including a vessel of developing solution;
means for registering the charger of the movable unit with the microfilm frame on the pressure plate and for charging the microfilm therewith;
means for subsequently registering the exposure window of the movable unit with the charged microfilm frame on the pressure plate;
exposure means and means for causing the incidence of the original image on the microfilm frame through the exposure window of the movable unit while said exposure window is registered with the frame on the pressure plate to thereby expose the microfilm frame and form thereon a latent image of the original;



means for subsequently registering the developing means with the exposed microfilm frame, means for forming a liquid-tight developing chamber while the developing means is registered with the microfilm frame, one wall of said chamber being formed by the microfilm frame surface carrying the latent image, and means for introducing developing solution from said vessel into said chamber and for contacting the exposed frame with said developing solution in the chamber to thereby develop the latent image;
means for subsequently moving the movable unit away from the developed frame; and
means for fixing the developed image on the microfilm frame;
wherein the pressure plate and the microfilm frame which is in the imaging position extend along parallel vertical planes and remain in fixed positions in their respective vertical planes throughout the period in which said microfilm frame is charged, exposed, developed and fixed.

3,964,829

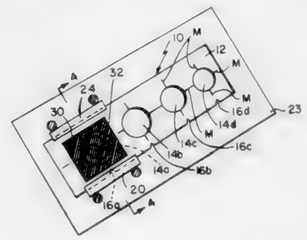
COIN PHOTOGRAPHIC APPARATUS

Richard H. Munis, Sawnee Bean Road, Thetford Center, Vt. 05075

Filed Mar. 18, 1974, Ser. No. 451,946

Int. Cl.² G03B *27/62*

U.S. Cl. 355—75 **13 Claims**



1. Coin photographic apparatus comprising;

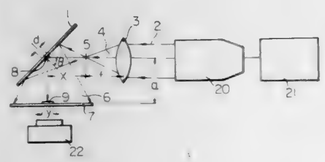
support means for a coin having means for receiving the coin in a predetermined position,
a light source for directing light onto the coin,
a camera positioned on the same side of said support means as said light source,
a grid disposed intermediate the light source and support means for establishing light contours on the coin that are photographed by the camera,
and means for supporting the grid over the coin in a fixed position relative to the coin so that each time a particular type of coin is photographed the coin and grid are maintained in the same relative position.

3,964,830

METHOD FOR INSPECTING FLAWS OF MATERIAL

Hiroyuki Ikeda, Yokohama, and Takefumi Inagaki, Kawasaki, both of Japan, assignors to Fujitsu Ltd., Japan

Filed Mar. 27, 1974, Ser. No. 455,369
Claims priority, application Japan, Mar. 30, 1973, 48-36372
Int. Cl.² G01B *9/02*
U.S. Cl. 356—109 **9 Claims**



1. A method for inspecting flaws in material, comprising the steps of:
a. directing a parallel beam generated from a source of a coherent wave of light through a spherical lens;
b. forming a cone-shaped coherent spherical wave of light by focusing said parallel beam to a focal point of said spherical lens;
c. positioning said material in a manner to provide intersection of said cone-shaped coherent spherical wave of light and a region of said material at a predetermined distance from said focal point, said region of said material on which said cone-shaped coherent spherical wave of light impinges being substantially larger than the size of said flaws to be inspected;
d. positioning an inspection screen at a predetermined distance from said material to intersect light reflected from said region in order that a Fresnel diffraction pattern of microflaws to be inspected becomes an observable size; and,
e. observing said inspection screen with regard to whether or not said distribution of said light reflected from said region includes a Fresnel diffraction pattern of said microflaws thereby enabling detection of said microflaws within said region of said material to be inspected.

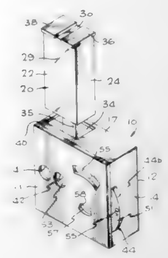
3,964,831

VISUAL COLOR COMPARATOR WITH INTEGRAL DUAL DIP CELLS

Gomer S. Frank, Northridge, Calif., assignor to Aquality, Inc., Chatsworth, Calif.

Continuation-in-part of Ser. No. 428,421, Dec. 26, 1973, abandoned. This application Aug. 25, 1975, Ser. No. 607,282
Int. Cl.³ G01J *3/48*
U.S. Cl. 356—182 **8 Claims**

1. A visual color comparator for testing a property of a liquid comprising:
first and second dip cells;
means for rigidly connecting said cells together in side by side location with a space therebetween;
a housing compartment for said cells;
an aperture in said compartment through which said cells are inserted together after being simultaneously dipped into said liquid to fill said cells;
guide means on said compartment and inserted into said space to guide the movement of said cells;



said compartment having a front panel opposite said cells containing first and second openings opposite said first and second cells, respectively, after insertion of said cells;
a plurality of different color standards movable one at a time into position between said second cell and said second opening;
said first cell receiving a reagent which colors the liquid in said cell and said color standards being moved until a standard matches the liquid color.

3,964,832

GEL COMPOSITION AND ADHESIVE STICK

Norman B. Cohen, Wayland, and Donald J. Lennon, Acton, both of Mass., assignors to The Carter's Ink Company, Cambridge, Mass.

Filed June 17, 1974, Ser. No. 479,801
Int. Cl.³ B43K *21/08*
U.S. Cl. 401—75 **29 Claims**

1. A remeltable adhesive composition comprising:
a metal salt of an aliphatic carboxylic acid having from 8 to 36 carbon atoms, the metal portion of said metal salt being selected from the group consisting of Group II metals and Group III metals;
a liquid dispersant;
a water soluble chelating agent in an amount sufficient to chelate the metal portion of the carboxylic acid salt to render the carboxylic acid salt soluble in the liquid dispersant;
and, a polyvinylpyrrolidone adhesive having a molecular weight between the range of 40,000 to 360,000.

5. An adhesive stick applicator comprising: a remeltable adhesive composition comprising;
a metal salt of an aliphatic carboxylic acid having from 8 to 36 carbon atoms, the metal portion of said metal salt being selected from the group consisting of Group II metals, and Group III metals,
a liquid dispersant,
a water soluble chelating agent in an amount sufficient to chelate the metal portion of the carboxylic acid salt to render the carboxylic acid salt soluble in the liquid dispersant, and
a polyvinylpyrrolidone adhesive having a molecular weight between the range of 40,000 to 360,000; a relatively vapor impermeable housing enclosing said adhesive composition; and,
means to expose said adhesive composition enclosed in said housing to enable said adhesive composition to be applied onto a substrate.

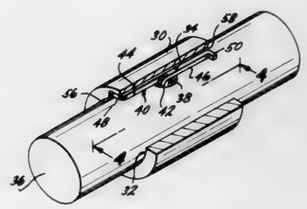
9. A composition suitable for use as a gel carrier comprising a metal salt of an aliphatic carboxylic acid having from 8 to 36 carbon atoms, the metal portion of said metal salt being selected from the group consisting of Group II metals and Group III metals, a liquid dispersant and a water soluble chelating agent in an amount sufficient to chelate the metal portion of the carboxylic acid salt to render the carboxylic acid salt soluble in the liquid dispersant.

3,964,833

KEYED RETAINER

Ralph F. Manriquez, San Jose, Calif., assignor to The Singer Company, New York, N.Y.

Filed May 21, 1975, Ser. No. 579,344
Int. Cl.² F16D *1/06*
U.S. Cl. 403—357 **3 Claims**



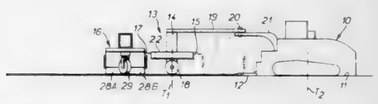
1. A means for coupling a sleeve in driving relationship to a shaft comprising:
a blind hole in said shaft,
longitudinal keyway means in said sleeve,
a spring means of substantially uniform cross-section comprising loop means formed centrally thereof insertable in said blind hole and provided with a pair of oppositely extending arms disposable in said keyway means, and
preformed tab means on said arms arranged to extend generally tangentially of the circumference of said shaft,
said keyway means being of a width sufficient to receive said tab means to permit disposition of said arms and tab means between said shaft and sleeve and to permit removal thereof without destruction,
said loop means, when inserted in said blind hole couple said sleeve and shaft circumferentially and said tab means engaging said sleeve, together with said loop means, position said sleeve longitudinally on said shaft.

3,964,834

APPARATUS FOR COMPACTING OR CONSOLIDATING A FRESHLY SURFACE STRIP

Michel Paramythioti, Chantilly; Emmanuel R. De La Sayette, Neuilly, and Jacques J. Girard, Gouvieux, all of France, assignors to Albaret S.A., Rantigny, France

Filed Jan. 27, 1975, Ser. No. 544,513
Claims priority, application France, Feb. 1, 1974, 74.03366
Int. Cl.² E01C *19/00*
U.S. Cl. 404—84 **18 Claims**



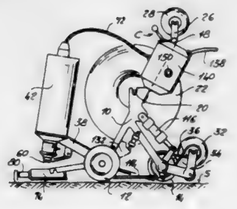
1. Apparatus for compacting or consolidating a surfaced strip, said apparatus comprising a self-propelled compacting machine having steering means for controlling the direction of movement of said machine, a guide vehicle displaceable along a strip in association with said compacting machine, means operatively associating said compacting machine with said guide vehicle for displacement along a strip with said guide vehicle; and means including a guide member on said guide vehicle for guiding said compacting machine along a path of travel about a vertical axis defined by a portion of said guide vehicle, and sensing means on said compacting machine cooperating with said guide member for indicating variations in the radial distance between said compacting machine and said guide member; automatic control means connected to said steering means and said sensing means and responsive to said sensing means for controlling the position of said steering means, thereby automatically adjusting the direction of movement of said compacting machine in response to variations in said radial distance.

3,964,835

DEVICE FOR FORMING MARKING STRIPES ON ROAD SURFACES

Ludwig Eigenmann, Vacallo, Canton Ticino, Switzerland

Filed Apr. 13, 1973, Ser. No. 350,830
Claims priority, application Italy, Apr. 15, 1972, 23179/72
Int. Cl.² B01F *7/00*; **E01C** *23/16*
U.S. Cl. 404—94 **17 Claims**



1. A road-marking device, comprising a vehicle for displacement over a road surface; container means mounted on said vehicle and including at least two compartments for separately confining different viscous components of a composition to be applied over the road surface; mixing means on said vehicle for mixing said viscous components so as to form said composition prior to application of the latter over the road surface, said mixing means comprising a mixing chamber having a downwardly facing outlet and located below and adapted to communicate with said compartments so as to permit descent of said viscous components into said mixing chamber by gravity, and said mixing means further comprising a rotary elongated mixer mounted for axial displacement in said mixing chamber and having a plug member at an end of said elongated mixer adjacent said outlet for closing the same when said mixer is stationary, said mixer having helically-arranged screw flights each having an inclined bottom surface extending generally radially in a sense away from said outlet, said inclined bottom surfaces being operative for pushing said mixer axially away from said outlet so as to open the same and permit the ejection of the resulting viscous composition as a function of the reaction force exerted by said viscous composition upon the inclined bottom surfaces during rotation of said mixer; a receptacle mounted on said vehicle below said outlet for receiving said composition and including a member movable between an open position in which the interior of said receptacle communicates with the road surface so as to permit application of said composition over the latter and a closed position, said receptacle having a trailing wall and also including doctor blade means on said wall for forming from said composition a layer of predetermined thickness over the road surface after application of said composition over the latter, said doctor-blade means including means for adjusting the vertical position thereof with respect to the road surface; support means on said vehicle for rotatably supporting at least one strip of marking material adapted to be applied over said layer; guide means for guiding said strip during application thereof over said layer; and pressure roller means positioned

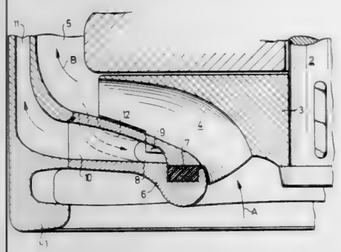
on said vehicle upstream of said receptacle as considered with respect to the direction of displacement of said vehicle over the road surface so as to pass over said composition subsequent to formation of said layer over the road surface.

3,964,836

METHOD OF PUMPING LIQUID WITH A SUBMERGED ROTARY PUMP AND PUMP FOR CARRYING OUT THE METHOD

Olav Rasmusson Navelsaker, Oslo, Norway, assignor to Thune-Eureka A/S, Oslo, Norway

Filed Feb. 5, 1974, Ser. No. 439,764
Claims priority, application Norway, July 5, 1973, 2765/73
Int. Cl.² F01D *25/00*; **F04B** *47/06*
U.S. Cl. 415—1 **6 Claims**



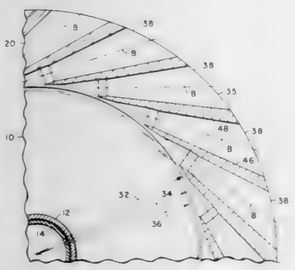
1. Method of pumping liquid by a submerged rotary pump that has an impeller that rotates about a vertical axis, said impeller having a pressure side to which said impeller delivers liquid upon rotation of said impeller, comprising rotating said impeller to pump the liquid up through a riser pipe until the liquid level has sunk to the pump, and thereafter causing the liquid in the riser pipe to pass down in bypass relation to the pump and into and up through a relatively narrow pipe which leads from the pump housing while continuing to rotate the impeller, thereby using the rotating impeller as check valve for the liquid.

3,964,837

ECCENTRIC PASSAGE PIPE DIFFUSER

John T. Exley, Milford, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Jan. 13, 1975, Ser. No. 540,601
Int. Cl.² F04D *21/00, 29/42*
U.S. Cl. 415—181 **7 Claims**



1. A diffuser whose inner periphery closely surrounds the impeller output stage of a radial flow centrifugal compressor having a capability for delivering a compressible fluid at supersonic velocity, said diffuser comprising:

an annular entrance space for receiving the fluid discharged from said impeller, said entrance space being formed by spaced apart walls aligned respectively with the front shroud and rear hub of the impeller;

a plurality of intersecting passages extending outwardly from said annular entrance space, in a tangential direction from the inner periphery of said diffuser, each of said passages being of curvilinear cross section with an entrance throat, the centerline of said throat being stepped, said throat being contoured to match the velocity vector profiles of fluid particles delivered by said impeller, and having in the region downstream of said entrance throat an area of expanding cross section extending toward the exhaust end of said passage; and

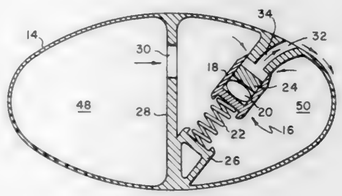
an external annulus for collecting the pressurized fluid delivered by the multiplicity of said passages.

3,964,838

BALANCED AIRFLOW CONTROL VALVE FOR HELICOPTER BLADE

John D. Spargo, 1511 Riverdale Drive, Annapolis, Md. 21401

Filed Sept. 24, 1973, Ser. No. 400,108
Int. Cl.² B64C *27/18*
U.S. Cl. 416—20 R **6 Claims**



1. A hollow airfoil;

a fluid passage means longitudinally of the surface of said airfoil and communicating with its interior;

said passage means including opposed interior openings along its length and a guide member, and fluid pressure balanced valve means;

said valve means including an U-shaped member slidable axially of said passage means;

means controlling operation of said U-shaped member for controlling flow through said passage means.

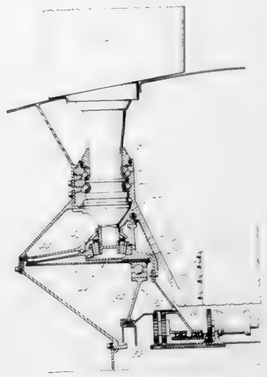
3,964,839

PITCH CHANGE MECHANISM

Edward H. Kusiak, Longmeadow, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 21, 1974, Ser. No. 516,710
Int. Cl.² B64C *11/32*
U.S. Cl. 416—160 **4 Claims**

1. In a pitch change actuator for varying the blade angle of a blade of a rotor wherein the pitch change actuator is adapted for mounting in said rotor and has a harmonic drive unit including a rigid spline rotatable in one direction and a flexispline rotatable in an opposite direction, the improvement which comprises first means for interconnecting said rigid spline and said blade for travel in said one direction and second means for interconnecting said flexispline and said blade for travel in said opposite direction, said first and second means simultaneously imparting by said rigid spline and said flexispline a coupled moment to said blade for pitch change movement thereof.

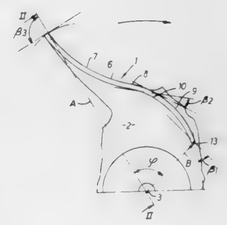


3,964,840

BLADE FOR A CENTRIFUGAL PUMP IMPELLER

Eduard Kamelmacher, 8 Brook Lane, Bexley, Kent, England

Filed Dec. 30, 1974, Ser. No. 537,376
Claims priority, application United Kingdom, Jan. 11, 1974, 1521/74
Int. Cl.² F01D *5/22*
U.S. Cl. 416—183 **10 Claims**



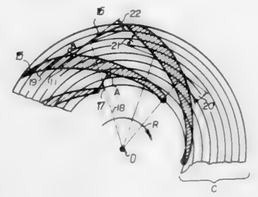
1. A blade for a centrifugal impeller and rotatable about a blade rotational axis comprising a pressure end or blade tip lying on a first radius about said blade rotational axis, a suction end opposite to said pressure end on a second radius about said blade rotational axis angularly spaced from said first radius with said second radius leading in the direction of intended blade rotation and inclined towards said blade rotational axis from one side of said blade to the other side of said blade and a pumping surface lying between said pressure end and said suction end including a concave portion adjacent said pressure end running into a convex portion adjacent said suction end, and having a first angle defined by a tangent to said pumping surface at its said suction end and a tangent at this point to a circle with center on said rotational axis and radius equal to the distance of said suction end from said rotational axis in the range 25°–90°, a second angle defined by a tangent to said pumping surface at the beginning of said inclination of said suction end of the blade and a tangent at this point to a circle with its center on said rotational axis and radius equal to the distance of said beginning of said inclination from said rotational axis in the range 15°–35° but smaller than said first angle and a third angle defined by a tangent to said pumping surface of said blade at its pressure end and a tangent at this point to a circle with its center on said rotational axis and a radius equal to the distance of said pressure end of said blade from said rotational axis in the range 60°–100°.

3,964,841

IMPELLER BLADES

Oldrich Strycek, Bratislava, Czechoslovakia, assignor to Sigma Lutin, Narodni Podnik, Lutin, Czechoslovakia

Filed Sept. 18, 1974, Ser. No. 507,211
Int. Cl.² F01D *5/04*
U.S. Cl. 416—186 R **2 Claims**



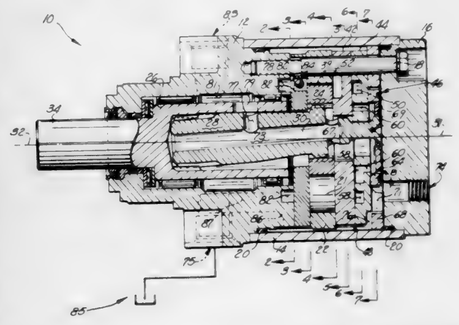
1. In a blade for a multi-blade rotary impeller of a hydrodynamic pump, fan or the like, comprising a curved pressure surface and a curved suction surface tapering at each end to meet in a trailing and leading edge, the improvement wherein the angles of inclination forming the curvature of the pressure surface increase gradually to a maximum value from the leading edge to a first point from which they thence decrease toward the trailing edge, the angles of inclination forming the curvature of the suction surface gradually decrease to a minimum value from the leading edge to a second point from which they thence increase toward the trailing edge, said first point being the point at which a first logarithmic spiral of said blade, running from the trailing edge of the adjoining blade on the pressure side and crossing the blade channel, intersects said pressure surface, and said second point being the point at which a second logarithmic spiral of said blade, running from the leading edge of the adjoining blade on the suction side and crossing the blade channel, intersects said suction surface.

3,964,842

HYDRAULIC DEVICE

Hollis N. White, Jr., West Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed Jan. 20, 1975, Ser. No. 542,574
Int. Cl.² F01C *1/02*; **F03C** *3/00*; **F04C** *1/02*
U.S. Cl. 418—15 **6 Claims**



1. A hydraulic device comprising an internally toothed first gear and an externally toothed second gear eccentrically located within said first gear, means supporting said gears for relative rotary and orbital movement, the number of teeth of said second gear being one less than the number of teeth on said first gear, the form of the gear teeth of said first and

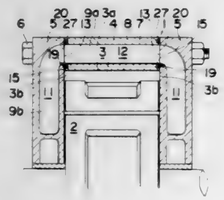
second gears being such that relative rotary and orbital movement occurs while said gears are supported and guided by the meshing teeth thereof, the gear teeth of said first and second gears defining pockets which expand from a minimum volume to a maximum volume and then contract to said minimum volume upon relative rotational and orbital movement thereof, commutation valve means for connecting said expanding pockets with one side of a fluid pressure system and for connecting said contracting pockets with the other side of the fluid pressure system in synchronism with said relative rotary and orbital movement of said first and second gears, said commutation valve means including means for directing fluid to and from said pockets from one axial side thereof, and valve means for selectively directing fluid into any expanding pocket from the other axial side thereof in response to the fluid pressure in said expanding pocket falling below a predetermined level and for blocking fluid flow out of any contracting pocket from said other axial side thereof in response to the fluid pressure in said contracting pocket rising above a predetermined level.

3,964,843

SEAL MEANS FOR ROTARY PISTON ENGINE

Yasuto Terazawa, and Fumio Imamaru, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Japan

Filed Dec. 31, 1974, Ser. No. 537,822
Claims priority, application Japan, Jan. 14, 1974, 49-7640
Int. Cl.² F01C *19/00, 21/06;* **F02B** *53/00;* **F02F** *11/00*
U.S. Cl. 418—83 **17 Claims**



1. In a rotary piston internal combustion engine comprising a casing having a rotor housing provided with a trochoidal inner peripheral wall surface and a pair of side housings sealingly secured to the opposite sides of the rotor housing;

a polygonal rotary piston disposed in said casing for planetary revolution and rotation so as to define working chambers between the casing and the rotor, each of said working chambers being variable in volume during the planetary motion of said rotary piston to thereby perform four strokes of intake, compression, power and exhaust;

cooling fluid passage means provided in the side housings;

cooling fluid passage means axially extending through said rotor housing and communicating with said corresponding passage means in the side housings so as to allow flow of cooling fluid to pass from one of the side housings through said passage means in the rotor housing to the other side housing;

sealing grove means provided on at least one of the mating surface of the rotor housing and each of the side housings at an area between the passage means in the rotor housing and the inner peripheral wall surface and having a form of an ellipse;

the improvement comprising seal means fitted in the sealing groove means to prevent the leakage of the cooling fluid from the passage means into the working chamber;

said seal means being a seal member having a heat-resistant rubber body to prevent the leakage of the cooling fluid from the passage means to the working chamber;

a first backup layer made of synthetic resin having less elasticity than the seal member and provided on the outer peripheral face of the seal member, which face is directed toward the cooling fluid passage of the rotor housing; and

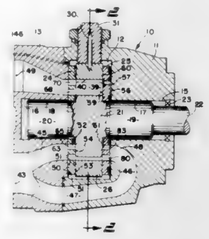
a second backup layer made of metal plate having less elasticity than the first backup layer and provided on the outer peripheral face of the first backup layer, which face is directed toward the cooling fluid passage of the rotor housing.

3,964,844

VANE PUMP

Charles H. Whitmore, Plainwell; Paul K. Houtman, Kalamazoo, and Elwyn E. Engelter, Otsego, all of Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Sept. 24, 1973, Ser. No. 399,854
Int. Cl.² F04C *15/00*
U.S. Cl. 418—133 **24 Claims**



1. In a vane pump having a housing with a pumping chamber intersected by inlet and outlet ports and a rotor in the chamber for conducting fluid from the inlet to the outlet when rotated and for pressurizing the fluid so conducted to the outlet, and a side plate between a side of the rotor and a wall of the housing, the improvement that comprises means providing a pressure area on the side of the plate next to said wall, passage means for conducting a portion of said pressurized fluid to said area for pressure biasing the plate toward said rotor, a groove in said plate on the side next to said rotor, means including a restricted passage for conducting a portion of said pressurized fluid to said groove, said plate having a bearing surface adjacent said groove and in close proximity to said side of said rotor, and passage means leading from a portion of said bearing surface remote from said groove to a low pressure zone within the pump whereby fluid entering said groove through said restricted passage will leave said groove between said bearing surface and said rotor and will permit the plate to move toward or away from said rotor to establish a predetermined clearance between said bearing surface and rotor when the fluid pressure forces acting on both sides of the plate on said area and on said groove and bearing surface are balanced; said restricted passage having a flow capacity and consequent pressure drop effective to vary the fluid pressure in said groove upon variance of said predetermined clearance to thereby unbalance said fluid pressure forces for moving said plate toward or away from said rotor owing to flow of fluid from said groove being greater than or less than the flow of fluid through said predetermined clearance.

3,964,845

APPARATUS FOR REPAIRING CONDUCTOR INSULATION

Thomas W. Duggan, and Richard P. McNerney, both of Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 26, 1974, Ser. No. 536,381
Int. Cl.² B29F *1/10*
U.S. Cl. 425—13 **22 Claims**

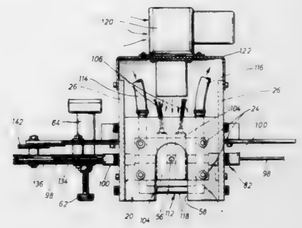
1. Apparatus for repairing insulation of an insulated conductor, which comprises:

a. a split yoke comprising first and second plates, at least one of said plates being movable relative to the other of said plates, said first and second plates having mating surfaces defining a molding zone;

b. an elongate, substantially cylindrical cavity formed in the mating surfaces of said first and second plates;

c. an elongate, split, substantially cylindrical conductor mold removably positioned in said cavity, said conductor mold being adapted to hold the insulated conductor during repair and having an inside diameter substantially equal to the original dimensions of the insulated conductor, said conductor mold including a central area corresponding to the area of the insulated conductor being repaired and end areas outside the central area;

d. an opening in said conductor mold for the introduction of insulator, said opening communicating with the area of the insulated conductor being repaired;



e. an injection bore through one of said plates, one end of said injection bore terminating adjacent said opening in said conductor mold;

f. injection molding means communicating with said injection bore to inject insulator into said conductor mold through said injection bore and opening;

g. means for moving at least one of said plates relative to the other of said plates to bring said plates into a closed molding position and an open position for removal of said conductor mold from said cavity;

h. heater means within said yoke to melt said insulator over only an area comprising the central area of said conductor mold; and

i. cooling means within said yoke to cool only the end areas of said conductor mold while said central area is heated, whereby the heat applied to insulated conductor within said conductor mold does not extend to insulated conductor outside the molding zone.

3,964,846

APPARATUS FOR MANUFACTURE OF POWER TRANSMISSION BELTS

Robert H. Bliss, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 95,171, Dec. 4, 1970, abandoned. This application May 7, 1973, Ser. No. 357,766
Int. Cl. B29d *29/00;* **B29c** *17/00;* **B29h** *7/22*
U.S. Cl. 425—28 B **3 Claims**

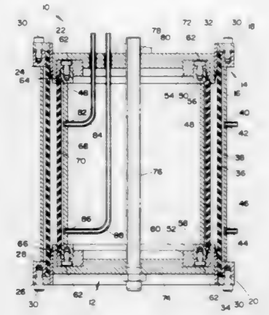
1. An apparatus for molding a power transmission belt sleeve having a tensile reinforcement disposed therein, comprising:

an inner cylindrically continuous flexible diaphragm that defines an inner mold surface;

an outer cylindrically continuous diaphragm that defines an outer mole surface, the inner and outer diaphragms radially spaced from and substantially concentric with each other for sandwiching the belt sleeve;

first pressure means for radially expanding the inner diaphragm out against the belt sleeve and applying outward radial pressure to mold that portion of the belt sleeve inward of the tensile reinforcement while tensioning the reinforcement;

second pressure means for radially contracting the outer diaphragm against the belt sleeve and applying inward radial pressure to mold that portion of the belt sleeve outward of the tensile reinforcement; and



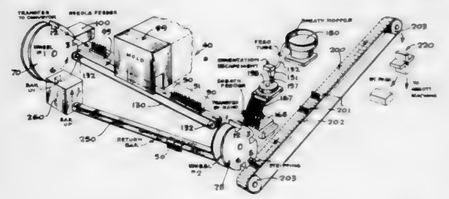
means for controlling pressure of the first and second pressure means for maintaining pressure of the first pressure means greater than the pressure of the second pressure means for maintaining tension reinforcement.

3,964,847

CONTINUOUS AUTOMATED PLASTIC MOLDING APPARATUS

Wilbert Redmer, Boca Raton; Kenneth Rolin, Del Ray Beach, and Herman Nittel, Boca Raton, all of Fla., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 7, 1972, Ser. No. 241,934
Int. Cl.² B29D *3/00*
U.S. Cl. 425—125 **3 Claims**



1. In an apparatus for molding including a molding machine having mold sections for receiving a mold core or insert, said apparatus comprising:

a carrier having a mold core or insert supporting means thereon for presenting the mold core or insert to the mold in said molding machine;

a first rotatable, indexable, trunnion transfer wheel positioned on a first side of said molding machine and having a plurality of carrier receiving positions on the periphery thereof, said first transfer wheel receiving and transferring said carrier to various positions around the periphery thereof;

a second rotatable, indexable, trunnion transfer wheel positioned on a second side of said molding machine opposite said first trunnion transfer wheel and having a plurality of carrier receiving positions on the periphery thereof, said second transfer wheel receiving and transferring said carrier with molded parts thereon;

conveyor means separate from said trunnion transfer wheels positioned in relation to said first trunnion transfer wheel, molding machine, and second trunnion transfer wheel for transporting the carrier from the first transfer wheel to the mold in the molding machine to the second transfer wheel, said conveyor means comprising an endless chain revolving about a pair of opposed sprockets, one each of

said sprockets positioned adjacent each of said trunnion transfer wheels;

driving means for moving said conveyor means to advance the carrier to and away from said molding machine from the first trunnion transfer wheel to the second trunnion transfer wheel, the driving means comprising engageable rack and pinion gears, the pinion gear affixed to one of the sprockets and an air cylinder in engagement with the rack to drive the rack a predetermined distance, preselected to position the carrier within the mold in the molding machine and to transfer the carrier from the molding machine to a position adjacent the second trunnion transfer wheel after the molding cycle is completed; and

return means connecting the second trunnion transfer wheel and the first trunnion transfer wheel for transferring the carrier from the second trunnion transfer wheel back to the first trunnion transfer wheel after the molded parts have been removed from the carrier.

3,964,848

CALENDERING OF SYNTHETIC PLASTICS FILM

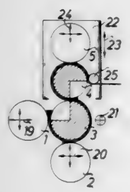
Willi Wockener, Hannover-Kleefeld, Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover-Kleefeld, Germany

Filed Sept. 13, 1974, Ser. No. 505,913

Claims priority, application Germany, Sept. 15, 1973, 2346543

Int. Cl.² B29D 7/14

U.S. Cl. 425—224 **2 Claims**



1. In a five-roll calendar for calendering synthetic plastics film an arrangement of said five-rolls such that a third calender roller of said five-roll calender co-operates with a laterally preceding first calender roller, set at the same height as said third calender roller, to form a first working roller gap, and cooperates with a second calender roller disposed beneath said third calender roller to form a second working roller gap, and cooperates with a fourth calender roller disposed above said third calender roller to form a third working roller gap, and said fourth calender roller co-operates with a fifth calender roller to form a fourth roller gap, a pull-off roller cooperating with said fourth calender roller to form a fifth roller gap located three-quarters of the circumference of said fourth calender roller from said third roller gap, the arrangement being such that said film is looped around three-quarters of the circumference of said third calender roller and three-quarters of the circumference of said fourth calender roller before being pulled off said fourth roller.

3,964,849

MOLD APPARATUS FOR CONTINUOUSLY PRODUCING LAMINATED RESINOID MATERIAL

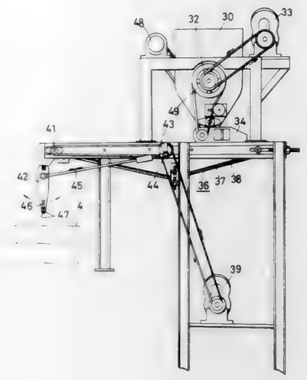
Heijiro Fukuda, No. 123, 3-chome, Umegaoka, Nagaokakyo Kyoto, Japan (617)

Division of Ser. No. 494,015, Aug. 1, 1974. This application Apr. 23, 1975, Ser. No. 570,982

Claims priority, application Japan, Oct. 9, 1973, 48-113718; Oct. 9, 1973, 48-113720; Oct. 9, 1973, 48-117761[U]; Mar. 18, 1974, 49-31284

Int. Cl.² B29D 7/02

U.S. Cl. 425—224 **2 Claims**



1. In an apparatus for feeding a powdery to granular resinoid abrasive composition having a belt conveyor having a conveying surface, a feed means disposed above the rear end of the conveyor surface of the belt conveyor and including a crasher, and a pivotally movable feeding tube provided at the front end of the belt conveyor, the improvement comprising:

means for intermittently driving the belt conveyor for a predetermined period of time;

a pair of walls provided at opposite lateral sides of the conveying surface of the belt conveyor for regulating the abrasive composition to be fed to a predetermined width; and

slitter means provided at the rear end of said conveying surface of the belt conveyor and positioned at an adjustable specified level thereabove between the pair of walls for regulating the abrasive composition to be fed to a predetermined height onto the conveying surface.

3,964,850

THERMOPLASTIC SHEET PRESSURE FORMING MACHINE

Frank Carnegie, Jr., Montville, N.J., assignor to Camid Intermatic, New York, N.Y.

Filed Nov. 27, 1974, Ser. No. 527,587

Int. Cl.² B29C 3/06, 5/06

U.S. Cl. 425—292 **9 Claims**

1. A forming apparatus for molding thermoplastic sheet material comprising:

a. a base,

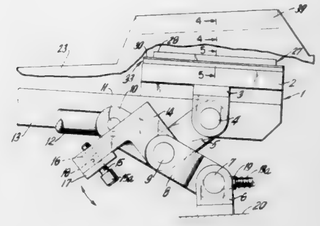
b. a platen and mold plate assembly on said base, said platen and mold plate assembly being openable and closeable relative to each other,

c. said mold plate assembly being provided with at least one forming mold section, a flexible member of elastic material attached as part of said mold plate assembly and forming at least a partial border around the lower portion of said forming mold section, a seal-off plate slidably mounted on said mold plate assembly and defining a peripheral outline and projecting upwards from said forming section and resting on said elastic material,

d. transport means mounted on said base for bringing said mold plate assembly into and out of said closed relationship with said platen when a sheet of thermplastic sheet material is positioned therebetween and held in a sealed relation with said base plate assembly by said seal-off plate.

e. cutting means carried by said mold plate assembly and defining a peripheral outline of the portion of the thermoplastic sheet to be cut, said cutting means being recessed below said seal-off plate except when said seal-off plate is pushed into said flexible member;

f. limiting means associated with said platen and mold plate assembly for limiting said closed relationship between



platen and mold plate assembly to a point where the seal-off plate holds the thermoplastic sheet in a sealed relation to said mold plate assembly without said seal-off plate being depressed into said elastic material,

g. pressure means associated with said platen and mold plate assembly for applying pressure to said thermoplastic sheet, first to hold the sheet against the platen, then to move the thermoplastic sheet into said forming section, and

h. retracting means connected to said limiting means for retracting said limiting means permitting a full closure of said closed relation thereby depressing said seal-off plate into said elastic material and thereby exposing the cutting means to cut the formed article from said thermoplastic sheet.

3,964,851

APPARATUS FOR CURING ELONGATE WORKPIECES

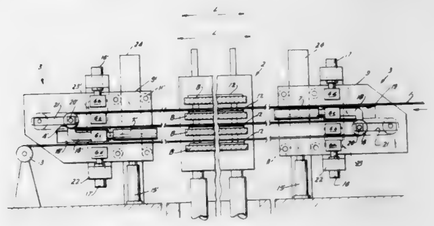
Hendrikus-Johannes Bongers, Eindhoven, Netherlands, assignor to G. Siempelkamp & Co., Krefeld, Germany

Filed Aug. 27, 1975, Ser. No. 608,347

Claims priority, application Germany, Aug. 27, 1974, 2441081

Int. Cl.² B29C 3/00, 17/02

U.S. Cl. 425—324 R **10 Claims**



1. An apparatus for curing a web of polymeric material, comprising:

a press with a stack of heated platens, including a top platen, a bottom platen and at least one intermediate platen, forming a plurality of superposed curing stages between them;

a pair of stretching stations flanking said press, each of said stations being provided with web-engaging means for leading a web in several passes through said stations and said stages, said web-engaging means including a clamping section in each of said stations and a deflecting section in at least one of said stations, said clamping section being provided with at least a top jaw and an intermediate jaw at one station and with at least an intermediate jaw and a bottom jaw at the other station substantially aligned with said platens for bracketing at least the outermost passes of said web entering and leaving said stages, at least one of said sections of said web-engaging means at each of said stations being horizontally movable relatively to said press for stretching said web upon a gripping of at least one pass thereof by said clamping section, said web-engaging means at each of said stations being vertically shiftable relatively to said press between a first and a second position, said web-engaging means in said first position holding said passes at levels substantially midway between confronting surfaces of an associated platen pair in an open state of the press, said web-engaging means in said second position holding each of said passes onto a surface of the associated platen pair in said open state of the press;

intermittently operable actuating means for operating said clamping section at each of said stations to grip said web in said first position with the press in its open state, displacing said horizontally movable sections at said stations away from each other to stretch the passes of said web spacedly extending between said platens, vertically shifting said web-engaging means at each of said stations from said first position to said second position, thereupon closing said platens on the passes of said web with a vertical motion opposite that of the shifting of said web-engaging means into said second position, vertically shifting said web-engaging means in said opposite direction into said first position at each of said stations, reopening the press after the curing of web portions subjected to heat and pressure between said platens, releasing said web from said clamping at each of said stations, and returning said horizontally movable sections to their original positions; and

feed means operative upon a reopening of said platens and the release of said web from said clamping sections for positioning previously uncured web portions between said platens.

3,964,852

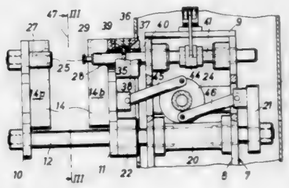
DEVICE FOR PRODUCING HOLLOW BODIES OF THERMOPLASTIC MATERIAL

Wilhelm Marflewicz, Berlin, Germany, assignor to Emil Korsch Spezialfabrik fur Komprimiermaschinen, Germany

Filed Sept. 30, 1975, Ser. No. 618,112

Int. Cl.² B29D 23/03

U.S. Cl. 425—326 B **8 Claims**



1. In a device for producing hollow bodies of thermoplastic material, of the type including a multi-part hollow mold mounted in a closure assembly, having a frame and movable

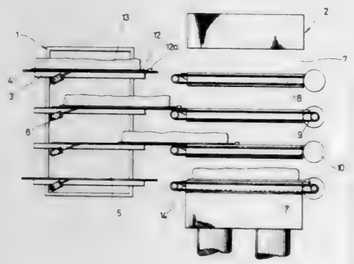
in a housing between a blow station and a plasticating unit, on relatively movable mold platens carried by two supporting bars extending below the hollow mold in the closure assembly, the improvement comprising a locking mechanism provided on the upper parts of the mold platens, said locking mechanism comprising, in combination, a locking bush firmly secured to one mold platen; and a locking rod rotatably mounted in the other mold platen but fixed against axial displacement relative thereto; said locking rod having a lock head, designed as a symmetric hammer head, adapted to lockingly engage said locking bush; said locking bush having an opening conformable to said hammer head and formed with diametrically opposite catch webs; said hammer head having faces adapted to engage behind said catch webs upon rotation of said locking rod, said faces extending circumferentially of said locking rod and obliquely relative to the axis thereof; said locking mechanism being located at the corner of a right triangle situated in the junction plane of said hollow mold and whose other corners are the axes of said two supporting bars, the right angle of said triangle being at the axis of that supporting bar which is the trailing supporting bar considered in the direction of movement of said closure assembly from said blow station toward said plasticating unit.

3,964,853

APPARATUS FOR LOADING MULTI-STAGE HEATING PRESSES

Werner Fledges, and Peter van Hullen, both of Krefeld, Germany, assignors to Becker & van Hullen Niederrheinische Maschinenfabrik, Krefeld, Germany

Filed Nov. 13, 1974, Ser. No. 523,312
Int. Cl.² B29C *3/00*
U.S. Cl. 425—338 **5 Claims**



1. Apparatus for charging a multiple-opening hot-moulding press having a plurality of vertically spaced platens, and having an entrance side and an exit side, comprising:

a feed basket located on the entrance side of the press, said feed basket having a plurality of horizontal shelves corresponding in number with the press platens, said shelves being substantially in horizontal register with their respective press platens;

a pallet slidably supported on each of said shelves;

a flexible transport support resting on each of said pallets, said flexible transport serving to carry the material to be pressed;

laterally extending towing strips fixed to the front ends of said flexible transport strips, the ends of said towing strips projecting laterally beyond the side edges of the transport support and beyond the side edges of the press platens;

means on said feed basket for linearly moving each of said pallets with its respective flexible transport support carried thereon toward the corresponding press platen until the pallet abuts against the press platen, and their respective top surfaces form a smoothly faired, continuous surface;

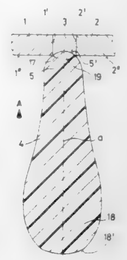
driving means movable alongside said press platen and engageable with the laterally projecting ends of said towing strips to pull said transport support off of said pallet and onto the press platen.

3,964,854

DEVICE FOR FINISHING TILE JOINTS

Johannes Groeneveld, Varrentrappstrasse 51, D-6 Frankfurt am Main, Germany

Filed June 6, 1974, Ser. No. 477,314
Claims priority, application Germany, June 8, 1973, 2329312
Int. Cl.² B29C *23/00*; **B29F** *3/012*; **E04G** *21/20*
U.S. Cl. 425—458 **18 Claims**



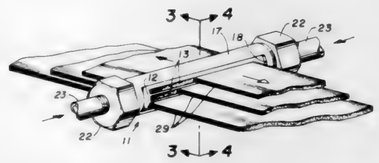
1. A scraping and pressing tool or device for finishing the surface of a jointing material between tegular elements applied to a surface and wherein said elements lie in the same plane, comprising a head, and a support therefor adapted to be gripped by hand for manipulation of the device, the terminal shape of said head being hemispherical in form such that it can be brought into operational engagement with the adjoining edges of adjacent tegular elements defining a joint with limited contact at each said edge and with a continually diminishing transverse dimension from the contact regions to the center portion of said head along said joint.

3,964,855

TUBULAR SPINNERETTE ASSEMBLY

Maurice J. Jones, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 19, 1974, Ser. No. 498,355
Int. Cl.² D01D *3/00*
U.S. Cl. 425—463 **1 Claim**



1. A spinnerette assembly, comprising

a. a tubular spinning element having therein a plurality of spinning orifices positioned in rectangular arrays extending along the spinning element, said spinning element also having flange means extending along the length thereof,

b. a tubular support member enclosing the spinning element and having therein internal groove means for receiving the flange means on the spinning element to prevent relative movement of said element and said member, said support member also having therein elongated slot means positioned to expose the arrays of spinning orifices in the spinning element,

c. inlet line means positioned to feed a spinning composition axially into the spinnerette assembly,

d. gasket means positioned between the spinning element and the inlet line means, and

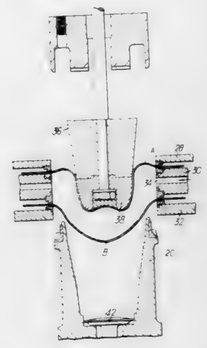
e. means for securing the inlet line means to the support member.

3,964,856

VACUUM MOULDING TECHNIQUES

Robert H. Day, Bracknell, England, assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 424,395, Dec. 13, 1973, abandoned. This application June 16, 1975, Ser. No. 587,509
Claims priority, application United Kingdom, Dec. 19, 1972, 58608/72
Int. Cl.² B29C *17/04*
U.S. Cl. 425—503 **1 Claim**



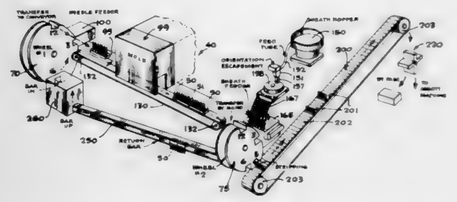
1. Apparatus for molding open-ended containers from two sheets of thermoplastic material, said apparatus comprising three annular clamp plates mounted in a vertically stacked parallel arrangement and movable in parallel in a vertical direction to clamp said sheet material therebetween, means for holding a first roll of one thermoplastic sheet material, a first waste roller, the sheet material from said first roll adapted to extend horizontally between the middle and upper clamp plates of said three clamp plates for feeding said one sheet material from said first roll horizontally between the middle and upper clamp plates of said three clamp plates when said middle and upper clamp plates are vertically separated, means for holding a second roll of a second thermoplastic sheet material, a second waste roller, the sheet material from said second roll adapted to extend horizontally between the middle and lower clamp plates of said three clamp plates for feeding said second sheet material from said second roll horizontally between the middle and lower clamp plates of said three clamp plates when said middle and lower clamp plates are vertically separated, heating means for heating said one and said second sheet material from said first and second rolls, said heating means mounted horizontally between said rolls and said three clamp plates to heat said one and said second sheet material, an open-ended thermoforming die mounted with the open end thereof below and concentrically within said lower clamp plate and movable relative to said three clamp plates in a vertical direction, a thermoforming plunger mounted above and concentrically within said upper clamp plate and vertically movable to engage and force said one and said second sheet material clamped between said three clamp plates downwardly into said thermoforming die, an annular cutoff die mounted above and concentrically about said plunger and selectively movable independently of said plunger through said three clamp plates and into cooperation with the open end of said thermoforming die to selectively clamp and cut off the portions of said one and said second sheet material within said three clamp plates, said middle clamp plate having an air port for selective application of air under pressure between said one and said second sheet material clamped between said three clamp plates, and air port means formed between said cutoff die and said plunger for selective application of air under pressure to the upper side of said one of said one and said second sheet material when said cutoff die cooperates with said open end of said thermoforming die.

3,964,857

CONTINUOUS AUTOMATED PLASTIC INJECTION MOLDING APPARATUS FOR MAKING SYRINGES HAVING A COVERING SHEATH

Wilbert Redmer, Boca Raton; Kenneth Rolin, Del Ray Beach, and Herman Nittel, Boca Raton, all of Fla., assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 241,934, April 7, 1972. This application Dec. 13, 1974, Ser. No. 532,551
Int. Cl.² B29D *3/02*
U.S. Cl. 425—515 **6 Claims**



1. In an apparatus for molding and assembling a syringe barrel having a needle hub with a needle molded therein and a sheath inserted on the hub to cover and protect the needle, said apparatus including a molding machine having mold sections for receiving a mold core, said apparatus comprising:

a carrier having a mold core shaped to conform to the syringe barrel extending therefrom for presenting the mold core to said molding machine;

a first rotatable, indexable trunnion transfer wheel positioned on one side of said molding machine and having a plurality of carrier receiving cradles on the periphery thereof, said first transfer wheel receiving and transferring said carrier to various positions around the periphery thereof;

a needle feeding station positioned adjacent said first trunnion transfer wheel, said station including needle feeding means for positioning a needle in the core extending from the carrier, said transfer wheel being indexable to said needle feeding station;

a second rotatable, indexable trunnion transfer wheel on the other side of said molding machine opposite said first trunnion transfer wheel and having a plurality of carrier receiving cradles on the periphery thereof, said second transfer wheel receiving and transferring said carrier with a molded syringe barrel thereon;

a sheath feeding and loading station positioned adjacent said second trunnion transfer wheel, said station including sheath feeding and loading means for inserting a sheath on the needle hub on the syringe barrel;

an unloading station positioned adjacent said second trunnion transfer wheel following said sheath feeding and loading station, said unloading station including unloading means for removing and releasing the molded syringe barrel from the core on the carrier, said second transfer wheel being indexable to said sheath feeding and loading and unloading stations;

means for indexing said trunnion transfer wheels;

conveyor means connecting said first trunnion transfer wheel, molding machine and second trunnion transfer wheel for transporting the carrier from the first transfer wheel to the mold in the molding machine to the second transfer wheel;

driving means for moving said conveyor means to advance the carrier to and away from said molding machine from the first trunnion transfer wheel to the second trunnion transfer wheel;

means for ejecting the carrier from the first trunnion transfer wheel onto the conveyor means;

return means connecting the second trunnion transfer wheel and the first trunnion transfer wheel for transferring the carrier from the second trunnion transfer wheel back to the first trunnion transfer wheel after the molded and assembled syringe barrel has been removed from the core on the carrier; and

means for ejecting the carrier from the second trunnion transfer wheel onto the return means.

3,964,858

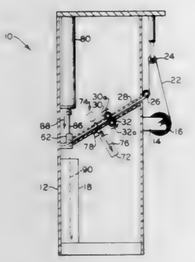
AUTOMATIC CANDLE-WICKING MACHINE

Norman J. Marik, Sibley Drive, Selmer, Tenn. 38375

Filed Sept. 30, 1974, Ser. No. 510,157

Int. Cl.² F23D *3/16*

U.S. Cl. 431—288 **7 Claims**



1. Apparatus to effect wicking of candles which comprises,

a roll of candle wick,

means to measure and cut off a length of wick,

a candle, and

an integral fixed wicking tube supported above the candle having one opening to receive the candle wick, and a second opening at an angle to the one opening, a wicking rod adapted to be received into the second opening, said second opening having an extended length to receive the wicking rod in close fitting sliding relation to serve to support and guide the wicking rod, and means to move the wicking rod to engage near the end of the candle wick and drive it into the candle on the central axis thereof to substantially the full length of the candle.

3,964,859

VAPORIZING TYPE LIQUID FUEL COMBUSTION APPARATUS

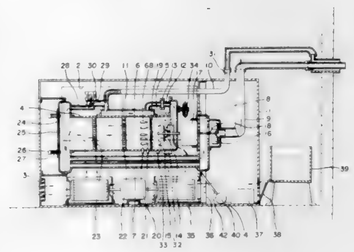
Atsuyoshi Nishi; Isamu Kawabuchi; Katuo Yashiro, all of Nakatsugawa; Kenichi Ono, and Yoshiaki Furuya, both of Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1975, Ser. No. 557,094

Claims priority, application Japan, Mar. 11, 1974, 49-29101[U]; Mar. 11, 1974, 49-29100[U]; Mar. 11, 1974, 49-28737; Mar. 11, 1974, 49-29102[U]

Int. Cl.² F23H *1/00*

U.S. Cl. 431—78 **4 Claims**



1. A vaporizing type liquid fuel combustion apparatus comprising:

a vaporization chamber for vaporizing a liquid fuel,

a combustion chamber coupled to said vaporization chamber for receiving fuel and for forming vaporized fuel,

a fuel tank,

an electric pump coupled to said fuel tank and to said vaporization chamber for feeding fuel from said tank to said vaporization chamber,

blower means coupled to said combustion chamber for feeding a mixture of air and vaporized fuel into said combustion chamber,

pump control means coupled to said electric pump for intermittently driving said pump in response to flame temperature in said combustion chamber,

said pump control means including a control element for supplying an AC voltage so that the average feed rate of said pump is between 0.3 and 0.08 cc/second.

3,964,860

METHOD FOR DYEING CARPETS AND THE LIKE

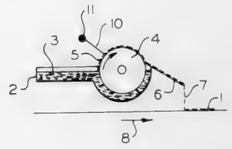
Ferdinand Leifeld, Kempen, Germany, assignor to Eduard Kusters, Krefeld, Germany

Filed Jan. 31, 1974, Ser. No. 438,333

Claims priority, application Germany, Dec. 11, 1973, 2361517

Int. Cl.² D06B *11/00*

U.S. Cl. 8—151 **10 Claims**



1. A method of dyeing textile materials such as a carpet so as to form random patterns thereon comprising the steps of:

a. rotating a roller in a trough of dye to form a dye film of width equal to that of the material for deposit onto the material;

b. placing a doctor blade in the form of an inclined plate in contact with said roller whereby said dye film of a width equal to the material width will be transferred to said inclined doctor blade;

c. continuously applying scraper blades to the surface of one of said roller and said doctor blade to alter the film thereon;

d. continuously varying the transverse position of said scraper blades with respect to time so as to form continuous strips varying amounts of dye which vary across the material width with respect to time; and

e. depositing the strips so formed on the textile material by permitting said strips to flow off said inclined plate and fall on material moving therebelow.

3,964,861

ALKOXYLATED ALIPHATIC AMINES TO INHIBIT OZONE FADING OF DYED POLYAMIDES

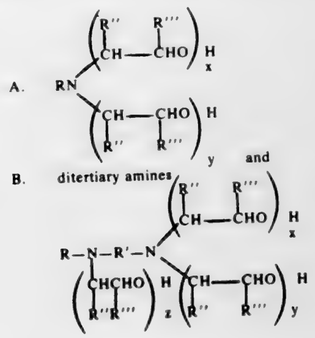
Robert Alden Lofquist, and Peter Reginald Saunders, both of Richmond, Va., assignors to Allied Chemical Corporation, Petersburg, Va.

Continuation-in-part of Ser. No. 211,695, Dec. 23, 1971. This application Jan. 28, 1974, Ser. No. 437,255

Int. Cl.² D06P *1/36*

U.S. Cl. 8—165 **6 Claims**

1. In a method for dyeing polycarbonamide fibers with anthraquinone dyes, the improvement comprising coating the fiber with a substance consisting essentially of a compound selected from the group consisting of tertiary amines



where R is an alkyl radical having 8 to 25 carbon atoms, R′ is an alkylene radical having 2 to 10 carbon atoms, R″ and R‴ are independently selected from hydrogen, a phenyl or an alkyl radical of 1 to 3 carbon atoms, provided that R″ and R‴ cannot both be hydrogen, *x*, *y* and *z* are each whole numbers, and in compound A (*x*+*y*) is not greater than 6, and in compound B (*x*+*y*+*z*) is not greater than 9, so that an amount of from about 0.4 to about 5 percent on weight of fiber remains on said fiber after dyeing to be exposed to ozone, whereby the dyed polycarbonamide fiber has improved fastness of dye when exposed to ozone.

3,964,862

PROCESS FOR DYEING AND PRINTING TEXTILE MATERIALS OF SYNTHETIC ORGANIC FIBERS

Purushottam Janardan Kangle, Goregaon-Bombay, India; Hermann Werdenberg, Basel, Switzerland; Klaus Artz, Muttenz, Switzerland; Visvanathan Ramanathan, Basel, Switzerland; Navnitrai Nagirji Naik, Goregaon-Bombay, India, and Branimir Milicevic, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 250,494, May 5, 1972, abandoned, which is a continuation of Ser. No. 41,094, May 27, 1970, abandoned. This application Sept. 21, 1973, Ser. No. 399,659

Claims priority, application Switzerland, June 3, 1969, 8411/69

Int. Cl.² D06P *3/00*

U.S. Cl. 8—176 **12 Claims**

1. A process for dyeing and printing textile material made of or containing fully synthetic hydrophobic linear polymers which are free from amino groups, comprising the steps of

1. padding the material with a dispersion dyestuff containing at least one carboxyl group and no sulfonic acid groups,
2. drying the padded textile material,
3. printing the dried textile material with a printing paste which contains heat-resistant alkaline compound as the only chemically reactive component, whereby the carboxyl-group-containing dyestuff forms a salt with the alkaline compound,
4. heating the textile material to fix the unreacted dyestuff thereon, and
5. washing the textile material to remove the dyestuff salt from the printed areas.

3,964,863

METHOD FOR IMPREGNATING WOOD

Guy Crockett Carr, 11635 SW. Canyon Road, Beaverton, Oreg. 97005

Continuation of Ser. No. 384,552, Aug. 1, 1973, abandoned, which is a continuation of Ser. No. 172,767, Aug. 18, 1971, abandoned. This application Sept. 9, 1974, Ser. No. 504,592

Int. Cl.² B27K *3/08, 7/00, 9/00*

U.S. Cl. 21—7 **6 Claims**

1. A method of impregnating members having a fibrous, capillary, cellular construction capable of fluid impregnation with a penetrating fluid comprising the steps of:

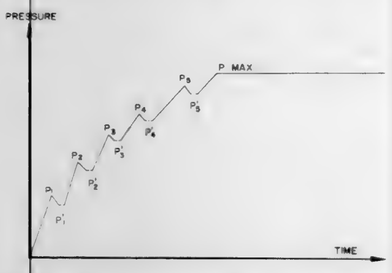
a. placing the members to be impregnated within a pressure chamber;

b. sealing said pressure chamber;

c. supplying said sealed pressure chamber with said penetrating fluid until said pressure chamber is filled therewith and until a first predetermined pressure level is reached within said pressure chamber;

d. discontinuing the supply of said penetrating fluid into said sealed pressure chamber without venting the chamber for a time sufficient to permit the pressure level in said sealed pressure chamber to decrease to a first stabilized pressure level below said first predetermined pressure level due to

the pressure of said penetrating fluid attaining equilibrium with the frictional and other forces in the cells of said member;



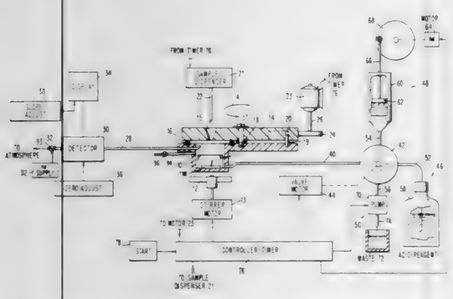
e. repeating steps (c) and (d) so that said penetrating fluid is intermittently pumped into said sealed pressure chamber to successively increased pressure levels until a maximum pressure level is reached.

3,964,864

METHOD AND APPARATUS FOR MEASURING CO_2, O_2, AND Cl IN BODY FLUIDS

Harald Dahms, 22 Lakeview Road, Ossining, N.Y. 10562

Filed Nov. 18, 1974, Ser. No. 524,793
Int. Cl.² G01N *33/16, 27/18*
U.S. Cl. 23—230 B **47 Claims**



47. A method for detection of a species in a sample of fluid, comprising the steps of:

placing said sample and a reagent in a vessel having a gas space with a given gas mixture therein to react said sample and said reagent to alter the composition of said given gas mixture,

transferring at least a portion of said altered gas mixture to a detector by adding a displacing liquid to said vessel,

measuring a stationary sample of said altered gas mixture in said detector,

draining said sample and reagent from said vessel, and

flushing said detector and said vessel with a flushing fluid.

3,964,865

LYOPHILIZED HUMAN HEMOGLOBIN STANDARD FOR COLORIMETRIC DETERMINATION OF TOTAL HEMOGLOBIN

Manik L. Das, Crestwood, Mo., assignor to Sigma Chemical Company, St. Louis, Mo.

Filed Jan. 30, 1975, Ser. No. 545,298
Int. Cl.² G01N *21/20, 33/16*
U.S. Cl. 23—230 B **11 Claims**

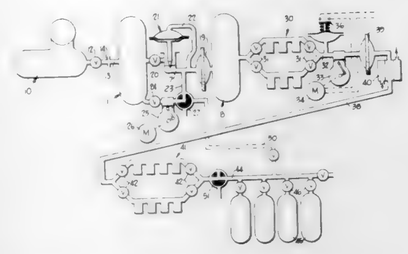
5. In a method of colorimetrically determining total hemoglobin in a sample solution wherein the hemoglobin is converted in solution to a methemoglobin derivative and the color of the resultant solution is compared with the color produced by a standard solution of the same methemoglobin derivative, the improvement wherein said standard solution is prepared from a known quantity of lyophilized methemoglobin.

3,964,866

HELIUM RECLAMATION

William Barney Shelby, 5 Rockbourne St., Elizabeth South, Australia (5112)

Filed Sept. 13, 1974, Ser. No. 505,551
Int. Cl.² B01J *1/22*; **B01D** *53/14*; **C01B** *23/00*
U.S. Cl. 23—252 R **6 Claims**



1. An apparatus for reclaiming helium from an admixture of gas provided to a diving means having a diving bell with a discharge valve comprising

a bell conduit having coupling means for connection to the discharge valve;

a first means coupled to the bell conduit for receiving the gas passed therethrough;

a second means coupled to the first receiver by an interconnecting conduit for receiving the gas passed therethrough;

a regulating valve means in the inteconnecting conduit for closing upon increase of pressure of the gas in the second receiver means;

compressor means coupled downstream of and to the second receiver means for increasing the gas pressure to a storage pressure;

storage means coupled downstream of and to the compressor means for receiving the pressurized gas and

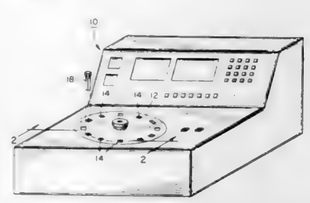
means for removing contaminants in the discharged gas between the diving bell and the storage means.

3,964,867

REACTION CONTAINER

John Franklin Berry, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.

Filed Feb. 25, 1975, Ser. No. 553,008
Int. Cl.² G01N *33/16, 21/24*; **B65D** *79/02*
U.S. Cl. 23—253 R **14 Claims**



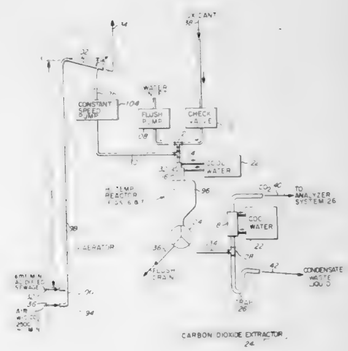
1. A singular reaction container of a nonflorescent, visible and ultraviolet radiant energy transmitting material for insertion in an automatic chemical analyzer, said analyzer causing energy to be applied through first and second energy paths, said first path being for measuring a chemical reaction occurring in said container and said second path being for detecting the insertion of said container in said analyzer, said container intersecting said first energy path when inserted in said analyzer, said container comprising four sides, two of which are parallel and a fixed distance apart, at least one of said sides having an extension therefrom to correspond to an indention in said analyzer, said extension being placed to position said two parallel sides to intersect said energy path when said container is inserted in said analyzer with said extension inserted in said indention, at least one of said two parallel sides includes a nontransparent area remote from the portion of that side which intersects said energy path, and positioned on that side to intersect only said second path when said container is inserted in said analyzer.

3,964,868

ORGANIC CARBON ANALYZER SYSTEM

Louis S. DiCola, Lincoln, R.I.; Donald W. Kemp, Marion, Mass., and H. Duane Evans, Portsmouth, R.I., assignors to Raytheon Company, Lexington, Mass.

Filed May 24, 1974, Ser. No. 473,116
Int. Cl.² G01N *31/12*
U.S. Cl. 23—253 PC **18 Claims**



1. An organic carbon analyzer system for analyzing material such as that found in raw sewage containing inorganic and organic carbonaceous substances, said system comprising:

means for treating said material with a chemical reagent that reacts with inorganic carbonaceous substances to produce a volatile compound of carbon;

means coupled to said treating means for dispersing said material in a first gaseous carrier, said first gaseous carrier being an absorber of said volatile compound, said dispersing means comprising an elongated chamber and means located at one end thereof for forcing a gas past a source of said material to urge said material to flow in a common current with said gas and thereby serve as said gaseous carrier for said material and inhibit the formation of a scum along the interior surface of said tube, said source of said material being located adjacent said one end of said elongated chamber;

means coupled to said dispersing means for replacing said first gaseous carrier with a second gaseous carrier free of said volatile compound, said second gaseous carrier reacting with organic carbonaceous substances to produce said volatile compound of carbon; and

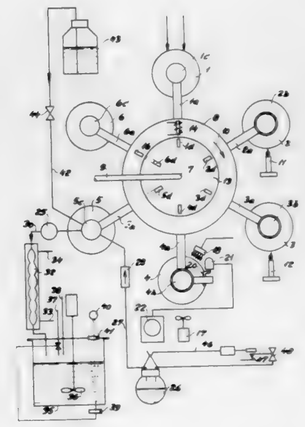
means coupled to said replacing means for measuring the concentration of said volatile compound in said second gaseous carrier, the amount of said concentration being a measure of the amount of organic carbonaceous substances in said material.

3,964,869

ANALYTICAL APPARATUS FOR SERIAL DETERMINATION OF NITROGEN IN SAMPLES BY THE KJELDAHL METHOD

Poul Erik Aegidius, Helsinge, Denmark, assignor to N.K. Verwaltungs AG, Zug, Switzerland

Continuation of Ser. No. 447,179, Feb. 28, 1974, abandoned.
This application July 11, 1975, Ser. No. 594,937
Claims priority, application Denmark, Mar. 1, 1973, 1119/73
Int. Cl.² G01N *31/16, 33/00*
U.S. Cl. 23—253 R **7 Claims**



1. An analytical apparatus for serial determination of nitrogen in samples by the Kjeldahl method, comprising:

a. a roundabout;

b. a plurality of flasks suspended vertically by the roundabout, each flask being provided with a cover and a side tube;

c. means for removing decomposition products;

d. drive means connected to rotate the roundabout stepwise to bring each flask in succession to a first position and advance each flask from the first position into several intermediate positions in succession and bring it back to the first position;

e. means for introducing sample material and decomposition material into the flask in the first position;

f. means for heating the flask in at least one subsequent intermediate position;

g. means for cooling the flask in a following position;

h. means for feeding diluent water into the flask in said following position;

i. means for introducing neutralizing material and steam into the flask in a further following position;

j. means for titrating the distillate from the flask in the said further following position;

k. means for emptying the flasks in the last said intermediate positions;

l. means for removing the covers on the completion of decomposition.

3,964,870
DIAGNOSTIC COMPOSITION FOR THE DETERMINATION OF GLUCOSE

Hugo Tiedemann, Mannheim-Wallstadt; Bernward Sojka, Viernheim; Hans Lange, Lampertheim; Hans-Georg Rey, and Peter Rieckmann, both of Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany

Filed Mar. 4, 1975, Ser. No. 555,327

Claims priority, application Germany, Mar. 29, 1974, 2415257

Int. Cl.² G01N *31/14, 31/22, 33/16*

U.S. Cl. 23—253 TP **10 Claims**

1. Diagnostic agent for the detection of glucose in urine, comprising an absorbent carrier impregnated with glucose oxidase, peroxidase, an indicator compound and, as a buffer, 2-(N-morpholino)-ethane-sulfonic acid.

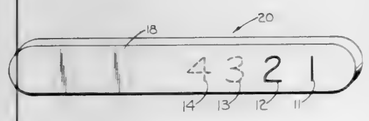
3,964,871
METHOD AND DEVICE FOR DETECTING GLUCOSE

Harry Hochstrasser, Hastings-on-Hudson, N.Y., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Dec. 18, 1974, Ser. No. 533,972

Int. Cl.² G01N *33/16*

U.S. Cl. 23—253 TP **21 Claims**



1. An indicator for the measurement of glucose dissolved in biological fluids, which comprises:

a support member; and

a plurality of indicating reagents for glucose, each of which is located in a separate zone of said member and at least two of which indicate the presence of different concentrations of glucose in solution.

3,964,872
INJECTING DEVICE OF A SOLVENT-FREE SAMPLE FOR A GAS ANALYZER

Hannu Henrik Karinkanta, Linnunpaantie 50, 20840 Turku 84, Finland

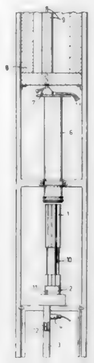
Filed Dec. 27, 1974, Ser. No. 536,888

Claims priority, application Finland, Dec. 29, 1973, 2117/73

Int. Cl.² G01N *31/06, 31/08*; **B01D** *15/08*

U.S. Cl. 23—259 **7 Claims**

1. A sample injecting device for a gas analyzer, comprising a vessel, a cassette within said vessel, a plurality of straight elongated sample tubes open at both ends disposed in said cassette in parallel relation to each other, a furnace with which said vessel communicates, and means for conveying said sample tubes one by one lengthwise from said cassette into said furnace and for returning said sample tubes from said furnace to said cassette, said conveying means comprising an elongated conduit paralle to said sample tubes and selectively engageable with one of said open ends of a said sample tube, means for moving said elongated conduit lengthwise to introduce said sample tube into said furnace and to withdraw said sample tube from said furnace, and means to introduce a



carrier gas through said elongated conduit and through said sample tube.

3,964,873
HEATING DEVICE HAVING DUMBBELL-SHAPED REACTION TUBES THEREIN

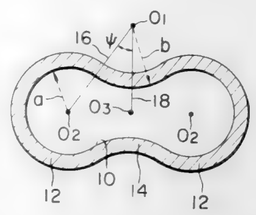
Seigo Aramaki; Katsuzo Sudo; Mitsuo Tani, all of Hiroshima; Takehiko Sato, Yokkaichi; Yuuji Onishi, Yokkaichi, and Nobuhiro Sakaguchi, Yokkaichi, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Mitsubishi Petrochemical Company Limited, both of Tokyo, Japan

Continuation of Ser. No. 312,309, Dec. 5, 1972, abandoned. This application July 12, 1974, Ser. No. 487,883

Claims priority, application Japan, Dec. 7, 1971, 46-98779

Int. Cl.² F16L *9/06*; **F22B** *37/12*; **F28D** *15/00*

U.S. Cl. 23—277 R **1 Claim**



1. In a furnace for the thermal decomposition of hydrocarbons comprising a chamber having heating means positioned at opposite locations therein, and at least one elongate reaction tube spaced between said heating means; the improvement which comprises said reaction tube having a cross sectional dumbbell-shape and having in cross section perpendicular to the longitudinal axis of said tube a major and minor diameter of the following interrelated characteristics:

$0° < \Psi < 60°$

$10 \text{ mm} < a < 60 \text{ mm}$

$5 \text{ mm} < b < 2000 \text{ mm}$

where

a = the radius of curvature of the inside surface of the reaction tube at the circular portions of said dumbbell-shape,

b = radius of curvature of the inside surface of the reaction tube at the narrow portion of said dumbbell-shape and,

Ψ = the angle between a line connecting the center of curvature at the narrow portion and the center of curvature at the circular portion and a line extending from said center of curvature at the narrow portion through the center of the narrow part

and wherein the major diameter of the dumbbell-shaped reaction tube is parallel to each of said heating means.

3,964,874
CONTINUOUS REACTOR FOR VISCOUS MATERIALS

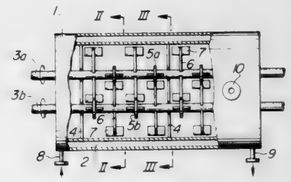
Morihisa Maruko; Chikao Oda, and Eizi Nakashima, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Japan

Filed Mar. 30, 1973, Ser. No. 346,309

Claims priority, application Japan, Apr. 12, 1972, 47-36057

Int. Cl.² B01J *10/00*; **B01F** *7/02*

U.S. Cl. 23—285 **11 Claims**



1. A continuous reactor comprising a substantially horizontal elongated container; a pair of parallel shafts rotatably mounted in said container; a plurality of figure-eight-shaped agitation rotors fixedly mounted on said shafts in pairs, one agitation rotor of each pair being fixed at the center thereof to one of said shafts, the other agitation rotor of each pair being fixedly attached at the center thereof to the other shaft, said one agitation rotor and said other agitation rotor being coplaner and normal to said shafts and arranged at a phase angle of 90° with respect to each other; and a plurality of scraper plates mounted in pairs to the ends of said agitation rotors remote from the centers thereof, said scraper plates being held at right angles to said agitation rotors and in parallel with said shafts, said shafts being spaced apart so as to allow the scraper plates attached to the agitation rotors on each shaft to pass in close proximity to the other shaft as said shafts rotate.

3,964,875
SWIRL EXHAUST GAS FLOW DISTRIBUTION FOR CATALYTIC CONVERSION

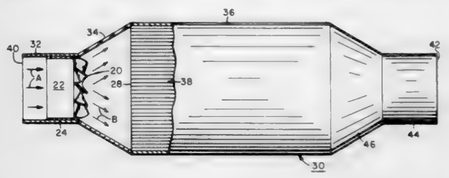
Zung S. Chang, Painted Post; John S. Howitt, Big Flats, and Robert V. VanDewoestine, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 9, 1974, Ser. No. 530,658

Int. Cl.² B01J *8/02, 35/04*; **F01N** *3/15*; **F15D** *1/00*

U.S. Cl. 23—288 FC **4 Claims**

1. In an exhaust system including an exhaust pipe of one diameter, a housing of a larger diameter containing a catalyst substrate, and a frustoconical diffuser member having an entrance opening adjacent said exhaust pipe and an exit opening adjacent said housing, said diffuser member connecting said exhaust pipe and said housing together wherein said exhaust pipe, diffuser and housing are axially aligned along and disposed about a common central axis, the improvement comprising deflector means positioned across the entrance opening of said diffuser for distributing the flow of exhaust gases emanating from said exhaust pipe into said housing, said deflector means including a central core portion positioned substantially coaxial with said central axis extending through said exhaust pipe, diffuser, and housing; means extending from said core portion for deflecting exhaust gases entering said diffuser angularly away from said central axis and for forming a velocity profile within said housing such that an annular area concentrically remote from said central axis has



a greater velocity than that along said central axis; said deflecting means including a plurality of stationary vanes extending radially outwardly from said central core portion; said vanes being twisted with a desired angle relative to a plane extending through said core portion perpendicular to said central axis for imparting a swirl-like flow to exhaust gases passing therethrough; and means for fixably mounting said deflector in position.

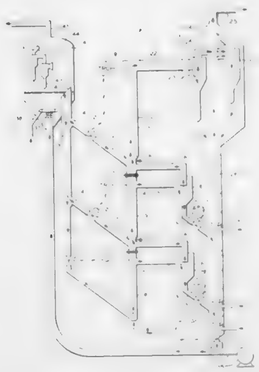
3,964,876
METHOD AND APPARATUS FOR CATALYTICALLY CRACKING HYDROCARBONS

John Preston James, Old Ocean, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 17, 1975, Ser. No. 542,007

Int. Cl.² B01J *8/18*

U.S. Cl. 23—288 S **2 Claims**



1. An apparatus for catalytically cracking hydrocarbons comprising:

a. an elongate reactor having a chamber therein adapted for flow of fluid and catalyst therethrough, said chamber having an inlet and an outlet and being divided into a plurality of zones;

b. a plurality of catalyst injection means each connected to a source of regenerated catalyst and communicating with said reactor chamber at spaced apart positions along the length thereof for injecting catalyst into each of said zones;

c. a plurality of conduits each communicating between respective adjacent zones and forming flow paths therebetween;

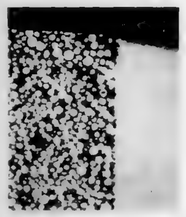
d. a plurality of cyclone separators each operatively associated with a respective said conduit to effect removal of catalyst from fluid flowing through said conduits and at least one cyclone separator communicating with said outlet to effect removal of catalyst from fluid discharged from said outlet;
e. first means communicating with said separators for receiving separated catalysts from said separators;
f. a regeneraor, which is said source of regenerated catalyst, communicating with said first means whereby removed catalyst passes to said regenerator, said catalyst injection means also communicate with said regenerator for flow of regenerated catalyst from same to said catalyst injection means;
g. second means communicating with the furthest downstream disposed zone of said zones for introducing hydrocarbon material thereinto; and
h. temperature responsive control means operatively associated with each said zone and respective said catalyst injection means to control the introduction of catalyst in response to the temperature in the respective zone.

3,964,877

POROUS HIGH TEMPERATURE SEAL ABRADABLE MEMBER

Irwin I. Bessen; Robert K. Betts, both of Cincinnati, and Robert V. Hillery, West Chester, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 22, 1975, Ser. No. 606,956
Int. Cl.² C22C *1/04*
U.S. Cl. 29—182 **5 Claims**



1. An improved porous high temperature member having an improved combination of oxidation and erosion resistance, controlled thermal conductivity and low elevated flow stress which provides, upon rubbing contact with another member, a compliant base and a flowed, substantially continuous facing, the member comprising:
a plurality of metallurgically bonded, metallographically distinguishable metal alloy powder particles substantially in the size range of about +140 to about −270 ASTM (U.S. Standard Sieve);
the alloy of the metal particles consisting essentially of, by weight, 15–35% Cr, 8–20% Al, up to 5% of one or more elements selected from the group consisting of Y, Hf and the rare earth elements, with the balance selected from the group consisting of Fe, Co and Ni and incidental impurities;
the member having density in the range of about 65–90% of theoretical density established by the inclusion of pores.

3,964,878

CEMENTED CARBIDE EMPLOYING A REFRACTORY METAL BINDER AND PROCESS FOR PRODUCING SAME

William Scheithauer, Jr., Athens, and Glenn Albert Shaffer, Towanda, both of Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed June 6, 1973, Ser. No. 367,433
Int. Cl.² C22C *1/06*; **B22F** *3/16*; **C22C** *29/00*
U.S. Cl. 29—182.7 **9 Claims**

1. A cemented carbide composition consisting essentially of from about 15 to about 50 percent by weight of a refractory metal carbide selected from carbides of refractory metals of the Group 4, Group 5, and Group 6 metals and mixtures thereof, from about 50 to about 85 percent of a binder selected from said refractory metals and from about 0.5 to about 1.5% of an iron group metal selected from iron, nickel and cobalt.

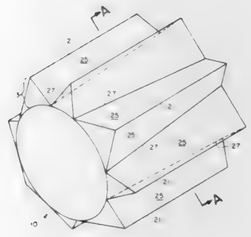
6. A process for producing a cemented carbide composition comprising:
a. forming an admixture by suitable mixing of refractory metal carbide, a refractory metal, a wax, an iron group metal, and a volatile mixing aid; said refractory metal carbide being from about 15 to about 50%, said refractory metal being from about 50 to 85% and said iron group metal being from about 0.5 to about 1.5%, said percentages being based upon the weight percent of the combined total weight of said carbide, said refractory metal and said iron group metal;
b. removing said mixing aid;
c. compacting the resulting powder to a predetermined shape;
d. heating said shapes at a first temperature for a sufficient time to remove said wax;
e. heating said shapes at a second temperature above the melting point of said iron group metal for at least about two hours; and thereafter
f. heating said shapes at a sintering temperature from about 1850°C to about 1950°C for a time sufficient to achieve complete sintering of the resulting particles.

3,964,879

FASTENER FOR JOINING ARTICLES

James F. Asmus, Rte. 1, Box 46A, East Liberty, Ohio 43319

Continuation-in-part of Ser. No. 224,569, Feb. 8, 1972, abandoned. This application May 21, 1974, Ser. No. 472,052
Int. Cl.² F16B *39/30*
U.S. Cl. 29—183.5 **5 Claims**



1. A fastener having an elongated portion for insertion into a cavity, said elongated portion including: a plurality of ridges

parallel to one another and parallel to the longitudinal axis of said elongated portion; said ridges defining a groove between each of said ridges; said grooves having, along the longitudinal axis of said elongated portion, substantially constant cross-sectional area and a substantial sequential change in cross-sectional shape; and means on the ends of said ridges for deflecting material defining said cavity into said grooves.

3,964,880

FUEL PASTE AND PROCESS FOR ITS PRODUCTION

Walter Siegrist, Visp (Kanton Wallis), Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

Filed Oct. 17, 1974, Ser. No. 515,602
Claims priority, application Switzerland, July 16, 1974, 9763/74
Int. Cl.² C10L *7/00*
U.S. Cl. 44—7 B **13 Claims**

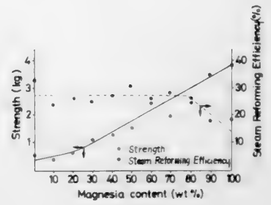
1. A fuel paste which comprises (a) ethanol, (b) an ethanol-soluble thickening agent and (c) an inorganic fuel carrier mixture of silicon dioxide and at least one member selected from the group consisting of (i) an oxide of silicon, other than silicon dioxide, (ii) an oxide of titanium, (iii) an oxide of zirconium, (iv) an oxide of aluminum, (v) a carbonate of an alkali metal, (vi) a carbonate of an alkaline earth metal, (vii) a hydroxide of an alkali metal and (viii) a hydroxide of an alkaline earth metal, said fuel paste being non-thixotropic and being soft and plastic.

3,964,881

PROCESS FOR GASIFICATION OF HEAVY HYDROCARBONS

Takeshi Kubota, Kyoto, Japan, assignor to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 459,964, April 11, 1974, abandoned. This application May 2, 1975, Ser. No. 573,871
Int. Cl.² C01B *2/16*; **C10G** *11/28*
U.S. Cl. 48—214 A **1 Claim**



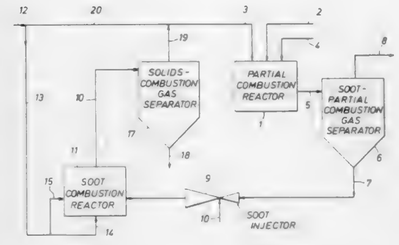
1. A continuous process for the catalytic steam decomposition of a residual oil, derived from the atmospheric or reduced pressure ditillation of oil, to completely gasify said residual oil to produce an olefin-containing gas which comprises:
gasifying and decomposing said residual oil with steam at a temperature in the range from about 700° to about 1000°C. in the presence of a catalyst obtained by mixing, kneading and firing a composition consisting essentially of calcium oxide containing about 5 to about 20% ferric oxide, about 10 to about 30% silica, and at least one other oxide selected from the group consisting of magnesia, alumina, and chromium oxide, the amounts of said oxide being about 20 to about 80%, about 1 to about 8%, and about 1 to about 20%, respectively for said oxides, all of said percentages being by weight based on said calcium oxide.

3,964,882

PARTIAL COMBUSTION PROCESS

Gernot Staudinger, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 9, 1974, Ser. No. 513,207
Claims priority, application Netherlands, Oct. 19, 1973, 7314390
Int. Cl.² C10G *13/30*; **C10J** *3/16*, *3/46*; **C10K** *1/00*
U.S. Cl. 48—215 **3 Claims**



1. A process for the production of a substantially soot-free, ash-free gaseous partial combustion product which comprises:
1. partially combusting a hydrocarbonaceous fuel containing ash-forming components in a substantially void combustion zone by reaction between said fuel and an oxygen-containing gas to yield a crude gas product containing principally hydrogen, carbon monoxide, ash and between 5 and 15% soot;
2. passing the crude gas product into a gas-solids separation zone wherein the solid soot particles and ash are separated by centrifugation and gravitation thereby affording a substantially soot-free partial combustion gas product and a solids consisting substantially of separated soot and ash components;
3. passing said separated soot and ash to a soot combustion zone and burning said separated soot with between twofold and a fivefold excess of oxygen over that required for complete combustion of the soot in said soot combustion zone to yield a hot combustion gas containing as principal components, oxygen, carbon dioxide, ash and water;
4. passing said hot combustion gas through a second gas-solids separation zone whereby the ash contained in said gas is separated from the hot combustion gas; and
5. passing the ash-free hot combustion gas from the soot combustion zone into the partial combustion zone whereby the oxygen contained therein supplies at least a part of the oxygen requirements for partial combustion and substantial portions of the carbon dioxide and water contained therein are converted to carbon monoxide and hydrogen.

3,964,883

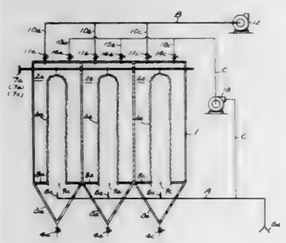
METHOD FOR FILTERING AND CLEANING A FILTER BAG

Yosinori Nakao, Nishinomiya, Japan, assignor to Nakao Filter Media Corporation, Nishinomiya, Japan

Filed June 11, 1973, Ser. No. 368,945
Claims priority, application Japan, Jan. 13, 1973, 48-6847
Int. Cl.² B01D *45/18*
U.S. Cl. 55—96 **3 Claims**

1. A method of cleaning an air filter unit having at least one filtering chamber, at least one cylindrical filter bag vertically suspended within said chamber in an upright position with the open end of the filter bag facing down, air inlet means extending into the bottom of the filtering chamber and associated with the open end of said vertically suspended filter bag for passing dust laden air upwardly thereinto, first filtered air exhaust valve means connected to the top of said filtering chamber, second air exhaust valve means connected at one

end to the top of said filtering chamber and at the other end to blower means connected to the air inlet means, and at least one dust collection zone positioned at the bottom of the filtering zone below the open end of the filter bag and comprising the following steps: passing dust laden air upwardly into the open end g the filter bag from the air inlet means of the filter chamber, passing the air filtered by the filter bag through the open first filtered air exhaust valve means, while the second air exhaust valve means are closed, stopping the flow of dust laden air into the air inlet means of the filtering chamber, stopping the flow of filtered air from the filtering chamber by closing the first filtered air exhaust valve means, mechanically shaking the filter bag to remove the collected dust from the interior surface of the filter bag to permit same to fall by gravity to the collection zone, removing the collected dust from the collection zone of the filtering chamber, opening the second air exhaust valve means connected to the top of said



filter chamber, operating the blower means to withdraw air from within the filtering chamber and air that has previously passed through the filter bag through the second air exhaust valve means, passing the collected air to said blower means, blowing and circulating such collected and withdrawn air in the closed system into the air inlet means associated with the bottom open end of the filter bag to pass such clean air therethrough and to further clean the inside surface of the filter bag, continuing the passage of the collected and withdrawn air in a closed system for a predetermined time and until the filter bag has been cleaned to the extent desired thereby preventing dust from being discharged into the atmosphere along with the cleaned and filtered air after the initial cleaning and removal of collected dust has been completed, closing the second air exhaust valve means, opening the first filtered air valve exhaust means, and thereafter resuming the passage of the dust laden air into the air inlet means of the filtering chamber for filtering therein.

3,964,884

MEANS AND METHOD FOR SEPARATION OF WATER FROM STEAM-WATER MIXTURE

Hans Judith, and Otto A. von Schwerdtner, both of Mulheim (Ruhr), Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

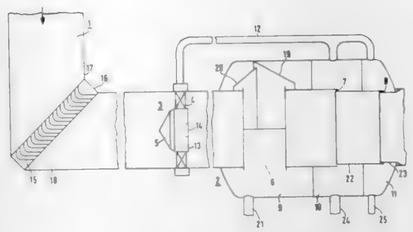
Filed Oct. 22, 1974, Ser. No. 516,901

Claims priority, application Germany, Oct. 23, 1973, 2353111

Int. Cl.² B01D *19/00*

U.S. Cl. 55—184 **1 Claim**

1. In combination, a high-pressure turbine stage, a low-pressure turbine stage, a duct having an inlet opening connected to said high-pressure turbine stage and an outlet opening connected to said low-pressure turbine stage, means for separating water from a steam-water mixture in said connecting duct, said means comprising a spin generator directly built into said connecting duct, said connecting duct being formed with at least one additional outlet opening downstream of said spin generator in flow direction of said steam-water mixture for water centrifugally separated by said spin generator from said steam-water mixture, at least one water-receiving chamber surrounding said connecting duct in communication with said additional outlet opening, and a steam suction line connected



at one end thereof to said water-receiving chamber and at another end thereof to said connecting duct in vicinity of said spin generator.

3,964,885

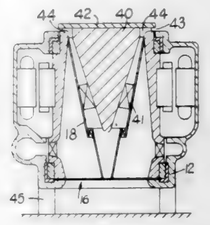
CENTRIFUGAL PUMPS

Harry Simister Bottoms, Solihull, and Leslie Holliday, Blackburn, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 18, 1974, Ser. No. 480,595

Int. Cl.² B01D *47/00, 53/22*; **F04B** *17/00, 35/04*

U.S. Cl. 55—203 **7 Claims**



1. A pump comprising a rotor defining a pair of axially aligned frusto-conical chambers and a centrifucal impeller arrangement between said chambers, said impeller arrangement comprising means for urging a fluid radially outwardly of the axes of said frusto-conical chambers, the larger diameter of each chamber being adjacent the impeller arrangement and the smaller diameter of one of the chambers defining an inlet for the pump, a first hollow frusto-conical member having a through passage and being mounted coaxially within the other of the chambers so as to define an annular-section space therein, the smaller diameter of said first member being directed towards the impeller arrangement and the larger diameter of said first member engaging the smaller diameter of said other chamber, a stator surrounding said rotor, said rotor being freely rotatable within said stator about the axes of said frusto-conical chambers, a passage within the stator communicating with said impeller arrangement and with an outlet for the pump, a deflector having a conical surface and being mounted within said first member so as to define an annular space between said deflector and said first member, the apex of said conical surface being directed towards the pump inlet and the larger end of said deflector extending axially beyond the end of the stator remote from said inlet, the larger end of said deflector including a portion extending radially outwardly of said conical surface, a first group of a plurality of vanes extending between the larger diameter ends of the first member and the deflector, and a second group of a plurality of vanes extending between the first member and the deflector intermediate the ends thereof.

3,964,886

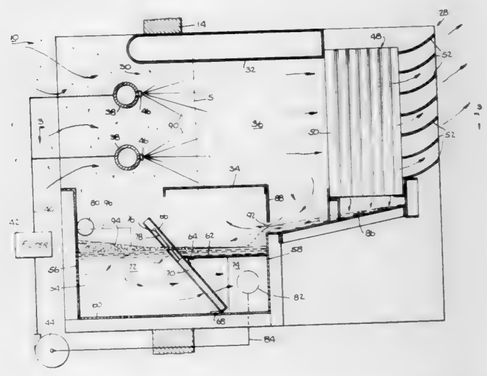
GAS SCRUBBING APPARATUS

John Engalitcheff, Jr., Gibson Island, and Edward N. Schinner, Silver Spring, both of Md., assignors to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed Oct. 29, 1974, Ser. No. 518,848

Int. Cl.² B01D *47/00*

U.S. Cl. 55—228 **15 Claims**



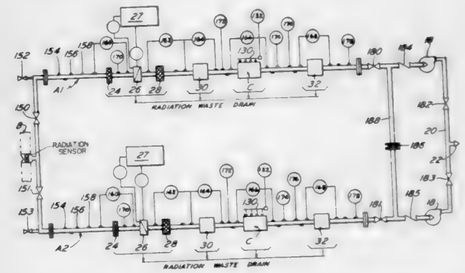
1. Apparatus for scrubbing gas, said apparatus comprising a conduit having an entrance end and an exit end, nozzle means positioned near said entrance end of said conduit and arranged to spray liquid into said conduit toward its exit end, such spraying causing the injection of a gas from an enclosure into said conduit in a manner such that foreign particles to be cleaned from the gas are caught on the sprayed liquid, mist eliminator means arranged across the interior of the conduit downstream of the nozzle means to intercept the liquid spray therefrom, along with foreign particles caught on said spray, and to permit passage of the injected gas out through said exit end of the conduit, said mist eliminator means comprising a plurality of closely spaced parallel elongated strips of sheet material distributed across the cross section of the conduit and extending individually with one end higher than the other, and lying in planes parallel to the direction of gas flow through the conduit, said strips each having at least one bend extending along its length to intercept the sprayed liquid and to direct the liquid down toward its lower end, a sump arranged outside of and below said conduit and communicating with said conduit through a passageway, said sump including means for maintaining a given level of liquid therein and means forming a transfer surface extending from a position under said strips within said conduit to said sump outside said conduit, said transfer surface being inclined downwardly toward said sump with its uppermost edge located a finite distance below the bottom of said strips and its lowermost edge located a finite distance below its upper edge and said lowermost edge being in direct communication, therealong, with said sump outside said conduit, said sump being constructed and arranged to permit collection of foreign material which stratifies therein reactor in the event of a design basis or loss of coolant accident comprising:

at least one ventiduct train adapted to be coupled to the interior of the containment housing in the event of a nuclear incident,

means constituting a sensor for placing one ventiduct train in operative disposition and drawing a stream of gas therethrough when the level of radioactivity in the containment housing reaches a predetermined level,

demister means for removing free water droplets entrained in the incoming gas stream,

means for reducing the relative humidity of the stream of gas exiting from said demister means,



means for filtering particulate dust in excess of 0.3 microns size in the gas stream,

a charcoal adsorber in the downstream side of said means for filtering, said charcoal adsorber being so constructed and arranged as to develop a static head thereacross and squeeze the gas therethrough in laminar flow disposition,

means constituting a higher efficiency particulate filter for removal of charcoal fines entrained in the gas stream upon passing through the adsorber, and

means for discharging the purified gas stream from the ventiduct to atmosphere.

3,964,887

RADIOACTIVE GAS STANDBY TREATMENT APPARATUS WITH HIGH EFFICIENCY RECHARGEABLE CHARCOAL FILTER

Thomas Nelson Hickey, and Ivars Sigurds Spulgis, both of Columbus, Ohio, assignors to CVI Corporation, Columbus, Ohio

Division of Ser. No. 317,434, Dec. 21, 1972. This application Mar. 31, 1975, Ser. No. 563,768

Int. Cl.² B01D *50/00*

U.S. Cl. 55—267 **2 Claims**

1. A standby gas treatment system for removal of radioactive contamination from the containment housing of a nuclear

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3,964,888

VACUUM SWEEPER

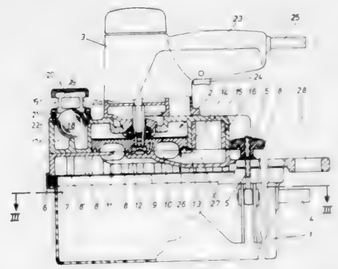
Reinhard Hahner, Kemnat; Wilbert Reibetanz, Leinfelden, and Karl Wanner, Echterdinge, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Sept. 25, 1974, Ser. No. 509,341

Claims priority, application Germany, Oct. 1, 1973, 2349338

Int. Cl.² B01D *50/00*

U.S. Cl. 55—274 **25 Claims**



1. A vacuum cleaner, particularly for collecting borings, comprising a receptacle having a first opening for admission of a gaseous medium containing solid particles, a collecting chamber, and a discharging second opening; means for closing said second opening, including a cover connected to said receptacle and having a passage communicating with said collecting chamber; a side channel vacuum pump having an

inlet and an outlet, said passage communicating with said inlet, said pump being operative for inducing flow of the gaseous medium from said collecting chamber through said passage into said inlet and for discharging the same into said outlet; and silencing means including an annular elongated channel in said cover and enclosed except for one open end communicating with said outlet and another open end longitudinally spaced from said open end and communicating with the ambient atmosphere.

3,964,889

CONTINUOUS FILTER SILO FOR THE CLEANING OF FLUE GASES

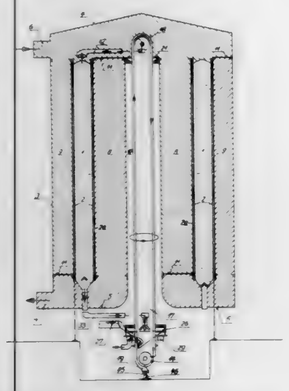
Friedrich Lachnit, Mulheim (Ruhr), Germany, assignor to Deutsche Babcock & Wilcox Aktiengesellschaft, Germany

Filed Oct. 7, 1974, Ser. No. 512,975

Claims priority, application Germany, Oct. 11, 1973, 2351003

Int. Cl.² B01D *46/30*

U.S. Cl. 55—429 **15 Claims**



1. In a continuous filter silo for the purification of flue gases by means of a filter layer located between two substantially vertically arranged wall sections of circular cross-section that are provided with apertures, wherein the filter material layer containers defined by said wall sections are subdivided into segments by means of at least four vertically arranged intermediate wall sections, and wherein means are provided for the controlled intake of flue gas in such a way that selected of said segments have have their exposure to flue gas stopped for the purpose of regeneration of the filter material the improvement comprising, a charging and emptying system positioned in the central inner space of the silo, which system is rotatably mounted around the vertical longitudinal axis of the silo and comprises a bucket-type elevator means adapted for transporting filter material from the region of the bottom of said silo to the region of the top of said silo and for discharging the contents of the bucket of said elevator onto means for transporting said material into selected of said segments of said filter material container, and drive means for causing said transporting means to move to selected of said segments.

3,964,890

RECHARGEABLE PARTICULATE FILTER FOR RADIOACTIVE CONTAMINATED GAS STREAMS

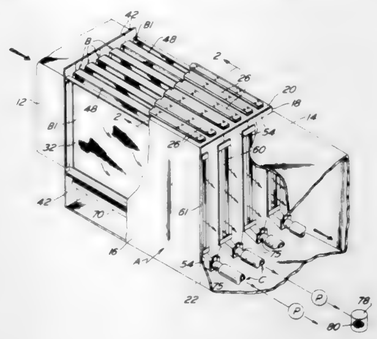
John William Bonn, Columbus, Ohio, assignor to CVI Corporation, Columbus, Ohio

Filed June 3, 1974, Ser. No. 475,477

Int. Cl.² B01D *46/30*

U.S. Cl. 55—479 **3 Claims**

1. In combination with a rechargeable gas filter of the type wherein a plurality of parallel laterally spaced vertically oriented generally parallelepiped filter beds are provided within a generally rectangular housing having a gas inlet and a gas outlet, wherein said beds each have two rectangular parallel vertical perforate walls for containing adsorbent material therebetween and having two vertical plates, one at the inlet side and the other at the outlet side, welded to said spaced perforate walls, two said vertical plates and two said perforate walls defining therein a single filter bed, said rectangular walls oriented with the sides of the rectangle vertical and horizontal, such that the bottom of the portion of the parallelepiped bed exposed to gas flow is flat and horizontal, and having vertically disposed channels welded between adjacent beds and between end beds and sides of said housing, alternately at the inlet and outlet, said vertical channels at the outlet defining gas inlet channels communicating with the inlet end of said housing and said vertical channels at the inlet thereby defining gas



exhaust channels communicating with the outlet of the housing such that the spaces between adjacent filter beds alternately are inlet channels and exhaust channels whereby for gas to pass from an inlet channel to an exhaust channel gas must pass through the two spaced perforate parallel walls of a filter bed, wherein means connect said beds with one another and with said housing so that gas passing from said inlet to said outlet must pass laterally through said perforate walls of one bed and adsorbent material contained therein, the improved means for evacuating said filter of adsorbent material which comprises:

a. a pair of longitudinally extending inwardly inclined funneling walls extending from bottom margins of adjacent filter beds entirely along the longitudinal length thereof, each wall of said pair extending downwardly and inwardly from an outer perforate wall of one of the adjacent filter beds, said pair of funneling walls forming a downwardly diverging discharge chute remote from the filter beds extending the length of the filter beds, said discharge chute being of greater length at one end of said filter beds and of lesser length at an opposite end of said filter beds;

b. channel means laterally extending exterior of said discharge chute along the entire longitudinal length thereof;

c. a well extending longitudinally the length of said discharge chute thereby encapsulating said discharge chute, secured to said channel means;

d. a pipe extending in the longitudinal direction from the end of said well where said discharge chute is of greater length; and

e. port means in the top of said housing for the introduction of adsorbent material to the filter therethrough;

whereby when said filter is filled with granular adsorbent through said port means, granular adsorbent from said adjacent filter beds above said funneling walls will fall through said discharge chute and form a heap on the portion of said well below said discharge chute along the entire longitudinal length thereof until the angle of repose of the heap of particulate granular adsorbent closes the discharge chute;

whereby when suction is applied to said pipe granular adsorbent in said well will be progressively drawn through said pipe, with granular adsorbent remote from said pipe in said well being drawn out first, such that all granular adsorbent in said adjacent filter beds above said funneling walls will be removed therefrom with the adsorbent in a corner of the parallelepiped most remote from the pipe being removed first.

3,964,891

PROCESS AND ARRANGEMENT FOR COOLING FLUIDS

Heinrich Krieger, Leitlestrasse 16, 81 Garmisch-Partenkirchen, Germany

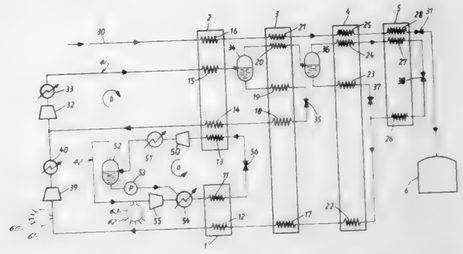
Continuation of Ser. No. 392,810, Aug. 29, 1973, abandoned.

This application Apr. 11, 1975, Ser. No. 567,407

Claims priority, application Germany, Sept. 1, 1972, 2242998

Int. Cl.² F25J *1/02*

U.S. Cl. 62—9 **5 Claims**



1. A process for cooling fluids, particularly for liquefying gaseous substances, comprising conveying a cooling fluid mixture capable of existing in a liquid and a vapor state along a first path including a first section in which said cooling fluid is cooled, and a second section downstream of said first section which is substantially thermally separated from said first section; conveying a precooling fluid mixture capable of existing in a liquid and a vapor state along a second path including a first part which is substantially thermally separated from said first section and is arranged in heat-exchange relationship with said second section and wherein said precooling fluid flows countercurrent to said cooling fluid in said second section so as to be supercooled thereby, and said second path also including a second part downstream of said first part which is arranged in heat-exchange relationship with said first section and wherein said precooling fluid flows countercurrent to said cooling fluid in said first section and cools the same, the composition of said precooling fluid being so selected that the cooling curve of the cooling fluid in said first section and the heating curve of the precooling fluid in said second part plotted in terms of temperature versus enthalpy approximate one another; compressing said cooling fluid upstream of said first section while said cooling fluid is in its vapor state; cooling the compressed cooling fluid upstream of said first section with a surrounding cooling medium, the compressed cooling fluid being in the form of superheated vapor upon entering said first section and being partially condensed to its liquid state in said first section by the precooling fluid in said second part; separating said cooling fluid into its liquid and vapor components subsequent to said partial condensation and at least partially condensing said vapor component to its liquid state; reducing the pressure of the condensed cooling fluid upstream of said second section, the reduced pressure cooling fluid entering said second section so as to supercool the precooling fluid in said first part and being substantially entirely in its vapor state in said second section; repeating the preceding four steps with the heated and vaporized cooling fluid; compressing said precooling fluid upstream of said first part while said precooling fluid is in its vapor state; cooling the compressed precooling fluid upstream of said first part with a surrounding cooling medium so as to condense said precooling fluid to its liquid state, the condensed precooling fluid being supercooled in said first part by the cooling fluid in said second section; reducing the pressure of the supercooled precooling fluid upstream of said second part, the reduced pressure precooling fluid entering said second part at a temperature substantially equal to at least its boiling point temperature so as to cool the cooling fluid in said first section thereby being heated and vaporized to its vapor state; and repeating the preceding three steps with the heated and vaporized precooling fluid.

3,964,892

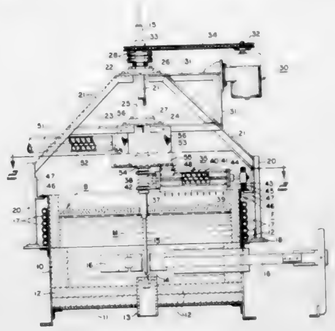
APPARATUS FOR ADVANCING PARTICULATE MATERIAL

Ray F. Schumacher, Peninsula; David J. Prasek, Parma, both of Ohio, and Howard L. Van Stone, Nashville, Tenn., assignors to Ferro Corporation, Cleveland, Ohio

Filed May 12, 1975, Ser. No. 576,706

Int. Cl.² C03B *5/26, 3/00*

U.S. Cl. 65—328 **17 Claims**



1. Glass melting apparatus and means for advancing particulate material to said apparatus, comprising: a glass-melting receiver adapted to melt the material having an inlet to receive it and an outlet to discharge molten glass, cane means reciprocably mounted above the receiver and in substantially vertical alignment with said outlet adapted to move axially in either direction into and out of said outlet to close and open the outlet and thereby affect said molten glass discharge, hollow drive shaft means telescopically receiving the cane means and supported with respect to the receiver for rotary movement about a longitudinal axis while accomodating said axial movement of the cane means, means to rotate the shaft means, a distributing arm secured to the drive shaft means to turn therewith and extending from a central area of said inlet of the receiver to a peripheral area of the inlet, said arm having trough means to receive said material which extends longitudinally along the arm, means for advancing said material along said trough means, exit means on said arm to release the material from the arm through said inlet, and roller means on the outer end of said distributing arm adapted to ride about the periphery of said inlet.

3,964,893

LAWN MOSS CONTROL WITH FERRIC AMMONIUM SULFATE-AMMONIUM SULFATE DOUBLE SALTS

John R. Everingham, San Rafael, and Karl A. Hoenke, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sept. 30, 1974, Ser. No. 510,676

Int. Cl.³ A01N *11/00*

U.S. Cl. 71—65 **5 Claims**

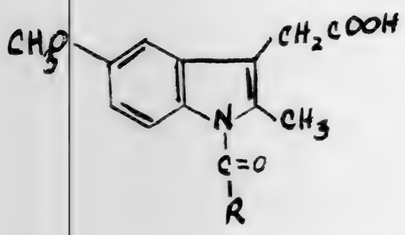
1. A method for the control of lawn moss in turf grass which comprises applying to said lawn moss ferric ammonium sulfate-ammonium sulfate double salt of the empirical formula $(NH_4)_xFe(SO_4)_2 \cdot xH_2O$ wherein x is 0 to 12 at a rate of about 0.3 to 1 pound Fe per 1000 ft² of lawn turf.

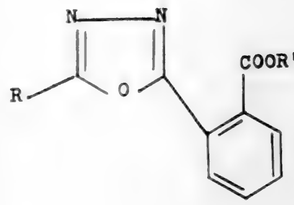
3,964,894
METHOD OF CONTROLLING PLANT GROWTH

Géza Tóth; Gábor Szabó; György Eibel, and Éva Somfai, all of Budapest, Hungary, assignors to Chinoin Gyogyszer-es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

Continuation-in-part of Ser. No. 168,443, Aug. 2, 1971, abandoned. This application Apr. 8, 1974, Ser. No. 458,999
Claims priority, application Hungary, July 31, 1970, CI 1017
Int. Cl.² A01N 9/22
U.S. Cl. 71—90 6 Claims

1. A process for promoting plant growth comprising applying to the plant site after seeding an effective amount of a compound of the formula





wherein R is selected from the group consisting of
phenyl,
phenyl substituted with up to three substituents wherein the substituents are halo, nitro, alkyl having up to 4 carbon atoms or alkoxy having up to 4 carbon atoms,
4-methyl-2-(3-pyridyl)-5-thiazolyl,
alkyl having up to 6 carbon atoms, and
3-pyridyl;
and R′ is hydrogen, alkali metal, ammonium, or a moiety having up to 12 carbon atoms selected from alkyl, alkynyl and epoxyalkyl.

or a salt thereof wherein R is selected from the group wich consists of:
2-furyl,
5-nitro-2-furyl,
2-bromothiazol-4-yl, and
2-chlorothiazol-4-yl.

3,964,895
THIADIAZOLYLIMIDAZOLIDINONE HERBICIDES

John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 18, 1975, Ser. No. 550,388
Int. Cl.² A01N 9/12
U.S. Cl. 71—90 2 Claims

1. A herbicidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to weeds the compound 1-(5-t-butyl-1,3,4-thiadiazol-2-yl)-3-methyl-5-hydroxy-1,3-imidazolidin-2-one.

3,964,896
OXADIAZOLE BENZOIC ACID DERIVATIVES AS HERBICIDES

Walter G. Brouwer, Guelph; Edwin J. MacPherson, Elmira, both of Canada; Ronald B. Ames, Naugatuck, and Robert W. Neidermyer, Cheshire, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 170,263, Aug. 9, 1971, Pat. No. 3,882,138. This application Feb. 5, 1975, Ser. No. 547,155
Int. Cl.² A01N 9/22
U.S. Cl. 71—92 6 Claims

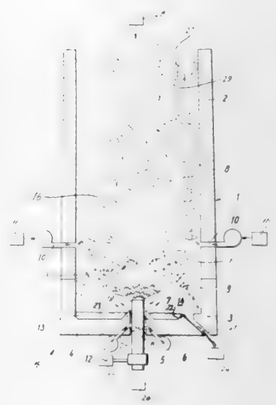
1. A method of controlling weeds which comprises applying to a locus containing weed seeds or supporting weed growth a herbicidally effective amount of a chemical having the structural formula

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3,964,897
METHOD AND ARRANGEMENT FOR MELTING CHARGES, PARTICULARLY FOR USE IN THE PRODUCTION OF STEEL

Hans-Juergen Langhammer, Bremen, Germany, assignor to Klockner-Werke AG, Duisburg, Germany

Continuation-in-part of Ser. No. 337,736, March 2, 1973, Pat. No. 3,789,309 which is a continuation-in-part of Ser. No. 337, 738, filed March 2, 1973, Pat. No. 3,894,864. This application Aug. 26, 1974, Ser. No. 500,662
Claims priority, application Germany, Aug. 25, 1973, 2343051; Aug. 25, 1973, 2342947
Int. Cl.² C22B 4/00; H05B 7/18
U.S. Cl. 75—10 R 37 Claims

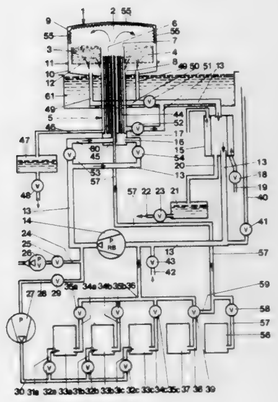


29. An arrangement as defined in claim 13, wherein said chamber has an at least approximately constant cross-section.

3,964,898
PROCESS FOR BATCH PRODUCTION OF SPONGE IRON

Hans Edward Henrik Murray, Djursholm, Sweden, assignor to SKF Nova AB, Gothenburgh, Sweden

Filed May 5, 1975, Ser. No. 574,576
Claims priority, application Sweden, May 9, 1974, 7406175
Int. Cl.² C22D 7/04
U.S. Cl. 75—11 34 Claims



1. A process for batch production of sponge iron, comprising a charging step, during which an oxide material of the iron is arranged as a stationary bed in a furnace chamber, at least one heating step, during which a hot atmosphere is caused to flow through said stationary bed for heating the same, and at least one reduction step, during which hot reducing atmosphere is caused to flow through said stationary bed of oxidic material for reducing the same to sponge iron, comprising heat exchanging, during the heating step and the reduction step, the relatively hot used atmosphere, which has just passed through the stationary bed, substantially in counter-current with relatively cold fresh atmosphere in order to preheat the cold atmosphere before introducing it into the furnace chamber directly after the heat exchange.

3,964,899
ADDITIVES TO IMPROVE SLAG FORMATION IN STEELMAKING FURNACES

Evan Thomas Richard Jones, and Robert Anthony Fishburn, both of Birmingham, England, assignors to Foseco International Limited, Birmingham, England

Filed Nov. 20, 1974, Ser. No. 525,668
Claims priority, application United Kingdom, Dec. 12, 1973, 57604/73
Int. Cl.² C21C 7/00; C22B 9/10
U.S. Cl. 75—53 18 Claims

1. A composition for use in the refining of steel as a dry additive to be added with lime to promote dissolution of lime in slag, said additive being in essentially solid form and consisting essentially of, by weight, at least 20% alumina, and at least one oxide selected from the class consisting of iron oxide, magnesium oxide, manganese oxide and titanium oxide, the said additive having a melting point of less than 1600°C.

3,964,900
SLAG-FORMING MIXTURE

Leonid Isaakovich Krupman, ulitsa R. Ljuxemburg, 30a, kv. 17; Ary Mikhailovich Okonishnikov, ulitsa Naberezhnaya, 117a, kv. 86; Alexandr Egorovich Sochnev, ulitsa Naberezhnaya, 147, kv. 2; Boris Viktorovich Gavronsky, Bulvar Shkolny, 21, kv. 30; Viktor Alexeevich Popov, prospekt Ilicha, 85, kv. 159; Anatoly Nikolaevich Kalashnik, ulitsa Krasnoflotskaya, 98, kv. 39; Vasily Sergeevich Chumachenko, prospekt Ilicha, 85, kv. 116; Veniamin Mikhailovich Gudkevich, bulvar Shevchenko, 69, kv. 32; Georgy Alexeevich Panev, ulitsa Gorkogo, 154, kv. 4; Vasily Ivanovich Detochka, ulitsa Polotskaya, 20g, kv. 24; Savely Adolfovich Telesov, bulvar Shkolny, 13, kv. 29; Leonid Moiseevich Pokrass, ulitsa Pionerskaya, 98; Abram Mikhailovich Ofengenden, ulitsa Tkachenko, 135, kv. 20; Raisa Petrovna Nesterovich, bulvar Pushkina, 25, kv. 11, and Georgy Gavrilovich Zhitnik, bulvar Pushkina, 25, kv. 21, all of Donetsk, U.S.S.R.

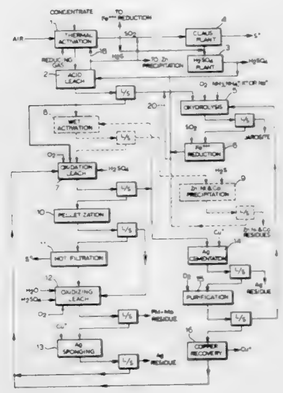
Filed Mar. 3, 1975, Ser. No. 554,541
Int. Cl.² C22B 9/10
U.S. Cl. 75—94 9 Claims

1. A slag-forming mixture for refining metals consisting of, in weight per cent,: 30–70, lime; 15 – 30, sodium nitrate as an oxidizer; 8–25, an aluminum-containing material as an oxidized component; and the balance, a fluoride selected from the group consisting of fluorspar, cryolite and magnesium fluoride.

3,964,901
PRODUCTION OF COPPER AND SULFUR FROM COPPER-IRON SULFIDES

Godefridus Maria Swinkels, Rossland; Robert Arthur Furber, Edmonton; Edward Francis Godfrey Milner, Warfield; Roman Michael Genik-Sas-Berezowsky, Edmonton, and Charles Ray Kirby, Rossland, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto and Cominco Ltd., Vancouver, both of, Canada

Filed Oct. 19, 1973, Ser. No. 408,132
Int. Cl.² C22B 1/11, 15/12, 61/00; C01B 17/06
U.S. Cl. 75—108 28 Claims



1. A process for treating metal sulfides containing iron and non-ferrous metals including copper for bulk removal of the iron content therefrom and for rendering copper and other non-ferrous metal values amenable for separate recovery, which comprises the steps of: heating said metal sulfides in a heating zone to an elevated temperature in a substantially non-oxidizing atmosphere for removal of labile sulfur; contacting said delabilized sulfides in a reducing zone with a

reducing gas capable of accepting sulfur to convert sulfidic iron in said sulfides to an acid leachable form, said reducing gas countercurrently contacting said delabilized sulfides; controllably burning combustible reaction products and labile sulfur therefrom with sufficient oxygen to provide heat for said heating step and to convert sulfur values to SO_2 for discharge from the said heating step; subjecting said sulfides to an acid leach in aqueous sulfuric acid to produce a solution of ferrous sulfate and a solids residue containing copper and iron in a molar ratio of at least about 1:1 with concurrent evolution of H_2S gas; discharging said ferrous sulfate and solids residue for subsequent separation, recovery of non-ferrous metal values and for production of sulfuric acid for recycle to said acid leach; combusting a portion of said H_2S gas; combining the combusted H_2S with SO_2 from said heating step for the production of at least a portion of the sulfuric acid required in said acid leach; combining remaining H_2S with remaining SO_2 from said heating step for the production of elemental sulfur, and controlling said production of sulfuric acid and elemental sulfur to supply acid requirements for the acid leach step and to produce excess sulfur as elemental sulfur.

17. A process as claimed in claim **1**, subjecting the solids residue from the acid leach to an acid oxidation leach in an aqueous solution of sulfuric acid for oxidation of sulfide sulfur to elemental sulfur and for solution of copper as cupric ion to form a copper sulfate solution.

27. A process as claimed in claim **17**, recovering metallic copper from said copper sulfate solution by hydrogen reduction comprising reacting the solution containing about 80 gpl Cu with hydrogen gas at a temperature within the range of from about 130° to 200°C. at a hydrogen partial pressure of from about 300 to about 400 psi for production of metallic copper, and recycling residual solution to the oxidation leach.

3,964,902

METHOD OF FORMING A WICK FOR A HEAT PIPE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Frank G. Arcella, Bethel Park, Pa.; Ernest C. Phillips, Jr., Smithton, Pa., and Richard P. Sprecace, Murrysville, Pa., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 27, 1974, Ser. No. 446,567

Int. Cl.² B22F *1/00, 3/00*; B21C *37/00; 39/06*

U.S. Cl. 75—225 **1 Claim**



1. A method for forming a wick for a heat transfer pipe adapted to utilize evaporation, condensation and surface tension characteristics of a working fluid within a closed ocntainer, comprising the steps of:

A. forming a blank from which a wick is to be shaped by folding a sheet of metallic screen of fine mesh into superimposed layers, uniting said superimposed layers by spot-welding the layers together, saturating said layers with water, and flat rolling the layers while in a saturated condition, whereby said blank is plasticized for reducing the size of the mesh opening;

B. permanently deforming the blank into a cylindrical structure by wrapping the blank about an inner mandrel and inserting the inner mandrel into an outer mandrel of a cylindrical configuration and swaging the mandrels and the blank;

C. disassociating the mandrels from the blank by selectively etching the mandrels; and

D. sintering the blank by subjecting the blank to elevated temperatures in a high vacuum environment.

3,964,903

DEVELOPMENT OF ELECTROSTATIC IMAGES

Jan Frans Van Besauw, Brasschaat; Noel Jozef De Volder, Edegem; Jozef Leonard Van Engeland, St. Katelijne-Wayer, and Albert Lucien Poot, Kontich, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Division of Ser. No. 254,916, May 19, 1972, Pat. No. 3,817,868. This application Feb. 21, 1974, Ser. No. 444,502

Claims priority, application United Kingdom, May 21, 1971, 16345/71

Int. Cl.² G03G *5/10; 13/08*

U.S. Cl. 96—1 SD **17 Claims**

1. A dry developing material for dry development of electrostatic images comprising a mixture of carrier particles and finely divided toner powder, said mixture having incorporated therein at least one solid hydrophobic bivalent or trivalent metal salt of a monoester or diester of a phosphorus oxyacid in a sufficient amount to improve the dry free-flowing nature thereof.

3,964,904

MANIFOLD IMAGING MEMBER AND PROCESS EMPLOYING A DARK CHARGE INJECTING LAYER

Joseph M. Kropac, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 22, 1974, Ser. No. 499,683

Int. Cl.² G03G *5/00, 13/00, 17/00*

U.S. Cl. 96—1.5 **16 Claims**

1. An imaging member comprising a donor layer and a receiver layer and sandwiched therebetween an integral electrically photosensitive imaging layer comprising electrically photosensitive materials and a thermo-activator for said imaging layer dispersed in an electrically insulating binder, said thermo-activator being a material different from the binder, and having a melting point lower than the binder so as to structurally weaken the cohesive strength of the imaging layer in response to heating, and sandwiched between the imaging layer and either the donor or receiver layer, layer of a dark charge injecting material, said dark charge injecting material being capable of injecting a uniform charge of one polarity into the electrically photosensitive imaging layer while under an electric field in the dark, and at least one of said donor and receiver layers being at least partially transparent to electromagnetic radiation to which said imaging layer is sensitive.

3,964,905

COLOR PHOTOGRAHIC MATERIAL HAVING A BLEACH INHIBITOR THEREIN DEFINING A SOUND TRACK

Takeshi Hirose; Yasushi Oishi, and Tadao Sakai, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Mar. 13, 1974, Ser. No. 450,938

Claims priority, application Japan, Mar. 13, 1973, 48-29252

Int. Cl.² G03C *7/24*

U.S. Cl. 96—4 **23 Claims**

1. An unexposed and unprocessed color photographic material comprising a support having thereon one or more silver halide color emulsion layers containing a coupler capable of forming a dye by reaction with the oxidation product of an aromatic primary amino developing agent and at least one of the emulsion layers of the color emulsion layers of the color photographic material containing a bleach inhibitor defining a sound track portion of said photographic material.

3,964,906

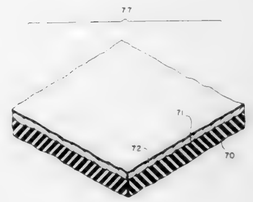
METHOD OF FORMING A HYDROPHOBIC SURFACE BY EXPOSING A COLLOIDAL SOL TO UV RADIATION

John Thomas Kenney, Lawrence Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 424,015, Dec. 12, 1973, Pat. No. 3,949,121. This application Sept. 26, 1975, Ser. No. 617,258

Int. Cl.² G03F *7/02*

U.S. Cl. 96—33 **2 Claims**



1. A method of forming a hydrophobic surface pattern on a surface, which comprises:

coating the surface with a stable aqueous colloidal wetting sol, formed by a hydrolysis and nucleation reaction, comprising insoluble hydrous oxide particles of an element selected from the group consisting of Be, In, Cr, Fe, Co, Ni, Tl, Cu, Zn, Sn and mixtures thereof, to form a coated surface of hydrophilic character; and

selectively exposing said coated surface to a source of ultraviolet radiation having a wavelength ranging from 1800A to 3300A to render exposed portions hydrophobic to form the hydrophobic surface pattern.

2. A method of preparing a printing master, which comprises:

a. coating a surface with a stable aqueous colloidal wetting sol, formed by a hydrolysis and nucleation reaction, comprising insoluble hydrous oxide particles of an element selected from the group consisting of Be, In, Cr, Fe, Co, Ni, Tl, Cu, Zn, Sn and mixtures thereof to form a coated surface of hydrophilic character, to form a coated surface of hydrophilic character; and

b. selectively exposing portions of said coated, hydrophilic surface to a source of ultraviolet radiation having a wavelength ranging from 1800A to 3300A to render regions thereof hydrophobic and to delineate an ink retaining surface pattern.

3,964,907

METHOD FOR THE PREPARATION OF RELIEF PRINTING MASTERS

Dana G. Marsh, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

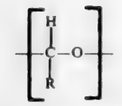
Continuation-in-part of Ser. No. 415,288, Nov. 12, 1973, abandoned. This application Sept. 2, 1975, Ser. No. 609,339

Int. Cl.² G03G *5/00, 1/68*; B31B *1/76*

U.S. Cl. 96—35 **13 Claims**

1. A method for the preparation of a relief printing master which comprises exposing a printing plate to actinic radiation in an imagewise manner, wherein said plate comprises a substrate having on its surface a film of a composition comprising:

a. a degradable polymer containing segments characterized by the structural formula:



wherein R is H, an alkyl hydrocarbon radical of 1 to 6 carbon atoms, a chlorinated or fluorinated aliphatic hydrocarbon of 1 to 6 carbon atoms or a cyano substituted aliphatic hydrocarbon radical of 1 to 5 carbon atoms and,

b. a photosensitizer which is capable upon exposure to actinic radiation of assuming the $^3(n,\pi^*)$ or $^1(n,\pi^*)$ state and extracting a hydrogen atom from the polymer backbone, thereby causing the polymer to degrade and form depressions in the film in the exposed areas.

3,964,908

POSITIVE RESISTS CONTAINING DIMETHYLGLUTARIMIDE UNITS

Joachim Bargon, Los Gatos; Edward Gipstein, Saratoga, and Hiroyuki Hiraoka, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

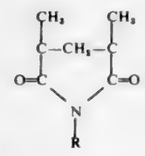
Filed Sept. 22, 1975, Ser. No. 615,652

Int. Cl.² G03C *5/00, 5/24*

U.S. Cl. 96—35.1 **10 Claims**

1. A process for forming an image with a positive resist, said process comprising the steps of:

1. forming on a substrate a film of a composition comprising a polymer containing the structural unit



wherein R is H, CH_3 or C_2H_5,

2. exposing said film in a predetermined pattern to radiation,

3. removing the radiation exposed portion of said film with a solvent.

3,964,909

METHOD OF PREPARING A PATTERN ON A SILICON WAFER

Richard Joseph Himics, Skillman; Scott Oliver Graham, and Daniel Louis Ross, both of Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 6, 1975, Ser. No. 555,728

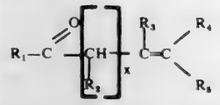
Int. Cl.² G03C *5/00, 1/68*

U.S. Cl. 96—36.2 **5 Claims**



1. In a method of preparing a pattern on a silicon oxide-coated silicon wafer which comprises applying a photoresist film to said oxide layer, exposing said photoresist to a light pattern, developing said exposed photoresist to remove ex-

posed portions thereof, thereby uncovering portions of the oxide layer, etching said wafter to remove the uncovered oxide layer and removing the remaining photoresist, the improvement which comprises employing as the photoresist a film of a copolymer of SO_2 and keto-olefin of the formula:



wherein R_1 is alkyl, aryl or substituted aryl; R_2 is hydrogen or methyl; x is an integer of 1 or 2; R_3 is hydrogen or is part of a carbocyclic ring with R_4 or R_5, with the proviso that when x is 2, R_3 is hydrogen; R_4 is hydrogen, alkyl, or aryl and R_5 is hydrogen or, when R_4 is hydrogen, is alkyl or aryl, or R_4 and R_5 together are part of a carbocyclic ring.

3,964,910

PRINTING OF DEEP DRAWN CONTAINERS WITH IMAGES REFLECTED FROM INSIDE OF CYLINDER

Robert Geist, Kempten, and Franz Benedikt, Rudolph Hamburg, both of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 13, 1974, Ser. No. 532,444

Claims priority, application Germany, Dec. 20, 1973, 2363551

Int. Cl.² G03C *11/00*; **G03B** *27/58*, *27/48*, *27/50*

U.S. Cl. 96—46 **5 Claims**

1. A process for producing a distorted artwork image on flat stock material, the distorted artwork image being such as to provide the desired artwork image after being stretched by deep drawing the flat stock material into the desired shape, comprising representing the original artwork on the inner walls of a cylinder, disposing a mirror co-axially within the cylinder, the mirror having a reflecting surface inclined to the axis of the cylinder, photographing a distorted image of the artwork as reflected in the mirror, and printing the distorted image on the flat stock material.

3,964,911

PHOTOGRAPHIC REPRODUCTION PROCESSES USING DIAZONIUM SALTS AND SUBSTITUTED SPIRO[BENZOPYRANE]

Jean Jules Achille Robillard, Ferney Voltaire, France, assignor to La Cellophane, Paris, France

Filed Dec. 18, 1973, Ser. No. 425,866

Claims priority, application France, Dec. 22, 1972, 72.27090

Int. Cl.² G03C *5/18*, *5/34*, *5/24*

U.S. Cl. 96—49 **9 Claims**

1. A photographic process for dry developing a negative image of an original containing image areas and non-image transparent areas comprising

a. placing said original over a photosensitive layer carried on a base layer, said photosensitive layer comprising a homogeneous mixture of

i. at least one diazonium salt photodecomposable into phenol; and

ii. at least one spiropyran compound photodecomposable into merocyanine, said spiropyran compounds selected from the group consisting of indolyl-2-spiro(benzo-1-pyrane) compounds and benzothiazole-2-spiro(benzo-1-pyrane) compounds wherein the molar ratio of said diazonium salt (i) to said spiropyran compound (ii) is from 0.7 -2.6:1; and

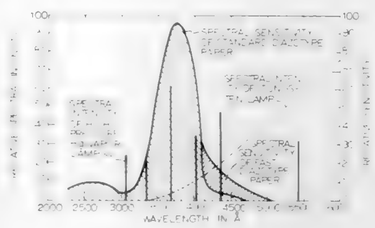
iii. from 0–65 percent by weight, based on the total of (i), (ii) and (iii) of a normally solid material having a melting point lower than about 150°C and which when in the molten state is a solvent for said phenol and said merocyanine,

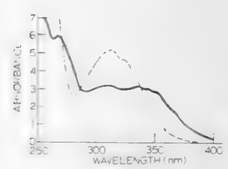
b. subjecting said photosensitive layer to imagewise exposure of actinic radiation whose emission spectrum encompasses the absorption bands of both said at least one diazonium salt of (a) (i) and of said at least one spiropyran compound of (a) (ii) to thereby produce said phenol and said merocyanine in the exposed areas;

c. heating said photosensitive layer until both of said phenol and said merocyanine are substantially completely dissolved or melted; and

d. allowing the formation of a colored complex of said phenol and said merocyanine in the exposed areas to thereby form a negative image of said original.

4. A photographic process for dry developing a positive image of an original containing image areas and non-image transparent areas comprising





a. subjecting a photosensitive layer carried on a base layer, said photosensitive layer comprising a homogeneous mixture of

i. at least one diazonium salt photodecomposable into phenol; and

ii. at least one spiropyran compound photodecomposable into merocyanine, said spiropyran compounds selected from the group consisting of indolyl-2-spiro(benzo-1-pyran) compounds and benzothiazole-2-spiro(benzo-1-pyrane)compounds wherein the molar ratio of said diazonium salt (i) to said spiropyran compound (ii) is from 0.7-2.6:1; and

iii. from 0–65 percent by weight, based on the total of (i), (ii), and (iii) of a normally solid material having a melting point lower than about 150°C and which when in the molten state is a solvent for said phenol and said merocyanine; to actinic radiation whose emission spectrum encompasses both the absorption band of said at least one diazonium salt of (i) and of said at least one spiropyran compound of (ii) to thereby produce said phenol and said merocyanine;

b. placing said original over said exposed photosensitive layer;

c. subjecting said photosensitive layer to image-wise exposure of actinic radiation whose emission spectrum encompasses the absorption band of said merocyanine to thereby reconvert said merocyanine to said spiropyran in said re-exposed areas;

d. heating said photosensitive layer until both of said phenol and said merocyanine are completely melted or dissolved; and

e. allowing the formation of a colored complex of said phenol and said merocyanine in the areas corresponding to the image areas of the original to thereby form a positive image of said original.

3,964,912

RUTHENIUM CONTAINING PHOTOGRAPHIC DEVELOPERS

Harry J. Price, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 504,596, Sept. 9, 1974, abandoned, and a continuation-in-part of Ser. No. 483,252, June 26, 1974, abandoned. This application Dec. 29, 1975, Ser. No. 645,104

Int. Cl.² G03C *5/30*

U.S. Cl. 96—66.3 **24 Claims**

1. A composition useful in developing silver halide photographic elements comprising

at least one silver halide developing agent and

a development accelerating amount of at least one ruthenium(Iil) or (II) cationic complex including at least four ligands chosen from the class consisting of ammine or amine ligands,

each said developing agent exhibiting in the absence of other silver halide developing agents and said ruthenium complex a silver halide development induction period in excess of 5 seconds and

at least one said developing agent exhibiting a rate of reduction of ruthenium(III) in said ruthenium(III) cationic complex, or produced by the oxidation of said ruthenium-(II) cationic complex, which exceeds its rate of reduction of silver halide.

3,964,913

STAINLESS STEEL POLISH

Charles David Nighy, c/o Catercraft (Sussex) Ltd., 18 Old Mill Square, Starrington, Sussex, England

Continuation-in-part of Ser. No. 390,559, Aug. 22, 1973, abandoned. This application Sept. 30, 1974, Ser. No. 510,158

Int. Cl.² C09G *1/02*

U.S. Cl. 106—10 **7 Claims**

1. A paste-like polishing composition for stainless steels and the like consisting essentially of water, alumina powder, an aliphatic monohydric alcohol having from 12 to 20 carbon atoms and a waxy condensation product of ethylene oxide and of an aliphatic monohydric alcohol having from 12 to 20 carbon atoms; said alumina powder constituting from about 40 to 50 parts, said aliphatic alcohol constituting from about 7 to 20 parts, said polyoxyethylated alcohol constituting from about 7 to 10 parts, and said water constituting from 27 to 30 parts, all by volume per 100 parts by volume of said composition.

3,964,914

ELECTROMARKING SOLUTION

Jonathan S. Bullock, Oak Ridge; William L. Harper, Wartburg, and Charles G. Peck, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Aug. 16, 1974, Ser. No. 498,146

Int. Cl.² C09D *11/00*

U.S. Cl. 106—19 **3 Claims**

1. An aqueous halogen-free electromarking solution consisting essentially of a water-soluble nitrate salt of an amphoteric metal selected from the group consisting of zinc, aluminum and tin in a concentration of about 0.085 to 0.139 mole per liter of solution, a chelating agent consisting of a water-soluble compound for complexing free metal ions in said solution with said chelating agent being in the solution with a concentration range of about 0.071 to 0.103 mole per liter of solution, and having an anion contributor selected from the group consisting of citrate, tartrate, oxalate, and ethylenediamine-tetraacetic acid, a corrosion-inhibiting agent in a concentration of 0.017 to 0.031 mole per liter of solution and selected from the group consisting of alkali metal chromates, dichromates, molybdates, tungstates, technetiates, vanadates, peroxydisulphates, and ethylenediamine, and paraformaldehyde, and a solution pH in the range of 2.3 to 10.0.

3,964,915

INVESTMENT WAX

Richard E. Doenges, North Alliance, and James E. Amelung, Minerva, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Dec. 26, 1974, Ser. No. 536,634

Int. Cl.² B28B *7/34*; **C08L** *91/06*

U.S. Cl. 106—38.6 **6 Claims**

1. In a pattern composition characterized by a low injection temperature, a low coefficient of expansion and insubstantial cavitation after injection into a pattern die comprising waxes, fatty acids, and thermoplastic resins, the improvement comprising as said ingredients: the composition consisting essentially of

1. 47 to 53% by weight of a mixture of stearic and palmitic acids of which 43 to 98% by weight is stearic acid,
2. wax in the amount of about 9 to 11% by weight,
3. about 31 to 35% by weight of a thermoplastic resin having a ball and ring melting point in the range of 90° to 125°C said resin being compatible with said wax and acids,
4. from 2.5 to 3.5% by weight of a fatty acid amide containing 12 to 22 carbon atoms per molecule which functions as a release agent and intercrystalline slip agent, and
5. from 1.5 to 2.5% by weight of aluminum polystearate and/or magnesium distearate.

3,964,916

CASTING POWDER

William H. Armistead; Dominic P. Mamazza, both of Corning, N.Y.; David Rostoker, Monroeville, Pa., and Frank E. Wooley, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 13, 1974, Ser. No. 532,328

Int. Cl.² C03C *3/04*; **B22D** *11/00*

U.S. Cl. 106—38.27 **10 Claims**

5. A method of making a particulate casting material to be applied onto the upper surface of molten steel in a vertical continuous casting mold therefor and comprising thoroughly mixing batch materials that melt on the surface of the molten steel to form a protective flux-lubricant molten glass covering which also flows down between the solidifying cast steel and the mold wall,

wherein the improvement comprises

a. thoroughly and intimately mixing a batch having an aggregate particle sizing by weight of:

at least 75% −120 mesh U.S. Standard Sieve,

at least 60% −200 mesh U.S. Standard Sieve,

analytically consisting essentially of, by weight:

20–45% SiO_2,

10–40% CaO, SrO, BaO and combinaions thereof,

0–10% Al_2O_3

0–11% Fe_2O_3

5–25% Na_2O, K_2O and combinations thereof,

0–15% MgO,

3–15% fluorine ion,

0–3% TiO_2, and

b. heating the mixed batch at temperature of at least 550° to less than 1000°C. for time sufficient to cause the sodium and potassium compounds to react with the other ingredients so as to leave no discrete Na_2O and K_2O phase identifiable therein as such, to render the resultant batch chemically homogeneous, and to drive off volatiles so as to render the resultant batch capable of exhibiting not more than 2% weight loss upon further heating at 900°C. for one hour.

3,964,917
OBJECTS OF MARBLE-LIKE GLASS CERAMIC

Shigeji Nakamura, Otsu, Japan, assignor to Nippon Electric Glass Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 312,631, Dec. 6, 1972, abandoned. This application Jan. 2, 1975, Ser. No. 539,160
Claims priority, application Japan, Dec. 10, 1971, 46-99500
Int. Cl.² C03C *3/22*
U.S. Cl. 106—39.6 **17 Claims**

1. A pseudo-marble body essentially consisting of a composition consisting essentially of 56.6% to 63.9% SiO_2, 5.3% to 8.9% Al_2O_3, 18.3% to 21.8% CaO, 5.1% to 9.9% ZnO, 0% to 8.2% BaO, 0% to 2.2% B_2O_3, and 0% to 5.2% $Na_2 + K_2O$, the total amount of SiO_2, Al_2O_3 and CaO being within the range of 81.4% and 89.1%, all percentages being by weight, the composition constituting elongated crystals of β-wollastonite and a matrix, and the crystals being embedded in the matrix.

3,964,918
BARIUM BOROSILICATE OPTICAL GLASSES

George B. Hares, and David W. Morgan, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 444,711, Feb. 22, 1974, abandoned. This application Dec. 6, 1974, Ser. No. 530,228
Int. Cl.² C03C *3/00*
U.S. Cl. 106—47 Q **6 Claims**

1. A lanthana-baria-borosilicate optical glass having a refractive index greater than 1.64, a dispersive index of at least 53, a weight loss not exceeding 1 mg./cm.² when immersed in a 10% HCl solution at room temperature for ten minutes, and being composed essentially of, as calculated from the batch in weight percent on an oxide basis, 18–36% SiO_2, 8–22% B_2O_3, 25–48% BaO, 0–10% of the other divalent metal oxides ZnO, PbO, and/or CaO, the total divalent metal oxide (RO) content being 25–48%, and 10–30% La_2O_3, the mole ratio of $RO:SiO_2$ not exceeding 0.6.

3,964,919
GLASS COMPOSITIONS

Neil Hunter Ray; William Derek Robinson, and Cyril John Lewis, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 329,167, Feb. 2, 1973. This application July 29, 1975, Ser. No. 599,999
Claims priority, application United Kingdom, Feb. 14, 1972, 6694/72
Int. Cl.² C03C *3/16, 3/12*
U.S. Cl. 106—47 R **18 Claims**

1. Inorganic oxide glasses having compositions consisting essentially of ingredients within the range (in mole percent):
   a. P_2O_5, 50–75%;
   b. Group VIb oxides 0.1–10%, comprising singly or in combination CrO_3 up to 2.6%, MoO_3 up to 7%, WO_3 up to 7%;
   c. at least one oxide selected from the group consisting of alkali metal oxides, alkaline earth oxides 15–49.9%; and
   d. lead oxide,

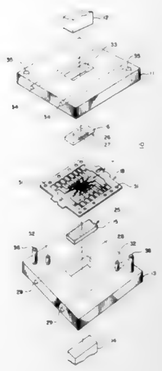
the total of all the above ingredients being at least 98 moles percent of the total composition with no more than 2% of other oxides, excluding water.

3,964,920
SOLDER GLASS COMPOSITION AND METHOD OF USING SAME FOR ENCAPSULATING DEVICES

Earl K. Davis, Tempe; Kent W. Hansen, and Duane C. Silvis, both of Scottsdale, all of Ariz., assignors to Motorola, Inc., Chicago, Ill.

Filed Oct. 26, 1973, Ser. No. 409,843
Int. Cl.² C03C *3/04, 3/10*
U.S. Cl. 106—53 **6 Claims**

1. A non-devitrifying solder glass composition consisting essentially of about 50–62 percent by volume of sealing glass and about 50–38 percent by volume of $ZrSiO_4$, said sealing glass consisting essentially of by weight: SiO_2 about 0–2 percent, PbO about 65–72 percent, ZnO about 5–10 percent, PbF_2 about 2–10 percent, CdO about 1–5 percent, TiO_2 about 0.5–3 percent and B_2O_3 about 10–14 percent.



3,964,921
WELL CEMENTING COMPOSITION HAVING IMPROVED FLOW PROPERTIES, CONTAINING PHOSPHONOBUTANE TRICARBOXYLIC ACID, AND METHOD OF USE

Leonard J. Persinski, Pittsburgh; Fred David Martin, McMurray, and Sally Lee Adams, Pittsburgh, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Feb. 27, 1975, Ser. No. 553,775
Int. Cl.² C04B *7/02, 7/35;* **E21B** *33/13*
U.S. Cl. 106—90 **15 Claims**

1. A cementing composition comprising hydraulic cement in admixture with from about 0.01 to about 5.0 percent by weight, based on weight of hydraulic cement, of a phosphonobutane tricarboxylic acid additive of the following formula:



wherein R is independently selected from -H,



and



provided that three R groups are



and one R group is



3,964,922
PROCESS FOR CALCINATION OF CEMENT-CLINKER

Toyomi Nishida; Hiroshi Sohma, and Hayami Ito, all of Hyogo, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Division of Ser. No. 394,017, Sept. 4, 1973, Pat. No. 3,881,862. This application May 22, 1974, Ser. No. 472,326
Claims priority, application Japan, Sept. 4, 1972, 47-88536
Int. Cl.² C04B *7/44*
U.S. Cl. 106—100 **4 Claims**

1. A process for calcining cement clinkers wherein a calcining furnace is provided between a preheating apparatus for suspension type raw material and a rotary kiln or a fluidizing calcination apparatus and the raw material is preheated in said preheating apparatus and then calcined in said calcining furnace, which comprises the steps of:
   a. introducing the preheated raw material particles into the calcining furnace;
   b. producing a combustion gas, in a combustion chamber having a separate heat source independent of the calcining apparatus, at a temperature above that required for calcining the most or the whole part of said preheated particles;
   c. introducing the combustion gas into the bottom of the calcining furnace in the form of high velocity flow at high temperature rising from the bottom of said calcining furnace, causing said combustion gas flow to rapidly expand to form a high velocity and high temperature flow in the center of said calcining furnace and a lower velocity flow of relatively lower temperature due to heat exchange with said preheated particles at the inner periphery of the surrounding wall, and introducing them into the upper part of said calcining furnace thereby reducing the velocity of the high velocity gas flow to cause the preheated particles riding on the high velocity and high temperature flow to rise from the bottom of said furnace to the upper part of said furnace while heating said raw materials to cause calcination, and classifying and separating them into lighter calcined particles and non-calcined heavier particles in the upper part of said furnace;
   d. exhausting the calcined lighter particles together with gas from the upper part of said furnace while causing the non-calcined heavier particles to fall down in the lower velocity flow along the inner surface of the surrounding wall of the furnace to the bottom of said furnace whereby the high velocity flow is established to produce the circulation of the non-calcined particles in said furnace for a sufficient time required for their calcination;
   e. separating the calcined particles from the gas; and
   f. passing the calcined cement particles into a calcination apparatus to form cement clinkers.

3,964,923
CONTROLLING PERMEABILITY IN SUBTERRANEAN FORMATIONS

Norris D. Zetmeir, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 13, 1975, Ser. No. 540,569
Int. Cl.² C08L *1/28, 33/26*
U.S. Cl. 106—189 **7 Claims**

1. A nonaqueous fluid composition, which, on admixing with water forms a water-impermeable gel, consisting of:
   a. at least one water-soluble or at least water-dispersible polymeric material selected from the group consisting of polyacrylamides, cellulose ethers and polysaccharides;
   b. an oxidizing agent selected from the group consisting of water-soluble compounds of polyvalent metals wherein the metal is present in its highest valence state, is capable of being reduced to a lower polyvalent valence state and is in a form normally unavailable for reaction until contacted with a reducing agent;
   c. a reducing agent effective to reduce the higher valence metal in said oxidizing agent (b) to a lower polyvalent valence state; and
   d. at least one monohydric aliphatic alcohol having from 1 to 4 carbon atoms in amounts of each component identified as (a) to (d) as follows: from 0.0025 to 20 parts of component (a) per 100 parts of component (d); an amount of component (b) at least sufficient to yield 3×10^{-6} gram-atoms of said metal (b) per gram of polymeric material (a); and an amount of component (c) at least sufficient to reduce said metal of said component (b) to a lower polyvalent valence state.

3,964,924
PROTECTIVE COATING FOR GRAPHITE ELECTRODES

Ronald Kurzeja, Iselin, N.J., assignor to Pfizer Inc., New York, N.Y.

Filed July 11, 1975, Ser. No. 596,021
Int. Cl.² C09D *1/00*
U.S. Cl. 106—286 **4 Claims**

1. A coating composition for the protection of graphite electrodes comprising a water dispersion, expressed in weight percent based on total solids, of from about 35 to 65 percent oxide-coated particulate silicon, from about 15 to 40 percent colloidal silica, from about 2 to 10 percent powdered carbon and from about 5 to 20 percent ground glass, the oxide coating of said coated silicon constituting from about 10 to 60 weight percent of said coated silicon and said glass having a softening point of from about 650° to 750°C.

3,964,925
APPARATUS FOR TREATING FLOOR COVERINGS

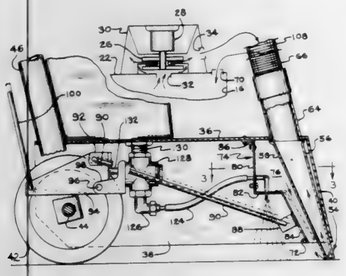
Jack L. Burgoon, Toledo, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Continuation-in-part of Ser. No. 465,233, April 29, 1974, abandoned. This application July 1, 1974, Ser. No. 484,804
Int. Cl.² B08B *5/04*
U.S. Cl. 134—21 **32 Claims**

1. Apparatus for cleaning a floor covering or the like, said apparatus comprising means forming a vacuum nozzle, means forming an exhaust air opening near said vacuum nozzle, means for supporting said nozzle means and said opening means over the floor covering for movement thereover, a remote vacuum tank, a vacuum blower remote from said nozzle means, said opening means and said supporting means and communicating with said tank for establishing a vacuum in said tank, a housing around said vacuum blower and having an exhaust outlet, first flexible passage means connecting said vacuum nozzle and said tank to establish a continuous flow of air through said nozzle to said tank whenever said blower is operating, second flexible passage means connecting said exhaust air opening and said exhaust outlet, and a liquid nozzle positioned at said exhaust air opening for directing liquid toward the floor covering with the exhaust air passing through

said exhaust air opening being effective to break up the liquid from said liquid nozzle.

12. Apparatus according to claim 1 characterized by said supporting means comprising a platform, a liquid container



for containing liquid at ambient pressure, means for supplying liquid from said container to said liquid nozzle, and means for removably supporting said liquid container above said liquid nozzle on said platform.

3,964,926

CLEANSING RECEPTACLE FOR CAPILLARY WRITING PEN PARTS

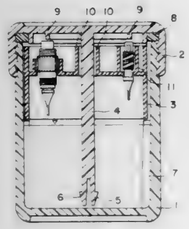
Werner Westphal, Pinneberg, Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Apr. 2, 1975, Ser. No. 564,391

Claims priority, application Germany, Apr. 27, 1974, 7414942

Int. Cl.² B08B *3/04, 11/02*

U.S. Cl. 134—117 **5 Claims**



1. A cleansing receptacle of the type used for cleaning the several components of capillary writing pen parts, comprising:

A. a container, adapted to be partially filled with cleaning solution, having a closed end and an open end, a cover for said open end and having coupled thereto a holder adapted for reception of parts to be cleaned, wherein;

B. said cover and holder coupling comprises a pin extending axially and inwardly from said cover through a complementary axial hole within said holder, said holder being axially slidable thereupon wherein said pin at its distal end includes means to limit axial displacement, and;

C. said container further including a plurality of ribs formed axially extending from said closed end upon its inner walls operable to axially support and limit the inward displaceability of said holder inside and near the top of said container when said cover and holder assembly has been fitted to said container, thereby completely enclosing said holder by said cover and said container and further maintaining said pen parts above said cleaning solution when said assembly is in an upright position.

3,964,927

LEAD DIOXIDE-ZINC RECHARGEABLE-TYPE CELL AND BATTERY AND ELECTROLYTE THEREFOR

Enrique Villarreal-Dominguez, Edificio 28-Depto, 302, Villa Olimpica, Mexico City 22, Mexico

Filed Oct. 10, 1974, Ser. No. 513,558

Int. Cl.² H01M *4/36*

U.S. Cl. 136—26 **4 Claims**

1. A storage battery comprising a plurality of lead dioxide-zinc rechargeable-type cells connected in series, each cell comprising a positive lead dioxide plate, a negative amalgamated zinc metal plate spaced from said positive plate and parallely confronted thereto, with both plates being permanently submerged in an acid electrolyte comprising an aqueous solution of zinc sulfate, sodium sulfate, aluminum sulfate, mercuric sulfate, sulfuric acid, dextrin and dibutylamine.

3,964,928

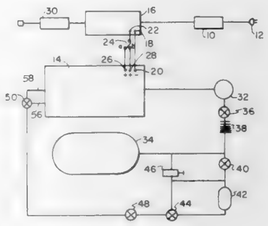
LEAD-OXYGEN DC POWER SUPPLY SYSTEM HAVING A CLOSED LOOP OXYGEN AND WATER SYSTEM

William J. Britz, Huntsville; William A. Boshers, Madison, and James J. Kaufmann, Huntsville, all of Ala.

Filed Dec. 27, 1974, Ser. No. 537,024

Int. Cl.² H01M *8/04, 8/18*

U.S. Cl. 136—86 A **2 Claims**



1. A closed-loop electrical power supply system for supplying power to electrical equipment comprising:

a. at least one lead-oxygen battery cell having a pair of positive terminals and a negative terminal;

b. charging means supplying DC power for charging said battery cell;

c. pump means connected to said battery cell for evacuating oxygen released from said battery cell during the charging thereof;

d. storage means connected to said pump means for receiving said oxygen in such a manner as to store said oxygen;

e. condensor means connected between said pump means and said storage means for cooling said oxygen causing moisture contained therein to condense into water;

f. accumulator means for receiving and storing said water; and

g. valve and valve control means for causing said water to be conveyed and returned to said battery cell following the charging thereof and for permitting oxygen from said storage means to be delivered and returned to said battery cell during the discharging of said battery cell;

whereby a closed-loop, self-contained battery system is provided reclaiming and re-using gases given off during the operation thereof thus eliminating pollutive and dangerous fumes while enhancing the efficiency of the system.

3,964,929

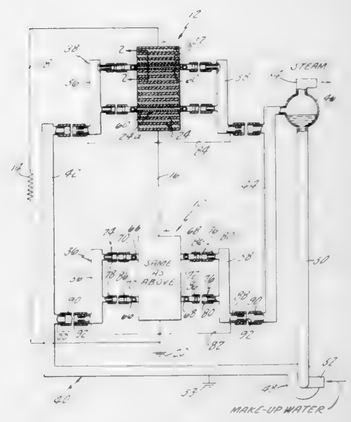
FUEL CELL COOLING SYSTEM WITH SHUNT CURRENT PROTECTION

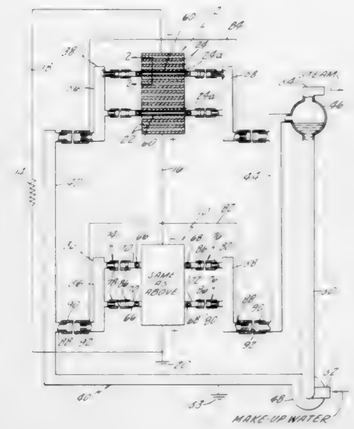
Paul E. Grevstad, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed July 21, 1975, Ser. No. 597,612

Int. Cl.² H01M *8/04*

U.S. Cl. 136—86 R **7 Claims**





1. A fuel cell power plant cooling system comprising:

a non-dielectric coolant;

a load;

electrical connection means;

a plurality of fuel cell stacks each having a low potential end and a high potential end, said stacks connected electrically in series to each other via said electrical connection means and connected electrically in series with said load, said series of stacks being connected electrically to ground, each stack comprising a plurality of cells connected electrically in series and electrically conductive separator plate means disposed between each pair of adjacent cells in each stack, at least one of said separator plate means in each stack including passageways formed therein, each of said stacks including a cooler, said coolant flowing through said cooler, said cooler including cooler tubes said tubes disposed within said passageways and passing through said plate means, said tubes comprising electrically conductive wall means, said cooler also including an electrically conductive plenum in fluid communication with said tubes;

coolant circulation means connected electrically to ground and in fluid communication with each of said plenums, said coolant circulation means including dielectric first conduit means connected to said plenums for providing fluid communication between said circulation means and said plenums and adapted to create first high electrical resistance paths in said coolant; and

electrical communication means connected between said plenum of at least one of said cooler and one of said ends of said stack associated with said plenum.

3,964,930

FUEL CELL COOLING SYSTEM

Carl A. Reiser, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed July 21, 1975, Ser. No. 597,614

Int. Cl.² H01M *8/04*

U.S. Cl. 136—86 R **9 Claims**

1. In a fuel cell stack comprising a plurality of cells connected electrically in series and electrically conductive separator plate means disposed between each pair of adjacent cells, said plate means including a pair of opposed surfaces, one facing each cell, each of said cells comprising an anode electrode and a cathode electrode spaced apart and including a matrix disposed therebetween adapted to hold electrolyte, said surfaces having channels formed therein in gas communication with said electrodes for carrying reactant gases into communication with said electrodes, an improvement to said stack comprising:

at least one of said opposed surfaces of at least one of said separator plate means in said stack including passageways formed therein parallel to the plane of said surface; and

cooler means for carrying a coolant into heat exchange relationship with said cells and including a plurality of cooler tubes disposed in said passageways and passing through said plate means.

3,964,931

CATHODE FOR ALKALINE PRIMARY BATTERIES

Helmut Balters, Abtsgmund, and Gerhard Schneider, Ellwangen, both of Germany, assignors to VARTA GmbH, Ellwangen, Germany

Division of Ser. No. 203,058, Nov. 29, 1971, abandoned. This application Oct. 31, 1973, Ser. No. 411,279

Claims priority, application Germany, Nov. 30, 1970, 2058768

Int. Cl.² H01M *21/00*

U.S. Cl. 136—107 **6 Claims**

1. In a cell having a positive electrode, a negative electrode and an electrolyte, said cell being for use with a multi-cell battery, said positive electrode consisting essentially of mercury oxide and means for providing an indication of the state of discharge of said cell consisting of silver (I) oxide, said silver (I) oxide being from 2 to 10% by weight of the positive electrode mass.

3,964,932

BATTERY HAVING DEFORMATIONS IN A METAL LAYER

John E. Oltman, Mount Horeb, and Ralph H. Feldhake, Verona, both of Wis., assignors to ESB Incorporated, Philadelphia, Pa.

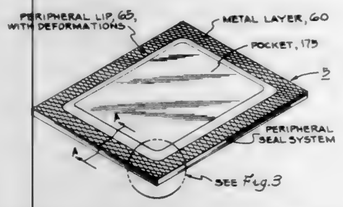
Continuation-in-part of Ser. No. 326,697, Jan. 26, 1973, abandoned. This application Aug. 14, 1975, Ser. No. 604,716

Int. Cl.² H01M *1/00*

U.S. Cl. 136—111 **7 Claims**

1. An improvement in a battery having a metal layer as a component thereof, the metal layer having a peripheral lip which is adhesively heat sealed to at least one other compo-

nent of the battery around the periphery of the battery and as part of a peripheral sealing system for the battery,



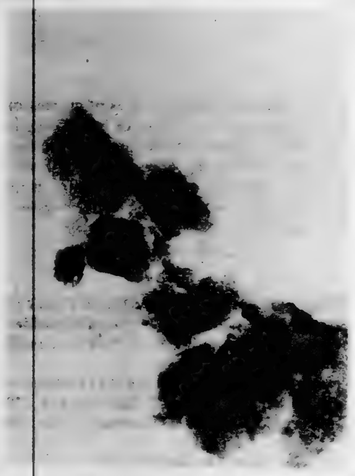
the improvement providing means for distributing stresses in the metal layer, the improvement comprising a plurality of deformations in the peripheral lip of the metal layer.

3,964,933

CARBON ARTICLE INCLUDING ELECTRODES AND METHODS OF MAKING THE SAME

Shun Chong Fung, Edison, and Samuel J. Tauster, Englishtown, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 8, 1974, Ser. No. 458,543
Int. Cl.² H01M 13/02
U.S. Cl. 136—121 **4 Claims**



1. An electrically conducting carbon composition comprising a non-conductive oxide which has a deposit of from about 2 wt. % to about 12 wt. % of carbon on the surface thereof, said oxide being one which forms nonstoichiometric compounds upon reduction, and the morphology of the deposited carbon being substantially identical to that of the oxide when observed by electron micrograph.

3,964,934

HIGH DISCHARGE CAPABILITY SEALED THROUGH CONNECTOR

Larry K. W. Ching, Jr., Littleton, and Charles E. Coleman, Lakewood, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

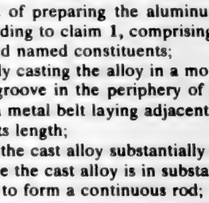
Filed May 15, 1975, Ser. No. 577,813
Int. Cl.² H01M 2/30
U.S. Cl. 136—135 R **23 Claims**

1. A sealed through connector for conducting electrical current from an electrolytic device through a substantially electrically nonconductive resilient partition, comprising:

at least one connector seat having a through bore and contained within said resilient partition, the seat comprising a shoulder portion interposed between a reduced neck portion and an inclined ramp portion;

a connector post insert positioned within the seat and extending through the bore, the insert comprising a stud of electrically conductive material and a deformable lead or lead alloy shroud having an inclined surface portion for disposition within the seat, at least the portion of the stud disposed substantially opposite the ramp portion of the seat being encased by the lead shroud;

said stud having an electrical resistivity substantially less than the resistivity of the lead of the shroud;



said shroud separately, and prior to forming the hereafter described seal, having an outer dimension greater than the inner dimension of the seat by at least about one percent, and the lead or lead alloy of the shroud having a Brinell hardness of less than about 10 kg/mm²;

means associated with the stud for facilitating pressing the inclined surface portion of the shroud against the inclined ramp portion of the seat to form an interference fit therebetween and thereby establish a liquid-tight seal between the connector and resilient partition.

3,964,935

ALUMINUM-CERIUM-IRON ELECTRICAL CONDUCTOR AND METHOD FOR MAKING SAME

Van C. Wilks, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 240,794, April 3, 1972, abandoned. This application Oct. 7, 1974, Ser. No. 512,821
Int. Cl.² C22F 1/04
U.S. Cl. 148—2 **10 Claims**

1. An aluminum alloy electrical conductor manufactured in the form of an at least partially annealed wire by means of continuous casting and rolling, drawing without preliminary or intermediate anneals, and then at least partially annealing the wire, said wire having a minimum conductivity of 61% IACS in the final at least partially annealed condition and consisting essentially of from about 0.55 to about 1.2 weight percent iron, from about 0.2 to about 1.5 weight percent cerium, optionally up to about 0.15 weight percent each of cobalt and magnesium in a total amount not exceeding about 0.25 weight percent, and the remainder aluminum with associated trace elements, the combined amounts of cerium and iron ranging from at least about 1.2 percent to about 2.5 percent; said wire having dispersed therein intermetallic precipitates comprising cerium aluminate and iron aluminate to further improve the physical properties of said conductor.

10. A method of preparing the aluminum alloy electrical conductor according to claim 1, comprising the steps of:

A. alloying said named constituents;

B. continuously casting the alloy in a moving mold formed between a groove in the periphery of a rotating casting wheel and a metal belt laying adjacent said groove for a portion of its length;

C. hot-rolling the cast alloy substantially immediately after casting while the cast alloy is in substantially that condition as cast to form a continuous rod;

D. drawing the rod through a series of wire-drawing dies, without any preliminary or intermediate anneals, to form wire; and

E. thereafter annealing or partially annealing the wire to achieve a conductivity of at least 61% IACS.

3,964,936

COATING SOLUTION FOR METAL SURFACES

Narayan Das, Westmont, Ill., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 429,779, Jan. 2, 1974, abandoned. This application Dec. 17, 1974, Ser. No. 533,644
Int. Cl.² C23F 7/06
U.S. Cl. 148—6.27 **30 Claims**

8. A method for coating aluminum can stock comprising contacting an aluminum can surface having a bright and shiny appearance with an acidic aqueous coating solution having a pH within the range of about 3 to about 5 and consisting essentially of zirconium and fluoride, the amount of zirconium being at least about 3 ppm and the amount of fluoride being at least 5 ppm and less than an amount which causes etching of said surface to the extent that the surface has a dull and frosty appearance, reacting said zirconium with said surface to chemically bond said zirconium to said surface and forming on said surface a coating, the coated surface having said bright and shiny appearance and resisting blackening after the coated surface is subjected to boiling water for 15 minutes, and wherein said coating solution is free of hexavalent chromium, ferroand ferricyanide, and any material which contains a transition element of the chromium subgroup of the Periodic Table.

3,964,937

METHOD OF MAKING A COMPOSITE COATING

Robert C. Post, Dallas; Allen W. McCullough, Irving , and James H. McClure, Dallas, all of Tex., assignors to Materials Technology Corporation, Dallas, Tex.

Division of Ser. No. 387,665, Aug. 13, 1973, Pat. No. 3,874,900. This application Dec. 20, 1974, Ser. No. 534,698
Int. Cl.² C23C 11/08
U.S. Cl. 148—6.35 **4 Claims**



1. The method of forming a coating on the wear surface of a composite metal tool comprising the steps of:

a. carburizing the wear surface of said tool by depositing carbon thereon in amounts sufficient to form a surface layer enriched in carbon;

b. reacting a titanium halide with a volatile hydrocarbon to form an interlayer at the surface of said tool, said interlayer comprising titanium, carbon and the material of said tool;

c. depositing a coating of titanium carbide on said interlayer by reacting a volatile hydrocarbon and a titanium halide in hydrogen at the surface of said interlayer; and

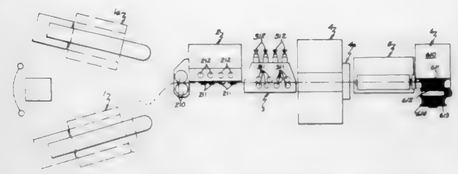
d. depositing a coating of titanium nitride on said coating of titanium carbide by reacting nitrogen and a titanium halide in hydrogen at the surface of said titanium carbide.

3,964,938

METHOD AND APPARATUS FOR FORMING HIGH TENSILE STEEL FROM LOW AND MEDIUM CARBON STEEL

Wilbur E. Tolliver, Holland, and Daniel J. Borodin, Detroit, both of Mich., assignors to New York Wire Mills Corporation, Tonowanda, N.Y.

Filed Jan. 20, 1975, Ser. No. 542,341
Int. Cl.² C21D 9/52, 11/00
U.S. Cl. 148—12 B **75 Claims**



1. A method for substantially increasing the tensile strength of steel material comprising: moving the steel material relative to adjacent heating and quenching means; heating the steel material at said heating means to a temperature above the austenite conversion temperature for the particular steel material being treated and immediately thereafter rapidly quenching the steel material at the quenching means; simultaneously subjecting the steel material to an external force between two spaced points located on opposite sides of said heating and quenching means to effect elongation and cross section reduction in the steel material between said two spaced points.

3,964,939

BODIES INCLUDING PASSIVATED METAL PARTICLES

Edwin Arthur Chandross; Murray Robbins, both of Berkeley Heights, and Harold Schonhorn, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1974, Ser. No. 536,377
Int. Cl.² H01F 1/02
U.S. Cl. 148—105 **4 Claims**

1. A body including particulate matter, which particulate matter consists essentially of essentially oxide free particles of an oxidizable metal, whose average least dimension is less than 100 micrometers, in intimate contact with an organic substance wherein the organic substance is at least one molecular species present on the surface of the particles in sufficient quantity to provide a surface layer at least one monolayer thick on each particle but constitutes less than five percent of the weight of the matter, wherein the at least one molecular species is selected from the group consisting of a urea, a thiourea, an isocyanate and an isothiocyanate which molecular species contains at least one organic substituent, which substituent contains at least two carbons.

3,964,940

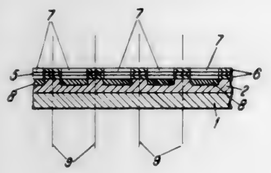
METHODS OF PRODUCING GALLIUM PHOSPHIDE YELLOW LIGHT EMITTING DIODES

Peter Brian Hart, and Ralph Nicklin, both of Northampton, England, assignors to Plessey Handel und Investments A.G., London, England

Continuation-in-part of Ser. No. 287,175, Sept. 7, 1972, abandoned. This application June 27, 1974, Ser. No. 483,810
Claims priority, application United Kingdom, Sept. 10, 1971, 42291/71
Int. Cl.² H01L 21/205, 33/00
U.S. Cl. 148—175 **12 Claims**

1. A method of producing a gallium phosphide yellow light emitting diode which includes the steps of providing a single crystal gallium phosphide substrate; growing from a hydride vapour phase a single crystal layer of nitrogen doped gallium

phosphide of the same conductivity type as the substrate on a surface of the substrate such that the nitrogen content of the layer is greater than 10^{19} atoms/cc, the actual nitrogen content



determining the wavelength of the light that can be emitted; forming at least one p-n junction with the said layer; and forming an electrically conductive contact on each side of the p-n junction.

3,964,941

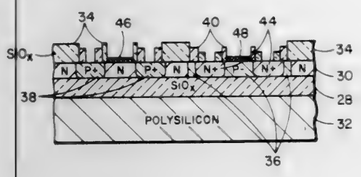
METHOD OF MAKING ISOLATED COMPLEMENTARY MONOLITHIC INSULATED GATE FIELD EFFECT TRANSISTORS

Raymond C. Wang, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Continuation of Ser. No. 154,922, June 21, 1971, abandoned. This application May 7, 1973, Ser. No. 358,190

Int. Cl.² H01L *7/36, 7/64*

U.S. Cl. 148—187 **7 Claims**



1. A method of making a complementary insulated gate field effect transistor integrated circuit by including the steps of:

forming on a surface of a semiconductor layer of a first conductivity type a dielectric layer;

forming on said dielectric layer a polycrystalline support layer;

forming on an exposed surface of said semiconductor layer a first insulating layer having a first aperture therein;

forming a lightly doped tub region of a second conductivity type through said first aperture and a second insulating layer thereon, said tub region extending through said semiconductor layer to said dielectric layer;

forming first source and drain regions defining a channel of a first field effect transistor in said lightly doped tub region and second source and drain regions defining a channel of a second field effect transistor in said semiconductor layer, said source and drain regions extending to the exposed surface of said semiconductor layer and lightly doped tub region; and

forming first and second gate electrodes spaced by a gate insulation layer on the exposed surface of said lightly doped tub region and semiconductor layer from the channels of said first and second field effect transistors, respectively.

7. The method of claim **1** in which said lightly doped tub region is formed by diffusing a P-type impurity in said semiconductor layer through the exposed surface, driving in the diffused impurity, and removing a portion of said semiconductor layer from the exposed surface to reduce the thickness of said semiconductor layer.

3,964,942

CHEMICAL POLISHING OF SINGLE CRYSTAL DIELECTRICS

Melvin Berkenblit, and Arnold Reisman, both of Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,610

Int. Cl.² C23G *1/36*

U.S. Cl. 156—2 **8 Claims**

1. A method for polishing single crystals of sapphire and magnesium spinel comprising the steps of:

immersing a single crystal substrate selected from the group consisting of sapphire and magnesium spinel in a mixture of sulphuric acid and phosphoric acid in a range of mixtures of 9 parts sulphuric acid to 1 part phosphoric acid to 1 part sulphuric acid to 9 parts phosphoric acid by volume said mixture being held at a temperature in the range of 200°–325°C, said magnesium spinel single crystal having one of the orientations (100) and (110) and said sapphire single crystal having one of the orientations (0001), $(11\bar{2}3)$, $(1\bar{1}00)$, $(11\bar{2}4)$, $(11\bar{2}0)$ and $(01\bar{1}2)$ for a time sufficient to achieve polishing of said substrate.

3,964,943

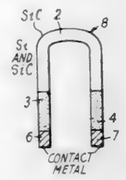
METHOD OF PRODUCING ELECTRICAL RESISTOR

Niels Lervad Andersen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 442,485, Feb. 12, 1974. This application Nov. 29, 1974, Ser. No. 528,076

Int. Cl.² H05B *3/66*

U.S. Cl. 156—6 **5 Claims**



1. A method of producing a silicon carbide electrical resistor which comprises forming under pressure a dense and substantially nonporous body consisting essentially of silicon carbide and free silicon, and etching a middle portion of said body with acid to remove essentially all the free silicon therefrom to thereby obtain a middle portion consisting essentially of a porous matrix of silicon carbide free of silicon and two end portions consisting essentially of silicon carbide and free silicon.

3,964,944

MANUFACTURE OF CEMENTITIOUS BOARD

Thomas Gwynne, Loughborough, England, assignor to United States Gypsum Company, Chicago, Ill.

Filed Nov. 6, 1973, Ser. No. 413,289

Int. Cl.² B32B *1/04, 31/18*

U.S. Cl. 156—40 **3 Claims**

1. A method for the manufacture of a planar lined board of cementitious material including the steps of:

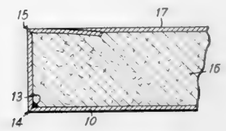
scoring a lower lining sheet at its edge regions along lines where folds are to be made;

advancing said lower sheet in a generally horizontal plane;

applying substantially solely to said edge regions of said lower sheet in the parts thereof to be folded at least one line or band of quick-setting adhesive;

folding the edges of said advancing sheet to provide at least part of the final edge configuration of the board and maintaining said regions in said configuration until fixed therein by setting of said adhesive;

depositing an aqueous slurry of cementitious material on said advancing sheet;



covering said slurry with an advancing upper lining sheet; and forming the resulting board to required cross-sectional dimensions.

3,964,945

METHOD OF MAKING AN ELECTRICAL CABLE

William Duke Everhart, Florence, S.C., and Charles Raymond McKay, Severna Park, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 241,907, April 7, 1972, abandoned, which is a division of Ser. No. 34,812, May 5, 1970, abandoned. This application May 9, 1974, Ser. No. 468,537

Int. Cl.² H01B *7/18, 13/26*

U.S. Cl. 156—52 **2 Claims**

1. A method of making an electrical cable having a core and a shield including the steps of:

forming a corrugated protective member by corrugating at least two polyethylene terephthalate films together under heat and pressure whereby such films are laminated together and wherein the combined thickness of the films, prior to corrugating, is less than 5 mils;

positioning such protective member between the core and the shield, with such protective member completely surrounding the periphery of such core, and

applying an outer jacket in a molten state over the shield, such core being effectively insulated from heat thereof by the protective member during such application and wherein the protective member has a percent fall-out of less than 35% when heated for 5 minutes at 150°C. and wherein the height of the protective member, in the finished cable and after the outer jacket has been applied, as measured from corrugation crest to corrugation crest, is at least 8 mils.

3,964,946

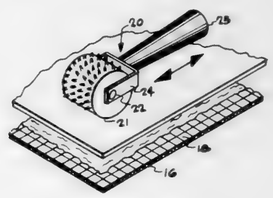
PROCESS FOR MOUNTING PHOTOGRAPHS TO SIMULATE AN OIL PAINTING

Eugene H. Falk, P.O. Box 1188, Monterey, Calif. 93940

Filed Jan. 31, 1975, Ser. No. 546,038

Int. Cl.² B44C *3/02*

U.S. Cl. 156—59 **9 Claims**



1. A process for mounting a photograph or other printed image to simulate an oil painting comprising the steps of:

providing a textured surface having small voids therein;

fixing the photograph face up to the textured surface by spreading glue on one or both the photograph or the surface and pressing the photograph onto the surface;

rolling the photograph with a resilient roller having resilient projections thereon of a diameter sufficiently small to at least partially fit within the textured surface voids and press the adjacent portions of the photograph therein; and

applying a transparent sealing material over the photograph which dries to form a seal for the photograph.

3,964,947

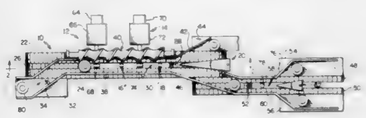
BOTTOM LABELING METHOD AND APPARATUS

Paul R. Mort, Jr., and Robert A. Cleary, both of Yonkers, N.Y., assignors to Synchro-Motion Corporation, Yonkers, N.Y.

Division of Ser. No. 469,549, May 13, 1974. This application June 19, 1975, Ser. No. 588,148

Int. Cl.² B32B *31/00*

U.S. Cl. 156—64 **2 Claims**



1. A method of bottom labeling a product comprising the steps of:

feeding a product past a first labeling station which is adapted to apply a label to the bottom of the product;

scanning the product to determine if a label has been applied to the bottom at the first labeling station;

feeding the product past a second labeling station which is adapted to apply a label to the bottom of the product;

applying a label to the product bottom at the second labeling station if the scanning determined no label was applied in the first labeling station;

scanning the product a second time to determine if a label has been applied to the bottom thereof; and

diverting the product from the feeding path of such product if the second scanning step determines that no label has been applied to the bottom of the product.

3,964,948

METHOD FOR DOSING A LOCKING AGENT INTO A THREADED HOLE

Walter Busse, Neubiberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg AG, Munich, Germany

Filed Nov. 25, 1974, Ser. No. 526,761

Claims priority, application Germany, Dec. 1, 1973, 2359937

Int. Cl.² B32B *7/04*

U.S. Cl. 156—91 **1 Claim**

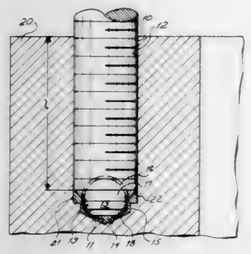
1. A method of introducing a dose of a liquid or semi-liquid locking agent into the helical space between the threads of a screw and a threaded blind hole accommodating the screw, comprising the steps of:

a. providing a capsule of compact shape comprising the locking agent completely enclosed in a hollow wall,

b. inserting the capsule into the bottom of the blind hole with the major portion of the capsule volume beneath the lowest point of engagement of the screw and hole threads after the screw has been threaded all the way into the blind hole, and

c. threading the screw into the hole so that the screw crushes the capsule against the bottom of the hole and releases the locking agent into the helical space between the screw and hole wall during the final portion of the

movement of the screw into the hole, the crushed capsule wall material approximately filling the space between the



inner end of the screw and the bottom of the hole after the screw has been threaded all the way into the hole.

3,964,949

METHOD OF TREADING TIRES

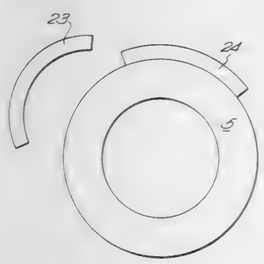
Peter Jan Kent; John Eric Phillips, both of Alton, England, and Jan Herbert Farquharson Kent, St. Martin, Guernsey (Channel Is.), assignors to Kentredder Limited, St. Saviour, Guernsey (Channel Is.)

Filed Aug. 30, 1974, Ser. No. 501,858

Claims priority, application United Kingdom, Sept. 7, 1973, 42208/73

Int. Cl.² B29H *5/04, 17/36, 17/37*

U.S. Cl. 156—96 **22 Claims**



1. A method of applying a tread to a tire carcass comprising the steps of providing a prevulcanized tread in strip form, placing the tread on the carcass with at least the wearing surface of the tread in a direction parallel to the longitudinal axis of the strip being shortened with there being a compressive stress in the tread longitudinally axially of the strip, and then bonding the compressed tread to the relatively uncompressed carcass while maintaining the compressive stress in the tread with the compressive stress remaining in the tread after it is bonded to the carcass so that the wearing surface of the final assembly remains under compressive stress.

3,964,950

ADHESION/BONDING DIP FOR TIRE REINFORCEMENT FABRICS

Hubert J. Boles, Cuyahoga Falls, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Dec. 9, 1974, Ser. No. 531,111

Int. Cl.² B29H *5/02*

U.S. Cl. 156—110 A **13 Claims**

1. A method for adhering a polyester reinforcing element to a vulcanized conjugated diene rubber compound which comprises treating said element with a composition comprising an aqueous alkaline dispersion of from about 10 to 30 percent by weight (as dry solids) of a mixture of about 65 to 89 parts of a rubbery vinyl pyridine terpolymer containing about 50 to 95 percent of a conjugated diolefin, about 5 to 40 percent of vinyl pyridine and about 0 to 40 percent of a styrene, about 10 to 30 parts of a resorcinol-formaldehyde resin and from about 0.5 to 5 parts of a heat reactable peroxide having a one-hour, half-life at 100°–160°C. wherein the peroxide is added to the dip after the vinyl pyridine terpolymer is polymerized; heat treating said element to remove the water and to cure the solids from said composition and to deposit on said element from said composition a total of from about 3 to 7 percent by weight (solids), said heat treatment being conducted at temperatures of from about 300° to 500°F. for from about 30 to 150 seconds, cooling said treated element, combining said cooled treatment element with an unvulcanized vulcanizable rubber consisting essentially of conjugated diene as the major elastomer component, and vulcanizing the same.

3,964,951

METHOD OF JOINING STIFFENING MATERIAL TO SHOE UPPER USING ULTRA HIGH FREQUENCY RADIATION

Paul A. Kremer, Grosskrotzenburg, and Bernhard N. Gora, Grossauheim, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

Filed July 2, 1974, Ser. No. 485,277

Claims priority, application Germany, July 16, 1973, 2336067

Int. Cl.² B29C *19/02*

U.S. Cl. 156—272 **6 Claims**

1. A method of joining a stiffening material consisting essentially of a thermoplastic synthetic resin stiffening agent containing homogeneously dispersed therein 3 to 50 parts per 100 parts of the synthetic resin of carbon black or graphite as an active substance to a shoe upper material of leather or synthetic resin which is devoid of such active substance without significantly heating the shoe upper material comprising heating the stiffening material to the temperature at which it becomes soft and adhesive by subjecting the stiffening material and adjacent shoe upper material to ultra high frequency radiation for about 2 to 15 seconds.

3. A method according to claim **1** wherein the ultra high frequency radiation is 2450 mega Hertz.

3,964,952

METHOD OF MANUFACTURE OF COMPOSITE MATERIALS CONSISTING OF CARBON FIBERS AND RESIN AND MATERIALS MANUFACTURED IN ACCORDANCE WITH SAID METHOD

Michel Brié, Orsay, and Gérard Riess, Mulhouse, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 235,303, March 16, 1972, abandoned. This application Mar. 1, 1974, Ser. No. 447,289

Claims priority, application France, Mar. 19, 1971, 71.09820

The portion of the term of this patent subsequent to Dec. 17, 1991, has been disclaimed.

Int. Cl.² B32B *5/02*

U.S. Cl. 156—296 **21 Claims**

1. Process for the manufacture of composite materials of carbon fibers and resin comprising the steps of radical grafting a polymer on carbon fibers by covalent bond, obtaining the bond by creation of free radicals on the polymer by heat and transfer reaction of the radicals on the sites of the carbon fibers and then incorporating the grafted fibers in a resin compatible with the polymer.

3,964,953

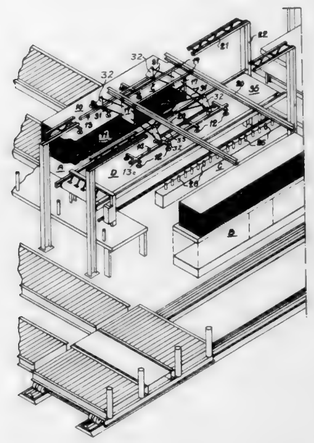
APPARATUS AND METHOD FOR LAMINATING LINER TO BOX BLANK

John M. Mitchard, Cherry Hill, N.J., and Peter J. Loftus, Levittown, Pa., assignors to Union Camp Corporation, Wayne, N.J.

Filed Mar. 25, 1975, Ser. No. 561,984

Int. Cl.² B31B *1/62, 1/06;* **B32B** *31/12;* **B65H** *39/04*

U.S. Cl. 156—300 **4 Claims**



2. Apparatus for laminating a first sheet in registry on a second sheet having at least one dimension larger than the corresponding dimension of the first sheet comprising:

a support for a stack of first sheets;

a support for a stack of second sheets;

a laminating table interposed between the said supports;

a shuttle movable in a cross-machine direction, said shuttle having means for gripping and lifting first and second sheets and being adapted to alternately take said sheets from the stacks on the supports to the laminating table and place a second sheet in registered position on the laminating table and a first sheet in registered position on the second sheet;

stops projecting upwardly from the laminating table to limit the forward and side motions of the second sheet and register it in position as it is placed on the laminating table;

stops movable into position over the second sheet to limit the forward and side motions of the first sheet and register it in position on the second sheet;

adhesive applying means to apply adhesive to the first sheet as it moves from the stack to the laminating table; and

means to convey the laminated sheets from the laminating table.

4. A method for laminating a first sheet in registry on a second sheet having at least one dimension larger than the corresponding dimension of the first sheet comprising:

providing a stack of first sheets;

providing a stack of second sheets;

interposing a laminating table between the said stacks;

positioning spaced means for gripping and lifting first and second sheets with the second sheet gripping and lifting means on the second sheet stack and the first sheet gripping and lifting means over the laminating table;

actuating the second sheet gripping and lifting means to pick up a second sheet from the second sheet stack;

moving the spaced means in a cross-machine direction and placing the second sheet against second sheet stops to register such second sheet in a forward and sideways direction on the laminating table with the first sheet gripping and lifting means positioned over the first sheet stack;

actuating the second sheet gripping and lifting means to release the said second sheet;

actuating the first sheet gripping and lifting means to pick up a first sheet from the first sheet stack;

moving first sheet stops into position over the second sheet on the laminating table to limit the forward and side motions of the first sheet to be placed on the second sheet and register such first sheet on the second sheet;

moving the spaced means in a reverse crossmachine direction, applying adhesive to the first sheet and placing the first sheet against the first sheet stops in a registered position on the second sheet on the laminating table;

moving the first sheet stops out of position from over the second sheet on the laminating table to permit the laminated first and second sheets to be moved from the laminating table; and

conveying the laminated sheets from the laminating table.

3,964,954

METHOD OF BONDING UTILIZING IMIDE ESTER DERIVATIVES OF ETHENE MALEIC ANHYDRIDE COPOLYMERS

Abraham Morduchowitz, Monsey, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 102,539, Dec. 29, 1970, Pat. No. 3,810,276. This application May 31, 9173, Ser. No. 365,647

Int. Cl.² C09J *5/00;* **B32B** *27/34, 17/10, 15/08*

U.S. Cl. 156—331 **5 Claims**

1. A method of adhering paper, cardboard, ceramic, glass, plastics and metals to themselves or each other which comprises applying to adjacent surfaces of said materials an imide-ester derivative of an ethene-maleic anhydride copolymer and maintaining said surfaces together whereby an adherent bond forms, said imide-ester derivative prepared by a process which comprises:

a. reacting together under refluxing conditions a 1:1 linear copolymer of ethene and maleic anhydride having an average molecular weight between about 10,000 and 25,000 dissolved in a hydrocarbon solvent and an alcohol selected from the group consisting of $C_{8\text{-}30}$ saturated aliphatic alcohols, $C_{8\text{-}30}$ unsaturated aliphatic alcohols and mixtures thereof,

b. adding to the reaction mixture of step (a) an amino compound selected from the group consisting of N-($C_{8\text{-}20}$) alkyl-1,3-diaminopropane, N-($C_{8\text{-}20}$) alkenyl-1,3-diaminopropane, $C_{8\text{-}20}$ alkylamine, $C_{8\text{-}30}$ alkenylamine and mixtures thereof and a catalyst comprising a strong organoinorganic acid,

c. reacting under refluxing conditions the mixture of step (b),

d. removing water of formation formed in step (c) from the reaction mixture, and

e. recovering from the reaction mixture, an imideester derivative of the ethene-maleic anhydride copolymer.

3,964,955

BONDING METHOD USING OLEFIN-ACRYLIC ESTER COPOLYMER

Masaaki Hirooka; Yoshikazu Fujii; Shigeru Morita, all of Ibaragi; Isamu Namazue, Toyonaka, and Kazuhiko Hata, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 29, 1974, Ser. No. 474,177

Claims priority, application Japan, June 2, 1973, 48-62174

Int. Cl.² C09J *7/02*

U.S. Cl. 156—332 **19 Claims**

1. In a method for the bonding of solid materials wherein an adhesive is applied to the surface of the solid materials to be bonded before contacting said solid surfaces, the improvement said of utilizing as aid adhesive a composition comprising an interpolymer containing 5 to 60 mole percent of at least

one olefin unit having 3–20 carbon atoms, 40–95 mole percent of at least one acrylic ester unit having an alcohol residue containing 1–20 carbon atoms and 0.1 to 30 mole percent of at least one functional ethylenically unsaturated compound from among acryloyl halides, having the formula

$$R'-CH=\underset{\displaystyle R''}{\overset{}{C}}-Y$$

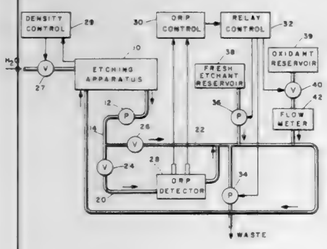
or maleic anhydride, wherein R' and R'' are individually a hydrogen atom, a halogen atom, a hydrocarbon or halohydrocarbon group having 1 to 8 carbon atoms, or wherein Y is an acid halide group, said interpolymer having an intrinsic viscosity of 0.1 to 10 dl/g as measured in benzene at 30°C.

3,964,956

SYSTEM FOR MAINTAINING UNIFORM COPPER ETCHING EFFICIENCY

H. Ben Snyder, Upland, Calif., assignor to General Dynamics Corporation, Pamona, Calif.

Division of Ser. No. 517,665, Oct. 24, 1974, Pat. No. 3,951,711. This application Oct. 6, 1975, Ser. No. 619,753
Int. Cl.² C23F *1/02*
U.S. Cl. 156—345 **10 Claims**



1. Apparatus to etch copper work pieces which comprises;

a. etching machine means which utilize a working solution of etchant in which there is a tendency to convert ferric ions to ferrous ions, and in which the copper ion content of the solution has a tendency to increase as the etching progresses;

b. oxidation reduction potential detection means to continuously monitor the changes in concentration of ferric, ferrous and copper ions and to compare the same to the concentration in a reference solution;

c. oxidation-reduction potential control means adapted to adjust the ion concentrations in the working solution responsive to the change in oxidation reduction potential monitored by said detector means;

d. working solution dumping means responsive to said control means to dump a signaled quantity of working solution;

e. etchant solution rejuvenating means activated by said control means to add fresh etchant solution in a quantity at least equal to that dumped by said dumping means;

whereby, said control means, according to the oxidation-reduction potential change continuously monitored by said detection means, dumps old etchant and rejuvenates with fresh etchant to reduce the copper ion content of the solution and maintain a constant etch rate.

2. The apparatus of claim 1; further including

f. oxidizing means responsive to said control means for charging the working solution with oxidant to reconvert the ferrous ions to ferric ions and maintaining the various ion concentrations in substantially constant balance and concentration.

5. The apparatus of claim 1 further including;

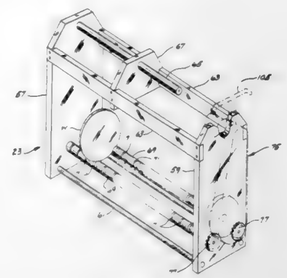
g. density control means.

3,964,957

APPARATUS FOR PROCESSING SEMICONDUCTOR WAFERS

Robert J. Walsh, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 426,387, Dec. 19, 1973, abandoned. This application Sept. 30, 1974, Ser. No. 510,851
Int. Cl.² H01L *7/50*
U.S. Cl. 156—345 **11 Claims**



1. Apparatus for uniform, damage-free chemical treatment of a plurality of generally circular wafers, said wafers each having substantially the same diameter, said apparatus comprising a frame adapted for being immersed in a chemical medium for treating said wafers, said frame including a pair of opposed end pieces, a pair of elongate rollers each extending longitudinally between said end pieces, each of said rollers having its respective ends journalled for rotation in said end pieces, said rollers being horizontal, the respective longitudinal axes of said rollers being in spaced, parallel relationship, each of said rollers having a plurality of annular grooves spaced uniformly along the length of the roller, grooves of one roller being laterally aligned with corresponding grooves of the other roller to provide parallel pairs of laterally aligned grooves, each of said grooves being of sufficient depth and of a crosssection shaped such that each laterally aligned pair of grooves is adapted to provide the sole means for guiding and supporting said wafers in a vertical plane, the spacing between the longitudinal axes of said rollers being substantially greater than the diameter of said wafers, the contact angle of said rollers defined by the included angle between the radii of said wafers at the points of contact of said wafers with the respective grooves of said rollers being approximately **105° to 115°**, said laterally-aligned grooves thereby supporting a plurality of said wafers in spaced, parallel relationship, and means for driving at least one of said rollers whereby the driven roller causes rotation of each of said wafers while said wafers are maintained in said spaced, parallel relationship while immersed in said chemical medium and whereby said wafers are prevented from being contacted by each other or by other objects except the surfaces of said grooves.

3,964,958

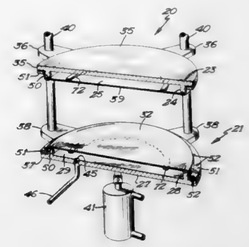
HEAT BONDING DEVICE

Orin B. Johnston, 5548 W. 78th St., Minneapolis, Minn. 55435

Continuation-in-part of Ser. No. 326,534, Jan. 24, 1973, abandoned. This application Aug. 22, 1974, Ser. No. 499,449
Int. Cl.² B29C *17/00*
U.S. Cl. 156—382 **23 Claims**

1. In a device for bonding heat bondable materials in a desired seam configuration of the type having means for supporting the material, having means cooperating with said supporting means for applying pressure to the material and having means for applying heat to the material, the improvement which comprises:

said pressure applying means comprising means for applying a uniform pressure over a first area of the supported material, said first area including the area of the desired seam configuration and being large relative thereto and said pressure applying means including a diaphragm in opposing relation to said material supporting means and spanning said first area; and



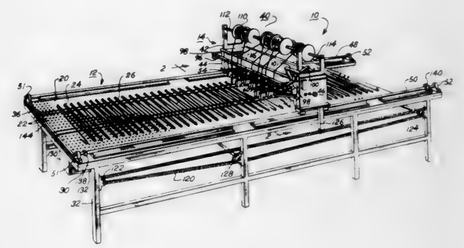
said heat applying means comprising heat generating means in intimate contact with said diaphragm and having a configuration conforming to the desired seam configuration for applying bonding heat to the area of the desired seam configuration of said material through said diaphragm, said heat generating means comprising metallic ribbon means fusion bonded to said diaphragm.

3,964,959

HEATING STRUCTURE FABRICATING MACHINE AND METHOD

Gerald E. Adams, Mishawaka, Ind., assignor to Easy Heat-Wirekraft, MSP Industries Corporation, Lakeville, Ind.

Filed Sept. 6, 1974, Ser. No. 503,924
Int. Cl.² H06B *3/00*
U.S. Cl. 156—433 **11 Claims**



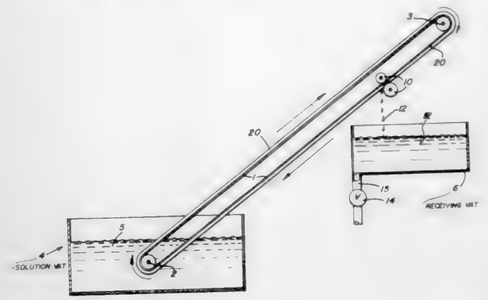
1. A machine for fabricating heating structures having heating wires with an external layer of thermoplastic material arranged with sections in a predetermined pattern and carrier strands of thermoplastic material fused to and interconnecting said wire sections: comprising a heating wire support means having spaced members on which wire sections are retained in a predetermined configuration and on a substantially common plane, a means for feeding a strand in a relatively cool condition to a heating wire section at said common plane and in a direction generally transverse to said wire section, a heating unit for simultaneously fusing a surface of said strand and an adjacent surface on said wire section in a transverse path, for immediate contact and union between said strand and said wire section in said path at said heated surface and progressively from one spaced section to another, a support means for said heating unit, and means for moving said heating unit and said wire support means relative to one another to join successive sections of said heating wire with said strand.

3,964,960

PROCESS FOR CONCENTRATING BRINE

Nelson S. Marans, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed July 12, 1974, Ser. No. 487,922
Int. Cl.² B01D *1/22*
U.S. Cl. 159—49 **3 Claims**



1. A process for concentrating brine solution comprising:

a. providing a continuous endless inclined belt having an exterior surface, an interior surface, an upper run, and a lower run between a brine containing vat in which the lower end of the belt is immersed and a receiving vat positioned at an elevation above said brine vat;

b. running said upper run of said endless belt from said brine vat to said receiving vat exposed to ambient to partially evaporate said brine;

c. providing a continuous layer of a self-supporting hydrophilic polyurethan foam on the exterior surface of said belt;

d. continuously exposing the upper run of said belt from said brine vat to the ambient atmosphere to evaporate water from the brine in said foam layer to form a concentrated brine in said foam layer;

e. continuously passing said lower run of said belt between rollers positioned over said receiving vat to continuously remove concentrated brine solution from said foam layer;

f. continuously collecting the removed concentrated brine solution in said receiving vat; and

g. removing the concentrated brine from said receiving vat.

3,964,961

METHOD FOR STORING BAGASSE

Rolf Hesch, Nettetal, Germany, assignor to Becker & van Hullen Niederrheinische Maschinenfabrik, Krefeld, Germany

Continuation-in-part of Ser. No. 495,283, Sept. 8, 1974, abandoned, which is a continuation of Ser. No. 336,325, Feb. 27, 1973, abandoned. This application Mar. 11, 1975, Ser. No. 557,321
Claims priority, application Germany, Feb. 29, 1972, 2209465
Int. Cl.² D21C *5/00*
U.S. Cl. 162—96 **6 Claims**

1. The method for storing bagasse in bulk to be used in the manufacture of articles having relatively high strength, in which the degradation of lignocellulose-containing fibers by hydrolysis and the decomposition of organic substances by bacteria and fungi is inhibited or prevented, comprising the steps of:

a. treating the bagasse before storing it to inhibit its fermentation rate;

b. piling the treated bagasse loosely in a first horizontal layer on a surface protected against ground water;

c. allowing fermentation to proceed at a controlled rate within said first horizontal layer, while allowing the heat and moisture within the pile to escape at a rate such that the temperature of the pile is prevented from building up

excessively, until fermentation has passed its peak, as evidenced by a drop in the temperature of the pile;

d. piling successive layers of treated bagasse loosely on top of said first layer to form a substantially layered structure in which the material in all layers is well-aerated, each layer being piled on only after the preceding layer has passed the peak of fermentation; and then

e. covering the top layer with a rain-repellent cover at the earliest possible time after the top layer has passed its fermentation peak.

3,964,962

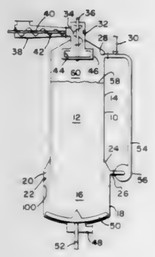
GASEOUS REACTION APPARATUS AND PROCESSES INCLUDING A PERIPHERAL GAS RECEIVING CHAMBER AND A GAS RECIRCULATION CONDUIT

Lawrence A. Carlsmith, Amherst, N.H., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 25, 1974, Ser. No. 445,212

Int. Cl.² D21C 7/00, 7/06

U.S. Cl. 162—236 **4 Claims**



1. Apparatus for the gaseous reaction of material, comprising a generally vertical vessel, material supply means connected to the upper end of said vessel for supplying material into such upper end, gas supply means connected to the upper end of said vessel for supplying gas into such upper end and to material therein, means for discharging material from the lower end of said vessel, said vessel including an upper portion and a therebelow adjoining lower portion of cross-section greater than said upper portion, the juncture of said vessel portions being substantially spaced intermediate the upper and lower ends of said vessel, the outer periphery of said vessel adjacent said juncture of said vessel portions being provided with gas discharge means open to said vessel for discharging gas therefrom, said gas discharge means including a gas receiving chamber extending along the outer periphery of said vessel and open to said vessel lower portion through an unrestricted opening to receive gas therefrom, said gas discharge means further including gas outlet means connected to said chamber for discharging gas from said chamber; said chamber, said unrestricted opening and said gas outlet means being free from screens and similar filtering media, gas recirculation conduit means connecting said gas outlet means with said upper end of said vessel for recirculating gas discharged from said vessel through said gas outlet means back into said upper end of said vessel, and blower means connected to said gas recirculation conduit means for causing gas discharged by said gas outlet means to flow through said gas recirculation conduit means towards said upper end of said vessel.

3,964,963

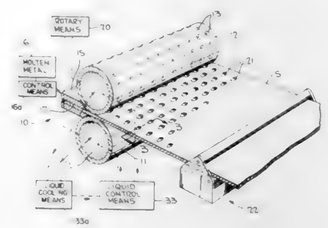
APPARATUS FOR PRODUCING CONTINUOUS CAST METALLIC SHEET WITH PATTERNED SURFACE

Paul E. Anderson, Torrance, Calif., assignor to Martin Marietta Aluminum Inc., Torrance, Calif.

Division of Ser. No. 319,033, Dec. 27, 1972, Pat. No. 3,844,336. This application July 31, 1974, Ser. No. 493,487

Int. Cl.² B22D 11/06

U.S. Cl. 164—277 **5 Claims**



1. Apparatus for use in continuous casting from molten metal of substantially rigid metallic sheets having a pattern of spaced projections on at least one side, comprising in combination a pair of oppositely rotatable rolls set generally one above the other and spaced to provide a longitudinal nip therebetween, the surface of the upper roll having laterally and circumferentially spaced recesses thereon, said recesses having a depth between 5 to 100 percent of the nominal spacing at the nip between said rolls, a nozzle positioned on the upstream side of said rolls for feeding molten metal into a plenum chamber formed between the nozzle and the rolls, said nozzle having its outlet directed toward said nip between the rolls, means to supply molten metal through said nozzle under controlled pressure, said nozzle outlet from which molten metal enters said plenum chamber being located shortly upstream of that location in the plenum chamber where the spacing between the apex of each recess in the rotating upper roll and the surface of the lower roll momentarily becomes from 17 percent to 200 percent greater than the nominal spacing between the rolls at the nip therebetween, means to rotate said rolls at controlled speed of rotation, means to provide a cooling liquid to the interior of said rolls and means to control the cooling liquid flow to maintain the desired cooling rate.

3,964,964

IDENTIFICATION OF FAILED FUEL ELEMENT

Richard M. Fryer, Idaho Falls, Idaho, and Robert G. Matlock, Hinsdale, Ill., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

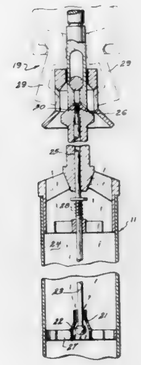
Filed Oct. 15, 1974, Ser. No. 514,877

Int. Cl.² G21C 17/04

U.S. Cl. 176—19 LD **1 Claim**

1. In a liquid metal cooled reactor having upward coolant flow and a plurality of vertically disposed fuel assemblies contained within a reactor vessel, each assembly having an outer closed sheath and a bundle of fuel pins consisting of a nuclear fuel enclosed within gas-tight claddings, a fuel handling machine including a gripper mechanism for grasping a handling adapter at the top of the fuel assemblies to remove and replace the fuel assemblies wherein said gripper mechanism includes gripper jaws at the lower end thereof, an orientation blade located therebetween, and the handling adapter includes an orientation slot at the top thereof, the orientation blade fitting in the orientation slot to establish the proper orientation of the gripper mechanism, said fuel handling machine being contained completely within said reactor vessel directly above the fuel assemblies:

a device for identifying failed fuel assemblies in their normal position within the reactor core, said device being within the outer sheath of each assembly and below the coolant level in the reactor vessel and comprising an inverted funnel of less diameter than that of the fuel assembly, disposed in each fuel assembly above the top of the fuel pins and including a normally closed valve at the apex thereof; and



an actuator rod attached to the normally closed valve extending upwardly through the axial center line of the adapter at the top of each fuel assembly and into the orientation slot therein wherein operation of the gripper mechanism to grasp the handling adapter of a fuel assembly depresses the actuator rod to open the valve, thereby releasing any bubble of radioactive fission gas which may be accumulated in the funnel.

3,964,965

PRESSURIZED-WATER REACTOR COOLANT GAS DISPOSAL SYSTEM

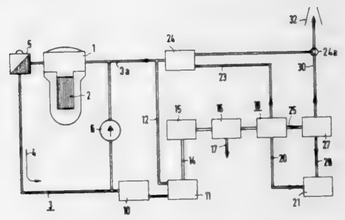
Ivan Kausz, Weiher; Helmut Stunkel, and Harald Wille, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 17, 1974, Ser. No. 434,356

Claims priority, application Germany, Jan. 22, 1973, 2302905

Int. Cl.² G21C 19/32

U.S. Cl. 176—37 **4 Claims**



1. A pressurized-water reactor installation comprising a pressure vessel and a core inside of said vessel, means for forming a main coolant pipe line loop for said vessel and containing a pressurized-water coolant having a continuous circulation through said loop, pressure vessel and core, said coolant containing a mixture of gases including as components hydrogen and relatively smaller amounts of radioactive krypton and xenon, a water coolant purification system including means for decompressing and cooling said coolant to separate at least a portion of said mixture from the coolant as a separated mixture, means for shunting a circulating portion of said circulation continuously through said system and producing the separated mixture, the separated mixture's krypton and xenon components preventing discharge of the separated mixture to the atmosphere, gas separation means for receiving the separated mixture and for separating at least some of said krypton and xenon from the hydrogen of said components by subjecting the mixture to condensation and step-wise evaporation of the components, means for returning to said circulation at least a portion of the hydrogen component separated by said gas separating means, and means for storing the krypton and xenon components separated by said gas separating means.

3,964,966

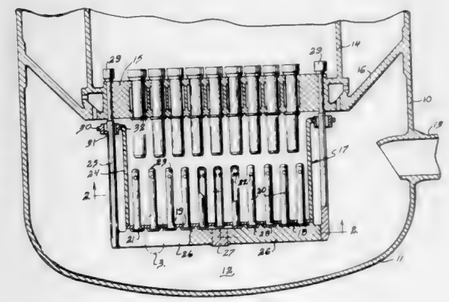
MOLTEN CORE RETENTION ASSEMBLY

Robert F. Lampe, Bethel Park, Pa., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Aug. 25, 1975, Ser. No. 607,852

Int. Cl.² G21C 9/00

U.S. Cl. 176—38 **4 Claims**



1. In a liquid-metal-cooled fast breeder reactor including a core disposed within a pressure vessel and supported therein by a core support plate, the improvement comprising a molten core retention assembly disposed below the core comprising a horizontal, circular baffle plate of diameter greater than that of the reactor core having a plurality of openings therein, vertical heat-transfer tubes mounted in said openings and extending upwardly therefrom, and having flow holes near the upper end thereof, an imperforate, cylindrical baffle welded to the periphery of the baffle plate and extending upwardly therefrom, a plurality of radial beams intermittently welded to the under surface of said baffle plates and joined at the center by a hub, and a plurality of hanger rods adapted to be supported from the core support plate of the reactor, each of which has its lower end welded to the end of one of the radial beams, wherein said retention assembly is disposed within the pressure vessel of the reactor below the reactor core.

3,964,967

TAG GAS CAPSULE WITH MAGNETIC PIERCING DEVICE

Ira V. Nelson, Richland, Wash., assignor to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Continuation of Ser. No. 403,309, Oct. 3, 1973, abandoned. This application Feb. 24, 1975, Ser. No. 552,398

Int. Cl.² G21C 3/16

U.S. Cl. 176—80 **2 Claims**

1. In a fuel element for a nuclear reactor comprising a substantially nonmagnetic fuel tube, an end cap closing one

end of said fuel tube, a multiplicity of stacked fuel pellets disposed within said tube and spaced from said end cap to form a plenum, the improvement comprising a substantially nonmagnetic sealed capsule fitting within said plenum with one end adjacent said end cap and containing an isotopic mixture of gases, said capsule having at said one end a thin, rupturable diaphragm spaced inwardly from said end cap of said fuel tube, and a ferromagnetic punch having a sharp-



pointed penetrator on at least one end, freely slidably movable longitudinally within said capsule, said punch having a length much less than that of said capsule and said penetrator being on the end of said punch pointed toward said diaphragm whereby said punch can be driven against said rupturable diaphragm in response to an external magnetic field induced around said fuel tube so that said rupturable diaphragm is breached by said penetrator and said isotopic mixture of gases is released from said sealed capsule into said fuel element.

3,964,968

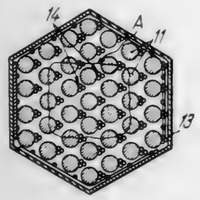
NUCLEAR REACTOR FUEL ASSEMBLY

Vitaly Vitalievich Kurilkin, ulitsa Shalyapina, 15, kv. 14, and Evgeny Vasilievich Kusmartsev, ulitsa Sovnarkomovskaya, 32, kv. 13, both of Gorky, U.S.S.R.

Filed Sept. 9, 1974, Ser. No. 504,231

Int. Cl.² G21C 3/12

U.S. Cl. 176—81 **1 Claim**



1. A fuel assembly for a nuclear reactor, comprising: a housing; fuel elements accommodated within said housing; a lateral surface of each of said fuel elements; spacer members, each of which is formed as a bunch of wires helically arranged on said lateral surface of at least some of said fuel elements; planes of contact, wherein said spacer members adjoin adjacent said fuel elements relative to those said fuel elements on which said spacer members are disposed; each of which said wires of said bunch of wires adjoins at least two adjacent wires along the entire length thereof; all said wires being rigidly interconnected between said planes of contact.

3,964,969

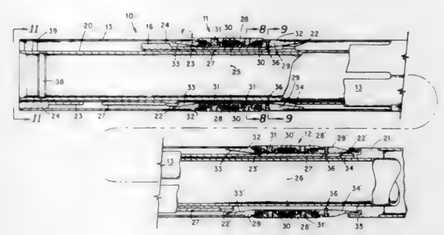
INTERNAL CORE TIGHTENER

Glen V. Brynsvold, San Jose, and Harold J. Snyder, Jr., Rancho Santa Fe, both of Calif., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed June 20, 1974, Ser. No. 481,299

Int. Cl.² G21C 5/08

U.S. Cl. 176—87 **5 Claims**



1. In a nuclear reactor utilizing a core composed of a plurality of closely adjacent fuel and control elements each having an outer casing and a spaced internal support tube; at least one internal core tightener for clamping adjacent elements comprising: an actuation sleeve positioned intermediate said support tube and said outer casing, said actuation sleeve being provided with at least one protruding cam-like member and at least one shoulder-forming member, said shoulder-forming member being located in spaced longitudinal relationship with said cam-like member, a load collar positioned about asid actuation sleeve intermediate said cam-like member and said shoulder-forming member thereof, and a plurality of preloaded load pad assemblies operatively positioned in openings in said outer casing, wherein axial movement of said actuation sleeve in one direction engages said shoulder forming member with said cam-like member causing said cam-like member to engage said load pad assemblies, moving said load pad assemblies outwardly and positions said load collar intermediate said actuation sleeve and said preloaded load pad assemblies forcing portions of said preloaded load pad assemblies to a position external of said outer casing for contacting adjacent elements, and axial movement of said actuation sleeve in the opposite direction withdraws said load collar from the position intermediate said actuation sleeve and said preloaded load pad assemblies and wherein said preloaded load assemblies constitute a rigid structure for clamping alignment of the adjacent elements and a flexible structure for accommodating expansion of the adjacent elements.

3,964,970

PROCESS FOR THE PREPARATION OF L-CAR-BAMYL-AMINO ACIDS AND OF THE CORRESPONDING L-AMINO ACIDS

Dino Dinelli, San Donato Milanese; Franco Morisi, San Giovanni in Persiceto, and Delio Zaccardelli, Monterotondo, all of Italy, assignors to Snam Progetti S.p.A., San Donato, Milanese, Italy

Filed May 10, 1974, Ser. No. 469,019

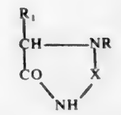
Claims priority, application Italy, May 11, 1973, 23957/73

Int. Cl.² C12D 13/06

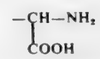
U.S. Cl. 195—2 **23 Claims**

1. A process for the preparation of only one of the two stereoisomer forms of carbamylamino acids comprising:

a. subjecting to hydrolysis a racemic mixture of compounds of the formula



wherein X is selected from the group consisting of CO, CS and O, R is selected from the group consisting of hydrogen and hydrocarbon radicals having up to 8 carbon atoms, R_1 is the residue of an amino acid molecule wherefrom the



moiety has been removed, said hydrolysis being carried out in the presence of an enzyme which acts on the racemic mixture through a selective hydrolysis of only one of the optically active forms:

b. separating the sole resultant carbamyl amino acid stereoisomer.

3,964,971

METHOD FOR INCREASING THE VITAMIN B_{12} PRODUCTION IN FERMENTATION PROCESSES CARRIED OUT WITH METHANOBACTERIA

Béla Johan; László Szemler; János Fülöp; Tamas Szontagh; Emilia Simonovits née Czink; Judit Bekes nee Erdös; László Kuti; Robert Torös; Dénes Szekely; Lászlo Szabo; Károly Seltz; Tádé Vajda; Erzsébet Kovacs née Komoroczy; Anikó Hargital nee Franyo, and Károly Polinszky, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Oct. 24, 1974, Ser. No. 517,797

Claims priority, application Hungary, Oct. 26, 1973, RI 523

Int. Cl.² C12D 5/06

U.S. Cl. 195—28 VB **1 Claim**

1. A method of increasing Vitamin B_{12} production in a fermentation broth undergoing fermentation to produce Vitamin B_{12} and containing a mixed population of a mesophilic methane-producing bacteria under anaerobic conditions which comprises the following steps:

a. adding daily to said fermentation broth, for a period of from 4 to 7 days, a first, broth-enriching nutrient concentrate containing at least 90% of the total amount of nitrogen source in the form of inorganic ammonium compounds and at least 90% of the total amount of a carbon source in the form of methanol and having an N:C weight ratio of 1:11 to 1:15 to increase the total concentration of assimilable nitrogen in the broth by a factor of maximum 4; and

b. periodically removing an effective portion of the fermentation broth and replacing same with an equal fresh portion of a second, broth-enriching nutrient concentrate also containing at least 90% of the total amount of a nitrogen source in the form of inorganic ammonium compounds and at least 90% of the total amount of a carbon source in the form of methanol and having an N:C weight ratio of 1:11 to 1:15 wherein the weight ratio of methanol carbon to ammonia nitrogen is 6 to 10% higher than that in the first nutrient concentrate added in step (*a*).

3,964,972

MODIFIED HETEROPOLYSACCHARIDES

John Tinsman Patton, 1213 E. Houghton Ave., Houghton, Mich. 49931

Division of Ser. No. 15,590, March 2, 1970, Pat. No. 3,729,460. This application July 24, 1972, Ser. No. 274,658

The portion of the term of this patent subsequent to Apr. 24, 1990, has been disclaimed.

Int. Cl.² C12D 13/04

U.S. Cl. 195—31 P **8 Claims**

1. A process for preparing an improved thickening agent which comprises dispersing a heteropolysaccharide produced by the action of bacteria of the genus Xanthomonas on a carbohydrate in an aqueous reaction medium substantially free of polyvalent cations, increasing the pH of said reaction medium by the addition of NaOH, KOH, or NH_3 to above about 11, heating said reaction medium to a temperature above 150°F and maintaining the medium at this elevated temperature for a period of time to effect clarification.

3,964,973

PREPARATION OF INSOLUBLE BIOLOGICALLY ACTIVE COMPOUNDS

Jiří Hradil; Jiří Čoupek; Miroslava Křivánková; Jiří Štamberg; Arthur Stoy, all of Prague, and Jaroslava Turková, Cesky Brod, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Jan. 30, 1974, Ser. No. 438,011

Claims priority, application Czechoslovakia, Feb. 5, 1973, 842-73

Int. Cl.² C07G 7/02

U.S. Cl. 195—68 **5 Claims**

1. A method of preparing a water insoluble biologically active product comprising subjecting a macroporous substantially hydrophobic polymeric carrier comprising a homopolymer or copolymer derived from (1) at least one acrylic monomer selected from the group consisting of alkylenediacrylates and dimethacrylates, oligo- and polyglycoldiacrylates and dimethacrylates, alkylenediacrylamides and methacrylamides, hydroxyalkylacrylates and methacrylates, oligo- and polyglycol monoacrylates and monomethacrylates, acrylonitrile and methacrylonitrile, or (2) a copolymer of at least one monomer of group (1) above with a vinyl monomer selected from the group consisting of vinylaniline, vinylpyridine and vinylcarbazol, to a superficial hydrolysis treatment with an aqueous alkaline medium to form free carboxylic acid groups in a thin surface layer of said polymeric carrier, subjecting the resulting superficially hydrolyzed polymeric carrier to an activation treatment comprising converting said free carboxylic acid groups to active carboxylic acid anhydride groups, and contacting the resulting activated polymeric carrier with a biologically active protein compound capable of being insolubilized and bound by reaction with said anhydride groups in said polymeric carrier.

3,964,974

ENZYMATIC DETERMINATION OF GLUCOSE

Dieter Banauch; Wolfgang Brummer; Wolfgang Ebeling; Roland Helger; Norbert Hennrich, and Hermann Lang, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Sept. 10, 1973, Ser. No. 395,547

Claims priority, application Germany, Sept. 28, 1972, 2247608

Int. Cl.³ G01N 31/14; C07G 7/02

U.S. Cl. 195—103.5 C **10 Claims**

1. An analytical agent for the quantitative enzymatic determination of glucose, consisting essentially of:

a. glucose dehydrogenase having a dry weight activity of at least 2 U/mg., the dinucleotide, 2 oxidase activity of which is less than 0.1% of said glucose dehydrogenase activity;

b. a pyridine coenzyme selected from the group consisting of NAD, NADP, thio-NAD, thio-NADP, nicotinamide purine dinulceotide, nicotinamide-(6-methylpurine)-dinucleotide and nicotinamide-(2-chloro-6-methylpurine)-dinucleotide in an amount sufficient to provide about a 2.0–5.0 millimole concentration in an analytical test solution;

c. means for maintaining an aqueous test solution of said analytical agent at a pH of about 6.5–8.5; and

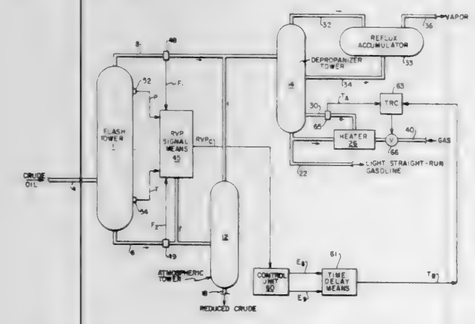
d. mutarotase in an amount sufficient to increase the spontaneous mutarotation of α-glucose to β-glucose in said test solution by more than 50%.

3,964,975

MEANS FOR CONTROLLING THE TEMPERATURE OF A DEPROPANIZER TOWER

Charles W. Harrison, Nederland, and Glenn A. Senters, Beaumont, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Aug. 19, 1974, Ser. No. 498,331
Int. Cl.² B01D *3/42*; **C10G** *7/02*; **G05B** *21/02*
U.S. Cl. 196—132 **5 Claims**



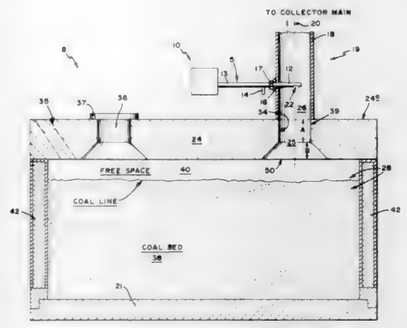
1. A refining unit comprising a flash tower receiving raw crude oil, an atmospheric tower receiving a flashed crude oil from said flash tower, a depropanizer tower receiving a light component vapor from said flash tower and producing gasoline, recirculating means including a heater for withdrawing, heating to a desired temperature and recirculating a portion of said gasoline back to said depropanizer tower, said refining unit further including a control system comprising flow rate sensing means for sensing the flow rates of the vapor and the flashed crude oil and providing signals corresponding thereto, pressure sensing means for sensing the pressure in the flash tower and providing a corresponding signal, first temperature sensing means for sensing the temperature of a liquid in the flash tower and providing a signal related thereto, Reid Vapor pressure signal means sampling the flashed crude oil and receiving the flow rate signals, the pressure signal and the temperature signal, for providing a signal corresponding to the current Reid Vapor Pressure of the raw crude oil, second temperature sensing means for sensing the temperature of the gasoline being recirculated back to the depropanizer tower and providing a signal corresponding thereto, desired temperature signal means for providing a signal corresponding to the desired temperature for the gasoline being recirculated back to the depropanizer tower, change signal means connected to the desired temperature signal means and to the Reid Vapor Pressure signal means for providing a change signal to the desired temperature signal means so as to cause the desired temperature signal means to change the amplitude of the desired temperature signal at some predetermined time after a change in the Reid Vapor Pressure has occurred and in accordance with the current Reid Vapor Pressure signal, and control means receiving the desired temperature signal and the sensed gasoline temperature signal for controlling the heater so as to control the temperature of the gasoline being recirculated back to the depropanizer tower.

3,964,976

PROCESS FOR CLEANING COKE OVEN GAS OFFTAKES

James Oliver Pettrey, Jr., Huntington, W. Va., and Rufus Furman Davis, Jr., Russell, Ky., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 28, 1974, Ser. No. 484,357
Int. Cl.² C10B *43/02*, *43/14*, *57/00*
U.S. Cl. 201—2 **8 Claims**



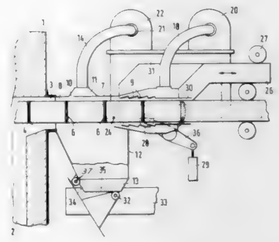
1. In a process for the coking of coal in a coke oven chamber having gas offtakes wherein said coking of coal is effected at flue temperatures from 1900° to 2600°F., the improvement which comprises contacting the inner surfaces of said gas offtakes with steam during the coking operation in an amount sufficient to react with the carbon deposits formed on said inner surfaces during said coking operation, said steam being at a temperature sufficient to maintain the temperature of said inner surfaces above 1472°F., whereby gaseous reaction products of said steam and carbon deposits are obtained while a substantial buildup of carbon deposits on said inner surfaces is prevented.

3,964,977

METHOD AND APPARATUS FOR OPERATING A LEVELING DEVICE FOR A COKING OVEN

Dietrich Haase, Mayen, Germany, assignor to Hartung, Kuhn & Co. Maschinenfabrik GmbH, Dusseldorf, Germany

Filed Nov. 5, 1975, Ser. No. 629,078
Int. Cl.² C10B *37/04*
U.S. Cl. 201—40 **12 Claims**



1. A method of operating a leveling rod for leveling coal in a horizontally extending coking chamber of the coking oven, in which the rod passes with clearance through an opening in an end wall of the coking chamber into the latter and with a portion thereof outside the chamber with clearance through a channel, said channel having two ends and communicating at one end thereof with said opening, said method comprising the steps of reciprocating the leveling rod; feeding air under pressure into the other end of said channel; sucking air from the region of said one end of the channel out of the latter; and adjusting the relationship between the air fed into and sucked out from the channel so that the amount of air fed into the other end of said channel, at any internal pressure in said chamber, is equal to the amount of air sucked from the region of said one end of said channel to thereby prevent passage of gases from the interior of the chamber through said opening and said channel to the outside of the coking oven, without feeding any of the air into the chamber.

3,964,978

NO_2 POLYMERIZATION INHIBITOR FOR VINYL AROMATIC COMPOUND DISTILLATION

James M. Watson, Big Spring, Tex., assignor to Cosden Technology, Inc., Big Spring, Tex.

Filed Dec. 9, 1974, Ser. No. 531,069
Int. Cl.² B01D *3/34*, *3/10*; **C07C** *7/18*
U.S. Cl. 203—9 **6 Claims**

1. A process for the distillation of a readily polymerizable vinyl aromatic compound, which comprises subjecting such compound to distillation conditions in the presence of a polymerization inhibitor consisting essentially of from about 50 ppm to about 2000 ppm of nitrogen dioxide (NO_2) and at a temperature of from about 150°F. to 300°F.

3,964,979

NO POLYMERIZATION INHIBITOR FOR VINYL AROMATIC COMPOUND DISTILLATION

James M. Watson, Big Spring, Tex., assignor to Cosden Technology, Inc., Big Spring, Tex.

Filed Dec. 9, 1974, Ser. No. 531,202
Int. Cl.² B01D *3/34*, *3/10*; **C07C** *7/18*
U.S. Cl. 203—9 **6 Claims**

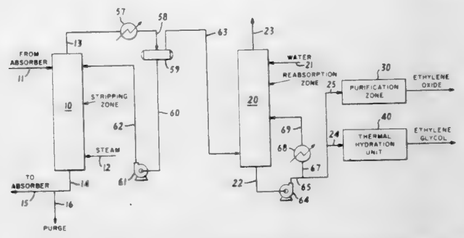
1. A process for the distillation of a readily polymerizable vinyl aromatic compound, which comprises subjecting such compound to distillation at a temperature between about 150 and 300°F. a polymerization inhibitor consisting essentially of nitric oxide (NO) in an amount of from about 20 ppm to about 3000 ppm, and in the substantial absence of oxygen.

3,964,980

PROCESS FOR THE RECOVERY OF ETHYLENE OXIDE

Brian I. Ozero, New York, N.Y., assignor to Halcon International, Inc., New York, N.Y.

Filed Mar. 24, 1975, Ser. No. 561,515
Int. Cl.² C01D *1/14*
U.S. Cl. 203—42 **6 Claims**



1. In the process for recovering ethylene oxide from the gaseous reaction effluent produced in the silver catalyzed, vapor-phase, partial oxidation of ethylene with molecular oxygen, the recovery process comprising the steps of: (a) countercurrently contacting the effluent with an aqueous scrubbing solution thereby producing an ethylene oxide-containing absorbate, (b) stream stripping said absorbate within a stripping zone containing a plurality of vaporliquid contacting stages to generate an ethylene-oxide containing stripper overhead vapor and (c) reabsorbing the ethylene oxide within a reabsorption zone containing a plurality of vapor-liquid contacting stages by countercurrent contact of the stripper overhead vapor with water to generate a reabsorbate suitable for further processing to recover ethylene therefrom and for thermal hydration of the ethylene oxide dissolved in said reabsorbate to form ethylene glycols, the improvement which comprises:

a. Subjecting the stripper overhead vapor to a partial condensation so that at least about 50% of the water contained therein is condensed while less than 20% of the ethylene oxide contained therein is condensed and returning the condensate from the partial condensation as reflux to an upper portion of the stripping zone;

b. Introducing the uncondensed portion of the stripper overhead vapor to the reabsorption zone;

c. Cooling a portion of the reabsorbate; and,

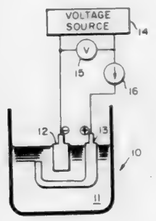
d. Recycling said cooled reabsorbate and introducing it to a point within the reabsorber intermediate between the points at which the uncondensed portion of the stripper overhead vapor and the water are introduced to the reabsorption zone, the amount of said cooled reabsorbate being at least 0.2 part by weight per part by weight of reabsorbate not cooled.

3,964,981

METHOD FOR POLAROGRAPHIC ANALYSIS USING AN ELECTRODE OF TANTALUM/CARBON MATERIAL

Henry M. Stahr, Ogden, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Continuation of Ser. No. 244,133, April 14, 1972, abandoned. This application Sept. 20, 1973, Ser. No. 399,075
Int. Cl.³ G01N *27/48*, *27/30*
U.S. Cl. 204—1 T **1 Claim**

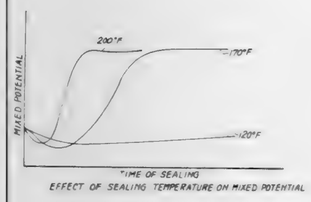


1. In a method of polarographic analysis of a species in an electrolyte including the steps of contacting said electrolyte with a reference electrode; contacting said electrolyte with an active electrode; applying an increasing voltage between said electrodes; and measuring the current flowing between said electrodes to produce an abruptly increasing current followed by a generally constant current, the voltage at which said increasing current appears being representative of a particular species and the magnitude of said constant current being representative of the quantity of the identified species; the improvement wherein said step of contacting said electrolyte with an active electrode comprises contacting said electrolyte with a tantalum/carbon material formed by vacuum-depositing carbon on a tantalum substrate by heating tantalum in a vacuum furnace in the presence of carbon at a temperature in the range 800° – 1,200°C. and depositing carbon on said tantalum substrate until the surface of said substrate turns gold, said material characterized in being inert to hydrofluoric acid and aqua regia.

3,964,982
METHOD AND APPARATUS FOR CONTROLLING THE DEGREE OF HYDRATION IN SEALING OF ANODIZED ALUMINUM

Duk Hwang Kim, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 490,832, July 22, 1974, abandoned. This application June 16, 1975, Ser. No. 587,177
Int. Cl.² G01N *27/26*; C25D *5/44*
U.S. Cl. 204—1 T **2 Claims**



EFFECT OF SEALING TEMPERATURE ON MIXED POTENTIAL

1. In the process for producing a sealed, anodized film on an aluminum surface, said process including the steps of anodizing said surface so as to produce a porous aluminum oxide film on said surface and thereafter sealing said surface, in which the improvement comprises a process for evaluating the degree of hydration during said sealing step including the step of measuring the mixed potential of the anodized aluminum surface; electrically recording said mixed potential with respect to time; and then automatically terminating said sealing step when said mixed potential equals a predetermined voltage representative of the preselected degree of hydration.

2. The process for evaluating the degree of hydration during sealing of an anodized aluminum part immersed in a sealing solution, comprising the steps of: measuring and recording the mixed potential of said anodized aluminum part during said sealing, and continuing said measuring and recording of said mixed potential when said mixed potential does not exceed, in a predetermined time internal, a predetermined voltage level representative of desired hydration level in order to evaluate the quality of said sealing solution.

3,964,983
PROCESS FOR THE ELECTROCHEMICAL SYNTHESIS OF ORGANIC METAL COMPOUNDS

Wilhelm Eisenbach; Herbert Lehmkuhl, and Günther Wilke, all of Mulheim (Ruhr), Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim (Ruhr), Germany

Filed Oct. 3, 1973, Ser. No. 403,239
Claims priority, application Austria, Oct. 5, 1972, 8547/72
Int. Cl.² B01K *3/00*
U.S. Cl. 204—59 L **25 Claims**

1. Process for the reaction of an H-acidic organic compound in which the acidic H-atom is bonded by oxygen or sulphur to the organic radical and which has a pK value of up to about 20, with a metal having a standard potential which is more positive than −1.66 volts and which does not or only incompletely reacts with the H-acidic compound under current-free conditions, wherein the H-acidic compound or its solution in polar solvent is made conducting by addition of a soluble salt of at least one of Li, Na, K, Rb and Cs and at least one of chloride, bromide and iodide and is electrolysed at temperatures up to 150°C, using said metal as the anode, and the reaction product of the H acidic compound and the metal anode is recovered.

3,964,984
METHOD OF PRODUCING PHOTOCHROMIC SODALITE CRYSTALS

Shavkat Vakhidov, ulitsa Beruni, 3, kv. 2; Mokhira Akhadovna Vakhidova, ulitsa Lenina, 11, kv. 14, both of poselok Ulugbek, Tashkentskaya oblast; Anatoly Nikolaevich Lobachev, ulitsa Fersmana, 3, kv. 68, Moscow; Oleg Konstantinovich Melnikov, Profsojuznaya ulitsa, 111, korpus 3, kv. 228, Moscow, and Nina Sergeevna Triodina, Universitetsky prospekt, 4, kv. 501, Moscow, all of U.S.S.R.

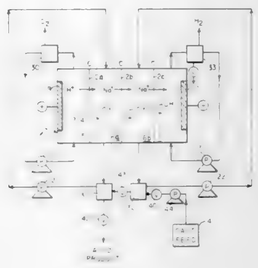
Filed Jan. 24, 1973, Ser. No. 326,338
Claims priority, application U.S.S.R., Feb. 4, 1972, 1739751
Int. Cl.² B01J *1/10*
U.S. Cl. 204—157.1 H **5 Claims**

1. A method of producing photochromic sodalite crystals which comprises exposing sodalite crystals to the effects of a penetrating ionizing radiation field in a chlorine-free atmosphere for a period of time necessary for the activation of the photochromic centers in said crystals.

3,964,985
ELECTRODIALYSIS APPARATUS AND PROCESS FOR ION MODIFICATION

Anthony J. Giuffrida, North Andover, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Filed Oct. 29, 1974, Ser. No. 518,587
Int. Cl.² B01D *13/02*
U.S. Cl. 204—180 P **6 Claims**

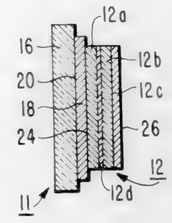


1. An ion-modification process for the electrolytic conversion of a water soluble metal salt of an acid into the corresponding acid per se comprising providing a four chamber electrolytic cell having at the terminals ends thereof a cathode and anode electrode chamber respectively and a first and second juxtaposed intermediate chambers placed between said electrode chambers with all four chambers separated from each other by cation permeable diaphragms and with means for separately introducing into recycling and removing fluids from the respective chambers via separate liquid holdup tank means associated with each of said chambers, the process comprising having aqueous acid salt solution in both said first and second intermediate chambers, having conductive aqueous solutions in the electrode chambers, the said anolyte solution being capable of producing hydrogen ions at the anode electrode, imposing a direct current transversely through all four chambers to cause hydrogen ions from the anolyte to migrate through the adjacent cation membrane diaphragm into the said first adjacently disposed intermediate chamber and to cause metal ions from the said salt solution of the said first intermediate chamber to migrate through the next adjacent membrane into the second adjacently disposed intermediate chamber and removing the resulting solution in said first intermediate chamber as the acid product.

3,964,986
METHOD OF FORMING AN OVERLAYER INCLUDING A BLOCKING CONTACT FOR CADMIUM SELENIDE PHOTOCONDUCTIVE IMAGING BODIES

Gordon Mark, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 31, 1975, Ser. No. 563,815
Int. Cl.² C23C *15/00*; H01J *39/00*
U.S. Cl. 204—192 **9 Claims**



1. A method of forming a transition material region along a surface portion of a first material region of a photoconductive imaging body wherein the material composition of the transition material region comprises a graded atomic transition of the material of the first material region with increasing amounts of aluminum and oxygen in a direction proceeding away from the first material region, including the steps of:

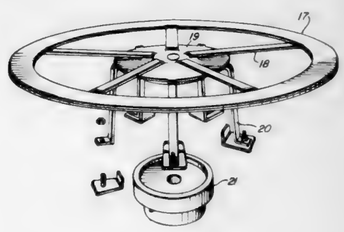
a. bombarding a deposition surface portion of the photoconductive body with electrons to achieve a current through said body of less than about 8 mA. per cm.² of surface area of said deposition surface portion in an atmosphere of oxygen at a pressure of from about 0.1 to about 0.5 torr, and simultaneously

b. subjecting the deposition surface portion of the photoconductive body to vapors of aluminum, or oxygen compounds thereof, to cause deposition of aluminum and oxygen along said deposition surface portion to form said transition material region.

3,964,987
ELECTROPLATING APPARATUS

Merlyn R. Reppert, Torrance, and Thomas M. Beckwith, Riverside, both of Calif., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 472,745, May 23, 1974, abandoned, which is a division of Ser. No. 420,109, Nov. 29, 1973, Pat. No. 3,874,054. This application Oct. 4, 1974, Ser. No. 511,978
Int. Cl.² C25D *17/06*, *17/10*
U.S. Cl. 204—194 **6 Claims**

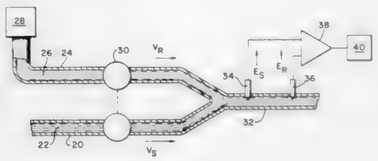


1. A collector for use in plating wheel centers comprising an insulating plug, and metal base, a plurality of metal legs between said base and the upper face of said plug, foot plates on each of said legs, said plug being connectable to said base plate.

3,964,988
ELECTROCHEMICAL MONITORING

John H. Riseman, Cambridge, and Martin Frant, Newton, both of Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Filed Jan. 19, 1972, Ser. No. 218,881
Int. Cl.² G01N *27/46*
U.S. Cl. 204—195 M **6 Claims**



1. Apparatus for electrochemical monitoring of a first liquid flow stream for the presence of an ionic species of interest comprising in combination;

a second liquid flow stream containing the ion species of interest and a second non-interfering ion species in a substantially fixed ratio to one another;

means for combining said first and second flow streams to provide a mixed liquid;

one electrochemical electrode for providing an electrical signal as a function of the activity of said ionic species of interest in said mixed liquid:

another electrochemical electrode for providing an electrical signal as a function of the activity of said second species of ion in said mixed liquid;

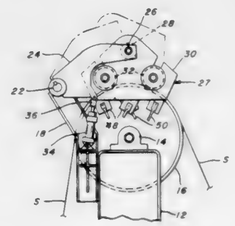
both of said electrodes being disposed in operative contact with said mixed liquid; and

means for determining a difference signal between the electrical signals from said electrodes.

3,964,989
APPARATUS FOR SUPPLYING CURRENT TO A MOVING STRIP

Robert E. Ackerly, and Roy C. Bongartz, both of Pittsburgh, Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Jan. 13, 1975, Ser. No. 540,379
Int. Cl.² C25D *17/00*, *17/06*, *7/06*
U.S. Cl. 204—211 **7 Claims**



1. Apparatus for supplying electric current to a moving strip comprising a strip support roll having a length at least as great as the width of the strip, means directing said strip around a substantial arc of said support roll, a pair of rotatable conductor rolls having a length at least as great as the width of the strip, means mounting said pair of conductors rolls in spaced apart relationship around the outer periphery of the support roll with their axes parallel to the axis of the support roll and their periphery in engagement with said strip where it is in contact with said support roll so that said strip is held for its full width between said support roll and one of said conductor rolls and and then between said support roll and the other of

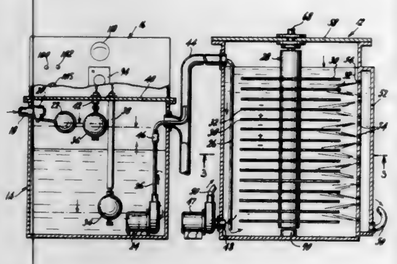
said conductor rolls, and means for supplying electric current to said conductor rolls.

3,964,990

PRECIOUS METAL RECOVERY SYSTEM

Stanley Woyden, 1575 High Ridge Road, Stamford, Conn. 06903

Filed Nov. 4, 1974, Ser. No. 520,246
Int. Cl.² C25C *7/00*
U.S. Cl. 204—275 **4 Claims**



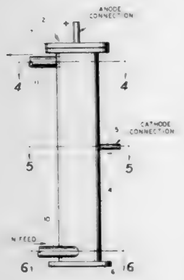
1. A system for recovering metals from solution comprising a recovery tank having electrodes positioned therein, means for applying an electrolysis voltage to said electrodes, a holding tank for receiving liquid from a liquid source, means for feeding liquid from said holding tank to said recovery tank, means for sensing when the concentration of metal in said recovery tank deviates from a desired concentration, and control means responsive to said sensing means for activating said feeding means when the metal concentration in said recovery tank deviates from said desired concentration so as to transfer liquid from said holding tank to said recovery tank to automatically provide proper electrolyte concentration for plating.

3,964,991

METHOD AND APPARATUS FOR PRECIPITATING COLLOIDS FROM AQUEOUS SUSPENSIONS

John K. Sullins, Kingsport, Tenn., assignor to Canton Textile Mills, Inc., Canton, Ga.

Filed July 28, 1975, Ser. No. 599,878
Int. Cl.² C25B *9/00, 11/02*
U.S. Cl. 204—275 **5 Claims**



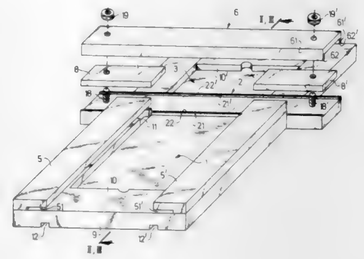
1. A flocculation cell comprising a cylindrical enclosure formed of electrically conductive material, an elongated generally cylindrical electrode of electrically conductive material disposed within said enclosure in insulated relation thereto and arranged with its major axis in substantially coincidental relation with the major axis of said cylindrical enclosure to define an annular passage therebetween, an inlet formed in the cylindrical wall of said enclosure at one end thereof and generally tangentially disposed relative to the inner surface of said wall and arranged to impart swirling motion in said annular passage to liquid supplied to said enclosure through said inlet, an outlet formed in the cylindrical wall of said enclosure at the other end thereof and generally tangentially disposed relative to the inner surface of said wall and arranged to exhaust liquid from said annular passage tangentially thereof and in the same general direction as the direction of swirling movement thereof so as to facilitate flow of liquid in a generally helical path through said annular passage, and means for impressing an electric potential between said enclosure and said electrodes.

3,964,992

CHAMBER AND PROCESS FOR CROSSED IMMUNOELECTRO-PHORESIS

Walter Krotz, Hamburg, Germany, assignor to Medac Gesellschaft fur klinische Spezialpraparate mbH, Hamburg, Germany

Filed Dec. 27, 1974, Ser. No. 536,964
Claims priority, application Germany, Dec. 31, 1973, 2365284; Oct. 11, 1974, 2448552
Int. Cl.² G01N *27/26, 27/28*
U.S. Cl. 204—299 R **19 Claims**



1. A chamber comprising:
a. a base plate,
b. means defining a well in said base plate,
c. means subdividing the well in said base plate into two well portions, a migration well and a connecting well, said well adapted to receive a second carrier for performing a second crossed-electrophoresis step following prior electrophoretic separation of a protein-containing sample in a first carrier, said means for subdividing said well into a migration well and a connecting well including,
d. a depot, said depot adapted to receive a protein-containing sample in a first carrier for separation in a second carrier in a direction at right angles to a first separating direction of the protein-containing sample,
e. means defining a vertically variable gap in said depot so that a first carrier in the depot is in contact with a second carrier in the wells, said means including a lid for said depot whereby upon utilization of said chamber with electrophoresis apparatus migration of protein from said sample in said first carrier into said second carrier takes place.

3,964,993

REMOVAL OF HF FROM THE SLUDGE RESULTING FROM THE TREATMENT OF A HYDROCARBON

Hugh E. Romine, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jan. 23, 1975, Ser. No. 543,592
Int. Cl.² C10G *17/00*
U.S. Cl. 208—13 **4 Claims**

1. A process for removing HF from the sludge resulting from the HF treatment of hydrocarbons, said process comprising:

a. adding to the sludge, aqueous caustic and more than 10%, by volume, based on the sludge, of a liquid aromatic diluent containing at least 30 weight percent aromatics, to form an admixture,
b. allowing the admixture of step (a) to form an aqueous phase and a hydrocarbon phase, and
c. separating the aqueous phase and the hydrocarbon phase, said process being characterized further in that:
a. the aqueous caustic solution contains from about 1 to about 50 weight percent caustic, and
b. the amount and concentration of aqueous caustic are such as to provide an amount of caustic which is in the range of about 1 to about 1,000 times the stoichiometric requirement, based on the HF present in the sludge.

3,964,994

H_2O_2-CONTAINING MICELLAR DISPERSIONS

Joe T. Kelly, deceased, late of Littleton, Colo. (by LaVerne S. Kelly, executrix), assignor to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 880,959, Nov. 28, 1969, Pat. No. 3,647,653. This application July 19, 1971, Ser. No. 164,109
Int. Cl.² C10G *27/04*
U.S. Cl. 208—196 **4 Claims**

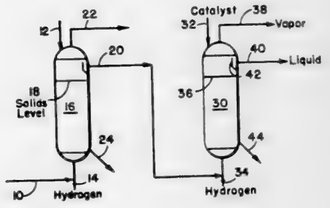
1. A process for dispersing hydrogen peroxide in liquid media comprising organic compounds in which hydrogen peroxide is not substantially dispersible normally, comprising:
a. forming a stable hydrogen peroxide-containing micellar dispersion comprising the components hydrocarbon, aqueous medium, hydrogen peroxide, and surfactant capable of dispersing the components, and,
b. admixing the hydrogen peroxide-containing micellar dispersion with said liquid media so that the hydrogen peroxide intimately comes into contact with and becomes dispersed through the liquid media.

3,964,995

HYDRODESULFURIZATION PROCESS

Ronald H. Wolk, Lawrence Township, Mercer County; Seymour B. Alpert, Princeton, and Michael C. Chervenak, Pennington, all of N.J., assignors to Hydrocarbon Research, Inc., Morristown, N.J.

Continuation of Ser. No. 274,221, July 24, 1972, abandoned, Continuation of Ser. No. 56,617, July 20, 1970, abandoned. This application June 21, 1974, Ser. No. 481,797
Int. Cl.² C10G *23/02*
U.S. Cl. 208—210 **4 Claims**



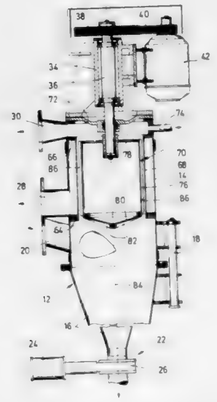
1. In a hydrodesulfurization process wherein a metal- and sulfur-containing petroleum liquid residuum feedstock is treated in a hydrodesulfurizing step by
feeding the residuum together with hydrogen upwardly into a desulfurization reaction zone maintained under ebullated bed hydrodesulfurization conditions with a temperature between about 700° and about 825°F and a pressure between about 1000 and about 3000 psig, while maintaining in said desulfurization zone a high density, substantially non-porous particulate solid catalyst selected from the group consisting of cobalt molybdate on alumina and nickel molybdate on alumina in random motion in the liquid, said catalyst having a porosity not greater than 0.1 cc/g of cumulative pore volume for pores having diameters larger than 250A to recover a reiduum containing less than one percent sulfur;
the improvement which comprises:
pretreating the metal-containing residuum before substantial desulfurization to remove vanadium or nickel by
feeding said residuum with a hydrogen-containing gas to a pretreatment zone maintained at a temperature between about 700° and 825°F and a pressure between 1000 and 3000 psig;
maintaining in said pretreatment zone a bed of particulate contact solids containing at least 75 weight percent porous alumina and containing about 7½ to 22 weight percent metal oxide promoter consisting essentially of a mixture of Fe_2O_3, TiO_2 and SiO_2, and mixtures thereof;
feeding said contact solids to the reaction zone at a rate sufficient to achieve at least 40 percent removal of vanadium, said contact solids being maintained in random motion in the liquid by the residuum feed and hydrogen-containing gas,
whereby the desulfurization catalyst has increased life and sulfur removal is enhanced.

3,964,996

CLASSIFYING UNIT FOR FIBROUS SUSPENSIONS

Emil Holz, Eningen, and Reinhold Kapernick, Reutlingen, both of Germany, assignors to Hermann Finckh Metalltuch- und Maschinenfabrik, Reutlingen, Germany

Filed Feb. 28, 1975, Ser. No. 554,150
Claims priority, application Germany, Mar. 20, 1974, 2413310
Int. Cl.² B03B *7/00*
U.S. Cl. 209—17 **15 Claims**



1. A classifying unit for fibrous suspensions including in combination, a housing having an upper portion and a lower vortex cleaner forming portion, a stationary vertically disposed screen cage mounted in said upper housing portion, a generally cylindrical rotor closed over its circumferential portion and over its bottom, means mounting said rotor for rotary movement within said screen cage, a stirring element carried by the outer surface of said cylindrical portion of said rotor for cooperation with said screen cage for clearing the openings of said screen cage and the space between said screen cage and said rotor, means providing a heavy material outlet at the bottom of said vortex cleaner portion, means providing said upper housing portion with an accepted stock outlet communicating with the outer side of said screen cage, means providing said housing with an inlet adjacent to the bottom of said rotor for the admission of a suspension to be classified, means providing said housing with an outlet located

above said screen cage for the removal of the separated fraction of the suspension, and means mounted on said rotor adjacent to said inlet for circulating the suspension to be classified within said vortex cleaner portion.

3,964,997

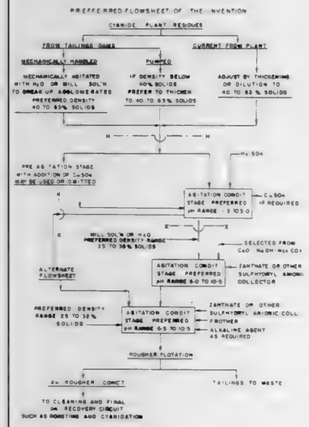
CONCENTRATION OF GOLD, SULPHIDE MINERALS AND URANIUM OXIDE MINERALS BY FLOTATION FROM ORES AND METALLURGICAL PLANT PRODUCTS

David Weston, 34 Parkwood Ave., Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 409,328, Oct. 24, 1973, abandoned, which is a continuation-in-part of Ser. No. 339,384, March 3, 1973, Pat. No. 3,919,079. This application Sept. 26, 1974, Ser. No. 509,428

Int. Cl.² B03D 1/02

U.S. Cl. 209—166 **41 Claims**



1. A process for the recovery by froth flotation of mineral values selected from the group consisting of gold, silver sulphide minerals, bismuth sulphide minerals and uranium oxides associated with gold value, from complex ores and metallurgical plant products containing at least one of said minerals comprising: subjecting a suitably prepared pulp of the material to mechanical agitation in at least one agitation conditioning stage wherein the pH of the said pulp has been lowered with an acid agent to an optimum pH point within the pH range of about 1.5 to 5.0 and wherein the agitation conditioning is for a sufficient period of time to bring about heavy activation of at least one of the said mineral values in at least one subsequent mechanical agitation conditioning stage wherein the said pulp is further agitation conditioned for a sufficient period of time and at an optimum pH point in the pH range of about 5.0 to 11.5 and in the presence of an alkaline agent when the said optimum pH point is in the pH range of about 6.0 to 11.5 and in the presence of at least one collector selected from the group of sulfhydryl anionic sulphide mineral collectors to produce the said heavy activation of at least one of the said mineral values; and subsequently in the presence of a frother subjecting the said agitation conditioned pulp to flotation to produce a concentrate enriched in at least one of the said mineral values, and a tailings product impoverished in at least the same said mineral value.

3,964,998

IMPROVEMENTS IN AND RELATING TO WASTE WATER TREATMENT

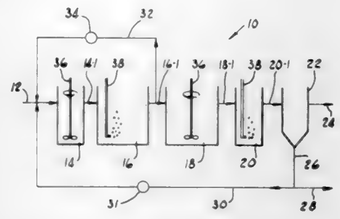
James Laing Barnard, Pretoria, Transvall, South Africa, assignor to The South African Inventions Development Corporation, Pretoria, Transvall, South Africa

Continuation of Ser. No. 377,390, July 9, 1973, abandoned. This application Apr. 9, 1975, Ser. No. 566,362

Claims priority, application South Africa, Aug. 4, 1972, 72/5371

Int. Cl.² C02C 1/06

U.S. Cl. 210—7 **18 Claims**



1. A process for removing nitrogen from organic waste water containing nitrogenous compounds, which includes the steps of

a. feeding waste water to a first stage,

b. passing active sludge recycled from a subsequent stage of the process, to the first stage and inducing turbulence in the first stage for mixing the waste water and the active sludge to provide a mixed liquor, said first stage being a biological denitrification stage for allowing heterotrophic bacteria in suspension in the active sludge to convert nitrates to nitrogenous gases under anoxic conditions,

c. passing mixed liquor from the first stage to a second stage,

d. aerating the second stage to maintain aerobic conditions with a dissolved oxygen concentration of between 0.2 and about 6 mg/l, to obtain biological nitrification of nitrogenous compounds to nitrates by nitrifying bacteria contained in the active sludge in the mixed liquor,

e. recycling mixed liquor containing nitrates formed in the second stage to the first stage at an average daily rate of at least **0.8** by volume of the rate of feed of waste water fed to the first stage,

f. providing a sufficient residence time of mixed liquor in the first stage in relation to the respiration rate of bacteria in the active sludge in the first stage, to obtain denitrification of at least 80% by weight of the nitrates in the mixed liquor recycled to the first stage,

g. passing mixed liquor from the second stage to a third stage and inducing turbulence in the third stage, while allowing a sufficient residence time of the mixed liquor in the third stage for endogenous respiration of bacteria in the active sludge, to reduce any oxygen in the mixed liquor and then reduce nitrates to nitrogen gas to remove at least 60% by weight of the nitrates in the mixed liquor entering the third stage from the second stage,

h. passing mixed liquor from the third stage to a solids separation stage to provide a clarified effluent and an active sludge having a concentrated suspension of bacteria,

i. withdrawing clarified effluent from the solids separation stage,

j. recycling at least a portion of the active sludge from the solids separation stage to the first stage to provide the recycled active sludge in the first stage, the active sludge being recycled at a sufficient rate to maintain suspended solids concentration in the mixed liquor of at least about 1,000 mg/l in the first, second and third stages, and

k. wasting sludge at a daily rate of less than 16% by weight of the weight of the sludge in all the stages of the process so as to ensure a sufficient residence time of nitrifying bacteria in the second stage, in relation to their growth rate, to prevent washing out of the nitrifying bacteria at a rate faster than their growth rate.

3,964,999

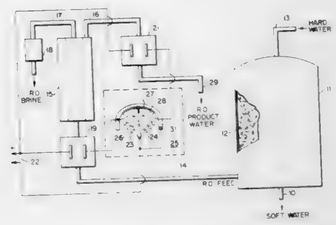
DETERMINATION OF SODIUM FORM WATER SOFTENER BREAKTHROUGH

David M. Chisdes, Wayne, N.J., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 398,662, Sept. 19, 1973, abandoned. This application Apr. 11, 1975, Ser. No. 567,367

Int. Cl.² B01D 13/00

U.S. Cl. 210—23 R **15 Claims**



1. A method of determining the relative exhaustion of a sodium form water softener which comprises the steps of:

measuring the conductivity of a sample of the outflow of the water softener;

removing sodium and hardness ions from the sample at different rates downstream of said measuring;

measuring the conductivity of the sample downstream of said removal;

determining the ratio of said measurements; and

determining said relative exhaustion from changes in said ratio.

3,965,000

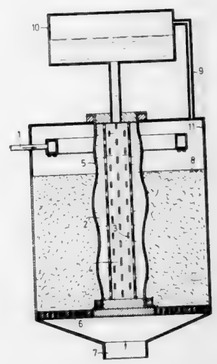
METHOD FOR OPERATING ION EXCHANGE COLUMNS

Jiri Mikule, and Hans Georg Schneider, both of Euskirchen, Germany, assignors to Industrial Filter & Pump Mfg. Co., Cicero, Ill.

Continuation of Ser. No. 307,102, Nov. 16, 1972, abandoned. This application Aug. 26, 1974, Ser. No. 500,568

Int. Cl.² B01D 15/00

U.S. Cl. 210—24 **5 Claims**



1. A method of maintaining a constant head of expandable granular material in a column through which a liquid to be treated is passed, said granular material being ion exchange resin which expands when used to treat said liquid, comprising the steps of vertically mounting a resilient, imperforate, deformable tubular member in said column to provide a first compartment within said member and a second compartment surrounding said member, partially filling one of said compartments with said granular material so as to leave an open space above said granular material in said one of said compartments, completely filling the other of said compartments with liquid, providing a closed liquid reservoir chamber above said column, partially filling said reservoir chamber with liquid connecting the top of said other compartment to a location in said reservoir below the liquid level therein, connecting said space in said one compartment above said granular material to a location in said reservoir chamber above said liquid level, and passing the liquid to be treated through said one of said compartments, whereby expansion of said granular material deforms said tubular member to force liquid up into said reservoir to maintain a constant head in said column.

3,965,001

PROCESS FOR REMOVING DISPERSED MATTER FROM WATER

Cyrus A. Irani, Clark, and Daniel J. McHugh, Edison, both of N.J., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Feb. 12, 1973, Ser. No. 331,864

Int. Cl.² C02C 9/02

U.S. Cl. 210—28 **3 Claims**

1. A process for removing dispersed oil from sea water which comprises:

a. dissolving strontium hydroxide in sea water to precipitate a flocculated strontium carbonate salt,

b. adsorbing said oil on said flocculated salt,

c. providing additional oil in said sea water,

d. adsorbing said oil-adsorbed flocculated salt on said additional oil, and

e. separating said additional oil along with said oil-adsorbed flocculated salt.

3,965,002

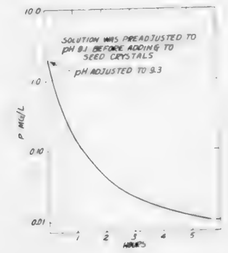
PROCESS FOR REDUCING DISSOLVED INORGANIC ORTHOPHOSPHATES TO PPB LEVELS IN AQUEOUS SYSTEMS

Lawrence B. Magnusson, Langhorne, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Continuation of Ser. No. 564,582, April 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 456,720, April 1, 1974, abandoned. This application Nov. 12, 1975, Ser. No. 631,335

Int. Cl.² C02C 1/40

U.S. Cl. 210—46 **8 Claims**



1. A method for the continuous removal of dissolved orthophosphate from an aqueous medium which comprises:

i. Adding to water containing a known amount of dissolved orthophosphate an amount of soluble calcium such that the molar ratio of calcium to phosphorus is at least about

1.5, plus at least about 8 milligrams per liter of calcium in excess of said amount,

ii. Maintaining the pH of said water between 8.5 and 9.5,

iii. Maintaining the temperature of the water at or below 30°C,

iv. Allowing the dissolved orthophosphate to nucleate and to begin precipitating in the form of calcium phosphate solid,

v. Charging a reactor region with a slurry of the calcium phosphate solid obtained in step (iv),

vi. Introducing into the region a continuous flow of the aqueous medium to be treated,

vii. Maintaining the pH in the region between about 9.3 and about 10.5,

viii. Maintaining the soluble calcium content of the water within the reactor region at a level where the calcium to influent phosphorus molar ratio is at least about 1.5 plus at least about 0.2 millimoles calcium per liter excess,

ix. Establishing a steady-state of approximately constant concentration of soluble phosphate by maintaining the ratio of the phosphate input rate to charged calcium phosphate solid amount at about 1.5×10^{-3} or less, where the input is expressed as moles of phosphorous per liter of reactor volume per minute and the charged calcium phosphate solid amount is expressed as moles of phosphorous per liter of reactor volume whereby additional orthophosphate in the form of calcium phosphate solid particles is precipitated, and

x. Separating the calcium phosphate solid particles from a reactor region effluent.

3,965,003

SCALE INHIBITION AND COMPOUNDS THEREFOR

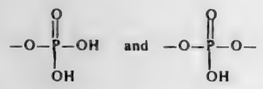
James R. Stanford, Sugar Land, and Paul G. Vogelsang, Jr., Houston, both of Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation of Ser. No. 121,136, March 4, 1971, abandoned, which is a continuation of Ser. No. 879,940, Nov. 25, 1969, Pat. No. 3,617,578. This application Mar. 31, 1975, Ser. No. 563,304

Int. Cl.² C02B *5/06*

U.S. Cl. 210—58 **10 Claims**

1. A process for preventing scale deposits of calcium, barium or magnesium salts or mixtures thereof from water containing said scale-forming chemicals which comprises adding to said water an effective scale inhibiting amount of a water soluble phosphate ester of at least one oxypropylated hydroxy hydrocarbon in which the phosphate ester groups consit essentially of one or both of a member selected consist the group consisting of



and

said oxypropylated hydroxy hydrocarbon being obtained solely by the addition of propylene oxide to a hydroxy hydrocarbon having only hydroxy groups attached to hydrocarbon groups and containing not more than 30 moles of propylene oxide per mole and said phosphate ester being obtained by reacting said oxypropylated hydroxy hydrocarbon with a compound from the group consisting of polyphosphoric acid, phosphorus pentoxide, and mixtures of polyphosphoric acid and phosphorus pentoxide.

3,965,004

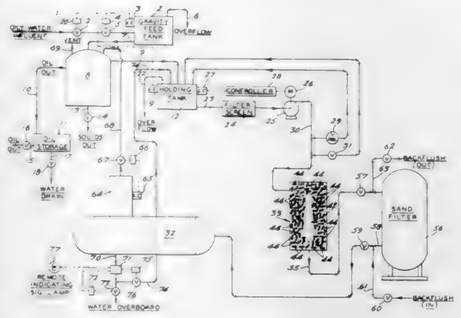
REMOVAL OF CONTAMINANTS FROM WATER

Daniel C. Garber, Overbrook Hills, Pa., assignor to Sun Shipbuilding & Drydock Company, Chester, Pa.

Continuation-in-part of Ser. No. 305,630, Nov. 10, 1972, abandoned. This application Jan. 30, 1975, Ser. No. 545,640

Int. Cl.² C10G *43/04*

U.S. Cl. 210—73 W **9 Claims**



1. A system for removing both oil and particulate contaminants from a flowing stream of liquid which is to be disposed of as waste, which comprises in sequence, a dewaxer consisting of a fixed bed containing a plurality of discrete bodies of a porous ceramic material compacted together in random arrangement as a packing which acts to constrain said flowing stream back and forth through said compacted ceramic material and to absorb waxes, asphalts, and like hydrocarbon materials, means to remove particulate matter, and a fine hole size coalescer operating to effect a separation of dispersed fine droplets of oil from said flowing stream.

3,965,005

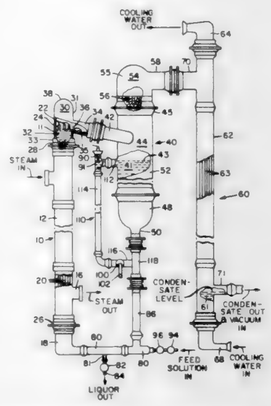
METHOD AND APPARATUS FOR EVAPORATING AND SEPARATING MULTIPLE COMPONENT SOLUTIONS OR MIXTURES

Lawrence C. Boyd, Jr.; Everett F. Kelm, both of Corning, N.Y., and John C. Randall, Blacksburg, Va., assignors to Corning Glass Works, Corning, N.Y.

Filed Nov. 22, 1974, Ser. No. 526,215

Int. Cl.² B01D *1/12*

U.S. Cl. 210—96 R **5 Claims**



1. In combination with an evaporator system for separating vapor and liquor components from a multiple component liquid, including vertical shell and tube evaporator means for forming streams of vapor and entrained liquor from a multiple component liquid, said evaporator means having a feed chamber at a lower end thereof for receiving said multiple component liquid, first impingement means connected to an upper end of said evaporator means for separating a first liquor portion from said streams, second impingement means communicating laterally with said first impingement means for separating a second liquor portion from said streams, and conduit means for mixing said first and second liquor portions with the multiple component liquid supplied to said feed chamber of said evaporator means, the improvement which comprises,

said second impingement means includes a separator pot having a vertical cylindrical surface provided with an opening connected to an inlet conduit, said inlet conduit communicating with said first impingement means and having a longitudinal axis off-set with respect to the axis of said cylindrical surface;

liquor receiving chamber means, communicating with said first and second impingement means and having an outlet positioned above said feed chamber, for receiving and accumulating a substantial combined volume of said first and second liquor portions, said chamber means being formed by a lower portion of said separator pot, said separator pot having a closed lower section connected to said cylindrical surface and an outlet in said closed section connected to said conduit means;

means for supplying reduced pressure to said second impingement means and for removing said streams from said second impingement means;

mesh entrainment means for separating a third liquor portion from said streams, said mesh entrainment means comprising a housing connected to the upper end of said vertical cylindrical surface, a mesh entrainment separator pad secured within said housing above the confines of said cylindrical surface, and means extending from said housing and connected to said means for supplying reduced pressure to said second impingement means for removing said streams from said second impingement means and thereby drawings said streams through said mesh entrainment separator pad and providing an essentially pure vapor portion; and,

drain means for intermittently draining said chamber means, said drain means including probe means for sensing the level of liquor within said liquor receiving chamber means, valve means actuated by said probe means for regulating the supply of multiple component liquid to said evaporator feed chamber and for maintaining the upper surface level of said combined volume of liquor portions within said liquor receiving chamber means at a generally constant average height, and pressure sensitive means communicating with a lower portion of said liquor receiving chamber means for actuating the draining of said chamber means in response to the obtainment of a predetermined density of said combined volume of liquor portions, thereby providing a liquor component of a selected concentration.

3,965,006

LIQUID WASTE DISPOSAL

George Otte, Jr., Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Nov. 12, 1974, Ser. No. 523,045

Int. Cl.² C02B *1/40*

U.S. Cl. 210—138 **19 Claims**

1. An improved disposal unit for disposing of contaminated or potentially contaminated liquid or semi-liquid waste in manner designed to protect personnel and the environment from contamination comprising a conical open top chamber terminating at its lower end in an integral fitting,

means on said fitting adapted to connect set fitting to a trap,

vent means connected to the upper part of said chamber, a cover,

hinge means connecting said cover to said chamber, nozzle means,

shaft means supporting said nozzle means on the lower side of said cover,

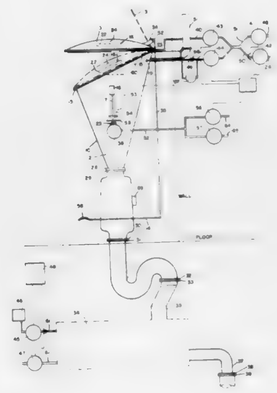
and said shaft means comprising,

a shaft rotatably supported on said cover at the center of the inside thereof and extending downwardly therefrom,

a hollow arm supported on said shaft and disposed generally perpendicular thereto,

holes in said arms, the ends of said arms having said nozzles supported thereon,

said nozzle means being supported on the end of said hollow arms whereby said nozzles rotate said arms,



and valve means connected to said hinge means and to said nozzle means for connecting fluid to said nozzle means and fluid supply means connected to said valve means whereby the inside of said chamber is sprayed by liquid from said nozzle means,

a shaft rotatably supported on said cover at the center of the inside thereof and extending downwardly therefrom,

a hollow arm supported on said shaft and disposed generally perpendicular thereto,

holes in said arms, the ends of said arms having said nozzles supported thereon,

said nozzle means being supported on the end of said hollow arms whereby said nozzles rotate said arms.

3,965,007

PROTEIN SKIMMER

Arnold Conn, 253 West End Ave., Manhattan Beach, N.Y. 11235, and Harvey K. Cohen, 400 Cozine Ave., Brooklyn, N.Y. 11207

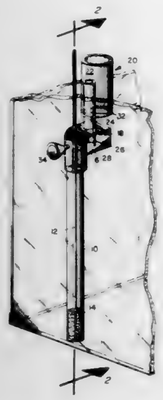
Filed Sept. 17, 1973, Ser. No. 397,639

Int. Cl.² E04H *3/20*

U.S. Cl. 210—169 **6 Claims**

1. Aquarium foam removal means in combination with an aquarium air lift water recirculating system, said system comprising a vertical air lift conduit with an inlet near the bottom thereof and air discharge means within said conduit near the bottom thereof, a horizontal conduit section with a first end in fluid communication with the upper end of said vertical conduit and an opposite open end for discharge of fluid therefrom, said foam removal means comprising baffle means arranged in said horizontal conduit section, a vertically arranged tube with an open upper end and a lower end connected to the horizontal conduit section and constructed and arranged to receive foam directed interiorly thereof by said baffle means, container means with sidewalls and a closed bottom and an

open upper end, said container bottom located above said horizontal conduit section and said sidewalls surrounding said



tube whereby foam directed into said tube is discharged from the upper end of said tube into said container.

3,965,008

PORTABLE WATER STERILIZATION DEVICE

Gerald C. Dawson, 391 Silvera Ave., Long Beach, Calif. 90814

Continuation-in-part of Ser. No. 451,576, March 15, 1974, abandoned. This application May 8, 1975, Ser. No. 575,485

Int. Cl.² B01D *21/00*

U.S. Cl. 210—192 **7 Claims**

1. A portable device for use in transforming harmful bacteria contaminated water into potable water, said device including a plurality of components that are removably connected to one another and that may be separated and stored in a compact space when said device is not in use, said device including:

a. a tank in which said harmful bacteria contaminated water may be placed, said tank including a bottom in which a water discharge opening is defined, and a tubular boss extending outwardly from said bottom and in communication with said water discharge opening;

b. a plurality of legs each of said legs including first and second end portions;

c. first means for removably securing said legs to said tank to support the latter at an elevated position above the surface on which said legs rest;

d. an inverted L-shaped tubular member that has first and second legs;

e. second means for removably securing said first leg to said tubular boss;

f. a manually actuatable valve secured to said second leg, said valve capable of being manually adjusted to permit water from said tank to flow by gravity through said tubular member at not greater than a predetermined rate and discharge from said valve;

g. two laterally spaced, oppositely disposed elongate electrodes situated in said L-shaped member at a position intermediate the ends thereof, with said electrodes electrically insulated from one another; and

h. third means for supplying alternating electric power to said electrodes at a voltage potential sufficient to kill said harmful bacteria in said water when the latter flows between said electrodes in said tubular member at not greater than said predetermined rate, with said legs, L-shaped tubular members and valve of such dimensions as to be storable within said tank when said device is not in use.

3,965,009

APPARATUS FOR BIOLOGICAL PURIFICATION OF AN EFFLUENT

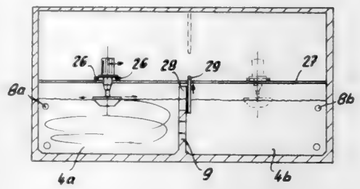
Joseph Richard Kaelin, Villa Seeburg, CH-6374 Buochs, Switzerland

Filed Aug. 19, 1974, Ser. No. 498,410

Claims priority, application Switzerland, Aug. 23, 1973, 12108/73

Int. Cl.² C02C *1/10*

U.S. Cl. 210—218 **1 Claim**



1. An apparatus for biological purification of an effluent comprising:

two identical basins sealed gas-tight at the top portion thereof and having a common wall, said common wall being provided with through passages interconnecting said basins;

means for feeding said effluent to be purified alternately to one or the other of said basins;

means for discharging purified water alternately from one or the other of said basins;

control means for said feeding and discharging means operative to feed effluent to the one of said basins and to discharge purified liquid from the other of said basins and alternately to feed effluent to the other of said basins and to discharge purified liquid from said one of said basins, whereby when the activated sludge concentration in the one basin drops below a certain level, the direction of operation is changed, so that the other basin functions as the activated sludge basin and the said one of said basins functions as the final purification basin connected in series;

aeration impeller means for enriching said effluent with oxygen or an oxygen mixture and for agitating said effluent in the respective basin operating as the activated sludge basin, said impeller means comprising a double-sided impeller having an oxygen supply line extending into one of the intake openings of said impeller;

a vertically movable slide in the upper region of said common wall for opening and closing a passage in the upper end thereof;

rail and roller means for reciprocally supporting said aeration impeller means on said basins and for slidably moving said aeration impeller means through said moveable slide passage between said basins for disposing the same in operative relation with the respective basin operating as the activated sludge basin; and

means for removing excess oxygen from the upper region of said basins.

3,965,010

METAL FILTER FOR MELT SPINNING PACKS

William Lewis Phillips, Jr., Wilmington, and Ernest Alan Uebler, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

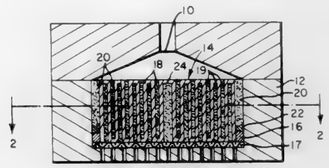
Filed Feb. 4, 1975, Ser. No. 547,018

Int. Cl.² B01D *23/10*

U.S. Cl. 210—283 **1 Claim**

1. A filter comprising a sintered porous metallic structure having upper and lower surfaces and concentric grooves alternately in communication with said upper and lower surfaces; granular material within said grooves; and means for retaining

said granular material in said grooves, said sintered porous metallic structure and said granular material comprising irregularly shaped particles formed from a metal alloy consisting essentially of about 30 percent to about 40 percent by weight



chromium; about 2 percent to about 4 percent by weight silicon; 100 to 400 parts per million by weight carbon and 600 to 1000 parts per million by weight nitrogen; and the remainder iron.

3,965,011

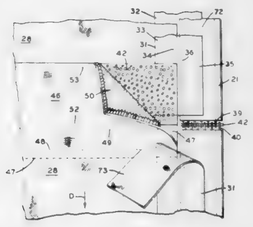
ENDLESS FILTER BELT

John A. Sheaffer, Norwalk, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed May 5, 1975, Ser. No. 575,031

Int. Cl.² B01D *33/14*

U.S. Cl. 210—400 **13 Claims**



1. Endless filter belt for a rotary vacuum drum filter which comprises a strand of filter media having longitudinal edge portions and transverse end portions,

a first pair of pile fiber fabrics fastened to respective faces of one end portion of said strand, in back-to-back relationship, and thus constituting with said filter media a prepared straight end portion of said stand,

a pair of flaps provided on the opposite end portion of said strand of filter media,

a second pair of pile fiber fabrics fastened to respective inner faces of respective flaps, and in face-to-face relationship, adapted to receive between them said prepared straight end portion of said strand, and to separably interlock with the pile fibers of said straight end portions, for transmitting shearing stresses resulting from the longitudinal pull of the filter belt.

3,965,012

MEMBRANE SEPARATION APPARATUS

Tamiyuki Eguchi, and Satoshi Imai, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 11, 1974, Ser. No. 531,476

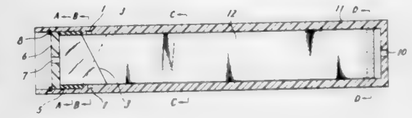
Claims priority, application Japan, Dec. 11, 1973, 48-140901

Int. Cl.² B01D *31/00*

U.S. Cl. 210—433 M **9 Claims**

1. A membrane separation apparatus adapted for use in ultrafiltration having a casing, a stacked membrane unit enclosed therein, a feed inlet, a concentrate outlet and an effluent outlet, said stacked membrane unit comprising:

a. a continuous composite membrane folded flatly in zigzag relation to form a plurality of stacked layers defining a plurality of outer flow channels for feed liquid in alternately interleaving pockets formed by said layers, said composite membrane being made of a flexible porous support and having a pair of selectively permeable membranes on opposite outer surfaces thereof and inner flow channels for effluent positioned between and separated from said outer flow channels by said selectively permeable membranes;



b. a plurality of spacer means alternately overlying layers of said composite membrane only along an area adjacent to one end of said composite membrane to seal between said layers of said composite membrane in said area while maintaining layers of said composite membrane in a spaced position in the other areas thereof;

c. said composite membrane being sealed at its peripheral edges except said end and defining, when folded, a serpentining opening of said inner flow channels exposing said end.

3,965,013

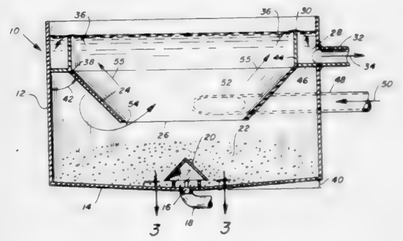
GRAVITY CLARIFIER

George F. Jackson, 5745 E. 47th Place, Tulsa, Okla. 74135

Filed Oct. 31, 1974, Ser. No. 519,526

Int. Cl.² B01D *21/26*

U.S. Cl. 210—519 **6 Claims**



1. A gravity clarifier for separating solids from liquid, comprising;

a large diameter circular cylindrical open top tank having a closed bottom;

a downwardly depending truncated conical shell attached at its large end to the tank wall;

an axial circular trough near the top end of said tank and a weir for the overflow of effluent liquid into said trough, the upper portion of the tank between said conical shell lower end and said overflow weir providing a quiescent gravity settling zone;

influent conduit means entering said tank tangentially below the large end of said truncated conical shell, the lower portion of the tank between the shell lower end and the tank bottom providing a swirling sludge bed directly beneath the quiescent settling zone; and

means for the removal of the settled sludge from said tank bottom near the center of said tank bottom.

3,965,014
ANIONIC FABRIC CONDITIONERS

Annie Sue Giordano, Piscataway, N.J.; Richard Lerda Burke, San Diego, Calif., and Harold Eugene Wixon, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 7, 1972, Ser. No. 311,720
Int. Cl.² D06M *13/20*
U.S. Cl. 252—8.7 3 Claims

1. A fabric conditioning composition comprising a dimethylpolysiloxane polymer, water, and an anionic surfactant having a derivable pH of about 7–9 selected from the group consisting of alkyl benzene sulfonates wherein the alkyl group contains from about 10 to about 20 carbon atoms, alkyl toluene sulfonates wherein the alkyl group contains from about 10 to about 20 carbon atoms, ethoxylated alcohol sulfates produced from an aliphatic alcohol having from about 10 to about 20 carbon atoms ethoxylated with from about 1 to about 6 moles of ethylene oxide, soaps of fatty acids having from about 10 to about 20 carbon atoms, paraffin sulfonates having from about 10 to about 20 carbon atoms, N-(2-hydroxyalkyl)-amino acids having from 10 to 20 carbon atoms in the alkyl chain, and mixtures thereof.

3,965,015
BLEACH-RESISTANT FABRIC SOFTENER

Robert Andrew Bauman, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 277,097, Aug. 1, 1972, abandoned. This application Sept. 19, 1974, Ser. No. 507,508
Int. Cl.² C11D *1/50*; D06M *13/40*
U.S. Cl. 252—8.8 17 Claims

1. A bleach-stable, cleaning and fabric-softening composition comprising from 2 to 75 percent by weight of a detergent selected from the group consisting of anionic, nonionic, cationic, ampholytic and zwitterionic detergents, and an effective amount of from about 1 percent to about 20 percent based on the weight of said detergent of a softening agent selected from the group consisting of urea, diurea, thiourea, dithiourea, and mixtures thereof, represented by the formulae:

1. $RNHCXNH(CH_2)_nNH_2$, and
2. $RNHCXNH(CH_2)_nNHCXNHR$, wherein R is an alkyl group containing 2–18 carbons or an aryl group, X is oxygen or sulfur, and *n* is 2 to 12.

10. An aqueous-alcohol bleach-stable, fabric-softening composition consisting essentially of an effective amount from about 1 percent to about 20 percent by weight of the formulation of a softening agent selected from the group consisting of urea, diurea, thiourea, dithiourea, and mixtures thereof, represented by the formulae:

1. $RNHCXNH(CH_2)_nNH_2$, and
2. $RNHCXNH(CH_2)_nNHCXNHR$, wherein R is an alkyl group containing 2–18 carbons or an aryl group, X is oxygen or sulfur, and *n* is 2 to 12.

3,965,016
COMPLEX ANTIMONY SULFIDES AS LUBRICANT ADDITIVES

John Richard Soulen, Narberth, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed May 27, 1975, Ser. No. 580,859
Int. Cl.² C10M *1/10*, *3/02*, *5/02*, *7/02*
U.S. Cl. 252—25 2 Claims

1. Lubricating compositions containing from about 1 to 60% by weight a complex sulfide of antimony represented by the formula Sb_aS_b where *a* is within the range of about 1.7 to 2.3 and *b* is within the range of about 3.6 to 4.4.

3,965,017
LUBRICATING OIL COMPOSITIONS

Victor Charles Ernest Burnop, and Ronald Charles Watkins, both of Wantage, England, assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed May 12, 1975, Ser. No. 576,968
Claims priority, application United Kingdom, May 17, 1974, 22085/74
Int. Cl.² C10M *1/40*, *3/34*, *1/54*, *3/48*
U.S. Cl. 252—33.3 17 Claims

1. A foam stabilised lubricating oil composition comprising a lubricating oil base, from 0.01 to 20 wt.% of (A) an overbased detergent additive, (B) 0.1 to 15 wt.% based on the weight of (A) of an aliphatic monocarboxylic acid, anhydride or salt thereof, or an aliphatic dicarboxylic acid, anhydride or salt thereof, said acid, anhydride or salt having at least 30 carbon atoms per molecule or the reaction product of a phosphorus sulphide with a hydrocarbon and (C) a dihydric alcohol having 2,3 or 4 carbon atoms per molecule, or a di- or tri-(C_2–C_4) glycol or an ether alcohol having 2 to 10 carbon atoms per molecule.

3,965,018
PROCESS FOR PREPARING A CONCENTRATE OF A POLYALPHA-OLEFIN IN A LUBRICATING OIL BASE STOCK

William J. Heilman, Allison Park, and Thomas J. Lynch, Harmar Township, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 205,720, Dec. 7, 1971, abandoned. This application June 12, 1974, Ser. No. 478,780
The portion of the term of this patent subsequent to Apr. 15, 1992, has been disclaimed.
Int. Cl.² C10M *1/16*
U.S. Cl. 252—59 9 Claims

1. The method for making a concentrate of a poly(1-alkene) in a lubricating oil base stock for use as an additive in preparing multiviscosity graded motor oils which comprises

conditioning a hydrotreated mineral lubricating oil base stock having a 210° F. viscosity between about two cs. and about eight cs., by contacting it with a first Ziegler-Natta catalyst comprising a compound of a transition metal from Groups IV-B, V-B, VI-B or VIII at a valence state less than its maximum valence state and an organometallic compound of a Group II or III metal and hydrogen at a pressure between about one and about 150 psia. at a temperature between about −10° C. and about 125° C. for about 30 seconds to about one hour, using from about 0.01 to about 20 grams of said catalyst per liter of said hydrotreated lubricating oil base stock and a ratio of gram atoms of Group II or Group IIII metal to gram atoms of the transition metal of from about 1:1 to about 10:1, and

contacting a 1-alkene reactant comprising about 70 to 100 mol percent of a 1-alkene having from six to 12 carbon atoms or a mixture thereof and 0 to about 30 mol percent of a 1-alkene having from 16 to 20 carbon atoms or a mixture thereof with a second Ziegler-Natta catalyst in the presence of about 10 to about 300 parts of the said conditioned hydrotreated lubricating oil base stock as a reaction medium per 100 parts of said 1-alkene reactant at polymerization conditions.

3,965,019
LUBRICATING COMPOSITIONS CONTAINING HYDROGENATED BLOCK COPOLYMERS AS VISCOSITY INDEX IMPROVERS

David J. St. Clair, Bethalto, Ill., and Ronald K. Crossland, Manhattan Beach, Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 388,875, Aug. 16, 1973, abandoned. This application Dec. 19, 1974, Ser. No. 534,256
Int. Cl.² C10M *1/16*
U.S. Cl. 252—59 3 Claims

1. A lubricating composition comprising a major proportion of a petroleum lubricating oil and from about 0.1% to about 10% by weight of a selectively hydrogenated block copolymer having the structure

polystyrene-hydrogenated polyisoprene wherein at least 98% of the olefinic double bonds present in the non-hydrogenated precursor of said polymer are reduced by hydrogenation, at least 20% of the polymer chains containing no in-chain olefinic unsaturation.

3,965,020
SILICEOUS THERMAL INSULATION AND METHOD OF MAKING SAME

Charles H. Noll, Athens, Ga., and James B. Andrews, Zion, Ill., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Sept. 20, 1973, Ser. No. 399,229
Int. Cl.² C04B *43/02*, *43/06*, *43/12*
U.S. Cl. 252—62 16 Claims

1. A method of forming a shaped predominately siliceous thermal insulation which consists essentially of

a. mixing in an aqueous medium at a temperature in the range of 170°–210°F. components including no natural inorganic fiber and consisting essentially of
60–85 wt. % diatomite powder
5–10 wt. % hydrated lime
8–14 wt. % clay and
1–8 wt. % synthetic fibers;
b. allowing the mixed components to stand for a period of 0.5–2.0 hours at a temperature in the range of 150°–200°F.;
c. molding the desired shape, and
d. drying said shaped siliceous thermal insulation.

13. A predominately siliceous shaped article containing no natural inorganic fiber and consisting essentially of the product of the reaction of
60–85 wt. % diatomite powder
5–10 wt. % hydrated lime
8–14 wt. % clay and
1–8 wt. % synthetic fiber and produced by a process consisting essentially of mixing in an aqueous medium at a temperature in the range of 170°–210°F., being allowed to stand for a period of 0.5–2.0 hours at a temperature of 150°–200°F., and then being molded to shape and dried.

3,965,021
ELECTROSTATOGRAPHIC TONERS USING BLOCK COPOLYMERS

Carl F. Clemens, Webster, and M. James Lenhard, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

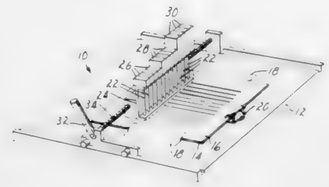
Continuation-in-part of Ser. No. 524,371, Jan. 14, 1966, abandoned. This application Sept. 15, 1970, Ser. No. 72,548
Int. Cl.² G03G *9/00*
U.S. Cl. 252—62.1 P 6 Claims

1. Finely-divided electrostatographic dry toner particles consisting essentially of a resinous material and from 1 (up) to about 25% of a colorant selected from the group consisting of dyes, pigments, and mixtures thereof based on the weight of said toner particles, said resinous material consisting essentially of a polyblend of at least 10% by weight of a first polymer having a glass transition temperature of at least about 20°C and at least 10% by weight of a second polymer having a glass transition temperature of at least about 5°C lower than the glass transition temperature of said first polymer, said polyblend consisting essentially of (comprising) a block copolymer of said first and second polymers.

3,965,022
PRESSURE-FIXABLE DEVELOPING POWDER

Doyle L. Strong, West Lakeland Township, Washington County, and Curtis Dale Hargadine, Hastings, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 29, 1973, Ser. No. 375,115
Int. Cl.² G03G *9/00*
U.S. Cl. 252—62.1 P 7 Claims



1. Flowable, pressure-fixable, dry powder particles, the binder material of said particles having a conductivity of at most 10^{-12} mho/cm., said binder comprising (a) about 74 to 98 parts by volume of a thermoplastic component having a softening point of at least about 60°C., a 10-second shear creep compliance in the range of about 1×10^{-12} cm²/dyne to 1×10^{-10} cm²/dyne, and a heat deflection temperature below about 300°C., and (b) about 2 to 26 parts by volume of a non-volatile component having a principal glass transition temperature below about 0° C. and a **10-second** shear creep compliance greater than about 8×10^{-8} cm²/dyne; wherein said powder exhibits a transfer density of less than about 0.15 and a paper abrasion density of less than about 0.15; wherein said non-volatile component is an elastomer selected from the group consisting of synthetic diene rubbers, acrylate rubbers, polyurethane elastomers, and rubbery block copolymers; and wherein said binder further comprises a tackifier for said elastomer.

3,965,023
METHOD OF PRODUCING LIQUID TONERS CONTAINING FURNACE BLACK FOR DEVELOPING ELECTROSTATIC IMAGES

Bheema Rao Vijayendran, Bethel, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sept. 24, 1974, Ser. No. 508,819
Int. Cl.² G03G *9/12*
U.S. Cl. 252—62.1 L 16 Claims

1. In a method of producing a liquid toner, the steps comprising:

A. charging into a mill a furnace black having a particle size ranging from 15–100 milimicrons, a polymer which is soluble in a liquid hydrocarbon, and a first non-polar liquid hydrocarbon having a K.B. number between 25 and 35, an electrical resistivity of at least 10^8 ohm-cm and a dielectric constant of less than 3.5;
B. mildly milling said ingredients for a period of 24–36 hours;
C. storing the milled ingredients to allow such ingredients to settle, thereby forming a sediment;
D. seperating the sediment which has settled during storage; and

E. mixing the sediment from the milled ingredients with a liquid hydrocarbon having said properties of said first liquid hydrocarbon.

3,965,024

WASHING AGENT COMPOSITIONS AND WASHING ASSISTANT COMPOSITION CONTAINING PHOSPHONOPOLYCARBOXYLATE SEQUESTERING AGENTS

Edmund Schmadel, Mettman; Günter Jakobi, Hilden; Karl-Heinz Worms, and Helmut Bium, both of Dusseldorf-Holthausen, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

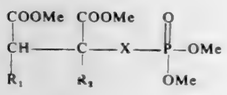
Filed Nov. 21, 1973, Ser. No. 417,891

Claims priority, application Germany, Nov. 29, 1972, 2258301

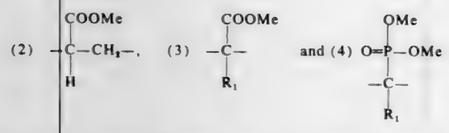
Int. Cl.² C11D *3/395*

U.S. Cl. 252—95 **12 Claims**

1. Washing agent compositions and washing assistant compositions comprising essentially of (a) from 0.5% to 70% by weight of a phosphonopolycarboxylate having the formula



wherein R_1 is a member selected from the group consisting of hydrogen and methyl, R_2 is a member selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms and $-CH_2-CHR_1-COOMe$, X is a member selected from the group consisting of (1) a direct bond between the carbon and the phosphorus,



and Me is a member selected from the group consisting of hydrogen and a cation capable of complex formation with alkaline earth metal ions, (b) from 0 to 96.5% by weight of customary non-surface-active ingredients for washing agents and (c) from 3% to 45% by weight of at least one surface-active compound selected from the group consisting of soaps, synthetic carboxylates, sulfates, sulfonates and nonionic polyglycol ethers, wherein the components are so selected that a 1% solution of said compositions has a pH of between 6 and 11.5 and the total content of phosphorus does not exceed 4% by weight.

3,965,025

METHOD FOR MANUFACTURING ALKALINE DETERGENTS AND DESINFECTANTS

Alojzy Klopotek, Nowy Dwor Mazowiecki; Jan Profic, Warsaw; Jerzy Uminski, Nowy Dwor Mazowiecki, and Gabriela Dziala, Legionowo, all of Poland, assignors to Instytut Chemii Przemyslowej, Warsaw, Poland

Filed Feb. 5, 1974, Ser. No. 439,758

Claims priority, application Poland, Feb. 7, 1973, 160632; Feb. 14, 1973, 160733

Int. Cl.³ C11D *3/48*; **C01B** *25/00*

U.S. Cl. 252—106 **7 Claims**

1. A process for preparing alkaline polyphosphate complexes of the formula

$Me[PO_3ME]_x$-OH...Br-Br...HO-$[PO_3Me]_x$Me

wherein Me represents an alkali metal atom, and x is an integer of from 2 to 50, which comprises reacting one mole of a compound selected from a bromoiodate ion, $[IBr_2]^-$ and a bromine-non-ionic surfactant complex with not more than 2 moles of a polyphosphate of the formula $Me[PO_3Me]_x$-OH, wherein Me and x are as defined above, at a temperature range of about 0°–50°C.

4. A process for preparing alkaline polyphosphate complexes of the formula

$Me[PO_3Me]_x$-OH...I-Br...HO-$[PO_3Me]_x$Me

wherein Me represents an alkali metal atom and x is an integer of from 2 to 50 which comprises reacting not more than one mole of a compound selected from iodine bromide and a bromine-iodine non-ionic surfactant complex with a polyphosphate of the formula $Me[PO_3Me]_x$-OH wherein Me and x are as defined above, at a temperature range of about 0°–50°C.

3,965,026

GERMICIDAL ALL-PURPOSE LIQUID CLEANER

Albert Jay Lancz, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 270,186, July 10, 1972, abandoned. This application Sept. 20, 1974, Ser. No. 507,840

The portion of the term of this patent subsequent to May 21, 1991, has been disclaimed.

Int. Cl.² C11D *1/10, 1/62, 3/48*

U.S. Cl. 252—106 **4 Claims**

1. An aqueous germicidal liquid cleaner which is stable, homogeneous and clear at temperatures between 30°F. and 120°F. consisting essentially of

1. from about 0.10% to about 15.0% by weight of a quaternary ammonium compound selected from the group consisting of trimethyl stearyl ammonium chloride, trimethyl cetyl ammonium chloride, dimethyl ethyl lauryl ammonium chloride and dimethyl propyl myristyl ammonium chloride,
2. from about 1.0% to about 25.0% by weight of nitrilotriacetic acid trisodium salt,
3. from about 0% to about 10.0% by weight of a polyethoxylate of a C_{10}–C_{18} fatty alcohol having a mole ratio of combined ethylene oxide to said fatty alcohol of at least 5, and
4. the balance water.

3,965,027

SCALE INHIBITION AND CORROSION INHIBITION

Bennett P. Boffardi, Bethel Park; Michael M. Cook, McKees Rocks, and Paul H. Ralston, Bethel Park, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

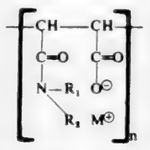
Filed Mar. 11, 1974, Ser. No. 450,029

Int. Cl.² C02B *5/00*

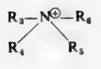
U.S. Cl. 252—180 **8 Claims**

1. A method of inhibiting corrosion and scale formation in an aqueous system comprising the step of treating the said system with 0.1 to 500 parts per million by weight of the total aqueous content of the said system, of a composition selected from the group consisting of:

a. polymers having recurring units of the formula:



wherein $M^{\oplus}$ may be $H^{\oplus}$, alkali metal cation, or quaternary ammonium cation of the formula:

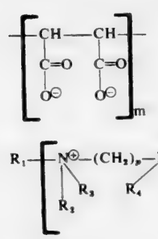


wherein for all of the above formulas, R_1, R_2, R_3, R_4, R_5, and R_6 are each independently selected from the group consisting of hydrogen, alkyl of from one to 10 carbon atoms, and substituted alkyl of from one to 10 carbon atoms, where the substituent is hydroxyl; carbonyl; and carboxylic acid groups, and alkali metal ion and ammonium salts thereof;

wherein *n* is an integer of from 2 to 100, such that the polymer has a weight average molecular weight of from about 200 to about 10,000; and

wherein for the polymer the molar ratio of amine to maleic anhydride is from about 0.1 to about 2.0; and

b. polymers having recurring units of the formula:



wherein R_1, R_2, R_3, R_4, R_5, and R_6 have the same meaning as above;

wherein *p* is an integer of from 1 to 6;

wherein *m* is an integer of from 2 to 100; and

wherein *n* is an integer of from 2 to about 100, such that the polymer has a weight average molecular of from about 200 to about 10,000, provided that, *n* not equal to *m*, the lesser of *m* or *n* is multiplied by a factor such that $n = m$; and

wherein for the polymer the molar ratio of amine to maleic anhydride is from about 0.1 to about 2.0.

3,965,028

BISULFITE TERMINATED OLIGOMERS TO PREVENT SCALE

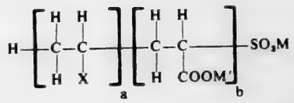
John T. O'Brien, Cheshire, and Woodrow W. Oxford; Oxford, both of Conn., assignors to Uniroyal Inc., New York, N.Y.

Filed July 31, 1974, Ser. No. 493,489

Int. Cl.³ C02B *5/06*

U.S. Cl. 252—180 **10 Claims**

1. A method of treating water to inhibit scale formation on surfaces of equipment in which the water is used comprising adding to the water, in an amount effective to inhibit scale formation, a bisulfite-terminated oligomer having the formula



wherein M is a water soluble cation; X is selected from the group consisting of —CN and $—COOCH_3$; M′ is selected from the group consisting of ammonium, amine, and alkali metal; a + b is from 4 to 250; and a/a+b is from 0.0 to 0.5.

3,965,029

LIQUID CRYSTAL MATERIALS

Sardari L. Arora, Kent, Ohio, assignor to Kent State University, Kent, Ohio

Filed Feb. 4, 1974, Ser. No. 439,046

Int. Cl.² C09K *3/34*; **G02F** *1/13*

U.S. Cl. 252—299 **6 Claims**

1. A liquid crystal material comprising a mixture of at least one Bis-(4′-n-alkoxybenzal) - 2-methyl-1, 4-phenylenediamine and 4-methylbenzal-4′-n-butylaniline.

3,965,030

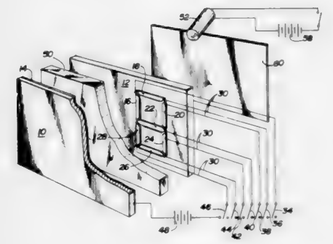
LYOTROPIC NEMATIC LIQUID CRYSTALS FOR USE IN ELECTRO-OPTICAL DISPLAY DEVICES

Derick Jones, and Sun Lu, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 16,078, March 3, 1970, Pat. No. 3,690,745. This application Aug. 7, 1972, Ser. No. 278,302

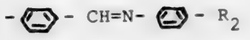
Int. Cl.² C09K *3/34*

U.S. Cl. 252—299 **5 Claims**



1. A mixed liquid crystal composition consisting essentially of a mixture of

a. a solvent having the general formula



wherein R_1 and R_2 are alkyl radicals having from 1 to 5 carbon atoms; and

b. a solute selected from at least one compound or a mixture of both compounds taken from the group of compounds consisting of

1. butyl - p - (p-ethoxyphenoxycarbonyl) phenyl carbonate, and
2. p - [N-(p-methoxybenzylidene) amino] phenyl acetate.

3,965,031

RED EMITTING PHOSPHORS

Richard M. Klein, Framingham, and Natansohn Samuel, Sharon, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 19, 1975, Ser. No. 578,681

Int. Cl.² C09K *11/30*

U.S. Cl. 252—301.4 R **5 Claims**

1. A phosphor represented by the formula $Li_{1-x}Ca_{1+x}Al_{3-x}O_8 : Fe^{+3}$ or $LiCa_xAl_{3-1+x}Si_xO_8 : Fe^{+3}$ wherein $0.005 \leq x \leq 0.25$ and the iron (Fe^{+3}) activator is present in about 0.001 to 0.013 moles/formula weight of said $Li_{1-x}Ca_{1+x}Al_{3-x}O_8$ or said $LiCa_xAl_{3-1+x}Si_xO_8$.

3,965,032
COLLOIDALLY STABLE DISPERSIONS

Dale S. Gibbs; Robert D. Vandell, and Ritchie A. Wessling, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 16, 1973, Ser. No. 351,713
Int. Cl.² B01J *13/00*; **C08F** *15/02*
U.S. Cl. 252—306 **11 Claims**

1. A colloidal dispersion containing as the surfactant material a stabilizing amount of a noncopolymerizable substantially linear interpolymeric interfacially spreading polyelectrolyte in both the disperse and continuous phase of said dispersion wherein:

1. said polyelectrolyte is composed of a mixture of nonionic hydrophobic units and ionic hydrophilic units wherein said nonionic hydrophobic units are copolymerized ethylenically unsaturated monomers which when in the form of amorphous homopolymers are less than about 0.1 percent soluble in water and wherein said monomer has no substituent extending more than about 10 Angstrom units from the point of ethylenic unsaturation said units being randomly distributed in the backbone of said polyelectrolyte and wherein said ionic hydrophilic units are copolymerized ethylenically unsaturated ionic monomers which when in the form of amorphous homopolymers are soluble in water and wherein said ionic hydrophilic units remain substantially completely ionized over the entire pH range of 0 to 14,
2. said polyelectrolyte is adsorbed at said disperse phase in a substantially flat configuration and where the area occupied by each ionic hydrophilic unit of said polyelectrolyte at the disperse phase surface is from about 60 to 100 square Angstrom units per hydrophilic unit, and
3. said polyelectrolyte has an adsorption constant equal to or greater than 1 at the point where the disperse phase is saturated with said polyelectrolyte wherein said adsorption constant is determined as the amount of polyelectrolyte in said disperse phase divided by the amount of polyelectrolyte in said disperse phase divided by the amount of polyelectrolyte in said continuous phase.

3,965,033
PROCESS FOR THE PRODUCTION OF OIL-CONTAINING MICROCAPSULES

Hiroharu Matsukawa, and Keiso Saeki, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 166,563, July 27, 1971, Pat. No. 3,803,045. This application Jan. 31, 1974, Ser. No. 438,518
Claims priority, application Japan, July 27, 1970, 45-65650; July 31, 1970, 45-66894
The portion of the term of this patent subsequent to Apr. 9, 1991, has been disclaimed.
Int. Cl.² B01J *13/02*
U.S. Cl. 252—316 **19 Claims**

1. A process for producing oil-containing microcapsules by coacervation, which comprises:

1. dispersing a hydrophobic fine powder or emulsifying a hydrophobic liquid into an aqueous solution of at least one type of high molecular weight electrolytic colloid for use in forming the capsule wall;
2. subjecting dispersion or emulsion obtained in Step (1) to water dilution, and/or pH adjustment to achieve coacervation and optionally, adding an aqueous solution of a high molecular weight colloid, if desired;
3. cooling the formed coacervate to gel the same;
4. adding a phenolic compound thereto at a temperature above 5°C., during Steps (2) and (3);
5. adding a hardening agent to the system;
6. adding a shock-preventing agent to the system at a temperature lower than the gelling point of gelatin, said shock-preventing agent being capable of preventing a rapid increase in the viscosity of the system during pre-hardening of the coacervate when the pH of the system approaches a value of no less than about 6;
7. adjusting the pH of the system to the alkali side, said Steps (5) through (7) constituting the pre-hardening treatment; and
8. optionally elevating the temperature of the system to more effectively harden the coacervate,

the order of Steps (5) through (7) being capable of being freely modified with respect to each other, and Step (5) further being capable of being conducted prior to Step (4),

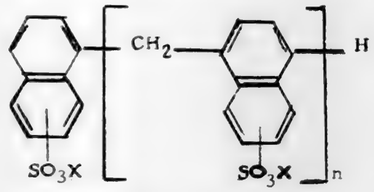
said shock-preventing agent being present in an amount sufficient to prevent a rapid increase in viscosity during pre-hardening, when the pH of the system approaches a value of no less than about 6 and being a member selected from the group consisting of

a modified cellulose comprising polysaccharides having β-1,4-glucoside bonds of glucoses and having anionic functional groups,

an anionic starch derivative composed of a linear polysaccharide amylose formed by only α-1,4-bonds of D-glucose, and a branched polysaccharide amylopectin formed by mainly α-1,4 bonds of D-glucose and a partially side chain branched by α-1,6 bonds,

an anionic acid polysaccharide, obtained by polycondensing linearly D-galacturonic acid between the α-1,4 bonds thereof, said acid polysaccharide containing pectin, pectic acid, and pectinic acid,

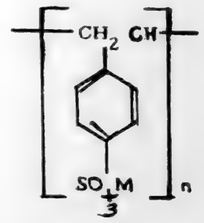
a condensate of naphthalene sulfonic acid and Formalin, which condensate is represented by the formula:



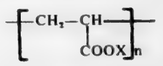
wherein X is a hydrogen atom, an alkali metal, or an ammonium group, and n is a positive integer,

a hydroxyethyl cellulose derivative selected from the group consisting of the carboxymethyl ether of hydroxyethyl cellulose, hydroxyethyl cellulose sulfate, and hydroxyethyl cellulose phosphate,

a vinylbenzene sulfonate copolymer selected from the group consisting of a vinylbenzene sulfonate-acryloylmorpholine copolymer, a vinylbenzene sulfonate-morpholinoethylacrylamide copolymer, a vinylbenzene sulfonate acrylamide copolymer, a vinylbenzene sulfonate-vinylpyrrolidone copolymer, and a vinylbenzene sulfonatemethyloxy-methylacrylamide, said copolymer having the following group within its molecular structure:



wherein M is an alkali metal and n is a positive integer and, an acrylic acid copolymer selected from the group consisting of an acrylic acid-acryloylmorpholine copolymer, an acrylic acid-morpholinomethylacrylamide copolymer, an acrylic acid-acrylamide copolymer, an acrylic acid-vinylpyrrolidone copolymer, an acrylic acid-methoxymethylacrylamide copolymer, said copolymer having the following group within its molecular structure:



wherein X is a hydrogen atom or an alkali metal, and n is a positive integer,

a maleic acid copolymer of maleic acid anhydride and at least one monomer having at least one unsaturated bond which is subjected to addition polymerization with said anhydride or a salt thereof, and a nucleic acid compound,

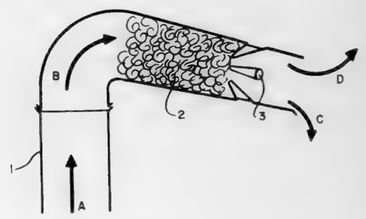
said phenolic compound being present in an amount ranging from 1/500 to ¾ part by weight based on one part by weight of gelatin used to form the capsule wall,

at least one of the hydrophilic colloids employed being gelatin.

3,965,034
METHOD FOR BREAKING FOAMS AND APPARATUS USEFUL THEREFOR

Henri Roques, Portet, Gar, and Michel Roustan, Ramonville, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Feb. 12, 1973, Ser. No. 331,691
Claims priority, application France, Feb. 29, 1972, 72.06865
Int. Cl.² B01D *19/00, 19/02*
U.S. Cl. 252—321 **7 Claims**



1. A method for breaking foams of surface active agents or fermentation which comprises passing the foam to be broken through a packing material which is chemically inert with respect to the foam and which consists essentially of:

glass, plastic or metal having a coating thereon of a compound of formula

$$CF_3-(CF_2)_n-X$$

wherein n is a whole number between 3 and 9 and X is selected from the group of $C_2H_4-SO_3-C_4H_9$; $C_2H_4-SO_3H$; $C_2H_4-SO_3H_9$, $(C_2H_5)_3N$; $C_2H_4-SO_2-NH_2$; $(C_2H_4)_2-COOH$; $(C_2H_4)_2-COOH$; $C_2H_5Cl-O-PO_3H_2$; $C_2H_5Cl-O-PO_3H_2$; C_2H_4OH; $(C_2H_4)_2OH$; $C_2H_4(OH)_2$; $C_2H_4-NH-C_6H_5$; $C_2H_4-SO_2-NH_2$; $C_2H_4-SO_2-N-H-C_2H_4N(C_2H_5)_2$; $C_2H_4-SO_2-NH-(CH_2)_6OH$; $C_2H_4-SO_2-NH-(CH_2)_6-OH$; $C_2H_4-SO_2-N(CH_3)-C_2H_4OH$; $C_2H_4-SO_2-N(CH_3)-C_2H_4OH$; $C_2H_4-SO_2-N-(CH_3)-CH_2-COOH$; $C_2H_4-SO_2-N(CH_3)-CH_2-COOH$ and C_2H_4SH,

said coating forming a stable composition with the packing material substrate

5. Apparatus for breaking foams of surface active agents, fermentation or foams produced in the method of enrichment, fractionation and separation by foaming, which comprises

a. a packing material consisting essentially of glass, plastic or metal having a coating thereon of a compound of formula

$$CF_3-(CF_2)_n-X$$

wherein n is a whole number between 3 and 9 and X is selected from the group of $C_2H_4-SO_3-C_4H_9$; $C_2H_4-SO_3H$; $C_2H_4-SO_3H_9$, $(C_2H_5)_3N$; $C_2H_4-SO_2-NH_2$; $(C_2H_4)_2-COOH$; $(C_2H_4)_5-COOH$; $C_2H_5Cl-O-PO_3H_2$; $C_2H_5Cl-O-PO_3H_2$; C_2H_4OH; $(C_2H_4)_2-OH$; $C_2H_4(OH)_2$; $C_2H_4-NH-C_6H_5$; $C_2H_4-SO_2-NH_2$; $C_2H_4-SO_2-NH-C_2H_4N(C_2H_5)_2$; $C_2H_4-SO_2-NH-(CH_2)_6OH$; $C_2H_4-SO_2-NH-(CH_2)-6-OH$; $C_2H_4-SO_2-N(CH_3)-C_2H_4OH$; $C_2H_4-SO_2-N(CH_3)-C_2H_4OH$; $C_2H_4-SO_2-N-(CH_3)-CH_2-COOH$; $C_2H_4-SO_2-N(CH_3)-CH_2-COOH$ and C_2H_4SH,

said coating forming a stable composition with the packing material substrate, and

b. means for passing the foam to be broken through the packing.

3,965,035
ENZYME CARRIER REGENERATION

Lorraine R. Bialousz, Elmira; Ethel R. Herritt; Donald J. Lartigue, both of Corning, and Wayne H. Pitcher, Jr., Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sept. 18, 1974, Ser. No. 507,199
Int. Cl.² B01J *21/20*; **G11B** *19/08*; **G07F** *11/00*
U.S. Cl. 252—412 **9 Claims**

1. A method of regenerating a porous inorganic support material used for the adsorption of glucose isomerase and comprising porous particles of a $MgO-Al_2O_3$ composition wherein the amount of MgO is within the range of about 0.84 to 12.0% by weight, the particles have an average particle size within the range of about 4 to 200 mesh, U.S. Standard Sieve, and an average pore diameter within the range of about 100A to 1000A, the method comprising the steps of pyrolyzing the material at a temperature within the range of about 500°C. to 900°C. under conditions sufficient to remove essentially all carbonaceous matter and then reacting the material with an aqueous solution of citrate ions, the solution having a pH between about 6.0 and 10.0.

3,965,036
REGENERATION OF ACTIVATED CARBON WITH A SOLUTION OF SORBED SPECIES IN A SOLVENT

Kenneth J. Himmelstein, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 313,771, Dec. 11, 1972, abandoned. This application July 23, 1974, Ser. No. 491,017
Int. Cl.² B01D *15/06*; **B01J** *21/20*
U.S. Cl. 252—414 **10 Claims**

1. In a method of recovering a sorbed organic compound from the group consisting of aliphatic acids, aromatic acids, alcohols and phenols from activated carbon by contacting said carbon with an organic solvent for said compound, the improvement which comprises:

employing as the solvent a solution containing a concentration of said compound in said solvent, said concentration being equal to the maximum concentration of said compound in said solvent which removes essentially as much of said compound per unit volume thereof as would a unit volume of pure solvent, wherein said concentration is calculated by the formula $X = a - b/c$, wherein X = the concentration of the sorbed compound in the solvent, a = the solubility of the sorbed compound in the solvent, b = the amount of sorbed compound present in the activated carbon, and c = the quantity of solvent to be contacted with the carbon bed.

10. A method of regenerating activated carbon containing a sorbed organic compound from the group consisting of

aliphatic acids, aromatic acids, alcohols and phenols by contacting said carbon with an organic solvent for said compound comprising:

a. contacting the activated carbon with a regenerant solution containing a concentration of said compound in said solvent, said concentration being equal to the maximum concentration of said compound in said solvent which removes essentially as much of said compound per unit volume as would a unit volume of pure solvent, wherein said concentration is calculated by the formula $X = a - b/c$, wherein X = the concentration of the sorbed compound in the solvent, a = the solubility of the sorbed compound in the solvent, b = the amount of sorbed compound present in the activated carbon, and c = the quantity of solvent to be contacted with the carbon bed,
b. removing the spent regenerant solution from the activated carbon,
c. separating the spent regenerant solution into at least two fractions consecutively with the spent regenerant flow,
d. treating the first fraction of the spent regenerant to separate the organic compounds from the solvent,
e. combining the remaining fraction of the spent regenerant with sufficient solvent to produce a fresh regenerant of said concentration, and
f. contacting the activated carbon with said fresh regenerant solution.

3,965,037
METHOD FOR REACTIVATING CARBON

Sterling R. Kennedy, 3460 Hollenberg Drive, Bridgeton, Mo. 63044

Filed Sept. 25, 1974, Ser. No. 509,353
Int. Cl.² B01J *21/20*; **B01D** *15/06*
U.S. Cl. 252—415 **10 Claims**

1. The method of reactivating in place carbon in a carbon bed which has been used in filtering water reclaimed from sewage and is contaminated with sewage components which consists in removing from the carbon excess water but discontinuing such removal before the water level reaches the level of the bed, adding hydrochloric acid to said carbon, mixing the water remaining with the hydrochloric acid by blowing pressurized air into said mixture to thoroughly mix the acid with the carbon and to minimize the formation of hydrogen sulfide, periodically repeating said mixing while retaining the mixture of acid and water with the carbon for sufficient time to reactivate the carbon, and then removing the acid and water from the carbon.

3,965,038
REGENERATION OF BISMUTH CONTAINING CATALYST USED IN THE HYDROFLUORINATION OF HALOGENATED HYDROCARBONS

Neithart Schultz, Eichsel, uber Rheinfelden; Hans-Joachim Vahlensieck, Wehr, Baden, and Rudolf Gebele, Waldkraiburg, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Division of Ser. No. 344,673, March 26, 1973, Pat. No. 3,904,701, which is a continuation of Ser. No. 889,301, Dec. 30, 1969, abandoned. This application June 13, 1975, Ser. No. 586,839
Claims priority, application Germany, Jan. 3, 1969, 1900241
Int. Cl.² B01J *23/92, 37/14*; **C07C** *17/08*
U.S. Cl. 252—416 **3 Claims**

1. A process for regenerating a catalyst composition consisting essentially of a γ or η-aluminum oxide, 0.1 to 20 weight percent bismuth as a bismuth salt, said catalyst prepared by:

A. Heating γ or η-alumina to about 50° to 120°C;
B. Impregnating said alumina with a substantially homogeneous solution of a water soluble bismuth salt;
C. Drying the so impregnated alumina;
D. Heating said dry impregnated alumina in the presence of hydrogen fluoride and air; and
E. Increasing the proportion of hydrogen fluoride in said air until cessation of the exothermic reaction which ensues whereby said catalyst contains 0.01 to 20 weight percent bismuth, 35 to 66 weight percent fluorine and 24 to 42 weight percent aluminum, and wherein said catalyst has become spent during a process of reacting a halogenated aliphatic or cycloaliphatic hydrocarbon having at least 2 carbon atoms with hydrogen fluoride to prepare the corresponding fluorinated hydrocarbon having more fluorine than the halogenated aliphatic or cycloaliphatic hydrocarbon reactant; which comprises heating said catalyst in air at a temperature of about 350° to 450°C.

2. A process according to claim 1 wherein said catalyst additionally contains 0.1 to 10 weight manganese and is regenerated by heating in air at about 250° to 350°C.

3,965,039
ION-EXCHANGE MOLDED CATALYST AND METHOD OF ITS PREPARATION

Donat Nikolaevich Chaplits, ulitsa Pervomaiskaya, 9, kv. 36; Vladimir Pavlovich Kazakov, 1 Zhilaya ulitsa, 10, kv. 28; Emmanuil Gabrielovich Lazariants, ulitsa Pervomaiskaya, 9, kv. 2, all of Yaroslavl; Vladimir Filippovich Chebotaev, ulitsa Dnepropetrovskaya, 19, kv. 21, Moscow; Mikhail Ivanovich Balashov, Maly Kozikhinsky pereulok, 9, kv. 3, Moscow, and Leonid Antonovich Serafimov, ulitsa Dnepropetrovskaya, 29, kv. 170, Moscow, all of U.S.S.R.

Filed Nov. 19, 1974, Ser. No. 525,115
Int. Cl.² B01J *31/10*
U.S. Cl. 252—426 **16 Claims**

1. An ion-exchange molded catalyst consisting of a sulfonated copolymer of styrene with a dialkenyl benzene selected from the group consisting of divinylbenzene and diisopropenyl benzene and of a sulfonated thermoplastic material selected from the group consisting of polyethylene, polypropylene and polyvinylchloride taken in a proportion of 1–4:1–2 by weight respectively, said catalyst having a compression strength from 98 to 200 kg/cm² and a static exchange capacity in terms of 0.1N NaOH of from 2.7 to 4.25 mg-equiv/g of catalyst.

2. A method of preparation of an ion-exchange molded catalyst consisting of a sulfonated copolymer of styrene with a dialkenyl benzene selected from the group consisting of divinylbenzene and diisopropenyl benzene, and a sulfonated thermoplastic material selected from the group consisting of polyethylene, polypropylene and polyvinylchloride taken in a proportion of 1–4:1–2 by weight respectively, said method consisting of mixing a copolymer of styrene with a dialkenyl benzene selected from the group consisting of divinylbenzene and diisopropenyl benzene, and a thermoplastic material in a proportion of 1–4:1–2 by weight respectively; molding the obtained mixture by extrusion with heating to the melting point of the thermoplastic material to produce molded elements; treating said molded elements first with a sulfonating agent at 20°–100°C and then with water.

3,965,040
PROCESS FOR PREPARING CATALYST

Thaddeus P. Kobylinski; Brian W. Taylor, both of Gibsonia, and Roger F. Vogel, Butler, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sept. 25, 1974, Ser. No. 509,073
Int. Cl.² B01J *27/14, 29/12, 23/40*
U.S. Cl. 252—435 **24 Claims**

1. A process for preparing a catalyst which comprises coating a support with a first solution containing a first metal salt selected from the group consisting of a salt of platinum and palladium, calcining, further coating the calcined base with a second solution containing a second metal salt selected from the group consisting of a salt of ruthenium and rhodium and a phosphorus compound selected from the group consisting of a phosphorus oxide, a phosphorus salt and a phosphorus acid and then further calcining.

3,965,041
PROCESS FOR METAL SULFIDE CATALYST PREPARATION

Jakob van Klinken, and Swan T. Sie, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sept. 27, 1974, Ser. No. 509,976
Claims priority, application Netherlands, Nov. 14, 1973, 7315573
Int. Cl.² B01J *27/14, 27/02*
U.S. Cl. 252—437 **10 Claims**

1. A process for the preparation of catalysts comprising at least one sulfide of metals from the group consisting of nickel, cobalt, molybdenum and tungsten on a carrier, comprising

wetting with water a composition which contains one or more of the above-mentioned metals on a porous carrier and which has been calcined at a temperature between 175° and 700°C with decomposition of at least part of the metal salts used for applying the metals to the carrier;

treating the wetted composition with a hydrogen sulfide-containing gas at a temperature below 150°C, and

heating the product to a final temperature above 200°C, provided that the amount of water used for wetting the calcined composition corresponds to 20–120% of the amount of water the composition is capable of taking up within the pores of the carrier at 20°C after being wetted with water and dried in a dry gas at 110°C, provided that, if the calcined composition has a combined nickel and cobalt content of less than 4 parts by weight per 100 parts by weight of carrier, the calcination temperature does not exceed 600°C.

9. A process as in claim 1, wherein in the wetting step the calcined composition is wetted with an aqueous solution containing one or more compounds which promote the water-solubility of the metals present in the calcined composition which compounds are selected from the group consisting of phosphoric acid, phosphorous acid and hydrogen peroxide and the amount of said solution used for wetting the calcined composition corresponds to 20–120% of the amount of water said composition is capable of taking up within the pores of the carrier at 20°C after being wetted with water and dried in a gas at 110°C.

3,965,042
FORMATION OF ALUMINA-CONTAINING PARTICLES WITH ALUMINUM HYDROXIDE BINDER

Raymond Douglas Feldwick, Cockeysville, and Darrell Edward Hildebrandt, Baltimore, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 7, 1973, Ser. No. 422,721
Int. Cl.² B01J *29/06, 23/08*
U.S. Cl. 252—455 R **7 Claims**

1. A process for preparing nodules containing alumina, aluminosilicate, or alumina-aluminosilicate mixutres and characterized as having increased crush strength and greater attrition resistance which comprises:

a. preparing an aqueous solution of an acid salt of aluminum by dissolving salt salt in water,
b. preparing an aluminum hydroxide binder slurry having pH in the range from about 7.5 to about 9 and comprising from about 0.2 to about 5 percent by weight of Al_2O_3 in the hydroxide form by adding sufficient ammonia or aqueous solution of ammonium hydroxide with said aluminum salt solution, said slurry having a viscosity of from about 15 to about 60 centipoises prior to addition of an alumina-containing powder,
c. preparing a mixture by adding the slurry with a substantially dry powder of alumina, aluminosilicate, or a mixture of alumina with aluminosilicate, said powder being added in an amount of from about 92.5 to about 99.8 parts by weight per one part by weight of the aluminum salt, calculated as Al_2O_3, in the slurry,
d. forming nodules of a desired shape from the mixture,
e. drying the nodules,
f. calcining the dried nodules, and
g. recovering nodules of treated powder bonded with from about 0.05 to about 1.5 parts by weight of alumina (Al_2O_3) per 100 parts by weight of the nodules.

3,965,043
CATALYST FOR ALKYLATING AROMATIC HYDROCARBONS THEREFOR

George E. Stridde, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Sept. 6, 1974, Ser. No. 503,985
Int. Cl.² B01J *29/06, 29/00*
U.S. Cl. 252—455 R **6 Claims**

1. A catalyst for the alkylation of aromatic hydrocarbons with an olefin-acting compound selected from the group consisting of ono-olefins, ~~+~~alkyl bromides, alkyl chlorides, and mixtures thereof, which comprises a trioctahedral 2:1 **l layer-lattice hectorite-type mineral containing a metallic cation having a Pauling electronegativity greater than** 1.0 in cation exchange positions on the surface of said mineral, said hectorite-type mineral having the following structural formula:

$$\left[(Mg_{6-z}^{2+}\ Li_z^{+})^{VI}\ Si_8\ O_{20}\ (OH)_{4-y}\ F_y\right] \frac{x}{z} M^{z}$$

where 0.33 x 1, 0 y 4, and wherein M is at least one of said metallic cations selected from the group consisting of Al^{3+}, Cr^{3+}, Ga^{3+}, In^{3+}, Co^{3+}, Co^{2+}, Ni^{2+}, Be^{2+}, Mg^{2+}, La^{3+}, Ce^{3+}, Pd^{2+}, and mixtures thereof.

3,965,044
METHOD OF METAL CHROMITE PREPARATION

Harold E. Manning, and Michael C. Ellis, both of Houston, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Aug. 1, 1974, Ser. No. 493,500
Int. Cl.² B01J *21/04, 23/16, 23/84*
U.S. Cl. 252—465 **14 Claims**

1. A method for preparing metal chromites comprising preparing an aqueous solution of a chromium (VI) oxygen containing compound and a soluble compound of a divalent metal selected from the group consisting of Mg, Sr, Ba, Fe, Mn, Co, Ni, Cu, Zn, Cd and mixtures thereof, admixing a soluble organic reducing agent with said aqueous solution, heating the solution to a temperature of about 75° to 100°C., precipitating a substantially water insoluble divalent metal chromite compound of chromium (III) and said divalent metal, recovering said precipitate, and calcining said precipitate to produce an activated dehydrogenation catalyst.

3,965,045
IRON CATALYST

Bruce E. Leach, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 20, 1975, Ser. No. 551,573
Int. Cl.² B01J *21/04, 21/74*
U.S. Cl. 252—466 J **16 Claims**

1. A catalyst prepared by a process comprising forming a mixture of magnetite and alumina derived from the water hydrolysis of aluminum alkoxides, said alumina being in the alpha monohydrate or gamma forms and being present in an amount in the range of about 0.01 to 5 weight percent based on the magnetite; calcining the mixture at temperatures in the range of about 650°C to a temperature below that at which the gamma form of alumina is significantly converted to the delta form; and reducing the calcined mixture with a reducing gas

at a temperature of about 400° to 475°C until 75 – 80. weight percent of the magnetite is reduced.

3,965,046
PROCESS OF MAKING METAL POWDERS AND PRODUCTS PRODUCED THEREBY

Robert J. Deffeyes, Arlington, Tex., assignor to Graham Magnetics Incorporated, Graham, Tex.

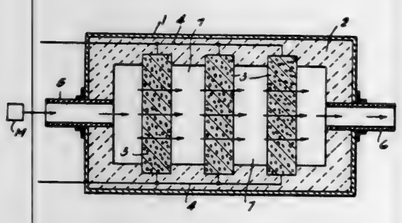
Filed Sept. 26, 1974, Ser. No. 509,468
Int. Cl.² B01J *23/74;* **C22B** *23/04*
U.S. Cl. 252—472 **30 Claims**

1. In a process for making metal-bearing powders comprising the formation of an organometallic salt and the subsequent decomposition of said salt to a said metal-bearing powder, the improvement comprising the steps of
1. reacting a carboxylic acid with a first metal reactant to form an organometallic salt seed,
2. reacting a carboxylic acid with a second metal reactant, in a liquid medium with said first carboxylic salt, and growing a second organometallic salt material on said seed, said seed causing a modification in the normal growth pattern of said second salt,
3. recovering a solid organometallic salt product comprising both said seed and said second organometallic salt, and
4. decomposing said salt product to a metal-bearing powder.

3,965,047
ELECTRICAL RESISTANT FLUID-PERMEABLE HEAT GENERATING MEMBER AND METHOD OF PRODUCING THE SAME

Takeshi Yamaguchi, Tokyo, Japan, assignor to Ernest K. Cleland, Milwaukee, Wis.

Continuation-in-part of Ser. No. 260,133, June 6, 1972, Pat. No. 3,828,161. This application Aug. 15, 1974, Ser. No. 497,821
Claims priority, application Japan, July 20, 1971, 46-54014
Int. Cl.² H01B *1/04*
U.S. Cl. 252—503 **6 Claims**



1. A sintered electrically resistive fluid-permeable heat generating member composed of a mixture of materials based on a starting mixture comprised of:
about 87 to 94 percent by weight of electrically conductive particles;
about 0.2 to 3 percent by weight of a thermally decomposable porosity control material;
about 3 to 9.5 percent by weight of an organic binding material; and
about 0.2 to 3 percent by weight of a foaming agent.

3,965,048
SOAP CURD DISSOLVING DRAIN CLEANER

Justin J. Murtaugh, Guilford, Ind., assignor to The Drackett Company, Cincinnati, Ohio

Filed Mar. 29, 1974, Ser. No. 456,429
Int. Cl.² B08B *9/06;* **C11D** *7/06, 7/32;* **C23G** *5/00*
U.S. Cl. 252—527 **10 Claims**

1. A drain cleaning composition consisting essentially of:
from about 0.25% to 10%, by weight, of a potassium salt of a member selected from the group consisting of nitrilotriacetic acid, N-2-hydroxyethylimino diacetic acid, an alkylene polyamine polycarboxylic acid, and mixtures thereof;
from about 0.50% to 10%, by weight, of potassium hydroxide; and
up to about 99%, by weight, of water, wherein said composition is substantially free of other alkali metal ions.

3,965,049
ONE-STEP SYNTHESIS OF AROMATIC ORGANIC DISELENIDES

Bernard Grushkin, Pittsford, N.Y., and Michael N. Salzman, Winnetka, Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 299,980, Oct. 24, 1972, abandoned. This application May 20, 1974, Ser. No. 471,376
Int. Cl.² C08G *79/00;* **C07D** *345/00, 293/00*
U.S. Cl. 260—2 M **5 Claims**

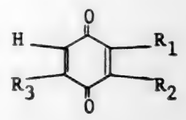
1. A method for the formation of aromatic diselenide compounds which comprises reacting in dimethylformamide an alkali metal diselenide and halogen substituted aromatic compound containing two replaceable halogen atoms and having no strong electron withdrawing groups other than halogen on the halogen bearing ring or on a ring adjacent to the halogen bearing ring, to thereby form an aromatic diselenide compound, the organic portion of which corresponds to the non-halogen portions of the halogen substituted aromatic compound.

3,965,050
PROCESS FOR PREPARING CROSS-LINKED ELASTOMER COMPOSITIONS AND COMPOSITIONS CURABLE WITH CROSS-LINKING AGENTS USED THEREFOR

Sachio Shimogawa; Takashi Fujio, both of Amagasaki; Mikio Arika, Nishinomiya; Nobuo Yamada, Amagasaki; Takashi Kodama, Itami, and Tetsuya Nakata, Ibaragi, all of Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

Filed June 3, 1974, Ser. No. 475,771
Int. Cl.² C08G *65/32;* **C08L** *19/00;* **C08J** *3/24*
U.S. Cl. 260—2 A **7 Claims**

1. In the process for preparing a cross-linked elastomer composition by heating a mixture of a homopolymer of epichlorohydrin or a copolymer of epichlorohydrin and an olefin oxide with a cross-linking agent, the improvement which comprises adding to the mixture a compound selected from the group consisting of quinones and their derivatives of the following formula (1)



(1)

wherein R_1, R_2 and R_3, which may be the same or different, are each a member selected from the group consisting of hydrogen and hydrocarbon moieties, and R_1 and R_2 may together form a benzene ring.

3,965,051
COMPOSITE MATERIALS

Peter Markusch, Cologne, and Dieter Dieterich, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 26, 1974, Ser. No. 527,388
Claims priority, application Germany, Nov. 30, 1973, 2359611
Int. Cl.² C08J *9/00*
U.S. Cl. 260—2.5 AK **15 Claims**

1. A process for the production of a composite material which comprises:
A. mixing
i. from 1–90 percent by weight of an organic polyisocyanate which contains 2–200 milliequivalents of ionic groups or groups which are capable of forming ionic groups in the presence of alkaline or organic basic compounds, per 100 grams of polyisocyanate,
ii. from 10–99 percent by weight of an organic or inorganic particulate or fibrous material, and
B. allowing the resultant mixture to react.

3,965,052
PROCESS FOR PREPARING LOW SMOKE-GENERATING RIGID FOAMS

Kazuo Iwasaki, Ohta, Japan, assignor to Kohkoku Chemical Industry Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1974, Ser. No. 463,688
Claims priority, application Japan, Nov. 18, 1973, 48-133819
Int. Cl.² C08G *18/48*
U.S. Cl. 260—2.5 AW **7 Claims**

1. In a process for preparing low smoke-generating rigid foams from a mixture of a polyisocyanate, a polyol, a blowing agent, a catalyst and a surfactant, the improvement which comprises using an aromatic polyisocyanate as the polyisocyanate in an amount from 3 to 5 times on the bases of chemical equivalent of the total amount of compounds having active hydrogen, and using a polyether polyol having an hydroxyl value of 69 to 200 and containing from 10 to 60 mole% of primary hydroxyl groups and using water as the blowing agent in an amount from 2 to 6 parts by weight per 100 parts of the polyol, together with an isocyanate trimerization catalyst.

3,965,053
FOAMED POLYOLEFIN FOILS

Frank Kleiner, Cologne; Wolfgang Becker, Hilden, and Karl Heinz Muller, Quadrath-Ichendorf, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Jan. 9, 1975, Ser. No. 539,800
Claims priority, application Germany, Jan. 10, 1974, 2401004
Int. Cl.² C08F *10/02*
U.S. Cl. 260—2.5 HA **9 Claims**

1. A process for the continuous production of a foamed foil from a polymer based on an α,β-monoolefinically unsaturated monomer, said process comprising adding 0.05–0.2% by weight, based on the polymer, of a diamide of the formula

$$R^1—CO—NH—(CH_2)_n—NH—CO—R^1$$

to said polymer in the solid or molten state either before or during foamed foil production by a chemical blowing agent, said R^1 and R^2, which may be the same or different, being alkyl or alkenyl having 4 to 20 carbon atoms and n being an integer of from 2 to 6.

3,965,054
FOAMABLE POLYOLEFIN COMPOSITION AND METHOD FOR MANUFACTURING FOAMED POLYOLEFIN

Akio Nojiri, Yokohama; Naonori Shiina, Tokyo; Hiroyuki Nakae, Yokohama; Hideyo Ueno, Hiratsuka, and Isamu Namiki, Yokohama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 457,392, April 2, 1974, abandoned. This application Oct. 14, 1975, Ser. No. 622,375
Claims priority, application Japan, Apr. 10, 1973, 48-40600; May 29, 1973, 48-59966; June 4, 1973, 48-62759; Oct. 30, 1973, 48-121902
Int. Cl.² C08J *9/06, 9/08, 9/10*
U.S. Cl. 260—2.5 HA **17 Claims**

1. A method for manufacturing foamed polyolefin comprising:
a. mixing 100 parts polyolefin selected from the group consisting of ethylene homopolymer, ethylene copolymer, propylene homopolymer and propylene copolymer with 0.01 to 3 parts of cross-linking agent selected from the group consisting of organic peroxides, azide compounds and silicon-containing peroxides, 0.01 to 30 parts of blowing agent which decomposes at a temperature higher than the decomposition temperature of said cross-linking agent to evolve gas in a volume of not more than 2cc per gram of blowing agent in 2 minutes after heating to 180°C begins in the thermal decomposition test, and 0.01 to 2 parts of gas trapping agent selected from the group consisting of a diallyl cyanurate, diallyl isocyanurate, triallyl cyanurate, and triallyl isocyanurate,
b. shaping the mixture into a desired form and then
c. heating the shaped mixture above the decomposition temperature of said blowing agent.

3,965,055
FREE CURING RUBBER COMPOSITION

Daniel Shichman, Trumbull, and Sung Whee Hong, Cheshire, both of Conn., assignors to Uniroyal Inc., New York, N.Y.

Continuation-in-part of Ser. No. 290,909, Sept. 21, 1972, abandoned, which is a division of Ser. No. 66,753, Aug. 25, 1970, Pat. No. 3,701,702. This application Feb. 14, 1974, Ser. No. 442,519
Int. Cl.² B29C *25/00;* **C08L** *7/00*
U.S. Cl. 260—3 **5 Claims**

1. A composition of matter comprising a blend of vulcanizable material in admixture with between about 2–10% by weight of a fiber forming, semi-crystalline, thermoplastic resin which possesses a melting point of 250°F. or greater, said resin being dispersed in said vulcanizable material in the form of particles having a cross sectional dimension (D) not greater than one-half micron and a length (L) to (D) ratio of 2 or greater.

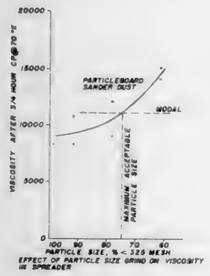
3,965,056
ADHESIVE EXTENDED COMPOSITION

Ronald M. T. Stout, Surrey, and Douglas E. Rogerson, Richmond, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

Continuation of Ser. No. 400,391, Sept. 24, 1973, abandoned. This application Aug. 25, 1975, Ser. No. 607,593
Int. Cl.² C08L *1/02*
U.S. Cl. 260—17.2 **2 Claims**

1. An adhesive composition comprising strongly adhesive aqueous alkaline phenol/formaldehyde resin and as an extender wood particles modified with about 6 to 18% by weight of the particles of cured urea/formaldehyde thermosetting resin,

said modified wood particles being ground to where 75% or more of the modified wood particles are small enough to pass



EFFECT OF PARTICLE SIZE GRIND ON VISCOSITY OF SPREADER

through a 325 mesh screen and with substantially no particles larger than about 150 microns.

3,965,057

ADHESION CONTROL FOR SAFETY GLASS LAMINATES VIA POLYURETHANE COMPOSITION

Vernon G. Ammons, Glenshaw, and James C. Vanek, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 403,138, Oct. 3, 1973, Pat. No. 3,900,686. This application Feb. 19, 1975, Ser. No. 551,188

Int. Cl.² C08G *18/30*; **B32B** *27/18, 27/40*

U.S. Cl. 260—18 TN **19 Claims**

1. A polyurethane composition comprising the reaction product of a polyisocyanate or a polythioisocyanate and a compound containing at least two groups which are reactive with the isocyanate or thioisocyanate groups; said polyurethane composition containing from about 0.01 to 0.30 percent by weight based on the weight of the polyurethane composition of an organic phosphorus acid selected from the class consisting of:

$$R_m-\overset{\overset{O}{\|}}{P}-(OH)_p \quad \text{and} \quad R_m-P-(OH)_p$$

where R is an alkyl containing from 1 to 18 carbon atoms, alkyl, alkaryl, alkoxy, aryloxy or an alkaryloxy group and may be linked directly to the phosphorus atom or linked by means of an oxygen atom, m and p are integers of from 1 to 2 and $m + p$ must equal 3, and from 0.05 to 0.5 percent by weight of an organo-functional silane having the structural formula:

$$(R)_n - Si - (X)_n$$

wherein m and n are whole integers of from 1 to 3 and $m + n$ is equal to 4, wherein X is a group which can hydrolyze to yield a hydroxyl group and R is an organic moiety selected from the class consisting of alkyl groups containing from 1 to 5 carbon atoms, aryl, vinyl and epoxy-containing organic moieties present in amounts sufficient so as to control the degree of adhesion of the polyurethane composition, when in sheet form, to glass; the weight ratio of organic phosphorus acid to organo-functional silane being from about 0.05 to 0.80:1 inclusive; said polyurethane being characterized as having a degree of adhesion to glass of about 1 to 10 pounds per lineal inch when a sheet of said polyurethane is laminated to a sheet of glass, said degree of adhesion being maintained when the laminate is subjected to 100 percent humidity, and 120°F., for at least 5 days.

3,965,058

COREACTION PRODUCTS

Michael Yurcheshen, Parma Heights; Morris Levine, Cleveland Heights, and Ralph M. Brane, Bay Village, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 444,793, April 1, 1965, Pat. No. 3,502,557. This application Aug. 29, 1969, Ser. No. 854,262

Int. Cl.² C09D *3/50, 3/52, 5/40*

U.S. Cl. 260—21 **44 Claims**

1. An ungelled thermosetting reaction product of an amine-aldehyde condensation product selected from the group consisting of a melamine-aldehyde condensation product, a formoguanamine-aldehyde condensation product, an acetoguanamine-aldehyde condensation product and a benzoguanamine-aldehyde condensation product and a polyfunctional hydroxylcontaining carboxylic acid.

3,965,059

ALKYD RESIN

John Charles Kerridge, and John William Syson, both of Billingham, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 29, 1974, Ser. No. 528,545

Claims priority, application United Kingdom, Dec. 10, 1973, 57124/73

Int. Cl.² C08G *63/02*; **C08L** *67/06*; **C09D** *3/66*

U.S. Cl. 260—22 CB **9 Claims**

1. In an alkyd resin which comprises the condensation product of a polybasic acid and a polyhydric alcohol, the improvement whereby part at least of the polybasic acid is the reaction product of an olefinically unsaturated hydrocarbon resin with an alpha, beta-olefinically unsaturated monobasic acid, dibasic acid, or derivative thereof selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, maleic anhydride, fumaric acid, itaconic acid, citraconic acid, itaconic acid anhydride, citraconic acid anhydride, mesaconic acid and the lower alkyl esters of these acids.

3,965,060

ADHESIVE COMPOSITION (CASE A)

Pallavoor R. Lakshmanan, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 26, 1974, Ser. No. 536,318

Int. Cl.² C08L *93/00*

U.S. Cl. 260—27 BB **6 Claims**

1. An adhesive composition consisting essentially of a styrene-butadiene block copolymer, a coumarone-indene tackifier, a solvent selected from the group consisting of aromatic hydrocarbons having from six to eight carbon atoms, aliphatic hydrocarbons having from six to eight carbon atoms, ketones having from two to four carbon atoms and esters having from two to four carbon atoms, said solvents having a boiling point between about 50° and 145° C., a zinc salt of rosin and, optionally, water wherein the components thereof are present in the following ranges:

Component	Weight Percent
Styrene-Butadiene Block Copolymer	100
Tackifier	10–400
Solvent	100–5,000
Zinc Salt of Rosin	0.1–40
Water	0–10.

3,965,061

ADHESIVE COMPOSITION

David L. Bash, Verona, and Pallavoor R. Lakshmanan, Allison Park, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 6, 1975, Ser. No. 574,897

Int. Cl.² C08L *93/00*

U.S. Cl. 260—25 **5 Claims**

1. An adhesive compositions consisting essentially of about 20 to about 80 parts by weight of a low softening, high crystallizing chloroprene polymer, about 80 to about 20 parts by weight of a low softening, medium crystallizing chloroprene polymer, about 30 to about 55 parts by weight of an oil-soluble, heat-hardenable phenol aldehyde resin, about five to about 20 parts by weight of a zinc salt of rosin and about five to about 15 parts by weight of an alkali metal or alkaline earth metal oxide or hydroxide.

3,965,062

ETHYLENE/VINYL ACETATE/ISOBUTYLENE TERPOLYMER COATING COMPOSITION

Claude J. Stiles, Tuscola, Ill., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 288,211, Sept. 11, 1972, abandoned. This application Nov. 15, 1974, Ser. No. 524,177

Int. Cl.² C08J *3/20*

U.S. Cl. 260—28.5 AV **8 Claims**

1. In a hot melt coating process, the improvement which comprises using a coating containing a terpolymer of ethylene, about 18–28 weight percent vinyl acetate and about 0.5–3 weight percent isobutylene, said terpolymer having a melt index of at least about 150.

5. In a hot melt coating composition comprising wax and an additive, the improvement which comprises employing a terpolymer of ethylene, about 18–28 weight percent vinyl acetate, and about 0.5–3 weight percent isobutylene having a melt index of at least about 150 as said additive.

3,965,063

HYDROPHILIC CONTACT LENSES AND LENS POLYMER

Frank O. Holcombe, Jr., Beltsville, Md., assignor to Burton, Parsons and Company, Inc., Washington, D.C.

Continuation-in-part of Ser. No. 476,896, June 6, 1974, Pat. No. 3,926,892. This application June 30, 1975, Ser. No. 591,859

Int. Cl.² C08F *216/04*; **C08L** *33/14*

U.S. Cl. 260—29.6 TA **7 Claims**

1. A hydrophilic gel polymer consisting essentially of the addition copolymer of hydroxyethyl methacrylate, about 1 to 20 weight percent N(1,1-dimethyl-3-oxobutyl) acrylamide, up to about 10% iso-butyl methacrylate, up to about 5 weight percent cyclohexyl methacrylate and about 0.01 to 0.50 weight percent trimethylolpropane trimethacrylate.

6. A hydrophilic gel polymer contact lens comprising a hydrated gel of the polymer of claim 1 containing about 25 to 50 weight percent weight.

3,965,064

PROCESS FOR THE CRYSTALLIZATION OF POLYCARBONATES AND PRODUCTS OBTAINED

Jean Mercier, Kessel-Lo; Francis Gallez, Saive, and Roger Legras, Seloignes, all of Belgium, assignors to Unibra S.A., Brussels, Belgium

Continuation of Ser. No. 380,218, July, 1973, abandoned. This application Oct. 29, 1974, Ser. No. 519,041

Int. Cl.² C08K *5/09, 5/50*

U.S. Cl. 260—30.6 R **24 Claims**

1. A process for crystallizing a bisphenol polycarbonate polymer wherein a nucleating agent in finely divided form, having a melting point above 180°C and selected from the group consisting of metal salts of carbonic acid, metal salts of organic acids and mixtures thereof and a plasticizer are incorporated into said polycarbonate polymer and the mixture thus obtained is crystallized at a temperature higher than its glass transition temperature.

3,965,065

METHOD OF IMPROVING THE ELECTRICAL PROPERTIES OF ORGANOPOLYSILOXANE ELASTOMERS AND COMPOSITIONS THEREFOR

Edward C. Elliott, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Sept. 8, 1975, Ser. No. 611,278

Int. Cl.² C08L *83/04*

U.S. Cl. 260—37 SB **7 Claims**

1. A method for preparing an improved elastomer-forming composition which comprises forming a mixture comprising (A) an organopolysiloxane which is convertible to the solid elastic state and (B) aluminum hydrate, and heating said mixture at a temperature of at least 100°C. for a time of at least 30 minutes.

3,965,066

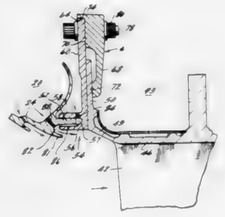
COMBUSTOR-TURBINE NOZZLE INTERCONNECTION

Albert P. Sterman; Henry J. Brands, and Frederick W. Weissborn, Jr., all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 15, 1974, Ser. No. 451,512

Int. Cl.² F02C *7/20, 7/12, 7/18*

U.S. Cl. 60—39.32 **17 Claims**



1. A seal for use between an annular combustor and a turbine nozzle disposed downstream of the combustor, the nozzle including a circumscribing sidewall, wherein the seal comprises:

an upstream-extending first flange associated with the nozzle;

a downstream-extending second flange associated with the combustor;

clamping means for frictionally clamping and engaging said first flange, said clamping means including first and second spaced and opposed walls, each of said walls abutting and frictionally engaging said first flange, and further including tensioning means for applying a clamping load between said first and second walls said clamping load effective to hold each of said first and second walls in said abutting and frictional engagement with said first flange;

and said clamping means having a portion projecting from one of said walls for frictionally retaining and engaging said second flange.

3,965,067

METHOD FOR PLASTICIZING SULFUR

Jung Il Jin, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 14, 1974, Ser. No. 497,357

Int. Cl.² C08K *5/00*

U.S. Cl. 260—45.8 A **8 Claims**

1. A process for plasticizing sulfur which comprises intimately intermixing a stabilized polysulfide composition having

a sulfur rank of from about 3.5 to 5 with sulfur in a ratio by weight of stabilized polysulfide to sulfur of from about 3:97 to about 6:4.

3,965,068

SMOKE RETARDANT VINYL CHLORIDE AND VINYLIDENE CHLORIDE POLYMER COMPOSITIONS

Elmer D. Dickens, Jr., Richfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 10, 1975, Ser. No. 548,569
Int. Cl.² C08J 3/20
U.S. Cl. 260—45.75 N 32 Claims

1. A smoke retardant composition comprising a vinyl chloride or vinylidene chloride polymer together with (A) at least one nickel compound selected from the group consisting of $NiCO_3$, $NiCl_2$, NiO, NiS and nickel acetylacetonate and (B) at least one zinc compound selected from the group consisting of $ZnCO_3$, $ZnCrO_4$, $ZnMoO_4$, $Zn_3(PO_4)_2$, Zn_2SiO_4, Zn_2SO_4, $ZnTiO_3$, Zn_2ZrO_4, zinc ammonium sulfate, zinc borate zinc acetylacetonate, zinc formate, zinc oxalate, and $M_{3-\frac{3}{2}x}Zn_{3+x}[Fe(CN)_6]_2 \cdot yH_2O$, wherein M is an alkali metal, x is from 0 to 1, and y is from 0 to 4, said compounds (A) and (B) being present in a total amount from about 0.25 to about 20 weight parts per 100 weight parts of polymer.

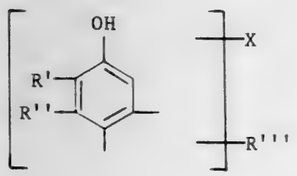
3,965,069

POLYPHENYLENE OXIDE IS PREPARED USING A MIXTURE OF MANGANESE CHELATES AS A CATALYST

Walter K. Olander, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1974, Ser. No. 534,903
Int. Cl.² C08G 61/10
U.S. Cl. 260—47 ET 20 Claims

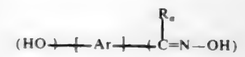
1. A process of forming self-condensation products of a phenol having the structural formula:



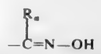
where X is a substituent selected from the group consisting of hydrogen, chlorine, bromine, and iodine; R′ is a monovalent constituent selected from the group consisting of hydrogen, hydrocarbon radicals, halohydrocarbon radicals having at least two carbon atoms between the halogen atoms and phenol nucleus, hydrocarbonoxy radicals, and halohydrocarbonoxy radicals having at least two carbon atoms between the halogen atoms and phenol nucleus, R″ and R‴ being the same as R′ and, in addition, halogen under reaction conditions which comprise contacting said phenol with oxygen in the presence of a basic reaction medium and a mixture of Type (A) and Type (B) manganese chelate complexes selected from Type (A) complexes of the formulas:

Type (A): $(L^1)_xMn$,

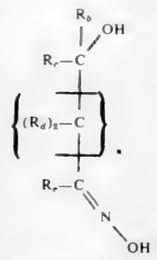
where L^1 is a ligand derived from an ortho-hydroxyareneoxime of the general formula



wherein R_a is independently selected from the group consisting of hydrogen and lower alkyl radicals having from 1–5 carbon atoms, Ar is at least a divalent arene radical having at least one -OH radical and at least one



4 N-OH radical attached directly to ortho-positioned arene ring carbon atoms, and an ω-hydroxyoxime of the formula



wherein each R_b, R_c, R_d and R_e is independently selected from the group consisting of hydrogen, acyclic and cyclic organic radicals, and n is a positive integer equal to 0 or 1, Mn is the transition metal manganese(II), and x is a positive number at least equal to about 0.5, and selected from Type (B) complexes of the formula:

Type (B): $(L^2)_xMn$,

wherein L^2 is a ligand other than an L^1 ligand, Mn is the transition metal manganese, and x is a positive number at least equal to about 0.5.

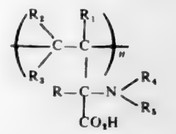
3,965,070

CROSSLINKED VINYLCARBONYL RESINS HAVING α-AMINO ACID FUNCTIONALITY

Richard B. Wuchter, Rydal, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 7, 1974, Ser. No. 512,813
Int. Cl.² C08G 10/04
U.S. Cl. 260—73 R 12 Claims

1. A resin having α amino acid functionality and which is derived from a crosslinked vinylcarbonyl copolymeric backbone, said resin having the followng general formula:



wherein R is H or $C_1 - C_4$ alkyl; R_1 is H or $C_1 - C_{10}$ alkyl; R_2 and R_3 are independently selected from H, C_1–C_{18} alkyl, aryl, alkylaryl, and cycloalkyl; and R_4 and R_5 are independently selected from H, $C_1 - C_{18}$ alkyl, and arylalkyl or taken together are linked to form a cyclic ring, said resin being crosslinked with about 2 to 30% by weight of at least one crosslinking monomer selected from polyvinyl aromatic hydrocarbons and polyvinyl ethers and esters of polyhydric alcohols.

3,965,071

POLYESTER CATALYSTS

Euan McClelland, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 1, 1974, Ser. No. 484,937
Claims priority, application United Kingdom, July 16, 1973, 33716/73
Int. Cl.² C08G 63/14
U.S. Cl. 260—75 R 21 Claims

1. A process for preparing a fiber-forming polymeric polyester or copolyester which comprises first forming an ester by esterification reaction between an aromatic dicarboxylic acid and a diol in the presence of a titanium compound as esterification catalyst, deactivating the catalytic titanium compound after the esterification is substantially complete by reacting said compound with phosphoric acid or a phosphate ester and thereafter polycondensing said ester in the presence of a polycondensation catalyst which is a compound selected from the group consisting of antimony and germanium compounds which are soluble in the reaction mixture to form said polyester or copolyester, the diol being a diol of the formula $HO(CH_2)_nOH$ wherein n is not less than 2 and not greater than 10 and the titanium compound being a tetraalkyl titanate wherein alkyl is of 1 to 4 carbon atoms, a titanate of ethylene glycol, hexylene glycol or octylene glycol, or isopropyl triethanolamine titanate, sodium or lithium titanate or a titanosiloxane.

3,965,072

POLYUREA-URETHANE POLYMERS FROM UREA, DIAMINES AND AMINOALCOHOLS

Kenneth H. Markiewitz, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Division of Ser. No. 880,892, Nov. 28, 1969. This application June 21, 1973, Ser. No. 372,445
Int. Cl.² C08G 71/02; D06M 15/52
U.S. Cl. 260—77.5 C 4 Claims

1. A polyureaurethane polymer prepared by reacting urea with an equal molar amount of a mixture of an amino alcohol and a diamine at a temperature from 150°C to 220°C, wherein the mixture contains from 10 to 90% by weight of a diamine and from 90 to 10% by weight of amino alcohol, wherein the amino alcohol has the formula $H_2N(RO)_m(CHR''O)_nH$ wherein m is 0 or 1, n an integer from 2 to 14, R is an alkylene group having from 3 to 5 carbon atoms, and each R is independently hydrogen or methyl, and wherein the diamine has the formula

$$H_2H + RO +_m + CH_2CHR''O +_q CH_2CHR'' - NH_2$$

wherein m is 0 or 1, q is an integer from 2 to 13, R is an alkylene radical having from 3 to 5 carbon atoms and each R″ is independently hydrogen or methyl.

3,965,073

PREPARATION OF RAPID SETTING NON-ELASTOMERIC POLYURETHANE COMPOSITIONS IN THE PRESENCE OF ESTER-MODIFIED POLYOXYALKYLENE COMPOUNDS

Franciszek Olstowski, Freeport, and Donald B. Parrish, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 366,835, June 4, 1973, Pat. No. 3,878,157, which is a continuation-in-part of Ser. No. 179,149, Sept. 9, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,467
Int. Cl.² C08G 18/00
U.S. Cl. 260—77.5 AN 21 Claims

1. A non-elastomeric, non-cellular dense, solid polymer having a density of at least about 1 gram/cc resulting from admixture of the components of a composition comprising:

A. a polyether polyol having from 3 to about 8 hydroxyl groups and a hydroxyl equivalent weight between about 75 and about 230,

B. an organic polyisocyanate,

C. a liquid modifier compound having a boiling point above about 150°C selected from the group consisting of ester-modified hydroxyl-containing polyoxyalkylene compounds having an average hydroxyl equivalent weight above about 700 when such compounds contain 1 or 2 hydroxyl groups and above about 500 when the compound contains 3 or more hydroxyl groups and mixtures thereof, and

d. a non-amine-containing catalyst for urethane formation, which is an organo-metal compound; component

wherein components (A) and (B) are present in amounts so as to provide an NCO:OH ratio of from about 0.8:1 to about 2:1; component (C) is present in quantities of from about 20 to about 50 percent with the proviso that when component (B) is a prepolymer containing less than about 40% NCO groups by weight, then component (C) is present in quantities of from about 10% to about 50% by weight of the sum of components (A), (B) and (C); and component (D) is present in quantities of from about 0.2 to about 10 percent by weight of the sum of the weights of component (A), (B) and (C); and wherein said polymer can be demolded within less than about 5 minutes, without the application of an external source of heat, after admixture of said composition.

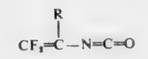
3,965,074

HOMOPOLYMERS OF POLYFLUORINATED VINYL ISOCYANATES

William J. Middleton, Chadds Ford, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 435,494, Jan. 22, 1974, which is a division of Ser. No. 176,709, Aug. 31, 1971, Pat. No. 3,816,495. This application Oct. 22, 1975, Ser. No. 624,975
Int. Cl.² C08G 18/81
U.S. Cl. 260—77.5 R 3 Claims

1. A homopolymer of a vinyl isocyanate of the formula



wherein:

R is fluorine, lower perfluoroalkyl, lower ω-chloroperfluoroalkyl or lower ω-hydroperfluoroalkyl.

3,965,075

CATALYZED PROCESS FOR IMIDE-ALCOHOL CONDENSATION

James W. Edwards, St. Louis, Mo., assignor to Monsanto Company

Filed July 22, 1974, Ser. No. 490,438
Int. Cl.² C08G 69/20, 69/44
U.S. Cl. 260—78 L 10 Claims

1. A catalyzed imide-alcohol condensation process for the preparation of polymeric compounds of polyester-polyamides comprising: contacting alcohols having one or more hydroxyl groups attached to an aliphatic carbon and acyl lactams, said contacting being in amounts of from about 10 to about 200 mole percent of the alcohol, in the presence of a catalyst selected from at least one of tertiary amines and a Group IVA, IB, IVB, VB, VIB, VII organometal compound selected from the group consisting of metal alkyls, metal phenols, metal amides, alkoxides, and glycoxides.

3,965,076

PROCESS FOR THE PRODUCTION OF MODIFIED CIS-14,-POLYISOPRENE

Junnosuke Yamauchi; Takayuki Okamura, and Shobu Minatono, all of Kashima, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed July 12, 1974, Ser. No. 488,059
Claims priority, application Japan, July 13, 1973, 48-79449
Int. Cl.² C08F 8/46; C08L 9/00
U.S. Cl. 260—42 11 Claims

1. A process for the production of a modified cis-1,4-polyisoprene rubber having high green strength, which comprises adding an aromatic hydrocarbon having 6 to 12 carbon atoms to the solution of cis-1,4-polyisoprene rubber resulting from the solution polymerization of isoprene in a saturated aliphatic hydrocarbon having 4 to 10 carbon atoms or a saturated alicyclic hydrocarbon having 6 to 10 carbon atoms, the said aromatic hydrocarbon being added in an amount of from about 10 to 50% by volume, based on the total volume of the resulting cosolvent, and thence adding maleic anhydride thereto in an amount of from about 0.1 to 20 parts by weight thereof per 100 parts by weight of said rubber, whereby the reaction between said rubber and maleic anhydride efficiently proceeds, with concomitant gel formation being suppressed.

10. The product of the process as defined by claim 1.

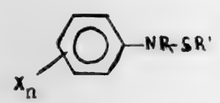
3,965,077

CYCLOALKYLTHIO(ELECTRON-WITHDRAWING GROUP SUBSTITUTED)ANILINE COMPOUNDS

Pyong-Nae Son, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 367,643, June 6, 1973, Pat. No. 3,895,060. This application Feb. 5, 1975, Ser. No. 547,177
Int. Cl.² C08F 28/00, 28/02
U.S. Cl. 260—79.5 P 11 Claims

1. A composition comprising (a) a sulfur-vulcanizable polymer having an olefinic unsaturation content of from about 0.1 to about 45% by weight of the polymer, (b) sulfur or a sulfur donor, (c) a vulcanization accelerator, and (d) a cycloalkylthio aniline of the formula



wherein X is an electron-withdrawing group selected from the group consisting of —Cl, —Br, —I, —F, $-SO_2R_a$, $-NO_2$, and $-COOR_a$ wherein R_a is an alkyl radical containing 1 to 18 carbon atoms, *n* is an integer from 2 to 4, R is selected from the group consisting of hydrogen, an alkyl radical containing 1 to about 8 carbon atoms, a phenyl radical which can be substituted with $-X_n$ groups, and —SR′, and R′ is a cycloalkyl radical containing 4 to 8 carbon atoms in the ring.

3,965,078

PROCEDURE FOR THE PRODUCTION OF POLYMERS AND COPOLYMERS OF ISOBUTYLENE

Aldo Priola; Sebastiano Cesca, and Giuseppe Ferraris, all of San Donato, Italy, assignors to Snam Progetti S.p.A., San Donato, Milan, Italy

Continuation of Ser. No. 306,911, Nov. 15, 1972, abandoned. This application Sept. 6, 1974, Ser. No. 503,599
Claims priority, application Italy, Nov. 26, 1971, 31725/71
Int. Cl.² C08F 4/52, 210/12
U.S. Cl. 526—154 6 Claims

1. Process for the production of copolymers of isobutylene and a conjugated diene wherein the copolymerization reaction is conducted in the presence of a catalyst system consisting of:

a. a metalorganic compound of aluminum having the formula AlR_2X, wherein X is a halogen atom and R is a hydrocarbon radical having from 1 to 10 carbon atoms or hydrogen; and

b. a compound selected from the group consisting of $Ti(OnC_4H_9)Cl_3$, $Ti(OCOCH_3)_2Cl_2$, $Si(CH_3)Cl_3$, $SiHCl_3$, $Sn(C_2H_5)_3Cl$, $Sn(C_2H_5)Cl_3$, $Sn(CH_3)_2Cl_2$, $Sn(C_6H_5)_3Cl$, $Sn(OCOCH_3)_2Cl_2$ and $Sn(C_2H_5)Cl_3$.

3,965,079

SEPARATION AND RECOVERY OF PRODUCTS OBTAINED IN CATALYTIC PROCESSES OF PREPARING ACRYLONITRILE POLYMERS OR COPOLYMERS

Luciano Console, Mirano; Enzo Chiellini, Rosignano Solvay, and Benedetto Calcagno, Milan, all of Italy, assignors to Societa' Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed July 8, 1974, Ser. No. 486,735
Claims priority, application Italy, July 7, 1973, 26269/73
Int. Cl.² C08F 4/40, 6/00, 20/44
U.S. Cl. 526—68 2 Claims

1. A method of separating and recovering both sulphur dioxide and unreacted monomer from the polymer or copolymer slurry obtained from polymerizing acrylonitrile monomer or from copolymerizing a mixture of acrylonitrile monomer and a further ethylenically unsaturated monomer copolymerizable therewith, the polymerizing or copolymerizing occurring in an aqueous medium and in the presence of a catalytic redox system which includes sulphur dioxide or a sulfite in combination with a compound selected from the group consisting of peroxides, persulfates and chlorates; said method comprising the steps of

1. admixing with said slurry a polymerization inhibitor and a mineral acid for adjusting the pH of said slurry to 1.8 to 2.5;
2. removing sulphur dioxide from said slurry by volatilization in a first vaporization stage conducted at a pressure of from 60 to 150 mm mercury and at a slurry temperature of from 40° to 60°C;
3. scrubbing the sulphur dioxide vapors obtained from (2) with water having a temperature of from 1° to 15°C, and recycling the aqueous solution obtained to the polymerization or copolymerization medium;
4. thereafter, removing unreacted monomer from said slurry by volatization in a second vaporization stage conducted at a pressure of from 1 to 60 mm mercury and at a slurry temperature of from 30° to 55°C; and
5. scrubbing vapors obtained from (4) with water having a temperature of from 1° to 30°C, and recycling the aqueous solution obtained to the polymerization or copolymerization medium.

3,965,080

POLYMERIZATION OF MONOMERS WITH ALKALINE EARTH METAL ORGANOMETALLIC COMPOUNDS

Ivan Glen Hargis, Tallmadge, and Russell Anthony Livigni, Akron, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 328,583, Feb. 1, 1973, Pat. No. 3,928,302, which is a continuation-in-part of Ser. No. 69,476, Sept. 3, 1970. This application Feb. 27, 1975, Ser. No. 553,716
Int. Cl.² C08F 1/28; C08D 1/18; C08F 3/76
U.S. Cl. 526—183 16 Claims

1. The method which comprises polymerizing at a temperature of from about −90° to 100°C. a polymerizable monomer selected from the group consisting of methyl acrylate, ethyl acrylate, butyl acrylate, ethyl hexyl acrylate, octyl acrylate, methyl methacrylate, ethyl methacrylate, butyl methyacrylate, methyl ethacrylate, ethyl ethacrylate, butyl ethacrylate, octyl ethacrylate, acrylonitrile, methacrylonitrile, butadiene, isoprene, dimethyl butadiene, styrene, metavinyl toluene and paravinyl toluene and mixtures of the same with at least one diorgano-metallic catalyst where the metal of said catalyst is selected from the group consisting of barium, strontium and calcium and mixtures thereof and where the organic moiety of said catalyst is selected from the group consisting of triphenyl methane, 1,3,3-triphenyl propene, bis(2-methoxy phenyl) methane, 1,1,2-triphenyl ethane, and 1,1-diphenyl alkanes in which the alkane group has from 1 to 10 carbon atoms and mixtures thereof, said metal being joined to said organic moiety by an ionic carbon to metal bond.

3,965,081

ISOTACTIC AND SYNDIOTACTIC POLYVINYL NITRATES AND PROCESSES FOR THEIR FORMATION

Richard A. Strecker, Feasterville, and Frank D. Verderame, Huntingdon Valley, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 21, 1974, Ser. No. 435,344
Int. Cl.² C08F 126/02, 8/30
U.S. Cl. 526—9 3 Claims

1. Stereoregular polyvinyl nitrate.

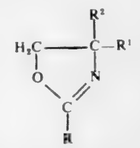
3,965,082

COMPOSITIONS OF POLYSTYRENE REACTED WITH HEXAMETHOXYMETHYLMELAMINE

Louis A. Jurisch, Morengo, Ill., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Division of Ser. No. 406,760, Oct. 15, 1973, Pat. No. 3,929,748. This application Sept. 2, 1975, Ser. No. 609,340
Int. Cl.² C08F 112/08
U.S. Cl. 526—19 4 Claims

1. A resinous compound prepared by polymerizing styrene in the presence of ammonium persulfate and an oxazoline corresponding to the formula:



wherein R^1 and R^2 are hydrogen, methyl, ethyl, hydroxymethyl or the group $RCOOCH_2$- and at least one of R^1 or R^2 is hydroxymethyl, and where R is an alkyl group of 1 to 19 carbons and further reacting said resinous compound with hexamethoxymethylmelamine at 400°F.

3,965,083

PROCESS FOR THE VAPOR PHASE POLYMERIZATION OF MONOMERS IN A HORIZONTAL, QUENCH-COOLED, STIRRED-BED REACTOR USING ESSENTIALLY TOTAL OFF-GAS RECYCLE AND MELT FINISHING

James L. Jezl, St. Charles; Edwin F. Peters, Winfield; Robert D. Hall, Wheaton, and John W. Shepard, Naperville, all of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 16, 1974, Ser. No. 533,018
Int. Cl.² C08F 2/34, 2/36, 6/02, 10/00
U.S. Cl. 526—65 27 Claims

1. A process for continuously polymerizing from the vapor state at least one polymerizable monomer comprising:

a. introducing said monomer into one or more vapor recycle inlets which are spaced along, and a majority of which are located below, a sub-fluidized bed of polymer distributed within a stirred, horizontal reactor operating at polymerization conditions, said reactor containing one or more individually polymerization-temperature-controllable polymerizable sections;

b. introducing at least one catalyst component into one or more inlets spaced along said reactor and quench liquid into a plurality of inlets spaced along the top of said reactor so that said at least one catalyst component and said quench liquid are intimately mixed with said bed of polymer;

c. removing without substantial pressure letdown polymer from said polymer bed to a post-polymerization zone into which a controlled amount of said monomer is introduced and wherein a controlled amount of essentially adiabatic polymerization takes place and said polymer is melted to form easily transferable molten polymer;

d. removing off-gases from said reactor through one or more reactor off-gas outlets spaced along the top of said reactor and removing entrained polymer therefrom and condensing quench liquid from said off-gases in a separation zone to form a liquid recycle and a gaseous recycle;

e. returning said gaseous recycle to said one or more vapor recycle inlets;

f. taking off a first portion of said liquid recycle containing any entrained polymer remaining in said off-gases and introducing said first portion through said plurality of inlets into said reactor;

g. taking off a second smaller portion of said liquid recycle and using said second portion for make-up of at least one catalyst component;

h. introducing make-up of said quench liquid into said reactor;

i. decomposing the catalyst components contained in the molten polymer of (c) with a kill substance;

j. treating the product of (i) to remove volatile components therefrom; and

k. cooling the polymer product of (j) to ambient temperature.

3,965,084

ASHLESS DISPERSANT PRODUCTS AND PROCESS

Sidney Schiff, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 503,800, Sept. 6, 1974, Pat. No. 3,909,421. This application May 12, 1975, Ser. No. 576,940
Int. Cl.² C07C 127/00
U.S. Cl. 260—96.5 R 10 Claims

1. As a new composition of matter, oil-soluble reaction product obtained upon reacting for a time and under conditions of temperature and pressure to produce said reaction product;

a. A petroleum sulfonic acid with

b. an adduct formed from

1. at least one amine selected from primary monoamines having from 2 to 10, inclusive, carbon atoms, and polyamines represented by the formula $H_2N[(CH_2)$-

$_xNH]_yH$ wherein x is an integer of from 2 to 6 and y is an integer of from 1 to 10, and

2. urea or thiourea.

6. A process for producing additives for lubricants and motor fuels which comprises the steps of

introducing an amine selected from primary monoamines having from 2 to 10, inclusive, carbon atoms, and polyamines represented by the formula $H_2N[(CH_2)_xNH]_yH$ wherein x is an integer of from 2 to 6 and y is an integer of from 1 to 10, and either urea or thiourea into a reaction zone and maintaining temperature and pressure for a time sufficient for forming an adduct from said amine and either urea or thiourea,

introducing a petroleum sulfonic acid into said reaction zone containing said adduct,

interacting said petroleum sulfonic acid and said adduct in said reaction zone "at a temperature and pressure for a time sufficient to produce said additives", and

recovering said additive from the resulting reaction mixture.

3,965,085

METHOD FOR REFINING OF SOAPS USING SOLVENT EXTRACTION

Bjarne Holmbom, Tarkkampujankatu 14, 20500 Turku 50, and Eero Avela, Pyorokiventie 10, 00830 Helsinki 83, both of Finland

Filed June 24, 1974, Ser. No. 482,564

Claims priority, application Finland, June 29, 1973, 2102/73

Int. Cl.² C09F *1/02*; C11C *1/00, 1/02*

U.S. Cl. 260—97.6 **9 Claims**

1. In a method for refining of soaps of the type of crude sulphate soap and soap obtained during alkali treatment of wood extractives, products of tall oil or products of vegetable oils, in which unsaponifiable neutral substances included in the soap are separated by means of extraction with organic solvents, the improvement comprising dissolving the soap in a mixture of acetone and water to form a soap solution and extracting unsaponifiable substances from said solution with water-immiscible solvent thereby to form an organic phase containing unsaponifiable neutral substances and a water phase containing salts of fatty and resin acids, separating said phases, removing from said organic phase said neutral substances, and removing from said water phase an oil with a high content of free fatty and/or resin acids.

3,965,086

PROCESS FOR PRODUCING PROTEIN CONCENTRATE (CASE) 1 USING AIR CLASSIFICATION

Ronald Bruce Swain, Walnut Creek, Calif., and David Evans O'Connor, Greenhills, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 418,348, Nov. 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 157,052, June 25, 1971, abandoned. This application Jan. 3, 1975, Ser. No. 538,280

Int. Cl.² A23J *1/14*

U.S. Cl. 260—123.5 **16 Claims**

1. A process for producing a protein concentrate which comprises the steps of:

a. fine grinding an oilseed meal so that 90% of the particles obtained thereby are less than 100 microns in diameter and air-classifying the resulting ground meal into a fraction which is characterized by its relatively high protein content and relatively low water-insoluble carbohydrate content; and

b. washing said fraction either in water or in a 20% to 80% by weight aqueous alcohol solution wherein the alcohol component of said solution is selected from the group consisting of methanol, ethanol, and isopropanol and separating the protein containing residue from the liquid supernatant.

3,965,087

TRISAZO DYE CONTAINING A DIPHENYLENESULFONE STRUCTURE

Kenzo Konishi, Nishinomiya; Akira Kotone, Nara; Yoshihiko Nakane, Yao; Teijiro Kitao, Tondabayashi, and Iro Yamase, Osaka, all of Japan, assignors to Sakai Chemical Industry Company Ltd., Sakai, Japan

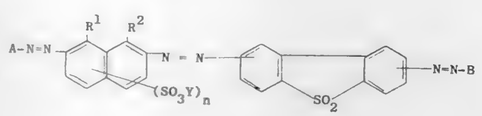
Filed Mar. 13, 1974, Ser. No. 450,817

Claims priority, application Japan, Mar. 14, 1973, 48-29790; Mar. 14, 1973, 48-29791; Apr. 24, 1973, 48-46945

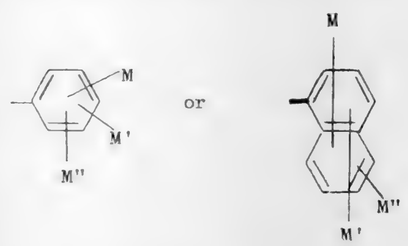
Int. Cl.² C09B *35/46*

U.S. Cl. 260—152 **3 Claims**

1. A polyazo dye of the formula



wherein A is phenyl, naphthyl or phenyl or naphthyl substituted with chlorine, lower alkyl, lower alkoxy, amino, carboxy, nitro, SO_3H or SO_3Na; B is



where M is NH_2, OH or SO_3H; M′ and M″ are the same or different and are H, NO_2, lower alkyl, SO_3H, SO_3Na or $N(R^6)_2$, wherein the members R^6 are independently H, lower alkyl or phenyl substituted with lower alkyl; Y is hydrogen, alkali metal, or NH_4; n is 1 or 2; and one of R^1 and R^2 is hydroxy and the other is amino.

3,965,088

NAPHTHACENE DERIVATIVES

Georges Jolles, Sceaux, France, assignor to Rhone-Poulenc S.A., Paris, France

Continuation-in-part of Ser. No. 187,559, Oct. 7, 1971, which is a continuation-in-part of Ser. No. 768,532, Oct. 17, 1968, abandoned. This application Nov. 20, 1972, Ser. No. 307,955

Claims priority, application France, Oct. 18, 1967, 67.124943; Finland, Sept. 19, 1968, 2648/68; Netherlands, Oct. 11, 1968, 6814582

The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.

Int. Cl.² C07H *15/00*

U.S. Cl. 260—210 R **1 Claim**

1. The naphthacene derivative which is 4-methoxy-5,12-dioxo-6,9,11-trihydroxy-7-(2,3,6-O-tridesocy-3-amino-1-L-lyxohexosyl)-9-(1-formylhydrazonoethyl)-5,7,8,9,10,12-hexahydronaphthacene, and non-toxic acid addition salts thereof.

3,965,089

PROCESS FOR THE PRODUCTION OF A CYCLIC UREIDO-DERIVATIVE OF A DEOXYSTREPTAMINE-CONTAINING ANTIBIOTIC AND PRODUCTS THEREOF

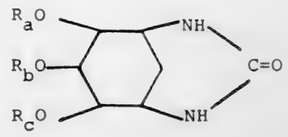
Hamao Umezawa; Kenji Maeda, both of Tokyo; Shinichi Kondo, Yokohama, and Shunzo Fukatsu, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Mar. 12, 1973, Ser. No. 340,311

Int. Cl.² C07H *15/22*

U.S. Cl. 260—210 AB **17 Claims**

1. The cyclic ureido-derivative of a deoxystreptamine-containing antibiotic of the formula:



wherein R_a is an aminoglycoside present in the molecule other than on the deoxystreptamine moiety thereof, R_b and R_c are each hydrogen or an aminoglycoside present in the molecule of the antibiotic other than on the deoxystreptamine moiety thereof.

3,965,090

AMPHOTERICIN COMPLEXES

Julio Metzger, East Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 338,122, March 5, 1973, abandoned, which is a division of Ser. No. 203,037, Nov. 29, 1971, abandoned. This application Feb. 18, 1975, Ser. No. 550,313

Int. Cl.² A61K *31/71*; C07G *11/00*

U.S. Cl. 260—210 AB **4 Claims**

1. A crystalline amphotericin B complex comprising about 1 mole of amphotericin B and from about 0.5 to about 20 moles of succinic acid, the complex having a solubility in water at pH 2 of about 28 grams per liter, and a U.V. absorption at 405 millimicrons (E_1^1) in methanol of 1649.

2. A method for preparing a crystalline amphotericin B complex which comprises reacting from about 0.5 to about 20 moles of succinic acid with one mole of amphotericin B, the resulting complex having a solubility in water at pH 2 of about 28 grams per liter, and a U.V. absorption at 405 millimicrons (E_1^1) in methanol of 1649.

3,965,091

PROCESS FOR THE PRODUCTION OF WATER-ADSORBING BUT WATER-INSOLUBLE CELLULOSE ETHERS

Arno Holst, Wiesbaden-Biebrich, and Helmut Lask, Wiesbaden-Schierstein, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Filed Nov. 18, 1974, Ser. No. 524,822

Claims priority, application Germany, Nov. 22, 1973, 2358150

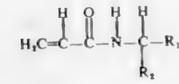
Int. Cl.² C08B *11/00, 11/20, 11/193, 15/10*

U.S. Cl. 260—231 A **10 Claims**

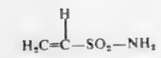
1. In the process for the production of water-adsorbing, but largely water-insoluble, cellulose ethers, in which cellulose is alkalized in the presence of alkali and isopropanol as a reaction medium and is so reacted with an etherification agent that by etherification only a water-soluble cellulose ether is produced, and in which process a modification agent which is able to react with the still free hydroxyl groups of the cellulose anhydro glucose groups in an alkaline reaction medium is reacted before, during, or after the etherification,

the improvement which comprises effecting the etherification of cellulose to carboxymethyl cellulose, carboxymethyl hydroxyethyl cellulose, hydroxyethyl cellulose, or methylhydroxyethyl cellulose, reacting with the modification agent in the presence of 0.8 to 7.5 parts by weight of isopropanol, based upon the cellulose weight,

and employing a modification agent which has one of the formulae



I and



II

R_1 in formula I being hydroxyl, or an acylamino or etherified carbamino group, and

R_2 in formula I being hydrogen or a carboxyl group.

3,965,092

PERFLUOROALKYL BENZODIAZEPINES

Aimé Cambon, Nice; Claude Giovannoni, Salindres; Raphaël Pastor, and Jean Riess, both of Nice, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

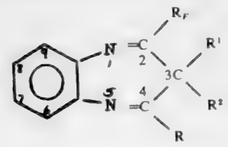
Filed May 21, 1974, Ser. No. 471,837

Claims priority, application France, May 22, 1973, 73.18488

Int. Cl.² C07D *243/12*

U.S. Cl. 260—239 BD **2 Claims**

1. A perfluoroalkylated benzodiazepine having the formula



wherein R_f is a C_1– C_{15} perfluoro straight chain alkyl group and R is the same as R_f or a different C_1– C_{15} perfluoro straight chain alkyl group or a phenyl group or a phenyl group substituted by a C_1– C_4 alkyl group; wherein R^1 and R^2 are, independently of each other, hydrogen or C_1– C_5 alkyl groups; and wherein the benzene ring is unsubstituted in positions 6, 7, 8 and 9 or substituted by a C_1– C_4 alkyl group in one or both of positions 7 and 8.

3,965,093

6-ARYLTHIO PENICILLANIC ACID AND DERIVATIVES THEREOF

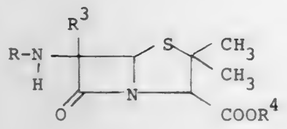
Joseph Edward Dolfini, Princeton; Ekkehard Bohme, Hightstown, and William A. Slusarchyk, Belle Mead, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 183,642, Sept. 24, 1971, Pat. No. 3,855,233. This application Aug. 26, 1974, Ser. No. 500,435

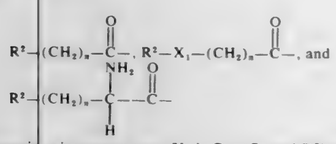
Int. Cl.² C07D *499/44*

U.S. Cl. 260—239.1 **4 Claims**

1. A compound of the formula



wherein $R^3$is selected from the group consisting of phenylthio and nitrophenylthio; R^4 is selected from the group consisting of hydrogen, lower alkyl, benzyl, methoxybenzyl, benzhydryl, trimethylsilyl, and trichloroethyl; and R is selected from the group consisting of



2 wherein *n* is zero or one, X_1 is O or S, and $R^2$is selected from the group consisting of thienyl, phenyl, and mono and disubstituted phenyl and thienyl wherein said substituents are selected from the group consisting of chloro, bromo, nitro, lower alkyl, and lower alkoxy; and pharmaceutically acceptable salts thereof.

3,965,094

PROCESS FOR THE MANUFACTURE OF 2-ARYL-V-TRIAZOLE

Uwe Claussen, Leverkusen; Heinrich Gold, Schildgen, and Josef Schroeder, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

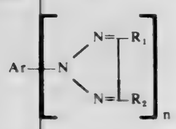
Filed Mar. 2, 1973, Ser. No. 337,559

Claims priority, application Germany, Mar. 3, 1972, 2210261

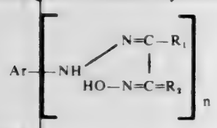
Int. Cl.² C07D *249/06, 405/04*

U.S. Cl. 260—240 C **7 Claims**

1. In the process of preparing a 2-aryl-1,2,3-triazole of the formula



by heating an α-oximino hydrazone of the formula



in which

Ar is an aromatic-carbocyclic or aromatic-heterocyclic radical;

R_1 is C_1–C_4-alkyl; C_1–C_4-alkyl substituted by halogen, OH, COOH or C_1–C_4-alkoxy; phenyl; or phenyl substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy; and

R_2 is hydrogen or R_1; and

n is the number 1 or 2;

the improvement comprising carrying out the reaction in the presence of at least 2 equivalents of

Q — NCO or Z — NH — COCl

in which

Q is hydrogen; C_1–C_6-alkyl; C_5–C_7-cycloalkyl; phenyl; phenyl substituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or nitro; phenylcarbonyl or phenylsulphonyl; and

Z is $C_1$14 C_6-alkyl, phenyl, tolyl, or chlorophenyl; or in the presence of at least 1 equivalent of pyrocarbonic acid methyl or ethyl ester.

3,965,095

OXINDOLE DERIVATIVES

Fritz Seemann, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed June 18, 1973, Ser. No. 370,764

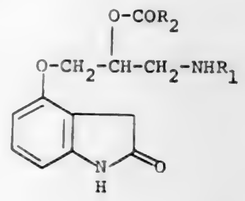
The portion of the term of this Patent subsequent to July 23, 1991, has been disclaimed.

Claims priority, application Switzerland, June 23, 1972, 9522/72

Int. Cl.² C07D *209/34*

U.S. Cl. 260—240 J **30 Claims**

1. A compound of the formula:



wherein R_1 is (i) alkyl of 1 to 4 carbon atoms, (ii) cycloalkyl of 3 to 8 carbon atoms, (iii) phenylalkyl of 8 to 12 carbon atoms in the aggregate thereof, the phenyl ring thereof being separated from the nitrogen atom by at least two carbon atoms, (iv) phenyl alkyl of 8 to 12 carbon atoms in the aggregate thereof, the phenyl ring thereof being separated from the nitrogen atom by at least two carbon atoms and being monosubstituted by alkoxy or alkyl of 1 to 4 carbon atoms, (v) alkenyl or alkinyl of 3 to 7 carbon atoms, or (vi) alkoxycarbonylalkyl, the alkyl moiety having 1 to 6 carbon atoms and the alkoxy moiety having 1 to 4 carbon atoms, and

R_2 is (i) phenyl, (ii) phenyl monosubstituted by halogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, (iii) phenylalkyl of 7 to 12 carbon atoms in the aggregate thereof or styryl, (iv) phenylalkyl of 7 to 12 carbon atoms in the aggregate thereof or styryl, monosubstituted in the phenyl ring thereof by halogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms, (v) pyridyl or thienyl (vi) alkoxycarbonylalkyl, the alkyl moiety having 1 to 6 carbon atoms and the alkoxy moiety having 1 to 4 carbon atoms, (vii) adamantyl, (viii) haloalkyl of 2 to 12 carbon atoms, the halogen thereof being located in other than the α position, or, when R_1 is alkenyl of 3 to 7 carbon atoms (ix) alkyl of 1 to 12 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, or cycloalkyl of 3 to 6 carbon atoms mono- or poly-substituted by alkyl of 1 to 4 carbon atoms, furyl or tetrahydropyranyl or

a pharmaceutically acceptable acid addition salt thereof.

3,965,096

ULTRAVIOLET AND THERMALLY STABLE POLYMER COMPOSITIONS

Ronald F. Reinisch, Palo Also; Hermilo R. Gloria, San Jose; Ronald E. Goldsberry, San Jose, and Michael J. Adamson, San Jose, all of Calif., assignors to The United States of America as represented by the Administrator of the United States National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 321,179, Jan. 5, 1973, Pat. No. 3,803,090. This application Nov. 8, 1973, Ser. No. 414,043

Int. Cl.² C07C *119/00*

U.S. Cl. 260—240 G **7 Claims**

1. As a new composition of matter:

2,2′,6,6′-tetrahydroxynaphthalazine (2,2′,6,6′-THNZ).

3,965,097

PRODUCTION OF KETAZINES

Kurt-Wilhelm Eichenhofer, Leverkusen, and Reinhard Schliebs, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

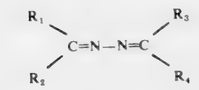
Filed Mar. 6, 1975, Ser. No. 556,036

Claims priority, application Germany, Mar. 27, 1974, 2414802

Int. Cl.² C07C *109/00*

U.S. Cl. 260—240 G **10 Claims**

1. A process for the production of a ketazine of the formula

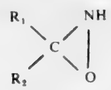


in which

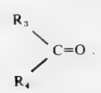
R_1, R_2, R_3 and R_4 each independently is an alkyl, cycloalkyl or aralkyl radical with up to 12 carbon atoms; or an aryl radical with up to 10 carbon atoms, at most two of the radicals R_1, R_2, R_3 and R_4 being aryl radicals, or

$R_1 + R_2$ and $R_3 + R_4$ individually is an alkylene radical with from 5 to 10 carbon atoms,

which comprises reacting a 3,3-diorganyl oxaziridine of the formula



with ammonia in the presence of a ketone of the formula



3,965,098

INTERMEDIATES FOR PREPARING CEPHALOSPORINS AND METHODS OF PRODUCTION

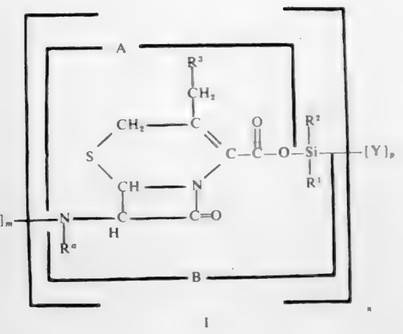
Charles A. Robinson, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,511

Int. Cl.² C07B *501/02*

U.S. Cl. 260—243 C **13 Claims**

1. A compound of the group consisting of those having the following formula:



I

wherein:

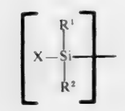
R^1 is of the group consisting of hydrogen, lower alkyl, phenyl, loweralkylphenyl and benzyl

R^2 is of the group consisting of lower alkyl, phenyl, loweralkylphenyl and benzyl

R^3 is hydrogen or



R^a is of the group consisting of hydrogen, 2-thienylacetyl, phenylglycyl, dihydrophenylglycyl, 2-furylacetyl, phenylglycolyl, phenylacetyl and phenoxyacetyl; W is of the group consisting of hydrogen and



II

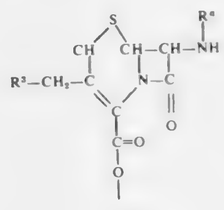
wherein

R^1 and R^2 have the same meaning as before, and X is halogen;

m and *p* are integers from 0 to 1 and are always equal

n is an integer from 1 to about 25;

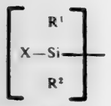
Y is of the group consisting of halogen, and groups of the following formula:



III

wherein R^a has the same meaning as before; with the provisos that, in Formula I,

1. when m is o and p is O, n is more than 1;
2. when n is more than 1, the moieties A of the additional groups B recur in ramdom head-toward-head, head-toward-tail and tail-toward-tail disposition;
3. when W is hydrogen, n is 1, and Y is Formula III, then R^a is hydrogen
4. when W is hydrogen or



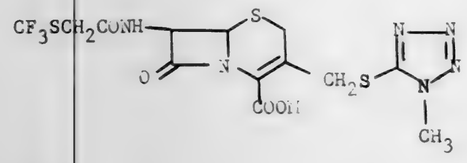
Y is not halogen when n is 1.

3,965,099
CEPHALOSPORIN ESTERS WITH ANTIBACTERIAL ACTIVITY

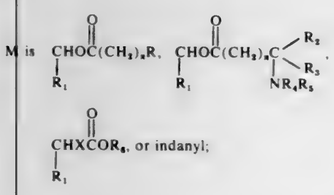
Robert M. DeMarinis, King of Prussia, and John R. E. Hoover, Glenside, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed June 26, 1974, Ser. No. 483,189
The portion of the term of this patent subsequent to Aug. 6, 1991, has been disclaimed.
Int. Cl.² C07D *501/50*; **A61K** *31/545*
U.S. Cl. 260—243 C **14 Claims**

1. A compound of the formula



wherein:

M is 

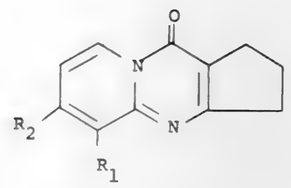
n is 0 to 4;
R is hydrogen, alkyl having 1 to 8 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenyl, C_1–C_4 phenalkyl, pyridyl, thienyl, or pyrrolyl;
R_1 is hydrogen, methyl or ethyl;
R_2 and R_3 are each hydrogen, alkyl having 1 to 6 carbon atoms, phenyl, pyridyl, or thienyl;
R_4 and R_5 are each hydrogen or alkyl of 1 to 4 carbon atoms;
R_6 is alkyl having 1 to 4 carbon atoms, phenyl, phenalkyl having 1 to 4 carbon atoms, pyridyl, thiadiazolyl, amino or C_1 –C_4 alkylamino;
X is NH or oxygen; and
each phenyl group is unsubstituted or substituted with one or two substituents selected from the group consisting of alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 4 carbon atoms, hydroxy, amino, NHR_1, $N(R_1)_2$, nitro, fluoro, chloro, bromo, or carboxy.

3,965,100
2,3-DIHYDROCYCLOPENTA[D]PYRIDO[1,2-a]PYRIMIDIN-10(1H)-ONE AND ITS DERIVATIVES

Harry L. Yale, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 26, 1975, Ser. No. 553,341
Int. Cl.² C07D *471/04*
U.S. Cl. 260—251 A **10 Claims**

1. A compound of the structure



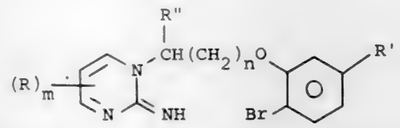
or a pharmaceutically acceptable salt thereof, wherein R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, lower alkyl having 1 to 6 carbons, phenyl, phenyl substituted with an alkyl containing 1 to 6 carbons, halo, alkoxy containing 1 to 6 carbons or trifluoromethyl, phenylalkyl the alkyl containing 1 to 6 carbons, halo, hydroxyl, carboxyl, lower alkoxy having 1 to 6 carbons, phenylalkoxy containing 1 to 6 carbons in the alkoxy, carboalkoxy, and carboxamido having the formula R'NHCO wherein R' is hydrogen or lower alkyl having 1 to 6 carbons, one of R_2 and R_1 being other than hydrogen.

3,965,101
1-(O-BROM-OPHENOXYALKYL)-1,2-DIHYDRO-2-IMINOPYRIMIDINES

Harry Louis Yale, New Brunswick, N.J., and Ramesh B. Petigara, Lansdale, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 382,803, July 26, 1973, Pat. No. 3,868,374. This application Mar. 7, 1975, Ser. No. 556,510
Int. Cl.² C07D *239/42*
U.S. Cl. 260—256.4 H **3 Claims**

1. A compound of the formula



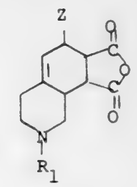
wherein *m* is 1 or 2; when *m* is 1, R occupies either position-4 or -5 of the starting 2-aminopyrimidine, but when R is halogen it occupies only position-5; when *m* is 2, the two R's occupy the 4- and 5-positions of the starting 2-aminopyrimidine, but only one of the two R-substituents can be halogen and it must occupy the 5-position;
R is the same or different and is hydrogen, F, Cl, Br, alkyl of from 1 to 4 carbons, benzyl, phenyl, or minosubstituted phenyl wherein the substituent is F, Cl, Br, I, alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons, or trifluoromethyl;
R' is hydrogen, F, Cl, Br, I, alkyl of from 1 to 4 carbons, alkylsulfonyl wherein the alkyl radical has from 1 to 4 carbons, dialkylamidosulfonyl wherein each alkyl radical has from 1 to 4 carbons, trifluoromethyl;
n is 0 or 1;
and R'' is hydrogen or alkyl of from 1 to 4 carbons.

3,965,102
1,2,3,4,6,7,8,8A-OCTAHYDRO-6-ARYL-ISOQUINOLINES AND DERIVATIVES THEREOF

Frederic Peter Hauck, Somerville, N.J., and Joseph E. Sundeen, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

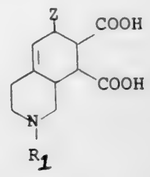
Continuation-in-part of Ser. No. 295,386, Oct. 5, 1972, abandoned. This application Oct. 4, 1974, Ser. No. 512,277
Int. Cl.² C07D *217/04*, *491/04*
U.S. Cl. 260—286 R **7 Claims**

1. A compound of the formula



wherein Z is phenyl or methoxyphenyl; R_1 is methyl or benzyl; and a pharmaceutically acceptable salt thereof.

3. A compound of the formula



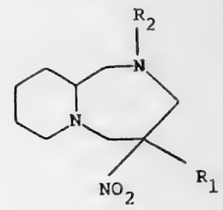
wherein Z is phenyl or methoxyphenyl; R_1 is methyl or benzyl; and a pharmaceutically acceptable acid addition salt thereof.

3,965,103
4-NITROPERHYDROPYRIDO[1,2-A][1,4]DIAZEPINES

Helmut Biere; Hermann Ulbrich; Hans-Joachim Kessler, and Ulrich Redmann, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed Sept. 20, 1974, Ser. No. 507,684
Claims priority, application Germany, Sept. 20, 1973, 2347886
Int. Cl.² C07D *471/02*
U.S. Cl. 260—293.55 **27 Claims**

1. A compound of the formula



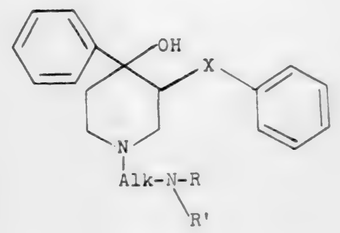
wherein R_1 is a hydrogen atom, alkyl of 1—12 carbon atoms, phenyl, hydrocarbon monocycle aralkyl of 7–10 carbon atoms, hydroxyalkyl of 1–4 carbon atoms, or $-(CH_2)_n-X$ wherein n is an integer from 0–4, inclusive and X is alkoxycarbonyl of 1–4 carbon atoms in the alkoxy group, nitrile, or carboxy, and R_2 is a hydrogen atom, alkyl of 1—4 carbon atoms or hydrocarbon monocyclic aralkyl of 7—10 carbon atoms, or a physiologically acceptable acid addition salt thereof.

3,965,104
1-(SUBSTITUTED-AMINOALKYL)-3-BENZOYL-4-HYDROXY-4-PHENYLPIPERIDINES AND RELATED COMPOUNDS

John W. Cusic, Skokie; Charles R. Ellefson, Chicago, and Chi Min Woo, Skokie, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed June 16, 1975, Ser. No. 587,401
Int. Cl.² C07D *211/52*
U.S. Cl. 260—293.64 **7 Claims**

1. A compound of the formula



(I)

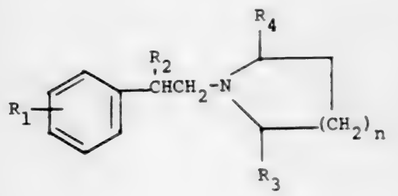
wherein X is hydroxymethylene or keto; Alk is alkylene of 2 to 6 carbon atoms, separating the nitrogen atoms attached thereto by at least 2 carbon atoms; and NRR' is selected from the group consisting of di(lower alkyl)amino, pyrrolidino, piperidino, and hexamethyleneimino.

3,965,105
PHENYL-LOWER-ALKYLAMINES

Bernard L. Zenitz, Colonie, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Jan. 20, 1975, Ser. No. 542,552
Int. Cl.² C07D *211/14*
U.S. Cl. 260—293.72 **8 Claims**

1. A compound having the formula:



where R_1 represents hydrogen, lower-alkyl or halogen R_2 represents lower-alkyl; R_3 represents lower-alkyl or cyclohexyl-lower-alkyl; R_4 represents hydrogen or lower-alkyl; and n represents one of the integers 1 and 2.

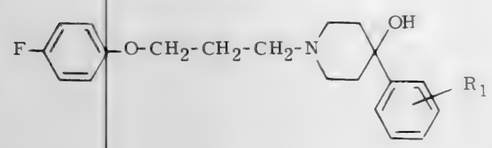
3,965,106

3-PHENOXYPROPYLAMINE DERIVATIVES

Isamu Maruyama, Minoo; Masaru Nakao, Osaka; Kikuo Sasajima, Toyonaka; Shigeho Inaba, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Dec. 12, 1973, Ser. No. 423,981
Int. Cl.² C07D *211/52*
U.S. Cl. 260—293.83 **6 Claims**

1. A 3-phenoxypropylamine derivative of the formula:



wherein R_1 is a halogen atom or a trifluoromethyl group.

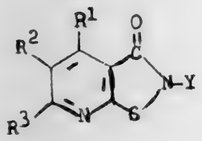
3,965,107

ISOTHIAZOLOPYRIDINONES

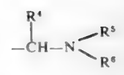
James L. Rainey, Abington, and Michael C. Seidel, Chalfont, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed July 8, 1974, Ser. No. 486,550
Int. Cl.² C07D *513/04*
U.S. Cl. 260—294.8 C **18 Claims**

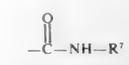
1. A compound of the formula:



wherein Y is hydrogen; $(C_1–C_{12})$ alkyl; unsubstituted aralkyl of up to 11 carbon atoms; aralkyl of up to 11 carbon atoms substituted with halogen, cyano, nitro, $(C_1–C_4)$ alkoxy or $(C_1–C_6)$ alkyl; $(C_1–C_4)$ alkylcarbonyl; $(C_6–C_{10})$ unsubstituted arylcarbonyl; $(C_6–C_{10})$ arylcarbonyl substituted with halogen, cyano, nitro, $(C_1–C_4)$ alkoxy or $(C_1–C_6)$ alkyl; unsubstituted aralkylcarbonyl of up to 11 carbon atoms; aralkylcarbonyl of up to 11 carbon atoms substituted with halogen, cyano, nitro, $(C_1–C_4)$ alkoxy or $(C_1–C_6)$ alkyl; $(C_2–C_3)$ hydroxyalkyl; a group of the formula:



wherein R^4 is hydrogen, $(C_1–C_3)$ alkyl or phenyl and
R^5 and R^6 are individually $(C_1–C_4)$ alkyl or taken together with the nitrogen atom to which they are attached, form a morpholino or piperidino group; or a carbamoyl group of the formula:



wherein R^7 is $(C_1–C_{18})$ alkyl; unsubstituted $(C_6–C_{10})$ aryl; $(C_6–C_{10})$ aryl substituted with halogen, cyano, nitro, $(C_1–C_4)$ alkoxy, or $(C_1–C_6)$ alkyl; unsubstituted aralkyl of up to 11 carbon atoms or aralkyl of up to 11 carbon atoms, substituted with halogen, cyano, nitro, $(C_1–C_4)$ alkoxy, or $(C_1–C_6)$ alkyl;
R^1 and R^3 are individually hydrogen, $(C_1–C_4)$ alkyl, phenyl, or benzyl; and
R^2 is hydrogen or $(C_1–C_4)$ alkyl; provided that at least one of R^1, R^2, and R^3 is other than hydrogen.

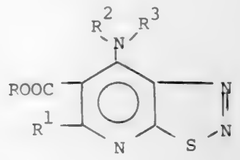
3,965,108

AMINO DERIVATIVES OF [1,2,3]THIADIAZOLO[5,4-b] PYRIDINE-6-CARBOXYLIC ACIDS AND ESTERS

Theodore Denzel, Regensburg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 12, 1975, Ser. No. 576,418
Int. Cl.² C07D *213/55*
U.S. Cl. 260—294.8 C **12 Claims**

1. A compound of the formula



wherein R and R^1 each is hydrogen or lower alkyl; and R^2 and R^3 each is hydrogen, lower alkyl or di (lower alkylamino)-lower alkyl;
and physiologically acceptable acid addition salts thereof.

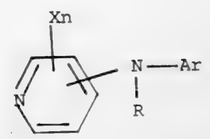
3,965,109

CERTAIN ARYL AMINO PYRIDINES

Clive Dudley Spencer Tomlin, Maidenhead; Charles Brian Barlow, Camberley, and Brian Graham White, Crowthorne, all of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 230,514, Feb. 29, 1972, Pat. No. 3,926,611. This application Sept. 16, 1975, Ser. No. 613,955
Claims priority, application United Kingdom, Mar. 19, 1971, 7291/71
Int. Cl.² C07D *213/57*
U.S. Cl. 260—294.9 **4 Claims**

1. An arylaminopyridine compound of the formula:



or salt thereof whereinn R represents hydrogen; Ar is phenyl or substituted phenyl bearing a substituent selected from the group consisting of chlorine, bromine, fluorine, nitro, cyano, alkyl of 1–4 carbon atoms and trifluoromethyl; X is selected from the group consisting of chlorine, bromine and fluorine; and n is 3 or 4; provided that when X is Cl, and n is 4, Ar is a substituted phenyl which bears 2 or 3 substituents.

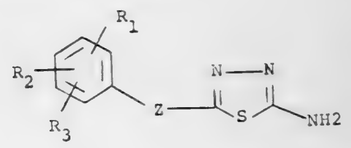
3,965,110

2-AMINO-5-(TRIFLUOROMETHYL PHENYLALKYL)-1,3,4-THIADIAZOLES

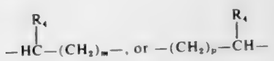
Marcel K. Eberle, Madison, and Robert E. Manning, Mountain Lakes, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 485,991, July 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 452,678, March 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 218,559, Jan. 17, 1972, abandoned, which is a continuation-in-part of Ser. No. 124,489, March 15, 1971, abandoned. This application Nov. 29, 1974, Ser. No. 528,477
Int. Cl.² C07D *285/12*
U.S. Cl. 260—306.8 D **8 Claims**

1. A compound of the formula



where R_1, R_2, and R_3 each independently represent hydrogen, fluoro or chloro, or trifluoromethyl, and
Z is $-(CH_2)_n-$,



where R_4 is lower alkyl, and
n is 1, 2, 3, or 4, and
m is 0, 1, 2, or 3, and
p is 1, 2, or 3,
provided that (a) at least one of R_1, R_2, and R_3 is trifluoromethyl, and (b) that when more than one of R_1, R_2, and R_3 is trifluoromethyl, they are bonded to other than adjacent carbon atoms and (c) where two of the substituents are trifluoromethyl, the remaining substituent is hydrogen,
or a pharmaceutically acceptable acid addition salt thereof.

3,965,111

TRIAZOLOTHIENODIAZEPINE COMPOUNDS

Michio Nakanishi, Oita; Kazuhiko Araki, Fukuoka; Tetsuya Tahara, Fukuoka, and Masami Shiroki, Fukuoka, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Oct. 30, 1972, Ser. No. 301,910
Claims priority, application Japan, Oct. 30, 1971, 46-86663
Int. Cl.² C07D *495/04*
U.S. Cl. 260—308 C **6 Claims**

1. 6-o-Chlorophenyl-8-ethyl-1,2-dihydro-4H-s-triazolo[3,4-c]thieno[2,3-e] [1,4] diazepin-1-one.

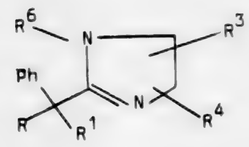
3,965,112

IMIDAZOLINE DERIVATIVES

Alan Chapman White, Windsor, and Robin Michael Black, Porton, both of England, assignors to John Wyeth & Brother Limited, Taplow, England

Continuation-in-part of Ser. No. 472,759, May 23, 1974, Pat. No. 3,926,994, and a continuation-in-part of Ser. No. 309,580, Nov. 24, 1972, abandoned. This application May 29, 1975, Ser. No. 582,043
Int. Cl.² C07D *49/34*
U.S. Cl. 260—309.6 **4 Claims**

1. A compound selected from the group consisting of bases having the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein R^3 and R^4 which may be same or different represent a member of the group consisting of hydrogen and lower alkyl, Ph represents a member of the group consisting of phenyl, halophenyl, lower alkyl phenyl, di(lower alkyl)phenyl) and lower alkoxyphenyl, R is a member of the group consisting of hydroxyl, lower alkoxy and chlorine, R^1 is a member of the group consisting of phenyl, halophenyl, lower alkyl phenyl, di(loweralkyl)phenyl, lower alkoxy phenyl and naphthyl and R^6 is a member of the group consisting of hydrogen and lower alkyl.

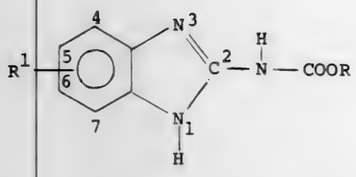
3,965,113

5(6)-BENZENE RING SUBSTITUTED BENZIMIDAZOLE-2-CARBAMATE DERIVATIVES HAVING ANTHELMINTIC ACTIVITY

Colin C. Beard, Palo Alto; John A. Edwards, Los Altos, and John H. Fried, Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 319,299, Dec. 29, 1972, abandoned. This application Nov. 21, 1973, Ser. No. 417,968
Int. Cl.² C07D *235/32*
U.S. Cl. 260—309.2 **7 Claims**

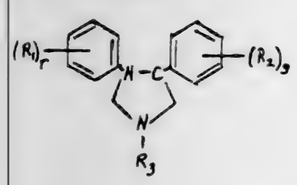
1. A compound selected from the group of compounds represented by the formula:



where R is lower alkyl group having 1 to 4 carbon atoms; R^1 is $-SR^5$ or $-OR^5$; and R^5 is naphthyl optionally substituted with a lower alkyl having 1 to 6 carbon atoms, alkoxy having 1 to 6 carbon atoms, halo, nitro, cyano, hydroxy, thiocyanato, isothiocyanato, trifluoromethyl, alkylthio having 1 to 6 carbon atoms, alkylsulfinyl having 1 to 6 atoms, alkylsulfonyl having 1 to 6 carbon atoms, alkanoyl or alkanoylamino where the alkanoyl portion has 1 to 6 carbon atoms, $-SO_2NR^3R^4$ or $-N(R^3)SO_2R^4$ radical; where R^3 and R^4 are independently hydrogen or lower alkyl having 1 to 6 carbon atoms; the R^1 substitution being at the 5(6)-position; and the non-toxic salts thereof.

3,965,114
IMIDAZOLIDINE DERIVATIVES
Willem Jacob van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.
Filed Sept. 4, 1974, Ser. No. 503,124
Claims priority, application Netherlands, Sept. 20, 1973, 7312944
Int. Cl.² C07D *49/34*
U.S. Cl. 260—309.7 **2 Claims**

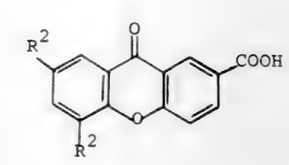
1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, in which R_1 and R_2 are selected from the group consisting of halogen, hydroxy, alkyl (1–6 C), alkoxy (1–6 C), and trifluoromethyl,
r and *s* stand for the number 0 – 1, and
R_3 is alkyl of 1 to 6 carbon atoms.

3,965,115
DISUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS
Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.
Division of Ser. No. 431,794, Jan. 8, 1974, Pat. No. 3,894,049, which is a continuation-in-part of Ser. No. 259,852, June 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 217,287, Jan. 12, 1972, Pat. No. 3,849,565. This application Mar. 13, 1975, Ser. No. 558,025
Int. Cl.² C07D *311/86*
U.S. Cl. 260—335 **8 Claims**

1. A compound selected from those represented by the following formula:



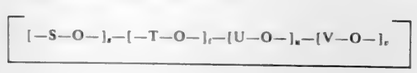
and the pharmaceutically acceptable, non-toxic alkyl or glycerol esters, amides, and salts thereof;
wherein one R^2 group is selected from alkyl containing from one to twelve carbon atoms and the other R^2 group is selected from the group



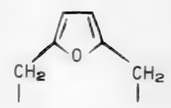
in which *n* is the integer 1 or 2, R is lower alkyl when *n* is 1 and R is lower alkyl, hydroxy, amino, monolower alkylamino, or dilower alkylamino when *n* is 2.

3,965,116
MULTIOXYMACROCYCLES
Donald J. Cram, Los Angeles, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed Sept. 12, 1974, Ser. No. 505,576
Int. Cl.² C07D *307/00*
U.S. Cl. 260—338 **9 Claims**

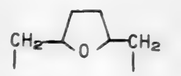
1. A compound of the formula



selected from the group consisting of a compound where —S— is

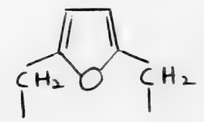


or

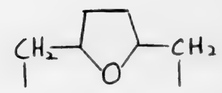


, and

s is 2 through 4, and
t, u and v are each zero, and a compound where —S— = U =



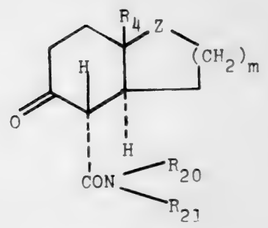
or



each of T and V is $-CH_2-CH_2-$,
s and u are 1,
t is 1 through 6,
v is 0 through 6.

3,965,117
STEREOSPECIFIC TOTAL STEROIDAL SYNTHESIS VIA SUBSTITUTED C/D-TRANS INDANONES
Zoltan George Hajos, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 765,023, Oct. 4, 1968, Pat. No. 3,897,460. This application June 24, 1974, Ser. No. 482,541
Int. Cl.² C07C *103/19*
U.S. Cl. 260—340.3 **1 Claim**

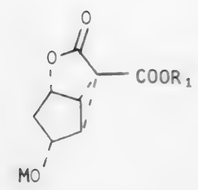
1. A compound of the formula



wherein R_4 is hydrogen methyl, ethyl, or propyl; Z is carbonyl, lower alkylenedioxy or $CH(OR_2)$; m is an integer having the value of 1 or 2; R_{20} and R_{21} are independently selected from the group consisting of lower alkyl, phenyl or phenyl substituted with one member of the group selected from lower alkyl, lower alkoxy, nitro, amine or halogen, and hydrogen, and R_2 is hydrogen, lower alkyl, lower alkoxy-lower alkyl, or phenyl-lower alkyl,
its optical enantiomer and the racemate thereof.

3,965,118
LACTONE INTERMEDIATES
Verlan H. Van Rheenen, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 273,785, July 21, 1972, Pat. No. 3,823,138. This application Apr. 19, 1974, Ser. No. 462,234
Int. Cl.² C07D *307/77*
U.S. Cl. 260—343.3 R **6 Claims**

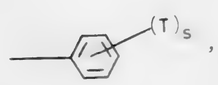
1. An optically active compound of the formula



wherein M is carboxyacyl of the formula



wherein R_2 is



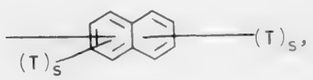
wherein T is alkyl of one to 4 carbon atoms, inclusive, phenylalkyl of 7 to 10 carbon atoms, inclusive, or nitro, and *s* is zero to 5, inclusive, provided that not more than two T's are other than alkyl, and that the total number of carbon atoms in the T's does not exceed 10 carbon atoms;

(2)



wherein R_3 is alkyl of one to 4 carbon atoms, inclusive,

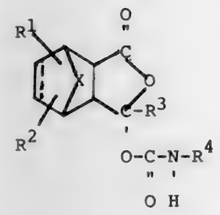
(3)



wherein T and s are as defined above, or (4) alkyl of 1 to 4 carbon atoms, inclusive; and wherein R_1 is hydrogen, alkyl of 1 to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, phenylalkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with 1, 2, or 3 chloro or alkyl of 1 to 4 carbon atoms, inclusive, or ethyl substituted in the β-position with 3 chloro.

3,965,119
CARBAMATES AND THEIR USE AS PHARMACEUTICALS
August Amann, Ludwigshafen; Gerhard Bolz, Frankenthal; Walter-Wielant Wiersdorff, Ludwigshafen; Hubert Giertz, Limburgerhof, and Klaus Wilsmann, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Sept. 13, 1974, Ser. No. 505,756
Claims priority, application Germany, Sept. 14, 1973, 2346305
Int. Cl.² C07D *307/77, 307/93*
U.S. Cl. 260—343.3 R **4 Claims**

1. A compound of the formula (I):



(I)

in which

The dotted line denotes a double bond which may be hydrogenated;

X is $-(CH_2)_n-$ in which n is one of the integers from 1 to 2,

R^1 is hydrogen or alkyl of one to four carbon atoms,

R^2 is hydrogen,

R^3 is hydrogen, and

R^4 is hydrogen or a linear or branched, saturated or unsaturated alkyl of one to four carbon atoms which may bear a substituent selected from the group consisting of chlorine, alkoxy of one to four carbon atoms, dialkylamino of one to four carbon atoms in the alkyl, cycloalkyleneimino of five to seven ring members and phenyl.

3,965,120

PROSTAGLANDIN E_1 INTERMEDIATE 3-CARBOXYMETHYL-4-METHYL-2-[1-CARBOXY-7-(LOWERALKOXY OR ARALKOXYCARBONYL)-HEPTYL]-4-HYDROXYBUTYRIC ACID, γ-LACTONE, AND PROCESSES OF THEIR PREPARATION

Chan-Hwa Kuo, South Plainfield; David Taub, Metuchen, and Norman L. Wendler, Summit, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 406,752, Oct. 15, 1973, Pat. No. 3,919,253, which is a division of Ser. No. 290,590, Sept. 20, 1972, Pat. No. 3,850,952. This application Feb. 11, 1975, Ser. No. 549,130

Int. Cl.² C07D *307/58*

U.S. Cl. 260—343.6 **5 Claims**

1. 3-Carboxymthyl-4-methyl-2-[1carboxy-7-(loweralkoxycarbonyl or hydrocarbon (C_6–C_{10}) aryl lower alkoxycarbonyl)heptyl]-4hydroxy-butyric acid, γ-lactone.

3,965,121

SALTS OF THE γ-LACTONE OF (-)-THREO-HYDROXYCITRIC ACID WITH R(+)-α-METHYL-p-NITROBENZYLAMINE

Clark William Perry, North Bergen, and Sidney Teitel, Clifton, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 404,951, Oct. 10, 1973, Pat. No. 3,901,915. This application May 15, 1975, Ser. No. 577,823

Int. Cl.² C07D *307/20*

U.S. Cl. 260—343.6 **2 Claims**

1. Salts of the γ-lactone of (−)-threo-hydroxycitric acid with R(+)-α-methyl-p-nitrobenzylamine.

3,965,122

CHROMONE COMPOUNDS AND PREPARATION THEREOF

Suminori Umio, Kawanish; Shizuo Maeno, Osaka; Ikuo Ueda, Yao; Yoshinari Sato, Takaishi, and Masaaki Matsuo, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

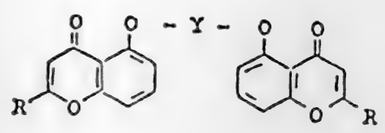
Filed Dec. 28, 1971, Ser. No. 213,180

Claims priority, application Japan, Dec. 30, 1970, 45-129469; Dec. 30, 1970, 45-129470

Int. Cl.² C07D *311/28*

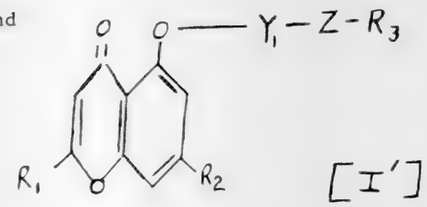
U.S. Cl. 260—345.2 **8 Claims**

1. A chromone compound selected from the group consisting of



[I]

and



[I']

wherein

R is aryl or substituted aryl,

Y is hydroxy (lower) alkylene,

R_1 is hydrogen, lower alkyl, aryl, or substituted aryl,

R_2 is hydrogen or lower alkoxy,

Y_1 is lower alkylene or hydroxy (lower) alkylene,

R_3 is hydrogen, lower alkyl, aryl, substituted aryl or ar (lower) alkyl,

Z is oxygen or sulfur

said aryl and said ar each constituting a monovalent, aromatic hydrocarbon having up to 10 carbon atoms, said substituted aryl being aryl substituted by 1 or more of lower alkoxy, halogen, carboxy, lower alkoxy carbonyl, ar (lower) alkoxy carbonyl, and aryloxy carbonyl.

3,965,123

MALEIC ANHYDRIDE RECOVERY

Frederick C. Franklin, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed June 10, 1974, Ser. No. 477,556

Int. Cl.² C07D *307/60*

U.S. Cl. 260—346.8 M **3 Claims**

1. A process for recovery of good color stability maleic anhydride which comprises:

a. removing maleic anhydride from a gaseous mixture containing maleic anhydride by absorption into an organic absorbent, which absorbent is effective for maleic anhydride absorption and frees maleic anhydride upon distillation,

b. distilling maleic anhydride overhead from the resulting absorbent in a first distillation column by applying heat to the absorbent at the bottom of the first distillation column,

c. condensing liquid maleic anhydride out of the resulting overhead by cooling the resulting overhead in a partial condenser thereby obtaining condensed liquid maleic anhydride which is received in a receiving vessel separate from the condenser.

d. passing at least a portion of the condensed liquid maleic anhydride from the receiving vessel to the upper part of a second distillation column,

e. distilling material more volatile than maleic anhydride out of the condensed liquid maleic anhydride in the second distillation column by applying heat to bottoms material in the second distillation column, thereby obtaining stripped maleic anhydride which is withdrawn from the lower part of the second distillation column, and vapors which are which are withdrawn from the top of the second distillation column, and

f. condensing liquid maleic anhydride out of said vapors by cooling said vapors in said partial condenser thereby obtaining condensed liquid maleic anhydride which is received in said receiving vessel, and

g. passing at least a portion of the condensed maleic anhydride from step (*f*) to the first distillation column.

3,965,124

6,9-OXIDO-9,10-SECOESTRANE DERIVATIVES AND METHOD OF SYNTHESIS

Ulrich Eder; Gregor Haffer; Jurgen Ruppert; Gerhard Sauer, and Rudolf Wiechert, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

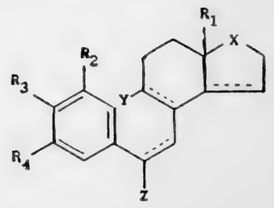
Division of Ser. No. 409,234, Oct. 24, 1973. This application June 18, 1975, Ser. No. 587,986

Claims priority, application Germany, Oct. 25, 1972, 2253088

Int. Cl.² C07D *307/79, 307/80*

U.S. Cl. 260—346.2 M **15 Claims**

1. A 9,10-secoestrane of the formula



wherein R_1 is lower alkyl; R_2, R_3 and R_4 each are a hydrogen atom, alkoxy of 1–4 carbon atoms or hydrocarbonyloxy of 1–12 carbon atoms; X is carbonyl, dialkoxymethylene wherein the alkoxy groups each contain 1–4 carbon atoms, alkylenedioxymethylene wherein the alkylene group contains 2–6 carbon atoms, phenylenedioxymethylene, hydroxymethylene, alkoxymethylene wherein the alkoxy group contains 1–10 carbon atoms, hydrocarbon aralkoxymethylene wherein the aralkoxy group contains 7–10 carbon atoms, or hydrocarbon carbonyloxymethylene wherein the hydrocarboncarbonyloxy group contains 1–10 carbon atoms; Y and Z collectively are —O—, and the linkages —— each represent a single or double bond.

3,965,125

SYNTHESIS OF CERTAIN BIS(PHTHALIC ANHYDRIDES)

Robert A. Meyers, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

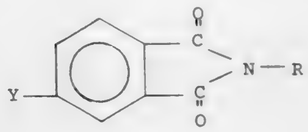
Filed Feb. 8, 1971, Ser. No. 113,747

Int. Cl.² C07D *307/89*

U.S. Cl. 260—346.3 **6 Claims**

1. A method of making monomeric high molecular weight anhydrides comprising:

A. i. reacting a substituted phthalimide characterized by the formula:



where Y is a functional group selected from the group consisting of —CL, —F, —Br, and —I, and R is selected from the group consisting of C_1 to C_5 alkyl groups, phenyl, with (ii) a polyfunctional compound characterized by the formula:

A — Z — A

wherein A is a functional group capable of reacting with Y and is selected from the group consisting of —OLi, —ONa, —OK, —SLi, —SNa, —SK, $-NHC_6H_5$, $-NHCH_3$, $-NHC_2H_5$, $-NHC_3H_7$, $-NHC_4H_9$, $-NHC_5H_{11}$, $-NHC_6H_{13}$, and $-NH_2$ and Z is selected from the group consisting of arylene, alkylene, haloarylene, oxyhisaryl, oxlybisaryl, alkylenebisaryl, nitro substituted anthraquinonylene, azabisoryl, alkyl substituted pyrimidylene, and pyrimidylene sulfonebisaryl to form a diimide terminated cyclic intermediate, and

B. hydrolyzing and subsequently dehydrating said diimide terminated intermediate to the corresponding dianhydride.

3,965,126

RECOVERING MALEIC ANHYDRIDE FROM THE EFFLUENT FROM THE PRODUCTION OF PHTHALIC ANHYDRIDE

Friedrich Wirth; Erich Renauer, both of Ludwigshafen; Hans Von Ammon, Gruenstadt; Curt Schneider, Kirchheim, and Hubert Suter, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Oct. 25, 1974, Ser. No. 517,887

Claims priority, application Germany, Nov. 9, 1973, 2356049

Int. Cl.² B01D *1/22, 1/26;* **C07C** *57/14*

U.S. Cl. 260—346.8 M **7 Claims**

1. In a process for recovering maleic anhydride formed in the production of phthalic anhydride by catalytic oxidation of o-xylene with air wherein the scrubbing of offgas with water produces an aqueous solution containing up to 40% by weight of maleic acid as well as other oxidation products, the improvement which comprises recovering maleic anhydride from said aqueous solution by:

a. evaporating water from the aqueous solution in at least one stage at a temperature of from 40°C to 150°C and a pressure of from 50 to 760 mm to give a concentrate containing less than 10% by weight of water, and condensing the aqueous vapors;

b. heating the concentrate in a film evaporator at a temperature of from 120° to 180°C and a pressure of from 100 to 600 mm;

c. collecting the condensate obtained by cooling the vapors from said film evaporator to a temperature of from 110° to 140°C, and condensing the aqueous vapors separately at a lower temperature;

d. distilling said condensate collected at 110° to 140°C through a distillation column to produce pure maleic anhydride;
e. returning the combined aqueous condensates to the off-gas scrubber; and
f. removing non-volatile impurities as a residue from the film evaporator.

3,965,127
UREA-PHOSPHORUS COMPOUNDS

Gail H. Birum, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 385,933, Aug. 6, 1973, abandoned. This application June 2, 1975, Ser. No. 582,962
Int. Cl.² G07D *307/54*; **G07C** *127/00*; **G07F** *9/36*; **C07F** *9/30*
U.S. Cl. 260—347.3 **8 Claims**

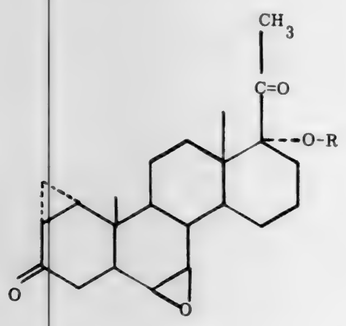
1. 1,4-dimethyl-3-(4-hydroxy-3-methoxyphenyl)-2-phenoxy-1,4,2-diazaphospholidin-5-one-2-oxide.

3,965,128
6β,7β-EPOXY-1α,2α-METHYLEN-D-HOMO-4-PREGNEN-3,20-DIONES

Andor Fürst, Basel; Marcel Müller, Frenkendorf; Leo Alig, Liestal; Peter Keller, Therwil, all of Switzerland; Ulrich Kerb, and Rudolf Wiechert, both of Berlin, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sept. 23, 1974, Ser. No. 508,492
Claims priority, application Germany, Sept. 26, 1973, 2349024
Int. Cl.² C07D *303/44*
U.S. Cl. 260—348 C **4 Claims**

1. A compound of the formula



wherein R is hydrogen or a $C_{1\text{-}18}$ organic carboxylic acid radical conventionally employed in steroid chemistry as an esterifying agent for hydroxy groups.

3,965,129
OPTICAL RESOLUTION OF ORGANIC CARBOXYLIC ACIDS

Clark William Perry, Saddle River, and Sidney Teitel, Clifton, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 404,951, Oct. 10, 1973, Pat. No. 3,901,915. This application May 15, 1975, Ser. No. 577,806
Int. Cl.² G07D *303/38*
U.S. Cl. 260—348 A **1 Claim**

1. (+)-threo-Epoxyaconitic acid bis-R(+)-α-methyl-p-nitrobenzylamine salt.

3,965,130
METHOD FOR PREPARING ERGOSTEROL AND UBIQUINONE-9 IN A SINGLE PROCESS

Nina Vasilievna Tarasova, Krasnaya Presnya, 45, kv. 12; Elena Abramovna Obolnikova, Astrakhansky pereulok, 19, korpus 2, kv. 37; Alexandr Dmitrievich Gololobov, Belomorskaya ulitsa, 20, kv. 101; Gleb Ivanovich Samokhvalov, ulitsa M. Ulyanovol, 3, korpus 3, kv. 53; Sergei Vladimirovich Chepigo, Lenigradsky prospekt, 74, korpus 2a, kv. 9; Galina Ivanovna Ivanova, Leninsky prospekt, 93, korpus 4, kv. 130; Vladimir Vasilievich Imshenetsky, Novokuznetsky pereulok,. 11/13, kv. 8, and Vera Mikhailovna Kulikova, Ulyanovskaya ulitsa, 52a, kv. 4, all of Moscow, U.S.S.R.

Filed Dec. 20, 1974, Ser. No. 534,667
Int. Cl.² C07C *45/24*, *49/73*; **C07J** *9/00*
U.S. Cl. 260—396 R **5 Claims**

1. Method of recovering both ergosterol and ubiquinone-9, in a single process from a biomass of a yeast which produces both ergosterol and ubioquinone-9, which comprises extracting the biolipid fraction from the biomass of said yeast containing ergosterol and ubiquinone-9 by means of a solvent for said biolipid fraction, separation said biolipid fraction from said solvent, hydrolyzing said biolipid fraction with a solution of alkali in lower aliphatic alcohol in the presence of an antioxidant which prevents oxidation of ergosterol and ubiquinone-9, extracting the unsaponifiable components from the thus hydrolyzed mixture by means of an organic solvent therefor, evaporating the thus obtained extract to crystallize out ergosterol, separating the precipitated ergosterol crystals from the mother liquor, removing the remaining solvent from the mother liquor, thus obtaining an oily product, and subjecting said oily product to adsorption on a chromatographic column, eluting and recovering the ubiquinone-9 from the eluate.

3,965,131
PROCESS FOR THE PURIFICATION OF CRUDE CHENODEOXYCHOLIC ACID

Dietrich Wiele, and Jürgen Riemann, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed Jan. 23, 1975, Ser. No. 543,626
Claims priority, application Germany, Jan. 25, 1974, 2404102
Int. Cl.² C07J *9/00*
U.S. Cl. 260—397.1 **8 Claims**

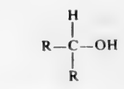
1. A process for the purification of crude chenodeoxycholic acid which comprises subjecting an aqueous solution of an alkali salt of crude chenodeoxycholic acid to exhaustive continuous liquid-liquid extraction with an immiscible organic solvent, separating the thuspurified aqueous solution and then acidifying the separated solution to precipitate the chenodeoxycholic acid therefrom.

3,965,132
ACID AND ESTER PRODUCTION

John R. Norell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 3, 1974, Ser. No. 475,977
Int. Cl.² C07C *51/14*, *67/38*
U.S. Cl. 260—410.9 R **10 Claims**

1. A process for the production of dimer acids and esters which comprises reacting
a. at least one olefin selected from linear olefins having from 4 to 12 carbon atoms and the cyclic olefin cyclohexene,
b. at least one polar compound selected from water and alcohols of the formula



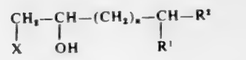
wherein R is hydrogen, alkyl, or hydroxyalkyl with the further proviso that the two R groups together can represent an alkylene grouping selected from tetramethylene and pentamethylene and the total number of carbon atoms does not exceed 12, and
c. carbon monoxide,
in the presence of
d. trifluoromethanesulfonic acid, under reaction conditions including a temperature in the range of about −50°C to about 100°C and carbon monoxide pressure in the range of about 25 to about 5,000 psig to produce dimer acids and esters.

3,965,133
POLYMER

Alf-Coran Dahlberg, Nykvarn; Karl Gustav Hogberg, Sodertalje; Sven Lindvall, Sodertalje, and Thore Oskar Verner Rydh, Sodertalje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

Division of Ser. No. 294,930, Oct. 4, 1972, Pat. No. 3,886,267. This application July 22, 1974, Ser. No. 490,850
Int. Cl.² C07F *15/02*
U.S. Cl. 260—439 R **22 Claims**

1. An iron-containing composition of matter which comprises a complex of ferric iron and a physiologically innocuous, water swellable polymer which is the reaction product (per mole of component iii below) of
i. about 0.1 to 1.0 moles of at least one hydroxy carboxylic acid selected from the group consisting of arabonic acid, gluconic acid and glucoheptonic acid and salts and lactones derivable therefrom;
ii. about 0.05 to 5 moles of at least one polymerizing agent of the formula



(I)

wherein *n* is an integer selected from the group consisting of 0, 1, 2, 3, and 4; X is selected from the group consisting of Cl, Br, and I; R^1 is selected from the group consisting of OH, Cl, Br, and I; and R^2 is selected from the group consisting of H, and if R^1 is OH also the radical $—CH_2—X$, wherein X has the meaning specified above, and diepoxides derivable therefrom; and
iii. at least one polyhydric alcohol selected from the group consisting of glycerol, polyglycerols, tetritols, pentitols, hexitols, heptitols, partial alkyl ethers of said polyhydric alcohols wherein the alkyl group contains 1 to 5 carbon atoms, and partial hydroxyalkyl ethers of said polyhydric alcohols wherein the alkyl group contains 1 to 5 carbon atoms,
the polymer components having been reacted in aqueous solution at a temperature between about 20°C and the boiling point of the reaction mixture, and thereafter dried.

3,965,134
PROCESS FOR MAKING SILARYLENESILANEDIOL

Ronald W. LaRochelle, Schenectady, and Tyrone D. Mitchell, Troy, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 10, 1975, Ser. No. 621,527
Int. Cl.² C07F *7/08*
U.S. Cl. 260—448.2 E **5 Claims**

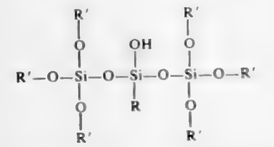
1. In a method for making silarylenesilanediol comprising the steps of
1. refluxing a mixture consisting essentially of a dialkoxy silarylene, water and water miscible organic solvent and
2. stripping the mixture of volatiles under reduced pressure to a temperature of about 100°C to produce a product consistng essentially of silanol-terminated silarylene-siloxane, the improvement which comprises, combining the mixture of (1) with at least 2 parts of water per part of water miscible organic solvent used in the mixture, to effect the separation of silarylenesilanediol from the resulting mixture, whereby step (2) involving the stripping of the mixture of (1) is eliminated.

3,965,135
ALKOXYSILANOL CLUSTER COMPOUNDS AND THEIR PREPARATION

Karl O. Knollmueller, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Sept. 24, 1975, Ser. No. 616,439
Int. Cl.² C07F *7/18*, *7/04*
U.S. Cl. 260—448.8 A **15 Claims**

1. A compound of the formula:



(I)

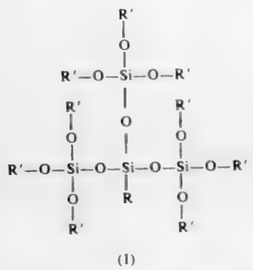
wherein R is hydrogen, an alkyl, alkenyl, aryl or aralkyl, and each R′ is independently selected from the same group as R with the proviso that at least a majority of R′ radicals are sterically hindered alkyl groups having at least 3 carbon atoms.

3,965,136
ALKOXYSILANE CLUSTER COMPOUNDS AND THEIR PREPARATION

Karl O. Knollmueller, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Sept. 24, 1975, Ser. No. 616,438
Int. Cl.² C07F *7/04*, *7/18*
U.S. Cl. 260—448.8 A **23 Claims**

1. A compound of the formula:



(I)

wherein R is hydrogen, an alkyl, alkenyl, aryl or aralkyl, and each R′ is independently selected from the same group as R with the proviso that at least a majority of R′ radicals are sterically hindered alkyl groups having at least 3 carbon atoms.

3,965,137
THIOCYANO XANTHATES

Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 466,106, May 2, 1974, abandoned. This application Mar. 31, 1975, Ser. No. 561,951
Int. Cl.² C07C *161/02, 155/06, 155/08*
U.S. Cl. 260—454 **19 Claims**

1. A compound having the formula



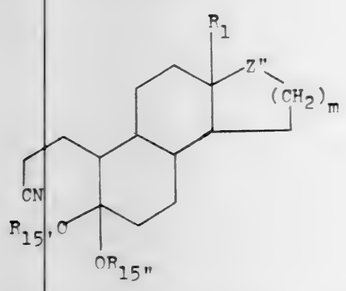
wherein X equals —O or —S; and R is selected from the group consisting of alkyl containing from 1 to 7 carbon atoms, alkoxyalkyl containing from 2 to 7 carbon atoms, napthyl, phenyl and substituted phenyl wherein the substituents can be selected from the group consisting of alkyl containing from 1 to 3 carbon atoms, alkoxy containing from 1 to 3 carbon atoms, halogen and nitro.

3,965,138
STEROID TOTAL SYNTHESIS PROCESS UTILIZING A CYANOALKYL A-RING PRECURSOR

Noal Cohen, Montclair; Michael Rosenberger, Caldwell, and Gabriel Saucy, Essex Fells, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 450,709, March 13, 1974, Pat. No. 3,925,420, which is a division of Ser. No. 67,296, Aug. 26, 1970, Pat. No. 3,813,417. This application July 28, 1975, Ser. No. 599,739
Int. Cl.² C07C *121/46*
U.S. Cl. 260—464 **4 Claims**

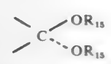
1. A compound of the formula



where R_1 is a primary alkyl group of from 1 to 5 carbon atoms; R_{15} and R_{15} are each independently the same lower alkyl having 1 to 8 carbon atoms; Z'' is a group of the formula



where R_7 is hydrogen, lower alkanoyl having 1 to 8 carbon atoms or lower alkyl having 1 to 8 carbon atoms and R_8 is hydrogen or lower alkyl having 1 to 8 carbon atoms or Z'' is a group of the formula



where R_{15} and R_{15} are the same lower alkyl as above; and *m* is 1 or 2.

3,965,139
2-CHLORO-N-(CYANOMETHYL)ACETANILIDES

James A. Scozzie, Wickliffe, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 316,409, Dec. 18, 1972, abandoned. This application May 1, 1974, Ser. No. 465,755
Int. Cl.² C07C *121/78*
U.S. Cl. 260—465 D **1 Claim**

1. 2-Chloro-N-cyanomethyl-2′,6′-dimethylacetanilide.

3,965,140
PROCESS FOR THE PREPARATION OF HYDROXYL-TERMINATED LIQUID POLYMERS

Yoshiaki Someya, Hiratsuka; Noriaki Tateno, Yokohama, and Kunio Kageyama, Yokohama, all of Japan, assignors to The Yokohama Rubber Co. Ltd., Tokyo, Japan

Filed May 16, 1974, Ser. No. 470,465
Claims priority, application Japan, July 28, 1973, 48-84592; July 28, 1973, 48-84593
Int. Cl.² C07C *121/00;* **C07C** *31/18, 29/02, 31/34*
U.S. Cl. 260—465.6 **16 Claims**

9. A process for the preparation of hydroxyl terminated liquid polymers, wherein said polymers have a number average molecular weight of from about 500 to about 10,000, and 2.0–2.7 terminal hydroxy groups per molecule located at the allyl position thereof and wherein said polymers are obtained by copolymerizing a conjugated diene monomer, wherein said diene monomer has 4–6 carbon atoms with conjugated double bonds, in a closed oxygen-free cell at a constant temperature ranging from about 80°C to about 200°C together with a vinyl monomer selected from the group consisting of parachlorostyrene, acrylonitrile and styrene, using an aqueous solution of hydrogen peroxide as a radical initiator in the presence of a metal halide selected from the group consisting of nickel, paladium, and platinum wherein said metal halide is present in the amount of a molar ratio to the monomer used of from 1.0×10^{-5} to 1.0, wherein said polymers are obtained from a single phase reaction system with isopropanol as the reaction medium, and wherein the aforesaid conjugated diene monomer and the aforesaid vinyl monomer constitute the sole organic reactive components.

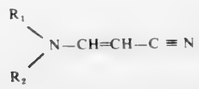
13. A process for the preparation of hydroxyl terminated liquid polymers, wherein said polymers have a number average molecular weight of from about 500 to about 10,000 and 2.0–2.7 terminal hydroxy groups per molecule located at the allyl positions thereof and wherein said polymers are obtained by copolymerizing a conjugated diene monomer, wherein said diene monomer has 4–6 carbon atoms with conjugated double bonds in a closed oxygen-free cell at a constant temperature ranging from about 80°C to about 200°C, together with a vinyl monomer selected from the group consisting of parachlorostyrene, acrylonitrile and styrene, using an aqueous solution of hydrogen peroxide as a radical initiator in the presence of a silver salt selected from the group consisting of silver nitrate, silver phosphate and silver halide wherein said silver compound is present in the amount of a molar ratio to the monomer used of from 1.0×10^{-5} to 1.0, wherein said polymers are obtained from a single phase reaction system with isopropanol as the reaction medium and wherein the aforesaid diene monomer and the aforesaid vinyl monomer constitute the sole reactive organic components.

3,965,141
PROCESS FOR PRODUCING DIALKYL AMINOACRYLONITRILE

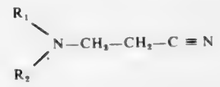
Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 480,660, June 19, 1974, Pat. No. 3,900,511, which is a division of Ser. No. 338,018, March 5, 1973, Pat. No. 3,853,946, which is a division of Ser. No. 197,968, Nov. 11, 1971, Pat. No. 3,742,015, which is a division of Ser. No. 42,528, June 1, 1970, Pat. No. 3,655,716, which is a division of Ser. No. 719,834, April 9, 1968, Pat. No. 3,542,848. This application May 2, 1975, Ser. No. 574,163
Int. Cl.² C07C *120/00*
U.S. Cl. 260—465.5 R **1 Claim**

1. A process for producing a dialkylaminoacrylonitrile having the formula:



wherein R_1 and R_2 are lower alkyl containing from 1 to 6 carbon atoms;
comprising treating a compound of formula:



wherein R_1 and R_2 are as above; with a hydrogen acceptor at a temperature of from 50°C. to 200°C. in the presence of a dehydrogenation catalyst.

3,965,142
PRODUCTION OF ALICYCLIC UNSATURATED COMPOUNDS HAVING PENDENT FUNCTIONAL GROUPS

Günther Wilke, and Paul Heimbach, both of Mulheim, Ruhr, Germany, assignors to Studiengesellschaft Kohle m.b.H., Mulheim, Ruhr, Germany

Continuation of Ser. No. 845,904, July 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 582,775, Sept. 27, 1966, abandoned. This application May 5, 1972, Ser. No. 250,533
Claims priority, application Germany, Sept. 29, 1965, 2443912
Int. Cl.² C07C *69/74*
U.S. Cl. 260—468 R **1 Claim**

1. A process for preparing cyclodecane carboxylic acid ethyl ester which comprises contacting butadiene and acrylic acid ethyl ester at a temperature of from about −10° to 200°C in the presence of a 0-valent nickel complex combined with tri-(ortho phenyl phenyl) phosphite as the sole electron donor, the mol ratio of butadiene to acrylic acid ethyl ester being at least 2:1, the reaction being carried out for a period of time sufficient to prepare 3,8-cyclodecadiene carboxylic acid ethyl ester, and thereafter hydrogenating said 3,8-cyclodecadiene carboxylic acid ethyl ester to cyclodecane carboxylic acid ethyl ester.

3,965,143
16-OXYGENATED PROSTANOIC ACID DERIVATIVES

Paul W. Collins, Deerfield, and Raphael Pappo, Skokie, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Mar. 26, 1974, Ser. No. 454,913
Int. Cl.² C07C *61/38, 69/74*
U.S. Cl. 260—468 D **3 Claims**

1. The compound which is racemic methyl 7-[3(R)-hydroxy-2β-(4(RS)-4-hydroxy-4-methyl-trans-1-octenyl)-5-oxocyclopentane]-1α-heptanoate.

2. The compound which is racemic methyl 7-[3(S)-hydroxy-2β-(4(RS)-4-hydroxy-4-methyl-1-octynyl)-5-oxocyclopentane]-1α-heptanoate.

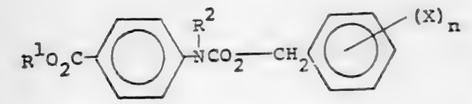
3. The compound which is racemic methyl 7-[3(R)-hydroxy-2β-(4(RS)-4-cyclohexylmethyl-4-hydroxy-4-methyl-trans-1-butenyl)-5-oxocyclopentane]-1α-heptanoate.

3,965,144
CARBANILATE COMPOUND FOR ERYTHEMAL PROTECTION

Martin E. Packard, Los Altos Hills; Edwin F. Ullman, Atherton, and Terry L. Burkoth, Palo Alto, all of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 388,004, Aug. 13, 1973, abandoned, which is a continuation of Ser. No. 71,783, Sept. 14, 1970, abandoned. This application Oct. 10, 1973, Ser. No. 405,237
Int. Cl.² C07C *125/06*
U.S. Cl. 260—471 C **8 Claims**

1. A compound of the formula



wherein R^1 is hydrogen or saturated aliphatic of from 1 to 6 carbon atoms and 0 to 3 heteroatoms, which are oxygen, as hydroxyl or ether oxygen;
R^2 is hydrogen or saturated aliphatic of from 1 to 6 carbon atoms;
n is an integer of from 2 to 3; and
X is alkoxy of from 1 to 3 carbon atoms.

3,965,145
COUPLED PEROXIDES

Antonio Joseph D'Angelo, Englishtown, N.J.; Orville Leonard Mageli, and Chester Stephen Sheppard, both of Kenmore, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 342,111, March 16, 1973, abandoned, which is a division of Ser. No. 737,359, June 17, 1968, Pat. No. 3,725,455. This application Jan. 16, 1974, Ser. No. 433,945
Int. Cl.² C07C *179/18, 179/20*
U.S. Cl. 260—471 C **5 Claims**

1. A compound of the formula R—C(=O)—R^4—C(=O)—R′ where:

a. R and R′ are identical and are selected from R_3—OO—$C(R_1)(R_2)$—R^3—O—, $(R_3$—OO—$)_2C(R_4)$—R^3O—, R_3—OO—C(=O)—R^3O—, R_3OO—C(=O)—OR^3O—, R_1OC(=O)—OO—$C(R_1)(R_2)$—R^3O— and R_1C(=O)—OO—$C(R_1)(R_2)$—R^3O—;
b. R_1 and R_2 are C_1 — C_{12} hydrocarbon aliphatic;
c. R_3 is C_4—C_{10} hydrocarbon aliphatic and the carbon atom joined to the peroxy oxygen atom is a tertiary carbon;
d. R_4 is C_1—C_{10} hydrocarbon aliphatic;
e. R_6 is H or lower alkyl;
f. Y is —N(R_6)—;
g. R^2 is C_1—C_{10} hydrocarbon aliphatic;
h. R^3 is C_1—C_{10} hydrocarbon aliphatic, C_3—C_{12} hydrocarbon cycloaliphatic or C_6—C_{12} hydrocarbon aromatic, with the proviso the R^3 is not aromatic when R^4 is R^3; and
i. R^4 is R^3, YR^3Y, $YR^3OC(=O)R^3C(=O)OR^3Y$, $YR^3OC(=O)R^3Y$ or YR^3OR^3Y.

3,965,146
BIPHENYLYLOXY BENZOIC ACID AND ESTERS THEREOF

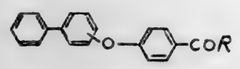
Klaus J. Dahl, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 366,326, June 4, 1973, Pat. No. 3,914,298, which is a division of Ser. No. 218,466, Feb. 16, 1971, abandoned, which is a continuation-in-part of Ser. No. 115,824, Feb. 16, 1971, abandoned. This application Apr. 11, 1975, Ser. No. 567,265

Int. Cl.² C07C 69/76

U.S. Cl. 260—473 R 6 Claims

1. A compound of structure



wherein, R is selected from the group consisting of hydroxyl, or C_1–C_3 alkoxy.

3,965,147
PHOSPHONOCARBOXYLIC ACID ESTERS

Udo-Winfried Hendricks, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany

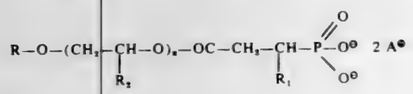
Filed May 6, 1974, Ser. No. 467,149

Claims priority, application Germany, May 5, 1973, 2322705

Int. Cl.² C07F 9/38

U.S. Cl. 260—478 6 Claims

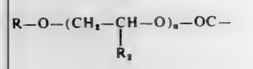
1. Phosphonocarboxylic acid esters of the formula



in which

R represents a C_8–C_{22}-alkyl radical, C_8–C_{22}-alkenyl radical or C_8–C_{18}-alkyl-phenyl radical,

R_1 represents hydrogen or the



group,

R_2 represents hydrogen or the methyl group, *n* represents a number from 1 to 10 and A represents hydrogen, an alkali metal ion or an ammonium ion.

3,965,148
PERFLUOROALKYL ALCOHOLS

Eduard K. Kleiner, New York, and Robert A. Falk, New City, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 493,362, July 31, 1974, abandoned, which is a continuation of Ser. No. 281,084, Aug. 16, 1972, abandoned. This application May 5, 1975, Ser. No. 574,496

Int. Cl.² C07C 149/20

U.S. Cl. 260—481 R 6 Claims

1. An alcohol of the formula

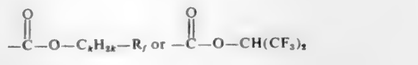


wherein

R^1, R^2 and R^3 are hydrogen, methyl, R_fA or R_fACH_2 and at least one of R^1, R^2 and R^3 is R_fA or R_fACH_2;

R_f is a perfluoroalkyl group of 1 to 10 carbon atoms;

R_fA is



k is 1 or 2;

m is 1 or 2;

n is 1 or 2;

and

B is saturated acyclic hydrocarbyl of 2 to 4 carbon atoms.

3,965,149
METHOD FOR RECOVERY OF METHYL METHACRYLATE FROM MIXED POLYMERIC MATERIALS

Lee R. Mahoney, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 413,279, Nov. 5, 1973. This application Nov. 4, 1974, Ser. No. 520,760

Int. Cl.² C07C 69/54

U.S. Cl. 260—486 R 4 Claims

1. A method for recovering methyl methacrylate monomer from a particulate mixture of polymeric materials containing poly (methyl methacrylate) which comprises in combination:

1. subjecting said particulate mixture of polymeric materials to continuous extraction with a boiling C_5 – C_8 alkane for a time in excess of 1 minute.
2. separating the alkane from a resultant insoluble residue of said particulate mixture of polymeric materials,
3. subjecting said insoluble residue to continuous extraction with boiling acetone for a time in the range of about 0.5 to about 20 hous,
4. separating the acetone and resultant acetone extract from a resultant insoluble residue of said particulate mixture of polymeric materials,
5. volatilizing acetone from the acetone extract leaving a poly (methyl methacrylate)-comprising solid,
6. pyrolysis of said poly (methyl methacrylate)-comprising solid at a temperature in the range of about 250° C. to about 500°C., and
7. recovering methyl methacrylate monomer from said pyrolysis.

3,965,150
POLYETHER ESTERS OF ALKENOIC ACIDS

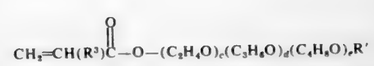
Richard E. Moeller, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 99,717, Dec. 18, 1970. This application Jan. 13, 1975, Ser. No. 540,522

Int. Cl.² C07C 69/52

U.S. Cl. 260—486 R 2 Claims

1. A compound having the structural formula



where R′ is a monovalent hydrocarbon radical of less than 8 carbon atoms, R^3 is a divalent radical selected from arylene and alkylene radicals of less than 20 carbon atoms, *c* is a whole number varying from 5 to 30 and *d* and *e* are whole numbers varying from 0 to 40.

3,965,151
INTERMEDIATES FOR TRICYCLIC BENZODIAZEPINES

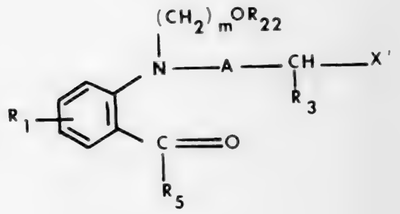
Michael Edward Derieg, Caldwell; James Valentine Earley, Cedar Grove; Rodney Ian Fryer, North Caldwell, and Leo Henryk Sternbach, Upper Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 45,928, June 12, 1970, abandoned, which is a continuation-in-part of Ser. No. 26,068, April 6, 1970, Pat. No. 3,905,956, which is a continuation-in-part of Ser. No. 863,377, Oct. 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 768,909, Oct. 18, 1968, abandoned. This application Mar. 11, 1975, Ser. No. 557,438

Int. Cl.² C07C 97/10, 103/42

U.S. Cl. 260—490 4 Claims

1. A compound of the formula



wherein R_1 is hydrogen, nitro, trifluoromethyl, halogen, lower alkyl, lower alkyl mercapto or lower alkoxy; R_3 is hydrogen or lower alkyl; R_5 is phenyl or phenyl substituted with a member selected from the group consisting of halogen, nitro, trifluoromethyl and lower alkyl; R_{22} is an acyl moiety derived from a lower alkanoic acid; m is an integer from 1-7; A is selected from the group consisting of $-CH_2-$ and



and X′ is chlorine, bromine or iodine.

3,965,152
PROCESS FOR PREPARING ALLYLIC ESTERS OF CARBOXYLIC ACIDS

William E. Smith, Schenectady, and R. John Gerhart, Averill Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 4, 1974, Ser. No. 439,275

The portion of the term of this patent subsequent to June 22, 1993, has been disclaimed.

Int. Cl.² C07C 67/00

U.S. Cl. 260—491 4 Claims

1. A vapor process for preparing allylic esters of carboxylic acids which comprises reacting a mixture of lower alkyl carboxylate ester, water, and the corresponding carboxylic acid and alcohol with an olefin having an allylic carbon-hydrogen bond and oxygen in the presence of a catalyst consisting of a Group VIII noble metal, or its salts, or its oxides, or mixtures thereof and optionally a support and optionally a promoter selected from the group consisting of alkali metal carboxylates, alkaline earth metal carboxylates, the transition metals, their salts, gold or copper at a temperature of from about 100°C to about 200°C.

3,965,153
PROCESS FOR PREPARING ALLYLIC ESTERS OF CARBOXYLIC ACIDS AND ALLYLIC ALCOHOLS

William E. Smith, Schenectady, and R. John Gerhart, Averill Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 4, 1974, Ser. No. 439,276

The portion of the term of this patent subsequent to Apr. 9, 1991, has been disclaimed.

Int. Cl.² C07C 67/00

U.S. Cl. 260—491 10 Claims

1. A vapor phase process for preparing allylic esters of carboxylic acids and allylic alcohols which comprises reacting an olefin having an allylic carbon-hydrogen bond, a lower alkyl carboxylate ester, water and oxygen in the presence of a catalyst system comprising an oxidation catalyst selected from the group consisting of a Group VIII noble metal, or its salts, or its oxides, or mixtures thereof and an acidic co-catalyst which is an acidic support material at a temperature of from about 100°C to about 200°C.

8. A vapor phase process for preparing an allylic alcohol which comprises reacting an olefin having an allylic carbon-hydrogen bond, a lower alkyl carboxylate ester, water and oxygen in the presence of a catalyst system comprising an oxidation catalyst selected from the group consisting of a Group VIII noble metal, or its salts, or its oxides, or mixtures thereof and an acidic co-catalyst which is an acidic support material at a temperature of from about 160°C to about 200°C.

3,965,154
PROCESS FOR PREPARING ALLYLIC ESTERS OF CARBOXYLATE ACIDS AND ALLYLIC ALCOHOLS

William E. Smith, Schenectady, and R. John Gerhart, Averill Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 4, 1974, Ser. No. 439,277

The portion of the term of this patent subsequent to June 22, 1993, has been disclaimed.

Int. Cl.² C07C 67/00

U.S. Cl. 260—491 8 Claims

1. A vapor phase process for preparing allylic esters of carboxylic acids and allylic alcohols which comprises reacting a mixture of a lower alkyl carboxylate ester, water and the corresponding carboxylic acid and alcohol with an olefin having an allylic carbonhydrogen bond and oxygen in the presence of a catalyst system comprising an oxidation catalyst selected from the group consisting of a Group VIII noble metal or its salts or its oxides or mixtures thereof, and an

acidic co-catalyst which is an acidic support material at a temperature of from about 100°C to about 200°C.

6. A vapor phase process for preparing an allylic alcohol which comprises reacting a mixture of a lower alkyl carboxylate ester, water and the corresponding carboxylic acid and alcohol with an olefin having an allylic carbon-hydrogen bond and oxygen in the presence of a catalyst system comprising an oxidation catalyst selected from the group consisting of a Group VIII noble metal, or its salts, or its oxides or mixtures thereof and an acidic co-catalyst which is an acidic support material at a temperature of from about 160°C to about 200°C.

3,965,155

PROCESS FOR PREPARING VINYL ESTERS OF CARBOXYLIC ACIDS

William E. Smith, Schenectady, and R. John Gerhart, Averill Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 4, 1974, Ser. No. 439,443

The portion of the term of this patent subsequent to June 22, 1993, has been disclaimed.

Int. Cl.² C07C *67/00*

U.S. Cl. 260—491 **6 Claims**

1. A vapor phase process for preparing vinyl esters of carboxylic acids which comprises reacting ethylene, a lower alkyl carboxylate ester, water and oxygen in the presence of a catalyst system comprising an oxidation catalyst selected from the group consisting of a Group VIII noble metal or its salts, or its oxides or mixtures thereof and an acidic co-catalyst which is an acidic support material at a temperature of from about 100°C to about 200°C.

3,965,156

PROCESS FOR PREPARING VINYL ESTERS OF CARBOXYLIC ACIDS

William E. Smith, Schenectady, and R. John Gerhart, Averill Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Feb. 4, 1974, Ser. No. 439,444

The portion of the term of this patent subsequent to June 22, 1993, has been disclaimed.

Int. Cl.² C07C *67/00*

U.S. Cl. 260—491 **4 Claims**

1. A vapor phase process for preparing vinyl esters of carboxylic acids which comprises reacting a mixture of a lower alkyl carboxylate ester, water, and the corresponding carboxylic acid and alcohol with ethylene and oxygen in the presence of a catalyst consisting of Group VIII noble metal, or its salts, or its oxides, or mixtures thereof and optionally an acidic support material and optionally a promoter selected from the group consisting of alkali metal carboxylates, alkaline earth carboxylates, the transition metals, their salts, gold or copper at a temperature of from about 100°C to about 200°C.

3,965,157

PREPARATION OF α-ACETOXY ALDEHYDES AND KETONES

Roger Garrick Harrison, Hampshire, England, assignor to Lilly Industries, Ltd., England

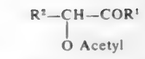
Filed Dec. 16, 1974, Ser. No. 533,358

Claims priority, application United Kingdom, Dec. 17, 1973, 58352/73

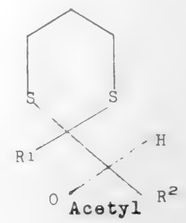
Int. Cl.² C07C *67/28*

U.S. Cl. 260—491 **8 Claims**

1. A process of preparing a compound of the formula



where R^1 and R^2 are independently hydrogen, C_{1-4}, alkyl, C_{3-10} cycloalkyl, acetoxyalkyl wherein the alkyl group has 1–4 carbon atoms, phenyl, or phenyl substituted with one or more groups selected from halogen, methyl, trifluoromethyl, methoxy and nitro; which comprises hydrolyzing a compound of the formula:



in the presence of mercuric ion.

3,965,158

PROCESS FOR PREPARING HALOPHENOL SULFONIC COMPOUNDS AND HALOPHENOLS FROM HALOBENZENE SULFONATES

Gerard Soula, Meyzieu; Jacques Metzger, and Louis Lena, both of Marseille, all of France, assignors to Rhone-Progil, Courbevoie, France

Filed Dec. 27, 1973, Ser. No. 428,828

Claims priority, application France, Dec. 29, 1972, 72.47213

Int. Cl.² C07C *143/42*

U.S. Cl. 260—512 R **11 Claims**

1. In a process for the preparation of a halophenol sulfonic acid compound or phenolic ether thereof or a lower alkyl substituted derivative of said halophenol sulfonic acid compound or phenolic ether derivative in which the phenolic hydroxy or ether group thereof is in the ortho position, comprising the reaction of a metal salt of a polyhalobenzene monosulfonic acid or lower alkyl substituted derivative thereof with a hydroxylating agent selected from the group consisting of alkali metal hydroxides and alkali metal lower alkoxides, the improvement comprising conducting said reaction in the presence of at least one ortho substitution orienting liquid organic compound having a dielectric constant not in excess of 25 determined at approximately 25°C. functioning as a reaction medium and selected from the group consisting of alkanols, cycloalkanols, oxoalcohols, benzylalcohols, amines, liquid poly ethers having a terminal hydroxy group thereon and mixtures thereof at a temperature between about 100°C. and 250°C., maintaining the molar ratio of said hydroxylating agent and said polyhalobenzene sulfonate salt between about 1/1 and 20/1, with the proviso that when said ortho substitution orienting liquid organic compound has a dielectric constant approximately equivalent to 25 at 25°C. the concentration of said hydroxylating agent is increased to compensate for the decreased selectivity of said ortho substitution orienting liquid organic compound, and recovering the halogenated phenolic compound.

3,965,159

CARBOXYDISULFOSUCCINATES

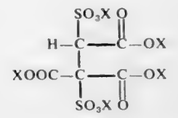
Ralph House, El Sobrante, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 2, 1975, Ser. No. 538,042

Int. Cl.² C07C *143/04, 143/12*

U.S. Cl. 260—513 R **3 Claims**

1. A compound useful as detergent builders having the formula:



in which X is H or an alkali metal, alkaline earth metal or ammonium cation.

3,965,160

REMOVAL OF IRON IMPURITIES FROM AROMATIC CARBOXYLIC ACIDS

Richard V. Norton, Wilmington, Del., assignor to Sun Ventures, Inc., Philadelphia, Pa.

Filed Apr. 3, 1974, Ser. No. 457,666

Int. Cl.² C07C *51/42*

U.S. Cl. 260—515 P **7 Claims**

1. A process for removing iron contamination of aromatic carboxylic acids of the benzene and naphthalene series obtained by aqueous hydrolysis of the corresponding nitriles which comprises oxidizing said aqueous nitrile hydrolysis products comprising ammonium salts of said aromatic carboxylic acids with air at a temperature between about 80° and about 250°C. to form insoluble iron compounds, separating said insoluble compounds and converting the acid ammonium salts to free acid.

3,965,161

PROCESS OF PRODUCING A 2-(4-ALKYLPHENYL)-PROPIONIC ACID

Katsura Kogure, and Kunio Nakagawa, both of Kawagoe, Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1974, Ser. No. 436,633

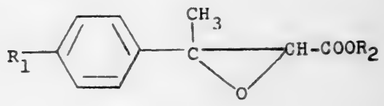
Claims priority, application Japan, Jan. 29, 1973, 48-11167

Int. Cl.² C07C *63/52, 51/24*

U.S. Cl. 260—523 R **10 Claims**

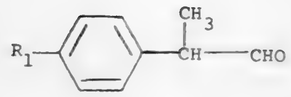
1. A single-stage process for converting a 3-methyl-3-(4-alkylphenyl)-glycidic acid alkyl ester into a 2-(4-alkylphenyl)-propionaldehyde and a 3-methyl-3-(4-alkylphenyl)-pyruvic acid, which comprises treating:

a. a 3-methyl-3-(4-alkylphenyl)-glycidic acid alkyl ester of the formula

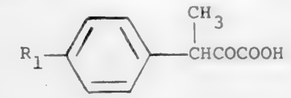


wherein R_1 is alkyl of 2–4 carbon atoms and R_2 is alkyl of 1–4 carbon atoms, with

b. an aqueous mineral acid at an elevated temperature for a period of time sufficient to form reaction products consisting essentially of a 2-(4-alkylphenyl)-propionaldehyde of the formula

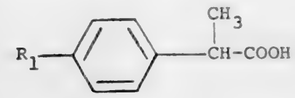


and a 3-methyl-3-(4-alkylphenyl)-pyruvic acid of the formula



wherein R_1 has the above-indicated values.

6. A process according to claim 1, further comprising oxidizing at least one of said reaction products to form a 2-(4-alkylphenyl)-propionic acid of the formula



wherein R_1 has the above-indicated values, or a pharmaceutically acceptable salt thereof.

3,965,162

PROCESS FOR PRODUCTION OF ACRYLIC ACID

Yoshihisa Watanabe; Makoto Imanari; Naohiro Nojiri; Nobuhiko Fuga, and Masato Nakajima, all of Ami, Japan, assignors to Mitsubishi Petrochemical Company Limited, Japan

Filed Oct. 23, 1973, Ser. No. 408,291

Claims priority, application Japan, Apr. 25, 1973, 48-46264

Int. Cl.² C07C *51/32*

U.S. Cl. 260—530 N **7 Claims**

1. A process for producing acrylic acid which comprises subjecting acrolein to catalytic vapor-phase oxidation with molecular oxygen over an oxidation catalyst consisting essentially of oxides of (1) molybdenum, (2) at least one member selected from the group consisting of copper, zinc, titanium, manganese, tungsten, iron, cobalt, nickel, cadmium, gallium, mercury, thorium and boron, (3) niobium, and (4) silicon at a temperature of from 200°C to 350°C and under a pressure of from 0.5 atmosphere to 10 atmospheres, gauge; in which the atomic ratio of the oxides of the metals of said catalyst is: element (1) 10, element (2) from 0.001 to 60, element (3) from 0.001 to 70, and element (4) from 2.5 to 500.

3,965,163

PROCESS FOR PREPARING UNSATURATED CARBOXYLIC ACIDS FROM THE CORRESPONDING UNSATURATED ALDEHYDES

Yoshio Oda; Keiichi Uchida, and Takeshi Morimoto, all of Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1974, Ser. No. 451,443

Claims priority, application Japan, Mar. 16, 1973, 48-29943; Mar. 16, 1973, 48-29944

Int. Cl.² C07C *51/26*

U.S. Cl. 260—530 N **8 Claims**

1. A process for preparing methacrylic acid, which comprises:

reacting methacrolein with molecular oxygen in the vapor phase at a temperature of from 250° to 450°C, in the presence of a catalyst consisting essentially of (a) molybdenum, (b) phosphorous, (c) antimony, (d) at least one element, but not more than any two elements selected from the group consisting of tungsten, barium, chromium,

lead, niobium, tantalum, tin, nickel, iron and zirconium, and (d) oxygen.

3,965,164

RECOVERY OF OXIDATION CATALYST METALS FROM ADIPIC ACID PRODUCTION

Jorge A. Blay, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Jan. 27, 1975, Ser. No. 544,159
Int. Cl.² C07C *51/24, 55/00*
U.S. Cl. 260—531 R **6 Claims**

1. In a process for the production of adipic acid wherein

a. cyclohexanol and/or cyclohexanone are oxidized in the liquid phase by nitric acid oxidation at temperatures within the range of 55 to 100°C. utilizing a copper-vanadium catalyst to obtain a liquid reaction product comprising adipic acid and also produce a byproduct off-gas containing nitrogen oxides; and wherein

b. said reaction product is subjected to crystallization to isolate therefrom an adipic acid product and a mother liquor comprising an aqueous nitric acid solution containing therein dibasic carboxylic acids and copper and vanadium values;

the improvement which comprises treating at least a portion of said mother liquor to recover copper and vanadium values therefrom by:

c. concentrating said mother liquor to remove nitric acid and water therefrom and obtain a substantially dry residue containing said dibasic acids and said copper and vanadium values, the amount of nitric acid and water so removed being sufficient that the nitric acid content of said substantially dry residue is below about 5% by weight thereof and the water content of said substantially dry residue is below about 2.2% by weight thereof;

d. intimately mixing said substantially dry residue, water, and off-gas from said nitric acid oxidation to form an ultimate solution, the temperature of any aqueous solution derived from said off-gas being below 80°C. at all times, the amount of water utilized in forming said ultimate solution being at least four times the weight of said substantially dry residue and being sufficient to reduce the dibasic carboxylic acid content of the said ultimate solution to below about 17% by weight, the amount of off-gas utilized being such that the nitrous acid in the said ultimate solution derived from the off-gas, without regard to any nitrous acid present from said substantially dry residue, is at least 1% by weight of the said ultimate solution, but less than the amount of off-gas which would cause the combined total of nitric and nitrous acids in the said ultimate solution, including any nitrous and nitric acid derived from said substantially dry residue, to be greater than 3% by weight of said ultimate solution; and

e. recovering copper and vanadium values from the said ultimate solution by passing it through a bed of cation exchange resin in the hydrogen form so as to accumulate copper and vanadium ions thereon.

3,965,165

PROCESS FOR PREPARING SODIUM TETROLATE

Takeshi Ichii, and Hiroshi Fujita, both of Hiro, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Continuation of Ser. No. 376,934, July 6, 1973, abandoned, which is a continuation of Ser. No. 145,045, May 19, 1971, abandoned, which is a continuation of Ser. No. 803,122, Feb. 27, 1969, abandoned. This application Dec. 2, 1974, Ser. No. 528,884
Claims priority, application Japan, Mar. 4, 1968, 43-15214
Int. Cl.² C07C *51/15*
U.S. Cl. 260—533 B **4 Claims**

1. In a process of preparing sodium tetrolate from methylacetylene, metallic sodium and carbon dioxide, the improvement which comprises introducing gaseous methylacetylene having a high content of butadiene into a mixture of tertiary amine, metallic sodium and a hydrocarbon solvent at a temperature ranging from 50° to 70°C, said tertiary amine being employed in an amount corresponding to about 1 to 2 moles per mole of said metallic sodium, and thereafter bubbling carbon dioxide into the reaction mixture at a temperature ranging from 0° to 20°C.

3,965,166

OXIDATION OF OLEFINS

Leon B. Levy, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

Filed Feb. 24, 1969, Ser. No. 801,766
The portion of the term of this patent subsequent to June 22, 1993, has been disclaimed.
Int. Cl.² C07C *51/32*
U.S. Cl. 260—533 N **9 Claims**

1. A process by which an alpha olefin having from 3 to 5 carbon atoms may be oxidized to the corresponding ethylenically unsaturated aldehyde or mixtures thereof with the corresponding ethylenically unsaturated carboxylic acid, said process comprising reacting in the gas phase said olefin with oxygen in the presence of a catalyst consisting essentially of the empirical formula:

$$Mo_xCr_yTe_zO_n$$

wherein x, y, z and n are numbers such that the atomic ratio of Mo:Cr:Te:O is 100:10–50:0.1–10:300–500; at a temperature sufficient to produce the desired product.

3,965,167

CRYSTALLINE AMMONIUM N-ACETYL-L-CYSTEINATE AND MUCOLYTIC PROCESS

Eugene Emanuel Hamlow, and Tellis Alexander Martin, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Feb. 3, 1972, Ser. No. 223,352
Int. Cl.² C07C *101/04*
U.S. Cl. 260—534 S **1 Claim**

1. Crystalline ammonium salt of N-acetyl-L-cysteine.

3,965,168

3-CARBAMOYL-3-HYDROXYGLUTARIC ACID AND SALTS

Karl E. Wiegand, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 347,822, April 4, 1973, Pat. No. 3,911,002, which is a division of Ser. No. 172,627, Aug. 18, 1971, Pat. No. 3,769,337. This application Jan. 20, 1975, Ser. No. 542,371
Int. Cl.² C07C *101/20*
U.S. Cl. 260—534 M **5 Claims**

1. 3-carbamoyl-3-hydroxyglutaric acid and the alkali metal, alkaline earth metal and ammonium salts thereof.

3,965,169

CRYSTALLINE TRISODIUM CARBOXYMETHYLOXYSUCCINATE MONOHYDRATE

N. Earl Stahlheber, Columbia, Ill., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 25, 1974, Ser. No. 445,693
Int. Cl.² C07C *59/22*
U.S. Cl. 260—535 P **1 Claim**

1. Crystalline trisodium carboxymethyloxysuccinate monohydrate.

3,965,170

PROCESS FOR THE PRODUCTION OF ETHER POLYCARBOXYLIC ACIDS

Horst-Jürgen Krause, Dusseldorf-Holthausen, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

Filed Sept. 25, 1975, Ser. No. 616,764
Claims priority, application Germany, Sept. 30, 1974, 2446687
Int. Cl.² C07C *59/22*
U.S. Cl. 260—535 P **9 Claims**

1. A process for the production of ether polycarboxylic acids consisting of reacting an alkali metal salt selected from the group consisting of sodium and potassium of an ether carboxylic acid having the formula

$$R^1 - O - CHR^2 - COOH$$

wherein R^1 is a member selected from the group consisting of alkyl having from 1 to 22 carbon atoms, hydroxy substituted alkyl having from 1 to 22 carbon atoms, carboxy substituted alkyl having from 1 to 22 carbon atoms, oxaalkyl having 3 to 22 carbon atoms, polyoxaalkyl having 5 to 32 carbon atoms and 2 to 6 hetero oxygens, and carboxy substituted oxaalkyl having 3 to 22 carbon atoms and R^2 is a member selected from the group consisting of hydrogen and alkyl having from 1 to 4 carbon atoms with an excess of carbon dioxide in the presence of (1) at least an equimolar amount of an alkali metal alkoxy-silano-carbonate having the formula

$$(R^3O)_{4-n}\,Si\,(O-\overset{O}{\overset{\|}{C}}-OMe)_n$$

wherein R^3 is an alkyl having from 1 to 4 carbon atoms, Me is an alkyl metal selected from the group consisting of sodium and potassium, and n is an integer from 1 to 3 and (2) from 0 to 30% by weight, based on the weight of the reaction mixture of a diluent selected from the group consisting of a finely-divided inert diluent, and an inert liquid diluent, at a temperature of between 200° and 350°C under a pressure of at least 2 atmospheres gauge, for a time sufficient to effect carboxylation, and recovering said ether polycarboxylic acids.

3,965,171

PROCESS FOR THE PRODUCTION OF ETHER POLYCARBOXYLIC ACIDS

Horst-Jurgen Krause, Dusseldorf-Holthausen, Germany, assignor to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

Filed Sept. 25, 1975, Ser. No. 616,763
Claims priority, application Germany, Sept. 30, 1974, 2446686
Int. Cl.² C07C *59/22*
U.S. Cl. 260—535 P **9 Claims**

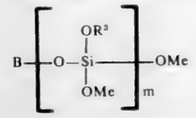
1. A process for the production of ether polycarboxylic acids consisting of reacting an alkali metal salt selected from the group consisting of sodium and potassium of an ether carboxylic acid having the formula

$$R^1 - O - CHR^2 - COOH$$

wherein R^1 is an member selected for the group consisting of alkyl having from 1 to 22 carbon atoms, hydroxy substituted alkyl having from 1 to 22 carbon atoms, carboxy substituted alkyl having from 1 to 22 carbon atoms, oxaalkyl having 3 to 22 carbon atoms, polyoxaalkyl having 5 to 32 carbon atoms and 2 to 6 hetero oxygens, and carboxy substituted oxaalkyl having 3 to 22 carbon atoms and R^2 is a member selected from the group consisting of hydrogen and alkyl having from 1 to 4 carbon atoms with an excess of carbon dioxide in the presence of (1) at least an equimolar amount of a silicon compound selected form the group consisting of (a) an alkali metal alkoxy-silanolate having the formula

$$(R^3O)_{4-n}\,Si\,(OMe)_n$$

wherein R^3 is an alkyl having from 1 to 4 carbon atoms, Me is an alkali metal selected from the group consisting of sodium and potassium, and n is an integer from 1 to 3 and (b) an alkali metal alkoxy siloxanolate having the formula



where Me and R^3 have the above assigned-values, B is selected from the group consisting of R^3 and Me and m is an integer from 2 to 50, and (2) from o to 30% by weight, based on the weight of the reaction mixture of a finely-divided inert diluent, and an inert liquid diluent, at a temperature of between 200° and 350°C under a pressure of at least 2 atmospheres gauge, for a time sufficient to effect carboxylation, and recovering said ether polycarboxylic acids.

3,965,172

PRODUCTION OF N,N-DICHLORO-TEREPHTHALAMIDE AND N,N-DICHLORO-ISOPHTHALAMIDE

Hans-Georg Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Mar. 13, 1974, Ser. No. 450,674
Claims priority, application Germany, Mar. 19, 1973, 2313548
Int. Cl.² C07C *119/18, 135/00*
U.S. Cl. 260—543 A **9 Claims**

1. A process for the production of N,N′-dichloro-terephthalamide or N,N′-dichloro-isophthalamide from the corresponding terephthalamide or isophthalamide as the initial phthalamide reactant, which process comprises:

reacting chlorine at a temperature of about 0°C. to 100°C. with said phthalamide reactant suspended in a liquid reaction mixture which, over the course of the reaction, consists essentially of a dilute aqueous solution of a mineral acid, the dilution being such that all of the hydrogen chloride formed by the chlorination reaction remains substantially completely dissolved in the reaction mixture.

3,965,173

PROCESS FOR PREPARING p-(5-CHLORO-2-METHOXY-BENZAMIDOETHYL)-BENZENE SULFONAMIDE

Francis L. Chubb, 4835 Pierre Lauzon, Pierre Fondes 910, and Lucien Eric, 1141 Lucerne Road, Town of Mount Royal, Montreal 305, both of Canada

Filed May 21, 1971, Ser. No. 145,923
Int. Cl.² C07C *143/80*
U.S. Cl. 260—556 AR **5 Claims**

1. A process for preparing p-(2-{5-chloro-2-methoxybenzamido}ethyl)-benzene sulfonamide which comprises the steps of methylating 5-chlorosalicylic acid to methyl-5-chloro-2-methoxybenzoate, treating methyl-5-chloro-2-methoxybenzoate with phenethylamine to obtain N-phenethyl-5-chloro-2-methoxybenzamide, subjecting said N-phenethyl-5-chloro-2-methoxybenzamide to chlorosulfonation and aminolysis to yield · p-(2-{5-chloro-2-methoxybenzamido}ethyl)-benzene sulfonamide.

3,965,174

PROCESS FOR PREPARING N,N-DISUBSTITUTED ACID HYDRAZIDES

Russell E. Malz, Jr., Naugatuck; Roger W. Amidon, Oxford, and Harold Greenfield, Watertown, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed July 16, 1975, Ser. No. 596,544
Int. Cl.² C07C *103/32*
U.S. Cl. 260—561 H 15 Claims

1. A process for preparing N′,N′-disubstituted acid hydrazides of the formula

$$R(CONR^1NR^2R^3)_n$$

comprising reacting an N′-monosubstituted acid hydrazide of the formula

$$R(CONR^1NHR^2)_n$$

with an aldehyde of the formula R^4CHO in the presence of hydrogen and a hydrogenation catalyst wherein *n* is an integer of 1 or 2;

R is hydrogen, a monovalent hydrocarbyl group, a divalent hydrocarbyl group, or a single bond;

R^1 is hydrogen or a hydrocarbyl group;

R^2 is a hydrocarbyl group;

R^3 is a primary linear or branched alkyl group having 1 to 18 carbon atoms or benzyl; and

R^4 is hydrogen, a linear or branched primary, secondary or tertiary alkyl group having 1 to 17 carbon atoms or phenyl.

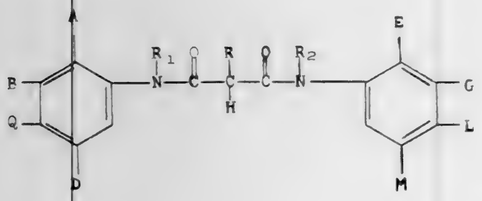
3,965,175

POULTRY COCCIDIOSIS TREATING COMPOSITIONS AND METHOD OF USING THE SAME

Elijah H. Gold, West Orange, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Feb. 12, 1975, Ser. No. 549,263
Int. Cl.² C07C *103/14*, *103/34*
U.S. Cl. 260—562 R 16 Claims

1. A compound of the formula:



wherein A, B, Q, D, E, G, L and M are each selected from the group consisting of hydrogen, NO_2, CF_3, Cl and Br with the proviso that 3 to 5 of these are hydrogen and that A and E cannot be NO_2;

R_1 and R_2 are each selected from the group consisting of H and C_1–C_4 alkyl; and

R is selected from the group consisting of C_1–C_6 alkyl and cyclopentenyl.

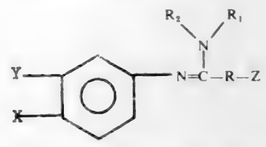
3,965,176

NOVEL SUBSTITUTED AMIDINES

Elijah H. Gold, West Orange, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 371,790, June 20, 1973, abandoned. This application Dec. 13, 1974, Ser. No. 532,437
Int. Cl.² C07C *123/00*
U.S. Cl. 260—564 RF 12 Claims

1. Compounds of the general formula

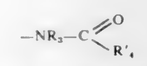


wherein R_1 represents hydrogen, lower alkyl, lower cycloalkyl, hydroxy, lower alkoxy, lower cycloalkoxy, unsubstituted phenyl or phenyl substituted by nitro, trifluoromethyl or halogen,

R_2 represents hydrogen, lower alkyl or lower cycloalkyl,

X is a member of the group consisting of nitro, trifluoromethyl, chloro, bromo and iodo,

Y is a member of the group consisting of hydrogen, halogen, nitro, amino, lower alkylamino, lower dialkylamino, lower alkyl, lower alkoxy, lower alkanoyl, polyfluorolower alkoxy, polyfluorolower alkyl, polyfluorolower alkylthio,



and $—NR_3SO_2R_4$ with R_3 being hydrogen or lower alkyl, R_4 being lower alkyl, and R'_4 is lower alkoxy and lower alkyl.

R is a divalent radical derived from an alkane or alkene having up to eight carbon atoms, either of which contains at least one secondary or tertiary carbon atom with the proviso that any double bond in said divalent radical derived from an alkene is not conjugated with the amidine double bond;

Z is a member of the group consisting of hydroxy, lower alkoxy,

and the pharmaceutically acceptable acid addition salts thereof.

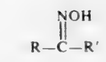
3,965,177

CATALYTIC PROCESS

Lawrence F. Kuntschik, and Robert S. Edwards, both of Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 250,020, May 3, 1972, abandoned, which is a continuation-in-part of Ser. Nos. 202,022, Nov. 24, 1971, Pat. No. 3,799,984, and Ser. No. 737,866, June 18, 1968, Pat. No. 3,683,024. This application Apr. 15, 1974, Ser. No. 461,058
Int. Cl.² C07C *131/00*
U.S. Cl. 260—566 A 17 Claims

1. A process for preparing O-polyalkoxylated high molecular weight alkanone or alkanal oximes which comprises contacting a paraffin oxime corresponding to the formula:



where R and R′ are hydrogen or alkyl groups having from 1 to 11 carbon atoms and where the sum of R and R′ is 9 to 12 carbon atoms with a basic nitrogen catalyst selected from the group consisting of triethylamine, pyridine, methylpiperidine, N,N-dimethylethylamine, N,N-diethylmethylamine, N,N-dimethylpropylamine, N,N-diethylpropylamine and N,N-ethylmethylpropylamine and from 2 to 40 moles of an oxirane per mole of said oxime in the substantial absence of water and where said O-polyalkoxylated oxime is subsequently contacted with a mild oxidizing agent.

3,965,178

METHOD FOR PREPARING TETRABUTYLAMMONIUM BROMIDE

Morris A. Johnson; James D. Reedy, and Kang Yang, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. Nos. 65,357, Aug. 19, 1973, abandoned, and Ser. No. 401,333, Sept. 27, 1973, abandoned. This application Feb. 12, 1975, Ser. No. 549,218
Int. Cl.² C07C *87/30*
U.S. Cl. 260—567.6 M 5 Claims

1. A process for preparing tetrabutylammonium bromide in yields of at least 75 percent based on the amount of tributylamine present, said process comprising mixing as a solution n-butylbromide, tributylamine, and acetonitrile in an inert atmosphere provided by a gas selected from argon, nitrogen, helium, and ethylene to form a reaction mixture wherein said n-butylbromide is present in an amount equal to from about 1.0 to about 1.2 moles per mole of said tributylamine and wherein said acetonitrile is present in an amount equal to from about 100 to about 500 milliliters per mole of said tributylamine, heating said reaction mixture at its reflux temperature for a period of time from about 12 to about 24 hours to form a solution containing tetrabutylammonium bromide; cooling said solution; mixing said solution with water to form a mixture; and recovering said tetrabutylammonium bromide from said mixture.

3,965,179

ALPHA-ETHYNYL BENZOHYDROLS

Edit Toth; Jozsef Törley; Sandor Gorog; Laszlo Szporny; Eva Palosi, and Szabolcz Szeberenyi, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Aug. 8, 1974, Ser. No. 495,846
Claims priority, application Hungary, Aug. 15, 1973, RI 520
Int. Cl.² C07C *33/04*
U.S. Cl. 260—570 R 2 Claims

1. 4-(β-Dimethylamino-ethoxy)-α-ethynyl-benzhydrol.

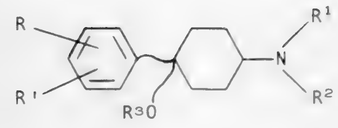
3,965,180

4′-FLUORO-4- [4-(PHENYL)-4-ALKOXY-CYCLO-HEXYL]AMINO BUTYROPHENONES AND THE SALTS THEREOF

Daniel Lednicer, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 194,530, Nov. 1, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,896
Int. Cl.² C07C *98/065*
U.S. Cl. 260—570.5 CA 13 Claims

1. A compound of the formula



wherein ~ is a generic expression denoting cis and trans stereoconfiguration and mixtures thereof, with the proviso that when the stereoconfiguration of the linkage connecting the cyclohexane ring and R^3O is cis to the amino group, the linkage connecting the cyclohexane and phenyl rings is always trans, and vice versa; R is selected from the group consisting of lower alkyl of 1 through 4 carbon atoms, chlorine, fluorine, bromine, trifluoromethyl, and lower alkoxy of 1 through 4 carbon atoms; R′ has the same meaning as R and in addition hydrogen; R^1 is selected from the group consisting of hydrogen and lower alkyl of 1 through 4 carbon atoms; R^2 is ring monosubstituted aroylalkyl wherein the substituents have the same meaning as R and R′, above, aryl is from 6 through 10 carbon atoms and alkyl of from 1 through 4 carbon atoms; and acid addition salts thereof.

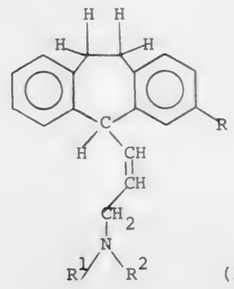
3,965,181

TRICYCLIC PHARMACOLOGICAL AGENTS, INTERMEDIATES AND METHODS OF MAKING

Michael Marx, Sunnyvale, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation of Ser. No. 377,107, July 6, 1973, abandoned. This application May 1, 1975, Ser. No. 573,495
Int. Cl.² C07C *87/29*
U.S. Cl. 260—570.8 TC 7 Claims

1. A compound selected from the group having the formula:



(III cis)

wherein R is hydrogen, chloro, cyano, or trifluoromethyl; one of R^1 or R^2 is methyl and the other is selected from the group consisting of hydrogen, methyl, and p-chlorophenacyl;

and pharmaceutically acceptable salts thereof.

3,965,182

PREPARATION OF ANILINE FROM PHENOL AND AMMONIA

Calvin J. Worrel, Detroit, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 2, 1969, Ser. No. 863,349
Int. Cl.² C07C *87/52*, *87/56*, *87/62*, *87/64*
U.S. Cl. 260—578 7 Claims

1. A process for making aromatic amines, said process comprising reacting a phenol with aluminum nitride and ammonia in a temperature range of from about 200°–600°C.

3,965,183

PREPARATION OF p-FLUORO-m-PHENYLENEDIAMINE

Walter A. Gay, Cheshire, and John H. Tobin, Beacon Falls, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed July 14, 1975, Ser. No. 595,613
Int. Cl.² C07C 85/11, 85/12
U.S. Cl. 260—578 4 Claims

1. A process for preparing p-fluoro-m-phenylene diamine comprising:

reacting m-nitroacetanilide with anhydrous hydrogen fluoride in the presence a deoxygenating agent selected from the group consisting of elemental phosphorus, elemental sulfur, phosphorus trihalides, sulfur halides in which sulfur has a valence lower than 6, aryl phosphorus halides, aryl sulfenyl halides and triarylphosphines at a temperature in the range of 0°–230°C at a pressure in the range of 15 to about 1,500 psia.

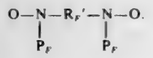
3,965,184

NOVEL MATERIALS CONTAINING NITROGEN

Ronald Eric Banks, Hazel Grove, and Robert Neville Haszeldine, Disley, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 30, 1973, Ser. No. 327,839
Claims priority, application United Kingdom, Jan. 31, 1972, 4382/72
Int. Cl.² C07C 135/02
U.S. Cl. 260—583 D 11 Claims

1. A composition of matter having the general formula



wherein R'_F is a divalent polyfluoroalkylene group having a chain length of from 1 to 4 carbon atoms and which may have one or more substituents selected from a group consisting of chloropolyfluoroalkyl, chlorofluoroalkyl and polyfluorocycloalkyl groups containing up to six carbon atoms;

and P_F is independently selected from a group consisting of polyfluoroalkyl, polyfluorocycloalkyl and chlorofluoroalkyl groups containing up to ten carbon atoms.

3,965,185

OXIDATION OF OLEFINS TO KETONES AND ALDEHYDES

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Brea, Calif.

Division of Ser. No. 268,487, July 3, 1972, Pat. No. 3,850,990, which is a continuation-in-part of Ser. No. 775,150, Nov. 12, 1968, abandoned. This application Apr. 11, 1974, Ser. No. 459,890
Int. Cl.² C07C 45/04, 27/12
U.S. Cl. 260—586 P 7 Claims

1. The method of oxidizing a hydrocarbon olefin having 2 to about 20 carbons to a carbonyl product thereof having the same number of carbon atoms as said olefin and selected from ketones and aldehydes which comprises contacting said olefin and molecular oxygen in a liquid reaction medium selected from the group consisting of aqueous media, C_1 to C_3 alkanoic acid media and combinations thereof. having dissolved therein a catalytic amount of a Group VIII noble metal containing catalyst and about 0.1 to about 5.0 moles of ammonium nitrate per mole of said olefin under reaction conditions including a pH of about 2 to about 6, a temperature of 25° to about 300°C. and a pressure of about 1 to about 1000 atmospheres sufficiet to convert said olefin to said carbonyl product in an amount greater than 100 moles of said carbonyl product per mole of said Group VIII metal and consume about 0.05 to about 0.9 moles of said ammonium nitrate per mole of said olefin converted.

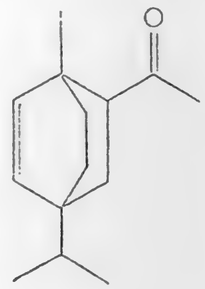
3,965,186

5- OR 6-ACETYL-SUBSTITUTED 1-METHYL-4-ISOPROPYL-1,4-ETHANO-CYCLOHEX-2-ENES

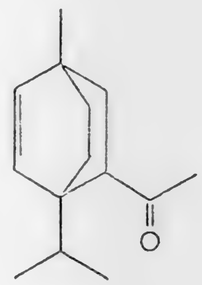
John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 462,750, April 22, 1974, Pat. No. 3,929,895. This application June 26, 1975, Ser. No. 590,470
Int. Cl.² C07C 49/61
U.S. Cl. 260—586 G 1 Claim

1. A mixture of chemical compounds having the structures:



and



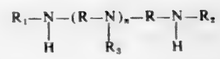
3,965,187

HYDROGENATION OF PHENOL

Edwin D. Little, Convent Station, and Zafarullah K. Cheema, Morris Township, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed July 2, 1970, Ser. No. 52,129
Int. Cl.² C07C 45/00
U.S. Cl. 260—586 R 5 Claims

1. In the process for hydrogenating phenol in the presence of hydrogenation catalyst in liquid or vapor phase at temperature of 24° to 400°C., using as starting material phenol having a purity of at least 99.8 percent obtained from fractional distillation of the cumene hydroperoxide decomposition product containing acetol as an impurity, the improvement which comprises: treating said phenol by contact with a polyamine of the formula:



wherein n is an integer from 0 to 4; R_1, R_2 and R_3 are independently selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, aralkyl and alkaryl and R independently at each occurrence is selected from the group of radicals consisting of alkylene, arylene, alkylenearylene, dialkylene, cycloaklyene, dialkylene cycloalkylene, nitrogen containing heterocyclic groups of 5 to 6 carbon atoms, and the lower alkyl substituted, hydroxy substituted and carboxyl substituted derivatives of said radicals

to reduce its acetol content to a level of less than 75 ppm prior to hydrogenation.

3,965,188

HOP EXTRACT PROCESS AND PRODUCT

Donald H. Westermann, Brookfield; Etzer Chicoye, and Darrell R. Hoffmann, both of Milwaukee, all of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Division of Ser. No. 216,424, Jan. 10, 1972, Pat. No. 3,798,332. This application Jan. 3, 1974, Ser. No. 430,563
The portion of the term of this patent subsequent to Mar. 19, 1991, has been disclaimed.
Int. Cl.² C07C 45/24
U.S. Cl. 260—586 D 7 Claims

1. The method of concentrating an aqueous solution of potassium isohumulate comprising (*a*) acidifying the solution to a pH below about 3.6 to provide an aqueous phase and an isohumulone phase; (*b*) heating the liquid mixture under reduced pressure to evaporate the liquid until the concentration is increased to at least 30% wt/wt isohumulone; and (*c*) treating the resulting liquid mixture with KOH sufficient to redissolve the isohumulone as potassium isohumulate.

3. The method according to claim 1 in which the aqueous solution of potassium isohumulate which is concentrated is obtained by the following steps: treating a hop extract in a water-immiscible hop solvent with aqueous KOH in a liquid-liquid extraction operation at a pH of 5.5–8.1 in the case of reduced isohumulone and 5.2–7 in the case of unreduced isohumulone; the aqueous KOH:hop solvent volume ratio being 0.1–3.0; and recovering an aqueous potassium isohumulate solution containing at least 10% of the original isohumulone as potassium isohumulate at least 80% pure.

3,965,189

1-ACETYL-11-METHYLENE-4,7,7-TRIMETHYL-CYCLOUNDECA-4,8-DIENE

Karl-Heinrich Schulte-Elte, Onex-Geneva; Michel Joyeux, Carouge-Geneva, and Gunther Ohloff, Bernex-Geneva, all of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Division of Ser. No. 499,120, Aug. 21, 1974. This application Oct. 20, 1975, Ser. No. 624,280
Claims priority, application Switzerland, Sept. 3, 1973, 12784/73
Int. Cl.² C07C 49/61
U.S. Cl. 260—586 M 1 Claim

1. 1-Acetyl-11-methylene-4,7,7-trimethyl-cycloundeca-4,8-diene.

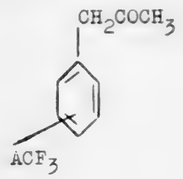
3,965,190

PHENYL PROPANONES

Don Pierre Rene Lucien Giudicelli, Fontenay-sous-Bois, and Henry Najer, Paris, both of France, assignors to Synthelabo, Paris, France

Filed May 30, 1973, Ser. No. 365,181
Claims priority, application France, May 31, 1972, 72.19515
Int. Cl.² C07C 49/80
U.S. Cl. 260—592 2 Claims

1. A 1-phenyl-2-propanone of the formula:



in which A is sulphur.

3,965,191

PROCESS FOR SYNTHESIZING METHYL GLYOXAL ACETALS

Shyam K. Gupta, Ledyard, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 422,089, Dec. 5, 1973, abandoned. This application Mar. 20, 1975, Ser. No. 560,304
Int. Cl.² C07C 45/00
U.S. Cl. 260—594 6 Claims

1. A process for synthesizing a compound having the formula

$$CH_3COCH(OR)_2$$

wherein R is alkyl having 1–4 carbon atoms, comprising the step of reacting at about 50°–150°C. dihydroxyacetone with at least an equivalent amount of an alkanol having 1–4 carbon atoms in the presence of a catalytic amount of a cation exchange resin produced from an acid having a pK value of less than one.

3,965,192

HYDROCARBONYLATION PROCESS

Frank B. Booth, Placentia, Calif., assignor to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 642,191, May 29, 1967, abandoned. This application Aug. 6, 1969, Ser. No. 848,114
Int. Cl.² C07C 45/10
U.S. Cl. 260—598 10 Claims

1. The hydrocarbonylation of a monocyclic, mono-olefin having from 4 to about 18 carbons and the structure:

$$R_1R_2C{=}CR_3R_4$$

wherein R_1, R_2, R_3 and R_4 are selected from hydrogen and alkyl and wherein one of said R_1 and R_2 and one of said R_3 and R_4 together form a single alkylene group having from 2 to about 8 carbons that comprises:

contacting in a reaction zone said mono-olefin, hydrogen and carbon monoxide in the presence of a liquid reaction medium containing a catalyst consisting of $RhH(CO)L_3$, wherein L is an organic ligand having the formula:

$$P(R')_3$$

wherein;

R′ is a member of the class consisting of alkyl from 1 to 8 carbons, aryl from 6 to 8 carbons; and

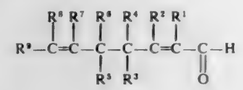
at least one of said R′ groups is aryl; and
maintaining reaction conditions comprising the temperature of the reaction zone from about 50° to 200°C. and sufficient pressure from 5 to 300 atmospheres to maintain the reaction medium in liquid phase, said conditions being sufficient to effect hydrocarbonylation of said olefin.

3,965,193
PRODUCTION OF HIGH MOLECULAR WEIGHT α,β-UNSATURATED ALDEHYDES

Norbert Goetz, Bobenheim-Roxheim, and Roman Fischer, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Nov. 1, 1972, Ser. No. 302,650
Claims priority, application Germany, Nov. 17, 1971, 2157035; Oct. 9, 1972, 2249372; Oct. 9, 1972, 2249398
Int. Cl.² C07C 47/38, 47/20, 47/52
U.S. Cl. 260—598 12 Claims

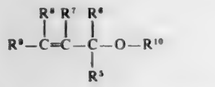
1. A process for the production of high molecular weight α,β-unsaturated aldehydes of the general formula (I):



(I)

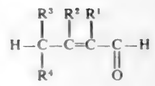
where
- R^1 is hydrogen, alkyl of one to four carbon atoms, phenyl or phenyl bearing alkyl of one to four carbon atoms as a substituent;
- R^2 is hydrogen, alkyl of one to four carbon atoms, phenyl or phenyl bearing alkyl of one to four carbon atoms as a substituent;
- R^3 is hydrogen or alkyl of one to four carbon atoms;
- R^5 is hydrogen or alkyl of one to four carbon atoms;
- R^6 is hydrogen or alkyl of one to four carbon atoms;
- R^7 is hydrogen or alkyl of one to four carbon atoms;
- R^4 is hydrogen or a saturated or unsaturated, branched or linear aliphatic or cycloaliphatic hydrocarbon radical of one to twelve carbon atoms;
- R^8 is alkyl of one to four carbon atoms or (when R^9 is phenyl) hydrogen; and
- R^9 is a saturated or unsaturated branched or linear aliphatic or cycloaliphatic hydrocarbon radical of one to twelve carbon atoms, or phenyl

wherein an allyl compound of the formula (II):



(II)

in which R^5 to R^9 have the meanings given above and R^{10} is hydrogen or acyl of a carboxylic acid of one to five carbon atoms is reacted in the liquid phase with an α,β-unsaturated aldehyde of the formula (III):



(III)

in which R^1 to R^4 have the meanings given above, at elevated temperature of about 60°–300°C and in the presence of an acid catalyst wit a pK value of −9 to 6 in such an amount of such acid catalyst that the reaction mixture has a pH of 1 to 7.

3,965,194
PRODUCTION OF FORMALDEHYDE IN CARBON STEEL REACTORS

Morgan C. Sze, Upper Montclair, and Harold Unger, Fort Lee, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Oct. 19, 1973, Ser. No. 408,106
Int. Cl.² C07C 45/16
U.S. Cl. 260—603 HF 11 Claims

1. In a process for producing formaldehyde by the oxidation of methanol in a carbon steel reactor, the improvement comprising:

treating the surface of the carbon steel reactor prior to said oxidation of methanol to formaldehyde with a passivating amount of a member selected from the group consisting of (a) a mixture of oxygen and sulfur dioxide and (b) hydrogen sulfide, said treatment with hydrogen sulfide being effected in the absence of oxygen on an oxidized carbon steel surface, said treatment being effected at a temperature and for a time to passivate the carbon steel surface with respect to the production of formic acid.

3,965,195
PROCESS FOR THE PRODUCTION OF FORMALDEHYDE

Karl Buschmann, Neustadt; Hans Diem, Mannheim; Guenther Matthias, and Friedrich Wodtcke, both of Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

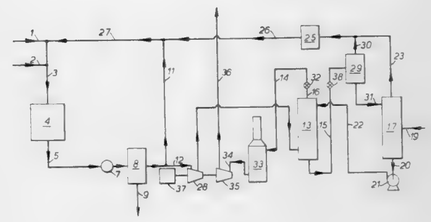
Continuation of Ser. No. 321,549, Jan. 5, 1973, Pat. No. 3,870,740. This application Apr. 23, 1975, Ser. No. 570,801
Claims priority, application Germany, Jan. 13, 1972, 2201434
Int. Cl.² C07C 45/16
U.S. Cl. 260—603 HF 10 Claims

1. In a process for the production of formaldehyde by vaporization of a mixture of methanol and water and then subjecting the methanol in the vapor phase to an oxidizing dehydrogenation in the presence of a catalyst at elevated temperature of from about 550° to 750°C and at a pressure of from 0.5 to 2 atmospheres where a silver catalyst is employed and at a temperature of from about 280° to 420°C where an oxide catalyst is employed, the improvement which comprises carrying out said vaporization in the presence of a solvent mixture of at least one alkanol of from 8 to 24 carbon atoms and at least one dialkylether of from 8 to 24 carbon atoms in each alkyl group, the amount of said solvent mixture being from 0.0001 to 0.8% by weight with reference to said methanol, the amount of said alkanol in this mixture being from 50 to 900% by weight based on the weight of said dialkylether.

3,965,196
HYDROCARBON RECOVERY PROCESS

William Laurence Wood, Farnham, England, assignor to Davy Powergas Limited, England

Continuation-in-part of Ser. No. 235,305, March 16, 1972, Pat. No. 3,914,277. This application Mar. 7, 1975, Ser. No. 556,272
Int. Cl.² C07C 45/04
U.S. Cl. 260—604 R 16 Claims



1. In a process for the preparation of methacrolein by oxidation of isobutane in which the effluent from the oxidation contains unreacted isobutane, carbon oxides, nitrogen, and methacrolein, in which methacrolein is removed from the oxidation effluent, and in which unreacted isobutane is separated from carbon oxides and nitrogen in the oxidation effluent and recycled to the oxidation reaction, the improvement which comprises contacting said oxidation effluent from which methacrolein has been removed with a liquid absorbent to absorb said unreacted isobutane and none or only a minor portion of said carbon oxides and nitrogen, contacting resulting liquid absorbent containing isobutane with nitrogen or a mixture of oxygen and nitrogen as a stripping gas to strip isobutane from said liquid absorbent and obtain a gaseous effluent containing isobutane and stripping gas, and passing said gaseous effluent to said oxidation reaction.

3,965,197
PROCESS FOR THE COMPLETE BROMINATION OF NON-FUSED RING AROMATIC COMPOUNDS

Heinrich Stepniczka, Alma, Mich., assignor to Michigan Chemical Corporation, Chicago, Ill.

Division of Ser. No. 80,122, Oct. 12, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 222,412
Int. Cl.² C07C 39/36, 43/00, 149/32
U.S. Cl. 260—623 H 14 Claims

1. A process for the complete bromination of aromatic compounds on the ring portion thereof, said aromatic compounds having one or more benzene rings and are selected from the group consisting of benzene, toluene, phenol xylene, biphenyl, biphenylether and biphenyl sulfide, comprising the steps of:

a. reacting the aromatic compound with a large excess of liquid bromine in the presence of a bromination catalyst selected from the group consisting of iron, aluminum, iodine, iron halide, and aluminum halide, at from about 10°C. to ambient temperatures to form a reaction mixture with the evolution of gaseous hydrogen bromide, said bromine excess being at least 100 percent of the stoichiometric amount of bromine required for the complete bromination;
b. thereafter refluxing said reaction mixture;
c. maintaining said reflux condition for a time sufficient whereby hydrogen bromide ceases to form; and
d. separating the completely brominated aromatic reaction product from the reaction mixture.

3,965,198
4-METHYLENE-5-HEXEN-1-OL

Erhard Bertele, Dubendorf, and Peter Schudel, Grut near Wetzikon, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 436,656, Jan. 25, 1974, which is a division of Ser. No. 742,178, July 3, 1968, Pat. No. 3,872,172. This application July 17, 1975, Ser. No. 596,875
Int. Cl.² C07C 29/02
U.S. Cl. 260—632 R 1 Claim

1. 4-methylene-5-hexen-1-ol.

3,965,199
HYDROGENATION AND HYDROGENOLYSIS OF CARBOHYDRATES WITH TUNGSTEN OXIDE PROMOTED SUPPORTED NICKEL CATALYST

Leon W. Wright, Wilmington, Del., assignor to ICI United States Inc., Wilmington, Del.

Continuation of Ser. No. 247,689, April 26, 1972, abandoned, which is a division of Ser. No. 9,059, Feb. 5, 1970, Pat. No. 3,691,100. This application May 10, 1974, Ser. No. 468,763
Int. Cl.² C07C 29/00
U.S. Cl. 260—635 C 8 Claims

1. A process for the preparation of glycerin from polysaccharide which consists essentially of contacting an aqueous solution of polysaccharide containing from 20% to about 80% by weight of dissolved polysaccharide with hydrogen at a pressure between about 70 atmospheres and about 150 atmospheres, at a temperature from about 180°C to about 250°C and in the presence of a supported nickel catalyst consisting essentially of finely divided metallic nickel and finely divided tungsten oxide supported on an inert carrier wherein the nickel content is from 5% to 45% by weight based on the total weight of nickel, tungsten oxide, and inert carrier and the amount of tungsten in the form of tungsten oxide is from 0.5% to 16% by weight based on the total weight of metallic nickel, tungsten oxide, and inert carrier.

3,965,200
AROMATIC COMPOUND NITRATION CATALYZED BY AROMATIC SULFONIC ACID SUPPORTED ON SOLID CARRIER

Osamu Manabe, and Takashi Kameo, both of Osaka, Japan, assignors to Osaka City, Osaka, Japan

Filed July 13, 1972, Ser. No. 271,407
Claims priority, application Japan, July 13, 1971, 46-52241
Int. Cl.² C07C 79/10
U.S. Cl. 260—645 7 Claims

1. A process for the selective para mononitration of an aromatic compound containing an ortho-para directing substituent wherein said aromatic compound is chlorobenzene, bromobenzene, iodobenzene, toluene, xylene, cumene or biphenyl, said aromatic compound being subjected to nitration in the presence of an aromatic sulfonic acid supported on a solid carrier in a weight ratio of 1 : 1 to 1 : 20.

3,965,201
FLUORINATION OF HEXACHLOROBUTADIENE

Alfred O. Minklei, Grand Island, N.Y., assignor to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Filed Oct. 11, 1973, Ser. No. 405,723
Int. Cl.² C07C 17/04, 17/20, 21/04
U.S. Cl. 260—653.4 2 Claims

1. A process which comprises the steps or reacting in the vapor phase a mixture comprised of hexachlorobutadiene, hydrogen fluoride and chlorine at a temperature between about 300°C and about 550°C in the presence of a particulate fluorinated alumina catalyst and recovering 2,3-dichlorohexafluorobutene-2 as product, said catalyst being prepared by the steps of dissolving alumina in a strong base, treating the resulting solution with a strong acid, to form a gel, recovering and drying the gel to produce a dried product and, treating the

dried product with hydrogen fluoride at a temperature of between 350° and 500°C to fluorinate the dried product.

3,965,202

PRODUCTION OF TRICHLORO-ETHYLENE FROM WASTE C_2 CHLORINATED HYDROCARBONS

Herbert Riegel, Maplewood; Morgan C. Sze, Upper Montclair, and Harvey D. Schindler, Fair Lawn, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed June 20, 1973, Ser. No. 371,613
Int. Cl.² C07C *21/04*
U.S. Cl. 260—654 R **8 Claims**

1. A process for producing a chlorination product selected from the group consisting of trichloroethylene, perchlorethylene and mixtures thereof, comprising:

a. introducing into a separation zone a waste C_2 chlorinated hydrocarbon stream derived from the production of vinyl chloride containing said chlorination product and a plurality of C_2 chlorinated hydrocarbons convertible to said chlorination product selected from the group consisting of monochlorinated C_2 hydrocarbons, dichlorinated C_2 hydrocarbons, trichloroethanes, perchloroethanes and pentachloroethane;

b. recovering from the waste stream in said separation zone said chlorination product and said plurality of C_2 chlorinated hydrocarbons convertible to said chlorination product;

c. contacting said plurality of C_2 chlorinated hydrocarbons with a molten mixture comprising the higher and lower valent chlorides of a multivalent metal and the oxychloride of the metal and a chlorinating agent selected from the group consisting of hydrogen chloride, chlorine and mixtures thereof, said contacting being effected at a temperature of from 700°F to 1200°F to produce a reaction effluent containing said chlorination product and plurality of C_2 chlorinated hydrocarbon by-products convertible to said chlorination product selected from the group consisting of monochlorinated C_2 hydrocarbons, dichlorinated C_2 hydrocarbons, trichloroethanes, perchloroethanes and pentachloroethane;

d. recovering said by-products and said chlorination product; and

recycling the by-products to step (c).

3,965,203

PROCESS FOR THE PRODUCTION OF 2-CHLOROBUTADIENE-1,3 FROM 3,4-DICHLOROBUTENE-1

Lawrence A. Smith, Jr., Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Jan. 31, 1974, Ser. No. 437,906
Int. Cl.² C07C *21/20*
U.S. Cl. 260—655 **11 Claims**

1. In the process for the preparation of 2-chlorobutadiene-1,3 by the dehydrohalogenation of 3,4-dichlorobutene-1 by reaction with a stoichiometric excess of an alkali metal hydroxide and recovery of the 2-chlorobutadiene-1,3, the improvement which comprises:

contacting, at a temperature of from about 75°C. to about 125°C., the 3,4-dichlorobutene-1 with the alkali metal hydroxide in a two-phase reaction system having an organic phase and an aqueous phase wherein substantially all the reaction occurs in the organic phase of said system; further, wherein the organic phase is from about 40% to about 90% by volume of the entire system, the organic phase being a material selected from primary or secondary alcohols, alkoxyethanols or mixtures thereof which, when added to a two-phase system of 3,4-dichlorobutene-1 and a 20 wt.% brine solution, at equilibrium, has a solubility in the dichlorobutene phase such that the product of the weight percent water and the weight percent organic phase material present in the dichlorobutene phase is greater than 200.

3,965,204

PREPARATION OF DERIVATIVES OF CYCLOBUTANE AND CYCLOBUTENE

Joachim H. Lukas; Frank Baardman, and Adriaan P. Kouwenhoven, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 10, 1974, Ser. No. 468,949
Claims priority, application United Kingdom, May 10, 1973, 22362/73
Int. Cl.² C07C *3/03*
U.S. Cl. 260—666 A **16 Claims**

1. A process for the preparation of an alkylidenecyclobutane derivative having one of the formulas

$$R^1R^2C-CR^3R^4 \qquad R^1R^2C=C-CR^3R^4$$
$$R^2R^4C=C-CR^7R^8 \quad \text{(I)}, \qquad R^2R^4C-CR^7R^8 \quad \text{(II)},$$
$$R^1R^2C-CR^7R^8 \qquad R^1R^2C=C-CR^7R^8$$
$$R^2R^4C=C-CR^5R^6 \quad \text{(III) or} \qquad R^2R^4C-CR^5R^6 \quad \text{(IV)}$$

in which formulas I–IV R^1, R^2, R^3 and R^4 each individually represent a hydrogen atom or alkyl, R^5 and R^6 a primary or secondary alkyl group, R^6 and R^7 a hydrogen atom, a primary or secondary alkyl group, and R^5 and R^6 each individually may represent a hydrogen atom when R^7 represents a primary or secondary alkyl group having at least 2 carbon atoms and R^8 a primary or secondary alkyl group, which process comprises contacting an alkene having the formula

$$R^5R^6C=CR^7R^8 \qquad \text{(V)}$$

with an allene having the formula

$$R^1R^2C=C=CR^3R^4 \qquad \text{(VI)}$$

R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8 in the formulas V–VI having the same meanings as in the formula I–IV, in the liquid phase in the presence of a dissolved Lewis acid derived from an element of Group IIIA of the Periodic Table of the Elements, titanium, tin, antimony, tantalum, rhenium, iron or zinc.

3,965,205

CONVERSION OF LOW OCTANE HYDROCARBONS TO HIGH OCTANE GASOLINE

William E. Garwood, Haddonfield; John A. Manzoni, Paulsboro; Thaddeus F. Whyte, Jr., Cherry Hill, all of N.J., and John J. Wise, Media, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed June 10, 1974, Ser. No. 477,728
Int. Cl.² C07C *15/00*
U.S. Cl. 260—668 R **12 Claims**

1. A process for producing high octane gasoline which comprises forming a feed by admixing at least one lower aliphatic oxygenated organic alcohol, ether or ketone compound having up to about 8 carbon atoms in its longest hydrocarbon chain with an effective amount up to about 95 volume percent based on the volume of lower aliphatic organic component, of a hydrocarbon fraction having a clear research octane number up to about 85; contacting at about 400° to 1000°F said feed with an aluminosilicate zeolite catalyst having a silica to alumina ratio of at least about 12, a constraint index of about 1 to 12 and a crystal density of not substantially below about 1.6 grams per cubic centimeter; and recovering a product comprising a liquid fraction having a boiling range in the normal gasoline boiling range, a clear research octane number higher than that of the hydrocarbon portion of the feed and containing a major proportion of the carbon content of said feed.

3,965,206

PRODUCTION OF STILBENE AND STYRENE

Phillip D. Montgomery, Creve Coeur; Richard N. Moore, St. Louis, and Walter R. Knox, Town and Country, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 430,018, Jan. 2, 1974, abandoned. This application Dec. 5, 1974, Ser. No. 529,985
Int. Cl.² C07C *15/10, 15/187*
U.S. Cl. 260—669 R **23 Claims**

1. A process for producing stilbene and stilbene derivatives free of polar impurities from toluene and toluene derivatives as the starting hydrocarbon which comprises:

a. effecting dehydrocoupling of toluene and toluene derivatives in the vapor phase in the presence of a solid metal oxide selected from the group consisting of the oxides of lead, cadmium and bismuth and mixtures thereof at a temperature in the range of from about 500°C to about 650°C,

b. separating the dehydrocoupling effluent by distillation to provide a stilbene fraction,

c. treating said stilbene fraction to remove polar impurities by either (1) passing it through a bed of an absorbent material capable of adsorbing polar impurities at a temperature in the range of from 75° to 200°C and at such a rate to provide a contact time of the stilbene and absorbent material of from 0.1 second to 15 minutes, or (2) intimately contacting it with a chemical treating agent selected from the group consisting of alkali metals, alkyl aluminums, aluminum alkoxides, Grignard reagents, metal hydrides, phenyllithium and disodium stilbene, or (3) distilling it to remove all compounds boiling below 128°C, and cooling the distillation residue to effect crystallization; and

d. recovering said stilbene fraction substantially free of polar impurities.

12. The process of producing styrene from toluene as the starting hydrocarbon which comprises:

a. effecting dehydrocoupling of toluene in the vapor phase in the presence of PbO at a temperature in the range of 500° to 650°C,

b. separating the dehydrocoupling effluent by distillation to provide a liquid stilbene fraction,

c. treating said stilbene fraction to remove polar impurities therefrom by either (1) passing it through a bed of an adsorbent material capable of adsorbing polar impurities at a temperature in the range of from 75° to 200°C and at such a rate to provide a contact time of the stilbene and adsorbent material of from 0.1 second to 15 minutes, or (2) intimately contacting it with a chemical treating agent selected from the group consisting of alkali metals, alkyl aluminums, aluminum alkoxides, Grignard reagents, metal hydrides, phenyllithium and disodium stilbene, or (3) distilling it to remove all compounds boiling below 128°C, and cooling the distillation residue to effect crystallization;

d. recovering said stilbene fraction substantially free of polar impurities,

e. effecting reaction of said recovered stilbene fraction in the vapor phase with ethylene in the presence of a disproportionation catalyst at a temperature in the range from 350° to 500°C, and

f. separating and recovering styrene from the catalytic reaction.

3,965,207

SELECTIVE PRODUCTION OF PARA-XYLENE

Benjamin Weinstein, Morganville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 6, 1975, Ser. No. 538,668
Int. Cl.² C07C *3/52*
U.S. Cl. 260—671 M **13 Claims**

1. A process for the selective production of para-xylene which comprises reacting toluene with a methylating agent at a temperature between about 575°C and about 750°C in the presence of a catalyst comprising a crystalline aluminosilicate zeolite, said zeolite having a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12.

3,965,208

METHYLATION OF TOLUENE

Stephen Allan Butter, East Windsor, and Warren William Kaeding, Westfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 6, 1975, Ser. No. 538,666
Int. Cl.² C07C *3/52, 15/08*
U.S. Cl. 260—671 M **24 Claims**

1. A process for the methylation of toluene such that the formation of meta-xylene is suppressed and the formation of at least one isomer selected from the group consisting of ortho- and para-xylene is enhanced which comprises contacting toluene with a methylating agent under methylation conditions in the presence of a catalyst comprising a crystalline aluminosilicate zeolite, said zeolite having a silica to alumina ratio of at least about 12, a constraint index within the approximate range of 1 to 12, said catalyst having been modified by the addition thereto of phosphorus, arsenic or antimony in an amount of at least 0.5 percent by weight.

3,965,209

SELECTIVE PRODUCTION OF PARA-XYLENE

Stephen Allan Butter, East Windsor, and Lewis Brewster Young, Kendall Park, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 6, 1975, Ser. No. 538,665
Int. Cl.² C07C *3/52, 15/08*
U.S. Cl. 260—671 M **12 Claims**

1. A process for the selective production of para-xylene which comprises reacting toluene with a methylating agent in the presence of a catalyst comprising a crystalline aluminosilicate zeolite, said zeolite having a silica to alumina ratio of at least about 12 and a constraint index of from 1 to 12, which catalyst has undergone prior treatment with steam to reduce the alpha value thereof to less than about 500.

3,965,210

SELECTIVE PRODUCTION OF PARA-XYLENE AND CATALYST THEREFOR

Chin-Chiun Chu, South Plainfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 6, 1975, Ser. No. 538,667
Int. Cl.² C07C *3/52, 15/08*
U.S. Cl. 260—671 M **15 Claims**

1. A process for the selective production of para-xylene which comprises reacting toluene with a methylating agent in the presence of a catalyst of a crystalline alumino-silicate zeolite, said zeolite having a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12, the surface of said catalyst having been modified by contact with a polymer made up of meta-carbonate units connected by siloxane units and of a size sufficiently large as to be unable to penetrate the zeolite pore structure.

10. A catalyst consisting essentially of a crystalline alumino-silicate zeolite having a silica to alumina ratio of at least about 12 and a constraint index within the approximate range of 1 to 12, the surface of which has been modified by contact with a polymer made up of meta-carborane units connected by siloxane units and of a size sufficiently large as to be unable to penetrate the zeolite pore structure.

3,965,211
CURABLE COMPOSITION OF RESIN, CYCLOALIPHATIC EPOXIDE AND AN AMINO COMPOUND

Glyn Islwyn Harris, Stourbridge, England, and Brian George Huckstepp, Glamorgan, Wales, assignors to Albright & Wilson Limited, Oldbury, England

Continuation of Ser. No. 453,875, March 22, 1974, abandoned, which is a continuation of Ser. No. 292,333, Sept. 26, 1972, abandoned. This application Nov. 21, 1974, Ser. No. 525,952

Claims priority, application United Kingdom, Oct. 1, 1971, 45825/71

Int. Cl.² C08G *45/06, 30/16*

U.S. Cl. 260—830 R **26 Claims**

1. A curable composition comprising (a) a resin containing free hydroxyl groups which is obtained by the reaction of a compound of formula $R'(CH_2X)_a$ wherein R′ is a divalent or trivalent phenylene group, X is an alkoxy group of 1 to 6 carbon atoms or is chlorine, bromine or iodine, and a is 2 or 3, with a molar excess of a phenolic compound, (b) a cycloaliphatic epoxy compound containing at least two 1,2 -epoxide groups per molecule in an amount of 10 – 1,000% of the stoichiometric amount needed to react with all the phenolic groups of the resin, and (c) an amino compound being selected from the group consisting of imidazoles, and triethylene diamine, in an amount of 0.05 – 10% by weight based on the weight of the resin.

3,965,212
FLAME-RESISTANT RESIN COMPOSITION

Kazumasa Kamada; Ryoji Handa, and Masafumi Hongo, all of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

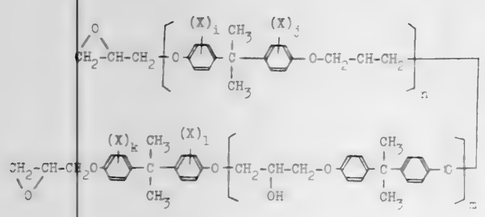
Filed Dec. 3, 1974, Ser. No. 529,080

Claims priority, application Japan, Dec. 4, 1973, 48-134853; May 8, 1974, 49-50218

Int. Cl.² C08G *45/14*

U.S. Cl. 260—835 **10 Claims**

1. A flame-resistant resin composition consisting essentially of 100 parts by weight of a polytetramethylene terephthalate, 3 to 40 parts by weight of a flame retardant represented by the general formula (I),



(I)

wherein $n + m$, which represents an average degree of polymerization, is a number of 0 to 10; X is a bromine or chlorine atom; and i, j, k and l are individually an integer of 1 to 4, and antimony trioxide, the weight ratio of said flame retardant to said antimony trioxide being in the range of from 0.25 to 6.

3,965,213
CONJUGATED DIENE BUTYL

Francis P. Baldwin, Summit, N.J., and Alberto Malatesta, Brussels, Belgium, assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 228,727, Feb. 23, 1972, Pat. No. 3,816,371. This application Apr. 30, 1974, Ser. No. 465,479

The portion of the term of this patent subsequent to June 11, 1991, has been disclaimed.

Int. Cl.² C08L *9/00, 47/00;* **C08F** *279/02;* **C08K** *5/10*

U.S. Cl. 260—879 **14 Claims**

1. A composition of matter consisting essentially of a copolymer consisting of about 70 to about 99.5% by weight of an isoolefin having about 4 to about 7 carbon atoms and about 30 to 0.5% by weight of at least one conjugated diolefin having about 4 to about 14 carbon atoms, said copolymer having conjugated diene groups and a number average molecular weight of about 5,000 to about 500,000.

3,965,214
FLAME RETARDANT ABS POLYMER COMPOSITIONS

Richard C. Nametz, St. Louis, and Robert J. Nulph, Alma, both of Mich., assignors to Michigan Chemical Corporation, Chicago, Ill.

Continuation of Ser. No. 209,411, Dec. 17, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 315,953

Int. Cl.² C08K *3/22, 5/03;* **C08L** *55/02*

U.S. Cl. 260—880 R **5 Claims**

1. A flame retardant thermoplastic composition comprising an acrylonitrile-butadiene-styrene polymer having incorporated therein a flame retarding mixture consisting of 5 to 25 percent by weight of decabromobiphenyl and 1 to 5 percent by weight of antimony trioxide, all percentages being based on the total weight of said composition.

3,965,215
COHESIVE SEALANT ARTICLES

Eugene F. Lopez, Sunnyvale, Calif., and Anthony Charles Evans, Brussels, Belgium, assignors to Raychem Corporation, Menlo Park, Calif.

Filed Oct. 31, 1973, Ser. No. 411,462

Int. Cl.² C08L *23/28*

U.S. Cl. 260—889 **10 Claims**

1. A coherent article essentially comprised of a mastic material uniformly dispersed throughout the interstices of a cross-linked polymeric matrix present in the article in minor proportion sufficient in extent to maintain it coherent at a transition temperature of the matrix.

4. An article according to claim **2** wherein said matrix is polyethylene and wherein said mastic material comprises a polyisobutylene rubber.

3,965,216
FIRE RETARDANT CROSSLINKED COPOLYMERS

Jung Il Jin, Irvington, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

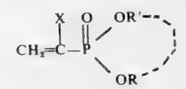
Division of Ser. No. 291,128, Sept. 21, 1972, Pat. No. 3,842,048. This application July 22, 1974, Ser. No. 490,594

Int. Cl.² C08L *23/02*

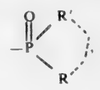
U.S. Cl. 260—897 C **5 Claims**

1. A fire retardant thermoplastic polymer composition consisting essentially of an intimate admixture of at least one poly (alpha-olefin) and from about 5 to 80% of at least one crosslinked copolymer of:

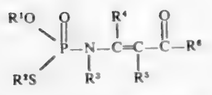
1. from about 2 to 60%, by weight, of at least one polyfunctional ethylenically unsaturated monomer; and
2. from about 3 to 98%, by weight, of at least one bis(hydrocarbyl) vinylphosphonate having the structure:



wherein X is selected from the group consisting of hydrogen, halogen, cyano, aryl, haloaryl, C_1–C_{18} alkyl and haloalkyl, and



wherein R and R′ are hydrocarbyl and substituted hydrocarbyl groups which can be the same, different or conjoint.



wherein R^1 and R^2 individually are alkyl of 1 to 6 carbon atoms or alkenyl of 3 to 6 carbon atoms; R^4 is hydrogen, alkyl of 1 to 6 carbon atoms or haloalkyl of 1 to 6 carbon atoms and 1 to 3 fluorine, chlorine or bromine; R^3 and R^5 individually are hydrogen or alkyl of 1 to 6 carbon atoms; R^6 is alkoxy of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, phenoxy,-phenoxy substituted with 1 to 2 alkyl of 1 to 4 carbon atoms, fluorine, chlorine or bromine, amino, N-lower alkylamino of 1 to 7 carbon atoms, N, N-di-lower alkylamino of 2 to 10 carbon atoms, N-phenylamino or N-lower alkylphenylamino of 1 to 7 carbon atoms.

3,965,217
METHOD OF PREPARING STABLE CONDENSATION PRODUCTS AND PRODUCTS FORMED BY THE PROCESS

Kyung S. Shim, Irvington, and Edward N. Walsh, New City, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 5, 1974, Ser. No. 494,444

Int. Cl.² C07F *9/09, 9/40*

U.S. Cl. 260—928 **9 Claims**

1. In a process for forming a condensation product which is adapted to be used in a polyurethane foam derived from condensing a β-haloalkyl ester of a pentavalent phosphorus acid with itself or with an alkyl ester of a pentavalent phosphorus acid to form a condensation product wherein the improvement comprises terminating the condensation reaction when it is from about 35% to 75% complete and performing the condensation in the absence of a nucleophilic initiator to form a stabilized condensation product.

8. A product formed by the process of claim **1.**

3,965,218
PHOSPHOROAMIDOTHIOATES

Francis J. Freenor, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 394,872, Sept. 6, 1973, Pat. No. 3,882,200. This application Apr. 7, 1975, Ser. No. 565,324

Int. Cl.² C07F *9/24*

U.S. Cl. 260—941 **9 Claims**

1. A compound of the formula

3,965,219
CONTINUOUS PROCESS FOR THE ESTERIFICATION OF PHOSPHONITRILIC CHLORIDE POLYMERS

John W. Ager, Princeton, N.J., and Thomas M. Fekete, Yardley, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Dec. 18, 1974, Ser. No. 533,874

Int. Cl.² C07F *9/00*

U.S. Cl. 260—973 **7 Claims**

1. A continuous process for the esterification of phosphonitrilic chloride polymers comprising reacting (a) a phosphonitrilic chloride polymer of the general formula $(NPCl_2)n$, where n is at least **3**, in an inert organic solvent with (b) an alkali metal alkoxide having 1 to 12 carbon atoms in an alkanol solvent, by continuously feeding said reactants to a reaction zone maintained at a temperature of 90 to 125 °C containing a circulating reaction mixture comprising phosphonitrilic ester reaction products and, while adding the reactants, continuously withdrawing said reaction mixture from said reaction zone such that the average residence time of the reactants in said reaction zone is between about 10 and 100 minutes.

3,965,220
PREPARATION OF ESTERS OF PHOSPHORUS ACIDS

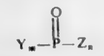
Ignatius Schumacher, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 156,561, June 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 103,877, Jan. 4, 1971, abandoned. This application May 28, 1974, Ser. No. 473,954

Int. Cl.² C07F *9/08, 9/16, 9/14*

U.S. Cl. 260—975 **29 Claims**

1. The process of preparing a mono- or di-ester of a phosphorus acid containing at least one phosphorus-halogen bond which comprises reacting a phosphorus halide of the formula



wherein

Y represents R or R′O;
R represents alkyl, alkenyl, alkynyl, cycloalkyl cycloalkenyl, cycloalkynyl, heterocyclyl or aryl;
R′ represents alkyl or aryl;
m represents 0 when n=3 and 1 when n=2;
n represents 2 or 3; and
Z represents chloro or bromo with a compound of the formula

R″OH

wherein

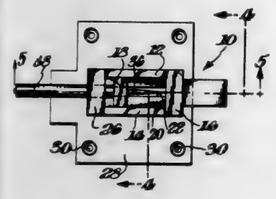
R″ represents aryl at a temperature of from about 85°C. to about 165°C. in the presence of a catalytic amount of pyridine.

3,965,221

FLUID FLOW DEVICE AND LIQUID METERING

Robert D. Englert, Corona Del Mar; Lester Porter Berriman, Irvine; Kenneth P. Armstrong, Lakewood, all of Calif., and Douglas A. Roe, Gilbert, Ariz., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed July 3, 1974, Ser. No. 485,518
Int. Cl.² F02M *7/20*
U.S. Cl. 261—23 A **15 Claims**



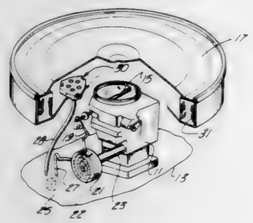
1. A method for producing a combustible air-liquid fuel mixture having a substantially constant air-to-fuel ratio comprising the steps of passing air through a variable area throat zone to increase its velocity to sonic, varying the area of the throat zone in correlation with operating demands imposed upon the engine for which the mixture is produced, metering fuel from a supply into the air stream at or before the throat zone in direct proportion to the area thereof, sensing the pressure of the high velocity air stream at a point before the throat zone where the cross-sectional area ratio between the variable area throat zone and the plane of the pressure sensing point is constant, and adjusting the rate of fuel delivered into the air stream in response to changes in the air pressure sensed whereby the air-to-fuel ratio of the mixture is maintained substantially constant.

3,965,222

CARBURETION SYSTEM

Benjamin C. Benjamin, Flint, Mich., assignor to Schmelzer Corporation, Durand, Mich.

Filed Sept. 3, 1974, Ser. No. 502,527
Int. Cl.² F02M *1/10*
U.S. Cl. 261—39 B **9 Claims**



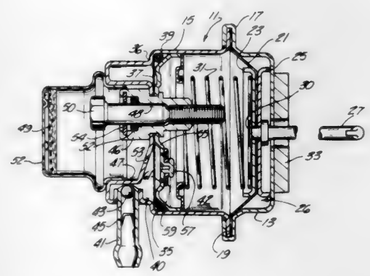
1. In a carburetion system having a choke, the combination of an air cleaner assembly including a filter, an air temperature responsive choke thermostat for operating the choke, modulating means disposed in said air cleaner assembly and modulating the supply of filtered air to the choke thermostat in accordance with the ambient temperatures in said air cleaner assembly, a heat source for warming the filtered air, a vacuum source connected to the choke thermostat to cause filtered air to be drawn from the air cleaner through the modulating means and the heat source to the choke thermostat, said modulating means including an air inlet positioned in said air cleaner to receive filtered air from said air cleaner, an air outlet operatively connected to the heat source and a temperature responsive means operative in response to the temperature in said air cleaner to vary the quantity of filtered air transferred between the air inlet and the choke thermostat from a minimum to a maximum as temperature in said air cleaner increases to change the temperature response of the thermostat and accordingly the operation of the choke.

3,965,223

CHARGE FORMING DEVICE

Benjamin C. Benjamin, Flint, and Glenn A. Schautz, Lennon, both of Mich., assignors to Schmelzer Corporation, Durand, Mich.

Filed Sept. 18, 1974, Ser. No. 507,128
Int. Cl.² F02M *1/10*
U.S. Cl. 261—39 B **3 Claims**



1. A charge forming device for an internal combustion engine including an induction passage, a choke valve in the passage, a temperature responsive element operatively connected to the choke valve and adapted to urge the valve to a closed position with a force inversely proportioned to the engine temperature, a vacuum responsive device operatively connected to the choke valve and adapted to move the same from a closed position to a variable partially open position at a controlled rate in response to a predetermined vacuum in the engine intake manifold obtained when the engine is operating above cranking speed, said vacuum responsive device including a casing, a flexible diaphragm dividing the casing into two main chambers, resilient means urging the diaphragm and operatively connected choke valve to a closed position, a rigid wall assembly separating one of the main chambers into first and second subchambers, at least one aperture in said rigid wall assembly, a valve member normally engaging said rigid assembly and closing said aperture against air flow from the first subchamber, bypass means permitting restricted fluid flow in either direction between said subchambers, a vacuum passage adapted to connect said second subchamber with a source subject to engine intake manifold vacuum, adjusting means for limiting the extent of movement of the diaphragm and coincident opening of the choke valve, said valve member being axially offset from the axial center of the device and said adjusting means comprising a stop member extending through said rigid wall into said one subchamber, said stop member also being axially offset from the axial center of the device on the opposite side from the flexible valve member.

3,965,224

CARBURETOR CHOKE VALVE POSITIONER

Richard J. Freismuth, Mount Clemens, Mich., assignor to Ford Motor Company, Dearborn, Mich.

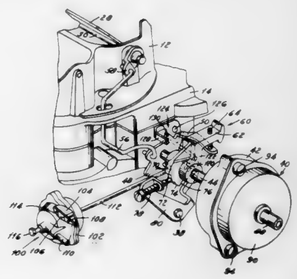
Filed Apr. 1, 1974, Ser. No. 457,049
Int. Cl.² F02M *1/10*
U.S. Cl. 261—39 B **9 Claims**

1. An automatic choke system for use with a carburetor having an air/fuel induction passage and

an unbalance mounted, air movable, choke valve mounted for variable movement across the passage to control airflow through the passage,

temperature responsive spring means operably connected to the choke valve urging the choke valve towards a closed position with a force increasing as a function of decreases in the temperature of the spring means from a first predetermined level,

power means sensitive to engine manifold vacuum for moving the choke valve from the closed position to a predetermined open position in opposition to the spring means, the predetermined open position being one that is only



slightly opened relative to the closed position and less open than the position attained when the engine has reached a normal operating temperature level, and

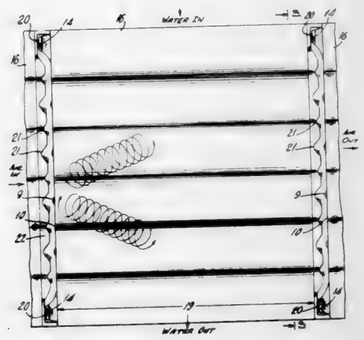
locking means operably engagable with the choke valve and rendered operable at all times once the power means has moved the choke valve to the predetermined position to prevent the choke valve from closing to a lesser open position than the predetermined position upon decay of the manifold vacuum below the level establishing the predetermined position of the choke valve.

3,965,225

SPACER-TURBULATOR

Edward N. Schinner, Silver Spring, Md., assignor to Baltimore Aircoil Company, Inc., Jessup, Md.

Filed Mar. 11, 1974, Ser. No. 448,802
Int. Cl.² B01F *3/04*
U.S. Cl. 261—79 A **5 Claims**



1. A spacer-turbulator portion of cooling tower corrugated fill sheets for separating said sheets and imparting corkscrew turbulence to air passing between said sheets which comprises:

a. raised mound means at the downstream portion of the spacer-turbulator for maintaining each fill sheet apart from an adjoining sheet, said mound means contacting the fill sheet at the base of a concave portion of the fill sheet and contacting the adjoining fill sheet at the base of its concave portion, said means being in repeating units; and

b. raised means between each of the raised mound means extending from the apex of a convex portion of a fill sheet outward and in opposite directions toward each concave portion of the same fill sheet, said raised means defining with the adjoining fill sheet an air space.

3,965,226

METHOD OF PROVIDING A THICK CONCENTRIC ENVELOPE ON AN ELECTRICAL CONDUCTOR

Lothar Werwitzke, Langenhagen; Hans-Dieter Stenzel, Hannover, and Hermann Uwe Voigt, Langenhagen, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Nov. 25, 1974, Ser. No. 526,459
Int. Cl.² B29C *25/00;* **B29F** *3/10*
U.S. Cl. 264—25 **17 Claims**



1. Method of providing a relatively thick thermoplastic or elastomeric envelope on a conductor, comprising the steps of:

extruding an envelope onto the conductor without counter pressure;

cooling the envelope relatively fast immediately following the extrusion without surface contact of the envelope as between its being extruded and engagement with a cooling fluid, to obtain a stable, supporting sleeve as part of the envelope for maintaining a concentric disposition of the conductor in the envelope;

reheating the envelope under pressure but for such short duration so that only a surface layer of the envelope melts and causing the envelope to solidify on the outside before the envelope has melted all the way through the conductor, to obtain a radially inwardly migrating melting zone followed by radially inwardly migrating resolidification, for a gradual formation of the desired internal texture in the resolidifying envelope; and

said steps being carried out concurrently in a continuous process, on the passing-through conductor, affecting different portions of the enveloped conductor at different times and being carried out directly consecutively as regards the same conductor portion on which the envelope is formed.

3,965,227

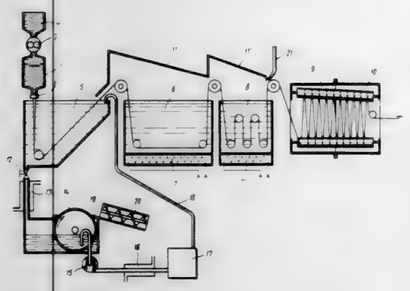
METHOD OF SIMULTANEOUSLY MANUFACTURING ACRYLIC FIBERS AND NITRATES

Artur Stoy; Vladimir Stoy; Renata Urbanova; Jaroslav Prokop, all of Prague, and Josef Kucera, Pardubice, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation of Ser. No. 264,451, June 20, 1972, abandoned.
This application Oct. 2, 1974, Ser. No. 511,427
Claims priority, application Czechoslovakia, June 22, 1971, 4609-71
Int. Cl.² D01F *13/00*
U.S. Cl. 264—38 **10 Claims**

1. A method of simultaneously producing (1) acrylic filament material by wet spinning nitric acid solutions of acrylic polymers and (2) nitrates from the coagulating bath system, comprising providing a solution of polymers or copolymers containing up to 100% of acrylonitrile units and from 0 to 50 mol percent of units of one or more comonomers copolymer-

izable with acrylonitrile into nitric acid-soluble polymers, introducing said solution into a coagulating bath for wet spinning said solutions into filament material and withdrawing said filament material from said bath, said coagulating bath containing an aqueous solution of nitrates and a constant surplus of neutralizing agents in an amount ranging from about 0.5 to about 5% by weight and sufficient to convert the nitric acid introduced by said polymer solution into nitrates and to make the filament leaving the the coagulating bath free of nitric acid, maintaining the temperature of the coagulating bath at least about 5 degrees above the temperature at which the



solution of the same concentration is saturated with respect to its nitrate content, maintaining the nitrate concentration of the coagulating bath substantially constant during wet spinning by (a) withdrawing a part of said bath equimolar to the amount of nitric acid introduced therein by the wet spinning of said polymer solution, (b) adding a neutralizing agent to said bath at a rate at which nitric acid is introduced into said bath by said polymer solution, and (c) replacing the water lost from said bath, treating said withdrawn part of said bath to recover in solid form at least part of the nitrate found therein and washing, stretching, heat stabilizing and drying said withdrawn filament material.

3,965,228

CONTINUOUS PRODUCTION OF POLYMERIC FOAM

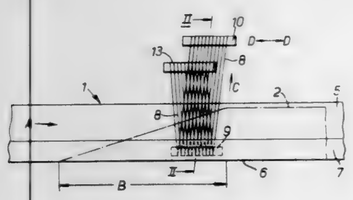
Nicholas Cornelis Vreenegoor, Hillegom, Netherlands, assignor to Unifoam AG, Glarus, Switzerland

Filed June 12, 1974, Ser. No. 478,510

Claims priority, application United Kingdom, June 18, 1973, 28884/73

Int. Cl.² B29C *11/00*; **B29D** *27/04*

U.S. Cl. 264—39 **7 Claims**



1. The method of continuously producing flat-topped polymeric foam, comprising the steps of

a. depositing a foamable thermosetting resin reaction mixture in the non-expanded condition in the bottom of a continuously moving trough conveyor in which the said reaction mixture begins to foam and rise upwardly;

b. contacting each side surface of the rising foam, as the moving trough conveyor passes through a rising station, with a plurality of corresponding upwardly moving wires interposed between each side surface of the rising foam and the adjacent side wall of the moving trough conveyor; and

c. subsequently returning said wires to the moving trough conveyor for engagement with another portion of the foam passing through said rising station in said moving trough conveyor.

3,965,229

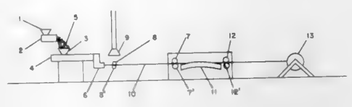
METHOD OF MANUFACTURING A FOAM FIBRILLATED FIBROUS WEB FROM AN ISOTACTIC POLYPROPYLENE AND POLYETHYLENE BLEND

Gary L. Driscoll, Boothwyn, Pa., assignor to Sun Ventures, Inc., St. Davids, Pa.

Continuation-in-part of Ser. No. 320,237, Jan. 2, 1973. This application Dec. 14, 1973, Ser. No. 425,004

Int. Cl.² B29D *7/24*, *27/00*

U.S. Cl. 264—50 **1 Claim**



1. A process of producing a foam fibrillated fibrous web comprising heating a blend of from 75 to 98 weight percent as based on said blend of isotactic polypropylene and from 25 to 2 weight percent as based on said blend of polyethylene in an extruder to a temperature generally maintained in a range of from 175° to 236°C whereby a molten blend is formed, extruding said blend and from 0.1 to 20 percent by weight as based on said blend of a material which is gaseous under the extrusion conditions used mixed with said molten blend from a die which is generally maintained in the temperature range of from 200° to 235°C into a zone of reduced pressure to produce a foam fibrillated fibrous web extrudate, quenching said extrudate to a temperature below about 150°C while withdrawing said extrudate from said die by a first linear take up means at a linear rate of from 2 to 25 times the linear rate at which said blend reaches the lips of said die whereby a foam fibrillated web is formed, and stretching said foam fibrillated web from 2 to 10 times in the machine direction at a temperature of from about 90°C to about 150°C to increase the strength thereof.

3,965,230

PROCESS OF MANUFACTURING LACQUERED ARTICLES OF COLD ROLLED ABS RESIN

Michael R. Grancio, Hampden, and George E. Walker, Longmeadow, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 317,967, Dec. 26, 1972, Pat. No. 3,887,746. This application Jan. 27, 1975, Ser. No. 544,076

Int. Cl.² B29C *15/00*

U.S. Cl. 264—129 **3 Claims**

1. A process of manufacture of an impact resistant ductile composite of a rubber reinforced resin substrate and an embrittling lacquer superstrate which comprises the steps of:

A. forming a sheet of rubber reinforced resin comprising a dispersion of a rubber graft copolymer in a matrix of interpolymer; wherein the rubber graft copolymer comprises a superstrate of an interpolymer of 5–95 parts by weight of a vinylidene aromatic hydrocarbon monomer and 95–5 parts by weight of a unsaturated nitrile monomer on a rubber substrate; wherein the weight ratio of superstrate to substrate is in the range of 10:100 to 250:100; wherein the matrix interpolymer is of the same composition as the superstrate; wherein the reinforcing rubber comprises between 3 and 30 weight percent of the total resin; and wherein the average particle size of the rubber substrate is in the range of 0.01 to 1.5 microns; said sheet having less than about 5 percent elongation beyond the yield point when coated with an embrittling layer of lacquer.

B. cold rolling the sheet of rubber reinforced resin at a temperature at least about 20°C. below the glass transition temperature of said rubber reinforced resin by passing it successively between cold rolls to reduce the thickness of the sheet to between 95 and 40 percent of the original thickness; and

C. applying lacquer to at least one side of the cold rolled sheet of reinforced resin to provide a layer of lacquer between 0.1 and 10 mils in thickness, said cold rolling and applying lacquer providing said composite having a minimum elongation beyond the yield point of at least about 5 percent of the original length.

3,965,231

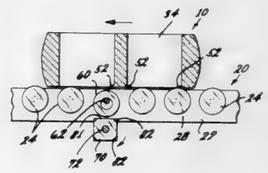
MEANS AND METHOD FOR DEFEATHERING BLOCKS

Charles W. Depka, Carlsbad, Calif., assignor to Modern Builders Supply Co., Oceanside, Calif.

Filed Apr. 7, 1975, Ser. No. 565,646

Int. Cl.² F28C *3/06*

U.S. Cl. 264—161 **13 Claims**



1. Means defeathering the lower portions of cement blocks at a defeathering station, comprising:

a. means supporting and conveying said blocks in a generally horizontal path of travel past said defeathering station,

b. a series of juxtaposed members and means supporting said juxtaposed members on a line below and extending laterally of said path of travel of said blocks at said defeathering station, said means supporting said juxtaposed members permitting them to move freely generally vertically from a first lower position to a second upper position,

c. means operative to periodically strike said justaposed members and to thereby propel said juxtaposed members upwardly from said first lower position to said second upper position, said juxtaposed members in moving from said first lower position to said second upper position thereby striking said lower portions of said blocks and thereby knocking feathers from said blocks,

d. said means supporting said juxtaposed members being a rod disposed transversely of said path of travel of said blocks and disposed therebelow and said juxtaposed members having openings therein in which said rod is positioned and said openings being larger than said rod thereby permitting said juxtaposed members to move from said first lower position to said second upper position,

e. said rod being of circular cross-section and said juxtaposed members being annular members and said openings being circular so that said annular members can rotate on said rod to permit different surfaces to strike said blocks to distribute wear on said annular members, and means mounting said rod free to rotate, the axis of said rod being stationary.

3,965,232

PROCESS FOR THE OBTAINING OF POLY(VINYLIDENE FLUORINE) YARNS AND FIBERS

Pierre Chion, Bron, and Robert Cuidard, Ecully, both of France, assignors to Rhone-Poulenc-Textile, France

Filed May 30, 1974, Ser. No. 474,585

Claims priority, application France, June 6, 1973, 73.20666

Int. Cl.² C08F *114/00*; **D01F** *6/00*

U.S. Cl. 264—184 **6 Claims**

1. A process of making polyvinylidene fluoride yarns and fibers of improved structure and dry tenacity of more than 33 grams/tex, said process comprising:

spinning a solution of polyvinylidene fluoride into a coagulating bath containing 45 to 60% by weight aprotic polar organic solvent and 40 to 55% by weight of water maintained between 15° and 40°C,

stretching the filaments in air between 15°C and 40°C to a ratio of between 1.5*x* and 5*x*, then stretching the filaments in boiling water to a ratio of between 1.5*x* and 4*x*, the overall stretch ratio being between 3*x* and 6.5*x*, and then washing the filaments with water maintained between 15°C and 40°C at room temperature.

3,965,233

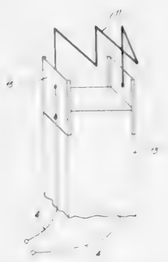
METHOD OF FORMING MOULDED ARTICLES

Paul Ritter, 76 Brookton Highway, Kelmscott, Australia

Continuation-in-part of Ser. No. 382,525, July 25, 1973, abandoned. This application Apr. 14, 1975, Ser. No. 567,998

Int. Cl.² B28B *11/04*

U.S. Cl. 264—219 **10 Claims**



1. A method of molding a coated article comprising: forming a mold from expanded polystyrene and reshaping a molding surface of said polystyrene to provide a configured surface; applying a coloured composition to a molding surface of said polystyrene; filling said mold with a settable hydraulic cement and allowing said cement to harden, applying an organic solvent to said mold to dissolve at least a portion of said polystyrene and said colored composition, causing a portion of said polystyrene, said composition and said solvent to remain on the concrete article, said colored composition being at least partially soluble in said solvent and permitting said solvent to evaporate to form a coloured glazed finish on the surface of said article.

3,965,234

METHOD OF MAKING RADAR REFLECTIVE BUOY

Noel W. Lane, Jr., 2106 Windmill View Road, El Cajon, Calif. 95020

Division of Ser. No. 328,659, Feb. 1, 1973, Pat. No. 3,806,927. This application Oct. 3, 1973, Ser. No. 403,175

Int. Cl.² B29B *3/00*

U.S. Cl. 264—275 **3 Claims**

1. The method of making a seamless and ventless hollow spherical shell of fusible cross-linkable polyolefin, with a rigid radar reflector fixedly molded therein, said radar reflector being formed by 3 mutually perpendicular, flat plates of micro-wave reflective material which define a cluster of 8 tetra-

hedrons, the intersections of each perpendicular pair of plates forming outer corners, said method comprising the steps of:

1. placing said radar reflector within a hollow mold cavity, using a plurality of spring-loaded standoffs attached to said corners, each of said standoffs having two perpendicularly related slots at one end thereof to slidably receive the corners of the respective reflector plates, and a cavity at the intersectin of said slots containing a compression spring that bears at one end against the standoff and at the other end against the reflector plates, said standoffs being molded of the same resin as said shell, but which has been only partially cross-linked;
2. loading a measured quantity of said fusible cross-linkable polyolefin into the mold cavity;



3. closing said mold, thereby slightly compressing said springs;
4. rotating said mold while heating the same above the fusion temperature of said resin, causing the resin particles to melt and form a continuous shell inside the mold cavity, and also causing the outer extremities of said standoffs to melt and fuse into said shell to become an integral part thereof, said outer extremities of the standoffs continuing the cross-linkig process as they fuse and merge with the molten plastic shell; and
5. rapidly chilling the molded part so as to cause the plastic resin to stiffen and become relatively rigid.

3,965,235

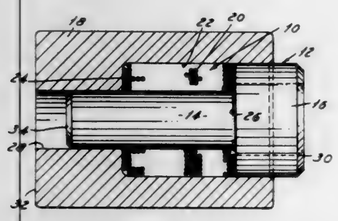
METHOD OF MAKING A LOW FRICTION BUSHING

Charles S. White, 35815 - 42nd St., East, Palmdale, Calif. 93550

Continuation-in-part of Ser. No. 321,566, Jan. 8, 1973, Pat. No. 3,891,488, which is a continuation-in-part of Ser. No. 76,110, Sept. 28, 1970, abandoned. This application Apr. 8, 1974, Ser. No. 458,559

Int. Cl.² B29G 7/00

U.S. Cl. 264—294 **4 Claims**



1. A method of making a low friction bushing comprising the steps of:

1. providing a bondable low friction thread impregnated with a bonding resin and cured to the B-stage, wherein the thread is comprised of bondable filaments and polytetrafluoroethylene filaments;
2. winding a continuous strand of the impregnated bondable low friction thread into the shape of a hollow cylinder onto a mandrel thereby forming a wound mandrel;
3. inserting said wound mandrel into a mold and axially compressing said hollow cylinder while cold to partially coalesce the resin and the thread turns into a preform;
4. removing said preform from said mold and said mandrel;
5. inserting said preform into a second mold;
6. heating and axially compressing said preform to further compact the thread turns and to fuse the resin into a solidified C-staged matrix of predetermined size; and
7. removing the thus formed bushing from the second mold.

3,965,236

POLY(META-PHENYLENE ISOPHTHALAMIDE) POWDER AND PROCESS

John William Turnbull, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 262,599, June 14, 1972. This application Feb. 24, 1975, Ser. No. 552,033

Int. Cl.² B29B 1/14

U.S. Cl. 264—319 **2 Claims**

1. A process for fabricating shaped articles from a coalescible and densifiable powder of poly(meta-phenylene isophthalamide) having a bulk density between about 0.02 g./cc. and about 0.4 g./cc. which comprises pressing said powder by subjecting said powder to a forming pressure of at least 10,000 psi. at a temperature up to about 250°C. to provide a preform having a density between about 1.0 g./cc. and about 1.30 g./cc., and sintering said preform by heating said preform in an inert atmosphere to a temperature between about 250°C. and about 350°C. to provide a shaped article having a density of at least about 1.24 g./cc.

3,965,237

DISSOLUTION PROCESS FOR ZrO_2-UO_2-CaO FUELS

Bernice E. Paige, Idaho Falls, Idaho, assignor to The United States of America as repesented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Apr. 11, 1975, Ser. No. 567,216

Int. Cl.² C01G 43/02

U.S. Cl. 423—4 **7 Claims**

1. A dissolution process for ZrO_2-UO_2-CaO-type pressurized water reactor fuels comprising: immersing the ZrO_2-UO_2-CaO fuel in zirconium-dissolver-product, which is about 6.8 M in fluoride and 1.0 to 1.3 M in zirconium, in a dissolver vessel; and adding nitric acid to said dissolver vessel to facilitate dissolution of the ZrO_2-UO_2-CaO fuel.

3,965,238

METHOD OF RECOVERING URANIUM

Tomokazu Tabata, and Tetsuo Ikushige, both of Shin Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed July 27, 1973, Ser. No. 383,246

Claims priority, application Japan, July 31, 1972, 47-75965

Int. Cl.² B01D 11/04

U.S. Cl. 423—8 **6 Claims**

1. A process for recovering uranium values from a phosphate rock which comprises

1. acidifying a phosphate rock containing uranium values and at least one other metal value, with a mineral acid so as to obtain a crude acid,
2. solvent extracting said crude acid with an organic solvent so as to separate a raffinate from a relatively pure, wet process, phosphoric acid, and
3. treating said raffinate with an alkali so as to raise the pH to 1–2, whereby uranium hydroxide or phosphate and other heavy metal hydroxides or phosphates are coprecipitated.

3,965,239

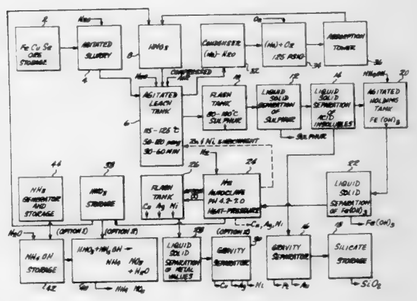
RECOVERY OF NITRIC ACID SOLUBLE TRANSITION METALS FROM SULFUR AND IRON CONTAINING ORES OF THE SAME

John G. Posel, Everett, Wash., assignor to International Ore Technology, Inc., Everett, Wash.

Continuation-in-part of Ser. No. 416,679, Nov. 16, 1973, abandoned, which is a continuation of Ser. No. 228,069, Feb. 22, 1972, abandoned. This application Apr. 18, 1975, Ser. No. 569,228

Int. Cl.² C01G 3/00, 5/00, 9/00, 7/00

U.S. Cl. 423—34 **37 Claims**



1. A method of recovering one or more metal values of the group consisting of copper, silver, nickel, cobalt and zinc from a sulfur containing ore of the metal or metals, comprising intermixing the ore and at least a stoichiometric amount of nitric acid of about 30–50% by volume concentration to form an aqueous acid leach solution of the same, heating the solution to a temperature at or above the melting point of sulfur while the solution is contained under pressure in a relatively inert atmosphere, controlling the temperature of the solution to precipitate the sulfur from the solution, relatively separating the sulfur precipitate from the acid soluble phase of the solution, and recovering the metal value or values from the acid soluble phase.

10. A method of recovering one or more metal values of the group consisting of copper, silver, nickel, cobalt and zinc from an iron and sulfur containing ore of the metal or metals, comprising intermixing the ore and at least a stoichiometric amount of nitric acid of about 30–50% by volume concentration to form an aqueous acid leach solution of the same, heating the solution to a temperature at or above the melting point of sulfur while the solution is contained under pressure in relatively inert atmosphere, controlling the temperature of the solution to precipitate the sulfur from the solution, controlling the pH of the solution to precipitate the iron values from the acid soluble phase of the solution, relatively separating the precipitates from the acid soluble phase of the solution, and the acid soluble phase of the solution from the acid insoluble phase thereof, and recovering the metal value or values from the acid soluble phase.

32. In a process of recovering one or more metal values of the group consisting of copper, silver, nickel, cobalt and zinc from a polysulfide ore of the metal or metals, the steps of leaching an aqueous suspension of the ore with at least a stoichiometric amount of nitric acid of about 30–50 percent by volume concentration, while agitating the leach solution in a container pressurized at about at least 50 psi above atmospheric pressure with a relatively inert gas, heating the solution to a temperature of about 115°–125°C, for at least about 30 minutes, crystallizing the sulfur, crystallizing the metal value or values, and recovering the crystals from the solution.

3,965,240

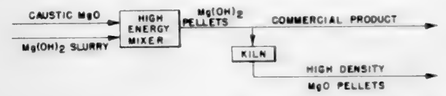
HIGH DENSITY MAGNESIA PELLET AND METHOD FOR MAKING SAME

Vaughn V. Hughey, Tiffin, Ohio, assignor to Basic Incorporated, Cleveland, Ohio

Filed Dec. 12, 1973, Ser. No. 424,176

Int. Cl.² C01F 5/02

U.S. Cl. 423—155 **10 Claims**



1. A method of making magnesium hydroxide pellets comprising the steps of mixing caustic magnesia, magnesium hydroxide and water in a rotatable mixing bowl containing a plurality of mixing tools eccentrically placed within the mixing bowl, rotating the mixing bowl about its axis of rotation while simultaneously subjecting the ingredients therein to the action of the rotating mixing tools wherein at least one of said mixing tools is rotated in the direction opposite to the direction of rotation of the mixing bowl, whereby the caustic magnesia hydrates in an exothermic reaction and excess water is driven off to form magnesium hydroxide pellets in the mixing bowl.

3,965,241

LEACHING TREMOLITE IMPURITY FROM TALC

N. Tryggve E. A. Baak, Marina Del Rey, and Dwight L. Harris, Westlake Village, both of Calif., assignors to Cyprus Mines Corporation, West Los Angeles, Calif.

Filed June 16, 1975, Ser. No. 587,175

Int. Cl.² C01B 33/24

U.S. Cl. 423—155 **15 Claims**

1. A process for the preparation of high purity talc from talc ore containing tremolite as an impurity, which comprises:

crushing said talc ore to provide finely ground talc of a particle size of minus 20 mesh;
combining said finely ground talc with a strong acid;
leaching said talc by subjecting said combination of talc and acid to a temperature of at least 110°C at a pressure of at least 1.5 kg/cm² for a time sufficient to reduce the amount of tremolite in said talc to less than 1.0 weight percent;
prior or subsequent to said leaching step, forming a dilute aqueous slurry of said talc and subjecting said slurry to at least one froth flotation; and
recovering a high purity talc.

3,965,242

METHOD FOR DESULFURIZING EXHAUST GAS BY ALKALI SULPHITE-GYPSUM PROCESS

Tomijiro Morita; Isao Funahashi; Masayoshi Sugai; Atushi Sasakawa, and Masakazu Takaiwa, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 331,879, Feb. 12, 1973, abandoned. This application May 27, 1975, Ser. No. 580,793

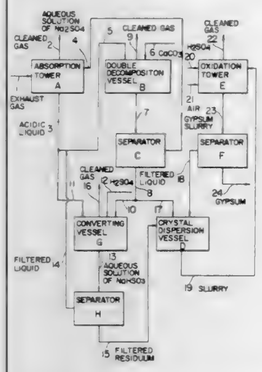
Claims priority, application Japan, Feb. 23, 1972, 47-18760

Int. Cl.³ C01B 17/56; C01D 5/14; C01F 11/46

U.S. Cl. 423—166 **3 Claims**

1. In a process for desulfurizing exhaust gas containing oxides of sulfur, including sulfur dioxide, and oxygen, which comprises (a) contact-reacting said exhaust gas with a solution containing an alkali metal sulfite to absorb a major portion of the sulfur dioxide and thus form an absorption liquid containing the alkali metal sulfite, the corresponding alkali metal bisulfite and the corresponding alkali metal sulfate, (b) adding lime or lime stone to the absorption liquid to cause a double decomposition reaction between the lime or lime stone and the alkali metal bisulfite contained in the absorption liquid and thus produce the corresponding alkali metal sulfite

and calcium sulfite, (c) separating the calcium sulfite from the resultant mixture and recycling the filtrate obtained therefrom to step (a), and (d) converting the separated calcium sulfite to produce gypsum, the improvement which comprises suspending a portion of the separated calcium sulfite in a portion of the absorption liquid formed in step (a), while adding sulfuric acid to the resultant suspension to lower the pH value



thereof to from 2 to 4 to (1) convert the alkali metal sulfate contained in said portion of the absorption liquid to the corresponding alkali metal bisulfite and (2) convert the suspended calcium sulfite to gypsum, separating the gypsum from the resultant mixture and recycling the filtrate obtained therefrom to step (b), the remaining portion of the separated calcium sulfite being subjected to oxidation.

3,965,243

RECOVERY OF SODIUM THIOCYANATE

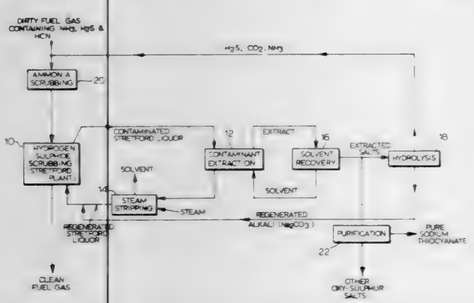
David Krofchak, Cambridge, Canada, assignor to David Krofchak Limited, Cambridge, Canada

Filed Sept. 10, 1974, Ser. No. 504,776

Claims priority, application United Kingdom, Sept. 11, 1973, 42551/73

Int. Cl.² B01D *53/34*; **C01C** *3/20*

U.S. Cl. 423—226 **5 Claims**



1. A process for the regeneration of an aqueous alkaline scrubbing liquor which has been used for removal of hydrogen sulphide from fuel gas and which contains alkali thiocyanate which comprises contacting at least a portion of said liquor with an organic extractant for said alkali thiocyanate, said extractant consisting essentially of n-butanol, separating the aqueous phase comprising scrubbing liquor of reduced alkali thiocyanate content from the alkali thiocyanate bearing organic extractant, recycling said liquor of reduced alkali thiocyanate content for re-use as gas scrubbbing liquor, separating alkali thiocyanate from said alkali thiocyanate bearing organic extractant to regenerate said extractant and recycling said regenerated extractant to treat additional used scrubbing liquor.

3,965,244

SELECTIVE REMOVAL OF SULFUR COMPOUNDS FROM ACID GAS MIXTURES CONTAINING SIGNIFICANT QUANTITIES OF CARBONYL SULFIDE

James A. Sykes, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 27, 1974, Ser. No. 527,578

Int. Cl.² B01D *53/34*

U.S. Cl. 423—228 **15 Claims**

1. A continuous process for selective removal of sulfur compounds from a feed gas mixture containing CO_2, H_2S and at least 50 parts per million of COS which comprises;

a. contacting said feed gas mixture in a first stage at a temperature of from 50°C to 90°C with an aqueous polyalkanolamine solution containing at least 20% by weight of a tetramethylene sulfone, said aqueous polyalkanolamine solution being saturated with CO_2 and H_2S at the partial pressures of said components in the acid gas feed mixture, thereby absorbing and hydrolyzing a substantial portion of the COS present in said acid gas feed mixture to form and maintain a steady state concentration of acid gas consisting substantially of CO_2 and H_2S in the gas phase of the first stage;

b. withdrawing said gas phase from the first stage and contacting it in a second stage with a regenerable H_2S-selective, aqueous alkanolamine absorbent solution to afford a substantially H_2S-free, CO_2-containing treated gas mixture and an absorbent solution loaded with absorbed H_2S;

c. regenerating the H_2S-loaded absorbent solution thereby liberating H_2S; and,

d. returning the regenerated absorbent into contact with the gas phase in the second stage of the process.

3,965,245

METHOD FOR PREPARING ALKALI METAL ORTHOPHOSPHATES AND AMMONIA IN A SINGLE STEP

Bernard H. Nicolaisen, Houston, Tex., assignor to Olin Corporation, New Haven, Conn.

Filed Dec. 30, 1974, Ser. No. 537,234

Int. Cl.² C01B *15/16*, *25/26*; **C01C** *1/02*

U.S. Cl. 423—312 **19 Claims**

1. A process for preparing a substantially ammonia-free solution of alkali metal orthophosphate and simultaneously recovering ammonia comprising:

a. contacting a selected ammonium phosphate with sufficient alkali metal hydroxide to provide an aqueous reaction mixture having a desired alkali metal/P molar ratio in the range of 1–2,

b. passing said reaction mixture downward in countercurrent contact with ammonia and inert stripping gases at elevated temperature and at a pressure in the range of 130–500 p.s.i.g. in a substantially vertical column having vapor-liquid contact means,

c. withdrawing from said column an overhead product comprising said ammonia and separately withdrawing therefrom a bottoms product comprising an aqueous solution of alkali metal orthophosphate having said alkali metal/P molar ratio and being substantially free of ammonia.

3,965,246

PROCESS FOR THE PRODUCTION OF AMMONIA USING ALIGNED CATALYST PARTICLES

Helmut Hinrichs, Leonding near Linz, Austria, assignor to Chemie Linz Aktiengesellschaft, Austria

Filed Feb. 19, 1974, Ser. No. 443,523

Claims priority, application Germany, Feb. 19, 1973, 2308101

Int. Cl.² C01C *1/04*

U.S. Cl. 423—361 **6 Claims**

1. In a process for carrying out the catalytic high pressure synthesis of ammonia using the gaseous reactants hydrogen and nitrogen in the presence of a fused iron oxide catalyst which is reduced to iron at the beginning of the synthesis of ammonia the improvement which comprises passing the gas through layers of said iron catalyst which consists predominately or entirely of particles of which the length of one spatial dimension is 2 to 20 times the length of at least one of the smaller spatial dimensions perpendicular thereto, and at least one of the smaller spatial dimensions is from 1 to 5 mm long, the catalyst being arranged in at least one cylindrical catalyst bed in a manner that the particles are orientated with their longest spatial dimension substantially parallel to the direction of flow of the gas.

3,965,247

RECOVERY OF SODIUM NITRITE FROM BY-PRODUCT PROCESS LIQUORS CONTAINING SODIUM CHLORIDE

Clarence Frederick Hecklinger, Camillus, and Donald Edward Crook, Auburn, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 20, 1975, Ser. No. 588,740

Int. Cl.² C01B *21/50*

U.S. Cl. 423—385 **10 Claims**

1. A process for recovering sodium nitrite from an aqueous solution containing dissolved therein sodium nitrite and sodium chloride which comprises: subjecting said aqueous solution to crystallization in a first crystallization zone under conditions sufficient to effect crystallization of sodium chloride from said solution, including operating temperatures of from about 110° to 130°C, to form a first slurry containing sodium chloride crystals; separating said sodium chloride crystals from said first slurry to form a solution containing dissolved sodium nitrite; subjecting said sodium nitrite solution to crystallization in a second crystallization zone under conditions sufficient to effect crystallization of sodium nitrite from said solution, including operating temperatures of from about 10° to 60°C, to form a second slurry containing sodium nitrite crystals; and recovering said sodium nitrite crystals from said second slurry.

3,965,248

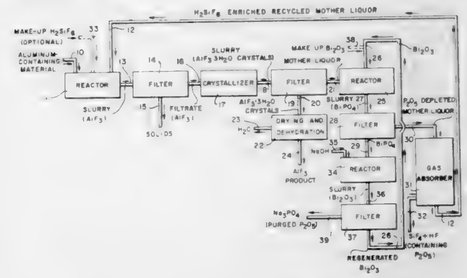
REMOVAL OF P_2O_5 FROM ALUMINUM FLUORIDE ENRICHED CRYSTALLIZATION MOTHER LIQUORS

Tadeusz K. Wiewiorowski, and Michael O. Nutt, both of New Orleans, La., assignors to Freeport Minerals Company, New York, N.Y.

Filed Aug. 12, 1974, Ser. No. 496,447

Int. Cl.² C01F *7/50*; **C01B** *25/26*; **C01G** *29/00*

U.S. Cl. 423—489 **7 Claims**



1. In a method for preparing aluminum fluoride, which comprises reacting an aluminum-containing material with a P_2O_5 contaminated inorganic fluorine acid to produce an aqueous solution of aluminum fluoride, subjecting the solution to crystallization to recover crystals of hydrated aluminum fluoride, separating the crystals from an aluminum fluoride enriched crystallization mother liquor which contains P_2O_5 values, and recycling the separated mother liquor to the process, the improvement which comprises: treating the separated mother liquor prior to recycling with a material which provides bismuth ions therein in an amount which insures a Bi/PO_4 mole ratio of about 1.0 to 1.05, while the acidity of the mother liquor is less than about 5%, expressed as weight percent H_2SiF_6, to essentially quantitatively precipitate the P_2O_5 values as bismuth phosphate; and separating the treated mother liquor from the bismuth phosphate precipitate.

3,965,249

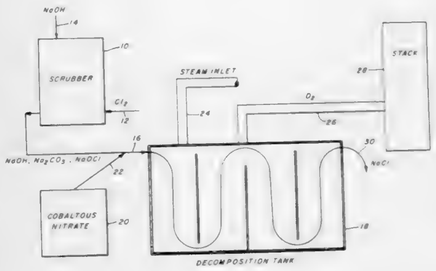
ANTI-POLLUTION METHOD

Donald L. Kinosz, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 469,819, May 14, 1974, abandoned, and a continuation-in-part of Ser. No. 290,223, Sept. 18, 1972, abandoned. This application Jan. 20, 1975, Ser. No. 542,109

Int. Cl.² C01B *11/06*

U.S. Cl. 423—497 **5 Claims**



1. A process for treating chlorine-containing gas to convert the chlorine therein to a chloride which comprises:

a. scrubbing chlorine-containing gas with an aqueous base selected from the class consisting of an alkali metal compound or an alkaline earth metal compound to convert the chlorine therein to a hypochlorite; solution and

b. decomposing said hypochlorite substantially continuously in the resulting solution

1. at a pH maintained between 7–13

2. at a temperature maintained between 20°C and the boiling point of the solution and

3. in the presence of from about 9–1000 ppm based on weight of the hypochlorite solution of an unsupported catalyst selected from the class consisting of cobalt, nickel, copper or calcium, in the form of a salt, fused metal, or metal powder which is converted into a finely divided oxide while converting said hypochlorite into chloride while inhibiting release of free chlorine gas.

3,965,250

SEPARATION OF SULFUR ISOTOPES

Robert DeWitt, Centerville; Bernhart E. Jepson, Dayton, and Roger A. Schwind, Centerville, all of Ohio, assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

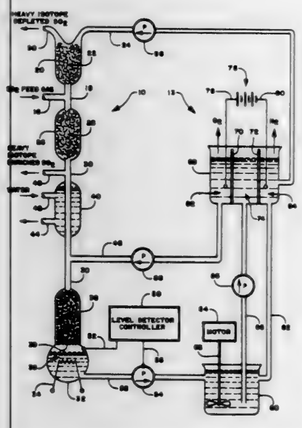
Division of Ser. No. 322,566, Jan. 10, 1973, Pat. No. 3,869,255. This application July 3, 1974, Ser. No. 485,652

Int. Cl.² B01D *59/32*; **C01B** *17/48*

U.S. Cl. 423—539 **5 Claims**

1. A method for separating different isotopes of sulfur contained in a sulfur dioxide feed gas wherein the chemicals used for the separation processes are reacted, regenerated and reused with said feed fluid comprising; contacting and reacting said feed gas with a material selected from the group consisting of sodium hydroxide at a molarity between about 1 and about 6 molar, potassium hydroxide at a molarity between about 1 and about 6 molar, and ammonium hydroxide at a molarity between about 1 and about 12 molar, at a tempera-

ture of from about 20°C. to 100°C. to form a hydrogen sulfite (HSO_3^-) reaction product, continuing said contacting of said feed gas and said material to effect exchange of the heavier isotopes of sulfur in said sulfur dioxide feed gas with lighter isotopes of sulfur in said hydrogen sulfite reaction product, said contacting and isotope exchange yielding said hydrogen sulfite reaction product enriched in the heavier isotopes of sulfur, removing reacted feed gas depleted in said heavier isotopes, contacting at a temperature of from 25°C. to 70°C. said hydrogen sulfite (HSO_3^-) reaction product enriched in said heavier isotopes of sulfur with sulfuric acid at a molarity between about 1 molar and about 6 molar to form a subsequent sulfur dioxide gas enriched with the heavier of said isotopes of sulfur and hydrogen sulfate (HSO_4^-) reaction



product, removing said subsequent sulfur dioxide gas enriched with a heavier of said isotopes, contacting said hydrogen sulfate (HSO_4^-) reaction product with said material at a temperature of from 25°C. to 100°C. to form a separate sulfate reaction product, passing an electrical current through said separate sulfate reaction product at a temperature of from 20°C. to 100°C. to dissociate said separate sulfate reaction product into anions and cations, effecting migration of said cations through a cation permeable membrane to form said material, and effecting migration of said anions through an anion permeable membrane to form said sulfuric acid, and recycling said material and said sulfuric acid to contact and react with additional quantities of said sulfur dioxide feed fluid.

3,965,251
METHOD OF REGENERATING A DEGRADED WORKING SOLUTION FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Hiroshi Shio; Junichiro Sugano, both of Yokkaichi; Tadashi Yoshii, Tokyo; Kichiro Iwamoto, Yokkaichi; Yasuhisa Kuriyama, Yokkaichi, and Minoru Kakuda, Yokkaichi, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 172,244, Aug. 16, 1971, abandoned. This application Aug. 2, 1973, Ser. No. 384,846
Claims priority, application Japan, Aug. 18, 1970, 45-71894
Int. Cl.² C01B *15/02*
U.S. Cl. 423—588 **4 Claims**

1. A method for regenerating a degraded working solution for the production of hydrogen peroxide by an auto-oxidation process employing an anthraquinone, which comprises:

contacting at a temperature of below 130°C, but a temperature sufficient to convert non-effective anthraquinone to effective anthraquinone, and in the presence of a catalyst comprising a metal selected from the group consisting of platinum group metals supported on an alkaline earth metal oxide carrier selected from the group consisting of CaO, MgO, Al_2O_3, $CaO.Al_2O_3$, $MgO.SiO_2$, and $MgO.Al_2O_3$, said degraded working solution, which comprises more than 0.02 moles of non-effective anthraquinone per liter of working solution and tetrahydroanthraquinone, with an olefinic compound whose hydrogenation product is gaseous at said contact temperature to accelerate regeneration of non-effective anthraquinone faster than the dehydrogenation reaction of tetrahydroanthraquinone to convert substantially all non-effective anthraquinone to anthraquinone and removing the hydrogenation product of the olefinic compound; and

subsequently contacting the thus treated working solution at a temperature above 130°C., said temperature being sufficient to promote the dehydrogenation reaction of said tetrahydroanthraquinone, and in the presence of said catalyst, with an olefinic compound whose hydrogenation product is gaseous at said contact temperature to dehydrogenate said tetrahydroanthraquinone without incurring any impedance of the dehydrogenation reaction and removing the hydrogenation product of the olefinic compound.

3,965,252
HYDROGEN PRODUCTION

Ronald A. Kmecak, and Stephen M. Kovach, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 327,010, Jan. 20, 1973, abandoned, which is a division of Ser. No. 92,243, Nov. 23, 1970, Pat. No. 3,725,246, which is a continuation of Ser. No. 769,727, Oct. 22, 1968, abandoned. This application Sept. 23, 1974, Ser. No. 508,193
Int. Cl.² C01B *1/18*
U.S. Cl. 423—651 **5 Claims**

1. A process for the production of hydrogen, comprising contacting paraffinic hydrocarbons consisting essentially of C_2 to C_8 hydrocarbons with a catalyst consisting essentially of a catalytic amount of a Group VIB metal of the Periodic System, and a promoting amount of Group IA metal of the Periodic System, both deposited on an enert oxide carrier, at a temperature between about 900°F. and about 1250°F, an absolute pressure of between about 100 and 2500 mm of mercury, and a gas hourly space velocity of about 20 to about 2930 volumes of gaseous hydrocarbon feedstock, computed at 60°F. and 1 atmosphere, per unit volume of catalyst per hour, liquefying the effluent product and flashing a dry gas portion containing hydrogen therefrom.

3,965,253
PROCESS FOR PRODUCING HYDROGEN

Donald W. Miller, Old Greenwich, Conn., and Keith E. Zarker, Orinda, Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 248,965, May 1, 1972, abandoned, which is a division of Ser. No. 746,848, July 23, 1968, abandoned. This application May 7, 1975, Ser. No. 575,297
Int. Cl.² C01B *1/16, 1/18, 1/32, 31/20*
U.S. Cl. 423—652 **5 Claims**

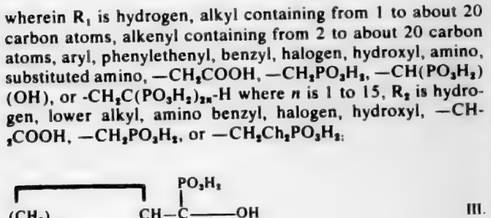
1. A process for supplying hydrogen to a high pressure catalytic hydrogen-consuming process which comprises:

A. partially oxidizing hydrocarbon to produce a carbon monoxide and hydrogen-containing gas,

B. reacting the carbon monoxide and hydrogen-containing gas with water to produce a carbon dioxide and hydrogen-containing gas,

C. centrifugally compressing said carbon dioxide and hydrogen-containing gas to a carbon dioxide partial pressure of at least 180 psi,

D. contacting the resultant compressed gas with an absorbing liquid consisting essentially of diisopropanolamine, a cyclotetramethylene sulfone and water to produce an absorber effluent gas that is substantially free of carbon dioxide, said effluent gas being at a pressure which at least approximates that of the high pressure hydrogen-consuming process,



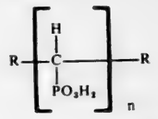
E. introducing said absorber effluent gas into said hydrogen-consuming process.

3,965,254
COMPOSITIONS FOR THE TREATMENT OF CALCIFIC TUMORS

Andrew John Tofe, and Marion David Francis, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

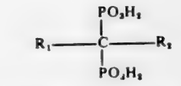
Continuation-in-part of Ser. No. 362,971, May 23, 1973. This application Nov. 15, 1974, Ser. No. 524,013
Int. Cl.² A61K *43/00*; C07F *9/02*
U.S. Cl. 424—1 **15 Claims**

1. A sterile dilute composition in unit dosage form comprising from about 2 to 20 millicuries of a ^{32}P or ^{33}P tagged polyphosphonate compound suitable for the treatment of calcific tumors selected from the group consisting of:



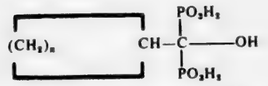
I.

wherein each R is hydrogen or CH_2OH and n is an integer of from 3 to 10;



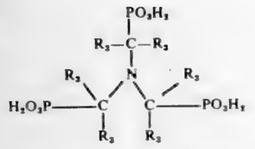
II.

wherein R_1 is hydrogen, alkyl containing from 1 to about 20 carbon atoms, alkenyl containing from 2 to about 20 carbon atoms, aryl, phenylethenyl, benzyl, halogen, hydroxyl, amino, substituted amino, $-CH_2COOH$, $-CH_2PO_3H_2$, $-CH(PO_3H_2)(OH)$, or $-CH_2C(PO_3H_2)_2$-H where *n* is 1 to 15, R_2 is hydrogen, lower alkyl, amino benzyl, halogen, hydroxyl, $-CH_2COOH$, $-CH_2PO_3H_2$, or $-CH_2CH_2PO_3H_2$;



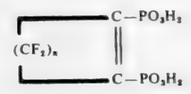
III.

wherein *n* is an integer of from 3 to 9;



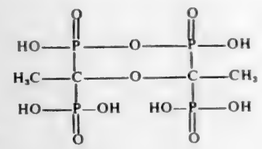
IV.

wherein each R_3 is hydrogen or lower alkyl (e.g., methyl, ethyl, propyl and butyl);

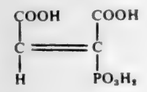


V.

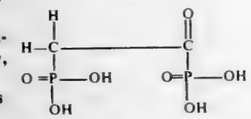
wherein *n* is an integer of from 2 to 4;



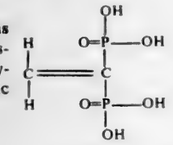
VI.



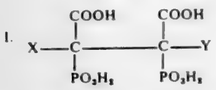
VII.



VIII.



IX.



X.

wherein X and Y are each hydrogen or hydroxy; and the pharmaceutically acceptable salts of each of the foregoing acids.

3,965,255
CONTROLLED DRUG RELEASING PREPARATIONS

Rene Bloch, Savion; Ora Kedem, Rehovoth, and Ester Löbel, Hulon, all of Israel, assignors to E. E. Eljim Ecology Ltd., Rehovoth, Israel

Filed May 1, 1974, Ser. No. 466,018
Int. Cl.² A61K *9/22, 9/24, 9/32, 9/58*
U.S. Cl. 424—19 **9 Claims**

1. A zero order release rate drug releasing preparation adapted for oral administration and for the controlled release of the drug contained therein at a substantially constant release rate during the first hour after administration and for several hours thereafter, which preparation comprises a drug body encapsulated in or coated with an outer solvent member, said drug body being selected from the group consisting of pure drug and drug admixed with an additional substance or substances which do not substantially influence the zero order release rate of the drug in said drug releasing preparation, and

said solvent membrane comprising at least one plasticizer and at least one reinforcing polymer, which membrane is essentially insoluble in the digestive tract, the plasticizer content constituting from about 40 to about 90% by weight of the solvent membrane, said solvent membrane in the as prepared drug releasing preparation being substantially free of drug.

3,965,256

SLOW RELEASE PHARMACEUTICAL COMPOSITIONS

Stewart Thomas Leslie, Aberdeen, Scotland, assignor to Synergistics, New York, N.Y.

Continuation-in-part of Ser. No. 253,746, May 16, 1972, abandoned. This application June 5, 1974, Ser. No. 476,351

Int. Cl.² A61K *9/22*

U.S. Cl. 424—22 **5 Claims**

1. A slow release pharmaceutical tablet comprising a therapeutically sufficient quantity of a pharmacologically active compound, a slow release pharmaceutical composition comprising two to four parts by weight of a higher aliphatic alcohol selected from the group consisting of aliphatic alcohols with the formula ROH, wherein R is an alkyl group having from 8 to 18 carbon atoms in chain length, ceto-stearyl alcohol and mixtures of these, and one part by weight of a hydrated hydroxy alkyl cellulose compound selected from the group consisting of hydroxy methyl cellulose, hydroxy ethyl cellulose, hydroxy propyl cellulose and mixture of these, said composition being formed by:

a. melting and granulating said higher aliphatic alcohol,

b. hydrating said hydroxy alkyl cellulose with two to four volumes of water for each part by weight of cellulose compound and granulating said hydrated cellulose compound,

c. blending the active ingredient with either the granulated melt of step (a) or with the granulated hydrated alkyl cellulose of step (b) or with mixtures thereof,

d. drying the blend of granules to obtain the formed dried slow release pharmaceutical granules, and

e. compressing the granules admixed with a sufficient quantity of a pharmaceutically acceptable tablet diluent into compressed tablets wherein the proportion of said slow release composition being present is in the amount of from 20 percent to 30 percent by weight of the total weight of the tablet.

3,965,257

COMPOSITIONS AND METHODS FOR THE TREATMENT OF THE SYMPTOMS OF HISTAMINE INDUCED ALLERGIC REACTIONS

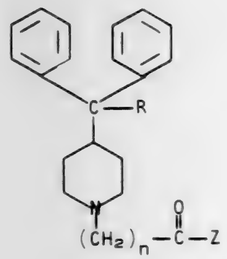
Albert A. Carr, and C. Richard Kinsolving, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 221,823, Jan. 28, 1972, Pat. No. 3,806,526. This application Jan. 28, 1974, Ser. No. 437,161

Int. Cl.² A61K *31/535*

U.S. Cl. 424—45 **27 Claims**

1. A pharmaceutical composition in unit dosage form containing from about 1 to 5 milligrams of a compound of the formula



wherein R is selected from the group consisting of hydrogen and hydroxy; n is a positive integer of from 1 to 3; and Z is selected from the group consisting of thienyl, phenyl, and substituted phenyl wherein the substituents on the substituted phenyl may be attached at the ortho, meta, or para positions of the substituted phenyl ring and are selected from the group consisting of a halogen atom, a straight or branched alkyl chain of from 1 to 4 carbon atoms, a lower alkoxy group of from 1 to 4 carbon atoms, a di(lower)alkylamino group, and a saturated monocyclic heterocyclic ring selected from the group consisting of pyrrolidino, piperidino, morpholino, and N-(lower)alkylpiperazino; and a pharmaceutically acceptable acid addition salt thereof and a significant amount of a pharmaceutically acceptable carrier.

3,965,258

PROCESS FOR PRODUCTION OF VACCINES

William J. McAleer, Ambler; Kenneth L. Posch, Lansdale, both of Pa.; Clarence L. Baugh, Lubbock, Tex., and Raymond E. Spier, Merron Guilford, England, assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 420,478, Nov. 30, 1974, abandoned, which is a continuation of Ser. No. 191,835, Oct. 22, 1971, abandoned. This application Apr. 16, 1975, Ser. No. 568,493

Int. Cl.² A61K *39/12*; **C12B** *1/00*; **C12K** *5/00, 7/00*

U.S. Cl. 424—89 **7 Claims**

1. A large scale tank process for producing a live virus vaccine for immunization of chickens against Marek's disease which comprises

incubating a mixture of viral-free cells, growth medium and isolated turkey herpes virus in a multi-plate apparatus which comprises a plurality of discs mounted on a rotable shaft, the incubation being started before any substantial cell growth has taken place in the multi-plate apparatus,

continuing the incubation until a satisfactory virus level is obtained, and

harvesting the virus.

3,965,259

CANNED EXPANDED PROTEIN LATTICE FOOD PRODUCT

Thomas B. Coppage, Richmond Heights; Ronald J. Flier, Ladue, and Bernard M. Payne, St. Charles, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Division of Ser. No. 376,857, July 5, 1973, Pat. No. 3,865,966, which is a continuation-in-part of Ser. No. 280,539, Aug. 14, 1972, abandoned, which is a continuation of Ser. No. 5,983, Jan. 26, 1970, abandoned. This application July 18, 1974, Ser. No. 489,629

Int. Cl.² A23K *1/10*; **A23L** *1/31*

U.S. Cl. 426—90 **10 Claims**

1. A complete maintenance, nutritionally balanced food composition resembling a canned all meat animal food composition in appearance, comprising a protein component of both vegetable and meat origin, the vegetable portion of said protein component being expanded soybean fiber chunks having an expanded meat-like lattice in the amount of up to about 25% by weight of said food composition, said chunks being uniformly distributed throughout said composition, and impregnated with moisture, oils and flavors to impart a natural meat texture and flavor thereto, and said meat portion of said protein component being intermixed therewith and being substantially uniform particles of meat in the range comprising about 9 to about 70% by weight of said food composition, said meat particles adhering to the surface of said chunks so the food composition remains as a substantially unsegregated mass when removed from its container.

3,965,260

ANTI-INFLAMMATORY DIPEPTIDE

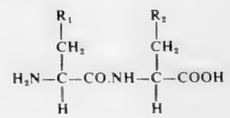
John N. McArthur, Toronto, Canada; Peter D. Dawkins, Taunton, and Mervyn J. H. Smith, London, both of England, assignors to John N. McArthur, Toronto, Canada

Filed July 7, 1975, Ser. No. 593,672

Int. Cl.² A61K *37/00*

U.S. Cl. 424—177 **13 Claims**

1. A method for the treatment of inflammation in a mammal which comprises administering to such mammal an effective amount of a composition comprising: a dipeptide or a pharmaceutically-acceptable salt thereof surrounded by a coating of an enteric substance which resists dissolution in gastric fluids but disintegrates in the intestine, said dipeptide having the general formula:



wherein R_1 and R_2 are the same or different and each is either phenyl or indolyl.

3,965,261

METHOD FOR TREATING PAPILLOMAS

John L. Gainer, Charlottesville, Va., assignor to University of Virginia, Charlottesville, Va.

Filed Apr. 29, 1975, Ser. No. 572,631

Int. Cl.² A61K *31/70*

U.S. Cl. 424—180 **5 Claims**

1. A method for the treatment of Papillomas on a mammal which comprises administering to a mammal in need of said treatment an anti-Papilloma effective amount of a water soluble carotenoid.

3,965,262

METHOD OF ENHANCING LEARNING AND/OR MEMORY IN WARM BLOODED ANIMALS

Paul Gordon, Chicago, Ill., assignor to Strategic Medical Research Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 337,134, March 1, 1973, and a continuation-in-part of Ser. No. 424,786, Dec. 14, 1973. This application Apr. 29, 1974, Ser. No. 465,339

Int. Cl.² H01N *9/00*

U.S. Cl. 424—180 **34 Claims**

1. A method of enhancing learning or memory in a warm blooded animal which consists essentially of administering thereto a therapeutically effective amount to enhance the ability of the animal to learn tasks or to enhance the ability of the animal to memorize information of a substance selected from the group consisting of

I. ethereally monosubstituted monosaccharides having the formula $S_1—O—Y$ and therapeutically effective and pharmaceutically acceptable organic acid and inorganic acid salts thereof, and

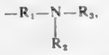
II. ethereal monosubstitutions of monosaccharide derivatives having the formula $S_2—O—Y$ and therapeutically effective and pharmaceutically acceptable organic acid and inorganic acid salts thereof,

Wherein:

1. S_1 is the residue of a non-derivatized monosaccharide selected from the group consisting of pentoses, hexoses and heptoses,

2. S_2 is the residue of a monosaccharide selected from the group consisting of pentoses, hexoses and heptoses which has been derivatized with a substance selected from the group consisting of (a) an aliphatic alcohol containing 1–18 carbon atoms to produce an acetal group at the site of an available hydroxyl residue, (b) an aldehyde containing 1–18 carbon atoms to produce an acetal group at the site of an available hydroxyl residue, (c) a ketone containing 1–18 carbon atoms to produce a ketal group at the site of an available hydroxyl residue, and (d) an organic acid residue containing 1–18 carbon atoms to produce an ester group at the site of an available hydroxyl residue, and

3. Y in each instance is selected from the group consisting of cyclic monovalent nitrogen containing organic radicals and residua and monovalent organic radicals and residua having the general formula



wherein R_1 is a divalent organic radical having a linear carbon chain length of about 1–7 carbon atoms and R_2 and R_3 are selected from the group consisting of —H,—OH,—SH, halogen and monovalent organic radicals and residua having a linear carbon chain length of about 1–7 carbon atoms,

and subjecting the said warm blooded animal to an environment wherein it is required to learn tasks or memorize information.

3,965,263

CHOLINE SALICYLATE COMPOSITIONS AND METHODS FOR ACHIEVING ANALGESIA

Walter Thomas Swimm, Darien, Conn., assignor to The Purdue Frederick Company, Norwalk, Conn.

Division of Ser. No. 401,771, Sept. 28, 1973, Pat. No. 3,898,532, which is a division of Ser. No. 303,920, Nov. 6, 1972, Pat. No. 3,801,613. This application May 12, 1975, Ser. No. 576,926

Int. Cl.² A61K *31/695*

U.S. Cl. 424—184 **8 Claims**

1. The method of achieving analgesia in an animal or a human comprising administering to said animal or human a therapeutically sufficient quantity of choline salicylate trimethylsilylsilicon dioxide.

3,965,264

PROCESS FOR CONTROLLING MICROBIOLOGICAL ORGANISMS IN AQUEOUS OR PETROLEUM HYDROCARBON SYSTEMS

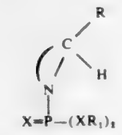
Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 210,106, Dec. 20, 1971, Pat. No. 3,821,232. This application Mar. 19, 1974, Ser. No. 452,644

Int. Cl.² A01N *9/36*

U.S. Cl. 424—200 **12 Claims**

1. A process of inhibiting the growth of bacteria, fungi, algae and protozoa in a.. aqueous or petroleum hydrocarbon system which comprises adding to said system an effective amount of a Diels-Alder Adduct of (1) a dihydro-nitrogen phosphoramidate of the formula



where N — C

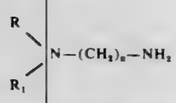
represents a nitrogen heterocyclic group, R and R_1 are lower alkyl or phenyl and X is O or S, and (2) a dienophile selected from the group consisting of unsaturated acids, alpha, beta-unsaturated carbonyl compounds, acetylenic compounds and cyclic ketones.

3,965,265
ANTIMICROBIAL AGENTS FOR WATER CONSERVATION

Günter Koppensteiner, Hilden, Rhineland; Hans-Werner Eckert, Dusseldorf, and Volker Wehle, Hilden, Rhineland, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

Division of Ser. No. 352,941, April 20, 1973, Pat. No. 3,874,869. This application Jan. 20, 1975, Ser. No. 542,229
Claims priority, application Germany, Apr. 24, 1972, 2220026; Mar. 22, 1973, 2314221
Int. Cl.² A01N 9/36
U.S. Cl. 424—204 **32 Claims**

1. A process for the prevention of the growth of microorganisms selected from the group consisting of gram-positive bacteria, gram-negative bacteria, and fungi which consists essentially of contacting said microorganisms with an amount effective to prevent the growth of said microorganisms of a reaction product of ε-caprolactam with a N-alkylalkylenediamine of the formula



wherein R is selected from the group consisting of alkyl of 10 to 18 carbon atoms, hydroxyalkyl of 10 to 18 carbon atoms, alkenyl of 10 to 18 carbon atoms, hydroxyalkenyl of 10 to 18 carbon atoms, alkadienyl of 10 to 18 carbon atoms, alkatrienyl of 10 to 18 carbon atoms, and mixtures of alkyl derived from fatty acid mixtures of 10 to 18 carbon atoms, R_1 is a member selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, and n is an integer from 2 to 6, with the molar ratio of N-alkylalkylenediamine to ε-caprolactam ranging from 1:1 to 1:10 and said reaction being carried out for 3 to 20 hours in the liquid phase at a temperature above 180°C.

3,965,266
METHYL ROSANILINE CHLORIDE ADDITIVE FOR PREVENTION OF FUNGI AND MOLDS IN POULTRY AND ANIMAL FEEDSTUFFS

Dennis E. Jackson, Springfield, Mo., assignor to Maremco, Inc., Springfield, Mo.

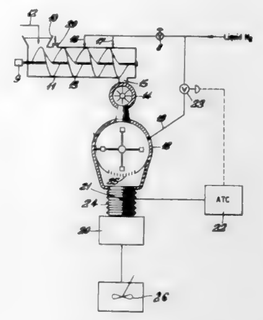
Continuation of Ser. No. 307,372, Nov. 17, 1972, abandoned. This application Jan. 6, 1975, Ser. No. 538,905
Int. Cl.² A23K 3/00
U.S. Cl. 426—97 **6 Claims**

1. A substantially dry, finely-divided, solid additive for inhibiting or preventing microbial activity, fungi and mold growths in animal and poultry feeds comprising a finely-divided, non-toxic, mineral carrier having from about 0.05% to 5.0% by weight of methyl rosaniline chloride dispersed thereon, said mineral carrier having incorporated therein by adsorption or reaction from about 0.1% to 10% by weight of a non-toxic acid based on the weight of the carrier, said acid being one which is adsorbed by or forms water soluble reaction products with said carrier, to thereby facilitate the release of said methyl rosaniline chloride from the carrier in the presence of moisture.

3,965,267
CRYOPULVERIZING AND POST-TREATMENT OF FLAVORING MATERIALS

Robert Bruce Davis, Nyack, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 17, 1974, Ser. No. 506,863
Int. Cl.² A23L 3/36; B02C 21/00
U.S. Cl. 426—273 **4 Claims**



1. A process for comminuting a flavoring material selected from the group consisting of spices, coffee and cocoa to a powder finer than 70 mesh which is readily dispersible in aqueous solution comprising the steps of:
   1. feeding the flavoring material to be comminuted into a grinding zone,
   2. introducing a cryogenic refrigerant into said grinding zone in sufficient quantity to maintain said flavoring material at a cryogenic temperature,
   3. pulverizing said flavoring material in said grinding zone to form a powder finer than 70 mesh,
   4. separating said powder from the vaporized cryogenic refrigerant and collecting same, and
   5. agitating said powder at a temperature above −100°F but below the deteriaration temperature of the flavoring material until a sufficient quantity of the oil content of the flavoring material is released from the powder to coat its surface where said agitation is for a time sufficient to produce a powder capable of forming an aqueous dispersion substantially free of agglomerated particles of said flavoring material.

3,965,268
EXPANDED PROTEIN PRODUCT COMPRISING SULFUR-CONTAINING ORGANIC COMPOUND

Charles T. Stocker, Augusta; Robert E. Schara, Battle Creek, both of Mich.; William E. Marshall, Mount Kisco, N.Y.; John T. Hayes, Jr., North Tarrytown, N.Y., and Martin Glicksman, Valley Cottage, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 244,996, April 17, 1972, abandoned, which is a continuation of Ser. No. 876,081, Nov. 12, 1969, abandoned. This application Mar. 1, 1974, Ser. No. 447,172
Int. Cl.² A23J 1/02, 1/12, 1/14
U.S. Cl. 426—331 **10 Claims**

1. A method of preparing an expanded, edible protein product having an open, cellular structure comprising forming an admixture of proteinaceous material having a protein content of at least about 30% by weight, from about 0.05% to about 2.0% by weight of said proteinaceous material of a sulphur-containing organic compound selected from the group consisting of cysteine hydrochloride, D,L-methionine, sodium lignosulfonate, thiamine mononitrate, calcium thioglycollate and mixtures thereof, and water in an amount sufficient to result in a moisture content of 15 to about 50% by weight of said admixture; heating the mix to a temperature above about 220°F, mechanically working the heated mix at a pressure substantially above atmospheric pressure; and expanding the mix by suddenly releasing the pressure.

3,965,269
METHOD OF EXTRACTING ROASTED COFFEE

William F. Lee, Dollard des Ormeauz; William J. Jeffery, Chateauguay Centre; Richard R. Pyves, and Moshi Y. Isaac, both of Montreal, all of Canada, assignors to General Foods Limited, Toronto, Canada

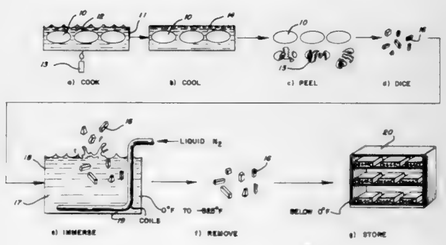
Filed Dec. 11, 1972, Ser. No. 313,726
Claims priority, application Canada, Nov. 2, 1972, 155431
Int. Cl.² A23F 1/08
U.S. Cl. 426—387 **11 Claims**

1. A process for producing coffee extract by split-extraction percolation of roasted and ground coffee wherein a percolator set is divided into an atmospheric section and an autoclave section, comprising
   a. extracting soluble coffee solids from roasted and ground coffee in said autoclave section by passing an aqueous autoclave extraction liquid through said autoclave section;
   b. drawing off a pre-determined quantity of autoclave coffee extract from the fresh stage of said autoclave section;
   c. splitting said autoclave coffee extract into a product portion and a feed portion;
   d. passing the feed portion of said autoclave extract through said atmospheric section to extract soluble coffee solids from the roasted and ground coffee in said atmospheric section;
   e. drawing off a pre-determined quantity of atmospheric coffee extract product from the fresh stage of said atmospheric section; and
   f. further processing said atmospheric coffee extract and said product portion of said autoclave coffee extract to obtain a dry instant coffee product.

3,965,270
METHOD OF FREEZING COOKED EGGS

Jacob J. Epstein, Topeka, Kans., assignor to Seymour Foods, Inc., Topeka, Kans.

Filed Aug. 12, 1974, Ser. No. 496,455
Int. Cl.² A23L 1/32; C12C 3/04
U.S. Cl. 426—418 **9 Claims**

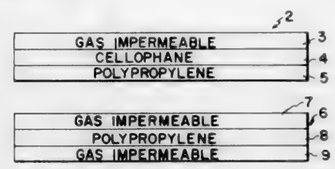


1. A method of freeze treating a shelled, cooked egg whereby said egg may be stored satisfactorily and upon thawing said has physical and chemical characteristics substantially unchanged from the freshly cooked condition of said egg said method comprising:
   immersing and retaining said egg in a liquid bath, the temperature of which is maintained at from approximately 0°F to approximately −325°F, until said egg is frozen;
   removing said frozen egg from said bath; and
   storing said frozen egg at temperatures below approximately 0°F.

3,965,271
METHOD FOR PACKAGING CHEESE CURD

Frank C. Harrington, Danville, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Aug. 19, 1974, Ser. No. 498,483
Int. Cl.² A01J 25/13
U.S. Cl. 426—515 **8 Claims**



1. In a process for producing a cheese product wherein a cheese curd is extruded through a nozzle into a flexible tubular mold, permitted to solidify or knit, and then removed from the mold to form a cheese product, the improvement which comprises:
   employing as said mold, a flexible tubular mold having (a) an outer film comprised of a laminate of a first film ply of cellophane having bonded to its outer surface a second film ply having a gas transmission rate of less than 10 cc/100 in.²/24 hour-atm. and a third film ply of biaxially oriented polypropylene bonded to the inner surface of the cellophane ply, and (*b*) an inner film comprised of a fourth film ply of biaxially oriented polypropylene.

3,965,272
METHOD OF FREEZE TREATING MAYONNAISE-CONTAINING PRODUCTS

Jacob J. Epstein, and Lawrence R. York, both of Topeka, Kans., assignors to Seymour Foods, Inc., Topeka, Kans.

Continuation-in-part of Ser. No. 496,455, Aug. 12, 1974, Pat. No. 3,965,270. This application Aug. 18, 1975, Ser. No. 605,631
Int. Cl.² A23L 1/24; A23B 4/06, 5/04
U.S. Cl. 426—524 **11 Claims**

1. A method of freeze treating a mayonnaise-containing product whereby such product may be stored satisfactorily in a frozen condition and upon thawing will maintain physical and chemical characteristics substantially unchanged from its pre-frozen state, said method comprising:
   immersing said product in a liquid bath of an inert liquid, said liquid maintained at a temperature of greater than approximately −50°F. but less than approximately 0°F.;
   maintaining said product in said bath until said product is completely frozen;
   removing said frozen product from said bath; and
   storing said frozen product at temperatures greater than approximately −50°F. but less than approximately 0°F.

3,965,273
DRY CARBONATION SOURCE AND METHOD FOR PREPARING THE SAME, AND DRY CARBONATED BEVERAGE CONCENTRATE

Howard D. Stahl, Hartsdale, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,107
Int. Cl.² A23L 1/22, 2/02
U.S. Cl. 426—548 **15 Claims**

1. A dry carbonated beverage concentrate for preparing a carbonated beverage comprising:
   a. a dry carbonation source which comprises a solid suspension of finely-divided calcium carbonate dispersed within a matrix of a water-soluble carbohydrate wherein the calcium carbonate has an average primary particle size of less than about 100 millimicrons and is substantially free from agregates in excess of about 10 microns,

b. a dry non-toxic acid, and
c. a flavorant.

10. A dry carbonated beverage concentrate according to claim **9** wherein the acid is present in an amount of from about 1 to 20% in excess of the amount theoretically required to release all of the carbon dioxide from the calcium carbonate and the supplemental carbonation source into solution upon solvation in water.

3,965,274

METHOD OF PREVENTING PREGNANCY WITH LACTONE DERIVATIVES

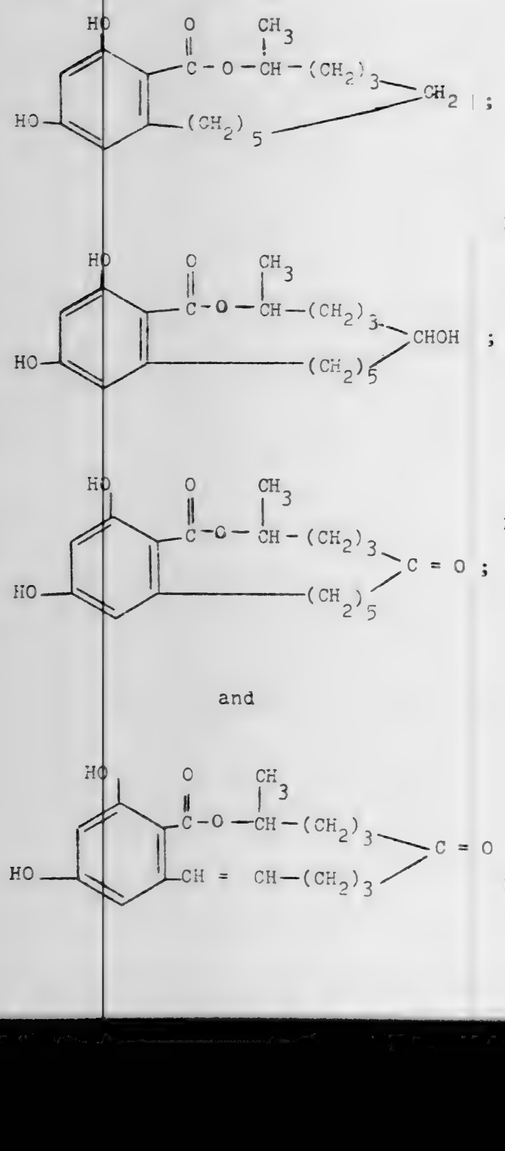
Phil H. Hidy, Terre Haute, and Robert S. Baldwin, Montezuma, both of Ind., assignors to Commercial Solvents Corporation, Terre Haute, Ind.

Continuation of Ser. No. 273,439, July 20, 1972, abandoned, which is a continuation of Ser. No. 28,967, April 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 512,111, Dec. 7, 1965, abandoned. This application June 7, 1974, Ser. No. 477,406

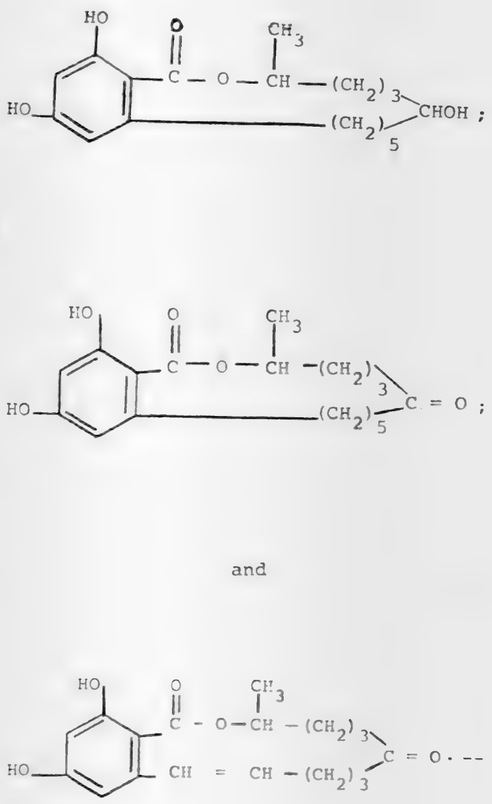
Int. Cl.² A61K *31/365*

U.S. Cl. 424—279 **10 Claims**

1. A method of preventing pregnancy in female humans experiencing a reproductive cycle which comprises administering to said female human in unit dosage form an effective amount to prevent pregnancy of a compound of the formula selected from the group consisting of:



and



3,965,275

COMPOSITION AND METHOD

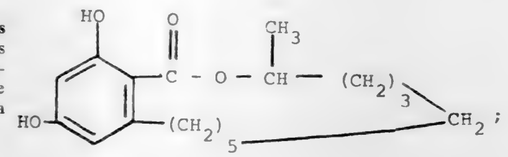
Phil H. Hidy, Terre Haute, and Robert S. Baldwin, Montezuma, both of Ind., assignors to Commercial Solvents Corporation, Terre Haute, Ind.

Continuation of Ser. No. 441,150, Feb. 11, 1974, abandoned, which is a continuation of Ser. No. 289,456, Sept. 15, 1972, abandoned, which is a continuation of Ser. No. 28,913, April 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 512,199, Dec. 7, 1965, abandoned. This application May 12, 1975, Ser. No. 576,639

Int. Cl.² A61K *31/365*

U.S. Cl. 424—279 **5 Claims**

1. A method of treating post-menapausal syndrome in a human female having such syndrome which comprises internally administering to said human an amount sufficient to relieve said syndrome of a compound of the formula selected from the group consisting of:



and

3,965,276

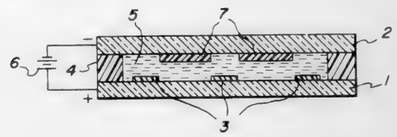
POLYMERIZATION IMAGING

Paul J. Cressman, Fairport; William W. Limburg, Penfield, both of N.Y., and Louis A. Pilato, Bound Brook, N.J., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 248,770, April 28, 1972, Pat. No. 3,879,275, which is a continuation of Ser. No. 858,062, Sept. 15, 1969, abandoned. This application Jan. 7, 1975, Ser. No. 539,147

Int. Cl.² G03G *17/00*

U.S. Cl. 427—12 **8 Claims**



1. The method of forming an image comprising:
a. providing, between and in contact with at least two electrodes, one of said electrodes being in imagewise configuration, a liquid, polymerizable composition comprising unsaturated vinyl containing compounds capable of undergoing liquid to solid addition polymerization in response to application of an electrical field across said polymerizable composition; and
b. in the absence of chemical initiators, catalysts and electrolytes, applying an imagewise configured electrical field across said polymerizable composition to polymerize said composition until an image is formed.

3,965,277

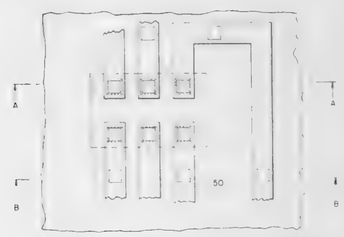
PHOTOFORMED PLATED INTERCONNECTION OF EMBEDDED INTEGRATED CIRCUIT CHIPS

Elis A. Guditz, and Robert L. Burke, both of Lexington, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 251,754, May 9, 1972, abandoned. This application Feb. 28, 1974, Ser. No. 446,865

Int. Cl.² B05D *1/24, 1/38*

U.S. Cl. 427—43 **14 Claims**



1. A process for electrically interconnecting integrated circuit chips comprising,
embedding said chips in cured resin to form a planar array of chips whose pads are not covered by the cured resin,
depositing photosensitized liquid resin on the pad-side of said array and curing said resin by photo exposure through a mask to form a via layer, said via layer having vias in registration with the chip pads,
depositing liquid resin on said via layer and curing said resin by photo exposure through a mask to form a conductor-groove layer, said conductor-groove layer containing both continuous and isolated grooves some of which are aligned through said vias to said pads,
chemically depositing an electrically conductive material only in the grooves and vias to form both continuous and isolated conductors in the conductor-groove layer some of which are electrically connected to the chip pads through the vias.

3,965,278

METHOD OF MAKING SCREENS FOR CATHODE-RAY TUBES

Hans Dignus Duinker; Cornelis Johannes Schoot, and Gerardus Antonius Wilhelmus Vermeulen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 13, 1973, Ser. No. 415,367

Claims priority, application Netherlands, Nov. 30, 1972, 7216227

Int. Cl.² B05D *3/06;* **H01J** *29/32*

U.S. Cl. 427—54 **5 Claims**

1. A method of providing a screen on a cathode-ray tube suitable for the application of phosphor materials, said method comprising forming a light-hardenable photosensitive layer of polyvinyl alcohol and a light-sensitive hexavalent chromium compound on a face plate of said tube, forming a layer of polyvinyl alcohol and a light-sensitive substance capable of absorbing light and which upon exposure to light decomposes into decomposition products which substantially do not absorb said light on said light hardenable photosensitive layer, locally exposing said thus coated face plate to light through a mask to locally harden desired areas of said light hardenable layer, dissolving out by means of a suitable solvent the light sensitive compound and the decomposition products thereof, developing the latent image produced by exposure to light of the polyvinyl alcohol-chromium compound layer, drying said developed image, thereby producing a layer of sharply defined hardened portions of polyvinyl alcohol on said face plate, applying a non-reflective layer to said face plate and then etching away the hardened polyvinyl alcohol portions and the portions of the non-reflective layer superimposed thereon thereby leaving sharply defined uncoated portions of the face plate separated from each other by the non-reflective layer and suitable for coating by phosphors.

3,965,279

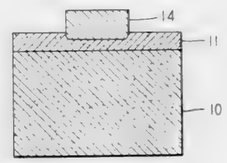
OHMIC CONTACTS FOR GROUP III-V n-TYPE SEMICONDUCTORS

Hyman Joseph Levinstein, Berkeley Heights, and Ashok Kumar Sinha, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 3, 1974, Ser. No. 502,451

Int. Cl.² B05B *5/12*

U.S. Cl. 427—89 **15 Claims**



1. A method of forming an ohmic contact on a III-V n-type semiconductor material comprising the steps of forming a metal film on the surface of the semiconductor comprising a first layer comprising germanium and a second layer comprising palladium over the first layer, and heating the resulting structure at a temperature and for a time sufficient to react said metal film with said semiconductor without melting said metal film so that an ohmic contact is formed at the semiconductor surface, the relative thicknesses of the two layers being such that during the heating the second layer diffuses through the first layer to the semiconductor.

3,965,280

USE OF ORGANOPOLYSILOXANE COMPOSITIONS WHICH CURE AT AMBIENT TEMPERATURE IN COATING ELECTRICAL AND ELECTRONIC DEVICES

Louis Ceyzeriat, Lyon, and Michel Letoffe, Ste.-Fay-les-Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 447,501, March 4, 1974, Pat. No. 3,922,246. This application May 5, 1975, Ser. No. 574,394
Claims priority, application France, Mar. 7, 1973, 73.08143
Int. Cl.² B05D *5/12*
U.S. Cl. 427—126 **6 Claims**

1. A process for coating an electric or electronic device which comprises applying to the device an organopolysiloxane composition which consists essentially of a mixture of the following ingredients, by weight:

i. 100 parts of a α,ω-dihydroxydiorganopolysiloxane polymer, of viscosity at least about 600 **19** cPo at 25°C, consisting essentially of diorganosiloxy units, the organic radicals bonded to the silicon atoms being selected from alkyl radicals with 1 to 3 carbon atoms, halogenoalkyl radicals with 3 or 4 carbon atoms, the vinyl radical, aryl or halogenoaryl radicals with 6 to 8 carbon atoms or cyanoalkyl radicals with 3 or 4 carbon atoms, with the proviso that at least 50 % of these organic radicals are methyl radicals;

ii. 1 to 15 parts of an organosilicon compound which is either:

a. a monomer of the formula (A): $R_xSi[(OCH_2CH_2)_aOR']_{4-x}$, in which R represents a hydrocarbon radical with 1 to 8 carbon atoms, R′ represents an alkyl radical with 1 to 4 carbon atoms, and x and a independently represent zero or 1, or

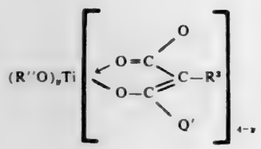
b. a polymer resulting from the partial hydrolysis of at least one monomer of formula $Si(OR')_4$, in which R′ is as defined above;

iii. 0.2 to 6 parts of an organic derivative of titanium, which is either:

a. a monomer of the formula (B): $Ti[(OCH_2CH_2)_bOR'']_4$, in which R″ represents an alkyl radical with 1 to 10 carbon atoms and b represents zero, 1 or 2 ; such that when b is zero, the alkyl radical has 3 to 10 carbon atoms and when b is 1 or 2 , the alkyl radical has 1 to 4 carbon atoms,

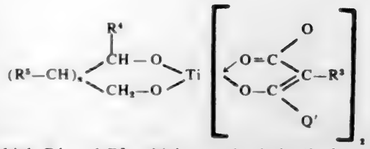
b. a polymer resulting from the partial hydrolysis of at least one monomer of the formula $Ti(OR'')_4$, in which R″ represents an alkyl radical with 3 to 10 carbon atoms,

c. a titanium chelate of the formula (C):



in which Q represents an alkyl radical with 1 to 4 carbon atoms, a phenyl radical or an alkoxy radical with 1 to 3 carbon atoms; R″ represents an alkyl radical of 3 to 10 carbon atoms; y represents 2 or 3 : R^3 represents a hydrogen atom, a methyl radical or a chloromethyl radical; Q′ represents an alkyl radical with 1 to 5 carbon atoms or a chloromethyl radical; or R^3 and Q′, together with the two carbon atoms to which they are attached, together form a phenyl nucleus, in which case Q represents an alkoxy radical or a hydrogen atom, or

d. a titanium chelate of the formula (D):



in which R^4 and R^5, which may be indentical or different, represent hydrogen atoms or methyl radicals; Q, Q′ and R^3 are as defined above and n represents zero or 1;

iv. 0 to 100 parts of an optionally organosilicon-treated inorganic filler;

v. 0 to 100 parts of plasticiser and/or organosilicon stabiliser and;

vi. 0.5 to 8 parts of an organosilicon resin consisting of units of the formulae R‴ $(CH_3)_2SiO_{0.5}$ and SiO_2, in which R‴ represents an alkyl radical with 1 to 3 carbon atoms or the vinyl radical and the ratio of the number of R‴ $(CH_3)_2SiO_{0.5}$ units to the number of SiO_2 units is from about 0.411 to about 1.2/1, and curing the composition on the device.

3,965,281

METHOD FOR PAVING SURFACES WITH GRANULAR, FLAKY OR POWDERY ASPHALT

Takashi Takase, Narashino; Tsunekazu Hayashi, Mitaka, and Hirokazu Saitoh, Ohmiya, all of Japan, assignors to Mitsubo-shi-Sangyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 151,571, June 9, 1971, Pat. No. 3,783,000. This application Sept. 20, 1973, Ser. No. 399,135
Claims priority, application Japan, June 11, 1970, 45-49845; June 11, 1970, 45-49846; June 11, 1970, 45-49847
Int. Cl.² E01C *5/12;* **B05D** *5/10*
U.S. Cl. 427—139 **6 Claims**

1. A method for paving surfaces with asphalt which comprises forming a mixture consisting of (1) powdery or granular asphalt having a diameter of from about 0.074 to about 10 mm or flaky asphalt having a thickness of from about 0.3 to about 0.5 mm and a width and length of from about 2 to about 4mm, said asphalts having a softening point of not greater than 95°C as measured by the Ring and Ball method and a penetration of from 35 to 80 as measured at 25°C, 100 g, 5 sec., and (2) a suitable dried aggregate, the proportion of the asphalt in said mixture being from 4 to 9% by weight, spreading said mixture on the surface to be paved, and pressing the mixture onto said surface.

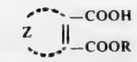
3,965,282

THERMOGRAPHIC RECORDING MATERIAL

Wilhelmus Janssens, Aarschot; Daniel Alois Claeys; Raymond Gerard Lemahieu, both of Mortsel, and Jozef Aime Dierckx, Hove, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Division of Ser. No. 428,781, Dec. 27, 1973, Pat. No. 3,911,171. This application Apr. 29, 1975, Ser. No. 572,669
Claims priority, application United Kingdom, Sept. 14, 1973, 43336/73; Nov. 30, 1973, 55687/73
Int. Cl.² B32B *5/00*
U.S. Cl. 428—341 **16 Claims**

1. A transfer sheet suitable for marking coloured images by a process involving heat-induced transfer of a compound with acid reaction to a receptor sheet incorporating a dye precursor compound, said transfer sheet incorporating as compound with acid reaction a compound corresponding to the following general formula:



wherein:

Z represents the necessary atoms to close an unsubstituted benzene nucleus, a halogen-substituted benzene nucleus or a nitro-substituted benzene nucleus, and

R represents an unsubstituted aliphatic group containing at least 4 carbon atoms, cycloaliphatic group or an aliphatic group substituted with hydroxyl, with an etherified hydroxyl group or with an acyloxy group.

3,965,283

FIBROUS SORBING MATERIALS AND PREPARATIONS THEREOF

Willard S. Moore, Rte. 1, Box 118, West River, Md. 20881

Filed Dec. 18, 1974, Ser. No. 534,007
Int. Cl.² D02G *3/00, 3/44*
U.S. Cl. 428—378 **4 Claims**

1. A method of preparing a manganese oxide coated acrylic fiber which comprises:

immersing acrylic fiber in a solution of an alkali metal base at a concentration from about 4N to about 7N at a temperature from about 80°C to about 110°C until the fiber obtains an orange-red color;

removing said fiber from said solution;

removing excess solution from said fiber;

immersing said fiber in a solution of a Mn^{+2} with a pH from 1 to 2 at a concentration from about 60% to 100% saturation at a temperature from about 30°C to about 40°C until the fiber is saturated;

removing said fiber from said solution;

removing excess solution from said fiber;

immersing said fiber in a solution of an alkali metal base at a concentration from about 3N to about 7N at a temperature from about 20°C to about 70°C;

removing said fiber from solution;

removing excess solution from said fiber; and

exposing said fiber to air until a blackish color is obtained.

3,965,284

CHEMICALLY OPENING CHRYSOTILE ASBESTOS AND ENCAPSULATING

Marinos Xanthos, and Raymond T. Woodhams, both of Toronto, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Jan. 19, 1973, Ser. No. 325,149
Claims priority, application Canada, Jan. 27, 1972, 133336
Int. Cl.² B32B *17/00*
U.S. Cl. 428—404 **13 Claims**



1. A method of chemically opening chrysotile asbestos into individual fibrils and at least partially encapsulating with polymer comprising:

a. physically breaking up the asbestos and shredding the fibres to a preliminary stage,

b. dispersing the resulting asbestos shreds in an aqueous alkaline medium of alkaline pH up to about **10** containing a soluble vinylic polymer polyelectrolyte having free carboxylic acid groups, with agitation to chemically open and coat the individual asbestos fibrils, and

c. insolubilizing the polyelectrolyte on the fibrils, and separating coated fibrils from the aqueous medium.

3,965,285
ELECTRICALLY CONDUCTIVE OBJECT HAVING AN ABLATIVE LAYER THEREON FOR PROTECTING THE SAME FROM DAMAGE BY AN ELECTRICAL DISCHARGE

Robert Dickson Hill, P.O. Box 5484, Montecito, Calif. 93108

Filed July 8, 1974, Ser. No. 486,665

Int. Cl.² H05F *1/02;* **H02G** *13/00;* **B64D** *45/02*

U.S. Cl. 174—2 **1 Claim**

1. The electrically conductive object having an ablative layer for protecting the surface of said conductive object from damage by an electrical discharge, the said object being required to have no particular shape or mechanical form other than to have an electrically conductive surface or be a particular part or parts of an electrically conductive surface, said surface, part or parts of surface being potentially vulnerable to damage when located in an environment that may be subject to electrical breakdown or discharge, the said layer covering the surface of the conductive object or covering said part or parts of the surface of the conductive object potentially exposed, the said layer having a specific physical and solid-state structure, comprising: a continuous, anisotropic, polycrystalline layer of hexagonal graphite crystals, the said crystals being densely aggregated together so as to constitute a continuous layer of high electrical and thermal conductivities, the said crystals being strongly bonded to the underlying surface of the conductive object, the said ablative layer having a thickness perpendicular to the surface of the conductive object of between approximately one and two millimeters, and the said crystals having their basal planes substantially parallel to the surface of the conductive object.

3,965,286
SPACER-DAMPER FOR OVERHEAD POWER TRANSMISSION LINES

Thomas John Smart, Oadby, England, assignor to Dunlop Limited, London, England

Filed Apr. 15, 1975, Ser. No. 568,318

Claims priority, application United Kingdom, Apr. 18, 1974, 16962/74

Int. Cl.² H02G *7/14, 7/12*

U.S. Cl. 174—42 **7 Claims**



1. A spacer-damper for a sub-conductor bundle of at least four sub-conductors of an overhead power transmission line, comprising: an arm for each sub-conductor, each arm having at one end a clamp having a groove for engaging the sub-conductor and at the other end a first resilient pivotal connection; and a central ring of at least eight rigid levers connected in series by second resilient pivotal connections, the first resilient pivotal connection at said other end of each arm connecting said arm to the central ring such that at least three resilient pivotal connections are in series between each adjacent pair or arms and all said pivotal resilient connections have their axes parallel to the axes of the grooves in the clamps.

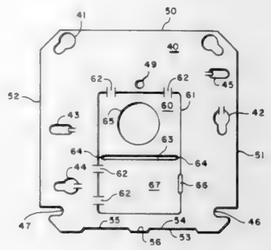
3,965,287
ELECTRIC CIRCUIT ENCLOSURE TRANSFORMER MOUNTING MEANS

Dale A. Mueller, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 24, 1975, Ser. No. 552,099

Int. Cl.² H05K *5/03*

U.S. Cl. 174—66 **5 Claims**



1. Mounting means adapted to mount a transformer on an electric circuit enclosure, including: plate-like cover means for covering said enclosure to effectively contain and protect electric wiring within said enclosure; said plate-like cover means having upset portion means forming knockout means removable to form an opening in said cover means adapted to receive a portion of said transformer to aid in the mounting of said transformer on said cover means; said upset portion means having an open slot with two opposed and spaced surfaces that substantially divides said knockout means into two parts; said two parts being joined together by bridging portions; said knockout means conforming in shape to the shape of the transformer to be mounted thereon to allow said transformer to be partially recessed into said enclosure; and said knockout means further including an annular portion within said knockout means to provide an annular aperture for surface mounting of said transformer if said knockout means is not removed in its entirety from said cover means.

3,965,288
AUTOMATIC TUNING APPARATUS

Yasuhiro Yamada, Neyagawa; Kazuyoski Tsukamoto, Hirakata; Yoshiaki Sakauchi, Nara; Takashi Tamura, Sakai, and Yukio Saito, Higashiosaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jan. 25, 1974, Ser. No. 436,536

Claims priority, application Japan, June 8, 1973, 48-64943; June 8, 1973, 48-64944; June 8, 1973, 48-64945

Int. Cl.² H04N *5/60;* **H04B** *1/32;* **H03J** *1/02;* **H04B** *3/04*

U.S. Cl. 178—5.8 A **30 Claims**

1. An automatic tuning apparatus comprising:

a solid state electrochemical potential memory device comprising:

a cathode including an active metal,

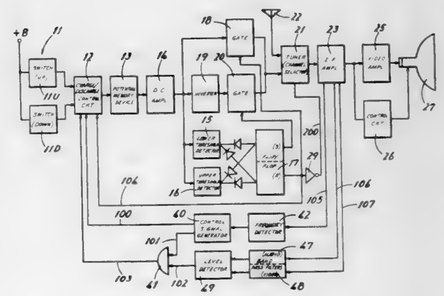
an anode comprising an alloy including said metal, and

a solid state electrolyte having high ion conductivity sandwiched between said cathode and said anode, said potential memory device exhibiting a terminal voltage betweeen said anode and said cathode linearly changing as a functionn of the charging or discharging quantity of electricity supplied to said device by a flow of current therethrough selectively in a charging or discharging direction, respectively, tuning means comprising a voltage controlled variable reactance device and means responsive to said terminal voltage of said potential memory device for generating a control voltage and supplying said generated control voltage to said device, whereby the tuning frequency of said tuning means is controlled by said control voltage as a function of said terminal voltage of said potential memory device,

means coupled to said tuning means for providing a signal indicative of the degree of tuning of said tuning means,

first means coupled to said means for providing said tuning degree indicating signal for threshold detecting said tuning degree indicating signal at a predetermined threshold level and producing a threshold detected output signal,

second means coupled to said tuning means for providing an output signal indicative of the realtionship of the tuning frequency of said tuning means with respect to a predetermined frequency, means responsive to said output from said second means for providing first and second correction signal outputs for respectively increasing and



decreasing the tuning frequency of said tuning means to correct for a difference thereof with respect to said predetermined frequency, and producing a third output signal when said tuning frequency has a predetermined relationship to said predetermined frequency,

means responsive to simultaneous outputs from said first means and said frequency correcting signal providing means for providing an output which is a logical product of said output signal from said first means and said third output signal of said frequency correcting signal providing means,

means for selectively producing first and second tuning direction selection output signals for selectively increasing and decreasing the tuning frequency of said tuning means,

means for selectively supplying a flow of current through said potential memory device, including:

means responsive selectively to said first and second output signals of each of said tuning direction selection output signal means and said correction output signal providing means to control the flow of current to said potential memory device in the corresponding one of said opposite directions for increasing and decreasing, respectively, the tuning frequency of said tuning means, and

switching means connected in series with said potential memory device, said switching means being rendered non-conductive in response to the presence of said logical product output signal to prevent a flow of current through said potential memory device, and being rendered conductive in response to either of said first and second tuning direction selection output signals or the absence of said logical product signal to permit a flow of current through said potential memory device.

3,965,289
IMAGE REPRODUCING METHOD

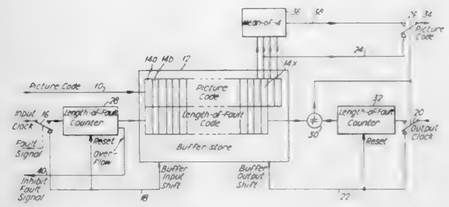
Peter C. Pugsley, Pinner, England, assignor to Crosfield Electronics Limited, London, England

Filed June 30, 1975, Ser. No. 591,959

Claims priority, application United Kingdom, July 1, 1974, 29113/74

Int. Cl.² H04N *1/38*

U.S. Cl. 178—6 **7 Claims**



1. A method of image reproduction of the kind in which an original to be reproduced is scanned, element by element, by an analysing scanner to provide a train of electric signals representative of density values of successively scanned picture elements and in which the said train of signals is used to control the treatment of successively scanned elements of an output surface, whereby the output surface bears a reproduction of the said original, the method further comprising, for forming a retouched reproduction of the original, the steps of:

marking a defect on the original prior to scanning with the analysing scanner, the marking applied to the defect and the analysing scanner being such that signals from the scanner indicative of the defect marking are distinguishable from signals from the remainder of the original;

sensing the presence of a defect-indicating signal in the scanner output;

applying the electric signals derived from the analysing scanner to a correction generator and deriving therefrom a replacement signal for the defect-indicating signal as a function of the densities of picture elements in a strip or area within which the said defective picture element is located;

and under the control of the defect-indicating signal, substituting the said replacement signal for the electric signal corresponding to the defective picture element in the train of signals for controlling the output surface treatment.

3,965,290
VIDEO-TO-BINARY CONVERSION APPARATUS HAVING MOIRE SUPPRESSION CHARACTERISTICS

James G. Tisue, Mountain View, Calif., assignor to Dacom, Inc., Santa Clara, Calif.

Filed Mar. 21, 1975, Ser. No. 560,825

Int. Cl.² H04N *1/40*

U.S. Cl. 178—6 **22 Claims**

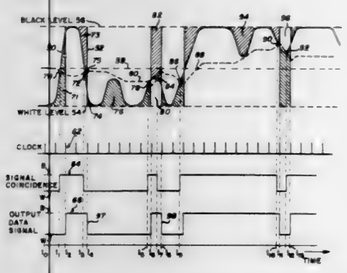
12. In an image reproduction system including means for scanning an image and developing a video signal commensurate therewith, signal conversion means for converting the video signal to a binary signal, and means for utilizing the binary signal to develop a reproduction of a scanned image, an improved signal conversion means having moire suppression characteristics comprising:

normalizer means for normalizing said binary signal relative to said video signal;

integrator means for integrating the difference between said video signal and the normalized binary signal to develop an adaptive threshold signal; and

comparator means for comparing said video signal to said

adaptive threshold signal to develop said binary signal, said binary signal changing binary states each time said



video signal has a predetermined relationship to said adaptive threshold signal.

3,965,291

METHOD AND ARRANGEMENT FOR SCANNING A SEQUENCE OF IMAGES

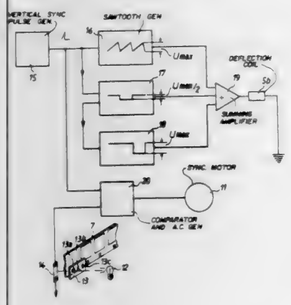
Richard Wick, Munich; Friedrich Bestenreiner, Grunwald; Reinhold Deml, and Josef Helmberger, both of Munich, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Continuation of Ser. No. 162,373, July 14, 1971, abandoned. This application Aug. 1, 1973, Ser. No. 384,396

Claims priority, application Germany, July 18, 1970, 2035820

Int. Cl.² H04N *5/86*

U.S. Cl. 178—7.2 **4 Claims**



1. Arrangement for scanning a motion picture film recorded at a determined frame rate for reproduction on a television receiver having a vertical scanning rate approximately equal to an integral multiple of said frame rate, said motion picture film having a sequence of images each having a predetermined height in the lengthwise direction of said motion picture film and a plurality of perforations having fixed locations relative to said images; synchronous motor means for moving said motion picture film continuously along a predetermined path in a predetermined first direction; scanning means for scanning each of said images a first, second and third time in a direction opposite to said first direction thereby furnishing scanning signals constituting a first, second and third scan, during said movement of said images along said predetermined path, said scanning means comprising a cathode ray tube furnishing a point source of a light beam and having a screen and a deflection coil, lens means for focusing an image of said screen onto each of said images as each of said images passes said scanning region, and photosensitive means arranged behind said motion picture film in the direction of said path of said light from said point source of said cathode ray tube, for furnishing said scaning signals in response to light impinging thereon, the height of said screen of said cathode ray tube exceeding the height of said image formed by said lens means on each of said images by a factor of one-third, said light beam covering a distance along said predetermined path in said direction opposite to said first direction of two-thirds of said image height during each of said scans; scan control means for displacing said scanning region by a predetermined distance corresponding to approximately one-third of said image height upon completion of said first and second scan, said scan control means comprising sawtooth voltage generator means for furnishing a sawtooth voltage having a determined maximum amplitude, first additional pulse generator means connected to said sawtooth voltage generator means and furnishing a negative pulse of one-half said maximum amplitude, second additional pulse generator means connected to said first additional pulse generator means for furnishing a negative pulse having an amplitude corresponding to said maximum amplitude, and summing amplifier means having a first, second and third input respectively connected to said sawtooth voltage generator means, and said first and second additional pulse generator means, and an output connected to said deflection coil; and synchronizing means for synchronizing said sawtooth voltage generator means and said synchronous motor means, said synchronizing means comprising stabilized frequency pulse generator means for furnishing vertical synchronization pulses, means connecting the output of said stabilized frequency pulse generator means to the input of said sawtooth voltage generator means, location signal furnishing means for furnishing location signals when said perforations pass a predetermined location along said predetermined path, and phase comparator means for comparing the phase of said location signals and said vertical synchronization signals and controlling the speed of said motor as a function of the difference therebetween, said location signal furnishing means comprising light blocking means arranged at said predetermined location and having a first, second and third slit spaced a substantially equal distance and along said height of said images, a source of illumination illluminating said first, second and third slits, and additional photosensitive means positioned behind said elongaged signal carrier means in direction of said light for furnishing said location signals when said perforations pass said slits.

3,965,292

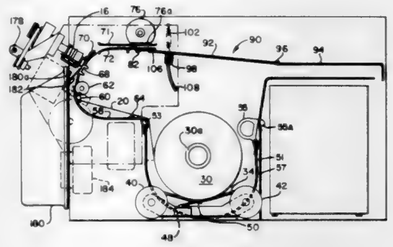
PAPER HANDLING APPARATUS FOR FACSIMILE RECEIVER

Matthew J. Costello, Bethel; Donald T. Dolan, Ridgefield; Andre T. Dehaudringhien, Stamford; Antoon M. Hurkmans, New Milford; Kenneth R. Jasinski, Danbury, and Edward G. Keplinger, Woodbury, all of Conn., assignors to Graphic Sciences, Inc., Danbury, Conn.

Division of Ser. No. 312,857, Dec. 7, 1972, Pat. No. 3,886,308. This application Feb. 21, 1975, Ser. No. 551,622

Int. Cl.² H04L *13/06*

U.S. Cl. 178—42 **17 Claims**



14. Record paper handling apparatus comprising

a paper supply comprising a roll of paper on which a message is to be printed and which is to be cut into sheets carrying such messages,

means feeding said paper to a work station,

means for cutting said paper into sheets, and

a sheet-receiving station following said work station including a lower plate and an upper plate between which a sheet is fed, said upper plate having an aperture in which said sheet is exposed,

an extractor wheel disposed above said upper plate and positioned so that its surface can enter said aperture and it can engage and feed a sheet of paper present between said upper and lower plates, as it is rotated,

a sheet-receiving tray adjacent to said upper and lower plates

a paper-gripping means between a portion of said sheet-receiving tray and said lower plate,

a cam coupled to said extractor wheel and rotating said wheel, and means operated by said cam for moving said tray downwardly as said extractor wheel feeds a sheet of paper thereon and, after the sheet of paper falls onto said tray, moving said tray upwardly, with the end of the sheet of paper held between and gripped by said paper-gripping means.

3,965,293

CIRCUIT ARRANGEMENT FOR VARYING THE PHASE OF A REFERENCE SIGNAL IN TRANSMISSION PATH DISTORTION MEASURING APPARATUS

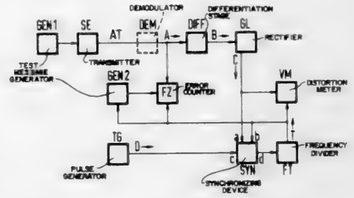
Erwin Schenk, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 20, 1974, Ser. No. 525,514

Claims priority, application Germany, Nov. 20, 1973, 2357912

Int. Cl.² H04L *25/06*

U.S. Cl. 178—69 A **6 Claims**



1. In apparatus for determining the distortion on a data transmission path, a circuit arrangement for adjusting the phase of a reference signal produced from a timing signal in the receiver relative to a signal received over said data transmission path, comprising:

first storage means for producing an output signal responsive to lagging distortion,

second storage means for producing an output signal responsive to leading distortion,

counter means for operating responsive to said reference signal to count counting pulses and for producing a signal upon reaching a predetermined count value,

means for supplying counting pulses to said counter means responsive to the presence of said first storage means output signal,

third storage means for receiving said counter output signal and producing an output signal responsive thereto,

logic circuit means capable of assuming first and second states for producing a binary output signal, said logic circuit means being constructed to remain in its first state when said second storage output signal is absent or when said first, second and third storage output signals are present, said logic circuit means being constructed to switch from said first to said second state when said second storage output signal is present and said third storage output signal is absent and

means responsive to said logic circuit binary output signal for producing delay or lead in said reference signal.

3,965,294

METHOD OF AND APPARATUS FOR TESTING TRANSMISSION LINE CARRYING BIPOLAR PCM SIGNALS

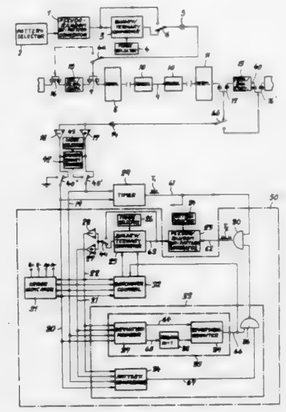
Günter Renz, Eningen; Walter Wehr, Wannweil, and Bertram Amann, Eningen, all of Germany, assignors to Wandel U. Goltermann, Eningen, Germany

Filed Apr. 23, 1975, Ser. No. 570,774

Claims priority, application Germany, Apr. 23, 1974, 2419478

Int. Cl.² H04L *25/06*

U.S. Cl. 178—69 A **10 Claims**



1. A method of checking the bit-distortion ratio of a transmission line carrying the bipolar equivalent of binary message signals consisting of marks and spaces transmitted at a constant bit rate, comprising the steps of:

generating, at a transmitting end of said line, a binary test pattern;

converting said binary test pattern into an equivalent ternary test pattern with translation of successive marks of the binary pattern into bipolar pulses of alternating polarity;

transmitting said ternary test pattern over the line;

generating, at a receiving end of said line, a binary reference pattern matching said test pattern;

separating, at said receiving end, the bipolar pulses of the incoming ternary pattern according to their polarity and deriving therefrom a first pair of binary pulse trains;

deriving from the marks of said reference pattern a local pulse sequence in step with the incoming bipolar pulses;

dividing said local pulse sequence into a second pair of binary pulse trains respectively duplicating related pulse trains of said first pair, upon accurate transmission of said ternary test pattern, according to the law of conversion used at the transmitting end; and

comparing corresponding pulse trains of said first and second pairs, bit by bit, to discover any disparity therebetween.

3,965,295

PROTECTIVE SYSTEM FOR STEREO LOUDSPEAKERS

Ronald C. Evans, and Sidney A. Corderman, both of Binghamton, N.Y., assignors to McIntosh Laboratory, Inc., Binghamton, N.Y.

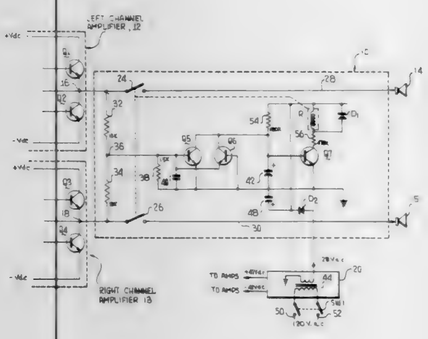
Filed July 17, 1974, Ser. No. 489,407

Int. Cl.² H02H *3/20, 7/20*

U.S. Cl. 179—1 A **9 Claims**

1. In an amplification system, an amplifier a load, normally open contacts connected in series between said amplifier and

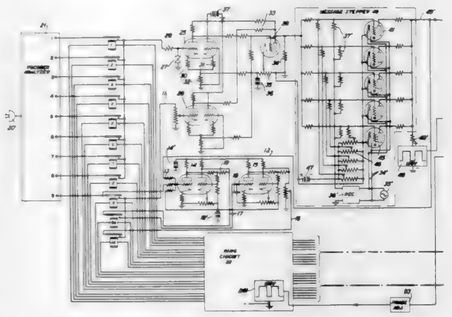
said load, a rectifier power supply, a source of a.c. power, switch means for at will connecting said rectifier power supply to said source of a.c. power, said rectifier power supply having relatively long build-up and decay times of its output voltage responsive respectively to opening and closing of said switch means, means responsive to closing of said switch means for closing said normally open contacts with a time delay at least as great as said build-up time and for opening said contacts after only a relatively short time delay in response to opening of said switch means, wherein said amplifier has a substantially zero d.c. potential output during normal operation of said amplifier and a d.c. potential output of at least a predetermined level during an abnormal operating condition of said amplifier, said system further including means responsive to a d.c. potential output of at least said predetermined level for



opening said contacts, wherein said amplifier has an output terminal and wherein said last mentioned means includes an auxiliary power supply, one side of said auxiliary power supply being grounded, a relay coil for controlling said contacts, a semiconductor switch having a control terminal, means for connecting said relay coil and said semiconductor switch in series across said auxiliary power supply, first and second transistors having intercollectors connected to said control terminal, a voltage dividing network connected between the output terminal of said amplifier and ground, said voltage dividing network having a midpoint, means for connecting the midpoint of said voltage dividing network to the base of said first transistor and the emitter of said second transistor, means for connecting the base of said second transistor to ground, a capacitor, and means for connecting said capacitor between the base of said first transistor and ground.

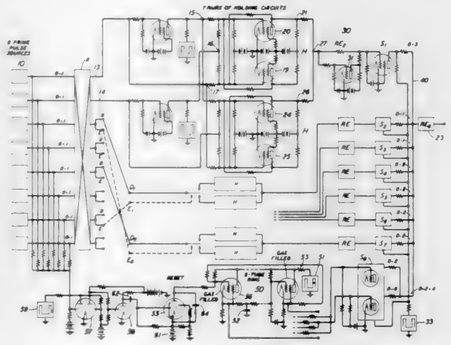
3,965,296
SIGNALING SYSTEM
Miller Ralph L., Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 30, 1944, Ser. No. 542,975
Int. Cl.² H04K *1/02*
U.S. Cl. 179—1.5 R **18 Claims**

1. In a signaling system, a plurality of input circuits carrying signal currents, a coresponding plurality of individual output channels, a privacy equipment common to said circuits and channels for rendering said signal currents unintelligible, a first set of relays for operatively associating said input circuits one at a time with said privacy equipment, a second set of relays for operatively associating said privacy equipment with



said channels one at a time, and a common timing circuit for operating the relays of each set in timed sequence.

3,965,297
SECRET COMMUNICATION SIGNAL GENERATING SYSTEM
Danforth K. Gannett, Mountain Lakes, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 1, 1946, Ser. No. 666,282
Int. Cl.² H04K *1/00*; **H04L** *9/04*
U.S. Cl. 179—1.5 R **6 Claims**

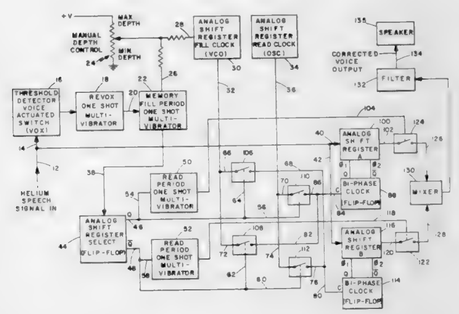


1. A key generating circuit for constructing a six-valued key by combination of signals of smaller ranges of values comprising means to produce two-valued signals of highly irregular occurrence, one signal having the values 0 and 1 unit, and the other having the values 0 and 3 units, means to produce a three-valued signal having the values 0 and 2 and 4 units occurring in irregular sequence, means to combine all of said signals in additive manner, and means effective when the summation signal has the value 6 units or a greater value for reducing such value by 6 units.

3,965,298
DEEP SEA DIVING SPEECH CONVERTER
James E. Carlson, Spring Valley, Calif., assignor to Long Enterprises, San Diego, Calif.
Filed May 5, 1975, Ser. No. 574,432
Int. Cl.² G11B *5/02*
U.S. Cl. 179—1 SH **9 Claims**

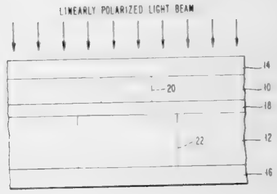
1. A deep sea diving speech converter for converting a diver's speech made in a gas mixture at depth that has been increased in frequency of resonance from that of a normal frequency of resonance of a diver's voice in air and not at depth including,

an analog register,
first means for providing first clock signals at a rate proportional to the depth of the diver,
second means for providing second clock signals at a rate corresponding to normal voice signals,



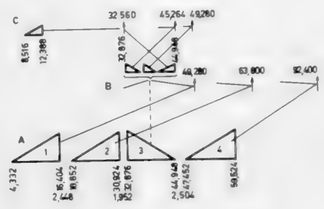
means for feeding an analog electrical signal proportional to the speech made in the gas to said analog register at said first clock rate,
and means for reading out said analog electrical signal to a speaker at said second clock rate.

3,965,299
DYNAMIC MAGNETIC BUBBLE DISPLAY SYSTEM
Burn Jeng Lin, Shrub Oak, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 9, 1975, Ser. No. 575,909
Int. Cl.² H04N *5/66*
U.S. Cl. 178—7.3 D **16 Claims**



1. An optical processing and display device for producing multi-level phase images comprising:
a plurality of separate magnetic bubble array layers arranged in a stack, said magnetic bubble array layers being each of a different thickness, each of said magnetic bubble array layers being composed of material that supports magnetic bubble domains which are movable in predetermined paths in said array,
electrical signal means connected to each of said magnetic bubble array layers for selectively propagating magnetic bubble domains through said predetermined paths of said layers,
said magnetic bubble domains selectively propagated through said paths of said layers having dimensions proportional to and determined by the thickness of the layers in which they are propagated such that the bubble domains in the separate layers of bubble arrays in said stack are of different predetermined sizes,
a one-quarter wave plate layer disposed on one side of said stack of said magnetic bubble array layers,
and means for directing linearly polarized light through said one-quarter wave plate and said stack of bubble array layers, phase of the linearly polarized light directed through said stack of bubble array layers being modified a different amount by each layer of the bubble domains in each layer in accordance with the thickness of the bubble domains in each layer to produce a phase modified multi-level circularly polarized light image corresponding to said selectively propagated magnetic bubble domains.

3,965,300
200 MHZ CARRIER FREQUENCY SYSTEM WITH SEXTENARY GROUPS
Georg Märkl, Nurnberg, Germany, assignor to Tekade Felten & Guilleaume Fernmeldeanlagen GmbH, Nurnberg, Germany
Filed Apr. 23, 1974, Ser. No. 463,378
Int. Cl.² H04J *1/18*
U.S. Cl. 179—15 FS **2 Claims**



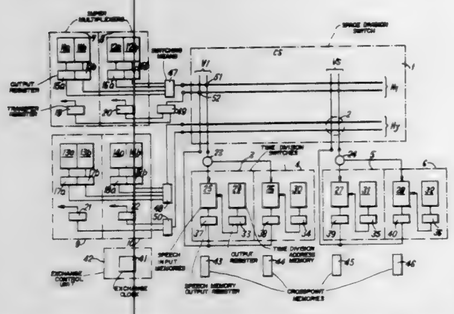
1. A 200-MHz carrier frequency method having a transmission band for the transmission of 32,400 speech channels by homospectral method in cooperation with a 60 MHz carrier frequency system of quinary group construction whose transmission band is separate from the transmission band of the 200 MHz method and is therefore no part thereof, in which method the 200 MHz transmission band comprises three sextanary groups, each containing four quinary groups, said method comprising allocating the 200-MHz transmission band such that the basic sextanary group is at the upper end of the 200-MHz transmission band and coincides with regard to its cut-off frequency as well as with regard to its internal structure with a 60 MHz transmission band which is directly translated into the frequency spectrum of the said basic sextanary group and contains the basic quinary group, forming the sextanary groups of the 200 MHz transmission band such that the frequency spacings between the sextanary groups are larger than the spacing between two side bands produced as a result of the said translation, suppressing the fringe zone of the second side band with only a partial attenuation value and transmitting the same together with the first side band which is used as a signal side band.

3,965,301
FOLDED SPACE-TIME-SPACE SWITCHING NETWORK
Kevork Kevorkian, Saint-Germain-en-Laye, France, assignor to International Standard Electric Corporation, New York, N.Y.
Continuation of Ser. No. 436,610, Jan. 25, 1974, which is a continuation of Ser. No. 254,003, May 17, 1972. This application Sept. 9, 1974, Ser. No. 504,124
Claims priority, application France, June 14, 1971, 71.21457
Int. Cl.² H04Q *11/04*
U.S. Cl. 179—15 AT **4 Claims**

1. A folded space-time-space switching network for a PCM switching exchange, comprising
a space division switch including horizontals and verticals arranged to enable their interconnection through cross-point switch means,
means coupling each horizontal to X supermultiplexers,
said supermultiplexers including means whereby each of a plurality of telephone lines can be coupled to an inlet terminal and to an outlet terminal of said space division

switch to enable the exchange of PCM signals between the horizontals and selected telephone lines, and

means coupling each vertical to X time division switches, said time division switches including means enabling the exchange of PCM signals between the verticals and the time division switches,



the operating frequency of the space-division switch being selected to be at least X times that of the supermultiplexers and the time division switches,

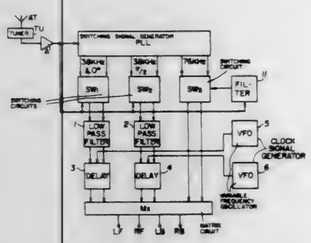
whereby the volume of the space division switch is minimal, as is the total volume of the combination of the space division switch and the time division switches.

3,965,302

STEREO SIGNAL DEMODULATOR IN A FOUR-CHANNEL STEREO BROADCAST RECEIVER

Hirotaka Kurata, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Jan. 28, 1975, Ser. No. 544,903
Claims priority, application Japan, Jan. 31, 1974, 49-13436
Int. Cl.² H04H *5/00*
U.S. Cl. 179—15 BT **31 Claims**



25. A stereo signal demodulator for a receiver in a four-channel stereo system in which four sound source signals (LF, LB, RF and RB) are transmitted from one station, the transmission being carried out for a synthesized signal comprising a signal in a main channel of (LF + LB) + (RF + RB), a pilot signal, a signal in a first sub-channel comprising a double side-band signal obtained by modulating an *m*-multiple frequency-multiplied signal of the pilot signal with a signal of (LF + LB) − (RF + RB), a signal in a second sub-channel comprising a double side-band signal obtained by moulating the same *m*-multiple frequency-multiplied but phase-shifted signal with a signal of (LF − LB) + (RF − RB), and a signal in a third sub-channel comprising a signal obtained by modulating an *n*-multiple ($m<n$) frequency-multiplied signal of the pilot signal with a signal of (LF − LB) − (RF − RB);

the four-channel stereo signal demodulator comprising:

signal deriving circuit means including means for deriving from the pilot signal in said synthesized signal that has been FM-detected by a tuner an *m*-multiple frequency-multiplied signal of said pilot signal, a signal obtained by phase-shifting said *m*-multiple frequency-multiplied signal, and an *n*-multiple frequency-multiplied signal of said pilot signal;

first, second and third switching circuits for switching their input signals comprised of said synthesized signal, respectively, under control of the respective three outputs of said signal deriving circuit means to demodulate the signals in said respective channels from said synthesized signal;

a matrix circuit having the outputs of said three switching circuits applied to its inputs for separating and emitting at its output the signals LF, LB, RF and RB;

a filter and a phase-compensator circuit coupling said synthesized signal to the input of said third switching circuit; and

first and second delay means coupling the outputs of said first and second switching circuits to the inputs of said matrix circuit.

3,965,303

SCANNING AND DISTRIBUTING SYSTEM FOR LARGE CENTRALLY CONTROLLED SWITCHING EXCHANGES

Bernard Michel Henri Depouilly, and Christian Yves Tournier, both of Paris, France, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 304,644, Nov. 8, 1972, abandoned. This application Aug. 26, 1974, Ser. No. 500,426
Claims priority, application France, Nov. 9, 1971, 71.40070
Int. Cl.² H04Q *3/54*
U.S. Cl. 179—18 FG **6 Claims**

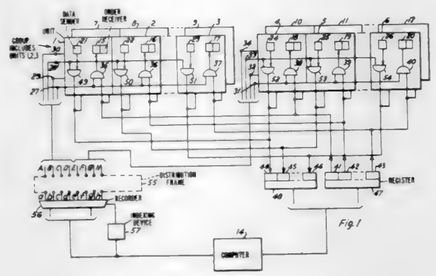


Fig. 1

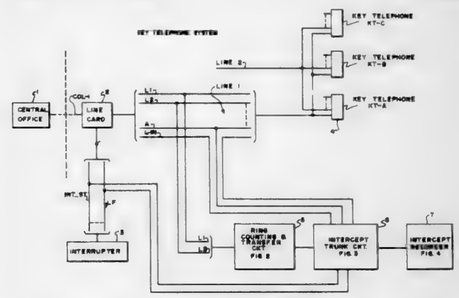
1. A scanning and distributing system for a centrally controlled telephone exchange to enable simultaneous supply of activation signals to a plurality of input points of devices in a number of switching units in an exchange from a single address specific to that plurality of points; comprising means coupled to receive signals from a computer and to route such signals to an exchange; said means including a plurality of code converters, a distribution frame and module decoders; a first one of said code converters being adaptable to receive signals representing logic addresses and to activate input terminals of said distribution frame in accordance with the logic addresses, said distribution frame responding to said signals representing logic addresses to provide output signals representing physical addresses corresponding to the locations of the pluralities of points within the exchange; and a second one of said code converters coupled to receive the output signals from said distribution frame and transmit them to respective module decoders; said module decoders routing signals to activate the plurality of input points in the switching units of the exchange.

3,965,304

INTERCEPT ARRANGEMENT FOR KEY TELEPHONE SYSTEMS

Edward A. Marheine, Brookfield, Wis., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 10, 1974, Ser. No. 531,280
Int. Cl.² H04M *3/42*
U.S. Cl. 179—18 B **7 Claims**



1. For use in a key telephone system having a plurality of outside lines and having an intercept recorder provided in common for said outside lines;

a ring counting, transfer and intercept trunk circuit having terminations for individually connecting said circuit to a corresponding one of said outside lines and other terminations for connecting said circuit to said common intercept recorder; having first switching means effective after the receipt of a predetermined number of rings over said individual outside line for initiating extension of said line to said common intercept recorder; and second switching means controlled by said first switching means and in turn controlling said circuit so that one, and only one, complete message is returned to said outside line by said intercept recorder regardless of whether said intercept recorder is kept in use by calls incoming from another, or others, of said outside lines said second switching means comprising switchthrough means controlled by said intercept recorder only when said recorder is not transmitting a message, for completing an answering loop from the output of said intercept recorder to said outside line, preparatory to the return of said message over said answering loop; and

said ring counting, transfer and intercept trunk circuit further including a locking connection causing said first switching means to be held operated under the control of said switchthrough means; and switching elements controlled by said first switching means for closing an independent signalling circuit to key telephones included in said key telephone system; whereby signalling of said key telephone is continued irrespective of the termination of ringing current transmission over said outside line upon completion of said answering loop.

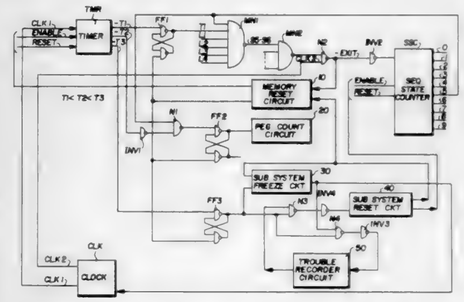
3,965,305

ARRANGEMENT FOR INCREASING THE CALL HANDLING CAPABILITIES OF A CROSSPOINT TANDEM SYSTEM

John Ng, Elmhurst, and Melvin A. Jacobs, Hinsdale, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 30, 1974, Ser. No. 537,292
Int. Cl.² H04Q *3/42*
U.S. Cl. 179—18 EB **10 Claims**

1. A communication switching system including a plurality of incoming trunks, a plurality of register-senders, a switching network for connecting any one of said incoming trunks with any one of said register-senders, a register-sender access control circuit for establishing said connections, each of said connections being established during a cycle of said register-sender access control circuit and each cycle thereof being divided into a number of sequence states in each of which pre-established logical functions must be accomplished before said register-sender access control circuit can advance from one sequence state to another, and a sequence state counter for establishing said sequence states, the improvement comprising an arrangement for improving the call handling capability of said register-sender access control circuit, said arrangement comprising timer means for providing a plurality of time interval output signals including a first time interval output signal which is set for the minimum time interval in which all of the logical functions to be performed in a sequence state can be accomplished, reset means for resetting and enabling said timer means to provide said time interval



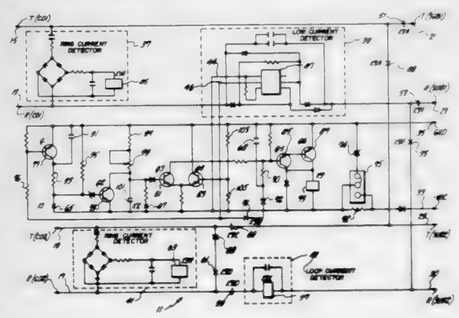
output signals associated with a sequence state, and first gating means, said first time interval output signal and signals indicating the completion of each of the logical functions to be completed in a sequence state being coupled to said first gating means, the receipt in coincidence of all of said signals enabling said first gating means, said first gating means upon being enabled providing an output signal which is coupled to and operates said sequence state counter to advance the sequence state to the next sequence state, whereby said register-sender access control circuit is permitted to complete a sequence state as the result of the accomplishment of all logical functions defined for that sequence state, and which is coupled to and operates said reset means to reset and enable said timer means.

3,965,306

TELEPHONE LINE TRANSFER CIRCUIT

Arthur Gene Watkins, Santa Ana, Calif., assignor to San/Bar Corporation, Santa Ana, Calif.

Filed Nov. 11, 1974, Ser. No. 522,866
Int. Cl.² H04M *3/54*
U.S. Cl. 179—81 R **10 Claims**



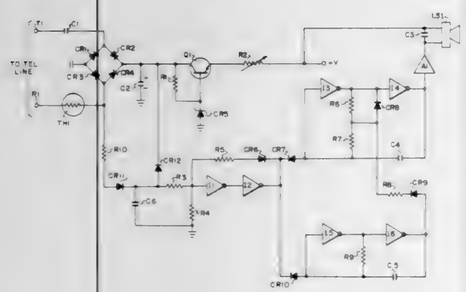
1. A telephone line transfer circuit for transferring a first pair of tip and ring lines, connected between a central office and a first subscriber set, to a second subscriber set, connected to a second pair of tip and ring lines from a central office, said line transfer circuit comprising:

first ring current detector means for detecting ringing current in said first pair of tip and ring lines;
second ring current detector means for detecting ringing current in said second pair of tip and ring lines;
loop current detector means for detecting loop current in said second pair of tip and ring lines;
means responsive to said first ring current detector means for, after a predetermined time delay, connecting said first pair of tip and ring lines to said second subscriber set and disconnecting said first subscriber set from said first pair of tip and ring lines; and
means responsive to said second ring current detector means or said loop current detector means for preventing said connecting means from operating.

3,965,307
ELECTRONIC TONE RINGER

Robert P. Dimmer, Lombard, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 28, 1974, Ser. No. 473,852
Int. Cl.² H04M *1/00*
U.S. Cl. 179—84 T **5 Claims**

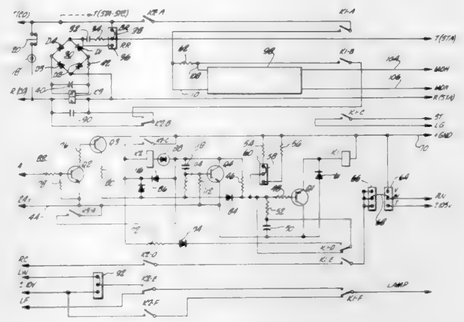


1. A tone ringer for use in a telephone subset connected to a telephone line, comprising: a rectifier circuit connected to said telephone line, operated in response to ringing signals received over said telephone line, to convert said ringing signals to DC potential; a first oscillator circuit including a plurality of frequency determining components operated to generate tone signals at a first frequency; a second oscillator circuit operated to periodically shunt at least one of said plurality of frequency determining components in said first oscillator; a threshold detector including a capacitor charged in response to at least a predetermined value of said DC potential to permit operation of said oscillators, connected between said rectifier and said first and second oscillator; operated in response to said DC potential from said rectifier being less than a predetermined value to inhibit operation of said oscillators and further operated in response to said DC potential from said rectifier being greater than said predetermined value to render said oscillators operated; said first oscillator further operated in response to each shunting of at least one of said frequency determining components, to generate a tone at a second frequency; a transducer connected to said first oscillator operated in response to generation by said first oscillator of tones of said first and second frequencies to audibly reproduce said tones; and party line determining means connected to ground and between said telephone line and said threshold detector whereby said threshold detector is rendered operable only in response to ringing current received over one side of said telephone line.

3,965,308
LINE CARD CIRCUIT

Wilson Franklin Jones, and Arthur Gene Watkins, both of Santa Ana, Calif., assignors to San/Bar Corporation, Santa Ana, Calif.

Continuation-in-part of Ser. No. 377,217, July 9, 1973, abandoned. This application Nov. 11, 1974, Ser. No. 522,790
Int. Cl.² H04M *1/21*
U.S. Cl. 179—99 **10 Claims**

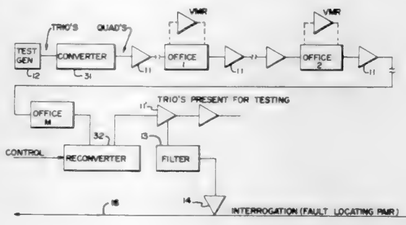


1. In a telephone line circuit for use with key telephone systems including at least one key telephone set having a hold button and connected to a central facility by a pair of line conductors, said key telephone system having a ringing condition during which ringing signals are applied to said line conductors, a seize condition characterized by said line conductors being interconnected by operation of said key telephone, and a hold condition characterized by the connection of a holding impedance between said line conductors in response to operation of the hold button, an interface circuit for coupling a message source to the telephone line circuit in order to provide a message to the calling party over said pair of line conductors for the duration of said hold condition, said interface circuit comprising:
a pair of message input terminals adapted to be connected to a message source;
a pair of message output terminals adapted to be connected across said holding impedance; and
means, connected between said pair of message input terminals and said pair of message output terminals, for automatically preventing the power of the signals being applied to said output terminals from exceeding a predetermined maximum level, irrespective of the power of the signals being applied to said input terminals.

3,965,309
TEST SYSTEM FOR A T CARRIER TYPE TELEPHONE PCM COMMUNICATIONS SYSTEM

Berton E. Dotter, Jr., Belmont, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Jan. 14, 1975, Ser. No. 540,813
Int. Cl.² H04B *1/60*
U.S. Cl. 179—175.31 R **5 Claims**

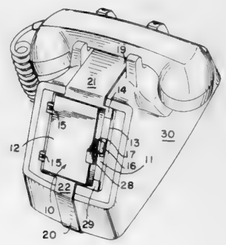


1. In a pulse code modulation (PCM) type communications system having repeater stations the PCM signal normally being in bipolar format and where such repeater stations may be tested by a plurality of test signals having relatively low frequencies compared to the PCM rate, such test signals being formed by trio sets which consist of a PCM pulse of one polarity between two pulses of the opposite polarity said pulses occupying three contiguous time slots of said PCM system, a plurality of trio sets of one type forming a trio group, sequential trio groups of opposite types providing a base line shift in the test signal which varies in polarity at a selected one of said low frequencies; said system including means for converting said trio sets to quadruple sets which have four pulses occupying four contiguous time slots for providing a signal which is sequentially bipolar with no dc offset.

3,965,310
APPARATUS FOR LIMITING ACCESS TO TELEPHONE DIALING AREA

Alan Willy, 1734 L Ave., National City, Calif. 92050

Filed Sept. 23, 1974, Ser. No. 508,426
Int. Cl.² H04M *1/66*
U.S. Cl. 179—189 D **7 Claims**



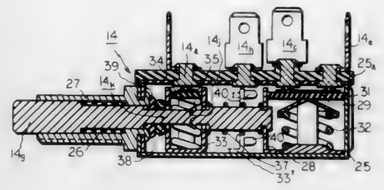
1. A telephone dial shielding device for selectively permitting or preventing access to a dialing area of a telephone face, including a frame formed by a plurality of sides extending around the perimeter of the dialing area of the telephone face, a shield pivotally attached to the frame so as to obscure and prevent access to the dialing area of the telephone face when in a closed position, strap means for attaching said frame to the body of the telephone, said strap means for attaching said frame to said telephone body being secured to selective opposing sides of said frame, and means for allowing the securing of the shield to said frame to retain said shield in said closed position adjacent said frame.

3,965,311
RESPONSIVE TO MOVEMENT IN FIRST AND SECOND OPPOSED DIRECTIONS FOR ESTABLISHING FIRST AND SECOND DIFFERENT INTERCONNECTIONS

John J. Parolin, South Boston, Mass., assignor to Cole-Hersee Company, South Boston, Mass.

Division of Ser. No. 335,779, Feb. 26, 1973, Pat. No. 3,902,159. This application Dec. 30, 1974, Ser. No. 537,349
Int. Cl.² H01H *15/10, 3/12*
U.S. Cl. 200—16 C **7 Claims**

1. Switching apparatus comprising a switch housing, a plunger mounted for reciprocating axial movements in relation to said housing, spring means urging said plunger in the one of opposite angular direction which promotes a maximum forward and outward extension of said end from a front of said housing, a contact actuator slidable in said directions within said housing, spring means urging said contact actuator in said one forward direction, said plunger being freely mated axially with said contact actuator by way of an opening therethrough, said plunger having an enlargement along one portion thereof between adjoining portions of lesser cross-section, an expandable ring member coaxial with said plunger and having an inner periphery smaller than the outer periphery of said enlargement and smaller than said opening and having an outer periphery larger than the outer periphery of said enlargement and larger than said opening, said enlargement having a periphery smaller than said opening, both the periphery of said enlargement and the opening extending radially to positions which correspond to less than half the distance from the inner to outer peripheries of said ring member, said ring member being disposed between said contact actuator and a front part of said housing, said enlargement being movable axially with said plunger from a forward position ahead of said front part and ring member to a more rearward position, stop means limiting rearward sliding motion of said contact actuator in relation to said housing beyond a predetermined limited

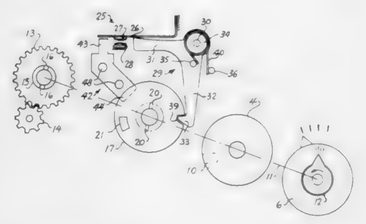


amount, electrical contacts disposed for electrical closure by said contact actuator when in one of its forward and rear positions and for electrical opening when said actuator is in the other of said positions, whereby rearward depression of said plunger causes said enlargement to press said ring member rearwardly and the ring member to slide said actuator rearwardly until the latter is halted by said stop means, whereupon said ring member expands and rides over said enlargement to allow said actuator to be sprung forward, and whereby subsequent forward return of said plunger does not disturb the position of said actuator and said enlargement passes through said ring member as it is held stationary against said front part of said housing.

3,965,312
PERCENTAGE TIMER

Joseph J. Mahon, Libertyville, Ill., assignor to Deltrol Corporation, Bellwood, Ill.

Filed Mar. 20, 1975, Ser. No. 560,552
Int. Cl.² H01H *7/08, 43/10*
U.S. Cl. 200—39 R **10 Claims**



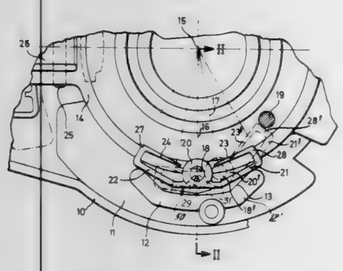
1. In a timing device, the combination of, first cam means mounted for rotation, drive means for rotating said cam means about an axis, said cam means having a peripheral surface formed with a peripheral notch, second cam means mounted about an axis for compound rotary and axial movement, means for rotating said second cam means in a predetermined relationship with said first cam means, said second cam means having a side camming surface, a relatively stationary camming surface cooperating with said side camming surface to cause axial movement of the second cam means as it rotates, a control device, a cam follower biased toward the peripheral surface of said first cam means and riding same, said cam

follower being arranged to actuate said control device from a first position to a second position when the cam follower drops into said peripheral notch, latch means arranged to hold the control device in said second position, and means actuated by axial movement of the second cam means for releasing said latch means at a predetermined angular position of the second cam means.

3,965,313
RETURN DEVICE FOR A DIRECTION INDICATING SWITCH

Erich Mutschler, and Adam Weber, both of Bletigheim, Wurttemberg, Germany, assignors to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH

Filed Oct. 24, 1974, Ser. No. 517,776
Claims priority, application Germany, Dec. 7, 1973, 2361063
Int. Cl.² H01H *3/16*
U.S. Cl. 200—61.27 **6 Claims**



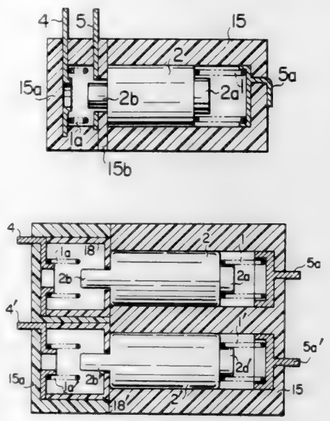
1. A return device for a direction indicating switch used with a vehicle steering wheel, comprising a manually movable switch member movable alternatively and selectively from an intermediate neutral position to a respective first and second indicating position on the respective sides of said neutral position, a release member adapted to be positioned in the neutral position when the vehicle is steered straight ahead and to move with the steering wheel in a direction away from the neutral position toward one of said first and second indicating positions, a release spring pivotally mounted on said switch member and having a first and second drive portion on respective ends which extend toward a respective first and second indicating position and which include resilient side portions which are deflected by said release member when it moves past the associated release spring, and fixed rigid guide means adjacent said release spring providing a guide deflection located to direct a respective drive portion into the path of movement of said release member, said release member being movable upon return of the steering wheel to a straight ahead steering position to contact said drive portions and move said release spring with said switch member back to a starting position, said guide means providing a further guide deflection to center said release spring in the neutral position.

3,965,314
COLLISION DETECTING SWITCH WITH RECTILINEARLY MOVABLE WEIGHT SENSORS

Hideaki Sasaya, and Akihiro Kobayashi, both of Aichi, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 25, 1974, Ser. No. 518,213
Claims priority, application Japan, Nov. 13, 1973, 48-131467[U]; Nov. 30, 1973, 48-135107
Int. Cl.² H01H *35/14*
U.S. Cl. 200—61.53 **4 Claims**

1. A collision detecting system comprising:
a housing; and
a switch contained within said housing, said switch including:
a weight slidably movable within the housing;
a first spring located within the housing and arranged in contacting relationship with said weight to urge the weight to slide in a first direction;
a second spring located within said housing and arranged in contacting relationship with said weight to urge the weight to slide in a second direction opposite to said first direction, said second spring exerting a force on said weight less than that exerted on the weight by said first spring;

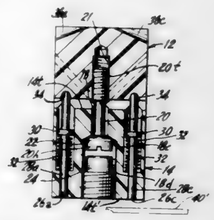


a pair of terminals mounted in spaced relationship in said housing, said terminals having a state of electrical interconnection dependent on the position of said second spring; and
means within said housing for restricting expansion of said second spring when the weight is moved in said second direction in response to a force imparted to the weight in excess of a predetermined value whereby contact between the weight and the second spring is interrupted causing the state of electrical interconnection of the terminals to be altered.

3,965,315
UNIVERSALLY MOUNTED, PIVOTED KEY ACTUCTOR AND ASSOCIATED SWITCH ASSEMBLY

Guenter J. Wuenn, 61 N. Arlington Ave., East Orange, N.J. 07017

Filed Jan. 8, 1975, Ser. No. 539,429
Int. Cl.² H01H *3/20, 25/00*
U.S. Cl. 200—6 A **10 Claims**

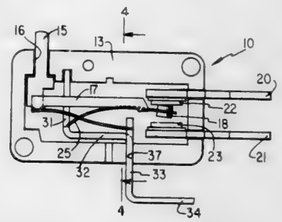


1. A switch construction particularly a rapid data entry switch for connecting a selective contact circuit, comprising a first block member having a first finger contact side and an opposite second side, a second block member having a first side adjacent to said first block's second side and an opposite second side, universal pivotal support means universally pivotally supporting said first block member on said first side of said second block member, at least one contact rod receiving bore defined through said second block member extending from said first side to said second side, a contact rod movable in said bore, spring means urging said contact rod in a direction to extend out of said first side towards said first block, said first block being pivotal by contact of a protion thereof by a person's finger in a direction to engage said contact rod to displace it in said bore for establishing a connection to the contact circuit, said first and second block members having four sides and being of a rectangular block-shaped configuration, said first block second side and said second block first side having triangular form projections and recesses which are complementarily interengageable.

3,965,316
LOW FORCE SWITCH MECHANISM

Harry William Olson, Woodridge, Ill., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Continuation of Ser. No. 394,970, Sept. 7, 1973, abandoned. This application Jan. 23, 1975, Ser. No. 543,537
Int. Cl.² H01H *13/36*
U.S. Cl. 200—67 D **4 Claims**

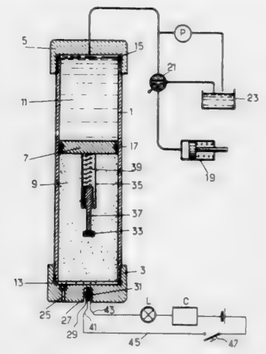


1. A switch assembly including in combination:
a housing having an enclosure and a coverplate thereon,
a switch operating plunger extending outwardly from said housing,
first and second fixed members within said housing, at least one of which is conducting and forms a contact within said housing and a terminal extending outwardly from said housing,
a common conducting terminal having a body portion positioned within said housing and an end portion extending outwardly from said housing, said body portion further having a blade anchoring part spaced a first predetermined distance from a pair of fulcrum extensions integral thereto and extending inwardly within the housing therefrom,
a one-piece substantially flat, elongated conducting contactor comprising a frame supporting a contact portion, a central blade portion having a free end extending away from the contact portion on said frame, a pair of auxiliary lever arms straddling said central blade portion and having free ends extending from said frame toward the contact portion of said frame, the free ends of said central blade portion and said auxiliary lever arms being spaced apart a second predetermined distance when said contactor is unstressed, said second predetermined distance being greater than said first predetermined distance, said contactor being positioned within said housing with said contact portion between said fixed members and engaging a selected one of said members, the free end of said blade being anchored to the blade anchoring part of said body portion of said common terminal and the free ends of said lever arms each being anchored to different ones of said fulcrum extensions,
said coverplate being secured to said enclosure to hold the switch assembly in assembled relation, such that said plunger is located adjacent the end of said frame remote from the contact portion so that when said plunger is actuated inwardly to engage said frame and to move said contactor, said blade is moved to drive said contact portion to engage the other of said fixed members, and said lever arms bias and return said plunger and contactor portion toward their unactuated positions.

3,965,317
APPARATUS FOR INDICATING CYLINDER FLUID LEVEL

Jean Louis Gratzmuller, 66 Blvd. Maurice Barres, Neuilly-sur-Seine, France (92200)

Filed July 3, 1974, Ser. No. 485,323
Claims priority, application France, July 4, 1973, 73.24526
Int. Cl.² H01H *35/38*
U.S. Cl. 200—82 E **13 Claims**



1. Apparatus for revealing that a piston has achieved a predetermined position within a pressurized cylinder without requiring an opening in the cylinder which must be separately sealed, comprising a cylinder,
a non-magnetic end closure operatively and sealingly attached to said cylinder and having
an aperture therein extending from the exterior surface of said end closure to a location intermediate the exterior and interior surfaces thereof,
a magnetically operable switch means located in said aperture,
means within said cylinder and operatively connected to a piston, within said cylinder, for movement therewith for actuation of said switch means when said piston is moved to a predetermind position relative to said end closure.

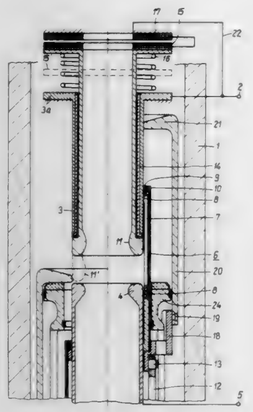
3,965,318
CONTACT ARRANGEMENT FOR AN ELECTRIC PRESSURE GAS POWER CIRCUIT BREAKER

Helmut Beier, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 10, 1975, Ser. No. 539,951
Claims priority, application Germany, Feb. 7, 1974, 2406143
Int. Cl.² H01H *33/82*
U.S. Cl. 200—148 R **5 Claims**

1. A contact arrangement for an electric pressure-gas circuit breaker for interrupting an electric current comprising: two stationary contact pieces disposed so as to conjointly define a gap therebetween; a follower contact disposed on one of said contact pieces in insulated relation thereto and movable in a direction toward the other one of said contact pieces; a bridging contact member movable between first and second positions for electrically joining said contact pieces in said first position and for running off of said one contact piece when moved in said direction toward said other contact piece to said second position thereby electrically separating said contact pieces; electromagnetic actuator means for developing a force

to propel said follower contact along said direction in the opening operation of the breaker; resilient means connected to said follower contact receiving resilient energy as said actuator means propels said follower contact in said direction; current supply means for supplying current to said one contact piece; said follower contact being connected to said current supply means through said electromagnetic actuator means to



define a bypass conducting path, said follower contact being disposed on said one contact piece so as to cause said bridging contact member to contact said follower contact when said bridging contact member runs off of said one contact piece thereby commutating said current to said bypass conducting path whereby said electromagnetic actuator means becomes energized to develop said force.

3,965,319

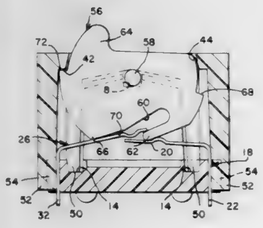
LIGHTED MOMENTARY SWITCH ARRAY

Joseph Larue Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 7, 1974, Ser. No. 521,725

Int. Cl.² H01H *9/00*

U.S. Cl. 200—310 **2 Claims**



1. An indicator light and switch in combination, comprising:

a housing, a pair of first contacts in said housing, light means having a pair of electrical leads engaged respectively on said first pair of contacts, said first pair of contacts protruding from said housing to form electrical terminals for pluggable connection externally of said housing, a second pair of contacts in said housing initially in spaced overlapping relationship, a cam displaceably mounted in said housing and having a first portion initially in a single stable position interposed between said second pair of contacts, a second portion on said cam being displaceable upon displacement of said cam to deflect one of said second pair of contacts into engagement with the other of said second pair of contacts to complete an electrical circuit therebetween, said first portion of said cam being displaceable away from said position initially interposed between said second pair of contacts to permit mutual engagement of said contacts, and said second pair of contacts protruding from said housing to provide electrical terminals for pluggable connection externally of said housing.

3,965,320

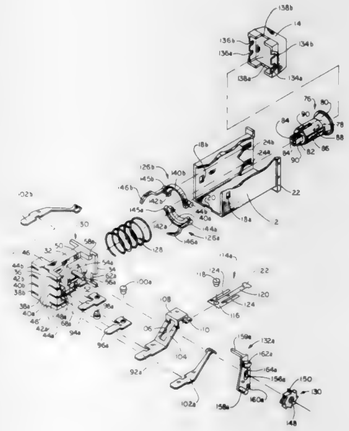
PUSH BUTTON SWITCH

Albert F. Ditzig, Hoffman Estates, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Oct. 17, 1974, Ser. No. 515,586

Int. Cl.² H01H *9/00*

U.S. Cl. 200—314 **7 Claims**



1. In a lighted push button switch for use in an electrical circuit including at least one switch blade assembly connected to said circuit having a switch blade movable between a normal position and an unstable position whereby electricity is allowed to flow through one part of the circuit in one position and another part of the circuit in the other position, said switch blade assembly having terminal components connectable to the circuit, an actuator assembly for moving the switch blade from its normal position to its unstable position having a depressable push button mounted for reciprocal movement, a switch housing encasing said switch blade assembly and said actuator assembly, and support means within said housing mounting said switch blade assembly and said actuator assembly, the improvement in said support means comprising:

a single unitary support member removably mounted within the housing, said support member including vertical web means dividing the interior of the housing into a plurality of portions, each portion capable of mounting a switch blade assembly thereon, a horizontal actuator mounting portion at one end of the web means associated with the actuator assembly, and a horizontal terminal mounting portion at the other end having terminal slots for mounting the terminal components, said terminal mounting portion being flush with the other end of the housing defining the bottom of the switch.

3,965,321

DRYING OF STORAGE BATTERY PLATES

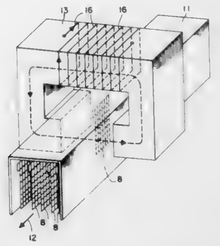
Jurgen Brinkmann, Hagen, and Wilhelm Saul, Hannover, both of Germany, assignors to Varta Batterie Aktiengesellschaft, Hannover, Germany

Filed Sept. 5, 1974, Ser. No. 503,316

Claims priority, application Germany, Sept. 24, 1973, 2348042

Int. Cl.² H05B *5/08*

U.S. Cl. 219—10.41 **36 Claims**



1. The method of drying storage battery plates having active mass pasted on lead grids, comprising the steps of:

transporting said plates along a predetermined path; and

producing an alternating magnetic field which traverses said path generally perpendicularly to said plates, and which alternates at frequencies below the high frequency range such that currents are induced in the short circuits formed by said grids without appreciable current displacement toward the marginal rods of the grids,

thereby heating the grids rapidly and evenly over the entire plate area,

the heating of each grid in turn heating the active mass pasted thereon from the inside and causing progressive drying of the mass from the inside toward the outside of the plates.

13. Apparatus for drying storage battery plates having active mass pasted on lead grids, comprising:

means for transporting said plates along a predetermined path; and

means for producing an alterating magnetic field within said path, said field being oriented generally perpendicularly to said plates along said path,

said field producing means being constructed to produce alternation at frequencies below the high frequency range such that currents are induced in the short circuits formed by the lead grids without appreciable current displacement toward the marginal rods of the grids,

thereby heating the grids rapidly and evenly over the entire plate area,

the heating of each grid in turn heating the active mass pasted thereon from the inside and causing progressive drying of the mass from the inside toward the outside of the plates.

3,965,322

COOKING TIME ADJUSTING ARRANGEMENT FOR USE IN ELECTRONIC OVEN

Fumiko Mori, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 346,795, April 2, 1973, Pat. No. 3,848,105. This application Apr. 17, 1974, Ser. No. 461,791

Claims priority, application Japan, Apr. 6, 1972, 47-41112[U]; Apr. 6, 1972, 47-41113[U]

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 B **11 Claims**

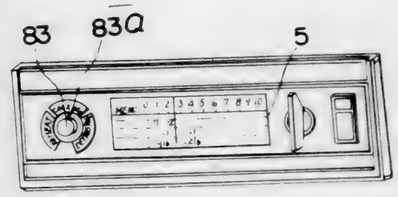
1. A cooking time selection and adjusting arrangement for use in an electronic oven of the type including an oven-defining structure having an access opening, means positioned for generating high frequency energy toward the interior of said oven-defining structure, and a hingedly supported door covering said access opening of said oven-defining structure, said time selection and adjusting arrangement comprising:

an instrument panel mounted on said oven-defining structure, said instrument panel having a front surface with a window portion and an aperture therein;

a pair of rolls rotatably mounted one above the other within said instrument panel;

a belt member having a length greater than the spacing between said rolls, said belt member having opposite ends wound around and connected to said rolls, said belt member having a front surface visible through said window portion of said instrument panel, said front surface of said belt member having thereon data relating to cooking menus and cooking times corresponding thereto;

driving means coupled to at least one of said rolls for synchronously rotating said rolls in the same direction, to



thereby place selected of said menu and corresponding cooking time data on said belt member in a position to be viewed through said window portion;

a timer device mounted in said instrument panel and having an operating shaft extending through said aperture in said instrument panel, said timer device being operatively coupled to said means for generating high frequency energy, whereby an operator may set said timer device to a cooking time of a selected menu visible through said window portion, and operation and stopping of said timer device start and stop said means for generating high frequency energy; and

a movable pointer needle mounted on said instrument panel and operatively coupled to said operating shaft to be moved thereby along said window portion and indicate the operating time of said means for generating high frequency energy corresponding to said cooking time of said selected menu.

3,965,323

METHOD AND APPARATUS FOR PROVIDING UNIFORM SURFACE BROWNING OF FOODSTUFF THROUGH MICROWAVE ENERGY

Ray B. Forker, Jr., Beaver Dams, and Joseph N. Panzarino, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

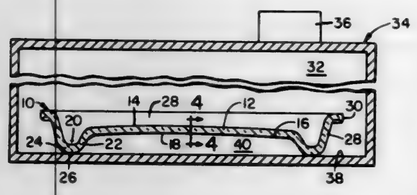
Filed Feb. 26, 1975, Ser. No. 553,317

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 E **7 Claims**

1. A browning apparatus for use in combination with microwave ovens comprising a vessel of glass ceramic material, said vessel including sidewall portions and a central bottom wall portion, said central bottom wall portion being connected to said sidewall portion by inner bounding wall portions and a foot portion having a lowermost support surface, said central bottom wall portion having a lower surface provided with an electroconductive coating, said coated lower surface being

vertically displaced above said lowermost support surface and forming a bottom-open recess in said vessel, and said bottom-



open recess being substantially peripherally bounded by said inner bounding wall portions.

3,965,324

COOKING TIME ADJUSTING ARRANGEMENT FOR USE IN ELECTRONIC OVEN

Fumiko Mori, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

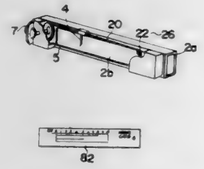
Division of Ser. No. 346,795, April 2, 1973, Pat. No. 3,848,105. This application Apr. 17, 1974, Ser. No. 461,792

Claims priority, application Japan, Apr. 6, 1972, 47-41112[U]; Apr. 6, 1972, 47-41113[U]

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 B **10 Claims**





1. A cooking time selection and adjusting arrangement for use in an electronic oven of the type including an oven-defining structure having an access opening, means positioned for generating high frequency energy toward the interior of said oven-defining structure, and a hingedly supported door covering said access opening of said oven-defining structure, said time selection and adjusting arrangement comprising:

an instrument panel mounted on said oven-defining structure and having a front surface;

a plurality of longitudinal interchangeable strip members each having a front surface having thereon data relating to cooking menus and cooking times corresponding thereto;

mounting means for positioning a selected one of said strip members with respect to said instrument panel to be viewable at a viewing position on said front surface thereof, to thereby place selected of said menu and corresponding cooking time data at said viewing position;

a timer device mounted in said instrument panel and having an operating shaft extending through said instrument panel, said timer device being operatively coupled to said means for generating high frequency energy, whereby an operator may set said timer device to a cooking time of a selected menu at said viewing position, and operation and stopping of said timer device start and stop said means for generating high frequency energy; and

a movable pointer needle on said instrument panel and operatively coupled to said operating shaft to be moved thereby along said selected strip member and indicate the operating time of said means for generating high frequency energy corresponding to said cooking time of said selected menu.

3,965,325

MICROWAVE OVEN

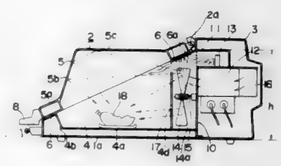
Kazumi Hirai, Nabari, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 24, 1975, Ser. No. 561,653

Claims priority, application Japan, Mar. 23, 1974, 49-33516; Aug. 14, 1974, 49-97844

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 R **8 Claims**



1. A microwave oven comprising

main casing portion defining an oven base, lower portion of a heating chamber, and including at least one flat mating surface which is defined by borders of a frame member for said main casing portion and which is inclined at an acute angle with respect to said base,

a door assembly portion which defines a heating chamber upper portion which is complementary to said lower portion and which cooperates therewith to define a complete heating chamber, said door assembly being movable to and held at a closed position wherein said door assembly portion seals said heating chamber, and defining at least one mating surface which comes into flat contact with said main casing mating surface when said door assembly portion is in said closed position, said door assembly being movable pivotally, upwardly to an open position,

heating assembly including high frequency wave generation means, high frequency wave direction means for directing waves generated by said generation means into said main casing portion, and power supply means for supplying electrical power to said generation means,

housing portion for housing said heating assembly.

3,965,326

WELDING BY ELECTRON BOMBARDMENT

Francois Corcelle, Cergy, and Jacques Courjaud, Parthenay, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 25, 1974, Ser. No. 526,813

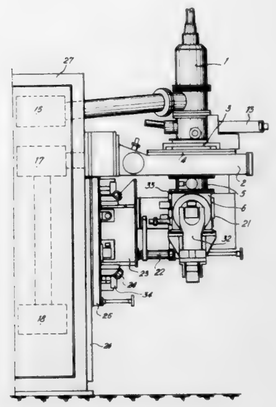
Claims priority, application France, Nov. 26, 1973, 73.41962

Int. Cl.² B23K *15/00*

U.S. Cl. 219—121 EB **19 Claims**

1. A machine for welding by electron bombardment which comprises an electron gun for emitting an electron beam, a chamber under continuous partial vacuum in position to receive said electron beam, a working chamber, valve means for interconnecting said partial vacuum chamber and said working chamber, displacement means acting in the same direction

throughout its path and substantially perpendicular to said electron beam for supporting said working chamber, means for continuously holding said electron gun under high vacuum, and narrow orifice means communicating with said



partial vacuum chamber for the passage of said electronic beam thereto, said displacement means being further adapted to act in a direction substantially parallel to said electron beam and being independently adjustable in each of said directions.

3,965,327

METHOD OF CUTTING MATERIAL TO SHAPE FROM A MOVING WEB BY BURNING

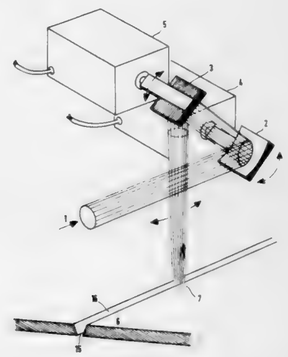
Günter Ehlscheid, Neuwied; Peter Langenbeck, Frickingen, and Kurt Stemmler, Neuwied, all of Germany, assignors to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG, Neuwied (Rhine), Germany

Filed Oct. 8, 1974, Ser. No. 513,022

Claims priority, application Germany, Oct. 10, 1973, 2350933

Int. Cl.² B23K *26/00*

U.S. Cl. 219—121 LM **8 Claims**



1. A method of cutting a predetermined pattern from a moving web of material, such as paper, cardboard or the like, comprising the steps of:

a. generating a laser beam from a laser beam source and directing said beam in a first direction onto a first pivotable mirror;

b. deflecting said laser beam in a second direction by said first pivotable mirror, onto a second pivotable mirror;

c. deflecting said laser beam onto the moving web of material by said second pivotable mirror;

d. passing the laser beam through a slot in a mask immediately prior to its contacting the moving web of material;

e. pivoting said first pivotable mirror to cause said laser beam to travel in a first direction so as to cut through said web along a given path in said moving web of material; and

f. pivoting said second pivotable mirror to cause said laser beam to travel in a second direction so as to cut through said web along said given path in said moving web of material, wherein the first and second mirrors are pivoted about axes which are parallel to each other and to the plane of travel of said moving web of material.

3,965,328

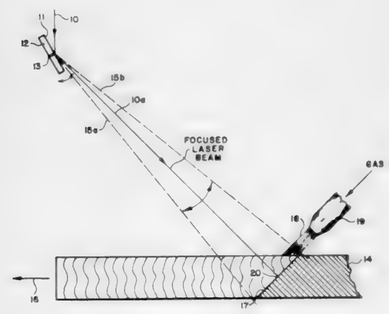
LASER DEEP CUTTING PROCESS

Edward V. Locke, Rockport, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed Dec. 19, 1974, Ser. No. 534,173

Int. Cl.² B23K *26/00*

U.S. Cl. 219—121 LM **6 Claims**



1. A method of cutting completely through a thick workpiece having a predetermined thickness on the order of 2 inches or more comprising:

a. directing from above said workpiece a concentrated laser beam on and at an acute angle to the surface of said workpiece;

b. moving the laser beam and workpiece relative to one another to define a direction of cut lying in the plane of said laser beam;

c. causing said laser beam to be oscillated at a predetermined rate parallel to the direction of cut through an arc sufficient to form a cutting surface including molten material, said cutting surface extending through said workpiece at an angle substantially normal to the direction of said laser beam at said acute angle to the surface of said workpiece;

d. directing a jet of gas at an angle substantially normal to the direction of said laser beam onto the point of intersection of the laser beam and said cutting surface in said workpiece as the laser beam moves back and forth along said cutting surface; and

e. sweeping the molten material along said cutting surface and out of the bottom of the cut by means of the jet of gas and thereby define said cut as said workpiece and laser beam are moved relative to one another.

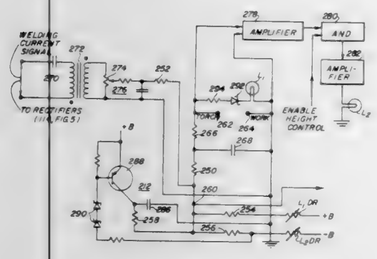
3,965,329
ELECTRICAL SYSTEM FOR AUTOMATIC ARC WELDING

Petros T. Petrides, 142 Arlington Acres, R.F.D. No. 2, Stonington, Conn. 06378; Russell J. Nickerson, 81 Island View Ave., Mystic, Conn. 06355; Rodney R. Cordeiro, R.F.D. No. 1, Box 422, Flanders Road, Stonington, Conn. 06378, and James S. Dodson, Jr., P.O. Box 145, Borough Station, Groton, Conn. 06340

Division of Ser. No. 136,503, April 22, 1971, which is a continuation of Ser. No. 804,724, Oct. 29, 1968, abandoned. This application Aug. 5, 1974, Ser. No. 494,596

Int. Cl.[2] B23K *9/06*

U.S. Cl. 219—124 **2 Claims**



1. An automatic arc welding system comprising:
a. a torch for providing an arc with which work can be welded,
b. means for driving said torch along a vertical line between said work and said torch whose position is responsive to a control voltage applied thereto,
c. means for providing to said torch direct current welding current having a periodic waveform,
d. means for sensing the current through said torch and generating a signal proportional thereto,
e. means for sensing the voltage across said torch and generating a signal proportional thereto, and
f. means for controlling said torch driving means by subtracting said signal proportional to said current from said signal proportional to said voltage, to produce said control voltage.

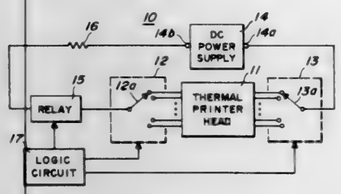
3,965,330
THERMAL PRINTER HEAD USING RESISTOR HEATER ELEMENTS AS SWITCHING DEVICES

Kenneth S. Williams, Barrington, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 5, 1974, Ser. No. 494,145

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—216 **17 Claims**



1. A thermal printing system comprising:
thermal printer head means;
a plurality of voltage-current switching characteristic resistors attached to said printer head means, each of said resistors having a threshold voltage;
a plurality of first selector terminals;
a plurality of second selector terminals;
first means for connecting each of said first terminals through a different path to each of said second terminals, each path having at least one of said plurality of resistors and including only different resistors of said plurality of resistors; and
second means for applying voltages greater than said threshold voltage between said first and second terminals for energizing only selected predetermined individual resistors in said plurality of resistors by causing only the voltages across these selected resistors to exceed the threshold voltage of these resistors.

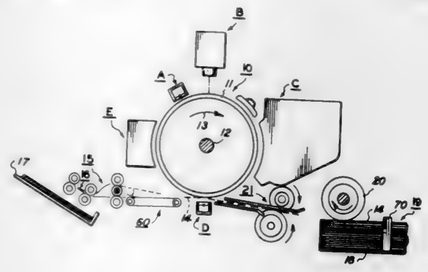
3,965,331
DUAL MODE ROLL FUSER

Rabin Moser, Fairport, and Ernest A. Weiler, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 24, 1975, Ser. No. 552,477

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—216 **9 Claims**



1. Dual mode fuser apparatus for fixing toner images to various types of substrates, said apparatus comprising:
fuser structure comprising first and second fuser members;
transport structure for conveying said substrates such that the toner images carried thereby contact one of said members during a first mode of operation; and
means for effecting reorientation of one of said structures to move said substrates such that the toner images carried thereby contact the other of said fuser members during a second mode of operation.

3,965,332
SELECTIVE FUSING APPARATUS

Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 10, 1975, Ser. No. 556,858

Int. Cl.[2] H05B *1/00*; **G03G** *15/20*

U.S. Cl. 219—216 **4 Claims**



1. In an electrostatic reproduction machine in which a dry fusing device for fusing powder images onto copy sheets made of paper is accomplished by passing the sheet bearing the powder images through a nip defined by rotatable members which apply heat and pressure thereto an improved selective dry fusing apparatus comprising:
a rigid core member made of material which is transparent to radiant energy,
a source of radiation disposed in the interior of said core member transmitting radiant energy,
a layer of elastomeric material which is transparent to radiant energy covering the surface of said rigid core member,
reflector means positioned along the periphery of the elastomeric layer closely spaced thereto defining a heat transfer zone at which radiation is reflected onto the surface of the layer,
tacking and detacking means positioned adjacent to the heat transfer zone to tack sheets with powder images contacting the surface of said elastomeric layer and detack sheets therefrom at the exit in the heat transfer zone, and
pressure roll means positioned at the exit of the heat transfer zone in pressure contact with said elastomeric layer to provide controlled heat and pressure to the copy sheet exiting from the heat transfer zone whereby selective fusing of the powder images onto the copy sheet is effected to produce high quality copies.

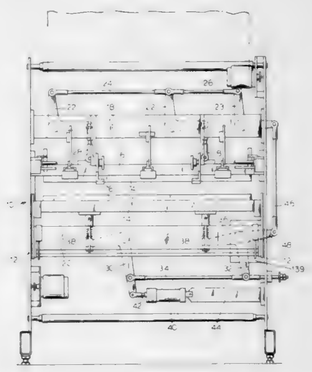
3,965,333
SEAL TEMPERATURE CONTROL MEANS FOR CURTAIN-TYPE WRAPPING MACHINE

Bertram F. Elsner, and Frank Elsner, Jr., both of Hanover, Pa., assignors to Elsner Engineering Works, Inc., Hanover, Pa.

Filed June 9, 1975, Ser. No. 585,305

Int. Cl.[2] H05B *1/00*

U.S. Cl. 219—243 **6 Claims**



1. In a curtain-type overwrapping machine having an elongated anvil bar and an elongated heater bar carrying a resistance-type heater element extending along one surface of said heater bar for co-action with said anvil bar, and means to move at least one of said bars toward and from the other to effect sealing of thermoplastic sheet wrapping and/or banding material around an article and re-constituting said material into a continuous sheet or band thereof; the improvement comprising means adjacent one end of said heater bar to anchor one end of said resistance-type heater element thereto, an anchor block adjacent the other end of said heater bar supported for movement axially toward and from said other end of said heater bar, means to secure the opposite end of said heater element to said anchor block, expansible means operable between said anchor block and said other end of said heater bar to maintain said heater element taut under all conditions of expansion and contraction, a lever pivotally connected intermediately of its ends to said other end of said heater bar, means on one end of said lever engageable by said anchor block to move said lever about its pivot as said anchor block is moved axially of said heater bar in response to expansion and contraction of said heater element, an electrical thermal impulse generator on said machine operable to develop a high amperage current and discharge the same instantly, electrical circuit means connecting said generator to said heater element to develop electrical resistance therein and produce a plastic-fusing temperature in said heater element instantaneously when said generator discharges current to said heater element, and a normally closed micro-switch in said circuit having an actuator positioned adjacent the opposite end of said lever and engageable therewith to actuate said micro-switch to open it when elongation of said heater element reaches a predetermined maximum limit to interrupt the circuit to said heater element and thereby limit the amount of elongation of said heater element which can occur and the consequent maximum ambient temperature which can be generated by the continuous cycling of current to said heater element.

3,965,334
HEATING DEVICE

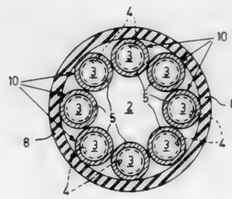
George Albert Apolonia Asselman, Eindhoven, Netherlands; David Bruce Green, Weymouth, England; Adrianus Petrus Johannes Castelijns, Eindhoven, Netherlands; Pieter Aart Naastepad, Eindhoven, Netherlands, and Jacob Willem De Ruiter, Eindhoven, Netherlands, assignors to U.S. Philips Corp. New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,498

Claims priority, application Netherlands, May 4, 1972, 7206063

Int. Cl. H05b *3/62*

U.S. Cl. 219—399 **5 Claims**



1. A heating device comprising a housing formed as a round tube made of heat insulating material, the tube having an inner peripheral surface and first and second ends, a plurality of heat pipes, each being a hermetrically sealed tube with a first evaporation end, a second condensation end, and capillary material on the inner peripheral surface, said heat pipes situated around and adjacent said housing inner peripheral surface and positioned in parallel with each other and with said housing tube axis, said heat pipes positioned with their first and second ends respectively adjacent said first and second ends of said housing, and at each end of the housing an annular end plate of heat insulating material, secured to and maintaining in relative position said heat pipes and housing tube ends, with a cylindrical heating chamber defined by the space radially inward of said heat pipes.

3,965,335
PROGRAMABLE DATA ENTRY SYSTEM

Vincent C. Ricci, Upper Darby, and Lester M. Spandorfer, Cheltenham, both of Pa., assignors to Sperry Rand Corporation, Blue Bell, Pa.

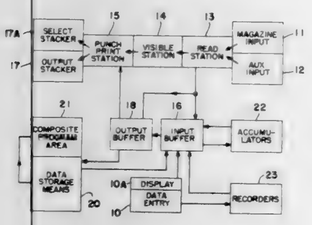
Filed Sept. 27, 1974, Ser. No. 509,808

Int. Cl.[2] G06K *1/16*; **G06F** *7/06*

U.S. Cl. 235—61.9 R **10 Claims**

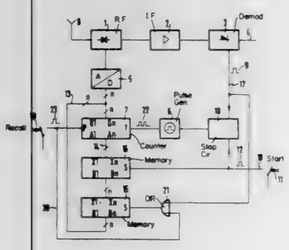
1. An internally programable data entry system for preparing data cards comprising:

data entry means having manual and automatic entry load modes,
card input means for receiving prepared cards and blank cards, said prepared cards having indicia means and data thereon,
card reading means connected to said card input means for reading both indicia means and data entered on a said prepared card,
said indicia means on said prepared card indicating whether said data on said card is program data or constant data,



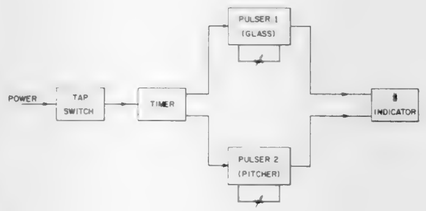
buffer output means connected to said card reading means for receiving and storing indicia means and data read from said card,
control means responsive to said indicia means for automatically storing said indicia means and data from said buffer output means in a program data storage area or a constant data storage area, and
program and constant data storage means for receiving and storing said program data and said constant data from said buffer output means under control of said control means as indicated by said indicia means.

3,965,336
RADIO OR TELEVISION RECEIVER WITH AN AUTOMATIC STATION FINDING ARRANGEMENT
Lothar Grohmann, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Nov. 14, 1974, Ser. No. 523,643
Claims priority, application Germany, Nov. 16, 1973, 2357359
Int. Cl.² H03K *21/36*
U.S. Cl. 235—92 FQ **9 Claims**



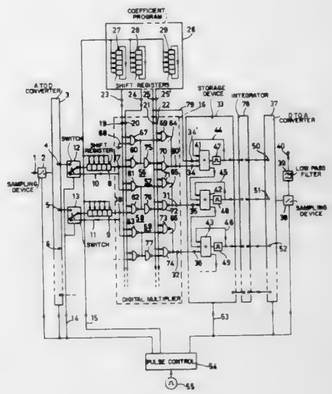
1. A receiver having automatic station finding capability, comprising:
means for tuning said receiver in response to an applied voltage;
a controllable pulse generator;
means for starting said pulse generator;
circulating counter means having parallel inputs and outputs, a stepping input and a set input, said stepping input connected to and responsive to pulses from said pulse generator for providing a variable digital output;
digital-to-analog converting means for converting the variable digital output from said counter means to a variable analog voltage, said voltage being applied to said tuning means, so that the receiver is tuned to a frequency corresponding to the analog voltage;
means for sensing a received signal and for providing a stop signal to the pulse generator in response thereto, whereby said generator stops providing pulses and the analog voltage remains constant keeping the receiver tuned to the received signal;
memory means having parallel inputs connected to the parallel outputs of said counter means and parallel outputs connected to the parallel inputs of said counter means;
means associated with said memory means for causing the memory means to store a particular digital output from said counter means; and
means associated with the set input of said counter means for selectively causing the digital signal at the counter input to be transferred to the counter output.

3,965,337
APPARATUS FOR MONITORING DISPENSED FLUID
Loring E. Young, Jefferson, Md., assignor to Ark, Inc., Rockville, Md.
Filed Apr. 30, 1975, Ser. No. 573,585
Int. Cl.² G06M *3/08;* **B67D** *5/22*
U.S. Cl. 235—92 FL **3 Claims**



1. Apparatus for monitoring fluid dispensed in at least two different unit quantities at corresponding monetary rates, comprising indicator means for registering monetary information representative of the amount of said fluid dispensed at said monetary rates, first and second control means for driving said indicator means substantially continuously, when actuated, to cause said indicator means to register said monetary information substantially continuously at a monetary rate dependent upon which of said control means is actuated, switch means operated concurrently with the dispensing of fluid, and means for causing said first control means to be actuated in response to initial operation of said switch means, so that said monetary information is registered at a monetary rate associated with said first control means, and, after a predetermined amount of switch operation time has elapsed, for causing said second control means to be actuated instead of said first control means, so that said information is then registered at a monetary rate associated with said second control means.

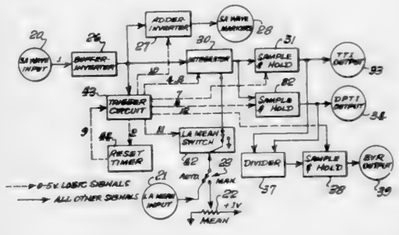
3,965,338
APPARATUS FOR ACHIEVING A PREDETERMINED TRANSFER CHARACTERISTIC
Petrus Josephus van Gerwen; Hendrik Arie van Essen, and Wilfred Andre Maria Snijders, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 474,810, May 30, 1974. This application Sept. 2, 1975, Ser. No. 609,446
Claims priority, application Netherlands, June 13, 1973, 7308175
Int. Cl.² G06J *1/00*
U.S. Cl. 235—150.52 **1 Claim**



1. An apparatus for producing a predetermined transfer characteristic of information-containing signals, comprising clock means for generating a clock pulse, input means for supplying digital representations of said information-containing signals; coefficient generator means for supplying a first train of pulses of digital multiplication coefficients; delay means, connected to said input means, for supplying a second train of pulses of representations of said information-containing signals in successive time periods; digital multiplier means, having a first input connected to said coefficient generator, and a second input connected to said delay means and an output, and comprising modifying means having a plurality of settings corresponding to said multiplication coefficients characterizing said predetermined transfer characteristic of said signals; and output means connected to said output of said digital multiplier for summing the output signals appearing at said output.

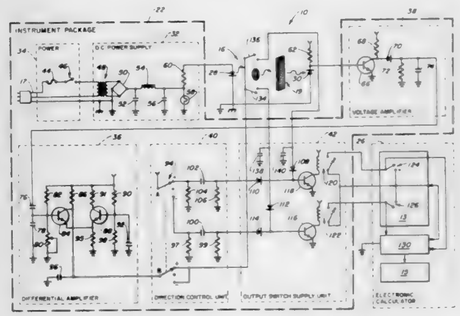
3,965,339
APPARATUS AND METHOD FOR MEASURING HEART CONDITION
Bruce E. Mount, Diamond Bar, and James R. Barela, Duarte, both of Calif., assignors to City of Hope-A National Medical Center, Los Angeles, Calif.
Filed Apr. 3, 1975, Ser. No. 564,798
Int. Cl.² G06G *7/60;* **A61B** *5/02*
U.S. Cl. 235—151.3 **8 Claims**

1. In an apparatus for continuously measuring the endocardial viability ratio of a patient for use with sources providing electrical signals representing the patient's systemic arterial pressure and left atrial pressure, the improvements comprising in combination:
a first input for a first signal varying as a function of the systemic arterial pressure and having a wave form with a leading edge at time t_0, a dicrotic notch at time t_1, and another leading edge at time t_2;
a second input for a second signal varying as a function of the left atrial pressure;
pulse generator means having said first signal as an input for generating a first pulse at times t_0 and t_2 and for generating a second pulse at a variable time after t_0;
display means for displaying said first signal and said first and second pulses, said pulse generator means including means for adjusting the timing of said second pulse to occur at time t_1;
an integrator having said first signal as an input;



a switching circuit for connecting said second signal to said integrator as an input during the time period t_1 to t_2 in subtractive relation with said first signal;
first and second sample and hold units;
means for connecting said integrator output to said first sample and hold unit for the time period $t_0$to t_1;
means for connecting said integrator output to said second sample and hold unit for the time period t_1 to t_2; and
dividing means having the output of said first and second sample and hold units as inputs for producing the ratio thereof as an output.

3,965,340
OPTICAL COUNTING DEVICE
Mathias Renner, 9950 Durant Drive, Beverly Hills, Calif. 90212, and Ronald L. Lyons, 722 Danvers Circle, Newbury Park, Calif. 91320
Filed Dec. 26, 1974, Ser. No. 536,544
Int. Cl.² G06F *3/05;* **G01C** *5/00*
U.S. Cl. 235—151.32 **4 Claims**



1. In combination with an electrical hand calculator, said calculator having a computer unit adapted to make mathematical calculations such as add, subtract, multiply and divide, said calculator including a digital display unit capable of displaying in digit form a numerical value determined by said computer unit, said calculator having a normally operable control panel employable to supply input into said computer unit to make said mathematical calculations, said control panel connected to an additive selection switch and a subtractive selection switch, upon actuation of said additive selection switch a predetermined numerical value is automatically added to the number displayed by said display unit with the then total accumulative value being displayed, upon actuation of said subtractive selection switch a predetermined numerical value is automatically subtracted to the number displayed by

said display unit with the then total accumulative value being displayed, the improvement comprising:

an optical counting apparatus located exteriorly of said electronic calculator and being electrically connected to both said additive and said subtractive selection switches, said counting apparatus capable of actuating said additive and said subtractive selection switches as though the actuation was performed by said control panel;

a first interference device;

a second interference device, said second interference device being movable with respect to said first interference device, both said first and said second interference devices having opaque areas and transparent areas, as said second interference device is moved said transparent areas are alignable permitting passage of light therethrough and also said opaque areas are alignable blocking the passage of light;

a light producing means located adjacent said second interference device capable of projecting light through said transparent areas of said second interference device which subsequently is capable of being transmitted through said transparent area of said first interference device;

light sensitive means located adjacent said first interference device, said light sensitive means being activated during the cycle of receiving no light to receiving light, upon activation of said light sensitive means an electrical signal is transmitted to a control means which thereupon causes activation of said electronic calculator;

the size of the transparent areas on said first interference device being equal to the size of said opaque areas on said first interference device, the size of said transparent areas on said second interference device being equal in size to the size of said opaque areas on said second interference device, both said first interference device and said second interference device comprising a thin sheet of film; and

the size of said transparent areas and said opaque areas on both said interference devices being equal in size.

3,965,341

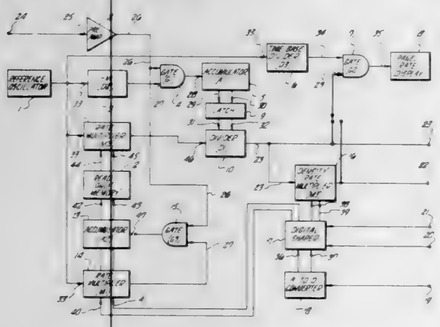
FLOW RATE COMPUTER

Raymond W. Honey, La Habra, and Louis Katz, Anaheim, both of Calif., assignors to Electrac, Inc., Anaheim, Calif.

Filed Jan. 10, 1975, Ser. No. 540,160

Int. Cl.² G06F *15/20*; G01F *1/00*

U.S. Cl. 235—151.34 **1 Claim**



1. A Flow Rate Computer for correcting the non-linearity of flow meters comprising:

converter means for converting an analog representation of viscosity to a digital representation;

digital shaper means for digitizing the manual assignment of viscosity and analog representation thereof;

a reference oscillator;

a first rate multiplier having an input and an output, the input being connected to the digital shaper and reference oscillator whereby the first rate multiplier provides a signal proportional to the reference oscillator frequency and the viscosity;

first accumulator means for receiving the output of the first rate multiplier;

a second rate multiplier;

a read-only memory programmed according to flow meter data to provide a signal R to second rate multiplier having an input and an output, the input being connected to the read-only memory and the reference oscillator whereby the second rate multiplier provides a signal proportional to the reference oscillator frequency and R;

a first divider with an input connected to the reference oscillator whereby the first divider provides for division of the reference oscillator frequency by a pre-set integer determined by the flow meter characteristics;

a second accumulator means for receiving the output of the first divider;

a latch means for updating the number stored in the second accumulator;

second divider means for dividing output of first rate multiplier by the number held in the latch;

a third rate multiplier having an input and an output, the input being connected to the digital shaper and second divider means; and

a panel rate display actuated by output of second divider or density rate multiplier.

3,965,342

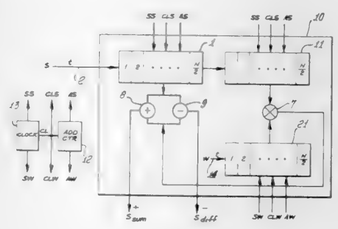
DIGITAL FFT PROCESSOR USING RANDOM ACCESS MEMORY

James Nickolas Constant, 1603 Danbury Drive, Claremont, Calif. 91711

Filed Nov. 4, 1974, Ser. No. 520,748

Int. Cl.² G06F *7/38*

U.S. Cl. 235—156 **22 Claims**



1. In a system for the digital implementation of a fast Fourier transform (FFT), the combination of:

a plurality of elements for performing FFT operations with each element including,

first and secnd random access memories (RAMs) for storing signals,

with said second memory connected to said first memory forming a delay line;

a third memory for storing the rotation vector of said FFT;

a multiplier having as inputs the outputs of said second memory and said third memory and providing at its output the product of said signal and said rotation vector;

sum and difference circuits having as inputs the output of said first memory and said multiplier and providing at its output the sum and difference signals required for said element by the FFT algorithm;

an address counter connected to said first, second, and third memories for accessing said memories; and

a clock connected to said memories and to said address counter for controlling timing operations of said memories and of said address counter.

3,965,343

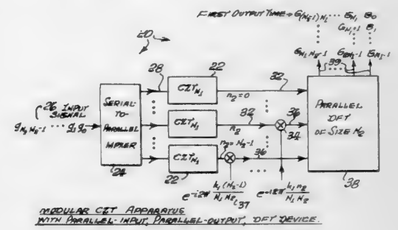
MODULAR SYSTEM FOR PERFORMING THE DISCRETE FOURIER TRANSFORM VIA THE CHIRP-Z TRANSFORM

Jeffrey M. Speiser, and Harper John Whitehouse, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 3, 1975, Ser. No. 554,875

Int. Cl.² G06F *15/34*

U.S. Cl. 235—156 **6 Claims**



1. Apparatus for combining N_2 **32** chirp-Z transform (CZT) modules of length N1 **256** in order to generate a discrete Fourier transform (DFT) of length N_1N_2 comprising:

a serial-to-parallel multiplexer to which may be applied a serial input signal and which has N_2 parallel outputs;

a plurality of N_2 chirp-Z transform devices, each of whose inputs comprise the outputs of the serial-to-parallel multiplexer, the input signals being transformed into chirp-Z transform signals;

a plurality of N_2-**1** multipliers, each one having an input connected to the output of the chirp-Z transform devices, the outputs comprising chirp-Z transformed signals, each signal having a different delay; and

a parallel discrete Fourier transform (DFT) device of size N_2, having as inputs the outputs of the N_2-**1** multipliers in addition to an output directly from one of the chirp-Z transform devices, its parallel outputs comprising the discrete Fourier transformed signals in parallel form.

3,965,344

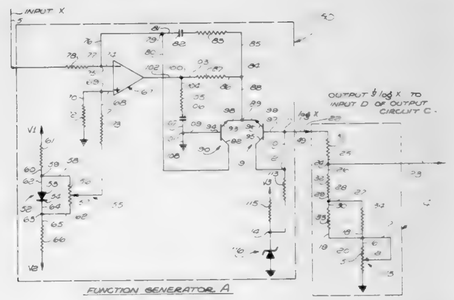
COMPUTER UTILIZING LOGARITHMIC FUNCTION GENERATORS

Edgar A. Romo, Costa Mesa, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 24, 1975, Ser. No. 598,783

Int. Cl.² G06G *7/20*, *7/24*

U.S. Cl. 235—197 **2 Claims**



1. A computer responsive to a main input signal directly proportional to a first function *x* for producing a main output signal of a magnitude directly proportional to a second function $x^{1/y}$, where *y* is a third function, said computer comprising: a first function generator having an output and being responsive to said main input signal for producing a first output signal at said output thereof directly proportional to **1**/*y* log *x*; an output circuit having first and second inputs and an output; and a second function generator having an input connected from said output circuit output, said second function generator output being connected to said output circuit second input, said output circuit first input being connected from said first function generator output, said output circuit being constructed to produce a main output signal at said output of said output circuit, said second function generator producing a second output signal at said output thereof directly proportional to the logarithm to the same base as that of said log x of said output circuit main output signal, said output circuit being constructed to drive said main output signal to a magnitude such that said second output signal becomes equal in magnitude to that of said first output signal.

3,965,345

FIXTURE FOR THE MOUNTING AND COOLING OF FLUORESCENT TUBES

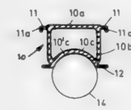
Marc Fordsmand, Charlottenlund, Denmark, assignor to Kicon AG, Ostermundigen, Switzerland

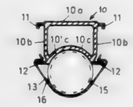
Filed May 9, 1974, Ser. No. 468,637

Claims priority, application United Kingdom, June 26, 1973, 30363/73

Int. Cl.² F21V *29/00*

U.S. Cl. 240—47 **8 Claims**





1. A fixture for the mounting and cooling of a fluorescent tube comprising, in combination, a cooling tube of heat conductive material, said cooling tube having a plurality of longitudinally extending walls defining a hollow interior for the circulation of a coolant therethrough, one of said walls being of arcuate cross-sectional shape for accommodating an arcuate portion of the periphery of a fluorescent tube in heat transfer relationship therewith and with the fluorescent tube disposed in substantially parallel relationship with said cooling tube and means on said cooling tube for supporting a fluorescent tube with the fluorescent tube arcuate peripheral portion in said heat transfer relationship with said cooling tube arcuately shaped wall.

3,965,346

LIGHT FIXTURE MOUNTING APPARATUS

Joseph L. Thompson, Jr, San Marcos, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed July 14, 1975, Ser. No. 595,674

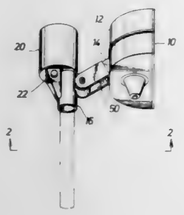
Int. Cl.² F21V *21/00*

U.S. Cl. 240—52 R **4 Claims**

1. A light fixture housing, comprising:

an angled mounting pad fixedly secured to the casing of said fixture providing a flat mounting surface,

a U-shaped bracket for attaching to said mounting pad and having a flat base surface for mating with said mounting surface of said mounting pad,
said base surface including at least one key-hole slot,
said mounting pad including a receiving hole for a bolt, the head of which operates within said key-hole slot,



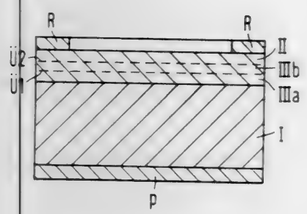
pivot means mounted within the legs of said U-shaped bracket having an axle with at least one threaded end for receiving a nut to provide tightening of said axle to said bracket at a selectable aiming angle for said housing.

3,965,347

ELECTROLUMINESCENT SEMICONDUCTOR DIODE WITH HETERO-STRUCTURE

Walter Heywang, Neukeferloh, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed Nov. 12, 1974, Ser. No. 523,118
Claims priority, application Germany, Nov. 14, 1973, 2356844
Int. Cl.² H01J *39/12*
U.S. Cl. 250—211 J **14 Claims**



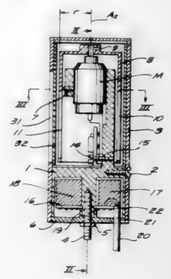
1. An electroluminescent diode comprising a homogeneous monocrystalline semiconductor body forming a first zone, an inhomogeneous epitaxial second zone having a forbidden-band-width which changes steadily with increasing distance from said first zone, the second zone having a first sub-zone with properties of a direct semiconductor adjacent said first zone and a second sub-zone interfaced with said first sub-zone, said second sub-zone having the properties of an indirect semiconductor, the junction between the two sub-zones lying parallel to the junction between said first and second zones, said second zone also having a third sub-zone of a conductivity type opposite to that of said first zone and said first and second sub-zones, which third sub-zone is interfaced with said second sub-zone to form a pn-junction with said second sub-zone, the distance between said first and second sub-zone junction and said pn-junction being such that the major part of the charge carriers injected into said second sub-zone from said pn-junction towards said direct semiconductor sub-zone reach said direct semiconductor sub-zone.

3,965,348

METHOD OF AND APPARATUS FOR DETECTING LIGHT AND CONTROLLING JALOUSIES AND THE LIKE

Leopold Anetseder, Sr., and Leopold Anetseder, Jr., both of Munich, Germany, assignors to Sun-Sor GmbH, Augsburg, Germany

Division of Ser. No. 400,057, Sept. 24, 1973, Pat. No. 3,885,152. This application Mar. 14, 1975, Ser. No. 558,274
Claims priority, application Germany, June 1, 1973, 2327837
The portion of the term of this patent subsequent to Dec. 17, 1991, has been disclaimed.
Int. Cl.² G01D *5/36*
U.S. Cl. 250—233 **8 Claims**



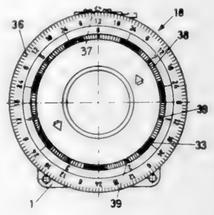
1. The combination with a load comprising a motor and a sunshield of a jalousie, window blind, awning, and like type driven by said motor of a sunlight detector for controlling said load and comprising:
a displaceable support;
sensing means having a photosensitive surface fixedly mounted on said support for emitting an electrical output on irradiation of said surface by light;
a housing surrounding said surface and having a wall fixedly mounted on said support and formed parallel to said surface with a generally vertically elongated slit-like window constituting the only light entrance into said housing;
means for angularly displacing said support and thereby displacing said slit window transversely to itself about an upright axis and at a constant distance from said surface through an angle of at least 150°; and
means connecting said sensing means and said load for operating said load according to said output.

3,965,349

TIME SWITCH WITH ADJUSTABLE PROGRAM

Aksel Jespersen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Feb. 18, 1975, Ser. No. 550,722
Claims priority, application Germany, Feb. 21, 1974, 2408343
Int. Cl.² H01J *39/12*; **G08B** *1/00*
U.S. Cl. 250—236 **2 Claims**



1. A timing device comprising clock works and a rotatable unit driven by said clock works, a reflecting disc having a reflecting surface mounted on said unit for rotation therewith, a stationary unit in close proximity to said reflecting disc holding a light source which directs a light beam towards said reflecting disc, a program disc mounted on said rotatable unit between said reflecting disc and said stationary unit, said program disc having a predetermined form for masking certain portions of said reflecting surface from said light beam as said rotatable unit rotates relative to said stationary unit, a light sensor on said stationary unit at a predetermined incidence angle relative to light source and said reflecting disc for sensing reflections of said light beam.

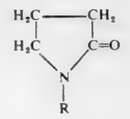
3,965,350

DYE PENETRANT METHOD FOR DETECTING FLOWS

Orlando G. Molina, Westminster, Calif., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 220,414, Jan. 24, 1972, which is a continuation-in-part of Ser. No. 68,475, Aug. 31, 1970, abandoned, which is a continuation of Ser. No. 655,752, July 25, 1967, abandoned. This application June 17, 1974, Ser. No. 480,057
Int. Cl.² G01N *21/38*
U.S. Cl. 250—302 **8 Claims**

1. A method for detecting cracks and flaws in the surface of an object which comprises applying to said surface a homogeneous liquid penetrant composition which consists essentially of an N-alkyl-2-pyrrolidone, as vehicle, and a fluorescent dye which is soluble in said pyrrolidone, said pyrrolidone having the general formula



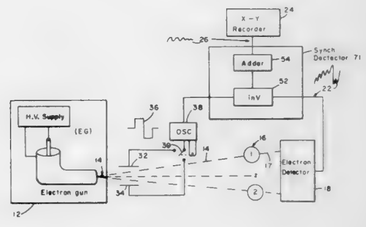
where R is an alkyl group containing from 1 to 4 carbon atoms; removing excess liquid penetrant composition from said surface, a portion of said liquid penetrant remaining in said cracks and flaws therein; and viewing the surface of said body under fluorescigenous light to obtain colored traces from the dye in said cracks and flaws.

3,965,351

DIFFERENTIAL AUGER SPECTROMETRY

Myron Strongin, Center Moriches; Matesh Narayan Varma, Shirley, both of N.Y., and Joshi Anne, St. Louis Park, Minn., assignors to The United States of America as represented by the United States Energy Research and Development Administration, Washington, D.C.

Filed Oct. 30, 1974, Ser. No. 519,324
Int. Cl.² G01N *23/04, 23/227*
U.S. Cl. 250—305 **5 Claims**



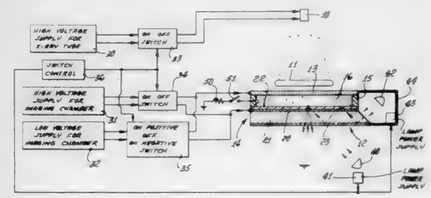
1. The method of controlling micro-Auger spectroanalysis of the surfaces of dilute alloys containing at least two metal elements, comprising:
a. spatially modulating a uniform low energy electron beam having a diameter of at least up to **1mm** of parallel electrons in an Auger spectrometer between first and second locii at a first frequency to produce Auger electrons corresponding to the elements at the locii;
b. collecting the Auger electrons produced when said beam is at said first locus;
c. separately collecting the Auger electrons when said beam is at said second locus; and
d. comparing the spectra of the Auger electrons collected for obtaining the difference therebetween, a pure reference sample being situated at said first locus and a sample of a dilute alloy containing a trace impurity less than 4 atomic percent being situated at the other of said locii so that said difference can be used to negate the Auger electron component from the locus corresponding to the pure reference sample Auger electrons.

3,965,352

X-RAY SYSTEM WITH ELECTROPHORETIC IMAGING

Frank V. Allan, Los Angeles; John B. Fenn, Jr., Canoga Park, and John H. Lewis, Los Angeles, all of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Filed Apr. 24, 1975, Ser. No. 571,220
Int. Cl.² G03G *13/00*; **G01J** *1/00*; **H05G** *1/00*
U.S. Cl. 250—315 A **23 Claims**



1. In an electronradiography imaging chamber for providing a visual image, the combination of:
first and second electrodes;
means for supporting said electrodes in spaced relation with a gap there between, with said first electrode being relatively transparent optically and having a dielectric layer at the surface thereof facing said second electrode;
an X-ray absorber and electron and positive ion emitter in said gap, with X-ray radiation entering said gap being absorbed and providing electrons and positive ions in said gap;
a plurality of electrophoretic particles in said gap; and
means for connecting an electric power source across said electrodes for attracting electrons toward one electrode and positive ions toward the other depending upon the plurality of the power source and forming an electrostatic charge image, with said particles being selectively deposited at said dielectric layer as a function of said electrostatic charge image forming a visual image viewable through said first electrode.

3,965,353

CROSS-SECTIONAL X-RAY EMISSION IMAGING SYSTEM

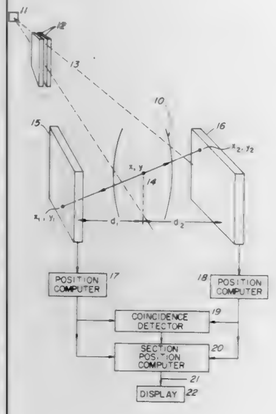
Albert Macovski, 4100 Mackay Drive, Palo Alto, Calif. 94306

Filed Dec. 6, 1974, Ser. No. 530,399
Int. Cl.² G01T *1/00*
U.S. Cl. 250—336 **11 Claims**

1. Apparatus for producing an image of a cross section of an object comprising:
means for illuminating the cross section with x-rays having energies greater than 1.02 Mev;
position-sensitive detector means for detecting gamma rays emitted from the illuminated cross section due to pair

production and producing a plurality of detected position signals;

means for computing the point of emission of the gamma rays in the illuminated cross section using the detected



position signals and producing a gamma-ray emission signal; and

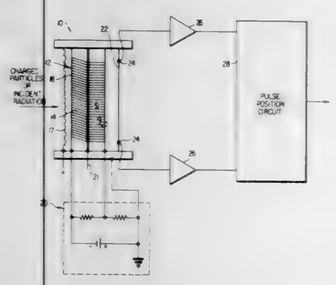
means for displaying the gamma-ray emission signals whereby an image of the cross section will be formed.

3,965,354

RESISTIVE ANODE IMAGE CONVERTER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Michael L. Lampton, and Francesco Paresce, both of Berkeley, Calif.

Filed Mar. 3, 1975, Ser. No. 555,336
Int. Cl.² G01T *1/16*
U.S. Cl. 250—336 **9 Claims**



1. An apparatus for imaging incident electromagnetic radiation ranging in wavelengths from approximately 10 A° to 2000 A° and charged particles comprising:

a. means for detecting said radiation and charged particles and for producing an amplified and accelerated electron image which corresponds spatially to the incident radiation and charged particles;

b. a continuous resistive target disposed in the path of said amplified and accelerated electron image; and

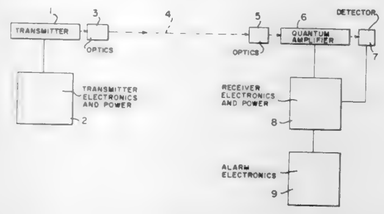
c. means electrically coupled to said continuous resistive target for producing signals representative of at least one of the two spatial coordinates of the points of impact of the electrons upon said target which comprise said electron image.

3,965,355

LOW POWER INFRARED LASER INTRUSION SYSTEMS

Bruce S. Maccabee, 10706 Meadowhill Road, Silver Spring, Md. 20901, and Charles E. Bell, 9717 Delamere Court, Potomac, Md. 20854

Filed Oct. 23, 1974, Ser. No. 517,160
Int. Cl.² G01J *1/00*
U.S. Cl. 250—341 **8 Claims**



1. A system which can signal the presence, within a chosen optical path, of an object that is opaque to infrared radiation and which comprises:

a. a radiation generator which produces a beam of infrared radiation,

b. beam forming optical means,

c. radiation collecting and focusing optical means,

d. a quantum amplifier that operates at the same frequency as the infrared radiation generator,

e. an infrared radiation detector which converts an infrared radiation level to an electronic signal level, and

f. electronic means which are capable of signalling a human operator in response to input signal levels from an infrared radiation detector,

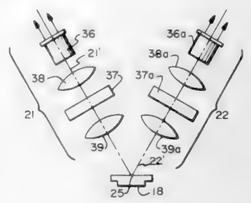
and in which the radiation from the generator passes through the beam forming optical means, traverses the chosen optical path whenever there is no opaque object within the said path, passes through the radiation collecting and focusing optical means and into the quantum amplifier, traverses the quantum amplifier and is incident on the infrared detector, and in which the electronic means is so connected to the infrared detector and so interconnected within itself that it signals a human operator whenever the signal level from the infrared detector falls below a certain chosen level.

3,965,356

APPARATUS FOR MEASURING A PREDETERMINED CHARACTERISTIC OF A MATERIAL USING TWO OR MORE WAVELENGTHS OF RADIATION

John J. Howarth, San Jose, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 573,173, April 30, 1975, abandoned, which is a continuation of Ser. No. 475,628, June 3, 1974, abandoned. This application May 29, 1975, Ser. No. 581,836
Int. Cl.² G01N *21/26*; G01J *3/34*
U.S. Cl. 250—343 **9 Claims**



1. Apparatus for measuring a predetermined characteristic of a material using two or more wavelengths of radiation comprising: a radiation source for emitting radiation having a

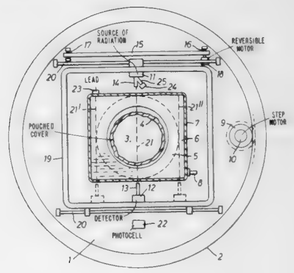
plurality of wavelengths; a diffusing window for receiving at least a portion of said radiation after impinging upon said material and for reradiating said received radiation; a plurality of radiation detector means each including a filter respectively centered around one of said plurality of wavelengths each of said detector means having an optical axis; means for supporting said plurality of detector means for aligning said optical axes to converge at substantially the same point in proximity to said diffusing window whereby each detector means receives substantially the same image of reradiation.

3,965,357

APPARATUS FOR EXAMINING A BODY BY MEANS OF PENETRATING RADIATION

Godfrey Newbold Hounsfield, Newark, England, assignor to EMI Patents Limited, Hayes, England

Filed Mar. 1, 1974, Ser. No. 447,381
Int. Cl.² G01M *23/00*
U.S. Cl. 250—360 **9 Claims**



1. Apparatus for examining a body by means of radiation, such as X- or gamma radiation comprising

a. a main structural frame,

b. a rotary member defining a central aperture positioned on said main structural frame and being arranged to rotate relative thereto,

c. a body supporting structure for positioning a body to be examined in said central aperture, said body supporting structure being located and arranged to remain stationary relative to said rotary member,

d. a known medium located in proximity with the body supporting structure,

e. a source of penetrating radiation and a detector for receiving a beam of penetrating radiation from said source and producing output signals responsive thereto mounted on said rotary member and located on opposite sides of said body supporting structure,

f. said source, said detector, and said body supporting structure being spatially arranged such that when a body to be examined is supported by said body supporting structure, it is interposed between the source and said detector,

g. an interconnection for said source and said detector to interrelate their positions on opposite sides of said body supporting structure, and to enable them to execute common lateral scanning movements relative to said rotary member,

h. motor means for driving said rotary member relative to said main structural frame to produce orbital scanning about the axis of said rotary member, and for driving said source and said detector to execute repetitive common lateral scanning movement such that for each lateral scan the beam of radiation is carried into a region beyond that region to be occupied by a body when supported by said supporting structure,

i. said lateral and orbital scanning being correlated for providing alternate predetermined increments of orbital and lateral scanning,

j. said known medium being positioned to intercept said beam in said first mentioned region to cause said detector to produce an output signal related to the attenuation of said known medium and independent of the attenuation of the body undergoing examination, and

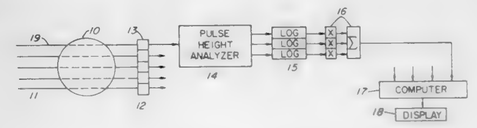
k. a circuit for combining the last mentioned detector output signals with detector output signals related to the attenuation of the body undergoing examination to reference the latter signals.

3,965,358

CROSS-SECTIONAL IMAGING SYSTEM USING A POLYCHROMATIC X-RAY SOURCE

Albert Macovski, 4100 Mackay Drive, Palo Alto, Calif. 94306

Filed Dec. 6, 1974, Ser. No. 530,397
Int. Cl.² G01T *1/20*
U.S. Cl. 250—369 **12 Claims**



1. An improved cross-sectionsl imaging apparatus of the type wherein a polychromatic *x*-ray beam is projected through a cross-section of an object at a plurality of angles and wherein the resultant transmitted beam is detected and applied to a reconstruction computer where the detected transmission data is used to reconstruct the density of the cross-section and the reconstructed image information is applied to a display, wherein the improvement comprises:

means for detecting a plurality of *x*-ray transmission signals representing the intensity of different energy spectra of the transmitted polychromatic *x*-ray beam;

means for deriving the logarithm of each of the *x*-ray transmission signals; and

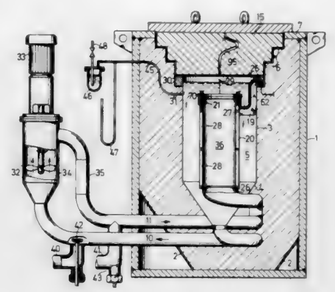
means for deriving a weighted sum of each of the logarithms of the *x*-ray transmission signals and applying the weighted sum signal to the reconstruction computer.

3,965,359

IRRADIATION PLANT HAVING A COMMON CLOSURE

Ernst Bosshard, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

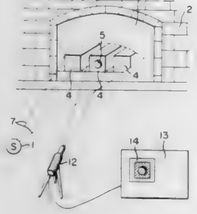
Filed Sept. 5, 1974, Ser. No. 503,336
Claims priority, application Switzerland, Sept. 5, 1973, 12729/73
Int. Cl.² G01N *23/12*
U.S. Cl. 250—432 R **11 Claims**



1. A plant for irradiating flowable material comprising

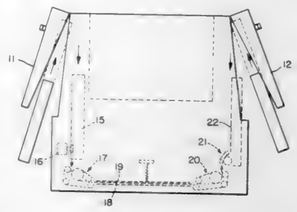
an irradiation chamber for receiving the flowable material;
a container within said chamber for receiving a plurality of radiation sources, said container having a plurality of ducts for the introduction and removal of the radiation sources;
a common closure member mounted on said container for closing said ducts in seal-tight relation relative to said chamber; and
a holder clamping said closure member into contact with said container.

3,965,360
METHOD FOR DISCRIMINATING HIGH-TEMPERATURE RED HEATED MATERIAL
Koji Sakasegawa; Atsushi Ohsumi; Tatsue Saito; Yukio Hosaka, all of Fukuyama; Kazuo Kunioka, Yokohama; Tomio Yamamoto, Takamatsu, and Tadashi Asai, Kobe, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo; Fuji Toyuki Kabushiki Kaisha, Kagawa and Asai Yushi Kogyo Kabushiki Kaisha, Kobe, all of, Japan
Filed Aug. 19, 1974, Ser. No. 498,371
Claims priority, application Japan, Aug. 22, 1973, 48-93282
Int. Cl.² G01M *21/38*
U.S. Cl. 250—461 R **9 Claims**



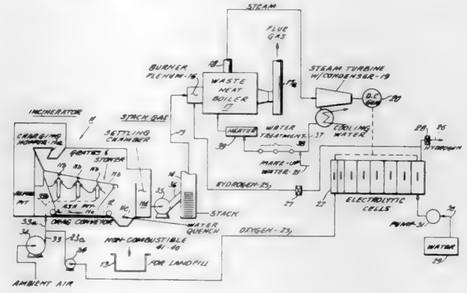
1. A method of discriminating a material radiant at high temperatures in a heating furnace as being radiant from outside the furnace, comprising:
previously placing a discrimination mark on the surface of a material to be discriminated from other materials to be heated in said furnace with a paint which is sensitive to near ultraviolet rays of wavelength of approximately 4358A, said paint being comprised of a manganese frit and a potassium silicate,
charging said marked material together with unmarked materials into said heating furnace for radiant heating,
projecting near ultraviolet rays of a high pressure mercury lamp from outside said furnace to said materials radiant-heated in said furnace, said near ultraviolet rays having a wavelength of approximately 4358A, said painted discrimination mark being responsive to said near ultraviolet rays impinging thereon to produce a visual sharp-contrast indication between the unpainted surface portion and said discrimination mark of said marked material, and
photographing the interior of said furnace while said materials are radiant with a camera having a bandpass filter which transmits substantially exclusively said near ultraviolet rays of wavelength of approximately 4358A in front of the camera lens to discriminate the marked material from the unmarked material while they are radiant.

3,965,361
X-RAY FILM LOADER
G. Louis Reser, Cincinnati, Ohio, assignor to Sybron Corporation, Rochester, N.Y.
Filed Nov. 29, 1974, Ser. No. 528,136
Int. Cl.² G11B *1/00*
U.S. Cl. 250—468 **5 Claims**



1. Apparatus for transporting cut sheets of *x*-ray film one at a time to or from an exposure station comprising:
first and second guides defining a film pathway and restricting lateral movement of a sheet of film in said pathway;
a first pair of endless belts positioned adjacent to said first guide and adapted to grip one lateral edge of said sheet of film; and
a second pair of endless belts positioned adjacent to said second guide and adapted to grip the other lateral edge of said sheet of film;
said first and second pairs of endless belts being adapted to allow said film to slip when an edge of the film strikes one of said guides, whereby the film will automatically slip in relation to at least one of said pairs of endless belts and align itself properly in said pathway.

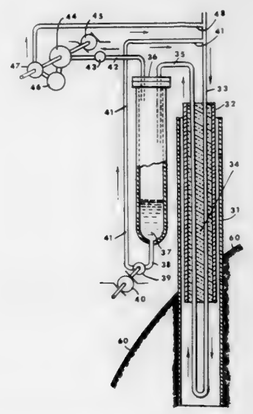
3,965,362
ENERGY SYSTEM FOR PRODUCTION OF HYDROGEN FROM WASTE INCINERATION
Gerald J. Harvey, Westbury, N.Y., assignor to New York Testing Laboratories, Inc., Westbury, N.Y.
Filed Mar. 20, 1974, Ser. No. 452,683
Int. Cl.² F23G *5/04*
U.S. Cl. 290—1 R **12 Claims**



1. A closed loop method for producing electric power and pure hydrogen comprising the steps of
a. combining waste material with ambient air and substantially pure oxygen;
b. burning the combined matter in an enclosed region to develop heated gaseous material;
c. mixing the heated gaseous matter with substantially pure hydrogen and igniting the resulting mixture and introducing the ignited mixture into a boiler to generate steam;
d. operating a turbine by the steam generated by the boiler;
e. operating a generator by said turbine to generate electric power;
f. utilizing a portion of the electric power to energize an electrolytic cell structure;

g. supplying said structure with water to enable the structure to produce substantially pure hydrogen and oxygen, all of said oxygen being that oxygen employed in the combining operation of step (a);
h. feeding a portion of the hydrogen produced through step (g) to the steam generator wherein the said portion of hydrogen is that hydrogen employed in the mixing step (c);
said method steps resulting in the burning of waste material at a higher temperature to reduce residue, resulting in the production of useful electric power and further resulting in the production of hydrogen in excess of that used in step (c) for subsequent utilization as a fuel or for other diverse purposes.

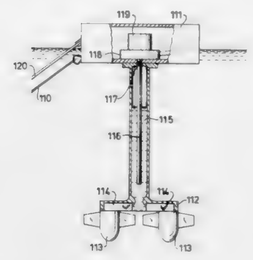
3,965,363
FUELESS POWER MEANS AND METHODS
Wayne Bailey, Box 89, Johnsonville, N.Y. 12094
Filed Apr. 18, 1974, Ser. No. 462,189
Int. Cl.² H02P *9/04*
U.S. Cl. 290—1 R **4 Claims**



1. In a fueless power plant, a heat pick up U tube, well beneath the ground level, said U tube encased in an outer protective tube driven in the ground, one tubular side of said U tube supplying heat pick-up fluid to said U tube, the other side of said U tube being connected to a vapor liquid separation device which is in turn connected to a vapor power producing means and having a second tube surrounding said U tube and encased by the outer protective tube, said second tube holding heat insulating material around the upper portion of said U tube, and including means for returning separated liquid to the fluid supply side of said U tube.

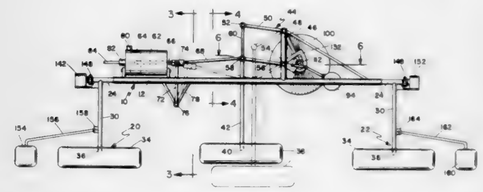
3,965,364
WAVE GENERATOR
Manfred Wallace Gustafson, Gamla Fagerstavagen 4, and Kaj-Ragnar Loqvist, Regnbagsvagen 40, both of 773 00 Fagersta, Sweden
Filed June 10, 1974, Ser. No. 478,145
Claims priority, application Sweden, June 18, 1973, 7308523
Int. Cl.² F03B *13/10*
U.S. Cl. 290—53 **7 Claims**

1. A device for the utilization of energy stored in the wave-motion or heaving of water, comprising at least one buoyant body located at the water surface, wherein said buoyant body is anchored in a way which permits substantially unrestricted movement thereof in an essentially vertical direction independently of the wave height and water depth when acted upon by the heaving waves, at least one lower member connected to the buoyant body, said lower member comprising at least two oppositely rotating propellers on different vertical shafts, said propellers positioned at a distance below the buoyant



body which locates them fully or partially at a depth where the surrounding water has substantially no vertical motion and including an energy collecting means for receiving and collecting the energy created by rotation of the propellers.

3,965,365
POWER GENERATING MACHINE ACTUATED BY OCEAN SWELLS
Edward L. Parr, 301 N. Cuyamaca, El Cajon, Calif. 92020
Filed Jan. 14, 1975, Ser. No. 540,889
Int. Cl.² F03B *13/12*; **B63H** *1/38*
U.S. Cl. 290—53 **15 Claims**

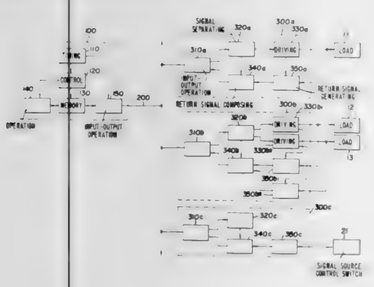


1. A power generating machine for operation by ocean swells, comprising:
an elongated frame;
a pair of support floats attached to and supporting said frame at opposite ends;
a power float mounted on said frame between said support floats;
a hinged pantograph mechanism supporting said power float for substantially vertical motion on the frame;
power generating means coupled to and actuated by motion of said pantograph mechanism;
sensing means for sensing the spacing of adjacent crests of ocean swells;
and actuating means, responsive to said sensing means, for varying the spacing of said support floats to correspond to the spacing of the swells crests.

3,965,366
ELECTRICAL DEVICES CONTROL SYSTEM
Shizuo Sumida; Kazuo Nii, both of Hiroshima; Osamu Shimizu, Himeji; Atsushi Ueda, Himeji, and Mitsuaki Ishii, Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Toyo Kogyo Co., Ltd., both of, Japan
Filed Aug. 30, 1974, Ser. No. 501,985
Claims priority, application Japan, Sept. 3, 1973, 48-99404
Int. Cl.² H02J *4/00*
U.S. Cl. 307—39 **8 Claims**

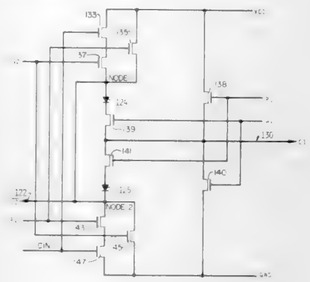
1. An electrical device for controlling and monitoring loads comprising:

a central operation apparatus comprising:
a timing part,
a control part,
an operating part,
a memory part,
an input-output operating part,
means connecting the timing part to the control part and to the input-output operating part,
means connecting the control part to the operating part and to the memory part,
means connecting the operating part and the memory part,
means connecting the memory part and the input-output operating part,
means connecting the input-output operating part and a multiple signal transmission line,
a first electrical load,
a first terminal operation apparatus comprising:
an input-output operating part,
a signal separating part,
a return signal composing part,
a driving part,
a return signal generating part,
means connecting the multiple signal transmission line and the input-output operating part,
means connecting the input-output operating part to the signal separating part,
means connecting the signal separating part to the driving part,
means connecting the signal separating part to the return signal composing part,



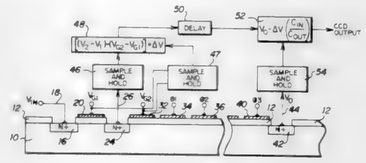
means connecting the driving part to the first electrical load,
means connecting the driving part to the return signal generating part,
means connecting the first electrical load to the return signal generating part,
means connecting the return signal generating part to the return signal composing part,
means connecting the return signal composing part to the input-output operating part,
a signal source control switch,
a second terminal operation apparatus comprising:
an input-output operating part,
a signal separating part,
a return signal composing part,
a return signal generating part,
means connecting the multiple signal transmission line and the input-output operating part,
means connecting the input-output operating part to the signal separating part,
means connecting the signal separating part to the return signal composing part,
means connecting the signal source control switch to the return signal generating part,
means connecting the return signal generating part to the return signal composing part,
means connecting the return signal composing part to the input-output operating part.

3,965,367
MULTIPLE OUTPUT LOGIC CIRCUITS
Kenyon Chi-Yen Mei, Union City, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 5, 1975, Ser. No. 574,203
Int. Cl.² H03K *19/08, 19/12, 19/20*
U.S. Cl. 307—207 **3 Claims**



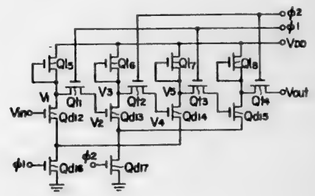
1. A logic circuit comprising a plurality of complementary switching elements, a first portion of said plurality of complementary switching elements having at least one interconnecting node and coupled between a primary output line and a first power supply line, a second portion of said plurality of complementary switching elements having at least one interconnecting node and being coupled between said primary output line and a second power supply line;
an electrical shorting path between the interconnecting node of said first portion of said plurality of complementary switching elements and the interconnecting node of said second portion of said plurality of complementary switching elements;
a secondary output line coupled to said electrical shorting path; and
one or more diodes coupled to said first and second interconnecting nodes for preventing electrical conduction between said first power supply line and said second power supply line via said electrical shorting path and one or more of the plurality of complementary switching elements.

3,965,368
TECHNIQUE FOR REDUCTION OF ELECTRICAL INPUT NOISE IN CHARGE COUPLED DEVICES
Stephen Perry Emmons, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 24, 1974, Ser. No. 517,555
Int. Cl.² H03K *3/353;* **H01L** *29/78*
U.S. Cl. 307—221 D **13 Claims**



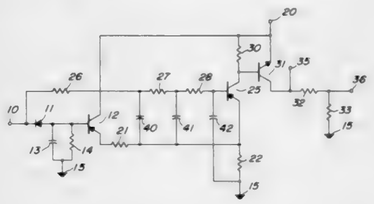
1. In a charge coupled device comprising a semiconductor substrate defining a channel and phase electrodes overlying and insulated from a surface of said substrate along said channel, input structure for introducing charge packets into a potential well in said substrate beneath at least one of said phase electrodes under control of input signals applied to said input structure, output structure for deriving output signals from said channel, and means for applying clock voltages to said phase electrodes for propagating said electrical charge packets along said substrate beneath said phase electrodes toward said output structure, said input structure including:
means for defining a floating doped region having conductivity different from that of said channel, means for introducing an input signal charge packet into said floating doped region dependent on the amplitude of an input signal applied to said input structure, said input signal charge packet characterized by noise uncertainty factor KTC wherein
k = Boltzman's constant;
T = absolute temperature;
C = capacitance associated with said floating doped region;
gate electrode means overlying and insulated from said substrate and disposed between said floating doped region and said one phase electrode;
means for applying a gating voltage to said gate electrode and a clock voltage to said one phase electrode to transfer a quantity of charge dependent on the magnitude of said input signal from said floating doped region into the potential well under said one phase electrode, said quantity of charge also characterized by said noise uncertainty factor; means for sampling the voltage of said floating doped region after introduction thereto of said input signal charge packet, and for sensing the voltage of said floating doped region subsequent to said transfer of charge into said potential well and for deriving from said sensed voltages an error voltage characteristic of the said noise uncertainty factor kTC; and means for utilizing said error voltage to modify an output signal produced by said output structure responsive to said input signal to produce an output signal voltage substantially free from said noise uncertainty factor.

3,965,369
MISFET (METAL-INSULATOR-SEMICONDUCTOR FIELD-EFFECT TRANSISTOR) LOGICAL CIRCUIT HAVING DEPLETION TYPE LOAD TRANSISTOR
Yoshikazu Hatsukano, Kodaira, Japan, assignor to Hitachi, Ltd., Japan
Division of Ser. No. 381,485, July 23, 1973, Pat. No. 3,917,958. This application May 29, 1975, Ser. No. 581,775
Claims priority, application Japan, Aug. 25, 1972, 47-84565
Int. Cl.² G11C *19/28;* **H03K** *23/22, 19/08, 19/20*
U.S. Cl. 307—221 C **2 Claims**



1. A MISFET logic circuit comprising:
at least one stage having
a first MISFET having a source, a gate, and a drain electrode;
a depletion type second MISFET having a source, a gate, and a drain electrode;
a logic circuit to which prescribed logic signals are coupled; and wherein
said first MISFET, said depletion type second MISFET, and said logic circuit are connected together in series, with said second MISFET forming a load and with said first MISFET being coupled to receive clock pulses, for driving said circuit, at the gate electrode thereof;
wherein said MISFET logic circuit comprises a plurality of stages connected in cascade to form a shift register circuit, with the respective gate electrodes of the first MISFETs, for controlling the operation of a respective stage receiving clock pulses shifted in time with respect to each other.

3,965,370
PULSE REGENERATING CIRCUIT
Wayne J. Bates, Des Plaines, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Dec. 20, 1974, Ser. No. 535,006
Int. Cl.² H03K *5/01, 6/06*
U.S. Cl. 307—268 **7 Claims**

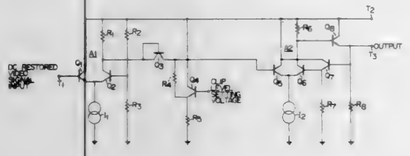


1. A pulse regenerating circuit comprising:
a. a transistor switch having first, second and control electrodes with means for connecting suitable operating power to the first and second electrodes;
b. an input terminal adapted to receive pulses having distorted leading and lagging edges and distorted amplitudes;
c. connecting means coupling said input terminal to the control electrode of said transistor switch;
d. first and second semiconductor junctions each providing essentially the same voltage drop thereacross as the voltage drop between the first and control electrodes of said transistor switch; and
e. a voltage divider connected in series with said first and second semiconductor junctions and the series circuit coupled between said input terminal and a reference point, said voltage divider having an output terminal coupled to the first electrode of said transistor switch and providing a voltage thereto approximately one half the voltage applied to said input terminal minus the voltage drop across one of said semiconductor junctions.

3,965,371
TEMPERATURE COMPENSATED VIDEO SIGNAL PROCESSING CIRCUIT WITH A VIDEO SIGNAL CLIPPING DEVICE
Itsuzo Sato, and Kikuo Saito, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan
Filed May 21, 1975, Ser. No. 579,702
Claims priority, application Japan, May 30, 1974, 49-61164
Int. Cl.² H03K *5/08*
U.S. Cl. 307—237 **4 Claims**

1. A video signal processing circuit comprising:
a first transistor differential amplifier having an input and output, the input of said first transistor differential amplifier being connected to receive a DC restored video signal;
a clipping pn junction device coupled to the output of said first transistor differential amplifier;
a first emitter follower transistor whose base is connected to a bias voltage source to apply a predetermined bias voltage to said clipping pn junction device by an emitter output of said first emitter follower transistor; and

a second transistor differential amplifier including first and second transistors each having an emitter collector and base and connected in common emitter configuration, the base of said first transistor being coupled to the output of said clipping pn junction, a load resistor coupled to the collector of said second transistor, a second emitter follower transistor whose base is coupled to the collector



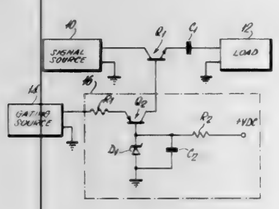
of said second transistor, and a second pn junction device coupled between the emitter of said second emitter follower transistor and the base of said second transistor, the polarity relation of said second pn junction device to the base of said second transistor being the same as that of said clipping pn junction device to the base of said first transistor.

3,965,372

SIGNAL TRANSMISSION GATE

Morris E. Levine, Staten Island, N.Y., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Mar. 27, 1974, Ser. No. 455,065
Int. Cl.² H03K *17/60*
U.S. Cl. 307—254 **12 Claims**



1. A bilateral signal transmission gate circuit for bilaterally transmitting and blocking signals of a frequency at least as high as audio frequency comprising DC blocking means, a first bipolar transistor and shunt impedance increasing means connected to said first bipolar transistor's base electrode operative to couple with a high impedance a gating signal to said base electrode, said first bipolar transistor being operative, when gated on by said gating signal, to bilaterally provide a low signal impedance through said DC blocking means between its emitter and collector electrodes and, when off, to bilaterally provide a high signal impedance therebetween, said shunt impedance increasing means being operative to increase the shunt signal impedance between said first bipolar transistor collector and emitter electrodes and ground.

3,965,373

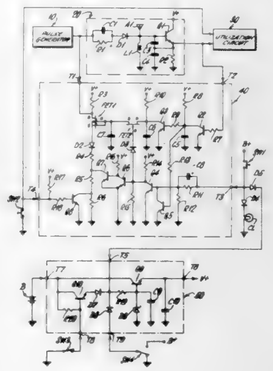
AUTOMATIC REFERENCE LEVEL ADJUSTMENT CIRCUIT

Paul A. Carlson, New Providence, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.

Continuation of Ser. No. 312,193, Dec. 4, 1972, abandoned.
This application Nov. 4, 1974, Ser. No. 520,552
Int. Cl.² H03B *3/02*; **G11C** *27/02*
U.S. Cl. 307—264 **23 Claims**

1. In a system comprising sensing circuit means for monitoring at least one parameter normally operative to provide a first output signal and operative in response to a predetermined minimum change in at least one monitored parameter to provide a second output signal, and energizing means operative to provide an energizing input to said sensing circuit means, the improvement comprising:

adjustment circuit means operative to receive said energizing input, said first and second output signals, and a first input signal from first circuit means for actuating said



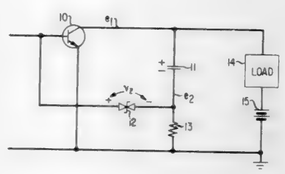
adjustment circuit means, said first circuit means being separate from said sensor circuit means, and operative in response to said first input signal to adjust the energizing input to the sensing circuit means so as to adjust the first output signal of the sensing circuit means to a substantially constant level.

3,965,374

CIRCUIT FOR CONTROLLING THE SWITCHING TIMES OF INVERTING SWITCHING DEVICES

William Anders Peterson, Lake Parsippany, and James Carroll Wadlington, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 5, 1975, Ser. No. 574,428
Int. Cl.² H03K *17/00*
U.S. Cl. 307—318 **8 Claims**



1. A circuit for controlling the switching time of an inverting switching device comprising:

a capacitor for connection to the output terminal of said inverting switching device;

a resistor connected between said capacitor and a terminal of fixed potential; and

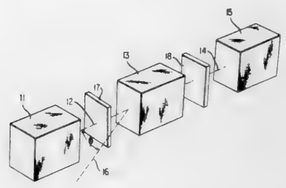
a double Zener diode having one lead connected to said capacitor and having the other lead for connection to the input terminal of said inverting switching device.

3,965,375

LITHIUM PERCHLORATE TRIHYDRATE NONLINEAR DEVICES

John George Bergman, Jr., Rumson; Glen Robert Crane, Scotch Plains; Raymond Nichols Storey, Orange, all of N.J., and Denise Williams, East St. Louis, Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 21, 1975, Ser. No. 560,332
Int. Cl.² H02M *5/04*
U.S. Cl. 307—88.3 **2 Claims**



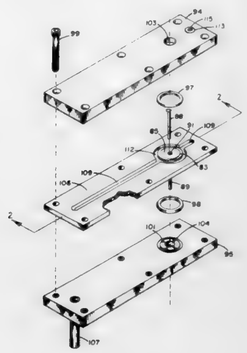
1. A device comprising a crystalline body consisting essentially of $LiClO_4.3H_2O$, with means for introducing into said crystalline body a beam of coherent plane polarized electromagnetic radiation of a first wavelength of approximately 5300 Angstroms, and means for utilizing a beam of coherent electromagnetic radiation of a second wavelength of approximately 2650 Angstroms emitted from said body, the said body being positioned in such a way that the angle between the beam of first wavelength and the optic axis of said crystalline body is such that the first beam and second beam are essentially noncritically phase matched within the crystal at approximately room temperature.

3,965,376

PULSED DROPLET EJECTING SYSTEM

John P. Arndt, Cleveland, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 330,360, Feb. 7, 1973, Pat. No. 3,832,579.
This application July 12, 1974, Ser. No. 487,876
The portion of the term of this patent subsequent to Aug. 27, 1991, has been disclaimed.
Int. Cl.² H01L *41/08*
U.S. Cl. 310—8.5 **4 Claims**



1. In a pulsed droplet ejecting system having a reservoir containing liquid; having a conduit communicating with said liquid in said reservoir and filled with said liquid; having a nozzle terminating said conduit and filled with said liquid; and having a transducer coupled to the liquid in said conduit and adapted to apply a pressure pulse to said liquid when an electric pulse is applied to said transducer thereby causing ejection of liquid from said nozzle, the improvement which comprises:

said conduit comprising viscoelastic material extending along a substantial length of said conduit in contact with said liquid;

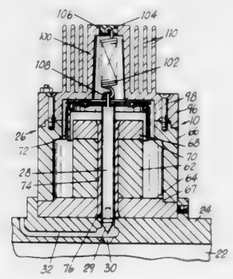
said transducer comprising a piezoelectric plate having two opposed major faces with electrodes thereon, and electric terminals connected to said electrodes, said transducer being coupled substantially only at an edge portion thereof to said liquid within said length of conduit which comprises viscoelastic material, substantially the full areas of said major faces being free of coupling to said liquid, and said transducer being adapted to expand parallel to said major faces when an electric pulse is applied to said terminals thereby applying a pressure pulse to said liquid causing ejection of liquid from said nozzle, said conduit being dimensioned relative to the properties of the liquid and to the viscoelastic propeties of the conduit material so that reflected wave energy therein caused by an ejected droplet is too weak to substantially interfere with the ejection of a subsequent droplet.

3,965,377

LINEAR FORCE GENERATOR

Gordon S. Carbonneau, Grand Rapids, Mich., assignor to Carbonneau Industries, Inc., Grand Rapids, Mich.

Filed June 21, 1973, Ser. No. 372,335
Int. Cl.² H02K *41/00*
U.S. Cl. 310—14 **19 Claims**



1. A linear force generator for use in regulating an internal combustion engine comprising,

a magnetic generator including a permanent magnet housed in a surrounding case and having a magnetically conductive tip located in opposed spaced relation to an annular pole face on the open end of the case,

said case, magnet and pole tip defining a central bore,

bearing means located in the ends of said bore,

an actuating pin extending through said bearing means and adapted at one end for regulating a function of said engine,

a coil carrying disc mechanically connected to said pin in axially spaced relation over said pole face,

a coil carried by the periphery of said disc and projectting in spaced relation into the gap between said pole tip and said pole face,

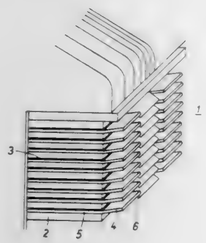
a cover secured over the open end of said case and enclosing said disc in axially spaced relation to said pole tip.

coil spring means arranged to bias said pin and said coil to a retracted position of said coil outwardly from said pole tip and pole face,
electrical terminal connections carried exteriorly on said cover,
lead wires on the ends of said coil extending in freely self-supporting and movable relation from said coil to said terminal connections with portions of the wires transverse and askew to the end of said coil,
and stop means coacting between said pin and said case to limit the retracting motion of the pin and coil,
said spring means and the magnetic attraction of said coil relative to said magnet constituting the sole moving force elements acting on said coil.

3,965,378
POLE COIL FOR ELECTRIC MACHINES AND APPARATUS

Wolfgang Liebe, and Werner Leistner, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 23, 1974, Ser. No. 472,701
Claims priority, application Germany, May 29, 1973, 2328265
Int. Cl.² H02K *1/32*
U.S. Cl. 310—65 **1 Claim**

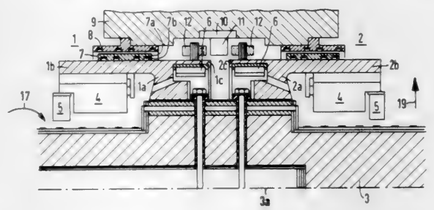


1. A pole coil for electrical machines, comprising:
a plurality of aligned turns wound from a flat conductor wound on edge, and
a plurality of cooling fin means corresponding to respective ones of each of said turns, each of said cooling fin means comprising a ribbon disposed in heat-conductive contact with the corresponding turn of said conductor and extending outwardly from the end surfaces of the pole coil, said ribbon being subdivided longitudinally into a plurality of short fin portions projecting out beyond the conductor, said fin portions being disposed successively one next to the other in the longitudinal direction of the conductor and being disaligned in a direction perpendicular to said longitudinal direction so that each two mutually adjacent ones of said fin portions of each cooling fin means are longitudinally disaligned with respect to each other, each of said fin portions being integral with said ribbon and with each other so as to constitute a unitary part of said ribbon, said unitary part being bent to have a wave-like shape to achieve said disalignment of said fin portions, longitudinally corresponding ones of said fin portions of each of said cooling fin means being disaligned in the same direction.

3,965,379
APPARATUS FOR A ROTATING THYRISTOR EXCITATION

Otto Meusel, and Otto Dressel, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 19, 1974, Ser. No. 525,085
Claims priority, application Germany, Nov. 29, 1973, 2359578
Int. Cl.² H02K *11/00*
U.S. Cl. 310—68 R **5 Claims**

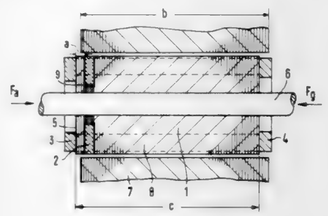


1. An arrangement for a rotating thyristor excitation in a turbogenerator including a machine housing and having at least one rectifier wheel including a rotating carrier disc on which the semi-conductor components including elements and protective external components and associated electronic driver units for the semi-conductor components are disposed, the turbogenerator including at least a three-phase main exciter machine, wherein the improvment comprises a carrier disc of the rectifier wheel in the form of a hub securely mounted over the shaft, said hub having hollow-cylindrical projections extending axially on both sides to form with the shaft an annular recess, with the semi-conductor components including their cooling elements and protective external components disposed on the inside of one projection and the associated driver units on the inside of the other projection and insulated against the carrier disc and a contactless and brushless signal transmission device having a stationary part mounted in the machine housing of the turbogenerator and having a rotating part mounted to the outside diameter of said carrier disc.

3,965,380
SLIDING ARMATURE BRAKING MOTOR

Jaroslav Stepina, Kaiserslautern, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 24, 1973, Ser. No. 399,950
Claims priority, application Germany, Sept. 25, 1972, 2246962
Int. Cl.² H02K *7/16, 17/18*
U.S. Cl. 310—77 **5 Claims**



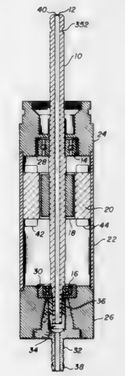
1. A sliding armature braking motor of the type having a cage rotor which braking motor provides an increased axial force, comprising:
a. a laminated stator;
b. a plurality of rotor laminations mounted on a rotor shaft with the stack of rotor laminations having one end lying outside the axial limitations of the corresponding end of the stator laminations when in an unenergized condition;

c. a plurality of rotor bars inserted in slots in said laminations;
d. an intermediate short circuit ring arranged in said stack of laminations near said one end said intermediate short circuit ring having an electrical conductivity as high as that of the rotor bars and in electrical contact therewith;
e. a first end face short circuit ring electrically connected to said rotor bars at the other end;
f. a second end face short circuit ring placed at said one end in electrical contact with said rotor bars and wherein said intermediate short circuit ring is placed so that in the unenergized condition, said intermediate short circuit ring is within the radial limitation of the corresponding end face of said stack or stator laminations.

3,965,381
ELECTRIC MOTOR HOUSING WITH INTERIOR SHIELD AGAINST LIQUIDS

Vern D. Shipman, Richardson, Tex., assignor to Headway Research, Inc., Garland, Tex.

Division of Ser. No. 267,683, June 29, 1972, Pat. No. 3,862,856. This application Sept. 12, 1974, Ser. No. 505,256
Int. Cl.² H02K *5/10*
U.S. Cl. 310—88 **5 Claims**



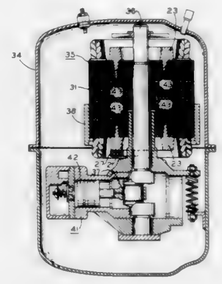
1. A construction for an electric motor, comprising:
a. a stator housing having a top end cap, said end cap having an aperture through which the rotor shaft extends, and said aperture being surrounded interiorly of the cap by an upstanding lip and a trough, and said housing having at least one passage for draining such liquids as may be captured in said trough to the exterior of the housing; and
b. a shield sealingly attached to the rotor shaft interiorly of the cap, said shield extending radially outward over said upstanding lip and above the trough, whereby liquids which may pass through the aperture in the end cap and flow alongside the rotor shaft will flow radially off the shield and into the trough from which they subsequently drain to the exterior of said stator housing.

3,965,382
ROTOR HAVING BALANCE WEIGHTS

Warren N. McCrosky, and Dennis F. Peterschmidt, both of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Oct. 3, 1974, Ser. No. 511,512
Int. Cl.² H02K *1/22*
U.S. Cl. 310—261 **6 Claims**

1. A rotor for use in an induction type dynamoelectric machine comprising a magnetizable core having a plurality of conductor slots; slot conductors of nonmagnetic electrically conducting material cast in the slots; at least one end conductor having at least one weight mounting means for receiving a balance weight, the end conductor interconnecting at least some of the slot conductors; and a balance weight; the weight mounting means being a stud having an enlarged portion with the enlarged portion cast into the at least one end conductor,

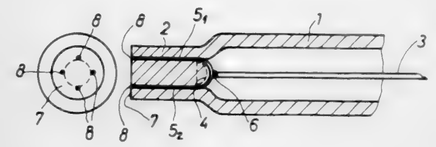


said enlarged portion being embedded in the at least one end conductor to firmly anchor the weight mounting means therein; and the balance weight being positioned on the stud and being secured thereto so that the balance weight fixedly becomes part of the rotor.

3,965,383
MULTI-WIRE OXYGEN ELECTRODE AND METHOD OF MANUFACTURING THE SAME

Helmut List, and George Fredericks, both of Graz, Austria, assignors to AVL AG, Schaffhausen, Switzerland

Filed Mar. 6, 1975, Ser. No. 555,767
Claims priority, application Switzerland, Mar. 15, 1974, 3642/74
Int. Cl.² H01J *5/50*
U.S. Cl. 313—331 **7 Claims**



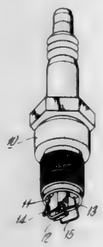
1. A multi-wire oxygen electrode, comprising a glass electrode tip having a reactive electrode surface at one end, a substantially semi-spherical support surface arranged coaxially with respect to the electrode tip at the other end thereof, a glass sleeve connected to the electrode tip at said other end, a cathode wire arranged in the glass sleeve and having one end held in the electrode tip at the apex of the support surface, and a number of electrode wires fused in said electrode tip, each electrode wire being secured at one end in electrically conductive manner to said one end of the cathode wire at the apex of the support surface, being guided through a substantially one-quarter arc over the support surface and then substantially parallel to the longitudinal axis of the electrode tip to said electrode surface, and having its other end freely exposed at said electrode surface, the exposed ends of the electrode wires being distributed about a circle.

3,965,384

IGNITION PLUG FOR USE IN INTERNAL COMBUSTION ENGINES

Kazue Yamazaki, c/o Mrs. Chiyo Toyoda, 17-34, Shakujii-cho 6-chome, Nerima, Tokyo, Japan

Filed May 22, 1974, Ser. No. 472,386
Claims priority, application Japan, July 18, 1973, 48-81067
Int. Cl.² H01T *13/20*
U.S. Cl. 313—142 **13 Claims**



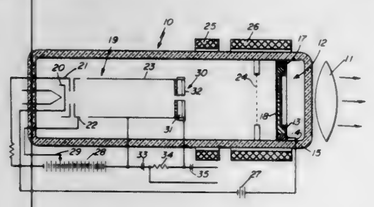
1. In an ignition plug including a metal outer shell and a central electrode supported by and electrically insulated from the shell and a side electrode extending from the shell toward said central electrode and forming therewith a spark gap, the improvement comprising a plurality of members formed of wire mounted to and projecting forwardly of said shell and delineating a space surrounding said spark gap, the distance between said wire members and said spark gap exceeding the width of said spark gap, and said plurality of wire members including at least one pair of wire members each having a horizontal linear portion substantially parallel to and coplanar with said side electrode.

3,965,385

SEMICONDUCTOR HETEROJUNCTION TELEVISION IMAGING TUBE

Amos Picker, Sharon, and Wolfgang M. Feist, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 437,578, Jan. 28, 1974, which is a continuation of Ser. No. 283,126, Aug. 23, 1972, abandoned, which is a division of Ser. No. 76,920, Sept. 30, 1970, abandoned. This application Dec. 12, 1974, Ser. No. 531,956
Int. Cl.² H01J *29/45, 31/38*
U.S. Cl. 313—366 **1 Claim**



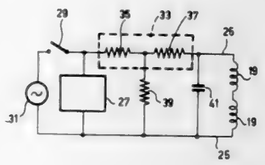
1. An electron tube device comprising in combination: a target structure comprising:
- a substrate of semiconductor material comprising N-doped silicon;
- a layer of dielectric material selected from the group consisting of antimony trisulphide and amorphous silicon doped with boron containing approximately 1% boron and silicon dioxide containing approximately 1% boron, said layer having a thickness in the range of 100 A to 10,000 A, said dielectric material being of substantially greater resistivity than said substrate; and
- a conductive layer comprising tin oxide contiguous to said layer of semiconductor material, said conductive layer being substantially transparent, and said layer being disposed upon the side of said substrate opposite said dielectric layer;
- means for providing a beam of electrons;
- means for focusing said beam of electrons;
- means for directing said beam of electrons towards selected positions upon said dielectric layer;
- means for controlling the amount of current flow in said electron beam;
- a semiconductor charge carrier multiplier, said multiplier being positioned between said means for providing said beam of electrons and said target structure; and
- an evacuated envelope containing said target structure, said means for providing a beam of electrons, said focusing means, and said directing means.

3,965,386

DEGAUSSING DEVICE FOR A COLOR TELEVISION DISPLAY TUBE

Jan Hendrik Duistermaat; Jan Gerritsen, and Constantius Johannes Waltherus Panis, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 3, 1974, Ser. No. 502,516
Claims priority, application Netherlands, Sept. 13, 1973, 7312607
Int. Cl.² H01J *29/07, 29/84;* **H01F** *13/00*
U.S. Cl. 315—8 **2 Claims**



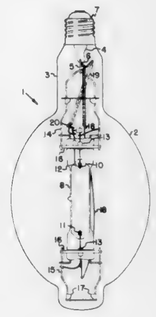
1. A color cathode ray tube having an evacuated envelope including a neck portion, a truncated conical front portion and deflection means located at the junction of said neck and front portions and, within said envelope, means to generate a number of electron beams emanating in a substantially horizontal plane during the normal operating condition of the tube, a color selection electrode made of a ferromagnetic material and provided with a plurality of slots, a display screen at the wide end of said front portion, said screen having a plurality of phosphor stripes, said slots and said stripes being arranged according to a pattern of lines which extend substantially vertically during the normal operating condition of the tube, a degaussing device comprising a shield of ferromagnetic material disposed substantially parallel to the conical wall of said front portion, at least one degaussing coil embracing a major surface portion of said conical wall and oriented such as to provide, when energized by an alternating degaussing current, a substantially vertically directed magnetic field in said color selection electrode, and shunting means connected parallel to said degaussing coil and having an impedance which is higher than that of said degaussing coil at the frequency of the degaussing current but lower at the frequency of the line deflection current.

3,965,387

ELECTRIC LAMP AND THERMAL SWITCH THEREFORE

Karl D. Stuart, Wickliffe; Juris Sulcs, East Cleveland, and P. Kennard Wright, III, Cleveland Heights, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed June 24, 1974, Ser. No. 482,335
Int. Cl.² H01J *7/44, 13/46, 17/34, 19/78*
U.S. Cl. 315—47 **8 Claims**



1. An electric discharge lamp comprising:
- an outer envelope,
- an inner arc tube located within said outer envelope and containing an ionizable medium,
- said arc tube having electrodes at opposite ends including at one end a main electrode plus an auxiliary starting electrode supported on inleads sealed through the tube wall, and a thermal switch within said outer envelope comprising a bimetal element having its root end fastened to one of said inleads,
- a springy conductor attached to the distal end of said bimetal and retroverting alongside thereof,
- said conductor being located on the convex side of the bimetal as it bends with rising temperature,
- said bimetal and conductor being disposed so that the free end of the conductor engages the other of said inleads to short-circuit said main and auxiliary electrodes together at switch closure,
- said conductor bending in the same direction as the bimetal to accommodate further curvature of the bimetal resulting from heating thereof beyond closure temperature whereby neither the bimetal nor the spring conductor is stressed beyond its elastic limit.

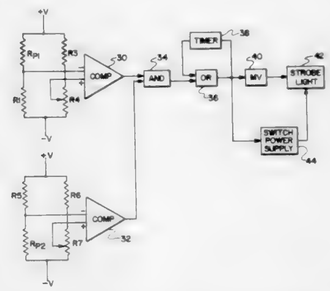
3,965,388

DIGITAL LIGHT RESPONSIVE SWITCHING CIRCUIT

Richard A. Brisk, Arlington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Dec. 13, 1974, Ser. No. 532,594
Int. Cl.² H05B *39/04*
U.S. Cl. 315—155 **8 Claims**

1. A digital light responsive switching circuit comprising:
- at least first and second electrically isolated photosensors each responsive to a respective light source, at least one being responsive to ambient light and the other being responsive to a signal light;
- at least first and second comparator circuits each having a threshold level representing respective input light conditions and coupled to a respective one of said photosensors each operative to provide a digital output signal of one signal level in response to incident light greater than said threshold level and of another signal level in response to incident light less than said threshold level; and
- control logic operative in response to said digital output signals from said comparator circuits to provide an intended output signal only in response to selected ambient and signal light conditions represented by said received



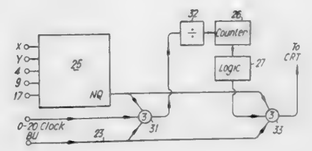
digital output signals, said control logic output signal adapted for energization of utilization apparatus.

3,965,389

BEAMED-INTENSITY CONTROL SYSTEMS FOR CATHODE-RAY TUBES

Brian Box English, and Frederick Cross, both of Edinburgh, Scotland, assignors to Ferranti, Limited, Hollinwood, England

Continuation of Ser. No. 139,467, May 3, 1971, abandoned. This application Aug. 29, 1973, Ser. No. 392,440
Claims priority, application United Kingdom, May 9, 1970, 22540/70
Int. Cl.² H01J *29/52*
U.S. Cl. 315—384 **10 Claims**



1. In a logic circuit for use in conjunction with a beam intensity control system for a cathode-ray rube arranged to have its beam deflected in X and Y co-ordinate directions by trains of incremental X or Y deflection signals occurring at different times and derived from a digital computer also having derived therein signals dependent on said X and Y incremental deflection signals to the extent of remaining steady throughout each train of successive incremental X or Y deflection signals as the case may be, a train of timing pulses a predetermined number of which are associated with each incremental signal and a brightness control signal adapted to be applied to the beam-control electrode of the cathode ray tube the improvement comprising first means for providing a control signal distinguishing the condition in which the incremental X and Y deflection signals occur alternately, from the condition in which either the X or Y signals occur successively, second means for applying to said first means said dependent signals and selected signals from said pulse train such that said first means provides said control signal which distinguishes the alternate incremental deflection signal for X and Y directions from repeated signals for either X or Y directions, and third means responsive to other selected signals from said pulse train and said control signal from said first

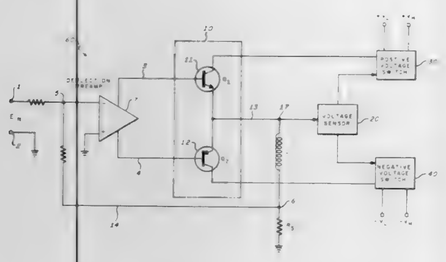
means for controlling the application of said brightness control signal to the beam control electrode such that the effective brightness of the beam is reduced whenever said X and Y incremental signals occur alternately.

3,965,390

POWER ON DEMAND BEAM DEFLECTION SYSTEM FOR CRT DISPLAYS

James M. Spencer, Jr., Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 21, 1975, Ser. No. 551,795
Int. Cl.² H01J *29/70*
U.S. Cl. 315—397 **7 Claims**



1. In an electron beam deflection control system including a deflection coil and a deflection amplifier wherein the deflection amplifier comprises,

input means for receiving an input signal indicative of the desired deflection of the beam for providing an output signal in response to said input signal;

output means having first and second push-pull operated sections, responsive to said output signal of said input means, each section providing an output, each output coupled to an output lead through which control current is applied to a common output terminal which is coupled to said deflection coil; said first section being responsive to a predetermined polarity of said output signal from said input means and said second section being responsive to a polarity opposite to said predetermined polarity, for controlling current through said deflection coil to provide a desired rate of change of beam deflection in one direction or the other in accordance with the polarity of said output signal of said input means,

sensing means containing a first section and a second section responsive to said outputs of said first and second sections respectively of said output means for providing a sensed output signal representative of each output of said output means;

a multiplicity of voltage sources of a first polarity,

a multiplicity of voltage sources of a second polarity which is opposite to said first polarity; and

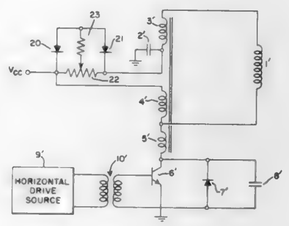
switching means containing a first and a second section, coupled to said first and second sections respectively of said sensing means and said output means, said first section of said switching means coupled to said multiplicity of voltage sources of said first polarity and said second section of said switching means coupled to said multiplicity of voltage sources of said second polarity, for switching from a voltage source of one of said polarities to a voltage source of greater magnitude and the same polarity when said output signal of said sensing means exceeds a critical magnitude, and from a voltage source of one of said polarities to a voltage source of lesser magnitude and the same polarity when the magnitude of said output signal of said sensing means is below said critical magnitude thereby a supply voltage of sufficient magnitude is provided to said output means which allows sufficient current to flow through said deflection coil to accomplish the desired rate of change of beam deflection while maintaining linear operation of said output means.

3,965,391

BALANCED DRIVE HORIZONTAL DEFLECTION CIRCUITRY WITH CENTERING

John W. Lister, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed June 4, 1974, Ser. No. 476,204
Int. Cl.² H01J *29/70*
U.S. Cl. 315—408 **6 Claims**



1. A horizontal deflection circuit exhibiting in its operation a long trace period and short retrace period, and in which a balanced drive voltage is supplied to the circuit's horizontal deflection winding so as to reduce the magnitude of the voltage between the deflection winding and ground and thereby avoid voltage breakdown during said retrace period when a large voltage pulse tends to appear across the deflection winding, comprising:

a. first winding means,

b. second winding means magnetically coupled to said first winding means so that voltages of opposite polarity are generated across said first and second winding means in response to energy applied to said first winding means,

c. a first capacitor,

d. said horizontal deflection winding, said first and second winding means and said first capacitor being connected in a series path between an energy source and a common terminal so that the difference of the voltages generated across said first and second winding means is distributed across the horizontal deflection winding and said first capacitor, said first capacitor being connected between said second winding means and said common terminal,

e. a switching circuit including parallel current paths one of which includes a second capacitor, each of said parallel circuit paths having a direct connection to said common terminal,

f. coupling means for coupling said series path to said switching circuit, whereby alternate operation of said switching circuit causes a voltage to be applied across said deflection winding accompanied by current buildup within said deflection winding during a portion of said trace period, the energy in which is sequentially transferred between said deflection winding and said second capacitor so as to generate in said deflecton winding a horizontal deflection current of generally sawtooth waveform that is shaped by said first capacitor, and

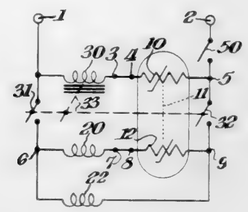
g. a centering network for providing a DC centering current component to said horizontal deflection current, said centering circuit being connected at one end to the junction of said first capacitor and said second winding means and at the other end to said energy source.

3,965,392

MOTOR START SYSTEM WITH TWO DISSIMILAR PTCR ELEMENTS

William L. Moorhead, and Manfred Kahn, both of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Division of Ser. No. 430,337, Jan. 2, 1974, Pat. No. 3,878,501.
This application Mar. 12, 1975, Ser. No. 557,720
Int. Cl.² H02P *1/44*
U.S. Cl. 317—13 A **2 Claims**



1. A motor start and run system providing a definitive time delay after the motor is deenergized before said motor may be restarted, comprising:

a. an a.c. motor having a main winding and a start winding;

b. a first PTCR having an anomaly temperature below which said first PTCR is in a low impedance state and above which said first PTCR is in a high impedance state;

c. a second PTCR having an anomaly temperature that is higher than that of said first PTCR, and being thermally connected thereto;

d. a switching control means capable of being connected to an a.c. power source and having an electrical input connected to said first PTCR, and having at least one switch being responsive to a change in impedance of said first PTCR; said means being provided for prohibiting activation of said at least one switch when said first PTCR is initially in said high impedance state, for activating said at least one switch and switching closed the two motor winding circuits to said a.c. power source only when said first PTCR is initially in a low impedance state, and for holding said circuits closed when and after said first PTCR changes from said low impedance state to a high impedance state; and

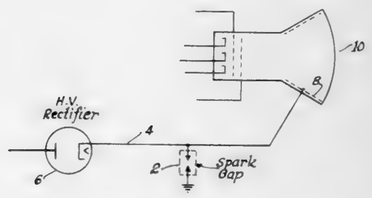
e. a selective heat removal means for cooling said second PTCR faster than said first PTCR.

3,965,393

TELEVISION X-RADIATION PROTECTION DEVICE AND CIRCUIT

Richard Travers Chamberlain, Arlington Heights, Ill., assignor to Admiral Corporation, Schaumburg, Ill.

Filed Apr. 21, 1971, Ser. No. 135,840
Int. Cl.² H02H *3/00*
U.S. Cl. 317—16 **2 Claims**



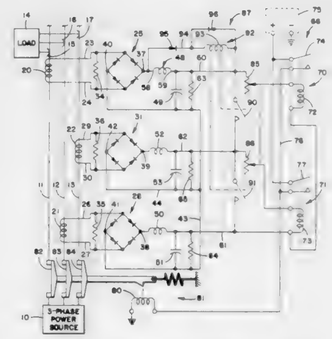
1. In a television receiver circuit, a picture tube including an ultor anode having a predetermined maximum operating voltage, high voltage supply means coupled to said anode for supplying said operating voltage thereto, spark gap means coupled between said supply means and ground for reducing the voltage supplied to said anode in the event the voltage supplied to said anode tends to exceed said predetermined maximum, thereby reducing the operating voltage to a predetermined level where undesirable X-radiation will not occur, said spark gap means having a breakdown voltage approximately equal to said predetermined maximum operating voltage, said spark gap means including a tube of material having a high dielectric constant, a pair of terminal members disposed at the extremities of said tube, said terminal members having interior ends adapted to serve as spark gap electrodes, and means for hermetically sealing said terminal members within the ends of said tube thereby defining an airtight cavity within said tube, said terminal members and said tube being so constructed and arranged that the sparkover voltage between the interior ends of said spark gap means is said predetermined operating voltage, a high voltage rectifier tube socket, said spark gap means being integrally incorporated into said tube socket and removable from said receiver only by removing said socket.

3,965,394

APPARATUS FOR PROTECTING A MULTIPHASE POWER TRANSMISSION LINE FROM INTERMEMBRAL FAULTS

Homer W. Heinzman, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed May 19, 1975, Ser. No. 578,452
Int. Cl.² H02H *1/02*
U.S. Cl. 317—18 R **13 Claims**



1. For a three-phase power transmission system having a power source for supplying three-phase, alternating current to a load through a power transmission line having first, second, and third power conductors, apparatus for interrupting current flow through the transmission line upon the occurrence of an electrical fault permitting current flow between two of the power conductors, the apparatus comprising:

first, second, and third sensing and rectifying means, each having first and second output terminals, for producing respective DC signals corresponding to the AC currents present in the first, second, and third power conductors, respectively, the respective second output terminals of the sensing and rectifying means being interconnected;

first, second, and third filtering circuits connected between the output terminals of the first, second, and third sensing and rectifying means, respectively, the filtering circuits having respective inductors having respective first terminals connected to the first output terminals of the first, second, and third sensing and rectifying means, respectively, and having respective second terminals, first, second, and third output conductors being provided connected to the second terminals of the inductor of the first, second, and third filtering circuits, respectively;

a first voltage responsive switching means for electrically isolating the power source from the power transmission line upon the occurrence of a predetermined voltage differential between the second and first output conductors and, alternatively, between the second and third output conductors;

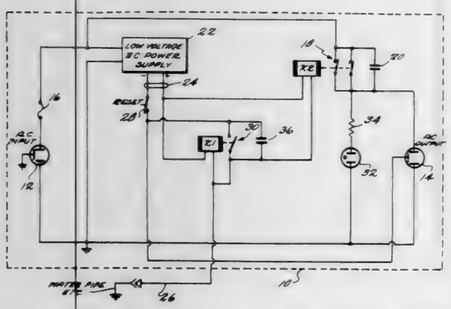
a second voltage responsive switching means, including two normally open switch elements each connected between one of the output conductors and a respective one of the other output conductors, the second voltage responsive swtching means comprising means temporarily closing the normally open switch elements upon the occurrence of a predetermined voltage differential between one of the first output terminals of the sensing and rectifying means and one of the output conductors, the second voltage responsive switching means comprising a means having a response time, in closing the normally open switch elements, which is shorter than that of the first voltage responsive switching means.

3,965,395

POWER INTERRUPTER FOR ELECTRICAL DEVICES

Danny J. Young, Tyler, Tex., assignor to James W. Fair, Tyler, Tex., a part interest

Filed July 2, 1975, Ser. No. 592,660
Int. Cl.² H02H *1/02*
U.S. Cl. 317—18 R **10 Claims**



1. A power interrupter for normally supplying electrical power from a power source to an electrical device having a working portion which may contact a grounded metal object during its operation and for automatically interrupting such power supply to the device whenever the working portion actually does contact a grounded metal object, said power interrupter comprising:

input connector means for electrical connection to said power source,

first relay means including first electrical contacts and a first actuating coil having first and second states of actuation for moving said first contacts,

output connector means for electrical connection to said electrical device including an electrical connection to said working portion,

said first electrical contacts being connected in series between said input connector means and said output connector means for normally supplying electrical power to said electrical device when said first actuating coil is in its first state of actuation and for interrupting said supply of power when said first actuating coil is in its second state of actuation,

a power supply means connected to receive electrical power from said input connector means and having first and second output leads for supplying relay actuating electrical energy,

a second relay means including second electrical contacts and a second actuating coil having first and second states of actuation as a function of electrical current passing therethrough for moving said second contacts,

ground connector means for establishing an electrical ground potential,

said second actuating coil being connected in series with said electrical connection to said working portion, said first and second output leads from the power supply means and said ground connector means whereby a circuit is completed through said second actuating coil for the flow of said relay actuating electrical energy whenever said working portion actually does contact a grounded metal object, and

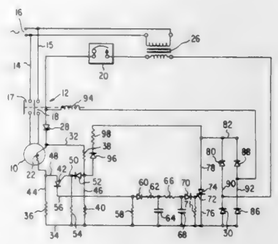
said first actuating coil being connected in circuit with said second electrical contacts whereby it is caused to change to its second state of actuation thereby interrupting said supply of electrical power to the device whenever said working portion actually does contact a grounded metal object.

3,965,396

CONDITION RESPONSIVE CONTROL CIRCUIT

Hugh J. Tyler, Santa Ana, and Dennis E. Newell, El Segundo, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 13, 1974, Ser. No. 450,711
Int. Cl.² H02H *7/08*
U.S. Cl. 317—42 **16 Claims**



11. A condition responsive control circuit comprising

a resistance bridge including first, second, third and fourth resistance arms connected at a pair of power input nodes and a pair of sensing nodes;

said first resistance arm containing a condition responsive resistance;

a diode bridge including first, second, third and fourth diodes connected at a pair of alternating current input nodes and a pair of unidirectional output nodes;

one of said pair of power input nodes of the resistance bridge and one of said pair of unidirectional output nodes of the diode bridge being connected together;

means including first and second lines for connecting to an alternating current source;

an alternating current responsive control relay having a winding electrically connected at one end to the first line and electrically connected at its other end to one of the pair of alternating current input nodes of the diode bridge;

the other of said pair of alternating current input nodes of the diode bridge being electrically connected to the second line;

unidirectional semiconductor switch means connected between the pair of unidirectional output nodes of the diode bridge;

means connecting the other of the pair of power input nodes of the resistance bridge to the first line;

voltage responsive means connected to the sensing nodes of the resistance bridge for operating the unidirectional semiconductor switch means when a predetermined condition is sensed by the condition responsive resistance;

said unidirectional semiconductor switch means including a PNPN semiconductor which has anode and cathode electrodes with a gate electrode responsive to a current therethrough for triggering undirectional avalanche current flow between the anode electrode and the cathode electrode; and

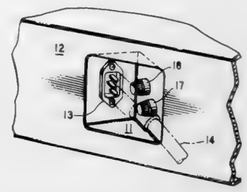
said voltage responsive means including a semiconductor device which produces a pulsed unidirection output when the voltage across the sensing nodes exceeds a predetermined polarity, and filter means for filtering the pulsed unidirection output of the semiconductor device to apply a filtered signal to the gate electrode of the PNPN semiconductor.

3,965,397

MEANS FOR PREVENTING AN ELECTRICAL SHOCK HAZARD

George David Pearsall, Jr., Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 1, 1975, Ser. No. 573,428
Int. Cl.² H02B *1/18*
U.S. Cl. 317—116 **3 Claims**



1. A safety arrangement for electrically powered apparatus, said apparatus having at least two surfaces having regions that are substantially planar, each region having an orientation corresponding to one of two planes that intersect forming a dihedral angle, the arrangement comprising disengagable electrical connecting means mounted to one of said regions for powering said apparatus, fusing means mounted to the other of said regions and being in circuit with said connecting means, and said connecting means and said fusing means being mounted in close proximity to each other and the dihedral angle having a predetermined value such that said connecting means directly blocks withdrawl of said fusing means, to said fusing means is obstructed by said connecting means making disengagement of said electrical connecting means necessary to gain access to said fusing means, thereby insuring that said apparatus is disconnected from a powering potential before said fusing means is contacted.

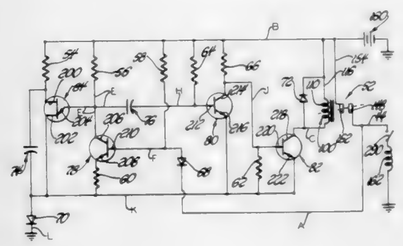
3,965,398

INTERMITTENT LOAD ENERGIZER ASSEMBLY AND CIRCUIT MEANS

Gerald K. Miller, Hersey, Mich., assignor to Nartron Corporation, Reed City, Mich.

Filed July 25, 1974, Ser. No. 491,763
Int. Cl.² H03H *7/30*
U.S. Cl. 317—141 S **13 Claims**

1. A flasher system for intermittently supplying electrical energy from a source of electrical potential to related electrical load means, comprising timing circuit means, said timing circuit means comprising first semiconductor means effective for creating an intermittent electrical timing signal, second semiconductor means, relay means, electrical contact means the opening and closing of which is controlled by said relay means, said second semiconductor means being adapted to be intermittently placed into a conductive state and a non-conductive state in response to the presence and absence of said timing signal, said second semiconductor means being effective when in one of said states to supply current flow from said source to said relay means, and said electrical contact means being effective when closed to supply current flow from said source to said related electrical load means, and additional semiconductor means having a plurality of electrical terminals, said additional semiconductor means being electrically connected to said timing circuit means and having at least one of said plurality of electrical terminals being adapted for connection to related load circuit means containing said related electrical load means so as to be effective to cause said timing circuit means to be conductive or non-conductive depending upon whether there is the presence of an actual electrical load in said related load circuit means.

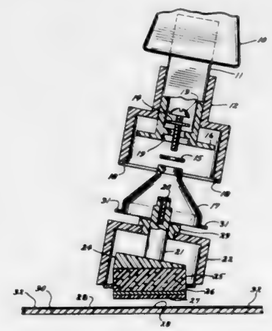


3,965,399

PUSHBUTTON CAPACITIVE TRANSDUCER

Frank A. Walker, Jr., and John B. Shevlin, both of c/o Controls Research Corporation, 2100 S. Fairview, Santa Ana, Calif. 92704

Filed Mar. 22, 1974, Ser. No. 453,841
Int. Cl.² H01G *5/01*
U.S. Cl. 317—249 R **7 Claims**



1. In a pushbutton transducer of the class above described, the combination comprising:

a reciprocable shaft including one end adapted to serve as an actuator therefor;

a resilient pad disposed on the other end of said shaft;

a pair of conductive electrode members, each having a terminal and being separated by a gap;

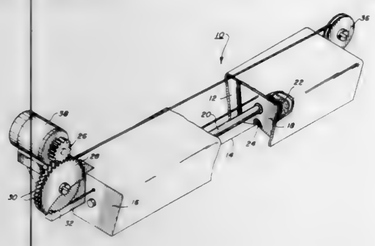
a flexible sheet electrode bridging means deformable across the plane thereof disposed on the end of said pad to be conformly deformed over the opposing surfaces of said electrode members for matingly interfacing a lower surface of said sheet electrode bridging means to said opposing surfaces of said electrode members, said flexible sheet electrode bridging means lower surface deforming to the contour of said opposing surfaces of said electrode members when said shaft is articulated against said electrode members; and

biasing means provided to urge the other end of said shaft away from said electrode members.

3,965,400
CORONA GENERATING DEVICE WITH IMPROVED BUILT-IN CLEANING MECHANISM

Peter M. Tolliver, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 24, 1975, Ser. No. 552,476
Int. Cl.² H01J *37/26*
U.S. Cl. 317—262 A **2 Claims**



1. An improved cleaning mechanism for a corona generating device, the device having an elongated generally U-shaped shield and a corona wire mounted within and extending along the shield, wherein the improvement comprises:

a. cleaning means in contact with the corona wire and slidably mounted within the shield so as to be movable along the latter;

b. a first circular member rotatably mounted on one end of the device and a second circular member rotatably mounted on the other end of the device, means forming a recess around the periphery of each of the circular memebers, and means forming gear teeth around the periphery of the first member on each side of the recess therein;

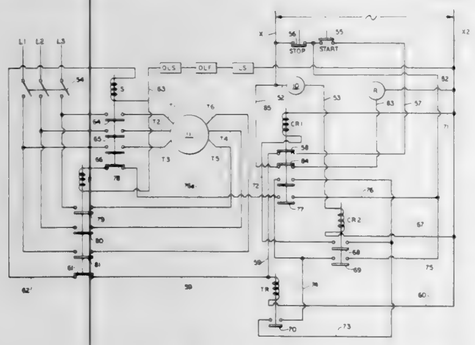
c. a length of belt mounted in and supported by the recesses of the cirular members, the ends of the belt being connected to opposite sides of the cleaning member; and

d. drive gear means having gear teeth meshing with the gear teeth of the first circular member.

3,965,401
TEXTILE CARD CRUSH ROLL OPERATING SYSTEM AND METHOD

Louis L. Jones, Jr., and William J. Wood, both of Canton, Ga., assignors to Canton Textile Mills, Inc., Canton, Ga.

Filed May 31, 1974, Ser. No. 474,967
Int. Cl.² B65H *59/38*
U.S. Cl. 318—6 **7 Claims**

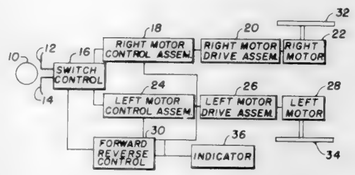


1. A textile card crush roll operating system comprising a crush roll driving motor operable both at slow and at high speeds, starting control means for energizing said motor so as to cause it to operate at low speed, electric timing means actuated independently of the crush rolls in coordination with actuation of said starting control means to initiate a timing cycle, operating control means activated upon completion of said timing cycle for causing said motor to operate at high speed, and automatic stop control means responsive to normal operating tension of sliver supplied from the crush rolls for rendering said operating control means effective and for deactivating said operating control means in response to subnormal sliver operating tension.

3,965,402
HEADREST PROPORTIONAL CONTROL FOR MOTORIZED WHEELCHAIR

Douglas H. Mogle, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 1, 1974, Ser. No. 484,383
Int. Cl.² H02P *7/68*
U.S. Cl. 318—55 **12 Claims**



1. A head controlled mechanism and system for the proportional control of a driven device comprising:

a. switch control circuit means having a plurality of switch means and a two part movable headrest means for engaging the head of an operator for actuating said switch means to provide output voltage signals in response to movement of said movable headrest,

b. control circuit means coupled to said switch control circuit means for producing a variable duty cycle output control signal proportional to the voltage signals received from said switch control circuit means,

c. a driven device coupled to said control circuit means and being driven in a direction and at speeds controlled by movement of said movable headrest means.

3,965,403
CONSTANT POWER CONTROL OF A D.C. ELECTRIC MOTOR FOR HANDLING CARGOES

Chihiro Okado, Fuchu, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Aug. 23, 1974, Ser. No. 500,086
Claims priority, application Japan, Aug. 24, 1973, 48-94933; Aug. 24, 1973, 48-94935
Int. Cl.² H02P *7/16*
U.S. Cl. 318—143 **6 Claims**

1. A constant power control for a D.C. electric motor comprising a Ward-Leonard set including a variable D.C. voltage supply and a D.C. motor connected thereto comprising:

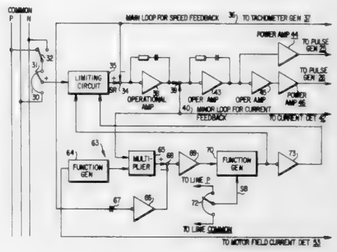
means for sensing the armature current of the motor,

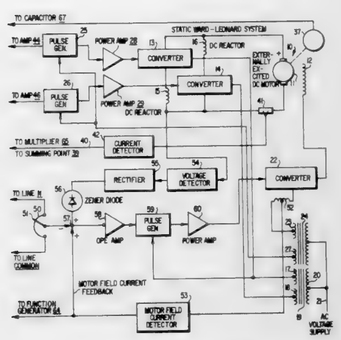
means for sensing the magnetic flux in the motor field winding,

means for sensing the rate of change of motor speed,

means for generating a load torque signal in accordance with the armature current of the motor, a magnetic flux in the motor field winding and the rate of change of motor speed,

means connecting the load torque signal to the variable D.C. voltage supply to control the variable D.C. voltage supply to maintain the motor armature current or the motor field current at a preset constant value upon completion of motor acceleration.

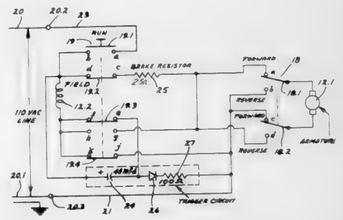




3,965,404
APPARATUS AND METHOD OF BRAKING A UNIVERSAL MOTOR FOR OPERATING A COMPACT WINCH

Paul S. Petersen, Minnetonka, Minn., assignor to Cordem Corporation, Minneapolis, Minn.

Filed Aug. 17, 1973, Ser. No. 389,330
Int. Cl.² H02P *3/14*
U.S. Cl. 318—261 **20 Claims**



1. In a universal motor having the field and armature windings connected in series;

means producing dynamic braking of the armature and including

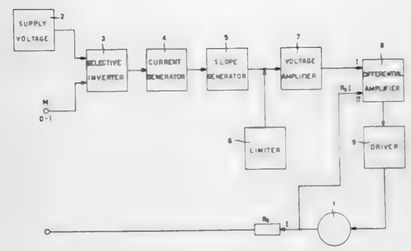
switching means disconnecting the windings from the current supply line and reversing connections to the armature winding to effectively cause the motor to act as a generator, the switching means also connecting a low braking resistance across the series connected field and armature windings; and

a current source connected to the field winding independently of the armature winding and rendered operative by the switching means to supply a pulse of current through the field winding when the supply line is disconnected from the windings by the switching means.

3,965,405
DRIVING AND CONTROL SYSTEM FOR D.C. MOTORS

Carlo Romano, Montalto Dora (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Jan. 9, 1974, Ser. No. 431,908
Claims priority, application Italy, Jan. 16, 1973, 67054/73; Oct. 16, 1973, 70040/73
Int. Cl.² H02D *5/06*
U.S. Cl. 318—331 **5 Claims**



1. A driving and control circuit for a D.C. motor comprising in combination:

a direct current motor of the type including a permanent magnet and with an ironless rotor winding capable of continuous rotation in both directions, the rotation speed of the motor being proportional to said direct current supplied to it;

a constant voltage generator responsive to a two level command signal for generating at its output a constant positive voltage in response to one level of said command signal and a constant negative voltage in response to the other level of said command signal;

a constant current generator comprising a first operational amplifier connected to the output of said constant voltage generator, responsive to said positive and negative voltages;

a reference voltage generator means connected to said constant current generator, for generating a substantially trapezoidally shaped reference voltage, with a rising slope and a falling slope;

an impedance means, connected in series with said motor and ground, for developing a feedback voltage proportional to the speed of said motor;

an inverting operational amplifier connected to said reference voltage generator for inverting said reference voltage;

a second operatonal amplifier connected to said inverting amplifier, having an inverting input, a non-inverting input and an output, for adding said feedback voltage, applied from said impedance means to said non-inverting input, to said reference voltage, applied from said reference voltage generator means to said inverting input, to establish a positive feedback summation signal for compensating for variations in the speed of said motor; and

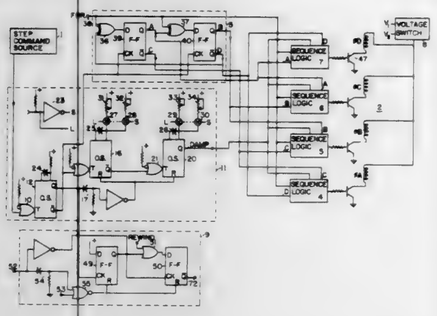
a pair of complementary transistors connected between said output and said motor, responsive to said positive feedback summation signal, for feeding over to said motor, for starting and stopping said motor in the presence of said rising and falling slopes respectively and, regulating the speed of said motor to be undisturbed by variations in load torque and inertia effects.

3,965,406

STEPPING MOTOR DAMPING CIRCUIT

Robert E. Yablonski, Orange, Calif., assignor to Electronic Engineering Company of California, Santa Ana, Calif.

Filed Mar. 8, 1974, Ser. No. 449,575
Int. Cl.² G05B *19/40*
U.S. Cl. 318—696 **4 Claims**



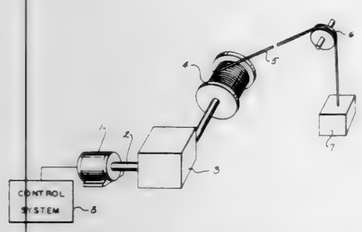
1. A control circuit for a stepper motor having plural windings, comprising:
   a. first circuit means (3) to supply stepping pulses sequentially at any time intervals to pairs of said plural windings,
   b. second circuit means (11) to supply damping pulses sequentially to only that one of said pair of plural windings just previously energized by the last one of said stepping pulses
   for stopping the motor at each step,
   said second circuit means (11) having relaxation elements connected to said control circuit for altering the duration of said damping pulses inversely according to the repetition rate of said stepping pulses, and
   c. third circuit means (7) having gating elements connected to said relaxation elements, to apply said damping pulses to the last previously energized winding during each step of said stepper motor.

3,965,407

METHOD AND MEANS FOR MEASURING THE TORQUE DELIVERED BY AN ELECTRIC MOTOR

Thomas A. Stoner, Brookfield, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Division of Ser. No. 332,697, Feb. 15, 1973, Pat. No. 3,867,678. This application Sept. 12, 1974, Ser. No. 505,529
Int. Cl.² H02P *5/00*
U.S. Cl. 318—432 **3 Claims**



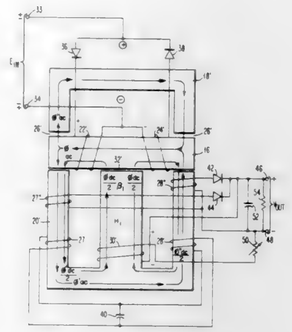
1. In a motor control, the combination comprising:
   means providing an electrical signal indicative of the speed of a motor being controlled;
   a differentiating circuit in receiving relation to said speed indicative signal that generates a signal indicative of rate of change of speed to provide an acceleration torque signal;
   a motor current sensing circuit that generates a signal indicative of induced torque of a motor being controlled;
   means for coupling said motor current sensing circuit to said differentiating circuit to sum said acceleration torque signal and said induced torque signal;
   a control circuit system for governing motor rotation; and
   means capacitively coupling said summed signals to said control circuit system for providing a transient torque feedback signal thereto.

3,965,408

CONTROLLED FERRORESONANT TRANSFORMER REGULATED POWER SUPPLY

Hobart Atsushi Higuchi, and Lawrence Paul Trubell, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 16, 1974, Ser. No. 533,428
Int. Cl.² H01F *27/38*; **G05F** *1/48, 1/64*
U.S. Cl. 321—25 **11 Claims**



1. A controlled ferroresonant transformer for a regulated power supply circuit arrangement comprising
   a ferromagnetic electric transformer core comprising an E-shaped stack of laminations, and I-shaped stack of laminations and a C-shaped stack of laminations,
   a primary winding arranged on said I-shaped stack with said C-shaped stack adjacent and spaced by an air gap for imparting the effect of a filter choke,
   a secondary winding comprising two coils arranged on the outer legs of said E-shaped stack with the E-shaped stack adjacent said I-shaped stack and spaced by an air gap,
   a resonating winding comprising two coils arranged on the outer legs of said E-shaped stack, and
   a control winding arranged on the central leg of said E-shaped stack.

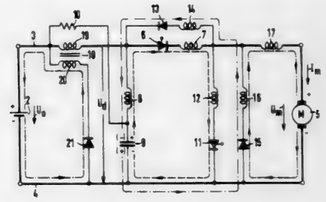
3,965,409

D-C CONTROL ELEMENT CIRCUIT

Herwig Klautschek, Furth, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 30, 1975, Ser. No. 572,892
Claims priority, application Germany, May 20, 1974, 2424369
Int. Cl.² H02M *7/155*
U.S. Cl. 321—45 C **8 Claims**

1. A d-c control circuit for use with a d-c voltage source and a load comprising:
   first and second connecting lines adapted to connect said source to said load, said first connecting line including a controllable main valve;
   A quenching circuit branch for operating on said main valve including a commutation capacitor, a commutation choke and a controllable commutation valve connected in series, said quenching circuit being connected in parallel with said main valve such that said commutation valve is in the blocking direction of said main valve;
   a fly-back valve connected antiparallel to said main valve;
   a bypass valve adapted to be connected parallel to said load
   a transformer including a primary winding, a secondary winding and a blocking diode connected in series with said secondary winding, said series connection of said



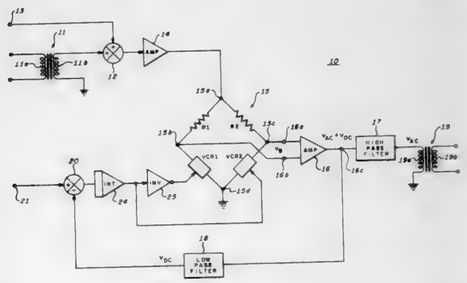
   blocking diode and said secondary winding being adapted to be connected in parallel with said source and said primary winding being adapted to be connected between said main valve and said source;
   and said commutation valve and said commutation capacitor having a common connection connected to said second line such that said commutation valve is antiparallel to said bypass valve.

3,965,410

A.C. POTENTIOMETER WITH BRIDGE HAVING VOLTAGE CONTROLLABLE DEVICES

Pierce C. Roselle, and Roy A. Zaborowski, both of Phoenix, Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 11, 1975, Ser. No. 603,423
Int. Cl.² G05F *1/56*
U.S. Cl. 323—19 **9 Claims**



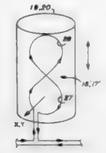
1. An a.c. potentiometer for providing a variable a.c. output voltage comprising:
   means for providing a variable d.c. voltage;
   means for providing an a.c. reference excitation;
   means for providing a d.c. reference excitation;
   a variable gain network including an input means, control means and an output means;
   means for summing said a.c. and d.c. reference excitations and for supplying said summed excitations to said network input means whereby a signal at said network output means includes both a.c. and d.c. voltage components;
   means, responsive to said d.c. voltage component of said signal at said network output means and to said variable d.c. voltage, for supplying a d.c. error signal, said d.c. error signal coupled to said network control means for controlling the gain of said variable gain network to reduce said error signal to zero whereupon the gain of said variable gain network is directly proportional to said variable d.c. voltage whereby said a.c. component at said network output means is likewise directly proportional to said variable d.c. voltage; and
   means, responsive to said signal at said network output means, for removing said d.c. component therefrom, thereby providing said variable a.c. output voltage.

3,965,411

GRADIENT WOUND TRIM COIL FOR TRIMMING A PRIMARY PICKUP COIL

Victor W. Hesterman, Palo Alto, Calif., assignor to Develco, Inc., Mountain View, Calif.

Filed Jan. 21, 1974, Ser. No. 434,857
Int. Cl.² G01R *33/02*
U.S. Cl. 323—44 F **7 Claims**



1. In a superconductive magnetic sensor:
   superconductive primary pickup coil circuit means for sensing a component of magnetic field or gradient of a magnetic field in which said primary pickup coil circuit means is disposed by picking up a magnetic flux proportional to the sensed magnetic field or magnetic field gradient component;
   an auxiliary superconductive trim coil circuit means wound in a magnetic gradient pickup configuration disposed in said magnetic field common to said primary pickup coil circuit means for picking up a trim magnetic flux proportional to a gradient of the magnetic field in which said trim coil circuit means is immersed;
   sensor means electromagnetically coupled to said primary pickup coil means and to said trim coil means for combining magnetic flux picked up by both said primary pickup coil circuit means and said trim coil circuit means to derive an output proportional to the combined magnetic flux picked up by said primary pickup coil circuit means and by said trim coil circuit means; and
   means for producing a variable localized gradient in the common magnetic field in which said trim coil means is immersed while said auxiliary and primary coil circuit means are superconducting to effect a variable change in the trim magnetic flux coupled into said sensor means.

3,965,412

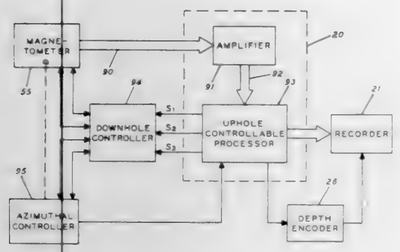
DETERMINATION OF THE POLARITY OF REMANENT MAGNETIZATION OF AN EARTH FORMATION PENETRATED BY A BORE HOLE USING AN ACCURATE MAGNETOMETER

Sulhi H. Yungul, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed July 29, 1974, Ser. No. 492,639
Int. Cl.² G01V *3/00, 3/18*
U.S. Cl. 324—8 **11 Claims**

1. A method of detecting at least the polarity of the direction of remanent magnetization associated with a rock source within an earth formation traversed by a well bore which comprises:
   a. fixedly positioning, depthwise, in said well bore magnetometer means defining an axis of response substantially orthogonal to the normal geomagnetic field of the earth

at a known mapping depth in a selected azimuthal direction of repose;
b. energizing said magnetometer means;
c. azimuthally rotating said magnetometer means so as to provide a series of readings, each of which sensing a component of said remanent magnetization normal to the earth's field in a known azimuthal direction;



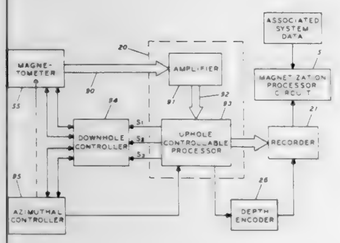
d. comparing the intensities of said azimuthally related readings to indicate a maximum and determining therefrom at least the polarity of direction of said remanent magnetization of said rock source at said known mapping depth.

3,965,413

DETERMINATION OF THE POLARITY OF REMANENT MAGNETIZATION OF AN EARTH FORMATION PENETRATED BY A BORE HOLE USING A HIGHLY ACCURATE MAGNETOMETER FOLLOWED BY PROCESSING OF RESULTING AS WELL AS ASSOCIATED DATA

Sulhi H. Yungul, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed July 29, 1974, Ser. No. 492,638
Int. Cl.² G01V *3/00, 3/18*
U.S. Cl. 324—8 **7 Claims**



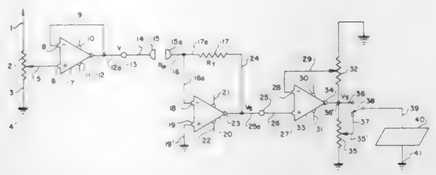
1. A method of indicating the polarity of the direction of remanent magnetization associated with an earth formation in a well bore penetrating said formation which comprises:
a. estimating by means of the published paleomagnetic data a direction S which is approximately in the direction of remanent magnetization at depth of interest (z);
b. positioning in said well bore magnetometer means defining an axis of response substantially coextensive with and parallel to the direction S at said mapping depth; and
c. measuring the intensity of magnetic field HS (z) in said earth formation in said direction S and obtaining therefrom an indication of remanent magnetization of said formation at said depth of interest z, wherein HS is the total contribution from the remanent and induced magnetizations of the formations adjacent to the well bore.

3,965,414

TEMPERATURE COMPENSATED CONDUCTIVITY MEASURING SYSTEM

Horace A. Teass, Jr., 73 Remson St., Brooklyn, N.Y. 11201

Continuation of Ser. No. 441,953, Feb. 13, 1974, abandoned.
This application May 29, 1975, Ser. No. 581,816
Int. Cl.² G01N *27/42*
U.S. Cl. 324—30 R **6 Claims**



1. An automatic temperature compensated system for measuring and linearly indicating the conductivity of an electrolyte comprising:
a. a regulated AC current source;
b. a first amplifier having input and inverting input leads, an output and a pair of DC power inputs, said input being electrically connected to said regulated AC current source, and said inverting input lead being electrically connected in feedback arrangement to said output;
c. a DC current source connected to said pair of DC power inputs for supplying power to said first amplifier;
d. a conductivity probe having first and second probe elements for immersion into an electrolyte whose conductance is to be measured, said first probe element being electrically connected to said first amplifier output;
e. a second amplifier having input and inverting input leads, an output and a pair of DC power inputs, said input lead being connected to circuit common, said inverting input lead being connected to said second probe element, and said pair of DC power inputs being connected to said DC current source for suppyling power to said second amplifier;
f. a thermistor circuit comprising a thermistor having first and second leads, said first lead being connected to said second amplifier inverting input lead and said second lead being connected to said second amplifier output, and said thermistor being in thermal contact with said electrolyte;
g. a third amplifier having input and inverting input leads, an output and a pair of DC power inputs, said input lead being connected to said second amplifier output, said inverting input lead being connected in feedback arrangement to said output and said pair of DC power inputs being connected to said DC current source for supplying power to said third amplifier; and
h. measuring means connected between said third amplifier output and circuit common for measuring any electrical output from said third amplifier.

3,965,415

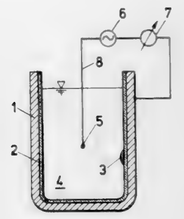
ALTERNATING VOLTAGE METHOD OF ELECTRICALLY DETECTING DAMAGE TO AN ENAMEL LAYER HAVING ONE OR MORE TANTALUM PLUGS

Rudolf Ehret, Schwetzingen, Germany, assignor to Pfaudler-Werke AG, Schwetzingen, Germany

Filed Mar. 24, 1975, Ser. No. 561,227
Claims priority, application Germany, Mar. 29, 1974, 2415317
Int. Cl.² G01R *31/12*
U.S. Cl. 324—54 **1 Claim**

1. Method of electrical detection of faults in an anticorrosion enamel layer of a metallic structure of an apparatus containing an electrically conducting medium and provided with at least one tantalum plug, comprising:

providing an insulated tantalum electrode in said medium in electrical contact therewith together with connection means, insulated from said apparatus, for connecting said tantalum electrode to a potential source external to the portion of said apparatus containing said medium;
applying a low voltage alternating potential between said tantalum electrode and said metallic structure while said medium is contained in said apparatus both to assure the coating of said tantalum electrode and of said tantalum plug(s) with a passivating layer and to furnish current for detection of faults in said enamel layer, and



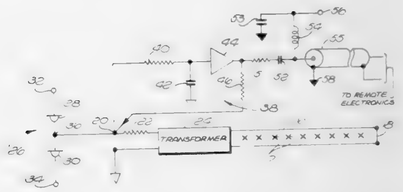
measuring the current flow produced by said application of potential after said tantalum electrode and said tantalum plug(s) have been coated with said passivating layer, thereby to determine the presence of a fault in said enamel layer,
the frequency of said alternating potential being chosen so as to favor measurement of said current flow without substantial interference from extraneous electric-current-inducing fields.

3,965,416

DIELECTRIC-CONSTANT MEASURING APPARATUS

Jay Friedman, Hermosa Beach, Calif., assignor to Tylan Corporation, Torrance, Calif.

Filed May 28, 1974, Ser. No. 473,521
Int. Cl.² G01R *27/04*
U.S. Cl. 324—58.5 B **13 Claims**



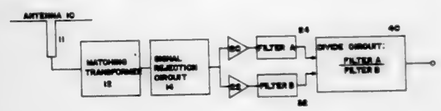
1. Apparatus for the measurement of the dielectric constant of a substance, comprising:
a driver device, including a tunnel diode operating to change the state of said device, said device actuable by applied pulses to reverse states and thereby provide drive pulses;
a sensor for placement contiguous to said substance, said sensor being connected to receive drive pulses from said driver device and including a transmission line terminated to provide reflections of received pulses related in time to the dielectric constant of said substance, said reflections being applied as pulses to said driver device; and
means for manifesting the time relationship between said pulses and reflections to indicate said dielectric constant.

3,965,417

COHERENT COMPONENT MAGNITUDE DETECTOR

Donald R. Tompkins, Laramie, Wyo., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 26, 1975, Ser. No. 590,667
Int. Cl.² G01R *23/16*
U.S. Cl. 324—77 R **4 Claims**



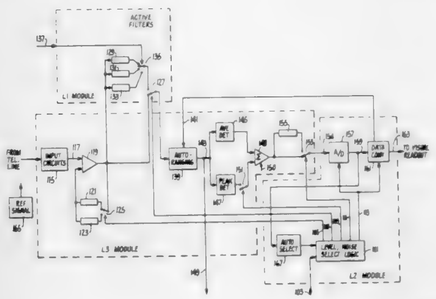
1. A method of determining the existence of a coherent component of an unspecified signal comprising:
a. receiving an unspecified signal;
b. rejecting any unwanted frequency of the unspecified signal to provide a retained signal and a rejected signal;
c. splitting the retained signal into a first and second part;
d. passing said first part thru a first filter having a selected center frequency and an established quality factor to provide a first filter output signal;
e. passing said second part thru a second filter having a center frequency identical to said first filter and an established quality factor different from said first filter to provide a second filter output signal;
f. dividing said first filter output signal by said second filter output signal to provide a final signal indicative of the magnitude of the coherent component of the unspecified signal at the selected center frequency.

3,965,418

TELEPHONE SYSTEM TESTING APPARATUS AND TECHNIQUES UTILIZING CENTRAL MEASURING EQUIPMENT WITH A PLURALITY OF REMOTE TEST STATIONS

Paul R. Bauer, Palo Alto, and Duane E. Dunwoodie, Los Altos, both of Calif., assignors to Wiltron Company, Palo Alto, Calif.

Division of Ser. No. 411,818, Nov. 1, 1973, Pat. No. 3,890,495.
This application Mar. 6, 1975, Ser. No. 555,727
Int. Cl.² G01R *17/04, 15/08*
U.S. Cl. 324—99 D **8 Claims**



1. An electronic circuit for selectively measuring either signal level or noise level from a communication circuit, comprising:
a single visual display device,
an input for connection to said communication circuit under test,
control means responsive to a control input for establishing either signal level or noise level states,
an amplifier responsive to the input, said amplifier being switchable between two distinct amplification levels and

connected to said control means to have a different amplification when said control means is in its noise state than when said control means is in its signal level state,

a filter circuit for modifying the frequency response of the amplified signal, said filter circuit being switchable between at least two different frequency response curves in response to the state of said control means, said filter circuit having a different bandwidth when said control means is in its noise state than when said control means is in its signal level state,

means receiving the output of said filter circuit for detecting said output in a manner to form a DC signal output, said detector being responsive to said control means in a manner to be a first type detector when said control means is in its signal level state and to be a second type detector when said control means is in its noise state, and

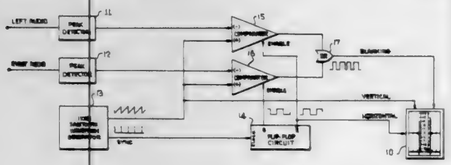
means receiving the DC output of said detector for driving said single visual display.

3,965,419

CATHODE RAY TUBE METERS

Micheal O. Paiva, Binghamton, N.Y., assignor to McIntosh Laboratory Inc., Binghamton, N.Y.

Filed July 18, 1974, Ser. No. 489,477
Int. Cl.² G01R 13/28, 19/04
U.S. Cl. 324—121 R **9 Claims**



1. A cathode ray tube indicator system for displaying the amplitude of continuously varying peak audio signal levels which are in separate stereo channels, comprising

a cathode ray tube,

said cathode ray tube including vertical and horizontal deflection means, a source of a cathode ray, and a luminous display screen,

plural stereo channels each conveying an audio signal,

separate means for peak detecting each of said audio signals to provide peak voltages,

said vertical deflection means including means for sequentially sweeping said cathode ray vertically at least to a vertical position representative of the magnitude of each of said peak voltages, said vertical deflection means also including means for extending said vertical sweeps to finite values when said peak voltages have zero magnitudes,

said horizontal deflection means including means for sequentially displacing said cathode ray recurrently horizontally to a plurality of fixed horizontal locations representative respectively of the identities of said stereo channels, and

means for synchronizing said vertical deflection means and said horizontal deflection means such that each vertical sweep occurs at only one of said fixed horizontal locations.

3,965,420

APPARATUS FOR NON-DESTRUCTIVELY TESTING THE VOLTAGE CHARACTERISTICS OF A TRANSISTOR

Wilfred Potter Bennett, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 16, 1974, Ser. No. 533,346
Int. Cl.² G01R 31/22
U.S. Cl. 324—158 T **9 Claims**

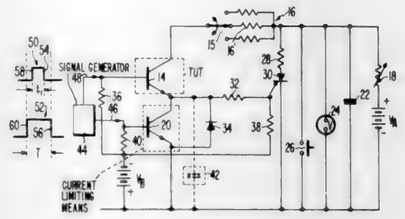
1. An apparatus for testing the voltage characteristics of a transistor having a pair of main electrodes and a control electrode, said transistor being of a type tending to conduct a destructive certain current when the voltage at the main electrode exceeds a given level, the apparatus comprising:

settable current limiting means having a current limiting value settable anywhere in a given range,

means for connecting one of said main electrodes to said current limiting means,

means for applying a test voltage across the serially connected main electrodes and current limiting means,

said current limiting means being responsive to a control signal having a predetermined value applied as an input



thereto for setting the current limiting value of said current limiting means within said range to thereby result in a potential increase at said one main electrode when said certain current occurs at said main electrodes,

preprogrammed signal generating means coupled to said current limiting means for determining the value of said control signal and for applying said control signal to said current limiting means, and

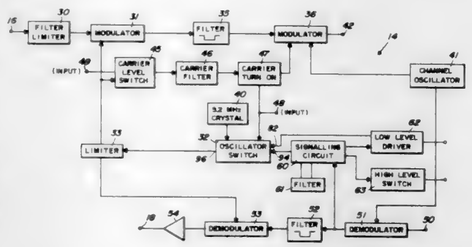
voltage sense means responsive to said potential increase at said one main electrode for removing the test voltage from said main electrodes.

3,965,421

AUTOMATIC MASTER-SLAVE CARRIER SWITCHING CIRCUIT

Wayne Joseph Bates, Des Plaines, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1974, Ser. No. 534,537
Int. Cl.² H04B 1/38
U.S. Cl. 325—17 **8 Claims**



6. In a suppressed carried, communications system including at least two, spaced apart, transmitter-receivers wherein a portion of the carrier is transmitted for use as a synchronizing signal, the method of switching between master and slave carriers comprising the steps of:

a. generating a local carrier;

b. generating a local control signal when the local transmitter is operated and no signal is being received;

c. generating a remote control signal when a signal including a remote carrier when a signal is received and the local transmitter is not operating;

d. separating the remote carrier from the received signal;

e. utilizing the local carrier for a synchronizing signal in the local transmitter-receiver either with no control signals present or in response to the generation of a local control signal; and

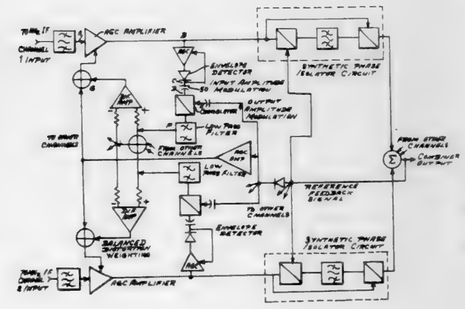
f. utilizing the remote carrier for a synchronizing signal in the local transmitter-receiver in response to the generation of a remote control signal.

3,965,422

SYSTEM CHANNEL DISTORTION WEIGHTING FOR PREDETECTION COMBINERS

Olindo A. Tagliaferri, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 26, 1974, Ser. No. 492,077
Int. Cl.² H04B 7/02
U.S. Cl. 325—305 **1 Claim**



1. A system channel distortion weighting apparatus for predetection combiners comprising in combination:

a plurality of diversity receiver channels respectively providing a plurality of I.F. signals, said plurality of diversity receiver channels each having a level control means connected thereto to control signal level within each receiver channel, said plurality of diversity receiver channels each having an amplitude distorted signal therein,

summing means connected to each of said plurality of diversity receiver channels to sum each of said amplitude distorted signals therefrom, said summing means providing a summed amplitude distorted signal,

means for envelope detecting said summed amplitude distorted signal, said detecting means providing a signal envelope representative of the distorted amplitude thereof,

means for envelope detecting each of said amplitude distorted signals thereby providing a plurality of signal envelopes representative of the amplitude distortion in each of said signals, and

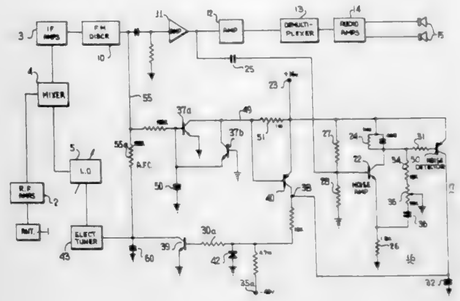
means for correlating said distorted signal envelope of said summed signal with each of said plurality of amplitude distorted signal envelopes to provide an output voltage, said output voltage being proportional to the correlation between each of said amplitude distorted signal envelopes and said distorted signal envelope of said summed signal, control signal means producing means providing a level control signal in response to said output voltage, said level control signal being applied to each of said level control means, said level control means adjusting each diversity receiver channel gain in response to said level control signal.

3,965,423

AUTOMATIC FREQUENCY CONTROL SYSTEM

Lawrence W. Fish, Jr.; Ronald C. Evans, and Sidney A. Corderman, all of Binghamton, N.Y., assignors to McIntosh Laboratory Inc., Binghamton, N.Y.

Filed July 17, 1974, Ser. No. 489,123
Int. Cl.² H04B 1/28
U.S. Cl. 325—346 **6 Claims**



3. In a superheterodyne receiver, a local oscillator for establishing the tuned frequency of said receiver, a circuit responsive to detuning of said local oscillator for developing a bipolar a.f.c. voltage having an amplitude which is a function of the extent of said detuning, a first NPN transistor having a first base, first emitter and first collector, a second NPN transistor having a second base, second emitter and second collector, means connecting said first base and said second emitter to a point of said a.f.c. circuit, means grounding said first emitter and said second base, means applying dc supply voltage to said first and second collectors, means responsive to turning on of either of said transistors for grounding a second point of said a.f.c. circuit, and means substantially isolating said first point from said second point in respect to voltage variations.

3,965,424

METHOD AND APPARATUS FOR TRACKING AN INCREMENTALLY SWEEPING GENERATOR BY A FREQUENCY SELECTIVE RECEIVER

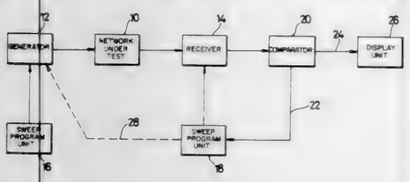
Robert Coackley; John Reid Urquhart, both of Dalgety Bay, by Dunfermline, and David George Dack, Dunfermline, all of Scotland, assignors to Hewlett-Packard Limited, South Queensferry, Scotland

Filed Dec. 4, 1974, Ser. No. 529,673
Claims priority, application United Kingdom, Dec. 21, 1973, 59599/73
Int. Cl.² H04B 17/00
U.S. Cl. 325—363 **7 Claims**

1. A method of tracking a sweeping generator with a frequency selective receiver tunable to a plurality of frequencies comprising the steps of:

receiving and measuring the level of a signal with the receiver by making at least two successive level measurements at one frequency to which the receiver is tuned;

providing a predetermined reference signal condition by establishing a predetermined signal level aperture;
comparing the measured signal against the predetermined reference signal condition by determining the level difference between two of the successive level measurements



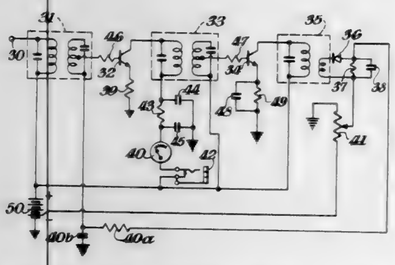
and comparing the level difference with the predetermined signal level aperture; and
tuning the receiver to another of the plurality of frequencies when the level difference is less than the predetermined signal level aperture.

3,965,425

ELECTROMAGNETIC RADIATION SOURCE LOCATOR

Richard C. Peterson, North Adams; John D. Moynihan, Pittsfield, and Martin W. O'Shea, Manchaug, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Oct. 23, 1974, Ser. No. 517,266
Int. Cl.² H04B *1/00*
U.S. Cl. 325—364 **5 Claims**



1. In an apparatus for locating the source of electromagnetic radiation of the type including a radio receiver that provides a d.c. signal whose amplitude is a function of the strength of the received radiation, the improvement comprising:
a voltage controlled audio oscillator (VCO) of the pulse generator type being connected to and controlled by said d.c. signal, said VCO having a pulse repetition rate of from 0.5 to 10 pulses per second when said strength of said received radiation is zero and said repetition rate increasing as a function of said received radiation strength, the output of said VCO being adapted for connection to an electro-acoustic transducer, for the purpose of producing a sound whose pitch increases with said received radiation strength.

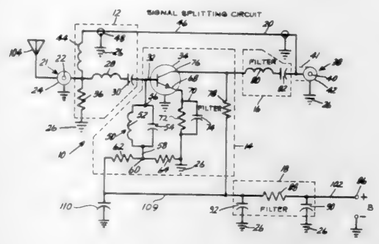
3,965,426

FREQUENCY MODULATED SIGNAL PRE-AMPLIFIER WITH AMPLITUDE MODULATED SIGNAL BYPASS

Robert S. Ringland, Burlington, Iowa, assignor to Tandy Corporation, Forth Worth, Tex.

Filed Jan. 10, 1974, Ser. No. 432,160
Int. Cl.² H04B *1/16*
U.S. Cl. 325—375 **10 Claims**

1. For use with a radio receiver for receiving both frequency and amplitude modulated signals, said frequency modulated signals being in a first frequency band and said amplitude modulated signals being in a second frequency band different from said first frequency band, the receiver including an antenna, an antenna lead, a receiver input circuit and complementary electrical connectors affixed to said antenna lead and said receiver input circuit, respectively, for coupling the antenna lead to the receiver input circuit; a frequency modulated signal pre-amplifier comprising a pre-amplifier input connector adapted to engage said antenna lead connector and a pre-amplifier output connector for engaging said receiver input circuit connector, band splitting circuit means coupled to said pre-amplifier input connector for receiving and separating said first and second frequency bands, said band splitting means including an amplitude modulated signal output terminal connected to said pre-amplifier output connector and a frequency modulated signal output terminal, and radio frequency amplifier means coupled between said frequency modulated signal input terminal and said pre-amplifier output connector for amplifying said frequency modulated signals, said amplifier means including tuned circuit means for limiting the frequency pass band of said amplitude means, said amplifier means providing amplification to the signals in said first frequency band which is substantially greater than the amplification of the signals in said second frequency band.

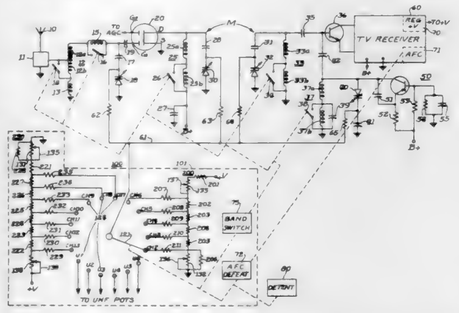


3,965,427

TELEVISION TUNING SYSTEM WITH PRECISION SUBSTRATE SWITCH ASSEMBLY

John Y. Ma, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Sept. 3, 1974, Ser. No. 502,482
Int. Cl.² H03J *5/02*
U.S. Cl. 325—464 **17 Claims**



1. An electronic television tuner system without a fine tuning control, for receiving and translating television signals in a fixed frequency range, having a plurality of tunable stages, each including an abrupt junction varactor diode displaying a capacitance-to-tuning voltage characteristic which is predictable from diode to diode, and means supplying the varactor diodes with tuning voltages for tuning said tuner to individual television signals in said fixed frequency range comprising:

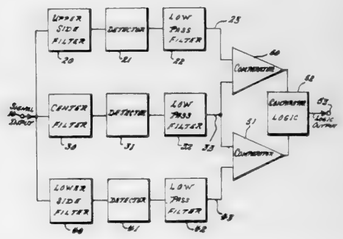
a source of regulated potential;
a substrate including a stable voltage divider network comprising deposited resistors whose junctions form voltage terminals at which respective ones of said tuning voltages are developed;
means on said substrate selectively connecting said voltage terminals to said tunable stages; and
setting means on said substrate coupled between said source and said voltage divider network for establishing the tuning voltage at one of said voltage terminals to enable reception and translation of a corresponding one of said television signals.

3,965,428

SPECTRUM-SHAPE DISCRIMINATING ON/OFF TARGET INDICATOR

Joel Katz, and James R. Pousson, both of Los Angeles, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 4, 1971, Ser. No. 105,748
Int. Cl.² H04B *1/10*
U.S. Cl. 325—474 **2 Claims**



1. A spectrum-shape discriminating on/off target indicator comprising a center bandpass filter, equal in bandwidth to the maximum spectral width of the desired signal, first and second contiguous narrow bandwidth filters, each of said filters receiving a common input signal, first, second and third detectors receiving the output of said first contiguous filter, said center filter, and said second contiguous filter, respectively, first, second and third low pass filters receiving the DC output of said first, second, and third detectors, respectively, first and second comparators, said first comparator receiving the output of said first and second low pass filter, said second comparator receiving the output of said second and third low pass filters, and a logic circuit receiving the outputs from said first and second comparator, said logic circuit rejecting sloping spectral shapes and envelopes approximating broad gaussian shapes and providing a DC logic output signal only for input signals having a signal-to-noise ratio equal to or higher than a preset minimum level though the signal "noise bandwidth" meets prescribed conditions.

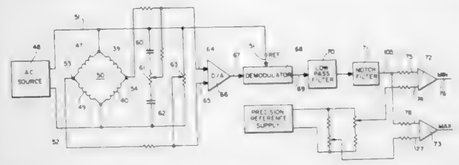
3,965,429

CIRCUITRY FOR USE WITH A TRANSDUCER WHICH GENERATES A SIGNAL CORRESPONDING TO A PHYSICAL PHENOMENON

Harry E. Roberts, III, Wilmington, Del., assignor to Columbia Research Laboratories, Inc., Woodlyn, Pa.

Continuation-in-part of Ser. No. 264,781, June 21, 1972, Pat. No. 3,858,443. This application May 17, 1974, Ser. No. 471,009
Int. Cl.² G01N *27/00*; **G08B** *19/00*
U.S. Cl. 328—1 **5 Claims**

1. A circuit to be employed with a transducer which translates a mechanical motion into an alternating current electrical signal which includes a carrier frequency signal whose amplitude is representative of said motion, comprising in combination: amplifier means adapted to be connected to said transducer to receive said alternating current signal and to generate an amplitude sinewave-like signal whose amplitude represents a measure of said mechanical motion; signal demodulating means connected to said amplifier means to receive said sinewave-like signal and translate it into a pulsating direct current signal which pulsating direct current signal includes a component having twice the frequency of said carrier signal; low pass filter means connected to said signal demodulating means and formed to receive said pulsating direct current signal and to impede all signal components of said pulsating direct current signal which have a frequency greater than a predetermined value including signals whose frequency is twice said carrier frequency thereby providing a once filtered signal; and notch filter means connected to said low pass filter means and formed to receive said once filtered signal and to attenuate that component of said once filtered signal which has a frequency of twice said carrier frequency thereby providing a non-pulsating direct current signal whose voltage level is a reliable measure of said mechanical motion.

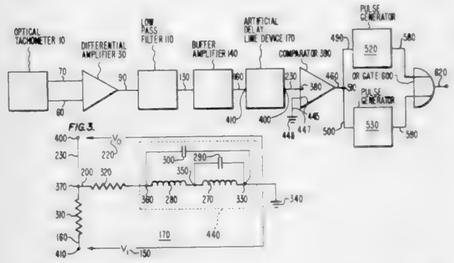


3,965,430

ELECTRONIC PEAK SENSING DIGITIZER FOR OPTICAL TACHOMETERS

Arnold W. Brandt, Livonia, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 428,616, Dec. 26, 1973, abandoned. This application June 18, 1975, Ser. No. 587,992
Int. Cl.² H03K *5/08*; **H03B** *19/00*; **G01P** *3/36*; **G01F** *1/06*
U.S. Cl. 328—20 **8 Claims**



1. The method of digitizing a signal from an optical tachometer comprising the steps of:
a. subtracting and amplifying a signal carrying line from a non-signal carrying line originating from the optical tachometer to thereby substantially remove line induced noise and to increase the gain of the subtracted signal,
b. filtering the subtracted signal to remove the remainder of said line induced noise,
c. reamplifying the filtered signal to recover any loss of gain incurred in said filter,
d. delaying the reamplified signal,
e. subtracting the delayed signal from the reamplified signal to thereby obtain a resultant signal that is uniformly delayed in time such that its zero amplitude points occur a fixed delay after the peak points of the reamplified signal,
f. alternating the level of a constant amplitude signal to create a digitized signal whenever the resultant signal intersects a reference level, said alternating occurring only when adjacent slopes of the resultant signal at the reference level intersection point are of opposite directions, and
g. doubling the frequency of the digitized signal by triggering on the positive and negative peaks thereof, thereby

causing frequency changes of the sinusoidal signal to be sensed on every slope direction change.

4. An improved system for digitizing a high frequency sinusoidal signal from an optical tachometer comprising:

a. a differential amplifier coupled to said optical tachometer by a signal carrying line and a non-signal carrying line, said non-signal carrying line being subtracted from the signal carrying line such that the amplified output therefrom is a high gain signal having substantially reduced line-induced noise,

b. a low pass filter coupled to said differential amplifier and effective for filtering out high frequency noise components,

c. a buffer amplifier coupled to said filter and effective for reamplifying the filtered signal to compensate for gain losses incurred in said filter,

d. an artifical delay line coupled to said buffer amplifier and effective for delaying the reamplified signal and for subtracting the delayed signal from the undelayed signal to thereby produce a uniformly delayed resultant signal through time such that the zero amplitude points thereof delayably concur just after the peak points of the reamplified signal,

e. a comparator coupled to said buffer amplifier and to said delay line and effective for digitizing said resultant signal when the slope direction thereof as sensed thereby is opposite the preceding one, said comparator being operative also to not digitize said resultant signal when the slope direction thereof is identical to said preceding one, and

f. a pair of pulse generators parallely coupled to said comparator and effective for trigger pulsing on the positive and negative peaks, respectively, of said resultant signal and for outputting signals to an OR gate to thereby effectively double the frequency of said original sinusoidal signal.

3,965,431

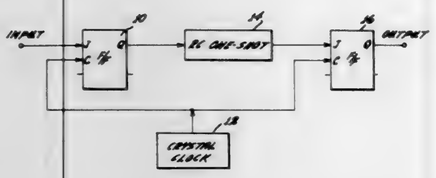
CIRCUITRY FOR PRODUCING PULSES WITH PRECISE PREDETERMINED WIDTHS

Edgar A. Johnson, Tujunga, Calif., assignor to The Singer Company, New York, N.Y.

Filed Jan. 2, 1975, Ser. No. 537,983

Int. Cl.² H03K *5/04*

U.S. Cl. 328—58 **4 Claims**



1. Circuitry for generating a pulse of precise predetermined width in response to an input signal comprising:

a clock-pulse generator;

a one-shot multivibrator, said multivibrator being adjustable to approximately the desired predetermined pulse width;

input means coupled to said generator and to said multivibrator, said input means being responsive to an input trigger signal for applying an actuating pulse to said multivibrator upon the occurrence of the first clock pulse after receipt of said triggering signal; and

output means coupled to said clock pulse generator and to said multivibrator for generating an output pulse that initiates upon the occurrence of said multivibrator actuating pulse and which terminates upon the occurrence of the first clock pulse after completion of said multivibrator pulse.

3,965,432

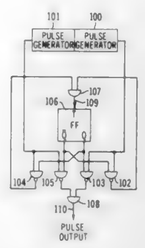
HIGH RELIABILITY PULSE SOURCE

Jeffrey Neil Denenberg, Naperville, and Kenneth Peter May, Aurora, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 14, 1975, Ser. No. 567,728

Int. Cl.² H03K *1/12*

U.S. Cl. 328—61 **5 Claims**



1. A pulse source circuit for providing a sequence of output pulses wherein, in the absence of a failure in the pulse source circuit, alternate output pulses occur in response to signals of one generator and the remaining output pulses occur in response to signals of another generator and, in the presence of a failure of either one of the generators, all output pulses occur in response to signals of the remaining generator comprising:

two independent but synchronized generators of repetitive signals;

a pulse output terminal;

bistable means for generating control signals at first and second output terminals in response to control signals at a control input terminal;

first gating means having input terminals connected to said generators and to said first and second output terminals of said bistable means for providing at said pulse output terminal a sequence of pulses in response to output signals of said generators and to said control signals; and

second gating means having input terminals connected to said generators and to said first and second output terminals of said bistable means for generating signals at said control input terminal for controlling the states of said bistable means in response to output signals of said generators and to said control signals.

3,965,433

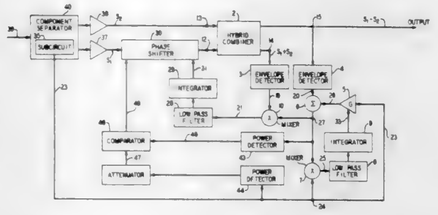
PHASE EQUALIZER USEABLE IN A LIND AMPLIFIER

Yu Shuan Yeh, Freehold Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 27, 1975, Ser. No. 562,572

Int. Cl.² H03B *3/04*

U.S. Cl. 328—155 **6 Claims**



6. A linear amplifier of the type having a component separator for producing from an input signal two signal components and the envelope of said input signal, a combining device for combining said two signal components to produce two output signals one of which is a linearly amplified replica of said input signal, wherein the improvement comprises:

a phase shifter inserted in the path of one of the two signal components between said component separator and said combining device; and

means responsive to the two ouput signals and to the envelope of the input signal for controlling said phase shifter.

3,965,434

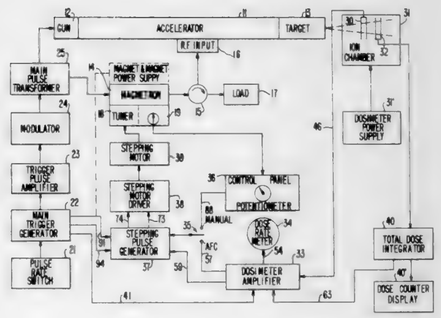
AUTOMATIC FREQUENCY CONTROL SYSTEM FOR DRIVING A LINEAR ACCELERATOR

Alan L. Helgesson, Los Altos Hills, Calif., assignor to SHM Nuclear Corporation, Sunnyvale, Calif.

Filed Dec. 1, 1972, Ser. No. 311,292

Int. Cl.² H05H *9/00*

U.S. Cl. 328—233 **12 Claims**



1. A particle accelerator system comprising:

an accelerator guide means for accelerating particles,

particle injection means for injecting particles into said guide means,

a source of radio frequency energy,

means for frequency modulating said radio frequency energy source,

means for introducing radio frequency energy from said source into said guide means for energy exchange with and acceleration of said particles,

motor means connected to said source for changing the output frequency of said source,

means connected to said motor means for producing a drive signal to drive said motor means and change said source frequency,

means for sensing the output amplitude of accelerated particles from said accelerator guide means including means measuring current pulses of the accelerated particles from said accelerator guide means, and

means connected to said sensing means and to said drive signal producing means to activate said drive signal producing means and drive said motor means until the sensed output amplitude is maximum, said activating means including means for synchronously demodulating a signal received from said sensing means.

3,965,435

CIRCUIT FOR DEMODULATING AN AMPLITUDE MODULATED SIGNAL

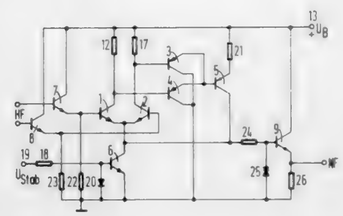
Hans Kriedt, Munich; Eckart Shatter, Zorneding, and Jean-Marc Zulauf, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 21, 1975, Ser. No. 570,182

Claims priority, application Germany, May 9, 1974, 2422534

Int. Cl.² H03D *1/18*

U.S. Cl. 329—101 **13 Claims**



4. A circuit arrangement for the demodulation of an amplitude-modulated signal employing envelope-curve rectification, comprising a high frequency input terminal, a low frequency output terminal, a terminal for connection with a potential source, a reference potential, a reference voltage source, a differential amplifier having two transistors of the same polarity type, the base of a first one of said transistors being connected to said input terminal, the emitters of said transistors being connected together, a constant current source, said emitters being connected through said constant current source to said reference potential, a collector resistor connected between the collector of said first one of said transistors and said potential source terminal, a rectifier, and a current amplifier serially connected between the collector of said first one of said transistors and said two emitters, whereby via a current negative feedback, the operative point of the said transistors remains constant, and whereby said emitters provide an output for a low frequency signal.

3,965,436

COMPRESSOR AND EXPANDER CIRCUITS FOR COMPANDER SYSTEM

Robert P. Dixon, Rustburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed June 20, 1975, Ser. No. 588,679

Int. Cl.² H03G *7/06*

U.S. Cl. 330—29 **8 Claims**

1. An improved compressor circuit for reducing the dynamic range of voice signals comprising:

a. a main input for receiving said voice signals;

b. a differential amplifier having an input and first and second differential outputs;

c. means connecting said input of said differential amplifier to said main input;

d. output means having first and second inputs and a common output;

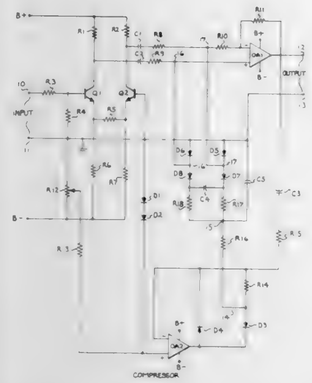
e. means connecting said first and second inputs of said output means to said first and second outputs of said differential amplifier respectively;

f. first and second diode attenuator circuits each having an attenuating terminal and a control terminal;

g. means connecting said attenuating terminals of said first and second diode attenuator circuits to said first and second outputs of said differential amplifier respectively;

h. and means connecting said common output of said output means to said control terminals of said first and second attenuator circuits for causing said attenuator circuits to

attenuate the signals at said first and second outputs of said differential amplifier as a function of the magnitude



of the signals at said common output of said output means.

3,965,437

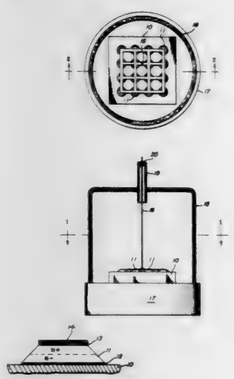
AVALANCHE SEMICONDUCTOR AMPLIFIER

Chung Kyu Kim, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 360,716, May 16, 1973, which is a division of Ser. No. 291,483, Sept. 22, 1972, abandoned, which is a continuation of Ser. No. 133,642, April 13, 1971, abandoned. This application Aug. 26, 1974, Ser. No. 500,973

Int. Cl.² H03F *3/10*

U.S. Cl. 330—34 **12 Claims**



1. In combination:

a plurality of bodies of semiconductor material, each of said bodies having an elongated region for producing charge carrier multiplication or density variation, the width of said region in a direction substantially transverse to the average direction of motion of said carriers being less than ten times the thickness of said region;

a heat sink thermally coupled to said region of each of said bodies, said heat sink being substantially wider than said width, heat flow away from said bodies having a substantial component parallel to the surface of said heat sink;

a conductive grid coupled to the side of each of said bodies opposite said heat sink operatively connecting said bodies in parallel;

oscillations produced by said charge carrier multiplication being coupled to a load; and

said bodies being arranged in an array of rows and columns upon said heat sink.

3,965,438

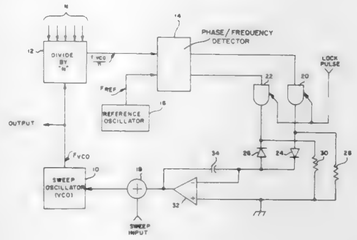
FREQUENCY LOCKING SYSTEM FOR A VOLTAGE CONTROLLED SWEEP FREQUENCY OSCILLATOR

Fendall Gregory Winston, IV, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 29, 1974, Ser. No. 518,663

Int. Cl.² H03B *3/10, 23/00*

U.S. Cl. 331—1 A **5 Claims**



1. A frequency locking system for a voltage controlled swept frequency oscillator, comprising:

a voltage controlled sweep frequency oscillator for generating an output having a frequency which varies as a function of a control input;

a divider for dividing said output by an integer N;

a phase and frequency detector responsive to the divided output and a reference signal for providing a plurality of detected signals;

means for supplying said reference signal to said detector;

means responsive to said detected signals for providing an error voltage representative of any differential in frequency and phase between both said divided output and said reference signal; and

means for adding said error voltage to a sweeping voltage and being operatively connected to said oscillator for locking said oscillator to the center frequency of said sweeping voltage.

3,965,439

ELECTROOPTIC-Q-SWITCHING SYSTEM FOR A LASER

Arthur H. Firester, Skillman, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 3, 1974, Ser. No. 529,144

Int. Cl.² H01S *3/11*

U.S. Cl. 331—94.5 Q **5 Claims**

1. An electrooptic Q-switching system for increasing the peak output pulse power and the frequency of a laser, the system comprising:

a laser positioned on one side of a laser cavity, said laser producing a polarized light beam along the optical axis of said laser cavity;

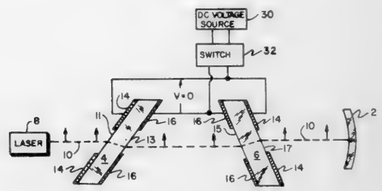
an end reflecting mirror positioned on the optical axis and at the opposite end of said laser cavity from said laser;

a longitudinal configuration of crystalline electrooptic material positioned in said laser cavity between said laser and said end reflecting mirror, said crystalline electrooptic material having longitudinal electrodes in physical contact on each side thereof wherein each of said longitudinal electrodes has an opening along said optical axis so

said polarized light beam may pass therethrough, with the surface of said crystalline electrooptic material positioned at the Brewster angle from said optical axis wherein said polarized light beam travels down the optic axis of said crystalline electrooptic material;

a direct current voltage source; and

switching means connected between said direct current voltage source and said longitudinal electrodes wherein said switching means alternately connects a voltage from



said direct current voltage source to said longitudinal electrodes such that the electric field momentarily produced in said crystalline electrooptic material is along said optical axis and is at a rate commensurate with the time said laser takes to replenish its stored energy while lasing to cause optical loss and storage of excess energy in said laser while said voltage is connected to said longitudinal electrodes and when said voltage is removed the peak power of the laser pulse is increased by said excess energy.

3,965,440

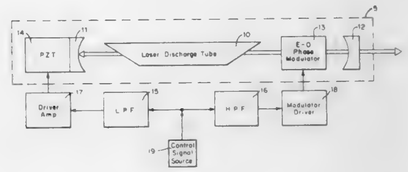
TUNABLE LASER OSCILLATOR

Ross E. Graves, Pacific Palisades, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 2, 1975, Ser. No. 564,569

Int. Cl.² H01S *3/10*

U.S. Cl. 331—94.5 C **8 Claims**



1. In combination:

a laser oscillator having a pair of end reflecting members defining a resonant laser cavity and a laser medium disposed within said cavity;

means for providing a control signal for controlling the frequency of said laser oscillator;

electro-mechanical means disposed at one end of said cavity for varying the length of said laser cavity substantially in response to components of said control signal below a first frequency;

electro-optical means disposed within said cavity for varying the effective electrical length of said laser cavity substantially in response to components of said control signal above said given frequency;

first means for coupling a first component of said control signal to said electro-mechanical means; and

second means for coupling a second component of said control signal to said electro-optical means.

3,965,441

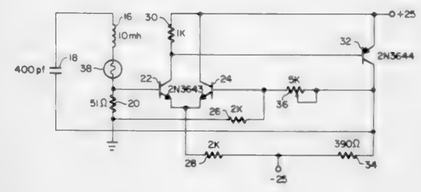
PARALLEL RESONANT CIRCUIT WITH FEEDBACK MEANS FOR INCREASING Q

Neal L. Roy, Redondo Beach, and David O. Hansen, Oakland, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed June 20, 1975, Ser. No. 588,760

Int. Cl.² H03B *7/06*

U.S. Cl. 331—115 **5 Claims**



1. A parallel resonant circuit, comprising:

a. a capacitor and an inductor having a first side of each thereof connected in common;

b. a resistor connected in series with the second side of said inductor to sense the current in said resonant circuit; and

c. an operational amplifier having its non-inverting input terminal connected to the side of said resistor that is connected in common with said inductor, its inverting input terminal connected to the opposite side of said resistor, and the output terminal connected to the second side of said capacitor;

said operational amplifier serving to introduce a negative resistance into said resonant circuit that is greater than that of said series resistor and thereby to effectively reduce the inherent resistance of said inductor and increase the Q thereof.

3,965,442

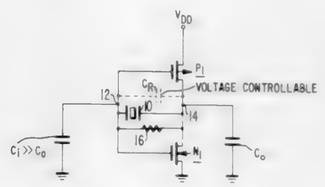
CMOS OSCILLATOR

Sargent Sheffield Eaton, Jr., Phillipsburg, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 3, 1975, Ser. No. 546,418

Int. Cl.² H03B *5/36*

U.S. Cl. 331—116 R **3 Claims**



1. An oscillator comprising, in combination:

two operating voltage terminals,

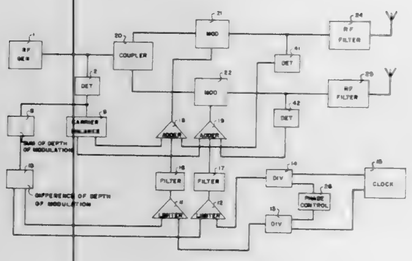
two field effect transistors of complementary conductivity types, each having a conduction path and a control electrode, said conduction paths connected in series between said operating voltage terminals, said two control electrodes connected to an input terminal, and the connection between said two conduction paths serving as an output terminal;

a regenerative feedback loop comprising a crystal connected between said output and input terminals;

a relatively small value of capacitance connected between said output terminal and a point of reference potential; and

a value of capacitance at least 10 times larger than said small value of capacitance connected between said input terminal and said point of reference potential.

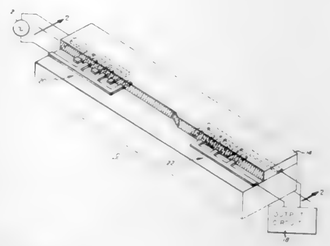
3,965,443
ELECTRONIC MODULATOR FOR GUIDANCE SYSTEMS
Allistair Towle, and Stanko Brcic, both of Willowdale, Canada, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 25, 1974, Ser. No. 509,209
Int. Cl.² H03C *1/06*
U.S. Cl. 332—31 R **4 Claims**



1. An amplitude modulation system for use in a navigational system where two overlapping signals modulated at different frequencies are transmitted to indicate course, comprising a source of a carrier wave to be modulated, a source of two modulation signals, a detector connected to e source of the carrier wave for deriving a DC control signal related to the amplitude of the carrier wave, two modulators each having an input for the carrier wave, an input for the modulation signal and an output for the modulated carrier, and modulation amplitude control means including two adders each having an output connected to the input for the modulation signal of an assigned modulator and at least two inputs, two limiters each having an output connected to one input of an assigned adder and two inputs, an adjustable first network for dividing the DC control signal from said detector to provide two differential DC signals applied respectively, to one input of each limiter for adjusting the depth of modulation, an adjustable additional network connected to said detector to produce from the DC control signal a signal for adjusting the overall depth of modulation and, derived therefrom, additional two differential DC signals applied respectively, to the other input of each adder for adjusting the carrier balance in respective modulators whereby the other input of each limiter is connected to said source of modulation signals.

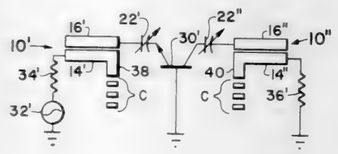
4. An amplitude modulation system, comprising a modulator (**5**) to which is supplied a carrier wave and a modulating signal, wherein the depth of modulation of the carrier wave by the modulation signal in the modulator is dependent on the amplitudes of each of the carrier and the modulation signal supplied thereto, and means to control the depth of modulation of the carrier including a further means (**2**) for producing a control voltage representative of the amplitude of the said carrier and a modulation signal amplitude control means (**4**) through which the modulation signal is supplied to the modulator (**5**) and to which the control voltage produced by said further means is supplied to control the amplitude of the modulation signal supplied to the modulator.

3,965,444
TEMPERATURE COMPENSATED SURFACE ACOUSTIC WAVE DEVICES
Charles B. Willingham; Thomas E. Parker, both of Framingham, and Frank H. Spoone., Concord, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Jan. 3, 1975, Ser. No. 538,478
Int. Cl.² H03H *9/26, 9/30;* **H03B** *5/32;* **H01L** *41/18*
U.S. Cl. 333—30 R **39 Claims**



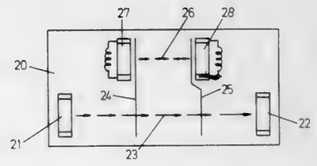
1. In combination:
a substrate of lithium tantalate piezoelectric material; and
a layer of silicon dioxide disposed upon a surface of said substrate, the thickness of said layer being determined such that the temperature coefficient of delay for surface waves on said substrate is within a predetermined range of values.

3,965,445
MICROSTRIP OR STRIPLINE COUPLED-TRANSMISSION-LINE IMPEDANCE TRANSFORMER
Wen-Pin Ou, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.
Filed Feb. 3, 1975, Ser. No. 546,593
Int. Cl.² H01P *5/08*
U.S. Cl. 333—33 **13 Claims**



1. A coupled-transmission-line impedance transformer for matching a first impedance to a second impedance utilizing a pair of parallel, electromagnetically coupled-transmission-lines disposed on a first surface of a dielectric substrate, and a ground plane disposed on a second surface of the dielectric substrate, comprising:
the first of said pair of transmission lines having first and second ends and a predetermined length and width, said first end being coupled to the first impedance;
first capacitive means coupled between said second end of the first transmission line and the ground plane for varying the effective electrical length of the first transmission line to vary the real part of the transformed impedance through the transformer;
the second of said pair of transmission lines having first and second ends and a predetermined length and width, said first end being open circuited and opposite said first end of the first transmission line; and
second capacitive means for varying the effective electrical length of the second transmission line to vary the imaginary part of the transformed impedance through the transformer, said second capacitive means and said secod end of the second transmission line being connected in series to the second impedance.

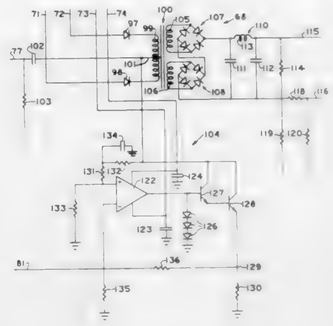
3,965,446
SURFACE ACOUSTIC WAVE FILTER
George Frederick Craven, Heath; John Stuart Heeks, Harlow, and Graham Marshall, Malvern, all of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 24, 1975, Ser. No. 552,410
Claims priority, application United Kingdom, Mar. 5, 1974, 9767/74
Int. Cl.² H03H *9/26, 9/30, 9/32, 9/04*
U.S. Cl. 333—72 **9 Claims**



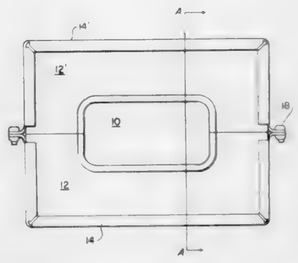
1. A surface acoustic wave filter comprising:
a body of piezoelectric material;
means for propagating a first acoustic wave in a first mode in the surface of said body of said material from an input electric signal;
means for converting a portion of the surface wave energy existing in said first acoustic wave into a second acoustic wave in a second mode;
a resonant structure on the surface of said body wherein acoustic wave energy in said second mode is resonant;
means for reconverting acoustic wave energy in said second mode into surface acoustic wave energy in said first mode;
means for introducing a predetermined phase shift of said reconverted acoustic wave energy relative to said propagated first acoustic wave energy; and
means for recovering combined acoustic wave energy of said first and second phase shift reconverted acoustic wave energies as an electric output signal.

3,965,447
SYNTHETIC REACTOR CIRCUIT
Robert M. Thomas, Brockville, Canada, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Division of Ser. No. 415,481, Nov. 13, 1973. This application Jan. 6, 1975, Ser. No. 538,985
Int. Cl.² H03H *11/00*
U.S. Cl. 333—80 T **2 Claims**

1. A synthetic reactor circuit comprising transistor means, an operational amplifier having an output coupled to said transistor means for controlling conduction therethrough, and resistance-capacitance means responding to the voltage across said transistor means and applying a signal to the non-inverting input of said operational amplifier in phase-displaced relation from said voltage such that the effective impedance presented by said transistor means is a reactive impedance.

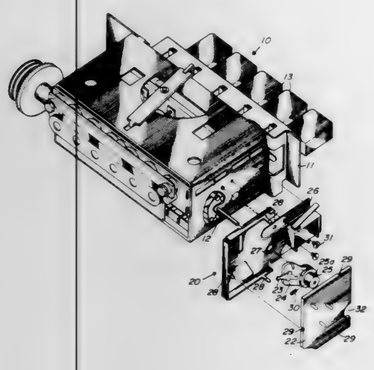


3,965,448
WAVEGUIDE ISOLATOR WITH DAMPING MEANS
Wayne L. Browning, Costa Mesa, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 7, 1975, Ser. No. 575,305
Int. Cl.² A44B *21/00*
U.S. Cl. 333—98 R **11 Claims**



1. A waveguide isolator for attenuating the vibrations of a flexible waveguide comprising:
flexible isolator means capable of enclosing a section of waveguide wall at a proper point along the length of said waveguide to support it to attenuate waveguide vibration and thus prevent a resonant condition, said isolator means being formed from a material which frictionally dissipates energy when flexed, said material comprising a thickly intertwined material impregnated by a low-density flexible foam and an elastic jacket supporting said foam-impregnated material; and
bracket means supporting said isolator means, said bracket means being adapted to be coupled to a relatively immobile foundation so that movement of said waveguide flexes the energy dissipation material of said isolator means within the confines of the relatively immobile bracket means thereby dissipating the movement of said waveguide walls.

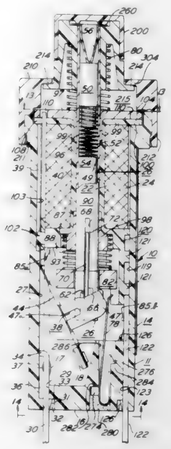
3,965,449
TREADLE BAR DRIVEN POTENTIOMETER
Louis Albert Bevacqua, Des Plaines, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed July 16, 1975, Ser. No. 596,344
Int. Cl.² H03J *5/08*
U.S. Cl. 334—7 **8 Claims**



1. Voltage dependent type tuner comprising
a tuner frame,
treadle bar means rotatably mounted in the frame,
a plurality of pushbutton tuning means mounted in the frame for rotating the treadle bar to repeatably select predetermined frequencies
wherein the improvement comprises
variable resistance means for providing an output voltage proportional to the frequency selected by any of the pushbuttons including
a resistive element, and
a wiper contact,
the resistive element and wiper contact being movable relative to each other for varying the effective output voltage,
one of the resistive element and the wiper contact connected to the treadle bar for rotation therewith in response to pushbutton actuation.

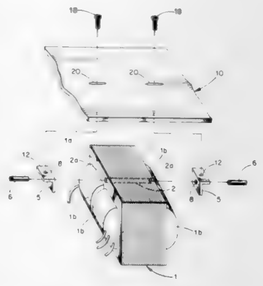
3,965,450
ELECTROMAGNETIC DEVICE HAVING A MOVABLE TUBE
Keith L. Schilling, Irvington, N.J., assignor to Heinemann Electric Company, Trenton, N.J.
Filed Feb. 6, 1975, Ser. No. 547,483
Int. Cl.² H01H *7/03, 7/14*
U.S. Cl. 335—63 **54 Claims**

1. An electromagnetic sensing device comprising a coil,
a member magnetically coupled to said coil,
an armature movable relative to said member,
a lever carried by said member and movable between first and second positions in response to movement of said armature, and
said armature being operatively connected to said lever to move said lever on sufficient energization of said coil,



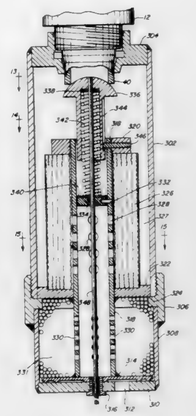
whereupon a further mechanism coupled to said lever is actuated thereby.

3,965,451
BALLAST TRANSFORMER MOUNTING ARRANGEMENT
Hendrik A. J. de Vos, Swansea, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed May 1, 1975, Ser. No. 573,434
Int. Cl.² H01F *15/02*
U.S. Cl. 336—67 **7 Claims**



1. A mounting arrangement mounting a ballast transformer to a structural support member, said ballast transformer including a core portion made up of several laminations and having an opening in said core portion with first and second entrances, said mounting arrangement comprising:
a first mounting member having a first elongated, nonthreaded mounting pin associated therewith and inserted, via the first entrance, into the opening in the core portion of the ballast transformer;
a second mounting member having a second elongated, nonthreaded mounting pin associated therewith and inserted, via the second entrance, into the opening in the core portion of the ballast transformer;
first securing means securing the first mounting member to the structural support member; and
second securing means securing the second mounting member to the structural support member.

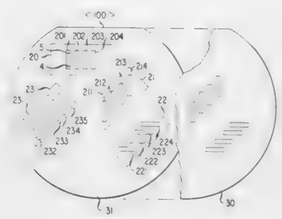
3,965,452
EXHAUST CONTROL DEVICE FOR CIRCUIT INTERRUPTING DEVICES
Leonard V. Chabala, Maywood, and Otto Meister, Arlington Heights, both of Ill., assignors to S & C Electric Company, Chicago, Ill.
Filed Apr. 1, 1975, Ser. No. 564,075
Int. Cl.² H01H *85/38*
U.S. Cl. 337—280 **23 Claims**



1. An exhaust control device for a circuit interrupter comprising:
a hollow housing having an intake means for receiving a stream of hot exhaust gases incident to the operation of the circuit interrupter;
heat sink means for cooling the hot exhaust gases positioned in said housing adjacent to said intake means in the stream of travel of the hot exhaust gases;
vortex-producing means for changing the direction of flow of the hot exhaust gases to achieve a momentum energy exchange to slow the speed of travel of the hot exhaust gases and to deposit and condense molten metal and metal vapor carried by the exhaust gases, said vortex-producing means being positioned downstream of said heat sink means;
absorbent means for further cooling the hot exhaust gases, for absorbing water vapor, for attenuating sound, and for filtering out solid debris, molten metal and metal vapor carried by the exhaust gases, said absorbent means positioned downstream of said vortex-producing means;
restricted outlet means in said housing communicating with said absorbent means for attenuating the production of sound by restricting the flow of exhaust gases from the housing into the atmosphere.

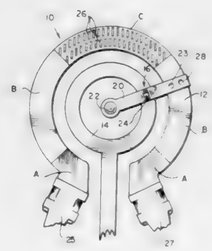
3,965,453
PIEZORESISTOR EFFECTS IN SEMICONDUCTOR RESISTORS
Thomas Edward Seidel, Berkeley Heights, and Masakazu Shoji, Warren, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 27, 1974, Ser. No. 536,847
Int. Cl.² H01C *7/00*
U.S. Cl. 338—13 **7 Claims**

1. A semiconductor integrated circuit in a semiconductor body of a first conductivity type comprising
an impurity zone of the second conductivity type in the semiconductor body for use as a resistor, and
two ohmic contacts to the impurity zone so a line between the contacts stays within the boundaries of the impurity zone and is parallel to a <100> crystallographic direction of the semiconductor body,
wherein the semiconductor is silicon, the first type conductivity is n-type and the second type conductivity is p-type,
wherein a major surface of the silicon body is the (100) plane and the two ohmic contacts are on the (100) plane,
wherein the impurity zone is generally rectangular and has a length greater than about two times the width,
said circuit further comprising a plurality of impurity zones used as resistors wherein a majority of the impurity zones have two ohmic contacts to each impurity zone so a line between the contacts stays within the boundaries of the



respective impurity zone and is parallel to a <100> crystallographic direction,
wherein all of the impurity zones used as resistors have two ohmic contacts to each impurity zone so a line between the contacts stays within the boundaries of the respective impurity zone and is parallel to a <100> crystallographic direction, and
wherein the impurity zone in the semiconductor body has a concentration of first type impurities less than the concentration of second type impurities, the ratio of concentrations being within the range of 0.1 to 0.99 and the sum of the concentrations being at least about 10^{18} impurities per cubic centimeter.

3,965,454
MEANS LOWERING CONTACT RESISTANCE IN VARIABLE RESISTANCE CONTROL
George O. Puerner, Frankfort, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Sept. 12, 1974, Ser. No. 505,508
Int. Cl.² H01C *10/32*
U.S. Cl. 338—174 **6 Claims**



1. A variable resistance control comprising:
a. an electrically insulative substrate,
b. a resistance path and a collector path carried on said substrate,
c. a movable electrical contact arm having an electrical contact engaging said collector path, and at least two electrical contacts engaging said resistance path,

d. electrical terminals electrically connected to said collector and resistance paths, and

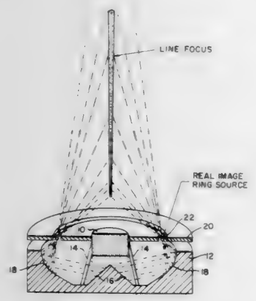
e. rows of discrete spots of a good electrically conductive material spaced along said resistance path, the number of rows being equal to the number of electrical contacts engaging said resistance path, and the spots of one row being staggered with respect to the spots of another row such that at least one of the electrical contacts engaging said resistance path will be in engagement with one of said spots as said contact arm moves along said collector and resistance paths.

3,965,455

FOCUSED ARC BEAM TRANSDUCER-REFLECTOR

Michael J. Hurwitz, Pittsburgh, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1974, Ser. No. 464,281
Int. Cl.² H04B *13/00*
U.S. Cl. 340—8 R **3 Claims**



1. An acoustic transducer-reflector for simulating a focused-arc beam comprising:

a disc-shaped transducer mounted forward of and concentrically with the transducer-reflector for radiating a beam of acoustic wave energy rearward toward the reflector;

compound reflector means attached behind said disc transducer for producing an emitted wavefront simulating that which would be radiated by a ring source to produce a line focus with great depth of field, said reflector means including a conical reflector concentrically behind said transducer for reflecting the acoustic waves radially outward, and a surface of revolution reflector, made of a truncated parabola for simulating a real-image ring source, concentric with and positioned radially outward from said conical reflector; and

an aperture stop disc with an annular slot positioned forward of and concentric with said surface of revolution reflector and in the focal plane of the real-image ring source.

3,965,456

VEHICLE SAFETY DEVICE FOR MONITORING THE OPERATION OF DIRECTIONAL SIGNAL LAMPS

Robert D. Schwellenbach, 515 E. Missouri, Pierre, S. Dak. 57501

Filed Jan. 17, 1974, Ser. No. 434,249
The portion of the term of this patent subsequent to Oct. 8, 1991, has been disclaimed.
Int. Cl.³ B60Q *1/26*
U.S. Cl. 340—79 **3 Claims**

1. In combination with a motor vehicle having a directional signal power switch connected to an electrical power supply, a vehicle safety device comprising:

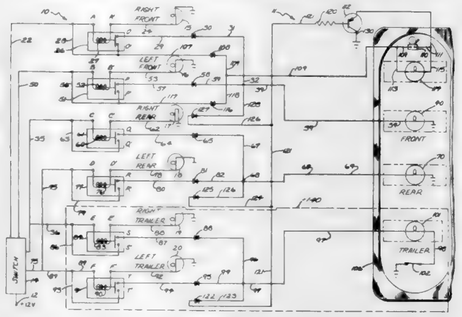
first and second pairs of directional signal lamps, each of said pairs of signal lamps including a left directional signal lamp positioned on said vehicle so as to indicate a left turn when energized, and a right directional signal lamp positioned on said vehicle so as to indicate a right turn when energized, all said directional signal lamps being electrically connected to said directional signal power switch so as to be selectively energized therefrom;

first and second directional signal monitor lights positioned on said vehicle so as to be visible to an operator of said vehicle.

first, second, third and fourth current detection apparatuses, each said detection apparatus including a switch electrically connected to said power switch, each said apparatus in response to detection of current through the apparatus closing its said switch and in the absence of detection of current through the apparatus opening its said width;

said first, second, third and fourth detection apparatuses being operatively electrically connected with said left directional signal lamp of said first pair of lamps, said right directional signal lamp of said first pair of lamps, said left directional signal lamp of said second pair of lamps, and said right directional signal lamp of said second pair of signal lamps, respectively, to detect current flowing to the signal lamp to which electrically connected;

a first pair of monitor diodes having one of its said diodes operatively electrically connected to said switch of said first detection apparatus and having its remaining monitor diode operatively electrically connected to said switch of said second detection apparatus, said first pair of monitor diodes being operatively electrically connected to said



first monitor light to permit current flow toward said monitor light from said first and second detection apparatuses and to block current flow from said monitor light toward said first and second detection apparatuses to thereby light said first monitor light when a directional signal lamp of said first pair of directional signal lamps is lighted to specifically indicate operation of the lighted directional signal lamp, and in the event of failure of a said directional signal lamp of said first pair of signal lamps to light when energized, said first monitor light being unenergized and thereby specifically identifying the failed directional signal lamp of said first pair; and

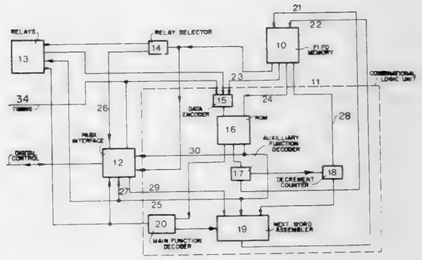
a second pair of monitor diodes having one of its said diodes operatively electrically connected to said switch of said third detection apparatus and having its remaining monitor diode operatively electrically connected to said switch of said fourth detection apparatus, said second pair of monitor diodes being operatively electrically connected to said second monitor light to permit current flow toward said monitor light from said third and fourth detection apparatuses and to block current flow from said monitor light toward said third and fourth detection apparatuses to thereby light said second monitor light when a directional signal lamp of said second pair of directional signal lamps is lighted to specifically indicate operation of the lighted directional signal lamp, and in the event of failure of a said directional signal lamp of said second pair of signal lamps to light when energized, said second monitor light being unenergized and thereby specifically identifying the failed directional signal lamp of said second pair.

3,965,457

DIGITAL CONTROL PROCESSOR

Keith Harwood, Brunswick, Australia, assignor to L.M. Ericsson Pty. Ltd., Australia

Filed Nov. 13, 1973, Ser. No. 415,423
Claims priority, application Australia, Nov. 13, 1972, 1198/72
Int. Cl.² G06F *15/46*; **G05B** *15/02, 19/02*
U.S. Cl. 340—172.5 **4 Claims**



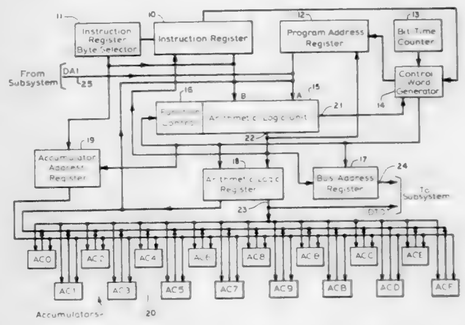
1. A digital control processor for controlling the operation of a plurality of external relay units comprising a first-in first-out memory for storing a plurality of memory words, each of said memory words comprising at least two fields, one of said fields containing the address information of one of the plurality of external relay units, the other of said fields containing process control information, decoding means for decoding said field containing said address information of said external relay unit, said decoded field providing an address of one of a plurality of said external units, means for transmitting said address to said external unit, a combinational logic unit, means for transmitting information from the addressed external unit relevant to its state of operation to said combinational logic unit, said combinational logic unit accepting said information from the addressed external unit and from said memory the other of said fields of said memory word for producing process control signals, means in said combinational logic unit receiving said process control signals for generating state control signals for the addressed external unit, means in said combinational logic unit receiving said process control signals for selectively generating memory words, said memory words comprising at least two fields one of said fields containing the address information of an external relay unit, the other of said fields containing process control information, means for transmitting said state control signals to said addressed external relay unit to cause said addressed external relay unit to change its state, and means for transmitting said generated memory word to said first-in first-out memory, the generated state control and memory signals by the means in the combinational logic unit at any instant of time being determined solely by the input thereto independently of any prior inputs thereby rendering the signals generated completely independent of previously generated signals.

3,965,458

CENTRAL PROCESSOR FOR A TELEPHONE EXCHANGE

Robert A. Borbas; John P. Dufton, both of Brockville; James H. Foster, Smithsfalls, and Jeffrey W. Siegel, Brockville, all of Canada, assignors to GTE Automatic Electric (Canada) Limited, Brockville, Canada

Filed Sept. 27, 1974, Ser. No. 510,092
Int. Cl.² H04Q *3/54*; **G06F** *9/06*
U.S. Cl. 340—172.5 **21 Claims**



1. A central processor for controlling the operation of subsystems which are interconnected on a common data bus of a telephone exchange to establish requested service between telephone subscribers, wherein the exchange includes a program memory also connected to the common data bus and containing a plurality of addressable multiple bit operational codes to be utilized by the central processor, said central processor comprising:

a program address register including means for providing and storing the address in the program memory which contains an operational code to be utilized by the central processor;

an arithmetic logic unit having an input coupled to said program address register for receiving the program memory address from said program address register, said arithmetic logic unit additionally having an output;

a bus address register having an input coupled to said arithmetic logic unit output and having an output coupled to the common data bus for receiving the program memory address from said arithmetic logic unit and for addressing the program memory at the program memory address over the common data bus to cause the program memory to transmit the operational code over the common data bus;

an instruction register having an input and an output for storing the operational code and for providing subsystem address signals responsive to the operational code;

said arithmetic logic unit input also being coupled to said common data bus for receiving the operational code and said arithmetic logic unit output being coupled to said instruction register input for transferring the operational code to said instruction register, said arithmetic logic unit also having another input coupled to said instruction register output for receiving said subsystem address signals therefrom and for transferring said subsystem address signals at said arithmetic logic unit output to said bus address register for causing said bus address register to address the subsystems corresponding to said subsystem address signals for obtaining subsystem data therefrom, and said arithmetic logic unit also including means for performing logic and arithmetic functions responsive to function control signals to provide subsystem data and control signals;

a bit time counter for providing sequential operational timing signals; and

a control word generator coupled to said instruction register for providing said function control signals responsive to

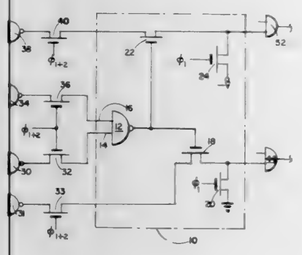
the operational code stored in said instruction register and coupled to said bit time counter for coacting therewith to provide said function control signals in proper time sequence.

3,965,459

SELECTABLE EIGHT OR TWELVE DIGIT INTEGRATED CIRCUIT CALCULATOR AND CONDITIONAL GATE OUTPUT SIGNAL MODIFICATION CIRCUIT THEREFOR

John R. Spencer, Villa Park, and Bruce W. Kinney, Jr., Anaheim, both of Calif., assignors to Rockwell International, El Segundo, Calif.

Filed Apr. 1, 1974, Ser. No. 456,997
Int. Cl.² G11C *13/00*
U.S. Cl. 340—173 R **6 Claims**



1. A random access memory system having memory registers of selectable length comprising:

a matrix of random access memory cells arranged in 2^k rows of 3×2^n memory cells each, where n is zero or a positive integer and k is a positive integer;

row and column address decoding means for decoding address signals to access the proper memory cells;

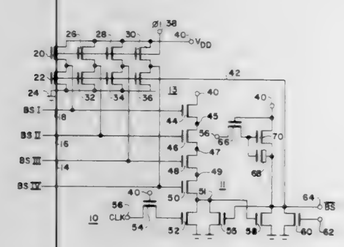
address modification means for controlling the register configuration of the memory by modifying addresses supplied to the memory system prior to their application to the row and column decoders.

3,965,460

MOS SPEED-UP CIRCUIT

Bruce J. Barbara, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed Jan. 2, 1975, Ser. No. 537,992
Int. Cl.² G11C *7/00, 11/24*
U.S. Cl. 340—173 R **15 Claims**



1. A speed-up circuit comprising first circuit means coupled, respectively, to a plurality of inputs for sensing a beginning of a voltage transition on one of said inputs and generating a feedback signal, each of said inputs being electrically isolated from the others of said inputs; and

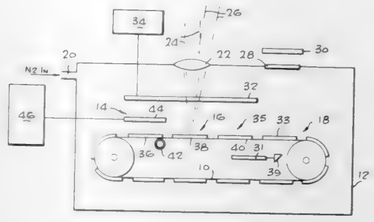
second circuit means said first circuit means responsive to said feedback signal coupled to said plurality of inputs for speeding up a remaining portion of said transition.

3,965,461

THERMOPLASTIC IMAGE RECORDING SYSTEM

John E. Wreede, Monrovia; Terence C. Stoddard, West Covina, and Kenneth R. Erikson, Orange County, all of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Apr. 30, 1975, Ser. No. 573,135
Int. Cl.² G11C *11/46, 7/00*
U.S. Cl. 340—173 TP **13 Claims**



1. A method for utilizing a thermoplastic recording medium comprising the steps of:

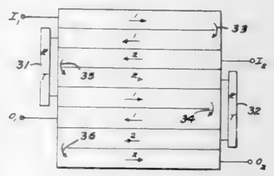
1. heating the medium to a temperature sufficient to erase a previous image;
2. exposing the medium while cooling from step (1) to record a new image;
3. cooling the medium.

3,965,462

SERPENTINE CHARGE-COUPLED-DEVICE MEMORY CIRCUIT

Ronald A. Belt, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 9, 1975, Ser. No. 576,059
Int. Cl.² G11C *11/40, 13/00*
U.S. Cl. 340—173 R **2 Claims**



1. A serpentine charge-coupled-device memory apparatus comprising:

a. a first array comprising a plurality of an even number of CCD linear shift registers;

b. a second array comprising a plurality of an even number of CCD linear shift registers interleaved with the said first plurality of shift registers in a two-by-two relationship;

c. a turn-around circuit coupling each adjacent shift register of the same array; and

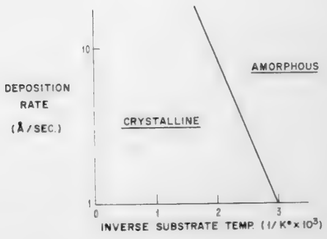
d. a refresh-turn circuit coupling shift registers of the same array having interleaved registers of the other array.

3,965,463

APPARATUS USING AMORPHOUS MAGNETIC COMPOSITIONS

Praveen Chaudhari, Briarcliff Manor; Jerome J. Cuomo, Bronx, and Richard J. Gambino, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 284,513, Aug. 29, 1972, abandoned. This application May 27, 1975, Ser. No. 581,078
Int. Cl.² G11C *11/14*
U.S. Cl. 340—174 TF **63 Claims**



1. A magnetic domain system comprising:

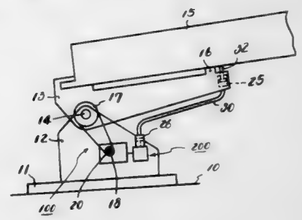
a magnetic medium in which said domains exist, said medium being an amorphous magnetic material without long range atomic ordering having long range magnetic ordering and a magnetic uniaxial anisotropy which is not due to long range crystalline structure, and means for sensing said domains in said amorphous magnetic medium.

3,965,464

DEVICE FOR AUTOMATICALLY DETECTING OVERLOAD ON AERIAL LADDER TRUCK

Tetsuo Kozai, Osaka, Japan, assignor to Morita Pump Kabushiki Kaisha, Osaka, Japan

Filed Nov. 21, 1974, Ser. No. 525,930
Int. Cl.² G08B *19/00*
U.S. Cl. 340—267 C **4 Claims**



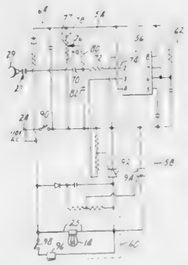
1. In an aerial ladder truck assembly having a truck body, a turntable unit mounted on the truck body, ladder support block means mounted on the turntable unit, horizontal shaft means mounted on the support block means, ladder support frame means mounted on the horizontal shaft means of the ladder support block means for vertically swinging relation therearound, ladder means mounted at one end to the ladder support means and stop means for the ladder means, the improvement of safety means for automatically detecting a weight overload on the ladder means at any given angle comprising ladder vertical angle detecting means mounted on the ladder support block means, said ladder angle detection means including disk means having a plurality of contacts denoting successive angle positions mounted thereon and angle position pointer means pivotally mounted for movement relative to said disk means from angle contact to angle contact, said movement being actuated by movement of the ladder means to correspond to the actual angle position of the ladder means, ladder load detecting means to denote the weight load on said ladder means, said load detecting means including load detecting fluid operated cylinder means actuatable by a load placed on the stop means of the ladder means, disk means containing a plurality of load indicating contacts positioned therearound, each of said load indicating contacts denoting a specific weight per square centimeter load value, a load pointer mounted for movement relative to said disk means from load contact to load contact, said pointer movement actuated by pressure from the fluid operated cylinder means to indicate the load placed on the ladder means, said angle indicating contacts and said load indicating contacts being electrically connected to one another, and an electrically actuated warning device electrically connected to said angle indicating contacts and said load indicating contacts whereby when a weight load placed on the ladder means exceeds the predeterminted weight limit loads for the respective vertical angles, a warning signal will be given.

3,965,465

SELF TIMING SWITCH

Jerry L. Alexander, St. Paul Park, Minn. 55071

Filed May 16, 1974, Ser. No. 470,537
Int. Cl.² G08B *13/26;* **E05B** *17/10*
U.S. Cl. 340—274 R **10 Claims**



1. An electrical switch device for controllably energizing load comprising:

timing means adapted for being switched from a stable state to a quasi-stable state in response to a negative activation signal and for providing an output signal when in said quasi-stable state;

a dwell-time-constant network coupled to said timing means for controlling the time during which said timing means remains in said quasi-stable state;

slave switching means coupled to receive said output signal for controlling the application of electrical power to a said load;

a manually operable sensitivity adjust network coupled to said timing means and comprising means for selectively controlling the intensity of a said activation signal needed to switch said timing means and means for providing a negative activation signal for said timing means to continuously activate said timing means, said sensitivity adjust network including a control comprising:

a support having a surface extending between a first terminal connected to a source of positive voltage, and a second terminal coupled to a source of negative voltage, said surface comprising a non-conductive surface portion proximate said second terminal, and a resistive surface portion between said first terminal and said non-conductive surface portion; and

a contact coupled to provide at least a portion of a said activation signal and being manually movable along said surface between said terminals so that when said contact is on said second terminal a negative activation signal is provided to cause said timing means to remain in said quasi-stable state, and when said movable contact is contacting said resistive portion a positive bias is pro-

vided to ensure that only an activation signal of a predetermined negative value will switch said timing means to said quasi-stable state; and

power supply means energized by said electrical power for energizing said timing means, said sensitivity adjust network and said dwell-time-constant network.

3,965,466

DIGITAL DISPLAY

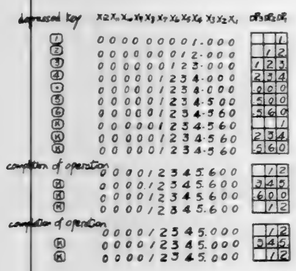
Atsushi Asada; Hideo Yoshida, both of Nara, and Akihiko Kunigane, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 23, 1974, Ser. No. 463,266

Claims priority, application Japan, Apr. 23, 1973, 48-45926; May 18, 1973, 48-56637

Int. Cl.² G08B *5/36*

U.S. Cl. 340—336 **10 Claims**



1. A digital display system controlled in a dynamic fashion in an electronic calculator comprising:

display means having N digits capacity, said display means including N display units, each of said units comprising a common electrode and a plurality of segment electrodes;

a first register means for storing the numeral information to be displayed, the digit capacity of the first register means being M times the N digits of the display units, wherein M is an integer greater than or equal to 3; a first buffer register means for storing digit information transmitted digit by digit from the first register means, the content of the first buffer register being supplied through a decoder to the segment electrodes of the display units;

a counter means for generating time division signals appearing during one word period once every N words, each of the signals being supplied to the common electrode of the display units;

conditional flip-flops for selecting a display block in the first register means consisting of M blocks each of which includes N digits and generating a block signal;

shifting means for sequentially shifting a condition of the conditional flip-flops to change the display block;

a matrix circuit receiving the time division signal, the block signal and digit time signals and generating a gate control signal; and

gate means connected between the first register means and the first buffer means for controlling the output signals of the first register means by the gate control signal whereby one word of the digit numeral information contained in the display block of the first register means is transmitted selectively to the first buffer register means.

3,965,467

ANALOG-TO-DIGITAL CONVERTERS

Raymond Frederick Monger, Red Gables, Ruston Park, Rustington, Sussex, England

Filed Aug. 12, 1974, Ser. No. 497,120

Int. Cl.² H03K *13/02*

U.S. Cl. 340—347 NT **9 Claims**

1. A bipolar analog-to-digital converter comprising a comparator having first and second inputs and an output, first and second switches for alternately connecting first and second signal levels to said first input, said first level comprising an input signal to be converted and said second signal level comprising a reference level, a storage device connected between said second input and said reference level, current generator means for delivering either a positive or negative current to said second input, depending upon input signal polarity, during a counting period while said first switch is connecting said first level to said first input to charge the storage device until a change of state occurs at the output of the comparator, selector means for determining the polarity of the current from said generator means depending upon the state of the output from the comparator, a counting pulse generator, counter means for determining the number of counting pulses emitted from the pulse generator during said counting period in which the current generator means is applied to the comparator before said change of state occurs; and a clocking generator operative to generate control signals controlling periods of operation of said converter and including generator means operative for generating a stop signal each time the comparator changes state, said periods including a first period during which said control signals actuate said switches to apply said first input level to said first input of said comparator while the comparator settles, a second counting period initiated by said clocking generator during which said control signals initiate delivery of pulses to said counter means and actuate said current generator means to apply current of selected polarity to said storage device and to said second input of the comparator until its output changes state, a third period initiated by the latter change of state during which said control signals disable said current generator means reverse said switches to substitute said second reference level for said first input level and cease the delivery of pulses to said counter means, and a fourth period initiated by said clocking generator during which said control signals actuate current generator means to apply a current of reversed polarity to said storage device and to said second input to the comparator until its output again changes state and actuates the generator means to deliver a stop signal for initiating a succeeding first period.

3,965,468

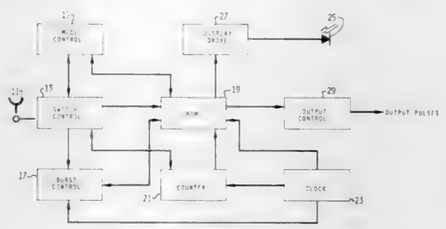
LOGIC PULSER

Barry Steven Bronson, Campbell, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 17, 1975, Ser. No. 541,806

Int. Cl.² G08C *1/00*

U.S. Cl. 340—349 **6 Claims**



1. A logic pulser for generating electronic pulses to induce changes of state in digital logic circuitry under test, said pulser comprising:

means for generating pulses in a plurality of operating modes comprising (1) single pulses, (2) continuous streams of pulses, and (3) recurring pulse bursts containing a predetermined number of pulses; and

coding means for serially encoding mode selection commands to select among said plurality of operating modes.

3,965,469

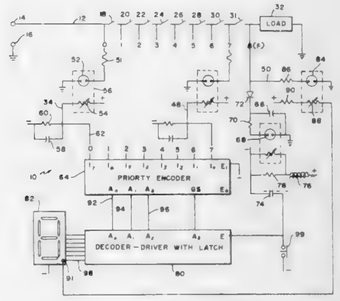
ANNUNCIATOR STRUCTURE AND METHOD

Thomas J. Ryan, Olmstead Falls, Ohio, assignor to The North American Manufacturing Company, Cleveland, Ohio

Filed July 30, 1974, Ser. No. 493,038

Int. Cl.² G08C *1/00*

U.S. Cl. 340—415 **5 Claims**



1. Annunciator structure for monitoring a series circuit including a plurality of series connected switches and having a terminal between each switch and for providing a visual indication of which of the switches first opened after the circuit has initially been completed, comprising a separate sensing circuit associated with each of the swithces connected between a separate one of said terminals and a common potential operable to provide a predetermined logic signal output pattern in response to a predetermined pattern of closure of the switches, encoding means for converting the predetermined pattern into a coded signal representative of a designation of the first of the switches to open, and means for decoding the signal and for providing a display indicating which of the switches opened first including delay storage means for latching said decoding means to provide an indication of a particular switch being first to open and to prevent opening of subsequent switches from affecting the display.

3,965,470

PULSE ANALYZER FOR AN RF MOVING TARGET DETECTOR

Glenn G. Clinard, Upland; Kenneth C. Guth, Pomona; Gail R. Mulhollam, Upland, all of Calif., and Frank J. Volk, Hickory Hills, Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 13, 1972, Ser. No. 314,645

Int. Cl.² G01S *9/02*

U.S. Cl. 343—5 PD **2 Claims**

1. In an RF target detector based on varying impedance, an apparatus for detecting the closest point of approach and the occurrence of the minimum detectable range when fed by read pulses indicative of thresholds of impedance and threshold count pulses indicative of the rate of changing impedance values, comprising:

a. a first counter fed by the threshold count pulses;

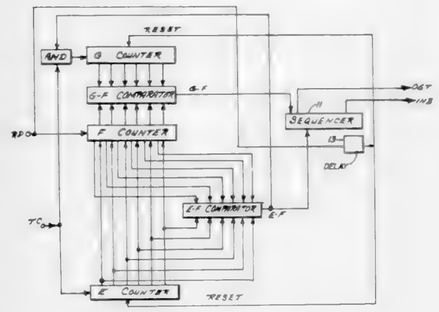
b. a second counter fed by the value in the first counter upon receipt of a read pulse;

c. a first means for comparing the counts in the first and second counters and generating a pulse when the count of the first counter exceeds that of the second counter;

d. a delay circuit fed by the read pulses and generating a delayed reset pulse resetting the first counter;

e. a sequencer fed by the first comparing means and in the absence of pulses therefrom generating a signal indicative of the outward bound motion of the target;

f. an AND gate fed by the threshold count pulses and the first comparing means;



g. a third counter fed by the AND gate and the reset pulses of the delay circuit; and

h. a second means for comparing the counts in the second and third counters and generating a pulse upon the equality of the counts therefrom and feeding the sequencer.

3,965,471

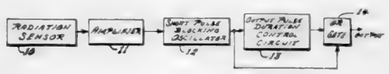
RADIATION DETECTION SYSTEM

Floyd A. Haeuszer, Cannon Falls, Minn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 13, 1969, Ser. No. 851,151

Int. Cl.³ G01S *7/36*

U.S. Cl. 343—18 E **2 Claims**



1. A radiation detection system comprising radiation sensor means adapted to generate trigger signals in response to radiation transients that exceed a discrete threshold level, a blocking oscillator connected thereto adapted to generate a pulse in response to each said trigger signal, and OR gate, and an output pulse duration control circuit adapted to generate an OR gate actuating signal of given duration in response to each said blocking oscillator pulse, said blocking oscillator being connected to deliver simultaneously pulses generated thereby to a first OR gate input and to said output pulse duration control circuit, said output pulse duration control circuit being connected to a second OR gate input.

3,965,472

OFF-RESONANT CHAFF SYSTEM FOR A LARGE TARGET VIEWED BY LOW FREQUENCY RADAR

James Nickolas Constant, 1603 Danbury Drive, Claremont, Calif. 91711

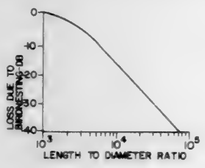
Continuation of Ser. No. 304,546, Nov. 7, 1972, abandoned, which is a continuation of Ser. No. 69,185, Sept. 2, 1970, abandoned. This application Apr. 10, 1974, Ser. No. 459,542

Int. Cl.² H04K *3/00*

U.S. Cl. 343—18 E **4 Claims**

1. A method for masking large targets viewed by radar operating at VHF or lower frequency comprising

dropping a plurality of separable electric conductors of a length forming dipoles resonating at a frequency substantially above the frequency of the radar, and



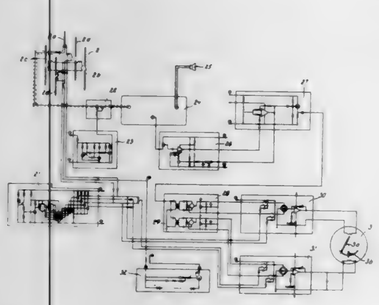
having a length-to-diameter ratio not substantially more than 3000 providing substantially rigid conductors, and having a diameter not substantially less than one thousandth of an inch providing low ohmic losses.

3,965,473

DIRECTION FINDERS

Anders Edvin Isacson, Rotnasvagen 58, 141 42 Huddinge, Sweden

Filed Aug. 28, 1974, Ser. No. 501,342
Int. Cl.² G01S 5/04
U.S. Cl. 343—122 **2 Claims**



1. A direction finder comprising in combination:

a. An antenna system including one central antenna (**2***a*) capable of receiving signals from an area equivalent to a circular antenna diagram and four secondary radiators or parasite antennae, said central antenna (**2***a*) in combination with two parasite antennae (**2***b*) and (**2***c*) being capable of receiving signals from an area equivalent to a right-hand lobe antenna diagram system, or said central antenna (**2***a*) in combination with the other two parasite antennae (**2***d*) and (**2***e*) being capable of receiving signals from an area equivalent to a left-hand lobe antenna diagram or system, and means (**24**) for receiving signals received by the central antenna itself and signals received either by the left-hand or the right-hand lobe diagram or system in different time slots;

b. a control pulse generator (**21**) for generating output pulses and means connecting said pulse generator to said antenna system to activate the antennae in the following coupling sequences:

i. one pair of parasite antennae and the central antenna,

ii. central antenna alone,

iii. the other pair of parasite antennae and the central antenna,

iv. central antenna alone;

c. said signal receiving means (**24**) being connected to said antenna system for receiving a signal during each coupling sequence, a low frequency rectifier means (**28**) having an input connected to said signal receiving means (**24**) to receive such signals from said receiving means and an output, a first comparison means (**30**) for responding to the received signal during coupling sequence (i) and (iii);

e. a second indicator means (**3***b*) connected to second comparison means (**31**) for responding when the signal received during coupling sequence (ii) or (iv) exceeds the signal received during coupling sequence (i) or (iii);

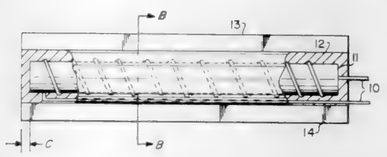
said control pulse generator (**21**) being adapted to generate output pulses to activate said first (**30**) and second (**31**) comparison means during each coupling sequence (i) to (iv) and said antenna system being so designed that said right-hand lobe antenna diagram partly overlaps said left-hand lobe antenna diagram so that the maximum common signal intensity received from each of said diagrams in one and the same direction exceeds the corresponding signal intensity received by the main antenna (**2***a*) from the circular antenna diagram alone in said same direction.

3,965,474

ANTENNA FOR RECEIVING VLF/LF TRANSMISSION IN SEAWATER

David L. Guerrino, Woodbridge, Va., and Richard W. Cole, Jr., Waldorf, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 26, 1975, Ser. No. 617,229
Int. Cl.² H01Q 1/04
U.S. Cl. 343—719 **10 Claims**



1. An apparatus for providing improved reception of very low frequency and low frequency transmissions in seawater comprising:

a loop antenna;

a non-conductive housing enclosing said loop antenna; and

projection means attached to said housing for reducing circulating conduction currents about said antenna.

3,965,475

SWITCHABLE BEAMWIDTH MONOPULSE METHOD AND SYSTEM

Leonard F. Deerkoski, Crofton, and Richard F. Schmidt, Seabrook, both of Md., assignors to The United States of America as represented by the United States Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 30, 1975, Ser. No. 582,318
Int. Cl.² H01Q 3/26
U.S. Cl. 343—854 **9 Claims**

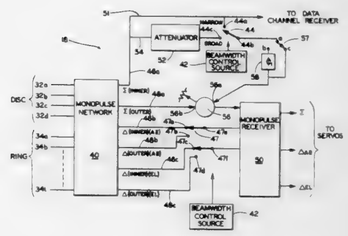
1. A switchable beamwidth monopulse antenna having selectively a wide beamwidth mode and a narrow beamwidth mode responsive to a beamwidth selection command source, the antenna including a curved reflector having a boresight axis with a focal region of the reflector lying on said axis, there being associated with the antenna an Airy disc lying in the focal region, said Airy disc surrounded by an Airy ring, comprising:

a first set of monopulse feeds located in an effective region of said Airy disc of said antenna;

a second set of monopulse feeds located outside said Airy disc in the region of said Airy ring;

first switching means for causing said antenna to operate in the narrow beamwidth mode including means connected to said first set of feeds for developing first sum and difference channel signals;

second switching means for causing said antenna to operate in the wide beamwidth mode including means connected to said second set of feeds for developing second sum and difference channel signals, means for attenuating and



phase shifting said first sum channel signal, and means for adding together said second sum channel signal and the output of said attenuating means;

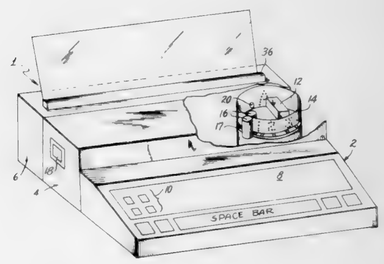
said first and second switching means controlled by said beamwidth selector command source.

3,965,476

LASER PRINTING METHOD AND SYSTEM

Per E. Wenander, Schweiz, and Carl E. Lundquist, Lucerne, both of Switzerland, assignors to Per E. Wenander, Meggen, Switzerland

Filed July 5, 1974, Ser. No. 486,167
Int. Cl.² B41B 17/10; G06K 15/02
U.S. Cl. 346—1 **28 Claims**



1. A method of recording on a receiving medium comprising the steps of:

a. directing a first radiant energy beam through an aperture mask thereby providing a first aperture-shaped beam,

b. displaying said first aperture-shaped beam by moving an optical element in a first direction,

c. storing data signals corresponding to said displayed first aperture-shaped beam,

d. subsequent to said displaying and storing steps directing a second radiant energy beam through said aperture mask for providing a second aperture-shaped beam corresponding to said stored data signals, and

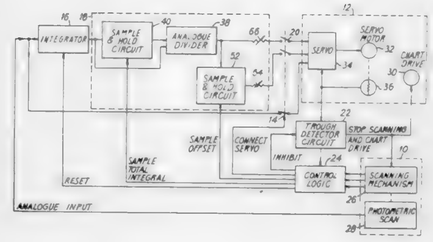
e. marking a surface of said receiving medium with said second aperture-shaped beam by moving said optical element in a second, opposite direction.

3,965,477

AUTOMATIC GRAPHING APPARATUS

James Hambleton; Peter Frank Davies; Philip Edward Harley, and Gianfranco Corsi, all of 8, Princesway, Team Valley, Durham, England

Filed Apr. 4, 1974, Ser. No. 457,848
Claims priority, application United Kingdom, Apr. 9, 1973, 16836/73
Int. Cl.² G01D 1/04
U.S. Cl. 346—33 A **7 Claims**



1. Apparatus for producing a graph of a function represented by a varying analogue input signal, comprising:

display means for tracing out in a graphing operation the graph of said function as said input signal is supplied to the apparatus;

calculating means including an integrator for providing an output proportional to the time integral of said input signal as it is supplied to the apparatus;

input means for supplying said input signal simultaneously to the display means and calculating means;

said input means including first switch means between said input means and said display means;

second switch means through which said calculating means is connected to said display means to selectively supply the said output thereto;

a trough detector circuit;

means for supplying to the trough detector circuit a signal derived from said input signal;

the trough detector circuit detecting the occurrence of a minimum point in the input signal and supplying a control signal at each such occurrence;

control means connected to the display means, trough detector circuit and said first and second switch means, the control means, in response to a control signal from the trough detector, acting to actuate said first and second switch means to disconnect the input signal from the display means, and to connect the calculating means to the display means, thereby to interrupt the graphing operation and cause the display means to display a value indicative of said output of the calculating means, and thereafter to cause the display means to resume the graphing operation, whereby the display means displays both the graph of said function and values indicative of the time integral of said function between successive interruptions of the graphing operation.

3,965,478

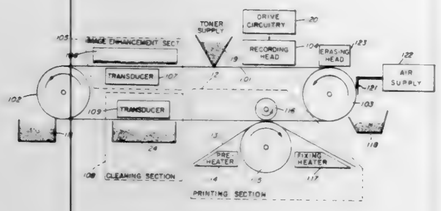
MULTICOLOR MAGNETOGRAPHIC PRINTING SYSTEM

Ernst F. R. A. Schloemann, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 372,142, June 22, 1973, abandoned. This application Dec. 9, 1974, Ser. No. 530,627
Int. Cl.² G01D 15/12, 15/20
U.S. Cl. 346—74.1 **30 Claims**

1. A color magnetographic printing system comprising in combination:

means for magnetizing a magnetizable surface with a plurality of recording wavelengths; and



a plurality of toner types, particles of each of said toner types adhering maximally to areas of said surface magnetized at a predetermined wavelength, each of said toner types corresponding to a predetermined color.

3,965,479

MULTI-STYLUS PRINTING HEAD

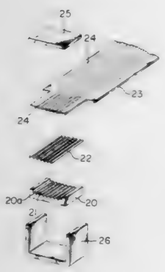
Naraji Sakamoto, Toyonaka; Tatsuo Mitsui, Hirakata, and Toshio Hayakawa, Katano, all of Japan, assignors to Matsieshita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 16, 1975, Ser. No. 613,899

Claims priority, application Japan, Sept. 20, 1974, 49-109090

Int. Cl.² G01D *15/06*

U.S. Cl. 346—139 C **3 Claims**



1. A multi-stylus printing head cell comprising

a. a base made of an insulating material with a shallow recess formed lengthwise in one of the major surfaces thereof, a plurality of parallel grooves being formed in the bottom of said recess,

b. a plurality of electrodes or styli placed in said grooves, respectively, and bonded with an adhesive,

c. a flat flexible cable consisting of an insulator and a plurality of conductors in the form of a foil, the leading end portions of said conductors being exposed from the insulator and overlaid upon said styli so as to attain the electrical connection with said styli, respectively,

d. a retaining plate placed upon said leading end portions of said conductors overlaid upon said styli, and

e. a U-shaped holder adapted to hold said base, said styli and said flat flexible cable with the side walls or legs of said U-shaped holder folded inwardly over said retaining plate whereby said base, said styli and said flat flexible cable may be securely held in position.

3,965,480

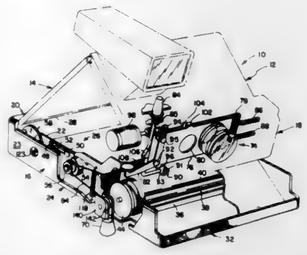
MANUALLY OPERATED PHOTOGRAPHIC PROCESSING SYSTEM

Vaito K. Eloranta, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 23, 1974, Ser. No. 535,377

Int. Cl.² G03B *17/50*

U.S. Cl. 354—83 **16 Claims**



1. In a photographic apparatus for effecting exposure and processing of at least one self-processable film unit, said apparatus including a housing having means for supporting the film unit in an exposure position, film transport and processing means, and film advance means for moving the film unit out of the exposure position and into engagement with the film transport and processing means, an improvement comprising:

an actuatable drive means for supplying energy to power said film advance means and said film transport and processing means; and

means for selectively transferring motion of said actuatable drive means to effectuate in consecutive sequence the energization of first said film advance means to advance the film unit out of said exposure position and into engagement with said film transport and processing means and then said film transport and processing means to continue the advancement of the film unit while simultaneously spreading a processing fluid across a photosensitive layer of the film unit such that said film transport and processing means is not energized until the film unit is engaged therewith.

3,965,481

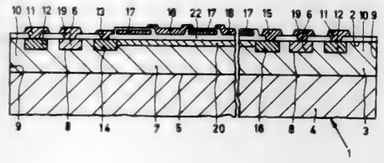
CHARGE TRANSFER DEVICE WITH J FET ISOLATION AND MEANS TO DRAIN STRAY CHARGE

Leonard Jan Maria Esser, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 22, 1974, Ser. No. 526,174

Int. Cl.² H01L *27/04, 29/64, 29/80*

U.S. Cl. 357—24 **10 Claims**



1. A semiconductor device having a semiconductor body and comprising a surface layer of one conductivity type which adjoins a surface of the body, is provided on a support and is separated from said support by a junction destined for electric insulation, in which at least one component is present in the surface layer in behalf of which the surface layer comprises island-insulating means in the form of an electrode pattern which is present at the surface and which surrounds at least an island-shaped part of the surface layer comprising the component and which is separated from the surface layer by a barrier junction, in which by means of the electrode pattern electric fields can be induced in the surface layer by means of which fields a depletion region is formed below the electrode pattern and extends throughout the thickness of the surface layer, a part of the surface layer which is present at the edge of the surface and outside the pattern and which adjoins the part of the surface layer which can be influenced with the pattern and in which the depletion region can be formed, having an electric connection for draining leakage currents.

3,965,482

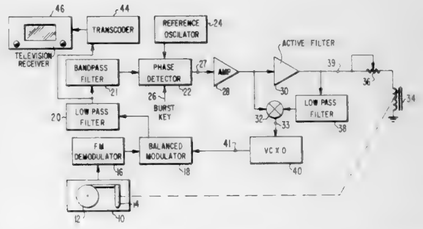
VELOCITY CORRECTION CIRCUIT FOR VIDEO DISCS

Thomas William Burrus, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 12, 1974, Ser. No. 522,816

Int. Cl.² H04N *5/76, 5/80*

U.S. Cl. 358—8 **5 Claims**



4. In a video disc player in which a signal pickup stylus cooperates with a signal information storing groove of a disc subject to rotation at a given rotational frequency to recover recorded composite video signals including luminance, chrominance and color synchronization signal components, and wherein said recovered signal components are undesirably subject to frequency errors as a consequence of deviations from a desired velocity of relative motion between said disc groove and said pickup stylus, correction apparatus comprising:

means coupled to said stylus for developing composite video signals representative of information stored in said video disc groove;

a voltage controlled oscillator providing oscillations of a controllable frequency;

heterodyning means responsive to said oscillations and said developed signals for frequency translating said developed signals;

a reference oscillator;

an arm stretcher transducer coupled to said stylus for imparting motion to said stylus along said groove in response to signals applied thereto;

means for phase comparing signals from said reference oscillator with a color synchronization component of said frequency translated signals to develop error signals indicative of departures from frequency correspondence therebetween;

means, having a first frequency response characteristic, for supplying said error signals from said phase comparing means to said voltage controlled oscillator to establish a first component frequency error correction loop; and

means, coupled to said phase comparing means and having a second frequency response characteristic, for supplying said error signals to said arm stretcher transducer to establish a second component frequency error correction loop;

said first frequency response characteristic differing from said second frequency response characteristic in such manner that correction of frequency errors which recur at said rotational frequency is predominately effected by said second correction loop to the substantial exclusion of said first correction loop, whereas said first correction loop provides significant correction of errors which recur at frequencies in a narrow range below said rotational frequency.

3,965,483

TAPE RECORDING APPARATUS FOR EDITING RECORDING

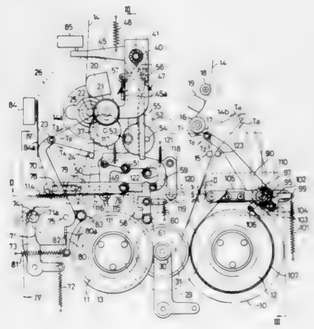
Hiroshi Katoh, Yokohama, and Mitsuo Fujita, Tokyo, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 15, 1975, Ser. No. 568,255

Claims priority, application Japan, Apr. 15, 1974, 49-40892; Feb. 21, 1975, 50-20830; Feb. 21, 1975, 50-20831; Feb. 21, 1975, 50-20832

Int. Cl.² G11B *27/02, 15/20;* **H04N** *5/78*

U.S. Cl. 360—14 **8 Claims**



1. A tape recording apparatus comprising:

means for transporting a recording tape from a first tape roll over a specific tape travel path to be taken up on a seocnd tape roll;

recodng and reproducing means disposed in a specific position along said tape travel path for recording signals on and reproducing signals from said tape;

means for varying the length of tape in a first part of the tape travel path extending from said recording and reproducing means to said second tape roll, said variation being between a maximum and a minimum tape length;

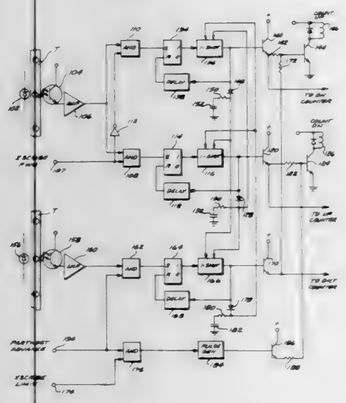
control mans for controlling said tape length varying means in a manner such that the length of said tape in said first part becomes a maximum during ordinary recording, a minimum during a pause mode preceding an editing recording, and the maximum during said editing;

reversing means for reversing the length of tape to be equal to the difference between said maximum and minimum lengths during said pause, said reversing means acting on a second part of the tape travel path extending from said first tape roll to said recording and reproducing means;

driving means operating during said ordinary recording to drive said tape paid out from said first tape roll and operating during said editing after said pause to drive tape in the second part of the tape travel path, which said second part includes both the tape which was reversed by said reversing means and the tape from said first tape roll contiguous thereto; and

detecting means operating during said editing recording to detect the operational condition wherein the tape portion reversed by said reversing means is driven in traveling motion, and said tape length varying means has assumed substantially a maximum tape length and means responsive to said detecting means for causing edit recording to start.

3,965,484
CENTRAL DICTATION SYSTEM
Bjorn J. Matz, Forest Hills, N.Y., and Paul F. Rivers, Old Saybrook, Conn., assignors to Dictaphone Corporation, Rye, N.Y.
Filed Jan. 2, 1975, Ser. No. 537,924
Int. Cl.² G11B 27/16
U.S. Cl. 360—61 12 Claims



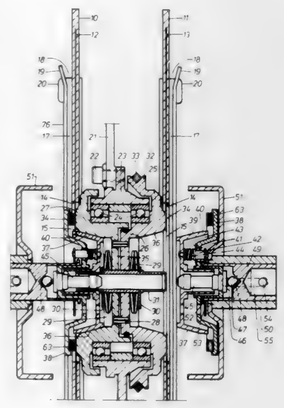
1. In recording/reproducing apparatus having a dictation site whereat audio signals are recorded on a movable record medium, and a transcription site whereat audio signals are reproduced from said record medium, apparatus for providing an indication of the cumulative amount of recorded audio signals awaiting transcription, comprising:

first means for producing first output signals representing the quantity of record medium advanced past said dictation site;

second means for producing second output signals representing the quantity of record medium advanced past said transcription site; and

indicating means responsive to said first and second output signals and including output voltage generating means for generating an output voltage representing the net difference between the quantity of record medium advanced past said dictation site and the quantity of record medium advanced past said transcription site, said output voltage being increased in response to said first output signals and decreased in response to said second output signals.

3,965,485
DRIVE MECHANISM FOR A DISC-SHAPED CODE CARRIER
Ulf Hasso Kennert Morin, Malmo, Sweden, assignor to Aktiebolaget Addo, Malmo, Sweden
Filed Sept. 11, 1974, Ser. No. 505,023
Claims priority, application Sweden, Sept. 13, 1973, 7312475
Int. Cl.² G11B 5/81, 17/04, 25/04
U.S. Cl. 360—98 8 Claims



1. Drive mechanism for disc-shaped code carrier having a central opening and which is adapted to co-act with a magnetic head or the like for recording or reading information comprising: a drive element having contact surfaces arranged on opposite sides thereof and adapted to co-act with an adjacent code carrier, means for rotating said drive element, said drive element also being provided with bevelled guide surfaces on opposite locations thereof, and separate centering devices being movable in an axial direction along a line co-extensive with the central axis of said drive element, each of said centering devices having correspondingly bevelled guide surfaces co-acting with a corresponding guide surface of said drive element and with the edge of the code carrier adjacent to said central opening.

DESIGN PATENTS

GRANTED JUNE 22, 1976

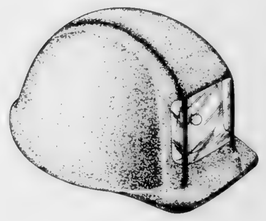
ERRATA

For CLASS	See PATENT NO.
025–075	240,325
056–001 R	240,328
016–063	240,332
016–060	240,333
016–014	240,334
015–033	240,336

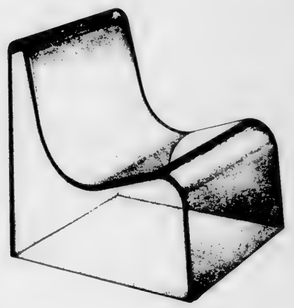
DESIGNS

JUNE 22, 1976

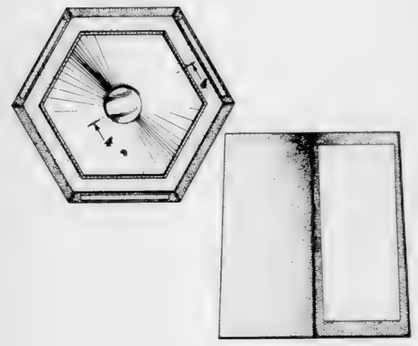
240,310
SAFETY HELMET
Malcolm D. Sinclair, 6201 Park Wood Road, Edina, Minn. 55436, and Andrew S. Fraser, 120 Ashley Road, Hopkins, Minn. 55343
Filed Aug. 30, 1974, Ser. No. 502,035
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232

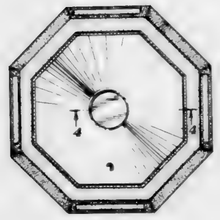


240,311
TOY CHAIR OR SIMILAR ARTICLE
Marion D. Owens, Denver, Colo.
(890 Reed Court, Lakewood, Colo. 80215)
Filed Nov. 13, 1972, Ser. No. 305,904
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



240,312
LITTER RECEPTACLE
Leonard M. Yordon, Daytona Beach, Fla., assignor to Repadco Incorporated, Daytona Beach, Fla.
Continuation-in-part of design application Ser. No. 361,647, May 18, 1973, now Patent No. 233,304, dated Oct. 22, 1974. This application Sept. 20, 1974, Ser. No. 507,766
Term of patent 14 years
The term of this patent subsequent to Oct. 22, 1988, has been disclaimed
Int. Cl. D7—*07*
U.S. Cl. D7—194





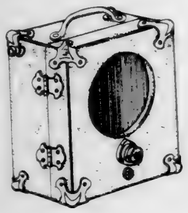
240,313
PLANT POT PACKAGE
George M. Sawyer, 8801 Calico Ave., Garden Grove, Calif. 92641
Filed Nov. 1, 1974, Ser. No. 520,112
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191



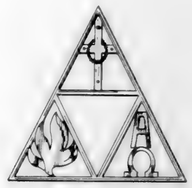
240,314
CAN
Walter K. Chlystun, 327 St. James Drive, Spartanburg, S.C. 29301
Filed Dec. 3, 1973, Ser. No. 420,869
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—218



240,315
SPEAKER AND AMPLIFIER FOR MUSICAL INSTRUMENTS
Wayne L. Kimbell, 4319 Melrose Ave., Los Angeles, Calif. 90029, and Richard P. Erlund, San Francisco, Calif. (2248 N. Alvarado St., Los Angeles, Calif. 90039)
Filed Jan. 2, 1974, Ser. No. 429,516
Term of patent 14 years
The term of this patent subsequent to Apr. 30, 1988, has been disclaimed
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



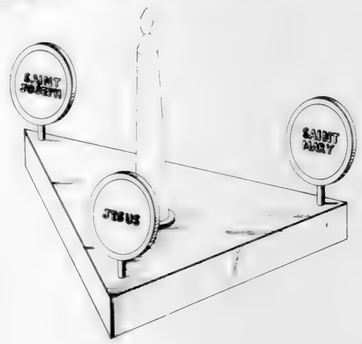
240,316
RELIGIOUS SYMBOL OR THE LIKE
William R. Elliott, 7216 Ainsley St., Fayetteville, N.C. 28304
Filed Aug. 19, 1974, Ser. No. 498,438
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—11 C



240,317
WATCH BAND CLASP
Alfred Joseph Durante, Forest Hills, N.Y., assignor to Cartier, Inc., New York, N.Y.
Filed June 12, 1974, Ser. No. 478,589
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4 A



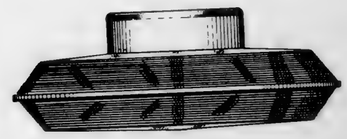
240,318
CANDLE HOLDER
Mary Sovago, 1806 1st Ave., New York, N.Y. 10026
Filed Sept. 23, 1974, Ser. No. 508,458
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2



240,319
LAMP BASE
Gilbert P. Hess, 2065 Emporia St., Aurora, Colo. 80010
Filed Apr. 3, 1975, Ser. No. 564,611
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 C



240,320
LUMINAIRE
Eldon L. Anderson, Jr., Fletcher, N.C., assignor to General Electric Company
Filed Sept. 9, 1974, Ser. No. 504,084
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—23 R



240,321
FLASHLIGHT
Jean-Pierre Rousseau, Draveil, France, assignor to Compagnie Industrielle des Piles Electriques (CIPEL), Levallois-Perret, France
Filed Mar. 31, 1972, Ser. No. 240,339
Term of patent 3½ years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



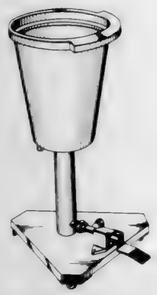
240,322
FLEXIBLE LIGHT
David E. Staub, Clearwater, Fla., assignor to Concept, Inc., Clearwater, Fla.
Filed Mar. 3, 1975, Ser. No. 554,752
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A



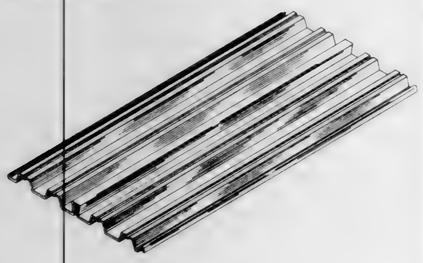
240,323
LIGHTING FIXTURE
Robert E. Walker, Bellevue, and G. Thomas Henderson, Bainbridge Island, Wash., assignors to Cascade Pacific Lumber Co., Inc.
Filed July 17, 1974, Ser. No. 489,361
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



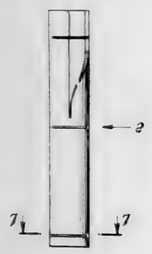
240,324
DEVICE FOR WASHING APPLICATOR HEADS USED IN RECONDITIONING CAR FINISHES
Saint Patrick Johnson, Sr., Overland Park, Kans., and Harry J. Brathwaite, Belton, Mo., assignors to Ming of America, Inc., Belton, Mo.
Filed Oct. 31, 1974, Ser. No. 519,609
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—11



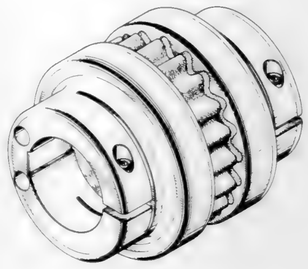
240,325
RIBBED METAL PANEL
Donald H. Landis, Pittsburgh, and Richard C. Pfaff, Murrysville, Pa., assignors to Epic Metals Corporation, Braddock, Pa.
Original design application Jan. 15, 1973, Ser. No. 323,912. Divided and this application Feb. 10, 1975, Ser. No. 548,499
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—75



240,326
COIN PACKER
Willis A. Nelson, Los Angeles, Calif.
(829 N. Stoneman Ave., Alhambra, Calif. 91801)
Filed Feb. 18, 1975, Ser. No. 550,210
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D52—4 R



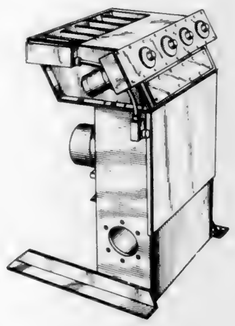
240,327
FLEXIBLE SHAFT COUPLING
Lewis E. Baer, Hagerstown, Md., and Carroll G. Wright, Fayetteville, Pa., assignors to T. B. Woods Sons Company, Chambersburg, Pa.
Filed Nov. 8, 1974, Ser. No. 522,305
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 G



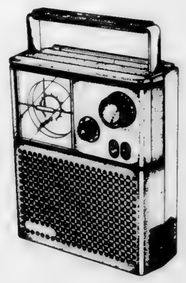
240,328
PICKUP FOR ADAPTING GRAND PIANO FOR ELECTRIC AMPLIFICATION
Charles T. Helpinstill II, 6124 Tessamine, Houston, Tex. 77036
Filed July 8, 1974, Ser. No. 486,491
Term of patent 14 years
Int. Cl. D17—*99*
U.S. Cl. D56—1 R



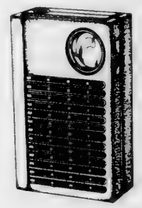
240,329
FEED GRINDING MILL
Douglas L. Graham, Auburn, Ind., assignor to Mix-Mill, Inc.
Filed Aug. 12, 1974, Ser. No. 496,712
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D55—1 B



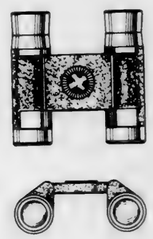
240,330
RADIO RECEIVER
Kunio Hoshino, Kadoma, Osaka, and Benito Mishiro, Sakai, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Oct. 18, 1974, Ser. No. 515,977
Claims priority, application Japan May 11, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



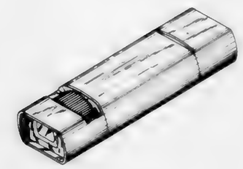
240,331
RADIO RECEIVER
Takao Okada, Kyoto Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Dec. 26, 1974, Ser. No. 536,613
Claims priority, application Japan July 3, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



240,332
BINOCULARS
Erwin Altenheiner, Hasselborn, Joachim Hornschu, Ober-Kochen, and Volker Donn, Heidenheim, Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Germany
Continuation of abandoned design applications Ser. Nos. 427,412 and Ser. No. 427,414, both Dec. 21, 1973. This application July 9, 1974, Ser. No. 486,882
Claims priority, application Germany June 25, 1973
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—63

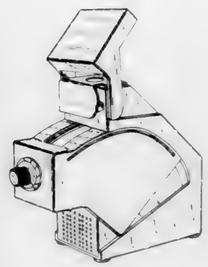


240,333
MONOCULAR
M. Gaines Chesnut, Denver, Colo., assignor to Outdoor Sports Industries, Inc., Denver, Colo.
Filed Nov. 29, 1974, Ser. No. 528,280
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—60





240,334
MICROFILM PROJECTOR OR THE LIKE
Richard J. Olson, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 3, 1975, Ser. No. 546,639
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—14



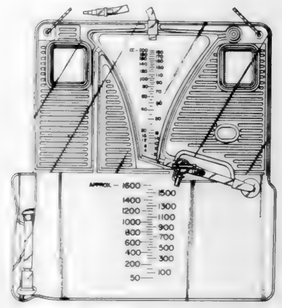
240,335
CHAIN CANDLE
Siegfried Steinhart, Obere Ganshalde 14, 8908 Krumbach, Germany
Original design application Aug. 22, 1972, Ser. No. 282,659, now Patent No. 233,175. Divided and this application July 26, 1974, Ser. No. 492,354
Claims priority, application Germany Feb. 25, 1972; Mar. 10, 1972
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D73—1 R



240,336
HOUSING DECK FOR A VIBRATORY COMPACTOR
Helmut A. Maass, West Bend, Wis., assignor to M-B-W, Inc., Slinger, Wis.
Filed Dec. 23, 1974, Ser. No. 535,319
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—33



240,337
URINE METERING AND COLLECTION UNIT
Paul Hanifl, Warwick, R.I., assignor to International Paper Company, New York, N.Y.
Filed Mar. 10, 1975, Ser. No. 557,033
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 U



240,338
MULTI-HEAD COMB
Bernard Suchowski, Marlboro, David D. Lovitz, Short Hills, and Claud W. Kissin, Fort Lee, N.J., assignors to The Hartz Mountain Corporation, Harrison, N.J.
Filed Jan. 30, 1975, Ser. No. 545,628
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



240,339
HAIR CURLING IRON
John L. Benty, Sands Point, N.Y., assignor to The Gillette Company, Boston, Mass.
Filed Jan. 2, 1975, Ser. No. 538,014
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF JUNE, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice)

A/S Tele-Plan: *See—*
Holmen, Hans Kristian, 3,964,311.
AB Ziristor: *See—*
Pettersson, Leif B., 3,964,617.
Abbott Laboratories: *See—*
Redmer, Wilbert; Rolin, Kenneth; and Nittel, Herman, 3,964,847.
Redmer, Wilbert; Rolin, Kenneth; and Nittel, Herman, 3,964,857.
Abe, Kyoichi, to Rohr Industries, Inc. Wave motion simulator. 3,964,316, Cl. 73-432.0SD.
Abex Corporation: *See—*
Frank, Earl E., 3,964,679.
Abildgaard, William H.; and Groswith, Charles T., III, to Velo-Bind, Inc. Case for book with pressure sensitive resilient spine pad. 3,964,770, Cl. 281-29.000.
Abraham, Edward D. Molding system. 3,964,540, Cl. 164-323.000.
ACF Industries, Incorporated: *See—*
Fitzgerald, John B., 3,964,259.
May, Edward T., 3,964,515.
Ackerly, Robert E.; and Bongartz, Roy C., to Allegheny Ludlum Industries, Inc. Apparatus for supplying current to a moving strip. 3,964,989, Cl. 204-211.000.
Acme Specialty Manufacturing Company: *See—*
Skilliter, Robert T., Jr.; and Pietrowski, Anthony P., 3,964,612.
Adachi, Nokihisa: *See—*
Nishio, Osamu; and Adachi, Nokihisa, 3,964,276.
Adair, John C.: *See—*
Ring, Wallace H.; Adair, John C.; and Elwyn, Richard A., 3,964,488.
Adams, Gary V.; and Minert, Roy T., to Thiokol Corporation. Airdrop canister. 3,964,700, Cl. 244-138.00R.
Adams, Gerald E., to Easy Heat-Wirekraft, MSP Industries Corporation. Heating structure fabricating machine and method. 3,964,959, Cl. 156-433.000.
Adams, John F. Folding luggage carrier. 3,964,762, Cl. 280-439.000.
Adams, John R. Holder assembly for fishing rods and fishing accessories. 3,964,706, Cl. 43-21.200.
Adams, Sally Lee: *See—*
Persinski, Leonard J.; Martin, Fred David; and Adams, Sally Lee, 3,964,921.
Adamson, Michael J.: *See—*
Reinisch, Ronald F.; Gloria, Hermilo R.; Goldsberry, Ronald E.; and Adamson, Michael J., 3,965,096.
Adler, Stanford L.; and Saunders, Alexander M., to Technicon Instruments Corporation. Coating apparatus including liquid sealant between compartments. 3,964,434, Cl. 118-405.000.
Admiral Corporation: *See—*
Chamberlain, Richard Travers, 3,965,393.
Aegidius, Poul Erik, to N.K. Verwaltungs AG. Analytical apparatus for serial determination of nitrogen in samples by the Kjeldahl method. 3,964,869, Cl. 23-253.00R.
Affeldt, Bernard H.: *See—*
Kiraly, Raymond J.; Affeldt, Bernard H.; and Anspach, Charles R., 3,964,416.
Ager, John W.; and Fekete, Thomas M., to FMC Corporation. Continuous process for the esterification of phosphonitrilic chloride polymers. 3,965,219, Cl. 260-973.000.
AGFA-Gevaert, A.G.: *See—*
Sieber, Werner; Ganser, Friedrich; Hammer, Thomas; Viehrig, Wolfgang; Frick, Hans-Dieter; and Osegowitsch, Viktor, 3,964,191.
Wick, Richard; Bestenreiner, Friedrich; Deml, Reinhold; and Helmberger, Josef, 3,965,291.
AGFA-GEVAERT N.V.: *See—*
Janssens, Wilhelmus; Claeys, Daniel Alois; Lemahieu, Raymond Gerard; and Dierckx, Jozef Aime, 3,965,282.
Stievenart, Emile Frans; Van Bouwel, Leo Paul; and Plessers, Hendrik Sylvester, 3,964,107.
Van Besauw, Jan Frans; De Volder, Noel Jozef; Van Engeland, Jozef Leonard; and Poot, Albert Lucien, 3,964,903.
Aggressive Industries Inc.: *See—*
Berquist, DeWayne Donald, 3,964,221.
Agriculture Research Incorporated: *See—*
Stone, G. W. (Charles), 3,964,242.
Ahlen, Karl Gustav, to S.R.M. Hydromekanik Aktiebolag. Torque converter transmission having rotating casing, and releasable pump. 3,964,347, Cl. 74-733.000.
Air Monitor Corporation: *See—*
De Baun, Kenneth W., 3,964,519.
Air Products and Chemicals, Inc.: *See—*
Antonio, Anthony I.; and Guerrero, Fernando V., 3,964,339.
Antonio, Anthony I.; and Guerrero, Fernando V., 3,964,340.
Molina, Orlando G., 3,965,350.
Aktiebolaget Addo: *See—*
Morin, Ulf Hasso Kennert, 3,965,485.
Akzona Incorporated: *See—*
van der Burg, Willem Jacob, 3,965,114.
Werner, Helmut; and Stapp, Hans, 3,964,249.
Zengel, Hans-Georg; and Bergfeld, Manfred, 3,965,172.
Albaret S.A.: *See—*
Paramythioti, Michel; De La Sayette, Emmanuel R.; and Girard, Jacques J., 3,964,834.
Albert, Kenneth J. Drinking receptacle. 3,964,631, Cl. 220-90.400.
Albrecht, Gerhard: *See—*
Soffge, Friedhelm; and Albrecht, Gerhard, 3,964,119.
Albright & Wilson Limited: *See—*
Harris, Glyn Islwyn; and Huckstepp, Brian George, 3,965,211.
Alexander, David John, to Lever Brothers Company. Pressurized dispensing container. 3,964,649, Cl. 222-399.000.
Alexander, Jerry L. Self timing switch. 3,965,465, Cl. 340-274.00R.
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Langensiepen, Gert; and Bruning, Werner, 3,964,641.
Alig, Leo: *See—*
Furst, Andor; Muller, Marcel; Alig, Leo; Keller, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,965,128.
Allaire, Joseph Paul. Miter table assembly. 3,964,361, Cl. 83-471.300.
Allan, Frank V.; Fenn, John B., Jr.; and Lewis, John H., to Xonics, Inc. X-ray system with electrophoretic imaging. 3,965,352, Cl. 250-315.00A.
Allec Manufacturing, Inc.: *See—*
Lunzer, Leo M.; and Evgen, Allan, 3,964,561.
Allegheny Ludlum Industries, Inc.: *See—*
Ackerly, Robert E.; and Bongartz, Roy C., 3,964,989.
Allen, Carling D. Wheel-support structure in vehicles. 3,964,563, Cl. 180-27.000.
Allen, Clifford H.: *See—*
Horvath, Louis T.; and Allen, Clifford H., 3,964,344.
Allen, Elaine; and Schrier, Eileen. Eye protective device. 3,964,241, Cl. 54-80.000.
Allen, Joseph C., to Texaco Inc. Thermal recovery of viscous oil. 3,964,546, Cl. 166-261.000.
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Alphameric Keyboards Limited: *See—*
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Alsop, Arthur Graham, to Strachan & Henshaw Limited. Stacking mechanism and method. 3,964,598, Cl. 198-35.000.
Aluminium Pechiney: *See—*
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Aluminum Company of America: *See—*
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Alvey Inc.: *See—*
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Amann, August; Bolz, Gerhard; Wiersdorff, Walter-Wielant; Giertz, Hubert; and Wilsmann, Klaus, to BASF Aktiengesellschaft. Carbamates and their use as pharmaceuticals. 3,965,119, Cl. 260-343.30R.
Amann, Bertram: *See—*
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Ambac Industries, Inc.: *See—*
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Amidon, Roger W.: *See—*
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Ammons, Vernon G.; and Vanek, James C., to PPG Industries, Inc. Adhesion control for safety glass laminates via polyurethane composition. 3,965,057, Cl. 260-18.0TN.

Amneus, John Sigfrid, to Procter & Gamble Company, The. Closure. 3,964,670, Cl. 229-51.0ST.

Amoco Production Company: *See—*
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AMP Incorporated: *See—*
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Anderson, Paul E., to Martin Marietta Aluminum Inc. Apparatus for producing continuous cast metallic sheet with patterned surface. 3,964,963, Cl. 164-277.000.

Anderson, Robert C., to United States of America, Energy Research and Development Administration. Diffusion bonding. 3,964,667, Cl. 228-194.000.

Anderson, William R., Jr. Rifle support. 3,964,613, Cl. 211-64.000.

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Anetseder, Leopold, Sr.; and Anetseder, Leopold, Jr., to Sun-Sor GmbH. Method of and apparatus for detecting light and controlling jalousies and the like. 3,965,348, Cl. 250-233.000.

Anne, Joshi: *See—*
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Anspach, Charles R.: *See—*
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Antonio, Anthony I.; and Guerrero, Fernando V., to Air Products and Chemicals, Inc. End holders for handle bars. 3,964,339, Cl. 74-551.900.

Antonio, Anthony I.; and Guerrero, Fernando V., to Air Products and Chemicals, Inc. Hand grip having an inner hub. 3,964,340, Cl. 74-551.900.

Aquality, Inc.: *See—*
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Arai, Kiyoyuki, to Copal Company Limited. Indicating device having a plurality of overturnable flaps. 3,964,428, Cl. 116-129.00H.

Araki, Kazuhiko: *See—*
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Aramaki, Seigo; Sudo, Katsuzo; Tani, Mitsuo; Sato, Takehiko; Onishi, Yuuji; and Sakaguchi, Nobuhiro, to Mitsubishi Jukogyo Kabushiki Kaisha; and Mitsubishi Petrochemical Company Limited. Heating device having dumbbell-shaped reaction tubes therein. 3,964,873, Cl. 23-277.00R.

Arcella, Frank G.: *See—*
United States of America, National Aeronautics and Space Administration; Arcella, Frank G.; Phillips, Ernest C., Jr.; and Sprecace, Richard P., 3,964,902.

Archibald, Paul B., to United States of America, Energy Research and Development Administration. Explosive fluid transmitted shock method for mining deeply buried coal. 3,964,792, Cl. 299-13.000.

Arika, Mikio: *See—*
Shimogawa, Sachio; Fujio, Takashi; Arika, Mikio; Yamada, Nobuo; Kodama, Takashi; and Nakata, Tetsuya, 3,965,050.

Arimura, Iwao; Sato, Akio; and Hirano, Hironori, to Bridgestone Tire Company Limited. Pneumatic radial type tire having an improved durability in bead section. 3,964,533, Cl. 152-362.00R.

Ark, Inc.: *See—*
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Arkla Industries, Inc.: *See—*
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Armento, Anthony F. High note intensifier for brass musical instruments. 3,964,363, Cl. 84-399.000.

Armistead, William H.; Mamazza, Dominic P.; Rostoker, David; and Woolley, Frank E., to Corning Glass Works. Casting powder. 3,964,916, Cl. 106-38.270.

Armstrong, Jack W., to Lipe-Rollway Corporation. Positive flow vibratory feeder. 3,964,601, Cl. 198-220.0BA.

Armstrong, Kenneth P.: *See—*
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Arnold, Richard B.; and Smith, Dallas F., to General Electric Company. Mechanism for use in winding apparatus. 3,964,525, Cl. 140-92.100.

Arnold, Winfried: *See—*
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Arora, Sardari L., to Kent State University. Liquid crystal materials. 3,965,029, Cl. 252-299.000.

Arregui, Jose Luis Loidi, to Asteko S/A. Truck for handling containers. 3,964,626, Cl. 214-505.000.

Arthur D. Little, Inc.: *See—*
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Arthur, David M. Railroad spike retainer. 3,964,680, Cl. 238-366.000.

Artz, Klaus: *See—*
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Asada, Atsushi; Yoshida, Hideo; and Kunigane, Akihiko, to Sharp Kabushiki Kaisha. Digital display. 3,965,466, Cl. 340-336.000.

Asahi Glass Co., Ltd.: *See—*
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Asai Yushi Kogyo Kabushiki Kaisha: *See—*
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Asmus, James F. Fastener for joining articles. 3,964,879, Cl. 29-183.500.

Aspro, Incorporated: *See—*
Myers, Albert F., Sr., 3,964,346.

Asselman, George Albert Apolonia; Green, David Bruce; Castelijns, Adrianus Petrus Johannes; Naastepad, Pieter Aart; and De Ruiter, Jacob Willem. Heating device. 3,965,334, Cl. 219-399.000.

Asteko S/A: *See—*
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Astra Lakemedel Aktiebolag: *See—*
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Ataka, Hisanori: *See—*
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Atchisson, Maxwell G. Adjustable sight for firearm apparatus. 3,964,173, Cl. 33-254.000.

Atchisson, Maxwell G. Safety mechanism for a firearm. 3,964,366, Cl. 89-148.000.

Atlas Copco Aktiebolag: *See—*
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Atwood, Hyatt B.; and McLean, James N., to Herr Manufacturing Company, Inc. Lubrication block and system for spinning and twisting rings. 3,964,576, Cl. 184-7.00A.

Auer, Peter, to Dyckerhoff & Widmann Aktiengesellschaft. Device for simultaneously stressing a number of tension elements. 3,964,154, Cl. 29-452.000.

Augland, Oddvar Kaurin: *See—*
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Aurora Products Corporation: *See—*
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Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, 3,964,663.

Auxer, Marvin L. Internal pipe bending mandrel. 3,964,290, Cl. 72-466.000.

Avco Corporation: *See—*
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Aylsworth, William Kenneth; Gudgel, Willard Leon; and Luoma, Richard William, to International Business Machines Corporation. Punching, reading and printing machine for document cards. 3,964,672, Cl. 234-35.000.

B. C. Research: *See—*
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B. F. Goodrich Company, The: *See—*
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Baak, N. Tryggve E. A.; and Harris, Dwight L., to Cyprus Mines Corporation. Leaching tremolite impurity from talc. 3,965,241, Cl. 423-155.000.

Baar, Walter; Koehler, Herbert; and Muecke, Walter, to Dr. -Ing Rudolf Hell GmbH. Engraving device for a printing form engraving machine. 3,964,382, Cl. 101-1.000.

Baardman, Frank: *See—*
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Baas, Hendrik Bernhard, to Verenigde Machinefabrieken N.V. Connection between two inter engaging elements. 3,964,520, Cl. 138-89.000.

Backhaus, Horst; and Schroder, Heinz, to Nordischer Maschinenbau Rud. Baader. Apparatus for separating the fillets of a flatfish. 3,964,132, Cl. 17-57.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
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Bailey, Alfred J.: *See—*
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Bailey, Wayne. Fueless power means and methods. 3,965,363, Cl. 290-1.00R.

Baker-Alpha Corporation: *See—*
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Balashov, Mikhail Ivanovich: *See—*
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Baldwin, Francis P.; and Malatesta, Alberto, to Exxon Research and Engineering Company. Conjugated diene butyl. 3,965,213, Cl. 260-879.000.

Baldwin, Robert S.: *See—*
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Hidy, Phil H.; and Baldwin, Robert S., 3,965,275.

Balistrieri, Peter A. Apparatus for crushing material. 3,964,718, Cl. 241-79.000.

Balmforth, Ernest Lynn. Game apparatus. 3,964,747, Cl. 273-131.0AB.

Balters, Helmut; and Schneider, Gerhard, to VARTA GmbH. Cathode for alkaline primary batteries. 3,964,931, Cl. 136-107.000.

Baltimore Aircoil Company, Inc.: *See—*
Engalitcheff, John, Jr.; and Schinner, Edward N., 3,964,886.
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Banauch, Dieter; Brummer, Wolfgang; Ebeling, Wolfgang; Helger, Roland; Hennrich, Norbert; and Lang, Hermann, to Merck Patent Gesellschaft mit beschrankter Haftung. Enzymatic determination of glucose. 3,964,974, Cl. 195-103.50C.

Banks, Ronald Eric; and Haszeldine, Robert Neville, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Novel materials containing nitrogen. 3,965,184, Cl. 260-583.00D.

Banner Metals Division of Intercole Automation, Inc.: *See—*
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Barbara, Bruce J., to Motorola, Inc. MOS speed-up circuit. 3,965,460, Cl. 340-173.00R.

Barela, James R.: *See—*
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Bargon, Joachim; Gipstein, Edward; and Hiraoka, Hiroyuki, to International Business Machines Corporation. Positive resists containing dimethylglutarimide units. 3,964,908, Cl. 96-35.100.

Barlow, Charles Brian: *See—*
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Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
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Schippers, Heinz; Bauer, Karl; Lenk, Erich; Mayer, Manfred; and Busch, Hans Jochen, 3,964,723.

Barnard, James Laing, to South African Inventions Development Corporation, The. Improvements in and relating to waste water treatment. 3,964,998, Cl. 210-7.000.

Barnes, Edgar E.: *See—*
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Barrett, Ronald Derek; and Howard, Michael Roi, to Ford Motor Company. Clutch disc. 3,964,586, Cl. 192-107.00C.

Barrington, Burchus Q.: *See—*
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Bartlett, Ronald D. Buoyancy compensating back pack assembly. 3,964,266, Cl. 61-70.000.

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Wirth, Friedrich; Renauer, Erich; Von Ammon, Hans; Schneider, Curt; and Suter, Hubert, 3,965,126.

Bash, David L.; and Lakshmanan, Pallavoor R., to Gulf Research & Development Company. Adhesive composition. 3,965,061, Cl. 260-25.000.

Basham, Edward R.; and Smith, William D., to Go International, Inc. Borehole tool orienting apparatus and systems. 3,964,553, Cl. 175-4.510.

Basic Incorporated: *See—*
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Bassani S.p.A.: *See—*
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Bates Printing Specialties, Inc.: *See—*
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Bates, Wayne J., to Motorola, Inc. Pulse regenerating circuit. 3,965,370, Cl. 307-268.000.

Bates, Wayne Joseph, to Motorola, Inc. Automatic master-slave carrier switching circuit. 3,965,421, Cl. 325-17.000.

Baudouin, Jean Pierre, to Compagnie Deutsch. Push pull connector. 3,964,771, Cl. 285-315.000.

Bauer, Karl: *See—*
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Bauer, Paul R.; and Dunwoodie, Duane E., to Wiltron Company. Telephone system testing apparatus and techniques utilizing central measuring equipment with a plurality of remote test stations. 3,965,418, Cl. 324-99.00D.

Baugh, Clarence L.: *See—*
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Bauman, Robert Andrew, to Colgate-Palmolive Company. Bleach-resistant fabric softener. 3,965,015, Cl. 252-8.800.

Bayer Aktiengesellschaft: *See—*
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Eichenhofer, Kurt-Wilhelm; and Schliebs, Reinhard, 3,965,097.
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Beam, Paul E., Jr.; and Meyers, Charles K., to General Motors Corporation. Turbine shaft balancing. 3,964,342, Cl. 74-573.00R.

Beard, Colin C.; Edwards, John A.; and Fried, John H., to Syntex (U.S.A.) Inc. 5(6)-Benzene ring substituted benzimidazole-2-carbamate derivatives having anthelmintic activity. 3,965,113, Cl. 260-309.200.

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Becker & van Hullen Niederrheinische Maschinenfabrik: *See—*
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Johan, Bela; Szemler, Laszlo; Fulop, Janos; Szontagh, Tamas; Simonovits nee Czink, Emilia; Bekes nee Erdos, Judit; Kuti, Laszlo; Toros, Robert; Szekely, Denes; Szabo, Laszlo; Seitz, Karoly; Vajda, Tade; Kovacs nee Komoroczy, Erzsebet; Hargital nee Franyo, Aniko; and Polinszky, Karoly, 3,964,971.

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Bell & Howell Company: *See—*
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Belokin, Paul, Jr. Advertising display. 3,964,189, Cl. 40-33.000.

Belt, Ronald A., to United States of America, Air Force. Serpentine charge-coupled-device memory circuit. 3,965,462, Cl. 340-173.00R.
Bender, David John; and Kubovich, Frank Steve, to Johns-Manville Corporation. Method of packaging fibrous mat structure. 3,964,232, Cl. 53-21.0FW.
Bendix Corporation, The: *See—*
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Hartford, Thomas William, 3,964,443.
Schulien, Howard E., 3,964,805.
Benedict, Charles E., to Wayne H. Coloney Co., Inc. Shuttle drive linkage for looms. 3,964,523, Cl. 139-142.000.
Benedict, Charles E., to Wayne H. Coloney Co., Inc. Loom lay drive linkage. 3,964,524, Cl. 139-190.000.
Bengtsson, Sture B., to Robur Konsult AB. Automated handling system for bank deposit boxes. 3,964,577, Cl. 186-1.00R.
Benjamin, Benjamin C., to Schmelzer Corporation. Carburetion system. 3,965,222, Cl. 261-39.00B.
Benjamin, Benjamin C.; and Schautz, Glenn A., to Schmelzer Corporation. Charge forming device. 3,965,223, Cl. 261-39.00B.
Bennett, Stanley W. Telephone system teaching apparatus. 3,964,179, Cl. 35-31.00R.
Bennett, Wilfred Potter, to RCA Corporation. Apparatus for nondestructively testing the voltage characteristics of a transistor. 3,965,420, Cl. 324-158.00T.
Benson, John C.; and Hossfield, George L., Jr., to Allis-Chalmers Corporation. Pole unit mechanism for closing the contacts in an oil circuit breaker. 3,964,338, Cl. 74-520.000.
Benson, William Merle, to FMC Corporation. Expansible operator's cab. 3,964,779, Cl. 296-27.000.
Bentivegna, Pasquale P. Ladder leveling device. 3,964,574, Cl. 182-204.000.
Bergeron, Gaetan G. Ball furniture. 3,964,790, Cl. 297-445.000.
Bergfeld, Manfred: *See—*
Zengel, Hans-Georg; and Bergfeld, Manfred, 3,965,172.
Bergman, John George, Jr.; Crane, Glen Robert; Storey, Raymond Nichols; and Williams, Denise, to Bell Telephone Laboratories, Incorporated. Lithium perchlorate trihydrate nonlinear devices. 3,965,375, Cl. 307-88.300.
Berkenblit, Melvin; and Reisman, Arnold, to International Business Machines Corporation. Chemical polishing of single crystal dielectrics. 3,964,942, Cl. 156-2.000.
Bernard, Armand R.: *See—*
Labadie, Jean Francois; Bernard, Armand R.; de la Taille, Olivier P.; and Thary, Christian, 3,964,787.
Bernhard, Robert, to Aurora Products Corporation. Miniature vehicle with magnetic force. 3,964,206, Cl. 46-251.000.
Berquist, DeWayne Donald, to Aggressive Industries Inc. Platform sections. 3,964,221, Cl. 52-177.000.
Berriman, Lester Porter: *See—*
Englert, Robert D.; Berriman, Lester Porter; Armstrong, Kenneth P.; and Roe, Douglas A., 3,965,221.
Berry, John Franklin, to Hycel, Inc. Reaction container. 3,964,867, Cl. 23-253.00R.
Bertele, Erhard; and Schudel, Peter, to Givaudan Corporation. 4-Methylene-5-hexen-1-ol. 3,965,198, Cl. 260-632.00R.
Bertrand, Henri. Method of and device for opening bivalvular mollusks. 3,964,130, Cl. 17-45.000.
Bessen, Irwin I.; Betts, Robert K.; and Hillery, Robert V., to General Electric Company. Porous high temperature seal abradable member. 3,964,877, Cl. 29-182.000.
Bestenreiner, Friedrich: *See—*
Wick, Richard; Bestenreiner, Friedrich; Deml, Reinhold; and Helmberger, Josef, 3,965,291.
Betts, Robert K.: *See—*
Bessen, Irwin I.; Betts, Robert K.; and Hillery, Robert V., 3,964,877.
Betz Laboratories, Inc.: *See—*
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Bevacqua, Louis Albert, to Motorola, Inc. Treadle bar driven potentiometer. 3,965,449, Cl. 334-7.000.
Beyer, Eduard. *See—*
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Bialousz, Lorraine R.; Herritt, Ethel R.; Lartigue, Donald J.; and Pitcher, Wayne H., Jr., to Corning Glass Works. Enzyme carrier regeneration. 3,965,035, Cl. 252-412.000.
Biere, Helmut; Ulbrich, Hermann; Kessler, Hans-Joachim; and Redmann, Ulrich; to Schering Aktiengesellschaft. 4-Nitroperhydropyrido[1,2-a][1,4]diazepines. 3,965,103, Cl. 260-293.550.
Biliunas, Leo; and SunPano, Allan. Fish bait device and method. 3,964,201, Cl. 43-4.000.
Bingley, George W.: *See—*
Joslyn, Gerald L.; and Bingley, George W., 3,964,713.
BIO Response Inc.: *See—*
Rose, Sam, 3,964,467.
Bippus, Walter; Gerniein, Hermann; and Simon, Manfred Horst, to Industriewerke Karlsruhe-Augsburg Aktiengesellschaft. Device for manufacturing, filling and sealing containers. 3,964,238, Cl. 53-167.000.
Birtcher Corporation, The: *See—*
Judson, Donald W., 3,964,487.
Birum, Gail H., to Monsanto Company. Urea-phosphorus compounds. 3,965,127, Cl. 260-347.300.
Black, Don. Scaffold supporting device. 3,964,116, Cl. 9-1.700.
Black Products Co.: *See—*
Lau, Erwin M., 3,964,650.
Black, Robin Michael: *See—*
White, Alan Chapman; and Black, Robin Michael, 3,965,112.
Blair, Calvin B.; and Hokr, Donald C., to Kent Manufacturing Co., Inc. Quick change mounting bracket for loader arms. 3,964,622, Cl. 214-145.00A.
Blanchard, Robert L., to Foxboro/Trans-Sonics, Inc. Densimeter. 3,964,317, Cl. 73-453.000.
Blaney, Ted Lee, to Procter & Gamble Company, The. Disposable diaper containing ammonia inhibitor. 3,964,486, Cl. 128-284.000.
Blay, Jorge A., to Celanese Corporation. Recovery of oxidation catalyst metals from adipic acid production. 3,965,164, Cl. 260-531.00R.
Bliss, Robert H., to Gates Rubber Company, The. Apparatus for manufacture of power transmission belts. 3,964,846, Cl. 425-28.00B.
Bloch, Rene; Kedem, Ora; and Lobel, Ester, to E. E. Eljim Ecology Ltd. Controlled drug releasing preparations. 3,965,255, Cl. 424-19.000.
Blum, Helmut: *See—*
Schmadel, Edmund; Jakobi, Gunter; Worms, Karl-Heinz; and Blum, Helmut, 3,965,024.
Boag, James T.; and Morgan, Brian E., to Cobe Laboratories, Inc. Extracorporeal blood circulation system and drip chamber with adjustable blood level. 3,964,479, Cl. 128-214.00R.
Bock, Leland B.: *See—*
Youngkamp, John H., 3,964,621.
Boehringer Mannheim G.m.b.H.: *See—*
Tiedemann, Hugo; Sojka, Bernward; Lange, Hans; Rey, Hans-Georg; and Rieckmann, Peter, 3,964,870.
Boeing Company, The: *See—*
Kim, Duk Hwang, 3,964,982.
Boffardi, Bennett P.; Cook, Michael M.; and Ralston, Paul H., to Calgon Corporation. Scale inhibition and corrosion inhibition. 3,965,027, Cl. 252-180.000.
Boggs, Beryl Aaron; Carr, Robert David; Cary, Lawrence Edward; Forman, Clarence Albert; Murray, Wayne Henry; Peterson, Weldon Herbert; and Montgomery, Everett Gray, to Allied Chemical Corporation. Transfer tail apparatus and method for vertical spindle winder. 3,964,722, Cl. 242-18.0PW.
Bohme, Ekkehard: *See—*
Dolfini, Joseph Edward; Bohme, Ekkehard; and Slusarchyk, William A., 3,965,093.
Boles, Hubert J., to General Tire & Rubber Company, The. Adhesion/-bonding dip for tire reinforcement fabrics. 3,964,950, Cl. 156-110.00A.
Bolz, Gerhard: *See—*
Amann, August; Bolz, Gerhard; Wiersdorff, Walter-Wielant; Gertz, Hubert; and Wilsmann, Klaus, 3,965,119.
Bongartz, Roy C.: *See—*
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Bongers, Hendrikus-Johannes, to G. Siempelkamp & Co. Apparatus for curing elongate workpieces. 3,964,851, Cl. 425-324.00R.
Bonisch, Horst: *See—*
Henning, Kurt; and Bonisch, Horst, 3,964,804.
Bonn, John William, to CVI Corporation. Rechargeable particulate filter for radioactive contaminated gas streams. 3,964,890, Cl. 55-479.000.
Bonnevaux, Henry: *See—*
Pomeret, Jean-Claude; and Bonnevaux, Henry, 3,964,182.
Booth, Frank B., to Union Oil Company of California. Hydrocarbonylation process. 3,965,192, Cl. 260-598.000.
Borbas, Robert A.; Dufton, John P.; Foster, James H.; and Siegel, Jeffrey W., to GTE Automatic Electric (Canada) Limited. Central processor for a telephone exchange. 3,965,458, Cl. 340-172.500.
Borden, Inc.: *See—*
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Borg-Warner Corporation: *See—*
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Schober, Michael A., 3,964,737.
Wang, Ting M.; Richardson, Walter H., deceased; and Richardson, Gregory R., administrator, 3,964,587.
Borodin, Daniel J.; and Tolliver, Wilbur E., to New York Wire Mills Corporation. Pipe cage end forming machine and method. 3,964,285, Cl. 72-69.000.
Borodin, Daniel J.: *See—*
Tolliver, Wilbur E.; and Borodin, Daniel J., 3,964,938.
Boser, Ronald J.; and Gluckin, Gerald. Elastic inserter for a sewing machine. 3,964,410, Cl. 112-121.260.
Boshers, William A.: *See—*
Britz, William J.; Boshers, William A.; and Kaufmann, James J., 3,964,928.
Bosshard, Ernst, to Sulzer Brothers Limited. Irradiation plant having a common closure. 3,965,359, Cl. 250-432.00R.
Bottoms, Harry Simister; and Holliday, Leslie, to Joseph Lucas (Industries) Limited. Centrifugal pumps. 3,964,885, Cl. 55-203.000.
Boultinghouse, George, to Boultinghouse, Harold D., a part interest. Method of expanding coins for decorative purposes. 3,964,284, Cl. 72-54.000.
Boultinghouse, Harold D.: *See—*
Boultinghouse, George, 3,964,284.
Bowden, Charles J.: *See—*
Smith, William E.; and Bowden, Charles J., 3,964,566.
Bowen, David, Jr.: *See—*
Fisher, Don E.; Knauff, Paul A.; and Bowen, David, Jr., 3,964,724.
Boyd, Harold B. Marine fender. 3,964,422, Cl. 114-219.000.

Boyd, Lawrence C., Jr.; Kelm, Everett F.; and Randall, John C., to Corning Glass Works. Method and apparatus for evaporating and separating multiple component solutions or mixtures. 3,965,005, Cl. 210-96.00R.
Boyd, Leonard E. Tongs. 3,964,775, Cl. 294-16.000.
Bozek, John S., to Continental Can Company, Inc. Closure with a slotted pull tab. 3,964,632, Cl. 220-270.000.
Brand, Albertus, to B.V. Houtindustrie"De Phoenix". Pallet of synthetic material. 3,964,400, Cl. 108-51.000.
Brand, Gunter: *See—*
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Brands, Henry J.: *See—*
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Brandt, Arnold W., to Burroughs Corporation. Electronic peak sensing digitizer for optical tachometers. 3,965,430, Cl. 328-20.000.
Brane, Ralph M.: *See—*
Yurcheshen, Michael; Levine, Morris; and Brane, Ralph M., 3,965,058.
Braun, Emil: *See—*
Heusler, Helmut; Braun, Emil; and Hofling, Peter, 3,964,596.
Braun, Hans: *See—*
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Brcic, Stanko: *See—*
Towle, Allistair; and Brcic, Stanko, 3,965,443.
Breitling, Ulrich, to Krauss-Maffei Aktiengesellschaft. Magnetic-suspension vehicle system having switch tracks. 3,964,398, Cl. 104-148.0MS.
Bremer, Richard J., to General Motors Corporation. Adaptive anti-lock brake control apparatus. 3,964,796, Cl. 303-21.0BE.
Bridgestone Tire Company Limited: *See—*
Arimura, Iwao; Sato, Akio; and Hirano, Hironori, 3,964,533.
Brie, Michel; and Riess, Gerard, to Commissariat a l'Energie Atomique. Method of manufacture of composite materials consisting of carbon fibers and resin and materials manufactured in accordance with said method. 3,964,952, Cl. 156-296.000.
Brinkmann, Jurgen; and Saul, Wilhelm, to Varta Batterie Aktiengesellschaft. Drying of storage battery plates. 3,965,321, Cl. 219-10.410.
Brisk, Richard A., to Arthur D. Little, Inc. Digital light responsive switching circuit. 3,965,388, Cl. 315-155.000.
Britax (London) Limited: *See—*
Burleigh, David William, 3,964,798.
British Iron and Steel Research Association, The: *See—*
Stubbs, Dennis; Maltby, Jack; and Oxlade, Roy Ronald, 3,964,282.
British Steel Corporation: *See—*
Stubbs, Dennis; Maltby, Jack; and Oxlade, Roy Ronald, 3,964,282.
Britz, William J.; Boshers, William A.; and Kaufmann, James J. Lead-oxygen DC power supply system having a closed loop oxygen and water system. 3,964,928, Cl. 136-86.00A.
Brixy, Heinz, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Temperature-measuring instrument. 3,964,314, Cl. 73-359.00R.
Broaster Co., The: *See—*
Luebke, Clem J.; Beck, Norman L.; and Daniels, Lowell W., 3,964,637.
Brod, William F. Purse kit. 3,964,529, Cl. 150-32.000.
Brodsky, Larry: *See—*
Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, 3,964,663.
Bronson, Barry Steven, to Hewlett-Packard Company. Logic pulser. 3,965,468, Cl. 340-349.000.
Brouwer, Walter G.; MacPherson, Edwin J.; Ames, Ronald B.; and Neidermyer, Robert W., to Uniroyal, Inc. Oxadiazole benzoic acid derivatives as herbicides. 3,964,896, Cl. 71-92.000.
Brown, Donald R., to General Motors Corporation. Valve control mechanism. 3,964,455, Cl. 123-90.430.
Brown, John J.; Milholen, William F.; and Lineberry, Cletue E. Method and apparatus for arranging bricks into proper row size for stacking and packaging. 3,964,597, Cl. 198-21.000.
Brown, Kenneth Jewett. Dog or animal toilet. 3,964,437, Cl. 119-1.000.
Brown, Lyman J., to Bates Printing Specialties, Inc. Jigsaw puzzle paint set. 3,964,750, Cl. 273-157.00R.
Brown Oil Tools, Inc.: *See—*
Slator, Damon T., 3,964,552.
Browning, Wayne L., to United States of America, Navy. Waveguide isolator with damping means. 3,965,448, Cl. 333-98.00R.
Brummer, Wolfgang: *See—*
Banauch, Dieter; Brummer, Wolfgang; Ebeling, Wolfgang; Helger, Roland; Hennrich, Norbert; and Lang, Hermann, 3,964,974.
Bruning, Werner: *See—*
Langensiepen, Gert; and Bruning, Werner, 3,964,641.
Brunner, Donald G., to Budd Company, The. Apparatus for metal casting. 3,964,541, Cl. 164-323.000.
Brynsvold, Glen V.; and Snyder, Harold J., Jr., to United States of America, Energy Research and Development Administration. Internal core tightener. 3,964,969, Cl. 176-87.000.
Bucksch, Manfred, to Zahnradfabrik Friedrichshafen AG. Speed-changing system with two fluid-actuated clutches. 3,964,584, Cl. 192-87.110.
Bucyrus-Erie Company: *See—*
Stoner, Thomas A., 3,965,407.
Budd Company, The: *See—*
Brunner, Donald G., 3,964,541.
Budich, Wolfgang; Krah, Robert; and Theissen, Hans, to Dynamit Nobel Aktiengesellschaft. Plastic-encased metallic hollow profile member. 3,964,231, Cl. 52-727.000.
Bullock, Jonathan S.; Harper, William L.; and Peck, Charles G., to United States of America, Energy Research and Development Administration. Electromarking solution. 3,964,914, Cl. 106-19.000.
Bullock, Norman J.; Wendt, Frank A.; DePas, Laddie A.; and Goodman, Walter P., to W. M. Cissell Manufacturing Company. Seam-busting apparatus and method. 3,964,185, Cl. 38-14.000.
Bunde Glass GmbH: *See—*
Hennings, Werner, 3,964,627.
Burgess, Ralph D., Jr., to Food Engineering Corporation. Flesh and skin separating apparatus and method for fruit and vegetable products. 3,964,715, Cl. 241-7.000.
Burgoon, Jack L., to Scott & Fetzer Company, The. Apparatus for treating floor coverings. 3,964,925, Cl. 134-21.000.
Burke, Richard Lerda: *See—*
Giordano, Annie Sue; Burke, Richard Lerda; and Wixon, Harold Eugene, 3,965,014.
Burke, Robert L.: *See—*
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Burkoth, Terry L.: *See—*
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Burleigh, David William, to Britax (London) Limited. Safety belt anchorages. 3,964,798, Cl. 303-1.00A.
Burnop, Victor Charles Ernest; and Watkins, Ronald Charles, to Exxon Research and Engineering Company. Lubricating oil compositions. 3,965,017, Cl. 252-33.300.
Burroughs Corporation: *See—*
Brandt, Arnold W., 3,965,430.
Burrus, Thomas William, to RCA Corporation. Velocity correction circuit for video discs. 3,965,482, Cl. 358-8.000.
Burton, Dennis Ray: *See—*
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Burton, Donald E.: *See—*
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Busch, Hans Jochen: *See—*
Schippers, Heinz; Bauer, Karl; Lenk, Erich; Mayer, Manfred; and Busch, Hans Jochen, 3,964,723.
Buschmann, Karl; Diem, Hans; Matthias, Guenther; and Wodtcke, Friedrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft Process for the production of formaldehyde. 3,965,195, Cl. 260-603.0HF.
Bush, Roberta F. Garment fitting aid. 3,964,169, Cl. 33-15.000.
Busi, Giovanni; and Belli, Pierluigi, to Officina Meccanica Giovanni Busi. Terry loop forming instrument for circular knitting machine. 3,964,275, Cl. 66-91.000.
Busse, Walter, to Maschinenfabrik Augsburg-Nurnberg AG. Method for dosing a locking agent into a threaded hole. 3,964,948, Cl. 156-91.000.
Butler, Steven J.; Clawson, Arthur Harley, Jr.; and Ward, Robert Jackie, to P. R. Mallory & Co., Inc. Beam leaded device welding machine. 3,964,664, Cl. 228-6.00A.
Butter, Stephen Allan; and Kaeding, Warren William, to Mobil Oil Corporation. Methylation of toluene. 3,965,208, Cl. 260-671.00M.
Butter, Stephen Allan; and Young, Lewis Brewster, to Mobil Oil Corporation. Selective production of para-xylene. 3,965,209, Cl 260-671.00M.
Buxton, Thomas S.: *See—*
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B.V. Houtindustrie"De Phoenix": *See—*
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C. Evans & Sons Limited: *See—*
Gostling, Peter Eric, 3,964,575.
C. Hager & Sons Hinge Manufacturing Company: *See—*
Peterson, Francis C., 3,964,207.
Cagle, Wesley J.; and Hodge, Ronald F., to John Blue Company Division of Subscription Television, Inc. High clearance vehicle wheel spacing adjustment. 3,964,565, Cl. 180-70.00R.
Calcagno, Benedetto: *See—*
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Calgon Corporation: *See—*
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Cambon, Aime; Giovannoni, Claude; Pastor, Raphael; and Riess, Jean, to Produits Chimiques Ugine Kuhlmann. Perfluoroalkyl benzodiazepines. 3,965,092, Cl. 260-239.0BD.
Camid Intermatic: *See—*
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Campbell, Lewis B.; Huffman, Robert E.; and Jones, Robert L., to General Motors Corporation. Energy absorber. 3,964,578, Cl 188-1.00C.
Canadian Patents and Development Limited: *See—*
Xanthos, Marinos; and Woodhams, Raymond T., 3,965,284

Canon Kabushiki Kaisha: *See—*
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Canton Textile Mills, Inc.: *See—*
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Sullins, John K., 3,964,991.

Caprio, Lawrence A.: *See—*
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Carbonneau, Gordon S., to Carbonneau Industries, Inc. Linear force generator. 3,965,377, Cl. 310-14.000.

Carbonneau Industries, Inc.: *See—*
Carbonneau, Gordon S., 3,965,377.

Carlsen, Ove Christian: *See—*
Fusco, Vito A.; Carlsen, Ove Christian; and Wright, Steven F., 3,964,147.

Carlsmith, Lawrence A., to Ingersoll-Rand Company. Gaseous reaction apparatus and processes including a peripheral gas receiving chamber and a gas recirculation conduit. 3,964,962, Cl. 162-236.000.

Carlson, James E., to Long Enterprises. Deep sea diving speech converter. 3,965,298, Cl. 179-1.0SH.

Carlson, Paul A., to Wagner Electric Corporation. Automatic reference level adjustment circuit. 3,965,373, Cl. 307-264.000.

Carnegie, Frank, Jr., to Camid Intermatic. Thermoplastic sheet pressure forming machine. 3,964,850, Cl. 425-292.000.

Carnielli, Guido. Physiological active and passive exercising apparatus. 3,964,742, Cl. 272-73.000.

Carpano & Pons S.A.: *See—*
Chauvigne, Michel, 3,964,685.

Carr, Albert A., and Kinsolving, C. Richard, to Richardson-Merrell Inc. Compositions and methods for the treatment of the symptoms of histamine induced allergic reactions. 3,965,257, Cl. 424-45.000.

Carr, Guy Crockett. Method for impregnating wood. 3,964,863, Cl. 21-7.000.

Carr, Robert David: *See—*
Boggs, Beryl Aaron; Carr, Robert David; Cary, Lawrence Edward; Forman, Clarence Albert; Murray, Wayne Henry; Peterson, Weldon Herbert; and Montgomery, Everett Gray, 3,964,722.

Carrier Corporation: *See—*
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Carter's Ink Company, The: *See—*
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Casadio, Roberto. Cable stripper. 3,964,350, Cl. 81-9.50A.

Casey, Thomas P., to Caterpillar Tractor Co. Apparatus for forming a groove and back-up dam for welds. 3,964,287, Cl. 72-210.000.

Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 3,964,592.

Castelijns, Adrianus Petrus Johannes: *See—*
Asselman, George Albert Apolonia; Green, David Bruce; Castelijns, Adrianus Petrus Johannes; Naastepad, Pieter Aart; and De Ruiter, Jacob Willem, 3,965,334.

Castillo, Adolfo: *See—*
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Catanzarite, Vincent Owen, to Specialty Products Development Corporation. Method of inflating an automobile passenger restraint bag. 3,964,255, Cl. 60-205.000.

Caterpillar Tractor Co.: *See—*
Casey, Thomas P., 3,964,287.
Eftefield, Larry G.; and Wirt, Leon A., 3,964,803.
Shankwitz, Robert F.; and Garman, Anthony L., 3,964,152.
Swanson, Fred T., 3,964,797.

Cattermole, David Christopher, to Elliott Brothers (London) Limited. Partially rotated fastener comprising circular fastener halves captured in complementary cavity. 3,964,511, Cl. 137-614.060.

Cauquelin, Yves Bernard: *See—*
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Celanese Corporation: *See—*
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Celio, Tino: *See—*
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Ceraver: *See—*
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Cervenka, Juraj; and Olesovsky, Jaroslav, to Prvni Brnenska strojirna. Additional device for an automatic welding equipment for fully welded tube walls. 3,964,665, Cl. 228-44.10R.

Cesca, Sebastiano: *See—*
Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,965,078.

Ceskoslovenska akademie ved: *See—*
Hradil, Jiri; Coupek, Jiri; Krivakova, Miroslava; Stamberg, Jiri; Stoy, Arthur; and Turkova, Jaroslava, 3,964,973.
Stoy, Artur; Stoy, Vladimir; Urbanova, Renata; Prokop, Jaroslav; and Kucera, Josef, 3,965,227.

Ceyzeriat, Louis; and Letoffe, Michel, to Rhone-Poulenc S.A. Use of organopolysiloxane compositions which cure at ambient temperature in coating electrical and electronic devices. 3,965,280, Cl. 427-126.000.

Chabala, Leonard V.; and Meister, Otto, to S & C Electric Company. Exhaust control device for circuit interrupting devices. 3,965,452, Cl. 337-280.000.

Chamberlain, Richard Travers, to Admiral Corporation. Television X-radiation protection device and circuit. 3,965,393, Cl. 317-16.000.

Champion Spark Plug Company: *See—*
Gimple, James J., 3,964,683.

Chandross, Edwin Arthur; Robbins, Murray; and Schonhorn, Harold, to Bell Telephone Laboratories, Incorporated. Bodies including passivated metal particles. 3,964,939, Cl. 148-105.000.

Chang, Zung S.; Howitt, John S.; and VanDewoestine, Robert V., to Corning Glass Works. Swirl exhaust gas flow distribution for catalytic conversion. 3,964,875, Cl. 23-288.0FC.

Chaplits, Donat Nikolaevich; Kazakov, Vladimir Pavlovich; Lazariants, Emmanuil Gabrielovich; Chebotaev, Vladimir Filippovich; Balashov, Mikhail Ivanovich; and Serafimov, Leonid Antonovich. Ion-exchange molded catalyst and method of its preparation. 3,965,039, Cl. 252-426.000.

Chapman, Lael Ogden. Insulated closures for attic fans, and seals therefor. 3,964,377, Cl. 98-116.000.

Charlin, Andre Marie Bernard. Methods and devices for recording, engraving and reproducing modulated information in tetraphony. 3,964,752, Cl. 274-46.00R.

Chatterjea, Probir K., to International Harvester Company. Clutch cylinder circuit and charging valve therefor. 3,964,372, Cl. 91-471.000.

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Chauvigne, Michel, to Carpano & Pons S.A. Lawn sprinkling and similar installations. 3,964,685, Cl. 239-66.000.

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Christen, Louis J., Jr.; and Latal, John J., to Christen Incorporated. Paper log roller. 3,964,373, Cl. 93-1.00C.

Christensen, Sofus Georg. Plate-shaped module units. 3,964,224, Cl. 52-387.000.

Chu, Chin-Chiun, to Mobil Oil Corporation. Selective production of para-xylene and catalyst therefor. 3,965,210, Cl. 260-671.00M.

Chubb, Francis L.; and Eric, Lucien. Process for preparing p-(5-chloro-2-methoxy-benzamidoethyl)-benzene sulfonamide. 3,965,173, Cl. 260-556.0AR.

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Clemens, Carl F.; and Lenhard, M. James, to Xerox Corporation. Electrostatographic toners using block copolymers. 3,965,021, Cl. 252-62.10P.

Cless, Gerhard; and Kaplan, Edward L., to Extel Corporation. Tape punch machine. 3,964,673, Cl. 234-115.000.

Clifford, Graham Frank; and Spurrier, Mack W., to Gaston County Dyeing Machine Company. Method for transferring yarn packages from a winding tube to a core for dyeing. 3,964,153, Cl. 29-427.000.

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Coackley, Robert; Urquhart, John Reid; and Dack, David George, to Hewlett-Packard Limited. Method and apparatus for tracking an incrementally sweeping generator by a frequency selective receiver. 3,965,424, Cl. 325-363.000.

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Conn, Arnold; and Cohen, Harvey K. Protein skimmer. 3,965,007, Cl. 210-169.000.

Connick, Francis G., to Swift & Company. Canned food recyclable thermal simulator. 3,964,313, Cl. 73-343.00B.

Conroy, Andrew, to Lawrence Peska Associates, Inc., a part interest. Suspended ceiling leveling device. 3,964,710, Cl. 248-206.00R.

Console, Luciano; Chiellini, Enzo; and Calcagno, Benedetto, to Societa' Italiana Resine S.I.R. S.p.A. Separation and recovery of products obtained in catalytic processes of preparing acrylonitrile polymers or copolymers. 3,965,079, Cl. 526-68.000.

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Constant, James Nickolas. Off-resonant chaff system for a large target viewed by low frequency radar. 3,965,472, Cl. 343-18.00E.

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Cortese, Anthony M. Stance control supports for, and combination thereof with, a golf shoe. 3,964,180, Cl. 36-135.000.

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DeWitt, Robert; Jepson, Bernhart E.; and Schwind, Roger A., to United States of America, Energy Research and Development Administration. Separation of sulfur isotopes. 3,965,250, Cl. 423-539.000.
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Thomas, Leslie P., 3,964,233.
Diamond Shamrock Corporation: *See—*
Scozzie, James A., 3,965,139.
Dickens, Elmer D., Jr., to B. F. Goodrich Company, The. Smoke retardant vinyl chloride and vinylidene chloride polymer compositions. 3,965,068, Cl. 260-45.75N.
Dickenson, Harvard G. Four way diverter valve. 3,964,517, Cl. 137-625.430.
DiCola, Louis S.; Kemp, Donald W.; and Evans, H. Duane, to Raytheon Company. Organic carbon analyzer system. 3,964,868, Cl. 23-253.0PC.
Dictaphone Corporation: *See—*
Matz, Bjorn J.; and Rivers, Paul F., 3,965,484.
Diem, Hans: *See—*
Buschmann, Karl; Diem, Hans; Matthias, Guenther; and Wodtcke, Friedrich, 3,965,195.
Dierckx, Jozef Aime: *See—*
Janssens, Wilhelmus; Claeys, Daniel Alois; Lemahieu, Raymond Gerard; and Dierckx, Jozef Aime, 3,965,282.
Dieringer, Andrew M.; and Eidemanis, Gunars, to Rexnord Inc. Railroad tie handling machine and method. 3,964,397, Cl. 104-9.000.
Dieterich, Dieter: *See—*
Markusch, Peter; and Dieterich, Dieter, 3,965,051.
Diggs, Richard E. Heater and vapor generator. 3,964,465, Cl. 126-350.00B.
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Dimauro, Frank S. Dispenser for bodies in sealed sheet material compartments. 3,964,638, Cl. 221-3.000.
Dimitracopoulos, Panayotis C. Audiovisual book system. 3,964,188, Cl. 40-28.100.
Dimmer, Robert P., to GTE Automatic Electric Laboratories Incorporated. Electronic tone ringer. 3,965,307, Cl. 179-84.00T.
Dineen, John Joseph, to Moore Business Forms, Inc. Paper web trimming apparatus having feed band chopper. 3,964,356, Cl. 83-302.000.
Dinella, Donald; and Kovaric, Richard M., to Western Electric Company, Inc. Bonding contact members to circuit boards. 3,964,666, Cl. 228-106.000.
Dinelli, Dino; Morisi, Franco; and Zaccardelli, Delio, to Snam Progetti S.p.A. Process for the preparation of L-car-bamyl-amino acids and of the corresponding L-amino acids. 3,964,970, Cl. 195-2.000.
Dini, Mamiliano, to European Rotogravure Association. Method and apparatus for removing surplus ink on printing cylinders. 3,964,386, Cl. 101-169.000.
DiPeri, Leonard J. Energy conservation housing. 3,964,268, Cl. 62-121.000.
Ditzig, Albert F., to Molex Incorporated. Push button switch. 3,965,320, Cl. 200-314.000.
Dixon, Robert L. Light transmitter. 3,964,824, Cl. 350-190.000.
Dixon, Robert P., to General Electric Company. Compressor and expander circuits for compander system. 3,965,436, Cl. 330-29.000.
Dr. -Ing. H.c.F. Porsche Aktiengesellschaft: *See—*
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Dr. -Ing Rudolf Hell GmbH: *See—*
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Dodson, Elmer E.: *See—*
May, Kenneth D.; Dodson, Elmer E.; and Cohee, Claude C., 3,964,590.
Dodson, James S., Jr.: *See—*
Petrides, Petros T.; Nickerson, Russell J.; Cordeiro, Rodney R.; and Dodson, James S., Jr., 3,965,329.
Doenges, Richard E.; and Amelung, James E., to TRW Inc. Investment wax. 3,964,915, Cl. 106-38.600.
Doin, Bernard J.: *See—*
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Dolan, Donald T.: *See—*
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Dolfini, Joseph Edward; Bohme, Ekkehard; and Slusarchyk, William A., to E. R. Squibb & Sons, Inc. 6-Arylthio penicillanic acid and derivatives thereof. 3,965,093, Cl. 260-239.100.
Domenz, Thomas B.: *See—*
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Dorr-Oliver Incorporated: *See—*
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Dorschner, Irvin E.: *See—*
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Dotter, Berton E., Jr., to TRW Inc. Test system for a T carrier type telephone PCM communications system. 3,965,309, Cl. 179-175.31R.
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Drackett Company, The: *See—*
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Drakoff, Raymond, to Lever Brothers Company. Lusterizing shampoo containing a polysiloxane and a hair-bodying agent. 3,964,500, Cl. 132-7.000.
Dressel, Otto: *See—*
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Purton, Robert Merrill; and Maddock, Robert Brent, 3,964,516.
Dreyer, John E. Pallet devices and method. 3,964,618, Cl. 214-10.50R.
Driscoll, Gary L., to Sun Ventures, Inc. Method of manufacturing a foam fibrillated fibrous web from an isotactic polypropylene and polyethylene blend. 3,965,229, Cl. 264-50.000.
Drivas, Peter J.: *See—*
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Duggan, Thomas W.; and McNerney, Richard P., to Schlumberger Technology Corporation. Apparatus for repairing conductor insulation. 3,964,845, Cl. 425-13.000.
Duinker, Hans Dignus; Schoot, Cornelis Johannes; and Vermeulen, Gerardus Antonius Wilhelmus, to U.S. Philips Corporation. Method of making screens for cathode-ray tubes. 3,965,278, Cl. 427-54.000.
Duistermaat, Jan Hendrik; Gerritsen, Jan; and Panis, Constantius Johannes Waltherus, to U.S. Philips Corporation. Degaussing device for a color television display tube. 3,965,386, Cl. 315-8.000.
Dukes, Bobby Wayne, to N-S-W Corporation. Back-up wrench for threaded connectors. 3,964,352, Cl. 81-426.000.
Dumas, Odilon. Self-supporting pipe boom. 3,964,512, Cl. 137-615.000.
Dunkelman, Robert L., to Frymaster Corporation, The. Tilting frypan with drain system. 3,964,378, Cl. 99-425.000.
Dunlop Limited: *See—*
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Dunnell, Alan Keith; Wade, Thomas Cyril James; and Greenwood, David, to Imperial Chemical Industries Limited. Crimping gears and process. 3,964,141, Cl. 28-1.800.
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Du Pont de Nemours, E. I., and Company: *See—*
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Phillips, William Lewis, Jr.; and Uebler, Ernest Alan, 3,965,010
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Dwyer, Allen Frederick: *See—*
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Dwyer, Thomas A., to Liquid Carbonic Corporation. Ice making machine. 3,964,270, Cl. 62-138.000.
Dyckerhoff & Widmann Aktiengesellschaft: *See—*
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Earl, T. Desmond, to Textron, Inc. Air cushion type undercarriage for aircraft. 3,964,698, Cl. 244-100.00A.

Earley, James Valentine: *See—*
Derieg, Michael Edward; Earley, James Valentine; Fryer, Rodney Ian; and Sternbach, Leo Henryk, 3,965,151.

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Easy Heat-Wirekraft, MSP Industries Corporation: *See—*
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Eaton, Sargent Sheffield, Jr., to RCA Corporation. CMOS oscillator. 3,965,442, Cl. 331-116.00R.

Ebeling, Wolfgang: *See—*
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Eberle, Marcel K.; and Manning, Robert E., to Sandoz, Inc. 2-Amino-5-(trifluoromethyl phenylalkyl)-1,3,4-thiadiazoles. 3,965,110, Cl. 260-306.80D.

Eckert, Hans-Werner: *See—*
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Eda, Masato, to Yamaha, Hatsudoki Kabushiki Kaisha. Rotary piston type engine 3,964,448, Cl. 123-8.450.

Eder, Rupert. *See—*
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Eder, Ulrich; Haffer, Gregor; Ruppert, Jurgen; Sauer, Gerhard; and Wiechert, Rudolf, to Schering Aktiengesellschaft. 6,9-Oxido-9,10-secoestrane derivatives and method of synthesis. 3,965,124, Cl. 260-346.20M.

Edmonds, David L.: *See—*
Street, William M.; and Edmonds, David L., 3,964,109.

Edstrom, Andrew H., to Xerox Corporation. Ribbon guide for a serial printer. 3,964,595, Cl. 197-170.000.

Edwards, Edwin L. Roller replacing. 3,964,658, Cl. 226-190.000.

Edwards, James W., to Monsanto Company. Catalyzed process for imide-alcohol condensation. 3,965,075, Cl. 260-78.00L.

Edwards, John A.: *See—*
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Edwards, Robert S.: *See—*
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Eftefield, Larry G.; and Wirt, Leon A., to Caterpillar Tractor Co. Self-aligning trunnion bearing assembly. 3,964,803, Cl. 308-72.000.

Eguchi, Tamiyuki; and Imai, Satoshi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Membrane separation apparatus. 3,965,012, Cl. 210-433.00M.

Ehlscheid, Gunter; Langenbeck, Peter; and Stemmler, Kurt, to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG. Method of cutting material to shape from a moving web by burning. 3,965,327, Cl. 219-121.0LM.

Ehret, Rudolf, to Pfaudler-Werke AG. Alternating voltage method of electrically detecting damage to an enamel layer having one or more tantalum plugs. 3,965,415, Cl. 324-54.000.

Eibel, Gyorgy: *See—*
Toth, Geza; Szabo, Gabor; Eibel, Gyorgy; and Somfai, Eva, 3,964,894.

Eiben, Frank J.; Halbert, Eric H.; Jobe, William T.; and Siegmann, Carl, to Senco Products, Inc. Safety firing control means for a fluid operated tool. 3,964,659, Cl. 227-8.000.

Eichenhofer, Kurt-Wilhelm; and Schliebs, Reinhard, to Bayer Aktiengesellschaft. Production of ketazines. 3,965,097, Cl. 260-240.00G.

Eidemanis, Gunars: *See—*
Dieringer, Andrew M.; and Eidemanis, Gunars, 3,964,397.

Eigenmann, Ludwig. Apparatus for applying tape marking material on road surfaces. 3,964,559, Cl. 180-1.0AP.

Eigenmann, Ludwig. Retro-reflecting element and method. 3,964,820, Cl. 350-104.000.

Eigenmann, Ludwig. Reflex reflecting system for road surface marking. 3,964,821, Cl. 350-105.000.

Eigenmann, Ludwig. Device for forming marking stripes on road surfaces. 3,964,835, Cl. 404-94.000.

Eisele, John A.: *See—*
Leinkram, Charles Z.; Oaks, William D.; Eisele, John A.; and Faraday, Bruce J., 3,964,155.

Eisenbach, Wilhelm; Lehmkuhl, Herbert; and Wilke, Gunther, to Studiengesellschaft Kohle m.b.H. Process for the electrochemical synthesis of organic metal compounds. 3,964,983, Cl. 204-59.00L.

Elastogran Maschinenbau GmbH & Co., Firma: *See—*
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Electrac, Inc.: *See—*
Honey, Raymond W.; and Katz, Louis, 3,965,341.

Electronic Engineering Company of California: *See—*
Yablonski, Robert E., 3,965,406.

Elford, Peter Bilice. Packaging machine. 3,964,239, Cl. 53-196.000.

Ellefson, Charles R.: *See—*
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Elliott Brothers (London) Limited: *See—*
Cattermole, David Christopher, 3,964,511.

Elliott, Edward C., to Dow Corning Corporation. Method of improving the electrical properties of organopolysiloxane elastomers and compositions therefor. 3,965,065, Cl. 260-37.0SB.

Ellis, Franklin H.; and Andrews, Stephen W., to Sybron Corporation. Method of using electrodes having antiseptic properties for LIDC therapy. 3,964,477, Cl. 128-172.100.

Ellis, Michael C.: *See—*
Manning, Harold E.; and Ellis, Michael C., 3,965,044.

Eloranta, Vaito K., to Polaroid Corporation. Manually operated photographic processing system. 3,965,480, Cl. 354-83.000.

Elsner, Bertram F.; and Elsner, Frank, Jr., to Elsner Engineering Works, Inc. Seal temperature control means for curtain-type wrapping machine. 3,965,333, Cl. 219-243.000.

Elsner Engineering Works, Inc.: *See—*
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Elsner, Frank, Jr.: *See—*
Elsner, Bertram F.; and Elsner, Frank, Jr., 3,965,333.

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EMI Patents Limited: *See—*
Hounsfield, Godfrey Newbold, 3,965,357.

Emil Korsch Spezialfabrik fur Komprimiermaschinen: *See—*
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Emmons, Stephen Perry, to Texas Instruments Incorporated. Technique for reduction of electrical input noise in charge coupled devices. 3,965,368, Cl. 307-221.00D.

Energystics Corporation: *See—*
Schalow, Rudolph D.; and Link, John T., 3,964,677.

Engalitcheff, John, Jr.; and Schinner, Edward N., to Baltimore Aircoil Company, Inc. Gas scrubbing apparatus. 3,964,886, Cl. 55-228.000.

Engelhardt, John S., to Anaconda Company, The. Apparatus including novel bridge circuit. 3,964,315, Cl. 73-362.0AR.

Engelter, Elwyn E.: *See—*
Whitmore, Charles H.; Houtman, Paul K.; and Engelter, Elwyn E., 3,964,844.

Engins Matra: *See—*
Lardennois, Regis; Robert, Michel; Gabillard, Robert; and Rubin, Edouard, 3,964,702.

Engle, Robert C., to Ex-Cell-O Corporation. Stone wear indication on a honing machine. 3,964,211, Cl. 51-165.870.

Englert, Robert D.; Berriman, Lester Porter; Armstrong, Kenneth P.; and Roe, Douglas A., to Dresser Industries, Inc. Fluid flow device and liquid metering. 3,965,221, Cl. 261-23.00A.

English, Brian Box; and Cross, Frederick, to Ferranti, Limited. Beamed-intensity control systems for cathode-ray tubes. 3,965,389, Cl. 315-384.000.

Entwistle, Robert J.: *See—*
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Epstein, Jacob J., to Seymour Foods, Inc. Method of freezing cooked eggs. 3,965,270, Cl. 426-418.000.

Epstein, Jacob J.; and York, Lawrence R., to Seymour Foods, Inc. Method of freeze treating mayonnaise-containing products. 3,965,272, Cl. 426-524.000.

Eric, Lucien: *See—*
Chubb, Francis L.; and Eric, Lucien, 3,965,173.

Erikson, Kenneth R.: *See—*
Wreede, John E.; Stoddard, Terence C.; and Erikson, Kenneth R., 3,965,461.

Ernest, Robert P.; Jones, Charles M.; Ounsted, Edwin J.; and Wu, Hai, to Ford Motor Company. Water cooling system – Wankel engine. 3,964,445, Cl. 123-8.010.

Ernst, Rudolf, to Elastogran Maschinenbau GmbH & Co., Firma. Mixing apparatus for multi-component plastics, particularly polyurethane. 3,964,731, Cl. 259-4.00R.

Ernst Wirz AG, Kipper- & Maschinenfabrik: *See—*
Wirz, Herbert A., 3,964,625.

ESB Incorporated: *See—*
Oltman, John E.; and Feldhake, Ralph H., 3,964,932.

Eschler, Hans, to Siemens Aktiengesellschaft. Apparatus and process for deflecting the direction of light beams in a controllable fashion. 3,964,825, Cl. 350-161.000.

Eshelman, Philip V., to Colt Industries Operating Corporation. Ignition distributor. 3,964,456, Cl. 123-117.00R.

Esorco Corporation: *See—*
Speller, Frank N., Jr., 3,964,545.

Esquire, Inc.: *See—*
Thompson, Joseph L., Jr, 3,965,346.

Esser, Leonard Jan Maria, to U.S. Philips Corporation. Charge transfer device with J FET isolation and means to drain stray charge. 3,965,481, Cl. 357-24.000.

Establissements Francois Salomon et Fils: *See—*
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Etablissements Bertrand Faure: *See—*
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Ethyl Corporation: *See—*
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Euchner, Perry C., Jr. Appartus for limiting vacuum and pressure in a furnace. 3,964,675, Cl. 236-15.00C.

European Rotogravure Association: *See—*
Dini, Mamiliano, 3,964,386.

Evans, Anthony Charles: *See—*
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Evans, H. Duane: *See—*
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Evans, Ronald C.; and Corderman, Sidney A., to McIntosh Laboratory, Inc. Protective system for stereo loudspeakers. 3,965,295, Cl. 179-1.00A.

Evans, Ronald C.: *See—*
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Everhart, William Duke; and McKay, Charles Raymond, to Du Pont de Nemours, E. I., and Company. Method of making an electrical cable. 3,964,945, Cl. 156-52.000.

Everingham, John R.; and Hoenke, Karl A., to Chevron Research Company. Lawn moss control with ferric ammonium sulfate-ammonium sulfate double salts. 3,964,893, Cl. 71-65.000.

Evgen, Allan: *See—*
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Evrard, Ernest L., to Societe Anonyme Machines Automatiques Cillotta. Bottle closing apparatus. 3,964,240, Cl. 53-306.000.

Ex-Cell-O Corporation: *See—*
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Exley, John T., to Avco Corporation. Eccentric passage pipe diffuser. 3,964,837, Cl. 415-181.000.

Extel Corporation: *See—*
Cless, Gerhard; and Kaplan, Edward L., 3,964,673.

Exxon Research and Engineering Company: *See—*
Baldwin, Francis P.; and Malatesta, Alberto, 3,965,213.
Burnop, Victor Charles Ernest; and Watkins, Ronald Charles, 3,965,017.
Fung, Shun Chong; and Tauster, Samuel J., 3,964,933.
Irani, Cyrus A.; and McHugh, Daniel J., 3,965,001.
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F. L. Smidth & Co.: *See—*
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Fachbach, Heinz: *See—*
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Thien, Gerhard; and Fachbach, Heinz, 3,964,462.

Fair, James W.: *See—*
Young, Danny J., 3,965,395.

Falk, Eugene H. Process for mounting photographs to simulate an oil painting. 3,964,946, Cl. 156-59.000.

Falk, Robert A.: *See—*
Kleiner, Eduard K.; and Falk, Robert A., 3,965,148.

Fancher, Llewellyn W., to Stauffer Chemical Company. Thiocyano xanthates. 3,965,137, Cl. 260-454.000.

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Farley, David L.; and Barrington, Burchus Q., to Halliburton Company. Pressure operated isolation valve for use in a well testing and treating apparatus, and its method of operation. 3,964,544, Cl. 166-315.000.

FAS/CON Systems, Inc.: *See—*
Manchester, Isaac F., Jr., 3,964,250.

Faure, Jean-Pierre; and Michot, Gilbert, to Commissariat a l'Energie Atomique. Device for locating and/or obturating leaky tubes in heat-exchangers. 3,964,293, Cl. 73-40.50A.

Federal Paper Board Company, Inc.: *See—*
Steel, Thomas C., 3,964,671.

Feist, Wolfgang M.: *See—*
Picker, Amos; and Feist, Wolfgang M., 3,965,385.

Fekete, Thomas M.: *See—*
Ager, John W.; and Fekete, Thomas M., 3,965,219.

Feldhake, Ralph H.: *See—*
Oltman, John E.; and Feldhake, Ralph H., 3,964,932.

Feldwick, Raymond Douglas; and Hildebrandt, Darrell Edward, to W. R. Grace & Co. Formation of alumina-containing particles with aluminum hydroxide binder. 3,965,042, Cl. 252-455.00R.

Fenn, John B., Jr.: *See—*
Allan, Frank V.; Fenn, John B., Jr.; and Lewis, John H., 3,965,352.

Fenton, Russell R. Cover assembly for open top truck bodies. 3,964,781, Cl. 296-100.000.

Ferranti, Limited: *See—*
English, Brian Box; and Cross, Frederick, 3,965,389.

Ferraris, Giuseppe: *See—*
Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,965,078.

Ferraro, Frank A., to Warner-Lambert Company. Adjustable safety razor. 3,964,159, Cl. 30-47.000.

Ferris, Ray L.; and Marulic, Walter J., to Pullman Incorporated. Fifth wheel plate assembly. 3,964,766, Cl. 280-433.000.

Ferro Corporation: *See—*
Schumacher, Ray F.; Prasek, David J.; and Van Stone, Howard L., 3,964,892.

Fetzer, Helmut; Braun, Hans; Cieslok, Gunter; and Rasenberger, Otto, to L. Schuler GmbH. Drive mechanism for a reciprocating feed. 3,964,357, Cl. 83-318.000.

Fiat Societa per Azioni: *See—*
Husse, Massimo; and Lagonigro, Mauro, 3,964,309.

Fiber Industries, Inc.: *See—*
Owens, Malcolm P.; Barnes, Edgar E.; and Burton, Dennis Ray, 3,964,721.

Firester, Arthur H., to United States of America, Army. Electrooptic-Q-switching system for a laser. 3,965,439, Cl. 331-94.50Q.

Firmenich S.A.: *See—*
Schulte-Elte, Karl-Heinrich; Joyeux, Michel; and Ohloff, Gunther, 3,965,189.

Fischer, Artur. Expansion anchor for suspended ceilings and other suspended elements. 3,964,229, Cl. 52-698.000.

Fischer, Artur. Expansion anchor device. 3,964,230, Cl. 52-698.000.

Fischer, Christopher L.: *See—*
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Fischer, Roman: *See—*
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Fish, Lawrence W., Jr.; Evans, Ronald C.; and Corderman, Sidney A., to McIntosh Laboratory Inc. Automatic frequency control system. 3,965,423, Cl. 325-346.000.

Fishburn, Robert Anthony: *See—*
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Fisher, Don E.; Knauff, Paul A.; and Bowen, David, Jr., to Monsanto Company. Traverse winding method. 3,964,724, Cl. 242-43.00R.

Fisher, John Albert, to Weathershields Limited. Opening roof assemblies for vehicles. 3,964,783, Cl. 296-137.00C.

Fitzgerald, John B., to ACF Industries, Incorporated. Multi condition relief valve. 3,964,259, Cl. 60-290.000.

Flaschar, Heinz: *See—*
Hesse, Horst; Kobald, Walter; Gand, Heinz; Hoheisel, Rainer; Sopha, Klaus; Flaschar, Heinz; Kleinschmidt, Heinz; Arnold, Winfried; and Zeuch, Werner, 3,964,518.

Fledges, Werner; and van Hullen, Peter, to Becker & van Hullen Niederrheinische Maschinenfabrik. Apparatus for loading multi-stage heating presses. 3,964,853, Cl. 425-338.000.

Fleshman, Roger L. Non-climbable poultry cage front. 3,964,439, Cl. 119-17.000.

Flider, Frank S., to Justrite Manufacturing Company. Self closing safety gate valve for viscous fluids. 3,964,728, Cl. 251-183.000.

Flier, Ronald J.: *See—*
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Benson, William Merle, 3,964,779.
Vensel, Perry M., 3,964,600.

Fogle, Stephen Fuller, to Texas Dynamatics, Inc. Fluid actuated downhole drilling device. 3,964,558, Cl. 175-107.000.

Food Engineering Corporation: *See—*
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Foote, Kenneth R.; Hanzel, Joseph W.; and Froehner, Warren P., to United States of America, Navy. Igniter. 3,964,393, Cl. 102-37.600.

Ford Motor Company: *See—*
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Ernest, Robert P.; Jones, Charles M.; Ounsted, Edwin J.; and Wu, Hai, 3,964,445.
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Mahoney, Lee R., 3,965,149.
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Fordsmand, Marc, to Kicon AG. Fixture for the mounting and cooling of fluorescent tubes. 3,965,345, Cl. 240-47.000.

Forker, Ray B., Jr.; and Panzarino, Joseph N., to Corning Glass Works. Method and apparatus for providing uniform surface browning of foodstuff through microwave energy. 3,965,323, Cl. 219-10.55E.

Forman, Clarence Albert: *See—*
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Foster, Richard D.: *See—*
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Fowler, James E., to Deering Milliken Research Corporation. Carpet tile machine. 3,964,353, Cl. 83-1.000.

Fox, Dale H. Combined boot jack and shaper. 3,964,117, Cl. 12-120.500.

Fox, J. DeWitt. Universal cervical collar. 3,964,474, Cl. 128-87.00B.

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Frank, Gomer S., to Aquality, Inc. Visual color comparator with integral dual dip cells. 3,964,831, Cl. 356-182.000.

Franklin, Frederick C., to Chevron Research Company. Maleic anhydride recovery. 3,965,123, Cl. 260-346.80M.

Franklin, Wesley D. Apparatus for obtaining earth cores. 3,964,555, Cl. 175-44.000.

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Froning, Edward C. Apparatus for sterotaxic lateral extradural disc puncture. 3,964,480, Cl. 128-215.000.
Fryer, Richard M.; and Matlock, Robert G., to United States of America, Energy Research and Development Administration. Identification of failed fuel element. 3,964,964, Cl. 176-19.0LD.
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G. Siempelkamp & Co.: *See—*
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G. Tsutomu Arai and Roger A. Hummel, Architects, (a Partnership): *See—*
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Gabbrielli, Luigi; and Giovanetti, Piero, to Ing. C. Olivetti & C., S.p.A. Keyboard of elastic material for office machines. 3,964,594, Cl. 197-98.000.
Gabillard, Robert: *See—*
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Gainer, John L., to University of Virginia. Method for treating papillomas. 3,965,261, Cl. 424-180.000.
Galen, Ralph W.; and Vanderpoel, John A. Bicycle rack. 3,964,611, Cl. 211-5.000.
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Gambino, Richard J.: *See—*
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Gane, Gordon R., to Kaiser Aluminum & Chemical Corporation. Easy open end method and apparatus. 3,964,414, Cl. 113-121.00C.
Gannett, Danforth K., to Bell Telephone Laboratories, Incorporated. Secret communication signal generating system. 3,965,297, Cl. 179-1.50R.
Gannon, Peter F. Adjustable safety ladder for above-the-ground swimming pools. 3,964,572, Cl. 182-86.000.
Ganser, Friedrich: *See—*
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Garcia, Valentine, to Xerox Corporation. Self-aligning and self-leveling pinch roll for magnetic card transport system. 3,964,739, Cl. 271-3.000.
Gardner, James W. Machine for slitting nut skins. 3,964,379, Cl. 99-541.000.
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Gassett, Paul L.; and McLeod, Wilfred R., to Gulf Research & Development Company. Offshore terminal. 3,964,423, Cl. 114-230.000.
Gassner, Hans; and Kress, Manfred, to Kugelfischer Georg Schafer & Co. Friction rollers for twist tubes in false-twisting apparatus. 3,964,324, Cl. 74-215.000.
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Gay, Walter A.; and Tobin, John H., to Olin Corporation. Preparation of p-fluoro-m-phenylenediamine. 3,965,183, Cl. 260-578.000.
Gaylord, Jack A. Locking means for releasable strap connectors. 3,964,138, Cl. 24-230.00A.
Gearhart, Marvin; King, David W.; Mendoza, Rudolph R.; Scherbatskoy, Serge A.; and Young, James D., to Gearhart-Owen Industries, Inc. Downhole signaling system. 3,964,556, Cl. 175-45.000.
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Geist, Robert; and Rudolph, Franz Benedikt, to Lever Brothers Company. Printing of deep drawn containers with images reflected from inside of cylinder. 3,964,910, Cl. 96-46.000.
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Getz, Donald J. Garbage can for use with disposable bags. 3,964,630, Cl. 220-63.00R.
Gibbs, Dale S.; Vandell, Robert D.; and Wessling, Ritchie A., to Dow Chemical Company, The. Colloidally stable dispersions. 3,965,032, Cl. 252-306.000.
Gideon, Thomas R. Knot simulator. 3,964,105, Cl. 2-152.00R.
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Giordano, Annie Sue; Burke, Richard Lerda; and Wixon, Harold Eugene, to Colgate-Palmolive Company. Anionic fabric conditioners. 3,965,014, Cl. 252-8.700.
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Gold, Elijah H., to Schering Corporation. Poultry coccidiosis treating compositions and method of using the same. 3,965,175, Cl. 260-562.00R.
Gold, Elijah H., to Schering Corporation. Novel substituted amidines. 3,965,176, Cl. 260-564.0RF.
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Gordon, Frank John, to Motorola, Inc. Adaptable tuner assembly. 3,964,320, Cl. 74-10.800.
Gordon, Garron. Safety razor with an angularly adjustable head. 3,964,160, Cl. 30-89.000.
Gordon, James Sneddon; and den Brinker, Carl Siegmund, to Texas Instruments Incorporated. Vehicle monitoring system. 3,964,302, Cl. 73-117.300.
Gordon, Paul, to Strategic Medical Research Corporation. Method of enhancing learning and/or memory in warm blooded animals. 3,965,262, Cl. 424-180.000.
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Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcz, 3,965,179.
Gostling, Peter Eric, to C. Evans & Sons Limited. Builders scaffolding. 3,964,575, Cl. 182-230.000.
Goto, Kenji, to Toyota Jidosha Kogyo Kabushiki Kaisha. Internal combustion engine with a supercharger. 3,964,451, Cl. 123-75.00B.
Gould Inc.: *See—*
Arndt, John P., 3,965,376.
Gourlandt, Albert Joseph; Gourlandt, Georges Charles; Cauquelin, Yves Bernard; and Lafon, Jean Francois. Automatic injection device. 3,964,481, Cl. 128-218.00A.
Gourlandt, Georges Charles: *See—*
Gourlandt, Albert Joseph; Gourlandt, Georges Charles; Cauquelin, Yves Bernard; and Lafon, Jean Francois, 3,964,481
Graham Magnetics Incorporated: *See—*
Deffeyes, Robert J., 3,965,046.

Graham, Scott Oliver: *See—*
Himics, Richard Joseph; Graham, Scott Oliver; and Ross, Daniel Louis, 3,964,909.

Grancio, Michael R.; and Walker, George E., to Monsanto Company. Process of manufacturing lacquered articles of cold rolled abs resin. 3,965,230, Cl. 264-129.000.

Grant, Arthur F.: *See—*
Williams, Thomas O.; and Grant, Arthur F., 3,964,260.

Graphic Sciences, Inc.: *See—*
Costello, Matthew J.; Dolan, Donald T.; Dehaudringhien, Andre T.; Hurkmans, Antoon M.; Jasinski, Kenneth R.; and Keplinger, Edward G., 3,965,292.

Gratzmuller, Jean Louis. Apparatus for indicating cylinder fluid level. 3,965,317, Cl. 200-82.00E.

Graves, Ross E., to Hughes Aircraft Company. Tunable laser oscillator. 3,965,440, Cl. 331-94.50C.

Green, David Bruce: *See—*
Asselman, George Albert Apolonia; Green, David Bruce; Castelijns, Adrianus Petrus Johannes; Naastepad, Pieter Aart; and De Ruiter, Jacob Willem, 3,965,334.

Greenfield, Harold: *See—*
Malz, Russell E., Jr.; Amidon, Roger W.; and Greenfield, Harold, 3,965,174.

Greenwood, David: *See—*
Dunnell, Alan Keith; Wade, Thomas Cyril James; and Greenwood, David, 3,964,141.

Greier, Josef: *See—*
Thien, Gerhard; Fachbach, Heinz; and Greier, Josef, 3,964,449.

Gretag Aktiengesellschaft: *See—*
Degenhardt, Gunter; and Celio, Tino, 3,964,193.

Grevstad, Paul E., to United Technologies Corporation. Fuel cell cooling system with shunt current protection. 3,964,929, Cl. 136-86.00R.

Griffis, Juniper, to Lyst, Harold E., a part interest. Laterally tiltable truck or trailer dump body with hinged side panels and hydraulically operated means for opening either side panel and at different elevations of the dump body. 3,964,791, Cl. 298-11.000.

Grimes, Donald D.; Hahn, Roger M.; and Sheldon, Jerome F., to Rexnord Inc. Wear strip. 3,964,800, Cl. 308-3.00R.

Groeneveld, Johannes. Device for finishing tile joints. 3,964,854, Cl. 425-458.000.

Grohmann, Lothar, to International Standard Electric Corporation. Radio or television receiver with an automatic station finding arrangement. 3,965,336, Cl. 235-92.0FQ.

Groswith, Charles T., III: *See—*
Abildgaard, William H.; and Groswith, Charles T., III, 3,964,770.

Grundman, Richard G., to General Motors Corporation. Pressure control system. 3,964,506, Cl. 137-85.000.

Grushkin, Bernard; and Salzman, Michael N., to Xerox Corporation. One-step synthesis of aromatic organic diselenides. 3,965,049, Cl. 260-2.00M.

GTE Automatic Electric (Canada) Limited: *See—*
Borbas, Robert A.; Dufton, John P.; Foster, James H.; and Siegel, Jeffrey W., 3,965,458.

GTE Automatic Electric Laboratories Incorporated: *See—*
Dimmer, Robert P., 3,965,307.
Marheine, Edward A., 3,965,304.
Ng, John; and Jacobs, Melvin A., 3,965,305.
Thomas, Robert M., 3,965,447.

GTE Laboratories Incorporated: *See—*
Klein, Richard M.; and Samuel, Natansohn, 3,965,031.

GTE Sylvania Incorporated: *See—*
de Vos, Hendrik A. J., 3,965,451.
Scheithauer, William, Jr.; and Shaffer, Glenn Albert, 3,964,878.

Gudgel, Willard Leon: *See—*
Aylsworth, William Kenneth; Gudgel, Willard Leon; and Luoma, Richard William, 3,964,672.

Guditz, Elis A.; and Burke, Robert L., to Massachusetts Institute of Technology. Photoformed plated interconnection of embedded integrated circuit chips. 3,965,277, Cl. 427-43.000.

Gudkevich, Veniamin Mikhailovich: *See—*
Krupman, Leonid Isaakovich; Okonishnikov, Ary Mikhailovich; Sochnev, Alexandr Egorovich; Gavronsky, Boris Viktorovich; Popov, Viktor Alexeevich; Kalashnik, Anatoly Nikolaevich; Chumachenko, Vasily Sergeevich; Gudkevich, Veniamin Mikhailovich; Panev, Georgy Alexeevich; Detochka, Vasily Ivanovich; Telesov, Savely Adolfovich; Pokrass, Leonid Moiseevich; Ofengenden, Abram Mikhailovich; Nesterovich, Raisa Petrovna; and Zhitnik, Georgy Gavrilovich, 3,964,900.

Gueret, Jean-Louis H.: *See—*
Morane, Bruno R.; and Gueret, Jean-Louis H., 3,964,643.

Guerrero, Fernando V.: *See—*
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Antonio, Anthony I.; and Guerrero, Fernando V., 3,964,340.

Guerrino, David L.; and Cole, Richard W., Jr., to United States of America, Navy. Antenna for receiving VLF/LF transmission in seawater. 3,965,474, Cl. 343-719.000.

Gugeler, William G. Changeable color display device. 3,964,194, Cl. 40-106.210.

Gulf Research & Development Company: *See—*
Bash, David L.; and Lakshmanan, Pallavoor R., 3,965,061.
Gassett, Paul L.; and McLeod, Wilfred R., 3,964,423.
Heilman, William J.; and Lynch, Thomas J., 3,965,018.
Juvkam-Wold, Hans C., 3,964,557.
Kobylinski, Thaddeus P.; Taylor, Brian W.; and Vogel, Roger F., 3,965,040.
Lakshmanan, Pallavoor R., 3,965,060.

Gupta, Shyam K., to Pfizer Inc. Process for synthesizing methyl glyoxal acetals. 3,965,191, Cl. 260-594.000.

Gustafson, Manfred Wallace; and Loqvist, Kaj-Ragnar. Wave generator. 3,965,364, Cl. 290-53.000.

Guth, Kenneth C.: *See—*
Clinard, Glenn G.; Guth, Kenneth C.; Mulhollam, Gail R.; and Volk, Frank J., 3,965,470.

Gutmann, Karl, Jr.; and Eder, Rupert, to Karl Gutmann KG, Firma. Typewriter and bookkeeping machine work unit for the formation of a work unit chain. 3,964,401, Cl. 108-64.000.

Gutridge, Jack E.: *See—*
Miller, Roy W.; and Gutridge, Jack E., 3,964,399.

Gwynne, Thomas, to United States Gypsum Company. Manufacture of cementitious board. 3,964,944, Cl. 156-40.000.

H. C. Price Co.: *See—*
Horn, Roy L.; and Lane, M. Jack, 3,964,435.

H. W. Hart Mfg. Co.: *See—*
Hart, Harold W., 3,964,440.

Haase, Dietrich, to Hartung, Kuhn & Co. Maschinenfabrik GmbH. Method and apparatus for operating a leveling device for a coking oven. 3,964,977, Cl. 201-40.000.

Habgood, Gordon Alfred, to Girling Limited. Disc brake assembly having a releasable drag-taking member. 3,964,581, Cl. 188-73.300.

Hadden, William: *See—*
Metzger, Arthur C.; and Hadden, William, 3,964,694.

Haeuszer, Floyd A., to United States of America, Air Force. Radiation detection system. 3,965,471, Cl. 343-18.00E.

Haffer, Gregor: *See—*
Eder, Ulrich; Haffer, Gregor; Ruppert, Jurgen; Sauer, Gerhard; and Wiechert, Rudolf, 3,965,124.

Hagemann, Julius, to United States of America, Navy. Influence detecting gear with improved towing characteristics. 3,964,424, Cl. 114-235.00B.

Haglund, William A..; and Reiling, Theodore P. Perennial weed control by deep placement of volatile soil fumigants. 3,964,405, Cl. 111-6.000.

Hahm, Heinz Gunter; and Pocci, Nedo Igor, to ITT Industries, Inc. Brake shoe for spot-type disc brakes. 3,964,580, Cl. 188-73.100.

Hahn, Roger M.: *See—*
Grimes, Donald D.; Hahn, Roger M.; and Sheldon, Jerome F., 3,964,800.

Hahner, Reinhard; Reibetanz, Wilbert; and Wanner, Karl, to Robert Bosch G.m.b.H. Vacuum sweeper. 3,964,888, Cl. 55-274.000.

Hajos, Zoltan George, to Hoffmann-La Roche Inc. Stereospecific total steroidal synthesis via substituted c/d-trans indanones. 3,965,117, Cl. 260-340.300.

Hala, Alfred A., to Hohmann & Barnard, Inc. Insert and anchor positioning and locating device. 3,964,219, Cl. 52-105.000.

Hala, Alfred A.; and Schwalberg, Bernard J., to Hohmann & Barnard, Inc. Adjustable wall-tie reinforcing system. 3,964,226, Cl. 52-562.000.

Hala, Alfred A., to Hohmann & Barnard, Inc. Anchoring apparatus for fixedly spacing multiple wall constructions. 3,964,227, Cl. 52-568.000.

Halbert, Eric H.: *See—*
Eiben, Frank J.; Halbert, Eric H.; Jobe, William T.; and Siegmann, Carl, 3,964,659.

Halcon International, Inc.: *See—*
Ozero, Brian I., 3,964,980.

Hall, John B., to International Flavors & Fragrances Inc. 5- or 6-Acetyl-substituted 1-methyl-4-isopropyl-1,4-ethano-cyclohex-2-enes. 3,965,186, Cl. 260-586.00G.

Hall, Robert D.: *See—*
Jezl, James L.; Peters, Edwin F.; Hall, Robert D.; and Shepard, John W., 3,965,083.

Halliburton Company: *See—*
Farley, David L.; and Barrington, Burchus Q., 3,964,544.
Wray, Gary Q.; and Holden, John C., 3,964,305.

Hally, William Whytock; and Pate, Thomas, Jr. Mobile stone crushing plant. 3,964,719, Cl. 241-101.700.

Hamamura, Takayuki: *See—*
Nagata, Yasunori; Itoh, Hirotaka; Yazaki, Susumu; Hamamura, Takayuki; and Yoshiya, Shigeo, 3,964,279.

Hambleton, James; Davies, Peter Frank; Harley, Philip Edward; and Corsi, Gianfranco. Automatic graphing apparatus. 3,965,477, Cl. 346-33.00A.

Hamilton, Rose B.; and Yarus, Joan R. Tamper-proof garment hanger. 3,964,651, Cl. 223-91.000.

Hamlow, Eugene Emanuel; and Martin, Tellis Alexander, to Mead Johnson & Company. Crystalline ammonium N-acetyl-L-cysteinate and mucolytic process. 3,965,167, Cl. 260-534.00S.

Hammer, Thomas: *See—*
Sieber, Werner; Ganser, Friedrich; Hammer, Thomas; Viehrig, Wolfgang; Frick, Hans-Dieter; and Osegowitsch, Viktor, 3,964,191.

Handa, Ryoji: *See—*
Kamada, Kazumasa; Handa, Ryoji; and Hongo, Masafumi, 3,965,212.

Hansen, A. Boyd: *See—*
Reynolds, Gordon S.; and Hansen, A. Boyd, 3,964,484.

Hansen, David O.: *See—*
Roy, Neal L.; and Hansen, David O., 3,965,441.

Hansen, Ib, to F. L. Smidth & Co. Tube mill. 3,964,717, Cl. 241-71.000.

Hansen, Kenneth Peter: *See—*
Paduch, Stanley Raymond; and Hansen, Kenneth Peter, 3,964,253.

Hansen, Kent W.: *See—*
Davis, Earl K.; Hansen, Kent W.; and Silvis, Duane C., 3,964,920.

Hanson, Richard Eric; and Nolan, Thomas Edward, Jr., to RCA Corporation. Engine brake horsepower test without external load. 3,964,301, Cl. 73-116.000.

Hanzel, Joseph W.: *See—*
Foote, Kenneth R.; Hanzel, Joseph W.; and Froehner, Warren P., 3,964,393.

Hares, George B.; and Morgan, David W., to Corning Glass Works. Barium borosilicate optical glasses. 3,964,918, Cl. 106-47.00Q.

Hargadine, Curtis Dale: *See—*
Strong, Doyle L.; and Hargadine, Curtis Dale, 3,965,022.

Hargis, Ivan Glen; and Livigni, Russell Anthony, to General Tire & Rubber Company, The. Polymerization of monomers with alkaline earth metal organometallic compounds. 3,965,080, Cl. 526-183.000.

Hargital nee Franyo, Aniko: *See—*
Johan, Bela; Szemler, Laszlo; Fulop, Janos; Szontagh, Tamas; Simonovits nee Czink, Emilia; Bekes nee Erdos, Judit; Kuti, Laszlo; Toros, Robert; Szekely, Denes; Szabo, Laszlo; Seitz, Karoly; Vajda, Tade; Kovacs nee Komoroczy, Erzsebet; Hargital nee Franyo, Aniko; and Polinszky, Karoly, 3,964,971.

Harley, Philip Edward: *See—*
Hambleton, James; Davies, Peter Frank; Harley, Philip Edward; and Corsi, Gianfranco, 3,965,477.

Harlow, Ronald. Elevating device for snowmobiles. 3,964,729, Cl. 254-131.000.

Harmening, Wayne Arthur, to RCA Corporation. Steerable mount. 3,964,336, Cl. 74-501.00M.

Harmon Industries, Inc.: *See—*
Karr, Jerry W., 3,964,704.

Harper, William L.: *See—*
Bullock, Jonathan S.; Harper, William L.; and Peck, Charles G., 3,964,914.

Harrington, Frank C., to Continental Can Company, Inc. Method for packaging cheese curd. 3,965,271, Cl. 426-515.000.

Harrington, Wilfred Henry, to Dunlop Limited. Pneumatic tires. 3,964,532, Cl. 152-330.0RF.

Harris, Dwight L.: *See—*
Baak, N. Tryggve E. A.; and Harris, Dwight L., 3,965,241.

Harris, Glyn Islwyn; and Huckstepp, Brian George, to Albright & Wilson Limited. Curable composition of resin, cycloaliphatic epoxide and an amino compound. 3,965,211, Cl. 260-830.00R.

Harris, James C. Time to intercept measuring apparatus. 3,964,695, Cl. 244-3.160.

Harrison, Anthony William, to Girling Limited. Railway brakes. 3,964,579, Cl. 188-71.900.

Harrison, Anthony William, to Girling Limited. Thrust devices. 3,964,806, Cl. 308-235.000.

Harrison, Charles W.; and Senters, Glenn A., to Texaco Inc. Means for controlling the temperature of a depropanizer tower. 3,964,975, Cl. 196-132.000.

Harrison, Ian T.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,965,115.

Harrison, Roger Garrick, to Lilly Industries, Ltd. Preparation of α-acetoxy aldehydes and ketones. 3,965,157, Cl. 260-491.000.

Hart, Harold W., to H. W. Hart Mfg. Co. Poultry watering device. 3,964,440, Cl. 119-18.000.

Hart, Peter Brian; and Nicklin, Ralph, to Plessey Handel und Investments A.G. Methods of producing gallium phosphide yellow light emitting diodes. 3,964,940, Cl. 148-175.000.

Harte, James Richard. Instructional apparatus with movable blank sheet. 3,964,176, Cl. 35-9.00R.

Hartford, Thomas William, to Bendix Corporation, The. Digital engine control system using DDA schedule generators. 3,964,443, Cl. 123-32.0EA.

Hartley Controls Corporation: *See—*
Hartley, Nelson, 3,964,732.

Hartley, Nelson, to Hartley Controls Corporation. Apparatus for mixing molding sand. 3,964,732, Cl. 259-10.000.

Hartman, Arlin P.; and Vance, Richard A., to Universal Bleacher Company. Folding handrails for telescoping seating sections. 3,964,215, Cl. 52-9.000.

Hartung, Kuhn & Co. Maschinenfabrik GmbH: *See—*
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Hartwell Corporation: *See—*
Poe, L. Richard, 3,964,364.

Harvard Apparatus Company, Inc.: *See—*
Kleinmann, Aaron Joseph; Norton, Robert Leo; and Radis, Morton Irving, 3,964,139.

Harvey, David C., Jr. Mallet game. 3,964,748, Cl. 273-138.00R.

Harvey, Gerald J., to New York Testing Laboratories, Inc. Energy system for production of hydrogen from waste incineration. 3,965,362, Cl. 290-1.00R.

Harwood, Keith, to L.M. Ericsson Pty. Ltd. Digital control processor. 3,965,457, Cl. 340-172.500.

Haszeldine, Robert Neville: *See—*
Banks, Ronald Eric; and Haszeldine, Robert Neville, 3,965,184.

Hata, Kazuhiko: *See—*
Hirooka, Masaaki; Fujii, Yoshikazu; Morita, Shigeru; Namazue, Isamu; and Hata, Kazuhiko, 3,964,955.

Hatsukano, Yoshikazu, to Hitachi, Ltd. MISFET (Metal-insulator-semiconductor field-effect transistor) logical circuit having depletion type load transistor. 3,965,369, Cl. 307-221.00C.

Haubner, Georg: *See—*
Wesemeyer, Jurgen; Schrumpf, Hans; Meier, Werner; and Haubner, Georg, 3,964,461.

Hauck, Frederic Peter; and Sundeen, Joseph E., to E. R. Squibb & Sons, Inc. 1,2,3,4,6,7,8,8a-Octahydro-6-aryl-isoquinolines and derivatives thereof. 3,965,102, Cl. 260-286.00R.

Hautaniemi, B. Wendell: *See—*
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Hayakawa, Toshio: *See—*
Sakamoto, Naraji; Mitsui, Tatsuo; and Hayakawa, Toshio, 3,965,479.

Hayashi, Tsunekazu: *See—*
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Hayes, John T., Jr.: *See—*
Stocker, Charles T.; Schara, Robert E.; Marshall, William E.; Hayes, John T., Jr.; and Glicksman, Martin, 3,965,268.

Headway Research, Inc.: *See—*
Shipman, Vern D., 3,965,381.

Hecht, Charles L., to S.K.H. & S., Inc. Air pickup system for strawberry pickers. 3,964,245, Cl. 56-331.000.

Hecklinger, Clarence Frederick; and Crook, Donald Edward, to Allied Chemical Corporation. Recovery of sodium nitrite from by-product process liquors containing sodium chloride. 3,965,247, Cl. 423-385.000.

Heeks, John Stuart: *See—*
Craven, George Frederick; Heeks, John Stuart; and Marshall, Graham, 3,965,446.

Heilman, William J.; and Lynch, Thomas J., to Gulf Research & Development Company. Process for preparing a concentrate of a polyalpha-olefin in a lubricating oil base stock. 3,965,018, Cl. 252-59.000.

Heimbach, Paul: *See—*
Wilke, Gunther; and Heimbach, Paul, 3,965,142.

Heimberger, Helmut, to Opti-Holding AG. Slide-fastener halves. 3,964,135, Cl. 24-205.10C.

Heinemann Electric Company: *See—*
Schilling, Keith L., 3,965,450.

Heinzman, Homer W., to LTV Aerospace Corporation. Apparatus for protecting a multiphase power transmission line from intermembral faults. 3,965,394, Cl. 317-18.00R.

Helger, Roland: *See—*
Banauch, Dieter; Brummer, Wolfgang; Ebeling, Wolfgang; Helger, Roland; Hennrich, Norbert; and Lang, Hermann, 3,964,974.

Helgesson, Alan L., to SHM Nuclear Corporation. Automatic frequency control system for driving a linear accelerator. 3,965,434, Cl. 328-233.000.

Hella, Terry A., to TEC Systems, Inc. Air bar assembly for web handling apparatus. 3,964,656, Cl. 226-97.000.

Heller, William C., Jr.: *See—*
Shatzkin, Leonard, 3,964,769.

Helmberger, Josef: *See—*
Wick, Richard; Bestenreiner, Friedrich; Deml, Reinhold; and Helmberger, Josef, 3,965,291.

Hemmann, Rainer; and Steinmann, Helmut, to Robert Bosch G.m.b.H. Control circuit for an electromotor. 3,964,444, Cl. 123-41.490.

Hendricks, Udo-Winfried, to Bayer Aktiengesellschaft. Phosphonocarboxylic acid esters. 3,965,147, Cl. 260-478.000.

Henkel & Cie G.m.b.H.: *See—*
Koppensteiner, Gunter; Eckert, Hans-Werner; and Wehle, Volker, 3,965,265.
Krause, Horst-Jurgen, 3,965,170.
Krause, Horst-Jurgen, 3,965,171.
Schmadel, Edmund; Jakobi, Gunter; Worms, Karl-Heinz; and Blum, Helmut, 3,965,024.

Henning, Kurt; and Bonisch, Horst, to Polysius AG. Apparatus for lubricating bearing rings loosely mounted on a rotary drum. 3,964,804, Cl. 308-109.000.

Hennings, Werner, to Bunde Glass GmbH. Container for an injection liquid, in the form of a flask closed by a curl-on cap. 3,964,627, Cl. 215-247.000.

Hennrich, Norbert: *See—*
Banauch, Dieter; Brummer, Wolfgang; Ebeling, Wolfgang; Helger, Roland; Hennrich, Norbert; and Lang, Hermann, 3,964,974.

Hensley, Donald W. Snap attaching tool. 3,964,660, Cl. 227-15.000.

Herd, Elmer R. Agricultural broadcasting apparatus. 3,964,681, Cl. 239-650.000.

Hermann Berstorff Maschinenbau GmbH: *See—*
Wockener, Willi, 3,964,848.

Hermann Finckh Metalltuch- und Maschinenfabrik: *See—*
Holz, Emil; and Kapernick, Reinhold, 3,964,996.

Herold, Stanley J.; Lagrange, Donald E.; and Laswell, John E., to United States of America, Navy. Spin actuated release mechanism. 3,964,396, Cl. 102-79.000.

Herr Manufacturing Company, Inc.: *See—*
Atwood, Hyatt B.; and McLean, James N., 3,964,576.

Herritt, Ethel R.: *See—*
Bialousz, Lorraine R.; Herritt, Ethel R.; Lartigue, Donald J.; and Pitcher, Wayne H., Jr., 3,965,035.

Hesch, Rolf, to Becker & van Hullen Niederrheinische Maschinenfabrik. Method for storing bagasse. 3,964,961, Cl. 162-96.000.

Hesse, Horst; Kobald, Walter; Gand, Heinz; Hoheisel, Rainer; Sopha, Klaus; Flaschar, Heinz; Kleinschmidt, Heinz; Arnold, Winfried; and Zeuch, Werner, to Robert Bosch G.m.b.H. Electrohydraulic control unit. 3,964,518, Cl. 137-625.640.

Hesselgren, Sven-Gunnar. Method of applying preventive and therapeutic agents. 3,964,164, Cl. 32-1.000.

Hesterman, Victor W., to Develco, Inc. Gradient wound trim coil for trimming a primary pickup coil. 3,965,411, Cl. 323-44.00F.
Heusler, Helmut; Braun, Emil; and Hofling, Peter, to O & K Orenstein & Koppel Aktiengesellschaft. Conveyor, especially autowalks for persons. 3,964,596, Cl. 198-16.0MS.
Hewlett-Packard Company: *See—*
Bronson, Barry Steven, 3,965,468.
Mei, Kenyon Chi-Yen, 3,965,367.
Hewlett-Packard Limited: *See—*
Coackley, Robert; Urquhart, John Reid; and Dack, David George, 3,965,424.
Heywang, Walter, to Siemens Aktiengesellschaft. Electroluminescent semiconductor diode with hetero-structure. 3,965,347, Cl. 250-211.00J.
Hiab-Foco Aktiebolag: *See—*
Lindqvist, Jonas Herman, 3,964,777.
Hickey, Thomas Nelson; and Spulgis, Ivars Sigurds, to CVI Corporation. Radioactive gas standby treatment apparatus with high efficiency rechargeable charcoal filter. 3,964,887, Cl. 55-267.000.
Hicks, Raymond John, to Vickers Limited. Gears. 3,964,334, Cl. 74-410.000.
Hidy, Phil H.; and Baldwin, Robert S., to Commercial Solvents Corporation. Method of preventing pregnancy with lactone derivatives. 3,965,274, Cl. 424-279.000.
Hidy, Phil H.; and Baldwin, Robert S., to Commercial Solvents Corporation. Composition and method. 3,965,275, Cl. 424-279.000.
Higuchi, Hobart Atsushi; and Trubell, Lawrence Paul, to International Business Machines Corporation. Controlled ferroresonant transformer regulated power supply. 3,965,408, Cl. 321-25.000.
Hildebrandt, Darrell Edward: *See—*
Feldwick, Raymond Douglas; and Hildebrandt, Darrell Edward, 3,965,042.
Hill, James David; Isbell, Gene Austin; and Williams, Thomas Hampton, to International Business Machines Corporation. Font selection system. 3,964,591, Cl. 197-1.00R.
Hill, Robert Dickson. Electrically conductive object having an ablative layer thereon for protecting the same from damage by an electrical discharge. 3,965,285, Cl. 174-2.000.
Hillery, Robert V.: *See—*
Bessen, Irwin I.; Betts, Robert K.; and Hillery, Robert V., 3,964,877.
Himics, Richard Joseph; Graham, Scott Oliver; and Ross, Daniel Louis, to RCA Corporation. Method of preparing a pattern on a silicon wafer. 3,964,909, Cl. 96-36.200.
Himmelstein, Kenneth J., to Dow Chemical Company, The. Regeneration of activated carbon with a solution of sorbed species in a solvent. 3,965,036, Cl. 252-414.000.
Hinrichs, Helmut, to Chemie Linz Aktiengesellschaft. Process for the production of ammonia using aligned catalyst particles. 3,965,246, Cl. 423-361.000.
Hirai, Kazumi, to Matsushita Electric Industrial Co., Ltd. Microwave oven. 3,965,325, Cl. 219-10.55R.
Hirano, Hironori: *See—*
Arimura, Iwao; Sato, Akio; and Hirano, Hironori, 3,964,533.
Hiraoka, Hiroyuki: *See—*
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Hirooka, Masaaki; Fujii, Yoshikazu; Morita, Shigeru; Namazue, Isamu; and Hata, Kazuhiko, to Sumitomo Chemical Company, Limited. Bonding method using olefin-acrylic ester copolymer. 3,964,955, Cl. 156-332.000.
Hirose, Takeshi; Oishi, Yasushi; and Sakai, Tadao, to Fuji Photo Film Co., Ltd. Color photograhic material having a bleach inhibitor therein defining a sound track. 3,964,905, Cl. 96-4.000.
Hirschkoff, Sidney, to McCulloch Corporation. Safety braking mechanism for a portable chain saw. 3,964,333, Cl. 30-381.000.
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Ho, Kok-Kit, to Timex Corporation. Adjustable hinge band. 3,964,252, Cl. 59-80.000.
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Hujsak, Karol L.; and Buxton, Thomas S., to Amoco Production Company. Recovery of heavy hydrocarbons from underground formations. 3,964,547, Cl. 166-269.000.
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Humphrey, William E., to Humphrey Instruments, Inc. Remote stereo microscope with field mirror reflected ocular paths. 3,964,818, Cl. 350-36.000.
Hunkeler, Ernst J., to Gleason Works, The. Large gear manufacture. 3,964,369, Cl. 90-5.000.
Hunter, Lee. Internal combustion engine. 3,964,442, Cl. 123-8.450.
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Husted, Royce H., to Saroy Engineering. Power driven ski. 3,964,560, Cl. 180-5.00R.
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Jackson, George F. Gravity clarifier. 3,965,013, Cl. 210-519.000.

Jackson, Jesse Milne, to Bell Telephone Laboratories, Incorporated. Gas detecting apparatus and methods. 3,964,292, Cl. 73-40.50R.

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Jamison, Will B., to Consolidation Coal Company. Method and apparatus for mining and supporting the mine roof. 3,964,265, Cl. 61-45.00C.

Jandrasi, Frank J.; and Purvis, Howard A., to Tapco International, Inc. Slide valve with integrated removable internals. 3,964,507, Cl. 137-375.000.

Janke, William R. Tamper-proof weather cover device for exhaust pipes. 3,964,876, Cl. 98-59.000.

Janning, John L. Method of making a liquid crystal display cell. 3,964,158, Cl. 29-592.000.

Janssens, Wilhelmus; Claeys, Daniel Alois; Lemahieu, Raymond Gerard; and Dierckx, Jozef Aime, to AGFA-GEVAERT N.V. Thermographic recording material. 3,965,282, Cl. 428-341.000.

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Jezl, James L.; Peters, Edwin F.; Hall, Robert D.; and Shepard, John W., to Standard Oil Company. Process for the vapor phase polymerization of monomers in a horizontal, quench-cooled, stirred-bed reactor using essentially total off-gas recycle and melt finishing. 3,965,083, Cl. 526-65.000.

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Johannsen, Thomas J. Flexile core material for laminated structures and method of producing the same. 3,964,354, Cl. 83-39.000.

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Johnson, Morris A.; Reedy, James D.; and Yang, Kang, to Continental Oil Company. Method for preparing tetrabutylammonium bromide. 3,965,178, Cl. 260-567.60M.

Johnson, Robert Carol, to Modulus Corporation. Strain indicator. 3,964,299, Cl. 73-88.00F.

Johnston, Orin B. Heat bonding device. 3,964,958, Cl. 156-382.000.

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Jones, Derick; and Lu, Sun, to Texas Instruments Incorporated. Lyotropic nematic liquid crystals for use in electro-optical display devices. 3,965,030, Cl. 252-299.000.

Jones, Evan Thomas Richard; and Fishburn, Robert Anthony, to Foseco International Limited. Additives to improve slag formation in steelmaking furnaces. 3,964,899, Cl. 75-53.000.

Jones, Louis L., Jr.; and Wood, William J., to Canton Textile Mills, Inc. Textile card crush roll operating system and method. 3,965,401, Cl. 318-6.000.

Jones, Maurice J., to Monsanto Company. Tubular spinnerette assembly. 3,964,855, Cl. 425-463.000.

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Jordan, Mary Ann McClurkin. Event calendar. 3,964,195, Cl. 40-107.000.

Jorgensen, Hans G.; and Hautaniemi, B. Wendell, to Ithaco, Incorporated. Ultrasonic inspection apparatus. 3,964,297, Cl. 73-67.80R.

Joseph, John S.; and Levinson, Edwin B., to Sundstrand Data Control, Inc. Dual sound system. 3,964,826, Cl. 352-10.000.

Joseph Lucas (Industries) Limited: *See—*
Bottoms, Harry Simister; and Holliday, Leslie, 3,964,885.

Joslyn, Gerald L.; and Bingley, George W., to Massey-Ferguson Inc. Reversible seat lock. 3,964,713, Cl. 248-418.000.

Jouppi, Eino J. Grapple. 3,964,778, Cl. 294-88.000.

Joyeux, Michel: *See—*
Schulte-Elte, Karl-Heinrich; Joyeux, Michel; and Ohloff, Gunther, 3,965,189.

Judith, Hans; and von Schwerdtner, Otto A., to Kraftwerk Union Aktiengesellschaft. Means and method for separation of water from steam-water mixture. 3,964,884, Cl. 55-184.000.

Judson, Donald W., to Birtcher Corporation, The. Uncomplicated load-adapting electrosurgical cutting generator. 3,964,487, Cl. 128-303.140.

Junker, Arnold E.; and Massaro, Anthony J., to Avco Corporation. Controlled aperture seal. 3,964,753, Cl. 277-26.000.

Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, to Automated Building Components, Inc. Apparatus for forming wooden joints. 3,964,663, Cl. 227-95.000.

Jurisch, Louis A., to Commercial Solvents Corporation. Compositions of polystyrene reacted with hexamethoxymethylmelamine. 3,965,082, Cl. 526-19.000.

Justrite Manufacturing Company: *See—*
Flider, Frank S., 3,964,728.

Juvkam-Wold, Hans C., to Gulf Research & Development Company. Treatment of weighted drilling mud. 3,964,557, Cl. 175-66.000.

Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
Werwitzke, Lothar; Stenzel, Hans-Dieter; and Voigt, Hermann Uwe, 3,965,226.

Kabelschlepp Gesellschaft mit beschrankter Haftung: *See—*
Steinmetz, Dietmar, 3,964,801.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Kawamura, Eiji; Nishimura, Yoshitaka; and Fukumoto, Hisashi, 3,964,562.

Kabushiki Kaisha Morita Seisakusho: *See—*
Matsui, Takahiro; and Uwamori, Osamu, 3,964,725.

Kacerek, John. Model railroad train control system. 3,964,701, Cl. 246-2.00F.

Kaeding, Warren William: *See—*
Butter, Stephen Allan; and Kaeding, Warren William, 3,965,208.

Kaelin, Joseph Richard. Apparatus for biological purification of an effluent. 3,965,009, Cl. 210-218.000.

Kageyama, Kunio: *See—*
Someya, Yoshiaki; Tateno, Noriaki; and Kageyama, Kunio, 3,965,140.

Kahn, Manfred: *See—*
Moorhead, William L.; and Kahn, Manfred, 3,965,392.

Kaiser Aluminum & Chemical Corporation: *See—*
Gane, Gordon R., 3,964,414.

Kaiser, Hans; and Kopf, Arthur, to Gebruder Junghans GmbH. Electrical primer for projectiles. 3,964,395, Cl. 102-70.20R.

Kakuda, Minoru: *See—*
Shin, Hiroshi; Sugano, Junichiro; Yoshii, Tadashi; Iwamoto, Kichiro; Kuriyama, Yasuhisa; and Kakuda, Minoru, 3,965,251.

Kalashnik, Anatoly Nikolaevich: *See—*
Krupman, Leonid Isaakovich; Okonishnikov, Ary Mikhailovich; Sochnev, Alexandr Egorovich; Gavronsky, Boris Viktorovich; Popov, Viktor Alexeevich; Kalashnik, Anatoly Nikolaevich; Chumachenko, Vasily Sergeevich; Gudkevich, Veniamin Mikhailovich; Panev, Georgy Alexeevich; Detochka, Vasily Ivanovich; Telesov, Savely Adolfovich; Pokrass, Leonid Moiseevich; Ofengenden, Abram Mikhailovich; Nesterovich, Raisa Petrovna; and Zhitnik, Georgy Gavrilovich, 3,964,900.

Kalbitz, Wolfgang; Keyl, Erwin; Nitsche, Herbert; and Scherbaum, Friedrich, to Siemens Aktiengesellschaft. Pluggable high-amperage contact. 3,964,814, Cl. 339-64.00R.

Kalippke, Harald; and Brand, Gunter, to Robert Bosch G.m.b.H. Internal combustion engine electric ignition breaker contact structure. 3,964,453, Cl. 123-146.50A.

Kaltz, Milton C.: *See—*
Prechter, Heinz C.; and Kaltz, Milton C., 3,964,784.

Kalugin, Oleg Mikhailovich: *See—*
Vexelman, Ilya Volfovich; Sljudikov, Leonid Davydovich; Kutilin, Alexandr Grigorievich; and Kalugin, Oleg Mikhailovich, 3,964,303.

Kamada, Kazumasa; Handa, Ryoji; and Hongo, Masafumi, to Mitsubishi Rayon Co., Ltd. Flame-resistant resin composition. 3,965,212, Cl. 260-835.000.

Kamelmacher, Eduard. Blade for a centrifugal pump impeller. 3,964,840, Cl. 416-183.000.

Kameo, Takashi: *See—*
Manabe, Osamu; and Kameo, Takashi, 3,965,200.

Kanebo, Ltd.: *See—*
Nagata, Yasunori; Itoh, Hirotaka; Yazaki, Susumu; Hamamura, Takayuki; and Yoshiya, Shigeo, 3,964,279.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Eguchi, Tamiyuki; and Imai, Satoshi, 3,965,012.

Kaneko, Mikio: *See—*
Katayama, Nobuaki; Tsuzuki, Isao; and Kaneko, Mikio, 3,964,321.

Kangle, Purushottam Janardan; Werdenberg, Hermann; Artz, Klaus; Ramanathan, Visvanathan; Naik, Navnitrai Nagirji; and Milicevic, Branimir, to Ciba-Geigy AG. Process for dyeing and printing textile materials of synthetic organic fibers. 3,964,862, Cl. 8-176.000.

Kao, Paul W.; and Lamborn, Homer C., to United States Pipe and Foundry Company. Bevel pipe winding method and product. 3,964,521, Cl. 138-176.000.

Kao, Paul W.; and Lamborn, Homer C., to United States Pipe and Foundry Company. Bevel pipe winder. 3,964,522, Cl. 242-7.220.

Kapernick, Reinhold: *See—*
Holz, Emil; and Kapernick, Reinhold, 3,964,996.

Kapit, Wynn. Portable unisex urinal. 3,964,110, Cl. 4-99.000.

Kaplan, Edward L.: *See—*
Cless, Gerhard; and Kaplan, Edward L., 3,964,673.

Kapsambelis, Christos B.: *See—*
Wilkas, Joseph R.; Kapsambelis, Christos B.; Tuhro, Richard H.; and Reynolds, Christopher C., 3,964,703.

Karcher, Karl-Friedrich: *See—*
Wagner, Heinrich; Karcher, Karl-Friedrich; and Merkle, Otto, 3,964,371.

Karden, Karl Gosta, to Atlas Copco Aktiebolag. Pneumatic grinding machine provided with dust removing means. 3,964,212, Cl. 51-170.0PT.

Karinkanta, Hannu Henrik. Injecting device of a solvent-free sample for a gas analyzer. 3,964,872, Cl. 23-259.000.

Karl Gutmann KG, Firma: *See—*
Gutmann, Karl, Jr.; and Eder, Rupert, 3,964,401.

Karnik, Stanley D.; and Morgan, Terry E. Floating campground. 3,964,418, Cl. 114-70.000.

Karr, Jerry W., to Harmon Industries, Inc. Operating mechanism for railroad crossing gate. 3,964,704, Cl. 246-125.000.

Kasamura, Toshiro: *See—*
Tanaka, Hidetoshi; Kasamura, Toshiro; and Sato, Tadashi, 3,964,827.

Kashio, Toshio, to Casio Computer Co., Ltd. Printing mechanism for printing characters. 3,964,592, Cl. 197-49.000.

Katayama, Nobuaki; Tsuzuki, Isao; and Kaneko, Mikio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fixing device for speed meter driven gear. 3,964,321, Cl. 74-12.000.

Katoh, Hiroshi; and Fujita, Mitsuo, to Victor Company of Japan, Limited. Tape recording apparatus for editing recording. 3,965,483, Cl. 360-14.000.

Katz, Joel; and Pousson, James R., to United States of America, Air Force. Spectrum-shape discriminating on/off target indicator. 3,965,428, Cl. 325-474.000.

Katz, Louis: *See—*
Honey, Raymond W.; and Katz, Louis, 3,965,341.

Kaufmann, James J.: *See—*
Britz, William J.; Boshers, William A.; and Kaufmann, James J., 3,964,928.

Kausz, Ivan; Stunkel, Helmut; and Wille, Harald, to Siemens Aktiengesellschaft. Pressurized-water reactor coolant gas disposal system. 3,964,965, Cl. 176-37.000.

Kawabuchi, Isamu: *See—*
Nishi, Atsuyoshi; Kawabuchi, Isamu; Yashiro, Katuo; Ono, Kenichi; and Furuya, Yoshiaki, 3,964,859.

Kawamura, Eiji; Nishimura, Yoshitaka; and Fukumoto, Hisashi, to Kabushiki Kaisha Komatsu Seisakusho. Steering system for an endless track type tractor. 3,964,562, Cl. 180-6.700.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Nishida, Toyomi; Sohma, Hiroshi; and Ito, Hayami, 3,964,922.

Kazakov, Vladimir Pavlovich: *See—*
Chaplits, Donat Nikolaevich; Kazakov, Vladimir Pavlovich; Lazariants, Emmanuil Gabrielovich; Chebotaev, Vladimir Filippovich; Balashov, Mikhail Ivanovich; and Serafimov, Leonid Antonovich, 3,965,039.

Kedem, Ora: *See—*
Bloch, Rene; Kedem, Ora; and Lobel, Ester, 3,965,255.

Keller, Peter: *See—*
Furst, Andor; Muller, Marcel; Alig, Leo; Keller, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,965,128.

Kelly, Joe T., deceased (by Kelly, LaVerne S., executrix), to Marathon Oil Company. H_2O_2-containing micellar dispersions. 3,964,994, Cl. 208-196.000.

Kelly, LaVerne S., executrix: *See—*
Kelly, Joe T., deceased, 3,964,994.

Kelm, Everett F.: *See—*
Boyd, Lawrence C., Jr.; Kelm, Everett F.; and Randall, John C., 3,965,005.

Kelton, Grady A., to Avis Industrial Corporation. Locking mechanism. 3,964,280, Cl. 70-84.000.

Kemp, Donald W.: *See—*
DiCola, Louis S.; Kemp, Donald W.; and Evans, H. Duane, 3,964,868.

Kennedy, Sterling R. Method for reactivating carbon. 3,965,037, Cl. 252-415.000.

Kenney, John Thomas, to Western Electric Company, Inc. Method of forming a hydrophobic surface by exposing a colloidal sol to UV radiation. 3,964,906, Cl. 96-33.000.

Kent, James A. Ski binding. 3,964,758, Cl. 280-613.000.

Kent, Jan Herbert Farquharson: *See—*
Kent, Peter Jan; Phillips, John Eric; and Kent, Jan Herbert Farquharson, 3,964,949.

Kent Manufacturing Co., Inc.: *See—*
Blair, Calvin B.; and Hokr, Donald C., 3,964,622.

Kent, Peter Jan; Phillips, John Eric; and Kent, Jan Herbert Farquharson, to Kentredder Limited. Method of treading tires. 3,964,949, Cl. 156-96.000.

Kent State University: *See—*
Arora, Sardari L., 3,965,029.

Kentredder Limited: *See—*
Kent, Peter Jan; Phillips, John Eric; and Kent, Jan Herbert Farquharson, 3,964,949.

Keplinger, Edward G.: *See—*
Costello, Matthew J.; Dolan, Donald T.; Dehaudringhien, Andre T.; Hurkmans, Antoon M.; Jasinski, Kenneth R.; and Keplinger, Edward G., 3,965,292.

Kerb, Ulrich: *See—*
Furst, Andor; Muller, Marcel; Alig, Leo; Keller, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,965,128.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Brixy, Heinz, 3,964,314.

Kerridge, John Charles; and Syson, John William, to Imperial Chemical Industries Limited. Alkyd resin. 3,965,059, Cl. 260-22.0CB.

Kesselring, Lutz, to MAPA GmbH. Soothing teat. 3,964,489, Cl. 128-360.000.

Kessler, Hans-Joachim: *See—*
Biere, Helmut; Ulbrich, Hermann; Kessler, Hans-Joachim; and Redmann, Ulrich, 3,965,103.

Kestenman Bros. Mfg. Co.: *See—*
Fuld, Kenneth, 3,964,652.

Ketz, George, Jr.: *See—*
LaBelle, Joan P.; and Ketz, George, Jr., 3,964,709.

Kevorkian, Kevork, to International Standard Electric Corporation. Folded space-time-space switching network. 3,965,301, Cl. 179-15.0AT.

Keyl, Erwin: *See—*
Kalbitz, Wolfgang; Keyl, Erwin; Nitsche, Herbert; and Scherbaum, Friedrich, 3,964,814.

Kicon AG: *See—*
Fordsmand, Marc, 3,965,345.

Kieper, Reinhold R. Power transmission. 3,964,322, Cl. 74-55.000.

Kihara, Toshiyuki, to Yoshida Kogyo Kabushiki Kaisha. Slide fastener 3,964,137, Cl. 24-205.16R.

Kikuchi, Kunio, to Mikuni Kogyo Kabushiki Kaisha. Carburetor. 3,964,503, Cl. 137-39.000.

Kim, Chung Kyu, to Raytheon Company. Avalanche semiconductor amplifier. 3,965,437, Cl. 330-34.000.

Kim, Duk Hwang, to Boeing Company, The. Method and apparatus for controlling the degree of hydration in sealing of anodized aluminum. 3,964,982, Cl. 204-1.00T.

Kim, Kwan Chi. Mop holder and brush combination. 3,964,121, Cl. 15-115.000.

Kimberley, John A., to Ambac Industries, Inc. Universal fuel injection system controller. 3,964,459, Cl. 123-140.0FG.

King, Cary J., to University of California, The Regents of the. Controlled humidity freeze drying process. 3,964,174, Cl. 34-5.000.

King, David W.: *See—*
Gearhart, Marvin; King, David W.; Mendoza, Rudolph R.; Scherbatskoy, Serge A.; and Young, James D., 3,964,556.

Kinney, Bruce W., Jr.: *See—*
Spencer, John R.; and Kinney, Bruce W., Jr., 3,965,459.

Kinosz, Donald L., to Aluminum Company of America. Anti-pollution method. 3,965,249, Cl. 423-497.000.

Kinsolving, C. Richard: *See—*
Carr, Albert A.; and Kinsolving, C. Richard, 3,965,257.

Kintish, Irving L.; and Marcus, Irwin, to United States of America, Army, Land mine (U). 3,964,392, Cl. 102-8.000.

Kiraly, Raymond J.; Affeldt, Bernard H.; and Anspach, Charles R., to United States of America, Navy. Boiler reactor. 3,964,416, Cl. 114-20.00A.

Kirby, Charles Ray: *See—*
Swinkels, Godefridus Maria; Furber, Robert Arthur; Milner, Edward Francis Godfrey; Genik-Sas-Berezowsky, Roman Michael; and Kirby, Charles Ray, 3,964,901.

Kitao, Teijiro: *See—*
Konishi, Kenzo; Kotone, Akira; Nakane, Yoshihiko; Kitao, Teijiro; and Yamase, Iro, 3,965,087.

Kitsuda, Kaname. Shaping apparatus and a method for producing a seamless container. 3,964,412, Cl. 113-7.00R.

Klaar, Jochen: *See—*
Stoferle, Theodor; Klaar, Jochen; Bellmann, Bernhard; and Theimert, Paul-Heinz, 3,964,367.

Klautschek, Herwig, to Siemens Aktiengesellschaft. D-C control element circuit. 3,965,409, Cl. 321-45.00C.

Klein, Richard M.; and Samuel, Natansohn, to GTE Laboratories Incorporated. Red emitting phosphors. 3,965,031, Cl. 252-301.40R.

Kleiner, Eduard K.; and Falk, Robert A., to Ciba-Geigy Corporation. Perfluoroalkyl alcohols. 3,965,148, Cl. 260-481.00R.

Kleiner, Frank; Becker, Wolfgang; and Muller, Karl Heinz, to Bayer Aktiengesellschaft. Foamed polyolefin foils. 3,965,053, Cl. 260-2.5HA.

Kleinmann, Aaron Joseph; Norton, Robert Leo; and Radis, Morton Irving, to Harvard Apparatus Company, Inc. Syringe holder. 3,964,139, Cl. 24-254.000.

Kleinschmidt, Heinz: *See—*
Hesse, Horst; Kobald, Walter; Gand, Heinz; Hoheisel, Rainer; Sopha, Klaus; Flaschar, Heinz; Kleinschmidt, Heinz; Arnold, Winfried; and Zeuch, Werner, 3,964,518.

Klockner-Werke AG: *See—*
Langhammer, Hans-Juergen, 3,964,897.

Klopotek, Alojzy; Profic, Jan; Uminski, Jerzy; and Dziala, Gabriela, to Instytut Chemii Przemyslowej. Method for manufacturing alkaline detergents and desinfectants. 3,965,025, Cl. 252-106.000.

Kmecak, Ronald A.; and Kovach, Stephen M., to Ashland Oil, Inc. Hydrogen production. 3,965,252, Cl. 423-651.000.

Kmetyko, Joseph. Headrest for vehicles. 3,964,788, Cl. 297-395.000.

Knapp, Peter A. Pivot pin adapter assembly. 3,964,799, Cl. 308-2.00R.

Knauff, Paul A.: *See—*
Fisher, Don E.; Knauff, Paul A.; and Bowen, David, Jr., 3,964,724.

Knepper, Larimer J.: *See—*
Crego, John B.; Cowan, Everett C., Jr.; Riffanacht, John D.; Knepper, Larimer J.; and Rowland-Hill, Edward W., 3,964,492.

Knight Engineering and Molding Co.: *See—*
Jasinski, Andrew S.; and McKirnan, Robert A., 3,964,634.

Knight, Ralph. Unitary device and method for screen manufacture and printing. 3,964,385, Cl. 101-128.400.

Knipe, Earl Albert, to Rexnord Inc. Rotary mower blade with detachable tines. 3,964,243, Cl. 56-17.500.

Knollmueller, Karl O., to Olin Corporation. Alkoxysilanol cluster compounds and their preparation. 3,965,135, Cl. 260-448.80A.

Knollmueller, Karl O., to Olin Corporation. Alkoxysilane cluster compounds and their preparation. 3,965,136, Cl. 260-448.80A.

Knox, Walter R.: *See—*
Montgomery, Phillip D.; Moore, Richard N.; and Knox, Walter R., 3,965,206.

Kobald, Walter: *See—*
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Kobayashi, Akihiro: *See—*
Sasaya, Hideaki; and Kobayashi, Akihiro, 3,965,314.

Kobylinski, Thaddeus P.; Taylor, Brian W.; and Vogel, Roger F., to Gulf Research & Development Company. Process for preparing catalyst. 3,965,040, Cl. 252-435.000.

Koch, Peter; and Beyer, Eduard, to Gebrueder Buehler AG. Method for pressure casting. 3,964,537, Cl. 164-136.000.

Kodama, Takashi: *See—*
Shimogawa, Sachio; Fujio, Takashi; Arika, Mikio; Yamada, Nobuo; Kodama, Takashi; and Nakata, Tetsuya, 3,965,050.

Koehler, Herbert: *See—*
Baar, Walter; Koehler, Herbert; and Muecke, Walter, 3,964,382.

Koehring Company: *See—*
Kopaska, Arnold F., 3,964,246.

Kogure, Katsura; and Nakagawa, Kunio, to Nisshin Flour Milling Co., Ltd. Process of producing a 2-(4-alkylphenyl)-propionic acid. 3,965,161, Cl. 260-523.00R.

Koh-I-Noor Rapidograph, Inc.: *See—*
Westphal, Werner, 3,964,926.

Kohkoku Chemical Industry Co., Ltd.: *See—*
Iwasaki, Kazuo, 3,965,052.

Kohno, Toshiyuki; and Imaizumi, Kenichi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Rotary piston internal combustion engine. 3,964,446, Cl. 123-8.130.

Kolk, Stephen B.: *See—*
Platner, Warren; Ursul, Earl G.; Kolk, Stephen B.; and Whitwam, Ronald L., 3,964,789.

Komatsu, Ikuo I., to Sunbeam Corporation. Combined hair styler and detangler. 3,964,502, Cl. 132-11.00A.

Kondo, Shinichi: *See—*
Umezawa, Hamao; Maeda, Kenji; Kondo, Shinichi; and Fukatsu, Shunzo, 3,965,089.

Koninklijke Nederlandsche Hoogovens en Staalfabriken N.V.: *See—*
van Langen, Jean Marie; Jacobs, Gerardus Wilhelmus Cornelis; and de Jong, Gerrit, 3,964,599.

Konishi, Kenzo; Kotone, Akira; Nakane, Yoshihiko; Kitao, Teijiro; and Yamase, Iro, to Sakai Chemical Industry Company Ltd. Trisazo dye containing a diphenylenesulfone structure. 3,965,087, Cl. 260-152.000.

Konnikov, Mikhail Naumovich; Nakul, Ivan Savvich; Novikov, Leonid Kuzmich; Zemlyansky, Evgeny Stepanovich; and Shulman, Peter Tankhomovich. Semiautomatic diamond tool-grinding machine. 3,964,209, Cl. 51-5.00R.

Konrad, Eugen: *See—*
Wajaroff, Theodor; Konrad, Eugen; and Hoch, Dieter, 3,964,499.

Kopaska, Arnold F., to Koehring Company. Rotary baler. 3,964,246, Cl. 56-341.000.

Kopf, Arthur: *See—*
Kaiser, Hans; and Kopf, Arthur, 3,964,395.

Kopp, Hans, to Georg Fischer Aktiengesellschaft. Cast one-piece annular rim member for a vehicle wheel. 3,964,144, Cl. 29-159.100.

Koppensteiner, Gunter; Eckert, Hans-Werner; and Wehle, Volker, to Henkel & Cie G.m.b.H. Antimicrobial agents for water conservation. 3,965,265, Cl. 424-204.000.

Kopstein, Joseph Jay by said Joan P. LaBelle and George Ketz, Jr.: *See—*
LaBelle, Joan P.; and Ketz, George, Jr., 3,964,709.

Kornylak, Andrew T., to Kornylak Corporation. Conveyor having provision for discharging loads at an angle generally transverse to the line of travel or the conveyor. 3,964,588, Cl. 193-36.000.

Kornylak Corporation: *See—*
Kornylak, Andrew T., 3,964,588.

Korsch, Alfred; and Schneiders, Friedrich, to D. Dupuis & Co. Apparatus for treating textile materials. 3,964,278, Cl. 68-5.00E.

Kotaro, Matumoto, to Dai Nippon Insatsu Kabushiki Kaisha. Apparatus for continuous pushing out of sheet product from blank. 3,964,655, Cl. 225-97.000.

Kotone, Akira: *See—*
Konishi, Kenzo; Kotone, Akira; Nakane, Yoshihiko; Kitao, Teijiro; and Yamase, Iro, 3,965,087.

Kouwenhoven, Adriaan P.: *See—*
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Kovach, Stephen M.: *See—*
Kmecak, Ronald A.; and Kovach, Stephen M., 3,965,252.

Kovacs nee Komoroczy, Erzsebet: *See—*
Johan, Bela; Szemler, Laszlo; Fulop, Janos; Szontagh, Tamas; Simonovits nee Czink, Emilia; Bekes nee Erdos, Judit; Kuti, Laszlo; Toros, Robert; Szekely, Denes; Szabo, Laszlo; Seitz, Karoly; Vajda, Tade; Kovacs nee Komoroczy, Erzsebet; Hargital nee Franyo, Aniko; and Polinszky, Karoly, 3,964,971.

Kovaric, Richard M.: *See—*
Dinella, Donald; and Kovaric, Richard M., 3,964,666.

Kozai, Tetsuo, to Morita Pump Kabushiki Kaisha. Device for automatically detecting overload on aerial ladder truck. 3,965,464, Cl. 340-267.00C.

Kraftwerk Union Aktiengesellschaft: *See—*
Judith, Hans; and von Schwerdtner, Otto A., 3,964,884.

Krah, Robert: *See—*
Budich, Wolfgang; Krah, Robert; and Theissen, Hans, 3,964,231.

Krause, Horst-Jurgen, to Henkel & Cie G.m.b.H. Process for the production of ether polycarboxylic acids. 3,965,170, Cl. 260-535.00P.

Krause, Horst-Jurgen, to Henkel & Cie G.m.b.H. Process for the production of ether polycarboxylic acids. 3,965,171, Cl. 260-535.00P.

Krauss-Maffel Aktiengesellschaft: *See—*
Breitling, Ulrich, 3,964,398.

Kreidler, Alfred; and Viessmann, Klaus. Apparatus for thermally treating metal components. 3,964,734, Cl. 266-133.000.

Kremer, Paul A.; and Gora, Bernhard N., to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Method of joining stiffening material to shoe upper using ultra high frequency radiation. 3,964,951, Cl. 156-272.000.

Krenzer, John, to Velsicol Chemical Corporation. Thiadiazolylimidazolidinone herbicides. 3,964,895, Cl. 71-90.000.

Kress, Manfred: *See—*
Gassner, Hans; and Kress, Manfred, 3,964,324.

Kriedt, Hans; Shatter, Eckart; and Zulauf, Jean-Marc, to Siemens Aktiengesellschaft. Circuit for demodulating an amplitude modulated signal. 3,965,435, Cl. 329-101.000.

Krieger, Heinrich. Process and arrangement for cooling fluids. 3,964,891, Cl. 62-9.000.

Krivakova, Miroslava: *See—*
Hradil, Jiri; Coupek, Jiri; Krivakova, Miroslava; Stamberg, Jiri; Stoy, Arthur; and Turkova, Jaroslava, 3,964,973.

Kroeker, Elmer Leroy Bob, to International Business Machines Corporation. Translatable stacker apparatus. 3,964,741, Cl. 271-213.000.

Krofchak, David, to David Krofchak Limited. Recovery of sodium thiocyanate. 3,965,243, Cl. 423-226.000.

Kropac, Joseph M., to Xerox Corporation. Manifold imaging member and process employing a dark charge injecting layer. 3,964,904, Cl. 96-1.500.

Kropfhammer, Georg. Inhaler apparatus. 3,964,478, Cl. 128-203.000.

Kropp, William E.: *See—*
Viker, Harris W.; and Kropp, William E., 3,964,415.

Krotz, Walter, to Medac Gesellschaft fur klinische Spezialpraparate mbH. Chamber and process for crossed immunoelectro-phoresis. 3,964,992, Cl. 204-299.00R.

Krupman, Leonid Isaakovich; Okonishnikov, Ary Mikhailovich; Sochnev, Alexandr Egorovich; Gavronsky, Boris Viktorovich; Popov, Viktor Alexeevich; Kalashnik, Anatoly Nikolaevich; Chumachenko, Vasily Sergeevich; Gudkevich, Veniamin Mikhailovich; Panev, Georgy Alexeevich; Detochka, Vasily Ivanovich; Telesov, Savely Adolfovich; Pokrass, Leonid Moiseevich; Ofengenden, Abram Mikhailovich; Nesterovich, Raisa Petrovna; and Zhitnik, Georgy Gavrilovich. Slag-forming mixture. 3,964,900, Cl. 75-94.000.

Kubota, Takeshi, to Mitsui Shipbuilding and Engineering Co., Ltd. Process for gasification of heavy hydrocarbons. 3,964,881, Cl. 48-214.00A.

Kubota Tekko Kabushiki Kaisha: *See—*
Murayama, Yoshinobu; and Uchibori, Yashunori, 3,964,585.

Kubovich, Frank Steve: *See—*
Bender, David John; and Kubovich, Frank Steve, 3,964,232.

Kucera, Josef: *See—*
Stoy, Artur; Stoy, Vladimir; Urbanova, Renata; Prokop, Jaroslav; and Kucera, Josef, 3,965,227.

Kugelfischer Georg Schafer & Co.: *See—*
Gassner, Hans; and Kress, Manfred, 3,964,324.
Schuster, Friedrich, 3,964,248.

Kuhn, Matthew; and Schumaker, Norman Edwin, to Bell Telephone Laboratories, Incorporated. Method of mounting semiconductor chips. 3,964,157, Cl. 29-591.000.

Kulikova, Vera Mikhailovna: *See—*
Tarasova, Nina Vasilievna; Obolnikova, Elena Abramovna; Gololobov, Alexandr Dmitrievich; Samokhvalov, Gleb Ivanovich; Chepigo, Sergei Vladimirovich; Ivanova, Galina Ivanovna; Imshenetsky, Vladimir Vasilievich; and Kulikova, Vera Mikhailovna, 3,965,130.

Kunigane, Akihiko: *See—*
Asada, Atsushi; Yoshida, Hideo; and Kunigane, Akihiko, 3,965,466.

Kunioka, Kazuo: *See—*
Sakasegawa, Koji; Ohsumi, Atsushi; Saito, Tatsue; Hosaka, Yukio; Kunioka, Kazuo; Yamamoto, Tomio; and Asai, Tadashi, 3,965,360.

Kuntschik, Lawrence F.; and Edwards, Robert S., to Texaco Inc. Catalytic process. 3,965,177, Cl. 260-566.00A.

Kuo, Chan-Hwa; Taub, David; and Wendler, Norman L., to Merck & Co., Inc. Prostaglandin E_1 intermediate 3-carboxymethyl-4-methyl-2-1-carboxy-7-(loweralkoxy or aralkoxycarbonyl)-heptyl]-4-hydroxybutyric acid, γ-lactone, and processes of their preparation. 3,965,120, Cl. 260-343.600.

Kuramochi, Shigeaki. Figure with movable trunk, head etc., having driving device and individual operation means. 3,964,205, Cl. 46-120.000.

Kuraray Co., Ltd.: *See—*
Yamauchi, Junnosuke; Okamura, Takayuki; and Minatono, Shobu, 3,965,076.

Kurata, Hirotaka, to Sansui Electric Co., Ltd. Stereo signal demodulator in a four-channel stereo broadcast receiver. 3,965,302, Cl. 179-15.0BT.

Kurdy, George. Dental hygiene device. 3,964,122, Cl. 15-184.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Morita, Tomijiro; Funahashi, Isao; Sugai, Masayoshi; Sasakawa, Atushi; and Takaiwa, Masakazu, 3,965,242.

Kurilkin, Vitaly Vitalievich; and Kusmartsev, Evgeny Vasilievich. Nuclear reactor fuel assembly. 3,964,968, Cl. 176-81.000.

Kuriyama, Yasuhisa: *See—*
Shin, Hiroshi; Sugano, Junichiro; Yoshii, Tadashi; Iwamoto, Kichiro; Kuriyama, Yasuhisa; and Kakuda, Minoru, 3,965,251.

Kurzeja, Ronald, to Pfizer Inc. Protective coating for graphite electrodes. 3,964,924, Cl. 106-286.000.

Kushner, Benjamin: *See—*
Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, 3,964,663.

Kusiak, Edward H., to United Technologies Corporation. Pitch change mechanism. 3,964,839, Cl. 416-160.000.

Kusmartsev, Evgeny Vasilievich: *See—*
Kurilkin, Vitaly Vitalievich; and Kusmartsev, Evgeny Vasilievich, 3,964,968.

Kusters, Eduard: *See—*
Leifeld, Ferdinand, 3,964,860.

Kuti, Laszlo: *See—*
Johan, Bela; Szemler, Laszlo; Fulop, Janos; Szontagh, Tamas; Simonovits nee Czink, Emilia; Bekes nee Erdos, Judit; Kuti, Laszlo; Toros, Robert; Szekely, Denes; Szabo, Laszlo; Seitz, Karoly; Vajda, Tade; Kovacs nee Komoroczy, Erzsebet; Hargital nee Franyo, Aniko; and Polinszky, Karoly, 3,964,971.

Kutilin, Alexandr Grigorievich: *See—*
Vexelman, Ilya Volfovich; Sljudikov, Leonid Davydovich; Kutilin, Alexandr Grigorievich; and Kalugin, Oleg Mikhailovich, 3,964,303.

L.M. Ericsson Pty. Ltd.: *See—*
Harwood, Keith, 3,965,457.

L. Schuler GmbH: *See—*
Fetzer, Helmut; Braun, Hans; Cieslok, Gunter; and Rasenberger, Otto, 3,964,357.

La Cellophane: *See—*
Robillard, Jean Jules Achille, 3,964,911.

Labadie, Jean Francois; Bernard, Armand R.; de la Taille, Olivier P.; and Thary, Christian, to Etablissements Bertrand Faure. Child's safety chair. 3,964,787, Cl. 297-390.000.

LaBelle, Joan P.; and Ketz, George, Jr., to Kopstein, Joseph Jay by said Joan P. LaBelle and George Ketz, Jr., a part interest. Nail polish bottle retainer. 3,964,709, Cl. 248-133.000.

Lachnit, Friedrich, to Deutsche Babcock & Wilcox Aktiengesellschaft. Continuous filter silo for the cleaning of flue gases. 3,964,889, Cl. 55-429.000.

Lafon, Jean Francois: *See—*
Gourlandt, Albert Joseph; Gourlandt, Georges Charles; Cauquelin, Yves Bernard; and Lafon, Jean Francois, 3,964,481.

Lagonigro, Mauro: *See—*
Husse, Massimo; and Lagonigro, Mauro, 3,964,309.

Lagrange, Donald E.: *See—*
Herold, Stanley J.; Lagrange, Donald E.; and Laswell, John E., 3,964,396.

Lakshmanan, Pallavoor R., to Gulf Research & Development Company. Adhesive composition (case a). 3,965,060, Cl. 260-27.0BB.

Lakshmanan, Pallavoor R.: *See—*
Bash, David L.; and Lakshmanan, Pallavoor R., 3,965,061

Lamb, Reginald T. Sheet-feeding apparatus. 3,964,740, Cl. 271-11.000.

Lamborn, Homer C.: *See—*
Kao, Paul W.; and Lamborn, Homer C., 3,964,521.
Kao, Paul W.; and Lamborn, Homer C., 3,964,522.

Lampe, Robert F., to United States of America, Energy Research and Development Administration. Molten core retention assembly. 3,964,966, Cl. 176-38.000.

Lampton, Michael L.: *See—*
United States of America, National Aeronautics and Space Administration; Lampton, Michael L.; and Paresce, Francesco, 3,965,354.

Lancz, Albert Jay, to Colgate-Palmolive Company. Germicidal all-purpose liquid cleaner. 3,965,026, Cl. 252-106.000

Lane, M. Jack: *See—*
Horn, Roy L.; and Lane, M. Jack, 3,964,435.

Lane, Noel W., Jr. Method of making radar reflective buoy. 3,965,234, Cl. 264-275.000.

Lang, Hermann: *See—*
Banauch, Dieter; Brummer, Wolfgang; Ebeling, Wolfgang; Helger, Roland; Hennrich, Norbert; and Lang, Hermann, 3,964,974.

Lange, Hans: *See—*
Tiedemann, Hugo; Sojka, Bernward; Lange, Hans; Rey, Hans-Georg; and Rieckmann, Peter, 3,964,870.

Langenbeck, Peter: *See—*
Ehlscheid, Gunter; Langenbeck, Peter; and Stemmler, Kurt, 3,965,327.

Langensiepen, Gert; and Bruning, Werner, to Alfred Fischbach KG Kunststoff-Spritzgusswerk. Device for dispensing flowable materials. 3,964,641, Cl. 222-82.000.

Langhammer, Hans-Juergen, to Klockner-Werke AG. Method and arrangement for melting charges, particularly for use in the production of steel. 3,964,897, Cl. 75-10.00R.

Lardellier, Alain Marie Joseph, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Device for boosting and bleeding a gas turbine engine. 3,964,257, Cl. 60-226.00R.

Lardennois, Regis; Robert, Michel; Gabillard, Robert; and Rubin, Edouard, to Engins Matra. Anti-collision safety device for a passenger transport system on tracks. 3,964,702, Cl. 246-4.000.

LaRochelle, Ronald W.; and Mitchell, Tyrone D., to General Electric Company. Process for making silarylenesilanediol. 3,965,134, Cl. 260-448.20E.

Lartigue, Donald J.: *See—*
Bialousz, Lorraine R.; Herritt, Ethel R.; Lartigue, Donald J.; and Pitcher, Wayne H., Jr., 3,965,035.

Lask, Helmut: *See—*
Holst, Arno; and Lask, Helmut, 3,965,091.

Laswell, John E.: *See—*
Herold, Stanley J.; Lagrange, Donald E.; and Laswell, John E., 3,964,396.

Latal, John J.: *See—*
Christen, Louis J., Jr.; and Latal, John J., 3,964,373

Lau, Erwin M., to Black Products Co. Bag filling machine having combined inlet valve and level control. 3,964,650, Cl. 222-450.000

Laughlin, Loran L. Can spout. 3,964,640, Cl. 222-81.000.

Lauterbach, James H. Combination means for rigidly attaching shoe to a pedal for a foot-driven crank-operated machine. 3,964,343, Cl. 74-594.600.

Lawrence Peska Associates, Inc.: *See—*
Conroy, Andrew, 3,964,710.
Lopez, Victor D., 3,964,686.
Mays, Kittrell W., 3,964,697.
Murphy, Norma M., 3,964,427.
Saethre, Magnus, 3,964,471.
Woodford, Thurman R., 3,964,120.

Lawrenz, Carl F.: *See—*
Strauss, Robert F.; and Lawrenz, Carl F., 3,964,458.

Lazariants, Emmanuil Gabrielovich: *See—*
Chaplits, Donat Nikolaevich; Kazakov, Vladimir Pavlovich; Lazariants, Emmanuil Gabrielovich; Chebotaev, Vladimir Filippovich; Balashov, Mikhail Ivanovich; and Serafimov, Leonid Antonovich, 3,965,039.

Leach, Bruce E., to Continental Oil Company. Iron catalyst. 3,965,045, Cl. 252-466.00J.

Lednicer, Daniel, to Upjohn Company, The. 4'-Fluoro-4- [4-(phenyl)-4-alkoxy-cyclo-hexyl]amino butyrophenones and the salts thereof. 3,965,180, Cl. 260-570.5CA.

Lee, William F.; Jeffery, William J.; Pyves, Richard R.; and Isaac, Moshi Y., to General Foods Limited. Method of extracting roasted coffee. 3,965,269, Cl. 426-387.000.

Legras, Roger: *See—*
Mercier, Jean; Gallez, Francis; and Legras, Roger, 3,965,064.

Lehmkuhl, Herbert: *See—*
Eisenbach, Wilhelm; Lehmkuhl, Herbert; and Wilke, Gunther, 3,964,983.

Leifeld, Ferdinand, to Kusters, Eduard. Method for dyeing carpets and the like. 3,964,860, Cl. 8-151.000.

Leighton, Robert B.: *See—*
Shair, Frederick H.; Simmonds, Peter G.; Leighton, Robert B.; and Drivas, Peter J., 3,964,294.

Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. Process for producing dialkyl aminoacrylonitrile. 3,965,141, Cl. 260-465.50R.

Leinkram, Charles Z.; Oaks, William D.; Eisele, John A.; and Faraday, Bruce J., to United States of America, Navy. Method of planar mounting of silicon solar cells. 3,964,155, Cl. 29-572.000.

Leistner, Werner: *See—*
Liebe, Wolfgang; and Leistner, Werner, 3,965,378.

Leland Stanford Junior University, The Board of Trustees of: *See—*
Schulz, Werner P., 3,964,468.

Lemahieu, Raymond Gerard: *See—*
Janssens, Wilhelmus; Claeys, Daniel Alois; Lemahieu, Raymond Gerard; and Dierckx, Jozef Aime, 3,965,282.

Lena, Louis: *See—*
Soula, Gerard; Metzger, Jacques; and Lena, Louis, 3,965,158.

Lenhard, M. James: *See—*
Clemens, Carl F.; and Lenhard, M. James, 3,965,021.

Lenk, Erich; Bauer, Karl; and Turk, Herbert, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Yarn transporting apparatus. 3,964,657, Cl. 226-177.000.

Lenk, Erich: *See—*
Schippers, Heinz; Bauer, Karl; Lenk, Erich; Mayer, Manfred; and Busch, Hans Jochen, 3,964,723.

Lennon, Donald J.: *See—*
Cohen, Norman B.; and Lennon, Donald J., 3,964,832.

Lenzinger, Fritz: *See—*
Tutzschky, Rudolf; and Lenzinger, Fritz, 3,964,733.

Leo, Daniel W. Advertising display device. 3,964,190, Cl. 40-39.000.

Leone, Salvatore. Load bearing beam for floors and the like. 3,964,217, Cl. 52-86.000.

Lesh, Robert C.; and Spector, George. Mini caddy. 3,964,642, Cl. 222-142.400.

Leslie, Stewart Thomas, to Synergistics. Slow release pharmaceutical compositions. 3,965,256, Cl. 424-22.000.

Letoffe, Michel: *See—*
Ceyzeriat, Louis; and Letoffe, Michel, 3,965,280.

Leutwyler, Roy: *See—*
Jureit, John Calvin; Leutwyler, Roy; Brodsky, Larry; Kushner, Benjamin; Seipos, Andrew G.; and Castillo, Adolfo, 3,964,663.

Le Van, Jacob J., to Raymond Lee Organization, Inc., The, a part interest. Manually operable blender. 3,964,345, Cl. 74-665.00P.

Lever Brothers Company: *See—*
Alexander, David John, 3,964,649.
Drakoff, Raymond, 3,964,500.
Geist, Robert; and Rudolph, Franz Benedikt, 3,964,910.

Levine, Morris: *See—*
Yurcheshen, Michael; Levine, Morris; and Brane, Ralph M., 3,965,058.

Levine, Morris E., to Wagner Electric Corporation. Signal transmission gate. 3,965,372, Cl. 307-254.000.

Levinson, Edwin B.: *See—*
Joseph, John S.; and Levinson, Edwin B., 3,964,826.

Levinstein, Hyman Joseph; and Sinha, Ashok Kumar, to Bell Telephone Laboratories, Incorporated. Ohmic contacts for group III-V n-type semiconductors. 3,965,279, Cl. 427-89.000.

Levy, Leon B., to Celanese Corporation. Oxidation of olefins. 3,965,166, Cl. 260-533.00N.

Lewis, Cyril John: *See—*
Ray, Neil Hunter; Robinson, William Derek; and Lewis, Cyril John, 3,964,919.

Lewis, Gerald F. Underground conduit holder. 3,964,707, Cl. 248-49.000.

Lewis, John H.: *See—*
Allan, Frank V.; Fenn, John B., Jr.; and Lewis, John H., 3,965,352.

Liebe, Wolfgang; and Leistner, Werner, to Siemens Aktiengesellschaft. Pole coil for electric machines and apparatus. 3,965,378, Cl. 310-65.000.

Lienemann, Darlo E.: *See—*
Norris, A. Lowell; and Lienemann, Darlo E., 3,964,639.

Lilly Industries, Ltd.: *See—*
Harrison, Roger Garrick, 3,965,157.

Limburg, William W.: *See—*
Cressman, Paul J.; Limburg, William W.; and Pilato, Louis A., 3,965,276.

Lin, Burn Jeng, to International Business Machines Corporation. Dynamic magnetic bubble display system. 3,965,299, Cl. 178-7.30D.

Lin, Tenhon. Simple foldable container for food and beverages. 3,964,668, Cl. 229-35.000.

Lindqvist, Jonas Herman, to Hiab-Foco Aktiebolag. Remote-controlled loading hook. 3,964,777, Cl. 294-83.00R.

Lindsey, Fred C. Wind driven mechanical drive. 3,964,426, Cl. 115-3.000.

Lindvall, Sven: *See—*
Dahlberg, Alf-Coran; Hogberg, Karl Gustav; Lindvall, Sven; and Rydh, Thore Oskar Verner, 3,965,133.

Lineberry, Cletue E.: *See—*
Brown, John J.; Milholen, William F.; and Lineberry, Cletue E., 3,964,597.

Link, John T.: *See—*
Schalow, Rudolph D.; and Link, John T., 3,964,677.

Linstromberg, William J., to Whirlpool Corporation. Sensing arm water fill shut off for ice maker. 3,964,269, Cl. 62-137.000.

Lipe-Rollway Corporation: *See—*
Armstrong, Jack W., 3,964,601.

Liquid Carbonic Corporation: *See—*
Dwyer, Thomas A., 3,964,270.

Lissau, Frederic, to Sloan Valve Company. Deoseptic assembly for bedpan rinser. 3,964,108, Cl. 4-7.000.

List, Hans: *See—*
Thien, Gerhard; Fachbach, Heinz; and Greier, Josef, 3,964,449.
Thien, Gerhard; and Fachbach, Heinz, 3,964,462.

List, Helmut; and Fredericks, George, to AVL AG. Multi-wire oxygen electrode and method of manufacturing the same. 3,965,383, Cl. 313-331.000.

Lister, John W., to General Electric Company. Balanced drive horizontal deflection circuitry with centering. 3,965,391, Cl. 315-408.000.

Little, Edwin D.; and Cheema, Zafarullah K., to Allied Chemical Corporation. Hydrogenation of phenol. 3,965,187, Cl. 260-586.00R.

Livigni, Russell Anthony: *See—*
Hargis, Ivan Glen; and Livigni, Russell Anthony, 3,965,080.

Lobachev, Anatoly Nikolaevich: *See—*
Vakhidov, Shavkat; Vakhidova, Mokhira Akhadovna; Lobachev, Anatoly Nikolaevich; Melnikov, Oleg Konstantinovich; and Triodina, Nina Sergeevna, 3,964,984.

Lobel, Ester: *See—*
Bloch, Rene; Kedem, Ora; and Lobel, Ester, 3,965,255.

Lockard, Joseph Larue, to AMP Incorporated. Lighted momentary switch array. 3,965,319, Cl. 200-310.000.

Locke, Edward V., to Avco Corporation. Laser deep cutting process. 3,965,328, Cl. 219-121.0LM.

Lockshaw, John E. Rotary cam internal combustion radial engine. 3,964,450, Cl. 123-55.0AA.

Lofquist, Robert Alden; and Saunders, Peter Reginald, to Allied Chemical Corporation. Alkoxylated aliphatic amines to inhibit ozone fading of dyed polyamides. 3,964,861, Cl. 8-165.000.

Loftus, Peter J.: *See—*
Mitchard, John M.; and Loftus, Peter J., 3,964,953.

Long Enterprises: *See—*
Carlson, James E., 3,965,298.

Lonza Ltd.: *See—*
Siegrist, Walter, 3,964,880.

Lopez, Eugene F.; and Evans, Anthony Charles, to Raychem Corporation. Cohesive sealant articles. 3,965,215, Cl. 260-889.000.

Lopez, Victor D., to Lawrence Peska Associates, Inc., a part interest. Showerhead with secondary liquid dispenser. 3,964,686, Cl. 239-74.000.

Loqvist, Kaj-Ragnar: *See—*
Gustafson, Manfred Wallace; and Loqvist, Kaj-Ragnar, 3,965,364.

L'Oreal: *See—*
Morane, Bruno R.; and Gueret, Jean-Louis H., 3,964,643.

Louis M. Gerson Co., Inc.: *See—*
Gerson, Ronald L.; and Caprio, Lawrence A., 3,964,162.

LTV Aerospace Corporation: *See—*
Heinzman, Homer W., 3,965,394.

Lu, Sun: *See—*
Jones, Derick; and Lu, Sun, 3,965,030.

Ludder, Rodney E., to Owens-Illinois, Inc. Recessed, rim-locking container closure. 3,964,635, Cl. 220-306.000.

Luebke, Clem J.; Beck, Norman L.; and Daniels, Lowell W., to Broaster Co., The. Deep fryer receptacle cover and operating mechanism therefor. 3,964,637, Cl. 220-314.000.

Lukas, Joachim H.; Baardman, Frank; and Kouwenhoven, Adriaan P., to Shell Oil Company. Preparation of derivatives of cyclobutane and cyclobutene. 3,965,204, Cl. 260-666.00A.

Lummus Company, The: *See—*
Riegel, Herbert; Sze, Morgan C.; and Schindler, Harvey D., 3,965,202.
Sze, Morgan C.; and Unger, Harold, 3,965,194.

Lumoprint Zindler KG: *See—*
Salger, Werner, 3,964,429.

Lund, Ordell R. Bracket for engagement with the rung and rail of a ladder for supporting an article. 3,964,711, Cl. 248-210.000.

Lundquist, Carl E.: *See—*
Wenander, Per E.; and Lundquist, Carl E., 3,965,476.

Lunzer, Leo M.; and Evgen, Allan, to Allee Manufacturing, Inc. Snowmobile ski wear rod. 3,964,561, Cl. 180-5.00R.

Luoma, Richard William: *See—*
Aylsworth, William Kenneth; Gudgel, Willard Leon; and Luoma, Richard William, 3,964,672.

Lynch, Thomas J.: *See—*
Heilman, William J.; and Lynch, Thomas J., 3,965,018.

Lyons, Ronald L.: *See—*
Renner, Mathias; and Lyons, Ronald L., 3,965,340.

Lyst, Harold E.: *See—*
Griffis, Juniper, 3,964,791.

M. Geleijnse & Zoon, Firma: *See—*
Geleijnse, Johannes; and Geleijnse, Machiel, 3,964,222.

Ma, John Y., to Zenith Radio Corporation. Television tuning system with precision substrate switch assembly. 3,965,427, Cl. 325-464.000.

Maccabee, Bruce S.; and Bell, Charles E. Low power infrared laser intrusion systems. 3,965,355, Cl. 250-341.000.

MacMillan Bloedel Limited: *See—*
Stout, Ronald M. T.; and Rogerson, Douglas E., 3,965,056.

MacMurdo, Ronald L. Magnetic game device. 3,964,746, Cl. 273-108.000.

Macovski, Albert. Cross-sectional X-ray emission imaging system. 3,965,353, Cl. 250-336.000.

Macovski, Albert. Cross-sectional imaging system using a polychromatic x-ray source. 3,965,358, Cl. 250-369.000.

MacPherson, Edwin J.: *See—*
Brouwer, Walter G.; MacPherson, Edwin J.; Ames, Ronald B.; and Neidermyer, Robert W., 3,964,896.

Maddock, Robert Brent: *See—*
Purton, Robert Merrill; and Maddock, Robert Brent, 3,964,516.

Madsen, Fred C. Handle attachment for drinking water bottle. 3,964,126, Cl. 16-114.00R.

Maeda Industries, Ltd.: *See—*
Ozaki, Nobuo, 3,964,330.

Maeda, Kenji: *See—*
Umezawa, Hamao; Maeda, Kenji; Kondo, Shinichi; and Fukatsu, Shunzo, 3,965,089.

Maeno, Shizuo: *See—*
Umio, Suminori; Maeno, Shizuo; Ueda, Ikuo; Sato, Yoshinari; and Matsuo, Masaaki, 3,965,122.

Mageli, Orville Leonard: *See—*
D'Angelo, Antonio Joseph; Mageli, Orville Leonard; and Sheppard, Chester Stephen, 3,965,145.

Magnusson, Lawrence B., to Betz Laboratories, Inc. Process for reducing dissolved inorganic orthophosphates to PPB levels in aqueous systems. 3,965,002, Cl. 210-46.000.

Mahon, Joseph J., to Deltrol Corporation. Percentage timer. 3,965,312, Cl. 200-39.00R.

Mahoney, Lee R., to Ford Motor Company. Method for recovery of methyl methacrylate from mixed polymeric materials. 3,965,149, Cl. 260-486.00R.

Major Watch Case Co., Inc.: *See—*
Fuld, Kenneth, 3,964,652.

Malatesta, Alberto: *See—*
Baldwin, Francis P.; and Malatesta, Alberto, 3,965,213.

Mall, Gunther; and Striegler, Werner, to Pfaff Industriemaschinen GmbH. Device for sewing and cutting-open tucks on cut pieces of garments. 3,964,409, Cl. 112-121.150.

Maltby, Jack: *See—*
Stubbs, Dennis; Maltby, Jack; and Oxlade, Roy Ronald, 3,964,282.

Malz, Russell E., Jr.; Amidon, Roger W.; and Greenfield, Harold, to Uniroyal, Inc. Process for preparing N,N-disubstituted acid hydrazides. 3,965,174, Cl. 260-561.00H.

Mamazza, Dominic P.: *See—*
Armistead, William H.; Mamazza, Dominic P.; Rostoker, David; and Woolley, Frank E., 3,964,916.

Manabe, Osamu; and Kameo, Takashi, to Osaka City. Aromatic compound nitration catalyzed by aromatic sulfonic acid supported on solid carrier. 3,965,200, Cl. 260-645.000.

Manchester, Isaac F., Jr., to FAS/CON Systems, Inc. Wristwatch case. 3,964,250, Cl. 58-88.00R.

Manley, Arthur G., to Eastprint, Inc. Disposable electrode. 3,964,469, Cl. 128-2.10E.

Manning, Harold E.; and Ellis, Michael C., to Petro-Tex Chemical Corporation. Method of metal chromite preparation. 3,965,044, Cl. 252-465.000.

Manning, Robert E.: *See—*
Eberle, Marcel K.; and Manning, Robert E., 3,965,110.

Manoogian, Alex; and Pullen, Eric V., to Masco Corporation of Indiana. Push-pull single handle water faucet valve. 3,964,514, Cl. 137-625.170.

Manriquez, Ralph F., to Singer Company, The. Keyed retainer. 3,964,833, Cl. 403-357.000.

Manzoni, John A.: *See—*
Garwood, William E.; Manzoni, John A.; Whyte, Thaddeus F., Jr.; and Wise, John J., 3,965,205.

MAPA GmbH: *See—*
Kesselring, Lutz, 3,964,489.

Marans, Nelson S., to W. R. Grace & Co. Process for concentrating brine. 3,964,960, Cl. 159-49.000.

Marathon Oil Company: *See—*
Kelly, Joe T., deceased, 3,964,994.
Schroeder, Donald E., Jr.; Plummer, Mark A.; and Roszelle, Wayne O., 3,964,548.

Marcus, Irwin: *See—*
Kintish, Irving L.; and Marcus, Irwin, 3,964,392.

Marfiewicz, Wilhelm, to Emil Korsch Spezialfabrik fur Komprimiermaschinen. Device for producing hollow bodies of thermoplastic material. 3,964,852, Cl. 425-326.00B.

Marheine, Edward A., to GTE Automatic Electric Laboratories Incorporated. Intercept arrangement for key telephone systems. 3,965,304, Cl. 179-18.00B.

Marik, Norman J. Automatic candle-wicking machine. 3,964,858, Cl. 431-288.000.

Mark, Gordon, to RCA Corporation. Method of forming an overlayer including a blocking contact for cadmium selenide photoconductive imaging bodies. 3,964,986, Cl. 204-192.000.

Markiewitz, Kenneth H., to ICI United States Inc. Polyurea-urethane polymers from urea, diamines and aminoalcohols. 3,965,072, Cl. 260-77.50C.

Markl, Georg, to Tekade Felten & Guilleaume Fernmeldeanlagen GmbH. 200 MHz carrier frequency system with sextenary groups. 3,965,300, Cl. 179-15.0FS.

Markusch, Peter; and Dieterich, Dieter, to Bayer Aktiengesellschaft. Composite materials. 3,965,051, Cl. 260-2.5AK.

Marriott Corporation: *See—*
Meyers, Henry W.; and Quinby, John, 3,964,118.

Marsan Manufacturing Company, Inc.: *See—*
Neumeier, Erich, 3,964,485.

Marsh, Dana G., to Xerox Corporation. Method for the preparation of relief printing masters. 3,964,907, Cl. 96-35.000.

Marshall, Albert H.; Oharek, Frank J.; Dillard, John H.; and Entwistle, Robert J., to United States of America, Navy. Universal infantry weapons trainer. 3,964,178, Cl. 35-25.000.

Marshall, Graham: *See—*
Craven, George Frederick; Heeks, John Stuart; and Marshall, Graham, 3,965,446.

Marshall, William E.: *See—*
Stocker, Charles T.; Schara, Robert E.; Marshall, William E.; Hayes, John T., Jr.; and Glicksman, Martin, 3,965,268.

Martin, Fred David: *See—*
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Martin Marietta Aluminum Inc.: *See—*
Anderson, Paul E., 3,964,963.

Martin, Tellis Alexander: *See—*
Hamlow, Eugene Emanuel; and Martin, Tellis Alexander, 3,965,167.

Martini, George, to Glamorise Foundations, Inc. Brassiere construction. 3,964,491, Cl. 128-476.000.

Maruko, Morihisa; Oda, Chikao; and Nakashima, Eizi, to Hitachi, Ltd. Continuous reactor for viscous materials. 3,964,874, Cl. 23-285.000.

Marulic, Walter J.: *See—*
Ferris, Ray L.; and Marulic, Walter J., 3,964,766.

Maruyama, Isamu; Nakao, Masaru; Sasajima, Kikuo; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. 3-Phenoxypropylamine derivatives. 3,965,106, Cl. 260-293.830.

Marx, Michael, to Syntex (U.S.A.) Inc. Tricyclic pharmacological agents, intermediates and methods of making. 3,965,181, Cl. 260-570.8TC.

Maschinenfabrik Augsburg-Nurnberg AG: *See—*
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Masco Corporation of Indiana: *See—*
Manoogian, Alex; and Pullen, Eric V., 3,964,514.

Mashuda, David. Mechanized wheelchair. 3,964,786, Cl. 297-330.000.

Massachusetts Institute of Technology: *See—*
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Massaro, Anthony J.: *See—*
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Massey-Ferguson Inc.: *See—*
Joslyn, Gerald L.; and Bingley, George W., 3,964,713.

Massey-Ferguson Services N.V.: *See—*
Crawford, Alexander; and Bailey, Alfred J., 3,964,714.

Mast, Aquila D., to Sperry Rand Corporation. Apparatus for feeding materials into a hammermill or the like. 3,964,720, Cl. 241-186.00A.

Matchett, Robert R. Hair grooming apparatus. 3,964,501, Cl. 132-11.00A.

Materials Technology Corporation: *See—*
Post, Robert C.; McCullough, Allen W.; and McClure, James H., 3,964,937.

Mathes, Stanley, to Syntex Puerto Rico, Inc. Inhalation device. 3,964,483, Cl. 128-266.000.

Mathieu, Thomas A. Method of removing material from a bed of a body of water. 3,964,184, Cl. 37-195.000.

Mathues, Thomas P., to General Motors Corporation. Modular proportioner. 3,964,795, Cl. 303-6.00C.

Matlock, Robert G.: *See—*
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Matsieshita Electric Industrial Co., Ltd.: *See—*
Sakamoto, Naraji; Mitsui, Tatsuo; and Hayakawa, Toshio, 3,965,479.

Matsui, Takahiro; and Uwamori, Osamu, to Kabushiki Kaisha Morita Seisakusho. Dental chair. 3,964,725, Cl. 248-421.000.

Matsukawa, Hiroharu; and Saeki, Keiso, to Fuji Photo Film Co., Ltd. Process for the production of oil-containing microcapsules. 3,965,033, Cl. 252-316.000.

Matsuo, Masaaki: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Mattco, Inc.: *See—*
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Matthias, Guenther: *See—*
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Matz, Bjorn J.; and Rivers, Paul F., to Dictaphone Corporation. Central dictation system. 3,965,484, Cl. 360-61.000.

Matzuk, Terrance. Integrated ultrasonic scanning apparatus. 3,964,296, Cl. 73-67.50R.

Maxwell, James C., to Carter's Ink Company, The. Method and apparatus for high speed non-impact printing with shade-of-grey control. 3,964,388, Cl. 101-426.000.
May, Edward T., to ACF Industries, Incorporated. By-pass valve with pressure relief feature. 3,964,515, Cl. 137-625.270.
May, Kenneth D.; Dodson, Elmer E.; and Cohee, Claude C., to Qonaar Corporation. Parking meter with automatic reading means. 3,964,590, Cl. 194-83.000.
May, Kenneth Peter: *See—*
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Mayer, Manfred: *See—*
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Mays, Kittrell W., to Lawrence Peska Associates, Inc., a part interest. Deployable wing back pack. 3,964,697, Cl. 244-64.000.
McAleer, William J.; Posch, Kenneth L.; Baugh, Clarence L.; and Spier, Raymond E., to Merck & Co., Inc. Process for production of vaccines. 3,965,258, Cl. 424-89.000.
McArthur, John N.; Dawkins, Peter D.; and Smith, Mervyn J. H., to McArthur, John N. Anti-inflammatory dipeptide. 3,965,260, Cl. 424-177.000.
McAvoy, Dennis J., to Sperry Rand Corporation. Power transmission. 3,964,505, Cl. 137-106.000.
McCabe, John H., to Fox Specialty Co., Inc. Combined decanter and tray. 3,964,629, Cl. 220-23.860.
McCartan, Daniel A.: *See—*
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McClelland, Euan, to Imperial Chemical Industries Limited. Polyester catalysts. 3,965,071, Cl. 260-75.00R.
McClelland, Robert G., to E. H. Sheldon and Company. Tension rod cabinet systems. 3,964,811, Cl. 312-265.000.
McClure, James H.: *See—*
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McCrosky, Warren N.; and Peterschmidt, Dennis F., to General Electric Company. Rotor having balance weights. 3,965,382, Cl. 310-261.000.
McCulloch Corporation: *See—*
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McCullough, Allen W.: *See—*
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McDonnell Douglas Corporation: *See—*
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McDonough, Cletus, to Molex Incorporated. Insulation piercing terminal. 3,964,815, Cl. 339-97.00C.
McGill Manufacturing Company, Inc.: *See—*
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McGill, Paul F. Fire sprinkler and ceiling panel assembly. 3,964,549, Cl. 169-37.000.
McGinty, Otto, Wayne. Low coolant level protection system. 3,964,567, Cl. 180-103.00R.
McHugh, Daniel J.: *See—*
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McIntosh Laboratory, Inc.: *See—*
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Fish, Lawrence W., Jr.; Evans, Ronald C.; and Corderman, Sidney A., 3,965,423.
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McKinley, Francis W. Container and dispenser for fish bait. 3,964,204, Cl. 43-55.000.
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McLean, James N.: *See—*
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McLeod, Wilfred R.: *See—*
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Medac Gesellschaft fur klinische Spezialpraparate mbH: *See—*
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Mei, Kenyon Chi-Yen, to Hewlett-Packard Company. Multiple output logic circuits. 3,965,367, Cl. 307-207.000.
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Meister, Otto: *See—*
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Mercier, Jean; Gallez, Francis; and Legras, Roger, to Unibra S.A. Process for the crystallization of polycarbonates and products obtained. 3,965,064, Cl. 260-30.60R.
Merck & Co., Inc.: *See—*
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Metzger, Julio, to E. R. Squibb & Sons, Inc. Amphotericin complexes. 3,965,090, Cl. 260-210.0AB.
Meusel, Otto; and Dressel, Otto, to Siemens Aktiengesellschaft. Apparatus for a rotating thyristor excitation. 3,965,379, Cl. 310-68.00R.
Meyer, Charles H.; Sheffield, Donald H.; and Willman, George N., to Mobil Oil Corporation. Apparatus for securing a sheet of material into a roll. 3,964,380, Cl. 100-9.000.
Meyers, Charles K.: *See—*
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Meyers, Henry W.; and Quinby, John, to Marriott Corporation. Cargo transfer vehicle with double angle catwalk adjustment. 3,964,118, Cl. 14-72.500.
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Middleton, William J., to Du Pont de Nemours, E. I., and Company. Homopolymers of polyfluorinated vinyl isocyanates. 3,965,074, Cl. 260-77.50R.
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Miller, Galen R., to Chemidyne Corporation. Safety cap assembly for pressurized vessels. 3,964,508, Cl. 137-377.000.
Miller, Gerald K., to Nartron Corporation. Intermittent load energizer assembly and circuit means. 3,965,398, Cl. 317-141.00S.
Miller Ralph L., to Bell Telephone Laboratories, Incorporated. Signaling system. 3,965,296, Cl. 179-1.50R.
Miller, Roy W.; and Gutridge, Jack E., to Pullman Incorporated. Railway gondola car. 3,964,399, Cl. 105-406.00R.
Miller, Ward B.; and McCartan, Daniel A., to Owens-Corning Fiberglas Corporation. Roll-up compressive packaging apparatus. 3,964,235, Cl. 53-118.000.
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Minkow, Julius M. Apparatus for assembling a frame. 3,964,288, Cl. 72-306.000.
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Monger, Raymond Frederick. Analog-to-digital converters. 3,965,467, Cl. 340-347.0NT.
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Morane, Bruno R.; and Gueret, Jean-Louis H., to L'Oreal. Unpressurized container for holding a plurality of products separately and dispensing them simultaneously. 3,964,643, Cl. 222-145.000.
Morduchowitz, Abraham, to Texaco Inc. Method of bonding utilizing imide ester derivatives of ethene maleic anhydride copolymers. 3,964,954, Cl. 156-331.000.
Morgan, Brian E.: *See—*
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Mori, Fumiko, to Matsushita Electric Industrial Co., Ltd. Cooking time adjusting arrangement for use in electronic oven. 3,965,324, Cl. 219-10.55B.
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Hirooka, Masaaki; Fujii, Yoshikazu; Morita, Shigeru; Namazue, Isamu; and Hata, Kazuhiko, 3,964,955.
Morita, Tomijiro; Funahashi, Isao; Sugai, Masayoshi; Sasakawa, Atushi; and Takaiwa, Masakazu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for desulfurizing exhaust gas by alkali sulphite-gypsum process. 3,965,242, Cl. 423-166.000.
Moritomo, Sadao, to Seiko Seiki Kabushiki Kaisha. Grinding apparatus. 3,964,210, Cl. 51-165.710.
Morrow, Raymond A. Silencer for combustion engines. 3,964,570, Cl. 181-56.000.
Mort, Paul R., Jr.; and Cleary, Robert A., to Synchro-Motion Corporation. Bottom labeling method and apparatus. 3,964,947, Cl. 156-64.000.
Mory, Walter. Ski binding. 3,964,756, Cl. 280-614.000.
Moser, Rabin; and Weiler, Ernest A., to Xerox Corporation. Dual mode roll fuser. 3,965,331, Cl. 219-216.000.
Motorola, Inc.: *See—*
Barbara, Bruce J., 3,965,460.
Bates, Wayne J., 3,965,370.
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Bevacqua, Louis Albert, 3,965,449.
Davis, Earl K.; Hansen, Kent W.; and Silvis, Duane C., 3,964,920.
Gordon, Frank John, 3,964,320.
Ou, Wen-Pin, 3,965,445.
Wang, Raymond C., 3,964,941.
Williams, Kenneth S., 3,965,330.
Mouat, Thomas W., to B. C. Research. Method and apparatus for detaching coatings frozen on to surfaces. 3,964,183, Cl. 37-12.000.
Mount, Bruce E.; and Barela, James R., to City of Hope-A National Medical Center. Apparatus and method for measuring heart condition. 3,965,339, Cl. 235-151.300.
Moynihan, John D.: *See—*
Peterson, Richard C.; Moynihan, John D.; and O'Shea, Martin W., 3,965,425.
Muecke, Walter: *See—*
Baar, Walter; Koehler, Herbert; and Muecke, Walter, 3,964,382.
Mueller, Dale A., to Honeywell Inc. Electric circuit enclosure transformer mounting means. 3,965,287, Cl. 174-66.000.
Mueller, Floyd F.; and Gelbuda, William A., to American Hospital Supply Corporation. Shelf and corner post assembly. 3,964,404, Cl. 108-144.000.
Mulhollam, Gail R.: *See—*
Clinard, Glenn G.; Guth, Kenneth C.; Mulhollam, Gail R.; and Volk, Frank J., 3,965,470.
Muller, Karl Heinz: *See—*
Kleiner, Frank; Becker, Wolfgang; and Muller, Karl Heinz, 3,965,053.

Muller, Marcel: *See—*
Furst, Andor; Muller, Marcel; Alig, Leo; Keller, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,965,128.

Munis, Richard H. Coin photographic apparatus. 3,964,829, Cl. 355-75.000.

Murai, Masayo; and Monno, Hiroki, to Nishiyama Gomu Kabushiki Kaisha. Device for sealing the end of sheath pipe. 3,964,754, Cl. 277-101.000.

Murayama, Yoshinobu; and Uchibori, Yashunori, to Kubota Tekko Kabushiki Kaisha. Hydraulic double clutch of the wet type with pressure control valves. 3,964,585, Cl. 192-87.130.

Murphy, Daniel Joseph: *See—*
Von Arnauld, Horst; and Murphy, Daniel Joseph, 3,964,349.

Murphy, Norma M., to Lawrence Peska Associates, Inc., a part interest. Survival apparatus. 3,964,427, Cl. 116-124.00B.

Murphy, Thomas V. Modular shelf and cabinet system. 3,964,810, Cl. 312-257.00R.

Murray, Hans Edward Henrik, to SKF Nova AB. Process for batch production of sponge iron. 3,964,898, Cl. 75-11.000.

Murray, Wayne Henry: *See—*
Boggs, Beryl Aaron; Carr, Robert David; Cary, Lawrence Edward; Forman, Clarence Albert; Murray, Wayne Henry; Peterson, Weldon Herbert; and Montgomery, Everett Gray, 3,964,722.

Murtaugh, Justin J., to Drackett Company, The. Soap curd dissolving drain cleaner. 3,965,048, Cl. 252-527.000.

Musgrave, Daniel D. Adjustable spring assembly. 3,964,199, Cl. 42-50.000.

Mutschler, Erich; and Weber, Adam, to SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH. Return device for a direction indicating switch. 3,965,313, Cl. 200-61.270.

Mycka, Anthony, Jr.: *See—*
Orzechowski, Casimir T.; Seiden, Nat; and Mycka, Anthony, Jr., 3,964,696.

Myers, Albert F., Sr., to Aspro, Incorporated. Limited slip differential including conical pinion and side gears. 3,964,346, Cl. 74-711.000.

Mynol, Inc.: *See—*
Stahlman, Donald B., 3,964,166.

N.K. Verwaltungs AG: *See—*
Aegidius, Poul Erik, 3,964,869.

N-S-W Corporation: *See—*
Dukes, Bobby Wayne, 3,964,352.

Naastepad, Pieter Aart: *See—*
Asselman, George Albert Apolonia; Green, David Bruce; Castelijns, Adrianus Petrus Johannes; Naastepad, Pieter Aart; and De Ruiter, Jacob Willem, 3,965,334.

Nadella: *See—*
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Nagata, Yasunori; Itoh, Hirotaka; Yazaki, Susumu; Hamamura, Takayuki; and Yoshiya, Shigeo, to Kanebo, Ltd. Apparatus for continuously washing a yarn with a washing liquid. 3,964,279, Cl. 68-205.00R.

Naidu, Panjeti Babu. Snow protectors for windshields. 3,964,780, Cl. 296-95.00C.

Naik, Navnitrai Nagirji: *See—*
Kangle, Purushottam Janardan; Werdenberg, Hermann; Artz, Klaus; Ramanathan, Visvanathan; Naik, Navnitrai Nagirji; and Milicevic, Branimir, 3,964,862.

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Nakagawa, Kunio: *See—*
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Watanabe, Yoshihisa; Imanari, Makoto; Nojiri, Naohiro; Fuga, Nobuhiko; and Nakajima, Masato, 3,965,162.

Nakamura, Norihiko; and Baika, Toyokazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. High compression internal combustion engine using a lean charge. 3,964,452, Cl. 123-78.0AA.

Nakamura, Shigeji, to Nippon Electric Glass Company, Limited. Objects of marble-like glass ceramic. 3,964,917, Cl. 106-39.600.

Nakano, Yoshihiko: *See—*
Konishi, Kenzo; Kotone, Akira; Nakane, Yoshihiko; Kitao, Teijiro; and Yamase, Iro, 3,965,087.

Nakanishi, Michio; Araki, Kazuhiko; Tahara, Tetsuya; and Shiroki, Masami, to Yoshitomi Pharmaceutical Industries, Ltd. Triazolothienodiazepine compounds. 3,965,111, Cl. 260-308.00C.

Nakano, Soichi; Iizuka, Yoshitoku; and Watanabe, Masao. Heating of intake mixture for auxiliary chamber of internal combustion engine. 3,964,460, Cl. 123-191.00S.

Nakao Filter Media Corporation: *See—*
Nakao, Yosinori, 3,964,883.

Nakao, Masaru: *See—*
Maruyama, Isamu; Nakao, Masaru; Sasajima, Kikuo; Inaba, Shigeho; and Yamamoto, Hisao, 3,965,106.

Nakao, Yosinori, to Nakao Filter Media Corporation. Method for filtering and cleaning a filter bag. 3,964,883, Cl. 55-96.000.

Nakashima, Eizi: *See—*
Maruko, Morihisa; Oda, Chikao; and Nakashima, Eizi, 3,964,874.

Nakata, Tetsuya: *See—*
Shimogawa, Sachio; Fujio, Takashi; Arika, Mikio; Yamada, Nobuo; Kodama, Takashi; and Nakata, Tetsuya, 3,965,050.

Nakul, Ivan Savvich: *See—*
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Nalco Chemical Company: *See—*
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Namazue, Isamu: *See—*
Hirooka, Masaaki; Fujii, Yoshikazu; Morita, Shigeru; Namazue, Isamu; and Hata, Kazuhiko, 3,964,955.

Nametz, Richard C.; and Nulph, Robert J., to Michigan Chemical Corporation. Flame retardant ABS polymer compositions. 3,965,214, Cl. 260-880.00R.

Namiki, Isamu: *See—*
Nojiri, Akio; Shiina, Naonori; Nakae, Hiroyuki; Ueno, Hideyo; and Namiki, Isamu, 3,965,054.

Namiki, Ryoichi, to Ricoh Co., Ltd. Device for supplying an offset preventing liquid to a fixing roller. 3,964,431, Cl. 118-60.000.

Naremco, Inc.: *See—*
Jackson, Dennis E., 3,965,266.

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Nartron Corporation: *See—*
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National Can Corporation: *See—*
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National Distillers and Chemical Corporation: *See—*
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National Gypsum Company: *See—*
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National Steel Corporation: *See—*
Saunders, William T., 3,964,413.

Navelsaker, Olav Rasmusson, to Thune-Eureka A/S. Method of pumping liquid with a submerged rotary pump and pump for carrying out the method. 3,964,836, Cl. 415-1.000.

Neidermyer, Robert W.: *See—*
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Nelms, George E., to Medtronic, Inc. Lead storage apparatus for electromedical device. 3,964,490, Cl. 128-419.00R.

Nelson, Ira V., to United States of America, Energy Research and Development Administration. Tag gas capsule with magnetic piercing device. 3,964,967, Cl. 176-80.000.

Nesterovich, Raisa Petrovna: *See—*
Krupman, Leonid Isaakovich; Okonishnikov, Ary Mikhailovich; Sochnev, Alexandr Egorovich; Gavronsky, Boris Viktorovich; Popov, Viktor Alexeevich; Kalashnik, Anatoly Nikolaevich; Chumachenko, Vasily Sergeevich; Gudkevich, Veniamin Mikhailovich; Panev, Georgy Alexeevich; Detochka, Vasily Ivanovich; Telesov, Savely Adolfovich; Pokrass, Leonid Moiseevich; Ofengenden, Abram Mikhailovich; Nesterovich, Raisa Petrovna; and Zhitnik, Georgy Gavrilovich, 3,964,900.

Neumann, Gerhard, to General Electric Company. Gas turbine engine noise shield. 3,964,568, Cl. 181-33.0HA.

Neumann, Gerhard, to General Electric Company. Gas turbine engine noise shield. 3,964,569, Cl. 181-33.0HA.

Neumeier, Erich, to Marsan Manufacturing Company, Inc. Enterostomy appliances. 3,964,485, Cl. 128-283.000.

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New York Wire Mills Corporation: *See—*
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Tolliver, Wilbur E.; and Borodin, Daniel J., 3,964,938.

Newell, Dennis E.: *See—*
Tyler, Hugh J.; and Newell, Dennis E., 3,965,396.

Newtson, Gary L. Grocery cart clip attachment. 3,964,134, Cl. 24-81.0PC.

Ng, John; and Jacobs, Melvin A., to GTE Automatic Electric Laboratories Incorporated. Arrangement for increasing the call handling capabilities of a crosspoint tandem system. 3,965,305, Cl. 179-18.0EB.

Nickerson, Russell J.: *See—*
Petrides, Petros T.; Nickerson, Russell J.; Cordeiro, Rodney R.; and Dodson, James S., Jr., 3,965,329.

Nickles, Lawrence H., to General Motors Corporation. Locking cup washer. 3,964,530, Cl. 151-29.000.

Nicklin, Ralph: *See—*
Hart, Peter Brian; and Nicklin, Ralph, 3,964,940.

Nicolaisen, Bernard H., to Olin Corporation. Method for preparing alkali metal orthophosphates and ammonia in a single step. 3,965,245, Cl. 423-312.000.

Nicollet, Michel. Automatic device for subaqueous massage. 3,964,472, Cl. 128-66.000.

Nighy, Charles David. Stainless steel polish. 3,964,913, Cl. 106-10.000.

Nii, Kazuo: *See—*
Sumida, Shizuo; Nii, Kazuo; Shimizu, Osamu; Ueda, Atsushi; and Ishii, Mitsuaki, 3,965,366.

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Nippon Electric Company Limited: *See—*
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Nippon Electric Glass Company, Limited: *See—*
Nakamura, Shigeji, 3,964,917.

Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Soken, Inc.: *See—*
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Nishi, Atsuyoshi; Kawabuchi, Isamu; Yashiro, Katuo; Ono, Kenichi; and Furuya, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Vaporizing type liquid fuel combustion apparatus. 3,964,859, Cl. 431-78.000.

Nishida, Toyomi; Sohma, Hiroshi; and Ito, Hayami, to Kawasaki Jukogyo Kabushiki Kaisha. Process for calcination of cement-clinker. 3,964,922, Cl. 106-100.000.

Nishimiya, Torazo, to Hitachi, Ltd. Differential ignition timing firing control system. 3,964,454, Cl. 123-148.0DS.

Nishimura, Yoshitaka: *See—*
Kawamura, Eiji; Nishimura, Yoshitaka; and Fukumoto, Hisashi, 3,964,562.

Nishio, Osamu; and Adachi, Nokihisa, to Okuma Machinery Works, Ltd. Knitting error detecting apparatus for circular knitting machine. 3,964,276, Cl. 66-154.00A.

Nishiyama Gomu Kabushiki Kaisha: *See—*
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Nisshin Flour Milling Co., Ltd.: *See—*
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Nitsche, Herbert: *See—*
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Nittel, Herman: *See—*
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Redmer, Wilbert; Rolin, Kenneth; and Nittel, Herman, 3,964,857.

NL Industries, Inc.: *See—*
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Nojiri, Akio; Shiina, Naonori; Nakae, Hiroyuki; Ueno, Hideyo; and Namiki, Isamu, to Furukawa Electric Co., Ltd., The. Foamable polyolefin composition and method for manufacturing foamed polyolefin. 3,965,054, Cl. 260-2.5HA.

Nojiri, Naohiro: *See—*
Watanabe, Yoshihisa; Imanari, Makoto; Nojiri, Naohiro; Fuga, Nobuhiko; and Nakajima, Masato, 3,965,162.

Nolan, Thomas Edward, Jr.: *See—*
Hanson, Richard Eric; and Nolan, Thomas Edward, Jr., 3,964,301.

Noll, Charles H.; and Andrews, James B., to Johns-Manville Corporation. Siliceous thermal insulation and method of making same. 3,965,020, Cl. 252-62.000.

Nonaka, Tsutomu. Reference indexing device. 3,964,192, Cl. 40-104.010.

Noordhof, Harry, to Noordhof, Lucille E. Core box mounting plates in a shell core machine. 3,964,538, Cl. 164-228.000.

Noordhof, Lucille E.: *See—*
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Norbutas, Stanley R.; Domenz, Thomas B.; and Mieleszuk, Jan, to Signode Corporation. Method and apparatus for providing containers with folded caps. 3,964,375, Cl. 93-36.50R.

Nordischer Maschinenbau Rud. Baader: *See—*
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Nordson Corporation: *See—*
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Norell, John R., to Phillips Petroleum Company. Acid and ester production. 3,965,132, Cl. 260-410.90R.

Normandin, Michel. Vane-type rotary internal combustion engine. 3,964,447, Cl. 123-8.410.

Norris, A. Lowell; and Lienemann, Darlo E., to International Harvester Company. Seed tube diffuser for a pneumatic seed planter. 3,964,639, Cl. 221-278.000.

Norsk Hydro A.S.: *See—*
Vestre, Rasmus; and Augland, Oddvar Kaurin, 3,964,146.

North American Manufacturing Company, The: *See—*
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Norton, Richard V., to Sun Ventures, Inc. Removal of iron impurities from aromatic carboxylic acids. 3,965,160, Cl. 260-515.00P.

Norton, Robert Leo: *See—*
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Novikov, Leonid Kuzmich: *See—*
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O'Brien, John T.; and White, Woodrow W., to Uniroyal Inc. Bisulfite terminated oligomers to prevent scale. 3,965,028, Cl. 252-180.000.

O'Connor, David Evans: *See—*
Swain, Ronald Bruce; and O'Connor, David Evans, 3,965,086.

Oda, Chikao: *See—*
Maruko, Morihisa; Oda, Chikao; and Nakashima, Eizi, 3,964,874.

Oda, Yoshio; Uchida, Keiichi; and Morimoto, Takeshi, to Asahi Glass Co., Ltd. Process for preparing unsaturated carboxylic acids from the corresponding unsaturated aldehydes. 3,965,163, Cl. 260-530.00N.

Oerther, Charles J.; and Osborn, Joseph B., to General Electric Company. Apparatus for positioning pin fins of a finned-tube heat exchanger. 3,964,286, Cl. 72-176.000.

Ofengenden, Abram Mikhailovich: *See—*
Krupman, Leonid Isaakovich; Okonishnikov, Ary Mikhailovich; Sochnev, Alexandr Egorovich; Gavronsky, Boris Viktorovich; Popov, Viktor Alexeevich; Kalashnik, Anatoly Nikolaevich; Chumachenko, Vasily Sergeevich; Gudkevich, Veniamin Mikhailovich; Panev, Georgy Alexeevich; Detochka, Vasily Ivanovich; Telesov, Savely Adolfovich; Pokrass, Leonid Moiseevich; Ofengenden, Abram Mikhailovich; Nesterovich, Raisa Petrovna; and Zhitnik, Georgy Gavrilovich, 3,964,900.

Officina Meccanica Giovanni Busi: *See—*
Busi, Giovanni; and Belli, Pierluigi, 3,964,275.

Ogawa, Akira; and Sakao, Masashi, to Shin Meiwa Industry Co., Ltd. Apparatus for cutting and stripping insulated wire. 3,964,142, Cl. 29-33.00M.

Ogden, John M. Tennis racquet stringing calibrator. 3,964,291, Cl. 73-1.00B.

Ogg, Andrew L. Spring mounted pitching deck and projectile for impacting thereon. 3,964,745, Cl. 273-95.00R.

O'Hanlon, Edward J. Solar air conditioner. 3,964,678, Cl. 237-1.00A.

Oharek, Frank J.: *See—*
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Ohloff, Gunther: *See—*
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Ohringer, Jack G. Parallel fluid heating system. 3,964,466, Cl. 126-361.000.

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Oishi, Yasushi: *See—*
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Okado, Chihiro, to Tokyo Shibaura Electric Co., Ltd. Constant power control of a D.C. electric motor for handling cargoes. 3,965,403, Cl. 318-143.000.

Okamura, Takayuki: *See—*
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Okonishnikov, Ary Mikhailovich: *See—*
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Okuma Machinery Works, Ltd.: *See—*
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Olander, Walter K., to General Electric Company. Polyphenylene oxide is prepared using a mixture of manganese chelates as a catalyst. 3,965,069, Cl. 260-47.0ET.

Oldfield, Benjamin Duncan, to Renold Limited. Damper apparatus. 3,964,331, Cl. 74-242.1FP.

Olesovsky, Jaroslav: *See—*
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Olson, Harry William, to McGill Manufacturing Company, Inc. Low force switch mechanism. 3,965,316, Cl. 200-67.00D.

Olstowski, Franciszek; and Parrish, Donald B., to Dow Chemical Company, The. Preparation of rapid setting non-elastomeric polyurethane compositions in the presence of ester-modified polyoxyalkylene compounds. 3,965,073, Cl. 260-77.5AN.

Oltman, John E.; and Feldhake, Ralph H., to ESB Incorporated. Battery having deformations in a metal layer. 3,964,932, Cl. 136-111.000.

Onishi, Yuuji: *See—*
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Orion Research Incorporated: *See—*
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Orzechowski, Casimir T.; Seiden, Nat; and Mycka, Anthony, Jr., to United States of America, Navy. Method of controlling the spin rate of tube launched rockets. 3,964,696, Cl. 244-3.230.
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Osaka Soda Co., Ltd.: *See—*
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Ott, Norman D.; and Foster, Richard D. Bowling ball hole font. 3,964,726, Cl. 249-90.000.
Otte, George, Jr., to American Sterilizer Company. Liquid waste disposal. 3,965,006, Cl. 210-138.000.
Ou, Wen-Pin, to Motorola, Inc. Microstrip or stripline coupled-transmission-line impedance transformer. 3,965,445, Cl. 333-33.000.
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Paige, Bernice E., to United States of America, Energy Research and Development Administration. Dissolution process for ZrO_2-UO_2-CaO fuels. 3,965,237, Cl. 423-4.000.
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Peterson, John O. H., to Scott Paper Company. Printing plate by laser transfer. 3,964,389, Cl. 101-467.000.
Peterson, Richard C.; Moynihan, John D.; and O'Shea, Martin W., to Sprague Electric Company. Electromagnetic radiation source locator. 3,965,425, Cl. 325-364.000.
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Reinisch, Ronald F.; Gloria, Hermilo R.; Goldsberry, Ronald E.; and Adamson, Michael J., to United States of America, National Aeronautics and Space Administration. Ultraviolet and thermally stable polymer compositions. 3,965,096, Cl. 260-240.00G.
Reiser, Carl A., to United Technologies Corporation. Fuel cell cooling system. 3,964,930, Cl. 136-86.00R.
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Renner, Hermann; and Weidemann, Dieter, to Daimler-Benz Aktiengesellschaft. Door for vehicle, especially passenger motor vehicle. 3,964,208, Cl. 49-502.000.
Renner, Mathias; and Lyons, Ronald L. Optical counting device. 3,965,340, Cl. 235-151.320.
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Oldfield, Benjamin Duncan, 3,964,331.
Renz, Gunter; Wehr, Walter; and Amann, Bertram, to Goltermann, Wandel U. Method of and apparatus for testing transmission line carrying bipolar PCM signals. 3,965,294, Cl. 178-69.00A.
Reppert, Merlyn R.; and Beckwith, Thomas M., to W. R. Grace & Co. Electroplating apparatus. 3,964,987, Cl. 204-194.000.
Reser, G. Louis, to Sybron Corporation. X-ray film loader. 3,965,361, Cl. 250-468.000.
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Reynolds, Donald F. Hitch assemblies. 3,964,768, Cl. 280-495.000.
Reynolds, Gordon S.; and Hansen, A. Boyd, to Sorenson Research Co., Inc. Antiocoagulant metering device and method. 3,964,484, Cl. 128-276.000.
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Ricci, Vincent C.; and Spandorfer, Lester M., to Sperry Rand Corporation. Programable data entry system. 3,965,335, Cl. 235-61.90R.
Rich, Beldon R., to Parker-Hannifin Corporation. Cushioning means for hydraulic cylinder. 3,964,370, Cl. 91-395.000.
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Rickardsson, Erik Georg. Air spring axle assembly for spring suspension and sway restraining of vehicle chassis. 3,964,764, Cl. 280-702.000.
Ricks, Robert E.; and Robinson, William P., to Smith International, Inc. Temperature-regulated, sealed bearing system for rock drill bits. 3,964,554, Cl. 175-17.000.
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Riddy, Frederick Thomas. Liquid fuel supply systems. 3,964,755, Cl. 280-5.00A.
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Riegel, Herbert; Sze, Morgan C.; and Schindler, Harvey D., to Lummus Company, The. Production of trichloro-ethylene from waste C_2 chlorinated hydrocarbons. 3,965,202, Cl. 260-654.00R.
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Ringland, Robert S., to Tandy Corporation. Frequency modulated signal pre-amplifier with amplitude modulated signal bypass. 3,965,426, Cl. 325-375.000.
Riseman, John H.; and Frant, Martin, to Orion Research Incorporated. Electrochemical monitoring. 3,964,988, Cl. 204-195.00M.
Ritter, Paul. Method of forming moulded articles. 3,965,233, Cl. 264-219.000.
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Robillard, Jean Jules Achille, to La Cellophane. Photographic reproduction processes using diazonium salts and substituted spiro[benzopyrane]. 3,964,911, Cl. 96-49.000.
Robinson, Charles A., to American Home Products Corporation. Intermediates for preparing cephalosporins and methods of production. 3,965,098, Cl. 260-243.00C.
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Rodgers, James T., to Standard Oil Company (Indiana). Underwater wellhead completions with portable atmospheric cellar. 3,964,543, Cl. 166-.500.
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Romano, Carlo, to Ing. C. Olivetti & C., S.p.A. Driving and control system for D.C. motors. 3,965,405, Cl. 318-331.000.
Romano, Gaetano; and Gorietti, Bruno, to Exxon Research and Engineering Company. Reducing undesirable components of automotive exhaust gas. 3,964,258, Cl. 60-274.000.
Romine, Hugh E., to Continental Oil Company. Removal of HF from the sludge resulting from the treatment of a hydrocarbon. 3,964,993, Cl. 208-13.000.
Romo, Edgar A., to International Telephone and Telegraph Corporation. Computer utilizing logarithmic function generators. 3,965,344, Cl. 235-197.000.
Rooks, Albert H.; and Vermilion, Everette E., to Rooks, Albert H. Electronic morning start-up control for a building temperature control system. 3,964,676, Cl. 236-46.00R.
Roques, Henri; and Roustan, Michel, to Produits Chimiques Ugine Kuhlmann. Method for breaking foams and apparatus useful therefor. 3,965,034, Cl. 252-321.000.
Rose, Sam, to BIO Response Inc. Methods and apparatus for augmentation of the production of anti-bodies in animals and humans and the collection thereof. 3,964,467, Cl. 128-1.00R.
Roselle, Pierce C.; and Zaborowski, Roy A., to Sperry Rand Corporation. A.C. potentiometer with bridge having voltage controllable devices. 3,965,410, Cl. 323-19.000.
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Roy, Neal L.; and Hansen, David O., to TRW Inc. Parallel resonant circuit with feedback means for increasing Q. 3,965,441, Cl. 331-115.000.
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Rutkowski, Edward J.; and Sowinski, Gerard T., to National Gypsum Company. Control joint with tear strip. 3,964,220, Cl. 52-100.000.
Ryan, Thomas J., to North American Manufacturing Company, The. Annunciator structure and method. 3,965,469, Cl. 340-415.000.
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Saethre, Magnus, to Lawrence Peska Associates, Inc., a part interest Child's bathing cabinet. 3,964,471, Cl. 128-65.000.
St. Clair, David J.; and Crossland, Ronald K., to Shell Oil Company. Lubricating compositions containing hydrogenated block copolymers as viscosity index improvers. 3,965,019, Cl. 252-59.000.
St. John, Ward A. Low velocity gas turbine with exhaust gas recycling. 3,964,254, Cl. 60-39.520.
Saint-Remy Pellissier, Charles Marc Marie, to Societe Anonyme Fondasol-Technique. Apparatus for measuring penetration of tubes of a penetrometer. 3,964,298, Cl. 73-84.000.
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Salomon, Georges Pierre Joseph, to Establissements Francois Salomon et Fils. Ski binding for ski boot. 3,964,759, Cl. 280-626.000.
Salsich, Peter W., Sr., to Playground Corporation of America. Basketball backboard structure. 3,964,743, Cl. 273-1.50R.
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Schneiders, Friedrich: *See—*
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Schnizler, Albrecht, Jr., to Metawerke KG Closs, Rauch & Schnizler. Driver for nuts and screws. 3,964,332, Cl. 74-325.000.
Schober, Michael A., to Borg-Warner Corporation. Belleville spring. 3,964,737, Cl. 267-161.000.
Scholl, Charles H., to Nordson Corporation. Apparatus for melting and dispensing thermoplastic material. 3,964,645, Cl. 222-146.0HE.
Scholz, Helmuth, to Daimler-Benz Aktiengesellschaft. Load-dependent two-circuit brake for vehicles, especially for trucks, busses or the like. 3,964,794, Cl. 303-6.00C.
Schonhorn, Harold: *See—*
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Schroeder, Donald E., Jr.; Plummer, Mark A.; and Roszelle, Wayne O., to Marathon Oil Company. Method for oil recovery by flooding with micellar dispersions containing crude oil sulfonates. 3,964,548, Cl. 166-273.000.
Schroeder, Josef: *See—*
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Schulte-Elte, Karl-Heinrich; Joyeux, Michel; and Ohloff, Gunther, to Firmenich S.A. 1-Acetyl-11-methylene-4,7,7-trimethylcycloundeca-4,8-diene. 3,965,189, Cl. 260-586.00M.
Schultz, Neithart; Vahlensieck, Hans-Joachim; and Gebele, Rudolf, to Dynamit Nobel Aktiengesellschaft. Regeneration of bismuth containing catalyst used in the hydrofluorination of halogenated hydrocarbons. 3,965,038, Cl. 252-416.000.
Schulz, Werner P., to Leland Stanford Junior University, The Board of Trustees of. Bioptome. 3,964,468, Cl. 128-2.00B.
Schulze, James L., Sr., to General Electric Company. Air conditioning system mounting arrangement for a mobile home. 3,964,271, Cl. 62-239.000.
Schumacher, Ignatius, to Monsanto Company. Preparation of esters of phosphorus acids. 3,965,220, Cl. 260-975.000.
Schumacher, Ray F.; Prasek, David J.; and Van Stone, Howard L., to Ferro Corporation. Apparatus for advancing particulate material. 3,964,892, Cl. 65-328.000.
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Schwartz, Joseph. Sheet material cutting apparatus. 3,964,360, Cl. 83-464.000.
Schwellenbach, Robert D. Vehicle safety device for monitoring the operation of directional signal lamps. 3,965,456, Cl. 340-79.000.
Schwenninger, Ronald L., to PPG Industries, Inc. Apparatus for coating continuously advancing substrate. 3,964,432, Cl. 118-314.000.
Schwind, Roger A.: *See—*
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Sebek, Rolf, to Phoenix Armaturen Werke Bregel GmbH. Magnetically actuated fluid-level indicator. 3,964,312, Cl. 73-314.000.
Seemann, Fritz, to Sandoz Ltd. Oxindole derivatives. 3,965,095, Cl. 260-240.00J.
Seibert, Josef. Driving mechanism for a reciprocating engine. 3,964,323, Cl. 74-60.000
Seidel, Michael C.: *See—*
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Seidel, Thomas Edward; and Shoji, Masakazu, to Bell Telephone Laboratories, Incorporated. Piezoresistor effects in semiconductor resistors. 3,965,453, Cl. 338-13.000.
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Shankwitz, Robert F.; and Garman, Anthony L., to Caterpillar Tractor Co. Tapered hinge pin assembly and removal means. 3,964,152, Cl. 29-427.000.
Sharp Kabushiki Kaisha: *See—*
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Sheaffer, John A., to Dorr-Oliver Incorporated. Endless filter belt. 3,965,011, Cl. 210-400.000.
Sheets, Kerney T. Lawn, farm, and orchard sprinklers. 3,964,687, Cl. 239-226.000.
Sheets, Kerney T. Lawn, farm, and orchard sprinklers. 3,964,688, Cl. 239-226.000.
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Shelby, William Barney. Helium reclamation. 3,964,866, Cl 23-252.00R.
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Shell Oil Company: *See—*
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Shimogawa, Sachio; Fujio, Takashi; Arika, Mikio; Yamada, Nobuo; Kodama, Takashi; and Nakata, Tetsuya, to Osaka Soda Co., Ltd. Process for preparing cross-linked elastomer compositions and compositions curable with cross-linking agents used therefor. 3,965,050, Cl. 260-2.00A.

Shin, Hiroshi; Sugano, Junichiro; Yoshii, Tadashi; Iwamoto, Kichiro; Kuriyama, Yasuhisa; and Kakuda, Minoru, to Mitsubishi Gas Chemical Company, Inc. Method of regenerating a degraded working solution for the production of hydrogen peroxide. 3,965,251, Cl. 423-588.000.

Shin Meiwa Industry Co., Ltd.: *See—*
Ogawa, Akira; and Sakao, Masashi, 3,964,142.

Shipman, Paul. Double cylinder lock bolt assembly. 3,964,281, Cl. 70-120.000.

Shipman, Vern D., to Headway Research, Inc. Electric motor housing with interior shield against liquids. 3,965,381, Cl. 310-88.000.

Shirai, Yukio: *See—*
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Shiroki, Masami: *See—*
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Shulman, Peter Tankhomovich: *See—*
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Shutt, Donald P., to Western Gear Corporation. Disconnect device for aircraft pitch or roll control system. 3,964,318, Cl. 74-471.00R.

Sie, Swan T.: *See—*
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Sieber, Werner; Ganser, Friedrich; Hammer, Thomas; Viehrig, Wolfgang; Frick, Hans-Dieter; and Osegowitsch, Viktor, to AGFA-Gevaert, A.G. Apparatus for simultaneous viewing of both sides of webs of photographic paper or the like. 3,964,191, Cl. 40-86.00A.

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Siegmann, Carl: *See—*
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Siegrist, Walter, to Lonza Ltd. Fuel paste and process for its production. 3,964,880, Cl. 44-7.00B.

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Silvis, Duane C.: *See—*
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Silvis, Richard R.; and Ettinger, John A., to Textron, Inc. Apparatus for positioning sliders. 3,964,615, Cl. 214-1.00B.

Simmonds, Peter G.: *See—*
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Simon, Manfred Horst: *See—*
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Simonovits nee Czink, Emilia: *See—*
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Sindermann, Siegmar, to Holstein & Kappert Maschinenfabrik Phonix GmbH. Method and apparatus for cleaning rotary filling machines. 3,964,526, Cl. 141-1.00R.

Singer Company, The: *See—*
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Siren, Andrew Oscar. Automatic synchronized pitch controls for pairs of driver and driven V pulley drives. 3,964,327, Cl. 74-230.17A.

Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Heel hold-down mechanism for safety ski bindings. 3,964,757, Cl. 280-626.000.

Sivetz, Michael. Coffee roasting system. 3,964,175, Cl. 34-57.00A.

SKF Nova AB: *See—*
Murray, Hans Edward Henrik, 3,964,898.

Skilliter, Robert T., Jr.; and Pietrowski, Anthony P., to Acme Specialty Manufacturing Company. Equipment support assembly. 3,964,612, Cl. 211-26.000.

Skurko, Richard. Apparatus for continuously casting metal nuggets. 3,964,542, Cl. 164-329.000.

Slator, Damon T., to Brown Oil Tools, Inc. Drive connector with load compensator. 3,964,552, Cl. 173-164.000.

Sljudikov, Leonid Davydovich: *See—*
Vexelman, Ilya Volfovich; Sljudikov, Leonid Davydovich; Kutilin, Alexandr Grigorievich; and Kalugin, Oleg Mikhailovich, 3,964,303.

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Smart, Thomas John, to Dunlop Limited. Spacer-damper for overhead power transmission lines. 3,965,286, Cl. 174-42.000.

Smith, Dallas F.: *See—*
Arnold, Richard B.; and Smith, Dallas F., 3,964,525.

Smith, David W., to Townsend Engineering Company. Stuffing tube apparatus for an encasing machine. 3,964,236, Cl. 53-122.000.

Smith International, Inc.: *See—*
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Vezirian, Edward, 3,964,605.

Smith, Lawrence A., Jr., to Petro-Tex Chemical Corporation. Process for the production of 2-chlorobutadiene-1,3 from 3,4-dichlorobutene-1. 3,965,203, Cl. 260-655.000.

Smith, Mervyn J. H.: *See—*
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Smith, Randel P., to Singer Company, The. Patterning device for tufting machines or the like. 3,964,408, Cl. 112-79.00A.

Smith, Randel P., to Singer Company, The. Dense pile fabric. 3,964,411, Cl. 112-410.000.

Smith, Randel P.: *See—*
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Smith, Robert W.: *See—*
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Smith, William D.: *See—*
Basham, Edward R.; and Smith, William D., 3,964,553.

Smith, William E.; and Bowden, Charles J., to General Signal Corporation. System for providing auxiliary power. 3,964,566, Cl. 180-133.000.

Smith, William E.; and Gerhart, R. John, to General Electric Company. Process for preparing allylic esters of carboxylic acids. 3,965,152, Cl. 260-491.000.

Smith, William E.; and Gerhart, R. John, to General Electric Company. Process for preparing allylic esters of carboxylic acids and allylic alcohols. 3,965,153, Cl. 260-491.000.

Smith, William E.; and Gerhart, R. John, to General Electric Company. Process for preparing allylic esters of carboxylate acids and allylic alcohols. 3,965,154, Cl. 260-491.000.

Smith, William E.; and Gerhart, R. John, to General Electric Company. Process for preparing vinyl esters of carboxylic acids. 3,965,155, Cl. 260-491.000.

Smith, William E.; and Gerhart, R. John, to General Electric Company. Process for preparing vinyl esters of carboxylic acids. 3,965,156, Cl. 260-491.000.

SmithKline Corporation: *See—*
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Smithson, Harold; and Stahl, John F., to Oxy-Catalyst, Incorporated. Catalyst changing system. 3,964,528, Cl. 141-67.000.

Snam Progetti S.p.A.: *See—*
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Gambini, Arnaldo; and Terenziani, Demetrio, 3,964,171.
Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,965,078.

Snell, Peter Garland. Acoustic system. 3,964,571, Cl. 181-150.000.

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Snow, Harold F., to Borden, Inc. Method and apparatus for eviscerating clams. 3,964,131, Cl. 17-53.000.

Snyder, H. Ben, to General Dynamics Corporation. System for maintaining uniform copper etching efficiency. 3,964,956, Cl. 156-345.000.

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Sochnev, Alexandr Egorovich: *See—*
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Societa' Italiana Resine S.I.R. S.p.A.: *See—*
Console, Luciano; Chiellini, Enzo; and Calcagno, Benedetto, 3,965,079.

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Societe Anonyme Fondasol-Technique: *See—*
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Societe Anonyme Machines Automatiques Cillotta: *See—*
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Societe Nationale des Poudres et Explosifs: *See—*
Plantif, Bernard E.; Doin, Bernard J.; and Beaumont, Jean S., 3,964,256.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Lardellier, Alain Marie Joseph, 3,964,257.

Soffge, Friedhelm; and Albrecht, Gerhard, to Dr. -Ing. H.c.F. Porsche Aktiengesellschaft. Support leg for bridges. 3,964,119, Cl. 14-75.000.

Sohma, Hiroshi: *See—*
Nishida, Toyomi; Sohma, Hiroshi; and Ito, Hayami, 3,964,922.

Sojka, Bernward: *See—*
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Someya, Yoshiaki; Tateno, Noriaki; and Kageyama, Kunio, to Yokohama Rubber Co. Ltd., The. Process for the preparation of hydroxyl-terminated liquid polymers. 3,965,140, Cl. 260-465.600.

Somfai, Eva: *See—*
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Son, Pyong-Nae, to B. F. Goodrich Company, The. Cycloalkylthio(electron-withdrawing group substituted)aniline compounds. 3,965,077, Cl. 260-79.50P.

Sonnenberg, Darwin D. Bowling pin and ball sorting apparatus. 3,964,744, Cl. 273-43.00E.

Sontag, Glenn R.; and Tranholm, Benjamin M., to Milprint, Inc. Composite wrapper combining rigid and flexible elements. 3,964,669, Cl. 229-40.000.

Sopha, Klaus: *See—*
Hesse, Horst; Kobald, Walter; Gand, Heinz; Hoheisel, Rainer; Sopha, Klaus; Flaschar, Heinz; Kleinschmidt, Heinz; Arnold, Winfried; and Zeuch, Werner, 3,964,518.

Sorenson Research Co., Inc.: *See—*
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Soula, Gerard; Metzger, Jacques; and Lena, Louis, to Rhone-Progil. Process for preparing halophenol sulfonic compounds and halophenols from halobenzene sulfonates. 3,965,158, Cl. 260-512.00R.

Soulen, John Richard, to Pennwalt Corporation. Complex antimony sulfides as lubricant additives. 3,965,016, Cl. 252-25.000.

South African Inventions Development Corporation, The: *See—*
Barnard, James Laing, 3,964,998.

Southwire Company: *See—*
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Sowinski, Gerard T.: *See—*
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Spandorfer, Lester M.: *See—*
Ricci, Vincent C.; and Spandorfer, Lester M., 3,965,335.

Spargo, John D. Balanced airflow control valve for helicopter blade. 3,964,838, Cl. 416-20.00R.

Specialty Products Development Corporation: *See—*
Catanzarite, Vincent Owen, 3,964,255.

Spector, George: *See—*
Lesh, Robert C.; and Spector, George, 3,964,642.

Speiser, Jeffrey M.; and Whitehouse, Harper John, to United States of America, Navy. Modular system for performing the discrete fourier transform via the chirp-Z transform. 3,965,343, Cl. 235-156.000.

Speller, Frank N., Jr., to Esorco Corporation. Processes for secondarily recovering oil. 3,964,545, Cl. 166-256.000.

Spencer, James M., Jr., to Sperry Rand Corporation. Power on demand beam deflection system for CRT displays. 3,965,390, Cl. 315-397.000.

Spencer, John R.; and Kinney, Bruce W., Jr., to Rockwell International. Selectable eight or twelve digit integrated circuit calculator and conditional gate output signal modification circuit therefor. 3,965,459, Cl. 340-173.00R.

Sperry Rand Corporation: *See—*
Crego, John B.; Cowan, Everett C., Jr.; Riffanacht, John D.; Knepper, Larimer J.; and Rowland-Hill, Edward W., 3,964,492.
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Mast, Aquila D., 3,964,720.
McAvoy, Dennis J., 3,964,505.
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Roselle, Pierce C.; and Zaborowski, Roy A., 3,965,410.
Spencer, James M., Jr., 3,965,390.

Spier, Raymond E.: *See—*
McAleer, William J.; Posch, Kenneth L.; Baugh, Clarence L.; and Spier, Raymond E., 3,965,258.

Spooner, Frank H.: *See—*
Willingham, Charles B.; Parker, Thomas E.; and Spooner, Frank H., 3,965,444.

Sprague Electric Company: *See—*
Moorhead, William L.; and Kahn, Manfred, 3,965,392.
Peterson, Richard C.; Moynihan, John D.; and O'Shea, Martin W., 3,965,425.

Sprecace, Richard P.: *See—*
United States of America, National Aeronautics and Space Administration; Arcella, Frank G.; Phillips, Ernest C., Jr.; and Sprecace, Richard P., 3,964,902.

Spulgis, Ivars Sigurds: *See—*
Hickey, Thomas Nelson; and Spulgis, Ivars Sigurds, 3,964,887.

Spurrier, Mack W.: *See—*
Clifford, Graham Frank; and Spurrier, Mack W., 3,964,153.

Stade, Bertil; and Hoglund, Edward, to Mercury Metal Products, Inc. Anti-emission exhaust pipe joint and clamp therefor. 3,964,773, Cl. 285-367.000.

Stahl, Howard D., to General Foods Corporation. Dry carbonation source and method for preparing the same, and dry carbonated beverage concentrate. 3,965,273, Cl. 426-548.000.

Stahl, John F.: *See—*
Smithson, Harold; and Stahl, John F., 3,964,528.

Stahl, Lee W. Elastomeric orthodontic apparatus. 3,964,165, Cl. 32-14.00A.

Stahlheber, N. Earl, to Monsanto Company. Crystalline trisodium carboxymethyloxysuccinate monohydrate. 3,965,169, Cl. 260-535.00P.

Stahlman, Donald B., to Mynol, Inc. Dental prophylaxis implement. 3,964,166, Cl. 32-59.000.

Stahr, Henry M., to Iowa State University Research Foundation, Inc. Method for polarographic analysis using an electrode of tantalum/-carbon material. 3,964,981, Cl. 204-1.00T.

Stakmore Co., Inc.: *See—*
Schankman, Milton, 3,964,403.

Stamberg, Jiri: *See—*
Hradil, Jiri; Coupek, Jiri; Krivakova, Miroslava; Stamberg, Jiri; Stoy, Arthur; and Turkova, Jaroslava, 3,964,973.

Standard Oil Company: *See—*
Jezl, James L.; Peters, Edwin F.; Hall, Robert D.; and Shepard, John W., 3,965,083.

Standard Oil Company (Indiana): *See—*
Rodgers, James T., 3,964,543.

Stanford, James R.; and Vogelsang, Paul G., Jr., to Nalco Chemical Company. Scale inhibition and compounds therefor. 3,965,003, Cl. 210-58.000.

Stankovich, Frank M. Device to hang a bicycle on an airplane wing. 3,964,699, Cl. 244-118.00R.

Stapp, Hans: *See—*
Werner, Helmut; and Stapp, Hans, 3,964,249.

Staudinger, Gernot, to Shell Oil Company. Partial combustion process. 3,964,882, Cl. 48-215.000.

Staudte, Walter J., Jr. Apertured panel bracket. 3,964,712, Cl. 248-223.000.

Stauffer Chemical Company: *See—*
Fancher, Llewellyn W., 3,965,137.
Jin, Jung Il, 3,965,067.
Jin, Jung Il, 3,965,216.
Shim, Kyung S.; and Walsh, Edward N., 3,965,217.

Steel, Thomas C., to Federal Paper Board Company, Inc. Carton for a package convertible to a baking pan. 3,964,671, Cl. 229-51.0TS.

Steelcase, Inc.: *See—*
Platner, Warren; Ursul, Earl G.; Kolk, Stephen B.; and Whitwam, Ronald L., 3,964,789.

Stefano, Rocco L.; and Galland, Robert J., to Unipunch Products, Inc. Punching apparatus with mechanically movable tool support arm. 3,964,358, Cl. 83-400.000.

Steinmann, Helmut: *See—*
Hemmann, Rainer; and Steinmann, Helmut, 3,964,444.

Steinmetz, Dietmar, to Kabelschlepp Gesellschaft mit beschrankter Haftung. Wiping device for telescopically displaceable cover boxes of covering devices on sliding and guiding paths of machine tools. 3,964,801, Cl. 308-3.500.

Stelling, William Taylor. Adjustable anchor. 3,964,420, Cl. 114-208.00R.

Stelniceanu, Jacques Dominique. Wheeled push-cart having the upper portion of the handle lowerable for convenience of carrying. 3,964,763, Cl. 280-47.170.

Stemmler, Kurt: *See—*
Ehlscheid, Gunter; Langenbeck, Peter; and Stemmler, Kurt, 3,965,327.

Stenberg, Nyyrikki K., to Dart Industries Inc. Linear response flow meter. 3,964,310, Cl. 73-207.000.

Stenstrom, Borje Harald, to Salen & Wicander AB. Method and device for ascertaining small amounts of oil in water. 3,964,295, Cl. 73-61.10R.

Stenzel, Hans-Dieter: *See—*
Werwitzke, Lothar; Stenzel, Hans-Dieter; and Voigt, Hermann Uwe, 3,965,226.

Stepina, Jaroslav, to Siemens Aktiengesellschaft. Sliding armature braking motor. 3,965,380, Cl. 310-77.000.

Stepniczka, Heinrich, to Michigan Chemical Corporation. Process for the complete bromination of non-fused ring aromatic compounds. 3,965,197, Cl. 260-623.00H.

Sterling Drug Inc.: *See—*
Zenitz, Bernard L., 3,965,105.

Sterman, Albert P.; Brands, Henry J.; and Weissborn, Frederick W., Jr., to General Electric Company. Combustor-turbine nozzle interconnection. 3,965,066, Cl. 60-39.320.

Sternbach, Leo Henryk: *See—*
Derieg, Michael Edward; Earley, James Valentine; Fryer, Rodney Ian; and Sternbach, Leo Henryk, 3,965,151.

Stievenart, Emile Frans; Van Bouwel, Leo Paul; and Plessers, Hendrik Sylvester, to AGFA-GEVAERT N.V. Radiographic film cassette. 3,964,107, Cl. 250-468.000.

Stiles, Claude J., to National Distillers and Chemical Corporation. Ethylene/vinyl acetate/isobutylene terpolymer coating composition. 3,965,062, Cl. 260-28.5AV.

Stivers, Edward C.; and Fischer, Christopher L., to Raychem Corporation. Needle foot shoe for knitting needle. 3,964,274, Cl. 66-123.000.

Stocker, Charles T.; Schara, Robert E.; Marshall, William E.; Hayes, John T., Jr.; and Glicksman, Martin, to General Foods Corporation. Expanded protein product comprising sulfur-containing organic compound. 3,965,268, Cl. 426-331.000.

Stoddard, Terence C.: *See—*
Wreede, John E.; Stoddard, Terence C.; and Erikson, Kenneth R., 3,965,461.

Stoferle, Theodor; Klaar, Jochen; Bellmann, Bernhard; and Theimert, Paul-Heinz, to Stoferle, Theodor; and Klaar, Jochen. Device for machining trochoidal inner walls, especially for the cylinders of Wankel engines. 3,964,367, Cl. 90-11.00C.

Stolkin, Walter J.; Riley, William A.; and Sejda, Henry, to Stolmar Corporation. Carton folding and glueing device. 3,964,374, Cl. 93-36.0MM.

Stolmar Corporation: *See—*
Stolkin, Walter J.; Riley, William A.; and Sejda, Henry, 3,964,374.

Stone, G. W. (Charles), to Agriculture Research Incorporated. Cotton harvesting machine. 3,964,242, Cl. 56-30.000.

Stoner, Thomas A., to Bucyrus-Erie Company. Method and means for measuring the torque delivered by an electric motor. 3,965,407, Cl. 318-432.000.

Storey, Raymond Nichols: *See—*
Bergman, John George, Jr.; Crane, Glen Robert; Storey, Raymond Nichols; and Williams, Denise, 3,965,375.

Storms, James G., to J. E. Love Company. Tree seedling harvester. 3,964,550, Cl. 171-61.000.

Stott, Robert C. Lift bail assembly for log truck trailers. 3,964,776, Cl. 294-74.000.

Stout, Ronald M. T.; and Rogerson, Douglas E., to MacMillan Bloedel Limited. Adhesive extended composition. 3,965,056, Cl. 260-17.200.

Stoy, Arthur: *See—*
Hradil, Jiri; Coupek, Jiri; Krivakova, Miroslava; Stamberg, Jiri; Stoy, Arthur; and Turkova, Jaroslava, 3,964,973.

Stoy, Artur; Stoy, Vladimir; Urbanova, Renata; Prokop, Jaroslav; and Kucera, Josef, to Ceskoslovenska akademie ved. Method of simultaneously manufacturing acrylic fibers and nitrates. 3,965,227, Cl. 264-38.000.

Stoy, Vladimir: *See—*
Stoy, Artur; Stoy, Vladimir; Urbanova, Renata; Prokop, Jaroslav; and Kucera, Josef, 3,965,227.

Strachan & Henshaw Limited: *See—*
Alsop, Arthur Graham, 3,964,598.

Strategic Medical Research Corporation: *See—*
Gordon, Paul, 3,965,262.

Strauss, Robert F.; and Lawrenz, Carl F., to Service Dynamics, Inc. Service vehicle for manhole operation. 3,964,458, Cl. 123-122.00H.

Strecker, Richard A.; and Verderame, Frank D., to United States of America, Army. Isotactic and syndiotactic polyvinyl nitrates and processes for their formation. 3,965,081, Cl. 526-9.000.

Street, William M.; and Edmonds, David L. Flush valve assembly. 3,964,109, Cl. 4-67.00A.

Strickland, Robert V. Powered drapery table. 3,964,186, Cl. 38-102.100.

Stridde, George E., to NL Industries, Inc. Catalyst for alkylating aromatic hydrocarbons therefor. 3,965,043, Cl. 252-455.00R.

Striegler, Werner: *See—*
Mall, Gunther; and Striegler, Werner, 3,964,409.

Strong, Doyle L.; and Hargadine, Curtis Dale, to Minnesota Mining and Manufacturing Company. Pressure-fixable developing powder. 3,965,022, Cl. 252-62.10P.

Strongin, Myron; Varma, Matesh Narayan; and Anne, Joshi, to United States of America, Energy Research and Development Administration. Differential auger spectrometry. 3,965,351, Cl. 250-305.000.

Strutz, Glenn L., to Tote Pak Co. Padded carrying strap construction. 3,964,653, Cl. 224-5.00P.

Strycek, Oldrich, to Sigma Lutin, Narodni Podnik. Impeller blades. 3,964,841, Cl. 416-186.00R.

Stuart, Karl D.; Sulcs, Juris; and Wright, P. Kennard, III, to General Electric Company. Electric lamp and thermal switch therefore. 3,965,387, Cl. 315-47.000.

Stubbs, Dennis; Maltby, Jack; and Oxlade, Roy Ronald, to British Steel Corporation; and British Iron and Steel Research Association, The. Rolling mills. 3,964,282, Cl. 72-19.000.

Studiengesellschaft Kohle m.b.H.: *See—*
Eisenbach, Wilhelm; Lehmkuhl, Herbert; and Wilke, Gunther, 3,964,983.
Wilke, Gunther; and Heimbach, Paul, 3,965,142.

Stumpf, Elmer J., to Beemak Plastics. Adjustable coin display device. 3,964,187, Cl. 40-27.500.

Stunkel, Helmut: *See—*
Kausz, Ivan; Stunkel, Helmut; and Wille, Harald, 3,964,965.

Sturtevant, Rodney Lee. Condenser lug extractor. 3,964,148, Cl. 29-203.00H.

Sudo, Katsuzo: *See—*
Aramaki, Seigo; Sudo, Katsuzo; Tani, Mitsuo; Sato, Takehiko; Onishi, Yuuji; and Sakaguchi, Nobuhiro, 3,964,873.

Sugai, Masayoshi: *See—*
Morita, Tomijiro; Funahashi, Isao; Sugai, Masayoshi; Sasakawa, Atushi; and Takaiwa, Masakazu, 3,965,242.

Sugano, Junichiro: *See—*
Shin, Hiroshi; Sugano, Junichiro; Yoshii, Tadashi; Iwamoto, Kichiro; Kuriyama, Yasuhisa; and Kakuda, Minoru, 3,965,251.

Sulcs, Juris: *See—*
Stuart, Karl D.; Sulcs, Juris; and Wright, P. Kennard, III, 3,965,367.

Sullins, John K., to Canton Textile Mills, Inc. Method and apparatus for precipitating colloids from aqueous suspensions. 3,964,991, Cl. 204-275.000.

Sulzer Brothers Limited: *See—*
Bosshard, Ernst, 3,965,359.

Sumida, Shizuo; Nii, Kazuo; Shimizu, Osamu; Ueda, Atsushi; and Ishii, Mitsuaki, to Mitsubishi Denki Kabushiki Kaisha; and Toyo Kogyo Co., Ltd. Electrical devices control system. 3,965,366, Cl. 307-39.000.

Sumitomo Chemical Company, Limited: *See—*
Hirooka, Masaaki; Fujii, Yoshikazu; Morita, Shigeru; Namazue, Isamu; and Hata, Kazuhiko, 3,964,955.
Maruyama, Isamu; Nakao, Masaru; Sasajima, Kikuo; Inaba, Shigeho; and Yamamoto, Hisao, 3,965,106.

Sun Shipbuilding & Drydock Company: *See—*
Garber, Daniel C., 3,965,004.

Sun-Sor GmbH: *See—*
Anetseder, Leopold, Sr.; and Anetseder, Leopold, Jr., 3,965,348.

Sun Ventures, Inc.: *See—*
Driscoll, Gary L., 3,965,229.
Norton, Richard V., 3,965,160.

Sunbeam Corporation: *See—*
Komatsu, Ikuo I., 3,964,502.

Sundeen, Joseph E.: *See—*
Hauck, Frederic Peter; and Sundeen, Joseph E., 3,965,102.

Sundstrand Data Control, Inc.: *See—*
Joseph, John S.; and Levinson, Edwin B., 3,964,826.

SunPano, Allan: *See—*
Biliunas, Leo; and SunPano, Allan, 3,964,201.

Suter, Hubert: *See—*
Wirth, Friedrich; Renauer, Erich; Von Ammon, Hans; Schneider, Curt; and Suter, Hubert, 3,965,126.

Suzuki, Minoru: *See—*
Suzuki, Shigeru; and Suzuki, Minoru, 3,964,648.

Suzuki, Nobuo, to Technical Incorporated. All-plastic housing for a small compact tape reproducer and recorder. 3,964,808, Cl. 312-8.000.

Suzuki, Shigeru; and Suzuki, Minoru, to Ricoh Co., Ltd. Toner supply device for copying apparatus. 3,964,648, Cl. 222-333.000.

Swain, Ronald Bruce; and O'Connor, David Evans, to Procter & Gamble Company, The. Process for producing protein concentrate (case) l using air classification. 3,965,086, Cl. 260-123.500.

Swanson, Fred T., to Caterpillar Tractor Co. Track shoe with staggered grousers. 3,964,797, Cl. 305-54.000.

Swartz, Robert L., to Oscar Mayer & Co. Inc. Loaf mold washing and release agent applying mechanisms. 3,964,433, Cl. 118-314.000.

SWF-Spezialfabrik fur Autozubehor Gustav Rau GmbH: *See—*
Mutschler, Erich; and Weber, Adam, 3,965,313.

Swift & Company: *See—*
Connick, Francis G., 3,964,313.

Swimm, Walter Thomas, to Purdue Frederick Company, The. Choline salicylate compositions and methods for achieving analgesia. 3,965,263, Cl. 424-184.000.

Swinkels, Godefridus Maria; Furber, Robert Arthur; Milner, Edward Francis Godfrey; Genik-Sas-Berezowsky, Roman Michael; and Kirby, Charles Ray, to Sherritt Gordon Mines Limited; and Cominco Ltd. Production of copper and sulfur from copper-iron sulfides. 3,964,901, Cl. 75-108.000.

Sybron Corporation: *See—*
Ellis, Franklin H.; and Andrews, Stephen W., 3,964,477.
Reser, G. Louis, 3,965,361.

Sykes, James A., Jr., to Shell Oil Company. Selective removal of sulfur compounds from acid gas mixtures containing significant quantities of carbonyl sulfide. 3,965,244, Cl. 423-228.000.

Synchro-Motion Corporation: *See—*
Mort, Paul R., Jr.; and Cleary, Robert A., 3,964,947.

Synergistics: *See—*
Leslie, Stewart Thomas, 3,965,256.

Syntex Puerto Rico, Inc.: *See—*
Mathes, Stanley, 3,964,483.

Syntex (U.S.A.) Inc.: *See—*
Beard, Colin C.; Edwards, John A.; and Fried, John H., 3,965,113.
Marx, Michael, 3,965,181.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,965,115.

Synthelabo: *See—*
Giudicelli, Don Pierre Rene Lucien; and Najer, Henry, 3,965,190.

Syrovatka, George Eugen. Ski boot heel attachment device. 3,964,761, Cl. 280-623.000.

Syson, John William: *See—*
Kerridge, John Charles; and Syson, John William, 3,965,059.

Syva Company: *See—*
Packard, Martin E.; Ullman, Edwin F.; and Burkoth, Terry L., 3,965,144.

Szabo, Gabor: *See—*
Toth, Geza; Szabo, Gabor; Eibel, Gyorgy; and Somfai, Eva, 3,964,894.

Szabo, Laszlo: *See—*
Johan, Bela; Szemler, Laszlo; Fulop, Janos; Szontagh, Tamas; Simonovits nee Czink, Emilia; Bekes nee Erdos, Judit; Kuti, Laszlo; Toros, Robert; Szekely, Denes; Szabo, Laszlo; Seitz, Karoly; Vajda, Tade; Kovacs nee Komoroczy, Erzsebet; Hargital nee Franyo, Aniko; and Polinszky, Karoly, 3,964,971.

Sze, Morgan C.; and Unger, Harold, to Lummus Company, The. Production of formaldehyde in carbon steel reactors. 3,965,194, Cl. 260-603.0HF.

Sze, Morgan C.: *See—*
Riegel, Herbert; Sze, Morgan C.; and Schindler, Harvey D., 3,965,202.

Szeberenyi, Szabolcz: *See—*
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcz, 3,965,179.

Szekely, Denes: *See—*
Johan, Bela; Szemler, Laszlo; Fulop, Janos; Szontagh, Tamas; Simonovits nee Czink, Emilia; Bekes nee Erdos, Judit; Kuti, Laszlo; Toros, Robert; Szekely, Denes; Szabo, Laszlo; Seitz, Karoly; Vajda, Tade; Kovacs nee Komoroczy, Erzsebet; Hargital nee Franyo, Aniko; and Polinszky, Karoly, 3,964,971.

Szemler, Laszlo: *See—*
Johan, Bela; Szemler, Laszlo; Fulop, Janos; Szontagh, Tamas; Simonovits nee Czink, Emilia; Bekes nee Erdos, Judit; Kuti, Laszlo; Toros, Robert; Szekely, Denes; Szabo, Laszlo; Seitz, Karoly; Vajda, Tade; Kovacs nee Komoroczy, Erzsebet; Hargital nee Franyo, Aniko; and Polinszky, Karoly, 3,964,971.

Szontagh, Tamas: *See—*
Johan, Bela; Szemler, Laszlo; Fulop, Janos; Szontagh, Tamas; Simonovits nee Czink, Emilia; Bekes nee Erdos, Judit; Kuti, Laszlo; Toros, Robert; Szekely, Denes; Szabo, Laszlo; Seitz, Karoly; Vajda, Tade; Kovacs nee Komoroczy, Erzsebet; Hargital nee Franyo, Aniko; and Polinszky, Karoly, 3,964,971.

Szporny, Laszlo: *See—*
Toth, Edit; Torley, Jozsef; Gorog, Sandor; Szporny, Laszlo; Palosi, Eva; and Szeberenyi, Szabolcz, 3,965,179.

Tabata, Tomokazu; and Ikushige, Tetsuo, to Toyo Soda Manufacturing Co., Ltd. Method of recovering uranium. 3,965,238, Cl. 423-8.000.

Tagliaferri, Olindo A., to United States of America, Air Force. System channel distortion weighting for predetection combiners. 3,965,422, Cl. 325-305.000.

Tahara, Tetsuya: *See—*
Nakanishi, Michio; Araki, Kazuhiko; Tahara, Tetsuya; and Shiroki, Masami, 3,965,111.

Takaiwa, Masakazu: *See—*
Morita, Tomijiro; Funahashi, Isao; Sugai, Masayoshi; Sasakawa, Atushi; and Takaiwa, Masakazu, 3,965,242.

Takase, Takashi; Hayashi, Tsunekazu; and Saitoh, Hirokazu, to Mitsuboshi-Sangyo Co., Ltd. Method for paving surfaces with granular, flaky or powdery asphalt. 3,965,281, Cl. 427-139.000.

Takeda, Harumi: *See—*
Sato, Takashi; Saita, Katuyuki; Naito, Tadashi; and Takeda, Harumi, 3,964,223.

Tamura, Takashi: *See—*
Yamada, Yasuhiro; Tsukamoto, Kazuyoski; Sakauchi, Yoshiaki; Tamura, Takashi; and Saito, Yukio, 3,965,288.

Tanaka, Hidetoshi; Kasamura, Toshiro; and Sato, Tadashi, to Canon Kabushiki Kaisha. Ion modulated image forming apparatus. 3,964,827, Cl. 355-3.00R.

Tandy Corporation: *See—*
Ringland, Robert S., 3,965,426.

Tani, Mitsuo: *See—*
Aramaki, Seigo; Sudo, Katsuzo; Tani, Mitsuo; Sato, Takehiko; Onishi, Yuuji; and Sakaguchi, Nobuhiro, 3,964,873.

Tansley, Henry William. Electromagnetic door holding device. 3,964,125, Cl. 16-48.500.

Tapco International, Inc.: *See—*
Jandrasi, Frank J.; and Purvis, Howard A., 3,964,507.

Tarasova, Nina Vasilievna; Obolnikova, Elena Abramovna; Gololobov, Alexandr Dmitrievich; Samokhvalov, Gleb Ivanovich; Chepigo, Sergei Vladimirovich; Ivanova, Galina Ivanovna; Imshenetsky, Vladimir Vasilievich; and Kulikova, Vera Mikhailovna. Method for preparing ergosterol and ubiquinone-9 in a single process. 3,965,130, Cl. 260-396.00R.

Tateno, Noriaki: *See—*
Someya, Yoshiaki; Tateno, Noriaki; and Kageyama, Kunio, 3,965,140.

Taub, David: *See—*
Kuo, Chan-Hwa; Taub, David; and Wendler, Norman L., 3,965,120.

Tauleigne, Rene. Apparatus for forming a piecing end on a yarn winding. 3,964,690, Cl. 242-18.0PW.

Tauster, Samuel J.: *See—*
Fung, Shun Chong; and Tauster, Samuel J., 3,964,933.

Taylor, Brian W.: *See—*
Kobylinski, Thaddeus P.; Taylor, Brian W.; and Vogel, Roger F., 3,965,040.

Teass, Horace A., Jr. Temperature compensated conductivity measuring system. 3,965,414, Cl. 324-30.00R.

TEC Systems, Inc.: *See—*
Hella, Terry A., 3,964,656.

Technical Incorporated: *See—*
Suzuki, Nobuo, 3,964,808.

Technicon Instruments Corporation: *See—*
Adler, Stanford L.; and Saunders, Alexander M., 3,964,434.

Teitel, Sidney: *See—*
Perry, Clark William; and Teitel, Sidney, 3,965,121.
Perry, Clark William; and Teitel, Sidney, 3,965,129.

Tekade Felten & Guilleaume Fernmeldeanlagen GmbH: *See—*
Markl, Georg, 3,965,300.

Tektronix, Inc.: *See—*
Winston, Fendall Gregory, IV, 3,965,438.

Telang, Yeshwant P., to Ford Motor Company. Apex seal material. 3,964,145, Cl. 29-182.000.

Telectronics Pty. Limited: *See—*
Wickham, Geoffrey Gordon; and Dwyer, Allen Frederick, 3,964,473.

Teleflex Incorporated: *See—*
Horvath, Louis T.; and Allen, Clifford H., 3,964,344.
Pardington, Lawrence D., 3,964,337.

Telesov, Savely Adolfovich: *See—*
Krupman, Leonid Isaakovich; Okonishnikov, Ary Mikhailovich; Sochnev, Alexandr Egorovich; Gavronsky, Boris Viktorovich; Popov, Viktor Alexeevich; Kalashnik, Anatoly Nikolaevich; Chumachenko, Vasily Sergeevich; Gudkevich, Veniamin Mikhailovich; Panev, Georgy Alexeevich; Detochka, Vasily Ivanovich; Telesov, Savely Adolfovich; Pokrass, Leonid Moiseevich; Ofengenden, Abram Mikhailovich; Nesterovich, Raisa Petrovna; and Zhitnik, Georgy Gavrilovich, 3,964,900.

Temple, Roderick R. Vending machine coin changer. 3,964,589, Cl. 194-10.000.

Terazawa, Yasuto; and Imamaru, Fumio, to Toyo Kogyo Co., Ltd. Seal means for rotary piston engine. 3,964,843, Cl. 418-83.000.

Terenziani, Demetrio: *See—*
Gambini, Arnaldo; and Terenziani, Demetrio, 3,964,171.

Texaco Inc.: *See—*
Allen, Joseph C., 3,964,546.
Harrison, Charles W.; and Senters, Glenn A., 3,964,975.
Kuntschik, Lawrence F.; and Edwards, Robert S., 3,965,177.
Morduchowitz, Abraham, 3,964,954.

Texas Dynamatics, Inc.: *See—*
Fogle, Stephen Fuller, 3,964,558.

Texas Instruments Incorporated: *See—*
Emmons, Stephen Perry, 3,965,368.
Gordon, James Sneddon; and den Brinker, Carl Siegmund, 3,964,302.
Jones, Derick; and Lu, Sun, 3,965,030.
Williams, Clark R., 3,964,251.

Textron, Inc.: *See—*
Earl, T. Desmond, 3,964,698.
Moertel, George B., 3,964,150.
Schmidt, Erich A.; and Schmidt, Volker E., 3,964,661.
Silvis, Richard R.; and Ettinger, John A., 3,964,615.

Thary, Christian: *See—*
Labadie, Jean Francois; Bernard, Armand R.; de la Taille, Olivier P.; and Thary, Christian, 3,964,787.

Theimert, Paul-Heinz: *See—*
Stoferle, Theodor; Klaar, Jochen; Bellmann, Bernhard; and Theimert, Paul-Heinz, 3,964,367.

Theissen, Hans: *See—*
Budich, Wolfgang; Krah, Robert; and Theissen, Hans, 3,964,231.

Thettu, Raghulinga R., to Xerox Corporation. Selective fusing apparatus. 3,965,332, Cl. 219-216.000.

Thien, Gerhard; Fachbach, Heinz; and Greier, Josef, to List, Hans. Cooler-cum-blower assembly for internal combustion engines. 3,964,449, Cl. 123-41.510.

Thien, Gerhard; and Fachbach, Heinz, to List, Hans. Sound-proofed internal combustion engine. 3,964,462, Cl. 123-198.00E.

Thiokol Corporation: *See—*
Adams, Gary V.; and Minert, Roy T., 3,964,700.

Thomas & Betts Corporation: *See—*
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Viker, Harris W., and Kropp, William E., to Minnesota Mining and Manufacturing Company. Can closure. 3,964,415, Cl. 113-121.00C.
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Wagner, Heinrich; Karcher, Karl-Friedrich; and Merkle, Otto, to Zahnradfabrik Friedrichshafen AG. Power boost steering mechanism. 3,964,371, Cl. 91-434.000.
Wajaroff, Theodor; Konrad, Eugen; and Hoch, Dieter, to Wella AG. Process for permanently shaping hair. 3,964,499, Cl. 132-7.000.
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Wuenn, Guenter J. Universally mounted, pivoted key actuctor and associated switch assembly. 3,965,315, Cl. 200-6.00A.

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Zimeri Safie, Jorge Antonio. Automatic pistol. 3,964,368, Cl. 89-141.000.

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Spaeder, Carl E., Jr., to United States Steel Corporation. Method of forming composite rolls. Re. 28,868, Cl. 29-148.40D.
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54 3,964,284
69 3,964,285
176 3,964,286
210 3,964,287
306 3,964,288
381 3,964,289
466 3,964,290

CLASS 73
1B 3,964,291
40.5A 3,964,293
40.5R 3,964,292
53 3,964,294
61.1R 3,964,295
67.5R 3,964,296
67.8R 3,964,297
84 3,964,298
88F 3,964,299
100 3,964,300
116 3,964,301
117.3 3,964,302
146 3,964,303
147 3,964,304
151 3,964,305
179 3,964,307
194A 3,964,308
3,964,309
194R 3,964,306
207 3,964,310
295 3,964,311
314 3,964,312
343B 3,964,313
359R 3,964,314
362AR 3,964,315
432SD 3,964,316
453 3,964,317
557 3,964,319

CLASS 74
10.8 3,964,320
12 3,964,321
55 3,964,322
60 3,964,323
215 3,964,324
219 3,964,325
230.05 3,964,326
230.17A 3,964,327
231C 3,964,328
233 3,964,329
240 3,964,330
242.1FP 3,964,331
325 3,964,332
410 3,964,334
422 3,964,344
425 3,964,335
471R 3,964,318
501M 3,964,336
501P 3,964,337
520 3,964,338
551.9 3,964,339
3,964,340
572 3,964,341
573R 3,964,342
594.6 3,964,343
665P 3,964,345
711 3,964,346
733 3,964,347

CLASS 75
10R 3,964,897
10S 3,964,901
11 3,964,898
53 3,964,899
94 3,964,900
123E Re.28,878
225 3,964,902

CLASS 76
26 3,964,348
41 3,964,349

CLASS 81
9.5A 3,964,350
52.4R 3,964,351
426 3,964,352

CLASS 83
1 3,964,353
39 3,964,354
169 3,964,355
302 3,964,356
318 3,964,357
400 3,964,358
430 3,964,359
464 3,964,360
471.3 3,964,361

CLASS 84
173 3,964,362
399 3,964,363

CLASS 85
72 3,964,364

CLASS 89
43R 3,964,365
141 3,964,368
148 3,964,366

CLASS 90
5 3,964,369
11C 3,964,367

CLASS 91
395 3,964,370
434 3,964,371
471 3,964,372

CLASS 93
1C 3,964,373
36MM 3,964,374
36.5R 3,964,375

CLASS 96
1SD 3,964,903
1.5 3,964,904
4 3,964,905
33 3,964,906
35 3,964,907
35.1 3,964,908
36.2 3,964,909
46 3,964,910
49 3,964,911
66.3 3,964,912

CLASS 98
59 3,964,376
116 3,964,377

CLASS 99
425 3,964,378
541 3,964,379

CLASS 100
9 3,964,380
34 3,964,381

CLASS 101
1 3,964,382
44 3,964,383
93.48 3,964,384
128.4 3,964,385
169 3,964,386
224 3,964,387
426 3,964,388
467 3,964,389

CLASS 102
1R 3,964,390
4 3,964,391
8 3,964,392
37.6 3,964,393
39 3,964,394
70.2R 3,964,395
79 3,964,396

CLASS 104
9 3,964,397
148MS 3,964,398

CLASS 105
406R 3,964,399

CLASS 106
10 3,964,913
19 3,964,914
38.27 3,964,916
38.6 3,964,915
39.6 3,964,917
47Q 3,964,918
47R 3,964,919
53 3,964,920
90 3,964,921
100 3,964,922
189 3,964,923
286 3,964,924

CLASS 108
51 3,964,400
64 3,964,401
3,964,402
90 3,964,403
144 3,964,404

CLASS 110
8A 3,964,406

CLASS 111
6 3,964,405

CLASS 112
79A 3,964,408
79R 3,964,407
121.15 3,964,409
121.26 3,964,410
410 3,964,411

CLASS 113
7R Re.28,872
3,964,412
120AA 3,964,413
121C 3,964,414
3,964,415

CLASS 114
20A 3,964,416
66.5H 3,964,417
70 3,964,418
106 3,964,419
208R 3,964,420
3,964,421
219 3,964,422
230 3,964,423
235WS 3,964,425
235B 3,964,424

CLASS 115
3 3,964,426

CLASS 116
124B 3,964,427
129H 3,964,428

CLASS 118
7 3,964,429
49 3,964,430
60 3,964,431
314 3,964,432
3,964,433
405 3,964,434
630 3,964,435
637 3,964,436

CLASS 119
1 3,964,437
3,964,438
17 3,964,439
18 3,964,440
109 3,964,441

CLASS 123
8.01 3,964,445
8.13 3,964,446
8.41 3,964,447
8.45 3,964,442
3,964,448
32EA 3,964,443
41.49 3,964,444
41.51 3,964,449
55AA 3,964,450
75B 3,964,451
78AA 3,964,452
90.43 3,964,455
117R 3,964,456
119F 3,964,457
122H 3,964,458
140FG 3,964,459
146.5A 3,964,453
148DS 3,964,454
191S 3,964,460

198DC 3,964,461
198E 3,964,462

CLASS 126

41R 3,964,463
270 3,964,464
350B 3,964,465
361 3,964,466

CLASS 128

1R 3,964,467
2B 3,964,468
2.1E 3,964,469
3,964,470
65 3,964,471
66 3,964,472
82.1 3,964,473
87B 3,964,474
132R 3,964,475
145.6 3,964,476
172.1 3,964,477
203 3,964,478
214R 3,964,479
215 3,964,480
218A 3,964,481
249 Re.28,873
260 3,964,482
266 3,964,483
276 3,964,484
283 3,964,485
284 3,964,486
303.14 3,964,487
351 3,964,488
360 3,964,489
419R 3,964,490
476 3,964,491

CLASS 130

27T 3,964,492

CLASS 131

10.5 3,964,493
17R 3,964,494
3,964,495
3,964,496
3,964,497
3,964,498

CLASS 132

7 3,964,499
3,964,500
11A 3,964,501
3,964,502

CLASS 134

21 3,964,925
117 3,964,926

CLASS 136

26 3,964,927
86A 3,964,928
86R 3,964,929
3,964,930
107 3,964,931
111 3,964,932
121 3,964,933
135R 3,964,934

CLASS 137

39 3,964,503
3,964,504
85 3,964,506
106 3,964,505
375 3,964,507
377 3,964,508
525.1 3,964,509
528 3,964,510
614.06 3,964,511
615 3,964,512
624.18 3,964,513
625.17 3,964,514
625.27 3,964,515
625.38 3,964,516
625.43 3,964,517
625.64 3,964,518

CLASS 138

37 3,964,519
89 3,964,520
176 3,964,521

CLASS 139

142 3,964,523
190 3,964,524

CLASS 140

92.1 3,964,525

CLASS 141

1R 3,964,526
8 3,964,527
67 3,964,528

CLASS 148

2 3,964,935
6.27 3,964,936
6.35 3,964,937
12B 3,964,938
105 3,964,939
175 3,964,940
187 3,964,941

CLASS 150

32 3,964,529

CLASS 151

29 3,964,530
41.7 3,964,531

CLASS 152

330RF 3,964,532
362R 3,964,533

CLASS 156

2 3,964,942
6 3,964,943
40 3,964,944
52 3,964,945
59 3,964,946
64 3,964,947
91 3,964,948
96 3,964,949
110A 3,964,950
272 3,964,951
296 3,964,952
300 3,964,953
331 3,964,954
332 3,964,955
345 3,964,956
3,964,957
382 3,964,958
433 3,964,959

CLASS 159

49 3,964,960

CLASS 162

96 3,964,961
236 3,964,962

CLASS 164

7 3,964,534
66 3,964,535
98 3,964,536
136 3,964,537
228 3,964,538
277 3,964,963
303 3,964,539
323 3,964,540
3,964,541
329 3,964,542

CLASS 166

.5 3,964,543
256 3,964,545
261 3,964,546
269 3,964,547
273 3,964,548
315 3,964,544

CLASS 169

37 3,964,549

CLASS 171

61 3,964,550

CLASS 173

73 3,964,551
164 3,964,552

CLASS 174

2 3,965,285
42 3,965,286
66 3,965,287

CLASS 175

8.51 3,964,553
17 3,964,554
44 3,964,555
45 3,964,556
66 3,964,557
107 3,964,558

CLASS 176

19LD 3,964,964
37 3,964,965
38 3,964,966
80 3,964,967
81 3,964,968
87 3,964,969

CLASS 178

5.8A 3,965,288
6 3,965,289
3,965,290
7.2 3,965,291
7.3D 3,965,299
42 3,965,292
69A 3,965,293
3,965,294

CLASS 179

1SH 3,965,298
1A 3,965,295
1.5R 3,965,296
3,965,297
15AT 3,965,301
15BT 3,965,302
15FS 3,965,300
18EB 3,965,305
18FG 3,965,303
18B 3,965,304
81R 3,965,306
84T 3,965,307
99 3,965,308
175.31R 3,965,309
189D 3,965,310

CLASS 180

1AP 3,964,559
5R 3,964,560
3,964,561
6.7 3,964,562
27 3,964,563
33R 3,964,564
70R 3,964,565
103R 3,964,567
133 3,964,566

CLASS 181

33HA 3,964,568
3,964,569
56 3,964,570
150 3,964,571

CLASS 182

86 3,964,572
116 3,964,573
204 3,964,574
230 3,964,575

CLASS 184

7A 3,964,576

CLASS 186

1R 3,964,577

CLASS 188

1C 3,964,578
71.9 3,964,579
73.1 3,964,580
73.3 3,964,581

CLASS 192

58B 3,964,582
85AA 3,964,583
87.11 3,964,584
87.13 3,964,585
107C 3,964,586
113B 3,964,587

CLASS 193

36 3,964,588

CLASS 194

10 3,964,589
83 3,964,590

CLASS 195

2 3,964,970
28VB 3,964,971
31P 3,964,972
68 3,964,973
103.5C 3,964,974

CLASS 196

132 3,964,975

CLASS 197

1R 3,964,591
49 3,964,592
98 3,964,593
3,964,594
170 3,964,595

CLASS 198

16MS 3,964,596
21 3,964,597
35 3,964,598
39 3,964,599
220BA 3,964,601
220CA 3,964,600

CLASS 200

6A 3,965,315
16C 3,965,311
39R 3,965,312
61.27 3,965,313
61.53 3,965,314
67D 3,965,316
82E 3,965,317
148R 3,965,318
310 3,965,319
314 3,965,320

CLASS 201

2 3,964,976
40 3,964,977

CLASS 203

9 3,964,978
3,964,979
42 3,964,980

CLASS 204

1T 3,964,981
3,964,982
59L 3,964,983
157.1H 3,964,984
180P 3,964,985
192 3,964,986
194 3,964,987
195M 3,964,988
211 3,964,989
275 3,964,990
3,964,991
299R 3,964,992

CLASS 206

75 3,964,602
76 3,964,603
219 3,964,604
349 3,964,605
395 3,964,606
427 3,964,607
451 3,964,608
540 3,964,609

CLASS 208

13 3,964,993
196 3,964,994
210 3,964,995

CLASS 209

17 3,964,996
166 3,964,997

CLASS 210

7 3,964,998
23R 3,964,999
24 3,965,000
28 3,965,001
46 3,965,002
58 3,965,003
73W 3,965,004
96R 3,965,005
138 3,965,006
169 3,965,007
192 3,965,008
218 3,965,009
283 3,965,010
400 3,965,011
433M 3,965,012
519 3,965,013

CLASS 211

5 3,964,610
3,964,611
26 3,964,612
64 3,964,613

CLASS 212

9 3,964,614

CLASS 214

1BD 3,964,616
1B 3,964,615
10.5R 3,964,617
3,964,618
16B 3,964,619
41R 3,964,620
85.5 3,964,621
145A 3,964,622
310 3,964,623
314 3,964,624
502 3,964,625
505 3,964,626

CLASS 215

247 3,964,627

CLASS 219

10.41 3,965,321
10.55B 3,965,322
3,965,324
10.55E 3,965,323
10.55R 3,965,325
121EB 3,965,326
121LM 3,965,327
3,965,328
124 3,965,329
216 3,965,330
3,965,331
3,965,332
243 3,965,333
399 3,965,334

CLASS 220

19 3,964,628
23.86 3,964,629
63R 3,964,630
72 Re.28,874
90.4 3,964,631
270 3,964,632
273 3,964,633
281 3,964,634
306 3,964,635
3,964,636
314 3,964,637

CLASS 221

3 3,964,638
278 3,964,639

CLASS 222

81 3,964,640
82 3,964,641
142.4 3,964,642
145 3,964,643
146HE 3,964,644
3,964,645
174 3,964,647
189 3,964,646
333 3,964,648
399 3,964,649
450 3,964,650

CLASS 223

91 3,964,651

CLASS 224

4E 3,964,652
5P 3,964,653
8R 3,964,654

CLASS 225

97 3,964,655

CLASS 226

3,964,656
177 3,964,657
190 3,964,658

CLASS 227

8 3,964,659
15 3,964,660
18 3,964,661
95 3,964,663

CLASS 228

6A 3,964,664
44.1R 3,964,665
106 3,964,666
157 Re.28,875
194 3,964,667

CLASS 229

35 3,964,668
40 3,964,669
51ST 3,964,670
51TS 3,964,671

CLASS 234

35 3,964,672
115 3,964,673

CLASS 235

61.9R 3,965,335
88RC 3,964,674
92FL 3,965,337
92FQ 3,965,336
150.52 3,965,338
151.3 3,965,339
151.32 3,965,340
151.34 3,965,341
156 3,965,342
3,965,343
197 3,965,344

CLASS 236

15C 3,964,675
46R 3,964,676
3,964,677

CLASS 237

1A 3,964,678

CLASS 238

17 3,964,679
366 3,964,680

CLASS 239

2S 3,964,682
15 3,964,683
56 3,964,684
66 3,964,685
74 3,964,686
226 3,964,687
3,964,688
318 3,964,689
650 3,964,681
662 3,964,714

CLASS 240

47 3,965,345
52R 3,965,346

CLASS 241

7 3,964,715
28 3,964,716
71 3,964,717
79 3,964,718
101.7 3,964,719
186A 3,964,720

CLASS 242

7.22 3,964,522
18PW 3,964,690
3,964,721
3,964,722
35.5A 3,964,723
43R 3,964,724
47 3,964,691
54R 3,964,692

CLASS 243

24 3,964,693

CLASS 244

3.15 3,964,694
3.16 3,964,695
3.23 3,964,696
64 3,964,697
100A 3,964,698
118R 3,964,699
138R 3,964,700

CLASS 246

2F 3,964,701
4 3,964,702
34R 3,964,703
125 3,964,704

CLASS 248

27R 3,964,705
49 3,964,707
126 3,964,708
133 3,964,709
206R 3,964,710
210 3,964,711
223 3,964,712
418 3,964,713
421 3,964,725

CLASS 249

90 3,964,726

CLASS 250

211J 3,965,347
233 3,965,348
236 3,965,349
302 3,965,350
305 3,965,351
315A 3,965,352
336 3,965,353
3,965,354
341 3,965,355
343 3,965,356
360 3,965,357
369 3,965,358
432R 3,965,359
461R 3,965,360
468 3,964,107
3,965,361

CLASS 252

8.7 3,965,014
8.8 3,965,015
25 3,965,016
33.3 3,965,017
59 3,965,018
3,965,019
62 3,965,020
62.1L 3,965,023
62.1P 3,965,021
3,965,022
95 3,965,024
106 3,965,025
3,965,026
180 3,965,027
3,965,028
299 3,965,029
3,965,030
301.4R 3,965,031
306 3,965,032
316 3,965,033
321 3,965,034
412 3,965,035
414 3,965,036
415 3,965,037
416 3,965,038
426 3,965,039
435 3,965,040
437 3,965,041
455R 3,965,042
3,965,043
465 3,965,044
466J 3,965,045
472 3,965,046
503 3,965,047
527 3,965,048

CLASS 254

138 3,964,730

CLASS 259

4R 3,964,731
10 3,964,732
103 3,964,733

CLASS 260

2A 3,965,050
2M 3,965,049
2.5AK 3,965,051
2.5AW 3,965,052
2.5HA 3,965,053
3,965,054
3 3,965,055
17.2 3,965,056
18TN 3,965,057
21 3,965,058
22CB 3,965,059
25 3,965,061
27BB 3,965,060
28.5AV 3,965,062
29.6TA 3,965,063
30.6R 3,965,064
37SB 3,965,065
45.75N 3,965,068
45.8A 3,965,067
47ET 3,965,069
73R 3,965,070
75R 3,965,071
77.5AN 3,965,073
77.5C 3,965,072
77.5R 3,965,074
78L 3,965,075
78.4D 3,965,076
79.5P 3,965,077
96.5R 3,965,084
97.6 3,965,085
123.5 3,965,086
152 3,965,087
210AB 3,965,089
3,965,090
210R 3,965,088
231A 3,965,091
239BD 3,965,092
239.1 3,965,093
240C 3,965,094
240G 3,965,096
3,965,097
240J 3,965,095
243C 3,965,098
3,965,099
251A 3,965,100
256.4H 3,965,101
286R 3,965,102
293.55 3,965,103
293.64 3,965,104

293.72 3,965,105
293.83 3,965,106
294.8C 3,965,107
3,965,108
294.9 3,965,109
306.8D 3,965,110
308C 3,965,111
309.2 3,965,113
309.6 3,965,112
309.7 3,965,114
335 3,965,115
338 3,965,116
340.3 3,965,117
343.3R 3,965,118
3,965,119
343.6 3,965,120
3,965,121
345.2 3,965,122
346.2M 3,965,124
346.3 3,965,125
346.8M 3,965,123
3,965,126
347.3 3,965,127
348A 3,965,129
348C 3,965,128
396R 3,965,130
397.1 3,965,131
410.9R 3,965,132
439R 3,965,133
448.2E 3,965,134
448.8A 3,965,135
3,965,136
454 3,965,137
464 3,965,138
465D 3,965,139
465.5R 3,965,141
465.6 3,965,140
468D 3,965,143
468R 3,965,142
471C 3,965,144
3,965,145
473R 3,965,146
478 3,965,147
481R 3,965,148
486R 3,965,149
3,965,150
490 3,965,151
491 3,965,152
3,965,153
3,965,154
3,965,155
3,965,156
3,965,157
512R 3,965,158
513R 3,965,159
515P 3,965,160
523R 3,965,161
530N 3,965,162
3,965,163
531R 3,965,164
533B 3,965,165
533N 3,965,166
534M 3,965,168
534S 3,965,167
535P 3,965,169
3,965,170
3,965,171
543A 3,965,172
556AR 3,965,173
561H 3,965,174
562R 3,965,175
564RF 3,965,176
566A 3,965,177
567.6M 3,965,178
570R 3,965,179
570.5CA 3,965,180
570.8R 3,965,181
578 3,965,182
3,965,183
583D 3,965,184
586D 3,965,188
586G 3,965,186
586M 3,965,189
586P 3,965,185
586R 3,965,187
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594 3,965,191
598 3,965,192
3,965,193
603HF 3,965,194
3,965,195
604R 3,965,196
623H 3,965,197
632R 3,965,198
635C 3,965,199
645 3,965,200
653.4 3,965,201
654R 3,965,202
655 3,965,203
666A 3,965,204
668R 3,965,205
669R 3,965,206
671M 3,965,207
3,965,208
3,965,209
3,965,210
830R 3,965,211
835 3,965,212
879 3,965,213
880R 3,965,214
889 3,965,215
897C 3,965,216
928 3,965,217
941 3,965,218
973 3,965,219
975 3,965,220

CLASS 261

39B 3,965,223
3,965,224
79A 3,965,225

CLASS 264

25 3,965,226
38 3,965,227
39 3,965,228
50 3,965,229
129 3,965,230
161 3,965,231
184 3,965,232
219 3,965,233
275 3,965,234
294 3,965,235
319 3,965,236

CLASS 266

133 3,964,734

CLASS 267

25 3,964,735
161 3,964,737
166 3,964,736

CLASS 269

221 3,964,738

CLASS 271

3 3,964,739
11 3,964,740
213 3,964,741

CLASS 272

73 3,964,742

CLASS 273

1.5R 3,964,743
43E 3,964,744
95R 3,964,745
108 3,964,746
131AB 3,964,747
138R 3,964,748
157R 3,964,749
3,964,750

CLASS 274

37 3,964,751
46R 3,964,752

CLASS 277

26 3,964,753
58 3,964,662
101 3,964,754

CLASS 280

5A 3,964,755
47.17 3,964,763
276 3,964,765
433 3,964,766
439 3,964,762
446B 3,964,767
495 3,964,768
605 3,964,760
613 3,964,758
614 3,964,756
623 3,964,761
626 3,964,757
3,964,759
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756 Re.28,876

CLASS 281

21R 3,964,769
29 3,964,770

CLASS 285

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315 3,964,771
367 3,964,773
409 3,964,774

CLASS 290

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3,965,363
53 3,965,364
3,965,365

CLASS 294

16 3,964,775
74 3,964,776
83R 3,964,777
88 3,964,778

CLASS 296

27 3,964,779
95C 3,964,780
100 3,964,781
102 3,964,782
137C 3,964,783
137E 3,964,784

CLASS 297

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330 3,964,786
390 3,964,787
395 3,964,788
445 3,964,789
3,964,790

CLASS 298

11 3,964,791

CLASS 299

13 3,964,792

CLASS 302

3 3,964,793

CLASS 303

1A 3,964,798
6C 3,964,794
3,964,795
21BE 3,964,796

CLASS 305

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CLASS 307

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88.3 3,965,375
207 3,965,367
221C 3,965,369
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237 3,965,371
254 3,965,372
264 3,965,373
268 3,965,370
318 3,965,374

CLASS 308

2R 3,964,799
3R 3,964,800
3.5 3,964,801
6C 3,964,802
72 3,964,803
109 3,964,804
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235 3,964,806
238 3,964,807

CLASS 310

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65 3,965,378
68R 3,965,379
77 3,965,380
88 3,965,381
261 3,965,382

CLASS 312

8 3,964,808
111 3,964,809
257R 3,964,810
265 3,964,811

CLASS 313

142 3,965,384
331 3,965,383
366 3,965,385

CLASS 315

8 3,965,386
47 3,965,387
155 3,965,388
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CLASS 316

25 3,964,812

CLASS 317

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18R 3,965,394
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116 3,965,397
141S 3,965,398
249R 3,965,399
262A 3,965,400

CLASS 318

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55 3,965,402
143 3,965,403
261 3,965,404
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432 3,965,407
696 3,965,406

CLASS 321

25 3,965,408
45C 3,965,409

CLASS 323

19 3,965,410
44F 3,965,411

CLASS 324

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3,965,413
30R 3,965,414
54 3,965,415
58.5B 3,965,416
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99D 3,965,418
121R 3,965,419
158T 3,965,420

CLASS 325

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364 3,965,425
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464 3,965,427
474 3,965,428

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20 3,965,430
58 3,965,431
61 3,965,432
155 3,965,433
233 3,965,434

CLASS 329

101 3,965,435

CLASS 330

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34 3,965,437

CLASS 331

1A 3,965,438
94.5C 3,965,440
94.5Q 3,965,439
115 3,965,441
116R 3,965,442

CLASS 332

31R 3,965,443

CLASS 333

30R 3,965,444
33 3,965,445
72 3,965,446
80T 3,965,447
98R 3,965,448

CLASS 334

7 3,965,449

CLASS 335

63 3,965,450

CLASS 336

67 3,965,451

CLASS 337

280 3,965,452

CLASS 338

13 3,965,453
174 3,965,454

CLASS 339

17M 3,964,813
64R 3,964,814
97C 3,964,815
99R 3,964,816
213R Re.28,877

CLASS 340

8R 3,965,455
79 3,965,456
172.5 3,965,457
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173TP 3,965,461
173R 3,965,459
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174TF 3,965,463
267C 3,965,464
274R 3,965,465
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347NT 3,965,467
349 3,965,468
415 3,965,469

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5PD 3,965,470
18E 3,965,471
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122 3,965,473
719 3,965,474
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CLASS 346

1 3,965,476
33A 3,965,477
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139C 3,965,479

CLASS 350

16 3,964,817
36 3,964,818
96WG 3,964,819
104 3,964,820
105 3,964,821
117 3,964,822
160P 3,964,823
161 3,964,825
190 3,964,824

CLASS 352

10 3,964,826

CLASS 354

83 3,965,480

CLASS 355

3R 3,964,827
10 3,964,828
75 3,964,829

CLASS 356

3,964,830
182 3,964,831

CLASS 357

24 3,965,481

CLASS 358

8 3,965,482

CLASS 360

14 3,965,483
61 3,965,484
98 3,965,485

CLASS 401

75 3,964,832

CLASS 403

357 3,964,833

CLASS 404

84 3,964,834
94 3,964,835

CLASS 415

1 3,964,836
181 3,964,837

CLASS 416

20R 3,964,838
160 3,964,839
183 3,964,840
186R 3,964,841

CLASS 418

15 3,964,842
83 3,964,843
133 3,964,844

CLASS 423

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8 3,965,238
34 3,965,239
155 3,965,240
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226 3,965,243
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312 3,965,245
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385 3,965,247
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497 3,965,249
539 3,965,250
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651 3,965,252
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CLASS 424

1 3,965,254
19 3,965,255
22 3,965,256
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89 3,965,258
177 3,965,260
180 3,965,261
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184 3,965,263
200 3,965,264
204 3,965,265
279 3,965,274
3,965,275

CLASS 425

13 3,964,845
28B 3,964,846
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224 3,964,848
3,964,849
292 3,964,850
324R 3,964,851
326B 3,964,852
338 3,964,853
458 3,964,854
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503 3,964,856
515 3,964,857

CLASS 426

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97 3,965,266
273 3,965,267
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387 3,965,269
418 3,965,270
515 3,965,271
524 3,965,272
548 3,965,273

CLASS 427

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43 3,965,277
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89 3,965,279
126 3,965,280
139 3,965,281

CLASS 428

341 3,965,282
378 3,965,283
404 3,965,284

CLASS 431

78 3,964,859
288 3,964,858

CLASS 526

9 3,965,081
19 3,965,082
65 3,965,083
68 3,965,079
88.7E 3,965,080
154 3,965,078

CLASSIFICATION OF DESIGNS

D2—	232	240,310	D15—	33	240,336	D26—14G	240,315		23R	240,320	D52—	4R	240,326				240,331
D6—	66	240,311	D16—	14	240,334	D29—11C	240,316		24A	240,321	D55—	1B	240,329	D73—	1R		240,335
D7—	194	240,312		60	240,333	D45— 4A	240,317			240,322		G	240,327	D83—	U		240,337
D9—	191	240,313		63	240,332	D48— 2	240,318		31	240,323	D56—	R	240,328	D86—	8		240,338
	218	240,314	D25—	75	240,325	20C	240,319	D49—	11	240,324		4B	240,330		10E		240,339

CLASSIFICATION OF PLANTS

P. —	14	3,923	P. —	38	3,925	P. —	3,919	P. —		3,921	P. —	78	3,916	P. —	86		3,917
P. —	21	3,924	P. —	68	3,918	P. —	3,920	P. —		3,922							

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1	:	3,964,565		3,964,440		3,965,137		3,965,461		3,964,361		3,964,660					
		3,964,620		3,964,450		3,965,144		3,965,468		3,964,523		3,964,671					
		3,964,748		3,964,466		3,965,146		3,965,470		3,964,524		3,964,673					
		3,964,855		3,964,468		3,965,159		3,965,472		3,964,663		3,964,699					
		3,964,928		3,964,474		3,965,181	8	:	3,964,113		3,964,674		3,964,737				
4	:	3,964,198		3,964,480		3,965,185			3,964,300		3,964,697		3,964,750				
		3,964,204		3,964,482		3,965,192			3,964,328		3,964,724		3,964,766				
		3,964,680		3,964,483		3,965,215			3,964,439		3,964,847		3,964,772				
		3,964,708		3,964,487		3,965,218			3,964,479		3,964,857		3,964,773				
		3,964,920		3,964,509		3,965,231			3,964,548	13	:	Re.28,870		3,964,782			
		3,964,941		3,964,516		3,965,234			3,964,846		3,964,173		3,964,788				
		3,965,390		3,964,519		3,965,235			3,964,934		3,964,366		3,964,797				
		3,965,410		3,964,521		3,965,241			3,964,994		3,964,493		3,964,803				
		3,965,445		3,964,522		3,965,285	9	:	3,964,159		3,964,613		3,964,815				
		3,965,460		3,964,527		3,965,290			3,964,167		3,964,935		3,964,895				
5	:	3,964,242		3,964,554		3,965,298			3,964,253		3,965,020		3,964,936				
6	:	3,964,106		3,964,570		3,965,306			3,964,348		3,965,401		3,965,019				
		3,964,110		3,964,605		3,965,308			3,964,360	15	:	3,964,121		3,965,062			
		3,964,122		3,964,628		3,965,309			3,964,418		3,964,595		3,965,082				
		3,964,126		3,964,631		3,965,310			3,964,459	16	:	3,964,241		3,965,083			
		3,964,138		3,964,636		3,965,339			3,964,651		3,964,964		3,965,104				
		3,964,143		3,964,738		3,965,340			3,964,753		3,965,237		3,965,143				
		3,964,149		3,964,739		3,965,341			3,964,789	17	:	3,964,108		3,965,169			
		3,964,160		3,964,740		3,965,342			3,964,837		3,964,114		3,965,262				
		3,964,163		3,964,765		3,965,343			3,964,929		3,964,127		3,965,271				
		3,964,169		3,964,770		3,965,344			3,964,930		3,964,147		3,965,305				
		3,964,174		3,964,775		3,965,350			3,964,990		3,964,152		3,965,307				
		3,964,187		3,964,779		3,965,352			3,965,011		3,964,177		3,965,312				
		3,964,195		3,964,792		3,965,353			3,965,023		3,964,194		3,965,316				
		3,964,196		3,964,807		3,965,354			3,965,028		3,964,201		3,965,320				
		3,964,206		3,964,816		3,965,356			3,965,055		3,964,214		3,965,330				
		3,964,213		3,964,817		3,965,358			3,965,135		3,964,215		3,965,370				
		3,964,244		3,964,818		3,965,365			3,965,136		3,964,243		3,965,393				
		3,964,254		3,964,826		3,965,367			3,965,174		3,964,260		3,965,421				
		3,964,266		3,964,831		3,965,396			3,965,183		3,964,313		3,965,427				
		3,964,268		3,964,833		3,965,399			3,965,191		3,964,320		3,965,432				
		3,964,274		3,964,893		3,965,402			3,965,253		3,964,326		3,965,449				
		3,964,281		3,964,908		3,965,406			3,965,263		3,964,370		3,965,452				
		3,964,294		3,964,946		3,965,408			3,965,292		3,964,372	18	:	3,964,166			
		3,964,306		3,964,956		3,965,411			3,965,329		3,964,374		3,964,269				
		3,964,316		3,964,963		3,965,412	10	:	3,964,267		3,964,375		3,964,273				
		3,964,318		3,964,969		3,965,413			3,965,010		3,964,458		3,964,342				
		3,964,333		3,964,987		3,965,416			3,965,072		3,964,560		3,964,396				
		3,964,359		3,965,008		3,965,418			3,965,160		3,964,590		3,964,399				
		3,964,364		3,965,086		3,965,428			3,965,199		3,964,618		3,964,463				
		3,964,393		3,965,096		3,965,431			3,965,236		3,964,630		3,964,501				
		3,964,414		3,965,113		3,965,434			3,965,429		3,964,632		3,964,525				
		3,964,417		3,965,115		3,965,440	12	:	3,964,133		3,964,633		3,964,530				
		3,964,422		3,965,116		3,965,441			3,964,172		3,964,634		3,964,582				
		3,964,424		3,965,123		3,965,448			3,964,178		3,964,639		3,964,664				
		3,964,430		3,965,125		3,965,459			3,964,197		3,964,650		3,964,677				

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22 : Re.28,877
3,964,184
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PLANT PATENTS

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Vol. 947 Number 5

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

June 29, 1976

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

June 29, 1976 Volume 947 Number 5

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The Patent and Trademark Office will use special grant covers with a bicentennial motif on patents issued and trademarks registered, beginning July 6, 1976 and continuing through the last six months of 1976.

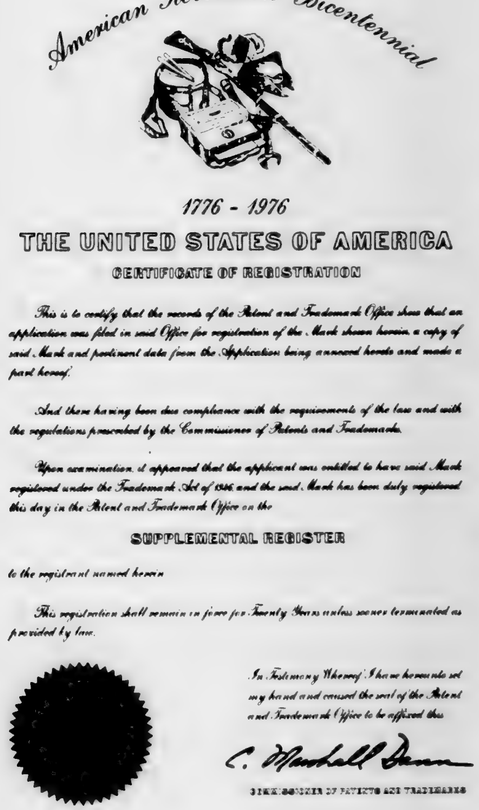
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May 25, 1976.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.


American Revolution Bicentennial

1776 - 1976

THE UNITED STATES OF AMERICA

CERTIFICATE OF REGISTRATION

This is to certify that the records of the Patent and Trademark Office show that an application was filed in said Office for registration of the Mark shown herein, a copy of said Mark and pertinent data from the Application being annexed hereto and made a part hereof.

And there having been due compliance with the requirements of the law and with the regulations prescribed by the Commissioner of Patents and Trademarks.

Upon examination, it appeared that the applicant was entitled to have said Mark registered under the Trademark Act of 1946 and the said Mark has been duly registered this day in the Patent and Trademark Office on the

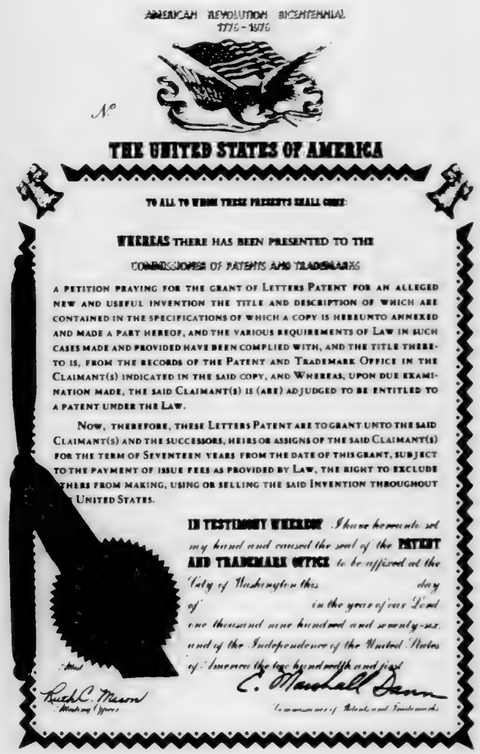
SUPPLEMENTAL REGISTER

to the registrant named herein.

This registration shall remain in force for Twenty Years unless sooner terminated as provided by law.

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Patent and Trademark Office to be affixed this

COMMISSIONER OF PATENTS AND TRADEMARKS


AMERICAN REVOLUTION BICENTENNIAL
1776 - 1976

No.

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

WHEREAS THERE HAS BEEN PRESENTED TO THE

COMMISSIONER OF PATENTS AND TRADEMARKS

A PETITION PRAYING FOR THE GRANT OF LETTERS PATENT FOR AN ALLEGED NEW AND USEFUL INVENTION THE TITLE AND DESCRIPTION OF WHICH ARE CONTAINED IN THE SPECIFICATIONS OF WHICH A COPY IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PATENT AND TRADEMARK OFFICE IN THE CLAIMANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID CLAIMANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A PATENT UNDER THE LAW.

NOW, THEREFORE, THESE LETTERS PATENT ARE TO GRANT UNTO THE SAID CLAIMANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID CLAIMANT(S) FOR THE TERM OF SEVENTEEN YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF ISSUE FEES AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM MAKING, USING OR SELLING THE SAID INVENTION THROUGHOUT THE UNITED STATES.

IN TESTIMONY WHEREOF, I have hereunto set my hand and caused the seal of the PATENT AND TRADEMARK OFFICE to be affixed at the City of Washington this day of in the year of our Lord one thousand nine hundred and seventy-six and of the Independence of the United States of America the two hundredth and first.

Attest:

Ruth C. Mason
Monitoring Officer

C. Marshall Dann
Commissioner of Patents and Trademarks

PATENT AND TRADEMARK OFFICE NOTICES

April and May 1976 Classification Orders

The reclassifications covered by the following classification changes became effective during April and May 1976.

Classification Order 517, effective April 19, 1976:

	Class	Subclasses
Abolished	260	78.4; 78.5 and 80–94.9.
Established	260	78.41.
	526	1–352 and 901–916.
	528	480–503.
Position change(s)	None	
Title change(s)	None	

Classification Order 518, effective April 20, 1976:

	Design classes	Subclasses
Abolished	D–13; 18; 21; 28; 60 and 68	ALL.
	54	1 and 2.
	92	17.
Established	6	208.1 and 208.2.
	23	138.1.
	(new) 25	1–98.
	34	45.
	92	25–33.
Title change(s)	92	
	6	205.
	8	214 and 225.
	23	94.

Classification Order 519, effective April 20, 1976:

Abolished	D57	ALL.
	D61	ALL.
Established	D16	1–83.
	D87	9.
Position change(s)	None	
Title change(s)	None	

Classification Order 520, effective April 22, 1976

	Class	Subclasses
Abolished	51	163.
Established	51	163.1 and 163.2.
Position change(s)	None	
Title change(s)	None	

Classification Order 521, effective April 28, 1976:

Abolished	9	1.
Established	9	1.1–1.7.
Position change(s)	None	
Title change(s)	None	

Classification Order 522, effective May 12, 1976:

Abolished	248	311.
Established	248	311.1; 311.3.
Position change(s)	None	
Title change(s)	None	

ALFRED C. MARMOR
Administrator for Documentation
June 7, 1976

Board of Appeals Decisions Rendered in the Month of May 1976

Examiner affirmed	224
Examiner affirmed in part	50
Examiner reversed	70
Total	344

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,742,378, T. A. Te Grotenhuis, FILLERS HAVING VINYL SILOXANE GROUPS BONDED TO THE SURFACE THEREOF AND COPOLYMERS THEREOF WITH ETHYLENICALLY UNSATURATED POLYMERIZABLE MONOMERS; **2,841,566,** same, HIGH POLYMERS WITH CHEMICALLY BONDED REINFORCING AND METHOD OF MAKING SAME, **filed** Feb. 18, 1976, United States Court of Appeals, Sixth Circuit, Ohio (Cincinnati) Doc. 75–1714, *PPG Industries Inc.* v. *Westwood Chemical, Inc. et al.* The judgment of the District Court is affirmed, Feb. 18, 1976. **Same, filed** Feb. 18, 1976, United States Court of Appeals, Sixth Circuit, Ohio (Cincinnati) Doc. 75–1715, *PPG Industries, Inc.* v. *Westwood Chemical, Inc. et al.* The judgment of the District Court is affirmed, Feb. 18, 1976. **Same, filed** Aug. 22, 1975, United States Court of Claims (District of Columbia) Doc. 473–69, *Westwood Chemical, Inc. and Eastwood Chemical, Inc.* v. *The United States.* Judgment for defendant, claims in both patents held invalid on basis of collateral estopped, Oct. 22, 1975.

2,802,760, Derick and Frosch, OXIDATION OF SEMICONDUCTIVE SURFACES FOR CONTROLLED DIFFUSION, **filed** June 23, 1975, United States Court of Claims (District of Columbia) Doc. 211–75, *Western Electric Company, Incorporated* v. *The United States.*

2,841,566. (See 2,742,378.)

2,869,120, Lolmaugh, Thornton and Smith, TOW TARGET HAVING COMBUSTION SIGNAL MEANS, **filed** June 13, 1975, United States Court of Claims (District of Columbia) Doc. 27–71, *Del Mar Engineering Laboratories* v. *The United States.* In infringement action against U.S., claims 1 to 7 held unpatentable under 35 U.S.C. 102(g) and 103. Petition dismissed, Oct. 22, 1975.

2,873,440, J. B. Speller, ANALOGUE-TO-DIGITAL CONVERTER, **filed** Jan. 16, 1976, United States Court of Claims (District of Columbia) Doc. 13–76, *United Technologies Corporation* v. *The United States.*

2,949,550, T. T. Brown, ELECTROKINETIC APPARATUS; **3,018,394,** same, ELECTROKINETIC TRANSDUCER; **3,517,462,** H. A. Imhof, DEDUCING AND ROUGHING TOOLS, **filed** Jan. 28, 1976, D.C., C.D. Calif. (Los Angeles) Doc. CV–76–327–AAH, *Townsend Brown Foundation* v. *Guidance Technology Inc.*

3,018,394. (See 2,949,550.)

3,038,964, A. G. Bose, LOUDSPEAKER SYSTEM; **3,582,553,** same; **Reg. No. 992,982** (MISCELLANEOUS DESIGN), Bose Corporation, **filed** July 12, 1971, D.C., S.D.N.Y., Doc. 71–C–3103, *Bose Corporation* v. *Linear Design Labs., Inc.* Consent judgment and conclusions of law, defendants are hereby enjoined from infringing claims 1, 7, 8 and 11 of '964 and claims 1–10, 12, 13, 15–21, 29–33 of '553, and from infringing upon Registration 992,982, June 20, 1975.

3,038,964, A. G. Bose, LOUDSPEAKER SYSTEM; **3,582,553,** same, **filed** Feb. 26, 1975, D.C. Minn. (Minneapolis) Doc. 4–75–C–89, *Bose Corporation* v. *John Watkins, Jr., doing business as Speakers, Inc. and Watkins Engineering Co.* Case reopened per Judge Larson's order of August 8, 1975.

3,200,396, Stevens and Moritz, CHARACTER READOUT DEVICE, **filed** Nov. 20, 1974, D.C., S.D.N.Y., Doc. 74–C–5093, *General Time Corporation* v. *Sankyo Seiki (America), Inc.* Stipulation of dismissal, claims and actions are hereby dismissed without prejudice, Feb. 3, 1976.

3,253,103, A. J. Fister, PROTECTORS FOR ELECTRIC CIRCUITS; **3,267,240,** T. E. L. Fitzgerald, PROTECTORS FOR ELECTRIC CIRCUITS, **filed** Dec. 17, 1973, D.C., N.D. Ill. (Chicago) Doc. 73c3179, *McGraw-Edison Company* v. *Federal Pacific Electric Company.* By agreement of the parties, case is dismissed with prejudice, Feb. 6, 1976.

3,267,240. (See 3,253,103.)

3,293,663, T. D. Cronin, SURGICALLY IMPLANTABLE HUMAN BREAST PROSTHESIS, **filed** Feb. 27, 1976, D.C., N.D. Ill. (Chicago) Doc. 76c746, *Dow Corning Corporation* v. *American Hospital Supply Corporation and Heyer-Schulte Corp.*

3,325,573, Boon and Hager, MANUFACTURE OF FOAM MATERIAL, **filed** Mar. 22, 1973, D.C. Md. (Baltimore) Doc. HM–74–1251, *Wm. T. Burnett & Company, Inc.* v. *Reeves Brothers, Inc.*

3,339,827, D. J. Steldinger, SEALED ENVELOPE ASSEMBLY WITH INTERIOR MAILING MATERIAL, **filed** Sept. 13, 1974, D.C., N.D. Ill. (Chicago) Doc. 74c2646, *Uarco Incorporated* v. *Wallace Business Forms, Inc.* Case closed in favor of plaintiff, Feb. 13, 1976.

3,431,598, Lueddeke and Lueddeke, MACHINE ORGANIZATION FOR MANUFACTURING TARGET DISCS, **filed** May 20, 1975, D.C.N.J. (Newark) Doc. 75–868, *Eastern Target Co., Inc.* v. *Remington Arms Co., Inc.* Stipulation and order of dismissal of action, Feb. 10, 1976.

3,464,799, C. L. Kimbell, GAS DETECTOR, **filed** Feb. 12, 1976, D.C., N.D. Tex. (Dallas) Doc. CA 3–76–0264, *Houston Atlas, Inc. and Charles L. Kimbell* v. *Del Mar Scientific, Inc. and Robert W. Canterbury.*

3,465,441, L. I. Linkow, RING-TYPE IMPLANT FOR ARTIFICIAL TEETH, **filed** Aug. 23, 1973, D.C., S.D.N.Y., Doc. 73–C–3667(TPG), *Orantronics, Inc. and Leonard I. Linkow* v. *Howmedica, Inc.* Filed consent judgment, defendant enjoined permanently, entered Feb. 11, 1974.

3,465,441(a), L. I. Linkow, RING-TYPE IMPLANT FOR ARTIFICIAL TEETH; **3,562,912**, A. E. Edelman, APPLIANCE FOR INSERTING DENTAL IMPLANTS; **3,623,226**, same, METHOD AND APPARATUS FOR INSERTING A DENTAL IMPLANT; **3,702,028**, same, DENTAL IMPLANT EXTRACTING TOOL; **3,729,825**, Linkow, Weiss, Weiss and Liwerant, ORAL IMPLANT; **3,851,393**, Weiss and Lew, same, **filed** Mar. 10, 1976, D.C.N.J. (Camden) Doc. 75–1683, *Orantronics Inc. and Leonard I. Linkow* v. *Implant Research Corporation and Alfred E. Edelman.*

3,517,462. (See 2,949,550.)

3,562,912. (See 3,465,441(a).)

3,582,553. (See 3,038,964.)

3,623,226. (See 3,465,441(a).)

3,702,028. (See 3,465,441(a).)

3,729,825. (See 3,465,441(a).)

3,851,393. (See 3,465,441(a).)

Reg. No. 992,982. (See 3,038,964.)

PATENT NOTICES

Certificates of Correction for the Week of June 29, 1976

P.P. 3,854	3,923,407	3,938,102	3,945,800
Re. 28,715	3,923,812	3,938,342	3,945,935
Re. 28,757	3,924,241	3,938,556	3,945,997
Re. 28,775	3,924,398	3,938,672	3,946,009
3,690,891	3,925,067	3,939,062	3,946,037
3,697,865	3,925,270	3,939,110	3,946,059
3,770,774	3,925,338	3,939,180	3,946,096
3,807,335	3,925,485	3,939,412	3,946,200
3,812,664	3,925,553	3,939,854	3,946,335
3,839,166	3,925,560	3,940,477	3,946,389
3,856,664	3,925,780	3,940,599	3,946,435
3,859,331	3,926,237	3,940,614	3,947,505
3,859,421	3,926,691	3,940,748	3,947,507
3,860,066	3,927,963	3,940,839	3,947,545
3,860,428	3,928,542	3,940,885	3,948,323
3,862,169	3,928,553	3,941,150	3,948,386
3,864,220	3,928,598	3,941,381	3,948,481
3,865,985	3,929,694	3,941,624	3,948,497
3,873,598	3,929,822	3,941,709	3,948,655
3,874,280	3,930,031	3,941,777	3,948,816
3,875,116	3,930,348	3,941,806	3,948,921
3,882,484	3,931,263	3,942,218	3,949,124
3,887,519	3,931,317	3,942,477	3,949,139
3,888,100	3,932,495	3,942,499	3,949,317
3,889,137	3,932,550	3,942,500	3,949,417
3,892,190	3,932,587	3,942,815	3,949,468
3,892,928	3,933,507	3,942,868	3,949,483
3,894,606	3,933,741	3,942,926	3,949,507
3,896,035	3,933,935	3,943,111	3,949,921
3,896,741	3,934,044	3,943,149	3,950,043
3,899,500	3,934,181	3,943,152	3,950,082
3,901,078	3,934,182	3,943,454	3,950,208
3,901,603	3,934,353	3,943,624	3,950,241
3,902,454	3,934,513	3,943,815	3,950,444
3,904,796	3,935,236	3,943,841	3,950,457
3,905,134	3,935,545	3,944,074	3,950,575
3,906,804	3,935,646	3,944,150	3,950,592
3,907,468	3,935,900	3,944,385	3,950,985
3,907,596	3,935,910	3,944,561	3,951,122
3,908,025	3,936,266	3,944,740	3,951,290
3,909,781	3,936,356	3,944,786	3,951,309
3,916,308	3,936,577	3,944,800	3,951,419
3,917,621	3,936,823	3,945,141	3,951,456
3,917,669	3,936,910	3,945,146	3,951,542
3,917,885	3,937,431	3,945,160	3,951,632
3,920,054	3,937,690	3,945,210	3,951,747
3,920,752	3,937,701	3,945,272	3,952,119
3,921,397	3,937,716	3,945,299	3,952,213
3,921,458	3,937,761	3,945,400	3,953,946
3,923,149	3,937,921	3,945,605	3,954,426
3,923,277	3,937,950	3,945,677	3,955,044

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 5, 1976

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-2-75
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	9-12-75
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-14-75
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-4-75
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-75
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-1-75
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	8-1-75
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-6-75
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-5-75
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	6-16-75
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	2-18-75
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—D. J. STOCKING, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-2-75
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	11-3-75
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—G. M. FORLENZA, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	6-26-75
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-19-75
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	11-7-75

Expiration of patents: The patents within the range of numbers indicated below expire during June 1976, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,888,679 to 2,893,004 inclusive
Plant Patents..... Numbers 1,838 to 1,849 inclusive

REISSUES

JUNE 29, 1976

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 28,879

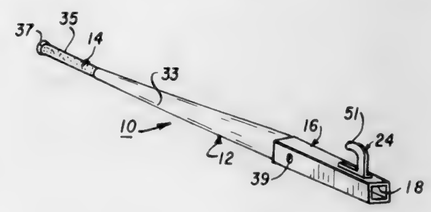
TRACTOR TRAILER FIFTH-WHEEL RELEASE TOOL

Ralph W. Verest, 4515 N. Pulaski Road, Chicago, Ill. 60630

Original No. 3,843,981, dated Oct. 29, 1974, Ser. No. 284,102, Aug. 28, 1972. Application for reissue Dec. 16, 1974, Ser. No. 531,112

Int. Cl.² B25F *1/00*

U.S. Cl. 7—1 G **9 Claims**



1. A tool for use on tractor-trailer trucks [employing a load binder having a release handle and] employing a fifth-wheel coupler having a release handle, comprising:

an elongated member rigid throughout its length terminating at its rear end portion in a handle and [terminating at its] *having a* front end portion [in a socket having a recess therein for receiving the load binder handle, the socket being defined by a solid tubular member]; and

a hook [fixedly mounted on and] extending from said front end portion and adapted to engage the fifth-wheel release mechanism handle for moving it to actuate the mechanism, said hook [having a base portion connected to said front end portion and] having a hook-like portion including [a radially-extending upstanding shank portion extending from said base portion,] a reversely-bent smoothly-curved portion extending backwardly [therefrom] and [terminating in] an inclined portion sloping from [the] *its* outermost portion [of said hook] toward said [base] *rear* portion, the distal end portion of said [inclined] *hook-like* portion being blunt in shape and *the innermost portion of said inclined portion* being spaced by a substantial distance from said outermost portion toward said [base] *front* portion.

Re. 28,880

PRINTING MACHINES FEED MECHANISM

Harold Frederick Farrow, Hitchin, England, assignor to Colorflo Limited, Great Britain

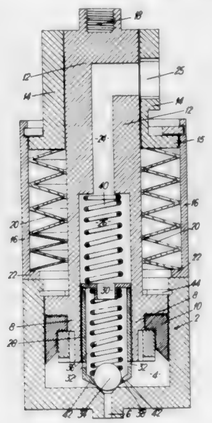
Original No. 3,543,682, dated Dec. 1, 1970, Ser. No. 744,068, July 11, 1968. Application for reissue Feb. 19, 1971, Ser. No. 116,840

Claims priority, application United Kingdom, July 21, 1967, 33735/67

Int. Cl.² B41F *31/08, 31/18*

U.S. Cl. 101—366 **7 Claims**

5. A mechanism for use in applying a fluid design onto material comprising a plate having a recessed design therein in accordance with the fluid design to be applied to the material and a passage through the thickness of the plate communicating with said recessed design, a fluid injector unit for delivering a charge of fluid under pressure through said passage to said recessed design when the plate and material are in sealing pressure relationship, said injector unit including a main piston movable in a first chamber to force fluid from said first chamber into said recessed design and means for relieving said pressure of the fluid in said recessed design, said means for relieving the pressure of the fluid in said recessed design comprising a member supported by said piston for yielding movement and having a surface portion exposed to the pressure and which yields in response to a predetermined pressure of the fluid acting thereon to thereby effect said pressure relief, said main piston having a passage



therein through which fluid flows, an auxiliary piston located in said passage, said auxiliary piston having a second chamber communicating with said passage in said main piston and through which fluid flows, means communicating said second chamber and said first chamber to provide for fluid flow therebetween, and said member being carried by said auxiliary piston.

Re. 28,881

BRAKE ADJUSTERS

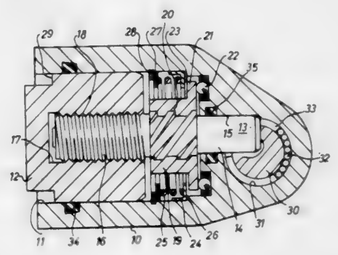
Glyn P. R. Farr, Warwick, England, assignor to Girling Limited, Birmingham, England

Original No. 3,442,357, dated May 6, 1969, Ser. No. 618,914, Feb. 27, 1967. Application for reissue Jan. 10, 1974, Ser. No. 432,359

Claims priority, application United Kingdom, Mar. 18, 1966, 11915/66; May 7, 1966, 20309/66

Int. Cl.² F16D *65/56*

U.S. Cl. 188—196 D **30 Claims**



26. In a vehicle braking system having an automatic adjuster operative between two relatively movable elements actuable to apply a brake: a mechanism of adjustable length for limiting relative travel between said elements upon brake release and comprising first and second members and a non-reversible screw-thread connection between said members; and means for

effecting adjustment and comprising opposed relatively rotatable and axially displaceable means, helically inclined surface means thereon, said opposed means being coaxial with one another and with said non-reversible screw-thread connection and being in interengagement with one another through said helically inclined surface means whereby relative to and fro axial displacement between said opposed means responsive to an excess relative travel between said elements causes relative back and forth rotation between said opposed means, and means for effecting transmission of said relative rotation in one direction only to said first and second members, said last-mentioned means comprising a stepless one way clutch for resisting relative rotation between one of said opposed means and one of said members during relative rotation in one direction between said opposed means and permitting relative rotation between said one of said opposed means and said one of said members during relative rotation in the opposite direction between said opposed means.

Re. 28,882

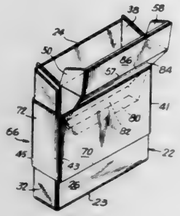
DISPENSING CARTON

David Charles Mueller, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Original No. 3,773,247, dated Nov. 20, 1973, Ser. No. 285,915, Sept. 1, 1972. Application for reissue Feb. 11, 1975, Ser. No. 548,915

Int. Cl.³ B65D *5/66*

U.S. Cl. 229—44 CB **13 Claims**



1. A two-piece, suitably cut and scored paperboard blank capable of being erected into a dispensing carton, comprising a slide receptacle portion and a shell portion, said slide receptacle portion comprising:

a front wall panel;

a pair of opposed side wall panels hingedly connected to the sides of the front wall panel;

a bottom wall panel hingedly connected to the bottom of the front wall panel;

a rear wall panel hingedly connected to the bottom wall panel on the opposite edge from the front wall panel;

a pair of opposed fold-in panels hingedly connected to the sides of the rear wall panel;

a pair of opposed bottom wall glue flaps hingedly connected to the bottom of the fold-in panels;

a rear wall connecting panel depending from the top of the rear wall panel across an alternate cut and crease line;

a pair of opposed fold-in flaps hingedly connected to the sides of the connecting panel; and

a top wall panel hingedly connected to the top of the connecting panel; and

said shell portion comprising:

a rear wall panel;

a pair of opposed side wall panels hingedly connected to the sides of the rear wall panel;

a front wall panel hingedly connected to one of the side wall panels and extending laterally therefrom;

a side wall panel glue flap hingedly connected to the front wall panel and extending laterally therefrom;

a foldover panel hingedly connected to the top edge of the rear wall panel;

at least one folding panel hingedly connected to and extending from the edge of the foldover panel parallel to rear wall panel top edge;

a hinge *panel* extending longitudinally from and hingedly connected to the adjacent folding panel; and

a glue panel extending longitudinally from and hingedly connected to the hinge panel.

Re. 28,883

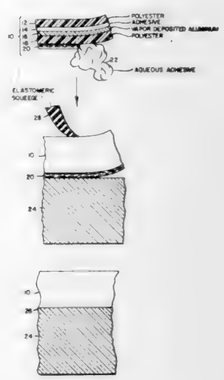
PROCESS FOR PRODUCING SOLAR CONTROL WINDOW

Michael E. Willdorf, Malden, Mass., assignor to Material Distributors Corporation, Woburn, Mass.

Original No. 3,891,486, dated June 24, 1975, Ser. No. 393,806, Sept. 4, 1973. Division of Ser. No. 113,426, Feb. 8, 1971, Pat. No. 3,775,226. Application for reissue Sept. 22, 1975, Ser. No. 615,376

Int. Cl.³ B32B *17/06*

U.S. Cl. 156—71 **5 Claims**



1. A process for producing a solar control window, said process comprising the steps of superposing a semi-transparent solar control film upon a window surface with an aqueous detergent interposed therebetween, said solar control surface comprising in laminated sequence, an optically clear silicone release stratum, an optically clear polyester support stratum, an optically clear polyester bonding stratum, a semi-transparent vapor deposited aluminum stratum, an optically clear polyester support stratum, and an optically clear pressure sensitive stratum being in contiguity with said window surface, said release stratum being remote from said window surface, squeegeeing said solar control film into intimate contact with said window surface while said pressure sensistive adhesive stratum is deactivated by said aqueous detergent, and permeating said aqueous detergent out of the interface between said pressure sensitive stratum said window surface in order to reactivate said pressure sensitive adhesive stratum.

Re. 28,884

WOODPULP BLEACHING PROCESS

Walter Q. Jack, and Loyd V. Johnson, both of Tacoma, Wash., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Original No. 3,433,702, dated Mar. 18, 1969, Ser. No. 467,697, June 28, 1965. Application for reissue July 2, 1975, Ser. No. 592,487

Int. Cl.³ D21C *9/12, 9/14*

U.S. Cl. 162—66 **10 Claims**

1. A process for the bleaching of woodpulp, comprising:

(a) reacting woodpulp with chlorine dioxide until said chlorine dioxide is [at least partially] *more than 50 percent* depleted and [,] thereafter, *without an intermediate wash*,

(b) reacting the woodpulp with chlorine, wherein

(1) the woodpulp is dispersed in an aqueous slurry, which slurry, after being treated with said chlorine dioxide, is rendered neutral to acidic;

(2) the temperature during said chlorine dioxide and chlorine reactions is maintained at from about 5 to about 100 degrees centigrade; and

(3) from about 2 to about 90 percent of the total available chlorine added is added as chlorine dioxide.

Re. 28,885

METHOD FOR ISOMERIZING GLUCOSE SYRUPS

William P. Cotter; Norman E. Lloyd, both of Clinton; Charles W. Hinman, deceased, late of Clinton, by Roy W. Deitchler, administrator, Fort Madison, all of Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

Original No. 3,623,953, dated Nov. 30, 1971, Ser. No. 765,654, Oct. 7, 1968. Application for reissue Oct. 25, 1972, Ser. No. 300,687

Int. Cl.³ C12D *13/00*

U.S. Cl. 195—31 F **12 Claims**

1. A process for enzymatically isomerizing glucose in a glucose-containing liquor to fructose comprising providing a glucose-isomerizing enzyme in a glucose-containing liquor and subjecting the liquor to isomerizing conditions, there being present in the glucose-containing liquor during isomerization a small amount of a water-soluble salt of sulfurous acid sufficient to measurably reduce the formation of color bodies below that level obtained by carrying out the enzymatic isomerization without the presence of the water-soluble salt of sulfurous acid.

10. A process for enzymatically isomerizing glucose in a glucose-containing liquor to fructose comprising providing a glucose-isomerizing enzyme in a glucose-containing liquor and subjecting the liquor to isomerizing conditions, there being present in the glucose-containing liquor during isomerization an amount of a water-soluble salt of sulfurous acid sufficient to reduce denaturation of the glucose-isomerizing enzyme below that level occurring when the enzymatic isomerizaton is carried out without the presence of the water-soluble salt of sulfurous acid.

Re. 28,886

METHOD FOR PREPARING CYTIDINE DIPHOSPHATE CHOLINE

Kiyoshi Nakayama, Sagamihara, and Hiroshi Hagino, Tokyo, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Original No. 3,684,652, dated Aug. 15, 1972, Ser. No. 60,743, Aug. 3, 1970. Application for reissue June 4, 1973, Ser. No. 366,263

Claims priority, application Japan, Aug. 4, 1969, 44-60999

Int. Cl.³ C12D *13/06*

U.S. Cl. 195—28 N **13 Claims**

14. A method for preparing cytidine diphosphate choline which comprises culturing an aqueous reaction liquor containing (a) at least one of the class consisting of choline and phosphoryl choline; (b) at least one of the class consisting of cytidine, cytidine-5'-monophosphate, cytidine-5'-diphosphate and cytidine-5'-triphosphate; (c) cells of bacteria or molds that are in a form which liberate their enzyme systems into the aqueous reaction liquor under the culturing conditions; (d) phosphate ion (e) at least one of the class consisting of magnesium ion and manganese ion; (f) at least one fermentable sugar and recovering cytidine diphosphate choline from said culture liquor.

Re. 28,887

SEQUENTIAL BLEACHING OF KRAFT PULP WITH CHLORINE DIOXIDE FOLLOWED BY CHLORINE

Walter Q. Jack, Youngstown, N.Y., and Loyd V. Johnson, Tacoma, Wash., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Original No. 3,501,374, dated Mar. 17, 1970, Ser. No. 787,267, Dec. 26, 1968. Continuation-in-part of Ser. No. 467,697, June 28, 1965, Pat. No. 3,433,702, no Re. 28,884. Application for reissue July 2, 1975, Ser. No. 592,486

The portion of the term of this patent subsequent to Mar. 18, 1986 has been disclaimed

Int. Cl.³ D21C *9/12, 9/14*

U.S. Cl. 162—66 **10 Claims**

1. A process for the sequential bleaching of kraft pulp, comprising the steps of sequentially:

(a) reacting kraft pulp dispersed in aqueous slurry with chlorine dioxide until the chlorine dioxide is [at least partially] *more than 50 percent* depleted, and then reacting the kraft pulp with chlorine, *without an intermediate wash*, wherein:

(1) the total available chlorine added by the chlorine dioxide and chlorine is from about 1 to about 10 percent by weight of the kraft pulp,

(2) from about 5 to about 90 percent of the total available chlorine is furnished by chlorine dioxide, the remaining available chlorine being furnished by chlorine,

(3) the chlorine dioxide is reacted with the kraft pulp for from about 2 to about 75 minutes, and the chlorine is reacted with the kraft pulp for from about 2 to about 120 minutes, and

(4) the reactions are run at a temperature of from about 0 to about 100 degrees centigrade, thereby forming a neutral to acidic slurry of pulp material with a consistency of from about 2 to about 20 percent (by weight of pulp); and

(b) treating said slurry of pulp material with caustic at a temperature of from about 0 to about 100 degrees centigrade for about 15 minutes to about 3 hours until the pH of the slurry is from about 7 to about 12.

Re. 28,888

COOKING TIME ADJUSTING ARRANGEMENT FOR USE IN ELECTRONIC OVEN

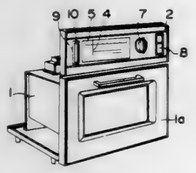
Fumiko Mori, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Original No. 3,848,105, dated Nov. 12, 1974, Ser. No. 346,795, Apr. 2, 1973. Application for reissue July 11, 1975, Ser. No. 595,302

Claims priority, application Japan, Apr. 6, 1972, 47-41112[U]; Apr. 6, 1972, 47-41113[U]

Int. Cl.² H05B *9/06*

U.S. Cl. 219—10.55 B **15 Claims**



1. A cooking time adjusting arrangement for use in an electronic oven, said arrangement being utilized in an electronic oven including an oven-defining structure having an access opening, means positioned for generating high frequency energy toward the interior of said oven-defining structure and a hingedly supported door for [selectively] covering the access opening of said oven-defining structure, said adjusting arrangement comprising:

a timer device having an operating shaft for setting the timer to any desired operating period, said means for generating high frequency energy being operatively coupled to said timer device and operating during said operation period;

an instrument panel having a front and back and positioned on said oven-defining structure and having a window portion and an aperture therein, said timer device being positioned adjacent the back of said panel and said operating shaft of said timer extending through said aperture;

a movable pointer needle, operatively coupled to said operating shaft and positioned to move along said window portion for indicating the operating time of said means for generating high frequency energy; and

display means positioned behind said window portion for visually representing various information relating to menus, corresponding cooking times and operating time, said display means comprised of a rotatable drum, the peripheral surface thereof having said information thereon.

PLANT PATENTS

GRANTED JUNE 29, 1976

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,926

ROSE PLANT—MEINASTUR VARIETY

Marie-Louise Meilland and Alain A. Meilland, Antibes, and Michele Meilland Richardier, Tass-in-la-Demi-Lune, France, assignors to The Conard-Pyle Company, West Grove, Pa.

Filed Oct. 24, 1974, Ser. No. 517,818

Claims priority, application Morocco, Dec. 7, 1973, 16,624

Int. Cl.² A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class substantially as illustrated and described, distinguished as to novelty, from the physical point of view, the plant, with medium green adult wood, is erect, the flower is semi-double, bright vermilion inside, crimson outside, the petals are very firm and show a yellowish white unguis, from the biological point of view, this rose plant is of vigorous growth, has great aptitude to forcing, its flowers last a long time when cut and their petals drop off cleanly.

3,927

APRICOT TREE

Raymond C. Freimann, Tieton, Wash., assignor to Stark Brothers Nurseries & Orchards Company, Louisiana, Mo.

Filed Feb. 26, 1975, Ser. No. 553,211

Int. Cl.² A01H *5/08*

U.S. Cl. Plt.—39 **1 Claim**

1. A new and distinct variety of apricot tree, substantially as herein shown and described, characterized particularly as to novelty by being appreciably larger in size than the Tilton apricot.

3,928

PEAR TREE

Louis F. Johnson, deceased, late of Ukiah, Calif., by Margaret M. Johnson, administratrix, Ukiah, Calif., assignor to Stark Brothers Nurseries & Orchards Company, Louisiana, Mo.

Filed Mar. 5, 1975, Ser. No. 555,449

Int. Cl.² A01H *5/03*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree substantially as herein shown and described, characterized particularly as to novelty by its fruit being appreciably larger in size than the Bartlett, not as pyriform in shape and more roundish with a distinct neck, while the tree is more compact than the Bartlett tree.

3,929

GRAPEVINE

Harold P. Olmo, Davis, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed May 15, 1975, Ser. No. 577,974

Int. Cl.² A01H *5/03*

U.S. Cl. Plt.—47 **1 Claim**

1. The new and distinct variety of grapevine herein described and illustrated and identified by the characteristics enumerated above.

3,930

IMPATIENS PLANT

Claude Hope and Rafael Angel Montoya Murillo, Cartago, Costa Rica, assignors to Goldsmith Seeds Inc., Gilroy, Calif.

Filed June 16, 1975, Ser. No. 587,439

Int. Cl.² A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinctive cultivar of *Impatiens sultani*, substantially as herein shown and described, characterized particularly as to novelty by its large, highly double flowers and distinct bright clear rose color.

PATENTS

GRANTED JUNE 29, 1976

ERRATA

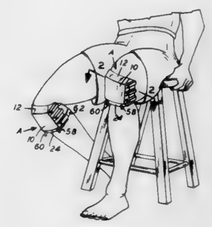
For CLASS	See PATENT NO.
272-104	3,965,507
084-077	3,965,794
151-005	3,965,954
052-753	3,965,958
104-275	3,965,967
043-021.2	3,966,151
061-013	3,966,233
308-235	3,966,284
162-013	3,966,540
260-429 R	3,966,595
526-306	3,966,689
526-283	3,966,690
526-078	3,966,691
526-020	3,966,692
526-075	3,966,693
526-011.2	3,966,694
526-062	3,966,695
526-199	3,966,696
526-093	3,966,697
252-465	3,966,790
261-064 R	3,966,854
261-092	3,966,859
424-052	3,966,863
260-668 D	3,966,895
195-103.7	3,966,896
423-112	3,966,909
264-118	3,966,912
424-317	3,966,978
252-500	3,966,987
423-626	3,966,996
340-415	3,967,281
357-038	3,967,294
357-051	3,967,295
357-080	3,967,296

PATENTS

GRANTED JUNE 29, 1976

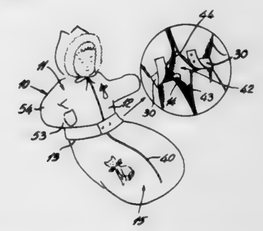
GENERAL AND MECHANICAL

3,965,486
PNEUMATIC KNEE PAD
Charles S. Lightbody, 125 W. Third St., Duluth, Minn. 55802
Filed Feb. 5, 1975, Ser. No. 547,209
Int. Cl.² A41D *13/06*
U.S. Cl. 2—24 **1 Claim**



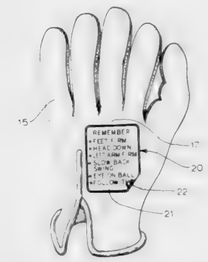
1. A pneumatic knee pad comprising:
a. a main hollow body portion including spaced side walls connected to
b. a front wall and
c. a rear wall spaced from said front wall,
d. a top wall connected to said side walls and said front and rear walls and
e. a bottom wall connected to side walls and said front and rear walls,
f. a central wall connected internally of said front and rear walls and said top and bottom walls dividing said hollow body into first and second chambers,
g. a plurality of spaced hollow fingers extending at substantially right angles from and communicating with the first chamber,
h. a plurality of hollow fingers extending at substantially right angles from and communicating with the second chamber,
i. means for attaching the pad to the knee of a user, and
j. means for inflating each of said first and second chambers with air which also inflates said communicating fingers, the air in the chambers is being forced into the fingers when the chamber is deformed to hold the knee joint parts together.

3,965,487
MULTI-USE INFANT GARMENT
Adella Mazur, 9 Holtham St., Hampstead H3X 3N2, Canada
Filed Dec. 13, 1974, Ser. No. 532,642
Int. Cl.² A41D *11/00, 15/04*
U.S. Cl. 2—69.5 **1 Claim**



1. A multi-use infant garment comprising an upper garment having at least a chest section and a back section, said upper garment defining a lower edge, a lower garment, said lower garment being detachably secured to said upper garment by a slide fastener consisting of two interlocking bands each having interlocking elements in an elongated edge thereof, a slide housing for causing engagement and disengagement of said interlocking elements in opposed bands, one of said bands being secured to said upper garment in the vicinity of said lower edge and the other of said bands being secured in an upper edge of said lower garment, said band secured to said inner surface of said upper garment being spaced inwardly from said lower edge to define a marginal band portion between said lower edge and said fastening means, said marginal band extending over and concealing said slide fastener, said upper garment having a closeable vertical opening extending from adjacent said lower edge to a neck opening, a second slide fastener for closing said vertical opening, said marginal band portion defining a belt portion extending beyond a vertical edge of said vertical opening whereby to overlap the band portion terminating at the opposed vertical edge of said vertical opening, and means to secure said overhanging belt portion to an outer surface portion of said band portion, said lower garment comprising a lower bag-like garment having an upper edge secured to said upper garment by said slide fastener, a closeable opening in said bag-like garment and extending substantially transverse to said upper edge and depending therefrom, said closeable opening being aligned with said closeable vertical opening of said upper portion and also closeable by a third slide fastener, all of said slide fasteners having an end terminating substantially centrally on the front of said infant garment whereby the garment sections can be detached from a central location in front of the garment where the slide housings meet, said upper garment being further provided with arm portions, said arm portions having a hand opening, at least one fastener secured adjacent said hand opening to retain a mitten about said hand opening, and a hood about a portion of a neck opening.

3,965,488
GOLF AID
Jeno F. Paulucci, 6 Minneapolis Ave., Duluth, Minn. 55806
Filed June 5, 1974, Ser. No. 476,428
Int. Cl.² A41D *19/00*
U.S. Cl. 2—161 A **2 Claims**



1. A golf glove for the left hand of a righthanded golfer or the right hand of a lefthanded golfer, constructed wherein:
a. said glove has a relatively smooth back which, when the golfer grips the golf club properly and addresses the ball, includes a portion immediately to the rear of the golfer's thumb and forefinger facing upwardly toward the golfer's eyes,
b. a strip of flexible material elongated on one axis,
c. indicia in the form of instructive words or phrases provided on one side of said strip extending transversely of said axis so that they can be read easily and accurately

only with the golfer's eyes looking along said axis from one end of said strip, and

d. means on the other side of said strip for releasably fastening said strip to said back portion with said axis of said strip extending upwardly from and generally parallel to the golfer's index finger,

e. said strip normally being fastened to said back portion with said one end of said strip being disposed away from the index finger and toward the golfer's eyes.

3,965,489

ENDOPROSTHETIC BONE JOINT DEVICE FOR THE TALO-NAVICULAR JOINT

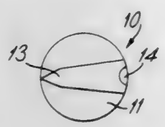
Michael Alexander Reykers Freeman, London; Geoffrey Edward Kempson, Flackwell Heath, and Michael Anthony Tuke, Sutton, all of England, assignors to National Research Development Corporation, London, England

Filed Apr. 9, 1975, Ser. No. 566,431

Claims priority, application United Kingdom, Apr. 11, 1974, 16182/74

Int. Cl.² A61F *1/24*

U.S. Cl. 3—1.91 **6 Claims**



1. An endoprosthetic talo-navicular joint device comprising: a talar component in the form of a disc having one face convexly curved to define a bearing surface, and the other face provided with a relieved configuration of elongated shape across such face but relatively shallow depth, said configuration including a rib which is longitudinally convergently tapered towards one end thereof and extends across said other face; and a navicular component of similar form to said talar component, but with the bearing surface of the former being concave and generally complementary to that of the latter for mutual articulatory bearing engagement therebetween.

3,965,490

FEMORAL INSERT FOR HIP JOINT PROSTHESIS

Ian P. Murray, Hewitt, and Mark R. Forte, Pinebrook, both of N.J., assignors to Howmedica, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 523,926, Nov. 14, 1974, abandoned. This application Oct. 6, 1975, Ser. No. 619,622

Int. Cl.² A61F *1/24*

U.S. Cl. 3—1.913 **28 Claims**



1. A femoral insert for a hip joint prosthesis comprising a spherical head, a longitudinally tapered stem adapted for insertion within the femur connected to said spherical head, a neck connected to said spherical head, a collar disposed between said neck and said stem for limiting the insertion of said stem within said femur, said stem having a curved proximal axis and a straight distal axis merging into each other to constitute a bent major axis disposed in an axial plane, said stem having throughout its proximal length substantially ellipsoidal transverse cross-sections with longer sides than widths disposed substantially parallel to said axial plane, said ellipsoidal cross-sections being disposed substantially perpendicular to said bent major axis, at least one curved teardrop-shaped depression disposed symmetrically about a lateral extension of said curved proximal axis in each of said sides, said depression tapering from a maximum width at the proximal end to a convergent tail at the distal end, the proximal and distal sides of said stem tapering in width uniformly from the proximal to distal ends of said stem, and the bases of said curved teardrop-shaped depressions in said sides being disposed substantially parallel to each other at a distance from each other which merges smoothly with the tapering outsides of said distal end and is not less than the width of the distal end adjacent said tail of said depression.

3,965,491

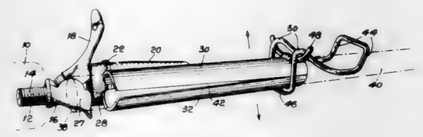
PROSTHETIC DEVICE FOR HOLDING GOLF CLUBS

William K. Frenzel, 151 Rte. 206, Bldg. 8, Apt. 3, Flanders, N.J. 07836

Filed Jan. 7, 1976, Ser. No. 647,058

Int. Cl.² A61F *1/06*

U.S. Cl. 3—12.8 **8 Claims**



1. A prosthetic arm device comprising:

a base member adapted to be coupled to a prosthetic arm socket member, said base member including a mounting member, a shaft extending from said mounting member and adapted to be detachably secured to said arm socket member, a control lever pivotably secured to said mounting member, a pair of adjacent support members extending respectively from said control lever and said mounting member, and resilient means urging said control lever and said support members to maintain a closed position;

a pair of tapered tubular sleeve sections secured to and extending longitudinally from respective said support members, said control member being adapted to open said sleeves against the force of said resilient means to receive a handle of a club therebetween, said sleeves being adapted to engage said handle upon return to said closed position; and

locking means on said sleeves to fixedly clamp said sleeve sections together around said handle.

3,965,492

ELECTRIC FLUSHING TOILET BOWL

Victor P. Hendricks, c/o G. F. Gibbs, 1850 Bel-Aire Road, Los Angeles, Calif. 90024

Filed Aug. 12, 1974, Ser. No. 496,520

Int. Cl.² E03D *5/012*

U.S. Cl. 4—79 **8 Claims**

1. In an electric flushing toilet bowl having a top rim opening and a bottom outlet connection with a drain line trap, the improvement comprising:

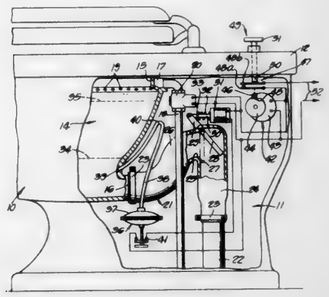
a. means for admitting a flushing fluid to the bowl adjacent the top rim opening, said means having a connection with a fluid source;

b. normally closed first valve means for controlling said fluid source connection;

c. normally open second valve means for controlling the outlet connection of said bowl;

d. manually operable switching means for initiating a flushing operation; and

e. means for controlling actuation of said first and second valve means, including electric timing means having an energizing circuit controlled by said switching means and being energizable in response to the operation of said switching means, for effecting a cycle of sequential operations as follows:



1. to open said first valve means and close the second valve means so as to provide a raised fluid level in said bowl,

2. to open said second valve means in response to the raised fluid level in said bowl so as to utilize the fluid at the raised fluid level in the bowl for flushing the bowl, and

3. after a time interval close the first valve means.

3,965,493

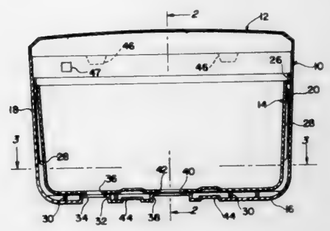
WATER CLOSET TANK

Richard A. Bemis, Sheboygan, Wis., assignor to Bemis Manufacturing Company, Sheboygan, Wis.

Filed Mar. 12, 1975, Ser. No. 557,706

Int. Cl.² E03D *1/20, 11/00, 1/01*

U.S. Cl. 4—18 R **15 Claims**



1. A water closet tank for toilets, comprising: tank means formed of a thin, rigid, high-impact strength plastic, including a generally-rectangular, open-topped tank and a cover therefor; and liner means formed of a thin plastic having a substantially greater pliability than said plastic of said tank means, including a generally-rectangular, open-topped liner having overall dimensions sufficiently less than those of said tank to fit within said tank and form an air space between the bottoms and side walls of said liner and said tank and an upper rim extended outwardly and offset from the remaining portion of said liner a sufficient distance to contact the inside of said side walls of said tank, said pliability of said liner being sufficient to form a nearly air-tight seal between said upper rim of said liner and said inside of said side walls of said tank.

3,965,494

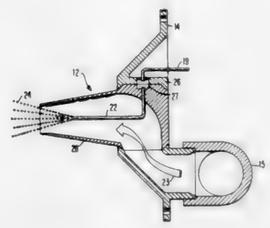
REDUCED LIQUID CONSUMPTION CLEANING APPARATUS

Larry K. Baker, Mokelumne Hill, Calif.

Continuation of Ser. No. 281,216, Aug. 16, 1972, abandoned. This application June 28, 1974, Ser. No. 484,076

Int. Cl.² A61H *33/02*

U.S. Cl. 4—145 **15 Claims**



1. A reduced liquid consumption cleaning system, comprising:

Means for supplying a cleaning liquid under pressure;

Means for supplying a gas under pressure;

An enclosure for containing a surface to be cleaned,

Means connected to said liquid supply means and said gas supply means for entraining droplets of said cleaning liquid on a stream of said pressurized gas, said entraining means comprising:

a first passageway for said pressurized gas;

a second passageway for said cleaning liquid, said second passageway being substantially parallel to said first passageway in said entraining means to provide an effective cleaning spray with reduced liquid consumption in said enclosure; and

Means connected between said enclosure and said gas supply means for recirculating a portion of said stream of pressurized gas.

3,965,495

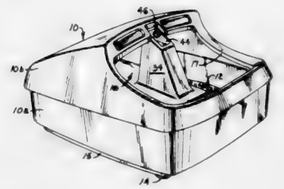
HYDROTHERAPY FOOT TUB HAVING HEATING AND MASSAGING MEANS

Samuel L. McNair, Kansas City, Mo., assignor to Dazey Products Company, Kansas City, Mo.

Filed June 2, 1975, Ser. No. 582,777

Int. Cl.² A47K *3/022, 3/10*

U.S. Cl. 4—182 **7 Claims**



1. Foot tub apparatus comprising:

a casing presenting a tub for receiving and containing liquid, said tub having a floor with foot spaces;

a heater housing supported between said foot spaces, said housing including generally upright walls extending upwardly from said floor and a top panel spaced above said floor, said walls and top panel cooperating to define a substantially enclosed chamber;

a heating element operable to emit heat;

a container member constructed of heat conducting material and lesser in size than said heater housing so that the exterior of said container member is spaced from the

walls and top panel of said housing, said container member having said heating element therein; and

means for mounting said container member within said heater housing.

3,965,496

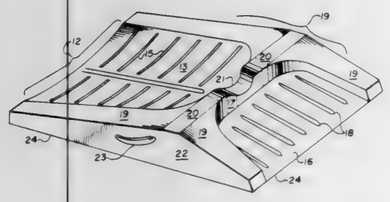
PORTABLE BABY BATHING AND SHAMPOOING TRAY

Georgia I. Grelle, 211 Vista Ave., Round Rock, Tex. 78664

Filed Dec. 9, 1970, Ser. No. 96,528

Int. Cl.² A47K *3/12*

U.S. Cl. 4—185 B **1 Claim**



1. An improved portable baby bathing and shampooing tray adapted to rest on a substantially flat surface, including drain provisions, said tray comprising:

A. a base perimeter adapted to rest on a substantially flat surface;

B. an inclined body supporting and drainage ramp, said body supporting and drainage ramp

1. occupying about two-thirds of the length of the tray,

2. being inclined upwardly from its outside lower extremity to an elevated ridge lying transversely across the tray at an intermediate point in the length of the tray,

3. having a longitudinal concave body receiving depression along the center of said body supporting and drainage ramp, and

4. having a longitudinally positioned drainage groove positioned down the center of said concave body depressions;

C. a head supporting and shampooing drainage ramp longitudinally spaced apart from said body drainage ramp, said head supporting and shampooing drainage ramp

1. occupying almost one-third of the length of said baby bathing tray,

2. inclined downwardly from a transverse ridge lying across an intermediate point in the length of the tray to an open end of the tray,

3. being bounded by a generally U shaped shallow vertical wall defining the outer perimeter of three sides of said head drainage ramp, and

4. a plurality of water run off guides lying parallel with the length of said head drainage ramp to guide liquids to the open end of said head drainage ramp;

D. a generally H shaped structure forming an elevated perimeter around three sides of each of the longitudinally spaced ramps with an elevated transverse ridge occupying the space between the upper ends of the two inclined spaced apart ramps and a concave neck receiving depression being provided in the transverse ridge portion of said perimeter structure;

E. inwardly inclined side walls rising from the base of the tray to enclose the left and right longitudinal sides of said trays and supporting the outside edge of said H shaped perimeter structure; and

F. hand hold carrying means comprising shaped openings being provided in each of the side walls of said improved baby bathing and shampooing tray.

3,965,497

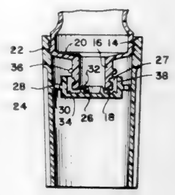
TOILET CHEMICAL DISPENSER

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Filed June 17, 1975, Ser. No. 587,640

Int. Cl.² E03D *9/02, 9/03*

U.S. Cl. 4—227 **15 Claims**



1. Dispensing apparatus for delivering charges of a liquid product into a toilet flush tank in response to the rise and fall of water level within the tank, comprising:

an enclosed liquid product container having a discharge spout directed downwardly therefrom;

a dispensing closure for said container comprising a sleeve encircling and spaced from said spout and having an upper end connected to said container in substantially fluid tight manner for vertical adjustment relative to said spout;

a metering and sealing cup supported within said sleeve, said cup being normally spaced beneath said spout for Vertical movement with said sleeve into sealing engagement with said spout and including an upstanding wall encircling and spaced from the lower end of said spout;

said sleeve having a downwardly opening lower end projecting below said cup for communication with the water within said tank;

said downwardly opening lower end being in communication with said cup through a passage extending externally of the cup and opening into said cup above the bottom thereof, for exposing the surface of the liquid product within the cup to the air pressure within the sleeve and for discharging overflowing liquid product from the cup by gravity into said tank.

3,965,498

FOLDING BED ASSEMBLY

Miklos Boni, 20717 Vanowen St., Apt. 18, Canoga Park, Calif. 91306

Filed June 20, 1975, Ser. No. 588,794

Int. Cl.² A47C *13/38*

U.S. Cl. 5—6 **7 Claims**

1. An improved folding bed assembly, said assembly comprising, in combination:

a bed frame having an upper portion and a lower portion,

hinge means interconnecting said upper portion and said lower portion,

a mattress supported by said bed frame and adapted to be foldable thereon,

a storage cabinet having interconnected side walls,

at least one elongated lever arm,

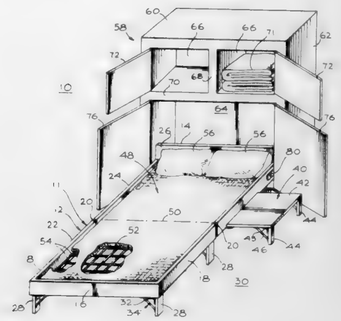
one end of said level arm being pivotally connected to a first side of said upper portion of said bed frame near the top thereof,

the opposite end of said lever arm being pivotally connected to the rear, lower end of one of said side walls,

said lever arm extending generally horizontally at about the level of said bed frame when said bed frame is in an operative position,

whereby the lower portion of the bed frame is adapted to be folded over the upper portion of said bed frame with the folded mattress therebetween to result in a compacted bed assembly having about one half the length of the bed frame in its operative position,

wherein said compacted bed assembly is adapted to be moved into a substantially vertical position and located



between said side walls by movement of one end of said level arm upward and towards said walls in an arcuate path extending about the pivot point of the opposite end of said lever arm and said one of said side walls,

whereby said bed assembly is stored between said side walls.

3,965,499

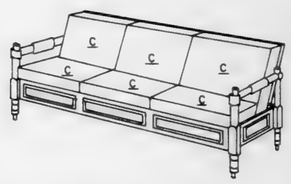
CONVERTIBLE SOFA

John M. Dunning, III, Greensboro, N.C., assignor to Dunning Ltd., East Sanford, N.C.

Filed Apr. 18, 1975, Ser. No. 569,469

Int. Cl.² A47C *17/14*

U.S. Cl. 5—13 **4 Claims**



1. A convertible sofa comprising:

a. a sofa frame including a front board and end walls extending rearwardly therefrom;

b. a bed frame mounted within said sofa frame behind said front board and between said end walls and comprising at least an upper and lower spring section hinged together along corresponding longitudinal edges adjacent said front board;

c. said spring section being movable with relation to each other between a folded, sofa position and an open, bed position;

d. said upper and lower spring sections, in said sofa position, being folded closely adjacent each other in flat, overlying relationship behind and beneath the upper edge of the front board;

e. an elevating means connecting said upper and lower spring sections for raising said lower spring section above the upper edge of said front board said elevating means including a lever means supported by said sofa frame pivotally attached to said lower spring section and movable between a lowered position and an upstanding position, and an activating means connecting said lever means with said upper spring section for activating said lever means responsive to unfolding of said upper spring section.

3,965,500

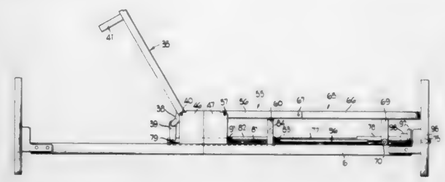
ADJUSTABLE BED WITH AUTOMATIC KNEE BREAK

William H. Stein, Jr., Batesville, Ind., assignor to Hill-Rom Company, Inc., Batesville, Ind.

Filed Mar. 20, 1975, Ser. No. 560,224

Int. Cl.² A47C *3/32*

U.S. Cl. 5—68 **12 Claims**



1. In an adjustable bed of the type having a movable head portion, head adjusting means coupled to said head portion for moving said head portion, and a movable knee portion, the improvement comprising knee adjusting means connected to said head adjusting means, having an active configuration and an inactive configuration and movable between said active and inactive configurations for, when in said active configuration, raising said knee portion above the flat position during at least a part of the time said head adjusting means moves said heat portion, said knee adjusting means not moving said knee portion when in said inactive configuration, and shifting means for moving said knee adjusting means between said active and inactive configurations, wherein said knee adjusting means includes a cam and a follower and said cam, when said knee adjusting means is in said active position and moving said knee portion, presses against said follower, said cam being connected to said head adjusting means and said cam follower is connected to said knee portion, said head adjusting means includes an elongated member moving translationally when said head adjusting means moves said head portion, and said cam connects to said elongated member, said cam, when said knee adjusting means occupies said active configuration, has rotational separation from said follower when said knee adjusting means occupies said inactive configuration, and said shifting means rotationally moves said cam, retaining means for holding said knee adjusting means in said active configuration until said shifting means moves said knee adjusting means out of said active configuration when said shifting means moves said knee adjusting means in said active configuration, said head adjusting means includes hand crank means manually rotatable for moving said elongated member translationally, and wherein said cam, when said knee adjusting means is in said inactive configuration, does not touch said cam follower, said knee portion, or said head portion.

3,965,501

BED INTENDED FOR USE BY SICK AND INVALID PERSONS

René Bucher, Stockackerstrasse 17, CH - 4153 Reinach, Switzerland

Filed Mar. 24, 1975, Ser. No. 561,640

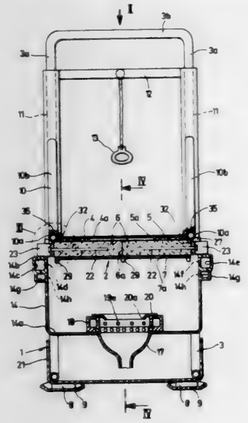
Claims priority, application Switzerland, Apr. 5, 1974, 4776/74

Int. Cl.² A47K *3/12*; **A61G** *7/02*

U.S. Cl. 5—90 **8 Claims**

1. A bed intended for use with sick and invalid persons, comprising a bed frame, bed cushion means provided for the bed frame, said bed frame including a vertically adjustable support frame, said bed cushion means comprising a cushion element and an upper portion arranged above the cushion element and supported by the vertically adjustable support frame, displacement means for the cushion element, said displacement means serving to displace the cushion element out of the region of said upper portion and to again bring such below such upper portion, said bed frame being equipped with

a trough provided with a closable discharge, the upper portion of the bed cushion means can be lowered into said trough when the cushion element has been removed out of the region of the upper portion, said cushion element comprises two components extending essentially in the lengthwise direction of the bed, said two components being separated by a substan-



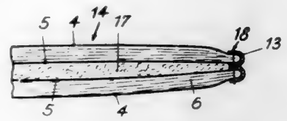
tially vertically extending separation surface, the bed frame having a head end and a foot end, the cushion element-displacement means being provided at both the head end and the foot end with a respective guide member secured to the bed frame and extending in the transverse direction of the bed, and guide elements connected with the cushion element-components displaceably guided in said guide members.

3,965,502
FOLDING COT
Wallace H. Bertram, La Crescenta, Calif., assignor to Goode Products, Inc., Vernon, Calif.
Filed Oct. 15, 1974, Ser. No. 514,716
Int. Cl.² A47C *17/68, 17/70*
U.S. Cl. 5—111 **1 Claim**



1. A folding cot comprising:
a pair of side rails, each side rail having at least two sections, the sections of each side rail being interconnected in a manner permitting folding of each side rail at least in half;
a flexible body-supporting sheet connecting said side rails; and
a plurality of support members located beneath said side rails and said body-supporting sheet and being removably connectible thereto for supporting said side rails and said body-supporting sheet in a horizontal plane, each of said support members comprising:
a pair of legs, the upper end of each leg being removably connectible to one of said side rails, the lower end of each leg being adapted to contact a horizontal support surface, each of said legs of each of said support members being laterally offset at a point intermediate the opposite ends thereof, the ends of each leg on opposite sides of said offset portion being parallel, the upper ends of the legs of each support member being spaced by an amount less than the spacing between the lower ends thereof when said legs are connected to said side rails;
a reinforcing bar positioned between said legs; and
a pair of identical hinges connecting the ends of said reinforcing bar to said legs, each of said hinges comprising a bifurcated portion defining a pair of arms, the ends of said arms being pivotably connected to said legs adjacent the lower ends of said offset portions of said legs, said legs being positionable in first positions in which said legs are essentially parallel to each other and perpendicular to said reinforcing bar, said hinges preventing movement of said upper ends of said legs toward each other beyond said first positions, said arms straddling said offset portions of said legs when said legs are in said first positions with said upper ends of said offset portions resting against said ends of said reinforcing bar, thereby stabilizing said legs against both horizontal and vertical rotation relative to said reinforcing bar, said hinges permitting, upon removal of said upper ends of said legs from said side rails, pivotable movement of said legs relative to said reinforcing bar, in opposite directions, through angles of approximately 90°, said lower ends of said legs moving toward each other to second positions in which said legs and said reinforcing bar are essentially parallel, the overall length of said support member with said legs in said second positions being approximately equal to the length of each section of said side rails.

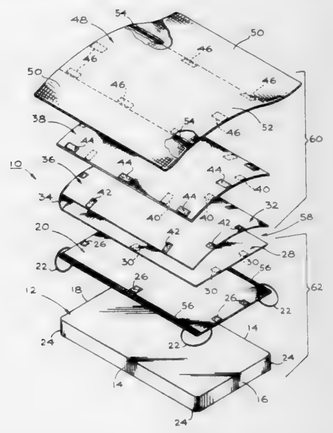
3,965,503
METHOD OF PRODUCING AN ABSORBENT, WASHABLE, PROTECTIVE MATTRESS SHEET AND A SHEET PRODUCED THEREBY
Joseph Y. Gridel, 59-Saint Souplet, France
Filed Nov. 7, 1974, Ser. No. 521,827
Int. Cl.² B32B *7/08*
U.S. Cl. 5—334 R **29 Claims**



1. A method of producing a protective sheet comprising two outer layers protecting an inner layer of fibers, the outer layers being joined by stitching, one of the faces of the protective sheet being waterproofed after the sheet has been stitched together, this method being characterized in that the inner layer comprises a felt made of waterproof synthetic fibers or superposed layers of waterproof synthetic fibers oriented essentially in the same direction and in that this inner layer is loosely joined by a bonding agent thus producing bonds directed essentially perpendicularly to said outer layers such that the sheet remains distended, in that the outer layers are placed on each of the faces of the inner layer, one of the outer layers comprising a mesh the spacing of which is at least 0.4 mm, in that the joining stitches are spaced apart by at least 2 cm, and in that one of the faces of the other one of the outer layers is waterproofed by a process during which the temperature is kept lower than the polymerization temperature or softening temperature of the bonding agent.

9. A protective sheet produced according to the method claimed in claim 1, characterized in that the inner layer has a high retention capacity for water, the lower waterproofed layer and the upper layer consisting of waterproof protective sheets having a loose weft to facilitate the passage of liquids from the upper layer into the inner layer.

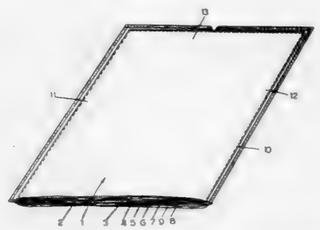
3,965,504
BEDDING ASSEMBLY
Phillis Ainsworth, 18500 Mayall St., Apt. D, Northridge, Calif. 91324
Filed May 1, 1975, Ser. No. 573,479
Int. Cl.² A47G *9/00*
U.S. Cl. 5—334 C **10 Claims**



1. An improved bedding assembly, comprising, in combination,
a mattress,
sheeting means having top and bottom portions,
heat insulating means,
means releasably interconnecting said top and bottom portions and heat insulating means in a stacked, non-slip relation along interconnection lines adjacent two opposite long sides thereof,
said top and bottom portions of said sheeting means being connected at the foot end thereof but not the head end thereof,
wherein the width of said bottom portion of said sheeting means between said interconnection lines is substantially the same width as the width of said mattress, and
wherein the width of said upper portion of said sheeting means and said insulating means between said interconnection lines is substantially greater than the width of said lower portion of said sheeting means,
whereby a body-receiving open sleeping pocket is formed between the top and bottom portions of said sheeting means.

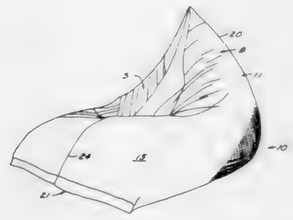
3,965,505
SLEEPING BAGS
Sydney William Thorowgood, Auckland, New Zealand, assignor to General Sports Manufacturing Limited, Auckland, New Zealand
Filed Dec. 17, 1974, Ser. No. 533,685
Int. Cl.² A47G *9/00*
U.S. Cl. 5—343 **4 Claims**

1. A sleeping bag comprising:
a first bottom panel;
a second top panel overlying said first panel;
said first and second panels being permanently joined at adjacent side and foot edges thereof, adjacent head edges of said first and second panels being unjoined to form an entrance to a double sleeping compartment between said first and second panels;
said first and second panels being foldable in half such that first of said permanently joined side edges are adjacent second of said permanently joined side edges, and such that said second top panel is folded to form a double-layer inner member and said first bottom panel is folded over said inner member to form an outer member; and
connecting means, attached to at least said first and second permanently joined side edges, for selectively connecting



said first and second permanently joined side edges when said panels are folded and for thereby forming a single sleeping compartment between the layers of said inner member.

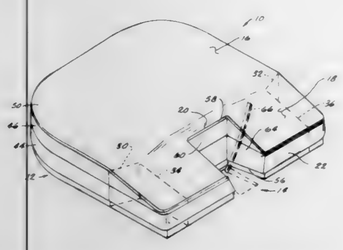
3,965,506
FURNITURE CONSTRUCTION
Robert J. Marks, 210 Johnson Ferry Road, Atlanta, Ga. 30328
Filed Mar. 4, 1975, Ser. No. 555,168
Int. Cl.² A47C *23/00, 27/00*
U.S. Cl. 5—345 R **4 Claims**



1. An article of furniture adapted to be supported on a supporting surface comprising:
a cover including an elongate rectilinear piece of flexible material having strength only in tension folded back over itself midway its length so that the opposed ends of the material overlie each other to form an overlapped end where the opposed ends of the material overlie each other and a folded end opposite the overlapped end where the material is folded, the opposed overlying side edges of the material attached together along their lengths to form opposed, generally parallel side seams and the overlying ends of the material attached together at the overlapped end so that the opposed side seams overlie each other at the overlapped end to form a cushion chamber therein; and,
a resilient cushion material having sufficient structural integrity to maintain the general shape of the article of furniture when a weight is imposed thereon corresponding to the general shape of the article of furniture when the weight is removed therefrom, filling said cushion chamber so that when the article of furniture is placed on the supporting surface so that the overlapped end is generally parallel to the supporting surface and the folded end is generally normal to the supporting surface and, alternatively, if the overlapped end is generally normal to the supporting surface and the folded end is generally parallel to the supporting surface, a seat with a back rest is formed, said cushion material including a first prescribed portion of ground flakes of expanded plastic

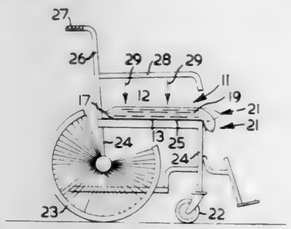
material and a second prescribed portion of shredded foam rubber mixed together.

3,965,507
ATHLETE'S LANDING PIT CUSHION
Harold P. Reiland, Wichita, Kans., assignor to The Langdon Corporation, Wichita, Kans.
Filed Feb. 3, 1975, Ser. No. 546,268
Int. Cl.² A47C *27/08*
U.S. Cl. 272—104 **5 Claims**



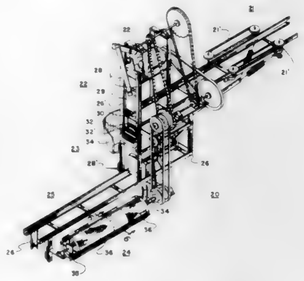
1. An athlete's landing pit cushion, comprising:
a. a cushion unit having a relatively smooth top portion, a portion of said top portion inclined downwardly; and
b. an essentially rectangular upright notch in an edge portion of a side of said cushion unit, said notch portion having opposed sides and a back, said sides and said back inclined upwardly and outwardly relative to the vertical, the upper portion of said notch opening to said inclined top portion of said cushion unit, horizontal lines through the plane of said back of said notch essentially parallel to horizontal lines through the plane of said edge portion of said cushion unit, said sides of said notch divergent from said back toward the edge portion of said cushion unit;
said landing pit cushion is constructed and adapted to be used in a pole vault pit or the like wherein said notch is placed at the pole resting end portion of a pole vault box or the like.

3,965,508
SEATING CUSHION
Ronald Bruce Hunter, 47 Cedar St. South, Timmins, Ontario, Canada (P4N 2G5)
Filed Apr. 14, 1975, Ser. No. 567,871
Claims priority, application Canada, Jan. 24, 1975, 218623
Int. Cl.² A47C *27/08*
U.S. Cl. 5—368 WB **5 Claims**



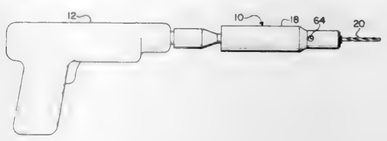
1. A cushion for use as a seating cushion for invalids on wheel chairs or the like, made from a flexible, fluid impervious sheet material, comprising:
an airtight hollow seat portion;
a hollow tongue portion in conduit communication with the said hollow seat portion and extending therefrom beyond the proposed seating area into the space intended for the invalid's legs and
a closeable orifice in communication with the said hollow tongue and seat portions, whereby when the said cushion with said hollows filled with a fluid at ambient pressure is laid upon the seat of a chair leaving said tongue portion to depend downwardly in a seat unoccupied state, a person's weight subsequently occupying said cushion expresses an amount of fluid into said tongue portion to lift it into a horizontal position to assist in separation of the legs of the invalid.

3,965,509
LEAF CUTTER BEE LARVAE EXTRACTING DEVICE
Theodore C. Barber, P.O. Box 5, Orovada, Nev. 89425
Continuation of Ser. No. 574,079, May 2, 1975, abandoned.
This application July 21, 1975, Ser. No. 597,721
Int. Cl.² A01K *51/00*
U.S. Cl. 6—12 A **9 Claims**



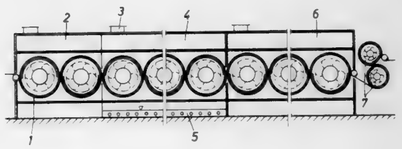
1. An apparatus for cleaning bee culture frames of the type having slots for frames, which are formed into blocks by aligning said frames, comprising:
a suitable framework;
an in-feed ramp carrying said blocks to a vertically disposed channel provided on said framework, said channel providing means for controlling forward movement of said block on said ramp and providing means for conducting frames separated from said block downwardly;
a board-breaker assembly comprising a blade reciprocating vertically in a channel disposed parallelly to said frames with the contact face of said blade being disposed at a pre-determined position to operate at the upper edge of the forwardmost frame in said block; and
a board-cleaning assembly disposed distally below said board-breaker assembly along said vertical channel, said cleaning assembly having means for removing larvae and the like from said frames, and a reassembly and off-feed assembly including an off-feed conveyor disposed below said cleaning assembly at the lowermost portion of said channels, said channels being provided with means rectilinearly aligning said frames into said block.

3,965,510
COMBINATION DRILLING AND WRENCHING TOOL
Richard John Ernst, Palatine, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Continuation-in-part of Ser. No. 575,922, May 9, 1975, abandoned. This application Sept. 15, 1975, Ser. No. 613,136
Int. Cl.² B25F *3/00*
U.S. Cl. 20—7 **20 Claims**



1. A tool for drilling a hole in a workpiece and setting a screw-type fastener therein, including a rotatable mandrel with a first extremity including means to removably secure a drill bit in coaxial arrangement therewith and a second extremity having torque transmitting surfaces formed thereon, a generally cylindrical body having a through bore, the body thereby telescopically and axially slidably mounted on the mandrel, a sleeve member mounted on the body for rotation relative thereto, stop means interacting between the sleeve and the body preventing free axial movement of the sleeve relative to the body but permitting relative rotation therebetween, the body having first and second extremities respectively associated with the first and second extremities of the mandrel, the first extremity of the body including a wrenching socket means formed thereon, the second extremity of the body having spring means mounted thereon cooperating with groove means on the mandrel to selectively retain the mandrel in a retracted position relative to the body, axial recess means formed at the extremity of the tool associated with the first extremities of the body and mandrel, the recess means extending for a predetermined axial dimension from the terminal extremity of the wrenching socket means and having an internal transverse dimension greater than the transverse dimension of the wrenching socket means.

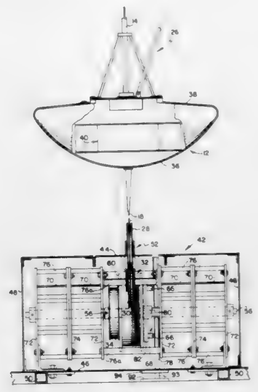
3,965,511
PROCESS FOR CONTINUOUS HEAT-SETTING AND SHRINKING OF SYNTHETIC FIBERS
Heinz Fleissner, Egelsbach near Frankfurt am Main, Germany, assignor to Vepa AG, Switzerland
Filed Apr. 11, 1973, Ser. No. 350,090
Claims priority, application Germany, Apr. 14, 1972, 2218035
Int. Cl.² D06B *3/04, 3/02, 21/00*
U.S. Cl. 8—149.1 **14 Claims**



1. A process for continuous heat-setting and shrinking of synthetic fibers in the form of yarns with a twist and synthetic fibers in the form of tows with a forced crimp by a heated fluid medium, characterized in that the synthetic fibers in at least one of said forms, in a two-step continuous procedure, are treated initially in a heated fluid medium selected from the group consisting of hot water at temperatures just below 100°C., saturated steam, and slightly superheated steam, and the synthetic fibers are immediately thereafter treated in a second heated fluid medium selected from the group consisting of air, superheated steam, and a superheated steam-air mixture at high temperature conditions between 150°C. and 250°C.

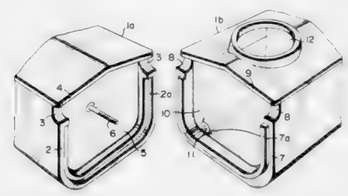
3,965,512
PRECISE NAVIGATION BUOY
Derek J. Bennett, Thousand Oaks, and Leslie G. Bullen, Westlake Village, both of Calif., assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Feb. 10, 1975, Ser. No. 548,552
Int. Cl.² B63B *21/52*
U.S. Cl. 9—8 R **15 Claims**

1. For use in resiliently mooring a buoy deployed on a water surface with said buoy subject to ambient forces and having a cable extending between said buoy and an anchor as said anchor descends toward the water floor, the improvement comprising:
a drum with a portion of said cable wound on said drum,
first means rotatably supporting said drum to enable said cable to unwind from drum in response to the descent of said anchor toward said floor,
tensed resilient means having a force stored therein,
second means operable for applying the force stored in said resilient means to said cable in opposition to said ambient forces,
and third means carried by said anchor for engagement with said floor and automatically operated in response to said engagement to operate said operable second means for



applying the force stored in said resilient means to said cable in opposition to ambient forces on said buoy, and
in which said means rotatably supporting said drum include a shaft in said anchor rotatably supporting said drum in said anchor, and said resilient means comprises a power spring spirally wound about said shaft and having an inner radial end secured to said shaft and an outer radial end secured against movement relative said anchor whereby said spring is tensed in response to rotation of said shaft in one direction.

3,965,513
SECTIONAL BOAT STRUCTURES
Kotaro Horiuchi, Hamamatsu, Japan, assignor to Yamaha, Hatsudoki Kabushiki Kaisha, Japan
Filed Feb. 7, 1975, Ser. No. 547,929
Claims priority, application Japan, Feb. 9, 1974, 49-16665
Int. Cl.² B63B *7/04*
U.S. Cl. 9—25 **13 Claims**



1. A boat structure having longitudinally extending body means which includes a first body section having a first mating end portion at its rear end, a second body section having a second mating end portion at its front end, said first and second body section having at the respective mating end portions abutting peripheral edge means which are in abutting engagement with each other when the body means is assembled, said abutting peripheral edge means on the first and

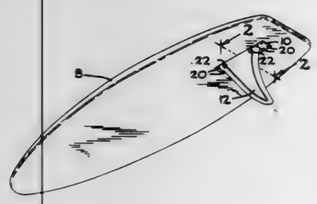
second body sections having mutually engagable groove means and projection means, first connecting member means in the first body section and extending substantially radially inwardly from the peripheral edge means thereof, second connecting member means in the second body section and extending substantially radially inwardly from the peripheral edge means thereof, said first and second connecting member means being axially offset from the abutting peripheral edge means in the first and second mating end portions, respectively, so that the first and second connecting member means are spaced from each other when the abutting edge means of the first and second mating end portions are put into abutting engagement with each other, and means for connecting said connecting member means together.

3,965,514

ADJUSTABLE AND/OR REMOVABLE FIN FOR SURFBOARDS

Arthur B. Shafer, 109 Coalinga Way, Santa Cruz; James E. Richardson, 1425 Trout Gulch Road, Aptos, both of Calif. 95003, and Jay L. Shuirman, 101 24th Ave., Santa Cruz, Calif. 95060

Filed Jan. 30, 1975, Ser. No. 545,762
Int. Cl.³ A63C *15/00*
U.S. Cl. 9—310 E **5 Claims**



1. A removable fin unit for a surfboard which comprises a fin having integral fillets at opposite sides of its base and arranged to abut the bottom of the surfboard, and

means for removably joining said fillets to said surfboard, said joining means including a fin holder having the conformation of an open-ended rectangular trough, the sides of which are adapted for insertion into the bottom of surfboard and connection thereto in a position such that the bottom of the trough is substantially flush with the bottom of the surfboard.

3,965,515

BOOT STRETCHER

George H. Moberly, Colorado Springs, Colo., assignor to The Moberly Company, Colorado Springs, Colo.

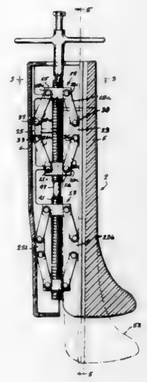
Filed Dec. 30, 1974, Ser. No. 537,362
Int. Cl.³ A43D *5/00*
U.S. Cl. 12—114.6 **6 Claims**

1. Apparatus for selectively stretching portions of a foot boot comprising:

a body generally conforming in its shape to the space within a boot, including a shortened foot portion, said body comprising anterior and posterior halves;

upper and lower expandable connecting means interconnecting the said body halves; and

means selectively engageable with the said upper and lower



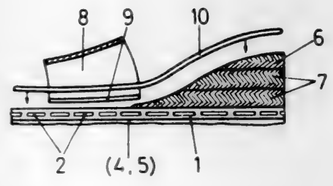
connecting means to expand the said connecting means and spread apart the said body halves.

3,965,516

FOOTWEAR FABRICATION PROCESS

Juan Alvarez Romero, Fray Pedro Balaguer, 25, Elche (Alicante), Spain

Filed July 17, 1974, Ser. No. 489,396
Int. Cl.³ A43D *9/00*; **A43B** *7/06*
U.S. Cl. 12—142 V **3 Claims**



1. A process for fabrication of ventilated footwear of varying sizes comprising the steps of:

a. forming a spiral edged sole of predefined configuration and of cross-stitched dimension cord-like thread;

b. placing said sole in a rubber containing mold of predefined configuration and dimension corresponding to those of said sole;

c. setting said sole to achieve vulcanization of at least a portion thereof;

d. forming a heel having at least an outermost side portion of cross-stiched cord-like thread, and;

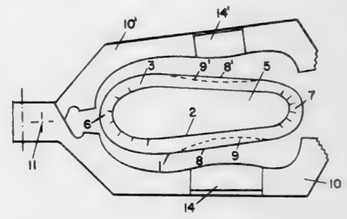
e. joining adhesively said sole and said heel.

3,965,517

METHOD AND DEVICE FOR THE MANUFACTURE OF FOOTWEAR

Horace Ray Auberry, and Anton Liebscher, both of Waynesville, N.C., assignors to Ro-Search, Inc., Waynesville, N.C.

Continuation-in-part of Ser. No. 410,393, Oct. 29, 1973, abandoned. This application Oct. 18, 1974, Ser. No. 515,901
Int. Cl.² A43D *9/00*
U.S. Cl. 12—142 RS **9 Claims**



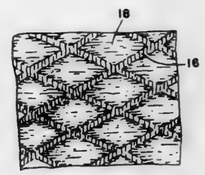
1. The method of manufacture of footwear which includes the steps, in sequence, of placing a prewelted upper upon a last, stringlasting said upper on the last, positioning a lip plate without a side frame in proper relation to the upper, welt and last to position and support the welt into a flat and final position for the finished footwear, locking said lip plate in said position, said last, upper and lip plate constituting a movable unit, and thereafter moving the unit in molding relation to a sole cavity member having a side frame forming the side walls thereof and placing an elastomeric material in the cavity and molding a sole to the welt.

3,965,518

IMPREGNATED WIPER

Erland L. Muolo, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed July 8, 1974, Ser. No. 486,285
Int. Cl.² B32B *29/06*
U.S. Cl. 15—104.93 **21 Claims**



1. A disposable self-polishing wiper for polishing of household surfaces with an emulsion polish, depositing a glossy protective film thereon, comprising:

a cellulosic fibrous web substrate having a basis weight of at least about 40 g./m.², said substrate having a bonding material penetrated into at least one surface thereof in a fine pattern to form bonded web portions of greater strength than adjacent portions not containing said bonding material, said substrate being substantially compressible, said substrate having a liquid capacity of at least about 200% by weight of substrate; and

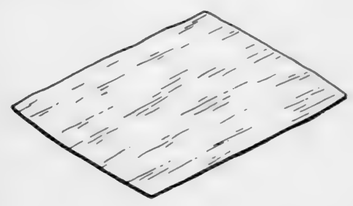
a surface treating liquid composition impregnated in said substrate in a weight ratio range to said substrate of about 1:1 – 3:1, said composition being a substantially wax-free oil-in-water emulsion comprising water and an internal phase consisting essentially of about 4 – 65% by weight of a mineral oil having a viscosity of about 50–250 SSU, silicone fluid in a weight ratio to said mineral oil of about 1:12 – 2.5:1 and having a viscosity of about 50 – 5,000 centistokes, said emulsion having an internal phase of about 4 – 70% by weight of said composition, said substrate being loaded to no more than about 50% of liquid capacity.

3,965,519

DISPOSABLE FLOOR POLISHING WIPE

James F. Hermann, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed July 8, 1974, Ser. No. 486,323
Int. Cl.² A47L *13/17*; **B65D** *85/70*
U.S. Cl. 15—104.93 **15 Claims**



1. A packaged disposable floor wipe adapted to apply a substantially uniform coating of an aqueous coating composition to a floor comprising in combination a flexible non-woven substrate which substrate is substantially compressible having a basis weight within the range of from 40 g/m² to 190 g/m², has a bonding material penetrated into at least 1 surface of said substrate in a fine pattern to form bonded web portions of greater strength than adjacent portions non containing said bonding material, said pattern comprising less than 35% of the total surface area of the web to give said substrate substantial wet strength, and having a liquid capacity sufficient to absorb from 4 to 10 times the weight of said substrate of water and an aqueous floor coating composition selected from emulsion coatings, alkali-soluble coatings and solution coatings, said coating composition having from 5 to 25% non-volatiles, a pH of from 7.0 to 10.0 and including from 5 to 18% by weight of a film-forming polymeric coating agent said coating composition impregnated in said non-woven substrate at a loading of from 3.0:1 to 6.5:1.

3,965,520

BRUSH AND CLEANING COMPOSITION FOR PHONOGRAPH RECORDS

Bruce R. Maier, 2802 Terry Lane, Columbia, Mo. 65201

Division of Ser. No. 260,828, June 8, 1972, abandoned. This application Oct. 15, 1974, Ser. No. 514,430
Int. Cl.² A46B *9/02*, *11/00*; **C11D** *3/48*
U.S. Cl. 15—104.94 **3 Claims**



1. In combination with a cleaning composition comprising a mixture of a surfactant, an emulsifier, an anti-microbe consisting of a fungicide, and a liquid carrier, said composition being used in the cleansing of a phonograph record, a brush comprising a frame member which facilitates grasping by the hand, a cloth means mounted to said frame member, a cushioning means disposed between the exposed surface of said cloth means and the frame member, and the pile of said cloth

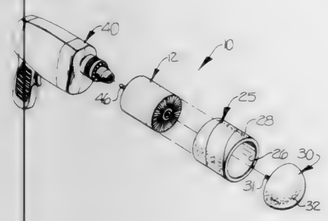
being angularly oriented with respect to the surface of the cloth from which it projects to facilitate the loosening and retention of particles from the record grooves during the cleaning of the phonograph record through the use of said cleaning composition.

3,965,521

CONVERTIBLE MULTI-PURPOSE BRUSH ASSEMBLY

Winnifred A. Wardell, 1312 Biltmore Drive, Charlotte, N.C. 28207

Filed Sept. 19, 1974, Ser. No. 507,274
Int. Cl.³ A46B *13/02*, *15/00*; B05C *17/02*; B24D *9/00*
U.S. Cl. 15—114 13 Claims



1. A convertible multi-purpose brush assembly characterized by providing a multiplicity of working surfaces for a variety of tasks and versatility and ease in conversion for various uses; said brush assembly comprising:

a generally cylindrical, flexible, resilient brush member having a predetermined outside diameter and providing an outside working surface of a predetermined character for performing certain tasks and having at least one substantially unobstructed end;

a desired plurality of sleeve members each defining a hollow, generally cylindrical interior having a predetermined inside diameter less than the outside diameter of said brush member and each providing an outside working surface of a different predetermined character than said working surface of said brush member and different from each other for performing certain different tasks;

said sleeve members being selectively and removably force-fitted one at a time on and around said brush member from said substantially unobstructed end thereof due to the resilience and flexibility thereof and the difference in the diameters to prevent relative displacement between said members during use of said brush assembly and for providing said brush assembly selectively with said outside working surfaces of said sleeve members, while allowing easy replacement of said sleeve members and removal of said sleeve members from said brush member for converting said brush member and selectively providing said brush member with said outside working surfaces of said sleeve members and said brush member; and

a desired number of end cap members selectively and removably secured to the outer longitudinal end portion of said brush member and each having an outside working surface of a predetermined character for performing certain tasks and for providing additional versatility to said brush member.

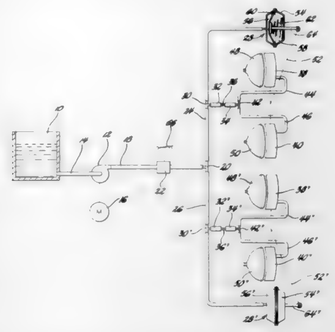
3,965,522

HEADLAMP WASHER SYSTEM

John S. Pavey, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 23, 1975, Ser. No. 589,352
Int. Cl.² B60S *1/46*
U.S. Cl. 15—250.04 2 Claims

1. In a headlamp cleaning system comprising; wiper means adapted for movement across the surface of the headlamp; nozzle means disposed on said wiper means for dispensing liquid on the surface of the headlamp; actuator means connected with said wiper means for controlling movement of said wiper means; the improvement comprising; pump means for supplying liquid at superatmospheric pressure; and passage means for communicating liquid from said pump means to said actuator means and said nozzle means, and including restriction means downstream of said actuator means and



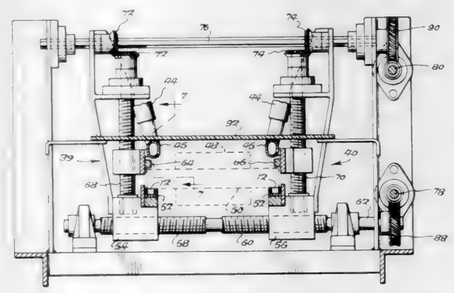
upstream of said nozzle means for maintaining the pressure of the liquid at a sufficient superatmospheric pressure level to actuate said actuator means and for controlling the flow of liquid through said nozzle means whereby a single source of liquid provides power to operate said actuator and supplies cleaning liquid for the system.

3,965,523

BEARING WASHER

Jack P. Elliott, Amherst, N.Y., assignor to J. P. Elliott Associates, Inc., Buffalo, N.Y.

Filed Sept. 16, 1974, Ser. No. 506,311
Int. Cl.² A47L *5/38*
U.S. Cl. 15—302 13 Claims



1. A bearing washing machine for washing and cleaning bearings, each such bearing having an inner and outer race with a plurality of roller means disposed therebetween, and wherein the bearings can be continuously fed into said washing machine and processed thereby, said bearing washing machine comprising:

a housing;

conveyor means for conveying bearings through said housing, said conveyor means having two spaced, substantially parallel bearing support means for supportably conveying diametrically opposite portions of each said outer race means so that each respective inner race means is rotatable during conveyance of each bearing through said housing;

conveyor drive means, said drive means being in driving connection with said conveyor means for driving said conveyor means through said housing, and;

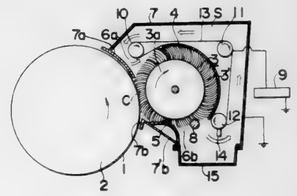
a plurality of fluid nozzles being disposed adjacent to said bearing support means, said fluid nozzles being so disposed for directing a corresponding plurality of fluid flows onto said bearings upon conveyance of said bearings past said nozzles.

3,965,524

RESIDUAL TONER REMOVING APPARATUS

Takaji Kurita, Kawachinagano, and Takao Fujiwara, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 19, 1974, Ser. No. 443,524
Claims priority, application Japan, Feb. 24, 1973, 48-22398
Int. Cl.² A47L *5/38*
U.S. Cl. 15—308 20 Claims



1. A residual toner removing apparatus for removing residual toner particles from a photoreceptor surface, said apparatus comprising:

a rotatable cleaning brush mounted for contact with a photoreceptor surface;

a casing surrounding a portion of the periphery of said brush;

a housing enclosing said casing and having associated therewith a restriction board compressing said brush at a position along the circumference thereof upstream from the position whereat said brush contacts a photoreceptor surface;

said restriction board and a first circumferential end of said casing forming therebetween an air outlet leading from within said casing to a chamber between said casing and said housing;

said housing and a second circumferential end of said casing forming therebetween an air inlet leading from said chamber into said casing;

whereby, upon rotation of said brush, toner particles are removed from a photoreceptor surface and carried thereby past said inlet and through said casing to said outlet through which said removed toner particles are expelled into said chamber, and a continuous circulation of air is created from said chamber through said inlet, through said casing with said removed toner particles to said outlet through which said air is expelled with said removed toner particles into said chamber, and back through said inlet; and

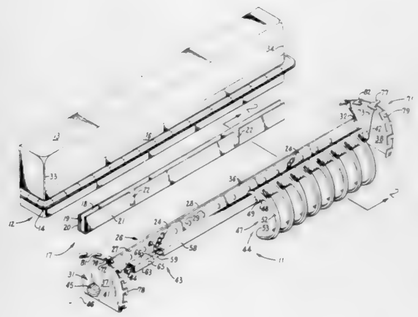
a surface positioned about a portion of the periphery of said brush, said surface being charged to a polarity opposite that of said toner particles, said surface comprising means for electrically attracting said removed toner particles from said air within said chamber.

3,965,525

SHAG RAKE ATTACHMENT FOR UPRIGHT VACUUM CLEANER

Edward C. Brissette, 790 Woodside Lane, Apartment 12, Sacramento, Calif. 95825, and Edwin W. Smith, Jr., 2700 Saddletree Lane, Rocklin, Calif. 95677

Filed May 9, 1975, Ser. No. 575,992
Int. Cl.² A47L *9/06*
U.S. Cl. 15—373 11 Claims



1. A shag rake attachment for upright vacuum cleaner having a nozzle oriented transversely to the path of vacuum cleaner travel, said attachment comprising:

a. a transverse frame including means for adjusting said frame to be substantially coextensive in length with said nozzle;

b. means for mounting said frame on said nozzle; and

c. a transversely elongated rake mounted on said frame, said rake being substantially coextensive in length with said frame and parallel thereto, said rake including a plurality of teeth capable of engaging the shag as the vacuum cleaner is moved along the path of travel.

3,965,526

SUCTION HOSE WITH CONDUCTOR MEANS FOR ELECTRICAL CURRENT

Eric G. Doubleday, Am Kraherwald 167, 7 Stuttgart W, Germany

Filed Nov. 12, 1973, Ser. No. 414,834
Claims priority, application Germany, Nov. 16, 1972, 2256231
Int. Cl.² A47L *5/00*
U.S. Cl. 15—377 17 Claims

1. A suction hose for a cleaning apparatus provided with an electrically driven vacuum pump and a separate suction head with electrically actuated cleaning brush means, comprising:

a substantially air-tight flexible external tube;

a flexible inner tube, substantially coaxial with said external tube and spaced therefrom;

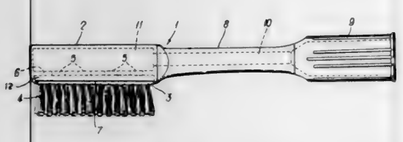
electrical conductor means interposed between said external and said inner tubes and aligned substantially with the axes of said tubes; and

connector means for interconnecting the actuator for said cleaning brush means with the electrical power supply for



said vacuum pump drive through said electrical conductor means.

3,965,527
VACUUM GROOMING BRUSH
Ivor Prosser George, West Winds, Cilfrew, Neath, Glamorganshire, Wales
Filed Sept. 10, 1974, Ser. No. 504,797
Int. Cl.² A47L 9/06
U.S. Cl. 15—396 **3 Claims**



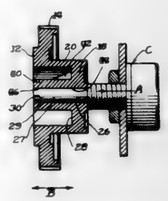
1. A vacuum grooming brush comprising a brush head having walls defining an enclosed vacuum chamber, a hollow handle integral with the brush head communicating at one end with the vacuum chamber and at the other end being adapted for connection to a domestic vacuum cleaner, a set of bristles extending from one wall of the brush head, said bristles being arranged in rows extending substantially parallel to the longitudinal axis of the brush head and the handle, vacuum inlet passages formed in said one wall of the brush head located only in the marginal edge regions of said one wall between the bristles and the other edges of the head on two opposite longitudinally-extending sides thereof, said passages communicating with the interior of the vacuum chamber, and flow equalization means located within the vacuum chamber adapted to equalize the flow of air through said vacuum inlet passages over their longitudinal extension, said flow equalization means comprising a wedge -shaped relief portion formed in the upper wall of the brush opposite to said one wall, and extending into the vacuum chamber, the longitudinal axis of said wedge-shaped relief portion being co-axial with the longitudinal axis of the brush and the apex of said relief portion being directed towards the outlet from the vacuum chamber formed by the interior of said hollow handle.

3,965,528
UNIVERSAL ELBOW ACTION LEVER HANDLE
Gerald Kissler, Woodcliff Lake, N.J., assignor to Kissler & Co., Inc., Englewood, N.J.
Filed Oct. 1, 1974, Ser. No. 511,314
Int. Cl.² A47B 95/02
U.S. Cl. 16—110 R **10 Claims**



1. A universal lever type handle device readily convertible for secure attachment to any one of a plurality of valve stems, having differently configured splines, to operate the same, comprising a handle portion and an interchangeable insert member therein; said handle portion including a solid base portion and an elongated arm directly attached to said base portion for manipulation of the handle, said base portion including top, bottom and side walls, a relatively large interior standard size cavity having an access opening in said bottom wall to receive any one of a plurality of interchangeable insert members, a roof defining wall in said cavity proximate said top wall of said base portion, and a screw hole through said top and roof defining walls; each of said interchangeable insert members having an exterior configuration corresponding to the configuration of said cavity so as to fit securely in said cavity, and each of said interchangeable insert members having an interior broach respectively configured for secure mating attachment to a correspondingly configured spline of a respective valve stem, each of said interchangeable insert members having a screw hole through a top wall thereof for positioning in direct alignment with said screw hole in said handle portion; whereby such an insert member fits firmly in said cavity to adapt the lever type handle for attachment to a respective valve stem spline and the handle may be secured by a screw through said screw holes to such a valve stem spline, and by interchanging insert members one for another the lever type handle may be readily adapted for attachment to different corresponding valve stem splines.

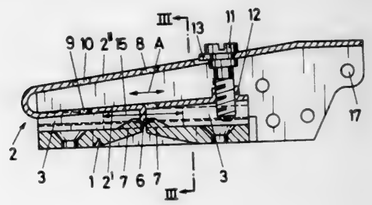
3,965,529
MOLDED CONTROL KNOB
Theodore M. Hadzimahalls, Libertyville, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Jan. 9, 1975, Ser. No. 539,834
Int. Cl.² F16D 1/06
U.S. Cl. 16—121 **11 Claims**



1. A unitarily molded control knob for mounting a D-shaft of an electrical control or the like, comprising:

a front face plate and a peripheral manual gripping portion;
a hollow cylindrical hub portion including a rear wall extending rearwardly of said face plate to define a body portion; and
an integrally molded D-shaft receiving means within said body, including a generally flat floor portion for engaging the flat of the D-shaft, side guide means for encapsulatingly engaging side portions of the D-shaft, said floor and guide means being supported within the body portion by a plurality of radially directed, longitudinally extending support flanges, and a flexibly resilient cantilever arm projecting from said rear wall and independent of said floor and guide means and spaced from and opposite said flat floor portion for engaging the D-shaft opposite its flat to bias the D-shaft against said floor portion and frictionally maintain the D-shaft longitudinally within the receiving means.

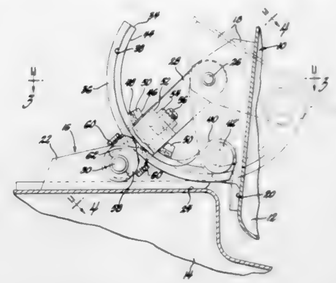
3,965,530
HINGE DEVICE
Erich Röck, Hochst, and Bernhard Mages, Dornbirn, both of Austria, assignors to Blum Gesellschaft m.b.H., Hochst, Austria
Filed Mar. 26, 1975, Ser. No. 562,153
Claims priority, application Austria, Mar. 29, 1974, 2635/74
Int. Cl.² E05D 7/04
U.S. Cl. 16—130 **7 Claims**



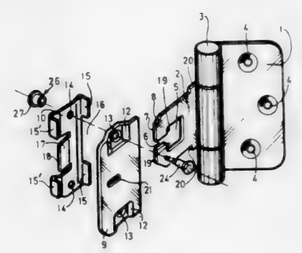
1. In a hinge device, especially for furniture doors, of the type including at least one mounting plate that can be fixed to one part of a piece of furniture, and a hinge arm anchored directly or indirectly to said mounting plate and which bears swivel arm means for connection to another part of the piece of furniture, the improvement wherein:
said mounting plate is provided on opposite lateral sides thereof with inwardly directed guides; and
said hinge arm is provided on opposite lateral sides thereof with outwardly directed projection means for insertion into respective of said guides.

3,965,531
INFINITE POSITION DOOR HOLD OPEN
Robert M. Fox, Warren, and Gary A. Wize, Washington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 12, 1975, Ser. No. 631,053
Int. Cl.² E05D 11/08
U.S. Cl. 16—140 **3 Claims**

1. An infinite position door hold open comprising, in combination, a pair of pivotally interconnected hinge members movable in door opening and closing directions relative to each other, a brake pad mounted on one hinge member for movement therewith, a brake member mounted on the other hinge member for movement therewith and movement relative thereto into and out of frictional engagement with the brake pad to selectively and alternately hold the hinge members against movement or permit movement in either direction, a brake member actuator mounted on said other member, and cooperating frictionally engageable means on the brake member and brake member actuator operable upon reversal of the direction of movement of the hinge members for moving the brake member relative to the one hinge member and into frictional engagement with the brake pad to thereby hold the hinge members against movement in either direction.



3,965,532
HINGES
Douglas Mervyn Wigfall, Holcombe Brook, near Bury, England, assignor to Crompton, Nettlefold Stenman Limited, Wigan, England
Filed July 23, 1975, Ser. No. 598,364
Claims priority, application United Kingdom, Aug. 1, 1974, 33935/74; Jan. 20, 1975, 2463/75
Int. Cl.² E05D 7/12
U.S. Cl. 16—149 **12 Claims**

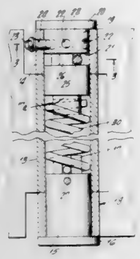


1. A hinge for pivotally connecting two components, said hinge comprising two pivotally inter-connected leaves and a casing, one leaf being arranged to be secured to one component, the casing being arranged to be secured to the other component and to provide a socket having opposed walls between which the other leaf can slide, one of the walls and said other leaf having complementary formations which interengage with a snap action to hold said other leaf in the socket when said leaf has entered the socket to a predetermined extent, said one wall being arranged to lie between said other leaf and the other component when the hinge is in use.

3,965,533
ADJUSTABLE DOOR SPRING HINGE WITH FIXED MINIMUM TENSION
Peter E. Frohlich, Landrum, S.C., assignor to Bommer Spring Hinge Co. Inc., Landrum, S.C.
Filed May 23, 1975, Ser. No. 580,187
Int. Cl.² E05F 1/12
U.S. Cl. 16—189 **6 Claims**

1. A spring hinge comprising opposed hinge leaves, a cylindrical barrel open at each end formed of integral hollow knuckles on said hinge leaves, a first plug secured within one end of the cylindrical barrel and secured to the hollow

knuckle of one of the hinge leaves adjacent thereto, a second plug adjustably secured within the hollow knuckle of the other hinge leaf, said plugs bridging the knuckles of the hinge leaves at each end of the hinge, an annular groove in the second plug, a stop disposed in the annular groove, a series of recesses radially disposed around the second plug, removable pin



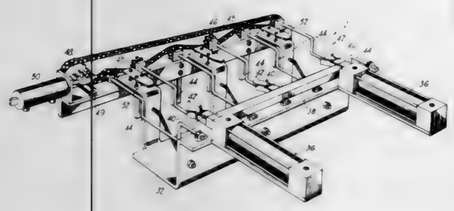
means carried within an opening in the knuckle adjacent the second plug and selectively receivable within the plug recesses, a spring carried between the first and second plugs within the barrel and coupled to said plugs and a fixed pin carried by the hollow knuckle adjacent the second plug, extending into the annular groove and disposed in the path of the groove stop.

3,965,534

POULTRY NECK BREAKING MACHINE

Grover S. Harben, Jr., Gainesville, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.

Filed July 9, 1974, Ser. No. 486,832
Int. Cl.² A22C *21/00*
U.S. Cl. 17—11 **11 Claims**



1. A machine for breaking the necks of fowls being conveyed along a conveyor line is inverted positions for processing, said machine comprising a frame; a carriage mounted to said frame for movement along an orbital path having an upper arcuate portion; at least one neck breaking blade supported on said carriage; and means for reciprocally driving said blade laterally said orbital path while said carriage is moving along said upper arcuate portion of said orbital path.

3,965,535

POULTRY LEG BONING MACHINE

John J. Kaplan, Council Bluffs, Iowa; Wilhelm H. Richert, Bellingham, Mass., and John W. Trumblee, Council Bluffs, Iowa, assignors to Jo-Bi Farms, Inc., Council Bluffs, Iowa

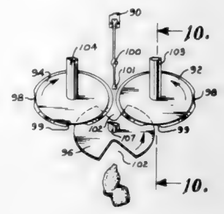
Filed Oct. 17, 1974, Ser. No. 515,669
Int. Cl.² A22B *17/04*
U.S. Cl. 17—1 G **12 Claims**

1. Apparatus for removing meat from a cooked poultry leg having at least one enlarged joint, said apparatus comprising:

a supporting frame;

at least two rotary disc members being substantially circular to provide peripheral stripping edges for engagement with said leg to strip meat therefrom, said disc members being horizontally disposed in juxtaposition and in spaced apart position whereby said leg may be received between the adjacent stripping edges of said disc members, and each of said disc members including at least one peripheral recess in the stripping edge thereof such that when said disc members are rotatably positioned with said recesses in opposed confronting alignment the enlarged joint of said leg may be passed through the space presented between said recesses;

bearing means supportingly mounting said disc members on said frame and yieldably biasing said disc members to said spaced apart position;



a poultry leg conveyor mounted on said frame to receive and carry said leg longitudinally between the adjacent stripping edges in a direction substantially perpendicular to said disc members;

first drive means coupled to said disc members for the rotative drive thereof; and

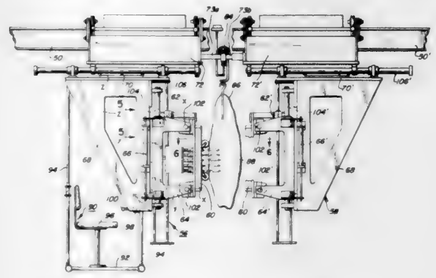
second drive means coupled to said leg conveyor for operation thereof, said second drive means being synchronized with said first drive means whereby to move said enlarged joint of said poultry leg through said recesses when in confronting alignment.

3,965,536

AUTOMATED MEAT TENDERIZATION SYSTEM

William J. Osiadacz, Hoffman Estates, and Alexander J. Nagy, Lake Zurich, both of Ill., assignors to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Dec. 9, 1974, Ser. No. 530,672
Int. Cl.² A22C *9/00*
U.S. Cl. 17—25 **2 Claims**



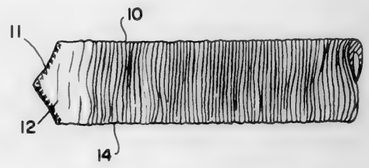
1. In a meat tenderizing system in which a tenderizing solution is injected into a carcass after slaughter, the improvement comprising, in combination: means for storing weight data; motorized means for providing tenderizing solution to a first station; motorized means for providing tenderizing solution to a second station; motorized means for providing tenderizing solution to a third station; a servo-mechanism coupled to each of said motorized means; means providing to each servo-mechanism a signal corresponding to a derived amount of tenderizing solution based upon a weight percentage of the carcass with said motorized means being operatively responsive to said servo-mechanism to provide a derived volume of tenderizing solution; and feedback means from said motorized means to said servo-mechanism to automatically signal said servo-mechanism when said derived volume has been provided.

3,965,537

SHIRRED COLLAGEN CASING STICK HAVING AN END CLOSURE AND METHOD OF MAKING THE SAME

Camilla B. Ross, Hinsdale, and Jerry A. Vos, Tinley Park, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 26, 1975, Ser. No. 562,010
Int. Cl.² A22C *11/02*
U.S. Cl. 17—42 **19 Claims**



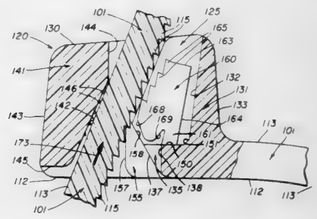
1. A stick of shirred edible tubular food casing having an end closure, said end closure comprising casing material defining an end of said shirred tubular casing having the opposing internal surfaces thereof joined across the full width of said tubular casing obliquely to the longitudinal edges thereof, said end closure being suitable to block the passage of food emulsion from the end of said tubular casing.

3,965,538

INTEGRAL CABLE TIE

Jack E. Caveney, Chicago, and Roy A. Moody, Flossmoor, both of Ill., assignors to Panduit Corporation, Tinley Park, Ill.

Filed May 5, 1969, Ser. No. 821,875
Int. Cl.² B65D *63/00*
U.S. Cl. 24—16 PB **22 Claims**



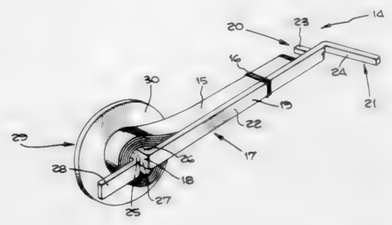
14. An integral one-piece cable tie to be tensioned about a bundle of wires and the like, said cable tie comprising an elongated flexible strap, a row of abutments disposed on one longitudinal surface of said strap and arranged transversely with respect thereto, a frame integral with one end of said strap and including an end wall and an abutment wall, said frame having an opening entry surface and an opening exit surface and a strap-receiving opening extending therethrough, said exit surface sloping toward said entry surface in a direction away from said strap, a ledge on said end wall extending longitudinally therefrom toward said abutment wall, a pawl disposed within said frame in said strap-receiving opening between said ledge and said exit surface, a hinge interconnecting said ledge and the end of said pawl disposed toward said entry surface, the longitudinal extent of said hinge being less than the longitudinal extent of said ledge at the junction therebetween, the longitudinal cross-sectional area of said hinge being less than the longitudinal cross-sectional area of said pawl at the junction therebetween, said pawl and said hinge cooperating so that said pawl is limited to substantially pivotal movement with respect to said frame about the connection to said ledge, said pawl in the as-molded position thereof and in all other positions thereof including the tensioned position thereof being disposed entirely within said frame between the entry and exit surfaces thereof, said abutment wall having a strap-bearing surface disposed toward said pawl and defining therewith a strap-receiving throat, and a set of teeth on said pawl arranged transversely with respect thereto and disposed toward said abutment wall and shaped to engage said row of abutments on said strap, said strap being deformable into a loop encircling a bundle of wires with the free end of said strap extending into said strap-receiving throat and through the opening in said frame and therebeyond, said tooth being disposed toward said row of abutments as said strap is tensioned about the bundle of wires to a tensioned condition and release of said strap causing at least one of said abutments firmly to engage said tooth, any force tending to withdraw said strap from within said strap-receiving throat in a strap-loosening direction serving to move said tooth into more firm engagement with the engaged ones of said row of abutments firmly to grip said strap between said strap-bearing surface and said pawl, whereby to prevent inadvertent withdrawal of said strap from said frame and thus to lock said strap in its tensioned condition about the bundle of wires.

3,965,539

PORTABLE, RELEASABLE TIE-DOWN DEVICE AND METHOD

Steven T. Golden, 822 Teague Drive, Santa Paula, Calif. 93060

Filed June 30, 1975, Ser. No. 591,461
Int. Cl.² A43C *11/00*; **A44B** *21/00*
U.S. Cl. 24—71.3 **17 Claims**



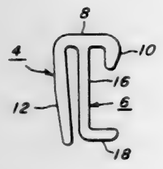
1. A portable, releasable tie-down device for quickly and easily applying tension to a flexible elongated member such as a belt, strap, cable, rope or the like, said device comprising:

flexible elongated member storing means for storing said flexible elongated member thereon in overlapping relationship, said storing means including flexible elongated member receiving means adapted to receive thereon a portion of said flexible elongated member, and handle means operatively connected to said member receiving means for rotating said member receiving means, in a non-interfering relationship to said flexible elongated member during rotation of said member receiving means, in a direction adapted to wind said flexible elongated member thereon in overlapping relationship;

contra-rotation preventing means associated with said storing means for preventing rotation of said member receiving means in an unwinding direction when said flexible elongated member is wound in an overlapping relationship on said member receiving means; and

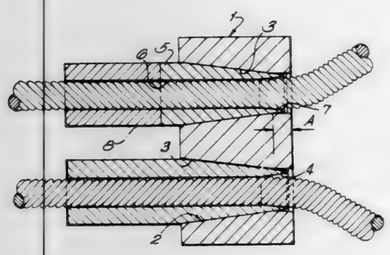
releasing means associated with said storing means for quickly and easily releasing said contra-rotation preventing means to thereby release said member receiving means for rotation in the unwinding direction.

3,965,540
CLIP FOR MOUNTING A CROSSBAR TO A BRACKET
David M. Moore, Pittsburgh, Pa., assignor to Armstrong Store Fixture Corporation, Pittsburgh, Pa.
Filed Jan. 29, 1975, Ser. No. 544,968
Int. Cl.² A44B 13/00
U.S. Cl. 24—84 R 6 Claims



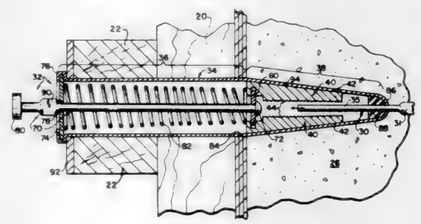
1. An integral clip for mounting a crossbar to a bracket, comprising:
a first member having a cross-section in the form of an inverted J, including
a horizontal portion,
a retaining lip depending from the front end of the horizontal portion, and
a rear wall vertically depending from the rear end of the horizontal portion; and
a second member of L-shaped cross-section, integrally formed with the first member, including
an intermediate wall spaced between the retaining lip and the rear wall, and vertically depending from the horizontal portion of the first member, and
a horizontal shelf extending forwardly from the lower end of the intermediate wall,
such that when the clip is mounted on the bracket with the bracket located in the space between the rear wall and the intermediate wall, the crossbar may be mounted in the space between the intermediate wall and the retaining lip, and supported by the horizontal shelf.

3,965,541
REINFORCING STRAND ANCHORAGE ASSEMBLY
John Davison, Harrogate, England, assignor to CCL Systems Limited, Surbiton, England
Filed Aug. 13, 1974, Ser. No. 497,126
Claims priority, application United Kingdom, Aug. 23, 1973, 39937/73
Int. Cl.² F16G 11/04
U.S. Cl. 24—122.6 5 Claims



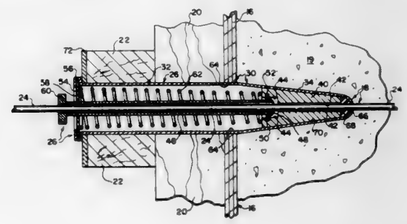
1. A deadend anchorage assembly for prestressed concrete structures, comprising an integral bearing plate having substantially planar end wall and a plurality of transverse openings having parallel axes with each of said openings extending through said planar end wall being adapted to receive a stranded stressing element, and each of said openings, in the position of use in a stressed concrete structure, lying at an angle to the axis of its co-acting stressing element at the point where said stressing element extends out of said bearing plate planar end wall, a frusto-conical wedge device having an axial bore and being positioned between the wall of each of said openings and its co-acting stressing element, each of said openings being in the form of a frusto-conical portion and a cylindrical portion arranged in continuation thereof, said frusto-conical portion forming a major part of the length of said opening and said cylindrical portions of said openings being closely adjacent said end wall, and the relative sizes of each of said openings and its co-acting wedge device being such that the leading or narrow end of said wedge device extends into said cylindrical portion of said opening free of contact therewith, said frusto-conical wedge device bore being of a size to freely receive an intended stressing element, and there being an end stop element for attachment to the end of each stressing element and for engaging the enlarged end of its respective frusto-conical wedge device.

3,965,542
LATCH-EQUIPPED, SHE-BOLT GRIPPER DEVICE FOR A CONCRETE WALL FROM TIE ROD
R. Kirk Gregory, Barrington, Ill., assignor to Symons Corporation, Des Plaines, Ill.
Filed Jan. 27, 1975, Ser. No. 544,330
Int. Cl.² E04G 17/08; F16G 11/04
U.S. Cl. 24—136 R 6 Claims



1. A gripper device adapted for application to one end of a cylindrical rod and comprising an open-ended, tapered, tubular shell having a frusto-conical front end section and a cylindrical rear end section and embodying wall extending across the rear end of said rear section, a plurality of tapered, tooth-equipped jaw segments slidably disposed within the front end section of said shell in circumferentially arranged relationship and defining a chuck structure for reception of said one end of the rod when it is projected into the front end section of the shell, a compression spring disposed between said wall and jaw segments and effective to bias the latter forwardly in the shell in camming relationship with respect to the tapered wall of the front end section of the shell and thus forcibly collapse said segments into gripping engagement with said one end of the rod, said wall having formed therein a central opening of non-circular configuration, and a pull rod projecting centrally and slidably through said opening, extending in coaxial relation with the shell, rotatable about the longitudinal access of the shell, having its forward end operatively connected in common to the rear ends of said jaw segments, and effective when it is shifted rearwardly against the biasing action of the spring to release said segments from said one end of the rod, and releasable latch means on said pull rod, normally disposed within the confines of the shell, and movable bodily with the pull rod rearwardly through said central opening to a retracted position exteriorly of the shell, said latch means being effective when the pull rod is released to make latching engagement with the edge region of said opening and thus maintain the pull rod in its retracted position, said latch means also being in the form of an enlargement which is formed on the rod, has a cross-sectional shape commensurate to said central non-circular opening, is, in at least one rotational position of the pull rod, capable of passing through said opening, and is, in at least one other rotational position of the pull rod, incapable of passing through said opening.

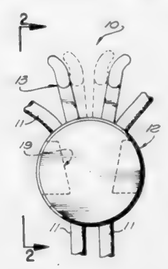
3,965,543
SHE-BOLT TYPE GRIPPER DEVICE FOR CONCRETE WALL FORM TIE RODS OF INDETERMINATE LENGTH
Frank T. Connors, Deerfield, Ill., assignor to Symons Corporation, Des Plaines, Ill.
Continuation-in-part of Ser. No. 526,076, Nov. 22, 1974, Pat. No. 3,910,546. This application Jan. 27, 1975, Ser. No. 544,179
The portion of the term of this patent subsequent to Oct. 7, 1992, has been disclaimed.
Int. Cl.² E04G 17/08; F16G 11/04
U.S. Cl. 24—136 R 4 Claims



1. As a new article of manufacture, a gripper device designed for use as a she-bolt in gripping the outer end region of a tie rod in associated relation with a concrete wall form, said device comprising a tubular shell having a frusto-conical front section and a cylindrical rear section, tooth-equipped jaw segments slidable in said front section and defining a chuck structure for reception therethrough of the tie rod, a circular wall extending across the rear end of the shell, a compression spring interposed between said wall and jaw segments and effective to bias the latter forwardly into tie rod-gripping relationship, an elongated cylindrical pull tube through which the tie rod is adapted to extend to any desired extent including through the open rear end of the tube, said pull tube projecting centrally and slidably through said circular wall coaxially with the shell and being capable of sliding movement longitudinally on the tie rod, said pull tube having its forward end operatively connected in common to the rear ends of the chuck segments and effective when pulled rearwardly to release such segments from the tie rod, and a radial flange carried on the rear end of said hollow pull tube exteriorly of the shell and disposed in close proximity to said circular wall, said flange, in combination with said circular wall, constituting a pry-head by means of which the pull tube may be pried rearwardly with respect to the shell.

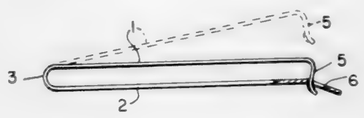
3,965,544
LOCKING DEVICE WITH COMBINED WEDGING AND SPRING ACTION
Ogden W. Boden, 1580 Gaywood Drive, Altadena, Calif. 91001
Filed June 11, 1975, Ser. No. 585,792
Int. Cl.² F16G 11/00
U.S. Cl. 24—136 R 20 Claims

1. A locking device comprising:
a body containing a passage having two opposite side walls;
a slide contained at least partially within said passage and movable essentially along a predetermined axis relative to said body;
said slide having two arms with gripping portions located opposite said two side walls respectively in a relation defining two paths at opposite sides of said slide along which two elongated flexible elements can extend between said arms and side walls;
said side walls having portions which converge toward one another as they advance in essentially a predetermined axial direction and which are positioned laterally opposite said gripping portions of said arms at locations to clamp said elements tightly between said gripping portions and said opposed converging portions of said side walls and thereby positively lock said elements against movement in said predetermined direction, by a wedging action resulting from the convergence of said wall portions;



said arms being yieldingly urged relative to one another in opposite lateral directions and toward said two converging portions of said side walls respectively to clamp said elements thereagainst independently of said wedging action, and being actuable inwardly away from said side walls to release said elements.

3,965,545
BELT BUCKLE
Lars Johansson, 631 Hicksville Road, Far Rockaway, N.Y. 11691
Filed May 28, 1975, Ser. No. 581,550
Int. Cl.² A44B 11/22, 11/24
U.S. Cl. 24—186 9 Claims



1. A buckle formed of a single piece of substantially inflexible material having a front face and, parallel thereto when the buckle is closed, a back face, connected at an adjacent end of each face by two hinges at the sides of each face and an integral frictional wedged prong connected to the other end of one of said faces, essentially perpendicular thereto, which prong engages the opposite face in a positive locking manner.

3,965,546
PLASTIC FILM CONNECTOR FOR INFLATABLE STRUCTURES
Jerry J. Hickle, Findlay, Ohio, assignor to R. L. Kuss & Co., Inc., Findlay, Ohio
Filed Aug. 7, 1975, Ser. No. 602,883
Int. Cl.² A44B 21/00; E04B 1/34
U.S. Cl. 24—243 K 5 Claims



1. A film connector for retaining and connecting in air-tight relationship the edges of a plurality of film layers, comprising:
an elongated base member of generally a horizontal J cross sectional shape with a central flat horizontal portion and one upwardly rolled edge defining a curve passing

through more than 180°, the rolled edge having a generally cylindrical inside surface, said base member also including a generally flat rearward retaining edge opposite the rolled edge;

an elongated locking member to be received by the base member, said locking member in cross section having a central flat portion, an upwardly curved edge shaped complementarily to the generally cylindrical inside surface of the base member, and a rearward edge opposite the upwardly curved edge;

said base member further including upwardly extending yieldable lock-down means between the retaining edge and the central flat horizontal portion for receiving and retaining in snap-in fashion the rearward edge of the locking member;

said locking member being sized to lie on the base member with its upwardly curved edge engaged within the generally cylindrical inside surface of the base member and its rearward edge engaged by the yieldable lock-down means,

whereby, when the plurality of film layers are placed along the upper surface of the base member from the lock-down means over the flat horizontal central portion and along the generally cylindrical inside surface of the upwardly rolled edge, said locking member may be inserted into the base member with its upwardly curved edge adjacent to the generally cylindrical inside surface and the film layers positioned therebetween, then the rearward edge of the locking member may be pushed downwardly to force the yieldable lock-down means back and to snap into engagement with the yieldable lock-down means, thereby engaging the plurality of film layers and establishing an air-tight relationship between the layers when the layers are placed in tension outside of the connector; and

ground-engaging fastening means connected to the locking member and to the base member for retaining the film connector and the edges of the plurality of film layers adjacent to the ground.

3,965,547

APPARATUS FOR PRODUCING BULKED YARNS

Duncan Cameron Ferrier; Thomas Berry, both of Tiverton, England, and Karel Murenbeeld, Geneva, Switzerland, assignors to John Heathcoat & Co. Ltd., Tiverton, England

Division of Ser. No. 130,899, April 5, 1971, Pat. No. 3,810,285. This application May 21, 1973, Ser. No. 362,350

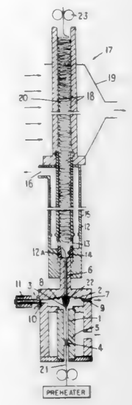
Claims priority, application United Kingdom, Apr. 6, 1970, 16192/70; June 29, 1970, 31381/70

Int. Cl.² D02G *1/20, 1/16, 1/12*

U.S. Cl. 28—1.3 **28 Claims**

1. Apparatus for bulking yarn incorporating a high pressure fluid passage and an intermediate pressure expansion chamber into which the passage debouches, the passage being formed with an entry for yarn and an entry for high pressure gaseous fluid spaced upstream from said expansion chamber such that yarn will become impregnated with high pressure fluid in said passage, a high pressure chamber from which the high pressure fluid passage leads to the intermediate pressure chamber, the entry for yarn and for high pressure fluid to the high pressure fluid passage being a common opening through which both yarn and fluid can pass simultaneously, the high pressure chamber being formed with means for introducing yarn and means for introducing high pressure gaseous fluid, and the intermediate pressure expansion chamber being formed with at least one fluid bleed-off opening and with a yarn discharge passage the entrance to which is located across the chamber from the debouchment of the high pressure fluid passage and containing a yarn deflecting surface also located across the chamber from the debouchment of the high pressure fluid passage.

9. Apparatus for bulking yarn incorporating a high pressure fluid passage and an intermediate pressure expansion chamber into which the passage debouches, the passage being formed with an entry for yarn and for high pressure gaseous fluid, the intermediate pressure expansion chamber being formed with a yarn discharge passage the entrance to which is located across the chamber from the debouchment of the high pressure fluid passage and containing a yarn deflecting surface also located across the chamber from the debouchment of the high pressure fluid passage, at least one bleed-off opening provided in the intermediate pressure expansion chamber, and two laterally extending parallel walls between which the high pressure fluid passage debouches into the intermediate pressure expansion chamber for constraining fluid issuing from the high pressure fluid passage into the intermediate pressure expansion chamber to expand laterally in a thin sheet between said parallel walls.



11. Apparatus for producing bulked multifilament yarn in which the yarn filaments are separated to a predetermined extent, comprising impregnating and carrying means for impregnating a multifilament yarn with a gaseous fluid at one pressure and carrying the yarn continuously forward in a stream of the fluid, expansion means comprising an expansion chamber for causing the fluid to expand suddenly to a lower pressure chosen to cause the fluid as it expands outwardly to separate the yarn filaments to an extent greater than said predetermined extent, and deflecting and carrying means, including a deflecting surface in said chamber against which the separated filaments are brought and a yarn discharge passage from said chamber, for causing said filaments to come toward one another in an amount such that the yarn filaments are separated to the said predetermined extent, and for carrying the yarn continuously forward in a second stream of the fluid, said expansion chamber having at least one bleed-off opening for fluid.

3,965,548

CRIMPER STARTUP METHOD AND SYSTEM

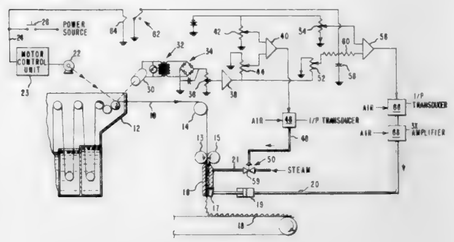
Edward William James, II, Oxford, Pa., and Warren Eugene Kenney, Waynesboro, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1975, Ser. No. 546,129

Int. Cl.² D02G *1/12*

U.S. Cl. 28—1.7 **4 Claims**

4. In a system for drawing and crimping tow including a driven draw machine from which tow is continuously passed to a stuffer box crimper having a feed means, along with an adjustable steam supply and an adjustable counterpressure means, an apparatus for adjusting both the crimper steam supply and the adjustable counterpressure means according to draw machine speed as the machine speed increases during startup comprising: a tachometer coupled to the draw machine for detecting draw machine speed and generating first signals proportional thereto; means coupled to said tachometer for combining said first signals with second signals of constant magnitude to produce third signals; control means responsive to said third signals for changing the adjustable steam supply; control means responsive to said third signals for changing the adjustable counterpressure means; and a time lag device connected to said means for producing third signals for momentarily delaying the third signals for changing the adjustable counterpressure means.



3,965,550

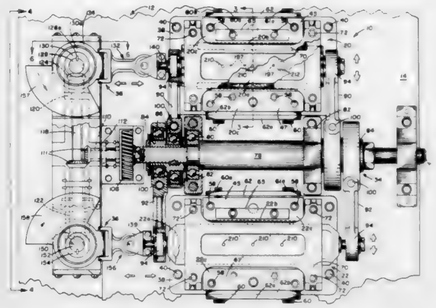
MACHINE FOR MAKING EXPANDED METAL

David B. Parkinson, Cleveland Heights, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Division of Ser. No. 388,400, Aug. 15, 1973, Pat. No. 3,893,214. This application Dec. 17, 1974, Ser. No. 533,690

Int. Cl.² B21D *31/02*; **B26D** *5/08*

U.S. Cl. 29—6.2 **8 Claims**



1. Apparatus for expanding metal strip comprising:

a. first and second movable blade members each having at least one cutting edge;

b. first and second stationary blade members respectively mounted for cooperation with said first and second movable blade members;

c. support means for supporting each of said movable blade members for independent guided movement in at least two directions in a common plane; and

d. drive means for said blade members, said drive means including means for imparting movement to said blade members to move them substantially simultaneously in opposite directions generally perpendicular to their cutting edges and including means for imparting movement to said movable blade members in directions generally along their cutting edges.

3,965,549

MANUFACTURE OF SOLID METAL SPHERICAL ARTICLES

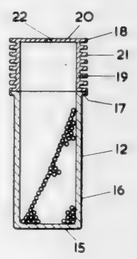
William Melville, Handsworth, England, assignor to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed Oct. 18, 1974, Ser. No. 516,017

Claims priority, application United Kingdom, Oct. 31, 1973, 50607/73

Int. Cl.² B21K *21/06*

U.S. Cl. 29—1.22 **9 Claims**



1. A method of manufacturing solid spherical articles from initial non-spherical preforms of a material which permits deforming of the preforms, comprising tumbling a charge of such preforms with a quantity of liquid coolant in a rotating barrel, the liquid having an evaporation temperature below the softening temperature of the material of the preforms so that the liquid is heated to its evaporation temperature by the tumbling action of the preforms, condensing the resulting vapor and returning the distillate to the preforms, and continuing the process until the preforms are deformably reshaped by their tumbling action to spherical articles.

3,965,551

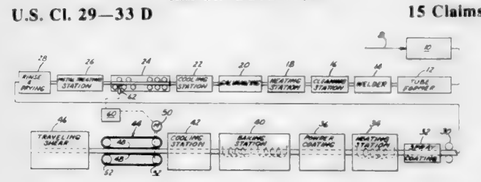
PRODUCTION OF POLYMER-COATED STEEL TUBING

Arthur E. Ostrowski, Crete, Ill., assignor to Allied Tube & Conduit Corporation, Harvey, Ill.

Filed Aug. 14, 1975, Ser. No. 604,622

Int. Cl.² B21B *15/00*

U.S. Cl. 29—33 D **15 Claims**



10. A method for producing coated tubing from steel strip, which method comprises the steps of continuously supplying steel strip, roll-forming said steel strip into tubular configuration, welding said roll-formed strip into a continuous tube at a fast rate of speed, sizing said welded tubing, cleaning the exterior surface of said welded tubing, heating said cleaned tubing, uniformly applying a polymeric coating to the exterior of said heated tubing, heating said polymer-coated tubing to a desired baking temperature, rapidly lowering the temperature of said baked coated tubing, said heating, coating and baking being performed while said tubing is physically unsupported, gripping said tubing over a longitudinal distance of at least about two feet and pulling said tubing in a manner so as to maintain said tubing in precise spatial location throughout said heating, coating and baking.

3,965,552
PROCESS FOR FORMING INTERNAL CONDUCTORS AND ELECTRODES

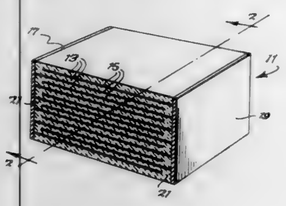
Truman C. Rutt, Niagara Falls, N.Y., assignor to N L Industries, Inc., New York, N.Y.

Division of Ser. No. 274,668, July 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 134,689, April 16, 1971, Pat. No. 3,679,950. This application June 10, 1974, Ser. No. 478,181

The portion of the term of this patent subsequent to Nov. 20, 1900, has been disclaimed.

Int. Cl.² H01G *4/30*

U.S. Cl. 29—25.42 **30 Claims**



1. A process for providing conductive areas in a sintered ceramic body which comprises: providing sheets of a finely divided non-conductive ceramic composition bonded with a fugitive bond, which composition forms a dense layer when fired to sintering temperature, introducing between said sheets a deposit of a second composition having a fugitive bond, said composition developing an open structure when fired; consolidating a plurality of said sheets and intervening deposits whereby to obtain a fugitive-bonded, self-sustaining body; heating said body to eliminate said fugitive bonds; firing said body to sintering temperature to produce a sintered monolithic body having areas of dense ceramic material and open-structured areas having interconnected voids, each such open-structured area extending to an edge region of said monolithic body; and providing a conductive material in said open-structured areas by impregnating them with molten metal.

3,965,553
TOOLHOLDER

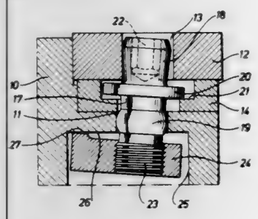
Kurt Heinrich Albert Erich Faber, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Oct. 10, 1975, Ser. No. 621,599

Claims priority, application Sweden, Oct. 18, 1974, 7413133

Int. Cl.² B26D *1/00*

U.S. Cl. 29—96 **6 Claims**



1. Toolholder for clamping an apertured cutting insert (12) into an insert-receiving site in a holder body so that the insert rests on a base surface and engages with at least one lateral abutment surface, there being a clamp pin (17) rotatably and pivotably received in a bore (11) in the holder while extending into the aperture (13) of the insert, characterized in that the pin is supported axially in the holder and provided with a threaded portion (23) threadedly engageable by a locking plate (24), said plate being non-rotatably received in an enlarged portion of the bore (11), said arrangement being such that said plate, when said pin is in-screwed, pivots into a position where said plate is caused axially to abut against a shoulder abutment (26) in the bore at the same time as the portion (18) of the pin projecting into the aperture of the insert engages therewith and urges the insert against its lateral abutment or abutments.

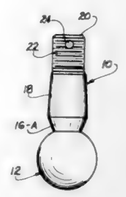
3,965,554
METHOD OF PRODUCING BALL JOINTS

James J. Amos, Delaware, Ohio, assignor to The Columbus Auto Parts Company, Columbus, Ohio

Division of Ser. No. 337,187, March 1, 1973, Pat. No. 3,831,245. This application Mar. 27, 1974, Ser. No. 455,054

Int. Cl.² B21D *53/10*; B23K *27/00*

U.S. Cl. 29—149.5 B **4 Claims**



1. A method of producing ball joints comprising, in combination, forming a stem portion from a stem work-piece in a forging die, said work-piece including a concave ball-receiving end, a thread-receiving end, forging a reverse tapered portion at said ball receiving end; forming a ball portion from a ball work-piece of metal stock; mounting said ball portion in a first die portion; mounting said stem portion in a second die portion; imparting relative rotation to said die portions while applying axial force to said work-pieces against one another at confronting surfaces; upsetting said work-pieces at said confronting surfaces by frictionally applied heat to metallurgically bond said work-pieces at a fused junction of said confronting surfaces; removing flashing produced by the welding at said junction; and mounting said ball and stem assembly in a ball joint housing with said ball portion pivotally supported by a bearing means, said reverse taper on said stem portion providing high angularity of movement of said stem portion with respect to said housing.

3,965,555
METHOD OF FORMING JOINTS FOR PROTECTIVELY LINED OR COATED METAL

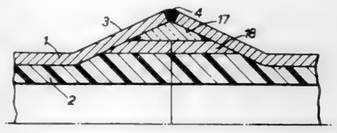
John David Webster, and Henry Torrens A. Bowman, both of St. Austell, England, assignors to English Clays Lovering Pochin & Company Limited, England

Filed June 10, 1974, Ser. No. 478,113

Claims priority, application United Kingdom, Mar. 22, 1974, 12988/74; June 6, 1973, 28679/73

Int. Cl.² B21D *53/00*; B21K *29/00*; B23P *15/26*

U.S. Cl. 29—157 R **3 Claims**



1. in a method of joining together first and second pipe members, each of which comprises a metallic pipe section having a coating on a surface thereof of a heat-degradable material, by forming a welded joint between abutting metal

edges of the metallic pipe sections, the improvement which comprises the steps of (i) constructing the metallic pipe section for each of the first and second pipe members so that at one end portion at least thereof it diverges away from the axis of said metallic pipe section; (ii) securing a heat shield to the inside of each divergent end portion of each of the metallic pipe section; (iii) applying the heat-degradable material to the metallic pipe section and to said heat shield to coat the same; (iv) aligning the metal edges of the divergent end portions of second pipe sections and urging them together; and (v) thereafter welding the metal edges of the two metallic pipe sections together to form the desired joint between the first and second pipe members.

3,965,556
JACKET HOLDER

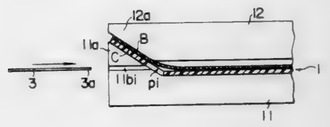
Fred M. Sanchez, San Jose, Calif.; Yukio Shirai; Toshiyuki Sakakibara, both of Kawasaki, Japan, and Mitsuru Ohminato, Yokohama, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1975, Ser. No. 548,023

Claims priority, application Japan, Feb. 8, 1974, 49-16675

Int. Cl.² B23P *19/00*

U.S. Cl. 29—200 J **10 Claims**



1. A jacket holder for holding a jacket to permit strips of film to be inserted therein, said jacket being of the type comprising, in combination, a base and a cover each made of pliable material and forming therebetween one or more pockets for storing strips of film therein, said pockets being disposed parallel to each other and each having an inlet for the film formed on the cover side and in the vicinity of one end portion in the longitudinal direction of the pocket, said jacket holder comprising: first and second members; spacing means for holding said jacket between said first and second members such that a space is maintained therebetween sufficient to permit a strip of film to be inserted into the pocket of the jacket held thereby with the cover disposed adjacent the first member; said first member including a raised inclined surface portion formed at the end portion thereof on the side corresponding to the inlets of said pockets and adapted to push and bend said jacket at the portion where the inlets exist toward said base when the jacket is held between the first and second members; said second member including a recessed inclined surface portion cooperating with said raised inclined surface portion when holding the jacket; and said first member including film strip inserting passageways formed at the end portion thereof on the side on which said raised inclined surface is provided and extending through the raised inclined surface portion parallel to and in alignment with the pockets of said jacket when held by the first and second members.

3,965,557
APPARATUS FOR AFFIXING PREALIGNED CORNER POSTS TO BOX-LIKE STRUCTURES BEFORE ASSEMBLING SAME

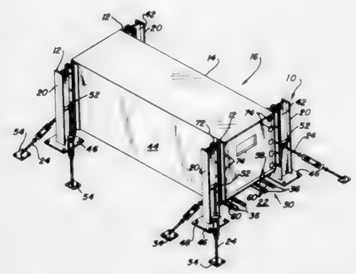
Robert L. Pruitt, Jr., 10001 Hendrix Court, N.E., Albuquerque, N. Mex. 87111

Filed Aug. 1, 1974, Ser. No. 493,763

Int. Cl.² B23P *19/00*

U.S. Cl. 29—200 J **9 Claims**

1. A corner-forming jig for aligning the corners of a room module or the like preparatory to joining two or more thereof together in assembled relation which comprises: a set of at least two rigid stanchions anchored in upstanding spaced parallel relation to one another, each of said stanchions having a vertically-disposed planar surface, and said planar surfaces paralleling one another; spacer means of uniform thickness effective when interposed between the planar surface of said stanchion and a flange of a structural steel corner post placed alongside thereof to maintain a minimum fixed spaced relationship therebetween; and, fastener means bridging the space between said stanchion and corner post operative upon actuation to draw the latter up snug against said spacer means, each of said stanchion, spacer means and fastener means subassemblies functioning independently of one another upon actuation to straighten the corner post associated therewith, and said subassemblies cooperating with one another to maintain said corner posts thus straightened in fixed spaced parallel relation to one another while being permanently attached to adjacent corners of a box-like structure placed therebetween.



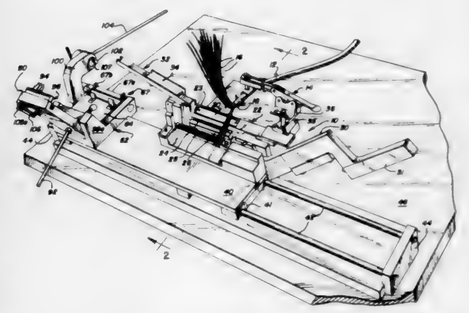
3,965,558
WIRE TERMINATION APPARATUS

William H. McKee, West Covina, Calif., assignor to TRW Inc., Elk Grove Village, Ill.

Continuation of Ser. No. 502,085, Aug. 30, 1974, abandoned. This application June 12, 1975, Ser. No. 586,453

Int. Cl.² H01R *43/04*

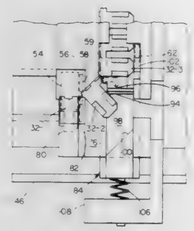
U.S. Cl. 29—203 MW **15 Claims**



1. Apparatus for simultaneously effecting solderless termination of a plurality of wires in a connector of the type having a plurality of terminals with the electrical contact portions of each terminal disposed within a separate terminal recess, comprising first means for supporting a plurality of insulated wires in predetermined, spaced, parallel relation to one another at spacings corresponding to the spacing of such recesses of such a connector, second means for supporting such a connector in a position such that said wires are juxtaposed with said recesses of a connector supported on said second means, means for effecting relation movement between said first and second means in a direction generally normal to the longitudinal axes of said wires and thereby positioning said wires in confinement engagement with said recesses, and

means engageable with each of said wires after said wires are so confined in said recesses for forcing each of said wires into electrically conductive engagement with the contact portions of the terminal in the respective recess.

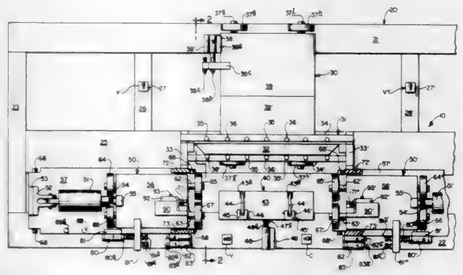
3,965,559
FLAG TERMINAL APPLYING MACHINE
Ralph Mazzola, Boston, Mass., assignor to Ark-Les Switch Corporation, Watertown, Mass.
Filed Mar. 6, 1975, Ser. No. 555,788
Int. Cl.² H01R *43/04*
U.S. Cl. 29—203 DT **7 Claims**



1. In an automatic terminal applying machine for attaching terminals to lengths of wire, said terminals being supplied to said machine attached sidewise to one another to form a terminal strip, said machine having
   a terminal applicator including
   a base,
   a tool reciprocable with respect to said base, said tool and base defining a terminal attaching position and including cooperating terminal attaching means actuated on reciprocation of said tool, and
   terminal carrier strip feed means for feeding said carrier strip in a carrier strip feed direction to place a leading terminal in said terminal attaching position, and
   a wire feed assembly for supplying wire in a wire feed direction perpendicular to said carrier strip feed direction to place a cut wire end in a said leading terminal in said terminal attaching position in said terminal applicator,
   that improvement comprising
   turning means in said terminal applicator cooperating with said terminal carrier strip feed means and actuated by reciprocation of said tool to turn a said leading terminal through 90° relative to said carrier strip feed direction before said leading terminal reaches said terminal attaching position,
   whereby said terminal applying machine is adapted to attach flag terminals to lengths of wire.

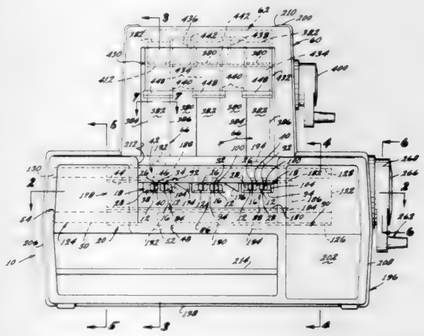
3,965,560
CORNER KEY MACHINE
James Carson Jackson, Baton Rouge, La., assignor to James Carson Jackson, Richmond, Va.
Filed Feb. 3, 1975, Ser. No. 546,212
Int. Cl.² B23P *19/04*
U.S. Cl. 29—208 R **18 Claims**

1. An apparatus for inserting a key member in an opening in a lineal member or shape comprising a frame, and mounted on said frame, a shape feed means for moving the shape to a preset location for receiving the key member, shape stop means for stopping the shape at the preset location for receiving the key member, and key feed means for inserting the key member in the lineal member or shape, said shape feed means including a shape support unit, and said shape support unit including shape support means, shape pick bar means



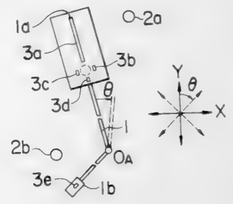
mounted thereon and shape guide means mounted on said pick bar means.

3,965,561
MACHINE FOR PLACING SUBSTANTIALLY FLAT, OPEN-THROATED ELEMENTS ON RODS
Tony Rhodes, Torrance, and Derek John Gay, Palos Verdes Peninsula, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 24, 1975, Ser. No. 552,587
Int. Cl.² B23Q *7/10*
U.S. Cl. 29—211 R **11 Claims**



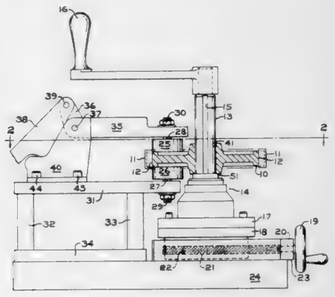
1. A machine for placing a substantially flat, open-throated element on a rod by passing the open-throat portion of said element past said rod transversely to the major axis thereof, comprising:
   1. means for holding said element with its open-throat portion unobstructed;
   2. means for supporting said rod with its major axis adjacent said unobstructed open-throat portion of said element, said supporting means comprising:
      A. a first L-shaped way positioned above said holding means, said first L-shaped way having a first leg lying in a substantially horizontal plane and a second leg depending from said first leg normal thereto in a vertical plane behind said rod;
      B. a second L-shaped way positioned below said holding means, said second L-shaped way having a first leg lying in a horizontal plane and a second leg upstanding from said first leg of said second L-shaped way normal thereto in a vertical plane behind said rod; and
      C. resilient pawl means pressing said rod against said second legs; and
   3. means connected to said holding means for moving said holding means toward said supported rod a sufficient distance to pass said open-throat portion of said held element past said rod.

3,965,562
METHOD AND APPARATUS FOR POSITIONING CONTROL
Tadao Inoyama, Yokohama, both of Japan, assignor to Hitachi, Ltd., Japan
Filed Jan. 20, 1975, Ser. No. 542,303
Claims priority, application Japan, Jan. 18, 1974, 49-7922; Feb. 1, 1974, 49-12747
Int. Cl.² B23Q *17/00*
U.S. Cl. 29—407 **16 Claims**



1. A method of positioning a first work piece in a prescribed alignment with a second work piece, said second work piece containing a plurality of positioning identification characteristic points, comprising the steps of:
   a. aligning a first detector defined relative to a first predetermined location on said first work piece with one of said positioning identification characteristic points on said second work piece; and
   b. rotating said first work piece relative to said second work piece about an axis passing through said first predetermined location on said first work piece and said one of said positioning identification characteristic points on said second work piece until another of said positioning identification characteristic points on said second work piece is aligned with a second detector defined relative to a second predetermined location on said first work piece.

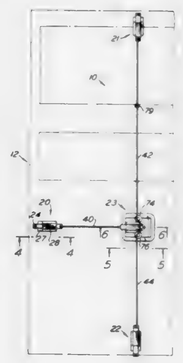
3,965,563
METHOD AND APPARATUS FOR REMOVING CUTTING BLADES FROM AN ANNULAR CUTTING HEAD
William L. Schaefer, Gibsonia, and Thomas J. Briar, Trafford, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed May 8, 1975, Ser. No. 575,903
Int. Cl.² B23P *19/02*
U.S. Cl. 29—427 **7 Claims**



1. In an apparatus for removing cutting blades from the periphery of an annular cutting head, said blades being longer than the thickness of said cutting head, the combination comprising:
   a working table;
   means for mounting said cutting head on said working table;
   means for rotating said cutting head about its axis;
   a pair of free wheeling cam members positioned to contact said blades at their portions extending beyond the width of the cutting head, the curved portions of said free wheeling cam members contacting the edges of the blades juxtaposed to the cutting edges, one of said cam members being removably mounted and both of said cam members being supported independent of said working table;
   means for moving said cam members and said working table in opposite directions to provide for removal of said blades from said cutting head, when said cutting head is rotated by said cam members thereby forcing said blades out of said cutting head.

6. In the method of removing cutting blades from the periphery of an annular cutting head, said blades being longer than the thickness of said cutting head, the improvement comprising:
   rotating said cutting head with the cutting blades therein;
   contacting said cutting blades at their portions extending outside the width of said cutting head on juxtaposed sides with a pair of cam members,
   moving said cutting head away from said cam members, and rotating said cutting head to force said blades out of their mounting.

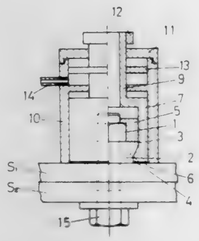
3,965,564
METHOD OF MAKING A LATCHING ASSEMBLY
Mike J. Slovensky, Jr., Twinsburg, Ohio, assignor to Cleveland Hardware & Forging Co., Cleveland, Ohio
Division of Ser. No. 483,110, June 26, 1974, Pat. No. 3,910,611, which is a continuation of Ser. No. 237,715, March 24, 1972, Pat. No. 3,834,747. This application Mar. 24, 1975, Ser. No. 561,350
The portion of the term of this patent subsequent to Sept. 10, 1991, has been disclaimed.
Int. Cl.² B23P *19/00*
U.S. Cl. 29—434 **1 Claim**



1. A method of providing a manually operative latching assembly for a door comprising the steps of:
   a. providing a plurality of latch members having latch pins movable between inward and outward directions and continually biased in the outwardly direction;
   b. providing an operating assembly including a pivotally mounted substantially flush handle driving a reciprocating sliding member;
   c. positioning said latch members along marginal edges of the door at locations wherein said latch pins can engage keepers;

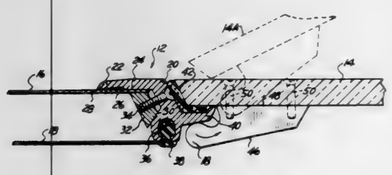
d. positioning said operating means at a desired location on said door;
e. interconnecting said sliding member with said latch pins by lengths of flexible cable; and
f. tensioning said lengths of cable an amount sufficient to allow said latch pins to move simultaneously upon movement of said sliding member but not an amount sufficient to hold said pins in retracted position.

3,965,565
METHOD OF AND APPARATUS FOR TIGHTENING HIGH-STRENGTH STEEL BOLTS
Kaneharu Fujii, No. 502, Tatzunodai, Zama Kanagawa, Japan
Filed June 4, 1975, Ser. No. 584,028
Int. Cl.² B23P *11/02*
U.S. Cl. 29—446 **1 Claim**



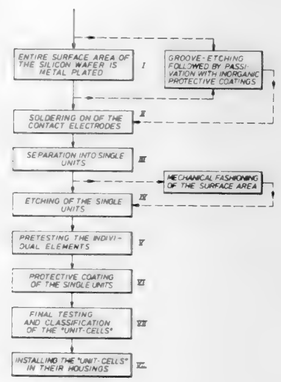
1. A method of tightening a high-strength steel nut and bolt combination comprising the steps of:
initially threading said nut to said bolt;
introducing a pre-stress tension into said bolt by means of a compressive force exerted on said nut threaded thereto;
tightening said nut on said bolt under said pre-stress tension; and then
releasing said force acting against said nut.

3,965,566
METHOD OF INSTALLING DETACHABLE SUN ROOF PANEL FOR AUTOMOBILES
Hal Green, Southfield, Mich., assignor to Empire Automotive, Inc., Ferndale, Mich.
Division of Ser. No. 444,274, Feb. 21, 1974, Pat. No. 3,913,971. This application May 27, 1975, Ser. No. 580,987
Int. Cl.² B23P *11/02*
U.S. Cl. 29—451 **3 Claims**



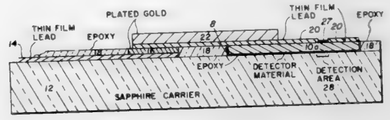
1. The method of adapting a conventional vehicle roof having a hard outer shell and a flexible headliner formed beneath the shell, to receive a removable sun roof panel, comprising: cutting an aperture in the roof panel and the headliner; disposing an elongated molding having a tapered section and a groove around the perimeter of the aperture; securing the molding to the shell by affixing wedges to the molding at the tapered section so as to engage the roof shell between the molding and the wedges; and disposing the edge of the headliner in the molding groove and securing it therein with a strip which extends into the groove.

3,965,567
METHOD FOR PRODUCING DIFFUSED CONTACTED AND SURFACE PASSIVATED SEMICONDUCTOR CHIPS FOR SEMICONDUCTOR DEVICES
Wolfgang Beerwerth, Neheim-Husten; Albrecht Geppert, Warstein; Horst Gesing, and Rigobert Schimmer, both of Belecke, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany
Filed June 28, 1974, Ser. No. 484,629
Claims priority, application Germany, June 28, 1973, 2332822
Int. Cl.² B01J *17/00*
U.S. Cl. 29—574 **40 Claims**



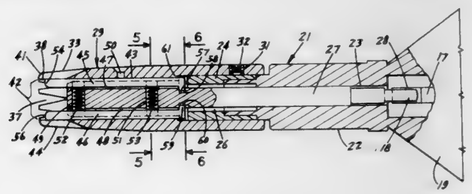
1. Method for producing diffused, contacted and surface passivated semiconductor chips for semiconductor devices, comprising the steps of:
a. producing a given arrangement of layers and regions of different conductance and different conductivity types for a plurality of devices in a semiconductor wafer by doping with impurity forming elements;
b. applying a metal layer to both of the major surfaces of the semiconductor wafer;
c. applying output electrodes for the plurality of devices to both metal layers with the output electrodes having such a thickness and overlying such areas of the metal layers so that after a subsequent separation of the wafer into a plurality of chips the thickness of the electrodes will still be sufficient for further processing and the major surfaces of the individual chips are completely covered by the output electrodes;
d. separating the semiconductor wafer into the intended plurality of individual contacted chips;
e. etching the exposed semiconductor surfaces of the individual contacted chips;
f. measuring the operating characteristics of the individual chips;
g. repeating steps (e) and (f) as required until the measured chip has satisfactory operating characteristics; and
h. providing the exposed semiconductor surfaces of the chips with satisfactory operating characteristics with a protective layer.

3,965,568
PROCESS FOR FABRICATION AND ASSEMBLY OF SEMICONDUCTOR DEVICES
Roland W. Gooch, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 392,148, Aug. 27, 1973, abandoned. This application June 5, 1975, Ser. No. 583,927
Int. Cl.² B01J *17/00*
U.S. Cl. 29—583 **11 Claims**



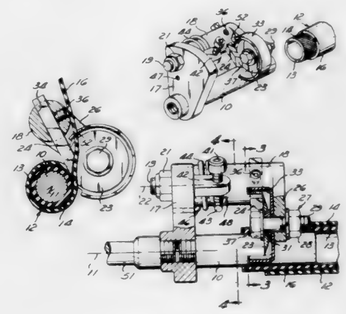
1. A method for fabricating a semiconductor device consisting of:
forming a lead pattern on a support member, said lead pattern having contacts of a thickness greater than a preselected thickness for forming a semiconductor device on said support member;
bonding a semiconductor chip with an insulating adhesive to the support member in a spaced relationship to the contacts, said semiconductor chip having a thickness greater than said preselected thickness, and said adhesive also filling the space between the semiconductor chip and the contacts;
lapping the semiconductor chip, the adhesive, and the support member lead pattern contacts in a single removal operation to form a coplanar surface and to form a semiconductor device by reducing the thickness of said semiconductor chip to said preselected thickness; and
forming conductive leads on said coplanar surface for connecting the semiconductor device to the support member lead pattern contacts.

3,965,569
CUTTING APPARATUS
Lee R. Bolduc, 4624 W. 28th St., Minneapolis, Minn. 55416
Continuation of Ser. No. 498,313, Aug. 19, 1974, abandoned. This application Aug. 18, 1975, Ser. No. 607,204
Int. Cl.² B26B *19/14*
U.S. Cl. 30—29.5 **10 Claims**



1. An apparatus for cutting hair comprising: a housing, an elongated generally cylindrical cutter means mounted on the housing operable to cut hair, said cutter means having a sleeve member with an open forward end, a plurality of forwardly directed teeth located around the open forward end, and a cylindrical inside wall surrounding a passage open to the forward end, adjacent teeth being spaced from each other to provide a plurality of separate V-grooves for accommodating hair, each of said grooves having an inner end and an open end whereby hair can move through the open outer end into the grooves between adjacent teeth, blade means located in the passage, said blade means comprising a pair of elongated bar members, each bar member having an elongated outer surface extended along the length of the bar member in surface engagement with the inside cylindrical wall, a linear cutting edge extended along one side of the outer surface, and generally flat sides, a rotatable member located in the passage, said rotatable member having an outer end located in general transverse alignment with the inner ends of the grooves in the sleeve member, said rotatable member having an outwardly directed annular rib, said cutter means having an inwardly directed annular shoulder cooperating with the rib to limit the longitudinal movement of the rotatable member, said rotatable member being a cylindrical member having two pairs of circumferentially spaced longitudinal walls forming a pair of longitudinal grooves located on diametrically opposite sides of the member, said bar members being located in said longitudinal grooves for rotation with the rotatable member, parts of the sides of said bar members being engageable with the longitudinal walls forming the longitudinal grooves, said bar members having outer end portions extended outwardly from the outer end of the rotatable member, said linear cutting edges of said end portions on rotation of the rotatable member cooperating with the teeth to cut the hair extended through the grooves in the sleeve member, means for biasing the blade means into engagement with the cylindrical inside wall, said means for biasing including a spring mounted on the rotatable member and engageable with the bar members, drive means connected to the rotatable member to move the blade means relative to the teeth to cut hair extended through the grooves in the sleeve member between adjacent teeth, and means engageable with the bar members and rotatable member to limit longitudinal movement of the bar members relative to the rotating member.

3,965,570
HOSE SKIVING TOOL
Robert E. Kozulla, Willowick, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio
Filed Apr. 21, 1975, Ser. No. 569,979
Int. Cl.² B21F *13/00*; **B26B** *27/00*
U.S. Cl. 30—90.1 **9 Claims**



1. A skiving tool for hose comprising cutter means, positioning means for laterally positioning a hose with respect to said cutter means for relative rotation between said hose and tool about a first axis, a support arm member connected to said positioning means, a tool post member mounted on said support arm member for adjustment rotation relative thereto about a second axis spaced from said first axis, said cutter means mounted on said tool post member operable upon relative rotation between said tool and hose about said first axis to engage such hose at a location spaced from said first axis and skive a layer therefrom, and adjusting means operable to adjustably move said tool post member relative to said support arm member about said second axis and to lock said members in adjusted positions; said adjusting means including a screw threaded into one of said members and engageable with a surface on the other of said members wherein both said screw and said surface are spaced from said second axis, and a spring connected between said members maintaining said

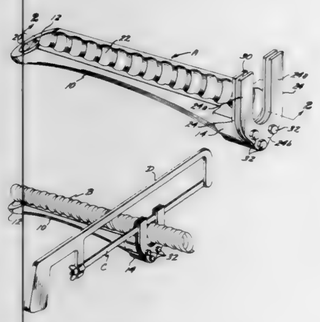
screw and surface in engagement during adjustment, said cutter means including a disc cutter journalled on said tool post member and adapted to radially cut into a hose, and a separate chisel-type cutter having a cutting edge positioned adjacent to the inner extremity of said disc cutter, the cutting edge of said chisel-type cutter extending generally in a longitudinal direction with respect to a hose supported by said positioning means, said disc cutter being mounted in a phase perpendicular to said first axis.

3,965,571

FLEXIBLE SPIRALLY WOUND CONDUIT CUTTING DEVICE

Richard G. Lyman, 408 E. 230th St., Carson, Calif.

Filed June 30, 1975, Ser. No. 591,778
Int. Cl.² B21F *11/00*; **B26B** *27/00*
U.S. Cl. 30—90.2 **2 Claims**



1. In combination with a hacksaw having a thin elongate blade, a light weight portable device that may be grasped by a hand of a user to removably hold a section of spiral wound flexible electric conduit within the confines thereof in such a position that said blade can be used to make a transverse cut in said conduit normal to the longitudinal axis of said conduit, said device including:

a. an elongate handle that has a first rearward end and a second forward end of substantially greater transverse cross section than the balance of said handle, with said handle having an elongate cavity of substantially semi-circular cross section extending the longitudinal length thereof, with said second forward end having a flat forward U-shaped face normally disposed to the longitudinal axis of said handle, and said second forward end face having a plurality of spaced tapped bores extending rearwardly therein below the bottom extremity of said cavity, and said cavity having a plurality of longitudinally spaced transverse recesses defined therein that engage the exterior surface of said spirally wound conduit to prevent the latter moving longitudinally in said handle when said conduit is being cut by said blade;

b. first and second rigid U-shaped guide plates, each of said guide plates including two transversely spaced legs having free first ends extending above said handle to a height above a conduit to be cut and second ends that merge below said cavity into a transverse web, and each of said plates having a plurality of openings in said web that are axially alignable with said tapped bores;

c. spacer means for separating said first and second plates and defining a space therebetween of a width greater than the thickness of said blade; and

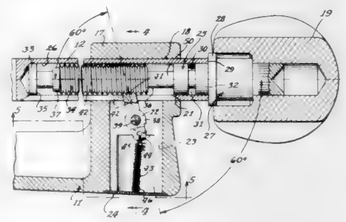
d. a plurality of bolts that extend through said openings to engage said tapped bores to removably secure said first and second rigid plates and spacer means to said second end of said handle to permit a section of said spirally wound conduit resting in said handle to be cut when said blade is reciprocated in said space in sawing contact with said conduit.

3,965,572

TUBE CUTTER

Richard V. Strybel, Elk Grove Village, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Oct. 21, 1975, Ser. No. 624,555
Int. Cl.² B23D *21/08*; **B25B** *13/16, 5/22*
U.S. Cl. 30—102 **20 Claims**



1. In a manually operable tool having a movably element, a mounting element, and a carrier movable carried on the mounting element for positionably adjustably carrying the working element, means defining a helical thread carried by said carrier, manually rotatable means for rotating said thread means about the helical axis thereof, and pawl means having a toothed portion engageable with said helical thread, the improvement comprising:

pivot means pivotally mounting said pawl means to said mounting element adjacent said helical thread means;

biasing means engaging said pawl means for biasing said pawl means to urge said toothed portion into mated association with said helical thread, the pivot axis of said pivot means being spaced from said helical thread means a preselected distance to cause said pawl means toothed portion in a forwardly angled position to drivingly engage said helical thread when the helical thread means is moved in a first axial direction and permit said helical thread to move past said toothed portion when the helical thread means is moved in a second, opposite axial direction, and in a rearwardly angled position to permit said helical thread to move past said toothed portion when the helical thread means is moved in said first axial direction; and

means at opposite ends of said helical thread defining a space into which said biasing means urges said toothed portion of the pawl means to permit initial movement of the helical thread against said toothed portion in the space to pivot the pawl means against the action of the biasing means to permit a continuation of that movement to cause movement of the helical thread past the toothed portion of the thusly pivoted pawl means.

3,965,573

AUTOPSY APPARATUS FOR ASSISTING THE CUTTING OF BRAIN TISSUE

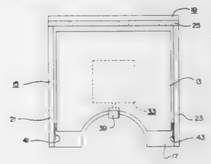
George P. Mims, Memphis, Tenn., assignor to Sandra J. Vorus, Memphis, Tenn.

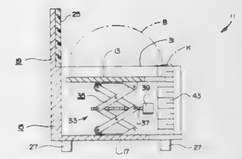
Filed Mar. 24, 1975, Ser. No. 561,186
Int. Cl.² B26B *11/00, 29/02*
U.S. Cl. 30—124 **6 Claims**

1. Apparatus for use in autopsies to assist in the cutting of brain tissue with an autopsy knife, said apparatus comprising:

a. holding means for holding and restraining movement of the brain tissue as the autopsy knife is passed through the brain tissue;

b. guide means located adjacent said holding means for guiding the autopsy knife through the brain tissue as the brain tissue is restrained by said holding means, said holding means including a horizontally disposed platform member for supporting the brain tissue, said horizontal platform member being movable relative to said guide means for allowing the brain tissue supported on said platform member to be positioned at different locations relative to said guide means, and





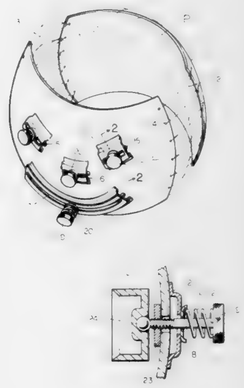
c. scale means located adjacent said guide means and said movable platform member for allowing said movable platform member to be adjustably positioned in graduated degrees relative to said guide means thus the autopsy knife may selectively be guided through various predetermined areas of the brain tissue while being supported on said platform member.

3,965,574

APPARATUS FOR FORMING A JACK-O-LANTERN

Harry Edwin Graves, 3219- 135th St., Toledo, Ohio 43611

Filed Sept. 29, 1975, Ser. No. 617,482
Int. Cl.² B26B *11/00, 29/02*
U.S. Cl. 30—124 **2 Claims**



1. Apparatus for forming a jack-o-lantern comprising

a. a pair of plates of sheet material curved to engage opposite sides of a pumpkin,

b. releasable means for connecting the adjacent edge portions of said plates for holding same in place against a pumpkin,

c. holes in one of said plates appropriately arranged for the eyes, nose and mouth of a jack-o-lantern,

d. cutters shaped appropriately for the eyes, nose and mouth adapted to cut through and remove portions of the wall of a pumpkin,

e. an instrument for each of said cutters to extend through the respective hole in said plate.

f. each instrument having a stem extending through a plate hole and engaging a cutter disposed on the inside of such plate,

g. a clamping plate on the inside of such plate in screw threaded engagement with said stem,

h. a clamping plate on the outside of and engaging such plate, and through which said stem freely extends,

i. an operating wheel on the outer end of said stem, and

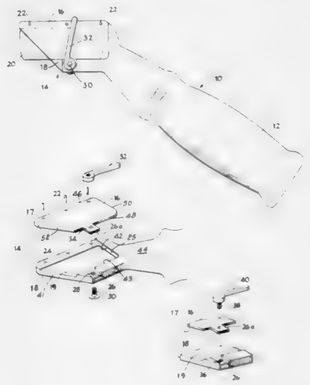
j. a coil spring between said wheel and said outside clamping plate.

3,965,575

KNIFE BLADE SUPPORT UNIT

Edward R. Stunger, Greenville, S.C., assignor to Bigelow-Sanford, Inc., Greenville, S.C.

Continuation-in-part of Ser. No. 498,253, Aug. 19, 1974, abandoned. This application Apr. 21, 1975, Ser. No. 569,784
Int. Cl.² B26B *1/08, 3/08*
U.S. Cl. 30—294 **5 Claims**



1. A knife blade support unit for receiving a replaceable blade having a predetermined thickness comprising

a blade-receiving slot defined by a rigid base member and a flexible second member, each said member having a blade engaging inner surface,

said base member providing an open channel including a surface portion continuous with said base member inner surface and extending therefrom,

said second member providing a tongue alignable with said base member channel and including a surface portion continuous with said second member inner surface and extending therefrom,

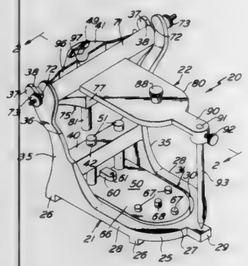
means spaced from said channel and tongue maintaining said inner surfaces fixed along a first edge of said defined slot spaced from said channel and tongue with a predetermined separation substantially equal to said predetermined blade thickness,

a clamping member passing through said channel and tongue, and

an elongated tightening lever for said clamping member lying in a plane generally parallel to said defined slot and rotatable in said plane,

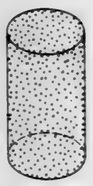
whereby force applied to said lever is transferred through said clamping member to urge together said inner surfaces securing said blade therebetween.

3,965,576
DENTAL APPARATUS AND METHOD
Melborne D. Eveland, 1006 Buena Vista Road, Forked River, N.J. 08731
Filed May 15, 1974, Ser. No. 470,197
Int. Cl.² A61C *11/00*
U.S. Cl. 32—32 **9 Claims**



1. In a dental method, the steps which comprise: detachably assembling upper and lower dental models in centric relation, surfacing opposite faces of the assembly generally parallel to each other and to the occlusal plane, positioning said assembly in a locating jig having a predetermined spacial relation with respect to an articulator, fixedly adhering attachment members to said opposite faces in said locating jig, removing said assembly and fixed attachment members from the jig, disassembling said models from said assembly, detachably mounting said models by said attachment members on the respective upper and lower members of an articulator for centric location of the models in said articulator, and providing an internal cusp-like guide surface fixed relative to said lower articulator member, and a follower depending from said upper articulator member into following engagement with said guide surface, for movement of said upper member relative to said lower member with said follower on said guide member to simulate excursive movement.

3,965,577
PELLETS
Gunther Wegner, Neuenhain, Taunus, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Division of Ser. No. 323,434, Jan. 15, 1973, abandoned. This application May 15, 1974, Ser. No. 470,317
Claims priority, application Germany, Jan. 13, 1972, 7201061[U]
Int. Cl.² A61C *3/00*
U.S. Cl. 32—40 R **4 Claims**

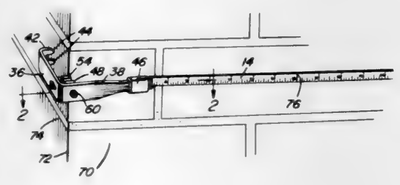


1. A halocarbon impregnated pellet of an elastic soft cellular plastic material having open pores of a volumetric weight from 25 to 40 kg/m³ and having a number of pores from 10 to 20/cm suitable for determining the vitality of tooth pulpa.

3,965,578
COMBINED AMALGAM CARRIER AND DENTAL HANDPIECE
Fuller Warden, and Eugene W. Lewis, both of Tulsa, Okla., assignors to Grace Development Company
Filed Sept. 23, 1974, Ser. No. 508,256
Int. Cl.² A61C *5/04*
U.S. Cl. 32—60 **14 Claims**

1. A combined amalgam carrier and dental handpiece for filling tooth cavities and comprising external power source means having rotatable drive means, cartridge means preloaded with amalgam ingredients in separate sealed compartments, mixing means provided in said cartridge means, said mixing means being removably engagable with said drive means for actuation thereby for release of the amalgam ingredients from the respective sealed compartments and to combine and mix the amalgam ingredients within said cartridge to produce amalgam, plugger means carried by said power source means and reciprocal with respect to said cartridge means for ejecting a quantity of amalgam into the tooth cavity and packing the amalgam within said tooth cavity.

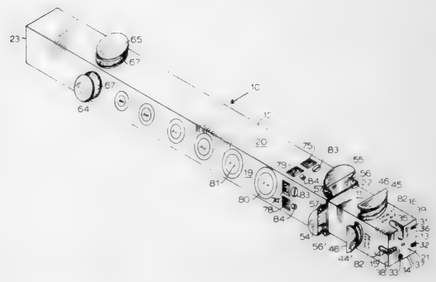
3,965,579
MEASURING TAPE ANCHOR
Lee W. Woods, 113 California, NE., Albuquerque, N. Mex. 87108
Filed May 19, 1975, Ser. No. 578,905
Int. Cl.² G01B *3/10*
U.S. Cl. 33—137 R **2 Claims**



1. In combination with a conventional tape rule of the type including a generally circular housing having a slot formed through one peripheral edge portion and a coiled flexible measuring tape within said housing provided with one free end portion protractible and retractable through said slot, a generally rectangular ring-type terminal end member pivotally mounted on said free end of said tape, and a right angularly extending apertured flange supported from and projecting outwardly of one side of the outer end of said end member; a rigid generally L-shaped anchor member including a pair of generally right-angularly disposed arms rigidly interconnected at adjacent ends, and means removably clampingly attaching said terminal end member to the inner side of one of said adjacent ends and said flange to the inner side of the other of said adjacent ends with said terminal end and flange generally paralleling the corresponding adjacent ends of said arms, said terminal end member being pivotally attached to the free end of the tape for oscillation relative thereto about an axis generally paralleling one side of said end member and extending transversely of said tape, the free end portion of one of said arms including an angularly directed terminal end projecting into the included angle formed by said arms, at least the inner side of the free end portion of the other of said arms including a resilient bumper portion, the length of said arms of said anchor member being such to enable the latter, when said tape is substantially fully retracted within said housing, to be positioned against said housing embracing approximately one-

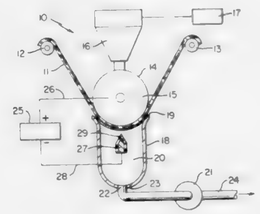
quarter of the external periphery thereof and with the juncture between said arms spaced outwardly of said slot.

3,965,580
DEVICE FOR DETERMINING THE SIZE DASH NUMBER OF STANDARD O-RINGS
James S. Bogart, Farmington Hills, Mich., and John M. Wilcox, Columbia, S.C., assignors to Federal-Mogul Corporation, Detroit, Mich.
Filed Oct. 29, 1974, Ser. No. 518,610
Int. Cl.² G01B *5/08, 3/20*
U.S. Cl. 33—143 M **7 Claims**



1. A device for determining the size dash number of standard O-rings, including in combination:
a pair of telescoping elongated prisms, comprising an outer prism and an inner prism mated to each other and slidable relative to each other, said outer prism including a first end and a second end, said inner prism at all times projecting from said first end of said outer prism and having an end wall,
one of said prism having means for determining the thickness category of each standard O-ring,
each face of said inner prism having at least one projection having a flat surface parallel to and facing away from said end wall, all said flat surfaces of all said projections lying in a common plane and providing stop means,
said outer prism having on each face thereof at said first end at least one projection for matching each projection of said inner prism and forming a mating stop means limiting inward telescopic movement of said inner prism, the matching pairs of projections providing means for supporting O-rings and being keyed to said means for determining the thickness category,
said outer prism also having on at least some faces adjacent said second end thereof, an additional O-ring supporting projection,
said outer prism having near each said projection an aligning means for each projection, each said aligning means lying on the same face as its corresponding projection and keyed thereto,
said inner prism having thereon identifying dash numbers in columns, each column being aligned with a said aligning means and each number being so aligned as to appear in a readable portion aligned with said aligning means when an O-ring is supported by both a projection of said inner prism and a projection of said outer prism, and when said inner prism is extended to a position where said O-ring is taut but not stretched, and
printed silhouettes in shapes of standard O-rings too small to enable installation on said projections, said silhouettes being desplayed on faces of said outer prism between the said projections of each respective face along with their dash numbers and along the longitudinal axis of said face which extends in the direction of the extension of said inner prism so that such small-diameter O-rings can be matched by silhouette to give the proper dash number.

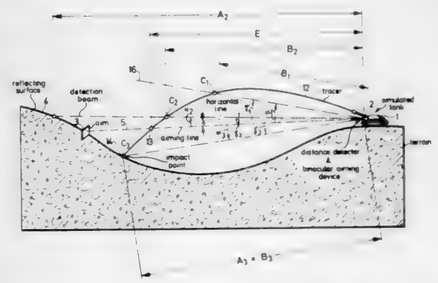
3,965,581
LIQUID REMOVING METHOD AND APPARATUS
James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429
Continuation-in-part of Ser. No. 469,820, May 14, 1974, and a continuation-in-part of Ser. No. 405,023, Oct. 10, 1973, and Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898. This application Feb. 10, 1975, Ser. No. 548,666
Int. Cl.² F26B *3/34, 3/36*
U.S. Cl. 34—1 **20 Claims**



1. Apparatus for removing moisture from web-like moisture bearing fibrous material comprising means for supporting and moving said material in strip-like fashion, vibrating means for vibrating said moving and supported material to work the fibers thereof, and dielectric heating means for heating said moisture in said moving and supported and vibrating material to remove at least some of said moisture from said vibrating material.

6. A method for removing moisture from web-like moisture bearing fibrous material comprising the steps of supporting and moving said material in strip-like fashion, vibrating said supported and moving material with vibrating means to work the fibers thereof, and removing at least some of said moisture from said vibrating material with dielectric heating means dielectrically heating said moisture in said vibrating material while said material is being moved and supported.

3,965,582
GUNNERY PRACTICE METHOD AND APPARATUS
Gerd von Bennigsen, Geisenbrunn, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Continuation-in-part of Ser. No. 493,658, July 30, 1974, abandoned. This application June 11, 1975, Ser. No. 585,820
Claims priority, application Germany, Aug. 2, 1973, 2339164
Int. Cl.² F41G *3/26*
U.S. Cl. 35—25 **9 Claims**



1. A method of simulating a projectile firing operation comprising the steps of:
automatically and continuously generating and displaying a trajectory trace corresponding to the trajectory of an imaginary projectile from a given starting point over

terrain taking into account an estimated distance between the desired impact point and said starting point, the azimuth angle and elevational angle of firing of said projectile, and the characteristic path of the selected projectile type;

training a range finder from a position generally at said starting point through successive points on said trajectory corresponding to instantaneous successive positions of said imaginary projectile thereon and generating first distance signals corresponding to the instantaneous straight-line first distance from said position through said successive points to locations on said terrain;

automatically calculating the instantaneous straight-line second distance between said starting point and said instantaneous successive positions of said imaginary projectile on said trajectory and generating second distance signals corresponding thereto;

comparing said first distance signals with respective second distance signals and generating a zero signal when said first and second distances are equal; and

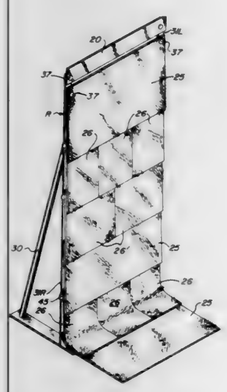
stopping generation of said trace on generation of said zero signal.

3,965,583

DISPLAY RACK FOR CARPET SAMPLES

Raymond C. Price, Rte. 3 Box 392, Golden, Colo. 80401

Filed May 23, 1975, Ser. No. 580,237
Int. Cl.² G09B *25/00*
U.S. Cl. 35—55 **9 Claims**



1. A carpet sample display rack for releasably supporting a plurality of generally rectangular carpet samples each being at least partially exposed comprising:

a. a generally rectangular, open frame formed set of relatively thin straps lying flatly in the plane of the frame, providing a relatively thin side profile, and including a pair of opposed strap members arranged for uprights and pair of opposed strap members adjacent the ends of the uprights as cross members, and therebeing a plurality of spaced holes through an upright spaced along its length and therebeing a plurality of complementary holes in the opposed upright arranged to be generally horizontal when the rack is mounted upright and each of holes being spaced from adjacent holes a distance less than the height of the samples;

b. a plurality of span straps of a length to span the distance across the opposed uprights and including a plurality of holes therethrough, with a pair of holes adjacent the outer ends of each span strap spaced to generally align with a pair of complimentary holes in the opposed uprights, and including a plurality of holes intermediate said outer holes arranged to coincide with the width of carpet samples held thereon;

c. a plurality of fasteners arranged to pass at least partially through the holes, pairs of which releasably secure each span strap to complimentary holes in said uprights, and pairs of which secure carpet samples to said straps and said span straps; and

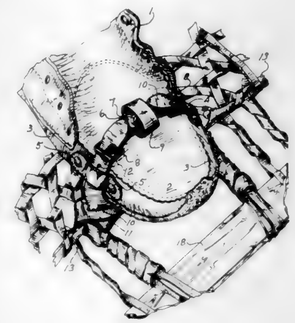
d. means for supporting said rack in upright position.

3,965,584

FOOTWEAR AND ATTACHMENT ASSEMBLY FOR SNOWSHOEING

Maurice Beaulieu, 120 Dequoy St., St. Gabriel de Brandon, Quebec, Canada

Filed Dec. 9, 1974, Ser. No. 531,194
Int. Cl.² A43B *00/00*
U.S. Cl. 36—122 **6 Claims**



1. A footwear and attachment assembly for snowshoeing comprising a footwear including a front foot portion having a pair of lateral walls, a pair of strap portions secured against the outer face of said lateral walls respectively, projecting lengthwise of said footwear transversely adjacent the articulation of the toes, and having an intermediate loose portion forming an upright passage, and a pair of tying straps insertable through said upright passages respectively, securable to each other over said front foot portion at said articulation, and each having a bottom end securable to an underlying snowshoe.

3,965,585

SHOE ATTACHMENT FOR SPORTS

Sherwin R. Stewart, 5844 Denny Ave., North Hollywood, Calif. 91601 5N

Filed Aug. 7, 1975, Ser. No. 602,682
Int. Cl.² A43B *00/00*
U.S. Cl. 36—125 **7 Claims**

1. A shoe attachment device for use in connection with a variety of sports including snow, beach surf, sand walking and the like comprising a pair of foot devices wherein each of said foot devices consists of:

an elongated platform having opposite ends terminating in close proximity to the toe and heel of the user's shoe;

a continuous sidewall integrally carried on said platform extending in parallel along the opposite sides of said platform;

a portion of said continuous sidewall constituting the front end of said platform and including an outwardly projecting lip;

said lip incasing a length of reinforcement rod so as to stiffen and rigidize said front end;

adjustable attachment means operably carried on said platform for detachably coupling the heel and toe of the user's shoe;

said attachment means including a toe piece having a pair of halves pivotally carried on said platform for lateral rotational movement towards the opposing surfaces of said sidewalls;

parallel runner means detachable carried on the underside of said platform so as to downwardly depend therefrom; and

releasing means interconnecting said runner means with said platform for removing and detaching said runner means.

3,965,586

SKI BOOT COVER

Friedrich Roosli, 315 E. 77th St., New York, N.Y. 10021

Filed July 28, 1975, Ser. No. 599,608
Int. Cl.² A43B *1/10*
U.S. Cl. 36—7.3 **7 Claims**



1. A ski boot protector for preserving the integrity of the ski binding-engaging surfaces of a ski boot when the ski boot is not engaged with a binding, said protector being formed of elastic material and comprising:

an elongate sole protector portion sized to conform generally to the shape and plan view area of a ski boot sole;

forward and rear upstanding end wall members extending upwardly from said protector portion at the opposite ends thereof and each end wall member presenting an inner surface adapted to engage the forward and rear projecting ends of a ski boot sole, each end wall member extending from side-to-side of said sole protector portion and each having a cover flange likewise extending from side-to-side of said sole protector portion, the cover flanges being dimensioned to overlie and substantially to cover the projecting forward and rear ends of a ski boot sole; and

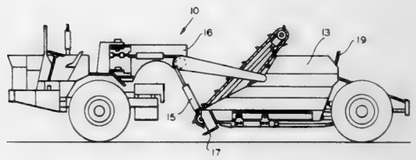
an upstanding side wall member extending along each side of said sole protector portion and integrally joining said end wall members, said side wall members being spaced apart closely to engage along opposite sides of a ski boot.

3,965,587

QUICK DROP CONTROL FOR SCRAPERS

Robert C. Johns, Jr., Lubbock, Tex., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 13, 1974, Ser. No. 523,307
Int. Cl.² B60P *1/36*; **F15B** *11/08*
U.S. Cl. 37—8 **2 Claims**



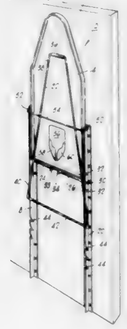
1. In a mobile earth moving scraper, a bowl to hold, haul and dump earth material, an hydraulic cylinder operable to raise or lower the front of the a bowl, a blade on the front of the bowl engageable with the ground when the bowl is lowered for digging earth material to fill the bowl, the improvement comprising a control including a main valve having a valve spool shiftable from a neutral position to one of three fluid control positions corresponding to up, down or quick drop control functions of the hydraulic cylinders, a pump, a reservoir connected with the pump through the main valve with the valve spool in the neutral position, a first line carrying hydraulic fluid under pressure from the pump through the main valve when the valve spool is in the up position to one end of the hydraulic cylinder causing the bowl to be raised, a second line connecting the other end of said cylinder through the main valve with the reservoir when said valve spool is in said up position, a check valve in the first line checking any exhaust flow to the reservoir from the one cylinder end in the up position, a source of pilot pressure, a pilot operated valve connected to the source of pilot pressure in the down or quick-drop positions, a bypass line connected to said first line above the check valve directing exhaust cylinder flow from the one end of the cylinder through the pilot operated valve when actuated by the pilot pressure and returning it below the check valve to unseat it and allow flow through the check valve back to the main valve by said first line returning the exhaust flow to the reservoir in the down position of the main valve or recirculating it to the other end of the cylinder in said quick drop position.

3,965,588

IRONING BOARDS

Harry L. Long, P.O. Box 1057, Norman, Okla. 73069

Filed May 19, 1975, Ser. No. 578,602
Int. Cl.² D06F *81/00*
U.S. Cl. 38—103 **4 Claims**



1. An ironing board assembly for use in combination with a selected vertical supporting door surface, comprising:

ironing board means of planar character having a squared end and an angled end;

first and second vertical support members arranged for parallel, bonded disposition to said door surface, said vertical support members each having a base panel for bonding to said door surface and an additional panel for receiving the squared end of said ironing board in rigid affixure as well as a plurality of brace receiving slots disposed at selected height from the door surface bottom;

first and second securing means for pivotally securing the squared end of said ironing board to said first and second vertical support members;

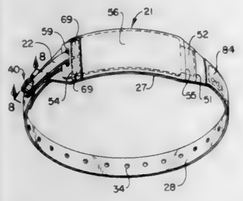
brace means pivotally affixed to the angled end of said ironing board means, said brace means being securable in said slots at the lower end of each said vertical support member to brace said ironing board means in its horizontal operative position; and

second securing means of resilient consistency affixed to said first and second vertical support members and adaptable to retain said ironing board means in a stored position parallel to said vertical door surface.

3,965,589
IDENTIFICATION MEANS

Clifton Eugene McDermott, Salt Lake City, Utah, assignor to Bio-Logics Products, Inc., Salt Lake City, Utah

Filed Feb. 12, 1975, Ser. No. 549,426
Int. Cl.² G09F 3/14
U.S. Cl. 40—21 C 7 Claims

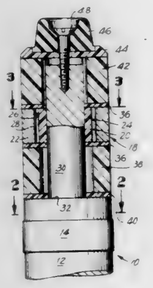


1. A composite identification band comprising:
a flexible plastic strap having located near one end thereof a lower pocket having an exposed opening at one end;
an upper pocket superimposed on said lower pocket having exposed openings at both ends;
a pocket partially overlying said upper pocket and open at one end;
a pocket longitudinally aligned with and adjacent to said upper and lower pockets along said strap having an exposed opening at one end;
male fastening means at the end of the strap containing said upper and lower pockets adapted to receive apertures in the other end of the strap in any of several possible positions when the band is in a looped condition;
a tether looped through a flat encoded identification plate, one end of the tether being adapted to fit over the male fastening means;
female fastening means carried by the other end of the tether adapted to interlock with said male fastening means when the ends of the tether are superimposed on each other thereby securing the strap in a looped condition and further securing the tether and encoded identification plate to said strap.

3,965,590
ARTICLES FOR CARRYING IDENTIFICATION

Isaac Algaze, Freeport, N.Y., assignor to Rich Cue of Valley Stream Corporation, Freeport, N.Y.

Filed Jan. 3, 1975, Ser. No. 538,310
Int. Cl.² G09F 3/18
U.S. Cl. 40—19 10 Claims



1. In an article which is to carry identification, an assembly having an interior backing portion and an outer window situated in front of and spaced from said backing portion to define therewith a gap situated between said backing portion and window, said backing portion being visible through said window and said window being formed with a slit through which a strip can be introduced into said gap to become situated between said backing portion and window so that a surface of said strip becomes visible through said window, said assembly including a closing means closing said gap at all parts thereof except a region of said gap which communicates with said slit so that access may be had to said gap only through said slit, and said assembly having a portion removably carrying said strip so that the latter may be removed from the latter portion of said assembly and then introduced through said slit into said gap after a desired identification has been placed on said surface of said strip which becomes visible through said window after said strip has been introduced into said gap, said window and backing portion having opposed ends and said closing means engaging said opposed ends and extending across said gap for closing the latter at all parts except said region thereof which communicates with said slit, and pressing means engaging said closing means at said opposed ends of said window and backing portion and pressing said closing means against said opposed ends for maintaining said closing means assembled with said window and backing portion.

3,965,591
NAPKIN RING

Alice E. J. Le Sueur, Cobble Hill, Canada, assignor to The Raymond Lee Organization, New York, N.Y., a part interest

Filed Nov. 26, 1974, Ser. No. 527,216
Int. Cl.² G09F 3/14
U.S. Cl. 40—21 R 3 Claims



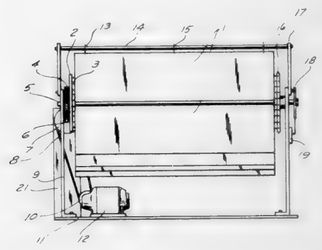
1. A napkin ring in the form of a hollow cylinder fitted with readily replaceable and interchangeable identification means, comprising
a hollow cylinder formed with a recess in an external face of the ring,
a strip of material fixed in said recess below the external surface of the ring, and
a plurality of plates, each externally marked with a symbol, that fit onto said strip in the recess, with said plates and strip joined to each other by magnetic means.

3,965,592
ADVERTISING DEVICE

Alfredo M. Anos, 6 Anak-Bayan St., San Francisco del Monte, Quezon City, Philippines

Filed Apr. 11, 1973, Ser. No. 281,503
Claims priority, application Philippines, Aug. 18, 1971, 12758
Int. Cl.² G09F 27/00
U.S. Cl. 40—28.1 9 Claims

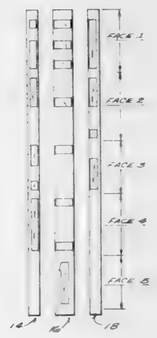
1. An advertising device comprising a pair of upright first supports spaced from one another; a drum mounted on said first supports for rotation about a substantially horizontal axis; means for rotating said drum so that successive portions thereof reach a front region of said device which is directed to an observer of the device and including a drive shaft; a plurality of information bearing sheets mounted on said drum for pivoting about axes parallel to the axis of said drum; means for displaying the information on successive sheets momentarily positioned at said front region of said device, said display means including a pair of second supports attached to said first supports and extending therefrom to a location above said front region of said drum, and limiting means connected to said second supports and including portions contacting a respective one of said successive sheets and holding the same in a substantially vertical position for a predetermined period of time; a tape recorder operative for reproducing audible signals pertaining to the information displayed by said displaying means and recorded on a magnetic tape, said tape recorder having a capstan connected to said drive shaft so as to share the rotation thereof and adapted to contact the magnetic tape; and means for synchronizing the signals with the information displayed by said displaying means, including a transmission between said drum and said drive shaft operative for establishing a proportion between the rotation of said drive shaft and the rotation of said drum so that said capstan advances the magnetic tape through said tape recorder at a speed proportionate to the speed of rotation of said drum.



3,965,593
NUMERIC DISPLAY USING THREE ENDLESS BELTS

Robert J. Harruff, Pardeeville, Wis., assignor to General Indicator Corporation, Pardeeville, Wis.

Filed Nov. 18, 1974, Ser. No. 524,746
Int. Cl.² G09F 11/28
U.S. Cl. 40—32 1 Claim

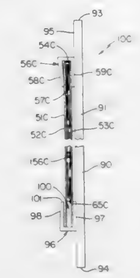


1. A numeric display device comprising:
a housing having an open front,
three endless belts mounted in the housing in side-by-side relationship with each belt reeved over rollers in serpentine fashion with a continuous face portion of each belt facing outwardly through the open front of the housing,
each of the three belts having only five face portions,
one of the belts having indicia on each of its five face portions while each of the other two belts has indicia on four face portions and a blank fifth face portion,
the indicia on the three belts being combinable in the open front to form any desired numeral from 0–9,
means driving each belt independently of the others so as to enable the various face portions to be positioned in the open front,
and guide means in the open front between adjacent belts to guide the edges of each belt.

3,965,594
FRAME CONSTRUCTION FOR A PLURAL PAGE DOCUMENT

James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429

Continuation of Ser. No. 374,936, June 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 336,989, March 1, 1973, Pat. No. 3,807,071, which is a continuation-in-part of Ser. No. 271,925, July 14, 1972, abandoned. This application Sept. 23, 1974, Ser. No. 508,084
The portion of the term of this patent subsequent to Apr. 30, 1991, has been disclaimed.
Int. Cl.² G09F 1/12
U.S. Cl. 40—104.02 7 Claims



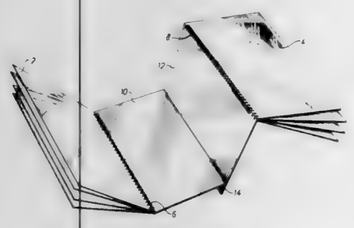
1. A picture-like frame construction exhibiting a plural page document comprising a plural page document, a back support for supporting said frame construction in a substantially vertical manner on a wall, desk, etc., said back support having a clamping channel means adjacent the top thereof for defining at least part of an open area within said frame construction and leading from the front thereof to said back support and clamping and holding adjacent top parts of said pages in serial hinged stacked relation in the channel thereof so that said pages are disposed in serial stacked relation in said open area in such a manner that the outermost page appears to be the only page framed in the open area but permitting all of said pages to be manually fanned out through said open area thereof for individual viewing thereof, and a folded transparent flexible sheet receiving said top parts of said pages of said document in the fold thereof, said fold of said sheet being clamped in said channel of said clamping channel means whereby the outer part of said folded sheet covers the outermost page of said plural page document when the same are disposed in said stacked relation in said open area and tends to give the appearance that the same is a glass panel covering the outermost page of said document, said frame construction having another channel means adjacent the bottom of said back support and having the channel thereof facing toward the channel of the first mentioned channel means while being spaced below the bottom parts of said pages and loosely receiving the bottom edge of said outer part of said sheet to hold said sheet and the bottom parts of said pages in unfanned relation at the bottom thereof until it is desired to fan the same out through said open area by bowing said outer part of said sheet to remove the bottom edge thereof from its respective channel whereby once said outer part of said sheet has its bottom edge thereof removed from its respective channel all of the bottom parts of said pages are free to be fanned out of said open area as the same are spaced above the respective channel whereby the differential in length between said outer part of said sheet and said pages permits said sheet to lock said

bottom parts of said pages in said unfanned relation when said outer part of said sheet is received in said respective channel.

3,965,595
MOUNTING DEVICE OR BOOK FOR STORING, DISPLAYING AND HANDLING TRANSPARENT PICTURES

Erik Kjellqvist, Stockholm, Sweden, assignor to Almqvist & Wiksell Forlag AB, Sweden

Continuation of Ser. No. 183,804, Sept. 27, 1971, abandoned. This application Dec. 16, 1974, Ser. No. 533,078
Claims priority, application Sweden, Oct. 6, 1970, 13539/70
Int. Cl.² G09F *11/06*
U.S. Cl. 40—104.18 **6 Claims**



1. A mounting device for displaying pictures in a random sequence, comprising:

a first picture set holder including at least one transparent picture sheet having at least one picture for display, a first carrier member and first means pivotally mounting said at least one transparent picture sheet to one edge of said first carrier member;

a second picture set holder for holding at least two pictures for display, said second picture set holder including at least two transparent picture sheets having at least one picture on each of said picture sheets for display, and a second carrier member, said first mounting means pivotally mounting said at least two transparent picture sheets to one edge of said second carrier member, for rotation about a common pivot axis through an angle of substantially 360° about said common pivot axis; and

second means pivotally mounting said first and second carrier members to each other at their respective opposite edges from said one edge of each said carrier member for movement relative to a display area border of said first picture set holder such that any of said at least two picture sheets is selectively superimposable on said at least one transparent picture sheet of said first picture set holder.

3,965,596
IMPROVEMENTS IN OR RELATING TO A MARKING SYSTEM

Peter Schrocksnadel, Etrichgasse 18a, 6020 Innsbruck, Austria

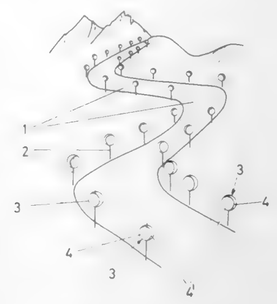
Filed May 1, 1975, Ser. No. 573,515
Int. Cl.² G09F *19/22*
U.S. Cl. 40—125 N **2 Claims**

1. A marking system for the visual identification of an area such as a ski run or the like, said system comprising:

a plurality of demarcation signs symmetrically arranged in pairs along opposite edges of a run;

each said sign having a first half of a first color and a second half of a second color, the division between said first and second halves of each sign being substantially vertical, and extending in a plane substantially parallel to the run; and

said signs of each said pair being positioned with respective similarly colored halves facing each other, whereby a

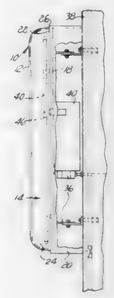


person can readily determine whether he is inside or outside the run upon viewing a single sign.

3,965,597
ADVERTISING SIGN STRUCTURE

Larry L. Noellert, Mount Clemens, Mich., assignor to Willey Sign Company, Mount Clemens, Mich.

Filed Nov. 6, 1974, Ser. No. 521,353
Int. Cl.² G09F *13/04*
U.S. Cl. 40—130 D **6 Claims**

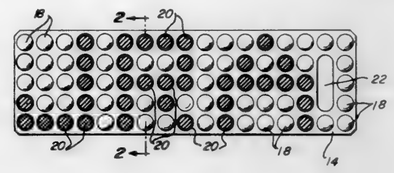


1. An advertising sign structure comprising a single-piece shaped shell of deep drawn plastic material having front faces and side faces, said side faces having an integral continuous flange portion extending peripherally in a single plane outwardly from said side faces and an integrally formed skirt portion forming a continuous ridge with the outer end of said flange portion, a backing panel having a front surface, a rear surface and a contoured edge for fitting within said skirt portion with a marginal portion of the front surface of said panel disposed within said shell in close proximity with said continuous flange portion, a resilient gasket sandwiched between said flange portion and said front surface marginal portion, fastener means for affixing said shell to said backing panel while maintaining said gasket under compression between said flange portion and said front surface marginal portion, and support means extending between said backing panel and a supporting structure for attaching said backing panel to said supporting structure, wherein said shell skirt portion extends proximate said supporting structure and forms a protective covering for said support means and components mounted on the rear surface of said backing panel.

3,965,598
IDENTIFICATION DEVICE AND METHOD OF MAKING SAME

John R. Avery, Denver, Colo., assignor to J. J. Avery, Inc., Denver, Colo.

Filed Nov. 14, 1974, Ser. No. 523,657
Int. Cl.² G09F *7/00*
U.S. Cl. 40—135 **5 Claims**



1. Sheet material comprising:

a. a sheet-like base member having stipples embossed on at least the front face thereof, said stipples being of one color,

b. said stipples being uniformly spaced and in rows disposed in quadrature, to form a display matrix on said base member,

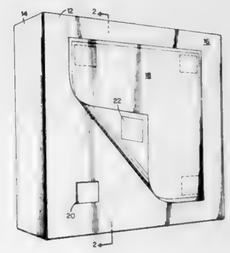
c. an opaque coating of a different color on said face completely covering said face and the stipples thereon,

d. at least a portion of each stipple and the coating material thereover being removable to expose the remaining stipple portion of the base member of contrasting color to the opaque coating over the remaining stipples, and thereby provide desired indicia, said base member and said opaque covering are made of a material which is readily severable by a sharp instrument for removing selected stipple and the coating thereover from said material to expose the remaining portion of the stipples and the spacing between stipples being such that a selected stipple may be removed without damaging an adjacent stipple.

3,965,599
DISPLAY SYSTEM FOR INTERCHANGEABLE PRESENTATION AND STORAGE OF PICTURES

Emanuel C. Ebner, Chelmsford, Mass., assignor to Foto-Cube, Inc., Chelmsford, Mass.

Filed Oct. 10, 1974, Ser. No. 513,842
Int. Cl.² G09F *1/12*
U.S. Cl. 40—152 **11 Claims**



1. A display device comprising:

a background member having a display surface and a back surface;

a non-rigid two-dimensional display object;

a plurality of thin metallic keeper plates affixed in spaced relationship to the back surface of said display object;

a like plurality of magnets embedded in said display surface in a spaced configuration substantially the same as the arrangement of keeper plates on said display object; and

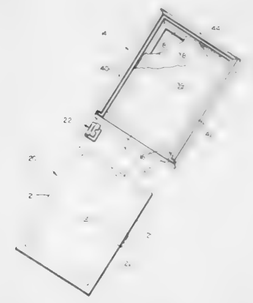
side members extending rearwardly from said background member to form, with said back surface, an open rearwardly facing box-like cavity of substantially the same lateral dimensions as said display object adapted for flat storage of additional display objects;

whereby said display object is removably retained on said display surface by means of mutual engagement between said magnets and said keeper plates.

3,965,600
FRAME HANGER

Wayne H. Paskerian, Winchester, Mass., assignor to M. W. Carr & Co., Inc., West Somerville, Mass.

Filed Mar. 3, 1975, Ser. No. 554,400
Int. Cl.² G09F *1/12*
U.S. Cl. 40—152.1 **7 Claims**



1. A picture frame assembly comprising:

a frame element having inwardly facing, opposed, recesses in opposite sides thereof in a common plane;

a rigid back plate having front and rear faces with its side edges and one end edge receivable within said recesses; and

an integral hanging clip having:

a U-shaped retaining portion positioned between one of said recesses and one of said edges and retained thereby for sliding movement therealong; and

an offset hanging portion extending inwardly from said frame element and being outwardly spaced from the exterior face of said back plate for receiving an external hanging device between said clip and said back plate to support said frame assembly from a wall or the like.

3,965,601
PICTURE FRAME

Helmar Nielsen, Townsend, Mass. 01469

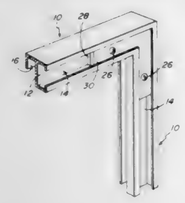
Continuation of Ser. No. 422,900, Dec. 7, 1973, abandoned, which is a continuation of Ser. No. 217,915, Jan. 14, 1972, abandoned. This application Aug. 12, 1974, Ser. No. 496,746
Int. Cl.² G09F *1/12*
U.S. Cl. 40—155 **7 Claims**

1. In a picture frame formed from frame sections, each of said frame sections having a rearwardly facing channel which terminates in inwardly extending lips, having interior surfaces an improved means for securing an adjacent pair of said sections together at a corner junction comprising:

a bracket having a pair of legs disposed at an angle substantially identical to the angle made by said frame sections at said corner junction, said legs being adapted to fit within the rearwardly facing channels of adjacent frame sections at said corner junction, said legs being of a width which is greater than the rearwardly facing opening de-

fined by said lips of said rearwardly facing channels thereby to retain said bracket within said channels;

locking means for urging said bracket away from the bottom of said channels and toward and against said lips;

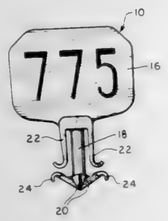


means forming the interior surfaces of said lips of said rearwardly facing channel of at least one of the frame sections to cause said at least one frame section to pivot along an axis parallel to its length and in a direction which will draw the forwardly facing regions of the adjacent frame sections together at their corner junction in response to operation of said locking means.

3,965,602
ANIMAL IDENTIFICATION TAG

Maurice Aaron Whitney, Cody, Wyo., assignor to Y-TEX Corporation, Cody, Wyo.

Filed Feb. 6, 1975, Ser. No. 547,479
Int. Cl.² G09F *3/00*
U.S. Cl. 40—301 **4 Claims**



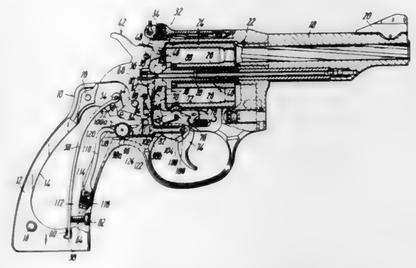
1. An improved animal identification tag comprising: a flat information-carrying portion having a surface on which indicia may be placed; a pin extending outwardly from the edge of said information-carrying portion in a direction generally parallel to said surface; laterally extending flexible prongs on the end of said pin, at least two of said prongs being oppositely disposed and having tip portions curved downwardly away from said information-carrying portion; and a pair of flexible, resilient support members extending outwardly from said information-carrying portion adjacent to said pin, said support members being positioned to contact the surface of the ear of an animal when said prongs are passed through the ear.

3,965,603
DOUBLE ACTION REVOLVER

Gilbert Albert Rene Maillard, Montbeliard, France, assignor to Manufacture de Machines du Haut-Rhin S.A., Mulhouse Cedex, France

Filed May 9, 1974, Ser. No. 468,541
Claims priority, application France, May 9, 1973, 73.16700
Int. Cl.² F41C *19/00*
U.S. Cl. 42—65 **5 Claims**

1. In a double-action revolver comprising a frame, a hammer pivotally mounted on the frame for movement between a cocked position and a firing position, the hammer further exhibiting a safety position intermediate the cocked and firing positions, a first spring supported on the frame for urging the hammer toward its firing position, a trigger pivotally mounted on the frame, the trigger being adapted at an initial phase of its displacement from a rest position to cause the hammer to be urged toward its cocked position and thereafter, in the final phase of displacement of the trigger, to cause the release of the hammer and thus the pivoting of the hammer toward its firing position, rebounding slider means coupled to the trigger and slidably mounted in the frame, a second spring having a first end affixed to the frame and a second end engageable with the slider means for opposing the displacement of the trigger and for effecting the return of the trigger to its rest position, the slider means including a first portion for position-

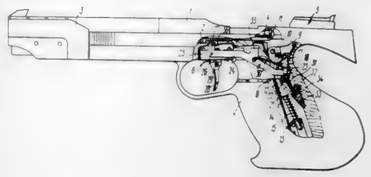


ing the hammer in the safety position when the trigger is returned to the rest position, the improvement wherein the second trigger spring is in the form of an elongated elastic arm, and in which the slider means further comprises a second portion having a contact surface resiliently engageable by the second end of the elastic arm, and means coupling the first and second portions of the slider means for varying the position of engagement between the second end of the elastic arm and the contact surface of the second portion as a function of the relative position of the slider means on the frame to maintain the restoring force component parallel to the direction of movement of the slider means on the frame relatively constant irrespective of the position of the slider means on the frame.

3,965,604
FIRING AND TRIGGER MECHANISM FOR SELF-LOADING MATCH PISTOL

Efim Leontievich Khaidurov, ulitsa Glagoleva, 25, korpus 2, kv. 138, Moscow, and Vladimir Alexandrovich Razorenov, ulitsa Ponomareva, 4-a, kv. 51, Minsk, both of U.S.S.R.

Filed Aug. 22, 1974, Ser. No. 499,847
Int. Cl.² F41C *19/00*
U.S. Cl. 42—69 B **2 Claims**



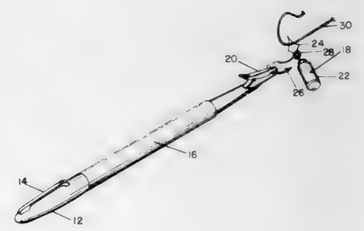
1. A firing and trigger mechanism for a self-loading match pistol mounted in a frame thereof; comprising: a hammer pivotably mounted on said frame of said pistol; a plunger operatively connected with said hammer; a firing spring received about said plunger; a bell crank pivotably mounted on said frame of said pistol; a hammer catch pivotably mounted on said frame of said pistol; said bell crank when in a cocked position of said hammer having one arm thereof engaging said hammer and having another end engaging said hammer catch; a spring having one end thereof bearing upon said bell crank and another end thereof bearing upon said hammer catch; a

trigger pivotably mounted on said frame of said pistol; a triggering rod having one end thereof operatively connected with said trigger and having another end thereof operatively connected with said hammer catch and being resiliently urged to said hammer catch by auxiliary spring means; said spring being arranged so that with said hammer in a cocked position said spring urges said bell crank to said hammer and to said hammer catch, upon disengagement of said hammer catch and said bell crank said bell crank loading said spring with an additional force compensating for the loss of the force of friction between said bell crank and said hammer catch, and disappearing at the moment of disengagement of said hammer catch and said bell crank.

3,965,605
FISH HOOK TIER

Arthur A. Allen, 1207 Martin Drive, Colorado Springs, Colo. 80915

Filed Aug. 28, 1974, Ser. No. 501,206
Int. Cl.² A01K *97/06*; **B25B** *1/00*
U.S. Cl. 43—1 **6 Claims**



1. A hook tying device comprising:

An elongated handle including a tubular recess in a first end

A spring clamp including gripping jaws attached to a second end of said handle and having means for pivoting one of said jaws to receive and grasp the barbed end of a fishing hook

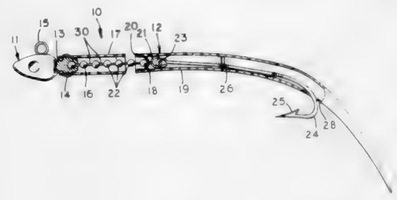
A removable threading device having a reduced tubular end sleeved in said tubular recess, said threading device having a handle portion and a loop end portion and wherein said loop end is formed of an elastic material such that said loop end may be compressed for passing through an eye of said fishing hook for passing a line through said loop end, after which the line is withdrawn through the eye by said loop end for subsequent knotting, and a cylindrical cap removably mounted on said second end for enclosing said clamp and having mounting clip means secured exteriorly thereof.

3,965,606
FISHING LURE

Donald J. Bingler, 4750 Bedford Ave., Brooklyn, N.Y. 11235

Filed Jan. 14, 1975, Ser. No. 540,857
Int. Cl.² A01K *85/00*
U.S. Cl. 43—42.16 **3 Claims**

1. An improved fishing lure including a head, said head being weighted, line attaching means on said head, said line attaching means on the top of said head, said head including a neck, a ball chain extending from said neck, a sleeve on said neck extending from said head, said sleeve surrounding at least part of said ball chain, a tail, said tail including a hook, said hook rotatably joined to said ball chain, a sleeve surrounding at least part of said hook contiguous with said head

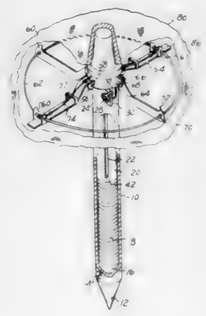


portion, said hook sleeve and said hook in a nonlinear shape adapted to rotate about said ball chain.

3,965,607
ANIMAL TRAP

Donald R. Lee, Box 577, Sundance, Wyo. 82729

Filed Mar. 18, 1975, Ser. No. 559,549
Int. Cl.² A01M *23/34*
U.S. Cl. 43—87 **15 Claims**



1. An animal trap comprising

a trigger mechanism adapted to be operated by an animal,

a noose of flexible material surrounding said trigger mechanism, and

actuating mechanism connected to said noose and controlled by said trigger mechanism operable to project said noose generally perpendicular to the plane in which it is set, to maintain said noose in open condition as it is projected, and to reduce the circumference of said noose to cause it to close in tightly about the part of the animal which operates said trigger mechanism, said trigger mechanism comprising a movable element shaped to be gripped between the jaws of the animal so that said noose closes around a head portion of the animal.

3,965,608
MANUALLY OPERATED SUCTION DEVICE FOR CAPTURING SMALL OBJECTS

Mark Schuman, 101 G. St., Southwest, Apt. 516, Washington, D.C. 20024

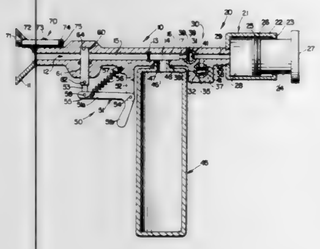
Continuation-in-part of Ser. No. 270,542, July 10, 1972, abandoned. This application May 1, 1974, Ser. No. 466,063
Int. Cl.² A01M *3/00*
U.S. Cl. 43—110 **62 Claims**

1. A manually operated, manually powered portable device for capturing small objects in the form of a hand held unit, said unit comprising:

a housing including an internal chamber means for vacuum storage;

aperture means in said housing for connecting said internal chamber means with the atmosphere;

pump means being a portion of said unit and communicating with said internal chamber means for depressurizing said internal chamber means relative to the pressure external to said aperture means to create a partial vacuum in said internal chamber means;



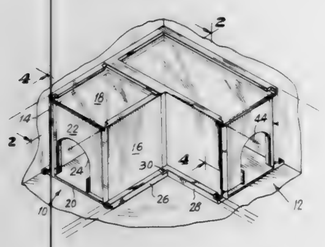
first valve means in said aperture means for blocking said aperture means during said depressurization and for substantially instantaneously substantially equalizing the pressure in said internal chamber means with said external pressure by substantially instantaneously substantially completely unblocking said aperture means when manually activated;

and means for activating said first valve means independently of the operation of said pump means.

3,965,609
BAITING ARRANGEMENT FOR RODENTS

Carmel T. Jordan, 1040 Grandview Ave., Union, N.J. 07083

Filed May 2, 1974, Ser. No. 466,149
Int. Cl.² A01M *25/00*
U.S. Cl. 43—131 **5 Claims**

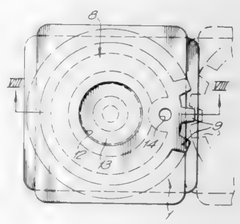


1. A bait feeding arrangement for rodents comprising, in combination, a first modular housing of assembled permanently rigid elements having an entrance wall with an entrance opening for admitting a rodent; a second modular housing of assembled permanently rigid elements connected to said first modular housing and having an exit wall with an exit opening through which said rodent may leave; interlocking connecting means on said first and second housings for connecting said housings; passage means connecting said entrance opening and said exit opening, said rodent being confined to move along said passage means in traveling from said entrance opening to said exit opening, said housings being located along a wall surface; and poison feed means within said first and second modular housings and containing feed for said rodent, said feed means extending substantially along said passage means connecting said entrance opening and said exit opening, said feed means extending along one side of said passage means and in substantially close proximity thereof; said feed means being spaced from said entrance opening and said exit opening to be inacessible from said openings, said feed means being accessible to said rodent only after said rodent has entered substantially the interior of said passage means, said interlocking connecting means comprising a plurality of pegs on one of said housings, and a plurality of openings on the other one of said housings, said pegs being inserted into said openings for interlocking said housings to each other; a plurality of rail members at the bottom of said one housing for supporting said pegs, said pegs being formed on a lip-shaped portion on said rails of said one housing; and a plurality of auxiliary rails on the other one of said housings at the bottom thereof for containing said openings, said openings being arranged within lip-shaped portions in said rails at the bottom of said other one of said housings, said lip portions of said first and second modular housings overlapping when said pegs are inserted into said openings; a transparent plate-shaped member at the top of said first and second modular housings, said first and second modular housings having slots at the top portions of said housings for retaining said transparent plate-shaped member, said transparent plate-shaped member being removable from said housings by sliding out of said slots; and a dividing wall within each of said housings for separating said feed means from the passage along which said rodent passes through said housings.

3,965,610
CONSTRUCTION UNITS, SOME WITH CORRESPONDING PINION WHEELS MOUNTED IN MESHED RELATION

Alfons Adriaan Den Ouden, Antwerp, Belgium, assignor to Brabo Corporation Naamloze Vennootschap, Antwerp, Belgium

Filed Aug. 5, 1974, Ser. No. 494,867
Claims priority, application United Kingdom, Sept. 7, 1973, 42209/73
Int. Cl.² A63H *33/04*
U.S. Cl. 46—17 **9 Claims**

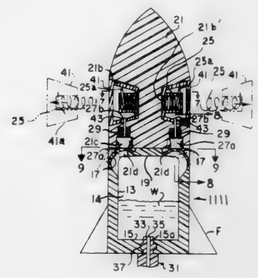


1. A toy kit for exercising the creative ability of children comprising a plurality of individual units, each of said units having upper and lower faces and carrying cooperative integral means laterally of said faces for directly interlockingly uniting the same together with said upper faces in side by side relation in a desired pattern so as to create a flat generally horizontally disposed base, a plurality of pinion wheels, at least two of said pinion wheels and two of said upper faces of said individual units having mutually cooperable means for rotatably mounting a maximum of one said pinion wheel per individual unit, and said at least two pinion wheels and said two individual units being so constructed, arranged and dimensioned that said at least two pinion wheels are in meashed relationship when said at least two individual units are united by said integral uniting means.

3,965,611
DIRECTIONALLY STABLE REACTION-FLUID-PROPELLED CARRIER MISSILE WITH FLUID-SEALED MOVABLE RETENTION AND RELEASE WALL

Reginald F. Pippin, Jr., 7806 Ruxway Road, Towson, Md. 21204

Division of Ser. No. 228,279, Feb. 22, 1972, which is a division of Ser. No. 36,120, May 11, 1970, Pat. No. 3,646,702, which is a continuation-in-part of Ser. No. 504,299, Oct. 24, 1965, Pat. No. 3,510,980. This application Apr. 16, 1974, Ser. No. 461,367
Int. Cl.² A63H *27/00, 33/20*
U.S. Cl. 46—74 B **25 Claims**



1. A propelled toy arrangement comprising

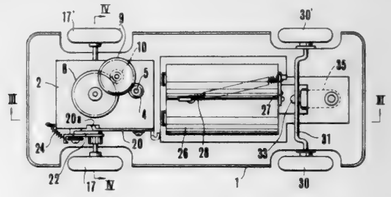
a self-propelled carrier unit including a generally rigid body having a pressurizable fluid chamber and a fluid discharge orifice in fluid connection between said chamber and the outside atmosphere and being fixed in directional orientation during fluid discharge therethrough,

said self-propelled unit having a fluid-sealed fluid-pressure-responsively movable retention-and-release wall in fluid connection with and movable in response to pressure in said chamber, and adapted to releasably hold and carry a carryable unit or member in a first releasably retained condition relative to and by said carrier unit as a function of the retentive positioning of said movable retention-and-release wall in response to internal fluid pressure in said body chamber, and for release of a said carryable unit or member from said first retained condition as a function of movement of said wall to a retracted release position upon decrease of fluid pressure in said chamber.

3,965,612
DRIVING MECHANISM FOR TRAVELING TOY

Seiji Asano, Tokyo, Japan, assignor to Shimsei Kogyo Co., Ltd., Japan

Filed Nov. 18, 1974, Ser. No. 524,862
Claims priority, application Japan, Nov. 21, 1973, 48-134353[U]
Int. Cl.² A63H *17/40*
U.S. Cl. 46—211 **8 Claims**

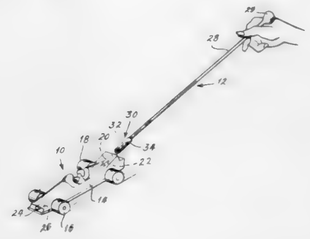


1. A driving mechanism for a travelling toy, comprising drive motor means having a rotatable shaft, a sun gear fixed to said rotatable shaft for rotation therewith, a rotary member freely rotatably mounted around said shaft, a pair of stopping pieces provided on said rotary member in staggered locations with a phase difference of substantially 180°, a planetary gear shaft on said rotary member, a planetary gear rotatably mounted on said planetary gear shaft and in alignment with the sun gear so that it can rotate together with the rotary member around said sun gear, a pair of stoppers both mounted on one side wall of said housing in a manner such that they can advance into and retreat from the passes of said stopping pieces, means for controlling the advance and retreat of said stoppers, a wheel shaft rotatably supported at said housing, and a pair of crown gears mounted on said wheel shaft and alternately engageable with said planetary gear.

3,965,613
MAGNETIC TOY

Jack L. Saunders, S.C. Rte. Box 78, West Plains, Mo. 65775

Filed Feb. 12, 1975, Ser. No. 549,373
Int. Cl.² A63H *33/26*
U.S. Cl. 46—238 **7 Claims**



1. A magnetically operated toy comprising a wheeled vehicle having a body with front and rear ends, magnetic means on the vehicle body adjacent to one of said body ends, said magnetic means having opposite end portions respectively forming north and south magnetic poles and being fixedly positioned with respect to said vehicle body, the lowest point of said magnetic means being higher than the lowest point of said vehicle, one of the magnetic poles of said magnetic means being oriented essentially forwardly of the other magnetic pole on said vehicle body, and means to manipulate the vehicle by moving it over a surface including a rod-shaped operator member having a first end portion to be held by the operator and an opposite end portion having magnetic means associated therewith for cooperating magnetically with a magnetic means on the vehicle so that when the magnetic means on the rod and the magnetic means on the vehicle cooperate and the rod is moved the vehicle will move on the surface on which it is positioned, the magnetic means associated with the vehicle being further oriented such that when the vehicle is in operative position on a surface the axis of said magnetic means intersects a horizontal plane at an elevational angle.

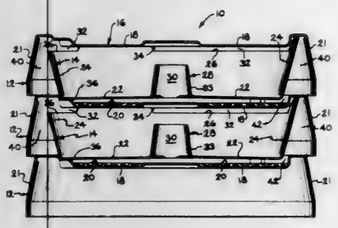
3,965,614
APPARATUS FOR SPROUTING SEEDS

Karl E. Kienholz, 4400 Loch Alpine Drive, W., Ann Arbor, Mich. 48103

Filed Nov. 28, 1975, Ser. No. 635,969
Int. Cl.² A01C *1/02*
U.S. Cl. 47—14 **11 Claims**

1. Germinating apparatus for sprouting seeds, legumes, grains or the like comprising a plurality of base members and a plurality of dish members adapted to be stacked alternately in a vertical arrangement with base members being the bottom and top members of the arrangement, said base members having similar configurations, each base member having an imperforate top wall with a recessed portion for retaining a surface of water thereon and a downturned peripheral side wall flaring outwardly from and terminating below said top wall, said dish members also having similar configurations,

each dish member having a foraminous bottom wall on which beans or the like can be dispersed, and an upturned peripheral side wall flaring outwardly from and terminating above said bottom wall, said base members and said dish members defining support means for maintaining the bottom wall of each dish member a preselected distance above the recessed portion of the base member on which it is stacked so that beans or the like on a foraminous bottom wall can be maintained in spaced relation to the surface of the water in the recessed portion of the dish member immediately therebelow, and said base members and said dish members also defining ventilation means for maintaining ventilation gaps around the upper periphery of each upturned peripheral side wall.



3,965,615

METHOD OF PREVENTING THE FORMATION OF FROST

Abelardo Antonio Portas, and Martin Pinto, both of Chivilcoy 140, Buenos Aires, Argentina

Filed Sept. 30, 1974, Ser. No. 510,581

Claims priority, application Argentina, Oct. 16, 1973, 250541

Int. Cl.² A01G *13/00*; **C09K** *3/30*

U.S. Cl. 47—2 **18 Claims**

1. A method for producing a fog to absorb moisture from plants and increase the ambient humidity surrounding the plants to prevent frost damage comprising the steps of providing in relatively sufficient amounts, silicon tetrachloride, an emulsifier, and ammonia, and forcibly combining said silicon tetrachloride, emulsifier and ammonia, said silicon tetrachloride and said ammonia and said emulsifier combining to form an atmospheric fog containing ammonium chloride and silicone dioxide and emulsifier to absorb moisture from plants and raise the ambient humidity surrounding the plants, to thereby aid in avoiding the rupture of the cells of said plants as a result of the freezing of said moisture in said cells.

3,965,616

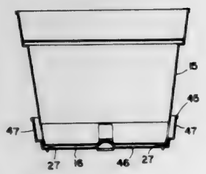
LOCKABLE VEGETATION POT AND SAUCER

John C. Ridgeway, 4216 Brookway Lane, Brooklyn, Ohio 44144

Filed Dec. 30, 1974, Ser. No. 537,242

Int. Cl.² A01G *9/02*

U.S. Cl. 47—34 R **5 Claims**



1. A lockable vegetation pot and saucer, comprising in combination:

a plastic pot having a pot base with a drain aperture therein and integral pot sides diverging from said pot base;

a plurality of pot legs extending from said pot base at a spaced distance from the other perimeter of said pot base;

a plurality of pot stops extending from the inside surface of said pot sides a distance less than said spaced distance of said pot legs;

whereby the angle of said diverging pot sides enables stacking of said pot with similar pots with said pot base engaging said pot stops of an adjacent similar pot;

a plurality of locking apertures in said pot sides each aperture having a locking side adjacent said pot base with said plurality of locking apertures in said sides being respectively adjacent said plurality of pot legs depending from said pot base;

a plastic saucer having a saucer base and integral saucer sides diverging from said saucer base;

a plurality of saucer stops extending from the inside of said saucer;

whereby the angle of said diverging saucer sides enables stacking of said saucer with similar saucers with said saucer engaging said saucer stops of an adjacent similar saucer;

and a plurality of tabs extending inwardly from the inside of said saucer sides with each tab having a ramp surface and a locking surface whereby said ramp surface causes progressive deformation of said saucer sides upon insertion of said pot into said saucer until said locking surfaces of said tabs engage said locking sides of said locking apertures to resiliently hold said pot legs against said saucer base.

3,965,617

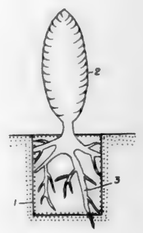
METHOD OF POTTING TREES AND SHRUBS

Makoto Kawase, 902 Ridgecrest Drive, Wooster, Ohio 44691

Filed Apr. 11, 1975, Ser. No. 567,055

Int. Cl.² A01G *23/02*

U.S. Cl. 47—58 **10 Claims**



1. The method of containerizing a field grown plant in a tubular container open at both ends comprising the steps of:

A. Placing the container over the plant crown and around the plant to rest on the soil surface after the plant has at least substantially reached a salable size,

B. Driving the container into the soil until the top of the container is at least level with the soil surface,

C. Allowing the container and contents to remain in the soil approximately from 4 to 12 months,

D. Removing the container and its contents from the soil,

E. Placing the container and its contents in an outer container which has a bottom and is slightly larger than said first container.

3,965,618

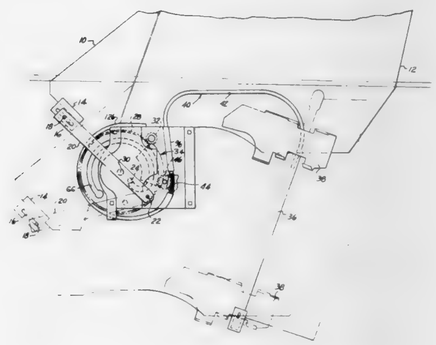
PROGRAMMED SEQUENTIAL OPERATOR

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detriot, Mich.

Filed Mar. 1, 1974, Ser. No. 447,158

Int. Cl.² E05F *5/12*

U.S. Cl. 49—103 **14 Claims**



1. A programmed sequential operator comprising an actuator reversely rotatable between limiting positions, first and second operating members each independently reversely movable between limiting positions, connections between said actuator and said operating members effective to produce forward and reverse movements of said members in sequentially programmed relation to forward and reverse movement of said actuator, one of said members being a rotatable driven member, said connections comprising drive means operable to rotate said driven member during a part of the rotary movement of said actuator, and blocking means acting between said actuator and rotatable driven member to block said rotatable driven member against rotation during another part of the rotary movement of said actuator while providing for continued rotation of said actuator, said actuator having peripheral gear teeth and an edge portion in which teeth are omitted to form a gap, said rotatable driven member being in the form of a pinion adapted to mesh with the peripheral teeth of said actuator, a blocking cam connected to said actuator having a circumferentially extending arcuate convex surface at one side of the plane occupied by its teeth and located generally at said gap and concentric with the axis of rotation of said actuator, said pinion having a concave radially facing surface at one side of the plane of its teeth and in the plane of the arcuate convex surface of said blocking cam, said concave surface being conformed to the arcuate convex surface of said blocking cam to provide for continued rotation of said actuator while said pinion is blocked against rotation.

3,965,619

QUICK CHANGE FEED MECHANISM AND ABRASIVE REPLACEMENT

Robert C. Engle, Holland, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed July 31, 1975, Ser. No. 600,698

Int. Cl.² B24B *49/00*

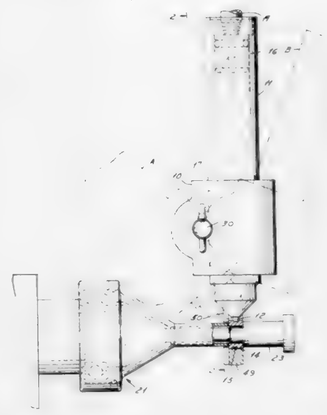
U.S. Cl. 51—58 **10 Claims**

1. In a honing machine having an abrasive mounted on an oscillating bridge wherein the apparatus for affixing said abrasive to said bridge comprises:

a. feed cylinder having an internal feed means wherein said abrasive is housed;

b. said bridge having a bore wherein said feed cylinder projects therethrough;

c. a lateral groove in said cylinder aligned with a lateral bore in said bridge; and



d. a pin disposed in said lateral bore means and said groove means locking said cylinder in said bridge.

3,965,620

DRUM POLISHING APPARATUS

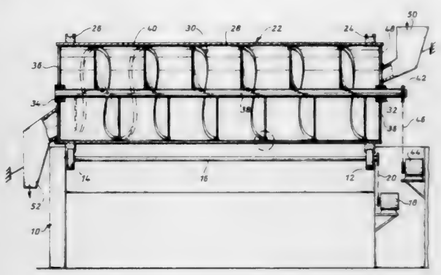
Manfrid Dreher, Engelsbrand, Germany, assignor to Dr.-Ing. Manfrid Dreher KG apparatebau und chemisch Verfahrenstechnik fur Oberflachenbehandlung von Metallen, Engelsbrand, Germany

Filed Aug. 8, 1974, Ser. No. 495,640

Claims priority, application Germany, Aug. 16, 1973, 2341268

Int. Cl.² B24B *31/02*

U.S. Cl. 51—164 **15 Claims**



1. Drum apparatus for the mechanical surface treatment of particulate material by a suitable media comrpising a cylindrical casing adapted to be rotated about its central axis, an inlet at one end for the supply of media and material and an outlet at the other end for the removal of said media and material, a screw conveyor located within said casing adapted to be rotated relative to said casing to move said media and material, said screw conveyor extending substantially the length of said casing and radially outward into proximity with the surface of the inner wall of said casing and comprising an axle and a spiral blade integrally formed therewith, said axle being journalled in bearings located at each end of said casing comprising a central hub surrounding said axle and support means extending radially outward in connection with said casing, said support means having an opening therein adapted to align with said inlet and outlet means on rotation of said casing, and means for variably rotating each of said casing and screw

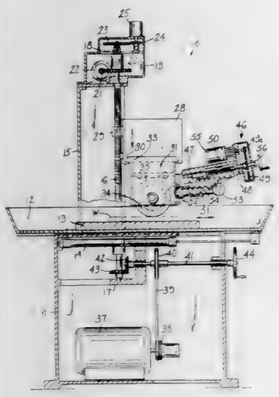
conveyor independently of the other, to obtain selectively variable relative speed therebetween.

3,965,621

CONTROL SYSTEM FOR GRINDING MACHINE

Paul E. Grieb, Plantsville, Conn., and Richard Sieradzki, Troy, Mich., assignors to Textron, Inc., Providence, R.I.

Division of Ser. No. 317,229, Dec. 21, 1972, Pat. No. 3,859,760. This application Nov. 7, 1974, Ser. No. 521,630
Int. Cl.² B24B *49/18*
U.S. Cl. 51—165.71 **5 Claims**



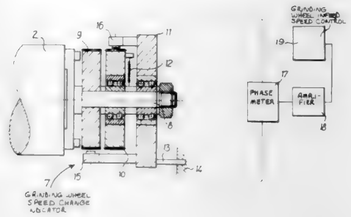
1. A surface grinder comprising a wheelhead arranged to drive a grinding wheel, means defining a reference plane, means including a pulse responsive motor for moving said wheelhead and wheel in elevation above the reference plane, a source of motor drive pulses, means providing a first train of pulses, resolver means coupled to said means for generating a second train of pulses at the same frequency as said first train, means for comparing the phase difference of the pulses of said first and second trains, means for providing a third train of pulses at a frequency substantially higher than pulses of said first and second trains proportional in number to the magnitude of the phase difference between pulses of said first and second trains and one direction of phase difference, and providing a fourth train of pulses of the same frequency as said third train proportional in magnitude to the magnitude of the phase difference between pulses of said first and second trains and the other direction of phase difference, pulse counting means for accumulating the difference in the number of the pulses of said third and fourth trains and establishing a numerical representation thereof, each of the pulses of said third and fourth trains representing an increment of distance between the cutting surface of said wheel and said reference plane, means for visually displaying the distance represented in said counting means, a grinding wheel dresser adapted to be moved into contact with said grinding wheel and reduce the radius thereof, a second pulse responsive motor adapted to move said dresser into contact with said grinding wheel, means for applying motor drive pulses to said second motor, means for selecting a predetermined dressing dimension for said wheel and storing said dimension, dresser pulse counting means adapted to count pulses applied from said pulse source to said second motor and permit application of a number of pulses representative of a preselected dressing dimension to said second motor, and means responsive to application of drive pulses to said second motor for applying a number of pulses of one of said third and fourth pulse trains to said pulse counting means to modify the difference therein in accordance with the dressing dimension.

3,965,622

DEVICE FOR INDICATING THE TOUCHING OF A GRINDING WHEEL AND A WORKPIECE

Karel Stepanek, Prague, Czechoslovakia, assignor to Vyzkumny ustav obrabecich stroju a obrabeni, Prague, Czechoslovakia

Filed Jan. 20, 1975, Ser. No. 542,452
Claims priority, application Czechoslovakia, Jan. 21, 1974, 375-74
Int. Cl.² B24B *49/00*
U.S. Cl. 51—165 R **3 Claims**



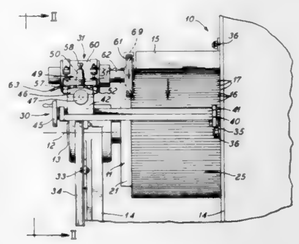
1. In a device for indicating the touching of a grinding wheel and a workpiece in a grinding machine, said machine having a spindle to which a grinding wheel is affixed, said device comprising, in combination, a shaft connected to the spindle, a first magnetic gear wheel affixed to the shaft, a second identical magnetic gear wheel rotatably mounted on the shaft, the second gear wheel normally rotating in phase with the first gear wheel, a spring extending between the second gear wheel and the shaft for effecting a retardation in phase of the rotation of the second gear wheel with respect to the first gear wheel upon the touching of the grinding wheel and the workpiece, a pair of magnetic heads individually fixedly disposed in magnetic association with the peripheries of the first and second gear wheels for generating a pair of signals differing in phase in proportion to the retardation in phase of the second gear wheel relative to the first gear wheel, and a phase meter coupled to the outputs of the respective magnetic heads.

3,965,623

METHOD FOR TRUEING COMMUTATORS AND SLIP RINGS

Thaddeus Robert Grutza, 2160 Stirling Road c/o Deerfield P.O., Bannockburn, Ill. 60015, and Kenneth Edward Grutza, 3246 Robincrest Drive, Northbrook, Ill. 60062

Continuation-in-part of Ser. No. 533,121, Dec. 16, 1974, abandoned. This application July 7, 1975, Ser. No. 593,590
Int. Cl.² B24B *1/00, 5/50*
U.S. Cl. 51—281 R **3 Claims**



1. The method of in-place trueing of a segmented copper commutator with a traversing grinding wheel which includes the improved steps of:

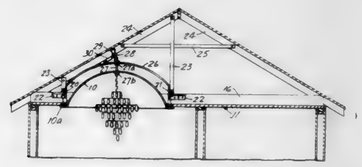
1. rotatably driving the commutator to be trued in its own journal support so that the commutator surface is in its normal running position;
2. simultaneously rotatably driving a peripheral grinding wheel surface exhibiting a grit size in the order of from about 150 to 180 at a peripheral speed of substantially at least 7,000 feet per minute;
3. contacting at least ½ to ¾ inch of said peripheral surface against the commutator surface with forces in the order of from about 2 to 3 pounds; and
4. maintaining the relative surface speed of the commutator and the grinding wheel surface at ultra high speeds in excess of 7,000 feet per minute, thereby to remove the copper commutator material in the form of dust without drag over between the segments.

3,965,624

ROOM CEILING CONSTRUCTION WITH RECESSED DOME MOUNTED THEREIN AND THE METHOD OF MOUNTING THE SAME

Thomas P. Madonna, Navarre, Minn., assignor to Madonna Corporation, Minneapolis, Minn.

Continuation of Ser. No. 400,379, Sept. 24, 1973, abandoned. This application Feb. 10, 1975, Ser. No. 548,392
Int. Cl.² E04F *19/00*
U.S. Cl. 52—28 **12 Claims**



5. A room ceiling structure in a building and including a finished ceiling

a plurality of structural joist members supporting said ceiling and a concave dome mounted in said ceiling in a building for suspending a chandelier type hanging fixture and comprising

an integrally formed pre-fabricated concave open bottom dome unit adapted to be installed in a ceiling opening of a size substantially greater than the space between more than two joist members and formed in the ceiling of a building, and having a peripheral flange integrally formed around the lower edge thereof and extending radially outwardly from said lower edge,

means supporting the dome unit from the ceiling structure of the building with the flange thereof attached to said ceiling and engaging the surface thereof.

3,965,625

CANOPY SUPPORT TOWERS WITH ADJUSTABLE CANOPY

Stevan C. White, Des Moines, Iowa, assignor to Music Circuit Productions, Inc., Des Moines, Iowa

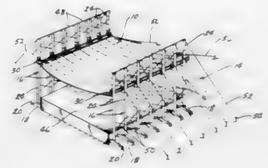
Filed Apr. 2, 1975, Ser. No. 564,304
Int. Cl.² B66B *9/00*
U.S. Cl. 52—29 **7 Claims**

1. In combination,

a flexible canopy having opposite ends and opposite sides, said canopy having a plurality of spaced-apart loop elements secured thereto adjacent the opposite sides thereof,

a plurality of spaced-apart and vertically disposed towers positioned at each of the opposite sides of said canopy,

each of said towers having a platform means selectively vertically movably mounted thereon, means connected to said platform means for selectively raising and lowering said platform means relative to said tower and connection means operatively secured to and extending between said platform means and adjacent towers at one side of said canopy for connection to said loop elements at said one side of said canopy whereby said canopy may be extended between and vertically movably supported by the towers at the opposite sides thereof; said connection means comprises an elongated member secured to and extending between said platforms, spaced apart brackets secured to said elongated member, and means secured to each of said brackets and one of said loop elements.

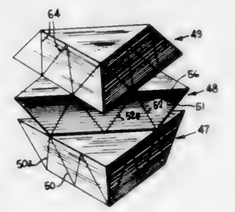


3,965,626

BUILDING MODULE

Mark B. Johnson, P.O. Box 1578, Santa Cruz, Calif. 95061

Filed Nov. 21, 1974, Ser. No. 525,994
Int. Cl.² E04H *3/00*
U.S. Cl. 52—79 **3 Claims**



1. A space structure for building purposes including a plurality of space modules stacked one above the other with each space module comprising:

a plurality of beams joined together to form a truncated tetrahedral shape having side walls;

a plurality of ribs extending between the beams forming the side walls;

means connecting the rib ends to the adjacent beam to form rib-beam joints;

means fastening the space modules together in stacked arrangement such that at least some of the side walls on one side of the structure do not lie in the same plane, and sheeting means covering the side walls and exposed surfaces of the modules thereby to form an enclosed multi-level space structure.

3,965,627

INTERCONNECTION OF MODULAR STRUCTURES

Miroslav Fencl, 59-28 57th Drive, Flushing, N.Y. 11378

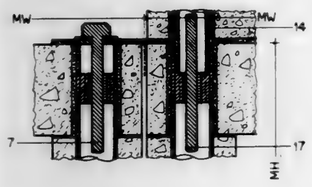
Continuation-in-part of Ser. No. 485,462, July 15, 1974, abandoned, which is a continuation-in-part of Ser. No. 294,391, Oct. 12, 1972, abandoned, which is a continuation-in-part of Ser. No. 289,935, Sept. 18, 1972, abandoned, which is a continuation-in-part of Ser. No. 143,547, May 14, 1971, abandoned. This application May 9, 1975, Ser. No. 576,220
Int. Cl.² E04H *9/06*
U.S. Cl. 52—79 **3 Claims**

1. An interconnection of a structure comprizing a modular assembly and a substructure supporting said assembly at its base; said assembly consisting of several stories and composed

of a plurality of self-supporting modules each having the form of a rectangular tube defined by two walls, a floor-slab and a ceiling-slab; said assembly being put together in a "wall beside wall, frontend to back-end, floor-slab over ceiling-slab" fashion;

a. said structure being interconnected vertically and laterally:

1. by rods, each extending over one story, the bottom of each rod being threaded;
rods applied at top modular story having a nut head at top;
rods applied at other stories having an immovably attached cap at top, said cap being of larger diameter than that of rod and having a threaded aperture at top designed to receive the bottom of said rods, said caps when installed projecting above the top of the modular story;
2. by pegs of generally identical shape with said rod cap, one such peg or a group of several pegs being immovably attached to a plate and such a subassembly being anchored at the top of the substructure so that pegs project above the substructure;
3. by pipes in which said rods or said pegs are encased, said pipes being embedded in walls of modules along the modular height;



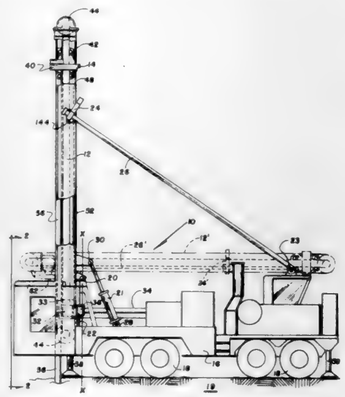
a fixture of generally tubular shape being immovably attached inside each said pipe at top, the aperture of said fixture being threaded to receive bolts of the lifting device, simultaneously allowing free passage of said rods;

4. by connecting plates penetrated by several holes of which the number corresponds with the number of pipes at that particular joint, the hole diameter corresponding to the size of the said rod caps or pegs;

b. the interconnection of the hardware being accomplished so that:
rods applied at the first modular story are connected by screwing with said pegs and rods of intermediate stories are connected by screwing with one another, in either case the bottom of the rod cap resting on the top of the fixture;
rods applied at the top modular story being connected by screwing with rod caps below, the nut head of these rods resting on top of the plate applied over said pipes of the top modular story;
connecting plates applied between ceiling-slabs and floor-slabs being engaged by holes with projecting rod caps, connecting plates applied on top of the top modular story being engaged by holes with rods of the top story.

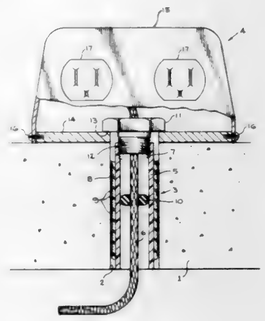
3,965,628
DRILL MAST SUPPORT ASSEMBLY
James B. Loftis, Remlap, Ala., assignor to Joy Manufacturing Company, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 458,331, April 5, 1974, abandoned. This application Mar. 26, 1975, Ser. No. 562,175
Int. Cl.² E04H *12/34*; **E21C** *11/02*
U.S. Cl. 52—115 **10 Claims**

1. A drill mast support assembly comprising: an elongated frame, an elongated drill mast connected to said frame adjacent one end portion of said mast for selective pivotal movement about a first pivot axis between a drilling position and a non-drilling position; elongated rigid brace means supported adjacent one end by said frame and pivotable with respect thereto about a second pivot axis which is parallel to said first pivot axis; support means on said mast connecting said brace means and said mast adjacent the end portion of said mast opposite said on end portion to permit relative longitudinal and pivotal movement of said mast with respect to said brace



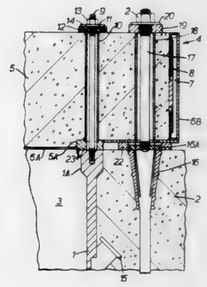
means throughout the pivotal movement of said mast with respect to said frame; said mast being pivotable with respect to said brace means about a third pivot axis which is parallel to said first and second pivot axes and movable with respect thereto; the distance between said first and second pivot axes being greater than the distance between said first and third pivot axes; and the longitudinal axes of said frame, said mast and said brace means being generally parallel to each other when said mast is in said non-drilling position.

3,965,629
CONDUIT APPARATUS
James R. Pearson, Houston, Tex., assignor to Lawrence A. Bresan and James R. Pearson, both of Houston, Tex., a part interest to each
Filed Sept. 11, 1974, Ser. No. 505,043
Int. Cl.² E04B *5/48, 1/38*
U.S. Cl. 52—221 **8 Claims**



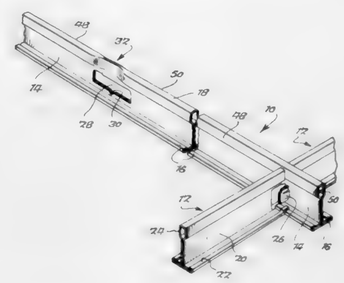
1. Conduit apparatus providing a fire resistant passageway, or an elongate member, through a hole in a barrier such as a floor, wall or the like comprising:
tubular core means through the interior of which said elongate member may pass;
friction means surrounding the exterior of said core means for frictional and sealing engagement with said hole through said barrier, said friction means comprising radial projections, substantially surrounding said core for an interference fit with said hole and having surfaces facing in one direction, relative to the axis of said hole, which are tapered for less frictional resistance to longitudinal movement in said one direction than the frictional resistance created to longitudinal movement in the opposite direction by the surfaces of said radial projections facing in the opposite direction so that said apparatus may be inserted into said hole in said one direction with substantially less force than necessary to remove said apparatus in said opposite direction; and
seal means engageable with said interior of said core means and the exterior of said elongate member.

3,965,630
PRESTRESSED CONCRETE BOILER CLOSURE
Anthony Charles Roberts, Leicester, England, assignor to Taylor Woodrow Construction, Limited, Southall, England
Filed Nov. 19, 1974, Ser. No. 525,114
Int. Cl.² E04C *3/22, 5/08*
U.S. Cl. 52—224 **7 Claims**



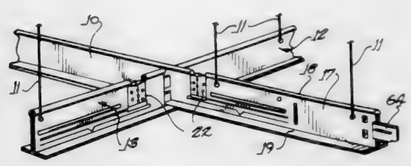
1. A vessel comprising a prestressed concrete container; prestressing members anchored in the material of said container to apply prestress thereto; a chamber in said container; a removable closure member also formed of concrete for said chamber; primary and secondary hold-down means for holding said closure member in its closed position; said primary hold-down means including releasable members held fast with the material of said container to hold down said closure member; said secondary hold-down means including members which pass through said closure member; retaining means mounted on said secondary hold-down means for securing said members of the secondary hold-down means relative to said closure member; and releasable couplings for coupling respective members of said secondary hold-down means to corresponding prestressing members; whereby said members of the secondary hold-down means, in holding down said closure member, serve to extend said corresponding prestressing members, which latter continue to apply the prestress to said container when said members of the primary and the secondary hold-down means are released to permit removal of said closure member.

3,965,631
FIRE RATED GRID-MEMBER WITH CONTROLLED EXPANSION MEANS
Gale E. Sauer, Williamsville, N.Y., assignor to Roblin Hope's Industries, Inc., Buffalo, N.Y.
Filed Aug. 1, 1974, Ser. No. 493,551
Int. Cl.² E04B *1/68*
U.S. Cl. 52—232 **9 Claims**



1. An improved grid member for supporting grid systems and the like, said grid member having a web means, load carrying flange means extending laterally outwardly of said web means, and a bead means having opposed sidewall portions surmounting said web means and being longitudinally aligned therewith for providing increased rigidity to said grid member, and said web means including a cut-out portion in a disposition intermediate to said load carrying flange means and said bead means for absorbing longitudinal compression therein, wherein said improvement comprises: said bead means being normally hollow in transverse cross-section and having at least one deformed portion along the longitudinal length thereof, said deformed portion having correspondingly opposed sidewall portions of said bead means formed into substantially planar abutment with one another so that said deformed portion is substantially non-hollow in transverse cross section, and said plane of abutment so formed between said deformed sidewall portions being slightly oblique to the longitudinal axis of said bead means so that during longitudinal compression of said bead means, said plane of abutment folds in a longitudinal direction to absorb such longitudinal compression.

3,965,632
FIRE RATED GRID
Donald L. Rousey, Des Plaines, Ill., assignor to Questor Corporation, Toledo, Ohio
Continuation-in-part of Ser. No. 490,065, July 19, 1974, abandoned. This application July 23, 1975, Ser. No. 598,207
Int. Cl.² E04C *2/42*; **E04B** *1/98*
U.S. Cl. 52—232 **18 Claims**



1. A longitudinally extending runner for a fire-rated ceiling suspension system comprising a web, an interrupted bead along one web margin, a flange along the other web margin, a buckleable web expansion member substantially longitudinally coextensive with the bead interruption which is adapted

to deform into a diamond-shaped pattern extending away from both sides of the web when compressive forces are applied to the runner in a longitudinal direction, the web being partially divided by a longitudinally oriented slot extending substantially in one direction only from and under said web expansion member for a limited distance, a portion of the web adjacent the slot and between the slot and the flange partially defining two opposed, longitudinally offset L-shaped lipped ledges, together extending beneath the web interruption, the expansion member and the slot for a distance equal to the slot, each ledge terminating adjacent the opposite ledge in a diagonally downturned end ledge portion adjacent a ledge end-defining slit, the ledge end portions together defining a V-shaped configuration longitudinally spaced apart from said expansion member to retain general runner shape when the runner undergoes expansion-induced buckling and having its apex adjacent the runner flange to permit the flange and web ledges to buckle away from the remaining portion of the web in a predetermined configuration when compressive forces are applied to the runner in a longitudinal direction.

3,965,633

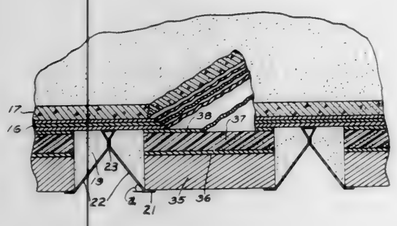
INSULATED ROOFING STRUCTURE AND METHOD

Frank E. Carroll, Barrington, Ill., assignor to Decks, Incorporated, Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 457,996, April 4, 1974. This application July 8, 1974, Ser. No. 486,444

Int. Cl.² E04B *1/24*; **E04C** *2/10*

U.S. Cl. 52—309 **6 Claims**



1. A fireproof insulated roof structure comprising: roof support members, roof decking adjacent to and supported by said roof support members, incombustible rigid gypsum formboard above and adjacent to said roof decking, synthetic polymer foam above and adjacent to said formboard, and a waterproof wearing surface to the exterior of said foam, wherein the lower surface of said gypsum formboard is bonded to the upper surface of a precast wood fiber cement-bonded board roof decking.

3,965,634

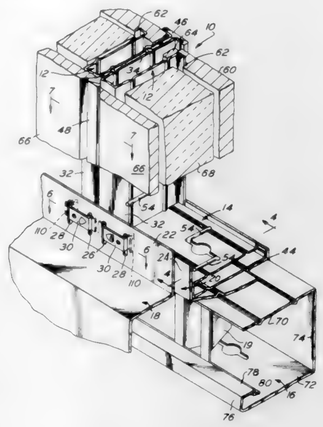
MODULAR BUILDING

Wesley T. Murphy, Auburn, N.Y., assignor to Vercon Products, Inc., Charlotte, N.C.

Continuation of Ser. No. 160,018, July 6, 1971, abandoned, which is a continuation-in-part of Ser. No. 85,533, Oct. 30, 1970, abandoned. This application Oct. 26, 1973, Ser. No. 410,076

Int. Cl.² E04B *1/68*

U.S. Cl. 52—403 **2 Claims**



1. A building construction comprising at least one stud member secured to a surface, said stud member comprising a first longer wall and a second shorter wall, said longer and shorter walls being generally parallel to each other and connected by a bridging section, said longer wall being adjacent to said surface, resilient means interposed between said longer wall and said surface, said longer and shorter walls and said surface each having aligned slots and clamp means extending through said slots and acting upon at least said shorter wall to urge said longer and shorter walls and said surface inwardly toward each other and applying a compressive force upon said resilient means.

3,965,635

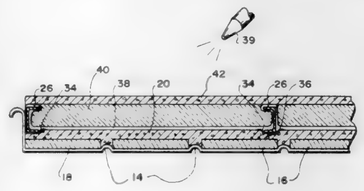
PREFABRICATED BUILDING PANEL AND METHOD OF MAKING

John S. Renkert, Canton, Ohio, assignor to Metropolitan Industries, Inc., Canton, Ohio

Filed Apr. 17, 1975, Ser. No. 569,276

Int. Cl.² E04B *2/00, 1/00*

U.S. Cl. 52—434 **10 Claims**



1. A process for forming an insulated concrete panel comprising,

providing a mold cavity with said cavity having a surface of cementitious material,

depositing a resinous mixture in said cavity in contact with said cementitious surface,

foaming the resinous mixture to fill the cavity,

applying a layer of cementitious material over the resinous mixture and in contact with said surface of cementitious material to completely enclose the foam within the cementitious mold cavity.

3,965,636

PANELING FOR WALLS OR THE LIKE

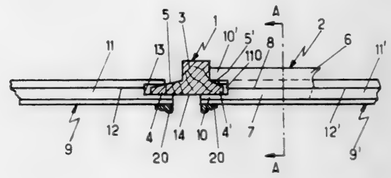
Eugen Huber, Echbeck, Germany

Filed Feb. 3, 1975, Ser. No. 546,822

Claims priority, application Switzerland, Feb. 1, 1974, 1393/74

Int. Cl.² E04B *5/52*

U.S. Cl. 52—496 **13 Claims**



1. A decorative and/or protective paneling for walls, ceilings or the like, comprising a skeleton frame including at least one elongated first frame member having two longitudinally extending marginal portions and at least one longitudinally extending tongue which includes one of said marginal portions and tapers in a direction away from the other of said marginal portions, and at least two spaced-apart elongated second frame members having bifurcated end portions into which said tongue extends, each of said end portions having a pair of prongs frictionally engaging said tongue in wedging relationship at the opposite sides thereof; and a panel disposed between and supported by said second frame members.

3,965,637

COMPOSITE BLOCK FOR REFRACTORY LININGS OF FURNACES

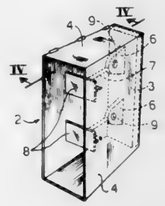
Ugo Brusa, Via Borgnis, Domodossola, Italy

Filed Feb. 14, 1975, Ser. No. 550,009

Claims priority, application Italy, Apr. 2, 1974, 68042/74

Int. Cl.² E04B *5/04, 1/16*

U.S. Cl. 52—596 **12 Claims**



1. A composite block for refractory linings of metallurgical furnaces, which block comprises an envelope made of steel, having a substantially prismatic shape with tetragonal bases, a plate, made of steel of a type different from that of the said envelope and secured in correspondence of the periphery of one of the side faces of said envelope, and having a greater thickness than the envelope, said plate forming the block face which has to be exposed towards the interior of the furnace, and means which allow the anchoring of said plate in a mass of refractory material with which the inner space of the said envelope is filled, said plate preventing wear and thermal shock of said refractory material.

3,965,638

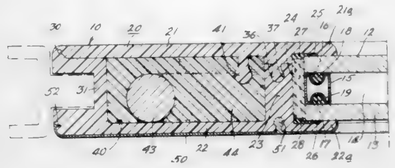
INSULATED GLASS PANEL

Irvin Newman, Cherry Hill, N.J., assignor to Ira W. Fine, Pennsauken, N.J.

Filed July 2, 1974, Ser. No. 485,165

Int. Cl.² E04C *2/34*

U.S. Cl. 52—616 **12 Claims**



1. An insulated panel structure comprising: a pair of panels juxtaposed to define an air gap therebetween, a spacer disposed in said gap between inner peripheral margins of said panels, said spacer having at least a pair of opposed recesses confronting said inner margins of said panels, a resiliently deformable gasket disposed in each of said recesses and having a portion extending outwardly thereof to engage said inner margins, and frame means surrounding said panels and engaging outer peripheral margins of said panels for urging said panels toward one another to compress said gasket thereagainst, said frame means including a first frame member disposed on one side of said pair of panels and a second frame member disposed on the other side thereof, one of said frame members having an inner web portion extending along the peripheral edges of said panels, an outer web on said one member spaced from said inner web, said inner and outer webs spacing said frame members apart to define therebetween a cavity, a foam material contained in said cavity, and means providing complementary mating snap fasteners releasably fastening said inner web to the other of said members.

3,965,639

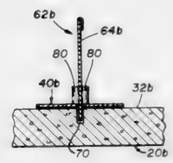
BEAM-REINFORCED CEILING PANELS

Edward J. Boarini, Arlington Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Continuation of Ser. No. 383,210, July 27, 1973, abandoned, which is a continuation of Ser. No. 167,198, July 29, 1971, abandoned. This application Feb. 3, 1975, Ser. No. 546,220

Int. Cl.² E04C *2/38*

U.S. Cl. 52—629 **3 Claims**



1. A reinforced ceiling panel comprising

a generally flat sheet having a front surface, a back surface, and opposite edge surfaces;

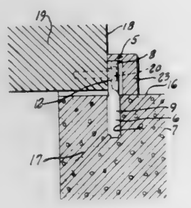
an elongate reinforcing member extending from one of said edge surfaces to the opposite edge surface between the remaining edge surfaces, said reinforcing member being secured along substantially its entire length flat against said back surface;

and a beam member secured to said reinforcing member so as to project from said back surface,

one of said reinforcing member and said beam member being provided with apertures and the other of said members being provided with outwardly extending connecting

means for releasably engaging said apertures to connect said members together;
whereby said beam member reinforces said sheet.

3,965,640
FASTENER FOR SECURING A STRUCTURAL MEMBER TO CONCRETE
Erik Ingvar Andersson, Gotgatan 6, S-703 58 Orebro, Sweden
Continuation of Ser. No. 413,675, Nov. 7, 1973, abandoned. This application Feb. 10, 1975, Ser. No. 548,814
Claims priority, application Sweden, Nov. 9, 1972, 14504/72
Int. Cl.² E04B 1/41
U.S. Cl. 52—704 **3 Claims**



1. A securement device of the type having a substantially solid pin portion that can be driven into a hole in a structural member of concrete or the like and having a head portion at one end of said pin portion to which another structural member can be secured for anchorage to the first mentioned structural member, wherein the pin portion of said securement device is characterized by:

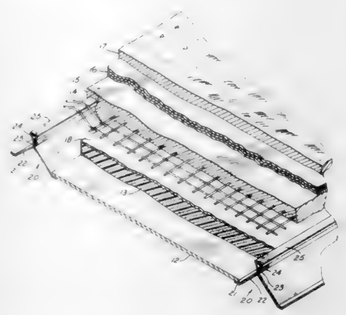
A. an elongated substantially cylindrical body having a uniform radius along a substantial major portion of its length; and

B. a plurality of circumferentially equidistant axially elongated ridges on said body, each said ridge

1. extending lengthwise along said major portion of the length of the body,
2. having a flat radially outermost surface which is normal to a plane containing the axis of the body and which, at its intersection with said plane, is at a uniform distance from said axis all along its length,
3. being tapered to diminish in extent, as measured circumferentially of the body, from said one end of the pin portion, the opposite longitudinal edges of said flat surface thus being convergent towards one another and said plane in the direction away from said one end of the pin portion, and
4. having other surfaces which extend lengthwise along said edges of said flat surface and which cooperate with said flat surface to define substantially square corners extending along said edges

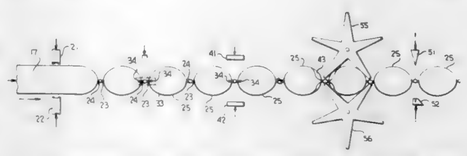
so that as the pin portion is driven progressively into a hole of a radius larger than that of said cylindrical body but smaller than that of the ridges, the corner portions of the ridges produce an increasing wedging effect upon the surface of the hole whereby circumferentially spaced, axially elongated zones of compression are created in the pin portion that resist its axial motion relative to the structural member having the hole.

3,965,641
SHEET METAL STRUCTURAL SHAPE AND USE IN INSULATED DECKING STRUCTURE AND METHOD
Frank E. Carroll, Barrington, Ill., assignor to Decks, Incorporated, Rolling Meadows, Ill.
Filed Apr. 4, 1974, Ser. No. 457,996
Int. Cl.² E04C 3/04, 5/065
U.S. Cl. 52—738 **11 Claims**



1. A sheet metal structural shape for use as a purlin or sub-purlin in deck construction which is symmetrical about a vertical bisecting plane having; a central vertical web of about ⅜ to about ⅝ inch in length, two legs projecting downwardly from the bottom of said web forming an angle of about 30° to about 90° between said legs having its vertex at the bottom of the web, said legs having a vertical depth of about 1⅛ to about 10 inches, each leg having a substantially horizontal flange projecting outwardly at its lower extremity, and a stiffening member at the upper edge of said web providing uplift resistance when surrounded by concrete.

3,965,642
METHOD AND APPARATUS FOR FILLING PLASTIC BAGS WITH LIQUID OR PARTICULATE MATERIAL
William H. Hills, and Shirley M. Hills, both of Melbourne Village, Fla., assignors to Hills Research & Development, Inc., Melbourne, Fla.
Filed Aug. 22, 1974, Ser. No. 499,558
Int. Cl.² B65B 9/08
U.S. Cl. 53—28 **8 Claims**



1. A continuous high-speed method of forming and filling plastic bags comprising the steps of:

continually advancing a sheet of flexible plastic material longitudinally to a plurality of operation locations in succession;

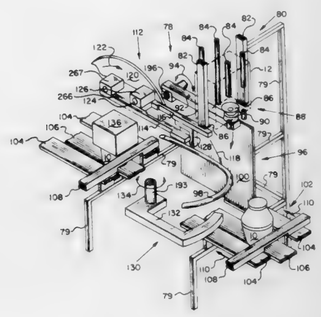
at a first location, forming a longitudinally-sealed tube from said sheet and inflating said tube with a gaseous medium;

at a second operation location, segmenting the inflated tube into individual interconnected, inflated and pressure-isolated plastic bags by sealing the tube generally transversely at fixed intervals along its length;

at a third operation location, filling each inflated plastic bag with flowable fill media by puncturing the bag with a fill nozzle and displacing the inflating gas with fill media introduced into the bag through said nozzle, the displaced gas being permitted to escape from said bag through the puncture about the nozzle periphery; and

at a fourth operation location, sealing the bag about said puncture to prevent fill media from escaping through said puncture.

3,965,643
TOPPER UNIT, MACHINE AND METHOD
Earle Conrad Sherman, West Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.
Filed Oct. 10, 1975, Ser. No. 621,446
Int. Cl.² B65B 21/04, 43/30
U.S. Cl. 53—29 **19 Claims**



1. A topper unit for opening, applying and locking a pre-glued open ended carton to the top of a bottle, comprising:

a. a frame;

b. a hopper mounted on said frame and serving as a receptacle for a plurality of pre-glued and folded cartons;

c. means, associated with and located below said hopper, for removing the cartons one at a time from the hopper;

d. means, mounted on said frame and located beneath said hopper, for opening said cartons while said removing means is removing the cartons from the hopper;

e. means, associated with said frame, for moving and positioning a bottle beneath the opened carton;

f. means, associated with said frame, for pressing the previously opened carton on top of the bottle and locking it onto the bottle; and

g. means, associated with said frame, for squaring up the carton as it is being pressed on top of the bottle.

11. A method for withdrawing a pre-glued open ended and folded carton from a hopper, opening the carton and applying it to the top of a bottle, comprising the steps of:

a. providing a bottle in a predetermined position beneath the hopper;

b. withdrawing the pre-glued and folded carton downwardly and away from the hopper while turning it 90° from its previous position in the hopper, the withdrawing and turning serving also to open the folded carton so that its open end is downwardly facing and is positioned over the bottle; and

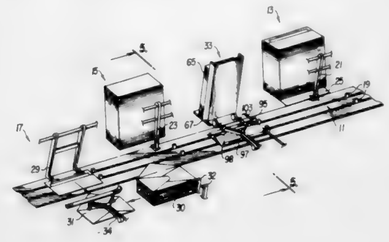
c. pressing the downwardly facing opened carton on top of the bottle while squaring up the carton until the carton is locked on the bottle.

3,965,644
APPARATUS AND METHOD FOR MAIL PREPARATION
Lester H. Stocker, Phillipsburg, N.J., assignor to Bell & Howell Company, Phillipsburg, N.J.
Filed Oct. 31, 1975, Ser. No. 627,742
Int. Cl.³ B65B 43/30
U.S. Cl. 53—29 **8 Claims**

1. An inserting machine for supplying insert sheets having pockets formed thereon, stuffing cards into said pockets and stuffing said insert sheets with cards in the pockets thereof into respective envelopes, said inserting machine comprising:

an insert raceway including a conveyor for receiving said insert sheets having pockets formed thereon at an insert-sheet supply station and intermittently conveying said insert sheets first to a pocket-stuffing station and then to an envelope stuffing station;

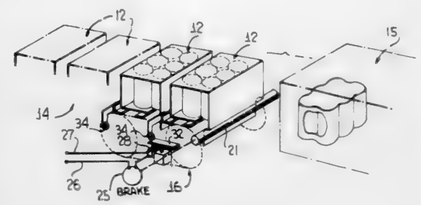
an insert-sheet supply means positioned at said insert-sheet supply station adjacent to said conveyor for sequentially placing individual insert sheets having pockets formed thereon on said conveyor;



an insert card stuffing means positioned at said pocket-stuffing station adjacent to said conveyor downstream of said insert-sheet supply station for engaging the pockets formed on insert sheets stopped at said pocket-stuffing station, opening said pockets, and inserting a card into each of said pockets;

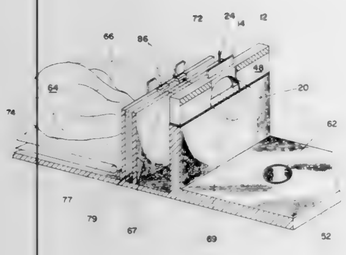
an envelope stuffing means positioned at said envelope stuffing station adjacent to said conveyor downstream of said pocket-stuffing station for supplying empty, open envelopes and stuffing each of said insert sheets with cards in the pockets thereof into an open envelope.

3,965,645
PACKAGE TIGHTENER AND METHOD
Robert H. Ganz, 8 Ridgecrest Road, Saddle River, N.J. 07458
Filed Aug. 26, 1974, Ser. No. 500,489
Int. Cl.² B65B 11/48
U.S. Cl. 53—32 **6 Claims**



5. A method of tightening a moving partially formed package of the type including an article having sheet material overlaying the same and extending vertically down front and back sides of the article and terminating in a forwardly extending rear bottom panel and a rearwardly extending front bottom panel, said method comprising the steps of providing a predetermined path of movement for said partially formed package, providing a support roll extending across said predetermined path, moving said partially formed package along said predetermined path and over said support roll in contact therewith, retarding rotation of said support roll to frictionally engage the front bottom panel as the partially formed package moves forward past said support roll and thereby tensioning the front bottom panel and tightening the package, and thereafter permitting the support roll to rotate thus permitting the rear bottom panel to freely pass over the support roll.

3,965,646
ADJUSTABLE SEALING DEVICE
Robert Stanley Hawkins, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Feb. 26, 1975, Ser. No. 553,388
Int. Cl.² B65B *31/02*
U.S. Cl. 53—112 B 13 Claims



1. In an apparatus for evacuating and closing flexible, impervious receptacles such as pouches, bags and the like which have at least one opening and contain at least one product, said apparatus comprising:

A. a first vacuum chamber;

B. a second vacuum chamber adjacent to said first chamber;

C. means providing an aperture in flow communication with said chambers for passing a portion of said receptacle containing the opening through the aperture;

D. means to evacuate said first and second chambers independently of each other and to evacuate said receptacle; and,

E. means to close said receptacle when its evacuation is completed, the improvement for effecting an improved seal between said chambers throughout a range of receptacle size wherein said aperture-providing means includes means for adjusting the size of said aperture to substantially preclude flow communication of the first and second chambers other than flow communication through said opening in the receptacle, said means for adjusting the size of said aperture including a gate adapted to traverse said aperture.

3,965,647
BRIEF FOLDING AND PACKAGING APPARATUS
Carl F. Sjoman, Los Angeles, Calif., assignor to Team Industries, Los Angeles, Calif.
Filed Aug. 29, 1974, Ser. No. 501,693
Int. Cl.² B65B *63/04*
U.S. Cl. 53—117 8 Claims

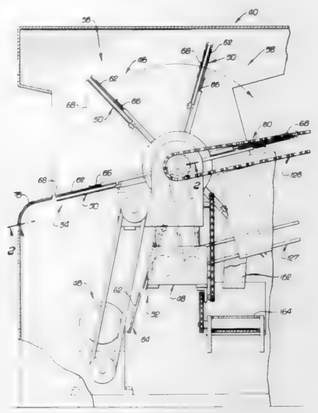
1. In an apparatus for packaging a man's brief, or similar article, the combination of:

a. means for folding the brief transversely thereof;

b. means for folding the transversely folded brief longitudinally thereof along spaced, substantially parallel longitudinal fold lines;

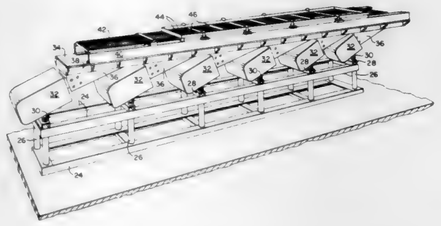
c. means for rolling the transversely and longitudinally folded brief into a substantially cylindrical configuration having an axis substantially parallel to the longitudinal fold lines;

d. means for opening a bag into which the folded and rolled brief is to be inserted; and



e. means for inserting the folded and rolled brief into the opened bag.

3,965,648
APPARATUS FOR LOADING FUEL PELLETS IN FUEL RODS
Robert J. Tedesco, Coraopolis, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 3, 1974, Ser. No. 430,421
Int. Cl. B65b *63/00*
U.S. Cl. 53—126 8 Claims



1. Apparatus for loading fuel pellets into fuel rods comprising:

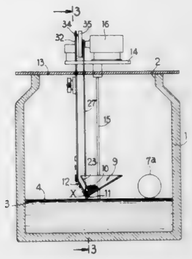
a base supporting a table having at least one row of fuel pellets thereon;

at least one fuel rod secured to the table upper surface and positioned in alignment with said pellets;

vibration means on said base connected with said table for imparting vibratory motion thereto;

said vibration means being mounted at an angle to a horizontal plane passing through the base to cause said table upon movement of said vibrator to cyclically move in a forward-upwardly backward-downwardly motion thereby advancing each pellet in each fuel rod a predetermined distance during each cycle.

3,965,649
APPARATUS FOR GROUPING ARTIFICIAL INSEMINATION STRAWS
Maurice Jean-Pierre Cassou, 61300 La Sapaie Saint-Symphorien des Bruyeres-par-l'Aigle, France
Filed Feb. 13, 1975, Ser. No. 549,796
Claims priority, application France, Feb. 15, 1974, 74.05287
Int. Cl.² B65B *5/10*
U.S. Cl. 53—127 11 Claims



1. An apparatus for grouping artificial insemination straws in a container whose length is less than the length of the straws, comprising in combination a support means and, mounted on said support means: a filling station, a device for feeding containers one by one to the filling station, each of said containers having at said filling station a filling opening substantially contained in a plane which is substantially vertical, a device for feeding the straws one by one to a charging position in which the straw is substantially horizontal and substantially perpendicular to said plane, said filling station having a space which is divided by said plane into a first space part and a second space part, the container being located in said first space part and the straw being located in said second space part at said filling station, a charging device for shifting the straws one by one in a direction parallel to the direction of the length of the straw from said charging position to a charged position inside the container, and said straw feeding device comprising a straw supply means for supplying straws one by one to a substantially horizontal intermediate position in which the straw is oriented in a direction substantially parallel to said charging position but below the level of the lowermost part of the opening of the container, and an intermediate shifting device for shifting the straws one by one in a direction transverse to the length of the straw from said intermediate position to said charging position which charging position is disposed above said level and intersects the position of the lowermost straw in the container.

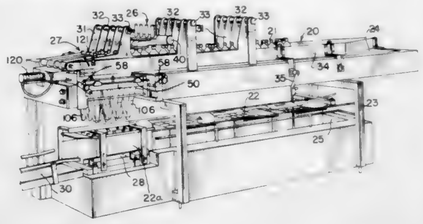
3,965,650
HIGH SPEED CASE PACKING MACHINE
Herbert H. Nussbaum, Bainbridge, Ga., assignor to Miller Hydro Company, Bainbridge, Ga.
Filed Jan. 13, 1975, Ser. No. 540,606
Int. Cl.² B65B *5/08*, *21/06*, *21/16*
U.S. Cl. 53—166 12 Claims

1. In an in-line packing machine of the type having a plurality of side-by-side channels in which containers to be packed are advanced, and a packing station for transferring containers from said channels to desired packing positions in an underlying carton, said packing station comprising

a plurality of drop bar assemblies underlying respective ones of said container channels, said drop bar assemblies each including a continuous-loop drive chain presenting an upwardly-facing surface for frictionally engaging said containers,

drive means for powering said drive chains to advance said containers in each of said channels to said predetermined packing positions, and

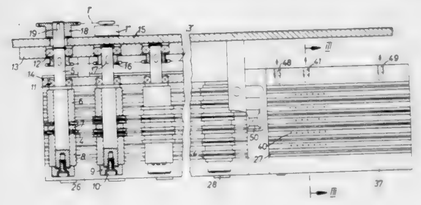
release means for shifting said drive bar assemblies from positions under said channels to positions between said channels after said containers have arrived at said predetermined pre-packing positions to allow said containers to drop into said underlying carton,



the improvement wherein:

each of said drop bar assemblies includes a support bar having a guide channel on the top surface thereof, the width of said support bar, overall, not exceeding the width of said drive chain, and wherein at least a portion of the links on said drive chain include a projecting tab portion slidably engaged in said guide channel.

3,965,651
DEVICE FOR THE MANUFACTURE AND FILLING OF PACKAGES
Erwin Reichlin, Waldegg, Walchwil, Switzerland
Filed Dec. 10, 1974, Ser. No. 531,214
Claims priority, application Switzerland, Dec. 14, 1973, 17592/73
Int. Cl.² B65B *1/02*, *9/04*
U.S. Cl. 53—183 5 Claims



1. An apparatus for manufacturing and filling packages including

first and second strips of packaging materials;

a forming station including

a frame having a side plate;

a forming plate having a plurality of longitudinal grooves in one surface thereof;

means for feeding and guiding the first one of said strips along said plate in the direction of said grooves and adjacent said grooved surface;

said means for feeding including a plurality of longitudinally spaced positively driven forming rolls adjacent said one surface with said first strip between said rolls and said surface,

said side plate having means for rotatably supporting said rolls in cantilever;

means for driving said rolls;

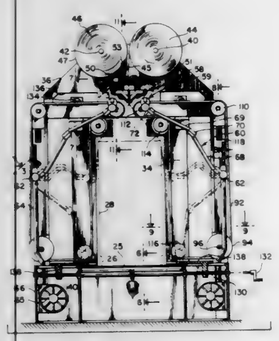
said rolls having annular ridges shaped to mate with said grooves and to press said strip into said grooves;

the first one of said rolls at one end of said plate having a pair of ridges laterally spaced apart on opposite sides of the centerline of said first strip to form a pair of continuous depressions in said strip;

each successive downstream one of said rolls having additional pairs of ridges spaced further apart than the outermost ridges on the preceding roll to successively form

additional continuous grooves in said strip, working from near the center of said strip toward the outer margins thereof;
means downstream of said rolls for depositing material to be packaged in the elongated depressions formed in said first strip;
means for feeding, guiding and joining said second strip to said first strip along the regions of said first strip between depressions formed therein; and
means for transversely sealing the joined strips and for severing the strips at the transverse joined regions into packages.

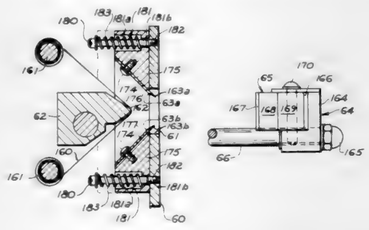
3,965,652
MACHINE FOR COVERING A PALLET LOAD WITH SHRINKABLE PLASTIC FILM
John B. Cimins, Paterson, N.J., assignor to J & H Co., Paterson, N.J.
Filed Oct. 30, 1969, Ser. No. 872,592
Int. Cl.² B65B *43/30, 53/02*
U.S. Cl. 53—183 **7 Claims**



1. Bulk shrink film packaging apparatus comprising:
a. a frame having load supporting means therein for supporting a load to be wrapped;
b. sheet feeding means for feeding tubular sheet downwardly toward said load supporting means; and
c. tube-gripping and holding means movable in opposite directions from the plane of the descending flat tubular sheet and positioned at a level above the load to be wrapped and below the sheet feeding means, said tube-gripping means being arranged to engage opposite sides of the flat tubular sheet as it is fed downwardly and spread them apart to form the sheet into a four-sided configuration and then hold it in said configuration and guide it downwardly around the load as the sheet-feeding means continues to feed the sheet downwardly,
said load supporting means including conveyor means for supporting a loaded pallet, said conveyor means being operative to position a pallet load immediately below said sheet feeding means.

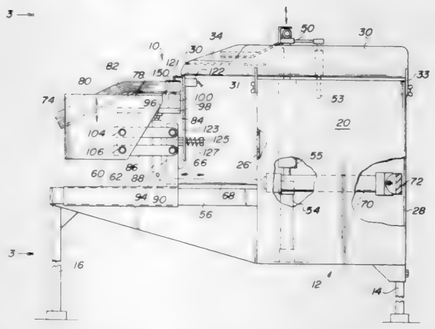
3,965,653
PACKAGING APPARATUS
Bernard Lerner, Hudson, Ohio
Continuation-in-part of Ser. No. 139,453, May 3, 1971, Pat. No. 3,815,318. This application Feb. 28, 1973, Ser. No. 336,560
Int. Cl.² B65B *5/00, 7/02, 43/12, 51/14*
U.S. Cl. 53—187 **28 Claims**

1. A packaging apparatus comprising:
a. structure establishing a path of travel for a packaging web to position a container forming portion of the web at a loading station; and
b. container closure and gripping means for:
i. closing a container portion after it has been loaded at the loading station;
ii. gripping the loaded container portion to isolate a region of the web from forces applied to a loaded container portion both by container contents and to effect separation of the container portion from the web; and,



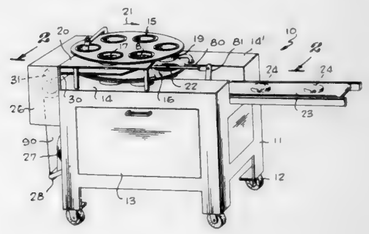
iii. thereafter applying container separation forces to a line of weakness connecting a loaded container portion to the remainder of the web, said separation forces being applied to the line of weakness while the container portion is being gripped to isolate said region from said separation forces.

3,965,654
BAGGING APPARATUS
Clarence Edmond Reubens, Decatur; Sterrett Paxton Campbell, and Lloyd Everett Marston, both of Atlanta, all of Ga., assignors to Paramount Packaging Corporation, Chalfont, Pa.
Filed July 21, 1975, Ser. No. 597,848
Int. Cl.² B65B *43/36*
U.S. Cl. 53—189 **12 Claims**



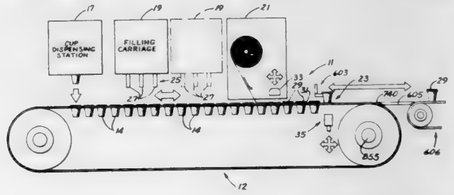
1. Bagging apparatus comprising a support structure, first and second horns mounted on said support structure, said second horn being shorter than said first horn, means connected to said second horn for moving said second horn toward and away from said first horn, a carriage supported by said support structure for movement toward and away from said horns, a portion of said carriage being below said first horn at one end of its movement, means on said carriage for supporting a stack of bags and for elevating the stack of bags, means including circuitry connected to said second horn and carriage for automatically cycling the same so that the carriage movement toward said horns causes the top bag to at least partially telescope over a portion of the horns and then causes the second horn to move away from the first horn to stretch the mouth of the bag, and means for causing the top bag to be open during such movement of the carriage toward the horns.

3,965,655
FOOD PRODUCT PACKAGING APPARATUS
William H. Schooler, Sr., 1913 Jackson St., Burbank, Calif. 91504, and William H. Schooler, Jr., 1013 N. Howard St., Glendale, Calif. 91207
Filed Dec. 30, 1974, Ser. No. 537,246
Int. Cl.² B65B *11/28*
U.S. Cl. 53—225 **7 Claims**



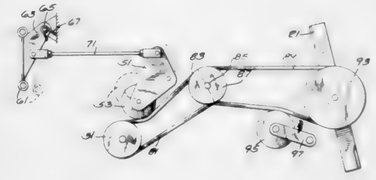
1. A food product wrapping machine comprising:
a base having a working surface;
a first and second means rotatably carried on said base in vertical fixed spaced apart relationship wherein each of said means are provided with a plurality of pockets in vertical registry for receiving said food product via gravity transference therebetween;
gating means operably disposed between said first and second means for supporting said food product during transition therebetween;
paper supply means operably carried on said base for supplying a sheet of paper between said first and second means and said gating means engagable with said food product during said gravity transference;
folding means interposed between said gating means and said second means for folding the edge marginal regions of said paper sheet about said food product;
control means interconnecting said above-mentioned means for timing and sequencing the operation thereof with respect to each other;
said paper supply means includes a cutting means having a reciprocably moving serrated cutting edge; and
clamping means operable to retain said paper sheet taut on opposite sides of said cutting edge.

3,965,656
CUP FILLING AND CAPPING APPARATUS
Ralph D. Gerben, Glen Burnie, Md., assignor to Solo Cup Company, Urbana, Ill.
Filed May 16, 1974, Ser. No. 470,379
Int. Cl.² B65B *3/14*
U.S. Cl. 53—282 **22 Claims**



1. An apparatus for filling and closing individual cups comprising an endless flight conveyor having a plurality of openings arranged in longitudinally extending rows for receiving and holding individual cups while moving along a predetermined path of travel, means for driving said endless conveyor to continuously move the conveyor and cups along said predetermined path and through a series of stations, cup dispensing means along said path at a cup receiving station for inserting an individual cup into each of said openings while said conveyor is continuously moving, filling means at a filling station along said path for filling each of said cups while continuously moving through said filling station, means for heat sealing an individual cover to each of said cups at a covering station while said cups are continuously moving through said covering station, a continuously moving means for lifting said cups from said openings in said conveyor means, said lifting means carrying the cups forwardly while simultaneously lifting the same to positions above said openings and means for pushing said cups from said lifting means and discharging the filled and covered individual cups without arresting their continuous movement.

3,965,657
REAR SAFETY BUMPER FOR RIDER MOWERS
Herbert A. Jespersen, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Apr. 15, 1974, Ser. No. 460,779
Int. Cl.² A01D *35/26*
U.S. Cl. 56—10.2 **6 Claims**



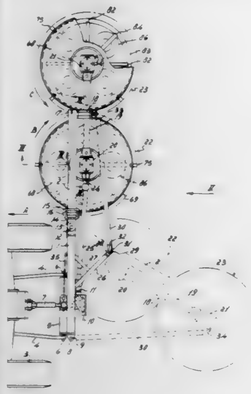
1. A riding lawn mower comprising a frame, forward and rear wheel means mounted on said frame for engagement with the ground to support said frame above the ground, a bumper, means on said frame movably supporting said bumper rearwardly of said rear wheel means for movement between an extended position and a retracted position, an engine supported by said frame, a cutter blade carried by said frame for rotary movement relative thereto, power transmission means connecting said engine to said cutter blade and including a member movable relative to a first position permitting engagement of said transmission and to a second position affording disengagement of said transmission, and means connecting said bumper to said member so as to locate said member in said first position permitting engagement of said transmission when said bumper is in said extended position and in said second position to afford disengagement of said transmission when said bumper is in said retracted position.

3. A riding lawn mower in accordance with claim 1 wherein said power transmission means comprises an endless belt and said member comprises an idler pulley movable relative to said endless belt between a position removing slack so as to effect power transmission and a second position permitting slack so as to interrupt power transmission.

3,965,658
MOWING MACHINES
Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland
Filed May 14, 1974, Ser. No. 469,772
Claims priority, application Netherlands, May 15, 1973, 7306705
Int. Cl.² A01D *55/22*
U.S. Cl. 56—192 **29 Claims**

1. A mowing machine comprising a mobile frame and mowing means supported on said frame, said mowing means including at least one mowing member that is rotatable about an upwardly extending axis, said mowing member having an outer circumference and cutting means adjacent said circumference, said machine having driving means connected to said mowing means to rotate said cutting means about said upwardly extending axis, at least one supporting member being rotatably mounted on said mowing member and said support-

ing member being rotatable about a separate axis of rotation that is spaced from said upwardly extending axis, said support-



ing member being freely rotatable about said separate axis of rotation independently of said driving means.

3,965,659

GRAIN LIFTER FOR A CORN REAPING MACHINE

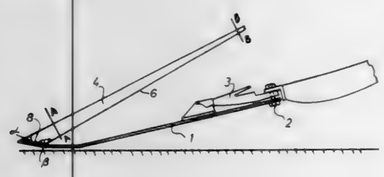
Gustav Schumacher, II, and Guenter Schumacher, both of 5231 Eichelhardt, Germany

Filed May 16, 1974, Ser. No. 470,571

Claims priority, application Germany, May 22, 1973, 2325916

Int. Cl.² A01D *65/02*

U.S. Cl. 56—313 **5 Claims**



1. In a reaping machine, an elongated supporting rod having an upper rear end region to be fixed on the reaper so that the supporting rod points forwardly and downwardly in the direction of motion, said supporting rod having a front tip region distant from and lower than said rear end region thereof, a lifting bar having a lower end welded only to said front tip region of said supporting rod and being inclined upwardly and backwardly from the front tip region of said supporting rod, said lifting bar gradually tapering and becoming narrower from its lower end upwardly toward an upper rear end region of said bar, said lifting bar being made of a metallic sheet material and having a pair of opposed side walls terminating in free rear edges and a substantially U-shaped front wall interconnecting said side walls, said side walls having a width which is of a maximum dimension at the lower end of said bar and which becomes gradually smaller toward the upper rear end region of the bar while said bar has a lower end which is welded to said front tip region of said rod, said lower end being situated in a plane which makes an acute angle with a forwardmost edge of said front wall and an obtuse angle with the rear free edge of said side wall to afford a secure welded connection of the bar to the front tip region of said rod, said rod having an upper surface situated in said plane.

3,965,660

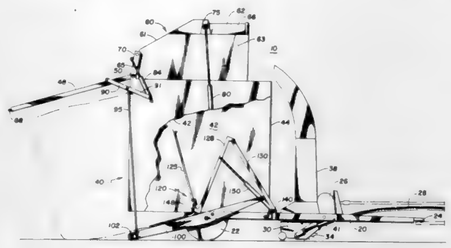
STACK FORMING APPARATUS

Glenn G. Kanengieter, Blooming Prairie, and Gerald E. Barry, Owatonna, both of Minn., assignors to Owatonna Manufacturing Company, Inc., Owatonna, Minn.

Filed Nov. 27, 1974, Ser. No. 527,703

Int. Cl.² A01D *85/00*

U.S. Cl. 56—344 **15 Claims**



1. A stack forming apparatus comprising: a chassis having a pair of wheels intermediate the extent of the same and supporting the chassis with a hitch at one end thereof; a crop receiving container positioned on said chassis over said wheels and extending from the other end thereof intermediate the extent of the chassis, said crop receiving container having upstanding sides and an open upper front side for the introduction of loose crop therethrough; a pick up means positioned by said chassis forward of said container and having a discharge chute extending adjacent to the open front side of the container; a movable roof for said container having downwardly projecting rear and side portions integral therewith and an open front extremity; a pivoted rear door for said container pivoted at the rear upper edge of the upstanding sides of the container and adapted to pivot from the top edge of the container; means including a first actuator means connected to the upstanding sides of the container adjacent the rear end thereof for pivoting rear of roof, and a second pair of actuator means connected to the top of the roof adjacent the forward edge of the same and to the sides of the container intermediate the extent thereof with said actuators pivoting the roof at the front and back through different arcs, said container having a floor pivoted intermediate the extent of the same and adjacent the axis of said wheels, and a push type unloader connected to the front wall of the container and adapted to push a stack within the container along the floor thereof causing pivoting of the floor as the stack is discharged

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3,965,661

THREAD DRAWOFF TUBE FOR AN OPEN-END SPINNING UNIT

Yoshiaki Yoshida, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho and Daiwa Boseki Kabushiki Kaisha, Osaka, both of, Japan

Filed Apr. 18, 1974, Ser. No. 461,930

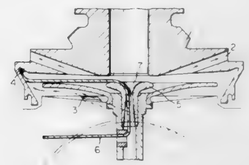
Claims priority, application Japan, Apr. 21, 1973, 48-45530

Int. Cl.² D01H *1/12, 13/04*

U.S. Cl. 57—58.89 **10 Claims**

1. In an assembly of a spinning rotor and a thread drawoff tube of an open-end spinning unit, said spinning rotor being capable of rotating about an axis thereof and provided with a ring shaped fiber collecting surface formed at an inside ring shaped wall having maximum rotational diameter, said thread drawoff tube disposed coaxially in stationary condition at a position along an extended line of said axis of said spinning rotor and provided with a hollow yarn guide for delivering a continuous thread from said assembly and a flange portion extending from an inside terminal of said hollow tube toward said fiber collecting surface of said spinning rotor, the improvement comprising an improved thread drawoff tube pro-

vided with a thread passage, said thread passage having frictional resistance along a portion of said thread passage contacted by said thread having inner and outer ends for creating a rolling motion of said thread by frictional contact therewith when said thread is being delivered from said assembly, said thread passage provided with a continuous trumpet shaped



friction surface in said portion of said thread passage, said portion of said thread passage having surface variations providing an effective coefficient of friction of said frictional resistance that gradually decreases toward the edge of said flange portion, said surface variations extending from said inner and outer ends of said portion of said thread passage and continuously contacting said thread.

3,965,662

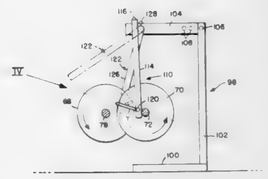
FALSE TWISTING DEVICE

Richard C. Spurgeon, R.D. No. 2, Lansdale, Pa. 19446

Filed Oct. 16, 1974, Ser. No. 515,331

Int. Cl.² D02G *1/08*

U.S. Cl. 57—77.33 **4 Claims**



1. In apparatus for false twisting yarn, the combination comprising

a. a plurality of friction discs alternate and intervening ones of which respectively are revolvable about laterally spaced generally parallel axes, said discs being disposed with said alternate discs to the rear of said intervening discs, and with the rims of said alternate and intervening discs overlapping,

b. means for turning said discs in yarn twisting direction,

c. means through which said yarn may be threaded for guidance and coaction with said discs to form of the length of yarn spanning said guide means a single loop extending over said discs, and

d. a plurality of members each having a section with a substantially straight elongated edge, said members being adjustably fixed in position and operable for bringing said edges into engagement with the loop of yarn extending over said discs and pressing the same downwardly and rearwardly between each pair of adjacent discs a selected distance, said yarn being free, in response to adjustment of said members to assume a position along said edges whereat vibration of said yarn circumferentially of said discs is substantially eliminated and said yarn is twisted in place on the rims of said discs.

3,965,663

SPUN YARN

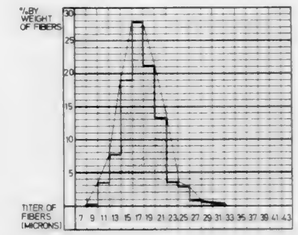
Hans Goetti; Anton Mittler, and Hermann Forrer, all of Burglen, Switzerland, assignors to Kammgarnspinnerei Burglen, Burglen, Switzerland

Continuation-in-part of Ser. No. 300,993, Oct. 26, 1972, abandoned. This application Sept. 18, 1974, Ser. No. 507,298

Claims priority, application Switzerland, Nov. 1, 1971, 15905/71

Int. Cl.² D02G *3/04*

U.S. Cl. 57—140 BY **7 Claims**



1. As a novel article of manufacture, a spun yarn at least predominantly made from synthetic plastic staple fibers and having the touch of a yarn approximating that of a yarn made only of natural fibers, said synthetic plastic staple fibers of said spun yarn comprising synthetic plastic staple fibers of at least three different titers including a medium titer which is within a range of about 6 microns of the average titer of the synthetic plastic fibers in said yarn, a fine titer which is at most about 15 microns less than said average titer and a coarse titer which is at most about 15 microns in excess of said average titer, said fibers of medium titer constituting a minimum of about two-thirds of the weight of the synthetic plastic fibers in said yarn.

3,965,664

METHOD OF MAKING SPUN YARN

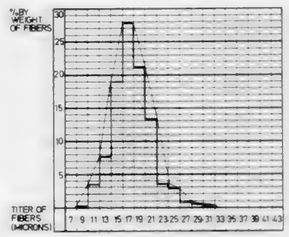
Hans Goetti; Anton Mittler, and Hermann Forrer, all of Burglen, Switzerland, assignors to Kammgarnspinnerei Buerglen, Buerglen, Switzerland

Continuation-in-part of Ser. No. 300,993, Oct. 26, 1972, abandoned. This application Sept. 18, 1974, Ser. No. 507,297

Claims priority, application Switzerland, Nov. 1, 1971, 15905/71

Int. Cl.² D02G *3/04*

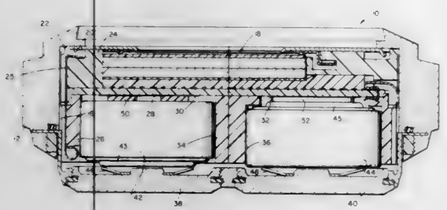
U.S. Cl. 57—157 R **14 Claims**



1. In a method of making spun yarns from staple fibers, the steps of forming a mix which comprises synthetic plastic staple fibers of at least three different titers including a medium titer which is within a range of about 6 microns of the average titer of the synthetic plastic fibers in said mix, a fine titer which is at most about 15 microns less than said average titer and a coarse titer which is at most about 15 microns in excess of said average titer and wherein the fibers of said medium titer constitute a minimum of about two-thirds of the weight of the

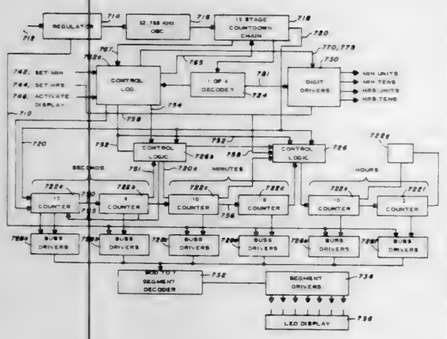
synthetic plastic fibers in said mix; and spinning said mix so as to convert it into a spun yarn.

3,965,665
ELECTRONIC WATCH CONSTRUCTION
Bela Somogyi, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Mar. 31, 1975, Ser. No. 563,926
Int. Cl.² G04C 3/00; H01R 11/22
U.S. Cl. 58—23 BA **9 Claims**



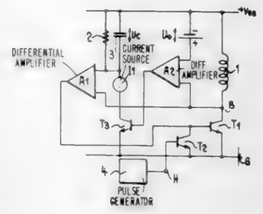
1. In combination in an electronic watch:
a support for carrying components of said electronic watch and an electric contact for connection of battery voltage for at least in part powering said electronic watch;
a nonmetallic resilient electrically conductive pad positioned against said electric contact on said support;
a battery having a contact and having its contact positioned against said resilient electrically conductive pad; and
means engaging said battery and said support for physically restraining said battery and support so that said resilient electrically conductive pad is maintained in a stressed, resiliently deflected position to maintain an area of electric contact on said battery contact and said electric contact on said support substantially as large as a battery contact to spread both electric contact area and mechanical force from said battery onto said support.

3,965,666
INJECTION LOGIC ELECTRONIC WATCH HAVING A CURRENT REGULATED OSCILLATOR
Clark R. Williams, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Feb. 19, 1974, Ser. No. 443,895
Int. Cl.² G04C 3/00; G04B 19/30; H03K 1/12
U.S. Cl. 58—23 BA **14 Claims**



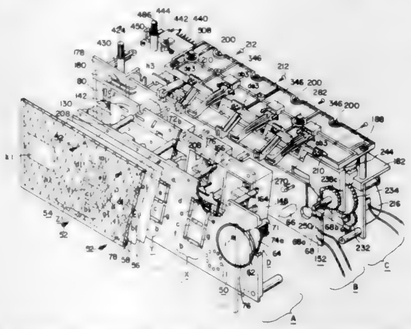
1. An electronic digital watch system comprising:
a. a current regulator and oscillator serially coupled between first and second system reference potentials; and
b. bipolar electronic timekeeping circuitry coupled to said oscillator for receiving a timing signal.

3,965,667
DEVICE FOR THE MAINTENANCE AND CONTROL OF THE OSCILLATIONS OF THE BALANCE WHEEL OF A TIMEPIECE
Igor Scherrer, Colombier, and Pierre Hersberger, Neuchatel, both of Switzerland, assignors to Ebarches S.A., Neuchatel, Switzerland
Filed July 9, 1974, Ser. No. 486,842
Claims priority, application Switzerland, July 19, 1973, 10573/73
Int. Cl.² G04C 3/04; H03F 3/34
U.S. Cl. 58—28 A **12 Claims**



1. A device for maintaining constant amplitude of oscillation of a balance wheel of a timepiece using an electrodynamic maintenance system, comprising means for generating a first signal the amplitude of which varies with the amplitude of said oscillation, means for generating a second reference signal, means for comparing said first and second signals and producing a third signal having a voltage level and polarity determined by said comparison, means for applying driving pulses to said balance wheel, and means for regulating said driving pulses in accordance with said third signal.

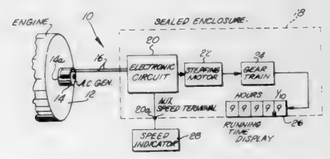
3,965,668
SHUTTER TYPE DIGITAL CLOCK
Suzuki Tomokazu, and Doma Katuharu, both of Tokyo, Japan, assignors to Kabushiki Kaisha Tamura Denki Seisakusho, Japan
Filed Feb. 28, 1975, Ser. No. 553,968
Claims priority, application Japan, Dec. 25, 1974, 50-700
Int. Cl.² G04B 19/00
U.S. Cl. 58—126 E **10 Claims**



1. A shutter type digital clock comprising a display unit base plate in which a plurality of display segment groups each having a plurality of display segmental openings arranged in the form of a figure "8" are formed, a plurality of shutter units disposed behind said base plate for switching said display segmental openings, a plurality of controlling mechanisms for controlling mechanical positions of shutter blades of said shutter units in association with a time-identified shifting mechanism, and interior light sources disposed behind said shutter blades for internally illuminating said display segmental openings, wherein each of said plurality of shutter units

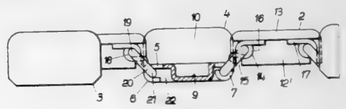
associated with respective display segment groups comprises a first shutter blade substantially vertically movable for switching an upper segmental opening and a lower segmental opening of said display segmental openings, a second shutter blade substantially vertically movable for switching an intermediate segmental opening of said display segmental openings, a third shutter blade substantially horizontal movable for switching an upperright segmental opening and an upper-left segmental opening of said display segmental openings, and a fourth shutter blade substantially horizontally movable for switching a lower-right segmental opening and a lower-left segmental opening of said display segmental openings.

3,965,669
ENGINE RUNNING TIME INDICATOR
Gerald L. Larson, and Roger F. Kuether, both of Battle Creek, Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Feb. 18, 1975, Ser. No. 550,509
Int. Cl.² G07C 3/02; G04F 8/00
U.S. Cl. 58—146 **17 Claims**



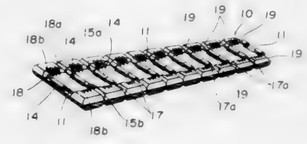
1. A running-time indicator for use with an engine comprising generator means driven by said engine for generating electric power above and below a threshold power level when the speed of said engine is respectively above and below a predetermined speed, and electronic clock means including means for measuring time that elapses only while said generated electric power is above said threshold power level, said electronic clock means being electrically powered solely by said generator means.

3,965,670
EXPANSION BRACELET
Gerhard Ihringer, Pforzheim, Germany, assignor to Rodi & Wienenberger, Aktiengesellschaft, Pforzheim, Germany
Filed Oct. 18, 1974, Ser. No. 516,006
Claims priority, application Germany, May 16, 1974, 2423734
Int. Cl.² F16G 13/24
U.S. Cl. 59—79 R **4 Claims**



1. An expansion bracelet, particularly for wristwatches, comprising a row of connected links which includes at its end portions a plurality of terminal links and which tapers in its width in direction inwardly of said end portions, each of said links comprising a plate member having a pair of first edge portions extending transversely of said row, and a pair of second edge portions extending longitudinally of said row, a pair of solid outer members each connected to one of said second edge portions and being spaced from one another transversely of said row, a solid inner member located between said outer members and in part projecting beyond them in direction longitudinally of said row, said inner member having an underside facing towards said plate member and provided with a pair of transversely extending channels, a pair of substantially C-shaped brackets, each having a bight portion pivotably received in one of said channels and a pair of leg portions, the leg portions of one of said brackets being pivotably connected to one of said first edge portions of said plate member so that one bracket can be tilted longitudinally of said row out from between said outer members, and a pair of biasing springs received in the respective channels in engagement with the respective brackets and permanently resisting such tilting thereof, the outer members of at least some of said terminal links being formed upwardly of the associated plate members with transversely aligned bores; a pair of telescopable spring bars, one for each end portion of said row, each spring bar being insertable into and removable from the aligned bores of said outer members of respective ones of said terminal links for releasably attaching connecting members to the respective terminal links; and a pair of hook-shaped connecting members each having a substantially tubular portion embracing the respective spring bar and being provided with a cutout permitting insertion of a tool to compress said spring bar so that the latter may be removed from said aligned bores after insertion thereinto.

3,965,671
STRAP FOR WRIST WATCH
Yoshinobu Kodera, Chiba, Japan, assignor to Bear Co. Ltd, Tokyo, Japan
Filed Dec. 5, 1974, Ser. No. 529,963
Claims priority, application Japan, Sept. 25, 1974, 49-115253; Sept. 25, 1974, 49-115254; Sept. 25, 1974, 49-115255
Int. Cl.² F16G 13/00
U.S. Cl. 59—80 **2 Claims**



1. A strap adapted for use with a wrist watch, comprising:
a plurality of inner strap elements each composed of a square main body of metal plate and having opposed sides thereof formed with one or two tubular flanges said tubular flanges being so arranged that the tubular flange or flanges of one side of said inner strap element are adapted to be engaged in axial alignment with the tubular flange or flanges of the associated side of the next adjacent inner strap elements when said inner strap elements are arranged in juxtaposition, said inner strap elements being pivotally connected with one another side by side in series with said tubular flanges engaged with associated tubular flanges of the next adjacent inner strap elements;
a plurality of connecting pins inserted through said tubular flanges thus axially aligned with the next adjacent ones while permitting said inner strap elements to be pivotal about the side edge or edges thereof relative to one another;
a plurality of ornamentally designed outer strap elements of the number corresponding to that of said inner strap elements, each having a central portion of the reverse or inner side surface thereof formed with a transverse groove traversing the width thereof, the size and configuration of said groove being of such an extent as to permit at least the main body of said inner strap elements to be fitted within said groove, and the depth of said groove being larger than the overall thickness of said inner strap element, said outer strap elements being arranged in juxtaposition with the respective grooves in alignment with one another in which grooves are fitted the main bodies of the thus previously connected inner strap ele-

ments while still permitted to make said pivotal movement; and

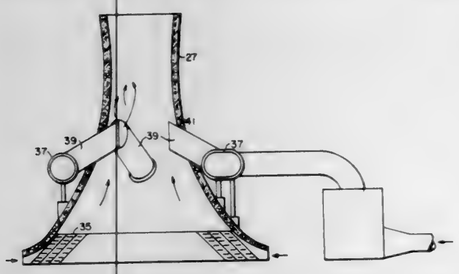
securement means for securing the outer strap elements with respect to the inner strap elements thus fitted within said grooves in such a manner that said central transverse grooves have upper edges of the opposed end walls thereof subjected to caulking so that said upper edges are inwardly stretched like comb teeth to cover end edges of the associated inner strap elements, the caulked portions finding themselves lower or inner than portions of the outer strap elements other than the groove portions, wherein said outer strap elements have opposed end portions other than the portions where said central transverse grooves are formed so configurated that said connecting pins have ends thereof blocked against said end portions to be prevented from making axial movement thereof.

3,965,672

WET COOLING TOWER WITH PLUME ELIMINATOR

James O. Stephens, Hamilton, Canada, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 23, 1974, Ser. No. 472,774
Int. Cl.² F02C 7/34; F28C 1/00
U.S. Cl. 60—39.5 **6 Claims**



1. In combination a wet cooling tower, a header subtending at least a portion of said cooling tower, means for supplying hot gases to said header, a plurality of conduits extending from said header into said cooling tower, each of said conduits being inclined upwardly and being generally disposed tangentially with respect to a circle disposed within the cooling tower, whereby hot gases flowing through said conduits follow a generally upwardly swirling path increasing the temperature and velocity of the upwardly flowing moisture laden air inducing mixing and lifting the moisture laden air into the upper atmosphere.

3,965,673

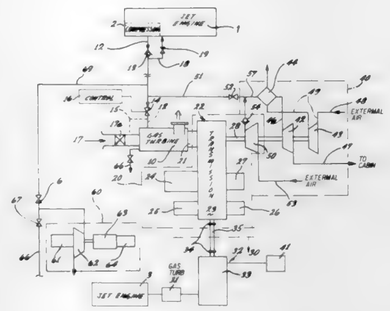
APPARATUS FOR STARTING AIRCRAFT ENGINES AND FOR OPERATING AUXILIARY ON-BOARD POWER GENERATING EQUIPMENT

Helmut Friedrich, Bremen, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Germany

Filed May 20, 1974, Ser. No. 471,327
Claims priority, application Germany, May 19, 1973, 2375592; Mar. 22, 1974, 2413882; Mar. 28, 1974, 2414918
Int. Cl.² F02C 7/26, 7/32
U.S. Cl. 60—39.14 **24 Claims**

1. Apparatus for starting aircraft engines and driving auxiliary equipment, comprising two independently operating auxiliary gas turbines respectively individually connected to two aircraft engines for driving them for starting;

a first and second plurality of auxiliary equipment each plurality including at least one distribution transmission gearing, an electric generator, an auxiliary compressor and a hydraulic pump all being drivingly connected to the gearing, each of said pluralities establishing a power park operating independently from the respective other one, so that both or either can provide for the respective electric and hydraulic power in the aircraft; at least one of the plurality further including an air turbine drivingly connected to the respective transmission gearing, a heat exchanger receiving compressed air from the respective auxiliary compressor, and providing air to the air turbine, the air turbine discharging decompressed air into the cabin of the aircraft;



the transmission gearings respectively of the first and second pluralities of auxiliary equipment being connected to the two gas turbines and being driven therefrom;

the auxiliary equipment of the first and second pluralities being driven by the respective gas turbine independently from the two aircraft engines, the air turbine acting as load relief; and

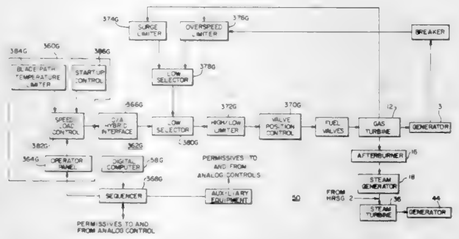
means for providing compressed air to the gas turbines.

3,965,674

COMBINED CYCLE ELECTRIC POWER PLANT AND A GAS TURBINE HAVING A BACKUP CONTROL SYSTEM WITH AN IMPROVED FEEDFORWARD ANALOG SPEED/LOAD CONTROL

Milton M. Hobbs, and Roy Kiscaden, both of Springfield, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,693
Int. Cl.² F02C 7/62
U.S. Cl. 60—39.18 B **12 Claims**



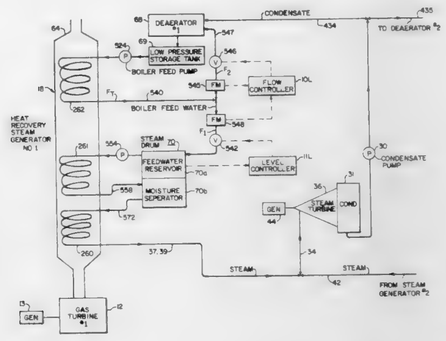
8. A control system for an electric power plant gas turbine comprising an automatic control and a backup control, means for controlling the flow of fuel to said gas turbine under automatic and manual control, said backup control including a speed/load control for generating a feedforward fuel demand signal for application to said fuel control means during speed and load control substantially free of dependence on speed and load parameter feedback and substantially free of forward controller action, and means for limiting the magnitude of the fuel demand signal for turbine protection purposes.

3,965,675

COMBINED CYCLE ELECTRIC POWER PLANT AND A HEAT RECOVERY STEAM GENERATOR HAVING IMPROVED BOILER FEED PUMP FLOW CONTROL

Lyle F. Martz, Verona, Pa., and Richard J. Plotnick, Cherry Hill, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,724
Int. Cl.² F01K 23/10, 13/02
U.S. Cl. 60—39.18 B **27 Claims**



1. A combined cycle electric power plant comprising:

a. at least one gas turbine including an exit through which heated exhaust gases pass;

b. means for generating steam at varying rates dependent upon the load placed upon said steam turbine, coupled to said gas turbine exit by transferring heat from the exhaust gases to a fluid passing through said steam generating means;

c. a steam turbine coupled to said steam generating means and driven by the steam supplied thereby;

d. means for generating electric power by the driving power of said turbines;

e. condenser means for receiving and converting the spent steam from said steam turbine into condensate;

f. means for controlling the operation of said turbines and said steam generating means;

g. said steam generating means including first and second heat exchange tubes, each having an inlet and outlet, said outlet of said first heat exchange tube being coupled to said inlet of said second heat exchange tube, pump means for directing the condensate from said condenser serially through said first and second heat exchange tubes, the steam derived from said second heat exchange tubes being supplied to drive said steam turbine, a recirculation conduit coupled between the outlet of said first heat exchange tube and its inlet, and a recirculation control valve inserted within said recirculation conduit and selectively controlled to permit a variable recirculation flow to said inlet of said first heat exchange tube; and

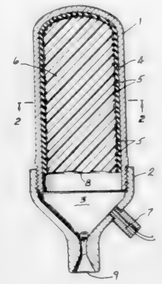
h. said controlling means comprising pump control means for actuating said pump to establish fluid flow through said first heat exchange tube at a substantially constant rate set for all loads imposed upon said steam turbine to achieve an optimum heat transfer between the exhaust gases and the fluid directed through said steam generating means to provide sufficient steam to said steam turbine at maximum load, and valve control means for controlling said valve to permit a variable, first flow through said recirculation conduit proportional to the difference between the constant flow established by said pump through said first heat exchange tube and a second flow to said second heat exchange tube, the second flow being set in accordance with the load imposed upon said steam turbine.

3,965,676

SOLID ROCKET MOTOR

Otto G. Schaffling, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Oct. 2, 1961, Ser. No. 143,275
Int. Cl.² F02K 9/04
U.S. Cl. 60—255 **10 Claims**



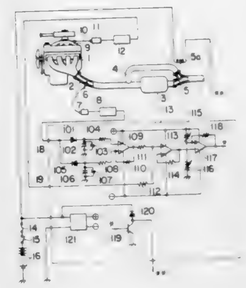
1. In combination with a vessel forming a rocket motor combustion chamber, a rubber-base liner having one surface firmly adhering to the chamber, the opposite surface of said rubber-base liner having a plurality of discrete powder grains partially embedded therein, each of said powder grains having a portion extending from said opposite surface of said rubber-base liner, and a propellant charge substantially filling the lined portion of said chamber, said propellant charge firmly adhering to said liner and enveloping each of said extending portions of said powder grains.

3,965,677

MISFIRE DETECTING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Kenji Goto; Norio Shibata, and Yukihide Hashiguchi, all of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 25, 1975, Ser. No. 561,692
Claims priority, application Japan, Aug. 30, 1974, 49-98876
Int. Cl.² F02B 75/10, 77/08
U.S. Cl. 60—277 **10 Claims**



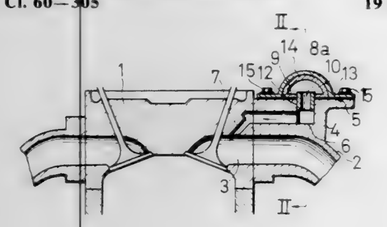
7. An internal combustion engine comprising: a catalytic converter incorporated in an exhaust pipe of the engine; a by-pass pipe connected in parallel with said converter; a control valve for selectively passing exhaust gas of the engine through either of said converter and said by-pass pipe; means to operate said control valve; means to detect a maximum value of a pulsating exhaust pressure of the engine; means to detect a minimum value of the pulsating exhaust pressure; means to detect a suction pressure and provide a value proportional to the suction pressure; means to form a difference

between the maximum value and the minimum value; addition means to add the difference to the value proportional to the suction pressure; and means to compare the result of addition of the addition means with a predetermined value and energize said means to operate said control valve.

3,965,678
AIR DISTRIBUTION PIPE FOR EXHAUST GAS MANIFOLD

Kazuhiro Shiki, Toyoda, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyoda, Japan

Filed Mar. 5, 1975, Ser. No. 555,434
Claims priority, application Japan, Sept. 10, 1974, 49-109066[U]
Int. Cl.² F01N 3/10
U.S. Cl. 60—305 **19 Claims**



1. In a device for supplying additional combustion air into exhaust ports of a multi-cylinder internal combustion engine, wherein said air is delivered from a source of air supply and distributed into said exhaust ports through a plurality of air distribution bores formed in an engine portion and each communicating at one end with one of said exhaust ports, the improvement which comprises:

a horizontally disposed air distribution pipe secured to said engine portion and communicating at one end with said source of air supply, said pipe having along at least a portion of its length a semi-circular cross-section defining a flat bottom wall formed therethrough with a plurality of apertures through which said air leaves said pipe, said pipe being closed at the other end;

said engine portion having an at least partly flat upper exterior surface at which said air distribution bores are open at the other end thereof, said flat bottom wall of said pipe being supported on said flat upper exterior surface of said engine portion, each of said apertures being aligned with said other end of one of said air distribution bores; and

means for securing said pipe to said engine portion, said securing means comprising:

at least two metal bands, each of said metal bands comprising a semi-circular central portion encircling said semi-circular cross-section of said pipe in close contact therewith and a pair of flat free end portions extending in opposite directions from said central portion and resting against said flat upper exterior surface of said engine portion; and

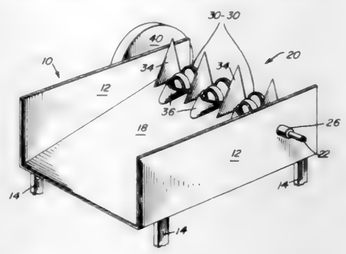
a pair of bolts each connecting one of said free end portions to said upper exterior surface of said engine portion.

3,965,679
WAVE ENERGY MACHINE

Erasmus J. Paradiso, R.F.D. No. 1, West Edmeston, N.Y. 13485

Filed June 14, 1974, Ser. No. 479,545
Int. Cl.² F16H 41/04
U.S. Cl. 60—398 **5 Claims**

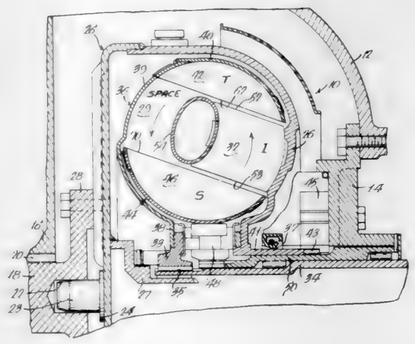
1. In a wave energy device, the combination of a generally trough-shaped member having upstanding side walls, and an inclined ramp extending longitudinally between the side walls and having a terminal upper edge disposed inwardly of one end of the wall, a driven shaft rotatably mounted in said side walls adjacent the terminal edge of the ramp, a plurality of wheel means mounted on said shaft between said side walls, smoothly-rounded buckets secured on each of said wheel means, the open portions of said buckets when each is in its generally vertically uppermost position facing said inclined ramp, slots in said inclined ramp aligned with and receiving said buckets during rotation of the wheel means, curved deflectors secured to said inclined ramp, in front of each slot, the uppermost edge of each curved deflector extending generally horizontally and slightly above the periphery of said shaft, but below the periphery of each of said wheel means, generally triangularly-shaped deflectors disposed alongside each curved deflector, each secured to said inclined ramp, each extending vertically above the uppermost edges of the buckets, a plurality of turbine guards secured to the underside of said inclined ramp, generally surrounding each of said slots and each of said wheel means and buckets thereon.



3,965,680
HYDROKINETIC DEVICE

Harold L. Cottrell, Kansas City, Mo., and Anthony C. Mamo, Arlington Heights, Ill., assignors to Power Control, Inc., Chicago, Ill.

Filed Jan. 14, 1975, Ser. No. 540,837
Int. Cl.² F16D 33/06
U.S. Cl. 60—357 **28 Claims**



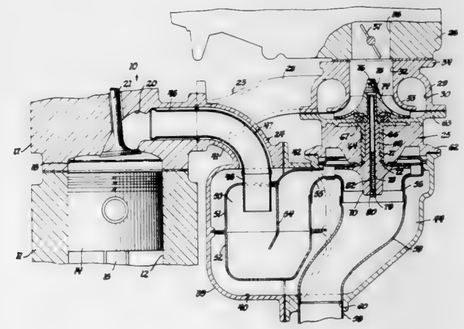
1. A hydrokinetic device comprising a fluid containing housing, impeller blade means located in said fluid containing housing for always effecting fluid flow in one direction and adapted to be connected to an input shaft, turbine blade means located in said fluid containing housing for effecting fluid flow in the same one direction and adapted to be connected to an output shaft, both of said blade means being adapted to rotate relative to one another, when rotated said impeller blade means developing a head in said one direction and said turbine blade means developing a head substantially unopposing the head developed by said impeller blade means,

and means for emptying and filling said fluid containing housing while said blade means are rotated for varying the amount of fluid operated on by said blade means, whereby the device has a power capacity alterable by varying the amount of fluid operated on by said blade means.

3,965,681
INTERNAL COMBUSTION ENGINE AND TURBOSUPERCHARGER THEREFOR WITH HEAT PIPE FOR INTAKE MIXTURE HEATING

Floyd A. Wyczalek, Birmingham; John L. Harned, Grosse Pointe Woods, and Ora M. Smith, Romeo, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 30, 1975, Ser. No. 591,274
Int. Cl.² F02B 29/02
U.S. Cl. 60—599 **3 Claims**



1. For use in combination with an internal combustion engine, a turbosupercharger comprising

housing and support means defining spaced inlet and exhaust passages,

a rotatable member mounted in said support means and including a central shaft having a vaned compressor wheel at one end and a vaned turbine wheel at the other end, said turbine, shaft and compressor being rotatable as a unit within said housing and support means, said turbine being disposed within said exhaust passage and arranged to be rotatably driven by exhaust gases passing therethrough and said compressor wheel being disposed within said inlet passage and arranged to compress to a higher pressure inlet mixtures passing therethrough,

said rotatable member having an enclosed cavity extending through said central shaft and within said turbine and compressor wheels, the walls of said cavity being in heat exchange relation with the vanes of said turbine and compressor wheels at their respective ends of said cavity and

a vaporizable heat transfer fluid in said cavity, said fluid having a boiling temperature intermediate the normal operating temperatures of said turbine and compressor wheels whereby, in use, heat picked up from the exhaust gases by the turbine wheel vanes will heat and vaporize fluid disposed at the turbine wheel end of the cavity while vaporized fluid will be condensed on the cooler walls of the compressor wheel end of the cavity transferring heat through the compressor wheel vanes to the inlet mixture being compressed thereby.

3,965,682
HYDRAULIC INSTALLATION, MORE PARTICULARLY FOR DRIVING WARPING RETAINING WINCHES ON BULK CARGO SHIPS

Hans Herchenröder, Varrelgraben, Germany, assignor to Friedrich Kocks GmbH, Bremen, Germany

Filed July 2, 1974, Ser. No. 485,685
Claims priority, application Germany, July 20, 1973, 2336897
Int. Cl.² F16D 31/02
U.S. Cl. 60—420 **20 Claims**



1. A hydraulic system comprising:

a. a main pump for pumping hydraulic fluid;

b. a main supply line and a main return line connected to said pump to form a main hydraulic circuit;

c. means to drive said main pump so as to maintain a constant pressure within said main hydraulic circuit;

d. a plurality of variable volume hydraulic adjusting motors, each driving a device, such as warping or retaining winches;

e. branch line means connecting each of the variable volume hydraulic adjusting motors in parallel to said main supply line and said main return line;

f. an adjustable volume regulator disposed in the branch line means of each variable volume adjusting motor to regulate the volume of hydraulic fluid used by said motors;

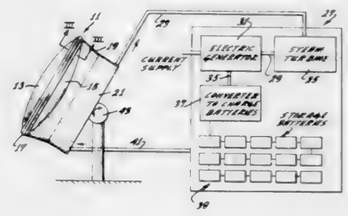
g. means to adjust the torque of each of said variable volume hydraulic adjusting motors; and

h. means to control the torque adjusting means and the adjustable volume regulator of each motor in dependence on one another.

3,965,683
SOLAR ELECTRICAL GENERATING SYSTEM

Sydney Dix, 48 The Point, Coronado, Calif. 92118

Filed May 9, 1974, Ser. No. 468,399
Int. Cl.² F03G 7/02; G02B 1/06
U.S. Cl. 60—641 **14 Claims**



6. Apparatus for generating electrical current including means for capturing solar rays comprising

a lens having

a pair of plates having a volume enclosed therebetween,

means for substantially sealing said volume while allowing for expansion and contraction of said plates as they are heated and cooled by the sun,

liquid means within said volume, and

means for passing an electrical current through said liquid means to control the chemical composition of said liquid means,

means for heating a fluid by means of the solar rays passing through said lens, and

means for extracting energy from the fluid thus heated and for converting the energy into electrical current.

9. Apparatus for generating usable energy from solar energy comprising

a lens including

a pair of plates of substantially equal circular peripheries, defining a volume therebetween,

a liquid in said volume,

means extending about the peripheries of said plates for retaining the peripheral edges thereof in a substantially constant relationship, for maintaining has been deleted and in its place the focal length of said lens in substantially constant relationship in spite of diametric thermal expansion, and for preventing said liquid from escaping from said volume, and

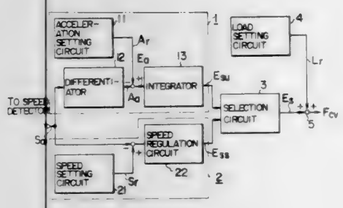
means for heating a fluid by means of solar energy passing through said lens.

3,965,684

DEVICE FOR CONTROLLING SPEED OF TURBINE

Masahide Nomura, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Jan. 21, 1975, Ser. No. 542,822
Claims priority, application Japan, Jan. 23, 1974, 49-9311
Int. Cl.² F01K *13/02*
U.S. Cl. 60—660 **11 Claims**



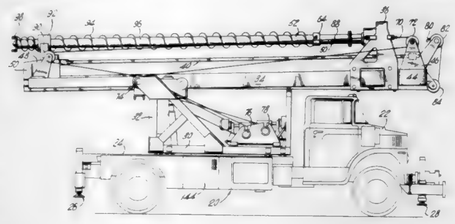
1. A device for controlling the speed of a turbine, comprising a constant speed control device which receives the output of a detector for detecting the speed of the turbine and a preset turbine speed signal so as to adjust the speed of the turbine to a predetermined value; an acceleration control device which receives the output of said detector and a preset turbine acceleration signal so as to adjust the acceleration of the turbine to a predetermined value; an adjustable valve provided at the entrance of said turbine; a selection circuit which receives the outputs of said constant speed and said acceleration control devices and selects one of said outputs which makes the opening of said adjustable valve smaller; and a means for determining the opening of said valve according to the output of said selection circuit, wherein the speed regulation circuit for determining the rate of change in the turbine output with respect to the turbine speed is provided in such a place that the change in the speed regulation affects only the constant speed control system consisting of said constant speed control device, said selection circuit, said valve-opening determining means, said adjustable valve and said speed detector.

3,965,685

METHOD FOR LOWERING GROUND WATER

Anthony J. D'Amiano, 5881 SW. 8th St., Plantation, Fla. 33314

Filed Sept. 25, 1974, Ser. No. 509,241
Int. Cl.² E02B *11/00*
U.S. Cl. 61—11 **2 Claims**



1. A method of lowering ground water including:

a. providing a hollow auger having an openable tip,

b. drilling a hole in the ground using said auger,

c. lifting the auger slightly from the bottom of the formed hole in the ground after reaching a predetermined depth,

d. inserting a prepacked well point downwardly through the hollow auger and the openable tip, said prepacked well point including a hollow tube having perforations only at a closed bottom end thereof, a filter medium around said tube and a screen member around said filter medium,

e. lifting the hollow auger out of the hole leaving the prepacked well point in the ground,

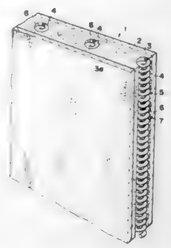
f. coupling the hollow tube to a vacuum source for removing water from the ground after the auger has been removed, whereby the vacuum source causes the water in the ground to pass through the said screen member, flow through the filter medium and enter the said hollow tube.

3,965,686

DRAIN SHEET MATERIAL

Jiro Saito, Tokyo; Kaoru Kimura, Iruma; Hiroshi Kusuhara, and Kazuyoshi Nakaguma, both of Tokyo, all of Japan, assignors to Ohbayashi-Gumi, Ltd., Osaka and Japan Vilene Company, Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 489,047, July 16, 1974, abandoned. This application Sept. 22, 1975, Ser. No. 615,707
Claims priority, application Japan, Mar. 4, 1974, 49-25049
Int. Cl.² E02B *11/00*
U.S. Cl. 61—11 **2 Claims**



1. A drain sheet element comprising:

a non-woven fabric layer of coarse and thick structure formed of synthetic fibers of relatively high denier randomly interconnected mainly at their cross points;

a plurality of elastic spiral springs linearly and parallelly positioned and embedded in the lengthwise direction of said fabric layer; and

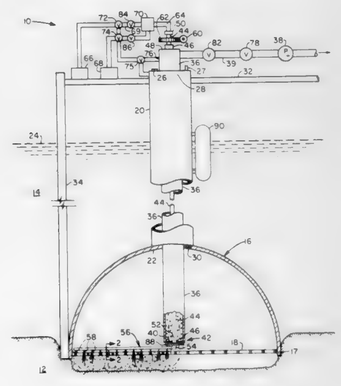
two non-woven fabric layers of dense and thin structure, one each entirely attached to and entirely covering opposite surfaces of said coarse and thick fabric layer, each of said dense and thin non-woven fabric layers being formed of randomly interconnected man-made fibers of relatively low denier.

3,965,687

APPARATUS FOR ANCHORING A STRUCTURE TO THE FLOOR OF A BODY OF WATER

Clarence W. Shaw, Metairie, La., assignor to J. Ray McDermott & Co., Inc., New Orleans, La.

Filed Aug. 15, 1974, Ser. No. 497,629
Int. Cl.² E02D *7/24*, *27/52*
U.S. Cl. 61—46 **8 Claims**



1. Apparatus for anchoring a structure to the floor of a body of water comprising:

a generally dome-shaped chamber having an open bottom and constructed of a fluid impermeable structural material which is non-collapsible under a pressure differential created when a suction is applied to the inside of said chamber;

a tubular caisson member fixedly attached to a top portion of the chamber and extending therefrom to a point above the surface of the body of water;

a plurality of fluid jet nozzles rotatably mounted in said chamber and aligned with the axis of said caisson member to direct a plurality of fluid jets generally in a direction of the open bottom of said chamber and generally perpendicular thereto;

displacement means operable when pressurized fluid is emitted from the nozzles for moving said nozzles with respect to said chamber and in a plane generally parallel to a plane of the floor of the body of water to slurry a portion of the unstable mud on the floor of the body of water lying beneath said open bottom and provide a zone of the floor into which said shell may penetrate;

a discharge conduit disposed within said caisson member for removing the slurried material from within the chamber;

a grate extending across the entirety of the open bottom of the chamber and having openings such that said grate acts in cooperation with said displacement means to filter and break apart slurried material entering said chamber to prevent clogging of said conduit while at the same time acting to prevent the chamber from penetrating into the floor before the entire zone beneath said chamber has been slurried; and

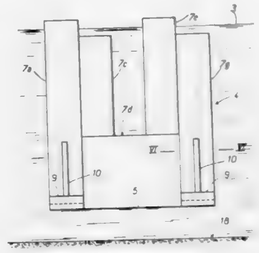
evacuation means for selectively evacuating said chamber to provide a differential pressure between said chamber and the surrounding body of water to urge said chamber towards the floor of the body of water.

3,965,688

UNDERWATER STRUCTURES, IN PARTICULAR FOR UNDERWATER DRILLING OPERATIONS

Peter Jensen, Boulogne, France, assignor to C. G. Doris, Paris, France

Filed July 24, 1974, Ser. No. 491,570
Claims priority, application France, July 25, 1973, 73.27245
Int. Cl.² E02D *27/00*
U.S. Cl. 61—50 **9 Claims**



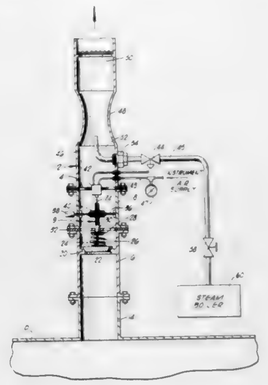
1. A structure designed to rest sunken upon the bed of a body of water in order to support on said bed fixed installations such as an off-shore drilling platform, comprising a vertical inwardly water-wetted internal wall defining a water-flooded central cavity having an open upper end and an open lower end, an outwardly water-wetted external wall defining a space between the external wall and the internal wall, a plurality of partitions extending vertically in said space to define a plurality of compartments therein and including a plurality of wall members projecting above said internal and external walls to form a plurality of hollow pillars uprising from said bed for supporting said fixed installations on said bed, and a plurality of base walls bottoming at least some of said compartments.

3,965,689

VENTING OF CRYOGENIC STORAGE TANKS

Lester E. Brown, and Harry H. West, both of Norman, Okla., assignors to University Engineers, Inc., Norman, Okla.

Filed July 18, 1974, Ser. No. 489,936
Int. Cl.² F17C *7/02*
U.S. Cl. 62—50 **14 Claims**

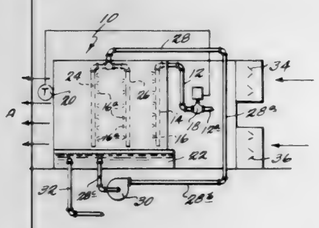


1. Apparatus for discharging cold, relatively dense gases to the atmosphere at a location near ground level comprising:

a vent pipe;

a Venturi ejection throat in said vent pipe;
a safety pressure relief valve spaced in the vent pipe from the Venturi ejection throat;
nozzle means in the vent pipe positioned to discharge a warming gas into a vented gas passing through the vent pipe along a path traversing the pressure relief valve and the Venturi ejection throat; and
means connected to said nozzle means and exterior of the vent pipe for supplying a warming gas to said nozzle means.

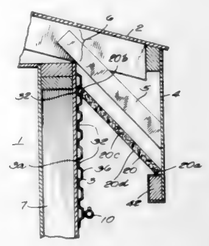
3,965,690
AIR WASHER PIPING
Robert A. Berryhill, Greensboro, N.C., assignor to Austin-Berryhill, Inc., Greensboro, N.C.
Filed May 29, 1974, Ser. No. 474,336
Int. Cl.² F28C *1/00*
U.S. Cl. 62—121 **8 Claims**



1. An air washer for maintaining a substantially constant year-around dewpoint of air passing from the leaving side of the air washer comprising:
a first chilled water spray means for initially contacting air passing through the washer, said first spray means cooling the air to a desired wet bulb temperature;
a sump for receiving water from said spray means after said water from said spray means has passed through said air;
thermostat means located at the leaving side of the air washer for controlling the temperature of the water in said sump;
second spray means for contacting the air after the air has passed from said first spray means, the water passing through said second spray means being at the temperature of the water in said sump to cool and humidify the air to a substantially saturated state at a substantially constant wet bulb temperature to a predetermined dewpoint temperature; and
means for pumping water from said sump to said second spray means.

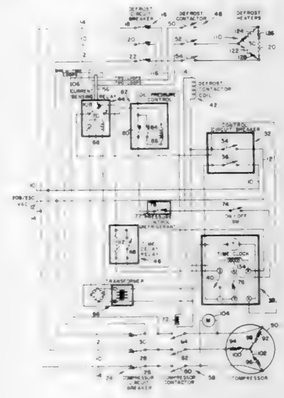
3,965,691
COOLING SYSTEM FOR POULTRY HOUSES
Robert L. Van Huis, Zeeland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.
Filed May 28, 1974, Ser. No. 473,789
Int. Cl.² F28D *5/00*
U.S. Cl. 62—157 **11 Claims**

1. Apparatus for cooling the interior of a poultry house having an air inlet comprising, in combination:
at least one filter pad positioned in front of the air inlet, said pad having an internal face facing said inlet and an external face; and
spray means including a pressurized source of coolant for spraying liquid coolant over said external face, said spray means positioned upstream of all said filter pads and directing said liquid coolant in the direction of flow through said air inlet whereby the air drawn through said pad is cooled;
automatic control means to initiate intermittent dispersement of the coolant onto said filter pad by said spray means, said automatic control means including temperature sensing means, timer means responsive to said temperature sensing means, valve means acting to control



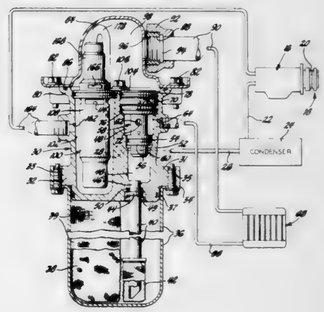
flow from said source and being operably connected to said timer means, said sensing means initiating operation of said timer means at a predetermined temperature and said timer acting to intermittently open and close said valve means to effect intermittent spraying of coolant by said spray means so as to reduce run-off from said pad.

3,965,692
REFRIGERATION CONTROL CIRCUIT
Roger C. Ansted, and Gerald L. Rodgers, both of San Antonio, Tex., assignors to Friedrich Refrigerators Inc., San Antonio, Tex.
Filed Nov. 15, 1974, Ser. No. 524,131
Int. Cl.² F25D *21/08*
U.S. Cl. 62—193 **18 Claims**



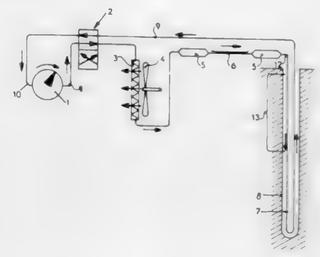
1. Control circuitry for a refrigeration unit comprising:
a source of power;
control switches for turning on said source of power;
compressor means connected to said source of power, said compressor means pressurizing a refrigerant for cooling said refrigeration unit;
defrost means connected to said source of power for defrosting said refrigeration unit;
means for periodically disconnecting said compressor means from said source of power and connecting said defrost means to said source of power;
means for sensing current flow through said defrost means and said compressor means, said current sensing means actuating said disconnecting means upon completion of defrost to reconnect said compressor means to said source of power and to disconnect said defrost means from said source of power; and
oil pressure control means associated with said compressor means and connected to said source of power for terminating power to said compressor means if oil pressure is reduced below a predetermined point for a specified period of time.

3,965,693
MODULATED THROTTLING VALVE
Richard E. Widdowson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 2, 1975, Ser. No. 574,041
Int. Cl.² F16K *31/12*; **F25B** *41/04*
U.S. Cl. 62—217 **4 Claims**



1. A suction throttling valve for regulating the pressure conditions within an evaporator unit of an automobile air conditioning system wherein the evaporator unit is connected in refrigerant flow relationship with a condenser, expansion means and an engine driven compressor comprising: a housing having an inlet and an outlet connected respectively to the evaporator and the compressor; a flow throttling assembly supported in said housing between said inlet and outlet for controlling the discharge of refrigerant from said evaporator so as to maintain the evaporator internal pressure above a level corresponding to frost forming conditions thereon; said flow throttling assembly including a body having a bore therein in which is reciprocally supported a piston valve whose movements cover and uncover a port in said body thereby controlling refrigerant flow; one side of said piston valve being fluidly exposed to evaporator refrigerant and a pressure control chamber formed on the opposite side of said piston valve; means to maintain a relatively constant pressure in said control chamber whereby a pressure differential across said piston valve produces a net force thereon to position the piston valve and thus regulate evaporator pressure by controlling the discharge of refrigerant through said port; means including a second piston reciprocal against a spring in response to decreasing refrigerant pressure downstream from said port to impose a supplementary closing force on said piston valve to permit evaporator pressure acting on said one side of the piston valve to increase substantially by reduced flow past said piston valve and through said port whereby the desirable consequence of reduced refrigerant flow to the compressor is decreased energy input.

3,965,694
METHOD AND DEVICE FOR THERMALLY AIR-CONDITIONING A ROOM, A VAT OR THE LIKE
Maurice Vignal, Faubourg Constant, and Henri Chapuis, Boulevard de Vinols, both of Craponne-sur-Arzon (Haute-Loire), France
Filed June 12, 1974, Ser. No. 478,495
Claims priority, application France, July 4, 1973, 73.25143; Mar. 28, 1974, 74.11887
Int. Cl.² F25D *23/12*
U.S. Cl. 62—260 **7 Claims**



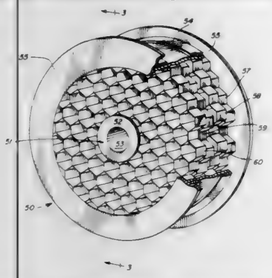
1. An air-conditioning device constituted by a heat pump working between the atmosphere of a room or vat to be air-conditioned and the interior of a first hole bored in the ground, characterized in that said heat pump comprises the following members, which are inserted in a first closed circuit wherein a fluid circulates in its liquid state and its gaseous state:
a. a compressor (**1**) which receives the fluid as a cold gas, and delivers it as a hot gas;
b. a two position reversing valve (**2**) connected to said first closed circuit such that it reverses the flow of gas through the circuit as it moves from a first to a second position to allow the device to function either as a heating system or a refrigerating system;
c. an exchanger, (**3**) connected to said first closed circuit into which the gaseous fluid flows at a certain temperature and out of which it flows at a different temperature, said exchanger being thermally steeped in the atmosphere of the room to be air-conditioned;
d. a capillary tube (**6**), wherein the fluid circulates to pass from its liquid state to its gaseous state, or conversely;
e. a first U-shaped line or pipe (**7**) housed inside a first deep hole (**8**) bored in the earth, and inside which the fluid flows at a certain temperature, circulates and flows out at a temperature substantially equal to that which prevails in said hole; and
f. a second closed circuit (**15, 17, 18**) having a second U-shaped pipe (**15**) disposed in said first deep hole (**8**) adjacent said first U-shaped pipe (**7**), a third U-shaped pipe (**18**) disposed within a second deep hole (**19**) and means to pump a fluid (**17**) through said second closed circuit so as to transfer heat from said first deep hole to said second deep hole and vice versa.

3,965,695
METALLIC SENSIBLE HEAT EXCHANGER
William F. Rush, Arlington Heights; Robert A. Macriss, Deerfield, and Sanford A. Weil, Chicago, all of Ill., assignors to Gas Developments Corporation, Chicago, Ill.
Filed June 12, 1975, Ser. No. 586,243
Int. Cl.² F28D *19/00*; **F25B** *13/00*
U.S. Cl. 62—271 **10 Claims**

1. An improved metallic heat exchange apparatus for use in cyclic heat exchange comprising multi-layers of metallic honeycomb each of said layers having axially parallel offset apertures and in just touching point contact with adjacent layers and retaining means for maintaining said relationship of said

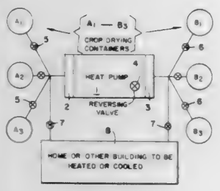
honeycomb layers, said multi-layer arrangement providing increased temperature gradient between the outer faces of said multi-layers.

6. In an open-cycle air conditioning apparatus for heating and cooling of the type comprising an enclosure defining a treatment air passageway and a separate regenerative air passageway, means for passing an air stream through each of said passageways, a sensible heat exchanger means for transfer of thermal energy from one of said passageways to the other, a desiccant means for transfer of moisture from the air treatment passageway to the regenerative air passageway and spaced toward the exhaust of the regenerative air stream from



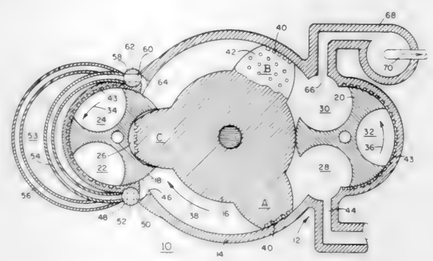
said heat exchanger means, a first evaporative cooling means near the exit of the conditioned air passageway and a second evaporative cooling means near the entrance of the regenerative air passageway, heater means in the regenerative air passageway between said sensible heat exchanger means and said desiccant means supplying heat to the regenerative air stream, the improvement wherein said sensible heat exchange means comprises multi-layers of metallic honeycomb, each of said layers having axially parallel offset apertures and in just touching point contact with adjacent layers and retaining means for maintaining said relationship of said honeycomb layers, said multi-layer arrangement providing increased temperature gradient between the outer faces of said multi-layers.

3,965,696
CROP DRYING (FOOD PRESERVING) APPARATUS
Harry Emmitte Thomason, 6802 Walker Mill Road, SE., Washington, D.C. 20027
Filed Dec. 21, 1973, Ser. No. 427,313
Int. Cl.² F25J *3/02*
U.S. Cl. 62—324 **9 Claims**



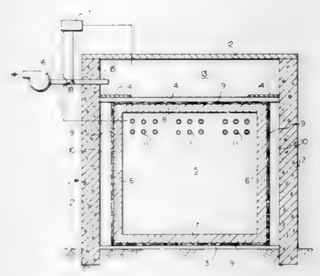
1. Apparatus for preserving perishables comprising a heat pump for producing both heat and cold, means for supplying heat from said heat pump to a first container to preserve the contents therein, means for supplying cold from said heat pump to a second container to preserve the contents therein, and means for switching the heat and cold supplies to supply cold to said first container and heat to said second container to thereby preserve said perishables by alternate heating and cooling and to conserve energy by using both the heat and cold outputs of the heat pump to preserve perishables, the duration of time after which the switching takes place being such that the temperature of the perishables in the second container is effectively raised and the temperature of the perishables in the first container is effectively lowered.

3,965,697
COMPRESSOR AND AIR COOLING SYSTEM EMPLOYING SAME
Richard R. Beierwaltes, 513 N. 4th Ave., Maywood, Ill. 60153
Continuation-in-part of Ser. No. 451,139, March 14, 1974, abandoned. This application Nov. 8, 1974, Ser. No. 522,028
Int. Cl.² F25D *9/00*
U.S. Cl. 62—402 **9 Claims**



1. An air cooling system comprising:
compression means of the rotary type for supplying compressed air and including:
a male rotor having a plurality of cycloidal shaped lobes about the circumference of said rotor;
a first female rotor coupled to said male rotor and having a plurality of cavities therein for receiving said lobes, said cavities being shaped to effect sealing with the sides of said lobes;
compression and expansion cavities being formed between said male rotor lobes, and said air cooling system further including:
heat exchange means coupled to said compression means to receive said compressed air and remove heat therefrom; and
coupling means for coupling the compressed air from said heat exchange means to said expansion cavity where the compressed air is allowed to expand and cool, and for coupling the compressed air from said compression cavity to said heat exchange means.

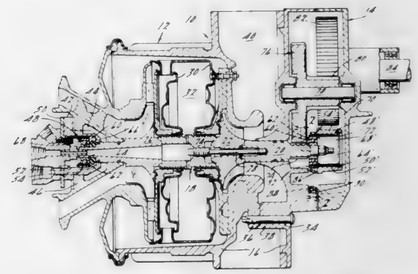
3,965,698
REFRIGERATED STRUCTURE
Egbert deVries, Kettering, Ohio, assignor to Quad Corporation, Highland Park, Ill.
Filed Apr. 1, 1975, Ser. No. 563,981
Int. Cl.² F25D *19/00*
U.S. Cl. 62—454 **2 Claims**



1. In a refrigeration or freezer chamber having insulated walls, ceiling and floor including vapor barriers and located within a building having outer walls and a roof, a crawl space between the ceiling and the roof, the insulated walls spaced a relatively small distance from the outer walls to form an air

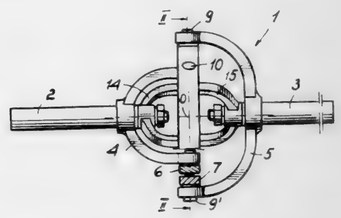
space, and wherein air pressure in the chamber at the upper portion near the ceiling is less than atmospheric pressure; the improvement comprising an air exhaust means to maintain a subatmospheric pressure within the said crawl space and within at least the upper portion of said air space.

3,965,699
SPRING COMPENSATED RADIALLY FLEXIBLE POWER TAKEOFF SHAFT
Joseph W. Bracken, Jr., Redford Township, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Oct. 29, 1974, Ser. No. 518,678
Int. Cl.² F16C *1/00*
U.S. Cl. 64—1 V **14 Claims**



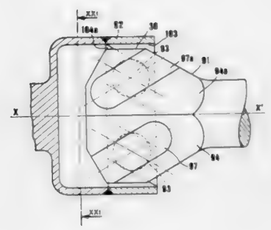
1. In a transmission including a housing, a rotatable driving member, and a driven member mounted for rotation within the housing and rotatably engaged with the driving member; the improvement comprising:
A. flexible support means operative to yieldably resist omnidirectional radial excursions of the driving member; and
B. biasing means imposing a force on the driving member supplemental to the resisting force exerted by the flexible support means and acting in a direction parallel to the line of action of the rotative reactive forces of the driving and driven members and opposite to the direction of the rotative operative force exerted by the driven member on the driving member.

3,965,700
DRIVE LINE COUPLING DEVICE WITH SUBSTANTIALLY HOMOKINETIC FEATURES
Emilio Nicoletti, Via pietro Kandler, 7, Trieste, Italy (34100)
Filed Nov. 11, 1974, Ser. No. 522,804
Int. Cl.² F16D *3/42*
U.S. Cl. 64—18 **3 Claims**



1. A substantially homokinetic universal joint drive line coupling device comprising: a drive shaft and a driven shaft, two yokes each of said yokes being rigidly affixed to one of said shafts and pivotally engaging a respective gimbal ring at a diameter thereof, both said gimbal rings being arranged concentrically while said pivot points are aligned to each other along a diameter when said two shafts are in line, two diametrically opposed pivot members pivotally engaging said two intervening concentric gimbal rings, said pivot members being arranged at approximately 45° to the diameter through said yoke pivot points, an auxiliary universal joint, concentric to said gimbal rings and idly engaging said two converging shafts, the spider of said supporting universal joint being mounted pivotally at a concentric diameter orthogonal to the diameter of said yoke pivot points through one of said gimbal rings while the auxiliary joint yoke, idly engaged onto the shaft, whose gimbal ring does not engage the spider, is at all times, when the shafts are in line, with its spider pivot points located on the same diameter as the pivot members joining the two rings, the universal joint axes converging in the center.

3,965,701
CONSTANT VELOCITY UNIVERSAL JOINTS
Michel Orain, Conflans-Ste.-Honorine, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France
Filed July 8, 1974, Ser. No. 486,655
Claims priority, application France, July 11, 1973, 73.25485; Jan. 28, 1974, 74.02774
Int. Cl.² F16D *3/30*
U.S. Cl. 64—21 **22 Claims**



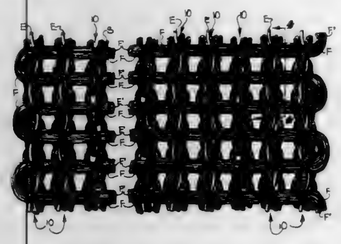
1. A constant velocity ratio universal joint for transmission of rotational motion between two shafts adapted to run at a variable angle between one another, comprising two main parts each mounted for rotation with one of the shafts to be coupled, at least two pairs of balls for torque transmission between the main parts, each of said balls being guided along two associated arcuate cross-sections rolling surfaces each of which is provided on one of said main parts, said rolling surfaces being parts of surfaces of revolution, the cross-sections centerlines of which defining two associated guiding paths each of which being oriented to cut its associated guiding path at an angle of 2α and to make an angle α with the longitudinal axis of the shafts at the point of intersection between said associated guiding paths when said shafts are in alignment, each main part having one longitudinal plane of symmetry on both sides of which each guiding path for a given pair of balls is symmetrically located with a guiding path for the other pair of balls and vice versa, lines tangent to the guiding paths on one main part at the points of intersection of said guiding paths with their associated guiding paths on the other main part being parallel for a given pair of torque transmitting balls, characterized in that the axis of revolution of the rolling surfaces on each main part for a given pair of balls cut the longitudinal plane of symmetry of that main part, the points of intersection of said axis of revolution with said plane being located on a straight line passing through the longitudinal axis of said main part and equidistant with the point of intersection of said straight line with said longitudinal axis.

3,965,702
HOSIERY SUPPORT
Kurt Ernst Findeisen, Spring City, Pa., assignor to Findeisen Brothers, Spring City, Pa.
Filed Nov. 7, 1973, Ser. No. 413,677
Int. Cl. D04b *9/54*; **A41b** *11/00*
U.S. Cl. 66—173 **2 Claims**



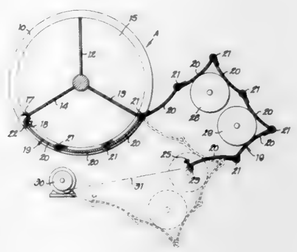
1. In a self-sustaining stocking having an elastic yarn knit in selected courses at its open end and having a small welt of double fabric at said end with a natural tendency to roll downwardly on a wearer, a flexible resisilient stay positioned within the double fabric of the welt, said stay being of a length which is less than 25% of the circumference of the said welt, said stay being unrestrained within the confines of the said welt such that is may migrate circumferentially thereof, said stay preventing circumferentially complete downward rolling of the welt on the wearer.

3,965,703
WARP KNITTED COMPRESSION BANDAGE FABRIC
J. David Barnhardt, Charlotte, N.C., assignor to Southern Webbing Mills, Greensboro, N.C.
Filed Apr. 18, 1975, Ser. No. 569,587
Int. Cl.² **D04B** *23/08*
U.S. Cl. 66—193 **7 Claims**



1. A ribbon-like warp knitted compression bandage fabric, said bandage fabric being stretchable in the lengthwise direction, but substantially unstretchable in the widthwise direction, said bandage fabric comprising
   a. a plurality of walewise parallel stitch loop chains knit of textured stretchable yarn within the range of about 100 to 300 denier and forming successive courses, said relaxed fabric containing from about 10 to 18 stitch loop chains per inch of width and containing at least about 30 courses per inch of length,
   b. filling yarn extending back and forth across said fabric and being held in each of said courses of said stitch loop chains, said filling yarn being approximately 6 to 8 times larger than said stretchable yarn and being crimped and substantially unstretchable, and
   c. an elastic yarn within the range of about 140 to 240 denier and inlaid in and extending along pairs of adjacent parallel stitch loop chains, and being omitted from single stitch loop chains throughout the medial portion of said fabric.

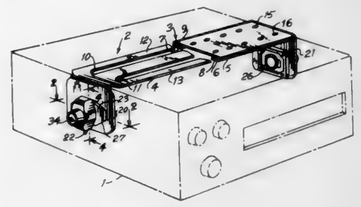
3,965,704
DRUM FOR WASHER-EXTRACTOR MACHINES
Herman E-C Vanderheyden, Ledeberg, Belgium, assignor to Em. D'Hooge N.V., Ledeberg, Belgium
Filed July 16, 1974, Ser. No. 488,903
Claims priority, application Belgium, Aug. 29, 1973, 804131; June 26, 1974, 53710
Int. Cl.² **D06F** *37/08*
U.S. Cl. 68—210 **5 Claims**



1. In a washer-extractor machine having a rotary drum, the improvement comprising:
   said drum having a pair of end plates;
   connecting means between said end plates, said connecting means being a plurality of radial partitions dividing said drum into outwardly open compartments; and
   an outer shell extending completely around said drum over the outer edges of said partitions and closing all of said compartments, said shell consisting of a single series of panels having adjacent longitudinal edges hinged to each other, the first panel of said series being secured along one longitudinal edge to the outer edge of one of said partitions and the last panel of said series having locking means at its free edge releasably locking the same to the outer edge of said one partition whereby said locking means may be released and said shell unwrapped from said drum to thereby open all said compartments.

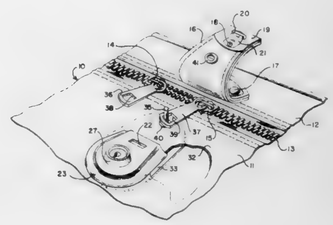
3,965,705
METHOD AND APPARATUS FOR ATTACHING AND LOCKING AN ARTICLE TO A MOUNTING STRUCTURE
Marshall Nadler, 2391 Knob Hill Drive, North Bellmore, N.Y. 11710
Filed Aug. 6, 1975, Ser. No. 602,833
Int. Cl.² **E05B** *73/00*
U.S. Cl. 70—58 **19 Claims**

1. A device for attaching and locking an article to a mounting structure, said device comprising a locking means having locked and unlocked states, a support means supporting said locking means thereon for displacement between first and second positions corresponding respectively to said locked and unlocked states, said support means being adapted for attachment to an article, and bracket means adapted for attachment to a mounting structure, said bracket means having an aperture shaped to allow passage of said locking means therethrough such that in said locked state of the locking means said locking means blocks removal thereof from said bracket means via said aperture, while in the unlocked state



of the locking means said locking means can be passed through the aperture to be separated from the bracket means.

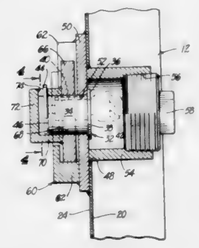
3,965,706
LOCKING DEVICE FOR LUGGAGE
Michael Davis, New Castle, Pa., assignor to Airway Industries Inc., West Pittsburgh, Pa.
Filed Nov. 25, 1974, Ser. No. 526,596
Int. Cl.² **E05B** *67/38*
U.S. Cl. 70—68 **3 Claims**



1. A locking device for a luggage case of the type having two parts joined by a separable fastener with a pair of sliders meeting in the closed position of the fastener, wherein the improvement comprises a flap anchored on one part of the luggage case and a lock member on the other part, the flap having thereon a latch which engages in the lock member to lock the parts of the luggage case against separation, a stud fixed in the wall of one of said parts of the luggage case laterally of the line of said separable fastener, to which the pull tabs of said sliders are adapted to be anchored to lock the separable fastener in closed position, said flap overlying said stud and having therein a hole which registers with said stud and through which the stud extends in the locked position of said flap thereby to prevent access to the pull tabs of the sliders while they are anchored to the said stud in the closed position of the fastener.

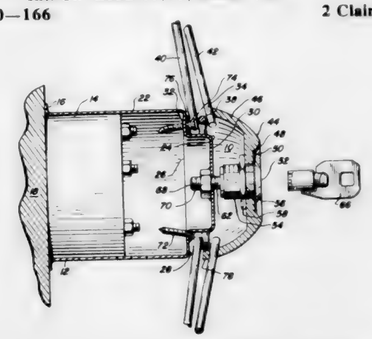
3,965,707
LOCKING STRUCTURE
Gordon F. Byars, Stanton, and Arthur L. Fairbanks, Fullerton, both of Calif., assignors to Security Storage Rentals, Inc., Stanton, Calif.
Filed Mar. 6, 1975, Ser. No. 555,970
Int. Cl.² **E05B** *63/14*, *65/46*
U.S. Cl. 70—120 **3 Claims**

1. A locking structure for use with a door equipped with a latching member which is capable of being moved between a latched and an unlatched position which comprises:
   a control part secured to said latching member so as to extend therefrom adjacent to the rear surface of said door when said latching member is in said latched position,
   said control part and said door being provided with openings which are aligned when said latching member is in said latched position and which are unaligned when said latching member is in said unlatched position,
   a lock means having an elongated housing, a flange on one end of said housing and a movable retainer on the other end of said housing,
   said lock means being capable of being actuated so that said retainer either extends from said other end of said housing or overlies said other end of said housing,
   said openings and said lock means being of such a dimension that said lock means may be inserted through both of said openings so that said flange abuts against the front surface of said door,



   said lock means being capable of being actuated when inserted through said opening so that said retainer extends from said housing and engages said control part so as to prevent relative movement between said control part and said door,
   a plate forming a part of said locking structure secured to said door, said opening in said door being located in said plate,
   a shield located on said plate and extending from said plate outwardly from the front surface of said door, said shield surrounding said opening in said plate and extending outwardly from said plate so as to restrict access to said lock means when said lock means is in place in said opening in said plate and said control part.

3,965,708
HUB CAP LOCKING DEVICE
Don A. Smiley, 5340 W. Race, Chicago, Ill. 60644
Filed Dec. 5, 1974, Ser. No. 529,687
Int. Cl.² **E05B** *65/12*; **B60B** *7/06*
U.S. Cl. 70—166 **2 Claims**



1. A device for preventing the unauthorized removal of a wire-spoke hub cap, comprising, in combination:
   a hub-covering shell having a cylindrical hub-engaging skirt and a head with a coupling aperture defined therein;
   a crown cap including a curved radial skirt of a circumferential size and dimension for positioning the hub cap about said head adjacent said hub-covering shell and having a smooth exterior convex surface for preventing

removal of the crown cap with a wrench-like tools and defining a lock-engaging aperture;

elongated threaded locking means positioned within said lock-engaging aperture and rotatable in a first direction for threaded interlocking engagement with said coupling aperture to lock said hub cap, said elongated threaded locking means being rotatable in a second direction to permit removal of said hub cap;

manually-operable actuating means selectively insertable into cooperative interlocking engagement with said threaded locking means for rotation of the latter;

said hub-covering shell including a shoulder integrally connecting said radial skirt and the head and defining at least one detent-receiving aperture;

detent means carried by the detent-receiving aperture for abutting the wire spokes of said hub cap; and

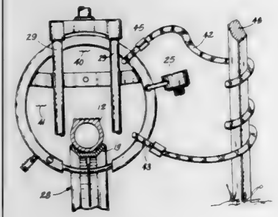
said crown cap including at least one lug abutting said wire spokes and operating with said detent means for substantially preventing rotation of said hub cap.

3,965,709

BICYCLE LOCK

Carl F. Belke, Scottsdale, Ariz., assignor to David P. Belke, Tucson, Ariz., a part interest

Filed June 4, 1975, Ser. No. 583,585
Int. Cl.² B62H *5/16*; **E05B** *71/00*
U.S. Cl. 70—227 **6 Claims**



1. In a bicycle lock for securing a wheel of the bicycle against rotation and preventing physical removal of the bicycle as an entirety,

a. an interrupted tubular ring having a bore and presenting a gap of a size to accommodate the passage of the rim and tire of a bicycle therethrough,

b. an arcuate rod slideable in said bore to be interposed between the spokes of a wheel and presenting a gap of an extent greater than the gap in said ring,

c. an arcuate slot in said ring having an extent substantially the same as the gap in said rod, said slot having closed ends,

d. a stem extending through said slot, having an inner end anchored to the rod and a tab on its outer end,

e. said ring being formed with two pairs of aligned apertures which are angularly spaced apart a distance substantially equal to the angular extent of said arcuate rod,

f. a transverse bracket spanning said ring and cooperating therewith to define an upper closed ring section and a lower open ring section including the gap in the ring,

g. a metallic line having one end permanently secured to said closed ring section and a loop at the other end which in a locked position of the ring, receives a part of the open section of the ring or that part of the rod which closes the gap, and

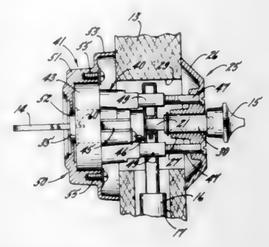
h. a padlock including a hasp which is adapted to be passed through either of said pair of aligned apertures to secure the ring in an adjusted position said hasp also being adapted to receive said loop at the end of said line.

3,965,710

DOOR LOCK WITH DECORATIVE ESCUTCHEON

Donald L. McCurdy, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed Apr. 14, 1975, Ser. No. 568,121
Int. Cl.² A47B *95/04*; **E05B** *15/02*
U.S. Cl. 70—452 **2 Claims**



1. The combination of a lock and a door; said door having inner and outer sides and having a hole extending therethrough between said sides; said lock comprising an exterior unit for the outer side of said door and an interior unit for the inner side of said door; said exterior unit comprising (1) a cylindrical barrel, (2) a lock cylinder secured rigidly within and coaxial with said barrel and projecting outwardly therefrom, (3) a decorative escutcheon telescoped over the outer end portion of said barrel and having an opening coaxial with said barrel and rotatably receiving the outer end portion of said lock cylinder, and (4) connecting means for preventing axial separation of said escutcheon and said barrel while permitting said escutcheon to rotate relative to said barrel and said lock cylinder; fastening means extending through said hole and connected between said barrel and said interior unit to anchor said interior and exterior units rigidly to said door, and a key-and-slot connection between said escutcheon and said barrel for retaining said escutcheon in a predetermined angular orientation with respect to said lock cylinder, the key of said connection having less shear strength than said fastening means and shearing away when excessive torque is exerted on said escutcheon so as to enable said escutcheon to turn about the axis of said barrel and said lock cylinder and thereby prevent said excessive torque from being transmitted to said barrel and fracturing said fastening means.

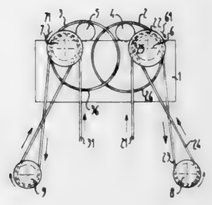
3,965,711

DEVICES FOR CONTINUOUSLY DISPLACING A FILAMENTARY MATERIAL IN A TREATMENT INSTALLATION

Marcel A. Giros, Ancerville, France, assignor to Societe Meusienne de Constructions Mecaniques, Ancerville (Meuse), France

Filed Jan. 8, 1975, Ser. No. 539,496
Claims priority, application France, Feb. 23, 1973, 73.07418
Int. Cl.² B21F *21/00*, *3/02*
U.S. Cl. 72—39 **10 Claims**

1. In apparatus for treating flexible resilient filamentary material of indefinite length, a tank having a longitudinal horizontal axis extending from an entrance end to an exit end thereof, first and second shafts journaled over said tank for rotation about respective first and second axes spaced horizontally a predetermined distance and parallel with said longitudinal axis, first means guiding a first strand of material into said tank at the entrance end thereof to form a first helix comprising a multiplicity of axially-spaced loops each in contact with and supported by said first shaft with each loop passing adjacent and slightly spaced from said second shaft, second means guiding a second strand of material into said tank at the entrance end thereof to form a second helix comprising a multiplicity of axially-spaced loops each in contact with and supported by said second shaft with each loop passing adjacent and slightly spaced from said first shaft, each loop of each helix extending downwardly into said tank and intercalated between a consecutive pair of loops of the other helix, power means connected with said shafts and rotating the same in opposite directions, and means guiding in succession the loops of both helices out of said tank at the exit end thereof.



3,965,712

AQUEOUS BASE POST PICKLING AND COLD ROLLING FLUID

Ellis Abrams, Harleysville, and Sidney Barber, Philadelphia, both of Pa., assignors to E. F. Houghton and Company, Philadelphia, Pa.

Division of Ser. No. 569,662, April 21, 1975, Pat. No. 3,933,661. This application Oct. 22, 1975, Ser. No. 624,932
Int. Cl.² B21B *45/02*
U.S. Cl. 72—42 **5 Claims**

1. A process for producing steel sheet which comprises

A. applying to hot freshly pickled steel sheet an aqueous base post pickling fluid comprising

1. from about 85% to about 50%, by weight of water and from about 15% to about 50% of a concentrate comprising

a. from about 50% to about 92%, by weight, of a water miscible fluid which is the condensation product of an aliphatic monocarboxylic acid containing from 10 to 20 carbon atoms, or glyceride thereof, and a dialkanolamine selected from the group consisting of diethanolamine and diisopropanolamine, the mole ratio of dialkanolamine to carboxylic acid being not less than about 1.5 to 1

b. from about 8% to about 50% of an agent for reducing the viscosity of aqueous base lubricant compositions containing said concentrate, said viscosity reducing agent being selected from the group consisting of

i. a sulfonate of the general formula

RSO_3X

in which R is an alkyl arylene group containing from 20 to 30 carbon atoms and X is Na, K, NH_4 or an amino group

ii. a mono alkyl ether of a lower alkylene glycol of the formula

$$R'O(CH_2CHO)_yOH$$
$$\quad\quad\quad R''$$

in which R′ is an alkyl group containing from 1 to 4 carbon atoms, R″ is H or CH_3, and *y* is an integer of from 1 to 3

iii. a glycol selected from the group consisting of dipropylene glycol, tripropylene glycol, 1,5-pentane diol, 2-ethyl-1,3-hexane diol, and hexylene glycol,

iv. a monohydroxy oxyethylene oxy 1,2-propylene aliphatic monoether in which the ethylene oxide and 1,2-propylene oxide are combined therein as oxyethylene and oxy 1,2-propylene groups, said monoether having an average molecular weight of at least 300, and mixtures of said viscosity reducing agents, and

B. subsequently subjecting said steel sheet to cold rolling in the presence of an aqueous base rolling lubricant comprising

1. from about 99.5% to about 98%, by weight, of water and

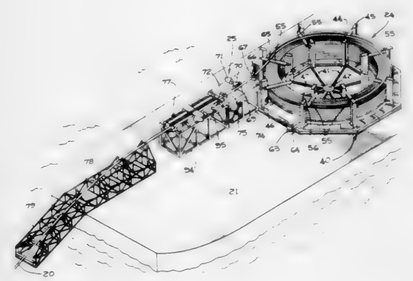
2. from about 0.5% to about 2% of said concentrate.

3,965,713

METHOD AND APPARATUS FOR LAYING CONTINUOUS PIPE

Edward E. Horton, Portuguese Bend, Calif., assignor to Deep Oil Technology, Inc., Long Beach, Calif.

Filed May 28, 1974, Ser. No. 473,568
Int. Cl.² B21D *11/06*, *7/08*
U.S. Cl. 72—146 **7 Claims**



1. In a method of forming a flat annular pipe spiral unit which is stressed to facilitate unwinding of the unit by departure of pipe from the annular unit at a selected location with respect to the radius and axis of the unit and to maintain the unit in spiral form, the steps of:

providing a continuous pipe;

forming said continuous pipe into a flat annular spiral having a plurality of turns lying in a plane;

said turns including an inner turn defining the inner diameter of the spiral unit and an outer turn defining the outer diameter of said unit, and intermediate turns between said inner and outer turns,

each of said inner, outer, and intermediate turns being progressively bent about a radius which is the mean radius of the annular spiral unit,

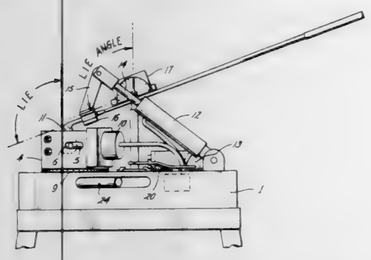
whereby bending stresses in said turns cause each of said turns to seek the radial position of the intermediate turn formed at the mean radius upon unwinding of said annular unit and to retain said flat spiral configuration.

3,965,714

GOLF CLUB BENDING MACHINE FOR SETTING THE LOFT AND LIE ANGLES OF THE CLUB HEAD

Franklin Beard, 14906 Cindywood, Houston, Tex. 77024

Filed Sept. 3, 1974, Ser. No. 502,970
Int. Cl.² B21D *7/14*, *7/00*
U.S. Cl. 72—32 **7 Claims**



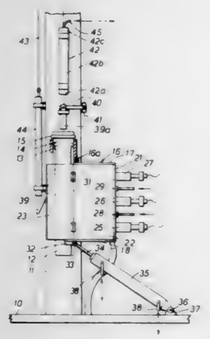
1. In a machine for adjusting the loft and lie angles of a golf club head, a base member, a clamp pivotally mounted on said base member, said clamp having certical walls, means for releasably anchoring a golf club head in vertical position in said clamp on said base member and releasably anchoring the hosel of said club in parallel alignment with the longitudinal walls of said base member, and means for selectively applying hydraulic pressure to cooperating members of said clamp to bend the neck of the club a predetermined distance to obtain the desired loft angle and to selectively move said means for anchoring said hosel to bend the neck of said club to the desired lie angle.

3,965,715

METHOD AND APPARATUS FOR BENDING THERMOPLASTIC PIPES

Gunnar Parmann, Mathopen, Norway, assignor to Rieber & Son A/S, Bergen, Norway

Division of Ser. No. 321,028, Jan. 4, 1973, Pat. No. 3,884,612. This application Feb. 6, 1975, Ser. No. 547,441
Claims priority, application Norway, Jan. 12, 1972, 48/72
Int. Cl.² B21D *7/16*
U.S. Cl. 72—342 **6 Claims**



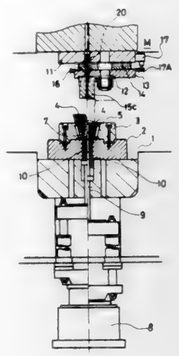
1. A heat chamber having means for seating a pipe therein in a predetermined position, said first means including a horizontal top member including a cavity corresponding to a curvilinear shape of a pipe at one end of said chamber adjacent said position to define a seat and a horizontal bottom member including a cavity corresponding to said shape at an opposite end of said chamber adjacent said position to define a seat, second means on one side of said chamber for directing at least one flow of heated air transversely onto and around a pipe in said position, an opening on an opposite side of said chamber from said one side for exhausting the heated flow of air passing away from said position, and a plurality of vertical side members secured to said top and bottom members, two of said side members projecting beyond the plane of said top and bottom members to define a whirl chamber adjacent said opening with a pipe in said position.

3,965,716

DEVICE FOR SWAGE-FORGING SHAFTS

Yoshikazu Suzuki, Chiryu; Katsumi Azuma, Okazaki, and Kiyoshi Ishimura, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Jan. 22, 1975, Ser. No. 543,183
Claims priority, application Japan, Oct. 15, 1974, 49-118510
Int. Cl.² B21J *13/02*
U.S. Cl. 72—356 **9 Claims**



1. Device for swage-forging a workpiece comprising a press having a vertically acting ram, said device comprising:
   a. a lower die set consisting of a die holder and a lower die on the bed of said press, said die holder having internal wall means at its center defining a first opening in which said lower die is fitted and means defining a second opening at one side thereof which extends to one side of said first opening and said lower die so as to permit horizontal insertion of the workpiece into said die, said lower die being divided into at least two parts which can slide up and down along said internal wall means and having a work-holding hole provided therebetween;
   b. a rotary die carrier attached to the ram of the press for rotation about a vertical axis and disposed above said lower die set;
   c. a plurality of upper dies attached to said rotary die carrier, and disposed upon said carrier so as to be alignable with said lower die, each upper die having a working surface shaped to carry out one step in finishing the workpiece;
   d. means for rotating said rotary die carrier; and
   e. means for stopping said carrier at each of a plurality of positions, in each of which one of said upper dies is in vertical alignment with said lower die.

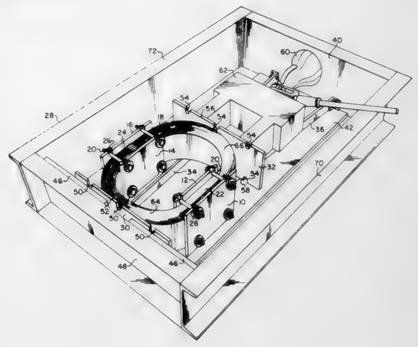
3,965,717

METHOD FOR FORMING WOUND CIRCULAR MAGNETIC CORES INTO RECTANGULAR CORES

Howard S. Smith, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 10, 1975, Ser. No. 540,207
Int. Cl.² B21D *31/00*
U.S. Cl. 72—364 **1 Claim**

1. A method of forming a wound circular core having a plurality of circular laminations into a rectangular core, comprising the steps of:
   placing first, second, third and fourth end plates around opposite ends of all the circular laminations in the circular core;
   tightening the first and second plates together and the third and fourth plates together to form two straight and parallel ends in the complete core;
   inserting the complete core between two slotted side plates which are adjacent to the remaining curved portions of the core;



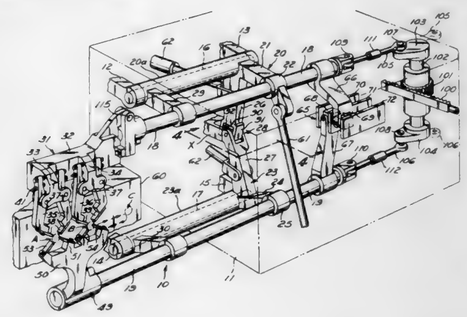
inserting a spacer block into the core window;
moving the side plates together to form a rectangular core;
aligning the slotted side plates during movement thereof by a pair of tracks engaged with slots in the side plates;
attaching means to the side plates to hold the side plates together after the force which moves the side plates together is released; and
annealing the core so that it will maintain its shape when the end and side plates are removed.

3,965,718

TRANSFER MECHANISM

Gaylen O. Kline, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio

Continuation-in-part of Ser. No. 381,851, July 23, 1973, abandoned. This application Nov. 18, 1974, Ser. No. 524,531
Int. Cl.² B21J *13/10*
U.S. Cl. 72—405 **31 Claims**



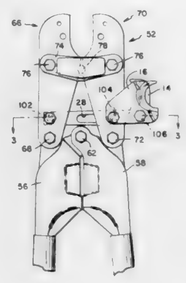
1. A transfer for forging machines or the like comprising a frame, a pair of opposed assemblies with each assembly including a support member pivoted on said frame for arcuate movement about a pivot axes parallel to the pivot axes of the other support member, an elongated arm mounted on each support member for lengthwise movement relative to its associated support member, each elongated arm having a cantilever end section, workpiece grippers mounted on the end sections operable to grip a workpiece at one transfer location and to transport such workpiece to another transfer location, and drive means operable to pivot said assemblies about their respective pivot axes to open and close said grippers and to produce lengthwise movement of said arms to move said grippers between said transfer locations, the direction of said lengthwise movement of said arms being parallel when said grippers are closed on a workpiece, the mounting of each elongated arm on its associated support being at a support location to one side of said transfer locations in the direction of the length of said elongated arms, and said cantilever end sections extending from said support location to said transfer locations.

3,965,719

CUTTING ATTACHMENT FOR CRIMPING TOOL

Kenneth Scott Hays, Exton, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 11, 1974, Ser. No. 522,550
Int. Cl.² B21D *37/12*
U.S. Cl. 72—410 **6 Claims**



1. In a crimping tool of the type comprising handles pivotally connected together at a pivot, a pair of spaced jaw plates pivotally connected to each of said handles by a first pivot and pivotally connected to each other at a distance from their pivotal connection to said handles by a second pivot and wherein each of said pairs comprises means for supporting a crimping jaw, the improvement comprising a first cutter member coupled to one pair of said jaw plates and a second cutter member coupled to said other pair of jaw plates, each of said cutter members being connected to their respective jaw plates at a point between said first and second pivots, and extending in the same lateral direction from said jaw plates with said cutters being disposed in generally side by side relation, each of said cutter members including a cutting edge, said cutting edges being in generally facing relation to each other so that when said pairs of jaw plates are moved relative to each other about said second pivot said cutting edges move in said lateral direction toward each other to cut an item disposed therebetween.

3,965,720

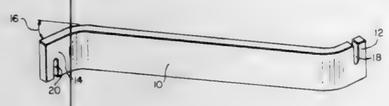
HINGE ADJUSTMENT TOOL

Henderson R. Goodwin, Edenton, and Edwin G. Wall, Elizabeth City, both of N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 28, 1975, Ser. No. 599,493
Int. Cl.² B21D *11/14*
U.S. Cl. 72—458 **2 Claims**

1. A hinge adjustment tool comprising:
   a hot rolled steel bar having heat treatment hardened, opposite end portions projecting out of the plane of the intermediate portion in opposite directions and at an angle between 45° and 75°, said end portions being displaced to the angularly projecting positions by a cold bending oper-

ation, each end portion having a slot in one of its longitudinal edges, the slot in one end portion being open to one



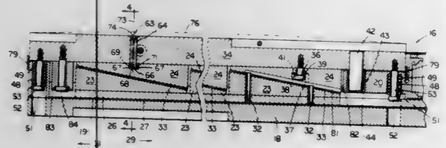
edge and the slot in the other end portion being open to the other edge.

3,965,721

ADJUSTABLE DIE HOLDER

Gerald V. Roch, Indianapolis, Ind., assignor to Hurco Manufacturing Company, Inc., Indianapolis, Ind.

Filed Feb. 24, 1975, Ser. No. 552,193
Int. Cl.² B21D *7/06*
U.S. Cl. 72—462 **21 Claims**



1. An adjustable die holder assembly for a press brake or the like comprising:

a die holder frame receivable on a press brake bed;

elongated die holder means mounted in said frame and having means thereon for holding a die therein;

and height changing means cooperating with said holder means and frame and operable, when actuated, to change the height of said holder means with respect to said frame uniformly throughout the length of said holder means,

said holder means including a die holder bar; and

said height changing means including a plurality of wedge means in said frame and vertically supporting said holder bar, said wedge means including upper wedges secured to said holder bar and a wedge driver mounted in said frame, said wedge driver being operable longitudinally of the holder bar and frame assembly to drive the wedges vertically as a unit.

3,965,722

APPARATUS FOR THE MEASUREMENT OF VISCOSITY

Greville Euan Gordon Bagg, Waltham Abbey, and Robert Ian Cracknell, Hoddesdon, both of England, assignors to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 279,770, Aug. 11, 1972, abandoned. This application May 3, 1974, Ser. No. 466,892
Int. Cl.² G01N *11/16*
U.S. Cl. 73—59 **6 Claims**

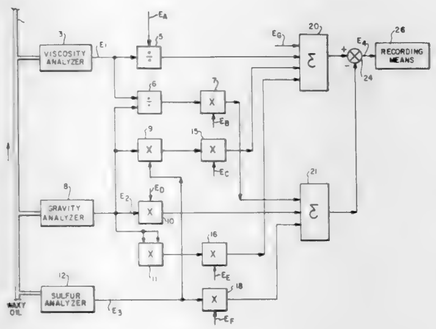
1. An apparatus for detecting a change in viscosity of a material, the change being from a highly fluid state to a high viscosity "set" state, comprising a probe, a motor for rotating said probe in a sample of the material, an operational amplifier having a negative feedback loop electrically connected to said motor, said amplifier providing current for driving said motor and said feedback loop compensating partially for the effect of increased loads on said motor, and means for measuring a parameter of the said combination, which parameter varies in accordance with the logarithm of the viscosity of said sample of material.

3,965,723

WAX CONTENT MEASURING MEANS

Charles W. Harrison, Nederland; Theodore C. Mead, Port Arthur; Howard R. Moreland, Houston, and Frank L. Barger, Port Arthur, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 8, 1975, Ser. No. 575,759
Int. Cl.² G01N *11/00, 33/26*
U.S. Cl. 73—53 **5 Claims**



1. Means for determining the wax content of waxy oil, comprising means for sensing the viscosity of the waxy oil and providing a corresponding signal, means for sensing the gravity of the waxy oil and providing a signal corresponding thereto, means for sensing the sulfur content of the waxy oil and providing a signal representative thereof, means connected to all the sensing means for providing a signal corresponding to the wax content of the waxy oil in accordance with the sensed parameter signals.

3,965,724

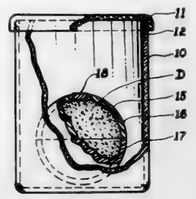
DEVICE AND METHOD FOR CALCULATING TEMPERATURE AND WATER VAPOR PRESSURE

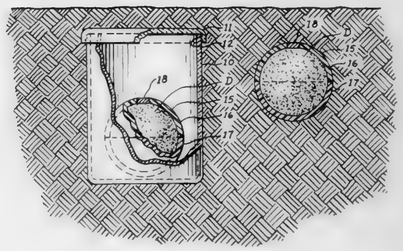
Wallace R. Ambrose, 39 Melba St., Downer, Australian Capital Territory 2602, Australia

Filed Dec. 6, 1974, Ser. No. 530,292
Int. Cl.² G01N *5/02;* **G01K** *3/04*
U.S. Cl. 73—64.2 **11 Claims**

1. A device for use in determining the timetemperature history of a medium over a selected period of time, said device being in said medium at the time of measurement, such device comprising a fluid tight contaner, the interior of said container containing a hollow spherical cell of constant wall thickness, and permeable to water vapour, said cell containing a dry desiccant material in particulate form and said container being filled to capacity with water.

10. Apparatus for use in determining the vapour pressure history of a medium over a selected time which comprises a device as claimed in claim **1** placed in close proximity to a





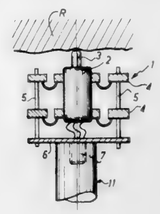
non-containerised hollow spherical cell containing a dry desiccant, both being situated in the medium.

3,965,725

SOUNDING VIBROMETER

Philippe Weber, Fontainebleau, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed Aug. 14, 1974, Ser. No. 497,494
Claims priority, application France, Aug. 14, 1973, 73.29710
Int. Cl.² G01N *9/18;* **G01D** *7/00*
U.S. Cl. 73—71.4 **9 Claims**



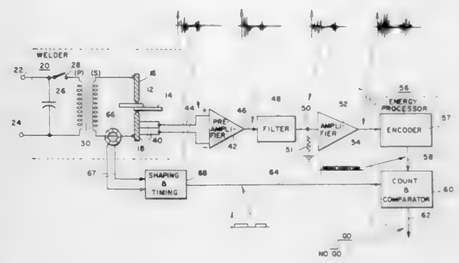
1. A sounding vibrometer for measuring the particulate speed in a rock mass comprising: a sensor including a geophone having its test-lead point mounted by way of two cable-type damping devices on small columns rigidly attached to a plate by means of a screw which is screwed onto a tubular section of a zicral or fiber glass rod, the tubular section being connected to three other sections by means of three bayonet or automatic connections, and an electrical circuit comprising an input with a switch and damping shunt resistance, a low-pass filter, an adjustable gain amplifier, a rectifier, an analog-digital converter, and an integrator-indicator which indicates a number proportional to the integral of the modulus of the particulate speed of said rock mass as detected by the geophone during the duration of a vibration.

3,965,726

METHOD AND APPARATUS FOR THE REAL-TIME EVALUATION OF WELDS BY EMITTED STRESS WAVES

Sotirios John Vahaviolos, East Windsor Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed July 2, 1975, Ser. No. 592,437
Int. Cl.² G01N *29/00*
U.S. Cl. 73—71.4 **10 Claims**



1. A method for the real-time, non-destructive evaluation of a weld comprising the steps of:

a. measuring stress-wave energy emitted by the material deformation during the solid-to-liquid phase transformation of the weld area;

b. measuring stress-wave energy emitted from cracks developing during the post-weld liquid-to-solid phase transformation of the weld area; and

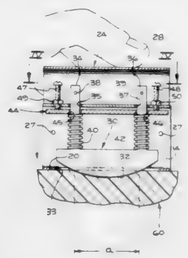
c. determining the strength of said weld by measuring the difference between the stress-wave energy measured during the solid-to-liquid phase transformation of the weld area and the stress-wave energy measured during the post-weld liquid-to-solid phase transformation.

3,965,727

HARDNESS TESTING INSTRUMENT

George A. Argabrite, c/o Pacific Transducer Corporation, 2301 Federal Ave., Los Angeles, Calif. 90064

Filed Oct. 17, 1974, Ser. No. 515,654
Int. Cl.² G01N *3/48*
U.S. Cl. 73—81 **6 Claims**



1. In an instrument for testing the hardness of a compressible sample and having a frame including means limiting downward movement of the frame relative to a sample and an indentor movably carried by the frame and resiliently biased downwardly relative thereto,

the improvement wherein the indentor comprises a thin elongated blade provided with a convex downwardly directed marking edge for penetrating a sample and including a pair of spaced legs fixed to the blade near opposite ends thereof and projecting upwardly therefrom, and a resilient member associated with each leg for providing said resilient bias.

3,965,728

APPARATUS FOR COMPENSATING MOVEMENTS OF AN APPARATUS FOR MEASURING OR RECORDING DISPLACEMENTS IN RESPECT OF A FIXED REFERENCE SURFACE

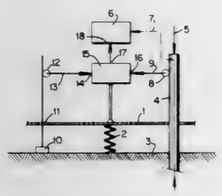
Arie Pieter van den Berg, Heerenveen, Netherlands, assignor to Ingenieursbureau A.P. van den Berg B.V., Heerenveen, Netherlands

Filed July 9, 1974, Ser. No. 486,870

Claims priority, application Netherlands, July 9, 1973, 7309584

Int. Cl.² G01N 3/00

U.S. Cl. 73—84 9 Claims



1. In an apparatus for soil sounding which includes a movable probe supported on a platform of a vehicle which in turn is resiliently supported on the ground wherein the probe is moved downwardly relative to the platform and wherein the platform forms a reference surface, and wherein there is an upward displacement of the reference surface relative to the ground during downward movement of the probe and wherein the position of the probe is monitored by sensor means supported on the platform of said vehicle and movable upwardly therewith in response to upward displacement of the vehicle platform, said sensor means cooperating with the probe and wherein the displacement of the reference surface from the ground creates errors in determining accurately the position of the probe which is movable in a nonuniform manner, the improvement comprising:

means mounted on said vehicle to measure the displacement of the reference surface relative to the ground, said means including:

a. subtractor means mounted on said vehicle and having a first and second input and an output;

b. said sensor means including a first sensor supported on said platform and providing one of said inputs, which input is the sum of the downward displacement movement of said probe relative to the ground and the upward displacement movement of the vehicle platform relative to the ground, said input being greater than the actual displacement of the probe relative to the ground;

c. further sensor means mounted on said vehicle and including means contacting the ground and operative to provide the other of said inputs which is smaller than said one input and which is representative of the displacement of the platform relative to the ground; and

said subtractor being a mechanical subtractor operative to subtract from the input which is greater than the actual displacement of the probe the input representative of the displacement of the reference surface relative to the ground.

3,965,729

LOAD CRACK TESTING DEVICE

William E. King, Jr., Bowie, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 1, 1975, Ser. No. 618,727

Int. Cl.² G01N 3/10

U.S. Cl. 73—90 4 Claims

1. A sustained constant load cantilever loading type specimen testing system; which comprises

a support

means on said support for anchoring one end of a test specimen in place,

a cantilever

means for securing one end of said cantilever and the unanchored end of said test specimen rigidly together in linear alignment,

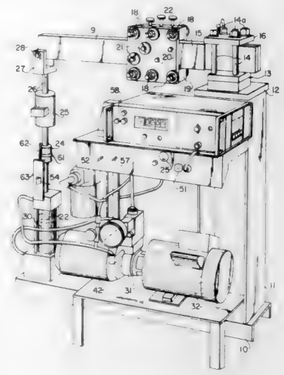
a hydraulic pressure cylinder containing a piston therein,

means for connecting said piston with the free end of said cantilever,

a hydraulic fluid reservoir

a hydraulic pump means connected to receive fluid from said reservoir,

a motor for driving said hydraulic pump to supply hydraulic fluid under pressure to said cylinder,



a subplate with interconnected stacked valves connected therewith

said valves including in succession a relief valve, a flow control valve and a directional fluid flow valve,

said subplate and said stacked valves including sufficient interconnecting fluid pressure lines therethrough to control fluid flow under pressure from said hydraulic pump through said relief valve, said flow control valve and said directional fluid flow valve to said cylinder and sufficient interconnecting return lines to return fluid from said pressure relief valve and said directional flow valve to said reservoir, and

a load indicating means for determining stress or strain on said test specimen.

3,965,730

VORTEX SHEDDING DEVICE FOR USE IN MEASURING AIR FLOW RATE INTO AN INTERNAL COMBUSTION ENGINE

Gary L. Innes, Flat Rock, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 28, 1975, Ser. No. 572,606

Int. Cl.² G01M 17/00; G01F 1/32

U.S. Cl. 73—118 2 Claims



1. A vortex shedding device for use in measuring the rate at which air flows into the air intake of an internal combustion engine, said device comprising:

a conduit having a passage within it through which air whose flow rate is to be measured may flow, said passage having a venturi section formed in it, said venturi section being of rectangular cross-section throughout and having width and height dimensions, the width dimension being the greater of said dimensions, said venturi section including an inlet portion a throat portion having a cross-sectional area in the range from about one-third to about one-half of the cross-sectional area of said inlet portion, a converging portion between said inlet and throat portions, and a diverging portion extending away from said throat portion toward the end of said passage remote from said inlet portion, said converging and diverging portions being formed by variation of said height dimension, said width dimension being constant over the length of said venturi section,

an elongated element for generating vortices in air flowing in said passage in a direction from said inlet portion toward said diverging portion, said elongated element being located in said throat portion of said passage and extending transverse to said direction of air flow and parallel to said width dimension, said elongated element being of circular or semi-circular cross-section and having a diameter in the range from about 1.5 mm to 3.5 mm,

a honeycomb structure positioned in said inlet portion of said passage venturi section, said honeycomb structure having a plurality of flow channels extending in said direction of said air flow to impart stratified characteristics to such air flow, said honeycomb structure being spaced from said converging portion of said venturi section, and

said cross-sectional area of said throat portion being sized, relative to said internal combustion engine, to achieve a maximum flow velocity in said throat portion in the range from about 76 to about 92 m/sec.

means for selectively raising and lowering the pair of rear cradling rollers relative to the front cradling rollers when a pair of vehicle wheels are positioned thereon to restrain the wheels from traveling back over the rear cradling rollers in their raised position and to permit the vehicle wheels to readily be driven off and on of the rear cradling rollers in their lowered position.

3,965,731

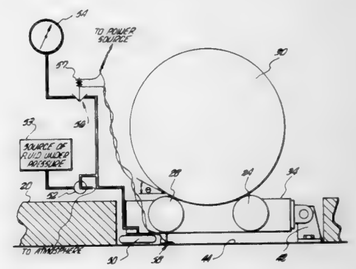
ROLLER BRAKE TESTER

Carl Junior Asmus, Temple City, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.

Filed Dec. 16, 1974, Ser. No. 532,817

Int. Cl.² G01L 5/28

U.S. Cl. 73—126 12 Claims



1. In a roller brake tester for testing a pair of wheel brakes of a motor vehicle, the combination which comprises:

wheel support means including a frame and pair of aligned rear cradling rollers and a pair of aligned front cradling rollers mounted in the frame for supporting and rotating the pair of vehicle wheels, the rear cradling rollers being arranged to engage the rear portion of the wheels, and the front cradling rollers being arranged to engage the front portion of the wheels, the frame being pivotally mounted with respect to a support surface at a location between the front and rear cradling rollers; and

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3,965,732

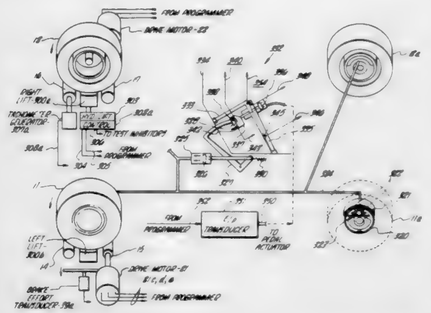
COMPUTER TYPE BRAKE ANALYZER

Edwin Lee Cline, Pasadena, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.

Continuation-in-part of Ser. No. 382,538, July 25, 1973, Pat. No. 3,899,916, which is a continuation-in-part of Ser. No. 811,168, March 27, 1969, abandoned. This application May 5, 1975, Ser. No. 574,284

Int. Cl.² G01L 5/28

U.S. Cl. 73—126 23 Claims



1. In an apparatus for analyzing the braking performance of a wheeled vehicle having wheel brakes individually associated with at least two wheels and a brake actuator for simultaneously applying the brakes to said wheels, the combination which comprises:

test means for rotating said wheels of the vehicle;

brake effort signal generating means including the test means for producing a separate brake effort signal for each wheel, the brake effort signals being proportional to the brake effort of the respective wheel while the wheel brakes are being applied; and

system response signal generating means responsive to the brake effort signals and to the operation of the brake actuator for producing a brake system response signal proportional to the delay between the time that the brake actuator is operated and at least one of the wheel brakes reaches a preselected brake effort.

3,965,733

CRANE LOAD INIDICATING ARRANGEMENT

Bernard David Francis Hutchings, Chelmsford, and Robert William Hubbard, Southend-on-Sea, both of England, assignors to Pye Limited, Cambridge, England

Filed May 10, 1974, Ser. No. 468,764

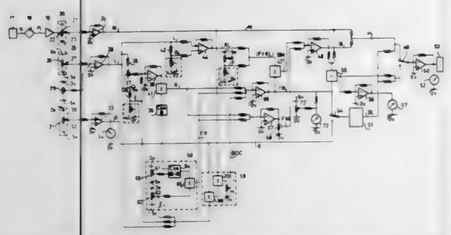
Claims priority, application United Kingdom, Mar. 15, 1973, 22500/73

Int. Cl.² B66C 13/16

U.S. Cl. 73—133 R 20 Claims

1. A load indicating arrangement for use with a crane or other lifting apparatus having a pivotally mounted telescoping boom comprising, boom supporting means, means for producing a first output signal representative of the total turning moment of the boom about its pivot in supporting a load, said first output signal producing means including transducer means for producing an output signal which is a function of the reaction sustained by the boom supporting means in supporting the boom and any bad suspended therefrom and angle

sensing means for modifying said output signal in accordance with the sine of the angle included between the boom supporting means and the boom, means for producing a second output signal representative of the turning moment of the boom about its pivot due to the weight of the boom alone, means for combining said first and second output signals to produce a third output signal which is the algebraic difference between said first and second output signals and which is thus representative of the turning moment due only to the load, means for deriving a load radius output signal representative of the



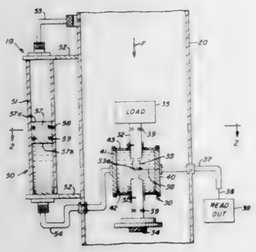
horizontal distance between the boom pivot point and the load and independent of the weight of the boom, a law generator unit for each mode of operation of the crane, a first one of the law generator units including means responsive to said load radius output signal for producing a fourth output signal which varies with the load radius and is representative of the maximum safe load moment for the crane in the appertaining mode of operation involving radius related duties and for the existing load radius, and means for comparing said fourth output signal with said third output signal to provide an indication of available lifting capacity.

3,965,734

PRESSURE EQUALIZING LOAD CELL SYSTEM

Howard E. Ward, Tustin, and Mari A. Wolf, El Toro, both of Calif., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Feb. 19, 1975, Ser. No. 551,226
Int. Cl.² G01L *1/26*
U.S. Cl. 73—141 A **3 Claims**



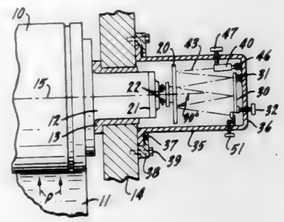
1. A load cell assembly comprising: an elongated load cell mounted within a fluid environment and having a force-sensing portion intermediate the ends thereof; enclosure means on said load cell spaced from and surrounding said force-sensing portion for forming a sealed enclosure therearound and containing a non-corrosive fluid therein; said enclosure means including at least one flexible diaphragm sealingly secured to said load cell for allowing slight relative movement between the ends of said load cell; and pressure equalizing means in fluid communication with such environment and the interior of said enclosure means for equalizing the pressure on each side of said diaphragm and for preventing the fluid of such environment from entering said enclosure means; said pressure equalizing means including an elongated chamber having a piston slidable therein forming within said elongated chamber two variable volume fluid chamber portions, a first pressure line communicating said non-corrosive fluid between said enclosure means and one of said chamber portions, a second pressure line communicating the fluid of such environment with the other of said chamber portions.

3,965,735

DEVICE FOR MEASURING PRESSURE BETWEEN CYLINDERS OF A PRINTING PRESS

Winfried Hartung, Offenbach am Main, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany

Filed Apr. 10, 1975, Ser. No. 566,749
Claims priority, application Germany, Apr. 10, 1974, 2417522
Int. Cl.² G01L *5/00*
U.S. Cl. 73—141 A **14 Claims**



1. A device for measuring the pressure between two cylinders in a printing press frame along a common plane containing the two cylinders comprising, in combination, a cylinder having a pair of journals supported in respective bearings in the press frame, a first mirror fixed to the end of one of the journals perpendicularly to and centered upon the cylinder axis for rotation with the cylinder, a relatively stationary second mirror facing the first mirror, means for mounting the second mirror on the frame spaced substantially parallel to the first mirror, a light emitter at one edge of the mirrors and lying substantially in the common plane for directing a concentrated beam of light between the mirrors at a shallow angle of incidence for multiple reflection thereof with the point of exit of the beam of shifting in accordance with changes in the angular position of the first mirror as a result of slight bowing of the cylinder in response to changes in applied pressure, means including a photocell at the region of exit for receiving the beam following the multiple reflection, the photocell means being so constructed and arranged as to produce an output signal which varies in accordance with the shift in the point of exit of the beam with the result that the output signal constitutes a measure of the applied pressure.

3,965,736

CLAMP-ON TRANSDUCER FOR WELL UNIT

Barry S. Welton, and G. Wayne Westerman, both of Midland, Tex., assignors to Energy Systems, Inc., Midland, Tex.

Filed Feb. 13, 1974, Ser. No. 442,218
Int. Cl.² E21B *47/00*
U.S. Cl. 73—151 **9 Claims**

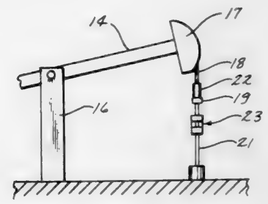
1. A strain measuring device for measuring the strain in the polish rod of a rod-pumped well unit having a reciprocal rod string extending to a subterranean producing formation and actuated by a prime mover comprising:

body means;

clamp means coupled to the body means, the clamp means being capable of detachably affixing the body means to the exterior of the polish rod of a well unit; and

transducer means attached to the body means and adapted to provide an indication of the strain induced in the polish rod during reciprocation thereof,

said body means comprising a split cylinder, and hinge pin means joining sections of said split cylinder, said clamp



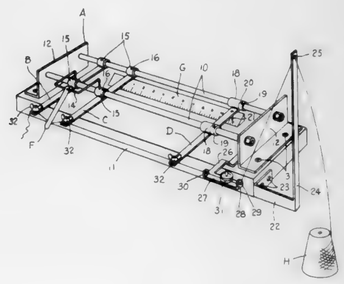
means being adapted to hold said split cylinder about a portion of the polish rod.

3,965,737

METHOD AND APPARATUS FOR INDICATING THE AMOUNT OF TORQUE IN A YARN

Hubert B. Matthews, 301 Lindsay Ave., Greenwood, S.C. 29646

Filed Feb. 13, 1975, Ser. No. 549,675
Int. Cl.² G01L *5/06*
U.S. Cl. 73—160 **10 Claims**



1. A device for indicating torque in a yarn comprising:

a. a support platform;

b. an elongated member mounted on said support platform;

c. a first member carried by said elongated member having means for receiving and clamping said yarn;

d. a second member movably carried on said elongated member having means for receiving and clamping said yarn;

e. tensioning means for applying a predetermined amount of tension to said yarn held between said first and second members;

f. said second member being movable towards said first member causing said yarn to twist together into a loop; and

g. means for indicating the point at which said loop occurs to indicate the amount of torque therein.

3,965,738

MAGNETIC FLOWMETER

Masayasu Watanabe, Yokohama, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed July 29, 1974, Ser. No. 492,766
Claims priority, application Japan, July 31, 1973, 48-86612
Int. Cl.² G01F *1/58*
U.S. Cl. 73—194 EM **3 Claims**

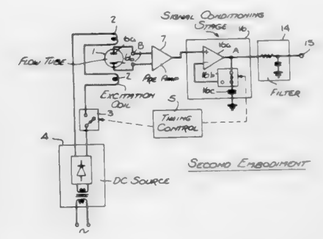
1. In an electromagnetic flowmeter provided with a flow tube through which the fluid to be metered is conducted, the tube having a pair of electrodes mounted at diametrically-opposed positions and an excitation coil to produce a magnetic field in the tube which is transverse to the direction of the flow, the combination comprising:

A. a D-C power source connected to said coil,

B. a power switch interposed between said source and said coil to interrupt the flow of D-C thereto whereby during an excitation period in which D-C is applied, the output of the electrodes is the combined voltage of a live flow signal and a zero-point voltage induced in the liquid flowing in the tube, and during a non-excitation period in which DC is interrupted, the output is the zero-point voltage only,

C. means responsive to the action of said power switch to hold said zero point voltage produced during the non-excitation period,

D. means to subtract said held zero-point voltage from the combined voltage to produce an output voltage in which zero error is minimized, and



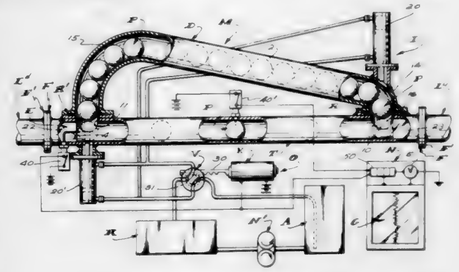
E. a timing control circuit operatively coupled to said switch to effect periodic operation thereof, whereby said DC excitation is periodic, said means responsive to the action of said power switch to hold said zero-point voltage and said means to subtract said held zero-point voltage from the combined voltage are constituted by a main differential amplifier whose non-inverting input is responsive to signals derived from the electrodes, the output of the amplifier being connected by a second switch during the non-excitation period to a capacitor whose charge represents said zero-point voltage, the zero-point voltage charge during the excitation period being transferred by said second switch to the inverting input whereby said amplifier subtracts the zero-point voltage from the combined voltage.

3,965,739

FLOW METER

Ray L. Jones, 258 Paseo de Granada, Redondo Beach, Calif. 90277

Filed May 13, 1975, Ser. No. 577,019
Int. Cl.² G01F *1/00*
U.S. Cl. 73—194 E **13 Claims**



1. An elongate fluid flow meter with upstream and downstream ends, comprising an elongate flow tube with upstream and downstream ends substantially coextensive with the meter means, means connecting the upstream and downstream ends

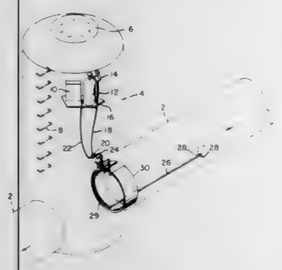
of the tube with upstream and downstream sections of a fluid line, an elongate transport duct at the exterior of the tube with upstream and downstream ends communicating with sides of the tube adjacent the upstream and downstream ends thereof; a plurality of plugs shiftable longitudinally in and through the duct and tube, intermittently operable plug engaging transfer means actuatable to synchronously transfer a plug transported through the duct to the end thereof into the tube and to transfer a plug transported through the tube to the downstream end thereof into the duct, control means for the transfer means comprising a plug sensing device at a predetermined position longitudinally of the tube, connected with the transfer means and operable to sense the presence of a plug in the tube at said position and cause the transfer means to actuate whereby plugs are transferred into and out of the upstream and downstream ends of the tube without substantially impeding of the flow of fluid through the tube and means to count and time intervals between plugs sensed by the device.

3,965,740

METHOD AND PORTABLE APPARATUS FOR CONTINUALLY MONITORING THE FLOW OF FLUID IN AN OPEN CHANNEL

Kenneth W. Martig, Jr., 2116 Lakemoor Dr., Olympia, Wash. 98502

Filed Sept. 5, 1974, Ser. No. 503,392
Int. Cl.² G01F *1/00*
U.S. Cl. 73—194 R **5 Claims**



1. A probe for use in determining the depth of fluid in an open channel comprising:

a. expandible collar means comprising a band of an exterior configuration to substantially conform to the interior of the channel and of a width to substantially align itself so that its central axis is substantially parallel with the axis of the channel,

b. elongated probe means extending outwardly of the collar substantially parallel with the axis of the collar, said probe means secured to the collar means and conforming to the interior of the collar to a point spaced from the outwardly extending portion adapted for connection to a source of gas under pressure, and

c. means to expand the collar means to frictionally engage the interior of the channel and hold the probe in a predetermined position.

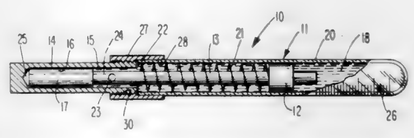
3,965,741

TIME TEMPERATURE INDICATOR DEVICE AND METHOD

George Peter Wachtell, Maple Shade, N.J., and Edward Wilred Jones, Upper Darby, Pa., assignors to Campbell Soup Company, Camden, N.J.

Filed May 8, 1975, Ser. No. 575,589
Int. Cl.² G01K *3/00, 11/06*
U.S. Cl. 73—344 **12 Claims**

4. A temperature level detection device comprising a longitudinally disposed casing having a piston slidable for longitudinal movement therein, a rod carried by the piston extending into a well in a first end of the casing, a heat-responsive meltable substance of predetermined melting temperature in the well normally fastening the rod to the casing in the well, a spring in the casing engaged for biasing the piston toward a second, opposite end of the casing, a viscous liquid substance



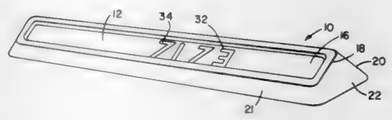
in said second end of the casing, passage means for traversal of the piston with the liquid, with the liquid having a viscosity that is substantially independent of temperature whereby a melted condition of said substance allows biased piston movement against said viscous liquid toward said second end of said casing, releasing the rod from its fastened position in the well.

3,965,742

DIGITAL THERMOMETER AND METHOD OF MANUFACTURE

Robert Parker, Danville, Calif., assignor to RPR, Inc., Dublin, Calif.

Division of Ser. No. 351,220, April 16, 1973, Pat. No. 3,861,213, which is a continuation-in-part of Ser. No. 263,064, June 15, 1972, abandoned. This application Oct. 24, 1974, Ser. No. 517,718
The portion of the term of this patent subsequent to Jan. 21, 1992, has been disclaimed.
Int. Cl.² G01K *11/16*
U.S. Cl. 73—356 **13 Claims**



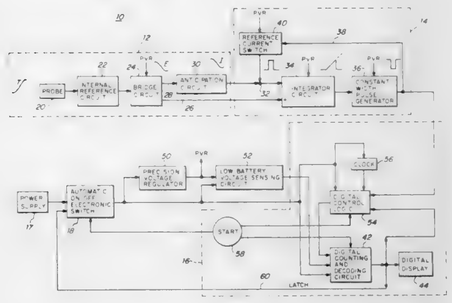
1. A digital thermometer readable by comparing the intensity of the visibility of adjacent digits comprising: a support having a plurality of transparent areas in the form of digital representations, delineated by opaque borders in a predetermined order of increasing value; a plurality of different microencapsulated temperature responsive liquid crystal compositions having different temperature response ranges, wherein each of said transparent areas has a substantially uniform coating of a thickness about the same as its adjacent transparent areas of a liquid crystal composition having a lower transition temperature below the numerical value represented by its digital representation and having an upper transition temperature above the numerical value represented by its digital representation and overlapping the temperature response range of the liquid crystal composition coated onto the transparent area of the digital representation of the next succeeding numerical value, the amount of overlap between adjacent digital representations being sufficiently consistent and of a magnitude so that the relative intensity of adjacent digits can be compared to estimate temperature.

3,965,743

AUTOMATIC ON-OFF ELECTRONIC SWITCH

Robert Bruce Turner, Weymouth, Mass., assignor to American Medical Electronics Corporation, Newton Upper Falls, Mass.

Filed May 28, 1974, Ser. No. 473,493
Int. Cl.² G01K *7/24*
U.S. Cl. 73—362 AR **3 Claims**



1. An electronic thermometer system comprising:

a temperature sensing circuit for sensing temperature variations and providing a first signal representative thereof;

a temperature measuring circuit responsive to said first signal provided by said temperature sensing circuit for producing a second signal representative of the temperature being sensed;

a time measuring circuit;

a display circuit responsive to said time measuring circuit and said temperature measuring circuit, for indicating the measured temperature during one period and the measured time during another period;

a power supply;

an actuator; and

an automatic electronic switch responsive to an initial operation of said actuator to provide power from said power supply to said circuits and to continue to provide power from said power supply to said circuits independent of further operation of said actuator during an interval at least as long as the combined periods and automatically and independently of further operation of said actuator, at the end of said interval, to cease providing power to said circuits and end the display.

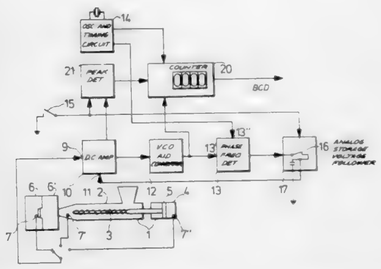
3,965,744

EQUIPMENT FOR COMPENSATING FOR SENSOR VARIATIONS

Lothar Gutjahr, Denzlingen, Germany, assignor to Klockner-Werke AG, Duisburg, Germany

Filed Apr. 16, 1975, Ser. No. 568,579
Claims priority, application Germany, Apr. 25, 1974, 2419914
Int. Cl.² G01L *19/04*
U.S. Cl. 73—393 **8 Claims**

1. In measurement equipment having sensor means for furnishing a sensor output signal indicative of the value of a measured characteristic and wherein said sensor output signal undergoes undesired variations as a function of at least one factor other than said measured characteristic, equipment for compensating for said undesired variations, comprising, in combination, DC amplifier means having a first input connected to said sensor means for receiving said sensor output signal, a second input, and an amplifier output, for furnishing an amplifier output signal varying as a function of signals at said first and second inputs at said amplifier output; analog-digital converter means connected to said DC amplifier means for furnishing a digital signal having a frequency corresponding to said amplifier output signal; stabilized oscillator means for furnishing a frequency stabilized signal; phase detector means connected to said analog digital converter means and said stabilized oscillator means for furnishing a DC compensating voltage varying as a function of the phase difference between said digital signal and said frequency stabilized signal; storage means connected to said second input of said DC amplifier means; and means for connecting said storage means



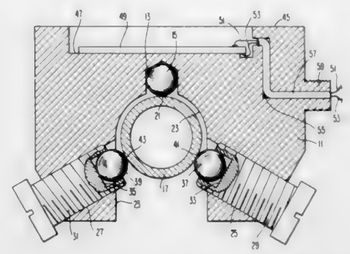
to said phase detector means prior to each measurement thereby creating a closed loop circuit, and for disconnecting said storage means from said phase detector means during each measurement, whereby the value of said DC compensating voltage immediately preceding each measurement is maintained during said measurement.

3,965,745

EXTERNALLY MOUNTED TRANSDUCER FOR DETECTING CHANGES OF FLUID PRESSURE IN A PIPE

Thomas H. Carey, Chester, Pa., assignor to Columbia Research Laboratories, Inc., Woodlyn, Pa.

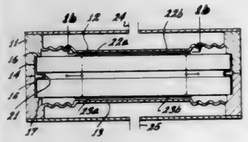
Filed Feb. 5, 1975, Ser. No. 547,342
Int. Cl.² G01L *9/06*
U.S. Cl. 73—398 AR **9 Claims**



1. An externally mounted device for detecting changes of fluid pressure in a pipe comprising in combination: housing means having a cut-away section therein formed to fit over said pipe; notch means formed in said housing means and formed to open into said cut-away section; first contact means disposed in said notch means and formed to have a substantially spherical surface extending into said cut-away section so that said first contact means only contacts said pipe at a first tangential point; first and second cavity means formed in said housing means and formed to open into said cut-away section; second contact means disposed in said first cavity means and formed to have a substantially spherical surface extending into said cut-away section so that said second contact means only contacts said pipe at a second tangential point; third contact means disposed in said second cavity means and formed to have a substantially spherical surface extending into said cutaway section so that said third contact means only contacts said pipe at a third tangential point and said third contact means disposed so that said first, second and third tangential points lie in a plane and define a hold in said plane into which

said pipe can be disposed; and piezo-electric crystal means mounted in said housing means whereby when a change of fluid pressure occurs in fluid passing through said pipe, said first, second and third contact means will respond to flex said housing means, which in turn will bend said piezo-electric crystal, to thereby produce voltage signals in accordance with said change of pressure in said pipe.

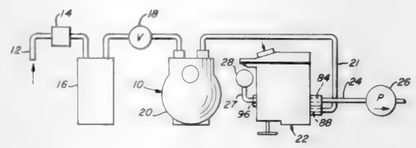
3,965,746
PRESSURE TRANSDUCER
Jan W. Rabek, Los Angeles, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Nov. 4, 1974, Ser. No. 520,415
Int. Cl.² G01L 9/12
U.S. Cl. 73—398 C **13 Claims**



1. A fluid pressure transducer comprising:
a fluid-tight container;
a first diaphragm forming a wall portion of said container, said first diaphragm having a rigid perimeter with an inner peripheral flat portion fixed to said container, said first diaphragm further including a rigid central hub and annular corrugations between said hub and said perimeter;
a rigid insulating disc having two substantially equal semi-annular areas of conductive material adjacent to and cooperating capacitively with said inner peripheral flat portion of said disc-shaped wall;
a second diaphragm forming a wall portion of said fluid-tight container, said second diaphragm having a rigid perimeter with a second inner fixed peripheral flat portion fixed to said container, said second diaphragm further including a second rigid central hub and annular corrugation between said hub and said perimeter;
a spindle rigidly interconnecting the rigid central hubs of said diaphragms;
a second rigid insulating disc having two substantially equal semi-annular aresa of conductive material in capacitive relationship with said second inner fixed peripheral flat portion of said second diaphragm; and
means for mounting said rigid insulating discs on said spindle for movement with said rigid central hubs; whereby differential pressure applied to said disc-shaped walls increases the capacitances between one pair of semi-annular conductive areas and the corresponding peripheral flat portion of one of the diaphragms and decreases the capacitances between the other pair of semi-annular conducting areas and the corresponding peripheral flat portion of the other diaphragm.

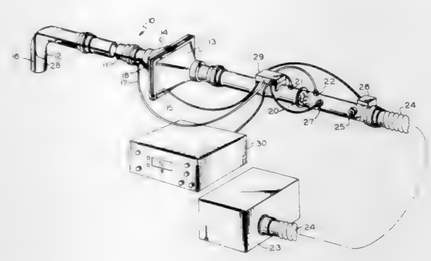
3,965,747
GAS SAMPLING SYSTEM AND METHOD
Richard E. McCorkle, Glendale, Calif., assignor to Joy Manufacturing Company, Pittsburgh, Pa.
Filed Oct. 24, 1972, Ser. No. 300,001
Int. Cl.² G01N 1/24
U.S. Cl. 73—421.5 R **9 Claims**

1. A method of isokinetic sampling of a flowing stream of particulate bearing gases comprising the steps of; applying a vacuum to a sampling train communicating with such a stream; measuring the volume rate of gas flow from such a stream through said train; continuously controlling the vacuum pressure of the gas flowing through said train to provide a constant internal vacuum pressure within said train; and said controlling of vacuum pressure is in response to sensing the



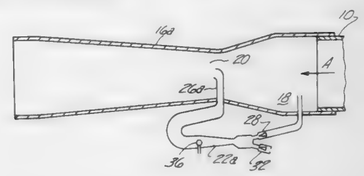
pressure difference between the gas pressure within the sampling train and the ambient air pressure.

3,965,748
APPARATUS FOR AUTOMATICALLY MEASURING PARTICULATE EMISSIONS IN GAS FLOW
Richard W. Boubel, Corvallis, Oreg.; David C. Babler, Brush Prairie, and Donald W. Peter, Battleground, both of Wash., assignors to Rader Companies, Inc., Portland, Oreg.
Filed Nov. 18, 1974, Ser. No. 524,749
Int. Cl.² G01N 1/24
U.S. Cl. 73—421.5 A **15 Claims**



1. An isokinetic sampling apparatus for measuring particulate emissions in a gas flow, comprising:
tubular means for insertion in said gas flow for receiving a portion of said gas flow,
filter means for collecting particulate matter,
means for measuring velocity pressure in said gas flow as exerted by the flowing gas due to its kinetic energy, and temperature sensing means for sensing the temperature in said gas flow,
means for measuring pressure drop in said tubular means, and temperature sensing means for sensing the temperature in said tubular means,
suction pressure applying means attached to said tubular means for moving gas through said tubular means,
means responsive to said means for measuring velocity pressure in said gas flow and to both said temperature sensing means for continuously calculating the pressure drop within said tubular means that would establish the volume rate of gas passing through said sampler as kinetically equivalent to the velocity of gas in said gas flow, and for calculating and providing a direct output reading indicative of gas flow in response to a measured pressure and temperature,
and means responsive to said calculating means and to said means for measuring pressure drop in said tubular means for changing the flow in said tubular means as brought about by said suction pressure applying means until the measured pressure drop in said tubular means substantially equals the calculated value.

3,965,749
SAMPLING AND DILUTION METHOD
Stephen C. Hadden, Cambridge, and Leonard R. Hulls, Marblehead, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Mar. 19, 1975, Ser. No. 559,856
Int. Cl.² G01N 1/22
U.S. Cl. 73—421.5 R **1 Claim**



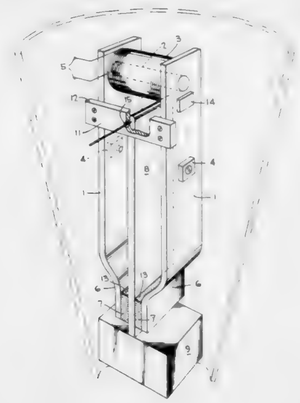
1. Means for measuring combustibles passing through the exhaust duct of an engine: said measuring means comprising a restriction in the exhaust duct forming a first superatmospheric pressure zone upstream therefrom and a second subatmospheric pressure zone downstream therefrom; a sampling chamber having a first conduit communicating with the superatmospheric pressure zone and a second conduit communicating with the subatmospheric pressure zone; said sampling chamber and its conduits being constructed to offer a flow resistance such that some of the engine exhaust gas is caused to be temporarily diverted through the sampling chamber via the first and second conduits; a third air coolant conduit communicating the ambient atmosphere with the sampling chamber, whereby cooling air is drawn into said chamber for intermixture with the diverted gas; and a combustibles sensor located within the chamber for detecting combustibles in the flowing gas-air mixture; a first pressure-responsive constant flow valve located in the first conduit, and a second pressure-responsive constant flow valve located in the third conduit; said valves cooperatively assuring a substantially constant ratio between the flow rates in the first and third conduits irrespective of variations in pressure differential between the first and second zones.

3,965,750
LIQUID SAMPLER AND STERILIZER
Julius Theodore Johnson, 348 - 20th St., SE., Cedar Rapids, Iowa 52403
Filed Feb. 21, 1975, Ser. No. 551,699
Int. Cl.² G01N 1/10
U.S. Cl. 73—425.4 R **7 Claims**



1. A sampling device useful for sampling liquids with strata of different compositions comprising an elongated tube having on one end thereof annular groove means, a well cap having bottom and side walls defining a liquid-holding well with an open side facing said tube, said end of said tube extending into said liquid-holding well, said cap further having peripherally spaced, axial fingers extending from its open side, the ends of said fingers being seated loosely in said groove means in a manner allowing rotation and limited tilting of said cap on said end of said tube, the liquid being sampled flowing between said fingers and into said end of said tube via said well cap as the tube is lowered substantially vertically through the body of liquid being sampled, and, with said tube held vertically, said end of said tube extending into said well providing, after said tube is filled with liquid to be sampled, a seal preventing air from entering the said end of said tube when said tube is raised completely out of said body of liquid.

3,965,751
INTEGRATED MAGNETO-SEISMIC SENSOR
Zaboj V. Harvalik, 5901 River Drive, Lorton, Va. 22079
Filed Nov. 8, 1974, Ser. No. 522,167
Int. Cl.² G01D 7/02, 21/04
U.S. Cl. 73—432 R **4 Claims**



1. An integrated sensor assembly for the detection of intrusion disturbances, of the variety having magnetic signal or seismic signal characteristics, when said sensor assembly is emplaced in a selected area comprising:
an all encompassing casing of nonmagnetic material adapted for emplacement in seismic relation in a selected area,
a magnetic armature yoke structure rigidly supported in seismic relation within said casing,
said armature yoke structure having a magnetic path consisting of a first section, a second section, and a defined air gaps section between a first selected end of each of said first and second sections, and a third section connected to the opposite end of each of said first and second sections and disposed therebetween, said first, second, and third sections of said magnetic armature yoke being of a material having a high initial permeability,
said third section having an inductance means wound thereabout such that changes in magnetic flux conditions in said air gaps section produces a first signal, having a frequency within a first selected frequency range, across said inductance means representative of said changes in magnetic flux conditions, and an elongated pendulum member,
nonmagnetic means for pivotedly attaching said elongated pendulum member to said yoke structure in the vicinity of said third section thereof, the length and configuration of said pendulum member and the pivot connection of said means for attaching adapted such that said pendulum member extends through and beyond said air gaps section and, in at least one selected orientation of said casing, is

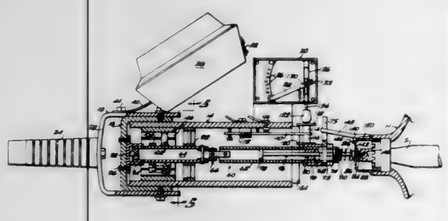
pivotedly moveable within said air gaps section in response to seismic movement of said casing, at least that portion of said pendulum member within said air gaps section being of a material which creates a magnetic flux disturbance when said pendulum member moves relative to said first selected ends of said first and second sections of said yoke structure within said air gaps section and produces a second signal, having a frequency within a second selected frequency range, across said inductance means representative of the movement of said pendulum member.

3,965,752

BALANCING DEVICE FOR VEHICLE WHEELS

Commodore Davis, Rte. No. 1, Box 289, Big Pine Key, Fla. 33043

Filed Oct. 16, 1975, Ser. No. 622,894
Int. Cl.² G01M *1/28*
U.S. Cl. 73—457 **16 Claims**



1. A device for balancing a wheel assembly mounted on a vehcile comprising,

A. a main housing defining an interior chamber and having an open front end;

B. a rotor shaft extending axially through said chamber and providing,

1. a back portion rotatably journaled in said chamber, and

2. a tubular front portion with a universal joint connection to said back portion;

C. probe means slidably journaled in said tubular front portion and including an extended outer end portion for centered engagement with the outer end of the wheel spindle to receive up and down oscillating movement of an out-of-balance wheel;

D. means to drivingly engage the wheel to said rotor shaft to rotate said rotor shaft in unison with the wheel when the wheel is rotated and the probe means is engaged with the wheel spindle;

E. means to transmit upwardly oscillating movement of said front portion, received from said wheel spindle by said probe means, to a first switch means;

F. a first dial means comprised of a first plurality of lights to visually indicate the location of the out-of-balance condition on the wheel when the wheel is rotated;

G. a first electric circuit means, activated by said first switch means to illuminate at least one of said first plurality of lights which visually indicates the location of the maximum out-of-balance on the wheel;

H. a second dial means comprised of a second plurality of lights to visually indicate the amount of weight necessary to bring the wheel into balance;

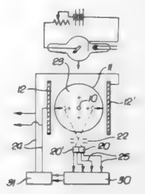
I. a second switch means activated by the oscillating movement of said first position to energize a second electric circuit means to illuminate the light of said second plurality which indicates the needed amount to weight to achieve a balanced condition of the wheel.

3,965,753

ELECTROSTATIC ACCELEROMETER AND/OR GYROSCOPE RADIOISOTOPE FIELD SUPPORT DEVICE

Alva LaRoy Browning, Jr., P.O. Box 4023, Santa Barbara, Calif. 93103

Continuation-in-part of Ser. No. 41,845, June 1, 1970, abandoned. This application Oct. 9, 1973, Ser. No. 404,294
Int. Cl.² G01C *19/24*; **G01P** *15/08*
U.S. Cl. 73—504 **9 Claims**



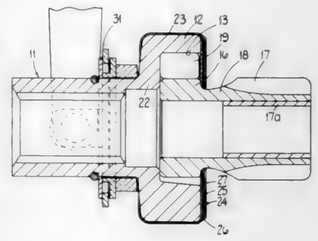
1. A sensing instrument including: a housing forming a closed chamber, an electrically charged sensing mass in said chamber, said sensing mass having a mass in excess of that subject to Brownian movement, said mass having therein radioactive material of selected particle emitting capability with a constant charge-to-mass ratio, an electrode assembly providing a supporting means comprising a plurality of pairs of electrodes with electrodes of respective pairs mounted on diametrically opposite side of said chamber and having a D.C. electric circuit interconnecting each pair of electrodes whereby said mass is freely supported by externally applied electric forces in a condition of stable equilibrium; and a detector in electrical operating association with at least one pair of electrodes and responsive to displacement of said sensing mass, said detector being mounted exteriorly with respect to said chamber.

3,965,754

ROLLER CLUTCH ASSEMBLY

Roy Price Bowcott, Solihull, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Apr. 28, 1975, Ser. No. 572,019
Claims priority, application United Kingdom, May 15, 1974, 21540/74
Int. Cl.² F02N *15/06*; **F16D** *41/06*
U.S. Cl. 74—6 **6 Claims**



1. A roller clutch assembly including a clutch outer member arranged to be driven, a clutch inner member carrying a pinion gear wheel, a radial shoulder between said inner member and said gear wheel, a plurality of rollers disposed between said inner and outer members, a plurality of compression springs, each spring urging a respective roller in a circumferential direction and, an annular washer, said washer being formed in at least two parts and being carried by the outer clutch member, said washer abutting said radial shoulder so as to retain the inner clutch member within the outer clutch member, and the parts defining said washer being so shaped

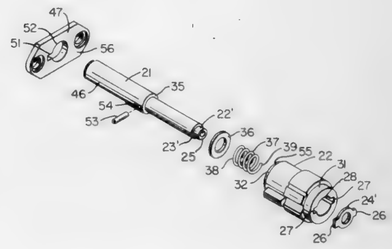
that the abutting edges of the parts are disposed other than parallel to the adjacent convolutions of said springs.

3,965,755

CONTROL DEVICE HAVING LOCKING SELECTOR MEANS

David M. Rosenberg; Henry F. Hild, and John W. Stearley, all of Indiana, Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 25, 1974, Ser. No. 526,975
Int. Cl.² F16H *35/18*
U.S. Cl. 74—10 R **6 Claims**



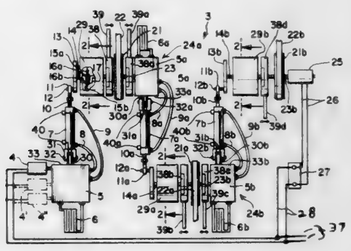
1. In a control device having a housing provided with a movable actuator and a rotatable selector shaft for positioning said actuator in relation to the rotational position of said shaft, the improvement comprising an actuator driver carried by said shaft and being operatively interconnected to said actuator to drive the same upon rotation of said driver by said shaft, said shaft and driver being axially movable relative to said actuator, said housing having a latching means, said shaft having a latching means remote from said drive and cooperable with said latching means of said housing when said shaft is in a certain rotational and axial position relative to said housing whereby said shaft cannot be rotated relative to said housing until said shaft is axially moved from said certain axial position to another axial position to clear said latching means of said shaft from said latching means of said housing, said latching means of said housing comprising part of a front cover of said housing, said part of said front cover comprising a plate carried by said front cover.

3,965,756

MULTI-SPEED AND LEVERAGE MOTOR

Alfredo E. Valles, 610 Salem Ave., Apt. A-3, Elizabeth, N.J. 07207

Filed Mar. 14, 1975, Ser. No. 558,250
Int. Cl.² F16H *25/08*
U.S. Cl. 74—22 R **10 Claims**



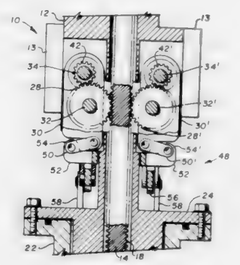
1. A multi-speed and leverage motor device comprising in combination: a first motor means for imparting a rotary motion to drive a shaft; a first rotary drive shaft drivable rotatably by operative connection to said first motor means; a first fluid compressor means for providing fluid pressure, including a first fluid piston reciprocatable in alternating to and fro action directions in a cylinder extending along its longitudinal axis, the fluid compressor means including valve elements adapted to effect fluid reciprocatable motion of the first fluid piston in said directions, the first fluid compressor means being operatively connected for the driving and operation thereof by said first rotary drive shaft; a first crank structure; and a first gear ratio means for providing predetermined mechanical and speed advantages having a second drive shaft extending therefrom and drivable thereby, the crank structure being drivable of and connected to the gear ratio means for providing predetermined mechanical and speed advantages and having a second drive shaft extending therefrom and drivable thereby, the crank structure being drivable of and connected to the gear ratio means at one end of the crank structure and connected to be driven at an opposite end of the crank structure by the first fluid piston.

3,965,757

SCRAM RELEASE FOR A CONTROL ROD

Donald Martin Barrus, Enfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 12, 1973, Ser. No. 424,125
Int. Cl.² F16H *19/04*
U.S. Cl. 74—30 **10 Claims**



1. A linear drive apparatus, comprising:

a. a housing;

b. a longitudinally extended linearly movable toothed element disposed in said housing;

c. a gear adapted to engage said toothed element;

d. means mounted on said housing for driving said gear, said means including a chain and a chain sprocket;

e. means for concurrently rotating and disengaging said gear from said linearly movable element by moving said gear away from said linearly movable element.

3,965,758

CONTROLLABLE PUMPS

Henry F. Hope, and Stephen F. Hope, both of 2548 Wyandotte Road, Willow Grove, Pa. 19090

Filed Nov. 1, 1974, Ser. No. 520,009
Int. Cl.² F16H *21/32*; **F01B** *31/14*
U.S. Cl. 74—41 **19 Claims**

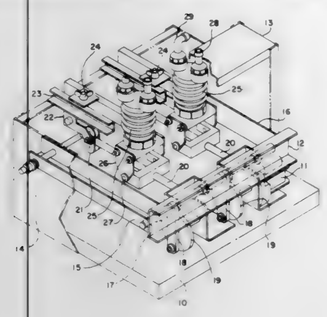
1. In a system for simultaneously reciprocating with controllable stroke lengths a plurality of reciprocable devices:

a plurality of levers for respectively activating the different ones of said reciprocable devices;

means connecting together one end of each said lever for simultaneous reciprocating movement thereof; and

means providing a separate pivot for a portion of each said lever distant from said connected-together end, each pivot means being separately adjustable in position

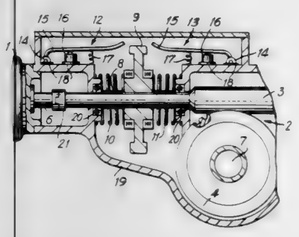
lengthwise of its lever, and each lever having attached to it, between its said connected-together end and adjustable pivot, means for activating the stroke of a respective one of said reciprocating devices.



3,965,759
SAFETY DEVICE FOR THE DRIVE OF A CLOSING MEMBER

Andrei Dmitrievich Plotnikov, ulitsa Zhukovskogo, 38, kv. 18, Leningrad; Viktor Andreevich Soloviev, ulitsa Volkhovskaya, 9, Mga, Leningradskoi oblasti; Tigran Ovanesovich Ter-Mateosiants, Bolshaya Porokhovskaya, 44, korpus 3, kv. 97, and Oleg Nikolaevich Shpakov, ulitsa Prazhskaya, 33, kv. 103, both of Leningrad, all of U.S.S.R.

Continuation of Ser. No. 298,632, Oct. 18, 1972, abandoned. This application Oct. 15, 1974, Ser. No. 515,039
Int. Cl.² F16H *27/02*
U.S. Cl. 74—89.14 **2 Claims**



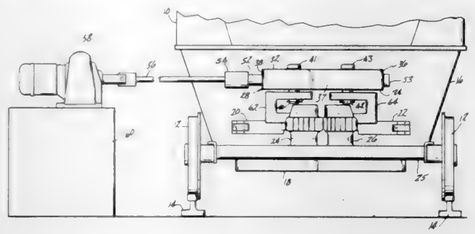
1. A safety device for the drive of a closing member, comprising a switch for the drive and a mechanical overload sensor made in the form of a nut located on a shaft of the drive, said nut being spring-loaded at both end faces thereof; displacement of said sensor along the shaft causing said sensor to interact with the switch arranged to cut said drive out should an overload thereof arise, characterized in that said nut comprising a flywheel having an inertial mass sufficient for providing axial displacement thereof under variations in speed of said shaft, said nut being coupled to said shaft by means of a non-braking thread.

3,965,760
OPERATING APPARATUS FOR SLIDING CLOSURES FOR RAILWAY CAR

Cortez Etheredge, Jr., Augusta, Ga., assignor to Olin Corporation, New Haven, Conn.

Filed Nov. 27, 1974, Ser. No. 527,817
Int. Cl.³ F16H *27/02*
U.S. Cl. 74—89.14 **4 Claims**

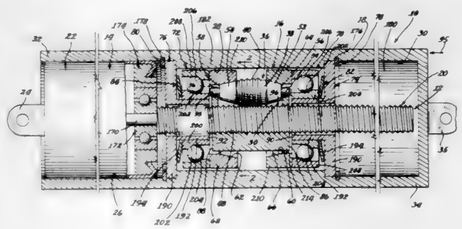
1. In an apparatus for operating the sliding gate of a hopper car having a discharge opening at its lower end, a sliding gate covering said opening, a pair of flexible arms attached to and extending from said sliding gate, a gate gear attached to each of said arms, said gate gears intermeshing with one another, an opening in at least one of said gears, the improvement which comprises a turning means for said gate gears having at least one adapter for insertion in said opening in said gate gears, holding means for said adapter, a worm gear mounted on said holding means, a worm shaft, a worm mounted on said worm shaft for engaging said worm gear, a housing for said worm gear, said housing having openings for said holding means and said worm shaft and attachment means for said holding means and said worm shaft, and means for driving said worm shaft.



3,965,761
LINEAR ACTUATOR

Richard B. Stanley, 4 Coventry on Duxbury, Rolling Meadows, Ill. 60008

Filed Mar. 21, 1974, Ser. No. 453,326
Int. Cl.² F16H *27/02*
U.S. Cl. 74—89.15 **23 Claims**



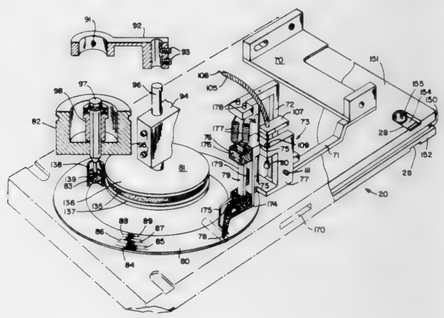
1. A linear actuator comprising:
a threaded shaft member,
a roller bearing assembly received about said shaft member and comprising a plurality of rollers having right flanges along their shanks rolling in threaded engagement with the shaft member threading, and an outer race structure defining spaced apart raceway surfaces, that are oblique relative to the longitudinal axis of said shaft, on which the ends of said rollers respectively ride,
a support mounting said bearing assembly and having a portion of same received about the shaft member which the bearing assembly is secured,
a nut member threaded on said shaft member and formed to freely receive said rollers in spaced apart relation about the shaft,
stop means fixed relative to said bearing unit mounting support and disposed adjacent one end of said nut member,
resilient means for resiliently spacing said nut member from said stop means,
whereby shock loads acting longitudinally of the shaft member in the direction of said stop means effect a yielding of said resilient means to bring said nut member end into bearing relation to said stop means to transmit said shock forces thereto.

one of said members being movable longitudinally of the shaft,
and means for rotating the other member to linearly move said one member through said bearing assembly.

3,965,762
SINGLE SPEED FRICTIONAL DRIVE UNIT WITH MAGNETIC BIASING MEANS

Jiri M. Nessel, Palo Alto, Calif., assignor to Victor Richards, San Francisco, Calif.

Division of Ser. No. 421,986, Dec. 5, 1973, Pat. No. 3,930,654. This application Nov. 21, 1974, Ser. No. 525,775
Int. Cl.² F16H *13/02*, *13/12*
U.S. Cl. 74—206 **4 Claims**

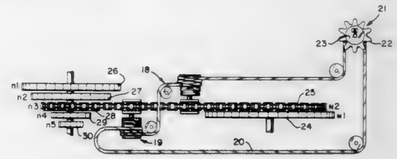


1. Apparatus for imparting rotary movement to a body about a given axis from a rotating shaft having its axis substantially parallel to said given axis, said apparatus comprising:
a. a drive unit in operative engagement with said body including a magnet sandwiched between a pair of circular discs of magnetic material mounted with their centers on said given axis; and
b. a hollow right circular cylinder of magnetic material mounted on said shaft coaxially therewith by means of a resilient annular member extending between said shaft and the inner surface of said hollow right circular cylinder, the exterior surface of said hollow right circular cylinder being in contact with the periphery of at least one of said circular discs.

3,965,763
BICYCLE GEAR SHIFT

Joseph W. Wechsler, 925 Enchanted Way, Pacific Palisades,, Calif. 90272

Continuation-in-part of Ser. No. 479,990, June 17, 1974, Pat. No. 3,901,095. This application May 27, 1975, Ser. No. 580,928
Int. Cl.² B62M *9/00*, *1/02*; **F16H** *7/22*, *9/00*
U.S. Cl. 74—217 B **5 Claims**

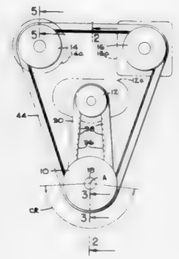


1. In combination with a bicycle having a frame structure mounting handlebars, pedals, and front and rear wheels, an improved gear shift including:
a. a front gear cluster including two gears having N1 and N2 teeth respectively, different in number from each other, coaxially mounted in side-by-side relationship and coupled for rotation by the bicycle pedals;
b. a rear gear cluster including at least two gears having n1 and n2 teeth respectively, different in number from each other, coaxially mounted together in side-by-side relationship and coupled to rotate said rear wheel;
c. a bicycle chain passing over one of the gears in the front gear cluster and one of the gears in the rear gear cluster;
d. a front derailleur means coupled to the bicycle frame structure and to said bicycle chain associated with said front gear cluster;
e. a rear derailleur means coupled to the bicycle frame structure and to said bicycle chain associated with said rear gear cluster;
f. a dial means including a drum mounted on the bicycle for manual rotation by a bicycle rider; and
g. a single continuous actuating cable passing from said drum through the front and rear derailleur means in series and back to said drum such that partial rotation of said drum through a given circumferential distance moves said cable a given distance, said front derailleur means functioning in response to each movement of said cable through said given distance to shift said chain from one of the two gears in said front gear cluster to the other, and said rear derailleur means functioning in response to movement of said cable through twice said given distance to shift said chain from one of the gears in said rear gear cluster to the next adjacent gear, said rear derailleur means thus only effecting a shift once for every two partial rotations of said drum in the same direction through said given circumferential distance.

3,965,764
PIGGYBACK BELT DRIVE ASSEMBLY

Stellios Anthony Avramidis, Greenfield, Ind., assignor to FMC Corporation, San Jose, Calif.

Filed July 5, 1974, Ser. No. 486,262
Int. Cl.² F16H *7/00*, *7/02*
U.S. Cl. 74—221 **5 Claims**

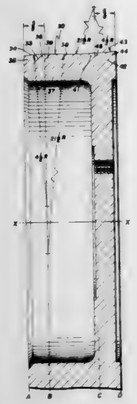


1. A drive system for a plurality of pulleys comprising a pair of endless drive belts received one over the other on at least one of said pulleys, the inner one of said belts on said one pulley received over another of said pulleys, said inner belt having an outer surface with a plurality of alternate longitudinally extending ridges and grooves therein, an outer belt of said pair being received over yet another of said pulleys, said outer belt having an inner surface with a plurality of alternate longitudinally extending grooves and ridges therein, the ridges and grooves on said inner and outer belts received in mating engagement at said one pulley.

3,965,765
PULLEY

Bernard D. Vaillette, Leominster, and William E. Zastawny, South Grafton, Mass., assignors to Cincinnati Milacron-Heald Corporation, Worcester, Mass.

Filed Mar. 17, 1975, Ser. No. 558,630
Int. Cl.² F16H *55/36, 7/18*
U.S. Cl. 74—230.5 **9 Claims**

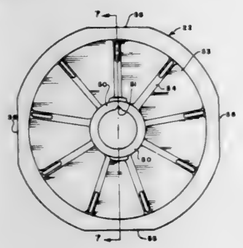


1. A pulley for driving a spindle in conjunction with a flat belt, comprising
   a. a first portion having a surface of revolution that tapers from a large end to a small end,
   b. a second portion having a surface of revolution having a large end and a small end, the large end being located adjacent the large end of the first portion, and
   c. a third portion having a surface of revolution having a large end and a small end, the small end being located adjacent the small end of the second portion, the surfaces of all three portions being composed of circular segments, the surface of the first portion being convex, the surface of the third portion being concave, and the surface of the second portion being convex adjacent the first portion and concave adjacent the third portion.

3,965,766
VARIABLE DRIVE PULLEY CONSTRUCTION

Frederick O. Luenberger, Stratford, Conn., assignor to Emerson Electric Co., St. Louis, Mo.

Filed June 23, 1975, Ser. No. 589,041
Int. Cl.³ F16H *55/52, 55/36*
U.S. Cl. 74—230.17 A **4 Claims**

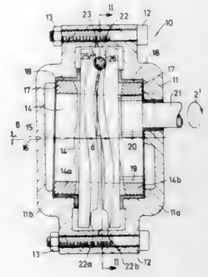


1. In a variable speed drive having a drive pulley and a driven pulley, both of said pulleys having at least one disc movable axially with respect to another disc making up said pulley, said discs having a rim, at least one of said pulleys being housed in an enclosure with an enclosure wall adjacent the perimeter-defining outer edge of the rim of said pulley, the improvement comprising a plurality of substantially chordal flats in the perimeter-defining outer edge of the rim of at least one pulley, said flats being arranged symmetrically about the axis of rotation of said pulley.

3,965,767
DRIVING PULLEY MECHANISM

Johannes Augustus Rinio, 7800 Versailles, 5, Promenade Venezia, Grand-siede, France

Filed Nov. 29, 1973, Ser. No. 420,009
Claims priority, application Germany, Dec. 1, 1972, 2258833
Int. Cl.² A01K *73/06;* **F16H** *55/56*
U.S. Cl. 74—230.24 **7 Claims**

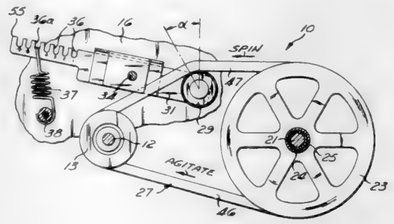


1. A driving pulley mechanism for multiple purpose hauling devices including a driving pulley and a traction cable, said driving pulley consisting of two specularly identical halves inclined toward each other and comprising each one half of a cable groove, the improvement consisting in that said halves are pressed toward each other on opposite sides at the cable supporting apex of their peripheral edges by at least one elastically yieldable clamping device consisting of a pair of pressure rollers mounted rotatably in a fixed frame and wherein said pulley halves are pressed away from each other by a spreading device at least at one point opposite said apex.

3,965,768
SLIPPING BELT CLUTCH

James R. Foster, Webster City, Iowa, assignor to Franklin Manufacturing Company, St. Cloud, Minn.

Filed July 25, 1975, Ser. No. 599,178
Int. Cl.³ F16H *7/12, 7/10*
U.S. Cl. 74—242.11 R **13 Claims**

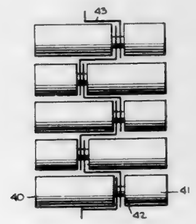


1. In a belt drive system for a washing machine, a reversible drive motor having an output shaft and a drive pulley fixed thereon, a transmission having an input shaft and a driven pulley fixed thereon, said transmission being adapted to effect agitation of articles in a spin tub of the machine when said transmission pulley is driven in a first rotary direction and to effect spinning of the spin tub when said transmission pulley is driven in the opposite rotary direction, a drive belt connecting said pulleys, and means resiliently tensioning one reach of said belt driving said transsmission pulley in the spin direction to limit the level of torque transmitted to said transmission pulley during spin operation by permitting belt slippage when the torque limit is reached, said resilient tensioning means including means for limiting spin torque to a level sufficiently low to result in a reduction of final spin speed when an out-of-balance condition exists in the spin tub, said resilient tensioning means being substantially ineffective to limit tension in an opposite belt reach driving said transmission pulley in the agitation direction whereby full motor power is transmitted to said transmission for agitation operation.

3,965,769
ROLLER CHAINS FOR A CONTINUOUS PRESS

Karl-Heinz Ahrweiler, Krefeld; Valentin Appenzeller, Kempen; Kurt Quoos, Krefeld, and Eduard Küsters, Krefeld-Forstwald, all of Germany, assignors to Eduard Kuesters Maschinenfabrik, Krefeld, Germany

Division of Ser. No. 308,556, Nov. 12, 1972, Pat. No. 3,851,685. This application Nov. 4, 1974, Ser. No. 520,863
Claims priority, application Germany, Nov. 22, 1971, 2157746; Oct. 5, 1972, 2248760
Int. Cl.² G01F *3/14;* **B27D** *3/04*
U.S. Cl. 74—245 R **14 Claims**



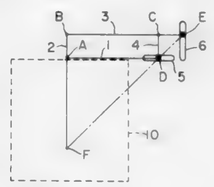
1. A roller chain of the type comprising a plurality of sets of rollers disposed one set behind the other longitudinally in their direction of advance, each set comprising at least two rollers disposed side by side on a pin with links joining successive sets of rollers and establishing the longitudinal spacing therebetween, in which the improvement comprises:
   a. the rollers on each individual pin spaced apart to form at least one gap; and
   b. the links disposed in and maintaining said gaps such that the gaps on successive sets of rollers when viewed longitudinally in the direction of advance of the chain do not form a straight path.

3,965,770
ARM MECHANISM FOR MOVING HEAVY MATERIALS IN A TWO-DIMENSIONAL PLANE

Kenro Motoda, 9-32-4, Kami-Kitazawa, Setagaya, Tokyo, Japan

Continuation-in-part of Ser. No. 460,145, April 11, 1974, abandoned, which is a continuation of Ser. No. 331,387, Feb. 12, 1973, abandoned. This application Dec. 27, 1974, Ser. No. 536,918
Int. Cl.² G05G *9/00*
U.S. Cl. 74—471 XY **6 Claims**

1. An arm mechanism for moving heavy materials in a two dimensional plane which comprises:
   a. a parallelogram link mechanism lying in a two-dimensional plane including an X-axis and a Y-axis, said parallelogram link mechanism having right and left side links arranged in the direction of the Y-axis and upper and lower side links arranged in the direction of the X-axis and rotatably coupled to said right and left side links;
   b. a load holding section provided at a free end of a first arm extended from said upper side link; and
   c. first and second sliding members, respectively provided at a coupling point of said right and lower side links and

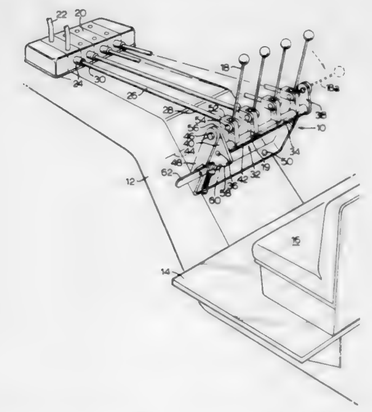


at an intersection point of said left side link and a phantom line connecting said load holding section to the coupling point of said right and lower side links, for sliding in the directions of the X-axis and Y-axis.

3,965,771
ADJUSTABLE HYDRAULIC CONTROL SYSTEM FOR A MOTOR GRADER

John Graham MacDonald, Goderich, Canada, assignor to Dominion Road Machinery Co. Limited, Goderich, Canada

Filed Oct. 15, 1974, Ser. No. 514,566
Int. Cl.² G05G *11/00*
U.S. Cl. 74—479 **9 Claims**



1. An apparatus for changing the neutral position of a control lever comprising:
   1. a bearing having a longitudinal axis;
   2. means for eccentrically mounting said bearing about a central axis which is spaced apart from and parallel to said longitudinal axis, said means for mounting said bearing permitting said bearing to revolve about said central axis;
   3. means for selectively retaining said bearing in a plurality of desired radial positions relative to said central axis;

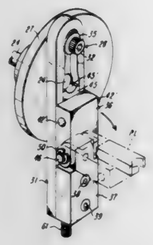
an end of the control lever being secured to said bearing to permit the control lever to pivot about said longitudinal axis, a connecting rod having its first end pivotally connected to the control lever and its second end connected to a device which is to be activated by the control lever; the first end of a connecting rod being positioned on the control lever so that said first end pivots about an axis which is coincident with said central axis; the control lever moving the connecting rod to activate the device when the control lever is pivoted about said longitudinal axis while said bearing remains stationary; and the control lever pivoting about said central axis when

said bearing revolves about said central axis to change the radial position of the control lever relative to said central axis.

3,965,772
SELECTIVE DRIVE CONNECTION FOR A CUTTING APPARATUS

Paul H. Hamisch, Sr., Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 448,094, March 4, 1974, Pat. No. 3,867,861. This application Jan. 10, 1975, Ser. No. 540,042
Int. Cl.² F16C *7/06*
U.S. Cl. 74—586 **4 Claims**

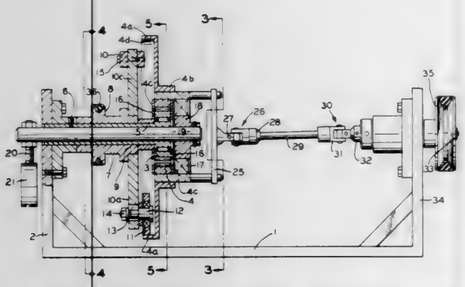


1. Apparatus, comprising: a rod having an elongated slot, a pin driven in a path and received in the slot, a settable member having a drive face, means mounting the settable member to the rod for selective movement between one position in which the drive face of the settable member is in the slot and another position in which the drive face is out of the slot, the pin being effective in the one position to drive the rod upon contact with the drive face and the pin being ineffective to drive the rod when the settable member is in the other position.

3,965,773
POWER TRANSMISSION UNIT

George J. Bert, 26825 Elmwood Ave., Westlake, Ohio 44145; Edward J. Stehle, 7188 Thorncliffe Blvd., Parma, Ohio 44134, and Herbert D. Groth, 1187 Gladys Ave., Lakewood, Ohio 44107

Filed Aug. 26, 1974, Ser. No. 500,639
Int. Cl.³ F16H *1/28*
U.S. Cl. 74—804 **4 Claims**

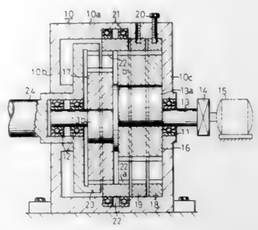


1. A power transmission unit having in combination a base, a fixed external gear mounted on said base, arm carrier means rotatably mounted on said base, at least one roller mounted on said arm carrier means, an internal gear encircling said fixed external gear engaging said fixed gear having an internal circumferential flange surface facing the rotational center of the arm carrier, said roller rollably engaging said internal flange surface effective to provide a slip-free relation therebetween, and means for supporting said internal gear for eccentric movement about said fixed gear.

3,965,774
REDUCTION GEAR APPARATUS

Toshimitsu Omi, and Takashi Omi, both of Anjo, Japan, assignors to Omi Industrial Company, Limited, Japan

Filed Jan. 17, 1975, Ser. No. 541,932
Claims priority, application Japan, Jan. 18, 1974, 49-8722
Int. Cl.² F16H *1/28*
U.S. Cl. 74—805 **3 Claims**

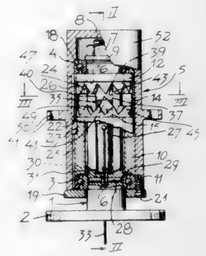


1. A reduction gear apparatus comprising a casing, an input shaft rotatably mounted in said casing having a pair of eccentric shaft portions, a first and second planetary gear rotatably mounted on said eccentric shaft portions of said input shaft, a first and second internal gear positioned in said casing to engage with said first planetary gear respectively, a coupling internal gear rotatably mounted in said casing to engage with said first and second planetary gear, a third internal gear rotatably mounted in said casing to engage with said second planetary gear, an output shaft rotatably mounted in said casing to connected with said third internal gear, means for selectively fixing said first and second internal gear to said casing, whereby said output shaft may be rotated at two different reduction gear ratio.

3,965,775
INDEXING DEVICE

Mordehay Pinkesfeld, 86 Atzmauth St., Ashkelon, Israel

Filed Dec. 27, 1974, Ser. No. 536,882
Int. Cl.² B23B *29/24*; **B23Q** *17/02*
U.S. Cl. 74—827 **4 Claims**

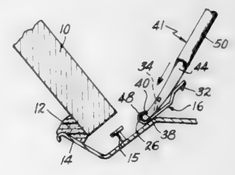


1. An indexing device comprising:
a first body member;
a second body member mounted to said first body member, said first and second body members being movable relative to one another in a first predetermined path;
a driving member mounted for reciprocal movement relative to said body member in a second predetermined path, said first predetermined path being non-parallel with said second predetermined path;
means for coupling said driving member to a source of reciprocatory motion;
driving lug means mounted to said driving member;
a plurality of driven elements coupled to said second body, said driving lug means engaging said driven elements individually and successively in either direction of reciprocation of said driving member to cause intermittent relative motion in one direction in said first predetermined path; and
stop means cooperative between said driving lug means and said driven elements to stop said relative motion in said first predetermined path during each reciprocating stroke of said driving member, said cooperative action occurring when said driving member approaches the end of its travel in one direction thereby preventing further relative motion of said first body member with respect to said second body member in said first predetermined path until said driving member moves in the opposite direction, whereupon said cooperative action also occurs between said driving lug means and said driven elements to prevent further relative motion in said first predetermined path when said driving member approaches the end of its travel in said opposite direction.

3,965,776
TOOL FOR APPLYING RETAINER CLIPS

Charles T. Wolstenholme, R.D. 2, Box 268, Milton, Del. 19968, and Douglas E. Sipple, P.O. Box 62, Georgetown, Del. 19947

Filed Sept. 16, 1975, Ser. No. 613,878
Int. Cl.² B23P *19/08*; **B25B** *27/20*
U.S. Cl. 81—3 R **4 Claims**

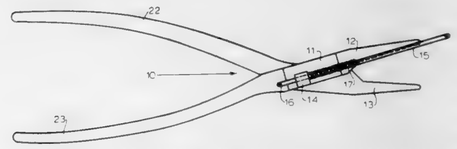


1. A tool for installing a retainer clip including a forward up-turned flange and an upwardly and rearwardly inclined central portion adapted to engage a fixed stud member, the tool comprising a pair of laterally spaced, elongated pusher prongs having vertically offset end portions, generally co-planar rearward portions and undercut inner surface areas along said end portions terminating at downwardly and forwardly sloped rear bevel surfaces, said end portions of said prongs including sections spaced laterally apart less than the total width of the forward up-turned flange of the clip to be installed by the tool, whereby the prongs may both engage said flange at the ends of the prongs during installation of the clip on either side of the central portion of the clip.

3,965,777
BROKEN NEEDLE REMOVAL TOOL FOR KNITTING MACHINES

Charles G. McMillan, Rte. 9, Box 218, Mount Airy, N.C. 27030

Filed Sept. 29, 1975, Ser. No. 617,701
Int. Cl.² B25B *7/00*
U.S. Cl. 81—5.1 R **7 Claims**

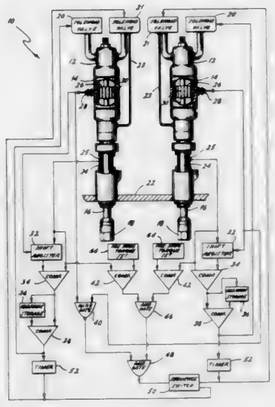


1. A tool for facilitating the removal of a slot-mounted machine element such as a knitting machine needle having a broken butt, comprising in combination:
a. a plier-type tool having on one end opposed pivotally-mounted jaw members having generally opposed flat, planar shaped surfaces for engaging and securely gripping said element and structurally interconnected with said jaws on the opposite end opposed elongated handle members and upon said handle members being forced together pivoting said jaw members together to cause said surfaces of said jaws to engage and securely grip said element; and
b. an element extracting member mounted on said plier-type tool and operable independently of said jaws and comprising:
i. an elongated shaft slidably mounted below and on a selected one of said jaw members of said plier-type tool and being movable longitudinally in a selected plane substantially parallel to the plane of said jaw member on which such shaft is mounted as said jaw members pivot back and forth and having an outward end portion extending forwardly beyond said jaw members, said shaft being arranged so that it may be centered between said jaw members when said jaw members are in a closed position;
ii. a hook tip portion integral with said outward end portion of said elongated shaft and having a width less than the width of the slot in which the element is mounted; and
iii. resilient return means for said extracting shaft arranged to normally hold said tip portion in a forward advanced position.

3,965,778
MULTI-STAGE TIGHTENING SYSTEM

Arthur J. Aspers, Mount Ephriam, N.J., and Robert J. Finkelston, Hatboro, Pa., assignors to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Sept. 19, 1974, Ser. No. 507,544
Int. Cl.² B25B *23/142*
U.S. Cl. 81—52.4 R **25 Claims**



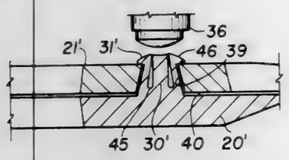
1. A multi-stage tightening system including a plurality of wrenches each adapted to tighten a fastener, means for discontinuing the output of each of said wrenches at an initial predetermined condition, control means operatively associated with each of said wrenches for shutting off said wrenches at a final predetermined condition, and interface means operatively associated with said control means for determining when all of said wrenches have discontinued their output, including checking means for determining if all of said wrenches have provided an output, and for thereafter reactivating said wrenches if each of said wrenches maintains some

minimum output, whereby said control means can shut off said wrenches at said final predetermined condition.

3,965,779
CAST ARTICULATED TOOL

Karl Hannes, White Plains, and Paul C. Rossi, Franklin Square, both of N.Y., assignors to Coats & Clark, Inc., Stamford, Conn.

Division of Ser. No. 434,106, Jan. 17, 1974, Pat. No. 3,880,021. This application Dec. 26, 1974, Ser. No. 536,357
Int. Cl.² B25B *7/08*
U.S. Cl. 81—416 **9 Claims**

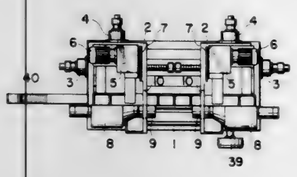


1. A cast articulated tool comprising first and second cast members, said first member having a continuously linearly tapered aperture extending therethrough, said second member having a pin with an enlarged head extending from one side thereof formed integrally with said second member, said pin being tapered with the larger diameter end thereof toward said second member, the tapered portion of said pin having a form corresponding to the form of said aperture and being fitted within said aperture to form an articulated joint between said members, said tapered portion of said pin being continuously tapered in the same direction in the portion thereof fitted in said aperture, whereby said enlarged head inhibits separation of said members.

3,965,780
WORK REST DEVICE FOR USE IN A CRANK PIN MILLER

Shingo Yamada, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed July 17, 1975, Ser. No. 596,667
Claims priority, application Japan, July 17, 1974, 49-81174
Int. Cl.² B23B *5/18, 25/00*
U.S. Cl. 82—9 **5 Claims**

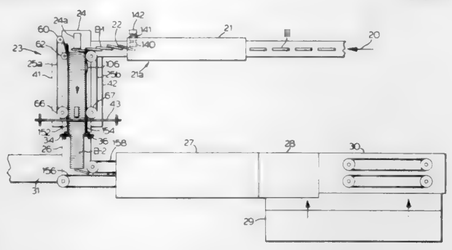


1. A work rest device for use in a crank pin miller which comprises;
- a pair of saddles mounted on a bed of the miller and moved in longitudinal and transverse directions of the bed;
- a pair of main bodies of said device mounted on said saddles, respectively, each of said bodies having a work clamping means for clamping a main journal part of a work adjoining a pin journal part of the work to be cut;
- a spline shaft connected through gears to an electric motor for rotating said work; and
- a gear train provided between said work clamping means and said spline shaft for rotating said work clamping means at the synchronous rotating speed with that of said work.

3,965,781
BANDSAW BOOK TRIMMER

William Felix Stroud, deceased, late of McKellar, Canada (by Lois Evelyn Stroud, executrix), and Edward John Stroud, McKellar, Canada, assignors to Stroud Graphic Equipment Limited, McKellar, Canada

Continuation-in-part of Ser. No. 318,617, Dec. 26, 1972, Pat. No. 3,888,150. This application Mar. 31, 1975, Ser. No. 563,425
Claims priority, application United Kingdom, Jan. 1, 1972, 15; Apr. 9, 1974, 15627/74
Int. Cl.² B26D *1/52*
U.S. Cl. 83—13 **9 Claims**

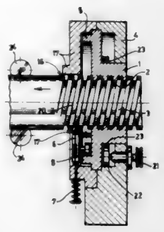


1. A method of trimming selvage from a plurality of books including the following steps: providing a saw having a pair of oppositely facing surfaces which merge at a cutting edge, one said surface having first and second portions, said first portion extending from a base of said saw to said second portion and being disposed substantially in a plane parallel to the cutting run of said saw and said second portion extending from said first portion to said cutting edge, the other said surface being oriented at an oblique angle to said cutting run plane; causing said books to advance downstream to said saw; positioning said saw relative to said books such that the cutting run of said saw is both normal to the direction of advance of said books and is substantially parallel to the plane of the pages of said books and such that said one surface faces pages to be trimmed by said saw and the other said surface faces selvage to be trimmed by said saw; and trimming said books by means of said saw.

3,965,782
MANUFACTURING CORRUGATED PERFORATED PLASTIC TUBE

Arnoldus Willem Jan Leloux, Dedemsvaart, Netherlands, assignor to Wavin B.V., Netherlands

Filed July 10, 1974, Ser. No. 487,201
Claims priority, application Netherlands, July 16, 1973, 7309844
Int. Cl.³ B26D *7/10;* **B26F** *1/00*
U.S. Cl. 83—15 **6 Claims**

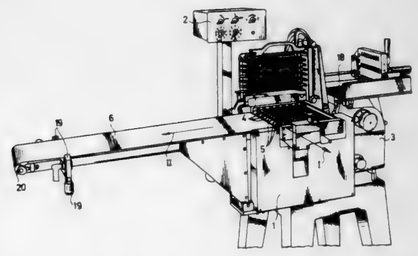


1. A method of forming perforations in a corrugated plastic tube, comprising the steps of:
- supporting said corrugated plastic tube only from the exterior thereof;
- passing said corrugated plastic tube through a guide member;
- supporting said corrugated plastic tube on more than one side of the region where said corrugated plastic tube is to be perforated; and
- subjecting said corrugated plastic tube to the simultaneous action of at least two substantially parallel punching members which point in substantially the same direction and which lie substantially in a plane which is oriented substantially transverse to the longitudinal axis of said corrugated plastic tube to form said perforations therein.

3,965,783
AUTOMATIC SLICING MACHINE FOR FOOD STUFFS

Ernst Muller, and Albrecht Maurer, both of Balingen, Germany, assignors to Bizerba-Werke Wilhelm Kraut K.G., Balingen, Wurttemberg, Germany

Filed Mar. 17, 1975, Ser. No. 559,366
Claims priority, application Germany, Mar. 21, 1974, 2413711
Int. Cl.² B26D *4/46*
U.S. Cl. 83—88 **9 Claims**



1. In combination with a food slicing machine having a rotating slicing blade for cutting food stock such as meats and cheese and an advancable and transversely reciprocable carriage for support and movement of the food stock toward as well as transversely across the cutting edge of the slicing blade to cut and supply in sequence severed slices of such stock, a slice removing means disposed in the slice release region of said blade comprising a linearly moveable planar deposit surface comprising a plurality of parallel side-by-side spaced individual transport belts providing individual longitudinal surfaces each moveable linearly in a direction away from said slicing blade, said deposit transport belts having associated interspaced rolls below said belts moveable into a position of projection above the deposit surface level of said belts for lifting of foodstuffs from said belts and movement thereof transversely to the direction of movement of said belts.

3,965,784
BLANKING DIE AND HOLDER CONSTRUCTION FOR PUNCH PRESSES

Joseph Marconi, 428 S. Jensen Road, Vestal, N.Y. 13850

Continuation-in-part of Ser. No. 317,236, Dec. 21, 1972, abandoned. This application Apr. 3, 1975, Ser. No. 564,658
Int. Cl.³ B26D *7/06;* **B26F** *1/14*
U.S. Cl. 83—157 **3 Claims**

1. A blanking die comprising a die plate having at least one die opening to cooperate with the punch of a press, a holder for said die having a bottom wall and side walls defining a space beneath said die, a shuttle plate in said holder mounted for movement within said space to an inward position in which it underlies said die and to an outward position in which it is entirely removed from beneath said die opening, said shuttle

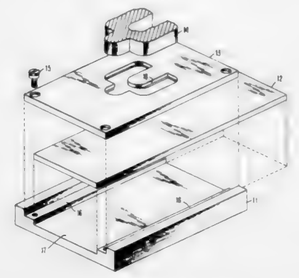
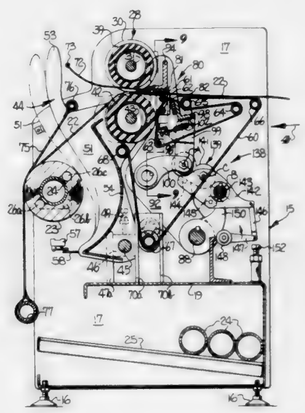


plate performing the function in its inward position of supporting said die during blanking operation.

3,965,785
APPARATUS FOR CUTTING SHEET MATERIAL

Herman S. Johns, Gastonia, N.C., assignor to Medical Specialties, Inc., Charlotte, N.C.

Filed Feb. 26, 1975, Ser. No. 553,444
Int. Cl.² B26D *1/56;* **B23D** *25/06*
U.S. Cl. 83—316 **26 Claims**

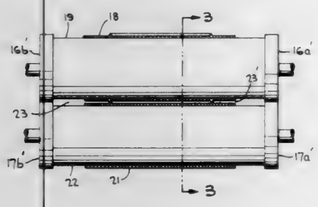


1. An apparatus for accurately and efficiently cutting a continuous web of sheet material into individual cut segments of predetermined length and having provision for readily adjusting the length of the cut segments between wide limits, said apparatus comprising
- a frame,
- means carried by said frame for continuously feeding the web along a predetermined path of travel,
- knife means extending transversely across said path of travel for cutting the web of sheet material into individual cut segments,
- means for mounting said knife means on said frame such that said knife means may be periodically reciprocated forwardly and rearwardly to define a stroke which extends along a direction substantially parallel to said path of travel of the web of sheet material, said mounting means including a cam follower surface,
- means for periodically reciprocating said knife means along said stroke, and comprising an endless non-slip belt carried by said frame for translation about a predetermined

trackway, means for continuously translating said belt about said trackway at a predetermined speed, and cam means carried by said belt for engaging said cam follower surface during a portion of the movement thereof along said trackway to thereby reciprocate said knife means along said stroke at a forward speed substantially corresponding to the speed at which the web is advanced by said feeding means, and

means for actuating said knife means during each forward reciprocation thereof.

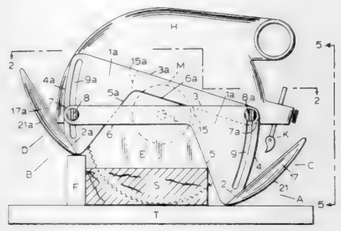
3,965,786
ROTARY DIE CUTTER
Emil D'Luhy, Youngstown, N.Y., assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.
Filed July 16, 1974, Ser. No. 489,045
Int. Cl.² B23D 25/12
U.S. Cl. 83—346 **6 Claims**



1. A rotary die cutting apparatus, comprising a rotatably mounted plate cylinder having die cutting means thereon, said die cutting means comprising a die cutting pattern including cutting edges lying both parallel and transverse to the longitudinal axis of said plate cylinder, a rotatably mounted cooperating anvil cylinder spaced from said plate cylinder, contacting bearer plates on said cylinders for maintaining said cylinders a fixed distance apart during rotation of said cylinders about their respective longitudinal axes, an anvil plate of substantially uniform thickness removably secured along the periphery of said anvil cylinder and disposed adjacent said pattern, the clearance between said anvil plate and said die cutting means being determined by the thickness of said anvil plate, whereby an interference fit as well as a gap may be provided as said clearance depending on the thickness of said anvil plate for respectively effecting a clear-through die cut and a partial die cut of at least one web arranged for movement between said cylinders, and whereby any contact between said die cutting means and said anvil cylinder is avoided by means of said anvil plate.

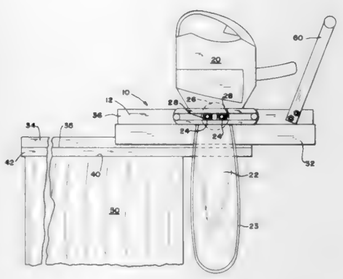
3,965,787
RETRACTABLE BLADE GUARD
Eugene W. Plischke, 99-549 Pohue Place, Aiea, Hawaii 96701
Filed Dec. 15, 1975, Ser. No. 640,850
Int. Cl.² B27G 19/04
U.S. Cl. 83—478 **10 Claims**

1. A retractable blade guard for use as a lower safety guard of a rotary power cutting tool comprising a guard section and securing means for pivotally mounting the guard section on the hood guard of said cutting tool; the guard section has an obverse leaf, a reverse leaf, a rod and an extension; the obverse leaf is rigidly connected to the reverse leaf in the vicinity of their lowest contact points by the rod and the extension; the guard section is arranged to pivot about an axis which is located beyond the circumference of the cutting tool; the guard section is arranged to shield a portion of the arc of travel of said cutting tool; and the guard section is arranged to automatically adjust itself to the thickness of a stock being cut and



remain in contact with the stock being cut to give maximum protection possible during the operation of said cutting tool.

3,965,788
LUMBER MAKING ATTACHMENT
Elof Granberg, 201 Nevin Ave., Richmond, Calif. 94801
Continuation-in-part of Ser. No. 417,603, Nov. 20, 1973, abandoned. This application June 11, 1974, Ser. No. 478,245
Int. Cl.² B27B 17/02, 27/02
U.S. Cl. 83—745 **4 Claims**



1. A lumber making attachment for use in cutting lumber with a chain saw comprising

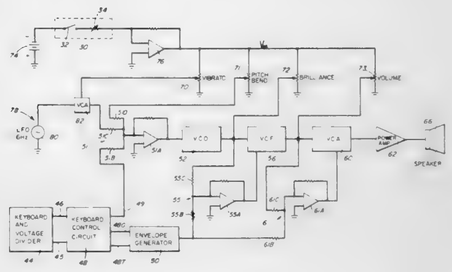
an elongated longitudinal support member having an elongated guide bearing runner secured to the underside thereof, said guide bearing runner having a longitudinal inverted "V" shaped groove formed in the underside thereof for slidably engaging a mating guide member positioned on the upper surface of said lumber whereby said guide member can be comprised of a single piece of angle iron disposed longitudinally on said lumber with its V back inverted and pointing upward for mating with said elongated guide bearing runner,

at least two elongated horizontal crossmembers secured to and extending in opposite directions from said support member, and engaging a stabilization rail mounted in spaced relation and substantially parallel to said guide bearing runner and support member, said stabilization rail being adapted to slide along a planar surface disposed perpendicular to the cut to be made in the lumber by the chain saw for rigidly supporting the cutter bar of the chain saw with respect to said lumber,

an elongated clamping bar mounted to said horizontal crossmembers on the side of said support member opposite said stabilization rail, said clamping bar being adjustably movable along said crossmembers with respect to said support member for securing the cutter bar of the chain saw therebetween, a first clamping plate being secured to said support member substantially midway between said horizontal crossmembers and a second clamping plate being secured to said clamping bar substantially opposed to said first clamping plate whereby the saw bar of said chain saw can be rigidly secured by said plates parallel and at any preselected angulation with respect to said support member and guide bearing runner, and

a push bar secured to said frame for moving said support member and the chain saw along the guide member.

3,965,789
ELECTRONIC MUSICAL INSTRUMENT EFFECTS CONTROL
Alan R. Pearlman, Newton Highlands, Mass., assignor to ARP Instruments, Inc., Newton, Mass.
Filed Feb. 1, 1974, Ser. No. 438,780
Int. Cl.² G10H 1/04, 5/02
U.S. Cl. 84—1.24 **6 Claims**



1. For an electronic musical instrument having a keyboard, means coupled from the keyboard and responsive to a minimum key pressure for providing an audio signal, and means responsive to the audio signal for generating an audible tone corresponding to the played key, effect control means comprising;

transducer means operatively associated with the keyboard and having a conductance that is variable in accordance with pressure applied to a key of the keyboard, said transducer means being disposed relative to said keyboard so as to be operative only at applied pressure above a predetermined threshold pressure, which predetermined threshold pressure is greater than said minimum key pressure,

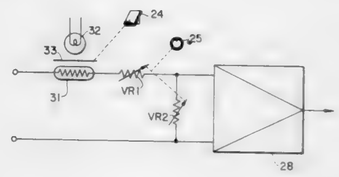
means coupled from said transducer means for establishing a control level signal that is variable in accordance with pressure applied above said threshold pressure,

a plurality of separate selection means each one for introducing a different audio effect, at least one of said selection means being selectable,

each of said selection means being responsive to said control level signal and producing an audio effect signal that is variable in accordance with said control level signal,

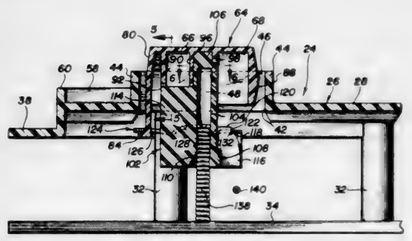
and means coupled from said selection means for altering said audio signal in accordance with at least one of said audio effect signals to thereby introduce the selected audio effect in the audible tone.

3,965,790
ELECTRONIC MUSICAL INSTRUMENT HAVING DYNAMIC RANGE VARIABLE EXPRESSION CONTROL
Shigeru Suzuki, and Takeshi Adachi, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Sept. 4, 1974, Ser. No. 503,529
Claims priority, application Japan, Sept. 5, 1973, 48-99927; Nov. 14, 1973, 48-128016; Dec. 14, 1973, 48-144010[U]; Dec. 14, 1973, 48-140685
Int. Cl.² G10H 1/02; H01P 1/22
U.S. Cl. 84—1.27 **13 Claims**



1. An electronic musical instrument comprising means defining at least one tone signal path for passing a tone signal therethrough, said path including an output terminal and an expression control circuitry, said circuitry having a first variable impedance element for selectively varying the level of the tone signal passing through said path and a variable impedance network, said variable impedance network being connected to said first variable impedance element for adjusting, independently of the variation of said level, the variation range of the tone signal at said output terminal.

3,965,791
STOP TABLET ASSEMBLY
Howard M. Thomas, North Tonawanda, and Richard A. Borowiec, Grand Island, both of N.Y., assignors to The Wurlitzer Company, Chicago, Ill.
Filed June 19, 1974, Ser. No. 481,114
Int. Cl.² G10B 3/10; G10H 1/00
U.S. Cl. 84—343 **12 Claims**

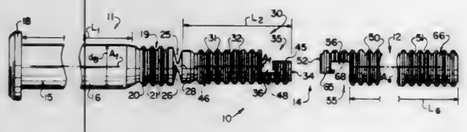


1. In an electronic musical instrument, the combination comprising a stop tablet assembly including a base, means on said base for receiving a stop tablet and including pivotal mounting means, a stop tablet, pivot means on said stop tablet cooperable with said pivotal mounting means rockably to mount said stop tablet on said base, and spring means acting between said base and said stop tablet and engaging said stop tablet below said pivot means to simultaneously bias said stop tablet pivot means against said pivotal mounting means, secure said stop tablet to said base, and provide an overcentering action to rocking of said stop tablet.

3,965,792
SPLIT PINTAIL FASTENER ASSEMBLY

John O. King, Jr., 3990 N. Ivy Road, Atlanta, Ga. 30342

Filed Jan. 17, 1975, Ser. No. 542,074
Int. Cl.² F16B 19/05
U.S. Cl. 85—7 4 Claims



1. A fastener assembly adapted to be installed through prescribed diameter aligned holes in work pieces having a prescribed combined thickness by pulling the assembly into position with a lockbolt installation gun comprising:

an elongate fastener having a fastener central axis and a leading end, and including a bearing section concentrically oriented about said central axis and having a bearing diameter larger than the prescribed hole diameter so that the bearing section must be forced into the holes and be in bearing contact with the holes through the work pieces, said bearing section having a first prescribed length substantially equal to the combined thickness of the work pieces; a head at one end of said bearing section adapted to engage the work pieces when said fastener is installed through the aligned holes; an engagement section at that end of said bearing section opposite said head concentrically oriented about said central axis coaxially with said bearing section and adapted to be engaged to hold said fastener in place in the work pieces, a frangible breakneck section at the leading end of said engagement section opposite said bearing section concentrically oriented about said central axis coaxially with said engagement section and said bearing section and having a prescribed reduced breakneck diameter substantially smaller than said bearing diameter to form a first minimum prescribed cross-sectional area which causes said breakneck section to fracture upon a prescribed axial load exerted thereon by the lockbolt installation tool; and a generally cylindrical pintail section having a leading end and a trailing end adapted to be engaged by the lockbolt installation gun leading said engagement section and concentrically oriented about said central axis coaxially with said engagement section and said bearing section, the trailing end of said pintail section connected to said engagement section through said breakneck section so that said pintail section is removed from said engagement section upon fracture of said breakneck section, said pintail section having a pintail diameter at least as small as the hole diameter, said pintail section having a second length shorter than said first length so that the leading end of said pintail section does not protrude through the holes when the leading end of said fastener is inserted in the holes until the leading end of said bearing section engages the work pieces about one end of the aligned holes, said pintail section defining a first recess at the leading end thereof extending transversely of said central axis along a chord of said pintail section, said first recess opening onto the leading end of said pintail section and along the periphery of said pintail section, said first recess having a depth less than one-half of said pintail diameter and a first prescribed pintail recess length from its leading end to its trailing end, said pintail section further defining a first channel therein transversely extending across said pintail section and having a trailing end and a leading end, said first channel opening into said first recess adjacent the trailing end thereof, said pintail section further comprising a driven shoulder at the leading end thereof defined by said first recess and said first channel, said driven shoulder adjacent said first channel at the leading end of said first channel, and said pintail section further comprising a first spacer section extending across said first channel opposite said first recess and connecting said driven shoulder to the remainder of said pintail section, said first spacer section having a second minimum prescribed cross-sectional area greater than said first prescribed cross-sectional area of said breakneck section to prevent fracture of said first spacer section prior to fracture of said breakneck section under axial loading; and,

a generally cylindrical pintail extension coaxially aligned with the leading end of said pintail section having a leading end and a trailing end adapted to be engaged by the lockbolt installation gun, said pintail extension concentrically oriented about a second central axis coaxial with said first central axis, said pintail extension having an extension diameter at least as small as the hole diameter, said pintail extension having a third length so that the leading end of said pintail extension protrudes through the holes when the leading end of said fastener is inserted in the holes until the leading end of said bearing section engages the workpieces about one end of the aligned holes, said pintail extension defining a second recess at the trailing end thereof extending transversely of said second central axis along a chord of said pintail extension, said second recess opening onto the trailing end of said pintail extension and along the periphery of said pintail extension, said second recess having a depth less than one-half of said extension diameter and a second prescribed pintail recess length from its leading end to its trailing end substantially equal to said first recess length, said pintail extension further defining a second channel therein transversely extending across said pintail extension and having a trailing end and a leading end, said second channel opening into said second recess adjacent the leading end thereof, said pintail extension further comprising a driving shoulder at the trailing end thereof defined by said second recess and said second channel, said driving shoulder adjacent said second channel at the trailing end of said second channel, and said pintail extension further comprising a second spacer section extending across said second channel opposite said second recess and connecting said driving shoulder to the remainder of said pintail extension, said second spacer section having a third minimum prescribed cross-sectional area greater than said first prescribed cross-sectional area of said breakneck section to prevent fracture of said second spacer section prior to fracture of said breakneck section under axial loading, said driving shoulder in said first channel and said driven shoulder in said second channel so that the exertion of an axial load on said pintail extension exerts an axial load on said fastener to force said fastener into said holes

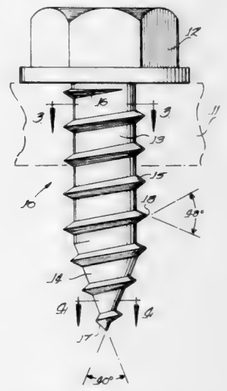
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3,965,793
PARTICLEBOARD SCREW

Kenneth L. Roser, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Continuation of Ser. No. 205,836, Dec. 8, 1971, abandoned.
This application Oct. 18, 1973, Ser. No. 407,424
Int. Cl.² F16B 25/00
U.S. Cl. 85—41 1 Claim

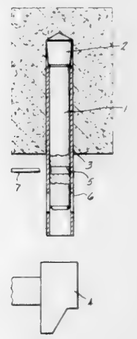
1. A threaded fastener formed by roll thread methods for use in particleboard and similar materials comprising a cylindrical shank having a driving head at one end and a gimlet-type point at the opposite end, said point having an included angle of about 40° and a helical thread on the shank and point of constant depth except where the thread merges into the shank adjacent the head, said thread having a generally sharp crest with an included angle of approximately 48° and a substantially cylindrical and relatively wide root between each thread turn with the ratio of root diameter to pitch being substantially in the range of 1.2 to 1.6 and varying substantially uniformly and inversely as the ratio of the major diameter to the root diameter varies in the range of 1.5 to 1.7, said thread having a constant depth on the point with a decreasing major diameter and a thread crest with an approximately 48° included angle.



3,965,794
EXPANDABLE PLUG

Roger Dorgnon, Avenue de St. Romains de Lerps 07130, Saint Peray, France

Filed Mar. 10, 1975, Ser. No. 557,212
Claims priority, application France, Mar. 13, 1974, 74.08467
Int. Cl.² F16B 13/06
U.S. Cl. 85—77 5 Claims

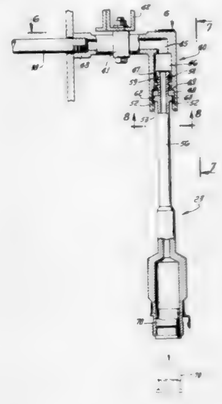


1. An expandable plug for use as an attachment point for a cable or the like comprising a cylindrical socket member, one end of said socket member being split to form at least one joint which expands into tight engagement with the wall of a hole formed in a supporting material to set the plug in the supporting material, a male member located in said socket, means on at least one of said members for causing expansion of said one end of said socket member upon relative axial movement of the members in one directon to set the plug, at least one of said members being provided with a diametrical hole for reception of a cable or the like, said members each being predetermined lengths such that one of the members prevents a cable or the like from being passed through said hole until a predetermined amount of relative axial movement sufficient to set the plug in said one direction has taken place between said members.

3,965,795
BREECH CARTRIDGE REMOVER

Arthur Collins, 1395 Stardust No. 5, Reno, Nev. 89503

Filed Mar. 22, 1974, Ser. No. 453,870
Int. Cl.² F41F 5/00; B23P 19/00
U.S. Cl. 89—1.5 F 7 Claims

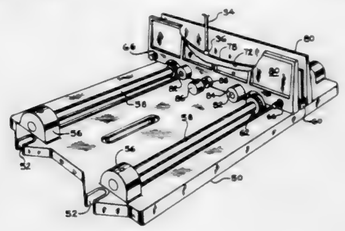


6. Apparatus for removing expended cartridges from breeches of bomb rack explosive ejector devices comprising an air driven hydraulic pump providing a source of hydraulic power, coupling means providing communication between the hydraulic source and the forward end of a breech, said coupling means including a flexible high pressure conduit and an adapter for removably connecting to the forward end of the breech, and said breech being adapted to have a cartridge in the rearward end thereof, said coupling means being adapted to deliver liquid under pressure from the hydraulic pump to against the interior end of the cartridge.

3,965,796
MACHINE TOOL TRACER CONTROL SYSTEM

Cecil J. Putnam, Jr., Union City, Mich., assignor to Putnam Pattern & Engineering Co., Coldwater, Mich.

Filed Dec. 5, 1974, Ser. No. 545,009
Int. Cl.² B23C 1/16
U.S. Cl. 90—13 R 5 Claims



1. A machine tool tracer control system for machining three-dimensional contours having a uniform transverse cross section throughout the length thereof comprising, in combination, a machine tool having cutting tool means and work support means, drive apparatus producing relative movement between said cutting tool means and said work support means in the direction of the length of the contour to be formed and transversely thereto, a servo-motor tracer control fixed with respect to one of said means having a universally movable template engaging stylus connected to and controlling operation of said drive apparatus, a template support fixed with respect to the other of said means, linear elongated guide rods

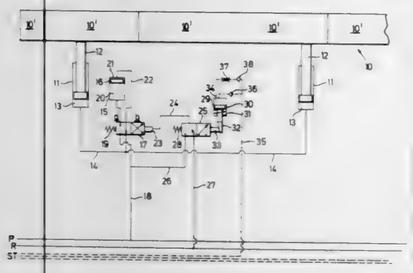
mounted upon said template support disposed parallel to the length of the contour to be formed, a template carriage movably mounted upon said guide rods for movement in the direction of the length thereof, a template mounted upon said carriage having a contour defined thereon corresponding in cross section to the contour to be machined, a pair of parallel planar spaced surfaces defined on said template carriage perpendicular to the length of the contour to be machined and disposed on opposite sides of said template in the direction of the plane of the contour to be formed for positioning said carriage along said guide rods, means engaging said stylus preventing movement of said stylus relative to said tracer control in the direction parallel to the length of the contour to be machined, said stylus engaging said template and closely slidably received between said parallel spaced surfaces whereby said stylus maintains said carriage and template in a predetermined position relative to said tracer during relative movement of said cutting tool means and said work support means in the direction parallel to the length of the contour to be machined, said parallel spaced surfaces and stylus permitting relative movement between said cutting tool means and said work support means in a direction transverse to the length of the contour to be machined.

3,965,797

CONTROL SYSTEMS AND ARRANGEMENTS FOR USE IN MINERAL MINING INSTALLATIONS

Hans Theodor Grisebach, Unna, Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Westphalia, Germany

Filed Dec. 10, 1973, Ser. No. 423,483
Int. Cl.² F15B *13/04*
U.S. Cl. 91—32 **17 Claims**



1. In a mining installation utilizing a plurality of shifting rams arranged in a mine working and serving to displace mining apparatus through a predetermined distance, each ram having a working chamber which is charged with pressure fluid to extend the ram; an improved control system for operating the rams and effecting fine control of the displacement of the mining apparatus through said predetermined distance, said system comprising pressure fluid conduit means for supplying pressure fluid used for operating the rams, a plurality of apportioning devices each allocated to at least one of the rams, each apportioning device being in the form of a cylinder containing a piston and first and second working chambers in the cylinder on either side of the piston, means for alternately connecting the first working chamber of each apportioning device to the pressure fluid supply conduit means and the second working chamber of each apportioning device to the working chamber of the at least one associated ram and vice versa, actuating means for causing the connecting means to cycle, control signal means for producing and transmitting successive control signals to the actuating means to repetitively cycle the connecting means to cause the associated apportioning device to cyclically move its piston back and forth to expel two predetermined non-variable quantities of pressure fluid from the working chambers of the apportioning device through the connecting means to the working chamber of the at least one associated ram, the quantities of pressure fluid for each cycle producing a collective volume of pressure fluid which is a fraction of the volume of fluid necessary to displace the mining apparatus through the said predetermined distance, each ram extending a fraction of the predetermined distance in small increments each corresponding to one cycle of operation, the distance by which the ram is extended being finely controlled by the total number of cycles which is determined by the number of control signals transmitted to the actuating means.

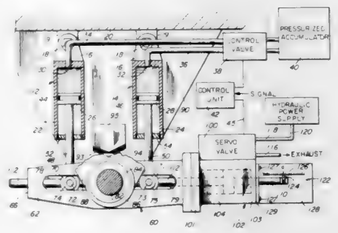
11. In a mining installation utilizing a plurality of shifting rams arranged in a mine working and serving to displace a mineral cutting appliance through a defined cutting depth, the combination of pressure fluid supply and return conduit means for supplying and receiving pressure fluid used for operating the rams, a plurality of apportioning devices each operatively connected to at least one of the rams, each apportioning device being composed of a cylinder containing a piston with first and second working chambers in the cylinder on opposite sides of the piston, the two working chambers of the apportioning device having a combined volume which is smaller than a working chamber of said at least one ram which is charged with pressure fluid, means for alternately connecting one working chamber of the apportioning device to the working chamber of said at least one ram and for connecting the other working chamber of the apportioning device to the pressure fluid supply means, the apportioning device feeding non-variable quantities of pressure fluid in successive doses to the working chamber of said at least one ram, each dose of pressure fluid being a fixed incremental fraction of the quantity of fluid necessary to displace the mineral cutting appliance through a distance corresponding to the defined cutting depth of the appliance, means for producing separate control signals, actuating means energized by the control signals for causing the connecting means to perform repetitive connecting cycles in accordance with the number of control signals received by the actuating means to thereby cause the associated apportioning device to transfer doses of fluid to the working chamber of said at least one ram to extend the ram through successive increments each corresponding to one dose of fluid.

3,965,798

ADAPTIVE ACTUATOR SYSTEM

Raymond J. Estlick, Winchester, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed July 2, 1973, Ser. No. 376,051
Int. Cl.² F01B *1/00*
U.S. Cl. 91—172 **11 Claims**



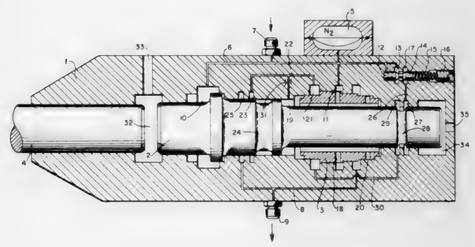
1. An adaptive actuator system adaptive to a variable load, and comprising:
- a rotatable shaft disposed for coupling to the load and having a rotational bias applied thereto;
- variable torque biasing means coupled to the shaft for cooperating with the load and providing a torque for rotating the shaft in a complying angular direction;
- variable counter torque biasing means including an adjustable moment arm coupled to the shaft for opposing rotation of the shaft in said complying angular direction and providing a proportional counter torque for rotating the shaft in the opposing angular direction; and
- torque control means coupled to the torque biasing means and the counter torque biasing means for varying one with respect to the other and producing a preferred rotation of the shaft, and including means for sensing the rotation of the shaft to determine the magnitude of counter torque required.

3,965,799

HYDRAULICALLY OPERATED PERCUSSION DEVICE

Esko Juvonen, and Pentti Virtanen, both of Lahti, Finland, assignors to Roxon Oy, Messilantie, Finland

Filed Sept. 11, 1974, Ser. No. 505,028
Claims priority, application Finland, Sept. 14, 1973, 2866/73
Int. Cl.² F01B *25/04*; **F01L** *17/00, 25/04*; **F01B** *7/18*
U.S. Cl. 91—220 **2 Claims**



1. Improvement in a hydraulically driven percussion device of the type for operation from a source of high pressure fluid and comprising a piston reciprocally movable within a body for striking against a tool, said piston defining with reference to the body two cylindrical chambers within which the piston moves, one of which chambers continuously communicates with the high pressure fluid, and distribution means for alternatingly connecting the other of said chambers to the high pressure fluid supply and a low pressure fluid supply, wherein the improvement comprises means for venting both ends of the piston to the low pressure fluid supply, said distribution means being located within one of the chambers and comprising a sleeve surrounding at least a portion of said piston, in order to move into a position such that movement of the piston directed towards the tool becomes possible, is controlled by means of grooves provided in the piston and in the body when the piston is in its end position farthest removed from the tool and only on condition that the pressure of the high pressure fluid supply exceeds a pressure set with an adjustable means incorporated in the body.

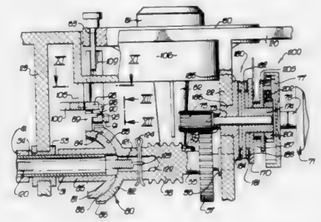
3,965,800

WATER POWERED DRIVE FOR AUTOMATIC CONTROLLERS

Edwin J. Hunter, Riverside, Calif., assignor to The Toro Company, San Marcos, Calif.

Division of Ser. No. 418,309, Nov. 23, 1973, which is a division of Ser. No. 190,528, Oct. 19, 1971, Pat. No. 3,827,459. This application Dec. 5, 1974, Ser. No. 529,698
Int. Cl.² F01B *25/06*
U.S. Cl. 91—336 **7 Claims**

1. A drive means for operating an automatic controller apparatus having a power input shaft, comprising:
- water powered means for receiving water under varying pressure from a source thereof and having a member driven by the force of said water thereon, said water powered means including means for supplying water to and exhausting water therefrom;
- power transmission means for driving said controller apparatus shaft in response to movement of said member under the action of said water;
- means for regulating the supply of water under said varying pressure to said water powered means for providing a virtually constant speed drive to said apparatus input shaft; and
- speed control means for automatically controlling the speed of driving of said controller apparatus shaft under the forces of said water powered means acting through said



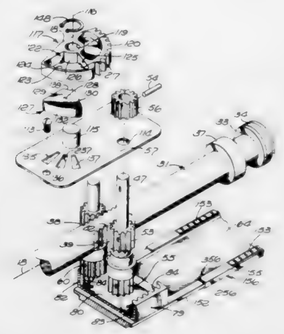
power transmission means to a predetermined rate by controlling said water regulating means, said speed control means including an escapement mechanism having a shaft having a maximum speed, means for driving said escapement mechanism shaft from said power transmission means responsive to the speed thereof, and control means movable in response to speed of said transmission means in excess of the maximum speed determined by the escapement mechanism and operatively connected to said water regulating means.

3,965,801

STRAIGHT LINE ABRADING TOOL

Alma A. Hutchins, 49 N. Lotus Ave., Pasadena, Calif. 91107

Division of Ser. No. 498,534, Aug. 19, 1974, Pat. No. 3,932,963. This application Jan. 27, 1975, Ser. No. 544,267
Int. Cl.² F01L *31/18*; **F16K** *31/16*
U.S. Cl. 91—351 **14 Claims**



1. Apparatus comprising:
- a structure reciprocable by pressure fluid alternately admitted to two different chambers;
- means forming a surface containing fluid passing valving apertures;
- an actuating part mounted for limited rotary oscillating movement about a predetermined axis and near said surface;
- a valve element slidable across and relative to said surface in a relation controlling the fluid flow through said apertures to produce said reciprocation, and connected to siad actuating part for oscillation thereby;

said actuating part being free from limited turning movement about said axis relative to said valve element so that upon movement in each rotary direction said part first turns through a predetermined angle without displacing said valve element and then turns through a further angle with the valve element to shift it relative to said surface and apertures;

said apertures including two circularly spaced apertures communicating with said two chambers respectively to deliver pressure fluid thereto, and a circularly intermediate aperture communication with the atmosphere;

said actuating part containing a confining recess loosely receiving said valve element for lost motion of the actuating part relative thereto;

said valve element having a recess at its underside facing said surface for placing said intermediate aperture in communication with said two first mentioned apertures alternately;

a pressure fluid inlet passage leading inlet fluid to a side of said valve element facing away from said surface in a relation urging said valve element against said surface while alternately passing said inlet fluid to said two first mentioned passages when they are not covered by the valve element;

a gear unit having teeth engagable by said reciprocable structure to turn the gear unit about a second axis in response to reciprocation of said structure;

said gear unit having additional teeth engaging said actuating unit;

said actuating unit being a gear sector having teeth meshing with said last mentioned teeth of the gear unit to turn the actuating part about said first axis in response to turning movement of said gear unit about said second axis.

3,965,802

HYDRAULIC DRIVE FOR OPERATING AN ELEVATOR

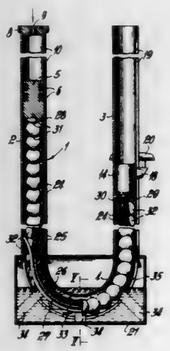
Max Jacobs, 179 Wittkullerstrasse, Solingen-Wald, Germany

Filed Nov. 26, 1973, Ser. No. 419,159

Claims priority, application Germany, Nov. 27, 1972, 2258065

Int. Cl.² F16J 1/10

U.S. Cl. 92—84 **15 Claims**



1. Elevator hydraulic drive means adapted for disposition inside the shaft of the elevator on one side of the load-lifting member thereof, said drive means comprising:

a. a hydraulic ram cylinder including a pair of vertical straight cylinder portions, and an arcuate bend portion connecting the lower ends of said straight cylinder portions, a first one of said straight cylinder portions extending up the path of ascent of the load-lifting member and having an axial slot in the wall thereof;

b. a hydraulic ram piston slidably mounted in the other straight cylinder portion;

c. a carrier body slidably mounted in said first straight cylinder portion and including a carrier arm that extends radially outwardly through said slot and supports the load-lifting member of the elevator;

d. universally flexible thrust-transmitting strand means cooperating at one end with said piston for transmitting thrust force in a direction parallel to and transverse to the axis of the cylinder portions, said strand means extending through said arcuate bend portion and cooperating at its other end with said carrier body; and

e. said piston being movable in opposing directions within said other straight cylinder portion causing corresponding movement of the carrier body in opposing directions within said first straight cylinder portion.

3,965,803

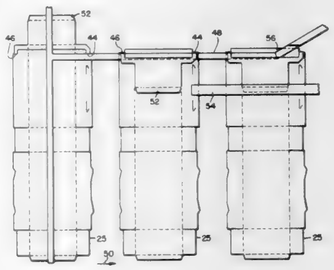
METHOD OF FORMING REINFORCED CARTON

Orison W. Stone, Rte. 17, New Haven, Vt. 05472

Filed Apr. 5, 1974, Ser. No. 458,189

Int. Cl.² B31B 7/14

U.S. Cl. 93—36 M **14 Claims**



3. A method for forming a tubular carton having a pair of opposed first walls, a pair of opposed second walls, and a reinforcing panel extending between said first walls, comprising:

providing a carton blank including a pair of first walls and a pair of second walls, alternatively hingedly connected together, and further including

a reinforcing panel hingedly connected to one end of said carton blank adjacent to one first panel but separated from said one first panel, said reinforcing panel having a glue flap at a free side thereof and another glue flap at a hinged side thereof;

folding said reinforcing panel, at its hinged connection, over on top of said carton blank and gluing the free side glue flap to one of said first walls;

parting said hinged connection between said reinforcing panel and carton blank;

erecting said carton blank into a carton including gluing said hinged side glue flap to the other one of said first walls; and

wherein said parting step includes folding said reinforcing panel over a flat blade having a portion that angles off with a sharp edge at the angle and moving said carton blank past said sharp edge such that said edge cuts through said hinged connection of said reinforcing panel.

3,965,804

CONTAINER ERECTION APPARATUS

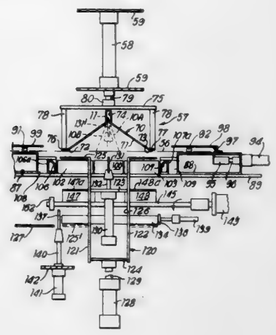
Peter Ellice Elford, 3 Wincroft Road, Caversham, Reading, Berkshire, England

Filed June 13, 1974, Ser. No. 479,053

Claims priority, application United Kingdom, June 14, 1973, 28384/73

Int. Cl.² B31B 1/46

U.S. Cl. 93—51 HW **7 Claims**



1. Apparatus for erecting a blank into a container, said blank comprising a folding surface portion having two like parts defined by a folding crease and two end surface portions each connected to a respective one of the said two parts of the folding surface at a second crease parallel to the folding crease, each of the end surface portions including edge parts connected at creases and which, when erected, cause the end portions to form end tray parts of the container, said apparatus comprising:

a. means for supporting the blank in a desired, substantially horizontal position;

b. erection means for causing the two parts of the folding surface to pivot towards one another about the folding crease as the end surface portions remain substantially horizontal, said erection means having an elongated crease breaker disposed below the desired position of support of the blank and extending in a direction parallel with and below the folding crease, and means for moving said crease breaker upwardly;

c. a die disposed below said desired position of the blank; and

d. movement means for moving the partly erected blank downwardly through said die to a container discharge position to erect said edge parts of said end surface portions to form said end tray parts, said movement means having a forming head disposed above said desired position of support of the blank and having a recess defined in a lower surface thereof to accommodate the upward movement of said crease breaker and the folding crease, said recess in the forming head being terminated at its lower edges on either side of the folding crease with corners adapted to facilitate breaking of said second creases on upward movement of the folding crease, and means for moving said forming head downwardly.

3,965,805

SPRAY FINISHING TUNNEL

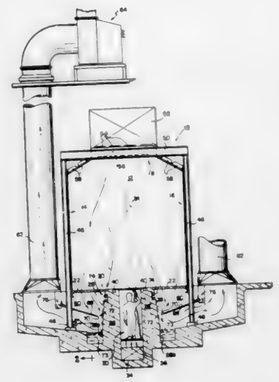
James H. Muehlbauer, Evansville, Ind., assignor to George Koch Sons, Inc., Evansville, Ind.

Filed June 9, 1975, Ser. No. 584,721

Int. Cl.² F23J 11/12

U.S. Cl. 98—115 SB **16 Claims**

1. A spray-finishing system including a tunnel through which objects to be finished longitudinally move, said tunnel having a pair of spaced longitudinal side walls, a floor defined, at least in part, by a grill through which air moves, means for distributing air within said tunnel and onto the objects being sprayed, means defining a chamber under said tunnel and in communication with said tunnel through said grill, and means for exhausting said chamber, in which the improvement comprises longitudinally extending means for dividing said chamber into lateral subchambers from which air is exhausted by said exhausting means, said dividing means providing, for each subchamber, a longitudinally and downwardly extending wall surface having a lower extremity, each subchamber including



a longitudinally extending trough adjacent the lower extremity, each subchamber also including a longitudinally extending, inwardly and downwardly sloping panel providing a distal edge spaced apart from said wall surface to provide a longitudinally extending, laterally narrow slot through which the air drawn from said subchamber moves, means for supplying a film of washing liquid flowing down said wall surfaces respectively to said troughs, and means for supplying a film of washing liquid flowing down said panels respectively toward said wall surfaces.

3,965,806

APPARATUS FOR BOILING, COOKING, STEAMING AND STERILIZING LIQUID, PORRIDGE-LIKE OR LUMPY FOOD

Manfred Brunner, Detmold-Bentrup, and Horst Knochenhauer, Lage-Lippe, both of Germany, assignors to H. Wolff Apparatebau K.G., Lage-Lippe, Germany

Filed Feb. 5, 1975, Ser. No. 547,298

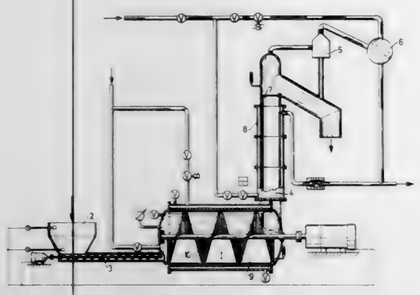
Claims priority, application Germany, Feb. 7, 1974, 2405807

Int. Cl.² A47J 27/66

U.S. Cl. 99—331 **7 Claims**

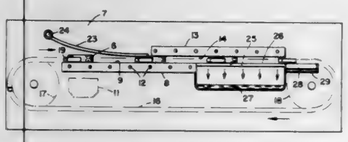
1. Apparatus for boiling, cooking, steaming, simmering and sterilizing liquid, porridge-like or lumpy food, comprising a cooker in the form of a cylindrical vessel having entry and exit openings for a material that is to be treated, and a conveying screw in its interior, the entry into said vessel being through

a feed screw of which the rear end is sealed, whereas the exit opening at the other end of said vessel communicates with a



riser pipe surmounted by a decompression device in the form of a cyclone associated with a condenser.

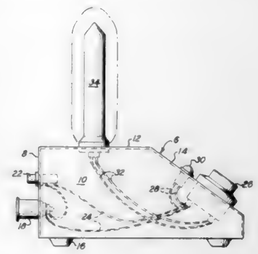
3,965,807
SLIDING PATTY GRILLER
Edward D. Baker, San Francisco, Calif., assignor to N.P.I. Corporation, Burlingame, Calif.
Filed Feb. 19, 1974, Ser. No. 443,253
Int. Cl.² A47J *27/14*
U.S. Cl. 99—375 **5 Claims**



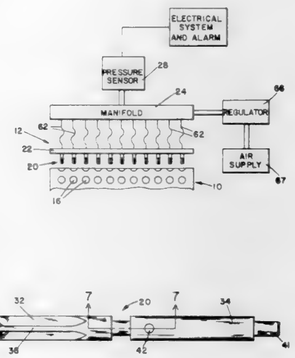
1. A sliding patty griller for cooking patties having a frame defining a front and a rear, comprising:
a lower stationary heated platen on said frame at the front thereof and having a substantially planar upper heated surface;
an upper stationary heated platen on said frame at the rear thereof and having a substantially planar lower heated surface, said heated surfaces being substantially parallel and vertically spaced apart with the front portion of said upper platen overlying the rear portion of said lower platen;
heating means for said platens to provide opposed cooking surfaces for said patties
a foraminous support means extending rearwardly from said lower platen below the rear portion of said upper platen; and
conveyor means having laterally extending pusher bars thereon arranged to move from the front to the rear of said griller, between said platens; whereby to slide patties over the front portion of said lower platen, then between said platens, then over said support means below the rear portion of said upper platen.

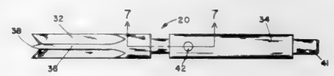
3,965,808
INTERNAL BUN TOASTER
Albert Etienne Chomette, Forest Hills, N.Y., assignor to Francis J. Fajella, Great Neck, N.Y., a part interest
Filed Aug. 7, 1975, Ser. No. 602,648
Int. Cl.² A47J *37/08*
U.S. Cl. 99—419 **12 Claims**

1. An internal bun toaster comprising a base cabinet open only downwardly, said cabinet having a smooth upper and side exterior with no depressions therein, a toasting spike extending upwardly from the highest plane of said base, and having a smooth surface with no depressions therein, said spike having a sharp edge or point at its uppermost extent that will readily penetrate the interior of a bun placed longitudinally down over said spike, said spike being shaped to extend throughout a substantial portion of the largest interior plane of said bun, electrical heating means imbedded in said spike and capable of heating the exterior surface of said spike sufficient to warm or toast buns in contact therewith, a switch mounted on said base below said spike to variably control the input of electric power to said heating means, a hooded electrical socket mounted on said base below said spike adapted to prevent collection of crumbs and dirt, and electrical connections between said socket, switch and spike located within the interior of said base.



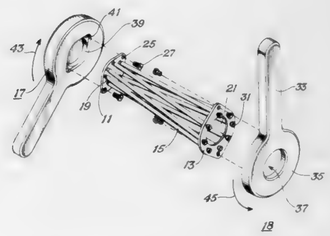
3,965,809
FRUIT PITTING APPARATUS
William E. Kieldsen, 2562 Borgum, NE., Grand Rapids, Mich. 49505, and Raymond J. Mieras, 3702 Kalamazoo, SE., Grand Rapids, Mich. 49508
Continuation of Ser. No. 270,967, July 12, 1972, abandoned, which is a continuation-in-part of Ser. No. 121,031, March 4, 1971, abandoned. This application July 18, 1974, Ser. No. 489,503
Int. Cl.² B23B *47/24*; **A23N** *4/02*
U.S. Cl. 99—492 **6 Claims**





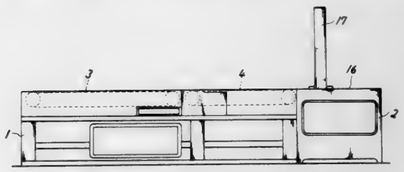
1. A pitting apparatus comprising:
a two-section pitting needle having a tip section and a shank section, said sections being joined together at a junction, said shank section having a fluid passageway therein communicating with the junction of said sections;
said tip section and said shank section being telescopically joined together at said junction, said sections having fluid pressure inlet and outlet ports therein, said sections when in a first position isolating said inlet port from said outlet port and when in a second position providing an open fluid passageway between said inlet and said outlet ports;
a fluid pressure source connected to said passageway in said shank sections;
the fluid pressure within said passageway changing upon the occurrence of relative movement of said sections between said first and second positions at said junction; and
means for sensing such changes.

3,965,810
NUT CRACKER
Jess Miller, Rte. 13, Box 183B, Fort Worth, Tex. 76119
Filed May 27, 1975, Ser. No. 580,573
Int. Cl.² A23N *5/00*; **A47J** *43/26*
U.S. Cl. 99—581 **5 Claims**



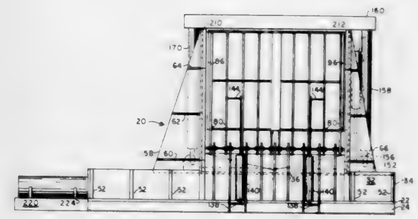
1. A nut cracker comprising:
back and front end plates, the front end plate having an aperture for the insertion of nuts to be cracked;
a plurality of elongated members, each of which is pivotally connected at its end portion to said plates;
said elongated members being spaced and disposed in an array defining together with said plates an enclosure for retaining a nut within;
so that rotating one plate with respect to the other constricts said enclosure to crack nuts.

3,965,811
APPARATUS FOR SUPPLYING OBJECTS TO BE BOUND TO AN AUTOMATIC BAND-BINDING MEANS
Shinroku Mae, Tokyo, Japan, assignor to Motosuke Umezu, Tokyo, Japan
Filed Aug. 8, 1975, Ser. No. 603,234
Claims priority, application Japan, Dec. 4, 1974, 49-139958
Int. Cl.² B65B *13/06*, *13/18*
U.S. Cl. 100—4 **5 Claims**



1. An apparatus for supplying objects to be bound to an automatic band-binding means, the apparatus comprising two groups of conveyers positioned at the same height, one of said groups of conveyers being arranged close to the automatic band-binding means; a push rod which reciprocates with respect to said automatic band-binding means; a pushing means fixed to the end of the push rod and provided with a pushing member disposed laterally of the push rod, said pushing member being adapted to take the position between the two groups of conveyers as its starting position and having springs which put it up higher than the conveyers during the movement of the push rod; a stopper means adapted to engage with the pushing means to hold it on a level with the conveyers as long as the push rod remains stationary; a plurality of selection means for band-binding positions located between the automatic band-binding means and the push rod at the different intervals corresponding to band-binding positions; means for reducing the running velocity of each selection means corresponding to the distance from the band-binding means with respect to the running velocity of the push rod; and means for stopping said selection means for band-binding positions when the object reaches a point just ahead of the automatic band-binding means; whereby said push rod is moved to supply the object to be bound to the automatic band-binding means and stopped at every stop position of said selection means to permit carrying out of band-binding.

3,965,812
METHOD OF COMPRESSING SCRAP METAL
Gordon D. Oberg, 20509 Crawford Road, Lynwood, Wash. 98036
Filed Sept. 24, 1974, Ser. No. 508,830
Int. Cl.² B30B *9/32*
U.S. Cl. 100—39 **3 Claims**

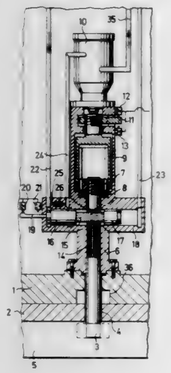


1. A method for operating an apparatus for processing scrap metal to compress the scrap metal and to increase the bulk density of said scrap metal, said apparatus comprising:
a. a moveable shear head;
b. a first wall and a second wall and a bottom support connecting said first wall and said second wall;
c. said first wall and said second wall being spaced apart to define a tunnel for receiving said shear head;
d. means to move said shear head with respect to said first wall and said second wall;
e. a first rotatable support juxtapositioned to said first wall;
f. a second rotatable support juxtapositioned to said second wall;
said method comprising:
g. positioning said first rotatable support on one side of said tunnel to support said scrap metal;
h. positioning said second rotatable support on the other side of said tunnel to support said scrap metal;
i. positioning said scrap metal over said tunnel and in a position to be supported by said first rotatable support;
j. moving said shear head toward said tunnel and into said tunnel to shear some of said scrap metal to form sheared scrap metal and to move said sheared scrap metal into said tunnel;
k. moving said shear head out of and away from said tunnel;
l. rotating said first rotatable support to allow said scrap metal to move to be in a position to be forced into said tunnel by said shear head; and,
m. moving said shear head toward said tunnel and into said tunnel to force said scrap metal into said tunnel.

3,965,813
ARRANGEMENT FOR THE ATTACHMENT OF A BODY TO A SUPPORT

Karl Pfost, Schanbach, Germany, assignor to Fritz Muller, Neckar, Germany

Filed May 7, 1975, Ser. No. 575,427
Claims priority, application Germany, May 16, 1974, 2423862; Mar. 27, 1975, 2513708
Int. Cl.² B30B 15/00
U.S. Cl. 100—99 13 Claims



1. An improved apparatus for releasably attaching a body to a support, the apparatus comprising

a clamping member having a shaft with threads at one end and with a T-head at the other end,

a support having a recess in one face thereof to receive the T-head and an opening through which the clamping member shaft extends,

threaded means coupled to the clamping member, the said threaded means being rotatable to axially move the clamping member, and first drive means to rotate said threaded means, whereby the T-head is extendable beyond a surface of the support and is rotatable between clamping and releasing positions,

rotating means coupled to said shaft of said clamping member for rotating said member between its clamping and releasing position;

second drive means for driving said rotating means;

a source of power for said first and second drive means; and

control means for selectively controlling the application of power from said source to said first and second drive means to sequentially apply power to said second drive means and then to said first drive means when a body is being clamped to the support, and to simultaneously apply power to both of said first and second drive means when a body is being released.

3,965,814
REPLACEABLE WEAR STRIPS AND LINER FOR BALING PRESS

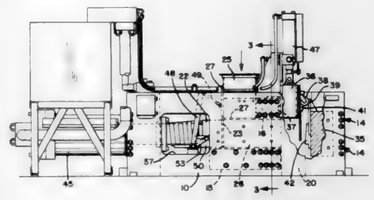
Nicholas L. Manko, Piqua, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Jan. 14, 1975, Ser. No. 540,800
Int. Cl.² B30B 15/04, 15/06
U.S. Cl. 100—245 6 Claims

1. In a baling press having means defining a cavity with loading and unloading openings, a bolster movably supported in said cavity to reduce the volume of said cavity and compress material loaded thereinto, a ram connected to reciprocate said bolster within said cavity between predetermined retracted and advanced positions providing for loading of bulk material into the cavity with said bolster in its retracted position and compression of the material to a predetermined shape at said advanced position;

the improvement comprising wear strips removably mounted to said bolster at the face thereof normally located within said cavity,

means for moving said ram such that said bolster is moved beyond one of said retracted and advanced positions to an extreme position, and

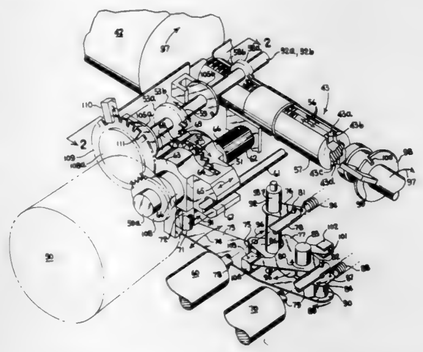


means guiding and supporting said bolster as it is moved to said extreme position such that the portion of said bolster upon which said wear strips are mounted is outside said cavity and exposed sufficiently to permit said wear strips to be removed and new wear strips mounted to said bolster.

3,965,815
SETTING MECHANISM FOR A POSTAGE PRINTING DEVICE

Raymond R. Lupkas, Trumbull, and Keith E. Schubert, Rowayton, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sept. 16, 1974, Ser. No. 506,331
Int. Cl.² B41L 47/46
U.S. Cl. 101—91 3 Claims



1. A setting mechanism for a postage printing device comprising a plurality of print wheel driving racks which are individually movable to set an associated print wheel to a postage value setting, said setting mechanism comprising:

a pair of spaced apart, nested, rotatably mounted shafts each having a pair of pinion gears mounted on one end thereof, and a pair of spur gears mounted on another end thereof, said pinion gears each being in operative engagement with a respective print wheel drive rack;

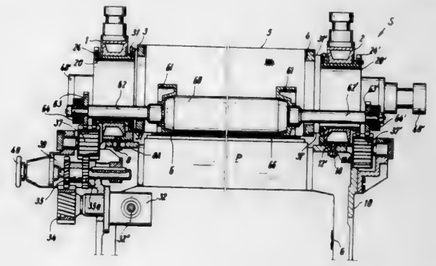
a stepper motor operatively connectable to each spur gear for rotatively driving each of said spur gears, so as to rotate the respective pinion gears to move said print wheel driving racks;

interconnectable means disposed between the stepper motor and said spur gears for interconnecting said stepper motor with each of said spur gears in a sequential manner, said interconnectable means comprising a splined shaft rotatively connected to said stepper motor, a master gear rotative with, and slidably supported upon said splined shaft by means of a yoke, said yoke having two spaced apart elongated laterally disposed tooth profiles for locking the spur gears against rotation when said spur gears are not in rotative engagement with said master gear, said master gear being disposed within a mid-portion of said yoke such that teeth of said master gear cooperate with the tooth profiles on the yoke to form two continuous elongated teeth which slide through the respective spur gears and keep them locked against rotation until said master gear is positioned opposite a spur gear to be rotated, means operatively connected to said master gear and said yoke for causing said master gear and said yoke to slide upon said splined shaft, said master gear sequentially slidably engaging with each of said spur gears when said master gear and said yoke are caused to slide upon said splined shaft, said master gear causing each spur gear to rotate when slidably engaged therewith and when said splined shaft is made to rotate by said stepper motor.

3,965,816
DRIVE FOR ROTARY SCREEN PRINTER UTILIZING THE ROLLER SQUEEGEE

Mathias Mitter, Verl, Germany, assignor to Mitter & Co., Schloss Holte, Germany

Filed July 15, 1974, Ser. No. 488,719
Claims priority, application Germany, July 19, 1973, 2336734
Int. Cl.² B41F 15/10, 15/42
U.S. Cl. 101—115 19 Claims

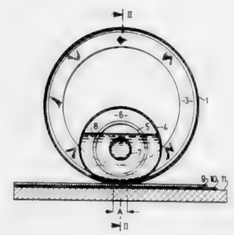


16. In a screen printing machine, a combination comprising a frame; first and second bearing members mounted in said frame; an elongated hollow stencil having first and second end portions rotatably supported by said first and second bearing members; a prime mover; a first power train drivingly connecting said prime mover with said first end portion of said stencil; and a second power train drivingly connecting said first power train with said second end portion of said stencil, said second power train including a rotary squeegee disposed in the interior of said stencil, means for transmitting torque from said first bearing member, and means including an idler gear which is freely rotatably mounted in said frame and is driven by said squeegee for transmitting torque from said squeegee to said second end portion of said stencil in the region of said second bearing member, said squeegee comprising coaxial first and second stubs which respectively extend into said first and second bearing members, said first power train comprising a first driving sleeve rotatable in said first bearing member, spacedly surrounding said first stub and operative to rotate said first end portion of said stencil, a first gear receiving torque from said prime mover and rotatably mounted in said frame, and a second gear rigid with said sleeve and meshing in the said first gear, said means for transmitting torque from said first power train to said squeegee comprising a third gear rigid with said first stub and meshing with said first gear, said means for transmitting torque from said squeegee to said second end portion of said stencil comprising a second driving sleeve rotatably mounted in said second bearing member, spacedly surrounding said second stub and operative to rotate said second end portion of said stencil, a fourth gear rigid with said second stub, said idler gear being rotatably mounted in said frame and meshing with said fourth gear, and a sixth gear rigid with said second sleeve and meshing with said idler gear.

3,965,817
CLOSED SQUEEGEE APPLICATOR WITH FLEXIBLE SIDES

Zeki Ipek, Brahmsgasse 4, A-9020 Klagenfurt, Austria

Filed Apr. 1, 1974, Ser. No. 456,768
Claims priority, application Austria, Apr. 3, 1973, 2922/73
Int. Cl.² B41F 15/40, 15/44
U.S. Cl. 101—120 3 Claims



1. In a web printing, coating or coloring apparatus of the type having a stencil mounted for applying printing, coating or coloring material therethrough onto a web, the improvement comprising:

a flexible hollow metal cylinder, the interior of said cylinder being at least partially filled with a supply of said material;

said cylinder having a portion of the periphery thereof deformed by the weight of said contained material and being thereby pressed into contact with said stencil on the interior surface thereof opposite said web;

said cylinder periphery being perforated along a longitudinally extending strip in the area of contact between said cylinder and said stencil;

the peripheral width of said area of contact being at least as great as the peripheral width of said perforate strip; and

deformable members sealing the opposite ends of said cylinder.

3,965,818
PRESSURE CONTROL DEVICE FOR OFFSET PRINTING MACHINE

Koji Ishii, Fukuyama, Japan, assignor to Ryobi, Ltd., Hiroshima, Japan

Filed Mar. 28, 1975, Ser. No. 563,166
Claims priority, application Japan, Mar. 28, 1974, 49-35726[U]
Int. Cl.² B41F 7/06, 13/28
U.S. Cl. 101—218 7 Claims

1. A pressure control device for an offset printing machine having a blanket cylinder comprising:

a pair of spaced apart side plates;

a pressure cylinder shaft having eccentric ends extending between said side plates, said shaft being pivotally mounted to said side plates;

a pressure cylinder rotatably mounted on said pressure cylinder shaft and having a periphery engageable with the blanket cylinder;

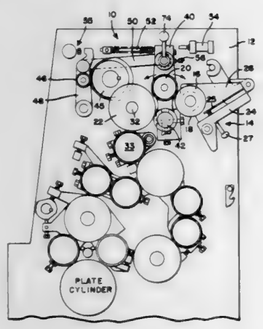
a cam driven pressure cylinder separating means having one end fixed to one end of said eccentric end to rotate said shaft, thereby changing the distance between said pressure cylinder and the blanket cylinder;

a pair of arms rotatably coupled at their respective ends to respective ones of said eccentric ends, said arms being pivotally mounted to respective ones of said side plates;
a pair of springs biasing respective ends of each of said pair of arms opposite said eccentric ends;
a pair of pins, one of said pair of pins extending transversely from respective ones of each of said pair of arms;
a cam shaft extending between said side plates and rotatably mounted in said side plates;



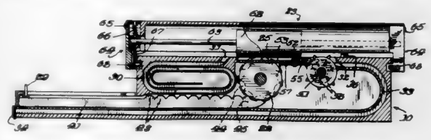
a pair of cams fixedly mounted on said cam shaft, the respective cam surface of said cams engaging respective ones of said pair of pins;
a dial mounted on one end of said cam shaft indicating the rotational position of said pair of cams;
a serrated wheel mounted on the other end of said cam shaft; and
a click mounted to engage the serration in said wheel to position said cam shaft, whereby rotation of said dial causes said pair of pins to move along said cam surfaces, thus pivoting said arm and moving the axial position of said pressure cylinder shaft.

3,965,819
INK DUCTOR SYSTEM
Dinesh G. Punater, Kettering, Ohio, assignor to Harris Corporation, Cleveland, Ohio
Filed Jan. 31, 1975, Ser. No. 545,778
Int. Cl.² B41F *31/10*
U.S. Cl. 101—350 **1 Claim**



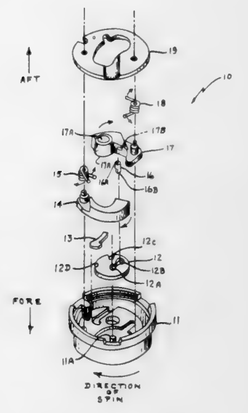
1. In an inker for a printing press having a fountain roll and a distributor roll mounted in spaced parallel relation, a ductor roll, pivotally mounted support arms carrying said ductor roll parallel to and between said fountain and distributor rolls, drive linkage connected to said arms to oscillate said ductor roll into contact alternately with said fountain and distributor rolls, throw off means operable on said drive linkage to prevent its moving said ductor roll into contact with said fountain roll, and an adjustable connection between said arms and said drive linkage to adjust precisely the area of contact between said ductor roll and said fountain roll;
the improvement comprising means incorporated in said adjustable connection to change the relative positions of said arms and said drive linkage temporarily without disturbing the setting of said adjustable connection whereby contact between said ductor roll and said distributor roll can be avoided during makeready periods,
said adjustable connection including
eccentric members having a circular stud portion forming a rotatable connection to said linkage and having a circular body portion offset from said stud portion,
bushings rotatably mounted in said arms and surrounding said body portions of said eccentric members,
a releasable connection between said bushings and said eccentric members defining a predetermined positional relation therebetween permitting temporary rotation between said bushings and said eccentric members, and
means clamping said bushings in said arms whereby said bushings and eccentric members can be rotated together and secured in an adjusted position defining the relation of said arms to said linkage.

3,965,820
METHOD FOR HIGH DENSITY RECORDING OF SOURCE CREDIT TRANSACTION DATA
Erdman O. Spradlin, 360 Green Acres Drive, Naperville, Ill. 60540
Continuation of Ser. No. 379,718, July 16, 1973, abandoned, which is a division of Ser. No. 132,050, April 7, 1971, Pat. No. 3,762,316. This application Mar. 31, 1975, Ser. No. 563,812
Int. Cl.² B41F *3/04*
U.S. Cl. 101—426 **3 Claims**



1. A method for recording data from each of a plurality of credit transactions, said data including characters comprising variable information, characters comprising fixed credit card information and customer signature information, onto a credit receipt and onto data paper successively advanceable to a plurality of linearly extending spaces, each of said linearly extending spaces having a height substantially equal to the height of said characters and being adapted to receive said data corresponding to one of said credit transactions, comprising the steps of:
a. providing adjustable recording means and setting them into correspondence with said variable information;
b. advancing a first portion of one of said linearly extending spaces of said data paper into alignment with said adjustable recording means;
c. aligning said fixed credit card information with a second portion of said one of said linearly extending spaces of said data paper;
d. providing a third portion of said one of said linearly extending spaces of said data paper adapted to receive customer signature information, said first portion, said second portion and said third portion of said data paper being aligned along said one of said linearly extending spaces;
e. moving said credit receipt into overlying relationship with said one of said linearly extending spaces of said data paper; and thereafter
f. simultaneously recording said variable information and said fixed credit card information respectively onto said first portion and said second portion of said one of said linearly extending spaces of said data paper, and onto said credit receipt.

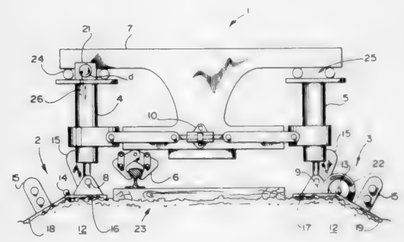
3,965,821
LOW SPIN-DECELERATION SAFING AND ARMING MECHANISM
William O. Maruska, Minnetonka, Minn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Continuation-in-part of Ser. No. 392,379, Aug. 28, 1973, abandoned. This application Jan. 16, 1975, Ser. No. 541,484
Int. Cl.² F42C *15/22*
U.S. Cl. 102—79 **3 Claims**



1. A low spin and deceleration safing and arming mechanism adapted for use in the autorotating submunition comprising:
a. a housing;
b. a delay disc linked to, and positioned within, said housing;
c. a rotor latch linked to, and positioned within, said housing;
d. a lockweight linked to, and positioned within, said housing, with said lockweight disposed aft of said delay disc;
e. means for biasing said lockweight, with said means positioned within said housing;
f. a rotor interlock pin linked to said delay disc and positioned within said housing;
g. a rotor linked to said rotor interlock pin and positioned within said housing, with said rotor having an aperture therein and therethrough for carrying and containing a detonator;
h. means for biasing said rotor, with said means positioned within said housing;
i. and, a bearing plate positioned aft of said delay disc, said rotor latch; said lockweight, said lockweight biasing means, said rotor interlock pin, said rotor, and said rotor housing means, with said bearing plate linked to, and positioned within, said housing.

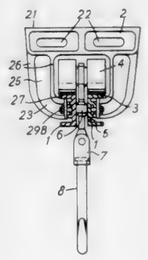
3,965,822
SHOULDER TAMPING LIFTING JACK
John Kenneth Stewart, Columbia, S.C., assignor to Canron, Inc., New York, N.Y.
Filed Nov. 11, 1974, Ser. No. 522,749
Int. Cl.² E01B *27/17*
U.S. Cl. 104—7 B **7 Claims**

4. A machine for aligning railroad track into a substantially correct position comprising: laterally and vertically adjustable clamping means adapted to grasp each of the rails of a railroad for purposes of track displacement when aligning track; a pair of contoured shoes, each one of said respective shoes being adapted to embrace a shoulder portion of the railroad ballast located on the outside of each respective rail which is to be aligned; a lifting jack articulately connected to each of said shoes adapted to provide a substantially vertical force to said



clamping means; and means to provide vibration to said contoured shoes during an alignment operation, each of said respective contoured shoes having an appropriate surface area whereby in use the force per unit area on said shoe is of a magnitude to substantially prevent said contoured shoe from vertical and lateral movement in said ballast when performing said alignment operation.

3,965,823
CONVEYORS
Pierre Bardot, Paris, France, assignor to Sucmanu, Paris, France
Continuation of Ser. No. 248,170, April 27, 1972, abandoned. This application Nov. 5, 1974, Ser. No. 521,211
Claims priority, application France, June 30, 1971, 71.23922
Int. Cl.² B61B *3/00;* **E01B** *25/26*
U.S. Cl. 104—91 **7 Claims**



1. In a conveyer comprising two rails, supports holding said rails spaced apart near to each other and parallel to each other, said supports comprising pairs of downwardly extending arms and bolts carried by the lower ends of said arms, which bolts support the rails, each rail having a horizontal bearing surface and a vertical guiding surface, a load carrying device running on the rails in engagement with said bearing surface and said guiding surface, each rail having a groove in that face of the rail on which the guiding surface is formed, said groove extending along the rail, said groove opening at that side of said rail which is remote from the guiding surface, said groove being wider near the guiding surface than at the opening; the improvement which comprises forming each pair of said arms with inwardly projecting horizontal extensions at their lower ends, and forming each rail with at least three horizontal limbs and a vertical limb, said horizontal limbs being spaced apart from each other and connected at one end to the vertical limb; the first of said horizontal limbs having its

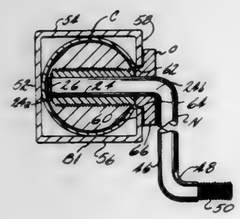
upper surface serving as said bearing surface and its underneath surface seating on the horizontal extension of one of said arms, the two other horizontal limbs (**12, 12A**) being of less depth horizontally than the first horizontal limb, a flange (**12B, 12C**) on the free end of each of said other horizontal limbs, said flanges extending towards each other so that said other horizontal limbs and said flanges form said groove; said bolts having approximately T-shaped heads engaged in the grooves, said T-shaped heads having a width less than the width of the grooves and a length greater than the width of the grooves, said bolts having nuts thereon engaging the lower ends of said arms.

3,965,824

BALL DRIVE MECHANISM FOR LOAD SUPPORTING HANGER

Robert J. Winkler, 2101 E. Fourth St., Santa Ana, Calif. 92704, and James B. Curran, 1509 W. St. Andrews Place, Santa Ana, Calif. 92705

Filed Dec. 4, 1974, Ser. No. 529,368
Int. Cl.² B65G *35/08*
U.S. Cl. 104—165 **11 Claims**



1. A mechanism for successively moving at least one load supporting first shaft of circular transverse cross section through a predetermined endless path, said mechanism including:

a. a hollow carrier frame that defines said predetermined endless path, said carrier frame having a first side in which an endless first slot is formed, said slot being situated between first and second longitudinally extending edges of said carrier frame;

b. a plurality of first and second balls disposed side by side in said frame, with the majority of said balls in abutting contact, each of said first balls having a diametrically extending bore therein that is axially aligned with said slot and normal to said first and second longitudinally extending edges, and each of said bores rotatably engaging one of said first shafts to movably support one of said load supporting members from said frame;

c. first means for retaining each of said first shafts in said bores;

d. second means for preventing transverse rotation of said first balls as said first balls move through said predetermined endless path said second means including a guide wheel rotatably supported on said first shaft, said guide wheel including a first circular portion disposed between said first and second longitudinal edges and a second portion of larger diameter than said first portion that is disposed between said first side and said third means that act as guides for said second portion to prevent said first portion from being disengaged from said slot defined by said first and second longitudinal edges;

e. a wheel having a plurality of circumferentially spaced lobes thereon, said wheel projecting into the interior of said frame through an opening therein, and said lobes so spaced that when said wheel is rotated pairs of adjacent lobes removably and successively engage each of said first and second balls to move the engaged ball and the balance of said balls and said load supported first shaft through said predetermined endless path; and

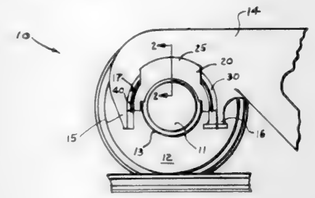
f. power means for rotating said wheel.

3,965,825

RESILIENT TRUCK AXLE BEARING MOUNTING

James W. Sherrick, Edinboro, Pa., assignor to Lord Corporation, Erie, Pa.

Filed Oct. 8, 1974, Ser. No. 513,187
Int. Cl.² B61F *5/28, 5/30, 5/38, 15/12*
U.S. Cl. 105—224.1 **3 Claims**



1. In a railway truck,

an axle extending transversely of said truck,

an anti-friction bearing carried axially of said axle,

an elongate side frame orientated transversely of said axle having downwardly depending pedestal jaws spaced fore and aft of said bearing and defining longitudinally therebetween a V-shaped downwardly facing load carrying surface positioned directly above said bearing, said load carrying surface being concentric to and about said axle from the fore to the aft side of said bearing with the apex thereof disposed inwardly toward said axle and extending longitudinally of said side frame,

a rigid bearing adapter overlying and carried by and in contact with said bearing, said bearing adapter having a V-shaped upwardly facing load receiving surface spaced directly beneath and presented toward said load carrying surface of said side frame, said load receiving surface being concentric to and about said axle from the fore to the aft side of side bearing with the apex thereof disposed upwardly toward said axle and extending longitudinally of said side frame, said load receiving surface matingly receiving said load carrying surface in opposed relation thereto, and

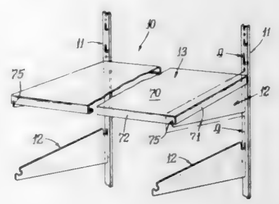
a unitary semi-annular resilient elastomeric pad disposed in compression load carrying relation between said load carrying and load receiving surfaces, said pad conforming to and bearing on said load carrying and load receiving surfaces.

3,965,826

SHELVING STRUCTURE

Robert D. Markham, Peoria, Ill., assignor to H C Products Co., Princeville, Ill.

Filed May 5, 1975, Ser. No. 574,566
Int. Cl.² A47B *5/00*
U.S. Cl. 108—152 **6 Claims**



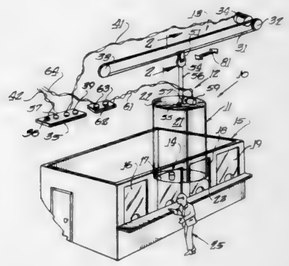
1. An off-wall shelving structure comprising: an elongated wall bracket mountable in vertical upright position over a supporting wall and including a planar platform portion and a pair of parallel flange portions extending outwardly of the lateral margins of said platform portion to space the latter from said supporting wall, said platform portion having a plurality of uniformly spaced elongated openings therethrough; and a cantilever shelf supporting bracket attachable to said wall bracket comprising a planar body having an operationally disposed horizontal upper edge and a platform engaging rear edge at right angles thereto, a plurality of locking tongues projecting integrally from said rear edge of said body and each having a depending ear portion spaced from said rear edge by an intervening reduced throat section, said tongues being uniformly spaced and formed to enter a selected corresponding plurality of said openings simultaneously whereby to dispose said throat sections thereof within said openings and said ear portions behind said platform portion, said throat sections being laterally movable within said openings with at least one thereof formed to enter a laterally offset portion of its associated opening; and detent means on the periphery of said offset portion for interlocking engagement with said one said throat section whereby to prevent reverse lateral movement thereof and thereby removably lock said cantilever bracket in vertical operating position.

3,965,827

CRIMINAL TRAP

Tom Reeves, 1216 Circle St., Winchester, Va. 22601

Filed Dec. 2, 1974, Ser. No. 528,890
Int. Cl.² E05G *5/02*
U.S. Cl. 109—3 **3 Claims**



1. A criminal trap intended for use in banks and similar institutions and positioned forwardly of and spaced above a series of side-by-side tellers' windows, the trap comprising, in combination:

a hollow open bottom cylindrical cage body member manufactured of bullet proof material and having cylindrical side walls, a flat top end, and an open bottom end;

a hollow cylindrically shaped compartment defined interiorly of said cage body member opening out of the bottom end thereof and of a size and configuration adapted to readily envelope therein an individual over which the cage body member is lowered;

a pair of horizontally spaced apart tandemly disposed sprocket members each rotatively mounted about their axis and disposed in parallel relationship to each other and adapted to be rotatably mounted above opposite ends of the series of tellers windows;

an endless continuous chain trained over said sprockets and having an upper run and a lower run;

means for raising and lowering said cage body member in a vertical direction;

means affixing said vertical raising and lowering means to said chain for positioning said cage body member in a horizontal direction;

an electrical motor connected to the axis of one of said sprockets for drivingly moving said chain in selected opposite directions thereabout;

a multi-positioned electrical panel connected to said electric motor by suitably insulated electrical wiring and connected to a suitable source of electrical energy for selective control of said energization and de-energization of said electric motor for movement of said chain about said sprockets; and

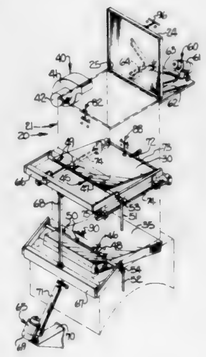
means for dispensing anesthetizing gas into said cage compartment upon the lowering of said cage body member.

3,965,828

WASTE FEEDING APPARATUS FOR INCINERATOR

Robert E. McRee, Jr., Charlotte, N.C., assignor to Environmental Control Products, Inc., Charlotte, N.C.

Filed Feb. 27, 1975, Ser. No. 553,794
Int. Cl.² F23G *5/00;* **F23M** *7/00*
U.S. Cl. 110—8 R **15 Claims**



1. In an incinerator including a combustion chamber for burning waste material and having an access opening in a top portion thereof for the introduction of waste material therein by gravity; the combination therewith of means for feeding material including pathological or highly infectuous wastes into the incinerator combustion chamber through the access opening for burning and being characterized by a construction which substantially prohibits the escape of fumes, smoke or particulate matter from the incinerator, said feeding means comprising:

generally vertically extending, enclosed, stationary, chute means mounted on the incinerator and having open top and bottom ends in which said bottom end is positioned in communication with the access opening in the incinerator combustion chamber for providing a generally vertically extending passageway for gravity flow of the waste material therethrough and into the incinerator combustion chamber;

selectively operable cover door means mounted on said chute means at said top end thereof for being opened to insert the waste material into said chute means and for being closed to cover and close said chute means at the top thereof; and

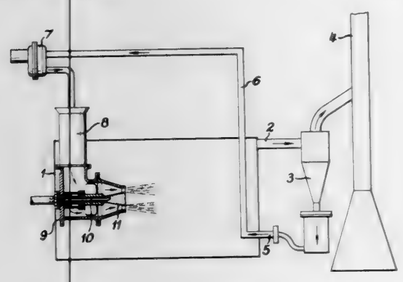
selectively operable interior door means mounted within said chute means below said cover door means for being closed to close the passageway through said chute means and for receiving and holding on the top surface thereof the waste material inserted into said chute means when said cover door means is opened and for being opened to allow gravity feeding of the waste material into the combustion chamber of the incinerator when said cover door means is closed;

whereby the escape of fumes, smoke or particulate matter from the incinerator is prohibited by said interior door means being closed when said cover door means is opened and said cover door means being closed when said interior door means is opened.

3,965,829
BOILER

Byrom Lees, Kent, England, assignor to The British Petroleum Company Limited, London, England

Filed Feb. 3, 1975, Ser. No. 546,758
Claims priority, application United Kingdom, Feb. 25, 1974, 8372/74
Int. Cl.² F23C 1/10; F23J 5/02
U.S. Cl. 110—22 R 9 Claims

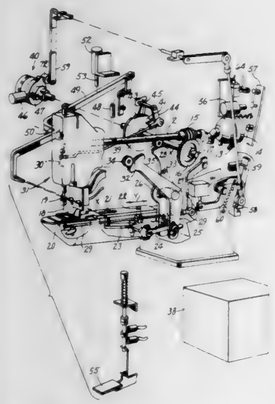


1. An oil-fired heating plant comprising a combustion chamber, an oil burner having a combustion air inlet, said oil burner being located in said combustion chamber, a cyclone means for trapping and collecting flue dust and means for cycling flue dust collected in said cyclone means back into said combustion air inlet of said oil burner.

3,965,830
ASSEMBLY FOR AUTOMATIC BAR TACKING

Adolph Stephen Dorosz, Beverly, Mass., assignor to USM Corporation, Boston, Mass.

Filed Dec. 5, 1974, Ser. No. 530,048
Int. Cl.² D05B 19/00, 65/02
U.S. Cl. 112—121.11 6 Claims



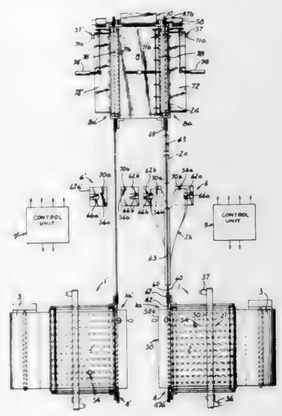
5. In a bar tacking sewing machine having a needle bar drive shaft operatively connected through a clutch to a motor to provide reciprocating motion to a needle, a workpiece clamp constructed to releasably secure and support a workpiece under the needle said clamp being slidably and pivotably mounted on the sewing machine for movement relative to the needle along first and second axes, means for feeding thread to the needle including a nipper for releasably engaging the thread and a knife for engaging and cutting the thread when the sewing operation is completed, the improvement comprising:

a. a cam shaft rotatably mounted on the sewing machine transverse to the needle bar drive shaft and being operatively geared to said drive shaft for coordinated rotation therewith;
b. a cam mounted for free rotation on the cam shaft and having a cam slot constructed therein to provide movement for the thread cutting knife;
c. an electrically operated clutch fixed to the cam shaft and releasably engaging the cam to cause rotation of said cam on said shaft during selected portions of the sewing operation;
d. linkage means connected to the thread cutting knife and to the cam slot through a follower to cause movement of said knife according to the configuration of the slot; and
e. electronic control means for actuating the clutch to cause engagement of the cam to the cam shaft only during the initial and final portions of the sewing operation.

3,965,831
APPARATUS FOR CUTTING, SELVAGING AND/OR FOLDING SHEET MATERIAL

Henry John Weir, Udine, Italy, assignor to Sheldon P. Behn, Highland Park and Robert M. Behn, Wilmette, both of, Ill., part interest to each

Filed Aug. 5, 1974, Ser. No. 494,853
Int. Cl.² D05B 33/00
U.S. Cl. 112—121.15 10 Claims



1. In combination, a draping conveyor having a narrow upper margin over which individual flatwork pieces can be draped in longitudinally spaced relation with at least the lower portions thereof exposed, a sewing station positioned opposite a section of said draping conveyor, and a pair of sewing machines on the opposite lateral sides of said draping conveyor at said sewing station and positioned so that operators in front of said sewing machine may grasp respectively the two exposed portions of the flatwork piece hanging down from the upper margins of said draping conveyor.

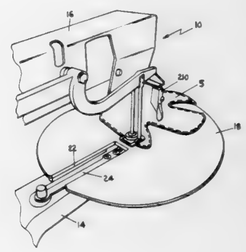
3,965,832
METHOD OF CONTOUR SEWING

Robert B. Egtvedt, Comstock Park; Theodore C. Zwiep, Grand Rapids, and John R. Den Bleyker, Holland, all of Mich., assignors to Wolverine World Wide, Inc., Rockford, Mich.

Division of Ser. No. 339,776, March 12, 1973, Pat. No. 3,871,306. This application Nov. 20, 1974, Ser. No. 525,737
Int. Cl.² D05B 1/00
U.S. Cl. 112—262 1 Claim

1. A method of contour sewing material comprising the steps of:

repeatedly inserting a threaded stitching needle into the material at successive intervals to form a stitching pattern;
gripping and advancing the gripped material in increments, each increment of advancement occurring while the needle is inserted into the material and advances therewith from an initial position to a final position;

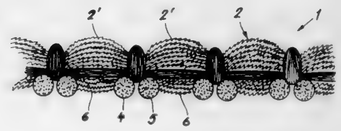


rotationally turning the gripped and advancing material in controlled increments simultaneously with said advancing of the material, each increment of turning and the simultaneously occurring increment of advancing occurring while the needle is inserted into the material and the material is gripped;
and each time after simultaneously advancing and turning the material, releasing the grip on the material, and withdrawing the stitching needle and returning the needle to said initial position.

3,965,833
SLIDE-FASTENER STRINGER WITH WARP-KNIT SUPPORT TAPES

Alfons Frohlich, and Marie-Luise Cappel, both of Essen, Germany, assignors to Opti-Holding AG, Glarus, Switzerland

Filed Oct. 3, 1974, Ser. No. 511,676
Claims priority, application Germany, Oct. 6, 1973, 2350318
Int. Cl.² D05B 97/10
U.S. Cl. 112—265 3 Claims



1. A method of making a slide-fastener stringer tape comprising the steps of:
continuously forming a substantially nonstretchable knit warp of only smooth synthetic yarns;
continuously laying into said warp textured synthetic weft yarns and highly shrinkable smooth synthetic weft yarns; and
thereafter shrinking said highly shrinkable yarns transversely of the tape to form said textured yarns into a mass of bulges on at least one face of said tape within meshes formed by the smooth yarns.

3,965,834
PROCESS FOR THE PRODUCTION OF AEROSOL DISPENSING AND SIMILAR METAL CANS

Gilbert Dolveck, St.-Barthelemy-de-Beaurepaire, France, assignor to Aluminium Suisse S.A., Switzerland

Filed Mar. 4, 1974, Ser. No. 448,054
Claims priority, application Switzerland, Mar. 8, 1973, 3380/73
Int. Cl.² B21D 51/00
U.S. Cl. 113—120 Y 4 Claims

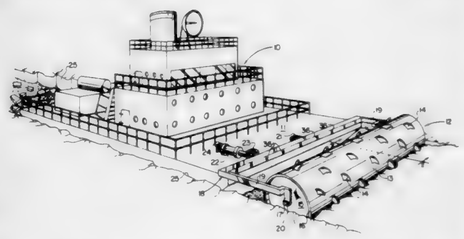


1. A process for assemblying an aerosol dispensing or similar can comprising, providing a tubular wall portion open at one end and a bottom having a disked central bottom portion and a peripheral skirt, said bottom having a dimension for fitting inside said tubular wall portion with said skirt extending against the inner surface of said wall portion, press fitting the bottom through said open end with said skirt extending toward the open end and disposing it movable axially therein and the edge of said skirt axially spaced from the edge of the open end so that a marginal edge portion of the tubular wall portion at the open end thereof obtains, progressively folding the marginal edge portion of the tubular wall portion defining said open end inwardly while progressively displacing the skirt of said bottom axially inwardly of said tubular wall portion with a progressively developed lower fold on said marginal edge portion progressively advanced axially of the tubular wall portion with said edge of said skirt positively seated on the inner surface of the fold.

3,965,835
ARCTIC TRANSPORT AND MARINE OPERATION SYSTEM

John D. Bennett, Denton, Tex., assignor to Sun Oil Company, Dallas, Tex.

Filed Mar. 28, 1974, Ser. No. 455,820
Int. Cl.² B63B 35/12
U.S. Cl. 114—42 2 Claims



1. A system for attachment to the front of a buoyant vessel for forming a channel to move the vessel through a sheet of ice, comprising:
a hollow buoyant drum extending transversely of the desired direction of channel formation and having a plurality of teeth projecting from the outer surface thereof;

a hollow framework mounting said buoyant drum for rotation about its longitudinal axis, said framework including openings along the inner periphery thereof;

a power source mounted within said drum; the exhaust heat from said power source being connected for discharge into the atmosphere through the framework openings to provide a warm air shroud in the region of said drum and inhibit refreezing of the ice pieces in the channel; and

means for coupling said power source to said drum to rotate the drum and the teeth into contact with the surface of an ice sheet and form a channel the width of the drum therethrough.

3,965,836

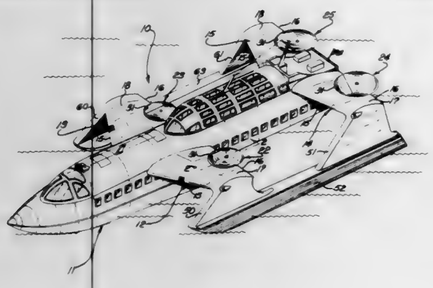
HIGH SPEED WATER VESSEL

Frank S. Malvestuto, Jr., 4295 East Mexico Ave., Denver, Colo. 80222

Continuation of Ser. No. 244,147, April 14, 1972, abandoned. This application Jan. 30, 1975, Ser. No. 545,493

Int. Cl.² B63B *1/18*

U.S. Cl. 114—66.5 R **6 Claims**



1. A boat comprising a hull having a surface for engaging a body of water to derive lift from the body of water during movement of said hull through the body of water, means for imparting additional lift forces to said hull to reduce water drag forces on said hull by raising said hull relative to the body of water from a first position in which a relatively large portion of said hull is submersed in the body of water to a second position in which a relatively small portion of said hull is submersed in the body of water, including an airfoil portion extending transversely relative to said hull at a location above said surface for producing a lift force upon movement through the air and propulsion means, said airfoil portion including an upper surface, a lower surface, and a trailing surface extending transversely to said upper and lower surfaces, said trailing surface being configured to define an arcuate recess having a forward portion and a pair of rearwardly extending side portions, said propulsion means including blade means disposed adjacent to a trailing surface of said airfoil portion for applying forward directed air pressure thrust forces to said trailing surface of said airfoil portion and for inducing a flow of air along a path extending across an upper surface of said airfoil portion and downwardly toward the body of water at the trailing surface of said airfoil portion to induce the application of air pressure lift forces to said airfoil portion and movement of said hull from the first position toward the second position, said blade means including a plurality of generally radial blades having tip portions which are movable along an annular path which is at least partially disposed within said arcuate recess, said annular path having a forward portion which is disposed closely adjacent to said forward portion of said recess and is disposed above said lower surface and below said upper surface, said annular path having a pair of spaced apart side portions which are disposed closely adjacent to said rearwardly extending side portions of said recess, each of said side portions of said annular path being disposed above said lower surface of said airfoil portion and below said upper surface of said airfoil portion, each of said blades including surface means for inducing the application of forwardly directed air pressure thrust forces against said trailing surface at said forward portion of said recess, the blade means being rotatable in a plane which is canted at an angle relative to the direction of movement of said vessel and which intersects the trailing surface of the airfoil portion, the blade means also being rotatable about an axis which is canted at angle relative to the forward direction of movement of said vessel.

3,965,837

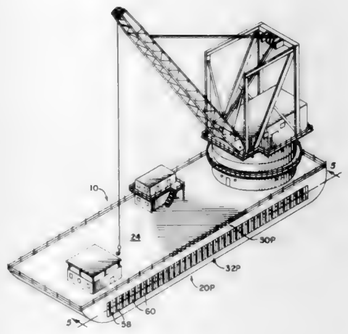
VESSEL HAVING IMPROVED WAVE RESPONSE CHARACTERISTICS

Farid Y. Michael, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed May 1, 1975, Ser. No. 573,531

Int. Cl.² B63B *39/03*

U.S. Cl. 114—125 **5 Claims**



1. A floatable vessel comprising:

a hull having top and bottom portions and port and starboard side portions,

said top portion including a working deck capable of carrying personnel and equipment;

each of said port and starboard side portions including vertically spaced upper and lower wing sections which form an outwardly open, inwardly closed trough section vertically therebetween,

each said trough section being bounded at the top by an outwardly directed undersurface of said upper wing section and at the bottom by an outwardly directed topsurface of said lower wing section;

each said trough section including a mouth extending between an outer end of said upper wing section and an outer end of said lower wing section to admit water into said trough section;

said topsurface of each said lower wing section being located for submersion during offshore operations to oppose upward motion of said vessel in heave and roll;

upper ballast tank means carried by said vessel and disposed to carry ballasting fluid above the center of said vessel;

means for

ballasting said upper tank means to raise the center of gravity and reduce the metacentric height of said vessel, and

deballasting said upper tank means to lower the center of gravity and increase the metacentric height of said vessel;

lower ballast tank means carried by said vessel and disposed to carry ballasting fluid below the center of said barge;

means for

ballasting said lower tank means to lower the center of gravity and increase the metacentric height of said vessel, and

deballasting said lower tank means to raise the center of gravity and reduce metacentric height of said vessel;

said trough sections and said upper ballast tanks, when ballasted, cooperating to provide mutually supplementary means operable to increase the natural roll period of said vessel in respone to

a reduction in effective water plane area of said vessel, created by said trough sections, and

a raising of the center of gravity of said vessel caused by ballasting of said upper ballast tanks;

said trough sections extending at least half the length of said vessel and being located so that the waterline of the body of water buoyantly supporting said vessel, in calm sea conditions, will intersect said trough sections vertically intermediate said undersurfaces and top surfaces thereof;

roll dampening means extending longitudinally along each of said trough sections and including means defining a series of longitudinally displaced openings, with said openings

providing water passages for transmitting water between said water body and the interior of said trough sections, with said water passages being directed in generally port and starboard facing directions, extending above and below said waterline and intersected thereby, and

being continuously operable to admit water into said trough sections, or permit inmpeded movement of water outward of said trough sections substantially throughout the height of said trough sections, and dampen rolling motion of said vessel;

said undersurfaces of said upper wing sections of said trough sections being inclined upwardly and outwardly and being operable, by virtue of said inclination, to reduce wave force acting thereon; and

wave energy dissipating means comprising wall means, said wall means

alternating with said water passages, longitudinally of said vessel,

extending generally upright of said trough sections, and

being operable to dissipate wave energy imparted to port or starboard sides of said vessel.

3,965,838

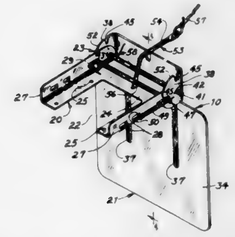
BACKWASH BAFFLE AND STABILIZING DEVICE FOR PROPELLER DRIVEN WATERCRAFT

Frank O. Uht, Bellevue, Wash., assignor to Jack Hughes, Bellevue, Wash., a part interest

Filed May 27, 1975, Ser. No. 581,160

Int. Cl.² B63H *25/48*

U.S. Cl. 114—145 A **13 Claims**



7. A backwash baffle and stabilizing device mountable to the anticavitation plate of a drive unit for operation below the operative water line of a watercraft, comprising:

a mounting member adapted to be anchored to the anticavitation plate;

a plate member pivotably mounted to the mounting member for movement about an axis between (a) a first position intersecting backwash produced by the drive unit and (b) a second position angularly displaced from the first position and in a plane parallel to the anticavitation plate;

releasable locking means mounted on one of the members directly interconnecting the members below the water line for operatively locking and unlocking the plate member relative to the mounting member in either of the positions thereof.

3,965,839

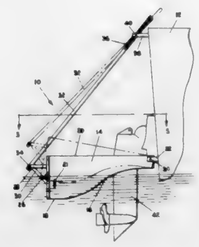
TROLLING BRAKE

George L. Lenz, Rte. No. 2, Cheboygan, Mich. 49721

Filed May 19, 1975, Ser. No. 578,627

Int. Cl.² B63H *25/44*

U.S. Cl. 114—145 A **13 Claims**



1. A trolling brake for controlling the speed of motor driven watercraft at idle speeds, said brake comprising:

an arcuate shield formed of a lightweight sheet material bent into a partial cylindrical shape from a pair of side portions to a rear central portion, said shield having a top edge and a bottom edge, said bottom edge sloping downwardly and rearwardly from the side portions to the rear central portion to provide a protective shield for downrigger lines and the like at the side portions thereof and to provide a water brake at a back portion thereof;

means for pivotably mounting said shield at the side portions thereof to the transom of a boat;

a rear support member for said shield, said support member being pivotably mounted at a lower end to a rear portion of said shield and having means at an upper end thereof to support said shield in a plurality of adjusted positions; and

means for adjustably mounting said upper portion of said support member on the transom of a boat.

3,965,840

METHODS AND APPARATUS FOR CONTROLLING THE PROPULSION OF AQUATIC VESSELS INCORPORATING SUCH APPARATUS

Jonathan Mark Blumberg, Creston, England, assignor to Gec-Elliott Automation Limited, Borehamwood, England

Filed Nov. 18, 1974, Ser. No. 524,566

Claims priority, application United Kingdom, Nov. 21, 1973, 53937/73

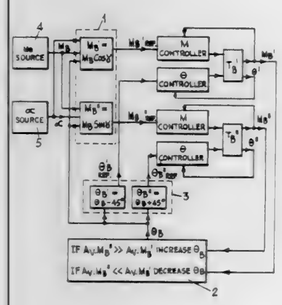
Int. Cl.² B63H *25/00*

U.S. Cl. 114—144 B **4 Claims**

1. A method of dynamically controlling the position of an aquatic vessel having at least two groups of steerable thrusters, each group of steerable thrusters including at least two individually steerable, individually variable-thrust thrusters, said method comprising the steps of steering at least one but not all of the thrusters of each group to direct its thrust on one side of a direction in which the net thrust vector of that group is to be directed, steering at least one other of the thrusters of each group to direct its thrust on the other side of said direction, maintaining two thrusters of a group at a constant angle with respect to each other, and controlling the thrust developed by each thruster of each group so that the net thrust

vector of said group is directed substantially in said direction, whereby in response to automatically measured variable input conditions the direction of the net thrust of at least one of said groups is automatically varied in a range of directions at a relatively high speed by changing the thrusts produced by individual thrusters of that group without further steering of such thrusters.

2. Apparatus for dynamically controlling the position of an aquatic vessel having at least two groups of steerable thrusters, each group of steerable thrusters including at least two individually steerable, individually variable-thrust thrusters, said apparatus comprising automatic control means for steering at



least one but not all of the thrusters of each said group to direct its thrust on one side of a direction in which the net thrust of that group is to be directed, means for steering at least one other of the thrusters of each said group to direct its thrust on the other side of said direction, means for controlling the thrust developed by each thruster of each said group so that the net thrust vector of said group is directed substantially in said direction, and means for automatically varying the direction of the net thrust vector of at least one of said groups at a relatively high speed by changing the thrusts produced by individual thrusters of that group and without further steering of such thrusters.

3,965,841

METHOD FOR HAULING A VESSEL ALONGSIDE A MOORING PLATFORM

Hendrik Maechiel Willem Croese, Schiedamseweg 103, Vlaardingen, Netherlands

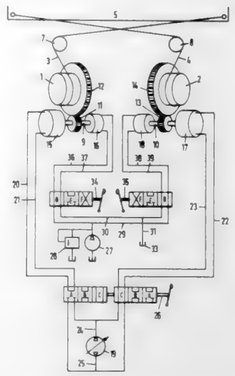
Filed Sept. 30, 1974, Ser. No. 510,729

Claims priority, application Netherlands, Apr. 26, 1974, 7405675

Int. Cl.² B63B *21/00*

U.S. Cl. 114—230 **11 Claims**

10. Apparatus for positioning a vessel alongside a mooring structure comprising a pair of winches each including a drum, cables extending from said drums for individual shortening and loosening, each of said winches including first rotary motor means for selectively driving said drum, each of said winches including second rotary motor means for exerting a like cable tensioning torque on said drum thereof independently of said first rotary motor means to normally apply a like tensioning force on each of said cables, said second motor means being a hydraulic motor, high and low pressure lines connected to both of said second motor means, and control means maintaining a constant pressure in each of said high and low pressure lines, said control means including means for connecting said second motor means high and low pressure lines directly to one another whereby when one of said winches is shortening its respective cables and the other of said winches is loosening its cable, said second motor means



coupled to said other winches is driven as a pump to drive said second motor means coupled to said one winch.

3,965,842

GRIPPING DEVICE FOR A SUSPENDED LOAD

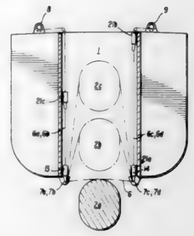
Jean Guy Cailloux, Six-Fours-la-Plage, France, assignor to Etat Francais, France

Filed Feb. 19, 1975, Ser. No. 551,024

Claims priority, application France, Mar. 5, 1974, 74.07350

Int. Cl.² B63B *21/56*

U.S. Cl. 114—235 R **12 Claims**



1. A gripping device for controlling the movements of a load suspended from a cable during the operation of bringing the load on board a ship or lowering the load below a ship, said device comprising:

at least two straps located on opposite sides of the cable and tensioned, above the load, across a passage in which the load moves when hoisted out of the water or placed in the water, one end of each of said straps being connected to means connected to one side of the passage and the other end of each of said straps being connected to means connected to the side of the passage opposite said one side thereof.

3,965,843

TRANSPORTING APPARATUS

Charles E. Smith, 7932 Eisenhower Blvd., Bridgeport, N.Y. 13030

Filed Dec. 19, 1974, Ser. No. 534,646

Int. Cl.² B63H *1/34, 16/00*

U.S. Cl. 115—19 **6 Claims**

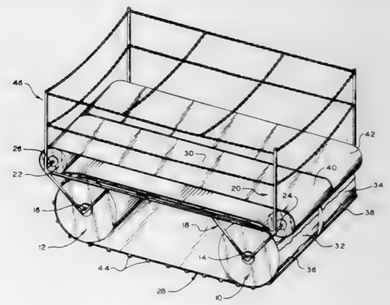
1. Buoyant apparatus for supporting a nominal load including a power source adapted to transmit motive power to said apparatus, thereby providing movement of said apparatus and load over a body of water, said apparatus comprising:

a. first and second pairs of cylinders having parallel, horizontal axes, at least said first pair being sufficiently buoyant to maintain said apparatus and the nominal load to be carried thereby submerged in water not further than approximately the diameter of said first pair of cylinders;

b. frame means maintaining said cylinders with the axe of said first pair in a first horizontal plane and the axes of said second pair in a second horizontal plane, above said first plane by a distance substantially equal to the combined radii of said first and second cylinders,

c. at least one continuous first belt of substantially the same width as said first pair of cylinders and encircling the same in such relation as to transmit rotation between said first belt and first pair of cylinders;

d. at least one continuous second belt of substantially the same width as said second pair of cylinders and encircling



the same in such relation as to transmit rotation between said second belt and second pair of cylinders;

e. said frame means maintaining said cylinders in such relation that a significant portion of the unwardly facing, outer surface of said first belt is in contact with substantially the entire downwardly facing, outer surface of said second belt for transmission of rotation between said belts, the upwardly facing, outer surface of said second belt being disposed for support of the power source providing motion thereto;

f. whereby, when supporting said nominal load, substantially all parts of said apparatus in contact with said body of water are adapted to move in a direction imparting said movement of said apparatus and load over said body of water in the desired direction by providing propulsion through said body of water in the desired direction thereby minimizing friction and drag.

3,965,844

APPARATUS FOR PIVOTALLY MOUNTING A FISHING MOTOR

John O. Brock; Marmion Dean Davis, and James Robert Wray, all of Shelby, N.C., assignors to Interstate Industries, Inc., Shelby, N.C.

Filed Mar. 27, 1975, Ser. No. 562,598

Int. Cl.² B63H *21/26*

U.S. Cl. 115—41 R **12 Claims**

1. An apparatus for pivotally mounting an outboard motor on a fishing boat or the like and such that the motor may be selectively and remotely pivoted between a vertically disposed lowered position wherein the motor is operatively held in the water and a horizontally disposed raised position wherein the motor is removed from the water, said apparatus comprising

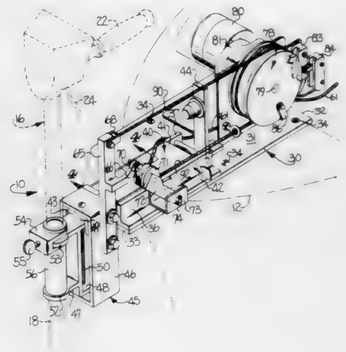
a mounting frame adapted to be fixedly attached to a boat,

a drive wheel rotatably carried by said mounting frame,

means for selectively rotating said drive wheel in either direction, and including a reversible electric motor carried by said frame and a manually operable switch for operating said electric motor in either direction,

a bracket pivotally carried by said mounting frame for pivotal movement in a vertical plane about a fixed horizontal axis and between a forward position and a retracted position,

means carried by said bracket for supportingly attaching the shaft of an outboard motor thereto and such that the outboard motor is disposed in its lowered position when said bracket is in its forward position and the outboard motor is disposed in its raised position when said bracket is in its retracted position,



cable means operatively interconnecting said drive wheel and bracket and including a first cable segment extending from said bracket in a first rotational direction with respect to said horizontal axis, and a second cable segment extending from said bracket in the opposite rotational direction with respect to said horizontal axis, whereby said bracket may be pivoted from said forward position to said retracted position upon rotation of said drive wheel in a first direction and the bracket may be reversely pivoted upon rotation of said drive wheel in the opposite direction.

3,965,845

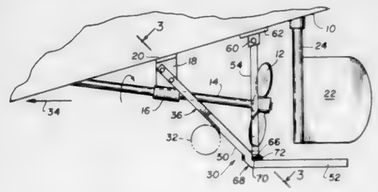
BOAT PROPELLER PROTECTIVE STRUCTURE

Michael T. Lubov, 8 Broadway, Lawrence, N.Y. 11559

Filed Nov. 26, 1975, Ser. No. 635,625

Int. Cl.² B63H *5/16*

U.S. Cl. 115—42 **6 Claims**



1. A protective structure for the propeller of a boat of the type wherein said propeller operates beneath the stern of said boat and is powered in rotation by a propeller shaft journalled in a depending shaft strut, said protective structure comprising a three-sectioned debris-blocking member including a U-shaped attaching section connected to said depending shaft strut, an oblique blocking section extending from said U-shaped section having an operative position located in the vertical plane of said propeller shaft and forwardly of said propeller, and a substantially horizontally oriented blocking section extending from said oblique blocking section having an operative position located also in the vertical plane of said propeller shaft and beneath said propeller, the juncture of said

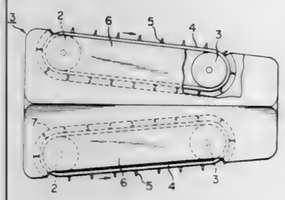
oblique and said horizontally oriented blocking sections being located substantially in the operating plane of said propeller, and a U-shaped holding member connected at its free ends to extend in depending relation from said boat and in surrounding relation about said propeller, said depending end of said U-shaped holding member being connected to said oblique and horizontally oriented sections at said juncture therebetween, whereby contact of said propeller with any debris is minimized by said protective structure by virtue of its surrounding position about said propeller.

3,965,846

ENDLESS BELT PROPULSION DEVICE FOR A HIGH SPEED BOAT

Osamu Mihara, Fujisawa, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 7, 1974, Ser. No. 477,422
Int. Cl.² B63H *1/34*
U.S. Cl. 115—64 **4 Claims**



1. A high-speed boat having at least one propeller unit for driving said boat and said propeller unit comprising:

a. a housing;

b. a plurality of wheel means arranged in spaces within said housing, each said wheel means comprising an upper and lower wheel;

c. at least two endless belt means arranged around said wheel means, each said belt means being in contact with the upper and lower wheel and each said belt means including a plurality of blades extending therefrom such that a portion of said plurality of blades extend outside of said housing wherein the angle of said blades relative to said housing is variable;

d. drive means for rotating at least two of said wheel means, said drive means comprising an inner shaft, an outer shaft and means for rotating said inner and outer shafts, said inner and outer shafts being interconnected by an oblique key inserted in oblique slots therein, said upper wheels being coupled to said outer shaft and said lower wheels being coupled to said inner shaft wherein when said inner and outer shafts are rotated with respect to each other the upper and lower wheels are rotated with respect to each other and thus the upper portion of each of said blades is twisted with respect to the lower portion thereof thereby tilting said blades, said blades extending from said housing and moving through the water thereby propelling said boat.

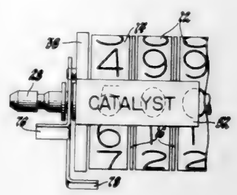
3,965,847

SERVICE MINDER ODOMETER

Kenneth R. Deming, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 3, 1975, Ser. No. 564,712
Int. Cl.² G01C *22/00*; **G01D** *13/00*
U.S. Cl. 116—114 W **3 Claims**

1. In an odometer assembly of the type having multiple counting wheels rotatable upon a shaft in response to mileage intervals, service indicating means responsive to a predetermined rotation of one of the counting wheels to move a signal into a visible position, a rotatable indicating member mounted on said shaft adjacent said one counting wheel, a flag portion of said indicating member extending in overlying relation to said counting wheels, wiper spring means between said indicating member and said one counting wheel to produce rotative movement of the indicating member from a first operative position to a second operative position in which said flag portion is visible to an observer, said wiper spring means being integrally attached to said member at one end and extending in a radial and axial direction toward said one counting wheel, circumferentially spaced detent means in said one counting wheel engaged by a second end of said wiper spring means to interconnect said member and said one counting wheel for rotation together during movement between first and second



operative positions, a stop washer mounted adjacent said indicating member having means operably engageable with said indicating member limiting rotation of said indicating member between said first and second operative positions whereby movement of said one counting wheel after rotation of said indicating member into its second operational position is permitted by flexing of said wiper spring means and resultant disengagement between its second end and said circumferentially spaced detent means, manually operated reset means including a lever for counter-rotating said stop washer and connected service indicating member in a direction corresponding to movement from the second operative position back to the first operative position.

3,965,848

FEVER INDICATOR

Robert Shotkin, Millburn, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Continuation-in-part of Ser. No. 409,819, Oct. 26, 1973. This application Jan. 31, 1975, Ser. No. 545,992
Int. Cl.² G01K *11/06*
U.S. Cl. 116—114.5 **2 Claims**

1. A fever indicator for determining temperatures above a predetermined value comprising:

a vessel having walls, a closed end, and an open end;

a plug member disposed for movement within said vessel;

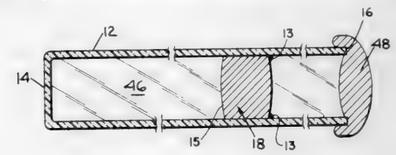
means bonding said plug within said vessel at a first position spaced apart from said vessel closed end in airtight relationship with said vessel walls, said bonding means comprising a material meltable at or above said predetermined temperature;

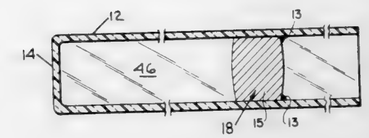
a portion of said vessel between said closed end and plug, said portion being evacuated of air;

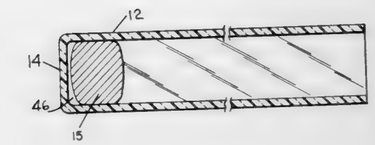
a removable closure over said vessel sealing said open end;

and,

a second portion of said vessel extending between said plug







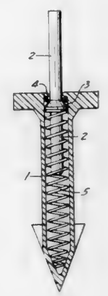
and said open end, said vessel second portion being evacuated of air.

3,965,849

COILED EDGE GUIDE FOR ROD-TUBE SIGNAL DEVICE AND METHOD

Glen R. Gee, Selma, Calif., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 17, 1975, Ser. No. 559,166
Int. Cl.² B29C *17/02*; **G01K** *11/06*
U.S. Cl. 116—114.5 **7 Claims**



1. A signalling device for indicating the attainment or surpassing of a critical condition comprising:

1. an elongate hollow element having at least one open end,

2. an indicating element within the hollow of the elongate hollow element and having sufficient clearance between the indicating element and the interior walls of the elongate hollow element to be capable of allowing the indicating element to freely slide within the hollow,

3. means for providing a force capable of extending the indicating element out of the at least one open end so as to provide a visual signal, and

4. means for providing a restraint on the indicating element so that it will not extend out of the at least one open end so as to provide a visual signal until a predetermined condition has been attained or surpassed,

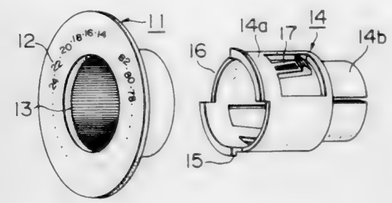
said signalling device being characterized by said at least one open end having about the opening an edge lip, said edge lip being both (1) a restraining means for said indicating element in an extended position and (2) a flexible polymeric resin material having a reverse spiral coil curl that provides a guiding element for said indicating element about the opening at the at least one open end.

3,965,850

CHANNEL INDICATOR DEVICE

Siro Tada, Chigasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 24, 1975, Ser. No. 561,355
Claims priority, application Japan, Apr. 1, 1974, 49-37665[U]; Nov. 20, 1974, 49-141015[U]
Int. Cl.² H03J *1/02*
U.S. Cl. 116—124.2 R **5 Claims**



1. A channel indicator device comprising a first indicator shaft linked to a channel knob for rotation therewith, a second indicator tubular shaft having a plurality of resilient members each having a knurl formed thereon, said second indicator tubular shaft being mounted on said first indicator shaft, and an indication digit plate having a knurl adapted to gear with said knurls on said resilient members formed thereon and having channel digits arranged thereon.

3,965,851

APPARATUS FOR APPLYING SEALING MATERIAL TO ENVELOPES

Robert Cohn, Millbrae, Calif., assignor to Champion International Corporation, Stamford, Conn.

Filed July 19, 1974, Ser. No. 490,203
Int. Cl.² B05C *1/02*, *13/02*
U.S. Cl. 118—1 **23 Claims**

1. Apparatus for applying sealing material to the flap closures of a plurality of envelopes, each including a body portion having a folded edge portion opposite said flap closure, comprising:

an endless, continuous conveyor means conveying a succession of envelopes in linear array, said conveyor means gripping each envelope along the folded edge thereof, with the flap closure being disposed below the plane of the envelope;

feed mechanism means in adjacent relation to said conveyor means, and which sequentially feeds the envelopes for engagement by said conveyor means;

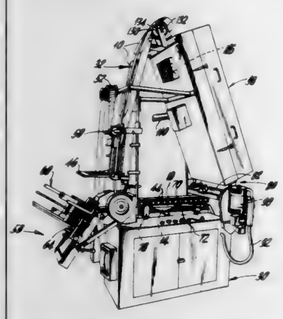
folding means in adjacent relation to said conveyor means whereover said conveyor means carries along said envelopes, and which is adapted to unfold the flap closure of each envelope to a generally horizontal position;

sealing material applicator means in adjacent relation to said conveyor means whereover said conveyor means

carries along said envelopes, and which is adapted to apply sealing material to one or more surfaces of the envelope;

dielectric dryer means in adjacent relationship to said conveyor means whereover said conveyor means carried along said envelopes, and which is provided to dry the sealing material applied to the envelopes; and

envelope stacking means in adjacent relation to said conveyor means whereto said conveyor means carried along said envelopes, and which is adapted to remove from said



conveyor means the envelopes to which sealing material has been applied, said continuous conveyor means extending in a generally horizontal direction over the folding means, extending upwardly and rearwardly at the point at which the sealing material applicator means is disposed, extending upwardly and rearwardly past the dielectric drying means, and extending downwardly and rearwardly past the envelope stacking means prior to returning to its initial position adjacent the feed mechanism means.

3,965,852

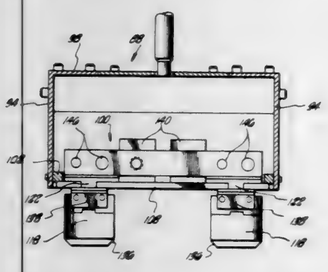
COATING APPARATUS

Donald F. Hardy, Horseheads, N.Y., assignor to Dart Industries Inc., Los Angeles, Calif.

Division of Ser. No. 374,298, June 28, 1973, Pat. No. 3,886,891, which is a continuation-in-part of Ser. Nos. 232,455, March 7, 1972, Pat. No. 3,856,498, and Ser. No. 732,413, March 7, 1972, Pat. No. 3,571,920. This application Jan. 6, 1975, Ser. No. 538,702

Int. Cl.² B05C *11/12*

U.S. Cl. 118—8 **8 Claims**



1. A fluidized bed dipping mechanism adapted to simultaneously transfer a plurality of heated objects to and through the media retained in said bed and including:

means supporting said fluidized bed and having and overhead frame between respective points where said objects are grasped, dipped into said bed and subsequently released said frame including an enclosure the bottom wall of which is comprised of a plurality of abutted mounting plates, each thereof having a multiplicity of parallelly arranged elongated guide slots therein;

actuator means positioned on and removably affixed to each of said plates interiorly of said enclosure;

separate members positioned in each of said slots with opposite end portions thereof projecting therefrom, said members being comprised of separable mating clamp segments, which segments are interconnected at one end portion of each with said actuator means and are movable in response thereto toward and away from one another in said slots;

said separate clamping members further including in their other end portions cavities shaped to grasp and wholly surround a segment of said objects thus shielding such segment from exposure to the fluidized bed media during immersion of the objects therein; and

conduit means extending through said members for communication between said cavities and a fluid source, said source being adapted to deliver fluid in quantities sufficient to maintain said members below the melting temperature of said media and to generate a positive pressure gradient within said cavities thereby excluding media therefrom.

3,965,853

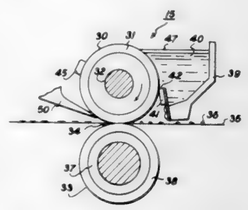
CONTACT FUSER ASSEMBLY

Rabin Moser, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 22, 1974, Ser. No. 490,635

Int. Cl.² G03G *15/20*

U.S. Cl. 118—60 **5 Claims**



1. Contact fuser apparatus for fixing toner images to a support member, said apparatus comprising:

a heated fuser roll structure having a rigid, thermally conductive core;

a backup roll forming a nip with said core through which said support member moves with said toner images contacting said core; and

means for forming a toner-impenetrable layer on said rigid core and a release layer on said toner impenetrable layer, said toner-impenetrable layer forming means comprising polyethylene which chemically reacts with the surface of said rigid core, said toner-impenetrable layer forming means containing copper for controlling said reactivity.

3,965,854

APPARATUS FOR COATING OF HOLLOW BODIES

Werner Scheiber, Frankfurt am Main, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed June 3, 1974, Ser. No. 476,031

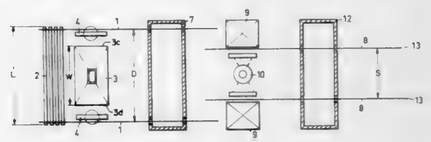
Claims priority, application Germany, June 4, 1973, 2328403; May 21, 1974, 2424558

Int. Cl.² B05C *5/00, 11/14*

U.S. Cl. 118—66 **10 Claims**

1. An apparatus for coating rotationally symmetrical elongated bodies comprising at least two in-line successive conveyors defining a transport path for said bodies, each of said conveyors comprising a pair of transversely spaced horizontally extending conveyor chains, the conveyor chains of a first

of said conveyors engaging said bodies at first regions of the length of the bodies axially spaced from second regions of engagement by the chains of the second conveyor along the length of each body, said bodies lying athwart said conveyors; first spray means including at least one spray chamber along the path of said first conveyor enclosing only said second regions of said bodies for spraying a hardenable protective layer thereon over only the second regions of said bodies; at least one oven downstream of said first spray means along said



transport path for hardening the layers upon said second regions of said bodies; second spray means disposed along the path of said second conveyor and enclosing said first regions of said bodies and spraying respective layers thereon upon said first regions and upon limited lengths of said bodies while said bodies are supported on the hardened layers of said second regions; and at least one second oven along the transport path downstream of said second spray means for hardening the layers disposed on the first regions of said bodies.

3,965,855

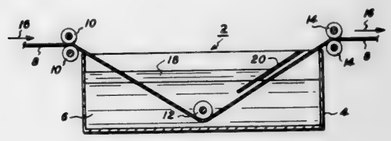
IMMERSION FUSING

Ernest A. Weiler, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 4, 1975, Ser. No. 565,303

Int. Cl.² G03G *15/20*

U.S. Cl. 118—68 **2 Claims**



1. A fusing apparatus for fixing a xerographic image of thermo-responsive powder located on a support member comprising:

a heat exchange portion having a heat storage and transfer medium, said medium including a heated liquid metal which is non-wetting to the support member and the image, and a molten non-metal floating atop said liquid metal, said liquid metal heated to a temperature greater than the fusing temperature of the thermo-responsive powder and less than the scorch point of the support member said molten non-metal acting as a vapor and oxidation barrier for the liquid metal,

container means for containing said liquid metal and said molten non-metal and including a baffle extending to a depth below the surface of said metal and above the surface of said non-metal to contain said floating non-metal,

conveying means for conveying the support member with the xerographic powder image thereon through said molten non-metal and into said heat exchange portion, whereby said support member is coated by said molten non-metal prior to its entry into said liquid metal and said xerographic powder image is fixed by heat transfer, from said heat storage and transfer medium to the support member and the powder image, and

conveying means further conveying the support member from said heat exchange portion in the area thereof not covered by said non-metal, whereby said molten non-metal is wrung by said liquid metal to a thin coating on said support member.

3,965,856

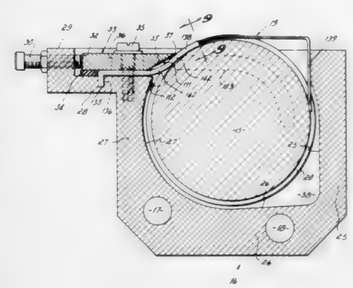
ADHESIVE WHEEL APPLICATOR DEVICE

Charles H. Scholl, Vermilion, and Alan B. Reighard, Bay Village, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Dec. 27, 1974, Ser. No. 536,730

Int. Cl.² B05C *1/02*

U.S. Cl. 118—202 **17 Claims**



1. An adhesive applicator device for use in combination with a machine for applying molten adhesive to a substrate comprising

an open top reservoir,

means for heating said reservoir to maintain adhesive contained therein in a molten state,

a wheel mounted for rotation within said reservoir, said wheel having a plurality of annular grooves in the periphery thereof,

a doctor blade adjustably mounted upon said reservoir, said doctor blade being operative to control the thickness of a film of adhesive applied by said wheel to a substrate as the substrate is passed over the wheel,

a plurality of stripper fingers mounted upon said reservoir and extending over the top of said applicator wheel, each of said stripper fingers having a section thereof located within one of said plurality of annular grooves of said applicator wheel, said sections of said stripper fingers which are located within said grooves of said applicator wheel extending between said doctor blade and said applicator wheel, and

a resilient tube surrounding each of said stripper fingers at least at the point at which said stripper fingers extend between said doctor blade and said wheel, said resilient tubes being operative to form a dynamic seal between the doctor blade and the annular grooves of said applicator wheel so as to preclude accumulation of molten adhesive about said stripper fingers at the top of said applicator wheel.

3,965,857

APPARATUS FOR PRODUCING A UNIFORM METALLIC COATING ON WIRE

Lawson J. Baxter, Raytown, Mo., assignor to Armco Steel Corporation, Middletown, Ohio

Continuation of Ser. No. 462,307, April 19, 1974, abandoned, which is a continuation of Ser. No. 40,791, May 27, 1970, abandoned, which is a division of Ser. No. 695,097, Jan. 2, 1968, Pat. No. 3,523,815. This application June 12, 1975, Ser. No. 586,421

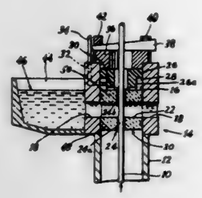
Int. Cl.² B05C *3/12*

U.S. Cl. 118—405 **3 Claims**

1. In an apparatus for applying a molten coating metal to a

wire, which includes a reservoir for said molten coating metal having a vertical passage therethrough,

a. a die holder, having a vertical passage therethrough, disposed in said vertical passage through said reservoir,
b. a substantially horizontal passage intersecting said passage in said die holder, and communicating with said reservoir,
c. a one-piece die element disposed in said die holder,
d. said die element having a vertical passage therethrough, defining a path of travel for said wire,



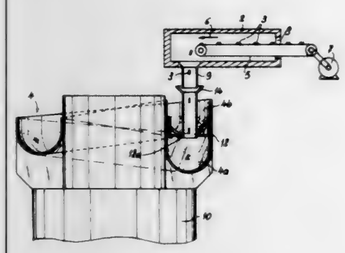
e. said die element having a horizontal passge intersecting said vertical passage in said die element, and communicating with the horizontal passage in said die holder,
f. said horizontal passage in said die element dividing the vertical passage in said die element into entrance and exit portions and being larger in diameter than said vertical passage,
g. said exit portion having a clearance over said wire of from about 0.010 to about 0.040 inch on the diameter, and
h. means for centering said wire with respect to said exit die.

3,965,858

APPARATUS FOR APPLYING PLASTIC COATINGS TO SMALL BODIES

Jacques Antoine Burdin, Ecully (Rhone), France, assignor to Societe Anonyme dite ATO CHIMIE, Courbevoie, France

Division of Ser. No. 381,439, July 23, 1973. This application Aug. 12, 1974, Ser. No. 496,586
Claims priority, application France, July 26, 1972, 72.27618; May 30, 1973, 73.20470
Int. Cl.² B05C *3/08*
U.S. Cl. 118—417 **10 Claims**



1. An apparatus for coating mobile workpieces with plastic material, comprising:

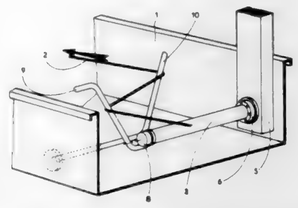
a vessel of substantially rectangular cross-section having a flat bottom for confining a fluidized bed of plastic material, said vessel forming a track for said material extending between a loading point and an unloading point, said bottom forming a channel for the circulation of a cooling fluid;
vibrating means coupled with said vessel for propelling said material along said track from said loading point to said unloading point;
heating means adjacent said vessel;
feed means for delivering workpieces via said heating means to said vessel at an elevated temperature at which particles of said plastic material fuse onto the surfaces of said workpieces to form a film, said feed means terminating above said loading point whereby the heated workpieces are dropped onto said track for entrainment by said plastic material to said unloading point; and
separating means at said unloading point for removing nonadhering particles from the coated workpieces.

3,965,859

APPARATUS FOR TREATMENT OF TOWS FOR FIBERS BY IMMERSION IN A LIQUID

Jean-Pierre Guilbaud, Mably, France, assignor to Ateliers Roannais de Constructions Textiles, Roanne, France

Filed Mar. 7, 1975, Ser. No. 556,390
Claims priority, application France, Mar. 8, 1974, 74.08097
Int. Cl.² B05C *3/12*
U.S. Cl. 118—428 **5 Claims**



1. An apparatus for the treatment of a tow for fibers which is at least partially immersed in a liquid treatment bath, comprising a tank having substantially vertical walls for containing a liquid treatment bath and which includes hold-down bars mounted, so as to overhang into the tank and over one of the vertical walls of the tank, said hold-down bars each having a free end spaced from the other side wall, wherein in the vicinity of one of the hold-down bars, the apparatus also comprises a tow-guide combination situated in two parallel vertical planes, including:

a first tow-guide inclined relative to the horizontal, situated in a vertical plane passing through the axis of the hold-down bar and fixed to the free end of the hold-down bar so that it is flush with the lower generatrix of the hold-down bar, and
a second tow-guide, situated downstream from the first tow-guide relative to the direction of forward movement of the tow, and fixed, at the same level as the first, to the vertical wall of the tank opposite the wall on which the hold-down bar is mounted so that it overhangs into the tank after its point of attachment to the wall, the second tow-guide comprising a horizontal part followed by a part which is inclined relative to the vertical and the slope of which is opposite to the incline of the first tow-guide, each tow guide having a free end spaced from one side wall.

3,965,860

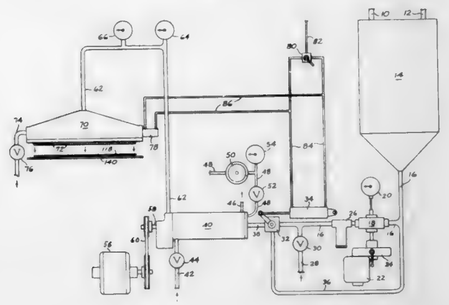
PLYWOOD MANUFACTURE USING FOAMED GLUES

Charles N. Cone, Portland, and Julius M. Steinberg, Hillsboro, both of Oreg., assignors to Pacific Adhesives, Inc., Hillsboro, Oreg.

Division of Ser. No. 80,961, Oct. 15, 1970, abandoned, Continuation-in-part of Ser. No. 839,481, July 7, 1969, abandoned. This application Mar. 23, 1973, Ser. No. 344,200
Int. Cl.² B05C *11/10*; B32B *5/18*
U.S. Cl. 118—612 **11 Claims**

1. Apparatus for applying foamed liquids to surface, which comprises:

a. positive displacement liquid pump means for continously propelling the liquid in unfoamed condition at a predetermined flow rate,
b. liquid foaming means communicating with the pump means for receiving the propelled liquid and foaming it as it is propelled, the foaming means comprising:
1. a generally cylindrical rotor and stator, with the rotor being rotatably mounted within the stator and spaced therefrom,
2. at one end of the stator first and second conduit means arranged for the respective introduction between the rotor and stator in the direction of the axis of rotation of the rotor of (a) unfoamed liquid from the pump means and (b) a foaming gas under pressure,



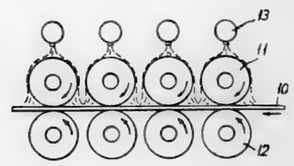
3. a plurality of radially extending spaced recesses in the opposed cylindrical surfaces of the rotor and stator, the recesses in the rotor being arranged to sweep across the recesses in the stator upon rotation of the rotor, thereby agitating the liquid and gas and foaming the liquid, and
4. third conduit means at the end of the stator opposite said one end for conveying away the resultant foamed liquid, and
c. applicator means communicating with the third conduit means for receiving the foamed liquid and applying it continuously to the surface,
d. the pump means maintaining the flow rates of the unfoamed and foamed liquids at substantially the same values on a unit weight of liquid per unit time basis.

3,965,861

SEPARATED ROLLER LIQUID DEVELOPMENT

Osamu Fukushima; Seiji Matsumoto, and Masamichi Sato, all of Asaka, Japan, assignors to Rank Xerox Ltd., London, England

Filed Sept. 4, 1974, Ser. No. 503,200
Int. Cl.² G03G *13/10*
U.S. Cl. 118—637 **4 Claims**



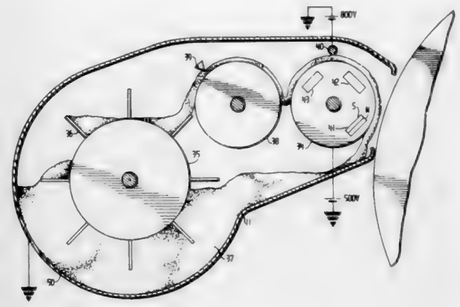
1. An apparatus for the development of electrostatographic latent images comprising at least one pair of rollers spaced in close proximity to one another capable of having a latent image bearing substrate interposed therebetween, means for furnishing liquid developer to the surface of one roller which functions as the developing roller and is adjacent the latent image when said substrate is present, a development electrode means having one surface concentric with and spaced in close proximity to the developing roller which, in cooperation with the developing roller within the range of about 0.2 to about 2 mm apart, forms a conduit for transporting the liquid developer in laminar flow having a Reynolds number below about 2000 to a latent image bearing substrate when interposed between said rollers.

3,965,862

XEROGRAPHIC DEVELOPMENT SYSTEM

Frank Yank, Hacienda Heights, Calif., and Jerome E. Lamel, Plano, Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 30, 1975, Ser. No. 545,560
Int. Cl.² G03G *15/09*
U.S. Cl. 118—637 **5 Claims**



1. An apparatus for developing a latent image on a charged photoconductive surface wherein the potential in the area of the image is higher than that of the remainder of the said surface comprising

a sump containing developer material comprising toner particles triboelectrically attracted to magnetic carrier granules,
a rotatable magnetic applicator means disposed in the sump for applying toner particles to the photoconductive surface, said applicator means being electrically biased at a potential intermediate the potential in the area of the image and remaining areas of the said surface, and
a stationary bar disposed in spaced substantially parallel relationship with the surface of said magnetic applicator means and extending throughout the length thereof, said bar being electrically biased to a potential greater than that on the applicator means but less than the potential of the latent image on the said photoconductive surface and said bar is disposed upstream of the photoconductive surface in the rotating path of the applicator means.

3,965,863

CHEMICAL LITTER UNIT

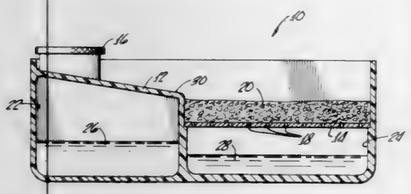
Harry M. Scott, 6472-A Warner Ave., Huntington Beach, Calif. 92647

Filed Apr. 7, 1975, Ser. No. 565,956
Int. Cl.² A01K *29/00*
U.S. Cl. 119—1 **8 Claims**

1. A chemical litter unit for a household pet comprising:

a holding tank;
a receptacle area attached adjacent said holding tank;
a litter tray mounted above said receptacle area, said tray having a series of perforations; and

a plurality of nonabsorbent chips located in said tray, said receptacle area containing a chemical solution for receipt



of liquid excreta from said pet, said holding tank for receipt of solid excreta of said pet.

3,965,864

AUTOMATIC DEVICE FOR THE MAINTENANCE OF SMALL ANIMALS

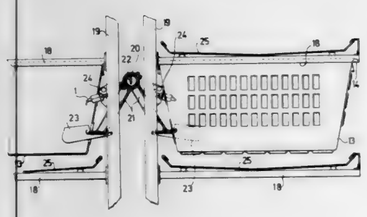
Heinrich Beltz, Marburg, Lahn, Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Lahn, Germany

Filed Dec. 17, 1974, Ser. No. 533,655

Claims priority, application Germany, Dec. 19, 1973, 7344856[U]; Dec. 19, 1973, 2363024

Int. Cl.² A01K *1/00, 7/00*

U.S. Cl. 119—18 **7 Claims**



1. An automatic device for rational management of small animals comprising, a frame, at least one pair of separate apertured cages for retaining small animals removably mounted on said frame in adjacent spaced locations, means for supplying drinking water to said cages; means for supplying fodder to said cages including a common fodder supply conveyor mounted in said frame between said cages and having a pair of feed tubes extending therefrom, said feed tubes each including a feeding bowl mounted on the end thereof remote from said conveyor and extending into its associated cage through an aperture in a side wall thereof; and means mounted in said frame for receiving and automatically removing dung falling from said cages; each of said feed bowls having a bottom, side, and top wall and wherein the top wall has an opening therein through which the animals feed, said feed tube being connected to and in communication with the feed bowl through the top wall thereof whereby fodder supplied to said bowl through the tubes rises only to the level of the top wall; the bottom wall of the bowl having thin slots formed therein to allow only fodder fines to pass therethrough; and said water supply means including a water supply valve having an inlet port and an outlet spout formed; and a valve seat formed therein between said inlet port and outlet spout; a valve closure element mounted in said valve upstream from said seat; spring means for biasing said closure element against said seat to normally close said spout; a control pin secured in said closure element and extending through and beyond said spout to a point where it is exposed for actuation by an animal such that angular movement thereof tilts the closure member and opens the valve; said valve having a by-pass passage formed therein providing communication between said inlet port and said spout around said closure member, and an adjusting screw threadably mounted in the valve with an end thereof extending into said passageway for selectively opening and closing the passageway and controlling the flow of water therethrough whereby a small continuous supply of water can pass through said spout when the valve is closed by said closure member.

3,965,865

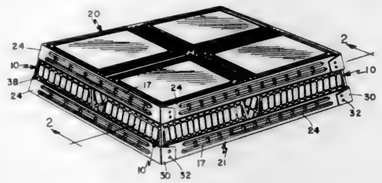
POULTRY CARRIER INCORPORATING DISPOSABLE FEED TRAYS

Peter Kundikoff, Rte. 4, Box 870, Escondido, Calif.

Filed June 5, 1975, Ser. No. 583,998

Int. Cl.² A01K *31/18*; B65D *11/00*

U.S. Cl. 119—19 **8 Claims**



1. A poultry carrier for chicks and the like comprising:
a topless and bottomless open beam frusto-pyramidal separator to house the chicks,
enclosures forming removable tops and bottoms for said separators,
means connected to said enclosures to permit vertical stacking of the enclosed separators for transport including,
mating male and female parts in a bottom enclosure of a first separator and a top enclosure of a subtending separator,
said male and female parts dividing the top and bottom enclosures into quadrants,
adjacent bottom edges of said separators being commonly received in a side by side relationship in an interior groove formed by a male part,
grooves running adjacent the edges of said enclosures to accommodate the exterior facing edges of said separators,
the top edges of said separators being received in grooves formed by the male parts of said top enclosure.

3,965,866

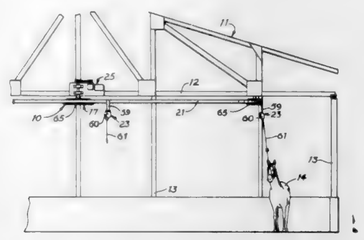
ANIMAL EXERCISER

Merle J. Lorentz, Rte. 1, Chewelah, Wash. 99109, and Donald F. Salzman, Rte. 3 - Box 167B, Colville, Wash. 99114

Filed Feb. 7, 1975, Ser. No. 548,084

Int. Cl.² A01K *29/00*

U.S. Cl. 119—29 **4 Claims**



1. An animal exercising device adapted to be mounted to an overhead structure spanning a prescribed open area and having peripheral support, such as ceiling joists and outside walls of a building structure, comprising:

a drive sheave adapted to be mounted to the overhead structure within the prescribed open area for rotation about a first vertical axis;
an end idler sheave adapted to be mounted to the overhead structure for rotation about a vertical axis spaced from the drive sheave;
a plurality of intermediate idler sheaves also adapted to be mounted to the overhead structure within the prescribed open area for rotation about vertical axes spaced from one another and between the axes of said drive sheave and said end idler sheave;
an extensible endless belt extending about said drive sheave, said end idler sheave and said intermediate idler sheaves to define a continuous circuit within the prescribed open area;
tether means fastened directly to said belt and depending therefrom for attachment to an animal so that tension along the tether means may result in deflection of the belt;
drive means for rotating said drive sheave about said first axis to thereby move said belt about said continuous circuit; and
adjustable yieldable tensioning means operatively associated with said intermediate idler sheaves for maintaining said extensible belt in a taut condition.

3,965,867

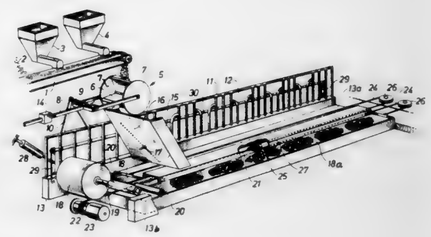
DEVICE FOR DELIVERING FEED PORTIONS TO DIFFERENT PLACES

Carl Anders Olsson, Eskilstuna, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Oct. 7, 1974, Ser. No. 512,601

Int. Cl.² A01K *5/02*

U.S. Cl. 119—52 AF **3 Claims**



1. In a device for delivering feed in portions to a plurality of feed places arranged in a row, the combination of a rotatable shaft adjacent one end of said row, an underlayer, a conveyor strip slidably supported on the underlayer when in an extended position and connected at one end to the shaft and initially wound thereon, means associated with the other end of the strip for unwinding the strip off the shaft and for extending the strip in only a single run along said row as unwinding the strip from the shaft occurs, the strip when extended along said row having said other end of the strip adjacent the other end of the row and at substantially the same level as said one end of the strip, and feed portioning means adjacent said one end of said row operable to deliver feed portions of predetermined weight successively upon the conveyor strip as the same is extended whereby the feed portions are moved to the respective feed places by said extending of the strip.

3,965,868

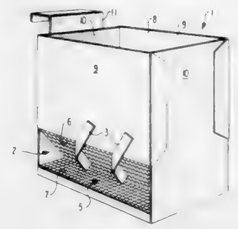
LABORATORY MOUSE FEEDER

John Hunziker, Jr., Pine Bluff, Ark., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Continuation-in-part of Ser. No. 464,489, April 25, 1974, Pat. No. 3,902,459. This application Apr. 14, 1975, Ser. No. 567,718

Int. Cl.² A01K *5/00*

U.S. Cl. 119—52 R **7 Claims**



1. A feeding device and feed storage hopper for laboratory mice, comprising:
wall means defining a chamber closed at its bottom holding a quantity of animal feed, said chamber having an upper portion, a lower portion, a feed inlet means at its upper portion and a feeding opening in its lower portion above the closed bottom;
a generally V-shaped feeding means mounted in the feeding opening in the lower portion for allowing mice to feed, said feeding means comprising an upper and lower screen which project inwardly toward the center of said chamber and meet in the apex of the V, said upper screen being affixed in said feed opening at an inclined angle sufficient so that the weight of the feed thereabove forces a continual collapsing downwardly of the feed as it is comsumed from below, said lower screen being horizontally affixed in said opening below said upper screen and above said closed bottom, wherein a mouse can ingest the feed resting on said upper screen, said upper and lower screen having a mesh size sufficient to support powdered mash feed without going through its openings while allowing a mouse to feed therethrough; and
partition means connected to said feeding means for preventing the mice from entering said feeder means thereby precluding contamination of the feed through feces or urine.

3,965,869

ASYMMETRICAL DIVIDER BLOCK FOR A ROTARY DISPLACEMENT ENGINE

Lloyd Edward Miller, Jr., 389 Granello Ave., Coral Gables, Fla. 33146

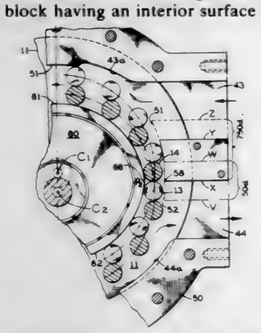
Filed Mar. 24, 1975, Ser. No. 561,069

Int. Cl.³ F02B *53/00*; F01C *1/08*; F04C *17/04*

U.S. Cl. 123—8.45 **3 Claims**

1. A positive displacement device employing a pair of parallel gear wheels which are rotatable on separated axes, gear teeth circularly disposed on the face of each of said wheels which teeth intermesh with said teeth on the opposite of said wheels, a housing and core member sealingly disposed between said wheels which define a generally annular track in which said teeth revolve, said teeth dividing said track into sealed working chambers whose volumes each contract and expand twice during one revolution of said chambers in said track, port means for providing the ingress and egress of fluid, respectively, to and from said chambers,
said housing including at least one divider block which in conjunction with said core member defines a ported pass

through which said teeth travel during rotation of said gear wheels, said block having an interior surface which is seal-



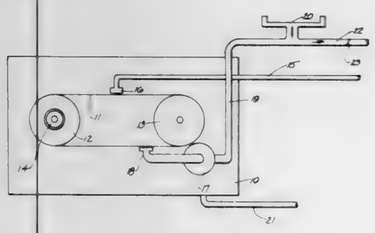
ingly contacted by at least one of said teeth at all times to restrict the leakage of fluid and prevent free communication through said pass.

3,965,870

METHOD OF OPERATING AN INTERNAL COMBUSTION ENGINE WITH SOLVENT REFINED COAL AS A FUEL

Wallace Clark, 1830 S. German Church Road, Indianapolis, Ind. 46239

Filed Mar. 3, 1975, Ser. No. 554,633
Int. Cl.² F02B *45/04*; **F02D** *19/04*
U.S. Cl. 123—23 **5 Claims**



1. The method of operating an internal combustion engine with SRC as a fuel, which includes the steps of

a. providing the SRC in finely divided form and substantially free of sulfur and ash,

b. aspirating the finely divided SRC into an internal combustion engine cylinder during the suction stroke of the piston in said cylinder,

c. causing said finely divided SRC to liquefy in the form of a fine spray during the compression stroke of said piston, and

d. providing a glow plug in the cylinder above piston travel whereby said fine liquid spray is ignited by said glow plug to produce a power stroke of said piston.

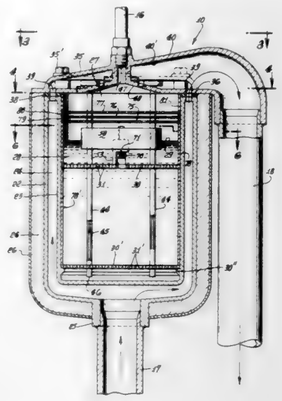
3,965,871

CONVERTER VAPORIZER

Clyde M. Morton, 11525 S. Ramona, Hawthorn, Calif. 90250

Filed Mar. 22, 1974, Ser. No. 453,590
Int. Cl. F02d *19/00*
U.S. Cl. 123—25 B **14 Claims**

1. In combination with a combustion engine having and an intake manifold an exhaust means from the engine, the combination of a converter vaporizer for converting water into vapor and introducing a mixture of air and the moist gaseous vapors to said combustion engine intake manifold, said converter vaporizer comprising a heat exchanger having respective outer and inner walls in nested relationship and in spaced relationship and forming a vein for engine hot exhaust emissions, a hot exhaust emissions inlet from said exhaust means to said vein and an exhaust emissions outlet from said vein to said exhaust means at a location downstream from said hot emissions inlet, said inner wall forming a cylindrical chamber for water having a top and an inner floor, a water inlet passage to said chamber and a vapor outlet passage from said chamber adjacent the upper end, a flow control in said water inlet passage and bouyant means in said chamber having an operative connection to said flow control, there being a selected liquid level in said chamber determined and maintained by said flow control, an air supply passage means from the exte-



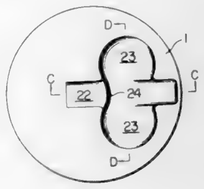
rior of the chamber to a location adjacent to the inner floor of the cylindrical chamber, baffle means in said chamber between said inner floor and said liquid level, a vacuum line communicating between the engine intake manifold and said vapor outlet passage from the chamber, said vapor outlet passage being at a location above said liquid level, and dispersing means in the chamber between said liquid level and said vapor outlet passage forming a dispersing passageway for water vapor particles to said vapor outlet passage for transmission to the engine intake manifold.

3,965,872

MAIN COMBUSTION CHAMBER OF SWIRL CHAMBER TYPE DIESEL ENGINE

Kaoru Taira, and Hirotoshi Inoue, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 3, 1975, Ser. No. 538,264
Claims priority, application Japan, Aug. 6, 1974, 49-093367[U]
Int. Cl.² F02B *3/00, 23/00*
U.S. Cl. 123—32 C **3 Claims**



1. In a swirl chamber type diesel engine comprising a piston, a main combustion chamber comprising a straight inclined groove formed in the top surface of said piston, said straight groove extends diametrically from an edge portion of said surface and becoming shallower as the groove

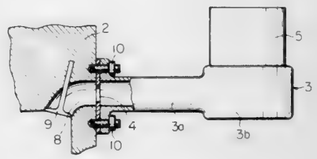
extends inward from said edge portion, said main combustion chamber further comprising a pair of twin-leaved recesses, each one of said pair of twin-leaved recesses extending from substantially the mid portion of a respective one of the pair of opposing straight sides of said straight inclined groove.

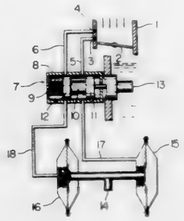
3,965,873

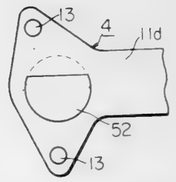
FLOW EQUALIZING MEANS

Tsohiaki Konomi; Joji Nurita, both of Susono, and Yasushi Tanazawa, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Nov. 1, 1973, Ser. No. 412,021
Claims priority, application Japan, July 12, 1973, 48-77871
Int. Cl.² F02H *75/18*
U.S. Cl. 123—52 M **2 Claims**







1. An intake manifold for a multicyiinder internal combustion engine of the type including a riser connected to a carburetor and branch pipes connecting the riser to intake ports of respective cylinders of the engine, the manifold being separable from the engine at an interface lying in a plane intersecting respective portions in each of the branch pipes, wherein the improvement comprises:

a flat gasket inserted at said interface and having orifices located at said positions in said respective branch pipes for limiting the cross-sectional flow area at each of said positions to a preselected magnitude for equalizing the pressure drops across said orifices, wherein each orifice is defined by an arc of a circle approximately concentric with, and of equal diameter to, the respective branch pipe, and a horizontal chord joining the upper ends of said arc.

3,965,874

IGNITION TIMING CONTROL APPARATUS

Noriaki Kawai, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 19, 1974, Ser. No. 534,469
Claims priority, application Japan, July 9, 1974, 49-080295
Int. Cl.² F02P *5/04*
U.S. Cl. 123—117 A **3 Claims**

1. Ignition timing control apparatus for an internal combustion engine comprising:

a first diaphragm means and a second diaphragm means, said first and second diaphragm means each individually controlling an advancer drive connected to a distributor,

a change-over valve,

means responsive to the operating condition of the engine for controlling the change-over valve,

a first vacuum port opening into a suction pipe of said engine and detecting the vacuum in accordance with an operating condition of said engine,

a second vacuum port opening into said suction pipe at the upstream side of said first vacuum port and detecting the vacuum which is less than the vacuum detected at said first vacuum port and may be substantially zero under low and high load operating conditions of said engine; and

said change-over valve fluidly interconnecting said first diaphragm means with said first vacuum port in the suction pipe and not fluidly interconnecting said second diaphragm means with said second vacuum port in the suction pipe when the engine is in cold operation or warming up so that when the engine is in cold operation or warming up said first diaphragm means communicates with said first vacuum port through said change-over valve to advance ignition timing in response to the vacuum from said first vacuum port, and said change-over valve fluidly interconnecting said second diaphragm means with said second vacuum port in the suction pipe and not fluidly interconnecting said first diaphragm means with said first vacuum port in the suction pipe when the engine is in a condition other than cold operation or warming up so that when the engine is in a condition other than cold operation of warming up said second diaphragm means communicates with said second vacuum port through said change-over valve to advance ignition timing in response to the vacuum from said second vacuum port.

3,965,875

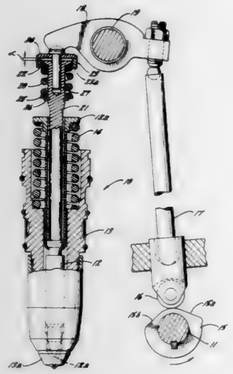
FUEL INJECTION SYSTEM FOR DIESEL ENGINES

Julius P. Perr, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed July 2, 1973, Ser. No. 375,350
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 AY **11 Claims**

1. In a fuel injection system for a diesel engine having an injection train connected between the camshaft of the engine and the plunger of the fuel injector for operating said plunger in synchronism with the rotation of said camshaft, said injection train having a predetermined spring rate, the improvement comprising auxiliary spring means connected in series with said injection train and having a spring rate lower than that of said injection train for advancing said plunger at a slow rate determined by the spring rate of said auxiliary spring means in response to a predetermined reaction force on the

tip of said plunger, and means for rendering said auxiliary spring means ineffective in response to a predetermined de-

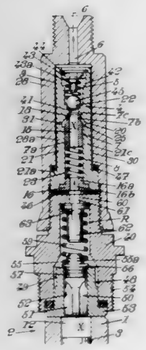


flection thereof so that said plunger is thereafter advanced at a fast rate determined by the spring rate of said injection train.

3,965,876
FUEL INJECTION PUMPS FOR INTERNAL COMBUSTION ENGINES

Raymond Tissot, Bron, France, assignor to Sigma Diesel, Venissieux, France

Filed Dec. 9, 1974, Ser. No. 531,197
Claims priority, application France, Dec. 13, 1973, 73.44650
Int. Cl.² F02M *39/00*
U.S. Cl. 123—139 **8 Claims**



1. A fuel injection pump for an internal combustion engine, comprising:

a pump assembly including a cylinder and a piston reciprocable in said cylinder to deliver liquid fuel from said cylinder during an active portion of a delivery stroke of the piston;

structure defining a delivery passage and a return flow passage for fuel between said cylinder and a linking passage for connection to an injector;

a normally closed delivery valve positioned in the delivery passage in said structure in alignment with said cylinder and responsive to pressure in the delivery passage to open during the active portion of the delivery stroke of the piston to allow fuel to be delivered to the linking passage; and

a normally closed return flow valve positioned in the return flow passage in said structure in alignment with said cylinder and responsive to the exceeding of a given pressure difference between the linking passage and said cylinder to open to allow fuel to flow back from the linking passage towards said cylinder;

said return flow valve including a permanently open axial passage forming part of the delivery passage;

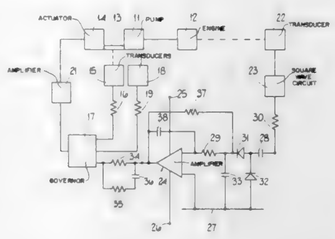
in which pump the improvement comprises;

a third valve disposed in said structure upstream of said return flow valve and operative to open and close in the same sense as said delivery valve, said third valve comprising a movable valve member slidable in a bore forming part of the delivery passage in said structure, a valve head on said movable valve member, a valve seat formed at one end of the bore receiving said movable valve member, and resilient means biasing the movable valve member into a closed position in which said valve head engages said valve seat, said movable valve member including means for closing the bore receiving said valve member when said valve head is spaced at a predetermined axial distance from said valve seat such that said movable valve member continues movement in a closing direction after closing of said bore, and hence increases the closed volume of the delivery passage downstream of the third valve until the valve head seats on said valve seat.

3,965,877
FREQUENCY TO VOLTAGE CONVERTERS

Anthony John Adey, Slough, England, assignor to C.A.V. Limited, Birmingham, England

Filed May 14, 1975, Ser. No. 577,357
Claims priority, application United Kingdom, May 31, 1974, 24212/74
Int. Cl.² F02M *39/00*; F02D *1/04*
U.S. Cl. 123—139 E **4 Claims**

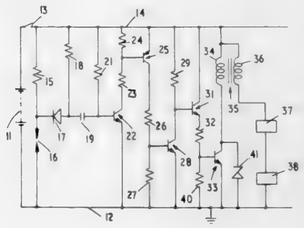


2. A fuel supply system for an engine comprising in combination a pump supplying fuel to the engine, a first transducer measuring pump output, a second transducer measuring demand, transducer means measuring engine speed, and an electronic governor to which the signals from the first and second transducers and the transducer means are supplied, the governor controlling the pump output, said transducer means comprising a pulse generator producing pulses at a frequency dependent upon the rotational speed of the engine, an operational amplifier which is powered by first and second supply lines, and has its output terminal connected to the governor and its non-inverting input terminal connected to a third supply line at a potential between the potentials of the first and second lines, a resistor connected in series with first and second similarly poled diodes between the inverting input terminal of the amplifier and the third line, a first capacitor connected between the output of the pulse generator and the junction of the diodes, a second capacitor connected between the junction of the first diode and the resistor and one of the supply lines, a feedback resistor connected between the output terminal of the amplifier and the junction of the first diode and resistor, and a third capacitor connecting the output and inverting input terminals of the amplifier.

3,965,878
SPARK IGNITION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Peter Hugh Salway, Birmingham, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Jan. 10, 1974, Ser. No. 432,230
Claims priority, application United Kingdom, Feb. 10, 1973, 6687/73
Int. Cl.² F02P *1/00*
U.S. Cl. 123—148 E **1 Claim**

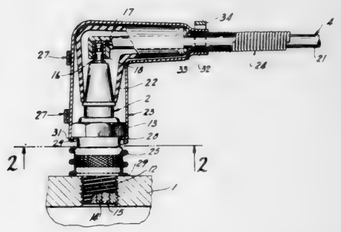


1. A spark ignition system for an internal combustion engine, including a battery, an ignition coil having a primary winding of relatively low impedance, a switching transistor in series with said primary winding across said battery, means for turning said transistor on to store energy in the winding and off to produce a spark, said last-mentioned means comprising contact breaker means, a first resistor in series with said contact breaker means across said battery, a second resistor and a diode connected in series between the positive terminal of said battery and the junction between said first resistor and said contact breaker means, a third resistor and a capacitor arranged in parallel to said second resistor, and an input transistor connected to the junction of said third resistor and said capacitor, and to said switching transistor, the arrangement being such that said switching transistor is conductive when said input transistor is conductive and the latter transistor will remain conductive as long as said capacitor charges upon closing of said contact breaker means, while said capacitor discharges via said diode and first resistor upon opening of said contact breaker means.

3,965,879
RADIO FREQUENCY INTERFERENCE SUPPRESSION APPARATUS

Arthur O. Fitzner, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Mar. 26, 1974, Ser. No. 454,803
Int. Cl.² H04B *15/02*; H01R *13/46*; F02P *11/00*
U.S. Cl. 123—148 P **18 Claims**

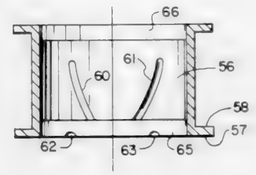


1. An ignition connection apparatus for interconnecting of a pulse signal to an igniting means of an internal combustion engine, comprising an ignition lead including a conducting element for carrying of the high voltage pulse signal and having a resistance on the order of 600 ohms per foot, said conducting element being wound on a magnetizable core to form a distributed inductive-resistive series impedance element and constituting the only inductance connected in the system, and a shield element applied over said lead to define a distributed capacitive shunt impedance, said shield is constructed to overlie the igniting means and defining an essentially uninterrupted shield, said shield including an extension in the form of a flexible coil wound about the lead with a plurality of abutting turns.

3,965,880
AUTOMOTIVE REAR MAIN BEARINGS

Ronnie L. Michael, 1040 W. Enid, Mesa, Ariz. 85202

Filed Feb. 18, 1975, Ser. No. 550,814
Int. Cl.² F01M *1/00*
U.S. Cl. 123—196 R **9 Claims**



1. In an automotive internal combustion engine having a crank shaft mounted within the engine block and including at least a rear main bearing and a rear main seal, the improvement comprising in combination:

a. a two part rear main bearing for providing a bearing surface intermediate the engine block and the crank shaft, said bearing including an upper half and a lower half; and

b. at least one channel disposed within said lower half bearing for conveying a flow of oil, said channel extending rearwardly from the front longitudinal edge of the bearing surface to a point short of the rear longitudinal edge of the bearing surface; whereby, the oil outflow intermediate the crank shaft and said rear main bearing surface is directed toward the front longitudinal edge of the bearing surface and away from the rear main seal.

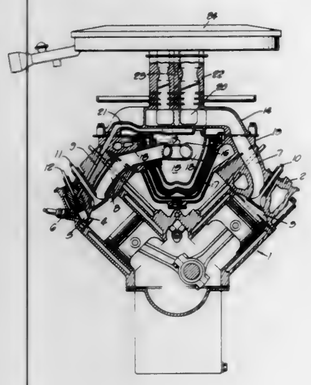
3,965,881
INTERNAL COMBUSTION ENGINE

Yoshitoshi Sakurai, Kawasaki; Takao Okura, Ooimachi, and Miniru Tanaka, Chofu, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed July 12, 1974, Ser. No. 487,998
Claims priority, application Japan, July 18, 1973, 48-80253
Int. Cl.² F02B *3/00*
U.S. Cl. 123—32 SP **9 Claims**

1. In an internal-combustion spark-ignition piston engine having a plurality of cylinders each provided with a main combustion chamber and an auxiliary combustion chamber connected by a torch nozzle restriction, the improvement comprising in combination: first passage means including main valved intake passages for supplying a lean air-fuel mixture to each of said main combustion chambers, second passage means including auxiliary valved intake passages for supplying a rich air-fuel mixture to each of said auxiliary combustion chambers, a valved exhaust passage leading from each main combustion chamber, a main exhaust gas reaction chamber, a plurality of auxiliary exhaust gas reaction chambers connected to receive hot exhaust gases from the exhaust passages and each having walls extending into the interior of said main reaction chamber, said walls having a discharge opening communicating with said main reaction chamber,

each of the auxiliary reaction chambers being substantially larger in cross-section than each said exhaust passage and



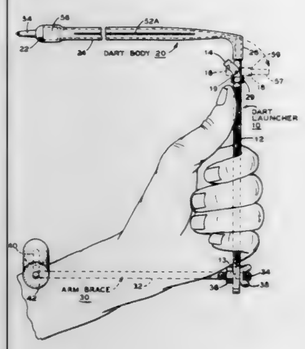
being substantially smaller in volume than said main reaction chamber.

3,965,882

SELF-PROJECTING ELASTIC TYPE PROJECTING DEVICE

Henry Ehrens, Bayside, and Frank Nonnenmacher, Brooklyn, both of N.Y., assignors to Allenwood Sports, Inc., Allenwood, N.J.

Filed Apr. 25, 1974, Ser. No. 463,884
Int. Cl.² F41B *7/02*
U.S. Cl. 124—18 **6 Claims**



1. A self-powered dart system comprising a self-powered dart and a dart launcher for launching said self-powered dart,

A. said dart launcher comprising

1. a handle, and
2. a launching post pivotally connected to one end of said handle;

B. said self-powered dart comprising

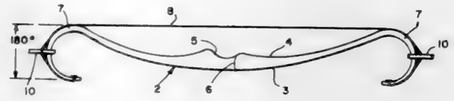
1. a stretchable elongated flexible tube having a plurality of peripherally-spaced longitudinal slits extending substantially its full length,
2. a weighted head positioned at one end of the tube, and
3. a means at the other end of the tube for detachably receiving and holding in a telescoping fashion the launching post of said dart launcher whereby when the tube is pulled to a cocked position the post will be prevented from pivoting rearwardly by a stop and when the dart is released the post will pivot forwardly and permit the dart to be detached from the post.

3,965,883

ARCHERY BOW

Leonard S. Meyer, 6449 Bridgewood Road, Columbia, S.C. 29206

Filed Aug. 9, 1972, Ser. No. 278,932
Int. Cl.² F41B *5/00*
U.S. Cl. 124—24 R **3 Claims**



1. An archery bow comprising a handle section with its ends projecting in opposite directions from the hand grip, and separably formed bow limbs each comprising an arcuate member with one end connected with one end of the handle section and the other end of which is adapted to cooperate with a bow string, the bow limbs being adjustably connectible with the handle section in different angular positions of limb recurvature including positions providing a limb recurvature of at least 55°.

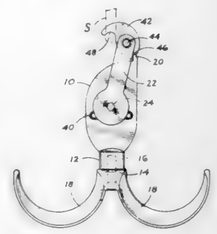
2. An archery bow comprising a handle section and bow limbs each recurved from the handle section in a direction toward the tension side of the bow and each having a string nock adjacent its extremity, a bowstring extending between and connected to each nock, the recurvature of the convex surface of each bow limb, measured between the line tangent to said convex surface at the nock point and the line of the string, being at least 90° when the bow is strung but not drawn, and the bow limbs consisting essentially of elastic material having a minimum elongation of about 4% and a maximum tangent flexural modulus of elasticity of 2,000,000.

3,965,884

TRIGGERLESS ARCHERY BOW STRING RELEASE

Gerald I. Killian, 16016 SE. 82nd Drive, Clackamas, Oreg. 97015

Filed Mar. 14, 1975, Ser. No. 558,269
Int. Cl.² F41C *19/00*
U.S. Cl. 124—35 A **8 Claims**



1. A triggerless archery bow string release, comprising:

a. an elongated body member having forward and rearward ends,

b. a finger grip connected to the rearward end of the body member and extending laterally from both sides of the body member,

c. an arm mounted pivotally at its rearward end on the body member on a transverse pivot mounting, projecting forwardly beyond the forward end of the body member, and extending generally along the longitudinal axis of the body member,

d. a bow string support lever mounted pivotally intermediate its ends of the forward end of the arm,

e. a catch on one end of the lever,

f. pawl means operatively associated with the body member for releasably engaging the catch for releasably securing the lever by rotating the body member in one direction about the pivotal axis of the arm to move the pawl means away from the catch to release the lever from cocked position and by rotating the body member in the opposite direction and rotating the lever so that the means will engage the catch, and

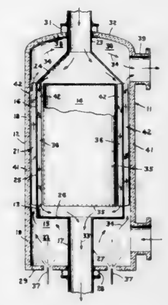
g. bow string retainer means on the opposite end of the lever for supporting a bow string when the lever is in said cocked position and for releasing a bow string when the lever is pivoted to uncocked position upon disengagement of the pawl means from the catch.

3,965,885

HEATER FOR LARGE FLOWS AT LOW PRESSURE LOSSES

Peter von Wiesenthal, New York, N.Y., assignor to Heat Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 462,046, April 18, 1974, abandoned. This application Feb. 24, 1975, Ser. No. 552,109
Int. Cl.² F24H *3/02*
U.S. Cl. 126—110 R **1 Claim**



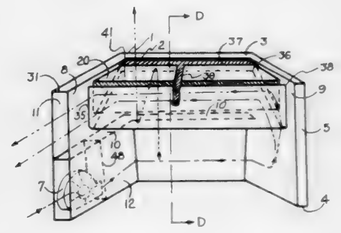
1. An air heater for a large flow of air to be heated at a low pressure loss, the heater comprising in combination: a cylindrical shell having a first end and a second end, a cylindrical sleeve mounted coaxially in the shell and having a first end and a second end each corresponding with that of the shell, the sleeve connected expandably by means of a bellows to the shell at one each of the shell and connected fixedly to the shell at the other end of the shell, the bellows positioned about the sleeve outwardly of the sleeve, the first ends of the shell and the sleeve converging to form a convection input passage therebetween, convection-input extended surface projecting from the sleeve into the convection input passage, the second ends of the shell and the sleeve diverging to form a radiant zone therebetween, hot gas means for passing a hot gas in turn through the radiant zone and the convection input passage, the hot gas means including at least one burner connected to supplies of fuel and oxygen as well as penetrating the shell to introduce the hot gas into the radiant zone, a cylindrical baffle mounted within the sleeve in its first end and defining a convection output passage boardered inwardly by the baffle and outwardly by the sleeve, air input means for introducing the air to be heated into the sleeve with the baffle organized to channel the air to be heated to the convection output passage, air output means for withdrawing the air to be heated from the convection output passage out of the heater, convection output extended surface projecting from the sleeve into the convection output passage.

3,965,886

HOME FIREPLACE HEATING

Clifford H. Nelson, 9 Merry Point Terrace, Newport News, Va. 23606

Filed Oct. 15, 1975, Ser. No. 622,699
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **4 Claims**



1. A free standing fireplace heating channel comprised of an assembly consisting of a three sided hollow metal room air conveying channel in combination with a hollow metal air conveying guide vane and control damper means for routing hot fire gases as desired through a V-shaped exhaust heat extraction channel prior to exiting up the chimney, insertible into an existing conventional fireplace without requiring modification to the fireplace structure, said air conveying channel having a center panel and two forward facing arms and adapted to fit against the three inside walls of a fireplace, said channel having adjoining walls exposed to the heat from the fire with corresponding rear walls spaced therefrom and connected by spacer means so as to form a suitable air channel for conveying room air to be heated by the fire, means for forcing room air into a lower portion of said forward facing channel arm by a single blower, and baffle means to direct the forced circulating room air to make multiple horizontal passes through said channel prior to exiting back into a room from an upper portion of a forward facing channel arm as useful heated air, said guide vane being symmetrically attached to the upper inside portions of said forward facing arms, said hollow metal guide vane having a triangular cross section with the base horizontal and the apex pointing downward and positioned forward of the center panel, said guide vane having a hollow interior vented into the hollow interior of said channel arms at the point of attachment whereby said vane becomes an additional conveying channel for heating circulating room air, said V-shaped exhaust heat extraction channel being formed by a V-shaped metal plate fastened to the upper inside walls of the forward facing arms of the air channel and positioned below and parallel to the underside surfaces of the guide vane and suitably spaced therefrom to form a conveying means for hot fire gases prior to exiting up the chimney, entrance opening for the hot fire gases into the said heat extraction channel is formed by locating the rearward horizontal edge of said V-shaped metal plate approximately equidistance from the inside lower surface of the guide vane and the center panel surface and the top surface of the free standing air channel, exit opening of said heat extraction channel is formed by positioning the forward horizontal edge of the V-shaped metal plate level with the guide vane base and leaving a small gap between said edge and the inside front surface of the fireplace throat, a converging upward passageway for hot gases after first leaving the fire is provided by the center panel surface and the inner upward sloping surface of the V-shaped metal plate, the said control damper means slides on top of the guide vane base and in the closed or rearward position covers the rear slot formed by the center panel top and the rear edge of the guide vane base and the two upper inside surfaces of the forward facing arms, said control damper in the rearward or closed position routes the hot fire gases into the said exhaust heat extraction channel, said control damper means is provided with a metal arm extending to the fireplace front to

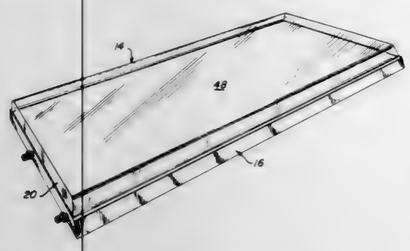
provide for manual control and as said control damper is moved forward the hot fire gases go directly up the chimney through the thus opened aforesaid near slot.

3,965,887

METHOD OF HEATING A LIQUID AND SOLAR HEATING PANEL THEREFOR

Eben J. Gramer, 98 Cabrini Blvd., Golden, Colo. 80401, and Melvin O. Johnson, 6488 Southwood Drive, Littleton, Colo. 80121

Filed Oct. 7, 1974, Ser. No. 512,701
Int. Cl.² F24J *3/02*
U.S. Cl. 126—271 **14 Claims**



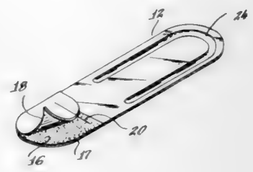
1. A solar heating panel comprising:
a. a base member formed from an insulating material, said member having
i. a liquid impervious upper surface,
ii. a plurality of spaced apart fluid supply recesses formed in said upper surface and extending longitudinally therealong,
iii. inlet and outlet manifolds, each manifold extending transversely across one of the ends of said base member and each manifold being disposed in fluid communication with each of said recesses,
iv. an inlet port disposed in fluid communication with said inlet manifold,
v. an outlet port disposed in fluid communication with said outlet manifold,
vi. a fluid return recess formed in the upper surface of said base member along one side thereof, said fluid return recess being adapted to be placed in fluid communication with said outlet port, and
vii. a plurality of spaced apart strips formed on the upper surface of said base member, said strips being disposed intermediate each of said recesses and adjacent the outer side of the outwardly disposed recesses;
b. a rigid solar heat absorbing member formed from metal and mounted upon the upper surface of said base member in contacting engagement with each of said strips,
i. the upper surface of said solar heat absorbing member containing a black, solar radiation absorbing coating thereon,
ii. said solar heat absorbing member cooperating with said recesses to form liquid supply channels and a liquid return channel each of which is isolated one from the other,
iii. each liquid supply channel having a width to depth ratio varying between approximately 9 and 13.5, and
iv. each liquid supply channel having a mean hydraulic radius varying between approximately 0.018 and 0.023;
c. an inverted cup shaped member formed from a transparent material and secured to said base member, said cup shaped member having an upper, generally planar surface spaced apart from the upper surface of said solar heat absorbing member, said inverted cup shaped member permitting solar radiation to pass therethrough and impinge upon said solar heat absorbing member for all angles of solar radiation impingement from a direction normal to the upper surface of said solar heat absorbing member plus or minus less than 90 degrees; and
d. an elastic adhesive means for securing said solar heat absorbing member to said strips, said adhesive means having flat bonding characteristics over the environmental temperature range whereby thermal expansion of said base member relative to thermal expansion of said solar heat absorbing member occurs while maintaining a general planarity of the upper surface of said solar heat absorbing member.

3,965,888

SPECIMEN COLLECTOR AND HOLDER

Louis Bender, Scotch Plains, N.J., assignor to Brenner and Bender, Inc., Warren, N.J.

Filed Feb. 12, 1975, Ser. No. 549,164
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 W **8 Claims**



1. A specimen holder for collecting and enabling examination of specimen comprising
a unitary generally longitudinal swab having an integrally coupled handle segment and a transparent segment provided on one side thereof with an adhesive coated area to retain the specimen when applied thereto, said swab further being provided with a scored fold-line located across the transparent segment to enable the adhesive coated area to be folded back against a transparent portion of the swab for close adherence thereto with specimen protection and for visual examination of the specimen through the transparent segment of the swab.

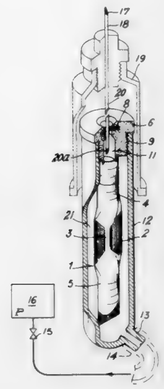
3,965,889

APPARATUS FOR THE SAMPLING OF BLOOD AND THE SEPARATION OF PLASMA UNDER ANAEROBIC CONDITIONS

Charles E. Sachs, Paris, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation-in-part of Ser. No. 308,940, Nov. 24, 1972, abandoned. This application Jan. 3, 1975, Ser. No. 538,270
Claims priority, application France, Nov. 26, 1971, 71.42350
Int. Cl.² A61B *10/00*
U.S. Cl. 128—2 F **4 Claims**

1. Apparatus for the sampling of blood and the separation of plasma under anaerobic conditions comprising a transparent supple substantially non-extensible under conditions of use thermosealable walled container which can be inflated or flattened if under exterior vacuum or pressure, two separate substantially equal chambers in said container, a restriction connecting said two chambers, an open end for said container, a rigid top connected to said container at said open end, a central orifice in said top, an elastic washer closing said top mounted across said orifice, a screw thread on the external face of said top, a rigid container carrying tube, a bottom and an open end for said tube, a second orifice in the open end of said tube receiving said top, a screw thread in said second orifice receiving the screw thread of said top to mount said supple substantially non-extensible thermosealable walled container in said tube, and an opening in said tube adapted to communicate with a source of vacuum.

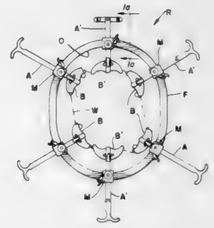


3,965,890

SURGICAL RETRACTOR

William Kohlmann Gauthier, 310 Codifer Blvd., Metairie, La. 70005

Filed Oct. 18, 1974, Ser. No. 515,857
Int. Cl.² A61B *17/02, 1/32*
U.S. Cl. 128—20 **11 Claims**



1. A surgical retractor comprising a frame means, retractor arm means carried by the frame means, retractor blade means carried by the arm means at one end of the arm means and depending therefrom for placement in an incised wound to hold the flesh out of the way of a surgeon, and pivot means pivotally mounting the blade means to the arm means for pivotal movement of the blade means about an axis disposed perpendicular to the axis of the arm means, said pivot means including a first fixed pin depending from the end of the arm means and pivotally received in an opening in the blade means for pivotal movement of the blade means about said first pin, said blade means rearwardly angularly inclined relative to said pivot axis whereby the blade is prevented from riding up out of an incision, a second fixed pin depending from the arm means in spaced relationship to the first pin and engaged at its lower end in an arcuate slot in an upper end portion of the blade means, so as to limit pivotal movement of the blade means to a predetermined angular displacement, and a movable stop pin carried by the arm and depending therefrom, said stop pin registerable with a hole in an upper end portion of the blade means so as to extend into said hole to preclude pivotal movement of the blade means, and actuating means connected with said movable stop pin to selectively retract said stop pin from said hole to enable said blade means to pivot about the first pin.

3,965,891

IUD PREPACKAGED IN A TUBULAR INSERTER

Irwin S. Lerner, Greenwich, Conn., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 447,262, March 1, 1974, Pat. No. 3,857,391, which is a continuation of Ser. No. 187,373, Oct. 7, 1971, abandoned. This application Nov. 18, 1974, Ser. No. 524,816
Int. Cl.² A61F *5/46*
U.S. Cl. 128—130 **13 Claims**



1. The combination of a resilient intrauterine device comprising a major portion, and laterally extending portion means, and an inserter for high fundal positioning of said intrauterine device, said inserter comprising an elongate tubular body having a front, cervix entry and intrauterine device expulsion end and a rear terminal end, and means for housing said major portion of said resilient intrauterine device within said tubular body with said intrauterine device being in a substantially undeformed configuration; whereby said intrauterine device may be deformed into an elongate shape within said tubular body prior to insertion of said inserter into placement position relative to a uterus and thereafter expelled into its substantially undeformed configuration within a uterine cavity.

3,965,892

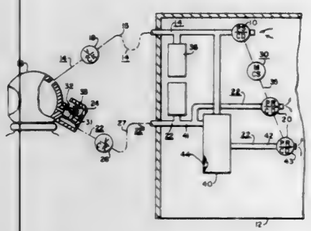
UNDERWATER BREATHING APPARATUS

John R. Colston, Annapolis, and Wilbur J. O'Neill, West Severna Park, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 13, 1975, Ser. No. 549,567
Int. Cl.² A62B *7/00*
U.S. Cl. 128—142.3 **9 Claims**

1. Underwater breathing apparatus for a diver, comprising,
a diver-worn device for introducing breathing gas to and from a submerged diver,
a submerged chamber containing a source of breathing gas and relative to which bell the diver may change depth,
pump means at said chamber for moving such gas simultaneously to and from said diver-worn device,
motor means at said chamber for operating said pump means,
flexible supply and return hose means extending between said pump means and said diver-worn device for conveying the gas being moved therebetween,
exhaust control valve means at said diver-worn device for maintaining gas pressure therein at slightly above the surrounding hydrostatic pressure, and

differential-pressure control means responsive to supply and return pressures of said gas in said hose means at said



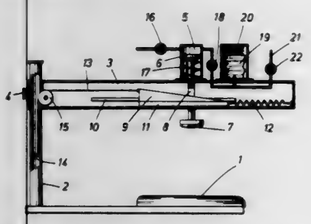
chamber for maintaining a substantially constant differential between such pressures in said hose means, respectively.

3,965,893

ARTIFICIAL RESPIRATION APPLIANCE

Franz Ragaller, Schmiegstrasse 6, Eferding, Austria

Filed May 21, 1975, Ser. No. 579,670
Int. Cl.² A61M *16/00*
U.S. Cl. 128—145.8 **7 Claims**



1. An appliance for subjecting a human patient to artificial respiration, which comprises

a cushion adapted to be disposed under the back of the patient,

a fixed support,

a piston-cylinder actuator carried by said support and comprising a piston,

a source of an inhalable gas under superatmospheric pressure,

a reservoir which is adapted to expand in response to its internal pressure,

a respiration mask adapted to be applied to the face of the patient,

an inlet valve connected between said source and said actuator and adapted to admit inhalable gas from said source to said actuator on one side of said piston,

an outlet valve connected between said actuator and said reservoir and adapted to release inhalable gas from said actuator on said one side of said piston into said reservoir,

a conduit which incorporates a shut-off valve and which connects said reservoir to said respiration mask,

first spring means opposing a movement of said piston under the influence of said inhalable gas admitted to said actuator from said source,

second spring means opposing the expansion of said reservoir,

ram means adjustably mounted relative to said fixed support structure for engagement with the chest of said patient and which is connected to said piston to be forced against the chest of said patient by the movement of said piston under the influence of said inhalable gas admitted to said actuator from said source,

stop means arranged to limit the movement of said piston under the influence of said inhalable gas admitted to said actuator from said source, and

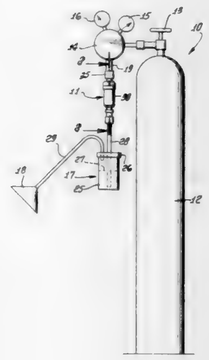
adjusting means for simultaneously adjusting said stop means in direct response to the adjustment of said ram relative to said support into engagement with said chest, whereby said stop is moved to a position in which said stop limits said movement of said piston to an extent that depends on the diameter of said chest.

3,965,894

MOISTURE TRAP FOR MEDICAL OXYGEN SUPPLY APPARATUS

Ernest J. Fischer, 384 Cardiff St., San Bernardino, Calif. 92408

Filed Jan. 30, 1975, Ser. No. 545,616
Int. Cl.² A61M *16/00*
U.S. Cl. 128—194 **4 Claims**



1. In a medical oxygen supply apparatus, the combination of:

an oxygen supply tank;

a valve provided on said tank for dispensing oxygen therefrom;

an oxygen flow regulator connected to said valve and receiving freshly released compressed oxygen therefrom through an in-flow pressure valve and having an output stem means providing a minute flow regulating orifice through which said oxygen is delivered from said flow regulator;

a water trap means having an input conduit connected with said output stem and extending downward therefrom whereby said oxygen delivered therefrom flows downwardly through said water trap means said water trap means lower end having output means;

an oxygen humidifier having an input connected with said output means of said water trap means to receive said flow of oxygen and cause the same to bubble upwardly through a body of water and thus become humidified and having an output means; and

oxygen mask means connected to said output means of said humidifier for receiving said humidified oxygen from said humidifier and delivering the same to a patient,

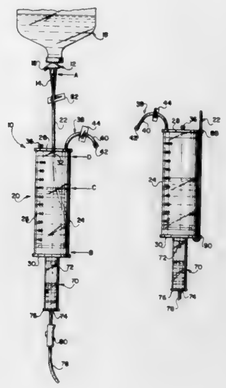
said water trap means entrapping water sucked from said humidifier by vacuum occasioned in said regulator by shutting said tank valve or said regulator in-flow valve and thereby protecting said minute oxygen delivery orifice from calcification by said water.

3,965,895

APPARATUS FOR CONTROLLED VOLUME AND RATE ADMINISTRATION OF LIQUIDS

William C. Dabney, Oakland, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Aug. 21, 1974, Ser. No. 499,199
Int. Cl.² A61M *5/16*
U.S. Cl. 128—214 C **20 Claims**



1. Apparatus for selective controlled volume administration of a parenteral solution and the like from a fluid supply container, comprising:

a. a substantially rigid measuring chamber having a top wall and a bottom wall;

b. said bottom wall having:

1. an outlet means for dispensing fluid therefrom, and

2. a fluid inlet means spaced apart from said outlet;

c. an airway in communication with an opening in said top wall; and

d. a fluid supply conduit connected to said fluid supply container and extending therefrom continuously and interiorly uninterruptedly to said fluid inlet means and terminating in a discharge end freely opening into said measuring chamber substantially at the interior of bottom wall, whereby splashing and foaming of liquid introduced into said measuring chamber from said supply container is eliminated; and

e. means fixedly positionally securing the discharge end with respect to said bottom wall.

3,965,896

BLOOD AUTOTRANSFUSION METHOD AND APPARATUS

Roy L. Swank, 4400 SW. Scholls Ferry Road, Portland, Oreg. 97225

Filed June 17, 1974, Ser. No. 479,764
Int. Cl.² A61M *5/14, 1/02*
U.S. Cl. 128—214 R **9 Claims**

1. The method for autotransfusing blood during a surgical procedure involving a bleeding open wound in which blood accumulates in the wound, comprising:

a. providing conduit means having a first end in communication with the wound and a second end in communication with a blood circulatory member of the patient, said conduit means having a blood storage reservoir intermediate its ends,

b. intermittently partially evacuating said reservoir to thereby intermittently suck blood from said wound into said first end, through said conduit means, and into said reservoir,

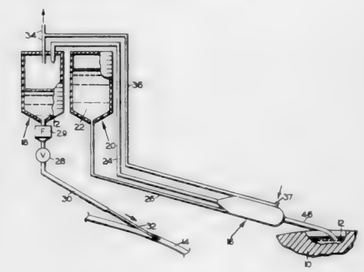
c. adding a blood anticoagulant to the blood adjacent said first end as the blood is removed from the wound in an amount predetermined to prevent the coagulation of the blood,

d. promptly filtering the anticoagulant containing blood as it flows though the conduit means to remove harmful components before the blood enters the reservoir,

e. accumulating the anticoagulant treated and filtered blood in the reservoir below the inlet of the conduit means into said reservoir, whereby the blood is retained in the reservoir without drying,

f. the evacuation of said reservoir and the addition of said anticoagulant being controlled at a location adjacent the first end of said conduit means,

g. And returning said reservoir to atmospheric pressure and withdrawing blood from the bottom end of the reservoir and returning it to the circulatory system of the same patient from whom it was collected.



3. Apparatus for autotransfusing blood during surgical procedures involving a bleeding wound in which blood collects in the wound, comprising:

a. a blood storage reservoir having passageway means at its upper end for communicating said reservoir with a source of vacuum,

b. first conduit means for interconnecting the wound with the reservoir and second conduit means for interconnecting the reservoir with a blood circulatory member of the patient,

c. a hand holdable sub-assembly on said first conduit means adjacent the end remote from the reservoir, said sub-assembly comprising: (1.) blood filter means in said conduit means, (2.) dispensing means for dispensing blood anticoagulant into the blood as it is removed from the wound and before it enters the filter means, and (3.) means for controlling communication between said passageway and said source of vacuum;

d. and blood cycling means in said second conduit means for returning the filtered blood to the circulatory member of the patient.

3,965,897

MEASURED VOLUME DRUG ADMINISTRATION DEVICE FOR USE WITH INTRAVENOUS FEEDING PUMP

Ingemar H. Lundquist, Oakland, Calif., assignor to Origo, Incorporated, Hayward, Calif.

Filed Oct. 11, 1974, Ser. No. 514,219
Int. Cl.² A61M *5/14, 5/315*
U.S. Cl. 128—214 R **6 Claims**

1. A drug measuring and mixing device adapted to be inserted in the flow system from a container of parenteral fluid to an intravenous feeding pump, which device comprises:

a. A cylindrical container having an inlet and an outlet end;

b. a piston within said cylindrical container;

c. a stem secured to said piston and extending out of said cylindrical container;

d. said piston and said stem being formed with a passageway extending through said piston and said stem and leading

to a point beyond the outlet end of said cylindrical chamber;

e. and a cylindrical flexible member secured between the piston and one end of the cylindrical container and serving to enclose the stem to provide a germ barrier preventing access of contaminated air to the interior wall of said cylindrical container between the piston and the outlet end of the cylindrical container;

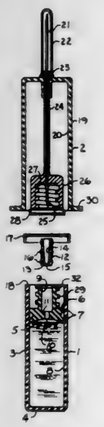


3,965,898

SYRINGE

Harold S. Cloyd, Erie, Pa., assignor to Nosco Plastics, Inc., Erie, Pa.

Filed Feb. 18, 1975, Ser. No. 550,628
Int. Cl.² A61M *5/00*
U.S. Cl. 128—220 **9 Claims**



1. A vial having tubular side walls with means for closing one end and with the other end open,

a piston received in coaxial with the vial having a head presented to the closed end of the vial, a first coupling element presented to the open end of the vial, means on the piston sealing engagement with the side walls of the vial, and an open way of smaller diameter than the piston extending axially through the piston,

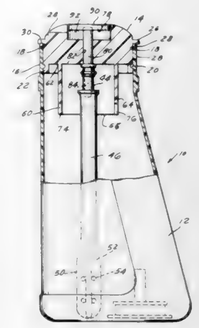
a plug of diameter smaller than the piston received in and closing said way, said plug having means in sealing engagement with said way, a passageway in said plug having one end presented to the open end of the vial and the other end presented to the closed end of the vial, and a diaphragm across and closing said passageway, said passageway having a portion for receiving a needle for puncturing said diaphragm to establish communication between the contents of the vial and the needle.

3,965,899

HYGIENIC DOUCHE SYSTEM

Jerome L. Murray, 652 First Ave., New York, N.Y. 10016, and Frances R. Gardiner, 43 Park Road, Sparta, N.J. 07871

Continuation-in-part of Ser. No. 382,658, July 26, 1973, Pat. No. 3,871,518, which is a division of Ser. No. 231,336, March 2, 1972, Pat. No. 3,756,236, which is a continuation-in-part of Ser. No. 197,848, Nov. 11, 1971, Pat. No. 3,756,230. This application Mar. 17, 1975, Ser. No. 558,954
The portion of the term of this patent subsequent to Sept. 4, 1990, has been disclaimed.
Int. Cl.² A61M *3/00*
U.S. Cl. 128—225 **8 Claims**



1. A hygienic douche apparatus comprising:

a container open at one end adapted to hold a quantity of liquid,

a closure member for sealing said open end of said container,

means defining a chamber within said container when said closure member is in sealing relationship on said container comprising a housing and a cover member therefor slidably disposed with respect to said housing and movable between a first sealed position and an unsealed second position,

said chamber adapted to hold a predetermined quantity of a compound capable of generating gas pressure to dispel completely the said quantity of liquid from said container when said compound is contacted by said liquid,

said cover member including means cooperable with said housing for sealing said chamber to preclude liquid contacting said compound in said chamber comprising cooperable means on said cover and said housing to effectively seal said chamber when said cover member is in said first position,

means cooperable from the exterior of said chamber to move said cover member from said first position to said second position to cause liquid within said container to enter said chamber and to contact said compound and generate sufficient gas pressure within said container to dispel the quantity of liquid from said container, and

means affording fluid communication between the interior of said container and the exterior for the passage of said quantity of liquid from said container after said compound is contacted by said liquid.

g. nipple-closing removable cap means including integrally connected nipple caps and tethers connected with said container closure member;

h. complemental coacting labyrinth type sealing means and inclined thread-like lug means on said container neck portion and on downwardly depending annular skirt-like wall means on said closure member, said coacting lugs constructed and arranged to provide screw-like attachment of the closure member to said container body; and

i. wherein said labyrinth type sealing means and the relative relationship of said thread-like lugs of said closure member and neck are such as to provide both

initial manual at least partial assembly of the closure member with the container neck portion, and also

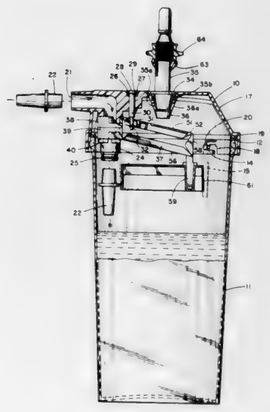
subsequent automatic continued assembly responsive to the pull of a vacuum source connected with said first nipple means.

3,965,903

SUCTION BOTTLE ASSEMBLY

Bidwell Chapman Cranage, Ferguson, Mo., assignor to Chemetron Corporation, Chicago, Ill.

Filed May 23, 1975, Ser. No. 580,496
Int. Cl.² A61M *1/00*
U.S. Cl. 128—276 **10 Claims**



1. A suction bottle assembly for effecting drainage from a patient, comprising:

a. a bottle;

b. a cover mounted on said bottle and providing an airtight seal therewith, said cover having an inlet means adapted to be connected to a source of vacuum and also in communication with the interior of said bottle, said cover having intake means adapted to be connected to a patient and which is also in communication with the interior of said bottle;

c. a bracket means hingedly connected to the interior of said cover generally adjacent said inlet means:

d. vacuum relief means located in said cover; and

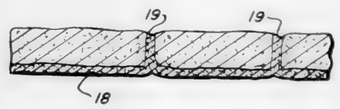
e. a float connected to said bracket, said float rising vertically as the drainage enters said bottle and moving said bracket to contact said vacuum inlet means to close same and to open said vacuum relief means.

3,965,904

DISPOSABLE DIAPER

Frederick K. Mesek, Downers Grove, and Virginia L. Repke, Oak Forest, both of Ill., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 18, 1975, Ser. No. 559,624
Int. Cl.² A61F *13/16*
U.S. Cl. 128—284 **17 Claims**



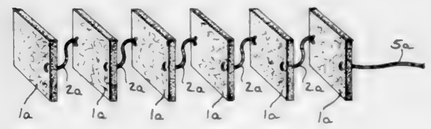
1. A multi-layer diaper comprising: a porous facing layer; a highly porous, loosely compacted, cellulosic fibrous batt of greater lengths than width in face-to-face juxtaposition to said facing layer and having greater wettability to water than said facing layer; a paper-like, densified compacted cellulosic fibrous layer of relatively high wettability and relatively high fluid retentivity integral with said loosely compacted batt on the face thereof opposite the face in juxtaposition to said facing layer; said densified compacted fibrous layer being thickened in selected linear regions across the width of said batt and near the ends thereof to direct the flow of fluid to selected areas of said densified layer; said densified layer extending continuously over substantially the entire area of said batt except for the region between the ends and said selected regions, and a water impervious backing sheet adhered to said densified layer.

3,965,905

CATAMENIAL TAMPON

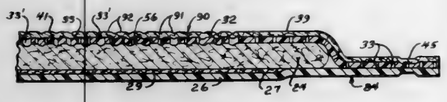
Daniel Schoenholz, Basking Ridge, and Myron S. Weinberg, Livington, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 271,453, July 13, 1972, abandoned. This application Sept. 24, 1975, Ser. No. 616,231
Int. Cl.² A61F *13/20*
U.S. Cl. 128—285 **6 Claims**



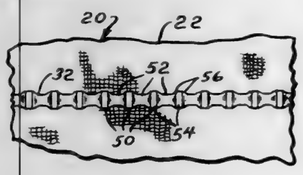
1. An intravaginal catamenial tampon which is suitable for insertion in the vagina by means of an applicator and which comprises a multiplicity of absorbent dimensional units attached to one another by means of a thread, each of said units having a front planar surface and a rear planar surface wherein the distance between said surfaces defines the width dimension of said unit, each surface of said units having an attachment point wherein said front planar surface attachment point of one unit is connected by said thread extending from said front planar surface attachment point to the rear planar surface attachment point of the next most adjacent unit, the size of the absorbent units and the length of said thread being such that the absorbent units cannot touch one another when the tampon is fully extended, and wherein said front planar surface of one of said units abuts said rear planar surface of the next adjacent unit when said tampon is assembled in said applicator.

3,965,906
ABSORBENT ARTICLE WITH PATTERN AND METHOD
Hamzeh Karami, Crystal Lake, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Feb. 24, 1975, Ser. No. 552,464
Int. Cl.² A41B 13/02; A61F 13/18
U.S. Cl. 128—287 **15 Claims**



1. An absorbent article, comprising: an absorbent pad having a front surface, a film of thermoplastic material covering at least a portion of the front surface of the pad in a fluid receiving region of the article, a fluid pervious top sheet covering said film in said region, said top sheet having an outer surface facing away from the film, said film having a plurality of fluid transmitting openings extending through the film in said region, and said top sheet being fused against the film in a pattern defining a recessed configuration in the outer surface of the top sheet.

3,965,907
SURGICAL SPONGE
David R. Hardy, and Richard C. Weatherford, both of Augusta, Ga., assignors to The Kendall Company, Boston, Mass.
Filed Jan. 8, 1975, Ser. No. 539,358
Int. Cl.² A61M 35/00; A61F 13/00
U.S. Cl. 128—296 **14 Claims**

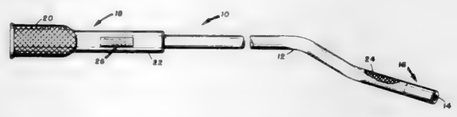


1. A surgical sponge, comprising
an absorbent fabric; and
an elongated radiopaque filament integrally bonded to fibers in said fabric to prevent dislodgment of said filament during use of said sponge, said filament having a varying dimensional configuration along the length of filament to provide a distinctive pattern of the filament on an X-ray.

3,965,908
SYNTHETIC PHYSIOLOGICAL MUCUS
Albert E. Posthuma, 3520 Burton Ridge, Apt. D, and Robert C. Woodhouse, 1664 Alexander, SE., both of Grand Rapids, Mich. 49506
Continuation-in-part of Ser. No. 538,092, Jan. 2, 1975, abandoned, which is a division of Ser. No. 470,522, May 16, 1974, abandoned, which is a continuation-in-part of Ser. No. 332,933, Feb. 16, 1973, abandoned. This application Nov. 26, 1975, Ser. No. 635,435
Int. Cl.² A61B 17/00; A01K 21/00; A61K 7/00
U.S. Cl. 128—303 R **22 Claims**

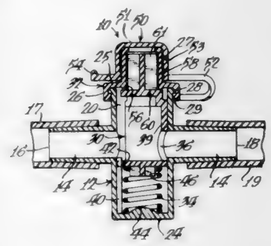
1. A body-inserted medical instrument having means for providing a slippery lubricated surface comprising, the medical instrument having a coating of a synthetic mucus-type lubricant dried on the surface thereof, said mucus-type lubricant being reconstituted to a slippery state upon exposure to an aqueous medium to define a lubricious surface whereby said instrument can be wetted just prior to use and can be inserted into a patient's body without the need to work with messy lubricating agents to prepare the instrument for body insertion.

3,965,909
ANGIOGRAPHIC CATHETER AND METHOD OF MANUFACTURE
Seid W. Waddell, Tarentum, and Marlin S. Heilman, Gibsonia, both of Pa., assignors to Medrad, Inc., Pittsburgh, Pa.
Filed Apr. 22, 1975, Ser. No. 570,998
Int. Cl.² A61M 25/00
U.S. Cl. 128—348 **29 Claims**



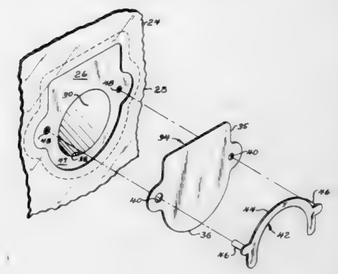
1. A method of manufacturing an elongated multiwall tube adapted for use as a catheter, the method comprising the steps of:
providing a first preformed elongated segment of flexible, tubular material;
encasing at least a portion of said first segment in a reinforcing braid sheath;
pulling said encased segment through a first heated die having an inside diameter less than the outside diameter of said encased segment to cause said segment to flow between the braids of said sheath to form a composite tube; and
encasing said composite tube in a flexible material.

3,965,910
URINARY IRRIGATION VALVE
Michael Fischer, Winnetka, Ill., assignor to Walpak Company, Wheeling, Ill.
Filed Apr. 28, 1975, Ser. No. 572,503
Int. Cl.² A61M 25/00
U.S. Cl. 128—349 R **11 Claims**



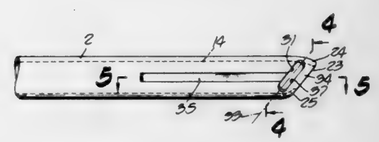
1. A urinary irrigation valve adapted to permit long term drainage and to permit solution from an irrigating syringe to flow into a bladder comprising a generally cross-shaped housing defining a first passage extending therethrough having an inlet and outlet, a second passage angularly disposed relative to said first passage, open-topped cap means on said housing adapted to cooperate in closing off said first passage, valve means controlling flow between said inlet and outlet and between said inlet and second passage, said valve means defining sealing means cooperating with said cap means for blocking flow through said second passage means when the valve means is in a first position and passage means permitting flow from said second passage through said inlet when the valve means is in a second position, said valve means also defining a passageway therethrough whereby said inlet and outlet are in communication when the valve is in said first position, and

3,965,900
ANTI-REFLUX DEVICE
Steven M. Boedecker, McHenry, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Oct. 2, 1974, Ser. No. 511,569
Int. Cl.² A61F 5/44
U.S. Cl. 128—275 **17 Claims**



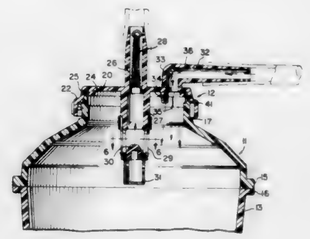
1. An anti-reflux device for a collection bag having an inlet port communicating with the inside of the bag and a generally planar surface surrounding the port on the inside of the bag, comprising:
a thin flexible valve element having sufficiently large dimensions to cover the inlet port; and
means for retaining said valve element adjacent said surface on the inside of the bag in a slidable relationship with the inlet port and with the valve element covering the port, with said valve element flexing away from the surface to permit passage of fluid through the inlet port into the inside of the bag, and with said valve element sealingly engaging against said surface responsive to pressure in the bag to prevent reflux of fluid from the bag to the inlet port.

3,965,901
SUCTION CATHETER
William Henry Penny, Arcadia, and Edmund E. Spaeth, Glendale, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Oct. 3, 1974, Ser. No. 511,622
Int. Cl.² A61M 1/00
U.S. Cl. 128—276 **12 Claims**



1. A medical suction catheter with a generally cylindrical flexible tube having a longitudinal bore extending between a front opening and a rear opening connected to a suction regulator, wherein the improvement comprises:
said flexible tube having two side openings with at least some portions of these side openings diametrically opposed from each other near the front opening, and each side opening has an area greater than one half the front opening's area, with the flexible tube between its front and rear openings being devoid of any other opening of equal or greater area than either one of its side openings, so that the front and side openings can coordinate suction forces for rapid removal of mucus from delicate tracheobronchial tissue to minimize suction damage to such tissue.

3,965,902
DISPOSABLE FLUID COLLECTION CONTAINER
Richard J. Reilly, Deerfield; Walter Goza Cornett, III, Wilmette, both of Ill.; James H. Riddle, Indianapolis, and David Wharmby, Noblesville, both of Ind., assignors to Respiratory Care, Inc., Arlington Heights, Ill.
Continuation of Ser. No. 344,412, March 23, 1973, abandoned. This application Oct. 17, 1974, Ser. No. 515,619
Int. Cl.² A61M 1/00
U.S. Cl. 128—276 **3 Claims**



1. A transparent completely disposable, vacuum-operated, body fluid collection container adaptable for single use particularly in pediatric as well as general surgical use, and disposable without need for emptying the liquid contents thereof, said disposable container comprising the combination of
a. transparent peripherally walled container body member having a transverse bottom wall, a generally dome-like top wall extending upwardly above a top portion of the transparent peripheral body wall and terminating in an upwardly extending annular neck portion centrally of the container body member;
b. said neck portion defining an aperture providing communication with the inside of said container;
c. a selectively removable closure member for normally closing said neck portion aperture, said closure member having an upwardly extending first nipple means communicating with a downwardly extending open-ended conduit means for collectively providing a part of said communication with the inside of said container, said first nipple means adaptable for connection with a vacuum source when in use;
d. said first nipple conduit means having its open end terminating generally above and not below the top portion of the peripheral body wall so as to be within said dome-like top wall, and having longitudinal, open cage-forming means at said open end with an axially movable float valve operatively retained the rein and adaptable to close off said open end conduit means responsive to a liquid being collected therein reaching the level of said float valve to actuate same;
e. said closure member also having a right-angle elbow conduit means spaced from said first nipple means and conduit and terminating at one end exteriorly of said container in a second nipple extending laterally in a direction away from said first nipple means, and having the other end terminating in a partially peripherally baffled opening within said closure adjacent to and partially baffled longitudinally to protectively shield said float valve and open end of said first nipple conduit means from incoming collected body fluid;
f. said second nipple means together with said elbow conduit means adaptable to provide communication access for body fluid being collected in said disposable container via a conduit connectable with said second nipple means, with said elbow conduit means adapted to retard fluid flow to reduce splash, said right angle elbow conduit including internally a deposit of anti-foaming means for introduction and mixture with said body fluid being collected prior to entrance of said fluid into said container;

resilient means in said housing normally biasing said valve into said first position, whereby an irrigating syringe can be employed to act on said valve means to block off the flow between the inlet and outlet of said valve and introduce an irrigating solution through said valve means into said inlet.

3,965,911

SMOKING MIXTURE

Robert Craig Anderson, and Robert Arthur Hall, both of West Kilbride, Scotland, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 125,812, March 18, 1971, abandoned. This application May 17, 1974, Ser. No. 471,148

Claims priority, application United Kingdom, Mar. 23, 1970, 13862/70

Int. Cl.² A24B *15/00;* **A24D** *1/18*

U.S. Cl. 131—2 **6 Claims**

1. A smoking mixture comprising a thermally degraded carbohydrate tobacco substitute as the essential smoke-producing fuel, alkali or alkaline earth carbonates, sodium carboxymethyl cellulose, and a protein selected from the group consisting of casein, groundnut protein, soyabean protein, zein, albumin or gliadin, the amount of protein to the said smoke producing fuel being in the range 1:8 to 1:60, the amount of alkali or alkaline earth carbonates to the said smoke-producing fuel, and the amount of sodium carboxymethyl cellulose to the said smoke producing fuel each being at least about 1:5 by weight and said thermally degraded carbohydrate being obtained by subjecting a carbohydrate material to a catalysed degradation process at a temperature of at least 100° C until the weight of the degraded material is approximately 90% or less of the dry weight of the original carbohydrate.

3,965,912

COIN STORING AND TRANSFERRING APPARATUS

Erwin Gross, Bruchsal, Germany, assignor to Standardwerk Eugen Reis GmbH, Bruchsal, Germany

Filed Aug. 19, 1974, Ser. No. 499,009

Claims priority, application Germany, Aug. 20, 1973, 7330284[U]; Nov. 14, 1973, 7340676[U]

Int. Cl.² G07D *1/00*

U.S. Cl. 133—1 R **7 Claims**



1. An apparatus for storing and transporting coins comprising: a rectangular base box open on top and defining in its interior a coin receiving container; an elongated frame having a head at one end, means for pivotally securing the other end of said frame along one end of the top of said base box and means for supporting said frame so that its head end extends upwardly at an oblique angle from the interior of said container to a level above said base box, a conveyor provided with transverse parallel arrays of coin entraining pins protruding therefrom, said conveyor comprising a pair of parallel endless belts supported by said frame, each belt extending between lower roller means mounted within said base box and outer roller means mounted at the head end of said frame and provided with means for selectively driving said lower roller means to independently move said belts, said container having a bottom sloping toward said conveyor to direct the coins thereon, said bottom being provided adjacent said conveyor with a corrugated edge cooperating with said conveyor to agitate the coins, said frame being arranged to pivot together with the section of said conveyor supported thereby about a fulcrum to enable said frame and the section of the conveyor supported thereby to fold over said base box in a plane common to that of the top of said base box covering its open top.

3,965,913

CASH DISPENSING SYSTEM

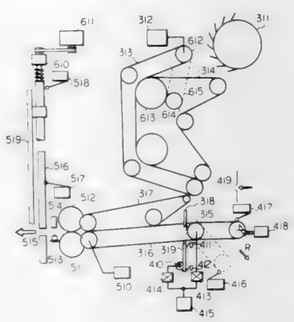
Katsuyuki Tokura, Kawasaki; Shuichi Maeda, Inagi; Takeshi Endo, Yokohama; Kenji Yoichizono, Mitaka, and Hiroshi Asami, Inagi, all of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Feb. 8, 1974, Ser. No. 440,659

Claims priority, application Japan, Feb. 19, 1973, 48-20489

Int. Cl.² B65H *29/14*

U.S. Cl. 133—8 R **21 Claims**



1. A cash dispensing system comprising:
cash container means for containing therein cash;
means for instructing the system as to the amount of cash to be dispensed;
cash counter means for taking out an amount of cash, as instructed, from said cash container means and counting the amount of cash so taken out;
cash transfer means for guiding said cash taken out from said cash container means along a cash transfer path to a cash outlet for dispensing thereof;
abnormality detector means for detecting an abnormality in said cash taken out from the cash container means and producing an abnormality detection output;
cash collecting means for collecting said cash taken out from said cash container in response to an abnormality detection output of said abnormality detector means;
counter means for counting the number of abnormality detection outputs of said abnormality detection outputs of said abnormality detector means; and
means responsive to an abnormality detection output produced by said detector means for a given said instructed amount of cash to be dispensed, to activate said means for taking out and counting the said instructed amount of cash, to again take out and count the said instructed amount of cash when said count of said abnormality detection output counter means is less than a predetermined value, and for stopping the dispensing operations when the count of said abnormality detection output counter means reaches a predetermined value.

3,965,914

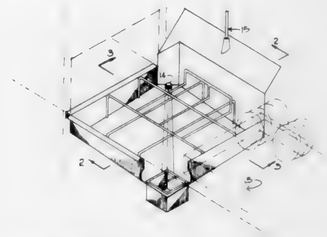
COMMERCIAL DISHWASHER PRE-WASH STATION

James H. Walker, Jr., 4928 Salem Drive, Nashville, Tenn. 37211

Filed Feb. 6, 1975, Ser. No. 547,489

Int. Cl.² B08B *3/02*

U.S. Cl. 134—104 **4 Claims**



1. A pre-wash station for use in commercial dishwashing operations where dishes stacked in a carrier are passed through the pre-wash station and sprayed with a forced spray of water, including:
a. a basin having vertical side walls with each side wall having an upper edge and a lower edge;
b. the upper edges of one set of opposing side walls form a first horizontal plane;
c. the lower edges of one set of connected side walls being askew to the upper edges of said side walls, respectively,
d. said basin having a bottom integrally connected to the lower edges of said side walls and askew to the said horizontal plane;
e. an outlet formed in the bottom of said basin at the lower portion of said basin;
f. a rack sitting in said basin and supported by the bottom of the basin;
g. said rack including support rods extending in the direction of travel of a dish carrier passing through the prewash station, said rods in a position to form a second horizontal plane coinciding with the first horizontal plane, vertically extending means connected to said rods for supporting said rods at said position, and connecting rods connecting said support rods and attached to the underside of said support rods,
h. one of said vertical walls being substantially perpendicular to the opposing walls whose upper edges form said first plane and extending vertically above the said plane to form a backsplash;
i. a spray assembly connected to said backsplash;
j. said spray assembly including a flexible hose and a hand-actuated spray nozzle;
k. the upper edge of one of said opposing walls being connected to a turned-down lip, and
l. a wide angle spray nozzle in the bottom of said basin directed in the direction of the plane of the bottom.

3,965,915

TENT STRUCTURE

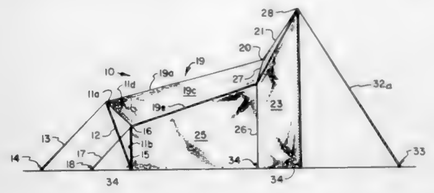
Arthur J. Kirkham, 24 W. Fifth South, Salt Lake City, Utah 84101

Filed Oct. 6, 1972, Ser. No. 295,516

Int. Cl.³ E04B *1/347;* **A45F** *1/00*

U.S. Cl. 135—1 R **8 Claims**

1. A tent shelter comprising
flexible panel means forming an enclosable sleeping area having a low profile and including door flaps providing access means to the sleeping area;
flexible wing portions integral with and permanently secured to said flexible panel means, extending from around opposite sides of and upwardly from said door flaps, said wing portions being interconnected at upper ends thereof, whereby a shelter area having three ground engaging, interconnected sides and one entirely open side is formed by the flexible panel means forming an enclosable sleeping area and the wing portions, said shelter area having a higher profile than the sleeping area and a highest point at the intersection of the wing portions most remote from the panel means, whereby a user can stand within said shelter area; and



means for supporting said flexible panel means and said wing portions in an upright, taut condition.

3,965,916

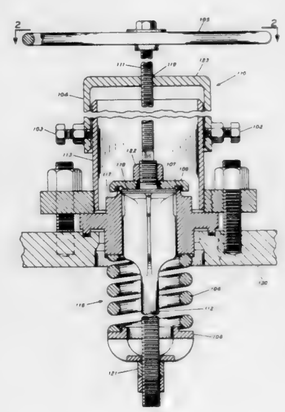
APPARATUS AND METHOD FOR GAGGING A RELIEF VALVE WITHIN A FLUE SECURED TO A TANK

Gus Karas, Concord, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 23, 1974, Ser. No. 535,397

Int. Cl.² F16K *15/18*

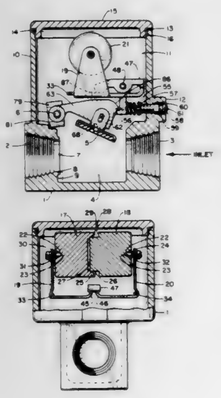
U.S. Cl. 137—15 **4 Claims**



1. Method for the purpose of sealing a leaky safety valve assembly in a tank containing gas under pressure, said assembly characterized by
an extended, hollow, and open-ended body passing through said tank so that one end opens into the interior of said tank and the other end opens into an environment exterior to said tank, said body attached to said tank;
a safety valve assembly reciprocable within said body due to pressure changes in said tank, said assembly having an expanded lower valve head;
a stem extending from said lower valve head and having an upper valve head, said upper valve head spaced a predetermined distance from said lower valve head;
a valve seat connected to said open-ended body, said seat cooperating with said upper head to close said open-ended body when said upper head is placed against said seat;
resilient means for keeping said upper head against said seat in a normally closed position, said resilient means located

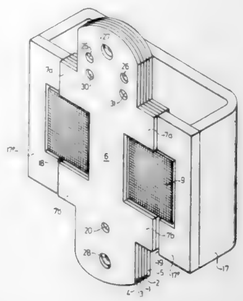
coaxial with said stem and between said lower valve head and said open-ended body;
a flue circumscribing said valve assembly and fixed to the exterior of said tank;
said method comprising the steps of:
placing over said flue a structural tube having a bar adjustably secured to and generally coaxial with said tube;
securing said tube to said tank in order to achieve a load-transferring position for said bar;
adjusting said bar until the lower end thereof is in alignment with the upper head of said safety valve; and
lowering said bar until said bar sits on said head to restrain said valve assembly from leaking by preventing said spring loaded upper head and stem from reciprocating within said body under a pressure change.

3,965,917
EARTHQUAKE VALVE
Ronald M. Speck, 8015 McGroarty St., Sunland, Calif. 91040
Filed Mar. 14, 1974, Ser. No. 450,982
Int. Cl.² F16K *17/36*
U.S. Cl. 137—38 **12 Claims**



1. An acceleration responsive device comprising:
a housing;
a pair of elongated reactant masses, each said mass having a front and a back end, each said mass having a longitudinal axis extending through the center of gravity of the mass from said front end to said back end, said masses being loosely interlocked together with the front ends of said masses normally assuming an abutting relationship defining an inline interlocked first position but movable to a misaligned interlocked second position, said first position being with said longitudinal axes in alignment and located substantially horizontal;
supporting means for supporting said reactant masses, said supporting means mounted on said housing, said supporting means contacting each said mass on its respective said longitudinal axis, whereby the movement from said first position to said second position is substantially a rolling motion between said masses to thereby minimize the producing of friction in the movement, the rolling motion being produced due to point contact between said masses immediately upon said masses leaving said interlocked first position;
a latching means mounted upon said housing, said supporting means connectable to cause activation of said latching means when said reactant masses are in said second position; and
actuation means mounted on said housing, said latching means connectable to hold said actuation means in an inactive position, upon activation of said latching means said actuation means assumes an active position.

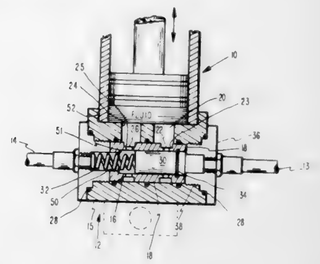
3,965,918
ELECTRO-FLUIDIC SIGNAL CONVERTER
Ludwig Finkbeiner, Walheim; Rudolf Jurinke, Ludwigsburg; Volkmar Leutner, Hemmingen, and Roman Romes, Friolzheim, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed June 28, 1974, Ser. No. 484,335
Claims priority, application Germany, July 3, 1973, 2333690
Int. Cl.² F15C *3/12*
U.S. Cl. 137—83 **11 Claims**



1. An electro-fluidic signal converter, comprising a body having an inlet and two outlets for pressure fluid, said body being composed of a pair of outer non-magnetic plates and a plurality of laminated-together inner magnetizable plates which are fluid-tightly sandwiched between said outer plates, said inner plates having respective plate portions which together constitute a body section that is resiliently deflectable out of a neutral position, and said body section being formed with a fluid channel which communicates with said inlet and which has a discharge orifice that communicates equally with both of said outlets when said body section is in said neutral position; and electromagnetic means adjacent said body and energizable for deflecting said body section out of said neutral position to one of a plurality of operated positions in which said discharge orifice communicates preferentially with one of said outlets, the non-magnetic character of said outer plates preventing shorting of the magnetic flux path required for effecting the deflecting of said body section.

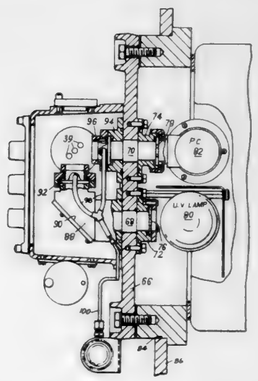
3,965,919
HYDRAULIC SAFETY VALVE BASE
Robert E. McGarvey, and Donald L. Gitthens, both of 5853 Owens, Arvada, Colo. 80002
Filed Sept. 26, 1974, Ser. No. 509,647
Int. Cl.² F16K *11/07*
U.S. Cl. 137—107 **7 Claims**

1. A safety valve for use in a hydraulic system, which system includes a hydraulic cylinder, hydraulic fluid, hydraulic fluid feed lines and hydraulic fluid control means, comprising:
a. A base member having a bore therethrough;
b. A first port and a second port located in the base member and perpendicular to the bore and joining the bore to the hydraulic cylinder;
c. A hollow cylindrical barrel positioned within the bore and having a first circumferential groove and a second circumferential groove, said first circumferential groove and said second circumferential groove each including a series of vents and each being aligned with the first port and the second port, respectively;
d. Inlet and exhaust fittings in the base member and communicating with a first end and a second end of the bore respectively; and



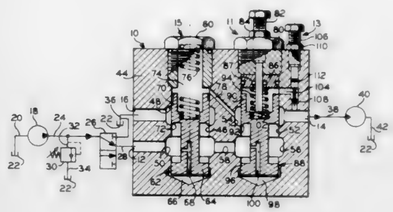
e. A plunger actuated by a single spring and slideably located within the bore and adapted to seal one or more of the ports or the other to prevent passage of the hydraulic fluid from the hydraulic cylinder to the bore.

3,965,920
INSTALLATIONS FOR MONITORING OIL CONTENT
Raymond Michael deVial, Beckenham, England, assignor to Bailey Meters & Controls Ltd., Croydon, England
Filed Oct. 3, 1974, Ser. No. 511,748
Claims priority, application United Kingdom, Oct. 3, 1973, 46274/73
Int. Cl.² G05D *7/06*; F16K *37/00*
U.S. Cl. 137—115 **4 Claims**



1. An installation for monitoring the oil content in a discharge of water ballast from cargo tanks of an oil tanker including a sampling connection positioned adjacent a sea valve for the discharge and connected to receive a flow of water from the discharge, an emulsifier connected to receive a fraction of the flow of water from the sampling connection and discharge the fraction, after thorough mixing, to a plurality of downwardly discharging orifices having co-planar axes of discharge in a sampling chamber, a beam of ultraviolet radiation of wavelength in the range 200 to 400 n.m. arranged to be incident upon the jets discharged from the orifices, a photo-electric cell arranged to receive fluorescent radiation emitted from the jets at wavelength greater than 400 n.m. and an alarm circuit arranged upon the photo-electric cell receiving radiation greater than a pre-determined value, to energise a pneumatically operated alarm system by venting a pneumatic pilot pressure line connected to a pneumatic actuator for the sea valve and to a pneumatic actuator for a valve to a line to a slop tank for receiving water ballast unacceptable for discharge, such that upon loss of pilot pressure the slop tank valve is moved to an open position and the sea valve is moved subsequently to a closed position.

3,965,921
CONTROLLED OPENING PRESSURE COMPENSATED FLOW CONTROL VALVE
David L. Thurston, Ashley, Ohio, assignor to Abex Corporation, New York, N.Y.
Continuation of Ser. No. 260,946, June 8, 1972, abandoned. This application Nov. 20, 1974, Ser. No. 525,418
Int. Cl.² G05D *7/01, 11/03*
U.S. Cl. 137—117 **3 Claims**



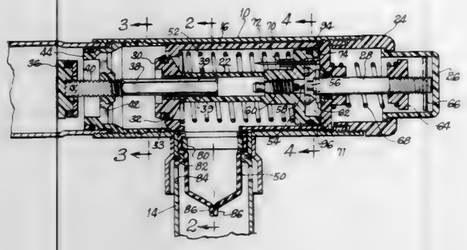
1. An automatic pressure fluid flow control device, comprising: a valve body; an inlet in the body for receiving pressure fluid from a source; an outlet in the body for discharging pressure fluid to a pressure fluid operated device; a normally closed variable orifice for regulating fluid flow to the outlet; a fluid passage for conducting pressure fluid to the variable orifice; pressure compensating means for regulating fluid flow from the inlet to the fluid passage including a compensating member, biasing means biasing the compensating member to an inoperative position permitting full fluid flow from the inlet to the fluid passage, first fluid pressure responsive means connected to the fluid passage for biasing the compensating member out of the inoperative position to reduce fluid flow to the flow control valve means, and second fluid pressure responsive means connected to the outlet opposing the first fluid pressure responsive means; biasing means biasing the orifice to its normally closed position; third fluid pressure responsive means connected to the fluid passage for opening the orifice when fluid in the fluid passage exceeds a predetermined pressure; adjustment means for selectively varying the maximum orifice opening; fourth fluid pressure responsive means opposing the third fluid pressure responsive means to oppose opening of the orifice; conduit means connecting the fourth fluid pressure responsive means to the outlet; and restricting means in the conduit means to limit the flow of fluid from the fourth fluid pressure responsive means to the outlet to control the rate of opening of the orifice as the orifice opens.

3,965,922
ANTI-SIPHON FLUSH VALVE CONSTRUCTION
Robert R. McCornack, 980 N. Broad St., Galesburg, Ill. 61401
Filed Nov. 25, 1974, Ser. No. 526,796
Int. Cl.² F16K *24/00*
U.S. Cl. 137—218 **18 Claims**

1. In a valve construction for controlling fluid flow through a first jacket section having a fluid inlet and outlet, a piston, means for mounting the piston for reciprocal and rotational movement in said jacket section, means for actuating said piston, a valve mounted to said piston to control fluid flow at the jacket inlet, the improvement comprising:
a. a socket provided in said piston at the inlet of said jacket section for receiving a shaft therein;
b. a second jacket section disposed forwardly of said first section;

c. a shaft threadingly engaged in said second section, the rear portion of said shaft extending to a position of engagement with said socket; and

d. a stop mounted to said shaft controlling fluid flow through the inlet end of said second jacket section, said

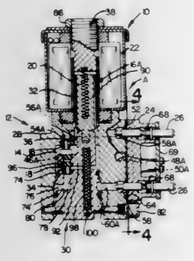


stop being movable by rotation of said piston between a seated position in sealing engagement with said second jacket section preventing fluid flow to said first section and an unseated position permitting a selectable amount of fluid flow.

3,965,923
SOLENOID VALVE

Walter E. Allen, Prospect, Conn., assignor to Peter Paul Electronics Co., Inc., New Britain, Conn.

Filed Aug. 16, 1974, Ser. No. 498,089
Int. Cl.² F16K *11/02*
U.S. Cl. 137—315 **24 Claims**

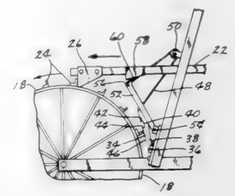


1. A solenoid actuated control valve comprising a body assembly having a chamber therein, a pair of opposing valve seats in said chamber, a solenoid mounted on said body assembly, an axially elongated plunger assembly supported for axially reciprocal movement in said chamber and including an axially elongated plunger axially movable from one to another position in response to energization of said solenoid and a rigid plunger arm extending radially outwardly beyond said plunger and having a pair of seating surfaces on opposite sides thereof radially outwardly spaced from said plunger, each of said seating surfaces aligned with an associated one of said valve seats, one of said seating surfaces engaging and closing one of said valve seats when said plunger is in its one position, the other of said seating surfaces engaging and closing the other of said valve seats when said plunger is in its other position, and means for biasing said plunger to and normally retaining it in its one position and yieldably resisting axial movement of said plunger to its other position on energization of said solenoid.

3,965,924
BRAKE MEANS FOR A CENTER PIVOT IRRIGATION SYSTEM

James M. Kennedy, 240 E. 6th St., Ainsworth, Nebr. 69210

Filed May 6, 1975, Ser. No. 567,725
Int. Cl.² B05B *3/12*
U.S. Cl. 137—344 **6 Claims**



1. In combination,

a center pivot irrigation system comprising an overhead irrigation pipe supported by a plurality of spaced-apart drive towers,

each of said drive towers comprising a frame means having a pair of spaced-apart wheels mounted thereon,

a trojan bar reciprocatably mounted on said frame means adapted to be moved in a drive stroke direction and a return stroke direction, said trojan bar engaging at least one of said wheels during its drive stroke whereby said one wheel will be driven,

power means connected to said trojan bar for reciprocating said trojan bar,

said one wheel having a plurality of spaced-apart lugs provided on its periphery,

a brake means movably mounted on at least some of said drive towers and being movable into engagement with said lugs for selectively preventing rotation of said one wheel in either directions of rotation,

and a control means connected to said brake means to move said brake means into and out of engagement with said lugs,

said trojan bar having a first dog means provided on one end thereof for engagement with one of said lugs during its drive stroke to cause the said one wheel to be driven in a forward direction,

a second downwardly extending dog means on said trojan bar spaced longitudinally inwardly of said first dog means,

an elongated brake arm pivotally secured at one end to said frame means and extending upwardly therefrom,

said brake arm having a lug receiving notch formed therein adapted to receive one of said lugs at times to prevent rotational movement of said one wheel in either direction when so engaged,

an elongated actuator arm pivotally secured at one end to said frame means,

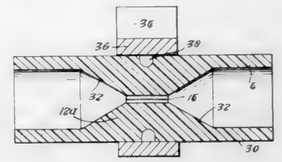
a cable means interconnecting said actuator arm and said brake arm,

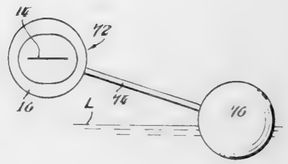
the other end of said actuator arm being in the movable path of said second dog means whereby said second dog means will engage and cause said actuator arm to be pivotally moved as said trojan bar is moving during its drive stroke to cause said brake arm to pivotally move out of engagement with said lug.

3,965,925
PINCH VALVE

John Henry Gooch, Hassocks, England, assignor to J. H. Gooch & Company Limited, Hassocks, England

Filed Mar. 17, 1975, Ser. No. 558,892
Claims priority, application United Kingdom, Mar. 18, 1974, 11817/74
Int. Cl.² F16K *7/06*
U.S. Cl. 137—451 **15 Claims**



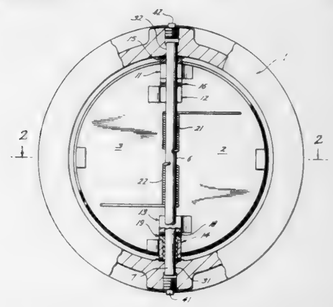


1. A valve comprising, in combination, a resilient tubular valve member, at least one transversely elongate passage through the valve member that is capable of being opened and closed by deformation of the valve member, an outer control member extending around at least a part of the periphery of the valve member and rotatable relative to the valve member about said periphery, said control member engaging different portions of the valve member periphery in respective positions of relative rotational adjustment in one of which it urges said at least one passage open and in another of which it urges said at least one passage closed.

3,965,926
FLAPPER VALVE WITH INDEPENDENT PLATE SUSPENSION

Spencer P. Buckner, Houston, Tex., assignor to TRW Inc., Cleveland, Ohio

Filed Aug. 25, 1975, Ser. No. 607,338
Int. Cl.² F16K *15/03*
U.S. Cl. 137—512.1 **4 Claims**

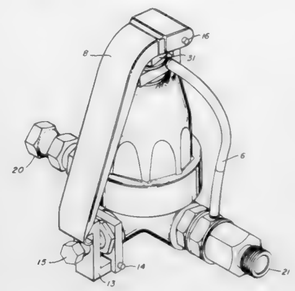


4. An improved valve of the type having a body with a fluid flow conduit therethrough, a valve seat surrounding said flow conduit, valve members for sealing said fluid flow conduit, a shaft for pivotally supporting said valve members within said body, and separate hinges for mounting said valve members on said shaft, wherein the improvement comprises a support collar attached to said shaft and interposed between two of said hinges supporting separate valve members whereby said collar supports the upper hinge of said two hinges.

3,965,927
OVERRUN VALVE FOR AIR PUMPS

Bernard W. Siczek, La Grange Park, Ill., assignor to Graco Inc., Minneapolis, Minn.

Filed Dec. 2, 1974, Ser. No. 528,708
Int. Cl.² F16K *17/00*
U.S. Cl. 137—460 **5 Claims**



1. Apparatus for limiting volumetric flow rate in a gaseous pressurized line, comprising:

a. a valve body having an inlet and outlet connection for sealably connecting to the gaseous pressurized line;

b. a first chamber in said valve body in communication with said inlet and having a pressure responsive diaphragm defining at least a portion of its chamber wall;

c. a venturi passage having an inlet in communication with said first chamber and an outlet in communication with said valve body outlet connection;

d. a second chamber in said valve body having said pressure responsive diaphragm separating it from said first chamber;

e. passage means for connecting the region near said venturi passage outlet with said second chamber;

f. a valve interposed in said first chamber in gas flow opening and closing position, said valve having a connection to said pressure responsive diaphragm;

g. a mechanical latch connected to said valve body and having a latch-opening valve rod connected to said pressure responsive diaphragm, said latch further having a detent means for exerting a latch-holding force in opposition to force of said diaphragm on said latch-opening valve rod; whereby an unbalance of forces against said latch wherein said diaphragm force exceeds said latch-holding force of said detent means causes said valve to close; and

h. pressure responsive force means, connected between said first chamber and said detent means, for increasing said detent means latch-holding force in relation to increasing pressure in said first chamber.

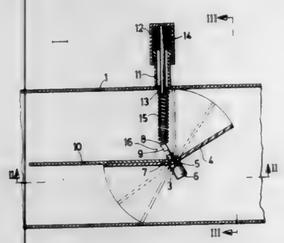
3,965,928
FLOW REGULATOR FOR DUCTS

Emil Siegwart, Michael-Blatter-Str. 6, 6603 Sulzbach-Neuweiler, Germany

Filed Oct. 9, 1975, Ser. No. 621,169
Claims priority, application Germany, Oct. 10, 1974, 2448271
Int. Cl.² F16K *31/36*
U.S. Cl. 137—499 **13 Claims**

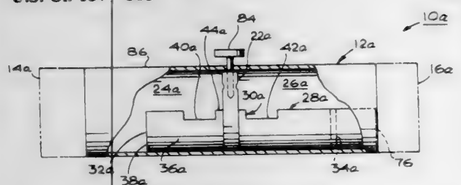
1. In a fluid ducting section, a flow regulator comprising a flap for varying the free ducting cross-section, a shaft mounted

transversely in the ducting section near the central axis thereof, said flap being mounted on said shaft for rotation about the shaft axis to vary the free ducting cross-section, said flap comprising first and second portions obtusely angled relative to each other along a bend line near said shaft, said ducting section having an air inlet end and an air outlet end defining the direction of air flow therethrough, means defining an open position and a closed position for said flap, said first and second portions being angled relative to each other such that in the open position of said flap the first portion is directed downstream from said shaft generally parallel to the direction of air flow and the second portion is directed



obliquely upstream, and in the closed position said second portion is directed substantially perpendicular to the ducting axis and said first portion is directed obliquely downstream, whereby air flow against said second portion biases said flap toward the closed position, and spring means biasing said flap toward the open position, said spring means being adapted to act from the direction of the wall of the ducting section on a lever arm attached to the shaft in such a manner that the point of action of the force on rotation of the flap out of the open position into the closed position describes a circular arc, which arc at the beginning is more oblique to the direction of the spring force than at the end.

3,965,929
CONDUIT VALVE
Akio Fukunaga, 2055 Colby Ave., Los Angeles, Calif. 90025
Filed June 17, 1974, Ser. No. 480,000
Int. Cl.² F16K *31/12*
U.S. Cl. 137—503 **9 Claims**



1. An in-linne fluid flow control valve comprising a partitioned housing upstream and downstream chambers and coupling means for coupling said chambers respectively to upstream and downstream conduits:

fluid passage defining means including first and second ports communicating respectively with said chambers and a slidable member having a recessed portion for permitting a flow between said ports and having opposite end portions for blocking flow between said ports, the slidable member having at least one downstream surface responsive to pressure in said downstream chamber for moving said member toward the upstream conduit coupling means; and

biasing spring means coupled to bias said slidable member toward the downstream conduit coupling means, the biasing spring being operative to drive the slidable member in a downstream direction to a first position permitting a first minimum flow in the absence of a predetermined downstream pressure range, to balance the slidable member in an intermediate position aligning the recessed portion with said ports for maximum fluid flow for downstream pressures within said predetermined range, and to permit the slidable member to be driven upstream by further increase in downstream pressure to a second position cutting off flow for downstream pressure in excess of said predetermined range;

said biasing spring means including means responsive to upstream pressure for increasing the biasing spring force as upstream pressure increases.

3,965,930
CHECK VALVE ASSEMBLY
Bryan Frederick Nicholls, Northampton, England, assignor to The Mettoy Company Limited, Northampton, England
Filed Feb. 25, 1975, Ser. No. 552,966
Claims priority, application United Kingdom, Mar. 5, 1974, 9919/74
Int. Cl.² F16K *15/14*
U.S. Cl. 137—525 **2 Claims**

1. In a non-return valve comprising a generally cylindrical valve member having opposed axial ends, an axial bore terminating at an inlet in one said end of the member, a pair of axially spaced walls projecting radially from said member and a circumferential sealing surface between said walls for carrying a close fitting sleeve of elastomeric material, and at least one radial passageway extending through said sealing surface and communicating with said bore, the improvement according to which said member is a synthetic plastics molding comprising two parts having snap-fitting interengagement; a first one of said parts defining said axial bore, one of said walls and said circumferential sealing surface and comprising an end portion located beyond the sealing surface having a radially enlarged head and the other one of said parts including the other of said walls, and being annular and resiliently deformable to permit its location over and engagement behind said radially enlarged head of said first part.

3,965,931
BALANCED FLOW CROSS-HEAD
Max Skobel, 10 Lynnwood Road, Edison, N.J. 08817
Filed Aug. 18, 1975, Ser. No. 605,637
Int. Cl.² B29F *3/02*
U.S. Cl. 137—561 A **5 Claims**

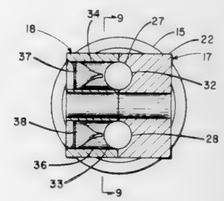
1. A balanced flow cross-head for extrusion of flowable materials comprising:

attachment means for attaching the cross-head to a suitable source of a pressurized stream of such flowable materials,

conduit means for accepting the stream of flowable material and turning the direction of flow away from the axis of the stream emanating from said source,

first flow dividing means in fluid communication with said conduit means for dividing said stream by a plane defined by the axis of symmetry of pressures in the conduit and the axis of stream flow as it emerges from said conduit means after being turned, and for twisting each substream 90°,

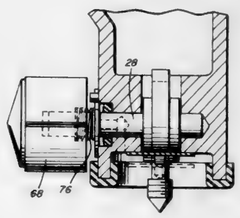
second flow dividing means in fluid communication with the output of a first flow dividing means for subdividing each of the substreams emanating from the first flow dividing means said second flow dividing means positioned on the



axis of symmetry of the substreams and including means for twisting the axis of symmetry of each portion of each of the substreams 90°, and

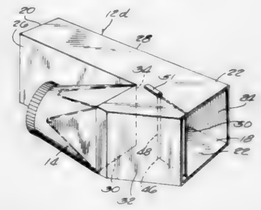
a cross-head output plate having a plurality of fluid paths communicating with said subdivided substreams for spreading the subdivided substreams into a recombined single stream exteriorly thereto.

3,965,932
VACUUM VALVE
Lawrence E. Wysocki, and Elmer W. Muench, both of Covina, Calif., assignors to Everett/Charles, Inc., Pomona, Calif.
Filed Apr. 4, 1975, Ser. No. 565,243
Int. Cl.² F16K *11/18*
U.S. Cl. 137—607 **9 Claims**



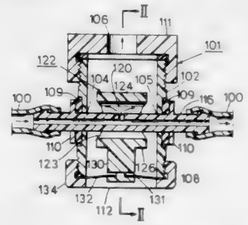
1. A vacuum valve assembly for applying suction pressure from a source to a location to be evacuated, comprising a valve body having an inlet portion and a manifold portion, suction conduit means of predetermined flow area connected to said inlet portion for connecting the valve body to said source, sealing means peripherally mounted on said manifold portion of the valve body for sealing the manifold portion at said locaton enclosing an area substantially greater than said predetermined flow area of the suction conduit means, gate means mounted in the valve body for blocking fluid communication between the inlet and manifold portions, valve actuating means engageable with the gate means for selectively opening the same to unblock fluid communication between the inlet and manifold portions of the valve body and re-pressurizing means connected to the actuating means for venting the manifold portion of the valve body to atmosphere simultaneously with the blocking of fluid communication between the inlet and manifold portions.

3,965,933
AIR DUCT MADE FROM SHEET METAL STAMPING
Patrick L. Beaudin, 1112 Fremont, NW., Grand Rapids, Mich. 49504
Filed Nov. 15, 1974, Ser. No. 524,225
Int. Cl.² F17D *1/02*
U.S. Cl. 137—610 **4 Claims**



1. A sheet metal duct section having an inlet and outlet comprising in combination: a prestamped upper and lower spaced panel interconnected by spaced side panels, at least one side panel being shorter in length than said upper and lower panels and defining an opening through which at least a portion of flow through said inlet is diverted, said upper and lower panels having end edges and a central body portion extending the length and width of said duct section from said inlet to said outlet and formed tongue portions extending laterally beyond said shortened side, said stampings being folded along their end edges and cooperatively engaged with said side panels to form the air duct section, and said tongue portions cooperatively forming a diverter outlet to divert flow through said inlet from said outlet, said duct having a diminishing cross section from said inlet to said outlet.

3,965,934
FLUID REGULATING DEVICES
Peretz Rosenberg, Moshav Bet Shearim, Israel
Division of Ser. No. 269,256, July 5, 1972, Pat. No. 3,882,890. This application Nov. 4, 1974, Ser. No. 521,004
Int. Cl.² B05B *1/08*
U.S. Cl. 137—624.14 **11 Claims**



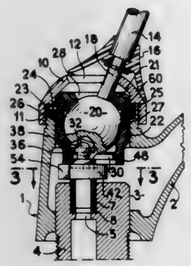
1. A fluid-flow control device comprising a conduit member connectable to a source of pressurized fluid to be controlled and including an inlet opening, an axial passageway, and an outlet opening through which the fluid flows; and a regulating member movable towards and away from the conduit member outlet opening to close and open same and thereby to control the flow of fluid therethrough; characterized in that the face of the conduit member in which the outlet opening is formed is curved, and the face of the regulating member closing the outlet opening is also curved but with a different curvature from that of the conduit member face, such that the curved regulating member face diverges from the curved conduit member face outwardly from the periphery of the outlet opening formed in the latter face to provide a spacing between the two curved faces which increases from the periphery of the outlet opening outwardly thereof, whereby as the regulating member moves away from the conduit member outlet opening to permit the fluid to flow therethrough, a pressure gradient is produced in which the pressure is lower at the periphery of

said opening than outwardly thereof, and which therefore tends to move the regulating member towards the conduit member outlet to close same, said pressure gradient acting with the fluid force to set the regulating member into vibratory movement towards and away from the conduit member outlet opening during the flow therethrough.

3,965,935
MIXER TAP

Bernard Jean Harry Morisseau, 22, Avenue de Friedland, 75 Paris, France

Filed Nov. 20, 1973, Ser. No. 417,526
Claims priority, application France, Nov. 29, 1972, 72.42368
Int. Cl.² F16K *11/06*
U.S. Cl. 137—625.4 **2 Claims**

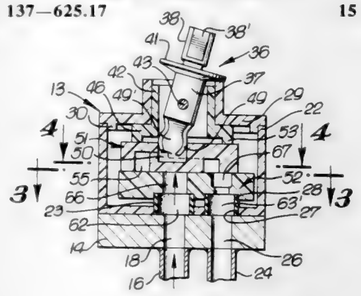


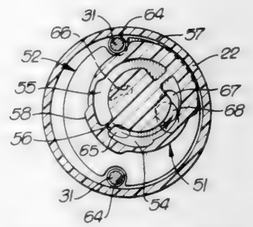
1. In a mixer tap comprising means defining a body having a chamber and an end wall which defines a part of the chamber; means defining an outlet for the chamber; means defining two inlet apertures in side-by-side spaced relation opening onto the end wall; valve actuating means comprising a rigid hard slide defining a flat valving surface, a spherical ball mounted relative to the body to pivot about the centre of the ball, a rod carried by the ball, and means connecting the ball to the slide whereby the rod is capable of shifting the slide in directions parallel to the valving surface; means for supporting the slide in the chamber and allowing the slide to move in directions parallel to the valving surface while maintaining a given orientation of the slide relative to the inlet apertures: the improvement comprising in combination two rigid hard tubular seats respectively mounted to be slidable axially of the seats in the two inlet apertures and having rigid hard flat first ends defining inlet ports slidably and sealingly engaging the valving surface and opposite second ends, the inlet apertures defining inner shoulder means spaced from the second ends of the seats axially of the seats, a resiliently yieldable self-sealing assembly interposed between and in a compressed state between the second end of each seat and the corresponding shoulder means and radially sealingly engaging the corresponding inlet aperture whereby the seat is sealingly combined with the inlet aperture and has its first end biased gainst the valving surface, the support means providing a rigid abutment for the slide in a direction perpendicular to the valving surface, the slide having an outer contour which has two contour portions defining two lateral notches which extend the entire thickness of the slide and constitute valving edges of said flat valving surface which are respectively cooperable with the two ports to be capable of selectively closing for zero flow and uncovering for maximum flow the two ports selectively simultaneously and separately according to the orientation of the rod about the centre of the ball, the parts of the ports and seats uncovered by the slide valving edges of the notches being outside said outer contour of the slide.

3,965,936
SINGLE HANDLED MIXING VALVE

Jack K. Lyon, Pasadena, Calif., assignor to Price Pfister Brass Mfg. Co., Pacoima, Calif.

Filed Nov. 20, 1974, Ser. No. 525,293
Int. Cl.² F16K *19/00*
U.S. Cl. 137—625.17 **15 Claims**





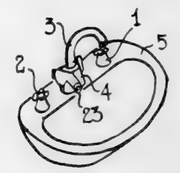
10. In a valve structure, a valve body including a cup defining a chamber, a fitting supporting said cup, a cover positioned on said cup, a pair of inlet holes in said fitting and a pair of inlets in the bottom of said cup, said inlet holes communicating respectively with said inlets, a flat valve seat mounted in said cup above the bottom thereof, a pair of arcuately shaped outwardly divergent ports in said valve seat, said ports communicating with said respective inlets, a valve plate slideable on said valve seat, circular groove means comprising a pair of arcuate grooves in the bottom of said valve plate, first adjacent inner ends of said arcuate grooves being arranged respectively to communicate with said arcuate inlet ports over varying areas of said respective inlet ports during sliding movement of said valve plate on said valve seat, an outlet hole in said fitting, an outlet in the bottom of said cup, said outlet communicating with said outlet hole, an outlet port in said valve seat and forming a mixing chamber, said outlet port communicating with said outlet, second adjacent outer ends of said arcuate grooves in said valve plate opposite said first adjacent ends being positioned for communication with said outlet port in said valve seat, and a member mounted on said cover in slideable contact with the upper surface of said valve plate and confining said valve plate for slideable movement on said valve seat.

3,965,937
WASHBASIN FAUCET INSTALLATION WITH AUXILIARY FITTING FOR MOUTH SPRAY OR SIMILAR APPARATUS

Martin Reber, 7 Cours de Rive, Geneva, Switzerland

Filed Apr. 16, 1975, Ser. No. 568,392
Claims priority, application Switzerland, Apr. 18, 1974, 5336/74
Int. Cl.² F16K *11/085*
U.S. Cl. 137—625.47 **4 Claims**

1. A faucet for a washbasin, comprising
1. a support base defining a water inlet conduit,
2. a two-way cock mounted on the support base and comprising
   a. a cock casing defining a chamber arranged to receive water from the inlet conduit, a main water outlet conduit and a branch water outlet conduit leading from the cock casing chamber,
   b. a cock body movably mounted in the cock casing chamber between the inlet conduit and the outlet conduits, the cock body being movable into respective angular positions to establish communication between the inlet and main outlet conduits, and the inlet and branch outlet conduits, respectively,
   c. the branch outlet conduit leading from the cock casing chamber to a first compartment in the casing and the casing defining two channels leading away from the compartment, and
   d. the cock casing defining a second compartment in communication with one of the channels, a spring-biased

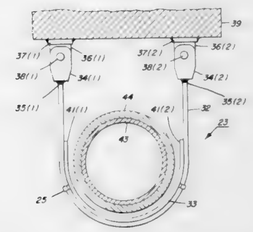


pressure limiting valve housed in the second compartment and normally closing communication between the one channel and the second compartment, excess pressure in the one channel opening the valve and permitting water to enter from the one channel into the second compartment, and the cock casing defining a third channel between the second compartment and the main water outlet conduit to permit water from the second compartment to flow into the main outlet conduit in response to said excess pressure,
3. a main water spout directed into the washbasin and in communication with the main water outlet conduit, and
4. an auxiliary water spout in communication with a second one of the two channels, the auxiliary spout serving for the attachment of a flexible tubing.

3,965,938
PIPE RESTRAINT DEVICE

Richard D. Bauerle; William A. Pitt, both of San Jose, and Mervyn A. White, Campbell, all of Calif., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 388,933, Aug. 16, 1973, abandoned. This application Nov. 11, 1974, Ser. No. 522,987
Int. Cl.² F16L *3/04*
U.S. Cl. 138—107 **11 Claims**

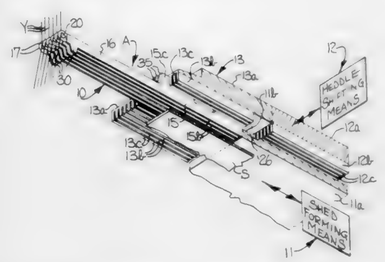


1. In a system including a pipe conducting a fluid at high pressure, a restraint device normally free of any contact with said pipe for limiting movement of said pipe in the event of rupture of said pipe, comprising: a U-shaped restraint member positioned around said pipe and normally spaced therefrom; support means adjacent each end of said restraint member, said support means being fixed to a structural member of said system; and a pivotable connection between each end of said restraint member and said support means, the material and size of said restraint member being selected to provide plastic elongation of said restraint member and absorption of energy of said pipe upon impact of said pipe against said restraint member in the event of said pipe rupture.

3,965,939
HEDDLE WITH GUIDE MEANS THEREON FOR USE IN A WEAVING MACHINE FOR MAKING TRIAXIAL FABRICS

Karol Kulczycki, 36 Lawrence Road, Parsippany, N.J. 07054; Burns Darsie, 1603 Sexton Drive, Rockford, Ill. 61108, and Norris F. Dow, 600 Allendale Road, King of Prussia, Pa. 19408

Filed July 18, 1975, Ser. No. 597,290
Int. Cl.² D03C *13/00*
U.S. Cl. 139—48 **9 Claims**

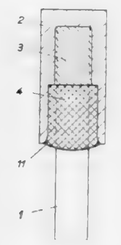


1. An elongate heddle for a weaving machine for making triaxial fabrics wherein the heddle is adapted to be moved longitudinally during warp shed forming operations and also is adapted to be shifted weftwise of the weaving machine, said heddle having a frontal portion with a warp strand guide opening extending therethrough, said heddle having means thereon adapted to be engaged for imparting longitudinal movement thereto, said heddle also having other means thereon adapted to be engaged for shifting the heddle weftwise of the weaving machine, and guide means carried by said frontal portion of the heddle and lying in a common plane with said frontal portion and projecting laterally therefrom for guiding said frontal portion of the heddle during movement of the heddle by being adapted to cooperate with an adjacent heddle.

3,965,940
RIGID AND FLEXIBLE MOUNTING FOR REED-DENT IN A PROFILED STAVE

Emil Marty, 38 Plattenstrasse, 8810 Horgen, Switzerland

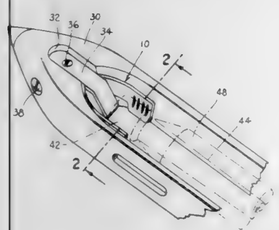
Filed Mar. 5, 1975, Ser. No. 555,748
Claims priority, application Switzerland, Mar. 6, 1974, 3181/74
Int. Cl.² D03D *49/62*
U.S. Cl. 139—192 **6 Claims**



1. In a textile weaving machine an improved reed-dent mounting arrangement comprising:

a. a plurality of reed-dents (1);
b. at least one stave (2) having a U-shaped cross-section to engage an end of the reed-dents;
c. a rigid bonding agent (3) surrounding the end of the reed-dent inserted into the stave so as to rigidly bond said reed-dent to said stave; and
d. a flexible bonding agent (4) surrounding the end of the reed-dent adjacent said rigid bonding agent so as to flexibly attach said reed-dent to said stave.

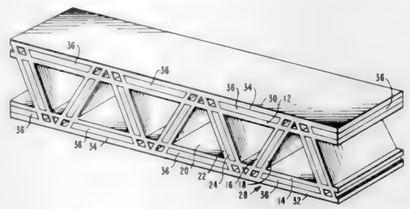
3,965,941
SHUTTLE SPRING
Ralph M. Compton, 4 Briarcreek Place, and Johnny W. Jenkins, Jr., 111 Sycamore Drive, both of Greenville, S.C. 29607
Filed May 8, 1975, Ser. No. 575,451
Int. Cl.² D03J *5/08*
U.S. Cl. 139—207 **3 Claims**



1. A shuttle spring for holding a bobbin having yarn wound thereon in a loom shuttle comprising:
a single piece of metal having a bent portion formed by bending said single piece of metal upon itself,
a pair of shank portions defined by the sides of said single piece of metal on each side of said bent portion,
a pair of spaced-apart jaw portions having opposed vertical side surfaces for resiliently engaging and holding said bobbin therebetween,
a side arm portion connecting, respectively, each one of said jaw portions to one of said shank portions, and
one of said vertical side surfaces having a greater vertical width than the opposing vertical side surface of said other jaw portion so as to cause said bobbin to rotate in a direction causing the yarn wound thereon to create an effective transfer tail when the bobbin is forced outwardly from said jaw portions of said shuttle spring.

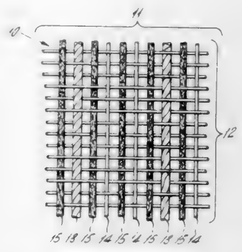
3,965,942
MULTI-PLY WOVEN ARTICLE HAVING STIFFENING ELEMENTS BETWEEN DOUBLE PLIES
Donald M. Hatch, Huntington Beach, Calif., assignor to Hitco, Irvine, Calif.
Continuation of Ser. No. 290,541, Sept. 20, 1972, abandoned. This application Oct. 9, 1974, Ser. No. 513,315
Int. Cl.² D03D *3/00*
U.S. Cl. 139—384 R **8 Claims**

1. A multi-ply woven structural panel comprising a woven fabric having a pair of opposite, spacedapart, generally planar faces and a pair of spacedapart intermediate rib plies of generally planar configuration extending between and being interwoven with the opposite faces, the faces and the rib plies defining a plurality of major chambers within the panel and between the opposite faces, the pair of intermediate rib plies alternately extending between the opposite faces in a zig zag configuration and providing the major chambers with generally triangular-shaped cross section, the pair of intermediate rib plies defining relatively thin, generally planar chambers which border the major chambers and have a thickness many times less than the thickness of the major chambers defined by the distance between the opposite faces, and a plurality of relatively thin, generally planar elements of size and shape



similar to and disposed within the relatively thin, generally planar chambers, the relatively thin, generally planar elements providing the panel with substantial strength and rigidity.

3,965,943
NARROW ELASTIC FABRIC FOR USE AS WAISTBAND IN ARTICLES OF APPAREL
Richard E. Goff, Jr., Barrington, and Normand D. Guay, Woonsocket, both of R.I., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Nov. 11, 1974, Ser. No. 522,570
Int. Cl.² D03D *15/08*; **A41D** *1/06*
U.S. Cl. 139—421 **5 Claims**

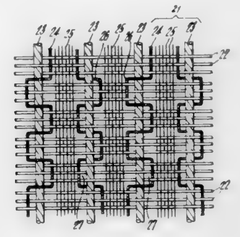


1. A narrow elastic fabric suitable for use as a waistband for an article of apparel comprising; a set of warp yarns running in the direction of the length of the fabric woven with a set of monofilament filling yarns running in the direction of the width of the fabric, the set of warp yarns contains elastic yarns and continuous filament synthetic fiber texturized yarns, said elastic yarns have a spandex core wrapped with a yarn that is set in its wrapped configuration, said elastic warp yarns being woven with the filling yarns in a plain one-over-one weave, at least a portion of said continuous filament texturized warp yarns are woven with said filling yarns in a rib weave wherein said continuous filament texturized warp yarns pass over at least three adjacent filling yarns to produce a rib running in the transverse direction of the fabric to provide the fabric with transverse stiffness and resiliency and abrasion resistant frictional gripping areas.

3,965,944
LIGHTWEIGHT NARROW ELASTIC FABRIC
Richard E. Goff, Jr., Barrington, and Normand D. Guay, Woonsocket, both of R.I., assignors to Johnson & Johnson, New Brunswick, N.J.
Filed Feb. 12, 1975, Ser. No. 549,605
Int. Cl.² D03D *15/08*, *19/00*
U.S. Cl. 139—421 **11 Claims**

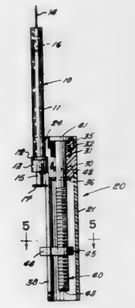
1. A narrow elastic fabric comprising a set of warp yarns and a set of filling yarns, said set of warp yarns containing elastic yarns, nonelastic monofilament yarns and synthetic texturized yarns, each of said elastic yarns woven with a monofilament yarn so that each monofilament yarn is a leno

woven warp yarn forming a substantially uniform sine-wave shape, the crest of adjacent sine-wave monofilament yarns disposed in diametrically opposed alignment, a plurality of said texturized yarns disposed between each pair of leno woven yarns, the filling yarns woven with the synthetic texturized yarns in a one-by-one plain weave between adjacent leno woven monofilament warp yarns and said synthetic texturized yarns floating over or under at least three adjacent filling yarns



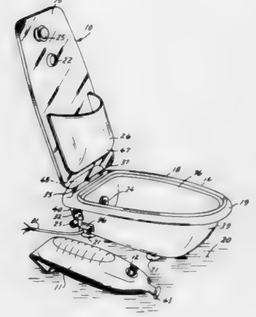
between adjacent leno woven elastic warp yarns, said fabric woven under tension so that when the fabric is relaxed said monofilament sine-wave yarns contract in the warp direction with said opposing adjacent crests being drawn closer to each other, said texturized yarns being squeezed in the plane of the fabric between said closely opposing adjacent crests and being spread out into a soft, fluffy condition in those areas not between opposing crests.

3,965,945
FILLING AID FOR MEDICANT SYRINGE
John D. Ross, Box 5541 NWJC, Senatobia, Miss. 38668
Filed Sept. 9, 1974, Ser. No. 504,100
Int. Cl.³ B65B *3/04*; **A61M** *5/18*
U.S. Cl. 141—27 **5 Claims**



1. An aid device for use with a medicant syringe which includes an elongated barrel, a needle projecting axially from one end of the barrel, and a plunger projecting from the other end of the barrel; said device comprising:
an elongated body including a hollow sleeve and an end piece secured to one end of the sleeve; said body end piece having means for clamping the barrel of a medicant syringe thereto, with the longitudinal axis of the syringe barrel aligned in parallel relation with the longitudinal axis of said body, and including means for preventing axial movement of the syringe barrel relative to said aid device;
an elongated, threaded shaft disposed longitudinally within said body, and mounted in said end piece for relative rotation and limited relative axial movement; said body sleeve having a longitudinal slot in one side wall; a lug threadedly mounted on said threaded shaft having a tab projecting radially through said body slot, whereby rotation of said shaft effects longitudinal movement of said lug along said body;
said lug tab being disposed to be engaged by the plunger of said medicant syringe clamped to said device; and said lug being selectively positionable relative to said body end piece, to limit the extent of withdrawal of the syringe plunger;
said threaded shaft being mounted within said device end piece for limited axial reciprocating movement, said end piece and said shaft having coacting stop means for limiting said reciprocating movement;
spring means for normally urging said shaft to its limiting position toward the end piece end of said device; and said reciprocating shaft movement defining an overfill control, allowing overfill of the syringe and subsequent ejection of the overfill medicant to remove any entrapped air.

3,965,946
VACUUM DEVICE FOR AN EXPANDABLE CONTAINER
Herbert Fred D'Alo, Oakwood Hills-Cary, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Mar. 6, 1975, Ser. No. 555,763
Int. Cl.² B65B *3/04*, *3/16*, *31/09*
U.S. Cl. 141—51 **17 Claims**



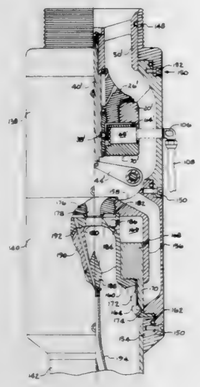
1. A device for introducing a flowable material into an expandable container having a sealable inlet port comprising:
a base member constructed and arranged to accommodate said container therein;
a cover member;
pivoting means securing said cover member to said base member to define a closed compartment;
sealing means disposed between said base and cover members, said base member adapted to be secured to a support in a stationary position and to remain in said position throughout usage of said device;
an opening in said cover member to permit access to said sealable inlet port in said container;
a vacuum passage communicating from inside said compartment to the outside;
a pocket member carried by said cover to position said sealable inlet port in said opening in said cover and to fully support said container when in a substantially vertical position, said pocket member partially supporting said container when in a substantially horizontal position;
and means carried by said cover member or said base to release a vacuum in said compartment.

3,965,947

TANK FILLING SYSTEM EMPLOYING EMERGENCY SHUT-OFF VALVE

Richard L. Easton, and Richard A. Buseth, both of Jackson, Mich., assignors to Aeroquip Corporation, Jackson, Mich.

Filed Apr. 6, 1973, Ser. No. 348,590
Int. Cl.² B65B *57/14*
U.S. Cl. 141—207 **7 Claims**



1. A tank filling system particularly suitable for filling tanks having an upper access opening comprising, in combination, a shutoff valve housing having an axis, an inlet port and an outlet port, liquid supply attachment means defined at said inlet port, an axially extending fluid passage defined in said housing communicating with said ports, an axially movable rod within said valve housing and passage and coaxial therewith, a valve element within said passage mounted on said rod and selectively movable with said rod between open and closed positions, an expansible motor having a movable piston within said valve housing, said expansible motor and piston being of an annular configuration concentrically disposed about said rod, a plurality of detents evenly spaced about said rod engageable with a circumferential groove defined therein, said detents being located intermediate said rod and said annular piston and selectively locking said rod and valve element in said open position, said piston operatively controlling said detents, aspirator means within said passage communicating with said motor tending to produce a vacuum within said motor during liquid flow through said passage, an atmospheric vent communicating with said motor permitting air to enter said motor and prevent movement of said piston while said vent is exposed to the atmosphere, upon said vent being submerged in liquid the substmospheric pressure within said chamber causing displacement of said piston releasing said detents from said rod causing said rod and element to move to said closed position, and manual reset means mounted on said valve housing movably shifting said rod and valve element from said closed position to said open position.

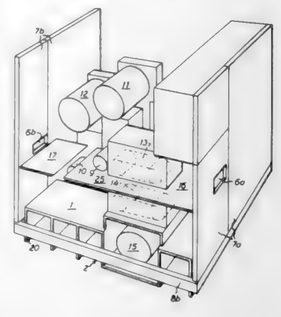
3,965,948

PLANING MACHINE

Torgny Folke Vilhelm Lundin, Partille, Sweden, assignor to Jonsereds Fabrikers Aktiebolag, Partille, Sweden

Filed Nov. 5, 1974, Ser. No. 521,193
Claims priority, application Sweden, Nov. 7, 1973, 7315102
Int. Cl.² B27C *9/04*
U.S. Cl. 144—3 R **21 Claims**

1. A wood working machine, particularly planing machine, including a frame and a plurality of machine components carried by the frame and assembled into a number of independent units, said machine comprising at least one working section including a motor-driven spindle for supporting a rotary wood working tool at a working position, a motor-driven feed mechanism for feeding work pieces through the machine, and adjustable guide means for guiding work pieces to and away from said working position and for keeping them engaged with a base during working, said components and said units assembled therefrom being removably mounted in a compact array, said wood working section comprising at least one independent detachable tool support unit composed of first and second subunits which are detachable from one another, wherein said first subunit is a spindle unit comprising a cylindrical spindle bearing housing and a spindle mounted in bearings in said housing, while said second subunit for axial adjustment of the spindle and consequently for setting of the tool along a first axis in relation to a movement of the work piece determined by said feed and guide mechanisms includes a support, a slide member guiding means and a first hollow slide member mounted in said guiding means and having a cylindrical chamber for receiving the spindle unit, said spindle unit being slidably insertable in and withdrawable from said chamber and being axially and radially lockable in a reference position in said chamber by releasable locking means, said



spindle unit forming said first subunit being axially movable and adjustable in said second subunit for permitting setting said tool along a first axis and said second subunit being arranged to be movably supported as a second slide member on a support connected to the frame to permit adjustment of the tool along a second axis at right angles to said first axis.

19. A wood working machine, particularly planing machine, including a frame and a plurality of machine components carried by the frame and assembled into a number of independent units, said machine comprising at least one working section including a motor-driven spindle for supporting a rotary wood working tool at a working position, a motor-driven feed mechanism for feeding work pieces through the machine, and adjustable guide means for guiding work pieces to and away from said working position and for keeping them engaged with a base during working, said components and said units assembled therefrom being removably mounted in a compact array, wherein at least one main portion of said frame has a box-like, sound attenuating construction including a plurality of parallel, open-ended cells which form an integral piece.

3,965,949

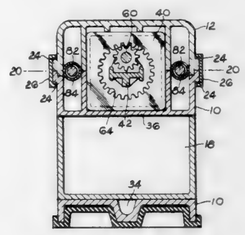
PENCIL SHARPENERS

Jack Ralph Aston, and Ronald Whitehouse, both of Dudley, England, assignors to Joseph Gillott & Sons Limited, Dudley, England

Filed Oct. 10, 1974, Ser. No. 513,644
Claims priority, application United Kingdom, Oct. 12, 1973, 47721/73
Int. Cl.² B43L *23/04*
U.S. Cl. 144—28.71 **1 Claim**

1. In a pencil sharpener comprising a body provided with an aperture for receiving one end of a pencil to be sharpened, a cylindrical cutter mounted for rotation about its axis, said

cutter axis being offset from a second axis which is the axis of said aperture, means for rotating the cutter about its axis, and means for revolving the cutter in planetary fashion about the second axis, the improvement comprising two separate parts of said body which meet in at least one plane containing the said second axis, together with means for securing the said



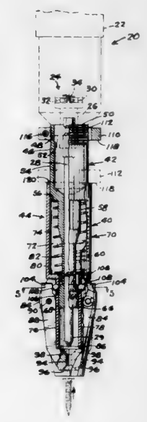
parts together, a gear pinion which is fast with the cutter, and an annulus gear fixed in the body, with which said gear pinion meshes to rotate the cutter during the planetary revolution of the cutter about the second axis, each of the two body parts being provided with a plurality of recesses, each of which is adapted to register with a complementary recess in the other body part to receive said annulus gear in a selected position.

3,965,950

FASTENER DRIVER AND FASTENER HOLDING NOSEPIECE

Murdo A. MacDonald, 600 Ridge Road, Bloomfield Hills, Mich. 48013

Filed Mar. 20, 1975, Ser. No. 560,360
Int. Cl.² B25B *15/00, 23/10*
U.S. Cl. 145—52 **35 Claims**



1. For a tool having a housing which supports a driver for movement along an axis for driving an article of the type having a head and a shank toward a work piece, an article holding nosepiece which comprises,

an adapter adapted to be mounted on the tool housing,

a body supported for movement between advanced and retracted positions relative to said adapter, such movement being generally parallel to the direction of article-driving movement of the driver,

means providing a bias which yieldably urges said body toward said advanced position,

a plurality of jaws supported on said body for movement lateral of said direction between closed condition for holding an article shank in alignment with the driver and open condition for releasing the article shank,

said adapter and body having means which cooperate to form blocking means effective in said advanced position to block movement of said jaws from said closed condition to said open condition,

said body being movable against said bias toward said retracted position responsive to force applied thereto counter to said direction,

said blocking means being effective to release said jaws for movement toward open condition responsive to attainment by said body of said retracted position,

said jaws, upon release thereof, being movable to said open condition under the impetus of an article head pushed thereagainst either in said direction or in said counter direction,

said body being returnable to said advanced position under said bias responsive to relief of said force,

said blocking means being operable to return said jaws to said closed condition responsive to return of said body to said advanced position.

3,965,951

SINGLE CHEMICAL ELECTRIC DETONATOR

Calvin L. Scott, Washington, D.C., and Howard S. Leopold, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 8, 1974, Ser. No. 522,077
Int. Cl.² C06B *41/00*
U.S. Cl. 149—23 **2 Claims**

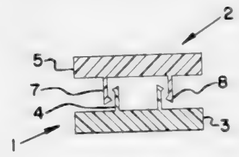
1. In an electrical explosive detonator including a container for an explosive charge, the improvement wherein the explosive charge consists solely of mercuric-5-nitrotetrazole.

3,965,952

PLASTIC SNAP FASTENER

Samuel J. Rivman, White Plains; Bernard Cohen, Spring Valley, and Alvaro Da Costa, Garnerville, all of N.Y., assignors to Eastern Poly Packaging Company, Brooklyn, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,273
Int. Cl.² B65D *33/16;* **A44B** *7/00*
U.S. Cl. 150—3 **4 Claims**



1. A reclosable bag of a heat sealable material having a snap fastener unit comprising:

a. a bag with a flap having complementary apertures in the flap and in the bag body;

b. said unit having two separable fastener elements;

c. each of said elements having a base with a cylinder projecting upwardly therefrom;

d. each of the bases of said elements comprising:

1. a raised collar portion immediately adjacent the cylinder; and,

2. a peripheral flange portion;

e. the cylinder of the first element having a horizontal rib on the upper portion of the inner surface thereof;

f. the cylinder of the second element having a horizontal rib on the upper portion of the outer surface thereof to cooperate with the rib of the first element to snap said elements together;

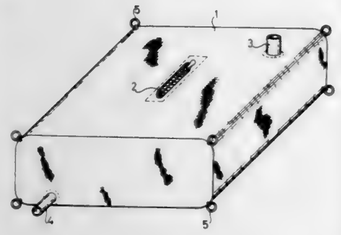
g. the element bases having a roughened upper surface;
h. the cylinder and collar of one of said elements projecting through an aperture in the flap of said bag to permit the upper surface of the flange portion of said base to be heat sealed to said flap;
i. the cylinder and collar of the other of said elements projecting through an aperture in the body of said bag to permit the upper surface of the flange portion of said base to be heat sealed to the body of said bag;
j. the flap element and the body element being positioned to permit closing and opening of said bag upon fastening and separating said elements thereby providing a reclosable bag.

3,965,953

FLEXIBLE CONTAINER FOR WINE AND FRUIT-JUICE

Theo Becker, Deidesheim; Eduard Hilscher, Idstein, Taunus, and Karl-Heinz Ott, Kelkheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 10, 1974, Ser. No. 504,701
Claims priority, application Germany, Sept. 12, 1973, 7332995[U]
Int. Cl.² B65D *89/08, 85/72, 33/06, 33/24*
U.S. Cl. 150—3 **8 Claims**



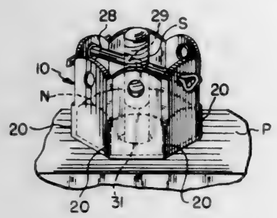
1. A flxible gas and liquidtight container for wine and/or fruit-juice, lined with a material resistent to wine and/or fruit-juice, having four sides, a top and a bottom forming four corners, a filling opening, an emptying opening and an opening big enough for cleaning the inside of the container, said cleaning opening having a gas and liquidtight zipper by which the cleaning opening can be opened and closed and each of said corners being provided with means for ease of handling and transporting said container.

3,965,954

ANTI-ROTATIONAL DEVICE FOR BOLTS AND NUTS

Raymond A. Lofredo, Cleveland, Ohio, assignor to Industrial Innovations, Inc., Cleveland, Ohio

Filed Feb. 19, 1975, Ser. No. 550,930
Int. Cl.² F16B *39/04, 39/282*
U.S. Cl. 151—5 **4 Claims**



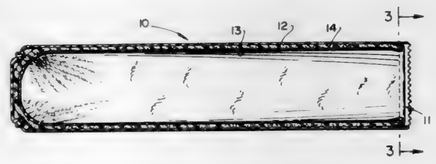
1. In combination an article of manufacture comprising a locking receptacle and a bolt or nut element said locking receptacle receiving the bolt head or nut element, said locking receptacle including a base having said bolt head or nut element seated thereon and a side wall portion extending upwardly from said base encompassing and extending beyond the associated bolt head or nut element, and retainer means extending inwardly from said side wall portion in overlying relation to said bolt head or nut element for preventing free movement of the bolt head or nut element out of said locking receptacle, said side wall portion being yieldable relative to said base for facilitating entry of the bolt head or nut element into said receptacle past said retainer means, said base having a generally central opening therethrough, means for aiding in restricting rotary movement of said receptacle on a support surface about the vertical axis of said article, and wherein said article is provided from a single piece of sheet metal, said side wall portion comprising an upwardly projecting unitary curb section and separate tab sections extending upwardly vertically from said curb section, each of said tab sections being in generally abutting relationship with adjacent tab sections along the sides thereof and including means readily permitting said tab sections to be individually resiliently yieldable in a generally radial direction toward and away from said axis for providing said ease of insertion of the associated bolt head or nut element past said retaining means, each of said tab sections having an opening therethrough for receiving a locking key, said retaining means comprising an embossment on the respective tab section circumscribing the respective opening through the tab section and extending inwardly into overlying relation to said bolt head or nut element, the bolt head or nut element being received in generally close fitting coaction with said side wall portion whereby the bolt head or nut can not be rotated about said axis without turning of said receptacle, the last mentioned opening comprising said rotary restricting means and being adapted to receive an anchoring member therethrough, such as for instance the aforementioned locking key.

3,965,955

GOLF CLUB HEAD COVERS

Edward John Price, Dunsley, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 21, 1975, Ser. No. 579,539
Int. Cl.² A63B *57/00*
U.S. Cl. 150—52 G **3 Claims**



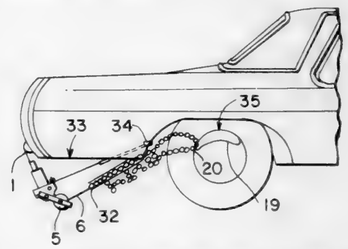
1. A golf club head cover comprising an elongated receptacle having an open end for receiving a golf club head, said receptacle being defined by at least a three ply wall including an outer layer of a material substantially impervious to water, an inner liner of a soft non-moisture absorbent textile material and an intermediate layer of a flexible foam plastic material, said inner liner and said intermediate layer being conjoined, said inner liner and said intermediate layer being free from attachment to said outer layer except at said open end.

3,965,956

BUMPER MOUNTED SPRING DRIVEN TIRE INSTALLER AND REMOVER

Norman Whatley, Jr., Littleton, Colo., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Continuation of Ser. No. 428,849, Dec. 27, 1973, abandoned. This application June 17, 1975, Ser. No. 587,548
Int. Cl.² B60C *27/14*
U.S. Cl. 152—214 **7 Claims**



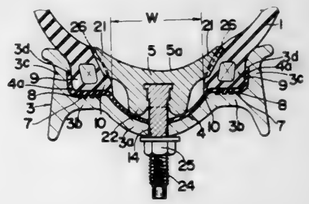
1. A device for installing and removing tire chains from the wheels and tires of a vehicle, comprising
first clamp means for engaging a rear body portion of the vehicle,
tire chain means for engaging wrappingly around a tire of a vehicle for protecting it against skidding on roads, paths and pavements,
second magnetic clamp means for engaging a forward end of said tire chain means and constructed and arranged for being releasably secured to a traction supporting member of said vehicle,
elongated take-up belt means engaging at its forward end portion to said tire chain means at a rearward end portion thereof, and
roller assembly means engaging said take-up belt means and said first clamp means for rolling up said tire chain means about and upon said traction supporting member.

3,965,957

VEHICLE WHEEL STRUCTURE

Eiji Nakasaki, Kakogawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Japan

Filed Sept. 25, 1974, Ser. No. 509,040
Claims priority, application Japan, Sept. 25, 1973, 48-111578[U]; Dec. 12, 1973, 48-144556[U]
Int. Cl.² B60C *5/04*
U.S. Cl. 152—400 **21 Claims**



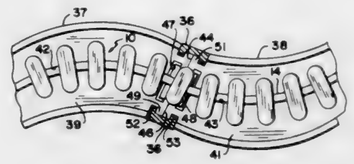
1. A vehicle wheel structure for use with a pneumatic tire, which comprises:
a hub, a rim, and a wheel axle, said hub being adapted to support the wheel structure therethrough on said wheel axle and said rim being adapted to support the pneumatic tire which is fitted therearound;
said rim having a pair of opposed rim flanges extending radially outwardly from respective sides of said rim, said pneumatic tire having a pair of opposed bead portions which substantially form respective side edges of said pneumatic tire, said bead portions, when said pneumatic tire is fitted around said rim, abutting against said respective rim flanges;
a flexible endless band held flat on said rim;
at least one rib and a corresponding mating groove formed in each of the side portions of said flexible endless band and each of the side portions of said rim adjacent said rim flanges, respectively, in the circumferential direction of said wheel structure, said rib, when said flexible endless band is held flat on said rim, being in engaging relationship with said mating groove, thereby avoiding any possible lateral displacement of said flexible endless band relative to said rim which may otherwise take place in a direction substantially perpendicular to the mid-circumferential plane of said tire; and
a plurality of bead stoppers adapted to be disposed on said rim and between said bead portions of said pneumatic tire in substantially equally spaced relationship in the circumferential direction of said wheel structure, each of said bead stoppers having one surface formed with a substantially crater-shaped projection adapted to contact a central portion of said rim between said side portions of said rim through said flexible endless band, and a pair of side portions extending laterally outwardly in opposite directions from the body of said bead stopper and adapted to contact said bead portions of said pneumatic tire, each of said bead stoppers including a set bolt having one end rigidly connected to said stopper, a substantially intermediate portion of said bolt extending in alignment with the center of said crater-shaped projection and the other end of said bolt being adapted to terminate outside said rim facing said hub, said crater-shaped projection and said side portions of each of said bead stoppers acting, when said bead stoppers are held in position on said rim and between said bead portions, in such a manner that said bolt extends through a perforation formed in said central portion of said rim, and is subsequently fastened with a corresponding nut with said rim and flexible endless band being firmly sandwiched between said nut and said crater-shaped projection, to firmly press said bead portions against said respective rim flanges, thereby causing said bead portions to substantially hermetically contact said respective rim flanges over the entire circumference of each of said bead portions and also to seal any clearance which may otherwise be formed between said bolt and said perforation in said rim.

3,965,958

JOINT ASSEMBLY AND FASTENER THEREFOR

Ernest Joseph Kump, 360 Everett Ave., Palo Alto, Calif. 94301

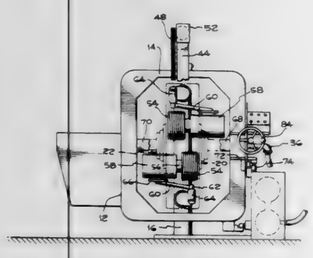
Filed Oct. 31, 1974, Ser. No. 519,572
Int. Cl.² F16B *5/00, 13/08*
U.S. Cl. 52—753 K **11 Claims**



1. A fastening assembly for members having adjacent edges with abutting faces and channels extending behind the abutting faces with opposed elongate openings through the abutting faces communicating with the channels and extending substantially parallel thereto, comprising
an elongate body having a thickness adapted to pass through the opposed elongate openings and a height for extending between the channels,

said elongate body being flexible about the long axis thereof,
and a plurality of axially spaced members attached to said elongate body extending laterally along both edges thereof and adapted to slidably fit into the channels for contacting the surface thereof adjacent said opposed elongate openings,
each of said plurality of axially spaced members having a rounded portion at each end thereof, so that the fastening assembly can be drawn through the channels without catching on the sides thereof.

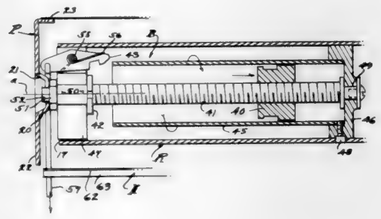
3,965,959
TIRE BUFFER
James D. Weir, 3863 Prospect No. 8, Culver City, Calif. 90230
Filed Sept. 9, 1974, Ser. No. 504,509
Int. Cl.² B29H *21/01*; B24B *5/00*
U.S. Cl. 157—13 **11 Claims**



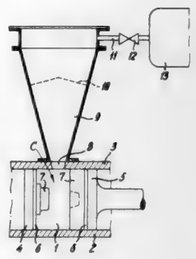
1. A tire buffer for pneumatic tire casing to be retreaded which includes
a rotary tire support,
a pair of powered rotary rasps in one hemisphere of said support and at each side of a plane containing the rotational axis of said rotary support, the rotational axes of said rasps being parallel in their initial positions to the rotational axis of the support,
supporting means for each rasp, and means for moving said rasps into engagement with the tread of a tire casing on said support from initial position in engagement with the central peripheral portion of the tire to successive positions from the central peripheral portion in a direction transversely of the tread portion in opposite directions on a cross-sectional profile of the tire to the sidewall portions thereof.

3,965,960
RETRACTABLE SHOWER SHADE WITH ADJUSTABLE EXTENSIBILITY
Peyton L. Massey, 12221 Wilshire Blvd., Los Angeles, Calif. 90025
Filed Sept. 16, 1974, Ser. No. 506,262
Int. Cl.² E06B *9/208*
U.S. Cl. 160—295 **10 Claims**

1. In combination with a retractile and extensible shade of flexible sheet reeled from a roller journaled upon spaced mounting plates, a revolvably adjustable retraction means fixedly anchored to the mounting plate at one end of the roller and biasing the roller to reel the sheet thereon, a revolvably adjustable extension limiting means fixedly anchored to the mounting plate at the other end of the roller and having a stop engageable with an element positioned by turning of the roller, and a latch means releasably engaging the said element and holding it against said stop.

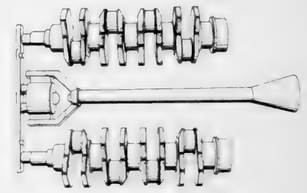


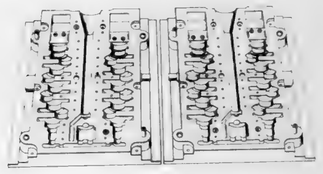
3,965,961
METHOD OF OPERATING AUTOMATIC MOLD PART PRODUCING APPARATUS
Marius Gunnergaard, Lyngby, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark
Division of Ser. No. 290,369, Sept. 19, 1972, Pat. No. 3,880,223. This application Dec. 6, 1974, Ser. No. 530,428
Claims priority, application Denmark, Sept. 23, 1971, 4651/71
Int. Cl.² B22C *15/28*
U.S. Cl. 164—40 **1 Claim**



1. A method of operating mold part producing apparatus including a horizontally disposed mold chamber having a pair of opposite end walls constituted by an axially reciprocal pressure plate and a counter pressure plate, and a mold part form supply bin disposed above said chamber and having communication therewith through an opening in the top of said chamber, said method comprising the steps of supplying material from said bin to said chamber, supplying air under pressure into said bin above said material to apply a vertical force to said material, and increasing the air pressure on said material in said bin toward the latter part of the filling operation to uniformly compact the material the full height of said chamber before compression thereof in the chamber by the pressure plate.

3,965,962
PROCESS FOR PRODUCING DUCTILE IRON CASTING
Toshiaki Tanaka, Kure; Shunsuke Yamaguchi, and Kazuharu Simowaki, both of Hiroshima, all of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan
Continuation of Ser. No. 236,830, March 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 827,582, May 26, 1969, abandoned. This application Feb. 21, 1975, Ser. No. 551,883
Claims priority, application Japan, May 25, 1968, 43-35640
Int. Cl.² B22D *27/20*
U.S. Cl. 164—55 **8 Claims**

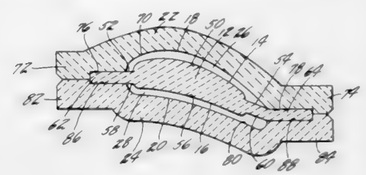




1. In a process for producing a ductile case iron crankshaft exhibiting the nodular graphite dispersed structure which comprises preparing a treated ductile cast iron melt, preparing a mold assembly having a bottom gating and set as a vertical pouring system, and pouring said treated ductile case iron melt into said mold assembly to produce a rigid cast iron crankshaft without chill formation on the crankshaft, the improvement which comprises
a. preparing said treating ductile case iron melt by subjecting a cast iron melt to graphite spheroidizing, and inoculating with up to 0.6% by weight of silicon to adjust the composition of the case iron melt to contain carbon in an amount of from 3.5 to 3.9%, and silicon in an amount from 2.3 to 2.9%, the combined carbon and ½ silicon content being within the range of 4.9 to 5.2%, and
b. within 10 minutes after the silicon inoculation, introducing said treated ductile cast iron melt into said mold assembly comprising a set of metal dies free of blind riser portions at the upper end of the crank shaft portions and comprising means for fixedly assembling said metal dies so as to prevent the deformation of the mold assembly during its eutectic solidification, each of said metal dies being lined with a sand layer having a thickness of more than 3 mm.

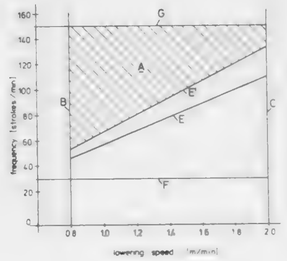
3,965,963
MOLD AND PROCESS FOR CASTING HIGH TEMPERATURE ALLOYS
Charles M. Phipps, Ridgewood, N.J., and Douglas R. Hayes, Vernon, Conn., assignors to United Technologies Corporation, Hartford, Conn.
Continuation-in-part of Ser. No. 416,563, Nov. 16, 1973, abandoned. This application May 2, 1975, Ser. No. 574,122
Int. Cl.² B22C *9/24*; B22D *25/06*
U.S. Cl. 164—60 **12 Claims**

6. In the manufacture of a cast hollow turbine blade, the steps of:
forming a central mold element of a strong refractory oxide material of such strength and thickness as to retain its shape without distortion during mold heating, pouring and cooling, said element having a configuration on each side corresponding to the configuration of the inner surfaces of the hollow blade and having projecting flanges at opposite edges extending beyond the blade configuration;
forming opposed outer mold elements of a refractory oxide to be positioned on opposite sides of the central element, one of said outer elements having an inner surface corresponding to the convex side of the blade and the other outer element having an inner surface corresponding to the concave side of the blade, said outer elements having



side flanges projecting beyond the shaped inner surface thereon to engage with the flanges on the central element and thereby space the formed inner surfaces of the outer elements from the configurations on the central element to establish the desired wall thickness of the blade;
assembling the several mold elements to produce a cavity for a blade half on each side of the central element, the latter providing adequate strength to prevent distortion of the entire mold;
filling the mold cavities with molten alloy;
removing the cast blade halves from the mold when the alloy is solidified; and
assembling the cast blade halves to form a complete blade.

3,965,964
METHOD OF CONTINUOUSLY CASTING STEEL STRANDS, IN PARTICULAR SLABS
Thorwald Fastner, and Manfred Pammer, both of Linz, Austria, assignors to Vereingte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria
Filed Jan. 2, 1975, Ser. No. 538,140
Claims priority, application Austria, Jan. 11, 1974, 206/74
Int. Cl.² B22D *11/04*
U.S. Cl. 164—83 **11 Claims**



1. A method of continuously casting a steel strand, for example a slab, in a continuous casting plant, wherein the strand which has a certain temperature is withdrawn from a cooled oscillating mold and is lowered at a certain lowering speed, said mold oscillating at a certain oscillation frequency, whereby oscillation marks distributed at certain distances over the strand surface are formed, and wherein the strand is fur-

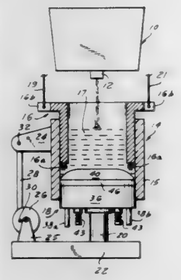
ther cooled in a secondary cooling zone arranged to follow the mold, the improvement comprising the step of coordinating the oscillation frequency of the mold and the lowering speed of the strand with each other so that the oscillation marks occur only within a certain maximum distance from each other, the distance of the oscillation marks being defined as the quotient of the lowering speed in meters per minute to the mold frequency in strokes per minute and amounting to maximumly 0.018 meters.

3,965,965

METHOD AND APPARATUS FOR CONTINUOUS CASTING OF METAL TUBING

Leonard Watts, Cedarhurst, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Dec. 19, 1974, Ser. No. 534,244
Int. Cl.² B22D *11/04, 11/08*
U.S. Cl. 164—83 **16 Claims**



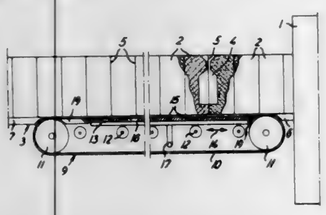
1. A method of casting an elongated hollow article utilizing a vertically arranged mold having an oscillatable chilled axial wall structure, comprising:
   pouring molten metal by gravity from a source directly into one end of the mold;
   relatively separating a starting bar from the mold which starting bar has at least an open end portion immersed in the metal, to withdraw the solidified article adhering to said bar from said end of said mold, during oscillation of the axial wall structure of said mold: and
   supplying the molten metal for such article from said mold.

3,965,966

APPARATUS FOR THE PRODUCTION OF CASTINGS

Marius Gunnergaard, Lyngby, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

Filed Aug. 27, 1975, Ser. No. 608,334
Claims priority, application Denmark, Sept. 11, 1974, 4796/74
Int. Cl.² B22C *11/08*
U.S. Cl. 164—213 **4 Claims**



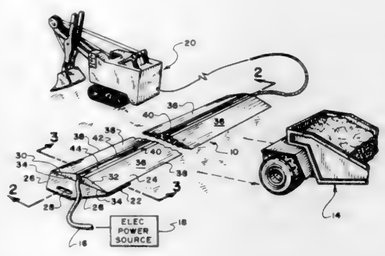
1. An apparatus for the production of castings, comprising a device for the successive production of identical mould parts and of a pouring track or guideway on which the mould parts are stacked together for the formation of a casting mould having at least one pouring cavity at each joint, said guideway over at least part of its length including a driving element which is reciprocable in the longitudinal direction of the guideway and solely during its forward stroke or part of this stroke is in driving connection with the casting mould, wherein the driving element is a plate which is reciprocable in its own plane and presents a number of apertures, through which compressed air can periodically be supplied to the top of the plate for eliminating the driving connection between the plate and the casting mould.

3,965,967

HIGH STRENGTH PORTABLE CABLE CROSSOVER FOR HIGH TONNAGE EARTH MOVING VEHICLES

David P. Jentzsch, Sandy; Hyrum T. Anderson, and Lee J. Olsen, both of Salt Lake City, all of Utah, assignors to Rubber Engineering, Inc., Salt Lake City, Utah

Division of Ser. No. 383,644, July 30, 1973, Pat. No. 3,888,186. This application Feb. 12, 1975, Ser. No. 549,234
Int. Cl.² E01B *7/28*
U.S. Cl. 104—275 **1 Claim**



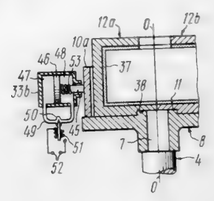
1. A combination comprising:
an electrically powered excavator;
a ground-engaging portable cable crossover for out-of-doors use with heavy load earth moving vehicles weighing many tons when loaded comprising:
a unitary one piece body of molded synthetic resinous material having a durometer hardness sufficient to support excavating vehicle loads of many tons;
said body comprising:
feathered front and back edges, each edge being defined by said material disposed in the form of an acute angle tip;
front and back tapered ramps, respectively extending from the tip of each edge toward the center of the body and defining a horizontal flat continuous load bearing bottom surface, and angular top surface which diverges from the bottom surface in an inward direction and a solid interior between said bottom and top surfaces;
a central solid portion comprising said one piece body so as to be integral with each tapered ramp and bridging therebetween having a width substantially less than the width of either ramp, the center portion comprising a central horizontal flat continuous load bearing bottom surface linearly connecting the two ramp bottom surfaces one to the other thereby creating a continuous horizontal load bearing crossover bottom surface and spaced top shoulders respectively angularly joined to the angular top ramp surfaces and a U-shaped recess the surface of which connects one top shoulder to the other, the U-shaped recess running the full length of the crossover for receiving an electrical cable at the bottom thereof, said recess having a vertical depth substantially greater than the diameter of the cable, the spaced top shoulder and the solid material thereunder withstanding the load of high tonnage ground-engaging vehicles when displaced across the crossover without deflection or destruction of said shoulders such as would impose vehicle load on the cable in the recess.

3,965,968

DEVICE FOR CENTRIFUGAL CASTING OF HOLLOW BODY WITH ASYMMETRICAL CROSS-SECTION

Nikolai Nikitievich Alexandrov, Sharikopodshipnikovskaya ulitsa, 2, kv. 126; Nikolai Nikolaevich Zorev, ulitsa Novinki, 6, kv.; Viktor Mikhailovich Krapukhin, Suvorovsky bulvar, 15, kv. 13; Viktor Vasilievich Krotov, Obolensky pereulok, 7, kv. 110; Ivan Romanovich Kryanin, Sharikopodshipnikovskaya ulitsa, 2, kv. 68; Boris Samoilovich Milman, Sharikopodshipnikovskaya ulitsa, 2, kv. 89; Pavel Vladimirovich Semenov, Nagatinskaya ulitsa, 95, kv. 62; Nikolai Anatolievich Sokolov, Sharikopodshipnikovskaya ulitsa, 2, kv. 160, and Viktor Gurievich Tinyakov, Juzhnoportovaya ulitsa, 16, kv. 23, all of Moscow, U.S.S.R.

Filed Dec. 24, 1974, Ser. No. 536,310
Claims priority, application U.S.S.R., Jan. 2, 1974, 1981019
Int. Cl.² B22D *13/04*
U.S. Cl. 164—287 **1 Claim**



1. A device for centrifugal casting of a hollow body with asymmetrical cross-section comprising a fixed base plate; a revolving disc adapted to have constant speed and mounted revolvably on said fixed base plate; a rod fixed on a stay so that it is disposed radially to the spinning axis of said revolving disc; a piston carried by said rod; a cylinder filled with fluid and accommodating said piston; said cylinder having spaces separated by said piston but in communication with one another along a by-pass line; said cylinder acting as a counterbalance weight traveling under the effect of centrifugal forces when a throttle on said by-pass line opens so as to facilitate movement of fluid and cylinder to and away from the spinning axis; a metal mould provided with lining and set up on said revolvable disc so that the longitudinal axis of this mould is essentially coaxial with the spinning axis of said revolvable disc; a cavity in said metal mould causing a progressing unbalance of the device as the cavity becomes filled with molten metal; said throttle adapted to open at the moment said cavity in said metal mould is being filled with said molten metal causing said unbalance; and electric motor means for rotating said revolvable disc.

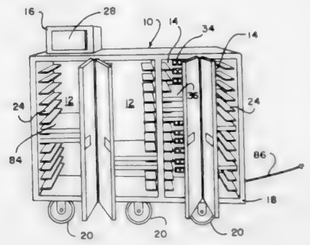
3,965,969

CONVERTIBLE FOOD SERVICE CART

Joseph R. Williamson, 613 W. Cheltenham Ave., Philadelphia, Pa. 19126

Filed June 11, 1973, Ser. No. 368,712
Int. Cl.² F25B *29/00*; **A47B** *77/08*
U.S. Cl. 165—12 **4 Claims**

1. In a convertible food service cart suitable for storing food in a refrigerated condition in a container placed upon a tray and for heating at least part of the food, the combination of
   A. a first compartment defining an interior space,
      1. said first compartment including first means to refrigerate the food within the first compartment by lowering the temperature within the interior space,
      2. said first compartment also including second means to heat the food within the first compartment,
         a. said second means including a plurality of hot food conversion trays,
            1. at least some of the conversion trays including a heating element and a connected electrical plug receptacle,
            2. said conversion trays receiving a plurality of food containing dishes thereon for heating purposes,
         b. the second means further including a plurality of electrical plugs communicating with the interior of the first compartment,
            1. the receptacle of said conversion trays being electrically interconnected with one said electrical plug to electrically energize the heating element,
            2. said heating element heating the food within the container but not heating the interior space; and
   B. program means to time the cycle of operation of the first means and the second means,



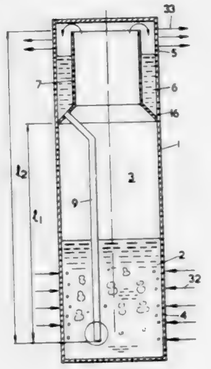
1. said program means including a timer and a time delay relay, the said time delay relay functioning after activation of the second means to prevent function of the first means for a predetermined time delay period,
2. the program means further includes carryover means, the said carryover means functioning the timer during periods when the cart is being moved whereby the timer can continue to program the operation of the first and second means even though the cart is disconnected from a source of power.

3,965,970

CONTROL OF TWO-PHASE THERMOSYPHONS

Duncan Chisholm, Strathaven, Scotland, assignor to The Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Nothern Ireland, London, England

Filed Oct. 10, 1974, Ser. No. 513,744
Claims priority, application United Kingdom, Oct. 11, 1973, 47498/73
Int. Cl.² F28D *15/00*
U.S. Cl. 165—32 **1 Claim**



1. A two-phase thermosyphon comprising a closed vessel of tubular form containing a liquid in contact with its vapour and having: a lower end at which is located an evaporator where heat may be absorbed by vaporisation of liquid; an upper end

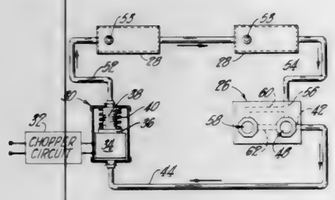
at which is located a condenser where heat may be given up by condensation of vapour; a cylindrical baffle located at the upper end of the vessel, and sealed to the vessel wall through which vapour may rise from the evaporator; a condenser reservoir of annular cross-section located adjacent the condenser having an inner surface defined by the baffle and an outer surface which forms part of the condenser whereby heat may be transferred from a heat source adjacent the evaporator to a heat sink adjacent the condenser at a rate dependent on the level of liquid in the condenser reservoir; and a connecting tube for limiting the said rate of heat transfer, said tube interconnecting the lower end of the condenser reservoir and the evaporator and being provided with a constriction at its lower end to cause liquid to accumulate in the condenser reservoir when the rate of heat transfer, and hence the rate of condensate flow, exceeds a predetermined value, so that when the rate of heat transfer exceeds the said predetermined value the level of liquid in the condenser reservoir rises and the rate of heat transfer correspondingly falls.

3,965,971

COOLING SYSTEM FOR SEMICONDUCTORS

George H. Roggenkamp, Salem, Va., assignor to Eaton Corporation, Cleveland, Ohio

Filed June 27, 1974, Ser. No. 483,489
Int. Cl.² F28D *15/00*
U.S. Cl. 165—39 **6 Claims**



1. In a battery powered vehicle:
a heat sink mounted on said vehicle;
a power semiconductor utilized to vary the speed of the vehicle mounted on said heat sink, said heat sink having a cavity formed therein to mount said power semiconductor, and forming a fluid chamber for maintaining cooling fluid in heat transfer communication with said semiconductor;
heat exchanger means mounted on said vehicle for dissipating heat to the ambient;
an oscillating pump mounted on said vehicle at a level below said heat exchanger means;
tubing means for connecting the fluid chamber of said heat sink, said heat exchanger means, and said oscillating pump into a closed series path to thereby allow said oscillating pump to recirculate cooling fluid therethrough; and
a chopper circuit electrically connected to the battery of said vehicle and mounted proximate to said oscillating pump to convert the constant D.C. signal of the vehicle battery to a pulsating D.C. signal, said oscillating pump being electrically connected to said chopper to be driven by the pulsating D.C. signal therefrom.

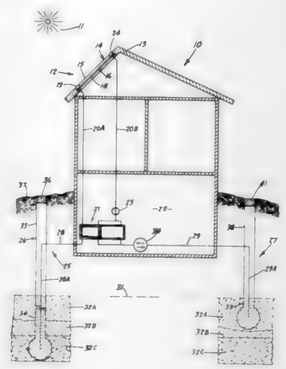
3,965,972

HEATING AND COOLING SYSTEM

Ross K. Petersen, 2974 W. River Road, Minneapolis, Minn. 55406

Filed Nov. 4, 1974, Ser. No. 520,270
Int. Cl.² F28D *7/00*
U.S. Cl. 165—45 **27 Claims**

1. A heat transfer system comprising: solar energy collector means having a first fluid to transfer heat energy, heat exchange apparatus receiving the first fluid from the collector means, an underground heat storage well, an underground cold storage well, first piping means connecting said solar collector means and heat exchange apparatus for conveyance of the first fluid between said collector means and heat exchange apparatus, second piping means connecting the heat storage well, cold storage well and heat exchange apparatus



for conveyance of a second fluid between said wells and heat exchange apparatus, first pump means to circulate the first fluid in the first piping means between the solar energy means and heat exchange apparatus, and second pump means operable to circulate the second fluid in said piping means whereby heat energy in the first fluid is transferred to the second fluid, said heated second fluid being stored in the heat storage well.

3,965,973

TEMPERATURE SENSING DEVICE

Raghulinga R. Thettu, Webster, N.Y., and Xerox Corporation, 02, Stamford, Conn., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 388,676, Aug. 15, 1973, Pat. No. 3,888,622. This application Nov. 13, 1974, Ser. No. 523,614
Int. Cl.² F28D *11/02*
U.S. Cl. 165—86 **6 Claims**



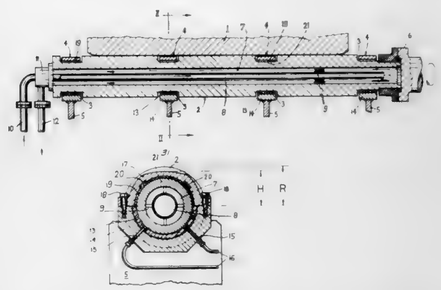
1. Apparatus for providing improved heat transfer between two bodies including
a first moving body
a second stationary body positioned adjacent to said first body in non-contiguous relation therewith so as to form an air gap therebetween,
magnetic means for establishing a flux field within said air gap, and
a magnetic medium having a high coefficient of thermal conductivity filling said air gap within the flux field whereby heat energy rapidly and efficiently flows between said bodies.

3,965,974

CONTINUOUS CASTING PLANT

Heinz Sernetz; Othmar Pühringer, and Rudolf Hoscher, all of Linz, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Jan. 20, 1975, Ser. No. 542,682
Claims priority, application Austria, Jan. 21, 1974, 460/74; Dec. 23, 1974, 10268/74
Int. Cl.² F28D *11/02*; **F28F** *5/02*; **F27D** *3/00*
U.S. Cl. 165—89 **30 Claims**



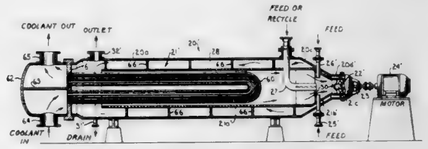
1. A roller or roll assembly for supporting, guiding, bending, straightening or deforming a continuously cast strand of relatively great width, for example a steel slab, in a continuous casting plant having a supporting structure, said roller or roll assembly comprising:
a roller or roll having a small diameter and a great longitudinal extension exceeding the width of the continuously cast strand, annular recesses being distributed over the longitudinal extension of the roller or roll to form relatively narrow bearing pins of substantially cylindrical shape; and
bearings surrounding and accommodating said bearing pins, said bearings having a height, measured from their center in the direction toward the strand, that is smaller than the radius of the roller or roll, said bearings being supported against the supporting structure of the continuous casting plant.

3,965,975

BAFFLING ARRANGEMENTS FOR CONTACTORS

Charles W. Edmundson, Leawood, Kans., assignor to Stratford Engineering Corporation, Kansas City, Mo.

Filed Aug. 21, 1974, Ser. No. 499,152
Int. Cl.² F28F *13/12*; **B01F** *5/10*
U.S. Cl. 165—108 **12 Claims**



1. In a contacting and mixing vessel including:
an elongate casing having a discharge opening and inlets for the fluids to be mixed,
a hollow open-ended circulating tube positioned axially within said casing and spaced from the interior wall thereof forming an annular passage therewith,
an impeller received within and positioned adjacent one end of the circulating tube for mixing and creating a cyclic flow of fluids through said tube and in the annular space surrounding said tube, and
a circulating head forming the end of the casing adjacent the impeller,
the improvement which comprises:
the circulating tube closely spaced adjacent to the interior wall of the casing whereby the annular space therebetween is minimal thereby to produce a high velocity of fluids flowing therethrough and
a plurality of baffles positioned interiorly of said circulating tube, spaced along the length thereof and extending at substantial right angles to the longitudinal axis of said tube,
said baffles of sufficient number and such configuration that the flow velocity of the fluids within the circulating tube is substantially increased over the flow velocity thereof in the unimpeded circulation tube,
said fluids flowing within the circulating tube additionally subjected to shear, change of flow direction and increased flow distance in the tube because of the presence of said baffles.

3. In a contacting and mixing vessel including:
an elongate casing having a discharge opening and inlets for the fluids to be mixed,
a hollow, open-ended circulating tube positioned axially within said casing and spaced from the interior wall thereof forming an annular passage therewith,
an impeller received within and positioned adjacent one end of the circulating tube for mixing and creating a cyclic flow of fluids through said tube and in the annular space surrounding said tube,
a circulating head forming the end of the casing adjacent the impeller and,
heat exchange means penetrating the other end wall of the casing and extending into the other end of said circulating tube,
said heat exchanging means extending substantially the length of said circulating tube and of an outer diameter substantially that of the inner diameter of the tube,
the improvement which comprises:
the circulating tube spaced a substantial distance away from said casing interior wall whereby the annular space therebetween is of considerable volume thereby to ordinarily produce a relatively low velocity of fluid flow therethrough, and
a plurality of baffles positioned interiorly of the annular space between said casing and circulating tube and spaced along the length thereof, same extending at substantial right angles to the longitudinal axis of the casing,
said baffles of sufficient number and such configuration that the flow velocity of the fluids within the annular space is substantially increased over the flow velocity thereof in the unimpeded annulus,
said fluids flowing within said annular space additionally subjected to shear, change of flow direction and increased flow distance in the said annular space because of the presence of said baffles.

3,965,976

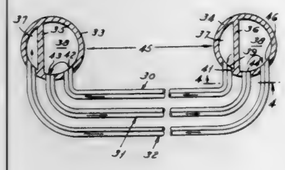
HEATER TUBE ARRANGEMENTS

David W. Barton, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 3, 1974, Ser. No. 466,653
Int. Cl.² F28F *9/02*
U.S. Cl. 165—175 **8 Claims**

1. A heater head assembly of the type useful in a hot gas engine of the Stirling type wherein a labyrinth of heat conductive tubes provide a closed connection for trapped gas at high pressure to reversibly communicate between a high temperature working chamber and a thermal regenerator, said labyrinth of heat conductive tubes selectively receiving heat from a central gaseous heat source within said labyrinth of tubes and promoting absorption of heat from said source to the trapped gas therein which is at a relatively lower temperature equal to or greater than 600°F, the assembly comprising:

a. a first header connected to at least one high temperature working chamber,
b. a second header connected to at least one thermal regenerator,
c. a continuous passage labyrinth having inner and outer cylindrical walls, an entrance communicating with one of said first and second headers and an exit communicating



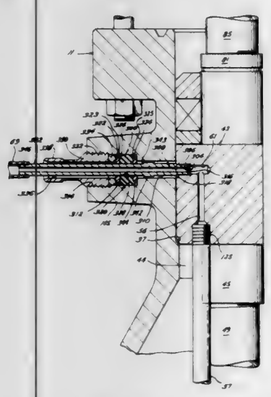
with the other of said first and second headers, said labyrinth being characterized by at least one element associated with each header to revert gas communication after having traveled substantially the distance separating said first and second headers, whereby flow of said gaseous heat source through said labyrinth will conduct heat to an increased inner wall area for improving heat transfer to the high pressure trapped gas therein.

3,965,977

CONTROL LINE EXITING COUPLING

John Beson, Houston, Tex., assignor to McEvoy Oilfield Equipment Co., Houston, Tex.

Continuation of Ser. No. 352,677, April 19, 1973, abandoned, and a continuation-in-part of Ser. No. 218,916, Jan. 19, 1972, Pat. No. 3,739,846. This application Aug. 26, 1974, Ser. No. 500,750
Int. Cl.² E21B *33/03*
U.S. Cl. 166—88 **9 Claims**



1. Means for providing flow communication through a first member with a contiguous second member having a passage therethrough comprising:
an enlarged bore through said first member;
a flexible tubular connector for insertion into the bore of the first member, said connector having an outside diameter substantially less than said enlarged bore;
said connector positionable within the first member in a plurality of angular positions;
connection means for connecting said connector to the second member adjacent the passage; and
securement means sealing said connector within the bore of the first member; said securement means being located at a distance from said connection means to permit said connector to flex within the bore between the securement means and the connection means.

3,965,978

SUBSURFACE TRANSIENT PRESSURE TESTING APPARATUS AND METHOD OF USE THEREOF

Dell Conley; Howard H. Ferrell, and Jaime A. Lescarboura, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 485,688, July 2, 1974, abandoned. This application Nov. 6, 1974, Ser. No. 521,323
Int. Cl.² E21B *47/022, 47/10, 33/12*
U.S. Cl. 166—113 **11 Claims**



1. Apparatus for seating in a seating nipple in a well tubing string for use in temporarily shutting off fluid flow through the tubing at a subsurface location in a well and making pressure determinations below the plug comprising:
a. a main plug body having a passageway therethrough, said passageway providing fluid communication from the tubing below the seating nipple to the tubing above the seating nipple, said main plug body having a downwardly-facing shoulder area around the exterior thereof adapted to seat against an upwardly-facing shoulder area of a seating nipple and form a fluid impermeable seal therewith;
b. relief plug means carried by said main plug body and biased to close said passageway therein;
c. a relief plug port extending through the relief plug means to provide fluid communication between the passageway and the upper portion of the relief plug means;
d. connecting means attached to said relief plug means for connecting said apparatus to cable means for lowering and raising said apparatus through the well tubing string;
e. said relief plug means being adapted to close said passageway when the apparatus is seated in a seating nipple and no upward force is imposed on said connecting means, and to open said passageway when an upward force is applied to said connecting means, and
f. means forming a part of said apparatus for attaching a pressure indicating means to said apparatus.

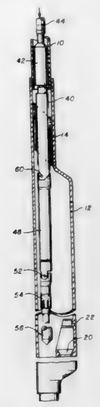
3,965,979

ORIENTING SYSTEM FOR A KICKOVER TOOL

C. Paul Lamb, Garland, Tex., assignor to Teledyne, Inc., Garland, Tex.

Filed Feb. 12, 1975, Ser. No. 549,168
Int. Cl.² E21B *7/06*
U.S. Cl. 166—117.5 **14 Claims**

5. A kickover tool for running and retrieving well equipment comprising:
an elongate housing,
a plunger slidably carried within said housing,
a tool carrier pivotally carried by one of said housing and said plunger,
a retractable locator key pivotally carried by the other of said housing and said plunger,
means for resiliently urging the projection of said key outward from said housing,
an upwardly directed abutment shoulder on said key for engaging a downwardly directed stop shoulder in the well tubing in which the tool is run to articulate the tool,
a downwardly directed chamfered surface on said key to permit the key to ride over obstructions as the tool is lowered through the well tubing,



a downwardly directed stop shoulder on said key spaced inwardly from said chamfered surface for engaging orienting means located in the well tubing,
means for articulating said tool carrier with respect to said housing upon engagement of said abutment shoulder with a downwardly stop shoulder in the well,
means carried by said tool carrier for releasably securing thereto the well equipment to be run or retrieved, and
means rendering said upwardly directed abutment shoulder ineffective in response to a selected force to permit upward movement of the tool past stop shoulders in the well tubing.

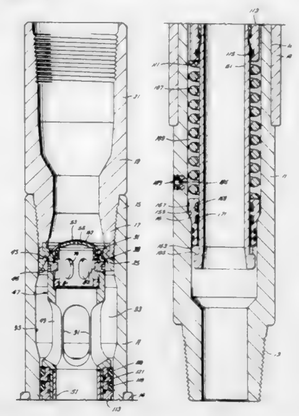
3,965,980

MUD SAVER VALVE

Joseph Stephen Williamson, Houston, Tex., assignor to Smith International, Inc., Houston, Tex.

Filed Feb. 21, 1975, Ser. No. 551,897
Int. Cl.² E21B *7/00*; F16K *3/02*
U.S. Cl. 166—224 R **28 Claims**

1. Mud saver valve adapted for connection between a kelly and a string of drill pipe including
a tubular valve body having means at its lower end for making connection with a string of drill pipe and means at its upper end for making connection with a top sub,
a tubular top sub having means at its upper end for making connection with a kelly and means at its lower end for making connection with said valve body,
said top tub having a downwardly facing valve seat,
closure means adapted to engage said valve seat and including a stem extending downwardly from said valve seat,
said stem having a downwardly facing shoulder thereon,
upper seal means bearing against said downwardly facing shoulder and sealingly engaging said stem and said valve body,
spring support means including an upwardly facing shoulder in said valve body,
a chamber formed by said valve stem, valve body, support means and upper seal means,
spring means disposed in said chamber around said stem bearing at its lower end against said support means and biasing said closure means toward the closed position, distinguished by



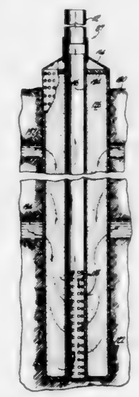
said spring means bearing at its upper end against said upper seal means,
said upper seal means being held in position against said downwardly facing shoulder by said spring means that biases the closure means toward closed position.

3,965,981

PRE-PACKED WELL POINTS

Anthony J. D'Amiano, 5881 SW. 8th St., Plantation, Fla. 33314

Continuation-in-part of Ser. No. 509,241, Sept. 25, 1974. This application Apr. 3, 1975, Ser. No. 564,687
Int. Cl.² E03B *3/18*; E21B *43/08*
U.S. Cl. 166—228 **7 Claims**



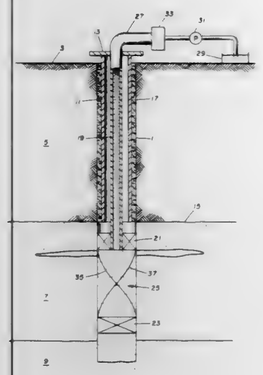
1. A prepacked well point comprising an inner perforated tubular member closed at its bottom end,
a tubular screen, perforated along its entire length, coaxial with and spaced around said inner tubular member and defining an annular space about said inner tubular member,
a filter medium filling said annular space,
said inner tubular member being perforated only near the closed bottom end thereof,
a vacuum coupling means, said coupling means being connected to the top end of said inner tubular member for coupling the prepacked well point to a vacuum line, and
a bottom plate, said bottom plate being imperforate and closing the bottom end of said inner tubular member, said annular space, and the bottom end of said tubular screen.

3,965,982

HYDRAULIC FRACTURING METHOD FOR CREATING HORIZONTAL FRACTURES

William L. Medlin, Dallas, Tex., assignor to Mobil Oil Corporation, New York City, N.Y.

Filed Mar. 31, 1975, Ser. No. 563,886
Int. Cl.² E21B *43/26*
U.S. Cl. 166—249 **5 Claims**



1. A method of forming a horizontally disposed fracture in a subterranean formation that is penetrated by a borehole, comprising the steps of:

a. setting in said borehole against said formation an upper packer and a lower packer to form with each of said upper packer and lower packer a packer-to-formation bond with the wall of said formation and define with said borehole and intermediate said upper packer and said lower packer a fracture treatment zone;

b. applying hydraulic pressure to said fracture treatment zone in an amount slightly less than that pressure required to create a vertical fracture in said formation;

c. applying acoustical energy in said fracture treatment zone at a frequency to form a resonant condition therein and rigidly couple said upper packer and said lower packer with the wall of said formation and form a horizontal fracture in said formation; and

d. propagating said horizontal fracture into said formation by continuing to apply hydraulic pressure to said fracture treatment zone.

3,965,983

SONIC FLUID LEVEL CONTROL APPARATUS

Billy Ray Watson, Box 756, Monahans, Tex. 79756

Filed Dec. 13, 1974, Ser. No. 532,502
Int. Cl.² E21B *47/00*
U.S. Cl. 166—250 **10 Claims**

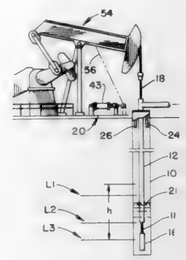
1. The combination with production apparatus associated with a wellbore and provided with a prime mover connected to actuate a pump, of a pump-off control apparatus comprising: a controller means connected to said prime mover for starting and stopping the pumping action; compressor means, a gas storage vessel connected to receive compressed gas from said compressor means, means by which said compressor means is connected to be actuated when said prime mover is energized;

a sound detector mounted at the upper extremity of the wellbore, a gas powered sound producing means focused down the wellbore to strike any downhole liquid surface and rebound back up the wellbore where it can be received by said sound detector;

a valve means connecting said sound producing means to said vessel, means including said controller means for de-energizing said prime mover and thereafter opening said valve means when the pressure differential between said vessel and said wellbore attains a magnitude which will produce said sound wave;

means, including a time delay means, for measuring the time interval required for a sound wave generated by said sound producing means to travel from the liquid surface uphole to the sound detector;

said time delay means only allows the sound detector to pass on a signal which occurs a finite time interval after said valve is opened, thereby avoiding any extremely large initial sound impulse being received by the sound detector;



means by which the prime mover is de-energized for a first time delay period when said time interval required for the sound wave to reach the sound detector is of a first value, means by which the prime mover is de-energized for a longer time delay period when said time interval required for the sound wave to reach the sound detector is of a second value; the last said time interval being indicative of a lower fluid level than the first said time interval.

6. Method of cyclically producing a fluid producing strata of wellbore wherein an artificial lift device is located downhole at a location which is usually below the fluid level thereof when the well is shut in, comprising the following steps:

1. starting said device and producing the well while simultaneously compressing a gas within a vessel;
2. stopping the device when the relative gas pressure differential measured between the vessel and the upper borehole annulus reaches a first value;
3. actuating a sound producing device with the gaseous contents of the vessel; and,
4. directing the sound wave downhole so that it must strike and rebound from any liquid level produced therein by the fluid producing strata;
5. detecting the rebound sound wave as it travels uphole through the borehole;
6. measuring the lapsed time required for the wave to travel from the location of the liquid level to the detecting location;
7. carrying out step (**6**) by measuring the sound wave detected in step (**5**) only during a time interval following a time delay wherein the time delay eliminates the measurement of any undesirable initial large sound impulse;
8. continuing the shut-in condition of the well for a first time interval when the lapsed time of step (**6**) is of a first value indicative of a pump-off condition;
9. starting the device when the lapsed time of step (**6**) is of a second value indicative of the presence of a hydrostatic head in the well which is of a value which will supply production fluid during the time required to carry out step (**1**).

3,965,984

WATERFLOOD METHOD USING OVERBASED NORMAL ALKYLAROMATIC SULFONATES

Charles R. Clark; M. Duane Gregory; Oliver C. Kerfoot, all of Ponca City, Okla.; Delmar D. Krehbiel, Lubbock, Tex., and Carl D. Kennedy, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Division of Ser. No. 344,017, March 22, 1973, abandoned. This application Sept. 30, 1974, Ser. No. 510,204
Int. Cl.² E21B *43/22*
U.S. Cl. 166—270 **14 Claims**

1. A process for recovering hydrocarbons from a petroliferous formation which comprises:

d. injecting into the formation an effective amount of an aqueous mixture which contains about 0.5 to about 25 weight percent of an overbased waterflood additive;

the waterflood additive comprising a base component plus a normal alkylaromatic sulfonate;

wherein the waterflood additive is sufficiently overbased that the ratio: weight of excess base component/weight of sulfonate is about 0.20 to about 1.0;

wherein the base component is sodium hydroxide; and

wherein the normal alkylaromatic sulfonate is a sulfonate having been prepared by partially chlorinating a normal alkane having about 10 to about 18 carbon atoms to about 2 to about 15 weight percent chlorine content, employing the chlorinated alkane to alkylate to aromatic hydrocarbon, sulfonating the thus formed alkylate to form a sulfonic acid, and converting the sulfonic acid to a sulfonate by reacting with the base component; and

e. recovering the displaced hydrocarbons from the formation.

3,965,985

MICROBIAL SYNTHESIS FROM ALDEHYDE CONTAINING HYDROCARBON DERIVED PRODUCTS

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 366,563, June 4, 1973, Pat. No. 3,856,774, which is a continuation of Ser. No. 167,177, July 29, 1971, abandoned, which is a division of Ser. No. 751,926, Aug. 12, 1968, Pat. No. 3,642,578. This application Oct. 18, 1974, Ser. No. 515,873
Int. Cl.² E21B *43/16*
U.S. Cl. 166—275 **15 Claims**

1. A method of water flooding which comprises diluting a polymeric gum possessing water viscosifying properties with water or brine to a suitable viscosity and injecting the resulting diluted polymeric gum into oil-bearing strata,

wherein said polymeric gum is characterized as produced by process of microbiosynthesis as cellular production products from oxygenated hydrocarbon feedstock containing aldehydes in addition to other oxygenated hydrocarbons, which feedstock is characterized as formed by the oxidation of hydrocarbons, which process comprises the steps of:

a. adding to said oxygenated hydrocarbon feedstock containing aldehydes at least one nitrogen-containing compound reactive with said aldehydes whereby said aldehydes are rendered substantially innocuous,

b. culturing on said nitrogen-containing compound treated feedstock from said step (a) oxygenated hydrocarbon-utilizing microorganisms effective to produce polymeric gum under fermentation conditions, thereby producing said polymeric gum, and

wherein said microorganism is selected from the genera consisting of Pseudomonas, Methanomonas, Arthobacter, Corynebacterium, Bacillus, Mycobacterium, Actinomyces, Nocardia, Micrococcus, Rhodobacillus, Chromatium, Serratia, Rhizobium, Aerobactor, Escherichia, and Streptococcus.

6. A method of treating drilling mud which comprises mixing a polymeric gum product possessing water viscosifying qualities with drilling mud thereby adjusting the viscosity of said drilling mud,

wherein said polymeric gum is characterized as produced by process of microbiosynthesis as cellular production products from oxygenated hydrocarbon feedstock containing aldehydes in addition to other oxygenated hydrocarbons, which feedstock is characterized as formed by the oxidation of hydrocarbons, which process comprises the steps of:

a. adding to said oxygenated hydrocarbon feedstock containing aldehydes at least one nitrogen-containing compound reactive with said aldehydes whereby said aldehydes are rendered substantially innocuous,

b. culturing on said nitrogen-containing compound treated feedstock from said step (a) oxygenated hydrocarbon-utilizing microorganisms effective to produce polymeric gum under fermentation conditions, thereby producing said polymeric gum, and

wherein said microorganism is selected from the genera consisting of Pseudomonas, Methanomonas, Arthobacter, Corynebacterium, Bacillus, Mycobacterium, Actinomyces, Nocardia, Micrococcus, Rhodobacillus, Chromatium, Serratia, Rhizobium, Aerobactor, Escherichia, and Streptococcus.

11. A method of selective plugging of an oil-bealang formation which comprises the steps of solubilizing at a pH below about 10 a polymeric gum possessing water viscosifying properties, injecting said solubilized polymeric gum into said formation, thereafter injecting an alkaline material into said formation sufficient to raise the pH of said solubilized polymeric gum in said formation, and thereby increasing the viscosity of said polymeric gum in said formation,

wherein said polymeric gum is characterized as produced by a process of microbiosynthesis as cellular production products from oxygenated hydrocarbon feedstock containing aldehydes in addition to other oxygenated hydrocarbons, which feedstock is characterized as formed by the oxidation of hydrocarbons, which process comprises the steps of:

a. adding to said oxygenated hydrocarbon feedstock containing aldehydes at least one nitrogen-containing compound reactive with said aldehydes whereby said aldehydes are rendered substantially innocuous,

b. culturing on said nitrogen-containing compound treated feedstock from said step (a) oxygenated hydrocarbon-utilizing microorganisms effective to produce polymeric gum under fermentation conditions, thereby producing said polymeric gum, and

wherein said microorganism is selected from the genera consisting of Pseudomonas, Methanomonas, Arthobacter, Corynebacterium, Bacillus, Mycobacterium. Actinomyces, Nocardia, Micrococcus, Rhodobacillus, Chromatium, Serratia, Rhizobium, Aerobacter, Escherichia, and Streptococcus.

3,965,986

METHOD FOR OIL RECOVERY IMPROVEMENT

Charles A. Christopher, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 4, 1974, Ser. No. 511,871
Int. Cl.² E21B *33/138*, *43/22*, *43/24*
U.S. Cl. 166—292 **9 Claims**

1. A method for reducing the permeability of a subterranean strata comprising

a. injecting a slug of fumed colloidal silica and water into the reservoir, and

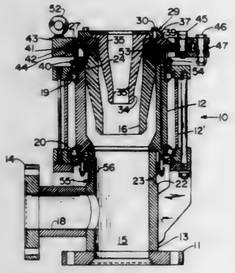
b. following the slug of fumed colloidal silica and water with a surfactant to form a gel on contact with the fumed colloidal silica slug.

3,965,987

METHOD OF SEALING THE ANNULUS BETWEEN A TOOLSTRING AND CASING HEAD

Morris S. Biffle, Odessa, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 339,037, March 8, 1973, Pat. No. 3,868,832. This application Dec. 19, 1974, Ser. No. 534,497
Int. Cl.² E21B *23/00, 33/03*
U.S. Cl. 166—315 **10 Claims**



1. Method of going into and coming out of a cased borehole with a tool string of varying outside diameter wherein the annulus formed between the tool string and the borehole wall near the casing head must be sealed against fluid flow, comprising the steps of:

1. sealing a first annulus near the casing head against fluid flow by sealingly engaging a relative small outside diameter of the tool string with a rotatable stripper rubber having a relative small inside diameter;
2. sealing a second annulus near the first annulus against fluid flow by sealingly engaging a relative larger outside diameter of the tool string with a rotatable stripper rubber having a relative larger inside diameter;
3. pulling the tool string from the borehole while a relative small outside diameter of the tool string engages the relative small inside diameter stripper rubber until a relative large outside diameter of the tool string sealingly engages the relative large inside diameter stripper rubber;
4. removing the small inside diameter stripper rubber from the casing head, while the relative larger inside diameter stripper rubber sealingly engages the relatively larger outside diameter of the tool string.

3,965,988

FIRE EXTINGUISHING METHOD AND APPARATUS

Harold R. Wesson; Lester E. Brown, and Gregory L. Puckett, all of Norman, Okla., assignors to University Engineers, Inc., Norman, Okla.

Filed Dec. 13, 1974, Ser. No. 532,407
Int. Cl.² A62C *13/38*
U.S. Cl. 169—9 **14 Claims**

1. A fire extinguishing apparatus comprising:

a pressure vessel containing a solid particulate chemical fire extinguishing agent;

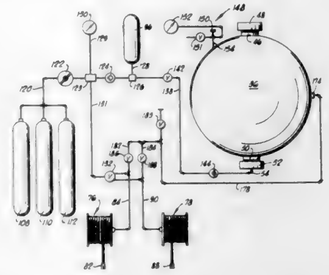
an injection pipe projecting through the lower side of the pressure vessel and terminating in the lowermost portion of the solid particulate chemical fire extinguishing agent in the pressure vessel;

a first source of gas under pressure connected to said injection pipe;

means for selectively and automatically regulating the pressure of gas delivered from said first source to said injection pipe;

a second source of gas connected to said injection pipe, said second gas source including a supply of gas at a relatively higher pressure than the regulated pressure of gas from said first source;

discharge means connected to said pressure vessel for delivering said solid particulate extinguishing agent from said pressure vessel to the situs of a fire; and



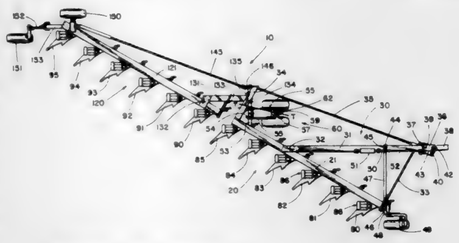
means automatically responsive to a property of the gas originating at said second source to sequentially communicate with the injection pipe, initially the second source of gas and subsequently the first source of gas, whereby gas flows at such subsequent time, at a constant pressure through said discharge means.

3,965,989

FLEXIBLE PLOW

Gerald G. Ward, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Sept. 24, 1973, Ser. No. 400,487
Int. Cl.² A01B *3/26, 15/14*
U.S. Cl. 172—310 **18 Claims**



1. A flexible plow including:

a first plow section, said first plow section comprising a first elongated diagonal frame member having a draft means structure including means for hitching to a tractor, a plurality of plow bottoms connected through first linkage means that function to support said plow bottoms in a working position below and adjacent said first elongated diagonal frame member said plurality of plow bottoms being spaced at equal intervals along said first elongated diagonal frame member, said first linkage means functioning when said plow bottoms are in working position to transmit upward forces from said plow bottoms to said first frame member;

a second plow section, said second plow section comprising a second elongated diagonal frame member, a plurality of plow bottoms connected through second linkage means that function to support said plow bottoms in a working position below and adjacent said second elongated diagonal frame member, said plurality of plow bottoms being spaced at intervals along said second elongated diagonal frame member equal to said equal intervals, said second linkage means functioning when said plow bottoms are in working position to transmit upward forces from said plow bottoms to said second frame member, ground wheel means carried by the rear portion of said second plow section;

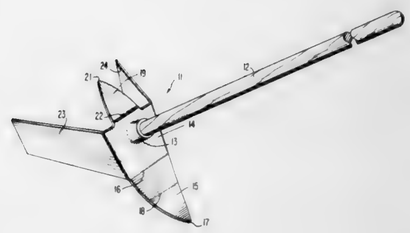
pivot means connecting the rear of said first elongated diagonal frame member to the front of said second elongated diagonal frame member such that the interval between the last plow bottom on said first elongated diagonal frame member and the first plow bottom on said second elongated diagonal frame member is substantially equal to said equal interval, the practical line of draft for said second plow section passing through the axis of said pivot means.

3,965,990

HAND HELD GARDEN IMPLEMENT

Gloucester R. Pittman, 623 N. Stone Mountain-Lithonia Road Rte. 3, Stone Mountain, Ga. 30083

Filed Apr. 21, 1975, Ser. No. 570,242
Int. Cl.² A01B *1/20, 1/10*
U.S. Cl. 172—375 **3 Claims**



1. A hand held garden implement having an elongated handle and further comprising a flat central plate portion to which the handle is affixed, said flat central plate portion having a forward side and rearward side and being generally of rectangular shape having four edges therewith, the forward and rearward sides further defining corresponding forward and rearward directions pointing away from the respective sides of the flat central plate, a handle receiving member centrally attached to the forward side of the flat central plate, said handle receiving member being of cylindrical configuration, said handle being received in said handle receiving member and projecting in the forward direction away from the central plate, a tapered digging blade integral with the flat central plate and depending from one of said edges thereof, said one edge at the juncture of the digging blade and the central plate comprising a first bend line, said digging blade terminating in a point, and wherein said point lies in a plane that passes through and lies along the longitudinal axis of the handle, the tapered digging blade being bent along the first bend line at the junction of said blade and the flat central plate, the tapered digging blade further being bent along the bend line in the forward direction toward which the handle also projects from the central plate, first and second rake blades projecting in the rearward direction with respect to the central plate, said rake blades projecting from two additional ones of said edges of the flat central plate, which additional edges are opposite each other, said rake blades projecting from the flat central plate at a diverging angle wherein the included angle between the diverging blades is less than 90°, said rake blades being of flat elongated substantially rectangular configuration, said rake blades each being most elongated in a direction pointing away from the adjacent said additional edge of said central plate.

3,965,991

MANUAL CULTIVATING TOOL

Harold O. Eads, Parkersburg, W. Va., and James W. Robison, Belpre, Ohio, assignors to McDonough Co., Parkersburg, W. Va.

Filed July 14, 1975, Ser. No. 595,694
Int. Cl.² A01B *1/10, 1/22*
U.S. Cl. 172—376 **9 Claims**



1. A cultivator of the type described comprising:

an elongated handle having a manually engageable end portion and an opposite end portion,

a tubular member having spaced opposite end portions thereof flattened, said flattened end portions having similar intermediately disposed transverse bends formed therein,

a pair of separate handle attaching elements including first portions fixed to the opposite end portion of said handle in opposed relation thereto and second portions having openings therein receiving therethrough the flattened end portions of said tube inwardly of the bends therein,

a U-shaped blade having a generally straight double edged bight portion disposed generally horizontally in operation and leg portions which extend transversely from the ends of said bight portion in a generally upward direction in operation, and

means for securing the free ends of said leg portions within the flattened end portions of said tube outwardly of the bends therein,

said openings having an interior cross-sectional configuration of a size larger than the exterior cross-sectional configuration of the flattened end portions extending therethrough and of a shape relative thereto operable to provide a limited tilting movement of said tubular member and U-shaped blade with respect to said handle and said handle attaching elements in a direction normal to the straight double edged bight portion of said blade.

3,965,992

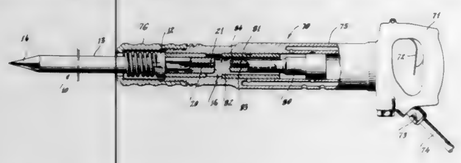
INTERNALLY SILENCED IMPACT DRIVEN TOOLS AND IMPACTING MEANS THEREFOR

James A. Swisher, 123 Silver Hill Road, Easton, Conn. 06612

Filed Mar. 6, 1975, Ser. No. 556,186
Int. Cl.² B25D *9/00*
U.S. Cl. 173—127 **16 Claims**

1. An internally silenced impact driven tool comprising a bitter end having an impact surface on one end thereof, a collar bounding the bitter end at the other end thereof, a shank, and a tip, said bitter end defining at least a portion of

at least one opening in said impact driven tool, and sound attenuating material positioned and secured within said open-



ing, said sound attenuating material comprising round hard metal shot.

3,965,993

WELL BORE PERFORATING APPARATUS

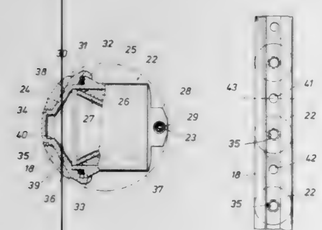
Jean Lavigne, Chevreuse; Pierre Chesnel, Savigny-sur-Orge, and Gerard Bouguyon, Plaisir, all of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Sept. 8, 1975, Ser. No. 610,945

Claims priority, application France, Sept. 20, 1974, 74.31760

Int. Cl.² E21B *43/117*; F42B *3/08*

U.S. Cl. 175—4.6 **14 Claims**



8. Perforating apparatus adapted for passage through well piping and comprising:

an elongated charge-support member formed of a tough ductile steel and having a convex forward face complementally curved for approximately fitting the interior wall of well piping of a selected internal diameter and a concave rearward face approximately parallel to said outer face and spaced uniformly therefrom;

means on said charge-support member and including a plurality of first openings spatially disposed along said charge-support member and internally threaded for respectively receiving a threaded axial protrusion on the nose of an encapsulated shaped explosive charge and securing it in facing relationship against said concave rearward face;

means on said charge-suppport member and including a plurality of second openings respectively disposed along said charge-support member between adjacent ones of said first openings and cooperatively sized for inducing transverse bends of limited magnitude respectively crossing each of said second openings upon detonation of spaced explosive charges secured in said first openings.

3,965,994

MAGAZINE FOR STORING DRILL STRING ELEMENTS

Jonas Olof Anders Hilding, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Dec. 16, 1974, Ser. No. 533,133

Claims priority, application Sweden, Dec. 21, 1973, 7317340

Int. Cl.² E21B *9/14*

U.S. Cl. 175—52 **13 Claims**

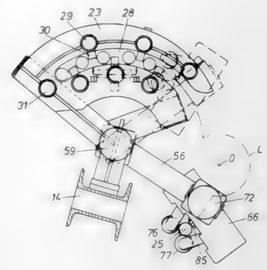
1. A drill string element handling apparatus comprising:

an elongated support (**14**),

a drilling machine (**15**) mounted on said support (**14**) for reciprocal movement therealong,

a plurality of drill string elements (**25**) for making up a drill string, said drill string being connectable at one end thereof to said drilling machine (**15**) to be driven longitudinally with respect to said support (**14**),

a magazine (**22, 23, 24**) for storing a plurality of said drill string elements laterally seriatim in a row with respect to the axis of said drill string,



means (**26, 27**) for transferring said drill string elements to and from said axis,

turnstile means (**29**) in said magazine, said turnstile means (**29**) being journalled rotatably alongside the row of stored drill string elements,

wing means (**30**) on said turnstile means for spacing adjacent string elements stored in said magazine, and

means for moving said drill string elements along a path in said magazine, and for rotating said turnstile means during movement of said drill string elements along said path.

3,965,995

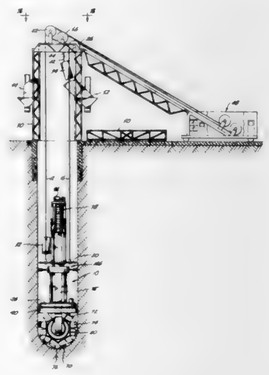
MACHINE FOR BORING A LARGE DIAMETER BLIND HOLE

David B. Sugden, Kingston Beach, Australia, assignor to The Robbins Company, Seattle, Wash.

Filed Mar. 6, 1975, Ser. No. 555,830

Int. Cl.² E21D *1/06*

U.S. Cl. 175—57 **18 Claims**



1. An earth boring machine for boring a transversely large hole, comprising:

a cutter wheel including a peripheral cutter portion;

means mounting said cutter wheel for rotation about an axis transverse to the hole;

motor means for driving said cutter wheel about said axis;

advance-retract means for advancing said cutter wheel into the earth material being cut while said cutter wheel is being rotated, and for retracting said cutter wheel out from its cut;

means for maintaining said cutter wheel and its mounting means in a fixed angular position relative to the axis of the hole while said cutter wheel is being rotated and advanced into the earth material, so that said cut is in the shape of the leading portion of the cutter wheel; and

means for angularly shifting said cutter wheel and its mounting means in position about the axis of the hole following retraction of the cutter wheel from a cut, to establish a new cut path which is at an angle to the first cut path.

9. A method of boring a transversely large hole, comprising:

power rotating a cutter wheel having a peripheral cutter portion about an axis transverse to the hole;

maintaining said rotating cutter wheel in angular position relative to the axis of the hole while advancing a leading peripheral portion of said rotating cutter wheel into the earth material to form a first cut;

retracting said cutter wheel out from said first cut; and

angularly shifting said cutter wheel in position about the axis of the hole following its retraction from the first cut, to establish a new cut path which is at an angle to the first cut path.

3,965,996

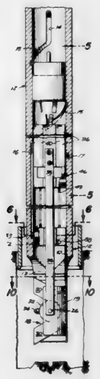
MEANS AND METHOD OF DRILLING WELLS

Bernard K. Gross, 4154 Beachmeadow Lane, Westlake Village, Calif. 91361

Filed Mar. 20, 1975, Ser. No. 560,483

Int. Cl.² E21B *9/26*

U.S. Cl. 175—57 **12 Claims**



12. A means of drilling wells containing a casing and a drill string and utilizing a wireline tool, said means comprising:

a. means for continuously rotating the casing and drill string except during placement of added sections of casing and drill string;

b. a bit assembly having a diameter for reception in the drill string and a length greater than the diameter of the well casing adapted to be introduced and retrieved by the wireline tool, said bit assembly being movable through and beyond the drill string and casing;

c. means for pivoting the bit assembly when beyond the drill string and casing to a transverse position;

d. cooperating means connected to the bit assembly and tubing string for orienting the bit assembly with respect to the drill string;

e. means for securing the bit assembly in its oriented position to the lower end of the drill string for rotation therewith thereby to drill the formation ahead of the bit assembly;

f. and means for advancing both the drill string and casing as permitted by the bit assembly.

3,965,997

METHOD AND APPARATUS FOR GUIDING AND SEALING A DRILL STRING

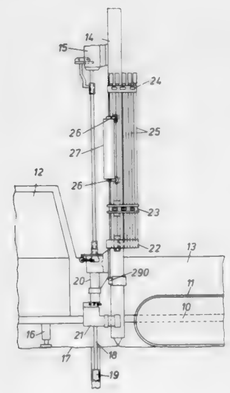
Jonas Olof Anders Hilding, and Jan Edvard Persson, both of Nacka, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Dec. 16, 1974, Ser. No. 533,131

Claims priority, application Sweden, Dec. 21, 1973, 7317341

Int. Cl.² E21B *19/14*, *19/16*; E21C *9/00*

U.S. Cl. 175—65 **10 Claims**



1. In a method of rock drilling by means of a string (**18**) of connected drill rods, said string being formed with an increased diameter at the portions where two adjacent rods are connected, comprising moving the string through a drill rod centralizer (**20**) while removing drill dust therefrom by suction, the improvement comprising guiding and gap-sealing of the drill string constantly during the drilling by providing first guide surface means for (**216**) for guiding and gap-sealing of the drill rods, and providing second and third guide surface means (**218, 224; 218, 231**) at respective opposite sides of said first guide surface means in the longitudinal direction of the drill rods for guiding and gap-sealing of the connection portions of adjacent drill rods; selectively moving said first guide surface means out of guiding and gap-sealing engagement with a drill rod to permit passage of a connection portion thereby, said second and third guide surface means providing guiding and gap-sealing when said first guide surface means is so moved; said first, second and third guide surface means being all located in the drill rod centralizer (**20**) rearwardly of the place (**223**) of suction so that said suction effectively seals respective clearance gaps between said first guide surface means and a drill rod and between said second and third guide surface means and a connection portion.

6. In a drill rig, in combination: an elongated support (**14**), a rock drill (**15**) mounted on said support for longitudinal movement therealong, a string (**18**) of connected drill rods, said string being connectable at one end thereof to said rock

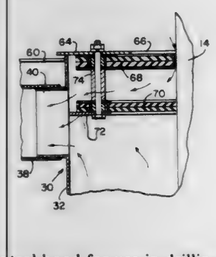
drill to be driven longitudinally with respect to said support, a drill bit (**19**) mounted on the other end of said string, a drill rod centralizer (**20**) mounted axially displaceably on said support, said drill rod centralizer having a front portion (**201**), and means for fixedly holding said support with respect to the ground during drilling, the improvement comprising guiding means for said drill bit in said front portion (**201**) of said drill rod centralizer, said guiding means having a substantial axial extent, and said drill rod centralizer having an axial extent forwardly of said support for resting against the ground when in a projected position relative to said support.

3,965,998

DUST CONTROL HOOD AND DUST CONTROL SYSTEM

Laszlo Gyongyosi, and Paul A. Lincoln, both of Clarksburg, W. Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Dec. 19, 1974, Ser. No. 534,177
Int. Cl.² E21B *21/00*
U.S. Cl. 175—209 **4 Claims**



1. A dust control hood for use in drilling holes comprising: a housing with an open bottom; a first flexible seal extending across the housing; a second flexible seal in the housing longitudinally spaced from the first flexible seal to provide air passage means in said longitudinal space, each of said flexible seals having a central hole; the flexible seals being sufficiently flexible so that the holes expand to receive a drill bit and drill string of greater diameter than the normal diameter of the hole in each flexible seal as the drill bit and drill string are lowered into the housing; and an air outlet extending from the side of the housing, the first flexible seal being above the air outlet and the second flexible seal extending across the housing at a point below the top of the air outlet and above the bottom of the air outlet, said air passage means providing direct air flow from the annular space between the two flexible seals to the air outlet so that air entering the annular space through the top of the housing and between the two flexible seals may be pumped from said annular space out through the air outlet, and also so that additional air may be pulled into the open bottom of the housing through the air outlet.

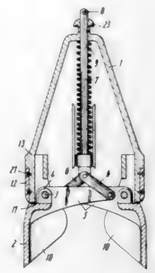
3,965,999

DRILLING GRAB FOR PILE FOUNDATIONS AND WELL BOREHOLES

Hans Mathieu, Bischmisheim, and Jürgen Hochstrasser, Saarbrucken, both of Germany, assignors to Elisabeth Hochstrasser nee Wack and Jurgen Hochstrasser, both of, Germany

Filed Jan. 29, 1975, Ser. No. 545,104
Claims priority, application Germany, Jan. 31, 1974, 2405142
Int. Cl.² E21B *11/04*
U.S. Cl. 175—238 **8 Claims**

1. A drilling grab for pile foundations and well boreholes comprising:
a grab body;
circular grab spades supported at the grab body end, which spades tilt from an open position into a closed position about pins located in the grab body; and
a radially projecting abutment interchangeably connected to the outer periphery of said grab body and engageable by the backs of the grab spades when located in the open position, said abutment overlapping the periphery of the grab body and characterized in that the abutment consists of extension members adapted to grab spades of different



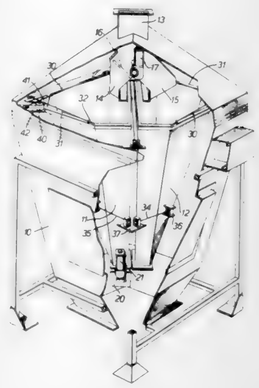
size, which members are supported on radially projecting ribs located on the grab body; on the extension members' surfaces adjacent the ribs, the extension members have a thickness corresponding to the thickness of the ribs and at their surfaces coming into engagement with the backs of the grab spades, the extension members have a surface adapted to the respective size of the spade.

3,966,000

WEIGHING APPARATUS

Clifford Edwin Allen, Cumbran, Wales, assignor to ISCA Electronics Limited, Great Britain

Division of Ser. No. 490,261, July 22, 1974. This application July 3, 1975, Ser. No. 593,029
Int. Cl.² G01G *13/22, 13/14*
U.S. Cl. 177—1 **5 Claims**



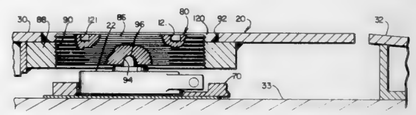
1. A method of weighing a continuous or semi-continuous flow of material, in which the flow is directed alternately between two weighing hoppers, and after filling one hopper the flow is diverted to the second hopper, during which filling operation the gross live weight of the first hopper is sensed and added to the total in a digital counter, the first hopper is emptied, and the tare weight thereof sensed and subtracted from the total in said counter, after which the flow is diverted back to the first hopper and the cycle is repeated for the second hopper.

3,966,001

PLATFORM WEIGHING SCALE

Arthur Goldberg, Fort Lee, N.J., assignor to Howe Richardson Scale Company, Clifton, N.J.

Filed Dec. 18, 1974, Ser. No. 534,086
Int. Cl.² G01G *21/00*
U.S. Cl. 177—128 **3 Claims**



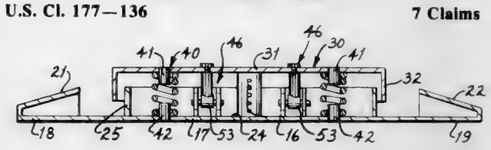
1. In a platform weighing scale, a series of load cells, a load-receiving platform structure positioned over and resting on said load cells, said platform structure including a platform which has a load cell-removal aperture in registry with each load cell, and a force-transferring member removably positioned in each load cell-removal aperture to transfer the force due to the weight of a load on said platform to said load cells, each force-transferring member being seated on its associated load cell and threadedly engaged in its associated load cell-removal aperture for selective vertical displacement to adjust the level of the adjacent region of said platform, and each load cell being upwardly removable through its associated load cell removal aperture upon removal of the force transferring member from its associated load cell removal aperture.

3,966,002

PORTABLE VEHICLE SCALES

Henry Allen Schneider, Spokane, Wash., assignor to Breakthrough Research & Development Corporation, Spokane, Wash.

Filed Sept. 12, 1974, Ser. No. 505,490
Int. Cl.² G01G *19/08*
U.S. Cl. 177—136 **7 Claims**



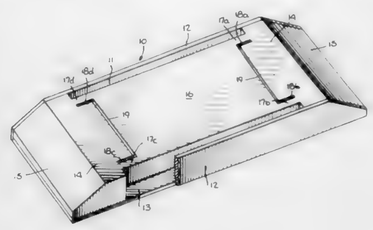
1. A portable vehicle load scales for weighing heavy wheel loads, comprising:
a base;
a weighing platform for receiving a vehicle wheel thereon;
a plurality of calibrated compression springs mounted in an array on the base supporting the platform and the vehicle wheel above the base in which the springs are compressively deflected in proportion to the wheel load applied to the platform;
pre-loading means operatively connected between the base and platform to move the base and platform closer together for initially compressively deflecting the array mounted springs to a desired loading prior to supporting the vehicle wheel on the platform;
a variable capacitor transducer operatively connected between the platform and the base that is responsive to the compressive deflection of the springs for measuring the applied wheel load, said capacitor transducer comprising at least two electrodes separated by a layer of elastic dielectric material that is compressively responsive to the deflection of the springs with the electrical capacitance of the transducer varying in accordance with the deflection of the springs so that the magnitude of the electrical capacitance of the transducer represents the magnitude of the applied wheel load supported on the platform;
and electrical means operatively connected to the transducer for measuring the magnitude of the electrical capacitance of the transducer and for visually displaying the magnitude in terms of the weight of the wheel load supported on the platform.

3,966,003

WEIGHING APPARATUS

Henry F. Miller, Clifton, N.J., assignor to Uniroyal Inc., New York, N.Y.

Filed Oct. 15, 1974, Ser. No. 514,518
Int. Cl.² G01G *3/14*
U.S. Cl. 177—211 **7 Claims**



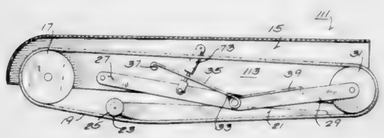
1. Weighing apparatus comprising:
a supporting base;
an elongated horizontal platform adapted to be loaded by an object to be weighed and attached to said base at two ends of said platform, said platform having four horizontally displaced flexible elongated parallel supporting arms in the plane of said platform and integral therewith and attaching said platform to said base, each of said supporting arms having attached thereto one or more electrical strain sensors, said sensors being so located on said arms and so connected in a single electrical bridge circuit as to provide an electrical signal representative of the load applied to said platform in a direction normal to said platform, said bridge circuit being non-responsive to shear loads applied to said platform in planes parallel to the plane of said platform and being non-responsive to the location of the load and the area of contact between the load and the platform.

3,966,004

SINGLE LINK SLIDE RAIL SUSPENSION SYSTEM

Edgar Rose, Glencoe, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed July 22, 1974, Ser. No. 490,286
Int. Cl.² B62M *27/02*
U.S. Cl. 180—5 R **11 Claims**

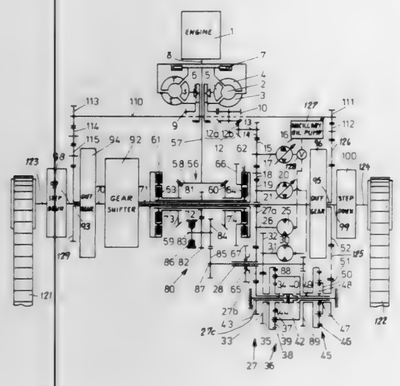


1. A snowmobile comprising a frame, a track drive sprocket mounted on said frame, a track suspension carrier including, adjacent to the forward end thereof, an upwardly and forwardly extending lower surface, a suspension link pivotally connected at one end to said frame rearwardly of said sprocket and pivotally connected to said carrier rearwardly of said surface, said suspension link constituting the sole rigid link connecting between the carrier and said frame and including a portion extending rearwardly from the connection of said link with said carrier, an idler wheel rotatably carried by said extending link portion adjacent to the rearward end thereof, and means urging said carrier away from said frame.

3,966,005
COMPOUND STEERING SYSTEM FOR ENDLESS-TRACK VEHICLES

Bernhard Binger, Ravensburg, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed Jan. 15, 1975, Ser. No. 541,108
Int. Cl.² B62D 11/16
U.S. Cl. 180—6.44 **8 Claims**

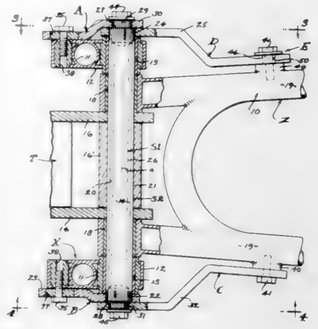


1. A vehicular steering system comprising:
- a pair of driven shafts coupled with respective traction elements on opposite sides of a vehicle body;
- a hydraulic torque converter with an input side and an output side;
- an engine coupled to said input side;
- reversible transmission means linking said output side with said driven shafts, said transmission means having two branches including respective differential-gear sets each having a driving input and a steering input;
- a continuously adjustable hydraulic power train coupled with said input side;
- a supplemental mechanical power train coupled with said output side;
- additive gear means provided with a first input shaft drivable from said engine via said hydraulic power train, a second input shaft drivable from said torque converter via said mechanical power train, and an output shaft; and
- link means forming two relatively reversed driving connections from said output shaft to said steering inputs for translating any rotation of said output shaft into mutually opposite torque components applied to said driven shafts;
- said transmission means further including a main shaft powered by said torque converter and a first pair of clutches for alternately connecting said main shaft with both driving inputs to reverse the sense of rotation of said driven shafts;
- said mechanical power train including a second pair of clutches for alternately connecting said main shaft with said second input shaft for rotating said output shaft in either of two directions;
- said additive gear means including a first and a second planetary-gear set in cascade with each other, each of said planetary-gear sets having two inputs, said hydraulic power train including pump means drivable by said engine and a pair of hydrostatic motors fluidically linked with said pump means, said motors being connected with respective inputs of said first planetary-gear set, said mechanical power train being connected with one input of said second planetary-gear set, the other input of said second planetary-gear set being connected with the output of said first planetary-gear set.

3,966,006
DUAL SPRING REAR SUSPENSION FOR MOTORCYCLES

John R. Cullinan, 2323 235th Place, Torrance, Calif. 90501

Continuation-in-part of Ser. No. 325,725, Jan. 22, 1973, abandoned. This application Oct. 31, 1974, Ser. No. 519,511
Int. Cl.² B62D 61/02; B62K 11/02
U.S. Cl. 180—32 **6 Claims**

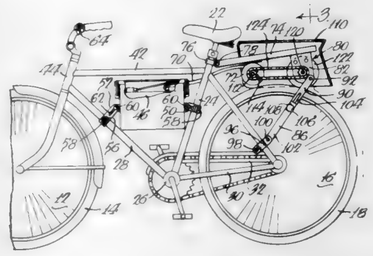


1. An adjustable rear suspension system for a motorcycle having a frame, said system comprising: a bearing means on the rear of said frame on a transverse, horizontally disposed axis; a rearwardly extending, rear wheel mounting fork; means at the forward end of said fork rotatably engaged on said frame about said axis; a torsion spring journaled in said bearing means about said axis, said spring having opposite ends projecting from respective ends of said bearing means; a first lever arm affixed to one of said torsion spring ends; a first connecting means for adjustably connecting said first lever arm to said frame, said first connecting means comprising a receiver in said first lever arm longitudinally spaced from said axis, an insert selectively rotationally mounted in said receiver, an offset opening in said insert, an opening in said frame aligned with said insert opening, and a fastener passing through said openings whereby the selective rotation of said insert about the axis of said offset opening angularly adjusts said first lever arm about said axis; a second lever arm affixed to the other of said torsion spring ends; and a second connecting means longitudinally spaced from said transverse axis, securing said second lever arm to said fork.

3,966,007
ELECTRICBIKE

Ralph L. Havener, Decatur, and Harry F. Dunakey, Harristown, both of Ill., assignors to Lectra Bike Corporation, Decatur, Ill.

Filed Nov. 20, 1974, Ser. No. 525,463
Int. Cl.² B60K 1/00
U.S. Cl. 180—34 **5 Claims**



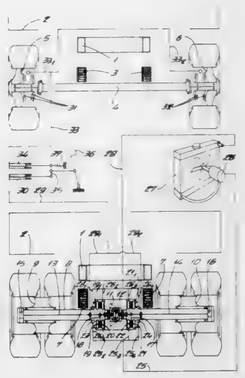
1. In an electric drive propelling a multiwheeled vehicle with a tubular frame, the combination comprising:

- a battery secured to the frame;
- a motor carrier pivotally connected to the frame adjacent a driven wheel, said carrier having a pair of supporting brackets extending downwardly from the underside of the carrier one on either side of the driven wheel, a pair of adjustable braces extending between the supporting brackets of the motor carrier and a vehicle frame member, said braces being pivotally connected to the supporting brackets and each brace terminating in a collar portion for attachment to the frame member, the effective length of the braces being selectable by hand adjustment to pivot the carrier toward and away from the driven wheel;
- a motor secured to the underside of said carrier and including a shaft driven by the motor;
- a motor sprocket mounted on said motor shaft;
- a drive shaft journaled on the underside of said carriage;
- a drive sprocket on said drive shaft;
- a friction wheel mounted on said drive shaft for frictional engagement with the driven wheel of the vehicle;
- an endless chain trained on said motor and drive sprockets for transferring the rotation of the motor shaft to the drive shaft whereby the friction wheel drives the vehicle; and
- a circuit having a normally open, spring-loaded control switch to connect the motor with the battery.

3,966,008
BRAKE SYSTEM FOR VEHICLES

Hermann Klaue, 24, Tour D'Ivoire, 1820 Montreaux, Switzerland

Continuation of Ser. No. 331,697, Feb. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 171,866, Aug. 16, 1971, abandoned. This application July 11, 1975, Ser. No. 595,007
Claims priority, application Germany, Aug. 24, 1970, 2041867; Switzerland, July 19, 1971, 10561/71; Apr. 7, 1972, 5122/72
Int. Cl.² B60T 8/02
U.S. Cl. 180—75 **17 Claims**

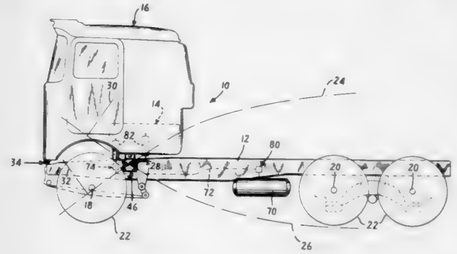


1. In a vehicle with an engine and a radiator, with a plurality of axles, at least one including driven wheels and one including non-driven wheels and a transmission system including driving shafts drivingly engaged with said driven wheels and the vehicle engine, a brake system including wheel brakes and at least one drive line auxiliary brake, characterized by the combination of:
- wheel brakes in the wheels of at least one of said axles, at least one auxiliary brake and actuating means including a singular application means, a first brake circuit means for operating said wheel brakes and a second brake circuit means for operating said auxiliary brake, both of said brake circuit means being operable in response to said actuating means;
- said auxiliary brake being a friction disc brake comprising friction elements which are dry on their friction engaging surfaces and being free of self-intensification effects, said auxiliary brake being designed with a capacity to absorb at least twice the maximum brake energy as that which can be absorbed by the said wheel brakes, and means for watercooling said auxiliary brakes;
- and actuating means including means for operating said auxiliary brake alone in a first mode of operation, during which said wheel brakes remain unbraked, and for operating in a subsequent second mode of operation said wheel brakes in addition to said auxiliary brake, the braking moment of the auxiliary brake increasing at a slower rate in the second mode than in the first mode, the total applied braking moment thus being distributed to each wheel approximately in proportion to the distribution of the dynamic load to that wheel.

3,966,009
VEHICLE CAB MOUNTING ARRANGEMENT

Leslie A. Meacock, II, Emmaus; Donald R. Schumaker, Allentown, and Robert F. Zalokar, Emmaus, all of Pa., assignors to Mack Trucks, Inc., Allentown, Pa.

Filed Dec. 17, 1974, Ser. No. 533,548
Int. Cl.² B62D 33/06
U.S. Cl. 180—89 A **4 Claims**



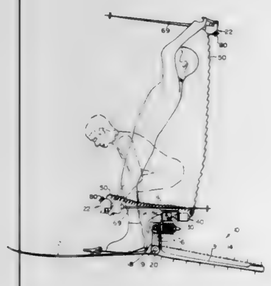
1. In a tractor adapted to be coupled to a semitrailer, the tractor having a frame capable of vibratory, beam-like bending about at least one nodal point, an engine mounted on the frame, a cab mounted on the frame to overlie the engine, and a reservoir adapted to contain air under pressure, the improvement comprising:
- a. first support means for resiliently mounting a rear portion of the cab on the frame substantially at the nodal point, the first support means including a pneumatic spring mounted at one end to the frame and being adapted for coupling at the other end to the cab, the pneumatic spring having a natural frequency of about one and a half cycles per second, and two shock absorbers located adjacent the pneumatic spring at opposite sides thereof, each shock absorber being mounted at one end to the frame and being coupled at the other end to the end of the pneumatic spring remote from the frame;
- b. means communicating the reservoir with the pneumatic springs for conducting pressurized air from the reservoir to the pneumatic springs, the conducting means including leveling valve means for controlling the flow of air to and from the pneumatic spring so as to adjust the air pressure within the spring and maintain the rear portion of the cab adjacent the spring at a relatively constant vertical position relative to the frame despite changes in static loading of the cab; and
- c. second support means for securing a front portion of the cab to the frame so as to permit pivotal movement of the cab relative to the frame about an axis extending transversely of the frame, the second support means transmit-

ting to the cab vibratory movement of the frame at the second support means, the second support means being located at the front end of the frame and spaced longitudinally of the frame from the first support means.

3,966,010
POWER DRIVEN SKI'S THROTTLE AND SHUT-OFF CONTROL

Samuel Shiber, Mundelein, Ill., assignor to Saroy Engineering, Wheaton, Ill.

Filed June 16, 1975, Ser. No. 587,342
Int. Cl.² B62M *27/02*
U.S. Cl. 180—103 BF **8 Claims**



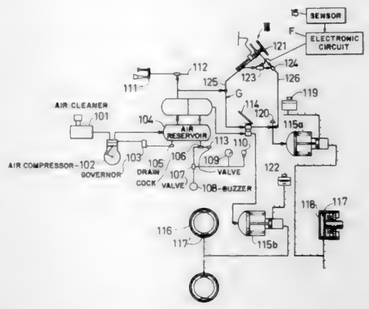
1. In a power-driven ski, a hand operated throttle control for transmitting a signal from a skier's hand to a throttle of an engine of said power-driven ski, comprising in combination:
   a. A hydraulic master cylinder having an output part for displacing liquid through said output port in response to a mechanical signal from a skier's hand,
   b. a hydraulic slave cylinder connected to said engine having an input port for receiving said liquid and translating it to a mechanical signal for actuating said throttle of said engine, and
   c. a resilient helically coiled extension spring tube assembly connecting said output and input ports, said assembly maintaining a minimum length pass between said master and slave cylinders while allowing one to move freely relative to the other, without interfering with the signal being transmitted between said cylinders.

3,966,011
RETARDER CONTROL DEVICE

Teruo Minami, Yokohama, and Masaru Uenoyama, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed June 25, 1974, Ser. No. 482,904
Claims priority, application Japan, Nov. 21, 1973, 48-130131
Int. Cl.² B60T *7/12*
U.S. Cl. 180—105 E **3 Claims**

1. A retarder control device for a vehicle having a drive train, including a torque converter, and an oil-cooled multiplate disc brake comprising solenoid and hand brake valves connected in parallel to a pneumatic line connected from a pneumatic pressure generating source to a chamber and cylinder of the brake, a check valve provided in the pneumatic pressure line for checking oil flow from the solenoid and hand brake valves and an electronic circuit means responsive to the rotational speed of the torque converter for controlling the

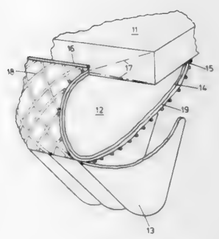


energization of the solenoid of the solenoid valve and thereby the application of the brake.

3,966,012
AIR CUSHION VEHICLES

Peter Rowland Crewe, Newport, England, assignor to British Hovercraft Corporation Limited, Yeovil, England

Filed Feb. 20, 1975, Ser. No. 551,089
Claims priority, application United Kingdom, Feb. 21, 1974, 8039/74
Int. Cl.² B60V *1/16*
U.S. Cl. 180—127 **4 Claims**

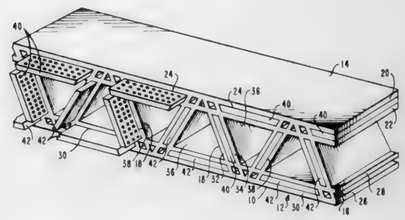


1. In an air cushion vehicle having a flexible skirt assembly forming at least a part of a cushion seal system for the vehicle, the flexible skirt assembly including a bag member formed from flexible material, the bag member being attached to rigid structure of the vehicle so as to enclose the outlet end of a duct defined by the rigid structure of the vehicle to be in communication with a source of pressurized air on the vehicle, the improvement comprising a flexible reticulated member attached to the vehicle so as to surround the outer surface of the bag member, the elasticity of the reticulated member being less than the elasticity of the bag member so that, in operation of the vehicle, pressurized air flowing from the duct inflates the bag member away from the rigid structure of the vehicle into contact with the reticulated member, thereby transferring some of the loading in the bag member to the reticulated member, and a sheet of buffer material interposed between the bag member and the reticulated member for preventing chafing between the two members and the reticulated member being arranged around the bag member so that the lines formed by the net structure of the reticulated member bisect a substantially horizontal line extending parallel with the longitudinal run of the skirt assembly at angles other than normal.

3,966,013
MULTI-PLY WOVEN ARTICLE HAVING ACOUSTICAL ELEMENTS BETWEEN DOUBLE PLIES

Donald M. Hatch, Huntington Beach, and George D. Lee, Monterey Park, both of Calif., assignors to Hitco, Irvine, Calif.

Continuation of Ser. No. 290,542, Sept. 20, 1972, abandoned.
This application Sept. 20, 1974, Ser. No. 507,771
Int. Cl.² F04B *1/99*; G10K *11/04*
U.S. Cl. 181—33 G **6 Claims**

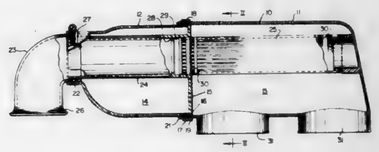


1. A multi-ply woven acoustical panel comprising a woven fabric having a pair of opposite, spacedapart, generally planar faces and a plurality of intermediate ribs of generally planar configuration extending between and being interwoven with the opposite faces, the faces and the ribs defining a plurality of acoustical chambers within the panel and between the opposite faces, the planar faces and the intermediate ribs including pairs of generally planar, spaced-apart plies defining relatively thin, generally planar chambers which border the acoustical chambers, at least the pairs of generally planar, spaced-apart plies of the woven fabric being of relatively open weave construction and having at least adequate porosity to relatively free pass acoustical waves therethrough, and a plurality of relatively thin, generally planar elements of size and shape similar to and disposed within the relatively thin, generally planar chambers, the pairs of plies defining the relatively thin, generally planar chambers combining with the relatively thin, generally planar elements disposed therein to form skins bounding the acoustical chambers which have a thickness many times less than the thickness of the acoustical chambers, the relatively thin, generally planar elements providing the skins with substantial strength and rigidity and at least some of the elements being acoustically transmissive elements and having a predetermined porosity to acoustical waves which largely determines the porosity of the skins to acoustical waves when combined with the porosity of the pairs of generally planar, spaced-apart plies.

3,966,014
AIR INTAKE SILENCER

George A. Gowing, Valcourt, Canada, assignor to Bombardier Limited, Valcourt, Canada

Filed Mar. 8, 1974, Ser. No. 449,449
Claims priority, application Canada, Nov. 22, 1973, 186483
Int. Cl.² F02F *1/34*; F02B *77/00*
U.S. Cl. 181—35 A **11 Claims**



1. An air intake silencer for an internal combustion engine of the two-stroke cycle type and having outlet means for connection to the intake side of engine carburetor means, comprising:
   a. a housing having said outlet means, said housing defining a first chamber of elongate form transversely of said outlet means, and having an inlet opening at one end,
   b. a tubular inlet duct extending through said inlet opening and having a perforate section extending within said first chamber transversely of said outlet means and terminating close to an end of said first chamber opposite to said inlet opening,
   c. one wall of said first chamber being defined by a perforate plate on an opposite side of which is a resonance chamber which communicates with the first chamber through perforations in said one wall but is otherwise closed.

3,966,015
SILENCER ELEMENT

Wilfred A. Bychinsky, Burton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 19, 1975, Ser. No. 551,017
Int. Cl.² F01N *1/08*
U.S. Cl. 181—56 **3 Claims**

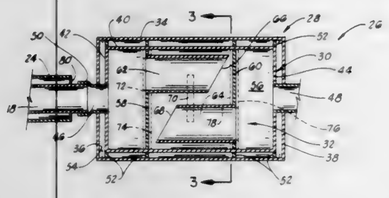


1. A wave interference silencer comprising: a housing having a pair of sidewalls and a top and a bottom joined together to define an exhaust flow volume, an end wall in said housing including an inlet into said exhaust flow volume, an outlet on the opposite end of said housing from said exhaust flow volume, a plurality of intermediate interior walls formed transversely of said volume having ends thereof in sealed relationship to said side walls to separate said exhaust flow volume into a plurality of interior compartments, each of said transverse wall portions including an opening therethrough for communicating adjacent ones of said compartments, a baffle plate located within each of said compartments, each of said baffle plates being formed in spaced parallellism with said intermediate interior walls and including opposite ends thereon in spaced relationship with said side walls to define a continuous flow path through said compartments, each opposite end of each of said baffle plates being laterally spaced asymmetrically with respect to the opening through said intermediate interior walls to define a first acoustical path around one end of said baffle plate and a second acoustical path of greater length than that of said first acoustical path around the opposite end of said baffle plate, said first and second acoustical paths having lengths which define a ratio to produce wave cancellation of a predetermined frequency as exhaust flow passes from said of one compartments around the baffle therein for flow through a downstream opening in an intermediate wall defining a next adjacent compartment within said exhaust flow volume of said housing.

3,966,016
MUFFLER CONVERTER

Victor Hecht, 969 Alexander Drive, Haysville, Kans. 67060

Continuation-in-part of Ser. No. 351,491, April 16, 1973, abandoned. This application Nov. 15, 1974, Ser. No. 524,071
Int. Cl.² F01N 1/08
U.S. Cl. 181—57 **8 Claims**



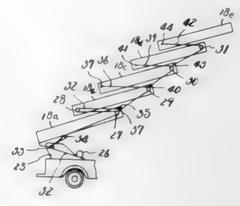
1. A muffler for an internal combustion engine exhaust gas system, comprising:
   a. a hollow shell having a sidewall and opposite ends,
   b. a hollow casing enclosed in said hollow shell in a spaced relation thereto, defining a cavity therein, and having a sidewall and opposite ends,
   c. an inlet conduit mounted through said shell and rigidly mounted to said casing and extending through adjacent ends of said shell and said casing,
   d. an outlet conduit mounted with said shell and said casing and extending through adjacent ends of said shell and said casing,
   e. a first baffle member and a second baffle member rigidly mounted with said casing sidewall in said casing cavity in a spaced relation to each other, each of said baffle members having an aperture therethrough with said apertures disposed in a spaced relation, said first baffle member being closest to said inlet conduit,
   f. a first conduit rigidly secured to said first baffle member, communicably connected with said aperture in said first baffle member and having its unattached end portion extending toward said second baffle member, and
   g. a second conduit rigidly secured to said second baffle member, communicably connected with said aperture in said second baffle member and having its unattached end portion extending toward said first baffle member, said muffler is constructed and adapted to in use receive exhaust gases from an internal combustion engine through said inlet conduit, pass said exhaust gases through said first conduit into said casing cavity, from said casing cavity through said second conduit and out said outlet conduit.

3,966,017
WORKING RANGE INDICATING DEVICE FOR AERIAL LADDER TRUCK

Kikuo Maeda, Tondabayashi, and Takashi Tomimoto, Nara, both of Japan, assignors to Morita Pump Kabushiki Kaisha, Osaka, Japan

Filed Feb. 12, 1975, Ser. No. 549,289
Int. Cl.² E06C 5/04, 5/34
U.S. Cl. 182—18 **2 Claims**

1. In an aerial ladder truck assembly having a turntable mounted on the body of the truck, ladder supporting means mounted on the turntable, an extensible, sectional ladder unit pivotally mounted at one end to said ladder supporting means, means to pivot the ladder unit, means to extend and contract the ladder sections of the ladder unit, and an operating stand mounted on the turntable, the improvement of a ladder unit working range indicator mounted on the operating stand for simultaneously indicating the vertical angle and the degree of extension of the ladder unit, said working range indicator comprising a casing body member mounted on said operating stand, a transparent gauge plate having a fixed point adjacent its lower edge mounted on said casing body member, said gauge plate having a plurality of vertical angle indicating scale marks present thereon, said vertical angle indicating marks each extending radially outwardly from the fixed point and in laterally spaced, equidistance relationship with respect to one another to provide a range of laterally spaced different angle values, said gauge plate further having a plurality of arcuate linear distance indicating scale marks present thereon, said arcuate linear distance indicating scale marks each extending outwardly from the fixed point in longitudinally spaced relationship to and in arcuate configuration with respect to one another to provide a range of outwardly progressing different linear space values, bar element means pivotally mounted at its bottom end to said casing body member at a point generally coinciding with the fixed point on said gauge plate, said bar element journaled for rotation about its longitudinal axis and pivotally mounted for movement back and forth over the face



of said gauge plate, said bar element means including an elongated threaded portion, a nut element threadably mounted thereon, scale indicating means associated with said nut element, and means permitting the axial movement of the nut element along the elongated threaded portion upon rotation of the threaded portion about its longitudinal axis, first actuating means operatively connected between said bar element means and the means for pivoting the ladder unit to pivot said bar element means over the vertical angle indicating scale marks on said gauge plate to indicate the vertical angle of the ladder unit, and second actuating means operatively connected between the base element means and the means for extending and contracting the ladder unit to rotate the bar element means about its vertical axis causing the indicating means carried by the nut element to move axially along the threaded portion and over the linear distance indicating scale marks of the gauge plate to indicate the distance of contraction or expansion of the ladder unit.

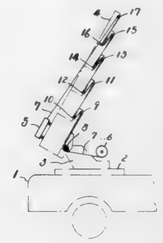
3,966,018
WORKING PLATFORM LIFTING APPARATUS FOR AERIAL LADDER TRUCK

Tetsuo Kozai, Higashiosaka, and Shomitsu Shiraki, Osaka, both of Japan, assignors to Morita Pump Kabushiki Kaisha, Osaka, Japan

Filed Feb. 12, 1975, Ser. No. 549,299
Int. Cl.² A62B 1/00
U.S. Cl. 182—103 **5 Claims**

1. The combination in an aerial ladder truck of a turntable mounted on and adjacent the rear end of the truck, a ladder supporting structure mounted on the turntable, extensible and contractable ladder means mounted on said ladder supporting structure, said ladder means including a plurality of longitudinally movable ladder sections, pulley means mounted at the front and rear ends of the successive ladder sections, working platform means mounted on said ladder means for movement longitudinally along the ladder sections after said sections of the ladder means have been extended, winch means mounted on said turntable for extending and contracting the ladder sections of said ladder means and raising and lowering the working platform member only after the ladder sections have been placed in an extended or contracted state, cable means mounted at one end to said winch means and thereafter passed

in zig zag arrangement successively around each of the front and rear mounted pulley means of each ladder section of said ladder means with the opposite end of said cable means being connected to said working platform means, hydraulic motor means operatively connected to said winch means for extending or contracting the ladder sections and to raise or lower the working platform means only after the ladder sections have been first placed in an extended or contracted state, braking means for said winch means to stop the rotation of said winch

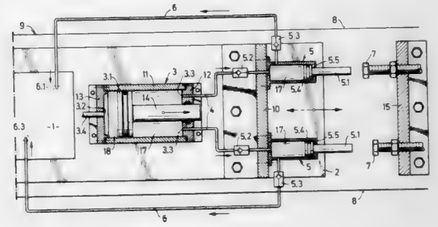


means, actuating means for actuating said hydraulic motor means, and electrical circuit means between said actuating means and said hydraulic means, said electrical circuit means including first solenoid means for energizing the braking means of said winch means when the actuating means are in a neutral position and second solenoid means having switch means energized by said working platform means to place the actuating means in a neutral position when the platform means has reached the desired uppermost limit on said ladder means.

3,966,019
LUBRICATING SYSTEM OF PRESSURE FLUID OPERATED ROCK DRILL MACHINES

Viekko Heikkila; Leo Hakkinen; Rolf Strom; Leo Uusitalo, and Juha Mellin, all of Tampere, Finland, assignors to OY Tampella AB Mechanical Workshops, Tampere, Finland

Filed June 13, 1975, Ser. No. 586,996
Claims priority, application Finland, June 18, 1974, 1867/74
Int. Cl.² F16N 7/14
U.S. Cl. 184—7 D **7 Claims**

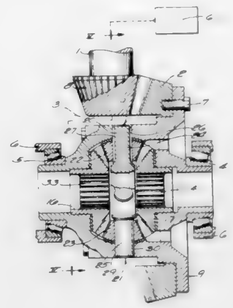


1. Lubrication system for rock drill machine operated by pressurized fluid, said rock drill machine comprising a rock drill unit mounted on a slide reciprocable by power feed means relative to stationary rail means, said lubrication system comprising a reservoir of lubricant, lubricant dosage means having an input connected to said reservoir of lubricant for receiving lubricant from said reservoir, conduit means connected between lubrication points on said machine and an output of said dosage means, and means for automatically and recurrently feeding an adjustable lubricant quantity into said conduit means upon reciprocation of said slide relative to said rail, each of said dosage means comprising a cylinder into which lubricant is fed from said reservoir, a piston reciprocable in said cylinder, and a piston rod attached to said piston, said piston rod being engageable with an abutment upon reciprocation of said slide.

3,966,020
DIFFERENTIAL LUBRICATION SYSTEM

David C. Quick, New Berlin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 4, 1974, Ser. No. 529,350
Int. Cl.² F16N 7/26
U.S. Cl. 184—11 R **10 Claims**



1. A differential of a vehicle having lubricating means comprising, a differential casing defining differential spider bearing surfaces, a differential spider supported by said differential casing, at least two differential pinion gears rotatably mounted on said differential spider, a pair of side gears rotatably mounted in said casing and engaging said differential pinion gears, a differential housing rotatably supporting said differential casing and defining a cavity for lubrication, a ring gear connected to said differential casing for driving said differential about an axis common with the axis of rotation of said side gears, said differential spider defining lubricating passages on said spider shafts extending from the external periphery of said differential casing to the bearing interface between said differential gears and said shaft of said differential spider, a propeller shaft pinion gear driving said ring gear and defining a cone angle directed toward the lubricating passages on said spider shafts for throwing lubricant against the periphery of said differential casing and passages for lubricating the interface between the differential spider shaft and said differential pinion gears through said lubrication passages when said differential is in operation.

3,966,021
AIR LINE LUBRICATORS AND THE LIKE

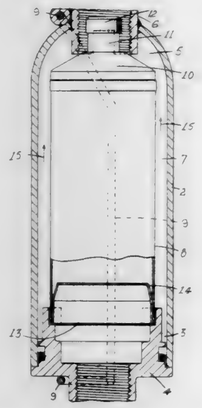
Ian Willoughby Hyslop, Johannesburg, South Africa, assignor to West Rand Engineering Works (Proprietary) Ltd., Drugersdorp, Transvaal, South Africa

Filed Feb. 28, 1974, Ser. No. 447,122
Int. Cl.² F16N 7/32
U.S. Cl. 184—56 R **2 Claims**

1. A lubricator for an air line comprising:
   a tubular casing defining a chamber therein, said casing having a first open end, and a second end opposite said first end,
   a removable cap member operatively connected to said casing at said first end and including an axial passage therethrough for permitting passage of air from an air line connected to said cap member into said chamber,
   said cap member comprising first socket means extending into said chamber,
   means defining an outlet from said chamber located at the said second end, said outlet defining means comprising second socket means extending into said chamber,

a removable reservoir in said chamber containing viscous material, and having a first end in said first socket means, said reservoir first end having piston means therewithin facing towards said axial passage in said removable cap member for impingement of air thereon to move said piston means into said reservoir away from said reservoir first end, said reservoir having a second end comprising spout means extending into said second socket means and comprising an outlet port,

said socket means comprising means for receiving and releasably supporting said reservoir in spaced relation to



the inner walls of said chamber, and further comprising means permitting the passage of air therethrough when said reservoir is in place in said socket means,

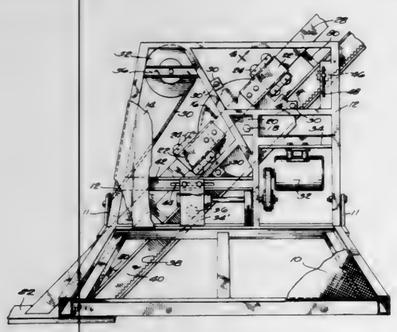
whereby said cap may be removed and said reservoir introduced into said chamber, and air will flow through said passage in said cap, impinge on and urge said piston means away from said first ends, flow through said first socket means, around said reservoir and thence through said second socket means, past said reservoir outlet port, entraining small quantities of viscous material from said reservoir, and thence pass out said outlet of said casing.

3,966,022

WHEELCHAIR LIFT ASSEMBLY

Robert W. Cheney, 1533 N. 122nd St., Wauwatosa, Wis. 53213

Filed Oct. 15, 1974, Ser. No. 515,001
Int. Cl.² B66B 9/08
U.S. Cl. 187—12 **7 Claims**



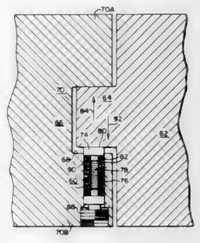
1. A wheelchair lift assembly intended for installation in a stairwell and adapted to travel along a guide rail which is provided on one of the walls of the stairwell, the wheelchair lift comprising a generally vertically positioned frame member located adjacent to the wall having a guide rail, a generally horizontally extended wheelchair support platform fixed to said frame member and extending outwardly from the stair side of said frame member; a sub-frame member provided with roller means which is adapted to engage and travel along the guide rail; said sub-frame member being a generally vertically extending plate having an arcuate portion which is rotatably fixed to said frame member at a central point relative to said arcuate portion in order to permit adjustable rotation of said roller means in the vertical plane to thus maintain the support platform horizontal irrespective of the angle of inclination of the guide rail; means for fixing said sub-frame member to said frame member, said fixing means being positioned on said frame member in such a position as to be capable of engaging and fixing said arcuate portion of said sub-frame member to said frame member throughout the rotatable adjustment movement of said arcuate portion about said central point to thus fix said roller means in anyone of its adjusted positions; and power and guide means operable to transport the wheelchair lift along the guide rail.

3,966,023

NOZZLE CHAMBER FRICTION DAMPER

Kuo P. Huang, Broomall, and John J. Walsh, III, Newtown Square, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 21, 1975, Ser. No. 560,459
Int. Cl.² F16F 7/08
U.S. Cl. 188—1 B **16 Claims**



1. Apparatus for dampening motion between a first member having a protrusion thereon and a second member having a groove therein to receive said protrusion, said apparatus comprising:

a bore disposed in said second member, said bore having a ledge disposed therein;

a friction generating member movably disposed within said bore; and,

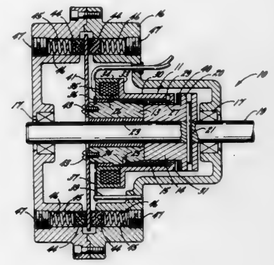
means for biasing said friction generating member into an abutting interface with said protrusion on said first member as said protrusion is received within said groove in said second member, said bias means acting on said friction generating member to cause a portion thereof to extend from said bore to establish said abutting interface, said bias means being disposed within said bore and maintained in a biasing relationship with said friction generating member by abutting against said ledge so that relative motion between said first member and said second member generates a friction force along said abutting interface to dampen the relative motion therebetween.

3,966,024

HELICAL SPRING CLUTCH

John S. Baer, Bar Harbor, Maine, assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Jan. 23, 1975, Ser. No. 543,236
Int. Cl.² F16D 67/02
U.S. Cl. 188—71.2 **4 Claims**



1. A brake mechanism comprising a clutch having a normally rotatable input member and a normally stationary output member supported for relative rotation about a common axis, a coiled helical spring telescoped with said members and having one of its ends connected to said output member, a normally stationary collar telescoped with at least one of said members and connected to the other end of said spring, means for causing said collar to shift axially into and out of frictional engagement with said input member, said collar being rotated by said input member when in frictional engagement with said input member and being operable when rotated to cause said spring to flex radially and couple said output member for rotation with said input member, a disc rigid with and projecting radially from said output member, a brake comprising friction material located to rub against said disc and operable to frictionally retard rotation of said disc and said output member and thereby retard rotation of said input member when the latter is coupled to said output member by said spring, and resiliently yieldable means for pressing said friction material against said disc.

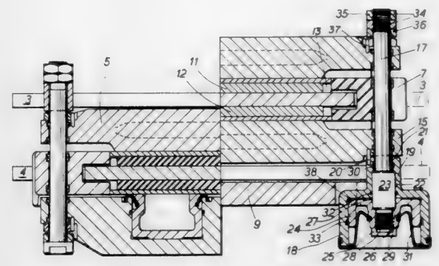
3,966,025

HYDRAULICALLY OPERATED DISC BRAKES FOR VEHICLES

Charles Newstead, Walsall, England, assignor to Girling Limited, Birmingham, England

Continuation of Ser. No. 464,222, April 25, 1974, abandoned, which is a continuation of Ser. No. 170,254, Aug. 9, 1971, abandoned. This application Mar. 18, 1975, Ser. No. 559,591
Claims priority, application United Kingdom, Aug. 21, 1970, 40275/70
Int. Cl.² F16D 55/228
U.S. Cl. 188—72.5 **6 Claims**

1. An hydraulically operated disc brake comprising a rotatable disc, two pressure plates for applying respective friction pads to opposite faces of the disc and at least one hydraulically-operated actuator for urging the pressure plates towards each other on application of the brake, said actuator comprising a cylinder housing having an open outer end, an end wall of the housing acting on one of the pressure plates and having a bore, a piston movable in the housing and having a stepped bore comprising a first bore portion of smaller diameter located adjacent to said open outer end, a second bore portion of larger diameter located adjacent to said end wall, and a step between said first bore portion and said second bore portion, a draw bar detachably connected to the piston and extending through said bore in said housing and over the peripheral edge of the disc to act on the second pressure plate, said draw-bar having a screw-threaded, reduced diameter end first portion having a free end, a second portion of a diameter larger than and continuous with said first portion, and a shoulder between said first portion and said second portion, at least part of said second portion of said draw bar being firmly accommodated within said second bore portion of said stepped bore over a contact area such that said shoulder engages said step in said bore, a first seal between said second portion of said draw bar and said housing disposed within said contact area, a second seal between said second portion of said draw bar and said



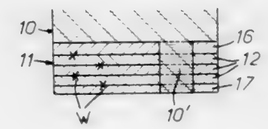
second bore portion of said stepped bore in the piston, at least one nut screwed onto said first portion of the draw bar which projects through said piston and which is accessible through said open end of said housing, said nut clamping said shoulder and said step together, and positive locating means on said free end of said draw bar for engagement with a tool to enable said draw bar to be held against rotation at least when said nut is being tightened and untightened.

3,966,026

NOISE-REDUCING SUPPORT FOR FRICTION LININGS OF BRAKING DEVICES

René Gabriel Filderman, Asnieres, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Dec. 6, 1974, Ser. No. 530,503
Claims priority, application France, Oct. 17, 1974, 74.34890
Int. Cl.² F16D 65/02
U.S. Cl. 188—73.5 **19 Claims**



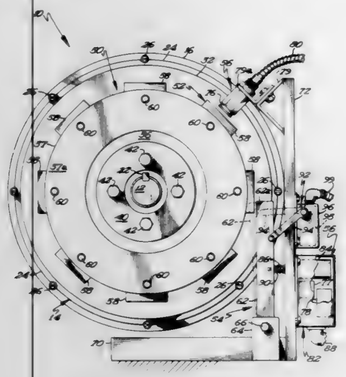
1. A noise-reducing support for a friction lining of a braking member in which said lining is fixed to said support and is adapted to be clamped against a friction track by the effect of an action applied on said support, said support comprising a stack of a plurality of sheets, all metallic, contiguous to each other over their whole surface being placed between a metal inner plate adjacent said lining and a metal outer plate, both plates having a portion contiguous to said stack of sheets, and localized junction means assembling together all of said sheets.

3,966,027

BRAKING APPARATUS FOR STOPPING A ROTATING SHAFT

Howard G. Plitzkow, Faribault, Minn., assignor to Humphrey Elevator and Truck Company, Faribault, Minn.

Filed Apr. 4, 1975, Ser. No. 565,272
Int. Cl.² B60T 7/12
U.S. Cl. 188—182 **13 Claims**



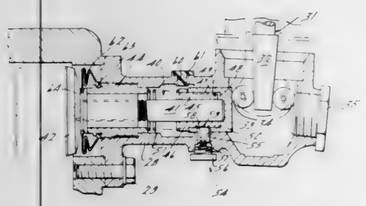
1. Safety braking apparatus for stopping a rotating shaft, said apparatus comprising:
rigid stop lug means associated with said shaft for rotation thereby;
displaceable means for selectively engaging said stop lug means; and
proximity means for electrically actuating said displaceable engaging means at a predetermined angular velocity of said shaft, said proximity means comprising:
means for generating an electrical control signal in response to rotation of said stop lug means, and solenoid means for actuating movement of said engaging means into abutment with said stop lug means in response to said control signal, said solenoid means normally operable to hold said displaceable engaging means in a rest position.

3,966,028

AUTOMATIC BRAKE ADJUSTING MECHANISM

Bruce D. Anderson, Berkley, and Alton B. Holmes, Troy, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 7, 1975, Ser. No. 556,486
Int. Cl.² F16D 65/56
U.S. Cl. 188—196 BA **7 Claims**



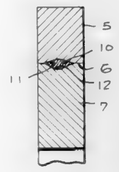
1. A vehicle brake assembly including a support, a movable brake shoe carried by said support, a movable brake actuator and a plunger assembly slidably mounted to said support and operatively connected to transmit motion from said actuator to said brake shoe, said plunger assembly comprising:
a rod mounted for rotary movement,
a brake shoe contacting plunger at one end of said rod,
means for moving said plunger relative to said rod to extend said plunger assembly in response to rotary movement of said rod,
a member having a rotary driving connection with said rod, said member being mounted for axial movement with said rod during movement of said rod in a brake applying direction and axially movable relative to said rod during return movement of said rod,
compressible energy storing means biasing said member in the direction of said return movement independantly of said rod, and
means for rotating said member and said rod upon said biased return movement of said member.

3,966,029

TWO PIECE BRAKE DISC

Raymond G. Spain, 6572 Segovia Circle, Huntington Beach, Calif. 92647

Filed Nov. 29, 1974, Ser. No. 528,383
Int. Cl.² F16D 65/12
U.S. Cl. 188—218 XL **1 Claim**



1. A friction disc for use in a brake assembly comprising an outer, generally ring shaped member having an inner edge, an inner, generally ring shaped member disposed generally concentrically within the outer member and having an outer edge disposed against and generally coextensive with the inner edge of the outer member, each of the outer and inner members being essentially an all-carbon composite, one of the outer and inner members comprising a structural member for the disc and the other one of the outer and inner members comprising a wear member having at least one surface defining a frictional wear surface, and cement of essentially all-carbon composition disposed between and bonding the inner edge of the outer member and the outer edge of the inner member together, the inner edge of the outer member and the outer edge of the inner member each having grooves therein, the grooves forming a void therebetween, and the cement of essentially all-carbon composition being disposed within the void.

3,966,030

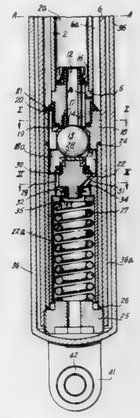
HYDRAULIC SHOCK ABSORBER FOR VEHICLE SUSPENSION

Jacques Sirven, 87 Boulevard Saint-Michel, Paris, France

Continuation of Ser. No. 408,353, Oct. 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 216,627, Jan. 10, 1972, abandoned. This application May 19, 1975, Ser. No. 578,858
Claims priority, application France, Jan. 13, 1971, 71.00893
Int. Cl.² F16F 9/19, 9/34
U.S. Cl. 188—318 **10 Claims**

1. A telescopic shock absorber comprising
a cylinder containing a fluid,
a main piston fixed to a piston rod having a section smaller than that of said cylinder, said main piston being mounted to slide in said cylinder and divide said cylinder into first and second chambers through the second of which chambers said piston rod extends,

first connecting means between said chambers which permits said fluid to flow from said second chamber to said first chamber, but inhibits flow in the opposite direction, and
pressure-responsive means for controlling the flow of fluid from said first chamber to said second chamber, said pressure-responsive means comprising
a space,
second connecting means between said space and said second chamber,
valve means having a valve member separating said first chamber from said space, said valve means being subject to the pressure in said first chamber which urges it toward an open position,
additional means adapted to move in said space and having a first surface engaging said valve member and a second opposite surface, said first surface being exposed to the pressure of the fluid in said space and which pressure



urges said additional means toward a position permitting said valve member to open,
a fluid reservoir, said opposite surface being exposed to fluid pressure in said reservoir, flow restricter means in said additional means permitting a restricted flow of fluid directly between said space and said fluid reservoir, said flow restricter means producing an increased pressure in said space upon an increased flow rate into said space from said first chamber,
and resilient means bearing against the opposite surface of said additional means and biasing it against said valve means in a direction which urges said valve means to its closed position, so that the pressure in said first chamber exerted against valve means plus the pressure exerted against the first surface of said additional means acts to counteract the pressure exerted by said resilient means against said additional means and thereby reduces the resistance to fluid flow past said valve means.

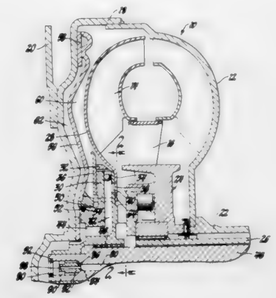
3,966,031

TORQUE CONVERTER AND SLIPPING CLUTCH

Raymond T. Peterson, Jr., Taylor, and Paul D. Stevenson, Ann Arbor, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 23, 1975, Ser. No. 589,594
Int. Cl.² F16D 39/00, 47/06
U.S. Cl. 192—3.3 **3 Claims**

1. A torque converter and clutch assembly comprising; impeller means; stator means; turbine means in toroidal fluid flow relation with said impeller means and said stator means including a turbine hub having a plurality of radially extending drive lugs and a plurality of support surfaces adjacent the drive lugs at the radially inner end of the drive lugs, a fluid passage formed through said turbine hub having an opening in one of said drive lugs intermediate the radially inner and outer ends thereof, a spacer member rotatably supported on said support surfaces and including complementary radial openings in which said drive lugs are disposed, a bladed turbine element secured to said spacer and having an annular surface adjacent said drive lugs and an aperture in said annular surface adjacent said fluid passage opening in said one drive lug and cooperating therewith to form a variable fluid flow passage, and spring means disposed in drive relation between said spacer and said turbine hub for transmitting drive torque from



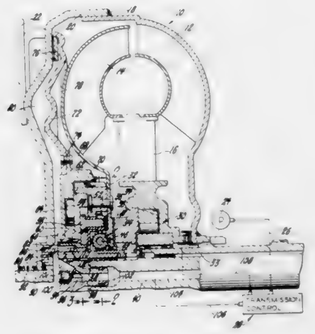
said bladed turbine element to said turbine hub and for permitting relative rotation between said turbine element and said turbine hub to control the opening of the variable fluid flow passage; and clutch means axially slidably disposed on and drivingly connected to said turbine hub and being frictionally slippingly engageable with said impeller means in response to an axial engagement force developed in accordance with fluid flow through said variable fluid flow passage, whereby torque transmission through said torque converter and clutch assembly is split so that a predetermined amount is transmitted through said torque converter and the remainder is transmitted through said clutch means to limit the slip speed between said impeller means and said turbine means.

3,966,032

HYDRODYNAMIC DRIVE AND SLIPPING CLUTCH

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

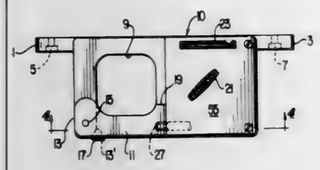
Filed June 9, 1975, Ser. No. 585,238
Int. Cl.² F16D 39/00
U.S. Cl. 192—3.3 **6 Claims**



3. A drive mechanism comprising:
a rotatable drive member;

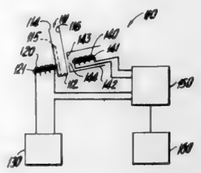
a rotatable driven member;
means defining a hydrodynamic coupling between said members;
means defining a friction clutch between said members independent of the hydrodynamic coupling and effective to establish a friction drive between said members in accordance with an engagement force;
means forming a clutch engagement chamber on one side of said friction clutch;
means forming a clutch disengagement chamber on the other side of said friction clutch, said engagement chamber and disengagement chamber being effective to develop a net engagement force on said friction clutch in accordance with hydraulic pressure differential between said chambers; and
means having two parts driven by said drive member and said driven member, respectively, defining a hydraulic fluid passage of size determined by the angular relation between said two parts and connecting said engagement chamber to said disengagement chamber, one of said parts being at least normally driven at a predetermined proportion of the speed of one of said members and the other of said parts being at least normally driven at the speed of the other of said members, said hydraulic fluid passage being disposed to vary the flow of fluid from said engagement chamber to said disengagement chamber to establish a differential pressure between said chambers to engage the friction clutch to the extent required to establish slipping frictional engagement between said members.

3,966,033
COIN-CHECK OPERATED ARTICLE LOCK
Duncan Doo, 44 Mercer Ave., Englewood, N.J. 07632
Filed Feb. 20, 1975, Ser. No. 551,428
Int. Cl.² G07F *5/00*
U.S. Cl. 194—1 R **9 Claims**



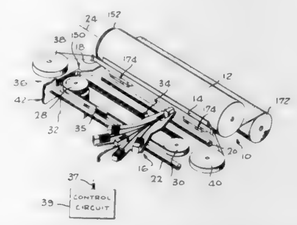
1. A coin check operated article locking device comprising a housing having an article receiving channel therein; a swingable gate moveable to a closed position across the open end of said article receiving channel; reciprocating bolt means moveable toward and away from said gate and engageable therewith to retain the gate in channel closing position; a rockable key check operated latching lever engageable with said bolt to retain same in gate engaging position and moveable to a second position to free said bolt for reciprocating motion away from said gate; a rockable coin operated detent lever having one end in engagement with said bolt at all times whereby rocking of said detent lever is translated into reciprocating motion of said bolt; spring means biasing said detent lever and said latching lever to gate releasing unlatched position.

3,966,034
PHASE SENSITIVE COIN DISCRIMINATION METHOD AND APPARATUS
Fred P. Heiman, Delran, N.J., and Guustaaf Arthur Schwippert, Pijnacker, Netherlands, assignors to Mars, Inc., McLean, Va.
Filed Oct. 12, 1973, Ser. No. 405,928
Claims priority, application United Kingdom, Oct. 12, 1972, 47163/72
Int. Cl.² G07F *3/02*
U.S. Cl. 194—100 A **24 Claims**



1. A method for examining coins and identifying conductive coins of a particular denomination, comprising the steps of
generating a high frequency signal,
transmitting an electromagnetic field from a first inductor driven by the high frequency signal,
receiving a portion of the field with a second inductor spaced from the first inductor,
selecting the frequency and location of the inductors relative to the coin under examination so that the amplitude of the part of the field passing through the coin to the second inductor and the amplitude of the part of the field passing around the coin to the second inductor are approximately equal when the coin is a coin of the particular denomination,
determining the phase difference between the signal in the first inductor and the signal in the second inductor, and
comparing the value of the phase difference with predetermined limits for coins of the particular denomination.

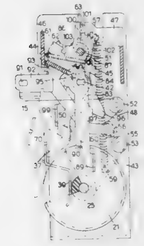
3,966,035
PRINTER
Robert L. Erickson, 1124 - 26th St., Santa Monica, Calif. 90403
Filed Mar. 1, 1974, Ser. No. 447,138
Int. Cl.² B41J *3/10*
U.S. Cl. 197—1 R **9 Claims**



1. In a printer, the improvement of a printing head comprising:
a member of magnetic material having a plurality of apertures forming a plurality of spaced magnetic circuit regions, each circuit region defining a closed magnetic circuit with an air gap;
a plurality of electrical conductor coils, each disposed along one of said magnetic circuits to create a magnetic field in a portion of the member which forms part of the magnetic circuit when the coil is energized;

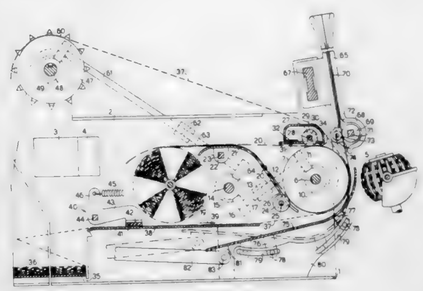
a plurality of armatures, each moveably mounted along the air gap of one of said magnetic circuits to move in first and second directions wherein the armature moves in directions to respectively close and open the air gap; and
a plurality of printer means individually moveable on said member, each printer means attached to a corresponding one of said armatures for making a mark when a corresponding electrical conductor coil is energized;
said member being constructed of magnetic material of a type wherein the magnetic field along each magnetic circuit drops to a low level when the corresponding coil is no longer energized.

3,966,036
INKED RIBBON FEED ARRANGEMENT
Francesco Bernardis, Ivrea (Turin), and Dario Bisone, Montalto Dora (Turin), both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy
Filed Dec. 10, 1974, Ser. No. 531,258
Claims priority, application Italy, Dec. 28, 1973, 70876/73
Int. Cl.² B41J *19/00*
U.S. Cl. 197—82 **21 Claims**



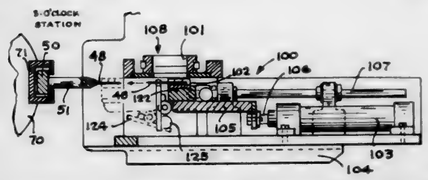
1. An apparatus for feeding an inked ribbon of a highspeed printer for office machines such as accounting machines, terminals, teleprinters or the like, comprising guide means for guiding said inked ribbon along a predetermined path, and feeding means for intermittently feeding a constant stroke of said inked ribbon along said path, said feeding means comprising actuatable advancing means for advancing the inked ribbon along said path, actuatable stopping means for alternately stopping and releasing the inked ribbon, switching means connected to said advancing means and said stopping means and selectively operable for alternately actuating said advancing means and said stopping means, and means defining said constant stroke, said defining means comprising:
lever means cooperative with said inked ribbon to define a loop thereof corresponding to said constant stroke, and movable between a first position and a second position in which said loop is at a minimum size and at a maximum size respectively, said lever means comprising means cooperative with said switching means; and
urging means for urging said lever means from said first position to said second position, said cooperative means actuating said switching means in said first and second position of said lever means for the actuation of said advancing and stopping means.

3,966,037
EQUIPMENT FOR HANDLING DIFFERENT FORMS FOR AN ACCOUNTING MACHINE
Adriano Zambolin, Ivrea (Turin), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy
Filed Nov. 20, 1974, Ser. No. 525,740
Claims priority, application Italy, Dec. 3, 1973, 70538/73
Int. Cl.² B41J *15/00*
U.S. Cl. 197—133 R **2 Claims**



1. In an accounting machine an equipment for independently handling a plurality of different forms comprising:
a print and supporting platen for first and second continuous forms positioned adjacent one another on said platen,
a guiding means and advancing means for positioning and feeding a card over said platen in superimposed relationship with at least one of said continuous forms, said guiding means being laterally movable with respect to said platen,
an element movable along said platen for printing on said forms and on said card,
motor means for moving said platen, a second advancing means connected to said motor means for moving said first continuous form, and
control means for allowing the simiItaneous and independent movement of said first continuous form and said card during the printing on said second continuous form.

3,966,038
CONTINUOUS AUTOMATED PLASTIC MOLDING APPARATUS
Wilbert Redmer, Boca Raton; Kenneth Rolin, Del Ray Beach, and Herman Nittel, Boca Raton, all of Fla., assignors to Abbott Laboratories, North Chicago, Ill.
Division of Ser. No. 241,934, April 7, 1972. This application Dec. 13, 1974, Ser. No. 532,558
Int. Cl.² B65G *47/52*
U.S. Cl. 198—20 R **2 Claims**



1. Needle loading apparatus for loading needles into needle supporting means prior to presenting the needle to the mold in a molding machine, said apparatus comprising:
a needle clamp comprising a block having a slot therein adapted for receiving a needle, said slot in the block having a V-shape for receiving a needle in accurate alignment with the needle supporting means, and a reciprocating jaw positioned transverse to said slot at one end of the block for contacting the needle and holding the needle in position while loading the needle in the needle supporting

means, the slot in the block being positioned in alignment with the needle supporting means, said jaw being mounted on a slideable plate for limited movement;

said needle loading apparatus being mounted on a reciprocating plate moveable between a needle clamping position for receiving and clamping the needles and a needle loading position for loading the needles into the needle supporting means;

biasing means arranged for biasing the jaw toward the slot in said block thereby clamping the needle in the slot; and

a lever arranged in engagement with the slideable plate upon which the jaw is mounted and means in engagement with the lever to move the lever to thereby release the jaw and simultaneously release the needle.

3,966,039

METHODS AND APPARATUS FOR CONTINUALLY DELIVERING WIRE CLOSURE ELEMENTS

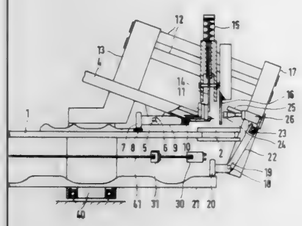
Lubor Kurzweil, Landeck-Kondringen, Germany, assignor to Firma Otto Sick K.G., Germany

Filed Jan. 29, 1975, Ser. No. 545,150

Claims priority, application Germany, Feb. 4, 1974, 2405191

Int. Cl.² B65G 47/42

U.S. Cl. 198—21 **2 Claims**



1. Apparatus for supplying wire closure elements for bottles comprising:

a magazine carrying a row of closure elements at a depositing station;

an endless conveyor traveling adjacent said magazine and having receivers for carrying closure elements from said depositing station toward a bottle wiring station;

a sprocket wheel driven by said conveyor;

a control cam plate rotatably driven by said sprocket wheel and having an irregular surface;

a support;

a lever to said support on a pivot extending generally tangentially to said sprocket wheel;

a guide carried by said support;

a transfer element slidably mounted on said guide, said transfer element being connected to said lever and including a pair of pistonlike portions each of which carry a permanent magnet;

a roller carried by said lever;

spring means biasing said roller against said irregular surface of said cam plate such that rotation of said cam plate causes said transfer element to be shifted toward and away from said closure elements;

locking means operable to prevent shifting of said transfer element toward said closure elements;

first release means for retracting said locking means;

abutment means mounted on said support for movement toward and away from a position in front of said row of closure elements to prevent discharge of closure elements;

second release means for retracting said abutment means;

a hook arm pivotally mounted at said magazine and extending generally radially relative to said sprocket wheel, said arm having:

a first end pressed resiliently against an irregular surface of said sprocket wheel such that said arm is rotated in a predetermined manner in response to rotation of said sprocket wheel, and

a stop end movable between a stop position between the two foremost closure elements of said row of closure elements to allow removal of only one closure element at a time from said magazine, and a release position wherein forward advancement of said row of closures is permitted;

a break gap plate located in the path of travel of said transfer element and disposed above a point where said conveyor receivers arrive;

said break gap plate including an aperture sized to allow passage of said permanent magnets while preventing passage of a closure element carried by said magnets;

fluid circuit sensing means for determining the presence of a yoke closure on a receiver at a sensing station ahead of said depositing station to prevent the depositing of a closure element onto said closure carrying receiver at said depositing station; said sensing means comprising:

a first fluid sensor at said sensing station arranged in the path of a yoke closure which may be carried on said receivers, to detect the presence of such a closure and emit a signal in response thereto,

a rotary stepping disc rotatably mounted and driven for rotation in synchronous relation with said sprocket wheel and said cam plate;

said stepping disc including recessed portions;

second and third fluid sensors arranged to sense said recessed portions and emit a signal in response thereto;

said first, second, and third sensors being operably connected to fluid control means for regulating the supply of actuating fluid to said first and second release means to sequentially retract said locking means and said abutment means to allow a closure element to be deposited onto a receiver only when there is no closure element on said receiver.

3,966,040

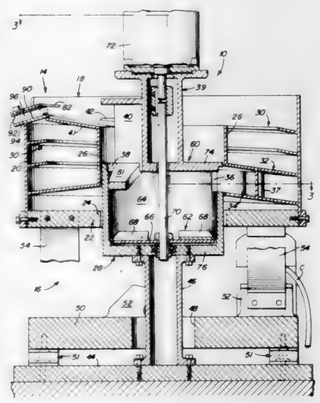
COMBINED VIBRATORY FEEDER DRIVE UNIT, VIBRATORY FEEDER BOWL, AND PARTS SEPARATOR

John E. Hazelwood, R.R. 1, Shoreline Court 110 B, Noblesville, Ind. 46060

Filed Mar. 5, 1975, Ser. No. 555,451

Int. Cl.² B65G 47/42

U.S. Cl. 198—288 **10 Claims**



1. Apparatus for receiving articles such as springs and spring-like parts in bulk and in unoriented and tangled condition and untangling and orienting same, the apparatus comprising, in combination:

a. a parts separator assembly arranged for receiving tangled articles and separating same:

b. a hopper arranged for orienting separated parts received from the separator assembly, the separator assembly being arranged centrally of and within the hopper; and

c. a vibratory feeder drive unit connected to the hopper for imparting vibrations to the hopper and feeding parts received from the separator assembly; the hopper is an annular bowl which includes an outer wall and a bottom, the latter being provided with a central opening, and further including an inner wall arranged around and spaced from the opening, the outer and inner walls extending co-directionally from the bottom, the separator assembly including a separator unit arranged in the central opening of the bottom of the bowl, and the bowl further includes a spiral track extending toward the inner wall of the bowl from the outer wall of the bowl, a portion of the track adjacent the bottom of the bowl extending from the outer wall to the inner wall and spiralling more than one revolution around the bowl and forming a pocket, and the separator unit having a discharge port disposed in communication with the pocket for decelerating parts emitted from the separator unit without the parts striking parts already in the bowl and becoming entangled again.

3,966,041

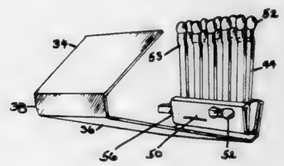
SAFETY MATCHBOOK

John Burgess, 1336 N. Occidental Blvd., Los Angeles, Calif. 90026, and Don Byrd, 1429 Greenwood Ave., Montebello, Calif. 90640

Filed Jan. 27, 1975, Ser. No. 544,206

Int. Cl.² A24F 27/18, 27/00, 27/12

U.S. Cl. 206—108 **7 Claims**



1. A matchbook comprising a cover; a plurality of matches, said matches being retained by said cover, a striking surface, said striking surface being enclosed within a chamber having at least one open end formed in said cover, and an aperture disposed along one side of said chamber which aperture communicates with the interior of said chamber such that the end of one of said matches opposite the match head may be inserted into said aperture and withdrawn from said open end thereby contacting said match head with said striking surface.

3,966,042

FASTENER STRIP

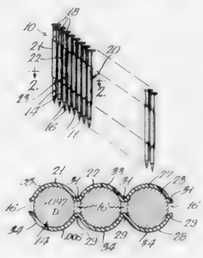
Lawrence S. Shelton, Morton Grove; Rudolf A. M. Golsch, Mount Prospect, and Dieter G. Boigk, Skokie, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 354,313, April 25, 1973, abandoned. This application July 7, 1975, Ser. No. 593,538

Int. Cl.² B65D 85/24

U.S. Cl. 206—344 **10 Claims**

1. A strip of fasteners for use in a rapid-acting fastener driving apparatus, comprising: a plurality of metal fasteners having elongated cylindrical shanks disposed in close generally parallel relationship to define a gap between adjacent shanks, and carrier means for connecting said fasteners to form said strip, said carrier means including a plurality of single-component, metal-adherent plastic envelopes extending about a major portion of each half of said shanks and having the properties of an adhesive bond without requiring a separate adhesive, each of said envelopes being of uniform thickness and having a pair of opposed portions each adhering respectively to opposite sections of the circumference of each shank during the entire driving action including entry into the workpiece, the carrier means between said envelopes extending into said adjacent gaps and defining therein between the envelope portions adhered to adjacent shanks recessed portions directed inwardly toward similar recessed portions between envelope portions secured to the opposite portions of the shanks, the bonding properties of the carrier means being such that the resistance to shear at the interface between the carrier and shank is greater than the shear resistance of the carrier material in the gap between two adjacent fasteners and greater than the resistance of the workpiece encountered when the fastener and carrier material penetrate same, thereby securing said fasteners together into said fastener strip while permitting each respective envelope and fastener to be easily and cleanly sheared and driven into said workpiece.



3,966,043

PACKAGE FOR FLORAL ART PIECES

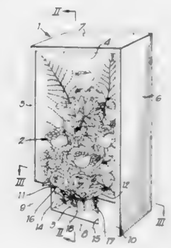
Leo Guillaume Devroe, Edegem, Belgium, assignor to Antwerp Plastic Merchandising, Antwerp, Belgium

Filed July 22, 1974, Ser. No. 490,245

Claims priority, application Belgium, Apr. 30, 1974, 53581

Int. Cl.² B65D 25/10, 85/52

U.S. Cl. 206—423 **1 Claim**



1. A package for a support having a peripheral edge and an article projecting from said support, such as a pot containing a floral art piece, comprising:

a unitary open box having a back wall, two side walls, a top wall and a bottom wall, said side walls having inwardly directed opposed flange-like members having spaced apart inner edges and dividing said box into a lower compartment for said support and an upper compartment for said article,

said spaced edges and the inner surfaces of the portions of said side walls below said members converging from the

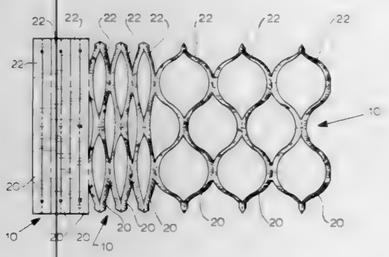
front of said package toward said back wall and at least one of the inner surface of said bottom wall and lower surfaces of said members sloping toward said back wall whereby the height of said lower compartment adjacent said back wall is less than that at the front of the package, said support being positioned in said lower compartment and at least a portion thereof wedgingly received between said botttom wall and the lower surfaces of said members, and a further flange-like member extending forwardly from said back wall and connecting the rear portions of said spaced inner edges.

3,966,044

SCRAPLESS PLASTIC SHEET MULTI-PACKAGING DEVICE

Ernest Ray Cunningham, Libertyville, Ill., assignor to Grip-Pak, Inc., St. Louis, Mo.

Filed Mar. 31, 1975, Ser. No. 563,885
Int. Cl.² B65D *71/02*
U.S. Cl. 206—427 **5 Claims**



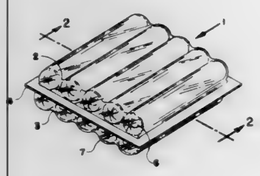
1. A scrapless multi-packaging device for a plurality of containers or the like, said multi-packaging device being made from a stretchable and elastic sheet of plastic material and including a plurality of laterally connected pairs of flat sheet material bands arranged in longitudinal rows, adjacent sheet material bands in each said longitudinal row being longitudinally connected to one another, each of the lateral and longitudinal connections being creased along the lateral extent of said connections in opposite alternating directions to one another whereby longitudinal stretching of said sheet causes said sheet material bands to automatically open and assume a generally upstanding condition for assembly to containers.

3,966,045

SKIN PACKAGE

Richard R. Perdue, Greer, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed May 12, 1975, Ser. No. 576,411
Int. Cl.² B65D *73/00, 85/20*
U.S. Cl. 206—443 **12 Claims**



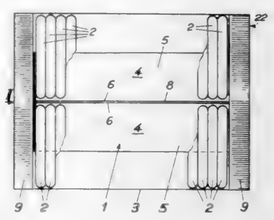
1. A skin package comprising:
a. a gas impervious support member and two film members; and,
b. products held securely to opposed sides of said support member, each product being held solely by a respective film member which includes a portion which conforms to the exact shape of the product, each of said film members being sealed to said support member around the periphery of each respective product.

3,966,046

WRAPPER ASSEMBLY INCLUDING AN ARTICLE CARRIER ELEMENT

Gert Deutschländer, Neuhausen am Rheinfall, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Mar. 5, 1975, Ser. No. 555,457
Claims priority, application Switzerland, Mar. 5, 1974, 3122/74
Int. Cl.² B65D *85/62*
U.S. Cl. 206—445 **4 Claims**



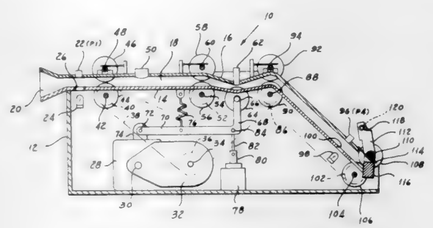
1. A wrapper assembly for packaging articles, including a carrier element supporting the articles and a sleeve surrounding the carrier element and the articles, the improvement wherein said carrier element is a one-piece member constituted of a folded blank having the shape of a rectangle; said carrier element comprising two compartments, each formed of a separate bottom wall, a separate lateral wall and at least one separate end wall, the two lateral walls being in a face-to-face contacting relationship.

3,966,047

PAPER CURRENCY ACCEPTOR

Larry E. Steiner, Grand Rapids, Mich., assignor to Rowe International Inc., Whippany, N.J.

Filed Nov. 27, 1974, Ser. No. 526,941
Int. Cl.² B07C *5/344*
U.S. Cl. 209—75 **14 Claims**



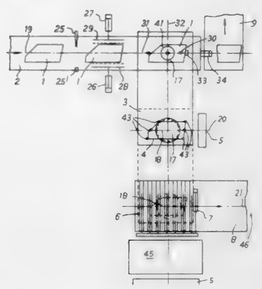
1. A bill acceptor for rejecting a spurious bill having magnetic material in an area where genuine bills are printed with nonmagnetic ink and including in combination a high resolution magnetic sensing head, means including said sensing head for scanning the bill along a path traversing said area, means for producing a signal concurrent with the traversal of said area by the sensing head, said head providing an output pulse for each transition from a nonmagnetic region of the bill to a magnetic region thereof, and means responsive to the concomitant presence of said signal and a single output pulse from the magnetic sensing head for rejecting the bill.

3,966,048

INSPECTION OF GLASS ARTICLES

Emmanuel Nunes, Ribecourt, and Jacques Vervin, Thourotte, both of France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed July 21, 1975, Ser. No. 597,911
Claims priority, application France, July 19, 1974, 74.25137
Int. Cl.² B07C *5/04*
U.S. Cl. 209—82 **14 Claims**



1. Automatic inspection apparatus for inspecting glass articles, which comprises an inspection station comprising a reference jig, measuring means at the inspection station for comparing at least one dimension of an article with a corresponding dimension of the jig, the measuring means being capable of emitting a signal when the difference between the dimension of the article and the reference dimension exceeds a predetermined value, horizontal feed conveyor means for feeding a succession of articles to be inspected, horizontal removal conveyor means for removing the articles after inspection, a carriage movable to and fro between abutments to transport articles from the feed conveyor to the inspection station and then from the inspection station to the removal conveyor, the carriage comprising two seizing means for seizing and lifting respective articles from the feed conveyor and jig at the inspection station when the carriage is at one end of its path of travel and to drop respective articles onto the jig and removal conveyor when the carriage is at the other end of its path of travel so that an article is successively lifted from the feed conveyor, dropped on the jig, lifted from the jig and dropped on the removal conveyor, the seizing means each comprising a downwardly directed orifice surrounded by a flexible lip having a maximum width less than the minimum dimension of the article to be seized, aspiration means for aspirating a stream of air upwardly through the orifice to attach the article to be seized thereto by suction, a duct through which the aspirated air is drawn and a valve arranged to open and shut the duct to start and stop the stream of air, and means sensitive to the position of the carriage to open and shut the duct, and rejection means for removing reject articles in response to said signal.

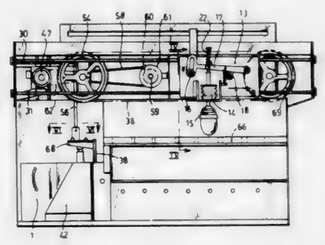
3,966,049

APPARATUS FOR SORTING EGGS AS TO WEIGHT

Christiaan van den Berg, Nunspeet, Netherlands, assignor to Big Dutchman (International) A.G., Chur, Switzerland

Filed Nov. 15, 1974, Ser. No. 524,221
Claims priority, application Netherlands, Nov. 15, 1976, 7315648
Int. Cl.² B07C *5/16;* **A01K** *43/08*
U.S. Cl. 209—121 **15 Claims**

1. In an egg sorting apparatus responsive to the weight of the eggs having an egg receiver, a weighing means having an egg carrier, a power driven conveyor for transporting a weighed egg, an ejector for ejecting a weighed egg from said conveyor and a collector of weighed eggs, the improvement comprising: an electronic weighing means having a vertically moveable lifting frame coupled with said egg receiver and cooperating with said egg carrier, said lifting frame being interconnected with a lifting arm which is synchronously moveable with said power driven conveyor, said power driven



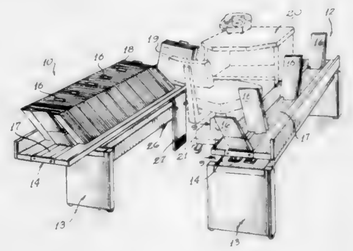
conveyor including a frame and being horizontally moveable to and fro, drive means for said conveyor, said drive means including a linking element for moving said conveyor along said egg collector, said collector including a suction cup controlled by a pair of vacuum bellows to receive an egg, said suction cup cooperating synchronously with said egg carrier.

3,966,050

INDEX FILE

Robert M. Dahl, 633 Park St., Wilmette, Ill. 60091

Filed Mar. 31, 1975, Ser. No. 563,786
Int. Cl.² A47B *57/00*
U.S. Cl. 211—10 **7 Claims**



1. An index file comprising a support base, a table shiftably mounted on said base, index file support means carried by the table, base rail means carried by the base, complementary table rail means carried by the table, the base rail means and table rail means having identical cross-sectional shapes, antifriction ball means interposed between said base and table rail means, and a vertically extending brake lever depending from said support base and having a lower foot operative portion, said brake lever releasably locking the table in various positions of adjustment relative to the base.

3,966,051

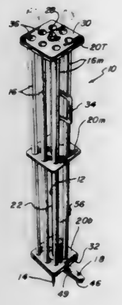
FREE-STANDING GOLF CLUB AND GOLF BALL CARRIER

Ralph O. Hollister, 2634 49th Ave. Court, and Ernest E. Sanders, 1313 10th St., both of Greeley, Colo. 80631

Filed Apr. 10, 1975, Ser. No. 566,723
Int. Cl.² A63B *55/02*
U.S. Cl. 211—14 **4 Claims**

1. In a carrier for both golf clubs and golf balls: a pair of elongate springable tubular elements having the interior thereof sized to loosely receive the shaft of a golf club, a third elongate element, and means fastened to said third element and said pair of tubular elements fastening them together in

spaced parallel relation to one another while cooperating therewith to define a cage-like compartment closed at both ends and sized to retain a plurality of golf balls stacked one atop another, said pair of tubular elements being held in



spaced relation such that the normal gap separating them is less than the diameter of a golf ball, and said tubular elements being spreadable to the extent necessary to pass a golf ball therebetween.

3,966,052

ARRANGEMENT FOR KEEPING TOOLS OF THE DRILLING, MILLING, BORING TYPE ETC. IN READINESS FOR USE ON MACHINE TOOLS

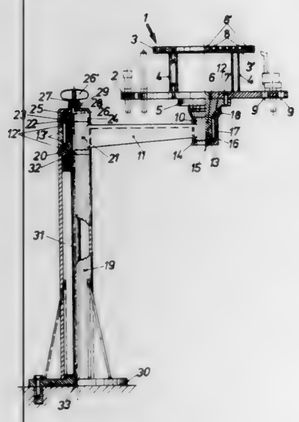
Reto Knaus, Ueberlandstrasse 309, 8051 Zurich, Switzerland

Filed May 15, 1974, Ser. No. 470,079

Claims priority, application Switzerland, Feb. 4, 1974, 1594/74

Int. Cl.² A47F *7/00*

U.S. Cl. 211—60 T **4 Claims**



1. A tool holder for shank tools comprising:

a table having a horizontal large-diameter lower disk, and a small-diameter upper disk spaced above and coaxial with said lower disk, and spacer means interconnecting said disks for joint rotation in spaced-apart relation, said upper disk being formed with a rectangular array of holes each adapted to receive a tool shank, said lower disk being formed with at least one circular array of holes outwardly of the outline of said upper disk and adapted to receive tool shanks;

a flanged shaft having its flange connected to the underside of said lower disk and extending coaxially with said table;

a support sleeve rotatably receiving said shaft;

friction means between said sleeve and said shaft for retarding rotation of said shaft relative to said sleeve;

a base;

a tubular post mounted on said base;

a horizontal arm rotatable on said post and carrying said sleeve;

a tubular pivot in said post carrying said arm;

a rod extending through said post and interconnecting said pivot and said base;

further friction means on said post for frictionally retarding swinging movement of said arm relative to said post; and

adjusting means on said post connected with said further friction means for adjusting the frictional retardation of said arm.

3,966,053

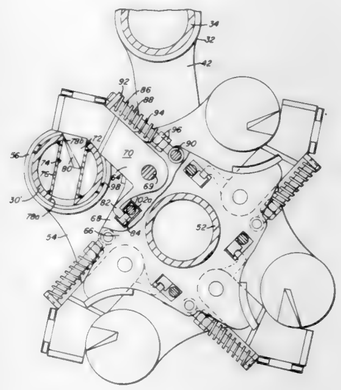
DRILLING APPARATUS

James B. Loftis, Remlap, Ala., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Division of Ser. No. 470,577, May 16, 1974, abandoned. This application Apr. 25, 1975, Ser. No. 571,854

Int. Cl.² E21B *19/14*

U.S. Cl. 211—60 S **8 Claims**



7. A drill pipe storage rack comprising: plurality of drill pipe support means, each of said support means including an upper drill pipe supporting assembly adapted to support an upper end portion of a drill pipe, a lower drill pipe supporting assembly adapted to support a lower end portion of such drill pipe and an actuator means; each of said lower drill pipe supporting assemblies including latch means movable in a generally horizontal plane into a drill pipe contacting position in response to a portion of a respective one of said actuator means being moved into a first position and said latch means movable in said plane into a drill pipe non-contacting position in response to movement of said portion being moved into a second position.

3,966,054

SHOCK ABSORBER FOR TUBULAR STORAGE OR DRILL STANDS ON A DRILLING SHIP

Robert R. Kelly, Hoffman Estates, Ill., assignor to BJ-Hughes Inc., Long Beach, Calif.

Filed May 22, 1975, Ser. No. 579,985

Int. Cl.² A47F *7/00*

U.S. Cl. 211—60 S **3 Claims**

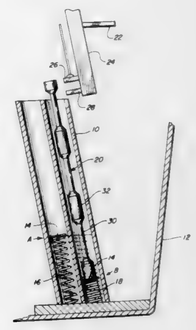
1. Pipe racking apparatus which comprises:

at least one closed bottom racking tube;

a piston in said tube having an area less than the surface area of a plane transverse to said tube;

said piston being contacted by pipe upon racking and storage in said tube;

a coil spring urging said piston upwardly in said racking tube to a pipe receiving position;



a fluid in said tube contained by said piston;

whereupon energy from impact upon said piston by a pipe being racked is dissipated in said fluid which piston moves downwardly in said racking tube, said piston being urged to move upwardly in said tube by said spring upon removal of said pipe therefrom.

3,966,055

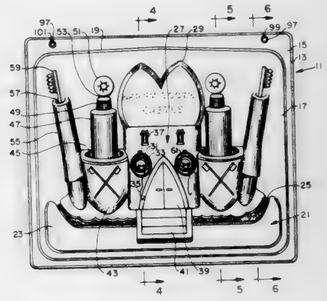
DISPLAY HOLDER FOR DENTAL MATERIALS

Vincent J. Francavilla, 140 Kenmore Ave., Buffalo, N.Y. 14226

Filed June 14, 1974, Ser. No. 479,276

Int. Cl.² A47B *81/02*

U.S. Cl. 211—65 **6 Claims**



1. A display holder, adapted to be held vertically in use, holding and displaying a toothbrush, a container of dentifrice and a dispenser of dental floss at particular indicated locations therein, which comprises a pair of unitary synthetic organic polymeric plastic three-dimensional front and back members of vacuum formed sheet material of a thickness between 5 and 50 mils, inclusive, each of said members having first areas which conform with and contact similar areas on the other member, said members being fastened together at said first areas so as to rigidify the display holder, said members having second areas which are spaced from each other and form compartments therein between them for at least the toothbrush and container of dentifrice, which compartment for the dentifrice supports the container thereof resting on its bottom, the front member having a scene depicted thereon including a representation of a fighter against tooth decay and a weapon for use in such fight wherein the container of dentifrice participates and represents at least a part of said fighter against tooth decay and the toothbrush participates and represents at least a part of said weapon when the container of dentifrice and toothbrush are held in the display holder at their particular indicated locations.

3,966,056

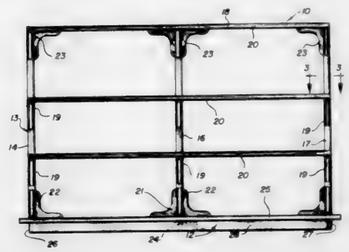
ARTICLE SUPPORT DEVICE

Charles O. Larson, Sterling, Ill., assignor to Charles O. Larson Co., Sterling, Ill.

Filed Mar. 19, 1975, Ser. No. 559,634

Int. Cl.² A47F *5/00*

U.S. Cl. 211—134 **8 Claims**



1. An article support device, comprising: a base; a frame extending from said base, said frame having at least two spaced apart posts and a rail of substantially the same cross-sectional configuration as said posts and extending therebetween, a first plurality of flanged bracket assemblies secured to said post for supporting shelves thereon, each of said flanged bracket assemblies including two similar flanged brackets having two straight leg elements of equal length and L-shaped in their plan view and each leg L-shaped in its cross-section, said two similar bracket elements being positioned relative to one another to form a U-shape in the cross-section with said two bracket elements overlapping at a bight portion thereof, and two flanges extending outwardly away from said frame and base, and circular apertures formed in each of said bracket elements and extending through the bracket elements overlapping portions but being displaced from one another a distance substantially equal to the flange material thickness to permit insertion of a fastener therethrough and to locate the fastener with its head adjacent the U-shaped bight portion and between the bracket flanges, whereby the fastener is at least partially hidden.

3,966,057

DRAFT GEAR MECHANISM AND METHOD OF ASSEMBLING SAME

Francis H. Duquette, Hinsdale, and Walter H. Merker, Jr., Downers Grove, both of Ill., assignors to Miner Enterprises, Inc., Chicago, Ill.

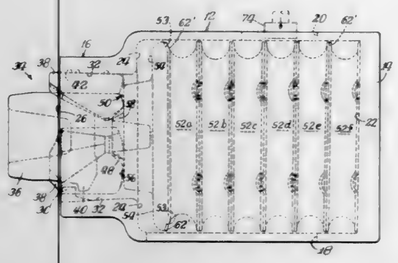
Filed Feb. 6, 1975, Ser. No. 547,692

Int. Cl.² B60G *9/06*

U.S. Cl. 213—22 **11 Claims**

1. A draft gear mechanism comprising an integral casing having a main body portion and a rear end closure wall and a constructed front end section, force transmitting means within and projecting from said front end section, a front pad follower within said body portion and abutting said force transmitting means, a stacked series of individual compressible elastomeric resilient pad units within said body portion between said front pad follower and said rear end closure wall, and an opening formed in one side wall of said body portion through which a compressed group of said pad units may be

moved into said body portion during assembly of said mechanism, the inner surface of said rear end closure wall having a



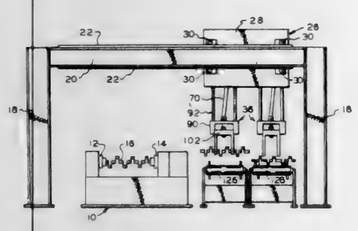
slight slope in a direction away from said opening thereby urging said stacked series of pad units away from said opening.

3,966,058

CRANKSHAFT TRANSFER MECHANISM

Allan J. Heffron, Freeland; Arthur L. Estry, Jackson, and William F. Chalmers, Essexville, all of Mich., assignors to C. M. Systems, Incorporated, Bay City and Crankshaft Machine, Jackson, both of, Mich.

Filed June 30, 1975, Ser. No. 591,436
Int. Cl.² B65G *25/00*
U.S. Cl. 214—1 BB **9 Claims**



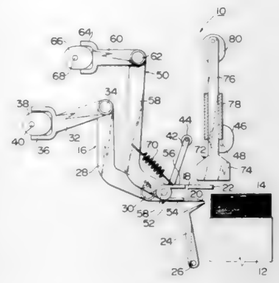
1. Crankshaft transfer apparatus comprising, in combination, an elevated track having parallel guide surfaces defined thereon, a carriage mounted upon said track for movement thereon, a first drive motor mounted upon said carriage drivingly connected to said track for translating said carriage upon said track, vertically oriented crankshaft holder guide means affixed to said carriage, a crankshaft holder mounted upon said guide means movable in a vertical direction with respect to said carriage, said holder including a movable jaw pivotally mounted thereon, a horizontally disposed drive shaft rotatably mounted on said carriage, a second drive motor mounted on said carriage in driving connection with said drive shaft, a holder drive pin eccentrically mounted on said drive shaft, connecting means connecting said pin to said crankshaft holder whereby rotation of said drive shaft alternately raises and lowers said holder, jaw actuating means mounted in said holder for vertical movement with respect thereto connected to said movable jaw, such relative vertical movement actuating said jaw between crankshaft holding and release positions, a slide mounted upon said pin for radial movement relative to the axis of rotation of said drive shaft, means connecting said slide to said jaw actuating means, cam means mounted on said carriage, and a cam follower connected to said slide engaging said cam means radially positioning said slide in accord with the contour of said cam to produce predetermined operation of said jaw in accord with the rotational position of said drive shaft.

3,966,059

PAPER FEEDING APPARATUS FOR AN AUTOMATIC PLANE TYPE PAPER PUNCHING MACHINE

Eizo Sase, No, 1991 Daikan-cho, Tatebayashi, Gunma, Japan

Filed Oct. 3, 1974, Ser. No. 511,731
Int. Cl.² B65G *59/02*
U.S. Cl. 214—8.5 SS **8 Claims**



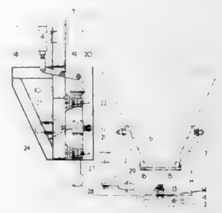
1. A paper feeding apparatus for an automatic plane type paper punching machine comprising a punching unit to punch stacked sheets of paper so as to obtain a predetermined shape and size of said stacked sheets of paper and a paper catcher to receive from said paper feeding apparatus and catch and deliver to said punching unit said stacked sheets of paper to be punched, said paper feeding apparatus comprising a base to mount thereon a stack of sheets of paper; separator means to separate predetermined sheets of paper from said stack, said separator means including an arm member movable back and forth relative to said stack and a pawl member means mounted on said arm member at one end thereof to be inserted into the layers of said stack at a first level means mounted on the separator and operatively associated with a fixed means for rising said predetermined sheets of paper to a second level; means to clamp and carry said separated sheets of paper from the remaining stack to said paper catcher, said clamping and carrying means including a clamper movable back and forth relative to said stack to clamp said separated sheets of paper.

3,966,060

LIFTING APPARATUS

John Frederick Collett Andrews, Lingfield; Roy Victor Beton, West Drayton; Kenneth David Leavens, Carpenders Park, and Gordon John Scott, Bovingdon, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Sept. 5, 1973, Ser. No. 394,528
Claims priority, application United Kingdom, Sept. 15, 1972, 42890/72
Int. Cl.² B66C *13/00*
U.S. Cl. 214—35 R **8 Claims**



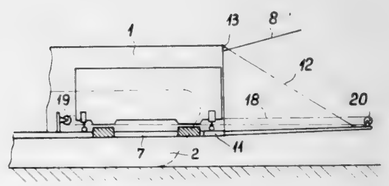
1. Lifting apparatus for lifting and lowering an object comprising an arm having at one end a pivot, engagement means including a bar mounted on the pivot with prongs fixed on the bar and projecting downward from the bar adapted to engage with the object, a drive shaft for the arm connected adjacent the other end of the arm, lifting and lowering means connected with the drive shaft for lifting and lowering the drive shaft and the arm, first rotating means separately connected to the drive shaft for rotating the drive shaft and the arm, and second rotating means connected to the arm and engagement means for relatively rotating the engagement means about the pivot with respect to the arm.

3,966,061

APPARATUS FOR INSTALLING AND REMOVING THE DRIVE ASSEMBLY IN CHAIN DRIVEN-VEHICLES

Berthold Fehn, Lintorf, and Oskar Simon, Essen, both of Germany, assignors to Gesellschaft fur Systemtechnik mbH, Dusseldorf, Germany

Filed Jan. 30, 1975, Ser. No. 545,714
Claims priority, application Germany, Feb. 11, 1974, 2406330
Int. Cl.² B65G *67/02*
U.S. Cl. 214—38 D **1 Claim**



1. Apparatus for installing and removing the drive assembly of a chain-drive vehicle having an opening at its rear and provided with a cradle and a chain drive mechanism, comprising: giuide means disposed in the interior of the cradle; means composed of rollers arranged to engage on said guide means for lifting the drive assembly onto said guide means; means defining an auxiliary rack temporarily attachable to the rear of the vehicle to form a rearwardly-projecting extension of said guide means, said auxiliary rack being composed of two supports provided with guides for said rollers and a cross member connected between said supports; mounting devices at the rear of the vehicle for fastening said supports to the vehicle at those ends of said supports which are adjacent the vehicle when said rack is temporarily attached to form such extension; a suspension device carried at the rear of the vehicle and including load supporting elements arranged to be connected to that end of said rack which is remote from the vehicle when said rack is temporarily attached to form such extension for supporting the entire load presented by such end of said rack which is remote from the vehicle and by the drive assembly on the rack, thereby to maintain said rack stationary relative to the vehicle; and means for moving the drive assembly through the opening in the rear of the vehicle onto the auxiliary rack.

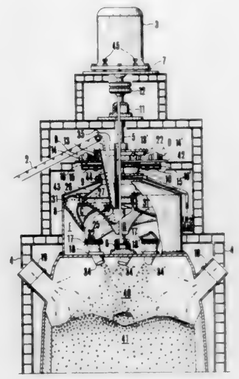
3,966,062

APPARATUS FOR CHARGING RAW MATERIALS INTO BLAST FURNACES

Kiyotoshi Sakai, 3-503, 12, Tenjin 1-chome, Tobata, Kita-kyushu, Fukuoka, Japan

Filed Apr. 9, 1975, Ser. No. 566,441
Claims priority, application Japan, Apr. 15, 1974, 49-43068
Int. Cl.² F27B *1/20*
U.S. Cl. 214—35 R **8 Claims**

1. Raw material charging apparatus for a blast furnace comprising a hollow inverted frustum shaped rotary hopper, conveyor means for supplying raw materials into said rotary hopper, a hollow disc shaped impeller disposed beneath said rotary hopper, said impeller including a dish shaped central portion facing to the lower end of said rotary hopper and a plurality of vanes mounted on the periphery of said dish shaped central portion for defining a plurality of discharge openings between adjacent vanes, for throwing out the raw materials by centrifugal force, a stationary inclined chute



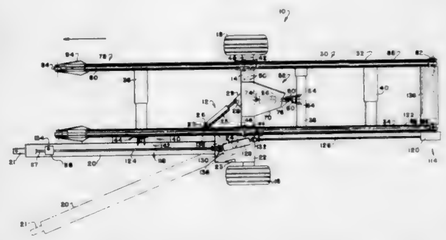
means including an annular hopper surrounding said impeller for charging the raw materials discharged by said vanes into the top of said blast furnace, a cover for said impeller and a lid for the said inclined chute means, said lid encircling said cover with an annular gap therebetween, and means for ejecting inert gas into said annular gap for preventing the gas in said blast furnace from leaking to the outside.

3,966,063

LARGE ROUND BALE HANDLING APPARATUS

Willis R. Campbell, Ephrata; Thomas W. Waldrop, and Shaun A. Seymour, both of New Holland, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Dec. 5, 1974, Ser. No. 529,982
Int. Cl.² B60P *1/38*
U.S. Cl. 214—83.36 **6 Claims**



1. An apparatus for handling crop material packages, such as large round bales or the like, comprising:
a mobile frame adapted for movement across a field;
a bed assembly including a pair of elongated support members being mounted at generally similar locations between their opposite ends to said frame such that said members longitudinally extend generally in the direction of movement of said mobile frame, each of said members being laterally spaced apart from the other and throughout a substantial portion of its longitudinal extent defining therebetween an elongated generally unobstructed channel or passageway within which the lower cylindrical portion of a bale or the like may downwardly extend when said bale is received and supported along said mem-

bers with its longitudinal axis extending generally parallel to said members, said bed assembly capable of being disposed in an inclined position with respect to the field in which corresponding one end portions of said support members are disposed adjacent the field;

separate means movably mounted on and along each support member and having outer portions disposed for movement along a path extending along and above an upper side of each support member and around and beyond the terminus of said corresponding one end portion of each member for delivering a bale or the like from the field to said corresponding one end portions of said support members and into said passageway defined therebetween when said members are disposed in the inclined position;

means for driving said movable means; and

a separate ground engaging element attached to and extending along and below said one end portion of each member so as to underlie said one end portion for supporting the same above the field, the forwardmost end portion of said element having a forwardly-opening slot defined therethrough which underlies said one end portion for allowing passage of said movable means outer portions as the same move along and below and then beyond said one end portion of each support member and toward said terminus thereof to thereby insure engagement of said outer portions with the field and leading engagement of said outer portions with said bale or the like for facilitating insertion of said member end portions under said bale or the like and receipt of the same into said passageway defined between said members as said apparatus is moved across the field in the direction of said bale or the like, said each element also including an elongated flat base portion underlying said member end portion and being disposed rearwardly of said slotted forwardmost end portion of flush with the surface of the field for sliding contact therewith when said support members are disposed in said inclined position and said apparatus is moved across the field.

3,966,064

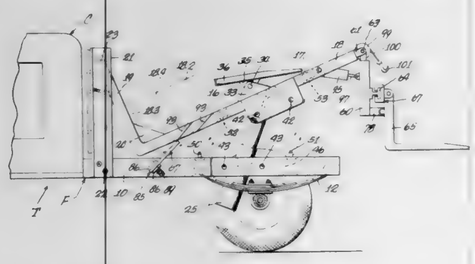
MULTI-PURPOSE VEHICLE

John Phil Felburn, 1700 Asheville Highway, P.O. Box 747, Hendersonville, N.C. 28739

Continuation-in-part of Ser. No. 284,654, Aug. 29, 1972, abandoned. This application Sept. 16, 1974, Ser. No. 506,517

Int. Cl.² E02F *3/00*

U.S. Cl. 214—131 R **10 Claims**



1. A roadway tractor for towing a semi-trailer having the usual fifth wheel plate, said tractor including a horizontal frame and wheels connected to and supporting the frame from a roadway, the improvement comprising:

upright support means having its lower end connected to a forward part of said frame and its upper end disposed a considerable distance above said frame,

a sub-frame having a first portion carrying a fifth wheel for engagement with said fifth wheel plate, said first portion being normally horizontal in juxtaposition to said frame,

said sub-frame also having an upright second portion rigidly connected to said first portion with its upper end pivoted to the upper end of said support means,

whereby said sub-frame may be swung about the pivot to elevate its normally horizontal first portion and in so doing causing the rear part of said first portion and said fifth wheel to move in a direction rearwardly of said frame,

means for effecting pivotal movement of said sub-frame,

said frame including a pair of laterally spaced longitudinally extending beams,

said sub-frame first portion including a pair of beams longitudinally aligned with said frame beams and resting thereon in normally horizontal position,

and metal side plate secured to each beam of said sub-frame first portion and depending therefrom, each plate cooperating with a side portion of a respective frame beam to maintain longitudinal alignment of said frame and sub-frame in horizontal position.

3,966,065

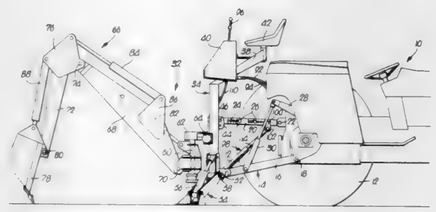
SAFETY HOLD-DOWN APPARATUS FOR TRACTOR-MOUNTED EARTH WORKING IMPLEMENTS

Joel Flynn Jones, Claremore, Okla., assignor to Hesston Corporation, Hesston, Kans.

Filed Aug. 19, 1974, Ser. No. 498,581

Int. Cl.² E02F *3/32*

U.S. Cl. 214—138 R **5 Claims**



1. In earth-working equipment:

a prime mover having a vertically swingable hitch and singleacting, fluid-pressure lifting means for raising said hitch,

said lifting means being operable to exert against the hitch an upward force only;

an implement mounted on said hitch for movement therewith when the hitch is raised and lowered,

said implement including a frame, a tool shiftably carried by the frame, and first fluid-pressure power means between the frame and the tool for actuating the tool; and

apparatus for applying a counteracting hold-down force against the implement during working resistance encountered by the tool,

said apparatus including second single-acting, fluid-pressure power means disposed to transmit force between the prime mover and the implement and operable to exert against the implement a downward force only,

said second power means being coupled in constant fluid communication with said first power means during actuation of the latter for responding with increased hold-down force to pressure build-up in said first power means.

3,966,066

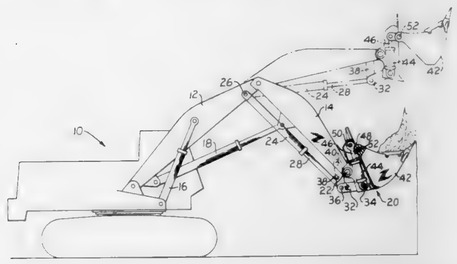
HYDRAULIC CIRCUIT

Lawrence F. Schexnayder, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 25, 1975, Ser. No. 571,873

Int. Cl.² E02F *3/40*

U.S. Cl. 214—146 R **7 Claims**



1. In a bottom dump front shovel machine having a bucket and apron and independent hydraulic cylinders respectively connected therewith to control the respective movement of the bucket and apron, the bucket cylinder being operatively connected in pivoting fashion with the bucket and the apron cylinder being operatively connected in pivoting fashion with the apron, a source of hydraulic fluid and a hydraulic circuit in communication with each respective cylinder, the improvement in the hydraulic circuit comprising:

first and second selector valves for respectively directing fluid flow selectively from the source to the bucket cylinder and the apron cylinder thereby causing respective movement of the bucket and apron, said selector valves being operatively positioned in response to first and second actuation means;

said first selector valve being operatively connected with eacn end of the bucket cylinder and providing communication between the source and the bucket cylinder to direct flow to one end of the bucket cylinder depending on the operative position of said first selector valve;

said second selector valve being operatively connected with each end of the apron cylinder and providing communication between the source and the apron cylinder to direct flow to one end of the apron cylinder depending on the operative position of said second selector valve; and

a control valve having a conducting and a nonconducting flow position, said control valve being connected in parallel between respectively one ends of the bucket and apron cylinders, said control valve being responsive to the actuation means for movement of said first selector valve in one direction wherein, when said first and second selector valves and said control valve are actuated, a portion of the flow from the bucket cylinder circuit is diverted through said control valve to the apron cylinder circuit thereby permitting simultaneous bucket and apron movement.

3,966,067

DISPOSAL VEHICLE

Raymond E. Reese, Los Angeles, Calif., assignor to Frodsham, E. Dale, Yorba Linda, Calif.

Filed July 24, 1974, Ser. No. 491,199

Int. Cl.² B65F *3/02*

U.S. Cl. 214—302 **9 Claims**

1. A dual-function vehicle-loading apparatus, comprising:

a vehicle;

a lifting mechanism mounted on, and adapted to move relative to, said vehicle;

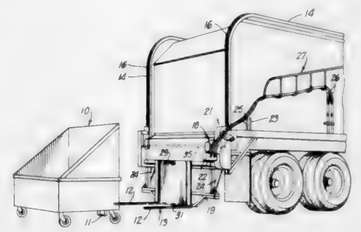
said lifting mechanism having:

a lifting framework;

a lifting fork having a pair of outwardly extending L-shaped pallet-type tines fixed to said lifting framework;

whereby said tines of said lifting fork may be engaged with respective lifting channels of a pallet-type structure on a container adapted to be lifted by said lifting mechanism, and have its contents dumped into said vehicle;

said lifting framework having a loading opening defined at the sides by the vertical legs of said tines and at the top and bottom by members of the lifting framework, said opening adapted to provide communication between the



volume above said tines and the body of said vehicle when said lifting framework has been raised to a suitable level, a lifting platform adapted to fit onto said lifting framework adjacent said loading opening and extending between and co-planar with the vertical and horizontal legs of the pair of tines, respectively, when in the vertical or horizontal position; and cooperating means for holding said platform in an operative state relative to said lifting framework.

3,966,068

POWERED VEHICLE WITH CONTROLS FOR LOADING, UNLOADING AND DISCHARGE TILTING OF A SEPARABLE CONTAINER

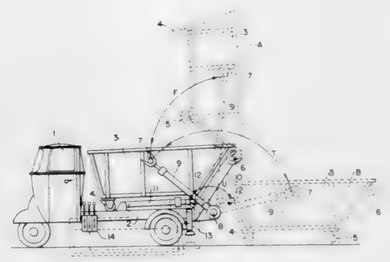
Orazio Duvia, Via Carducci, 19100 La Spezia, Italy

Filed July 12, 1974, Ser. No. 488,008

Claims priority, application Italy, Sept. 27, 1973, 16706/73

Int. Cl.² B65G *65/04*

U.S. Cl. 214—317 **8 Claims**



1. A material handling device, comprising: a wheeled, self-powered transport vehicle having a container carrying bed, support means for forming a first horizontal pivot axis bearing for the container above and toward the rear of said vehicle body, and connecting means rotatable about a second horizontal axis fixed with respect to the vehicle bed and spaced from said first axis for pivotally engaging the container at a third horizontal pivot axis fixed with respect to the container and spaced from said axes; first power means for expanding said connecting means to increase the spacing between said second and third axes to correspondingly pivot the container rearwardly and upwardly about said first axis for discharge of the container contents; second power means for rotating said connecting means about said second axis from a first position wherein the container is on the vehicle bed to a second position wherein the container is entirely removed from the vehi-

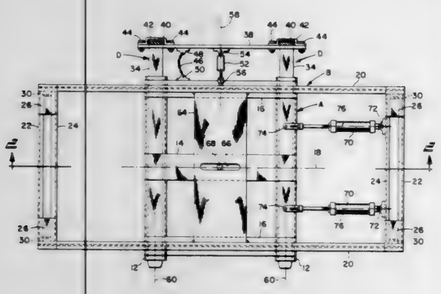
cle bed and placed upon the vehicle support surface; said support means including a support mounted on each side of said vehicle bed to be selectively moved from an upright position defining the position of said first pivot to a second position for purposes of storage; each of said support means further being mounted for movement between selected positions corresponding to different first axis location; a container having a plurality of first axis rigid pins on each side spaced from each other corresponding to said first axis location; and each of said supports being a rigid arm pivotally mounted about a fourth axis to said vehicle body and fixing the distance between said first axis and said fourth axis; and said first axis pins on each side being located on an arc having said fourth axis as a center of curvature.

3,966,069

SPREADER FOR LIFTING CONTAINERS

Jack E. Fathauer, Roxboro, N.C., assignor to RPC Corporation, Roxboro, N.C.

Filed Nov. 29, 1974, Ser. No. 528,168
Int. Cl.² B66F 9/14
U.S. Cl. 214—620 **13 Claims**



11. In a generally rectangular container lifting spreader frame mountable upon tines of a fork truck or the like and including power means for shifting said frame relative to the tines rotatably about a generally vertical axis and generally horizontally in directions both parallel and perpendicular to the longitudinal axes of the tines, said spreader frame including base and upper frames, the improvement comprising; at least one elongated slot in one of said frames extending generally parallel to one of said horizontal directions, and a fixed pin extending from the other of said frames and being received in said slot.

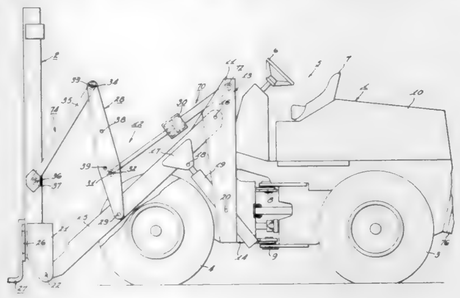
3,966,070

MECHANISM FOR LOADER BUCKET OR FORKLIFT MAST ON A MATERIAL HANDLING VEHICLE

John W. Barth, Topeka, Kans., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 7, 1974, Ser. No. 512,736
Int. Cl.² E02F 3/70
U.S. Cl. 214—776 **10 Claims**

1. A load carrying mechanism for a material handling tractor comprising, support means including upright supports on a chassis, boom means pivotally supported on said upright supports, at least one lift cylinder pivotally mounted on said support means and pivotally connected to said boom means to pivotally lift said boom means, at least one crossarm pivotally supported on said boom means, a leveling cylinder pivotally connected between said support means and said crossarm, a leveling link pivotally connected to said crossarm, a load carrying attachment pivotally connected to said leveling link and pivotally mounted on said boom means, said attachment selectively and alternatively including a mast supporting a forklift carriage and a material handling bucket, said crossarm defining a first pair of holes with a first hole receiving a pin connected to said leveling cylinder and a second pin received in a second hole connected to said leveling link whereby said boom means and said leveling link operate said material handling bucket, said crossarm defining a second pair of holes with a third hole receiving a pin connected to said leveling



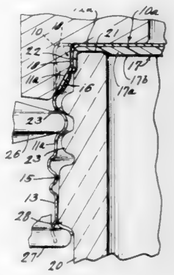
cylinder and a fourth hole receiving a pin connected to said leveling link whereby said boom means and said leveling link operate said mast supporting said forklift carriage, and wherein said leveling cylinder and link, when connected to said second pair of holes, have a substantially different operating geometry than when connected to said first pair of holes.

3,966,071

VENTING BOTTLE CLOSURE

John D. Northup, 2460 Underhill Road, Toledo, Ohio 43615

Filed May 1, 1975, Ser. No. 573,745
Int. Cl.² B65D 51/16
U.S. Cl. 215—260 **5 Claims**



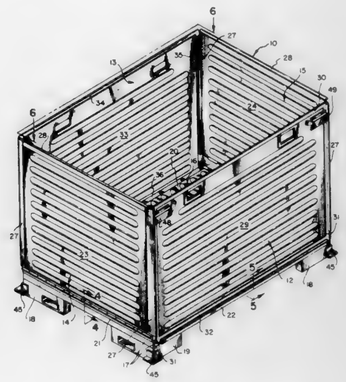
1. A pressure relieving bottle closure, comprising:
a top panel positioned above the top finish of a bottle;
a cylindrical side skirt connected to the top panel and positioned circumjacent a side finish below and adjacent the top finish of the bottle;
a resilient sealing liner interposed between the top panel of the closure and the top finish of the bottle and between the side skirt of the closure and the side finish of the bottle; and
means for retaining the closure to the bottle with the sealing liner compressively engaged between said top panel and the top finish of the bottle and between said side skirt and a portion, but less than all of the side finish of the bottle;
said side skirt including at least one relieved area adjacent the uncompressed portion of the liner whereby, under sufficient internal bottle pressure, the portion of the sealing liner which is not compressed between said skirt and the side finish of the bottle is free to bulge outwardly at the location of the relieved area to pass pressurized fluid to relieve excess pressure in the bottle.

3,966,072

COLLAPSIBLE CONTAINER

Joseph M. Gonzales, and Armond J. Page, both of Boonsboro, Md., assignors to Fairchild Industries Inc., Germantown, Md.

Filed June 13, 1974, Ser. No. 478,893
Int. Cl.² B65D 7/30
U.S. Cl. 220—7 **1 Claim**



1. A collapsible container comprising a base, two substantially opposing wall portions rotatably connected to said base, said rotatably connected wall portions each being rotatable inwardly to occupy a position above the upper surface of said base when said container is in the collapsed configuration, and two substantially opposing slidable wall portions, said slidable wall portions being removable from said container wherein the improvement comprises means for preventing said slidable wall portions from being dislodged from said container when said container is in the erected configuration, said dislodgment preventing means comprising latch means located on the upper portion of at least some of said wall portions, said latch means comprising a handle for moving the latch means to its open or closed position, a spring for exerting a force on said handle, a latch member associated with said spring, a pivot pin about which said handle pivots and a connecting link member which interconnects said latch member and said handle, the attachment position of said connecting link member to said handle being located below the level of said pivot pin when said latch means is in the open position, said latch means being totally located within the outer confines of the erected container.

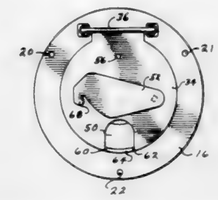
3,966,073

ELECTRIC CORD HATCH

Dennis M. Geisel, South Bend, Ind., assignor to Mid America Sales Co., Inc, Elkhart, Ind.

Filed July 19, 1971, Ser. No. 163,897
Int. Cl.² H02G 3/22; H05K 5/03
U.S. Cl. 220—3.8 **4 Claims**

1. A hatch for an electrical cord for mobile homes, campers, trailers and similar vehicles, comprising a hollow body, a plate-like front member attached to said body and having an opening therein communicating with the hollow interior of said body, a cover for said opening pivoted near the top to said front member, a means defining a notch-shaped opening in the lower portion of said cover for the cord while said cover is in closed position, a cover for said second mentioned opening extending beyond the periphery thereof and overlying a surface of said first mentioned cover when in closed position, said second mentioned cover being pivoted to said first mentioned cover and moving angularly from a position closing said second mentioned opening to a position at which said second mentioned opening is fully open, a latch means yieldably securing said covers in their closed positions, said latch means including a lug mounted on said hollow body and projecting through said notch-shaped opening and said second mentioned cover including a tongue extending under said lug



releasably latching said second mentioned cover in its closed position, means for supporting said second mentioned cover for movement between closed and opened positions, and a cord opening in said body to the rear of said front member through which the cord can be extended and retracted.

3,966,074

TERMINAL BOX AND COVER

Kenneth W. Hotchkiss, Golden, and George A. Kopp, Sr., Boulder, both of Colo., assignors to Proto Production Plastics, Inc., Boulder, Colo.

Filed Apr. 28, 1975, Ser. No. 572,116
Int. Cl.² H01R 13/44; B65D 43/10
U.S. Cl. 220—3.8 **2 Claims**



1. A terminal box and cover comprising
a. a box having a bottom, opposite side walls and opposite end walls, said side walls comprising a plurality of side members spaced apart longitudinally of the box, each side member being provided with a top which has under surfaces overhanging part of the space between it and an adjacent side member, and
b. a cover having a top, opposite side walls and opposite end walls, said cover side walls having a plurality of latch devices on their inner surfaces, said latch devices entering the spaces between the box side wall members and engaging the under surfaces of the said box side wall members when the cover is in place on the box, and said latch devices each comprising a shank extending downwardly from the cover top and terminating in an enlarged end that engages the under surfaces of the tops of adjacent box side wall members.

3,966,075

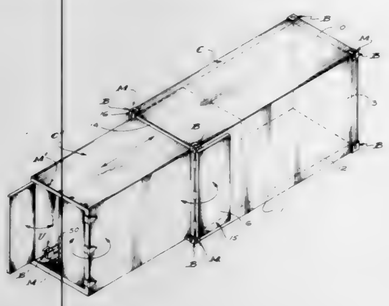
CARGO CONTAINER

Gerhard L. Schultz, 7271 Natal Drive, Westminster, Calif. 92683

Filed Jan. 10, 1975, Ser. No. 540,171
Int. Cl.² B65D 87/02, 21/02
U.S. Cl. 220—1.5 **8 Claims**

1. A substantially rectangular receivable cargo container in combination with and selectively cooperatively engageable with the interior and exterior of a substantially rectangular

standard cargo container having standard exterior dimensions, a cargo-receiving interior, an access opening at one side thereof and having substantially cubical standard mounting blocks at its exterior corners in fixed predetermined standard spacial relationship with each other and each having three outwardly disposed apertured exterior sides arranged in substantially parallel planes with and spaced outward from related sides of the standard container, said receivable container being smaller in exterior dimension than the interior of said standard container and includes mounting means comprising substantially standard cubical mounting blocks related to the exterior corners of the receivable container and carrier means between said blocks and said container to secure said blocks



relative to the receivable container in a first position wherein said blocks are in standard spacial relationship with each other and operable to position said blocks in a second position wherein said blocks are within the dimensional limits of the interior of said standard container, whereby said receivable container can be cooperatively related with the exterior of said standard container and other like adjacent standard containers with their related mounting blocks in cooperative relationship with each other when the mounting blocks of the receivable container are in said first position and said receivable container can be cooperatively received by and positioned within the standard container when said blocks are in said second position.

3,966,076

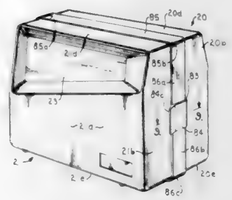
CONTACT LENS ACCESSORY CASE

Douglas J. Kroger; Donald J. Kroger, both of Lincoln, Nebr.; Winton D. Jensen, Leawood, and Donald L. Rohrs, Overland Park, both of Kans., assignors to Consolcase, Inc., Lincoln, Nebr.

Filed May 18, 1973, Ser. No. 361,832
Int. Cl.² B65D *1/24*
U.S. Cl. 220—20 **3 Claims**

1. A multi-compartment case for carrying, removably retaining and displaying a plurality of containers therein in vertical orientation comprising, in combination:

1. a first substantially rectangular receptacle having a side wall, substantially parallel end walls and substantially parallel top and bottom walls,
2. a second substantially rectangular receptacle having a side wall, substantially parallel end walls and substantially parallel top and bottom walls,
3. said receptacles having a width at least equal to the height thereof, as well as being congruent in form and equal in open face area,
4. base support means on said receptacle bottom walls operative to mount said case as a standing, self-supporting unit in both closed and open positions, normally erect on the bottom walls of the receptacles,
5. normally vertical hinge means joining in flexible fashion the free edges of one end wall of each of said receptacles, whereby same may be moved together and apart in a normally horizontal plane around said hinge to form closed a standing, self-supporting, integral closed container and when open a pair of standing, self-supporting, angled apart, open-face receptacles, respectively,
6. normally vertical latch means cooperatively mounted on each of the other end walls of said receptacle operative to engage one another and form said standing integral closed container when said receptacles are pivoted to closed position around said hinge,
7. at least two elongate normally vertical partitions provided within each of said receptacles fastened along their entire length to the inside face of the respective receptacle side wall, same running between and connecting at their upper and lower ends to the top and bottom walls thereof and further running substantially parallel to the receptacle end walls, thereby to define in each said receptacle at least three parallel, substantially rectangular, normally vertical storage chambers of substantially greater height than width, when said receptacles are standing normally erect on the bottom walls thereof,
8. limited, fixed wall means associated only with the normally lowermost part of at least two of said storage chambers in each receptacle operative to removably retain objects received in each of said chambers in the normal vertical standing position of the case by closing off only the lowermost portions of the open fronts of said storage chambers, while permitting ready insertion and removal of such objects without moving said wall,
9. each said latter wall means made up of an assembly comprising at least a front wall member, a top wall member and a back wall member, the said front wall member hingedly connected to the bottom wall of one receptacle and the top wall member thereof being open centrally, whereby said assembly, before use of the case, is pivoted around said hinge into position in the lower end of its corresponding compartment with the front and back wall members normally vertical, the top wall member normally horizontal and the assembly retained in this position in its compartment by lugs on a wall of the compartment overlying one wall of the assembly,
10. the entire, normally uppermost portions of the side walls of each of said receptacles tapering upwardly toward one another when said case is closed, and
11. a normally horizontal elongate grasping indentation or recess provided in each of the upper tapered portions of the side wall of each said receptacle adjacent the upper edge thereof,
12. each said recess running substantially the length of the said side wall,
13. said recesses serving, in combination, when the case is closed, as a normally horizontal grasping and carrying handle for the case, so that said case is normally carried with the storage chambers thereof in vertical orientation.

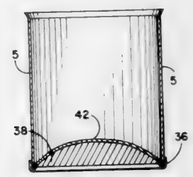


3,966,077

PRODUCTION OIL CAN AND TOOL

George W. Jardine, 12 Lake Road, Waltham, Mass. 02154

Filed May 5, 1975, Ser. No. 574,678
Int. Cl.² B65D *7/42*
U.S. Cl. 220—70 **1 Claim**



1. An open ended, weighted tin container for fluids comprising:

a side wall;

a flanged rib flare positioned at said open end of said container on said side wall;

a bottom having an inward concave depression;

a flare extending around side walls and bottom;

a weight secured within said depression;

said weight being incorporated and secured therein by pouring molten lead into said depression and allowing said lead to harden;

said lead adhering to said tin surface due to physical and chemical binding interaction of molten led and tin;

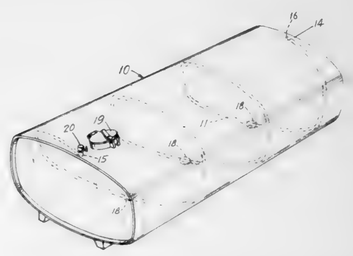
thereby forming a curved bottom surface due to surface tension effect.

3,966,078

TANK VENT

Leland L. Johnson, Edina, and Lindley A. Parkinson, Anoka, both of Minn., assignors to Brown-Minneapolis Tank & Fabricating Co., Minneapolis, Minn.

Filed Oct. 9, 1973, Ser. No. 404,282
Int. Cl.² B65D *25/00, 51/16*
U.S. Cl. 220—85 R **38 Claims**



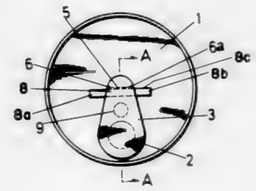
1. A vent for an enclosed chamber such as a tank, having wall structure defining said chamber, said vent comprising an elongated duct, said duct having a first end portion which communicates with the interior of such chamber, said duct having a second end portion in communication with the atmosphere surrounding said chamber, a portion of said duct within said chamber being generally horizontal and a portion of said duct being generally vertical regardless of what position the chamber assumes, and a normally closed two-way valve operatively connected to said first end portion.

3,966,079

SEAL FOR CAN OR LIKE CONTAINER

Kiyoshi Kawamata, Ohmiya, Japan, assignor to Nihon Seikan Kabushiki Kaisha, Japan

Division of Ser. No. 428,735, Dec. 27, 1973. This application June 6, 1975, Ser. No. 584,602
Int. Cl.² B65D *41/32*
U.S. Cl. 220—266 **2 Claims**



1. A sealing device for covering an opening in a container, comprising:

adhesive-backed sealing material for covering said opening and adhering to said container, said sealing material having a first portion and a second portion separated by a straight perforated line, said first portion being removable along said perforation to completely uncover said opening, and said second portion remaining on said container after said first portion is removed; and

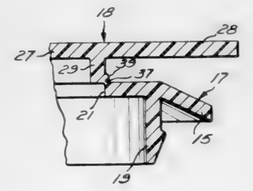
finger catch means attached underneath said first portion near the perforation for separating the two portions of said sealing material along the perforation and for removing said first portion from the container.

3,966,080

END CLOSURE WITH RESEALABLE TAB

Patricia A. Bittel, Bay Village, Ohio, assignor to Weatherchem Corporation, Twinsburg, Ohio

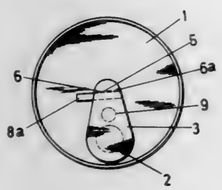
Filed May 15, 1975, Ser. No. 577,737
Int. Cl.² B65D *41/32*
U.S. Cl. 220—269 **8 Claims**



1. A one-piece plastic end closure comprising a stationary base and a movable tab, said stationary base including a laterally extending opening defined in part by a peripheral edge, said tab being laterally substantially coextensive with said opening, said tab being movable relative to said stationary base between an initially closed position and an open position and reclosed position, said tab including a generally flat top portion and a skirt portion depending axially from said top portion, said skirt portion of said tab being disposed exteriorly of said peripheral edge and being connected to said stationary base at the location of said peripheral edge by a reduced thickness tearing web when said tab is in said initially closed position, said tearing web being constructed and arranged to break to permit movement of said tab from said initially closed position to said open position, said tab being disposed away from said opening when said tab is in said open position, said skirt portion of said tab being received within said peripheral edge of said stationary base when said tab is in said reclosed

position, said skirt portion including a lowermost outside corner and said peripheral edge including an uppermost outside corner, and said reduced thickness tearing web being located at said lowermost corner of said skirt portion and at said uppermost corner of said peripheral edge.

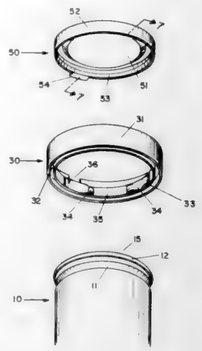
3,966,081
SEAL FOR CAN OR LIKE CONTAINER
Kiyoshi Kawamata, Ohmiya, Japan, assignor to Nihon Seikan Kabushiki Kaisha, Ohmiya, Japan
Filed Dec. 27, 1973, Ser. No. 428,735
Claims priority, application Japan, July 13, 1973, 48-83544; Aug. 22, 1973, 48-98500
Int. Cl.² B65D *17/20*
U.S. Cl. 220—270 **4 Claims**



1. A sealing device for covering an opening in a container, comprising:
adhesive-backed sealing material for covering said opening and adhering to said container, said sealing material having a first portion and a second portion separated by a straight perforated line, said first portion being removable along said perforation to completely uncover said opening, and said second portion remaining on said container after said first portion is removed; and
finger catch means attached underneath said first portion near the perforation for separating the two portions of said sealing material along the perforation and for removing said first portion from the container, said finger-catch means comprises a finger catch element of tape-like material adhesively attached to the adhesive backed side of said first portion of said sealing material positioned so that one side of said tape-like material is located along said perforation having at least one segment thereof extending beyond the edge of said first portion so that it may be grasped by fingers to separate said two portions along the perforation and to completely remove said first portion of said sealing material from the container.

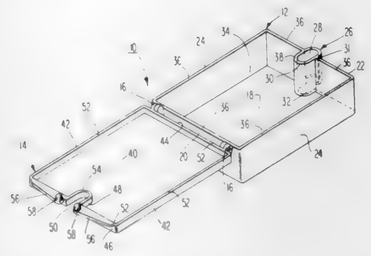
3,966,082
ANNULAR COLLAR SAFETY CLOSURE
Brian D. Hopkins, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.
Filed Feb. 24, 1975, Ser. No. 552,073
Int. Cl.² B65D *55/02*
U.S. Cl. 220—306 **1 Claim**

1. A rotatable safety closure annular collar in combination with a snap-fit cap and a cylindrical container
having an inwardly directed annular groove extending completely around the wall of said container and an outwardly projecting annular bead formed for releasable holding engagement with said snap-fit cap,
said projecting annular bead encircles the mouth or is positioned between the mouth and said annular groove of said container,
said snap-fit cap having a top panel, an annular skirt depending from the periphery of said top panel, a lift tab extending outwardly from the lower margin of said depending skirt, and an annular bead projecting inwardly from said depending annular skirt adapted to snap over said outwardly projecting annular bead of said container,
said annular collar comprising an upstanding exterior wall member having an access gate, an inwardly extending flange connecting said exterior wall member and an interior annular rib member having a container engaging inner wall frictionally fitted to said annular groove of said container, wherein



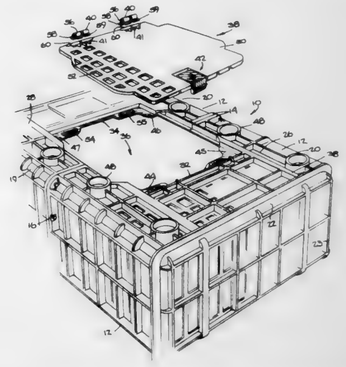
said container engaging inner wall has a plurality of flattened portions whereby friction is reduced and said annular collar can be easily rotated relative to said container, and
said flange has a raised flat area extending outwardly from said inner wall adjacent to and circumferentially extending at least the width of said gate whereby said flange is reinforced and access to the bottom peripheral edge of said depending annular skirt is prevented.

3,966,083
CONTAINERS FOR THE BULK PACKAGING OF ARTICLES
Louis S. Hoffman, Morristown, and Michael Lutz, Watchung, both of N.J., assignors to Dillon-Beck Manufacturing Company, Hillside, N.J.
Filed Feb. 5, 1975, Ser. No. 547,103
Int. Cl.² B65D *43/10*
U.S. Cl. 220—306 **8 Claims**



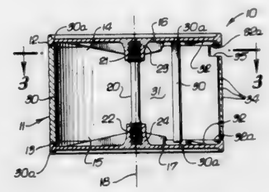
1. A non-collapsible container adapted for use in the bulk packaging of articles, such as nails, bolts, screws, nuts and the like, said container being adapted to be stored or displayed in either a flat condition or hung on a supporting rod or stem, said container comprising:
a. a main body including a bottom wall and peripheral side, front and rear walls extending upwardly from the bottom wall to define a three-dimensional compartment providing the greatest article-retaining volume of the container, a hollow tubular section having a passageway therethrough, said tubular section being associated only with the main body of the container and being joined to the front wall thereof, said tubular section being disposed with its passageway substantially normal to the bottom wall and having an inner segment defining a part of the configuration of the three-dimensional compartment and an outer segment disposed exteriorly of said compartment, said peripheral walls and inner segment of the tubular section having upper margins defining the upper boundaries of said three-dimensional compartment;
b. a lid pivotally connected to the rear wall of the main body and movable between a closed position for enclosing the three-dimensional compartment and an opened position for permitting access into said compartment, said lid including a front wall having a recess therein which is aligned with the portion of the passageway extending through the inner segment of the hollow tubular section when the lid is in a closed position so as to provide an unobstructed passageway through the tubular section for permitting a plurality of containers to be hung on a supporting rod by inserting said rod through only the passageway of the tubular section of each container, said lid including marginal surfaces for engaging the upper margins of the peripheral walls and inner segment of the tubular section of the main body when the lid is in a closed position for completely enclosing the three-dimensional compartment.

3,966,084
LATCH FOR A POULTRY TRANSPORT CAGE
Theodor Box, 1108 Aileen Road, Brielle, N.J. 08730
Filed Aug. 21, 1975, Ser. No. 606,460
Int. Cl.² B65D *45/16, 43/16*
U.S. Cl. 220—326 **11 Claims**



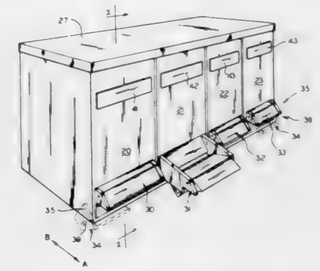
1. In an animal transport cage having a rectangular frame structure supporting openwork sides, ends, bottom and top, with an enlarged opening in the top, said cage having a complementary lid hinged at one end to the opening in the top, an improved lid latch comprising:
a. a sliding latch member having a horizontal portion and a vertical portion depending from the front thereof, with a beveled lip formed on said vertical depending portion to provide a catch and guide means on said horizontal portion;
b. a transverse beam defining one side of the enlarged opening in the top of the cage at the edge of the opening opposite that which is hinged for engaging said catch; and
c. means in said lid at the end opposite said hinged end for accepting and retaining said sliding latch and including:
1. means cooperating with said guide means to permit motion of said sliding latch member in the plane of the lid perpendicular to the hinging axis and to restrain motion of said sliding latch member in all other directions; and
2. a bowed beam member biasing said latch outward to cause said beveled lip to engage said transverse beam.

3,966,085
LOCKING TOP AND BOTTOM CONTAINER
Dale H. Norton, Gardena, Calif., assignor to Roy Besser, Los Angeles, Calif.
Filed Nov. 10, 1975, Ser. No. 630,307
Int. Cl.² B65D *45/00*
U.S. Cl. 220—327 **8 Claims**



1. In a locking top and bottom container,
a. an upright cylindrical body having open upper and lower ends surrounded by rims,
b. upper and lower discs closing and extending across said body upper and lower ends, respectively,
c. retainer means extending axially within said body and having upper and lower connections to said upper and lower discs respectively,
d. at least one of the connections to one disc being a threaded connection allowing rotation of the one disc in a tightening direction about said axis to peripherally tighten against one end rim of the body, and disc rotation in a loosening direction about said axis to loosen the one disc from the body allowing access to the body interior.

3,966,086
DISPENSER
Gordon W. Kelso, P.O. Box 3672, Austin, Tex. 78764
Filed May 27, 1975, Ser. No. 580,734
Int. Cl.² B65H *5/00*
U.S. Cl. 221—234 **10 Claims**



1. A dispenser comprising at least one bin with a bottom opening and having a sloping floor for guiding and directing objects contained in the bin toward the bin opening, a sliding drawer individually associated with the bin and having a compartment beneath the bin opening for receiving pills stored in the bin, shapable means in the form of a pad superimposed over said bin opening, which pad may be shaped to at least partly cover said bin opening and to provide a hole with a reduced size as compared to the size of said bin opening for selectively enabling passage of approximately a predetermined number of said pills through said bin opening and into said compartment, whereby said hole reshapes said opening

and does not necessarily have to have any predetermined minimum shape, size, or dimensions established by the shape, size or dimensions of said bin opening and movable trapdoor means associated with the compartment, said trapdoor being openable for enabling pills in the compartment to fall from said dispenser.

3,966,087

AEROSOL DISPENSING DEVICE CONTAINING A HAIRSETTING PREPARATION HAVING A LOW PROPELLANT CONTENT

Kenneth Vasey Curry, Heatherside; Rustom Kooverji Gamadia, London, and Barry Graham Pike, Yateley, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,404

Claims priority, application United Kingdom, Mar. 30, 1973, 15323/73

Int. Cl.² B67D *5/06*

U.S. Cl. 222—192 **2 Claims**

1. An aerosol dispensing device having

i. a first compartment containing a single liquid phase product and propellant in gaseous form, said single liquid phase comprising by weight from about 50 to about 99% water, from 0 to about 40% of a water-miscible organic solvent, from about 0.2 to about 5% of a film-forming resin and from about 0.001 to about 25% of a propellant dissolved therein;

ii. a dispensing valve arranged to interconnect the first compartment and the atmosphere;

iii. a second compartment containing propellant gas; and

iv. a communicating valve arranged to interconnect the second compartment and the first compartment, thereby to allow the propellant gas to pass from the second compartment to the first compartment.

3,966,088

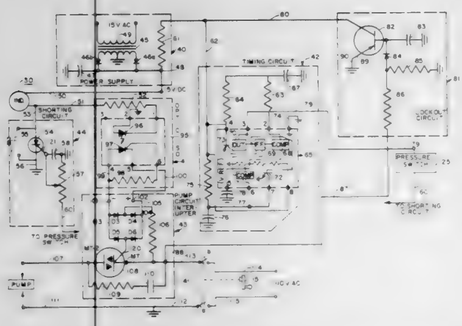
LEAK DETECTION APPARATUS

David E. Reynolds, Littleton, Colo., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 459,151, April 8, 1974, Pat. No. 3,935,567. This application Apr. 14, 1975, Ser. No. 567,669

Int. Cl.² G01M *3/00*; **B67D** *5/08*

U.S. Cl. 222—63 **8 Claims**



1. A leak detection apparatus for a dispensing apparatus having a pump and a pressure-sensing apparatus with an output switch means responsive to a predetermined pressure comprising:

a. a pump interrupter circuit means having a control input wherein said pump interrupter control circuit comprises an optical isolation circuit having a LED diode signal input and a photo-SCR controlled output; a shorting circuit means connected across said LED diode signal input, said shorting circuit means having a control input connected to said output switch means; and means for connecting said photo-SCR controlled output across said pump interrupter circuit means control input.

b. a pump interrupter control circuit means having an input and an output connected to the control input of said pump interrupter circuit means wherein said pump interrupter control circuit comprises an optical isolation circuit having a LED diode signal input and a photo-SCR controlled output; a shorting circuit means connected across said LED diode signal input, said shorting circuit means having a control input connected to said output switch means; and means for connecting said photo-SCR controlled output across said pump interrupter circuit means control input;

c. a timing circuit means having an output and input means for initiating a signal at said output for a predetermined period of time; and

d. means for connecting said timing circuit means through said pressure-sensing apparatus output to the input of said pump interrupter control circuit means,

whereby a leak in said dispensing apparatus will cause closure of said output switch means, transferring said signal at the output of said timing circuit means during said predetermined period of time to the input of said pump interrupter control circuit means, thereby causing said pump interrupter circuit means to interrupt the operation of said pump.

3,966,089

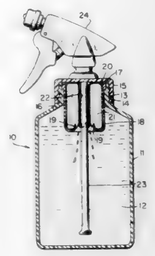
DILUTING AND DISPENSING CONTAINER

Richard James Klingaman, Darien, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 25, 1975, Ser. No. 571,886

Int. Cl.² B67B *7/24*

U.S. Cl. 222—88 **6 Claims**



1. A container for diluting and dispensing in diluted form a concentrated substance provided in a capsule having an annular storage compartment, a central passageway, a frangible bottom wall and a predetermined height dimension in a direction parallel to the axis of said central passageway, said container comprising, in combination,

a. a hollow vessel having a neck portion terminating in a annular rim,

b. a closure cap having an inner threaded surface,

c. said neck portion having an outer threaded surface adapted to mate with said inner threaded surface of said neck portion,

d. a cradle disposed in said neck portion below said annular rim, for supporting said capsule,

e. said cradle including puncturing means projecting from said cradle toward said annular rim and terminating below said annular rim,

f. the distance from the terminus of said puncturing means to said annular rim being less than said predetermined height dimension of said capsule,

g. dispensing means disposed in said closure cap for expelling the contents of said vessel through said central passageway,

h. said puncturing means being adapted to pierce the frangible bottom wall of said capsule in response to downward movement of said closure cap on said neck portion of the vessel, thereby releasing said concentrated substance into said hollow vessel, said capsule including a first engagement means and said closure cap including a second engagement means coacting with said first engagement means during mounting of the closure cap on said vessel to rotate said capsule in response to rotation of said cap.

3,966,090

PACKAGE FOR DISPENSING AN ANTISEPTIC COMPOSITION

Samuel B. Prussin, and Davis S. Lozano, both of Los Angeles, Calif., assignors to Dart Industries Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 799,978, Feb. 17, 1969, abandoned. This application June 19, 1972, Ser. No. 263,807

Int. Cl.² A61K *33/18*; **B65D** *35/22*

U.S. Cl. 222—94 **5 Claims**

1. A package adapted for the dispensing of an antiseptic iodine-containing composition therefrom which comprises a pressure-tight container with means to maintain two ingredients therein isolated from each other, the first of said ingredients comprising about 2 – 50 weight percent of an alkali metal iodide selected from the group consisting of potassium iodide and sodium iodide and the second of said ingredients comprising about 2 – 30 weight percent hydrogen peroxide, a liquified gaseous propellant in at least one of said ingredients and valve means communicating with each of said ingredients adapted to mix effective portions of each of said ingredients to dispense from said package a heated composition containing free iodine.

3,966,091

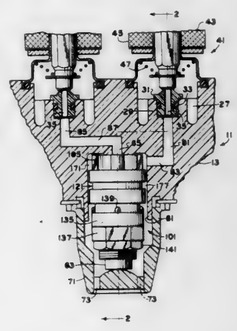
CARBONATED BEVERAGE DISPENSER HAVING DIFFUSER ASSEMBLY

Robert S. Bencic, Tucson, Ariz., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 11, 1975, Ser. No. 567,163

Int. Cl.² B67D *5/56*; **F16K** *19/00*

U.S. Cl. 222—129.1 **9 Claims**



1. A carbonated beverage dispenser including a valve body defining a bore, a carbonated liquid inlet and a syrup inlet, a nozzle having an outlet and defining an axis, and a diffuser generally within said nozzle, said diffuser comprising:

a. an inner member defining syrup passage means in open communication with said syrup inlet, said syrup passage means extending axially therethrough, a portion of the outer surface of said inner member and the bore of said valve body defining a first liquid passage in open communication with said carbonated liquid inlet;

b. an outer member surrounding said inner member and including first and second axially disposed portions, said inner member and said first portion of said outer member defining a plurality of second liquid passages communicating with said first liquid passage, said second portion of said outer member defining a generally cylindrical inner surface in spaced relation to said inner member;

c. an intermediate member surrounding said inner member and defining a generally cylindrical outer surface disposed in spaced relation within said inner surface of said outer member, said inner and outer surfaces cooperating to define a third liquid passage providing communication between said second liquid passages and the outlet of said nozzle, said third liquid passage having a gradually increasing cross sectional area in an axial direction toward the outlet of said nozzle; and

d. said outer member and said intermediate member being relatively axially movable to permit relative adjustment of said inner and outer surfaces to change the cross sectional area of said third liquid passage on a given transverse plane.

3,966,092

MANUALLY OPERATED MAN-PORTABLE SPRAYER

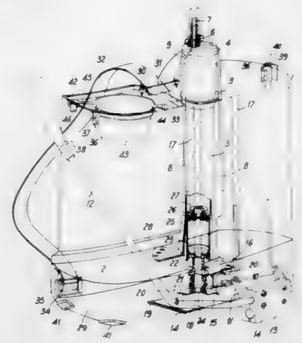
Vincent Pierre Marie Ballu, Epernay, France, assignor to Tecnoma, Epernay, France

Filed Sept. 15, 1975, Ser. No. 613,234

Claims priority, application France, Sept. 17, 1974, 74.31341

Int. Cl.² B67D *5/64*; **B05B** *9/08*, *11/00*

U.S. Cl. 222—175 **5 Claims**



1. In a manually operated man-portable sprayer having a piston-type reciprocating pump the body of which extends through the upper wall of the reservoir, through which wall said body can be caused to slide by a side-mounted actuating lever, the pump being disposed centrally in relation to the reservoir, the improvement consisting in that force is transmitted from the actuating lever to the pump body through a stirrup-shaped two-branch connecting-rod which is hingedly connected to the top of the pump body and coextensive therewith and the two protected branches of which are operative within two reinforcement-forming grooves provided in that wall of the reservoir which is remote from the wall to be applied against the carrier's back, on either side of the location of the pump body.

3,966,093

VALVED WATER CONTAINER WITH SEAL

Carl E. Frahm, and Shirley E. Frahm, both of 1428 Oak Meadow Road, Arcadia, Calif. 91106

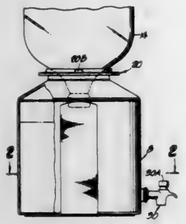
Division of Ser. No. 494,464, Aug. 5, 1974. This application Feb. 27, 1975, Ser. No. 553,685

Int. Cl.² B67D *5/06*

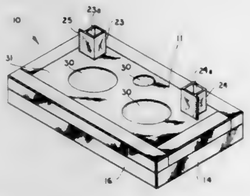
U.S. Cl. 222—185 **5 Claims**

1. A reservoir for water in a dispenser, said reservoir being entirely of plastic material with an apertured portion, an internally threaded bushing secured within said apertured portion and a valve structure releasably threaded in said bushing, said plastic material being relatively thin in comparison to the

length of said bushing, said apertured portion being defined by an inwardly extending and integrally formed cylindrical portion, and means between the inner wall of said cylindrical portion and said bushing securing said bushing to said inner wall.



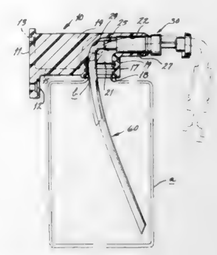
3,966,094
MIXING SUPPORT FOR CASTABLE MATERIAL
M. Egan Sheppard, 22 Keystone Drive, Savannah, Ga. 31406
Filed Apr. 17, 1975, Ser. No. 568,890
Int. Cl.² B67D *3/00;* **B05C** *11/00*
U.S. Cl. 222—187 **9 Claims**



1. A mixing support for castable material, comprising:
porous means defining a rigid porous surface region for receiving and supporting a quantity of castable material;
means associated with said porous means to supply a mixing liquid to said porous means at a location thereon which is remote of said rigid porous surface region to establish a flow of said mixing liquid through said porous means to emerge at said rigid porous surface region, so that a mixture of castable material received on said rigid porous surface region is exposed to the emerging mixing liquid; and
the porosity of said rigid porous surface region permitting said flow of said mixing liquid while substantially preventing said castable material from flowing into said rigid porous surface region.

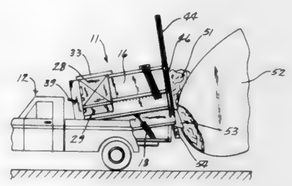
3,966,095
HORIZONTALLY-OPERATED PUMP-TYPE DISPENSER
Albert R. Chappell, Jerseyville, Ill., assignor to The Metalife Company, Wentzville, Mo.
Filed Apr. 9, 1975, Ser. No. 566,175
Int. Cl.² B67D *5/42*
U.S. Cl. 222—384 **2 Claims**

1. A wall-bracket type dispenser utilizing a replaceable pump adapted to pump liquid from a suspended vessel, comprising
a cylindrical pump of a type adapted to operate when positioned horizontally and having at its forward end a plunger and at its aft end a dip tube, in combination with
a mounting bracket having an aft mounting portion,
a hollow, forwardly projecting portion defining a chamber whose forward end is cylindrical and substantially horizontal,
the chamber having an aft wall including an aft and downward-curving surface portion leading to a downward-presented vessel support opening spacedly forward of the mounting portion,
said aft wall including a pair of guide lobes projecting forwardly and flanking the vertical central plane of the bracket at a spacing from each other sufficient to accommodate and guide the dip tube, and



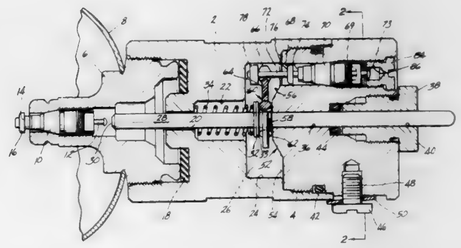
air inlet means into the chamber,
whereby the pump may be replaceably installed in the forward cylindrical chamber portion by inserting the lower end of the dip tube therethrough and camming it, between said guide lobes, downward against the aft and downward surface portion to emerge and extend downward through the vessel-support opening.

3,966,096
SATELLITE REFUSE PACKER
Stanley W. Worthington, Waterloo, Iowa, assignor to Wayne Engineering Corporation, Cedar Falls, Iowa
Filed Dec. 26, 1974, Ser. No. 536,415
Int. Cl.² B67D *5/42;* **G01F** *11/00;* **B60P** *1/16*
U.S. Cl. 222—389 **6 Claims**



1. A vehicle for handling refuse comprising:
apparatus having supporting means mounted to the vehicle body;
a container pivotally mounted to said supporting means at the front end thereof along a pivotal axis, said container having a floor;
means for pivoting the container about said pivotal axis to thereby selectively adjust the vertical height of the other end of said container for unloading refuse at the adjusted height;
door means for opening or closing said rear end of the container, said door means comprising a single door having a bottom edge, said bottom edge being adjacent to said floor in the closed position thereof;
means for slidably connecting said door means to said rear end of the container for vertical adjustment thereof;
means having an operator control member for controlling the position of said door means with respect to the container;
ram means operably disposed within said container for selectively packing materials placed within the container when the door is closed and for ejecting materials out from said rear end of the container when said door is at least partially open; and
means having an operator control lever adjacent to said operator control member of said controlling means for operating the ram means, whereby the positions of said ram means and said door means can be simultaneously controlled by one person for metering refuse from said container.

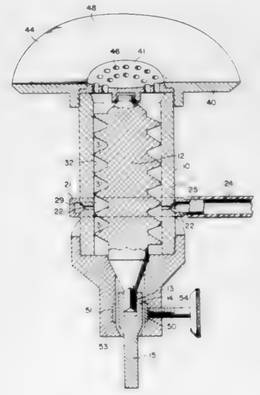
3,966,097
FLUID METERING VALVE
Marlyn Dale Crown, and Carl Eugene Finley, both of Sycamore, Ill., assignors to Olin Corporation, New Haven, Conn.
Filed July 2, 1975, Ser. No. 592,707
Int. Cl.² G01F *11/38*
U.S. Cl. 222—402.2 **9 Claims**



1. An apparatus for providing a measured amount of fluid under pressure from a reservoir of a bulk supply of fluid of the type having an outlet valve normally closed against fluid flow, said apparatus comprising:
a. means forming a measuring chamber for containing a predetermined volume of fluid under pressure;
b. means forming a first fluid flow passage into said measuring chamber from the fluid reservoir outlet said first fluid flow passage being coaxial with the bulk supply outlet valve;
c. a probe coaxial with the bulk supply outlet valve and mounted in said first fluid flow passage for axial movement therethrough between a first position free of engagement with the bulk supply outlet valve and a second position engaging the bulk supply outlet valve to open the latter, and return;
d. means forming a second fluid flow passage out of said measuring chamber, said second fluid flow passage being radially offset from and having a portion with an axis which is substantially parallel to the axis of said probe;
e. valve means contained in said second fluid flow passage;
f. lever means mounted on said probe between end surfaces thereof and extending radially therefrom, said lever means engaging said valve means to hold the latter open while said probe is in said first position and said lever means being movable with respect to said valve means in response to axial movement of said probe toward said second position to close said valve means before said probe reaches said second position to enable filling of said measuring chamber with a measured amount of fluid under pressure while said probe is in said second position.

3,966,098
PAINT APPLICATOR
Joseph F. Brown, Oakland, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Sept. 17, 1974, Ser. No. 506,771
Int. Cl.² G01F *11/22*
U.S. Cl. 222—413 **3 Claims**

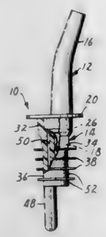
1. A dispenser and applicator of paint, comprising
a hollow tubular housing mounted to rotate within
a hollow collar rotatably mounted about the exterior of said housing so that said collar remains relatively fixed when the enclosed housing is rotated,
a worm gear mounted inside of said housing so as to be free to rotate with respect to said housing,
said worm gear fitted at a first end with a drive member that extends externally beyond a first axial end of the housing,
said drive member externally shaped to engage a means of rotatable power,
a circular disc, which serves as a dispenser and applicator of liquid coating, externally joined to a second axial end of said housing, said disc formed with through perforations leading to the interior of the housing,
said hollow collar fitted with attachment means to join a dispensing tube leading from a supply of liquid coating to the interior of the collar, with said housing fitted with through perforations in the wall of the housing surrounded by the collar, said perforations leading to the interior of the collar so that liquid coating in the collar interior is led into the interior of the housing, and
drive means to rotate the housing with respect to the worm gear inside the housing, when the worm gear is rotated by rotation of the drive member, such that
rotation of the worm gear within the housing, relative to the housing, forces liquid coating in the housing interior out of the perforations of the disc and onto the external surface of the disc for application by the disc to a surface to be coated, said rotation of the worm gear serving to draw said coating into the housing through the perforations in the housing wall leading to the interior of the collar and serving to consequently draw said coating into the collar interior from a dispensing tube attached to the collar leading from a supply of liquid coating, with
rotation of the housing serving to rotate the disc to rotatably apply the coating on the exterior of the disc to a surface to be coated.



3,966,099
TWO MEMBER POURING DEVICE HAVING VENT
Walter E. Sanford, Jr., Hugo, Minn., and Peter R. R. Rupp, St. Croix Falls, Wis., assignors to Aladdin International, Inc., St. Paul, Minn.
Filed May 1, 1975, Ser. No. 573,775
Int. Cl.² B67D *3/00*
U.S. Cl. 222—478 **10 Claims**

6. A pourer for dispensing liquid from a narrow necked bottle, said pourer comprising a rigid spout member for guiding the flow of liquid from the bottle and a flexible resilient sealing member for sealingly seating within the neck of the

bottle and removably attaching the pourer thereto, said spout member including a rigid base portion having a longitudinal bore therethrough and having a longitudinally extending trough in the outer wall thereof, said flexible sealing member



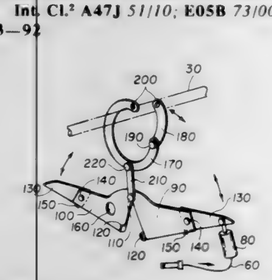
comprising a tubular body tightly fitting over said rigid base portion and having a longitudinal vent tube provided as an integral part extending along the inside wall thereof and seating within said trough.

3,966,100

LOCK FOR COATS AND OTHER SLEEVED GARMENTS

Daryl A. Nelson, Sioux Falls, S. Dak., assignor to The Raymond Lee Organization, Inc., a part interest

Filed June 16, 1975, Ser. No. 586,975
Int. Cl.² A47J *51/10*; **E05B** *73/00*
U.S. Cl. 223—92 **4 Claims**



1. A coat lock, comprising:

a clothing hanger member which is elongated and has opposed pair of ends;

hanger means with two curved members that each have a free end, the hanger means being attached to the top of the hanger member intermediate its ends to enable the hanger means to be secured to a clothes bar when the free ends of the members are secured together and to enable the hanger means to be detached from the clothes bar when the free ends of the members are separated from each other;

a flexible cable secured at one end to an end of the hanger member; and

lock means attached to the end of the cable remote from the hanger member and detachably securing this remote end to the free ends of the curved members to form a closed loop while simultaneously securing the free ends of the members together.

3,966,101

CAMERA SUPPORT

William P. Taylor, III, 963 Renwood Drive, Kettering, Ohio 45429

Filed Dec. 5, 1974, Ser. No. 529,626
Int. Cl.³ A44C *5/00*; **G03B** *17/00*
U.S. Cl. 224—28 R **11 Claims**

1. A camera support comprising:

a. substantially rigid arm engaging means including a section having an appreciably greater length than width to permit said arm engaging means to extend along and engage at more than a single point portions of the forearm of one using said support,

b. means for wrapping at more than a single point the forearm along which said arm engaging means extends,

c. said arm wrapping means being secured to said arm engaging means and thereby rendering substantially immobile said arm engaging means with respect to the forearm along which it extends,



d. a camera supporting base projecting outwardly from said arm engaging means at a position such that it is adjacent a hand associated with the forearm to which said arm engaging means is attached, and

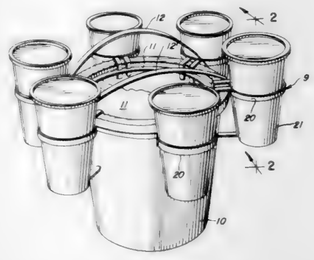
e. means on said camera supporting base for mounting a camera thereon in a position to be operated by the hand associated with the forearm to which said arm engaging means is attached.

3,966,102

SINGLE UNIT CARRIER FOR DRINKWARE

Robert T. Clark, La Mirada, Calif., assignor to Standard Oil Company, Chicago, Ill.

Filed Aug. 8, 1974, Ser. No. 495,546
Int. Cl.² B65D *71/00*
U.S. Cl. 224—45 A **7 Claims**



1. A carrier for drinkware adapted to support tapered cups or glasses on a container having a bottom, an open top and a tapered sidewall extending therebetween comprising:

a. at least one ring shaped to suspend a tapered cup or tapered glass by contact with a substantially vertical outside surface thereof;

b. at least one flange attached to said ring adapted to hold said ring to the container, wherein said flange is bent to provide a horizontal arm sufficiently long to extend across a lip of the container and an arm extending downwards from the end of the horizontal arm into the inside of the container and where said container is provided with a lid having a plurality of slots whereby said at least one flange is received therein; and

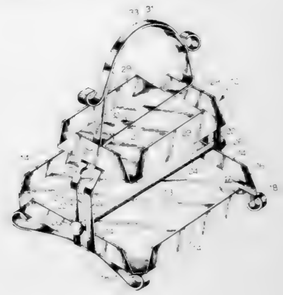
c. a bar having one end attached to said ring and having a free end extending downward so as to contact the outside of the tapered container and to maintain said ring parallel to the top of the container.

3,966,103

HOLDER FOR CONTAINERS AND NAPKINS

Hyman Abrams, P.O. Box No. 27, N. Hackensack Station, River Edge, N.J. 07661

Filed Dec. 13, 1974, Ser. No. 532,620
Int. Cl.² A47G *23/06*
U.S. Cl. 224—48 R **6 Claims**



1. A substantially rigid structure for holding and dispensing condiment containers and napkins comprising:

a lower tray portion having a substantially planar surface for retaining a stack of napkins securely thereon;

strut means extending upwardly from opposed sides of said lower tray portion in rigid relation thereto:

slot means extending upwardly from said lower tray portion and within said strut means;

bar means extending through said slot means and slidable therein said bar means extending across said lower tray portion to rest on napkins and thereby hold said napkins in said lower tray portion, said bar means including locking means to retain said bar in said slot means;

an upper tray portion including a substantially planar surface for supporting containers and flange means for positively retaining containers on said surface;

means for mounting said upper tray portion on and above said strut means above said slot means, so that said planar surfaces of said lower and upper trays remain parallel, when said structure is carried and is at rest; and

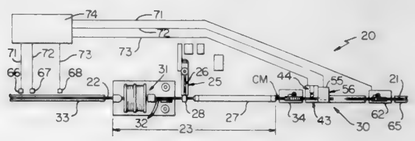
handle means extending from said upper tray portion for lifting and carrying said structure, said handle means cooperating with said flange means to support said containers.

3,966,104

APPARATUS FOR SEVERING REINFORCED ELASTOMERIC CONDUIT

Homer N. Holden, Sylva; James P. Hunt, Clyde; Vernon D. Browning, Waynesville; Edward L. Hoglen, Candler, all of N.C., and Donald L. Kleykamp, Springboro, Ohio, assignors to Dayco Corporation, Dayton, Ohio

Filed Mar. 5, 1975, Ser. No. 555,492
Int. Cl.² B65H *35/10*
U.S. Cl. 225—96 **12 Claims**



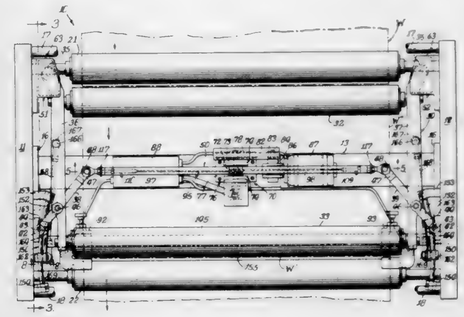
5. In a machine system for producing a continous flexible elastomeric cylindrical conduit having a particular circumference and a wall thickness and which is reinforced by a plurality of axially extending helical wires and in which said system employs a plurality of elongated rigid mandrels operatively associated in aligned end-to-end relation for supporting said conduit during continuous production thereof the improvement comprising an apparatus for severing said conduit adjacent associated ends of each pair of associated mandrels, said apparatus comprising, first moving means for moving each conduit covered mandrel at a particular speed as its exits a fabrication area of said system, weakening means for weakening said conduit around its entire circumference and through substantially its entire wall thickness at a location adjacent associated ends of each pair of associated mandrels, said weakening means being at a weakening station downstream of said fabrication area, a cutting device at a cutting station arranged between said fabrication area and said weakening station for cutting each of said plurality of helical reinforcing wires adjacent said location, said cutting device providing a longitudinal rectilinear cut through said conduit at one circumferential position therealong which extends into said conduit a sufficient distance to cut said wires yet with a portion of an associated rigid mandrel in a supporting position therewithin, and second moving means downstream of said weakening means for moving the forward one of said pair of mandrels as it exits said weakening station at a speed faster than said particular speed causing said conduit with its cut helical wires to be severed apart around its entire circumference and through its entire wall thickness at said location and causing said forward mandrel with a length of conduit therearound to be moved rapidly from said weakening station.

3,966,105

WEB ALIGNING APPARATUS

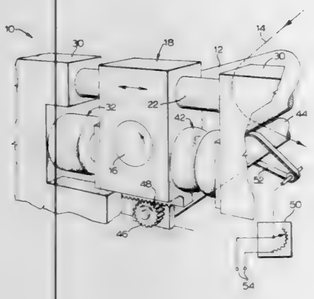
Thomas F. Curran, Hoffman Estates, Ill., assignor to Cary Metal Products, Inc., Barrington, Ill.

Filed Aug. 10, 1973, Ser. No. 387,235
Int. Cl.² B65H *25/26*
U.S. Cl. 226—21 **26 Claims**



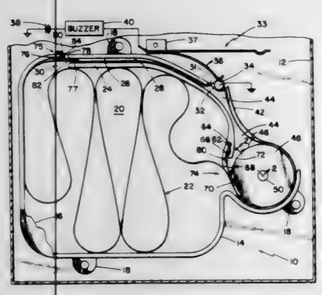
1. In an apparatus for returning a moving web to a desired path of travel after a lateral deviation therefrom, said apparatus comprising support structure including a pair of laterally spaced support members, a tilt frame disposed between said support members, said tilt frame including a pair of laterally spaced, longitudinally extending frame members, at least one steering roller rotatably mounted at its ends in said frame members, said roller being arranged so that its axis extends generally transversely to the path of travel of said web, and means connecting said tilt frame to said support members for tilting movement with respect to said web, the improvement of sliding bearing means carried by at least one of said support members and at least one of said frame members for supporting said tilt frame and guiding the movements thereof, said sliding bearing means having bearing surfaces permitting said one frame member to slide relative to said one support member in only one plane and said tilt frame to tilt only in said one plane.

3,966,106
FOLLOWER ROLL SUSPENSION SYSTEM
Adu Randpalu, Lasalle, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Canada
Filed July 24, 1974, Ser. No. 491,231
Int. Cl.² B65H *25/04*
U.S. Cl. 226—42 **4 Claims**



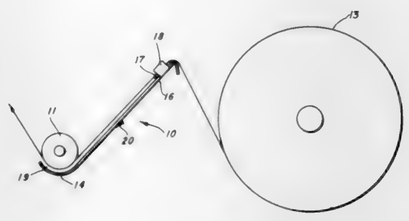
1. A spring roll system for a paper machine having a roll mounted between spaced bearing blocks for rotation therebetween when in use in web tensioning relation, roll support means comprising a pair of spaced horizontally extending shafts carrying low friction bearing means in supporting relation with said bearing blocks to permit in operation substantially linear horizontal displacement of the roll over a range of displacement in respsonse to a component of tension forces produced by a said web, closed air bag spring means to position said roll intermediately of said range of displacement, and means responsive to the relative position of said roll in said range of displacement connected in speed controlling relation with said paper machine to adjust the speed thereof in the sense to maintain the tension in said web constant.

3,966,107
TAPE CASSETTE
Joseph A. Costantini, East Longmeadow; Glen E. Flint, Springfield, and Richard J. Lanier, Indian Orchard, all of Mass., assignors to Standard Electric Time Corporation, Springfield, Mass.
Filed June 5, 1974, Ser. No. 476,426
Int. Cl.² G03B *1/24*
U.S. Cl. 226—59 **9 Claims**



1. In a tape cassette including a storage housing means for storing an endless perforated program tape in random fashion, a storage compartment, a rotatable drum compartment, said storage housing having a sidewall portion and an inner wall member defining a passage for said tape extending from said storage compartment to an opening in said cassette to permit movement of said tape over a sensing position adjacent a sensing means of associated equipment to said rotatable drum compartment, drive means including a rotatable drum means located within said rotatable drum compartment, said drum means having at least one peripheral groove and a plurality of projections which extend outwardly from a peripheral surface of said drum means to engage said perforations in said tape for advancing said tape by pulling said tape from said storage compartment through said passage, over said tape sensing position towards an entrance for said storage compartment, and separation means including a resilient leaf guide member located adjacent said entrance for said storage compartment having at least one leg portion with an end which slidably engages a surface of said groove of said rotatable drum means, whereby said separation means is effective to separate said tape from said rotatable drum means as said drum means advances said tape towards said entrance, and tape control means including a tension member extending towards said inner wall member at an entrance of said passage to contact said tape for permitting passage of only one layer of said tape into said passage thereby preventing clogging of said tape adjacent said passage and for maintaining tension on said tape as it is advanced towards said entrance of said storage compartment.

3,966,108
INERTIA ISOLATOR
Alfred Kent Boyd, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Mar. 11, 1974, Ser. No. 450,039
Int. Cl.² B65H *17/42*
U.S. Cl. 226—114 **8 Claims**



1. In a web transport system having a frame, web material wound on a supply reel, and at least one drive roller for unwinding the web material from the supply reel, an inertia isolator, comprising:

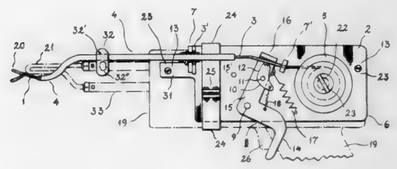
a. a first relatively stiff member fixedly mounted to the frame, adjacent the drive roller;

b. a flexible member, attached to the first member, opposite the drive roller; and

c. a second relatively stiff member attached to the flexible member, positioned adjacent the supply reel, and slidably engaging the web material for providing a flexing motion in a direction that tends to unwind the web material when the drive roller is accelerated and for providing a flexing motion in the opposite direction when the drive roller is decelerated.

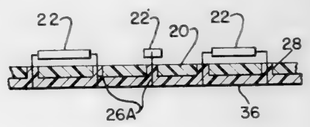
3,966,109
SOLDERING AID
James Edward Hogan, 7 Harvard St., South Hadley, Mass. 01075
Filed May 2, 1975, Ser. No. 573,874
Int. Cl.² B23K *3/06*
U.S. Cl. 228—52 **10 Claims**

1. Soldering aid for handoperated feeding of measured lengths of soldering string to the heating wire tip of a soldering gun, having a trigger for control of heating intervals, which soldering aid comprises: a base plate, mounted above the trigger on one side of the soldering gun, a hand lever being pivoted near the lower edge of the central part of the base plate and having a handling arm extending approximately to a location parallel to the trigger and a locking arm extending in the opposite direction, a storage reel carrying a supply of soldering string and being pivoted on the rear part of the base plate, a protective tube mounted partially on the forward part of the base plate and partially in a hollow heat-resisting bead seated over the heating wire of a soldering gun; a springloaded finger clamp being pivoted on the locking arm, a lug attached



to the free end of this arm and aligned as a counterhold for the finger clamp pressing against the soldering string when the hand lever is being swiveled for intermittent forward transport of soldering string which is drawn from the storage reel and pushed through the protective tube unto the heating wire tip, and further comprises a coil spring, as a means for keeping the finger clamp off any gripping contact with the soldering string when the locking arm is being swiveled in direction toward the storage reel, freeing the finger clamp for backsliding under the soldering string.

3,966,110
STABILIZER SYSTEM WITH ULTRASONIC SOLDERING
Kenneth G. Boynton, Milford, N.H., assignor to Hollis Engineering, Inc., Nashua, N.H.
Continuation-in-part of Ser. No. 508,052, Sept. 23, 1974. This application Mar. 11, 1975, Ser. No. 555,271
Int. Cl.² B23K *31/02, 1/08*
U.S. Cl. 228—175 **28 Claims**



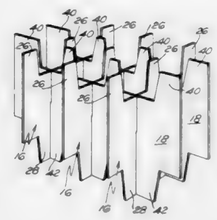
1. A method of mass joining with solder printed circuit boards having mounted thereon components with leads extending through holes in lands on the board, said method comprising the steps of:

holding said components in position in said board by coupling said lands and leads to one another with a solid stabilizer material which is compatible with said solder and has a melting point below that of said solder, and

immersing said board and leads at least in part in a molten body of said solder to which vibratory energy is imparted so as simultaneously to melt said stabilizer material and scrub said lands and leads to remove oxides and said materials therefrom, and to wet said lands and leads with said molten body of solder.

18. A system for mass joining with solder electrical and electronic components assembled in a circuit board wherein the components have leads which extend through holes in lands on said board, and comprising in combination: means for applying to said board a solid stabilizer material which is compatible with said solder and has a melting point below that of said solder; and, an ultrasonic soldering station adapted to apply to said lands and leads a molten body of said solder to which vibratory energy is imparted so as to scrub said lands and leads to remove oxides and said stabilizer material therefrom, and to simultaneously wet said lands and leads with molten solder.

3,966,111
CONTAINER PARTITIONING
Brian A. Grimes, Warwick, R.I., assignor to Grimes Box Company, Inc., East Providence, R.I.
Filed Oct. 20, 1975, Ser. No. 624,175
Int. Cl.² B65D *5/48, 81/00*
U.S. Cl. 229—15 **6 Claims**



1. A partitioning for a container comprising first and second sets of spaced parallel panels adapted for respective transverse and longitudinal interconnection with each other to delineate a plurality of spaced cells within said container, each panel of said first set of panels having an intermediate body portion and a plurality of projections extending upwardly and downwardly therefrom so as to form alternating projections and cutouts on either side thereof, said upwardly and downwardly extending projections being laterally offset from each other, and a vertically oriented slot extending downwardly from each upper cutout into and terminating in said body portion, each panel of said second set of panels having an intermediate body portion and a plurality of projections extending upwardly and downwardly therefrom so as to form alternating projections and cutouts on either side thereof, said upwardly and downwardly extending projections being laterally offset from each other, and a vertically oriented slot in each of said downwardly extending projections, said slot extending upwardly into and terminating in said body portion, the slots as formed in said first set of panels being located for aligned engagement with slots as formed in said second set of panels.

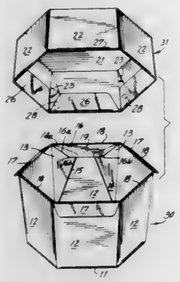
3,966,112
TWO-PIECE, POLYGONAL CONTAINER
Robert Louis Gordon, Monroe, N.Y., assignor to International Paper Company, New York, N.Y.
Filed Dec. 23, 1974, Ser. No. 536,007
Int. Cl.² B65D *5/12*
U.S. Cl. 229—23 BT **9 Claims**

1. In a two-piece, polygonal container having a paperboard base which includes: a central, polygonal, bottom panel of at least four sides; at least four, upstanding, side wall panels, foldably connected to the sides of the bottom panel; at least four, triangular gusset panels, each gusset panel being located between and foldably connected to two, adjacent, side wall panels; and at least two, downwardly extending, base-locking flaps, foldably connected to the top edges of at least two, non-adjacent, side wall panels; the central, leading edge portions of each base-locking flap being bonded to the underlying surface of a side wall panel; and each of the gusset panels being folded so that it lies substantially flat against a surface of a side wall panel and is overlain by a base-locking flap; the improvement which comprises:

the top edges of each gusset panel including an angle of 0° to 10° with the lateralmost, lateral edge portions of an overlying, base-locking flap;

the lateral edge portions of each base-locking flap overlapping the top edges of a gusset panel by no more than 5/16 inch;

a spot of adhesive being provided on a surface of each of the at least two, non-adjacent, side wall panels for bonding



the leading edge portions of the base-locking flaps to the underlying surfaces of the side wall panels; the spots of adhesive being so located that they do not contact the gusset panels; and

each base-locking flap overlying two adjacent gusset panels.

3,966,113

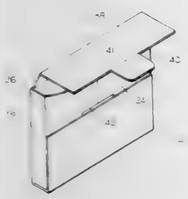
ONE PIECE BOX FOLDER

William G. Tipton, St. Louis, Mo., assignor to Cavalier Packaging Company, Inc., St. Louis, Mo.

Filed May 14, 1975, Ser. No. 570,400

Int. Cl.² B65D *5/02*

U.S. Cl. 229—40 **3 Claims**



1. A one-piece box adapted to be erected from a foldable blank, said box having a front panel provided with a slot for receiving a tuck tab of a hinged cover panel, said front panel having a thickness substantially greater than the thickness of the tuck tab in order to receive said tuck tab within the front panel, said box comprising a rear panel foldably connected to top, bottom and a pair of side panels, said front panel being comprised of a pair of underlying front side panels foldably connected to said side panels and an overlying lower front panel foldably connected to said bottom panel and adhesive means securing said last named panels together, the hinged cover panel being foldably connected to said top panel and engageable in abutting relation against the upper portion of the underlying front panels, said front side panels being provided with openings which provide a combined opening receiving said tuck tab, said combined opening having a major portion underlying the overlying lower front panel and a minor portion extending partially across the box above said lower front panel to provide said tuck tab receiving slot.

3,966,114

BOX WITH A MEMBRANE WHICH SEALS THE BOX

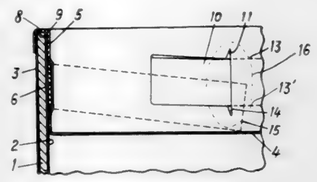
Walter Schellenberg, Diepoldsau, Switzerland, assignor to Max Sandherr AG, Diepoldsau, Switzerland

Filed June 2, 1975, Ser. No. 582,817

Claims priority, application Switzerland, July 22, 1974, 10089/74

Int. Cl.² B65D *17/20, 5/54*

U.S. Cl. 229—51 CE **10 Claims**



1. An improved pilfer-proof membrane seal for a container of the type having a replaceable lid insertable into the container opening, the seal comprising

a membrane having

a cylindrical portion extending downwardly into the open end of the container at least to the insertion depth of the lid,

said cylindrical portion lying adjacent the inner surface of the container and being at least partly sealed to said inner surface, and

a transverse portion extending across the interior of said container to close the interior volume thereof below said insertion depth; and

a tear strip extending completely around the inner surface of said container and lying between said cylindrical portion and said inner surface.

3,966,115

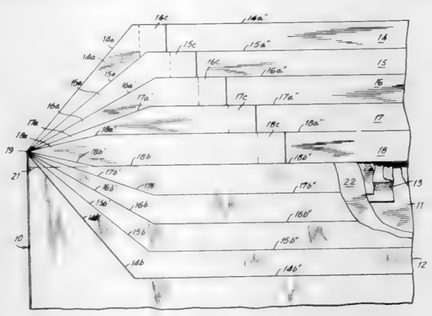
STEPPED AND ANGLE-CUT, PINCH CLOSURE

Clinton R. Hollis, Camden, Ark., assignor to International Paper Company, New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 526,789

Int. Cl.² B65D *33/02, 33/18*

U.S. Cl. 229—55 **14 Claims**



1. In an end construction for forming a pinch closure for the opening in an end of a multi-ply, tubular bag, the improvement which comrises:

at least two plies of said bag including a stepped and angle-cut flap on the portion of each ply on one side of the opening in the end of the bag and

a stepped and angle-cut cut-out in the portion of each ply on the other side of the opening in the end of the bag;

each flap on one of said at least two plies having a leading edge remote from the opening in the end of the bag and a pair of lateral edges connected to the ends of the leading edge and the opening in the end of the bag;

the leading edge of the flap on an outer ply of said at least two plies being spaced a greater distance from the opening in the bag than the leading edge of the flap on an inner ply of said at least two plies; and

the lateral edges of the flap on an outer ply of said at least two plies including greater angles with the opening in the bag than the lateral edges of the flap on an inner ply of said at least two plies; and

each cut-out in one of said at least two plies having a leading edge remote from the opening in the end of the bag and a pair of lateral edges connected to the ends of the leading edge and the opening in the end of the bag;

the leading edge of the cut-out in an outer ply of said at least two plies being spaced a greater distance from the opening in the bag than the leading edge of the cut-out in an inner ply of said at least two plies; and

the lateral edges of the cut-out in an outer ply of said at least two plies including greater angles with the opening in the bag than the lateral edges of the cut-out in an inner ply of said at least two plies; and

the flap on each ply being adapted to fold about a fold line, located inwardly of the opening in the end of the bag, to overlap the leading edge and the lateral edges of the cut-out in its ply.

3,966,116

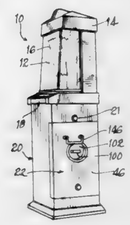
SECURITY BOX AND RECEPTACLE HOUSING FOR VALUABLES

George G. Dominick, Hoffman Estates; Ronald J. Lugowski, Rolling Meadows; Phillip D. Goodrich, Hoffman Estates, and Kenneth Erickson, Palatine, all of Ill., assignors to Qonaar Corporation, Elk Grove Village, Ill.

Filed Apr. 12, 1974, Ser. No. 460,276

Int. Cl.² G07B *15/00*

U.S. Cl. 232—7 **11 Claims**



1. In a construction for receiving valuables including a housing having a deposit section, a box for holding valuables deposited, a recess in said housing for removably receiving said box, an opening defined by said box for passage of valuables from said deposit section into said box, means normally blocking said opening, and a lock for holding said blocking means in the blocking position, said recess including means for unlocking said lock whereby said blocking means can be moved to unblocking position when the box is within said recess, the improvement wherein said blocking means comprises a door, a track receiving said door, said track serving to guide said door for sliding movement of the door on the track, a pivotally mounted arm connected to said door, means connecting said arm to said lock whereby the arm is free for movement only upon unlocking of the lock, and a handle mounted on the outside of said box and connected to said arm, rotation of the handle pivoting said arm to thereby slide said door along said track to an unblocking position.

3,966,117

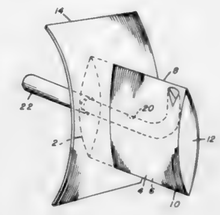
CENTRIFUGE DISCHARGE DEVICE

Walter Johannes, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 6, 1975, Ser. No. 584,557

Int. Cl.² B04B *11/02*

U.S. Cl. 233—19 A **12 Claims**



1. A discharge device for use in discharging a fluid from a fluid processing apparatus, the apparatus having means for causing relative motion of the fluid with respect to said discharge device, and the apparatus further having means for positioning said discharge device in the fluid, said discharge device comprising:

a body having a pair of converging side surfaces defining a leading surface on said body, whereby when said body is positioned in a fluid and the fluid is caused to move relatively to said body, said leading surface parts the fluid, thereby enabling the fluid to flow around and past said body in a generally streamlined flow pattern;

means defining at least one inlet port in one of said side surfaces;

an outlet tube extending from said body; and

means defining a passageway connecting said inlet port to said outlet tube, said inlet port being effective to shear a portion of the relatively moving fluid into said passageway for discharge from said outlet tube.

3,966,118

AUTOMATIC REGULATING EQUIPMENT FOR A HEATING DEVICE HAVING A VAPORIZING BURNER

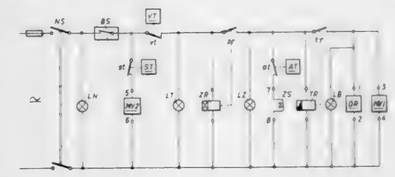
Ferdinand Karpf, 7, Josef Brennerstrasse, A-3400 Klosterneuburg, Austria

Filed June 18, 1975, Ser. No. 588,041

Claims priority, application Austria, June 19, 1974, 5074/74

Int. Cl.² G05D *23/00*

U.S. Cl. 237—2 A **12 Claims**



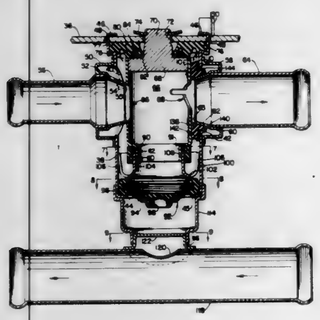
1. A full automatic regulating equipment for a heating device having an oil burner adapted to vaporise and burn fuel oil, an oil supply line leading to said burner, and an electrically heated ignition member for ignitioning the oil within said burner, input terminals for said ignition member, the equipment comprising a first thermostat responsive to the temperature of the burner, a contact of said first thermostat being adapted to control the delivery of electrical energy to said input terminals of said ignition member, an oil control regulator having a bi-metal element and a heating winding adapted to heat the bi-metal element, a first solenoid-operated valve

having an excitation winding, said oil control regulator and said first solenoid-operated valve being inserted in the oil supply line and adapted to control the stream of oil flowing through this line, a second thermostat responsive to the temperature of a medium to be heated by the burner and having a contact, an electronic time-delay-relay having input terminals and a contact, said input terminals of the time-delay-relay being connected in series to the contact of said second thermostat, a thermo-relay having input terminals and a contact, said imput terminals of said thermo-relay being connected in series with the contact of said time-delay-relay and in parallel with said input of said ignition member, so that said time-delay-relay with its contact switches the input terminals of said ignition member, the heating winding for said bi-metal element of said oil control regulator and the excitation winding of said first solenoid-operated valve to the supply voltage, whereas the thermo-relay with its contact switches the heating winding of the bi-metal element of said oil control regulator and the excitation winding of said first solenoid-operated valve with time delay to the supply voltage with respect to the input terminals of said ignition member.

3,966,119
VALVE ASSEMBLY WITH PLURAL FLOW PATH CONTROL

Robert M. Harter, deceased, late of Gowanda, N.Y. (by Patricia Harter, executrix), and Gary L. Russo, Gowanda, N.Y., assignors to AVM Corporation, Jamestown, N.Y.

Continuation of Ser. No. 286,663, Sept. 6, 1972, abandoned. This application Oct. 11, 1974, Ser. No. 514,183
Int. Cl.² F16K *11/18*; B60H *1/02*; G05D *15/00*
U.S. Cl. 237—12.3 B **40 Claims**



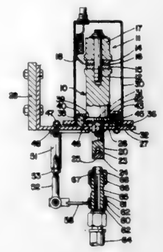
1. A valve assembly comprising: body means having a fluid inlet and a fluid outlet and a bypass outlet; a hollow plug valve member rotatable in said body means and having a through passage provided including a hollow chamber with an end opening and with inlet and outlet openings adapted to align with said fluid inlet and fluid outlet, respectively, in a valve open position; and bypass orifice means in said body means providing fluid communication via the interior of said body means with said fluid inlet and with said plug member end opening to enable regulated discharge of fluid from said valve body through said bypass outlet.

37. A hot water system for supplying an automotive heater core comprising: a water pump; a first conduit means leading from the water pump outlet to the heater core inlet; a second conduit means leading from the heater core outlet to the water pump inlet; and a control valve assembly comprising body means having a fluid inlet and a fluid outlet connected to control flow through said first conduit means and by-pass orifice means in fluid flow communication between said first and second conduit means; a hollow plug valve member rotatably supported in the interior of said body means and defining a through axial passage communicating at one end with said by-pass orifice means and having respective side inlet and outlet openings communicating with said through passage and adapted to align with said fluid inlet and fluid outlet in an open position of said hollow plug valve member; and valve means responsive to fluid pressure within the interior of said body means for controlling fluid flow through said by-pass orifice means.

3,966,120
ULTRASONIC SPRAYING DEVICE

Keith A. Furgalus, Lakewood, and Harold C. Simmons, Richmond Heights, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Mar. 12, 1975, Ser. No. 557,622
Int. Cl.² B05B *3/14*
U.S. Cl. 239—102 **18 Claims**

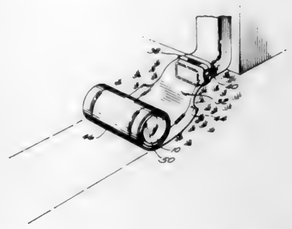


1. An atomizing device comprising a support, an acoustical horn mounted on the support, an ultrasonic generator engaging the horn to impart ultrasonic vibrations thereto when the generator is energized, said horn including a radially extending face integral therewith and opposed to a face on the support, a resilient member between said faces to separate and vibrationally isolate the horn relative to the support, means for attaching said horn to said support with said resilient means clamped between said faces, and said horn having a surface against which liquid may be impinged for atomizing the same.

3,966,121
DOWNSPOUT EXTENSION

Bruce A. Littman, Highland Park, Ill., assignor to Benson Mfg. Corporation, Menomonee Falls, Wis.

Filed May 22, 1975, Ser. No. 580,100
Int. Cl.² B05B *1/14*
U.S. Cl. 239—197 **3 Claims**

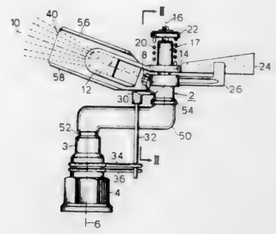


1. A downspout extension comprising an elongated tube body, said tube being formed from two opposed tube portions, said tube portions being connected together along their edges by first longitudinal seams, second longitudinal seams spaced inwardly from said side edges to form a central water conduit, apertures in said tube portions to form water outlets, and said first seams cooperating with said second seams to form channels transverse seams closing one end of each of said channels, spring strips located in said channels to cause said tube to wind into a coil, said tube including a downspout connecting sleeve said sleeve being formed by said two opposed tube portions and said second longitudinal seams to form a flexible connecting sleeve free of said springs and extending from said transverse seams for attachment to the downspout, and clamping means for securing said sleeve to the downspout.

3,966,122
NON-SIDE-SPLASH WATER SPRINKLERS

Mordeki Drori, 89 Zahal St., Kiron, Israel

Filed Apr. 9, 1975, Ser. No. 566,275
Claims priority, application Israel, Aug. 30, 1974, 45573
Int. Cl.² B05B *3/08*
U.S. Cl. 239—233 **12 Claims**

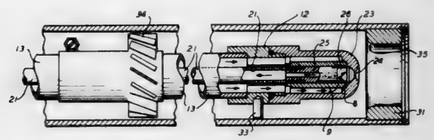


1. A water sprinkler including a sprinkler head mountable to a supply pipe for movement about a rotational axis, a nozzle carried by the sprinkler head from which the water issues in the form of a jet, and a drive member carried by the sprinkler head and impinged by the water jet for driving the head about said rotational axis, characterized in that the sprinkler includes a splash guard carried by the sprinkler head at a location to be impinged by the water splashed laterally from the drive member to substantially block side-splash therefrom, and that the sprinkler head is rotatably mounted on a rotational axis which is substantially aligned with the general vicinity of impingement of the water splashed against the splash-guard such that little or no rotary torque is applied at anytime to the sprinkler head by the impingement of the water splashed against the splash-guard during the rotation of the sprinkler head about its rotational axis by said drive member.

3,966,123
BURNER GUN

James T. Voorheis, 53 Park Lane, Essex Fells, N.J. 07021

Filed Dec. 5, 1974, Ser. No. 529,598
Int. Cl.² B05B *7/10*
U.S. Cl. 239—401 **8 Claims**

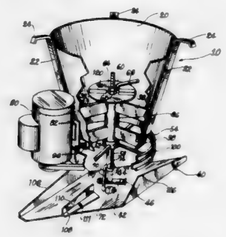


1. A burner gun comprising:
a. a oil tube,
b. a first housing attached at one end of the oil tube,
c. a second housing attached at the other end of the oil tube,
d. a piston tube in the oil tube,
e. means to move the piston tube axially in the oil tube,
f. a swirl chamber in the second housing,
g. an oil discharge opening in the end of the swirl chamber communicating with the outside of the second housing and defining an atomizer tip,
h. an axially movable piston disposed in the swirl chamber and connected to the piston tube, whereby the piston is moved in the swirl chamber,
i. at least one oil passage communicating between the oil tube and the swirl chamber,
j. the oil passage incrementally obstructable by the movement of the piston,
k. an outer tube surrounding the second housing and mounted coaxially on the oil tube,
l. a passage in the outer tube communicating with the interior of the outer tube, for introducing a gas therein,
m. means to move the outer tube axially with respect to the oil tube,
n. a nozzle on the end of the outer tuber having an elongated emission tunnel axial passage therein,
o. the nozzle arranged in spaced relation to the atomizer tip,
p. the means to move the outer tube axially with respect to the oil tube adjusts the nozzle with respect to the atomizer tip,
q. the piston having an axial bore communicating with the swirl chamber,
r. a regulator shaft connected to the piston tube in the first housing,
s. an axial bore in the regulator shaft,
t. a transverse passage in the regulator shaft,
u. an elongated chamber in the first housing in registration with the transverse passage,
v. a pressure gauge mounted on the first housing to read the pressure in the elongated chamber.

3,966,124
SPREADER FOR GRAIN AND LIKE MATERIAL

Eugene G. Sukup, Dougherty, Iowa 50433

Division of Ser. No. 452,736, March 20, 1974, Pat. No. 3,902,610. This application June 16, 1975, Ser. No. 587,056
Int. Cl.² A01C *17/00*; B65G *65/32*
U.S. Cl. 239—666 **4 Claims**

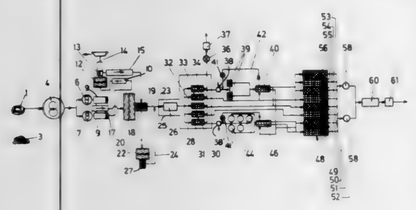


1. A spreader assembly for spreading grain or like material comprising a material receiving guide to be disposed generally vertically, a first support rotatably supported in said guide and extending therebelow, a second support extending parallel to said first support and being adjustable in a direction parallel to the axis of rotation of said first support and rotatable with said first support, a thrower member disposed beneath said guide for receiving thereon such material dropped from said guide, said thrower member being pivotally supported on said second support for axial movement therewith as said second support is adjusted axially of said first support, a link element mounted pivotally on said first support and pivotally attached to said thrower member at a location spaced from the pivotal connection of said thrower member to said second support, means for selectively adjusting the postition of said second support axially of said first support, whereby the angular position of said thrower member relative to horizontal is determined by such axial adjustment of said second support, and means for rotating said first and second supports, said link and said thrower member for distributing material received through said guide in any adjusted position of said thrower member.

3,966,125
METHOD AND FACILITY FOR THE PRODUCTION OF RUBBER FLOURS AND/OR RUBBER GRANULES FROM VEHICLE TIES

Hanspeter Finkbeiner, Kundoldingen, Switzerland, assignor to Gezolan Engineering AG, Zolfingen, Switzerland

Filed Apr. 2, 1975, Ser. No. 564,558
Claims priority, application Switzerland, Apr. 3, 1974, 4659/74
Int. Cl.² B02C *23/10*
U.S. Cl. 241—14 **4 Claims**

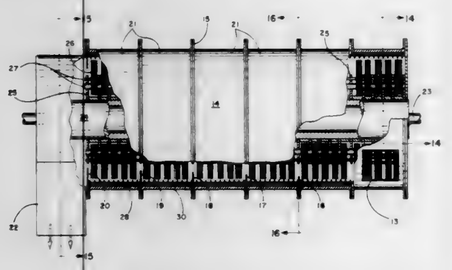


1. The method of recovering rubber from worn automobile tires which comprises the steps of:
initially cutting the tires to pieces by first pregrinding means;
subsequently recutting said pieces by second pregrinding means independent of said first pregrinding means;
segregating said recut pieces into metal containing and substantially metal free pieces;
comminuting said metal containing and said metal free pieces independently of each other into reduced size metal containing and into reduced size metal free pieces;
segregating said reduced size metal free pieces into a mass of relatively large size particles and into a first mass of relatively small size particles;
comminuting said relatively large size particles into a second mass of relatively small size particles; and
comminuting said first and second masses of relatively small size particles into graded masses of rubber flour.

3,966,126
CLASSIFYING HAMMERMILL SYSTEM AND METHOD OF OPERATION

Edward E. Werner, Oshkosh, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Feb. 10, 1975, Ser. No. 548,593
Int. Cl.² B02C *23/30*
U.S. Cl. 241—18 **4 Claims**

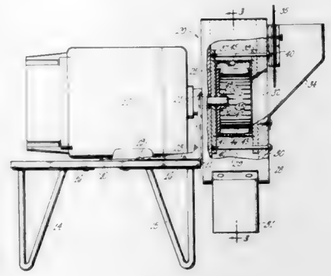


1. A process for separating a body of fibrous material into substantially individual fibers which comprises passing the fibrous material in a generally helical path in a current of air while impacting with impact elements the fibrous material to break it into fibers and at the same time slowing the movement of the fibrous material relative to the impact elements by causing the material to move along and against a grid-like impervious wall surrounding the current of air so that the slowed movement of the fibrous material permits it to be subjected to repeated impacts by the impact elements, said current of air carrying defiberized fibrous material through apertured classifier rings while the said rings retain for further defiberizing action material which is insufficiently defiberized, the defiberized material passing through the apertures of the rings.

3,966,127
CENTRIFUGAL DEVICE AND PROCESS FOR CONCURRENTLY RUPTURING AND PULVERIZING GRANULAR MATERIAL, PARTICULARLY CEREAL GRAIN

Steve Pytlewski, Rodom, Poland, assignor to Raymond Pytlewski, Torrance and Theodore Pytlewski, Woodland Hills, both of, Calif., part interest to each

Filed Nov. 1, 1974, Ser. No. 519,880
Int. Cl.² B02C *13/06*
U.S. Cl. 241—73 **6 Claims**



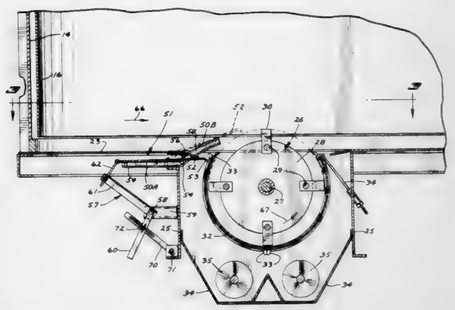
1. That process for rupturing granular material such as cereal grain and further reducing the ruptured granules to a desired pulvurant size in a continuous procedure, said process comprising
suspending a minor volume of granular material within a gaseous flow stream and by centrifugal force effected by rapid rotation of a rotor having a cylindrical series of multiple radially-directed baffles directing said stream against a surrounding spaced surface having multiple small apertures of selected size, said stream being moved with a force adapted to rupture the grains of material by impact with said surface, but leaving at least some of them larger than capable of passing through said apertures,
accumulating and maintaining a body of thus ruptured granules extending inward from said surface beyond the outer edges of the rotor baffles, and
moving said granular body transversely and frictionally across said surface by repetative rotation of the baffles through said body, thereby converting said ruptured granules to a reduced size adapted to pass through the apertures of said surface.

3,966,128
FEED CONTROL FOR TUB TYPE HAY GRINDER

Joseph A. Anderson; Chester G. Neukom, both of Jamestown, and Ivyl Kopecky, Ypsilanti, all of N. Dak., assignors to Haybuster Manufacturing Inc., Jamestown, N. Dak.

Filed Dec. 5, 1974, Ser. No. 529,918
Int. Cl.² B02C *13/286*
U.S. Cl. 241—73 **8 Claims**

1. In combination with a forage grinder having a hopper with a stationary wall, and a grinding cylinder having grinding means protruding through a provided opening in said stationary wall into said hopper, and feed means for moving forage material to be ground along said wall and across a forage input side of said grinding means, the improvement comprising an adjustable plate member mounted in relation to said wall adjacent to said cylinder and on the forage input side of said cylinder and protruding from said wall to deflect forage material moving along said wall, and means to permit movement of said plate member between at least two positions wherein the plate member deflects forage material in said hopper being

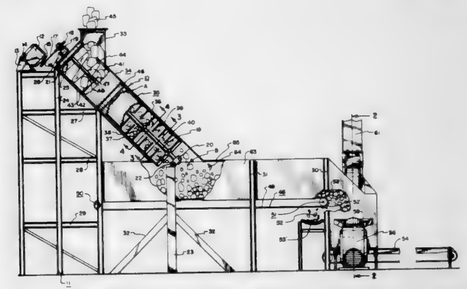


moved toward said cylinder by said feed means in a direction to limit the amount of the forage material coming into contact with said grinding means protruding into said hopper by a different amount in each position as the forage material passes over the cylinder, said plate member remaining spaced apart from the axis of said cylinder an amount greater than the maximum diameter of said grinding means when said plate member is moved between said positions.

3,966,129
REFUSE PROCESSING EQUIPMENT

John C. Brewer, Salt Lake City, Utah, assignor to Garbalizer Corporation of America, Salt Lake City, Utah

Filed May 7, 1975, Ser. No. 575,474
Int. Cl.² B02C *23/08*
U.S. Cl. 241—79.1 **17 Claims**

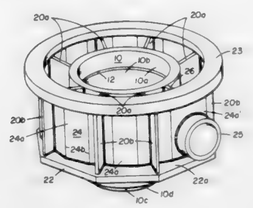


1. A materials' pre-processing and separation structure including, in combination, support structure, a declining receiver mounted to said support structure, said declining receiver having an upper input hopper and a revolving chamber provided with an input end communicating with said hopper for receiving contents therefrom and also with outlet end, said chamber being provided with interior refuse-impact arms, an elongate first conveyor having a feed end disposed underneath said outlet end and also a discharge end horizontally separated from said feed end, said first conveyor being provided with ferrous metals' separating means proximate said discharge end thereof, second and third essentially parallel, side-by-side conveyors disposed at a level beneath that of said first conveyor, said second conveyor extending forwardly of but being essentially in the same axially elongate vertical plane with said first conveyor, said second conveyor having a receiving end disposed beneath said discharge end of said first conveyor, and air-classifying blower means for directing a stream of air transversely across said second and then said third conveyor for blowing light materials descending from said discharge end of said first conveyor toward said third conveyor.

3,966,130
FRAME FOR CONE CRUSHER

Floyd F. Doty, Marion, Iowa, assignor to Iowa Manufacturing Company, Cedar Rapids, Iowa

Filed June 9, 1975, Ser. No. 585,120
Int. Cl.² B02C *2/00*
U.S. Cl. 241—285 R **5 Claims**



1. A composite frame for cone crushers and the like fabricated from a plurality of frame members and secured by welds, the members comprising: a generally cylindrical inner housing having an axis and opposite first and second axial ends, the housing having a bore therethrough along said axis; a generally annular base flange disposed in spaced surrounding relation to the outer periphery of the inner housing adjacent said first end thereof; a generally annular bowl support flange disposed in spaced surrounding relation to the outer periphery of the inner housing adjacent said second end thereof, the base and support flanges having opposed axially facing end faces and being coaxial with the inner housing; a plurality of integral rib plates disposed in planes parallel to said axis, the inner ends of the rib plates being secured as aforesaid to the outer periphery of the inner housing at spaced locations thereabout, the rib plates extending radially therefrom to and between said end faces of the base and support flanges and secured thereto as aforesaid; a plurality of filler plates secured as aforesaid between the opposed faces of each adjacent pair of the rib plates and between said end faces of the base and support flanges effective to box the rib plates and the base and support flanges and to close over the opening therebetween; and a drive shaft housing extending through both the inner housing and the filler plates between a pair of the rib plates, the drive shaft housing being secured as aforesaid to the inner housing and the filler plates and having a bore therethrough radially disposed with respect to said axis.

3,966,131
METHOD AND MACHINE FOR MAKING TWISTED WIRE BEADS FOR TIRES

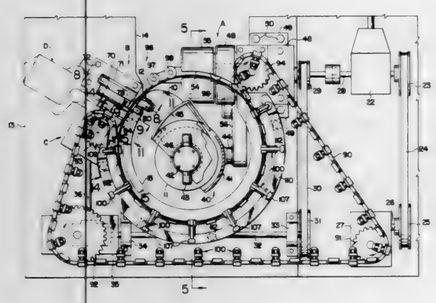
John Albert LaBoda, Fairview Park, Ohio, assignor to Advance Manufacturing Corporation, Cleveland, Ohio

Continuation of Ser. No. 283,178, Aug. 23, 1972, abandoned, Continuation-in-part of Ser. No. 190,753, Oct. 20, 1971, Pat. No. 3,801,028. This application June 3, 1974, Ser. No. 475,614
Int. Cl.² B65H *81/02*
U.S. Cl. 242—4 BE **12 Claims**

1. A machine for wrapping continuous lengths of filamentary wire material helically around the surface of a circular core ring comprising:
an endless roller chain having an outer span and an arcuate inner span,
an arcuate guide member adapted to be engaged by the rollers of said chain throughout said inner span,
clamping means carried by said roller chain adapted to engage and resiliently grip said core ring and filamentary material wrapped thereon in said arcuate inner span

around a major portion of the circumference of said core ring whereby said core ring is revolved with said inner span to transport successive portions of said core ring progressively across a free circumferential section in the space between the ends of said inner span,

a reel with a supply of filamentary wire material mounted for rotation about its axis, and



means for orbiting said reel about an axis tangent to said core ring with the axis of said reel parallel to a fixed reference line,

whereby as said core ring is revolved, said filamentary material is progressively fed from said reel and helically wrapped around the surface of the free circumferential section of said core ring.

3,966,132

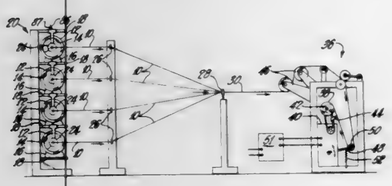
APPARATUS FOR AND METHOD OF HANDLING LINEAR ELEMENTS

Robert J. Gelin, Newark, Ohio, and James E. Bartlett, Big Pine Key, Fla., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 348,343, April 5, 1973, abandoned. This application Aug. 1, 1974, Ser. No. 493,580

Int. Cl.² B65H *63/00*

U.S. Cl. 242—36 **11 Claims**



1. The method of handling a linear bundle of filaments comprising:

linearly advancing the bundle along a given path such that the bundle vibrates with a varying frequency in response to changes in the linear speed and tension of the advancing bundle;

sensing the frequency of the vibrations of the advancing bundle;

supplying an electrical signal having a fixed amplitude and a varying frequency corresponding to the frequency of the vibrations of the advancing bundle; and

controlling advancement of the linear bundle in response to the varying frequency of the electrical signal.

3,966,133

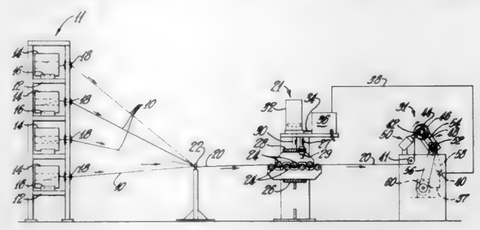
TENSION CONTROLLING APPARATUS

Robert J. Gelin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 23, 1974, Ser. No. 535,621

Int. Cl.² B65H *54/02, 59/30, 77/00*

U.S. Cl. 242—42 **5 Claims**



1. Apparatus for packaging roving from a plurality of continuous glass strands comprising:

a plurality of glass strand serving packages each mounted for linear withdrawal of a strand from one end thereof;

a rotatable collector spaced from the serving packages upon which the roving is wound as a package;

means for rotating the collector including speed control means for varying the angular speed of the collector during package collection so that the roving is wound at a constant linear collection speed, the speed control means including an electrical means effective to provide an electrical signal which varies in response to the changes of the diameter of the package during package collection;

gathering means between the packages and the collector for combining the strands into the roving;

means for tensioning the roving along its path to the collector including a first bar and a second bar in spaced relation located at opposite sides of the path and upon which the roving is turned during its travel along the path to the collector; and

means for controlling the tension in the roving including means for holding the first bar on a fixed axis, pneumatic means including an air cylinder for movably holding the second bar in a biased relationship with the roving so that changes in the disposition of the second bar modifies the turning of the roving upon the bars to modify the tension in the roving, and a pressure control for regulating the air pressure in the cylinder, such control including means for sensing the varying electrical signal from the electrical means and for regulating the air pressure in response to the sensed signal.

3,966,134

CASSETTE FOR AN ENDLESS TYPE CINEFILM

Yasuhisa Matsuda, Mitaka, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Dec. 3, 1973, Ser. No. 421,101

Claims priority, application Japan, Dec. 11, 1972, 47-142218[U]

Int. Cl.² B65H *17/48*

U.S. Cl. 242—55.19 A **5 Claims**

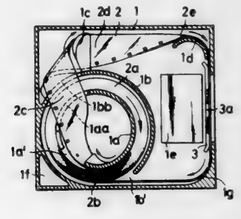
1. A cassette for an endless type film comprising:

a rectangular casing for housing therein said film coiled to form windings, said casing comprising a bottom wall, four side walls connected to the bottom wall, and a top wall, said top and bottom walls being separated by a distance substantially equal to the sum of the width of the film plus the thickness of the film, the casing further comprising

a film gate formed in a side wall of said casing oriented for the projection or the exposure of the portion of said film fed out of said windings and guided to pass across said film gate,

an annular inner guide ring secured to said casing for positioning and guiding the innermost winding of said film located around said inner guide ring, the inner guide ring having an outlet cut-out portion for feeding therethrough the terminal portion of the innermost winding of said film inwardly of said inner guide ring,

an annular outer guide ring secured to said casing and arranged around said inner guide ring substantially concentrically therewith and spaced a distance therefrom so that the windings of said film located around said inner guide ring are held within said outer guide ring, said outer guide ring having an inlet cut-out portion for receiving therethrough the foremost portion of said film which has been fed across said film gate into the interior of said outer guide ring to merge into the outermost winding of said film, said inner guide ring and said outer guide ring each having a shallow depression remote from said outlet cut-out portion of said inner guide ring for twisting that portion of the film fed out of said outlet cut-out portion by 90° as the film is advanced across said inner and outer guide rings,



a guide means for guiding said film fed out of said outlet cut-out portion of said inner guide ring across said inner and outer guide rings, said guide means being supported at a portion of said casing exteriorly of said outer guide ring adjacent to the position at which said portion of said film fed out of said inner guide ring moves across said inner and outer guide rings, the outer surface of said guide means being oriented obliquely with respect to the direction of movement of said film moving across said inner and outer guide rings, for twisting the portion of said film guided over said outer surface of said guide means by 180° in the same direction as the said twisting of 90°, the direction of movement of said portion of said film guided over said outer surface of said guide means being turned substantially at right angles, and

a further guide member for guiding said film from said guide means to said film gate and twisting said film by 90° in the same direction as the twisting of 180° effected by said guide means thereby causing said film to execute a 360° twist between being fed out of said inner guide ring and being moved across said film gate, then to be advanced to said inlet cut-out portion of said outer guide ring so as to merge into the outermost winding of said film.

3,966,135

NEWSPRINT REWINDER

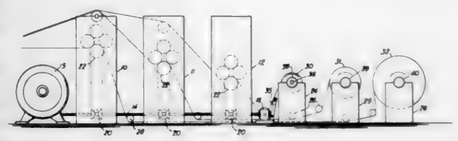
Bill Baker, 2723 Copeland Road, Tyler, Tex. 75701, and Frank Patterson, 608 Hood, Palestine, Tex. 75801

Filed Feb. 18, 1975, Ser. No. 550,184

Int. Cl.² B65H *19/18*

U.S. Cl. 242—58.1 **9 Claims**

1. In a printing press having a plurality of presses for simultaneously printing a plurality of paper webs and power train means for transmitting power to the presses, apparatus for supplying paper to the presses with said apparatus comprising a plurality of paper roll supports with at least one support including a rotatable shaft, and means for coupling said one roll support rotatable shaft with said power train means for



winding paper onto the one roll support from another of the roll supports.

3,966,136

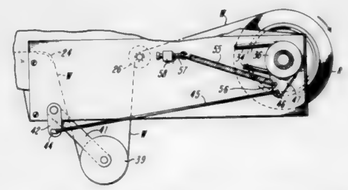
REWIND APPARATUS

John T. Newberry, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed May 13, 1974, Ser. No. 469,146

Int. Cl.² B65H *17/04, 25/00*

U.S. Cl. 242—67.1 R **19 Claims**



1. Apparatus for rewinding a web, comprising: a rotatably mounted shaft, first and second sleeves rotatably received on the shaft, means for continuously driving the first sleeve, the first and second sleeves having respective first and second cam surfaces, the cam surfaces being cooperable to cause the first sleeve to skew slightly on the shaft to cause the first sleeve to clutch the shaft, a hub driven by the shaft onto which a web can be wound, web tension sensing means responsive to tautness and slack in the web, and actuating means controlled by the sensing means for effecting movement of the cam surfaces of the first and second sleeves into cooperation when slack exists in the web and for effecting movement of the cam surfaces out of cooperation when tautness exists in the web.

3,966,137

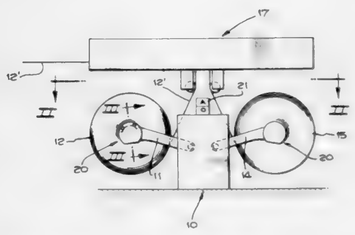
METHOD AND APPARATUS FOR CONTROLLING WEB TENSION

Jerome E. Schuessler, Fullerton, Calif., assignor to Jeroll Mfg. Co., North Hollywood, Calif.

Filed Mar. 27, 1975, Ser. No. 562,562

Int. Cl.² B65H *25/22*

U.S. Cl. 242—75.43 **11 Claims**



6. In an apparatus for making corrugated board in which a paper liner is joined with a fluted paper medium, the paper liner and medium being drawn from separate paper stock

rolls, the amount of paper medium fluted for each unit amount of unfluted liner consumed being expressed as take-up ratio, the provision of:

means for precisely controlling tension in at least said paper roll supplying the fluted medium for controlling consumption thereof at an optimum take-up ratio;

said means comprising disc brake means at opposite ends of the medium paper roll operable at selected braking pressure ranges,

said brake means including means for maintaining a constant uniform braking pressure on opposite sides of the medium paper roll,

said latter means including a self-regulating fluid brake system.

3,966,138

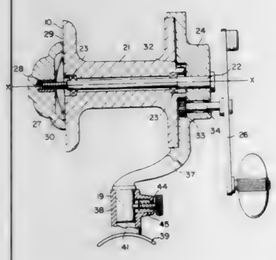
CASTING FISHING REEL

August P. Gelardi, Pacifica, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Jan. 14, 1975, Ser. No. 541,013

Int. Cl.² A01K *89/04*

U.S. Cl. 242—84.2 B **3 Claims**



1. A fishing reel fitted with a support arm for fastening to a fishing rod, with means to rotate the reel in the attached position to a first position in which axis of the spindle of the reel is oriented parallel to the axis of the rod for casting purposes, or alternately to rotate the reel to a second position in which the axis of the spindle of the reel is oriented perpendicular to the axis of the rod for reeling purposes,

said means serving to positively latch the reel in either the said first position or the said second position, with the support arm of the reel formed with a cylindrical plug member rotationally engaged in a sleeve member fitted to a member that is attachable to a fishing rod,

said cylindrical plug member formed with a pair of recessed holes, the axes of which are in a common plane, perpendicular to each other and perpendicular to the axis of the cylindrical plug member, with said sleeve member fitted with a detent member slidably mounted on a through hole of the sleeve member, the axis of said detent and hole being in the plane of the axes of the holes in the plug in the assembled mode,

said detent of a length to project both externally of the sleeve member and internally into one of the holes of the plug member when the plug member is rotated so as to align a plug hole with the detent member.

3,966,139

TEXTILE SERVING SPOOL

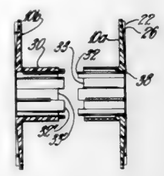
Anthony Terpak, Key Biscayne, Fla., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 19, 1974, Ser. No. 498,676

Int. Cl.² B65H *75/14*

U.S. Cl. 242—118.7 **6 Claims**

1. A textile serving spool for supporting a strand or yarn wound thereon and adapted for mounting on a rotatable mandrel and for serving the strand or yarn about a continuous object passing axially through the center of the mandrel, the spool comprising a hollow cylindrical core and a pair of integral annular flanges respectively at opposite ends of the core, the core and flanges being made of breakable material, each of the flanges having grooves in its surface extending between inner and outer peripheries thereof and corresponding to like grooves in the opposite flange to form pairs of grooves, the core having a slot for each pair of grooves, and having a rib extending axially along the interior thereof, each slot extending radially through the wall of the core and axially along the core between corresponding grooves but terminating a short



distance from each of the flanges to leave continuums of breakable material respectively at opposite ends of the core whereby when the flanges are fractured by breaking along the grooves the lines of fracture propagate across the continuums of material to the corresponding slots in the core and the core and flanges separate into at least two pieces for easy removal from the mandrel, and a liner in the core effective to frictionally engage with the mandrel, the liner having a slit extending from end to end to permit removal thereof from around the mandrel and being disposed in the core with the slit cooperatively engaging the rib extending axially along the interior of the core whereby the liner cannot rotate relatively to the core.

3,966,140

FISHING REEL

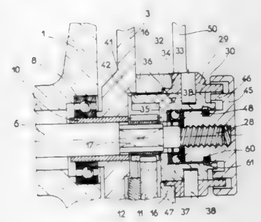
Andre Coquelet, and Alain Nepote, both of Cluses, France, assignors to Mitchell S.A., France

Filed June 30, 1975, Ser. No. 591,649

Claims priority, application France, July 18, 1974, 74.25043

Int. Cl.² A01K *89/02*

U.S. Cl. 242—217 **2 Claims**



1. In a fishing reel of the type comprising a rotatable spool disposed between two supports, a spool-braking device disposed coaxial to the spool and being actuable by an intermediate element also coaxial to the spool and movable by an axial traction exerted by a control member which is movable angularly but not axially, this control member including an abutment face disposed facing the outer face of one of the supports and at least one profiled part cooperating with a member of complementary profile angularly but not axially fixed on said support, the improvement wherein said control member and said member of complementary profile are retained axially on an end of the intermediate element extending beyond said one support solely by a common removable retaining member disposed on said end.

3,966,141

APPARATUS FOR PROCESSING YARN END OF COPS SUPPLIED TO THE WINDER

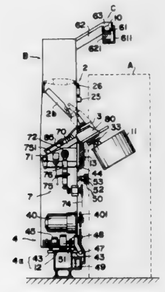
Shigeyuki Nishiyama, Amagasaki; Kotaro Tsurumi, Takatsuki, and Katsuaki Yoshimura, Amagasaki, all of Japan, assignors to Nihon Spindle Seizo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1973, Ser. No. 407,349

Claims priority, application Japan, Oct. 17, 1972, 47-104117; Oct. 17, 1972, 47-104118; Nov. 28, 1972, 47-119618; Mar. 13, 1973, 48-31591[U]

Int. Cl.² B65H *54/26*

U.S. Cl. 242—35.5 A **21 Claims**



1. An apparatus for processing yarn ends of cops to be supplied to a plurality of winder units comprising in combination, a magazine associated with each winder unit for receiving said cops, said magazines each including suction means for supplying yarn to the associated winding units; cop feeder means adapted to move along a path including a position in registration with each of said magazines, said cop feeder means including means for stopping said cop feeder means at each of said registration positions, and charging means automatically supplying cops to each of said magazines to dispose same therein when said feeder means is at each said registration position; yarn draw-out means for removing the yarn wound on said cops and drawing out the yarn end; yarn guide means for engaging the yarn extended between said yarn draw-out means and the cop disposed in said magazine to guide the yarn into proximity with said magazine suction means; and yarn cutting means for cutting the yarn gripped by said suction means in a position intermediate said suction means and said yarn draw-out means.

3,966,142

VERTICAL TAKEOFF AND LANDING AIRCRAFT

Marshall J. Corbett, Centerport, and Robert W. Kress, Lloyd Harbor, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 6, 1975, Ser. No. 556,095

Int. Cl.² B64C *1/30*

U.S. Cl. 244—12 A **21 Claims**

1. An aircraft having a fuselage, wings, empennage and propulsion means,

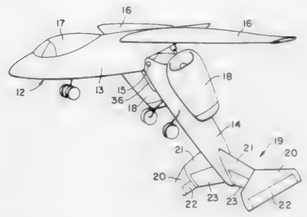
said wings being attached to said fuselage,

said propulsion means producing a thrust,

means for rotating said thrust with respect to said wings and said fuselage,

said empennage being rotatable as a unit with respect to said fuselage,

wherein said empennage rotates in concert with the rotation



of said thrust whereby the efflux of said propulsion means is directed at and impinges on said empennage.

3,966,143

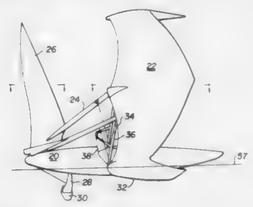
SELF-LAUNCHING GLIDER

Gordon R. Smith, 4 Summit Terrace, Sparta, N.J. 07871

Continuation of Ser. No. 351,997, April 17, 1973, abandoned. This application Jan. 28, 1974, Ser. No. 437,187

Int. Cl.² B64C *31/02*; **B63B** *35/72*

U.S. Cl. 244—16 **37 Claims**



32. An amphibious glider, operable in both a surface mode and capable of self-launching into a gliding mode, comprising,

a hull;

an aerodynamic wing mounted on said hull, said aerodynamic wing including means for stabilizing said glider when operating in said surface mode, said means for stabilizing said glider disposed at the ends of said aerodynamic wing; and

a hydrofoil mounted with respect to said hull, said hydrofoil being capable of hydrodynamic direction control.

3,966,144

DUCT SYSTEM FOR WIND GUST ALLEVIATION OF AIRCRAFT AND SUSPENDED CONTAINERIZED LOADS

Edwin Zenith Gabriel, 318-B South St., Eatontown, N.J. 07724

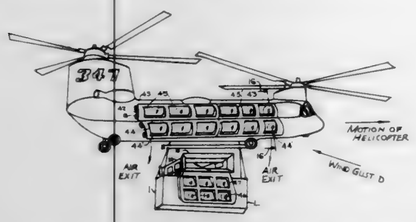
Continuation-in-part of Ser. No. 420,154, Nov. 29, 1973, abandoned. This application June 30, 1975, Ser. No. 584,585

Int. Cl.² B64D *47/00*

U.S. Cl. 244—17.11 **4 Claims**

1. An air duct system for mounting onto each exterior side of an aircraft's fuselage and having an exterior wall and an interior on each exterior side of said fuselage and supported by and spaced away from the surface of said fuselage so that air can flow between said duct system exterior walls and said surface, said walls shaped to follow contour of said surface, said walls having openings over most of their area and being fitted with doors having spring-hinges mounted above said doors and said doors capable of opening inward only into the interior of said duct system, said system having top, bottom, forward and rear sides and having openings on said sides for expelling air entering said system interior so that when a wind gust blows against the side of said fuselage said doors open and said system allows the air entering to be blown out through

said sides, the majority of said air being blown out through said bottom side by virtue of said hinges being mounted above



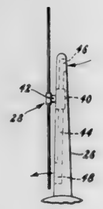
said doors, and said duct system provided with means for fastening onto the surface of said fuselage.

3,966,145

STRUCTURE FOR COOLING HELICOPTER TAIL ROTOR GEARBOX

Robert Wiesner, Broomall, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 28, 1975, Ser. No. 554,296
Int. Cl.² B64D *33/10*
U.S. Cl. 244—17.11 **3 Claims**



1. In a helicopter comprising a fuselage, a rotary wing system and a vertical stabilizer comprising a spar, a first skin connected to said spar and forming one side of said stabilizer and a second skin connected to said spar and forming the other side of said stabilizer, the combination of an anti-torque tail rotor and cooling system comprising a tail rotor connected to said vertical stabilizer, a gear box located within said stabilizer and operably connected to said tail rotor, an air passage located within said stabilizer and in communication with said gear box, wherein said air passage is formed by said spar, said first skin and said second skin air inlet means located in the vertical stabilizer and at one end of said passage, air outlet means located in said stabilizer and located at the other end of said passage, whereby cooling air flows into said inlet means through said passage and about said gear box, and out/said outlet means upon rotation of said tail rotor.

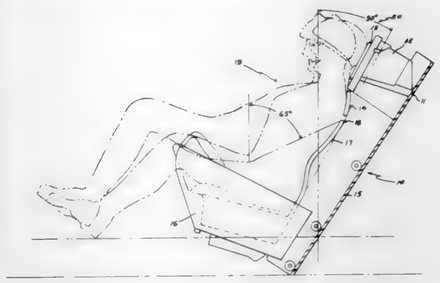
3,966,146

AIR BLADDER SEAT CUSHION FOR HIGH ACCELERATION COCKPIT

Edward O. Roberts, Xenia, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 10, 1975, Ser. No. 556,987
Int. Cl.² B64D *25/04*
U.S. Cl. 244—122 A **3 Claims**

1. In an aircraft ejection seat having a seat pan portion and a seat back portion rigidly mounted thereto at a predetermined minimum backward tilt angle; a pneumatically-operable, inflatable, air bladder cushion pad element disposed in supporting relation with the said seat pan and seat back portions, and adjustable between a first, deflated position against and acting as a part of the padding of the ejection seat and a second, inflated position with an upper surface portion thereof being disposed upwardly against and effectively forming a new back supporting surface for, and automatically tilting the occupant of the seat at a substantially increased and predetermined maximum angle of backward tilt towards the supine position for a significantly increased tolerance to sustained



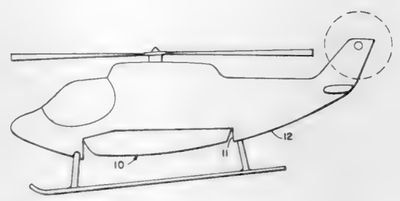
acceleration levels of up to 10 to 12 *g*'s; said air bladder cushion pad element including a first, back supporting portion attached to, and conforming with the configuration of, the seat back portion; and a second, seat portion integrally formed with said first, back supporting portion, and attached to and conforming with the seat pan portion of the ejection seat.

3,966,147

HAMMOCK SUPPORTED FUEL TANK

Joseph N. Wittko, Old Westbury, N.Y.; David G. Harding, Brookhaven, Pa.; John J. Schneider, Media, Pa., and Joseph E. Gonsalves, Springfield, Pa., assignors to Grumman Aerospace Corporation, Bethpage, N.Y. and The Boeing Company, Seattle, Wash.

Filed Nov. 26, 1974, Ser. No. 527,338
Int. Cl.² B64D *37/04*
U.S. Cl. 244—135 B **3 Claims**



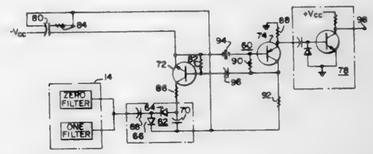
1. In an aircraft, a fuel cell fabricated of self-sealing material having:
- a substantially flat top surface for nesting under and against a substantially flat external bottom surface of the aircraft and having sides and a bottom shaped in the form of a shallow catenary, and
- means for supporting the fuel cell comprising:
  - a bar member extending the length of the fuel cell on both sides thereof and extending across the front and rear of the fuel cell,
  - hinge means for releasably attaching said bar member to the bottom surface of the aircraft,
  - means provided on said bar member for securing thereto the fuel cell, and
  - a fabric hammock attached to said bar member, said hammock engaging about and conforming to the shape of said fuel cell to confine and support it from said bar member.

3,966,148

SIGNAL THRESHOLD RESPONSIVE APPARATUS

Arun P. Sahasrabudhe, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 15, 1975, Ser. No. 568,225
Int. Cl.² B61L *21/06*
U.S. Cl. 246—34 R **7 Claims**



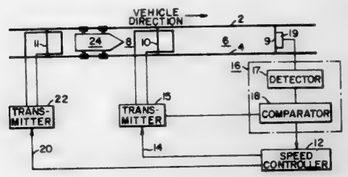
1. In a vehicle control system including signal threshold apparatus responsive to a coded input signal provided within a signal block of a track along which a vehicle is operative for controlling the vehicle occupying said signal block, the combination comprising
- means operative with said vehicle for providing a first output signal having an energy level in accordance with the energy level of said coded input signal,
- means including an oscillator for providing a second output signal in accordance with said first output signal having at least a predetermined energy level at which said oscillator will oscillate, and
- means responsive to the second output signal for controlling the operation of said vehicle within said signal block.

3,966,149

QUAD STATE RECEIVER

Thomas C. Matty, North Huntingdon, and Arun P. Sahasrabudhe, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburg, Pa.

Filed Mar. 13, 1975, Ser. No. 558,097
Int. Cl.² B61L *21/06*
U.S. Cl. 246—34 R **17 Claims**



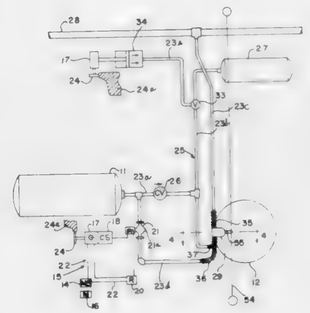
1. In a transportation vehicle detection system which compares the logic conditions contained in signals transmitted at a first point with logic conditions detected from signals received at a second point, the apparatus including:
- first means for filtering said received signals in relation to a first predetermined frequency;
- second means for filtering said received signals in relation to a second predetermined frequency;
- third means for detecting first logic conditions from said signals filtered by said first filtering means;
- fourth means for detecting second logic conditions from said signals filtered by said second filtering means where said second logic conditions are complementary to said first logic conditions;
- means for providing an enabling signal in relation to said first and second complementary logic conditions;
- means for comparing the logic conditions in said transmitted signals with said enabling signal provided in relation to said first and second complementary logic conditions; and
- means for indicating that a vehicle has been detected between said first and second points in relation to said comparing means.

3,966,150

VEHICLE SPEED CONTROL DEVICE

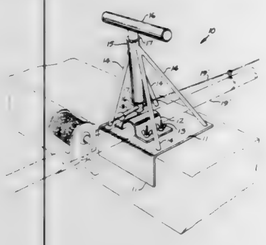
William H. Peterson, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jan. 13, 1975, Ser. No. 540,746
Int. Cl.² B61L *3/10*
U.S. Cl. 246—182 B **2 Claims**



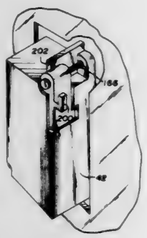
1. A vehicle speed control device for limiting the speed of a railroad car comprising
- a wheel driven generator adapted to engage a wheel of the railroad car,
- a speed responsive switch attached to said generator,
- magnetically operated switch means,
- tripping means mounted off the railroad car to actuate the magnetically operated switch means,
- a first reservoir tank of fluid under a vacuum,
- shuttle valve means,
- speed control valve means connected to the first reservoir and the shuttle valve means, and actuated by the generator through the speed responsive switch and the magnetically operated switch means to selectively supply fluid under a vacuum from the first reservoir to the shuttle valve means,
- a second reservoir tank of fluid under a vacuum,
- a trainline of fluid under a vacuum connected to charge both said first and second reservoir tanks with a vacuum,
- car wheel brakes,
- a brake cylinder for operating the car wheel brakes, said brake cylinder having a piston therein, and
- ball valve means mounted on the shuttle valve means which is mounted on the brake cylinder,
- said shuttle valve means and said ball valve means having a first common passage communicating with one side of the piston in said brake cylinder for introducing a vacuum into said brake cylinder and having a second common passage for introducing atmospheric pressure to the other side of said piston in said brake cylinder,
- said shuttle valve means responsive to the fluid pressure from both said speed control valve and from said ball valve means to selectively supply vacuum to said brake cylinder either from said first reservoir through said speed control valves or from said reservoir through said ball valve means.

3,966,151
BOTTOM FISHING DEVICE
Carl V. Hawkins, III, 18801 Vicci St., Canyon Country, Calif. 91351
Filed Jan. 18, 1974, Ser. No. 434,553
Int. Cl.² A01R 97/10; A01K 97/10
U.S. Cl. 43—21.2 **1 Claim**



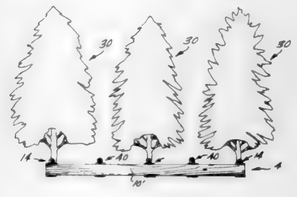
1. In a device of the class described comprising,
a. A Base.
b. Said base having a portion thereof turned downwardly at substantially a right angle.
c. A tubular element spaced apart from and supported by said base.
d. A T-shaped handle element pivotally supported by said tubular element.
e. A tube attached to the lower end of the handle element.
f. A clamp attached to said base and adapted to receive and hold a fishing rod.

3,966,152
ELECTRICAL RECEPTACLE
Menashe Bromberg, West Orange, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Division of Ser. No. 512,414, Oct. 7, 1974. This application Apr. 14, 1975, Ser. No. 567,540
Int. Cl.² H02G 3/08, 3/18, 3/12
U.S. Cl. 248—27 R **2 Claims**



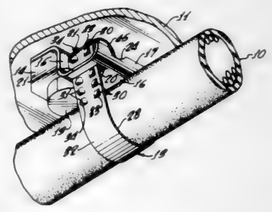
1. Mounting means for an electrical receptacle having an enclosed body member, a base portion integrally joined to said body member and having a flanged portion extending beyond the periphery of said body member, said mounting means comprising: pawl means rotatably connected to said flanged portion and having a finger portion movable from a first position within the confines of the outer periphery of said body member to a second position beyond the confines of the outer periphery of said body member; means for rotatably deploying said pawl means finger portion from said first position to said second position; means for displacing said pawl means along an axis generally normal to the plane of said base member flanged portion adjacent said body member; and means for selectively restraining the rotational movement of said pawl means along a given portion of its length of axial displacement, said restraining means comprising a first planar pawl stop and a second planar pawl stop, said first pawl stop extending rearwardly from said base member flanged portion parallel to the path of axial displacement of said pawl means finger portion for stopping said pawl means in said second position, said second pawl stop being shorter than said first pawl stop and extending rearwardly from said base member flanged portion generally parallel to a portion of the path of axial displacement of said pawl means finger portion and lying in a plane generally parallel to and spaced from the plane of said first pawl stop to provide a channel-like passageway for said pawl means finger portion along a portion of the path of axial displacement of said pawl means finger portion.

3,966,153
CHRISTMAS TREE STAND
Jack William Fleck, 4536 Lake Heights St., Bellevue, Wash. 98004
Filed July 19, 1972, Ser. No. 273,266
Int. Cl.² A47G 33/12
U.S. Cl. 248—512 **9 Claims**



1. A Christmas tree stand for use with a Christmas tree having a headed nail-like element driven partially into the side of the tree trunk a small fractional part of its length above the butt end thereof, said stand comprising a bottom member having an upwardly pointed prong adapted to impale the butt end of the Christmas tree, an upper member having an upwardly open slot extending generally vertically adapted to slidably receive and retain the nail-like element with the head of the nail on one side and the side of the tree trunk on the opposite side of said slotted upper member, and means interconnecting the bottom and upper members in fixed positional relationship which maintains the tree in upright position.

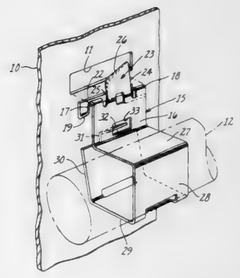
3,966,154
CABLE HANGER
Frederick Perrault, 2644 W. 225th St., Torrance, Calif. 90505, and Raymond E. Perrault, 2404 Colt Road, Rancho Palos Verdes, Calif. 90274
Filed Mar. 19, 1975, Ser. No. 559,808
Int. Cl.² F16L 3/04
U.S. Cl. 248—62 **15 Claims**



1. A supporting device comprising:
a bracket adapted for attachment to a structural element, said bracket including a wall having at least one slot therein,
and a strap defined by an elongated flat member of resilient material, said member having opposite longitudinal edges,

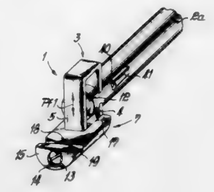
said member including a plurality of tabs projecting outwardly from one principal surface thereof,
each of said tabs having a free transverse edge facing one end of said elongated member,
and a free generally longitudinal edge spaced inwardly from and facing one of said longitudinal edges of said member, the remaining edges of each of said tabs being connected to said member,
said member at said tabs having a thickness greater than the width of said slot as measured in at least one direction,
said tabs being deflectable to enable the opposite end of said member to be moved through said slot, whereby said transverse edge of one of said tabs can overlap said wall at said slot when said tabs are so moved through said slot for thereby preventing movement of said member through said slot in the opposite direction,
said member and said bracket including means for attaching said one end of said member to said bracket.

3,966,155
CLIP FOR REMOTE CONTROL ROD
Engel A. Meyer, Bloomfield Hills, Mich., assignor to USM Corporation, Boston, Mass.
Filed Feb. 10, 1975, Ser. No. 548,833
Int. Cl.² F16L 3/08
U.S. Cl. 248—73 **7 Claims**



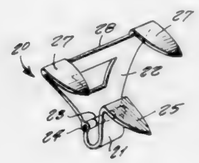
1. A clip for retaining an element adjacent a panel having a substantially rectangular opening provided therein for engagement with the clip, said clip comprising a base portion having a substantially planar rear surface to be located adjacent the panel, a pair of spaced means disposed at the top of said base portion for gripping the lower edge of the panel opening, means disposed between said gripping means for engaging the upper edge of said panel opening providing interfering engagement between said gripping means and said engaging means, and said lower and upper panel opening edges respectively, and means connected to said base for enclosing an element received therein to limit lateral displacement of the element, said enclosing means comprising a box-shaped structure having one wall thereof disposed adjacent to and in parallel relation with the front surface of the panel, said wall being separable from said box structure at the upper corner thereof, an opening formed in said clip element adjacent said corner of said box-shaped structure and a tab extending from said wall structure and into said opening adjacent said corner to enclose the element within the box-shaped structure whereby said one wall is inseparable from said box structure with said clip engaged in the panel rectangular opening.

3,966,156
SET OF FIXING ELEMENTS FOR MOUNTING RADIATORS OR LIKE BODIES ON WALLS
Albert Frischmann, Freiburg; Kurt Mermi, Emmendingen; Rainer Hermeneit, Freiburg, and Rudolf Königer, Buchholz-Batzenhausle, all of Germany, assignors to Upat-Max Langensiepen KG, Emmendingen, Germany
Filed May 6, 1974, Ser. No. 467,275
Claims priority, application Germany, May 7, 1973, 7317049[U]; May 7, 1973, 7317102[U]; Sept. 28, 1973, 7335061[U]; Mar. 11, 1974, 2411577
Int. Cl.² F28F 9/26
U.S. Cl. 248—201 **27 Claims**



1. A set of fixing elements for mounting structures, particularly radiators, on a support such as a wall, comprising an elongated wall fitting adapted to be mounted on a support, the wall fitting having a transverse slot at its end projecting outwardly of the support; a U-shaped clip having a first shank slidably mounted in the transverse slot and a second shank said clip being deformable so as to move said second shank against the end of said fitting; a holder adapted to support a structure and being connected with the clip so as to move with the latter and thereby adjust the position of the holder relative to the wall fitting; and clamping means for drawing the shanks towards each other and for clamping the second shank against the projecting end of the wall fitting so as to securely fix the holder to the wall fitting.

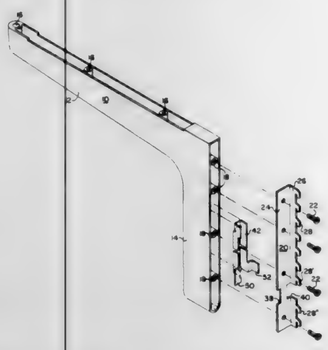
3,966,157
HEAVY WEIGHT HANGER
Jose Corral, and George Spector, both c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007
Filed Nov. 6, 1973, Ser. No. 413,315
Int. Cl.² A47G 1/16
U.S. Cl. 248—217 **1 Claim**



1. A wall hanger of generally triangular shape having an upper wide portion with symmetrical spaced end prongs and a tapered narrow lower apex portion having a point, including a lower prong, vertically beneath and horizontally midway between the end prongs in combination with a U-shaped hook to support an object to be hung thereon, wherein said hook is disposed integrally at the same apex portion below the lower prong and having an outer end spaced from a wall support when said prongs are driven into said wall support, wherein the upper portion is pivotally connected to the apex portion at said outer end of the hook, said lower prong forming an integral transverse projection extending from the hook away towards the wall support and away from the said outer end of

the hook, whereby the said upper portion encloses the hook and is spaced from the wall when mounted.

3,966,158
CANTILEVER LOCK
Bruce K. Boundy, Holland, Mich., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 7, 1975, Ser. No. 548,128
Int. Cl.² A47G 29/02
U.S. Cl. 248—243 **5 Claims**

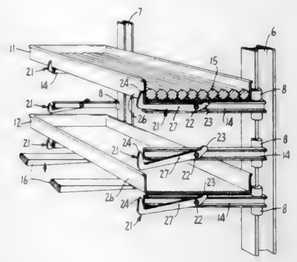


1. In combination, a support bracket locking mechanism and cantilever support bracket for locking the cantilever support bracket to a slotted standard, said cantilever support bracket including an L-shaped mounting bracket attached to one edge thereof, said L-shaped mounting bracket including a plurality of spaced vertically aligned hook shaped connectors extending therefrom adapted to interconnect with a plurality of spaced slots in said slotted standard, said locking mechanism comprising; a locking member associated with said L-shaped mounting bracket and including a locking tab and an actuating tab, said locking tab constructed and arranged to extend into one of said slots in said slotted standard in place of one of said hook connectors, said actuating tab being movable with respect to said locking tab and said locking member being slidably movable, with respect to said mounting bracket, from a locked position to an unlocked position whereby said locking tab will be caused to move in response to said slidable movement of said locking member from an unlocked position equidistant between two adjacent hook connectors to a locked position closer to one of said adjacent hook connectors.

3,966,159
SAFETY LATCH FOR TRAYS
Peter Brown, 2731 26th Ave., Oakland, Calif. 94601
Filed May 19, 1975, Ser. No. 578,507
Int. Cl.² A47G 29/02; E04G 3/08
U.S. Cl. 248—250 **1 Claim**

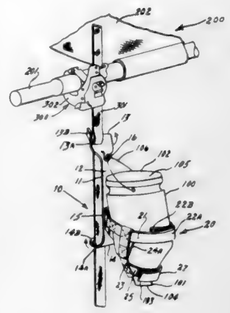
1. A device for retaining a tray in position on two spaced horizontal U-shaped supports, each support having a top leg and a bottom leg spaced from the top leg to define an opening therebetween, comprising:

a latching element pivotally attached to one of the horizontal supports, said latching element having an elongated body disposed in front of the opening in the U-shaped support, an upwardly projecting cam element on one end of said elongated body for engaging the undersurface of a tray supported on the top legs of the supports, a tray end engaging element on the other end of said elongated body having a flat face presented inwardly toward said elongated body and oriented perpendicularly thereof, said tray end engaging element projecting upwardly from said body a distance slightly less than the thickness of the tray for engaging a forward edge of the tray supported on the supports to prevent that tray from sliding forwardly when it is being supported on the supports, said flat face being perpendicularly disposed to the support top leg when the tray is supported on that top leg, a pivot pin extending through said elongated body to attach said body to the support so that it is located within the U-shaped support opening, said pivot pin being located near said body one end so that said pivot pin is spaced from said engaging element a distance which greatly exceeds that distance said pivot pin is spaced from said cam element; and a stop



pin on said body between said engaging element and said pivot pin for engaging the support bottom leg so that when the tray is removed from engagement with said cam element said elongated body pivots about said pivot pin and said tray end engaging element moves downwardly to a position just below the support top leg so that the tray can move forwardly on the support top leg while said latching element is prevented from moving downwardly into a position whereat it would interfere with movement of trays on supports beneath said latching element.

3,966,160
INFLIGHT INTRAVENOUS BOTTLE HOLDER
Myrl E. Wilson, Sheppard AFB, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed May 12, 1975, Ser. No. 576,504
Int. Cl.² A47K 1/08
U.S. Cl. 248—311.3 **3 Claims**



1. A bottle holder assembly, adapted for use as an inflight holder of an intravenous bottle aboard an aircraft, wherein said aircraft is equipped with conventional litters and litter support straps, and wherein said intravenous bottle is of the conventional type having two ends, with a neck and an outlet at one end, and with a bottom and a bail at the other end, comprising:

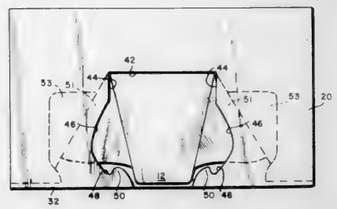
a. a cradle generally configurated in the form of an inverted T, wherein said T has a vertical leg with an upper end and a lower end, and a horizontal leg, and wherein said cradle is suitably configurated and dimensioned so as to be removably attachable to, and slideably movable along, any one of said litter support straps;

b. a hook releasably connected to said upper end of said vertical leg of said inverted T-shaped cradle, wherein said hook is suitably configurated and dimensioned to accept and to hold said bale of said intravenous bottle when said bottle is in an inverted position;

c. and, a strap subassembly removably attached to said cradle and suitably configurated and dimensioned to accept, and to assist in holding and in supporting, said intravenous bottle at said neck and outlet end when said bottle is in an inverted position, wherein said strap subassembly includes:

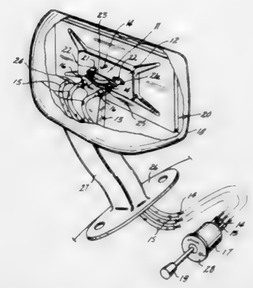
1. an upper strap having a first end portion and a second end portion, wherein said end portions are releasably connectable;
2. an intermediate strap having a first end portion and a second end portion, with said first and second end portions attached to said upper strap at different locations respectively, thereby causing said intermediate strap to become formed in the shape of a half-loop;
3. and, a first lower strap and a second lower strap, with each said lower strap having a first and a second end portion, and with said first end portion of said first lower strap attached to said intermediate strap, and with said second end portion of said second lower strap also attached to said intermediate strap at a different location, and also with said second end portion of said first lower strap, and said first end portion of said second lower strap releasably connectable.

3,966,161
DESK CALENDAR WITH EASEL
Gordon E. Nichols, Middleboro, Mass., assignor to Winthrop-Atkins Co., Inc., Middleboro, Mass.
Filed May 19, 1975, Ser. No. 578,809
Int. Cl.² A47B 97/04
U.S. Cl. 248—459 **12 Claims**



1. An easel comprising, a panel containing between its front and back surfaces a pocket, and in the back surface an opening into the pocket symmetrically disposed with respect to the pocket so that portions of the pocket extend laterally from the opposite edges of the opening, a leg member hinged at its upper end within the pocket on a hinge coinciding with the top of the opening for angular movement rearwardly from the opening and means for supporting the leg in an angular rearwardly disposed positions relative to the panel to hold the latter upright, characterized in that said means embodies articulated members slidingly engaged within the pocket at each side of the opening, said articulated members comprising proximal sections hinged at one edge to the leg adapted to be slid outwardly of the pocket and into the pocket solely by pushing and pulling the leg rearwardly and forwardly relative to the panel and distal sections hinged at one end to the outer edges of the proximal sections which remain in the pockets when the leg is pulled outwardly and which limits outward movement of the proximal sections, said distal sections being frictionally engaged within the pockets so as to retain the leg in either position.

3,966,162
REMOTE CONTROL REARVIEW MIRROR
Richard Marshall Hadley, Jackson, Tenn., assignor to Harman International Industries, Inc., Grandville, Mich.
Filed June 12, 1974, Ser. No. 478,699
Int. Cl.² A47G 1/24
U.S. Cl. 248—487 **2 Claims**



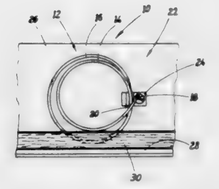
1. An improved compression pivot structure for remote rearview mirrors and the like comprising:

a pedestal having an arcuate slot therein;

a compression pivot comprising an arm having a triangular cross section, a pair of cylindrical extensions, said cylindrical extensions forming truncated cylindrical portions at their intersections with said arm, one at each end of said arm and integral therewith, both of said extensions being on separate but parallel spaced apart axis, and each of said extensions being topped by a spherical surface having its center at or slightly above the intersection of a mirror facing apex of said triangular cross section of said arm with said extensions, and an arcuate disk integral with and extending from said arm intermediate the ends thereof, said disk having a center of arc substantially on a line passing through the centers of said spherical surfaces and in the plane including the axis of said cylindrical extension; and

a mirror back pressed against said compression pivot member having a pair of spaced apart depressions into which said spherical extensions nestably and rockably seat, one of said depressions being a channel or slot formed in said mirror back, said slot having an axis coextensive with an axis through said spherical surfaces.

3,966,163
FILTER RETAINING LATCH
Allan R. Getzin, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed May 28, 1974, Ser. No. 473,378
Int. Cl.² B01D 39/08; B65D 45/24
U.S. Cl. 248—500 **2 Claims**



1. A coiled latch for locating and holding a filter in a housing, said coiled latch comprising:

a generally radially displaceable filter retaining turn adapted to be laterally spaced from the housing a distance

greater than the thickness of the filter, said retaining turn having a free end adapted to be moved between a first free position and a second filter retaining position spaced generally radially outwardly from the axis of said retaining turn from said first position;

a filter locating turn coaxially disposed to and integral with said filter retaining turn, said locating turn having a larger radii than said retaining turn, said locating turn having a fixed end, said locating turn being adapted to be attached to the housing proximate said fixed end;

a hook formed in the end of one of said turns; and

a loop formed in the end of the other of said turns, said loop being adapted to receive said hook when said free end is in said second filter retaining position;

whereby when the filter is positioned in the housing in the space between the housing and said filter retaining turn, the peripheral margin of the filter axially abuts said locating turn and said free end is in said second position and attached to said fixed end, said retaining turn exerts a radially directed force on the filter thereby holding the filter in the housing.

3,966,164

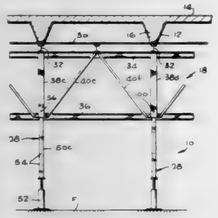
ADJUSTABLE TRUSS SUPPORT AND FORM FOR CONCRETE CONSTRUCTION

Stephen S. Dashew, Palos Verdes, Calif., assignor to Interform, Inc., Compton, Calif.

Division of Ser. No. 387,967, Aug. 13, 1973, Pat. No. 3,902,289. This application Feb. 5, 1975, Ser. No. 547,232

Int. Cl.² E04G 11/40

U.S. Cl. 249—18 **2 Claims**



1. A concrete forming structure for forming an upper concrete floor at a distance above a lower concrete floor comprising:

a pair of elongated framework structures, each including a substantially horizontal upper beam extending along the length of the structure, a substantially horizontal lower beam below the upper beam, and a plurality of spaced tubular upper column members fixed at their upper ends to the upper beam and at their lower ends to the lower beam, said framework structures spaced from one another and extending substantially parallel to each other;

a plurality of detachable bracing members extending between the pair of framework structures;

a plurality of purlin members extending between and supported on the upper beams of the pair of laterally spaced framework structures;

a concrete floor form supported on the purlin members; and

a plurality of adjustable lower column members each slideably disposed in a corresponding upper column member to support the upper column member on a floor that lies below the framework structures;

each lower beam including a lower flange which lies below the lower ends of the upper column members; and

each lower column member is detachable from a corresponding upper column member, whereby to permit each framework structure to be rolled along the bottom of its lower beam.

3,966,165

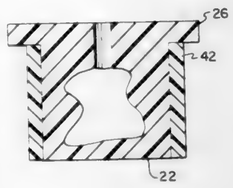
COMPOSITE FLEXIBLE MOLD

Miroslav Psensky, Cary, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Dec. 4, 1974, Ser. No. 529,334

Int. Cl.² B28B 7/06; B29C 7/00

U.S. Cl. 249—120 **3 Claims**



1. A composite flexible mold comprising an integral, inner, flexible, stretchable shaping element having a shaping cavity therein, for confining and shaping hardenable or otherwise curable material; and an outer second element which is a flexible, stretchable element distinct and separate from the first element, the outer element being in direct and closely confining contact with the inner element, the outer element being in a condition of stress due to stretching thereof and in which the outer element has a portion thereof having the configuration of a sleeve, and in which the outer element is stretched axially as well as circumferentially while in said direct and closely confining contact.

3,966,166

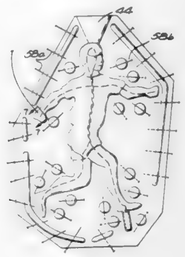
SCULPTURE MOLD

James B. Elliott, Hacienda Heights, Calif., assignor to Poly-Optics, Inc., Santa Ana, Calif.

Filed Dec. 26, 1974, Ser. No. 536,518

Int. Cl.² B29C 1/16

U.S. Cl. 249—134 **1 Claim**



1. A mold for cast-reproduction of a three dimensional structure, comprising a pair of mold halves, each half formed of rigid polyvinyl chloride film having a thickness of **0.010 ± 0.003** inch and deformed in conformation to opposite surface contours of said structure, said halves mating along a parting line to define a mold chamber, an access opening to said chamber, and marginal regions coextending about said chamber from said parting line, said marginal regions being formed with a plurality of conjugate elongate protuberance pairs arranged tandemly substantially around said mold chamber and a plurality of conjugate conical protuberance pairs arranged between said chamber and said elongate protuberance pairs, each component of said conjugate protuberance pairs extending a substantial distance beyond said parting line a pin disposed cross-wise directly through each of said protuberance pairs for securement of said mold.

3,966,167

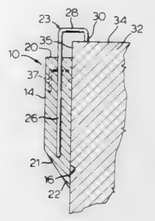
SIDEBOARD CONSTRUCTION

Pierre A. Vayda, Burlington, Canada, assignor to Exothermic Company of Canada Limited, Hamilton, Canada

Filed May 6, 1975, Ser. No. 574,852

Int. Cl.² B22D 7/10

U.S. Cl. 249—198 **13 Claims**



1. For use with an open-topped metal ingot mold: a sideboard comprising a body portion, a hanger rod of which part extends through said body portion, and a plate member embedded within the body portion, the plate member being oriented substantially normally to the hanger rod and having a non-circular opening with a least dimension measured in one direction and a greatest dimension measured in another direction, the rod passing through said opening and having a non-circular section at least in the region of said opening, said rod being rotatable within said opening between a first position in which it binds against edge portions of the opening and a second position in which it does not so bind, whereby the rod in said second position can be moved lengthwise through said opening, the material of the rod being softer than the material defining the opening, another part of the rod extending out of the body portion and having means for hanging the sideboard from the ingot mold.

3,966,168

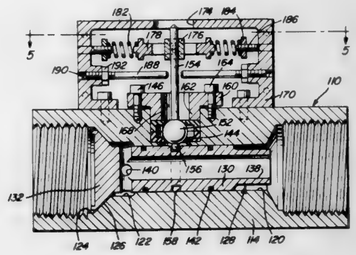
PRESSURE RESPONSIVE VALVE

Francis P. Sury, P.O. Box 353, St. Clairsville, Ohio 43950

Filed Dec. 18, 1973, Ser. No. 425,774

Int. Cl.² F16K 31/44, 31/12

U.S. Cl. 251—58 **6 Claims**



1. A valve comprising a longitudinally extending valve body disposed in a fluid flow line for controlling flow of fluid in the line, said valve body including a longitudinally extending bore therethrough forming a flow passage, a valve plug assembly longitudinally reciprocally mounted in the bore in the valve body, one end of said bore in the valve body including a valve seat, said valve plug assembly including an elongated stem slidable in the bore in the valve body and a head on one end of the stem including a valve face engageable with the valve seat on the valve body, said stem of the valve plug assembly including a longitudinal bore therein communicating with the end of the stem remote from the head, and transverse port means in the stem adjacent the head communicating the periphery of the valve stem with the bore therethrough for providing axial flow passage through the valve stem from a point adjacent the valve head whereby fluid flowing past the valve seat and valve face when spaced therefrom will flow through the port means and the bore in the valve stem, and valve actuating means isolated from contact with the flow of fluid through the valve including pivotal lever means actuating the valve plug assembly from a point intermediate the ends of the valve stem whereby the actuating means will not be in the flow path and will not be in direct contact with the material flowing past the valve, said actuating means includes an actuating stem extending generally radially from the valve stem, said actuating stem having a ball member mounted on the end portion thereof adjacent the valve stem, a projection on the ball member remote from the actuating stem, said valve stem having a peripheral groove therein receiving said projection, means sealingly mounting the ball member on the actuating stem in the valve body whereby longitudinal pivotal movement of the actuating stem will cause longitudinal reciprocation of the valve plug assembly for controlling the flow of fluid through the valve, and said valve stem includes spaced seal means interposed between the periphery of the valve stem and the bore in the valve body on each side of the groove for isolating the actuating stem from the fluid flow.

3,966,169

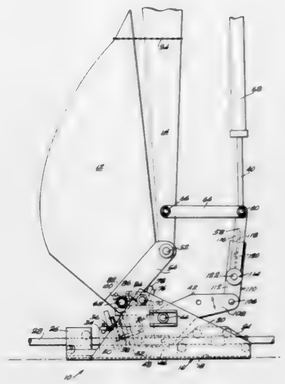
ROD AND PIPE PUSHER, PULLER DEVICE

William O. Schosek, P.O. Box 3626, North Fort Myers, Fla. 33903

Continuation-in-part of Ser. No. 482,275, June 24, 1974, Pat. No. 3,907,253. This application Sept. 22, 1975, Ser. No. 615,534

Int. Cl.² E21B 19/00

U.S. Cl. 254—29 R **8 Claims**



1. A rod and pipe pusher, puller device for location in an operating trench adjacent to a first side of a finished surface for connection to, and operation by a conventional backhoe device, including a dipstick, to push a rod under the finished surface into a target trench located on the second side thereof, and to withdraw a pipe attached to the end of the rod in the target trench back under the finished surface to the operating trench, said device comprising,

A. a generally channel shaped main body portion including

1. a bottom wall and

2. a pair of spaced apart upstanding side walls;

B. a slide box, slidably journalled along said bottom wall;

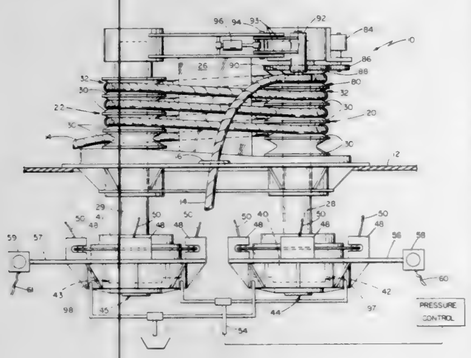
C. a power arm in the form of a bell crank journalled between said side walls and including,

1. a first lever arm pivotally connected at its outer end to an extended end of a hydraulic ram piston forming a part of the backhoe device,
2. a second lever arm pivotally linked to said slide box to said slide box to impart reciprocating, back-and-forth movement thereto upon conventional operation of said ram piston;

D. drive jaw means pivotally connected within said slide box to drivingly engage a rod or pipe passing therethrough, said drive jaws including means to reverse the direction of drive thereof;

E. means to connect the conventional backhoe bucket, while it is attached to the backhoe dipstick, to the rod and pipe pusher, puller device in a spanning relation to an upper, generally central portion of said side walls.

3,966,170
TRACTION WINCH
Henry Alvin McKenna, Reston, Va., assignor to Ocean Systems, Inc., Reston, Va.
Continuation-in-part of Ser. No. 144,828, May 19, 1971, abandoned. This application Sept. 13, 1973, Ser. No. 397,108
Int. Cl.² B66D *1/76*
U.S. Cl. 254—175.7 **8 Claims**



1. A power driven traction winch for drawing up rope having two spaced, parallel, power-driven drums journaled on a bearing support structure, a segment of rope intermediate its ends being wound during drawing around said drums, including

a pulley mounted for receiving a final turn of said rope,

a pressure roller mounted with its axis parallel to the axis of said pulley and pivoted for movement towards and away from said pulley in alignment therewith,

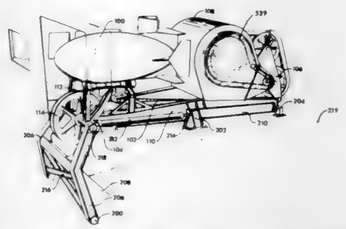
means for urging said roller towards said pulley to press a turn of rope against said pulley, and

means for applying torque to said pulley in the wind-up direction, said torque being independent of rotation of and torque applied to said drums, whereby rope is tightened into said winch under all operating conditions and released from said winch free of tension.

3. In a traction winch for drawing up rope having a plurality of parallel drums spaced apart and rotatably mounted on a support structure, a segment of rope intermediate its ends being wound during drawing around said drums, the improvement comprising

drive means applying equal torque in the take-up direction to each of said drums and being directly responsive to the rope tension between said drums while leaving said drums free to automatically accommodate to varying rope stretch by rotating at speeds differing in varying ratio responsive directly to varying rope stretch, whereby stretchable rope may be hauled in with reduced slippage.

3,966,171
APPARATUS FOR LAUNCHING TOWING AND RECOVERING A SUBMERSIBLE BODY FROM A VESSEL
Neville E. Hale, Mississauga, Canada, assignor to Fathom Oceanology Limited, Port Credit, Canada
Division of Ser. No. 327,003, Jan. 26, 1973, Pat. No. 3,782,319. This application Nov. 30, 1973, Ser. No. 420,375
Claims priority, application Canada, Feb. 29, 1972, 135768
Int. Cl.² B66D *1/36*
U.S. Cl. 254—190 R **10 Claims**



1. For use in association with a winch for reeling and storing cable, where said winch is rotatable about an axis, a cable spooling assembly comprising: first arm means bearingly supported in a direction substantially perpendicular to the axis of said winch, said first arm means being rotatable about the longitudinal axis thereof; second arm means mounted at a first end of said first arm means; at least one sheave rotatably mounted on and bearingly supported by said second arm means; the arrangement being such that cable passes over said at least one sheave to reverse its direction of travel from its point of initial contact with said at least one sheave back towards a winch when cable is being reeled onto the winch said sheave being so mounted on said second arm means relative to said winch that when said cable is reeled to or unreeled from said winch, said first arm means is caused to rotate about its longitudinal axis to provide level winding means for the cable whereby said at least one sheave traverses back and forth across said winch and position said at least one sheave in an attitude relative to said winch which permits reeling the cable to or unreeling the cable from said winch at a minimum fleet angle of the cable defined between said at least one sheave and said winch, said first arm being rotatable about its longitudinal axis so as to accommodate the cable reach between said sheave and said winch.

10. A winch construction for reeling and storing cable comprising an enclosing supporting frame, at least two drum means co-axially supported by and mounted within said frame and upon which drum means cable may be reeled and unreeled; and drive means for driving said at least two drums, wherein:

said enclosing frame comprises first and second ends and an enclosure plate between said ends substantially enclosing said at least two drums; a transverse slot formed in said enclosure plate extending between said first and second ends; said at least two drums being bearingly supported between said first and second ends by bearing support means mounted in each of said ends so as to mount said drum within said enclosure plate and between said ends for rotation therein where each said drum is mounted with respect to the surrounding drum or frame by a pair of opposed circular races at each end of each such drum with bearing means between said races; and drive means for rotatably driving said at least two drums, including first sprocket means formed outwardly of one of said ends and rigidly secured to one end of the innermost of said drums, a drive sprocket, and drive transfer means between said drive sprocket and said first sprocket; and including latch means to securably latch the outermost drum against rotation with respect to said frame and further latch means to latch each drum against rotation relative to the next adjacent drum thereto; and a transverse slot formed in each said drum except the innermost of said drums, said latch means being further adapted to secure said drums for reeling or unreeling cable onto any one of said drums, serially from the outermost drum inwardly, by aligning each of said transverse slots one with another and with the transverse slot in said enclosure plate so that with respect to any drum on which cable is being reeled or unreeled, all outward drums, if any, are latched in non-rotating position with the transverse slots in each aligned, and all inward drums, if any, are latched for rotation with the innermost drum.

3,966,172
LIGHTWEIGHT FENCE FOR PROTECTION AGAINST AIRBORNE SNOW, SAND OR THE LIKE
Herbert V. Garrett, 8112 Belleforest Drive, Vienna, Va. 22180
Filed Nov. 19, 1974, Ser. No. 525,282
Int. Cl.² E01F *7/02*
U.S. Cl. 256—12.5 **13 Claims**



1. An easily erectable-collapsible fence unit for use with snow-sand or the like, comprising a plurality of adjustable A-frames, each said A-frames comprising a pair of pivotally interconnected ground contacting posts; a plurality of strips interconnecting said A-frames, anchoring means operatively associated with said unit for maintaining the unit in erect condition, said strips being provided on each of said pivotally interconnected posts, each said strips being broad and flat, pliant and readily deformable; means adjacent the lower ends of said A-frames adjustably limiting the pivotal relation of the posts to adjust the vertical extent of the fence and establish the stability thereof and to modify the angular relation of the strips to the ground; whereby said posts may be pivotally moved toward or away from each other and said A-frames may be moved toward or away from each other.

3,966,173
MEDIAN BARRIER FOR HIGHWAYS AND THE LIKE
Ernest Glaesener, Differdange, Luxembourg, assignor to Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED, Luxembourg
Filed Mar. 18, 1975, Ser. No. 559,590
Claims priority, application Germany, Mar. 19, 1974, 2413095
Int. Cl.² A01K *3/00*; **E01F** *15/00*
U.S. Cl. 256—13.1 **15 Claims**

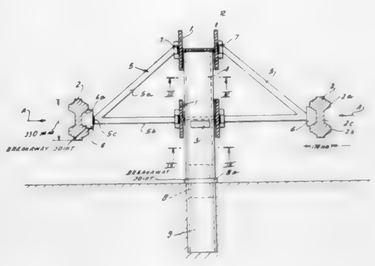
1. A roadway barrier adapted to be constructed along a travel lane for passenger and heavier vehicles, comprising:

a row of upright posts spaced apart along said lane and transversely spaced therefrom;

a substantially rigid continuous wall mounted on said posts and spaced from the proximal edge of said lane, said wall extending continuously along said row;

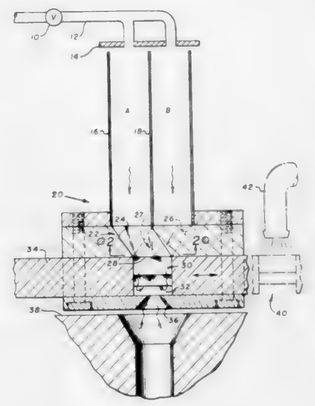
a guard rail positioned to intercept passenger vehicles and extending continuously along said lane between said wall and said edge, said guard rail being laterally deflectable more readily than said wall and being disposed at a height enabling it to intercept said passenger vehicles; and

spacers mounted on said wall a projecting laterally therefrom to support said guard rails at a distance of 1 to 2 meters form said wall, said wall having a heavy-vehicle intercepting portion spaced above said guard rail and lying at a level above the centers of gravity of heavy vehicles adapted to use said lane, said spacers being



connected to said guard rails at respective breakaway portions.

3,966,174
PREMIX NOZZLE FOR KOLD BOX PROCESS
Vagn Deve, Shaker Heights, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Feb. 2, 1973, Ser. No. 329,007
Int. Cl.² B22C *15/24*; **B01F** *15/02*
U.S. Cl. 259—4 R **9 Claims**



1. A premix nozzle for kold box process comprising:

a. a mixing chamber formed by a plurality of stationary surfaces and a pair of opposite movable surfaces;

b. introduction means for introducing sand, resin and catalyst in close mixing relation into said mixing chamber;

c. an exit opening leading from said mixing chamber;

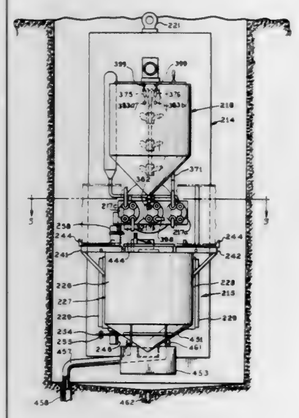
d. means for sweeping said stationary surfaces of said mixing chamber clear of residual sand by movement of one of said movable surfaces across each of said stationary surfaces; and

e. a baffle affixed to and carried between said movable surfaces, which baffle, when positioned in said chamber, induces a mixing turbulence in the flow of said sand while flowing through said chamber.

3,966,175
APPARATUS FOR INTRODUCING PARTICULATE MATERIAL INTO A CONTAINER

Arthur J. Stock, Lakewood; Donald E. Christofer, Willowick, and Joseph E. Brinza, Euclid, all of Ohio, assignors to Stock Equipment Company, Cleveland, Ohio

Division of Ser. No. 182,088, Sept. 20, 1971, Pat. No. 3,835,617. This application Oct. 25, 1973, Ser. No. 409,386
Int. Cl.² B01F 3/12; B65B 1/44
U.S. Cl. 259—8 12 Claims

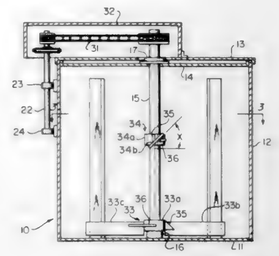


1. Apparatus for preparing a mixture of particles in a liquid without human handling comprising a container adapted to contain a dispersion of finely divided particles in a liquid which after settling of the dispersion in the container segregates so there is a first level of a mixture of finely divided particles and said liquid and above said first level a second level of said liquid that is essentially free of said particles; sensing means associated with said container for movement into said liquid to indicate each of said levels, said sensing means being adapted to sense the different specific gravities of said mixture and said liquid at said first and second levels and to provide information to a remote location outside of and away from said container; decanting pipe means including control means associated with said container to remove excess essentially particle-free liquid therefrom and having an inlet movable in a generally upright path in the liquid in said container to remove said excess liquid from said container from only between said first and second levels; means controllable from a remote location outside and away from said container for removing excess liquid from said container through said decanting pipe to provide a desired proportion of total liquid to total particles in said container; means for mixing said liquid and said particles in said proportion in said container to form a mixture in which said particles are dispersed in said liquid; means controllable from a remote location outside of and away from said container for removing predetermined amounts of said last named mixture out of said container; and means controllable from a remote location outside of and away from said container for moving said decanting pipe inlet out of said liquid in said container to permit said mixing of said liquid and said liquid and said particles in said container.

3,966,176
METHOD AND APPARATUS FOR PRODUCING FILLED RESINS

Ivan E. Lux, P.O. Box 26, Minden, Nebr. 68959

Filed Aug. 25, 1975, Ser. No. 607,481
Int. Cl.² B01F 7/16
U.S. Cl. 259—108 10 Claims



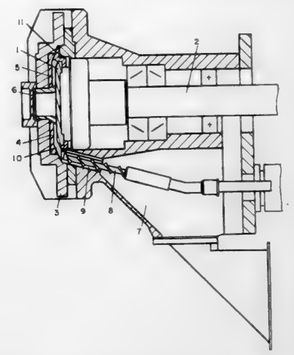
1. Apparatus for mixing resins and fillers comprising
a. a vertical tank having a cylindrical side wall and a flat, horizontal bottom wall;
b. a vertical rotor shaft supported in bearings carried by the tank and coaxial with the cylindrical side wall;
c. a prime mover supported on the outside of the tank and connected in driving relation with the rotor shaft to rotate the shaft in a predetermined direction;
d. a plurality of equiangularly spaced rotor blades which are fixed to the shaft, project radially therefrom, and are arranged in at least two axially spaced sets,
e. one set being located adjacent the bottom of the tank and the other being located at an intermediate elevation,
f. each rotor blade being inclined at an angle on the order of 45° with respect to the horizontal so that its leading edge in said predetermined direction of rotation is at a lower elevation than its trailing edge and the blade acts to force material in the tank in the upward direction; and
g. a plurality of imperforate, radial baffles attached to the inside of the side wall and spaced equiangularly about the axis thereof,
h. the baffles extending vertically from a region adjacent the tank bottom to an elevation spaced slightly below the top of the tank,
i. the radial width of the baffles being such that the inner margins of the baffles are closely adjacent the tips of the rotor blades.

3,966,177
FEED DEVICE FOR PLASTICS PROCESSING MACHINES

Serge Lagoutte, Chalon-sur-Saone, and Andre Lanciaux, Chatenoy-le-Royal, both of France, assignors to Societe d'Etudes Verrieres, Neuilly-sur-Seine, France

Continuation of Ser. No. 47,187, June 18, 1970, abandoned. This application Sept. 27, 1973, Ser. No. 401,443
Claims priority, application France, June 19, 1969, 69.20528
Int. Cl.² B29B 1/04
U.S. Cl. 259—185 1 Claim

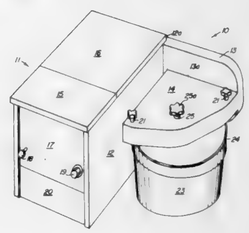
1. In a device for processing plastic materials including a fixed plate and a rotatable plate defining a gap therebetween, the improvement comprising an annular channel extending radially outside both the fixed plate and the rotatable plate about the gap and communicating with the gap, a metering screw to feed plastic material to the channel and a crown hook including a plurality of deflecting hooks extending radially outwardly from the rotatable plate to sweep the annular channel through each rotation and deflect plastic material fed to the channel to permit regular and efficient feeding of the device.



3,966,178
COMBINATION GRAIN MILL AND DOUGH MIXER

Harold E. Stevens, deceased, late of Brigham City, Utah (by Joan Stevens, heir), assignor to Mill & Mix Company, Inc., Brigham City, Utah

Filed Apr. 29, 1974, Ser. No. 464,793
Int. Cl.² A21C 1/00; B29B 1/04
U.S. Cl. 259—185 8 Claims



1. A combination grain mill and dough mixer comprising
a housing having side walls, a front wall, a rear wall, a top wall and a bottom wall;
a power source arranged in said housing producing a rotary output from a shaft thereof;
a stone grinding wheel attached to said shaft so as to turn therewith;
a fixed grinding stone, secured within said housing so as to be proximate to said grinding wheel, with grinding faces of each extending parallel to and mutually opposite to one another;
means disposed below said stone grinding wheel and and fixed grinding stone, for receiving meal falling from between said stone grinding wheel and fixed grinding stone;
means for feeding grain between said stone grinding wheel and fixed grinding stone;
means connected to said shaft for transferring power therefrom to a dough mixer;
mixer mounting means extending from a side wall of said housing on which said dough mixer is mounted said mixer mounting means comprising a mixer mounting plate extending as a shelf outwardly from said side wall and at a spaced distance above the bottom wall of said housing;
an agitator blade rotated by said power transfer means, and clamping means carried by the mixer mounting means; and
container means having a periphery arranged to be releasibly attached beneath and to be immovably clamped to said mixer mounting plate by said clamping means, with the agitator blade therein, whereby the blade can be rotated and dough mixed in the container means.

3,966,179
APPARATUS FOR EVAPORATIVE COOLING OF METALLURGICAL PLANTS

Sergei Mikhailovich Andoniev, prospekt Pravdy, 5, kv. 60; Leonid Borisovich Zilberman, ulitsa Ekonomicheskaya, 1a, kv. 12; Gennady Alexandrovich Kudinov, prospekt Gagarina, 32, kv. 203; Dorina Borisovna Kutsykovich, prospekt Lenina, 39, kv. 54; Oleg Vladimirovich Filipiev, prospekt Pravdy, 5, kv. 41; Grigory Ivanovich Kasyanov, prospekt Lenina, 64b, kv. 63; Grigory Borisovich Zalmanovich, 602 mikroraion, 33, kv. 37, and Jury Borisovich Raikovsky, prospekt Lenina, 11, kv. 34, all of Kharkov, U.S.S.R.

Filed July 18, 1974, Ser. No. 489,839
Int. Cl.² C21B 7/10
U.S. Cl. 266—193 3 Claims



1. An apparatus for the evaporative cooling of metallurgical plants, comprising, in combination: at least one closed system for the natural circulation of cooling water, each system including an individually mountable cooler having at least two sections therein with a plurality of cooling plates including coiled pipes, intermittently connected in a substantially vertical direction by intermediate pipes, thus forming at least two separate circulation loops in said cooler sections; at least one common water-supply pipeline connected to the lower end of at least one of said cooler sections, and separate pipes connected to the upper ends of said sections for discharging a steam and water mixture; at least one common cooling-water manifold disposed above said coolers and feeding water from its lower water side through respective closable pipelines to said common supply pipelines; and steam separators arranged above said common manifold, individually for at least one group of said cooler sections; said discharging pipes leading individually to said separators; the latter being individually connected with their lower water sides to the upper steam sides of said common manifold, while upper steam outlets of said separators are similarly individually connected to a common discharging pipeline, and means for rinsing said closed system from dirt and foreign particles by passing therethrough a flow of water, including inlet and outlet valves associated with said closable pipelines and said lower ends of the cooler sections.

3,966,180

CONVERTER WITH A CONVERTER HOOD

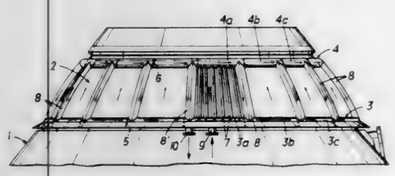
Alexander Patuzzi; Manfred Eysn, and Peter Moser, all of Linz, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Sept. 2, 1975, Ser. No. 609,678

Claims priority, application Austria, Sept. 12, 1974, 7408/74

Int. Cl.² C21C 5/40

U.S. Cl. 266—158 3 Claims



1. A converter with a converter hood, comprising

a plurality of cooling channels arranged in groups and extending over the periphery of the converter hood substantially in generatrix direction for receiving coolant to flow upwardly therethrough,

coolant passage means extending horizontally over the periphery of the converter hood and connected to the cooling channels, which coolant passage means comprises

lower coolant distributor conduit sections and

upper coolant collector conduit sections,

coolant supply and drain means connected to the coolant passage means,

coolant reflux tubes so arranged that one single reflux tube coacts with a group of cooling channels each and connects one upper coolant collector conduit section with the respective lower coolant distributor conduit section following thereupon.

3,966,181

SUSPENSION SPRING ADJUSTER

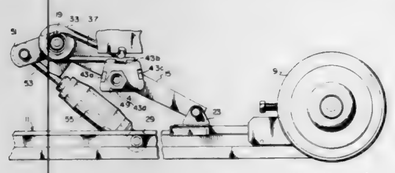
Normand Lessard, Valcourt, Canada, assignor to Bombardier Limited, Valcourt, Canada

Filed Dec. 2, 1974, Ser. No. 528,897

Claims priority, application Canada, Mar. 11, 1974, 194591

Int. Cl.² F16F 1/16

U.S. Cl. 267—58 17 Claims



1. In a snowmobile suspension system comprising track engaging elements to support a snowmobile upon a ground engaging portion of a snowmobile track belt, suspension arm means mounted on a frame of the snowmobile and carrying said track engaging elements and torsion spring means acting on said suspension arm means and operative to urge said track engaging elements into engagement with said track portion, said torsion spring means including a lateral arm engaging a part of said suspension system and movable to vary the force of said torsion spring means as the track engaging elements move vertically, the improvement comprising said part being in the form of a rotatably mounted cam which includes a plurality of surface portions selectively engageable with said lateral arm upon rotation of said cam, each said surface portion being effective to retain said lateral arm at a different position thereby to vary the loading in said torsion spring means.

3,966,182

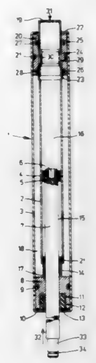
LENGTHWISE-ADJUSTABLE GAS SPRING

Ludwig Stadelmann, and Fritz Bauer, both of Altdorf, Germany, assignors to Suspa Federungstechnik Fritz Bauer & Sohne oHG, Altdorf, near Nurnberg, Germany

Filed July 30, 1975, Ser. No. 600,523

Int. Cl.² F16F 9/34

U.S. Cl. 267—124 9 Claims



1. In a lengthwise adjustable, compressed-gas-filled spring comprising:

an outer cylinder;

an inner cylinder coaxially disposed in said outer cylinder, and defining an annular chamber therebetween;

a piston axially displaceably mounted within said inner cylinder, said piston sealingly dividing the inside of said inner cylinder into a first and a second housing chamber;

a piston rod connected at one end to said piston on the side facing said first housing chamber, said piston rod extending out of said cylinders in a sealed manner;

connecting means for providing a fluid connection between said first housing chamber and the annular chamber; and

valve means, operable from outside the cylinder, at the end of the cylinders opposite that from which the piston rod extends, for connecting or separating said second housing chamber from said annular chamber; the improvement wherein:

said inner cylinder is axially displaceable within said outer cylinder, is sealed off at the end opposite that from which said piston rod extends, and has a passageway therethrough in the vicinity of said sealed off end;

said spring further comprising sealing means in the vicinity of said passageway for sealing off said passageway in one axial position of said inner cylinder within said outer cylinder and for permitting access from said second housing chamber to said annular chamber through said passageway when said inner cylinder is in a second axial position within said outer cylinder,

whereby said inner cylinder and said sealing means serve as said valve means.

3,966,183

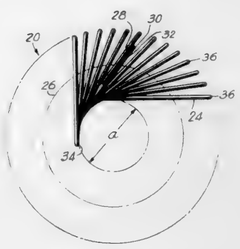
ARTICLE INCLUDING AN ENDLESS COIL SPRING

Salvador Escobar Mayer, Sr., Mexico City, Mexico, assignor to David Dweck, Brooklyn; Maurice Zalta, Woodmere; Camel Cohen, Brooklyn, all of, N.Y. and Robert Cohen, Deal, N.J., a part interest to each

Filed Apr. 26, 1974, Ser. No. 464,638

Int. Cl.² F16F 1/06

U.S. Cl. 267—167 9 Claims



1. An article comprising an endless coil spring of substantially circular configuraton having, only as a result of the inherent resiliency of the coil spring itself, convolutions wound around a substantially circular line which extends through the hollow interior of the endless coil spring, said convolutions having inner portions which press against each other and determine the inner diameter of the endless coil spring and outer portions which are spaced from each other and determine the outer diameter of the endless coil spring, said outer portions of said convolutions being circumferentially offset with respect to the inner portions thereof, when the coil spring is not acted upon by any outside force and responds only to its inherent resiliency, so that the outer diameter of the coil spring is smaller than the outer diameter which it would have if the convolutions were arranged substantially radially with respect to the center of a circle along which said line extends at least substantially.

3,966,184

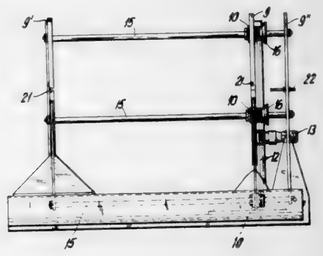
DIE-TESTING PRESS

Dino Magherini, Via Osservatorio 36, Florence, Italy

Filed June 3, 1974, Ser. No. 475,997

Int. Cl.² G01N 3/04

U.S. Cl. 269—37 3 Claims



1. A horizontal die-testing press for adjusting and testing mating die halves for use in die casting, injection molding and the like of metals, metal alloys, and synthetic resin materials, said die-testing press comprising, in combination, an elongated horizontal rigid base; two substantially planar vertical opposed supports mounted on said base for horizontal movement relative to each other; said supports being constructed and arranged for anchoring thereon of respective mating die halves in opposed relation; means operable to move said supports toward and away from each other; guiding means engaged with said supports and maintaining parallelism of said supports during relative horizontal movement thereof; one of said substantially planar vertical supports being fixedly mounted on said base at one end thereof, and the other of said substantially planar vertical supports being mounted on said base for horizontal sliding movement therealong toward and away from said one support; a plurality of nuts rotatably mounted in said movable support; a respective non-rotatable and axially fixed screw threaded through each nut; means operable to rotate said nuts in synchronism with each other to effect horizontal movement of said other movable support toward and away from said one fixed support in parallel orientation thereto; said means for rotating said nuts in synchronism with each other comprising respective sprockets secured to said nuts for rotation therewith, chain means interconnecting all of said sprockets, and means for driving said chain means; said driving means comprising an electric motor; respective hand wheels secured to at least certain of said nuts for manual rotation thereof; and a third substantially planar vertical support fixed to said base at the opposite end thereof; said screws being fixed at their ends to said fixed substantially planar vertical supports, against rotation and against axial displacement; there being three screws located at different levels relative to said base and all located at the maximum distance from the longitudinal axis of said press so as to leave free the central space between the two die half mounting supports to allow an easy mounting and dismounting of the dies both from above the press and from a side thereof, and also to provide easy access for the operator into the press.

3,966,185

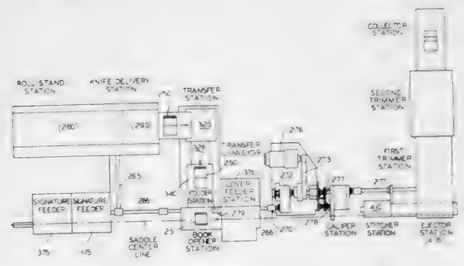
BOOK MAKING

William B. McCain, Hinsdale; James F. Cosgrove, Western Springs, and Edward J. Zagorski, Chicago, all of Ill., assignors to McCain Manufacturing Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 263,944, June 19, 1972, abandoned, which is a division of Ser. No. 32,257, April 27, 1970, Pat. No. 3,717,337. This application Feb. 11, 1974, Ser. No. 441,056

Int. Cl.² B41L 43/12

U.S. Cl. 270—37 20 Claims



1. A machine for producing signatures and forming trimmed books therefrom comprising: a roll stand having spaced spindles for supporting rolled webs of paginated printed material at least of double page width, said webs being punched along at least one edge with equidistantly spaced openings enabling the webs to be registered for proper pagination head-to-foot, a pin register belt disposed to travel beneath the spindles and having the register pins thereof spaced to register with the holes in the webs, feed means to withdraw the webs from their rolls, glue means for applying glue longitudinally between the webs approximately midway of the transverse web width, a knife at one end of the pin register belt, guide means to continuously place the webs one juxtaposed on another on the traveling pin register belt which advances the justaposed webs to the knife where the webs are severed transversely to produce juxtaposed sheets of multi page width joined by a glue joint, a folder for folding the juxtaposed sheets along the glue joint

to produce a signature with a back and having the openings presented at an extended lap margin opposite the resultant back of the signature, means to transfer the juxtaposed sheets from the knife to the folder, a saddle-type conveyor adjacent the folder, means to deliver the signature from the folder to the saddle conveyor including a lap opener for divaricating the folded signature so the backbone thereof fits the saddle conveyor, and a trimmer downstream of the lap opener effective to separate the lap margins containing the register openings as waste.

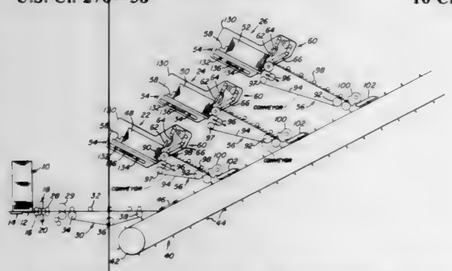
17. A method for producing signatures and forming books therefrom comprising: supporting rolled webs of paginated printed material having register holes along at least one edge of each web, withdrawing web lengths from the rolls and registering the web lengths in juxtaposed relation for proper pagination head-to-foot, applying glue to one of the webs between the pages thereof and joining the webs thereby in registered form at a glue joint, advancing the joined and juxtaposed webs to a knife where the juxtaposed webs are cut transversely to the glue joint to produce juxtaposed signature sheets of at least two-page width joined by glue, folding the sheets along the glue joint to produce a signature having a glued back and a lap margin with the register holes in the lap margin, opening the signature at the lap margin and delivering the opened signature to a saddle type conveyor, delivering a second signature to the saddle conveyor and timing delivery thereof so that the two signatures are gathered together one atop another on the conveyor, trimming off the lap margins and conveying the gathered signatures to a binder where the signatures are bound at their backs.

3,966,186

METHOD AND APPARATUS FOR FEEDING INSERTS SELECTIVELY

Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Continuation-in-part of Ser. No. 194,819, Nov. 2, 1971, abandoned. This application July 21, 1975, Ser. No. 597,530
Int. Cl.² B65H *39/04*
U.S. Cl. 270—58 **10 Claims**



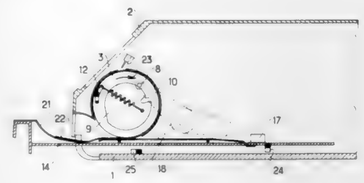
1. Apparatus for selectively collating inserts comprising,
means to move a primary insert from a stack of primary inserts at a primary insert feed station,
a reading device operable to read indicia on primary inserts,
first conveying means to convey primary inserts from said primary insert feed station across said reading device to a discharge station,
a plurality of secondary insert feed stations positioned adjacent to said first conveying means between said reading device and said discharge station,
separate means to remove a secondary insert from a source of secondary inserts at said plurality of secondary insert feed stations,
a plurality of second conveying means to separately transfer secondary inserts removed from said respective source of secondary inserts at each of said secondary insert feed stations to said first conveying means, and
signal transmitting means responsive to signals provided by said reading device to simultaneously actuate said means that remove a secondary insert from each source of secondary inserts at each of said secondary insert feed stations.

3,966,187

DEVICE FOR LOADING AND UNLOADING A SHEET ON A ROTATING DRUM

Michel Beduchaud, Palaiseau, and Andre Ramadier, Paris, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jan. 2, 1975, Ser. No. 538,216
Claims priority, application France, Jan. 7, 1974, 74.00457
Int. Cl.² B65H *5/04, 5/12*
U.S. Cl. 271—3 **7 Claims**



1. A device for loading or unloading a sheet on a drum rotatably mounted on a stand, said device comprising:
means for stopping rotation of the drum in a predetermined angular position,
a drawer,
means for slidably mounting said drawer underneath the drum for movement between two end positions, in one of which the drawer is completely pulled out relative to the drum and in the other of which the drawer is completely pushed in,
means for mechanically coupling said drawer to said drum, through a part of its sliding motion to effect rotation of said drum,
a clamping bar extending along a generatrix of the drum, and
resilient means for keeping said bar in a closed position, enabling the gripping of an edge of the sheet, and
a stop fixed to the drawer and operatively associated with the clamping bar to open it when the drawer is commpletely pulled out,
the improvement comprising the drawer being provided on a part of its upper surface with resilient pressure means, which, when the drawer is between the two end positions of its sliding movement, presses tangentially against the cylindrical surface of the drum but which no longer touches said drum cylindrical surface when the drawer is completely pushed in.

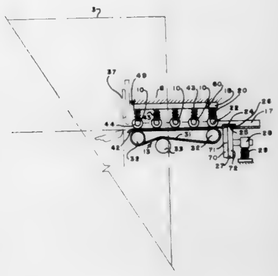
3,966,188

LABEL TRANSPORT

D. Bruce Maguire, Ballwin, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 2, 1975, Ser. No. 537,934
Int. Cl.² B65H *9/16, 5/26*
U.S. Cl. 271—9 **9 Claims**

1. A transport for conveying a plurality of articles between a first receiving position and a second position, comprising:
a plurality of longitudinally aligned take-away means having a first input side and a second output side, each of said take-away means including a conveying device for transporting individual ones of said articles in a first direction, the conveying devices of each of said take-away means plurality having substantially equal lengths, and a plurality of first idlers for maintaining positive control of individual ones of said articles as said articles move along said conveying device, individual ones of the conveying devices of said take-away means plurality being driven at progressively different speeds so as to stagger alignment of said articles, said articles being received at the input side of the take-away means plurality as groups of aligned articles, the speed of the slowest take-away means being set with respect to the speed of the fastest take-away means so that the spacing between groups of articles arriving at the output sides of said take-away mean plurality is at least equal to the spacing between individual articles within each group;
guide means positioned at the output sides of said take-away means plurality, said guide means including an edge alignment portion for receiving an edge of individual articles in abutting relationship;



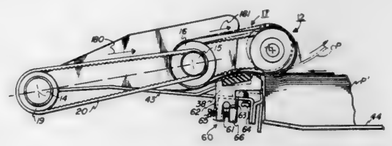
main conveyor means having an upper side and a lower side, said main conveyor means extending between the output sides of said take-away means plurality and said second position;
at least one main idler at the termination of each of said take-away means plurality, said main guide idler abutting said main conveyor on the lower main conveyor side, said main guide idler exerting a force on said articles which tends to drive said articles into abuttment with said edge alignment guide, said articles being inserted between said main guide idler and said conveyor on the lower side of said main conveyor;
means for driving said main conveyor means; and
means for varying the speed of said conveying devices.

3,966,189

TOGGLING RETARD PAD

Thomas N. Taylor, Rochester, and Wayne F. Schoppe, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 5, 1974, Ser. No. 503,541
Int. Cl.² B65H *3/04*
U.S. Cl. 271—34 **15 Claims**



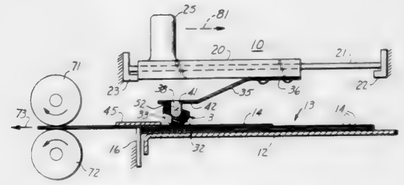
1. In a sheet feeding and separating apparatus for feeding and separating individual sheets from a stack of sheets including: sheet feeding and separating means comprising an endless sheet feeding and separating belt having a deformable unsupported section and retard means comprising a member having a frictional retard surface which deformably engages said feed belt in said unsupported section to form a nip for sheet advancement therebetween and a sheet queing throat, the improvement comprising:
means responsive to the direction in which said sheet is moving through said nip for providing a first relatively high nip force between said retard means and said feeding means when said sheet is moving in the sheet feeding direction and for substantially reducing said nip force as compared to said first force when said sheet is moving in a second direction generally opposed to the sheet feeding direction for allowing removal of sheets from said nip, said first force comprising a desired force level for obtaining proper sheet separation.

3,966,190

SHEET ADVANCING METHODS AND APPARATUS

Frederic F. Grant, Bellflower, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 30, 1973, Ser. No. 420,737
Int. Cl.² B65H *3/02*
U.S. Cl. 271—42 **1 Claim**



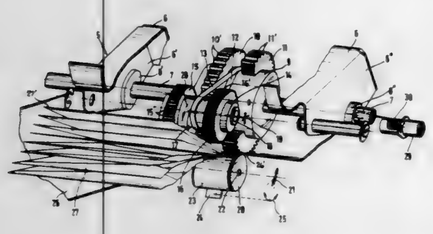
1. In apparatus for advancing pieces of material, the improvement for removing the top piece of material from a stack of said pieces of material, comprising in combination:
means for resiliently mounting said stack;
means adjacent said resilient mounting means for forming an opening for the passage of only the top piece of material from said stack;
a rotary device for selectively advancing said top piece of material through said opening, said rotary device having a flat surface extending in parallel to an axis of rotation of said rotary device, and a circumferential continuous cylindrical surface, and said rotary device including at said cylindrical surface a first portion having a first friction relative to said top piece, and a second portion having a second friction relative to said top piece, said second friction being higher than said first friction;
means connected to said device for moving said second portion into engagement with said top piece and for moving said top piece with said engaged second portion relative to the remaining pieces in said stack and through said passage opening, and for alternatively moving said first portion into contact with said top piece and said second portion out of engagement with said top piece and for moving said rotary device along a top piece of said stack in a direction contrary to the direction of movement of said top piece with said engaged second portion; and
means adjacent said flat surface of said rotary device for stopping with the aid of a first part of said rotary device at said flat portion the rotation of said rotary device when said second portion has been moved into engagement with said top piece, and for stopping with the aid of a second part of said rotary device at said flat portion the rotation of said rotary device when said first portion has been moved into contact with said top piece.

3,966,191

SHEET SEPARATING DEVICE

Harry Strobel, Berlin, Germany, assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Apr. 16, 1975, Ser. No. 568,589
Claims priority, application Germany, Apr. 25, 1974, 2420078
Int. Cl.² B65H 3/06
U.S. Cl. 271—125 8 Claims



2. A sheet separator device for feeding sheets individually from a stack of sheets, located within a hopper having side walls, to an addressing machine, the combination comprising:

A. a first shaft supported by the side walls of the hopper;

B. a housing pivotably supported by said first shaft;

C. a separator roller located within said housing and rotatably mounted on said first shaft;

D. a second shaft received within said housing, said second shaft being spaced from said first shaft;

E. an auxiliary roller received within said housing and rotatably mounted on said second shaft;

F. a third shaft disposed within said housing spaced relative to said first shaft;

G. a friction wheel rotatably mounted on said third shaft in operational engagement with said separator roller; and

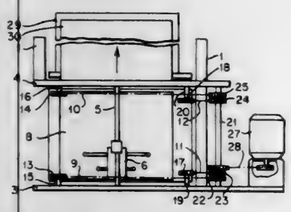
H. a tension biasing member associated with one of the side walls of the hopper and having one end engaging said housing, said spring being positioned to exert a tension upon said housing.

3,966,192

SHEET PILE ELEVATOR IN SHEET DELIVERY SYSTEMS FOR PRINTING MACHINES

Willi Jeschke, Heidelberg, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Continuation of Ser. No. 421,769, Dec. 3, 1973, abandoned, which is a continuation of Ser. No. 231,437, March 2, 1972, abandoned, which is a continuation of Ser. No. 29,040, April 16, 1970, abandoned. This application Sept. 27, 1974, Ser. No. 509,945
Claims priority, application Germany, May 3, 1969, 1922694
Int. Cl.² B65H 1/14
U.S. Cl. 271—147 2 Claims



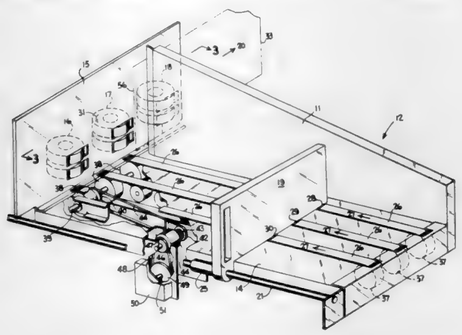
1. Sheet pile elevator in a sheet delivery system of a printing machine having a substantially rectangular sheet pile table located within a framework of the sheet delivery system, comprising a plurality of shaft stubs, each of said stubs being mounted on the framework above each of the corners of the sheet pile table, said stubs having a length that is short compared to the width of the table and carrying a respective rotary guide roller, said shaft stubs having symmetry axes and said guide rollers having rotary axes extending in a direction wherein sheets piled on the table are feedable therefrom for processing, a plurality of lifting roller chains articulatingly secured at one end thereof to each of the corners of the table and extending upwardly and over said guide rollers, respectively, the roller chain joints of said roller chains having rotary axes extending parallel to the direction in which the sheets are being fed, so that the table is laterally adjustable, a single drive shaft for rotating all of said guide rollers simultaneously so as to drive all of said lifting chains simultaneously, said shaft being located at a first side of the table and having a rotary axis extending in said direction, the sheets piled on the table being feedable therefrom for processing, a sprocket wheel for each of said lifting chains mounted in common on said single drive shaft at said first side of the table, said lifting chains having a free end, respectively, leading to a respective sprocket wheel, the table framework and said chains being arranged so that a pile of sheets may be fed onto the table from a second side thereof and components of the sheet delivery system overlying the table are accessible to servicing personnel from a third side of the table which is disposed substantially perpendicularly to said second side thereof, the sheets piled on the table being feedable for processing in said direction over a fourth side of the table disposed substantially at right angles to said first side of the table, whereby the sheets being fed are easily inspectable and the view and serviceability of the sheet delivery system remains unobstructed.

3,966,193

MAIL HANDLING STACKING AND FEEDING APPARATUS

Anthony Storace, Tarrytown, N.Y., and Paul R. Sette, Hamden, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Mar. 12, 1975, Ser. No. 557,490
Int. Cl.² B65H 1/02, 1/24
U.S. Cl. 271—150 8 Claims



1. A mail-handling stacking device for supporting a quantity of mail, and for uniformly urging said quantity of mail irrespective of its size, towards a discharging mechanism in a fluctuating manner, comprising:

support means for supporting a quantity of mail;

pressure means carried by said support means for urging said quantity of mail towards a discharging mechanism;

drive means operatively connected to said pressure means for driving said pressure means into operative engagement with a quantity of mail supported by said support means;

clutch means comprising a dual clutch mechanism, a first clutch of which is operatively connected to said drive means for causing said drive means to be coupled and decoupled from driving said pressure means, and a second clutch of which is a slip clutch operatively connected to said drive means for causing said drive means to drive said pressure plate with a constant force when said first clutch is not decoupling said drive means; and

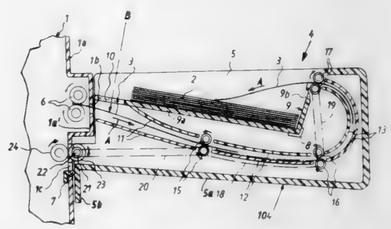
sensing means disposed adjacent said discharging mechanism for sensing the discharging of pieces of mail, said sensing means being operative to descouple said pressure means from said drive means via said first clutch in response to sensing a discharging piece of mail, and to couple said pressure means to said drive means via said first clutch when no discharging piece of mail is sensed such that said pressure means will be caused to fluctuate between a mail urging and a mail non-urging condition.

3,966,194

APPARATUS FOR MANIPULATING FINISHED REPRODUCTIONS IN COPYING MACHINES

Günter Abbé, Gilching; Rüdolf Eppe, Taufkirchen; Rudiger Ettelbrück, Munich; Josef Pfeifer, Unterhaching, and Günther Schnall, Eching, all of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

No Drawing. Filed Mar. 26, 1975, Ser. No. 562,243
Claims priority, application Germany, Mar. 28, 1974, 7410968[U]
Int. Cl.² B65H 29/40
U.S. Cl. 271—186 6 Claims



1. Apparatus for manipulating sheet-like finished reproductions in a copying machine wherein at least one side of each reproduction is provided with information, comprising means for advancing successive finished reproductions into an elongated path having successive first, second and third portions in the first of which said one side of each reproduction faces substantially upwardly so that said one side is observable from above for determination of the presence, absence and/or quality of information; means for inverting successive finished reproductions in said second portion of said path so that said one side of each reproduction faces downwardly; means for stacking successive inverted reproductions on top of each other in said third portion of said path; and an observation window integral with said stacking means and located above said first portion of said path between said advancing means and said stacking means.

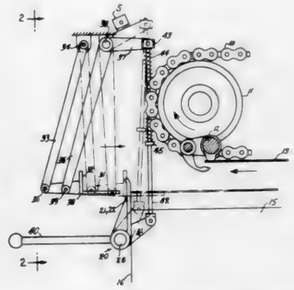
3,966,195

SHEET DELIVERY MECHANISM

Claus Simeth, Offenbach, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany

Filed Jan. 14, 1974, Ser. No. 433,130
Claims priority, application Germany, Jan. 15, 1973, 2301840
Int. Cl.² B65H 31/18
U.S. Cl. 271—189 13 Claims

1. In a sheet delivery mechanism of a sheet fed printing press, the combination comprising means for supporting a pile of sheets, an endless conveyor terminating above the pile and having a set of grippers for carrying an individual sheet and for releasing it above the pile for depositing thereon, vertical guide members alined with the front edge of the pile for stopping the forward motion of a sheet deposited on the pile, a horizontal supporting finger above the pile and in the vicinity of the forward edge thereof, means for mounting the supporting finger for horizontal receiprocating movement between a retracted position in which the supporting finger is clear of the pile and an interposed position in which the supporting finger is above the pile to provide temporary support for a sheet deposited by the grippers, and manually operated means coupled to the finger mounting means and to the front guide members for (a) moving the supporting fingers into a position above the pile to intercept a fallen sheet and thereafter retracting the guide members to permit withdrawl of the top sheet on the pile for inspection and control purposes and (b) restoring the guide members to vertical working position and thereafter withdrawing the supporting finger.

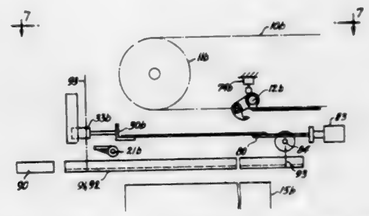


3,966,196

SHEET DELIVERY MECHANISM

Claus Simeth, Offenbach, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Germany

Division of Ser. No. 433,130, Jan. 14, 1974, abandoned. This application May 7, 1975, Ser. No. 575,480
Int. Cl.² B65H 31/32, 29/68
U.S. Cl. 271—218 1 Claim



1. In a sheet delivery mechanism of a sheet fed printing press, the combination comprising means for supporting a pile of sheets, an endless conveyor terminating above the pile and having a set of grippers for carrying an individual sheet and for releasing it above the pile for depositing thereon, vertical guide members alined with the front edge of the pile for stopping the forward motion of the sheet deposited on the pile, a first set of horizontal supporting fingers above the pile and in the vicinity of the forward edge thereof, a second set of horizontal supporting fingers above the pile and in the vicinity of the rear edge thereof, means for mounting the sets of fingers for movement between a retracted position in which the fingers are clear of the pile and an interposed position in which the supporting fingers are above the pile to provide temporary support of a sheet deposited by the grippers, manually operated means for actuating the mounting means for the fingers so that the sheet and any subsequently deposited sheets are totally supported by the fingers thereby permitting removal of

the pile for formation of a new pile when the supporting fingers are subsequently retracted, means including suction ports on the fingers for holding the sheet and subsequently fed sheets positively thereon until the fingers are retracted to begin formation of a new pile, a pair of platform rails suspended above the pile and below the fingers and in which a platform is provided slidable onto the rails for starting the new pile, and suction discs interspersed between the second set of fingers for decelerating the forward component of movement of a sheet dropped by the conveyor.

3,966,197

METHOD AND APPARATUS FOR CONTROLLED FEEDING OF SHEETS TO PRINTING MACHINES OR THE LIKE

Rudi Riedl; Regina Jungnickel; Rainer Nitsch, all of Leipzig; Werner Lein, Radebeul; Lothar Vetter, Radebeul; Helmut Schone, Radebeul; Günter Weisbach, Radebeul; Hans Johne, Radebeul; Alfred Schott, Radebuel; Karl-Heinz Forster, and Albrecht Johne, both of Dresden, all of Germany, assignors to VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany

Division of Ser. No. 357,790, Nov. 19, 1973. This application Mar. 13, 1975, Ser. No. 558,117

Int. Cl.² B65H *7/14*

U.S. Cl. 271—260 **1 Claim**

1. In an apparatus for feeding sheets from a stack into a printing or another sheet processing machine, a combination comprising a support for a stack of sheets; lifting means including at least one pneumatic lifting member movable between a first position of engagement with the topmost sheet of the stack on said support and a second position whereby the movement of said lifting member to said second position normally results in the removal of a single sheet from the stack on said support; and transducer means comprising a holder for said lifting member, said holder including a first portion and a second portion movable with said lifting member relative to said first portion when said lifting member carries a sheet during movement to said second position, and said transducer means further comprising a contact-free initiator having a first part provided on said first portion and a second part provided on said second portion and cooperating with said first part to produce a signal when said second portion fails to move relative to said first portion whereby such signal indicates that said lifting member does not carry a sheet in said second position thereof.

3,966,198

SHEET CONVEYING DEVICE

Kenya Komada, Atsugi, and Yoshiaki Kondo, Kawasaki, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1974, Ser. No. 534,150

Claims priority, application Japan, Dec. 27, 1973, 49-2081

Int. Cl.² B65H *5/06, 29/20*

U.S. Cl. 271—265 **6 Claims**

1. A sheet conveying device comprising:

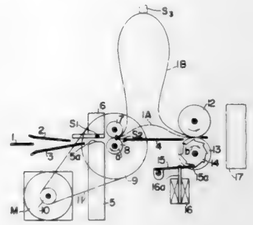
first transport means for transferring a flexible sheet at a first transfer rate;

second transport means, arranged on the downstream side of said first transport means in a position spaced therefrom a distance smaller than the length of said sheet, for transferring the sheet from said first transport means at a second transfer rate higher than said first transfer rate;

first sensor means for sensing the presence of said sheet and producing a first signal in response thereto;

second sensor means, disposed downstream of said first sensor means and upstream of said second transport means, for sensing the presence of said sheet and producing a second signal in response thereto;

first control means actuated in response to the simultaneous production of said first and second signals for detecting



the amount of operation of said first transport means in transferring said sheet and producing a third signal when the detected amount reaches a preset value;

catching means actuated in response to the production of said third signal for gripping and holding the leading end portion of the sheet temporarily after it reaches said second transport means during transferring to permit the portion of the sheet interposed between said first and second transport means to buckle-up; and

second control means actuated by the cessation of the production of said first signal by said first sensor means following the simultaneous production of said first and second signals for initiating the transfer of the sheet by said second transport means following the gripping and holding of the leading end portion of the sheet by said catching means.

3,966,199

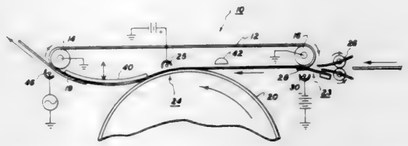
BELT TRANSFER LOADING SYSTEM

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 17, 1975, Ser. No. 558,750

Int. Cl.² B65H *5/02*

U.S. Cl. 271—275 **5 Claims**



1. In an electrostatographic copying system in which an image is transferred at a transfer station from an imaging surface to a copy sheet, and wherein said copy sheet is passed through said transfer station on a moving copy sheet transport belt to which said copy sheet is electrostatically tacked prior to said passage through said transfer station, the improvement comprising:

electrical corona charge generating means spaced adjacent to said transport belt, at a copy sheet loading position on said transport belt spaced from said imaging surface, for electrostatically tacking said copy sheet to said belt with corona generated charges, and

a plurality of elonated sheet guide fingers extending towards said transport belt and extending between said corona charge generating means and said transport belt at said copy sheet loading position for urging said copy sheet into engagement with said transport belt while said copy sheet is simultaneously subjected to corona charges from said corona charge generating means,

said sheet guide fingers being substantially spaced apart with openings therebetween for said corona generated charges to pass therethrough,

and said sheet guide fingers extending at an angle to the direction of movement of said transfer belt at said copy sheet loading position to provide for uniform charging of said copy sheet by said corona generated charges, wherein terminal portions of said guide fingers are flexibly pressed into sliding engagement with said transport belt to resiliently press said copy sheet against said belt.

3,966,200

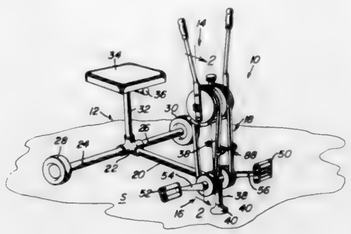
STRETCHING EXERCISING DEVICE

Norman Kirk, 9 Rosedale Ave., Montclair, N.J. 07042

Filed May 12, 1975, Ser. No. 576,583

Int. Cl.² A63B *21/10*

U.S. Cl. 272—109 **1 Claim**



b. hand means including a pair of levers independently pivotally mounted on the frame for selective actuation by an exerciser's hands; and

c. brake means for applying a drag independently and equally to each of the levers, the hand means further including a pair of shafts mounted on the frame, and the pair of hand levers pivotally mounted on the shafts, whereby each of the hand levers is movable independently of the other of the hand levers, the brake means including a brake shoe assembly comprising;

i. a pair of drums mounted on the shafts, each drum connected to a respective one of the hand levers to form a set therewith;

ii. a pair of brake shoes arranged for contacting the drums; and

iii. a support means for adjustably mounting the brake shoes on the frame and permitting varying of the bias of the brake shoes against the drums, the support means including a member, a rod pivotally connected to the member at a point thereon between the brake shoes, a coiled spring having coils arranged about the rod and an end coil thereof abutting the frame, a washer arranged on the rod engaging an end coil of a spring spaced form the end coil abutting the frame, screw threads provided on the rod, and a nut threadingly engaged with the screw threads of the rod and contacting the washer for positioning the washer as a function of a desired deflection of the spring, the spring deflecting being a function of the bias of the brake shoes on the drums.

3,966,201

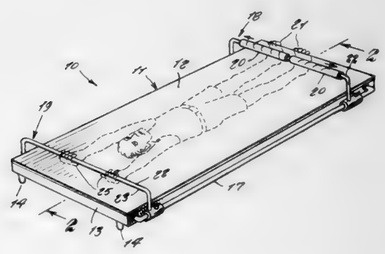
EXERCISING MACHINE

Joseph H. Mester, 373 S. Seguin Ave., New Braunfels, Tex. 78130

Continuation of Ser. No. 453,529, March 21, 1974, abandoned. This application June 10, 1975, Ser. No. 585,566

Int. Cl.² A63B *21/22, 23/04*

U.S. Cl. 272—72 **8 Claims**



8. An exercising machine, comprising, in combination:

a. a frame;

1. An exercising apparatus, comprising in combination, a low table, a rail along opposite two side edges of said table, and a pair of inverted, U-shaped bars bridging said table being slidably, adjustably supported at their ends upon said rails; said table comprising a rectangular flat panel mounted upon a frame supported upon short corner legs, each said rail comprising a U-shaped metal pipe secured at each end of said table frame, a central portion of said pipe extending parallel and spaced from said table side edge, each said U-shaped bar comprising a metal pipe having a straight central portion that is parallel and spaced above said table panel, opposite ends of said U-shaped bars being downwardly bent and affixed in metal sleeves slidable on said rails, and winged set screw means for locking said bars in a fixed position along said rails, and a pair of cushioned rollers of soft rubber being slidably fitted on one said bar for cushioning a person's feet bearing thereagainst, and a cylindrical surface of each said roller being spiralled for feet stimulation when rolled thereagainst.

3,966,202

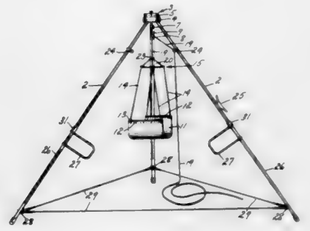
SWIMMING APPARATUS

Sam Cynamon, 4011 Kings Highway, Brooklyn, N.Y. 11234

Filed Aug. 12, 1975, Ser. No. 603,936

Int. Cl.² A63B *31/00*

U.S. Cl. 272—71 **10 Claims**



1. An apparatus used in the instruction and learning of swimming movements and capable of being used both on land and in the water, comprising a stationary tripod support means containing upwardly converging leg members, interconnecting means at their upper ends to limit the divergent movement of said leg members and having a suspension support means; a freely-swinging horizontally balanced torso support means

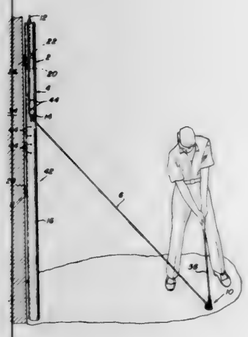
adjustably suspended from said suspension means comprising an open ended flexible sling for receiving the user in a prone position, and a sling support balancing means connected to said sling by means of flexible cable and at a sufficient height from said sling to permit unimpeded freedom of swimming motion.

3,966,203

RESISTANCE TYPE GOLF SWING PRACTICE AND EXERCISE DEVICE

Richard A. Bickford, No. 2 Pocahontas Drive, Dade City, Fla. 33525

Filed Mar. 10, 1975, Ser. No. 557,184
Int. Cl.² A63B *21/00*
U.S. Cl. 272—118 **7 Claims**



1. A golf swing practice and exercise device for use in training and building the muscles of the body employed in swinging of a golf club which comprises:
- a free-fall weight member,
- a tube adapted to receive said weight member and to maintain it during movement thereof in a straight path,
- mounting means to hold said tube in a substantially vertical position,
- a golf club,
- a cord fixed at its proximal end to means attaching it to the head of said golf club,
- means on said weight member by which the distal end of said cord is fastened thereto,
- a first fairlead for said cord fixed to said guide member adjacent the top thereof,
- a second fairlead for said cord and,
- means to hold said second fairlead at different positions between the ends of said tube during a practice swing of the golf club by a user to cause raising and lowering of said weight member.

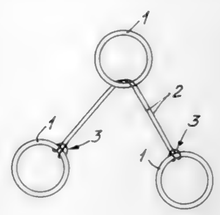
3,966,204

ELASTIC TYPE EXERCISING APPARATUS

Werner Dubach, Ilnauerstrasse 32, CH-8307, Effretikon, Switzerland

Filed Jan. 12, 1973, Ser. No. 323,154
Claims priority, application Switzerland, Jan. 13, 1972, 467/72; Nov. 17, 1972, 16761/72
Int. Cl.² A63B *23/00, 21/00, 23/04*
U.S. Cl. 272—135 **6 Claims**

1. Fitness apparatus for the performance of gymnastic exercises based on stress and relaxation, said apparatus comprising:
- a. a plurality of tough elastic ring-shaped hand grips,
- b. connector means including at least one endless elastic tensile element connected to two of the ring-shaped hand grips by being passed through each said two hand grips and formed into a knot,
- c. said two hand grips being engaged one within the other with their planes approximately at right angles with respect to each other and connected at one of their points



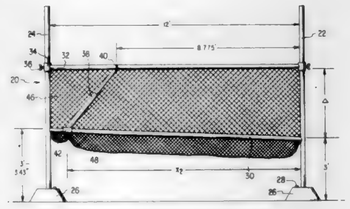
of contact by said tensile element knotted about said rings, and
- d. a spherical weight disposed within both said two hand grips.

3,966,205

TENNIS SERVE PRACTICE DEVICE AND METHOD OF USING SAME

David B. Schain, 11124 Arroyo Drive, Rockville, Md. 20852, and Morton R. Kagan, 2 Charen Court, Potomac, Md. 20854

Filed Feb. 20, 1975, Ser. No. 551,419
Int. Cl.² A63B *69/38*
U.S. Cl. 273—29 A **12 Claims**



8. A method for enabling a tennis player to accurately practice his service without actually using regulation tennis court facilities, said method comprising the steps of:
- providing a upright framework means having adjustably interconnected members which define a trapezium-shaped quadrilateral opening;
- positioning one of said members to define a top member, another of said members to define a bottom member, another of said members to define a straight side member and another of said members to define an angular side member which forms an obtuse angle with said top member and an acute angle with said bottom member;
- measuring the effective sevice height of the tennis player,
- adjusting the position of said top member relative to said bottom member in calculated accordance with said measured effective service height;
- adjusting the angular disposition of said angular side member with respect to said top and bottom members in calculated accordance with said measured effective service height; and
- positioning the framework means with the adjusted members at a predetermined distance away from the tennis player, to permit the tennis player to direct his service at the said opening.

11. A tennis serve practice device comprising:
- adjustable upright frame means including first, second, third, and fourth frame members adjustably interconnected and thereby forming and circumscribing a trapezium-shaped quadrilateral opening of variable configuration;

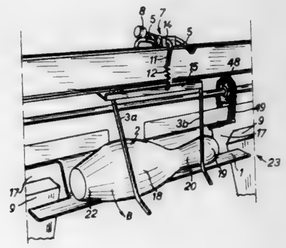
- net means connected to said frame members and disposed adjacent to said opening;
- said net means having a surface area greater than that of said opening to form a tennis ball receiving and retaining pocket;
- said first frame member being disposed substantially perpendicular to the ground;
- said second frame member being disposed substantially perpendicular to said first frame member;
- said third frame member being disposed beneath said second frame member and extending from said first frame member to the lower end of said fourth frame member;
- said fourth frame member being variable in length and being pivotally attached at its upper end to said second frame member and adjustably attached at its lower end to said third frame member;
- said fourth frame member thus being relatively movable along said third frame member for attachment at a predetermined position therealong;
- said fourth frame member forming an acute angle with said third frame member and an obtuse angle with said second frame member;
- said adjustment of said frame means being in calculated accordance with the serving height of the person using said device to vary the configuration of said opening to assure that the pocket will receive and retain only those served tennis balls which would land in the proper service area of a regulation tennis court.

3,966,206

BOWLING PIN ALIGNMENT APPARATUS TO UNIFORMLY ALIGN BOWLING PINS END-FOR-END

August Schmid, Schwerzenbach, Switzerland, assignor to Patentverwertungs - und Finanzierungsgesellschaft, SERANIA, Glarus, Switzerland

Filed June 23, 1975, Ser. No. 589,182
Claims priority, application Switzerland, June 27, 1974, 8828/74
Int. Cl.² A63D *5/08*
U.S. Cl. 273—43 E **10 Claims**



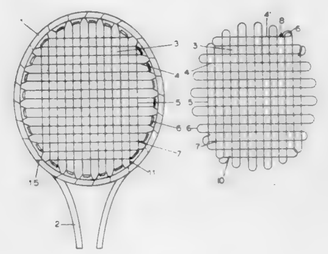
1. Bowling pin alignment apparatus to uniformly orient and align bowling pins end-for-end upon being applied to the apparatus in randomly oriented position comprising
- means (**1**) temporarily supporting a bowling pin (**2**) in essentially horizontal position; means for moving the bowling pin;
- two sensing and holding levers (*3a*, *3b*) located in horizontally spaced position and engageable with the bowling pin body portion (**18**) and the neck portion (**19, 20**) respectively upon movement of the pin; and
- interlock means (**7, 8, 21; 41, 42**) operatively connected to both said levers and locking that one of the levers (FIG. **1**: *3b*) engaging the neck poriton (**19, 20**) of the pin (**2**) therebeneath, while releasing movement of the lever (*3a*) which engages the body portion (**18**) therebeneath,
- whereby, upon disengagement between said support means (**1**) and the pin (**2**), the pin will fall due to the greater weight of the body portion with the body portion first, downwardly, while being restrained by that one of the levers engaging the neck portion to thereby align and orient the pin with the body portion in downward direction.

3,966,207

STRING SYSTEM FOR A GAME RACKET

Roger D. Pass, 1119 W. Montana Ave., St. Paul, Minn. 55108

Filed June 25, 1973, Ser. No. 372,907
Int. Cl.² A63B *51/02*
U.S. Cl. 273—73 D **1 Claim**



1. A game racket and string system therefor comprising a racket frame having an unstrung open head portion, a handle portion and an intermediate throat portion, said head portion having string support means spaced about the inner periphery of said head portion for receiving said string system, said string system having substantially parallel runs of interwoven strings at right angles to each other, adjacent pairs of similarly oriented strings forming loops around the outer periphery of said string system with four terminal loops each formed by one run of string secured to itself, each of said loops and terminal loops respectively corresponding in spacing to the spacing of said string support means, the planar dimensions of the outer periphery of said string system in its normal, unstrung non-tensioned condition being less by a predetermined amount than the planar dimension defined by the interior periphery of said string support means, whereby the respective loops of said string system are adapted to be directly stretched onto their respective string support means and result in a strung racket of a desired tension as determined by said predetermined lesser dimension of said string system.

3,966,208

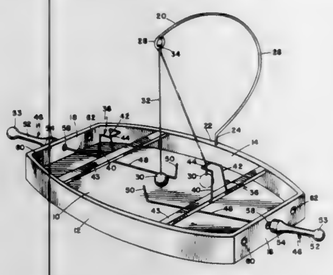
TETHERED BALL GOAL SCORING GAME

Robert Edward Gohsler, 10662 Gabacho Drive, San Diego, Calif. 92124

Filed June 5, 1975, Ser. No. 584,173
Int. Cl.² A63B *65/12*
U.S. Cl. 273—101 **11 Claims**

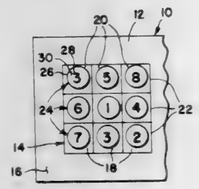
1. A goal scoring game comprising:
- a game board defining a playing area,
- a tethered impact receiving missile normally disposed in a suspended quiescent position and adapted for swinging over the game board,
- support means for suspending said missile over said game board, said support means bowed outwardly of same game board in a nonobstructing relationship with the tether of a missile propelled to above said support means,
- retaining means intermediate a side of the game board and the quiescent position of said missile, and projecting toward the missile quiescent position defining a goal scoring zone reachable only by propelling said missile to adjacent said retaining means and then behind the same for retention within the goal scoring zone,
- and striker means slidably associated with said game board and disposed below said retaining means, said striker means adapted for striking said missile and propelling the

same in a generally pendulum motion toward the goal defining said playing area, said striker means includes an elongated shank with an impactor connected to the shank, said striker means slidably received in holes in



opposite sides of said frame whereby the end of the striker means opposite the impactor can be manipulated to strike said missile and propel the same into the vicinity of the retaining means for retention therewith.

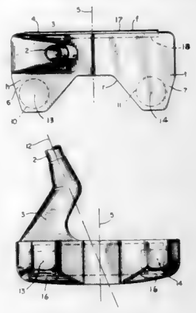
3,966,209
NUMBERS GAME
Anne Gambardella, Brooklyn, N.Y., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Apr. 10, 1975, Ser. No. 566,910
Int. Cl.² A63F *3/00*
U.S. Cl. 273—130 R **1 Claim**



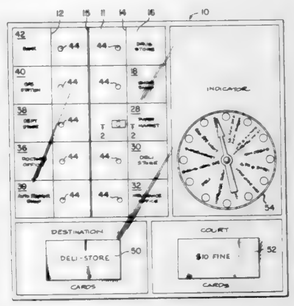
1. A number problem game, which comprises:
a. a playing board having a top planar surface thereon;
b. seven boxes contained on said top surface, each said box formed from nine squares, said nine squares arranged in three horizontal and three vertical rows intersecting each other; and
c. a plurality of sets of playing discs with each disc having numbered indicia thereon, the indicia on each disc within a set being identical with the indicia on all other discs in that set, the indicia for each set differing from the indicia of every other set, the indicia of the respective sets including the respective numbers one to eight, each set comprising at least ten discs, said discs positionable in said squares of said seven boxes for forming fifty six multiple digit numbers of a three digit character in said seven boxes.

3,966,210
GOLF CLUB
John J. Rozmus, 1030 Derwydd Lane, Berwyn, Pa. 19312
Filed Feb. 11, 1969, Ser. No. 798,351
Int. Cl.² A63B *53/04*
U.S. Cl. 273—169 **2 Claims**

2. In a golf club:
a head with heel and toe sections and front and rear sides;
a ball striking face formed on the front side with the plane of impact of the head being located between the heel and toe sections and being generally normal to the striking face;
a shaft connected to the head with the projection of the shaft axis extending through the plane of impact;
means on the head forming weight means respectively disposed on opposite sides of the plane of impact and whose mass concentrations are located substantially outwardly from the plane of impact respectively toward the heel and toe sections and also substantially spaced from the projection of the shaft axis in a rearward direction, said disposition of the shaft axis and the location of the mass concentrations being for use in causing the striking face, during the swing to be oriented generally normal to the line of swing and for use in providing for the head to have, at the moment of ball impact, a high moment of inertia with respect to the plane of impact so as to minimize twist of the striking face; and
said mass concentrations being substantially formed by a pair of weights in said head.

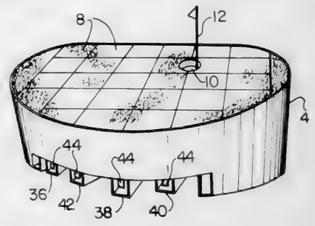


3,966,211
TRAFFIC COURT BOARD GAME
Eugene B. Brown, Chicago, Ill., assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest
Filed Sept. 23, 1974, Ser. No. 508,503
Int. Cl.² A63F *3/00*
U.S. Cl. 273—134 GM **4 Claims**



1. A board game apparatus having a plurality of line indicia defining an elongated street and a plurality of blocks disposed along at least one side of said street, each block having an indicia thereon designating a different one of a plurality of commercial institutions, a plurality of first cards having instructions designating different ones of said commercial institutions for determining goal board destinations, a means for random selection of one of said plurality of commercial institution indicia or one of a plurality of traffic offenses committed on said street, a plurality of second cards having indicia indicating different monetary fines, a supply of play money for players, and a plurality of playing elements each of which represents a single player for movement to said blocks having commerical institution indicia selected by said random selection means.

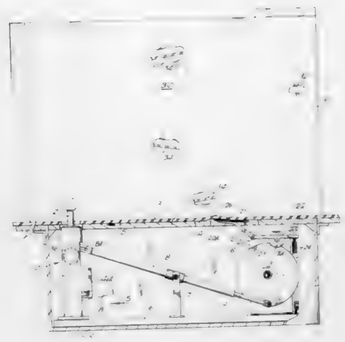
3,966,212
SIMULATED GOLF GREEN
Richard Mason, 637-39 E. Olney Road, Norfolk, Va. 23510
Filed Nov. 14, 1975, Ser. No. 632,070
Int. Cl.² A63B *69/36*
U.S. Cl. 273—181 A **5 Claims**



1. A simulated golf green comprising:
a. a base means comprising a base plate, a plurality of divider means mounted on said base plate, said divider means defining a plurality of areas on said base plate, a plurality of holes through said base plate, one of said holes being located in each of said areas, and a plurality of channel means mounted on said base plate, each of said channel means being positioned below one of said holes;
b. a plurality of surface plates positioned over said base means, said surface plates forming a substantially contiguous cover thereover;
c. a plurality of support means mounted on said base plate, each support means supporting one of said surface plates such that said surface plates can tilt with respect to said support means at 360° around the axis of said support means, wherein when a golf ball strikes one of said surface plates it tilts said surface plate falling therefrom into one of said areas of said base plate and then through the hole in said base plate located in said area into one of said channel means; and
d. detector means for detecting the presence of the golf ball in said channel.

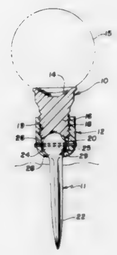
3,966,213
GOLF TEE DEVICE
John G. Bradley, 1800 Lakewood Court, Eugene, Oreg. 97402
Filed Apr. 3, 1975, Ser. No. 564,686
Int. Cl.² A63B *57/00, 69/36*
U.S. Cl. 273—201 **3 Claims**

1. A golf ball teeing device comprising,
a platform on which the golfer stands,
a base disposed below said platform,
arm means rockably mounted on said base,
a tee assembly supported by said base and coupled to one end of said arm means and thereby actuated in a reciprocating manner during rocking motion of the arm to position a golf ball above the platform,
arm actuating means for cyclic oscillation of the arm means, said arm actuating means including a circular cam plate having a recessed area defined by its outer periphery, a switch arm including follower means in riding contact with the cam plate, a switch carried by said switch arm in circuit with a motor driving said cam plate and with an electrical source, said switch arm disposed subjacent said platform and including an arm segment disposed within a platform opening permitting actuation of the switch arm by the golfer to close the arm carried switch to initiate motor operation, said arm carried switch opened to stop motor operation upon said follower means engaging the cam plate defined recess, and



ball guide means communicating a gravitating supply of golf balls to said tee assembly and including a ball release mechanism actuated by said rockably mounted arm means during each cycle of operation to sequentially release golf balls to the tee assembly.

3,966,214
TILT TOP GOLF TEE
Dalford D. Collins, 2016 Walnut St., Hastings, Minn. 55033
Filed May 27, 1975, Ser. No. 580,878
Int. Cl.² A63B *57/00*
U.S. Cl. 273—207 **10 Claims**



1. A golf tee comprising:
a shank element for insertion into the golfing surface; and
a head element including a ball supporting portion and a shank retaining portion threadedly connected with each other, said shank retaining portion having means for retaining said shank element for limited pivotal movement relative thereto and said ball supporting portion and said shank retaining portion being theadedly connected such that tightening of such threaded connection restricts the freedom of relative pivotal movement between said shank element and said shank retaining portion.

3,966,215
PHONOGRAPH AUTO-CHANGER CENTER SPINDLE

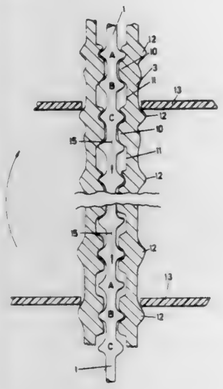
Keith Douglas Ridler, Fulbourn, and Alexander Bennett Gosling, Linton, both of England, assignors to Strathearm Audio Limited, Belfast, Ireland

Filed Jan. 29, 1975, Ser. No. 545,164

Claims priority, application United Kingdom, Feb. 1, 1974, 4812/74

Int. Cl.² G11B *17/04*

U.S. Cl. 274—10 S **7 Claims**



1. A phonograph auto-changer centre spindle including a one-piece tubular sleeve of resilient material having an operating length over which it is continuous, an operating spindle within the sleeve, means to move the resilient sleeve and the operating spindle relative to one another longitudinally to first and second respective positions, the resilient sleeve having an operating length which is at least equal to the thickness of a plurality of records to be played, said sleeve co-operating with the operating spindle over its operating length and having variations in the cross-sectional area of its wall along its operating length and the operating spindle having a plurality of variations in its surface which co-operate with the variations in the resilient sleeve to produce a plurality of bulges in the external surface of the sleeve in the first of the said respective positions, each bulge being of a size sufficient to prevent a disc record on the centre spindle from passing along the centre spindle, at least a part of each bulge being reduced in size sufficient to allow a disc record to pass over the said parts when the sleeve and the operating spindle are in the second of the said respective positions.

3,966,216
CARTRIDGE ASSEMBLY FOR RECORD PLAYER TONE ARM

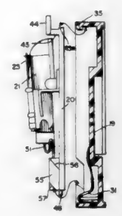
Secundino Rodriquez Sandoval, Mexico City, Mexico, assignor to Investigaciones Tecnologicas Electromecanicas y Electronicas, S.A., Mexico City, Mexico

Filed May 7, 1975, Ser. No. 575,219

Int. Cl.² G11B *3/02*

U.S. Cl. 274—25 **1 Claim**

1. A cartridge assembly for a record player tone arm comprising a generally box-shaped base having a top an open bottom front and rear ends and a pair of side walls, each of the side walls being provided with an angled slot extending toward the rear end, said rear end being provided with a plurality of recesses said recesses opening towards the bottom of said base, a first set of electrical contacts mounted on the base adjacent the rear end, each of the contacts of the first set being formed of a generally U-shaped piece of flexible and resilient spring metal, each of the contacts of the first set having one end thereof inserted into one of the recesses, a cartridge-mounting plate positioned between the side walls of the base and having a pair of laterally outwardly extending locking wings positioned within the slots in the side walls of the base and a front end positioned adjacent to and rearwardly of the front end of the base, detent means on the front end of the base engaging the front end of the mounting plate for releasably holding the mounting plate between the side walls, a second set of electrical contacts mounted on and extending



from the rear of said mounting plate and engaging the U-shaped contacts of the first set and flexing the U-shaped contacts rearwardly, the locking wings and the slots in the side walls of the base having engaging camming surfaces for preventing withdrawal of the locking wings from the slots when the detent means on the base engages the front end of the mounting plate, a cartridge holder secured to the mounting plate, and wires connecting the contacts of the second set to the cartridge holder.

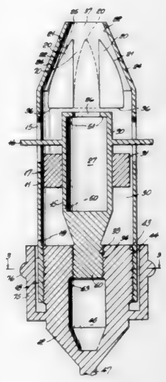
3,966,217
AUTOMATIC CHUCK

Harold Tummel, St. James, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Apr. 22, 1975, Ser. No. 570,417

Int. Cl.² B23B *31/19*

U.S. Cl. 279—59 **1 Claim**



1. A chuck fitted with jaws for holding a tool in detachable engagement with a shaft to which the chuck may be concentrically fastened; comprising

a housing having a front tapered section and a rear open section,

a plurality of jaws mounted inside the front section of the hollow tapered housing,

a central pin located in the interior of the housing so as to bear, when moved towards the jaws, against the rear ends of the jaws, such bearing causing the sides of the jaws to slide against the taper to move the jaws together,

a plug threadably engaged to the rear end of the housing,

a pin transversely mounted to the central pin, said pin extending through a slot in the housing wall, in which the rear of the central pin is formed of an oval-shape cross-section and the plug is formed with a recess of oval-shaped and larger cross-section than the cross-section of the oval portion of the central pin, with the exterior of the oval section of the central pin formed as a male screw thread, and the interior surface of the oval-shaped recess of the plug formed as a female screw thread so that turning the central pin with respect to the plug locks said central pin against axial motion with respect to the plug.

3,966,218
SKI BINDING WITH INCORPORATED BOOT SUPPORTING PIVOTING PLATE

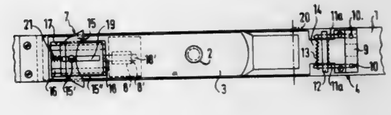
Jean Joseph Alfred Beyl, Blvd. Victor Hugo, Nevers, France

Filed Mar. 18, 1975, Ser. No. 559,552

Claims priority, application France, Mar. 25, 1974, 74.10132

Int. Cl.² A63C *9/081*

U.S. Cl. 280—618 **10 Claims**



1. A safety ski binding comprising a pivot member rigid with the ski, a pivoting plate means for supporting a ski boot, said pivoting plate being rotatably mounted on said pivot member, an abutment member mounted on said ski adjacent said pivoting plate, first and second ski boot retaining means mounted on said pivoting plate for releasably retaining the toe and heel ends of the boot, respectively, on said pivoting plate; means for slidably mounting said first retaining means on said pivoting plate; first resilient means for urging said first retaining means away from the toe end of the boot, and feeler means connected to the first retaining means and removably engageable with said abutment member, said feeler means engaging said abutment member to normally prevent sliding movement of said first retaining means away from the boot toe, said feeler means being pivotable with said pivoting plate and movable away from said abutment member after said pivoting plate has pivoted a selected distance to permit the first resilient means to slide said first retaining means along the pivoting plate to release said boot from the binding, and second resilient means mounted on said ski and coacting with said pivoting plate, said second resilient means applying a return torque to said pivoting plate upon pivoting movement thereof at least during pivoting movement over said selected distance.

3,966,219
SKI LOCK

Robert A. Look, 8404 W. Mercer Way, Mercer Island, Wash. 98040

Division of Ser. No. 322,906, Jan. 11, 1973. This application Oct. 23, 1974, Ser. No. 517,185

Int. Cl.² A63C *11/02*

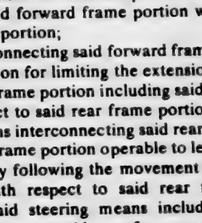
U.S. Cl. 280—611 **12 Claims**

3. A combination of a binding for a ski and a locking apparatus, said combination comprising:

a. a first bracket and a first binding being mounted on a first plate;

b. a second bracket and a second binding being mounted on a second plate;

c. said first bracket and said second bracket being capable of fitting together; and,



d. a locking means for releasably securing together said first bracket and said second bracket.

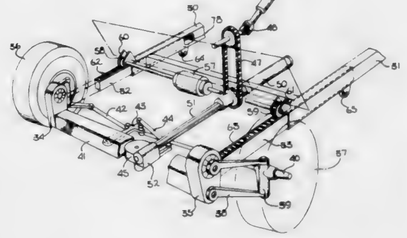
3,966,220
VARIABLE LENGTH VEHICLE

Robert W. Forsyth, and John P. Forsyth, both of 1517 N. 3rd Ave., Upland, Calif. 91786

Division of Ser. No. 293,797, Oct. 2, 1972, Pat. No. 3,896,946. This application Jan. 7, 1974, Ser. No. 431,383

Int. Cl.² B62D *21/14*

U.S. Cl. 280—638 **2 Claims**



1. In a passenger vehicle having an adjustable variable length wheelbase, the combination comprising:

an elongated frame;

said frame having a rear portion operably supporting the rear wheels of said vehicle and a movable forward portion carried in slidable relationship on said rear portion for operably supporting the front wheels of said vehicle;

a body carried on said frame having a portion thereof movable with said forward frame portion in response to movement of said forward frame portion with respect to said rear frame portion;

means interconnecting said forward frame portion with rear frame portion for limiting the extension and retraction of said front frame portion including said front body portion with respect to said rear frame portion;

steering means interconnecting said rear frame portion with said front frame portion operable to lengthen and shorten respectively following the movement of said front frame portion with respect to said rear frame portion and wherein said steering means includes a splined shaft sleeve carried on said rear frame portion and an externally splined shaft carried on said front frame portion in slidably fitted relationship with said sleeve so as to be operable to relatively move in a fore and aft manner as said elongated frame portions extend and retract while

allowing rotation of said sleeve and said shaft for simultaneous steering of said front wheels; and

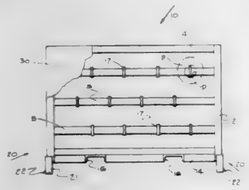
power means operably interconnecting said rear portion and said forward portion for slidably moving said forward portion away from and towards said rear portion for simultaneously moving said front frame portion with respect to said rear portion and moving said steering shaft with respect to said steering sleeve.

3,966,221

YARN SHIPPING RACK ASSEMBLY

John A. Beam, Greenville, and John D. Bane, Spartanburg, both of S.C., assignors to Hoechst Fibers Incorporated, Spartanburg, S.C.

Filed Nov. 15, 1974, Ser. No. 524,050
Int. Cl.² B62B 3/02
U.S. Cl. 280—79.3 **15 Claims**



11. An improved yarn shipping rack assembly comprising:

a. at least one rack module, said module having an outer skeletal framework made up of vertical and horizontal members secured together and defining an outer periphery around said module; a plurality of inner horizontal members in spaced apart vertical relationship and secured to said outer frame within said periphery, said inner horizontal members having yarn package receiving means provided thereon in staggered fashion;

b. means provided on said frame to cooperate with a frame of a next adjacent rack module to permit stacking of said rack modules; and

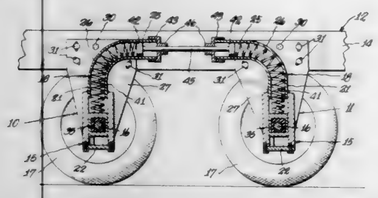
c. a separate wheeled dolley received below said at least one rack module, said dolley having members thereon to preclude lateral movement of said rack module with respect to said dolley.

3,966,222

VEHICLE SUSPENSIONS

J. Phil Felburn, P.O. Box 2344, Arlington, Va. 22202

Filed Oct. 23, 1974, Ser. No. 517,367
Int. Cl.² B60G 11/16
U.S. Cl. 280—685 **14 Claims**



1. A wheel suspension for a vehicle having a frame, a wheel for rolling along a travel surface, such as a roadway and the like, and an axle on which said wheel is mounted, comprising:

a mounting for said axle whereby the latter may move vertically, said mounting having a portion connected to said frame and including a curved conduit,

a coil spring within said curved conduit, the convolutions of said spring engaging the inner wall surface of said curved conduit so that said coil spring is axially flexed to follow the curvature of said conduit, one end of said spring bearing against said axle,

abutment means against which the other end of said spring bears, and

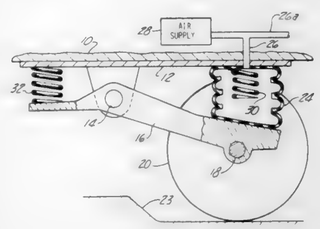
means for adjusting said abutment to compress said spring a selected amount.

3,966,223

VEHICLE SUSPENSION

James P. Carr, 15005 Lear Lane, Silver Spring, Md. 20904

Filed Nov. 8, 1974, Ser. No. 522,165
Int. Cl.² B60G 11/46
U.S. Cl. 280—712 **10 Claims**



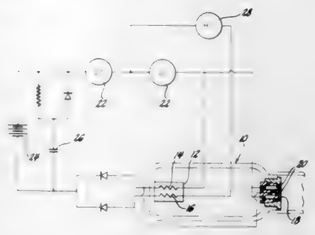
1. A vehicle suspension system comprising a source of relatively constant air pressure; an air bag functionally interposed between a road wheel and the vehicle sprung mass to provide a constant suspension force having a zero rate characteristic when the wheel is in a range of intermediate positions representative of normal run conditions; conduit means continually and non-restrictively connecting the bag to the source, whereby the bag internal pressure remains essentially constant throughout the wheel's intermediate positional range; an auxiliary normally inactive force means operable to introduce a progressively increasing additive force to the suspension system only when the wheel is deflected upwardly beyond its intermediate positional range; and a negative governing force means operable to progressively decrease the suspension system net support force only when the wheel is deflected downwardly from its intermediate positional range; the governing force means having a range of values that is sufficient to determine the vehicle suspension height.

3,966,224

MULTIPLE INFLATION RATE OCCUPANT RESTRAINT SYSTEM

David D. Campbell, and Edwin H. Klove, Jr., both of Bloomfield Hills, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1971, Ser. No. 195,310
Int. Cl.² B60R 21/08
U.S. Cl. 280—735 **1 Claim**



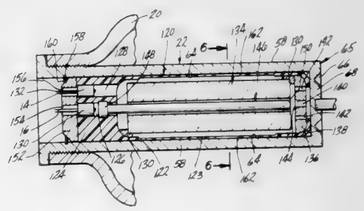
1. A vehicle occupant restraint system comprising, in combination, source means actuatable to provide first and second volumes of pressure fluid, an occupant restraint cushion inflatable from the source means, first control means responsive to the vehicle being subjected to an initial impact of predetermined minimum intensity not exceeding a predetermined maximum intensity to release the first volume of pressure fluid to the cushion and including time delay means providing a predetermined fixed time interval for actuating the source means to sequentially release the second volume of pressure fluid to the cushion after said predetermined fixed time interval, and second control means responsive to the occurrence within the predetermined time interval of the vehicle being subjected to a subsequent impact of intensity equal to or exceeding the predetermined maximum for actuating the source means to release the second volume of pressure fluid to the cushion within said predetermined fixed time interval.

3,966,225

INFLATING DEVICE WITH SELF-CONTAINED PROPELLANT GAS GENERATING CARTRIDGE

Darrell W. Marlow, Herrin, Ill., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 286,361, Sept. 5, 1972. This application Oct. 11, 1973, Ser. No. 405,359
Int. Cl.³ B60R 21/08
U.S. Cl. 280—737 **4 Claims**



1. In an inflating device for use in connection with vehicle safety systems of the type including an inflatable confinement, a reservoir for storing a fluid under pressure, a cartridge receiving chamber extending into said reservoir and having an external opening at its outer end, means at the other end of said chamber sealing said chamber from said reservoir and operable upon a predetermined pressure to provide communication between said reservoir and chamber, a self-contained propellant gas generating cartridge secured within said chamber, said cartridge comprising an elongated tubular body portion formed integral with a head portion, said head portion and body portion formed from a resilient plastic material, a propellant charge positioned within said tubular body portion between said head portion and the other end, ignitor means positioned within said head portion for igniting said propellant charge, a nozzle member closing said other end of the cartridge adjacent the means sealing said chamber, said nozzle being held in place by folding over a portion of said body portion, means for reducing the throat area of said nozzle positioned within said cartridge, and means locking said cartridge within said chamber under a predetermined load.

3,966,226

FLUID SUPPLY FOR OCCUPANT RESTRAINT SYSTEM

Helmut Roth, Bloomfield Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

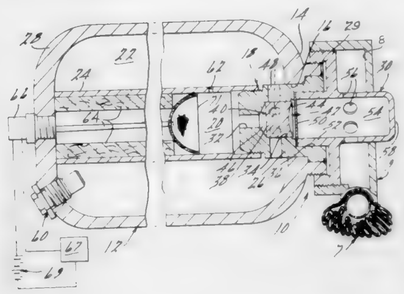
Continuation of Ser. No. 244,543, April 17, 1972, abandoned. This application Jan. 25, 1974, Ser. No. 436,400
Int. Cl.² B60R 21/08
U.S. Cl. 280—737 **5 Claims**

1. A fluid supply for an occupant restraint system having a confinement with a collapsed inoperative condition and an expanded operative condition for restraining movement of an occupant of a vehicle during a collision of the vehicle and means for directing gas into the confinement to effect expansion thereof, the fluid supply comprising:

a vessel defining an elongated storage chamber adapted to hold pressurized fluid and an exit passage at one end of the vessel adapted for communication with the directing means and being generally concentric with the primary axis of the elongated storage chamber;

a tubular assembly passing through said exit passage and disposed concentrically within said elongated storage chamber substantially on said axis and defining a generating chamber concentric with said axis;

gas generating material located in the generating chamber and adapted to generate gas upon actuation;



means for providing fluid communication between the storage chamber, the gas generating chamber, and the exit passage, said means for providing fluid communication between the storage chamber and the gas generating chamber including means for providing continuous fluid communication therebetween;

a shear disk located within and sealing the exit passage;

a shear member having a cutting edge facing the shear disk for cutting an opening in the shear disk; and

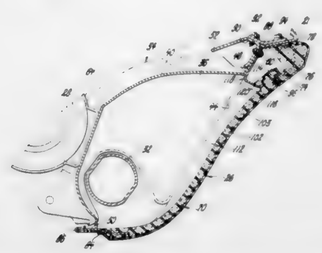
means for moving the shear member through the shear disk in response to the generation of gas to cut the opening in the shear disk to allow fluid to be released from the vessel.

3,966,227

COVER ASSEMBLY FOR AN OCCUPANT RESTRAINT SYSTEM

Donald K. Cameron, Fraser, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 24, 1974, Ser. No. 517,794
Int. Cl.² B60R 21/08
U.S. Cl. 280—752 **1 Claim**



1. In a vehicle body having an instrument panel structure, an occupant restraint cushion housing, an inflatable occupant restraint cushion deployable from the housing, a cover assembly mounted on the instrument panel structure and including flanges defining the side and upper edge portions of an opening to the housing, a flexible closure hinged to the lower edge portion of the opening for movement to an open position, and including flanges underlying the cover assembly flanges to releasably hold the closure against such movement, the

flanges at the side edge portions of the closure engaging the housing to block lateral movement of the side edge portions of the closure inwardly of the opening under inward pressure applied thereto, the improvement comprising, an elongated filler member secured to the housing and including an elongated shoulder extending angularly to the plane of the opening, said filler member also including an adjacent flange juxtaposed to the upper edge flange of the cover assembly and resiliently clamping the upper edge flange of the closure therebetween, and an elongated shoulder on the closure adjacent the upper edge flange thereof engaging the angular filler member shoulder to resist sliding movement in the general plane of the opening of the closure upper edge flange relative to the filler member flange under both inward and outward pressure applied to the closure, movement of the closure to an open position by deployment of the cushion forcing the closure shoulder past the filler member shoulder angularly and outwardly of the plane of the opening.

3,966,228

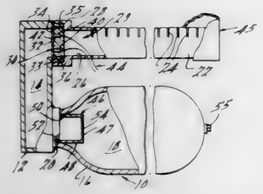
SEQUENCED ORIFICE FLUID SUPPLY FOR OCCUPANT RESTRAINT SYSTEM

Richard F. Neuman, Farmington, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 278,163, Aug. 4, 1972, abandoned. This application Jan. 31, 1975, Ser. No. 546,060

Int. Cl.[2] B60R *21/08*

U.S. Cl. 280—737 **11 Claims**



1. A fluid supply for an occupant restraint system having:
a confinement having a collapsed inoperative condition and an expanded operative condition for restraining movement of an occupant of a vehicle during a collision, said fluid supply comprising:
means for directing fluid into the confinement;
a vessel defining first and second pressure chambers fluidically in series;
gas under pressure in the first and second pressure chambers; means substantially blocking fluid flow between said first and second chambers;
means for directing an initial flow of the gas from the first chamber into the fluid directing means to effect an initial expansion of the confinement; and
means for subsequently removing said blocking means and directing a flow of the gas from the second chamber through the first chamber and into the fluid directing means to effect full expansion of the confinement after the confinement has been initially expanded.

3,966,229

PEDAL ACTUATED BICYCLE BRAKE

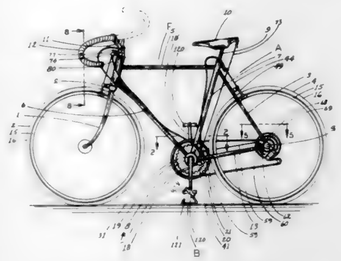
Edwin E. Foster, 1801 Camp Craft Road, Austin, Tex. 78746

Filed Oct. 10, 1974, Ser. No. 513,837

Int. Cl.[2] B62L *5/00*

U.S. Cl. 280—261 **29 Claims**

1. In combination with a bicycle having a frame, front and rear wheels supported on said frame, a pedal crank assembly with a main shaft and pedal cranks a drive sprocket carried on said main shaft, a driven sprocket engaged upon said rear wheel, a transmission chain interconnecting said drive and driven sprockets, and front and rear wheel caliper brakes, a brake control assembly comprising a lever swingably mounted on said frame for movement between an upper normal position and a downward position, means engaged upon said main shaft and to said lever, said means being adapted to bindingly restrict rotation of said main shaft upon back pedaling action whereby said lever is swung into downward position, means operatively engaged to said lever inhibiting tension in said transmission chain between said drive sprocket and said driven sprockets when said lever is in downwardly swung position, first and second cable means respectively connecting said lever and said front and rear wheel caliper brakes effecting braking action thereof upon downward swinging of said lever.



3,966,230

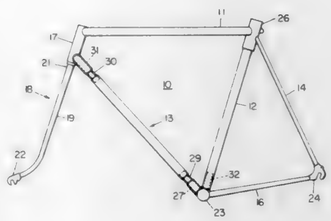
BICYCLE FRAME

John Nicol, Palos Verdes Peninsula, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 455,579, March 28, 1974, abandoned. This application Nov. 1, 1974, Ser. No. 520,043

Int. Cl.[3] B62K *3/04*

U.S. Cl. 280—281 R **1 Claim**



1. In a lightweight bicycle frame of the type including a tubular top bar having front and rear ends, a tubular set tube having top and bottom ends, a tubular head tube, a bottom bracket, and a tubular down tube, all of which are constructed of annealed titanium metal and which possess a combined weight of no more than four pounds, the improvement therein which includes:
a tubular sleeve of annealed titanium metal having an inner diameter slightly larger than the diameter of said seat tube and a wall thickness over a major portion thereof approximately equal to that of said seat tube and within the range of 0.032 inches to and including 0.035 inches;
said sleeve being fitted over and ensleevingly engaging a portion of said seat tube and extending from said top end of said seat tube to a predetermined short distance along said seat tube;
and wherein said tubular top bar is of a tubular diameter less than the diameter of said tubular sleeve and wherein said rear end of said top bar is of a cylindrical geometry concavely recessed from the end of said top bar for matingly engaging the cylindrical outer surface of said tubular sleeve, said rear end of said top bar further being butted up against and fusion bonded to said outer surface of said tubular sleeve to form an integral juncture therebetween;
and wherein said tubular down tube is of a hollow cylindrical shape of a predetermined outer diameter and bore and a wall thickness in the range of 0.032 inches to and including 0.035 inches and contains at least one radially inwardly deformed portion adjacent an end, said deformed portion defining a cylindrical surface of smaller diameter and smaller bore than the major portion of said tube and being of a short length;
and a tubular mandrel of annealed titanium material, said mandrel being of a wall thickness approximately equal to the wall thickness of said down tube and having first and second ends and having a length greater than the length of said deformed portion of said down tube;
said tubular mandrel having a radially inwardly deformed portion spaced from and located between the said first and second ends thereof;
said deformed portion of said mandrel defining a cylindrical surface of outer diameter almost equal to said inner diameter defined by said deformed portion of said down tube and of a length approximately equal to that length defined by said deformed portion of said down tube;
said mandrel being located inside said down tube with said deformed portion of said mandrel underlying and engaging said deformed portion of said down tube and with the remaining portions of said mandrel engaging the inner surface of said down tube.

3,966,231

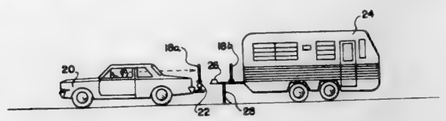
TRAILER ALIGNER

Robert P. Metzler, Ypsilanti, Mich., assignor to RPM Marketing Enterprises, Inc., Bloomfield Hills, Mich.

Filed Dec. 6, 1974, Ser. No. 530,238

Int. Cl.[3] B60D *1/06*

U.S. Cl. 280—477 **5 Claims**



1. A trailer aligner device for trailers equipped with a ball and socket type trailer hitch comprising in fixed non-rotatable combination an indicating rod having attached at one end thereof magnetic positioning means which is axially aligned with said rod, the gripping surface of said means is perpendicular to the longitudinal axis of said rod, said means being adapted to retain said device when positioned only on the top flat portion of the coupler ball whereby the bottom of the aligner device is engaged with the flat top portion of said ball and is disengaged from said ball by contacting said aligner with the socket of the trailer hitch.

3,966,232

PARKING CARDS

Joseph Doriel, Tel Aviv, Israel, assignor to P.I.D. Patents and Inventions Development Limited, Tel Aviv, Israel

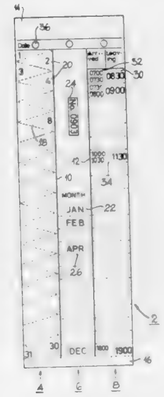
Filed Dec. 30, 1971, Ser. No. 214,158

Claims priority, application Israel, Feb. 18, 1971, 36227

Int. Cl.[2] G09F *3/00*

U.S. Cl. 283—23 **4 Claims**

1. A parking card for displaying a prepaid parking time period, said card being in the form of a strip of tearable material having month, day and hour indicia printed on separate areas thereof, each of said indicia areas being formed with severance lines enabling the user to separate a part of the card in each of said areas along selected severance lines thereof to identify the month, day and the arrival and expiration times of the preselected prepaid parking time period;
the severance lines in at least one of said indicia areas each being in the form of a continuous cut defining a tab which may be pressed out of the card, the ends of each continuous cut terminating adjacent to but spaced from the edge of the card or another continuous cut, forming a connecting web portion between the card and the tab;
the tabs in at least one of said indicia areas being spaced along at least one edge of the card, each of said tabs having a generally triangular shape extending inwardly from the adjacent edge of the card to an apex and having



the earliest and latest permitted arrival times printed adjacent one end of the tab and the expiration time printed adjacent the opposite end of the tab to define the preselected parking time period associated with that tab; and
the relative lengths of the continuous cuts and connecting web portions, and the strength of the material providing the web portions, defining the respective tabs being such that the user may press each tab out of the card along said continuous cut, and pull same to cause the card to be torn along said connecting web portion, producing thereby a readily-discernible, irreversible alteration in the card.

3,966,233

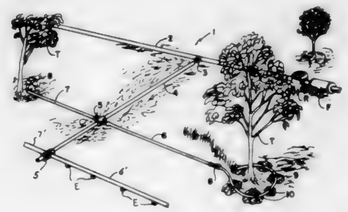
IRRIGATION APPARATUS

Richard E. Diggs, 12A Road, Rte. 3, P.O. Box 776, Carthage, Mo. 59101

Continuation-in-part of Ser. No. 498,181, Aug. 16, 1974, which is a division of Ser. No. 213,927, Dec. 30, 1971, Pat. No. 3,833,019. This application Feb. 13, 1975, Ser. No. 549,556

Int. Cl.[2] F16L *55/00*

U.S. Cl. 61—13 **5 Claims**



1. Irrigation apparatus, comprising a length of plastic pipe connected at one end with a source of irrigating water and

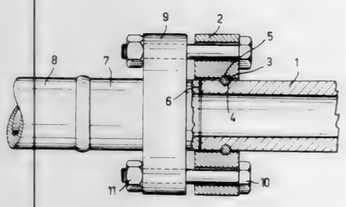
extending into an area to be irrigated, a plurality of self-piercing fittings inserted into the sidewall of the length of plastic pipe at spaced intervals along the length thereof for effecting desired localized flow of irrigating water into controlled root zones of plants to be irrigated, said fittings each including a sharpened piercing end inserted into the wall of the pipe and an integral shrouded discharge end projecting a substantial distance radially beyond the external surface of the pipe, said fitting having an axial bore therethrough for flow of water from the pipe into the shrouded end, said shrouded end having openings therein directed substantially perpendicular to the axis of the bore and to the axis of the pipe, whereby irrigating water exiting the pipe through the bore impinges against the shrouded end and flows from the openings therein, and a plurality of separate, spaced apart, thin, flexible, protective wraps of plastic sheet material wrapped around and engaging the fitting and pipe at the location of each fitting and having opposite edge portions projecting substantially beyond the fitting to prevent entry of dirt and the like into the fittings and to spread the flow of irrigating water over a larger area than that accomplished by the fitting itself.

3,966,234

FLANGE JOINT

Goran Vilhelm Sundholm, Makitie 4, Myllykyla, 01590 Maisala, Finland

Filed Feb. 21, 1975, Ser. No. 551,599
Claims priority, application Finland, Feb. 22, 1974, 532/74
Int. Cl.² F16L *23/00*
U.S. Cl. 285—24 **6 Claims**



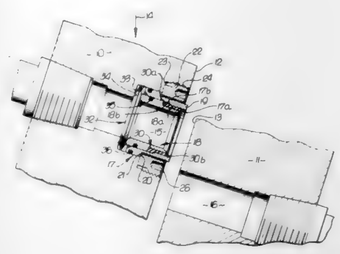
1. A flange joint comprising; a pair of tubular pieces to be joined, a clamping flange mounted on each of said pieces, a packing positioned between said pieces, means cooperating with said flanges for securing said pieces together, at least one of the clamping flanges turnably mounted on one of said pieces to be joined by means of a locking ring in corresponding grooves formed in the clamping flange and in said piece to be joined said grooves in the clamping flange and in said piece being arranged in such a way that when the flange is in position to be tightened the distance from the back edge of the flange groove to the forward edge of the flange is greater than the distance from said back edge of the flange groove to the joining point for the pieces to be joined, the distance from the forward edge of the flange groove to the back edge of the flange being less than the distance from the back edge of the flange groove to the joining point of the pieces to be joined, the forward portion of said flange surrounds the other piece and has an internal diameter slightly greater than the outer diameter of the other piece and thus forms a guide and a support for the other piece to be joined and for the packing fitted in between them.

3,966,235

UNDERWATER SEALING OF EXPOSED PORTS IN RELATIVELY CLOSABLE MEMBERS

George E. Lewis, Arcadia, Calif., assignor to Hydril Company, Los Angeles, Calif.

Continuation of Ser. No. 355,484, April 30, 1973. This application Feb. 10, 1975, Ser. No. 548,513
Int. Cl.² F16L *35/00;* **E21B** *43/01*
U.S. Cl. 285—25 **11 Claims**



1. For combination with first and second members having mutually opposed faces which are relatively movable toward and away from one another, the members defining ports to be brought into open registration in response to said member relative movement toward one another, improved sealing apparatus to seal off between said faces and about said registered ports, comprising

a. first and second concentric tubular inserts carried by one of the members for relative telescopic movement, the inserts extending about the port in said one member, at least one of the inserts having an end portion projecting endwise outwardly relative to said one member to be forcibly engaged by the other member for inwardly displacing said one insert in response to said member relative movement toward one another, and

b. elastomeric means located in a space defined by and between said inserts to transfer compressive force from said one insert to the other insert in response to said inward displacement of the one insert, and to be compressively urged in an outward direction into annular sealing engagement with the face of said other member about the port mouth therein,

c. said inserts having shoulders facing said space so as to have relative movement toward one another in response to said inward displacement of the one insert, both said inserts extending endwise inwardly beyond the innermost extent of said elastomeric means.

3,966,236

RELEASABLE COUPLING

Roy R. Vann, Box 38, Artesia, N. Mex. 88210

Filed Oct. 23, 1974, Ser. No. 517,391
Int. Cl.² F16L *37/22*
U.S. Cl. 285—39 **2 Claims**

1. A wireline actuated releasable fluid coupling apparatus which can be interposed within a tool string and arranged so that a wireline fishing tool can be used to part one marginal length of the string from the other, comprising:

an upper member having an upper end for attachment into an upper marginal length of a tool string;

a lower member having a lower end for attachment into a lower marginal length of a tool string;

means by which a marginal lower end of said upper member and a marginal upper end of said lower member can be slidably and telescopingly joined together in abuting relation, one within the other; seal means formed between said upper and lower member for precluding fluid flow therebetween;

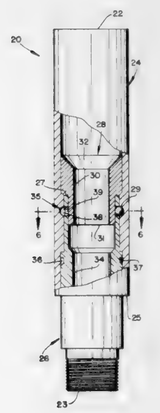
a releasing member; said upper member, said lower member, and said releasing member being concentrically arranged respective to one another, means forming an axial passageway through said upper member, said lower member, and said releasing member; said releasing member being slidably received within at least a portion of said marginal lower end and marginal upper end;

an annulus formed within the outermost of said upper and lower members, and a plurality of radially spaced apertures formed within a wall of the innermost of said upper and lower members;

said annulus and said radially spaced apertures jointly cooperate together to form a cavity; a marginal length of said releasing member being interposed between said cavity and said axial passageway;

said cavity being radially inwardly directed and jointly formed by a portion of the overlapping marginal ends of said upper and lower members;

a plurality of spherical objects of a diameter to be received within said cavity and to simultaneously bear against structure forming said annulus, said apertures, and said releasing member;



said releasing member having a wall surface thereof which bears against said spherical members to hold each said member within said cavity;

abutment means formed on a lower end portion of said releasing member for engaging a wireline fishing tool so that the releasing member can be engaged and moved axially upwards respective to the tool string to thereby communicate the cavity with the axial passageway; said releasing member having a shoulder formed thereon, said shoulder having a diameter greater than the diameter of the axial passageway in said lower member and abutingly engages the upper terminal end of said lower member to thereby limit the downward travel of said releasing member;

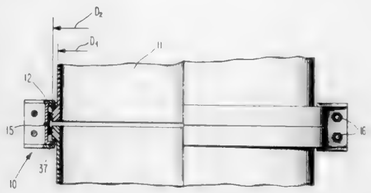
means, including said cavity, biasing said spherical objects axially inwardly toward said passageway so that a wireline fishing tool can be run downhole through the tool string and said releasing member engaged and moved axially to allow said cavity to communicate with said passageway, thereby causing said spherical objects to be forced from said cavity, and allowing said upper and lower members to slide apart from one another.

3,966,237

PIPE COUPLING FOR LARGE DIAMETER PIPE

Leo K. Thiessen, Shawnee Mission, Kans., assignor to Aeroquip Corporation, Jackson, Mich.

Continuation of Ser. No. 452,877, March 20, 1974, abandoned. This application June 23, 1975, Ser. No. 589,056
Int. Cl.² F16L *17/04*
U.S. Cl. 285—112 **2 Claims**



1. A pipe joint comprising, in combination,

two lengths of thin wall, large diameter pipe arranged end to end for connection one to the other,

each of said pipe lengths having a continuous, circumferential, enlarged diameter end portion thereon at the juxtaposed ends for pipe end connection purposes,

said end portions of substantial rectangular cross section, whereby to provide therewith a peripheral flat circumferential bearing surface thereon and a substantially radially extending circumferential engaging shoulder,

and mechanical coupling means overlying and engaging said enlarged diameter pipe end portions comprising:

a plurality of arcuate segments adapted for assembled positioning, in a group, as a complete, pipe-end-encircling, rigid, circular coupling housing;

each of said segments having an arcuate, outboard, with respect to the pipe lengths being connected, rectangular base portion;

said assembled housing segments having an inside diameter, at the concave inner faces of said rectangular base portions, greater than the outside diameter of the enlarged pipe end portions;

said segments having a width somewhat greater than the combined width of the two pipe end enlarged portions to be connected;

said housing segments each having a pair of radial projections extending inwardly from the concave inner face of the base portion, spaced inwardly from the side edges thereof and laterally from one another, whereby to form a gasket receiving groove therebetween;

the said radial projections, in the assembled housing, having an inside diameter slightly greater than the outside diameter of the enlarged pipe end bearing surface portions and adapted to overlie same;

said housing segments each having a pair of radial flange portions of greater depth than the depth of said projections extending radially inwardly from the side edges of said base portion, whereby to enclose and overlap, when the housing is assembled around the pipe ends, the two juxtaposed, aligned, enlarged diameter pipe end portions;

said radial flange portions having, in the assembled housing on the pipe, an internal diameter less than the outer diameter of the pipe end enlarged portions, but somewhat greater than that of the pipe lengths, per se, and a lateral spacing therebetween somewhat greater than the combined width of the two pipe end enlarged portions;

a C-section gasket positioned inboard of the segment housing base portions, retained laterally by the inboard radial projections and having a sealing portion engaging the peripheral bearing surface portion of each of the enlarged pipe end portions,

clamping means positioned at each end of each arcuate segment adapted to cooperate with like clamping means

on adjacent arcuate segments to form the circular housing; and

guide-interlock means positioned on each side of each arcuate segment and cooperating with like guide-interlock means on adjacent segment endings to rigidly retain and maintain the said segments coupled into the rigid circular housing, in cooperation with the said clamping means,

said guide-interlock means comprising first and second guide members, one of which is positioned along each side and outside of each housing segments at each connecting end thereof, each housing segment having two guide members at each end thereof,

said first guide members each having a V-shaped projection extending beyond the end of the housing segment carrying same, shaped cut-out positioned alongside but within the arc of said segment carrying same,

whereby, upon assembly of said segments into said circular housing, axial and radial alignment of said housing segments is achieved and maintained by the cooperation of the clamping and guide-interlock means.

3,966,238

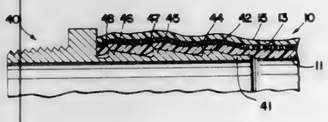
HOSE CONSTRUCTION AND HOSE COUPLING JOINT

Donald E. Washkewicz, Euclid, and Wayne S. Busdiecker, Stow, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 465,183, April 29, 1975, abandoned. This application July 16, 1975, Ser. No. 596,254

Int. Cl.² F16L *33/00*

U.S. Cl. 285—239 **4 Claims**



1. A hose coupling joint comprising a fitting and hose having a bore therethrough, said fitting having an extension with a free end received within said bore, said extension having a circular barb thereon adjacent said free end and within said bore, said barb being tapered rearwardly at an acute angle with the longitudinal axis of said extension so as to have its largest diameter remote from said free end, said barb having a rear face that is substantially normal to said axis, said hose comprising a core tube, a braided tubular reinforcement of fibrous material over the core tube, said braid having an angle less than the neutral angle of the braid prior to insertion of such fitting extension into said hose bore, and a tubular cover over the reinforcement, at least one of said core tube and cover being of polyvinyl chloride plastic with a Shore A hardness between about 60 to 90 durometer, the inside diameter of said core tube being initially between about ¼ inch and ⅛ inch and said largest diameter of the barb being about 0.068 inch greater than said initial inside diameter of the core tube, whereby the barb diameter is within the range from substantially 124% greater than the initial hose inside diameter when such inside diameter is about ¼ inch to substantially 113% when the hose ID is about ⅛ inch, and said cover and core tube being bonded to said reinforcement with sufficient adherence whereby the pull required prior to assembly of the hose to the fitting to separate the core tube from the reinforcement is at least 8 lbs. and to separate the cover from the reinforcement is at least 12 lbs. on the test comprising separately peeling a one inch long strip of the cover from the reinforcement and the reinforcement from the core tube at the rate of one inch per minute.

3,966,239

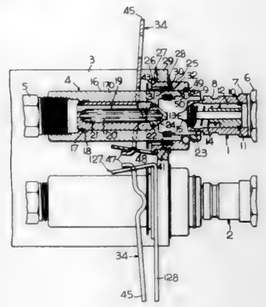
RELEASE FOR BREAKAWAY COUPLING

Edward B. Heckenkamp, Brookfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 16, 1974, Ser. No. 533,320

Int. Cl.² F16L *37/18*

U.S. Cl. 285—316 **10 Claims**



1. A release mechanism on a hydraulic fluid coupling comprising, a socket section, a plug section for reception in said socket section, said plug section including casing means defining a locking recess, said socket section including a housing means defining radial openings, a spring seat on said housing, locking elements received in said openings, a locking sleeve embracing said housing means, spring means compressively positioned in said locking sleeve against said spring seat on said housing and normally biasing said locking sleeve for locking said locking elements in said locking recess of said casing means for locking said coupling together, a hinge collar defining an opening receiving said locking sleeve of said coupling and an axial flange forming a fulcrum, a bracket supporting said hinge collar and said coupling through said locking sleeve, a lever defining an opening receiving said coupling and pivotally supported on the fulcrum of said hinge collar, a spacer encircling said coupling and engaging said spring seat and said lever and biasing said socket section against said spring means to a disengaging position relative to said locking sleeve responsive to pivotal movement of said lever.

3,966,240

QUICK-ACTION PIPE JOINT

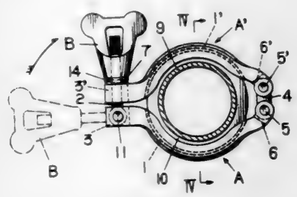
Michitoshi Enomoto, Osaka, Japan, assignor to Nakamura Kinzoku Kogyosho, Inc., Osaka, Japan

Filed Mar. 17, 1975, Ser. No. 558,721

Claims priority, application Japan, June 4, 1974, 49-66146

Int. Cl.² F16L *23/00, 19/02*

U.S. Cl. 285—367 **3 Claims**



1. A quick-action pipe joint comprising: a pair of opposed curved clamp members in which interior, tapered grooved portions are formed, for simultaneous engagement with and clamping of at least flange portions of two pipes to be joined; said members having terminal portions with respective cut-

outs therein, to engage a bolt having freedom of rotation at one end thereof; and recesses therein to mount a link with pins so as to rotate freely on a surface of the other end; and a nut including a body portion and a sleeve-shaped screw portion, for securing said clamp members at said one end in engagement with said bolt; wherein said clamp members and said nut body portion are mass produced by die-casting and molding from an aluminum alloy, said screw portion is made from an abrasion-resistant material such as steel, extends axially beyond the end of said body portion and is in abutting engagement with the terminal portion of one of said clamp members.

3,966,241

YARN KNOT

Charles Alonzo Jones; Jerry Joe Lawson, and William Carl Mayrose, all of Shelby, N.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Division of Ser. No. 242,775, April 10, 1972. This application Apr. 15, 1974, Ser. No. 461,199

Int. Cl.² D04G *5/00*

U.S. Cl. 289—1.2 **4 Claims**



1. A yarn knot composed of two leading ends of continuous filament substantially uniformly underdrawn yarn, said ends being knotted about each other to form a unitary continuing yarn, the portion of said ends engaged in said knotted manner being substantially drawn, and the successive portions of said ends immediately adjacent said knotted portion being substantially uniformly underdrawn wherein said knotting is constituted by a self-tightening, balanced knot.

3,966,242

LOCKING MECHANISM IN PARTICULAR FOR A VEHICLE BONNET

Raymond Vitalis, Montbeliard, France, assignor to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Boulogne-Billancourt, both of France

Filed Feb. 3, 1975, Ser. No. 546,776

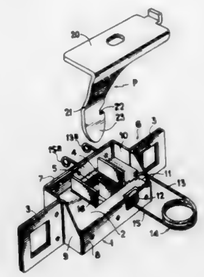
Claims priority, application France, Feb. 20, 1974, 74.05759

Int. Cl.² E05C *19/06*

U.S. Cl. 292—19 **9 Claims**

1. A locking device for relatively movable first and second parts, comprising

a locking mechanism comprising two complementary sub-assemblies respectively forming a keeper and a bolt, a first of the sub-assemblies comprising a mount, a hair-pin shaped spring having a first branch and a second branch which branches have end portions which define eyes adjacent free ends of the branches, said end portions extending out of the mount, the first sub-assembly having means for holding a portion of the first branch adjacent said end portion stationary with respect to the mount transversely of the first branch while leaving the remainder of the spring free to be elastically deformed in a given plane so that the second branch is free to move elastically with respect to the mount transversely of the second branch in said plane between a locking position and an unlocking position, the first sub-assembly having means for precluding movement of the second branch in directions other than in said plane, a second of the sub-assemblies having a part engageable by the second branch in



said locking position of the second branch so as to be locked by the second branch when the two assemblies are brought together, the second sub-assembly being for mounting on the first part and the second sub-assembly being for mounting on the second part, and cable control means for shifting the second branch to said unlocking position in opposition to the elastically yieldable resistance of the spring, the control means comprising a cable and a sheath and the sheath being in abutting relation to the eye of one of the branches and stop means combined with the cable putting the cable in abutting relation to the other of said eyes.

3,966,243

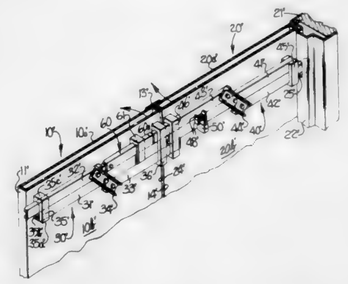
SECURITY BAR ASSEMBLY FOR DOUBLE DOORS

Robert I. Connell, 896 S. Main St., Mount Holly, N.C. 28120

Filed July 23, 1975, Ser. No. 598,201

Int. Cl.² E05C *7/04*

U.S. Cl. 292—40 **9 Claims**



1. A security lock device for a side-by-side pair of hinged double doors comprising a pair of locking bar assemblies adapted to be mounted respectively on a common face of the pair of doors extending generally horizontally thereacross and being operable to permit lockingly securing the doors to the opposing door jambs and to one another, each locking bar assembly including

an elongate central mounting bar adapted for being securely mounted on the face of the door extending widthwise thereof with one end of the central mounting bar posi-

tioned adjacent the outside edge of the door and adjacent the door jamb and with the other end thereof positioned adjacent the inside edge of the door where the doors meet,

a relatively short crank member pivotally connected to said central bar and having opposite end portions thereof extending on opposite sides of the pivotal connection with said central bar,

an outer elongate slidable bar positioned alongside said elongate central mounting bar and pivotally connected to one of said end portions of said crank member and being slidably movable longitudinally along said central bar to position a free end portion of the outer slidable bar outwardly beyond the outside end of the central bar and beyond the outside edge of the door for engaging with the adjacent door jamb,

an inner elongate slidable bar also positioned alongside said central mounting bar and pivotally connected to the other end portion of said crank member, said inner slidable bar thereby being slidably movable longitudinally along said central bar simultaneously with and in the opposite direction to said outer slidable bar to position a free end portion of the slidable bar inwardly beyond the inside end of the central bar and beyond the inside edge of the door for engagement with the adjacent other door,

keeper means carried by said central bar adjacent each end thereof and cooperating with the respective outer and inner slidable bars for retaining said slidable bars in position alongside the central bar while permitting longitudinal sliding movement thereof, and

means carried by said central bar adjacent the inside end thereof for receiving and lockingly engaging with the extended free end portion of the inner sliding bar on the opposite door so that said pair of locking bar assemblies, when in the extended locked position, interlockingly engage one another at the opposing inside edges of the doors where the doors meet and also engage the door jambs along the outside edges of the doors to thereby maintain the pair of double doors in tightly locked position.

3,966,244

INSTALLATION FOR SECURING OF PIVOTAL HOODS OR FLAPS, ESPECIALLY ENGINE HOODS

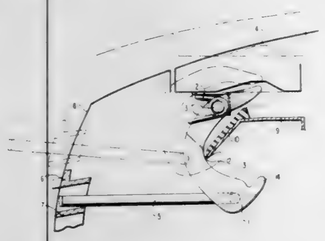
Werner Kleisser, Ostelsheim, and Götz Motting, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Dec. 23, 1974, Ser. No. 535,984

Claims priority, application Germany, Dec. 24, 1973, 2364466

Int. Cl.² E05C *19/10*

U.S. Cl. 292—127 **22 Claims**



1. An installation for securing pivotal members of vehicles, which can be unlatched from the interior space of the vehicle and can be released from the outside out of a stop position by a lever at a safety hook means, characterized in that the safety hook means is pivotally mounted at the pivotal member under a spring load and cooperates with a locally fixed countermember, said safety hook means upon release of the interior latching member being pivoted ay an upwardly directly movement of said pivotal member into a stop position in which said lever, which is pivotally mounted at the safety hook means, is displaced out of a normal cover-off position into an externally accessible position for the disengagement out of the stop position, said safety hook means is constructed sickle-shaped and is provided below the pivotal axis with a curved butting surface means which passes over on one side of the safety hook means into a detent notch provided with a locking nose portion which is adjoined by a crowned sliding surface, the fixed counter member includes a stop edge against which said curved butting surface means lies after a release of the latching mechanism, said curved butting surface means being slidable along the stop edge up to said locking nose portion to thereby move said lever from the normal covered-off position to the externally accessible position, and in that said crowned sliding surface is engageable with said fixed counter-member to deflect the safety-hook means away from the fixed counter-member upon a closing of the pivotal member.

3,966,245

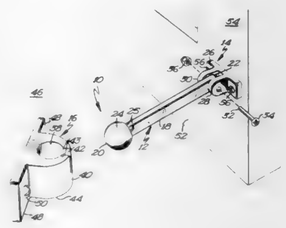
MULTIOPERATIONAL LATCH

Luigi G. Losenno, 3804 Thomas Ave. S., Minneapolis, Minn. 55410

Filed Jan. 30, 1975, Ser. No. 545,506

Int. Cl.² E05C *17/14*

U.S. Cl. 292—202 **10 Claims**



1. Multioperational latch for use with a door, having an inside surface, where the door can be placed in open and closed positions with respect to a door frame comprising in combination: an elongated latch member having a first end and a second end; the first end including a foot;

means for pivotally mounting the second end of the latch member to a first downward, privacy position, a second horizontal latch position, and a third upraised, nonoperative position; means for mounting the pivot means to the inside surface of the door; means for removably capturing and receiving the foot of the latch member; and means for mounting the receiving means in a stationary position with respect to the door frame, with the first privacy position of the latch member preventing the door from being moved from its closed position, the second position being where the foot of the latch member is captured within the receiving means holding the door in its open position, and the third position allowing the door to be freely moved either to or from its open or closed position.

3,966,246

DOOR LATCH FOR APPLIANCES AND THE LIKE

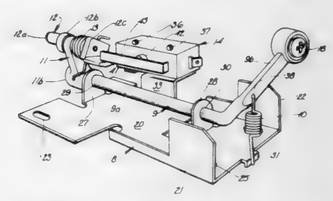
William H. Yake, Connersville, Ind., assignor to Design and Manufacturing Corporation, Connorsville, Ind.

Filed Jan. 21, 1975, Ser. No. 542,653

Int. Cl.² E05C *3/22*

U.S. Cl. 292—241 **11 Claims**

1. An improved latch mechanism comprising a support plate having upstanding lugs in parallel spaced relationship with coaxial perforations therethrough, an L-shaped latch lever the first leg of which comprises a rod-like portion rotatively mounted in said perforations of said support plate lugs, the second leg of said L-shaped latch lever comprising a handle portion with handle means at the end thereof, said latch lever being rotatable in said support plate lug perforations by said handle portion between an open position and a closed position, a link non-rotatively affixed to the free end of said first latch lever leg, a bolt means, means pivotally affixing said



bolt to said link, said bolt means being independently swingable between a normal position and a latching position with respect to said link, means to bias said bolt to said normal position, a hookshaped strike, said bolt having a strike engaging portion, said strike having at least one cam surface thereon for engagement by said strike engaging bolt portion and so configured as to shift said bolt from said normal position to said latching position as said latch handle is shifted from said open to said closed position.

3,966,247

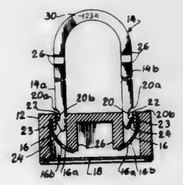
KEYLESS PADLOCK

Fred Muller, Jr., Florham Park, N.J.; Stanley Wolniak, Chicago, Ill.; Marshall Johnson, Mundelein, Ill., and Elbert Spencer, Wildwood, Ill., assignors to Madge Canter Associates, Inc., West Orange, N.J.

Filed June 4, 1973, Ser. No. 366,750

Int. Cl. E05c *19/18*

U.S. Cl. 292—318 **3 Claims**



1. A keyless padlock of the character described, comprising:

a. a lock body having a cavity formed therein, on one side thereof,

b. a seal plate secured to said lock body to close said open side,

c. a pair of spaced access holes formed in said lock body for access into said cavity and a pair of abutments formed in said lock body adjacent said access holes,

d. a generally U-shaped hasp consisting of a bight and a pair of generally parallel legs depending from said bight and adapted to be inserted into said lock body cavity through said access holes,

e. said hasp legs having a pair of barb formations at their lower ends, with downwardly directed cam-faces and upwardly directed abutment shoulders above said cam faces, and

f. lock spring means, confined in said lock body cavity between the abutments formed therein and the seal plate, for interlocking engagement with said hasp leg barb formations to interlock the hasp with the lock body,

g. said lock spring means comprising a generally U-shaped leaf spring having a bight and a pair of generally parallel arms extending upwardly therefrom and a pair of reception holes formed in said arms adjacent said bight,

h. said cam-faces on the hasp leg barb formations being oriented to engage the leaf spring arms, when the hasp legs are inserted into the lock body through said access holes, to cam said leaf spring arms laterally into spring-biased, non-parallel positions,

i. said hasp leg barb formations being registrable with the reception holes in the leaf spring arms when the hasp legs are fully seated in the lock body,

j. whereby the leaf spring arms are disengaged from the cam faces on said barb formation and spring back to generally parallel positions, trapping the barb formations in said reception holes,

k. said barb formations being locked in said reception holes by means of the abutment shoulders on the barb formations.

3,966,248

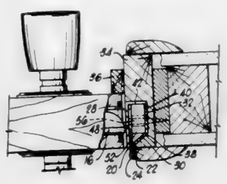
SAFETY DOOR LOCK

Loyal W. James, P.O. Box 129, Chickasha, Okla. 73018

Filed June 29, 1972, Ser. No. 267,644

Int. Cl.² E05C *15/02*

U.S. Cl. 292—340 **6 Claims**



1. A door jamb keeper assembly for locking engagement with a door lock bolt, comprising:

an inset element for affixure within a door jamb adjacent to said door lock bolt;

a keeper element slidably retained in contact with said inset element and providing a lock aperture for receiving said door lock bolt;

pressure pad means formed from resilient material and being disposed contiguous to said inset element and in contact with said keeper element;

pressure plate means disposed contiguous to said pressure pad means; and

fastener means urging said pressure plate means toward said inset element to deform said pressure pad means and place predetermined keeping pressure in said bolt receiving disposition.

3,966,249

ROTATOR

Jonas Herman Lindqvist, Hudiksvall, Sweden, assignor to Hiab-Foco Aktiebolag, Hudiksvall, Sweden

Filed June 6, 1974, Ser. No. 476,852

Int. Cl.² B25B *1/00*; **B66C** *1/00*

U.S. Cl. 294—88 **4 Claims**

1. An improved rotator adapted to be positioned between a crane hoisting boom and a fluid actuated lifting tool, comprising in combination:

a rotator stand having a portion presenting a continuous vertical bore;

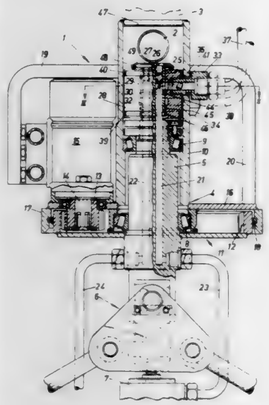
a vertical shaft having a lower end projecting downwardly from said stand, the remainder of said shaft being received in said bore;

bearing means disposed within said bore and engaging an intermediate section of said shaft for supporting said shaft

for rotation and against axial displacement, said shaft having an upper end projecting above said bearing means and located wholly within said bore, said bore being of larger diameter than said upper end of the shaft;

motor means carried by said stand and drivingly connected to said shaft below said bearing means for selectively rotating said shaft;

a sleeve enclosing said upper end of said shaft within said bore, said sleeve rotatably engaging said shaft and having an outer diameter less than the diameter of said bore



whereby said upper end of the shaft may freely flex laterally together with said sleeve incident to shaft loading without interference between said sleeve and said stand;

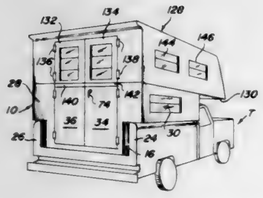
passage means defining a pair of fluid conduits extending through said sleeve and into said shaft to said lower end thereof for establishing pressure fluid connection between the upper and the lower ends of said shaft; and

means for preventing rotation of said sleeve relative to said stand while allowing said lateral flexing of the upper end of said shaft with said sleeve.

3,966,250
ENCLOSING STRUCTURE FOR THE LOAD BED OF A PICKUP TRUCK

Andrew B. Winskas, 504 Janine Lane, Schaumburg, Ill. 60172

Filed Jan. 27, 1975, Ser. No. 544,565
Int. Cl.² B60P *3/34*
U.S. Cl. 296—1 R **2 Claims**



2. A pick up truck including a cab, a load bed comprising a floor, opposite side panels extending upwardly from the floor and a tailgate and including:

a. a base section removably supported on the floor of said bed and lying between said side panels,

b. said base section having an open top and including an upper edge generally defining the perimeter of said open top,

c. said base section including a rear wall,

d. a first opening in said base section rear wall extending to said upper edge,

e. first door means attached to said base section rear wall covering said first opening,

f. an upper section removably supported on said base section and having an open bottom,

g. means for attaching said upper section to said base section,

h. said open bottom having a lower edge generally defining the perimeter of said open bottom, and the lower edge of said open bottom cooperating with the upper edge of said base section and removably secured thereto,

i. said upper section including a rear wall,

j. a second opening in said upper section rear wall extending to said bottom edge,

k. a second door means attached to said upper section rear wall covering said second opening and cooperating with said first door means,

l. said upper section including a forward compartment and only said forward compartment extending substantially forward of said base section and above and over said pick up cab and said forward compartment having a closed bottom in advance of said upper section's open bottom, and

m. the closed bottom of said forward compartment lying in substantially the same plane as the bottom edge of said upper section,

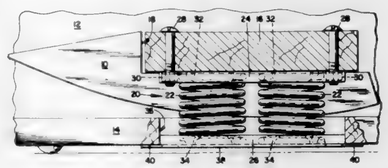
n. said upper edge of said base section lying in substantially the same plane as the bottom edge of said upper section and above the plane of the roof of said cab, and

o. a roof covering said upper section.

3,966,251
ROCKER SPRING UNIT

Adelard J. Belisle, South Hadley Falls, Mass., assignor to Dual Manufacturing and Engineering Incorporated, Holyoke, Mass.

Continuation of Ser. No. 270,054, July 10, 1972, abandoned. This application July 15, 1974, Ser. No. 488,305
Int. Cl.² A47C *3/02*
U.S. Cl. 297—267 **5 Claims**



1. A rocker spring unit for a platform rocker chair of the type wherein a rocking component has rocker blocks associated with a rocker base comprising,

an upper spring retainer and a lower spring retainer,

spring means extending between and fixed to the upper and lower spring retainers,

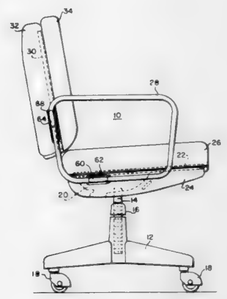
the rocker spring unit operably connected between the rocker base and rocking component, at least one of said rocker base or said rocking component having an opening through which the rocker spring unit passes,

and wherein the operable connection includes stops on at least one of the upper and lower spring retainers for precluding displacement of the rocker spring unit during rocking, the stops being non-pivotal relative to the spring retainers and comprising oppositely extending horizontally-disposed extensions on the spring retainers extending outwardly beyond the walls of said opening to prevent further movement of said at least one retainer through said opening.

3,966,252
CHAIR STRUCTURE AND TILT MECHANISM THEREFOR

Don C. Albinson, Coopersburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 28, 1974, Ser. No. 473,965
Int. Cl.² A47C *7/44*
U.S. Cl. 297—306 **4 Claims**



1. An improved chair construction for office type chairs and the like, comprising:

a base for supporting the chair on a floor;

a spindle extending substantially vertically from said base;

a tilt mechanism connected to the upper end of said spindle, said tilt mechanism including first, second and third interconnected frame members, with said second frame member connected to said spindle;

a chair seat structural member, having a molded shell on one side thereof and said molded shell having apertures on the side edges thereof, said first frame member connected to said chair seat structural member;

a back mounting bar connected to said third frame member proximate the midpoint of said bar and extending laterally of said tilt mechanism in both directions;

a pair of chair arms, one of said chair arms being fixed, within said molded shell through said apertures, to each laterally extending end of said back mounting bar;

a chair back structural member;

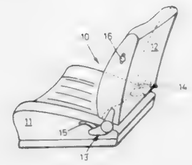
a chair back support member constructed and arranged to carry and support said chair back structural member, said chair back support member extending across the back of said chair and being secured at each extremity to one of said chair arms, whereby force applied to the back of said chair will cause said chair back to tilt with respect to said seat and said arms will move with said back.

3,966,253
VEHICLE SEAT WITH TILTABLE BACKREST

Hans-Joachim Berghof, Remscheid-Hasten; Hans-Gerd Hackländer, and Gerd Klingelhofer, both of Remscheid, all of Germany, assignors to Keiper KG, Remscheid-Hasten, Germany

Filed Apr. 28, 1975, Ser. No. 572,300
Claims priority, application Germany, Apr. 30, 1974, 15117
Int. Cl.² A47C *1/026*; B60N *1/06*
U.S. Cl. 297—367 **10 Claims**

1. In a seat, particularly a vehicle seat, a combination comprising a pair of hinge fittings at opposite lateral sides of the seat and each including a first strap fixedly connected with the seat member of the seat, a second strap fixedly connected with the backrest member of the seat, a pivot connecting the respective first and second straps for relative pivotal movement, a gear segment on one of the straps of each of said pairs of straps, an engaging member on the respective other strap of each of said pairs of said straps and movable into engagement with the respective gear segments for preventing said pivotal movement, and biasing means biasing said engaging members into engagement with the respective gear segments; and control means for substantially simultaneously moving the engaging members of both of said hinge fittings out of engagement with the respective gear segments, said control means including on said other strap of each fitting a pivotally mounted first arm movable to and from a location in which it abuts the respective engaging member and prevents the same from moving out of engagement with the respective gear segment, a pivotally mounted second arm, a pivotally mounted third

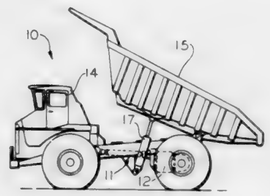


arm coupled with said second arm, the respective second and third arms being directly coupled with one another and with one end of a link by a coupling portion, the other end of said link being coupled to the respective first arm for joint movement of all said arms, and said control means further including a connecting member connecting the third arms of both fittings for substantially simultaneous movement, said control means also including a handle for effecting movement of one of said second arms so that such movement is transmitted to the other second arm via said connecting member.

3,966,254
TRANSMISSION NEUTRALIZER

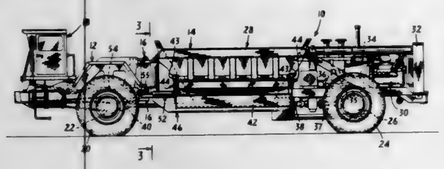
Richard E. Guhl, Decatur, and Kenneth W. Renfro, Macon, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 4, 1975, Ser. No. 546,947
Int. Cl.² F16H *57/10*
U.S. Cl. 298—22 C **10 Claims**



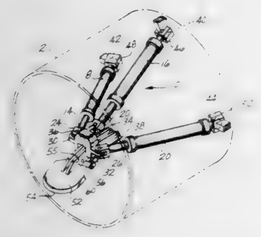
1. In a dump vehicle having a powered wheel drive including a transmission, manually operable transmission selector means selectively disposable in reverse, neutral, and forward positions, transmission control means responsive to said selector means for selectively arranging the transmission in corresponding reverse, neutral and forward positions for corresponding selective operation of the wheel drive, a dump body, and dump body control means including a manually operable control operable independently of said transmission selector means to selectively raise the dump body to a dump position for dumping a load therefrom and lower the dump body to a carrying position for carrying the load, the improvement comprising means responsive to said manually operable control for preventing reverse operation of the wheel drive irrespective of the disposition of the transmission selector means when the dump body control is arranged to move the dump body.

3,966,255
BOTTOM DUMP VEHICLE
Vincent Licari, Emmaus, Pa., assignor to Mack Trucks, Inc., Allentown, Pa.
Filed Mar. 5, 1975, Ser. No. 555,629
Int. Cl.² B60P *1/00*
U.S. Cl. 298—35 M **11 Claims**



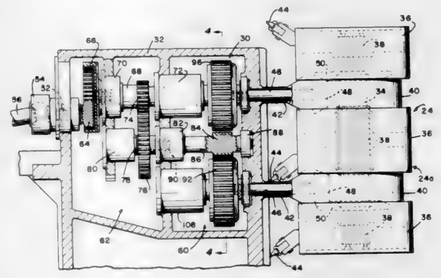
1. In a vehicle including:
a. a front section having at least one front axle and a plurality of wheels mounted on the axle;
b. a rear section having at least one rear axle and a plurality of wheels mounted on the rear axle, the rear section also having a receptacle adapted to receive and carry loads; and
c. means articulative about a generally vertical axis for coupling together the front and rear sections;
the improvement comprising:
d. an engine mounted on the rear section of the vehicle;
e. drive train means operatively coupling the engine to the front wheels, the drive train means including at least one drive shaft extending lengthwise of the rear section of the vehicle;
f. a tunnel member on the rear section of the vehicle having at least a top cover portion and two laterally spaced apart side wall portions, the tunnel member extending lengthwise of the rear section of the vehicle and enclosing the drive shaft; and
g. a pair of dump doors defining at least part of the bottom of the load-carrying receptacle and being mounted so as to be movable away from each other to produce a dump opening in the bottom of the load-carrying receptacle, the tunnel member extending lengthwise across the dump opening.

3,966,256
TUNNELING EQUIPMENT
Tyman H. Fikse, Enumclaw, Wash., assignor to The Robbins Company, Seattle, Wash.
Filed Apr. 11, 1975, Ser. No. 567,269
Int. Cl.² E21D *9/08*
U.S. Cl. 299—33 **25 Claims**



1. An excavating mechanism for use in a tunneling machine that is advanced in the tunnel as excavation proceeds, said mechanism comprising:
a cutting tool;
a support tripod for said cutting tool comprising a tool mounting head and three double-acting hydraulic cylinders forming three variable length support and drive legs, each said cylinder having a forward end and a rearward end, and means connecting the forward end of said cylinders to said mounting head for pivotal movement about chordwise axes, said means otherwise transmitting moments between said mounting head and said cylinders, said cylinders being adapted to in use diverge rearwardly from said tool mounting head, and wherein the rearward ends of said cylinders are adapted to be mounted for universal pivotal movement and said cylinders are adapted to in use be selectively extended and retracted for moving said cutting tool forwardly and rearwardly and in substantially all directions across the tunnel face; and means mounting said cutting tool onto said tool mounting head.

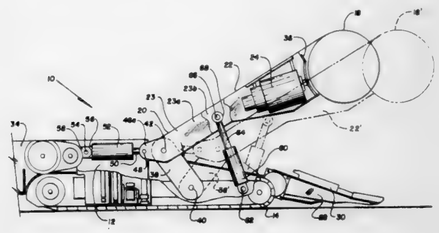
3,966,257
DRIVING ARRANGEMENT FOR ROTARY MINING HEADS OF MINING MACHINES
Arvind K. Shah, Soda Springs, Idaho, assignor to Lee-Norse, Company, Charleroi, Pa.
Filed Aug. 26, 1974, Ser. No. 500,331
Int. Cl.² E21C *27/24*
U.S. Cl. 299—76 **10 Claims**



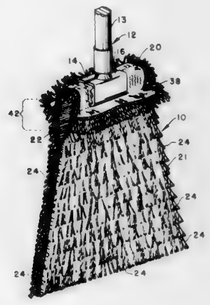
1. A mining machine, comprising: a rotary mining head including at least one support rotatable about an axis, and cutter drum means carried by said support for rotation therewith, a gear box comprising gearing, a plurality of rotatable drive shafts separately and independently connected to said gearing to be rotatably driven thereby, means drivingly connecting said drive shafts to said support such that said drive shafts impart common rotary drive to said one support input means connected to said gearing for causing said gearing to drive said drive shafts; said support is disposed at a forward end of the mining machine; and said drum means extends lengthwise along said axis.

3,966,258
MINING BOOM LINKAGE FOR SEPARATE SUMP AND SWING CUTTING
Matthew J. Dolecki, Oil City, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.
Filed Dec. 16, 1974, Ser. No. 532,750
Int. Cl.² E21C *27/24*
U.S. Cl. 299—76 **8 Claims**

1. A mining machine comprising: an elongated main support; a cutter head support assembly including link means and an elongated rigid boom member; said link means being pivotally connected to said main support about a first axis fixed with respect to said main support; said boom member having one end portion pivotally connected to said link means about a second axis parallel to said first axis; a cutter head carried by said boom member on the free end thereof opposite said one end portion; said cutter head having an axis of rotation extending transversely of said boom member and having a length along said axis of rotation greater than the width of said main support; and actuator means communicating between said main support and said cutter head support assembly for selectively pivoting said cutter head support assembly about said first axis and for selectively pivoting said boom about said second axis.



3,966,259
WET MOP HEAD CONSTRUCTION
Ernest Levon Richards, La Grange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Division of Ser. No. 523,884, Nov. 14, 1974, Pat. No. 3,924,289. This application Oct. 2, 1975, Ser. No. 618,850
Int. Cl.² A47L *13/20*
U.S. Cl. 300—21 **2 Claims**



1. A method of producing a wet mop head construction for attachment to the gripping elements of a mop tool comprising the steps of
1. providing a pile fabric,
2. cutting a plurality of rows of generally double-trapezoidal shaped pieces from a portion of said pile fabric with side edges of adjacent rows of said pieces contiguous,
3. folding each of said double-trapezoidal shaped pieces about their common shorter parallel side with the pile faces of each piece forming outer faces of the folded piece,
4. attaching a headband to overlie the folded edge of each piece, and
5. securing the headband thereto.

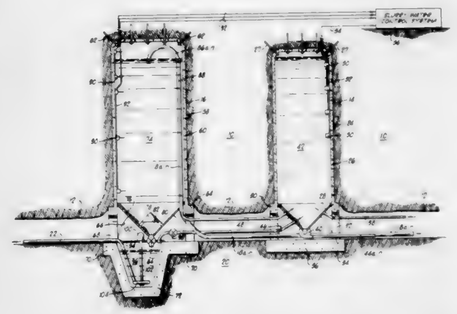
3,966,260
PRESTRESSED AXLE BEAM
Eugene R. Braun, Royal Oak, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Jan. 7, 1975, Ser. No. 539,136
Int. Cl.² B60B *35/00*
U.S. Cl. 301—127 **5 Claims**

1. In a non driven axle suitable for supporting a vehicle thereon and comprising a one-piece beam section having means near each end of the beam for attachment of the axle to the vehicle, the improvement wherein the beam, when in an unloaded state, has a tensile residual stress in the top portion and a compressive residual stress in the bottom portion so that



when the axle is loaded during use the loading stresses on said axle will be partially neutralized by the residual stresses present in the unloaded beam.

3,966,261
COAL SLURRY RECOVERY SYSTEMS
Richard E. Doerr; David L. McCain, both of Ponca City, Okla., and David H. Davis, Fairmont, W. Va., assignors to Continental Oil Company, Ponca City, Okla.
Filed June 30, 1975, Ser. No. 591,269
Int. Cl.² B65G *53/30*
U.S. Cl. 302—14 **9 Claims**



1. An improved slurry handling system for centralized reproportioning of slurried particulate material at a centralized mine tunnel location, comprising:
a water storage enclosure and means for conducting water to at least one mine tunnel work face;
a slurry storage enclosure and means for receiving slurried material from at least one mine tunnel work face, said slurry enclosure having the lower extremity formed to provide a slurry outlet;
slurry sump enclosure means disposed in said mine tunnel at said slurry storage enclosure and slurry outlet;
metering valve means connected to receive particulate material from said slurry outlet to provide positive metering of material into said slurry sump enclosure means;
conduit means including flow control valve for conducting water from said water enclosure means for input as reslurry water to said slurry sump enclosure means; and
slurry pump means and exit slurry line for moving slurry out of said sump enclosure means via said exit slurry line.

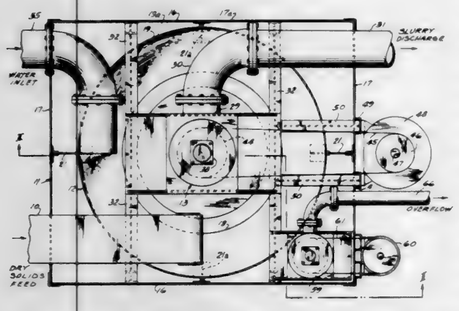
3,966,262
SUMP AND PUMP CONSTRUCTION FOR CONVEYING SOLIDS IN THE FORM OF A SLURRY
Walter D. Haentjens, Box 121, R.D. 1, Sugarloaf, Pa. 18249
Continuation of Ser. No. 371,038, June 18, 1973, abandoned. This application Mar. 24, 1975, Ser. No. 561,534
Int. Cl.² B65G *53/30, 53/36*
U.S. Cl. 302—15 **6 Claims**

1. In an apparatus for conveying solids supplied in the form of dry solids at fluctuating rates and suitable for transportation in the form of a slurry,
an outer sump having upstanding containing walls,
an inner sump fully contained within said outer sump and having upstanding containing walls spaced inwardly of said upstanding containing walls of said outer sump.

a conveyor conveying dry solids to said inner sump,

a pump having an inlet in direct communication with the bottom of said inner sump,

a supply line for water leading to said inner sump, supplying water thereto at a rate substantially equal to the capacity of said pump, to maintain a constant level of water in said inner sump and create a vigorous agitation of water and solids in said inner sump to form a slurry,



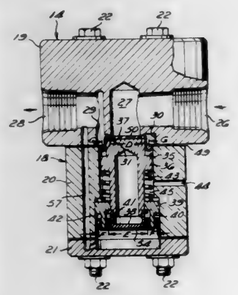
said containing walls of said outer sump providing a top edge extending substantially uniformly to a higher elevation than an edge defining the top of said inner sump walls and collecting the overflow of dirty water and fines from said inner sump caused by the discharge of solids into said inner sump, and

a pump for said outer sump having a capacity sufficient to take care of the overflow of water from said inner sump caused by the discharge of solids thereinto, for continuously removing the water and fines from said outer sump.

3,966,263
BLEND BACK PROPORTIONING VALVE FOR BRAKE SYSTEM

Richard G. Thrush, North Olmsted, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed Aug. 25, 1975, Ser. No. 607,476
Int. Cl.² B60T *8/26*
U.S. Cl. 303—6 C **14 Claims**

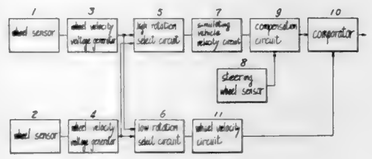


1. In a motor vehicle air brake system having a source of high pressure air and a plurality of air brake actuators, a pressure proportioning valve; said pressure proportioning valve comprising a housing having an inlet port connected to said source of high pressure and an outlet port connected to said brake actuators, a bore between said inlet port and said outlet port, a shuttle piston slidably disposed in said bore, said shuttle piston having an inlet end and an outlet end and a valve surface, said valve surface being disposed on said inlet end, said valve surface being constructed and arranged to open and close pressure communication through said bore between said inlet port and said outlet port in response to a pressure unbalance on said inlet and outlet ends of said shuttle piston, said inlet and outlet ends each having a predetermined net lateral cross-sectional area exposed to the fluid pressure in said inlet and outlet ports respectively, said net inlet and outlet areas being different from one another by a predetermined ratio and being constructed and arranged to establish a predetermined ratio between changes in one of said port pressures and changes in the other of said port pressures, one of said ends including a shuttle piston portion and an annular sleeve and a diaphragm all disposed in said bore, said shuttle piston portion being connected to the other of said ends, said sleeve being disposed radially outwardly of said shuttle piston portion in said bore and being slidable in said bore relative to said shuttle piston portion, said sleeve including an axially extending skirt portion, said skirt portion being spaced radially inwardly away from said bore and radially outwardly away from said shuttle piston portion, said skirt portion and said bore cooperatively defining an annular outer diaphragm cavity, said skirt portion and said shuttle piston portion cooperatively defining an annular inner diaphragm cavity, said diaphragm having a radially outer peripheral portion secured to said housing and a radially inner center portion secured to said shuttle piston portion, and said diaphragm extending axially from its radially outer peripheral portion into said outer diaphragm cavity and extending axially from its radially inner center portion into said inner diaphragm cavity.

3,966,264
COMPENSATION FOR ANTI-SKID BRAKE CONTROL SYSTEM

Hiroaki Mattori, Yamatokoriyama; Takemi Mizuta, Osaka, and Shinzi Okamoto, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed July 22, 1974, Ser. No. 490,303
Claims priority, application Japan, July 23, 1973, 48-82905
Int. Cl.² B60T *8/10*
U.S. Cl. 303—21 BE **6 Claims**



1. In an anti-skid brake control system of the slip modulus type, for use in a vehicle having at least a wheel and a steering wheel, in which pressure reduction signals for the purpose of reducing the brake pressure are generated when the slip modulus exceeds a predetermined value, an arrangement for preventing the erroneous generation of brake pressure reduction signals when the vehicle is making a turn comprising:

a wheel sensor provided adjacent to the wheel for generating wheel velocity signals in response to the rotational velocity of the wheel;

means for generating simulated vehicle velocity signals in response to the wheel velocity signals;

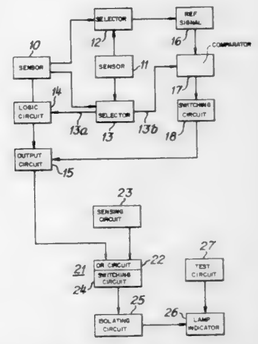
a steering wheel sensor for generating steering angle signals in response to the angle of the steering wheel; a compensation circuit for reducing the value of the simulated vehicle velocity signals in response to the steering angle signals; and

a comparator for comparing the wheel velocity signals with output signals of the compensation circuit, the comparator producing pressure reduction signals for reducing the brake pressure of the brake system within the vehicle when the difference in value between the wheel velocity signals and the output signals of the compensation circuit is beyond a predetermined value.

3,966,265
FAULT DETECTING SYSTEM FOR VEHICLE ANTI-SKID CONTROL SYSTEMS

Robert Ernest Taylor; Mervyn Brian Packer, and David Parsons, all of Leamington Spa, England, assignors to Automotive Products Ltd., Leamington Spa, England

Filed Sept. 3, 1974, Ser. No. 502,854
Claims priority, application United Kingdom, Sept. 14, 1973, 43301/73
Int. Cl.² B60T *8/08*
U.S. Cl. 303—21 AF **6 Claims**



1. A fluid pressure operated braking system comprising fluid carrying lines for supplying fluid under pressure to a brake of a vehicle, at least one electrical system operatively connected with a wheel of the vehicle to regulate the braking force applied to said wheel, said electrical system being operable automatically to effect release of said brake acting on said wheel when the deceleration thereof exceeds a predetermined amount and to re-apply said brake when the angular velocity of said wheel approaches that at which the periphery of said wheel rolls on the road surface without slipping, means for sensing the time for which said brake is released and operative, if the sensed time is greater than a predetermined time, to actuate an isolating circuit which renders inoperative said electrical system to permit re-application of said brake, said electrical system being rendered operative again when the ignition of the vehicle is switched off, a solenoid operated valve having an armature operatively connected with said electrical system and connected in the fluid lines of the braking system, said solenoid valve being operable in response to signals produced by said electrical system to relieve fluid pressure in a fluid line to thereby effect said brake release, means for sensing the position of the armature of said solenoid valve, said sensing means being connected to said isolating circuit and being operable to actuate said isolating circuit when said solenoid valve remains in a condition to relieve fluid pressure for more than a predetermined time.

3,966,266
SKID CONTROL SYSTEM

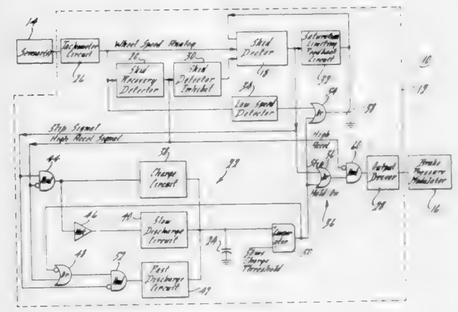
Thomas M. Atkins, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation-in-part of Ser. No. 393,727, Sept. 4, 1973, abandoned. This application Nov. 13, 1974, Ser. No. 523,426
Int. Cl.² B60T *8/08*
U.S. Cl. 303—21 P **67 Claims**

19. A skid control system for a vehicle having a wheel and a brake for the wheel comprising:

a wheel speed sensor for providing an output signal representative of the speed of the wheel; and

skid detecting means including a capacitor, a transistor and a biasing circuit for said transistor being responsive to said wheel speed sensor output signal and arranged for providing an output signal having a first substantially constant magnitude in response to a skid condition having a severity between first and second predetermined degrees of severity and a second different substantially

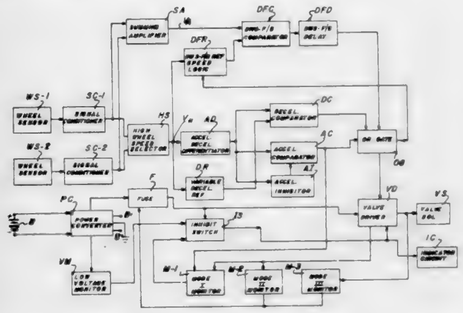


constant magnitude in response to a skid condition having a severity above said second predetermined degree of severity.

3,966,267
SKID CONTROL SYSTEM

Joseph H. McNinch, Jr., Oak Park; John A. Urban, Livonia, and Gary L. Hopkins, Southfield, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 326,676, Jan. 26, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 528,218
Int. Cl.² B60T *8/02*
U.S. Cl. 303—21 BE **9 Claims**



1. A skid control system for use with a vehicle having at least first and second spaced apart independently rotatable wheels and having a braking system for applying braking forces to said wheels and comprising:

brake control means responsive to a skid signal for controlling said braking system to release the braking forces on said wheels;

means for providing first and second wheel speed signals of magnitudes respectively representative of the wheel speeds of said first and second wheels;

logic circuit means for providing a skid signal when the acceleration rate of the faster of said wheels exceeds a predetermined positive acceleration; and

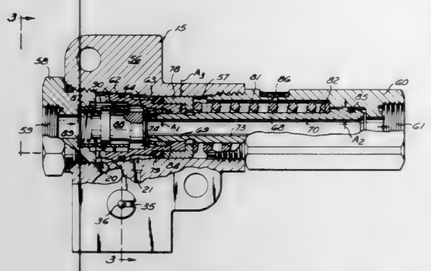
means for inhibiting said logic circuit means from providing said skid signal when the positive acceleration rate of the faster wheel attains a level representative of a second predetermined acceleration greater and more positive than that of said first predetermined acceleration.

3,966,268

INERTIA LOAD SENSING BRAKE VALVE

Edward S. Orzel, Cleveland, and Richard G. Thrush, North Olmstead, both of Ohio, assignors to The Weatherhead Company, Cleveland, Ohio

Filed Mar. 12, 1975, Ser. No. 557,677
Int. Cl.² B60T *8/26, 13/06*
U.S. Cl. 303—24 F **24 Claims**



1. A motor vehicle hydraulic brake system comprising a front brake circuit, a rear brake circuit having a pressure proportioning valve for reducing the pressure supplied to the rear wheel brakes relative to the pressure supplied to the front wheel brakes, and control means altering the pressure proportioning characteristics of the proportioning valve in accordance with the load of the vehicle; said proportioning valve including an inlet, an outlet, a bore connecting said inlet and outlet, a proportioning piston slidably disposed in said bore and having a net inlet area exposed to fluid pressure in said inlet and a net outlet area exposed to fluid pressure in said outlet, valve means responsive to movement of said proportioning piston in said bore maintaining increases in outlet pressure proportional to but less than increases in inlet pressure by a predetermined proportional relationship under first predetermined conditions; said control means including a control chamber and a control member operatively connected to said valve means and having a predetermined area slidably disposed in said control chamber, said control member being constructed and arranged to urge said valve means open in response to the fluid pressure in said control chamber under second predetermined conditions, and inertia responsive valve means preventing increases in pressure in said control chamber and locking said control chamber pressure in said control chamber during increases in inlet pressure under third predetermined conditions.

3,966,269

FLUID BRAKE CONTROL SYSTEM

Eugene Douglas McEathron, Watertown, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

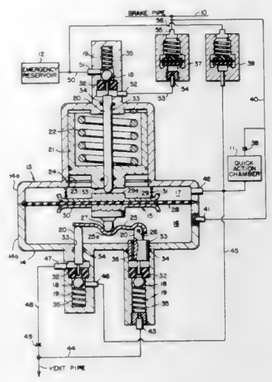
Filed Sept. 12, 1975, Ser. No. 612,840
Int. Cl.² B60T *15/30, 15/52*
U.S. Cl. 303—37 **26 Claims**

1. A fluid brake control system for a train of cars including a car having a brake control pipe, a reference fluid reservoir subject to charge periodically from the brake pipe and an improved quick service control device comprising:

a. a housing containing a fluid pressure differential operated abutment subject to actuation from a normal position by differences in pressure between respective brake pipe and reference fluid pressure chambers acting on opposite sides of the abutment,

b. two poppet type valve means on the brake pipe pressure chamber side of the abutment for selectively venting the chambers, each of the valve means being spring biased in the direction of the abutment to a normally closed position and the valve means having respective operating push rods longitudinally disposed between the associated valve means and the abutment, and

c. the poppet valve means being responsive to movement of the abutment in one direction to vent first the brake pipe fluid pressure chamber and thereafter the reference fluid pressure chamber to alternately reverse the differential in fluid pressure acting on the opposite sides of the abutment to thereby reciprocate the abutment cyclically,



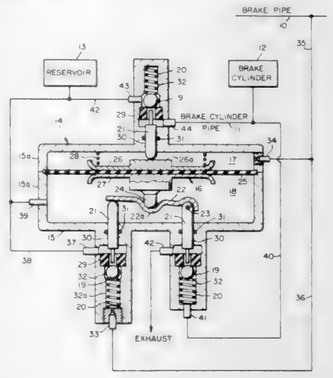
d. whereby the poppet valve means are opened and closed in turn so as to intermittently reduce the pressure in the brake pipe as long as the brake pipe pressure is being reduced independent of action of the poppet valve means.

3,966,270

FLUID BRAKE CONTROL SYSTEM

Eugene Douglas McEathron, Watertown, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Aug. 13, 1975, Ser. No. 604,404
Int. Cl.² B60T *15/32*
U.S. Cl. 303—69 **7 Claims**



1. A fluid brake control system for a vehicle having a brake pipe, a brake cylinder pipe governing fluid pressure in a brake cylinder, and a reference fluid pressure reservoir wherein an improved brake application and release control device is provided for governing fluid pressure in the brake cylinder pipe comprising;

a. a housing containing a differential abutment subject to actuation from a normal position by differences in pressure between respective brake pipe and reference fluid pressure chambers on opposite sides of the abutment,

b. at least one poppet type valve means disposed in the housing on each of said opposite sides of the abutment spring biased in the direction of the abutment to a closed position and the valve means having an operating push rod axially disposed between the associated valve means and the abutment,

c. the poppet valve means on one side of the abutment being opened by movement of the abutment in one direction from its normal position to permit charging of the brake cylinder pipe, and

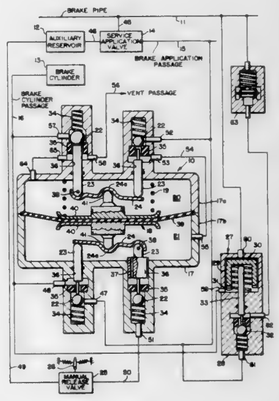
d. the poppet valve means on the other side of the abutment being opened by movement of the abutment in the opposite direction from its normal position to permit fluid to be released from the brake cylinder pipe.

3,966,271

FLUID BRAKE CONTROL SYSTEM

Eugene Douglas McEathron, Watertown, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Aug. 13, 1975, Ser. No. 604,405
Int. Cl.² B60T *15/32*
U.S. Cl. 303—69 **7 Claims**



1. A fluid brake control system for a vehicle having a brake control pipe, a fluid reservoir, a brake cylinder, and a service valve governing flow of fluid from the reservoir through brake application and brake cylinder passages successively to the brake cylinder, wherein an improved brake cylinder release control device comprises;

a. a housing containing an abutment subject to actuation from a normal position by differences in pressure between a release spring in a chamber on one side of the abutment and pressure selectively applied to the abutment by another chamber on the opposite side of the abutment,

b. at least one poppet type valve means on each side of the abutment spring biased in the direction of a valve seat disposed between the associated valve means and the abutment,

c. the poppet valve means on one side of the abutment being normally closed against its seat and opened by movement of the abutment in opposition to the pressure of the release spring for releasing fluid from the brake cylinder, and

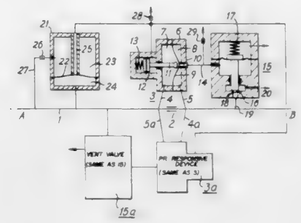
d. the poppet valve means on said other side of the abutment being maintained open normally by action of the release spring against the abutment and being closed by movement of the abutment in opposition to the pressure of the release spring for preventing flow of fluid from the brake application passage to the brake cylinder passage.

3,966,272

RAIL VEHICLE BRAKING SYSTEM WITH IMPROVED BRAKE SIGNAL PROPAGATION

David John Wickham, London, England, assignor to Westinghouse Brake & Signal Company Limited, Chippenham, England

Filed Oct. 9, 1974, Ser. No. 513,398
Claims priority, application United Kingdom, Oct. 13, 1973, 47918/73
Int. Cl.² B60T *11/28*
U.S. Cl. 303—81 **8 Claims**



1. In a rail vehicle braking system having a brake pipe through which fluid signals are propagated for control of brakes of the vehicle, an arrangement for improving signal propagation in the brake pipe, comprising valve means connected with said brake pipe and operable when actuated to effect enhancement of a predetermined brake pipe pressure change produced by flow in the brake pipe, fluid flow sensor means connected with said brake pipe for controlling said valve means to effect said enhancement in response to sensed fluid flow rate in said brake pipe, and override means responsive to fluid conditions in said pipe for inhibiting operation of said arrangement except upon the occurrence of a predetermined pressure change to be propagated in said pipe, so as to render said arrangement nonresponsive to pressure changes of other than a predetermined sense and to steady pressure gradients and flow as might be caused by a leak in said system, said override means comprising a pressure change detector in the form of a pressure sensitive member subjected on opposing faces to fluid conditions in said pipe, and delay means for delaying changes of fluid conditions on one face relative to the other face upon a pressure change in said pipe.

3,966,273

SYNCHRONIZED AND PRECISION SEQUENCING OF BALL RETAINER RELATIONSHIP TO THE INNER AND OUTER SLIDE MEMBERS

Magnus F. Hagen, 3713 Twilight Drive, Fullerton, Calif. 92632, and Fred A. Jordan, 14906 Lodosa, Whittier, Calif. 90605

Filed Sept. 13, 1974, Ser. No. 505,902
Int. Cl.² F16C *29/04*
U.S. Cl. 308—3.8 **20 Claims**

1. Telescoping linear motion synchronized ball bearing slides, comprising:

an outer slide member having a longitudinally extended bottom wall;

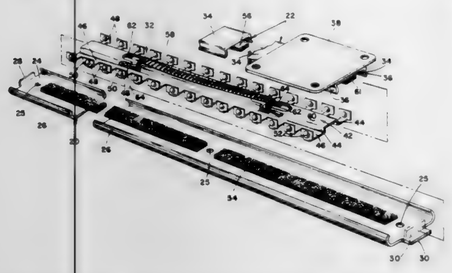
a strip of material having a multiplicity of protrusions thereon secured to the inner side of the bottom wall of said outer slide member and extending longitudinally thereof;

an inner slide member having a longitudinally extending top wall parallel to the bottom wall of the outer slide member;

a strip of material having a multiplicity of protrusions thereon secured to the inner side of the top wall of the inner slide member, said strip of material extending longitudinally of said inner slide member;

ball races along the side edges of the outer and inner slide members, the ball races along adjacent side edges of the

respective slide members being operably positioned to receive ball bearings therein;
ball bearings in said races for retaining said members together for longitudinal movement relative to each other;
a ball retainer longitudinally movable between said slide members and having parts for operably retaining the balls in longitudinally spaced relationship in said ball races, said ball retainer having a longitudinally extending part parallel to the bottom and top walls of said outer and inner slide members;



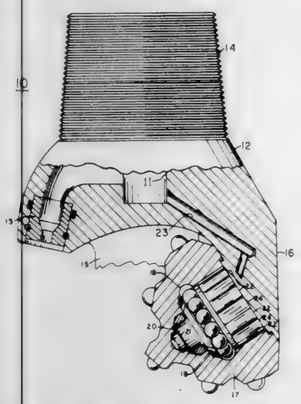
an endless band of flexible material having a multiplicity of protrusions thereon;
band mounting means spaced apart on the ball retainer on which the band is operably mounted and over which ends of the band pass with a rolling movement, said band including planar portions at opposite sides of the ball retainer between said mounting means at all times being in random and meshing positive interlocking engagement with the adjacent strips of the slide members to preclude slippage therebetween.

3,966,274

ROLLER SEPARATOR FOR BIT BEARINGS

Samuel Lee Penny, Lancaster, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 13, 1975, Ser. No. 549,606
Int. Cl.² F16C *19/04*
U.S. Cl. 308—8.2 **8 Claims**



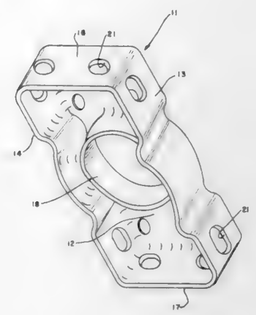
1. A rotary rock bit, comprising:
a bit body;
at least one bearing pin extending from said bit body;
a cutter member rotatably positioned on said bearing pin;
a plurality of cylindrical rollers positioned between said bearing pin and said cutter member; and
a plurality of floating independent separator elements positioned between said bearing pin and said cutter member, each individual separator element positioned between a pair of adjacent rollers.

3,966,275

BEARING MOUNT

Earl S. Cain, Portola Valley; Jerome A. Carlson, Woodside, and George E. Goodrich, San Carlos, all of Calif., assignors to Tribotech, Redwood City, Calif.

Filed July 26, 1974, Ser. No. 492,214
Int. Cl.² F16C *13/00*
U.S. Cl. 308—15 **17 Claims**



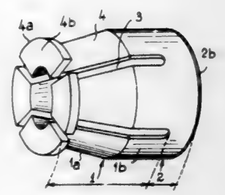
1. A bearing mount comprising: a flange plate having a bearing receiving flange extending outwardly of one face thereof and adapted to receive and hold a bearing therein, the other face of said flange plate defining a mounting surface substantially perpendicular to the axis of said flange for positioning said bearing mount on a supporting surface; at least one side plate extending laterally from said one face adjacent said flange, the surface of said side plate remote from said flange defining a second mounting surface substantially parallel to the axis of said flange; and said flange plate and side plate having means whereby either of said mounting surfaces may be secured to a supporting surface.

3,966,276

AUTOMATIC PLAY TAKE-UP JOURNAL BUSHINGS

Raymond Bellarbre, and Marcel Legavre, both of Boulogne-Billancourt, France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Jan. 9, 1975, Ser. No. 539,806
Claims priority, application France, Jan. 11, 1974, 74.01067
Int. Cl.² F16C *33/00*
U.S. Cl. 308—238 **2 Claims**



1. A bushing for receiving a pin or trunnion of a mechanism subjected to medium or moderate loads and for force-fitting into a bearing comprising, a body having an annular cross-sectional shape and an equal radial thickness throughout the length thereof for accommodating the pin or trunnion, a radi-

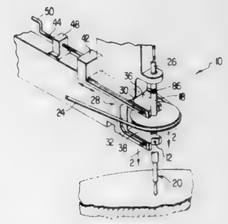
ally extending, outwardly directed flange on one end of said body having at least one longitudinally extending resilient portion adjacent said one end for radial outward movement by the pin or trunnion accommodated within the body and at least one longitudinally extending substantially rigid portion adjacent the other end of said body, said resilient body portion comprising at least one longitudinally extending portion of frusto-conical shape, said frusto-conical portion having a plurality of circumferentially spaced, longitudinally extending slots, said slots extending through said flange to define a plurality of resilient segments each provided at their outer ends with a portion of said flange, said flange portions being angularly disposed with respect to the longitudinal axis of said body for yielding engagement with one end of the bearing in which the bushing is mounted and with a cooperating surface on the pin or trunnion accommodated within said body to thereby eliminate axial movement between the bearing and the pin or trunnion.

3,966,277

VEE BEARING HAVING ADJUSTABLE V JOURNAL PROFILE

John A. Cupler, II, 10 Cupler Drive LaVale, Cumberland, Md. 21502

Filed Sept. 6, 1974, Ser. No. 503,749
Int. Cl.² F16C *23/02*
U.S. Cl. 308—36 **8 Claims**



1. A Vee bearing having spaced bearing element pairs defining a V journal profile; said spaced bearing element pairs comprising diamond inserts having planar bearing surfaces; means for adjusting said V journal profile; said means including adjusting means for equal adjustment of said bearing surfaces toward and away from the journal axis of said V journal profile; said adjusting means including diamond insert mounting means mounted for movement toward and away from said axis; cooperating means on said diamond insert mounting means and said Vee bearing for insuring said equal adjustment of said bearing surfaces; and said cooperating means comprising cam means on said diamond insert mounting means and cooperating cam means mounted for equal collective movement relative to the diamond insert mounting means to insure equal collective adjustment of said bearing surfaces.

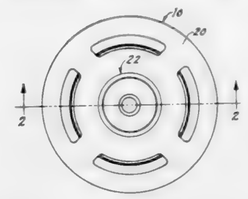
3,966,278

LUBRICATED SELF-ALIGNING BEARING ASSEMBLY

John G. Lewis, Dellwood, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 13, 1974, Ser. No. 523,344
Int. Cl.² F16C *11/06, 23/04, 25/04*; F16N *7/12*
U.S. Cl. 308—72 **5 Claims**

1. In a spherical bearing assembly, a bearing retaining member having a cylindrical wall, where the inner wall surface thereof has an integrally formed transverse wall within said cylindrical wall, a first annular seat formed in said transverse wall, a spherical bearing having a spherical surface near one end thereof engaging said seat, a plurality of circularly spaced, integrally formed lugs projecting inward from said cylindrical wall surface having abutment surfaces, a high-rate leaf spring having a central portion, an aperture in said central portion defined by a second annular seat in engagement with a spherical surface portion of said bearing near its other end, said leaf spring having portions projecting radially from said central portion with the outer ends thereof lying within said cylindrical wall and engaging said abutment surfaces, said abutment



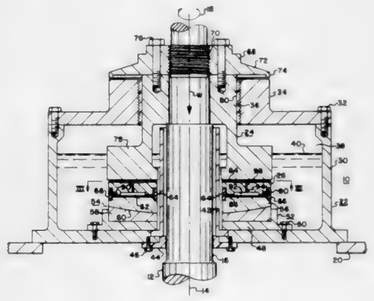
surfaces being so spaced axially from said transverse wall as to require said radially projecting spring portions to be flexed when in engagement therewith, and the spacing between said circularly spaced lugs being such as to permit said radially extending spring portions to be flexed when positioned between said lugs so they may be rotated in a flexed condition into engagement with said abutment surfaces.

3,966,279

HIGH-LOAD CAPACITY, NON-TILTING THRUST BEARING

Albert A. Raimondi, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 6, 1975, Ser. No. 584,429
Int. Cl.² F16C *17/06*
U.S. Cl. 308—160 **5 Claims**



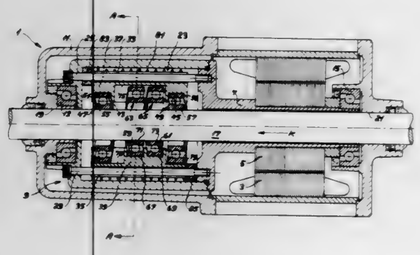
1. A thrust bearing for supporting a rotating shaft, a portion of said shaft having a thrust runner mounted securely thereon, said bearing comprising:
a bearing housing having a fluid cavity therein, said shaft extending through said housing so that said thrust runner is disposed within said fluid cavity;
a bearing pad having an upper and a lower axial surface thereon disposed within said housing so that said upper surface is adjacent to said thrust runner in a shaft supporting position, said pad having a pocket disposed on said lower surface thereof and a step disposed on said upper surface thereof;
a lubricating fluid disposed within said cavity, said lubricating fluid forming a hydrodynamic film between said upper surface of said pad and said thrust runner when said shaft is rotating, said hydrodynamic film being disposed within said step provided on said upper surface and having a predetermined pressure existing therein when said shaft is rotating; and
means for conducting a portion of said pressurized hydrodynamic film into said pocket to form a hydrostatic film of

fluid between said lower surface of said pad and said housing to support said pad away from said housing.

3,966,280
DEVICE FOR CONVERTING ROTARY MOTION TO AXIAL MOTION AND A METHOD OF APPLYING THE DEVICE FOR TRUING, POLISHING OR CALIBRATING A BODY OF ROTATION

Henrik Gerner Olrik, Bakkegaardsvej 413, 3050 Humlebaek, Denmark

Filed Dec. 17, 1974, Ser. No. 533,724
Claims priority, application Denmark, Dec. 17, 1973, 6826/73; Feb. 25, 1974, 990/74; Sept. 16, 1974, 4850/74
Int. Cl.² F16C *19/04*
U.S. Cl. 308—176 **33 Claims**



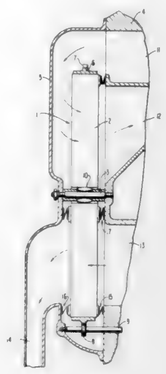
1. A device for converting rotary motion into axial motion and consisting in a friction unit comprising ball bearings of larger internal diameter than the external diameter of a shaft extending through the inner bearing rings, said ball bearings being so disposed that their inner rings exert radial forces on the shaft, the vector sum of which is substantially nought, the ball bearings being inclined with respect to the shaft axis and wherein the friction unit comprises at least two ball bearing jaws in a retaining member adapted to produce relative rotation between the shaft and the ball bearing jaws, each of which is provided with recesses for supporting the outer ring of at least one ball bearing, said recesses being so inclined that the axis of each ball bearing forms an angle with the plane defined by the shaft axis and the abutment of the inner ring of the said ball bearing against the shaft, the friction unit being further provided with clamping means adapted to clamp the ball bearing jaws more tightly against the shaft in response to an increase of the axial load on the shaft.

3,966,281
BEARING SUPPORT FOR A ROTATABLE REGENERATIVE HEAT EXCHANGER

Klaus Wiegard, Esslingen-Zollberg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Oct. 11, 1973, Ser. No. 405,278
Claims priority, application Germany, Oct. 11, 1972, 2249763
Int. Cl.² F16C *19/00*
U.S. Cl. 308—202 **25 Claims**

1. A bearing support for a rotatable regenerative heat-exchanger in disk form which is rotatably supported on support shaft means characterized in that the bearing support includes roller bearing means having approximately barrel-shaped roller bodies whose length is a multiple of their thickness, said roller bearing means including inner bearing surface means formed by a concave surface portion with a radius of

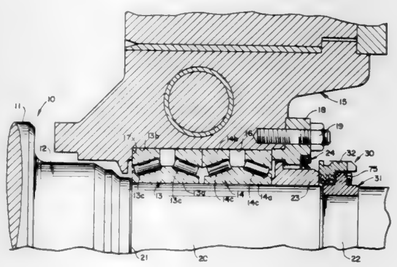


curvature which is larger than the radius of curvature of curved outer surfaces of the barrel-shaped roller bodies.

3,966,282
BEARING CHOCKING ASSEMBLY FOR MILL ROLLS

Harold C. Overton, Gadsen, Ala., assignor to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 393,507, Aug. 31, 1973, Pat. No. 3,912,345. This application July 14, 1975, Ser. No. 596,431
The portion of the term of this patent subsequent to Oct. 14, 1992, has been disclaimed.
Int. Cl.² F16C *35/06*
U.S. Cl. 308—207 R **21 Claims**



1. A bearing chocking device positionable on a shaft in engagement with a formation on the shaft, the device being operable to chock a shaft journaling bearing structure which bearing structure is at a location spaced axially from the formation, the device comprising:

a. a first ring structure including a plurality of ring segments each segment being coactable with the shaft formation for axially locating the segments, the first ring structure defining first cam surfaces;

b. a second ring structure having second cam surfaces engageable with said first cam surfaces to effect axial movement of said second ring structure toward and away from the bearing structure as said second ring structure is rotated relative to said first ring structure;

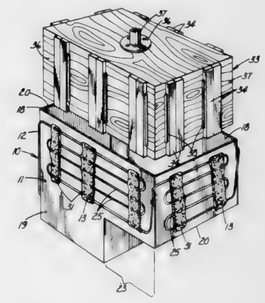
c. retaining means establishing a connection between said one of the ring structures and the shaft to prevent rotation of said one ring structure relative to the shaft when said ring structures are rotated relatively; and

d. connection means for securing said ring structures together once said second ring structure has been positioned to properly chock the bearing structure.

3,966,283
REFRIGERATION APPARATUS AND METHOD FOR MAKING SAME

Richard L. Puterbaugh, St. Cloud, Minn., assignor to Franklin Manufacturing Company, St. Cloud, Minn.

Continuation of Ser. No. 366,752, June 4, 1973. This application Dec. 12, 1974, Ser. No. 532,151
Int. Cl.² B65D *5/56*
U.S. Cl. 312—214 **7 Claims**



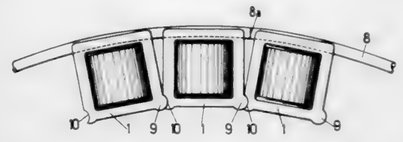
1. A refrigeration cabinet comprising heat conducting elements, including a box-like inner liner and a plurality of lengths of interconnected refrigeration tubing extending along a plurality of outer wall surfaces of the liner and in heat conducting relation by direct contact with said wall surfaces, an outer shell in spaced relationship to the inner liner, a first layer of insulating foam, having been foamed in place, covering at least portions of said lengths of tubing and covering and adhering to areas of the liner outer wall surfaces between adjacent lengths of said tubing, said layer covering sufficiently large areas of said wall surfaces and sufficient portions of said lengths of tubing and having sufficient rigidity to serve as the sole means securing and maintaining said tubing in heat conducting relationship with said wall surfaces but being of less thickness than the space between said inner and outer shell, and a second layer of insulating foam compatible with the foam of said first layer, said second foam layer having been foamed in place over the first layer and filling the space between said outer shell and said first foam layer and any portions of said tubing and wall surfaces not covered by said first layer, said first and second layers of foam each having a thermal conductivity coefficient representative of rigid insulating foam whereby together they provide heat insulation throughout substantially the entire space between said wall surfaces and tubing and said outer shell.

3,966,284
SNAPPABLE OPEN SEPARATORS FOR THE CAGE OF ROLLING THRUST BEARING ELEMENTS

Jacques Lucien Joseph Martin, Paris, France, assignor to R.K.S. Societe Anonyme, France

Filed Mar. 19, 1974, Ser. No. 452,567
Claims priority, application France, Mar. 20, 1973, 73.09979
Int. Cl.² F16C *19/20*
U.S. Cl. 308—235 **12 Claims**

1. An apparatus, housing a rolling thrust-bearing element, for use with other apparatuses of the same type housing other thrust-bearing elements, which apparatuses are assembled together with a ring to form a cage, having an axis, for the elements, said apparatus housing a roller thrust-bearing element comprising: a separator including an opening in which the element is located, a first side having a groove which cooperates with the ring, and a second side opposite said first side and for facing the axis of the cage, said second side including first and second cylindrical surfaces having the same radius and axes parallel to the axis of the cage, said first and

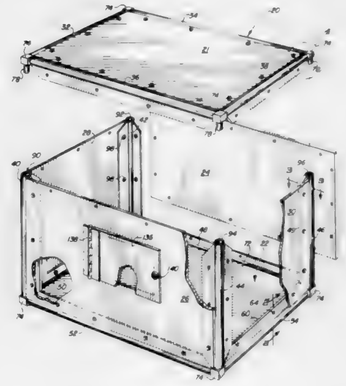


second surfaces being located, respectively, in the vicinity of the ends of said second side, whereby one separator may nest with adjacent separators by the cooperation of said first and second surfaces on the one separator with complementary surfaces on adjacent separators.

3,966,285
COLLAPSIBLE SHIPPING CONTAINER

Don E. Porch, 5026 E. Earl, Phoenix, Ariz. 85018; Paul W. Manktelow, 8310 E. Lewis, Scottsdale, Ariz. 85257, and James E. Utz, 6608 S. 43rd Place, Phoenix, Ariz. 85040

Filed July 17, 1974, Ser. No. 489,446
Int. Cl.² A47B *43/00;* **B65D** *7/00*
U.S. Cl. 312—257 R **2 Claims**



1. A collapsible and reusable shipping container which, in total, is too large for manual handling; said container comprising a box-like structure having corners, said box-like structure provided with a first pair of side structures; a top; and a bottom; said container adapted to rest on any one of said side, top or bottom structures; said side, top and bottom structures all having opposite edges; elongated tubular frame members each having open opposite ends and disposed at all of said edges; joint members disposed at said corners, and said frame members all intersecting said joint members at said corners; each of said joint members having three prongs, each of said prongs disposed in one of said open ends of said hollow tubular frame members; each hollow tubular frame member having a longitudinal axis and having a pair of flat elongated longitudinal flanges; each pair of flanges being parallel with said longitudinal axis of a respective frame member; each of said flanges extending laterally from each respective hollow tubular frame member; the flanges of each of said pairs being spaced angularly apart; each flange having a plurality of first disengageable fixture means spaced longitudinally thereof; at least two of said sides, top or bottom structures having a panel member overlapping at least four of said flanges of four respective

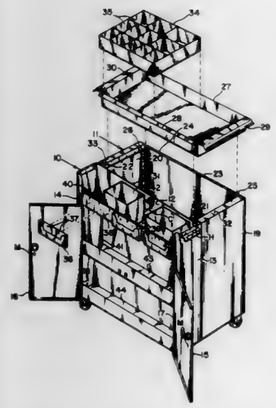
frame members; and second disengageable means cooperative with each of said first disengageable means for removeably holding said panels fixed on respective frame members, each of said prongs readily slidably removed from each respective one of said open ends when respective disengageable means is disengaged; said disengageable fixture means being accessable from the interior only of said box-like structure; one of said panels having a locking door means, adapted to provide manual access to said disengageable fixture means; all of said panels readily disconnectable from each other so that all of said panels may be separate for easy handling and shipping exchange replacement relative to each other; said container being collapsible and having at least six panels removeably connected together; fixture means removeably connecting said panels in an enclosing assembly; all six of said panels readily disconnedctable from each other so that all of said panels may be separate for easy manual handling and shipping exchange replacement; said fixtures accessible only from inside said container; at least one of said panels having a locking door means to provide access to said removeable fixture means internally of said container.

3,966,286

BLOOD-SPECIMEN PROCUREMENT CART

Pauline Inez Groseclose, 611 E. Bonds St., Carson, Calif. 90745

Filed Oct. 31, 1975, Ser. No. 627,539
Int. Cl.² A47B *43/00*
U.S. Cl. 312—258 **10 Claims**



1. A blood-specimen procurement cart for carrying medical supplies comprising, in combination:

a. a rigid cabinet portion including a vertical rear panel, left and right rigid side panels secured to and extending forwardly from said rear panel, and front cabinet doors hinged to the forward vertical edges of the rigid side panels;

b. a folding cabinet portion including left and right foldable side panels hinged to and extending rearwardly from said rear panel when in unfolded positions, and rear cabinet doors hinged to the rearward vertical edges of said foldable side panels;

c. a flat rectangular rear shelf of given length and width dimensions horizontally hinged along one longitudinal edge to the rear surface of said rear panel a distance below the upper edge of said rear panel at least as great as the width of said shelf;

d. engaging means on the inner sides of said foldable side panels at a level corresponding to the hinge level of said shelf;

e. forward left and right rollers secured beneath said rigid cabinet portion; and,

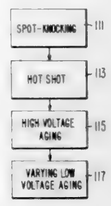
f. rear left and right rollers secured to the bottom edges of said left and right foldable side panels adjacent to the hinge points of said rear cabinet doors respectively, whereby when said left and right foldable side panels are swung outwardly from said rear panel into alignment with said left and right rigid side panels, said shelf may be swung downwardly until opposite sides of the shelf engage said engaging means so that said shelf is level and holds the foldable side panels in their unfolded positions to stabilize said folding cabinet portion and whereby said rear left and right rollers are spaced rearwardly of said rear panel to provide rolling stability with said forward left and right rollers for said rigid cabinet portion and foldable cabinet portion so that the resulting cart may be easily rolled along horizontal floors to service patients and when not in use, the left and right foldable side panels can be swung against said rear panel after swinging said shelf upwardly into flat engagement with said rear panel, and the cart easily stored in a compact space.

3,966,287

LOW-VOLTAGE AGING OF CATHODE-RAY TUBES

Paul Richard Liller, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed June 27, 1975, Ser. No. 590,914
Int. Cl.² H01J *9/00*
U.S. Cl. 316—1 **10 Claims**



1. In a method of processing a completed cathode-ray tube having an electron gun including a cathode, a control electrode, a screen electrode, a focus electrode and a high-voltage electrode, the method including the steps of spot-knocking, hot-shot, high-voltage aging and low-voltage aging, the improvement comprising applying a varying positive voltage to said focus electrode and a constant positive voltage to said screen electrode during the low-voltage aging step of said processing.

3,966,288

METHOD FOR MAKING HIGH INTENSITY DISCHARGE ARC TUBE

William A. Finch, Marblehead; Frederick A. Loughridge, Ipswich, and Rudolf Marcucci, Beverly, all of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Division of Ser. No. 390,538, Aug. 22, 1973, Pat. No. 3,905,795. This application Dec. 12, 1974, Ser. No. 532,078
Int. Cl.² H01J *9/18*
U.S. Cl. 316—19 **1 Claim**

1. The method of making an arc tube for a high intensity discharge lamp comprising the steps of: rotating a length of vitreous quartz tubing; heating by means of a movable heater an intermediate portion of said length to the softening point; rapidly moving the heater away from the tubing and moving a closable two piece mold proximate the softened portion of the tubing; closing the mold around said softened portion and admitting pressurized gas into the softened portion to blow the tubing into the shape of the mold which is arch shaped; severing the unnecessary length of tubing; sealing electrodes in the



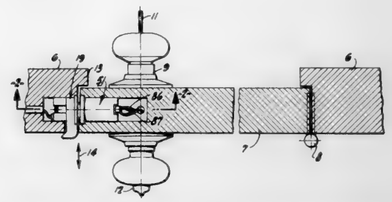
ends of the molded portion of the tubing; and exhausting and filling to form a completed arch shaped arc tube.

3,966,289

ELECTRIC POWER COUPLER

Ernest L. Schlage, 219 Bloomfield Road, Burlingame, Calif. 94010

Filed May 16, 1975, Ser. No. 578,080
Int. Cl.² H01R *39/00*
U.S. Cl. 339—4 **14 Claims**



8. An electric power coupler for use with first and second door members relatively movable along a predetermined path toward and away from substantial abutment comprising a first frame adapted to be mounted on said first door member, said first frame having a recess therein with an opening laterally in the direction of said path, at least a first electrical connector extending parallel to said path, means for mounting said first connector on said first frame in said recess and directed toward said opening, a second frame adapted to be mounted on said second door member, a plunger having a chamber therein with an aperture open laterally in the direction of said path and complementary to said opening, means for mounting said plunger on said second frame for movement relative thereto in a direction normal to said path, at least a second electrical connector extending parallel to said path, means for mounting said second connector on said plunger and in said chamber directed toward said aperture and toward said first connector, and a conductor on said second frame and joined to said second connector.

3,966,290

POLARIZED CONNECTOR

David Murray Little, Harrisburg, and Gary Lee Zimmerman, Shermansdale, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 478,206, June 11, 1974. This application July 2, 1975, Ser. No. 592,428
Int. Cl.² H01R *13/64*; H05R *1/06*
U.S. Cl. 339—17 LC **2 Claims**

1. A polarized connector, comprising:

a first connector housing mounted on a printed circuit board and having a plurality of pins therein,

an opening in said first connector housing encircled by chamfered edges defining a funnel entry,

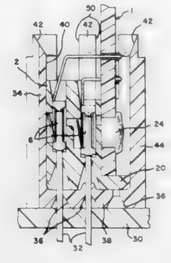
a second connector housing having a plurality of receptacles therein for receiving in mating engagement said pins,

said second connector housing being mounted on an edge margin of a printed circuit board,

a lip on said second connector housing flush with one end thereof and covering an edge of said printed circuit board,

said lip and said one end of said second connector housing being chamfered on the peripheral edges thereof for ease in insertion within said funnel entry,

said pins being arranged in rows within said first connector housing offset toward a side of said first connector housing,



said receptacles being arranged in rows within said second connector housing and including tail portions projecting therefrom for mounting within said printed circuit board,

said receptacles being of different distances from said one end of said second connector housing,

said pins being received through said one end of said second connector housing, and

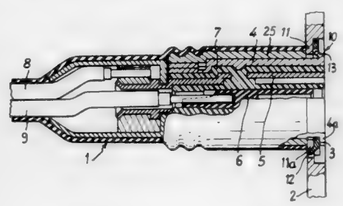
said receptacles being sequentially received over corresponding pins during insertion of said second connector housing in said first connector housing.

3,966,291

ELECTRICAL CONNECTOR MOUNTED ON A SUPPORT PLATE

Alfred Jean Théodore Hug, Zurich, Switzerland, assignor to ARFINA Anstalt fur Continentale und Vebersee-Finansinteressen, Vaduz, Liechtenstein

Division of Ser. No. 365,628, May 31, 1973, Pat. No. 3,894,782. This application Apr. 18, 1975, Ser. No. 569,262
Claims priority, application Switzerland, June 2, 1972, 8238/72
Int. Cl.² H01R *13/62*
U.S. Cl. 339—64 R **4 Claims**



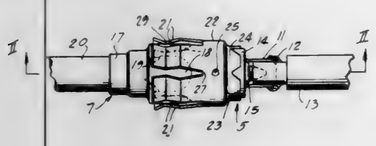
1. An electrical connector comprising an element mounted on a support in a direction substantially perpendicular to the said support and passing through an orifice in the said support, in which play is provided, in the plane of the said support, between at least a portion of the said connector element and the said support, with said element passing through a washer with play between the said element and the edge of an internal orifice of the washer, the said washer itself being arranged in an orifice in the support with play between the outer periphery of the washer and the edge of the said orifice in the support, means being provided to substantially immobilize the said

element and the said washer relative to the support longitudinally of the connector.

3,966,292
PHONOJACK WITH GROUNDING TAB CLAMPING MEANS

Ronald L. Schultz, Northfield, Ill., assignor to Chromalloy-Alcon Inc., Chicago, Ill.

Filed Oct. 15, 1974, Ser. No. 514,615
Int. Cl.² H01R *13/54, 17/08*
U.S. Cl. 339—91 P **9 Claims**



1. In combination in a phonojack assembly including a tubular grounding shell fast about a dielectric support carrying a phonojack socket contact within which a phonoplug pin is receivable, the grounding shell providing a perimeter area of substantial length longitudinally slideably engageable by plug shell tulip finger tabs pushed onto said area from one end of said area, the improvement comprising:

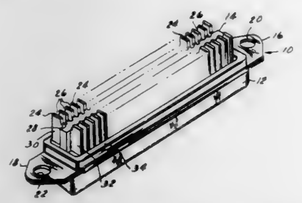
separate resilient clamping fingers biased toward said perimeter area for thrusting the plug shell tulip finger tabs received between said clamping fingers and said area into positive electrical contact with said area; and

means fixedly secured to said grounding shell at the opposite end of said area and fixedly mounting the nearest ends of said clamping fingers.

3,966,293
HOOD ASSEMBLY FOR AN ELECTRICAL CONNECTOR

Istvan Mathe, Cicero, and Ronald Richard Maros, Elmhurst, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Dec. 30, 1974, Ser. No. 537,087
Int. Cl.² H01R *13/58*
U.S. Cl. 339—103 R **14 Claims**



1. A hood assembly for an electrical connector which supports a plurality of contacts, which connector has a front portion and a rear portion, and which electrically taps at said contacts a plurality of conductors which are received in a bundle and exit the connector individually, said hood assembly comprising:

a hollow housing including means defining a first opening and means for mounting the connector in said housing with the front portion of said connector extending through the first opening;

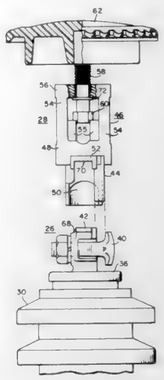
means defining a second opening for receiving the bundle of conductors, including means for clamping the bundle of conductors in the second opening; and

means defining a narrow slot for receiving the individual conductors therethrough and distributing the same in a generally side-by-side relationship.

3,966,294
ADAPTOR FOR TRANSFORMER BUSHING TERMINALS

Ronald E. Benton, Athens, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 5, 1973, Ser. No. 337,968
Int. Cl.² H01R *15/18*
U.S. Cl. 339—153 **9 Claims**



1. An adaptor suitable for attachment to the terminal of an electrical bushing, said adaptor comprising:

a form-fitting skirt dimensioned to fit tightly around a substantial portion of the bushing terminal;

a stud dimensioned to extend into clamping means on the bushing terminal;

an adaptor base attached to said skirt and stud;

an adaptor crown having a threaded opening therein;

a plurality of supporting columns having two ends, with one end of said columns attached to said base and the other end of said columns attached to said crown, said columns being separated sufficiently to permit the insertion of an electrical cable between two of said columns;

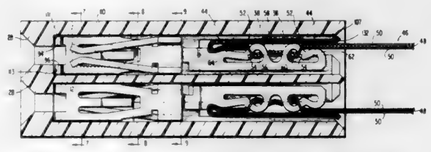
a shoe disposed between said base and crown and guided within a channel formed by said columns; and

tightening means threadably engaged with the threaded opening in said crown, said tightening means being attached to said shoe in such a manner that rotation of said tightening means moves said shoe toward said base.

3,966,295
TERMINATING APPARATUS FOR FLAT CONDUCTOR CABLES

Anthony Joseph Hyland, Delran, N.J., and Wade William Crossley, Bristol, Pa., assignors to Elco Corporation, Willow Grove, Pa.

Filed June 17, 1974, Ser. No. 480,314
Int. Cl.² H01R *13/50, 9/16*
U.S. Cl. 339—176 MF **4 Claims**



1. Contact apparatus for conductor means comprising:

contact tail means for simultaneously providing a secure structural and electrical connection to an associated conductor;

contact nose means for providing a releasable electrical connection to another associated mating conductor contact means; and

bridge means for connecting said contact tail means with the contact nose means to provide a unitary contact apparatus, wherein said contact nose means includes

a pair of opposed contact tines resiliently cantilevered from said bridge means in a direction away from said contact tail means, said tines being mutually self-biased together at the free end thereof for providing said releasable electrical connection with the another associated mating conductor contact means,

wall means longitudinally extending from said bridge means along at least one side of said pair of opposed contact tines in a posture contiguous to but spaced from said pair of opposed contact tines, and

lance means formed by a portion of said at least one wall means and resiliently cantilevered to one side of said contact away from said pair of opposed contact tines, said lance means being oriented in the general direction of said contact tail means, said lance means being operable to resiliently engage a correspondingly locking recess fashioned within an insulator housing for selectively retaining said contact apparatus within an insulator housing,

said bridge means including:

a pair of spaced, parallel legs extending transversely relative to said wall means to another side of said contact other than the side to which said lance means is cantilevered, one of said legs being dimensioned differently than the other for being operably received within a correspondingly dimensioned recess fashioned within an insulator housing to permit insertion of the contact apparatus within an insulator housing only in accordance with a predetermined orientation;

said opposed contact tines being integral with respective ones of said legs and projecting therefrom in a direction away from said contact tail means.

4. Electrical connector apparatus comprising:

a generally flat conductor cable having a plurality of coplanar individual conductors,

a generally rectangular insulation housing means having

a forward portion carrying an array of longitudinally extending apertures with mutually parallel and coplanar axes, and

a generally open rearward portion communicating with said apertures;

a plurality of contact means for each housing aperture, each including

contact tail means disposed in said housing rearward portion and simultaneously providing a resilient structural and electrical connection to an associated one of said plurality of cable conductors,

said tail means being secured to said cable at a location remote from the terminal end of said cable, with a terminal end section of said cable being folded over upon itself opposite said tail means in said housing rearward portion;

contact nose means disposed within an associated housing aperture for providing a releasable electrical connection to another associated one of a plurality of mating conductor contacts, and

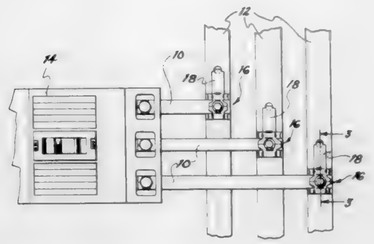
bridge means for connecting said contact tail means with said contact nose means to provide a unitary contact apparatus;

said housing rearward portion further including a plurality of ridge means projecting in a direction generally perpendicular to the plane of said cable and being in engagement with said folded cable section to depress said folded cable section against the connection between said tail means and said cable conductors to enhance said resilient connection therebetween.

3,966,296
ANTI-TURN CLIP FOR INCORPORATION IN BOLTED ELECTRICAL JOINTS

Eric A. Ericson, Plainville, Conn., assignor to General Electric Company, New York, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,696
Int. Cl.² H01R *7/08*
U.S. Cl. 339—263 R **12 Claims**



10. For use with a bolted electrical joint between rigid first and second current carrying members having rectangular cross-sections, a clip for maintaining a predetermined angular relationship between the members despite looseness of the bolt securing the joint, said clip comprising:

A. an elongated body;

B. means forming an aperture in said body adjacent one end thereof to accommodate passage of the bolt used to make the bolted joint;

C. a pair of spaced arms extending laterally from said body adjacent said aperture, said arms adapted for disposal in contiguous relation to opposed lateral surface portions of the first member;

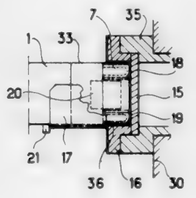
D. means deforming the portion of said body surrounding said aperture into a depression such that, when said clip is incorporated in an electrical joint, the bolt clamping pressure acts to flatten out said deformed body portion and thereby reduce the spacing between said arms so as to bring said arms into engaging relation with the opposed lateral surface portions of the first member; and

E. means carried by said body at the other end thereof for engaging the second member.

3,966,297
DEVICE FOR OBSERVING AN EQUIPMENT UNDER TENSION

Jacques Vigreux, and André Gromier, both of Lyon, France, assignors to Delle-Alsthom, Villeurbanne, France

Filed May 28, 1974, Ser. No. 473,978
Claims priority, application France, June 1, 1973, 73.20100
Int. Cl.² G02B *23/08*
U.S. Cl. 350—52 **1 Claim**



1. In an optical observation device for viewing the condition of high voltage equipment within an opaque electrical apparatus enclosure through a cylindrical viewing port within the enclosure wall covered by a viewing glass, and forming an

annular recess outwardly of said viewing glass, said device comprising:

a periscope terminating at one end in a tubular lens assembly, the improvement comprising:

periscope support means comprising an annular securing element received within said recess of said enclosure wall port and having a trough extending outwardly therefrom for supporting said tubular lens assembly in axial alignment and juxtaposed to said viewing port glass, and

said lens assembly comprising a cylindrical ferrule, a cylindrical lens centrally mounted within said ferrule and radially spaced therefrom, and a light source mounted within said ferrule and about the lens periphery with said light source facing said port glass for directly illuminating the enclosure interior through said port viewing glass, and a cylindrical screen interposed between said cylindrical lens and said light source and extending in the direction of said viewing glass to direct light from said light source through said viewing glass into the interior of said enclosure and prevent direct light impingement from said light source on said cylindrical lens.

3,966,298

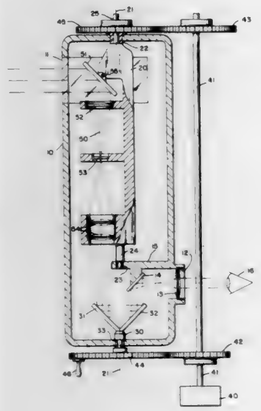
IMAGE DEROTATION DEVICE FOR RELAYING OPTICAL PATHS OFF OR ACROSS GIMBALS

Arthur S. Chapman, Rolling Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 6, 1974, Ser. No. 530,335

Int. Cl.² G02B *23/02*

U.S. Cl. 350—23 **10 Claims**



1. In an optical system of the type having a first gimballed portion of the system including objective lens means mounted for rotation about a gimbal axis, a fixed portion of the system including eyepiece lens means positioned in fixed relationship to said gimbal axis, and means to relay an optical image from said gimballed portion of said system to said fixed portion of said system in any permitted position of said gimballed portion without incurring an image rotation about the line of sight along the optic axis of said eyepiece means, the improvement comprising:

a. means to rotatably mount said first gimballed portion of said system for rotation about a gimbal axis which is parallel to and displaced from the optic axis of said objective lens means of said first gimballed portion in any position thereof so that said optic axis describes an arc of constant radius about said gimbal axis during rotation of said gimballed portion;

b. a second gimballed portion comprising optical path folding means mounted for rotation about a projection of said gimbal axis independently of said first gimballed portion and positioned to receive an image from said objective lens means which is directed therefrom in a path along said optic thereof and to fold said path so that it emerges in a direction parallel and opposed to the direction of said optical path along said optic axis of said first gimballed portion of said system and displaced therefrom, the optical path length through said optical path folding means being the same in any position of said path folding means for any point on said image;

c. image receiving means positioned on said fixed portion of said system in fixed relationship to said gimbal axis for receiving said image along said folded path from said folding means and for transmitting it through said eyepiece means; and

d. means to simultaneously rotate said first gimballed portion including said objective lens of said system and said second gimballed portion including said optical path folding means at different but proportional rates such that said folding means rotates at an angular rate equal to one-half of the angular rate of rotation of said objective lens of said system.

3,966,299

COMMUNICATION CABLES

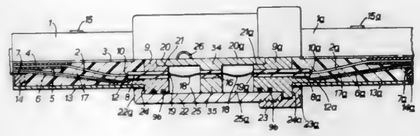
John Richard Osterfield, and Robert George Pragnell, both of Eastleigh, England, assignors to Pirelli General Cable Works Limited, London, England

Filed Mar. 19, 1975, Ser. No. 559,883

Claims priority, application United Kingdom, Mar. 20, 1974, 12467/74

Int. Cl.² G02B *5/16*

U.S. Cl. 350—96 C **11 Claims**



1. A communications cable system comprising:

a. a plurality of communications cables joined end-to-end, each said communications cable comprising:

i. a plurality of single-material optical fibres extending the length of the respective cable; and

ii. a plurality of short lengths of cladded-core optical fibres at each end of the respective cable, said single-material optical fibres being optically joined at their opposite ends to respective ends of respective said short cladded-core optical fibres; and

b. a plurality of cable joining means, each joining the ends of an adjacent pair of said cables, each said means being provided with a plurality of through-bores extending between the pair of cables joined thereby, the free ends of the short cladded-core optical fibres of the two cables being inserted into opposite ends of respective said through-bores.

3,966,300

LIGHT CONDUCTING FIBERS OF QUARTZ GLASS

Gerhard Bernsee, Mainz-Weisenau, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

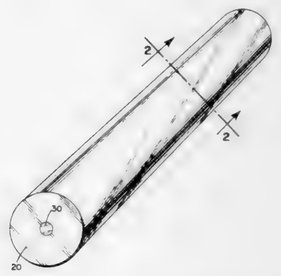
Filed Jan. 22, 1973, Ser. No. 325,377

Claims priority, application Germany, Jan. 24, 1972, 2203140

Int. Cl.² G02B *5/16*

U.S. Cl. 350—96 B **15 Claims**

1. A light-conducting optical fiber comprising a quartz glass core consisting of SiO_2, 0–20 ppm H_2O, and up to 1 ppm trace elements, and having a refractive index N_1, encased by a quartz glass sheath consisting of SiO_2, 800–4000 ppm H_2O,



and up to 1 ppm trace elements, and having a refractive index N_2, N_1 being greater than N_2.

3,966,301

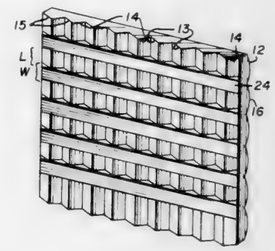
TRANSPARENT SCREEN HAVING INTERMITTENT PORTIONS FOR REDUCING REFLECTION FROM AMBIENT LIGHT

John W. Brown, Flemington, N.J., assignor to Qantix Corporation, Flemington, N.J.

Continuation-in-part of Ser. No. 534,297, Dec. 19, 1974, abandoned. This application Oct. 16, 1975, Ser. No. 622,896

Int. Cl.² G03B *21/60*

U.S. Cl. 350—128 **17 Claims**



1. A front projection screen made from a sheet of light-transmitting material having a predetermined critical angle of internal reflection less than 45°; said sheet having a front surface and a back surface; said screen being characterized by:

a plurality of parallel ridges formed on said front surface, each forming a section of a cylinder having a predetermined focal length;

a plurality of parallel ridges formed on said back surface, each having curved sides terminating at a peak; said curved sides extending away from said sheet at an angle equal to or greater than 45° immediately adjacent to said sheet; the angle between a line tangent to said sides and said sheet continuously decreasing as said curved sides extend toward said peak; the angle between a line tangent to said sides and said sheet being greater than or equal to said predetermined critical angle of internal reflection at said peaks but less than 45°;

said ridges on said front surface being disposed perpendicularly to said ridges on said back surface; and

means on said back surface formed parallel to said ridges on said front surface for intermittently interrupting said parallel ridges on said back surface so that light incident upon said means is not reflected therefrom.

3,966,302

PANEL FOR LIQUID CRYSTAL DISPLAY AND METHOD OF MAKING

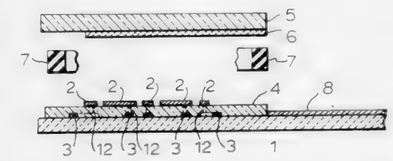
Masanari Mikoda, Neyagawa; Hisashi Akatani, and Shigeru Hayakawa, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 16, 1974, Ser. No. 515,359

Claims priority, application Japan, Oct. 19, 1973, 48-118196

Int. Cl.² G02F *1/16*

U.S. Cl. 350—160 LC **10 Claims**



1. A panel for a liquid crystal display device, comprising: a ceramic substrate; lead conductors on one surface of said ceramic substrate; an insulating glass layer on said ceramic substrate and covering said lead conductors, said glass layer having electrical conductors therein which are spaced from each other and are electrically connected to the respective lead conductors and extend through the thickness of said glass layer; rear segment electrodes on the surface of said glass layer opposite to the surface of said glass layer facing said ceramic substrate and in a pattern to form the desired display; a spacer on said substrate around said rear segment electrodes; and a transparent glass plate having transparent front electrodes on one surface thereof on said spacer with said front electrodes facing said rear segment electrodes and spaced therefrom, the space between said glass layer and said glass plate and within said spacer being adapted to be filled with a liquid crystal, said front and rear segment electrodes being for exciting the liquid crystal.

3,966,303

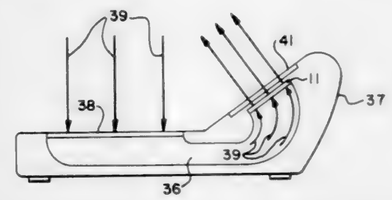
LIQUID CRYSTAL DISPLAY UTILIZING TRANSMITTED LIGHT

Mititaka Yamamoto, Los Altos, Calif., assignor to Omron Tateisi Electronics Co., Mountain View, Calif.

Filed July 26, 1974, Ser. No. 492,152

Int. Cl.² G02F *1/13*

U.S. Cl. 350—160 LC **2 Claims**



1. In combination with a liquid crystal display for use in a light transmitting mode, a case for mounting the liquid crystal display, at least one fiber optics bundle positioned in said case having one end exposed to ambient light and the other end in juxtaposition with the reverse side of the liquid crystal display for collecting ambient light at said one end and for concentrating and directing the ambient light on the reverse side of the liquid crystal display, said fiber optics having a larger cross sectional area at said one end then at said other end, whereby light flux density at the reverse side of the liquid crystal display is higher than ambient, thereby passing through the display for

providing sufficiently high light contrast ratios to allow visual interpretation in relatively low ambient light conditions.

3,966,304

LIQUID CRYSTAL DISPLAY DEVICE

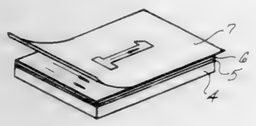
Teruyuki Kakeda, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Japan

Filed Aug. 14, 1974, Ser. No. 497,266

Claims priority, application Japan, Aug. 20, 1973, 48-97396[U]

Int. Cl.² G02F *1/13*

U.S. Cl. 350—160 LC **10 Claims**



1. A liquid crystal display device comprising a liquid crystal contained in a cell comprising transparent, opposed, spaced-apart, parallel, multi-layered side walls, wherein the side walls comprise:

a. a transparent outer base plate;

b. a transparent intermediate electrode layer; and

c. a transparent interior polymeric film in abutting relationship to a surface of the liquid crystal, the long axes of the constituent molecules of selected portions of the transparent interior polymeric film having select orientations different from the orientations of the molecules of the remainder of the transparent interior polymeric film, the long axes of the molecules in the liquid crystal having orientations corresponding to the orientations of the constituent molecules of the interior film.

3,966,305

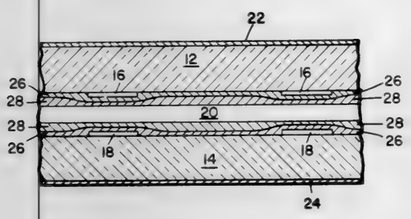
LIQUID CRYSTAL CELL WITH IMPROVED ALIGNMENT

Robert A. Young, San Jose, Calif., assignor to American Micro-Systems, Inc., Santa Clara, Calif.

Filed Oct. 10, 1974, Ser. No. 513,580

Int. Cl.² G02F *1/13*

U.S. Cl. 350—160 LC **4 Claims**



1. An optical display device comprising a pair of transparent plates that are spaced apart and sealed peripherally to form a thin planar cavity filled with a twisted nematic liquid crystal material;

a first layer of transparent conductive material forming an electrode in a preselected pattern configuration on the inner surface of each said plate;

a first thin film of dielectric material covering the inner surface and said conductive pattern configuration on each said plate said first film having substantially the same thickness over the entire conductive pattern and forming a second layer having a surface that is more uniform in chemical composition and texture than said inner surface of the plate and its said first layer of conductive material thereon;

and a second thin film of aligning material of uniform thickness covering said second layer on each said plate and causing the molecules of said liquid crystal material to be aligned essentially parallel to each other on the surface of each plate.

3,966,306

LARGE APERTURE SUPER WIDE ANGLE LENS

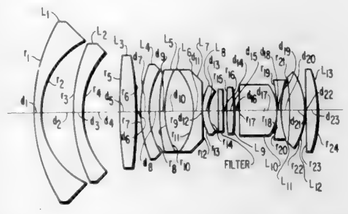
Sadao Okudaira, Ranzan, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1975, Ser. No. 547,684

Claims priority, application Japan, Feb. 28, 1974, 49-23851

Int. Cl.² G02B *9/64, 5/20*

U.S. Cl. 350—214 **2 Claims**



1. A super wide angle lens comprising 13 lenses grouped in 11 components wherein the first and second lenses are negative meniscus lenses convex to the object, the third lens is a positive lens, the fourth lens is a negative meniscus lens convex to the object, the fifth, sixth and seventh lenses constitute a cemented triplet, the eighth lens is a negative meniscus lens convex to the object, the ninth lens is a positive lens, the tenth lens is a thick positive lens, the eleventh lens is a negative lens, and the twelfth and thirteenth lenses are positive lenses convex to the image, and further comprising a filter located between said eighth and ninth lenses, wherein the radii r_1 to r_{24}, the thickness and separations d_1 to d_{23}, the refractive indices n_1 to n_{13}, and Abbe numbers ν_1 to ν_{13} of said first to thirteen lenses L_1 to L_{13}, respectively, satisfy the following conditions:

Lens	Radius of Curvature r	Lens Thickness or or Distance d	Refractive Index n	Abbe No. ν
L_1	$r_1 = 256.3$	$d_1 = 6.5$	$n_1 = 1.6031$	$\nu_1 = 60.7$
	$r_2 = 121.6$	$d_2 = 47.4$		
L_2	$r_3 = 253.9$	$d_3 = 14.1$	$n_2 = 1.7410$	$\nu_2 = 52.7$
	$r_4 = 125.8$	$d_4 = 57.4$		
L_3	$r_5 = 783.8$	$d_5 = 22.9$	$n_3 = 1.6258$	$\nu_3 = 35.7$
	$r_6 = -430.9$	$d_6 = 6.1$		
L_4	$r_7 = 211.3$	$d_7 = 9.3$	$n_4 = 1.8160$	$\nu_4 = 46.8$
	$r_8 = 119.7$	$d_8 = 16.4$		
L_5	$r_9 = 277.8$	$d_9 = 8.1$	$n_5 = 1.5473$	$\nu_5 = 53.6$
L_6	$r_{10} = 119.3$	$d_{10} = 43.2$	$n_6 = 1.7200$	$\nu_6 = 50.3$
L_7	$r_{11} = -100.4$	$d_{11} = 12.6$	$n_7 = 1.5613$	$\nu_7 = 45.2$
	$r_{12} = 5113.5$	$d_{12} = 0.5$		
L_8	$r_{13} = 89.6$	$d_{13} = 8.1$	$n_8 = 1.6968$	$\nu_8 = 56.5$
	$r_{14} = 47.6$	$d_{14} = 20.5$		
	$r_{15} = 455.8$	filter thickness 4.3		
L_9		$d_{15} = 10.3$	$n_9 = 1.8051$	$\nu_9 = 25.4$
	$r_{16} = -249.8$	$d_{16} = 9.9$		
L_{10}	$r_{17} = -834.6$	$d_{17} = 57.2$	$n_{10} = 1.4645$	$\nu_{10} = 66.0$
	$r_{18} = -66.9$	$d_{18} = 0.5$		

—Continued

Lens	Radius of Curvature r	Lens Thickness or or Distance d	Refractive Index n	Abbe No. ν
	$r_{19} = -201.9$			
L_{11}		$d_{19} = 5.4$	$n_{11} = 1.8051$	$\nu_{11} = 25.4$
	$r_{20} = 157.9$	$d_{20} = 11.1$		
	$r_{21} = -1167.6$			
L_{12}		$d_{21} = 25.5$	$n_{12} = 1.4645$	$\nu_{12} = 66.0$
	$r_{22} = -95.6$	$d_{22} = 0.5$		
	$r_{23} = 10629.3$			
L_{13}		$d_{23} = 18.9$	$n_{13} = 1.6204$	$\nu_{13} = 60.3$
	$r_{24} = -209.0$			

3,966,307

TELEPHOTO LENS SYSTEM

Tsutomu Tojyo, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1974, Ser. No. 516,015

Claims priority, application Japan, Oct. 23, 1973, 48-118527

Int. Cl.² G02B *9/60*

U.S. Cl. 350—216 **2 Claims**



1. A telephoto lens system comprising five lenses, a first lens being a positive meniscus lens with its convex surface positioned on the object side, a second lens being a biconcave lens, a third lens being a positive meniscus lens with its convex surface positioned on the object side, a fourth lens being a negative lens with its concave surface positioned on the object side, and a fifth lens being a biconvex lens, and said telephoto lens system having the following numerical values:

$r_1 = 0.3186$	$d_1 = 0.0225$	$n_1 = 1.48749$	$\nu_1 = 70.1$
$r_2 = 2.8394$	$d_2 = 0.0112$		
$r_3 = -0.9987$	$d_3 = 0.0110$	$n_2 = 1.7400$	$\nu_2 = 31.7$
$r_4 = 1.2312$	$d_4 = 0.0020$		
$r_5 = 0.3283$	$d_5 = 0.0230$	$n_3 = 1.52542$	$\nu_3 = 64.5$
$r_6 = \infty$	$d_6 = 0.3649$		
$r_7 = -0.1408$	$d_7 = 0.0100$	$n_4 = 1.51874$	$\nu_4 = 64.5$
$r_8 = \infty$	$d_8 = 0.0140$		
$r_9 = 0.6388$	$d_9 = 0.0200$	$n_5 = 1.57309$	$\nu_5 = 42.6$
$r_{10} = -0.4795$			

$f = 1.0$ $f_B = 0.3413$ $P = 0.82$

$1 : 4.5$

wherein reference symbol r_1 through r_{10} respectively represent radii of curvature of respective lens surfaces, reference symbols d_1 through d_9 respectively represent thicknesses of respective lenses and airspaces between respective lenses, reference symbols n_1 through n_5 respectively represent refractive indexes of respective lenses, reference symbols ν_1 through ν_5 respectively represent Abbe's numbers of respective lenses, reference symbol f represents the focal length of the lens system as a whole, reference symbol f_B represents the back focal length, and reference symbol P represents the telephoto ratio.

3,966,308

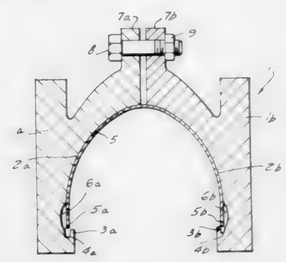
DEVICE FOR REFLECTING RADIANT ENERGY

Hans Erik Nilson, Vargon, Sweden, assignor to Infrarodteknik AB, Vanersborg, Sweden

Filed May 1, 1974, Ser. No. 466,035

Int. Cl.² G02B *5/10*

U.S. Cl. 350—293 **11 Claims**



1. A device for reflecting energy comprising, in combination, two substantially mirror-symmetrical housing sections, each having a curved supporting surface which forms with the supporting surface of the other housing section a substantially continuous support surface defining a cavity having an open end when said housing sections are assembled to constitute a housing; at least one portion in each housing section at said open end and projecting into said cavity of said housing and provided with at least one recess; a reflecting element in said housing in abutment and substantial conformity with said supporting surfaces and having at least one marginal portion; and means for drawing said housing sections towards one another so that said marginal portion of said reflecting element enters said recess of said housing sections during the drawing of the latter together to constitute said housing, and is retained in said recesses of said housing whereby said reflecting element is connected to said housing.

3,966,309

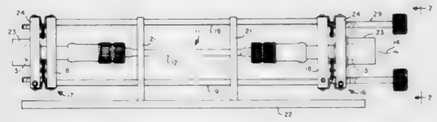
ADJUSTABLE MOUNTING STRUCTURE FOR OPTICAL DEVICE

Galen E. Mohler, Mountain View, Calif., assignor to Lexel Corporation, Palo Alto, Calif.

Division of Ser. No. 392,614, Aug. 20, 1973, Pat. No. 3,864,029. This application Nov. 25, 1974, Ser. No. 526,506

Int. Cl.² G02B *5/08*

U.S. Cl. 350—310 **10 Claims**



1. A mounting structure enabling adjustment of the position of an optical device relative to an optical axis comprising a reference member positioned at a predetermined location relative to said optical axis, a mount for said optical device, and means connecting said mount to said reference member for adjustment of the position of said mount with respect to said reference member, said connecting means including:

A. a first connection between said reference member and said mount at a first location, said first connection having:

1. a separator which extends between said reference member and said mount at said first location for maintaining the same spaced apart thereat, the length of said separator along a path extending directly between said reference member and said mount at said first location being selectively variable; and

2. a leaf spring having opposite ends respectively secured independently of said separator to said reference member and said mount and being in tension therebetween to resiliently urge said reference member and said mount toward one another at said first location by maintaining a compressive force on said separator, said leaf spring being characterized by including an expansion and contraction joint under tension between said opposite ends enabling said spring to lengthen and shorten to compensate for changes in the distance between said reference member and said mount while maintaining a compressive force on said separator;

B. said expansion and contraction joint being free of any other connection between said reference member and said mount for changes in the distance between said reference member and said mount at said first location independently of any other connection between said reference member and said mount.

3,966,310

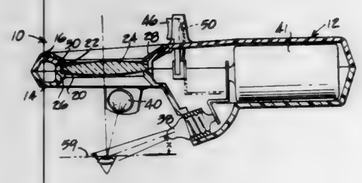
PUPILLOMETER AND METHOD OF USE THEREOF

Merlin D. Larson, 3420 21st St., San Francisco, Calif. 94110

Filed Feb. 15, 1974, Ser. No. 442,760

Int. Cl.² A61B *3/10*

U.S. Cl. 351—16 **2 Claims**



1. Hand-operable apparatus for observing reaction of the iris in the pupil of an eye, comprising:

a body sized to be hand-held;

a plurality of generally unidirectional light sources mounted on said body and positioned to direct light therefrom to said eye in the area of said pupil upon hand-positioning of said body, at least one light source emitting only a first generally straight light beam impinging on said eye generally along a line within the limits of from 0° to 20° from a plane tangent to the center of the pupil, and at least one other generally unidirectional light source of said plurality of light sources emitting only a second generally straight light beam impinging on said eye in the vicinity of said pupil more directly into said pupil and iris than said light means impinging on said eye within said 0° to 20° limits, said light beam impinging within said 0° to 20° limits being of greater divergence than said more directly impinging light beam;

means for selectively actuating the light source impinging more directly on the pupil;

lens means mounted on said body and positioned for allowing observation therethrough of the reaction of the iris and pupil to the selectively actuated light source impinging more directly on the pupil;

marking means mounted on said lens means and sized in relation to said lens means and the distance of the pupil therefrom to indicate the size of the pupil being observed;

said means for selectively actuating the light source comprising pressure-sensitive switch means mounted on said body and positioned between adjacent fingers of the hand with the body so hand-held, said pressure-sensitive switch means actuating said light source upon application of pressure applied thereto by one adjacent finger in the direction of the other adjacent finger.

3,966,311

METHOD OF PRODUCING PHOTOCHROMIC MULTIFOCAL SPECTACLE LENSES

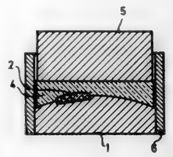
Siegfried Korn, Oberkochen; Bernd Kratzer, Huttlingen, and Otto Muckenhaupt, Oberkochen, all of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Germany

Continuation of Ser. No. 355,865, April 30, 1973, abandoned. This application Jan. 22, 1975, Ser. No. 543,083

Claims priority, application Germany, May 2, 1972, 2221488

Int. Cl.² G02B *1/10*; C03B *11/08*

U.S. Cl. 351—164 **21 Claims**



1. The method of manufacturing a fused multifocal spectacle lens having a reading lens segment portion fused to a major lens portion having photochromic properties and formed from a glass containing silver salts and requiring heat treatment in a tempering range of temperature from 550° to 650°C. to improve its photochromic properties, the glass of said major lens portion having a tendency to develop turbidity when maintained at a temperature in said tempering range, the glass of one of said portions requiring heating to said tempering range in order to soften said one of them sufficiently for fusion of the two glasses to each other, said method comprising the steps of heating both of said lens portions, at least said major portion being heated to a temperature in said tempering range, bringing the two portions into fusion position relative to each other at a time not later than a time when said major portion is at a temperature in said tempering range, maintaining said major portion at a temperature in said tempering range only sufficiently long to improve the desired photochromic properties and to accomplish fusion of the two portions to each other, and then cooling the fused portions relatively rapidly to a temperature below said tempering range at such rate that the total time in said tempering range is not more than about 10 hours.

19. The product of the process of claim 1.

3,966,312

FADE-OVER ARRANGEMENT FOR A MOTION PICTURE CAMERA

Eduard Wagensonner, Aschheim, and Volkmar Stenzenberger, Unterhachung, both of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Dec. 5, 1974, Ser. No. 530,044

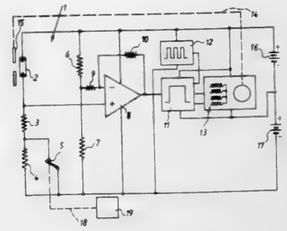
Claims priority, application Germany, Dec. 15, 1973, 2362506

Int. Cl.² G03B *21/36*

U.S. Cl. 352—91 C **4 Claims**

1. In a motion picture camera having film and a diaphragm having a variable aperture positioned in the path of light to said film, a fade-over arrangement, comprising, in combination, bridge circuit means having a first arm including photoelectric receiver means positioned following said diaphragm in said path of light to said film for creating a first electrical impedance varying as a function of light impinging thereon, a second arm including a second impedance, and a bridge output terminal for furnishing a bridge output signal varying as a function of both said first and second impedances, said bridge output signal being a balanced bridge output signal when a predetermined relationship exists between said first and second impedances; fade-out switch means connected to said

second impedance for changing the value thereof upon external activation from a first predetermined value to a second predetermined value and in a direction for changing the quantity of light required for furnishing said balanced bridge output signal from a first predetermined quantity to a second predetermined quantity substantially less than said first predetermined quantity but exceeding zero; and aperture control means connected to said bridge output terminal for decreasing the size of said aperture under control of said bridge output



signal until said bridge output signal is said balanced bridge output signal and said aperture admits only said second predetermined quantity of light to said photoreceiver means, whereby the quantity of light falling on said photoelectric receiver means is decreased by a predetermined quantity independent of the light conditions for each fade-out and whereby said aperture control means remains under control of said bridge output signal and thereby responsive to light conditions during and after fade-out.

3,966,313

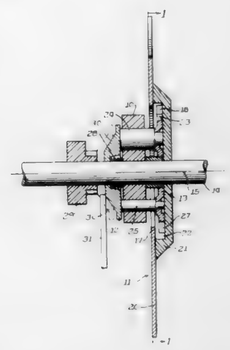
FORWARD-REVERSE PROJECTOR MECHANISM

James G. Woodier, Morton Grove, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed July 2, 1975, Ser. No. 592,498

Int. Cl.² G03B *1/00*

U.S. Cl. 352—173 **11 Claims**



1. In a film feed apparatus for use in a motion picture projector and of the type which includes a shuttle which is driven by a film transporting cam disposed for engagement thereby, the shuttle having teeth for engaging perforations of a film to be transported and for transporting the film frames through a predetermined index stroke for bringing successive frames into registration with the projector aperture, and the transporting cam being mounted on and rotated in unison with a rotatable shaft, a forward-reverse film transport synchronizing mechanism which affords properly synchronized forward and reverse film transportation while maintaining rotating of the rotatable shaft in a single angular direction comprising:

a rotary shutter mounted in fixed axial and radial relation on the rotatable shaft with an axis of rotation concentric with the axis of rotation of the rotatable shaft and including a plurality of radially extending shutter blades, a given one of which is arranged for covering the aperture during both forward and reverse film transportation and additionally including first and second drive lugs arcuately spaced about said concentric axis by 180° and axially spaced along said concentric axes; and

transport cam drive means engaged with said transport cam and axially slideable between first and second positions on said rotating shaft, which cam drive means includes a driven lug positioned on said cam drive means so as to communicate with said first drive lug on said shutter when said cam drive means is in said first position and to communicate with said second drive lug on said shutter when said cam drive means is in said second position for causing said transport cam to rotate when said shutter and rotating shaft rotate; whereby

with said cam drive means being slideable between said first and second positions, the communication between said driven lug and said first and second drive lugs is selectable to thus alter the angular relationship between said transport cam and said shutter by 180° to cause the film feed mechanism to transport the film in both forward and reverse directions and to be properly synchronized for both forward and reverse film transportation.

3,966,314

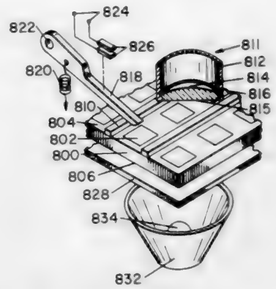
MICROFORM CARD INCLUDING SURFACE LOCATING STRUCTURE FOR ELIMINATION OF NEWTON RING COLOR BANDING AND CARD UTILIZATION APPARATUS THEREFOR

George T. Brown, Jr., Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Division of Ser. No. 400,406, Sept. 24, 1973, Pat. No. 3,876,299. This application July 29, 1974, Ser. No. 492,642

Int. Cl.² G03B *23/08*; G02B *27/02*; G03B *27/28*

U.S. Cl. 353—27 R **6 Claims**



1. A microform card system comprising:

a microform card having a card body means with first and second opposed surfaces thereon;

said card body means having spaced image containing areas thereon and supporting areas between adjacent said image containing areas;

spacer means located on at least said second surface at said supporting areas and having a predetermined height at least equal to the combined length represented by several wavelengths of visible light and being spaced apart generally by a first separation distance;

a source of light adjacent said first surface for illuminating said image containing areas on said card and a moveable lens means adjacent said second surface for viewing said image containing areas;

positioning means for moving said microform card with reference to said lens means;

said lens means having a lens surface whose diameter is greater than said first separation distance so that when

said lens surface is moved into engagement with said card body at any location thereon to enable said lens surface engages at least two of said spacer means;

said spacer means being effective to maintain the lens surface of said lens means at said predetermined height away from said image containing areas when being viewed by said lens means to thereby eliminate the formation of Newton ring color band images.

3,966,315

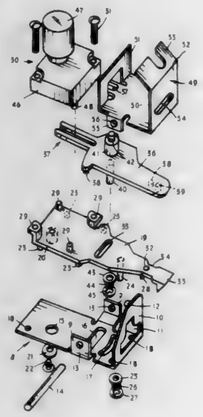
LENS FOCUSING MEANS FOR SLIDE PROJECTORS

Robert E. Styles, and John C. Les Veaux, both of Sydney, Australia, assignors to Hanimex Pty. Ltd., Australia

Division of Ser. No. 545,614, Jan. 30, 1975. This application Dec. 1, 1975, Ser. No. 636,592

Int. Cl. G02b *7/02;* **G03b** *3/00, 21/14*

U.S. Cl. 353—101 **5 Claims**



1. In a slide projector having a casing in which is mounted means to hold a slide in projection position in alignment with a lens system including a movable lens unit:

a lens unit focusing mechanism comprising a sub-frame fixed to the casing, a first platform, a pivotal connection between the first platform and the sub-frame;

first friction producing means to hold the first platform in frictional engagement with the sub-frame to inhibit pivotal movement therebetween, a second platform, a pivotal connection between the second platform and the first platform, a second friction producing means to hold the second platform in frictional engagement with the first platform to inhibit pivotal movement therebetween, a lens holder, bearings on the lens holder, a shaft in sliding engagement with the bearings, shaft holding means on the sub-frame in which said shaft is held, a slot in said second platform, a drive assembly fixed to the first platform, a peg on the drive assembly movable thereby in a circular path and engaging in the slot in the second platform, a first slot in the lens holder and a pivot pin on the second platform in engagement with the slot in the lens holder, a second slot in the lens holder parallel to the shaft and a peg on the sub-frame in engagement with the second slot;

manual pivoting movement of the first platform relative to the sub-frame being transferred through the pivot pin on the second platform to a side of the first slot in the lens holder to cause the lens holder to move along said shaft and said peg on the sub-frame to slide in the second slot in the lens holder, activation of the drive assembly causing pivotal movement of the second platform relative to the first platform by engagement of the driving assembly peg with a side of the slot in the second platform and the pivotal movement of the second platform being transferred through the pivot pin on the second platform to a side of the first slot in the lens holder to cause the lens holder to move along said shaft and said peg on the sub-frame to slide in the second slot in the lens holder.

3,966,316

ELECTROSTATIC COPYING MACHINE WITH REMOVABLE COPYING DRUM

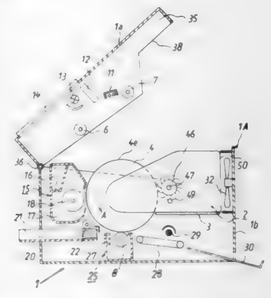
Josef Pfeifer, Unterhaching, and Gunther Schnall, Eching, both of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed July 24, 1975, Ser. No. 598,882

Claims priority, application Germany, July 27, 1974, 2436301

Int. Cl.² G03G *15/00*

U.S. Cl. 355—3 R **21 Claims**



1. In an electrostatic copying machine, a combination comprising a housing; centering means in said housing; a self-sustaining module removably mounted in said housing and including a casing, a mobile copying component installed in said casing; and means for cleaning said component, said cleaning means being mounted in said casing; said centering means engaging and locating said component and including at least one motion transmitting member actuatable to move said component with respect to said housing.

3,966,317

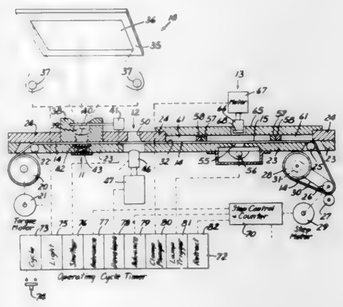
DRY PROCESS PRODUCTION OF ARCHIVAL MICROFORM RECORDS FROM HARD COPY

Harvey H. Wacks, Southfield; Peter H. Klose, Troy; Stanford R. Ovshinsky, Bloomfield Hills, all of Mich., and Robert W. Hallman, San Diego, Calif., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Apr. 8, 1974, Ser. No. 458,715

Int. Cl.² G03B *27/00, 27/02, 27/32*

U.S. Cl. 355—19 **18 Claims**



1. A dry-process apparatus for producing archival microform records from light reflecting hard copy comprising in combination a dry-process mask film strip which is photosensitive to and imaged by light and dry developed by heat to provide imaged transparencies therein, an imaging and developing station, an image transferring station, means for moving the dry-process mask film strip to the imaging and developing station and to the image transferring station, means for applying light to the hard copy to be reflected thereby, means in the imaging and developing station for reducing the light image reflected from the hard copy to microimage size and applying the same to the dry-process mask film strip to produce microimages of the hard copy in the dry-process mask film strip when it is moved to the imaging and developing station, means in the imaging and developing station for heating the dry-process mask film strip when it is moved to the imaging and developing station for developing the microimages into microimage transparencies, a dry-process microform film which has archival properties and which is sensitive to and imaged and developed by short pulses of electromagnetic energy above a threshold value applied thereto to provide imaged records having archival properties, means in the image transferring station for receiving the dry-process microform film, means in the image transferring station for superimposing the dry-process microform film and the transparent microimaged dry-process mask film strip when it is moved to the image transferring station, and means in the image transferring station for applying short pulses of electromagnetic energy above a threshold value through the transparent microimaged dry-process mask film strip when it is moved to the image transferring station onto the dry-process microform film for providing in the dry-process microform film imaged microform records which conform to the transparent microimages in the dry-process mask film strip and which have archival properties.

means for removing said card from said means for picking up cards;

belt means for accepting said cards from said removal means to hold and advance a predetermined number of cards for making photomicrographs of the cards held thereon;

delay means for adjustable delay of feeding of a subsequent card from said stack in order to form a space between successive cards on said belt;

stack elevation means for elevating said stack upon dimunition of the supply of cards in said stack below a predetermined level;

b. counting means for counting the number of cards fed to said belt;

c. means responsive to said counting means to stop the feeding means after a predetermined number of cards have been fed to said belt; and

d. means operative to advance said belt and reactivate said pick up means after a predetermined time interval.

3,966,318

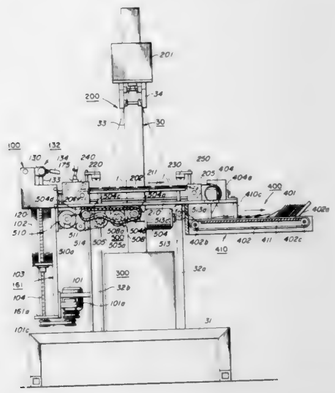
APPARATUS FOR AUTOMATIC MICROPHOTOGRAPHY

Andrew L. Amort, Ann Arbor, Mich., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 526,250, Nov. 22, 1974. This application Mar. 25, 1975, Ser. No. 561,968

Int. Cl.² G03B *27/32, 27/52*

U.S. Cl. 355—64 **36 Claims**

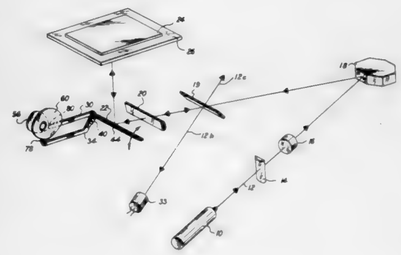


1. An apparatus for photographing cards having a means for feeding cards successively from a stack of cards, said apparatus including:

a. means operative to feed individual cards from a stack of cards to a belt one at a time in response to a command signal, said means including;

means for picking up said cards;

linkage means for bringing said means for picking up cards adjacent the stack of cards to pick up a single card from the stack;

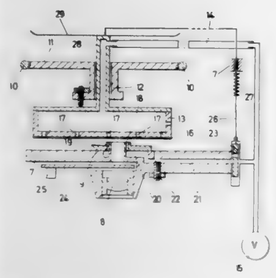


1. In a flat field scanning system having an illumination source generating a collimated beam, a stationary planar medium, a scanning mirror rotatable about an axis and interposed between said source and said medium and arranged to reflect said beam to said medium in successive increments in one direction across said medium during rotation thereof, a first cam follower, a second cam follower, means connecting said first cam follower to said mirror for shifting said mirror in a direction transverse to its rotational axis, means connecting said second cam follower to said mirror for pivoting the same about said rotational axis, a first cam, a second cam, the improvement comprising: a shaft, means for rotating said shaft in one direction, said cams being mounted on said shaft for rotation therewith, means urging said first cam follower into engagement with the surface of said first cam, means urging said second cam follower into engagement with the surface of said second cam, the surface of said first cam being so designed to effect shifting said mirror in one direction along a transverse path to the rotational axis thereof from a start-of-scan position to an intermediate scan position and to shift said mirror in the opposite direction from the intermediate scan position to an end-of-scan position and maintain a substantially constant length optical path from said source to said medium, the surface of said second cam being so designed to cause rotation of said mirror about its rotational axis in one direction during movement thereof from the start-of-scan position to the end-of-scan position in such a manner that said beam will be scanned at a substantially constant rate onto said medium.

3,966,320
MICROFILM CAMERA

Manfred Wiessner, Dresden, Germany, assignor to VEB Pentacon Dresden, Dresden, Germany

Filed Apr. 7, 1975, Ser. No. 565,961
Claims priority, application Germany, Apr. 10, 1974, 177798
Int. Cl.² G03B 27/60
U.S. Cl. 355—73 **6 Claims**

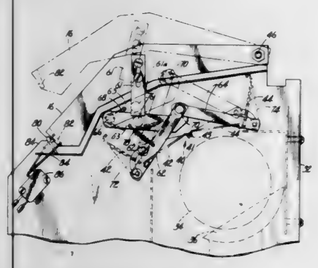


1. A microfilm camera comprising:
a. a film gate having a film bearing surface,
b. a suction plate for holding a sheet of film which can be moved in steps across the film gate,
c. suction apertures on said film bearing surface of said film gate,
d. a vacuum pump,
e. a suction conduit connected between said suction apertures and said vacuum pump during each exposure operation, and
f. a valve for closing the path between the apertures and the vacuum pump.

3,966,321
DUPLICATING MACHINE EXPOSURE SYSTEM

Robert C. Patzke, Prospect Heights, Ill., assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed July 3, 1974, Ser. No. 485,346
Int. Cl.² G03B 27/04
U.S. Cl. 355—121 **23 Claims**

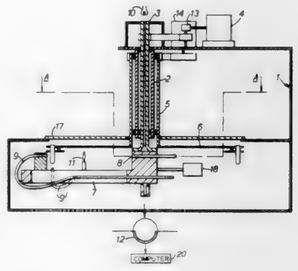


1. An exposure system comprising:
a light transparent platen;
a light source disposed on one side of said platen;
a shutter mechanism interposed between said light source and said transparent platen, said shutter mechanism having an open condition of operation for passing light from said light source to said platen and a closed condition of operation for blocking the passage of light from said light source to said platen;
a cover disposed on the opposite side of said platen, said cover having an open position for providing access to said platen and a closed position for covering said platen;
first resilient biasing means mechanically coupled to said cover for biasing said cover to a partially open position;
second resilient biasing means mechanically coupled to said shutter mechanism for biasing said shutter mechanism to said closed condition of operation;
linkage means mechanically coupling said shutter mechanism, said cover and said second resilient biasing means, said linkage means being responsive to the position of said cover for operating said shutter mechanism to the open condition of operation against the force of said second resilient biasing means when said cover is placed in the closed position, said linkage means including means for transmitting force from said second resilient biasing means to said shutter mechanism for operating said shutter mechanism to said closed condition of operation when said cover is biased to said partially open position by said first resilient biasing means;
timing means responsive to the closing of said cover for initiating a timing interval; and
means for latching said cover in the closed position against the force of said first resilient biasing means, said latching means being responsive to said timing means for releasing said cover upon the completion of said timing interval.

3,966,322
DEVICE FOR USE IN PRODUCING A SCANNING BEAM OF RADIATION AND APPARATUS FOR USE IN INVESTIGATING SPECIMENS

Geoffrey Stuart Greaves; Ian Deverill, and Roger Abraham Bunce, all of Birmingham, England, assignors to Vickers Limited, London, England

Filed Nov. 6, 1974, Ser. No. 521,254
Claims priority, application United Kingdom, Nov. 8, 1973, 51988/73; Oct. 28, 1974, 46608/74
Int. Cl.² G01N 33/16, 21/24
U.S. Cl. 356—39 **24 Claims**

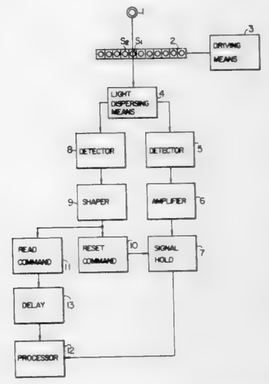


2. Apparatus for use in investigating liquid specimens, comprising a turntable having a rotational axis and adapted to support a plurality of at least partially light-transmitting vials or other vessels, each for containing a liquid specimen to be investigated, in a circular array centred on said axis, means for rotating the turntable stepwise about said axis, means for directing radiation, at least once during each dwell period of the turntable between successive stepwise advancements of the turntable, at each of the vessels in turn, and radiation receiving means arranged to receive radiation leaving the vessels.

3,966,323
APPARATUS FOR PRODUCING TIMING SIGNAL FOR PHOTOMETRIC MEASUREMENT

Yoshio Matsuoka; Hiroshi Inomata; Tsuneo Shimazaki, and Fujiya Takahata, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 18, 1974, Ser. No. 524,868
Claims priority, application Japan, Nov. 21, 1973, 48-130231
Int. Cl.² G01J 3/42
U.S. Cl. 356—96 **21 Claims**

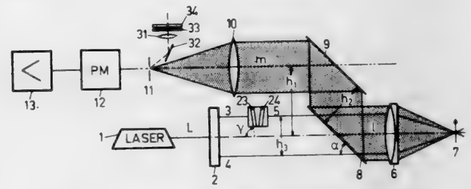


1. An apparatus for producing signals for timing the operations in photometric measurement comprising a light source, a plurality of containers for samples, driving means for providing a relative movement between said light source and said plurality of sample containers, means for detecting variation at least in a portion of light ransmitted through said sample container and for providing a detection signal in accordance therewith, said variation being caused by said relative movement, and means for deriving signals for timing the operations of measuring said samples contained in said container from the detection signal produced by said detecting means, whereby said timing signals are produced on the basis of light transmitted through said containers.

3,966,324
LASER DOPPLER ANEMOMETER

Paul D. Iten, Oberrohrdorf, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Mar. 22, 1974, Ser. No. 453,969
Claims priority, application Switzerland, Apr. 18, 1973, 5580/73
Int. Cl.² G01B 9/02
U.S. Cl. 356—106 R **5 Claims**

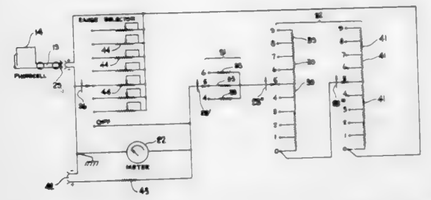


1. A laser Doppler anemometer comprising a source providing a laser radiation beam, means for splitting said laser radiation beam into a plurality of partial radiation beams, a common optical image-forming system for illuminating a measuring volume by said partial radiation beams and for receiving the backscattered signal radiation therefrom, a detector located in the optical path of said back-scattered signal radiation, and a deflecting device comprising at least one partially reflecting mirror means positioned in said common optical image-forming system for directing at least one part of the scattered signal radiation leaving said common optical image-forming system to a pinhole diaphragm, wherein said partially reflecting mirror means is constituted by two mirrors disposed plane parallel to each other and wherein said partially reflecting mirror means include light-transmissive elliptical rings.

3,966,325
LASER POWER METER

Galen E. Mohler, Mountain View, Calif., assignor to Lexel Corporation, Palo Alto, Calif.

Filed Mar. 31, 1975, Ser. No. 563,596
Int. Cl.² G01J 1/42
U.S. Cl. 356—218 **6 Claims**



1. A laser power meter for measuring the power of a laser beam or the like over a range of output wavelengths comprising:
A. sensing means responsive to the interception of the output beam of a laser by generating an electrical output potential having a value dependent upon both the power and the wavelength of said intercepted beam;
B. indicator means for registering power as a function proportional to the value of an electrical potential applied thereto; and
C. calibration means responsive to receipt of the output of said sensing means by passing an electrical potential to said indicator means; said calibration means including:
1. first and second pluralities of resistors;
a. said first plurality of resistors being selected to provide first resistance values between said sensing means and said indicator means, each of which resistance values responds to the receipt by said sensing means of a laser beam having a wavelength at the starting point of a chosen one of correspondingly successive segments of said wavelength range by passing a potential to said indicator means having a value in the proximity of the potential value causing said indicator means to register the true power of a laser beam having a wavelength representative of said starting point;
b. said second plurality of resistors being divided into first and second sections respectively providing ten and unit decimal resistance value selection, said resistance values being related to successive wavelength measurement values in a straight line function having a slope which approximates the slope in all of said wavelength segments of the actual relationship of resistance values to wavelength measurement values which would cause said indicator means to register the true power of laser beams received by said sensing means having said wavelengths; and
c. said starting points of said successive wavelength segments provided by said first plurality of resistors being selected at changes in the hundreds unit of a measurement of wavelengths within said wavelength range, the relationship of successive resistance values provided by said first plurality of resistors being related non-linearly to corresponding wavelength measurement values;

2. first switching means for connecting between said sensing means and said indicator means one or more of the resistors of said first plurality of resistors to provide a selected one of said first resistance values defining a chosen one of said successive wavelength range segments; and

3. second switching means including first and second switches respectively associated with said first and second sections of resistors of said second plurality of resistors for also connecting between said sensing means and said indicator means resistors of said sections to select digitally the beam wavelength in the chosen one of said wavelength range segments to which said sensing means will respond by passing a potential to said indicator means having a value generally equal to the potential value causing a true registration by said indicator means of the power of said laser beam,

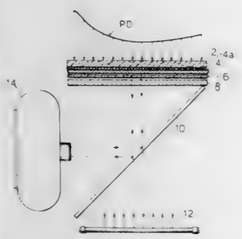
whereby said calibration means is adjustable on a decimal scale to pass an electrical potential from said sensing means to said indicator means having a value proportional to the output power of a laser beam received by said sensing means, irrespective of the wavelength of said laser beam.

3,966,326

METHOD AND APPARATUS FOR INDICATING OR MEASURING CONTACT DISTRIBUTION OVER A SURFACE

Maurice A. Brull, Tel Aviv, and Mircea Arcan, Ramat Hasharon, both of Israel, assignors to Ramot University Authority for Applied Research & Industrial Development Ltd., Tel Aviv, Israel

Filed Mar. 17, 1975, Ser. No. 559,240
Claims priority, application Israel, Mar. 29, 1974, 44525
Int. Cl.² G01B *11/18*
U.S. Cl. 356—114 **15 Claims**



1. A method for indicating the contact pressure distribution over a surface, comprising the steps: transmitting the contact pressure to be indicated to a photoelastic member through a pressure-transmitting member having a plurality of point-contact projections effective to transmit said contact pressure to the photoelastic member in the form of a plurality of localized points, the photoelastic member being one whose optical properties are changed when the member is subjected to pressure; and optically displaying the changes in the optical properties of the photoelastic member.

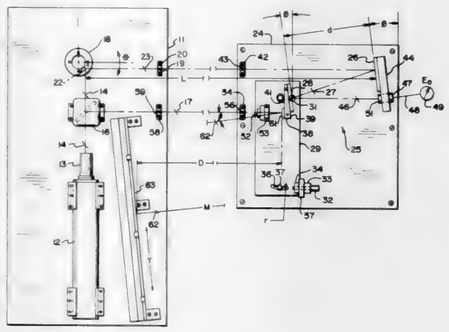
3,966,327

ANGULAR DISPLACEMENT MEASUREMENT APPARATUS

Richard Arthur Hanson, Concord, Calif., assignor to Systron Donner Corporation, Concord, Calif.

Filed Apr. 21, 1975, Ser. No. 569,839
Int. Cl.² G01B *11/26*
U.S. Cl. 356—138 **13 Claims**

1. An angular displacement measurement apparatus for determining small angular motion of a device, comprising a main support frame, an optical table in predetermined spaced relation with said main support frame, a source of electromagnetic energy mounted on said main support frame, means for receiving said electromagnetic energy and for forming a beam for projection toward the device, means adapted to mount the device for receiving said beam and providing an initial reflected beam directed toward said optical table, means for intercepting said initial reflected beam and for amplifying the angular excursion thereof mounted on said optical table, said last named means including a beam position sensor producing



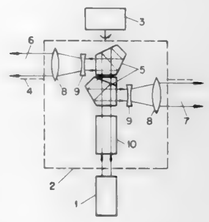
an output signal indicative of a position of impingement of said intercepted initial reflected beam thereon, means for adjusting the angular position of said means for amplifying thereby adjusting said position of impingement so that said output signal assumes a predetermined value, and means for indicating providing a measure of the angular motion of said means for amplifying in terms of the angular motion of said means adapted to mount the device.

3,966,328

DEVICE FOR GENERATING A SPATIAL REFERENCE PLANE

Klas Rudolf Wiklund, Taby, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Continuation of Ser. No. 512,235, Oct. 7, 1974, abandoned. This application Aug. 25, 1975, Ser. No. 607,257
Claims priority, application Sweden, Oct. 16, 1973, 7314028
Int. Cl.² G01B *11/26*
U.S. Cl. 356—138 **9 Claims**



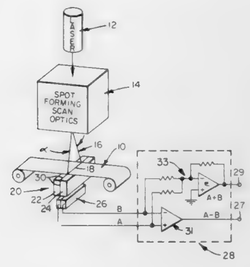
1. Apparatus for visibly indicating a spatial plane comprising a light emitter for generating a beam of light, means for dividing said beam of light into a first and second light beam directed in different directions in a first and second plane respectively, and means for scanning said first and second light beams in said first and second plane, respectively, said first and second planes being parallel to and on opposite sides of said spatial plane to be indicated.

3,966,329

PRECISION OPTICAL BEAM DIVIDER AND POSITION DETECTOR

Baron Christian Dickey, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sept. 24, 1974, Ser. No. 508,918
Int. Cl.² G01B *11/26*
U.S. Cl. 356—152 **10 Claims**



1. A split optical assembly for monitoring the lateral deviation of an optical beam in a light beam system from a selected position, wherein the optical beam is introduced to the assembly via a spot forming lens having a rear nodal plane, and wherein the beam scans along a selected scan path in the region of a recording medium, the assembly comprising the combination of;

single optical means formed of a split optical element for directly receiving the optical beam and for dividing the beam into at least two simultaneous beam parts within the same element, the split optical element defining confronting optical elements defining therebetween a line of intersection corresponding to the selected scan path, whereby the two simultaneous beam parts are formed as the optical beam scans along and is continuously divided by the intersection, said optical elements further having confronting surfaces wherein the line of intersection thereof defines a precise reflective interface with an optical accuracy of the order of 1/20 wave;

said split optical element including an optical surface to selectively image the rear nodal plane of the spot forming lens;

wherein any lateral deviation of the optical beam from the precise reflective interface correspondingly varies the relative sizes and thus the intensities of the two beam parts; and

split transducer means including split diode photodetector means disposed to simultaneously receive respective beam parts and thus the images formed via the split optical element itself as the optical beam scans along the interface, to continuously generate a pair of selective output signals indicative of the relative intensities of the divided beam parts and thus of the lateral deviation of the optical beam relative to the precise reflective interface.

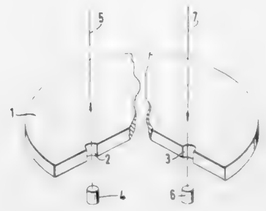
3,966,330

PHONOGRAPH RECORD DETECTING ARRANGEMENT

Keith Douglas Ridler, Fulbourn, and Colin Howard Stanwell-Smith, Balsham, both of England, assignors to Strathearn Audio Limited, Belfast, Northern Ireland

Filed Nov. 27, 1974, Ser. No. 527,636
Claims priority, application United Kingdom, Dec. 4, 1973, 56188/73; July 2, 1974, 29281/74; July 2, 1974, 29282/74
Int. Cl.² G11B *3/60, 17/04*
U.S. Cl. 356—156 **12 Claims**

1. Apparatus for use in detecting the presence of a disc record on a turntable, including means comprising a source of energy and means for detecting the energy from said source, the arrangement being such that at least a part of a path for the energy set up between the source means and the detector means is in a region adjacent the surface of the turntable on



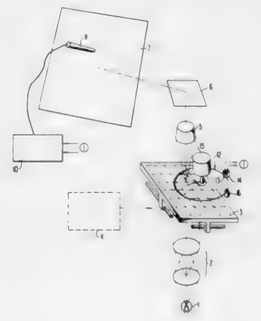
which the the record rests, and that the path is modified by the presence of a disc record on the turntable.

3,966,331

COORDINATE DETECTING APPARATUS FOR OPTICAL PROJECTORS

Masafumi Inuiya, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 27, 1974, Ser. No. 501,105
Claims priority, application Japan, Aug. 27, 1973, 48-95963
Int. Cl.² G01B *9/08*
U.S. Cl. 356—164 **4 Claims**



1. A coordinate detecting apparatus for an optical projector, comprising:

a rotary code disc having thereon a clock pattern, a start line, a θ-pattern and an r-pattern, said clock pattern being provided about the periphery of said disc, said θ-pattern being a half line passing through the rotation center of said disc, said r-pattern including divergent curves passing through rotation center of said disc, the projections of said θ-pattern and said r-pattern being imposed on a picture image on a screen;

a rotating means for rotating said code disc;

a light pen adapted to be used in cooperation with the picture image screen to photoelectrically detect said projections of said θ-pattern and said r-pattern through said screen;

photoelectric means adjacent said code disc for detecting said clock pattern and said start line on the rotating code disc;

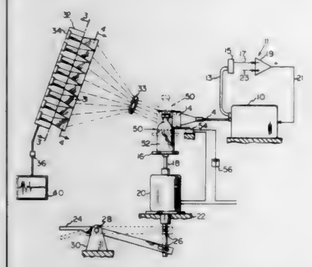
and

an electric circuit responsive to the outputs of said lightpen and said photoelectric means for counting the clock signal from said photoelectric means in response to the detected projections of said θ-pattern and said r-pattern to produce digital polar coordinate signals of the position of said lightpen with respect to the picture image on the screen.

3,966,332
METHOD AND APPARATUS FOR INSPECTING LIQUIDS IN TRANSPARENT CONTAINERS

Julius Z. Knapp, Somerset, and John C. Zeiss, Bloomfield, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Sept. 12, 1974, Ser. No. 505,431
Int. Cl.² G01N 21/24
U.S. Cl. 356—197 37 Claims

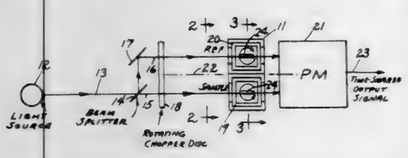


1. A method for inspecting a liquid-filled transparent container, that may have a multiplicity of specular reflections on or in itself, to detect foreign particles in the liquid, said method comprising the steps of:
a. placing the article at an inspection station,
b. rotating said liquid about an axis while holding said container stationary,
c. illuminating said article,
d. dissecting the article image into a plurality of columns which extend from the bottom of the container through the top of the liquid meniscus,
e. monitoring each of said columns with separate sensing means for changes in illumination,
f. electronically translating said changes in illumination into voltage signals,
g. forming a composite signal of said voltage signals,
h. comparing said composite signal to a standard reference signal and based thereon accepting or rejecting said article for particulate contamination;
whereby the image of particulate matter which moves past a column with a saturated sensing means will be detected as it passes through a column with an unsaturated sensing means.

3,966,333
MAGNETIC STIRRER NOISE CANCELLATION SYSTEM

Byron E. Marcus, Columbia, Md., assignor to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Feb. 3, 1975, Ser. No. 546,676
Int. Cl.² G01J 1/10
U.S. Cl. 356—229 14 Claims

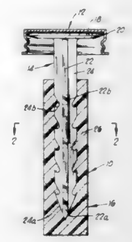


1. In an optical photometer device of the type employing a photosensitive electronic valve device, a sample cuvette, means to direct a light beam to the cuvette and to direct a resultant emergent beam to the electronic valve device, whereby to generate an electrical signal, and magnetic stirrer means including a movable stirrer magnet adjacent said cuvette and electronic valve device and a magnetic driven element in the cuvette, magnetic noise compensation means comprising a movable companion magnet adjacent said stirrer magnet and electronic valve device, means to support the magnetic so that they can be repetitively cyclically moved, the respective magnets having north and south poles, means intercoupling the magnets to move them synchronously in opposite senses, the magnets being mounted on the supporting means so that poles of opposite polarity of the respective magnets move alternately toward and away from each other as the magnets are cyclically moved in said opposite senses, and means to drive said stirrer magnet and companion magnet, whereby their magnetic fields interact in a manner to minimize the magnetic field acting on the electronic valve device.

3,966,334
ADHESIVE APPLICATOR DEVICE AND METHOD

Charles W. Forsberg, Shaker Heights, Ohio, assignor to Indian Head Inc., New York, N.Y.

Filed Feb. 6, 1975, Ser. No. 547,391
Int. Cl.² A46B 15/00
U.S. Cl. 401—9 12 Claims



1. An adhesive applicator device comprising:
an elongated shaft of x-shaped transverse section, said shaft including
a first elongated web having parallel side edges and having a plurality of spaced notches in each of said side edges, said notches each terminating in innermost portions positioned closer to one end of said shaft than is the opening to the respective notch;
a second elongated web intersecting said first web along the longitudinal axis of the shaft to form said x-shaped transverse section, said second web having parallel side edges;
a mounting plate secured to the opposite end of said shaft from said one end; and
a generally cylindrical porous, resilient applicator pad having an x-shaped slot therein along the central axis thereof and extending from one end of the pad over a major portion of the length thereof, said pad receiving said shaft in said slot and resiliently engaging said shaft.

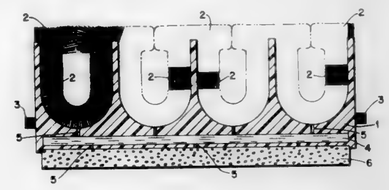
3,966,335
MULTI-DIGITAL SURGICAL SCRUB BRUSH

Daniel J. Abramson, 2800 Greenvale St., Chevy Chase, Md. 20015

Filed May 16, 1975, Ser. No. 578,009
Int. Cl.² A46B 11/00, 15/00
U.S. Cl. 401—10 12 Claims

1. A scrub brush comprising means for scrubbing all surfaces of the four fingers and web spaces simultaneously said means being in the form of four connected aligned finger length troughs which are bristle lined inwardly from all surfaces of the sides and bottoms, having fan shaped bristles projecting in all directions from the top of the trough walls so as to form an outer bristle surface as well as providing inwardly projecting bristles, intermeshing with the fan shaped bristles from the opposite trough wall to complete the bristle encirclement of each finger space, said intermeshed bristles being yieldable to a vertical brushing motion, as well as providing for a horizontal brushing motion, said scrub brush

having attached to the opposite surface to the outer bristles surface, a plastic foam layer and on the other two opposed

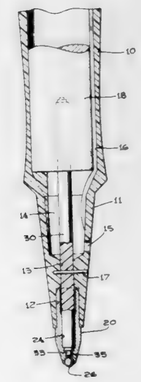


sides means for cleaning the nails, under the nails and the finger tips.

3,966,336
BALL TYPE MARKER CONSTRUCTION WHICH ELIMINATES STICK-SLIP PHENOMENA

Lotfi H. Lotfallah, Hollywood, Calif., assignor to The Gillette Company, Santa Monica, Calif.

Filed May 20, 1974, Ser. No. 471,435
Int. Cl.² B43K 7/10, 5/00
U.S. Cl. 401—209 5 Claims

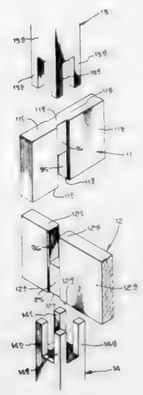


1. In a ball-type marking instrument, wherein a writing ball is rotatably held in a socket of a metallic writing tip element carried by a forward end portion of a thermoplastic composition barrel member, including a rearwardly disposed chamber including a porous reservoir containing ink having an aqueous solution base, the provision of:
means for modifying the stick-slip friction relationships between the ball and its seat while writing and of the provision of means to prevent interruption of writing ability by reason of discontinuity of ink feeding when the instrument is subject to shock,
said means including a feeder rod composed of a bundle of virtually parallel polymeric filaments lightly bonded together, the rear end portion of said rod extending into the ink of said reservoir and a front end face adjacent the rear of the writing ball,
the filaments of said feeder rod being adapted to expand in the presence of ink from the reservoir and to flex and exert a yielding and opposing pressure on the rear of said ball during writing with the frontal surface of said ball,
and means connecting and holding at least the rear portion of said rod in normally fixed and axially immovable relation with respect to the barrel member and ball.

3,966,337
MODULAR POST AND BEAM JOINT

Elsie Crawford, 743 S. Curson, Los Angeles, Calif. 90036

Filed Apr. 18, 1975, Ser. No. 569,268
Int. Cl.² F16D 1/00, 3/00
U.S. Cl. 403—170 3 Claims



1. In a modular post and beam joint, the combination comprising
a. first and second transverse beam members defining an intersection with four corners which are vertically elongated, and
b. primary and secondary post members having end portions which extend vertically endwise oppositely in interfitting relation with said beam members at said intersection,
c. the primary post member end portion containing transverse slots which intersect so as to closely receive upper extents of said transverse beam members, and defining four fingers which project downwardly at said respective four corners,
d. the secondary post member end portion containing transverse slots which intersect so as to closely receive lower extents of said transverse beam members, and defining four fingers which project upwardly at said respective four corners,
e. said primary and secondary post member end portions having equal lengths, said primary post member end portion terminating in adjacent relation to the secondary post member end portion, the post members having sliding frictional interfit with the beam members,
f. said first and second beam members containing vertically extending notches respectively receiving second and first beam member extents at said beam member intersection and concealed inwardly of said fingers, and
g. said first and second beam members having chamfered surfaces that are interengaged inwardly of edges defined by said fingers, said chamfered interengaged surfaces holding said members in rigid assembled relation.

3,966,338
COUPLING PIECE

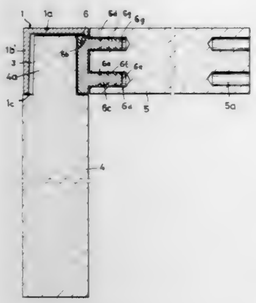
Peter Ghyczy, Kasteel Nieuwenbroek, Beesel, L, Netherlands

Filed July 24, 1975, Ser. No. 598,585
Claims priority, application Germany, Aug. 3, 1974, 7426458
Int. Cl.² A47B 3/06
U.S. Cl. 403—192 6 Claims

1. A coupling member for connecting a vertical member

with at least one horizontal member, particularly for the production of furniture, comprising

a substantially cubical-shaped hollow cup having lateral side walls and a closed cup-bottom and being open on a front side opposite said cup-bottom so as to be placed on a stud of a vertical member,



at least one of said side walls being formed with a slot extending into said open side and adapted to receive a guide web of a peg member, the latter for being secured to a horizontal member and having a bearing plate,

said side walls include unslotted walls, and

guide ribs disposed on an inner side of said unslotted walls relative to said hollow cup.

3,966,339

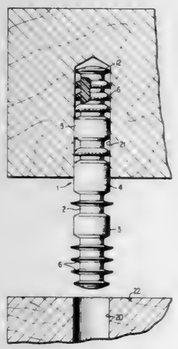
FASTENERS

Borivoj Nemecek, 306 Dorset Square, Hillbrow St. & Harrow Road, Berea, Johannesburg, and Jean M. Lipman, 195 Frances St. East, Observatory, Johannesburg, Transvaal, both of South Africa

Filed Feb. 21, 1975, Ser. No. 551,648

Int. Cl.² F16D *1/00*

U.S. Cl. 403—292 **8 Claims**



1. A dowel fastener of one piece construction formed from suitably high impact strength polymer material comprising a profiled elongated body, the body having a raised central stabilizing formation extending thereform and further raised stabilizing formations which are spaced from the central stabilizing formation and are located towards each end of the body, the said stabilizing formations being operative to stabilize the fastener in a socket therefor, and spaced radially outwardly extendng flexible socket gripping fins extending from and tapering outwardly from the body radially beyond the stabilizing formations and being spaced apart longitudinally on either side of the central stabilizing formation so that the construction is adapted for insertion from either end into a socket of slightly smaller diameter than that of the fins.

3,966,340

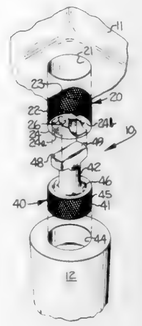
TWIST LOCK CONNECTOR

Max O. Morris, 582 E. Sunset Highway, Issaquah, Wash. 98027

Filed Feb. 27, 1975, Ser. No. 553,796

Int. Cl.² F16B *9/02*; B25G *3/00*; F16D *1/00*

U.S. Cl. 403—353 **11 Claims**



1. A twist lock connector for use in connecting and disconnecting components, such as knock-down furniture components, and being characterized by a construction which provides easy selective progressive friction locking and unlocking thereof to a selected degree by opposite relative right-hand or left-hand rotation of a correlated amount; said connector comprising:

a female member for attachment to one of the components to be assembled and having opposite outer ends and a longitudinally extending passageway therethrough defining a pair of opposing end walls on each side of said passageway on each of said outer ends, said opposing end walls on one of said outer ends each defining opposing camming surfaces thereon; and

an elongate, longitudinally extending male member having opposite end portions, one of said end portions being adapted for attachment to other of the components to be assembled and having an inside face for abutment with said other end of said female member, the other of said end portions comprising a predetermined configuration for extending through and out of said passageway in said female member at said one end and including at least one flange member projecting transversely outwardly therefrom for being positioned outside of said one end of said female member and having an inside wall defining opposing camming surfaces for cooperatively frictionally engaging and progressively frictionally locking to a desired selective degree with said opposing camming surfaces on said end walls of said one end of said female member upon rotation by a selective predetermined force in either a right-hand or left-hand direction of one of said members relative to the other an amount correlated to the desired degree of frictional locking and for unlocking upon relative rotation by at least an equal force in the opposite direction an amount at least equal to the amount utilized for locking said members.

3,966,341

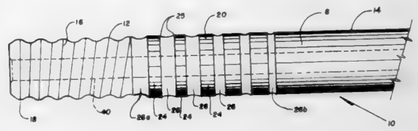
DRILL STEEL

Edward A. Bailey, Newport, and James F. Ordway, West Lebanon, both of N.H., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Dec. 16, 1974, Ser. No. 533,125

Int. Cl.² F16B *7/18*

U.S. Cl. 403—343 **9 Claims**



1. An elongated, generally uniformly cylindrical drill steel for use in the drilling of holes in rock or like hard formations comprising: a full diameter portion; at least one cylindrical end portion being externally threaded along the axial length thereof and being axially spaced from said full diameter portion; the threads of said one end portion being force-bearing rock drill threads; a transition portion being externally grooved and extending between said full diameter portion and said end portion; said transition portion having groove root diameters which increase from a minimum nearest said end portion to a maximum nearest said full diameter portion; the minimum groove root diameter being approximately equal to the root diameter of the rock drill thread adjacent thereto and the maximum groove root diameter being slightly less than the diameter of said full diameter portion; and the axial length of said transition portion being at least equal to the diameter of said full diameter portion.

3,966,342

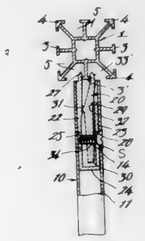
INTERIOR STRUCTURE FRAME ASSEMBLY

Mamoru Moriya, Tokyo, Japan, assignor to Seiki Hanbai Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1974, Ser. No. 517,931

Int. Cl.² E04C *2/42*; B25G *3/00*

U.S. Cl. 403—405 **3 Claims**



1. A beam holder unit adapted to be disposed in a horizontal hollow transverse beam member to secure the said beam to an upright pillar having a plurality of spaced projections about its periphery extending in the longitudinal direction comprising a first holding member of a substantially U-shaped cross-section with one leg of the U longer than the other and provided with an apex thereon, a second holding member of substantially angular cross-section with one end thereof in the U of the first member, aligned holes in the legs of the U and the second member and screw means disposed in said aligned holes whereby the end of the long leg of the first member and the end of the corresponding member of the second member move toward or away from each other as the screw is turned in or out, the shorter leg of the first member being provided with an inwardly extending pawl and the second member being provided with a corresponding recess to engage the pawl, and the second member being provided with an apex to act as a fulcrum when the second member moves.

3,966,343

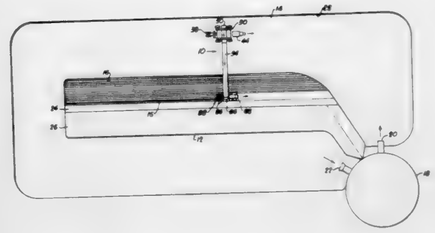
STRIP PAVING MACHINE

Perry J. Dick, and Perry J. Dick, Jr., both of Pittsburgh, Pa., assignors to Trumbull Corporation, Pittsburgh, Pa.

Filed Dec. 16, 1974, Ser. No. 532,772

Int. Cl.² E01C *19/12*

U.S. Cl. 404—101 **12 Claims**



1. A paving machine for paving a sloped surface with a castable material in strips having a preselected configuration comprising,

a mobile receiving hopper for continuously receiving the castable material,

first prime mover means positioned in abutting relation with said receiving hopper for forwardly propelling said receiving hopper,

said receiving hopper having an adjustable outlet for discharging the castable material at a controlled rate as said receiving hopper is forwardly propelled,

conveyor means for transporting the castable material laterally from said receiving hopper, said conveyor means having a receiving end portion positioned in material receiving relation with said receiving hopper outlet and a discharge end portion positioned laterally of said receiving hopper,

frame means pivotally connected at one end portion to said receiving hopper and extending laterally relative to said receiving hopper with said conveyor means positioned on said frame means, said frame means being movably supported on the sloped surface and positioned at the other end portion at a preselected height above the sloped surface,

a feed hopper secured to and positioned below said conveyor discharge end portion for receiving the castable material from said conveyor means,

extruding means positioned in the lower portion of said feed hopper above the sloped surface for spreading the castable material onto the sloped surface in accordance with a preselected form,

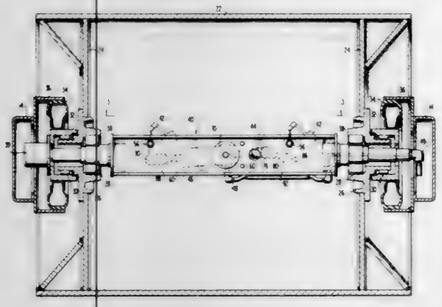
vibrating means secured to the rearward end portion of said feed hopper for compacting the formed castable material, and

second prime mover means connected to said feed hopper for forwardly propelling said feed hopper on the sloped surface with said conveyor means being positioned on said frame means transverse to the direction of travel of said receiving hopper and said feed hopper.

3,966,344
ADJUSTABLE VIBRATORY ROLLER

Edwin J. Haker, Elm Grove; William H. Buelow, and Charles F. Riddle, both of Brookfield, all of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Sept. 29, 1975, Ser. No. 617,605
Int. Cl.² E01C *19/38*
U.S. Cl. 404—117 **4 Claims**

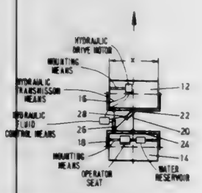


1. Apparatus for compacting soil such as for roadways comprising a roll having central bearings at the ends thereof, means for traversing the roll over the soil, a vibration inducing assembly having end shafts rotatably supported in said bearings and laterally spaced parallel beams, said beams joining said end shafts and having interconnecting trunnions adjacent to said shafts, a weight pivotally mounted on each trunnion and pivotally movable between radially spaced inner and outer positions having reference to the rotational axis of said assembly, each weight having a connecting pin which intersects said axis when the weight is in either of said positions, a hydraulic cylinder located between said connecting pins and supported by and between said beams, said hydraulic cylinder having a double-ended piston rod with its opposite ends respectively connected to the connecting pins of the weights whereby fluid under pressure in one end of said cylinder is effective to move the weights from their outer to their inner positions, and the longitudinal axis of said cylinder and piston rod being substantially coincident with their rotational axis whereby shock and vibration forces applied thereto are minimized.

3,966,345
TANDEM ROAD ROLLER

Ferdinand Kofel, Wallisellen, Switzerland, assignor to Koehring GmbH — Bomag Division, Boppard, Rhine, Germany

Filed Sept. 6, 1974, Ser. No. 503,851
Claims priority, application Germany, Sept. 8, 1973, 2345412
Int. Cl.² E01C *19/26*
U.S. Cl. 404—126 **6 Claims**

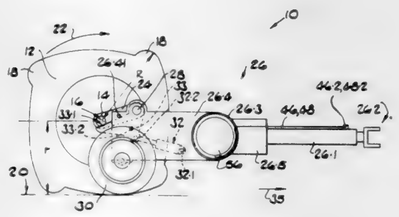


1. In a tandem road roller including a front roll, a rear roll, a roller frame composed of first and second frame members connected together in a jointed manner to form a center pivot steering assembly, with said front roll being rotatably mounted in said first frame member and said rear roll being rotatably mounted in said second frame member, a first piston-cylinder assembly having one end pivotally connected to said first frame member and its other end pivotally connected to said second frame member to form a first link between said frame members for controlling the angular relationship between said frame members to steer said roller, the improvement comprising: a connecting bar member having its opposite ends pivotally connected to respective ones of said frame members to form a second link between said frame members, the pivotal connections of said first and second links to each said frame member being laterally spaced from one another on each said frame member, and a second pistoncylinder assembly pivotally connected between substantially diametrically opposed points of the linkage formed by said first and second links and the portions of said frame members between the pivotal connections of said links and actuable for laterally offsetting said frame members relative to one another in a manner to vary the total width of the rolling track of said roller.

3,966,346
COMPACTOR

Aubrey Ralph Berrange, Pretoria, South Africa, assignor to South African Inventions Development Corporation, Pretoria, South Africa

Filed Dec. 4, 1973, Ser. No. 421,667
Int. Cl.² E01C *19/26*
U.S. Cl. 404—124 **13 Claims**

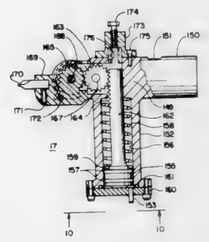


1. A compactor comprising:
a wheeled frame including a pair of laterally spaced ground wheels;
a pair of laterally spaced links pivotally mounted on the frame about a common laterally extending pivot axis;
a roller of non-circular cross-sectional profile rotatably connected to the links about a laterally extending rotational axis spaced from the pivot axis, the roller being disposed between the wheels and being movable between an operative position in which it rests on and can roll along a surface supporting the wheels, and an inoperative position in which it is raised from said surface and supported by the frame; and
elevator means mounted on the frame and engageable with the roller whereby the roller is movable between its operative and inoperative positions,
the operative position being such that the wheels are supported by the surface to carry the weight of the frame during rolling of the roller, the roller in its operative position being substantially freely pivotable via the links relative to the frame and carrying substantially none of the weight of the frame.

3,966,347
HYDRAULICALLY ACTUATED CUTTING TOOL

Sanders Chapman Watson, 1358 Roller Coaster Road, Tucson, Ariz. 85704

Division of Ser. No. 424,328, Dec. 13, 1973, Pat. No. 3,937,586. This application Aug. 4, 1975, Ser. No. 601,631
Int. Cl.² B23B *29/034, 47/22*
U.S. Cl. 408—180 **8 Claims**



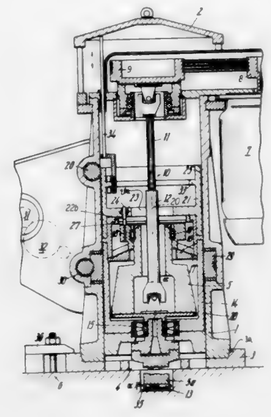
1. In a machine tool ensemble having a machine tool depending from the collet of a rigid spindle machine for rotation therewith and for selectively developing a source of hydraulic fluid under pressure, which fluid exerts a force to laterally displace a carriage mounted within the machine tool, a cutting tool for selectively pivoting a cutting implement, said cutting tool comprising in combination:
a. a holder extending from said cutting tool for engaging the carriage;
b. a piston and cylinder assembly disposed within said cutting tool for effecting movement of said piston commensurate with the pressure within said cylinder;
c. conduit means interconnecting the source of hydraulic fluid with said cylinder for conveying hydraulic fluid into said cylinder to effect translation of said piston;
d. a rack extending from said piston for movement therewith;
e. a housing for supporting the cutting implement, said housing being pivotally connected to said cutting tool to pivot with respect to said holder;
f. gear means interconnecting said housing and said rack for pivoting said housing from an initial position in response to translatory movement of said rack; and
g. means for independently varying the degree and rate of movement of the carriage and the degree and rate of pivotal movement of said housing; and means within the machine tool for generating the source of hydraulic pressure for selectively laterally displacing said cutting tool with respect to the rotation axis of the rigid spindle machine and for selectively pivotally displacing the cutting implement with respect to said holder.

3,966,348
DEVICE FOR TAPPING BORES

Karl Burgsmüller, Haus Hainberg, 3350 Kreiensen, Germany

Filed Oct. 11, 1974, Ser. No. 514,325
Int. Cl.² B23G *1/04, 1/48*
U.S. Cl. 408—180 **19 Claims**

1. A device for tapping bores, especially blind bores, comprising a tubular housing; a spindle journalled at one end thereof inside said housing and having free the other end thereof, said spindle being rotatable in, and axially shiftable along the axis of, said housing; a transversely extending cutter provided at the free end of said spindle; an opening in the bottom of said housing permitting the free end of said spindle to project outside the housing when the spindle is shifted in axial direction; means engageable with the bottom of said housing arranged to align the axis of said housing with the axis of said bore and thus to secure a correct axial introduction of the free end of said spindle into said bore so that said cutter becomes located in the bore with clearance from the bore wall; means for rotating said spindle; means inside said housing cooperating with said spindle for tilting the same to a position in which in extends skew to the axis of the bore and engages the wall thereof to cut, when the spindle is rotated,

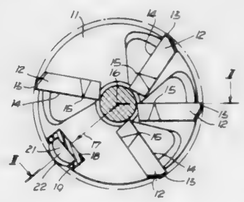


into the bore wall; and means inside said housing providing for gradually axially retracting the rotating spindle outwardly of said bore in dependence on the rotation speed of said spindle so that the rotation of the spindle combines with said retraction and the cutter cuts ascending threads into the bore wall.

3,966,349
ROTATING CUTTER TOOL

Mohamed Osman, and Bernd Greuner, both of Verden, Germany, assignors to Gebrueder Heller, Verden, Germany

Filed Mar. 31, 1975, Ser. No. 563,523
Claims priority, application Germany, Apr. 3, 1974, 2416157
Int. Cl.² B23B *41/02, 51/04*
U.S. Cl. 408—204 **7 Claims**



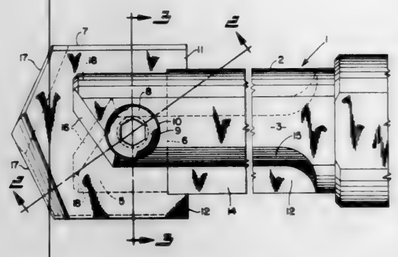
1. A cutter tool for making a hole by rotation about an axis comprising a tool body, at least two cutting blades with cutting edges angled with respect to each other, and a support strip, said cutting blades and said support strip forming a support surface defining a slot for a lubricant film between said support surface and the wall of said hole, so that said support surface is supported on said wall of said hole by said film during the cutting operation, wherein said cutting blades are arranged such that, the resultant reaction force generated by the cutting forces produced by said cutting edges during the cutting operation is directed toward said support strip and has such a magnitude, such that said lubricant film supports said support surface of said support strip without breaking away.

3,966,350

SPADE DRILL

Milton L. Benjamin, Chagrin Falls, Ohio, assignor to Erickson Tool Company, Solon, Ohio

Filed Feb. 24, 1975, Ser. No. 552,696
Int. Cl.² B23B *51/00*
U.S. Cl. 408—233 **4 Claims**



1. In a spade drill wherein a holder has a slot extending diametrically across one end thereof, and a blade is clamped in said slot by screw means with its cutting edges disposed axially forwardly of the open end of said slot and with its other end in abutting engagement with the bottom of said slot, the improvement which comprises oppositely beveled straight and flat end portions on said holder which are inclined with respect to the adjacent sides of said blade and which respectively extend from the open end of said slot from a substantial distance beyond the longitudinal center line of said blade angularly toward the bottom of said slot to the other side of said longitudinal center line thus to form with the adjacent sides of said blade passages of obtuse angle cross section which diverge with respect to said cutting edges for flow of chips from said cutting edges when the spade drill is in use; said inclined beveled end portions leaving narrow remaining end portions which support the respective cutting edges against torque load from the bottom of said slot to the open end thereof at said remaining end portions; said holder having longitudinally extending grooves which are of obtuse angle cross section with one side of said grooves being substantially flush with the respective side faces of said blade and with the other side of said grooves intersecting said beveled end portions to form longitudinal continuations of said passages.

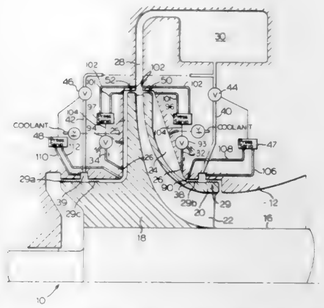
3,966,351

DRAG REDUCTION SYSTEM IN SHROUDED TURBO MACHINE

Robert Stanley Sproule, 4731 Connaught Ave., Montreal, Quebec, Canada (H4B 1X5)

Filed May 15, 1974, Ser. No. 470,150
Int. Cl.² F01D *25/18, 25/22*
U.S. Cl. 415—110 **3 Claims**

1. A rotary machine to effect a useful energy exchange by changes in pressure of a working gas passing through the machine, comprising a rotor rotatably mounted in a housing having passages therethrough arranged in flow connecting relation with passages extending through the rotor for the passage of said working gas in energy exchanging relation with the machine rotor, said rotor comprising a rotatable shroud having blade members extending from a radially inner surface of the shroud, the shroud having a first, radially inner boundary and second, radially outer boundary defining an annular surface therebetween, a first gas seal means adjacent said first boundary and a second gas seal means adjacent said second boundary to substantially isolate an annular zone surrounding the shroud, displacer gas supply means connected to the zone to provide low density displacer gas thereto, selected from the group consisting of hydrogen and helium, to reduce parasitic gas drag acting on the shroud, a gas annulus within the zone located adjacent the first seal means having gas supply means connected thereto including inlet flow control valve means to regulate the gas supply, a gas collection gallery within the zone adjacent said second seal to collect said displacer gas together



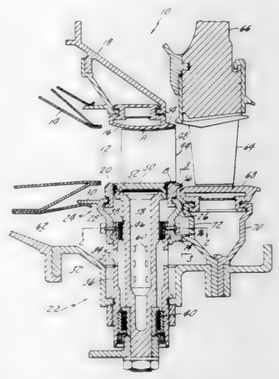
with gas entering through said second seal and gas exhaust passage means connected to said gallery having an exhaust flow control valve connected therewith to regulate the passage of gas including said displacer gas from said zone.

3,966,352

VARIABLE AREA TURBINE

Loren Hawdon White, East Hartford, and John Herman Young, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed June 30, 1975, Ser. No. 591,554
Int. Cl.² F01D *5/08*
U.S. Cl. 415—115 **10 Claims**



1. In a gas turbine engine of the type having an inner shroud and an outer shroud which radially bound a flow path for the working medium gases in the engine, a variable area nozzle including a cantilevered guide vane which is rotatable and has an airfoil section overhanging a portion of the outer shroud, wherein the improvement comprises:

means for controlling the radial clearance between the overhung vane and the opposing outer shroud including

a bearing cartridge having a cylindrical bushing which axially and radially positions the rotatable vane,

an annular ring which extends circumferentially about the engine and which is attached to the bearing cartridge, and

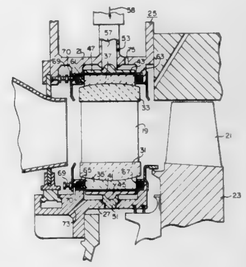
means for attaching the outer shroud to the annular ring to axially and radially position the outer shroud thereby fixing the radial position of said shroud with respect to said rotatable vane.

3,966,353

CERAMIC-TO-METAL (OR CERAMIC) CUSHION/SEAL FOR USE WITH THREE PIECE CERAMIC STATIONARY VANE ASSEMBLY

Claude R. Booher, Jr., West Chester, Pa., and Thomas J. Rahaim, Claymont, Del., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 21, 1975, Ser. No. 551,939
Int. Cl.² F01D *9/02*
U.S. Cl. 415—115 **6 Claims**



1. A ceramic vane assembly for an axial flow gas turbine, said assembly comprising:

an array of stationary ceramic vanes,

radially inner and radially outer ceramic end caps, said end caps having recesses for receiving and locating at least one of said vanes,

a plurality of radially outer metal shoes disposed radially outwardly of said radially outer end caps,

a plurality of radially inner-metal shoes disposed radially inwardly of said radially inner end caps,

radially inner and outer cushioning members disposed, respectively, between said inner and outer shoes and said inner and outer end caps,

radially inner insulator members disposed between said radially inner end caps and said radially inner cusioning members,

radially outer insulator members disposed between said radially outer end caps and said radially outer cushioning members,

radially inner and outer generally arcuate support members having a U-shaped portion, the legs of the U being disposed to extend generally radially for receiving the shoes and cushioning members, the inner portions of the legs having arcuate grooves,

upstream and downstream axial cushioning members disposed in said grooves, and

means for applying a radially inwardly directed force on said shoes to hold said end caps and vanes in position in the assembly.

3,966,354

THERMAL ACTUATED VALVE FOR CLEARANCE CONTROL

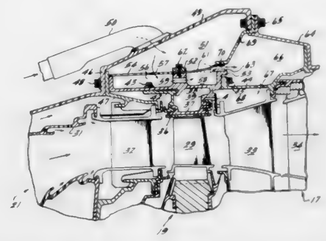
William R. Patterson, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 19, 1974, Ser. No. 534,551
Int. Cl.² F01D *25/12, 25/14*
U.S. Cl. 415—116 **13 Claims**

1. An improved gas turbomachine of the type having a relatively high thermal inertia rotor disposed in close clearance relationship within a stator for operation over a range of temperatures and speeds wherein the improvement comprises:

a. a shroud surrounding a portion of the rotor;

b. a shroud support for positioning said shroud radially with respect to said rotor, said shroud support having a relatively low thermal inertia and adapted to grow radially outward during periods of machine acceleration and shrink during periods of deceleration; and



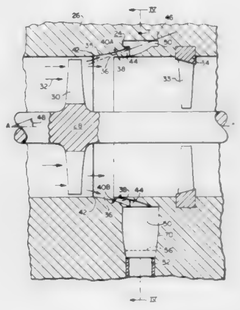
c. valve means responsive to machine acceleration and deceleration for directing a relatively hot fluid medium over said shroud support during periods of machine acceleration and away from said shroud support during periods of machine deceleration so that said shroud support has a relatively fast growth rate and a relatively slow shrinkage rate.

3,966,355

STEAM TURBINE EXTRACTION SYSTEM

Mario F. Pierpoline, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 24, 1975, Ser. No. 589,978
Int. Cl.² F01D *17/00*
U.S. Cl. 415—144 **13 Claims**



1. An extraction system for extracting steam at a predetermined pressure from a steam turbine apparatus for use within an associated user apparatus in a circumferentially uniform manner, the turbine having a rotor with an axis therethrough with a plurality of arrays of rotating blades thereon, a casing disposed circumferentially about said rotor, a plurality of arrays of stationary blades dependent from the casing and alternately disposed axially between adjacent arrays of rotating blades, the alternating arrays of stationary and rotating blades cooperating to define an annular blade path, the extraction system comprising:

an extraction orifice extending circumferentially about the casing, said orifice being disposed axially intermediate an array of rotating blades and the next-axially adjacent array of stationary blades, the orifice having an inlet opening communicating with a throat portion, the throat portion having a dimension that varies from a maximum to a minimum dimension about the circumference of the blade path,

an extraction manifold disposed circumferentially about the casing and communicating with the extraction throat, and,

an extraction pipe connecting the extraction manifold to the associated user apparatus,

the dimension of the throat being sized so that the maximum throat dimension occurs at the point on the circumference of the blade path circumferentially opposite the point of attachment of the manifold with the extraction pipe.

3,966,356

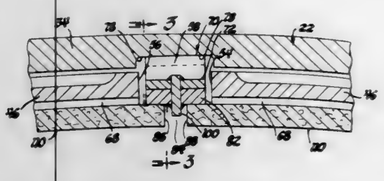
BLADE TIP SEAL MOUNT

John A. Irwin, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 22, 1975, Ser. No. 615,222

Int. Cl.² F01D *11/08*; **F04D** *17/08*

U.S. Cl. 415—217 **3 Claims**



1. A stationary annular rotor blade tip seal for a turbomachine comprising, in combination, an annular support extending circumferentially around the rotor blades, a seal mount ring composed of a plural number of seal mount segments retained by the support, the circumferential ends of adjacent segments being justaposed with gaps between the segments, the axial edges of the segments having rebent flanges defining a circumferentially extending slot, a low density seal insert mounted in the slot in each segment and retained by the flanges, resilient means for biasing the insert against the said rebent flanges, and strips mounted on the juxtaposed ends of the segments bridging the gaps between the segments, the strips including portions extending between adjacent inserts to retain the inserts against circumferential movement.

3,966,357

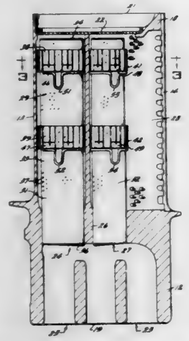
BLADE BAFFLE DAMPER

Robert J. Corsmeier, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Sept. 25, 1974, Ser. No. 509,031

Int. Cl.² F01D *5/18*

U.S. Cl. 416—97 R **6 Claims**



1. An improved turbomachinery blade of the type having a hollow cavity defining an internal wall surface, a cooling insert adapted to be positioned within said cavity, and means for delivering coolant to the interior of said insert, wherein the improvement comprises:

spacing means disposed between said insert and said wall surface, said spacing means having a beveled portion which forms an acute angle with said wall surface; and

a vibration damper positioned between said insert and said internal wall surface, said damper adapted to move radially outward over said beveled portion when acted on by centrifugal force to wedge between said spacing means and said internal wall surface so as to substantially preclude motion of said insert within said cavity during rotation of the blade.

3,966,358

PUMP ASSEMBLY

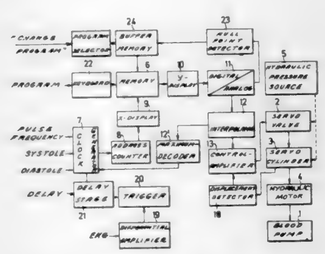
Horst Peter Heimes, Aachen, and Helmut Reul, Duren, both of Germany, assignors to Medac Gesellschaft fur Klinische Spezialpraparate mbH, Germany

Filed May 17, 1974, Ser. No. 471,057

Claims priority, application Germany, Nov. 9, 1973, 2355966

Int. Cl.² F04B *49/06*

U.S. Cl. 417—12 **18 Claims**



1. A pump assembly comprising

a pump, said pump having a piston therein,

a programmable memory for storing a preselected amplitude, frequency and wave-shape variable fluid pumping characteristic,

means for reading out the fluid pumping program stored in said memory,

means for controlling the displacement of said piston in said pump to provide a fluid pumping characteristic in accordance with said stored program,

means for comparing the position of said pump piston with the position thereof established by said stored program, and

means responsive to said comparing means for controlling said pump piston to correct any deviation of the piston position from the position established by said stored program.

3,966,359

APPARATUS FOR BODY HYGIENE

Philippe-Guy Woog, Geneva, Switzerland, assignor to Les Produits Associes, SA, Geneva, Switzerland

Filed Feb. 28, 1975, Ser. No. 554,175

Claims priority, application Switzerland, Mar. 1, 1974, 2895/74

Int. Cl.² F04B *49/02*, *49/08*

U.S. Cl. 417—38 **9 Claims**

1. In apparatus for body hygiene comprising

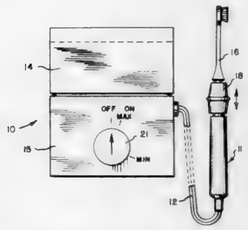
a. an hydraulic pump driven by an electric motor and adapted to produce liquid pressure pulses,

b. an electric switch for said motor,

c. and a hand appliance supplied with said liquid pressure pulses and containing an hydraulic motor actuable by said pulses to drive a working attachment, particularly a toothbrush attachment, and means for alternatively supplying said pulses to a liquid jet attachment,

d. said pump including pressure regulator means for controlling the pressure of said pulses progressively between maximum and minimum values,

e. a manually actuable control member coupled with said electric switch and pressure regulating means for turning said electric motor on at approximately the position of



the regulator means corresponding to maximum pump pulse pressure upon movement of the control member in one direction from the off position thereof and maintaining the motor on upon further movement of the control member toward minimum pump pressure, and for turning the motor off upon movement of the control member in the opposite direction past a position corresponding to approximately maximum pump pulse pressure to said off position.

3,966,360

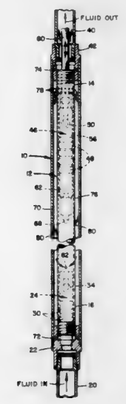
CONTINUOUS-FLOW FLUID PUMP

James L. Greene, P.O. Box 171, Columbia, Ky. 42728

Filed Jan. 27, 1975, Ser. No. 544,512

Int. Cl.² F04B *39/02*, *21/04*; **F15B** *21/04*

U.S. Cl. 417—53 **6 Claims**



1. A fluid pump for subsurface operation, comprising:

a. a pump casing having first and second end portions;

b. a pumping member disposed for movement in said pump casing for pumping fluid into said pump casing through said second end portion and out of said pump casing through said first end portion;

c. an outer casing disposed about said pump casing so as to form a reservoir between said pump casing and said outer casing;

d. at least one valveless opening in said pump casing disposed proximate said first end portion of said pump casing for permitting fluid to flow from said pump casing into said reservoir;

e. at least one valveless opening in said pump casing disposed proximate said second end portion of said pump casing for permitting fluid to flow from said reservoir into said pump casing, the total cross-sectional area of the valveless opening or openings in said pump casing disposed proximate said second end portion of said pump casing being less than the total cross-sectional area of the valveless opening or openings in said pump casing disposed proximate said first end portion of said pump casing, whereby a portion of the pumped fluid may be recirculated between the interior of said pump casing and said reservoir to lubricate continuously said pumping member upon movement thereof and whereby the pumped fluid is permitted to enter said pump casing from said reservoir at a lesser rate than the pumped fluid is permitted to enter said reservoir from said pump casing.

3,966,361

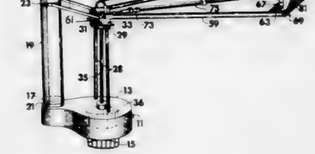
TRACTOR MOUNTABLE ADJUSTABLE HIGH VOLUME WATER PUMP

Bennie L. House, P. O. 577, Hickory Ridge, Ark. 72347

Filed May 19, 1975, Ser. No. 578,720

Int. Cl.² F04B *17/06*

U.S. Cl. 417—231 **9 Claims**



1. A portable water pump adapted to attach to the three-point hitch of a tractor and be powered by the tractor power take-off comprising:

an immersible centrifugal pump impeller and housing therefor,

an outlet conduit extending upwardly from said housing,

a vertical elongated support connected at its lower end to said housing,

a rigid shaft connected to said impeller and extending upwardly from said housing,

a right angle drive unit connected rigidly to the upper end of said support and in driving relation with the upper end of said shaft,

a pair of horizontal arms,

pivot means for connecting said support at one end of said horizontal arms with pivotal movement about a horizontal axis, said axis being above the center of gravity of the entire structure connected to said support including said pump impeller and housing, rigid shaft, and gear drive unit,

a mounting frame rigidly connected to the other ends of said arms with said other ends in spaced apart relation,

coupling means for attaching said mounting frame and horizontal arms to the three-point hitch mechanism of said tractor,

a variable length shaft having a universal joint at one end connected to the input shaft of said gear drive unit and a universal joint at the other end adapted to be connected to the power take-off of said tractor, and

means for adjusting and maintaining the pivotal position of said pump housing and support including,

a brace connected with one end in fixed relation to said mounting frame and horizontal arms and the other end

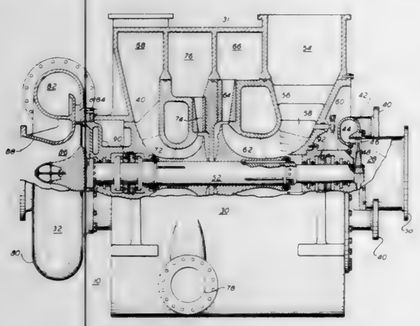
pivotally attached in fixed relation to said vertical elongated support at a point spaced from said horizontal axis about which said support pivots, and

a means for adjusting and maintaining the length of said brace to position said pump housing and support.

3,966,362
PROCESS AIR COMPRESSION SYSTEM

Hans D. Linhardt, Costa Mesa, Calif., assignor to Airco, Inc., Montvale, N.J.

Filed Aug. 24, 1973, Ser. No. 391,117
Int. Cl.² F04B *17/06*
U.S. Cl. 417—374 **7 Claims**



1. A pre-assembled air compressor module comprising in combination:

a. a portable support frame;

b. a common unitary main shaft, rotatably supported with respect to said frame by a pair of spaced bearings;

c. a steam turbine on one end of said shaft and outboard of one of said pair of spaced bearings for driving said shaft;

d. a radial inflow hot gas expander having a pressure ratio of at least 5:1 and being located on the other end of said shaft and outboard of the other of said pair of spaced bearings, adapted to expand hot expandable gas for driving said shaft;

e. a multi-stage high pressure ratio compressor on said shaft intermediate said steam turbine and said hot gas expander and between said pair of spaced bearings adapted to be driven by said shaft at least one stage of said compressor having a pressure ratio in excess of about 4:1;

f. said module thereby comprising an intergrated unit requiring no on-site alignment or assembly of elements (b) through (e); and

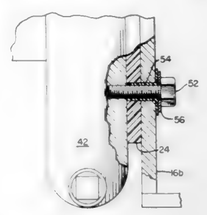
g. said module having a compressor horsepower rating of at least 1500 HP.

3,966,363
PUMPING ASSEMBLY

William N. Rowley, Palos Verdes Estates, and Gordon F. Ehret, Alhambra, both of Calif., assignors to Weil-McLain Co., Inc., El Monte, Calif.

Filed Sept. 25, 1974, Ser. No. 509,121
Int. Cl.² F04B *17/00, 35/04*
U.S. Cl. 417—423 R **7 Claims**

1. A pump assembly comprising a pump housing defining an opening, an electrical motor having an output shaft, means for supporting said motor relative to said housing with a portion of said output shaft extending through said opening, a seal plate of a dielectric material, at least a portion of said seal plate extending between said housing and said support means for insulating said housing from said support means, a plurality of sleeves of dielectric material extending through corresponding openings in said seal plate and said support means, a bolt extending through each sleeve and into said housing to connect said seal plate and said support means to said housing, said seal plate defining an opening for receiving said shaft, and

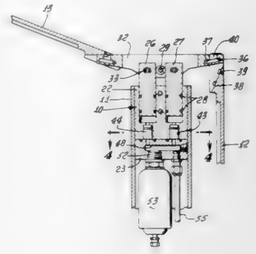


an impeller disposed in said housing and drivingly connected to said shaft to pump fluid through said housing.

3,966,364
PISTON PUMP

Wilfred H. Bachle, Long Beach; John V. Peck, Anaheim; Thomas D. Stantial, Carpinteria, and Richard H. Williams, Corona del Mar, all of Calif., assignors to Oxy Metal Industries (Intra) Inc., Warren, Mich.

Filed Dec. 24, 1974, Ser. No. 536,232
Int. Cl.² F04B *25/04*
U.S. Cl. 417—539 **1 Claim**



1. In a single action positive displacement pump, the combination of:

a generally cylindrical pump housing having a cylinder section with first and second axially extending parallel piston openings extending through one end and an inlet and an outlet passage extending from each cylinder opening through the other end of said cylinder section, and a separate manifold section secured to said cylinder section with inlet and outlet openings communicating with said passages;

first and second pistons in the form of solid cylinders having drive ends and valve ends and slidably positioned in said first and second piston openings respectively, with said drive ends projecting out of said one end of said housing;

piston drive means including a rocker arm mounted on said housing between said projecting pistons and directly connected to said drive ends outside said housing;

a first inlet check valve and a first outlet check valve in corresponding passages in said cylinder section in communication with said first piston opening;

a second inlet check valve and a second outlet check valve in corresponding passages in said cylinder section in communication with said second piston opening;

inlet passage means in said manifold section connecting said inlet openings to said inlet check valves;

outlet passage means in said manifold section connecting said outlet openings to said outlet check valves;

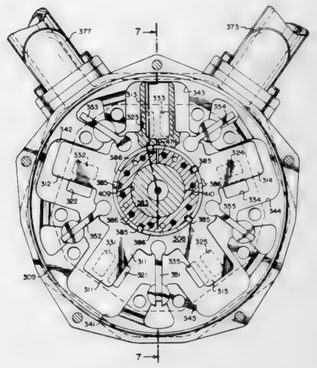
means defining an accumulator chamber communicating with one of said passages in said manifold section; and

outer housing means surrounding said cylinder section, manifold section and accumulator.

3,966,365
HYDRAULIC POWER TRANSMISSION AND BRAKING SYSTEM FOR VEHICLES

Bernhard Ulrich, Jr., Corpus Christi, Tex., assignor to Tex Trans Inc., Corpus Christi, Tex.

Division of Ser. No. 305,513, Nov. 10, 1972, Pat. No. 3,827,239. This application July 3, 1974, Ser. No. 485,632
Int. Cl.² F01C *21/00*
U.S. Cl. 418—29 **16 Claims**



1. A variable displacement hydraulic machine comprising:

a cylindrical casing having a pair of parallel spaced end walls and a plurality of circumferentially spaced chambers, each chamber having a pair of hydraulic fluid ports in an end wall thereof;

an orbiting member disposed within said cylindrical casing, said orbiting member having a pair of parallel spaced surfaces for intimately contacting said end walls of said cylindrical casing, and a plurality of legs extending radially into said circumferentially spaced chambers for covering and uncovering said hydraulic fluid ports during the orbiting motion of said orbiting member;

a plurality of movable vanes connecting said orbiting member at points intermediate said legs to said cylindrical casing at points intermediate said chambers, said vanes intimately contacting said end walls of said cylindrical casing to provide fluid seals between adjacent chambers;

an eccentric shaft having a first end and a second end, the first end of said eccentric shaft being rotatably mounted at a point on the axis of said cylindrical casing, said orbiting member being journaled on said eccentric shaft at a point intermediate its ends; and

variable eccentric carrier means rotatably mounted on the axis of said cylindrical casing for rotatably engaging said second end of said eccentric shaft at a variable radius from the axis of said cylindrical casing so as to cause said second end of said eccentric shaft to follow an orbital path about the axis of said cylindrical casing whereby variation of the radius of said orbital path varies the radius of the orbital path of said orbiting member thus varying the displacement of said hydraulic machine.

3,966,366
DEFLECTION COMPENSATION FOR SLANT AXIS ROTARY MECHANISMS

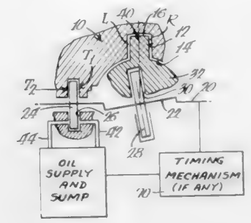
Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 25, 1975, Ser. No. 616,787
Int. Cl.² F04B *1/16*
U.S. Cl. 418—53 **11 Claims**

1. A slant axis rotary mechanism comprising:

a housing defining an operating chamber;

a shaft journalled in said housing and having an angularly offset portion within said chamber, said shaft being slightly axially movable with respect to said housing;



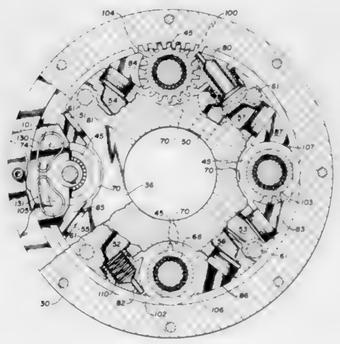
a rotor within said chamber and journalled on said angularly offset portion;

and means for cyclically axially oscillating said shaft during operation of said mechanism to compensate for deflection during such operation.

3,966,367
HYDRAULIC MOTOR OR PUMP WITH MOVABLE WEDGE

Lewis C. Erickson, 3328 E. Superior St., Duluth, Minn. 55804

Filed Jan. 16, 1975, Ser. No. 541,402
Int. Cl.² F01C *19/04, 19/08, 1/10;* **F04C** *1/06*
U.S. Cl. 418—58 **21 Claims**



1. In a fluid motor or pump, the combination comprising:

internal ring gear means operably secured within a housing;

pinion gear means rotatably mounted to mesh with said ring gear means;

wedge means, having a shape conforming to the outer peripheries of said ring and pinion gears to provide a sealing effect and pressure or suction chamber, said wedge means having a piston end and porting in the tip thereof communicating with said chamber forming a hydrostatic pressure means having a hydrostatic pressure in an operable direction to overcome pressure from said chamber;

supporting means within said housing supporting said pinion gear means and supporting said wedge means for slidable movement;

means for delivering fluid under pressure from a source to said pressure chamber; and,

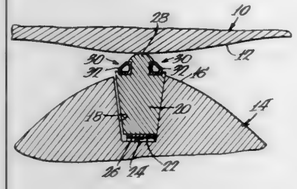
means for returning fluid to said source.

3,966,368

INSULATED SEAL FOR ENGINES

Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 15, 1975, Ser. No. 541,183
Int. Cl.² F01C *21/06, 19/04;* **F16J** *9/12*
U.S. Cl. 418—83 **7 Claims**



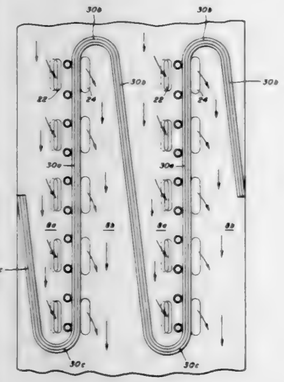
1. In an internal combustion engine including a housing having an interior wall defining a combustion chamber, a member movable within said housing and subjected to hot gases of combustion and a seal mounted on said member for movement therewith and having a surface in engagement with said interior wall to establish a seal between said member and said interior wall, the improvement comprising at least one insulating member carried by said seal spaced from but adjacent said surface and in heat transfer resisting relation to said combustion chamber to resist heat transfer from said hot gases of combustion to said seal and said surface thereof whereby said seal may run at a cooler operating temperature to reduce wear.

3,966,369

INLET AND OUTLET PORTS AND SEALING MEANS FOR A FLUID DRIVEN MOTOR

Marion A. Garrison, Denver, Colo., assignor to Empire Oil Tool Company, Denver, Colo.

Filed Mar. 6, 1975, Ser. No. 556,079
Int. Cl.² F04C *27/00*
U.S. Cl. 418—149 **10 Claims**



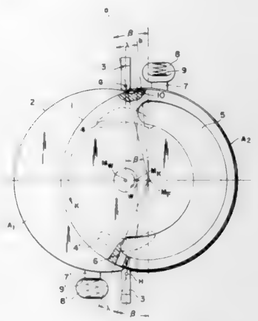
6. In a motor or pump comprising a housing having a cylindrical bore therein, a rotor mounted coaxially for rotation in said bore, inlet port means opening through said housing, and outlet port means opening through said housing and spaced circumferentially from said inlet port means; the improvement comprising locating said inlet and outlet port means in the same longitudinal location alternately in circumferentially spaced relationship about the housing and providing sealing means externally of said housing isolating said inlet port means from said outlet port means and from one end of said housing and isolating said outlet port means from the other end of said housing.

3,966,370

ROTARY PISTON MACHINE FOR TRANSPORTING LIQUID OR GASEOUS MEDIA

Franz Huf, Constance, Germany, assignor to Dornier System GmbH, Germany

Filed Jan. 29, 1975, Ser. No. 545,185
Claims priority, application Germany, Feb. 5, 1974, 2405308
Int. Cl.² F04C *29/08*
U.S. Cl. 418—183 **12 Claims**



1. In a rotary piston machine of trochoidal construction for transporting a fluid medium, having working chambers formed between a trochoidal piston and a housing corresponding to the coordinated outer envelope curve, said chambers being separated from each other by radial seals in the housing, wherein the medium is supplied through openings within the inner envelope curve in the housing side wall and in a recess in the piston and passes from the recess by way of control openings in the peripheral piston surface to the working chamber, and having outlet openings in the housing closed-off by check valves,

the improvement comprising

a. the piston has the form of a saddle-free epitrochoid 1:1,

b. the supply openings in the housing side wall are diametrically opposed and in the area of the radial seals,

c. the piston recess is in the front piston wall and extends over such a portion of the piston that during rotation, continuously at least one supply opening and, in the dead-center position of the piston, both diametrically opposed supply openings are in communication with said recess, and

d. in the dead-center position of the piston, the control openings are positioned immediately ahead of one radial seal shortly prior to the passage of said openings from the suction side to the pressure side.

3,966,371

ROTARY, POSITIVE DISPLACEMENT PROGRESSING CAVITY DEVICE

Lawrence W. Berzanske, 8000 Garfield Road, Mentor, Ohio 44060

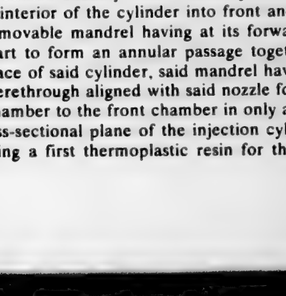
Continuation of Ser. No. 412,205, Nov. 2, 1973, abandoned. This application Feb. 19, 1975, Ser. No. 551,028
Int. Cl.² F04C *17/04*
U.S. Cl. 418—197 **3 Claims**

1. A rotary, positive displacement, progressing cavity device comprising:

a fluid inlet and a fluid outlet in spaced relation relative to a central flow axis,

four inter-engaging helical rotors symmetrically spaced around said central flow axis and mounted for rotation about their respective axes of symmetry, said rotors, as viewed in transverse cross section, defining four, two-lobed plane figures with curved tips, each in the same orientation relative to a radial line from its axis to said central flow axis and in engagement with the two adjacent plane figures throughout the synchronized rotation thereof, to define therebetween an enclosed region that varies from a maximum area when said plane figures are oriented perpendicular to their respective radial line to a minimum area when said plane figures are oriented in alignment with said radial line.

each rotor having a helical surface form generated by translating its respective two-lobed plane figure along its respective rotor axis while rotating said plane figure thereabout, and



a central sealing element mounted for free rotation about said flow axis and having an axial twist with a pitch corresponding to the pitch of the helices formed in said rotors,

said sealing element as viewed in transverse cross section defining four concave sides with radii corresponding to the curved tips of said rotors to provide a tight seal therewith at axial locations whereat said two-lobed plane figures are oriented in alignment with their respective radial lines,

whereby said rotors and said sealing element define therebetween closed cavities symmetrical about said axis and in aligned endwise relation, that progress axially along said central flow axis from said inlet to said outlet in response to synchronized rotation of said rotors and said sealing element.

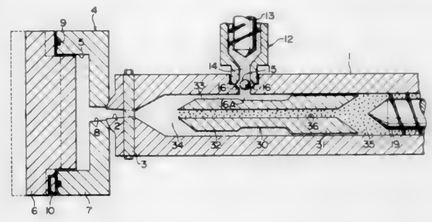
3,966,372

INJECTION MOLDING APPARATUS FOR FORMING A COMPOSITE, FOAM-SKIN, ARTICLE

Akio Yasuike; Takehiro Shibuya; Kaoru Toyouchi, all of Yokohama, and Susumu Imai, Kanagawa, all of Japan, assignors to Asahi-Dow Limited, Japan

Filed May 16, 1974, Ser. No. 470,662
Claims priority, application Japan, May 28, 1973, 48-58706; May 29, 1973, 48-59331; June 19, 1973, 48-68299; Dec. 3, 1973, 48-134284; Jan. 29, 1974, 49-12013; Apr. 15, 1974, 49-42060
Int. Cl.² B29D *27/00;* **B29E** *3/00*
U.S. Cl. 425—4 R **6 Claims**

1. An apparatus for injection molding an article having a sandwich construction comprising: mold means having a mold cavity, an injection cylinder having at its front end a nozzle connected with the mold cavity of said mold means, a movable mandrel mounted slidably within said injection cylinder to divide the interior of the cylinder into front and rear chambers, said movable mandrel having at its forward portion a reduced part to form an annular passage together with the inside surface of said cylinder, said mandrel having a central passage therethrough aligned with said nozzle for connecting the rear chamber to the front chamber in only a central area of the cross-sectional plane of the injection cylinder, means for supplying a first thermoplastic resin for the shell of an article to the front chamber, said supplying means being connected with said annular passage, and means for charging a



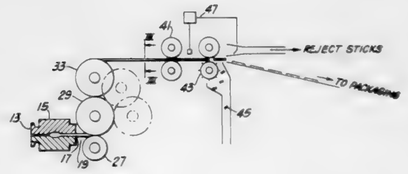
second thermoplastic resin for the core of the article in the rear chamber and for applying an injection force to the second resin therein.

3,966,373

APPARATUS FOR THE CONTINUOUS EXTRUSION OF SMALL CROSS-SECTION THERMOPLASTIC FOAM PROFILES

Keith G. Johnson, Pittsburgh, Pa., assignor to ARCO Polymers, Inc., Philadelphia, Pa.

Division of Ser. No. 419,811, Nov. 28, 1973, abandoned. This application Jan. 22, 1975, Ser. No. 542,973
Int. Cl.² B29G *7/00*
U.S. Cl. 425—4 C **1 Claim**



1. Apparatus for making continuous extrudate having a predetermined cross section profile, from thermoplastic material containing a blowing agent, comprising:

a. extrusion means for forcing said material in a molten condition through a die connected to said extrusion means;

b. a confined passage of predetermined configuration comprising:

1. a first roll having a projection on its surface, internal means for cooling said first roll, and means for rotating said first roll;

2. a second roll having a groove in its surface, internal means for cooling said second roll, and means for rotating said second roll;

3. said first and second rolls being located adjacent one another, but touching only in the area of said confined passage, such that the projection of the first roll intermeshes with the groove in the second roll; and

4. the height of said projection beyond the first roll being less than the depth of said groove in the second roll such that when said projection intermeshes with said groove, a confined passage of predetermined configuration is defined between the top of said projection and the bottom of said groove;

c. said confined passage being spaced apart from said die to provide an unconfined zone therebetween;

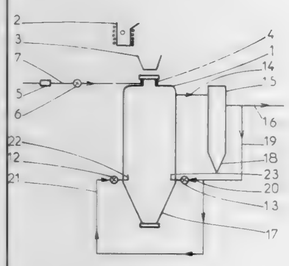
d. a third roll having a groove in its surface, internal means for cooling said third roll, and means for rotating said third roll; said third roll being located adjacent but not touching said second roll such that the grooves on the two rolls are in alignment; and

e. means for removing said extrudate from said third roll; whereby said extruded material is formed in said confined passage, thereafter confined solely first within said groove in said second roll and secondly within said groove in said third roll.

3,966,374
APPARATUS FOR THE MANUFACTURE OF SPHERICAL METALLIC POWDER NON-CONTAMINATED BY AMBIENT ATMOSPHERE

Yves C. Honnorat, Imphy; Gerard D. Raisson, and Jean G. Morlet, both of Nevers, all of France, assignors to Creusot-Loire, Paris, France

Filed Dec. 11, 1974, Ser. No. 531,812
Claims priority, application France, Dec. 20, 1973, 73.45788
Int. Cl.² B28B *1/54*
U.S. Cl. 425—7 **3 Claims**

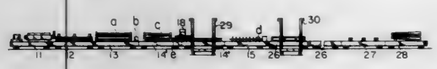


1. Apparatus for manufacturing metallic powder by gaseous atomization of a jet of liquid metal, comprising a vertical cylindro-conical receiver for receiving liquid metal through its top and comprising at its top part an annular arrangement of gas injectors for atomization of the liquid metal and an outlet for dust-laden gas, at its bottom part a hopper for metallic powder, and means for introducing gas into the bottom half of its cylindrical portion comprising a plurality of jets arranged tangentially to a theoretical cylinder centered on the axis of said receiver and opening in the same direction with respect to said axis and tilted from 0° to 60° with respect to the horizontal to cause vortices of inert gas and metallic powder and said theoretical cylinder passing through the outlet orifices of said jets.

3,966,375
RAIL MOUNTED APPARATUS FOR MANUFACTURING CONCRETE POLES

Yoshikiyo Fukushima, Tokyo; Kenzo Momota; Hideaki Shirahata, both of Kawasaki, and Noriyuki Sakanai, Kashiwa, all of Japan, assignors to Nippon Concrete Industries, Co., Ltd., Tokyo, Japan

Filed July 30, 1974, Ser. No. 493,054
Claims priority, application Japan, Feb. 12, 1974, 49-16167
Int. Cl.² B28B *5/04*
U.S. Cl. 425—62 **2 Claims**



1. Movable apparatus, for manufacturing concrete poles, which includes a train of cars movably running on rails, comprising:

a boiler car having a boiler disposed thereon for supplying steam for use in a curing operation of said concrete poles;

a wire storage car connected to said boiler car having wires stored thereon for use in forming a wire cage for said concrete poles;

a caging stand car connected to said wire storage car having wire caging machines and an upsetter device disposed thereon for fabricating reinforcing wire cages from said stored wires;

a molding shop car connected to said caging stand car having a mold disposed thereon, for receiving said wire cage therewithin, and concrete supply means secured thereto for supplying concrete to said mold;

a spinning machine car connected to said molding shop car having a spinning machine disposed thereon for spinning said mold when charged with concrete;

at least one empty car connected to said spinning machine car for receiving said mold therefrom subsequent to a spinning operation;

a steam curing room disposed adjacent to said empty car for receiving said mold therefrom and having means disposed thereon for curing said concrete therewithin in the presence of steam supplied to said curing room from said boiler;

a demolding shop car disposed adjacent to said curing room for receiving said concrete poles when the same are removed from said mold after said curing operation;

a tractor connected to said train at one end thereof for moving said cars along said rails;

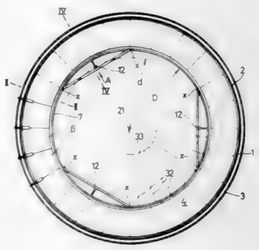
a mold traverser mounted upon a supplementary rail disposed parallel to said train rails; and

a plurality of mono-rails hoist means mounted upon rails disposed transversely of said train rails and said supplementary rail, said demolding shop car and said steam curing room being disposed beneath one of said hoist means, whereby said hoists can move said molds between said train, disposed upon said train rails, and said traverser, as well as between said train and said steam curing room and said demolding shop car.

3,966,376
SLIP FORM ARRANGEMENT FOR CONSTRUCTING ANNULAR STRUCTURES

Otto Heinzle, Sonderberg 19, 6840 Gotzis (Vorarlberg), Austria

Continuation-in-part of Ser. No. 405,880, Oct. 12, 1973, Pat. No. 3,897,182. This application Feb. 18, 1975, Ser. No. 550,835
Claims priority, application Austria, Oct. 13, 1972, 8812/72; Feb. 19, 1974, 1341/74
Int. Cl.² E04G *11/22*
U.S. Cl. 425—63 **15 Claims**



1. A slip form arrangement for pouring a concrete mixture comprising:

a. three upright columns;

b. a slide member mounted on each column for vertical movement;

c. an annular frame extending about an upright axis in a surface transverse to said columns,

1. said columns defining a triangle about said axis in a plane perpendicular to said axis;

d. carrier means connecting said slide members and said frame and including a plurality of fastening means engaging respective circumferential portions of said frame,

1. said portions being circumferentially spaced from each other,

2. the number of said portions and of said fastening means being greater than the number of said columns;

f. a plurality of elongated beam members;

g. attaching means one longitudinal end portion of each beam member to said frame in a position in which the direction of elongation of each beam member is substantially horizontal and outwardly away from said frame;

h. an annular form assembly including an outer form wall and an inner form wall respectively remote from and near said frame and spaced from each other in said direction, said form assembly enveloping said columns;

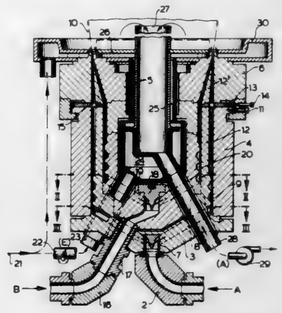
i. securing means releasably securing respective portions of each of said walls to the other longitudinal end portions of said beam members, the secured walls depending from said beam members and holding said other end portions in transversely spaced relationship; and

j. means operatively interposed between said slide members and said upright columns for holding said slide members in predetermined vertical positions on said upright columns and for thereby transmitting a portion of the weight of said frame and of said form assembly to each of said columns.

3,966,377
BLOWHEAD FOR TUBULAR FILM

Hartmut Upmeier, Tecklenburg, and Werner-Josef Zimmermann, Lengerich, both of Germany, assignors to Windmoller & Holscher, Lengerich, Germany

Filed Apr. 17, 1974, Ser. No. 461,799
Claims priority, application Germany, Apr. 24, 1973, 2320687
Int. Cl.² B29D *7/02*
U.S. Cl. 425—72 R **4 Claims**

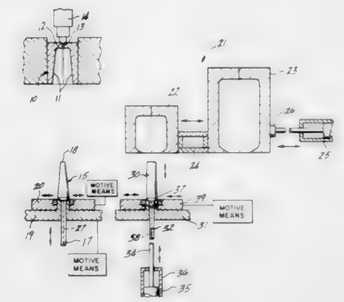


1. A blow-head for producing tubular film from thermoplastic molten material comprising, a tubular housing having an interior and an annular outlet nozzle for molten material, a first tubular insert having a conically shaped bottom wall disposed within said housing interior, said first insert having a side wall provided with a helical groove on the outer surface thereof adjacent said bottom wall, said first insert side wall defining with the inner surface of said housing a first flow passage for said molten material, said first flow passage having a helical lower portion defined by said groove and a tubular upper portion, a plurality of circumferentially spaced, radially extending first distributing passages in said first insert bottom wall, said first distributing passages having axially disposed inner ends and outer ends communicating with said helical portion of said first flow passage, a first supply conduit for molten material communicating with the inner ends of all of said first distributing passages, a second tubular insert having a conically shaped bottom wall disposed within the interior of said first inert, said second insert having a side wall provided with a helical groove on the outer surface thereof adjacent said bottom wall, said second insert side wall defining with the inner surface of said first insert a second flow passage for said molten material, said second flow passage having a helical lower portion defined by said groove and a tubular upper portion, said tubular upper portions of said first and second flow passages converging together at said annular outlet nozzle to form a two-ply plastic film, a plurality of circumferentially spaced, radially extending second distributing passages in said second insert bottom wall, said second distributing passages having axially disposed inner ends and outer ends communicating with the helical portion of said second flow passage, a second supply conduit for molten material communicating with the inner ends of all of said second distributing passages, coaxially extending air inlet and outlet means within said housing including at least one air inlet tube extending through the bottom walls of said first and second inserts and at least one outlet tube extending through the bottom walls of said first and second inserts, said inlet and outlet tubes disposed between said first and second distributing passages and extending to the exterior of said housing.

3,966,378
APPARATUS FOR MAKING ORIENTED HOLLOW PLASTIC ARTICLES

Emery I. Valyi, 5200 Sycamore Ave., New York, N.Y. 10471

Filed May 28, 1974, Ser. No. 473,580
Int. Cl.² B29C *1/00, 17/00*
U.S. Cl. 425—242 B **41 Claims**

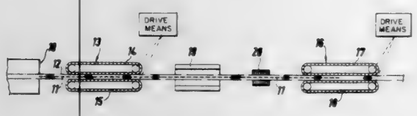


1. An apparatus for forming objects of moldable organic plastic material which comprises: at least one first core; means cooperating with said first core and aligned therewith for providing a parison thereon; a first mold spaced from said first core and engageable with said first core for forming said parison; means operatively connected to and carried by said first core for forming said parison located on said first core; means associated with said first core and said first mold for bringing together and for separating said first core and said first mold, said separating leaving said formed parison retained in said first mold free from said first core; at least one second core in spaced relationship to said first core; means including said first mold for transferring said formed parison from said first mold to said second core; at least one second mold in spaced relationship to said first mold; means associated with said second core and second mold for transferring said formed parison into said second mold; means on said second core for expanding the formed parison in said second mold.

3,966,379
APPARATUS FOR MAKING CORRUGATED FLEXIBLE TUBING

Patrick William O'Brien, Springhead, near Oldham, England, assignor to Compoflex Company Limited, England

Division of Ser. No. 773,859, Nov. 6, 1968, Pat. No. 3,793,423. This application Dec. 12, 1973, Ser. No. 424,051
Claims priority, application United Kingdom, Nov. 6, 1967, 50382/67; Dec. 20, 1967, 57933/67
Int. Cl.² B29C *17/02*
U.S. Cl. 425—327 **3 Claims**

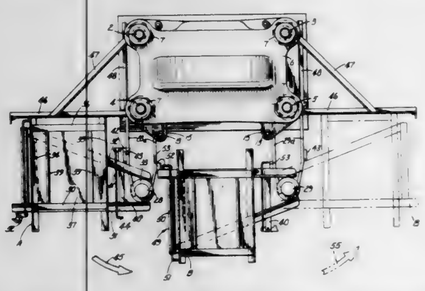


1. Apparatus for the manufacture of flexible compressed corrugated tubing comprising extruder means for extruding tubing of a plastics material, said tubing having annular corrugations longitudinally thereof; first haul-off means for engaging and feeding said corrugated tubing emerging from said extruder means, said first haul-off means being positioned downstream from said extruder means; heating means for heating said tubing, said heating means being positioned downstream from said first haul-off means and spaced from said corrugated tubing; second haul-off means for engaging and moving said corrugated tubing, said second haul-off means being positioned downstream from said heating means; first and second drive means connected respectively to said first and second haul-off means for respectively driving said first haul-off means and said second haul-off means at first and second feed rates, said second feed being substantially slower than said first feed rate so as to cause compression of said tube; cooling means positioned between said heating means and said second haul-off means for cooling and setting the compressed corrugated tube; mandrel means secured to said extruder for supporting said corrugated tubing, said mandrel means extending at least beyond said cooling means, and said cooling means being disposed in spaced relation from said mandrel.

3,966,380
APPARATUS FOR LOADING AND UNLOADING PRESSES

Samuel J. Kosik, Jr., Box 231, Botkins Angle Road, New Knoxville, Ohio 45871

Division of Ser. No. 356,592, May 2, 1973, abandoned. This application Mar. 10, 1975, Ser. No. 556,964
Int. Cl.² B29C *3/00*
U.S. Cl. 425—338 **1 Claim**

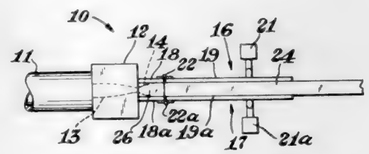


1. In apparatus of the class described, in combination, a press comprising a base, a header spaced therefrom and connected thereto, a series of platens for supporting molds adjustably supported in spaced relation between the base and header, said spaced relation providing for receiving molds therebetween, while facilitating opening and closing movement thereof, means comprising adjustable connections from the header to an adjacent platen and from each adjacent platen to the platen adjacent thereto, to support molds of substantially different thicknesses between any of said platens during repeated opening and closing movement, table means to move the platens toward the header and to support the platens upon movement away from the header, a series of means at opposite sides of said openings to support molds for loading the same with moldable material and unloading molded products from such molds, such means including instrumentalities to enable the molds to be moved into alignment with the openings and to receive molds therefrom to be thereafter moved to one side or the other of the openings on the support means, the series of means at one side for supporting a series of first molds, and the series at the other side supporting a series of second molds, and being swingable toward and from the openings, the said support means being wing-like members separately swingable toward and from the openings.

3,966,381
EXTRUSION OF THERMOPLASTIC FOAM

Kyung W. Suh, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 417,845, Nov. 21, 1973, Pat. No. 3,897,528. This application Mar. 17, 1975, Ser. No. 559,290
Int. Cl.² B29D *27/00;* **B29F** *3/04*
U.S. Cl. 425—376 **2 Claims**



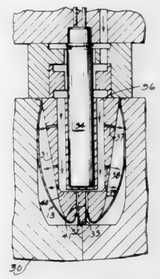
1. An apparatus for the preparation of synthetic resinous closed cell plastic foam in the form of a generally rectangular body by extrusion, the apparatus comprising in cooperative combination a source of heat plastified thermoplastic synthetic resinous foamable mobile gel, a die in operative communication with said source, the die having an elongate slit-like extrusion orifice, the extrusion orifice having first and second major generally parallel sides and first and second generally parallel ends, a shaping means comprising a pair of generally planar forming members disposed external to the die and in spaced, generally parallel relationship to the major sides of the extrusion orifice, the shaping means adapted to receive extruded foamable gel from the extrusion orifice therebetween, the improvement which comprises

a pair of generally concave restraining means positioned adjacent the ends of the die to constrain the freshly extruded gel in generally convex configuration in the plane of the slit and axis of extrusion at a location adjacent the die and a portion of the forming means adjacent the die with the further limitation that the generally concave restraining means has a generally convex surface in a plane perpendicular to the axis of extrusion whereby the apparatus provides a foam extrude of improved density uniformity and without apparent collapse of the foam.

3,966,382
APPARATUS FOR FORMING THIN-WALLED PLASTIC ARTICLES

Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 514,521, Oct. 15, 1974, Pat. No. 3,923,370, and a continuation-in-part of Ser. No. 214,275, Dec. 30, 1971, abandoned. This application Apr. 24, 1975, Ser. No. 571,329
Int. Cl.² B29D *23/03*
U.S. Cl. 425—387 B **3 Claims**



1. An apparatus for blow molding relatively thin walled hollow thermoplastic articles with controlled wall thicknesses using molded thermoplastic preforms having a central continuous annular portion formed to extend from one interior wall of said preform comprising:

an elongated mandrel having an axis extending longitudinally thereof and having the shape of the interior of said preform and including a pin projection positioned on said axis and to be received within said continuous annular portion of said preform and a concentric continuous annular projection formed on said mandrel to encircle said pin projection thereby defining a continuous annular recess mechanically locking said preform on said mandrel in a direction substantially perpendicular of said axis during blow molding, a female blow mold having the interior shape of said article,

and said mandrel and said female blow mold being relatively formed to cooperate for initial blowing of said preform with said continous annular portion of said preform mechanically locked within said recess of said mandrel and spaced from and immediately adjacent one interior surface of said female blow mold and for final blowing of said preform into the shape of said article with a final blowing of said continuous annular portion of said preform.

3,966,383
APPARATUS FOR EMBOSSING FILM

Francis H. Bussey, Jr., Rosedale, and James K. Rutherfoord, Terre Haute, both of Ind., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 30, 1974, Ser. No. 537,195
Int. Cl.² B29C *17/00*
U.S. Cl. 425—388 **7 Claims**

1. In an apparatus for vacuum embossing sheet material, the combination comprising:

a. a pair of spaced apart, generally parallel end plates;

b. a pair of spaced apart, parallel, hollow rollers rotatably connected to said end plates, one of said rollers having heating means connected thereto, the other of said rollers cooling means connected thereto;

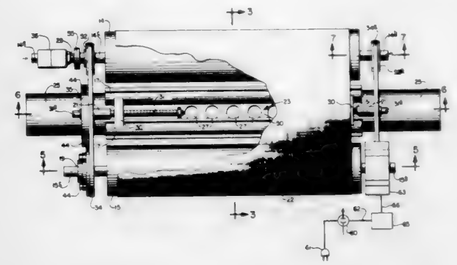
c. an endless, seamless, flexible, porous screen fitted over said rollers connecting said rollers together to cause one roller to rotate when the other roller rotates;

d. drive means connected to one of said rollers to rotate said roller and advance said screen;

e. a vacuum assembly connected to said end plates and engaging a portion of the underside of said screen that extends between said rollers, said assembly positioned between said pair of rollers and partially inside said screen so that the portion of said screen passing over said roller having heating means connected thereto contacts said vacuum assembly before contacting said roller having cooling means connected thereto, said assembly including:

i. a vacuum manifold means connected to said end plates;

ii. seal roll retainer means connected to said manifold means;



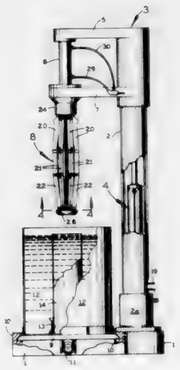
iii. a pair of spaced apart cylindrical seal rolls rotatably supported by said seal roll retainer means and said manifold means, each of said seal rolls rotatably contacting the underside of said screen;

iv. two movably mounted end seal members connected to said end plates by adjusting means adjacent each end of said seal rolls, said end seal members making sliding, sealing contact with said manifold means, both of said seal rolls and the underside of said screen to provide a vacuum chamber underlying that portion of said screen lying between the lines of contact made on the underside of said screen by said seal rolls.

3,966,384
MACHINE FOR THE THERMAL EXPANSION OF RIGID PLASTIC TUBING

Johann H. Maier, 18584 NE. Second Ave., Miami, Fla. 33162

Division of Ser. No. 490,234, July 22, 1974, abandoned. This application Apr. 14, 1975, Ser. No. 567,503
Int. Cl.² B29C *17/02*
U.S. Cl. 425—392 **9 Claims**



1. A machine for expanding thermoplastic tubing including in combination:

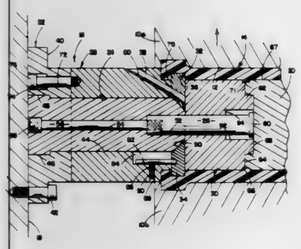
means forming a base for supporting a container for heated liquid;

a container for heated liquid on said base;

support means rising above said base;
head means mounted reciprocatively on said support means above said base for reciprocation toward and away from said container on said base;
drive means operatively associated with said head means for reciprocating said head means; and
expanding means mounted on said head means comprising a rod secured to said head means and extending downard therefrom for reciprocation thereby;
a plurality of angularly spaced upper links pivotally fixed relative to said rod;
a plurality of angularly spaced lower links pivotally secured relative to said rod;
and a plurality of angularly spaced links each interconnecting one of said lower links to one of said upper links, whereby said links are adapted to expand segments of the tubing when heated in said container to provide a tubular plastic article having angularly spaced outwardly extending projections.

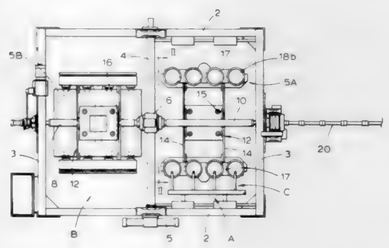
8. A machine for expanding thermoplastic tubing including in combination:
means forming a base for supporting a container for heated liquid;
a container for heated liquid on said heat;
support means rising above said base;
head means mounted reciprocatively on said support means above said base for reciprocation toward and away from said container on said base;
drive means operatively associated with said head means for reciprocating said head means; and expanding means mounted on said head means comprising
a rod secured to said head means and extending downward therefrom for reciprocation thereby,
a plurality of flexible expanding devices spaced apart circumferentially around said rod and each being elongated lengthwise of the rod,
and means operatively connecting both ends of said expanding devices to said rod to be expanded outwardly by the axial movement of the rod in one direction, whereby to expand corresponding portions of the thermoplastic tubing in the heated liquid in said container to form a tubular plastic article having circumferentially spaced outwardly extending projections.

3,966,385
APPARATUS FOR FORMING A GROOVE IN A TUBE
Wayne Spears, 12884 Bradley Ave., Sylmar, Calif. 91342
Continuation-in-part of Ser. No. 422,776, Dec. 7, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 528,259
Int. Cl.² B29C *17/02*
U.S. Cl. 425—393 **21 Claims**



1. Apparatus for molding an annular groove internally of a tubular molded part, said apparatus comprising an extendible and retractable core assembly which comprises:
a. means defining a base having a longitudinal axis and means defining an outer mold surface for molding the interior of a generally tubular molded part, said mold surface having a pair of ends, said base means being movable along said axis;
b. a plurality of mold segments mounted on said base means circumferentially around and intermediate the ends of said mold surface for axial movement relative to said outer mold surface and radial movement relative to said base means and for movement between first contracted positions and second expanded positions, said movement of said mold elements being at least in part radial and at least in part axial, said segments comprising a first group of segments and a second group of segments, said segments being disposed to combine when in said expanded positions to form a generally continuous ring for defining a generally continuous internal annular groove in the molded part, said first group of segments configured to be movable radially inwardly from said expanded positions relative to said second group of segments sufficiently to be withdrawn from said annular groove, said first group of segments being movable axially relative to said second group of segments from said withdrawn positions and which axial movement of said first segments begins approximately when or without substantial delay after said first group of segments have been fully withdrawn from said annular groove, but not prior to said first group of segments having been fully withdrawn from said annular groove and thereby permit radially inward movement of said second group of segments from said expanded positions only after said first group of segments have been fully withdrawn from said annular groove and have started axial movement relative to said second group of segments, and which second segments then start axial movement with said base means relative to said outer mold surface, and
c. actuator means between said base means and said segments for effecting movement of said segments between said expanded and contracted positions incident to movement of at least a portion of said base means.

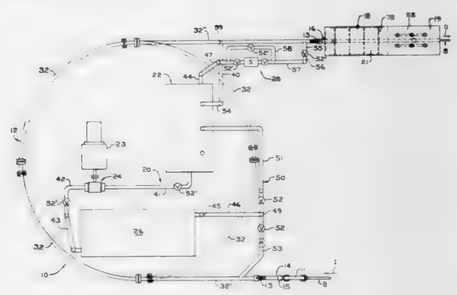
3,966,386
MACHINES FOR ROTATIONAL MOULDING OF PLASTIC ARTICLES WITH ARTICLE REMOVAL MEANS
Knut Beyer-Olsen, Norvegjerde, and Otto Steffenssen, Nova Store-Norve, both of 6000 Alesund, Norway
Filed Dec. 16, 1974, Ser. No. 533,088
Claims priority, application Norway, Dec. 14, 1973, 4792/73
Int. Cl.² B29C *5/04*; **B28B** *7/10*
U.S. Cl. 425—436 R **9 Claims**



1. In a rotational moulding machine of the type including at least one two-part mould, each of the mould parts being mounted on separate rotatable shafts, means for simultaneously moving the mould parts of each mould from a closed moulding position wherein said mould parts are in contact, away from each other to an open moulded product release position wherein said mould parts are spaced from each other, and the split plane between said mould parts when in said closed moulding position being normal to the axis of said separate rotatable shafts; the improvement comprising means

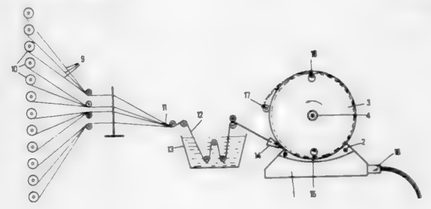
for automatically removing a moulded product from said mould, said removing means comprising:
at least one pair of complementary product grasping means positionable to straddle said mould adjacent said split plane when said mould parts are in said closed moulding position;
means for moving said product grasping means toward each other, into contact with a moulded product in said mould, as soon as said mould part moving means moves said mould parts from said closed moulding position by a sufficient distance to allow entry of said product grasping means, for thereby grasping and holding said moulded product prior to further separating movement of said mould parts, and for thus releasing said moulded product from said mould parts upon further separating movement of said mould parts; and
support means, supporting said product grasping means, for moving said product grasping means from the position straddling said mould to a discharge position outside said moulding machine for discharge of said moulded product, and vice versa.

3,966,387
APPARATUS FOR VULCANIZING HOSE
William R. Babbin, and Stephen C. Sabo, both of Barberton, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed June 5, 1975, Ser. No. 584,056
Int. Cl.² B29D *23/00*; **B29H** *7/14*
U.S. Cl. 425—445 **6 Claims**



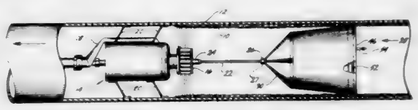
1. Apparatus for vulcanizing elastomeric hose comprising:
A. a vulcanizing chamber of substantially circular cross-section extending helically about a vertical axis, said chamber having
1. an entrance end;
2. an exit end;
B. means circulating fluid at selected elevated temperature and pressure through the chamber from adjacent the entrance end to the exit end;
C. fluid recovery means adjacent the exit end of the chamber;
D. means for recycling fluid recovered by the recovery means to the fluid circulating means;
E. sealing means at the entrance end of the chamber for
1. permitting unvulcanized hose to enter the chamber through the entrance end for transport through the chamber by the circulating fluid and
2. preventing fluid from leaving the chamber through the entrance end while the hose is entering the chamber, the sealing means comprising
a. an annular rigid cap member having a nose portion providing an elongated hose receiving and stiffening zone adjacent the entrance end, and
b. a flexible, polymeric seal member having
i. an annular mounting flange secured between said cap member and said entrance end, and
ii. an annular portion extending into the chamber from the entrance end, terminating in a hose contacting lip, and having a surface exposed to the pressurized fluid in the chamber and a contour adapted to utilize the pressure of the fluid to promote sealing contact between the lip and hose.

3,966,388
DEVICE FOR CONTINUOUSLY MANUFACTURING CURVED PROFILED MEMBERS OF PLASTIC MATERIAL REINFORCED WITH FILAMENTS
Gerard Bonavent, Rueil-Malmaison; Michel Huvey, Bougival, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France
Filed Aug. 19, 1975, Ser. No. 605,887
Claims priority, application France, Sept. 4, 1974, 30241
Int. Cl² B29G *7/00*
U.S. Cl. 425—505 **7 Claims**



1. A device for continuously manufacturing a curved profiled member of plastic material reinforced with filaments, comprising a frame, a die formed of two complementary elements the first of which is secured to the frame and the other is rotatably mounted on said frame and connected to rotation driving means, at least one of said elements being provided with a groove which, together with the other element, forms a section of passage for a resin-impregnated assembly of filaments through the die, means for heating said first die for polymerization of the plastic material therein, means for continuously measuring the braking torque developed by the profiled member within the die during its formation, and means for automatically controlling the rotation speed of said driving means, said control means being connected to said measuring means and adapted to produce in response to a variation of the resisting torque, a corresponding variation of the rotation speed of the same direction as the torque variation.

3,966,389
APPARATUS FOR TROWELING PIPE LINING MATERIAL
Albert Shubert, Santa Ana, Calif., assignor to Ameron, Inc., Monterey Park, Calif.
Filed Dec. 27, 1972, Ser. No. 318,895
Int. Cl.² B05C *3/02*
U.S. Cl. 425—460 **1 Claim**



1. An improved frusto-conical trowel for spreading a smooth layer of protective coating material on the inside of a pipe, the trowel comprising a plurality of circumferentially overlapping arcuate leaves, an inflatable annular elastic tube member disposed within the trowel adjacent its larger end to bear against the leaves and urge them outwardly with a substantially uniform force against the protective coating material, the annular tube having a major diameter substantially greater than its minor diameter, and a plurality of longitudinally extending rods each secured at one end to the tube and at the other end to a portion of the trowel of smaller diameter.

3,966,390
MOLD FOR POLYIMIDE, POLYAMIDE, OR POLYAMIDE-IMIDE RESIN WHICH HAS NOBLE METAL LAYER ON ITS SURFACE TO BE IN CONTACT WITH RESIN

Mineo Nakano; Takeshi Koyama, both of Hitachi; Yoshiro Matsumoto, Ibaragi, and Akira Maruoka, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Filed Aug. 21, 1973, Ser. No. 389,659
Int. Cl.² B29C *1/02, 1/04*
U.S. Cl. 425—470 **1 Claim**



1. A mold for molding a synthetic resin containing an amide linkage, an imide linkage or both linkages comprising a stainless steel belt, a layer of plated nickel on one surface of said stainless steel belt, a layer of plated gold on said layer of plated nickel, and a layer of plated silver on said layer of plated gold.

3,966,391
METHOD OF COMBUSTION USING HIGH TEMPERATURE STABLE CATALYSTS

Saul G. Hindin, Mendham, and George R. Pond, Elizabeth, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed Dec. 10, 1973, Ser. No. 423,093
Int. Cl.² F23D *3/40;* **F23B** *7/00*
U.S. Cl. 431—7 **4 Claims**

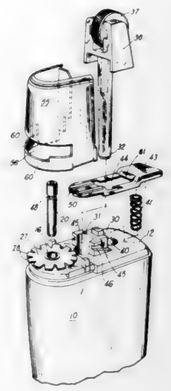
1. A method for the combustion of carbonaceous fuel comprising: forming an intimate admixture of said fuel and air; contacting said fuel air admixture with an oxidation catalyst at a temperature sufficient to combust said admixture, said catalyst having a surface area of at least 20 m^2/g after calcination for two hours at a temperature of 1200°C., said catalyst consisting essentially of (a) a catalystically-active calcined composite of alumina, a rare earth metal oxide, and a mixture of two metal oxide components wherein the first component is selected from the group consisting of an oxide of Cr, W, and mixtures thereof and the second component is selected from the group consisting of an oxide of calcium, strontium, barium, silicon, tin, and mixtures thereof, and (b) a catalytically-effective amount of platinum group metal incorporated therein after calcination of said composite at a temperature of at least 500°C.

3,966,392
CIGARETTE LIGHTER HAVING IMPROVED VALVE MEANS

John C. Lockwood, Atlanta, Ga., assignor to Scripto, Inc., Atlanta, Ga.

Filed Aug. 19, 1974, Ser. No. 498,305
Int. Cl.² F23Q *2/16*
U.S. Cl. 431—344 **6 Claims**

1. A cigarette lighter having a body defining a fuel reservoir and a passageway extending from the reservoir to the body exterior; a rotatable spindle having a central bore therethrough threaded at least partially into said passageway; a windguard secured to the upper portion of said body and having a horizontal opening in its forward end with a slot in the lower portion thereof; a plurality of bendable tabs secured about said spindle exteriorly of said body and extending in a common plane except for one downwardly bent tab and extending through said windguard opening; a porous washer positioned at the inner end of said central bore, said spindle being rotated upon assembly to a point where the desired minimum compression of said porous washer is achieved where the tab adjacent one end of the slot is bent downward to restrict the withdrawal rotation of said spindle and stop

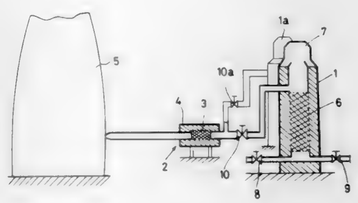


means for limiting rotary movement of said spindle through engagement with ends of said slot by said bent tab for selective adjustment by the user of the flame height.

3,966,393
HOT BLAST STOVE APPARATUS

Kikuo Takeuchi, 18-17, 1-chome, Takaban-cho, Meguro, Tokyo, Japan

Filed Apr. 28, 1975, Ser. No. 572,446
Claims priority, application Japan, Dec. 23, 1974, 49-146716
Int. Cl.² C21B *9/10;* **F23L** *15/02*
U.S. Cl. 432—40 **4 Claims**

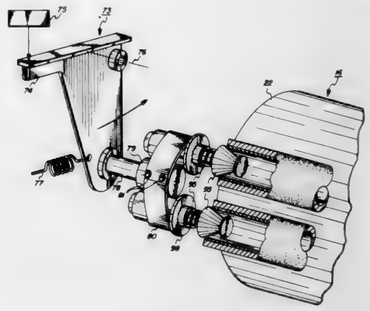


1. A hot blast stove apparatus comprising a regenerative hot blast stove, combustion heating means in said stove, heat regenerative material in said stove for being heated by said heating means, said stove having an outlet for discharge of hot blast gases from the stove, a main hot blast gas duct externally connected to said outlet for conveying hot blast gases from said stove, valve means for cyclical discharge of hot blast gases from said stove to said duct and temperature equalizer means in said main duct for absorbing heat from the hot blast gases at the beginning of a discharge cycle of the hot blast gases from the stove to store the heat and for releasing the stored heat to the hot blast gases at the end of the discharge cycle such that the hot blast gases are delivered from said duct at an equalized temperature during said cycle, said temperature equalizer means comprising a tubular container coupled to said duct, and a mass of heat regenerative material including juxtaposed checker brick with through holes therein filling said tubular container and through which the blast gases pass.

3,966,394
PLURAL CLEANING ROLLS ASSEMBLY

Oskar J. Braun, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 30, 1975, Ser. No. 572,986
Int. Cl.² G03G *13/20*
U.S. Cl. 432—75 **4 Claims**



1. In a fusing system for fusing toner images in an electrostatic copying machine in which a relatively hard heated roll surface is used to fix the toner images to copy sheet material, an improved plural cleaning rolls apparatus for cleaning toner offset onto the heated roll surface comprising:

a carriage means supporting at least two cleaning roll members in contact with a heated roll surface to be cleaned,

pressure loading means for urging said carriage means towards the heated roll surface at a predetermined pressure,

first shaft means rotatably mounted on said carriage means for supporting said cleaning roll members,

each of said cleaning roller members including a core member exteriorly covered by a thermoplastic layer to create sufficient surface energy to collect toner from the heated roll surface, and

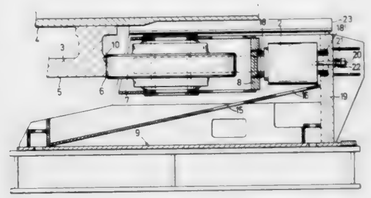
second shaft means including a plurality of shaft members corresponding to and supporting an associated one of said core members for rotation thereof, and

flexure means connecting said first shaft means to each of said shaft members whereby independent alignment of said shaft members and core members relative to the fuser roll is accomplished.

3,966,395
PRESSURE ROLLER STAND FOR FORCIBLE LONGITUDINAL DISPLACEMENT OF LARGE ROTATING DRUMS

Heinrich Schneider, Bochum, and Ernst Böser, Solingen, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Nov. 8, 1974, Ser. No. 522,146
Claims priority, application Germany, Nov. 9, 1973, 2356038
Int. Cl.² F27B *7/00;* **F16C** *13/00*
U.S. Cl. 432—103 **15 Claims**



15. A pressure roller stand with a drive means for forcing longitudinal displacement of a heavy industrial drum rotating on annular raceways adjacent a foundation, comprising:

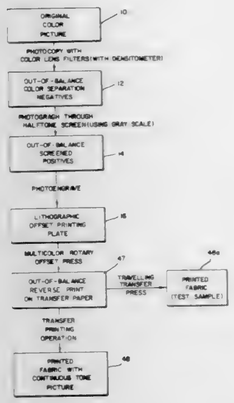
a pressure roller rotatable on an axis transverse to the axis of said heavy drum for engagement with an axially facing surface on one of said annular raceways of the drum; and

a drive means connected to said pressure roller for applying a force thereto transverse of its axis of rotation forcing said roller against the raceway, said drive means connected to the roller to apply a force transverse of the roller axis and through the axial center of its axis and in alignment with the reaction force between the roller and raceway so that lateral force couples are absent which would create wear on the roller, and wherein said drive means is connected to the pressure roller by a displaceable ring central to said pressure roller and on which said pressure roller rotates.

3,966,396
TEXTILE PRINTING PROCESS AND TRANSFER MEDIUM

Bruce Howes, South Salem, N.Y., and Thomas K. Holland, Paris, France, assignors to F. P. Licensing Co., Inc, New York, N.Y.

Filed Dec. 18, 1974, Ser. No. 533,862
Int. Cl.² D06P *1/00*; B32B *9/06*; B41M *3/12*; G03F *7/02*
U.S. Cl. 8—2.5 A **16 Claims**



1. An offset process for multiple color printing in ink dyes of an original pattern to a true likeness comprising the steps of:

copying the pattern photographically through color filter lenses to produce separate negatives in each of the respective colors desired,

regulating exposure and developing variables for the separate negatives to achieve selected film emulsion densities on the respective negatives, said densities being reduced from a standard balanced negative to define an out-of-balance negative,

projecting the out-of-balance negatives through a halftone screen for uniformly dividing the pattern into a plurality of dots corresponding in sizes to the intensity of light transmission through the film emulsion to form respective halftone positive dot patterns reduced in size in proportion to the respective ink transfer sublimation characteristics,

photoengraving each of the halftone positive dot patterns respectively on a corresponding lithographic plate,

printing the dot patterns respectively on a transfer medium corresponding to that on the lithograph plates by depositing ink dyes in the respective colors from each of the plates,

transferring the dot pattern from the transfer medium onto a fabric through the application of heat and pressure to form a continuous tone pattern.

12. A method of textile printing suitable for producing a design formation on a fabric comprising the steps of photoengraving printing plates using an ink dot pattern produced from color compensated halftone positives and having a dot structure reduced in size in proportion to ink transfer sublimation characteristics, applying controlled quantities of ink on the printing plates and dot pattern, transposing the inked dot pattern from the printing plates onto a support medium and then heat transferring the dye from the inked dot pattern in a vapor phase from the support medium onto a fabric whereby the ink dye from the ink dots expand to form a continuous tone pattern.

3,966,397
DYEING KERATINOUS FIBERS

Nicholas Hay Leon, Isleworth, and John Alan Swift, Maidenhead, both of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 282,196, Aug. 9, 1972, abandoned, which is a continuation-in-part of Ser. No. 21,498, March 20, 1970, abandoned. This application June 5, 1973, Ser. No. 367,282
Claims priority, application United Kingdom, Mar. 28, 1969, 16383/69
Int. Cl.² D06P *1/38, 3/10*; A61K *7/13*
U.S. Cl. 8—10 **9 Claims**

1. A process for dyeing hair which comprises contacting the hair with a dyestuff, the dyestuff being solubilised in an aqueous or alcoholic medium and being of the formula

$$R^3-(N{=}N-Y-\overset{\overset{S}{\|}}{C}-SR)_n$$

wherein

R is selected from the group consisting of

- R′COOH
- -R′COOCH$_3$
- CH$_2$CH$_2$OH

and,

- CH$_3$

in which R′ is an alkylene group containing 1, 2 or 3 carbon atoms,

R³ is the residue of a diazo coupling compound,

Y is a phenylene or substituted phenylene group and

n is 1 or 2.

3,966,398
HAIR DYEING COMPOSITION CONTAINING A NON-IONIC SURFACTANT

Guy Vanlerberghe, Rue Des Ecoles, and Henri Sebag, Paris, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 384,635, Aug. 1, 1973, Pat. No. 3,928,224, which is a continuation-in-part of Ser. No. 142,409, May 11, 1971, Pat. No. 3,821,372. This application Mar. 24, 1975, Ser. No. 561,630
Claims priority, application Luxemburg, May 12, 1970, 60900
Int. Cl.² D06P *3/06*
U.S. Cl. 8—11 **1 Claim**

1. An aqueous hair dyeing composition comprising an effective amount of a hair dye and as a thickener or dye vehicle therefor a compound of the formula

$$R\text{-}CHOH\text{-}CH_2O\text{-}\left[CH_2\text{-}CHOH\text{-}CH_2\text{-}O\right]_n H$$

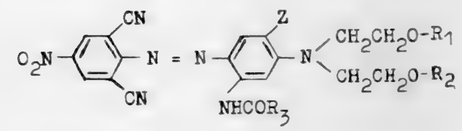
wherein R is selected from the group consisting of aliphatic, cycloaliphatic and arylaliphatic radicals and mixtures thereof, having 7–21 carbon atoms, wherein the aliphatic moiety of said radicals is saturated or unsaturated, linear or branched and optionally contains 1 to 6 ether, thioether and hydroxymethylene groups, *n* is greater than 1 and equal to or less than 10, in a proportion of 1 to 80% by weight of said composition.

3,966,399
AZO DISPERSE DYE MIXTURES

Katsunobu Sato, Minoo; Yoshihisa Sueda, Toyonaka; Yoshiro Izutsutani, Osaka; Kunihiko Imada, Toyonaka, and Katsumasa Ohtake, Nara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 9, 1973, Ser. No. 349,578
Claims priority, application Japan, Apr. 7, 1972, 47-35325; Apr. 7, 1972, 47-35326
Int. Cl.² D06P *1/18*
U.S. Cl. 8—26 **10 Claims**

1. A mixture of at least two members selected from the group consisting of compounds represented by the formula,

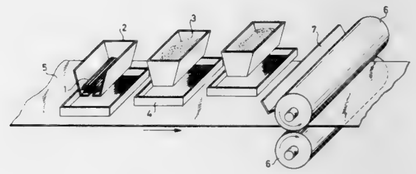


wherein Z represents hydrogen atom or methyl, ethyl, methoxy or ethoxy group, each R_1 and R_2 represents methyl or ethyl group, R_3 represents methyl, ethyl or phenyl group or a phenyl group substituted by methyl, ethyl, methoxy or ethoxy group.

3,966,400
PROCESS AND DEVICE FOR THE IRREGULAR DYEING OF TEXTILES

Walter Birke; Hans-Ulrich von der Eltz, and Franz Schön, all of Frankfurt am Main, Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 22, 1974, Ser. No. 499,401
Claims priority, application Germany, Aug. 25, 1973, 2342981
Int. Cl.² C09B *67/00*; D06C *23/00*; D06P *5/02*
U.S. Cl. 8—82 **6 Claims**

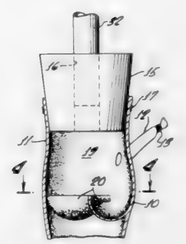


1. A process for the irregular dyeing of textile material, which comprises: applying a mixture of dyestuffs and salts containing crystal water in powder form irregularly onto the material and melting the salt by means of a heat treatment sufficient to melt and release water from said salts, the bondage between the dyestuffs and the material to be dyed being brought about by means of the liquid phase which forms thereby; and then finishing the dyeing in the usual manner according to known methods for the fixation of the dyestuffs used.

3,966,401
PREPARING NATURAL TISSUE FOR IMPLANTATION SO AS TO PROVIDE IMPROVED FLEXIBILITY

Warren D. Hancock, Santa Ana, and Thomas J. Fogarty, Palo Alto, both of Calif., assignors to Hancock Laboratories Incorporated, Anaheim, Calif.

Filed July 1, 1974, Ser. No. 485,159
Int. Cl.² A61L *17/00*; A63B *51/02*; D01C *3/00*; D01F *5/00*
U.S. Cl. 8—94.11 **13 Claims**



1. The method of preparing for implantation natural tissues in a form in which a portion thereof is subjected to pressure within the physiologic range when implanted and which assumes a predetermined configuration as a result of such pressure comprising the steps of

alternately applying a tanning fluid to said portion of said tissues at a pressure within the physiologic range, and relieving the pressure on said portion of said tissues to less than that of said physiologic range,

whereby said portion of said tissues is caused to assume said predetermined configuration intermittently,

and simultaneously applying a tanning fluid to remaining parts of said tissues at a pressure below said physiologic range so as to cause said portion and said remaining parts of said tissues to become fixed while said portion of said tissues intermittently assumes said predetermined configuration.

13. The method of preparing a natural heart valve for implantation comprising the steps of

inserting a member having an aperture therethrough into the ascending aorta of a unit that includes a natural heart valve and its ascending aorta,

attaching said aorta to said member so that said unit and said member define a chamber and said aperture provides access to the interior of said chamber at the downstream end of said valve.

ligating the arteries of said unit so as to close said chamber,

alternately introducing a tanning fluid which is pressurized to within the physiologic range of pressure for said valve through said aperture into said chamber so as to inflate said valve and cause said valve to assume substantially its natural configuration, and relieving the pressure of such tanning fluid,

thereby to cause intermittent flexing of said valve, simultaneously applying such tanning fluid at a pressure below said physiologic range of pressure to the exterior of said unit while said valve is so intermittently flexed,

and maintaining said tanning fluid so applied to the exterior of said unit and continuing to so alternately introducing tanning fluid into said chamber and relieving the pressure thereof for a time sufficient to cause the tissue of said valve to become substantially fixed, thereby to cause said valve to substantially maintain said configuration while possessing flexibility.

3,966,402
PROCESS FOR THE MANUFACTURE OF BASIC CHROME TANNING AGENTS SOLUBLE IN COLDWATER

Hans-Joachim Nebel, Ludwigshafen, Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 5, 1974, Ser. No. 486,239

Claims priority, application Germany, July 7, 1973, 2334636

Int. Cl.² C14C *3/06;* **B01F** *1/00*

U.S. Cl. 8—94.27 **10 Claims**

1. A process for the manufacture of a powdered, basic chromium sulfate which is soluble in cold water, said process comprising the step of evaporating an aqueous solution of basic chromium sulfate in the presence of 0.1 to 10% by weight, with reference to the weight of dry chromium salt in the solution, of at least one glycol compound selected from the group consisting of alkylene glycol of 2 to 4 carbon atoms; the monomethyl or monoethyl ether of said glycol; and higher molecular weight oligomers and polymers of said glycol, adducts thereof with ethylene oxide and/or propylene oxide, or the monomethyl or monoethyl ethers of said oligomers, polymers and adducts, with the proviso that said higher molecular weight compounds have a molecular weight up to about 2,500.

3,966,403
HAIR LACQUER OR HAIR SETTING COMPOSITION CONTAINING A TETRAPOLYMER

Christos Papantoniou, Epinay-sur-Seine, and Jean-Claude Grognet, Gagny, both of France, assignors to L'Oreal, Paris, France

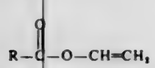
Filed Mar. 31, 1975, Ser. No. 563,460

Claims priority, application Luxemburg, Apr. 1, 1974, 69759

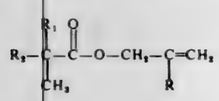
Int. Cl.² A61K *7/06*

U.S. Cl. 8—127.51 **3 Claims**

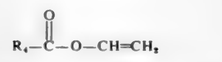
1. A hair lacquer composition or a hair setting composition comprising a hydroalcoholic carrier or an alcoholic carrier and a copolymer of 2–15 weight percent of an unsaturated acid having the formula $R-CH=CH-(CH_2-O-CH_2)_n-COOH$ wherein $n=0$ or 1 and when $n=0$, $R=CH_3$ and when $n=1$, $R=H$; 55–89.5 weight percent of a vinyl ester having the formula



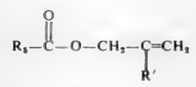
wherein R is CH_3 or C_2H_5; 8–20 weight percent of at least one branched allyl or methallyl ester having the formula



wherein R′ represents hydrogen or CH_3, R_1 represents a saturated hydrocarbon chain, linear or branched, having 1–6 carbon atoms and R_2 represents CH_3 or $CH(CH_3)_2$, with the proviso that the sum of the number of the carbon atoms in R_1+R_2 is equal to or less than 7; and 0.5–10 weight percent of a monomer selected from the group consisting of a vinyl ether having the formula $CH_2=CH-O-R_3$ wherein R_3 is linear or branched alkyl having 1–12 carbon atoms, a vinyl ester having a fatty chain and having the formula



wherein R_4 is linear alkyl having 7–11 carbon atoms and a linear allyl or methallyl ester having the formula



wherein R′ is hydrogen or CH_3 and R_5 is linear alkyl having 1–11 carbon atoms, said copolymer being present in an amount of about 1–4 weight percent of said composition.

3,966,404
HAIR LAQUER OR HAIR SETTING COMPOSITION CONTAINING A TERPOLYMER

Christos Papantoniou, Epinay-sur-Seine, and Jean-Claude Grognet, Gagny, both of France, assignors to L'Oreal, Paris, France

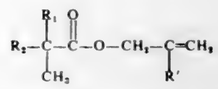
Filed Mar. 31, 1975, Ser. No. 563,461

Claims priority, application Luxemburg, Apr. 1, 1974, 69760

Int. Cl.² A61K *7/06*

U.S. Cl. 8—127.51 **3 Claims**

1. A hair lacquer composition or hair setting composition comprising a hydroalcoholic carrier or an alcoholic carrier and a terpolymer of 6-15 weight percent crotonic acid, 65–86 weight percent vinyl acetate and 8–20 weight percent of an allyl or methallyl ester of the formula



wherein R′ is selected from the group consisting of hydrogen and $-CH_3$, R_1 is a saturated hydrocarbon chain, linear or branched, having 1–6 carbon atoms, and R_2 is selected from the group consisting of $-CH_3$ and $-CH(CH_3)_2$, with the proviso that the sum of the number of carbon atoms in R_1 and R_2 is equal to or less than 7, said terpolymer being present in an amount of about 1—4 weight percent of said composition.

3,966,405
N-ALKYL NITRO PHENYL DIETHYLENE TRIAMINE DYEING OF ACID MODIFIED SYNTHETIC FIBERS

Reinhard Mohr, Offenbach am Main, and Manfred Hahnke, Kelkheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

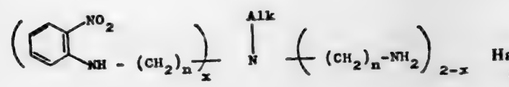
Filed Mar. 17, 1975, Ser. No. 558,783

Claims priority, application Germany, Dec. 17, 1974, 2459564

Int. Cl.² D06P *5/00*

U.S. Cl. 8—168 A **8 Claims**

1. In a process for the dyeing of high-molecular substrates containing acidic groups with basic nitro groups containing dyestuffs the improvement consisting of contacting said substrate with a dyestuff of the formula



wherein Alk is alkyl of 1 to 6 carbon atoms, n is 2 to 6, x is a number of 1 up to but excluding 2 and wherein the phenyl nuclei can be substituted by halogen, carboalkoxy of 2 to 5 carbon atoms, nitro, sulfamoyl, sulfon amide mono- or di-(lower alkyl)-amide, carbamoyl, carboxylic acid mono- or di-(lower alkyl)-amide, cyano, lower alkyl, lower alkoxy, lower alkanoylamino or lower alkylsulfonyl, or a mixture of said dyestuffs.

3,966,406
PROCESS FOR JET DYEING FIBROUS ARTICLES CONTAINING POLYESTER-TYPE SYNTHETIC FIBERS

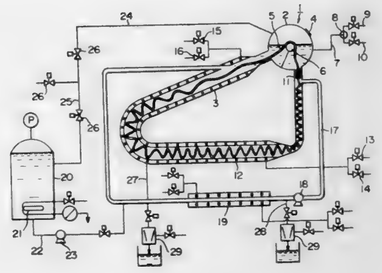
Hiroshi Namiki, Nagaokakyo; Norihiro Minemura, Takatsuki; Takeo Kimura, both of Takatsuki, and Shigeru Takahashi, Kaga, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Sept. 4, 1974, Ser. No. 503,190

Claims priority, application Japan, Sept. 5, 1973, 48-99163; Sept. 18, 1973, 48-104503

Int. Cl.² D06P *3/52*

U.S. Cl. 8—179 **14 Claims**



1. In a jet dyeing process for dyeing fibrous articles containing polyester-type synthetic fibers by adding a jet of a dye liquor to a liquid bath containing a fibrous article moving therein, the improvement which comprises,

a. moving the fibrous article in a liquid bath in a dyeing tank at a rate, relative to said dyeing tank, of 80 to 300 meters per minute while the liquid bath is at a temperature of no more than 80°C. and does not contain any dye,

b. elevating the temperature of the liquid bath in the dyeing tank to at least 110°C., while the fibrous article is moving therein, and

c. adding a dye liquor containing dye in an amount of 1 gram per liter to 100 grams per liter to said liquid bath at a rate of not more than 20 liters per second after the temperature of said liquid bath reaches at least 100°C. to form a dye bath in said dyeing tank of at least 110°C., said dye bath having a dye concentration of 0.001 to 5% based on the weight of the fibrous article in said dye bath, while continuing to move said fibrous article in said dye bath at said rate of 80 to 300 meters per minute, relative to said dyeing tank until said fibrous article is dyed.

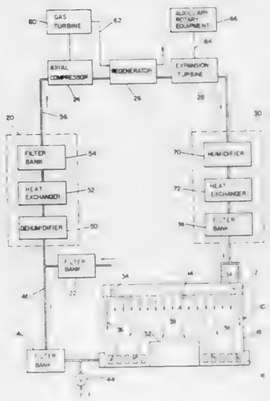
3,966,407
AIR STERILIZING COMPRESSOR SYSTEM

Harry Zuckerberg, 60 Browne St., and William Kukers, 86 Griggs Road, both of Brookline, Mass. 02146

Filed Aug. 2, 1974, Ser. No. 494,168

Int. Cl.² A61L *3/00;* **F24F** *13/00*

U.S. Cl. 21—74 R **16 Claims**



1. An air processing system for use with a medical service facility that has an inlet passage for flow of air into the facility and an outlet pressure for flow of air out of the facility,

said air processing system having a flow capacity sufficient to provide at least two hundred changes of air per hour in the serviced medical service facility and comprising

closed path structure having an inlet port for connection to the outlet passage of the serviced medical service facility and an outlet port for connection to the inlet passage of the serviced medical facility, said closed path structure defining a closed air flow path between said inlet port and said outlet port,

a compressor in said closed path, said compressor imparting flow energy to the air in said closed path and simultaneously raising the temperature of the air in said closed path at least **300°F**, said compressor having an inlet connected to said inlet port and an outlet through which heated air flows from said compressor,

an air temperature retaining unit in said closed path, said air temperature retaining unit having an inlet connected directly to the outlet of said compressor, an air passageway arrangement for maintaining the heated air from said compressor at sterilizing temperature for a sufficient time interval for achieving substantially complete sterilization, and an outlet through which sterilized air flows from said air temperature retaining unit, and

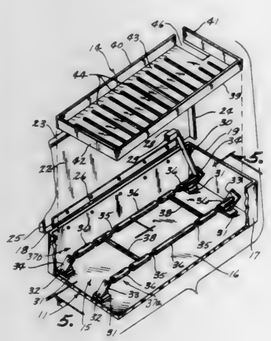
an expansion device in said closed path, said expansion device having an inlet through which the sterilized air from said air temperature retaining unit is passed and an outlet connected to said outlet port, said expansion device reducing the temperature of the sterilized air from said air temperature retaining unit prior to flow of that air through said closed path outlet port for flow into the serviced medical service facility.

3,966,408

STERILANT IMMERSION CONTAINER WITH COVER ACTUATED TRAY

Richard E. Drennen, Fairway Heights, and Keith L. Stutzman, 19 N. Seventh, both of Denison, Iowa 51442

Filed Feb. 13, 1975, Ser. No. 549,503
Int. Cl.² A61L 3/00, 3/02; A47B 81/00
U.S. Cl. 21—87 6 Claims



1. For effecting the sterilization of instruments in a chemical germicide solution, a sterilizer unit comprising:

a container member having a bottom and walls, said walls being joined in end to end fashion and being perpendicularly attached to said bottom, said walls forming an opening, the germicide solution being received through said opeing and held by said walls and said bottom;

a cover member pivotally attached to said container and movable to close said opening of said container;

a removable tray member having a wide slot and a plurality of narrow slots formed therethrough, said wide slot and said narrow slots being disposed in parallel with respect to each other, the instruments being received and held by said tray;

means for supporting, rocking and moving said tray between a first position adjacent said bottom and a second position adjacent said opening, said tray being supported in a horizontally disposed manner at both said first and said second positions, said tray being immersed in the germicide solution at said first position and being elevated above the germicide solution at said second position, the germicide solution draining from said tray through said wide and narrow slots into said container when said tray is in said second position, said tray being rocked through dispositions at an angle to the horizontal while between said first and said second positions, said means for supporting, rocking and moving including first and second pivot support units and at least one cross member, both of said pivot support units being pivotally attached to said bottom of said container, said cross member interconnecting said pivot support units, said tray resting upon said pivot support units; and

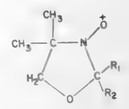
means connecting said cover member and said means for supporting, rocking and moving, for moving said means for supporting, rocking and moving in response to movement of said cover member, said connecting means for moving being received within said wide slot.

3,966,409

NUCLEAR MAGNETOMETERS FOR EARTH'S FIELD MEASUREMENTS BASED ON DYNAMIC POLARIZATION OF NUCLEI AND FREE RADICAL SUBSTANCE FOR USE THEREIN

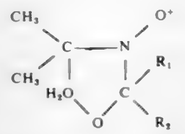
Ivan Hrvoic, 2825 Islington Ave., N., Weston, Ontario, Canada, and Kresimir Humski, Adamiceva 3, 41020 Zagreb, Yugoslavia

Filed Sept. 9, 1974, Ser. No. 504,719
Claims priority, application Canada, Nov. 30, 1973, 187093
Int. Cl.² C07D 263/00; G01N 27/26
U.S. Cl. 23—230 R 4 Claims



1. A method of measuring weak magnetic fields comprising:

a. placing in the magnetic field to be measured, a sample of a chemical substance made up of an assembly of nuclei with magnetic moments different from zero, the transition energy between the two adjacent energy states of nuclear magnetic moments being strictly proportional to the applied magnetic field and an assembly of unpaired electrons with unpaired spin and magnetic moments, said nuclear and electron magnetic moments being coupled by dipolar or scalar coupling or both, the said unpaired electrons in the sample being provided by a free radical chemical substance of the oxazolidine group



wherein the radicals R_1 and R_2 are chain radicals of the type $-(CH_2)_n CH_3$, where n varies from 0 to 2,

b. saturating with a strong RF magnetic field of frequency close to the electron energy transition, the said electron transitions producing a strong dynamic polarization of nuclear magnetic moments, and

c. detecting and measuring by electrical means the transition energy states of nuclear moments.

3,966,410

GROUP EXTRACTION OF ORGANIC COMPOUNDS PRESENT IN LIQUID SAMPLES

Vilhelm J. Jahnsen, Lake View Terrace, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 274,321, July 24, 1972, abandoned. This application June 20, 1974, Ser. No. 481,065
Int. Cl.² B01D 15/00, 15/08
U.S. Cl. 23—230 B 10 Claims

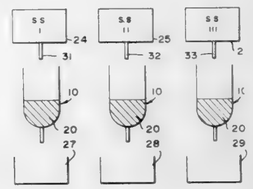
1. A method of extracting from a liquid sample, consisting of an aqueous liquid in which chemical compounds are contained, an extract, comprising a selected family of said compounds, the steps comprising

providng a substantially hollow tube with inlet and outlet openings and a packing zone therebetween,

placing a dry, substantially inert, chemically non-reactive packing material which has a large surface area to volume ratio within said packing zone,

directing through said open inlet to said packing material said liquid sample, whereby as it comes in contact with said packing material it spreads out as a thin liquid film over the large surface area of said packing material and is held thereon in a stationary state, and

rapidly removing said extract directly from said packing material in bulk out of said outlet opening, without selective fractional migration within the packing zone substantially immediately after the time required for an organic solvent, which is immiscible with the liquid of said sample, to pass through said packing material which is holding said sample as a thin liquid film spread over its large surface area,



said step of rapidly removing said extract comprising passing a reagent through said packing material to adjust the pH of said extract in said liquid sample to provide said extract with a partition coefficient value biased very heavily in favor of a solvent, which is immiscible with the liquid of said sample, relative to said sample,

passing said solvent, which is immiscible with the liquid of said sample through said packing material, in bulk through said packing material whereby it will exit said outlet opening carrying said extract therewith.

3,966,411

ANALYSIS FOR NITROGEN COMPOUNDS BY GAS CHROMATOGRAPHY

William D. Ross, 9060 Concord Road, R.R. 3, Eaton, Ohio 45320, and Robert E. Sievers, 2628 N. Emerald Drive, Fairborn, Ohio 45324

Filed Apr. 8, 1975, Ser. No. 566,157
Int. Cl.² G01N 31/08, 31/10, 33/18
U.S. Cl. 23—230 R 19 Claims



1. A process for the quantitative analysis of nitrogen-containing compounds which comprises mixing a sample comprising a nitrogen-containing compound selected from the group consisting of nitric acid, a salt of nitric acid, the oxidation products of an organic nitrogen-containing compound and nitrogen dioxide with an aromatic compound having the following formula:



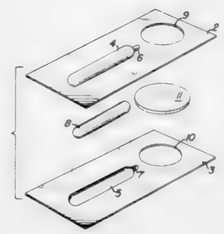
where R is hydrogen, alkyl, alkoxy, hydroxy or amino; reacting with nitrogen-containing compound with the aromatic compound in the presence of sulfuric or sulfurous acid, thereby converting the nitrogen-containing compound to a nitro-aromatic compound; and passing a sample of the resulting reaction mixture containing the nitro-aromatic compound through a chromatography detector.

3,966,412

LEWISITE DETECTION SAMPLER AND METHOD

Howard L. Stroterhoff, Towson, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 25, 1975, Ser. No. 561,723
Int. Cl.² G01N 21/06, 21/12
U.S. Cl. 23—232 R 2 Claims



1. A method of detecting chlorovinyldichlorarsine vapors in the surrounding atmosphere comprising the steps of placing a white silica gel paper spot and a frangible thin walled ampule containing a reactant solution consisting essentially of cupric carbonate, arsenious oxide, sodium hydroxide, piperidine in an aqueous solution of distilled water, in a recessed plastic film container means having an aperature means in both the upper and lower surfaces for exposing said silica gel paper spot to the atmosphere to be tested, exposing said silica gel paper spot to the atmosphere suspected to contain chlorovinyldichlorarsine, simultaneously crushing the reactant containing ampule to flow the reactant therein to the silica gel paper spot; reacting the reactant solution and any chlorovinyldichlorarsine absorbed in the silica gel paper spot to produce a color change in the white silica gel paper to a color spectrum of brownish-red to indicate the presence of chlorovinyldichlorarsine vapors in the tested atmosphere.

3,966,413

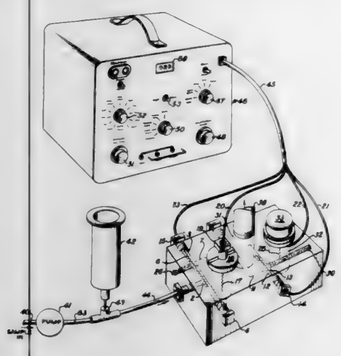
ELECTROCHEMICAL CHLORINE FLUX MONITOR

George Marinenko, Clarksburg, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Sept. 5, 1975, Ser. No. 610,711
Int. Cl.² G01N 27/46, 27/52
U.S. Cl. 23—253 R 6 Claims

1. Apparatus for measuring low concentration levels of chlorine in water including a self-contained calibration means comprising, means for providing a sample of water, a container of potassium iodide solution, means for mixing said sample of water and said potassium iodide solution to form a new solution, said new solution containing an amount of iodine proportional to the concentration of the chlorine in said sample of water, amperometric detecting cell means having a reference electrode and a working electrode, means for pass-

ing said new solution between said electrodes of said detecting cell means, and means for measuring the electrical current output of said detecting cell means, said calibration means comprising electrolysis cell means situated upstream of said



detecting cell means for electrolyzing the potassium iodide in said new solution to iodine when operated, and means for passing said new solution through said electrolysis cell means before it is passed through said detecting cell means.

3,966,414

TIME TEMPERATURE INDICATORS

Ghazi Khattab, Parsippany, and Robert J. Witonsky, Princeton, both of N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.

Filed Jan. 16, 1974, Ser. No. 433,925

Int. Cl.² G01K *3/04, 3/10, 11/12;* **G01N** *31/22*

U.S. Cl. 23—253 TP **5 Claims**

1. An indicator system operable to signal the attainment of a preselected value corresponding to the integral of the temperatures to which said system has been exposed as a function of time comprising:

a. a free radical sensitive dye;

b. at least a one molar excess based on said dye on an organic peroxide having the formula

$$R^1—O—O—R^2$$

wherein each of R^1 and R^2, independent of the other, is (I) a hydrocarbon group selected from the group consisting of alkyl, alkenyl, phenyl, phenylalkyl, cycloalkyl, phenoxyalkyl and substituted derivatives thereof or (II) said hydrocarbon group linked to the peroxy group through a carbonyl, oxycarbonyl or sulfonyl group; and

a solid, peroxide inert carrier; wherein a mixture of said free radical sensitive dye and organic peroxide is supported on said solid, peroxide inert carrier; whereby said dye changes color in the system as a result of free radical generation from the decomposition of said organic peroxide.

3,966,415

AEROBIC/ANAEROBIC COMPOSTING DEVICE

Francis B. Chester, 40-28 - 220th St., Bayside, N.Y. 11361

Continuation of Ser. No. 315,115, Dec. 14, 1972, Pat. No. 3,890,129. This application Mar. 24, 1975, Ser. No. 561,173

The portion of the term of this patent subsequent to June 17, 1992, has been disclaimed.

Int. Cl.² C05F *11/08, 11/06*

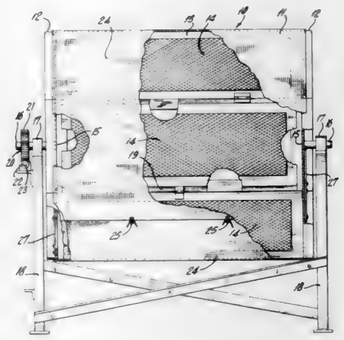
U.S. Cl. 23—259.1 **3 Claims**

1. In a composting device for aerobic and anaerobic decomposition of organic waste materials, the combination which comprises:

a. a rotatable waste material receptacle supported at ends thereof for rotation about a horizontal axis, said receptacle comprising a drum-like container having open sides;

b. open-mesh means extending around said open sides of said receptacle for discharging composted material from the receptacle in rotation of the receptacle about said horizontal axis;

c. cover means removably attached to and rotatable with said receptacle for retaining heat generated by decomposition of the waste material and protecting said waste material from moisture, said cover means comprising a removable cover of flexible material extending around said open-mesh sides of the receptacle and preventing the waste material from passing therethrough during rotation of the receptacle; and



d. an access door in a side of the receptacle for permitting introduction of the organic waste material therethrough into the receptacle.

3,966,416

SINGLE CRYSTAL GROWTH APPARATUS WITH FLUID BEARING AND FLUID DRIVE MEANS

Jean-Claude Tranchart, Morsang-sur-Orge, and Jacques Charles Louis Bunel, Vigneux-sur-Seine, both of France, assignors to U.S. Philips Corporation, Briarcliff Manor, N.Y.

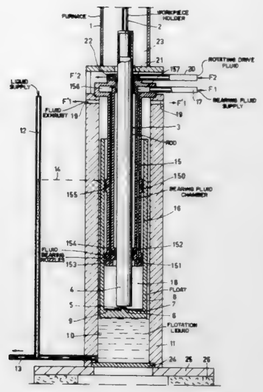
Filed June 20, 1974, Ser. No. 481,381

Claims priority, application France, June 28, 1973, 73.23686

Int. Cl.² B01D *9/00*

U.S. Cl. 23—273 SP **9 Claims**

1. In a driving device for a single crystal growth apparatus, for moving a body vertically and rotationally about a vertical axis through a growth furnace, comprising a tank for holding a quantity of liquid, means for controlling the level of said liquid in the tank, a hollow cylindrical float for floating in the liquid, having an inner bottom surface and an inner vertical wall having a given height, a circular cylindrical central member having a height greater than said given height, said central member positioned vertically, the improvement wherein said central member has a top portion arranged to carry said body and a bottom end disposed within said float, and said device further comprises bearing means for supporting said bottom end on said bottom surface, means for establishing a gas bearing with said central member to center said member and maintain said member vertical, and means for directing a gas



flow in contact with said central member so as to rotate said member about a vertical axis.

3,966,417

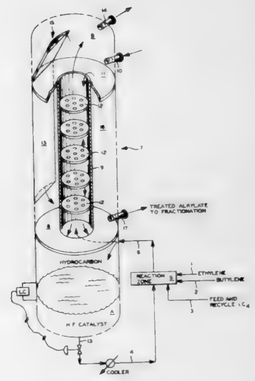
APPARATUS FOR CONTACTING ALKYLATE CONTAINING ALKYL FLUORIDE WITH HYDROGEN FLUORIDE

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 159,884, July 6, 1971, Pat. No. 3,784,628. This application Sept. 13, 1973, Ser. No. 397,028

Int. Cl.² B01J *1/00, 8/08;* **C07C** *3/54*

U.S. Cl. 23—283 **5 Claims**



1. An apparatus for the contacting of two liquids which comprises a unitary vessel containing a lower section, an intermediate section, and an upper section, the upper portion of said lower section being delineated by a plate extending across the vessel, a means in the upper portion of said lower section for introducing a liquid into said lower section, a means in the lower portion of said lower section for withdrawing a liquid from said lower section, an upright riser conduit mounted on said plate in cooperation with a perforation in said plate to permit liquids from said lower section to rise into said riser conduit, said plate being in fluidtight connection with the walls of said vessel and said riser conduit, said riser conduit containing mixing and contacting elements, said riser conduit extending upwardly from said plate a substantial distance along the vessel and defining with the vessel an annulus, a second plate having a perforation therein associated with said riser conduit to permit communication between the upper section and the lower section through said riser conduit, said second plate being in fluid-tight connection with the walls of said vessel and with the upper portion of said riser conduit, said second plate defining the upper portion of the intermediate section and the lower portion of said upper section means for introducing a liquid into said upper section at a lower portion thereof, and a downcomer conduit with one of its ends near the top of said vessel in said upper section, the other end of said downcomer conduit extending downwardly through said upper plate so that liquid in the top of said section can be passed downwardly through said downcomer into the annulus formed between the vessel and the riser conduit in the intermediate section of the vessel, and means provided for removing liquids in said annulus portion of the intermediate section from the vessel.

3,966,418

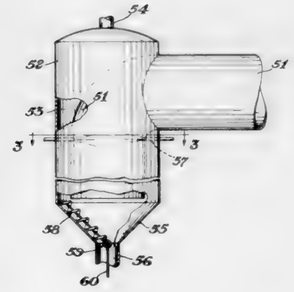
GAS TREATMENT APPARATUS

Ludo K. Frevel, Midland, and Leonard J. Kressley, Saginaw, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 433,935, Jan. 16, 1974, abandoned. This application Feb. 28, 1975, Ser. No. 553,958

Int. Cl.² C01B *17/56;* **B01D** *50/00;* **B01J** *1/00*

U.S. Cl. 23—284 **1 Claim**



1. A gas treatment apparatus comprising:

a hollow body having a gas exit port in the ceiling thereof and a conical funnel-shaped portion with a solids exit port in the bottom thereof;

a conduit for conveying gas, a portion of the conduit passing through a wall of and into the interior of the hollow body such that a portion of the conduit within the hollow body is aligned coaxially with the hollow body, the conduit having a first open end for introducing a gas to be treated into the hollow body and a second open end within the hollow body for discharging treated material from the hollow body;

at least one nozzle for injecting an atomized solution into the gas conveyed in the conduit, the nozzle being positioned in fluid communication with the interior of the conduit, and the nozzle being located at an angle relative to a radial from the center of the conduit, such that a swirling motion is imparted to the injected solution;

a gas passageway for removing gases formed during the gas treatment, the passageway being defined by the inner surface of the hollow body and the outer surface of the conduit portion, and the gas passageway being in communication with the gas exit port;

a screw conveyer positioned on the inner peripheral surface of the conical funnel-shaped portion of the hollow body;

means to support the screw conveyer on the inner peripheral surface;

a drive means adapted to rotate the screw conveyer about its axis while circularly swiveling the screw conveyer over substantially the entire inner peripheral surface of the conical funnel-shaped portion, such that any solids deposited thereon during gas treatment are removed through the soild exit port by the motion of the screw conveyer.

3,966,419

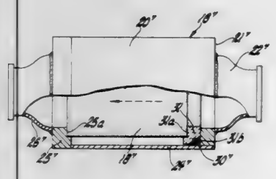
CATALYTIC CONVERTER HAVING MONOLITH WITH MICA SUPPORT MEANS THEREFOR

Rodger E. Bloomfield, Linden, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1974, Ser. No. 524,486

Int. Cl.² B01J *8/00*; **F01N** *3/15, 7/00*

U.S. Cl. 23—288 F **7 Claims**



1. A catalytic converter comprising a housing, a monolithic catalyst element disposed within said housing, said catalyst element having a rate of thermal expansion less than said housing, and support means disposed between said catalyst element and said housing for providing supporting and immobilizing forces therebetween, said support means being formed of mica having a rate of thermal expansion greater than said housing to thereby provide increasing supporting and immobilizing forces between said catalyst element and said housing as the temperature of said converter increases.

3,966,420

APPARATUS AND PROCESS FOR THE CATALYTIC TREATMENT OF HYDROCARBONS

Abraham A. Pegels, and Joannes B. Wijffels, both of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.

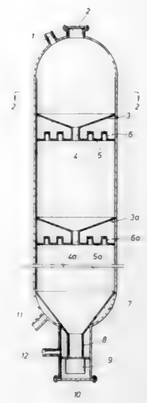
Filed Jan. 10, 1975, Ser. No. 540,307

Claims priority, application Netherlands, Feb. 8, 1974, 7401733

Int. Cl.² B01J *8/04, 8/12, 8/20, 8/44*

U.S. Cl. 23—288 R **12 Claims**

1. An upright apparatus for the catalytic treatment of hydrocarbons, comprising a reactor containing at least one tray, and containing catalyst supporting means for at least one catalyst bed, said supporting means being permeable to liquid and gas and impermeable to catalyst particles, said supporting means being attached to the inner wall of the reactor and being at least partly in the shape of a conical surface of a truncated cone converging downwardly to an aperture permeable to catalyst particles, one of said trays being located beneath each supporting means, said trays being permeable to liquid and gas for effecting redistribution of liquid flowing out



of the catalyst bed and impermeable to catalyst particles and having an aperture which is permeable to catalyst particles.

3,966,421

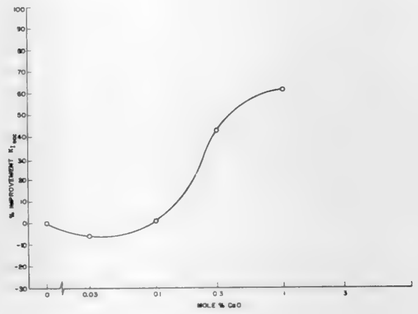
ULTRA-HIGH STRENGTH STEEL CONTAINING CaO, MgO, BaO OR SrO HAVING IMPROVED RESISTANCE TO ENVIRONMENTAL STRESS CORROSION CRACKING

Herbert E. Townsend, Jr., Allentown; James B. Horton, Bethlehem, and Louis R. Woodyatt, Whitehall, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed June 18, 1973, Ser. No. 371,195

Int. Cl.² C22C *1/05*

U.S. Cl. 29—182.5 **15 Claims**



1. A composition of matter consisting essentially of a dispersion of particles of a metal oxide selected from the group consisting of CaO, BaO, MgO, and SrO and mixtures thereof in a ferrous metal matrix, said metal oxide present in an amount from about 0.1 to less than 3 mole percent, said composition characterized by an improved resistance to environmental stress corrosion cracking when heat treated to a yield strength in excess of 160,000 pounds per square inch.

3,966,422

POWDER METALLURGICALLY PRODUCED ALLOY SHEET

Eugene W. Kelley, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed May 17, 1974, Ser. No. 470,746

Int. Cl.² B22F *3/00, 8/00, 1/00*

U.S. Cl. 29—182.7 **10 Claims**

1. A new article of manufacture comprising an alloy sheet suitable for cutting edges produced by hot working to gauge a slab of hot consolidated atomized prealloyed powder, the powder consisting of about 27% to about 32% chromium, about 3.5% to about 5.5% tungsten, about 0.19% to about 2.4% carbon, up to about 1.5% molybdenum, up to about 2% manganese, up to about 3% iron, up to about 2% silicon, up to about 3% nickel, up to about 1% boron, and the balance cobalt, the consolidation and hot working being carried out at temperatures less than about 2300°F, the microstructure of the sheet comprising a dispersion of carbide particles in a solid solution matrix, the carbide particles having an average size less than 10 microns.

3,966,423

GRAIN REFINEMENT OF TITANIUM CARBIDE TOOL STEEL

M. Kumar Mal, 99 N. Pascack Road, Spring Valley, N.Y. 10977, and Stuart E. Tarkan, 152 Grandview Ave., Monsey, N.Y. 10952

Filed Nov. 6, 1973, Ser. No. 413,339

Int. Cl.² B22F *3/00*

U.S. Cl. 29—182.7 **16 Claims**

1. A steel-bonded titanium carbide composition formed of primary grains of titanium carbide of average size less than 5 microns dispersed through a steel matrix characterized by an austenitic decomposition product, said composition containing an effective amount of a grain-growth inhibitor corresponding to by weight of about 0.25% to 2% of a Group VB carbide, said composition in the hardened state being characterized by improved anti-friction properties and improved resistance to wear.

12. A method of inhibiting the grain growth of titanium carbide grains in the production of a sintered, steel-bonded titanium carbide composition containing primary grains of titanium carbide dispersed through a steel matrix making up essentially the balance which comprises, providing a powder mixture of titanium carbide with powdered steel-forming ingredients, including an effective amount of a grain growth inhibitor corresponding to about 0.25% to 2% by weight of a Group VB carbide, compacting said mixture to a desired shape and sintering said shape at an elevated liquid phase sintering temperature of said matrix, whereby the titanium carbide grains in the resulting sintered product are characterized by an average grain size of less than 5 microns, by improved anti-friction properties and by improved resistance to wear by virtue of the presence of said effective amount of said Group VB carbide.

3,966,424

WELDING MATERIAL FOR SUPER LOW TEMPERATURE STEELS

Tomokazu Godai; Toboru Sugiyama, and Katushi Nishimura, all of Kamakura, Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Continuation-in-part of Ser. No. 242,202, April 7, 1972, Pat. No. 3,853,611. This application Oct. 7, 1974, Ser. No. 512,915

Claims priority, application Japan, Apr. 10, 1971, 46-22530

The portion of the term of this patent subsequent to Dec. 10, 1991, has been disclaimed.

Int. Cl.² B32B *15/16*

U.S. Cl. 29—191.2 **2 Claims**

1. A welding material which is suitable for low temperature steels, which comprises:

a combination of metal-forming material and a lime-titania flux, wherein said metal-forming material and flux are combined in such a fashion that the integrity of the flux and the metal-forming material as distinct entities is maintained in said combination, said metal-forming material consisting of no more than 0.2% carbon, 5 – 12% manganese, no more than 30% chromium, 4 – 8% niobium, no more than 22% iron, no more than 1.5% silicon, and the balance being essentially nickel, and said flux consisting essentially of a mixture of 10 – 50% calcium carbonate, 16 – 50% fluorspar, 2 – 20% magnesia clinker and no more than 10% rutile and alloy-constituting elements of no more than 1.6% carbon, no more than 55% manganese, no more than 60% chromium, no more than 24% niobium, and no more than 10% silicon with the proviso that the total amount of the alloy constituting elements in said flux does not exceed 60%, wherein all the elements contained in the metal-forming material and flux are adjusted such that the composition, calculated on the basis of the metal-forming material, consists essentially of no more than 0.2% carbon, 5 – 12% manganese, no more than 30% chromium, 4 – 8% niobium, no more than 22% iron and no more than 1.5% silicon, the balance being essentially nickel.

3,966,425

STAINLESS STEEL WIRE HAVING NICKEL PLATED LAYER

Keinosuke Takeo, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 20,186, March 17, 1970, abandoned.

This application Feb. 27, 1975, Ser. No. 553,720

Claims priority, application Japan, Mar. 18, 1969, 44-21144

Int. Cl.² B32B *15/00*

U.S. Cl. 29—191.6 **1 Claim**

1. A cold drawn wire, useful in forming coiled springs without frictional seizure or galling, comprising a stainless steel wire having a plated coating consisting essentially of nickel thereon of a thickness of from 0.1 to 15 microns.

3,966,426

COOKING VESSEL FOR USE WITH INDUCTION HEATING COOKING UNIT

Robert A. McCoy, Turtle Creek, and William C. Moreland, II, Export, both of Pa., assignors to White-Westinghouse Corporation, Cleveland, Ohio

Filed Mar. 24, 1972, Ser. No. 237,703

Int. Cl.² H05B *1/02*

U.S. Cl. 29—196.2 **5 Claims**

1. A cooking vessel for use with an induction heating cooking device operating at a frequency between 20 and 40 kilohertz and having a laminated wall adapted to be placed in proximity with the induction coil of said device, said laminated wall including at least three metallic layers comprising:

one layer of a magnetic material having a thickness of at least one skin depth within the range of operating frequencies of said device when the vessel is in use, to develop the major part of the power in said one layer and to prevent substantial penetration of the magnetic field produced by said coil beyond said layer;

another layer, farther from said coil than said one layer in use, of relatively high thermal conductivity material, in excess of about 50 BTU/hr/sq. ft/°F./ft., to promote the uniform distribution of heat derived from said one layer throughout said another layer; and

an additional layer on the face of said one layer opposite said another layer, said additional layer being of a metallic material having relatively low magnetic permeability with the field intensity produced by said coil, a thickness of between one-fifth and one-twentieth of one skin depth within the range of said operating frequencies, and a

relatively high electrical resistivity as compared to the electrical resistivity of said one layer.

3,966,427

PRODUCTION OF BRIQUETTES

Robert Herment, Grand-Couronne; Yves Lafage, Paris; Jean Claude Emo, and Jean Marie Yurcek, both of Grand-Couronne, all of France, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 17, 1975, Ser. No. 542,134

Claims priority, application France, Jan. 18, 1974, 74.01758

Int. Cl.² C10L *5/00, 5/16;* **C22B** *1/08*

U.S. Cl. 44—10 H **8 Claims**

1. A process for producing briquettes comprising admixing water-containing solid particles selected from the class consisting of mineral ore, coal and carbonaceous soot or a mud of said particles in a mixer with a bituminous binder selected from the group consisting of powdered bitumen, molten bitumen and bitumen emulsion, and then subsequently compressing the resultant mixture directly after mixing, without separation of a substantial amount of liquid water from the mixer, into briquettes at a temperature which is at least equal to about the softening point temperature, as measured by the Ring and Ball method, minus 40°C of the bitumen present in the bituminous binder, the amount of the binder being such that the briquettes contain from about 1 to about 12% by weight of said binder.

3,966,428

ETHYLENE BACKBONE POLYMERS IN COMBINATION WITH ESTER POLYMERS HAVING LONG ALKYL SIDE CHAINS ARE LOW VISCOSITY DISTILLATE FUEL COLD FLOW IMPROVERS

Albert Rossi, Warren, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Oct. 31, 1973, Ser. No. 411,289

Int. Cl.² C10L *1/18*

U.S. Cl. 44—62 **9 Claims**

1. A light middle distillate fuel oil having a viscosity in the range of about 1.6 to 7.5 centistokes at 100°F boiling in the range of 250° to 750°F, which has been improved in its low temperature flow properties by about 0.002 to 0.5 wt. % based on the weight of the total composition, of a synergistic flow improving mixture of 0.5 to 10 parts by weight of an oil soluble ethylene backbone middle distillate pour point depressing polymer having a molecular weight in the range of about 500 to 50,000 per part by weight of an oil soluble long side chain ester-containing polymer operable as a residua flow improver and having a molecular weight in the range of about 1000 to 100,000,

wherein said ethylene backbone pour point depressant is selected from the group of polymers consisting of:

1. chlorinated polyethylene containing about 10 to 30 wt. % chlorine,
2. copolymers consisting essentially of 3 to 40 molar proportions of ethylene with a molar proportion of C_3 to C_{18} alpha monoolefin, and
3. copolymers consisting essentially of 3 to 40 molar proportions of ethylene with a molar proportion of an ethylenically unsaturated alkyl ester of the formula:



wherein R_1 is hydrogen or methyl, R_2 is a $-OOCR_4$ or $-COOR_4$ group wherein R_4 is hydrogen or a C_1 to C_{16} alkyl group, and R_3 is hydrogen or $-COOR_4$;

wherein said long side chain ester containing polymer is characterized by at least 25 wt. % of the polymer being straight chain C_{18}-C_{44} alkyl groups extending from ester linkages, said long chain ester polymer being selected from the group consisting of:

A. polyester condensation product of 0.8 to 1.6 molar proportions of an alkenyl or alkyl succinic anhydride or its corresponding acid containing a linear hydrocarbon group of 16 to 44 carbon atoms with 0.8 to 1.2 molar proportions of a polyol containing 2 to 6 hydroxy groups and a total of 2 to 12 carbon atoms, and 0.7 to 2.2 molar proportions of a C_{20} to C_{44} saturated aliphatic monocarboxylic acid;

B. addition polymers comprising moieties of long side chain unsaturated esters represented by the formula:



wherein R_1 is hydrogen or a C_1 to C_5 alkyl group, R_2 is a $-OOCR_4$ or $-COOR_4$ group wherein R_4 is a C_{20} to C_{44} straight chain alkyl group, and R_3 is hydrogen or $-COOR_4$; and

C. polymers of about equi-molar proportion of C_{18} to C_{40} mono alpha aliphatic olefin with an unsaturated C_4 to C_{10} dicarboxylic acid or anhydride and esterified with about 0.5 to 1.0 molar proportion of C_{20} to C_{40} linear, saturated, alcohol;

said synergistic flow improving mixtures being polymer combinations of: (1) and (B); (2) and (A); (3) and (A); and (3) and (C).

3,966,429

MANGANESE CONTAINING FUELS

James W. Sprague, Bedford; Daniel W. Feldman, Beachwood, and Frank Veatch, Cleveland, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed May 16, 1974, Ser. No. 470,692

Int. Cl.² C10L *1/18*

U.S. Cl. 44—68 **12 Claims**

1. In a gasoline composition for combustion in a gasoline internal combustion engine comprising gasoline and a gasoline soluble manganese tricarbonyl compound as an additive, the improvement comprising

including a small but effective amount of a trialkyl citrate compound, said compound being soluble in gasoline and acting as a gasoline additive to improve the performance of the gasoline internal combustion engine.

3,966,430

CARBURETOR ADAPTER

Woodrow W. Stephens, 2704 S. Mulberry St., Muncie, Ind. 47302

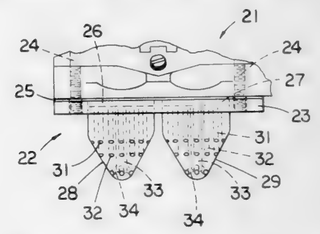
Filed July 10, 1975, Ser. No. 595,325

Int. Cl.³ F02M *29/04*

U.S. Cl. 48—180 R **3 Claims**

1. An apparatus adapted for insertion between the carburetor and the intake manifold of an internal combustion engine, said apparatus comprising a generally flat base and at least one solid conical member depending from one face of the base, the other face of the base being undercut in register with the

depending conical member, a series of spaced apertures extending through said conical member parallel to the axis of the member, a central aperture of larger diameter than said first mentioned spaced apertures coincident with the axis of the conical member and extending adjacent to but not through the



apex of said conical member, and a further series of spaced apertures extending to the exterior of the cone shaped member from said central aperture, said further series of spaced apertures being adjacent the apex of said cone shaped member and extending at an acute angle with the axis of the cone shaped member.

3,966,431

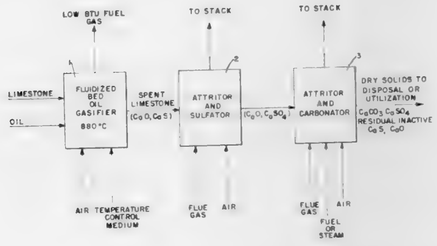
WASTE STONE OXIDATION AND RECARBONIZATION

John W. T. Craig, E. Hendred near Wantage, England; Eoin P. O'Neill, and Dale L. Keairns, both of Pittsburgh, Pa., assignors to The United States of America as represented by the United States Environmental Protection Agency, Washington, D.C.

Filed Feb. 21, 1975, Ser. No. 551,786

Int. Cl.³ C10J *1/00;* **C10K** *1/34*

U.S. Cl. 48—197 R **5 Claims**



1. A process for the desulfurization and gasification of a sulfur-containing fuel comprising:

contacting said sulfur-containing fuel with a particulate calcium oxide-containing material, in a first reaction zone, at a temperature sufficient to gasify said fuel and to cause the sulfur contained therein to react with the calcium oxide to form calcium sulfide coatings on the particles and to produce a fuel gas overhead of reduced sulfur content;

transferring said calcium sulfide-coated particles from said first reaction zone to a second reaction zone, wherein said particles are contacted with a free oxygen-containing gas at a temperature suffficient to convert at least a portion of said calcium sulfide to calcium sulfate, thereby forming sulfated particles;

transferring said sulfated particles to a third reaction zone wherein said sulfated particles are contacted with a carbon dioxide-containing gas to convert at least a portion of the calcium oxide contained in said sulfated particles into calcium carbonate, thus forming an environmentally stable particulate material comprising calcium sulfate and calcium carbonate.

3,966,432

LIQUID ABRASIVE COMPOSITIONS CONTAINING A SILICATE SUSPENDING AGENT

George Geoffrey Rayner, Eccles, England, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed June 14, 1974, Ser. No. 479,328

Claims priority, application United Kingdom, July 6, 1973, 32367/73

Int. Cl.² C04B *31/16;* **C09C** *1/68*

U.S. Cl. 51—308 **12 Claims**

1. A liquid abrasive composition comprising an aqueous suspension of about 25–60% of a substantially waterinsoluble particulate abrasive, about 3–8% of a nonionic surfactant and about 0.25–1.0% of suspending agent selected from natural and synthetic clays, hydrophobically treated clays, fumed silica, magnesium montmorillonite, and complex magnesium aluminum silicates.

3,966,433

PURIFIER

Victor D. Molitor, 2829 S. Santa Fe Drive, Englewood, Colo. 80110

Filed Apr. 24, 1974, Ser. No. 463,458

Int. Cl.² B01D *53/04*

U.S. Cl. 55—66 **7 Claims**



1. A purifier comprising:

a first series of passages in heat exchange relationship with a second series of passages provided by opposed, interspaced cylindrical shells connected to end plates and having a circular periphery of decreasing diameter inwardly, said shells being of decreasing diameter and length from the outside inwardly;

a container for gettering material disposed centrally of said shells;

a heater for heating said gettering material to a predetermined temperature and for heating the gases passing through said container;

said end plates including alternate end plates at one end of said shells having holes for transferring incoming gases from one incoming passage to the next incoming passage;

alternate end plates at the opposite end being annular with an inside diameter permitting passage of outgoing gases from one outlet passage to the next outer outlet passage; and

additional shells extending from each end plate toward the opposite end plate but being spaced from the opposite end plate to permit gases to pass around the spaced edges of said additional shells.

6. A method of purifying a predetermined gas to remove at least two gaseous impurities, wherein one or more of said impurities are removed by a first gettering material operating at a predetermined temperature and one or more of such gaseous impurities are removed by a gettering material operating at a lower temprature; which comprises:

passing incoming gas to be purified through a labyrinth passageway in heat exchange relation to the outgoing gases and through a bed of said first gettering material heated to said predetermined temperature;

during said passage of the outgoing gases in heat exchange relation with the incoming gases, passing the same through said second bed at said lower temperature; and

passing said outgoing gases from said second bed in heat exchange relationship with said incoming gases at temperatures below said lower temperature.

3,966,434

METHOD FOR FILTERING GAS AND CLEANING OF FILTER BAGS

Arthur E. Frazier, Elmore, Ohio, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 21, 1974, Ser. No. 516,480
Int. Cl.² B01D *46/04*
U.S. Cl. 55—96 **2 Claims**



1. A process for removing suspended solids from a stream of gas comprising passing a solids-laden gas stream through a filter bag in a bag filter compartment, wherein said bag is fabricated from a polytetrafluoroethylene woven fabric wherein said bag is heat-stabilized, and wherein said filter bag is mounted in said filter compartment with 0.5 to 5 percent longitudinal slack, based upon the bag length when there is no differential pressure across said bag and wherein during filtration the differential pressure across said bag removes said slack by causing said bag to expand, collecting clean gas in a closed compartment enclosing said filter bag, exhausting said clean gas via an open exhaust valve, closing said exhaust valve whereby when said exhaust valve is closed, the differential pressure across said bag approaches zero, said bag becomes slack and the solids deposited on the filter surface disengage therefrom and fall to collection chamber, after which, said exhaust valve is opened and the step of removing solids from said stream of gas is resumed.

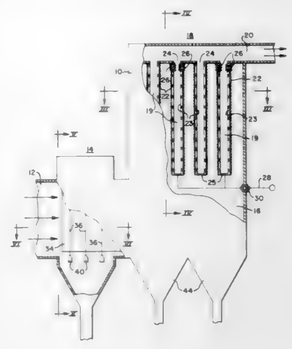
3,966,435

ELECTROSTATIC DUST FILTER

Gaylord W. Penney, 216 Paris Road, Pittsburgh, Pa. 15235

Filed May 2, 1974, Ser. No. 466,131
Int. Cl.² B03C *3/00*
U.S. Cl. 55—131 **15 Claims**

1. An electrostatic filter for collecting a mixture of electrically-charged solid particles of opposite polarities, said filter comprising spaced filter members having fabric filter elements with generally parallel surfaces, and said filter elements also have surface irregularities, means for maintaining a unidirectional electric field between said filter members in a direction generally perpendicular to said surfaces, whereby said filter members are of opposite relative polarities, and means for directing said mixture of particles into the space between the filter members in a direction generally parallel to said surfaces



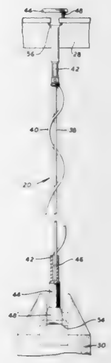
of the filter elements and transverse to said electric field to cause the particles to move in opposite directions in accordance with their polarities and to deposit on said surfaces in porous layers.

3,966,436

DISCHARGE ELECTRODE

William E. Archer, Huntington Beach, Calif., assignor to Wahlco, Inc., Costa Mesa, Calif.

Filed July 8, 1974, Ser. No. 486,548
Int. Cl.² B03C *3/41*
U.S. Cl. 55—147 **4 Claims**



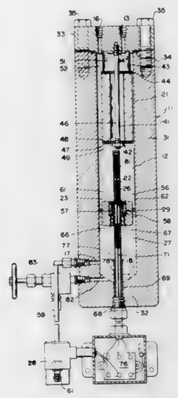
1. An electrode assembly adapted to be supported within an electrostatic precipitator comprising: an elongated, substantially straight, electrically conductive electrode member; a generally helical electrically conductive electrode member having end portions; a major portion of said straight member being radially spaced from and encompassed by said helical member; securing means electrically connecting and mechanically securing said end portions of said helical member to said straight member; and weight means connected to said straight member for holding said straight member in tension; wherein only the major extent of said helical member between said end portions is free to move into and out of engagement with said straight member during normal operation in an electrostatic precipitator.

3,966,437

HIGH PRESSURE GAS-LIQUID SEPARATOR

Charles F. DeWolf, Alameda, and William S. Gault, Castro Valley, both of Calif., assignors to Rix Industries, Emeryville, Calif.

Filed July 31, 1973, Ser. No. 384,245
Int. Cl.² B01D *29/42*
U.S. Cl. 55—219 **2 Claims**



1. A high pressure gas-liquid separator adapted for connection in high pressure gas lines for removing condensate therein comprising:

a pressure vessel having a wall means formed for containment of a gas pressure up to about 15,000 psi, therein, said pressure vessel defining a first chamber, and said first chamber having a gas outlet connected thereto;

a coalescent-type filter comprising a hollow porous filter body having an interior, second, chamber and mounted in a normally upper portion of said first chamber to define below said filter in a lower portion of said first chamber a condensate sump;

a condensate drain opening in said vessel communicating with said condensate sump;

said filter body having an exterior wall spaced from the interior wall of said first chamber to define an annular passage surrounding said filter body for gravitation into said condensate sump of condensate on said exterior wall;

a gas inlet passage communicating with said second chamber for gas flow into said second chamber and for gas flow through said porous filter body to said exterior wall, said filter body being adapted to coalesce condensate from gas passing through said filter body and release coalesced condensate on said exterior wall;

an elongate guide tube mounted in said first chamber below said filter in a generally upright position of use and being sealed in a normally lower end of said vessel, said guide tube being adapted to withstand high gas pressures in said first chamber;

a float composed of snytactic material mounted in said first chamber and on said guide tube for vertical reciprocation;

a pair of magnetically operated switches mounted interiorly of said guide tube in longitudinally spaced positions representing high and low condensate levels;

an electrically operated valve connected to said drain opening;

magnetic means carried by said float and operating said switches at relatively high and low condensate levels respectively; and

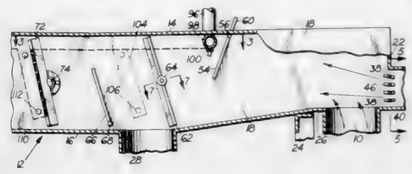
an electric control circuit connected to said switches and electrically operated valve.

3,966,438

APPARATUS FOR WASHING STACK GASES

Jerry W. Nicholson, 668 SW. McVey, Apt. 59, Lake Oswego, Oreg. 97034

Filed Dec. 5, 1974, Ser. No. 529,819
Int. Cl.² B01D *47/10*
U.S. Cl. 55—238 **5 Claims**



1. Apparatus for washing stack gases and the like, comprising:

a. a hollow housing defined by top, bottom and side walls and having an outlet at one end,

b. means arranged to support said housing in substantially a horizontal position across the top of a stack,

c. stack gas inlet means in the bottom wall of said housing adjacent the end opposite said outlet arranged to communicate with the top opening of a stack and to receive stack gases therefrom.

d. blower means having an outlet communicating with the end of the housing opposite said outlet for directing air from the blower means across the stack gas inlet means toward the housing outlet,

e. a plurality of baffle means supported in said housing on the opposite side of said stack gas inlet means from the blower means and having face portions arranged to be impinged by gases forced through said housing,

f. said baffle means being located in said housing in an arrangement providing a tortuous path of movement of the stack gases through the housing,

g. liquid spray means disposed between said baffle means to wash the gases,

h. means defining a discharge opening in the bottom wall of said housing for discharging liquid from said spray means, and

i. adjustable mounting means for some of said baffle means in said housing, said adjustable mounting means providing adjustment of certain of said some of said baffle means on an axis at right angles to the longitudinal length of the housing and providing adjustment of others of said some of said baffle means on a universal axis whereby to establish a selected path of tortuous movement of stack gases through said housing.

3,966,439

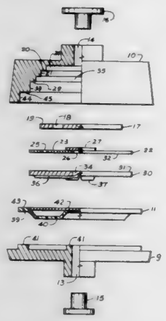
FLUID SAMPLING DEVICE

Spyros-Lysander N. Vennos, 4003 Milldale Court, Phoenix, Md. 21131

Filed Nov. 11, 1974, Ser. No. 522,904
Int. Cl.² B01D *53/30*
U.S. Cl. 55—270 **9 Claims**

1. A sample collection unit comprising in combination a hollow two piece cassette having a removable bottom member having an inlet port therein, a top member frictionally and imperviously engaging said bottom member and containing a valving structure means permitting unidirectional flow from said inlet port to said outlet port said top member having an outlet port therein, a filter capsule removably positioned in said cassette between said top and bottom members said filter capsule comprising at least two parts, one of said parts facing said inlet port of said cassette and consisting of a nonhygroscopic impervious shield having an aperture therein in registry with the inlet port of said removable bottom member, another of said parts comprising a filter mounted adjacent to and touching said shield in a region of the shield surrounding said

aperture, the mounting of said filter with said shield causing a portion of its surface area to separate from said shield during flow conditions and to return to its original position when flow



ceases, and means engaging the peripheral edge of said capsule to hold said capsule between the top and bottom members of said cassette.

3,966,440

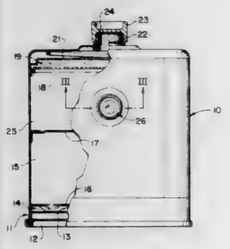
COLORIMETRIC VINYL CHLORIDE INDICATOR

Charles Clifton Roberts, Pittsburgh, Pa., assignor to Catalyst Research Corporation, Baltimore, Md.

Filed June 3, 1975, Ser. No. 583,421

Int. Cl.² B01D *46/30*

U.S. Cl. 55—274 **3 Claims**



1. In a canister for removing airborne vinyl organo material from the atmosphere having an inlet and an outlet port and an inner chamber substantially filled with an active particulate material positioned between said inlet and outlet port for removing said airborne vinyl organo material and including an indicator window positioned for viewing into said inner chamber and adjacent to said outlet port, the improvement comprising a solid vinyl organo colorimetric indicating material positioned immediately behind said indicator window and extending into said active material, said vinyl organo colorimetric indicating material consisting of activated alumina impregnated with between 0.5 and 5.0% by weight potassium permanganate.

3,966,441

LINT DISPOSAL APPARATUS

Benjamin H. Freze, Garden Grove, Calif., assignor to Challenge-Cook Bros., Incorporated, City of Industry, Calif

Continuation-in-part of Ser. No. 257,018, May 25, 1972, abandoned. This application Sept. 30, 1974, Ser. No. 510,369

Int. Cl.² B01D *46/26*

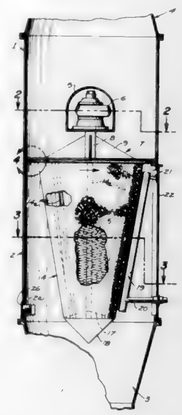
U.S. Cl. 55—290 **10 Claims**

1. An apparatus for the disposition of combustible particulate matter, contained in an air stream moving in a duct, said apparatus, comprising:

a. a shell having a relatively coaxial inlet end and outlet end interposed in the duct with its inlet end and outlet end joined thereto;

b. an annular filter screen structure closed at one end and extending longitudinally within the shell between its inlet end and outlet end, the screen structure defining with the shell an inlet chamber exteriorly of the filter screen structure, including its closed end, said inlet chamber communicating with the inlet end of the shell, and an outlet chamber interiorly of the filter screen structure and communicating with the outlet end of the shell;

c. an annular seal means between the outlet end of the shell and the outlet chamber formed by the screen structure to close the inlet chamber whereby all flow of air through the duct passes through the filter screen structure, said annular seal means permitting rotation of the filter screen structure;



d. means attached to an end of the screen structure for rotating the filter screen structure at sufficient surface speed to cause the air stream and entrained particulate matter, on approaching the filterscreen structure, to rotate therewith, the air stream flow and the surface speed of the filter screen structure being sufficient to exert a force continuously urging the particulate matter off the filter screen structure in opposition to air flow through the filter screen structure and cause the particulate matter to remain partially suspended in proximity to the surface of the filter screen structure;

e. and a longitudinally extending heating means directed toward a narrow zone of the external surface of the filter screen structure and maintained at a temperature above the combustion temperature of the particulate matter thereby to burn off the particulate matter as the filter screen structure rotates past the heating means.

3,966,442

ODOR MASKING AND FILTERING ASHTRAY

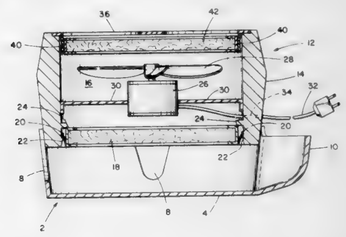
Bruce M. Waters, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Filed Sept. 30, 1974, Ser. No. 510,644

Int. Cl.² B01D *50/00*

U.S. Cl. 55—316 **9 Claims**

1. A filtering ashtray apparatus comprising: an ashtray base having a vertically extending side wall provided with openings therein sufficiently large to accommodate items being smoked and to permit their movement therein; an annular housing on the top of said ashtray base extending therein to rest on the side wall thereof enclosing said ashtray base except for said openings; said openings extending below the bottom of said housing; filter means mounted in said housing; and a motor



driven fan mounted in said housing for drawing air and smoke in said ashtray through said openings, through said filter means and out of the top of said housing.

3,966,443

EXHAUST GAS PURIFIER FOR INTERNAL COMBUSTION ENGINE

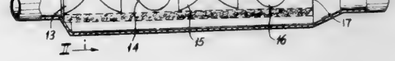
Ryoichi Okano, Nagoya; Tsuchio Bunda; Shinichiro Mizusawa, both of Okazaki, and Akiyoshi Morita, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Kabushiki Kaisha Tsuchiya, Nagoya, both of, Japan

Filed Apr. 15, 1974, Ser. No. 460,895

Claims priority, application Japan, Apr. 18, 1973, 48-043981

Int. Cl.² B01D *50/00*

U.S. Cl. 55—337 **6 Claims**



1. An exhaust gas purifier comprising, a casing, at least one porous tube surrounded by porous filter means within the casing, said porous tube having an interior and an exterior, said tube and casing having a gas flow space between said casing and the exterior of said tube; gas inlet means at one end of the casing for directing gas into the interior of said porous tube, and gas outlet means at the other end of the casing for receiving gas from said gas flow space; baffle means in said tube for mixing gas from said inlet and for diverting gas through said porous tube and into the gas flow space, said baffle means comprising, a series of flat plates each twisted at least 180° between end edges thereof and aligned with the porous tube, end edges of adjacent plates being at right angles to each other so that the mixing action of the plates is enhanced.

3,966,444

VACUUM CLEANER FILTER ASSEMBLY

Earl R. Clowers, and Walter G. Azelkas, both of Anderson, S.C., assignors to The Singer Company, New York, N.Y.

Filed Apr. 4, 1975, Ser. No. 565,039

Int. Cl.² B01D *46/02*

U.S. Cl. 55—356 **2 Claims**

1. In a lightweight vacuum cleaner having a hollow lower housing including an aperture at one end and open at the other end, a filter bag compartment defined within said lower housing, an inlet air conduit having a nozzle at one end, means for securing the conduit to the lower housing with its other end positioned within the aperture, and an upper housing having suction creating means removably secured to the open end of the lower housing with said suction creating means communicating with said filter bag compartment, an improved filter assembly comprising: a support plate including an integral open ended guide tube positioned in said compartment, said guide tube extending from a face of the plate toward the open end of the lower housing and in flow communication registration with said aperture, said plate having a marginal border conforming in size and shape to that of the lower housing at the aperture end, said guide tube being positioned



about said other end of the intake air conduit, a frame having elongated legs secured to said plate and extending toward the open end of the lower housing, said frame including a grasping member at the upper extremity of said legs, a porous filter bag having at least two interior compartments, one compartment including a tubular inlet portion receivable about said guide tube, a second compartment having an opening communicating with the first compartment remote from the tubular portion and having a dirt storage cavity remote from the opening, and means for removable securing said tubular inlet portion about said guide tube, said assembly being removable as a unit from the open end of the lower housing.

3,966,445

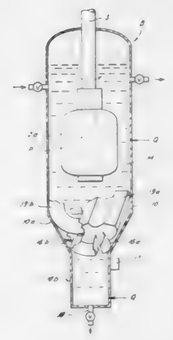
FREEZE REFINING METHOD

Clyde C. Adams, P.O. Box 31, French Settlement, La. 70733

Filed June 7, 1974, Ser. No. 477,366

Int. Cl.² B01D *9/00, 9/04*

U.S. Cl. 62—58 **7 Claims**



1. A method of crystal collection, including the steps of:

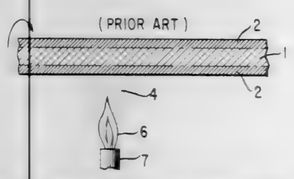
providing a vessel containing a liquid melt, said melt including pure and impure materials;

said pure materials being capable of collection in crystalline form;

maintaining said melt in substantially a liquid phase in said vessel;

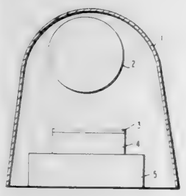
providing a rotatable cooling shaft in said melt;
collecting heterogeneous material in discrete crystalline form on said shaft by substantially radial grain growth with respect to said shaft with said discrete cystals including substantially pure material within and having grain boundaries at least partly formed of said impure materials; and wherein the improvement comprises,
using centrifugal force caused by rotation of said cooling shaft to remove said heterogeneous material from said shaft in solid chunk form without fully melting by separating said material along the grain boundaries thereof.

3,966,446
AXIAL FABRICATION OF OPTICAL FIBERS
Stewart Edward Miller, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 23, 1975, Ser. No. 625,318
Int. Cl.² C03B *37/02*
U.S. Cl. 65—2 **6 Claims**



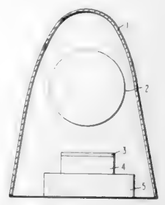
1. A method of forming an optical fiber, comprising:
forming thermochemically a particulate glass precursor material capable of being consolidated into a glass of optical loss less than 50 db/km;
rotating a base member about an axis substantially perpendicular to its flat surface;
directing axially a stream of the said particulate matter onto the rotating flat base member from a direction substantially perpendicular to the surface of the base member; and
drawing the structure into an optical fiber.

3,966,447
HEAT ABSORBING SEALING METHOD FOR LASER GLASS
Yoshiyuki Asahara, Kanagawa, and Tetsuro Izumitani, Hino, both of Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan
Filed Aug. 20, 1974, Ser. No. 499,097
Claims priority, application Japan, Aug. 20, 1973, 48-93078
Int. Cl.² C03B *23/20, 27/00*; **C03C** *3/00*
U.S. Cl. 65—40 **8 Claims**



1. A sealing method for a laser glass which comprises applying a powder mixture of (1) a low melting glass containing an infrared absorbing component and (2) a low expansion high melting glass containing an infrared absorbing component to an Nd laser glass and then welding the powder mixture to the laser glass by heating.

3,966,448
SEALING METHOD FOR LASER GLASS
Yoshiyuki Asahara, Kanagawa; Tetsuro Izumitani, Hino, and Kenji Nakagawa, Tikorozawa, all of Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan
Filed Aug. 20, 1974, Ser. No. 499,098
Claims priority, application Japan, Aug. 20, 1973, 48-93077
Int. Cl.² C03B *27/00*; **C03C** *3/00*
U.S. Cl. 65—43 **6 Claims**



1. A sealing method for a laser glass which comprises applying a powder mixture consisting essentially of (1) a low melting glass for sealing a glass laser and (2) a glass having a melting point higher than the melting point of the low melting glass and an expansion coefficient lower than the expansion coefficient of the low melting glass to an Nd laser glass and welding the glass mixture to the laser glass by heating.

3,966,449
SEALING GLASS COMPOSITION AND PROCESS
Betty Jane Foster, and Rao Ramamohana Tummala, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 10, 1975, Ser. No. 548,649
Int. Cl.² C03C *27/00, 3/12, 3/00*
U.S. Cl. 65—43 **3 Claims**

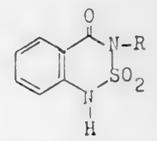
1. A glass sealing composition comprising a paste including; particles of a lead glass, said glass having a composition of, by weight, from about 66% to about 76% PbO, from about 8.6% to about 14% B_2O_3, from about 10% to about 12% ZnO, from about 2% to about 4% SiO_2, from about 0.7% to about 2% BaO, from 0 to about 5.0% CuO, from 0 to about 1.7% Al_2O_3, and from 0 to about 0.2% Na_2O; from about 1 to about 3% by weight of said glass of finely divided TiO_2; and from about 5 to about 20% by weight based on the total weight of paste of terpineol.

3,966,450
ANIMAL WASTE ODOR TREATMENT
Eugene T. O'Neill, Hightstown, and William H. Kibbel, Jr., Pennington, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.
Filed Aug. 12, 1974, Ser. No. 496,518
Int. Cl.² C05F *3/00*; **C02C** *1/40*
U.S. Cl. 71—15 **5 Claims**

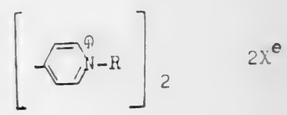
1. A process for simultaneously controlling the odor of an animal waste slurry and increasing the plant nutrient values in said animal waste slurry, which comprises:
contacting an animal waste slurry with about 5 ppm to about 500 ppm hydrogen peroxide as an aqueous hydrogen peroxide solution based on 100% hydrogen peroxide;
adjusting the pH of the slurry to between about 4.0 and about 8.0 with a mineral acid selected from the group consisting of phosphoric acid, sulfuric acid, and nitric acid;
mixing the slurry until the animal waste odor is no longer objectionable whereby ammonia and related amine odors are converted into ammonium salts; and
recovering a treated animal waste slurry containing increased amounts of ammonium salts selected from the group consisting of ammonium phosphate salts, ammonium sulfate salts, and ammonium nitrate.

3,966,451
HERBICIDAL MIXTURES OF 3-LOWER ALKYL-2,1-3-BENZOTHIADIAZINONE-(4)-2,2-DIOXIDES OR SALTS THEREOF AND 1,1'-DI-(3,5-DIMETHYLMORPHOLINE-CARBONYLMETHYL)-4,4'-DIPYRIDYLIUM SALT
Adolf Fischer, deceased, late of Mutterstadt, Germany (by Caecilia Emma Fischer, legal representative), assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Division of Ser. No. 432,687, Jan. 11, 1974, abandoned, which is a division of Ser. No. 343,629, March 22, 1973, Pat. No. 3,888,655. This application Feb. 10, 1975, Ser. No. 548,386
Claims priority, application Germany, Apr. 13, 1972, 2217722
Int. Cl.² A01N *9/12*
U.S. Cl. 71—91 **10 Claims**

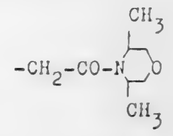
1. A herbicide composition comprising an inert carrier having dispersed therein a herbicidally effective amount of a mixture consisting essentially of
a. a compound of the formula



where R denotes lower alkyl of a maximum of 4 carbon atoms, or an alkali metal, alkaline earth metal, ammonium, lower hydroxyalkylammonium, lower alkylammonium or hydrazine salt thereof, and
b. a compound of the formula



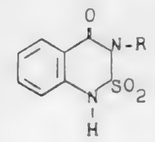
where R denotes the radical



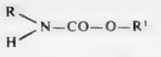
and X denotes an anion in a weight ratio of a:b of 3:1 to 1:3.

3,966,452
HERBICIDE MIXTURES OF 3-LOWER ALKYL-2,1,3-BENZOTHIADIAZINONE-(4)-2,2-DIOXIDES OR SALTS THEREOF AND LOWER ALKYL N-(4-AMINOBENZENESULFONYL)-CARBAMATES
Adolf Fischer, deceased, lat of Mutterstadt, Germany (by Caecilia Emma Fischer, legal representative), assignor to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Continuation-in-part of Ser. No. 432,685, Jan. 11, 1974, abandoned, which is a division of Ser. No. 343,629, March 22, 1973, Pat. No. 3,888,655. This application Mar. 17, 1975, Ser. No. 559,322
Claims priority, application Germany, Apr. 13, 1972, 2217722
Int. Cl.² A01N *9/12*
U.S. Cl. 71—91 **3 Claims**

1. A herbicide composition comprising an inert carrier having dispersed therein a herbicidally effective amount of a mixture of herbicides consisting essentially of
a. a compound of the formula



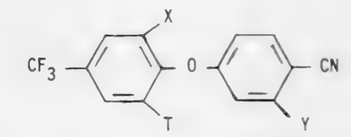
where R denotes lower alkyl of a maximum of 4 carbon atoms, or an alkali metal, alkaline earth metal, ammonium, lower alkylammonium, lower hydroxyalkylammonium or hydrazine salt thereof, and
b. a compound of the formula



where R denotes aminobenzenesulfonyl and R^1 denotes lower alkyl in a weight ratio of a:b of 3:1 to 1:3.

3,966,453
HERBICIDAL 2-HALO-4-TRIFLUOROMETHYL-4'-CYANOPHENYL-ETHERS
Ryohei Takahashi, Kusatsu; Kanichi Fujikawa, Kyoto; Isao Yokomichi, Kusatsu; Tadaaki Toki, Kusatsu, and Shinzo Someya, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 326,366, Jan. 24, 1973. This application Mar. 25, 1975, Ser. No. 561,682
Claims priority, application Japan, Jan. 27, 1972, 47-10367; May 13, 1972, 47-47322; Aug. 2, 1972, 47-76944; Dec. 6, 1972, 47-121665; Dec. 11, 1972, 47-123369
Int. Cl.² A01N *9/20*; **C07C** *121/75*
U.S. Cl. 71—105 **7 Claims**

1. A compound having the formula:



wherein X represents a halogen atom, T represents a hydrogen or a halogen atom, and Y represents a hydrogen atom, halogen atom, lower alkyl, lower alkoxy group.

7. The method of killing weeds which comprises applying a herbicidally effective amount of a compound of claim 1.

3,966,454
METHOD FOR PRODUCING IRON OR IRON ALLOY POWDERS HAVING A LOW OXYGEN CONTENT
Shunji Ito; Yasuaki Morioka; Yoshihiro Kajinaga; Minoru Nitta, all of Chiba, and Ichio Sakurada, Ichihara, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan
Filed June 23, 1975, Ser. No. 589,564
Claims priority, application Japan, June 24, 1974, 49-71250
Int. Cl.² B22F *9/00*
U.S. Cl. 75—.5 BA **11 Claims**

1. A method for producing iron or iron alloy powders having a low oxygen content to be used for powder metallurgy comprises subjecting iron or iron alloy powder materials having an oxygen content of not more than 8% by weight and a total carbon amount including carbon alloyed in said powders being not more than 6% by weight to an induction heating under a relative density of 5–65% based on a density of the molding steel of said powders by means of an alternating current of 50 cycles-1 megacycle to heat said powders at a temperature of 750°–1,400°C to effect reduction rapidly.

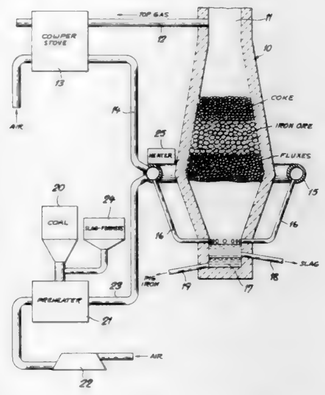
3,966,455
PROCESS FOR ILMENITE ORE REDUCTION
Paul Franklin Taylor, P.O. Box 468, Crossville, Tenn. 38555
Continuation-in-part of Ser. No. 117,098, Feb. 19, 1974, Pat. No. 3,811,871. This application Mar. 28, 1974, Ser. No. 455,624
Int. Cl.² C22C *38/14*; **C22B** *5/00*
U.S. Cl. 75—21 **2 Claims**

1. A method of reducing ilmenite metal ore oxides comprising the steps of: (a) Admixing finely divided ilmenite ore with a liquid chemical solution consisting essentially of about 24.2 parts by weight of phosphoric acid, about 0.5 parts by weight of zinc oxide, and about 1.0 part by weight of a sulfated surfactant, (b) admixing and dissolving about one-half pound finely divided limestone (calcium carbonate, $CaCO_3$) or the carbonate of a Class IA or IIA metal per approximately 20 pounds of concentrated ilmenite ore, (c) stirring to aid chemical reaction and maintain mixture homogeneity, (d) heating the mixture to vaporize volatile materials and until residue is baked to a dry and solid state, and (e) smelting the remaining solid material to produce iron - titanium alloy metal.

3,966,456
PROCESS OF USING OLIVINE IN A BLAST FURNACE
Frank H. Ellenbaum, Hinsdale, Ill., and Richard Ciesco, Griffith, Ind., assignors to Molten Metal Engineering Co., Willowbrook, Ill.
Filed Aug. 1, 1974, Ser. No. 493,696
Int. Cl.² C21B *5/04*
U.S. Cl. 75—41 **6 Claims**

1. In a process for producing iron in a blast furnace wherein charge materials including iron oxide bearing materials, calcium carbonate and coke, are charged into the blast furnace to form within the furnace layers of iron oxide bearing materials, calcium carbonate and coke and wherein air is passed upwardly through said layers, and said coke is burned to heat said materials and reduce iron oxides to produce molten iron, said charge materials having an alkali metal oxide content exceeding 1 pound per ton of molten iron produced, the improvement which includes charging into said blast furnace in addition to said iron oxide materials from 0.25 to 5 percent of olivine, said percentage being based on the weight of said iron oxide materials.

3,966,457
METHOD OF OPERATING A BLAST FURNACE USING COAL AUXILIARY COMBUSTIBLE
Raymond Limpach, Huncherange, and Lucien Lorang, Differdange, both of Luxemburg, assignors to Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED, Luxembourg, Luxembourg
Filed Dec. 5, 1975, Ser. No. 638,159
Claims priority, application Luxembourg, Dec. 6, 1974, 71434
Int. Cl.² C21B *5/00*
U.S. Cl. 75—42 **10 Claims**

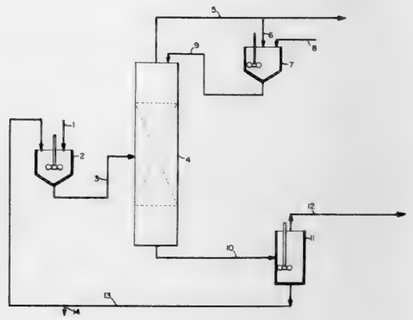


1. In a method of operating a blast furnace wherein hot gas rises countercurrent to a descending column of coke and iron ore to smelt the ore and burn the coke, the improvement comprising the steps of sequentially:
introducing a carbonaceous combustible granulate containing a vaporizable component into a chamber separate from said blast furnace,
rapidly heating said granulate in said chamber to a temperature sufficiently high to vaporize said component and explode said granulate into fine particles, and
conducting said particles from said chamber into said furnace.

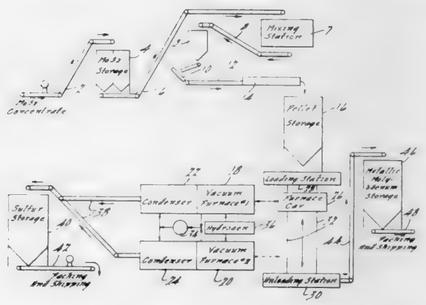
3,966,458
SEPARATION OF ZIRCONIUM AND HAFNIUM
Donald R. Spink, Waterloo, Canada, assignor to Amax Specialty Metal Corporation, Greenwich, Conn.
Filed Sept. 6, 1974, Ser. No. 503,724
Int. Cl.² C22B *61/02*
U.S. Cl. 75—84.5 **13 Claims**

1. A continuous process for the separation of the tetrahalides of hafnium and zirconium comprising dissolving a crude feed consisting essentially of hafnium tetrahalide and zirconium tetrahalide in a solvent comprising a near eutectic mixture of zirconium tetrahalide and at least one alkaline metal halide selected from the group consisting of sodium, potassium and lithium to form a first solution, introducing said first solution of an elevated temperature into a distillation tower, withdrawing hafnium tetrahalide vapor from the said solution as the overhead product, adding at least one alkaline metal halide selected from the group consisting of sodium, lithium and potassium to a portion of said hafnium tetrahalide vapor at an elevated temperature to form an eutectic second solution, introducing said second solution into the distillation tower as a reflux, withdrawing an eutectic third solution of zirconium tetrahalide and at least one alkaline metal halide selected from the group consisting of sodium, potassium and lithium as a bottoms fraction from said distillation tower, and separating from said third solution a portion of zirconium tetrahalide.

10. A continuous process for the separation of the tetrahalides of hafnium and zirconium and for the production of pure zirconium metal comprising mixing crude zirconium tetrachloride containing hafnium tetrachloride with sodium chloride and potassium chloride to form an eutectic salt containing about 65 mole percent zirconium tetrachloride and hafnium tetrachloride, about 29 mole percent potassium chloride and about 8 mole percent sodium chloride, melting the mixture at a temperature less than about 220°C to form a molten salt mixture, feeding the molten salt mixture to a distillation tower and withdrawing pure hafnium tetrachloride vapor as an overhead product, removing a bottoms product from said tower comprising a molten hafnium-free salt containing about 85 percent by weight zirconium tetrachloride, heating said bottoms product to remove a portion of the pure zirconium tetrachloride, reducing said pure zirconium tetrachloride with magnesium to provide pure zirconium metal, recycling the remainder of the bottoms product to said eutectic salt and combining a portion of the hafnium tetrachloride overhead product with a mixture of sodium chloride and potassium chloride to form an eutectic reflux which is introduced to said column.

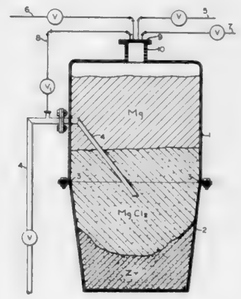


3,966,459
PROCESS FOR THERMAL DISSOCIATION OF MOLYBDENUM DISULFIDE
Donald O. Buker, Denver, Colo., assignor to Amax Inc., New York, N.Y.
Filed Sept. 24, 1974, Ser. No. 508,848
Int. Cl.² C22B *34/00*, *9/14*
U.S. Cl. 75—84 **16 Claims**



1. A process for preparing metallic molybdenum of relatively high purity which comprises the steps of agglomerating a feed material consisting essentially of a finely-particulated molybdenite concentrate consisting predominantly of molybdenum disulfide into a plurality of shape-sustaining pellets, heating said pellets to an elevated temperature ranging from about 2,500°F to about 3100°F for a period of time sufficient to effect a dissociation of substantially all of the molydenum disulfide contained therein while in a non-oxidizing atmosphere under a pressure of less than about 10 torr, continuously withdrawing the gaseous sulfur and other volatile contaminating constituents in said pellets, heat treating the residual said pellets by subjecting them to contact with hydrogen at an elevated temperature ranging from at least about 2500°F to about 3100°F in a manner to effect a further extraction of residual sulfur to a level less than about 100 ppm by a conversion thereof to hydrogen sulfide and continuously withdrawing the gaseous products thus obtained so as to maintain a pressure of less than about 5 torr, and thereafter cooling and extracting the substantially dense sintered said pellets consisting predominantly of metallic molybdenum.

3,966,460
REDUCTION OF METAL HALIDES
Donald R. Spink, Waterloo, Canada, assignor to Amax Specialty Metal Corporation, Greenwich, Conn.
Filed Sept. 6, 1974, Ser. No. 503,723
Int. Cl.² C22B *34/14*; **C21C** *7/00*
U.S. Cl. 75—84.4 **2 Claims**

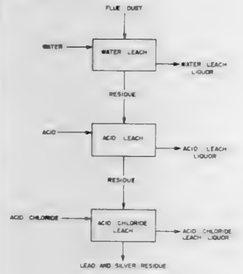


1. A process for the production of a metal selected from the group consisting of zirconium and hafnium from its tetrahalide comprising:
a. reducing the metal tetrahalide with a stoichiometric excess of magnesium in a inert atmosphere and at an elevated temperature in a first retort having an upper portion and a lower first crucible portion;
b. withdrawing magnesium halide from said first retort substantially as formed during the reaction while continuously maintaining a protection cover of magnesium chloride over the reduced metal;
c. the said reduced metal being deposited in the first crucible and containing excess magnesium and entrained magnesium chloride;
d. a reaction vessel having an upper portion and a lower portion;
e. removing said first crucible from the first retort and placing it inverted in the upper portion of said reaction vessel;
f. inserting in the lower portion of the reaction vessel a second retort having an upper portion and a lower second crucible portion;
g. heating the upper portion of the reaction vessel and vacuum distilling off the excess magnesium and entrained magnesium halide from the reduced metal in the first crucible;
h. maintaining the lower portion of the reaction vessel at a lower temperature to condense the vapors of magnesium and magnesium chloride;
i. passing the magnesium and magnesium chloride into the second retort from the first crucible; and
j. employing said second retort in a subsequent reduction of said metal halides as in step (a) above.

3,966,461
SELECTIVE REMOVAL OF BISMUTH FROM OXIDIZED PARTICULATE MATERIALS

Jan D. Miller, and Juan Luis Sepulveda Jimenez, both of Salt Lake City, Utah, assignors to The University of Utah, Salt Lake City, Utah

Filed Mar. 17, 1975, Ser. No. 559,119
Int. Cl.² C22B *30/06*
U.S. Cl. 75—101 R **5 Claims**

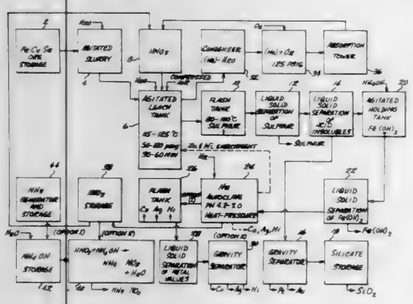


1. A process for selectively removing bismuth from oxidized particulate materials comprising oxides of at least one of the metals selected from the group consisting of lead and silver, the process comprising the steps of:
   obtaining oxidized particulate bismuth material including metals selected from the group consisting of lead and silver;
   leaching the oxidized particulate material with an acidic chloride leach comprising sulfuric acid having an acidity greater than 0.1 Molar and a chloride ion concentration within the range on the order of about 0.05 to 0.2 Molar and at an elevated temperature thereby selectively dissolving bismuth; and
   separating the dissolved bismuth from the material.

3,966,462
RECOVERY OF NITRIC ACID SOLUBLE TRANSITION METALS FROM SULFUR AND IRON CONTAINING ORES OF THE SAME

John G. Posel, Everett; Gregory P. Williams, Montlake Terrace, and David N. Nilsen, Everett, all of Wash., assignors to International Ore Technology, Inc., Everett, Wash.

Filed Apr. 18, 1975, Ser. No. 569,227
Int. Cl.² C22B *15/08*
U.S. Cl. 75—101 BE **7 Claims**



1. In the process of recovering copper from a sulfur and iron containing ore of the same, the steps of forming an aqueous nitric acid leach solution of the ore, heating the solution under containment to a temperature at or above the melting point of sulfur to establish an iron content of no greater than 15 grams of iron values per liter in the leach liquor, adding an acid neutralizer to the liquor to establish a pH of about 1–2 therein and to produce salts of the acid which are soluble in the liquor, contacting the liquor with a copper specific aqueous insoluble organic extractant liquid while maintaining the foregoing pH in the liquor to extract the copper into the extractant liquid, relatively separating the organic extractant liquid and the liquor, and recovering the copper from the organic extractant liquid.

3,966,463
OXIDATION AND SINTER-RESISTANT METAL POWDERS AND PASTES

Anthony V. Fraioli, East Setauket, and John A. DeRosa, Queens Village, both of N.Y., assignors to Plessey Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 496,714, Aug. 12, 1974. This application Apr. 7, 1975, Ser. No. 565,835
Int. Cl.² C22B *11/04*
U.S. Cl. 75—108 **3 Claims**

1. The method of preparing a precious metal powder having high density and an increased sintering temperature comprising:
   forming an acidic solution of said precious metal and a minor proportion, relative to said metal, of a refractory oxide precursor;
   rapidly mixing said first solution with an ammonia solution, and then neutralizing with an acid;
   dissolving sodium acetate in said solution;
   adding sufficient sodium bisulfite, under conditions of agitation, to drop the pH of the solution to about 4, and precipitate said precious metal and oxide; and
   recovering, drying and purifying said precipitate.

3,966,464
ELECTRICAL CONTACT MATERIALS AND METHODS OF MAKING THE SAME

Terrence Ardern Davies, Horton, England, assignor to Square D Company, Park Ridge, Ill.

Division of Ser. No. 384,157, July 30, 1973, Pat. No. 3,857,706. This application Nov. 25, 1974, Ser. No. 526,889
Claims priority, application United Kingdom, Aug. 25, 1972, 39666/72
Int. Cl.² C22C *5/06*, *1/03*
U.S. Cl. 75—173 R **1 Claim**

1. A method of producing an electrical contact material including the steps providing a silver-mercury master alloy of a desired composition; adding the master alloy to molten silver under an inert atmosphere to provide a silver-based molten alloy having a mercury concentration of not more than 3.0 weight percent; casting molten alloy to form an ingot; and forging and rolling the ingot into sheet form.

3,966,465
MULTIPLE LAYER MIGRATION IMAGING SYSTEM

Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 76,891, Sept. 30, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,546
Int. Cl.² G03G *13/04*, *13/06*, *13/22*
U.S. Cl. 96—1 PS **46 Claims**

1. An imaging method comprising:
   a. Providing an imaging member comprising a circulation layer and a migration layer; said migration layer having a thickness between 0.5 and 5 microns and comprising migration material and electrically insulating softenable material capable of having its resistance to migration of migration material decreased sufficiently to allow migration of migration material in depth in said migration layer softenable material; said circulation layer having a thickness between 1 and 12 microns and comprising electrically insulating softenable material capable of being softened sufficiently to allow circulation thereof in response to a charge density;
   b. Electrically latently imaging said imaging member to form an electrical latent image of a pre-determined charge density;
   c. Developing said electrical latent image to creat an image by decreasing the resistance to migration of migration material in depth in the migration layer softenable material at least sufficient to allow image-wise migration of migration material at least in depth in said migration layer softenable material, and by softening the circulation layer softenable material sufficient to allow circulation thereof in response to said pre-determined charge density wherein migrating material is accumulated into groups.

3,966,466
PHOTOELECTROPHORETIC IMAGING PROCESS USING DARK CHARGE INJECTING AGENT ON BLOCKING ELECTRODE

Geoffrey A. Page, Rochester; Steven J. Grammatica, Webster, and Joan R. Ewing, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1974, Ser. No. 533,552
Int. Cl.² G03G *5/12*, *13/01*, *13/24*
U.S. Cl. 96—1.2 **18 Claims**

1. A photoelectrophoretic imaging process comprising the steps of providing a suspension of electrically photosensitive pigment particles in an electrically insulating carrier liquid placed between a conductive electrode and a blocking electrode, at least one of said electrodes being at least partially transparent to electromagnetic radiation to which at least a portion of said pigment particles are sensitive and said blocking electrode being coated with a dark charge injecting agent, said agent being a compound selected from the group consisting of inorganic salts of lithium, iodine, tin and iron, said dark charge injecting agent on said blocking electrode being capable of causing said pigment particles to be substantially uniformly attracted to said conductive electrode when an electrical field is applied across said suspension in the dark, subjecting said suspension to an electrical field in the dark while in contact with said dark charge injecting agent whereby said pigment particles are substantially uniformly attracted to said conductive electrode, and exposing said suspension to an imagewise pattern of electromagnetic radiation to which at least a portion of said pigment particles are sensitive until an image is formed.

3,966,467
TRANSFERRING TONER TO AN HYDROCARBON SHEET

Richard A. Parent, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 465,964, May 1, 1974. This application Apr. 17, 1975, Ser. No. 569,138
Int. Cl.² G03G *13/16*, *13/22*
U.S. Cl. 96—1.4 **6 Claims**

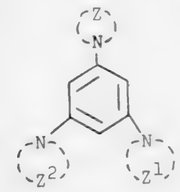
1. A method of xerographically preparing a color transparency copy comprising:
   a. forming a single color powder image of a multicolored original to be reproduced;
   b. transferring the powder image to a transparency comprising a thermoplastic film sheet, said sheet having at least one surface coated with a long chain aliphatic hydrocarbon having a melting point of above 40°C., the hydrocarbon coating having a thickness of above 0.1 mil; and
   c. fixing the powder image on the transparency.

3,966,468
ORGANIC PHOTOCONDUCTORS WITH TRIAMINO BENZENE ADDITIVES

Lawrence E. Contois, and Norman G. Rule, both of Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 25, 1975, Ser. No. 571,469
Int. Cl.² G03G *5/06*
U.S. Cl. 96—1.5 **16 Claims**

1. An organic photoconductive insulating compositon comprising at least one organic photoconductor and, as a contrast-modifying agent, a compound having the formula:

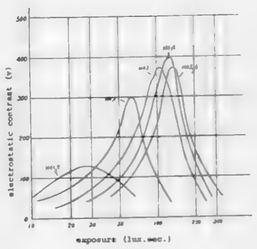


wherein each of Z, Z^1 and Z^2, taken together with the nitrogen to which each is attached, represents the non-metallic atoms necessary to complete an N-deterocyclic group having from 5 to 10 atoms in the cyclic nucleus.

3,966,469
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE COMPOSITION EMPLOYING A PREPOLYMER OF DIALLYLPHTHALATE

Makoto Kuroda, Hirakata; Kazuhisa Morimoto, Settsu, and Akira Minobe, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Sept. 10, 1974, Ser. No. 504,990
Claims priority, application Japan, Sept. 14, 1973, 48-104371
Int. Cl.² G03G *5/07*
U.S. Cl. 96—1.5 **5 Claims**



1. A photosensitive composition for electrophotography comprising an organic photosensitive compound which is poly-N-vinylcarbazole or halogenated poly-N-vinylcarbazole and a prepolymer of diallylphthalate, the proportions of the organic photosensitive compound to said prepolymer being 100 parts by weight of organic photosensitive compound to 20 to 100 parts by weight of said prepolymer.

3,966,470

PHOTO-CONDUCTIVE COATING CONTAINING Ge, S, AND Pb OR Sn

Adalbert Feltz; Johannes Opfermann; Bernd Voigt, all of Jena, and Walter Seliger, Dresden, all of Germany, assignors to VEB Pentacon Dresden, Dresden, Germany

Filed June 3, 1974, Ser. No. 475,381

Claims priority, application Germany, Aug. 22, 1973, 173134

Int. Cl.² G03G *5/04; H01J 39/00*

U.S. Cl. 96—1.5 **2 Claims**

1. A photoconductive material comprising a carrier and a homogeneous, vitreous coating thereon, said coating comprising an alloy consisting essentially of germanium, sulphur and a further constituent selected from the group consisting of lead and tin,

the thickness of said coating being between 0.2 and 200μm,

the atom percent of Ge being between 17.7 and 42.5 and that of S between 54.5 and 61 when lead is used,

the atom percent of Ge being between 21 and 41 and that of S between 53 and 61 when tin is used,

the atom percent of the lead being between 0.1 and 24.5 and that of the tin between 0.1 and 22.

3,966,471

ELECTRO PHOTOSENSITIVE MATERIALS WITH A PROTECTIVE LAYER

Haruo Hasegawa; Hiroyoshi Taniguchi; Shiro Yamane; Takao Igawa, and Tomoshi Nagayama, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1974, Ser. No. 536,296

Claims priority, application Japan, Dec. 25, 1973, 49-4025

Int. Cl.² G03G *5/04, 5/08*

U.S. Cl. 96—1.5 **2 Claims**

1. A photosensitive material comprising a conductive support at least one surface of which is coated with a photoconductive layer, the said photoconductive layer in turn being coated on the top surface thereof with a protective coating comprising from 0.1 to 50% by weight based on the total weight of the protective coating with an organic compound selected from the group consisting of aluminum alcoholates and aluminum chelate compounds dispersed in a resin.

3,966,472

PROCESS FOR PRODUCING PRINTING PLATES

Kikuo Kubotera, and Eiichi Mizuki, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 4, 1973, Ser. No. 347,762

Claims priority, application Japan, Apr. 5, 1972, 47-34265

Int. Cl.² G03F *7/02;* **G03C** *1/90*

U.S. Cl. 96—33 **8 Claims**

1. A process for producing a printing plate, which comprises exposing a photosensitive printing plate material through an original, said printing plate material consisting of a support having an oleophilic surface, a layer of a direct positive-type photosensitive silver halide emulsion formed on said support, a hydrophilic layer applied between said support and said emulsion layer capable of being etch-bleached corresponding to a silver image to be formed in said emulsion layer and an interlayer formed between said emulsion layer and said hydrophilic layer for easy removal of the emulsion layer after the etch-bleaching treatment, said interlayer being etch-bleachable along with the hydrophilic layer and being removable after etch-bleaching with said emulsion layer, said interlayer being removable from said hydrophilic layer by immersion in water of 30°–50° C; developing the exposed material to form a silver image in the non-exposed areas in said emulsion layer; subjecting the developed material to an etch-bleaching treatment to remove the interlayer and hydrophilic layer at a portion corresponding to the silver image in the non-exposed areas and to reveal the oleophilic surface of the support; and removing the interlayer and the emulsion layer at the exposed portion on which the silver image is not formed, thereby to reveal said hydrophilic layer.

3,966,473

METHOD FOR PRODUCING A PHOTOMASK

Masamichi Sato, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 9, 1974, Ser. No. 513,435

Claims priority, application Japan, Oct. 9, 1973, 48-113630

Int. Cl.² G03C *5/00;* **C09K** *13/08;* **C23F** *1/02;* **G03B** *27/00*

U.S. Cl. 96—36 **14 Claims**

1. A method for producing a photomask, which comprises exposing and development-processing a photographic light-sensitive material consisting essentially of a transparent support having thereon a masking layer and a silver halide emulsion layer to thereby form silver image areas, said emulsion layer being formed by dispersing silver halide in a water soluble binder, etch-bleaching said silver halide emulsion layer to thereby remove the silver image areas to uncover the masking layer thereunder, subjecting the support, masking layer and remaining non-silver image areas of the emulsion layer to etching to etch the uncovered masking layer with a mixed solution containing hydrofluoric acid and ammonium fluoride to thereby uncover the transparent support thereunder without permeation of the mixed solution etchant through the non-silver image areas of the emulsion layer, and then removing the non-silver image areas of the emulsion layer to thereby reveal the masking layer.

3,966,474

METHOD FOR IMPROVING ADHERENCE OF PHOSPHOR-PHOTOBINDER LAYER DURING LUMINESCENT-SCREEN MAKING

Stanley Arthur Harper, New Providence, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1974, Ser. No. 527,055

Int. Cl.² G03C *5/00*

U.S. Cl. 96—36.1 **10 Claims**

1. A method for preparing a luminescent screen upon a glass surface comprising

a. adhering to said glass surface a dry, non-photosensitive precoating consisting essentially of discreet water-insoluble, organic, polymeric particles, said precoating having a weight of about 0.08 to 0.80 milligrams per square centimeter,

b. depositing upon said precoating a layer of a slurry comprising phosphor particles and a photosensitive binder therefor,

c. exposing said coating to a light image whereby to form in said coating selected regions of greater solubility and selected regions of lesser solubility,

d. and then developing said exposed coating by selectively removing said regions of greater solubility.

3,966,475

PHOTOGRAPHIC SILVER HALIDE EMULSIONS CONTAINING ACYLACETANILIDE COLOR COUPLERS

Raphael Karel Van Poucke, Berchem, and Freddy Carolus Baeyens, Wommelgem, both of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

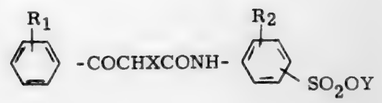
Filed Mar. 18, 1974, Ser. No. 452,327

Claims priority, application United Kingdom, Apr. 6, 1973, 16625/73

Int. Cl.² G03C *7/00*

U.S. Cl. 96—55 **6 Claims**

1. Method of producing a yellow colored photographic image in a photographic light-sensitive silver halide material comprising exposing a photographic light-sensitive silver halide material and developing it with an aromatic primary amino color developing agent in the presence of a benzoylacetanilide color coupler having the formula:



wherein

R_1 represents an alkoxy group,

R_2 represents alkoxy,

X represents hydrogen, halogen, a —S—R′ group wherein R′ is an alkyl group, an aryl group or a heterocyclic group, a —O—R″ group wherein R″ represents an alkyl group or an aryl group, or an acyl group, and

Y represents a carbocyclic aryl group.

3,966,476

SPECTRALLY SENSITIZED SILVER HALIDE EMULSION CONTAINING MORE THAN 50% OF THE GRAINS WITH RIPENING NUCLEI IN CAVITIES

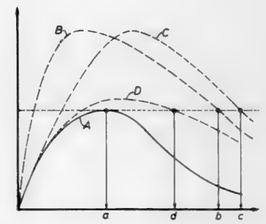
Manfred Becker, Leverkusen, Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Germany

Filed Feb. 11, 1974, Ser. No. 440,976

Claims priority, application Germany, Feb. 9, 1973, 2306447

Int. Cl.² G03C *1/28, 1/08*

U.S. Cl. 96—107 **2 Claims**



1. A photographic material containing at least one light-sensitive spectrally sensitized silver halide emulsion layer, wherein the emulsion contains silver halide grains with ripening nuclei capable of forming developable latent image nuclei upon exposure and being developable after exposure in the surface developer of the following composition:

Water	800 ml
p-methylaminophenol	2.4 g
ascorbic acid	10.0 g
sodium carbonate	10.0 g
potassium bromide	2.0 g
made up with water to	1 liter

wherein the improvement comprises more than 50% of the grains in the emulsion contain ripening nuclei which are in cavities within the silver halide grains which cavities are open to the outside of the surface of the grains.

3,966,477

SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Masanao Hinata; Haruo Takei; Tadashi Ikeda; Akira Ogawa; Akira Sato, and Atsuo Iwamoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

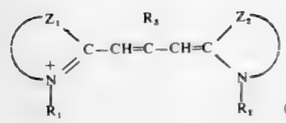
Filed Dec. 6, 1974, Ser. No. 530,100

Claims priority, application Japan, Dec. 6, 1973, 48-138346

Int. Cl.² G03C *1/14*

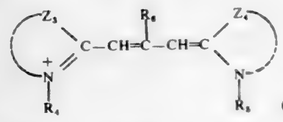
U.S. Cl. 96—124 **16 Claims**

1. A silver halide photographic emulsion containing, in combination, supersensitizing amounts of (A) at least one sensitizing dye of the following formula (I)



(I)

wherein Z_1 represents an atomic group required for forming a benzimidazole ring or a β-naphthimidazole ring; Z_2 represents an atomic group required for forming a benzoxazole ring or a β-naphthoxazole ring; R_1 and R_2 each represents an aliphatic group with at least one or R_1 and R_2 representing an alkyl group having a carboxy group or an alkyl group having a sulfo group; R_3 represents a hydrogen atom or an alkyl group; X_1 represents an acid anion; and m is 1 or 2, and when m is 1 the dye forms an intramolecular salt, wherein the benzimidazole ring formed by Z_1, is substituted in the 5 position with a halogen atom, an alkylcarbonyl group, or an alkoxy carbonyl group, and (B) at least one sensitizing dye of the following general formula (II)



(II)

wherein Z_3 represents an atomic group required for forming a benzoxazole ring or a β-naphthoxazole ring; Z_4 represents an atomic group required for forming a benzothiazole ring, a benzoselenazole ring, a β-naphthothiazole ring or a β-naphthoselenazole ring; R_4 represents a hydrogen atom or an alkyl group; R_4 and R_5 each represents an aliphatic group with at least one of R_4 and R_5 representing an alkyl group having a carboxy group or an alkyl group having a sulfo group; X_2 represents an acid anion; and n is 1 or 2, and when n is 1 the dye forms an intramolecular salt.

3,966,478

N,N-DIALKYL O,O-BIS(HALOALKYL)PHOSPHORAMIDATE FLAME RETARDANT

Arthur D. F. Toy, Stanford, Conn., and Kenneth L. Eilers, Irvington, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 69,157, Sept. 2, 1970, abandoned. This application July 21, 1972, Ser. No. 274,033

Int. Cl.² C08J *3/20*

U.S. Cl. 106—15 FP **8 Claims**

1. A fire retardant composition comprising, in intimate admixture, a polymeric material selected from the group consisting of polyurethanes, cellulosics, polyolefins, polyesters, vinyl polymers, polyacrylics, polyethers, polyacetals, polyphenolics, and rubber in combination with and as a fire retardant therefor, a haloalkyl N,N-dialkylphosphoramidate selected from the group consisting of 2,3-dihalopropyl N,N dialkylphosphoramidates and 2-(1,3-dihalopropyl) N,N-dialkylphosphoramidates wherein said halo substituent is selected from the group consisting of chloro and bromo, and the alkyl group attached to said "N" being an alkyl radical of from 1 to 4 carbon atoms.

8. In a process for preparing fire retardant polymer compositions which comprise, in intimate admixture, a polymer selected from the group consisting of polyurethanes, cellulosics, vinyl polymers, polyolefins, polyesters, polyethers, polyacetals, polyepoxies, polyphenolics, and rubber, and a fire retardant compound, the improvement which comprises adding, as said fire retardant an effective amount of a haloalkyl N,N-dialkylphosphoramidate selected from the group consisting of 2,3-dihalopropyl N,N dialkylphosphoramidates and 2-(1,3dihalopropyl) N,N-dialkylphosphoramidates wherein said halo substituent is selected from the group consisting of chloro

and bromo, and the alkyl group attached to said "N" being an alkyl radical of from 1 to 4 carbon atoms.

3,966,479
DENTAL INVESTMENT MATERIAL
Francis Frederick Koblitz, York, Pa., assignor to Dentsply Research & Development Corporation, Milford, Del.
Filed Feb. 27, 1973, Ser. No. 336,393
Int. Cl.² B28B 7/28
U.S. Cl. 106—38.5 R 2 Claims

1. A microscopically foraminous solid dental molding composition having a fracture strength under compression of from between about 100psi to about 500psi comprising uniformly distributed therethrough about 30 to 45% by weight of a substantially completely hydrated calcined gypsum, about 30 to 55% by weight of chemically uncombined water, about 5 to 20% by weight of an extender capable of maintaining the chemically uncombined water evenly distributed throughout the solid, wherein said extender is selected from the group consisting of diatomaceous earth or perlite; and about 3 to 10% by weight of a water swollen glutinous organic binder capable of enhancing the adherence of the hydrated gypsum to the extender.

3,966,480
LOW DENSITY SLEEVE
James D. Evans, Johnstown, Pa., assignor to Swank Refractories Company, Inc., Johnstown, Pa.
Filed Dec. 30, 1974, Ser. No. 537,063
Int. Cl.² C04B 21/06
U.S. Cl. 106—40 R 4 Claims

1. A low density refractory clay stopper rod sleeve having a substantially imperforate surface and a core containing a plurality of randomly spaced internal and discontinuous small voids, said bulk density of the sleeve being less than 2.0 gr./cc.

3,966,481
FIBERIZABLE ALKALI-RESISTANT E-TYPE GLASS
Alan W. Atkinson, and Brian P. Hodgson, both of Rochdale, England, assignors to Turner & Newall Limited, Manchester, England
Continuation of Ser. No. 450,231, March 11, 1974, abandoned. This application June 30, 1975, Ser. No. 592,034
Claims priority, application United Kingdom, Mar. 12, 1973, 11783/73
Int. Cl.² C03C 3/08, 13/00
U.S. Cl. 106—54 6 Claims

1. A fiberizable glass composition exhibiting improved alkali resistance consisting essentially, by weight, of

SiO_2	46 to 56%
B_2O_3	7 to 12%
R_2O_3	12 to 17% (Fe_2O_3 less than 1%)
CaO	13 to 24%
MgO	0 to 6%
F	0 to 1%
R_2O	less than 1%
ZrO_2	2 to 6%
TiO_2	0 to 6%

wherein R_2O_3 is Al_2O_3 with less than 1% Fe_2O_3 and minor amounts of similar oxides, and R_2O is Li_2O, Na_2O, K_2O or a mixture of at least two thereof, said glass composition having improved alkali resistance compared to a similar composition absent titania and zirconia, wherein CaO plus MgO does not exceed 25%, and ZrO_2 plus TiO_2 does not exceed 8%.

3,966,482
REFRACTORY BINDER
John Edward Cassidy, and Philip Glenn Millar, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Sept. 19, 1974, Ser. No. 507,606
Claims priority, application United Kingdom, Sept. 28, 1973, 45432/73
Int. Cl.² C04B 35/02
U.S. Cl. 106—64 16 Claims

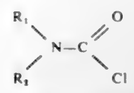
1. A binder suitable for use in the binding of non-basic refractory aggregate and comprising a mixture of a calcium aluminate and a water-soluble aluminium phosphate, in which the calcium aluminate has the empirical formula x CaO. y Al_2O_3, where x:y is in the range 3:1 to 1:5 and wherein the molar ratio of P_2O_5 in the aluminium phosphate to CaO in the calcium aluminate is in the range 0.05:0.7.

3,966,483
METHOD OF FORMULATING SOLUTION CONTAINING DISPERSED NITROCELLULOSE
Jack W. Albright, Detroit, Mich., assignor to Carpenter Chemical Company, Detroit, Mich.
Filed Mar. 24, 1975, Ser. No. 561,088
Int. Cl.² C08L 1/18
U.S. Cl. 106—171 1 Claim

1. The method of formulating a nitrocellulose based skin covering material comprising: blending a base consisting of about one part per volume of castor oil and three parts per volume of ether in five parts per volume of alcohol; preparing a thickener consisting of 30% by weight of 70% nitrocellulose solids with about 50% by weight acetone and 9% by weight plasticizer, with the balance alcohol; mixing one part by volume thickener to about three parts per volume of the base; and mixing 1 gallon part by volume of 70% nitrocellulose into the combined base and thickener.

3,966,484
COMPOSITION FOR SIZING CELLULOSE FIBERS
Karin Ulla Elisabet Helmer, Soina, and Alf Ragnar Reuterhall, Gustavsberg, both of Sweden, assignors to Kemanord Aktiebolag, Stockholm, Sweden
Division of Ser. No. 271,858, July 14, 1972, Pat. No. 3,887,427. This application Mar. 24, 1975, Ser. No. 561,562
Int. Cl.² D21D 3/00; C07C 125/03
U.S. Cl. 106—287 R 4 Claims

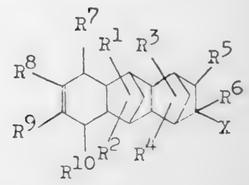
1. A sizing agent for material containing cellulosic fibers comprising an aqueous dispersion of an effective emulsifying amount of an emulsifier and a carbamoyl chloride having the following general formula



wherein R_1 is an organic, hydrophobic hydrocarbon group containing 8 – 40 carbon atoms and R_2 is hydrogen, lower alkyl or is the same as R_1.

3,966,485
NOVEL RESINS AND MANUFACTURING THE SAME
Junji Ariyoshi, Hirakata, and Noboru Kariya, Sakai, both of Japan, assignors to Arakawa Rinsan Kagaku Kogyo Kaisha and Nard Institute, both of Osaka, Japan
Division of Ser. No. 296,780, Oct. 12, 1972, abandoned. This application June 23, 1975, Ser. No. 589,014
Claims priority, application Japan, Oct. 13, 1971, 46-80794; Oct. 21, 1971, 46-83774
Int. Cl.² C07C 61/12, 63/52; C07G 17/00
U.S. Cl. 106—287 R 4 Claims

1. A resin having a formula of



wherein each of R^1, R^2, R^3, R^4, R^5 and R^6 is hydrogen or methyl group, each of R^7, R^8, R^9 and R^{10} is hydrogen, alkyl group having 1 to 6 carbon atoms or phenyl group and X is —CN or $CONH_2$—

3,966,486
HIGH TEMPERATURE PIGMENTED COATINGS BASED ON ZIRCONIUM PHOSPHINATE POLYMER BINDERS CROSSLINKED WITH PHOSPHINIC ACIDS
James Ping King, Lansdale; Joseph Simkin, Lafayette Hill, and Peter F. Radice, King of Prussia, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed July 1, 1974, Ser. No. 484,523
Int. Cl.² C08L 85/02; C09K 3/00
U.S. Cl. 106—287 R 7 Claims

1. A composition comprised of a mixture of a zirconium phosphinate polymer of the repeating unit Zr $(OH)_2$ $(OPRR^1O)_2$, a phosphinic acid of the formula $R^2R^3P(O)OH$, where R, R^1, R^2 and R^3 are independently selected from the group consisting of alkyl, aryl, alkoxyl, and aryloxyl radicals, having 1 to 12 carbons and a pigment selected from the grou consisting of aluminum, zinc, the alkali metal and alkaline earth metal titanates, zinc oxide, magnesium oxide, and the alkali metal and alkaline earth metal silicates, there being in the composition from about 25 to about 75 parts by weight of the phosphinic acid and from about 230 to about 330 parts by weight of the pigment per 100 parts by weight of the zirconium phosphinate polymer.

3,966,487
PYROLIZATION
Grant Crane, and Edward Leo Kay, both of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 236,169, March 20, 1972, abandoned. This application May 24, 1974, Ser. No. 473,014
Int. Cl.² C09C 1/44, 1/48
U.S. Cl. 106—307 2 Claims

1. The process of producing carbon black from scrap tires which comprises separating the tire treads from other parts of the tires so as to obtain scrap rubber composed essentially of tread stock and substantially free of other rubber stock, calcining said scrap rubber in the substantial absence of air and reducing the particle size of the char obtained and thus producing a char which is suitable for use as a carbon black for compounding in tire tread stock.

3,966,488
FLOWABLE AQUEOUS PIGMENT FORMULATIONS CONTAINING DIPROPYLENE GLYCOL
Hans Langenfelder, Mannheim; Ewald Daubach, and Horst Belde, both of Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Jan. 30, 1974, Ser. No. 438,032
Claims priority, application Germany, Feb. 1, 1973, 2304978
Int. Cl.² C04B 31/40
U.S. Cl. 106—308 Q 9 Claims

1. An aqueous pigment composition having improved flow, said composition consisting essentially of
a. water,
b. a water-insoluble pigment,
c. a water-soluble dispersing agent and
d. from 5 to 35% by weight of dipropylene glycol based on the total weight of the composition.

3,966,489
METHOD OF DECOLORIZING SUGAR SOLUTIONS WITH HYBRID ION EXCHANGE RESINS
James Henry Barrett, Neshaminy Valley, and David Henry Clemens, Willow Grove, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
Division of Ser. No. 26,046, April 6, 1970, abandoned. This application Dec. 21, 1973, Ser. No. 427,402
Int. Cl.² C13D 3/14
U.S. Cl. 127—46 A 4 Claims

1. A method of decolorizing sugar solutions which comprises contacting the solution with a hybrid ion exchange resin in which the resin has anionic exchange activity, said hybrid ion exchange resin being based on a hybrid copolymer comprising a cross-linked macroreticular porous host or base copolymer of a polyunsaturated monomer and a monoethylenically unsaturated monomer, said macroreticular copolymer being at least partially filled with a cross-linked gel copolymer of a polyunsaturated monomer and a monoethylenically unsaturated monomer, the gel copolymer or phase being present in the amount of about 5 to 300 parts by weight per 100 parts by weight of macroreticular host polymer or phase.

3,966,490
ELECTROCHEMICAL CELL
James J. Auborn, Groton, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Filed Aug. 15, 1975, Ser. No. 605,130
Int. Cl.² H01M 1/02, 35/00, 43/06
U.S. Cl. 136—6 LN 17 Claims

1. An electrochemical cell comprising an alkali metal anode; an electronically conducting cathode material, a nonaqueous electrolytic solution comprising an inorganic solvent selected from the group consisting of phosphorus oxychloride, thionyl chloride, sulfuryl chloride, and mixtures thereof, and a solute dissolved in said solvent; said anode, cathode and electrolyte being housed in a container the inner surface of which is an oxide of a material selected from the group consisting of aluminum, magnesium, and titanium and alloys thereof.

3,966,491
MOLTEN SALT ELECTROCHEMICAL SYSTEMS FOR BATTERY APPLICATIONS
Gleb Mamantov, Knoxville, Tenn.; Roberto Marassi, Camerino, Italy, and James Q. Chambers, Concord, Tenn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Feb. 13, 1975, Ser. No. 549,578
Int. Cl.² H01M 10/00
U.S. Cl. 136—6 LF 6 Claims

1. An electrochemical system comprising an aluminum anode, a cathode spaced from said anode where said cathode

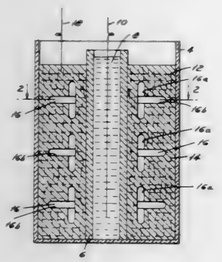
comprises positive oxidation states of an element selected from the group consisting of sulfur and iodine and a low melting molten mixture of aluminum chloride and alkali chloride disposed between said anode and said cathode and in contact with each.

3,966,492

SODIUM SULFUR BATTERY OR CELL WITH IMPROVED AMPERE-HOUR CAPACITY

Frank A. Ludwig, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 20, 1975, Ser. No. 605,941
Int. Cl.² H01M 43/00
U.S. Cl. 136—6 FS **12 Claims**



1. In a secondary battery or cell comprising:

A. one or more anodic reaction zones containing a molten alkali metal reactant-anode in electrical contact with an external circuit;

B. one or more cathodic reaction zones containing (1) a cathodic reactant which, when said battery or cell is at least partially discharged, is selected from the group consisting of (i) a single phase composition comprising molten polysulfide salts of said anodic reactant and (ii) a two phase composition comprising molten sulfur and molten sulfur saturated polysulfide salts of said anodic reactant and (2) an electrode of porous conductive material which is at least partially immersed in said cathodic reactant; and

C. a cation-permeable barrier to mass liquid transfer interposed between and in contact with said anodic and cathodic reaction zones, said porous conductive material being in electrical contact with both said cation-permeable barrier and said external circuit, wherein the improvement comprises:

a. employing a porous conductive material which will wick both sulfur and alkali metal polysulfides and which, in different regions of said cathodic reaction zone exhibits different degrees of wettability by said alkali metal polysulfide, said material in a region adjacent to said cation-permeable barrier being more readily wetted by said polysulfide than is said material in a region further removed from said barrier such that sulfur will boil near said barrier and condense away from it;

b. disposing said porous conductive material within said cathodic reaction zone such that it forms and encloses one or more channels which extend from said region adjacent said cation-permeable barrier outwardly into the region of said cathodic reaction zone which is further removed from said barrier; and

c. maintaining the amount of molten cathodic reactant within said cathodic reaction zone such that said channels remain free of said molten reactant and are thus adapted to transport sulfur vapor.

3,966,493

RECHARGEABLE MERCURY ELECTRODE

Margarete Jüng, Kelkheim, Taunus, Germany, assignor to Varta Batterie Aktiengesellschaft, Hannover, Germany

Continuation of Ser. No. 23,918, March 30, 1970, abandoned.
This application Dec. 6, 1972, Ser. No. 312,434
Claims priority, application Germany, Apr. 2, 1969, 1916959
Int. Cl.² H01M 35/02
U.S. Cl. 136—20 **17 Claims**

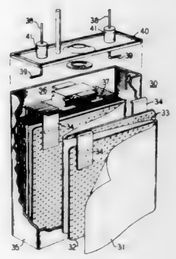
1. A rechargeable electrode having high capacity especially for primary cells and accumulators, which comprises a porous metal matrix having amalgamated thereon a non-pyrophoric amalgam of said matrix metal as non-migratory, non-coalescible, solid particles in fine state of physical distribution, said matrix being inert to alkali and being capable of absorbing hydrogen and the electrode being capable of repeated charging and discharging cycles during which the mercury is present as mercury oxide and mercury, respectively, but in either case without coalescing into mercury droplets, said electrode being capable of a flat and constant discharge curve, with a current discharge approaching the theoretical capacity of the electrode and said matrix being a Raney-metal of one of the following: Raney-nickel, Raney-iron, Raney-cobalt or alloys of these Raney metals.

3,966,494

IMPREGNATION OF ELECTRODES FOR NICKEL CADMIUM BATTERIES

Thomas Denis O'Sullivan, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 21, 1974, Ser. No. 516,791
Int. Cl.² H01M 4/38
U.S. Cl. 136—24 **16 Claims**



1. A process for the fabrication of nickel cadmium batteries in which the cadmium electrodes are made by a series of steps comprising immersing a porous nickel plaque in a solution with pH between 0.5 and 5.0 which contains cadmium ions and a reducible anion, the redox potential of which is more positive than the redox potential of the cadmium ions, followed by impregnating the plaque by precipitating the hydroxide of the cadmium ions from the solution in the pores of the plaque by electrolytic action at a given current density in the temperature range from 85°C to the boiling point of the solution, characterized in that said solution contains an additional anion selected from the group consisting of chloride, iodide and sulfate with concentration between 10 and 98 mole percent of the total anion concentration.

3,966,495

METHOD FOR THE PRODUCTION OF LEAD STORAGE BATTERY ELECTRODES

Tore Eriksson, Nol, Sweden, assignor to Aktiebolaget Tudor, Sundbyberg, Sweden

Filed Oct. 30, 1974, Ser. No. 519,193
Claims priority, application Sweden, Nov. 1, 1973, 7314903; Nov. 1, 1973, 7314904
Int. Cl.² H01M 4/16
U.S. Cl. 136—27 **22 Claims**

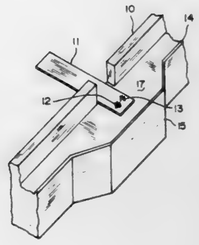
1. A process for the preparation of positive lead storage battery electrodes wherein an active material comprising lead monoxide dry powder surrounded by a sheath is converted to lead dioxide which consists essentially of immersing an electrode containing such active material in a single forming solution of an alkaline electrolyte having a pH of about 11–13 and thereafter forming the electrode in said electrolyte to convert the active material to lead dioxide.

3,966,496

ELECTRODE ASSEMBLY FOR AIR DEPOLARIZED CELLS

Roger W. Kelm, Emerald, Wis., assignor to Gould Inc., St. Paul, Minn.

Continuation of Ser. No. 279,028, Aug. 9, 1972, abandoned.
This application Aug. 30, 1974, Ser. No. 502,050
Int. Cl.² H01M 4/00
U.S. Cl. 136—86 A **23 Claims**



1. An electrode assembly for an air depolarized cell comprising:

an electrode assembly of predetermined thickness including a current collecting member having openings of a predetermined size, an electrode material dispersed throughout said current collecting member and a first insulating member located on one side of said electrode assembly and a second insulating member located on the second side of said electrode assembly;

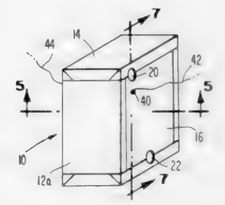
an electrical conducting tab for forming a low resistance electrical connection to said current collecting member through said insulating layers, said electrical conducting tab having tines suitable for penetrating through said electrode assembly, and said insulating layers, said electrically conducting tab overlaying one of said insulating layers and spaced from said current collecting member with each of said tines projecting through an opening formed in said electrode assemby by each of said tines, said tines having at least a portion of said tines engaging said current collecting member to thereby form a low resistance electrical connection thereto.

3,966,497

SEAWATER BATTERY

Harold Nickolas Honer, Raleigh, N.C., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Sept. 16, 1974, Ser. No. 506,304
Int. Cl.² H01M 6/34
U.S. Cl. 136—90 **13 Claims**



5. A galvanic battery comprising a plurality of cells, each cell including a cathode and an anode, the battery being characterized by a first endwall and a second endwall, each endwall having a first and a second opposed edge, a top and a bottom, a plurality of barriers, one barrier separating each adjacent pair of cells, the barriers being composed of a flexible electrically non-conductive material, each barrier having a first face and a second face, a first edge and a second edge, a top and a bottom, the first edge and the second edge of each barrier including a first flange and a second flange extending from a face of the barrier; a cathode on the first face of each barrier and an anode on the second face thereof;

individual means for electrically connecting the cathode on the first face of each barrier with the anode on the second face thereof, each means for connecting, penetrating through the respective cathode, barrier and anode, each means for connecting further providing a means for attaching its respective cathode and anode to the barrier, therebetween,

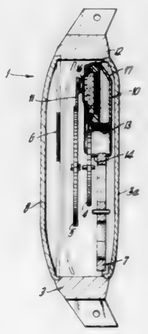
an adhesively coated tape, the tape overlapping the endwalls of the battery and being adhered thereto, the tape further being adhered to the flanges of at least one side of the battery, the adhesively coated tape and the flanges alone forming at least one sidewall of the battery.

3,966,498

ENERGY CELL CONFIGURATION FOR A TIMEPIECE

Paul Wuthrich, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Nov. 18, 1974, Ser. No. 524,433
Int. Cl.² H01M 2/00
U.S. Cl. 136—166 **4 Claims**



1. An improved cell for a substantially circular electric

watch movement having a rotatably mounted center wheel, wherein the improvement comprises:

an outer container for said cell having a first arcuate convex sidewall portion with a first uniform radius of curvature and an arcuate beveled portion forming part of the bottom of the cell and connected along the edge of the first sidewall portion,

a second connecting sidewall portion extending between the ends of the first sidewall portion, wherein said second wall portion includes an arcuate concave sidewall portion having a second smaller uniform radius of curvature.

3,966,499

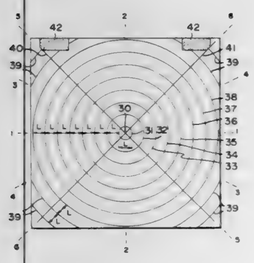
SOLAR CELL GRID PATTERNS

Robert K. Yasui, Los Angeles, and Paul A. Berman, La Crescenta, both of Calif., assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 296,622, Oct. 11, 1972, abandoned. This application Apr. 19, 1974, Ser. No. 462,341

Int. Cl.² H01L 31/02

U.S. Cl. 136—206 **8 Claims**



1. A solar cell exposable to solar radiation comprising:

a first layer of semiconductive material doped to a first polarity, having a top surface and a bottom surface;

a second layer of material doped to a second polarity opposite said first polarity, having a bottom surface in contact with the top surface of said first layer and a top surface exposable to solar radiation, a point on said top surface defining a center; and

a metallized grid pattern on said second layer top surface and in contact therewith, the pattern including a plurality of electrically conductive metallized spaced apart grids of a preselected geometric shape, each grid being formed of a separate continuous metallic strip defining the boundaries of a plane figures of a different fixed area, and the grids being organized about said center and with equal distances between them, the distance between any pair of adjacent grids being definable as L and a plurality of electrical conductors, each conductor being radially disposed on said surface and in electrical contact with each of said grids and extending from the grid closest to said center to the periphery of said surface whereby the maximum distance of any majority carrier, injected in said semiconductor material in response to the exposure of said semiconductor material to solar radiation, to any of said grids, is not greater than ½L with said metallized grid pattern being substantially identical along an imaginary straight line passing through said center, except for lines along said conductors, with said pattern being located on said second layer top surface so that portions of the surface not covered by said pattern are exposed on either side of each grid and each conductor.

3,966,500

TEMPERATURE-MEASURING DEVICE

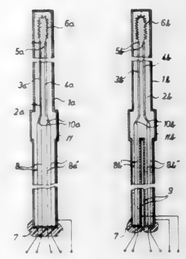
Heinz Brixy, Julich, Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Continuation-in-part of Ser. No. 428,352, Dec. 26, 1973. This application Apr. 22, 1974, Ser. No. 463,104

Claims priority, application Germany, Apr. 25, 1973, 2320751

Int. Cl.² G01K 7/30, 7/04

U.S. Cl. 136—232 **3 Claims**



1. A temperature-measuring device comprising:

an elongated housing having a closed end;

a body of refractory material in said housing;

a noise-thermometer coil in said housing adjacent said closed end and having a pair of opposite extremities;

a pair of spaced-apart thermocouple elements extending through said body and each forming a thermocouple junction with said noise-thermometer coil at a respective extremity thereof, said elements being of materials which are capable of forming a temperature-measuring thermocouple junction with one another; and

two pairs of pair of conductors, each conductor being connected to one of said elements remote from the junctions thereof with said extremities and leading from said housing.

3,966,501

PROCESS OF PRODUCING SEMICONDUCTOR DEVICES

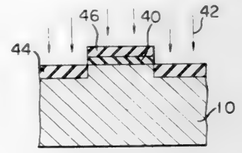
Kousi Nomura; Satoru Kawazu; Yoshihiko Hirose; Isao Inoue; Yoshihiko Watari, and Koichi Kijima, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1974, Ser. No. 451,383

Claims priority, application Japan, Mar. 23, 1973, 48-33191; Mar. 31, 1974, 49-37064; May 18, 1973, 48-55310

Int. Cl.² H01L 21/265

U.S. Cl. 148—1.5 **12 Claims**



5. A process of producing semiconductor devices as claimed in claim 3, wherein said substrate is silicon in the form of a single crystal and wherein said charged particles are ions of an element selected from the group consisting of indium, gallium, antimony, tin and arsenic.

3,966,502

ZIRCONIUM RINSE FOR PHOSPHATE COATED METAL SURFACES

Robert Eric Binns, Abington, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Division of Ser. No. 281,357, Aug. 17, 1972, Pat. No. 3,850,732, which is a continuation-in-part of Ser. No. 94,531, Dec. 2, 1970, Pat. No. 3,695,942. This application Sept. 6, 1974, Ser. No. 504,005

Int. Cl.² C23F 7/10

U.S. Cl. 148—6 **3 Claims**

1. As a composition of matter suitable for rinsing metal surfaces subsequent a conversion coating, an aqueous solution comprising:

1. a water soluble zirconium salt including at least one member selected from the group consisting of zirconium carboxylate, the alkali metal and ammonium salts of fluozirconate, the alkali metal and ammonium salts of a zirconium hydroxycarboxylate, and the zirconium salt of ethylendiaminetetraacetate, wherein said zirconium moiety is present in said solution as the tetravalent ion in a concentration of from about .05 grams to about 3 grams per liter, expressed as zirconium dioxide (ZrO_2) and,

2. at least one member selected from the group consisting of gluconic acid and citric acid and salts thereof in an amount sufficient to solubilize trace minerals present, if any;

said solution being rendered to a pH of between about 3 to about 8.5.

3,966,503

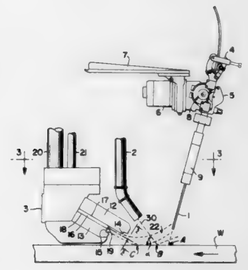
METHOD FOR MAKING INSTANTANEOUS SCARFING STARTS

Stephen August Engel, Shenorock, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jan. 13, 1975, Ser. No. 540,455

Int. Cl.² B23K 7/08

U.S. Cl. 148—9.5 **14 Claims**



1. A method for making an instantaneous thermochemical start on the surface of a ferrous metal workpiece comprising the steps of:

a. contacting a preselected spot on said surface where the scarfing reaction is to begin, with the end of a ferrous metal wire which has been preheated to its ignition temperature in an oxygen atmosphere, and simultaneously therewith

b. impinging a high intensity jet of oxygen gas on said surface at a point about 1 to 15 cm. behind said spot, thereby causing an instantaneous scarfing reaction to begin and a molten puddle to form at said spot, and thereafter

c. continuing the impingement of a high intensity jet of oxygen on said puddle until said puddle has spread to a preselected width.

3,966,504

METHOD AND APPARATUS FOR THERMOCHEMICAL GAS SCARFING

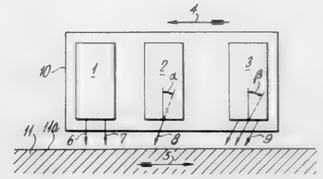
Ladislav Sipek, Taby, and Erik Smars, Rimbo, both of Sweden, assignors to Centro-Maskin i Goteborg AB, Goteborg, Sweden

Filed May 16, 1974, Ser. No. 470,445

Claims priority, application Sweden, May 21, 1973, 7307144

Int. Cl.² B23K 7/06, 7/08

U.S. Cl. 148—9.5 **15 Claims**



1. A method for initiating and supporting a thermochemical process of scarfing the surface of a workpiece in order to remove surface defects comprising the steps of continuously relatively moving a workpiece having surface defects through a preheating station, a combustion station, and a scarfing station,

preheating at said preheating station a zone of said workpiece to form a molten area of molten material at said zone,

simultaneously combusting at said combusting station a zone of said workpiece which has previously been preheated at said preheating station to combust said molten material and extend said molten area over a predetermined area of said workpiece,

simultaneously scarfing at said scarfing station a zone of said workpiece which has previously been preheated at said preheating station and chemically combusted at said combusting station,

and continuing said steps until a desired degree of scarfing is completed.

3,966,505

HIGH STRENGTH WROUGHT ZINC ALLOY

David L. Dollar, Greeneville, Tenn., assignor to Ball Corporation, Muncie, Ind.

Continuation-in-part of Ser. No. 469,973, May 15, 1974, abandoned. This application Apr. 30, 1975, Ser. No. 573,292

Int. Cl.² C22F 1/16

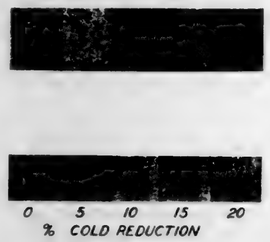
U.S. Cl. 148—11.5 R **7 Claims**

1. A method of manufacturing a stable high strength alloy having mechanical properties greater than 15 percent elongation and a tensile strength greater than 65,000 psi, which comprises subjecting a Zn/Al/Cu/Mg alloy containing from about 20 to 28 percent aluminum, from about 0.1 to 3.5 percent copper, about 0.01 to 0.5 percent magnesium, and the remainder zinc, to a temperature between 550° F., to 750° F., to effect homogenization of the alloy, cooling the homogenized alloy to a rolling temperature of about 350° F., at a rate of about 10° to 50° F., per minute and thereafter rolling the homogenized alloy at a temperature below 350° F., to attain between 10 and 70 percent reduction.

3,966,506
ALUMINUM ALLOY SHEET AND PROCESS THEREFOR

Frank N. Mandigo, North Branford, and Philip R. Sperry, North Haven, both of Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed May 21, 1975, Ser. No. 579,423
Int. Cl.² C22F 1/04
U.S. Cl. 148—11.5 A 15 Claims



7. A process of imparting increased ductility and resistance to grain coarsening to an aluminum alloy sheet comprising subjecting said sheet to a step of cold reduction of at least 50% and then to a final partial annealing treatment at a temperature of 500° to 700°F., while limiting the treatment time to a period sufficient only to cause the full recrystallization of 50 to 99% by volume of said alloy and leaving at least 1% by volume of said alloy as strained unrecrystallized grain fragments substantially uniformly dispersed among the said recrystallized grains.

3,966,507
PROCESS FOR MANUFACTURING HOLLOW-CYLINDRICAL ROTORS

Werner Herbert, Markdorf, Germany, assignor to Dornier System GmbH, Germany

Filed Jan. 24, 1975, Ser. No. 543,935
Claims priority, application Germany, Mar. 21, 1974, 2413519
Int. Cl.² C21D 9/08, 9/50
U.S. Cl. 148—12 R 3 Claims

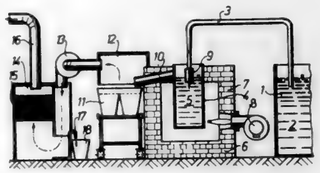
1. A process for manufacturing an axially symmetrical rotor adapted to rotate about the vertical axis thereof and having a length greater than the diameter thereof which comprises rolling a thin, high-strength steel sheet to form a cylinder having a longitudinally-extending joint,
welding said joint by electron beam welding,
solution-treating the blank thus formed,
and bringing the blank to its final dimensions by means of the three-roll press rolling process wherein the blank mounted on a rotating pressure mandrel having a stop is pressed by pressure rollers moving toward the stop while the material of the blank flows counter-currently with respect thereto.

3,966,508
TREATING WASTE DISCHARGE LIQUIDS FROM METAL HARDENING BATHS, PARTICULARLY CONTAINING NITRITE AND NITRATE COMPOUNDS

Ekkehard Mohr, Kleinheppacher Weg 10, 7050 Waiblingen, Germany

Filed Aug. 6, 1974, Ser. No. 495,193
Claims priority, application Germany, Aug. 9, 1973, 2340405
Int. Cl.² C21D 1/48
U.S. Cl. 148—15 5 Claims

1. Method of continuously treating waste discharge aqueous liquid from baths of industrial cyanidecontaining hardening or treating salts, by evaporation of liquid and detoxification of the cyanide portions by oxydation comprising
preparing a melt of the salts comprising a nitrate-nitrite mixture at a temperature of about at least 400°C;
introducing the discharge liquid into the melt in controlled amounts insufficient to lower the temperature of the melt in the immediate vicinity of the introduction location to

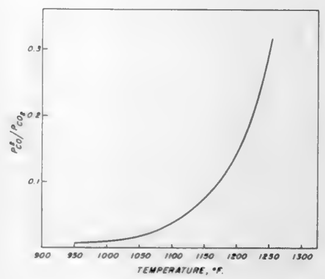


below evaporation temperature of the water to effect essentially immediate evaporation of the water content of the discharge liquid and to introduce the salts in the discharge liquid into the melt;
permitting the melt to overflow an overflow level;
and recovering the overflowing melt.

3,966,509
METHOD FOR REDUCING CARBON DEPOSITS DURING BOX ANNEALING

Harry H. Podgurski, Greensburg, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 22, 1975, Ser. No. 543,198
Int. Cl.² C21D 1/48
U.S. Cl. 148—16 5 Claims



1. In the box annealing of ferrous metal sheet, wherein said sheet is heated in a controlled protective atmosphere to a soak temperature within the range 1000° –1700°F and held at such soak temperature for a time sufficient to effect desired softening thereof,
the improvement for significantly reducing the occurrence of carbon deposits which comprises,
a. during the initial heating period when the temperature of said sheet is being raised; employing a first gaseous atmosphere which is essentially devoid of CO and CO_2, consists essentially of at least 5% H_2, at least 0.2% H_2O, balance N_2, and
b. subsequent to the time the temperature of exposed portions of said sheet reaches a minimum replacement temperature, said minimum replacement temperature being within the range 1000° – 1400°F, adjusting the controlled protective atmosphere to a second atmosphere consisting essentially of 3 – 30% CO_2, 3 – 30% CO, 4 – 20% H_2, 0.5 – 5% H_2O, balance N_2, and maintaining said second atmosphere during the soak.

3,966,510
FERROMAGNETIC POWDER FOR MAGNETIC RECORDING MEDIUM AND METHOD FOR PREPARATION THEREOF

Masashi Aonuma; Yasuo Tamai, and Goro Akashi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

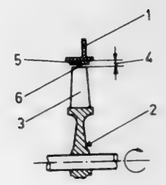
Filed Aug. 15, 1974, Ser. No. 497,794
Claims priority, application Japan, Aug. 15, 1973, 49-91498
Int. Cl.² H01F 1/02
U.S. Cl. 148—105 19 Claims

1. A method for the preparation of a ferromagnetic powder for a magnetic recording medium which contains at least one of Fe—B, Co—B, Fe—Co—B, Fe—Ni—B, Co—Ni—B, or Fe—Co—Ni—B with the surface of the ferromagnetic powder having thereon a layer of Cr or a layer mainly consisting of Cr, the method comprising reducing a metal salt capable of forming a ferromagnetic powder containing at least one of Fe, Co, Fe—Co, Fe—Ni, Co—Ni and Fe—Co—Ni in an aqueous solution thereof with one or more borohydride compounds or derivatives thereof, and, after the reducing is initiated, adding an aqueous solution containing Cr ion or a Cr-containing anion to said reaction solution, the method being conducted under the following conditions:
a. the amount of Cr added to the aqueous solution of the metal salt is about 0.001 to 0.5 mol per 1 mol of metal ion in the aqueous solution of the metal salt;
b. under a pressure of about 0.5 to 5 atmospheres;
c. at a temperature of about −10°C. to about 65°C;
d. the pH of the reaction solution being about 12 or less;
e. the metal ion concentration of the aqueous solution ranging from about 0.002 to 2 moles/liter;
f. the concentration of said borohydride compound or derivative thereof reducing agent being in the range of about 0.002 to 10 moles/liter; and
g. the molar ratio of the borohydride compound or derivative thereof reducing agent to the metal ion being in the range of about 0.1 to 5.

3,966,511
PROCESS FOR THE MANUFACTURE OF ANTI-ABRADANT ELEMENTS

Josef Zboril, Fisilsbach, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed June 27, 1974, Ser. No. 483,812
Claims priority, application Switzerland, June 29, 1973, 9488/73
Int. Cl.² C21D 5/00
U.S. Cl. 148—127 6 Claims

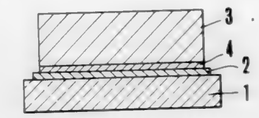


1. A method for reducing abrasion between interacting moving parts, which comprises:
fixedly attaching an anti-abradant element of gray cast iron onto the surface of a moving part such that it is positioned between said moving parts;
pre-annealing said anti-abradant element attached to said moving part at a temperature of at least 250°C; and
allowing the dimensional proportions of said anti-abradant element to increase upon exposure to oxidation, sulfation, nitration, carbonization, heat annealing, or combinations thereof as said anti-abradant element is abraded, whereby the spacing between said moving parts is maintained relatively constant.

3,966,512
METHOD OF MANUFACTURING TARGETS OF PICKUP TUBES

Yasuhiko Nonaka, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 5, 1974, Ser. No. 503,261
Claims priority, application Japan, Sept. 10, 1973, 48-101162
Int. Cl.² H01L 21/06, 21/203, 27/14
U.S. Cl. 148—174 10 Claims

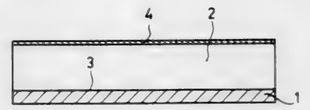


1. A method of manufacturing the target of a pickup tube comprising forming an N-type transmitting conductive film on a substrate, forming an N-type photoconductive film consisting of a group II–VI compound on said N-type light transmitting conductive film by means of a vacuum deposition device comprising a boat for containing said compound and a hollow shielding member, and then applying a P-type amorphous photoconductive film consisting essentially of metallic selenium onto said N-type photoconductive film, the temperature of said substrate being maintained in a range of from 50°C to 250°C when said N-type photoconductive film is formed on said N-type light transmitting conductive film, and the N-type photoconductive film being formed in a thickness of from about 120A to 260A.

3,966,513
METHOD OF GROWING BY EPITAXY FROM THE VAPOR PHASE A MATERIAL ON SUBSTRATE OF A MATERIAL WHICH IS NOT STABLE IN AIR

Jean Philippe Hallais, Paris; Alain Humbert, Plessis Trevise, and Claude Schemali, Paris, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 8, 1974, Ser. No. 440,717
Claims priority, application France, Feb. 13, 1973, 73.05049
Int. Cl.² H01L 7/36
U.S. Cl. 148—175 8 Claims



1. A method of epitaxially growing a monocrystalline layer of a first material from the vapor phase on an oxide free surface of a substrate of a second material oxidizable in air, said method comprising epitaxially growing a layer of said second material on a support of a monocrystalline material having the desired crystalline structure, reducing the thickness of said support to a value sufficiently less than the thickness of the layer of said second material to enable removal by etching of said support from the layer of said second material, introducing said support and attached layer of said second material into a non-oxidizing atmosphere and then, while in said non-oxidizing atmosphere, subjecting said support and attached layer of said second material to the action of an etch for a time sufficient to cause complete removal of said support but insufficient to cause complete etching of the layer of said

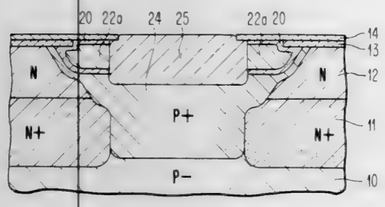
second material thereby leaving exposed the surface of the layer of said second material previously attached to said support and growing, by epitaxial deposition from the vapor phase, a monocrystalline layer of said first material on the surface of said second material exposed by etching.

3,966,514

METHOD FOR FORMING DIELECTRIC ISOLATION COMBINING DIELECTRIC DEPOSITION AND THERMAL OXIDATION

Bal-Cwo Feng, Wappingers Falls, and George Cheng-Cwo Feng, Poughkeepsie, both of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed June 30, 1975, Ser. No. 592,014
Int. Cl.² H01L *21/308*
U.S. Cl. 148—187 **6 Claims**



1. In the fabrication of integrated circuits, a method for forming dielectrically isolated regions in a silicon substrate comprising:

forming a layer of silicon dioxide on a surface of the substrate,

forming a masking layer of silicon nitride having a plurality of openings on said silicon dioxide layer,

etching a plurality of openings through the masked silicon dioxide layer in registration with the silicon nitride mask openings, said silicon dioxide layer openings having greater lateral dimensions than the silicon nitride openings and, thus, undercut the silicon nitride at the periphery of said mask openings,

etching a plurality of recesses in the silicon substrate respectively in registration with the openings through the silicon dioxide and silicon nitride layers,

depositing a layer of a material capable of blocking the oxidation of silicon and having greater etchability than silicon nitride in said recesses covering said undercut portions of said silicon nitride masks,

etching to remove said blocking material from the portions of said recesses not under said silicon nitride to expose the silicon in said portions, and

thermally oxidizing the exposed silicon in said recesses to form regions of recessed silicon dioxide substantially coplanar with the unrecessed portions of the silicon substrate.

3,966,515

METHOD FOR MANUFACTURING HIGH VOLTAGE FIELD-EFFECT TRANSISTORS

Samuel Josepheus Guthrie, Portland, Oreg., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed May 17, 1974, Ser. No. 470,803
Int. Cl.² H01L *7/34*
U.S. Cl. 148—188 **1 Claim**

1. The method of manufacturing high voltage field-effect transistors, comprising the steps of:

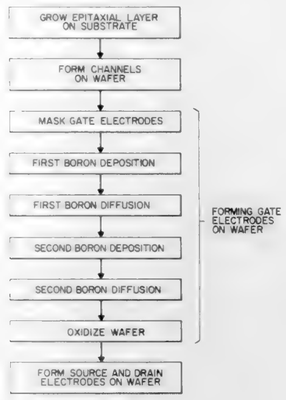
growing an epitaxial layer of a desired conductivity upon a substrate of the opposite conductivity,

forming channels of desired conductivity on the wafer,

forming gate regions on the wafer by the steps of:

masking the wafer to expose only the gate region areas,

forming a first boron deposition on the wafer,



diffusing the first boron deposition into the wafer,

forming a second boron deposition on the wafer,

diffusing the second boron deposition into the wafer, and

oxidizing the wafer, and

forming the source and drain electrodes on the wafer.

3,966,516

SLURRY EXPLOSIVE COMPOSITION CONTAINING A NITROPARAFFIN AND AN AMIDE

Hiroshi Sakai; Fumio Takeuchi, and Tsutomu Hanake, all of Aichi, Japan, assignors to Nippon Oils and Fats Company Limited, Tokyo, Japan

Filed June 18, 1975, Ser. No. 588,052
Claims priority, application Japan, June 25, 1974, 49-72599
Int. Cl.² C06B *31/30*
U.S. Cl. 149—60 **9 Claims**

1. A slurry explosive composition comprising an inorganic oxidizing acid salt, water, a combustible material, a thickener, a nitroparaffin and an amide.

3,966,517

MANUFACTURING SEMICONDUCTOR DEVICES IN WHICH SILICON SLICES OR GERMANIUM SLICES ARE ETCHED AND SEMICONDUCTOR DEVICES THUS MANUFACTURED

Hendrik Armand Denis Claes, Deurne, Belgium, and Wolter Geppienus Gelling, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 30, 1974, Ser. No. 510,492
Claims priority, application Netherlands, Oct. 3, 1973, 7313572
Int. Cl.² H01L *21/306*
U.S. Cl. 156—7 **12 Claims**

1. A method of etching a semiconductor device in which at least one silicon slice or germanium slice is secured by one side to a sodium containing glass support comprising exposing said device to the action of an etching bath containing hydrofluoric acid, at least one oxidizing agent and an amount of silicon dissolved therein that is at least equivalent to the amount of sodium dissolved from the glass support upon initial contact of said etching bath upon said glass support.

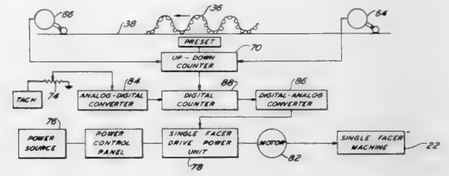
7. A method as claimed in claim **1**, characterized in that the glass support has a coefficient of expansion which differs at most 25% from that of the material of the slice.

3,966,518

PAPERBOARD CORRUGATOR

James T. Ferara, and William A. Massey, both of Gibbsboro, N.J., assignors to Molins Machine Comapny, Inc., Camden, N.J.

Filed Dec. 26, 1973, Ser. No. 428,296
Int. Cl.² G05G *15/00*
U.S. Cl. 156—64 **5 Claims**



1. A method of producing corrugated paperboard wherein single face paperboard is fed from a single facer machine to a bridge and withdrawn from the bridge by a double facer machine comprising the steps of generating a quantity signal indicative of the rates at which single face paperboard is fed to and removed from the bridge, automatically generating a control signal indicative of a desired time a unit length of the single face paperboard should remain on the bridge by modifying a signal indicative of the speed of the double facer machine, automatically comparing said signals and generating an output discrepancy signal, and using the output discrepancy signal to automatically control the speed of the single facer machine so that a unit length of single face paperboard remains on the bridge a preselected time.

5. In a corrugator wherein single faced paperboard from a single facer machine is fed to a bridge and withdrawn from the bridge by a double facer machine comprising means coupled to said single facer machine for controlling the speed thereof so that a unit length of single faced paperboard remains on the bridge for a predetermined time regardless of variations in the speed of the double facer machine, said means including a first device for detecting the amount of single facer paperboard fed to the bridge and for generating a signal indicative thereof, a second device for detecting the amount of single faced paperboard removed from the bridge and for generating a signal indicative thereof, a comparator means coupled to said devices for comparing said signals and generating a quantity signal, means for generating a control signal indicative of a desired amount of time the single faced paperboard should remain on the bridge, means for automatically comparing said quantity signal with said control signal and for generating an output signal, said last mentioned means being connected to the drive unit of a single facer machine to automatically vary the speed of the single facer machine as a function of said output signal.

3,966,519

METHOD OF BONDING FIBROUS WEBS

Kenneth J. Mitchell, Neenah, and Kurt W. Ostermeier, Harrison, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

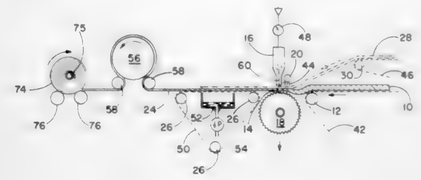
Filed Dec. 27, 1974, Ser. No. 536,728
Int. Cl.² B32B *31/22*
U.S. Cl. 156—73.1 **14 Claims**

1. Method of bonding a base fibrous web comprising the steps of,

providing a patterned bonding nip including a hammer adapted to vibrate at high frequencies and an anvil,

applying a liquid to the web in an amount sufficient to insure the presence of uncombined liquid at said nip,

vibrating said hammer at high frequencies of up to 400,000 cps with an amplitude in the range of from about 1 to 30 mils, and



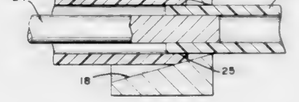
passing said web and liquid through said nip to cause the liquid to be driven into the web by said vibrations and to knot the fibers of the web in the pattern bond areas.

3,966,520

METHOD OF ULTRASONICALLY WELDING A CIRCUMFERENTIAL TELESCOPING JOINT

Eberhardt G. Fallenbeck, Georgetown, and Wayne N. Upright, West Newbury, both of Mass., assignors to Branson Ultrasonics Corporation, New Canaan, Conn.

Filed July 14, 1975, Ser. No. 595,773
Int. Cl.² B32B *31/20, 31/22*
U.S. Cl. 156—73.1 **13 Claims**



1. The method of welding two thermoplastic workpieces, an outer workpiece and an inner workpiece, along telescopingly overlapping surfaces comprising the steps of:

disposing the workpieces to be joined in telescopically overlapping surface relation with one another on a mandrel;

applying ultrasonic vibratory energy to the overlapping surfaces in a generally radial direction relative to the axis of the mandrel, and

providing a compressive force in a substantially radial direction along the circumference of the outer workpiece while rotating the workpieces and said vibratory energy is applied for urging the workpieces into forced contact and causing responsive to said energy and force a butt joint between the overlapping surfaces of said workpieces.

3,966,521

POLYURETHANE FOAM COMPOSITE

John T. Patton, Jr., Wyandotte; Louis C. Pizzini, Trenton; John G. Demou, Lincoln Park, all of Mich., and Gerhard G. Ramlow, East Windsor, N.J., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 513,639, Oct. 10, 1974, Pat. No. 3,931,450. This application June 16, 1975, Ser. No. 587,476
Int. Cl.² B32B *5/20*
U.S. Cl. 156—78 **8 Claims**

1. In a process for the production of a laminated composite which comprises heat sealing a substrate to a polyurethane foam prepared by the reaction of an organic polyisocyanate with a polyol in the presence of a blowing agent the improvement which comprises employing as the polyol a graft polyol prepared by the in situ polymerization in the presence of a free

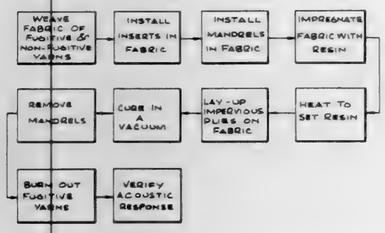
radical catalyst of an ethylenically unsaturated monomer or mixture of monomers in a polyol.

3,966,522

METHOD OF MAKING WOVEN ACOUSTICAL PANEL

Donald M. Hatch, Huntington Beach, and George D. Lee, Monterey Park, both of Calif., assignors to Hitco, Irvine, Calif.

Filed May 23, 1974, Ser. No. 472,670
Int. Cl.² B32B *5/08*
U.S. Cl. 156—148 **18 Claims**



10. A method of making a woven acoustical panel comprising the steps of:

weaving a fabric having first and second parallel, spaced-apart, generally planar face plies having a plurality of pockets therebetween, a third generally planar face ply parallel to and spaced-apart from the first and second face plies, and a plurality of rib plies extending between and interwoven with the first, second and third face plies, the rib plies forming flutes between the third face ply and the first and second face plies, the first and second face plies being comprised of yarns, each of which is comprised of both fugitive material and non-fugitive material, the yarns being interwoven with each other;

providing a plurality of generally planar acoustical elements having a controlled porosity;

inserting the acoustical elements into the pockets between the first and second face plies;

inserting a plurality of mandrels into the flutes;

inpregnating the fabric with a resin;

curing the resin impregnated fabric; and

heating the fabric to a temperature sufficient to burn out the fugitive material to the exclusion of the non-fugitive material and thereby form apertures of predetermined size in the first and second face plies, the apertures exposing the acoustical elements to the outside of the panel and to the flutes.

3,966,523

METHOD OF MAKING FILAMENT REINFORCED COMPOSITE RINGS FROM PLURAL FLAT FILAMENTARY SPIRAL LAYERS

Karl Severin Jakobsen, Somers, and David Benjamin McLaughlin, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 11, 1975, Ser. No. 604,300
Int. Cl.² B29D *3/02*; **B29G** *5/00*
U.S. Cl. 156—169 **10 Claims**

1. The method of making a composite ring having a plurality of undirectional filaments embedded in a polymer matrix comprising:

winding a filament into a solvated curable polymer matrix containing curing agents to form a monolayer sheet comprising a filamentary flat spiral;

desolvating the polymer matrix of the monolayer sheet to hold the filament in position in the sheet;

stacking a plurality of the monolayer sheeets in adjacent relationship in an annular mold cavity; and



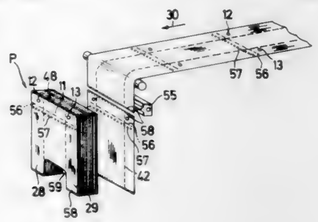
curing the polymer matrix in the stacked monolayer sheets under pressure in said mold cavity to form a unitary composite ring.

3,966,524

METHOD AND APPARATUS FOR MANUFACTURE OF PAD-STACKED BAGS

Hans Lehmacher, 5216 Niederkassel-Mondorf, Hummerich, Germany

Filed Aug. 17, 1972, Ser. No. 282,193
Claims priority, application Germany, Aug. 17, 1971, 2141045; June 19, 1972, 2229728; July 7, 1972, 2233408; July 26, 1972, 2236523
Int. Cl.² B32B *31/00*
U.S. Cl. 156—182 **40 Claims**



1. A method for manufacture, from thermoplastic synthetic plastic film, of bags such as carrying bags or the like packaging stacked and connected with one another through welding into a tear-off type pad, comprising the steps of:

providing a flattened film tube as a longitudinally advanced, continuous web comprising two layers of said film; feeding said web longitudinally downwardly vertically to a welding device acting in a horizontal plane;

severing from said web sections corresponding to respective bags; stacking the severed sections successively into a pad stack; and

stack welding each section to the preceding section as it is added to the stack

with the sections being welded at, or in the region of, respective like edges;

the stacking and welding of the bag sections to the stack being carried out at said device with a substantially vertical disposition of the bag sections.

38. A method for manufacture, from thermoplastic synthetic plastic film, of bags such as carrying bags or the like packaging stacked and connected with one another through welding into a tear-off type pad, comprising the steps of:

providing a flattened film tube as a longitudinally advanced, continuous web comprising two layers of said film;

feeding said web longitudinally to a welding device;

severing, from said web, sections corresponding to respective bags;

stacking the severed sections successively into a pad stack; and

stack-welding each section to the preceding section as it is added to the stack

with the sections being welded at, or in the region of, respective like edges,

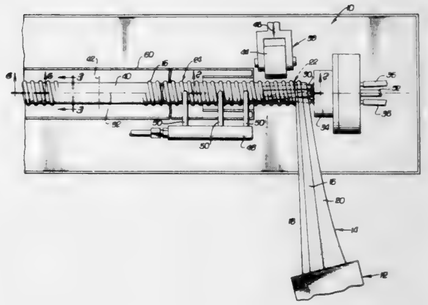
the stack-welding of each bag section to the stack being effected by a continuous linear weld extending over the major part of the full width of, and penetrating both film layers of, each bag section.

3,966,525

METHOD OF MAKING HELICALLY WOUND PLASTIC TUBING

William L. Steward, Costa Mesa, Calif., assignor to Steward Plastics, Inc., Santa Ana, Calif.

Division of Ser. No. 469,234, May 13, 1974, Pat. No. 3,910,808, which is a continuation of Ser. No. 284,944, Aug. 30, 1972, abandoned. This application Apr. 28, 1975, Ser. No. 572,389
Int. Cl.² B65H *81/00*
U.S. Cl. 156—195 **1 Claim**



1. A method of making helically externally ribbed plastic tubings having externally smooth, thickened end fittings, including the steps of:

a. continuously extruding a plastic strip with a longitudinal rib;

b. continuously helically winding said strip into a tube, at a winding location on the axis of said tube, with said rib externally of said tube and with one edge of each convolution of said strip overlapping an edge of a preceding convolution;

c. periodically flattening the external rib, at a flattening location adjacent but spaced downstream from said winding location in the direction of the axis of said tube, to provide said tube with longitudinally spaced, externally smooth portions of increased wall thickness compared to the interrib portions of said tube; and

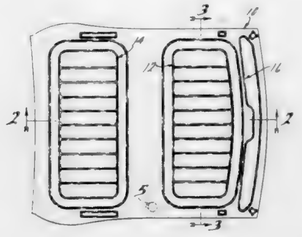
d. thereafter periodically cutting said tube transversely, at a cutting location spaced downstream from said flattening location in the direction of the axis of said tube, intermediate the ends of said externally smooth portions to provide externally helically ribbed tubings having externally smooth, thickened end fittings.

3,966,526

PROCESS FOR MAKING RESILIENT LAMINAR PANEL

Ralph G. Doerfling, Walled Lake, Mich., assignor to Detroit Gasket & Manufacturing Company, Detroit, Mich.

Division of Ser. No. 344,629, March 26, 1973, Pat. No. 3,867,240, which is a continuation-in-part of Ser. No. 255,524, May 22, 1972, abandoned. This application Dec. 9, 1974, Ser. No. 530,806
Int. Cl.² B65D *25/06*; **E04B** *1/74*
U.S. Cl. 156—224 **12 Claims**



1. A method for making a resilient laminar panel of a preselected shape-retaining contour which comprises the steps of forming a layer of substantially thermoplastic rigid foam having cover sheets bonded to the face surfaces thereof providing therewith an integral laminar foam-cored panel, piercing said foam-cored panel to impart a plurality of perforations extending therethrough from one face to the opposite face of said panel and performed in a manner to deform and laterally displace and locally densify said foam in a region surrounding each perforation without incurring any appreciable removal of material and without significantly reducing the thickness of said panel, said piercing step performed to distribute said perforations at spaced intervals over substantially the entire surface area of said panel, coating the exterior surfaces of said panel including the interior surfaces defining said perforations with a sealing material forming a substantially moisture-resistant barrier thereover, heating the sealed said panel to an elevated temperature for a period of time sufficient to effect a softening thereof, deforming the heat softened said panel to impart a preselected contour thereto, cooling the deformed said panel to a temperature at which a rigidification thereof occurs of a magnitude sufficient to retain at least a portion of the preselected contour therein, and applying and securing a pervious decorative ply to one said face surface of said panel forming a decorative laminar panel.

3,966,527

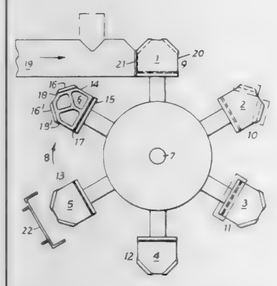
MANUFACTURE OF ARTICLES OF A SUBSTANTIALLY SACK-LIKE OR TUBULAR STRUCTURE

Eugene Gros, 9 Harman Drive, London NW2, England

Division of Ser. No. 358,953, May 10, 1973, abandoned. This application May 6, 1975, Ser. No. 575,075
Claims priority, application United Kingdom, June 4, 1970, 26997/70
Int. Cl.² B32B *31/00*
U.S. Cl. 156—250 **9 Claims**

1. A method of producing a generally three-sided tubular article from a continuous length or web of sheet material, which comprises the steps of feeding along a path having at least a linear terminal portion two continuous web sections, one superposed upon the other, which are joined along a common edge to provide when viewed in transverse cross-section, a generally U-shaped web configuration having a transverse dimension generally corresponding to the depth dimension of said tubular article sealing together the leading edges of said web sections along a line extending generally transversely of the web length to form the leading end into a two-sided pocket, advancing a generally flattened supporting form

in a plane generally coincident with the linear web path portion along an angular path intersecting with said terminal web path portion to introduce said flattened form into said semipocket with the leading end of said form engaging said sealed web end, sealing together said two web sections along a transverse strip region immediately proximate the trailing end of



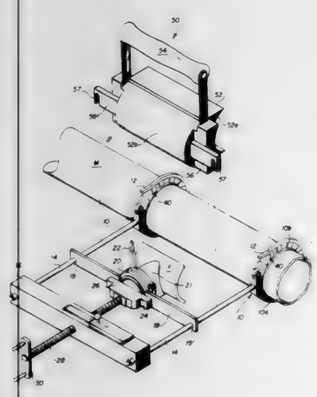
said form to close the third side of said end pocket with the form disposed therein, separating the thus-formed pocket from the web sections by severing through said sealed strip to concurrently form a further two-sided semipocket, transfering the separated article containing the supporting form from said terminal path portion, and repeating said advancing, sealing, separating and transfering steps with further supporting forms.

3,966,528

APPARATUS AND METHOD FOR JOINING A BRANCHING FITTING TO A PIPE

Joe William Christie, Box 386, Frisco, Tex. 75034

Filed Aug. 14, 1974, Ser. No. 497,396
Int. Cl.² B23Q *3/18*; **B25B** *1/20*; **B32B** *31/20*
U.S. Cl. 156—293 **10 Claims**



1. An apparatus for attaching a fitting to a side wall of a pipe with the axis of the fitting being substantially perpendicular to the axis of the pipe, comprising:

at least two cold rings for attachment to the pipe;

removable inserts mounted within said cold rings for accommodating varying sizes of pipe;

a guide rod attached to each of said cold rings and extending outwardly therefrom perpendicular to the axis of the pipe;

a base plate slidably mounted on said guide rods for movement relative to the pipe;

a receiver member fixed to said base plate and adapted to receive the fitting to be joined to the pipe;

removable inserts mounted within said receiver member for accommodating varying sizes of fittings to be joined to the pipe;

a top bar fixedly attached between said guide rods;

a threaded shaft with one end attached to said receiver member and with the second end passing through said top bar;

an engaging member in said top bar having a semibore threaded therein with threads which mate with those of said threaded shaft such that selective engagement between said shaft and said engaging member may be had by depressing the engaging member until it is engaged with the threads on said shaft whereby said shaft may be translated through said top bar by turning said shaft; and

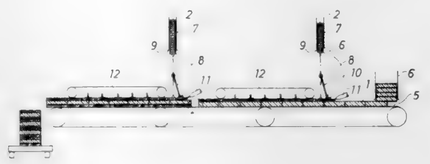
a removable heating unit slidably positioned on said guide rods having one face substantially conforming to the shape of the side wall of the pipe and with a second face substantially conforming to the shape of the fitting to be joined to the pipe so that said fitting and side wall of the pipe may be heated by said heating unit prior to joining.

3,966,529

METHOD OF MAKING A PALLET

Shigeharu Kuroda, 5-1-13 Tomigaoka, Nara, 631, Japan

Continuation-in-part of Ser. No. 343,024, March 20, 1973, abandoned. This application Feb. 20, 1975, Ser. No. 551,508
Int. Cl.² B32B *31/20*, *31/12*, *31/26*; **B65D** *19/00*
U.S. Cl. 156—300 **7 Claims**



1. A method for fabricating pallets comprising the steps of:

a. placing a plurality of separate and discrete connection beams in parallel at predetermined distances from each other on a conveyor line with the longitudinal dimension of said beams extending in the longitudinal direction of said conveyor line;

b. intermittently moving said conveyor line and said connection beams longitudinally to predetermined positions and stopping said conveyor line and connection beams;

c. intermittently supplying a plurality of lateral plates to said predetermined positions at spaced intervals on one side of the thus intermittently moved beams with said plates extending transversely to the longitudinal dimension of said beams and at a predetermined angle to the surface of said beams, and stopping the movement of said plates before said plates are in full contact with said beams;

d. applying a means for providing an adhesive on the contacting surfaces of at least one of said plates and beams while said beams and plates are stopped;

e. thereafter continuing the intermittent movement of said beams and plates to place said beams and said plates in parallel, immediately thereafter pressing said plates against said beams by a press means, and moving said beams and plates in full contact through said press means under pressure for a desired time to form a secure bond therebetween; and

f. releasing the thus bonded beams and plates from said press means, turning the thus released bonded beams and plates over, and repeating steps (b)–(e) to thereby bond further plates at predetermined intervals to the opposite side of said beams.

3,966,530

SURFACE TREATMENT OF POLYMERS

Ernest Cutts, and Geoffrey Thomas Knight, both of London, England, assignors to The Malaysian Rubber Producers' Research Association, England

Filed Oct. 29, 1974, Ser. No. 518,938
Int. Cl.² C09J *5/02*
U.S. Cl. 156—308 **10 Claims**

10. A method of adhering a surface of a non-polar unsaturated elastomer to a substrate comprising treating the surface of the elastomer by applying thereto a 4-substituted-1,2,4-triazoline-3,5-dione, applying an adhesive to the treated elastomer surface, the substrate or both treated elastomer surface and substrate and adhering the elastomer surface and substrate together.

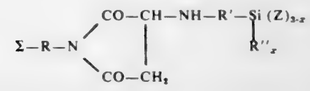
3,966,531

COMPOSITIONS CONTAINING SILANES POSSESSING IMIDE GROUPS

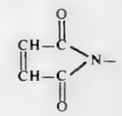
Michel Bargain, Lyon, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Feb. 3, 1975, Ser. No. 546,447
Claims priority, application France, Feb. 5, 1974, 74.03799
Int. Cl.² C09J *1/00*, *5/00*
U.S. Cl. 156—329 **11 Claims**

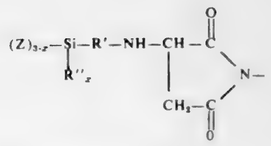
5. A composition based on imide group-containing organosilicon compound which comprises a compound of the formula:



in which R, R′, R″Z and x are as defined in claim 1 and Σ represents a radical of the formula:



or



10. In a process for adhering an organopolysiloxane composition which can be vulcanised at ambient temperature in the presence of water in the liquid or vapour state to a substrate which comprises placing an adhesive between the composition and the substrate, the improvement wherein the adhesive is a composition as defined in claim **5**.

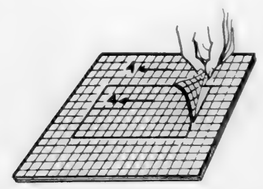
3,966,532

METHOD OF MAKING WATER COLOR PICTURES READY FOR FRAMING

Ruth P. Harasta, 1434 Oakdale Road, Johnson City, N.Y. 13790

Continuation of Ser. No. 352,605, April 19, 1973, abandoned. This application Dec. 5, 1974, Ser. No. 529,960
Int. Cl.² B32B *7/06*, *31/18*; **B29D** *3/00*; **B44D** *1/32*
U.S. Cl. 156—344 **6 Claims**

1. The method of making a work of art comprising the steps of cutting through an adhesive-bearing plastic sheet which is adhesively removably secured to a back sheet to circumscribe an area of said plastic sheet, removing said circumscribed area of said plastic sheet together with the adhesive carried by said area of said plastic sheet to provide an open sight area substantially devoid of adhesive on said back sheet, applying coloring materials to portions of said sight area, and stripping the remaining portions of said adhesive-bearing plastic sheet from said back sheet to provide a work of art then ready for framing.

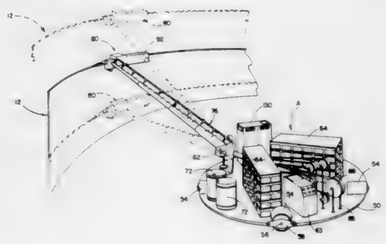


3,966,533

ON-SITE WALL STRUCTURE FORMATION

William Brandt Goldsworthy, Palos Verdes, and Ethridge E. Hardesty, Pine Valley, both of Calif., assignors to Goldsworthy Engineering, Inc., Torrance, Calif.

Continuation-in-part of Ser. No. 352,413, April 19, 1973, abandoned. This application Sept. 19, 1973, Ser. No. 398,755
Int. Cl.² B32B *19/02*
U.S. Cl. 156—380 **26 Claims**



1. Apparatus for generating a reinforced plastic composite walled enclosure formed of successive turns of spirally wound reinforcing material; said apparatus comprising:

a. a supporting member rotatable through a cylindrical path,

b. an application head carried by said supporting member and being movable in a cylindrical path of peripheral length substantially equivalent to the peripheral length of the walled enclosure to be formed,

c. delivery means including a canister which contains a substantially fully cured amount of a matrix impregnated fiber containing reinforcing material having a cross-sectional shape substantially equivalent to the shape of a turn in the walled enclosure for delivery to said application head,

d. application means operatively associated with said application head for receiving said matrix impregnated reinforcing material to deposit said matrix impregnated reinforcing material as a turn on a previously deposited turn of the spirally wound reinforcing material,

e. said application means comprising a draw-die which essentially conforms to the size and shape of a new turn of the impregnated reinforcing material and which die is essentially closed and open on one side thereof, said application means being located so that a previously

deposited turn of said walled enclosure substantially closes said draw-die in such size and shape to receive and deposit said impregnated reinforcing material,

f. one of said last previously deposited turns and said new turn having an interlockable projection extending therefrom toward the other of said turns and said other of the turns having an interlocking recess formed therein and capable of having said projection mechanically interlocked into said interlocking recess in a zipper type arrangement as said application head moves therealong,

g. securement means carried by said application head to rigidly secure and bond said matrix impregnated reinforcing material during deposition thereof as a new turn of said walled enclosure to a previously deposited turn of reinforcing material in said walled enclosure,

h. said securement means being provided with bonding means to chemically bond the projection of one of said turns into the interlocking recess of the other of said turns,

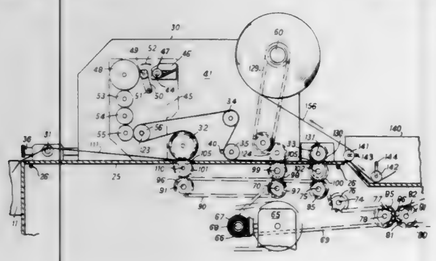
i. and means on said application head to retentively hold said new turn on said last previously deposited turn of reinforcing material during a portion of the chemically bonding of the projection and the interlocking recess during movement of the application head therealong.

3,966,534

LETTERPRESS PRINTING MACHINE

Keith Mason Oddy, 58 Baldwin Road, Kidderminster, England

Filed Jan. 30, 1974, Ser. No. 437,947
Int. Cl.² B32B *31/18*
U.S. Cl. 156—384 **10 Claims**



1. A rotary letterpress label making machine for making labels from a laminated strip formed of a paper web and a cover web in superposed relation with the side of the paper web facing the cover web coated with adhesive while the other side of the paper web is uncoated, said machine comprising:

a. a frame through which the strip moves from a supply reel;

b. rotary printing means in the frame operable for printing label matter in discrete label regions on the uncoated side of the paper web;

c. die cutting means in the frame operable for cutting through the paper web only and along lines which form closed paths about the label regions to separate the paper web into a continuous waste matrix and discrete label elements;

d. means driving said printing means and die cutting means in synchronism;

e. a support member engaging the cover web side of the strip along a region extending transversely of the strip downstream from the die cutting means and forming a deviating region wherein the cover web and the printed labels thereon is separated from the waste matrix of the paper web;

f. a first guide means engaging the uncoated side of said paper web near said region and guiding the waste matrix in a first direction away from said deviating region;

g. a second guide means spaced downstream from said first guide means engaging the label side of said cover web and guiding the cover web with the labels thereon away from said deviating region in a second direction, said first and second directions diverging in respectively opposite senses from the path of the strip from said die cutting means to said deviating region; and

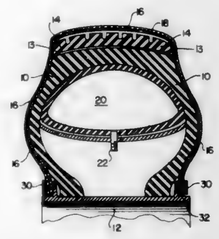
h. first and second wind-up means in the frame engaging the matrix and the cover web respectively and driven for reeling up the matrix and the cover web simultaneously while holding the matrix and cover web taut between the die cutting means and the wind-up means, said second guide means being spaced from said deviating region in a direction perpendicular to the plane of said strip to prevent the said first guide means for engaging the said label elements and thereby damaging the printing thereon.

3,966,535

ENVELOPE SEALING APPARATUS FOR COLD PROCESS TIRE RETREADING

Antonio Dabura Abularach, P.O. Box 560, Cochabamba, Bolivia

Filed Jan. 15, 1975, Ser. No. 541,136
Int. Cl.³ B29H *5/04, 17/36*
U.S. Cl. 156—394 **3 Claims**



1. Apparatus for holding and sealing an envelope about a tire casing and tread strip assembly during a cold vulcanization operation, which includes: a rim member for supporting a tire casing said rim member having outwardly extending radial flanges on the outer peripheral surface thereof at opposite ends thereof for receiving the ends of the envelope adjacent to the respective outer surfaces of the flanges; an annular pressure member mounted on each end of the rim member adjacent to the outer surface of a corresponding one of the flanges with the ends of the envelope being received between the pressure members and the flanges; axially extending guide means formed on the rim member at the opposite ends thereof and at spaced angular positions thereon for supporting the annular pressure members; and means for forcing each pressure member axially inwardly towards the corresponding flange to squeeze the corresponding end of the envelope against the outer surface of the corresponding flange so as to provide a securing means for the envelope.

3,966,536

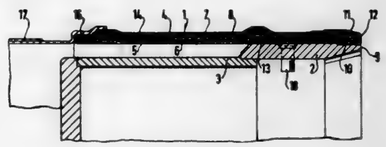
TIRE BUILDING MACHINERY

Otto Schmitt, Niedergrundau, Germany, assignor to Dunlop Limited, London, England

Filed May 7, 1974, Ser. No. 467,814
Claims priority, application Germany, May 15, 1973, 2324570
Int. Cl.³ B29H *17/12*
U.S. Cl. 156—401 **18 Claims**

1. A folding device comprising a folding bag which is inflatable from a flattened, cylindrical shape to a toroidal shape, and is supported at least partially on a cylindrical support, a first end of the bag lying substantially flush with one end of the support, the bag being secured to the support at a point adjacent said end at a point intermediate the ends of the bag, the bag comprising an endless flexible-walled tube being covered

on its inner periphery by a first reinforcing layer and on its outer periphery by a second reinforcing layer, each of said reinforcing layers comprising two layers of oppositely dis-



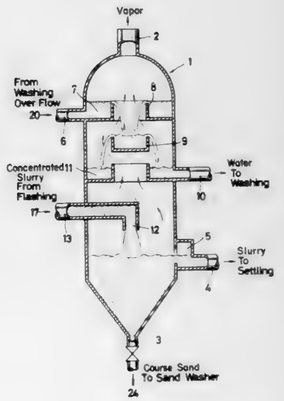
posed bias-cut cord plies, the bias angle of the cords of the plies of the first reinforcing layer being greater than that of the second reinforcing layer and a restoring device secured to the end of the bag remote from said first end.

3,966,537

DEVICE FOR WASTE HEAT RECOVERY AND SAND REMOVAL IN THE BAYER PROCESS

Chosei Sato; Yasutoku Yamada, and Yoshiyuki Takenaka, all of Yokohama, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 228,624, Feb. 23, 1972, Pat. No. 3,869,537. This application Oct. 3, 1974, Ser. No. 511,724
Claims priority, application Japan, Feb. 24, 1971, 46-8667
Int. Cl.² B01D *1/28, 1/14, 35/18*
U.S. Cl. 159—2 R **2 Claims**



1. A device for recovering waste heat and for desanding slurry prepared in production of alumina by treating bauxite containing monohydrated alumina with an aqueous solution of caustic soda at high temperature and high pressure by the Bayer process, said device comprising in combination,

A. a column, the bottom of which has a funnel shape;

B. a discharge pipe for vapor, disclosed at the top of said column;

C. a feed pipe for said slurry, disposed at a lower portion of said column;

D. a discharge pipe for overflow slurry having been deprived of coarse sand particles, said discharge pipe disposed below the level of said feed pipe and having an overflow decanting space;

E. a feed pipe for overflow liquid from a red mud thickener of the Bayer process disposed at an upper portion of said column;

F. a substantially annular overflow barrier disposed within said column at the same level as said feed pipe for the overflow liquid from the red mud thickener;

G. an overflow duct bounded by the inside wall of said column and said overflow barrier in communication with said feed pipe for the overflow liquid from the red mud thickener;

H. a tray-shaped reservoir disposed below said overflow duct to receive liquid overflowing said barrier;

I. an annular duct formed below said tray-shaped reservoir on the inside wall of said column to receive liquid overflowing said tray-shaped reservoir;

J. a discharge pipe communicating with said annular duct; and

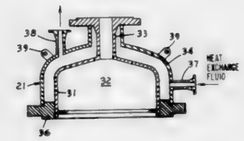
K. a discharge pipe for separated coarse sand particles, said discharge pipe disposed at the funnel shaped bottom of said column.

3,966,538

FALLING STRAND DEVOLATILIZATION APPARATUS

Carl G. Hagberg, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 322,261, Jan. 9, 1973, Pat. No. 3,928,300. This application Dec. 13, 1974, Ser. No. 532,339
Int. Cl.² B01D *1/28, 1/06, 1/00, 1/10*
U.S. Cl. 159—2 R **4 Claims**



1. An improved falling strand devolatilizer apparatus comprising:

A. a vessel adapted for use as a flash chamber in devolatilization, said vessel having an upper portion, a middle portion and a lower portion, each such portion being generally symmetrically positioned about a central axis which is vertically oriented,

1. said lower portion being generally conical in cross-section and terminating in a fluid material discharge orifice,

2. said middle portion being generally cylindrical in cross-section,

3. said upper portion having a relatively large axially located material input orifice and further having a relatively small, circumferentially located, gaseous material exhaust port means,

4. said vessel having its walls generally circumscribed by heat exchange means adapted to heat said walls to a predetermined temperature during operation of said apparatus,

B. a shell and tube heat exchanger means having vertical tube members is spaced, parallel relationship to one another all enclosed and mounted generally within a shell member,

1. said shell member having heat exchange fluid input and output ports therein,

2. each of said tube members having a length of from about 2 to 8 feet, an average inside diameter which is generally constant with respect to said length thereof and which ranges from about 0.5 to 1.5 inches, and a ratio of said length to said diameter ranging from about 30 to 80,

3. said shell and tube heat exchanger means being mounted in gas-tight relationship generally transversely across said material input orifice of said vessel with said tube members generally parallel to said central axis, said shell and tube heat exchanger extending down into said upper and middle portions of said vessel defining

an annular manifold zone with said middle zone of said vessel to collect and direct devolatilized vapors out of said exhaust port,

C. bonnet means for said heat shell and tube heat exchanger means mounted over the exterior, upper end portions of said tube members and adapted to distribute said material as an input process fluid uniformly over said upper end portions from a material input port means coaxially located in a top section of said bonnet,

D. first pump means with associated conduit means functionally interconnected with said material input port means of said bonnet and adapted to supply said input material as heated, viscous material at a predetermined pressure into said bonnet, and

E. second pump means with associated conduit means functionally interconnected with said gaseous material exhaust port means in said vessel and adapted to evacuate and maintain the interior of said vessel at a predetermined low pressure.

3,966,539

PROCESS FOR EXTRACTING DISSOLVED SALTS FROM WATER

Carl W. Garbe, San Carlos, Calif., assignor to Dames & Moore, San Francisco, Calif.

Filed Feb. 22, 1974, Ser. No. 444,640
Int. Cl.² B01D *1/00, 9/02;* **C01D** *3/00*
U.S. Cl. 159—47 R **10 Claims**

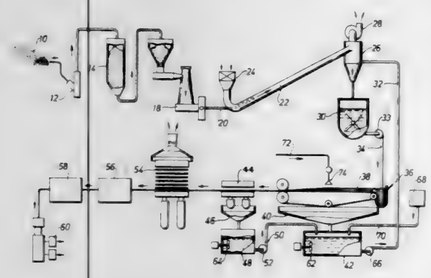
1. A process for concentrating salt dissolved in a salt-saturated water by accelerated evaporation comprising the steps of providing a particulate solid having a density greater than the salt-saturated water; mixing said particulate solid particles with said liquid containing a salt to form a slurry having a percentage moisture content in the range of up to 300%; periodically agitating said slurry at at least the air-slurry interface to prevent the formation of any visible clear liquid layer over the solid particles of said slurry; after said agitating step, settling said solid particles from the surface of said slurry; and, decanting the surface of said slurry to remove liquid having dissolved salt concentrated therein.

3,966,540

MANUFACTURE OF FIBERBOARD ACCORDING TO THE WET METHOD WITH CLOSED BACKWATER SYSTEM

Stig Daniel Selander, Stockholm, Sweden; Bernard Marechal, Casteljaloux, and Corrado D'Andrea, Arpajon, both of France, assignors to Isorel S.A., Puteaux, France and Stig Daniel Selander, Stockholm, Sweden

Filed Sept. 10, 1974, Ser. No. 504,739
Claims priority, application Sweden, Sept. 14, 1973, 7312580
Int. Cl.² D21C *3/00;* **D21F** *1/66*
U.S. Cl. 162—13 **4 Claims**



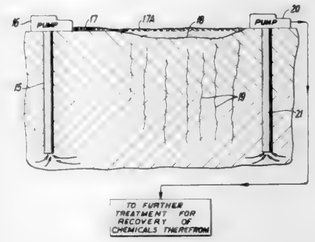
1. In the method of manufacturing wood fibreboard according to the wet system with closed white water system including defibrating lignocellulose material, diluting the defibrated material in water serving as the transporting medium, forming wet sheets from the diluted pulp, mechanically separating white water obtained from the formation of wet sheets and recirculating it to the dilution stage and final drying by evaporation of water from the wet sheets, the production of fibreboard having enhanced appearance while maintaining a closed white water system with reduced discharge of pollutants to the environment including drying the incoming lignocellulose material, prior to the dilution step, to a dry content from 60 percent to 75 percent, which is higher than the dryness of the wet sheet prior to the time it enters the final drying stage, the improvement comprising adding formaldehyde to the white water, homogenizing the white water containing said formaldehyde to a degree such that occurring precipitations are atomized prior to using it for dilution of incoming fibre material.

3,966,541

CONCENTRATION OF UNDERGROUND BRINES IN SITU BY SOLAR EVAPORATION

Abraham Sadan, 4353 Diana Way, Salt Lake City, Utah 84117

Filed Feb. 20, 1975, Ser. No. 551,395
Int. Cl.² B01D *1/00, 9/02;* **C01D** *3/06, 7/00*
U.S. Cl. 159—47 R **4 Claims**



1. A process for recovering salts selected from the group consisting of carbonates, sulfates, borates and chlorides of sodium and potassium from underground brine associated with a permeable ore body comprising the steps of:

establishing at least one well communicating with the brine of said ore body,

pumping brine via said well to the surface of the ore body to accumulate a confined body of brine over said ore body exposed to solar evaporation,

the surface and strata of said ore body being sufficiently permeable to allow brine concentrated by solar evaporation to percolate downwardly into an underground basin associated with said permeable ore body,

subjecting said confined body of brine to solar evaporation to produce a brine of higher salt concentration,

allowing the brine of said high salt concentration to percolate downwardly to an underground basin associated with said ore body,

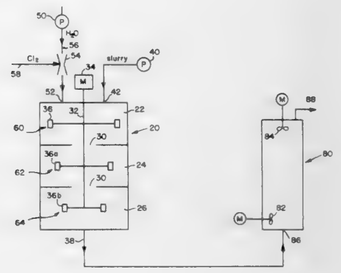
and continuing the steps of (1) accumulating brine at the surface, (2) concentrating said brine by solar evaporation, and (3) percolating said concentrated brine to said underground basin until sufficient concentrated brine has been produced to economically optimize the recovery of chemicals therefrom.

3,966,542

MULTI-STAGE BLEACHING OF PULP USING SUCCESSIVELY LOWER POWER LEVELS

James Y. Oldshue, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Sept. 20, 1974, Ser. No. 507,892
Int. Cl.² D21C *3/26, 9/12*
U.S. Cl. 162—57 **9 Claims**



1. A process for bleaching pulp in a tank comprising the steps of:

a. supplying a pulp slurry to a first tank compartment;

b. supplying an oxidizing agent to said first tank compartment;

c. agitating a mixture of said pulp slurry and oxidizing agent in said first tank compartment at a first power level;

d. supplying said mixture to another tank compartment; and

e. re-agitating said mixture in said another tank compartment at a second power level that is lower than said first power level and corresponds to the amount of unreacted oxidizing agent and unreacted pulp slurry.

3,966,543

ENZYME-TREATED PAPER

Theodore Cayle, Lake Forest, and Gerard J. Moskowitz, Buffalo Grove, both of Ill., assignors to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Oct. 30, 1972, Ser. No. 302,323
Int. Cl.² D21D *3/00*
U.S. Cl. 162—158 **5 Claims**

1. A process for improving the disintegratability of moistened paper comprising applying a dilute aqueous solution of a cellulase enzyme complex containing at least about five units each of C_1- and C_2-components of enzyme activity per ml. of said solution to newly formed paper after leaving the forming section but prior to entering the drying section so that said paper contains from about 75% to about 80% water after said application, followed by drying in which the temperature of said paper is not raised above about 100°C, the amount of said complex being such as to provide at least about 50 C_1 units per gram of paper.

3,966,544

GUIDE SHOWER FOR A FABRIC BELT

Henry Johnson, Quebec, Canada, assignor to JWI Ltd., Montreal, Canada

Filed Dec. 23, 1974, Ser. No. 536,924
Claims priority, application United Kingdom, Jan. 9, 1974, 945/74
Int. Cl.² D21F *1/42*
U.S. Cl. 162—199 **24 Claims**

22. A method for guiding an endless fabric belt of a paper making machine, the fabric belt being driven by a driving roll;

said endless fabric belt comprising a high tension portion and a low tension portion, and right and left edges adjacent the right and left side of the machine respectively;

said high tension portion being disposed in that portion of the belt preceding said driving roll in the direction of travel of said belt;

said low tension portion being disposed in that portion of the belt following said driving roll in the direction of travel of said belt;

and guide shower disposed across the width of the endless fabric belt, and comprising a series of nozzles joined by a pipe;



the method comprising providing fluid under pressure through said pipe to outlet ends of those nozzles directed towards the left edge of said endless fabric belt;

and providing fluid under pressure through said pipe to the outlet ends of those nozzles directed towards the right edge of said endless fabric belt;

adjusting the pressure at the outlet ends of the nozzles directed towards the left edge to a different pressure from the pressure at the outlet ends of the nozzles directed towards the right edge;

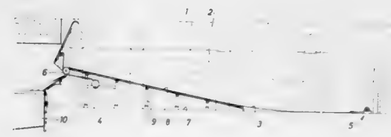
whereby the belt will be guided to the side of the higher pressure.

3,966,545

DEVICE FOR THE REMOVAL OF MACULATURE OR SIMILAR

Kurt A. Banner, Goteborg, Sweden, assignor to Mekantransport AB, Goteborg, Sweden

Filed Jan. 28, 1975, Ser. No. 544,787
Claims priority, application Sweden, Jan. 28, 1974, 7401034
Int. Cl.² D21F *1/66*
U.S. Cl. 162—264 **5 Claims**

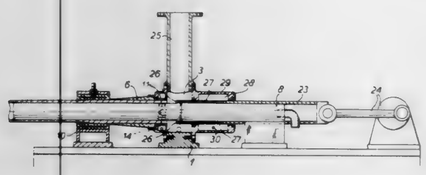


1. In a paper manufacturing machine, a device for the reception and removal of maculature collecting underneath the paper web in said machine comprising a cloth, stretchable in the space underneath the machine, a winding roller, driven by driving means and connected with one end of said cloth and arranged to wind up the cloth for the purpose of removing the cloth with the maculature collected thereon from said space leaving the same free, a discharge station for the discharge of the maculature over a linked portion of the cloth when being wound up, and a pulling device connected with the opposite end of said cloth by means of two wires and arranged to unwind the cloth from the winding roller and stretch the cloth in said space underneath the paper machine, said pulling device comprising a shaft which is rotatable by driving means in order to wind up said wires.

3,966,546
APPARATUS FOR MANUFACTURING SLEEVES FROM FIBER PULP

Terje Braaten, Ed, Sweden, assignor to Renee Engell, Oslo, Norway

Filed May 10, 1974, Ser. No. 469,042
Int. Cl.² D21F 1/00
U.S. Cl. 162—293 **7 Claims**



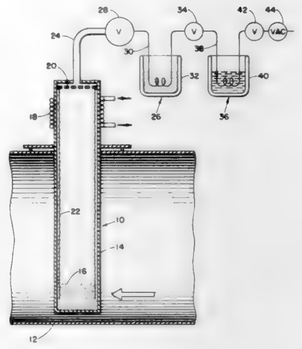
1. An apparatus for the manufacture of sleeves of fiber pulp comprising:
- first dewatering means including suction means for dewatering the fiber pulp;
- nozzle means for discharging the sleeves of fiber pulp, said nozzle means having a tubular nozzle body, a portion of the interior surface of said nozzle body including an annular first screen member which acts as a portion of said first dewatering means;
- a mandrel extending longitudinally through said nozzle body;
- second dewatering means including suction means for dewatering the fiber pulp; and
- reciprocable piston means which is reciprocable along a given axis for driving the fiber pulp through said nozzle means, said reciprocable piston means being mounted on said mandrel, wherein one end of said reciprocal piston means includes a surface which extends radially outward from said mandrel, is spaced from said axis and exerts a pressure force on the fiber pulp through said nozzle means, said surface of said one end of said reciprocable piston means including a second screen member acting as a portion of said second dewatering means.

3,966,547
METHOD OF PRODUCING ^{123}I

James W. Blue, Bay Village, Ohio, assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 247,434, April 25, 1972, abandoned. This application Mar. 13, 1973, Ser. No. 340,863
Int. Cl.² G21G 1/10
U.S. Cl. 176—11 **5 Claims**

1. In a method of producing high purity radioactive ^{123}I by the decay of ^{123}Xe, the improvement comprising the steps of
- bombarding ^{133}Cs contained in one end of a heat pipe with a beam of high energy protons having energies greater than 200 MeV causing a spallation reaction which produces xenon vapor and radioactive iodine contaminants while heating said ^{133}Cs and vaporizing the same,
- transporting said vaporized ^{133}Cs out of said beam to the end of said heat pipe opposite said beam,
- cooling said end of said heat pipe opposite said beam so that said vaporized ^{133}Cs condenses,
- transporting said condensed ^{133}Cs back to said one end of said heat pipe in said beam for additional bombardment,
- removing said radioactive iodine contaminants and said xenon vapor from said cooled end of said heat pipe,
- separating said radioactive iodine contaminants from said xenon vapors,
- condensing said xenon vapor in a container after said radioactive iodine contaminants have been removed therefrom, and

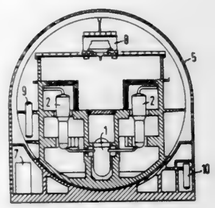


- holding the xenon in said container for a period of time sufficient for ^{123}Xe to decay ^{123}I.

3,966,548
COOLING SYSTEM FOR A NUCLEAR REACTOR

Klaüs Muller, Grossdechsendorf, and Bernhard Böhm, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 15, 1973, Ser. No. 332,737
Claims priority, application Germany, Feb. 19, 1972, 2207870
Int. Cl.² G21C 9/00
U.S. Cl. 176—37 **6 Claims**

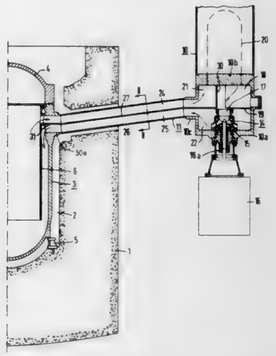


1. A reactor installation comprising a pressure containment enclosure enclosing a normally closed main cooling circuit comprising a pressurized-water reactor pressure vessel and means for cooling and for circulating pressurized-water coolant through said vessel, and a fuel-element storage well in said enclosure for storing used hot fuel elements removed from said vessel, said well having an open top exposed to the atmosphere inside of said enclosure, said installation having circulating means for circulating fuel-element cooling water through said well while maintaining at least a fuel-element-covering water level in the well; wherein the improvement comprises said fuel-element storage well containing an excess of said fuel-element cooling water extending upwardly to a height substantially above said fuel-element covering level, and a supplemental circuit comprising means for pumping at least a portion of said excess of said fuel-element cooling water from said well into said main cooling circuit to provide this main cooling circuit with supplemental coolant, said supplemental circuit connecting with said well above said level to pump from said well at most only said excess water into said main cooling circuit by means of said circulating pump.

3,966,549
PRESSURIZED-WATER COOLANT REACTOR INSTALLATION

Eberhard Michel, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 4, 1973, Ser. No. 421,681
Claims priority, application Germany, Dec. 15, 1972, 2261477
Int. Cl.² G21C 15/12
U.S. Cl. 176—65 **2 Claims**



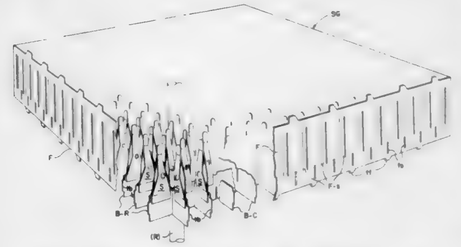
1. A pressurized-water reactor installation comprising a vertical reactor pressure vessel with an upper portion having at least one coolant connection with a horizontal dividing wall, said vessel internally having means for conducting coolant from below said wall downwardly into the vessel and then upwardly for discharge above the wall, a coolant pipe connected to and extending from the vessel's said connection and containing a horizontal partition wall extending throughout its length and connected with said dividing wall of the vessel's connection, a vertical steam generator positioned adjacent to said vessel, said generator having a lower portion having a coolant connection with which said pipe is connected and internally having a horizontal tube sheet above the generator's said connection and a horizontal partition below the tube sheet and horizontally aligned with and connected with the pipe's said horizontal partition wall and having a vertical partition wall extending upwardly to said tube sheet transversely with respect to the generator's said connection and forming horizontally separated spaces below the tube sheet and above the generator's horizontal partition, one of said spaces being adjacent to and connected to said pipe above its said horizontal partition wall, the generator's said horizontal partition forming a lower space therebelow, a vertical coolant pump vertically positioned in said lower space and discharging thereinto and having a suction inlet connected to the other of said spaces, said lower space being connected with said pipe below its said partition wall, and a vertical motor for driving said pump and positioned below and outside of the generator's said lower portion, a vertical shaft extending through said lower portion and interconnecting said motor and pump.

3,966,550
REACTOR FUEL ASSEMBLIES

Ronald B. Foulds; Alvin H. Kasberg, both of Murrysville; Karl H. Puechl, Export, and Melvin L. Bleiberg, Pittsburgh, all of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 125,544, March 18, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,998
Int. Cl.² G21C 3/18
U.S. Cl. 176—78 **7 Claims**

1. In a nuclear reactor fuel array, improved means comprising:
- a plurality of parallel nuclear fuel rods;
- a plurality of grid spacers axially spaced along the length of said fuel rods;
- column support strips and row support strips associated to define a plurality of square openings orthagonally and egg-crate arranged within each grid spacer, the corresponding square openings of the axially spaced grid spacers defining for each fuel rod a longitudinal predominantly open compartment having a square cross section, said openings consisting of a few peripheral openings around the periphery of the grid support and many non-peripheral openings, there being many non-peripheral compartments and a few peripheral compartments;
- four fingers integrally extending from a set of four edges of each of said non-peripheral square opening, such fingers extending in directions approximately parallel to the fuel rods extending through said non-peripheral square openings;



- a bowed portion at a cantilevered end portion of each of said fingers, said bowed portion extending into a compartment;
- a bowed finger portion welded back-to-back at its ends to the bowed portion of said integral finger cantilevered from a support strip, said bowed finger extending into a compartment adjacent to the compartment receiving said bowed portion of the finger, each fuel rod in one of said non-peripheral compartments being resiliently contacted by halves of four paired-bow springs thus extending into said compartment for said fuel rod, and each of the non-peripheral paired-bow springs resiliently contacting fuel rods in two adjacent compartments, said grid spacers providing each of said rods only with resilient supporting contacts, the paired-bow springs being constructed and arranged to permit both radial expansion and axial expansion of each of said rods and to permit convenient axial insertion and removal of each of said rods.

3,966,551
METHOD FOR PREPARING TANNABLE PELTS FROM ANIMAL SKINS AND HIDES

Rolf Monsheimer, Darmstadt-Eberstadt, and Ernst Pfleiderer, Darmstadt-Arheilgen, both of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed Jan. 28, 1975, Ser. No. 544,794
Claims priority, application Germany, Feb. 1, 1974, 2404789
Int. Cl.² C12B 1/00
U.S. Cl. 195—6 **3 Claims**

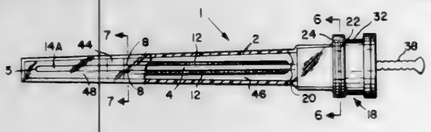
1. In a process for the preparation of tannable pelts from animal skins or hides wherein concurrent soaking, unhairing, opening up of the hide structure, and bating are effected in a single procedural step by treatment with enzymes in an aqueous bath containing enzymes, the improvement wherein the enzymatic treating bath is free of amines and comprises dissolved therein:
- a. an effective amount of at least one member selected from the group consisting of a fungus protease whose optimum efficacy towards casein is at a pH above 7.0, trypsin, papain, and a bacterial protease whose optimum efficacy is at a pH between 6 and 9;

b. an effective amount of a bacterial protease having an optimum efficacy against hemoglobin at a pH above 9; and
c. an effective amount of thioglycolic acid or a salt thereof.

3,966,552
DEVICE FOR MAKING A CULTURE OF MICRO-ORGANISMS

Joseph F. Pagano, Paoli, and Ronald J. Schoengold, Thorndale, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Apr. 14, 1975, Ser. No. 567,696
Int. Cl.² C12B 1/02
U.S. Cl. 195—139 **7 Claims**



1. A device for making a culture of micro-organisms comprising:
a container having an open end,
means to seal the open end of the container,
second ring seal means dividing said container into a first compartment for a liquid culture medium remote from the open end of the container and a second compartment adjacent the open end of the container,
a removable elongated member in the container,
said elongated member having a portion extending through the second compartment and into said first compartment and removably engaging the second seal means to seal liquid culture medium in the first compartment, and
a culture medium secured to a portion of said elongated member lying in the second compartment.

3,966,553
PROCESS FOR PRODUCING CITRIC ACID BY FERMENTATION

Jean-Max Charpentier, Montesson; Georges Glikmans, Meudon-la-Foret, and Paul Maldonado, Chatou, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activites Petrolieres Elf, Rueil-Malmaison, France

Filed Dec. 6, 1973, Ser. No. 422,568
Claims priority, application France, Dec. 6, 1972, 72.43480; Dec. 8, 1972, 72.43936
Int. Cl.² C12B 1/00
U.S. Cl. 195—28 R **10 Claims**

1. A process for continuously manufacturing citric acid comprising in at least one first aerated fermentation zone, continuously growing a culture of yeast capable of assimilating n-paraffins, in a medium containing all the elements required for the growth of said yeast, including at least one n-paraffin, continuously withdrawing the yeasts at such a rate that they be kept in the first fermentation zone during their development phase, continuously introducing the withdrawn yeasts into at least one second aerated fermentation zone separate and distinct from the first aerated fermentation zone and containing growth elements, but having a low content of assimilable inorganic nitrogen source, at least one nitrogeneous heterocyclic compound at a concentration of from 0.5 to 10 g/l being added to said second fermentation zone, maintaining said yeasts in said second zone for a sufficient time to excrete citric acid and separating the citric acid and the yeasts from the culture medium of said second zone, the dilution rate being from 0.15 to 0.2 h^{-1} in said first fermentation zone, and 0.1 to 0.04 h^{-1} in said second fermentation zone, the cell concentration in both fermentation zones being about 20 g/l.

3,966,554
PROCESS FOR THE PRODUCTION OF A PROTEIN-VITAMIN CONCENTRATE BY USING YEASTS FROM ANIMAL OR VEGETABLE FATS AND FOR ITS TRANSFORMATION INTO A PRODUCT

Károly Vass; György Kárpáti; Éva Széchenyi-Márton, and Ferenc Simek, all of Budapest, Hungary, assignors to Novex RT, Hungary

Filed June 20, 1973, Ser. No. 371,706
Claims priority, application Hungary, June 20, 1972, KO-2520
Int. Cl.² A23J 1/18
U.S. Cl. 195—30 **4 Claims**

1. A method for the production of a protein-vitamin concentrate suitable for human consumption or animal feeding and having a protein content of at least 50% by weight, comprising culturing a member selected from the group consisting of *Candida guilliermondic*, *Candida tropicalis*, *Candida lipolytica*, *Candida utilis*, *Saccharomyces fragilis*, *Saccharomyces lactis*, Deuteromycetes and *Geotrichum candidum* in a culture medium containing animal or vegetable fat as a carbon and energy source, ammonium salt or carbamide as a source of nitrogen, the nitrogen content of the medium being 0.1 to 0.2%, mineral material providing the ions PO_4^{3-}, Cl^-, K^+, Na^+, Mg^{2+}, Ca^{2+}, Mn^{2+}, Fe^{2+} and Cu^{2+}, the N:P ratio being about 4:1, the pH being about 4.5 to 5 and the temperature being about 30° to 40°C., aerating the culture medium at an aeration intensity of about 150 to 300 cubic meters of air per square meter of fermenter base area per hour, and separating the resulting biomass from the culture medium.

3,966,555
ALPHA-GALACTOSIDASE PRODUCTION

Nichole Arnaud, Vendome, France, and David Anthony Bush, Maidstone, England, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jan. 30, 1975, Ser. No. 545,356
Claims priority, application Switzerland, Feb. 1, 1974, 1403/74
Int. Cl.² C07G 7/028
U.S. Cl. 195—66 R **10 Claims**

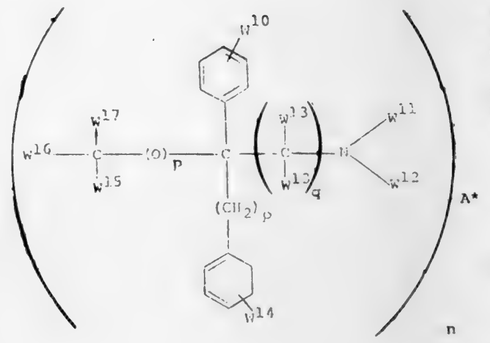
1. A process for the production of α-galactosidase by culturing the mold Penicillium duponti in an aqueous medium containing at least one sugar with at least one αD-galactopyranosyl bond, collecting the mycelium thus obtained and subjecting said collected mycelium to a step selected from the group consisting of lyophilization and treatment to liberate its intracellular content of α-galactosidase.

3,966,556
COMPOUNDS FOR ENZYME AMPLIFICATION ASSAY METHADONE ANALOGS

Kenneth E. Rubenstein, Palo Alto, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Division of Ser. No. 304,157, Nov. 6, 1972, Pat. No. 3,852,157, which is a continuation-in-part of Ser. No. 143,609, May 14, 1971, abandoned. This application June 20, 1974, Ser. No. 481,087
Int. Cl.² G01N 31/14; C07G 7/02
U.S. Cl. 195—63 **9 Claims**

1. An enzyme-bound-ligand of the formula:



wherein:
any one of the W groups can be -X* or an H of any of the W groups may be replaced by -X*, wherein -X* is a bond or a linking group;
A* is an enzyme bonded at other than its reactive site to n ligands whrein n is in the range or 1 to the molecular weight of -A* divided by 2,000;
p is 0 or 1, being the same in both instances;
q is 2 or 3;
W^{10} and W^{14} are hydrogen;
W^{11} and W_{12} are hydrogen, alkyl of from 1 to 3 carbon atoms, or may be taken together to form a 6-membered ring with the nitrogen to which they are attached;
W^{13} is hydrogen or methyl, only one W^{13} being methyl;
W^{15} is hydrogen or hydroxyl;
W^{16} is hydrogen, acyloxy of from 1 to 3 carbon atoms, or hydroxy; and
W^{17} is hydrogen or alkyl of from 1 to 3 carbon atoms.

3,966,557
ANTIBIOTIC 19,402 RP

Denise Mancy, Charenton; Leon Ninet, and Jean Preud'homme, both of Paris, all of France, assignors to Rhone-Poulenc S.A., Paris, France

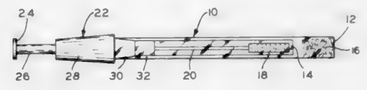
Division of Ser. No. 707,233, Feb. 21, 1968, Pat. No. 3,821,366. This application Mar. 24, 1972, Ser. No. 237,993
Claims priority, application France, Feb. 22, 1967, 67.96051
Int. Cl.² C12D 9/00
U.S. Cl. 195—80 R **5 Claims**

1. Process for the production of an alkali metal salt of the antibiotic 19,402 RP which comprises inoculating an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and mineral salts with a culture of the strain *Streptomyces peruviensis* NRRL 2757, allowing fermentation to take place under submerged aerobic culture conditions commencing at a pH within the range 6.0 to 7.5 and at a temperature of from 25° to 35°C until a substantial amount of 19,402 RP, together with the amphoteric antibiotic 6798 RP, is produced by the said microorganism in the said culture medium, and isolating 19,402 RP, in the form of an alkali metal salt thereof, substantially free of 6798 RP, from the culture medium by adjusting the pH of the medium to below 5, and extracting the filter cake with water containing an alcohol selected from the group consisting of methanol, ethanol and propanol at a pH of from 3 to 7.

3,966,558
DEVICE FOR COLLECTION OF SAMPLES FOR MICROBIOLOGICAL STUDIES

Cesar Calva-Pellicer, Copenhague No. 24, Mexico City 6, Mexico

Filed May 5, 1975, Ser. No. 574,388
Claims priority, application Mexico, Nov. 5, 1974, 154796
Int. Cl.² C12B 1/00
U.S. Cl. 195—139 **5 Claims**



1. In a device for collecting and preserving samples for microbiological studies and the like; a rod adapted for supporting a swab element at one end, a stopper member surrounding the rod in a region spaced from said one end and sealingly engaging the rod, an inner tubular container closed at one end and open at the other adapted for being placed over the rod from said one end of the rod and with the open end of the inner container sealingly engaging the stopper member, an outer tubular container surrounding said inner container and having an open end sealingly engaging said stopper member and a closed end axially spaced from the closed end of the inner container, said stopper member maintaining the interiors of said containers isolated from one another and from the atmosphere.

3,966,559
APPARATUS FOR DEODORIZING OIL AND SIMILAR MATERIAL

Anthony Athanassiadis, Brussels, Belgium, assignor to Extraction de Smet, Edegem, Belgium

Filed May 14, 1974, Ser. No. 469,884
Claims priority, application Belgium, Oct. 31, 1973, 806819
Int. Cl.² B01D 1/00, 19/00, 35/18, 1/02
U.S. Cl. 196—111 **12 Claims**

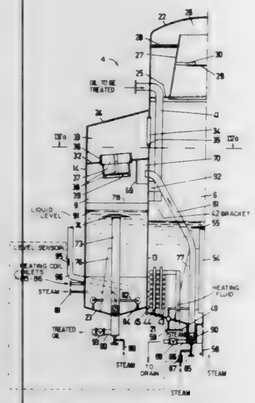
1. In an apparatus for deodorizing oil and similar material, said apparatus being of the type including:
a column; inlet duct means opening into an upper part of said column for supplying thereto material to be treated;
means for supplying heat injection fluid to a lower part of said column to treat said material therein; and
a gas discharge tube in said upper part of said column and adapted to be attached to an exhaust device; the improvement comprising:
a plurality of separate compartments surrounding at least a portion of said lower part of said column, said compartments being separate from, and not in fluid communication with, each other;
a plurality of first duct means, one each extending from the lowest portion of said column to one of said compartments, for allowing passage of material from said column separately to each of said compartments;
a plurality of separately controlled supply means, one each operatively associated with one of said first duct means, for supplying said material from said column through the

respective said first duct means to the respective compartment;

means for supplying heat injection fluid to each of said compartments to treat said material therein;

vapor passageway means communicating the top portion of said compartments with said upper part of said column;

a plurality of second duct means, one each leading from a respective one of said compartments, for discharging



treated material from each of said compartments to a common outlet duct connected to each of said second duct means; and

a plurality of separate control means, one each connected to one of said second duct means, for separately controlling the flow of treated material through the respective said second duct means from the respective said compartment.

3,966,560

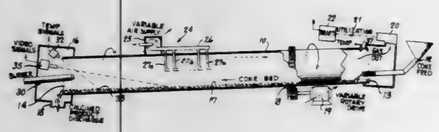
METHOD OF CALCINING COKE IN A ROTARY KILN

Frank John Farago; Raman Radha Sood, and David Michael Stokes, all of Arvida, Canada, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed May 6, 1974, Ser. No. 467,376

Int. Cl.² C10B *49/00, 49/06, 57/16*

U.S. Cl. 201—32 **13 Claims**



1. In a method of calcining coke which travels from the upper feed end where said coke is fed at a desired rate to the lower discharge end of a sloping, rotary kiln, which has a predetermined slope, at a speed dependent on the speed of kiln rotation, while supplying heat to the traveling coke to calcine the coke by removing volatile material and increasing substantially the real density of the coke, the improvement which comprises causing combustion of removed volatile material within the kiln to supply 75 to 100% of the heat required for said calcination after preliminary heating to initiate the process, by supplying air into the kiln at localities within a zone which extends longitudinally between places spaced substantially from the discharge and feed ends respectively, while drawing the gaseous products of said combustion upstream through the kiln and out the feed end, said supply of heat being effective to raise the temperature of the coke as the coke travels from the feed end to a desired maximum value at a place spaced longitudinally upstream of the discharge end, while the temperature of the coke decreases in further travel from said maximum temperature place to the discharge end, said maximum temperature place being distinguished by an observable physical disturbance in the kiln which accompanies said removal and combustion of volatile material, said disturbance being located along only a longitudinally intermediate region of the kiln from which the substantially calcined coke travels beyond said disturbance to the discharge end, determining departures from the desired maximum temperature value and the desired location of said disturbance and adjusting said supply of air to said localities for sufficient combustion to maintain said desired maximum temperature value while adjusting the speed of kiln rotation to situate said maximum temperature at the desired place so that the coke travels for 5 minutes or more from the downstream end of said disturbance to the discharge end, thereby insuring uniform calcining treatment of the coke before it discharges.

3,966,561

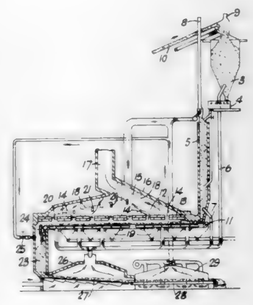
APPARATUS FOR THE CARBONIZATION OF COAL

David William Hinkley, Brighton Beach, Australia, assignor to International Oils Exploration N.L., Melbourne, Australia

Filed Sept. 23, 1974, Ser. No. 508,263

Int. Cl.² C10B *1/06, 7/06, 21/00*

U.S. Cl. 202—117 **18 Claims**



1. Coal carbonization apparatus comprising a travelling grate disposed within a carbonization chamber and extending from at least the inlet to the outlet end of said carbonization chamber, hot inert gas inlets disposed in said carbonization chamber below said travelling grate, a combustion chamber disposed above said travelling grate and separated from said carbonization chamber by a perforated refractory screen, air inlets being disposed within said combustion chamber adjacent said refractory screen.

3,966,562

MULTI-STAGE FLASH DISTILLATION PLANT

Toshimi Mukushi; Kenkichi Izumi; Sankichi Takahashi; Yoshiaki Okazima; Toshio Sawa, all of Hitachi, and Mithumasa Komai, Funabashi, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed July 31, 1974, Ser. No. 493,480

Int. Cl.² B01D *3/00*

U.S. Cl. 202—173 **6 Claims**

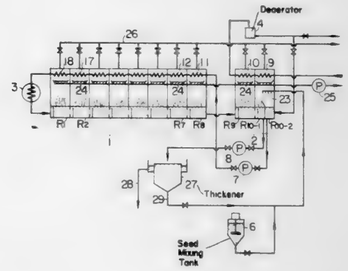
1. A multi-stage flash distillation plant comprising:

a plurality of flash distillation stages divided into a heat recovery section and a heat rejection section, each of said stages including a flash chamber and a condenser with the last stage of the heat rejection section having a front flash chamber and a rear flash chamber;

a brine circulating pump means and associated conduit means providing communication between the rear flash chamber of said heat rejection section and the first condenser of the heat recovery section for sequentially circulating unflashed brine and a condensing medium through the condensers of each of the flash distillation stages of the heat recovery section;

a brine heater means and associated conduit means providing communication between the final condenser and the first flash chamber of said heat recovery section for heating unflashed brine prior to its introduction into said first flash chamber;

means for introducing feed sea water sequentially through the condensers of the heat rejection section, and deaerator means disposed downstream of the final condenser of the heat rejection section for receiving said sea water and means for introducing at least a portion of the deaerated feed sea water from the deaerator means to the rear flash chamber of the last stage of the heat rejection section;



an open thickener container;

a brine extracting pump and associated conduit means for conveying the flashed and concentrated brine from the front flash chamber of the last stage of the heat rejection section to said open-type thickener container for separating the flashed and concentrated brine into clean brine containing a small amount of seeds as discharged brine and the brine containing a relatively large amount of seeds as recovered brine;

a seed mixing tank for preparing new seed-mixed brine; and

a distributor means provided with nozzle means and disposed in the rear flash chamber of the last stage of the heat rejection section and means for combining the recovered brine from the thickener container and the new seed-mixed brine and introducing the mixture to said distributor means, whereby the brine mixture is deaerated.

3,966,563

COKE GUIDE SPRAY SYSTEM

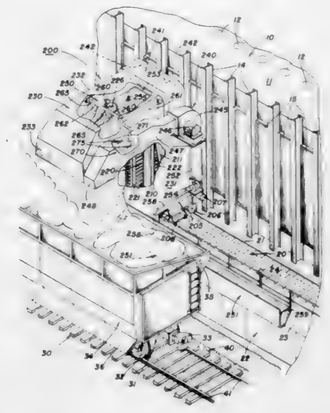
Frank K. Armour, Flossmoor, and Robert P. Winters, Olympia Fields, both of Ill., assignors to Interlake, Inc., Chicago, Ill.

Filed Sept. 27, 1973, Ser. No. 401,188

Int. Cl.² C10B *39/02, 27/04, 39/12*

U.S. Cl. 202—228 **3 Claims**

1. A coke guide spray system for use with a battery of coke ovens having a corresponding plurality of coke side doors disposed in a row with a coke guide track arranged generally parallel thereto and with a coke quenching car track arranged beside and generally parallel to the coke guide track and at an elevation therebelow with a coke quenching car thereon and movable therealong, said system comprising a coke guide including an outer frame mounted on the coke guide track for movement of said coke guide from one coke side door to another, a track mounted on said outer frame and arranged transversely with respect to the coke guide track, a coke guide chute mounted on said transverse track for movement toward and away from an associated coke side door, said coke guide guiding coke from an associated open coke side door across the coke guide track and into a coke quenching car on the coke quenching car track, a hood mounted on said coke guide and covering said coke guide chute and extending outwardly over the associated coke quenching car, a water inlet pipe mounted on said coke guide and adapted to be connected to a source of water under pressure, water spray means mounted within said hood above said coke guide chute adjacent to the end thereof disposed toward the associated coke quenching car for spraying water on the upper surface of a column of coke as it falls into the associated coke quenching car and for spraying water into the portion of said hood disposed over the associated coke quenching car, a gas exhaust system mounted on said coke guide and including an intake duct communicating with the interior of said hood and a fan connected to said intake duct and an outlet duct connected to said fan and discharging into said associated coke quenching car, and a horizontally disposed condensing spray system in said outlet



duct for spraying a horizontal stream of water therein to entrain fumes and particulate matter passing through said outlet duct and depositing the same in the associated coke quenching car, said hood and said water spray means and said exhaust system and said condensing spray system cooperating to trap emissions from the associated coke oven during discharge thereof in the water from said water spray means and condensing spray system and to direct the water and the emissions trapped therein onto the coke in the coke car and to retain the water therein, whereby to minimize emissions into the atmosphere from the hot coke as it is pushed from an oven through the associated coke side door and said coke guide into the coke quenching car.

3,966,564

METHOD OF ELECTRODEPOSITING AN ALLOY OF TIN, COBALT AND A THIRD METAL AND ELECTROLYTE THEREFOR

Jacob Hyner, and Robert A. Michelson, both of Waterbury, Conn., assignors to Whyco Chromium Company Inc., Thomaston, Conn.

Division of Ser. No. 431,025, Jan. 7, 1974, Pat. No. 3,881,919.

This application Dec. 17, 1974, Ser. No. 533,472

Int. Cl.² C25D *3/60, 3/56*

U.S. Cl. 204—43 S **15 Claims**

1. An acidic, aqueous bath for the formation of a bright, tarnish resistant and color stable coating, containing a tin compound providing stannous ions, a cobalt compound providing cobaltous ions and at least one third compound providing ions of a third metal, said third metal being antimony or a metal other than aluminum selected from Periodic Group II_B, III_A or VI_B, said ions being present in amounts sufficient to electrodeposit from said bath at pH of about 1–3, a current density of about 5–45 A/ft.² and bath temperature of about 50°–85° C., a ternary alloy consisting essentially of about

40–90 wt. % tin, about 10–50 wt. % cobalt and about 1–28 wt. % at least one of said third metals.

11. A process for forming on a substrate a bright, tarnish resistant and color stable coating of an alloy consisting of about 40–90 wt. % tin, about 10–50 wt. % cobalt and about 1 to 28 wt. % of at least one third metal other than aluminum selected from Periodic Groups II_B, III_A or VI_B, which comprises electroplating said alloy from an acidic, aqueous bath at a pH of about 1–3, a current density of about 5–45 A/ft.^{2} and a bath temperature of about 50°–85°C, said bath containing about 20–100 g/l of a tin compound providing stannous ions, about 20–400 g/l of a cobalt compound providing cobaltous ions, and about 5–175 g/l of at least one third compound providing ions of said third metal.

3,966,565

ELECTRODEPOSITION OF COPPER

Otto Kardos, Ferndale; Donald A. Arcilesi, Mount Clemens, and Silvester P. Valayil, Pontiac, all of Mich., assignors to M & T Chemicals Inc., Greenwich, Conn.

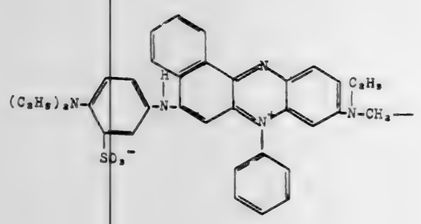
Continuation-in-part of Ser. No. 315,112, Dec. 14, 1972, abandoned. This application Nov. 21, 1974, Ser. No. 525,717

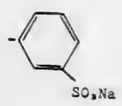
Int. Cl.^{2} C25D *3/38*

U.S. Cl. 204—52 R **6 Claims**

1. A process for electrodepositing copper from an aqueous acidic copper plating bath containing at least one member independently selected from each of the following two groups:

A. 0.005 to 40 grams per liter of an aryl amine exhibiting the formula:





and

B. sulfoalkyl sulfide compounds containing the grouping —S—Alk—SO_3M where M is one gram-equivalent of a cation and —Alk— is a divalent aliphatic hydrocarbon group of 1 to 8 carbon atoms in an amount of 0.01 milligrams per liter to 1000 milligrams per liter.

3,966,566

ELECTROLYTIC HYDRODIMERIZATION PROCESS IMPROVEMENT

J. Harvey Lester, Jr., Pensacola, and James S. Stewart, Cantonment, both of Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 497,808, Aug. 15, 1974, Pat. No. 3,898,140, which is a continuation-in-part of Ser. No. 385,767, Aug. 6, 1973, abandoned, which is a continuation-in-part of Ser. No. 347,948, April 4, 1973, abandoned, which is a continuation-in-part of Ser. No. 285,975, Sept. 5, 1972, abandoned. This application July 25, 1975, Ser. No. 599,255

The portion of the term of this patent subsequent to Aug. 5, 1992, has been disclaimed.

Int. Cl.^{2} C25B *3/10*

U.S. Cl. 204—73 R **10 Claims**

1. In a process for hydrodimerizing an olefinic compound having the formula $R_2C{=}CR{-}X$ wherein —X is —CN, —$CONR_2$ or —COOR′, R is hydrogen or R′, R′ is C_1–C_4 alkyl and at least one R directly attached to either of the two carbon atoms joined by the double bond in said formula is hydrogen by electrolyzing an aqueous solution having dissolved therein at least about 0.1% by weight of said olefinic compound, at least about 10^{-5} gram mol per liter of quaternary phosphonium ions and at least about 0.1% by weight of conductive salt in contact with a cathodic surface having a cathode potential sufficient for hydrodimerization of said olefinic compound, the improvement which comprises including the solution between 0.1 and about 50 millimols per liter of a nitrilocarboxylic acid compound having the formula

$$Y_2N{-}(-Z{-}YN{-})_n{-}R''{-}COOM$$

wherein Y is hydrogen, —R″—COOM, —$(-CH_2-)_{m+1}$—OH or C_1—C_{20} alkyl; —R″— is —$(-CH_2-)_m$— or —$(-CHR'''-)$—: R‴ is hydroxy, —COOM. —$(-CH_2-)_m$—COOM or C_1—C_8 alkyl, hydroxyalkyl or hydroxyphenyl; Z is a divalent C_2—C_5 hydrocarbon radical; M is hydrogen, alkali metal or ammonium; m is 1 or 2; n is an integer from 0 to 4 and at least one Y is —R″—COOM or —$(-CH_2-)_{m+1}$—OH)

3,966,567

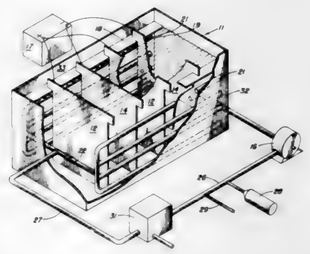
ELECTROLYSIS PROCESS AND APPARATUS

Gerald F. Pace, Casa Grande, Ariz.; John C. Stauter, Arlington Heights, Ill.; Calvin N. Armstrong, and Gary R. Harris, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 29, 1974, Ser. No. 518,842

Int. Cl.^{2} C25C *1/12, 7/00*

U.S. Cl. 204—105 R **4 Claims**



1. An improved apparatus for electrolyzing ions in an aqueous electrolyte comprising an electrolysis cell containing said electrolyte; electrodes immersed in said electrolyte, said electrodes being at least one anode and at least one cathode; a current supply means connected to said electrodes for supplying an electrical direct current to said electrodes and impressing said current through said electrolyte; an electrolyte circulating means fluidly communicating with said cell; a reagent injection means and a temperature control means fluidly communicating with said electrolyte circulating means; and, electrolyte distributor means secured to two parallel side portions of said cell and fluidly communicating with said circulating means so that electrolyte distributed therethrough is directed across the face of said electrodes from two opposing directions, said electrolyte distributor means comprising a plurality of horizontally disposed conduit means each having a plurality of openings therein having a diameter of from 0.30 to 0.044 inches.

3,966,568

ELECTROWINNING OF GALLIUM

Cecil L. Crossley, Rossland; Horst E. Hirsch, Trail, both of Canada, and Shou C. Liang, Spokane, Wash., assignors to Cominco Ltd., Trail, Canada

Filed Dec. 13, 1974, Ser. No. 532,546

Claims priority, application Canada, Oct. 21, 1974, 211805

Int. Cl.^{2} C25C *1/24*

U.S. Cl. 204—105 R **11 Claims**

1. A process for the electrolytic recovery of gallium from an acidic, aqueous gallium trichloride solution which comprises the steps of feeding said solution containing gallium in a concentration of up to about 3 molar to electrolytic cells, electrolyzing said solution at an electrode current density in the range of about 150 to 350 A/m^2 and conducting said electrolysis in presence of metal ions of at least one metal chosen from the group consisting of aluminum, zinc, calcium, magnesium, sodium and potassium dissolved in said solution, said metal ions being present in a concentration of up to about 3 molar.

3,966,569

METHOD OF RECOVERING METAL FROM METALLIFEROUS WASTE

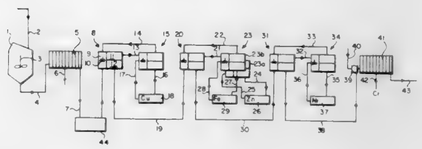
Hans Reinhardt, Vastra Frolunda, and Harald Daniel Ottertun, Molndal, both of Sweden, assignors to MX Processor Reinhardt & Co. AB, Sweden

Continuation-in-part of Ser. No. 537,905, Jan. 2, 1975, abandoned. This application Feb. 25, 1975, Ser. No. 552,923

Claims priority, application Sweden, Jan. 28, 1974, 7401085

Int. Cl.^{2} C25C *1/08, 1/12*

U.S. Cl. 204—108 **8 Claims**



1. A method of recovering metal from solid metalcontaining waste, such as metal hydroxide slime, comprising leaching the waste with sulphuric acid to form a metal sulphate solution having a pH value of 0–5, contacting the metal sulphate solution in a liquid extraction process with an organic solution containing an organophosphorous acid to transfer iron and zinc from the metal sulphate solution to the organic solution, contacting the organic solution in a first washing operation with an aqueous solution containing 50–200 g/l free sulphuric acid for selectively transferring zinc from the organic solution to said aqueous sulphuric acid solution, recovering zinc from said aqueous sulphuric acid solution, contacting the organic solution in a second washing operation with an aqueous solution containing 500–1000 g/l free sulphuric acid for selectively transferring iron from the organic solution to said aqueous sulphuric acid solution, and recovering iron from said aqueous sulphuric acid solution.

3,966,570

ELECTROLYTIC POST-TREATING METHOD OF ELECTROLYTICALLY CHROMATE TREATED OR METALLIC CHROMIUM PLATED STEEL SHEET

Hidehisa Yamagishi, Yokohama; Hiroshi Takano, and Yoshitaka Kashiyama, both of Kawasaki, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed June 18, 1974, Ser. No. 480,592

Claims priority, application Japan, Jan. 14, 1974, 49-6644

Int. Cl.^{2} C25D *5/48*

U.S. Cl. 204—140 **6 Claims**

1. A method for electrolytically post-treating the surface of an electrolytically chromate treated or metallic chromium plated steel sheet, which comprises anodically treating said sheet, said sheet being employed as an anode, with a quantity of electricity of from at least about 0.2 Coulomb/dm^2 to a quantity insufficient to completely dissolve the metallic chromium layer, and in an electrolyte comprising an aqueous solution containing (a) and (b), below:

a. from about 3 to about 40 grams per liter of hexavalent chromium, expressed as chromic acid, and

b. from about 5 to about 50 grams per liter of at least one compound selected from the group consisting of an aliphatic and aromatic monobasic, dibasic and polybasic acid and a salt thereof.

3,966,571

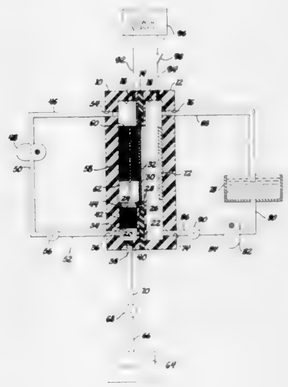
METHOD OF OPERATING A DYNAMICALLY PACKED BED ELECTRODE ELECTROCHEMICAL CELL SYSTEM

Eugene G. Gagnon, Utica, and Kao-Wen Mao, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 463,533, April 24, 1974, abandoned. This application Sept. 3, 1975, Ser. No. 610,067

Int. Cl.^{2} C25B *1/46, 15/00*

U.S. Cl. 204—149 **2 Claims**



1. A method for conducting high rate electrochemical reactions comprising the steps of:

dynamically packing conductive particles against a fluid porous, particle restraining means and in contact with an electrical conductor by rapidly flowing an electrolyte fluid through said particles and said particle restraining means;

communicating said dynamically packed particles with a spaced counterelectrode through at least one electrolyte;

interconnecting said dynamically packed particles and said counterelectrode through external circuit means to obtain high rate electrochemical reactions in said cell;

periodically stopping said rapid electrolyte fluid flow and interrupting said cell reactions to automatically unpack said dynamically packed particles;

upon each such termination, dynamically repacking said conductive particles into new particle relationships by again rapidly flowing said electrolyte fluid through said particles and said porous restraining means; and

resuming said cell reactions.

3,966,572

PHOTOCURABLE LOW GLOSS COATINGS CONTAINING SILICA AND ACRYLIC ACID

Charles H. Carder, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 11, 1975, Ser. No. 549,043

Int. Cl.² C08F *8/00, 2/46*

U.S. Cl. 204—159.16 **2 Claims**

1. In a photocurable acrylate-based coating or ink composition containing silica as the flatting agent, the improvement of having present in said composition from 0.1 to 10 weight percent of acrylic acid, based on the weight of the composition.

3,966,573

PHOTOPOLYMERIZATION CO-INITIATOR SYSTEMS

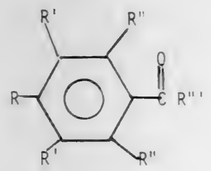
Anthony J. Bean, East Rutherford, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Division of Ser. No. 519,579, Oct. 31, 1974, Pat. No. 3,933,682, which is a continuation-in-part of Ser. No. 328,442, Jan. 31, 1973, abandoned. This application July 23, 1975, Ser. No. 598,188

Int. Cl.² C08F *2/46, 4/00;* **B01J** *31/02*

U.S. Cl. 204—159.23 **5 Claims**

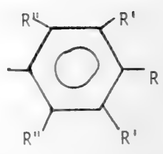
1. In a process for photopolymerizing a monomeric ethylenically unsaturated compound by irradiating the compound in the presence of a photoinitiator, the improvement which comprises using as the photoinitiator a co-initiator system which consists essentially of (a) about 1–30 parts of at least one compound having the formula



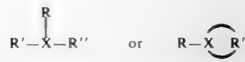
wherein R, R′, and R″ is each hydrogen, C_{1-14} alkyl, aryl, alkylaryl, alkoxy, aryloxy, halogen, halogenated C_{1-14} alkyl, halogenated aryl, amino, or amino N-substituted with alkyl, aryl, β-alkanol, or a combination of these, and may be the same or different; and R‴ is hydrogen, C_{1-14} alkyl, halogenated alkyl, aryl, —OZ where Z is C_{1-14} alkyl or aryl;



where Y is hydrogen, C_{1-14} alkyl, aryl, or alkylaryl and Q is hydrogen, C_{1-14} alkyl, aryl, alkylaryl, alkoxy, or aryloxy: or



wherein R, R′, and R″ is each hydrogen, C_{1-14} alkyl, aryl, alkylaryl, alkoxy, aryloxy, halogen, halogenated C_{1-14} alkyl, halogenated aryl, amino, or amino N-substituted with alkyl, aryl, β-alkanol, or a combination of these, and may be the same or different; (b) about 1–30 parts of at least one compound having the formula



wherein X is nitrogen, phosphorus, arsenic, bismuth, or antimony and R, R′, and R″ is each alkyl, hydroxyalkyl, aryl, aralkyl, or alkaryl and may be the same or different and one or both of R and R″ may be hydrogen; and (c) 1–30 parts of at least one halogenated hydrocarbon.

3,966,574

ULTRAVIOLET POLYMERIZATION COATINGS SUITABLE FOR FOOD PACKAGING USING FDA APPROVED DYES AS PHOTOSENSITIZERS

John David LaBash, Berea, and Vincent D. McGinniss, Valley City, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 431,282, Jan. 7, 1974, abandoned. This application June 30, 1975, Ser. No. 591,644

Int. Cl.² C08F *2/46, 4/00*

U.S. Cl. 204—159.24 **16 Claims**

1. In a process for photopolymerizing a composition comprising a photopolymerizable ethylenically unsaturated vehicle and a photoinitiator system containing a photosensitizer and 2–10% by weight of an organic amine activator by exposure to ultraviolet radiation, the improvement, rendering said composition suitable for food associated applications, comprising incorporating into said composition as said photosensitizer 0.5–5% by weight based on the weight of the composition of a dye formulation consisting essentially of 9-(o-carboxyphenyl)-6-hydroxy-2,4,5,7-tetraiodo-3H-xanthene-3-one, disodium salt (FD&C red No. 3) in combination with at least one azo dye selected from the group consisting of trisodium salt of 1-(4-sulfo-1-naphthylazo)-2-naphtol-3,6-disulfonic acid (FD&C red No. 2) and 6-hydroxy-5-[(2-methoxy-5-methyl-4-sulfophenyl)azo]-2-naphthalenesulfonic acid disodium salt (FD&C red No. 40).

3,966,575

METHOD FOR REMOVING LIQUID FROM BEARING MATERIAL

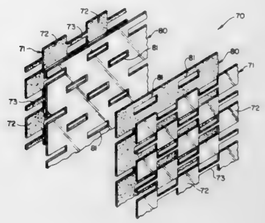
James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429

Continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, and a continuation-in-part of Ser. No. 548,666, Feb. 10, 1975, which is a continuation-in-part of Ser. No. 383,255, July 27, 1973, Pat. No. 3,849,275, which is a division of Ser. No. 263,605, June 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, July 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,938, April 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, March 28, 1969, abandoned, said Ser. No. 548,666, is a continuation-in-part of Ser. Nos. 469,820, May 14, 1974, and Ser. No. 405,023, Oct. 10, 1973, and Ser. No. 499,178, Aug. 21, 1974. This application Apr. 21, 1975, Ser. No. 569,815

The portion of the term of this patent subsequent to Nov. 19, 1991, has been disclaimed.

Int. Cl.² B01D *13/02*

U.S. Cl. 204—180 R **10 Claims**



1. A method of treating moisture bearing material comprising the steps of creating a plurality of non-uniform electrostatic fields with each field having the higher intensity portion thereof substantially oppositely located relative to the higher intensity portion of an adjacent non-uniform field, and disposing said material so that said non-uniform fields at least partially extend across said material to act on at least part of the moisture thereof to move at least part of said moisture relative to said material.

3,966,576

ELECTROPHORETIC DEPOSITION OF ASBESTOS DIAPHRAGMS

William W. Carlin, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 15, 1974, Ser. No. 488,871

Int. Cl.² C25B *11/00, 13/06;* **C25D** *13/02*

U.S. Cl. 204—181 **16 Claims**

1. In a method of assemblying a chlor-alkali diaphragm cell wherein an electrolyte permeable first electrode having an aqueous sodium chloride brine permeable asbestos diaphragm thereon and a second electrode are inserted in a cell body, the improvement wherein the aqueous sodium chloride brine permeable diaphragm is deposited by the method comprising:

A. placing the first electrode in an aqueous liquid composition comprising (1) chrysotile asbestos at a concentration below 1.0 weight percent to avoid formation of asbestos fiber agglomerates and high enough to allow electrophoretic deposition and having a nominal fiber length short enough to remain in suspension and long enough to form a porous deposited diaphragm, and (2) sufficient surfactant to transport the asbestos and reduce the surface tension of the liquid composition while maintaining the pH thereof above the isoelectric point of asbestos;

B. maintaining said liquid composition basic; and

C. maintaining an electrical potential above about 150 volts between the first electrode and a second electrode in said liquid composition to provide an electrophoretic current density.

3,966,577

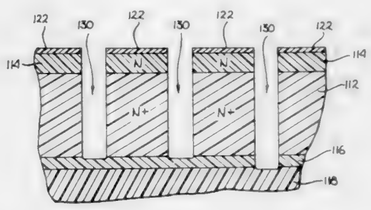
DIELECTRICALLY ISOLATED SEMICONDUCTOR DEVICES

Arthur K. Hochberg, Torrance, Calif., assignor to TRW Inc., Los Angeles,, Calif.

Division of Ser. No. 392,039, Aug. 27, 1973, abandoned. This application May 3, 1974, Ser. No. 466,722

Int. Cl.² C23C *15/00;* **H01L** *21/302, 21/314*

U.S. Cl. 204—192 **4 Claims**



1. A method of forming a structure adapted for construction of integrated circuit devices on an epitaxial wafer having a first layer of monocrystalline semiconductor material of a predetermined conductivity type and active impurity concentration and of a predetermined thickness, and a second layer of epitaxially deposited monocrystalline semiconductor material of the same conductivity type, but of a lower concentration of active impurities than that of said first layer, said second layer being substantially thinner than said first layer, including the steps of:

a. forming an isolating layer on said first layer of said wafer;

b. forming a polycrystalline semiconductor material onto said isolating layer;

c. forming a mask on said second layer to define groove regions between a plurality of active semiconductor regions;

d. diffusing impurity dopants of the same conductivity type as that of said first layer into said groove region of said second layer; and

e. removing said semiconductor material in said first and second layer within said groove regions by bombardment of said semiconductor material with charged particles accelerated across a potential difference to form a plurality of grooves in said groove regions, said groove extending into said first and second layers at least to said isolating layer.

2. A method of forming a structure adapted for construction of integrated circuit devices on an epitaxial wafer having a first layer of monocrystalline semiconductor material of a predetermined conductivity type and active impurity concentration and of a predetermined thickness, and a second layer of epitaxially deposited monocrystalline semiconductor material of the same conductivity type, but of a lower concentration of active impurities than that of said first layer, said second layer being substantially thinner than said first layer, including the steps of:

a. forming an isolating layer on said first layer of said wafer;

b. forming a polycrystalline semiconductor material onto said isolating layer;

c. forming a first mask on said second layer to define groove regions between a plurality of active semiconductor regions and to define a plurality of contact regions in each active semiconductor region;

d. diffusing impurity dopants of the same conductivity type as that of said first layer into said groove regions of said

second layer and into said plurality of contact regions to form a plurality of contact strips and a plurality of regions having substantially the same susceptibility for removal as said first layer;

e. forming a second mask on said second layer and first mask to redefine said plurality of groove regions; and

f. removing said semiconductor material in said first and second layers by bombardment with charged particles to form a plurality of grooves in said redefined groove regions each of said grooves extending into said first and second layers at least to said isolating layer.

3,966,578

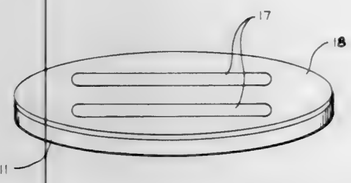
METHOD OF MAKING THIN FILM THERMISTOR

Alfred Sommer, Teaneck, N.J., assignor to Ceramic Magnetics, Inc., Fairfield, N.J.

Division of Ser. No. 434,067, Jan. 17, 1974, Pat. No. 3,851,291. This application Aug. 1, 1974, Ser. No. 493,906

Int. Cl.² C23C *15/00*; **H01B** *1/02*

U.S. Cl. 204—192 **6 Claims**



1. The method of forming a thin film thermistor comprising the steps of:

a. preparing a substrate of thin polyimide film;

b. placing a mask over said film to define areas upon which thermistor material is to be deposited;

c. placing said film and said mask in a sputtering chamber and sputtering a thermistor material consisting of lead teleuride plus approximately 5% cerium on to said thin film; and

d. depositing metal electrodes on said film to provide electrical contact to the thermistor material deposited thereon.

3,966,579

APPARATUS FOR MEASURING ALCOHOL CONCENTRATIONS

Kuo Wei Chang, 485 Massachusetts Ave., Lexington, Mass. 02173, and Sol Aisenberg, 36 Bradford Road, Natick, Mass. 01760

Filed Mar. 20, 1974, Ser. No. 453,064

Int. Cl.² G01N *27/46*

U.S. Cl. 204—195 R **11 Claims**



1. An electrochemical fuel cell analyzer for detecting the presence of alcohol, comprising:

an anode having an active catalytic surface for electrooxidizing impinging alcohol molecules;

a cathode having an active catalytic surface for electroreducing oxygen molecules;

ion exchange means impermeable to electrolyte separating said anode and cathode positioned on opposite sides thereof;

an aqueous electrolyte maintained between said anode and cathode active surfaces; and,

low impedance circuit means connected between said anode and cathode substantially eliminating voltage differences across said cell to provide a short circuit current output and includes means for measuring the flow of said short circuit current

whereby a low impedance ion exchange path is formed in said cell between said anode and cathode upon oxidation of alcohol at said anode and reduction of oxygen at said cathode.

3,966,580

NOVEL PROTEIN-IMMOBILIZING HYDROPHOBIC POLYMERIC MEMBRANE, PROCESS FOR PRODUCING SAME AND APPARATUS EMPLOYING SAME

Jiri A. Janata, and Jarmila Janata, both of Salt Lake City, Utah, assignors to The University of Utah, Salt Lake City, Utah

Filed Sept. 16, 1974, Ser. No. 506,464

Int. Cl.² G01N *27/30, 27/46, 31/14, 33/16*

U.S. Cl. 204—195 B **10 Claims**

1. A hydrophobic membrane having one member of an immunochemically reactive pair immobilized thereon comprising:

a. a hydrophobic polymeric substrate swellable by an organic solvent,

b. hydrocarbon chains of at least 6 carbon atoms in length partially absorbed into the surface of said polymeric substrate, said hydrocarbon chains having a reactive site reactive with one compound of an immunochemically reactive pair attached to its non-absorbed portion, and

c. one member of an immunochemically reactive pair reacted with the reactive site of said hydrocarbon chain.

10. A quantitative device measuring electric potential difference for detecting presence of compounds reactive with an immobilized compound of an immunochemically reactive pair by utilization of an immunochemical reaction comprising:

a. a reference electrode;

b. a reactive electrode comprising:

1. an electrical metal conductor;

2. a sheath of hydrophobic polymeric membrane comprising:

a. a hydrophobic polymeric substrate swellable by an organic solvent,

b. hydrocarbon chains of at least 6 carbon atoms in length partially absorbed into the surface of said polymeric substrate, said hydrocarbon chains having a reactive site reactive with one compound of an immunochemically reactive pair attached to its non-absorbed portion,

c. one member of an immunochemically reactive pair reacted with the reactive site of said hydrocarbon chain, and

c. electrical conductor means connecting said reference electrode and measuring electrode through a meter sensitive to very slight changes in electrical potential.

3,966,581

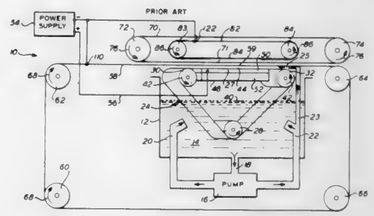
SELECTIVE PLATING APPARATUS

Paul C. Holte, Canton, Mass., assignor to Auric Corporation, Newark, N.J.

Filed Oct. 16, 1974, Ser. No. 515,319

Int. Cl.² C25D *17/28, 5/02, 5/06, 3/48*

U.S. Cl. 204—202 **9 Claims**



1. Apparatus for continuous electroplating of selected portions of discrete electronic components of the type comprising an electrically conductive body terminating in a die-receiving face; a lip portion formed about said body above said face, said lip portion being of greater diameter than said face; and a plurality of electrical contacts formed as insulated islands at said die-receiving face, with flexible wire leads being connected to at least some of said contacts and extending oppositely from said die-receiving face beyond the body of said component, but said leads being electrically insulated from said body; said selected portions to be electroplated being said die-receiving face and said electrical contacts; and said apparatus comprising:

an electroplating station;

moveable applicator means adapted for carrying electroplating solution on a surface thereof;

means for continuously moving at least a portion of said applicator means surface through said electroplating station;

means for applying electroplating solution to said applicator means surface;

an electrically conductive conveyor belt means, having spaced openings therein for receiving said component bodies in nesting relationship, the periphery of said openings supporting said bodies at said lip portions so that said leads extend through said openings and said die-receiving faces project beyond the plane of said belt means;

lead contact means electrically continuous with said conveyor belt means, abounding each said opening, for surrounding the group of said leads extending from the component nested in said opening, and effecting a ring-like contact with said group, to provide electrical continuity between said leads and conveyor belt means;

said spaced openings of said conveyor belt being defined by formed out cups in said conveying belt, said cups being open at the bottom to define a rim portion electrically continuous with said conveyor belt means and of diameter less than the diameter of said openings, said rim portion being spaced from the periphery of said openings, said rim portion being spaced from the periphery of said openings on the side of said belt means opposite that supporting said lip portions, whereby said rim portion may surround and engage said extending group of wire leads to provide said ring-like contact with said group and thereby constitute said lead contact means;

means for maintaining said components in said nested positions in contact with said belt means and lead contact means; said means including a keeper belt, and means for bringing said keeper belt into contact with a portion of said component non-adjacent said conveying belt to sandwich said component;

a stationary conveyor belt guide means being mounted in fixed spaced relationship with respect to said moveable applicator means, and having a channel therethrough, through which said conveyor belt means passes, said guide means restraining the movement of said components other than in the direction of conveyance of said belt means, the said components being thereby conveyed across the surface of said applicator means with said projecting die-receiving face and said electrical contacts in contact with said electroplating solution on said applicator means;

means for moving said conveyor belt, keeper belt and sandwiched components together through said guide means at said electroplating station;

the direction of movement of said conveyed components through said guide means being such in relationship to said movement of said applicator means that the trace of each said component on the surface of said applicator means continuously overlies fresh electroplating solution; and

means for applying a D.C. electrical potential between said conveyor belt means, and electrically continuous component leads, and the side of said applicator means surface opposite said components, whereby to enable plating of said die-receiving faces and said contact present at said faces.

3,966,582

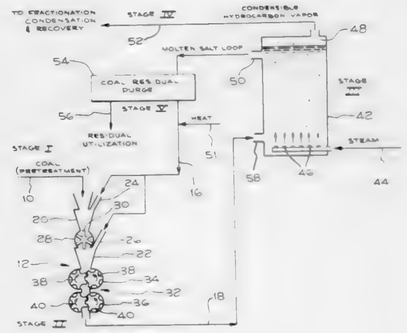
SOLUBILIZATION AND REACTION OF COAL AND LIKE CARBONACEOUS FEEDSTOCKS TO HYDROCARBONS AND APPARATUS THEREFOR

Frank B. Cramer, Misson Hills, Calif., assignor to Clean Energy Corporation, Los Angeles, Calif.

Filed Oct. 7, 1974, Ser. No. 512,538

Int. Cl.² C10G *1/06*

U.S. Cl. 208—8 **38 Claims**

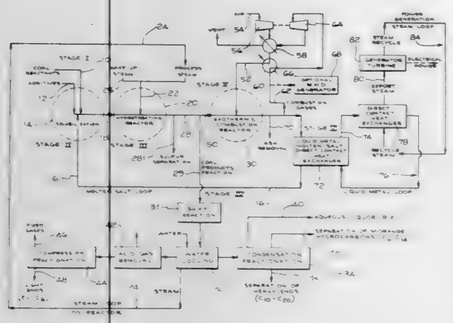


1. Process for the generation and recovery of low molecular weight hydrocarbons from high molecular weight carbonaceous feedstock, which includes forming a solution of said feedstock in molten inorganic salt, dissolving steam in said solution to form a homogeneous reaction stream containing active nonmolecular hydrogen, passing said reaction stream through a reaction zone under conditions and in a manner briefly contacting said feedstock with said hydrogen under hydrogenating conditions including a stream temperature between 250° and 600° C, to produce low molecular weight hydrocarbon vapors dispersed undissolved through said reaction stream, and collecting and recovering said vapors differentially by stripping higher molecular weight vapors from the molten salt of the reaction stream with lower molecular weight vapors.

3,966,583
COAL TREATMENT PROCESS AND APPARATUS

Frank B. Cramer, Mission Hills, Calif., assignor to Clean Energy Corporation, Los Angeles, Calif.

Filed Oct. 7, 1974, Ser. No. 512,539
Int. Cl.² C10G *1/06*
U.S. Cl. 208—8 **41 Claims**



13. Process for the treatment of coal or like carbonaceous solid fuel reactant for the coproduction of hydrocarbons and heat energy, which includes introducing a single phase molten salt solution of said reactant into a first reaction zone, generating active hydrogen by steam dissociation within said zone, contacting said reactant with said active hydrogen within said first zone and under hydrogenating conditions sufficient to hydrogenate the relatively more reactive 50 to 85% by weight portion of said reactant, separating overhead a stream comprising produced hydrocarbons and recovering said hydrocarbons; passing the first reaction zone effluent comprising a molten salt solution of said reactant to a second reaction zone, introducing an oxidizing gas into the solution in said zone under combustion conditions sufficient to substantially completely oxidize said unreacted reactant with the release of the heat of combustion into said molten salt, passing combustion gases overhead from said second reaction zone, passing the molten salt second reaction zone effluent after transferring combustion heat therefrom back to the first reaction zone, adding fresh reactant to said effluent, and repeating the hydrogenation and combustion cycle.

3,966,584
IMPROVEMENTS IN AND RELATING TO THE PRODUCTION OF COKE

Michael David Gray, and Geoffrey Michael Kimber, both of Cheltenham, England, assignors to Coal Industry (Patents) Limited, London, England

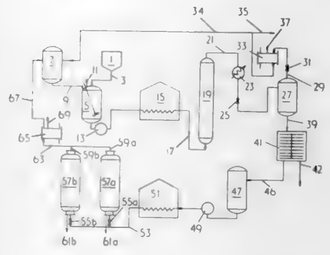
Filed Nov. 22, 1974, Ser. No. 526,251
Claims priority, application United Kingdom, Dec. 12, 1973, 57608/73
Int. Cl.² C10G *1/04*
U.S. Cl. 208—8 **9 Claims**

1. A process for the production of coke which process comprises digesting coal at an elevated temperature with a solvent which includes non-recirculated solvent, filtering undissolved material from the extract, concentrating the extract and thereafter coking the concentrated extract while recovering the solvent for recirculation, characterized in that prior to use in the digestion of the coal, said non-recirculated solvent is subjected to coking under conditions comparable with the conditions under which the coal solution is subjected to coking until the coking of all the cokable components in the solvent under those conditions is substantially complete.

3,966,585
MANUFACTURE OF COKE FROM A COAL EXTRACT

Michael David Gray; Geoffrey Michael Kimber, and David Ernest Shipley, all of Cheltenham, England, assignors to Coal Industry (Patents) Limited, London, England

Filed Nov. 26, 1974, Ser. No. 527,258
Claims priority, application United Kingdom, Nov. 30, 1973, 55654/73
Int. Cl.² C10G *1/04*
U.S. Cl. 208—8 **11 Claims**

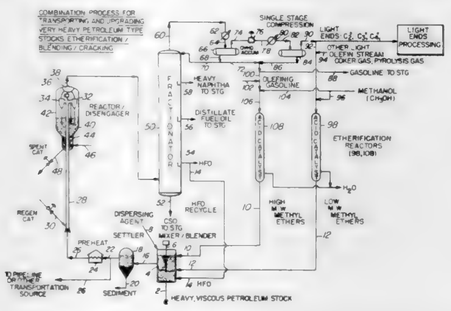


1. A process for the production of coke having a low mineral matter content which process comprises digesting coal in a non-hydrogenated high boiling aromatic oil solvent at a temperature within the range of 350°C. to 480°C. in an atmosphere which is substantially free from hydrogen separating insoluble matter from the coal digest to give a coal extract and coking the coal extract characterised in that all the coal prior to digestion has a volatile matter content within the range of 13% to 28% by weight.

3,966,586
METHOD FOR UPGRADING HEAVY PETROLEUM TYPE STOCKS

Hartley Owen, Belle Mead, and Paul B. Venuto, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 31, 1974, Ser. No. 493,445
Int. Cl.² C10G *11/04*, *37/06*; B01J *8/24*, *29/28*
U.S. Cl. 208—120 **10 Claims**



1. A method for upgrading heavy hydrocarbon feeds which comprises,

combining the heavy hydrocarbon feed with one or more lower boiling components selected from the group comprising low and high molecular weight methyl ethers, and a heavy cycle oil product of the operation,

converting the heavy hydrocarbon feed combined with said lower boiling component by contact with a crystalline zeolite containing conversion catalyst at a temperature within the range of 800°F. to about 1100°F.,

separating catalyst from the products of said conversion operation,

separating the products of said conversion operation into heavy fuel or recycle oil, light cycle oil, heavy naphtha, a light gasoline product and a gaseous product comprising C_4 and lighter olefins,

converting light olefin product of the process admixed with methanol to a low molecular weight methyl ether,

converting a portion of the gasoline product admixed with an olefin rich light naphtha and methanol to form high molecular weight methyl ethers and

using the methyl ethers thus formed as a solvent for the heavy hydrocarbon feed to be processed.

3,966,587
METHOD FOR CONTROLLING REGENERATOR TEMPERATURE IN A FLUIDIZED CRACKING PROCESS

Joel S. Bittensky, Port Arthur; Edward W. Dillingham, Neederland; William R. Menzies, III, Houston, and Roy E. Pratt, Groves, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 23, 1974, Ser. No. 535,408
Int. Cl.² C10G *13/18*
U.S. Cl. 208—164 **8 Claims**

1. In a continuous fluidized catalytic cracking process wherein hydrocarbon chargé stock is contacted with regenerated catalyst under cracking conditions in a riser transport reaction zone, wherein catalyst and hydrocarbon discharge from said riser into a reaction vessel for separation into a hydrocarbon vapor phase and a fluidized dense phase of coke-contaminated spent catalyst, wherein volatile hydrocarbon is stripped from said spent catalyst in a stripping zone, wherein spent catalyst from said stripping zone is transferred to a regeneration zone, comprising a fluidized dense catalyst phase maintained at a controlled temperature in the range of from about 1050°F. to about 1450°F. in the lower portion of said regeneration zone, and a dilute catalyst phase in the upper portion of said regeneration zone, wherein said coke-contaminated spent catalyst is contacted with an oxygen-containing regeneration gas for a controlled residence time in said fluidized dense catalyst phase for combustion of coke from said catalyst and production of a flue gas, and wherein the coke content of the spent catalyst is insufficient for providing heat required to maintain the regeneration zone fluidized dense catalyst phase at said controlled temperature; the improvement which comprises:

a. intimately mixing torch oil with said coke-contaminated spent catalyst being transferred from said stripping zone to said regeneration zone in an amount to provide sufficient combustible material in said regeneration zone to maintain the fluidized dense catalyst phase at a regeneration zone controlled temperature in the range of about 1275°F to about 1450°F while avoiding localized temperatures in said fluidized dense catalyst phase that are substantially higher than said controlled fluidized dense catalyst phase temperature;

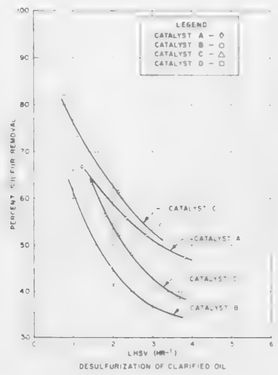
b. adjusting the flow rate of said oxygen-containing regeneration gas to provide oxygen to effect substantially complete combustion of coke and torch oil to carbon dioxide and to provide in the range of from about 1 to about 10 mol% oxygen in the flue gas; and

c. maintaining catalyst in the regeneration zone fluidized dense catalyst phase for a residence time in the range of from about 3 minutes to about 10 minutes for maintaining the temperature of said regeneration zone dilute catalyst phase below about 1500°F., maintaining the carbon monoxide concentration of the regeneration flue gas in the range of from about 0 to about 500 ppm, and maintaining the carbon-on-regenerated-catalyst content in the range of from about 0 to about 0.15 wt.%.

3,966,588
CATALYTIC HYDRODESULFURIZATION

William Ralph Beaty, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Division of Ser. No. 360,274, May 14, 1973, Pat. No. 3,900,430. This application Jan. 14, 1975, Ser. No. 540,915
Int. Cl.² C10G *23/02*
U.S. Cl. 208—216 **3 Claims**



1. A process for hydrodesulfurizing hydrocarbon oil by contacting said oil in the presence of hydrogen under hydrodesulfurization conditions with a catalyst consisting essentially of from about 0.5 to about 25 weight percent based on the catalyst weight of at least one catalytic metal selected from the group consisting of molybdenum, tungsten, chromium, nickel and cobalt supported on gamma alumina produced by a process consisting essentially of:

a. hydrolyzing aluminum alkoxides to produce an aqueous alumina slurry and an organic reaction product,

b. contacting said aqueous alumina slurry with an organic solvent selected from the group consisting of ethanol, propanol, isopropanol, butanol, hexanol, isobutanol and tertiary butanol in an amount sufficient to produce alumina having a cumulative pore volume (0–10,000A) from about 1.0 to about 2.75 cc/g, a surface area from about 225 to about 400 m^2/g and a loose bulk density from about 7.5 to about 25 lb/ft^3 upon drying to an Al_2O_3 content from about 80 to about 100 weight percent to form a solvent-aqueous alumina mixture,

c. drying said solvent-aqueous alumina mixture to produce alumina, and

d. forming said alumina into particles and calcining to produce said gamma alumina.

3,966,589
PROCESS FOR THE SEPARATION OF AROMATIC HYDROCARBONS FROM A MIXED HYDROCARBON FEEDSTOCK

George Solomon Somekh, New Rochelle, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 439,709, Feb. 5, 1974. This application Mar. 17, 1975, Ser. No. 559,077
Int. Cl.² C10G *21/28*
U.S. Cl. 208—321 **13 Claims**

1. A continuous solvent extraction-steam distillation process for the recovery of aromatic hydrocarbons having boiling points in the range of about 80°C. to about 175°C. from a feedstock containing aliphatic hydrocarbons and said aromatic hydrocarbons comprising the following steps:

a. introducing the feedstock into an extraction zone at about the midpoint thereof;

b. introducing a mixture of water and solvent into the extraction zone at about the top of said extraction zone, said

solvent being a water-miscible organic liquid having a boiling point of at least about 200°C.

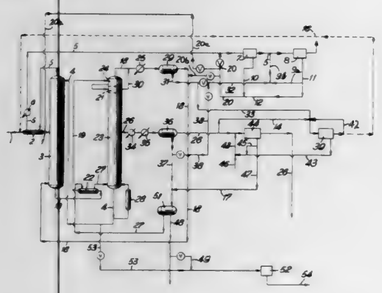
c. introducing reflux hydrocarbons into the extraction zone at about the bottom thereof;

d. contacting the feedstock in the extraction zone with the mixture of water and a solvent, the water phase of step (j), and the reflux hydrocarbons to provide an extract comprising aromatic hydrocarbons, reflux aliphatic hydrocarbons, solvent, and water and a raffinate comprising essentially aliphatic hydrocarbons;

e. contacting the extract with steam in a distillation zone to provide an overhead distillate comprising a reflux hydrocarbons phase and a water phase, a side cut distillate comprising an aromatic hydrocarbons phase and a water phase, and bottoms comprising a mixture of solvent and water;

f. contacting the raffinate with the water phase of step (g) to provide a raffinate aliphatic hydrocarbons phase and a water phase;

g. contacting the raffinate aliphatic hydrocarbons phase of step (f) with the water phase of the side cut distillate to provide a raffinate aliphatic hydrocarbons phase and a water phase;



h. contacting the water phase of the overhead distillate with an aromatic hydrocarbons stream containing at least 95 percent aromatic hydrocarbons, the amount of said stream being in the range of about 0.1 percent to about 5 percent by weight of the total aromatic hydrocarbons in the feedstock, to form an aromatic hydrocarbons phase and a water phase;

i. contacting the aromatic hydrocarbons phase of the side-cut distillate with the water phase of (h) to form an aromatic hydrocarbons phase and a water phase;

j. recycling the water phase of step (f) to the extraction zone at about the midpoint thereof;

k. recycling the water phase of step (i) to the distillation zone where said water phase is essentially converted to steam;

l. recycling the reflux hydrocarbons phase of the overhead distillate and the bottoms of step (e) to the extraction zone to provide, respectively, reflux hydrocarbons for step (c) and mixture of water and solvent for step (b); and

m. recovering the aromatic hydrocarbons phase of step (i) and the raffinate aliphatic hydrocarbons phase of step (g).

3,966,590

MAGNETIC ORE SEPARATOR

Roger W. Boom; Yehia M. Eyssa, both of Madison, Wis., and John Sutton, South Holmwood near Dorking, England, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sept. 20, 1974, Ser. No. 508,013

Int. Cl.² B03C *1/30*

U.S. Cl. 209—39 **5 Claims**

1. A method for separating magnetic components from material containing a mixture of magnetic and nonmagnetic components wherein said components are comminuted and slurried by mixing with a fluid, comprising

activating a radially directed magnetic field from a stationary magnetic flux source thereof which is extended distributed longitudinally from an initial point to a terminal point,

directing said slurry in a turbulent flow thereof from said initial point toward said terminal point and about said source as a center, and substantially perpendicular to the radial direction of said magnetic field, in an environment where said components of the mixture are subject to forces acting in a direction opposite to that of magnetic attraction on said magnetic components of said slurry mixture,

maintaining said magnetic field at a strength which overcomes said oppositely directed forces as said forces bear on said magnetic components, and draws said magnetic components toward said source,

maintaining said turbulent flow at an intensity which at substantially all points in said flow of slurry between said



initial and terminal points counteracts said forces drawing said magnetic components, including said magnetic attraction thereon tending to retain said magnetic components at said source, and modifies said forces on said nonmagnetic components, including said oppositely directed forces thereon, tending to dispel said nonmagnetic components away from said source, whereby said magnetic and nonmagnetic components are continuously maintained free-flowing in said flow between said initial and terminal points and carried across said magnetic field toward said terminal point, and concurrently separated one from the other into fractions taking disparate paths through said turbulent flow by said attraction of said magnetic components toward said centered source of magnetic flux and by said dispersion of said nonmagnetic components away from said centered source in response to said oppositely directed forces thereon, and

collecting separately said magnetic and nonmagnetic components at respective stations which are differently disposed therefor within extensions of said disparate paths beyond said terminal points.

3,966,591

FILLING BOBBIN INSPECTION DEVICE

Charles V. Hinton; Kenneth W. Troutman, and Richard Ferguson, all of Charlotte, N.C., assignors to The Terrell Machine Company, Charlotte, N.C.

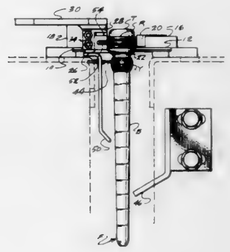
Filed May 23, 1975, Ser. No. 580,423

Int. Cl.² B07C *1/10*

U.S. Cl. 209—73 **11 Claims**

1. A filling bobbin inspecting device for checking the completeness of a bobbin stripping operation comprising, in combination with means for feeding a series of spent filling bobbins that have been subjected to stripping action along a given path while suspended from the butts thereof, an elongated magnet means aligned at one side of said given path for receiving said bobbins serially and maintaining the suspension thereof through attraction at the butt rings while feeding travel continues, and feeler means extending laterally and angularly into said given feeding path at a normally biased position from which it is pivotally displaceable in the plane of the longitudinal axis of each suspended bobbin that is completely stripped to allow continuing travel of such bobbins

along said magnet means, but at which position said feeler means is held by a remaining bunch on any incompletely



stripped bobbin and thereby caused to act as a stationary cam for forcing such bobbins to be dropped from said series.

3,966,592

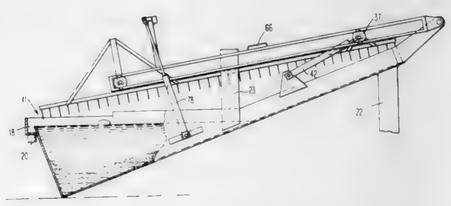
DEWATERING AND CLASSIFYING APPARATUS

Daniel H. Herbert, 138 Ainsworth Ave., East Brunswick, N.J. 08816

Filed Mar. 20, 1975, Ser. No. 560,560

Int. Cl.² B03B *5/50*

U.S. Cl. 209—462 **12 Claims**



1. Apparatus for dewatering sand and like particulate material comprising well means for containing sand and water, sloped surface discharge means for conveyance of the particulate material upwardly thereof, the sloped discharge means having a lower end in said well means and an upper end disposed above said well means, rake means for discharging particulate material out of said well means up said sloped discharge means, said rake means including a moveable elongate structure having a plurality of rake blades projecting downwardly therefrom mounting means mounting said moveable elongate structure of said rake means for movement of said blades along said sloped surface discharge means in a discharging direction, and for return of said elongate structure and blades carried thereby away from said sloped discharge means and elevated relative thereto removing said elongate structure and blades carried thereby from said sand and water, and including cylinder drive means for said moveable elongate structure of said rake means, said drive means including first cylinder means operable in a direction generally parallel to said sloped discharge means for driving said rake means in a particle discharge direction alternately upwardly and downwardly along and generally parallel to said sloped discharge means, and second cylinder means operable in a direction generally transverse to said sloped discharge means for driving a lower end of said rake means alternately toward and away from an associated end of said sloped discharge means.

3,966,593

PROCESS AND AN APPARATUS FOR PURIFYING A STREAM OF MECHANICALLY COMMINUTED MATERIAL AS WELL AS FOR ENRICHING FINE ORES AND OTHER MINERALS BY MECHANICAL SORTING

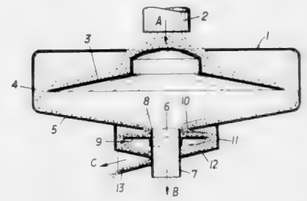
John Larsson, Bromma, Sweden, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Linz, Austria

Filed Mar. 10, 1975, Ser. No. 556,941

Claims priority, application Austria, Mar. 12, 1974, 2027/74

Int. Cl.² B07B *13/08*

U.S. Cl. 209—479 **4 Claims**



1. In a process for purifying a stream of mecanically comminuted material, such as chips from wood cutting and sawdust, as well as for enriching fine ores and other minerals by mechanical sorting, in which a stream of material is subjected to shaking and is thereby thickened, whereupon, due to gravity, a lower layer of the stream of material forms, which is rich in heavier and smaller particles, while an upper layer of the stream of material, which contains lighter and bigger particles, forms thereabove, and in which said upper layer is separated by a mechanically acting separating means, the improvement comprising the step of deflecting said lower layer of the stream of material in a winding manner immediately after separation of said upper layer so as to controllably brake the speed of said lower layer material stream after separation.

3,966,594

TREATMENT OF AQUEOUS WASTE SOLUTION

Masaaki Ohkawa, Takatsuki, and Yasuyoshi Sawaguri, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Filed Nov. 25, 1974, Ser. No. 527,151

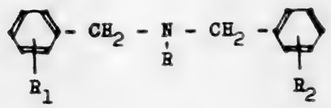
Claims priority, application Japan, Nov. 26, 1973, 48-133181; Mar. 14, 1974, 49-29730

Int. Cl.² B01D *11/04*

U.S. Cl. 210—22 R **16 Claims**

1. A process for treatment of organic waste water containing water-soluble organic anionic substances, which comprises

1. contacting an acidic waste water with a waterinsoluble organic solvent solution of at least one amine represented by the formula,



wherein R_1 and R_2 are each a hydrogen or halogen atom or a $C_1 - C_4$ alkyl group, and R is a $C_8 - C_{18}$ alkyl or alkenyl group,

whereby said substances are transferred to said organic solution,

2. separating the aqueous layer from the organic layer, and

3. contacting said organic layer with an aqueous alkali solution whereby said substances are transferred to said

aqueous alkali layer and said amine is recovered as the organic solution thereof.

3,966,595

METHOD OF MAKING GROUP VIII METAL COMPLEX COMPOUNDS

Lawrence W. Gosser, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 273,804, July 20, 1972, abandoned. This application May 10, 1974, Ser. No. 468,691

Int. Cl.² B01D *13/00*

U.S. Cl. 260—429 R **11 Claims**

1. A method of making ligand deficient Group VIII metal complex compounds which comprises:

contacting a solution containing a dissociable complex of a Group VIII metal having at least one reversibly dissociable neutral ligand of the formula:

$$L_zMY_x$$

wherein

M is a Group VIII metal,

L is a neutral dissociable ligand,

the Y's, alike or different, are anionic ligands or noncoordinated counter-ions, x is 3 to 6 inclusive, and z is 0 to 3 inclusive with an asymmetric semipermeable membrane consisting essentially of an aromatic polymer having recurring

$$-C(=O)-N<$$

groups in the polymer chain, said membrane being permeable to said dissociated ligand, and applying to the solution pressure greater than the osmotic pressure of said solution whereby dissociated ligand is separated from said solution.

3,966,596

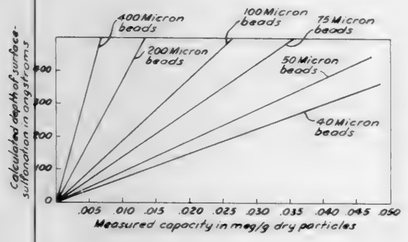
HIGH PERFORMANCE, CATION-EXCHANGE CHROMATOGRAPHY ON SURFACE-SULFONATED COMPOSITIONS

Timothy S. Stevens, and Hamish Small, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 386,261, Aug. 6, 1973, Pat. No. 3,925,019. This application Mar. 10, 1975, Ser. No. 556,761

Int. Cl.² B01D *15/08*

U.S. Cl. 210—24 **10 Claims**



1. A process for chromatographic separation of cations comprising:

a. passing a fluid mixture comprising the cations through a bed comprising synthetic resin particles of about 5 microns to about 200 microns particle size, said synthetic resin particles being cross-linked to from about 0.25 percent to about 5 percent and surface-sulfonated to a calculated depth of about 100 Angstroms to about 300 Angstroms; and

b. eluting the bed with an eluent which differentially removes cations which are attracted to surface-sulfonation sites on the synthetic resin particles.

3,966,597

OIL OR ORGANIC SOLVENT-ABSORBENT

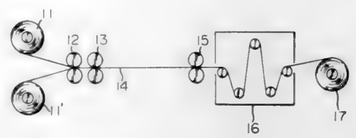
Akira Omori; Isao Okamura; Tadasi Imoto, all of Sagamihara, and Takayuki Katoh, Tokyo, all of Japan, assignors to Teijin Limited, Osalin, Japan

Continuation-in-part of Ser. No. 360,534, May 15, 1973, abandoned, which is a continuation-in-part of Ser. No. 136,511, April 22, 1971, abandoned. This application Dec. 5, 1974, Ser. No. 529,907

Claims priority, application Japan, July 28, 1970, 45-65893

Int. Cl.² B01D *15/02*; **B29D** *27/00*; **B32B** *31/14*

U.S. Cl. 210—39 **27 Claims**



1. A process for the preparation of an oil or organic solvent-absorbent, which comprises:

a. extruding a molten mixture of a resinous blend consisting essentially of 60 to 99 parts by weight of polystyrene and 1 to 40 parts by weight of polyethylene and a foaming agent through a die with a slit clearance of 0.1 – 1.0 mm;

b. quenching the extrudate at a point less than 5 mm away from the die surface to a temperature below the highest glass transition temperature exhibited by the resinous blend;

c. simultaneously drafting the extrudate at a draft ratio between the maximum draft ratio possible under the conditions and one-third thereof, thereby fibrillating the extrudate just as it leaves the die exit;

d. laminating at least two sheets of the thus-obtained unopened, sheet-like and reticulated fibrous structures so that the directions of the fibers of these structures are identical to each other;

e. pulling the laminate in the direction perpendicular to the direction of the fibers to open the same; and

f. subjecting the opened, sheet-like laminate to heat shrinking treatment at a temperature ranging from 80° to 150°C. to develop crimps in the fibers.

13. The oil or organic solvent-absorbent produced by the process of claim **1**.

14. A process for removing oil from the surface of a body of water comprising contacting said surface with an oil absorbent as defined by claim **13**.

3,966,598

CIRCULAR DISSOLVED GAS FLOTATION SYSTEM

Gregory A. Ettelt, Berwyn, Ill., assignor to Tenco Hydro/Aerosciences, Inc., Countryside, Ill.

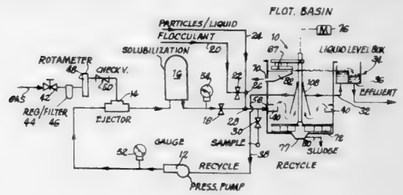
Filed Feb. 24, 1975, Ser. No. 552,650

Int. Cl.² B03D *1/02*, *1/26*

U.S. Cl. 210—44 **19 Claims**

1. In a dissolved gas flotation system including means to inject gas into liquid and to dissolve the gas into the liquid, and having a flotation basin which receives a liquid having gaseous bubbles and particulates, wherein the improvement comprises: a submerged release chamber having a fixed fluid volume located generally about a major portion of the inner periphery of the flotation basin for reducing the velocity of the liquid discharged into the flotation basin, said release chamber including inlet means to receive the liquid and outlet means to discharge the liquid into the flotation basin to permit upward flotation of the gaseous bubbles and particulates.

19. A dissolved gas flotation process comprising the steps of: introducing gas into recycled liquid; dissolving the gas in the liquid; forming gas bubbles in the liquid; combining water-carrying waste with the gas bubbles and recycled liquid; transporting the combined liquid-carrying particulates and gas bubbles into the entrance of an inlet to the flotation basin; reducing the entrance inlet velocity of the combined liquid-carrying particulates and gas bubbles; feeding the velocity-reduced liquid-carrying particulates and gas bubbles into a flotation basin via a submerged release chamber having a fixed fluid volume located generally about a major portion of the inner periphery of the flotation basin; providing upward flotation of the particulate-carrying gas bubbles; removing the flotable particulate from the flotation basin; removing clarified liquid from the flotation basin for effluent discharge; removing clarified liquid from the flotation basin for recycling; and pumping the recycled liquid to the gas introduction means.



3,966,599

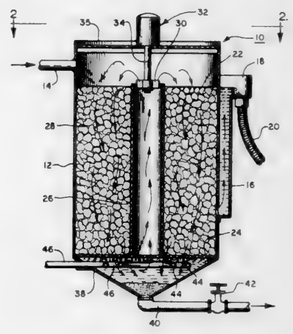
METHOD AND APPARATUS

Carl E. Burkhead, Lawrence, Kans., assignor to Ecodyne Corporation, Lenexa, Kans.

Continuation-in-part of Ser. No. 202,489, Nov. 26, 1971, abandoned. This application Sept. 16, 1974, Ser. No. 506,211

Int. Cl.² C02C *1/04*

U.S. Cl. 210—14 **15 Claims**



1. A method for treating a liquor containing biodegradable waste products comprising:

introducing said liquor into a single column of submerged fixed media material said media providing a multiplicity of flow paths and having a surface area to volume ratio of at least 20 ft.² per cubic foot and a volumetric void space of at least 85%;

simultaneously surface aerating said liquor at the top of said media column and distributing the aerated liquor over the top of said media column to cause said liquor to flow downwardly through said media column and to be split into a multiplicity of individual streams to promote intimate contact of said liquor with said media and to control and maintain turbulence below a level disruptive to microbial growth on said media while providing sufficient oxygen for microbial growth on said media;

passing said liquor from the bottom of said column to a receiving basin positioned directly below said column;

returning said liquor from said receiving basin to the top of said media column through a flow passageway isolated from said column;

recirculating said liquor through said aerating and distributing steps to repeatedly pass said liquor through said media column;

removing effluent which has passed through said media column;

collecting residual solids in a sediment receiving zone in a lower portion of said receiving basin and spaced substantially below the flow path through said fixed media to a preclude resuspension of said solids;

and removing said solids from said sediment receiving zone.

3,966,600

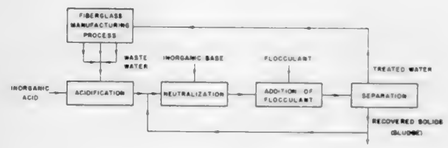
PROCESS FOR THE TREATMENT OF WASTE WATER FROM A FIBERGLASS MANUFACTURING PROCESS

Thomas N. Crowley, Myrtle Beach, S.C., and David M. Urbanski, Philadelphia, Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Filed Mar. 28, 1975, Ser. No. 563,029

Int. Cl.² C02B *1/20*

U.S. Cl. 210—46 **1 Claim**



1. A process for the treatment and recycling of waste water from a fiberglass manufacturing process contaminated with both water soluble and insoluble resins together with non resin particulate material, which comprises:

a. acidifying the waste water at a temperature from about 70° to about 200° F by the addition of an inorganic acid selected from the group consisting of sulfuric, carbonic and phosphoric acid in an amount sufficient to give acidified water having a pH of from about 3.5 to about 4.5;

b. neutralizing the acidified waste water by the addition of a base selected from the group consisting of:

i. calcium oxide;

ii. Calcium hydroxide; and

iii. magnesium oxide,

in an amount sufficient to give neutralized water having a pH of from about 7.5 to about 8.5, the acid of step a) and the base being selected so as to form a water insoluble inorganic salt.

c. adding an anionic polyelectrolyte flocculating agent to promote separation of solid material obtained from step c)

d. separating the solid material from the neutralized water, and adding a part of the solid material to the acidified water between steps a) and b); and

e. returning the neutralized water separated from the solid material to the fiberglass manufacturing process.

3,966,601
EFFLUENT TREATMENT

Arthur Stevenson, West Bromwich, and Neil Harkness, Lichfield, both of England, assignors to Robinson Brothers Ltd., West Bromwich, England

Filed Oct. 11, 1973, Ser. No. 405,476

Claims priority, application United Kingdom, Nov. 1, 1972, 50349/72

Int. Cl.² C02C *5/02*

U.S. Cl. 210—53 **15 Claims**

1. A process for purifying industrial effluent from a plant where dithiocarbamates are made or used and which contains at least 200 p.p.m. dissolved dithiocarbamate consisting essentially of, before discharging the effluent, adjusting the pH, if necessary to a pH of 6 to 8, mixing the effluent at a pH of 6 to 8 with an excess of up to 200% of the stoichiometric amount of at least one soluble heavy metal salt selected from the group consisting of iron and copper and thereby precipitating heavy metal dithiocarbamate, separating the precipitated heavy metal dithiocarbamate from the effluent, discharging the effluent and disposing of the said precipitate by dumping or incineration.

3,966,602
PROCESS AND APPARATUS FOR RECLAIMING AND REGENERATING SPENT SOLVENT

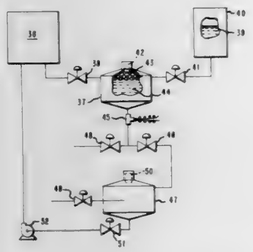
Charles Frederic Burger, Geneva, Switzerland, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 29, 1974, Ser. No. 501,790

Claims priority, application Switzerland, Sept. 17, 1973, 13300/73

Int. Cl.² B01D *17/02, 21/10*

U.S. Cl. 210—83 **5 Claims**



1. Apparatus for reclaiming and regenerating spent solvent which is made up of a major portion of an oil phase and a minor portion of an aqueous phase and which has been used in a cleaning operation, which apparatus comprises:
   1. a first vessel to hold spent solvent for a period of time sufficient to permit the spent solvent to separate into an upper aqueous phase and a lower oil phase, said first vessel having a liquid entry port to receive spent solvent and a liquid discharge port to discharge the liquid contents of the vessel;
   2. an automatic liquid phase detector-transmitter connected in liquid relationship with the liquid discharge from the first vessel to generate an appropriate electrical signal indicating the presence or absence of the aqueous phase or the oil phase as either phase passes through the detector-transmitter, said detector-transmitter comprising an in-line electrical conductometric probe having two electrodes exposed to the liquid discharge stream from the first vessel;
   3. a second vessel to hold the oil phase and having a liquid entry port to receive the oil phase; and
   4. valve and conduit means, said valve means being controlled by a programming means which is actuatable by the electrical signal generated by the detector-transmitter, to conduct liquid from the liquid discharge port of the first vessel through the automatic liquid phase detector-transmitter and to direct the flow of oil phase into the liquid entry port of the second vessel and the flow of aqueous phase to waste,

said apparatus further comprising means to regenerate the reclaimed oil phase, said means comprising a vessel containing fresh oil, an automatic valve and conduit means controlled by said programming means to conduct liquid from the fresh oil-containing vessel to the first vessel which is calibrated to hold a predetermined amount of solvent, a water reservoir, an automatic operating valve and conduit means controlled by said programming means to conduct water from the water reservoir through the automatic operating valve and into the second vessel which is calibrated to hold all the oil transferred from the first vessel and the amount of water equivalent to the amount of aqueous phase discharged to waste.

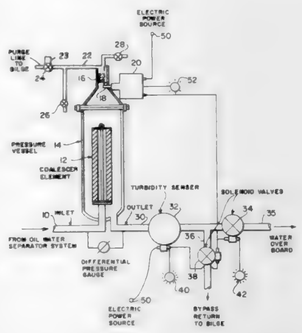
3,966,603
OIL-IN-WATER MONITOR

Michael G. Grant, Rte. 5 Box 1894, Fredericksburg, Va. 22401

Filed Nov. 25, 1975, Ser. No. 635,492

Int. Cl.² B01D *35/00*

U.S. Cl. 210—86 **12 Claims**



1. An oil-in-water monitoring system for monitoring the effluent from a source of liquid comprising, in combination:
   pressure vessel means for holding a liquid, said means having an inlet and an outlet port;
   inlet pipe means connected to said inlet port for transferring at least a portion of the effluent from said source to said pressure vessel means;
   outlet pipe means connected to said outlet port for transferring the liquid contents of said pressure vessel means to receiving means;
   oil coalescer means for coalescing drops of oil from oil-containing liquids, said coalescer means being located within said pressure vessel means and being fed by said inlet pipe means;
   oil-water interface sensing (OWIS) means for sensing an interface between oil and water, said OWIS means being located near the top of said pressure vessel at a level which measures off a predetermined volume at the top, said volume being called the oil-collection section,
   said OWIS means providing an output signal when said oil-collection section isfilled with oil;
   purge line means connected to said oilcollection section for emptying the oil therefrom;
   first valve means for controlling the flow of liquid through said purge line means, said valve means being normally closed;
   first timing means for maintaining said first valve means closed for a predetermined first period of time and opening said first valve means for a sufficient time to empty said oil-collection section ;

   second valve means for controlling the flow of liquid through said outlet pipe means, said second valve means being normally open;
   by-pass pipe means connected to said outlet pipe means between said outlet port and said second valve means for by-passing the flow of liquid through said outlet pipe means to a receiver other than said receiving means; and
   third valve means for controlling the flow of liquid through said by-pass pipe means, said third valve means being normally closed,
   the output signal from said OWIS means bein transferred to said second and third valve means to cause them to close and open, respectively,
   the output signal from said OWIS means occurring only when said oil-collection section fills with oil before the end of said first period of time.

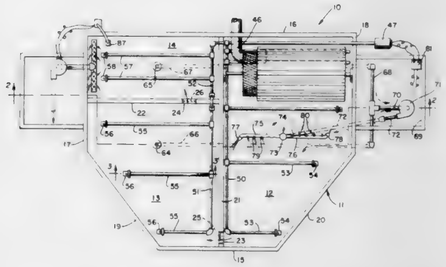
3,966,604
APPARATUS FOR AEROBIC DECOMPOSITION OF SEWAGE

Richard E. Diggs, 12 A Road, Carthage, Mo. 64836

Filed Mar. 25, 1975, Ser. No. 561,877

Int. Cl.² B01D *21/24*

U.S. Cl. 210—104 **15 Claims**



1. Apparatus for the aerobic, sludge free decomposition of sewage and the like, comprising: a plurality of separate, liquid-containing compartments; a rotatable, horizontally disposed, hollow drum at least partially immersed in the liquid contained in a first one of the compartments; the drum having sides with a plurality of holes defined therein which form an irregular inner surface on the drum sides, a raw sewage feed pipe having a discharge end located within the interior of the drum to introduce raw sewage and the like into the interior of the drum so that the sewage contacts the irregular inner surface of the drum sides to be agitated thereby; air inlet means at the bottom of said first compartment to indroduce air thereinto and thus effect upward bubbling of the air through the liquid in the first compartment; bubble trapping means connected with the drum and arranged to trap at least some of said bubbles and effect rotation of the drum, said drum rotating at a speed such that the raw sewage contacting the irregular inner surface of the drum sides is sufficiently agitated to be fragmented into particles small enough to pass through the holes in the drum wall and into the first compartment; the air inlet means being arranged in the first compartment to introduce bubbles thereinto in a direction so that at least some of the bubbles contact fragmented particles to agitate and aerate the fragmented particles flowing into that first compartment from the rotating drum to enhance aerobic decomposition thereof; and flow control means operatively associated with the compartments to effect the sequential flow of the material through all of the compartments and to effect recycling of the heavier particles thereof, until substantially complete liquification and decomposition of the material is obtained.

3,966,605
RESERVOIR

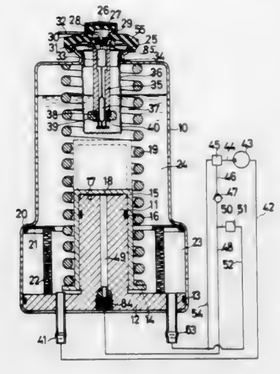
Hiromu Kuromitsu, and Naoki Ohara, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Toyota, Japan

Filed Jan. 22, 1975, Ser. No. 542,930

Claims priority, application Japan, Feb. 20, 1974, 49-020924

Int. Cl.² B01D *27/10;* **E03B** *11/00*

U.S. Cl. 210—130 **5 Claims**



1. A reservoir having an accumulator incorporated therein, said accumulator being fluidically connected to a source of fluid pressure, and comprising,
   a casing;
   a projecting member fixedly connected at one end to one end of said casing and projecting into said casing, said projecting member being provided with an axial passage therethrough fluidically connected to said source of fluid pressure and being provided with a recessed groove at the inner end thereof and fluidically communicating with said axial passage;
   a cylindrical member closed at its inner end and sealingly and slidably mounted on said projecting member for increasing or decreasing the volume of said recessed groove of said projecting member in response to the fluid pressure from said source of fluid pressure;
   a chamber for containing oil formed between the other end of said casing and said slidable cylindrical member; and
   a spring member disposed within said chamber for constantly urging said cylindrical member against increases in volume of the recessed groove of said projecting member when subjected to fluid pressure, one end of said spring member being in contact with said other end of said casing and the other end thereof with said cylindrical member.

3,966,606
FILTER IN SAMPLE DRAWING DEVICE

Mohammad Ahmad, Ipswich, England, assignor to Fisons Limited, London, England

Filed Feb. 5, 1975, Ser. No. 547,354

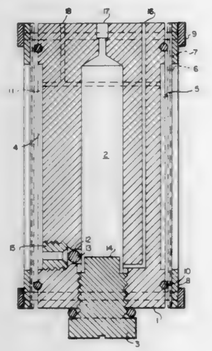
Claims priority, application United Kingdom, Feb. 6, 1974 5407/74

Int. Cl.² B01D *35/00*

U.S. Cl. 210—136 **8 Claims**

1. A filtration device comprising a housing containing a closed filtrate storage chamber, the external surfaces of the housing being provided with at least two open faced filtrate reception chambers, the open faces of said chambers being closed with a filtration medium; the storage chamber being connected to one of the reception chambers by means of a passage incorporating a one way valve; the reception chambers being in liquid flow connection with one another by

means of passages within the housing; the housing being provided with further passages whereby fluid may be fed to or



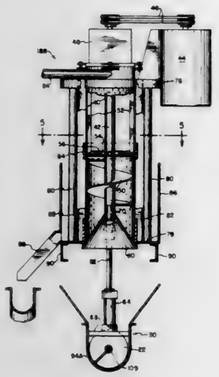
removed from the reception chambers and the storage chamber independently from or to a plurality of external sources.

3,966,607

SOLID-LIQUID SEPARATOR

William Wayne Gaynor, Atwood, and Gene Ray Voigt, Sterling, both of Colo., assignors to Ceres Ecology Corporation, Denver, Colo.

Filed Jan. 22, 1975, Ser. No. 542,969
Int. Cl.² B01D *21/04*; B30B *9/12*, *15/00*
U.S. Cl. 210—137 **7 Claims**



1. A separator for separating a viscous slurry of at least about fifteen percent solid content into solid and liquid fractions, the liquid fraction comprising a slurry of water and fine solids and the solid fraction comprising coarse fibers and grains, including

a housing comprising a substantially cylindrical screen having an upper zone and a lower zone, the screen having openings smaller than the fibers and grains comprising the solid fraction;

rotatably mounted axle means extending longitudinally through the upper and lower zones;

first inlet means communicating with said upper zone for feeding said slurry under pressure into said upper zone;

a plurality of scraper knives mounted to the axle means in said upper zone;

means for rotating said axle means;

the apertures in the screen in said upper zone comprising a first outlet means for most of said liquid fraction;

second inlet means communicating with the upper end of said lower zone for feeding said solid fraction and the remaining liquid fraction from said upper zone to said lower zone;

a substantially helical auger flighting mounted to the axle means in said lower zone;

second outlet means communicating with the lower end of said lower zone for discharging the contents of said lower zone, said second outlet means comprising a conically shaped member coaxial with said screen and movable axially during operation of the separator, with the small diameter end of said conical member extending into said lower zone;

means for applying a predetermined force to said conically shaped member to provide a back pressure to the contents of said lower zone; and

means enveloping at least a portion of said lower zone for accumulating said liquid fraction exiting from the upper and lower zones;

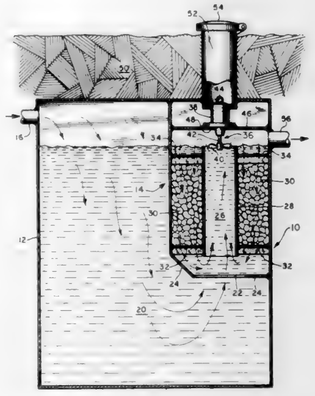
whereby upon feeding said viscous slurry into said housing upper portion through said first inlet means, the majority of the liquid fraction is separated from the remainder of said slurry, said liquid fraction exiting into said said accumulating means through said first outlet means, the remainder of said slurry entering said housing lower portion via said second inlet means wherein it is compressed and discharged.

3,966,608

LIQUID TREATMENT APPARATUS

Donald G. Mason, Overland Park, and Robert B. Higgins, Lenexa, both of Kans., assignors to Ecodyne Corporation, Lenexa, Kans.

Filed Mar. 1, 1974, Ser. No. 447,293
Int. Cl.² B01D *33/34*
U.S. Cl. 210—151 **6 Claims**



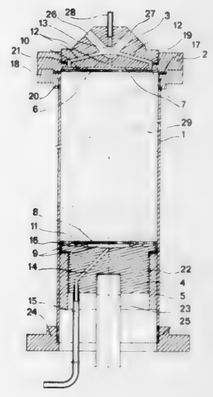
1. Improved apparatus for treating a liquor containing biodegradable wastes comprising: a settling tank having an inlet communicating with an upper portion thereof; a reactor chamber disposed within said settling tank, said reactor chamber having lower inlet means communicating with said settling tank, a perforated floor portion, and a vertical flow passageway; a column of fixed media within said reactor chamber on said perforated floor portion and surrounding said flow passageway, said media being composed of a multiplicity of elements freely and randomly stacked on one another to provide interstitial areas therebetween, said elements having a high surface area to volume ratio; aeration means in said reactor chamber for introducing air into said liquor; means for delivering said liquor from said aeration means downwardly through said fixed media; means for recirculating said liquor through said fixed media and said central flow passageway; and means for withdrawing effluent from an upper portion of said reactor.

3,966,609

CHROMATOGRAPHIC DEVICE

Etienne Godbille, Villemomble, and Lucette Tondu, Bobigny, both of France, assignors to Roussel-UCLAF, Paris, France

Filed Feb. 25, 1974, Ser. No. 445,342
Claims priority, application France, Mar. 1, 1973, 73.07278
Int. Cl.² B01D *15/08*
U.S. Cl. 210—198 C **9 Claims**



1. Chromatographic apparatus adapted to contain a bed of particulate adsorbent material in column form, said apparatus comprising a tube; a lid removably mounted at one end of the tube, said lid being permeable to liquids and gases while retaining particulate adsorbent material; a slidable element movably mounted within said tube so as to provide a chamber of variable volume for particulate adsorbent material between said lid and said slidable element, said slidable element being permeable to gases and liquids while retaining particulate adsorbent material and movable the length of the tube; and means for communicating a force to said slidable element to displace said slidable element along the axis of the tube, said force being sufficient to compress particulate adsorbent material contained in said tube into the consistency of a solid body and said means being effective to maintain said particulate adsorbent material under compression and being capable of providing sufficient force to extrude all the solid body of adsorbent material from the end of the tube when the lid is removed.

3,966,610

FILTER

Orville J. Gibbs, North Easton, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

Filed Dec. 16, 1974, Ser. No. 533,338
Int. Cl.² B01D *33/02*
U.S. Cl. 210—203 **8 Claims**

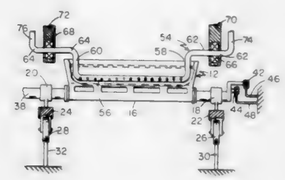
1. In a filter for solids-liquid slurry of the type which includes feed means for feeding the slurry into a plurality of individual pans containing a filter medium while the pans are in substantially horizontal position, suction means for removing liquid through said medium in said pans, cake treating means for applying treating liquid to a cake of solids formed on said medium in said pans, and moving means for relatively moving said pans and the aforesaid means to subject said pans successively to the action of said feed means and said suction means and of said treating means and said suction means;

the improvement for treating slurry containing solids particles of which a portion of relatively fine size settles more slowly in the slurry liquor under the force of gravity than the remainder, which comprises the combination of:

means operative upon feeding of slurry to each pan and prior to the action of said suction and cake treating means thereon to inhibit drainage of slurry liquor through said medium in said pan for a time interval sufficient to permit a cake of solids to form on said medium by settling in said liquor; and

removal means operative prior to the action of said suction and cake treating means on each pan to remove slurry liquor from above the so-formed cake therein while said liquor contains unsettled particles of said relatively fine size portion.

5. In a filter for solids-liquid slurry of the type which includes feed means for feeding the slurry onto an endless filter



medium while the medium is in substantially horizontal position, suction means for removing liquid through said medium, cake treating means for applying treating liquid to a cake of solids formed on said medium, and moving means from relatively moving said medium and the aforesaid means to subject said medium successively to the action of said feed means and said suction means and of said treating means and said suction means;

the improvement for treating slurry containing solids particles of which a portion of relatively fine size settles more slowly in the slurry liquor under the force of gravity than the remainder, which comprises the combination of:

means operative upon feeding of slurry to said medium and prior to the action of said suction and cake treating means thereon to inhibit drainage of slurry liquid through said medium for a time interval sufficient to permit a cake of solids to form on said medium by settling in said liquor; and

removal means operative prior to the action of said suction and cake treating means to remove slurry liquor from above the so-formed cake while said liquor contains unsettled particles of said relatively fine size portion.

3,966,611

FILTER

Orville J. Gibbs, North Easton, and John T. Roos, Westwood, both of Mass., assignors to Bird Machine Company, Inc., South Walpole, Mass.

Filed Dec. 16, 1974, Ser. No. 533,340
Int. Cl.² B01D *33/02*
U.S. Cl. 210—203 **13 Claims**

1. In a filter for solids-liquid slurry of the type which includes feed means for feeding the slurry into a plurality of individual pans containing a filter medium while the pans are in substantially horizontal position, suction means for removing liquid through said medium in said pans, cake treating means for applying treating liquid to a cake of solids formed on said medium in said pans, and moving means for relatively moving said pans and the aforesaid means to subject said pans

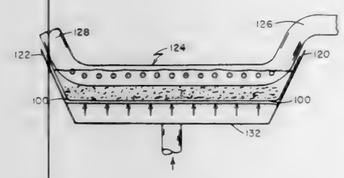
successively to the action of said feed means and said suction means and of said treating means and said suction means;

the improvement for treating slurry containing solids particles of which a portion of relatively fine size settles more slowly in the slurry liquor under the force of gravity than the remainder, which comprises the combination of:

means operative upon feeding of slurry to each pan and prior to the action of said suction and cake treating means thereon to inhibit drainage of slurry liquor through said medium in said pan for a time interval sufficient to permit a cake of solids to form on said medium by settling in said liquor, including backflushing means for supplying liquid to the under surface of said filter medium, while said cake is forming by settling in said liquor, at a pressure sufficiently above the hydrostatic head of slurry in said pan over said medium to cause said liquid to flow upwardly through said medium and cake forming thereon; and

removal means operative prior to the action of said suction and cake treating means on each pan to remove slurry liquor from above the so-formed cake therein while said liquor contains unsettled particles of said relatively fine size portion.

8. In a filter for solids-liquid slurry of the type which includes feed means for feeding the slurry onto an endless filter medium while the medium is in substantially horizontal position, suction means for removing liquid through said medium, cake treating means for applying treating liquid to a cake of solids formed on said medium, and moving means for relatively moving said medium and the aforesaid means to subject said medium successively to the action of said feed means and said suction means and of said treating means and said suction means;



the improvement for treating slurry containing solids particles of which a portion of relatively fine size settles more slowly in the slurry liquor under the force of gravity than the remainder, which comprises the combination of:

means operative upon feeding of slurry to said medium and prior to the action of said suction and cake treating means to inhibit drainage of slurry liquor through said medium for a time interval sufficient to permit a cake of solids to form on said medium by settling in said liquor, including backflushing means for supplying liquid to the under surface of said filter medium, while said cake is forming by settling in said liquor, at a pressure sufficiently above the hydrostatic head of slurry over said medium to cause said liquid to flow upwardly through said medium and cake forming thereon; and

removal means operative prior to the action of said suction and cake treating means to remove slurry liquor from above the so-formed cake while said liquor contains unsettled particles of said relatively fine size portion.

3,966,612

DIALYSIS APPARATUS FOR PURIFICATION OF A MEDIUM, PREFERABLY BLOOD

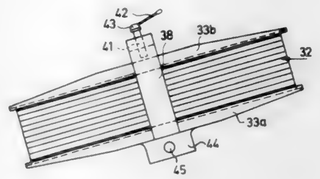
Paul-Johny Johansson, Bankgatan 14, S-223 52 Lund, Sweden

Filed Dec. 10, 1973, Ser. No. 423,393

Claims priority, application Sweden, Sept. 13, 1973, 7312461

Int. Cl.² B01D *31/00*

U.S. Cl. 210—238 **9 Claims**



1. In a dialysis apparatus embodying a plurality of stacked alternating first and second fluid-directing flow plate elements sealingly separated from one another by a semi-permeable diaphragm member providing separate fluid flow passage systems on opposite sides of the diaphragm member for passage respectively of a medium to be purified, and of a purification medium, wherein a supply and discharge of the respective mediums is obtained through supply and discharge conduit means connected with respectively separate hole and passage means in end portions of said stacked elements and communicating with said respective flow passage systems; the improvement comprising:

a. a first flow passage system for the medium to be purified including a plurality of longitudinally elongated parallel ribs uniformly spaced on opposite sides of the first flow plate element, said ribs providing straight, unimpeded, constant direction flow paths;

b. a second flow passage system for the purification medium including a plurality of series of longitudinally aligned parallel ribs on opposite sides of the second flow plate element, which plurality of series are arranged longitudinally in a side-by-side manner and laterally separated slightly by longitudinally directed flow passages, the ribs of each respective series being angled differently from those of each adjacent series effecting constantly changeable flow patterns of the purification medium flowing therethrough;

c. wherein the respective ribs of said first and second flow plate elements are of substantially the same height from a planar base portion thereof, and respective patterns of the ribs and rib series are the same in number and disposed so as to be substantially opposite one another when in interleaved assembly with the apparatus, thereby maintaining the interposed diaphragm member in positively gripped condition and substantially uniformly spaced from the planar base portions of said plate elements.

3,966,613

APPARATUS FOR SPILLING RETRIEVAL

William P. Kirk, 22 Glenhaven Circle, Saco, Maine 04072, and Dwight W. Reynolds, R.F.D. 1, Box 49, Pownal, Maine 04069

Filed Jan. 22, 1975, Ser. No. 543,170

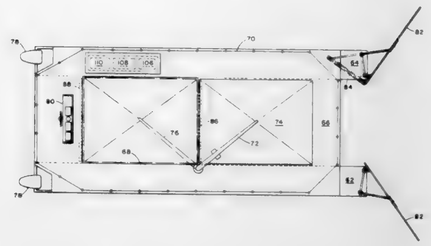
Int. Cl.² E02B *15/04*

U.S. Cl. 210—242 **7 Claims**

1. Apparatus for retrieving a liquid spilling floating on water, comprising in combination,

a catamaran having spaced parallel hulls, and

bow and stern gates extending between the hulls and forming therewith a well, the walls of the well extending a substantial distance below the surface of the spilling, the bottom of the well having an opening, each of the gates being supported by the hulls for independent pivotal movement, the stern gate being mounted for movement to a position above the water line defined by the buoyancy of the catamaran.



3,966,614

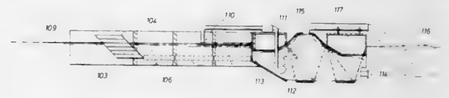
OIL SPILL CLEANUP SYSTEM

Ray R. Ayers, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 292,028, Sept. 25, 1972, abandoned, which is a continuation-in-part of Ser. No. 225,987, Feb. 14, 1972, abandoned. This application July 29, 1974, Ser. No. 492,556

Int. Cl.² E02B *15/04*

U.S. Cl. 210—242 R **14 Claims**



1. Apparatus for removing oil from the surface of a body of water comprising:

means adapted to support the apparatus in the water;

a compartment supported by the support means having an at least partially submerged open front end permitting entry of oil and water into the compartment, sides, a rear end, and an at least partially open submerged bottom permitting exit of water from the compartment;

baffles which divide the open front end of the compartment into separate adjacent chambers open at front and rear to permit passage of oil and water therethrough and of sufficient length to substantially arrest orbital water particle motion associated with waves without substantially impeding flow;

baffles which divide the open bottom into separate adjacent chambers open at bottom and top and of sufficient vertical extent to diffuse and downwardly direct water exiting from the compartment, whereby the diffusion and change of current direction in combination with the wave suppression action of the front baffles create a quiescent oil capture zone within the compartment; and

means for articulating at least the bottom baffles from front to rear to be wave conformable.

3,966,615

OIL COLLECTION BARGE

Sigvald L. Petchul, and Richard K. Petchul, both of 1380 SW. 57th Ave., Plantation, Fla. 33314

Filed June 25, 1974, Ser. No. 483,018

Int. Cl.² E02B *15/04*

U.S. Cl. 210—242 R **8 Claims**

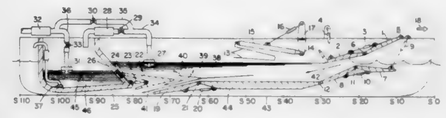
1. In a barge for collecting, containing and concentrating oil on the surface of water comprising:

a generally U-shaped longitudinally extending channel comprising two horizontally spaced, upstanding sidewalls with a bottom wall extending between them and adapted to receive water with oil on the surface thereof;

an entrance opening at the forward end of said channel through which water and oil may enter said channel for flow therethrough;

an upstanding wall at the rear end of said channel at which the oil on the surface of the water collects; and

a vent at the bottom wall of said channel forward of said rear wall for allowing water to flow out of said channel;



the improvement comprising:

an adjustable flow splitter consisting of a generally V-shaped member extending generally transversely across said channel with the apex of the V forming a trailing edge of said vent and the sides of the V extending rearwardly;

an adjustable vent plate extending transversely across said channel generally paralleling the apex of said V-shaped member and defining a leading edge of said vent;

means for adjusting the position of said V-shaped member, thereby controlling the flow pattern of water at said vent; and

means for adjusting the position of said vent plate, thereby controlling the size of said vent.

3,966,616

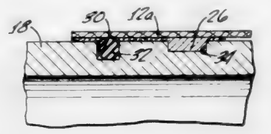
MEMBRANE CARTRIDGE

Donald T. Bray, Escondido, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.

Filed Nov. 27, 1974, Ser. No. 527,686

Int. Cl.² B01D *31/00*

U.S. Cl. 210—433 M **4 Claims**



1. A membrane cartridge for reverse osmosis and ultrafiltration systems comprising a perforated central collection tube around which is spirally wound an assembly of at least one permeate transfer leaf, membrane leaf and brine side spacer leaf; an end area and side band areas of said permeate transfer leaf being attached by a sealing adhesive to adjacent surfaces of said perforated central collection tube; in which the improvement comprises:

a. a pair of circumferential grooves in said perforated central collection tube, each of said grooves being spaced apart from the other and within one of said side band areas of said permeate transfer leaf;

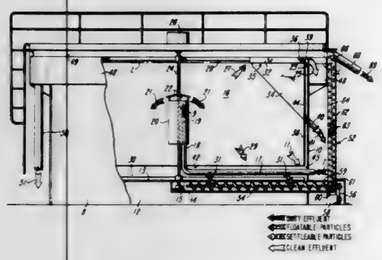
b. a resilient O-ring seated in each of said grooves in said perforated central collection tube; and

c. said sealing adhesive applied to said side band areas of said permeate transfer sheet and substantially filling the crevices between said resilient O-rings and said grooves in said collection tube and said permeate transfer leaf when said assembly of at least one permeate transfer leaf, membrane leaf and brine side spacer leaf is spirally wound around said perforated central collection tube.

3,966,617
SLUDGE ELEVATOR FOR FLUID CLARIFICATION SYSTEM

Fred A. Zaenkert, Cincinnati, Ohio, assignor to The Cincinnati Butchers' Supply Co., Cincinnati, Ohio

Filed Oct. 7, 1974, Ser. No. 512,495
Int. Cl.² B01D *21/14*
U.S. Cl. 210—519 **1 Claim**



1. A fluid clarification device for separating scum, sludge and clear fluid from a dirty effluent, comprising a cylindrical, separator tank having a flat bottom, a top, a rotatable shaft extending axially thereof for substantially the entire height of the tank, means on the tank top for rotating said shaft, an inlet pipe for dirty effluent extending upwardly into the tank from the bottom thereof and substantially coaxially therewith and having an effluent discharge opening upwardly presented for discharging dirty effluent axially within said tank in an upward direction, a cylindrical housing disposed coaxially around the inlet substantially at the center of the tank and having a cylindrical body, and a substantially circular splash plate having a shaft receiving opening centrally thereof receiving said rotatable shaft through said opening and located to be above said discharge opening and to extend radially outward from said shaft and in a downward direction so that the shaft receiving opening is above the outer circumferential edge of said splash plate, said discharge opening being offset from the central axis of said housing, said housing having a plurality of struts connecting said cylindrical body and said splash plate circumferential edge to define a plurality of generally radially and downwardly directed ports for directing the flow of dirty effluent impinging against said splash plate from the inlet discharge opening in a generally outward and downward direction into the tank at a level which is below the upper surface of liquid contained in the tank, an upstanding outer side wall and a vertical inner wall concentric with and spaced radially inwardly of the outer side wall to define therebetween a circumferential channel, the inner wall having a bottom edge spaced upwardly from the flat bottom a distance greater than the maximum depth of sludge which is accumulated on the bottom of the tank to define a fluid discharge port for discharging clean effluent from the separator tank, the discharge port being in open fluid communication with the circumferential channel for discharging clean effluent thereinto, said inner wall having an upper edge spaced above the upper edge of the outer wall to form a barrier for confining floatable particles within the tank, an annular trough secured to and surrounding an upper portion of the outer wall and in fluid communication with the circumferential channel for receiving clean effluent from the channel, an effluent collector connected to the annular trough for discharging effluent into a sewage disposal system, said trough having a lip on the outer circumferential edge thereof which lip is located above the fluid level to prevent spillage from the trough, an elongate chamber carried by and projecting inwardly from the inner wall and having an elongate mouth at the fluid level of fluid in the device and a conduit connected thereto for collecting matter from the chamber and transferring that matter away from the separator tank, said flat bottom having an elongate, radially extending, open-topped trough therein with the open top substantially coplanar with the flat bottom and in free, unobstructed, open communication with the bottom, an elongate, skimmer arm means carried by the shaft at the fluid level and rotatable in the device and having a skimmer blade depending therefrom to be immersed in the fluid a predetermined distance to sweep floatable particles from the surface of fluid in the device and into the chamber as the skimmer arm rotates with the rotatable shaft, scraper blade means carried by the shaft for rotation therewith and movement along the surface of the bottom to scrape settled particles from the bottom into the open-topped bottom trough, horizontally disposed screw-type conveyor means in the trough extending for substantially the entire length thereof and having an end portion extending outwardly beyond the outer wall to convey the particles in the form of sludge along the trough to beyond the outer wall, means for driving the horizontal conveyor means, a vertically extending conduit externally of the outer wall having a closed upper end and in fluid communication at a lower end portion thereof with the end of the conveyor means which extends beyond the outer wall and extending at its upper end upwardly a predetermined distance above the fluid level, and a vertically oriented screw-type conveyor means mounted in and carried by the vertically extending conduit for receiving sludge in said lower end portion thereof from said horizontal conveyor means and elevating the sludge to a discharge port at said closed upper end a predetermined distance above the fluid level to effect draining of the fluid from the sludge, whereby the discharged sludge is substantially free of excess fluid.

3,966,618
CLARIFICATION OF XANTHAN GUM

George T. Colegrove, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 449,875, March 11, 1974. This application Oct. 10, 1974, Ser. No. 513,810
Int. Cl.² C12B *1/00*; **E21B** *43/22*
U.S. Cl. 252—8.55 D **1 Claim**

1. A solid composition comprising from about 85–95% by weight of solid xanthan gum containing cellular fermentation solids and about 5–15% by weight of an alkaline protease enzyme.

3,966,619
LUBRICANTS FOR COLD WORKING OF ALUMINIUM

Gordon Frederick Smith, Rugby, and Michael Keith Budd, Barford St. Michael, both of England, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Oct. 28, 1975, Ser. No. 626,269
Claims priority, application United Kingdom, Nov. 5, 1974, 47694/74
Int. Cl.² C10M *1/44*, *3/38*, *5/24*, *7/24*
U.S. Cl. 252—32.5 **8 Claims**

1. A lubricant for working aluminium comprising essentially an aqueous solution of

a. a secondary alkylamine, in which at least one of the alkyl groups includes a chain of at least 8 carbon atoms, the secondary alkylamine including a carboxylic acid group as a substituent at a carbon atom not more than 3 atoms distant from the amino group and

b. an acid phosphate mono- or di-ester of a polyalkylene oxide surface active agent, said alkylamine and said acid phosphate ester each having a solubility of at least ½% by weight in water and said solution including at least ½% by weight of said alkylamine and said acid phosphate ester.

3,966,620
LUBRICANT COMPOSITIONS

Robert F. Bridger, Hopewell, and Albert L. Williams, Hopewell Township, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 11, 1975, Ser. No. 603,428
Int. Cl.² C10M *1/40*, *3/34*, *1/32*, *3/26*
U.S. Cl. 252—33.4 **9 Claims**

1. A lubricant composition comprising (1) a major proportion of a lubricant, (2) from about 0.5% to about 30% by weight of the product of reaction between (a) a polyalkenyl-succinic anhydride or acid, wherein the polyalkenyl has a number average molecular weight of from about 200 to about 4,000 and (b) trishydroxymethylaminomethane and (3) an antirust amount of a bi-naphthol.

3,966,621
LUBRICATING OIL COMPOSITIONS

Robert Charles Watkins, Wantage; Derek Alfred Kinghan, and Robert Walter Humphrey, both of Didcot, all of England, assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed May 12, 1975, Ser. No. 576,969
Claims priority, application United Kingdom, May 17, 1974, 22087/74
Int. Cl.² C10M *1/54*, *3/48*, *5/28*, *7/52*
U.S. Cl. 252—42.7 **17 Claims**

1. A process for the preparation of a colloidal suspension in oil of a Group II metal carbonate together with a Group II metal sulphurised phenate as dispersant in which

1. a reaction mixture is formed comprising
   a. a Group II metal base compound,
   b. either sulphur and one or more hydrocarbyl substituted phenols, wherein the or each hydrocarbyl group contains up to 60 carbon atoms or one or more sulphurised phenols having one or more hydrocarbyl group substituents, each substituent containing up to 60 carbon atoms,
   c. a diol having a boiling point less than the decomposition temperature of the reaction product,
   d. a C_1 to C_{15} monoalcohol or a C_2 to C_{20} ether alcohol and
   e. oil
2. the reaction mixture is heated at a temperature of from 110° to 180°C in 5 to 15 hours, provided the rise in temperature from 150° to 160°C takes 1 to 4 hours, and that from 170° to 180°C takes 1 to 4 hours,
3. carbon dioxide is introduced into the reaction mixture when the temperature thereof is less than 140°C,
4. before the introduction of carbon dioxide has been completed the amount of water of reaction is reduced to below 0.3 wt.% based on the total weight of the reaction mixture, and thereafter
5. the diol and alcohol or ether alcohol are removed from the reaction mixture.

3,966,622
LUBE OIL DISPERSANT OF IMPROVED ODOR AND ANTIOXIDANT PROPERTIES

Walter W. Hellmuth, Beacon; Harry Chafetz, Poughkeepsie, and William P. Cullen, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 330,914, Feb. 9, 1973. This application Sept. 9, 1974, Ser. No. 504,616
Int. Cl.² C10M *1/48*
U.S. Cl. 252—46.6 **8 Claims**

1. A method of preparing a lubricating oil concentrate of a detergent-dispersant sulfurized alkoxylated product consisting essentially of:

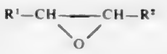
a. first contacting a polyalkene of an average molecular weight between about 500 and 50,000 with P_2S_5 in the presence of between about 0.1 and 1 wt. % sulfur at a temperature between about 100 and 320°C., said P_2S_5 comprising between about 5 and 40 wt. % of the reaction mixture,

b. secondly diluting the polyalkene-P_2S_5 with mineral lubricating oil to form a lube concentrate of between about 10 and 90 wt. % of said lubricating oil,

c. thirdly contacting the polyalkene-P_2S_5 lube concentrate with steam at a temperature between about 100 and 260°C. utilizing at least about a mole ratio excess of steam in respect to said polyalkene-P_2S_5 reaction product,

d. fourthyl removing inorganic phosphorus acid from the steam treated polyalkene-P_2S_5 concentrate,

e. fifthly contacting the inorganic acid free, steam hydrolyzed polyalkene-P_2S_5 concentrate with an alkylene oxide of the formula:



where R^1 and R^2 are hydrogen or an alkyl containing 1 to 6 carbon atoms in a mole ratio of said inorganic phosphorus acid free, steam hydrolyzed P_2S_5-polyalkene reaction product to said alkylene oxide of at least about 1:1,

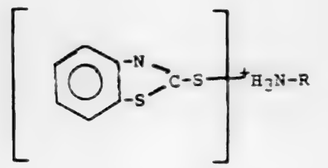
the improvement which comprises the step of contacting the alkoxylated inorganic free, steam hydrolyzed polyalkene-P_2S_5 reaction product of Step *e* with added sulfur at a temperature between about 130° and 300°C. utilizing an initial polyalkene:added sulfur mole ratio of between about 1:0.5 and 1:10 to form said sulfurized alkoxylated product.

3,966,623
CORROSION INHIBITED LUBE OIL COMPOSITIONS

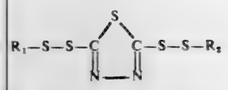
Robert H. Krug, Cornwall, and Clemence J. Henry, Newburgh, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 5, 1975, Ser. No. 584,243
Int. Cl.² C10M *1/38*, *3/32*, *5/28*, *7/36*
U.S. Cl. 252—47 **6 Claims**

1. A composition comprising a major amount of hydrocarbon oil of lubricating viscosity and between about 0.01 and 25 wt. % of an amine salt of 2-mercaptobenzothiazole characterized by the formula:



where R is alkyl or alkenyl of between about 4 and 30 carbons and between about 0.01 and 25.0 wt. % of a thiadiazole characterized by the formula:



where R_1 and R_2 are alkyl or alkenyl of from 4 to 30 carbons.

3,966,624
BLENDED TRACTION FLUID CONTAINING HYDROGENATED POLYOLEFIN AND AN ADAMANTANE ETHER

Irl N. Duling, West Chester; David S. Gates, Swarthmore; Frederick P. Glazier, Thornton, all of Pa.; Robert E. Moore, Wilmington, Del., and Thomas D. Newingham, Broomall, Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed July 15, 1971, Ser. No. 165,418
Int. Cl.² C10M *1/20*
U.S. Cl. 252—52 R **7 Claims**

1. A composition useful as a base stock for a lubricant in a traction drive transmission, said composition having a kinematic viscosity at 210°F in the range of 1.5–200.0 cs. and comprising

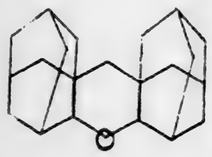
A. from 1–25 parts by weight of a hydrogenated polymer of C_3–C_8 aliphatic hydrocarbyl monoolefin, said polymer having an average molecular weight in the range of 180–2000, and

B. one part by weight of an adamantane compound selected from:

a. an ether having the formula



or



and

b. an alkyl-substituted derivative of said ethers.

3,966,625
LUBRICATING OIL COMPOSITION CONTAINING POLYOXYALKYLENE GLYCOL DIETHER VISCOSITY-INDEX IMPROVERS

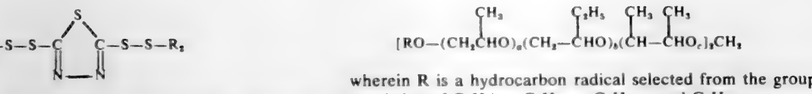
Yoshiharu Tanizaki, Kamakura; Hiroshi Kawaguchi, Tokyo, and Kenichiro Minagawa, Kawasaki, all of Japan, assignors to Nippon Oils and Fats Company Limited, Tokyo, Japan

Continuation of Ser. No. 290,272, Sept. 18, 1972, abandoned. This application Oct. 3, 1974, Ser. No. 511,525
Claims priority, application Japan, Sept. 23, 1971, 46-74405
Int. Cl.² C10M *1/20*
U.S. Cl. 252—52 A **2 Claims**

1. A lubricating oil composition consisting essentially of

a lubricating amount of a mineral oil and

a viscosity index improving amount of a polyoxyalkylene glycol diether of the formula:



wherein R is a hydrocarbon radical selected from the group consisting of C_nH_{2n+1}, C_nH_{2n-1}, C_nH_{2n-3} and C_nH_{2n-5},

n is an integer of 1–24 and

$$n \geqq 6 - 5\,\frac{(b+c)}{a+b+c},$$

$a+b+c$ is an integer in the range of 5–100, and

a or $b+c$ may be 0 but a, b, and c are not 0 at the same time.

3,966,626
HEAT TRANSFER FLUIDS

Larry L. Jackson; Walter F. Seifert, and Daniel E. Collins, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 154,181, June 17, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 398,049
The portion of the term of this patent subsequent to June 10, 1992, has been disclaimed.
Int. Cl.² C09K *50/00*
U.S. Cl. 252—73 **2 Claims**

1. A heat transfer fluid having a freezing point below about 40°F. and consisting essentially of at least about 20% by volume of diphenyl oxide and at least about 20% by volume of a polyphenyl ether having 3 or 4 phenyl rings.

3,966,627
DISHWASHING COMPOSITIONS

Frederick W. Gray, Summit, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 291,680, Sept. 25, 1972, abandoned. This application Jan. 17, 1975, Ser. No. 541,813
The portion of the term of this patent subsequent to Aug. 28, 1990, has been disclaimed.
Int. Cl.² C11D *7/56*
U.S. Cl. 252—99 **8 Claims**

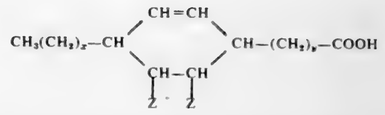
1. A water-soluble detergent composition capable of inhibiting overglaze attack consisting essentially of about 50-95% by weight of at least one water-soluble inorganic or organic builder salt and about 0.5–3.0% by weight of aluminum silicate, said aluminum silicate having a pH of about 5–9.

3,966,628
SOLID CLEANING COMPOSITIONS CONTAINING C_{21} DICARBOXYLIC ACID

Fred E. Woodward, West Palm Beach, Fla., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 21, 1974, Ser. No. 499,299
Int. Cl.² C11D *3/08*
U.S. Cl. 252—135 **5 Claims**

1. An alkaline dry mix and powdered formulation cleaning composition consisting essentially of an alkaline builder and from about 0.5% to about 15% by weight of a C_{21} dicarboxylic acid having the structure



wherein x and y are integers from 3 to 9, x and y together equal 12, wherein one Z is hydrogen (H), and the other Z is a carboxylic acid group (COOH), the acid being in anhydrous free acid form.

3,966,629
TEXTILE SOFTENING DETERGENT COMPOSITIONS

Richard John Dumbrell, Blyth, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 23, 1974, Ser. No. 500,096
Claims priority, application United Kingdom, Aug. 24, 1973, 40205/73; Aug. 31, 1973, 41085/73
Int. Cl.² C11D *3/12, 7/10*
U.S. Cl. 252—140 **11 Claims**

1. Process for preparing a built laundry detergent composition comprising the step of spraying a moving bed of a particulate carrier selected from the group consisting of sodium and potassium tripolyphosphate, pyrophosphates, acid pyrophosphates, carbonates, sulfates, borates, and silicates and spray dried built synthetic detergent granules containing a hydratable, inorganic salt dried to such an extent that the salt is incompletely hydrated, said moving bed containing up to 50% by weight of a smectite-type clay softening agent having an ion exchange capacity of at least 50 meq/100 g, with a liquid agglomerating agent selected from the group consisting of aqueous solutions of electrolytes containing no more than 75% of saturation of said electrolytes and said electrolytes being selected from the group consisting of water soluble phosphates, tripolyphosphates, acid pyrophosphates, neutral pyrophosphates, carbonates, sulfates, chlorides, borates, silicates and mixtures thereof; water; and solutions of organic adhesives, said liquid agglomerating agent containing up to 60% by weight of said clay, the weight ratio of said agglomerating agent to the combined weight of said clay and said carrier being from 1% to 40%, to form free-flowing agglomerates.

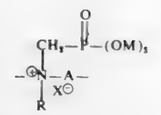
3,966,630
USE OF POLYQUATERNARY AMMONIUM METHYLENE PHOSPHONATES IN CHELATING OR SCALE INHIBITION

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

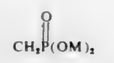
Division of Ser. No. 237,883, March 24, 1972, Pat. No. 3,792,084. This application Nov. 5, 1973, Ser. No. 412,603
The portion of the term of this patent subsequent to Dec. 18, 1992, has been disclaimed.
Int. Cl.² C02B *5/06*
U.S. Cl. 252—180 **10 Claims**

1. The process of chelating or inhibiting the formation of scale in an aqueous system which comprises treating said system with a polyquaternary ammonium methylene, or substituted methylene, phosphonate wherein all the methylene, or substituted methylene, phosphonate groups are nitrogen-bonded, wherein the substituted methylene moieties each consist of methylene substituted by at least one hydrocarbon group, wherein there are up to two such methylene, or substituted methylene, phosphonate groups bonded to a quaternary ammonium nitrogen atom and having at least one methylene, or substituted methylene, phosphonate group attached to at least one of such nitrogens, there being at least two quaternary ammonium groups in the polyquaternary ammonium moiety of the phosphonate.

3. The process of claim 1 where the polyquaternaries have repeating units of the general formula



where R is



or a hydrocarbon group, and A is a bridging group, M is hydrogen, ammonium, organic ammonium, or an alkali metal or an alkaline earth metal, and X is halogen, the bridging group A being an alkylene terminated bivalent hydrocarbon group having 8 to 30 carbons, or alkylene-ether containing group of the formula $A'-(OA')_n$ where A' is alkylene having 1 to 10 carbons and n is 1 to 10, or an alkylene group having 2 to 25 carbons unsubstituted or substituted by OH or halogen.

3,966,631
NEMATIC LIQUID CRYSTAL COMPOSITION

Kazuhisa Toriyama, Hitachi; Hidetoshi Abe, Katsuta; Fumio Nakano, Hitachi; Kenji Murao, Hitachi, and Mikio Sato, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 8, 1974, Ser. No. 495,768
Claims priority, application Japan, Aug. 15, 1973, 48-9089
Int. Cl.² G02F *1/16*; C09K *3/34*
U.S. Cl. 252—299 **7 Claims**

1. A nematic liquid crystal composition comprising:

a predominant amount of an N_a-type nematic liquid crystal;

an onium halide salt selected from the group consisting of quaternary ammonium halides, pyridinium halides, isoquinolinium halides, quniolinium halides, acrilidinium halides and combinations thereof, said onium halide salt being dissolved in the nematic liquid crystal for effecting a dynamic scattering mode of the liquid crystal compound upon application of a driving voltage; and

a phenolic compound selected from the group consisting of phenol, alkylphenols having a molecular weight of 108 to 290, benzoxyphenol, halogenated phenols having a molecular weight of 127 to 472, alkoxy substituted phenols having a molecular weight of 124 to 306, acyl substituted phenols having a molecular weight of 136 to 318, aminophenol, nitrophenols having a molecular weight of 139 to 185, methylaminophenol, cyanophenols having a molecular weight of 115 to 141, hydroquinone monobenzyl ether, p-phenylphenol and combinations thereof, said phenolic compound being dissolved in the nematic liquid crystal for improving solubility of the onium salt in the liquid crystal compound and for improving dissociation of the onium salt in the liquid crystal compound to ions;

the amount of the onium halide salt being 0.001 to 3% by weight, based on the weight of the liquid crystal composition, the phenolic compound being added to said composition in an amount of 0.5 to 50 times the amount of said onium halide salt, the amount of said phenolic compound in said composition being no larger than 6% by weight, based on the weight of the liquid crystal composition.

3,966,632
VEGETABLE OIL EMULSION

John A. Colliopoulos, Evanston, and Nicholas S. Yanick, Elmhurst, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

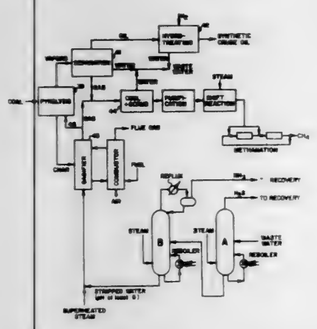
Filed June 6, 1974, Ser. No. 476,953
Int. Cl.² A23D 3/00, 5/00; B01F 17/34
U.S. Cl. 252—309 4 Claims

1. A water in oil emulsion comprising:
a. 91–98% soybean oil;
b. 1–5% water; and
c. 1–4% esters of a mixture of di-, tri-, and tetra-polyglycerols and 12-hydroxy-9-octadecenoic acid, said esters having a saponification value of 165–169.

3,966,633
WASTE WATER PROCESSING

Louis D. Friedman, New Brunswick, N.J., assignor to Cogas Development Company, Princeton, N.J.

Filed Sept. 23, 1974, Ser. No. 508,395
Int. Cl.² C07C 1/02; C10J 3/12
U.S. Cl. 252—373 2 Claims



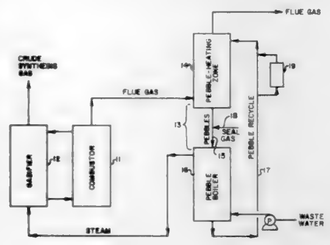
1. In a system of synthesis gas manufacture including a gasifier wherein fluidized char is reacted with steam using a particulate heat exchange material to sustain the endothermic steam-carbon reaction to produce a synthesis gas stream which on cooling gives water contaminated with H_2S and NH_3 and a carbonizer wherein fluidized coal is carbonized below about 700°C to provide said char and vapors which on cooling give oil and water contaminated with H_2S and NH_3 and organic materials, the improvement which comprises steam-stripping the contaminated waters to remove the H_2S but retaining sufficient ammonia to keep the pH between about 8.5 to 10.5 and introducing the resulting treated water into the gasifier to provide at least a portion of the steam requirement therefor while consuming the organic materials.

3,966,634
GASIFICATION METHOD

Martin E. Sacks, East Windsor, N.J., assignor to Cogas Development Company, Princeton, N.J.

Filed Sept. 23, 1974, Ser. No. 508,394
Int. Cl.² C07C 1/02; C10J 3/12
U.S. Cl. 252—373 1 Claim

1. a system of synthesis gas manufacture including a gasifier wherein fluidized char is reacted with steam using a particulate heat exchange material to sustain the endothermic steam-carbon reaction to produce a synthesis gas stream which on cooling gives water contaminated with H_2S and NH_3 and a carbonizer wherein fluidized coal is carbonized below about 700°C to provide said char and vapors which on cooling give oil and water contaminated with H_2S, NH_3 and organic materials, the improvement which comprises heating solid heat transfer material to a temperature above 500°C, then, after said heating, feeding a stream of said contaminated waters into contact with said preheated heat transfer solid to form superheated steam, feeding said superheated steam to said gasification zone, repeatedly reheating said solid after said



contact with said contaminated waters and repeatedly recycling the reheated solid into such contact with additional quantities of said contaminated waters, said solid being substantially inert in said process.

3,966,635
PROCESS FOR REACTIVATING PLATINUM CATALYSTS USED IN PRODUCTION OF HYDROXYLAMMONIUM SALTS

Hussain El-Ghatta, Chur, Grisson, and Johann Karl Forrer, Domat-Ems, Grisson, both of Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Switzerland

Filed Mar. 17, 1975, Ser. No. 558,703
Claims priority, application Switzerland, Mar. 21, 1974, 3906/74
Int. Cl.² B01J 23/42; C01B 21/20
U.S. Cl. 252—413 18 Claims

1. A process for rejuvenating an aged platinum catalyst which has been used for hydrogenation of nitric oxide to hydroxylammonium salts in an acid medium, which process comprises
a. treating the catalyst in the presence of a hydroxylammonium salt in a first stage with a sulfur compound in an aqueous acid medium, wherein said sulfur compound liberates sulfurous acid when subjected to said acid medium, said sulfurous acid being present in an amount of 1 to 150 atom % of sulfur based on the amount of platinum metal in said aged catalyst, said treatment being conducted substantially in the absence of oxidizing agents capable of oxidizing sulfurous acid to sulfate and for from 0.1 to 15 hours, thus obtaining a first-treated catalyst, and
b. treating the first-treated catalyst in a second stage with di- or tetravalent platinum compound in acid medium in the presence of hydrogen, said platinum compound being present in a platinum amount of 1 to 30% by weight based on the amount of platinum which the catalyst contained when used for the first time.

3,966,636
SEQUENTIAL HYDROGENATION-OXIDATION-HYDROGENATION OF RHODIUM AND RUTHENIUM CATALYSTS

John W. Jenkins, Seabrook; Ronald S. Bauer, and Harold E. De La Mare, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 19, 1974, Ser. No. 534,547
Int. Cl.² B01J 23/96; C07D 301/00
U.S. Cl. 252—419 4 Claims

1. A process for the regeneration of a catalyst comprising between about 0.1 and 10.0 percent weight rhodium or ruthenium on an alpha alumina carrier, said catalyst having been employed in the hydrogenation of a diglycidyl ether of 2–2

bis(4-hydroxyphenyl)propane in the presence of a methylene dichloride solvent, wherein said catalyst becomes at least partially deactivated, such process comprising:
a. contacting the deactivated catalyst with a hydrogen-containing gas at temperatures from about 400° to about 600°C for between about one-half hour and about 2 hours;
b. contacting the hydrogen-treated catalyst with an oxygen-containing gas which contains between about 1 and about 10 percent volume oxygen in a staging sequence, said staging sequence consisting of contacting the catalyst with the oxygen-containing gas at between about 75°C and about 125°C for between about one-third hour and two-thirds hour, then at between about 175°C and 225°C for between one-third hour and two-thirds hour, and then at between about 375°C and 450°C for between about 1 hour and about 1½ hours; and
c. contacting the oxidized catalyst with a hydrogen-containing gas at temperatures from about 150°C to about 600°C for between about one-half hour and about 1 hour.

3,966,637
CATALYSTS

Josef Witte, Cologne, and Günther Lehnert, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Nov. 12, 1974, Ser. No. 523,022
Claims priority, application Germany, Nov. 16, 1973, 2357193
Int. Cl.² C08F 4/78
U.S. Cl. 252—429 B 7 Claims

1. A catalyst composition comprising:
A. a reaction product of 1 mol tungsten hexachloride with from 1 to 4 mols of a mixture of 2-chloroethanol and 2,2,2-trichloroethanol in a molar ratio of from 1:3 to 3:1; and
B. from 1 to 20 mol, per mol of tungsten in component (A), of an organometallic aluminium compound.

3,966,638
ALKALINE EARTH METAL ORGANOMETALLIC COMPOUNDS, THEIR PREPARATION BY METALLATION AND CATALYSTS COMPRISING SAME

Ivan Glen Hargis, 679 Atwood Drive, Tallmadge, Ohio 44278, and Russell Anthony Livigni, 2291 Manchester Road, Akron, Ohio 44314

Division of Ser. No. 69,476, Sept. 3, 1970. This application Nov. 15, 1974, Ser. No. 524,336
Int. Cl.² B01J 31/12; C07D 311/82
U.S. Cl. 252—431 R 5 Claims

1. A composition of matter useful as a homogeneous anionic polymerization catalyst comprising active catalyst material dissolved in an aprotic polar solvent selected from the group consisting of dialkoxyalkanes, dialkoxypolyalkanes, heterocyclic ethers, dialkyl ethers, peralkyl alkylene polyamines, peralkyl phosphoramides and mixtures thereof formed by reacting in said solvent metal selected from the group consisting of barium, strontium and calcium with heterocyclic compound selected from the group consisting of xanthene, 9-phenylxanthene, 9-α-naphthyl xanthene and 9-(2-methoxyphenyl) xanthene to convert at least part of said heterocyclic compound into active catalyst material selected from the group consisting of dixanthenyl calcium, bis (9-phenyl xanthenyl) calcium, bis(9-α-naphthyl xanthenyl) calcium, bis [9-(2-methoxyphenyl) xanthenyl] calcium, dixanthenyl strontium, bis (9-phenyl xanthenyl) strontium, bis (9-α-naphthyl xanthenyl)strontium, bis [9-(2-methoxyphenyl) xanthenyl] strontium, dixanthenyl barium, bis (9-phenyl xanthenyl) barium, bis (9-α-naphthyl xanthenyl) barium and bis [9-(2-methoxyphenyl) xanthenyl-α] barium.

3,966,639
AMPHORA AGGREGATES

James L. Callahan, Bedford Heights; Arthur F. Miller, and Wilfrid G. Shaw, both of Lyndhurst, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 271,387, July 13, 1972, Pat. No. 3,848,033. This application July 22, 1974, Ser. No. 490,429
Int. Cl.² B01J 35/08
U.S. Cl. 252—439 3 Claims

1. An aggregate having a spherical or semispherical shape, a void center and a single cavity in the external surface communicating to the void center prepared by
a. preparing a slurry, the slurry comprising a suspending liquid and distinct particles of a first solid suspended in said liquid;
b. preparing a particle bed consisting of particles of a second solid;
c. forming droplets of the slurry; and
d. dropping the droplets of the slurry into the particle bed in such manner that the total droplet is not immersed in the powder and under conditions where the suspending liquid is at least partially removed from the slurry droplet to form an aggregate of the distinct particles of the first solid.

3,966,640
SUPPORTED COBALT SULFATE DESULFURIZATION CATALYST

Sheldon B. Katz, Cleveland; Frederick J. Burton, Jr., Bay Village, and Leonard A. Cullo, Solon, all of Ohio, assignors to The Harshaw Chemical Company, Cleveland, Ohio

Filed June 28, 1974, Ser. No. 483,982
Int. Cl.² B01J 27/02
U.S. Cl. 252—440 10 Claims

1. A catalyst composition consisting essentially of cobalt sulfate deposited in a finely divided crystalline form as the essential catalytic ingredient on a catalyst support.

3,966,641
SORPTIONAL CARRIER MATERIALS AND A PROCESS FOR THE PREPARATION THEREOF

Kálmán Csatar, and István Soha, both of Budapest, Hungary, assignors to Országos Érc- és Ásványbányák, Budapest, Hungary

Filed Feb. 27, 1975, Ser. No. 553,552
Claims priority, application Hungary, Mar. 6, 1974, CA 363
Int. Cl.² B01J 21/08, 29/00, 29/06
U.S. Cl. 252—449 6 Claims

1. A porous carrier rock-based sorptional carrier consisting of at least one porous carrier rock selected from the group which consists of silicic earth, pumices, tuffs, bubble-porous lava rocks, expanded perlite, vermiculite, chalks, other porous biogeneous limes, and porous sand rocks in an amount not exceeding 95% by weight and 5 to 30% by weight of a clay mineral in a particle size of about 0.1 to 1μ and selected from the group which consists of montmorillonite, illite, kaolinite, and co-minerals thereof provided that montmorillonite is present in an amount of at least 5% by weight, having a multiple sorptional pore space, possessing a sorption capacity of at least 50%, and being quasi-spherical in shape.

3,966,642
HYDROCARBON CONVERSION CATALYST

Edgar R. Black, Aspinwall; Angelo A. Montagna, Monroeville, and Harold E. Swift, Gibsonia, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 441,059, Feb. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 291,263, Sept. 22, 1972, abandoned. This application Apr. 18, 1974, Ser. No. 461,907

Int. Cl.² B01J *29/06*

U.S. Cl. 252—455 R **11 Claims**

1. A hydrocarbon conversion catalyst comprising:

a laminar 2:1 layer-lattice aluminosilicate mineral possessing layer-lattice unit cells, each cell having an inherent negative charge balanced by cations exterior to said unit cell; and

a hydrogenation component;

said mineral corresponding to the following overall formula prior to drying and calcining:

$$[(Al_{1-re}{}^{3+}\ Y_{3w}{}^{2+})^{IV}\ (Q_{8-x}{}^{4+}\ Al_x{}^{3+})^{IV}\ O_{20}\ (OH)_{4-f}F_f]\{dC^y\}$$

where

Al is aluminum;

Y is selected from the class consisting of nickel, cobalt and mixtures thereof;

Q is at least 0.95 mol fraction silicon ions, the remainder consisting of tetravalent ions having an ionic radius not to exceed 0.65 A; and

F is fluorine;

C is at least one charge-balancing cation: and where e has a numerical value from 2 to 3 inclusive;

w has a numerical value from 0.01 to 2 inclusive, with the proviso that the quantity ew have a numerical value from 0.02 to 4 inclusive:

f has a value of 4 or less;

x has a numerical value from 0.05 to 2.0 inclusive;

y is the valence of the cation C;

d is the number of cations C where the product $dy = x + 3(e-2)w$;

and wherein said first bracket represents said layer-lattice unit cell formation and said second bracket represents said charge-balancing cations.

3,966,643
RARE EARTH TRANSITION METAL EXCHANGED FAUJASITES AND CATALYSTS PREPARED THEREFROM

Julius Scherzer, and Philip K. Maher, both of Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 232,309, March 6, 1972, abandoned, which is a continuation of Ser. No. 50,359, June 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 854,305, Aug. 29, 1969, abandoned. This application Feb. 15, 1974, Ser. No. 442,981

Int. Cl.² B01J *29/06*

U.S. Cl. 252—455 Z **7 Claims**

1. A method for preparing the catalytically active faujasite which contains 0.2 to 3% by weight transition metal ions calculated as

$$M_{\frac{2}{n}}O$$

wherein M is a transition metal ion selected from the group consisting of Cr, Fe and mixtures thereof, and *n* is the valence of M, and 2 to 15% by weight rare earth ions calculated as RE_2O_3 which comprises:

a. exchanging sodium faujasite with a mixture of chromium and rare earth ions in aqueous solution, said solution having a pH of 2 to 4 and from about 0.01 to 0.2 moles transition metal ions per liter and from 0.1 to 0.4 RE ions per liter; and

b. calcining said exchanged faujasite at a temperature of 600° to 1500°F.

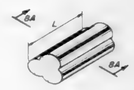
3,966,644
SHAPED CATALYST PARTICLES

William Roy Gustafson, Trumbull, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 385,519, Aug. 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 255,491, May 22, 1972, abandoned. This application Sept. 24, 1974, Ser. No. 508,780

Int. Cl.² B01J *21/12, 29/06*

U.S. Cl. 252—455 R **7 Claims**



1. A porous hydrotreating catalyst particle having a composition comprising a major portion of alumina; up to about 36 weight percent of silica, based on the total weight of silica and alumina; from about 10 to 25 weight percent of molybdenum in the form of its oxide or sulfide; and a total of about 1 to 8 weight percent of a metal selected from cobalt, nickel and mixtures thereof in the form of the corresponding oxide or sulfide, said percentages being based on the total weight of said catalyst particle; said particle being further characterized by a polylobal cross-sectional shape defining a concave geometric solid, said cross-sectional shape being defined by circles, all of said circles in said cross-sectional shape having equal diameters, the centers of said circles being spaced from one another by a distance which is from about ⅜ to about 15/16 of the diameters of said circles and when more than two lobes are present, lines connecting the centers of adjacent circles form a substantially equilateral polygon, each side of said polygon being from ⅜ to 15/16 of the diameters of said circles and all of said cross-sectional shape included by said circles being of said composition; said particle size being defined by a ratio of geometric volume to geometric surface in the range of about 0.001 to 0.042 inch; a catalytic surface area greater than 150 square meters per gram; and a catalytic pore volume in the range of about 0.35 to 0.85 cubic centimeters per gram, said pore volume resulting from a major portion of pores of diameter in the range of 40 to 90 Angstrom units when measured with mercury at up to about 50,000 pounds per square inch absolute pressure and a contact angle of 140°.

3,966,645
CATALYST

James Anthony Cairns, Wantage, and Stanley Frederick Pugh, Abingdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 14, 1975, Ser. No. 550,146

Claims priority, application United Kingdom, Feb. 22, 1974, 8303/74; May 13, 1974, 20988/74

Int. Cl.² B01J *21/04, 23/84, 35/02*

U.S. Cl. 252—465 **20 Claims**

1. A catalyst comprising particles, the exposed area of which supports a substantially homogeneous, sputtered coating of catalytic material, a major proportion of the coating comprising an unagglomerated atomic dispersion, said coated particles being in association with support material compatible with the coated particles, such that the support material and the coated particles are adhered together.

3,966,646
FABRICATING BODIES

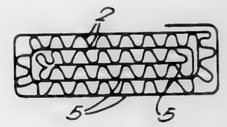
Michael Lesney Noakes, Reading; Wilfred George Caesar, Pangbourne, Nr. Reading; William Henry Holland, Wallingford, and Norman Herbert Hancock, Wantage, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 29, 1974, Ser. No. 519,016

Claims priority, application United Kingdom, Nov. 8, 1973, 51974/73

Int. Cl.² B01J *35/02;* **B21D** *11/06*

U.S. Cl. 252—477 R **28 Claims**



1. A method of manufacturing a body, which method comprises the steps of forming a single elongate strip of material with regions comprising; alternately along the length of the strip, a plain region and a region of protrusions; laying the, or each, plan region onto the, or each, region of protrusions by folding the strip about an axis extending across the strip transverse to the length of the strip; and winding the folded strip onto itself, starting at the axis about which the strip is folded to form a coil which comprises alternate layers of plain and corrugated strip.

3,966,647
PERFUME COMPOSITIONS CONTAINING MONOALKYL-PARA-DIOXANES

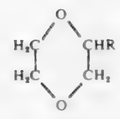
Vincent Lamberti, Upper Saddle River, and Eddie N. Gutierrez, Fort Lee, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 452,222, March 18, 1974, abandoned. This application Apr. 8, 1975, Ser. No. 566,580

Int. Cl.² C11B *7/00*

U.S. Cl. 252—522 **5 Claims**

1. A perfume blend comprising about 10% to about 90% by weight of phenylethyl alcohol, the balance being a compound of the formula



wherein R is a straight-chain hydrocarbon radical having from about 4 to about 22 carbon atoms, and mixtures thereof.

3,966,648
2-ALKYL-OCT-5-EN-2-OLS IN FRAGRANCE COMPOSITIONS

Alfred A. Schleppnik, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 211,789, Dec. 23, 1971, Pat. No. 3,859,366. This application Jan. 9, 1974, Ser. No. 432,012

Int. Cl.² A61K *7/46*

U.S. Cl. 252—522 **2 Claims**

1. A fragrance composition having incorporated therein an odoriferous amount of cis-2-methyl-oct-5-en-2-ol and at least one carrier commonly used in fragrance compositions.

2. A fragrance composition having incorporated therein an odoriferous amount of cis-2-methyl-oct-5-en-2-yl acetate and at least one carrier commonly used in fragrance compositions.

3,966,649
LIQUID DETERGENTS CONTAINING CHELIDAMIC ACIDS AND SALTS THEREOF

Bao-Ding Cheng, Highland Park, N.J., assignor to Colgate-Palmolive Company

Continuation of Ser. No. 293,090, Sept. 28, 1972, abandoned. This application Jan. 16, 1974, Ser. No. 433,649

Int. Cl.² C11D *1/29, 3/28, 3/33, 17/08*

U.S. Cl. 252—542 **1 Claim**

1. A detergent composition consisting essentially of 19 percent by weight of $RO(C_2H_4O)_3SO_3Na$ wherein R is a mixed C_{13-15} normal primary alkyl group, 12 percent by weight of sodium sulfate, 10.3 percent by weight of a condensation product of higher fatty alcohol of 14 to 15 carbon atoms with 11 moles of ethylene oxide, 22 percent by weight of chelidamic acid, 10.3 percent by weight of linear dodecyl benzene sulfonate, 8.6 percent by weight of isopropyl alcohol and the balance water.

3,966,650
POLYETHER URETHANE FOAM

Bela Prokai, Mahopac, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 334,767, Feb. 22, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,861

Int. Cl.² C08K *5/54;* **C08G** *18/14*

U.S. Cl. 260—2.5 AH **27 Claims**

1. A process for producing high resilience polyether urethane foam, said process comprising foaming and reacting a mixture comprising:

I. organic polyol selected from the group consisting of (A) a polyether triol containing at least 40 mole per cent primary hydroxyl groups and having a molecular weight from about 2,000 to about 8,000 and (B) a mixture of said polyether triol and another polyether having an average of at least two hydroxyl groups, said polyether triol of said mixture amounting to at least 40 weight per cent of the total polyol content;

II. organic polyisocyanate, said organic polyol and said polyisocyanate being present in the mixture in a major amount and in the relative amount required to produce the urethane;

III. blowing agent in a minor amount sufficient to foam the reaction mixture;

IV. a catalytic amount of catalyst for the production of the urethane; and

V. a cyanoalkoxy-alkyl modified siloxane fluid having the average formula

$$(X)_zR_{3-z}SiO(R_2SiO)_x[(X)(R)SiO]_ySiR_{3-z}X_z$$

wherein x has a value of 2 to 6 inclusive; y has a value of 0 to 6 inclusive; z has a value of 0 to 1 inclusive; R is a lower alkyl or phenyl radical; and X is a cyanoalkoxy-alkyl radical having the formula $-(O)_nR'OR''CN$ where n has a value of 0 or 1, R′ is an alkylene radical having from 3 to 8 carbon atoms and R″ is an alkylene radical having from 2 to 4 carbon atoms said siloxane containing at least one of said cyanoalkoxy-alkyl radicals and having an average molecular weight in the range of about 400 to about 2000, in an amount sufficient to stabilize the foam against voids and shrinkage.

3,966,651

PROCESS FOR THE PRODUCTION OF FINE-CELL POLYOLEFIN FOAMS

Frank Gerald Kleiner, Cologne, and Karl Heinz Müller, Quadrath-Ichendorf, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Oct. 8, 1974, Ser. No. 513,126

Claims priority, application Germany, Oct. 13, 1973, 2351515

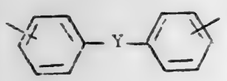
Int. Cl.² C08J *9/06, 9/10*

U.S. Cl. 260—2.5 HA **13 Claims**

1. A process for the production of a fine-celled foam which comprises forming a mixture of a polyolefin, a crosslinking amount of an organic peroxide capable of crosslinking the polyolefin, 2 to 30 percent by weight, based on the weight of the mixture, of a principal blowing agent having a decomposition point or decomposition range above about 190°C. and 0.1 to 1.5 percent by weight, based on the weight of said principal blowing agent, of an auxiliary blowing agent working up said mixture to form a shaped object under conditions that neither crosslinking nor appreciable foaming thereof takes place and subsequently crosslinking and foaming said shaped object by heating it to a temperature above 190°C., said auxiliary blowing agent being a disulfonylhydrazide of the formula

$$H_2NHNO_2S\text{-}X\text{-}SO_2NHNH_2$$

wherein X is an alkyl radical having up to 6 carbon atoms, a cycloalkyl radical having 4 to 7 carbon atoms, an aryl radical having 6 to 12 carbon atoms or an aromatic radical of the formula



wherein Y is O, SO_2, S or a bond or a sulfonylhydrazide of the formula

$$X\text{-}SO_2\text{-}NH\text{-}NHR$$

wherein X is as aforesaid and R is acyl having 3 to 6 carbon atoms or -R′COR″ wherein R′ and R″ are the same or different aliphatic radicals having 1 to 5 carbon atoms.

3,966,652

METHOD OF MAKING FOAMED COPOLYIMIDES AND PRODUCT OBTAINED THEREFROM

John Gagliani, San Diego, and John V. Long, El Cajon, both of Calif., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 11, 1974, Ser. No. 522,765

Int. Cl.² C08J *9/02*

U.S. Cl. 260—2.5 N **7 Claims**

1. A process of making a copolyimide foam which comprises the steps of: dissolving two or more diamines in a mixture of an esterifying agent and one or more esters of a tetracarboxylic acid in an amount such that the imide forming functionalities are substantially equimolar, one of said diamines being heterocyclic and having nitrogen in the ring, another of said diamines being a para- or meta-substituted aromatic diamine which is free of aliphatic moieties, and any additional diamine being either a heterocyclic or an aromatic diamine as aforesaid; adding from 0.1 to 10 parts by weight of a surfactant based on the weight of the ester and diamine constituents; heating the resulting material at a temperature in the range of 150°–250°F until the volatiles content of the material is from one to five percent lower than the theoretical volatiles content of the ester and diamine constituents; and thereafter heating the unfoamed precursor material existing at the end of said step of reducing the volatiles content to a temperature in the range of 220°–325°F to develop a polymeric foam and then to a temperature of 550°–600°F to cure the foam.

3,966,653

CELLULAR MATERIAL

Geoffrey Vincent Dallow Blunt, Cheltenham, and Newton John Hodges, Charlton Kings, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Dec. 1, 1972, Ser. No. 311,318

Claims priority, application United Kingdom, Dec. 20, 1971, 58987/71; Apr. 6, 1972, 15941/72; Sept. 1, 1972, 40545/72

Int. Cl.² C08J *9/00;* **C08L** *63/00, 95/00*

U.S. Cl. 260—2.5 EP **40 Claims**

1. A cellular material consisting of between 5% and 80% of a coal pitch selected from coal tar pitches and coal digests and an epoxy resin, and including at least 25% by volume of cells.

3,966,654

STABLE ROSIN DISPERSIONS

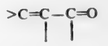
Paul H. Aldrich, Greenville, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 386,135, Aug. 6, 1973, abandoned. This application Aug. 1, 1975, Ser. No. 601,566

Int. Cl.² C08L *93/04*

U.S. Cl. 260—24 **21 Claims**

1. An aqueous fortified rosin dispersion consisting essentially of, by weight, (A) from about 5% to about 50% fortified rosin, (B) from about 0.5% to about 10% of watersoluble cationic resin dispersing agent, and (C) water to 100%, component (B) being selected from the group consisting of (i) a water-soluble polyaminopolyamide-epichlorohydrin resin, (ii) a water-soluble alkylenepolyamine-epichlorohydrin resin and (iii) a water-soluble poly(diallylamine)-epichlorohydrin resin, said fortified rosin being the adduct reaction product of rosin and an acidic compound containing the



group.

3,966,655

MANUFACTURE OF POLYESTER IMIDE DISPERSIONS

Jenoe Kovacs, Bobenheim-Roxheim; Hans Jung, Ludwigshafen; Matthias Marx, Bad Duerkheim; Herbert Spoor, Limburgerhof, and Wilfried Roschke, Frankenthal, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Oct. 10, 1974, Ser. No. 513,834

Claims priority, application Germany, Oct. 11, 1973, 2351077; Oct. 11, 1973, 2351078

Int. Cl.² C08J *3/08, 3/12*

U.S. Cl. 260—29.2 N **12 Claims**

1. A process for the manufacture of an aqueous polyester imide dispersion containing 20 to 60% by weight of said polyester imide in the form of solid particles having a diameter of less than 5 μm, said process comprising the steps of solidifying a composition consisting essentially of a molten polyester imide, comminuting the solid polyester imide in the dry state to particle sizes of about 10 to 100 μm at temperatures of less than 100°C, and thereafter milling the comminuted particles in water at temperatures of less than 80°C to a diameter of less than 5 μm, more than 80% of the particles having a diameter of less than 1 μm.

3,966,656

AQUEOUS ORGANIC BASE SOLUTION OF POLYHYDRAZIDES

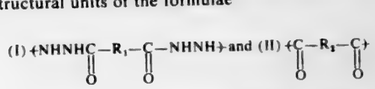
Jon David Hartzler, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 23, 1974, Ser. No. 508,654

Int. Cl.² 264 *184;* **C08L** *79/06*

U.S. Cl. 260—29.2 N **8 Claims**

1. A film and/or fiber forming solution comprising a (co)-polyhydrazide in an aqueous solution of an organic base selected from the group consisting of tetramethylammonium hydroxide, and tetraethylammonium hydroxide, tetrapropylammonium hydroxide, and the (co)polyhydrazide being characterized by substantially equimolar amounts of repeating structural units of the formulae



wherein R_1 and R_2 represent divalent radicals individually selected from the group of organic radicals of 1–12 carbon atoms, 2,5-pyridinediyl radicals, or a chemical bond.

3,966,657

AMBIENT TEMPERATURE COMPENSATED RESIN-HARDENER FILLERS

Kenneth G. Klatt, Brown Deer; Ronald L. Walling, Sussex, and James R. Hallstrom, Brookfield, all of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Feb. 5, 1974, Ser. No. 439,746

Int. Cl.² C08G *51/24*

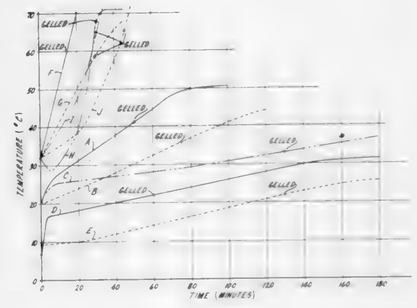
U.S. Cl. 260—29.2 EP **6 Claims**

1. A method of altering the working time of an epoxy filling compound to compensate for ambient temperatures comprising:

forming a stable resin blend including a cross-linkable epoxy resin and water, wherein the epoxy resin contains more than one alpha-epoxy group capable of being converted to thermoset form;

selecting a cross-linking agent for the epoxy resin from the group consisting of water soluble polyamines, water soluble polyamides, water soluble polyamidoamines, water soluble tertiary amines, or mixtures thereof according to the heat change produced by intermixing water with the cross-linking agent, said selection being made so that the heat change produced by intermixing water and said agent counteracts the effect of the ambient temperature on the working time and curing time; thoroughly intermixing said agent with a mixture of cement and sand to afford a hardener blend; and,

intermixing just prior to application to a working area, said resin blend with said hardener blend to obtain a curable compound with a compensated working time and curing time.



3,966,658

LIQUID PHENOL-ALDEHYDE ADHESIVE FOR USE IN CURTAIN-COATING ADHESIVE APPLICATORS

Paul Robitschek, Eugene; Norman Andrew Chappelle, Springfield, and John Wallace Lorimer, Eugene, all of Oreg., assignors to Chembond Corporation, Springfield, Oreg.

Continuation of Ser. No. 295,599, Oct. 6, 1972, abandoned. This application Aug. 26, 1974, Ser. No. 500,366

Int. Cl.² C08L *61/10, 61/14*

U.S. Cl. 260—29.3 **10 Claims**

10. For use in the formulation of a liquid adhesive composition applicable in adhesive applicators of the curtain-coating class, a liquid, alkaline phenol-formaldehyde resinous adhesive containing from about 0.01% to about 5% by weight, based on the weight of the liquid resinous adhesive of a curtain-improving additive of the group consisting of 2,4,7,9-tetramethyl-5-decyne-4,7-diol and the ethylene glycol-, propylene glycol-, and butylene glycol-ethers thereof having from 1 to 10 moles of glycol per mole of diol.

3,966,659

PROCESS FOR THE PERMANENT FINISHING OF FIBER MATERIALS

Josef Oxé, Arlesheim, and Rudolf Keller, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 226,511, Feb. 15, 1972, Pat. No. 3,835,148. This application June 4, 1974, Ser. No. 476,243

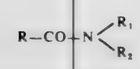
Claims priority, application Switzerland, Feb. 16, 1971, 2248/71

Int. Cl.² C08F *112/08;* **C09K** *3/16*

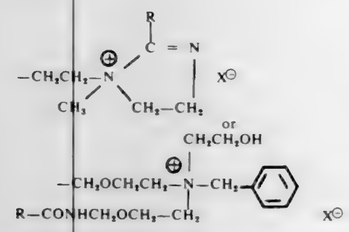
U.S. Cl. 260—29.6 MN **11 Claims**

1. A preparation for use in giving fiber materials a permanent antistatic and dirt-repellent finish, consisting essentially of an aqueous dispersion of

a. 10 to 20% by weight of an antistatic agent comprising a quaternary ammonium compound of the formula



wherein R is alkyl of 8 to 22 carbon atoms, R_1 is hydrogen, and R_2 is



and $X^{\ominus}$ is $CH_3OSO_3^{\ominus}$ or $Cl^{\ominus}$,

b. 3 to 35% by weight of an aqueous non-film-forming dispersion of polystyrene,

c. 1 to 6% by weight of an inorganic or organic monobasic or polybasic acid, and

d. 0 to 5% by weight of an antimicrobic agent.

3,966,660

METHOD FOR PREPARING VINYL FLUORIDE-HEXAFLUORO-PROPYLENE RESIN AND METHOD FOR PRODUCING A COATING THEREFROM

Yorikazu Tamura, and Yasuhisa Shishido, both of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 457,412, April 3, 1974, abandoned, which is a continuation-in-part of Ser. No. 267,920, June 30, 1972, abandoned. This application Oct. 30, 1974, Ser. No. 519,339

Claims priority, application Japan, July 5, 1971, 46-49444

Int. Cl.² C08L *27/20*

U.S. Cl. 260—29.6 F **11 Claims**

1. A method for preparing a vinyl fluoride-hexafluoropropylene copolymer comprising polymerizing 5 to 50 mol % of hexafluoropropylene, 0 to 10 mol % of a monomer selected from the group consisting of vinyl esters of aliphatic carboxylic acids having 1 to 6 carbon atoms or 0 to 1 mol % of a monomer selected from the group consisting of unsaturated aliphatic carboxylic acids having 3 to 6 carbon atoms, lower alkyl esters of acrylic acid having an epoxy group and lower alkyl esters of methacrylic acid containing an epoxy group, and vinyl fluoride in an aqueous suspension in the presence of an organic peroxide initiator, a fluorine-containing surface active agent and a dispersing agent selected from the group consisting of methyl cellulose, gelatine, tragacanth, starch, carboxymethyl cellulose, polyvinyl alcohol, partially saponified polyvinyl alcohol and polyacrylic acid.

3,966,661

PREPARATION OF LATICES

Alan Arthur John Feast, Eastleigh, and Charles Mack Scott, Southampton, both of England, assignors to The International Synthetic Rubber Company, Limited, England

Filed July 31, 1974, Ser. No. 493,612

Claims priority, application United Kingdom, Aug. 3, 1973, 36884/73

Int. Cl.² C08L *9/04, 9/08*

U.S. Cl. 260—29.7 H **20 Claims**

1. A continuous process for the preparation of carboxylated latices comprising:

1. Continuously supplying to a first reactor maintained at a temperature of 70° to 85°C, monomers consisting of at least one conjugated diene, at least one non-carboxylic comonomer which is a vinyl aromatic, an unsaturated nitrile or an ester of an unsaturated carboxylic acid with an alcohol having 1 to 10 carbon atoms and 0.1 to 10% of at least one ethylenically unsaturated carboxylic acid; and reaction ingredients comprising a source of peroxy disulphate ion, 1.0 to 3 parts by weight per hundred parts of monomer of an alkali metal or ammonium alkyl aryl sulphonate emulsifier, an alkali metal or ammonium electrolyte, or the reaction product of such an electrolyte with an ethylenically unsaturated carboxylic acid, and water; and polymerising the monomers for an average residence time of 3 to 5 hours.
2. Continuously removing reaction mixture from the first reactor to at least one subsequent reactor maintained at 85° to 100°C in which polymerisation is continued; and
3. Continuously recovering the carboxylated latex from the last reactor.

3,966,662

SOLID, RAPID-SETTING, RIGID POLYURETHANES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 405,244, Oct. 10, 1973, which is a continuation-in-part of Ser. No. 327,630, Jan. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 221,784, Jan. 28, 1972, abandoned. This application May 1, 1975, Ser. No. 573,714

Int. Cl.² C08K *5/52*

U.S. Cl. 260—30.6 R **16 Claims**

1. A process for producing solid, rigid, polyurethane articles having a density of at least 1 g/cc, a percent elongation of less than 100, and which can be demolded within a period of about 5 minutes without the addition of an external source of heat, which process comprises

1. admixing, in the absence of a catalytic quantity of a catalyst for urethane formation, the components of a composition comprising
   A. an amine initiated polyol having an OH equivalent weight of from about 50 to less than about 250 and from about 3 to about 8 hydroxyl groups;
   B. an organic aromatic polyisocyanate;
   C. a liquid modifier having a boiling point above about 150°C selected from organic phosphates, organic phosphites, organic phosphonates and mixtures thereof;

   wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1 and component (C) is employed in quantities of from about 5% to about 60% by weight of the combined weights of components (A), (B) and (C);
2. placing the admixed composition into a suitable mold wherein said composition solidifies within less than about 5 minutes to a solid having a density of at least 1 g/cc and a percent elongation of less than 100; and
3. subsequently demolding the resultant article from the mold.

3,966,663

FIRE-RETARDANT INSULATION FOR ROCKET MOTORS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 31, 1975, Ser. No. 563,427

Int. Cl.² C08K *5/10*; **F02C** *3/26*

U.S. Cl. 260—31.4 R **4 Claims**

1. The combination comprised of a tetrabromo compound selected from tetrabromophthalic anhydride, tetrabromophthalimide, di(2-ethylhexyl) tetrabromophthalate, N-2-hydroxyethyl-tetrabromophthalimide, diammonium tetrabromophthalate, potassium tetrabromophthalimide, an epoxide of tetrabromophthalic anhydride, and an epoxide of tetrabromophthalimide, with a binder and a curing agent for said binder, said combination being the ingredients for use as an inert rocket motor component of a solid-propelled rocket motor, and being further identified as said inert rocket motor component which serves as either a liner composition for a composite propellant rocket motor or a crosslinked nitrocellulose propellant rocket motor, said liner composition serves to bond the motor wall or wall insulation to the solid propellant grain of said solid-propelled rocket motor, or as an insulation or thermal barrier, said selected compound when in said combination being effective in preventing afterburning of said inert rocket motor component, said liner composition for said composite propellant rocket motor comprised of about 80–85 parts by weight of hydroxy-terminated polybutadiene prepolymer binder with a diisocyanate curing agent, of about 1–4 parts by weight of carbon black additive, of about 4–10 parts by weight of inert fillers, and a curative of about 10 parts by weight of said selected tetrabromo compound; and said liner composition for said crosslinked nitrocellulose propellant rocket motor comprised in parts by weight of a binder of about 49 parts cellulose acetate, of about 31 parts triphenyl phosphate, of about 615 parts acetone, of about 484 parts of an activator 2-methoxy ethanol acetate, of about 2–4 parts of a diisocyanate curing agent, and of about 19 parts of said selected tetrabromo compound.

3,966,664

SOLID, RAPID-SETTING, RIGID POLYURETHANES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 405,244, Oct. 10, 1973, which is a continuation-in-part of Ser. No. 327,630, Jan. 29, 1973, abandoned, which is a continuation-in-part of Ser. No. 221,784, Jan. 28, 1972, abandoned. This application May 1, 1975, Ser. No. 573,718

Int. Cl.² C08K *5/10*

U.S. Cl. 260—31.4 R **12 Claims**

1. A process for producing solid, rigid, polyurethane articles having a density of at least 1 g/cc, a percent elongation of less than 100, and which can be demolded within a period of about 5 minutes without the addition of an external source of heat, which process comprises

1. admixing, in the absence of a catalytic quantity of a catalyst for urethane formation, the components of a composition comprising
   A. an amine initiated polyol having an OH equivalent weight of from about 50 to less than about 250 and from about 3 to about 8 hydroxyl groups.
   B. an organic aromatic polyisocyanate;
   C. a liquid modifier having a boiling point above about 150°C selected from the group consisting of ester-modified polyoxyalkylene compounds having an average hydroxyl equivalent weight above about 700 when such compounds contain 2 hydroxyl groups, an average hydroxyl equivalent weight above about 500 when such compounds contain 3 or more hydroxyl groups and an average molecular weight above about 700 when such compounds contain zero or 1 hydroxy group and mixtures thereof; wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1 and component (C) is employed in quantities of from about 5% to about 60 % by weight of the combined weights of components (A), (B) and (C);
2. placing the admixed composition into a suitable mold wherein said composition solidifies within less than about 5 minutes to a solid having a density of at least 1 g/cc and a percent elongation of less than about 100; and
3. subsequently demolding the resultant article from the mold.

3,966,665

COATING COMPOSITION FOR HARDENING THE SURFACE OF CELLULOSIC PLASTICS AND SHAPED ARTICLES OF CELLULOSIC PLASTICS USING SAID COATING COMPOSITION

Nobuhiro Sakata, Ashiya, and Toshihiro Suzuki, Yokohama, both of Japan, assignors to Nippon Pelnox Corporation and Nippon Sheet Glass Co., Ltd, both of, Japan

Filed Apr. 10, 1974, Ser. No. 459,851

Claims priority, application Japan, Apr. 13, 1973, 48-42421

Int. Cl.² C08G *12/32*

U.S. Cl. 260—32.8 R **5 Claims**

1. A surface hardening coating composition for cellulosic plastics, the hardening ingredient of said composition consisting essentially of a pre-condensation product of:

a. methylolmelamine which contains 3 to 6 methylol groups or 3 to 6 methylol groups at least part of which have been converted to an alkyl-etherified methylol group with the alkyl moiety having 1 to 6 carbon atoms and
b. 0.8 to 1.2 equivalents, per equivalent of said methylolmelamine, of a polyhydric alcohol which is 1,3-propanediol, 1,4-butanediol or 1,8-octanediol, said precondensate having a molecular weight of up to about 100,000.

3,966,666

CONTINUOUS PROCESS FOR PREPARING A SPINNING SOLUTION OF ACRYLIC POLYMERS

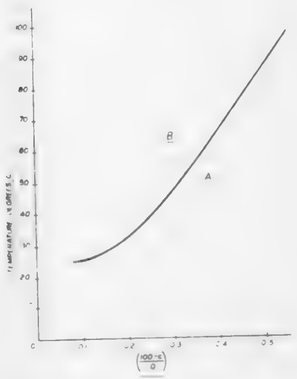
Paolo Melacini, Mestre; Luigi Patron; Giorgio Doria, both of Venice, and Raffaele Tedesco, Mestre, all of Italy, assignors to Montefibre S.p.A., Milan, Italy

Filed June 5, 1974, Ser. No. 476,698

Claims priority, application Italy, June 14, 1973, 50787/73

Int. Cl.² C08K *5/17*; **D01F** *6/18*

U.S. Cl. 260—32.6 N **11 Claims**



1. A continuous method for preparing a spinning solution of acrylic polymers directly from an acrylonitrile polymerization slurry obtained by bulk polymerization, this method comprising,

a. adding to said polymerization slurry a solvent in such quantity as to be insufficient to attack and dissolve the polymer and to result in a polymer/monomer/solvent mixture having a viscosity less than 2 poises;
b. bringing the resulting mixture to a temperature (T) exceeding room temperature and not exceeding 170°C, said temperature (T) being such that there is no appreciable attack of the polymer by the solvent;
c. removing at least 30% of unreacted monomer or monomers by vacuum adiabatic evaporation; and

d. heating the resulting mixture to a temperature not exceeding 170°C, said temperature being such as to result in said solvent attacking and completely dissolving the polymer.

3,966,667

PREPARATION OF NON-AQUEOUS THERMOSETTING ACRYLIC POLYMER DISPERSIONS

Thomas R. Sullivan, Natrona Heights; John W. Du, Natrona; Raymond L. Pelegrinelli, Cheswick, and Suryya K. Das, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 11, 1972, Ser. No. 296,705

Int. Cl.² C08J *3/08*; **C08K** *5/01, 5/02, 5/04*

U.S. Cl. 260—33.6 UA **6 Claims**

1. A method of preparing a nonaqueous polymer composition comprising

a. forming a polymer from reactants comprising

1. about 70 to about 98 percent by weight of ethylenically unsaturated monomers, based on the weight of said reactants, wherein said ethylenically unsaturated monomers comprise

a. from about 4 to about 30 percent by weight hydroxy-containing ethylenically unsaturated monomer, based on the weight of said reactants, and

b. from about 0.5 to about 5 percent by weight ethylenically unsaturated carboxylic acid, based on the weight of said reactants,

2. from about 1 to about 25 percent by weight of a multifunctional dispersion stabilizer, based on the weight of said reactants,

3. from about 0.5 to about 5 percent by weight of an imine-containing compound which will react with said ethylenically unsaturated carboxylic acid, based on the weight of said reactants,

in the presence of a dispersing liquid consisting essentially of liquid aliphatic hydrocarbons having a boiling point in the range of from about 30° to about 300°C. to form a nonaqueous dispersion of polymer and at least 0.5 percent by weight microgel particles, wherein

4. said multifunctional dispersion stabilizer is a branched copolymer containing two polymeric segments of which one segment is solvated by said dispersing liquid and said second segment is

a. an anchor polymer of different polarity to said first segment,

b. relatively nonsolvatable by said dispersion liquid, and

c. contains pendant groups which are copolymerizable with said ethylenically unsaturated monomers, and

(5) said microgel particles

a. being substantially crosslinked,

b. being substantially insoluble in tetrahydrofuran,

c. having substantially the same refractive index as that of said polymer, and

d. being of size in the range of from about 1 to about 40 microns,

and

b. adding active solvent to said nonaqueous dispersion to form a solution of said polymer containing dispersed microgel particles wherein the ratio of said active solvent to said dispersing liquid is in the range of from about 35:65 to about 90:10.

3,966,668

CARBON BLACK DISPERSIONS AND METHOD OF MAKING SAME

Alfred R. Cain, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 447,321, March 1, 1974, abandoned, which is a continuation of Ser. No. 385,525, Aug. 3, 1973, abandoned, which is a continuation of Ser. No. 268,242, July 3, 1972, abandoned. This application Dec. 11, 1974, Ser. No. 531,574

Int. Cl.² C08L *75/06, 75/08*

U.S. Cl. 260—37 N **4 Claims**

1. The process of making a flowable, castable polyurethane rubber precursor containing carbon black by subjecting a mixture of

		% based on the weight of Component (A)
(A)	a flowable, castable polyurethane precursor	100
and		
(B)	a porous carbon black, said porous black having been subjected to heat treatment at high temperatures in an oxygen-containing atmosphere, resulting in a ratio of diameter of the carbon black particles determined by nitrogen absorption to the diameter of the carbon black as determined by microscopic examination of at least 1.2:1	5 – 40

to a vacuum of 20 mm or less of mercury for a duration of one hour or more at a temperature of 30°–200°C to substantially reduce the viscosity thereof, said precursor composition, when cast and cured, resulting in polyurethane products of improved physical properties reflecting a high degree of reinforcement by the carbon black.

3,966,669

POWDER COATINGS HAVING A VARIEGATED, SPECKLED APPEARANCE

Norman Gilbert Wolfe, New Albany, Ind., assignor to Celanese Coatings & Specialties Company, Louisville, Ky.

Filed Sept. 30, 1974, Ser. No. 510,339

Int. Cl.² C09D *5/29*

U.S. Cl. 260—37 EP **7 Claims**

1. a powder coating composition capable of producing a speckled coating after being baked which comprises a physical blend of a finely divided fusible polymeric film forming coating composition and an oil soluble dye wherein the dye is present in the amount of about 0.03 weight percent to about 0.3 weight percent based on the weight of the polymeric film forming coating composition and wherein the dye has a particle size of about 0.01 to about 50 microns.

3,966,670

FRICTION PARTICLE FOR BRAKE LINING

Frank S. Grazen; Melvin L. Buike, and Frank M. Bryzinsky, all of North Tonawanda, N.Y., assignors to Hooker Chemicals & Plastics Corporation, Niagara Falls, N.Y.

Division of Ser. No. 319,109, Dec. 27, 1972, Pat. No. 3,873,490, which is a division of Ser. No. 188,598, Oct. 12, 1971, Pat. No. 3,781,241, which is a division of Ser. No. 872,753, Oct. 30, 1969, Pat. No. 3,658,751. This application Dec. 23, 1974, Ser. No. 535,910

Int. Cl.² C08G *37/18, 51/10*

U.S. Cl. 260—38 **6 Claims**

1. A friction particle consisting essentially of the non-catalyzed product of the reaction at about 225° to about 400° Fahrenheit of about 95 to about 60 percent by weight of a non-hydroxyalkylated, alkylated hydroxy aromatic hydrocarbon aldehyde resole containing substantially no etherified aromatic hydroxyl groups with about 5 to about 40 percent by weight of a hydroxyalkylated hydroxy aromatic hydrocarbon-aldehyde novolac until the product is substantially insoluble in acetone, infusible, and does not soften slightly under mechanical force at a temperature below about 400° Fahrenheit and has substantially no cohesive or bonding strength, wherein the alkylated groups of said alkylated resole are selected from the groups consisting of:

a. alkyl groups of 1 to 60 carbon atoms.

b. cycloalkyl groups of 5 to 12 atoms.

c. alkyl, aryl and cycloalkyl ketonic groups wherein the hydrocarbon portion is as defined in (a) and (b).

d. alkyl, aryl and cycloalkyl carboxylic groups wherein the hydrocarbon portion is as defined in (a) and (b).

e. aryl groups of 6 to 24 carbon atoms, and

f. aryl substituted alkyl wherein the aryl is phenyl, lower alkyl-substituted phenyl or hydroxy substituted phenyl.

3,966,671

POLYESTER COMPOSITION

Clive Percy Smith, Wheathampstead, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 27, 1975, Ser. No. 544,668

Claims priority, application United Kingdom, Feb. 22, 1974, 8150/74

Int. Cl.² C08K *5/09*

U.S. Cl. 260—40 R **10 Claims**

1. A reinforced polyester composition comprising a crystalline thermoplastic linear polyester, 2 to 80 percent by weight of the composition of a reinforcing filler and sufficient of an aliphatic monobasic carboxylic acid or a salt thereof containing 1 to 8 carbon atoms to increase the melt viscosity of the composition under low shear conditions.

3,966,672

PREPARATION OF CARBOXYL-CONTAINING POLYMERS AND COMPOSITES THEREOF WITH HYDROXYL-CONTAINING MATERIALS

Norman G. Gaylord, New Providence, N.J., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 20, 1974, Ser. No. 525,333

Int. Cl.² C08K *3/20, 9/04*; **C08L** *13/00, 23/26*

U.S. Cl. 260—42.14 **18 Claims**

1. A process for preparing a carboxyl-containing polymer which comprises subjecting a mixture of a mono- or diolefin polymer having a number average molecular weight of at least about 10,000 and a thermoplastic copolymer of a carboxyl-containing monomer and a monomer copolymerizable therewith, the molar ratio of carboxylic acid component to copolymerizable monomer being such that there will be at least one carboxyl group present for each molecule of copolymer present in the mixture, said copolymer having a number average molecular weight of about 500 to 5000 and being present at a concentration of about 0.1 to 25%, based on the total weight of mono- or diolefin polymer and carboxyl-containing copolymer, to shearing forces at a temperature above the softening point of both the mono- or diolefin polymer and the carboxyl-containing copolymer.

3,966,673

POLYVINYLCHLORIDE POLYMER INHIBITED AGAINST RELEASE OF HYDROGEN CHLORIDE AT ELEVATED TEMPERATURE

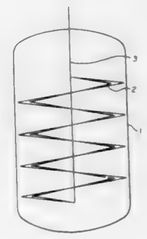
Siegmund Frick, Troisdorf-Oberlar; Wilhelm Gresser, Troisdorf; Gunther Meyer, Troisdorf-Sieglar, and Gerhard Bier, Troisdorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed July 13, 1973, Ser. No. 377,687

Claims priority, application Germany, July 15, 1972, 2234430

Int. Cl.² C08K *3/26, 9/10*

U.S. Cl. 260—42.49 **9 Claims**



1. Process of preparing vinyl chloride polymer inhibited against release of hydrogen chloride at elevated temperature, which comprises producing the polymer by polymerizing vinyl chloride in a reaction medium having calcium carbonate dispersed therein for in situ incorporation of calcium carbonate in the polymer in dispersed condition, the proportion of calcium carbonate being 90–105 percent of the stoichiometric amount which is 50.04 g $CaCO_3$ per 62.5 grams of vinyl chloride in the polymer.

3,966,674

EPOXY RESIN COMPOSITION

Masaaki Takahashi; Akira Ito, both of Tokyo, and Yuriko Igarashi, Mitaka, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1974, Ser. No. 511,308

Claims priority, application Japan, Oct. 9, 1973, 48-112885; Oct. 9, 1973, 48-112886

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.7 R **5 Claims**

1. An epoxy resin composition having stabilized electrical properties comprising 100 parts by weight of an epoxy resin and 5–50 parts by weight propylfluoranthene or propylpyrene.

3,966,675

THERMAL STABILIZERS FOR POLYPROPYLENE

Edward Joseph Schurdak, Somerville, and Christos Savides, Piscataway, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 11, 1974, Ser. No. 522,385

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.8 NT **5 Claims**

1. A stabilizer composition useful in the synergistic enhancement of the resistance of polypropylene to thermal degradation comprising, in combination, pentaerythritol tetrakis(3-n-dodecylthiopropionate) and either bis(4-t-butyl-3-hydroxy-2,6-dimethylbenzyl) dithiolterephthalate or 1,3,5-tris(4-t-butyl-3-hydroxy-2,6-dimethylbenzyl)-s-triazine-2,4,6-(1H,3H,5H)-trione.

2. A composition comprising polypropylene and a stabilizing amount of the stabilizer composition of claim 1.

3,966,676

BIS-(HALOPHENYL) 2,3,5,6-TETRACHLORO-TEREPHTHALATE AND FIRE RETARDANT COMPOSITIONS PREPARED THEREFROM

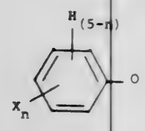
Sidney B. Richter, Chicago, and Glendon D. Kyker, Glen Ellyn, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 18, 1975, Ser. No. 550,332

Int. Cl.² C08J *3/20*; **C07C** *69/82*

U.S. Cl. 260—45.75 B **11 Claims**

1. A compound of the formula



wherein X is chlorine or bromine, and *n* is an integer from 2 to 5.

5. A fire retardant polymeric composition comprising a combustible polymer and a fire retarding amount of the compound of claim **1**.

3,966,677

SELF-EXTINGUISHING POLYSTYRENE RESIN COMPOSITION

Yuzo Sonoyama; Akira Ohi, and Yukio Hozumi, all of Sakai, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Sept. 6, 1974, Ser. No. 503,634

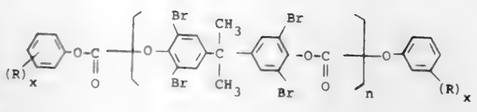
Claims priority, application Japan, Sept. 14, 1973, 48-104191

Int. Cl.² C08J *3/20*

U.S. Cl. 260—45.85 T **7 Claims**

1. A self-extinguishing resin composition which comprises a homogeneous mixture of

1. polystyrene resin, and
2. flame retarding agent in an amount sufficient to impart a self-extinguishing property to the resin composition, said flame retarding agent consisting essentially of
   a. a material selected from the group consisting of tricresyl phosphate, triphenyl phosphate and mixtures thereof, and
   b. a carbonate oligomer of 2,2 —4,4′-dihydroxy-3,3′, 5,5′-tetrabromodiphenyl) propane having the formula:



wherein **R** is hydrogen or alkyl having from 1 to 6 carbon atoms, *x* is an integer of 1 to 5 and n is an integer of 2 to 10;

the molar ratio of ingredient (a) : ingredient (b) being about 1(*n*):1, said resin composition containing from 3 to 25 percent by weight of said flame retarding agent.

3,966,678

MALEIC ANHYDRIDE-POLYALDIMINE PREPOLYMERS

Max Gruffaz, La Mulatiere, and Bernard Rollet, Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 463,249, April 23, 1974, Pat. No. 3,875,087. This application Sept. 30, 1974, Ser. No. 510,727

Claims priority, application France, Apr. 26, 1973, 73.15175

Int. Cl.² C08F *20/08*; **C08G** *69/44*; **C08J** *9/10*

U.S. Cl. 260—47 UA **1 Claim**

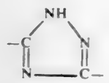
1. A prepolymer obtained by heating maleic anhydride and a polyaldimine of the general formula:

$$A(N=CH-G)_n$$

in which G represents a phenyl, naphthyl, pyridyl, pyrimidinyl, furyl, thienyl, benzo[b]thienyl, indolyl, triazolyl or 3,4-methylenedioxy-phenyl radical or a several said radicals connected to one another directly or via a —O—, —S—, —NH—, —COO—, —CONH—, —SO_2—, —N=N—, —N=N(O)—, —CO— or a linear or branched alkylene or alkenylene group with up to 8 carbon atoms, A represents a phenylene radical, a radical of the formula:



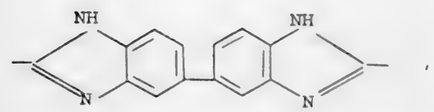
or



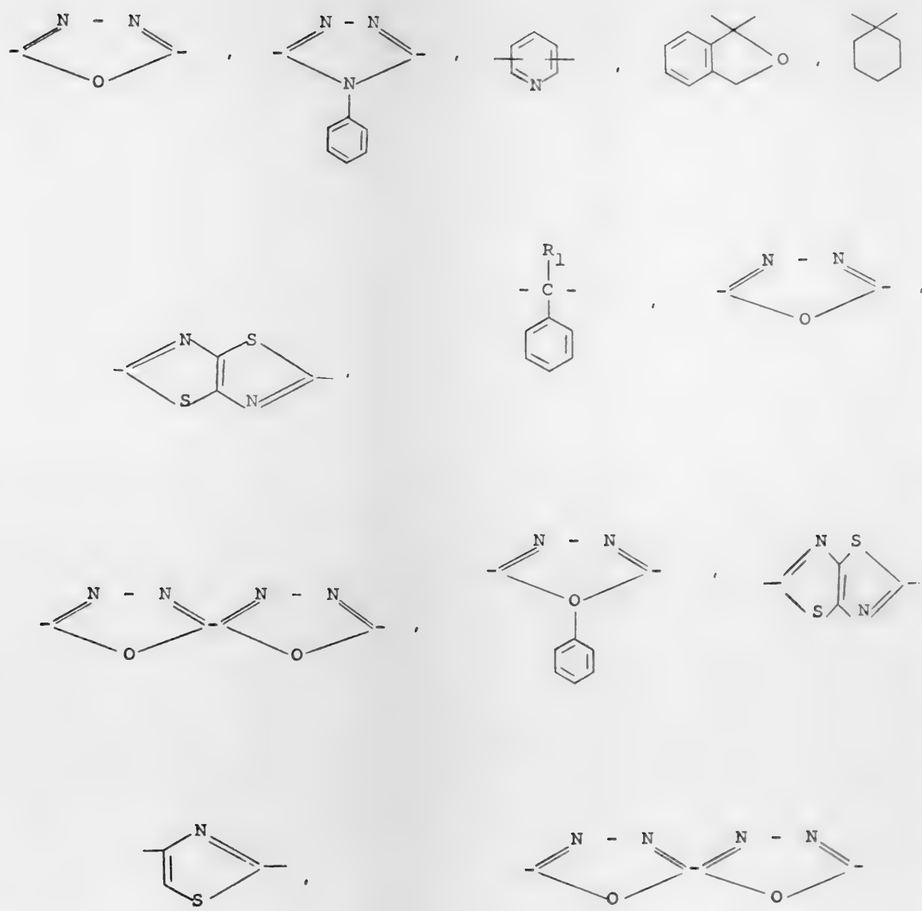
or a divalent radical containing 12 to 30 carbon atoms, consisting of phenylene radicals bonded to one another by a simple valency bond or by —O—, —S—, —SO_2—, —NR_1—, —N=N—, —CONH—, —COO—, —$P(O)R_1$—, —CONH—X—NHCO—, —N=N(→O)—, an alkylene group with 1 to 3 carbon atoms,

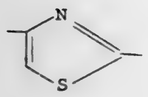


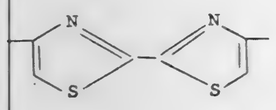
or



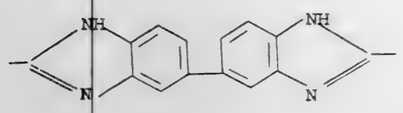
wherein R_1 represents a hydrogen atom, an alkyl radical with 1 to 4 carbon atoms, a phenyl radical or a cyclohexyl radical, and X represents an alkylene radical with less then 13 carbon atoms or a 3 to 5 valent naphthalene, pyridine, triazine or benzene radical or a 3 to 5 valent radical consisting of several benzene nuclei bonded to one another by a —O—, —S—, —SO_2—, —NR_1—, —N=N—, —CONH—, —COO—, —$P(O)R_1$—, —CONH—X—NHCO—, —N=N(→O)—, an alkylene group with 1 to 3 carbon atoms,



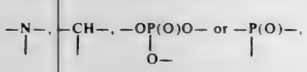




or



wherein R_1 represents a hydrogen atom, an alkyl radical with 1 to 4 carbon atoms, a phenyl radical or a cyclohexyl radical, and X represents an alkylene radical with less than 13 carbon atoms or



and *n* represents a number at least equal to 2, at a temperature from 100° to 200°C.

3,966,679

ABSORBENT ARTICLES AND METHODS FOR THEIR PREPARATION

James R. Gross, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 468,794, May 9, 1974, which is a continuation-in-part of Ser. No. 371,909, June 20, 1973, abandoned. This application May 9, 1975, Ser. No. 575,920

Int. Cl.² B05D *1/00, 3/00, 3/02*

U.S. Cl. 260—47 EA **14 Claims**

1. A method of preparing a substantially dry water swellable particulate polyelectrolyte which comprises the steps of

A. applying a coating on an impervious substrate wherein the coating comprises

1. a solution of a carboxylic synthetic polyelectrolyte wherein the solution comprises water, lower alcohols, or mixtures thereof and about 5 to about 60% by weight of a carboxylic polyelectrolyte, and
2. at least about 0.1% by weight based on the polyelectrolyte of a crosslinking agent reactive with carboxylate groups,

B. heating said coated substrate to a temperature greater than about 30°C. to crosslink said polyelectrolyte to form a film,

C. separating said crosslinked polyelectrolyte film from said substrate, and

D. disintegrating said film to form flakes, strips, or powders thereof.

3,966,680

PHENOXY-S-TRIAZINE CHAIN COUPLER FOR POLYESTERIFICATION AND NOVEL POLYESTERS

Robert L. Wear, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

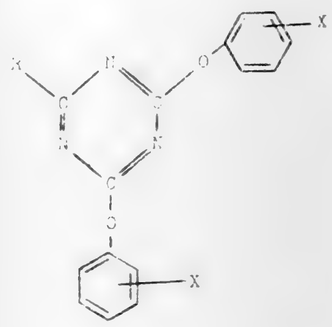
Continuation of Ser. No. 424,351, Dec. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 323,626, Jan. 15, 1973, abandoned. This application May 27, 1975, Ser. No. 580,714

Int. Cl.² C08G *63/66, 63/68*

U.S. Cl. 260—47 C **8 Claims**

1. In the process of forming a polyester by reacting at least one polyol with at least one polycarboxylic compound the improvement which comprises adding to a reaction mixture of the polyol and polycarboxylic compound after polyesterification has begun, 0.67 to 3.68% by weight of a chain-coupling compound of the formula:

,



wherein R is an organic radical which will not render the chain-coupling compound thermally unstable at about 280°C, and

X is an inert substituent or hydrogen.

3,966,681

PROCESS FOR THE PREPARATION OF UNSATURATED POLYURETHANE RESINS

Hiroshi Maeda, Chiba; Nagao Ariga, and Takeo Matuo, both of Ichihara, all of Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 409,381, Oct. 25, 1973, abandoned. This application Jan. 13, 1975, Ser. No. 540,393

Claims priority, application Japan, Oct. 31, 1972, 47-108514

Int. Cl.² C08G *18/42, 18/04, 18/58*

U.S. Cl. 260—75 NH **3 Claims**

1. A process for preparing an unsaturated polyurethane resin containing two or more unsaturated monobasic acid residues selected from the group consisting of acrylic acid and methacrylic acid in its molecular structure which comprises reacting, in the presence of a polymerizable vinyl monomer other than acrylic or methacrylic acid, (A) a diesterified epoxy compound containing at least two hydroxyl groups, said compound obtained by reacting an epoxy compound having two epoxy groups in its molecular structure but not containing a hydroxyl group with unsaturated monobasic acid selected from the group consisting of acrylic acid and methacrylic acid, with (B) a diisocyanate compound in the presence or absence of (C) an oligopolyester glycol containing a saturated or unsaturated dibasic acid group, at the rate of 0.2 to 1.0 mole of the isocyanate group per each mole of said hydroxyl group and adding (D) a monoalkyl ester of an unsaturated dibasic acid in the final reaction product unsaturated polyurethane solution in such amount that the acid value of said solution is at least 5.

3,966,682

POLY(TETRAMETHYLENE DIBRO MOTEREPHTHALATE)

James P. Nelson, Woodridge, Ill., and Alfred Steitz, Jr., deceased, late of Batavia, Ill. (by Margaret Marie Steitz, executrix), assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 263,195, June 15, 1972, abandoned. This application June 14, 1974, Ser. No. 479,473

Int. Cl.² C08G *63/68*

U.S. Cl. 260—75 H **3 Claims**

1. A fire-retardant polyester consisting essentially of a dicarboxylic acid component and 1,4-butanediol component wherein the dicarboxylic acid component comprises from 10 to 100 mole percent 2,5-dibromoterephthalic acid moieties and correspondingly 90 to 0 mole percent terephthalic acid moieties.

3,966,683

PROCESS FOR THE PREPARATION OF COMPOUNDS WHICH CONTAIN HYDANTOIN GROUPS

Rudolf Merten, Leverkusen; Jurgen Lewalter, Cologne, and Wilfried Zecher, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation-in-part of Ser. No. 457,852, April 4, 1974, abandoned. This application Aug. 1, 1974, Ser. No. 493,520

Claims priority, application Germany, Apr. 11, 1973, 2318198

Int. Cl.² C08G *18/24, 18/26, 18/18, 18/34*

U.S. Cl. 260—77.5 AC **13 Claims**

1. A process for the preparation of a hydantoin which comprises reacting at a temperature of 50° to 350°C.

a. at least one compound of the formula

$$R^3(-NCX)_z$$

wherein X is O or S;

z is an integer of from 2 to 3 and R^3 is an optionally substituted aliphatic radical containing 1–20 carbon atoms, an optionally substituted aromatic radical containing 5–12 carbon atoms, a cycloaliphatic radical containing 5–12 carbon atoms, an aliphatic-aromatic radical containing 6–20 carbon atoms or an aromatic or cycloaliphatic heterocyclic radical containing 5–12 ring atoms which contains or is substituted by hetero atoms such as N, O or S, with

b. at least one α-halocarboxylic acid selected from the group consisting of



wherein Hal is halogen; R^4 is an optionally substituted aromatic radical containing 5–10 carbon atoms, an aliphatic radical containing 1–20 carbon atoms, a cycloaliphatic radical containing 5–10 carbon atoms, hydrogen or two radicals R^4 taken together with the carbon atom to which they are attached form a cycloaliphatic ring of 5–7 ring members; R^6 is an aliphatic radical containing 1–10 carbon atoms, a cycloaliphatic radical containing 5–10 carbon atoms, an aliphatic-aromatic radical containing 6–10 carbon atoms or an aromatic radical containing 5–10 carbon atoms and *y* is an integer of from 1 to 3.

3,966,684

CATIONIC WATER SOLUBLE POLYMERIC REACTION PRODUCT OF POLYAMINOPOLYUREYLENE-EPICHLOROHYDRIN AND NITROGEN COMPOUND

Herbert H. Espy, and Stearns T. Putnam, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 334,338, Feb. 21, 1973, abandoned. This application Sept. 27, 1974, Ser. No. 509,869

Int. Cl.² C08G *71/04*

U.S. Cl. 260—77.5 C **9 Claims**

1. A cationic water soluble resin which is essentially nonthermosetting, said resin consisting essentially of the polymeric reaction product of (1) a water soluble or water dispersible polyaminopolyureylene--epihalohydrin base resin having epoxide moieties said base resin consisting essentially of the reaction product of urea and a polyamine containing at least three amine groups, at least one of which is a tertiary amine, in a mole ratio of the latter to the former of from about 0.7:1 to about 1.5:1 to form a polyaminoureylene containing free amine groups, at least 70% of which are tertiary amine groups, and then reacting, under alkaline conditions, the polyaminoureylene with epihalohydrin in a mole ratio of epihalohydrin to free amine groups in the polyaminoureylene of from about 1.0:1 to about 1.7:1, and (2) a nitrogen compound in an amount at least stoichiometrically equivalent to the epoxide moieties of the base resin, said nitrogen compound having the formula RRR'N wherein R is independently selected from the group consisting of hydrogen and C_1–C_4 alkyl and wherein R' is selected from the group consisting of hydrogen, hydroxyl and C_1–C_4 alkyl, said reaction between (1) and (2) being carried out at a temperature of from about 0°C. to about 150°C. and until substantially all epoxide moieties of the base resin have reacted with the nitrogen compound.

3,966,685

DIFFICULTLY INFLAMMABLE THREADS, FIBERS AND FILMS OF POLYESTERAMIDES AND PROCESS FOR OBTAINING THEM

Pierre Allard, Fontaines-sur-Saone, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed May 22, 1974, Ser. No. 472,155

Claims priority, application France, June 1, 1973, 73.20277; July 24, 1973, 73.27318

Int. Cl.² C08G *69/32*

U.S. Cl. 260—78 R **2 Claims**

1. A difficultly inflammable filament, thread, fiber or film of aromatic carbocyclic copolyester amide polymers having a melting point above 300° C to 450° C consisting essentially of about 40 to 55% of units of the formula

$$-NH-Ar_1-NH- \text{ and}$$

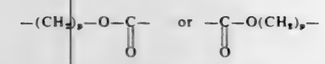
about 60 to 45% of units of the formula

$$-CO-Ar_2-CO-$$

and of the formula

$$-OC-Ar_3-Y_a-(Ar)_b-Y_c-Ar_4-CO-$$

wherein Ar_1, Ar_2, Ar_3, Ar_4, and Ar_5 represent a divalent aromatic carbocyclic radical and Y is



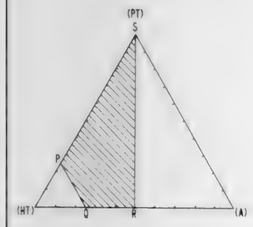
with $p = 1$ or 2, a, b, and c being equal to 0 or 1, at least one of the subscripts a or c being equal to 1, and the proportion of the units $-CO-Ar_2-CO-$ and $-OC-Ar_3-Y_a-(Ar_4-)_b-Y_c-Ar_5-CO-$ being such that there are at least 15 said ester bonds per 100 total amide and ester bonds.

3,966,686

AROMATIC POLYAMIDE-TYPE FILMS

Toshiyuki Asakura; Masaaki Itoga, both of Otsu; Takeshi Hayakawa, Kyoto, and Masamitu Tanimura, Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 24, 1974, Ser. No. 536,256
Claims priority, application Japan, Dec. 28, 1973, 49-1682
Int. Cl.² C08G *69/46*
U.S. Cl. 260—78 A **11 Claims**



1. An aromatic polyamide-type film, substantially consisting of a member of the group consisting of at least one of p-benzamide, p-phenylene terephthalamide and terephthaloyl hydrazide recurring units as essential chain constituents, which constituents comprise at least about 70 mol % of the entire film, and which have an inherent viscosity of more than 1.0 at 25° C, a density of more than 1.41 g/cm³ at 25° C and 0% relative humidity and a planar orientation coefficient of larger than 0.65, obtained by the X-ray pole figure method, said film being substantially free of organic solvent and inorganic ionic compounds, and having been prepared by heating to the polymer crystallization temperatures while preventing free shrinkage in the machine direction and in the transverse direction.

3,966,687

ACRYLIC COPOLYMERS

Alain Ribba, Chateaurenault, France, assignor to Manufacture de Produits Chimiques Protex, Paris, France

Filed Feb. 6, 1974, Ser. No. 440,270
Claims priority, application France, Feb. 16, 1973, 73.05668
Int. Cl.² C08F *220/06, 222/28, 230/02, 230/08*
U.S. Cl. 526—317 **5 Claims**

1. Copolymers obtained by interpolymerization of the following four monomers:

a. at least one alkylacrylate, the alkyl portion of which contains 1 to 8 carbon atoms, at a weight percentage of 25 to 85% of the weight of the mixture of monomers (a) to (d),

b. methacrylic acid, at a weight percentage of 15 to 75% of the weight of the mixture of monomers (a) to (d),

c. a trialkyloxyvinylsilane corresponding to the general formula:

$$CH_2 = CH - Si(OR_1)(OR_2)(OR_3)$$

wherein R_1, R_2, R_3, which are identical or different, are either an alkyl group, linear or branched, or an alkyloxyalkyl group wherein the alkyl portions are defined as above, at a weight percentage of 0.1 to 2% of the weight of the mixture of monomers (a) to (d), and

d. at least one monomer having at least two ethylenic double bonds, which can be copolymerized with monomers (a) to (c), at a weight percentage of 0.01 to 0.5% of the weight of the total monomer mixture.

3,966,688

ARYLENE SULFIDE COPOLYMER PRODUCTION

Robert W. Campbell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 3, 1974, Ser. No. 529,033
Int. Cl.² C08G *75/16*
U.S. Cl. 260—79 **8 Claims**

1. A process for the production of arylene sulfide copolymers consisting of reacting:

a. a mixture of different arylene sulfide polymers in which each arylene sulfide polymer present in said mixture makes up at least 10 weight percent of the total amount of arylene sulfide polymers employed and each polymer has an inherent viscosity, determined at 206°C in 1-chloronaphthalene at a polymer concentration of 0.4g/100 ml solution, greater than 0.005, with

b. at least one organic amide selected from cyclic and acyclic amides having from 1 to 10 carbon atoms per molecule under reaction conditions including an elevated temperature sufficient to produce at least one arylene sulfide copolymer having repeating units characteristic of those of each of the arylene sulfide polymer reactants present in said mixture, and

c. at least one alkali metal sulfide present in an amount within the range of 0 to about 0.1 gram-mole of alkali metal sulfide per gram-atom of sulfur in the total amount of arylene sulfide polymers in said mixture.

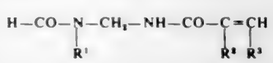
3,966,689

POLYMERS BASED ON N-FORMYL-N'-ACRYLOYL-METHYLENEDIAMINES

Joachim Ribka, Offenbach am Main-Burgel; Friedrich Engelhardt, Frankfurt am Main-Fechenheim, and Steffen Piesch, Oberursel, Taunus, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany

Division of Ser. No. 408,488, Oct. 23, 1973, abandoned. This application Jan. 30, 1975, Ser. No. 545,550
Claims priority, application Germany, Oct. 23, 1972, 2251922
Int. Cl.² C08F *22/38*
U.S. Cl. 526—306 **7 Claims**

1. A linear addition copolymer which is prepared by the process of polymerizing from 0.2 to 50% by weight of a monomer of the formula



wherein R^1, R^2 and R^3 are hydrogen or alkyl having 1 to 5 carbon atoms and at least one copolymerizable olefinically unsaturated monomer, said polymerization being carried out at a temperature between 10° and 80°C. and in the presence of a free radical yielding substance.

3,966,690

MODIFIED HYDROCARBON RESINS

Glenn William Mathews, and Milton Silas Wing, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 357,434, May 4, 1973, abandoned. This application May 23, 1974, Ser. No. 472,568
Int. Cl.² C08F *232/02, 236/04*
U.S. Cl. 526—283 **3 Claims**

1. A thermoplastic tackifying hydrocarbon resin having a softening point in the range from 80° to 110°C. comprising the copolymer of

A. an unsaturated C_5 feedstock which comprises a major amount of piperylene, and minor amounts of cyclopentene, isoprene, and cyclopentadiene wherein the resin comprises from about 85 to about 60 weight percent of said feedstock and wherein greater than 50 weight percent of the resin comprises piperylene moieties and

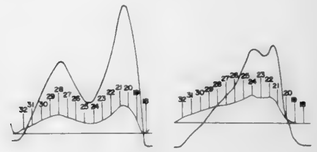
B. diisobutylene wherein the resin comprises from about 15 to about 40 weight percent of said diisobutylene.

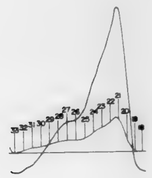
3,966,691

POLYMERIZATION OF CONJUGATED DIENES WITH STARVED LITHIUM, POTASSIUM OR SODIUM CATALYST

Adel Farhan Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 378,763, July 12, 1973, abandoned. This application Feb. 19, 1974, Ser. No. 435,395
Int. Cl.² C08D *1/20, 3/08*
U.S. Cl. 526—78 **5 Claims**





1. The process of producing a cyclized aliphatic polymer of the class consisting of homopolymers of linear conjugated dienes containing 4 to 8 carbon atoms, copolymers of conjugated dienes of 4 to 8 carbon atoms and copolymers of 60 to 75 percent by weight of a conjugated diene and a vinyl aromatic monomer, which process comprises

a. cyclizing such a monomer or mixture of monomers in a monomer-starved solution in an aliphatic hydrocarbon solvent by permitting only a substantial minimum amount of unpolymerized monomer to be present during the polymerization,

b. at a temperature of 0° to 300° F.,

c. in a concentration of 5–80 percent of monomer

d. while feeding the monomer or mixtures of monomers to a polymerization vessel at the rate of substantially 0.5 to 10 pounds per hour,

e. providing for the monomer or monomers a residence time of 0.5 to 20 hours in the reactor,

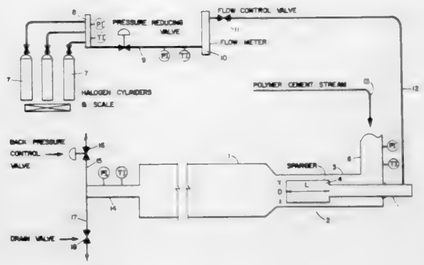
f. using as catalyst, per 100 grams of monomer, 5 to 200 millimoles of metallic lithium, sodium or potassium or an alkyl or aryl derivative thereof in which the alkyl group contains 1 to 8 carbon atoms and the aryl group is phenyl, tolyl or naphthyl together, with 5 to 200 millimoles of tetraalkyl alkylene diamine as co-catalyst.

3,966,692

PROCESS FOR HALOGENATING RUBBER

Richard E. Driscoll, and Hugh E. Milligan, both of Monroe, La., assignors to Cities Service Company, Tulsa, Okla.

Filed June 10, 1974, Ser. No. 477,726
Int. Cl.² C08F *8/22*
U.S. Cl. 526—20 **10 Claims**



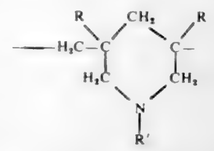
1. In a process for halogenating an elastomer wherein a halogen is incorporated into a solution of the elastomer in an organic solvent and reaction of the halogen with the elastomer occurs while both are dissolved in the solvent, the improvement which comprises mixing a fluid halogen with a continuously flowing stream of the elastomer solution and followed by reaction of said halogen with the elastomer of said stream, the Reynold's number of said stream being below 100 during mixing of the halogen and the reaction thereof with the dissolved elastomer in the stream, and wherein a pressure is maintained on said stream which assures substantially complete disolution of the halogen therein during mixing and reaction while also preventing vaporization of volatile components of said stream during reaction of the halogen with the rubber.

3,966,693
METHOD OF AND APPARATUS FOR CONTINUOUSLY PREPARING A SYRUP OF A MONOMER-POLYMER MIXTURE
Tetsuji Kato, Otake, Japan, assignor to Mitsubishi Rayon Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1974, Ser. No. 434,064
Claims priority, application Japan, Jan. 18, 1973, 48-8161
Int. Cl.² C08F *120/14, 220/14*
U.S. Cl. 526—75 **2 Claims**

1. A method for continuously preparing a syrup/initiator mixture used for manufacture of different kinds of plates by continuously introducing said mixture to a feeding entrance formed by continuously traveling belt spans defining a continuously traveling polymerizing space, said mixture consisting essentially of a major amount of a first supply prepared by partial polymerization of a monomer mixture of at least 80% by weight of methyl methacrylate and not more than 20% of a copolymerization unsaturated monomer selected from the class consisting of monoethylenically unsaturated compounds and polyfunctional compounds, mixed with minor amounts of a second supply, the proportions of said first and second supply being required to differ for the manufacture of the different kinds of plates; said second supply being selected from the class consisting of methyl methacrylate containing said initiator and said monomer mixture containing said initiator said mixture being continuously prepared by said first and second supplies being formed into continuous flows which are continuously intermixed and continuously introduced as said mixture to said feeding entrance, the flow rates of said flows being proportioned as required to provide the prepared mixture for one kind of plate being manufactured and, for changing to the manufacture of a different kind of plate, the flow rates being changed so they are proportioned to provide the mixture for that different kind, without stopping the continuous travel of said belt spans during said changing.

3,966,694
CATIONIC WATER SOLUBLE POLYMERIC REACTION PRODUCT OF POLY(DIALLYLAMINE)-EPIHALOHYDRIN AND NITROGEN COMPOUND
Herbert H. Espy, and Stearns T. Putnam, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.
Division of Ser. No. 334,338, Feb. 21, 1973, abandoned. This application Sept. 27, 1974, Ser. No. 509,868
Int. Cl.² C08F *126/04*
U.S. Cl. 526—11.2 **9 Claims**

1. A cationic water soluble resin which is essentially nonthermosetting, said resin consisting essentially of the polymeric reaction product of (1) a water soluble or water dispersible poly(diallylamine)—epihalohydrin base resin having epoxide moieties and (2) a nitrogen compound in an amount at least stoichiometrically equivalent to the epoxide moieties of the base resin, said nitrogen compound having the formula RRR′N wherein R is independently selected from the group consisting of hydrogen and C_1-C_4 alkyl and wherein R′ is selected from the group consisting of hydrogen, hydroxyl and C_1-C_4 alkyl, said reaction being carried out at a temperature of from about 0°C. to about 150°C. and until substantially all epoxide moieties of the base resin have reacted with the nitrogen compound, said base resin (1) being the reaction product of (A) a linear polymer having units of the formula



where R is hydrogen or lower alkyl, and R′ is hydrogen, alkyl or a substituted alkyl group wherein the substituent is a group which will not interfere with polymerization through a vinyl double bond and is selected from the group consisting of carboxylate, cyano, ether, amino, amide, hydrazide and hydroxyl groups and (B) from about 0.5 to about 1.5 moles of an epihalohydrin per mole of secondary plus tertiary amine present in said polymer, said product being formed at a temperature of from about 30° to about 80°C. and a pH of from about 7 to about 9.5.

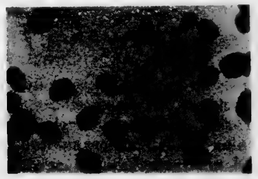
3,966,695
PREVENTION OF WALL DEPOSITS DURING POLYVINYL CHLORIDE POLYMERIZATIONS
Karsten Flatau, and Bernd Terwiesch, both of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany
Filed Feb. 6, 1975, Ser. No. 547,608
Claims priority, application Germany, Feb. 8, 1974, 2405978
Int. Cl.² C08F *2/16, 14/06*
U.S. Cl. 526—62 **14 Claims**

1. In the commercial production of polyvinyl chloride and copolymers wherein vinyl chloride or a mixture of vinyl chloride and one or more vinyl monomers copolymerizable therewith is polymerized in an aqueous phase in a polymerization zone comprising metallic surfaces which are contacted by the vinyl chloride or mixture of monomers, the improvement wherein the metallic surfaces are substantially pure nickel having a purity of at least 99.0%.

3,966,696
PROCESS FOR PRODUCING VINYLCHLORIDE RESIN HAVING A HIGHLY POROUS UNIFORM GRANULAR STRUCTURE
Kunizoh Kidoh; Hidetora Kashio; Toshio Hosokawa, and Kazuo Kusida, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan
Filed Mar. 6, 1975, Ser. No. 555,994
Claims priority, application Japan, Mar. 9, 1974, 49-26768
Int. Cl.² C08F *114/02;* **C08L** *1/28, 5/00*
U.S. Cl. 526—199 **5 Claims**

1. In a process for producing vinyl chloride resin having a highly porous granular structure containing little residual monomer and having a uniformly distributed grain size by suspension polymerization of vinyl chloride or a mixture of vinyl chloride and an ethylenically unsaturated monomer copolymerizable therewith, vinyl chloride being predominant, in an aqueous medium containing a suspending agent in the presence of an oil-soluble polymerization catalyst, the improvement which comprises the use of a suspending agent

comprising a protective colloid and a saccharose ester which is an ester of one mole of saccharose with from 1 to 3 mole of an aliphatic monocarboxylic acid having 8 to 18 carbon atoms, the quantity of the protective colloid being in the range



of from 0.01 to 0.5 percent by weight of said vinyl chloride monomer or said mixture and the quantity of saccharose ester being in the range of from 0.005 to 0.5 percent by weight of said vinyl chloride monomer or said mixture.

3,966,697
PRODUCTION OF HIGH-VINYL GROUP, HIGH-MOLECULAR WEIGHT UNSATURATED HYDROCARBON POLYMERS
Wolfgang Kampf, Haltern, and Karl-Heinz Nordsiek, Marl, both of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany
Filed Dec. 9, 1974, Ser. No. 530,550
Claims priority, application Germany, Oct. 3, 1974, 2447203
Int. Cl.² C08F *4/70, 36/06*
U.S. Cl. 526—93 **13 Claims**

1. In a process for the production of a vinyl-group containing unsaturated hydrocarbon polymer by the polymerization of a conjugated diene in the presence of a solvent, employing as catalyst system consisting essentially of (a) one or both of cobalt octoate and cobalt acetylacetonate, (b) a halogen-containing organoaluminum compound in an amount such that the molar ratio of the cobalt in (a) to the aluminum in (b) is 1:1 to 1:2,000, and (c) an organic phosphorus compound, alone or in combination with (d) an H-acidic compound in a molar ratio to the aluminum in (b) of up to 1.5 : 1, the improvement wherein component (c) is a tris(aryl)phosphite of the general formula



wherein R_1, R_2 and R_3 are monocyclic halogenated aryl or diphenyl, naphthyl, anthracenyl or phenanthryl, or a corresponding diphenyl, naphthyl, anthracenyl or phenanthryl substituted by at least one of halo and alkyl, in a molar ratio of from 0.1 to 50 moles per mole of cobalt compound.

3,966,698
RECOVERY OF TALL OIL SOAPS
Robert V. Gossage, Chicago Ridge, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.
Filed May 2, 1975, Ser. No. 574,077
Int. Cl.² C09F *1/00*
U.S. Cl. 260—97.5 **22 Claims**

1. A method for the separation of tall oil soaps from Kraft black liquor in the manufacture of paper pulp which comprises the steps of:
   A. Treating said Kraft black liquor with an aqueous solution of sodium lignosulfonate containing sodium hydroxide;
   B. Rendering said tall oil soaps insoluble; and
   C. Removing said insoluble tall oil soaps by skimming.

3,966,699
REDUCED BACITRACIN
Mohammed T. Shipchandler, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.
Filed Feb. 7, 1975, Ser. No. 548,124
Int. Cl.² C07C *103/52;* **C07G** *7/00*
U.S. Cl. 260—112.5 R **5 Claims**

1. Reduced bacitracin and pharmaceutically acceptable salts thereof obtained by reacting bacitracin with sodium borohydride at ambient temperatures in a ratio of about 1:1 by weight and for a period of time of from about 0.5 to 1.5 hours.

3,966,700
PROCESS FOR PREPARING SYNTHETIC L-PYROGLUTAMYL-L-HISTIDYL-L-PROLINAMIDE
Gabriele Mattalia, Rome, Italy, assignor to Istituto Farmacologico Serono, S.P.A., Rome, Italy
Filed Sept. 27, 1974, Ser. No. 509,843
Claims priority, application Italy, Oct. 19, 1973, 53232/73
Int. Cl.² C07C *103/52;* **C07G** *7/00*
U.S. Cl. 260—112.5 TR **9 Claims**

1. In a process for preparing highly pure pyroglutamyl-histidyl-prolinamide by synthesis from protected aminoacids, removal of the protecting groups, and final purification of the crude deprotected tripeptide, the improvement which comprises reductively deprotecting the protected tripeptide pyroglutamyl-$N^{(im)}$-benzyl-histidyl-prolinamide by contact thereof with sodium in liquid ammonia, and purifying the crude deprotected tripeptide by gel filtration.

3,966,701
FIBRINOGEN PEPTIDE DERIVATIVES
Linneaus C. Dorman, and Roberta C. Cheng, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 7, 1973, Ser. No. 413,745
Int. Cl.² C07C *103/52;* **C08H** *1/00;* **A61K** *37/00*
U.S. Cl. 260—112.5 R **7 Claims**

1. A C-terminal- or C-terminal- and N-terminal-protected lower peptide of the class of dipeptide and tripeptide salts of a pharmaceutically-acceptable acid wherein the dipeptide moiety is L-prolyl-L-arginine and the tripeptide moiety is glycyl-L-prolyl-L-arginine and a methanolate solvate thereof, wherein the C-terminal protective group is benzyl and the N-terminal protective group is benzyloxycarbonyl or tert.-butyloxycarbonyl.

3,966,702
PROCESS FOR THE PRODUCTION OF OILSEED ISOLATES
Paul L. Carey, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
Continuation-in-part of Ser. No. 379,519, July 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 246,941, April 24, 1972, abandoned. This application Nov. 22, 1974, Ser. No. 526,181
Int. Cl.² A23J *1/14*
U.S. Cl. 260—123.5 **38 Claims**

1. A process for the production of a protein extract from oilseeds which is substantially devoid of impurities comprising:
   a. extracting a ground substantially defatted oilseed material with an alkaline extractant to provide an alkaline protein extract having a pH of at least 8.5; and
   b. passing said alkaline extract through activated carbon to substantially remove impurities from said extract.

3,966,703

ASYMMETRICAL FRISAZO DYESTUFFS DERIVED FROM DIAZOTIZED 2,7-DIAMINO-CARBAZOLE

Wolf-Eckhard Bleck; Horst Nickel, both of Leverkusen, and Karl-Heinz Schundehutte, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

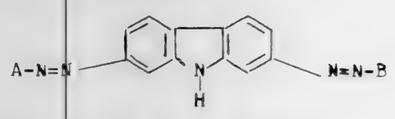
Filed July 20, 1973, Ser. No. 381,167

Claims priority, application Germany, July 21, 1972, 2235815

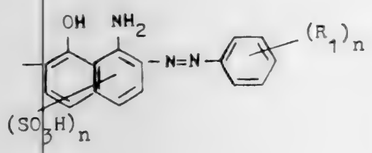
Int. Cl.[2] C09B *35/46*

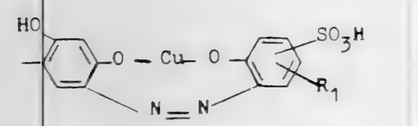
U.S. Cl. 260—146 R **7 Claims**

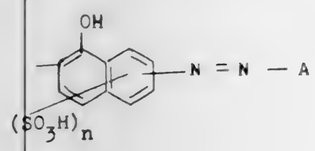
1. Azo dyestuff of the formula

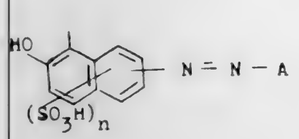


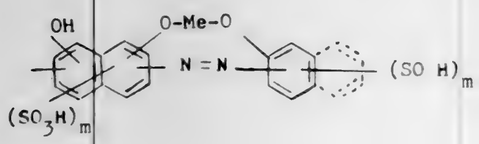
wherein B represents a radical of the formula



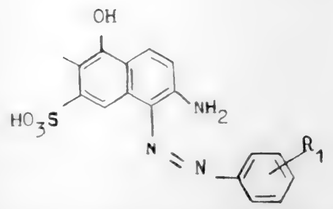








or



A is hydroxyphenyl; hydroxyphenyl substituted by methyl, ethyl, tert.-butyl, cyclohexyl, methoxy, ethoxy, phenyl, chloro, acetylamino, carboxy, methoxycarbonyl, ethoxycarbonyl, hydroxy, sulfo or nitro; anilino; anilino substituted by methyl, ethyl, propyl, butyl, chloroethyl, acetoxyethyl, hydroxyethyl, cyanoethyl, acetylamino, methoxy, ethoxy, chloro, $—NH_2$, nitro, hydroxy, sulfo, carboxymethylamino, hydroxyacetylamino, carboxycarbonylamino or aminocarbonylamino; hydroxynaphthalene; aminonaphthalene; hydroxynaphthalene or aminonaphthalene substituted by hydroxy, methoxy, ethoxy, hydroxyethoxy, methylsulfonylamino, amidosulfonyl, acetylamino, carboxy, amidocarbonyl, anilidocarbonyl, anilidocarbonyl substituted in the aniline nucleus by methyl, chlorine, methoxy or sulfo, sulfo, chloroacetylamino, propionylamino, benzoylamino, animobenzoylamino, chlorobenzoylamino, nitrobenzoylamino, benzenesulfonylamino, toluenesulfonylamino, aminocarbonylamino, phenylaminocarbonylamino, dimethylamino, phenylamino or chloro;

n is 1 or 2;

m is 0, 1 or 2;

R_1 is hydrogen, C_1–C_4-alkyl, nitro, sulfo, chloro, $—NH_2$ or acetylamino;

Me is copper, iron, nickel, cobalt or chromium.

3,966,704

NAPHTHYLAZO NAPHTHYL COPPER COMPLEX DYESTUFFS

Fritz Meininger, Frankfurt am Main; Klaus Hunger, Kelkheim, Taunus, and Hartmut Springer, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

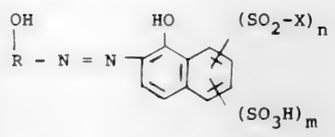
Continuation of Ser. No. 122,243, March 8, 1971, abandoned. This application Oct. 26, 1973, Ser. No. 409,813

Claims priority, application Germany, Mar. 6, 1970, 2010656

Int. Cl.[2] C09B *45/18, 45/32*; **D06P** *3/60*

U.S. Cl. 260—150 **1 Claim**

1. A water-soluble copper complex compound of a monoazo dyestuff which in the metal-free form and in form of the free acid corresponds to the formula



wherein

X is vinyl or $— CH_2—CH_2—Z$

in which Z is chlorine, bromine, methylsulfonyloxy, p-toluenesulfonyloxy, acetoxy, 3-sulfobenzoyloxy, phenoxy, dimethylamino, diethylamino, thiosulfato, phosphato or sulfato, *m* is 0 or 1, *n* is 1 or 2, the sum of $(m + n)$ is 1 or 2, and

in which HO—R is naphthol or naphthol substituted by chloro, methyl, methoxy, ethoxy, amino, acetylamino, benzoylamino, chloroacetylamino, 3-(β-chloroethylsulfonyl)-benzoylamino, N-phenylsulfonyl-N-methyl-amino, hydroxy, sulfo or $—SO_2—X$ wherein X is defined as above.

3,966,705

DISULFO NAPHTHALENE CONTAINING FIBER-REACTIVE TETRAZO DYES

Fritz Oesterlein, Basel, and Henri Riat, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

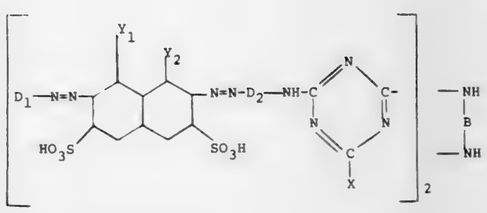
Filed Dec. 12, 1974, Ser. No. 532,420

Claims priority, application Switzerland, Jan. 4, 1974, 61/74; Oct. 22, 1974, 14103/74

Int. Cl.[2] C09B *43/12, 43/16*

U.S. Cl. 260—153 **3 Claims**

1. A fibre-reactive tetraxo dye of the formula

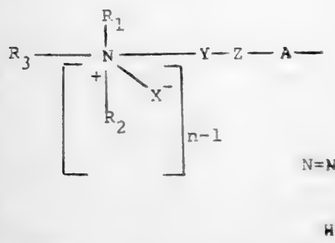


wherein each of D_1 and D_2 represents mono- or di-sulfophenyl which is further unsubstituted or substituted by methyl, chloro, nitro or methoxy;

one of Y_1 and Y_2 represents HO- and the other represent H_2N;

X represents halo; and

B represents phenylene which is unsubstituted or substituted by chloro, methyl, ethyl, methoxy or ethoxy.



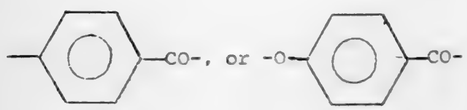
in which

A is unsubstituted or substituted phenylene, biphenylene or naphthylene which, when substituted, is substituted by one or more of halogen, alkyl, or alkoxy, or is mono-substituted by nitro, sulphonamide, phenyl, phenoxy, phenylazo, halogen alkyl, alkylsulphonyl, N-alkyl sulphonamide or carbalkoxy where in each case the alkyl radical contains at most 4 carbon atoms,

Z is a direct bond, —O—, —S—, —NR′—, —CO—, —OCO—, —NR′CO—, —NR′SO_2—, $—SO_2—$,



$—COOC_2H_4—O—$



where

R′ is hydrogen or lower alkyl,

Y is C_1–C_6 alkylene, C_1–C_6 alkylene interrupted by —S—, —O—, or —NH—, or with N, R_1 and R_3 or with N and R_2 forms benztriazolyl, benzimidazolyl, triazolyl or pyridyl,

R_1 and R_2 each is hydrogen, alkyl of 1 to 4 carbon atoms, phenyl, benzyl or cyclohexyl,

R_3 is hydrogen, alkyl of 1 to 4 carbon atoms, benzyl, cyclohexyl, alkoxy of 1 to 4 carbon atoms or amino,

or where one or more of R_1, R_2 and R_3 together with N forms pyridyl, piperidyl, quinolyl, morpholinyl, pyrrolidyl or cyclohexylamine,

X^- is an anion and

n is 1 or 2.

3,966,706

2,6-DIHYDROXY-3-CYANO-4-METHYLPYRIDINE CONTAINING AZO DYES WHICH CONTAIN A FUNCTIONAL AMINO GROUP

Visvanathan Ramanathan, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 110,240, Jan. 27, 1971, which is a continuation of Ser. No. 827,960, May 26, 1969, abandoned. This application Sept. 7, 1973, Ser. No. 395,304

Int. Cl.[2] C07B *29/36*

U.S. Cl. 260—156 **19 Claims**

1. A basic azo dyestuff of the formula

3,966,707

PROCESS FOR PREPARING DOUBLE STRANDED RNA

Ernst Boris Chain, London; Kenneth William Buck, Crawley Down; Joan Elizabeth Darbyshire, London; Geoffrey Talbot Banks, Billingshurst; Fred Himmelweit, and Giulio Ratti, both of London, all of England, assignors to Beecham Group Limited, United Kingdom

Continuation of Ser. No. 202,635, Nov. 26, 1971, abandoned, which is a division of Ser. No. 124,496, March 15, 1971, abandoned. This application Aug. 2, 1974, Ser. No. 494,334

Int. Cl.[2] C07C *21/02*

U.S. Cl. 260—211.5 R **6 Claims**

1. A process for the production of double-stranded ribonucleic acid or the sodium salt thereof which comprises deproteinizing virus particles extracted from *Aspergillus foetidus* or *Aspergillus niger* and recovering the double-stranded ribonucleic acid or sodium salt thereof obtained.

3,966,708

AMINATED SULFITE DERIVATIVES OF CONIFEROUS BARKS

Ronald Leroy Casebier, and Karl David Sears, both of Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 3, 1972, Ser. No. 268,595

Int. Cl.² C07G *17/00*

U.S. Cl. 260—236.5 **9 Claims**

1. An aminated sulfite derivative of coniferous tree bark containing from about 8 – 11 percent nitrogen prepared by heating an aqueous solution containing coniferous bark, ammonia and sulfur dioxide at a temperature of from about 130°–190°C, the ammonia:bark ratio being from about 0.5:1 – 0.9:1 and the SO_2:bark ratio being about 0.3:1 – 0.35:1 both on a weight basis, and separating the resulting aqueous bark derivative from the reaction mass.

3,966,709

PENICILLINS AND CEPHALOSPORINS AND THEIR PRODUCTION

Hans-Bodo König; Karl Georg Metzger, and Wilfried Schröck, all of Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Germany

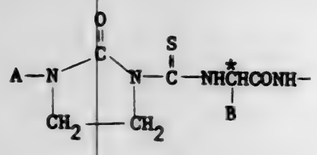
Filed Oct. 25, 1974, Ser. No. 518,178

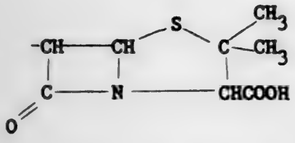
Claims priority, application Germany, Oct. 30, 1973, 2354219

Int. Cl.² C07D *499/68*, *499/70*

U.S. Cl. 260—239.1 **12 Claims**

1. A compound selected from the group consisting of a penicillin of the formula:





and the pharmaceutically acceptable acid addition salts thereof wherein

the carbon atom designated C constitutes a center of chirality;

A is hydrogen or alkyl of 1 to 4 carbon atoms; and

B is phenyl, methylphenyl, chlorophenyl, hydroxyphenyl or cyclohexa-1,4-dien-1-yl.

3,966,710

AMINOMETHYLARYLMETHYLPENICILLIN DERIVATIVES

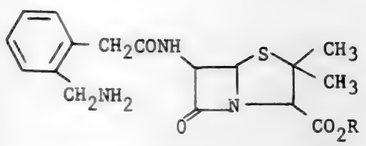
James W. McFarland, Lyme, and Colin Thomson, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 12, 1974, Ser. No. 523,024

Int. Cl.² C07D *499/68*

U.S. Cl. 260—239.1 **7 Claims**

1. A compound selected from the group consisting of:



and the pharmaceutically acceptable salts thereof wherein R is selected from the group consisting of hydrogen, 1-(alkanoyloxy) alkyl, said alkanoyl having 2 to 8 carbon atoms and said alkyl having from 1 to 3 carbon atoms, and phthalidyl.

3,966,711

4-ALKYL-1,4-DIAZA-5-OXO-CYCLOHEPTANES AND THEIR 1-OXYLS

Michael Rasberger, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

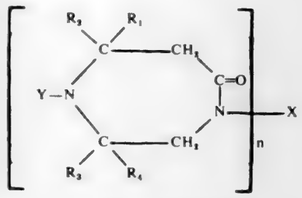
Filed June 5, 1974, Ser. No. 476,366

Claims priority, application Switzerland, June 22, 1973, 9186/73

Int. Cl.² C07D *243/06*

U.S. Cl. 260—239.3 R **9 Claims**

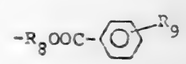
1. A compound of the Formula



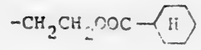
(I)

wherein R_1, R_2, R_3 and R_4 independently of one another are alkyl of 1 to 18 carbon atoms or R_1 and R_2 and/or R_3 and R_4 together with the carbon atom to which they are bonded form a cyclopentyl, cyclohexyl or cyclooctyl ring, Y is hydrogen or the oxyl radical 0°, *n* is an integer from 1 to 4; and

X, if *n* is 1, is alkyl of 1 to 20 carbon atoms; or an alkyl and/or alkylene containing substituent selected from hydroxyalkyl of 1 to 3 carbon atoms; $-CH_2COOH$; $-CH_2COOR_5$ where R_5 is alkyl of 1 to 18 carbon atoms; $-R_6OOCR_7$ where R_6 is alkylene of 2 or 3 carbon atoms and R_7 is alkyl of 1 to 17 carbon atoms;

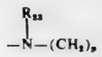


wherein R_8 is alkylene of 2 or 3 carbon atoms and R_9 is tert.C_4H_9;



$-R_{10}NHCOR_{11}$ where R_{10} is alkylene of 2 or 3 carbon atoms and R_{11} is alkyl of 1 to 17 carbon atoms; $-CH_2CONH_2$; $-CH_2CH_2CONH_2$; $-R_{12}CONHR_{13}$ where R_{12} is alkylene of 1 or 2 carbon atoms and R_{13} is alkyl of 1 to 12 carbon atoms; $-CH_2CH_2CONHC_6H_5$; $-CH_2CON(CH_3)_2$; $-CH_2CN$ or $-CH_2CH_2CN$; $-R_{14}OR_{15}$ where R_{14} is alkylene of 1 or 2 carbon atoms and R_{15} is alkyl of 4 to 8 carbon atoms; $-R_{16}SR_{17}$ where R_{16} is alkylene of 2 or 3 carbon atoms and R_{17} is octyl or phenyl; $-CH_2CH_2SOR_{18}$ where R_{18} is octyl; $-CH_2CH_2CH_2SO_2R_{19}$ where R_{19} is dodecyl; $-R_{20}N(R_{21})$ 2 where R_{20} is alkylene of 2 or 3 carbon atoms and R_{21} is independently H or alkyl of 1 or 2 carbon atoms; and $-CH_2CH_2NHCH_2CH_2CN$; alkenyl with 3 to 18 carbon atoms; propargyl; benzyl; phenylethyl; phenylpropyl; 3,5-di-tert-butyl-4-hydroxy-benzyl; 4-propionoxybenzyl; or 4-ethoxycarbonylbenzyl;

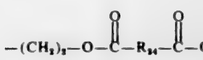
X, if *n* is 2, is alkylene of 1 to 18 carbon atoms; $-(CH_2)_2-O-(CH_2)_2-$; $-(CH_2)_2-S-(CH_2)_2-$; $-CH_2CH_2S-R_{22}-SCH_2CH_2-$ where R_{22} is alkylene of 2 to 12 carbon atoms; $-(CH_2)_p$



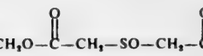
where *p* is 2 or 3 and R_{23} is H, CH_3, C_2H_5 or CH_2CH_2CN;



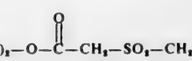
where *p* is an integer from 1 to 3 and *q* is an integer from 2 to 12;

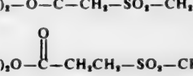


where R_{24} is butylene; $-CH_2-O-CH_2-$, $-CH_2-S-CH_2-$ or $-(CH_2)_2S(CH_2)_2-$; $-(CH_2)_pCONH(CH_2)_qNHCO-(CH_2)_p-$ where *p* is an integer from 1 to 3 and *q* is an integer from 2 to 12; $-(CH_2)_2-SO-(CH_2)_2-$; $-CH_2CH_2-SO-(CH_2)_2-SO-CH_2CH_2-$ where *q* is an integer from 2 to 12;



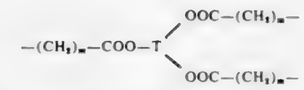
$-CH_2CH_2SO_2-CH_2-CH_2-$; $-CH_2CH_2-SO_2-(CH_2)_6-SO_2-CH_2CH_2-$;





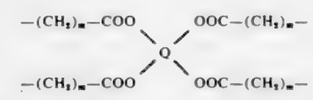
alkenylene or alkinylene with 4 to 6 carbon atoms; 1,2-bis-(methylene)-benzene; 1,3-bis-(methylene)-benzene; 1,4-bis-(methylene)-benzene; 1,2-bis-(ethylene) -benzene; 1,3-bis,(ethylene)-benzene; 1,4-bis-(ethylene)-benzene; or 4,4′-bis-(methylene)-diphenyl;

X, if *n* is 3, is the group



in which *m* is a number from 1 to 2 and T is a saturated trivalent aliphatic hydrocarbon radical with 3 to 7 carbon atoms;

X, if *n* is 4, is



in which *m* is a number from 1 to 2 and Q is a saturated tetravalent aliphatic hydrocarbon radical with 4 or 5 carbon atoms; and its salts with carboxylic acids or organophosphorus acids with 1 to 20 carbon atoms, phosphoric acid, hydrochloric acid, phosphorous acid or carbonic acid.

3,966,712

PROCESS FOR THE PURIFICATION OF CAPROLACTAM

Otto Immel, and Hans-Helmut Schwarz, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 361,465, May 18, 1973, abandoned. This application Oct. 31, 1974, Ser. No. 519,687

Claims priority, application Germany, May 19, 1972, 2224505

Int. Cl.² C07D *201/16*

U.S. Cl. 260—239.3 A **3 Claims**

1. A process for purification of caprolactam comprising the steps of crystallization followed by distillation wherein said caprolactam has been obtained by catalytic rearrangement in the gaseous phase and contains as main impurities a member of the group consisting of cyclohexanone oxime, cyclohexanone, cyclohexanol, various hexenic acid nitriles and cracking products and said crystallisation takes place from dimethyl formamide, tetrahydrofuran, 1,4-dioxane, propanol, butanol, amylalcohol or from a mixture of these solvents.

3,966,713

11 β-FLUOROANDROSTENES

Helmut Hofmeister; Henry Laurent; Rudolf Wiechert; Klaus Annen, and Hermann Steinbeck, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

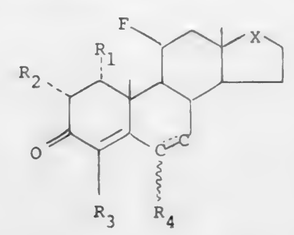
Filed Feb. 25, 1975, Ser. No. 552,958

Claims priority, application Germany, Mar. 1, 1974, 2410443

Int. Cl.² C07C *3/00*

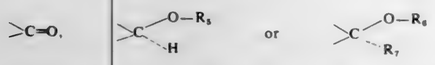
U.S. Cl. 260—239.55 R **38 Claims**

1. A 11β-fluoroandrostene of the formula



wherein R_1 and R_2 each are a hydrogen atom or collectively are methylene or a further carbon-to-carbon bond between

the C-1 and C-2 carbon atoms; R_3 is a hydrogen atom or a chlorine atom, R_4 is a hydrogen atom, a fluorine atom or a chlorine atom, C C is a single or double bond between the C-6 and C-7 carbon atoms, and X is



wherein R_5 is a hydrogen atom, the acyl radical of a hydrocarbon carboxylic acid of 1–18 carbon atoms, alkyl of 1–4 carbon atoms, or tetrahydropyranyl; R_6 is a hydrogen atom or the acyl radical of a hydrocarbon carboxylic acid of 1–18 carbon atoms, and R_7 is alkyl, alkenyl or alkynyl of 1–5 carbon atoms, butadiynyl or chloroethynyl.

3,966,714

PROCESS FOR THE PREPARATION OF A Δ^4-3-KETO STEROID 17-PROPIOLACTONE

Rainer Philippson, Bergkamen, Germany, assignor to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Filed May 23, 1974, Ser. No. 472,739

Claims priority, application Germany, May 25, 1973, 2327448

Int. Cl.² C07J *19/00, 1/00*

U.S. Cl. 260—239.57 **10 Claims**

1. A process for the production of 3(17β-hydroxy-4-androsten-3-on-17α-yl)-propiolactone, which comprises the steps of

a. reacting 4-androstene-3,17dione, 1,4-androstadiene-3,17-dione, or a mixture thereof, with propargyl alcohol in the presence of an alkali alcoholate of a tertiary alcohol;

b. selectively hydrogenating the thus-produced 17α-(3-hydroxypropinyl)-17β-hydroxy-3-ketoandrost-4-ene, androsta-1,4-diene, or mixture thereof, respectively, with hydrogen in the presence as catalyst of a complex of a halide of a metal of subgroup VIII of the periodic table with triphenyl phosphine or titanium chloride; and

c. oxidizing the thus-produced 17α-(3-hydroxy-propyl)-17-hydroxy-3-ketoandrost-4ene with chromic acid.

8. A process according to claim **7** wherein the compound which is hydrogenated is 17α-(3-hydroxypropinyl)-17β-hydroxy-4-androstene-3-one.

3,966,715

HERBICIDAL AGENTS

Kurt Westphal, Wuppertal-Vohwinkel; Werner Meiser, Wuppertal-Elberfeld; Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

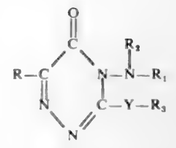
Continuation of Ser. No. 120,713, March 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 6,647, Jan. 28, 1970, Pat. No. 3,671,523, which is a continuation-in-part of Ser. No. 630,225, April 12, 1967. This application Nov. 25, 1974, Ser. No. 526,663

Claims priority, application Germany, Apr. 16, 1966, 48954451

Int. Cl.² C07D *251/10*

U.S. Cl. 260—240 A **11 Claims**

1. Substituted 1,2,4-triazine-5-one having the formula



in which Y is selected from the group consisting of O and S, and (a′) when Y is O,

R is selected from the group consisting of alkyl having 1–6 carbon atoms, alkenyl having 2–6 carbon atoms, alkynyl having 2–6 carbon atoms, cycloalkyl having 5–6 ring carbon atoms, phenyl alkyl having 1–4 carbon atoms in the alkyl moiety, phenylalkenyl having 2–4 carbon atoms in the alkenyl moiety, naphthylalkyl having 1–4 carbon atoms in the alkyl moiety, naphthyl alkenyl having 2–4 carbon atoms in the alkenyl moiety, phenyl, naphthyl, furyl, pyridyl, and thienyl, and such alkyl, alkenyl, alkynyl, cycloalkyl, phenylalkyl, phenyalkenyl, naphthylalkyl, naphthylalkenyl, phenyl, naphthyl, furyl, pyridyl and thienyl which is substituted with a substituent selected from the group consisting of chloro, bromo, fluoro, iodo, nitro, carboalkoxy having 1–4 carbon atoms, alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, phenyl-alkylmercapto having 1–4 carbon atoms in the alkyl moiety, alkylmercapto having 1–4 carbon atoms, phenylmercapto, naphthylmercapto, phenyloxy, naphthyloxy, and mixtures of such substituents,

R_1 and R_2 taken together represent a member selected from the group consisting of alkylidene having 1–4 carbon atoms and cycloalkylidene having 5–6 ring carbon atoms substituted with a substituent selected from the group consisting of furyl, nitrofuryl and pyridyl, and

R_3 is selected from the group consisting of alkanoyl having 1–4 carbon atoms, hydrogen, alkyl having 1–6 carbon atoms, alkenyl having 2–6 carbon atoms, alkynyl having 2–6 carbon atoms cycloalkyl having 5–6 ring carbon atoms, phenylalkyl having 1–4 carbon atoms in the alkyl moiety, phenylalkenyl having 2–4 carbon atoms in the alkenyl moiety, naphthylalkyl having 1–4 carbon atoms in the alkyl moiety, naphthylalkenyl having 2–4 carbon atoms in the alkenyl moiety, phenyl, naphthyl, and such alkyl, alkenyl, alkynyl, cycloalkyl, phenyl alkyl, phenyalkenyl, naphthylalkyl, naphthylalkenyl, phenyl and naphthyl which is substituted with a substituent selected from the group consisting of chloro, bromo, fluoro, iodo, amino, alkyl amino having 1–4 carbon atoms in the alkyl moiety, dialkyl amino having 1–4 carbon atoms in each alkyl moiety, nitro, alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, phenyloxy, naphthyloxy, and mixtures of such substituents;

b′. when Y is S, and R_1, R_2 and R_3 are the same as defined under (a′) above,

R is selected from the group consisting of alkyl having 2–6 carbon atoms, alkenyl having 2–6 carbon atoms, alkynyl having 2–6 carbon atoms, cycloalkyl having 5–6 ring carbon atoms, phenylalkyl having 1–4 carbon atoms in the alkyl moiety, phenylalkenyl having 2–4 carbon atoms in the alkenyl moiety, naphthylalkyl having 1–4 carbon atoms in the alkyl moiety, naphthylalkenyl having 2–4 carbon atoms in the alkenyl moiety, furyl, pyridyl, and thienyl, and such alkyl, alkenyl, alkynyl, cycloalkyl, phenylalkyl, phenylalkenyl, naphthylalkyl, naphthylalkenyl, furyl, pyridyl, and thienyl as well as phenyl and naphthyl which is substituted with a substituent selected from the group consisting of chloro, bromo, fluoro, iodo, nitro, carboalkoxy having 1–5 carbon atoms, alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, phenylalkylmercapto having 1–4 carbon atoms in the alkyl moiety, alkylmercapto having 1–4 carbon atoms, phenyl mercapto, naphthylmercapto, phenyloxy, naphthyloxy, and mixtures of such substituents;

c′. when Y is S, and R, R_1 and R_2 are the same as defined under (a′) above,

R_3 is selected from the group consisting of alkyl having 2–6 carbon atoms, alkenyl having 2–6 carbon atoms, alkynyl having 2–6 carbon atoms, cycloalkyl having 5–6 ring carbon atoms, phenylalkyl having 1–4 carbon atoms in the alkyl moiety, phenylalkenyl having 2–4 carbon atoms in the alkenyl moiety, naphthylalkyl having 1–4 carbon atoms in the alkyl moiety, naphthylalkenyl having 2–4 carbon atoms in the alkenyl moiety, phenyl, naphthyl, and such alkyl, alkenyl, alkynyl, cycloalkyl, phenylalkyl, phenylalkenyl, naphthylalkyl, naphthylkenyl, phenyl and naphthyl which is substituted with a substituent selected from the group consisting of chloro, bromo, fluoro, iodo, amino, alkylamino having 1–4 carbon atoms in the alkyl moiety, dialkylamino having 1–4 carbon atoms in each alkyl moiety, nitro, alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, phenyloxy, naphthyloxy, and mixtures of such substituents;

d′. when Y is S, and R and R_3 are the same as defined under (a′) above,

R_1 and R_2 taken together represent a member selected from the group consisting of alkylidene having 1–4 carbon atoms, cycloalkylidene having 5–6 ring carbon atoms, phenylalkylidene having 2–4 carbon atoms in the alkylidene moiety and naphthylalkylidene having 2–4 carbon atoms in the alkylidene moiety substituted with a substituent selected from the group consisting of furyl, nitrofuryl and pyridyl.

3,966,716

2H-1,3,2-DIOXABORINO-[5,4-c]-1,2-BENZO-THIAZINE 6,6-DIOXIDES

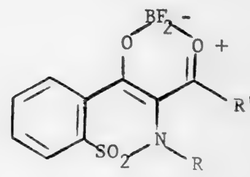
Daniel Kaminsky, Parsippany, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 365,398, May 29, 1973, Pat. No. 3,898,218. This application Mar. 17, 1975, Ser. No. 558,866

Int. Cl.² C07D *279/02*

U.S. Cl. 260—243 R **7 Claims**

1. A compound of the formula II:



II

wherein R represents hydrogen, lower alkyl and lower alkanoyl; R′ represents lower alkyl.

3,966,717

7-β-ACYLAMIDO-3-CARBAMOYLOXYMETHYLCEPH-3-EM-4-CARBOXYLIC ACIDS AND SALTS THEREOF

Martin Christopher Cook; Gordon Ian Gregory, both of Chalfont St. Peter, and Janice Bradshaw, Harrow, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

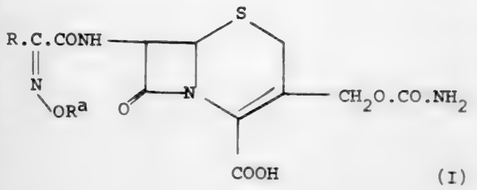
Continuation-in-part of Ser. No. 304,524, Nov. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 252,666, May 12, 1972, abandoned. This application Nov. 8, 1973, Ser. No. 413,970

Claims priority, application United Kingdom, May 14, 1971, 15082/71; Oct. 1, 1971, 45884/71; Aug. 21, 1973, 39645/73

Int. Cl.² C07D *501/20*

U.S. Cl. 260—243 C **1 Claim**

1. A compound selected from the group consisting of a cephalosporin antibiotic of the formula



(I)

wherein R is pyrrolyl; N-methylpyrrolyl; isothiazolyl; thiadiazolyl; oxadiazolyl; 3- or 4-isoxazolyl; 3-phenyl-5-methylisoxazol-4-yl or 3-halophenyl-5-methylisoxazol-4-yl; and R^a is C_{1-4} alkyl, C_{3-7} cycloalkyl or phenyl; and a physiologically acceptable salt thereof, said cephalosporin antibiotic being in the form of a syn isomer free of the corresponding anti isomer to the extent of at least 75%.

3,966,718

7-β-ACYLAMINO-CEPH-3-EMS AND SALTS AND ESTERS THEREFOR

Edward George Brain, Leigh, Nr. Reigate, and Neal Frederick Osborne, West Croydon, both of England, assignors to Beecham Group Limited, Great Britain

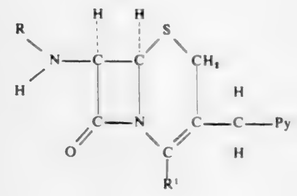
Filed Jan. 17, 1974, Ser. No. 434,137

Claims priority, application United Kingdom, Jan. 18, 1973, 2561/73

Int. Cl.² C07D *501/50, 501/52, 501/54, 501/56*

U.S. Cl. 260—243 C **9 Claims**

1. A 7-β-acylamino-ceph-3-em compound of the formula (II):



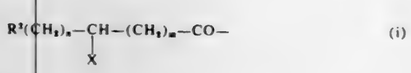
(II)

or a pharmaceutically acceptable acid addition salt thereof, wherein

Py is 2-pyridyl or 3-pyridyl,

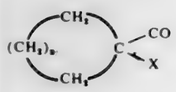
R^1 is COOH, a salt of COOH selected from the sodium, potassium, calcium, magnesium, aluminum, triethylamine, procaine, dibenzylamine, triethanolamine, 1-ephenamine and ethylpiperidine or a hydrolyzable ester which breaks down in the body to the free acid selected from acetoxymethyl, pivaloyloxymethyl, α-acetoxymethyl, α-acetoxybenzyl, α-pivaloyloxyethyl, phthalide, and 3,4 dimethyl phthalide

R is



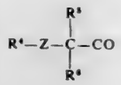
(i)

in which
R^2 is hydrogen, lower alkyl, C_{3-6} cycloalkyl, cyclohexenyl, cyclohexadienyl, phenyl, p-hydroxyphenyl, thienyl, pyridyl, isoxazolyl, 3-O-chlorophenyl-5-methyl-isoxazol-4-yl, sydnonyl or tetrazolyl,
X is hydrogen, hydroxy, halogen, COOH or its phenyl or indanyl ester, azido, amino, ureido, guanidino, triazolyl, tetrazolyl, cyano, formyloxy, lower alkanoyloxy or lower alkoxy; and
n and *m* are each 0, 1, 2 or 3; or



(ii)

in which *n* is 1, 2, 3 or 4 and X is as defined in (i) above, or



(iii)

in which
R^4 is lower alkyl, benzyl, phenyl, C_{3-6} cycloalkyl, cyclohexenyl, cyclohexadienyl, thienyl or pyridyl,
R^5 and R^6 are each hydrogen, lower alkyl, phenyl, benzyl or phenylethyl, and
Z is oxygen or sulphur.

3,966,719

4-(TETRAZOL-5-YL)-Δ³-CEPHEM COMPOUNDS

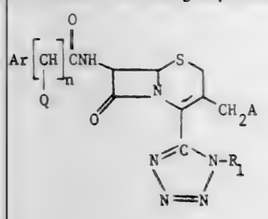
Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 407,097, Oct. 17, 1973, abandoned. This application Sept. 23, 1974, Ser. No. 508,634

Int. Cl.² C07D *501/20*

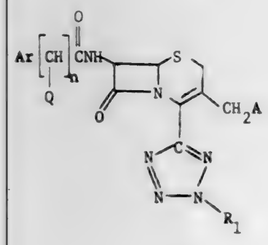
U.S. Cl. 260—243 C **8 Claims**

1. A compound selected from the group consisting of



III

and



IV

and the salts thereof, wherein
Ar is selected from the group consisting of cyano, bromo, phenyl, mono- and disubstituted phenyl wherein each substituent is selected from the group consisting of hydroxy, fluoro, chloro, bromo, amino, methoxy and methyl, 2-methyl-1,3,4-thiadiazol-5-ylthio, phenoxy, phenylthio, thienyl and 1-tetrazolyl and pyridylthio;
Q is selected from the group consisting of hydrogen, hydroxy, azido, amino and carboxy;
n is an integer of 1;
A is selected from the group consisting of hydrogen, acetoxy, 1-methyltetrazol-5-ylthio and 2-methyl-1,3,4-thiadiazol-5-ylthio;
R_1 is selected from the group consisting of hydrogen, alkanoyloxymethyl having from three to six carbon atoms, 1-(alkanoyloxy)ethyl having from four to seven carbon atoms, methoxymethyl, and phthalidyl; provided that when Ar is selected from the group consisting of pyridylthio, phenoxy, phenylthio, 2-methyl-1,3,4-thiadiazol-5-ylthio, bromo, and cyano, Q is selected from the group consisting of hydrogen and carboxy.

3,966,720

PROCESS FOR PRODUCING DESACETOXY CEPHALOSPORANIC ACID COMPOUND

Tatsuo Tomioka, Tokyo; Yasuo Hoshide, Okegawa; Hirosi Ogawa, Ageo, and Kenichi Suzuki, Funabashi, all of Japan, assignors to Nikken Chemicals Co., Ltd., Tokyo, Japan

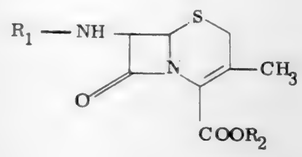
Filed Dec. 10, 1973, Ser. No. 423,187

Claims priority, application Japan, Dec. 9, 1972, 47-123830; Dec. 12, 1972, 47-125958; Dec. 27, 1972, 48-1594; Mar. 9, 1973, 48-27729

Int. Cl.² C07D *501/10*

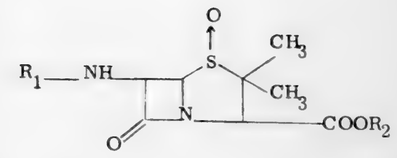
U.S. Cl. 260—243 C **14 Claims**

1. A process for producing a desacetoxy cephalosporanic acid represented by formula (III),



(III)

wherein R_1 is acyl, selected from the group consisting of 2-phenylacetyl, phenoxyacetyl, 2-phenoxybutyryl, 2-carboxy-2-phenylacetyl, 2,6-dimethoxybenzoyl, 2-ethoxy-1-naphthoyl, 2-sulfo-2-phenylacetyl, 2-azido-2-phenylacetyl, 2-thienylacetyl, 2-amino-2-phenylacetyl, and R_2 is alkyl selected from the group consisting of t-butyl and 2,2,2-trichloroethyl or arylalkyl selected from the group consisting of benzyl, p-methoxybenzyl, p-nitrobenzyl, benzhydryl, trityl and phenacyl consisting essentially of heating a penicillin sulfoxide of the formula (I),



(I)

wherein R_1 and R_2 are the same as hereinbefore defined, at 80° to 130°C for at least one hour in an inert organic solvent selected from the group consisting of 1,4-dioxane, n-propyl ether, methyl n-propyl ketone, methyl isobutyl ketone, ethyl carbonate, n-propyl acetate, 1,2-dichloropropane and 1,1,2-trichloroethane in the presence of 0.1 to 4 mole per one mole of said penicillin sulfoxide of a sulfonate represented by formula (VI),



(VI)

wherein R_3, R_4 and R_6 are lower alkyl, phenyl, benzyl, phenylethyl, R_7 is 1-12C alkyl, phenyl 1-12C alkyl-substituted phenyl, naphthyl, 1-12C alkyl-substituted naphthyl, halogen-substituted phenyl, and wherein R_3 and R_4 may bond to form a 4-5C heterocyclic polymethylene ring and R_6 and R_7 may bond to form a polymethylene link and wherein the sulfonate anion of said compound is selected from the group consisting of methanesulfonate, ethanesulfonate, propanesulfonate, benzenesulfonate, p-toluenesulfonate, trimethylbenzenesulfonate, dodecylbenzenesulfonate, chlorobenzenesulfonate and naphthalenesulfonate.

3,966,721

OXA- AND THIA-DIAZIN-2-ONES

Roger K. Huff, Wokingham, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

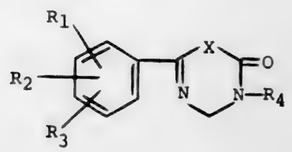
Filed Dec. 13, 1974, Ser. No. 532,433

Claims priority, application Switzerland, Dec. 19, 1973, 17810/73

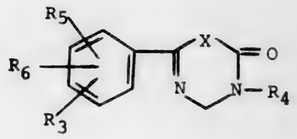
Int. Cl.² C07D *285/34, 273/04*

U.S. Cl. 260—243 R **16 Claims**

1. Diazine derivatives of the formulae Ia and Ib



(Ia)



(Ib)

wherein X represents oxygen or sulphur, R_1 represents hydrogen, halogen, nitro, cyano, C_1–C_{12} alkyl, C_1–C_{12} alkoxy, C_1–C_{12} haloalkyl, C_1–C_{12}haloalkoxy, C_3–C_4 alkenyl, C_3–C_4 alkenyloxy, C_1–C_{12} alkylthio, C_1–C_{12}haloalkylthio, C_3–C_4 haloalkenyloxy, C_1–C_{12} alkoxycarbonyl, C_1–C_{12} alkylsulphonyl, C_1–C_{12} haloalkylsulphonyl, 4-nitrophenoxy, R_2 represents hydrogen, halogen, nitro, C_1–C_{12} alkyl, C_1–C_{12} alkoxy, R_3 represents hydrogen, halogen, C_1–C_{12} alkyl, C_1–C_{12} alkoxy, R_4 represents hydrogen, C_1–C_{12} alkyl, C_2–C_3 alkoxyalkyl, C_3–C_4 alkenyl or C_3–C_6 cycloalkyl which is optionally bound through a methylene or an ethylene bridge, R_5 represents amino, C_1–C_5 monoalkylamino or C_2–C_{10} dialkylamino, isothiocyano, C_1–C_{12} alkoxycarbonylamino, C_2–C_6 monoalkylureido, C_3–C_{10} dialkylureido or C_2–C_6 monoalkylthioureido or C_3–C_{10} dialkylthioureido, C_1–C_{12} alkanoylamino, and R_6 represents hydrogen, halogen, C_1–C_{12} alkyl, C_1–C_{12} alkoxy, cyano, C_1–C_{12} haloalkyl, C_3–C_4 alkenyl, C_3–C_4 alkenyloxy, C_3–C_4 haloalkenyloxy, C_1–C_{12} alkoxycarbonyl, C_1–C_{12} alkylsulphonyl.

3,966,722

INDAMINES FOR DYEING KERATINOUS FIBERS

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 161,887, July 12, 1971, Pat. No. 3,758,268, which is a continuation-in-part of Ser. No. 52,739, July 6, 1970, Pat. No. 3,677,690. This application May 16, 1973, Ser. No. 360,741

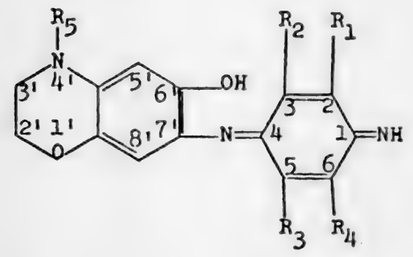
Claims priority, application France, July 17, 1969, 69.59119; July 17, 1970, 70.61354; Jan. 15, 1971, 71.62429; Jan. 15, 1971, 71.62429

The portion of the term of this patent subsequent to July 31, 1990, has been disclaimed.

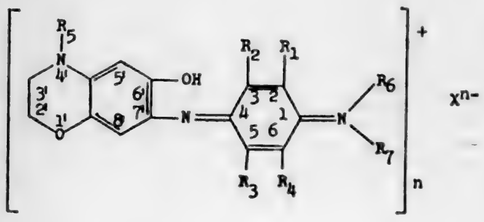
Int. Cl.² C07D *265/00, 273/00, 295/00*

U.S. Cl. 260—244 R **15 Claims**

1. A compound selected from the group consisting of
1. an indamine having the formula



wherein R_1, R_2, R_3 and R_4 each, independently, represent a member selected from the group consisting of hydrogen, lower alkyl having 1-4 carbon atoms and lower alkoxy having 1-4 carbon atoms and R_5 represents lower alkyl having 1-4 carbon atoms, and
2. an indamine salt having the formula



wherein R_1, R_2, R_3 and R_4 have the meanings given above, R_5 represents a member selected from the group consisting of hydrogen and lower alkyl having 1-4 carbon atoms, R_6 and R_7 each independently represent a member selected from the group consisting of hydrogen, lower alkyl having 1-4 carbon atoms, hydroxy lower alkyl having 1-4 carbon atoms, acylaminoalkyl wherein the alkyl moiety has 1-4 carbon atoms and piperidinoalkyl wherein the alkyl moiety has 1-4 carbon atoms, X^{n-} is an anion selected from the group consisting of $CH_3CO_2^-$, $(Cl_2Zn)^-$ and $S_2O_6^{--}$ and n is 1-2.

3,966,723

1,2,3,4,10,14B-HEXAHYDRO-PYRIDINO[1,2-A]-DIBENZO[C,F]-AZEPINE

Willem Jacob van der Burg, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

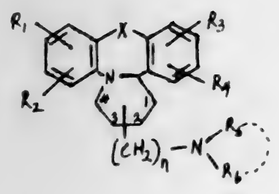
Filed Apr. 24, 1974, Ser. No. 463,712

Claims priority, application Netherlands, Apr. 26, 1973, 7305811

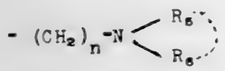
Int. Cl.² C07D 471/00

U.S. Cl. 260—247.1 L **4 Claims**

2. A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein the group



is present at position 2 or 3 and in which:

X represents the group CR_8R_9,

R_1, R_2, R_3 and R_4 represent hydrogen, hydroxy, halogen, alkyl containing 1 to 6 carbon atoms, alkoxy containing 1 to 6 carbon atoms, alkylthio containing 1 to 6 carbon atoms or trifluoromethyl,

R_5, R_6 represent hydrogen, alkyl containing 1 to 6 carbon atoms, aralkyl containing 7 to 10 carbon atoms, or R_5 together with R_6 with the nitrogen atom represent a heterocyclic 5 or 6 membered ring selected from the group consisting of pyrrolino, pyrrolidino, piperidino, oxazolidino, morpholino, and piperazino,

R_8, R_9 represent hydrogen or methyl, and

n is the number 0, 1, 2, or 3.

3,966,724

1-(α-AMINOMETHYLBENZYL)ISOQUINOLINE COMPOUNDS

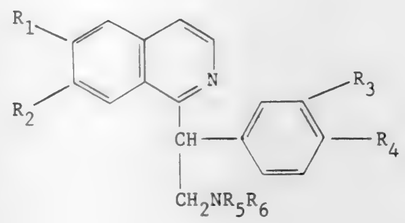
John Lawrence Hughes, Kankakee; Jay Kenneth Seyler, Bourbonnais, and Carroll M. Smith, Park Forest, all of Ill., assignors to Armour Pharmaceutical Company, Phoenix, Ariz.

Filed Dec. 20, 1974, Ser. No. 534,741

Int. Cl.² C07D 217/12, 295/12

U.S. Cl. 260—247.5 GP **8 Claims**

1. A compound having the structure:



in which R_1 and R_2 are alkoxy groups of one to four carbon atoms, R_3 and R_4 each is hydrogen or an alkoxy group of one to four carbon atoms, and R_5 and R_6 each is an alkyl group of one to four carbon atoms or benzyl or R_5 taken with R_6 and N are pyrrolidinyl, piperidino, or morpholino groups and the pharmaceutically acceptable salts thereof.

3,966,725

1-(4-PHENOXY-PHENYL)-1,3,5-TRIAZINES

Josef Helmut Reisdorff; Gerd Aichinger; Axel Haberkorn, all of Wuppertal-Elberfeld; Heinrich Kolling, Haan, and Eckart Kranz, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

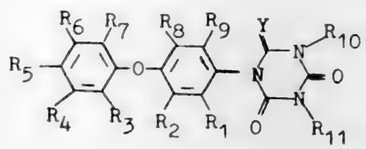
Filed Mar. 18, 1975, Ser. No. 559,562

Claims priority, application Germany, Mar. 21, 1974, 2413722

Int. Cl.² C07D 251/34

U.S. Cl. 260—248 NS **29 Claims**

1. A compound of the formula



or a pharmaceutically-acceptable, nontoxic salt thereof wherein

R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 are the same or different and each is hydrogen, lower alkyl, halo(lower alkyl), lower alkoxy, halo(lower alkoxy), lower alkylthio, halo(lower alkylthio), halo, nitro, cyano, amino, lower alkanoylamino, lower alkoxycarbonylamino, carboxy, lower alkoxycarbonyl, carbamoyl, lower alkanoyl, halo(lower alkanoyl), lower alkylsulphinyl, lower alkylsulphonyl, halo(lower alkylsulphinyl), halo(lower alkylsulphonyl) or sulphamoyl; provided that at least one of R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 is halo(lower alkyl), halo(lower alkylthio), halo(lower alkylsulphinyl) or halo(lower alkylsulphonyl);

R_{10} is hydrogen, lower alkyl, cycloalkyl of 4 to 7 carbon atoms, halo(lower alkyl), lower alkoxy, lower alkoxy(lower alkyl), halo(lower alkoxy)(lower alkyl), (lower alkylthio)(lower alkyl), halo(lower alkylthio)(lower alkyl), lower alkenyl, lower alkinyl, lower alkoxycarbonyl, (lower alkylthio)carbonyl, (lower alkylthio)thiocarbonyl, lower alkanoylamino, di(lower alkanoyl)amino, phthalimido, succinimido, di(lower alkyl)amino, benzyl, phenyl or halophenyl;

R_{11} is hydrogen or lower alkyl; and

Y is oxygen or sulphur.

3,966,726

PROCESS FOR THE PRODUCTION OF CYCLIC CARBOXYLIC ACID IMIDES

Anton Toth, and Gerhard Meyer, both of Obernburg, Germany, assignors to Akzo N.V., Arnhem, Netherlands

Filed Sept. 8, 1972, Ser. No. 287,520

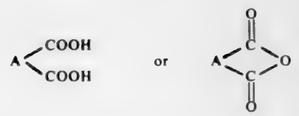
Claims priority, application Germany, Sept. 23, 1971, 2147535

Int. Cl.² C07D 251/52

U.S. Cl. 260—249.8 **10 Claims**

1. In a process for the production of an N-substituted cyclic carboxylic acid imide by reacting in a solvent at an elevated temperature between about 40°C. and 160°C.

A. an ortho-dicarboxylic acid or its anhydride of the formula



wherein A is a divalent radical, selected from amongst phenylene, or phenylene substituted by halogen, nitro, acetamido, lower alkyl, lower alkoxy; tetrahydrophenylene or pyridylene: with

B. a mono- or di-amine, selected from amongst alkylamine, alkylenediamine, N-alkyl substituted alkylenediamine of up to 18 carbon atoms; phenyl mono- or diamines which may be substituted by halo, nitro, hydroxy, mercapto, lower alkyl, lower alkoxy, mercaptomethyl, mercaptoethyl, methyl or ethyl carboxylate, sodium or potassium sulfonate, or 4,4'-diaminodiphenylmethane, 4,4'-diaminodiphenyloxide, 4,4'-diamino diphenylsulfone, 1,5-diaminoanthraquinone, aminopyrazine, 2-aminopyridine, 2-aminothiazole, 2-amino-4-methylpyridine, 6-amino-3-methylpyridine, 2-amino-4-methylpyrimidine, ammeline, 2,6-diaminopyridine, 3-aminopyridine or 4-aminopyridine the improvement of carrying out said reaction in a liquid solvent mixture consisting essentially of a non-polar organic solvent and a strongly polar organic solvent which form a ternary azeotrope with water at the reaction temperature.

3,966,727

MANUFACTURE OF PHTHALO-BIS-GUANAMINES

Hans Diem; Christian Dudeck, and Gunter Lehmenn, all of Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

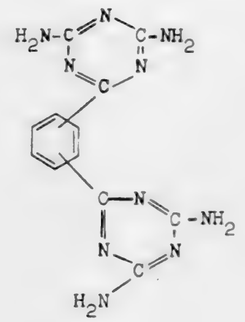
Filed Dec. 16, 1974, Ser. No. 533,145

Claims priority, application Germany, Dec. 29, 1973, 2365180

Int. Cl.² C07D 251/48

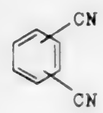
U.S. Cl. 260—249.9 **10 Claims**

1. A process for the manufacture of a phthalo-bis-guanamine of the formula



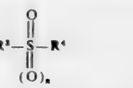
I

wherein the two substituents on the phenylene ring are in the o-, m- or p-position to one another, by reaction of phthalodinitriles of the formula



II

wherein the two substituents are in the o-, m- or p-position to one another, with dicyandiamide in the presence of an inorganic, basic compound and an organic solvent, wherein the solvent is a sulfoxide or a sulfone of the formula



IV,

in which R^3 and R^4 can be identical or different radicals and each is alkyl of 1 to 8 carbon atoms or alkenyl of 2 to 8 carbon atoms, or R^3 and R^4 together are alkylene of 2 to 5 carbon atoms, or the said radicals substituted by carboxylic acid amide or alkoxy of 1 to 3 carbon atoms, and n is 0 or 1; or said solvent is a formamide of the formula



in which R^1 and R^2 can be identical or different and each is hydrogen, alkyl of 1–8 carbon atoms, phenyl, or said alkyl or said phenyl substituted by alkyl or alkoxy respectively having 1–4 carbon atoms or R^1 and R^2 together with the adjacent nitrogen form a 5- or 6-membered heterocyclic ring, optionally containing another nitrogen atom or an oxygen atom and optionally substituted by alkyl or alkoxy respectively having 1–4 carbon atoms.

3,966,728

BENZOGUANAMINE DERIVATIVES

Hiromu Murai; Katsuya Ohata; Yoshiaki Aoyagi; Fusao Ueda; Masahiko Kitano; Satoshi Takata, and Shinichi Tada, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Kyoto, Japan

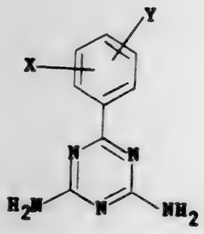
Filed Jan. 27, 1975, Ser. No. 544,176

Claims priority, application Japan, Feb. 18, 1974, 49-19211; Feb. 18, 1974, 49-19212

Int. Cl.² C07D *251/48*

U.S. Cl. 260—249.9 **10 Claims**

1. a benzoguanamine derivative of the formula:



in which X and Y are the same or different halogens in the 2- and 5-positions.

3,966,729

ADDITION CURABLE PHENYL-QUINOXALINE COMPOSITIONS AND THEIR SYNTHESIS

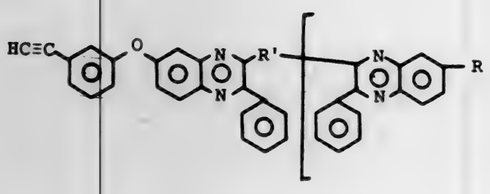
Robert F. Kovar, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

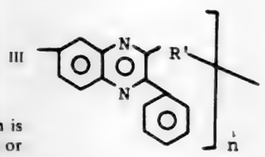
Filed May 19, 1975, Ser. No. 578,846

Int. Cl.² C07D *241/42, 241/44*

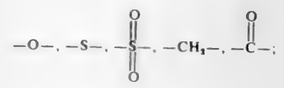
U.S. Cl. 260—250 Q **6 Claims**

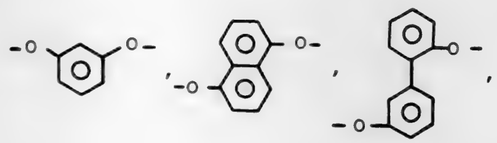
1. An ethynyl terminated polyquinoxaline having the following structural formula:

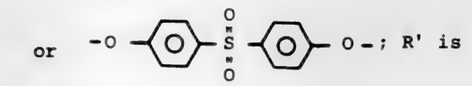




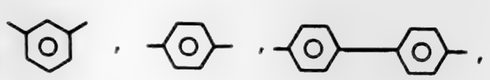
where R is a single bond,

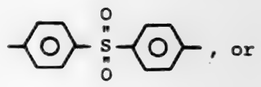




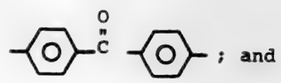
or  ; R' is







, or



; and

---

and *n* is an integer from 1 to 20, inclusive.

3,966,730

PYRIMIDIN(4)-YL-(THIONO)-(THIOL)-PHOSPHORIC-(PHOSPHONIC)-ACID ESTERS

Wolfgang Hofer; Fritz Maurer; Hans-Jochem Riebel; Lother Rohe, all of Wuppertal; Wolfgang Behrenz, Overath-Steinenbruck; Ingeborg Hammann, Cologne; Wilhelm Stendel, Wuppertal, and Bernhard Homeyer, Opladen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

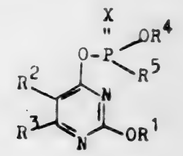
Filed Aug. 22, 1974, Ser. No. 499,808

Claims priority, application Germany, Aug. 31, 1973, 2343931

Int. Cl.² C07F *9/65*

U.S. Cl. 260—251 P **3 Claims**

1. A pyrimidin(4)-yl-(thiono)-(thiol)-phosphoric-(phosphonic) acid ester or ester-amide of the formula



in which

R^1 is straight-chain or branched alkyl with 1 to 20 carbon atoms, cycloalkyl with 5 to 7 carbon atoms, alkenyl or alkynyl with 2 to 6 carbon atoms or aralkyl with 6 to 10 carbon atoms in the aryl moiety and 1 to 2 carbon atoms in the alkyl moiety,

R^2 is hydrogen, straight-chain or branched alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 4 carbon atoms, alkylmercapto with 1 to 4 carbon atoms, alkylcarbonyl or alkoxycarbonyl with 1 to 4 carbon atoms in the alkyl or alkoxy moiety, halogen or nitrile,

R^3 is hydrogen, straight-chain or branched alkyl with 1 to 6 carbon atoms, or alkoxycarbonylalkyl with 1 to 4 carbon atoms in the alkoxy radical and 1 to 2 carbon atoms in the alkyl radical, or

R^2 and R^3 conjointly form an alkylene bridge which forms a 5-membered to 7-membered ring with the adjoining carbon atoms,

R^4 is straight-chain or branched alkyl with 1 to 12 carbon atoms or alkoxyalkyl with 1 to 12 carbon atoms in the alkyl radical and 1 to 4 carbon atoms in the alkoxy radical,

R^5 is straight-chain or branched alkyl, alkoxy or alkylmercapto with 1 to 6 carbon atoms or aryl with 6 to 10 carbon atoms, and

X is oxygen or sulfur

3,966,731

2-FLUOROMETHYL-3-o-TOLYL-6-AMINO-4(3H)-QUINAZOLINONE

Ichizo Inoue, Ikeda; Toyonari Oine, Nara; Yoshihisa Yamada, Kyoto; Junichi Tani; Ryuichi Ishida, both of Osaka, and Takashi Ochiai, Kobe, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Sept. 30, 1974, Ser. No. 510,577

Claims priority, application Japan, Oct. 15, 1973, 48-115512

Int. Cl.² C07D *239/91*

U.S. Cl. 260—256.4 Q **2 Claims**

1. 2-fluoromethyl-3-(o-tolyl)-6-amino-4(3H)-quinazolinone or a pharmaceutically acceptable acid addition salt thereof.

3,966,732

NITROIMIDAZOLYL PYRIMIDINES

Clemens Rufer; Eberhard Schroder, and Hans-Joachim Kessler, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Germany

Division of Ser. No. 331,114, Feb. 9, 1973, Pat. No. 3,920,655.

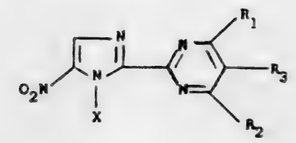
This application Apr. 14, 1975, Ser. No. 568,117

Claims priority, application Germany, Feb. 19, 1972, 2208518; Nov. 7, 1972, 2255079

Int. Cl.² C07O *239/00*

U.S. Cl. 260—256.4 C **10 Claims**

1. A compound of the formula



and physiologically acceptable acid addition salts thereof wherein X is alkyl of 1–4 carbon atoms, R_1 and R_2 each are a hydrogen atom, alkyl of 1–4 carbon atoms, phenyl, trifluoromethyl, or 2-thienyl, and R_3 is a hydrogen atom, alkyl of 1–4 carbon atoms, hydroxyalkoxy of 2–4 carbon atoms or an ester thereof of an alkanecarboxylic acid of 1–4 carbon atoms or oxoalkyl of 3–6 carbon atoms.

3,966,733

INTERMEDIATES FOR CERTAIN BENZOTHIADIAZEPINE AND BENZOTHIADIAZOCINE COMPOUNDS

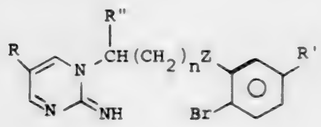
Harry Louis Yale, New Brunswick, N.J., and Ramesh B. Petigara, Lansdale, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 382,802, July 26, 1973, Pat. No. 3,875,162. This application Jan. 15, 1975, Ser. No. 541,165

Int. Cl.² C07D *239/04*

U.S. Cl. 260—256.5 R **12 Claims**

1. A compound of the formula



wherein

R is hydrogen,

R′ is hydrogen, F, Cl, Br, CF_3, alkyl of from 1 to 4 carbons, or dialkylamidosulfonyl wherein each alkyl radical has from 1 to 4 carbons;

n is 0 or 1;

R″ is hydrogen or alkyl of from 1 to 4 carbons; and Z is S or SO_2.

3,966,734

METHOD FOR THE PURIFICATION OF 6-METHOXY-1-PHENAZINOL 5,10-DIOXIDE

Joseph Donald Surmatis, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 213,748, Dec. 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 139,287, April 23, 1971, abandoned. This application Feb. 12, 1975, Ser. No. 549,413

Int. Cl.² C07D *241/52*

U.S. Cl. 260—267 **3 Claims**

1. A process for preparing pure 6-methoxy-1-phenazinol 5,10-dioxide which comprises

a. reacting a ferric chloride hexahydrate in a suspension of a crude mixture containing 6-methoxy-1-phenazinol 5,10-dioxide in a concentrated aqueous mineral acid;

b. isolating the solid ferric chloride complex of 6-methoxy-1-phenazinol 5,10-dioxide which forms;

C admixing this complex with acetone, thereby breaking the complex; c.

d. recovering the pure 6-methoxy-1-phenazinol 5,10-dioxide, wherein the concentrated aqueous mineral acid is selected from the group consisting of hydrochloric acid and sulfuric acid.

3,966,735

1-3-(4-FLUOROBENZOYL)PROPYL-4-SUBSTITUTED PHENOXY ETHYL PIPERAZINE

Wolfgang Milkowski, Burgdorf; Horst Zeugner, Hannover; Klaus-Wolf von Eickstedt, Berlin, and Werner Stühmer, Eldagsen, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

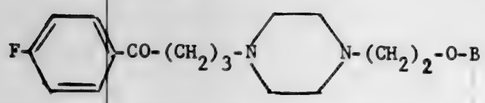
Filed Mar. 5, 1974, Ser. No. 448,381

Claims priority, application Germany, Mar. 12, 1973, 2312171

Int. Cl.² C07D *295/08*

U.S. Cl. 260—268 R **4 Claims**

1. A compound having the formula



in which B is a 2-chloro-4-alkanoylphenyl radical, the alkanoyl moiety of which has at least 2 and at most 4 carbon atoms, and pharmaceutically acceptable acid addition salts thereof.

3,966,736

2,9-DIHYDRO-3H-PYRIDO[3,2-c]-s-TRIAZOLO[4,3-a][1,5]-BENZODIAZEPIN-3-ONES

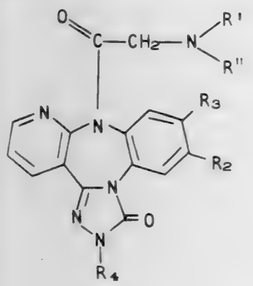
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 7, 1975, Ser. No. 565,709

Int. Cl.² C07D *471/14*

U.S. Cl. 260—268 PC **10 Claims**

1. A compound of the formula IV

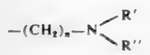


IV

wherein R′ and R″ are alkyl of 1 to 3 carbon atoms or



is pyrrolidino, piperidino, 4-methylpiperazino, or [4-(2-hydroxyethyl)piperazino] wherein R_2 and R_3 are hydrogen, chloro, bromo, trifluoromethyl or alkyl defined as above; and wherein R_4 is hydrogen, alkyl as defined above or



in which *n* is an integral number of 2 or 3 and R′, R″ and



are defined as above, or the pharmacologically acceptable acid addition salts thereof.

3,966,737

FLUORO-SUBSTITUTED DIBENSO[b,f]THIEPINS

Max Gerecke, Reinach; Jean-Pierre Kaplan, Le Plessis Robinson, and Emilio Kyburz, Reinach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

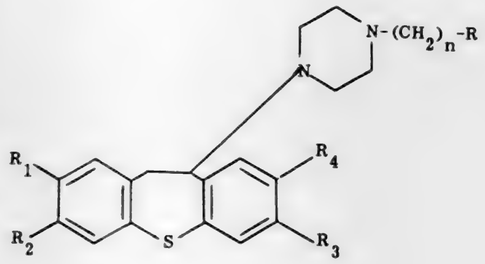
Continuation-in-part of Ser. No. 378,733, July 12, 1973, abandoned. This application May 17, 1974, Ser. No. 471,101

Claims priority, application Switzerland, Mar. 30, 1973, 4606/73; Jan. 16, 1974, 568/74

Int. Cl.² C07D *409/04*

U.S. Cl. 260—268 TR **9 Claims**

1. A Compound of the formula



wherein *n* is an integer from 1 to 3; R is hydrogen or, when *n* is 2 or 3, is hydroxy or an alkanoyloxy group of 2–18 carbon atoms; one of R_1 and R_2 is hydrogen and the other is methyl, methoxy, methylthio, dimethylsulfamoyl, fluoro, chloro or trifluoromethyl; and one of R_3 and R_4 is hydrogen, and the other is methyl, methoxy, methylthio, dimethylsulfamoyl, fluoro, chloro or trifluoromethyl, provided that at least one of R_1, R_2, R_3 and R_4 is fluoro,

or a pharmaceutically acceptable acid addition salt thereof.

3,966,738

AZETIDINE DERIVATIVES

Jan Verwey, Leiden, and Hong Sheng Tan, Bleiswijk, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

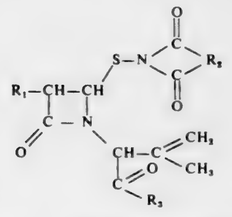
Filed Feb. 8, 1974, Ser. No. 440,725

Claims priority, application United Kingdom, Feb. 9, 1973, 6576/73

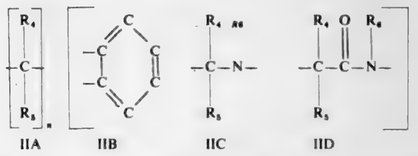
Int. Cl.² C07D *207/24, 401/12, 403/12*

U.S. Cl. 260—281 GP **22 Claims**

1. Acetidine derivatives of the formula



wherein R_1 represents a conventional penicillin- or cephalosporin acylamido group, R_2 is



IIA IIB IIC IID

wherein R_4 and R_5 are individually selected from the group consisting of a hydrogen atom, lower alkyl and alkenyl and n represents 2 or 3 R_3 represents an amino group of the formula



wherein R_7 represents a hydrogen atom or a lower alkyl and R_8 represents a lower alkyl, or R_3 represents a N,N′-disubstituted hydrazine group wherein the substituents are lower alkyl, or R_3 represents the group $-OR_9$, wherein R_9 represents a hydrogen atom, a lower alkyl optionally substituted by 1 to 3 halogen atoms or by 1 or 2 phenyl groups, wherein te phenyl groups may be substituted by a methoxy or a nitro, or R_9 represents a phenacyl or an alkali metal or alkaline earth metal ions and corresponding azetidine derivatives of formula I wherein the double bond in the propenyl side chain has been shifted from the 2- to the 1-position.

3,966,739

PYRROLE-CARBOXYLIC ACIDS LUMILYSERGOL ESTERS

Luigi Bernardi, Milan; Germano Bosisio, Palazzolo Milanese, and Gian Carlo Fregnan, Milan, all of Italy, assignors to Societa' Farmaceutici Italia S.p.A., Milan, Italy

Filed Mar. 7, 1972, Ser. No. 232,605

Claims priority, application Italy, Mar. 13, 1971, 21713/71; Nov. 13, 1971, 31059/71

Int. Cl.² C07D *457/02*

U.S. Cl. 260—285.5 **4 Claims**

1. 1,6-Dimethyl-8β-[2′-methyl-3′-pyrroyloxymethyl]-10α-methoxyergoline or the maleate thereof.

2. 1,6-Dimethyl-8β-[3′, 5′-dimethyl-2′-pyrroyloxymethyl]-10α-methoxyergoline or the maleate thereof.

3. 1,6-Dimethyl-8β-[1′, 3′, 5′-trimethyl-2′-pyrroyloxymethyl]-10α-methoxyergoline or the maleate thereof.

4. 1,6-Dimethyl-8β-[1′-ethyl-2′-pyrroyloxymethyl]-10α-methoxyergoline or the maleate thereof.

3,966,740

2-METHYL-3-PHENYL-1,2,3,7,8,8a-HEXAHYDRO-1H-CYCLOPENT[i,j]-ISOQUINOLINE HYDROBROMIDE

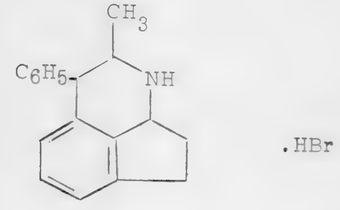
Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Mar. 7, 1975, Ser. No. 556,467

Int. Cl.² C07D *217/14*

U.S. Cl. 260—286 R **1 Claim**

1. A compound of the formula:



.HBr

3,966,741

PROCESS FOR THE PREPARATION OF SUBSTITUTED OR UNSUBSTITUTED 4-PYRIDYLTHIOACETIC ACID

Andreas J. J. Hendrickx, Venlo, and Willem H. van Duyl, Grubbenvorst, both of Netherlands, assignors to Oce-Andeno B.V., Venlo, Netherlands

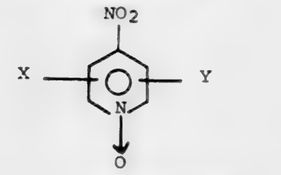
Filed Dec. 4, 1974, Ser. No. 529,457

Claims priority, application Netherlands, Dec. 13, 1973, 7317069

Int. Cl.² C07D *213/70*

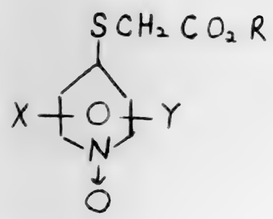
U.S. Cl. 260—294.8 G **14 Claims**

1. A process for the preparation of substituted or unsubstituted 4-pyridylthioacetic acid, which comprises (1) reacting a 4-nitro-pyridine-N-oxide having the formula



I

with a compound having the formula $HSCH_2CO_2R$ to form a compound having the formula



in which formula X is a hydrogen or a halogen atom or an alkyl or alkoxy group, said groups containing 1–4 carbon atoms, Y is a hydrogen atom, an alkyl or alkoxy group, said groups containing 1–4 carbon atoms and R is an alkyl group containing 1–4 carbon atoms; (2) reducing the formed compound by reacting it with finely divided iron in the presence of a catalytic quantity of hydrochloric acid or acetic acid to obtain a corresponding 4-pyridylthioacetic acid ester, and (3) converting said ester into the corresponding 4-pyridylthioacetic acid by saponification followed by acidification.

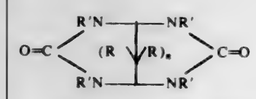
3,966,742

TETRA-N-ALKYL DERIVATIVES OF BICYCLIC UREAS AND METHOD OF THEIR PRODUCTION

Sergei Sergeevich Novikov, Kotelnicheskaya naberezhnaya, 1/5, kv. 183; Lenor Ivanovich Khmelnitsky, ul. Miklukho-Maklaya, 57, korpus 1, kv. 139; Oleg Vasilievich Lebedev, ul. Obrucheva, 9, kv. 83; Lia Vladimirovna Epishina, Bolotnikovskaya 40, korpus 1, kv. 16; Ljudmila Ivanovna Suvorova, B. Ostroumovskaya, 15, kv. 24, all of Moscow; Lidia Vasilievna Lapshina, Podolsky raion, p/o Ryazanovo, dom otdykha ostaflevo, 17, Moskovskaya oblast; Valery Dmitrievich Krylov, ul. Uralskaya, 17, kv. 150, Moscow; Irina Vitalievna Zaikonnikova, ul. Chekhova, 4b, kv. 1, Kazan; Irina Evgenievna Zimakova, ul. Lenina, 2a, kv. 18, Kazan; Vladimir Sergeevich Chudnovsky, ul. Dekabristov, 189, kv. 5, Kazan; Viktor Andreevich Babichev, Komsmolsky prospekt, 38/16, kv. 81, Moscow, and Nina Alexandrovna Avdonina, ul. Gagarina, 14, kv. 3, Kazan, all of U.S.S.R.

Filed July 27, 1972, Ser. No. 275,823
Int. Cl.² C07D *239/04*
U.S. Cl. 260—256.4 F **8 Claims**

1. A method for producing tetra-N-alkyl derivatives of bicyclic ureas having the formula:



wherein *n* is an integer 0 or 1, R is selected from the group consisting of H and lower alkyl which can be the same or different, and R′ is lower alkyl comprising alkylating bicyclic ureas, unsubstituted at the nitrogen atoms, with lower alkyl halides in liquid ammonia under the action of an alkali metal amide, followed by separation of the product.

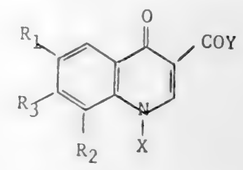
3,966,743

ORTHO FUSED CYCLOALKANO-4-QUINOLONE-3-CARBOXYLIC ACID DERIVATIVES

Herbert Berger, Mannheim-Kafertal; Alfred Rhomberg, Mannheim-Neuostheim; Kurt Stach, Mannheim-Waldhof; Wolfgang Vömel, Mannheim, and Winfriede Sauer, Mannheim-Wallstadt, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim, Germany

Continuation-in-part of Ser. Nos. 363,211, May 23, 1973, abandoned, Ser. No. 363,235, May 23, 1973, abandoned, and Ser. No. 326,203, Jan. 24, 1973, abandoned, said Ser. No. 363,211, is a continuation of Ser. No. 98,957, Dec. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 843,182, July 18, 1969, abandoned, Ser. No. 363,235, , which is a continuation of Ser. No. 119,035, Feb. 25, 1971, abandoned. This application Sept. 9, 1974, Ser. No. 504,589
Claims priority, application Germany, July 23, 1968, 1770951; Mar. 14, 1969, 1912944; Mar. 13, 1970, 2011885; May 25, 1970, 2025363; Sept. 4, 1970, 2043817; Feb. 19, 1972, 2207856
Int. Cl.² C07D *215/56*
U.S. Cl. 260—287 CF **36 Claims**

1. A cycloalkano-quinolone compound having the formula:



wherein one of R_1 and R_2 represents a member selected from the group consisting of hydrogen, halogen, nitro, amino and lower alkanoyl amino, and the other of R_1 and R_2 taken together with R_3 forms an alkylene bridge containing 3 to 5 carbon atoms, X is hydrogen or lower alkyl of up to 6 carbon atoms, which may be substituted by a member of the group consisting of halogen, hydroxyl, lower alkanoyloxy, lower alkoxy, phenoxy, benzyloxy, mercapto, lower alkylmercapto, lower carbocyclic arylsulfonyloxy, and lower alkylsulfonyloxy, or X is unsubstituted lower alkenyl including alkadienyl, or lower alkynyl, and Y is a member selected from the group consisting of hydroxyl and lower alkoxy; and the non-toxic salts thereof.

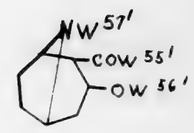
3,966,744

SPIN LABELED COMPOUNDS

Avram Goldstein, Stanford; Richard K. Leute, Sunnyvale, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syva Company, Palo Alto, Calif.

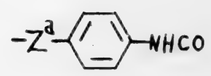
Continuation-in-part of Ser. Nos. 105,535, Jan. 11, 1971, abandoned, and Ser. No. 141,516, May 10, 1971, Pat. No. 3,690,834, and a continuation of Ser. No. 270,108, July 10, 1972, Pat. No. 3,853,914. This application June 24, 1974, Ser. No. 482,542
Int. Cl.² C07D *451/12, 451/06*
U.S. Cl. 260—292 **4 Claims**

1. A compound according to the formula:



wherein one of W^{56} and W^{57} is -X*-A*; when other than —X*—A*:

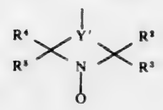
W^{56} is hydrogen or benzoyl; and
W^{57} is methyl;
W^{55} is hydroxy or methoxy;
X* is



wherein

Z^a is methylene, carbonyl or —Z—CONH— wherein Z is aliphatic hydrocarbylene of from 1 to 7 carbon atoms, having 0 to 1 site of unsaturation, said unsaturation, where present, being ethylenic; and

A* is of the formula:



wherein

R^{2-3} are alkyl of from 1 to 3 carbon atoms and Y′ is trivalent aliphatic hydrocarbyl having 1 to 3 carbon atoms and 0 to 1 site of unsaturation, said unsaturation, where present, being ethylenic.

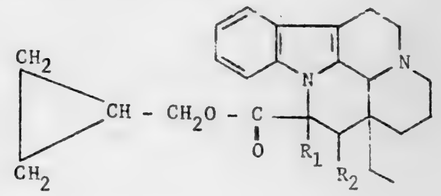
3,966,745

VINVAMINE SERIES CYCLOALKYL-ALKYL ESTERS

Don Pierre René Lucien Giudicelli, Fontenay-sous-Bois; Henry Najer, Paris; Bogdan Iliesco-Branceni, Paris, and Yves Robert Alain Pascal, Paris, all of France, assignors to Synthelabo, Paris, France

Filed May 6, 1974, Ser. No. 467,596
Claims priority, application France, May 7, 1973, 73.16266
Int. Cl.² C07D *519/04*
U.S. Cl. 260—293.53 **7 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen or hydroxy:
R_2 is hydrogen, or
R_1 and R_2 together represent an additional bond between the two carbon atoms to which they are attached, or a pharmaceutically acceptable acid addition salt thereof.

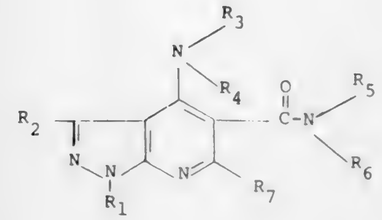
3,966,746

AMINO DERIVATIVES OF PYRAZOLOPYRIDINE CARBOXAMIDES

Hans Hoehn, Tegernheim, and Theodor Denzel, Nurnberg, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 489,636, July 18, 1974, abandoned, which is a division of Ser. No. 306,967, Nov. 15, 1972, Pat. No. 3,840,456. This application June 4, 1975, Ser. No. 583,373
Int. Cl.² C07D *471/04*
U.S. Cl. 260—293.6 **8 Claims**

1. A compound of the formula



wherein R_1 is selected from the group consisting of hydrogen, lower alkyl, phenyl, phenyl-lower alkyl, and cycloalkyl having 3 to 7 carbon atoms;

R_2 is selected from the group consisting of hydrogen, lower alkyl, and phenyl;

the basic nitrogen group



is selected from the group consisting of

i. acyclic amino groups wherein R_3 and R_4 are each selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkanoyl, phenyl, substituted phenyl, phenyl-lower alkyl, di-lower alkyl amino-lower alkyl, benzoyl, substituted benzoyl, phenyl-lower alkanoyl, substituted phenyl-lower alkanoyl, alkane sulfonyl, benzenesulfonyl, and substituted benzenesulfonyl and

ii. heterocyclic groups selected from the group consisting of pyrrolidino, piperidino and piperazino;

the basic nitrogen group



is selected from the group consisting of

i. acyclic amino groups wherein R_5 and R_6 are each selected from the group consisting of hydrogen, lower alkyl, alkoxy lower alkyl, dialkoxy lower alkyl, and di-lower alkylamino-lower alkyl and

ii. heterocyclic groups selected from the group consisting of pyrrolidino and piperidino;

R_7 is selected from the group consisting of hydrogen, lower alkyl, and phenyl;

with the proviso that at least one of the groups



and



is a heterocyclic group;
wherein lower alkyl and lower alkenyl refer to hydrocarbon groups having 1 to 8 carbon atoms;
wherein lower alkanoyl refers to acyl radicals of acids having the formula $C_nH_{2n+1}COOH$ wherein n must be 7 or less;
wherein substituted phenyl, substituted benzoyl, and substituted benzenesulfonyl refers to the respective moieties substituted with one or two substituents selected from the group consisting of lower alkyl, halogen, trifluoromethyl, amino, and carboxy;
and physiologically acceptable acid-addition salts thereof.

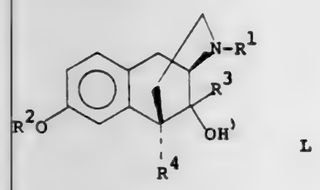
3,966,747

9-HYDROXY-6,7-BENZOMORPHANS

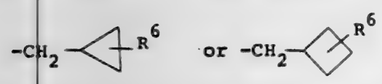
Ivo Monkovic, Candiac; Michel Saucier, Dorval; Yvon Lambert, Cote Ste. Catherine, all of Canada, and Thomas Alfred Montzka, Manlius, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 301,049, Oct. 26, 1972, abandoned. This application July 9, 1974, Ser. No. 486,936
Int. Cl.² C07D *221/26*
U.S. Cl. 260—293.54 **17 Claims**

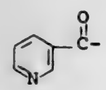
1. A compound having the formula



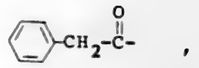
wherein R^1 is selected from the group consisting of



in which R^2 is H or CH_3, R^3 is selected from the group consisting of H, (lower)alkyl, (lower)alkanoyl,



$-CH_2O-CH_3$ and



R^3 is H or CH_3, R^4 is n-propyl or (lower)alkenyl; or a pharmaceutically acceptable acid addition salt thereof.

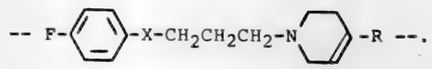
3,966,748

PARA-FLUOROPHENYL-N-HETEROCYCLIC SUBSTITUTED BUTANES

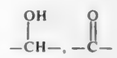
Corris Mabelle Hofmann, Ho-Ho-Kus, and Sidney Robert Safir, River Edge, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 8, 1975, Ser. No. 575,846
Int. Cl.² C07D *213/34*
U.S. Cl. 260—294.8 D **16 Claims**

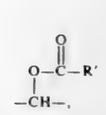
1. A compound of the formula:



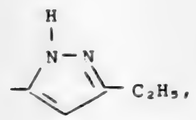
wherein X is selected from the group consisting of

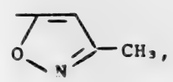


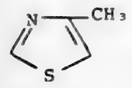
and

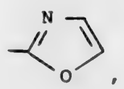


wherein R' is lower alkyl; and R is selected from the group consisting of:





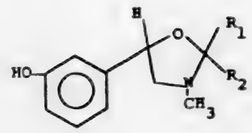






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and pharmaceutically acceptable acid addition salts thereof.



(II)

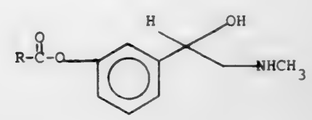
3,966,749

NOVEL SYNTHESIS OF OPTICALLY ACTIVE M-ACYLOXY-α-[(METHYLAMINO)METHYL]BENZYL ALCOHOLS, THE PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF AND INTERMEDIATE USEFUL IN THE PREPARATION THEREOF

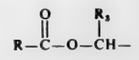
Nicolae S. Bodor, and Sun-Shine Yuan, both of Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.

Filed Feb. 10, 1975, Ser. No. 548,606
Int. Cl.² C07D *213/02*
U.S. Cl. 260—295 R **13 Claims**

1. A method for preparing an optically and therapeutically active (m-acyloxy-α-[(methylamino)methyl]benzyl alcohol of the formula:

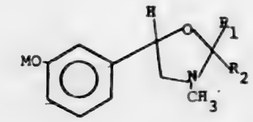


wherein R represents a member selected from the group consisting of a straight or branched alkyl group or from one to twenty carbon atoms, an ethoxycarbonyl group, a benzyloxycarbonyl group, a phenyl group, an



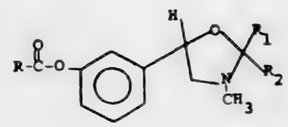
group, wherein R is as defined above and R_3 is a member selected from the group consisting of a hydrogen atom, a methyl group and a phenyl group, and a 2-, 3-, or 4-pyridyl group, or the HX salts thereof, wherein X represents a pharmaceutically acceptable acid addition salt anion which consists essentially of

1. reacting optically active phenylephrine with an excess of a carbonyl compound of the formula: $R_1—CO—R_2$, wherein R_1 and R_2 which can be the same or different and represent a member selected from the group consisting of a hydrogen atom, a C_1–C_{10} alkyl group, and a di(C_1–C_2.)alkylamino(C_1–C_{10})alkyl group, or wherein R_1 and R_2 together with the carbonyl group to which they are attached can form a member selected from the group consisting of a C_5–C_7 cycloalkanone group and a substituted or unsubstituted N- or O-heterocyclic (C_5–C_7) alkanone group, wherein said substituent is a C_1–C_2 alkyl group, either in the presence of a dehydrating agent selected from the group consisting of an alkaline earth metal carbide, a molecular sieve of from 4 to 5 A, calcium chloride, magnesium sulfate, and sodium sulfate, or in the presence of a conventional inert aromatic hydrocarbon solvent plus an organic or inorganic acid catalyst to eliminate the water formed as an azeotropic mixture, said step being carried out at a temperature of from 20° to 140° C, standard pressure, and for a period of time ranging from 2° to 2 to 48 hours, whereby the intermediate;



(III)

wherein M, R_1, and R_2 are defined above is formed;
3. reacting the intermediate of step (2) with a stoichiometric amount of an acyl halide of the formula: R—CO—Y, wherein R is defined as above and Y represents a halogen atom in the presence of an inert organic solvent selected from the group consisting of an aliphatic hydrocarbon solvent of from five to 10 carbon atoms, an aromatic hydrocarbon solvent, methanol, propanol, butanol, a conventional ether, and dimethylformamide, said step being carried out at room temperature, standard pressure, and for a period of time ranging from 1 to 24 hours, whereby the intermediate:



(IV)

wherein R, R_1, and R_2 are defined as above is formed; and
4. cleaving the $R_1—CO—R_2$ moiety of the intermediate from step (3) in an organic inert solvent selected from the group consisting of an aliphatic hydrocarbon solvent of from five to ten carbon atoms, an aromatic hydrocarbon solvent, a C_1–C_4 aliphatic alcohol, a conventional ether, and dimethyl formamide and further in the presence of a stoichiometric or excess amount of water and a catalytic amount of an HX acid, wherein X is defined as above, said step being carried out at a temperature of from 20° to 100° C, standard pressure, and for a period of time of from 1 to 24 hours, whereby the free base of formula (I) is obtained.

3,966,750
N-3,5-DICHLOROPHENYLOXAZALIDINES

Dietrich Mangold, Neckargemuend; Bernd Zeeh, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

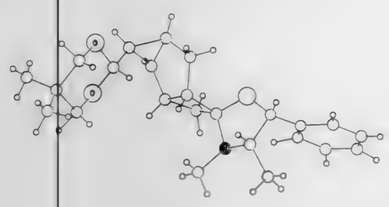
Filed May 28, 1974, Ser. No. 473,505
Int. Cl.² C07D *263/44*
U.S. Cl. 260—307 B **1 Claim**

1. N-(3,5-dichlorophenyl)-5-methyl-5-vinyloxazolidine-2,4-dione.

3,966,751
OXAZOLIDINES OF 4-OXO-TRICYCLO[5.1.0^{2,5}]OCTAN-8-ENDO-CARBOXALDEHYDE, NEOPENTYL GLYCOL ACETAL

Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 315,364, Dec. 15, 1972, abandoned, which is a division of Ser. No. 181,246, Sept. 16, 1971, Pat. No. 3,711,515, which is a continuation-in-part of Ser. No. 93,483, Nov. 27, 1970, abandoned. This application Jan. 22, 1975, Ser. No. 543,196
Int. Cl.² C07D *263/06*
U.S. Cl. 260—307 FA **3 Claims**



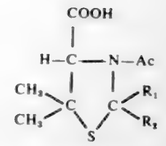
1. An oxazolidine, which is 8′(5,5-dimethyl-1,3-dioxan-2-yl)-(1′R,2′R, 4S,4′R,5R,5′S,7′S,8′S)-3,4-dimethyl-5-phenyl-spiro(oxazolidine-2,4′-tricyclo[5.1.0.0^{2,5}]octane).

3,966,752
RESOLUTION OF D,L-PROTECTED-PENICILLAMINE

Friedrich Asinger, Aachen; Heribert Offermanns, Grossauheim; Karl-Heinz Gluzek, Alpen, and Walter vonBebenburg, Buchschlag, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Germany

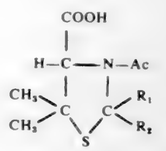
Continuation-in-part of Ser. No. 276,530, July 31, 1972, abandoned, and a continuation-in-part of Ser. No. 419,473, Nov. 27, 1973, abandoned. This application Nov. 4, 1974, Ser. No. 520,899
Int. Cl.² C07D *277/06*
U.S. Cl. 260—306.7 C **27 Claims**

1. A process comprising the step of crystallizing out of solution the salt of an optically active base with an optically active form of penicillamine having at least one of the hydrogen atoms of the mercapto group and the amino group protected as a compound of the formula:



where R_1 and R_2 are both methyl or R_1 and R_2 are joined together to form the pentamethylene group and Ac is formyl employing the D,L racemate form of said protected penicillamine and l-norephedrine free of d-norephedrine and precipitating the salt of the D-form of the protected penicillamine and the l-norephedrine.

10. A process comprising the step of crystallizing out of solution the salt of an optically active base with an optically active form of penicillamine having at least one of the hydrogen atoms of the mercapto group and the amino group protected as a compound of the formula:



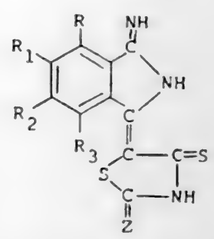
in which R_1 and R_2 are both methyl or R_1 and R_2 are joined together to form the pentamethylene group and Ac is formyl, employing the D,L racemate form of said protected penicillamine and a salt of l-norephedrine free of d-norephedrine and precipitating the salt of the D-form of the protected penicillamine and l-norephedrine.

3,966,753
THIAZOLIDINYLIDENE ISOINDOLINE PIGMENTS

Nathan N. Crounse, and Nicholas A. Ambrosiano, both of Cincinnati, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 9, 1974, Ser. No. 496,078
Int. Cl.² C07D *277/34*
U.S. Cl. 260—306.7 R **5 Claims**

1. A compound of the formula



in which R, R_1, R_2 and R_3 are the same or different and are selected from the class consisting of hydrogen, alkyl having one to three carbon atoms, alkoxy having one to three carbon atoms, halo, trifluoromethyl, phenyl and phenyl substituted by alkyl having one to three carbon atoms, alkoxy having one to three carbon atoms or halogen; and Z is oxygen or sulfur.

3,966,754
CERTAIN SULFONIC ACID ESTERS

Beat Böhner, Binningen; Dag Dawes, Pratteln; Willy Meyer, Basel; Haukur Kristinsson, Bottmingen, and Kürt Rüfenacht, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 12, 1974, Ser. No. 478,680
Claims priority, application Switzerland, June 14, 1973, 8520/73; Apr. 29, 1974, 5829/74
Int. Cl.² C07D *249/04, 249/12*
U.S. Cl. 260—308 R **11 Claims**

1. A sulphonic acid ester of the formula

$$R_1 - SO_2 - O - R_2$$

wherein

R_1 represents C_1–C_6 alkyl or C_2–C_5 alkenyl optionally substituted by halogen, lower alkoxy or lower alkylthio; and

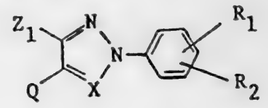
R_2 represents 1,2,3-triazolyl(4), 1,2,3-triazolyl(5), 1,2,4-triazolyl(5) or 1,2,4-triazolyl(3) optionally substituted by halogen; alkoxy, alkylthio, alkylsulphinyl, alkylsulphonyl, alkylthioalkyl, haloalkyl or alkoxyalkyl, each having lower alkyl groups; alkenyl, alkenyloxy or alkenylthio each having 2–5 carbon atoms; amino, mono-(lower)alkylamino or di-(lower)alkylamino; carbamoyl; carb-(lower)alkoxy; nitro; cyano; or phenyl, phenylthio, phenylsulphinyl, phenylsulphonyl, benzyl, benzylthio, benzylsulphinyl, benzylsulphonyl, 1-phenethyl, 2-phenethyl, diphenylmethyl or C_5–C_6 cycloalkyl, optionally substituted by halogen, lower alkyl, lower haloalkyl, lower alkoxy, lower alkylthio or nitro.

3,966,755
COUMARIN DERIVATIVES

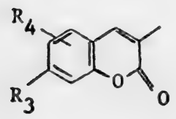
Hans Schlapfer, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 18, 1973, Ser. No. 370,880
Claims priority, application Switzerland, June 21, 1972, 9335/72
Int. Cl.² C07D *405/04, 405/14, 413/14*
U.S. Cl. 260—308 A **12 Claims**

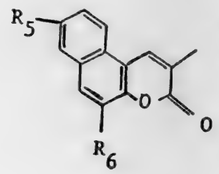
1. Compounds of the formula



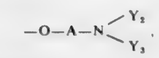
wherein Z_1 represents hydrogen or methyl, R_1 represents hydrogen, halogen, alkyl with 1 to 4 carbon atoms or alkoxy with 1 to 4 carbon atoms, R_2 represents hydrogen, halogen or alkyl with 1 to 4 carbon atoms, X represents nitrogen and Q represents a radical



or



wherein R_3 denotes alkoxy with 1 to 12 carbon atoms, benzyloxy which is optionally chlorine-substituted in the phenyl radical, acetylamino, a —NHCOOY radical, wherein Y represents alkyl with 1 to 12 carbon atoms or phenyl which is optionally substituted by chlorine, methyl or methoxy, or phenyl which is optionally substituted by chlorine, methyl or methoxy, an optionally quaternised radical



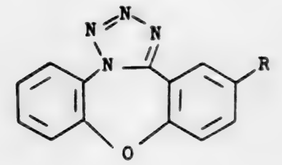
wherein A represents alkylene with 2 to 4 carbon atoms, Y_2 and Y_3 independently of one another represent optionally hydroxy-substituted alkyl with 1 to 4 carbon atoms, R_4 denotes hydrogen, chlorine, methyl or methoxy and R_5 and R_6 independently of one another denote hydrogen or alkyl with 1 to 4 carbon atoms.

3,966,756
SUBSTITUTED DIBENZO[b,f]TETRAZOLO[1,5-d][1,4]-OXAZEPINES

Lantz Stephen Crawley, Spring Valley, N.Y., and Sidney Robert Safir, River Edge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 7, 1975, Ser. No. 565,907
Int. Cl.² C07D *257/04*
U.S. Cl. 260—308 D **4 Claims**

1. A compound of the formula:



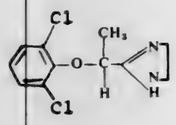
wherein R is selected from the group consisting of hydrogen and halogen.

3,966,757
IMIDAZOLINE DERIVATIVES AND PROCESSES FOR THE PRODUCTION THEREOF

Horst Baganz, Moorrege, and Hans-Joachim May, Neustadt-Hambach, both of Germany, assignors to A. Nattermann & Cie GmbH, Germany

Continuation-in-part of Ser. No. 440,345, Feb. 7, 1974, abandoned, which is a continuation of Ser. No. 164,815, July 21, 1971, abandoned, which is a continuation of Ser. No. 706,665, Feb. 19, 1968, abandoned. This application Apr. 8, 1975, Ser. No. 566,136
Claims priority, application Germany, Feb. 23, 1967, 30055
Int. Cl.² C07D *49/34*
U.S. Cl. 260—309.6 **2 Claims**

1. A compound having the formula



and its pharmaceutically acceptable acid addition salts.

3,966,758

ANTI-INFLAMMATORY 1-(SUBSTITUTED BENZYL)-2-IMIDAZOLIDINONES

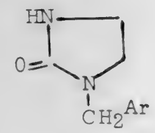
Thomas J. Schwan, and Nelson J. Miles, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed June 16, 1975, Ser. No. 586,921

Int. Cl.² C07D *49/34*

U.S. Cl. 260—309.7 **5 Claims**

1. A compound of the formula:



wherein Ar is 4-chlorophenyl, 3-fluorophenyl, 2,3-dichlorophenyl, and 1-naphthyl.

3,966,759

1-(3,4-DICHLOROBENZYL)-3-INDAZOLINONE

Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Mar. 7, 1975, Ser. No. 556,479

Int. Cl.² C07D *231/56;* **A61K** *31/415*

U.S. Cl. 260—310 A **1 Claim**

1. 1-(3,4-Dichlorobenzyl)-3-indazolinone

3,966,760

2-SUBSTITUTED-5,6-DIMETHOXYINDAZOLES

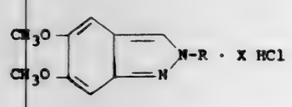
Thomas J. Schwan; Charles S. Davis, both of Norwich, and Leroy J. Honkomp, Oxford, all of N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed May 23, 1974, Ser. No. 472,719

Int. Cl.² C07D *231/56*

U.S. Cl. 260—310 C **15 Claims**

1. A compound of the formula:



wherein R is cyclohexyl, 2-phenethyl, p-diethylaminophenyl, dimethylamino, 2-diethylaminoethyl, 2-tetrahydropyranylmethyl, 2-(5,6-dimethoxy-2-indazolyl) ethyl, 2-methoxyethyl, allyl, 2,3-dihydroxypropyl, phenyl, 3-dimethylaminopropyl, 2-hydroxyethyl or hydroxy; and X is zero, one, or two.

3,966,761

NOVEL AMINO-INDAZOLE COMPOUNDS

Ctirad Podesva, Montreal, and William T. Scott, Chateauguay, both of Canada, assignors to Delmar Chemicals Limited, Ville La Salle, Canada

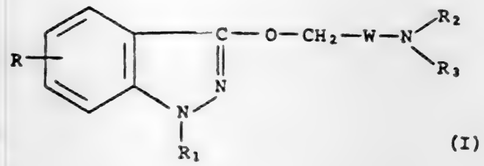
Filed Feb. 7, 1974, Ser. No. 440,445

Claims priority, application United Kingdom, Feb. 7, 1973, 6030/73

Int. Cl.² C07D *231/56;* **A61K** *31/415;* **A01N** *9/22*

U.S. Cl. 260—310 C **8 Claims**

1. A tertiary amino-indazole compound of formula I:



(I)

wherein

R is a hydrogen atom or a halogen atom;

R_1 is an alkyl group having 1 to 6 carbon atoms, or a phenyl alkyl group, the alkyl group having 1 to 6 carbon atoms;

R_2 and R_3 which may be the same or different and each is an alkyl group having 1 to 6 carbon atoms;

W is a branched chain alkylene group comprising a divalent straight chain lower alkyl group having 1 to 6 carbon atoms pendant from the beta or gamma carbon atom relative to the carbon atom;

or a non-toxic acid addition salt thereof.

3,966,762

N-[(6,7-DIHYDROINDOLO[1,7-ab][1]BENZAZEPIN-2-YL)METHYL]PHTHALIMIDE

John Ernest Alexander, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed June 3, 1974, Ser. No. 475,445

Int. Cl.² C07D *403/00*

U.S. Cl. 260—326 D **1 Claim**

1. N-[(6,7-Dihydroindolo[1,7-ab][1]benzazepin-2-yl)methyl]phthalimide.

3,966,763

PROCESS FOR PRODUCING 2-PYRROLIDONE

Janice L. Greene, Chagrin Falls, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed June 30, 1975, Ser. No. 591,878

Int. Cl.² C07D *207/26*

U.S. Cl. 260—326.5 FN **9 Claims**

1. In the process for producing 2-pyrrolidone by contacting an aqueous reaction mixture of succinonitrile with hydrogen at elevated temperatures and pressures in the presence of a hydrogenation catalyst, the improvement comprising:

adding to the aqueous reaction mixture a reaction promoter selected from the group consisting of 2-pyrrolidone and an N-alkyl-2-pyrrolidone wherein the alkyl group contains from 1 to 6 carbon atoms.

3,966,764

LIGAND DETERMINATION OF SPIN LABELED COMPOUNDS BY RECEPTOR DISPLACEMENT-AMPHETAMINE ANALOGS

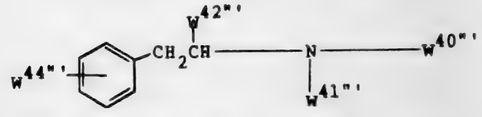
Avram Goldstein, Stanford; Richard K. Leute, Sunnyvale, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syva Company, Palo Alto, Calif.

Division of Ser. No. 270,108, July 10, 1972, Pat. No. 3,853,914. This application June 24, 1974, Ser. No. 482,200

Int. Cl.² C07D *207/14*

U.S. Cl. 260—326.85 **6 Claims**

1. A spin labeled reagent which is of the formula:



wherein one of W^{40}, W^{42}, and W^{44} is -X*-A*; when other than -X*-A*;

W^{40} is hydrogen;

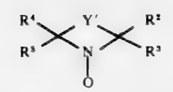
W^{42} is methyl; and

W^{44} is hydrogen;

W^{41} is hydrogen or methyl;

X* is -Z-CONH-, wherein Z is hydrocarbylene of from 1 to 7 carbon atoms, having from 0 to 1 site of ethylenic unsaturation, with the proviso that when W^{44} is -X*-A*, X* is -O-Z-CONH-; and

A* of the formula:



wherein R^{1-3} is alkyl of from 1 to 3 carbon atoms and Y' is a trivalent radical of from 1 to 3 carbon atoms and 0 to 1 heteroatoms, wherein said heteroatom is oxygen, sulfur or nitrogen.

3,966,765

PROCESS FOR PRODUCING BENZOTHIOPYRANS

Jagadish C. Sircar, Dover; Harold Zinnes, Rockaway, and John Shavel, Jr., Mendham, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

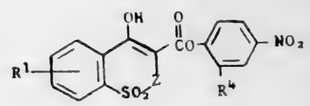
Division of Ser. No. 464,707, April 26, 1975, Pat. No. 3,878,198. This application Oct. 11, 1974, Ser. No. 513,986

The portion of the term of this patent subsequent to Apr. 30, 1991, has been disclaimed.

Int. Cl.² C07D *335/06*

U.S. Cl. 260—327 TH **1 Claim**

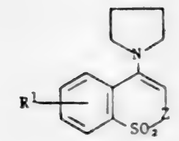
1. A process for the production of a compound of the formula:



III

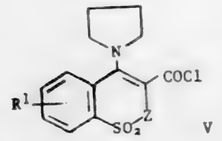
wherein Z is CHR^2; R^1 is hydrogen, a lower alkyl of 1 to 7 carbon atoms, a lower alkoxy of 1 to 7 carbon atoms, halogen, cyano, or trifluoromethyl; R^2 is hydrogen, lower alkyl of 1 to 7 carbons, or aralkyl wherein the alkyl moiety contains from 1 to 7 carbons and the aryl is a monocyclic aromatic radical of 6 to 10 carbon atoms; and R^4 is hydrogen or a nitro radical which comprises:

A. treating a compound of the formula:



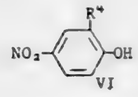
IV

with phosgene to give a compound of the formula



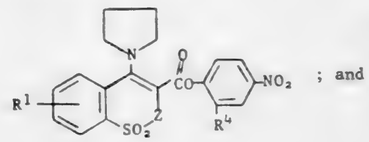
V

B. reacting compound V with a compound of the formula:



VI

to obtain a compound of the formula:



; and

VII

C. hydrolyzing Compound VII under acidic conditions.

3,966,766

MONOCYCLIC MACROCYCLIC COMPOUNDS AND COMPLEXES THEREOF

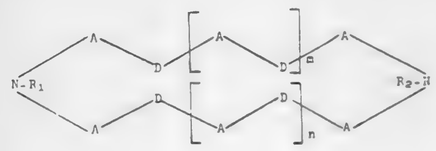
Jean-Marie Lehn, Strasbourg, France, assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 344,682, March 26, 1973, Pat. No. 3,888,877, which is a continuation-in-part of Ser. No. 43,979, June 5, 1970, abandoned. This application Mar. 20, 1975, Ser. No. 560,281

Int. Cl.² C07D *273/00*

U.S. Cl. 260—327 R **13 Claims**

1. A macrocyclic compound selected from the group consisting of a compound of the following formula I:

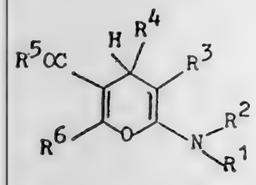


I

wherein R_1 and R_2 and members selected from the group consisting of hydrogen and a hydrocarbon radical having up to 12 carbon atoms;
wherein each A is a hydrocarbon radical having from 2 to 8 carbon atoms;
each D is a member selected from the group consisting of oxygen, sulfur, a hydrocarbon radical having up to 8 carbon atoms, and =N—R (R being a member selected from the group consisting of hydrogen, a hydrocarbon radical having up to 12 carbon atoms, an aryl hydrocarbonsulfonyl radical having up to 12 carbon atoms, a lower alkoxycarbonyl radical, a lower alkoxycarbonylmethylene radical and a carboxymethylene radical);
at least two of said D members being hetero-substituents selected from the group consisting of oxygen, sulfur and =N—R; one of said two hetero-substituents being selected from the group consisting of oxygen and sulfur, the other of said two heterosubstituents being selected from the group consisting of oxygen and =N—R;
m and *n* are integers from 0 to 5;
and the ammonium quaternary salts and acid addition salts thereof.

3,966,767
2-AMINO-4 H-PYRANE
Horst Meyer; Friedrich Bossert, both of Wuppertal; Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Germany
Division of Ser. No. 375,809, July 2, 1973, Pat. No. 3,897,462. This application Nov. 25, 1974, Ser. No. 526,800
Claims priority, application Germany, July 19, 1972, 2235406
Int. Cl.² C07D *333/24*
U.S. Cl. 260—332.2 A **5 Claims**

1. A compound of the formula

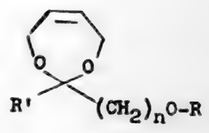


wherein

R^1 and R^2 are the same or different and each is hydrogen or lower alkyl;
R^3 is lower alkyl;
R^4 is thienyl unsubstituted or substituted by lower alkyl, halogen or lower alkoxy;
R^5 is —OR″ wherein R″ is lower alkyl, lower alkenyl or cycloalkyl of 3 to 7 carbon atoms; and
R^6 is hydrogen or lower alkyl.

3,966,768
SUBSTITUTED 1,3-DIOXEPINS
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 179,215, Sept. 9, 1971, Pat. No. 3,738,997, which is a division of Ser. No. 1,032, Jan. 6, 1970, Pat. No. 3,652,594. This application Jan. 22, 1973, Ser. No. 325,846
Int. Cl.² C07D *321/06*
U.S. Cl. 260—338 **5 Claims**

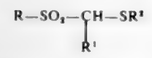
1. Substituted 1,3-dioxepin compounds corresponding to the formula:



wherein R is a lower alkyl group of from 1 to about 8 carbon atoms, inclusive; R′ is hydrogen or a lower alkyl group of from 1 to about 8 carbon atoms, inclusive; and *n* is an integer of from 1 to about 8.

3,966,769
SULFONYL COMPOUNDS
Steffen Piesch, Oberursel, Taunus, and Friedrich Engelhardt, Frankfurt am Main, both of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Germany
Division of Ser. No. 259,201, June 2, 1972, Pat. No. 3,882,120. This application Feb. 22, 1974, Ser. No. 444,810
Claims priority, application Germany, June 5, 1971, 2128011
Int. Cl.² C07D *317/56*
U.S. Cl. 260—340.5 **2 Claims**

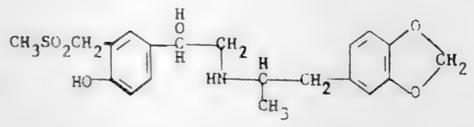
1. A compound of the formula



wherein R is phenyl, naphthyl, benzyl or phenethyl or one of said moieties substituted on the aromatic moiety thereof by alkyl having 1 to 4 carbon atoms, hydroxy, chlorine, bromine, fluorine, nitro or trifluoromethyl; R^1 is phenyl, naphthyl, benzyl or phenethyl substituted on the aromatic moiety thereof by methylenedioxy and R^2 is alkyl having 1 to 8 carbon atoms substituted by hydroxy.

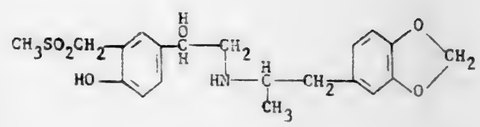
3,966,770
4-HYDROXY-α-[(3,4-METHYLENEDIOXYPHENYL)ISOPROPYLAMINOETHYL]-3-(METHYLSULFONYLMETHYL)BENZYL ALCOHOL
Carl Kaiser, Haddon Heights, N.J., and Stephen T. Ross, Berwyn, Pa., assignors to SmithKline Corporation, Philadelphia, Pa.
Filed Mar. 25, 1975, Ser. No. 561,828
Int. Cl.² C07D *317/44*
U.S. Cl. 260—340.5 **4 Claims**

1. A chemical compound of the formula:



or a pharmaceutically acceptable acid addition salt of said compound.

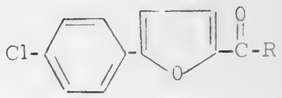
2. A pharmaceutical composition having β-adrenergic stimulant activity in dosage unit form comprising a pharmaceutical carrier and a β-adrenergic stimulating effective amount of a chemical compound of the formula:



or a pharmaceutically acceptable acid addition salt of said compound.

3,966,771
5-(4-CHLOROPHENYL)-2-FURYL KETONES
Stanford S. Pelosi, Jr., Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.
Filed June 16, 1975, Ser. No. 586,877
Int. Cl.² C07D *307/46*
U.S. Cl. 260—347.8 **3 Claims**

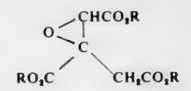
1. A compound of the formula:



wherein R is cyclopropyl or 2-furyl.

3,966,772
CITRIC ACID DERIVATIVES
Robert William Guthrie, Fairfield; James Guthrie Hamilton, Nutley; Richard Wightman Kierstead, North Caldwell; O. Neal Miller, Montclair, all of N.J., and Ann Clare Sullivan, New York, N.Y., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Division of Ser. No. 204,334, Dec. 2, 1971, Pat. No. 3,810,931. This application Feb. 13, 1974, Ser. No. 442,258
Int. Cl.² C07D *303/38*
U.S. Cl. 260—348 A **3 Claims**

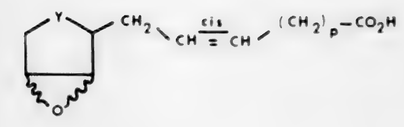
1. A compound of the formula



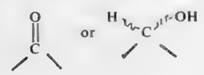
having the threo-configuration wherein all R groups are hydrogen
and the optical antipodes and pharmaceutically acceptable salts thereof.

3,966,773
2-SUBSTITUTED-3,4-EPOXYCYCLOPENTAN-1-ONES, AND 2-SUBSTITUTED-3,4-EPOXYCYCLOPENTAN-1-OLS
Karel Francis Bernady; Middleton Brawner Floyd, Jr., both of Suffern; John Frank Poletto, Nanuet, all of N.Y.; Robert Eugene Schaub, Upper Saddle River, and Martin Joseph Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.
Division of Ser. No. 355,101, April 27, 1973, abandoned. This application Aug. 11, 1975, Ser. No. 603,466
Int. Cl.² C07D *303/38*
U.S. Cl. 260—348 C **3 Claims**

1. Compounds of the formula:



wherein *p* is an integer from 2 to 6, inclusive, and Y is a divalent radical of the formulae



3,966,774
PROCESS FOR THE PRODUCTION OF AMINO-ANTHRAQUINONE
Paul Stoll, Basel, and Istvan Toth, Bottmingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland
Filed Aug. 6, 1973, Ser. No. 385,757
Claims priority, application Switzerland, Aug. 8, 1972, 17700/72
Int. Cl.² C07C *85/11, 97/24*
U.S. Cl. 260—378 **28 Claims**

1. A process for producing an aminoanthraquinone or a diaminoanthraquinone or mixtures thereof from a nitroanthraquinone selected from the group consisting of 1-nitroanthraquinone, 2-nitroanthraquinone, 1,2-dinitroanthraquinone, 1,6-dinitroanthraquinone, 1,7-dinitroanthraquinone, 1,8-dinitroanthraquinone, 1,5-dinitroanthraquinone, 2,7-dinitroanthraquinone, 2,6-dinitroanthraquinone, and mixtures thereof, comprising the steps of:
a. hydrogenating said nitroanthraquinone, suspended or dissolved in an inert solvent selected from the group consisting of a liquid aromatic hydrocarbon, chlorobenzene, a liquid ether and a liquid carboxylic acid ester, with molecular hydrogen in the presence of a metal hydrogenation catalyst selected from the group consisting of noble metal and Raney nickel, at an upper temperature in the range of 50° to 200°C., and at a hydrogen partial pressure of between 0.5 and 15 atmospheres, the weight ratio of solvent to nitroanthraquinone being between 100:1 and 1:2 and the weight of catalyst being between 0.05 and 10% of the weight of nitroanthraquinone, the amount of hydrogen being in excess of the theoretical amount to overhydrogenate the nitroanthraquinone to nuclear-hydrogenated aminoanthraquinone;
b. continuing heating within said upper temperature range for sufficient time to dissolve all of the resulting hydrogenated products;
c. removing the catalyst within said upper temperature range;
d. cooling the reaction mixture to a lower temperature between 40° and 150°C. below said upper temperature, to precipitate the aminoanthraquinone;
e. recovering the precipitated aminoanthraquinone from the reaction mixture containing dissolved nuclear hydrogenated aminoanthraquinone; and
f. reacting the nuclear-hydrogenated aminoanthraquinone with nitroanthraquinone or a hydrogenated derivative thereof of higher oxidative level than aminoanthraqui-

none to oxidize the nuclear-hydrogenated aminoanthraquinone to aminoanthraquinone,

the solvent being selected so that at the upper temperature the aminoanthraquinone and nuclear-hydrogenated aminoanthraquinone are soluble therein and at the lower temperature, the aminoanthraquinone is substantially insoluble therein while the nuclear-hydrogenated aminoanthraquinone is soluble therein.

3,966,775

PROCESS FOR THE PREPARATION OF 1-SUBSTITUTED ANTHRAQUINONES

Akio Fukui, Kyoto; Hiroshi Koike, Takatsuki; Takehiko Tanaka, Kobe, and Yuji Ito, Amagasaki, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan

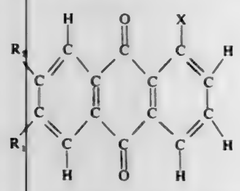
Filed Oct. 25, 1974, Ser. No. 518,209

Claims priority, application Japan, Oct. 26, 1973, 48-119978; Nov. 9, 1973, 48-125422; Jan. 9, 1974, 49-5318; Jan. 10, 1974, 49-5626; May 8, 1974, 49-50276

Int. Cl.² C07C *85/11, 89/00*

U.S. Cl. 260—378 **38 Claims**

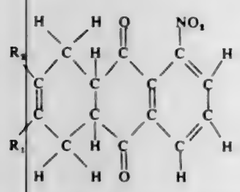
1. A process for the preparation of a 1-substituted anthraquinone having the general formula (I)



(I)

where, in the formula, R_1 and R_2 individually represent a hydrogen atom or methyl group and X represents a hydroxylamino or amino group,

which comprises treating a 5-nitro-1,4,4a,9a -tetrahydroanthraquinone having the general formula (II)



(II)

where, in the formula, R_1 and R_2 individually represent a hydrogen atom or methyl group

in the presence of a basic compound in a liquid medium whereby during the course of the reaction the ring structure is oxidized and the nitro group is partially or completely reduced to provide a product consisting essentially of the 1-substituted anthraquinone of the above general formula (I).

3,966,776

PROCESS FOR PREPARING PARABENZOQUINONES

Takashi Kato, Yokohama; Toru Yamanaka, Kamakura, and Akira Komatsu, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

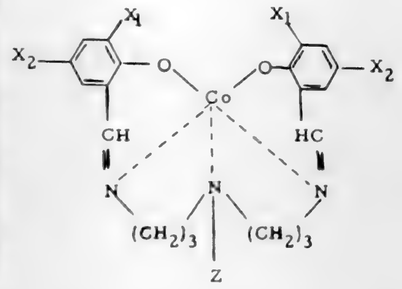
Continuation-in-part of Ser. No. 339,787, March 9, 1973, abandoned. This application Sept. 10, 1974, Ser. No. 504,796

Int. Cl.² C07C *49/64, 49/66, 49/68*

U.S. Cl. 260—396 R **13 Claims**

1. A process for preparing a parabenzoquinone which comprises oxidizing an alkylphenol with oxygen or oxygen-containing gas in an inert organic solvent in the presence of a cobalt-di-(salcylal)-3,3'-diimino-di-n-propylamine derivative and an amine selected from the group consisting of ammonia and primary, secondary and tertiary amines having 1 or 2 nitrogen atoms and containing up to and including 15 carbon atoms, wherein:

said derivative is of the formula:

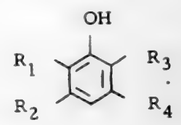


(I)

wherein X_1 and X_2 each represents a hydrogen atom, a halogen atom, an alkyl or alkoxy group having 1 to 3 carbon atoms or a nitro group; and Z represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms;

reaction is at 10°C to 50°C; and

the alkylphenol is of the formula:



wherein R_1, R_2, R_3 and R_4 are hydrogen or a C_1–C_4 alkyl group, at least 1 of R_1–R_4 being C_1–C_4 alkyl group.

3,966,777

PROCESS FOR THE PRODUCTION OF 1α-HYDROXY PROVITAMIN D_3 AND 1α-HYDROXY VITAMIN D_3

Yehuda Mazur, Tel-Aviv; Dalia Freeman, Rishon Lezion, and Aureliu J. Acher, Ramat-Gan, all of Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Filed Oct. 15, 1975, Ser. No. 622,647

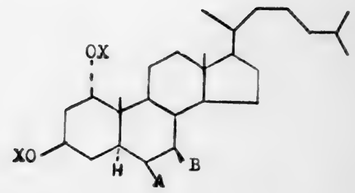
Claims priority, application Israel, Oct. 22, 1974, 45897

Int. Cl.² C07J *9/00*

U.S. Cl. 260—397.2 **16 Claims**

1. Process for the production of 1α-hydroxy provitamin D_3 (1α-hydroxy-7-dehydrocholesterol) which comprises treating 1α,2α-epoxy-cholesta-4,6-dien-3-one, dissolved in a solvent, at a low temperature with liquid ammonia, with ammonium chloride and with lithium metal to result in 1α,3β-dihydroxy-cholest-6-ene, converting this to the corresponding 1α,3β-di(-lower alkanoyloxy)-derivative, reacting the latter with bromine to give 1α,3β-di-lower alkanoyloxy 6β,7α-dibromo-cholestane, which latter is dehydro-brominated with a base to give 1α,3β-di(lower alkanoyloxy)-cholesta-5,7-diene which is converted to the 1α-hydroxy provitamin D_3.

8. A compound of the formula



wherein X is hydrogen or lower alkanoyl,

A—B is a 6(7) double bond or A is —Br and B is —Br.

3,966,778

PRODUCTION OF 21-PHOSPHATE CORTICORDS HAVING UNPROTECTED HYDROXYL RADICALS AT LEAST AT THE 17α- AND 21-POSITION

Hirotomo Masuya, Kobe, and Takuichi Miki, Amagasaki, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 160,205, July 6, 1971, abandoned, which is a continuation of Ser. No. 547,779, May 5, 1966, abandoned. This application June 20, 1974, Ser. No. 481,906

Claims priority, application Japan, May 8, 1965, 40-27042; June 9, 1965, 40-34556

Int. Cl.² C07J *5/00*

U.S. Cl. 260—397.45 **19 Claims**

1. A process for preparing 17α-hydroxy corticoid 21-phosphate which comprises reacting a compound selected from the group consisting of 17α,21-dihydroxy corticoid and 11,17α,21-trihydroxy corticoid with pyrophosphoryl tetrachloride in the presence of an organic solvent which does not react with the starting materials at a temperature of up to about room temperature, subjecting the reaction mixture to hydrolysis with an aqueous hydrolysis medium at a temperature up to about room temperature, and recovering the objective 17α-hydroxy corticoid 21-phosphate or 11,17α-dihydroxy corticoid 21-phosphate from the hydrolysis reaction medium.

3,966,779

THYMOL DERIVATIVES AND A PROCESS FOR THEIR PREPARATION

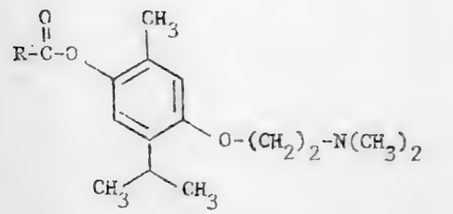
Gerhard Satzinger, Denzlingen, and Manfred Franz Herrmann, St. Peter, both of Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 356,031, April 30, 1973, abandoned. This application Nov. 29, 1974, Ser. No. 528,125

Int. Cl.² C07C *69/24, 69/26, 69/96*

U.S. Cl. 260—404 **6 Claims**

1. Compounds of the general formula I:



I

in which R represents an alkyl group of 8 to 11 carbon atoms or an alkoxy group R'—O— of 3 to 10 carbon atoms and the pharmaceutically acceptable salts thereof.

3,966,780

PROPARGYL ESTERS OF 7,11-SUBSTITUTED DODECADIENOIC ACIDS

Madhukar Subraya Chodnekar, Basel; Peter Loeliger; Albert Pfiffner, both of Pfaffhausen; Ulrich Schwieter, Reinach; Milos Suchy, and Rene Zurfluh, both of Pfaffhausen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

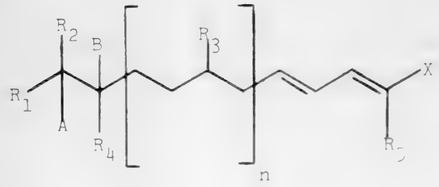
Filed June 8, 1973, Ser. No. 368,135

Claims priority, application Switzerland, June 16, 1972, 9109/72; June 29, 1972, 9744/72

Int. Cl.² C07C *69/61;* **A01N** *9/24*

U.S. Cl. 260—410.9 N **9 Claims**

1. A polyene compound of the formula:



wherein R_1, R_2, and R_3 are methyl; R_4 is hydrogen or lower alkyl of 1–6 carbon atoms, and R_5 is hydrogen; A is individually hydrogen, hydroxy, lower alkoxy of 1–6 carbon atoms or lower alkyl of 1–6 carbon atoms; B is individually hydrogen; or A and B taken together form a carbon to carbon double bond or an oxygen bridge; X is —$COOR_6$ wherein R_6 is propargyl; and *n* is equal to 1.

3,966,781
DEUTERATION OF FUNCTIONAL GROUP-CONTAINING HYDROCARBONS

Joseph G. Atkinson, Montreal, and Michael O. Luke, Pinawa, both of Canada, assignors to Merck Sharp & Dohme (I.A.) Corporation, New York, N.Y.

Division of Ser. No. 192,296, Oct. 26, 1971, abandoned. This application Dec. 10, 1973, Ser. No. 423,361
Claims priority, application Canada, Dec. 17, 1970, 100961
Int. Cl.² C11C *3/02*
U.S. Cl. 260—410.9 R **10 Claims**

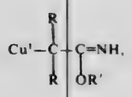
1. A process for preparing a deuterated, saturated, acyclic hydrocarbon C_{4-18}-alkanoic acid or its ester or amide and having a boiling point of at least 100°C. in its liquid state, which comprises the continuous passage under atmospheric pressure of deuterium gas at a flow rate of at least about 40 ml. per minute through a saturated acyclic hydrocarbon alkanoic acid or its ester or its amide in its liquid state and a catalyst selected from the group consisting of palladium, platinum, rhodium, ruthenium, osmium, iridium, nickel, and rhenium at a temperature between about 100°C. and 300°C. and below the boiling point of said acyclic hydrocarbon acid, ester or amide and continuing the exchange until between 50 and 99.5% of the substrate hydrogen atoms have been replaced by deuterium atoms.

3,966,782
COPPER BASE METALORGANIC COMPOUNDS AND PROCESS FOR THE PREPARATION THEREOF

Gioacchino Cipriani, and Emilio Perrotti, both of San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Nov. 15, 1974, Ser. No. 524,311
Claims priority, application Italy, Nov. 21, 1973, 31501/73
Int. Cl.² C07F *1/08*
U.S. Cl. 260—438.1 **3 Claims**

1. A copper base metalorganic compound having the formula



wherein the copper is in the $^{+}1$ oxidation state, R, the same or different, is a member of the group consisting of hydrogen, methyl, ethyl and phenyl and R′, is methyl or ethyl.

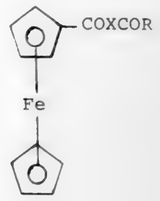
2. The process of preparing the metalorganic compound of claim 1, which consists in reacting a monovalent copper salt having the formula $Cu^{1}X$, wherein X is a monovalent anion selected from the group consisting of halides, ClO_4^- and BF_4^-, with an alkali metal alkoxide in the presence of a mixture of a nitrile represented by the formula RR′CHCN, wherein R is a member of the group consisting of hydrogen, methyl, ethyl and phenyl and R′ is methyl or ethyl, and an alcohol represented by the formula R′OH, wherein R′ is methyl or ethyl, under anhydrous conditions in the presence of an inert solvent selected from the group consisting of aliphatic, aromatic and cycloaliphatic hydrocarbons and tetrahydrofuran, in the liquid phase, and in an atmosphere of inert gas.

3,966,783
COMPOUNDS

John Louis Suschitzky, and David Rutherford, both of Loughborough, England, assignors to Fisons Limited, London, England

Filed Nov. 11, 1974, Ser. No. 522,593
Claims priority, application United Kingdom, Nov. 21, 1973, 54003/73; July 17, 1974, 31608/74
Int. Cl.² C07F *15/02*
U.S. Cl. 260—439 CY **7 Claims**

1. A compound of formula I,



I

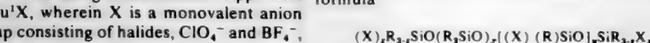
in which X is a bivalent saturated hydrocarbon group containing from 2 to 10 carbon atoms inclusive, and
R is C_1 to C_8 alkyl, phenyl, or phenyl substituted by one or more halogen or alkyl groups.

3,966,784
POLYETHER URETHANE FOAM

Bela Prokai, Mahopac, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 334,767, Feb. 22, 1973, abandoned. This application Oct. 7, 1974, Ser. No. 512,860
Int. Cl.² C07F *7/10*, *7/18*
U.S. Cl. 260—448.2 N **23 Claims**

1. A cyanoalkyl modified siloxane fluid having the average formula



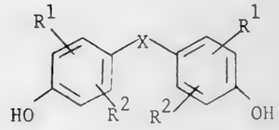
wherein x has a value of 2 to 6 inclusive; y has a value of 0 to 6 inclusive; z has a value of 0 to 1 inclusive; R is a lower alkyl or phenyl radical; and X is a cyanoalkoxy-alkyl radical having the formula $-(O)_nR'OR''CN$ where n has a value of 0 or 1, R′ is an alkylene radical having from 3 to 8 carbon atoms and R″ is an alkylene radical having from 2 to 4 carbon atoms said siloxane containing at least one of said cyanoalkoxy-alkyl radicals and having an aqueous molecular weight in the range of about 400 to about 2000.

3,966,785
PROCESS FOR THE PREPARATION OF BISPHENOL BISCHLOROCARBONIC ACID ESTERS

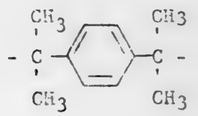
Heinrich Krimm, Krefeld; Hermann Schnell, Krefeld-Uerdingen, and Hans-Helmut Schwarz, Krefeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Mar. 4, 1975, Ser. No. 555,148
Claims priority, application Germany, Mar. 6, 1974, 2410668
Int. Cl.² C07C *68/00*
U.S. Cl. 260—463 **9 Claims**

1. A continuous process for the preparation of a bisphenol bischlorocarbonic acid ester which comprises reacting a hydroxy compound which is a hydroquinone or an aromatic dihydroxy compound of the formula



wherein X is alkylene, alkylidene, cycloalkylene, cycloalkylidene, O, S, SO_2 or

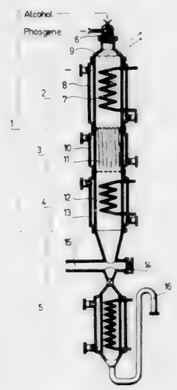


and R^1 and R^2, which may be the same or different, are each alkyl, chlorine or bromine, said hydroxy compound being dissolved in excess alkali metal hydroxide solution as the sole acid binding agent, with from 2.5 to 5.0 mol, per mol hydroxy compound, of phosgene which is dissolved in a solvent for the bischlorocarbonic acid ester formed in the reaction, at a pH of above 12 and at a temperature of from 0° to 50°C. under vigorous mixing of the reactants and uni-directional flow conditions, separating the organic layer thus obtained and isolating the bisphenol bischlorocarbonic acid ester therefrom by distillation, crystallization or a combination thereof.

3,966,786
METHOD FOR PRODUCING CHLOROFORMATES

Laszlo Rozsa, Miskolc; Lajos Meszaros, Szeged, and Ferenc Mogyorodi, Miskolc, all of Hungary, assignors to Eszakmagyarorszagi Vegyimuvek, Sajobabony, Hungary

Filed Jan. 28, 1972, Ser. No. 221,504
Int. Cl.² C07C *68/02*
U.S. Cl. 260—463 **13 Claims**



1. In a process for producing a chloroformate by reaction of an alcohol with gaseous phosgene in a reaction zone the improvement which comprises reacting said alcohol in the atomized state.

3,966,787
PROCESS FOR THE PREPARATION OF GRANULAR OR PULVERULENT ORGANIC PEROXIDES

Johannes de Jager, Diepenveen, and Hendrik Hansma, Schalkhaar, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed June 10, 1974, Ser. No. 477,849

Claims priority, application Netherlands, June 14, 1973, 7308250

Int. Cl.² C07C *68/00, 179/14*

U.S. Cl. 260—463 **6 Claims**

1. A process for preparing a granular or pulverulent diacyl peroxide which is solid at a temperature ranging from −20° to +55°C, which comprises

solidifying a liquid diacyl peroxide with the aid of a liquid cooling medium in which the peroxide is substantially insoluble and which is liquid at a temperature of −20°C or lower, but gaseous at the storage temperature of the diacyl peroxide to be solidified.

3,966,788
PROCESS FOR THE PREPARATION OF ALIPHATIC DIOL POLYCARBONATES

Jean-Pierre G. Senet, Vaux-le-Penil, and Julien C. Deweerdt, Toulouse, both of France, assignors to Societe Nationale des Poudres et Explosifs, France

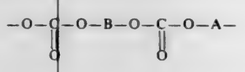
Filed Sept. 24, 1974, Ser. No. 508,754

Claims priority, application France, Oct. 16, 1973, 73.36841

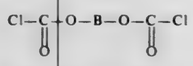
Int. Cl.² C07C *68/00*

U.S. Cl. 260—463 **16 Claims**

1. A process for preparing telechelating oligomers having two terminal hydroxyl groups of numerical average molecular weight between 250 and 2500, which possess carbonate groups distributed through the macromolecular chain, with the repeating unit of structure



in which each of A and B is branched or straight chain bivalent aliphatic hydrocarbyl or cycloaliphatic hydrocarbyl radical, unsubstituted or substituted by aromatic, halogen or phosphorus-containing groups, or is a branched or straight chain bivalent aliphatic hydrocarbyl or cycloaliphatic hydrocarbyl radical additionally containing at least a functional bridge selected from the group consisting of ether, thioether and ester radicals and A and B are the same or different, which consists of reacting a monomer which is a bis-chloroformate of formula



in which B is as defined hereinabove with an excess of a monomer diol of the formula

in which A is as defined hereinabove, in three sequential steps:

1. introducing one of said monomers into the other over a period of 20 minutes up to 4 hours under reduced pressure of 1–10 cm of mercury at a temperature of 20°–80°C while flushing the reaction mixture with a gentle stream of an inert anhydrous gas, and
2. polycondensing the bis-chloroformate with the diol at a temperature below 150°C, under reduced pressure of 1–10 cm of mercury for a period of time between 1.5 hours and 7 hours;
3. and purifying the crude oligomers formed.

3,966,789
N-SUBSTITUTED AMINONITRILE DERIVATIVES

Tadashi Oishi; Nobuyuki Kameda; Toshiro Kato; Akira Fujinami, all of Hyogo; Toshiaki Ozaki, Osaka, and Eiyashi Itooka, Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

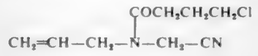
Filed Sept. 5, 1974, Ser. No. 503,425

Claims priority, application Japan, Sept. 5, 1973, 48-100547

Int. Cl.² C07C *121/417*

U.S. Cl. 260—465.4 **1 Claim**

1. A compound



3,966,790
COMPOSITIONS AND METHODS FOR HIGH TEMPERATURE STABLE CATALYSTS

Saul G. Hindin, Mendham, and George R. Pond, Elizabeth, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Filed Dec. 10, 1973, Ser. No. 423,094

Int. Cl.² B01J *23/16*

U.S. Cl. 252—465 **20 Claims**

1. A catalyst composition consisting essentially of (a) a catalytically-active, calcined composite of alumina; a first metal oxide component selected from the group consisting of an oxide of chromium, tungsten, and mixtures thereof; and a second metal oxide component selected from the group consisting of an oxide of (i) a metal selected from the group consisting of calcium, strontium, barium, silicon, tin, and mixtures thereof and (ii) mixtures of zirconium with a metal selected from the group consisting of calcium, strontium, barium, silicon, tin, and mixtures thereof, said composite having been formed by calcination at a temperature of at least 500°C. and possessing a surface area of at least 20 m^2/ g when calcined for 2 hours at 1200°C.; and (b) a catalytically-effective amount of a platinum group metal incorporated in said calcined composite after calcination of said composite at a temperature of at least 500°C.

3,966,791
PREPARATION OF DIALKYL AMINO ACRYLONITRILE

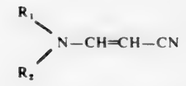
Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 480,660, June 19, 1974, Pat. No. 3,900,511, which is a division of Ser. No. 338,018, March 5, 1973, Pat. No. 3,853,946, which is a division of Ser. No. 197,968, Nov. 11, 1971, Pat. No. 3,742,015, which is a division of Ser. No. 42,528, June 1, 1970, Pat. No. 3,655,716, which is a division of Ser. No. 719,834, April 9, 1968, Pat. No. 3,542,848. This application May 2, 1975, Ser. No. 574,164

Int. Cl.² C07C *120/00*

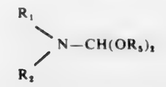
U.S. Cl. 260—465.5 R **1 Claim**

1. A process for producing a dialkyl amino acrylonitrile compound of the formula:



wherein R_1 and R_2 are lower alkyl containing from 1 to 6 carbon atoms;

comprising condensing acetonitrile at a temperature of from 80°C. to 250°C. with an acetal compound of the formula:



wherein R_1 and R_2 are as above; and R_5 is lower alkyl containing from 1 to 6 carbon atoms;

to form said dialkyl amino acrylonitrile.

3,966,792
PROSTAGLANDIN COMPOUNDS

Masaki Hayashi; Seiji Kori, both of Takatsuki; Isao Ohyama, Kyoto, and Hirofumi Endo, Fujinomiya, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

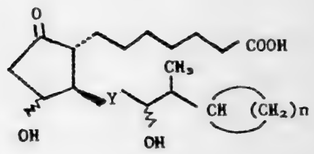
Filed Feb. 27, 1974, Ser. No. 446,241

Claims priority, application Japan, Feb. 28, 1973, 48-23068

Int. Cl.² C07C *61/38, 69/74*

U.S. Cl. 260—468 D **9 Claims**

1. A compound of the formula:



wherein Y represents trans—CH=CH— or CH_2CH_2—, n represents 4 or 5, and indicates attachment of the hydroxy radical to the carbon atom in alpha or beta configuration, and alkyl esters thereof having from 1 to 12 carbon atoms in a straight- or branched-chain, and cyclodextrin clathrates of such acids and esters, and non-toxic salts of such acids.

3,966,793
INTERMEDIATES FOR PREPARING 1,4-BENZODIAZEPINE-2-ONES HAVING A CARBOXYLIC ACID ESTER OR AMIDE GROUP IN THE 3-POSITION

Josef Schmitt, deceased, late of L'Hay-les-Roses, France (by Marcelle Armande Georgette Schmitt, administratrix), assignor to Clin Midy, Paris, France

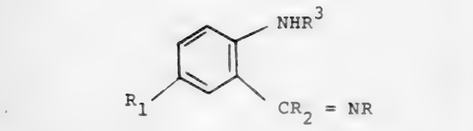
Continuation-in-part of Ser. No. 739,990, Feb. 19, 1968, abandoned, which is a division of Ser. No. 463,613, June 14, 1965, abandoned. This application Sept. 26, 1973, Ser. No. 401,029

Claims priority, application France, June 15, 1964, 64.978360; Apr. 12, 1965, 65.12886

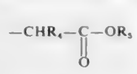
Int. Cl.² C07C *119/00*

U.S. Cl. 260—471 A **13 Claims**

1. An ortho-aminoaryl ketimine having the formula



in which R is a group having the formula



R_1 is a hydrogen or halogen atom or a trifluoromethyl, loweralkyl, loweralkoxy, nitro or amino group, R_2 is a cyclohexyl, a loweralkyl or a phenyl group, R_3 is a hydrogen atom or a loweralkyl group, R_4 is a hydrogen atom, lowercarbalkoxy, carbamoyl, N-loweralkylcarbamoyl, N,N-di-loweralkylcarbamoyl, N(di-loweralkylaminoalkyl) carbamoyl, loweralkyl group, and R_5 is a loweralkyl group.

3,966,794
CURABLE POLYENE-POLYTHIOL COMPOUNDS

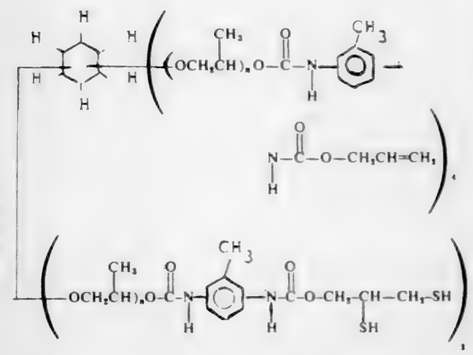
Donald W. Larsen, Marriottsville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 259,148, June 2, 1972, abandoned. This application Sept. 9, 1974, Ser. No. 504,410

Int. Cl.² C07C *125/00*

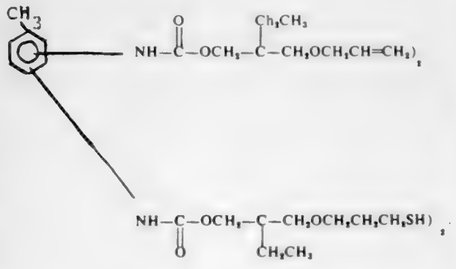
U.S. Cl. 260—471 C **2 Claims**

1. A compound having the formula



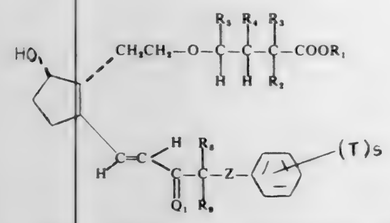
wherein *n* is a numeral from 1 to 2, with *n* being, on the average, about 1.5 per molecule.

2. A compound having the formula:

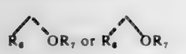


3,966,795
5-OXA-11-DEOXYPHENYL- AND PHENOXY-SUBSTITUTED PROSTAGLANDIN $F_1\alpha$ ANALOGS
Norman A. Nelson, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Division of Ser. No. 361,990, May 21, 1973, Pat. No. 3,864,387. This application Nov. 18, 1974, Ser. No. 524,482
Int. Cl.² C07C *69/76*
U.S. Cl. 260—473 A **17 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein Z represents an oxa atom (—O—) or C_jH_{2j} wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, substituted with zero, one, or 2 fluoro, with one to 6 carbon atoms, inclusive, between $—CR_8R_9—$ and the ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_{10}$, wherein R_{10} is hydrogen or alkyl of one to 4 carbon atoms, inclusive, and s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different; wherein Q_1 is



wherein R_6 and R_7 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different; wherein R_1 is hydrogen, alkyl of one to 12 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein when Z is oxa (—O—), R_8 and R_9 are hydrogen or alkyl of one to 4 carbon atoms, being the same or different, and, when Z is C_jH_{2j}, R_8 and R_9 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that R_8 is fluoro only when R_9 is hydrogen or fluoro; wherein R_3 is hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro; wherein R_2 is hydrogen or fluoro, with the proviso that R_2 is fluoro only when R_3 is hydrogen or fluoro; and wherein R_4 and R_5 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, with the proviso that no more than one of R_3, R_4, and R_5 is alkyl; including the lower alkanoates thereof, and the pharmacologically acceptable salts thereof when R_1 is hydrogen.

3,966,796
N-CHLORO-AMINO ACID DERIVATIVES ACTIVITY
James J. Kaminski, and Nicolae S. Bodor, both of Lawrence, Kans., assignors to Interx Research Corporation, Lawrence, Kans.
Filed June 14, 1974, Ser. No. 479,560
Int. Cl.² C07D *101/10*
U.S. Cl. 260—482 R **12 Claims**

1. The compound: n-hexyl-α-N-chloroaminoisobutyrate.

7. The compound: Methyl-α-N,N-dichloroaminoisobutyryl-glycinate.

9. An ester of α-N,N-dichloroaminoisbutyric acid having the formula:



and

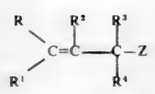
wherein R_1 represents a member selected from the group consisting of an n- or branched alkyl group of from 1 to 20 carbon atoms, a phenyl group and a naphthyl group and wherein *n* represents an integer of from 1 – 11.

3,966,797
DINORBORNENES
Henry Octave Colomb, Jr.; David John Trecker, both of South Charleston, and Thomas Kemper Brotherton, Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 759,759, Sept. 13, 1968, Pat. No. 3,658,669. This application May 26, 1971, Ser. No. 147,224
Int. Cl.² C07C *69/66*
U.S. Cl. 260—484 A **3 Claims**

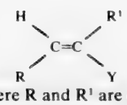
1. A dinorbornene of the formula: [BCH-X-G_n-poly(alkylenecarbonyloxy)alkylene]$_2$0 wherein BCH is the bicycloheptenyl group; X is a divalent alkylene of from 1 to 8 carbon atoms; G is a divalent carbamoyloxy group; and *n* is an integer having a value of 0 or 1.

3,966,798
CATALYTIC COUPLING OF ALLYLIC COMPOUNDS TO SUBSTITUTED OLEFINS
George M. Intille, and Gary R. Beck, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Dec. 4, 1974, Ser. No. 529,674
Int. Cl.² C07C *69/52*
U.S. Cl. 260—486 R **19 Claims**

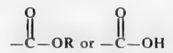
1. A catalytic process for carbon to carbon coupling of allylic compounds with substituted olefins, comprising:
contacting allylic compounds having the formula



where R, R^1, R^2, R^3, and R^4 are each independently hydrogen, or a hydrocarbyl radical, and Z is hydrogen, chlorine, an alcohol, or —OR group with R having a hydrocarbyl radical; and
substituted olefins having the formula



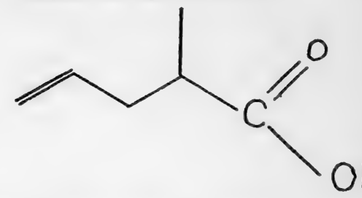
where R and R^1 are each independently hydrogen or a hydrocarbyl radical and Y is one of



with R being a hydrocarbyl radical;
said contacting occurring in the presence of a catalyst system comprised of a a Group VIII metal component, at least one of a bromine or iodine component, and Group VA component.

3,966,799
ALKYL ESTERS OF 2-METHYL-4-PENTENOIC ACID
John B. Hall, Rumson; Ching Y. Tseng, Middletown; Manfred Hugo Vock, Locust; Joaquin Vinals, Red Bank, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.
Continuation-in-part of Ser. No. 490,718, July 22, 1974, Pat. No. 3,907,718. This application May 21, 1975, Ser. No. 579,567
Int. Cl.² C07C *69/52*
U.S. Cl. 260—486 R **3 Claims**

1. A compound having the structure



wherein R′ is selected from the group consisting of n-hexyl and i-butyl.

3,966,800
1-CARBOXYMETHYL-3-CHLOROADAMANTANE
Yoshiaki Inamoto, Wakayama; Takeji Kadono, Kainan, and Naotake Takaishi, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 410,508, Oct. 29, 1973, Pat. No. 3,897,479. This application Nov. 29, 1974, Ser. No. 528,399
Claims priority, application Japan, Oct. 30, 1972, 47-108602
Int. Cl.² C07C *61/38*
U.S. Cl. 260—514 G **1 Claim**

1. 1-Carboxymethyl-3-chloroadamantane.

3,966,801
PHENYL BUTYRIC ACIDS AND DERIVATIVES THEREOF
Julius Diamond, Lafayette Hills, Pa., assignor to William H. Rorer, Inc., Fort Washington, Pa.
Division of Ser. No. 195,825, Nov. 4, 1971, Pat. No. 3,867,434. This application Dec. 13, 1973, Ser. No. 424,628
Int. Cl.² C07C *63/52*
U.S. Cl. 260—515 A **2 Claims**

1. α-chloro-γ-(p-i-propylphenyl)butyric acid.

3,966,802
PROCESS FOR PREPARING ACRYLIC ACID AND OXIDATION CATALYST
Shigeo Takenaka; Hitoshi Shimizu, and Masanobu Ogawa, all of Takasaki, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 336,058, Feb. 26, 1973, Pat. No. 3,857,796. This application Apr. 19, 1974, Ser. No. 462,310
Claims priority, application Japan, Mar. 9, 1972, 47-23603
Int. Cl.² C07C *51/26*
U.S. Cl. 260—530 N **5 Claims**

1. In the continuous process for preparing acrylic acid by vapor phase oxidation of propylene wherein acrolein is mainly prepared in the first oxidation step and oxidized in the second oxidation step without separating acrolein from by-products or off gas, the improvement which comprises carrying out said second oxidation step with molecular oxygen in the presence of an oxidation catalyst of the empirical formula:

$$Mo_aV_bT_cA_dO_e$$

wherein Mo, V and O represent molybdenum, vanadium and oxygen, respectively, T represents tungsten or antimony, A represents an alkali metal, and a, b, c, d and e represent number of atoms of Mo, V, T, A and O, respectively, and when a is 12, b is 0.5 to 6, c is 0 to 6, d is 0.01 to 1.5 and e is a number naturally determined by the valence requirements of the other elements present, said catalyst being prepared by mixing a water-soluble molybdate, a water-soluble vanadate, a water-soluble salt of an alkali metal and, optionally, tungsten or antimony compound all in the form of aqueous solution or powder, adding, if necessary, a suitable carrier, evaporating the mixture to dryness and calcining the dried mixture at a temperature of from 300° to 500°C.

3,966,803
PROCESS FOR THE MANUFACTURE OF ALKALI METAL SALTS OF AMINO POLYCARBOXYLIC ACIDS
Wilhelm Vogt, Knapsack near Cologne; Hubert Neumaier, Hermulheim near Cologne; Erich Schallus, Cologne-Klettenberg, and Gunter Peantek, Hermulheim near Cologne, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany
Continuation of Ser. No. 333,006, Feb. 16, 1973, abandoned, which is a continuation of Ser. No. 791,139, Jan. 14, 1969, abandoned. This application Apr. 25, 1975, Ser. No. 571,771
Claims priority, application Germany, Feb. 2, 1968, 1668927
Int. Cl.² C07C *99/10*
U.S. Cl. 260—534 E **6 Claims**

1. In the process for the production of alkali metal salts of an amino polycarboxylic acid selected from the group consisting of nitrilotriacetic acid and ethylene diamine tetraacetic acid by reacting an amino polycarboxylic acid nitrile selected from the group consisting of nitrilo triacetonitrile and ethylene diamine tetraacetonitrile with aqueous alkali at elevated temperatures, the improvement which consists essentially of suspending the amino polycarboxylic acid nitrile at room temperature in an aqueous alkali metal hydroxide solution which has a minimum strength of about 30% by weight and contains a stoichiometric proportion of alkali metal hydroxide, introducing the resulting suspension into a reaction zone heated to a reaction temperature of between 80° and 120°C., inducing and effecting salt formation by thorough agitation of the suspension in the reaction zone throughout the reaction, the suspension being introduced into the reaction zone at a rate sufficient for the foaming and rapidly reacting reaction mixture to remain within a zone of thorough mixing so that a stoichiometric proportion of alkali metal hydroxide is present in all portions of said mixing zone throughout the reaction, employing the heat evolved during the reaction to remove from the reactor the ammonia formed during the reaction and water present therein, the removal of the water and ammonia being effected continuously at a rate sufficient for the reaction

mixture to remain moist with water or steam during the reaction, and evaporating the resulting moist reaction product substantially to dryness.

3,966,804

METHOD OF PREPARATION OF HYDROXYLAMINE FORMIATE

Andre Bathellier, Sceaux, and Michel Germain, Marcoussis, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 20, 1974, Ser. No. 471,744

Claims priority, application France, May 18, 1973, 73.18165

Int. Cl.² C07C *51/52, 135/00*

U.S. Cl. 260—542 **4 Claims**

1. A method of preparation of hydroxylamine formiate consisting of conducting an anion exchange by continuous extraction of anions between an aqueous solution of a hydroxylamine salt selected from the group consisting of hydroxylamine sulphate, hydroxylamine hydrochloride and hydroxylamine nitrate, and an organic solution of trilaurylamine formiate in accordance with the reaction:

$$NH_2OH \cdot HX_{aq.} + A \cdot HCOOH_{org.} \rightarrow A \cdot HX_{org.} + NH_2OH : HCOOH_{aq.}$$

where A represents the trilaurylamine and X represents the anion of the starting hydroxylamine salt, so as to obtain an aqueous solution of hydroxylamine salt.

3,966,805

N,N'-DIPHENYL-N-(N''-ALKYLCARBAMOYL)FORMAMIDINES

Karl Seckinger, Riegel, Germany, and Fritz Reisser, Therwil, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

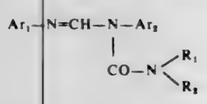
Filed Feb. 23, 1973, Ser. No. 335,050

Claims priority, application Switzerland, Feb. 29, 1972, 2859/72

Int. Cl.² C07C *127/19;* **A01N** *9/20*

U.S. Cl. 260—553 A **37 Claims**

1. A compound of the formula:

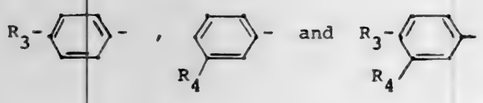


wherein

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms,

R_2 is alkyl of 1 to 4 carbon atoms, and either

Ar_1 and Ar_2 are the same, and are each phenyl or a substituted phenyl group selected from



wherein

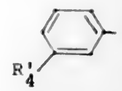
R_3 is chlorine, bromine, methyl or methoxy, and

R_4 is chlorine, bromine, methyl, methoxy or trifluoromethyl, or

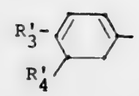
Ar_2 is phenyl and

Ar_1 is a substituted phenyl group selected from





and

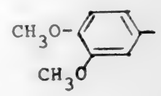


wherein

R_3' is chlorine or methyl and

R_4' is chlorine, methyl or trifluoromethyl,

with the proviso that Ar_1 and Ar_2 are other than



3,966,806

INSECT REPELLENT COMPOUNDS

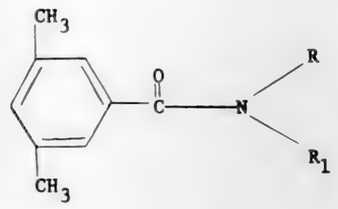
Don R. Baker, Orinda; Francis H. Walker, Mill Valley, and Peter E. Letchworth, Cupertino, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 417,306, Nov. 19, 1973, abandoned. This application Dec. 24, 1974, Ser. No. 536,278

Int. Cl.² C07C *103/76*

U.S. Cl. 260—558 R **7 Claims**

1. A compound having the formula:



wherein R is alkenyl; and R_1 is selected from the group consisting of alkyl, alkenyl and haloalkenyl.

3,966,807

LUBRICANT ADDITIVES, THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

John Scotchford Elliott; Bryan Terence Davis, and Richard Martin Howlett, all of Bracknell, England, assignors to Edwin Cooper & Company Limited, Bracknell, England

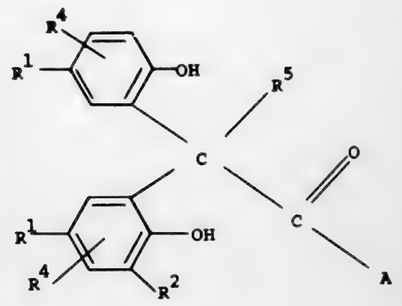
Filed Apr. 18, 1974, Ser. No. 462,092

Claims priority, application United Kingdom, Apr. 19, 1973, 19173/73

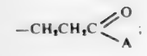
Int. Cl.² C07C *103/20*

U.S. Cl. 260—559 D **15 Claims**

1. A compound having the formula



wherein each R^1 is sthe same or different and is a hydrogen atom or an alkyl group, provided that at least one is an alkyl group containing at least 30 carbon atoms; R^2 is hydrogen or is a group of the formula



and each



I

is the same or different and is an amide group having at least one hydroxyalkyl or aminoalkyl substituent attached to the nitrogen atom, or is an ester group derived from a hydroxy-substituted amine.

3,966,808

MANUFACTURE OF 6-METHYLENETETRACYCLINES

Franco Paolo Luciano, Trezzano sul Navigilo (Milan), Italy, assignor to Rachelle Laboratories Italia, S.p.A., Milan, Italy

Continuation of Ser. Nos. 480,833, June 19, 1974, abandoned, and Ser. No. 192,336, Oct. 26, 1971, abandoned, and a continuation-in-part of Ser. No. 101,688, Dec. 28, 1970, abandoned. This application July 9, 1975, Ser. No. 594,291

Int. Cl.² C07C *103/19*

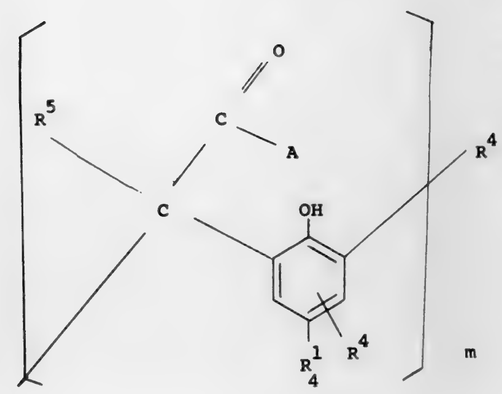
U.S. Cl. 260—559 AT **4 Claims**

1. In a method for the preparation of methacycline hydrochloride which comprises halogenating oxytetracycline hydrochloride to form the corresponding hemiketal base, 11a-halo-5-oxytetracycline-6,12-hemiketal, dehydrating the hemiketal to form the corresponding 11a-halo-6-methylene-5-oxytetracycline, and converting the 11a-halo-6methylene-5-oxytetracycline to methacycline hydrochloride; the improvement comprising

a. halogenating the oxytetracycline hydrochloride in solution at sub-ambient temperatures while maintaining the acidity of the reaction mixture between pH 3.0 and 5 to spontaneously crystallize the 11a-halo-5-oxytetracycline-6,12-hemiketal substantially entirely in the enolic form;

b. reacting the 11a-halo-5-oxytetracycline-6,12-hemiketal base with hydrochloric acid at temperatures of from −10° to 20° C to crystallize the hemiketal hydrochloride, 11a-chloro-5-oxtetracycline-6,12-hemiketal hydrochloride, substantially entirely in the enolic form; and

c. dehydrating the hemiketal hydrochloride rather than the hemiketal base to the corresponding 11a-halo-6-methylene-5-oxytetracycline.



m

in which *m* is zero or an integer; each R^4 is the same or different and is hydrogen or a group of the formula $-Z-R^6$ in which Z is a sulphur atom or a chain of two or more sulphur atoms or is absent and R^6 is an alkyl group or a hydroxy-substituted aralkyl group when Z is absent or a hydroxy-substituted aryl or alkaryl group when Z is present; each R^5 is the same or different and is a hydrogen atom, a methyl group or the group

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3,966,809

INSECT REPELLENT COMPOUNDS

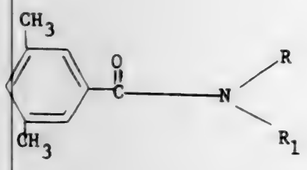
Don R. Baker, Orinda; Francis H. Walker, Mill Valley, and Peter E. Letchworth, Cupertino, all of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 417,306, Nov. 19, 1973, abandoned. This application Dec. 24, 1974, Ser. No. 536,277

Int. Cl.² C07C *103/75*

U.S. Cl. 260—559 R **6 Claims**

1. A compound having the formula:



wherein R is selected from the group consisting of hydrogen and alkoxyalkyl; R_1 is selected from the group consisting of cycloalkenyl and alkoxyalkyl.

3,966,810

PROCESS FOR HYDRATING A NITRILE TO THE CORRESPONDING AMIDE

Tokuzo Kumata, 2-218, Nishimagari, Yahata, Kitakyushu; Takeshi Okano, 3-554-33, Nishiohji, Yahata, Kitakyushu; Akio Tamaru, 3, Sakuradai, Midori, Yokohama; Yozo Kato, 5-1, Tsutsujigaoka, Midori, Yokohama, and Saburo Nagashima, 2-16-46, Saginuma, Takatsu, Kawasaki, all of Japan

Division of Ser. No. 393,291, Aug. 31, 1973. This application June 6, 1975, Ser. No. 584,349

Claims priority, application Japan, Sept. 2, 1972, 47-88217; Sept. 4, 1972, 47-88531; Feb. 14, 1973, 48-18195

The portion of the term of this patent subsequent to Dec. 30, 1992, has been disclaimed.

Int. Cl.² C07C *103/08*

U.S. Cl. 260—561 N **15 Claims**

1. A process for preparing an amide, which comprises: hydrating a nitrile to the corresponding amide in the presence of a copper metal catalyst obtained by decomposing copper hydride in the presence of a promoter compound containing the element chromium.

3,966,811

DIALKYL ACETALS OF ANILINOACETALDEHYDES

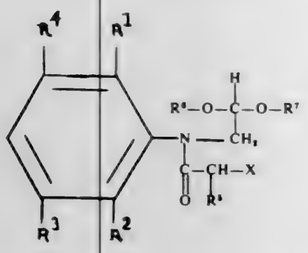
John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Dec. 19, 1974, Ser. No. 530,797

Int. Cl.² C07C *103/32*

U.S. Cl. 260—562 B **8 Claims**

1. A compound of the formula



wherein R^1, R^6 and R^7 are each alkyl; R^2 is selected from the group consisting of hydrogen, alkyl, alkoxy and trifluoromethyl; R^3 and R^4 are each selected from the group consisting of hydrogen, lower alkyl, halogen, cyano, alkoxy, alkylthio, haloalkyl and alkoxyalkyl; R^5 is selected from the group consisting of hydrogen and alkyl; and X is halogen.

3,966,812

TRICHLOROETHYLIDENE-BIS-(ISOCYANIDE-DICHLORIDE) AND PROCESS FOR MAKING SAME

Gunther Beck, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 28, 1975, Ser. No. 626,409

Claims priority, application Germany, Oct. 30, 1974, 2451634

Int. Cl.² C07C *119/00*

U.S. Cl. 260—566 D **1 Claim**

1. Trichloroethylidene-bis-(isocyanide-dichloride).

3,966,813

PROCESS FOR THE PREPARATION OF 1-(m- AND p-HYDROXYPHENYL)-2-AMINOETHANOL

Gerhard Satzinger, and Wolfgang Dieter Herrmann, both of Denzlingen, Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed June 20, 1972, Ser. No. 264,698

Claims priority, application Germany, June 21, 1971, 2130710

Int. Cl.² C07C *85/11*

U.S. Cl. 260—570.6 **5 Claims**

1. A two-step process for the preparation of 1-(hydroxyphenyl)-2-aminoethanol which comprises:

A. reacting in a dipolar aprotic solent, hydroxyacetophenone with a lower alkyl nitrite in the presence of a hydrogen chloride catalyst, to form isonitrosoacetophenone, and

B. catalytically reacting the isonitrosoacetophenone with palladium to cause hydrogenation and bring about the reduction of the isonitroso and keto moieties on the isonitrosoacetophenone molecule.

3,966,814

1-PHENYL-2-(NAPHTHYLALKYL-AMINO)-ETHANOLS AND SALTS THEREOF

Kurt Schromm; Anton Mentrup; Ernst-Otto Renth, all of Ingelheim am Rhein, and Werner Traunecker, Munster-Sarmsheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

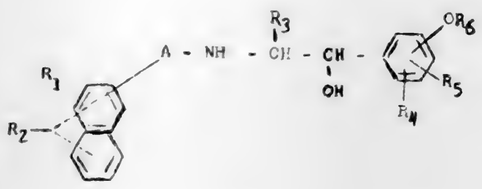
Continuation of Ser. No. 92,527, Nov. 24, 1970, abandoned. This application June 27, 1973, Ser. No. 373,933

Claims priority, application Germany, Dec. 12, 1969, 1962497

Int. Cl.² C07C *91/16*

U.S. Cl. 260—570.6 **7 Claims**

1. A racemic mixture of a compound of the formula



wherein

A is alkylene of 2 to 6 carbon atoms,

R_1 is hydrogen, lower alkyl, lower alkoxy or hydroxyl,

R_2 is hydrogen, lower alkyl or lower alkoxy,

R_3 is hydrogen, methyl or ethyl,

R_4 is hydrogen, lower alkyl or lower alkoxy,

R_5 is hydrogen or hydroxyl, and

R_6 is hydrogen,

an optically active antipode component thereof, or a non-toxic, pharmacologically acceptable acid addition salt of said racemic mixture or optically active antipode.

3,966,815

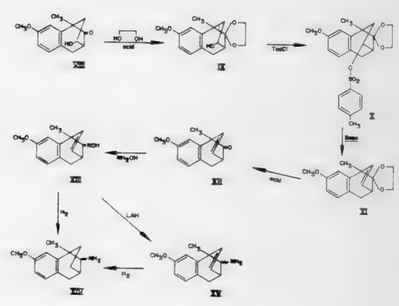
PREPARATION OF 5,8-METHANO-5H-BENZOCYCLOHEPTEN-10-AMINES

Meier E. Freed, Paoli, and John R. Potoski, Spring City, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

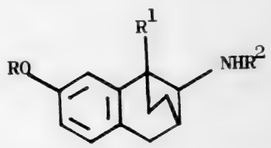
Filed May 31, 1974, Ser. No. 475,223

Int. Cl.² C07C *87/29*

U.S. Cl. 260—570.8 R **12 Claims**

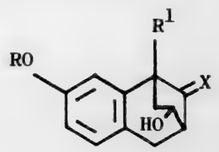


1. A process for the preparation of a chemical compound of the formula:



wherein R is lower alkyl, or phen(lower)alkyl; R^1 is lower alkyl and R^2 is hydrogen, lower alkyl, or phen(lower)alkyl which comprises:

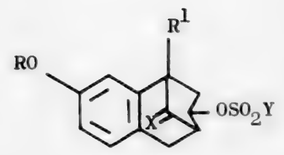
a. treating a compound of the formula:



wherein R and R^1 are as defined hereinabove; and X is a ketone protecting group from the group ethylene ketal, an ethylene hemithioketal, an ethylene dithioketal, or a semicarbazide; with a compound of the formula:

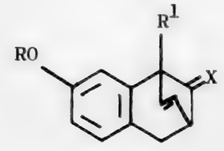
$A-SO_2Y$

wherein A is halo, and Y is straight or branched chain alkyl of from 1 to 10 carbon atoms, cycloalkyl of from 1 to 10 carbon atoms, or carbocyclic aryl; to produce a compound of the formula:



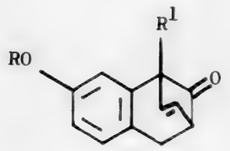
wherein R, R^1, X and Y are as defined hereinabove;

b. treating the product of step (a) above with base in the presence of an inert solvent at about 60° to about 65°C. to produce a compound of the formula:



wherein R, R^1, and X are as defined hereinabove;

c. removing the protecting group from the ketone function of the product of step (b) to produce a compound of the formula:

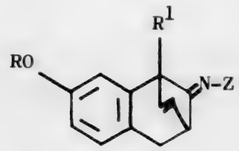


wherein R and R^1 are as defined hereinabove;

d. treating the product of step (c) above with a compound of the formula:

H_2N-Z

wherein Z is hydrogen, hydroxyl, lower alkyl, or phen(lower)alkyl; to form a compound of the formula:



wherein R, R^1 and Z are as defined hereinabove; and

e. reducing the imino function and non-aromatic unsaturation of the product of step (d) above by subjecting said product of step d to catalytic hydrogenation, or by reducing said product of step d with a metal hydride reducing agent or with sodium dissolving in alkanol followed by catalytic hydrogenation.

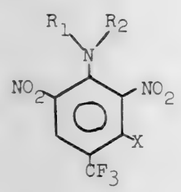
3,966,816

3-HALO-2,6-DINITRO-4-TRIFLUOROMETHYLANILINE

William G. Woods, Fullerton, and Don L. Hunter, Anaheim, both of Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 878,262, Nov. 19, 1969, abandoned. This application Mar. 5, 1974, Ser. No. 448,322
Int. Cl.² C07C 87/58, 87/60
U.S. Cl. 260—573 10 Claims

1. A compound of the formula



wherein X is halogen, R_1 is hydrogen, alkyl, alkenyl, or alkynyl, and R_2 is alkyl, alkenyl, or alkynyl, said alkyl, alkenyl, and alkynyl groups being unsubstituted or having halo, hydroxy, or lower alkoxy substituents.

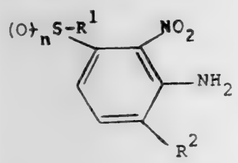
3,966,817

HERBICIDAL ORTHO-NITROANILINES

Kurt H. G. Pilgram, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 25, 1974, Ser. No. 454,185
Int. Cl.² C07C 87/50
U.S. Cl. 260—578 2 Claims

1. An o-nitroaniline of the formula:



wherein

a. R^1 is methyl, R^2 is chlorine and $n = 0$, 1 or 2;
b. R^1 is ethyl, R^2 is chlorine and $n = 1$;
c. R^1 is propyl, R^2 is chlorine or methyl, and $n = 1$; and
d. R^1 is iso-butyl, R^2 is chlorine or methyl and $n = 0$, 1 or 2.

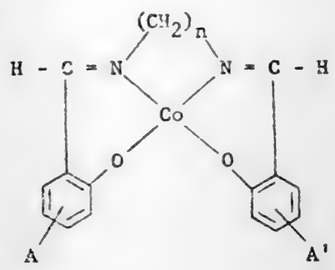
3,966,818

NOVEL PROCESS FOR PREPARATION OF 4-HYDROXY-2,4,6-TRIMETHYL-2,5-CYCLOHEXADIENE-1-ONE

Yataro Ichikawa; Yoshiyuki Yamanaka, and Hideki Tsuruta, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

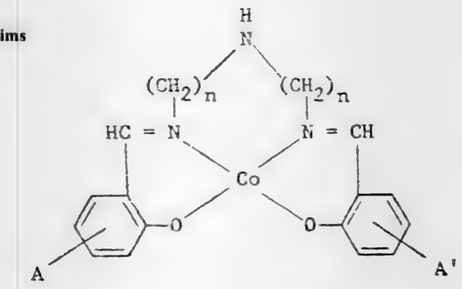
Filed Mar. 19, 1973, Ser. No. 342,500
Claims priority, application Japan, Mar. 25, 1972, 47-30160; Mar. 30, 1972, 47-31920
Int. Cl.² C07C 45/16
U.S. Cl. 260—586 P 22 Claims

1. A process for preparing 4-hydroxy-2,4,6-trimethyl-2,5-cyclohexadiene-1-one comprising reacting a phenol which is 2,4,6-trimethyl phenol, alkali metal 2,4,6-trimethyl phenolate, or alkaline earth metal 2,4,6-trimethyl phenolate, with molecular oxygen or a molecular oxygen-containing gas at an oxygen partial pressure of at least .1 Kg/cm² and at a temperature of from −20° to +200°C., and optionally in the presence of an inert liquid reaction medium having a pH of at least 5 selected from one of the group consisting of water, an inert organic liquid, or a mixture thereof, in the absence of a catalyst or in the presence of a catalyst selected from the group consisting of cobalt complexes represented by the following formulas (a), (b) and (c)



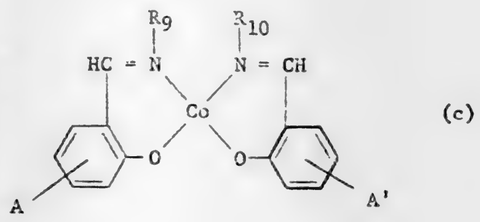
(a)

wherein, n is an integer of 2–10, A and A′ are hydrogen, $-NO_2$, fluoro, or $-OC_2H_5$,



(b)

wherein n, A, and A′ are as defined above, and



(c)

wherein, R_9 and R_{10} are hydrogen, phenyl, alkyl, —OH, hydroxyalkyl, or benzyl, A and A′ are as defined above; cobalt-di(salycylal) ethylenediimine-pyridine; cobalt-phthalocyanine; or cobalt-acetylacetone.

3,966,819

SESQUITERPENIC DERIVATIVES AS ODOR- AND TASTE MODIFYING AGENTS

Karl-Heinrich Schulte-Elte, Onex-Geneva; Michel Joyeux, Carouge-Geneva, and Günther Ohloff, Bernex-Geneva, all of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Filed Aug. 21, 1974, Ser. No. 499,120
Claims priority, application Switzerland, Sept. 5, 1973, 12784/73
Int. Cl.² C07C 45/02, 49/61
U.S. Cl. 260—586 F 3 Claims

1. A process for preparing perfume ingredients consisting essentially of 5-acetyl-2,6-dimethylene-10,10-dimethylbicyclo [7.2.0^{1,9}] undecane and of 1-acetyl-11-methylene-4,7,7-trimethyl-cycloundeca-4,8-diene comprising treating clove oil with a base, fractionally distilling the treated oil to obtain a terpene fraction having a boiling point of 80° to 110°C/2 Torr and acetylating said terpene fraction under Friedel-Crafts conditions.

3. 5-Acetyl-2,6-dimethylene-10,10-dimethylbicyclo [7.2.0^{1,9}]undecane.

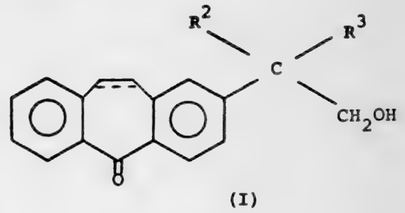
3,966,820

2-SUBSTITUTED-5-OXO-5H-DIBENZO- [a,d] CYCLOHEPTENES, THE ESTERS AND ETHERS THEREOF, HAVING PHARMACEUTICAL ACTIVITY, AND METHODS AND COMPOSITIONS FOR THE USE THEREOF

Peter H. Nelson, and Karl G. Untch, both of Los Altos, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 486,038, July 5, 1974, abandoned. This application May 30, 1975, Ser. No. 581,501
Int. Cl.² C07C 49/76
U.S. Cl. 260—590 FB 19 Claims

1. A compound selected from the group of compounds represented by the formula:



(I)

where one of R^2 and R^3 is hydrogen and the other is hydrogen, methyl, or ethyl, or together R^2 and R^3 are methylene; the dotted line refers to an optional, additional bond between the carbon atoms at the 10- and 11-positions.

3,966,821

PROCESS FOR PREPARING 1-TETRAHYDRONAPHTHALONE

Ken-Ichi Kudo, Niihama; Tadayuki Ohmae, Kobe; Yoshiki Toyoshima, and Sumio Hara, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

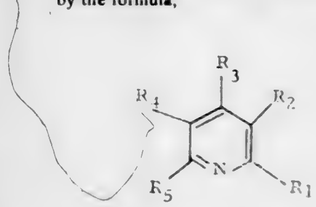
Filed Feb. 26, 1975, Ser. No. 553,200
Claims priority, application Japan, Feb. 26, 1974, 49-23150
Int. Cl.² C07C 49/76
U.S. Cl. 260—590 R 2 Claims

1. In a process for preparing 1-tetrahydronaphthalone by a liquid phase oxidation of tetrahydronaphthalene with molecular oxygen or a molecular oxygen containing gas in the presence of a catalyst, wherein

a. said molecular oxygen or said molecular oxygen containing gas is used in a proportion of about 0.01 to about 10 based on a molecular oxygen/tetrahydronaphthalene molar ratio;
b. said oxidation is conducted at a temperature of about room temperature to about 250°C. under a pressure between atmospheric and about 20 kg/cm² for a period of about 0.2 to about 10 hours; and
c. said oxidation is conducted by introducing said molecular oxygen or said molecular oxygen containing gas into a solution of said catalyst in tetrahydronaphthalene in a batch manner or a continuous manner;

the improvement comprising conducting said liquid phase oxidation in the presence of a catalyst system consisting essentially of

a. chromic naphthenate, chromous naphthenate or a mixture thereof in a concentration of about 0.1 to about 500 ppm in the tetrahydronaphthalene calculated as chromium ion, together with
b. an alkyl-substituted pyridine compound represented by the formula,



wherein R_1, R_2, R_3, R_4 and R_5, which can be the same or different, each represents a hydrogen atom or an alkyl group having 1 to 5 carbon atoms and at least one of R_1, R_2, R_3, R_4 and R_5 is an alkyl group, said pyridine compound being present in a concentration of about 0.1 to about 10 mol % in tetrahydronaphthalene.

3,966,822

CATALYTIC PREPARATION OF KETONES FROM ALDEHYDES

Masahiro Fukui; Shigeru Hayashi; Takehiko Okamoto; Isao Koga, and Takeshi Inoi, all of Yokohama, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Apr. 27, 1972, Ser. No. 248,133
Claims priority, application Japan, May 19, 1971, 46-33774; Jan. 19, 1972, 47-7438
Int. Cl.² C07C 45/00
U.S. Cl. 260—593 R 5 Claims

1. A decarboxylation process which consists essentially of contacting two mols of an aldehyde of the formula R_1CHO or one mol of an aldehyde of the formula R_1CHO and one mol of the formula R_2CHO wherein R_1 and R_2 are different alkyl groups, in the vapor phase and in the presence of water with a catalyst in an amount effective to produce a ketone of the formula R_1COR_1 or R_1COR_2

said aldehydes R_1CHO and R_2CHO being selected from the group consisting of acetaldehyde, propionaldehyde, N-butyraldehyde, isobutyraldehyde, valeraldehyde, caproic aldehyde, heptaldehyde caproylaldehyde, 2-ethylhexyl aldehyde, pelargonic aldehyde, capric aldehyde and mixtures thereof,

said catalyst being selected from the group consisting of:

a. 100% zirconium oxide

b. Zirconium oxide and an alkali metal oxide, and

c. zirconium oxide and an alkaline earth metal oxide,

said elevated temperature being within the range of 200° – 600°C.

3,966,823

PROCESS FOR PREPARING 1,3-BUTADIENE AND METHACROLEIN SIMULTANEOUSLY

Shigeo Takenaka; Hitoshi Shimizu, and Kenichiro Yamamoto, all of Takasaki, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1971, Ser. No. 194,501

Claims priority, application Japan, Nov. 7, 1970, 45-97548

Int. Cl.² C07C *45/04*

U.S. Cl. 260—604 R **5 Claims**

1. The process for preparing 1,3-butadiene and methacrolein simultaneously by reacting butene mixture containing n-butenes and isobutylene with molecular oxygen in the presence of steam and a catalyst of the empirical formula;

$$Ni_aCo_bFe_cBi_dL_eM_fMo_gO_h$$

wherein Ni, Co, Fe, Bi, Mo and O are the chemical symbols of the corresponding elements, L represents at least one element selected from the group consisting of phosphorus, arsenic and boron, M represents at least one element selected from the group consisting of potassium, rubidium and cesium, *a*, *b*, *c*, *d*, *e*, *f*, *g* and *h* represent number of atoms of Ni, Co, Fe, Bi, L, Mo, O and M, respectively, and (f) is 12, (*a*) and (*b*) independently are numbers of 0–15, (a) + (b) being 1–15, (c) is a number of 0.5–7, (d) is a number of 0.1–4, (g) is a number of 36–98 (e) is a number of 0–4 and (h) is a number of 0.01–1.0, wherein the reaction is carried out at a temperature of from 250°C to 450°C, wherein the molar ratio of oxygen, per one mole of total olefins is 0.5–4:1 and the molar ratio of steam per one mole of total olefins is 1–20:1 and wherein the reaction is carried out under a pressure of 0.5–10 atmospheres absolute.

3,966,824

p,p'-DISUBSTITUTED α-TRICHLOROMETHYLBENZYLPHENYL ETHERS

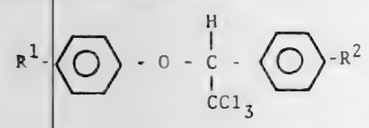
Robert L. Metcalf; Inder Kapoor, and Asha Hirwe, all of Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Division of Ser. No. 318,206, Dec. 26, 1972, Pat. No. 3,894,092. This application Nov. 29, 1974, Ser. No. 528,351

Int. Cl.² C07C *43/20*

U.S. Cl. 260—612 R **5 Claims**

1. Insecticides having the formula



where R^1 and R^2 are selected from the group consisting of substituents Cl, CH_3, CH_3O, and C_2H_5O, provided that at least one of R^1 and R^2 in Cl or CH_3.

3,966,825

PROCESS FOR PREPARING β-NITROETHANETHIOL

Michael Marx, Sunnyvale, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed June 30, 1975, Ser. No. 591,596

Int. Cl.² C07C *149/14*

U.S. Cl. 260—609 R **8 Claims**

1. The process for preparing β-nitroethanethiol which comprises reacting a carboxylic acid ester of β-nitroethanol with trisodium thiophosphate followed by acid hydrolysis of the resulting phosphate ester of β-nitroethanethiol.

3,966,826

PHENYL ETHERS

Jürgen Trösken, Walldorf, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

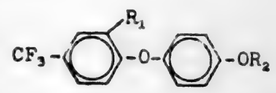
Filed July 8, 1975, Ser. No. 594,119

Claims priority, application Germany, July 10, 1974, 2433066

Int. Cl.² C07C *43/22*

U.S. Cl. 260—613 R **1 Claim**

1. Diphenyl ethers of the formula



I

wherein R_1 is hydrogen or halogen and R_2 is hydrogen or an alkali metal or ammonium cation.

3,966,827

PRODUCTION OF 3-METHYLPENTANE-1,5-DIOL

Werner Aquila, Mannheim; Walter Himmele, Walldorf; Werner Fliege, Otterstadt, and Hardo Siegel, Ludwigshafen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Jan. 16, 1975, Ser. No. 541,638

Claims priority, application Germany, Jan. 30, 1974, 2404312

Int. Cl.² C07C *29/00*

U.S. Cl. 260—635 E **13 Claims**

1. A process for the production of 3-methylpentane-1,5-diol wherein 2-methylbut-1-en-4-ol is reacted with carbon monoxide and hydrogen at 60–140°C and at 10–700 atmospheres pressure at a ratio by volume of CO to H_2 in the range of 1:0.25 to 1:4 in the presence of a rhodium carbonyl complex which has been modified with at least three mols of a tertiary organic phosphine per gram atom of rhodium, the organic groups of said tertiary phosphine being selected from the group consisting of alkyl having 1–20 carbon atoms, cycloalkyl having 5–8 carbon atoms, phenyl, phenyl bearing 1–2 alkyl groups, each having 1–4 carbon atoms, and phenyl bearing 1–2 alkoxy groups, each having 1–4 carbon atoms, said rhodium complex catalyst being present in an amount of 0.5 to 500 ppm, calculated as rhodium metal and based on the 2-methylbut-1-en-4-ol, to produce 2-hydroxy-4-methyltetrahydropyran and the 2-hydroxy-4-methyltetrahydropyran thus obtained is hydrogenated at elevated temperature and at superatmospheric pressure in the presence of a conventional hydrogenation catalyst to form 3-methylpentane-1,5-diol.

3,966,828

SECONDARY ALCOHOL PROCESS

Robert M. Suggitt, Wappingers Falls; Walter C. Gates, Jr., Newburgh, and Ralph B. Hudson, Jr., Beacon, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 428,508, Dec. 26, 1973. This application Dec. 13, 1974, Ser. No. 532,352

Int. Cl.² C07C *29/12*

U.S. Cl. 260—639 B **12 Claims**

1. In a process for producing secondary alcohols from C_6 to C_{30} n-paraffins wherein a portion of said n-paraffin is converted to a borate ester along with oxygenated by-products, wherein said borate ester is separated from a mixture of unreacted paraffin, olefin and oxygenated by-products and where said borate ester is hydrolyzed to said secondary alcohol, the improvement which comprises:

a. catalytically hydrogenating said mixture at a temperature of from about 600° to 750°F. in the presence of a catalyst composed of alumina and a Group VIII metal and from about 10 to 5000 parts per million of nitrogen present as ammonia or an organonitrogen compound selected from the group consisting of monoalkylamines, dialkylamines, trialkylamines, nitriles and alkenylpolyamines basis said paraffin mixture; and

b. recycling said hydrogenated product of (a) for conversion with said n-paraffin to said borate ester.

3,966,829

METHOD OF PURIFYING MONOALCOHOLS

Friedrich Engelhardt, Hamburg; Karl Erhard, Buchholz, and Gündolf Füchs, Steinbeck-Meilsen, all of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Continuation-in-part of Ser. No. 463,080, April 22, 1974, abandoned, which is a continuation of Ser. No. 873,739, Nov. 26, 1969, abandoned, which is a continuation of Ser. No. 638,742, May 16, 1967, abandoned. This application Sept. 27, 1974, Ser. No. 509,873

Claims priority, application Germany, Sept. 24, 1966, 1568415

Int. Cl.³ C07C *29/24*

U.S. Cl. 260—643 B **17 Claims**

1. A process for selectively converting a secondary alkanediol in admixture with a primary monoalkanol to a primary monoalcohol without appreciably effecting dehydration of said primary monoalkenol, which comprises passing a mixture of secondary alkanediol and primary monoalkanol at a temperature of from about 170° to 220°C in the liquid phase over a dehydrating agent consisting essentially of a gamma-alumina catalyst.

3,966,830

PROCESS FOR THE NITRATION OF HALOGENATED BENZENE DERIVATIVES

Keizo Shimada; Takeo Nishikawa, both of Hino; Toshiaki Harada, Hachioji, and Shizuo Nagahama, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

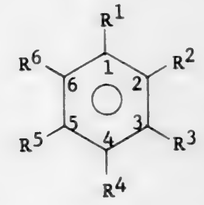
Filed Nov. 12, 1974, Ser. No. 523,049

Claims priority, application Japan, Mar. 8, 1974, 49-26340; Mar. 23, 1974, 49-32221; Mar. 23, 1974, 49-32222

Int. Cl.² C07C *79/12*

U.S. Cl. 260—646 **7 Claims**

1. A process for nitrating halogenated benzene derivatives which comprises reacting in the vapor phase a halogenated benzene derivative represented by the formula:



wherein R^1 is a halogen atom, R^4 is a hydrogen atom, and R^2, R^3, R^5, and R^6, independently represent a member selected from the class consisting of a hydrogen atom, a halogen atom and an alkyl group, at least one of R^2, R^3, R^5 and R^6 being a hydrogen atom, the total number of halogen atoms including R^1 being not more than 3; with the provisos that when there is one halogen atom and both R^3 and R^6 are alkyl groups, R^2 is a hydrogen atom; when there are two halogen atoms and R^3 is a halogen atom, R^2 is a hydrogen atom; when there are two halogen atoms and R^2 is a halogen atom, at least one of R^3 and R^6 is a hydrogen atom; when there are three halogen atoms, R^2 is a halogen atom and R^5 is a hydrogen or a halogen atom; and when there are at least two halogen atoms including R^1, the substituent halogen atoms are substituted at positions such that the sum of the numbers 1 to 6 showing the substituting positions attached to the inside of the benzene ring in the above formula becomes a minimum; with at least one member selected from the group consisting of nitric acid, nitrogen dioxide and nitrogen pentoxide in the presence of at least one solid inorganic oxide selected from the group consisting of silica, alumina and silica-alumina.

3,966,831

PRODUCTION OF BROMOSTYRENES

Moshe Levy; David Vofsi; Stephen Daren, all of Rehovot, and Ella Cohen, Ramat-Hasharon, all of Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 376,171, July 3, 1973. This application Feb. 7, 1975, Ser. No. 547,861

Claims priority, application Israel, July 26, 1974, 45356

Int. Cl.² C07C *25/28*

U.S. Cl. 260—650 R **7 Claims**

1. A process for the production of a compound selected from the group consisting of monobromostyrene, dibromostyrene and tribromostyrene, said process comprising reacting β-bromoethyl-monobromobenzene, β-bromoethyl-dibromobenzene and β-bromoethyl-tribromobenzene, respectively, with a lower alkanol or water, at a temperature between 280°C. and 470°C. in the presence of a chemical source of free radicals.

3,966,832

CONTINUOUS PROCESS FOR PREPARING DERIVATIVES OF BENZENE WITH FLUORINATED SIDE CHAINS FROM THE CORRESPONDING CHLORINE COMPOUNDS

Rudolf Lademann, Kelkheim, Taunus; Helmut Lindner, Hofheim, Taunus; Thomas Martini, Neuenhain, Taunus, and Peter Paul Rammelt, Hofheim, Taunus, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Nov. 7, 1974, Ser. No. 521,894

Claims priority, application Germany, Nov. 10, 1973, 2356257

Int. Cl.² C07C *25/14, 17/20*

U.S. Cl. 260—651 F **13 Claims**

1. In a process for the preparation of the derivative of benzene containing at least one trifluoromethyl group by reaction of the corresponding trichloromethyl compound with liquid hydrogen fluoride, by subsequently distilling the reaction products under pressure thus eliminating the newly formed hydrogen chloride, and by subsequently isolating the remaining reaction products, the improvement for continuous processing which comprises continuously feeding the reactants into a reaction zone under an effective pressure in excess of 20 absolute atmospheres to maintain a sufficiently homogeneous reaction mixture to solubilize the reactants, with the hydrogen fluoride reactant being in at least a 25 mol % excess as compared to the stoichiometric proportion, blending said mixture in said zone by means limited to the agitation caused by the pressurized feeding of the reactants into said zone, withdrawing the reaction products from said zone proportionately to the feeding-in rate of the reactants, said reaction zone being maintained in a reaction temperature range of above 80° to about 150°C, said reaction having been initiated by precharging said zone with liquid hydrogen fluoride alone or in homogeneous mixture with said trichloromethyl compounds and hydrogen chloride to a pressure of at least 20 atmospheres.

3,966,833
PROCESS FOR HYDRODEALKYLATING ALKYLAROMATIC HYDROCARBONS

Jean Cosyns, Nanterre; Bernard Juguin; Jean-Francois Le Page, both of Rueil-Malmaison, and Jean Miquel, Paris, all of France, assignors to Institut Francaise du Petrole, Rueil-Malmaison, France

Filed Dec. 13, 1974, Ser. No. 532,618
Claims priority, application France, Dec. 13, 1973, 73.44690
Int. Cl.² C07C *3/58*
U.S. Cl. 260—672 R 11 Claims

1. In a process for the catalytic hydrodealkylation of alkyl aromatic hydrocarbons, conducted at a temperature from 400° to 650° C, under a pressure from 1 to 30 kg/cm² at a space velocity from 1 to 10 and a ratio of hydrogen to the hydrocarbons, expressed in mole per mole of the effluent at the outlet of the reactor, in the range from 1 to 10, wherein the improvement comprises employing a catalyst containing essentially:
a. at least one metal selected from the group consisting of ruthenium, osmium, palladium, rhodium, iridium, platinum and manganese, and
b. an alumina, substantially inert to cracking and coking reactions in the presence of hydrogen, the metal content by weight of the catalyst being from 0.05 to 5%, the specific surface of the catalytst being from 1 to 100 m²/g., the total pore volume of the catalyst being from 0.2 to 0.8 cc/g and the heat of neutralization of the catalyst by ammonia adsorption being lower than 10 calories per gram of catalyst at 320° C under a pressure of 300 mm of Hg.

3,966,834
PROCESS FOR THE SEPARATION OF DIENE FROM ORGANIC MIXTURES

Ell Perry, St. Louis, and William F. Strazik, St. Ann, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sept. 22, 1972, Ser. No. 291,453
Int. Cl.² C07C *7/00*
U.S. Cl. 260—681.5 R 8 Claims

1. A process for separating dienes from an organic mixture comprising dienes having from 4 to 8 carbon atoms per molecule and alkenes having one double bond and from 3 to 12 carbon atoms per molecule which comprises:
contacting the mixture against a first side of a membrane which is selected from the group consisting of poly (vinyl chloride), poly (vinyl fluoride), poly (vinylidene fluoride), tetrafluoroethylene/ethylene copolymer, vinyl chloride/ethylene copolymer, and vinylchloride/vinylacetate copolymer; and withdrawing from a second side of the membrane a vaporous mixture having a higher concentration of dienes than the aforesaid organic mixture with the mixture at the second side being maintained at a lower chemical potential than the mixture on the first side of the membrane.

3,966,835
PERMANENTLY ANTISTATIC POLYAMIDE COMPOSITIONS

Geert Christoph; Eduard Radlmann; Günther Nischk; Ludwig Bruns, and Günther Schnuchel, all of Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 22, 1972, Ser. No. 317,670
Claims priority, application Germany, Dec. 23, 1971, 2164307
Int. Cl.² C08L *63/00*
U.S. Cl. 260—830 P 6 Claims

1. A permanently anti-static polyamide composition comprising an aliphatic polyamide and from 0.5 to 40% by weight based on the polyamide composition of a substantially water-insoluble high-molecular weight polyalkylene oxide dispersed in the polyamide and obtained by the copolymerization of a mono-epoxide with a di- or tri-epoxide.

3,966,836
PULVERULENT COATING MATERIALS

Eckhard de Cleur, Duisburg; Rolf Dhein, Krefeld-Bockum; Hans Rudolph, Krefeld-Bockum, and Hans Joachim Kreuder, Krefeld-Bockum, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed May 28, 1974, Ser. No. 473,340
Claims priority, application Germany, June 1, 1973, 2328012
Int. Cl.² C08G *45/14*
U.S. Cl. 260—835 9 Claims

1. In a powder lacquer binder consisting of a mixture of
A. at least one polyepoxide having an average of at least two epoxide groups per molecule or a mixture thereof with a polyoxazoline and
B. at least one polyester resin which contains free carboxyl groups and has an acid number of 30 to 85 and a softening point above 40°C., the improvement wherein each said polyester resin is the condensation product of an acid anhydride consisting essentially of at least one non-aromatic dicarboxylic acid anhydride wherein at least 50 mol % of said dicarboxylic acid anhydride is succinic acid anhydride and at least one polyester resin having an OH number of about 40 to 100, said latter polyester resin being the condensation product of at least one polyalcohol and at least one aromatic dicarboxylic acid or said condensation product having up to 30 mol % of said aromatic dicarboxylic acid replaced with at least one cycloaliphatic dicarboxylic acid, at least one aliphatic dicarboxylic acid or a mixture thereof, said (A) being present in an amount to provide at least one epoxide group for each free carboxyl group of (B) or being present in an amount to provide a combined number of epoxide groups and oxazoline groups at least equal to the total number of free carboxyl groups of (B).

3,966,837
COMPOSITIONS CONTAINING EPOXY RESIN, CHAIN EXTENDER, FUNCTIONALLY TERMINATED ELASTOMER AND CURING AGENT

Changkiu K. Riew, Akron; Alan R. Siebert, Maple Heights, and Eugene H. Rowe, Akron, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 20, 1971, Ser. No. 210,156
Int. Cl.² C08G *45/04*
U.S. Cl. 260—837 R 6 Claims

1. An epoxy resin composition yielding high strength, high modulus, high impact resistant, thermoset products, comprising a di-epoxy compound, a less than equivalent proportion of a diphenol chain lengthening material, a functionally terminated elastomer which is a material having no functional groups other than two terminal phenolic hydroxyl groups, in an amount not over about 7½% by weight of the di-epoxy compound, and a curing agent for the epoxy compound.

3,966,838
POLYAMIDE BASE POWDER COATING MATERIAL

Rainer Feldmann; Wolfgang Kriesten; Karl Adolf Müller, all of Marl; Hans Joachim Panoch, Hullern, and Heinz Scholten, Lippramsdorf, all of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Germany

Filed Apr. 24, 1973, Ser. No. 354,123
Claims priority, application Germany, May 5, 1972, 2222122
Int. Cl.² C08L *77/00*
U.S. Cl. 260—857 R 14 Claims

1. Polyamide base powder compositions consisting essentially of a plurality of finely divided particles, said powder compositions comprising polyamides having carbonamide groups with an average of from 8 to 11 aliphatically linked carbon atoms per carbonamide group, about 0.2 to 5 percent of said carbonamide groups having n-alkoxymethyl groups attached to the nitrogen atoms of said carbonamide groups and about 0.01 to 2 percent by weight of acid catalysts reactive with said polyamides at the temperature of film forming, said polyamides selected from the group consisting of polylauryllactam, polyundecanamide, mixtures thereof and mixtures thereof with a second polyamide selected from the group consisting of polycaprolactam, polyhexamethylenadipamide, polydodecamethyleneadipamide, polyhexamethylensebacamide, polyhexamethyleneeagelaic acid amide, polycapryllactam, copolymers thereof and mixtures thereof.

3,966,839
HOMOGENEOUS BLENDS OF POLYAMIDES WITH VINYL AROMATIC RESINS

Willard M. Sims, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.

Filed Jan. 30, 1975, Ser. No. 545,268
Int. Cl.² C08L *77/06*
U.S. Cl. 260—857 UN 11 Claims

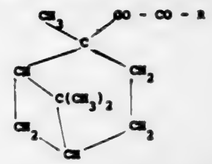
1. A composition comprising a homogeneous blend of:
a. a polyamide resin;
b. a vinyl aromatic resin; and
c. a copolymer comprising a vinyl aromatic monomer copolymerized with maleic anhydride, said copolymer present at a level within the range of about 0.1 to about 5% by weight based on resin content,
said polyamide resin or said vinyl aromatic resin present at a level of from about 55 to 99% by weight based on the total weight of said polyamide and vinyl aromatic resins present in the composition.

3,966,840
FREE RADICAL POLYMERIZATION OF OLEFINICALLY UNSATURATED MONOMERS, USING PINANYL-PEROXYESTERS

Wolfgang Edl, Grosshesselohe; Werner Meister, Munich, and Hans Seidl, Grunwald, all of Germany, assignors to Peroxid-Chemie GmbH, Hoellriegelskreut near Munich, Germany

Filed Jan. 27, 1975, Ser. No. 544,226
Claims priority, application Germany, Jan. 29, 1974, 2404209
Int. Cl.² C08L *67/02, 67/06;* C07C *69/02, 179/18*
U.S. Cl. 260—860 9 Claims

1. In a method of polymerizing an olefinically unsaturated monomer in the presence of a peroxyester capable of forming free radicals, the improvement which consists in said peroxyester being an ester of pinane hydroperoxide of the formula



wherein R is primary, secondary, or tertiary alkyl, cycloalkyl, aralkyl, aryl, haloaryl, alkylaryl, alkoxyaryl, alkoxyalkyl, or arylalkyloxyalkyl, the amount of said ester being sufficient to cause polymerization of said monomer.

3,966,841
MIXTURES OF POLYESTERS AND DAC-B RESIN

Robert L. Combs, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 30, 1975, Ser. No. 591,551
Int. Cl.² C08L *67/06*
U.S. Cl. 260—873 6 Claims

1. A composition comprised of a mixture of
A. a polyester of
1. a dicarboxylic acid component which is at least 80 mole percent terephthalic acid,
2. a diol component which is at least 80 mole percent ethylene glycol, and
B. from 1–14 weight percent, based on the weight of the polyester, DAC-B hydrocarbon resin.

3,966,842
THERMOPLASTIC MOLDING COMPOSITIONS OF RUBBER-REINFORCED STYRENE/MALEIC ANHYDRIDE RESINS AND POLYCARBONATE RESINS

Peter J. Ludwig, Huntington Beach, Calif., and Arnett L. Bird, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 18, 1974, Ser. No. 489,675
Int. Cl.² C08L *67/06*
U.S. Cl. 260—873 8 Claims

1. A thermoplastic molding composition comprising an intimate admixture of
a. a diene rubber-containing styrene/maleic anhydride composition, the rubber-containing styrene/maleic anhydride composition having copolymerized therein from 65 to 85 parts by weight of styrene and from 10 to 35 parts by weight of maleic anhydride and from 5 to 40 parts by weight of a rubber, the diene rubber being in the form of particles having diameters within the range of 0.02 to 30 microns dispersed throughout a continuous phase of styrene maleic anhydride resin, and
b. a polycarbonate resin in a proportion of from about 12 to 40 parts by weight of the polycarbonate resin to 88 to 60 parts by weight of the diene rubber-containing styrene/maleic anhydride resin.

3,966,843
NONFLAMMABLE POLYSTYRENE THERMOPLASTIC COMPOSITIONS CONTAINING A BROMINATED ESTER POLYMER

Arne O. Finberg, Edison, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 5, 1975, Ser. No. 574,212
Int. Cl.² C08L *25/14*
U.S. Cl. 260—874 12 Claims

1. A nonflammable thermoplastic polystyrene composition containing an amount sufficient to impart nonflammability characteristics to said composition of a brominated alkyl or aryl ester of a copolymer of maleic acid or anhydride and a compound containing ethylenic unsaturation.

3,966,844
POLYMERIC MATERIAL HAVING IMPACT RESISTANT PROPERTIES AND PROCESS FOR THE PREPARATION THEREOF

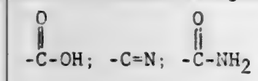
Sergio Arrighetti, Milan; Aldo Brancaccio, Cremona; Sebastiano Cesca, and Gianpaolo Giuliani, both of San Donato Milanese, all of Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Oct. 31, 1974, Ser. No. 519,799
Claims priority, application Italy, Oct. 31, 1973, 30786/73
Int. Cl.² C08L *23/16, 23/08;* C08F *255/06, 255/02*
U.S. Cl. 260—878 R 4 Claims

1. A polymeric material having high impact resistance and resistance to ageing consisting of a rubbery terpolymer of ethylene, an alpha-olefin and a triene termonomer containing at least one pair of conjugate double bonds in the polymer chain and having grafted thereon a member of the group consisting of alkenyl aromatic monomers, vinyl and vinylidene halides and acrylic monomers having the general formula



in which R is hydrogen or an alkyl group having from 1 to 5 carbon atoms, and X is a member of the group consisting of



and



wherein R′ is an alkyl group having from 1 to 9 carbon atoms, and mixtures thereof.

3,966,845

ACRYLIC ACID GRAFTED POLYOLEFINS AS NUCLEATING AGENTS FOR UNGRAFTED POLYOLEFINS

Robert A. Van Brederode, and Robert A. Steinkamp, both of Baytown, Tex., assignors to Exxon Research & Engineering Co., Linden, N.J.

Continuation-in-part of Ser. No. 240,468, April 3, 1972, abandoned. This application May 22, 1974, Ser. No. 472,169

Int. Cl.² C08L *23/08*

U.S. Cl. 260—876 R **10 Claims**

1. In an injection molding operation to produce thick shaped articles the method of improving the crystallization properties of crystallite forming C_2 to C_8 polyolefins which comprises:

a. incorporating into said crystallite forming polyolefins from 0.1 to 15 weight percent of a nucleating agent consisting essentially of a grafted C_2 to C_8 polyolefin wherein said graft component comprises 0.1 to 15 weight percent of an acrylic acid.

b. melting said crystallite forming polyolefin, and

c. cooling the resulting blend to the temperature of crystallization of said blend and thus forming very small spherulites because of the presence of said nucleating agent.

3,966,846

PROCESS FOR THE PREPARATION OF TRANSPARENT HIGH IMPACT STRENGTH VINYL CHLORIDE POLYMERS

Walter Gutmann, Zurich, and Rene Nicolet, Fribourg, both of Switzerland, assignors to Lonza Ltd., Gampel, Valais, Switzerland

Filed Dec. 9, 1974, Ser. No. 530,554

Claims priority, application Switzerland, Dec. 7, 1973, 017183/73

Int. Cl.² C08L *27/06, 23/08, 31/02, 25/14*

U.S. Cl. 260—884 **21 Claims**

1. The process for the preparation of a transparent, high-impact-strength and weather-resistant vinyl chloride polymer by the polymerization of vinyl chloride either together with or without other copolymerizable monomers in aqueous dispersion by the emulsion polymerization method in the presence of at least one acrylic ester copolymers which comprises emulsion polymerizing, at a temperature of 50° to 70°C. and at an absolute pressure of 65 to 95 percent of the saturation pressure of said vinyl chloride or of said monomer mixture at said temperature, vinyl chloride or a monomer mixture containing at least 80 percent by weight of vinyl chloride in the presence of a dispersion of at least one acrylic ester copolymer consisting of 55 to 94.7 percent by weight of at least one acrylic ester containing 3 to 18 carbon atoms in the ester group, 35 to 5 percent by weight of α-methyl styrene and 0.3 to 10 percent by weight of a polyfunctional monomer having at least two non-conjugated ethylenic double bonds, at least one of said double bonds being of the allyl type, said acrylic ester copolymer having a mean particle diameter of 30 to 150 nm, determined by soap titration, and said acrylic ester copolymer being used in a quantity such that the resultant vinyl polymer contains 4 to 20 percent by weight of acrylic ester units.

3,966,847

CONTACT LENS FROM HYDROPHILIC GEL POLYMERS OF POLYVINYLPYRROLIDONE AND HYDROXYALKYL METHACRYLATE

Maurice Seiderman, 3306 Deronda Drive, Hollywood, Calif. 90028

Continuation of Ser. No. 218,598, Jan. 17, 1972, abandoned, which is a continuation-in-part of Ser. No. 161,269, July 9, 1971, abandoned, which is a division of Ser. No. 92,280, Nov. 23, 1970, Pat. No. 3,721,657, which is a continuation-in-part of Ser. No. 845,499, July 28, 1969, Pat. No. 3,639,524. This application Jan. 4, 1974, Ser. No. 430,653

The portion of the term of this patent subsequent to Feb. 1, 1989, has been disclaimed.

Int. Cl.² C08L *31/02*

U.S. Cl. 260—885 **12 Claims**

1. A contact lens comprising a hydrophilic polymer consisting essentially of a polymerized mixture of polyvinylpyrrolidone and a hydroxyalkyl methacrylate in a weight ratio to the polyvinylpyrrolidone of from 60:40 to about 99:1, from 0.1 to about 25 parts by weight for each 100 parts of the polyvinylpyrrolidone of a crosslinking agent, and an amount of catalyst ranging from zero to about five grams thereof for each 100 grams of reaction mixture.

3,966,848

O,O,O′,O′-TETRAETHYL-S,S′-METHYLENE-BIS(p-PHENYLENETHIOMETHYLENE)

Michael Stanley Schrider, South Bound Brook, and Stephen David Levy, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 21, 1975, Ser. No. 570,294

Int. Cl.² C07C *9/06;* **A01N** *9/36*

U.S. Cl. 260—930 **1 Claim**

1. The compound phosphorodithioic acid, 0,0,0′,0′-tetraethyl S,S′-methylenebis (p-phenylenethiomethylene) ester.

3,966,849

BROMINE-CONTAINING CYCLIC PHOSPHONIC ACID ESTERS

Siegfried Noetzel, Kelkheim, Taunus; Horst Jastrow, Niederhochstadt, Taunus, and Edgar Fischer, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

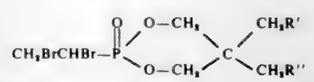
Filed Aug. 5, 1974, Ser. No. 494,877

Claims priority, application Germany, Aug. 7, 1973, 2339863

Int. Cl.² C07F *9/15;* **C08K** *5/53*

U.S. Cl. 260—937 **5 Claims**

1. A phosphonic acid ester of the formula



in which R′ and R″ represent a member selected from the group consisting of hydrogen, chlorine, bromine and R′ and R″ joined to form dibromo-cyclohexane.

3,966,850

O-ETHYL-S-N-PROPYL-O-(2-BROMO-4-CYANO-PHENYL)-THIONOTHIOL-PHOSPHORIC ACID ESTER

Hans-Jochem Riebel, Wuppertal, and Ingeborg Hammann, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

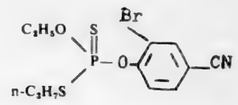
Filed Oct. 21, 1974, Ser. No. 516,838

Claims priority, application Germany, Nov. 6, 1973, 2355442

Int. Cl.² A01N *9/36;* **C07F** *9/18*

U.S. Cl. 260—940 **1 Claim**

1. O-Ethyl-S-n-propyl-O-(2-bromo-4-cyanophenyl)-thionothiolphosphoric acid ester of the formula



3,966,851

PHENOL PRECURSORS

Ronald George Feasey, Knebworth, and John Brewster Rose, Letchworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 165,769, July 15, 1971, Pat. No. 3,840,580. This application July 19, 1974, Ser. No. 490,101

Claims priority, application United Kingdom, July 15, 1970, 34308/70; July 15, 1970, 34309/70; Aug. 6, 1970, 37949/70; Dec. 23, 1970, 61171/70

Int. Cl.² C07F *9/14*

U.S. Cl. 260—949 **4 Claims**

1. A phenol precursor having the formula $Q'ZQOPOCl_2$ in which Q is a bivalent aromatic radical selected from the group consisting of unsubstituted phenylene, biphenylylene and naphthylene radicals and substituted radicals derived therefrom and Q′ is a univalent aromatic radical selected from the group consisting of unsubstituted phenyl, biphenylyl and naphthyl radicals and substituted radicals derived therefrom, the substituents in the Q and Q′ radicals, when substituted, being selected from the group consisting of halogen atoms, alkyl and alkoxy radicals containing up to 10 carbon atoms, and radicals that tend to deactivate an aromatic ring, provided that not more than one of said Q and Q′ radicals contains such deactivating substituents, and Z is $—SO_2—$ or —CO—.

3,966,852

METHOD FOR PREPARING TEST SPECIMENS FOR ANALYSIS

Karl-Heinz Neeb; Werner Schweighofer, and Hans-Jörg Weisse, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

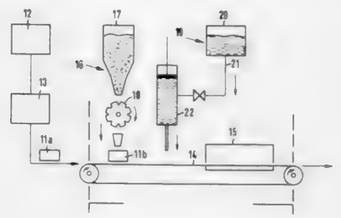
Filed Oct. 26, 1972, Ser. No. 300,963

Claims priority, application Germany, Oct. 28, 1971, 2153758

Int. Cl.² G21C *21/00*

U.S. Cl. 264—.5 **6 Claims**

1. The process for preparing test specimens for X-ray analysis, which process comprises mixing together a radio active sample material to be analyzed, a molten phosphate which is normally solid at room temperature and melts at a temperature above 100°, said molten phosphate being at least 50 times by weight greater than the amount of said sample and a substance which serves as an internal standard for X-ray analysis,



and forming the resulting mixture into a shaped form suitable for X-ray analysis.

3,966,853

PROCESS FOR PREPARING PRILLED POROUS AMMONIUM NITRATE

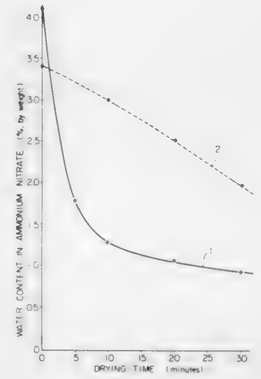
Naoto Osako; Katsumi Kozima; Hiroshi Shimizu, and Kazumi Kimura, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Sept. 25, 1974, Ser. No. 509,257

Claims priority, application Japan, Sept. 25, 1973, 48-107712

Int. Cl.² B01J *2/04*

U.S. Cl. 264—13 **8 Claims**



1. In a process for preparing dried, prilled porous ammonium nitrate by prilling an aqueous solution of 93% to 98% by weight ammonium nitrate, whereby a prilled ammonium nitrate product is obtained containing 2% to 5% water, and thereafter drying said prilled ammonium nitrate, the improvement comprising:

a. drying said prilled ammonium nitrate containing 2% to 5% water under conditions such that the drying temperature is eventually lowered to a temperature less than the III—IV crystalline transition temperature of ammonium nitrate at least once when the water content of the prilled ammonium nitrate reaches the level of 0.3 to 1.5% by weight;

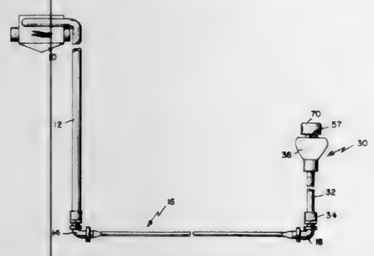
b. heating said dried ammonium nitrate further at a temperature higher than the III—IV transition temperature to complete drying of said ammonium nitrate; and

c. adding an anti-caking agent to said dried ammonium nitrate, whereby a dry, porous, prilled ammonium nitrate product is obtained.

3,966,854
AIR TRAP

Harold J. Schramm, deceased, late of West Chester, Pa. (by Florence J. Schramm, executrix); John R. McCullough, and Joseph P. Yarnall, both of West Chester, Pa., assignors to Schramm, Inc., West Chester, Pa.

Division of Ser. No. 286,008, Sept. 5, 1972, Pat. No. 3,848,623. This application July 19, 1974, Ser. No. 490,211
Int. Cl.² C02C *5/04, 1/12*
U.S. Cl. 261—64 R **5 Claims**



1. A system for producing gas bubbles in a body of liquid comprising:

means for supplying a gas under pressure;

a submersible elongated conductor having an internal passage connected to receive gas from said supplying means, and a plurality of openings along its length for allowing said gas to flow outwardly from said internal passage to produce bubbles in a body of liquid;

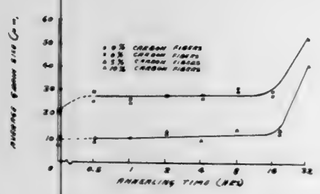
means providing an additional opening for effecting rapid removal of accumulated liquid from said internal passage by displacement with gas;

means for sensing the completion of removal of said accumulated liquid and means responsive to said sensing means for automatically closing said additional opening when the displacement of said accumulated liquid has been completed, thereby causing said gas to escape through said plurality of openings; and means responsive to the pressure of gas within said internal passage for maintaining said opening in its closed condition so long as said pressure is maintained.

3,966,855
METHOD OF FABRICATING SILICON CARBIDE ARTICLES

Glenn W. Hollenberg, and Robert L. Crane, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 22, 1974, Ser. No. 445,046
Int. Cl.² C04B *35/52*
U.S. Cl. 264—65 **11 Claims**



10. A method of fabricating an article of silicon carbide which comprises the following steps:

a. blending α silicon carbide powder with about 0.75 to 20 weight percent of finely divided carbon particles, based upon the weight of the silicon carbide, so as to form a homogeneous mixture consisting essentially of the aforementioned ingredients;

b. milling the homogeneous mixture of step (a) in a liquid mixing medium which is inert to the ingredients of the mixture until the ingredients are completely dispersed;

c. drying the mixture of step (b) so as to evaporate the mixing medium;

d. initially compressing the dried mixture of step (c) in a compression zone formed of graphite and lined with a sheet of graphite at a temperature in the range of about 700° to 1200°C and at a pressure ranging from about 400 to 600 psi, the compressing being carried out under a vacuum of about 10^{-3} to 10^{-1} torr or under a blanket of an inert gas for a period of about 15 minutes to 1 hour;

e. compressing the resulting compacted article in the compression zone at a temperature in the range of about 1950° to 2250°C and at a pressure ranging from about 4000 to 6000 psi for a period of about 10 to 20 minutes, the compressing being carried out under a vacuum of about 10^{-5} to 10^{-3} torr or under a blanket of an inert gas for a period of about 10 to 20 minutes;

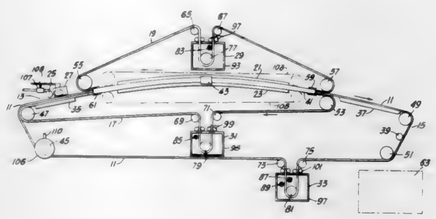
f. allowing the compression zone to cool to room temperature over a period of about 1 to 4 hours; and

g. recovering the silicon carbide article from the compression zone.

3,966,856
METHOD FOR THE PRODUCTION OF PEARLESCENT BUTTON BLANKS

Charles H. Williams, Export, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 431,225, Jan. 7, 1974, abandoned, which is a division of Ser. No. 248,702, April 28, 1972, Pat. No. 3,801,253. This application June 20, 1975, Ser. No. 588,671
Int. Cl.² B29D *19/02;* **B29C** *5/10*
U.S. Cl. 264—71 **10 Claims**



1. A method for making pearlescent button blanks comprising:

a. contacting the undersurface of a first flat member having plural perforations therein in the shape of button blanks with an unperforated second flat member to form plural mold cavities in the shape of button blanks,

b. filling the cavities with a polymerizable resin containing light reflecting platelets,

c. contacting the upper surface of the resin in the cavities and the first flat member with an unperforated third flat member,

d. causing linear movement of the three flat members in the same direction but with one of the solid flat members moving at a speed different from the perforated first flat member so as to scuff the surface of the polymerizable resin in contact with the solid flat member that is moving at a different speed thereby causing the light reflecting platelets to orientate parallel to the resin surface being scuffed,

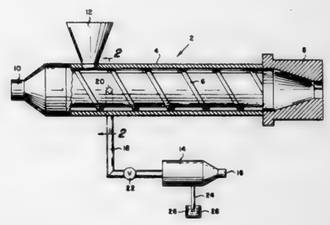
e. moving the three flat members through a polymerization zone during the scuffing to polymerize the resin while the light reflecting platelets are oriented,

f. separating the solid flat members from the perforated flat member and ejecting the pearlescent button blanks from the perforated flat member.

3,966,857
LUBRICATION OF EXTRUDED MATERIALS

Ralph W. Charlton, Newfoundland, and Seevaram N. Varadhachary, North Plainfield, both of N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Filed Dec. 31, 1969, Ser. No. 889,527
Int. Cl.² B29C *21/00*
U.S. Cl. 264—75 **2 Claims**



1. A method of producing an extruded resinous product having a mosaic-like appearance wherein the surface of the product is characterized by a plurality of random distinct lines of demarcation dividing the surface of the product into a plurality of distinct adjacent areas comprising:

a. providing a blend of thermoplastic resinous chips selected from the group consisting of polyvinyl chloride, polyurethane, polyethylene, polypropylene, polyvinyl copolymers and mixtures thereof,

b. feeding said blend of thermoplastic resinous chips to the barrel of an extruder at the hopper end of the extruder,

c. softening and moving said blend of thermoplastic resinous chips in the barrel of the extruder without melting said chips,

d. applying a liquid lubricative coating agent selected from the group consisting of lubricating oils, paraffinic hydrocarbons, mineral oils, and oil fractions of petroleum to said softened blend of thermoplastic resinous chips by injecting said lubricative coating agent into the barrel of the extruder downstream from the hopper end thereof, and feeding said blend and said agent in said barrel towards the extrusion end of said extruder while mixing the same, and

e. extruding said softened blend of thermoplastic resinous chips into a desired product wherein substantially all of said thermoplastic resinous chips retain their individuality in said product,

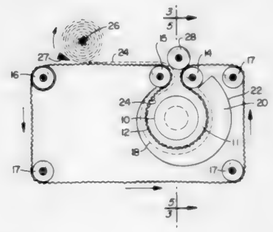
f. thereby producing an extruded product having a mosaic-like appearance in which said thermoplastic chips are visually distinct one from another.

3,966,858
LINEAR APPARATUS AND METHOD FOR HIGH SPEED PRODUCTION OF AIR-LAID NON-WOVEN WEBS

Marion Frank Troy, Hinsdale, and Ewald Albert Kamp, Chicago, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 25, 1974, Ser. No. 436,615
Int. Cl.² B29J *5/00;* **D04H** *1/58, 1/60*
U.S. Cl. 264—91 **16 Claims**

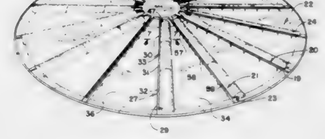
1. The method of making a non-woven fibrous web which comprises: providing a fluid stream, incorporating fibers into said stream, continuously rotating the fiber containing fluid stream to direct said stream in a centrifugal flow and directing said stream by arcuate channels of a rotor and causing said fibers to exit from said channels in a direction opposite to the direction of movement of the periphery of said rotor, whereby the velocity of said fibers is greatly reduced, collecting said fibers from said centrifugally flowing stream in a substantially endless web of uniform thickness contained in an arc around the axis of rotation of said centrifugal flow, continuously moving said web substantially in a circuit around said rotor, sealing across spaced portions of said web to assist in maintaining pressure in a region bounded by said web as it moves around said rotor by contacting said portions by means positioned therebetween and recovering said web after it leaves said region.



3,966,859
MULTIPLE STAGE LIQUID COOLING ASSEMBLY

Leonard J. Boler, Minneapolis, Minn., assignor to Cherne Industrial, Inc., Edina, Minn.

Filed Nov. 21, 1973, Ser. No. 417,793
Int. Cl.² B01F *3/04*
U.S. Cl. 261—92 **19 Claims**



1. A large scale cooling assembly having first and second stages for air cooling of hot liquid wherein

each of such stages has a plurality of liquid spray units adapted for selective controlled projection of liquid drops under variable ambient wind conditions in at least one trajectory, the trajectory substantially extending generally perpendicular from its unit and in a common horizontal direction therefrom with drop sizes, velocities and volume rates of liquid spraying adapted to provide a directional wind effect across the unit along the common horizontal direction;

the first stage is aligned and oriented to receive and initially cool the hot liquid by the controlled projection of liquid drops into a reservoir portion adjacent the units of the first stage, creating a generally horizontal directional wind effect across the units of the first stage;

the second stage has at least some units adjacent units of the first stage and is aligned and oriented to receive and cool the liquid by the controlled projection of liquid drops into a reservoir portion adjacent the units of the second stage, creating a generally horizontal directional wind effect across the units of the second stage complementary to the directional wind effect across the adjacent units of the first stage; and

the second stage is aligned and oriented to receive and further cool the liquid initially cooled by the first stage.

3,966,860

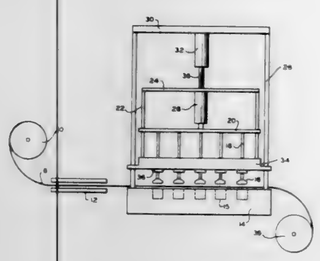
PROCESS FOR USING A CONTOURED ASSIST PLUG FOR THERMOFORMING ORIENTED ARTICLES

Jimmie E. Hudson, Bartlesville, Okla., and Calvin D. Dockery, Bacton, England, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 75,801, Sept. 24, 1969, abandoned. This application Jan. 7, 1975, Ser. No. 539,041

Int. Cl.² B29C *17/04*

U.S. Cl. 264—94 **7 Claims**



1. A process for forming high strength, open end articles from thermoplastic sheet comprising:

heating said sheet to orientation temperature;

contacting said sheet initially only around an annular area concentric with an article-forming zone;

applying pressure against said sheet along said annular area to stretch said sheet and cause slippage of polymer from within the area encompassed by said annular area said contact during said stretching continuing to be only along said annular area, said sheet encompassed by said annular area being contacted only by ambient air during said stretching; and

expanding said thus stretched sheet which has not yet contacted side walls of said forming zone by differential fluid pressure into conformity with said forming zone.

3,966,861

COMPOSITE TUBULAR FILM PROCESS AND APPARATUS

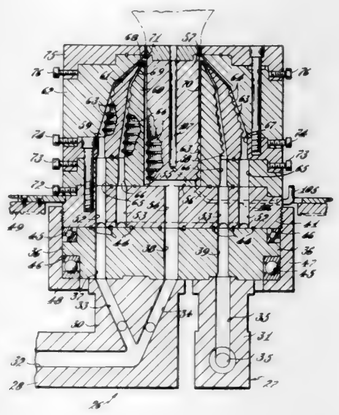
Edward G. Papesh, Palmer, and Edward F. Papesh, Wilbraham, both of Mass., assignors to Pierson Industries, Inc., Palmer, Mass.

Continuation-in-part of Ser. Nos. 730,505, May 20, 1968, abandoned, and Ser. No. 820,946, May 1, 1969, Pat. No. 3,649,143, which is a continuation-in-part of Ser. No. 73,505, May 20, 1968, abandoned. This application Aug. 9, 1971, Ser. No. 170,257

Int. Cl.² B29F *3/10*

U.S. Cl. 264—95 **4 Claims**

1. In the die forming of multi-layered film wherein separate streams of molten thermoplastic material from the die holder are formed into a plurality of layers in separate concentric chambers of the die head to be laminated therein into a composite film, the steps of: bottom feeding the separate streams of material from the die holder to the die head to form said separate layers; merging said separate layers together at a common orifice within said die head, and extruding said merged layers from said die head while continuously rotating the die head relative to the die holder to thereby achieve uniform gauge blown film free of pin holes, die scratches, weld



marks and the like imperfections, and to achieve also uniform flowing and uniting of the layers of thermoplastic material.

3,966,862

METHOD OF RECONSTITUTING MICA

Franklin C. Farnam, 19 Glenview Road, Asheville, N.C. 28804

Filed Sept. 27, 1974, Ser. No. 509,910

Int. Cl. C04b *35/16*

U.S. Cl. 264—110 **7 Claims**

1. In a method of making reconstituted mica sheet including the steps of blending mica and polyester, forming the mixture into a layer, and subjecting the layer to heat and pressure for bonding the layer into sheet form, the improvement comprising providing dry ground mica having a particle size in the range of from about 200 mesh to about 14 mesh; providing ground thermoplastic polyester having a particle size of less than about 60 mesh; proportioning the mixture to have from about 90 to about 50% mica by weight of the mixture; forming the layer to have a thickness in the range of from about ⅛ inch to about ¾ inch; bonding the layer into a sheet having a thickness in the range of from about 1/64 inch to about 3/34 inch; and maintaining the ground mica and ground polyester free from water during the steps of blending while producing the mixture, forming the layer and subjecting the layer to heat and pressure.

3,966,863

ORAL HYGIENE COMPOSITIONS

Geoffrey Charles Forward, Redhill; Susan Ann Duke, Croydon, and Melissa Anne Bell, New Malden, all of England, assignors to Beecham Group Limited, United Kingdom

Filed Dec. 4, 1974, Ser. No. 529,567

Int. Cl.² A61K *7/18*

U.S. Cl. 424—52 **8 Claims**

1. An oral hygiene composition comprising: (*a*) a calcium carbonate abrasive: (*b*) an ionic fluoride: and (*c*) an ionic monofluorophosphate, the weights of the said ingredients (*b*) and (*c*) being sufficient to provide respectively from 40–80% and 20–60% of the total fluorine content of the compositions.

3,966,864

FILAMENT-WOUND REINFORCED PLASTIC ARTICLES AND PROCESS OF MAKING AND USING SAME

Horst Stenzenberger, Dossenheim, Germany, assignor to Technochemie GmbH Verfahrenstechnik of Heidelberg, Heidelberg, Germany

Continuation of Ser. No. 334,472, Feb. 21, 1973, abandoned. This application Apr. 8, 1975, Ser. No. 566,530

Int. Cl.² B29C *27/26*

U.S. Cl. 264—137 **7 Claims**

1. In a process of producing a filament-wound reinforced substantially pore-free plastic article by wetting and impregnating fibrous material with a plastic material and winding the wetted and impregnated fibrous material around a mandrel of a shape corresponding to the inner structure of the desired plastic article, the improvement which consists in the steps of

a. wetting and impregnating the filamentary fibrous material with a liquid molten polymerizable bisimide having a melting point below 200°C., which melting point is at least 20°C. below the temperature at which substantial polymerization sets in, said wetting and impregnating step being carried out at a temperature above the melting point of said bisimide and below that at which substantial polymerization takes place, at which temperature said bisimide has a viscosity substantially lower than 800 centistokes;

b. winding the thus wetted and impregnated filamentary fibrous material around a winding mandrel of the desired shape to produce the respective wound article; and

c. heating said wound article at a temperature sufficient to effect addition polymerization and to cause hardening and curing to the filament-wound, reinforced plastic article.

3,966,865

METHOD FOR PRODUCING FIBRIL FIBROUS STRUCTURES

Takeshi Nishida, Kobe; Isao Shiromaru, Nagahama, and Tsutomu Teshima, Osaka, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Apr. 22, 1974, Ser. No. 462,950

Claims priority, application Japan, Apr. 21, 1973, 48-45628

Int. Cl.² B29H *7/18*

U.S. Cl. 264—147 **13 Claims**



1. A method for producing fibrillated fibrous structures which comprises forming into a knit fabric, or a woven fabric, or a non-woven fabric, fabrillatable composite filaments consisting essentially of (A) a polyamide and (B) a component having poor affinity to said polyamide and selected from the group consisting of a polyester, a polyolefin and polyacrylonitrile, each of said composite filaments in transverse cross-section consisting of at least three integral polyamide layers of substantially uniform thickness which comprise from 10 to 35 percent of the cross-sectional area of the filament and which diverge substantially radially in the outward direction and extend to the perimeter of the filament, said layers dividing said component B of said filament into at least three separate segments which extend to the perimeter of the filament; immersing said fabric in an aqueous emulsion consisting essentially of water, from 1.5 to 50 percent by weight of an alcohol selected from the group consisting of benzyl alcohol and phenylethyl alcohol, and a surfactant in an amount in the range of 5 to 20 percent by weight, based on the weight of said alcohol, and effective to impart to said emulsion a percent transmittancy of less than 20 percent; and maintaining said fabric in contact with said emulsion under conditions effective to swell and shrink component A and to minimize swelling and shrinking of component B for a period of time effective to separate at least about 70% of said segments of component B from said polyamide layers whereby to fibrillate the composite filaments to impart a soft silky feel and a bulky appearance to the fibrous structure, and in the case of knit and woven fabrics to shrink the arena of the fabric from 10 to 60 percent, to increase the thickness of the fabric more than 20 percent and wherein the ratio of said thickness increase percent to said area shrinkage percent is more than 2, and in the case of non-woven fabrics to shrink its volume from 10 to 40 percent.

3,966,866

POLYURETHANE FIBER UNIFORMITY

Richard L. Ballman, Gulf Breeze; Kenneth R. Lea, Pensacola; Walter J. Nunning, and John H. Southern, both of Gulf Breeze, all of Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 400,770, Sept. 26, 1973, abandoned. This application July 15, 1974, Ser. No. 488,635

Int. Cl.² B29F *3/10*

U.S. Cl. 264—171 **6 Claims**

1. A process for preparing a conjugate fiber, comprising:

a. preparing a solid melt-spinnable fiber-forming polyurethane by reacting together

1. a polymeric glycol having a molecular weight between 800 and 3000,

2. between 4.6 and 8.8 mols of an aromatic diisocyanate per mol of said polymeric glycol, and

3. sufficient low molecular weight polyol to provide an NCO/OH ratio between 0.96 and 1.04 to 1;

b. heating said polyurethane to a temperature within the range from at least

$$210.6 + 3\,\frac{\text{mols diisocyanate}}{\text{mols polymeric glycol}}\ ^{\circ}\text{C.}$$

and less than 255°C. to form a first molten stream;

c. maintaining the temperature of said first molten stream within said range for a treatment period of at least 10 seconds and less than a treatment period which would cause objectionable degradation;

d. combining said first molten stream with a second molten stream in a side-by-side conjugate relationship to form a conjugated stream, said second molten stream being formed from a melted fiber-forming hard polymer;

e. extruding said conjugated stream through a spinneret orifice; and

f. cooling said conjugated stream to form a conjugate yarn.

3,966,867

MANUFACTURE OF UNIQUE POLYETHYLENE TEREPHTHALATE FIBER

Johannes Pieter Munting, Emmen, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 187,521, Oct. 7, 1971, Pat. No. 3,838,561, which is a division of Ser. No. 852,915, Aug. 25, 1969, Pat. No. 3,650,879. This application Mar. 13, 1974, Ser. No. 450,776

Claims priority, application Netherlands, Aug. 31, 1968, 6812442

Int. Cl.² B29C *17/02*; **D01D** *5/10, 5/16*

U.S. Cl. 264—210 F **3 Claims**

1. A process for producing a reinforcing fiber of polyethylene terephthalate which comprises drawing a non-drawn fiber of polyethylene terephthalate in two stages, the polyethylene

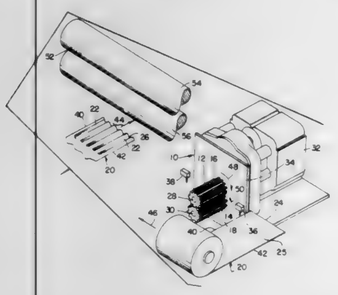
terephthalate having a relative viscosity of from 1.50 to 1.70, the drawing in the first stage being effected at a temperature in the range of about 70°C. to about 100°C. at a draw ratio of from about 3.8 to 4.2, and the drawing in the second stage being effected in the presence of superheated steam at a temperature of from about 210°C. to 250°C. and at a draw ratio such that the total draw ratio in the two stages is in the range of from about 5.6 to 6.0; said fiber of polyethylene terephthalate having a tenacity of at least about 7.5 grams per denier, an elongation at break of at least about 9%, an elongation of not more than about 5% under a load of 5 grams per denier and a shrinkage of less than 4% when kept under a tension of 0.05 grams per denier for 4 minutes at about 160°C.

3,966,868

STRIP STRAIGHTENING APPARATUS, PRODUCT AND METHOD

Henry F. Hope, 3192 Huntingdon Road, Huntingdon Valley, Pa. 19006, and Stephen F. Hope, 2548 Wyandotte Road, Willow Grove, Pa. 19090

Filed Dec. 9, 1974, Ser. No. 530,685
Int. Cl.² B29C *15/00*
U.S. Cl. 264—238 **29 Claims**



1. A method of feeding, without attaching a leader, a strip of photographic material which has a tendency to curl, between successive roll pairs in roll type photographic processing equipment and avoiding curling of said material about said rolls, which comprises

feeding the strip between a pair of corrugating means and corrugating an end portion of the strip forming longitudinal corrugations in said end,

moving said corrugating means apart and out of engagement with said strip,

directly feeding said end portion between at least one following roll pair while continuing to pass a portion of said strip between said corrugating rolls but out of engagement therewith.

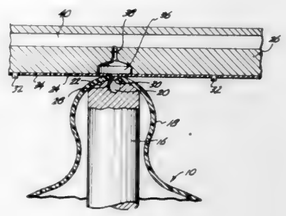
3,966,869

FORMING A REMOVABLE CLOSURE MEMBER IN SITU

Gerald C. Kohl, 1106 S. Fourth St., Tacoma, Wash. 98405

Filed Apr. 14, 1972, Ser. No. 244,018
Int. Cl.² B32B *31/04*; **B29C** *6/04*; **A61J** *9/00*
U.S. Cl. 264—242 **4 Claims**

1. In the process of forming a removable closure member for the end opening in a bulbous, open-ended nipple or the like of resiliently flexible sheet material, the steps of interposing the nipple in the space between spaced mutually opposing surfaces of a pair of mold sections having mutually opposing recesses therein, one of which mold sections takes the form of an elongated mandrel which is inserted in the nipple and has a recess in the inserted end thereof, registering the end opening in the nipple with the recesses and while maintaining a seal about the opening between the inserted end of the mandrel and the surface of the other mold section, injecting a settable liquid molding composition into the cavity formed by the recesses and the opening in the nipple, to form the removable closure member, and relatively retracting the mandrel and the other mold section from the nipple and the closure member after the molding composition of the closure member has set in the cavity, said recesses having crosswise dimensions relatively parallel to the plane of the opening, which are adapted so that relatively enlarged inside and outside heads are formed



on the closure member at the respective sides of the opening, the inside head formed in the recess of the mandrel, having a peripheral contour in directions extending relatively away from the opening, whereby the inside head is adapted to pass through the opening when a force is applied to the closure member in the direction of the outside head, relatively crosswise of the nipple and generally axially of the opening.

3,966,870

HOLLOW, MULTI-LAYERED, CROSS-LINKED PLASTIC STRUCTURES AND PROCESS FOR PRODUCING SAME

Camillo M. Vecchiotti, Ridgewood, N.J., assignor to Amerace Corporation, New York, N.Y.

Division of Ser. No. 410,815, Oct. 29, 1973, Pat. No. 3,900,640. This application Feb. 7, 1975, Ser. No. 548,088
Int. Cl.² B29C *5/04*; **B29D** *9/00*, *23/08*
U.S. Cl. 264—255 **6 Claims**

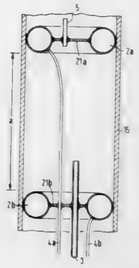
1. A process for producing a hollow, multi-layered cross-linked, plastic structure from a linear thermoplastic polyester and a cross-linkable polyethylene having a melting point lower than the melting point of the polyester, said process comprising the steps of: charging a mold with a sufficient amount of the thermoplastic polyester material to form a substantially uniform layer on the inner surface of said mold; heating said mold to a temperature above the melting point of the polyester; rotating said mold so as to fuse the polyester contained within the mold and to uniformly distribute the fused polyester on the inner surface of the mold; cooling said mold to a temperature below the melting point of the polyester but above that of the cross-linkable polyethylene thus crystallizing the polyester to a solid layer; stopping the rotation of the mold; charging said mold with a sufficient amount of the cross-linkable polyethylene to form a substantially uniform layer on said polyester layer; heating said mold to a temperature above the melting point of the polyethylene and sufficiently below the melting point of the polyester so as not to cause dimensional distortion of the polyester; rotating the polyethylene charged mold for a sufficient period of time to fuse said polyethylene, uniformly distribute the polyethylene on the inner surface of the polyester layer and effect cross-linking of said polyethylene so as to set the polyethylene layer and effect cross-linking of said polyethylene to said linear polyester; and stopping the rotation of said mold to remove the resulting hollow, cross-linked multi-layered polymeric structure.

3,966,871

METHOD AND APPARATUS FOR INSPECTING TUBULAR CAVITIES

Peter Schröder, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Germany

Filed Nov. 19, 1974, Ser. No. 525,229
Claims priority, application Germany, Nov. 26, 1973, 2358802
Int. Cl.² B29C *7/00*
U.S. Cl. 264—318 **4 Claims**



1. A method for obtaining an image of the surface of an internal zone of a cavity having an open end, said method comprising transporting a flowable elastically hardenable casting plastic through said end to said zone and casting said plastic against said surface and hardening of said plastic to an elastic casting, pulling said casting from said zone and through said open end with said casting elastically retaining an image of said surface, dams for said cavity being first inserted through said end and initially moved to said zone, and with the dams flexibly interconnected against separation more than the extent of said zone, and said plastic being transported under pressure to said zone through a tube inserted through said end and the one of said dams most adjacent to said end, with said tube opening between said dams and said plastic being injected between said dams to separate the same so they embrace said zone, said dams being interconnected so as to hold the dams against said separation while said plastic is injected therebetween, and when pulling said casting from said zone, said casting elastically stretching and releasing itself from any depressions on the inside of said tube, said dams, while interconnected, permitting said stretching.

3,966,872

COUPLED CATIONIC AND ANIONIC METHOD OF SEPARATING URANIUM

Parameshwaran Sundar; Leonard Elikan, and Ward L. Lyon, all of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 1, 1973, Ser. No. 411,889
Int. Cl.² B01D *11/00*
U.S. Cl. 423—9 **38 Claims**

1. A method of separating uranium from contaminating ions in an aqueous feed liquor containing uranyl ion comprising:

1. extracting said feed liquor with a first, non-interfering, water-immiscible, organic solvent containing a reagent which reacts with said uranyl ion to form a complex soluble in said solvent; **2.** either

A. stripping said organic solvent with a stripping liquor of an aqueous carbonate solution having a pH of about 8 to about 9 and a molarity of about 0.25 to about 0.75 or

B. (**1**) stripping said organic solvent with a stripping liquor of an aqueous sulfuric acid liquor having a pH of about 0.5 to about 5 containing a reducing ion, **2.** oxidizing uranous ion in said sulfuric acid liquor to uranyl ion, and **3.** adjusting the pH of said sulfuric acid liquor to about 0.9 to about 1.5;

3. extracting said stripping liquor with an amine liquor comprising a second, non-interfering, water-immiscible, organic solvent, about 0.1 to about 0.5 M of an amine having the formula

$N[R]_n$

where n is **3** to **4** and each R is independently selected from alkyl from C_7 to C_{12}, and about 1 to about 10% by volume of a solubilizer;

4. stripping said amine with an ammonium carbonate solution containing sufficient ammonium and carbonate ions to precipitate a uranium complex; and

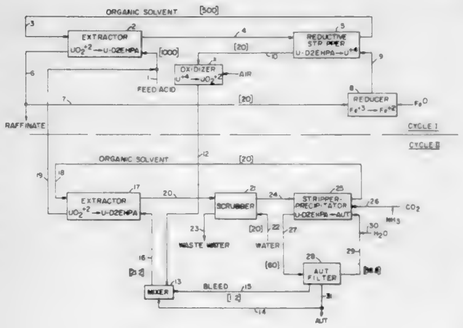
5. collecting said precipitated uranium complex.

3,966,873

URANIUM COMPLEX RECYCLING METHOD OF PURIFYING URANIUM LIQUORS

Leonard Elikan, Pittsburgh; Ward L. Lyon, Monroeville, and Parameshwaran S. Sundar, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 1, 1973, Ser. No. 411,886
Int. Cl.² C01G *43/00*, *43/02*
U.S. Cl. 423—10 **23 Claims**



1. A method of separating uranium from an aqueous liquor containing uranyl ion and contaminating cations comprising:

1. mixing said aqueous liquor with recycled uranium complex to form a solution of said uranium complex in said aqueous liquor;

2. extracting said aqueous liquor with a non-interfering, water immiscible organic solvent containing a reagent which reacts with said uranyl ions forming a complex soluble in said solvent;

3. stripping said organic solvent with an aqueous solution containing at least enough ammonium and carbonate ions to precipitate a uranium complex; and

4. recycling a portion of said precipitated uranium complex to step (1).

3,966,874

EXTRACTION OF ALUMINA FROM BAUXITE ORES

Richard H. Featherston, Richmond, Va.; Joseph P. Fischer, Ingleside, Tex.; Meriwether L. Garing, Portland, Tex., and James R. Wright, Corpus Christi, Tex., assignors to Reynolds Metals Company, Richmond, Va.

Filed May 14, 1975, Ser. No. 577,411
Int. Cl.² C01F *7/06*
U.S. Cl. 423—121 **8 Claims**

1. An improved wet caustic process for the extraction of caustic soluble alumina values from a bauxite containing, on a dry basis, at least 1% by weight of goethite, calculated as (FeO)OH, and at least 1% by weight of a monohydrated alumina, calculated as $AL_2O_3.H_2O$, which process comprises the steps of: (a) forming a caustic slurry of said bauxite; (b) in a preheating zone preheating said caustic slurry of bauxite

in the absence of a hereafter defined calcium compound and in the liquid phase to a temperature of at least 200°C; (c) passing the preheated slurry to a digestion zone wherein said slurry is maintained in the liquid phase under digesting conditions of at least 225°C for a digesting time sufficient to dissolve substantially all of the caustic soluble alumina from said bauxite, there being also added to said digestion zone a calcium compound selected from the group consisting of CaO, $Ca(OH)_2$ and $CaCo_3$; and (d) removing the resulting slurry from said digestion zone and in a recovery zone recovering the alumina values therefrom.

3,966,875

PROCESS FOR THE DESULFURIZATION OF GASES

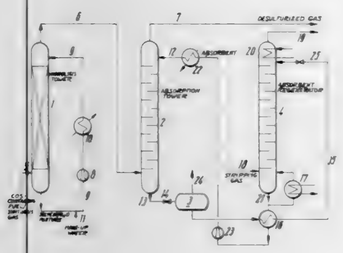
Karl Bratzler, Bad Homburg, and Alexander Doerges, Frankfurt am Main, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Oct. 11, 1973, Ser. No. 405,678

Claims priority, application Germany, Oct. 13, 1972, 2250169

Int. Cl.² B01D *53/34*

U.S. Cl. 423—220 **1 Claim**



1. A process for the desulfurization of a raw fuel or synthesis gas containing carbonyl sulfide and hydrogen sulfide which comprises the steps of:

a. treating the gas at a temperature of 50° to 105°C with a low volatility organic solvent miscible with water and selected from the group consisting of N-substituted pyrrolidone, N-substituted piperidones, and polyethylene glycol ethers said solvent containing 15 to 50 mole% water to selectively dissolve the carbonyl sulfide and yield a gas free from carbonyl sulfide said solvent being chemically inert with respect to reaction with carbonyl sulfide in the absence of water and wherein the rate at which said solvent is contacted with said gas is selected to maintain an absorption factor of at least 1 for carbonyl sulfide in terms of the anhydrous solvent constant rate;

b. hydrolyzing the carbonyl sulfide dissolved in the solvent with water combined therewith simultaneously with the treatment of step (*a*) to transform the solution of dissolved carbonyl sulfide to hydrogen sulfide and carbon dioxide and stripping the solvent laden with the hydrogen sulfide formed by the hydrolysis of the carbonyl sulfide with a further part of the raw gas simultaneously with step (*a*); and

c. subsequently scrubbing said carbonyl sulfide-free gas to remove therefrom hydrogen sulfide.

3,966,876

GAS PURIFICATION

Frank Henry Singleton, Croydon; Derek Vernon Gosden, and Graham Woodhouse, both of Horsham, all of England, assignors to Woodall-Duckham, Limited, England

Filed Dec. 18, 1973, Ser. No. 425,715

Int. Cl.² C01B *17/04*

U.S. Cl. 423—233 **2 Claims**

1. In a gas purification process in which H_2S in a foul gas stream is absorbed by a liquid reagent, said liquid reagent gradually becoming contaminated predominantly with at least one member selected from a group consisting of thiosulphate, sulphate and thiocyanate, the improvement in which comprises controlling the build up of said contaminants in the liquid reagent without directly disposing of the contaminated spent liquid reagent by bleeding off a side stream of said contaminated, spent liquid reagent, subjecting said side stream to high-temperature hydrolysis in a non-oxidizing atmosphere at a temperature in the range of 500° to 800°C, thereby producing a gas phase containing H_2S and a solid phase, recycling said gas phase containing H_2S to the foul gas stream being subjected to purification by the said process, and subjecting the solid phase to reduction by contact with a reducing gas at a temperature in the range of 500° by 800°C.

3,966,877

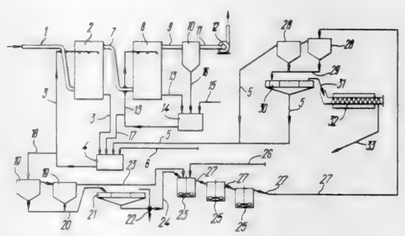
METHOD OF PROCESSING OF WASTE GASES

Vladimir Sergeevich Kalach, ulitsa Lobachevskogo, 22, kv. 37, and Lidia Ivanovna Burlakova, Leninsky prospekt, 52, kv. 316, both of Moscow, U.S.S.R.

Filed Sept. 11, 1974, Ser. No. 505,082

Int. Cl.² B01D *53/34*

U.S. Cl. 423—240 **8 Claims**



1. Method of processing of a waste gas containing hydrogen fluoride and silicon tetrafluoride which comprises absorbing said hydrogen fluoride and silicon tetrafluoride from said waste gas by an aqueous solution containing at least one ammonium compound selected from the group consisting of ammonium carbonate, ammonium bicarbonate and ammonium fluoride and also containing ammonia and sodium fluoride, thereby forming an aqueous solution containing ammonium fluoride and a precipitate of sodium fluosilicate, treating said solution with sodium carbonate to form a precipitate of sodium fluoride, and separating the thus formed sodium fluoride and other precipitates from the solution, and returning the remaining solution for further absorption.

3,966,878

METHOD FOR REMOVING POLLUTANTS FROM A GASEOUS MIXTURE

Josef Pausch, Minnetonka, and Sung Lim Kwon, St. Paul, both of Minn., assignors to General Resource Corporation, Hopkins, Minn.

Filed Nov. 8, 1973, Ser. No. 413,928

Int. Cl.² C01B *17/00*

U.S. Cl. 423—242 **7 Claims**

1. A method of treating a high temperature waste gaseous product containing a chemically active substance consisting of SO_2, SO_3, or mixtures thereof, comprising the steps of:

a. passing said gaseous product at its elevated temperature through the interior of a substantially upright U-shaped channel;

b. dispersing as a mist into the interior of said channel in at least one limited area therein within the flow path of said gaseous product, an aqueous solution containing a material which reacts with the chemically active substance in said gaseous product producing a precipitate, and concomitantly evaporating the moisture of the mist by the elevated temperature of said gaseous product to form a separable relatively dry reaction product;

c. and controlling a condition relating to the dispersion of said solution within said channel in response to a measurement of a condition of at least one portion of the contents of said channel at a point between the opposite ends of said channel.

3,966,879

REMOVAL OF SULFUR OXIDES AND PARTICULATE MATTER FROM WASTE GAS STREAMS

Willem Groenendaal; Friedrich C. Taubert, both of The Hague; Jaap E. Naber, and Gijsbertus A. Bekker, both of Amsterdam, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed May 6, 1974, Ser. No. 467,530

Claims priority, application United Kingdom, May 8, 1973, 21848/73

Int. Cl.² B01J *8/00*; **C01B** *17/00*

U.S. Cl. 423—244 **10 Claims**

1. A process for removing sulfur oxides and particulate matter from waste gas streams containing sulfur oxides and particulate matter which comprises:

A. contacting the waste gas stream under oxidative conditions in a sulfur oxide and particulate matter removal zone with a solid acceptor comprising copper or a copper compound or mixtures thereof supported on a particulate carrier, said contact being established by passing the waste gas at a temperature of from about 300° to 500°C. cross-currently through a moving bed of the solid acceptor, thereby accepting the sulfur oxide on said acceptor and filtering out the particulate matter to afford an acceptor loaded with sulfur oxides and particulate matter and a waste gas stream substantially free of both sulfur oxides and particulate matter;

B. removing the particulate matter from the loaded acceptor in a first separation zone wherein the acceptor loaded with both sulfur oxides and particulate matter is stripped of particulate matter by transporting the loaded acceptor through a stream of an inert stripping gas;

C. separating the sulfur oxides from the acceptor product of the first separation zone by contacting the acceptor with a reducing gas at a temperature between 300°–500°C in a second separation zone whereby the sulfur oxides bound to the acceptor are released as SO_2 gas and

D. returning the acceptor product of the second separation zone into cross-current contact with said waste gases under oxidative conditions in the sulfur oxide and particulate matter removal zone.

3,966,880

METHOD FOR PRODUCING ALKALI METAL GOLD SULFITE

George Dietz, Jr., Watertown, Conn.; Robert M. Skomoroski, Paterson, N.J., and Robert G. Zobbi, Southbury, Conn., assignors to American Chemical & Refining Company Inc., Waterbury, Conn.

Filed June 17, 1975, Ser. No. 587,607

Int. Cl.² C01B *17/62*; **C01G** *7/00*

U.S. Cl. 423—265 **12 Claims**

1. In a process for making alkali metal gold sulfite, the steps comprising

a. admixing an aqueous solution of gold chloride with an excess of magnesium oxide to produce a precipitate of magnesium oxide particles having magnesium aurate thereon, the molar ratio of gold chloride to magnesium oxide being 1:2–6 and said solution being at a pH of at least 7.0;

b. admixing the magnesium aurate with an aqueous solution of alkali metal sulfite to produce alkali metal gold sulfite in solution and a precipitate of magnesium oxide, said solution having a pH of at least 10 and the molar ratio of magnesium aurate to alkali metal sulfite being 1:5–14; and

c. recovering the alkali metal gold sulfite.

3,966,881

METHOD OF MAKING A SINGLE CRYSTAL INTERMETALLIC COMPOUND SEMICONDUCTOR

Masaaki Ayabe, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 3, 1973, Ser. No. 356,949

Claims priority, application Japan, May 11, 1972, 47-46629

Int. Cl.² C01B *25/00*

U.S. Cl. 423—299 **5 Claims**

1. A method of making an intermetallic compound semiconductor composed of a first element from Group III having a relatively low vapor pressure at the melting point of said compound and a second element from Group V having a relatively high vapor pressure at said melting point which comprises the steps of melting said first element in a confined zone, applying a temperature differential along the melted first element between 20°C and 300°C, while maintaining said melted mass at a temperature below the melting point of the desired intermetallic compound, vaporizing said second element in the confined zone, maintaining a depth of said melted mass of said first element substantially constant, and exposing the higher temperature portion of said melted mass to the vapors of said second element to thereby form a single crystal of said intermetallic compound at a lower temperature portion of said zone.

3,966,882

THERMAL STABLE SYNTHETIC ZEOLITE

Philip Kenerick Maher, Baltimore, and Carl Vance McDaniel, Laurel, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 233,827, March 10, 1972, abandoned, which is a continuation of Ser. No. 29,285, April 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 714,357, March 19, 1968, Pat. No. 3,518,051, which is a continuation-in-part of Ser. No. 367,864, May 15, 1964, abandoned. This application Apr. 15, 1974, Ser. No. 461,050

The portion of the term of this patent subsequent to Dec. 20, 1983, has been disclaimed.

Int. Cl.² C01B *33/28*

U.S. Cl. 423—328 **2 Claims**

1. As a composition of matter a synthetic ultra stable zeolite aluminosilicate having the composition expressed in terms of oxide mole ratios as follows

$$X\ M_{2/n}O:\ Al_2O_3 :\ 2.5 - <3.5\ SiO_2 :\ Y\ H_2O$$

where M represents alkali metal of less than one percent by weight of said zeolite and hydrogen and n is the valence of M, X may vary from 0 to 1 and Y may be any value up to 9, said ultrastable zeolite aluminosilicate further being characterized by:

a cubic cell size of 24.45 to 24.70 angstroms

and an ultrastable structure as evidenced by retention of a surface area of (i) greater than 100 m^2/g after treatment at 1650°F. for 16 hours and (ii) greater than 200 m^2/g after treatment with an atmosphere of 25 percent steam at a temperature of greater than 1525°F. for 16 hours.

3,966,883
SYNTHETIC FERRIERITE SYNTHESIS
David Evan William Vaughan, Columbia, and Grant Campbell Edwards, Silver Spring, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Filed Oct. 16, 1974, Ser. No. 515,380
Int. Cl.² C01B *33/28*
U.S. Cl. 423—329 **4 Claims**

1. A process for preparing synthetic ferrierite which comprises the steps of

a. preparing a reactant mixture having the following oxide molar ratios of reactants 0.75 to 1.5 Li_2O:0.9 to 1.2 Al_2O_3:7 to 20 SiO_2:50 to 600 H_2O,
b. adding powdered natural or synthetic ferrierite in a concentration of about 0.1 to 10% to the reaction miture,
c. heating the reactant mixture to about 180° to 325°C. in a closed reaction vessel at a pressure of 1 to 119 atmospheres,
d. washing, drying and recovering a ferrierite product having the X-ray diffraction pattern essentially as shown in Table C.

3,966,884
SYNTHESIS OF WOLLASTONITE FROM NATURAL MATERIALS WITHOUT FUSION
Claude J. Jacob, Olivet, France, assignor to Bureau de Recherches Geologiques et Minieres, Paris, France
Filed June 20, 1974, Ser. No. 481,427
Claims priority, application France, June 20, 1973, 73.22459
Int. Cl.² C01B *33/24*
U.S. Cl. 423—331 **6 Claims**

1. A process for producing low-temperature wollastonite wherein a natural chalk-containing material which comprises silica in the form of sponge spikelets and calcium carbonate in amounts within 10% of the stoichiometric ratio (a) is mixed with a mineralizing agent selected from the group consisting of NaCl, NaF, Na_2CO_3, Na_2SiO_3, Na_2WO_4, KCl, $CaCl_2$, CaF_2, LiF, LiCl and Li_2CO_3, (b) said mixture is reduced in granulometry to lower than 2 mm and rendered homogeneous, and (c) said mixture of (b) is heated to a temperature of between 1000° – 1100°C for 1 to 5 hours.

3,966,885
METHODS AND MATERIALS FOR JOINING SILICON POWDER STRUCTURES
Edwin Richard Wells May, Bournemouth, England, assignor to National Research Development Corporation, London, England
Continuation-in-part of Ser. No. 430,772, Jan. 4, 1974, abandoned, which is a continuation of Ser. No. 852,508, Aug. 22, 1969, abandoned. This application Mar. 3, 1975, Ser. No. 554,697
Claims priority, application United Kingdom, Aug. 29, 1968, 41202/68
Int. Cl.² C01B *21/06*
U.S. Cl. 423—344 **6 Claims**

1. A method of producing a unitary silicon nitride structure by joining together at least two shaped silicon based bodies, comprising the steps of:

a. providing separate shaped bodies of material selected from the group consisting of silicon powder and silicon powder which has been at least partially nitrided, said shaped bodies having faces at which they are to be joined together,
b. applying to at least one of the joining faces a thin film of a mixture of silicon powder and a heat removable liquid therefor, said binder being such that no undesirable residue results from heating the binder,
c. assembling together said shaped bodies with their joining faces in juxtaposition and in contact with the intervening mixture of silicon powder and binder, the joining faces being held together under light pressure,
d. maintaining said faces in juxtaposition, and
e. slowly heating said assembled shaped bodies in a nitriding atmosphere to remove said liquid binder, continuing said heating to avoid collapse of the intervening silicon powder into a molten pool, and to convert the material of said bodies and the intervening silicon powder into a unitary silicon nitride structure.

3,966,886
METHOD OF PREPARING AND ISOLATING METAL HYDROCARBONYLS AND RECOVERY OF PURE METALS THEREFROM
Lubertus Bakker, Mentor, Ohio, assignor to Joseph P. Meyers, Palos Verdes, Calif., a part interest
Filed Dec. 29, 1971, Ser. No. 213,725
Int. Cl.² C01G *1/04*
U.S. Cl. 423—417 **3 Claims**

1. A method comprising

1. contacting a solid material having a maximum particle dimension of 1 mm. and containing nickel present as any of free metal, metal oxides, metal sulfides, metal salts, metal esters and mixtures thereof with a mixture of hydrogen and oxygen in a molar ratio of from 3:1 to 1:3 at a temperature of 185°±15°C. and a pressure of from one to about 250 atmospheres for a time sufficient to convert substantially all of said nickel in said solid material to nickel hydrocarbonyl, and
2. separating such nickel hydrocarbonyl from the reacting system while maintaining said system at said temperature and pressure.

3,966,887
PROCESS FOR PRODUCTION OF CARBON FIBERS AND THE RESULTANT FIBERS
Pierre Chiche, Verneuil-en-Halatte, France, assignor to Charbonnages de France, Paris, France
Filed Oct. 26, 1972, Ser. No. 301,150
Claims priority, application France, Nov. 8, 1971, 71.39939
The portion of the term of this patent subsequent to Jan. 8, 1991, has been disclaimed.
Int. Cl.² D01F *9/12*
U.S. Cl. 423—447 **4 Claims**

1. In a process for the production of carbon fibres from a strongly aromatic distillation residue pitch, comprising subjecting said pitch to a heat treatment at a temperature approximately 407°C, the product of the heat treatment being thereafter melt spun into fibres which are then oxidized and carbonized, the improvement comprising:

adding to said distillation residue pitch, no later than during the heat treatment, and agitating therewith, a polymer selected from the group consisting of a phenolformaldehyde polymer and a non-cross-linked polyester resin, in an amount approximately 10% by weight and sufficient to improve the mean breaking stress and the mean Young's modulus of the carbonized fibres.

3,966,888
ANHYDROUS MAGNESIUM CHLORIDE USING ETHYLENE GLYCOL AND AMMONIA
David G. Braithwaite, and Ronald J. Allain, both of Brookhaven, Miss., assignors to Nalco Chemical Company, Oak Brook, Ill.
Filed Oct. 29, 1975, Ser. No. 626,813
Int. Cl.² C01F *5/34*
U.S. Cl. 423—498 **4 Claims**

1. A method of preparing anhydrous magnesium chloride from magnesium chloride hydrates which comprises the steps of:

A. dissolving a magnesium chloride hydrate in ethylene glycol to form an ethylene glycol magnesium chloride hydrate solution;

B. heating the ethylene glycol magnesium chloride hydrate solution to a temperature and for a period of time sufficient to remove all the water therefrom to produce an ethylene glycol anhydrous magnesium chloride solution;
C. treating the ethylene glycol anhydrous magnesium chloride solution with ammonia to form a magnesium chloride ammonia complex which is insoluble in the ethylene glycol, with the temperature of the ethylene glycol magnesium chloride solution being within the range of between −15° to 50°C.;
D. separating the magnesium chloride ammonia complex from the ethylene glycol;
E. washing the magnesium ammonia complex with a polar solvent having a lower boiling point than ethylene glycol to remove any ethylene glycol entrained in the magnesium chloride ammonia complex;
F. heating the magnesium chloride ammonia complex to a temperature and for a period of time sufficient to drive off the ammonia, thereby forming anhydrous magnesium chloride; and then,
G. recovering anhydrous magnesium chloride which has a magnesium oxide content less than 0.8% by weight.

3,966,889
PROCESS FOR THE RECOVERY OF SELENIUM FROM WASTE GAS
Hisashi Kakuta; Shigetada Matoba; Kenichi Shimizu, and Satoshi Yamashita, all of Yokohama, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 384,227, July 31, 1973, abandoned. This application Nov. 14, 1974, Ser. No. 523,747
Int. Cl.² C01B *19/00*
U.S. Cl. 423—510 **7 Claims**

1. A process for the recovery of selenium from combustion waste gas, which comprises:

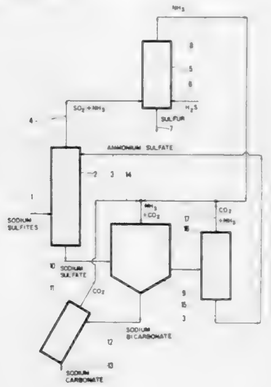
contacting said combustion waste gas with a first absorbing solution which contains at least one absorbent selected from the group consisting of an alkali metal sulfite and an alkali metal bisulfite, whereby the major portion of the selenium component of said waste gas is absorbed therein, and wherein said waste gas is cooled so that the humidity of said gas is increased;
passing said gas through a moistened glass fiber filter of glass wool having a bulk density of 150–250 kg/m³, so that the residual selenium in said gas is collected thereon;
combining the selenium component collected on said filter with the first absorbing solution; and
acidifying said combined solution to reduce and precipitate said selenium component to metallic selenium.

3,966,890
METHOD OF PRODUCING SOLUTIONS CONTAINING CUPROUS IONS
Alan James Parker; Winfield Earle Waghorne, both of Canberra; Dion Ewing Giles, Sydney; John Howard Sharp, Sydney; Robert Alexander, and David Michael Muir, both of Canberra, all of Australia, assignors to Anumin Pty. Limited, Canberra, Australia
Division of Ser. No. 237,061, March 22, 1972. This application Dec. 17, 1974, Ser. No. 533,660
Claims priority, application Australia, April 2, 1971, 4500/71; April 2, 1971, 4501/71; April 2, 1971, 4502/71; April 28, 1971, 4735/71; June 4, 1971, 5110/71; Sept. 14, 1971, 6281/71; Sept. 24, 1971, 6411/71; Oct. 20, 1971, 6718/71; Oct. 26, 1971, 6798/71; Dec. 14, 1971, 7383/71; Jan. 26, 1972, 7776/72
Int. Cl.² C01G *3/10*; **C22B** *15/00*, *15/08*
U.S. Cl. 423—512 A **3 Claims**

1. A method of reducing an aqueous cupric sulfate solution to a solution containing cuprous sulfite, cuprous bisulfite or mixtures thereof comprising mixing said aqueous cupric sulfate solution with between 5 and 30% acetonitrile, adding sulfur dioxide and maintaining the pH of the cupric sulfate solution between 1 and 6 until a solution containing cuprous sulfite, cuprous bisulfite or mixtures thereof is formed.

3. A method of leaching copper values as a solution containing cuprous sulfate, cuprous bisulfite or mixtures thereof from a material selected from the group consisting of copper oxides, copper carbonates and copper hydroxides comprising mixing said material in a leaching vesel under an atmosphere of sulphur dioxide with a homogeneous composition containing aqueous cupric sulfate assaying at least 0.05% cupric ion by weight, 5 to 30% by volume of acetonitrile, and at least 50% by volume water, allowing the mixture to react, separating unreacted solids from the mixture and recovering the resulting solution containing cuprous sulfate, cuprous, bisulfite or mixtures thereof.

3,966,891
PROCESS FOR MANUFACTURING SULFUR FROM A SOLUTION OF SODIUM SULFITE
Philippe Renault, Noisy-le-Roi; André Deschamps, Chatou, and Claude Dezael, Maisons-Lafitte, all of France, assignors to Institut Francaise du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France
Filed Oct. 15, 1973, Ser. No. 406,348
Claims priority, application France, Oct. 20, 1972, 72.37418
Int. Cl.² C01B *17/04*, *17/60*; **C01C** *1/244*; **C01D** *5/08*
U.S. Cl. 423—574 R **10 Claims**

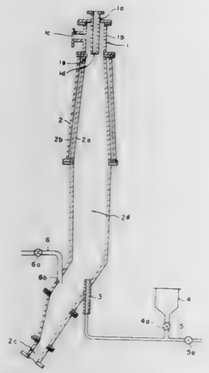


1. A process for manufacturing sulfur from a sodium sulfite solution, comprising the steps of (a) reacting said sodium sulfite solution with ammonium sulfate, $(NH_4)_2SO_4$ to produce a gas containing sulfur dioxide and ammonia and a liquid outflow containing sodium sulfate, (b) reacting said gas with hydrogen sulfide, to produce sulfur, and separating said produced sulfur from the remaining ammonia containing gas, (c) reacting said liquid outflow with carbon dioxide and ammonia to convert sodium sulfate to ammonium sulfate and to form a precipitate of sodium bicarbonate, (d) separating said precipitate from the ammonium sulfate containing liquid outflow and (e) recycling the liquid outflow from step (d) to step (a) for contact with the sodium sulfite solution.

3,966,892
PROCESS FOR PRODUCING TITANIUM DIOXIDE
Shigenori Okudaira; Michiaki Iwakami, and Takefumi Iriye, all of Chigasaki, Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1974, Ser. No. 523,454
Int. Cl.² C01G *23/04*
U.S. Cl. 423—613 **5 Claims**

1. In a process for producing titanium dioxide by the continuous gaseous oxidation of titanium tetrachloride or a titanium

tetrachloride containing gas with oxygen or an oxygen containing gas, the improvement wherein both of said gases are separately preheated and the titanium tetrachloride or titanium tetrachloride containing gas is fed downwardly into the reactor from a burner equipped with a cooling jacket disposed at the upper part of the reactor and the oxygen or oxygen containing gas is fed downwardly through the burner into the reactor for reaction with titanium tetrachloride; and simultaneously, an inert gas and inert refractory particles are injected from the lower part of the reactor toward the inner wall of the reactor so that the inert refractory particles are caused to rise upwardly as a suspension, and the upward flow of the suspension is countercurrently contacted with the downward flow of



the reaction product so as to rapidly cool the reaction product, the amount of inert refractory particles injected is more than 10 wt% based on the resulting titanium dioxide product, and wherein the inert gas does not substantially reach the reaction zone wherein said titanium tetrachloride is oxidized to titanium dioxide; and the inert refractory particles injected with the inert gas are raised into said reaction zone by inertia and impinge on the inner wall of the reactor so as to prevent the deposition of titanium dioxide.

3,966,893

PRECIPITATING α ALUMINA MONOHYDRATE

M. Robert Deroff, Blackwood, N.J., and Elliot P. Hertzenberg, Wilmington, Del., assignors to Philadelphia Quartz Company, Valley Forge, Pa.

Filed Dec. 2, 1974, Ser. No. 528,823

Int. Cl.² C01F *7/02, 7/34*

U.S. Cl. 423—628 **12 Claims**

1. A method of preparing dispersible colloidal sized particles of α alumina monohydrate comprising:

a. preparing an aqueous solution of an aluminum salt of a strong acid;

b. conditioning said solution by mixing it with a water miscible organic solvent selected from the group consisting of water miscible aldehydes, ketones and alcohols;

c. mixing the conditioned solution with an aqueous solution of base, thereby forming a mixture of a precipitate and a supernatant liquid;

d. diluting said precipitate and supernatant liquid with water at a temperature between room temperature and just below the boiling point of the organic solvent;

e. agitating and heating the diluted precipitate and supernatant at a temperature between room temperature and just below the boiling point of the organic solvent for 6 to 25 minutes;

f. further heating the diluted precipitate and supernatant liquid at a temperature of 140 to 200°C in an autoclave for ¼ to 1½hours;

g. cooling, filtering and washing the precipitate; and

h. drying the washed precipitate to obtain the product.

3,966,894

METHOD OF PREPARING BARIUM HYDROXIDE

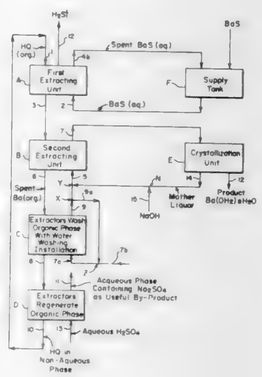
Jean-Pierre Cuer, Colombes, and Nicole Texier, Paris, both of France, assignors to Produits Chimiques Ugine Kuhlmann, Paris, France

Filed Sept. 16, 1974, Ser. No. 506,595

Claims priority, application France, Sept. 25, 1973, 73.34249

Int. Cl.² C01F *11/10*

U.S. Cl. 423—638 **8 Claims**



1. A method for obtaining an aqueous solution of barium hydroxide from barium sulfide comprising the steps of

i. contacting an aqueous barium sulfide solution containing barium ions and sulfide ions with a substantially water-insoluble exchange agent containing hydrogen ions, and which is capable of exchanging the hydrogen ions for barium ions, said exchange agent being a dialkyl phosphoric acid having the formula



R and R′ being the same or different straight, branched or cyclic hydrocarbon radical having 6 to 12 carbon atoms, effecting the transfer of barium ions from the aqueous solution to said agent and simultaneously effecting the reaction of the exchanged hydrogen ions with sulfide ions to form hydrogen sulfide gas;

ii. separating the exchange agent containing barium ions from the residual aqueous solution;

iii. contacting the separated exchange agent containing barium ions with an aqueous alkali metal hydroxide solution containing alkali metal ions and hydroxide ions, effecting the transfer of barium ions to the aqueous solution in exchange for alkali metal ions and forming an aqueous solution of barium hydroxide;

iv. separating the aqueous solution of barium hydroxide from the exchange agent containing alkali metal ions.

3,966,895

DEHYDROGENATION WITH A NONACIDIC MULTIMETALLIC CATALYST

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 348,379, April 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 81,512, Oct. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 15,960, March 2, 1970, abandoned. This application Aug. 27, 1974, Ser. No. 501,113

Int. Cl.² C07C *5/18*

U.S. Cl. 260—668 D **24 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, hydrogen, and water or water-producing substance, at dehydrogenation conditions, with a nonacidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.01 to about 5 wt. % nickel, about 0.01 to about 5 wt. Group IVA metal, and about 0.1 to about 5 wt. % of an alkali or alkaline earth metal, wherein the platinum group metal, Group IVA metal, nickel, and alkali or alkaline earth metal are uniformly dispersed throughout the porous carrier material, wherein substantially all of the platinum group metal is present in the elemental metallic state, wherein substantially all of the Group IVA metal is present in an oxidation state above that of the elemental metal and wherein substantially all of the alkali or alkaline earth metal is present in an oxidation state above that of the elemental metal.

3,966,896

RADIOIMMUNOASSAY FOR PLASMA RENIN ACTIVITY

Joel Glovsky, Fenton, and James L. Brown, House Springs, both of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Filed Sept. 6, 1974, Ser. No. 503,648

Int. Cl.² A61K *43/00*; **G01T** *1/16*; **G01N** *33/00*

U.S. Cl. 195—103.7 **24 Claims**

1. A radioimmunoassay method for the in vitro determination of the renin activity of an unknown plasma sample, comprising the steps of:

providing an unknown generation sample by mixing the unknown plasma sample with a generation buffer solution and an inhibitor for enzymes which convert angiotensin I to other substances;

incubating said unknown generation sample to generate angiotensin I therein by action of renin upon angiotensinogen, thereby producing a generated unknown plasma sample;

providing a generated unknown radioimmunoassay reaction mixture by mixing said generated unknown plasma sample with a predetermined amount of radioactively labeled angiotensin I, a predetermined amount of an antibody for angiotensin I, and an amount of an assay buffer solution sufficient to provide in said generated unknown reaction mixture renin and angiotensinogen concentrations at which there is no substantial angiotensin I generation at the temperatures to which said generated unknown radioimmunoassay reaction mixture is subsequently exposed;

incubating said generated unknown radioimmunoassay reaction mixture at a temperature of at least about 12°C. so that a competitive binding reaction takes place between the antibody and both labeled and unlabeled angiotensin I;

separating bound angiotensin I from unbound angiotensin I;

determining the relative proportions of bound and unbound labeled angiotensin I in said reaction mixture;

determining the angiotensin I content of said generated unknown reaction mixture by comparison of the relative proportions of bound and unbound labeled angiotensin I in said unknown reaction mixture with the relative proportions of bound and unbound labeled angiotensin I in standard radioimmunoassay reaction mixture containing known amounts of unlabeled angiotensin I; and

determining the renin activity of said unknown plasma sample from the difference between the angiotensin I content of said generated unknown reaction mixture and the angiotensin I content of a nongenerated radioimmunoassay reaction mixture containing a sample of the same unknown plasma.

3,966,897

MEDIUM FOR USE IN BIOASSAY AND METHOD OF USING SAME

Donald W. Renn, Glen Cove, Me, and Calvin A. Saravis, Waban, Mass., assignors to Marine Colloids, Inc., Rockland, Maine

Filed Apr. 2, 1973, Ser. No. 346,966

Int. Cl.² G01N *33/00*; **A61K** *43/00*; **G21H** *5/02*

U.S. Cl. 424—1.5 **11 Claims**

1. A medium for use in bioassay diffusion processes with test substances, said medium comprising a layer of dry material hydratable to a gel through which said test substance can diffuse, and fixed to a restricted localized zone of said layer against diffusive movement therethrough a reagent capable of reaction with said test substance, said reagent being confined to said zone which is smaller than said layer.

3,966,898

METHOD AND REAGENT FOR DETERMINING IMMUNOLOGIC MATERIALS

John A. Sjöquist, and Arne V. Sjödin, both of Uppsala, Sweden, assignors to Pharmacia Diagnostics AB, Uppsala, Sweden

Filed June 19, 1974, Ser. No. 480,915

Claims priority, application Sweden, June 28, 1973, 7309096

Int. Cl.² G01N *21/52, 33/16*

U.S. Cl. 424—12 **3 Claims**

1. In the method of qualitatively or quantitatively indicating an immunoglobulin belonging to the IgG-class, the Fab-portion of which immunoglobulin is bound to an antigen or hapten, the immunoglobulin being labelled, before or after binding to the antigen or hapten, with one or more analytically indicatable atoms or groups by contacting said immunoglobulin with a polypeptide labelled with said analytically indicatable atoms or groups, the improvement which comprises using as the polypeptide, a polypeptide which is obtained from Staphylococci and which is able to bind itself to the Fc-portion of said immunoglobulin belonging to the IgG-class.

3,966,899

METHOD OF TREATMENT OF MEDICINES

Yoshinobu Nakai, 2-5-2, Komagome, Toshima, Tokyo; Keiji Yamamoto, 10-510 Shiei Fuseko-Danchi, 206 Hieashi-Naebocho, Higashi, Sapporo, Hokkaido, and Masahiro Nakano, 95-654-53, Hachiken, Nishi, Sapporo, Hokkaido, all of Japan

Filed Mar. 12, 1975, Ser. No. 557,696

Claims priority, application Japan, Sept. 13, 1974, 49-104899

Int. Cl.² A61J *3/00*

U.S. Cl. 424—19 **6 Claims**

1. The method of manufacturing a pharmaceutical comprising a plurality of pharmacologically active ingredients whereby upon administration to a patient each active ingredient will be released therefrom at substantially the same uniform rate, said method consisting essentially of mixing a plurality of pharmacologically active ingredients with beta-1, 4-glucan, and pulverizing the mixture.

3,966,900

EVAPORATOR SYSTEM COMPRISING A STABILIZED PESTICIDAL PHOSPHORIC ACID ESTER AND METHOD FOR STABILIZING SUCH ESTER ENCLOSED IN AN EVAPORATOR

Claude Hennart, Seraincourt; Bernard Rabussier, Aventon, and Jean-Pierre Mandon, Poitiers, all of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.

Continuation-in-part of Ser. No. 17,918, March 9, 1970, abandoned. This application Dec. 21, 1973, Ser. No. 427,103

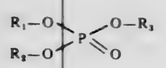
Claims priority, application France, Mar. 12, 1969, 69.06860; Mar. 12, 1969, 69.906861; Mar. 12, 1969, 69.06862; Luxemburg, Dec. 18, 1969, 60052

Int. Cl.² A01N *17/12, 9/36*

U.S. Cl. 424—27 **10 Claims**

1. In an evaporator system adapted fo emitting insect killing vapors of an insecticide therefrom in a closed area and comprising a liquid or solid composition therein, which can neither be ingested by the insect nor penetrate into it by contact, which composition contains as the essential constituents:

1. as the sole insecticidal substance, from about 8.5 to 99 percent, calculated on the weight of all the ingredients of at least one volatile phosphoric acid ester (A) of the formula:



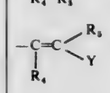
(I)

wherein, R_1 and R_2 are the same or different and represent alkyl radicals containing 1 to 4 carbon atoms and R_3 is a member selected from one of the following groups (i) and (ii):



(II)

(i)



(III)

(ii)

wherein Y is a halogen atom having an atomic weight of at most 80 and

R_4 and R_5 are identical or different and are selected from the group consisting of a hydrogen atom, an aforesaid halogen atom and a methyl, ethyl or propyl radical,

2. from 0.1 to about 10 percent, based on the weight of (A), of a stabilizing agent (B) for stabilizing the volatile phosphoric acid ester (A) and

3. from 0 to about 90 percent, based on the total weight of the composition, of a solid or liquid diluent

(C) which is a solvent for at least one of components A and B,

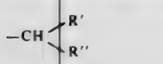
the improvement wherein the stabilizing agent (B) is such as to prevent the self-protonization reaction of the volatile phosphoric acid ester and is selected from the group consisting of at least one diazene compound of the formula:

$$R - N = N - ZH \quad (IV)$$

and of its corresponding tautomeric hydrazonic formula:

$$R - NH - N = Z$$

wherein ZH is a member selected from the group consisting of



and the group



and Z the corresponding tautomeric divalent groups and R, R′, R″ and R‴ having the following meanings:

R represents a radical of hydroaromatic or of aromatic character comprising one, two or three rings, each having 5 or 6 ring members and when said radical contains two or three rings, the rings are condensed together or bound to each other, directly or via an oxygen atom or an —NH—, $-CH_2-$, or

$$-CH=CH-$$

group and when said radical represents three rings, the latter can form a triphenyl methan group; the radical R being selected from the group consisting of

a. carbocyclic radicals of aromatic character having one to three rings and heterocyclic radicals of aromatic character having from one to three rings one of which contains one or two ring hetero atoms chosen from nitrogen, oxygen and sulphur;

b. carbocyclic or heterocyclic radicals with hydroaromatic character having two or three carbocyclic rings each of 5 or 6 ring members and at least two of these rings are condensed together, wherein two or four carbon atoms in one of the rings are saturated and at least one other ring is aromatic;

c. radicals as defined under (a) or (b) substituted by at least one member selected from the group consisting of one or two phenylazo, naphthylazo or arylazoarylazo, in which each of the aryl radicals is phenyl or naphthyl, or 4 - pyrazolyl-azo groups; and

d. a radical as defined under (a), (b), or (c) with at least one of its rings bearing one to four substituents selected from fluorine, chlorine, bromine, iodine, keto oxygen, hydroxy, carboxy, alkyl having from one to six carbon atoms, alkylene having from two or five carbon atoms, cycloalkyl having five or six carbon atoms, amino, alkanoylamino having up to five carbon atoms, mono-benzoylamino, alkoxy having from one to five carbon atoms, benzyloxy, nitro, sulpho, cyano, carbamoyl, benzoyl, amino substituted by one or two groups selected from the group consisting of alkyl groups having one to four carbon atoms, phenyl groups and benzyl groups, alkoxycarbonyl having from two to six carbon atoms, alkylsulphonyl having from one to five carbon atoms, sulphamoyl, the nitrogen atom of which is unsubstituted or substituted by one or two hydrocarbon radicals having a total of one to eight carbon atoms, alkanoyloxy having at most eighteen carbon atoms, and alkenoyloxy having at most eighteen carbon atoms, alkanoyl having up to five carbon atoms, and dialkylamino-alkyl having a total of from three to nine carbon atoms; and

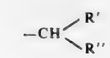
R′ is a member selected from the group consisting of benzyl, alkyl of from one to seventeen carbon atoms, alkenyl of two to eight carbon atoms and a radical R as defined under any one of (a) to (d) as defined above and

R″ is a member selected from the group consisting of a radical R′ as defined above, an unsubstituted phenylazo or naphthylazo group and a phenylazo or naphthylazo group substituted by methyl or ethyl; or

R′ and R′ taken together represent a divalent hydrocarbon radical having a total of four to fourteen carbon atoms which is a straight or branched chain radical or a chain radical containing an aryl ring condensed to the chain, any substituent of said hydrocarbon radical being selected from the substituents defined under (d), and groups of the formula =NX, in which X represents hydrogen, alkyl having from one to five carbon atoms or phenyl, and the group of formula:



represents a radical R as defined under (a) to (d) above other than a group



as defined above wherein R′ and R″ are taken together, or (ii) a salt of a compound as defined under (i) above being at least one group capable of salt formation or, (iii) a metal complex of a compound or salt as defined under (i) or (ii) bearing one or two groups capable of metal complex formation selected from hydroxy, carboxy, amino, mono (C_1–C_4 alkyl) amino, phenylamino, phenylsulphonamino and (C_1–C_4 alkyl) sulphonamido groups, said diazene being soluble in said composition.

3,966,901

DENTIFRICE PREPARATION

Douglas Charles Cullum, East Molesey, and Joan Collinge, Cheadle, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 389,628, Aug. 21, 1973, abandoned, which is a continuation of Ser. No. 210,559, Dec. 21, 1971, abandoned. This application Feb. 21, 1975, Ser. No. 551,870

Claims priority, application United Kingdom, Dec. 29, 1970, 61614/70

Int. Cl.² A61K *7/18*

U.S. Cl. 424—52 **4 Claims**

1. A dental cream preparation comprising a water-soluble alkali metal monofluorophosphate in amount to provide about 0.01–1% by weight of fluorine and about 20–99% by weight of compatible polishing material at least a major part of which is dimagnesium orthophosphate trihydrate.

3,966,902

POLYMER COMPLEX CARRIERS FOR AN ACTIVE INGREDIENT

Richard C. Chromecek, Goshen, Conn., assignor to Airwick Industries, Inc., Carlstadt, N.J.

Continuation-in-part of Ser. No. 252,823, May 21, 1972, Pat. No. 3,886,125. This application Mar. 14, 1975, Ser. No. 558,345

Int. Cl.² A61K *7/44, 7/46, 31/78*

U.S. Cl. 424—59 **12 Claims**

1. A composition comprising an effective amount of an active ingredient dispersed in a polymer complex consisting essentially of (1) a polymer which is a homopolymer or copolymer comprising a monomer having a hydrophilic functional group and (2) from 0.1 to 90 mol percent based on the hydrophilic functional groups present in said homopolymer or copolymer, of aluminum, zinc, or zirconium metal bound in complex form, said monomer being selected from the group consisting of hydroxyalkyl esters of α,β-unsaturated carboxylic acids and ethylenically unsaturated monomers containing an amino group, said copolymers further comprising from 0.5 to 60 mol percent of an ethylenically unsaturated monomer free of said hydrophilic functional groups.

3,966,903

SULFITE OR BISULFITE HAIR-WAVING COMPOSITION CONTAINING A WAVE ACCELERATING AGENT

Kenji Toril, Tokyo; Tatsuya Ozawa, Chofu; Kimio Ono, Hidaka; Koichi Iwabe, and Hiroumi Horikawa, both of Yokohama, all of Japan, assignors to Shiseido Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1974, Ser. No. 462,603

Claims priority, application Japan, May 4, 1973, 48-50141

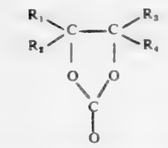
Int. Cl.² A61K *7/09*

U.S. Cl. 424—71 **14 Claims**

1. A hair-waving composition which comprises

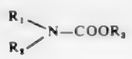
A. from 1 to 40% by weight of a main waving agent selected from the group consisting of a water soluble sulfite and a water soluble hydrogen sulfite and

B. from 5 to 70% by weight of a wave accelerating agent selected from the group consisting of an alkylene carbonate of the formula:



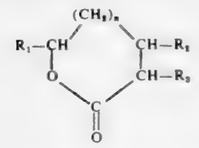
(I)

wherein R_1, R_2, R_3 and R_4 each stand independently for hydrogen, methyl or ethyl, an alkyl carbamate of the formula:



(II)

wherein R_1, R_2 and R_3 each stand independently for hydrogen, methyl, ethyl or propyl and a γ- or α- lactone of the formula:



(III)

wherein R_1, R_2 and R_3 each stand for hydrogen or methyl, and *n an for aan integer of* 0 or 1, and mixtures thereof, and

C. water wherein the total amount of (A) and (B) ranges from 10 to 80% by weight.

3,966,904

QUATERNARY AMMONIUM CO-POLYMERS FOR CONTROLLING THE PROLIFERATION OF BACTERIA

Harold A. Green, Havertown, Pa.; John J. Merianos, Jersey City, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Division of Ser. No. 511,759, Oct. 3, 1974, Pat. No. 3,928,323, which is a continuation-in-part of Ser. No. 425,931, Dec. 18, 1973, Pat. No. 3,874,870. This application July 7, 1975, Ser. No. 593,733

Int. Cl.² A61K *31/14, 31/785*

U.S. Cl. 424—78 **1 Claim**

1. A method of controlling the proliferation of bacteria which comprises applying to said bacteria an effective amount sufficient to inhibit their growth, of a product formed by the condensation of a mixture of difunctional tertiary amines and a molar quantity of 1,4-dichloro-2-butene that is substantially equal to the molar sum of the mixture of difunctional tertiary amines, said mixture of difunctional tertiary amines being selected from the group consisting of (a) 1,4-bis-(dimethylamino)-2-butene and N,N,N′,N′-tetramethylethylenediamine and (b) 1,4-bis-(dimethylamino)-2-butene and 1,4-bis-(methyl dodecylamino)-2-butene.

3,966,905

STABILIZED CATECHOL AMINE SOLUTIONS

Rebecca F. Nite, Sunnyvale, Calif., assignor to Barnes-Hind Pharmaceuticals, Inc., Sunnyvale, Calif.

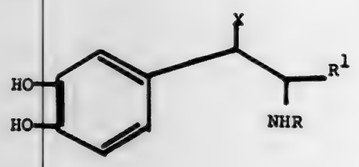
Continuation of Ser. No. 365,013, May 29, 1973, abandoned. This application Nov. 25, 1974, Ser. No. 526,660

Int. Cl.² A61K *31/135*

U.S. Cl. 424—80 5 Claims

1. A physiologically useful catechol amine solution having enhanced stability comprising:

in an aqueous medium from 0.1 to 10 weight percent of a catechol alkyl amine of from 8 to 12 carbon atoms of the formula:



wherein R and R^1 are hydrogen or alkyl of from 1 to 3 carbon atoms, and X is hydrogen or hydroxyl;

from 0.1 to 5 weight percent of polyvinylpyrrolidone of a molecular weight in the range of about $1–10 \times 10^4$ and from 0.1 to 2. weight percent of boric acid as borate, and a physiologically acceptable antioxidant selected from the group consisting of ascorbic acid, erythorbic acid, acetylcysteine and thioglycerol in an amount of from about 0.2 to 5 weight percent at a pH in the range of about 5.5 to 8.5.

3,966,906

DISAGGREGATED GAMMA GLOBULIN AND PROCESS FOR PREPARING IT

Hermann E. Schultze, Tenerife, Spain, and Hans Gerhard Schwick, Marburg an der Lahn, Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Germany

Continuation-in-part of Ser. No. 115,071, Feb. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 584,689, Oct. 6, 1966, abandoned, which is a continuation-in-part of Ser. No. 153,214, Nov. 17, 1961, abandoned. This application Apr. 8, 1974, Ser. No. 459,188

Claims priority, application Germany, Oct. 11, 1961, 64342

Int. Cl.² A23J *1/06*; A61K *37/06*, *39/40*, *39/42*

U.S. Cl. 424—85 9 Claims

1. The process for preparing a human gamma globulin disaggregated into sub-units by enzymatic action and having no significant effect on the complement system, which process comprises (1) treating a crude antibody-containing gamma globulin fraction of human serum, obtained by precipitating blood serum with ammonium sulfate or alcohol, at a pH between 3.5 and 5 and at a temperature from 25°C. to 45°C. with from 50,000 MTU to 100,000 MTU of pepsin per 100 grams of protein to be degraded, while continually controlling the anticomplement activity, for a period ranging from 12 to 48 hours, until the anti-complement activity, measured by combining a 1 ml sample of the disaggregated gamma globulin with 1 ml of a solution containing 100 units of guinea pig complement in the presence of a buffer solution and heating for 1 hour at 30°C., is such that more than 20 units of the complement in the original complement solution must not be inactivated; (2) removing low molecular weight decomposition products from the disaggregated gamma globulin by filtration; and (3) filtering the disaggregated gamma globulin under sterile conditions.

7. A preparation of human gamma globulin disaggregated into sub-units by enzymatic action and suitable for intravenous injection, prepared by the process of claim 1.

3,966,907

VACCINES AGAINST FELINE LEUKEMIA

William Fleming Hoggan Jarrett; James Oswald Jarrett, and Lindsay Joan Mackey, all of Glasgow, Scotland, assignors to University of Glasgow, Glasgow, Scotland

Filed Sept. 13, 1974, Ser. No. 505,625

Claims priority, application United Kingdom, Sept. 18, 1973, 43642/73

Int. Cl.² A61K *39/12*

U.S. Cl. 424—89 4 Claims

1. A vaccine for the prevention of diseases caused by Feline leukemia virus which comprises in unit dosage form about 10^7 –10^9 cells infected with live Feline leukemia virus said cells having virus-associated antigen or their surface.

3,966,908

METHOD OF TREATING DEGENERATIVE JOINT AFFLICTIONS

Leslie L. Balassa, Blooming Grove, N.Y., assignor to Lescarden Ltd., Goshen, N.Y.

Continuation of Ser. No. 420,257, Nov. 29, 1973, abandoned. This application July 10, 1975, Ser. No. 594,697

Int. Cl.² A61K *35/32*

U.S. Cl. 424—95 4 Claims

1. A method of treating degenerative joint afflictions to obtain a protracted symptomatic remission period, the alleviation of pain and the promotion of increased joint mobility in a human suffering from said degenerative joint affliction which comprises subcutaneously administering to said human in a distensible area of the body and in a plurality of individual treatments a total dose of between about 150 and 1,000 cc consisting essentially of a liquid extract of essentially pure granulated cartilage material, substantially free from adhering tissue, and subcutaneously administering to said human at least about 10 cc of said liquid extract in each of said individual treatments.

3,966,909

SOLVENT EXTRACTION OF ALUMINUM

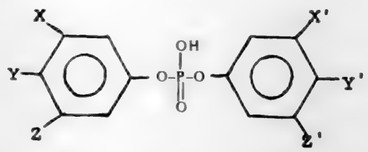
James K. Grunig, and Rodney J. Anderson, both of Tucson, Ariz., assignors to The Anaconda Company, New York, N.Y.

Continuation-in-part of Ser. No. 444,004, Feb. 20, 1974, abandoned. This application Mar. 13, 1975, Ser. No. 558,149

Int. Cl.² B01D *11/04*; G01F *7/00*

U.S. Cl. 423—112 7 Claims

1. A process for recovering aluminum from an impure acidic solution containing aluminum and iron comprising contacting the said solution with a symmetrical bis(3,5-C_1–C_{10} alkyl-substituted pheny) hydrogen phosphate to extract the aluminum and stripping the extract to separate the aluminum from the extract formed, said phosphate having the structural formula:



wherein each of X and Z is a C_1–C_{10} alkyl group, Y is selected from hydrogen and a C_1–C_5 alkyl group, X′, Y′, and Z′ correspond, respectively, to X, Y, and Z, and when Y and Y′ are greater than C_1, X, X′, Z and Z′ are at least 3 carbon atoms longer in chain length.

3,966,910

METHOD FOR TREATING HYPERCHOLESTEROLEMIA WITH MEDIOCIDIN

Carl P. Schaffner, Trenton, N.J., and Harry W. Gordon, Bronx, N.Y., assignors to Schmid Laboratories, Inc., Little Falls, N.J.

Continuation of Ser. No. 24,797, April 1, 1970, abandoned, which is a continuation of Ser. No. 627,313, March 31, 1967, Pat. No. 3,627,879. This application Jan. 26, 1972, Ser. No. 221,062

Int. Cl.² A61K *35/00*

U.S. Cl. 424—115 3 Claims

1. A process for treating hypercholesterolemia in a large mammal afflicted with hypercholesterolemia which comprises orally administering an effective dose for treating hypercholesterolemia of mediocidin to said mammal.

3,966,911

METHOD FOR TREATING HYPERCHOLESTEROLEMIA WITH N-ACETYL CANDICIDIN

Harry W. Gordon, Bronx, N.Y., and Carl P. Schaffner, Trenton, N.J., assignors to Schmid Laboratories, Inc., Little Falls, N.J.

Division of Ser. No. 221,062, Jan. 26, 1972, which is a continuation of Ser. No. 24,797, April 1, 1970, abandoned, which is a continuation of Ser. No. 627,313, March 31, 1967, Pat. No. 3,627,879. This application Jan. 7, 1974, Ser. No. 431,501

Int. Cl.² H61K *35/00*

U.S. Cl. 424—117 3 Claims

1. A process for the treatment of hypercholesterolemia in a large mammal afflicted with hypercholesterolemia which comprises orally administering to said mammal an effective dose for treating hypercholesterolemia of N-acetyl candicidin.

3,966,912

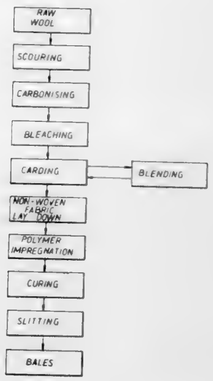
METHOD OF PREPARING TOBACCO SMOKE FILTER

Graeme David Fair, Toorak; Derek Lesley Arthur Hasmall, West Brunswick; William Patrick Ryan, Lugarno, and Edwin John Sellman, Burwood, all of Australia, assignors to Rothmans of Pall Mall (Australia) Limited, Granville and Lantor of Australia Pty. Ltd., Sydney, both of, Australia

Division of Ser. No. 399,306, Sept. 21, 1973, abandoned. This application Aug. 1, 1975, Ser. No. 601,136

Int. Cl.² B29D *23/10*

U.S. Cl. 264—118 9 Claims



1. A method of making a tobacco smoke filter element, said method comprising:

forming a dry web of bonded non-woven fabric at least partly from scoured, carbonized and bleached wool fibres by the random lay method;

immersing the said dry web in a bath of a polymeric binder;

drying and curing said polymeric binder;

slitting said web to form strips of a predetermined width;

passing each said strip through heated corrugated rolls thereby heating and imparting to said strip a quasi-corrugation in the longitudinal direction thereof; and

feeding each strip to the garniture of a conventional filter rod manufacturing machine to form a filter element.

3,966,913

ANTIBIOTICS NO. K-73 AND METHOD FOR PRODUCING THE SAME

Akiro Ito, Saitama; Yasushi Ichikawa, Fuji; Sadayuki Horiguchi, Fuji; Shyoji Shirota, Fuji; Yasuo Kayama; Shiro Chihara, both of Tokyo; Isoko Haneda, Yamato; Katsumi Hasuda, Niiza, and Shyoichi Takano, Hanno, all of Japan, assignors to Kayaku Antibiotic Research Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1975, Ser. No. 543,500

Int. Cl.² A61K *35/74*

U.S. Cl. 424—119 5 Claims

4. Antibiotic No. K-73A hydrochloride which is described by the following characteristic properties:

1. Specific rotation: $[\alpha]_D^{25} + 177°$ (C=2, chloroform)
2. Molecular weight: 496
3. Chemical formula: $C_{24}H_{29}NO_8.HCl$
4. Elemental analysis (%): C 57.73, H 6.39, N 2.35
5. Melting point: 180°C (decomposition)
6. Ultraviolet absorption spectrum: FIG. 1
7. Infrared absorption spectrum: FIG. 2
8. Solubility:
   Soluble in water, methanol, ethanol, acetone, ethyl acetate and benzene. Insoluble in n-hexane and petrolem;
9. Color reaction:
   Balyer, Anthron, Fehling and Quinone reactions are positive; Ninhydrin, Biuret and Elson-Margan reactions are negative;
10. Nature
    Basic substance (pKa=9.5).

3,966,914

ANTIBIOTIC SUBSTANCES B-41, THEIR PRODUCTION AND THEIR USE AS INSECTICIDES AND ACARICIDES

Atsushi Aoki; Rikiya Fukuda; Toshio Nakayabu, all of Sapporo; Keijiro Ishibashi, Hiro; Chiyoko Takeichi, Hiro, and Mitsuo Ishida, Hiro, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Division of Ser. No. 394,073, Sept. 4, 1973, which is a continuation-in-part of Ser. No. 365,188, May 30, 1973. This application Oct. 31, 1974, Ser. No. 519,668

Claims priority, application Japan, June 8, 1972, 47-57058

Int. Cl.² A61K *35/00*

U.S. Cl. 424—122 2 Claims

1. An antibiotic substance B-41-A_2 effective against harmful insects, said substance being a colorless amorphous powder form which is difficultly soluble in water and easily soluble in n-hexane, benzene, acetone, ethanol and chloroform and has a molecular formula of $C_{38}H_{56}O_{10}$, a composition of 71.73% carbon and 8.26% hydrogen and the balance oxygen and the following properties; molecular weights of 672.1 obtained by an osmometric method in acetone and of 672 according mass spectrum; a specific rotatory power of $[\alpha]_D^{20} = +54°$ obtained with the concentration of a sample of 5 mg./2 ml. and the length of a layer of 10 cm. in acetone; no pKa at a pH ranging from 2 to 12; absorption maximum in the ultraviolet region of the spectrum at 245 mμ; characteristic absorption bands in the infrared region shown in FIG. 11; nuclear magnetic resonance spectrum in $(CD_3)_2CO$ shown in FIG. 20; main peaks of the mass spectrum 672, 181, 153 and 151 obtained under the conditions of 75 eV at ionization room temperature of 200°C. and a sample temperature of 120°–190°C.; and the following color reactions according to a thin layer chromatography, yellow to iodine/chloroform, negative to ninhydrin,

reddish purple to sulfuric acid and yellow to potassium permanganate.

3,966,915

TREATMENT OF HEART DISEASES

Luciano Caprino, Rome, Italy, assignor to Istituto Farmacologico Serono S.p.A., Rome, Italy

Continuation of Ser. No. 324,572, Jan. 18, 1973, abandoned. This application June 19, 1974, Ser. No. 480,746
Claims priority, application Italy, Feb. 11, 1972, 48280/72
Int. Cl.² A61K *37/00*
U.S. Cl. 424—177 **6 Claims**

1. A method for the treatment of heart disease by increasing the contraction amplitude of the heart which comprises administering to man a pharmaceutically effective amount of about 0.1 to 1 gram per day of phosvitin.

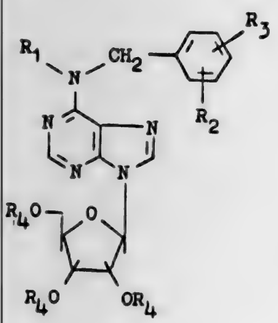
3,966,916

N(6)-DISUBSTITUTED ADENOSINE COMPOUNDS AND THERAPEUTIC COMPOSITIONS

Wolfgang Kampe, Heddesheim; Erich Fauland; Kurt Stach, both of Mannheim-Waldhof; Harald Stork, Mannheim-Feudenheim, and Felix Helmut Schmidt, Mannheim-Seckenheim, all of Germany, assignors to Boehringer Mannheim G.m.b.H., Mannheim-Waldhof, Germany

Division of Ser. No. 393,859, Sept. 4, 1973, Pat. No. 3,880,829. This application Nov. 21, 1974, Ser. No. 525,795
Claims priority, application Germany, Sept. 9, 1972, 2244328
Int. Cl.² A61K *31/70*
U.S. Cl. 424—180 **29 Claims**

1. Therapeutic composition having anti-lipolytic, anti-hyperlipaemic and anti-hypercholesterolaemic action comprising a pharmaceutically acceptable carrier and, in effective amounts, an N(6)-disubstituted adenosine compound of the formula:



wherein

R_1 is lower alkyl of up to 8 carbon atoms substituted by at least one of hydroxyl, alkoxy or acyloxy of up to 8 carbon atoms each; cycloalkyl of from 3 to 9 carbon atoms; or lower alkenyl of up to 8 carbon atoms;

R_2 and R_3 are individually hydrogen, halogen, nitro, lower alkyl, lower alkoxy or lower alkylthio of up to 8 carbon atoms; and

R_4 is hydrogen or acyl of up to 8 carbon atoms;

and the pharmacologically acceptable salts thereof.

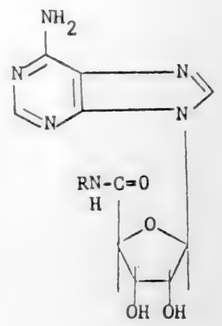
3,966,917

PLATELET AGGREGATION INHIBITORS

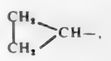
Raj Nandan Prasad, Pierrefonds, Canada, and Herman Hal Stein, Skokie, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 492,949, July 30, 1974, Pat. No. 3,914,414, which is a division of Ser. No. 370,084, June 14, 1973, Pat. No. 3,864,483, which is a division of Ser. No. 236,980, March 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 125,893, March 18, 1971, abandoned. This application June 26, 1975, Ser. No. 590,548
Int. Cl.² A61K *27/12*
U.S. Cl. 424—180 **7 Claims**

1. A method of inhibiting platelet aggregation in a patient having symptoms of a thrombosis, comprising administering to said patient a therapeutic amount of a compound of the formula:



wherein R is H, CH_3, CH_3CH_2, $(CH_3)_2CH$,



$CH_2{=}CHCH_2$, or $CH_3(CH_2)_2$.

3,966,918

METHOD OF PREPARING AQUEOUS SOLUTIONS OF STEROL GLYCOSIDES AND THEIR ESTER DERIVATIVES

Masanobu Kawamata; Hirokazu Ushimaru; Akira Sano, and Yutaka Takahashi, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed Nov. 22, 1974, Ser. No. 526,224
Claims priority, application Japan, Dec. 12, 1973, 48-140922; Feb. 23, 1974, 49-21749
Int. Cl.² A61K *31/705*
U.S. Cl. 424—182 **11 Claims**

1. A method of preparing an aqueous solution suitable for oral or injectable administration of an anti-inflammatory sterol glycoside or an ester thereof which comprises dissolving said sterol glycoside or an ester thereof in ethanol and subsequently adding to the solution polyoxyethylene hydrogenated castor oil and water.

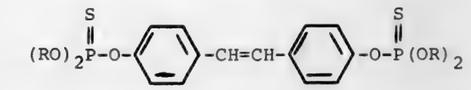
3,966,919

O,O,O′,O′-TETRAALKYL, O,O′-VINYLENEDI-p-PHENYLENE PHOSPHOROTHIOATES AND COMPOSITIONS CONTAINING THE SAME FOR THE CONTROL OF SIPHONAPTERA INFESTATIONS

Stephen David Levy, Trenton; Gordon Paul Poeschel, Kinnelon, and Michael Stanley Schrider, South Bound Brook, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 460,257, April 11, 1974, Pat. No. 3,907,936. This application Feb. 12, 1975, Ser. No. 549,220
Int. Cl.² A01N *9/36*
U.S. Cl. 424—206 **12 Claims**

1. A composition useful in controlling infestations of a domestic warm-blooded animal with Siphonaptera which comprises from 1 to about 90% of a compound of the formula:



wherein each R is the same and is C_1–C_4 alkyl in association with a carrier.

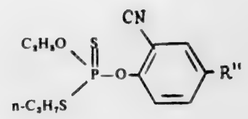
3,966,920

O,S-DIALKYL-O-(2-CYANOPHENYL)-THIONOTHIOLPHOSPHORIC ACID ESTERS AND INSECTICIDAL AND ACARICIDAL COMPOSITIONS AND METHOD

Hans-Jochem Riebel, Wuppertal; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 4, 1974, Ser. No. 529,660
Claims priority, application Germany, Dec. 5, 1973, 2360548
Int. Cl.² A01N *9/36*; **C07F** *9/18*
U.S. Cl. 424—210 **9 Claims**

1. A 2-cyanophenyldithiophosphoric acid ester of the formula



in which R″ is hydrogen or bromine.

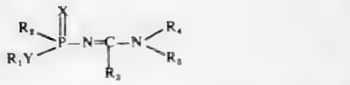
3,966,921

CERTAIN PESTICIDAL PHOSPHORUS CONTAINING AMIDINES

Ernst Beriger, Allschwil; Odd Kristiansen, Reinach; Kurt Rufenacht, Basel, all of Switzerland, and Jorg Bader, deceased, late of Arlesheim, Switzerland (by Dagmar Bader-Ludwig, legal representative), assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 340,805, March 13, 1973, Pat. No. 3,882,103. This application May 5, 1975, Ser. No. 574,799
Claims priority, application Switzerland, Mar. 17, 1972, 4054/72
Int. Cl.² A01N *9/36*
U.S. Cl. 424—211 **11 Claims**

1. An insecticidal, acaricidal and nematocidal composition comprising an insecticidally, acaricidally and nematocidally effective amount of a compound of the formula



wherein

R_1 represents phenyl, or phenyl mono- to trisubstituted by halogen, mono- or disubstituted by C_1–C_4-alkyl, C_1–C_4-alkylthio, nitro, cyano or trifluoromethyl, or monosubstituted by C_1–C_4-carbalkoxy,

R_2 represents methyl, methoxy, ethyl, ethoxy or phenyl,

R_3 represents hydrogen or methyl,

R_4 and R_5 represent methyl, ethyl, n-propyl, isopropyl or allyl,

X and Y represent oxygen or sulphur, or

R_4 and R_5 with the nitrogen atom to which they are bound form the morpholino, piperidino or pyrrolidino ring, or

R_3 with R_4 or R_5 form a pyrrolidino or piperidino ring, whereby then the group R_4 or R_5 not participating in the ring formation represents methyl or ethyl,

together with a suitable inert carrier therefor.

3,966,922

COMPOSITION FOR POULTRY AND LIVESTOCK

Taneji Okamoto, Toyonaka; Kuniyoshi Fujie, Takatsuki, and Sadao Kondo, Kawani, all of Japan, assignors to Takeda Chemical Industries, Ltd., Japan

Filed July 23, 1971, Ser. No. 165,695
Int. Cl.² A61K *31/65*
U.S. Cl. 424—227 **6 Claims**

1. A composition for poultry and livestock, which is stable in aqueous solution, which comprises from 1 to 200 parts by weight of a tetracycline compound selected from the group consisting of tetracycline, oxytetracycline, demethyltetracycline, doxycycline, chlortetracycline, demethylchlortetracycline, minocycline, methacycline and salts thereof with metaphosphoric acid, phosphoric acid, sodium, hydrochloric acid and sulphuric acid, 1 part by weight of one of vitamin B_1 compounds selected from the group consisting of vitamin B_2, flavin mono-nucleotide and flavin adenine dinucleotide and from 0.5 to 20 parts by weight of vanillin.

3,966,923

MEDICAMENTS INTENDED FOR THE PREVENTION AND TREATMENT OF ISCHEMIC DISTURBANCES

Hubert Serre, Paris, France, assignor to Pierre Fabre S.A., Paris, France

Continuation-in-part of Ser. No. 366,608, June 4, 1973, abandoned. This application Aug. 4, 1975, Ser. No. 601,303
Claims priority, application France, June 5, 1972, 72.20390
Int. Cl.² A61K *31/625*
U.S. Cl. 424—232 **18 Claims**

1. Pharmaceutical composition useful in the treatment of circulatory insufficiency comprising

a. a vasotrope compound selected from the group consisting of dihydroergocristine, papaverine, and a pharmaceutically acceptable salt of such vasotrope compound, and

b. a thrombocytotropic substance selected from the group consisting of dimethylaminoethanol acetyl salicylate and salt forms thereof which are pharmaceutically useful, the combined amount of said compound and said substance being sufficient to inhibit platelet aggregation to an extent greater than the additive effects of the individual components, (*a*) and (*b*) being present in amounts so as to provide the components in a proportion of about one part of the vasotrope compound (*a*) to about one to 250 parts of the thrombocytotropic substance (*b*).

3,966,924
COMPOSITION AND METHOD FOR TREATING PSORIASIS

Torsten Fredriksson, Vasteras, Sweden, assignor to Allergan Pharmaceuticals, Irvine, Calif.

Filed Nov. 13, 1974, Ser. No. 523,241
Int. Cl.² A61K *31/56*
U.S. Cl. 424—240 **4 Claims**

1. A method for treating psoriasis in humans comprising the topical administration to a human suffering from psoriasis of an effective dose for treating psoriasis of a composition comprising as active ingredients, from about 0.025 to about 0.1% by weight of β-methasone valerate and about 1 to about 5% of 5-fluorouracil.

3,966,925
LUBRICANT FOR FITTING AND TRIAL MOUNTING OF PROSTHODONTIC APPLIANCES

Arthur Milton Bell, 211 Chadwick Road, Teaneck, N.J. 07666

Division of Ser. No. 326,575, Jan. 26, 1973, Pat. No. 3,861,041, which is a continuation-in-part of Ser. No. 184,949, Sept. 29, 1971, abandoned. This application Dec. 24, 1974, Ser. No. 536,270
Int. Cl.² A61K *31/56*
U.S. Cl. 424—240 **10 Claims**

1. A lubricating compound for the fitting, trial mounting and removal of prosthodontic appliances, said compound including: (a) a stable, non-toxic, non-setting, water soluble, greaseless base material providing at least 80 percent of the compound, said base material being characterized as having a lubricating quality which quality is not materially affected by storage under reasonable conditions and also during intimate contact with the environs of the mouth, appliance and teeth preparations, said base having a consistency sufficiently stiff to prevent fluid flow by gravity; (b) an anti-inflammatory agent provided by Fluocinolone Acetonide of less than one-quarter of 1 percent of the compound and sufficient to provide a desensitizing effect on the prepared teeth when brought into intimate contact therewith, and (c) a bacteriostatic agent also providing less than 5 percent of the compound and sufficient to prevent noxious odors from forming and to also prevent a proliferation of bacteria from infiltering the restoration and prepared teeth, gingival tissue and other mouth environs during periods of provisional function of the lubricant.

3,966,926
COMPOSITION OF A STEROIDAL[2,3-d]-ISOXAZOLE AND METHOD OF USE THEREOF

Gordon O. Potts, Chatham, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Mar. 26, 1975, Ser. No. 562,122
Int. Cl.² A61K *31/58*
U.S. Cl. 424—241 **2 Claims**

1. A method for disrupting pregnancy in a female mammal which comprises administering orally to said mammal, subsequent to implantation of a fertilized ovum in said mammal, an abortifacienlly effective amount of 17β-hydroxy-4,4,17α-trimethylandrost-5-eno[2,3-d]isoxazole or a pharmaceutically acceptable ester thereof.

3,966,927
METHODS FOR INDUCING PARTURITION IN CATTLE WITH CERTAIN INTRAVENOUSLY-INJECTED SYNTHETIC GLUCOCORTICOIDS

Clarence E. Binninger, Box 1952, Orofino, Idaho 83544

Filed Dec. 16, 1974, Ser. No. 532,769
Int. Cl.² A61K *31/56, 31/58*
U.S. Cl. 424—243 **3 Claims**

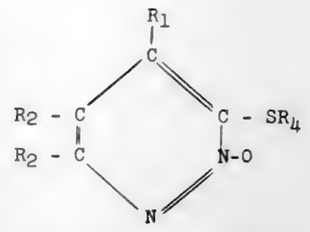
1. In a method of bovine parturition induction with synthetic glucocorticoids, the improvement which consists in intravenously administering to cows, pregnant for at least about 235 days, 10 to 60 mg of a long-lasting parturition-inducing 21-esterified glucocorticoid whereby parturition with low incidence of retained placenta and in-utero fetal and post-partum calf mortality takes place in about two to three days.

3,966,928
NOVEL DERIVATIVES OF PYRIDAZINE-2-OXIDE

Miriam L. Douglass, Piscataway, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 207,536, Dec. 13, 1971, abandoned. This application Feb. 21, 1974, Ser. No. 444,597
Int. Cl.² A61K *31/555, 31/495*; C11D *3/48*
U.S. Cl. 424—245 **13 Claims**

1. A topical antimicrobial composition for improving the condition of the hair and skin comprising about 0.1 to 3% by weight of a compound of the formula



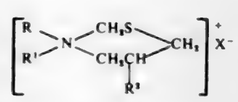
wherein R_1, R_2 and R_3 are each hydrogen; R_4 is a metal selected from alkali metals, alkaline earth metals, transistion metals, group IIIA metals, IVA metals, VA metals, and a quaternary ammonium ion of the formula $R_5R_6R_7R_8N^+$ wherein R_5, R_6, R_7 and R_8 are each independently hydrogen, and $C(NH_2)_2X$ wherein X is selected from the group consisting of halide, sulfate, nitrate, acetate, tartarate, citrate and saccharinate and a sufficient amount of a compatible, non-toxic cosmetic vehicle.

3,966,929
PROCESS FOR CONTROLLING BACTERIA WITH TETRAHYDRO-1,3-THIAZINIUM SALTS

Ludwig Konrad Huber, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 461,556, April 17, 1974, Pat. No. 3,919,422, which is a division of Ser. No. 220,372, Jan. 24, 1972, Pat. No. 3,821,210. This application June 6, 1975, Ser. No. 584,330
Int. Cl.² A01N *9/12*
U.S. Cl. 424—246 **4 Claims**

1. The method of killing and inhibiting the growth of bacteria comprising contacting the bacteria with an effective amount of tetrahydro-1,3-thiazinium salt represented by the formula



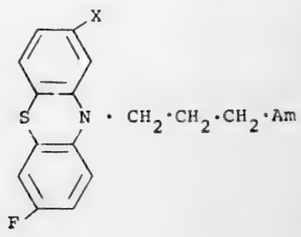
where X is an anion selected from the group consisting of chloride, bromide, iodide, acetate, formate, perchlorate and tosylate, R^3 is hydrogen or hydroxyl, and R and R^1 are independently alkyl having one to 20 carbon atoms or alkyl having one to 20 carbon atoms substituted with one or two hydroxyl groups, the total of the number of carbon atoms in $R + R^1$ being from about 12 to 24.

3,966,930
PHENOTHIAZINE DERIVATIVES, COMPOSITIONS THEREOF AND METHODS OF PREPARATION THEREOF

Jorn Lasse Martin Buus, Bjaeverskov, and Niels Lassen, Gentofte, both of Denmark, assignors to Kefalas A/S, Copenhagen-Valby, Denmark

Filed May 30, 1974, Ser. No. 474,530
Claims priority, application United Kingdom, June 8, 1973, 27527/73
Int. Cl.² C09D *279/20, 279/22*
U.S. Cl. 424—247 **25 Claims**

1. A compound selected from the group consisting of 1) a 7-fluoro substituted phenothiazine of the formula:



wherein "Am" is selected from the group consisting of $N(CH_3)_2$ and



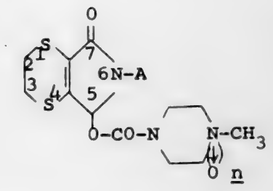
X is selected from the group consisting of —Cl, $—CF_3$, $—CO{\cdot}CH_3$ and $—SO_2{\cdot}N(CH_3)_2$, Y is selected from the group consisting of >NH, $>N{\cdot}CH_3$, $>N{\cdot}CH_2{\cdot}CH_2OH$, $>N{\cdot}CH_2{\cdot}CH_2OAc$ $>CH{\cdot}CH_2{\cdot}CH_2OH$ and $>CH{\cdot}CH_2{\cdot}CH_2OAc$, and —Ac is an acyl radical of an aliphatic carboxylic acid having one to seventeen carbon atoms inclusive, 2) a N-oxide thereof, and 3) an acid addition salt thereof with a pharmaceutically acceptable acid.

3,966,931
1,4-DITHIINO[2,3-c]PYRROLE COMPOSITIONS

Claude Jeanmart, Brunoy; André Léger, Paris, and Mayer Naoum Messer, Bievres, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 421,060, Dec. 3, 1973. This application June 24, 1975, Ser. No. 589,871
Claims priority, application France, Dec. 4, 1972, 72.43054; Oct. 19, 1973, 73.37402
Int. Cl.² C07D *409/14*
U.S. Cl. 424—250 **8 Claims**

1. A pharmaceutical composition consisting essentially of, as active ingredient, a 1,4-dithiino[2,3-c]pyrrole of the formula:



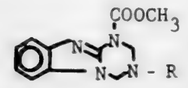
wherein A is phenyl, 2-pyridyl, 3-pyridazinyl, 2-quinolyl or 1,8-naphthyridin-2-yl, or a said radical singly substituted by halogen, alkyl of 1 through 4 carbon atoms, alkoxy of 1 through 4 carbon atoms, cyano or nitro, and *n* is zero or 1, or a non-toxic pharmaceutically-acceptable acid addition salt thereof, in association with a significant amount of a pharmaceutical carrier or coating.

3,966,932
TRIAZINO-BEZIMIDAZOLE FUNGICIDES

Hans Rüchling, Altenhain, Taunus, and Kurt Hürtel, Hofheim, Taunus, both of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 361,073, May 14, 1973, Pat. No. 3,896,120. This application Dec. 26, 1974, Ser. No. 536,399
Claims priority, application Germany, May 18, 1972, 2224244; Feb. 19, 1973, 2308067
Int. Cl.² A01N *9/22*
U.S. Cl. 424—249 **6 Claims**

1. A fungicidal composition which comprises an effective amount of a triazino-benzimidazole of the formula



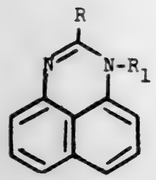
in which R is alkyl having from 1 to 18 carbon atoms; alkenyl having from 3 to 18 carbon atoms, alkinyl having from 2 to 8 carbon atoms, cycloalkyl having from 3 to 12 carbon atoms, optionally substituted by one or more alkyl groups having from 1 to 4 carbon atoms or by hydroxy; cyclohexylalkyl, cyclohexylalkenyl, or cyclohexylalkinyl each having from 1 to 3 carbon atoms in the chain, endomethylene-cyclohexylmethyl, endomethylene-cyclohexenylmethyl, tricyclodecyl, or tricyclodecenyl; phenalkyl, diphenylalkyl or triphenylalkyl each having from 1 to 6 carbon atoms in the alkylene radical, the phenyl nuclei of which being optionally substituted by halogen, alkyl, alkoxy or alkylthio, each having from 1 to 4 carbon atoms or by di-(C_1-C_4)-alkylamino; phenyl or naphthyl, optionally being substituted by alkyl of from 1 to 4 carbon atoms, halogen, halogenoalkyl of from 1 to 4 carbon atoms, trifluoromethyl, hydroxy, alkoxy of from 1 to 4 carbon atoms, phenoxy or (C_1-C_4)-alkylthio; di-(C_1-C_4)-alkyl-amino-(C_2-C_6)-alkyl; hydroxy-(C_2-C_{18})-alkyl, (C_2-C_{18})-alkoxyalkyl or dialkoxyalkyl, (C_2-C_{18})-alkylmercaptoalkyl, (C_3-C_6)-dialkylphosphinyl-alkyl, furfuryl, morpholino-(C_1-C_4)-alkyl, pyrrolidino-(C_1-C_4)-alkyl, piperidino-(C_1-C_4)-alkyl or (C_2-C_{18})-carbalkoxylalkyl in admixture with an inert carrier, and a dispersing agent.

3,966,933
INHIBITION OF GASTRIC ACID SECRETION WITH 1-ALKYL-2-R-PERIMIDINES

Vasken Paragamian, Dresher, Pa., and Russell J. Taylor, Jr., Palmyra, N.J., assignors to NcNeil Laboratories, Incorporated, Fort Washington, Pa.

Continuation-in-part of Ser. No. 417,666, Nov. 20, 1973, abandoned. This application Dec. 12, 1974, Ser. No. 532,150
Int. Cl.² A61K *31/505*
U.S. Cl. 424—251 **6 Claims**

1. A method of inhibiting gastric acid secretion in a gastric hyperacidic subject which comprises internally administering thereto an effective gastric acid secretion inhibiting amount of a member selected from the group consisting of a disubstituted perimidine of the formula:



wherein R is a member selected from the group consisting of loweralkoxyloweralkyl and loweralkanoyloxyloweralkyl, and R_1 is loweralkyl, and a pharmaceutically acceptable acid addition salt thereof.

3,966,934

SYNERGISTIC LOCAL ANESTHETIC COMPOSITIONS

Herbert J. F. Adams, Westboro, and Bertil H. Takman, Worcester, both of Mass., assignors to Astra Pharmaceutical Products, Inc., Worcester, Mass.

Continuation-in-part of Ser. No. 206,181, Dec. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 109,942, Jan. 26, 1971, abandoned. This application June 12, 1973, Ser. No. 369,302

Int. Cl.² A61K *31/505*

U.S. Cl. 424—251 **25 Claims**

1. An injectable local anesthetic composition having long-lasting local anesthetic effect which is a solution consisting essentially of a pharmaceutically acceptable carrier having dissolved therein

a. a non-heterocyclic aminoacyl anilide local anesthetic compound in a concentration of from 0.05 to 5 percent by weight of the carrier and

b. a toxin selected from the group consisting of from 0.5 to 10 micrograms of tetrodotoxin per milliliter of the carrier and from 10 to 20 micrograms of desoxytetrodotoxin per milliliter of the carrier.

3,966,935

INHIBITION OF ULCERS WITH 2(3H)-PERIMIDYLIDENE-2-PROPANONE

Vasken Paragamian, Dresher, Pa., and Russell J. Taylor, Jr., Palmyra, N.J., assignors to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Continuation-in-part of Ser. No. 417,706, Nov. 20, 1973, abandoned. This application Dec. 12, 1974, Ser. No. 532,281

Int. Cl.² A61K *31/505*

U.S. Cl. 424—251 **2 Claims**

1. A method of aiding the prevention and amelioration of stomach ulcers which comprises internally administering to a subject having stomach ulcers an effective stomach ulcer-inhibiting amount of a member selected from the group consisting of 2(3H)-perimidylidene-2-propanone and a pharmaceutically acceptable acid addition salt thereof.

3,966,936

PIPERAZINO QUINAZOLINE BRONCHODILATORS

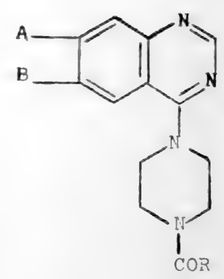
Timothy H. Cronin, Niantic, and Hans-Jürgen E. Hess, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 444,669, Feb. 21, 1974, Pat. No. 3,914,423, which is a division of Ser. No. 315,617, Dec. 15, 1972, Pat. No. 3,814,760, which is a division of Ser. No. 55,964, July 17, 1970, Pat. No. 3,723,434. This application May 29, 1975, Ser. No. 581,830

Int. Cl.² A61K *31/505*

U.S. Cl. 424—251 **3 Claims**

1. A method for effecting bronchodilator action in a subject afflicted with bronchoconstriction, which comprises administering to said subject an effective amount of a compound selected from the group consisting of 4-piperazino-6,7-dialkoxyquinazoline bases of the formula:



and the pharmaceutically acceptable addition salts thereof, wherein A and B are each a member selected from the group consisting of methoxy and ethoxy, and R is a member selected from the group consisting of piperidino, hydroxypiperidino and 4-methyl-4-hydroxypiperidino.

3,966,937

METHOD FOR PROTECTING PLANTS FROM SOIL-BORNE PLANT DISEASE ORGANISMS USING METHYL-(4-METHYLPHENYL)-SUBSTITUTED-TETRAZOLO (1,5-a)-PYRIMIDINES

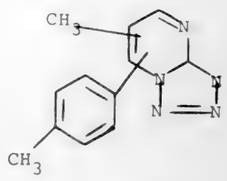
Fred Y. Edamura, Concord, and Ronald J. Sbragia, Clayton, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 451,668, March 14, 1974, Pat. No. 3,920,654. This application Jan. 20, 1975, Ser. No. 542,481

Int. Cl.² A01N *9/22*

U.S. Cl. 424—251 **8 Claims**

1. A composition useful for systemically protecting plants from diseases caused by soil-borne plant disease organisms comprising from about 2 to 98 percent by weight of the total composition of a methyl-(4-methylphenyl)-substituted tetrazolo(1,5-a)pyrimidine compound having the general formula:



wherein the methyl substituent is in the 5(or 7)- position and the 4-methylphenyl substituent is in the 7(or 5)- position, in combination with an inert solid or liquid carrier therefor, the said compound being the product of a process comprising the steps of (1) forming a reaction mixture containing a sodium 1-(4-methylphenyl)-1,3-butanedione intermediate by the reaction of about two molar proportions of each of p-methylacetophenone and sodium metal in the presence of ethylacetate, said reaction being carried out at a temperature below about 40°C, (2) reacting said reaction mixture of step (1) with about 2 molar proportions of 5-aminotetrazole monohydrate in the presence of a carrier medium under reflux conditions for from about 2 to about 6 hours to form a reaction mixture containing a methyl-(4-methylphenyl)-substituted 4,5-dihydrotetrazole(1,5-a)pyrimidin-5-ol intermediate, (3) recovering said intermediate formed in step (2), (4) dissolving the intermediate recovered in step (3) in a suitable carrier medium, and (5) treating said intermediate solution of step (4) with a concentrated acid at a temperature below about 30°C, thereby dehydrating said intermediate to the

methyl-(4-methylphenyl)-substituted tetrazolo(1,5-a)pyrimidine compound.

3,966,938

TREATMENT OF THROMBOSIS AND THE INHIBITION OF BLOOD PLATELET AGGREGATION

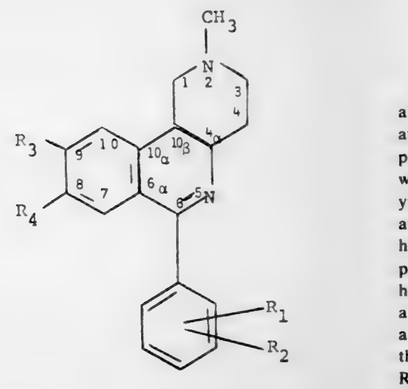
Hans Ott, Pfeffingen, and Rudolf Suess, Bettingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 408,053, Oct. 19, 1973, Pat. No. 3,899,494, which is a continuation-in-part of Ser. No. 305,289, Nov. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 303,069, Nov. 2, 1972, abandoned, which is a continuation-in-part of Ser. No. 140,239, May 4, 1971, abandoned. This application May 8, 1975, Ser. No. 575,523 Claims priority, application Switzerland, Oct. 26, 1972, 15675/72; Oct. 26, 1972, 15676/72; Oct. 26, 1972, 15677/72; Oct. 26, 1972, 15678/72

Int. Cl.² A61K *31/47*

U.S. Cl. 424—258 **20 Claims**

1. A method of treating thrombosis in animals, which comprises orally administering to an animal in need of such treatment a therapeutically effective amount of a compound of formula:



wherein

R_1 is hydrogen, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms or alkylthio of 1 to 3 carbon atoms, fluorine, bromine, chlorine, nitro, trifluoromethyl, amino or —NH—CO—R,

wherein

—CO—R is alkanoyl of 1 to 18 carbon atoms, benzoyl, benzoyl wherein the benzene ring is substituted by one X and one Y, X being lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, fluorine, chlorine, or bromine, and Y being hydrogen, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms, or chlorine, phenylalkenoyl wherein the akylene section has 1 to 3 carbon atoms, cinnamoyl, phenylalkenoyl as defined above or cinnamoyl which are substituted in the benzene ring by one X and one Y which are as defined above, or A-CO-, A being thienyl, furyl, pyrrolyl, or pyridyl,

R_2 is hydrogen, chlorine, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms, and

R_3 and R_4 are both hydrogen or both methoxy, or

R_3 and R_4 together are methylenedioxy,

or a pharmaceutically acceptable acid addition salt thereof.

3,966,939

NOVEL 2-SUBSTITUTED 6,7-BENZOMORPHAN DERIVATIVES AND SALTS THEREOF IN ANALGESIC COMPOSITIONS

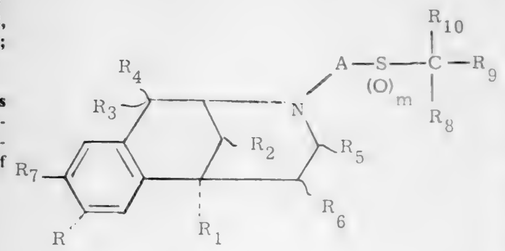
Kenji Kobayashi, Takarazuka; Toshitsugu Fukumaru, Kyoto; Hiroyuki Mizote; Shigeho Inaba, both of Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Japan

Division of Ser. No. 418,052, Nov. 21, 1973, Pat. No. 3,903,093. This application Mar. 17, 1975, Ser. No. 558,655 Claims priority, application Japan, Nov. 22, 1972, 47-117379

Int. Cl.² A61K *31/485*

U.S. Cl. 424—260 **15 Claims**

1. An analgesic composition comprising an analgesically effective amount of the 6,7-benzomorphan derivative of the formula:



wherein R is a hydrogen atom, a hydroxyl group, a C_1-C_3 alkoxy group or a C_1-C_6 alkanoyloxy group; R_1 is a hydrogen atom, a C_1-C_5 alkyl group, a C_2-C_{10} alkoxyalkyl group, a phenyl group a halophenyl group, an alkylphenyl group wherein the alkyl moiety has 1 to 3 carbon atoms or an alkoxyphenyl group wherein the alkoxy moiety has 1 to 3 carbon atoms; R_2 is a hydrogen atom or a hydroxyl group; R_4 is a hydrogen atom, a C_1-C_3 alkyl group, a phenyl group, a halophenyl group, an alkylphenyl group wherein the alkyl moiety has 1 to 3 carbon atoms or an alkoxyphenyl group wherein the alkoxy moiety has 1 to 3 carbon atoms, or R_2 and R_4 may form a C_1-C_3 alkylidene group or a carbonyl group together with the carbon atom to which they are bonded; R_3, R_5, R_6, R_7, R_8, R_{10} and R_{10} are each a hydrogen atom or a C_1-C_3 alkyl group; A is a C_1-C_3 alkylene group; and m is an integer of 0 to 2 or an acid addition salt thereof as the active ingredient and a pharmaceutically acceptble carrier or diluent.

3,966,940

ANALGETIC COMPOSITIONS

Irwin J. Pachter, Fayetteville, and Maxwell Gordon, Syracuse, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 414,567, Nov. 9, 1973, abandoned, which is a continuation-in-part of Ser. No. 60,621, Aug. 3, 1970, Pat. No. 3,773,955. This application Sept. 2, 1975, Ser. No. 609,847

Int. Cl.² A61K *31/485*

U.S. Cl. 424—260 **4 Claims**

1. A method for the treatment of a narcotic-addicted subject which comprises orally administering to said subject an effective amount of a composition consisting essentially of (a) a narcotic selected from the group consisting of α-dl-methadol, β-dl-methadol, α-l-methadol, β-dl-acetylmethadol, α-l-acetylmethadol and β-l-acetylmethadol in an amount sufficient to substantially prevent narcotic craving and (b) naloxone in an amount sufficient to induce withdrawal symptoms when said composition is administered parenterally but

insufficient to negate the action of said methadone when the composition is administered orally.

3,966,941

COMPOSITION FOR PREVENTING LACTATION OR PREGNANCY IN MAMMALS AND THE METHOD FOR USING THE SAME

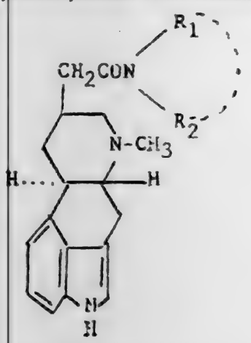
Miroslav Semonsky; Karel Rezabek, and Miroslav Seda, all of Prague, Czechoslovakia, assignors to Spofa United Pharmaceutical Works, Prague, Czechoslovakia

Continuation of Ser. No. 74,906, Sept. 23, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 315,838

Int. Cl.² A61K *31/48*; **C07D** *457/02*

U.S. Cl. 424—261 **9 Claims**

1. A pharmaceutical composition for preventing lactation or pregnancy in mamals comprising "an admixture with a suitable pharmaceutical carrier" a therapeutically effective dosage of a compound consisting essentially of α-D-6-methylergolinyl-8-acetylamides of the formula:



wherein R_1 is hydrogen or alkyl having 1 to 6 carbon atoms, R_2 is hydrogen, alkyl having 1 to 6 carbon atoms, cycloalkyl having 5 or 6 carbon atoms, hydroxylkyl having 3 or 4 carbon atoms or alkoxycarbonylmethyl having an alkoxy group of 1 to 4 carbon atoms, or R_1 and R_2 jointly are divalent alkylene having 4 or 5 carbon atoms and pharmaceutically acceptable acid addition salts thereof.

3,966,942

3-SUBSTITUTED-5-HYDROXY(MERCAPTO)ALKYLIDENE-RHODANINE DERIVATIVES

Arthur Magnani, Wynnewood, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

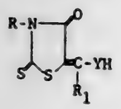
Division of Ser. No. 379,037, July 13, 1973, Pat. No. 3,890,331, which is a continuation-in-part of Ser. No. 254,363, May 18, 1972, abandoned. This application Mar. 14, 1975, Ser. No. 558,399

Claims priority, application United Kingdom, May 3, 1973, 21064/73

Int. Cl.² A61K *31/44*, *31/425*

U.S. Cl. 424—263 **9 Claims**

1. A pharmaceutical composition having anti-arthritic activity, in dosage unit form, comprising a pharmaceutical carrier and an effective, nontoxic amount of a compound of the formula: v,



wherein:

R is lower alkyl of from 1 to 4 carbon atoms, straight or branched chain, cycloalkyl of from 3 to 6 carbon atoms, alkenyl of from 3 to 5 carbon atoms, phenyl, phenylalkyl of from 7 to 9 carbon atoms, monohalophenyl, dichlorophenyl, tolyl, methylchlorophenyl or pyridylmethyl;

R_1 is lower alkyl of from 1 to 4 carbon atoms, phenylalkyl of from 7 to 9 carbon atoms, said alkyl moieties being straight or branched chain, monochlorobenzyl or monomethylbenzyl; and

Y is oxygen or sulfur, or a 2-aminopyridine or 2-aminothiazole salt thereof.

3,966,943

6-PYRIDYL BENZODIAZEPINES ANTIDEPRESSANTS

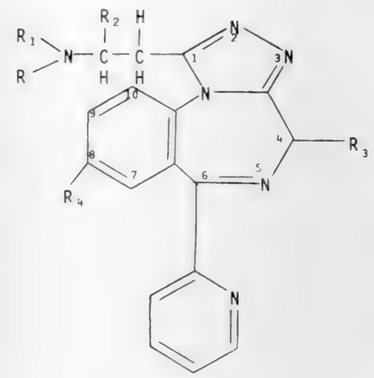
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 180,111, Sept. 13, 1971, Pat. No. 3,767,661. This application Apr. 28, 1975, Ser. No. 572,140

Int. Cl.² A61K *31/44*

U.S. Cl. 424—263 **9 Claims**

1. A process for treating depression comprising the administration to a human or animal subject an effective antidepressant amount of a compound of the formula:



wherein R, R_1, R_2 and R_3 are hydrogen, methyl or ethyl, and R_4 is hydrogen, fluorine, chlorine, bromine, $—NO_2$, $—CF_3$, or methylthio, inclusive; or a pharmacologically acceptable acid addition salt thereof, in association with a pharmaceutical carrier.

3,966,944

10 (N-METHYL-4-PIPERIDYLIDENE)-10H[1]-BENZOPYRANO[3,2-b]-PYRIDINE AS AN ANALGESIC, ANTI-INFLAMMATORY AND AGENT AGAINST TYPE III HYPERSENSITIVITY DISEASE

George W. Carter, Libertyville, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed May 19, 1975, Ser. No. 578,583

Int. Cl.² A61K *31/44*

U.S. Cl. 424—263 **2 Claims**

1. The method of treating analgesia inflammation and Type III hypersensitivity disease in a mammalian patient in need of such treatment comprising administering to said patient a therapeutically effective amount of 10 (N-methyl-4-piperidylidene)-10H[1]-benzopyrano[3,2-b]-pyridine.

3,966,945

2-ALKOXY(AND 2-ALKOXYALKYL)-2-HETEROCYCLIC-THIOACETAMIDES FOR INHIBITING GASTRIC ACID SECRETION

Helene E. Bowman Van Hoeven, Wallingford; L. Martin Brenner, Upper Darby, and Bernard Loev, Broomall, all of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

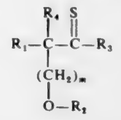
Division of Ser. No. 386,898, Aug. 9, 1973, Pat. No. 3,907,814, which is a continuation-in-part of Ser. No. 284,375, Aug. 28, 1972, abandoned, which is a continuation-in-part of Ser. No. 248,512, April 28, 1972, abandoned. This application June 12, 1975, Ser. No. 586,314

Int. Cl.² A61K *31/44*

U.S. Cl. 424—263 **12 Claims**

1. A pharmaceutical composition having gastric acid secretion inhibitory activity, in dosage unit form, comprising a pharmaceutical carrier and an effective amount of a thioamide compound of the formula:

FORMULA I



in which:

m is 0, 1, or 2;

R_1 is 2-pyridyl

R_2 is lower alkyl, allyl or cyclopropanemethyl;

R_3 is



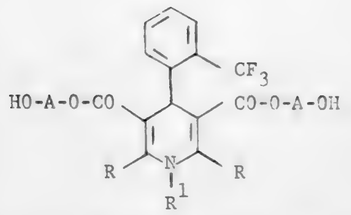
NH-phenyl or $NH-(CH_2)_n$-cycloalkyl, said cycloalkyl having 3-6 carbon atoms;

R_4 is hydrogen or lower alkyl;

R_5 and R_6 are hydrogen or lower alkyl and

n is 0 or 1

or a pharmaceutically acceptable acid salt thereof.



wherein R is lower alkyl, R^1 is hydrogen or methyl and A is a straight or branched alkylene chain the backbone of which contains from 2 to 4 carbon atoms.

3,966,947

PYRIDYL PHENYL-CARBAMATE RODENTICIDE

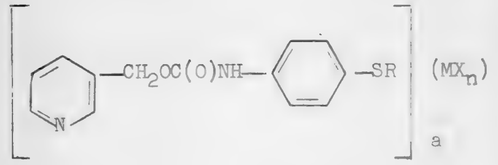
Edward E. Kilbourn, Chalfont, and Ernest D. Weiler, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 429,464, Dec. 28, 1973, Pat. No. 3,929,808. This application Oct. 3, 1975, Ser. No. 619,278

Int. Cl.² A01N *9/22*

U.S. Cl. 424—263 **8 Claims**

1. A metal salt complex having the structure



3,966,946

1,4-DIHYDROPYRIDINE COMPOUNDS IN TREATING HYPERTENSION

Anthony Maitland Roe, Hatfield; Robert Antony Slater, Letchworth, both of England, and Bernard Loev, Broomall, Pa., assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

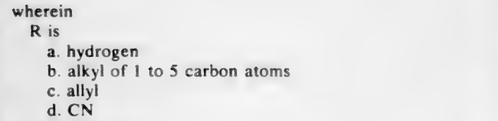
Continuation-in-part of Ser. No. 476,346, June 5, 1974, Pat. No. 3,910,937. This application July 8, 1975, Ser. No. 594,188

Claims priority, application United Kingdom, June 12, 1973, 27793/73

Int. Cl.² A61K *31/44*

U.S. Cl. 424—263 **10 Claims**

1. A pharmaceutical composition having anti-hypertensive activity, in dosage unit form, comprising a pharmaceutical carrier and in an effective amount to produce said activity a 1,4-dihydropyridine compound of the formula:



wherein

R is

a. hydrogen

b. alkyl of 1 to 5 carbon atoms

c. allyl

d. CN

e. CCl_3 and

f. 5-tetrazolyl

M is a metal cation,

X is an anion forming a compound with the cation M in which the compound has sufficient solubility to form a metal salt complex, and

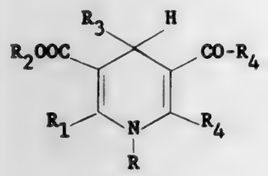
a is an integer corresponding to the valence of cation M and *n* is an integer which for the anion X satisfied the valence of the cation M.

3,966,948
SPASMOLYTIC, VASO-DILATING AND ANTI-HYPERTENSIVE COMPOSITIONS AND METHODS

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Germany

Division of Ser. No. 344,277, March 23, 1973, abandoned, which is a division of Ser. No. 107,849, Jan. 19, 1971, Pat. No. 3,775,422. This application July 3, 1974, Ser. No. 485,333
Claims priority, application Germany, Jan. 24, 1970, 2003146
Int. Cl.² A61K *31/455*
U.S. Cl. 424—266 **41 Claims**

1. A pharmaceutical composition capable of producing spasmolytic, vascular dilating, and antihypertensive effects upon administration to a human or other animal which comprises an effective amount of a 1,4-dihydropyridine of the formula:



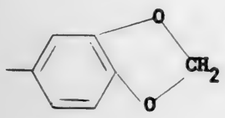
wherein

R is hydrogen or straight chain lower alkyl;

R_1 is straight or branched chain alkyl of 1 to 4 carbon atoms;

R_2 is straight or branched chain alkyl of 1 to 6 carbon atoms, straight or branched chain alkyl of 2 to 6 carbon atoms interrupted by 1 oxygen atom, furfuryl or propargyl;

R_3 is phenyl, benzyl or phenyl substituted by a member selected from the group consisting of nitro, cyano, halogen, trifluoromethyl, nitro and chloro, 1 or 2 alkoxy moieties of 1 to 2 carbon atoms, and a dioxymethylene moiety of the formula:

 and

R_4 is straight chain alkyl of 1 to 4 carbon atoms.

3,966,949
PHARMACEUTICAL COMPOSITIONS AND PREPARING SAME

Norval Ellsworth Webb, Jr., Cincinnati, Ohio, assignor to Richardson-Merrell Inc., Wilton, Conn.

Filed Oct. 12, 1973, Ser. No. 406,013
Int. Cl.² A61K *31/135*, *31/445*, *31/425*, *31/535*
U.S. Cl. 424—250 **10 Claims**

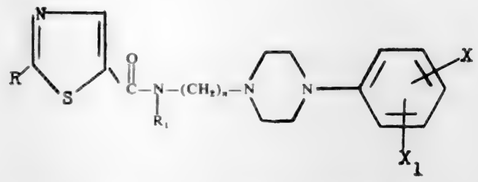
1. A method of preparing a stabilized aqueous parenteral composition of a water-insoluble therapeutic agent containing a tertiary amine capable of being protonated which comprises reacting said therapeutic agent with at least a stabilizing amount of a lipophilic liquid fatty acid having from 14 to 24 carbon atoms to form a lipophilic, fatty acid liquid salt; incorporating a nonionic surfactant with said liquid salt; and incorporating water to effect a solution suitable for injection.

3,966,950
NOVEL THERAPEUTIC COMPOSITIONS AND METHOD INVOLVING THIAZOL-CARBOXAMIDES

Odile Le Martret, Paris, and Francois Clemence, Rosny-sous-Bois, both of France, assignors to Roussel-UCLAF, Paris, France

Division of Ser. No. 340,289, March 12, 1973, Pat. No. 3,872,124. This application Jan. 8, 1975, Ser. No. 539,327
Claims priority, application France, Mar. 22, 1972, 72.10010
Int. Cl.² A61K *31/495*
U.S. Cl. 424—250 **9 Claims**

1. An α-adrenolytic composition comprising an effective amount of a compound selected from the group consisting of thiazolcarboxamides of the formula



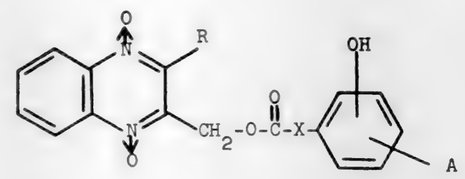
wherein R is selected from the group consisting of alkyl of 1 to 6 carbon atoms and phenyl, R_1 is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, n is a whole number from 2 to 5 and X and X_1 are individually selected from the group consisting of hydrogen, halogen, trifluoromethyl and alkyl, alkoxy and alkylthio of 1 to 4 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts and a pharmaceutical carrier.

3,966,951
ESTERS OF QUINOXALINE-1,4-DIOXIDES

Banavara L. Mylari, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 2, 1975, Ser. No. 564,363
Int. Cl.² A61K *31/495*; C07D *241/36*
U.S. Cl. 424—250 **17 Claims**

1. A compound of the structure



A

wherein

X is selected from the group consisting of a single bond, n-alkylene having up to six carbon atoms and $-(CH_2)_p-CH=CH-(CH_2)_q-$ wherein p and q have integral values from zero to four with the proviso that p plus q is less than or equal to four;

A is selected from the group consisting of hydrogen, hydroxyl, lower alkyl, lower alkoxy, fluorine, chlorine, bromine, iodine, cyano and trifluoromethyl; and

R is selected from the group consisting of hydrogen lower alkanoyl and α-hydroxy lower alkyl.

8. A method of promoting growth and improving feed efficiency of animals comprising administering to said animals a pharmaceutically effective amount of a compound of claim **1.**

10. A method of controlling bacterial infections in animals caused by susceptible microorganism comprising administering to said animals a pharmaceutically effective amount of a compound of claim **1.**

3,966,952
ALPHA-ISOMER OF THE PALMITIC ACID ESTER OF 10-[3-(4-HYDROXYETHYL-1-PIPERAZINYL)-PROPYLIDENE]-2-TRIFLUOROMETHYL THIAXANTHENE, COMPOSITIONS THEREOF AND A METHOD OF PREPARATON THEREOF AND USE THEREOF

Jorn Lasse Martin Buus, Bjaeverskov, Denmark, assignor to Kefalas A/S, Copenhagen-Valby, Denmark

Filed Dec. 4, 1974, Ser. No. 529,281
Claims priority, application United Kingdom, Dec. 7, 1973, 56900/73
Int. Cl.² A61K *31/493*
U.S. Cl. 424—250 **10 Claims**

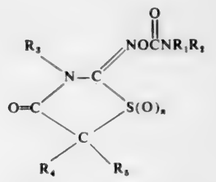
1. A compound selected from the group consisting of 1) the alpha-isomer of the palmitic acid ester of 10-[3-(4-hydroxyethyl-1-piperazinyl)propylidene]-2-trifluoromethyl thioxanthene and 2) a non-toxic acid addition salt thereof.

3,966,953
2-(CARBAMOYLOXIMINO)-4-THIAZOLIDINONE COMPOUNDS AS INSECTICIDAL, MITICIDAL OR NEMATOCIDAL AGENTS

Themistocles D. J. D'Silva, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,761
Int. Cl.² A01N *9/12*, *9/20*
U.S. Cl. 424—270 **20 Claims**

1. An insecticidal, miticidal or nematocidal composition comprising an acceptable carrier and an insecticidal, miticidal or nematocidal amount of a compound of the formula:



wherein:

R_1 is trihalomethanesulfenyl, R_2 is hydrogen or lower alkyl;

R_3 is hydrogen, lower alkyl, halo substituted lower alkyl, lower alkenyl, lower dialkylamino, lower alkoxy lower alkyl or lower alkylthio lower alkyl;

R_4 and R_5 are individually hydrogen, lower alkyl, lower alkoxy lower alkyl or lower alkylthio lower akyl; and

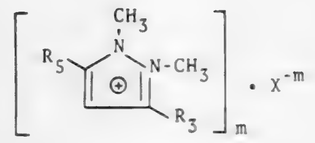
n is 0, 1 or 2.

3,966,954
3,5-CYCLOALKYL PYRAZOLIUM SALTS AS FUNGICIDES

Bryant Leonidas Walworth, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 399,785, Sept. 21, 1973, Pat. No. 3,907,825. This application Mar. 17, 1975, Ser. No. 559,000
Int. Cl.² A01N *9/22*
U.S. Cl. 424—273 **14 Claims**

1. A method for controlling disease growth and protecting plants from attack by plant pathogenic fungi comprising, applying to said plants which are to be protected a fungicidally effective amount of a compound having the formula:



wherein R_3 and R_5 are members independently selected from the group consisting of alkyl C_4–C_{11}, phenyl, cycloalkyl C_3–C_7, and halogen provided that:

a. when one of R_3 and R_5 is alkyl C_4–C_{11}, the other R group is phenyl; or

b. when one of R_3 and R_5 is cycloalkyl C_3–C_7, the other R group is cycloalkyl C_3–C_7 or halogen; or

c. when one of R_3 and R_5 is phenyl, th other R group is alkyl C_4–C_{11}, cycloalkyl C_3–C_7 or halogen; or

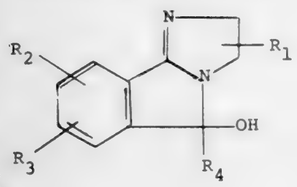
d. when one of R_3 and R_5 is halogen, the other group is phenyl or cycloalkyl C_3–C_7; X represents an anion having a charge of from 1 to 3 and is selected from the group consisting of bromide, chloride, iodide, acetate, sulfate, hydrogen sulfate, methyl sulfate, benzene sulfonate, p-toluene sulfonate, nitrate, phosphate, carbonate, perchlorate and mixed sulfate/hydrogen sulfate; m is an integer selected from 1, 2 and 3.

3,966,955
ANTI-ULCER THERAPY

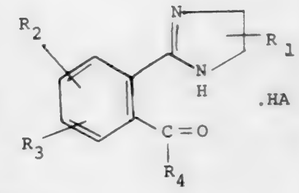
David A. Shriver, King of Prussia, and Melvyn I. Gluckman, Wayne, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 7, 1974, Ser. No. 495,353
Int. Cl.² A61K *31/415*
U.S. Cl. 424—273 **1 Claim**

1. The method of treating gastric ulcers in a warm blooded animal suffering from ulcers which comprises orally or parenterally administering to said animal an effective amount of a compound of the following formulae:



and



.HA

wherein

R_1 is hydrogen or lower alkyl;

R_2 is selected from the group consisting of hydrogen, halogen, amino, lower alkylamino, lower alkyl, and lower alkoxy; R_3 is hydrogen when R_2 and R_5 are dissimilar and when R_2 and R_3 are the same they are both selected from the group consisting of hydrogen, halogen, lower alkyl, and lower alkoxy; R_4 is selected from the group consisting of phenyl, monohalophenyl, dihalophenyl, mono(lower-)alkylphenyl, di(lower)alkyl-phenyl, trifluoromethyl-

phenyl, mono(lower)alkoxyphenyl, and di(lower)alkoxyphenyl; and HA is a pharmaceutically acceptable acid.

3,966,956

[1-(p-CHLOROBENZOYL)-5-METHOXY-2-METHYL-3-INDOLE]ACETOXYACETIC ACID AND SALTS IN TREATING INFLAMMATION

Karl-Heinz Boltze, Bensberg-Kippekausen; Otfried Brendler, Cologne; Hans-Dieter Dell, Bergisch-Gladbach, and Haireddin Jacobi, Leichlingen, all of Germany, assignors to Troponwerke Dinklage & Company, Cologne, Germany

Division of Ser. No. 374,615, June 28, 1973, Pat. No. 3,910,952. This application Apr. 9, 1975, Ser. No. 566,452

Claims priority, application Germany, July 14, 1972, 2234651

Int. Cl.² A61K *31/40*

U.S. Cl. 424—274 **9 Claims**

7. Method of treating inflammation which comprises administering to a subject in need thereof a therapeutically effective amount of [1-(p-chlorobenzoyl)-5-methoxy-2-methyl-3-indole]-acetoxyacetic acid or a pharmacologically acceptable salt thereof.

3,966,957

METHOD FOR CONTROLLING EMESIS WITH N-(1-SUBSTITUTED-3-PYRROLIDINYL)BENZAMIDES AND THIOBENZAMIDES

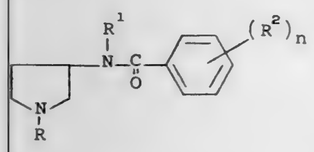
Albert Duncan Cale, Jr., Mechanicsville, and Charles Arthur Leonard, Richmond, both of Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 340,417, March 12, 1973, abandoned, and a continuation-in-part of Ser. No. 240,840, April 3, 1972, abandoned. This application Oct. 25, 1974, Ser. No. 518,123

Int. Cl.² A61K *31/40*

U.S. Cl. 424—274 **33 Claims**

1. A method of treating warm blooded animals for emesis which comprises internally administering from about 5 mg. to about 100 mg. of an antiemetic selected from the group having the following structural formula:



wherein;

R is selected from the group consisting of cycloalkyl of 4 to 12 carbon atoms, phenyl, benzyl and phenethyl,

R^1 is selected from the group consisting of hydrogen, lower alkyl of 1 to 8 carbon atoms and phenyl,

R^2 is selected from the group consisting of halogen, loweralkyl of 1 to 8 carbon atoms, methoxy, ethoxy, amino, nitro, dimethylamino, methylamino, mercaptomethyl, acetamido, sulfamoyl, cyano, hydroxy, benzyloxy and trifluoromethyl,

n is an integer from zero to three inclusive, and

the pharmaceutically acceptable acid addition salts thereof.

3,966,958

METHODS AND COMPOSITIONS FOR INCREASING FEED INTAKE OF ANIMALS

Clifton A. Baile, Glen Mills; Gregory Gallagher, Collegeville; Carol Lynn McLaughlin, Malvern, and Robert Lee Webb, West Chester, all of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 328,235, Jan. 31, 1973, Pat. No. 3,852,473. This application July 26, 1974, Ser. No. 491,980

Int. Cl.² A61K *31/27*

U.S. Cl. 424—300 **7 Claims**

1. The method of increasing feed intake in healthy, immature sheep, pig or cattle subjects comprising administering orally or by implant to said subjects a quantity effective for increasing feed intake but nontoxic to the subject of an active ingredient having the formula:

RR'R''CX

in which:

R is lower alkyl of from 1–9 carbons or hydroxy lower alkyl of from 1–9 carbons;

R' is lower alkyl of from 1–9 carbons, fluoro, bromo or chloro;

R'' is lower alkyl of from 1–9 carbons, lower alkenyl of from 2–9 carbons, lower alkynyl of from 2–9 carbons and, when R and R' are lower alkyl or hydrogen, R'' is phenyl; and

X is $-NHCONH_2$, $-ONHCONH_2$, $-OCONH_2$ or $-CONHCONH_2$ said increase in feed intake resulting in a faster rate of weight gain.

3,966,959

INSECTICIDAL AND ACARICIDAL PYRETHROID COMPOUNDS

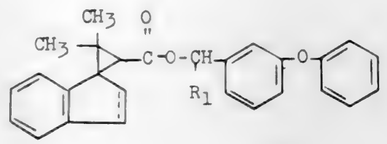
Roger Williams Addor, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 13, 1975, Ser. No. 550,105

Int. Cl.² A01N *9/20*

U.S. Cl. 424—304 **16 Claims**

1. A compound having the formula



(I)

wherein R_1 is hydrogen, cyano or ethynyl, and represents a single or double bond, and the optical and geometric isomers thereof.

3,966,960

3-(4-BIPHENYLCARBONYL)PROPIONIC ACID AS AN INHIBITOR OF PLATELET AGGREGATION

Leon Ellenbogen, New City, N.Y., and Constance Anne Kohler, Nutley, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 25, 1975, Ser. No. 571,826

Int. Cl.² A61K *31/19*

U.S. Cl. 424—317 **5 Claims**

1. A method of producing an inhibitory effect on blood platelet aggregation which comprises incorporating into the blood of a thrombotic warm-blooded animal an effective amount of 3-(4-biphenylcarbonyl)propionic acid or a pharmaceutically acceptable salt thereof.

3,966,961

METHANESULFONIC ACID-2-BROMOETHYL ESTER NEMATOCIDE

Denis Varsanyi, Arlesheim; Paul Rathgeb, Basel, and Karl Gass, Magden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 13, 1974, Ser. No. 532,432

Claims priority, application Switzerland, Dec. 21, 1973, 18055/73

Int. Cl.² A01N *9/14*

U.S. Cl. 424—303 **1 Claim**

1. A method of combatting pests of the class Nematoda which comprises applying to said pest a nematocidally effective amount of 2-bromoethylmethane sulphonate.

3,966,962

TRIACETIN SOLUTIONS OF PGE-TYPE COMPOUNDS

Samuel H. Yalkowsky, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 27, 1975, Ser. No. 562,535

Int. Cl.² A61K *31/215, 31/19*

U.S. Cl. 424—305 **9 Claims**

1. A stable dosage form of a prostaglandin-like compound of the PGE-type comprising a solution of said compound in triacetin.

3,966,963

INSECTICIDAL COMPOSITION CONTAINING CYCLOPROPANE-CARBOXYLATE

Yoshitoshi Okuno, Toyonaka; Nobushige Itaya, Ikeda, and Toshio Mizutani, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

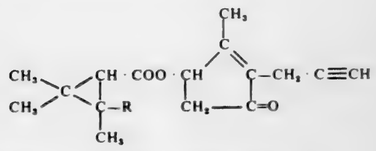
Division of Ser. No. 364,271, May 29, 1973, Pat. No. 3,876,681. This application Jan. 13, 1975, Ser. No. 540,547

Claims priority, application Japan, May 31, 1972, 47-54533

Int. Cl.² A01N *9/24*

U.S. Cl. 424—305 **3 Claims**

1. An insecticidal composition comprising an inert carrier and an insecticidally effective amount of a compound of formula



(I)

wherein R is hydrogen or methyl group.

3,966,964

VETERINARY COMPOSITION CONTAINING THIONOSALICYLIC ACID ANILIDES OR SALTS THEREOF AND METHODS OF USING THE SAME

Jurgen Kurz, Wuppertal-Elberfeld; Heinrich Kolling, Hannover, Rhineland, and Manfred Federmann, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

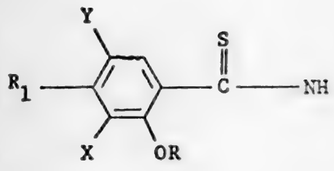
Division of Ser. No. 861,158, Sept. 25, 1969, Pat. No. 3,898,272, which is a continuation-in-part of Ser. No. 634,835, May 1, 1967, abandoned. This application Feb. 13, 1975, Ser. No. 549,689

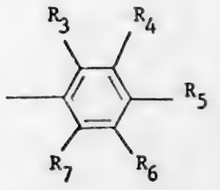
Claims priority, application Germany, May 6, 1966, 49138; Aug. 17, 1966, 49965; Sept. 3, 1966, 50110

Int. Cl.² A61K *31/235*

U.S. Cl. 424—308 **52 Claims**

1. A veterinary composition having parasiticidal activity, which comprises a parasiticidally effective amount of a compound of the formula:





wherein

R is hydrogen, lower alkanoyl or phenyl lower alkanoyl,

R_1 is hydrogen or lower alkyl,

R_3, R_4, R_5, R_6 and R_7 are the same or different and are each hydrogen, lower alkyl, lower alkoxy, halogen, nitro, trifluoromethyl or lower alkylmercapto and

X and Y are the same or different, wherein X is halogen or nitro, and Y is hydrogen or halogen,

or a salt thereof with a non-toxic inorganic or organic base in combination with a non-toxic veterinary carrier.

3,966,965

OXAMIC ACID DERIVATIVES FOR THE PREVENTION OF IMMEDIATE TYPE HYPERSENSITIVITY REACTIONS

John H. Sellstedt, Pottstown; Charles J. Guinosso, King of Prussia, and Albert J. Begany, Perkiomenville, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 344,466, March 23, 1973, abandoned. This application Jan. 20, 1975, Ser. No. 542,465

Int. Cl.² A61K *31/24*

U.S. Cl. 424—309 **9 Claims**

1. A process for preventing the release of pharmacological mediators from an immediate hypersensitivity reaction between reaginic type antibodies and an antigen, thereby preventing the symptoms manifest in bronchial asthma, seasonal pollinosis, allergic rhinitis, urticaria, allergic conjunctivitis, food allergy and anaphylactoid reactions of a sensitized animal, which comprises prophylactically administering, orally or prenterally, to said animal an effective amount of a compound of the formula:



in which

A is a member selected from the group consisting of α-naphthyl, β-naphthyl, phenyl, 2,6-dichlorophenyl and substituted phenyl moieties containing from one to three substituents in any of the 2,3,4 and 5 positions of the phenyl ring, independently selected from the group consisting of lower alkyl, lower alkylthio, lower alkylsulfinyl, lower alkoxy, hydroxy(lower)alkoxy, 2-(lower alkoxy oxalyloxy)ethoxy, benzyloxy, N-mono- and di-lower alkylamino(lower)alkoxy, halo, sulfamyl, polyhalo(lower-)alkyl, carbamyl, N-lower alkylcarbamyl, nitro, mono- and di- lower alkylamino, carboxy, lower alkylcarbonyl, carb(lower)alkoxy, phenoxy(lower)alkoxy, lower alkoxy oxalamido and lower alkoxyoxalamidophenoxy; and

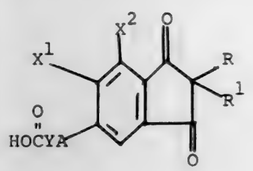
B is lower alkoxy, cyclohexyloxy or phenoxy.

3,966,966
PHARMACEUTICAL COMPOSITIONS AND METHOD OF TREATMENT EMPLOYING 1,3-DIOXO-2,2-DISUBSTITUTED INDANYLOXY ALKANOIC ACIDS

Edward J. Cragoe, Jr., Lansdale, and Otto W. Woltersdorf, Jr., Chalfont, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 405,967, Oct. 12, 1973. This application July 31, 1974, Ser. No. 492,942
Int. Cl.² A61K 31/19
U.S. Cl. 424—317 4 Claims

1. A pharmaceutical composition useful in the treatment of edema and hypertension which also maintains uric acid at pretreatment levels or causes a decrease in uric acid in patients which comprises along with a pharmaceutically acceptable carrier 50 mg. to 500 mg. of a compound of the formula:



wherein

A is oxygen;

R is lower alkyl having from 1 to 5 carbon atoms, cycloalkyl, phenyl or substituted phenyl wherein the substituent is lower alkyl or halo,

R^1 is hydrogen, lower alkyl having 1 to 5 carbon atoms, lower alkenyl having 3 to 5 carbon atoms, lower alkynyl having from 3 to 5 carbon atoms, phenyl lower alkyl wherein lower alkyl has 1 to 3 carbon atoms, phenyl lower alkenyl wherein lower alkenyl has 2 to 5 carbon atoms, phenyl or substituted phenyl wherein the substituent is lower alkyl or halo;

X^1 is hydrogen, methyl or halo; and

X^2 is methyl or halo; and

Y is alkylene or haloalkylene containing a maximum of 4 carbon atoms, and

the racemic form, the enantiomers and the non-toxic, pharmacologically acceptable salt thereof.

3,966,967
COMPOSITIONS AND METHODS OF TREATING PSORIASIS WITH VINYLOGS OF DESMETHYL RETINOIC ACID

Kwan-Hua Lee, San Francisco, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 343,559, March 21, 1973, Pat. No. 3,882,244, and a continuation-in-part of Ser. No. 207,623, Dec. 13, 1971, abandoned. This application Oct. 29, 1974, Ser. No. 518,548
Int. Cl.² A61K 31/07
U.S. Cl. 424—318 2 Claims

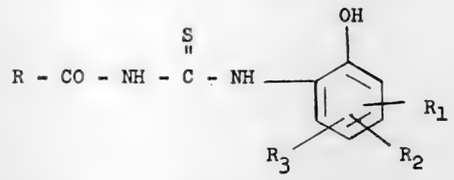
1. A medicine for topical application to the body comprising a physiological acceptable carrier and from about 0.1 to 2% of 2, 6, 6,-Trimethyl-1-(10'-carboxy-deca-1',3',5',7',9'-pentaenyl) cyclohex-1-ene.

3,966,968
N,N'-DISUBSTITUTED THIOUREAS, THEIR PROCESS OF PRODUCTION AND USE AS ANTIMICROBIAL AGENTS

Hans Andree, Dusseldorf-Itter; Günther Koppensteiner, Meisungen, and Heinz-Ulrich Stracke, Langenfeld, all of Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

Filed Dec. 18, 1973, Ser. No. 425,800
Claims priority, application Germany, Jan. 26, 1973, 2303761
Int. Cl.² A01N 9/12
U.S. Cl. 424—322 14 Claims

1. In the method of controlling bacteria which comprises contacting bacteria with a bactericidal amount of a bactericide, the improvement consisting of utilizing a bactericidal amount of a N,N'-disubstituted thiourea of the formula



wherein R is a member selected from the group consisting of lower alkyl, phenyl, methoxyphenyl and nitrophenyl, and R_1, R_2 and R_3 are members selected from the group consisting of hydrogen, lower alkyl, chlorine, bromine and nitro.

3,966,969
SPIDER MITE CONTROL

William E. Willy, and Clive A. Henrick, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Mar. 6, 1975, Ser. No. 555,758
Int. Cl.² A01N 9/24
U.S. Cl. 424—343 5 Claims

1. A method for controlling spider mites which comprises applying to the eggs of the spider mite, an ovicidally effective amount of a compound of the formula:

wherein *n* is an odd integer from 7 to 15.

3,966,970
METHOD FOR PACKAGING A UNIQUE CHEESE ITEM

Murray John Williams, Syracuse, N.Y., assignor to Borden, Inc., Columbus, Ohio

Filed June 6, 1974, Ser. No. 477,015
Int. Cl.² A23C 11/14
U.S. Cl. 426—393 8 Claims

1. A method of making a packaged cheese product comprising preparing a molten cheese composition, cooling the molten cheese composition to a temperature of 40° to 60°F, extruding the cheese composition in the form of cheese rope which holds its shape, rapidly cooling the cheese rope to a temperature of 10° to 30°F, cutting the cheese rope into cheese pieces of about ¼ to 1½ inches in length following the cooling step, and wrapping each cheese piece in a suitable wrapping material on a high speed wrapping machine.

3,966,971
SEPARATION OF PROTEIN FROM VEGETABLE SOURCES

Alpha L. Morehouse, and Ronald C. Malzahn, both of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

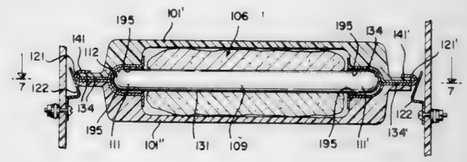
Filed Jan. 2, 1975, Ser. No. 538,127
Int. Cl.² A23L 1/20
U.S. Cl. 426—44 5 Claims

1. A process of obtaining protein from a vegetable protein source material which comprises washing a vegetable protein source material with water maintained at a pH of minimum protein solubility, subjecting the washed vegetable protein source material to digestion in water at a pH of from about 2 to 6 in the presence of acid phytase, and separating a liquid extract containing soluble protein from the insoluble digestion residue.

3,966,972
PACKAGED COATED FOOD PRODUCT CAPABLE OF BEING COOKED USING ELECTRODES

Ernst Theodore Theimer, Rumson, and George E. Heinze, East Brunswick, both of N.J., assignors to Lectrofood, Inc., East Brunswick, N.J.

Filed Feb. 28, 1974, Ser. No. 446,822
Int. Cl.² B65B 25/22; A23L 1/04
U.S. Cl. 426—90 15 Claims



1. A packaged food, for cooking the food therein, wherein a container encloses an edible sandwich type food, said packaged food comprising:

a. An electrically low conducting food having high electrical resistivity;

b. An electrically high conducting food disposed in contact with and substantially surrounded by said low conducting food;

c. Said high conducting food having at least two diametrically opposite high conducting food portions extending outwardly beyond said low conducting food, each of which portion has a substantially solid external surface;

d. In common intimate contact with at least a part of each of said external surfaces of high conducting food; an electrically high conducting composition and at least two electrical contacts, said electrically high conducting composition forming a continuous phase and coated onto and being an integral part of each of said substantially solid external surfaces comprising a combination of:

i. a gel material selected from the group consisting of agar, xanthan gum, tragacanth, guar gum and gum arabic; and

ii. an edible non-toxic substantially ionized species selected from the group consisting of sodium chloride, potassium chloride, ammonium chloride, sodium iodide, potassium iodide, magnesium chloride, sodium glutamate, potassium glutamate, sodium alginate, potassium alginate, ammonium alginate, magnesium alginate, calcium alginate, sodium bicarbonate, potassium bicarbonate, magnesium bicarbonate, calcium bicarbonate, sodium nitrate, potassium nitrate, sodium nitrite and potassium nitrite;

said composition being positioned to make intimate contact between the electrical contacts and the substantially solid surface of said electrially high conducting food thereby acting to eliminate arcing during the electrical resistance cooking of the high conducting food;

e. A hollow thermal insulating substantially moisture impervious container which contains and encloses said electrically low and high conducting foods, said container being capable of existing in a closed position and in an open position, said container comprising two sections having substantially conterminous edges, a first section and a second section articulating said first section, said first section and said second section having mutually substantially continuous conterminous edges, at least one of said sections having an internal surface designed to fixedly hold said high conducting food over those portions of the external surfaces of said high conducting food which are in intimate contact with said electrically high conducting composition and said electrical contact when the container is in a closed position; at least one of said container sections has substantially diametrically opposite internal surfaces which are conterminous with the external surfaces of said diametrically opposite high conducting food portions; and the electrical contacts extend outwardly from said container, said electrical contacts having electrically conducting ends external to said container, said ends being designed to make the electrical contact with an electrical energy source when said container is in a closed position.

3,966,973
PROCESS FOR DETERMINING AND CONTROLLING THE MOISTURE OF FOOD PRODUCTS

William F. Henry, Minneapolis; Gareth J. Templeman, Chanhassen; Roger A. Gorman, Hopkins, all of Minn., and Lawrence Pinaire, Clarksville, Ind., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Aug. 26, 1974, Ser. No. 500,971
Int. Cl.² G01N 33/02
U.S. Cl. 426—231 5 Claims

1. A process for determining the moisture content of a food comprising applying an alternating current to the food product, measuring the impedance in Ohms and the phase angle in degrees expressed from minus 90° to plus 90°, measuring the NMR liquid content and expressing the moisture content as a function of the applied frequency in Hertz, the phase angle in degrees, the impedance in Ohms, and the NMR liquid content.

3,966,974
CURING OF MEAT USING ORGANIC NITRITES

Kekhusroo R. Bharucha, Toronto; Charles K. Cross, Rexdale, and Leon J. Rubin, Toronto, all of Canada, assignors to Canada Packers Limited, Toronto, Canada

Continuation-in-part of Ser. No. 426,131, Dec. 19, 1973, abandoned. This application June 4, 1975, Ser. No. 583,798
Int. Cl.² A23L 1/272, 1/31; A23B 4/14
U.S. Cl. 426—265 22 Claims

13. A method for the curing of meats comprising contacting the meat with a curing solution containing an organic nitrite of boiling point in the range of about 15° to 150°C, said organic nitrite being emulsified in said solution in an amount sufficient to provide a nitrite equivalent of a conventional alkali metal nitrite curing solution.

3,966,975

METHOD FOR PRODUCING AGGLOMERATED POWDERS AND APPARATUS FOR PERFORMING THE METHOD

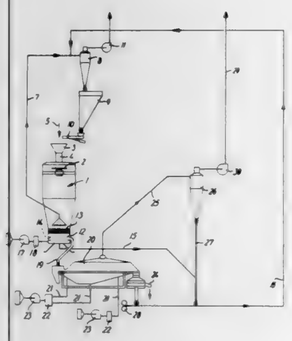
Karl Erik Hansen, Copenhagen, and Ove Hansen, Vaerlose, both of Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark

Continuation-in-part of Ser. No. 206,710, Dec. 10, 1971, abandoned. This application July 19, 1973, Ser. No. 380,794

Claims priority, application United Kingdom, Dec. 21, 1970, 60700/70; Germany, Dec. 10, 1971, 2161448; Japan, Dec. 21, 1971, 46-103303

Int. Cl.² A23C *9/00*

U.S. Cl. 426—285 **26 Claims**



1. A method for producing agglomerated hygroscopic soluble powder products of coffee or coffee substitutes from a powder of the raw materials, said method comprising the steps of:

a. dropping the raw materials
   i. in an unobstructed movement directly down towards a disc
   ii. a distance sufficient to permit moistening of the raw materials in the next-recited step;
b. moistening the raw materials
   i. with an aqueous moistening agent
   ii. as they drop towards the disc
   iii. by an amount sufficient to cause agglomeration of the raw materials; and
c. causing the disc to rotate with sufficient speed to cause the moistened raw materials to be thrown off the disc by centrifugal force, the disc being shaped so that the motion of the raw materials as they are thrown off the disc by centrifugal force is unobstructed.

14. Apparatus for producing agglomerated hygroscopic soluble powder products of coffee or coffee substitutes from a powder of the raw materials, said apparatus comprising:

a. a chamber;
b. means defining an inlet for the raw materials located in said chamber;
c. means for moistening the raw materials
   i. with an aqueous moistening agent
   ii. as they drop into said chamber from said inlet
   iii. by an amount sufficient to cause agglomeration of the raw materials;
d. a disc
   i. located vertically below said inlet by a distance sufficient to permit moistening of the raw materials as they fall in an unobstructed movement from said inlet
   ii. shaped so that the motion of the raw materials as they are thrown off the disc by centrifugal force is unobstructed;
e. means for rotating said disc with sufficient speed to cause the moistened raw materials to be thrown off said disc by centrifugal force; and
f. means for causing the raw materials to have a uniform distribution across the cross-section of the moistening zone.

3,966,976

FOAM STABLE MALT BEVERAGE

Harry R. Schuppner, Jr., El Cajon, and John H. Randel, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 27, 1975, Ser. No. 581,387

Int. Cl.² A21D *4/00*

U.S. Cl. 426—329 **3 Claims**

1. The method of improving the foam properties of fermented malt beverages which comprises adding to the beverage a quantity of between about 5 to 100 parts per million by the weight of said beverage of the Polysaccharide colloid S-10.

3,966,977

VEGETABLE PROTEIN PRODUCT AND PROCESS

Arthur A. Levinson, Chicago, and Kenneth B. Bass, Evanston, both of Ill., assignors to National Can Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 60,764, Aug. 3, 1970. This application Oct. 10, 1973, Ser. No. 405,201

Int. Cl.² A23J *3/00;* **A23L** *1/20, 3/34*

U.S. Cl. 426—331 **4 Claims**

1. A process for producing a proteinaceous food product having an enhanced protein content and the fibrous chewy texture of meat which comprises contacting a compacted, defatted protein-containing seed meal product in shard form which is characterized by the presence as one portion of the surface thereof of a densified, tough, at least partially denatured skin which is resistant to rehydration; with an aqueous solution having a pH of from about 2 to about 6.5 and containing a non-toxic, edible polyhydric alcohol having bacteriostatic properties, at temperatures above about 105°C. and at superatmospheric pressure for a time sufficient to solubilize and extract a portion of the non-proteinaceous component of said starting material and increase the relative protein content thereof and render the starting material substantially porous, recovering the product from the resulting liquor and reducing the moisture content of the product to from about 12 to about 50% by weight; said product containing an amount of polyhydric alcohol sufficient to render it resistant to bacterial attack when packaged without sterilization or canning.

3,966,978

4-BIPHENYLACETIC ACID AS AN INHIBITOR OF PLATELET AGGREGATION

Leon Ellenbogen, New City, N.Y., and Constance Anne Kohler, Nutley, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 25, 1975, Ser. No. 571,815

Int. Cl.² A61K *31/19*

U.S. Cl. 424—317 **4 Claims**

1. A method of producing an inhibitory effect on blood platelet aggregation which comprises incorporating into the blood of a thrombotic warm-blooded animal an effective amount of 4-biphenylacetic acid or a pharmaceutically acceptable salt thereof.

3,966,979

PROCESS FOR FREEZING COFFEE EXTRACT

Saul N. Katz, Monsey, N.Y., and Daniel E. Dwyer, Jr., Long Valley, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed May 21, 1975, Ser. No. 579,535

Int. Cl.³ A23F *1/04;* **A23C** *1/06*

U.S. Cl. 426—385 **10 Claims**

1. A process for producing a dark colored freeze-dried coffee which comprises:

a. producing a liquid coffee extract,
b. continuously applying layers of said extract to a freezing surface which is sufficiently chilled to fast freeze the extract such that as the extract continues to be applied it contacts each previously frozen layer of extract and constantly remelts the upper portion of that layer,
c. completely freezing the extract,
d. comminuting the frozen extract, and
e. freeze-drying the frozen comminuted extract to a stable moisture content.

3,966,980

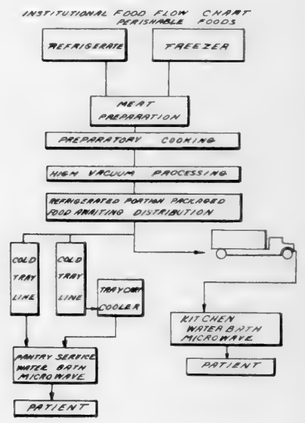
METHOD OF COOKING AND STORING FOOD IN FLEXIBLE BAGS

Ambrose T. McGuckian, Bethesda, Md., assignor to A.G.S. Food System Inc., Greenville, S.C.

Filed May 2, 1969, Ser. No. 821,181

Int. Cl.² B65B *25/22*

U.S. Cl. 426—393 **26 Claims**



2. A method for cooking raw or partially cooked foods in vacuum packages, comprising the steps of:

1. encasing the food in a plastic pouch,
2. substantially evacuating air from the pouch and sealing under a high vacuum,
3. immersing the food encased in the pouch in a hot water bath held at a constant elevated temperature for a period of time sufficient to at least partially cook the raw food or further cook the partially cooked food,
4. removing the packaged food from the hot water bath and chilling it for a period of time sufficient to attain an internal temperature of the food of 32°–34°F. which is above but near the freezing point thereof, and
5. storing the cooked food in the pouch above the freezing temperature of the food and at a temperature of 28°–32°F.

3,966,981

PROCESS FOR REMOVING RESIDUAL SOLVENTS

William G. Schultz, El Cerrito, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 26, 1974, Ser. No. 527,402

Int. Cl.³ B01D *11/02*

U.S. Cl. 426—425 **1 Claim**

1. A process for removing residual hexane from soybeans which have been de-fatted by extraction with hexane, which process comprises:

a. extracting the de-fatted soybeans with liquid CO_2 at a pressure and temperature at which the CO_2 remains in the liquid state,
b. separating the extracted de-fatted soybeans from the liquid CO_2 extract, and
c. evaporating CO_2 from the extracted de-fatted soybeans.

3,966,982

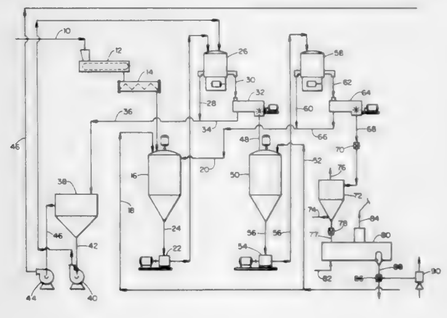
PROCESS AND APPARATUS FOR TREATING OLEAGINOUS SEED MATERIAL

Kenneth W. Becker; Klemens C. Baczewski, and Donald J. Klein, all of Pittsburgh, Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed June 18, 1973, Ser. No. 371,148

Int. Cl.² A23L *1/20*

U.S. Cl. 426—430 **35 Claims**



1. In a process for treating a defatted oleaginous seed material to extract soluble non-proteinaceous materials therefrom to form a proteinaceous concentrate, the steps comprising:

a. contacting said oleaginous seed material with a first carbohydrate selective extraction solvent flow under conditions to extract a portion of said non-proteinaceous materials;
b. expressing the slurry of solids of step (a) to separate a first miscella stream from a first solids-solvent stream;
c. contacting said first solids-solvent stream of step (b) with a second carbohydrate-selective extraction solvent flow under conditions to extract substantially the remaining portion of said non-proteinaceous material therefrom; and
d. expressing the slurry of solids of step (c) to separate a second miscella stream from a second solids-solvent stream.

3,966,983

METHOD AND APPARATUS FOR TREATING FOOD PIECES

Edward Dexter, Blaby, and Stephen Reverdy Otley, Long Whatton, near Loughborough, both of England, assignors to United Biscuits Limited, Edinburgh, Scotland

Filed Nov. 7, 1974, Ser. No. 521,846

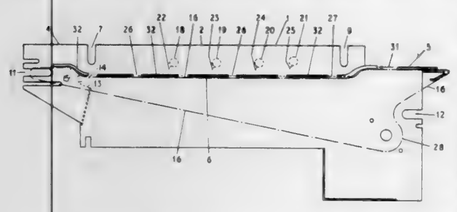
Claims priority, application United Kingdom, Nov. 15, 1973, 53093/73

Int. Cl.³ A21D *6/00;* **A23L** *1/01*

U.S. Cl. 426—439 **7 Claims**

1. In the process of cooking food comprising relatively thin pieces having two generally flat and sticky faces, having a relatively small dimension between said faces as compared to the size of said faces and having a moisture content between thirty and sixty percent, which food is to be fried in a continuous succession to a desired degree, the improvement wherein said pieces are pretreated prior to said frying to minimize the distortion which tends to occur because of the thinness of the pieces comprising the steps of:

supporting said pieces on one of said faces, continuously passing said pieces while so supported in succession through a bath of hot oil with the pieces being only partially immersed therein whereby the pieces do not tend to float but remain firmly supported at said one face, and while said pieces are in said bath applying hot oil to the



upper surfaces of said pieces, said pieces being in said bath for a period of time sufficient to give them a stiffness but insufficient to cook them to said desired degree; and

thereafter removing said pieces sequentially from said bath and subjecting them to said frying to an extent sufficient to cook them to said desired degree.

3,966,984

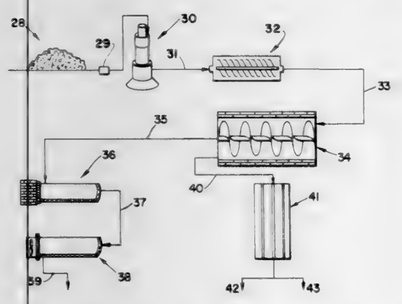
METHOD OF REDUCING AIR POLLUTION BY RECOVERING D-LIMONENE FROM CITRUS PULP PROCESSING OPERATION

Emory L. Cocke, Atlanta, Ga.; Fred W. Muncie, deceased, late of Detroit, Mich., and by John W. Muncie, executor, Grosse Pointe Park, Mich., assignors to Emory L. Cocke, Atlanta, Ga.

Filed Nov. 27, 1974, Ser. No. 527,718

Int. Cl.[2] A23L *1/00, 2/06*

U.S. Cl. 426—472 **7 Claims**



1. A method of reducing air pollution by recovering d-limonene from a process for the preparation of dried citrus pulp from a citrus residue, said method comprising:

a. subdividing a citrus residue having a volatilizable component comprising d-limonene, citrus oils, free water and bound water;

b. liming said citrus residue to convert a portion of the bound water to free water;

c. heating and agitating said limed residue where said heating is to a temperature sufficient to convert at least a portion of the remaining bound water to free water and to evaporate at least a portion of free water and liquids to thereby form (1) a vapor component comprising water, citrus oil and d-limonene, and (2) a concentrated solids component;

d. collecting and condensing said vapor component;

e. drying said concentrated solids component at an elevated temperature to remove a major amount of residual water and thereby form a citrus pulp; and

f. cooling said citrus pulp.

3,966,985

FLAVORING AGENT OBTAINED BY REACTING A MONOSACCHARIDE AND A SUPPLEMENTED PLASTEIN

David Andrew Jonas, Ramsgate, England, assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 548,916, Feb. 11, 1975, abandoned. This application Apr. 22, 1975, Ser. No. 571,010

Claims priority, application United Kingdom, Feb. 18, 1974, 7350/74

Int. Cl.[2] A23L *1/231*

U.S. Cl. 426—533 **17 Claims**

1. A process for preparing a flavoring agent which comprises reacting a mixture of one part by weight of a hexose or pentose monosaccharide and from about one to twenty parts by weight of a plastein supplemented with about 5 to 50% by weight, based on the supplemented plastein, of a sulfur-containing amino acid which is held in a state of peptide bonding to said plastein and which acid is selected from the group consisting of methionine, cysteine, cystine and lanthionine, in water as the reaction medium, the amount thereof providing at least about two parts by weight of water for each part of said supplemented plastein, at a temperature from about 80° to 120°C.

3,966,986

METHOD FOR ENHANCING TEA FLAVOR AND PRODUCT THEREOF

George L. K. Hunter, Atlanta, Ga.; Victor Krampl, Essen, Germany; Charles Thomas Malone, Doraville, Ga., and Gerald Edward Usher, Reading, England, assignors to Tenco Brooke Bond Limited, London, England

Continuation-in-part of Ser. No. 327,056, Jan. 26, 1973, abandoned, which is a continuation-in-part of Ser. No. 71,411, Sept. 11, 1970, abandoned. This application Oct. 29, 1974, Ser. No. 518,305

Int. Cl.[2] A23F *3/00, 1/22*

U.S. Cl. 426—534 **74 Claims**

39. A flavoring agent for enhancing the flavor and aroma of a final tea beverage consisting essentially of about 5–68% of at least one compound selected from the group consisting of linalool and linalool oxide, about 0–15% trans-2-hexenal, about 0–11% 1-penten-3-ol, about 0–8% trans-2-hexen-1-ol, about 2–16% cis-3-hexen-1-ol, about 0–21% iso-butanal, about 0–25% 2-methyl-butanal, about 0–17% propanal, about 0–10% pentanal, about 0–6% hexanal, about 0–46% acetaldehyde, about 0–16% phenylacetaldehyde, about 0–5% methyl salicylate, about 0–4% n-hexanol, about 0–2% ethyl acetate, about 0–0.6% alpha-terpineol, about 0–0.6% nerolidol, about 0–0.3% beta-ionone, about 0–0.3% iso-jasmone, about 0–0.7% benzaldehyde, about 0–2% n-pentanol, about 0–1% n-octanol, about 0–0.7% geraniol, about 0–3% iso-butanol, about 0–0.3 % iso-propanol, about 0–8% n-butanol, about 0–1% phenylethanol, about 0–5% propionic acid, about 0–1% iso-butyric acid, about 0–1.2% n-butyric acid, about 0–4% iso-valeric acid, about 0–4% n-valeric acid, about 0–0.6% 2-methylvaleric acid, about 0–0.06% iso-hexanoic acid, about 0–19% n-hexanoic acid, about 0–10% cis-3-hexenoic acid, about 0–10% trans-2-hexenoic acid and about 0–4% cis-2-penten-1-ol.

3,966,987

ELECTROCONDUCTIVE HIGH POLYMER COMPOSITION

Tetsuo Suzuki; Katsuhiro Mizoguchi, and Fumio Togo, all of Tokyo, Japan, assignors to International Flavors & Fragrances Inc., New York, N.Y.

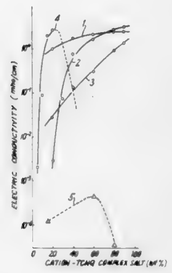
Filed Apr. 8, 1975, Ser. No. 566,613

Claims priority, application Japan, Apr. 17, 1974, 49-43554

Int. Cl.[2] H01B *1/06*

U.S. Cl. 252—500 **4 Claims**

1. A high polymer composition which consists essentially of a polymer selected from the group consisting of polyvinylpyridine, polyvinylquinoline, polyacrylonitrile and polyvinylcarbazole and 20 – 90% by weight of a 7,7,8,8-tetracyanoquinodimethane complex salt of N-methylacridinium and has an electric conductivity of at least 10^{-2} mho/cm.



3,966,988

FLAVORING COMPOSITIONS AND PROCESSES UTILIZING DITHIAZINE COMPOUNDS

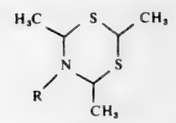
Richard Arnold Wilson, Westfield; Ira Katz, West Long Branch; Manfred H. Vock, Locust, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 166,683, July 28, 1971, abandoned. This application July 8, 1975, Ser. No. 594,099

Int. Cl.[2] A23L *1/231*

U.S. Cl. 426—535 **6 Claims**

1. A process for augmenting or enhancing the chicken flavor or aroma of a foodstuff which comprises adding to said foodstuff from about 0.02 up to 100 parts per million by weight of a compound having the structure:



wherein R is hydrogen or methyl.

3,966,989

FLAVORING METHODS AND COMPOSITIONS

Alan O. Pittet, Atlantic Highlands; John V. Pascale, Jackson, and Denis E. Hruza, Bricktown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 362,886, May 23, 1973, Pat. No. 3,906,119, which is a division of Ser. No. 201,545, Nov. 23, 1971, abandoned. This application June 2, 1975, Ser. No. 582,861

Int. Cl.[2] A23L *1/235*

U.S. Cl. 426—535 **5 Claims**

1. A process for imparting a fruity flavor to a foodstuff or augmenting an existing fruity flavor of a foodstuff which comprises adding to said foodstuff from about 0.05 up to 150 ppm of at least one sulfinate according to the formula:

wherein R_1 is selected from the group consisting of methyl, n-hexyl and n-decyl and R_2 is selected from the group consisting of methyl, n-hexyl and n-propyl, provided that when R_1 is methyl, R_2 is n-propyl, or n-hexyl; and provided that when R_2 is methyl, R_1 is n-decyl or n-hexyl.

3,966,990

GRANULAR MODIFIED STARCH BINDER FOR DOUGH FORMING OF PUFFABLE FOOD PRODUCTS

Charles W. Cremer; James E. Eastman, and Robert V. Schanefelt, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Feb. 11, 1974, Ser. No. 441,185

Int. Cl.[2] A23L *1/18*

U.S. Cl. 426—550 **11 Claims**

1. A dough for puffable food products including a dough binder comprising an alcohol washed, granular hydroxypropyl starch derivative obtained from hydrolyzed starch selected from the group consisting of waxy maize, waxy milo, waxy sorghum, waxy rice, waxy millet, potato, tapioca and arrowroot starch, said starch having an alkali fluidity in the range of 17–61 ml. for a 2.5 g. sample tested in .375N sodium hydroxide, said starch having been first treated with anhydrous disodium phosphate and then reacted with propylene oxide to a hydroxypropyl degree of substitution of 0.3 to 0.5, alcohol washed, and then dried to about 3–5 percent moisture to remove volatile residues, said binder comprising 30–70 percent by weight of said dough.

3,966,991

ANGEL FOOD CAKE MIX

Robert Edward Oborn, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 16, 1975, Ser. No. 623,134

Int. Cl.[2] A21D *2/02*

U.S. Cl. 426—555 **11 Claims**

1. In an angel food cake mix comprising sugar, edible farinaceous material and from about 6 to about 12% by weight of dried desugared egg white, the improvement comprising adding an alkali metal bisulfite thereto in an amount of from about 0.005 to about 1.0% by weight of the dried desugared egg white.

3,966,992

TREATMENT OF SOYA

Philip George Banks, Manchester, and William Pringle, Altrincham, both of England, assignors to The British Arkady Company Limited, Manchester

Filed Jan. 30, 1974, Ser. No. 438,173

Claims priority, application United Kingdom, Feb. 3, 1973, 5440/73

Int. Cl.[2] A23L *1/20;* **A23C** *21/00*

U.S. Cl. 426—583 **11 Claims**

1. A process for eliminating or destroying the trypsin inhibitor in soya without significantly affecting the quality of the soya protein, the process comprising heating a mixture comprising soya and whey at a temperature of at least the boiling point of water for a period of time and with an amount of whey sufficient to destroy or eliminate the trypsin inhibitor, and wherein the pH of the mixture is below 5.5.

3,966,993
PROCESS FOR MAKING SOLID SAUCE BAR

John V. Luck, Lakewood, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed May 20, 1970, Ser. No. 39,183
Int. Cl.² A23L 1/40, 1/195
U.S. Cl. 426—589 3 Claims

1. A process for making a sauce bar convertible on mixing with aqueous liquid into an edible sauce which comprises:
   a. intimately mixing together 40 to 60 parts of melted, edible emulsified triglyceride fat having acyl radicals of preponderantly C_{16}–C_{18} chain length and having a Wiley melting point of about 100° to 125°F. and a minimum of 30% Solid Fat Index at 70°F., and 15 to 40 parts of farinaceous flour, and 5 to 45 parts of condiment solids having particle size not substantially greater than about 30 microns;
   b. tempering the resulting mixture in an agitated tempering zone until fat crystals are generated, forming a solid bar of the tempered mixture under conditions precluding complete remelting of said fat crystals; and
   c. cooling the resulting bar until it is dimensionally stable at room temperature.

3,966,994
DRY STABLE INSTANT BEVERAGE MIX

Timothy James Kennedy, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 17, 1974, Ser. No. 489,291
Int. Cl.² A23L 2/00
U.S. Cl. 426—590 33 Claims

1. A substantially dry composition for providing flavorful beverages upon the addition of water consisting essentially of: a beverage flavor base containing phosphoric acid as a flavor component and acidulent; and a monoalkali orthophosphate in an amount at least equimolar to the phosphoric acid content of said flavor base;, said composition having been prepared by drying an admixture of water, said flavor base and said phosphate.

3,966,995
COFFEE SUBSTITUTE

Ruth A. Workman, 2109 Dymond St., Burbank, Calif. 91505

Filed Aug. 28, 1975, Ser. No. 608,449
Int. Cl.² A23F 1/14
U.S. Cl. 426—596 2 Claims

1. A material useful for brewing a beverage simulating coffee comprising the outer zone or cortex of carrot root subdivided and roasted to a dark brown colorand essentially devoid of the wood or pith of the core of the carrot root. color and

3,966,996
PROCESS FOR PREPARING SPHEROIDAL ALUMINA PARTICLES

Jacques Maurice Jules Andre, Brussels; Hugo Johannes van Thillo, Grimbergen; Rene Odon Lammers, Brussels; Henri Robert Debus, Meise, and Raymond Marc Cahen, Brussels, all of Belgium, assignors to Labofina S.A., Brussels, Belgium

Filed Feb. 10, 1975, Ser. No. 548,213
Claims priority, application Luxemburg, Feb. 18, 1974, 69407
Int. Cl.² C01F 7/02
U.S. Cl. 423—626 13 Claims

1. A process for preparing alumina beads from alumina hydrogel comprising
   a. preparing an aqueous mixture containing from 5–30% by weight alumina in the form of alumina hydrogel and from 0.25–20% by weight of a water-soluble acrylic monomer which is polymerizable to an uncross-linked water-soluble polymer or an uncross-linked gel polymer, said acrylic monomer being of the formula

$$CH_2{=}C(R^1){-}C(=O){-}R^2,$$

wherein R^1 is selected from a group consisting of —H and $-CH_3$ and R^2 is selected from the group consisting of $-OR^3$ and $-NR^3R^4$, wherein R^3 and R^4 are selected from the group consisting of —H and a hydrophylic radical,
   b. dispersing said aqueous mixture as droplets into a substantially water-immiscible fluid having a temperature of 50°–105°C. at atmospheric pressure to effect polymerization of said aqueous mixture,
   c. maintaining said droplets in said fluid until individual hard beads are formed, and
   d. drying and calcining said beads.

3,966,997
CHOCOLATE SOLID WAFER AND METHOD OF MANUFACTURE

Brian T. Warkentin, Sunnyvale, Calif., assignor to Shade Foods, Inc., Belmont, Calif.

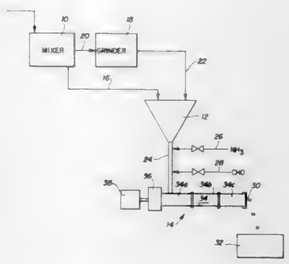
Continuation-in-part of Ser. No. 423,011, Dec. 10, 1973, abandoned. This application Feb. 3, 1975, Ser. No. 546,300
Int. Cl.² A23G 1/00
U.S. Cl. 426—631 2 Claims

1. A substantially unsweetened homogeneous solid chocolate composition consisting essentially of 25–40 weight percent of cocoa determined on a fat-free basis, 30–40 weight percent of a mixture of hydrogenated vegetable oil having a melting point of at least 100°F. and cocoa butter, said mixture containing 10–25% cocoa butter, 18–25 weight percent of starch, 0–10 weight percent of low-fat milk powder, 0.5–2.0 weight percent of an emulsifying agent and 0.5–3 weight percent of salt.

3,966,998
FEED SUPPLEMENTS FOR RUMINANTS

Robert M. Rawlings, and Anthony Ambrose Maher, both of Boise, Idaho, assignors to Blue Wing Corporation, Boise, Idaho

Filed June 19, 1974, Ser. No. 480,850
Int. Cl.² A23K 1/00
U.S. Cl. 426—630 16 Claims

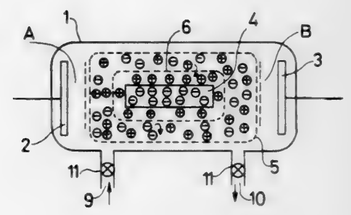


10. A method of producing solid particulate feed supplement for ruminants containing dispersed lipids within a protein-aldehyde complex which is substantially insoluble in the rumen but soluble in the abomasum and lower gut of said ruminants comprising:
   a. forming a mixture of a feed material comprising lipid and protein;
   b. comminuting said mixture and constantly admixing the comminuted mixture by augering said mixture in an extruder at a temperature within the range of from about 75°F to about 250°F and at a pressure in the range of from about 5 psig to about 50 psig to form a protein material with lipid globules thoroughly dispersed therein; and
   c. contacting said mixture during said augering with an effective amount of an activating agent to activate the protein material and with an effective amount of an aldehyde to react with said protein and form a protein-aldehyde complex around said lipid globules therein; and
   d. agglomerating and cooling the resulting mixture from step (c) to form said particulate feed supplement.

3,966,999
METHOD OF PROCESSING AN ORGANIC HIGH MOLECULAR WEIGHT FILM

Kazuo Horiguchi, Kyoto, Japan, assignor to Susmu Industrial Co., Ltd., Kyoto, Japan

Filed Aug. 16, 1974, Ser. No. 498,846
Claims priority, application Japan, Sept. 14, 1973, 48-104787
Int. Cl.² B05D 3/06
U.S. Cl. 427—41 6 Claims



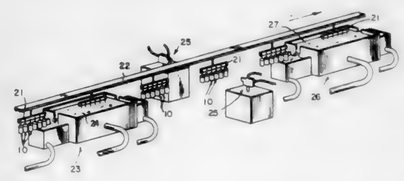
1. A method of producing an organic high molecular weight film soluble in an organic solvent and having an essentially uniform softening temperature in a glow discharge tube having discharge electrodes defining a plasma zone therebetween, which comprises the steps of electrically floatingly disposing at least one substrate within the plasma zone, disposing a pair of opposed perforated screening plates between the discharge electrodes, a respective one of the screening plates being adjacent a respective end of the plasma zone, each screening plate being disposed between one of the electrodes and one of the plasma zone ends, passing electric discharge from the discharge electrodes through the screening plates, electrically connecting the screening plates to each other, mounting a perforated plate between the screening plates and parallel to the substrate, the perforated plate extending over the whole area of the substrate, introducing a monomer through the perforated plate into the plasma zone, and depositing the monomer on the substrate to form the film.

3,967,000
RISER PROTECTION FOR ANODES

Gerhart P. Klein, Manchester, and Milton Kallianidis, Brockton, both of Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed June 13, 1974, Ser. No. 479,052
Int. Cl.² B05D 5/12, 3/00
U.S. Cl. 427—58 8 Claims

1. A method of applying a layer of material containing polytetrafluorethylene over a riser of an anode adapted for use in an electrical device comprising providing an anode comprising a body including electrically conducting material and a riser projecting from the body, masking the anode body with a liquid, directing particles of a material consisting essentially of polytetrafluorethylene entrained in a medium toward the anode, and depositing particles of said material over the anode

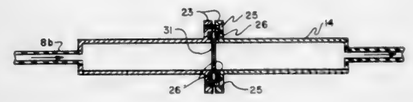


riser, said masking liquid being of such a nature that said particles will not adhere to the anode body.

3,967,001
PROCESS OF PREPARING A SECONDARY ELECTRON EMISSIVE COATING ON THE INTERIOR WALLS OF A MICROCHANNEL PLATE

Bipin C. Almaula, Alexandria, Va., and Philip G. Reif, Chatsworth, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 411,884, Nov. 1, 1973, abandoned. This application Sept. 20, 1974, Ser. No. 507,838
Int. Cl.² B05D 5/12
U.S. Cl. 427—78 8 Claims

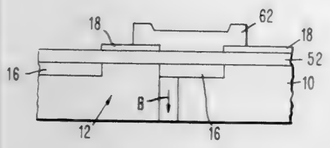


1. A process of preparing a secondary electron emission surface along the interior walls of a plurality of channels in a microchannel plate, the sequence of steps comprising:
   providing a source of inert gas;
   providing a source of nickel compound gas;
   securing said microchannel plate in a deposition chamber with the outer rim of said microchannel plate sealed air tight against the interior walls of said deposition chamber for forcing said inert gas and said nickel compound gas to flow only through said plurality of channels;
   simultaneously passing only said inert gas through said plurality of channels while heating the inside volume of said deposition chamber such that the heated inert gas is forced through the open channels of said microchannel plate to heat said microchannel plate to a temperature much higher than enough to decompose said nickel compound gas and continuing to pass said inert gas through the heated deposition chamber and said plurality of channels for an extensive time to stabilize the temperature of said microchannel plate;
   lowering the temperature of said deposition chamber and said inert gas passing through said plurality of channels wherein the temperature of the interior walls of said plurality of channels is sufficient to decompose said nickel compound gas;
   after the step of lowering the temperature, mixing said nickel compound gas and said inert gas in a mixture chamber prior to passing the resulting gas mixture through said plurality of channels at said lower temperature for sufficient time to decompose a nickel layer on the interior walls of said plurality of channels; and
   providing an absorption tank having a nitric acid solution therein at the output of said deposition chamber to neutralize the unreacted nickel compound gas passed through said absorption tank and exhausting the resulting harmless gases to the atmosphere.

3,967,002
METHOD FOR MAKING HIGH DENSITY MAGNETIC BUBBLE DOMAIN SYSTEM

George S. Almasi, Katonah; Robert J. Hendel, Beacon; George E. Keefe, Montrose; Yeong S. Lin, Mt. Kisco, and Richard P. McGouey, Mahopac, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1974, Ser. No. 537,797
Int. Cl.² C04B 35/00
U.S. Cl. 427—132 26 Claims



1. A method for fabricating magnetic bubble domain chips, comprising the steps of:
   forming a patterned magnetic layer over a substrate which includes a magnetic medium in which said bubble domains can exist, said patterned magnetic layer defining at least a sensor area and a propagation area of said bubble domain chip, said propagation area including ion implanted patterns along the edges of which said bubble domains move, said magnetic medium being ion implanted using a mask at least partially comprising said patterned magnetic layer,
   forming a patterned layer of non-magnetic electrically conductive material on specified portions of said magnetic layer using a critically aligned mask.

22. A method for fabricating a magnetic bubble domain chip, comprising the steps of:
   forming magnetic elements on a substrate comprised of a magnetic medium in which said bubble domains can exist,
   ion implanting said magnetic medium in areas surrounding said magnetic elements to produce ion implanted patterns along the edges of which said bubble domains will move in response to the reorientation of a magnetic field,
   forming a patterned metallic layer using a mask aligned with respect to said magnetic elements and said ion implanted regions.

3,967,003
HARDENING OF COATING CONTAINING ALUMINUM HYDROXYHALIDES USING A MIST OF ACETATE OR LACTATE

Harold Garton Emblem, Mirfield, and Graham Kenwood Sargeant, Dartford, both of England, assignors to Zirconal Processes Limited, England

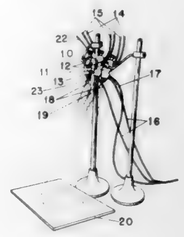
Filed Aug. 1, 1974, Ser. No. 493,783
Claims priority, application United Kingdom, Apr. 1, 1974, 14303/74
Int. Cl.² B05D 1/38
U.S. Cl. 427—133 5 Claims

1. A method of preparing a mold suitable for use in the casting of metals comprising the steps of (1) coating an expendible pattern with a composition consisting essentially of a finely divided refractory powder dispersed in an aqueous alcoholic solution of an aluminum hydroxyhalide of the general formula $Al_2(OH)_nX_{(6-n)}.mH_2O$ or a polymer thereof, where n is a number less than 6, m is a number less tha 4 and x represents a chlorine, bromine or iodine atom, (2) dusting a coarse refractory material onto the resulting wet coating and (3) then hardening the resulting coating by contacting it with a mist of a solution of an acetate or a lactate that renders the mist solution thereof alkaline.

3,967,004
METHOD FOR THE PRODUCTION OF FIBER-REINFORCED RESIN COMPOUNDS

Kouzou Oda, No. 436-1, Yashiro, Yashiro-cho, and Hidefumi Miki, No. 449-1, Yashiro, Yashiro-cho, both of Kato, Hyogo, Japan

Continuation-in-part of Ser. No. 284,055, Aug. 28, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,129
Int. Cl.² B05D 1/34, 1/36
U.S. Cl. 427—196 4 Claims

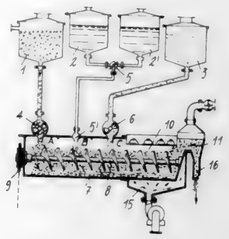


1. A method for the production of a fiber-reinforced resin compound, which comprises spraying onto a suitable substrate from three respectively different nozzles:
   1. an unsaturated polyester resin composition having a viscosity of about 3000 to 15000 Cps at 25°C;
   2. a fiber-reinforcing material and
   3. a thickening agent consisting essentially of magnesium oxide, magnesium hydroxide, calcium oxide, calcium hydroxide or beryllium oxide suspended in a liquid polyester resin or a mixture of a liquid polyester resin and styrene the amount of liquid resin being about 2 to 5 times by weight of the thickening agent, the weight of (1):(2):(3) being 100:20–55:3–30; said three respective streams of (1), (2) and (3) intersecting one another after exiting from said nozzles and prior to contacting said substrate to form one stream.

3,967,005
METHOD FOR ENVELOPING PELLETS OF FOAMED POLY-STYRENE SUITABLE FOR PRODUCING LIGHTENED MANUFACTURED ARTICLES OF CEMENT

Mario Cattaneo, Via Simplone, 6, Bergamo, Italy (24100)

Filed Dec. 11, 1974, Ser. No. 531,604
Claims priority, application Italy, Dec. 14, 1973, 3012/73
Int. Cl.² C04B 31/44
U.S. Cl. 427—202 5 Claims



1. A method for enveloping foamed polystyrene pellets suitable for producing lightened manufactured articles of cement, the method substantially comprising the continuous steps of:
   introducing a stream of foamed polystyrene pellets into a mixing unit;

   feeding the pellets to a first station of said unit;
   continuously introducing at said first station a proportioned amount of water and water dispersible synthetic resins;
   feeding the so wetted pellets to a second station of said unit;
   continuously introducing at said second station an inert filler in a proportioned amount;
   feeding all of the material to a third station of said unit;
   presenting an obstacle to the progression of material in said unit to cause momentary accumulation of said material at a drying and polymerization zone;
   applying heat to the accumulated material at said zone to enhance drying and polymerization of said material; and
   thereafter delivering said material to an outlet of said unit.

3,967,006
DRY PROCESS FOR THE PRODUCTION OF PLASTIC-COATED INORGANIC SUBSTANCES

Tadashi Yamaguchi; Takayuki Ono, both of Sendai; Hiroshi Hoshi, Narashino; Michio Hirakawa, and Isao Watanabe, both of Ichikawa, all of Japan, assignors to Lion Yushi Kabushiki Kaisha (Lion Fat & Oil Co., Ltd.), Tokyo, Japan

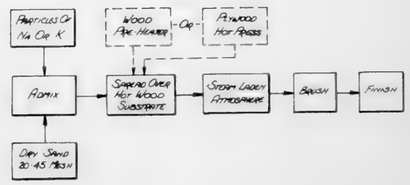
Filed Feb. 1, 1974, Ser. No. 438,534
Claims priority, application Japan, Feb. 3, 1973, 48-13918
Int. Cl.² B05D 7/00
U.S. Cl. 427—221 6 Claims

1. A substantially dry process for producing vinyl polymer coated inorganic particles which comprises applying to core particles of an inorganic granular material a surface coating of a vinyl monomer and suspending said monomer-coated particles in an atmosphere containing gaseous sulfur dioxide in the presence of a small amount of water or lower alcohol sufficient to initiate polymerization of said monomer coating on said core particles in the absence of a radical polymerizing agent for said monomer.

3,967,007
METHOD FOR PRODUCING DISTRESSED WOOD

Hong Man Lee, White Plains, N.Y., assignor to Champion International Corporation, Stamford, Conn.

Filed Nov. 6, 1974, Ser. No. 521,252
Int. Cl.² B05D 3/08
U.S. Cl. 427—223 9 Claims

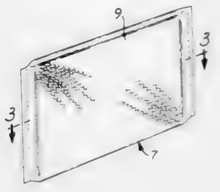


1. The method of distressing wood comprising the steps of admixing a quantity of particles selected from the group consisting of metallic sodium and metallic potassium with dry sand having a grain size of about 20 to 45 mesh, distributing said mixture over a surface of a wood substrate, introducing this wood substrate into a steam laden atmosphere, inducing spontaneous combustion in said particles in said steam laden atmosphere, and thereafter brushing said surface to remove burned residues and loose charcoal.

3,967,008
TREATMENT OF FABRICS IN MACHINE DRYERS

William G. Mizuno, and Iris N. Henderson, both of St. Paul, Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Division of Ser. No. 232,432, March 7, 1973. This application May 16, 1974, Ser. No. 470,565
Int. Cl.² B05D 3/12, 3/02
U.S. Cl. 427—242 9 Claims

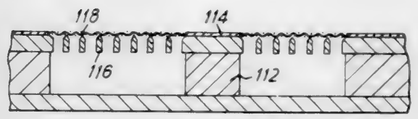


1. The method of conditioning fabrics which comprises the steps of:
   a. positioning a fabric-conditioning agent as a bar or consolidated, reuseable form, which form is solid at normal room temperature, within the drum of a machine dryer, said drum including a rotatable cylindrical drum wall, said agent being in a form which is heat softenable at temperatures within the operating temperature range of the dryer; and said agent being enclosed within a dispenser body having a permeable surface through which only a small amount of said enclosed fabric conditioning agent can pass when it is softened by heating of said dispenser body in a dryer, thereby allowing the enclosed fabric-conditioning agent to act as a long lasting reservoir for fabric conditioning agent which, after it passes through the permeable surface, is transferred to the fabric being treated by contact between the fabric and the permeable surface of the dispenser body; said dispenser body being secured to a portion of the dryer drum;
   b. drying and conditioning fabric by means of the step of tumbling fabric in said dryer by rotation of said cylindrical drum wall and by heating the dryer during rotation of said drum wall, thereby causing some of the fabric-conditioning agent to be transferred to the fabric by contact between the tumbling fabric and the permeable portion of said dispenser body.

3,967,009
METHOD FOR APPLYING LIQUID TO A SUBSTRATE

Charles William Blake, Basingstoke, England, assignor to McCorquodale Colour Display Limited, Basingstoke, England

Filed Sept. 13, 1974, Ser. No. 505,927
Claims priority, application United Kingdom, Sept. 13, 1973, 43119/73
Int. Cl.² B41M 5/00
U.S. Cl. 427—256 16 Claims



1. A method for applying liquid to a plurality of accurately defined spaced areas on each of a succession of like substrates, said method comprising the steps of:
   providing a rigid bed having a horizontal upper surface formed with a plurality of spaced outlets, said outlets being shaped and spaced to correspond with said defined

areas and containing porous or foraminous material having an upper surface substantially coplanar with said horizontal upper surface;

supplying liquid to said rigid bed such that liquid is in wetting contact with said material at each of said plurality of outlets and stands at a level no higher than said upper surface of said material;

successively applying said plurality of substrates with the application of pressure to said rigid bed such that said plurality of areas on each of said substrates is impressed onto said plurality of outlets; and

removing in turn each of said substrates from said rigid bed after application of said liquid.

3,967,010

PROCESS FOR THE PRODUCTION OF METAL-PLATED STAPLE FIBERS

Minoru Maekawa, Okayama, Japan, assignor to Kuraray Co., Ltd., Okayama, Japan

Filed Nov. 11, 1974, Ser. No. 522,895

Claims priority, application Japan, Nov. 30, 1973, 48-135580

Int. Cl.² B05D *3/04, 3/10*

U.S. Cl. 427—306 **12 Claims**

1. A process for the production of metal plated staple fibers comprising providing said fibers having an areal weight of 0.5 to 5.0 kg/m², activating said fibers and spraying an electroless metal plating solution onto the activated fibers at a space velocity of 100 to 600 m³ of said solution per m³ of said fibers per hour.

3,967,011

PROCESS FOR IMPREGNATING WOOD

James L. Dunn, Jr., Lake Jackson, and Harold G. Liddell, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 728,755, May 13, 1968, abandoned. This application June 25, 1973, Ser. No. 372,875

Int. Cl.² C08J *7/08*

U.S. Cl. 427—345 **6 Claims**

1. A substantially non-polluting wood treating process for the impregnation of wood with preservatives to obtain substantially uncolored, natural appearing wood which consists of

1. contacting, in a pressure vessel, wood with a solution of a wood preservative dissolved or suspended in a liquid halogenated hydrocarbon solvent at a pressure of from atmospheric pressure up to about 150 psig for a period of time sufficient to incorporate an amount of preservative into the wood and penetrate preservative to a depth into the wood to provide the desired protection, said solvent being non-flammable by Tag Closed Cup; having a specific gravity greater than 1.1, a heat of vaporization less than 150 BTU/No. (78.6 cal/gm) and immiscible with water;

2. removing excess solution from contact with the impregnated wood and

3. heating the wood under ambient pressure by contacting said wood with a flow of steam for a time sufficient to substantially remove the chlorinated hydrocarbon solvent therefrom, said steam being at from its atmospheric boiling point to its boiling point at about 30 psig; withdrawing the vapors from the pressure vessel and

4. condensing the vapors;

5. separating the solvent from the water condensate;

6. recycling the condensate water to the steam treatment for generation of steam, recycling the solvent for reuse in preparing the solution of wood preservative for the impregnation step.

3,967,012

METHOD OF MAKING A SEALING AND INSULATING COATING

Jakob Ebner, Regensburg, Germany, assignor to Gundermann GmbH & Co. KG, Regensburg, Germany

Continuation of Ser. No. 216,823, Jan. 10, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 457,129

Int. Cl.² B05D *3/02;* **B32B** *25/00*

U.S. Cl. 427—380 **1 Claim**

1. A process for applying an insulating, sealing and moisture-barrier coating to a solid concrete or metal body, comprising the steps of:

forming a thermally coagulatable emulsion composition of substantially equal parts by weight of a styrenebutadiene rubber latex, colloidal polystyrene, polyurethane and natural rubber latex, substantially 10% by weight of a mixture of substantially equal parts of polyethylene glycol ether and polyvinylmethylether as thermal sensitizers capable of coagulating said composition upon heating but not effecting coagulation in the absence of heating, a filler selected from the group which consists of asbestos fibers, asbestos meal and shale meal, and an antiaging stabilizer making up 60 to 75% of the composition and the composition having the consistency of a paste;

applying said composition in the form of a paste to said body;

heating said paste on said body to a temperature for a period sufficient to effect coagulation of the composition on said body without material evaporation of water therefrom, thereby forming a coherent layer; and

thereafter heating said layer to dryness to effect a chemical transformation of said layer and produce a tough adherent layer whose adhesivity increases until said layer is thoroughly dry.

3,967,013

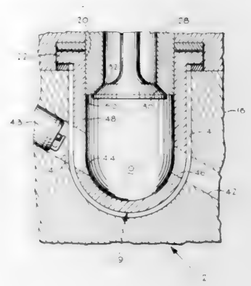
METHOD OF MAKING A COMPOSITE ARTICLE FOR RAPID HEATING

Louis J. Danis, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 408,697, Oct. 23, 1973, Pat. No. 3,892,216. This application Jan. 6, 1975, Ser. No. 538,821

Int. Cl.² C23C *1/08*

U.S. Cl. 427—383 **2 Claims**



1. The method of making a composite article for initial rapid heating and subsequent continuous rapid transfer of heat comprising the steps of:

a. forming a generally elongated tubular cup of copper material,

b. immersing said cup in a bath of molten material of eutectic aluminum-silicon alloy; and

c. removing said cup from the bath and heating same to a temperature in the range 775° – 835°C for a predetermined time such that said bath material is dispersed into said copper material.

3,967,014

RUBBER ARTICLES HAVING IMPROVED SLIP COATING

Pascal E. Esemplare, Mountainside, N.J., and Dennis Beeferman, Brooklyn, N.Y., assignors to Sutures, Inc., Coventry, Conn.

Division of Ser. No. 405,863, Oct. 12, 1973, Pat. No. 3,919,442. This application July 16, 1975, Ser. No. 596,529

Int. Cl.² B32B *25/08, 25/12, 27/00;* **A41D** *19/00*

U.S. Cl. 427—385 **5 Claims**

1. A method of providing an adherent, extensible, essentially rubber free slip coating on a rubber surface comprising contacting a rubber surface with an aqueous synthetic resin latex essentially free of rubber and comprising from 5 to 90 percent by weight of a first resin copolymer component selected from the group consisting of vinyl chloride-alkyl acrylate copolymer, vinylidene chloride-alkyl acrylate copolymer, and vinyl acetate-alkyl acrylate copolymer and from 95 to 10 percent by weight of a second resin copolymer component selected from the group consisting of vinyl chloride-vinyl ester copolymer and vinylidene chloride vinyl ester copolymer, to provide a coating of said latex on said rubber surface, and permitting said coating to form a resin slip coating on said rubber surface.

3,967,015

PROCESS FOR DYEING GLASS TEXTILES

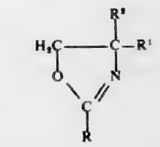
Jerry H. Hunsucker, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Continuation-in-part of Ser. No. 296,400, Oct. 10, 1972, abandoned. This application Apr. 1, 1974, Ser. No. 457,027

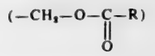
Int. Cl.² C03C *25/02;* **B05D** *1/38;* **D06P** *3/80;* **B32B** *17/04*

U.S. Cl. 427—386 **12 Claims**

1. In a process for dyeing a glass fiber textile by the steps of applying thereto a water-soluble thermosetting resin composition, heating to about 370°F for 30 minutes, immersing in a bath of disperse or acid dye at about 200°F for about 30 minutes and drying same, the improvement consisting of using as said resin composition a combination of (a) 60 parts of an oxazoline corresponding to the formula:



wherein R is heptadecyl and R^1 and R^2 can be methyl, ethyl, hydroxymethyl or the group



and can be the same or different, and (b) 40 parts of a thermosetting epoxy resin prepared by heating an epoxy resin with C_{18} mixed unsaturated fatty acids, followed by heating with trimethylolethane and dimethylolpropionic acid, then heating with phthalic anhydride and solubilizing the resin thereby produced with 2-amino-2-methyl-1-propanol.

3,967,016

REINFORCED WALLBOARD

Joseph W. Schneller, Williamsville; Duane C. Bennett, Eggertsville, and George P. Matiacio, Cheektowaga, all of N.Y., assignors to National Gypsum Company, Buffalo, N.Y.

Filed Aug. 28, 1974, Ser. No. 501,332

Int. Cl.² B05D *3/02, 1/18;* **B32B** *27/40*

U.S. Cl. 427—393 **8 Claims**

1. The method of improving the strength of paper-covered gypsum wallboard comprising the steps of impregnating substantially the full thickness, which is about .020 inch, of at least portions of the area of a paper cover sheet on the back face of a gypsum wallboard with a substantially water-free resinous solution and allowing said impregnant to solidify therein.

3,967,017

METHOD OF COATING A VEHICLE TEST BED ROLLERS

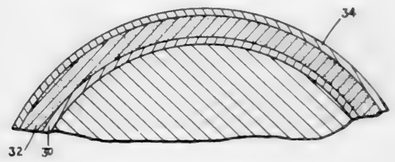
John Anthony Marten, Swan Lodge, Holt, Norfolk, England

Division of Ser. No. 318,906, Dec. 27, 1972, Pat. No. 3,841,151, Continuation-in-part of Ser. No. 124,403, March 15, 1971, abandoned. This application July 18, 1974, Ser. No. 489,804

Claims priority, application United Kingdom, Mar. 17, 1970, 12867/70

Int. Cl.² B05D *1/06*

U.S. Cl. 427—405 **7 Claims**



1. A method for coating a metallic roller with an abrasive, wear-resistant surface coating comprising the steps of:

coating said roller with an innermost layer of molybdenum particles;

flame spraying onto said innermost layer a first intermediate layer of stainless steel particles, a second intermediate layer of ceramic particles, and an outermost layer of stainless steel particles, said stainless steel particles being larger than said ceramic particles; and blending said molybdenum, stainless steel, and ceramic particles to form a composite molybdenum-ceramic-stainless steel core within said surface coating.

3. A method of covering a metallic roller comprising the steps of:

coating said roller with molybdenum particles;

flame spraying a first layer of stainless steel particles onto said molybdenum particles; and

coating said first layer with ceramic particles, said stainless steel particles being larger than said ceramic particles, whereby said ceramic particles blend into said first layer of stainless steel particles to produce an abrasive, wear-resistant surface coating on said roller.

3,967,018
METHOD OF SURFACE TREATMENT OF POLYTETRAFLUOROETHYLENE

Jiri Jansta, Kostelec nad Labem, and Frantisek Dousek, Prague, both of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Sept. 30, 1974, Ser. No. 510,731
Claims priority, application Czechoslovakia, Oct. 3, 1973, 6806-73
Int. Cl.² B32B *27/00*; **B05D** *1/18*
U.S. Cl. 427—430 **4 Claims**

1. A technique for treating the surface of polytetrafluoroethylene which comprises immersing the polytetrafluoroethylene in an alloy selected from the group consisting of (a) mercury and an alkali metal and (b) mercury and an alkali metal in combination with an alloy of mercury and an alkaline earth metal at a temperature less than 300°C.

3,967,019
ORNAMENTAL ARTIFICIAL TREE

Audra Fay Magee, 430 Huron Ave., Bogalusa, La. 70427

Filed Nov. 29, 1974, Ser. No. 528,016
Int. Cl.² A47G *33/06*
U.S. Cl. 428—7 **8 Claims**



1. A self-supporting, ornamental, artificial tree consisting essentially of:
a. a base;
b. a circular attaching member secured to said base;
c. a plurality of straight, rigid elongated support members attached at one of their ends to said base by attachment means to said attaching member and attached at their other ends one to the other to form an apex of a cone shape, said attached support members together forming the cone-shaped ornament support frame, said elongated members have formed in one end thereof a loop through which said attaching member passes; and
d. ornaments attached to said cone-shaped, ornament support frame.

3,967,020
COATED METAL PIPE

Masaru Uemura; Hitoshi Kuroki; Nobuhiro Echida; Yujiro Kosaka, and Kanji Otomo, all of Yokohama, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Japan

Filed Nov. 20, 1974, Ser. No. 525,661
Claims priority, application Japan, Feb. 15, 1974, 49-018870
Int. Cl.² F16L *58/10, 58/12*
U.S. Cl. 428—36 **16 Claims**

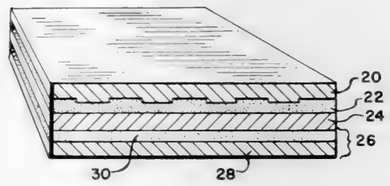


1. A coated metal pipe which comprises a pipe coated with a composition comprising 5–30 wt parts of ethylene-vinylacetate copolymer having a vinylacetate content of 15–40 wt% and a melt index of 1–1000 g/10 min; 2–20 wt parts of low molecular weight oxidized polymer of ethylene-vinylacetate copolymer, polypropylene or propylene-ethylene copolymer; 5–30 wt parts of styrene-butadiene copolymer; 5–50 wt parts of a rosin tackifier and 10–80 wt parts of asphalt.

3,967,021
DECALCOMANIAS EMPLOYED IN OFFSET TRANSFER PROCESS

Saul W. Weingrad, Hillsdale, N.J., assignor to Pictorial Productions, Inc., Mount Vernon, N.Y.

Division of Ser. No. 139,044, April 30, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,564
Int. Cl.² B44C *3/12*; **B32B** *7/06*
U.S. Cl. 428—40 **3 Claims**

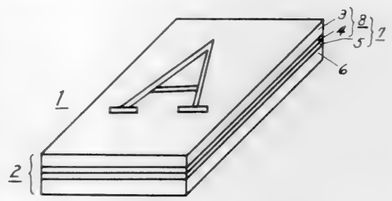


1. A decalcomania comprising;
a substrate,
a release layer bonded to said substrate,
a second adhesive film layer bonded to said release layer,
a design layer bonded to said second adhesive film layer, and
a first adhesive film layer bonded to said design layer, both of said first and second adhesive film layers being temperature sensitive, so that said first adhesive film layer softens and becomes adhesive when heated to a temperature within a first temperature range and said second adhesive film layer softens and becomes adhesive when heated to a temperature within a second temperature range, said first temperature range is from about 100°F to about 110°F said second temperature range is from about 150°F to about 160°F. both said first and second adhesive film layers being substantially non-adhesive outside of said first and second temperature ranges, respectively.

3,967,022
ADHESIVE LABEL

Taeko Hasei, 25 Go 4 Ban, Ekimae cho 2-chome, Okayama, Japan

Filed Apr. 25, 1975, Ser. No. 571,848
Claims priority, application Japan, May 2, 1974, 49-049897
Int. Cl.² B32B *7/06, 7/12*; **G09F** *3/02, 3/04*
U.S. Cl. 428—40 **6 Claims**



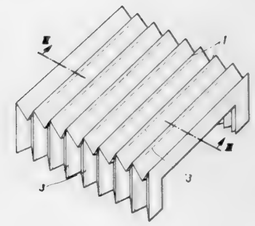
1. A laminate consisting of
a flat backing board,

one major face of a vinylchloride film removably adhered to the backing board through the inherent adhesiveness of the film and not through use of a bonding agent,
a releasing agent on the other surface of the vinylchloride film,
a coating of an adhesive agent on said other surface of the vinylchloride film,
the releasing agent enabling the vinylchloride film to be peeled off the adhesive agent coating, and
a sheet bonded to the adhesive agent coating and carrying printed information.

3,967,023
ACCORDION-PLEATED ARTICLE OF MANUFACTURE

Franz Lysek, Bielefeld, Germany, assignor to Moeller-Werke GmbH, Brackwede, Germany

Continuation of Ser. No. 339,106, March 8, 1973, abandoned. This application Jan. 8, 1975, Ser. No. 539,610
Int. Cl.² B65G *13/00*
U.S. Cl. 428—102 **5 Claims**

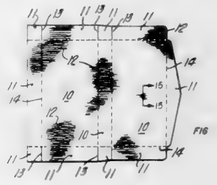


1. A cover, particularly for covering a guide element of predetermined cross-section, comprising a single-ply elongated channel-shaped cover element provided with a plurality of accordion pleats, each having an outer folded edge region; and shape-retaining reinforcing members of flexible but kink-resistant sheet material mounted in said edge regions of at least some of said pleats and extending across the free cross-section of said cover element, said members being formed with cut-outs adapted to matingly interengage with the guide element being covered, whereby such mating interengagement prevents said cover from accidentally lifting off the guide element.

3,967,024
FROZEN FISH PACKAGE

Laurence R. Beath, Kenogami, and Alexander M. Vessie, Lachute, both of Canada, assignors to The Price Company Limited, Quebec, Canada

Filed Mar. 18, 1974, Ser. No. 451,971
Int. Cl.² B32B *3/26*
U.S. Cl. 428—155 **6 Claims**



1. A folder comprising a fibrous paperboard body covered on both faces by compression-fracturable, wax-blend coatings which are substantially impervious to water and water vapour, each of said coatings having a large number of compression micro-fractures rendering the folder pervious to air but substantially impervious to water.

3,967,025
MAGNETIC RECORDING MATERIAL

Takashi Tanabe, and Tomio Adachi, both of Sagamihara, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 300,174, Oct. 24, 1974, abandoned. This application June 28, 1974, Ser. No. 484,152
Claims priority, application Japan, Oct. 27, 1971, 46-84663
Int. Cl.² G11B *5/70, 5/78, 5/84*
U.S. Cl. 428—155 **6 Claims**

1. A magnetic recording material comprising a base film of a crystalline polymer and a magnetic layer coated on a first surface of said base film, the first surface of said base film on which the magnetic layer is coated being sufficiently smooth to prevent the occurrence of dropout, the second surface of the film being finely rugged to impart good running property to the base film, such fine ruggedness resulting from
differentially crystallizing said base film such that said second surface has at least 5 percent higher degree of crystallization than said first surface and thereafter stretching said film in at least one direction whereby said second surface, having the higher degree of crystallization, becomes finely rugged, such good running property resulting solely from said fine ruggedness of said second surface,
said base film not containing fine particles in an amount to impart noticeable ruggedness or dropout to the film.

3,967,026
CAMOUFLAGE SHEET AND METHOD FOR MANUFACTURING THE SAME

Gunnar Dalblom, Solna, Sweden, assignor to Barracudaverken Aktiebolag, Gamleby, Sweden

Filed Oct. 25, 1974, Ser. No. 518,206
Claims priority, application Sweden, Nov. 1, 1973, 7314888
Int. Cl.² B32B *3/00*; **E04F** *10/00*
U.S. Cl. 428—195 **11 Claims**



1. A method of manufacturing a camouflage sheet bearing an overall camouflage pattern composed of a plurality of contiguous component patterns having the general outline of a 3-, 4-, 6-, or 8-sided figure and each coextensive with a respective zone of the sheet, wherein the individual component patterns present the same irregular pattern features and the overall pattern is built up by separately applying the pattern features to the respective zones of the sheet and arranging for the pattern features of at least the majority of adjacent pairs of component patterns to be angularly offset relatively to one another by at least 45° and at most 315°.

3,967,027

STABLE ELECTRET RETAINING A HIGH SURFACE POTENTIAL AND METHOD OF MAKING THE SAME

Yuriko Igarashi, Musashino, and Haruko Kakutani, Tokyo, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 99,974, Dec. 21, 1970, abandoned. This application May 8, 1974, Ser. No. 468,102
Claims priority, application Japan, Dec. 19, 1969, 44-101622
Int. Cl.² B32B 7/02, 7/04, 31/12
U.S. Cl. 428—212 12 Claims



1. A stabilized layer electret having a high surface potential consisting of a laminate of a plurality of unit electrets, free from metal layers, each unit electret is formed from a sheet of film of a first high molecular weight plastic substance selected from the group consisting of polymethyl (methacrylate), poly (ethylene terephthalate), polycarbonate, polyvinylidene fluoride and mixtures thereof, said unit electrets being laminated in such a manner that surfaces to be faced to each other have opposite charges, and insulation layers of a second high molecular weight plastic substance having an electrical volume resistivity on the order of at least 10^{15} ohm-cm having a higher electrical resistivity than said first plastic substance, said insulation layers having a a thickness of from 4 to 100 microns and being applied at least to both outer surfaces of said laminate.

6. In a method of producing a layered electret comprising forming a laminate of a plurality of unit electrets wherein each unit electret is formed from a sheet of film of a high molecular weight organic substance selected from the group consisting of polymethyl (methacrylate), poly(ethylene terephthalate), polycarbonate, polyvinylidene fluoride and mixtures thereof, the improvement which consists of laminating said unit electrets in such a manner that the surfaces facing one another are of opposite charges, and covering both outer surfaces of said laminate with a thin film of a high molecular weight organic substance having an electrical volume resistivity on the order of at least 10^{15} ohm-cm and an electrical volume resistivity higher than that of said polar high molecular weight organic substance.

3,967,028

SEALED FOAM WEB

Heinz Müller, Hamburg; Bodo Szonn, Pinneberg; Peter Jauchen, and Rolf Schulze, both of Hamburg, all of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

Filed Dec. 12, 1974, Ser. No. 532,109
Claims priority, application Germany, Dec. 21, 1973, 2363802
Int. Cl.² B32B 3/26
U.S. Cl. 428—214 8 Claims

1. A sealed foam web which comprises a web of polyurethane, polyvinyl chloride or polyethylene foam, at least one side of which is covered with an adhesive intermediate layer of elastic polyurethane, said intermediate layer being bonded to said web and to a thin, hard thermosetting plastic sealing layer of a urea-formaldehyde resin or a melamine resin.

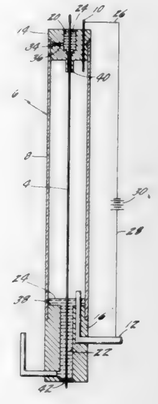
2. A web according to claim 1 wherein said sealing layer is up to 10 microns in thickness, and said intermediate layer is up to 70 microns in thickness.

3,967,029

BORON-CARBON ALLOY TAPE

Richard D. Veltri, East Hartford, Conn.; Roy Fanti, Springfield, Mass., and Francis Salvatore Galasso, Manchester, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 2, 1973, Ser. No. 337,358
Int. Cl.² C23C 11/00
U.S. Cl. 428—216 6 Claims



1. A high strength composite tape at least one mil in thickness suitable for use as a reinforcement in resin or metal matrix composite articles comprising:

a substrate consisting essentially of carbon tape; and

a continuous coating adhered to the entire surface of said substrate consisting essentially of boron-carbon alloy, said coating consisting essentially of 15–40 atomic percent carbon, remainder boron.

3,967,030

SILOXANES

Gordon Carlton Johnson, Armonk; Richard Bruce Metzler, Ossining, both of N.Y., and Donald Leroy Bailey, Sistersville, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 390,408, Aug. 22, 1973. This application Jan. 22, 1975, Ser. No. 543,127
Int. Cl.² B32B 33/00
U.S. Cl. 428—266 5 Claims

1. An article of manufacture, a textile having improved water repellency, said textile having been treated with about 0.2 to about 3 weight per cent, based on the dry weight of the textile, of a quadripolymer siloxane having the average structure

$$R_3SiO(R_2SiO)_a(RHSiO)_b(H_2SiO)_cSiR_3$$

in which a has a value of from 27 to 55, b has a value of from 4 to 15, c has a value of 4.5 to 10, the ratio of b:a is from 0:1:1 to 0.35:1, the ratio of c:a is from 0.1:1 to 0.25:1, the ratio of b:c is from 0.9:1 to 1.6:1, the degree of polymerization is from about 35 to 80; and R is alkyl of from 1 to 3 carbon atoms.

3,967,031

PRINTABLE PRESSURE-SENSITIVE ADHESIVE TAPE

Richard J. Lambert, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 252,096, May 10, 1972, abandoned. This application Apr. 25, 1974, Ser. No. 463,979
Int. Cl.² C09J 7/02
U.S. Cl. 428—294 6 Claims

1. In a pressure-sensitive tape comprising a backing, a layer of normally tacky and pressure-sensitive adhesive coated over and firmly adherently bonded to the face side of said backing, and a low adhesion backsize coated over and firmly adherently bonded to the back side of said backing,

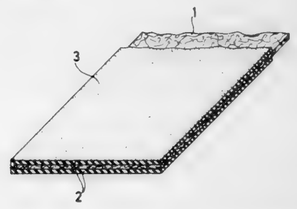
the improvement which comprises (1) utilizing biaxially oriented polyethylene terephthalate film as the backing and (2) utilizing as the low adhesion backsize a blend of polymers consisting essentially of 5 to 80 parts by weight of cellulose acetate butyrate and correspondingly 95 to 20 parts by weight of synthetic polymer selected from the class consisting of linear saturated ethylene terephthalate:ethylene isophthalate copolyesters, whereby (a) the back side of said tape can be printed with flexographic ink indicia and said adhesive will not remove more than about 5% of said indicia when placed in contact therewith and subsequently stripped away, (b) when wound in roll form and unwound therefrom, the unwind force of the tape will not exceed about 70 ounces per inch of width, and (c) the tape will display in adhesion value of at least 95%.

3,967,032

BITUMINIZED ROOF SHEET

Kurt Plotz, Waldems; Klaus Breschar, Schwalbach, Taunus, and Albert Klein, Frankfurt am Main, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sept. 5, 1974, Ser. No. 503,331
Claims priority, application Germany, Sept. 8, 1973, 2345484
Int. Cl.² E04D 5/02, 5/06; B32B 27/02
U.S. Cl. 428—300 7 Claims



1. In a bituminized roofing material comprising a sheet of bitumen reinforced with a spun fleece of synthetic polyester filaments, said filaments having a filament bonding coating thereon, the improvement which comprises a filament bonding coating consisting essentially of a copolymer of 45 to 55 weight percent of an acrylic or methacrylic acid ester of a monohydric alcohol having from 1 to 8 carbon atoms, from 24 to 30 weight percent of acrylonitrile from 12.5 to 30 weight percent of styrene and from 0.5 to 2.5 weight percent of acrylic acid amide.

4. The method of making a bituminized roofing material which comprises forming a spun fleece of synthetic polyester filaments, impregnating said fleece with a neutral to weakly alkaline aqueous dispersion of a copolymer of 45 to 55 weight percent of an acrylic or methacrylic acid ester of monohydric alcohol having from 1 to 8 carbon atoms, from 24 to 30 weight percent of acrylonitrile, from 12.5 to 30 weight percent of styrene and from 0.5 to 2.5 weight percent of acrylic acid amide, drying said fleece to cause said copolymer to bond the filaments of said fleece, calendering said fleece and thereafter bituminizing and sanding the impregnated and calendered fleece.

3,967,033

FIRE-RETARDANT PANEL CONSTRUCTION

Robert E. Carpenter, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Dec. 22, 1975, Ser. No. 643,517
Int. Cl.² B32B 3/26
U.S. Cl. 428—307 6 Claims

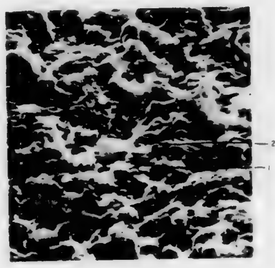
1. A fire-resistant insulating structural panel having outer planar metallic skin surfaces and a laterally coextensive inner core assembly of a layer of foamed polymeric material of which at least one side thereof adjoins a thermal barrier layer comprising a solid water-in-oil emulsion wherein the continuous phase is a thermoset polymerization product of an unsaturated linear polyester and a vinyl monomer crosslinking agent.

3,967,034

PRESSURE SENSITIVE COATINGS

Frederick Weldon Meadus; Bryan David Sparks, and Ira Edwin Puddington, all of Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Dec. 20, 1972, Ser. No. 316,726
Claims priority, application Canada, Dec. 22, 1971, 130879
Int. Cl.² C08L 29/04, 31/04, 39/06, 91/00
U.S. Cl. 428—323 28 Claims



1. A composition, which on drying on a substrate forms a pressure- and heat sensitive coating comprising (a) meldable organic particles consisting of a mixture of stearic acid and hydroxystearic acid of about 0.001 to 50 micrometers in diameter, said particles being formed by precipitation from a solvent and having a melting point above about 55°C, the particles being of substantially uniform colour, that will provide a visible change from a light to a darker colour, when subjected to plastic flow or deformation by heat or pressure, (b) a liquid carrier, being a poor solvent for the organic particles at least at room temperature, in sufficient amount to give a fluid system, and (c) a binder, dispersed or dissolved in the carrier to provide adhesion for the organic particles to a substrate without decreasing the pressure or heat deformability of the organic particles.

3,967,035

COATED CEMENTED CARBIDE PRODUCT

Thomas Eugene Hale, Warren, Mich., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 339,653, March 12, 1973, Pat. No. 3,914,473, which is a division of Ser. No. 147,240, May 26, 1971, Pat. No. 3,736,107. This application May 15, 1975, Ser. No. 577,804

The portion of the term of this patent subsequent to May 29, 1990, has been disclaimed.

Int. Cl.² C23C 11/08

U.S. Cl. 428—336 3 Claims

1. The product prepared by the process of coating a cemented carbide substrate with a fully dense alpha aluminum oxide coating of from 1–20 microns thickness, which process comprises contacting the carbide substrate with aluminum halide vapor, water vapor and hydrogen gas (over the carbide substrate) at a temperature of from about 900° – 1250°C, the ratio of water vapor to hydrogen gas being between about 0.025 and 2.0, to form a layer of fully dense alpha aluminum oxide on said substrate.

3,967,036

FLUX-COATED ARC WELDING ELECTRODE

Edward Peter Sadowski, Ringwood, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed July 11, 1974, Ser. No. 487,780

Int. Cl.² B32B 9/00, 15/18

U.S. Cl. 428—386 4 Claims

1. A flux-coated arc welding electrode consisting essentially of a metal electrode and a welding flux bonded as a coating on the electrode, said electrode being a maraging stainless steel consisting essentially of up to 0.05% carbon, 6.5% to 8% nickel, 9.5% to 11.5% chromium, 0.5% to 0.9% silicon, up to 1% molybdenum, up to 0.1% manganese, up to 0.1% aluminum, up to 0.1% titanium, up to 0.01% sulfur, up to 0.015% phosphorus and balance iron, said welding flux consisting essentially of the baked residue from a flux mixture consisting essentially of about 21% to 35% calcium carbonate, 20% to 26% cryolite, 21% to 35% titania, 2% to 4% bentonite, 3.5% to 7.7% chromium as ferrochromium, 2½% to 5% manganese combined in material selected from the group consisting of ferromanganese, manganese carbonate and mixtures thereof proportioned according to the relationship (%Mn as FeMn)+½(%Mn as $MNCO_3$) equal about 2½% to about 5%, and with the sum of %$MnCO_3$ plus %$CaCO_3$ not exceeding about 44% and the sum of %$MnCO_3$ plus %TiO_3 not exceeding about 42%, and an addition of liquid silicate selected from the group consisting of sodium silicate and potassium silicate and mixtures thereof in an amount effective as a binder, with the proportion of baked flux weight to electrode metal weight being at least 0.3 to one and not exceeding about 0.4 to one, said flux-coated electrode being characterized by capability for providing a weld deposit wherein the manganese content does not exceed 0.85% manganese.

3,967,037

FRICTION MATERIAL FOR BRAKE LININGS AND THE LIKE

Alfred Marzocchi; Albert E. Jannarelli, both of Cumberland, R.I., and David W. Garrett, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 12, 1974, Ser. No. 460,628

Int. Cl.² B32B 5/16; F16D 13/60

U.S. Cl. 428—392 9 Claims

1. A friction material suitable for use in brake linings or pads, comprising from 30 to 60 percent by weight of randomly orientated glass fibers, from about 12 to 20 percent by weight of a resinous binder selected from the group consisting of a thermoset phenolic resin and aniline-formaldehyde resin, from about 2 to 8 percent by weight of a binder-modifying material selected from the group consisting of the carbonates and hydroxides of calcium, barium and aluminum, tetralkyl silicates and alkyl siloxanes wherein the alkyl groups, in both cases, have from 1 to 4 carbon atoms, and aromatic silicates and siloxanes having a hydroxy function, from about 5 to 20 percent by weight of a particulate heat-conducting material, from about 2 to 5 percent by weight of an elastomer, from about 5 to 15 percent by weight of a particulate filler, and from 5 to 15 percent by weight of a friction-modifying material.

3,967,038

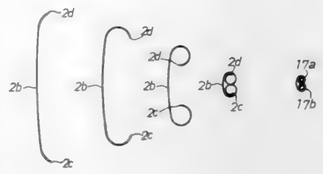
UNTWISTED SYNTHETIC RESIN STRING AND APPARATUS FOR MANUFACTURING THE STRING

Fusao Katagi, Sakai, Japan, assignor to Katagi Goseikagaku Kabushiki Kaisha, Sakai, Japan

Filed Oct. 22, 1974, Ser. No. 516,958

Int. Cl.² B32B 3/04; D02G 3/00

U.S. Cl. 428—397 3 Claims



1. An untwisted synthetic resin string, consisting essentially of a longitudinally stretched polyolefin resin film including two rolled portions, each spiral in cross section, formed by rolling the opposite side edges of the film toward each other, the rolled portions being parallel to each other in the longitudinal direction, wherein said rolled portions contact each other and only the outermost peripheral layers of the rolled portions which are in contact are thermally fused together, and the interior spirally rolled layers of each rolled portion are in loose contact with adjacent layers.

3,967,039

COATED ALKALI METAL CHLORITE PARTICLES

Leon Ninane, Bierges, and Willy Kegelart, Brussels, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Apr. 17, 1973, Ser. No. 352,048

Claims priority, application Belgium, May 4, 1972, 117080

Int. Cl.² B32B 9/00

U.S. Cl. 428—403 9 Claims

1. An alkali metal chlorite-containing product comprising (*a*) alkali metal chlorite-containing particles and (*b*) a coating on said particles, said coating being an inorganic salt selected from the group consisting of sodium nitrate, sodium carbonate, sodium bicarbonate, sodium phosphate, sodium silicate, sodium chloride, potassium nitrate, potassium carbonate, potassium bicarbonate, potassium phosphate, potassium silicate, potassium chloride and mixtures thereof.

3,967,040

PRODUCTION OF COLORED GLASS BODIES

Émile Plumat, Gilly; Jean Schottey, Montignies-sur-Sambre, and Francois Toussaint, Montignies le Tilleul, all of Belgium, assignors to Glaverbel-Mecaniver, Watermael-Boitsfort, Belgium

Continuation of Ser. No. 293,033, Sept. 28, 1972, abandoned. This application Dec. 18, 1974, Ser. No. 534,137

Claims priority, application Luxembourg, Oct. 1, 1971, 63992

Int. Cl.² C03C 21/00

U.S. Cl. 428—410 18 Claims

1. A process for imparting a desired coloration to a body of ordinary soda-lime-silica glass which is free of phosphorus pentoxide and formed from a vitrifiable composition, by diffusing a substance into surface layers of the body from a medium contacting the body, comprising the steps of:

introducing a reducing agent into such surface layers by diffusion starting from the outer surface of the body, to cause such agent to be concentrated in such layers in an amount of at least 1% by weight;

placing the body surface, after said step of introducing, into contact with such a medium composed of a mixture of (*a*) a salt furnishing reducible silver metal ions in an amount sufficient to impart coloration to the body, and capable of being reduced by the reducing agent and (*b*) a diluting agent constituted by a salt of another metal, furnishing metal ions which diffuse into the body in exchange for smaller ions initially present in the body, the total concentration in the medium of the salt furnishing reducible silver metal ions being less than one hundred parts per million; and

during said step of placing, maintaining the surface layers at a temperature which causes such reducible silver metal ions to diffuse into the body surface layers and to be chemically reduced by the reducing agent and such ion exchange to induce in surface layers of the body compressive stresses which are prevented from relaxing entirely during the course of said step of placing, said diffusion of reducible silver metal ions and said ion exchange occurring similtaneously.

3,967,041

MODIFYING TEXTILES AND FIBERS

Heinz Abel, Reinach, Switzerland; Bryan Dobinson; George Edward Green, both of Cambridge, England; Melvin Harris, Dornach, Switzerland; Bernard Peter Stark, and Kenneth Winterbottom, both of Cambridge, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 30, 1973, Ser. No. 392,921

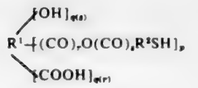
Claims priority, application United Kingdom, Sept. 1, 1972, 40647/72

Int. Cl.² B32B 27/06, 27/32

U.S. Cl. 428—419 18 Claims

1. A process for imparting shrink-proof and durable press properties to keratinous material which comprises

1. treating the material with a polythiol ester of the formula



where

R^1 represents an aliphatic or araliphatic hydrocarbon radical of at least 2 carbon atoms, or an aliphatic or araliphatic hydrocarbon radical of at least 2 carbon atoms which contains one ether oxygen atom,

R^2 represents an alkylene group of at most 6 carbon atoms,

p is an integer of from 2 to 6,

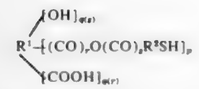
q is zero or a positive integer of at most 3, such that $(p+q)$ is at most 6, and

r and s each represent zero or 1 but are not the same, and

2. causing the polythiol ester to cure on the material by reaction with a polyene having a molecular weight of at least 250 and at most 10000 and containing, per average molecule, at least two ethylenic double bonds each β to an oxygen or nitrogen atom,

the sum of such ethylenic double bonds in the polyene and of the mercaptan groups in the polythiol ester being more than 4 and at most 8, the combined weight of the polyene and the polythiol ester being from 0.5 to 15% by weight of the keratinous material treated, and the amount of the polyene being such as to supply up to 1.2 ethylenic double bonds per mercaptan group of the polythiol ester.

12. Keratinous material bearing thereon 0.5 to 15% by weight, calculated on the weight of the keratinous material, of a cured product comprising a polythiol ester of the formula



where

R^1 represents an aliphatic or araliphatic hydrocarbon radical of at least 2 carbon atoms, or an aliphatic or araliphatic hydrocarbon radical of at least 2 carbon atoms which contains one ether oxygen atom,

R^2 represents an alkylene group of at most 6 carbon atoms,

p is an integer of from 2 to 6,

q is zero or a positive integer of at most 3, such that $(p+q)$ is at most 6, and

r and s each represent zero or 1 but are not the same, and a polyene having a molecular weight of at least 250 and at most 10000 and containing, per average molecule, at least two ethylenic double bonds each β to an oxygen or nitrogen, atom, the sum of such ethylenic double bonds in the polyene and of the mercaptan groups in the polythiol ester being more than 4 and at most 8.

3,967,042

FUSER BLANKET

Harold B. Laskin, New Brighton, and Robert H. Valentine, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 12, 1973, Ser. No. 322,915

Int. Cl.² B32B 27/00

U.S. Cl. 428—422 7 Claims



1. A composite article suitable for use as a fuser blanket comprising a dimensionally-stable substrate having bonded to one surface thereof a thin, resiliently compressible layer comprising a fluorinated elastomer, and overlying said fluorinated elastomer and bonded thereto a thin, resiliently compressible layer comprising a silicone elastomer, said silicone elastomer having a release value of less than 100 grams per inch.

2. The article of claim 1 wherein said fluorinated elastomer is a fluorosilicone elastomer.

3,967,043

ASBESTOS ARTICLES HAVING DUSTPROOF PROPERTIES

Takashi Otouma, Yokohama, and Michio Nakamura, Odawara, both of Japan, assignors to Nippon Asbestos Company, Ltd., Tokyo, Japan

Filed Jan. 3, 1974, Ser. No. 430,590

Claims priority, application Japan, Mar. 26, 1973, 48-34299

Int. Cl.² B32B 19/02

U.S. Cl. 428—443 2 Claims

1. An asbestos product which exhibits dustproof effects comprising an asbestos article impregnated in the interior substrate thereof by the reaction product of formaldehyde and a water-soluble organic compound reacted therewith to form a water-insoluble compound under weakly alkaline conditions in an atmosphere maintained at a high temperature and a high humidity, said reaction product being present in an amount of 0.05 to 10 wt.% based on the total weight of the asbestos product, said asbestos product having a surface layer of 0.04 to 0.09 wt.% based on the weight of the said asbestos product

of a film of a water-soluble macromolecular substance, said asbestos product having 1.5 – 30wt. % based on the weight of the asbestos product of a polyhydric alcohol plasticizer therein.

3,967,044

COPPER COATINGS ON SHAPED PLASTIC SUPPORTS

Wilhelm Brandt, Wertach, and Irmgard Bindrum, Wiesbaden-Biebrich, both of Germany, assignors to Hoechst Aktiengesellschaft, Germany

Division of Ser. No. 312,269, Dec. 5, 1972. This application June 26, 1975, Ser. No. 591,557

Claims priority, application Germany, Dec. 8, 1971, 2160822

Int. Cl.² B05D *5/12*

U.S. Cl. 428—457 **4 Claims**

1. A process for metallizing the surface of a shaped plastic support selected from the group consisting of polyesters, polyolefins, polyimides and acrylonitrile-butadiene-styrene copolymers comprising

producing on said surface a conductive layer of a surface resistance in the range of about 1 to less than 10^{12} ohms by incorporation of carbon black into said surface in an amount sufficient to obtain a surface resistance in the stated range,

and vapor depositing copper in a high vacuum on said conductive surface to form a coating on the shaped plastic support.

3,967,045

PRE-COATED METAL SHEET

Moriji Kurobe; Toshimi Araga; Nobuhiro Ito, all of Nagoya; Shigeyuki Sato, Iwakura, and Hidero Takahashi, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

Filed July 3, 1974, Ser. No. 485,592

Claims priority, application Japan, July 5, 1973, 48-76277

Int. Cl.² B32B *15/08, 27/30*

U.S. Cl. 428—463 **7 Claims**

1. In a precoated metal sheet comprising a metal sheet and an acrylic resin coating, the improvement which comprises an acrylic resin coating comprising a dispersion of a granular rubbery material in an acrylic-based resin matrix which resin matrix contains monomer units having functional groups which cross-link upon heating and which resin matrix is glassy at room temperature, said resin coating comprising from **70** to **99** wt. percent of said acrylic-based resin matrix and from **1** to **30** wt. percent of said granular rubbery material.

ELECTRICAL

3,967,046

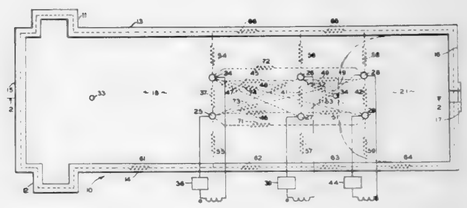
APPARATUS AND METHOD FOR INCREASING FURNACE LIFE IN AN ELECTRIC FURNACE FOR THERMOPLASTIC MATERIALS

Magnus L. Froberg, Granville, and John F. Maddux, Heath, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Feb. 18, 1975, Ser. No. 550,809

Int. Cl.² C03B *5/02*

U.S. Cl. 13—6 **19 Claims**



1. A system for heating molten thermoplastic material by Joule effect comprising a container for the molten thermoplastic material; sidewalls for said container having an electrical resistivity less than the electrical resistivity of such molten thermoplastic material at the operating temperatures of the system; an array of electrodes in said container having portions adapted for contact with such material, certain of said electrodes being mated; and means for applying electrical power to such material through said electrodes for heating such material by the Joule effect, said source being so applied as to impose the greatest voltage across said thermoplastic material between mated electrodes; said electrodes being so positioned with respect to said sidewalls and each other that the mated electrodes having the greatest voltage applied across such thermoplastic material between said electrodes are closer to each other than to the most proximate sidewall.

3,967,047

ELECTRODE COOLING APPARATUS

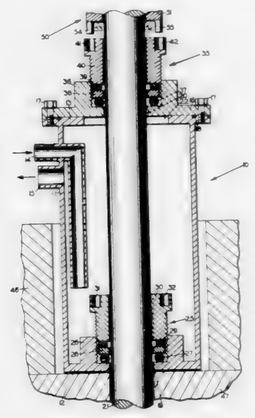
James Michael Long, Corvallis, and Paul Alan Osterlund, Philomath, both of Oreg., assignors to Evans Products Company, Portland, Oreg.

Filed Aug. 19, 1975, Ser. No. 605,867

Int. Cl.² C03B *5/02*

U.S. Cl. 13—6 **4 Claims**

1. In an electric furnace, the combination comprising an electrode, electrode cooling apparatus, and associated tooling; said electrode cooling apparatus having a body, coolant inlet and outlet ports in said body, and a top and bottom to said body; a removable lid secured to said top, electrode receiving openings in said bottom and said lid, and an electrode passing through said electrode receiving openings; an inner sealing assembly located about the electrode and electrode receiving opening in the bottom of said body and an outer sealing assembly located about the electrode and electrode receiving opening in the lid, said inner and outer sealing assemblies comprising a female member, compressible sealing material in said female member and a male member adapted to be received by said female member in a position to compress said compressible sealing material at its inner reach within said female member, said male member having tool receiving means located on the outer face thereof; and associated tool means having an electrode receiving passageway extending therethrough whereby said tool may be slipped over said electrode, and tool receiver engaging means located on



the inner end of said tool means adapted to engage said tool receiving means on the outer face of said male member.

3,967,048

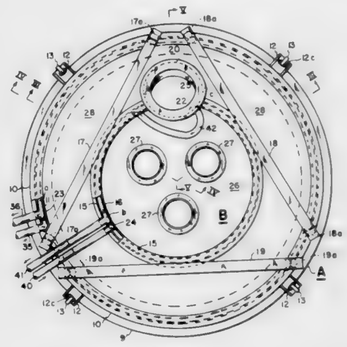
DUAL RING SUPPORTED ROOF FOR ELECTRIC ARC FURNACE

Levi S. Longenecker, 61 Mayfair Drive, Pittsburgh, Pa. 15228

Filed June 6, 1975, Ser. No. 584,631

Int. Cl.² F27D *1/02*

U.S. Cl. 13—35 **20 Claims**

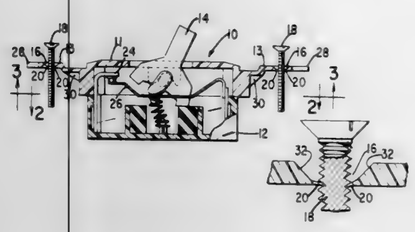


1. In an improved roof for an electric arc furnace and the like having a mouth ledge portion and wherein the roof is to be lowered and lifted into and out of position with respect to the ledge portion of the furnace, an outer fluid-cooled metal roof ring member adapted to rest on the ledge portion, an inner metal roof ring member in a radially-inwardly spaced relation with respect to said outer ring member, a first group of refractory tile members defining a central roof within the confines of and supported by said inner ring member, said central roof having electrode and fume exhaust hole portions therein, a second group of refractory tile members defining a roof skirt positioned between said inner and outer ring members, an overhead structural metal frame extending over the first and second groups of tile members and securing said inner ring member in an upwardly offset and connected relation with respect to said outer ring member.

3,967,049
MOUNTING STRAP

Burkhard A. Brandt, Santa Monica, Calif., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Feb. 27, 1975, Ser. No. 553,679
Int. Cl.² H02G 3/08
U.S. Cl. 174—53 6 Claims

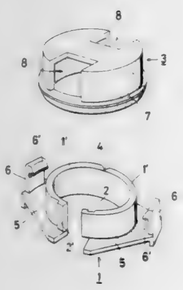


1. An electrical wiring device comprising a housing having a lower body portion and an upper body portion, components of said wiring device arranged within said housing, a plastic mounting strap means on one of said body portions and projecting laterally therefrom and having bevelled apertures at either end thereof receiving threaded screw means for mounting said strap means on a mounting surface with said wiring device projecting thereinto, said bevelled apertures being transversely elongated and having resilient lips engaging said threaded screw means to prevent free movement thereof.

3,967,050
STRAIN GROMMET

Chiharu Makihara, Kamakura, and Tohru Yoda, Yokohama, both of Japan, assignors to Mitsubishi Electric Co. and Nifco Inc., both of Tokyo, Japan

Filed July 3, 1975, Ser. No. 592,850
Claims priority, application Japan, July 4, 1974, 49-78191
Int. Cl.² H01R 13/58; F21V 21/02
U.S. Cl. 174—135 8 Claims

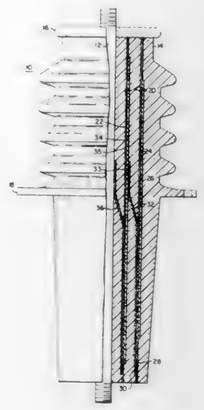


1. A two-piece strain relief grommet comprising a generally cylindrical body adapted to encircle a free end portion of a covered electrical cord, said body having one side split in an axial direction and means for permitting said body to flex between open and closed positions, fastening means for maintaining said split side in a closed position, a hollow hat-shaped fitting body accepting said cylindrical body within its cavity, connecting means for mantaining said bodies in telescoped assembled relation, and means providing communication with the interior of said fitting body.

3,967,051
CAST RESIN CAPACITOR BUSHING HAVING SPACER MEMBERS BETWEEN THE CAPACITOR SECTIONS AND METHOD OF MAKING SAME

Curtis L. Moore, Sharon, and Paul W. Martincic, Sharpsville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 22, 1975, Ser. No. 579,757
Int. Cl.² H01B 17/28
U.S. Cl. 174—143 7 Claims



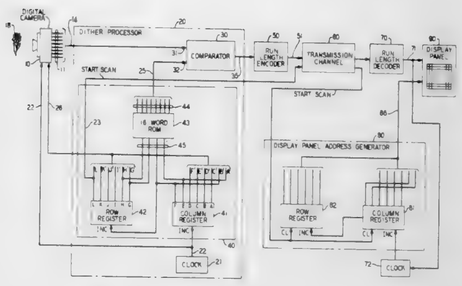
1. An electrical bushing comprising:
a current conducting structure;
a solid insulating material cast around the conducting structure;
a first cylindrical capacitor element concentrically located around the conducting structure and embedded in the solid insulating material;
a second cylindrical capacitor element concentrically located around the first capacitor element and embedded in the solid insulating material; and
a spacing member constructed of a non-conductive material which is positioned between the first and second capacitor elements;
each of said capacitor elements including a conductive member and a non-conductive member;
said spacing member being constructed of a different material than said solid insulating material; and
said spacing member having a conical portion which has a first diameter at one end and a second diameter at the other end, with the first diameter being substantially equal to the outside diameter of the first capacitor element and the second diameter being substantially equal to the inside diameter of the second capacitor element.

7. A method of constructing a cast capacitor bushing comprising the steps of:
winding a first sheet of adhesive coated, non-conductive material around a tapered mandrel;
placing a sleeve around the smaller diameter portion of the tapered mandrel and the portion of the nonconductive material which is wound around the smaller diameter portion of the tapered mandrel;
winding a second sheet of adhesive coated, non-conductive material around the first sheet of adhesive coated, non-conductive material and said sleeve;
winding an adhesive coated, metallic foil around the second sheet of adhesive coated, non-conductive material;
curing the adhesive coating on the first and second sheets of non-conductive materials and on the metallic foil to provide a rigid capacitor section;
removing the sleeve from the mandrel;
removing the capacitor section from the mandrel;
assembling the capacitor section concentrically with other similar capacitor sections;
placing the capacitor sections into a mold and around a current conducting structure;
injecting an epoxy resin into the mold; and
curing the epoxy resin.

3,967,052
IMAGE TRANSMISSION METHOD AND APPARATUS

Charles Norris Judice, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 17, 1975, Ser. No. 596,954
Int. Cl.² H04N 7/12
U.S. Cl. 178—6 32 Claims



1. In a display system adapted to receive a signal representing the respective intensities of picture elements of a scanned image, said picture elements having respective assigned threshold values and said display system including means responsive to said signal for generating a plurality of display bits, the value of each display bit being determined by the intensity of a corresponding one of said picture elements and the threshold value assigned to said corresponding one of said picture elements, a generating means characterized by means for assembling said display bits in respective groups, each of said groups comprising ones of said display bits corresponding to picture elements having substantially equal assigned threshold values.

3,967,053
METHOD AND MEANS FOR ELECTRONIC IMAGE ANALYSIS WITHIN A RASTER-SCANNED FIELD

Rudolf Grosskopf, Koenigsbronn, Germany, assignor to Carl Zeiss-Stiftung, Wurttemberg, Germany

Filed Oct. 30, 1974, Ser. No. 519,202
Claims priority, application Germany, Nov. 2, 1973, 2354769
Int. Cl.² H04N 7/18
U.S. Cl. 178—6.8 12 Claims

Directional Sense of
Third Length Discrimination

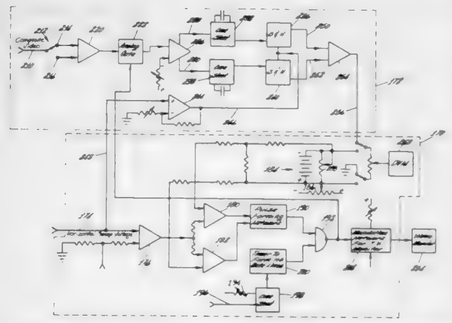


8. Apparatus for electronic-image analysis within a field of raster-scanned subject matter, wherein TV-scan video and line-synchronizing signals are available from raster-scanning of the subject matter, comprising a high frequency generator of frequency greater than the line frequency of TV-scanning, said generator having a synchronizing input for synchronization with input line-synchronizing signals, whereby for each scanning line a plurality of precisely spaced raster elements may be identified through output oscillations of said generator, a discriminator having an input for supply with the TV-scanned video signal, said discriminator having upper and lower thresholds between which a predetermined range of video-signal level may be selected for evaluation, decision-logic circuit means connected to said discriminator to receive signals passed between said thresholds, a synchronizing control connection from said generator to said logic-circuit means; said logic-circuit means including selectively operable means for storing a preselected digital value, switch means having a control connection to the discriminator output and having a first state reflecting presence of the scanned object and a second state reflecting absence of the scanned object, said logic-circuit means having an output characterized by said preselected digital value when said switch is in said second state; and $n-1$ bit delay-storage device having an input connected to said logic-circuit output and having a delay output connection, subtraction means connected to said delay output connection for subtracting one digit for each raster-digit signal, as long as said switch means is in said first state, the output of said subtraction means being connected to said logic-circuit output when said switch is in said first state, a comparator preset for a guide-value raster-digit signal beyond which further subtraction is to be limited, said comparator producing an output signal upon recognition of raster-digit reduction to said guide value, means including a gate having an input connection to the output of said comparator, said gate providing an output singal for particle evaluation, and an input control connection to said gate from the output of said discriminator.

3,967,054
TELEVISION MEASURING SYSTEM AND METHOD

Joe W. Walton, Goleta, Calif., assignor to Circon Corporation, Santa Barbara, Calif.

Filed May 8, 1975, Ser. No. 575,830
Int. Cl.² H04N 7/18
U.S. Cl. 178—6.8 10 Claims



1. A system for generating an analog output voltage representative of the dimensional measurement of an article comprising
means for televising said object to produce a composite video signal thereof having horizontal synchronizing signals and video information signal, said televising means including means for generating a horizontal sweep voltage which controls the video signal during each horizontal line scan occurring between successive horizontal synchronizing signals;
amplifying means electrically connected to the televising means and responsive to said composite video signal for producing an amplified composite video signal;
gating means responsive to said amplified composite video signal and to a selected number of gating pulses for enabling transmission of a plurality of increments of horizontal line scan video information signals;
boundary determination means responsive to the horizontal sweep voltage and having a horizontal position set means for establishing the horizontal component of the field of view of an object to be measured and a vertical position set means for establishing the vertical component field of

view of the object to be measured, said horizontal and vertical components of fields of view being slightly larger than the horizontal and vertical components of the dimensional measurement of the object to be measured;

horizontal line scan gating means responsive to said horizontal sweep voltage, said horizontal position set means and said vertical position set means for generating said selected number of gating pulses each having a duration equal to that increment of a horizontal line scan defined by the horizontal component of the field of view and the selected number of gating pulses being determined by vertical component of the field of view;

means responsive to said predetermined number of gated horizontal line scan video information signals for generating during each horizontal line scan a first control signal when the video information signal is at a first preselected level representative of one boundary of the dimensional measurement and a second control signal when the video information signal is at a second preselected level representative of the other boundary of the dimensional measurement;

means electrically connected to said control signal means and responsive to the horizontal sweep voltage for detecting and storing as a first signal and a second signal the average voltage level of said horizontal sweep voltages at each increment during the predetermined number of line scans when said first control signals and said second control signals are generated; and

output generating means electrically connected to said storing means and responsive to the first signal and second signal stored therein for generating an analog output voltage derived from the difference between the voltage levels of said horizontal sweep voltage represented by said stored first signal and second signal, which analog output voltage represents the dimensional measurement of an article.

3,967,055

CHARGE TRANSFER IMAGING DEVICE

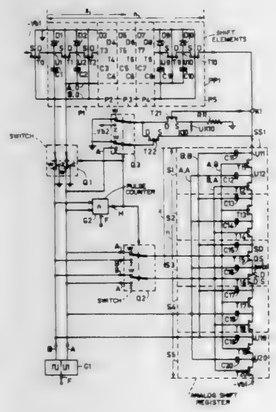
Kees Teer, and Frederik Leonard Johan Sangster, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 14, 1974, Ser. No. 497,472

Claims priority, application Netherlands, Aug. 20, 1973, 7311429

Int. Cl.² H04N *5/30;* **H01L** *27/14*

U.S. Cl. 178—7.1 **10 Claims**



1. A solid state photosensitive imaging array for detecting and shifting information by means of charge transfer comprising:

a shift register having a plurality of elements having an output, comprising photosensing means and shift means for sensing and transferring information;

a clock pulse means for providing clock pulses;

an analog shift register having an input/output terminal connected to the output of said register elements; and

control means responsive to said clock pulses for controlling the direction of shifting of said analog shift register.

3,967,056

AUTOMATIC FOCUSING APPARATUS

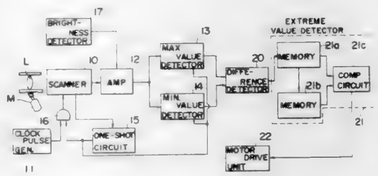
Kotaro Yata, Ikeda, and Seiji Yamada, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 19, 1974, Ser. No. 443,527

Claims priority, application Japan, Feb. 26, 1973, 48-22936; Feb. 27, 1973, 48-24994

Int. Cl.² H04N *5/38*

U.S. Cl. 178—7.2 **4 Claims**



1. An apparatus for automatically focusing an image of a subject in an image plane, which is used for a photographic or television camera having an objective lens system, said apparatus comprising:

means for moving said lens system in predetermined incremental displacements;

a self-scanning photodiode array having a plurality of photodiodes arranged in said image plane so as to respectively generate an output corresponding to the brightness of a different part of the image;

shift registering means connected to said photodiodes for repeatedly picking up the outputs of said photodiodes in a predetermined order to generate a first electric signal representative of distribution of the brightness of the image of a predetermined range of spatial frequencies during each picking-up cycle thereof;

first detecting means for detecting maximum and minimum values of said first electric signal for each picking-up cycle of said shift registering means;

means for generating a second electric signal representative of the difference between said maximum and minimum values of said first electric signals which have been detected by said first detecting means for a series of picking-up cycles of said shift registering means, said second electric signal varying in its value in accordance with the position of said lens system; and

second detecting means for detecting the maximum value of said second electric signal for thereby indicating that said image is focused in said image plane thereof.

3,967,057

AUTOMATIC TUNING APPARATUS

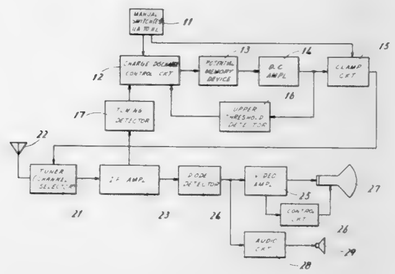
Kazuyoshi Tsukamoto, Hirakata; Yoshiaki Sakauchi, Nara; Yukio Saito, Higashiosaka, and Kazufumi Ushijima, Hirakata, all of Japan, assignors to Sanyo Electric Co., Japan

Filed Jan. 25, 1974, Ser. No. 436,534

Claims priority, application Japan, Aug. 30, 1973, 48-94759; Aug. 31, 1973, 48-98640; Sept. 10, 1973, 48-101956; Oct. 26, 1973, 48-120977

Int. Cl.² H04N *5/60;* **H04B** *1/32;* **H03J** *1/02;* **H04B** *3/04*

U.S. Cl. 178—5.8 A **22 Claims**



1. An automatic, tuning apparatus for use in a television receiver, comprising:

a potential memory device exhibiting a terminal voltage changing as a function of the charging or discharging quantity of electricity supplied to said device by a flow of current therethrough selectively in a charging or discharging direction, respectively,

means for clamping the terminal voltage of the potential memory device including means for supplying a selected, fixed voltage and means for superposing the terminal voltage of the potential memory device on the said selected, fixed voltage to produce a combined, clamped voltage,

tuning means for said television receiver for generating a tuning frequency and comprising a voltage controlled variable reactance device and means for supplying a voltage associated with said combined, clamped voltage from said clamping means to said variable reactance device, whereby the tuning frequency output of said tuning means is controlled in accordance with said combined, clamped voltage,

means coupled to said tuning means for providing a signal indicative of the degree of tuning of said tuning means,

means connected to said potential memory device for supplying said flow of current therethrough to said potential memory device in a direction for selectively charging or discharging said potential memory device and correspondingly changing the terminal voltage thereof, thereby causing a change in the reactance of said voltage controlled reactance device and thus a scanning change in the tuning frequency of said tuning means in the corresponding selected direction, said current providing means controlling the extent of change of said terminal voltage and correspondingly the change of the associated voltage supplied to said voltage controlled variable reactance, for controlling the tuning frequency of said tuning means and receiving a desired, corresponding television channel,

means for enabling said current supplying means for initiating said scanning change in the tuning frequency of said channel selector

said television receiver including an intermediate frequency stage producing an intermediate frequency output including video component and sound component outputs and including means for separating synchronizing pulses from a received signal and producing a separated synchronizing pulse output,

means responsive to operation of said enabling means for starting charging or discharging or said potential memory device and thus said scanning change in the tuning frequency of said tuning means and responsive to said signal indicative of the degree of tuning of said tuning means, for disabling said current supplying means for discontinuing said charging and discharging of said potential memory device and correspondingly said scanning change in the tuning frequency of said tuning means of said potential memory device, said disabling means including at least two means responsive to at least two of said video component outputs, said sound component output and said synchronizing pulse output and means responsive to the simultaneous occurence of said at least two outputs for disabling said current providing means for discontinuing said scanning change in the tuning frequency of said tuning means.

3,967,058

TWO WIRES TIME SHARING TWO WAY FULL DUPLEX COMMUNICATION SYSTEM

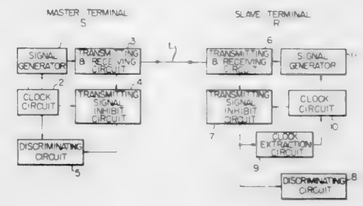
Takao Moriya; Kazuo Murano, and Syunji Fujikawa, all of Kawasaki, Japan, assignors to Fujitsu Ltd., Japan

Filed Nov. 11, 1974, Ser. No. 522,693

Claims priority, application Japan, Nov. 12, 1973, 48-126923

Int. Cl.² H04L *5/14*

U.S. Cl. 178—58 R **8 Claims**



1. A two wire time sharing two-way full duplex communication system between master and slave terminals, comprising:

a master terminal including a first transformer means, a master clock signal generating means for generating a repetitive pulse timing signal, a master digital signal generating means for receiving said repetitive pulse timing signal and for providing a master transmitting dipolar RZ pulse signal synchronized with said repetitive pulse timing signal, a master transmitter means being connected to said first transformer means for transmitting said master transmitting pulse signal, and a master receiving means being connected to said first transformer means for receiving signals from said slave terminal and including a master discriminator means;

a slave terminal including a second transformer means, a slave receiving means being connected to said second transformer means for receiving and rectifying said master transmitting pulse signal, a slave clock extracting circuit means for extracting a slave timing signal from said received master transmitting pulse signal, a slave digital signal generating means for providing a dipolar RZ slave transmitting pulse synchronized with said slave timing signal, and slave transmitting means being connected to said second transformer means for transmitting said slave transmitting pulse signal;

a two wire transmission line means, a first end of which is connected to said first transformer means of said master terminal, and the second end of which is connected to said second transformer means of said slave terminal; whereby, said master terminal and said slave terminal

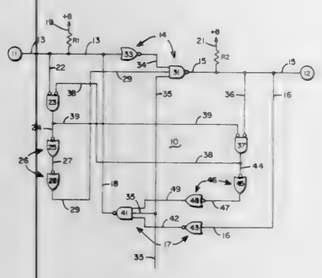
alternately transmit one bit of digital signal on said transmission line means to achieve simultaneous two way communication.

3,967,059

BI-DIRECTIONAL LOGIC SYSTEM

Harry W. Moore, III, Dryden, N.Y., and Richard R. McGee, Lakeland, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 5, 1975, Ser. No. 547,156
Int. Cl.² H04L *5/16*
U.S. Cl. 178—58 A **6 Claims**



1. A fast acting bi-directional data transmission system comprising:

a first input-output port having at least two stable states representative of a quiescent state and a transmitting or receiving state,

a second input-output port having at least two stable states representative of a quiescent state and a transmitting or receiving state,

first blocking means comprising first and second inputs and an output, said first input being coupled to said second input-output port for indicating its quiescent state or its data transmitting state, said second input being connected to said first input-output port for receiving data signals and for generating a first delayed data signal at said output when said first input is indicative of a quiescent state,

second blocking gate means having first and second inputs and an output, said first input being coupled to said first input-output port for indicating its quiescent state or its data transmitting state, said second input being connected to said second input-output port for receiving data signals and for generating a second delayed data signal at said output when said first input is indicative of a quiescent state,

first drive means comprising a first drive gate delay and a first drive gate, said first drive gate having a first input connected to the output of said first drive gate delay and a second input coupled to the output of said first blocking gate means for receiving said first delayed data signal, said output of said first drive gate being connected to said second input-output port, wherein, data signals simultaneously applied to said first blocking gate and said drive gate delay are transmitted from said first drive gate means to said second input-output port when said second input-output port is in its quiescent state,

second drive means comprising a second drive gate delay and a second drive gate, said second drive gate having a first input connected to the output of said second drive gate delay and a second input coupled to the output of said second blocking gate means for receiving said second delayed data signal, said output of said second drive gate being connected to said first intput-output port, wherein, data signals simultaneously applied to said second blocking gate and said second drive gate delay are transmitted from said second drive gate means to said first input-output port when said first input-output port is in its quiescent state, whereby,

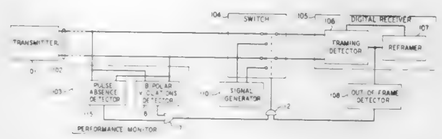
data signals applied to a transmitting port at either end of said bi-directional transmission line first automatically enables the drive means connected thereto, then disables the transmission of data signals from other end of said bi-directional transmission line and then transmits data signals from the transmitting port to the receiving port.

3,967,060

FAST REFRAMING ARRANGEMENT FOR DIGITAL TRANSMISSION SYSTEMS

Mahadevan Subramanian, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 19, 1974, Ser. No. 490,064
Int. Cl.² H04L *7/00*
U.S. Cl. 178—69.5 R **13 Claims**



1. In a digital receiver of the type including backward acting reframing apparatus and employed to receive digital signals transmitted at a prescribed bit rate and having a prescribed framing pattern, the improvement comprising:

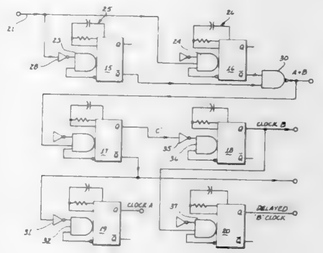
means for enhancing reframing of the digital receiver including, means for controllably inhibiting reception of incoming signals and for supplying a signal to the receiver during intervals in which reception is inhibited, said supplied signal having a frequency greater than the digital transmission rate and having an appropriate format related to the framing pattern of the transmitted digital signals normally being received so that the period of a reframing signal generated in the digital receiver is controlled to be substantially equal to but slightly less than the period of a frame of the transmitted signal normally being received.

3,967,061

METHOD AND APPARATUS FOR RECOVERING DATA AND CLOCK INFORMATION IN A SELF-CLOCKING DATA STREAM

Joseph J. Dobias, Poway, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 5, 1975, Ser. No. 555,518
Int. Cl.² H04L *7/00*
U.S. Cl. 178—69.5 R **21 Claims**



1. A method of recovering information from a self-clocking bi-phase coded bit stream, said bit stream having a predetermined bit period and two voltage levels with negative-going and positive-going voltage level transitions occurring in the

stream to indicate clock information and data information, one such voltage level transition occurring at the beginning of each bit period, the method comprising the steps of:

a. producing a first pulse for each positive-going and each negative-going voltage level transition in said bit stream;

b. producing a second pulse having a pulse width greater than one-half said bit period for each positive-going voltage level transition in each of said first pulses occurring at the beginning of a bit period; and

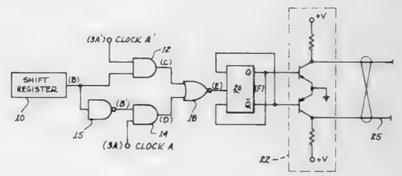
c. producing a clock pulse for each positive-going or negative-going voltage level transition of each of said second pulses.

3,967,062

METHOD AND APPARATUS FOR ENCODING DATA AND CLOCK INFORMATION IN A SELF-CLOCKING DATA STREAM

Joseph J. Dobias, Poway, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 5, 1975, Ser. No. 555,520
Int. Cl.² H04L *7/00*
U.S. Cl. 178—69.5 R **7 Claims**



1. A method of encoding and transmitting binary information, represented by a wave form having a first voltage level during a bit period indicating one binary value and a second voltage level during a bit period indicating a second binary value, into a bi-phase self-clocking bit stream, comprising the steps of:

a. providing a first clock pulse train having a first pulse rate;

b. providing a second clock pulse train having a second pulse rate;

c. applying to a common terminal either said first clock pulse train when said wave form is at said first level during a bit period or said second clock pulse train when said wave form is at said second level during a bit period; and

d. providing an output wave form having two voltage levels and including two voltage level transitions during said bit period when said second clock pulse train occurs at said terminal and having a single voltage level transition during said bit period when said first clock pulse train occurs at said terminal.

3,967,063

LOGIC FOR MATRIX SYSTEMS FOR REPRODUCING QUADRAPHONIC SOUND

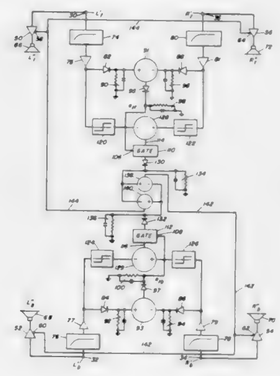
Benjamin B. Bauer, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Continuation of Ser. No. 351,938, April 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 177,003, Sept. 1, 1971, abandoned, and a continuation-in-part of Ser. No. 155,976, June 23, 1971, Pat. No. 3,798,373. This application Mar. 3, 1975, Ser. No. 554,422
Int. Cl.² H04R *5/00*
U.S. Cl. 179—1 GQ **35 Claims**

1. Decoder apparatus for translating first and second composite signals L_T and R_T respectively containing, when present, dominant left front (L_f) and right front (R_f) signal components each including left back (L_b) and right back (R_b) signal components, when present, and wherein said L_b signal components have substantially equal magnitude and are in substantially quadrature relationship with each other in said first and second composite signals and in one is in leading relationship with that in the other and wherein said R_b signal components have substantially equal magnitude and are in substantially quadrature relationship with each other in said first and second composite signals and in one of said composite signals is in lagging relationship with that in the other, into four separate output signals respectively predominantly containing, when present, L_f, R_f, L_b and R_b signals, said apparatus comprising, in combination:

a decoding matrix having first and second input terminals to which said L_T and R_T composite signals are respectively applied, and first, second, third and fourth output terminals,

said matrix being operative to transfer substantially equal amounts of said L_f, R_f, L_b and R_b signal components, when present, as dominant signals to said first, second,



third and fourth output terminals, respectively said L_f and said R_f signals each being accompanied by lower amplitude, quadrature-related L_b and R_b signal components with the L_b and the R_b components accompanying the L_f and R_f signals also being in quadrature with each other, and said L_b and the R_b signals each being accompanied by lower amplitude, quadrature-related L_f and R_f signal components with the L_f and R_f signal components accompanying the L_b signal being in phase opposition to the R_f and L_f signal components accompanying the R_b signal;

first, second, third and fourth gain control amplifiers respectively connected to said first, second, third and fourth output terminals and each having input and output terminals and a control electrode,

said gain control amplifiers each having a gain characteristic which varies with the control voltage applied to its control electrode and being normally operative at a first quiescent control voltage level which produces a first amplification factor lower than its full amplification by a selected amount, and having a time constant to cause it to respond relatively less rapidly to application of a negative-going control voltage,

control circuit means connected to the output terminals of said decoding matrix and operative to compare the relative amplitudes and phase positions of the signals instantaneously present at said first, second, third and fourth output terminals and to produce a first control signal when the output signals at the third and fourth output terminals of the decoding matrix are of equal amplitude and out of phase or a second control signal when the output signals at the first and second output terminals of the decoding matrix are of equal amplitude and are out of phase, or both said first and second control signals,

means for applying said first control signal, if present, to the control electrodes of said first and second gain control amplifiers, and

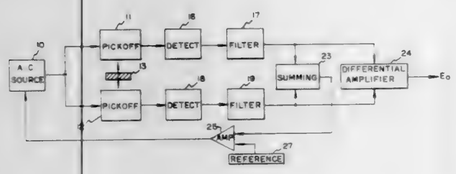
means for applying said second control signal, if present, to the control electrodes of said third and fourth gain control amplifiers.

3,967,064

LOW NOISE ELECTRONIC CIRCUIT, TRANSDUCER USING THE SAME, AND METHOD

Frederick J. Sigworth, Orinda, Calif., assignor to Systron Donner Corporation, Concord, Calif.

Continuation of Ser. No. 307,110, Nov. 16, 1972, abandoned.
This application Apr. 28, 1975, Ser. No. 572,267
Int. Cl.² H04R *3/00*
U.S. Cl. 179—1 P **15 Claims**



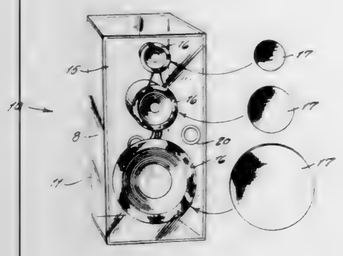
11. In a low noise electronic circuit for use with transducers of the type having first and second signal channels, an AC source for exciting first and second pickoffs located in each of said first and second signal channels and producing first and second signals therein, a movable element disposed between said pickoffs, a tuned circuit in each of said first and second signal channels including said first and second pickoffs for increasing said AC source excitation in said pickoffs limited only by the power dissipation characteristics of said pickoffs, means for detecting said first and second signals producing DC signals of predetermined polarity, said detecting means containing electronic circuit elements having no more than two electrical terminals, thereby minimizing injection of asynchronous noise into said channels, and means for combining said DC signals whereby common mode noise signals are cancelled and differential mode output signals are added.

3,967,065

PLEXIGLAS SPEAKERS

James M. Ward, deceased, late of Kansas City, Mo. (Sandra Ward, surviving spouse), assignor to Sandra Ward, Kansas City, Mo.

Filed July 21, 1975, Ser. No. 597,773
Int. Cl.² H04R *1/02*
U.S. Cl. 179—1 E **5 Claims**



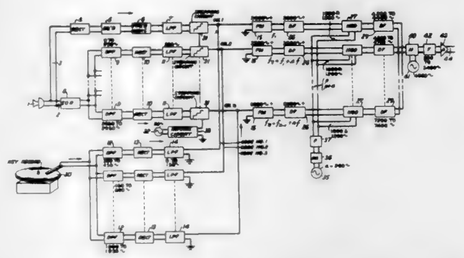
1. In a Plexiglas speaker unit the combination of a cabinet containing a plurality of speakers, means for connection of said speakers to exterior components of a high fidelity sound system.

3,967,066

SECRET TELEPHONY

Robert C. Mathes, Maplewood, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 24, 1941, Ser. No. 412054
Int. Cl.² H04K *1/02*
U.S. Cl. 179—1.5 R **34 Claims**



1. In a system of secret transmission of speech, means to subdivide speech waves constituting a message into a plurality of narrow frequency bands, means to integrate the energy in each band, means including a key for determining in successive time intervals a succession of indications unrelated to the speech being transmitted, and transmitting means controlled jointly by the integrated energy from each band and by said indications for transmitting a cipher from which to derive said speech message.

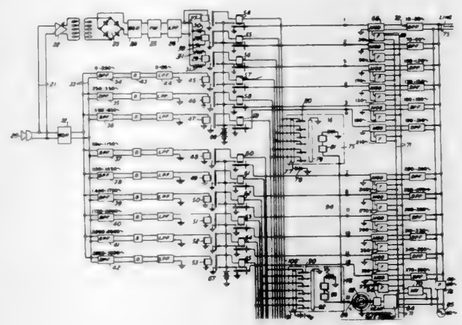
10. In a speech privacy system, means to analyze speech message waves into a plurality of low frequency waves simultaneously existent in a corresponding plurality of separate channels, and enciphering means for adding to each such low frequency wave a varying key wave of similar amplitude and frequency range to destroy the identity of the low frequency waves before transmission.

3,967,067

SECRET TELEPHONY

Ralph K. Potter, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 24, 1941, Ser. No. 412,056
Int. Cl.² H04K *1/02*
U.S. Cl. 179—1.5 R **18 Claims**



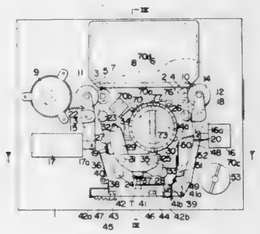
1. In a system of secret transmission of speech, means to subdivide speech waves constituting a message into a plurality of narrow frequency bands, means to integrate the energy in each band, means individual to said bands to subdivide the integrated energy from each band on a time basis to produce impulses with intervening spaces, and means to variably control said last-mentioned subdividing means individually in accordance with a key unrelated to the message.

3,967,068

AUTOMATIC TELEPHONE MONITORING SYSTEM

Isao Shinohara, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 380,130, July 17, 1973, abandoned.
This application Feb. 11, 1975, Ser. No. 549,032
Claims priority, application Japan, July 17, 1972, 47-72283; Aug. 7, 1972, 47-78960; Aug. 7, 1972, 47-78961; Aug. 21, 1972, 47-83437; Aug. 21, 1972, 47-83438; Sept. 25, 1972, 47-96431; Dec. 20, 1972, 47-128573; Dec. 20, 1972, 47-128574; Mar. 12, 1973, 48-29190; Nov. 25, 1973, 48-135558; Nov. 24, 1972, 47-135719; Mar. 12, 1973, 48-30941
Int. Cl.² H04M *1/64*; **G11B** *21/08, 5/55*
U.S. Cl. 179—6 R **7 Claims**



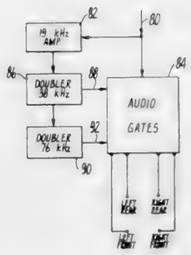
1. An automatic telephone answering system comprising:
an endless magnetic recording tape having thereon a first group of recording tracks for recording and reproducing a first type of messages to be transmitted to a caller, a second group of recording tracks for recording and reproducing a second type of messages to the caller, and a third group of recording tracks for recording and reproducing messages from the caller, the numbers of said tracks of said first and second groups being equal, said tape having both ends joined to each other by a metallic foil secured thereto, thereby to make the tape endless;
means operatively positioned for driving said magnetic tape in one direction and comprising an electrically operated motor, a first solenoid unit having a solenoid armature movable between extended and retracted positions, a capstan, and a pinch roller operatively coupled to said solenoid armature, said capstan being rotated by said motor, and said pinch roller being selectively engaged to said capstan with the magnetic tape sandwiched therebetween, said tape being driven in said one direction by said capstan in cooperation with said pinch roller upon movement of said solenoid armature to said retracted position thereof;
a first movable selectively operable transducer head;
means operatively connected to said first transducer head for selectively aligning said first transducer head with any one of said tracks of said first group and for thereby permitting said first transducer head to record and reproduce information on said selected one of said tracks of said first group;
a second movable transducer head for recording and reproducing information on said second and third groups of tracks and operable when said first transducer head is inoperative;
means for stepwisely shifting said second transducer head in a first direction transversely of the lengthwise direction of said magnetic tape each time said first transducer head completes its operation to thereby align said second transducer head with said tracks of said third group one after another, and for, after all of the tracks of said third group have been used, aligning said second transducer head with one of the tracks of said second group which corresponds to said selected one of said tracks of said first group; said means for stepwisely shifting said second transducer head in said first direction comprising:
a stepped cam member;
a ratchet wheel coupled to said stepped cam member;
a trigger lever coupled to said ratchet wheel for driving said ratchet wheel;
a crank lever coupled to said trigger lever;
a pulley coupled to said crank lever;
a drive wheel;
transmission means coupled to said crank lever and to said drive wheel for transmitting driving force from said drive wheel to said pulley;
a first pivotable lever coupled to said transmission means for selectively activating said transmission means;
a seesaw lever coupled to said pivotable lever;
a roller element rotatably provided on one end of said seesaw lever;
a detent recess formed in said pulley, with driving force transmission from said drive wheel to said pulley being discontinued when said roller element engages said detent recess in said pulley, and with said driving force transmission means between said drive wheel and said pulley being operative when said roller element is disengaged from said detent recess;
a second solenoid unit having a plunger member;
said roller element of said seesaw lever being adapted to be disengaged from said detent recess of said pulley by said plunger member of said second solenoid unit; and
said second transducer head being aligned with said tracks of said third group each time said first transducer head completes operation, and after all of the tracks of said third group have been used, being aligned with one of the tracks of said second group which corresponds to said selected one of said tracks of said first group; and
means operatively positioned for stepwisely shifting said second transducer head in a second opposite direction transverse of the lengthwise direction of said magnetic tape for returning said second transducer head from a first position in which said second transducer head is aligned with said one of said tracks of said second group, to a second position in which said second transducer head is aligned with the first one of the tracks of said third group.

3,967,069

COMPATIBLE FOUR CHANNEL FM SYSTEM

Louis Dorren, Millbrae, Calif., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.

Continuation of Ser. No. 319,939, Dec. 29, 1972, Pat. No. 3,822,365, which is a continuation of Ser. No. 32,989, April 29, 1970, Pat. No. 3,708,623, which is a continuation-in-part of Ser. No. 13,902, Feb. 25, 1970, abandoned. This application June 24, 1974, Ser. No. 482,415
The portion of the term of this patent subsequent to Jan. 2, 1990, has been disclaimed.
Int. Cl.² H04H *5/00*
U.S. Cl. 179—15 BT **12 Claims**



1. A four channel FM system comprising means for transmitting a carrier wave frequency-modulated in accordance with the modulating function:

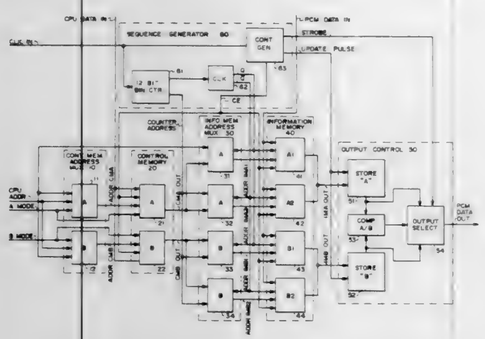
$C(t) = (A+B+C+D) + (A+B-C-D)\sin 2w_s t + (A-B-C+D-)\cos 2w_s t + (A-B+C-D)\sin 4w_s t + K\sin w_s t$ in which A, B, C, D are audio signals, K is the amplitude of the reference pilot signal $\sin w_s t$, $w_s = 2\pi f_s$, where f_s is the fundamental frequency of the pilot signal, $\sin 2w_s t$, $\cos 2w_s t$ and $\sin 4w_s t$ are sub-carrier signals, each sub-carrier signal being suppressed-carrier double sideband amplitude modulated by said audio signals, and receiver means operative in response to the reception of said frequency modulated carrier for reproducing each of said audio signals.

3,967,070

MEMORY OPERATION FOR 3-WAY COMMUNICATIONS

Dinesh K. Srivastava, Westmont, and David Q. Lee, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 21, 1975, Ser. No. 606,698
Int. Cl.² H04J *3/00*
U.S. Cl. 179—15 AT **6 Claims**



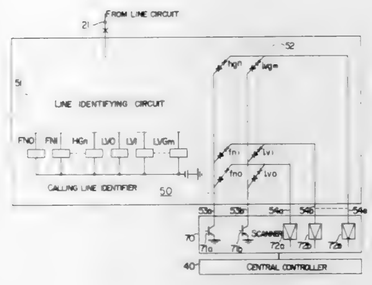
1. Memory means for use in a time division multiplex telephone switching system employing pulse code modulation, wherein said switching system operates under control of a connected central processor unit which generates control signals in accordance with an internal program and external call requests from a plurality of subscribers, said memory means comprising: a sequence generator including an input circuit connection to said central processor unit and a plurality of output connections, operating in response to cyclically recurring signals received from said central processor unit to generate a plurality of control signals; a control memory comprising first and second memory portions, each including circuit connections to said central processor unit and to said sequence generator; control memory multiplex means including first and second portions connected between said central processor unit and said control memory and including circuit connections to said sequence generator, operated in response to control signals from said sequence generator to selectively couple address information from said central processor unit to one of said control memory portions for storage therein; an information memory comprising first and second pairs of memory portions and including circuit connections to said switching system and to said sequence generator; information memory multiplex means comprising first and second pairs of multiplex portions and including circuit connections to said sequence generator; said first pair of multiplex portions connected between said first control memory portion and said first pair of information memory portions and said second multiplex portion pair connected between said second control memory portion and said second pair of information memory portions; said information memory multiplex means operated in response to cyclic signals from said sequence generator to couple information stored in said control memory portions to said information memory portions; and output control means including an output connection to said telephone switching system and circuit connections to said sequence generator and said information memory; said information memory operated in response to control information from said control memory coupled through said information address multiplexer, to store pulse code modulated data from said switching system, and in response to said sequence generator signals couple said coded data to said output control means; said control means periodically operated in response to said sequence generator to couple said data from said output control means to said telephone switching system.

3,967,071

SWITCHING SYSTEM OF STORED PROGRAM CONTROL TYPE

Hirotoshi Shirasu, and Hirotaka Usuda, both of Yokohama, Japan, assignors to Hitachi, Ltd., Japan

Filed May 28, 1974, Ser. No. 474,024
Claims priority, application Japan, May 28, 1973, 48-58694
Int. Cl.² H04Q *3/54*
U.S. Cl. 179—18 ES **7 Claims**



1. In a telephone switching system of the stored program control type having

a plurality of line circuits associated with a plurality of respective subscribers and capable of indicating the free status, the calling status, and the busy status of a subscriber's line;

a switching network having a plurality of terminal positions to be respectively connected with said line circuits; and

a stored program central controller;

the improvement comprising:

first means, coupled between said line circuits and said stored program controller, and responsive to a first signal from a line circuit, representative of the calling status of a subscriber, for supplying to said central controller an indication of the terminal position of a calling subscriber's line on said switching network; and

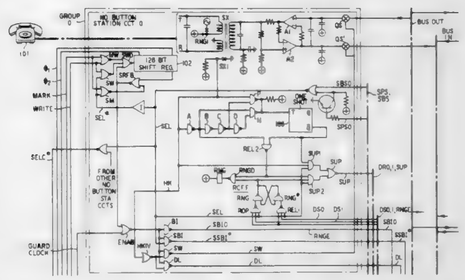
second means, coupled between said stored program controller and said line circuits, and being responsive to a signal from said central controller, corresponding to the terminal position of a called subscriber's line on said switching network and representative of a request for an incoming connection to said called subscriber's line, and a second signal, from the line circuit associated with said called subscriber's line, and representative of the busy status of said called subscirber's line, for supplying to said central controller an indication of the busy status of said called subscriber's line.

3,967,072

TIME DIVISION NETWORK CONNECTION AUDITING ARRANGEMENT

James Owen Dimmick; Theras Gordon Lewis; John Francis O'Neill, all of Boulder, Colo., and Lucian Philip Fabiano, Jr., Madrid, Spain, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 313,956, Dec. 11, 1972, abandoned. This application June 10, 1974, Ser. No. 478,147
Int. Cl.² H04M *3/20;* **H04Q** *1/52*
U.S. Cl. 179—18 J **10 Claims**



1. In a time division switching system having a communications bus, a plurality of station ports and line ports, a central memory for indicating which ports are to be interconnected, and means defining a numbered sequence of time slots during which predetermined ones of said ports may be connected to said communicating bus, the combination comprising

first common bus means associated with said line ports and second common bus means associated with said station ports,

addressable means at each said station port and line port to cause the associated one of said common bus means to exhibit a particular signal condition during the time slot that said port is connected to said communications bus,

means for addressing said addressable means of a station and of a line port which said central memory indicates are to be interconnected,

means for storing an indication of the time slot numbers accruing when said particular signal condition is present on said first and on said second bus means,

means for assigning a new time slot number to said station and line port addressed by said addressing means when said time slot numbers accruing are different, and

means operative when said numbers agree for advancing said addressing means to address another pair of said station and line ports indicated in said memory.

3,967,073

PBX AUTOMATIC NUMBER IDENTIFICATION SYSTEM

Harold Peter Anderson, Boulder; George Albert Lesser, Lakewood, both of Colo.; Fredric Lukas, Chatsworth, Calif.; Rodney Robert Maxon, and James Hall Vlamour, both of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 9, 1975, Ser. No. 539,828
Int. Cl.² H04Q *3/72*
U.S. Cl. 179—18 FH **13 Claims**

1. In a telephone system having a PBX, a central office, and trunks interconnecting said PBX with said central office, said PBX comprising:

a switching network having lines connected to its line side and said trunks connected to its trunk side,

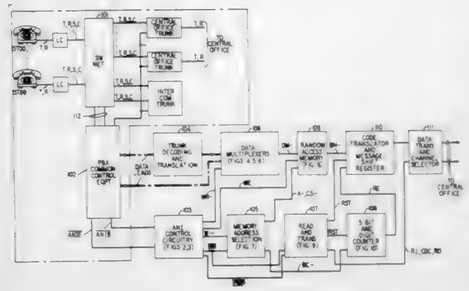
means responsive to the initiation of calls by a plurality of calling lines each requesting access to said central office for selecting a different idle one of said trunks for connection to each of said calling lines,

means responsive to each selection of an idle trunk on a call for identifying the calling line and the selected trunk for said call,

a memory having storage locations with a capacity for storing line and trunk identity information for a predetermined number of said calls,

means responsive to each identification by said identifying means on a call for entering the calling line and trunk identity information into vacant locations of said memory,

means including said memory for inhibiting said selecting means when said memory has reached its storage capacity and is unable to store additional call identity information,



means responsive to each identification by said identifying means when said selection means is not inhibited for establishing a network connection from each of said calling lines to its selected trunk,

a data channel interconnecting said PBX with said central office, and

means for transmitting said identify information in said memory over said data channel to said central office.

3,967,074

TELEPHONE STATION IDENTIFICATION SYSTEM

Robert Frederick Schillo, Granville, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 30, 1975, Ser. No. 591,892
Int. Cl.² H04M *15/06;* **H04Q** *3/72*
U.S. Cl. 179—18 FH **24 Claims**

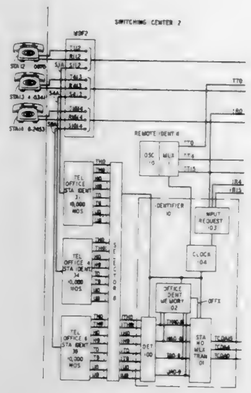
1. An identification system for use with telephone stations of a plurality of telephone offices comprising

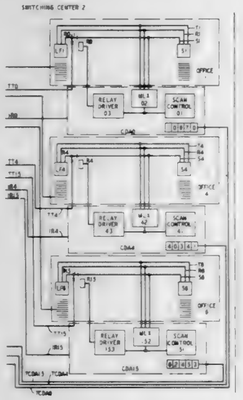
means having input and output leads and responsive to an input signal appearing on one of the input leads for translating the input signal into output signals on thousands, hundreds, tens, and units ones of the output leads,

means for identifying ones of the telephone offices currently serving telephone stations in accordance with a first output signal appearing on one of the thousands, hundreds, tens, and units output leads of said translating means, and

means for generating the identity of each telephone station

served by the identified telephone offices in accordance with subsequent output signals appearing on the thou-

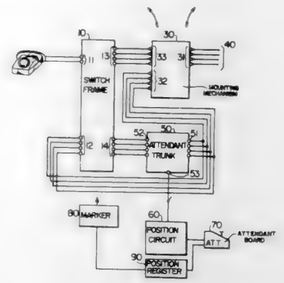




sands, hundreds, tens, and units output leads of said translating means.

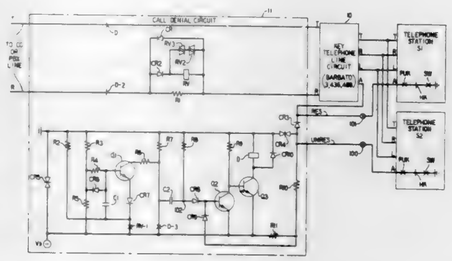
3,967,075
ATTENDANT BOARD SYSTEM IN A TELEPHONE EXCHANGE
Hiromi Moriyama, Fujisawa, and Motosuke Kuwabara, Yokohama, both of Japan, assignors to Hitachi, Ltd., Japan
Filed Jan. 15, 1974, Ser. No. 433,501
Claims priority, application Japan, Jan. 16, 1973, 48-6648
Int. Cl.² H04Q *3/62*
U.S. Cl. 179—98 **1 Claim**

1. In an attendant board system in a telephone exchange which may be selectively adapted for either direct connection type office trunk communication or channel access type office trunk communication between a switch frame and an attendant trunk to a central office provided with:
a. a switch frame having two groups of trunk side terminals and a group of line side terminals;
b. an attendant trunk having switch frame side terminals and office trunk side terminals respectively connected with one group of each of the trunk side terminals and the line side terminals of the switch frame; and
c. an attendant board connected with an attendant trunk and controlling the operation thereof, wherein the improvement comprises:
d. an office trunk mounting mechanism having first connector means connected with an office line, second connector means connected with the trunk side terminals of the switch frame, and third connector means connected with the office trunk side terminals of the attendant trunk; and



e. a first office trunk having a first office trunk circuit, and first and second connector means both connected therewith at the positions corresponding to the first and second connector means, respectively, of the office trunk mounting mechanism, for providing a channel access type attendant board system; and
f. a second office trunk having a second office trunk circuit, and first and second connector means both connected therewith at the positions corresponding to the first and third connector means of the office trunk mounting mechanism, for providing a direct connection type attendant board system.

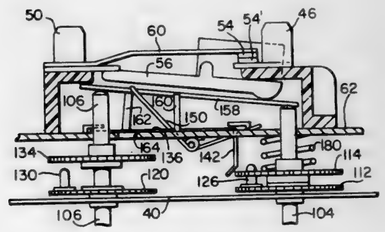
3,967,076
CALL DENIAL CIRCUIT FOR KEY TELEPHONE SYSTEMS
Gerry Christian Balzer, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 27, 1975, Ser. No. 562,573
Int. Cl.² H04M *1/66*
U.S. Cl. 179—99 **13 Claims**



1. A call denial circuit for use in a key telephone system wherein communication connections can be established between a telephone line and any number of telephone stations under control of a line circuit connected between said line and said stations, said line circuit being controllable by A lead signals from each said station, said call denial circuit arranged for connection to said telephone line and to the A lead of at least one of said stations and comprising

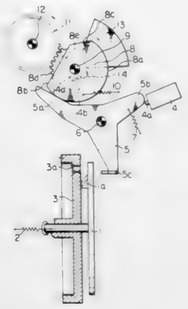
means for monitoring said telephone line to detect voltage polarity reversals with respect to said telephone line,
a first terminal connectable to the A lead from an associated station,
means operable under control of said monitoring means for denying communication transmission over said telephone line when said voltage polarity reversal is detected, and
means responsive to a first signal on said A lead when said A lead is connected to said first terminal for preventing the enabling of said denying means.

3,967,077
APPLIANCE TIMER SWITCH ASSEMBLY
Thomas G. Willis, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 2, 1974, Ser. No. 494,681
Int. Cl.² H01H *43/00*
U.S. Cl. 200—38 FA **7 Claims**



1. A timing device suitable for electric ranges, comprising:
a supporting plate having at least first, second and third openings therein;
an electrical contact structure having opened and closed positions and supported in fixed relationship with respect to the supporting plate;
a rocking lever supported from the supporting plate, said rocking lever having first and second ends positioned substantially over the first and second openings in the supporting plate and an ear projecting from the surface of said lever and positioned substantially over the third opening;
a first shaft extending through the first opening in the supporting plate and engageable with the first end of the rocking lever;
a second shaft extending through the second opening in the supporting plate and engageable with the second end of the rocking lever;
a motor-driven gear mechanism;
said first and second shafts being settable in automatic and manual positions to provide automatic control of the contacts according to the position of the motor-driven gear assembly and to provide manual control of the contacts which is nonresponsive to the position of the motor-driven gear assembly;
a locking lever pivotally attached to the supporting plate;
means for moving a portion of the locking lever across the third opening when the first and second shafts are set in the manual position; and,
means for moving the locking lever away from the third opening when the first and second shafts are set in the automatic position.

3,967,078
TIME SWITCH MECHANISM
Jyusuke Yaguinuma, Koriyama, Japan, assignor to Copal Company Limited, Tokyo, Japan
Filed Oct. 29, 1974, Ser. No. 518,874
Claims priority, application Japan, Oct. 29, 1973, 48-125139[U]
Int. Cl.² H01H *43/10*; **G04C** *21/16*
U.S. Cl. 200—38 R **1 Claim**



1. A time switch mechanism having switch means and a clock mechanism for automatically operating said switch means independently of the manual operation thereof, wherein the improvement comprises:
a switch lever rotatable about a given axis between a start position and a terminal position and being spring-biased toward said terminal position;
said switch means being positioned adjacent to said switch lever so that said switch means is actuated to one operating condition thereof by a first portion of said switch lever when the same is positioned at either of said start position and said terminal position, while said switch means is switched to the other operating condition when said switch lever is positioned at an intermediate position between said start position and said terminal position;
a rotary switching cam manually rotatably mounted adjacent to said switch lever and having a first, a second and a third cam portion and a pin formed thereon, being spring-biased for rotation in a direction from an initial position at which said first cam portion faces against a second portion of said switch lever to a position in which said second portion faces against said second cam portion, then against said third cam portion and thereafter again against said first cam portion;
click stop means cooperating with said pin of said switching cam for releasably holding said switching cam, respectively, at a first position at which said second cam portion faces against said second switch lever portion after said switch cam is rotated from said initial position, at a second position at which said third cam portion faces against said second lever portion and at a third position at which said first cam portion faces again against said second lever portion;
a sector gear integrally secured to said switching cam so as to be rotatable therewith;
a gear frictionally mounted on a rotatable shaft driven by said clock mechanism and engageable with said sector gear so as to drive said sector gear in the direction of rotation of said switching cam, the configuration of said sector gear being so determined that it is disengaged from said gear within the range of rotation of said switching cam before said switching cam is brought into said initial position thereof during its rotation;
a time setting member having engaging means manually settable to a desired set time; and

a timing cam driven by said clock mechanism, being coaxially disposed with said time setting member, and having engaging means, said timing cam cooperating with said time setting member so that said timing cam is shifted from a first position to a second position at said set time by the engagement of said engaging means thereof with said engaging means of said time setting member during rotation of said timing cam, said timing cam being so positioned with respect to a third portion of said switch lever that the same is held in said intermediate position to maintain said switch means in said other operating condition when said timing cam is in said first position and said switching cam is in said initial position, while, when said timing cam is in said second position and said switching cam is in said first position, said switch lever is held in said terminal position to maintain said switch means in said one operating condition,

said second position of said switching cam at which said third cam portion faces against second portion of said switch lever being so determined that said switch lever is prevented from rotating from said intermediate position to said terminal position, to maintain said switch means in said other operating condition regardless of the operation of said timing cam, thereby determining a first manual set position of said time switch mechanism,

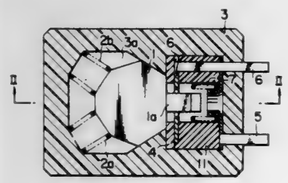
and said third position of said switching cam at which said first cam portion again faces against said second portion of said switch lever is so determined that said switch lever is held in said start position so as to maintain said switch means in said one operating condition with said third portion of said switch lever being spaced from said timing cam, thereby determining a second manual set position of said time switch mechanism, and

said initial position of said switching cam permitting automatic operation of said time switch mechanism.

3,967,079
COLLISION DETECTION DEVICE

Hideaki Sasaya, and Akihiro Kobayashi, both of Aichi, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jan. 3, 1975, Ser. No. 538,330
Claims priority, application Japan, Feb. 26, 1974, 49-23177
Int. Cl.² H01H *35/14, 1/06*
U.S. Cl. 200—61.45 R **3 Claims**



1. A collision detection device comprising:

a. a casing;

b. a mass disposed within said casing in such a way that said mass is deflected under acceleration or deceleration within a predetermined angle including the direction of the movement of the vehicle;

c. pressure means for pressing said mass;

d. a first fixed contact and a second fixed contact both fixed within said casing so as to be electrically isolated from each other;

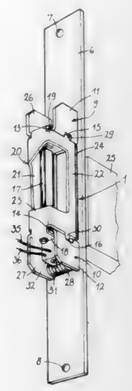
e. a contact coil spring interposed between said first and second contacts in such a way that said contact spring can be deflected only in the direction of the movement of the vehicle when said mass is deflected, said contact spring having one end portion in contact with said second fixed contact; and

f. a column-shaped member fixed to said mass and extended through said first fixed contact to press said contact spring in the direction opposite to the direction of the movement of the vehicle, by the force of said pressure means, said column-shaped member having a stepped portion whose length one direction is smaller than the diameter of said contact spring, said stepped portion being normally brought into contact with a portion of another end of said contact spring so that the remaining portion of the same end of said contact spring, which is normally not in contact with said stepped portion can be brought into contact with said first fixed contact when said mass is deflected.

3,967,080
SWITCH DEVICE FOR INDICATING THE UNDUE OPENING OF DOORS AND CLOSING-WINGS

Deo Errani, Via Cavour 44/1, Faenza (Ravenna), Italy

Filed Aug. 12, 1974, Ser. No. 496,787
Claims priority, application Italy, Aug. 29, 1973, 3478/73
Int. Cl.² H01H *27/00, 3/16*
U.S. Cl. 200—61.64 **4 Claims**



1. An intrusion detector device for detecting the undue opening of a door comprising a plate member fixed to the door jamb and closing a cavity formed therein, an aperture formed in said plate member and adapted to receive a bolt of a lock or a pin mounted on said door adjacent said plate member means for supporting an alarm controlling switch mounted on said plate member and arranged in said cavity, said alarm controlling switch having normally open contacts, a swinging element for actuating said alarm controlling switch pivoted on said plate member and located in said cavity, spring means biasing said element to a rest position in which said contacts are open, said swinging element being adapted to be engaged by said bolt or pin when undue pressure is exerted on the door, thus causing closing of the contacts of the switch.

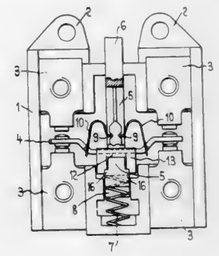
3,967,081
SNAP SWITCH

Albert Portmann, Murten, and Jean-Claude Papaux, Fribourg, both of Switzerland, assignors to Sodeco-Sala S.A., Geneva, Switzerland

Filed July 25, 1974, Ser. No. 491,932
Claims priority, application Germany, Aug. 16, 1973, 2341488
Int. Cl.² H01H *13/28*
U.S. Cl. 200—67 PK **6 Claims**

1. A snap switch comprising a body, fixed contacts on said body, a contact bridge, an actuating member including a

frame portion having an opening, said contact bridge being centrally disposed in said opening, toggle springs acting between said bridge and said actuating member so that said bridge jumps from a position in contact with the contacts through a dead-center position to another position spaced

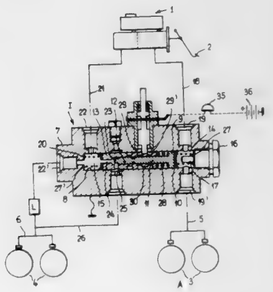


from said contacts in response to movement of said actuating member, and force lever drive means responsive to movement of said actuating member for separating said bridge from said contacts, said force lever drive means being disposed for engagement of said contact bridge at a central position thereof.

3,967,082
FLUID PRESSURE DROP INDICATOR FOR THE HYDRAULIC BRAKING SYSTEM OF A VEHICLE

Patrick Remy, Boulogne-Billancourt, France, assignor to Regie Nationale des Usines Renault and Automobiles Peugeot, both of Boulogne-Billancourt, France

Filed Feb. 20, 1975, Ser. No. 551,398
Claims priority, application France, Feb. 25, 1974, 74.06271
Int. Cl.² H01H *35/38*
U.S. Cl. 200—82 D **1 Claim**

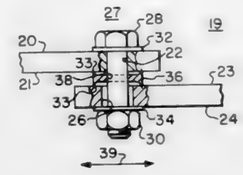


1. A pressure drop indicator for a braking system comprising two independent circuits, one of said circuits comprising a pressure limiter, said indicator comprising a body formed with a bore, a movable member slidably mounted in said bore and responsive to the pressure in both circuits, said movable member actuating a control element on an electric switch and closing an electric signal circuit in case of fluid leakage in one of said circuits, said movable member comprising a first piston provided with a rod movable in a bore formed in a second piston, said second piston further actuating said electric switch control element at two axial abutment positions of said second piston, said pistons providing at the ends of said bore in said body first and second chambers to which feed lines of said first and second circuits are connected, said second circuit comprising said pressure limiter, the pressure drop indicator being characterized in that the end of the rod said first piston comprises a valve means removably closing a passage hole formed in said second piston and providing a fluid passage between said second chamber, and an auxiliary chamber in said body for supplying fluid to the second circuit and bypass said pressure limiter when a pressure drop takes place in said first circuit and a spring disposed between the adjacent faces of said first piston and said second piston for constantly urging the valve of said first piston rod away from said second piston passage hole.

3,967,083
METHOD AND APPARATUS FOR ALIGNING AND AFFIXING PORTIONS OF CIRCUIT BREAKER APPARATUS

Fred Bould, Pittsburgh, and Norman Davies, East Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 27, 1974, Ser. No. 500,997
Int. Cl.² F16B *5/02*
U.S. Cl. 200—237 **22 Claims**



1. An adjustable link, comprising:

a first member having a generally planar surface;

a second member having a generally planar surface, said first member and said second member being disposed in spaced relationship, said planar surfaces being disposed in face to face relationship in parallel planes;

lock means disposed between said planar surfaces, said lock means having oppositely disposed edge portions which are generally transverse to said parallel surfaces for cutting into said surfaces as a compression force is applied to said first and said second members against said locking means and transverse to said parallel surfaces, said first and said second members being movable relative to one another within limits in a direction parallel to said parallel surfaces for adjustment of the disposition of said first member relative to said second member before said compression force is applied; and

compression means for applying said compression force to said first and said second members after said adjustment has been made for thereby providing a generally rigid link.

3,967,084
KEYBOARD SWITCH ASSEMBLIES HAVING TWO FOOT SUPPORT LEGS ON DOME-SHAPED CONTACT MEMBER

Walter R. Pounds, Lafayette, Colo., assignor to KB-Denver, Inc., Loveland, Colo.

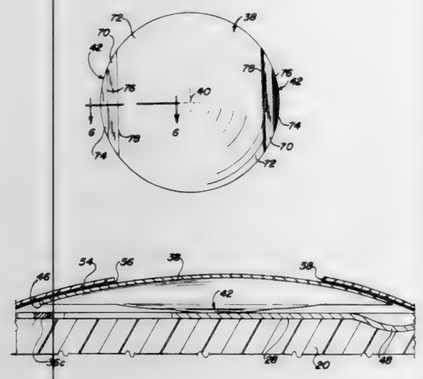
Filed May 12, 1975, Ser. No. 576,694
Int. Cl.² H01H *1/06, 13/52*
U.S. Cl. 200—275 **20 Claims**

1. In a keyboard assembly which includes an insulative substrate upon which are carried a plurality of conductive paths respective portions of which are selectively bridged upon depression of a conductive resilient contact element, the improvement comprising:

said contact element being in the shape of a dome and having only one pair of space-opposed regions of its marginal portion deformed downwardly away from its apex to constitute a pair of space-opposed feet;

and said dome-shaped element being disposed adjacent to said substrate with at least one of said feet being in electrical and physical contact with one of said portions of

one of said paths, the central area of said dome-shaped element being in registry over another of said portions in



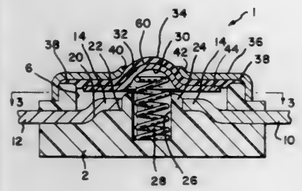
another of said paths to enable connection between said central area and that other portion upon depression of said central area.

3,967,085

SINGLE POLE MOMENTARY SWITCH

Joseph Larue Lockard, Harrisburg, and Bryce Wilson Blair, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 27, 1974, Ser. No. 527,789
Int. Cl.² H01H 9/04
U.S. Cl. 200—302 **3 Claims**



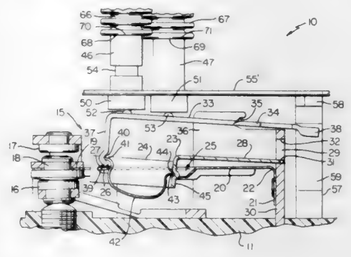
1. A momentary switch, comprising:
a base having an enlarged recess,
a pair of spaced contacts projecting into said recess,
said base having an integral hub projecting into said recess,
a spring seated in said hub and projecting outwardly into the recess of said base,
an inverted cup engaged against the projecting spring and received for displacement within said base recess,
said spring normally biasing said cup in a position spaced from said contacts,
an encircling lip on said cup,
a flexible diaphragm overlying said base and said cup,
a cover secured to said base and sandwiching a portion of said diaphragm between said cover and said base to provide a seal,
said cover having an aperture exposing a portion of said diaphragm which overlies said cup,
said diaphragm having a portion sandwiched between the lip of said cup and said cover,
said diaphragm and said cup being displaceable in a direction away from said cover collapsing said spring and engaging said contacts with said cup to complete an electrical circuit across said contacts.

3,967,086

ELECTRICAL SWITCH CONSTRUCTION

Werner R. Bauer, Radnor, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 12, 1975, Ser. No. 557,462
Int. Cl.² H01H 9/20
U.S. Cl. 200—328 **10 Claims**



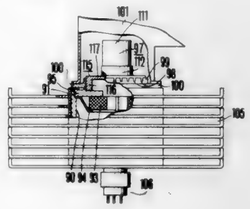
1. An electrical switch construction comprising a housing having a single electrical switch therein provided with only one movable contact, and a pair of actuators carried by said housing and both being operatively associated with said electrical switch for operating said electrical switch independently of each other, one of said actuators being automatically reset and the other of said actuators being manually reset.

3,967,087

SEALING STRUCTURES FOR THE OUTPUT PORTIONS OF MAGNETRONS

Yoji Kanuma, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 8, 1974, Ser. No. 513,097
Claims priority, application Japan, Oct. 11, 1973, 48-117475[U]
Int. Cl.² H05B 9/06
U.S. Cl. 219—10.55 B **5 Claims**



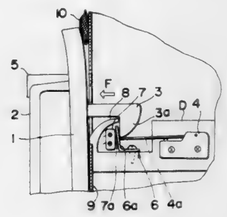
1. In the sealing structure for the output portion of a magnetron of the type wherein the output portion is sealed to a support for the magnetron, said output portion including an antenna for supplying microwave energy to a load and an insulator for insulating said antenna from a base portion for said antenna constituting a part of the magnetron, the improvement wherein said support for the magnetron comprises a plate member with a annular bent portion formed about an opening at the central area of said plate member, said bent portion being provided with a plurality of axial slits, said base portion for said antenna comprising a pedestal which includes a cylindrical portion of a larger diameter than said insulator and a second plate member having an opening of a diameter approximately equal to the inner diameter of said insulator, the upper end of said cylindrical portion being integrally fixed to said second plate member, the lower end of said cylindrical portion being fixed to an element adjacent to the output portion of the magnetron, said base portion for said antenna being in electrical and mechanical contact with said annular bent portion.

3,967,088

GAP DETECTOR FOR MICROWAVE OVEN

Masao Horiuchi, Tenri, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 9, 1973, Ser. No. 530,841
Claims priority, application Japan, Dec. 14, 1973, 48-140609
Int. Cl.² H05B 9/06
U.S. Cl. 219—10.55 C **20 Claims**



1. In a microwave oven of the type including a casing structure defining an oven chamber, said casing structure being formed at one side thereof with an access opening communicating to said oven chamber, a door hingedly supported to said casing structure and selectively movable from an open position to a closed position for selectively opening and closing said access opening, means for radiating high-frequency electromagnetic energy into said oven chamber, and means for interlocking said door to said casing structure to lock said door in said closed position to close said access opening; the improvement comprising:
detecting means, mounted on one of said door and said casing structure at a position adjacent said access opening, for detecting the pressure of a gap between said door and said casing structure due to deformation of said door caused by the pressure of foreign matter between said door and said casing structure when said door is locked in said closed position by said interlocking means, and for halting operation of said radiating means upon the detection of such gap.

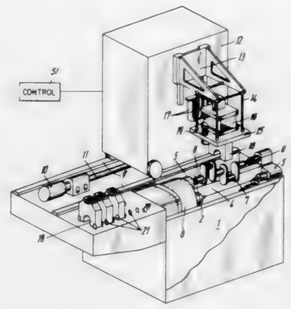
3,967,089

APPARATUS FOR THE INDUCTIVE HARDENING OF WORKPIECES ROTATABLE AROUND A ROTATIONAL AXIS

Gerhard Seulen; Friedhelm Reinke, both of Remscheid, and Edgar Stengel, Wuppertal-Hahnenberg, all of Germany, assignors to AEG-Elotherm G.m.b.H., Germany

Filed June 18, 1974, Ser. No. 481,364
Claims priority, application Germany, June 28, 1973, 2332832
Int. Cl.² H05B 5/08; C21D 1/10
U.S. Cl. 219—10.67 **16 Claims**

1. An apparatus for the inductive hardening of workpieces which are rotatable about a rotational axis wherein various parts of the surface of the workpieces are heated by means of variably shaped inductors and wherein the workpiece is clamped horizontally with respect to a hardening carriage, said apparatus including means for moving said hardening carriage parallel to the rotational axis of said workpiece to selected operating positions, and a transformer plate which is vertically movable with respect to said hardening carriage, said transformer plate supporting a transformer thereon, the primary of said transformer being connected to a source of medium frequency power, the secondary of said transformer being connected to one of said inductors, said inductor being fixedly and removably attached to said transformer plate, the improvement comprising:
an inductor magazine disposed in the travel range of the hardening carriage, said variably shaped inductors being deposited one beside another in a parallel direction along one of the rotational axes of the workpieces in said magazine,
an automatically operated clutch for attaching an inductor to the transformer plate and for electrically connecting the inductor with the secondary of the transformer, and



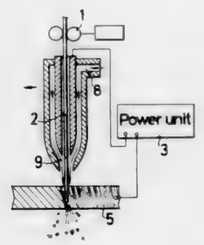
a program control means for moving the hardening carriage and the transformer and inductor into operating position for the inductive hardening of said workpieces and into changing positions proximate said magazine for changing said inductors.

3,967,090

PROCESS FOR CONSUMABLE-ELECTRODE TYPE ARC CUTTING AND APPARATUS THEREFOR

Masanobu Hamasaki, Takamatsu, and Fumikazu Tateiwa, Kagawa, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Nov. 12, 1974, Ser. No. 523,069
Claims priority, application Japan, Nov. 14, 1973, 48-128520
Int. Cl.² B23K 9/00
U.S. Cl. 219—70 **6 Claims**



1. A consumable-electrode type arc cutting process using a wire as the electrode, which comprises:
passing an electric current through the work subjected to cutting and the wire electrode protruding from a contact tip serving as the path for electric current for thereby producing a continuous electric arc between the wire electrode and the work,
allowing the work to be fused and severed by the arc and, at the same time, projecting a jet of water, pressurized to a value substantially in excess of atmospheric pressure, from a water projecting nozzle disposed around the periphery of the contact tip to the freshly fused point of work, and
continuing the arc cutting while causing the molten metal of the work to be blown away from the severed edges by the jet of water.

3,967,091
CAPILLARY FLOW WELD-BONDING

Robert W. Vaughan, Manhattan Beach, and Robert J. Jones, Hermosa Beach, both of Calif., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 2, 1975, Ser. No. 538,047
Int. Cl.² B23K *11/10, 11/18*
U.S. Cl. 219—92 **2 Claims**



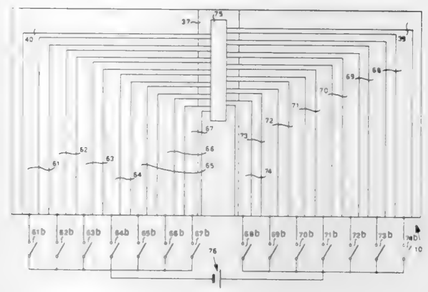
1. A process for weld-bonding titanium comprising:
A. bringing at least two titanium plates into contact with each other;
B. spot-welding to joint said plates;
C. applying a bead of resin adhesive to the edge of the joint; and
D. heating said adhesive whereby said adhesive flows between said plates by capillary action and cures to form a structurally strong weld-bonded layer.

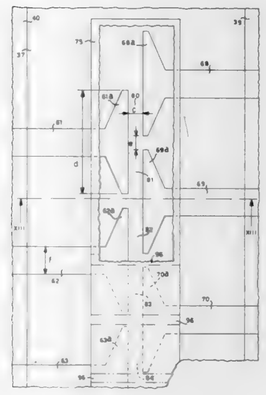
3,967,092
ELECTROTHERMAL PRINT HEAD

Renato Conta, Ivrea; Lucio Montanari, Cascinette, and Riccardo Brescia, Ivrea, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Oct. 7, 1974, Ser. No. 512,564
Claims priority, application Italy, Oct. 23, 1973, 70117/73
Int. Cl.² H05B *1/00*
U.S. Cl. 219—216 **5 Claims**

1. An electrothermal printing head for the impactless printing of dot matrix characters of a heat-sensitive recording medium, continously moving with respect to said head during the printing operations, comprising: an electrically insulating support; a plurality of resistive printing elements aligned along a given line and comprising a single strip of resistive material extending along said given line and carried by said support, each element comprising a segment of the strip of resistive material and having a partly cylindrical outer surface concave towards the support, the generatrices of the partly cylindrical outer surfaces of all segments being parallel to said given line; and a pattern of conductors carried by said support for selectively energizing the elements comprising a first group of conductors spaced along and contacting one side of the strip, and a second group of conductors spaced along and contacting the other side of the strip in a staggered relationship to the conductors of the first group wherein each conductor of the second group is partly opposed to two adjacent conductors of the first group and each resistive segment of said strip lying between a given conductor of the first group and a given conductor of the second group partly opposed to the given



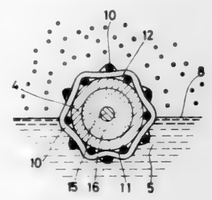


conductor of the first group is selectively heated upon application of an electric voltage between the given conductors.

3,967,093
HEATING APPARATUS WITH HEAT MEDIUM VAPOR

Shigeo Oi, 929-4 Nakahigano, Inasato-cho, Nagano, Japan

Filed June 10, 1974, Ser. No. 477,616
Claims priority, application Japan, June 14, 1973, 48-66411
Int. Cl.² H05B *1/02*
U.S. Cl. 219—388 **1 Claim**

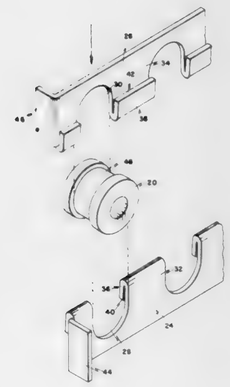


1. A heating apparatus with heat medium vapor, including a plurality of closed elongated vessels having surfaces for receiving fibrous materials, the upper parts of the vessels being communicated with a lateral condensate trough and the lower parts of the vessels being communicated to one another with a heat medium liquid container, the bottom of which contains a substantially constant level of a heat medium liquid, and a heat medium vapor chamber formed on the free level of the heat medium liquid, the improvement comprising:
an electric heater of elongated, form placed along the free level of the heat medium liquid in the heat medium container, and being only partly immersed therein so that the upper surface of the heater projects above the free surface of the liquid; and
a means for wicking a thin film of liquid by capillary action from the heat medium liquid onto the upper, non-immersed surface of the heater, said means comprising a single layer of porous mesh telescoped over the heater and in contact therewith;
said porous mesh defining a plurality of voids adjacent said heater throughout its periphery and length, above and below the liquid medium level; the voids above said liquid medium level constantly filling with fluid medium liquid by capillary action so that a thin film of liquid is constantly placed in heat exchange contact with the upper, unimmersed surface of the heater for evaporation.

3,967,094
ELECTRIC HEATING UNIT SUPPORT ASSEMBLY

Robert E. Petersen, Grafton, and Robert J. Dietsche, Elyria, both of Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 28, 1975, Ser. No. 626,413
Int. Cl.² H05B *3/02*
U.S. Cl. 219—532 **4 Claims**

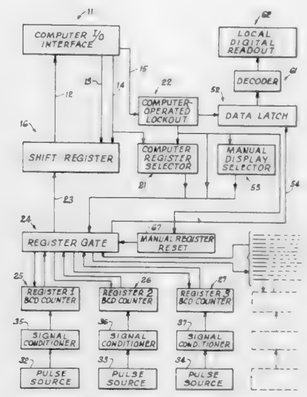


1. A support member carrying insulating bushings for supporting an open coil electrical heating element, comprising:
a pair of strips, each having a number of spaced-apart, open-side cutouts with intervening webs having retroverted end margins, placed in opposed, lapping and registering relation with the cutouts forming openings for the insulating bushings and the end edges of said margins facing each other;
an insulating bushing in each said opening, said bushing including a circumferential groove of a width approximating the sum of four single thicknesses of said strips so that the assembly of the strips in the lapping relation can be effected with said bushings seated in place in the cutouts of one of said strips, the lateral restraint effected by the sides of the grooves holding the strips in a position that the end edges are maintained in an interfering relation preventing disengagement of the strips from their lapping relation.

3,967,095
MULTI-COUNTER REGISTER

William M. Herring, Campton Township, and Dennis B. Walling, Darien, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 26, 1974, Ser. No. 500,321
Int. Cl.² H03K *21/12*
U.S. Cl. 235—92 EA **30 Claims**



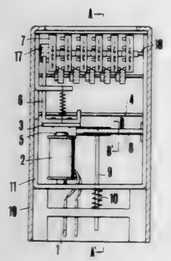
1. A multi-counter register system, useful for reading individual accumulated counts in a set of BCD counter means at a local area by local readout means at the local area or by a computer located at a remote area and using a communications bus connecting the multi-counter register system at the local area and the computer, which comprises:
sets of gate means, each set of gate means having:
at least one set of four outputs to provide a BCD signal from said set of gate means; and
at least one set of four inputs to receive a BCD signal at said set of inputs, said one set of four inputs of each of said sets of gate means being connectable to a different BCD counter means of a set of BCD counter means;
data storage means having:
at least one set of four data inputs to receive digital information as a BCD signal, said one set of four data inputs being connected to each of said one set of four outputs of said sets of gate means;
at least one set of four other inputs to receive a BCD signal corresponding to the decimal number assigned to the BCD counter means that is connectable to said one set of said sets of gate means; and
at least one set of outputs to transmit at the same time digital information as a BCD signal based on the digital information received at one of said sets of four inputs of said storage means;
means to provide different BCD signals at four outputs, each of said different BCD signals corresponding to the decimal number assigned to a different one of the BCD counter means that are connectable to different said one sets of said four inputs of said sets of gate means, said one set of four outputs of said BCD signal-providing means being connected to said one set of four other inputs of said data storage means; and
means responsive to BCD signals, said signal-responsive means having BCD inputs connected to said four outputs of said BCD signal-providing means and having a number of outputs each connected to an enable input of a different set of said sets of gate means, said signal-responsive means providing a signal at a different one of said number of outputs, for different BCD signals at said inputs of said signal-responsive means provided by said signal-providing means, to enable selectively one of said set of gate means

so that the BCD counter means connected to that enabled set of gate means is operatively connected to said one set of four data inputs of said data storage means for transfer of digital information from that BCD counter means to said storage means.

3,967,096
ELECTROMAGNETIC COUNTERS WITH MECHANICAL ACTUATED LOCKING

Soichi Ando, Yonezawa, Japan, assignor to Tamura Electric Works, Ltd., Tokyo, Japan

Filed Oct. 7, 1974, Ser. No. 512,402
Int. Cl.² G06M *3/12*
U.S. Cl. 235—92 C **3 Claims**



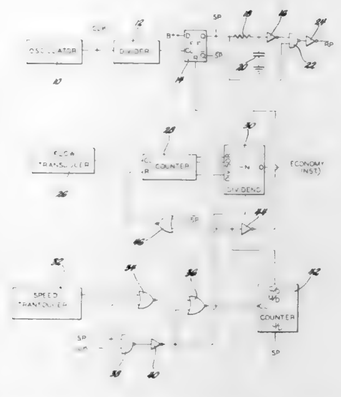
1. In an electromagnetic counter provided with a plug socket and adapted to be plugged into a socket holder wherein a digit wheel is operated by an armature of an electromagnet through a pawl, and said digit wheel, pawl, armature and electromagnet are mounted on a supporting frame, the improvement which comprises a member for locking the armature which is adapted to be pivoted between said armature and said electromagnet under spring bias, and a rod displaceable against spring bias to cause said member to deviate from the region between said armature and said electromagnet, said rod extending from said plug socket and displaced upon plugging the counter into said socket holder.

3,967,097
VEHICLE FUEL ECONOMY CALCULATOR AND INDICATOR

John A. Moretti, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 15, 1975, Ser. No. 613,081
Int. Cl.³ G01M *15/00*
U.S. Cl. 235—150.21 **3 Claims**

1. A vehicle fuel economy calculator comprising: a flow transducer for generating fuel flow pulses having a frequency proportional to vehicle fuel flow rate; a speed transducer for generating speed pulses having a frequency proportional to vehicle speed; means responsive to the fuel flow pulses and the speed pulses for generating a first series of pulse groups, the number of pulses in each pulse group in the first series representing the instantaneous vehicle fuel economy; a plurality of digital up/down counters, each of the counters having data inputs and data outputs and being presettable to a digital number applied to its data inputs; a plurality of memory circuits, the number of memory circuits being one less than the number of up/down counters; means coupling each memory circuit between the data inputs and outputs of a respective pair of up/down counters to form a series of up/down counters interconnected by the memory circuits; a divider for dividing the number of pulses coupled thereto by the number of up/down counters and supplying a number of pulses equal to the quotient; means for coupling the first series of pulse groups to the divider, the divider supplying a second series of pulse groups, the number of pulses in each pulse group in the second series representing the instantaneous vehicle fuel economy divided by the first number; means for counting up the first up/down counter in the series of up/down counters with the pulses in the second series of pulse groups to generate a digital number representing the number of pulses counted; and means after each pulse group in the second series for sequentially enabling each memory circuit to memorize the digital number at the up/down counter data outputs coupled therewith and to apply the memorized digital number to the up/-

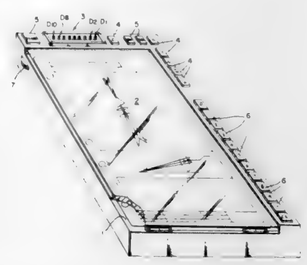


down counter data inputs coupled therewith, totalizing the digital numbers in the up/down counters, and presetting each of the up/down counters to the digital number applied to the data inputs thereof, the means for totalizing the digital numbers in the up/down counters including means for counting down each of the up/down counters to zero in succession, whereby the totalized digital numbers represents an average vehicle fuel economy.

3,967,098
NAVIGATION INSTRUMENT

Gary L. Harnagel, 319 W. Cameron Ave., Pamona, Calif. 91767, and Robert T. Longo, 734 Callita St., Arcadia, both of Calif. 91006

Filed Apr. 14, 1975, Ser. No. 568,162
Int. Cl.² B64D *45/04*
U.S. Cl. 235—150.22 **7 Claims**



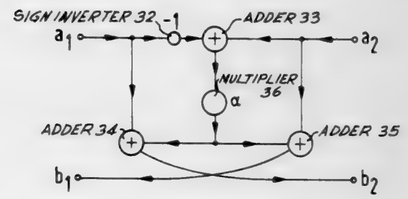
1. Navigation instrument comprising:
means for displaying a navigation chart;
a calculator circuit for performing arithmetic calculations, said calculator circuit including an output register;
display means for visually displaying a number in the output register of said calculator means;
means for manually entering data from the navigation chart to said calculator means;
means for manually entering operation signals to said calculator means;

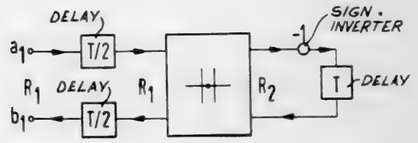
an enabling signal, said enabling signal being manually activated;
clock means for providing a signal once each second; and
circuit means for entering data and operation signals to said calculator circuit in response to said enabling signal and the signal from said clock means, to add one to the number in the output register of said calculator circuit each second.

3,967,099
FILTER HAVING FREQUENCY-DEPENDENT TRANSMISSION PROPERTIES FOR ELECTRIC ANALOG SIGNALS

Alfred Fettweis, Bochum, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 148,577, June 1, 1971, abandoned. This application Oct. 1, 1973, Ser. No. 402,348
Claims priority, application Germany, June 3, 1970, 2027303
Int. Cl.² G06F *15/34*; **H03H** *7/10*
U.S. Cl. 235—152 **18 Claims**



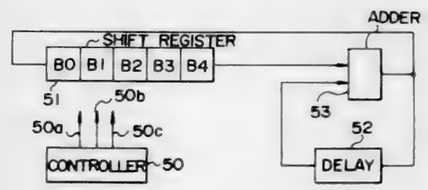


1. A filter having a filter function for discrete electric signals corresponding to the frequency-dependent transmission properties for electric analog signals of an analog LC-network of predetermined configuration and having predetermined impedance-representing constants,
said filter comprising
a. a basic filter circuit having a plurality of port elements with ports each including a port input and a port output,
b. at least one of said port elements being a one-port element, said one-port element comprising time delay means having a predetermined time delay, said time delay means being connected between the port input and the port output of the one-port element and being operable for receiving an input signal from the port input of the one-port element, and for supplying an output signal to the port output of the one-port element in accordance with said input signal but delayed by said predetermined time delay;
c. said plurality of port elements of said basic filter circuit comprising further port element means including further port input means and further port output means, and
d. said basic filter circuit comprising interface device means interconnecting said port elements, said interface device means having a set of interface ports comprising first and second interface ports each with an interface port input and an interface port output, the interface port input and the interface port output of the first interface port being connected respectively with the further port output means and the further port input means of the further port element means, and the interface port output and the interface port input of the second interface port being connected respectively with the port input and the port output of said one-port element,
e. said interface device means comprising interface circuitry including adder means and multiplier means connected with the set of interface ports and connecting the interface ports of the set together in a connective relationship which is in accordance with the configuration of said analog LC-network,
f. said interface circuitry having a multiplier coefficient for each said multiplier means correlated with the connective relationship of said set of interface ports and with the impedance-representing constants of analog components of the LC-network corresponding to the port elements interconnected by said set of interface ports, and
g. said further port element means comprising further time delay means providing a further time delay which is a function of said predetermined time delay, said further time delay means being interposed in said further port element means so as to be in series with said interface circuitry to prevent the existence of a feedback loop without time delay via said further port element means and said interface circuitry.

3,967,100
DIGITAL FUNCTION GENERATOR UTILIZING CASCADE ACCUMULATION

Naonobu Shimomura, No. 13-8, Sakuragaoka-cho, Shibuya, Tokyo, Japan

Filed Sept. 13, 1974, Ser. No. 505,849
Claims priority, application Japan, Nov. 12, 1973, 48-126899; Feb. 1, 1974, 49-13470; Feb. 13, 1974, 49-17360; Apr. 5, 1974, 49-38634; July 23, 1974, 49-84298
Int. Cl.² G06F *1/02*
U.S. Cl. 235—152 **30 Claims**



10. Apparatus for obtaining a digital value of a function expressed by:

$$w = a_0 + a_1x + a_2x^2 + \ldots + a_ix^i + \ldots + a_nx^n$$

where w is the function the value of which is to be obtained,
$a_0, a_1, a_2, \ldots, a_i, \ldots, a_n$ are constants,
x is the independent variable, and
$n \geqq 2$ comprising:
plural memories designated by addresses **0, 1, 2,** . . . , i, . . . , n, each having a word length and means for loading said memories with a specific, initial numerical value determined by the constants $a_0, a_1, a_2, \ldots, a_i, \ldots a_n$,
means for arranging said memories in a shift register means,
algebraic addition means having first and second inputs and an output,
delay means having an input and an output,
means connecting the output of said shift register to one of the inputs of said algebraic addition means,
means connecting the output of said algebraic addition means to the input of said shift register means, and also to the input of said delay means,

means connecting the output of said delay means to the other input of said algebraic addition means, and

means for repeatedly shifing said shift register a number of cycles corresponding to the value of the independent variable x.

3,967,101

DATA ALIGNMENT CIRCUIT

Darrell L. Fett, Scottsdale, Ariz., assignor to Honeywell Information Systems, Inc., Phoenix, Ariz.

Filed Mar. 17, 1975, Ser. No. 559,115
Int. Cl.² G06F 7/00
U.S. Cl. 235—152 **6 Claims**



1. Means for shifting a plurality of data bits in alignment comprising:

A. an ordered plurality of data selector circuits, each of said data selector circuits comprising:

1. a current source;

2. an ordered plurality of cells, each of said cells comprising further:

a. a pair of bipolar transistors connected with common emitters;

b. means for connecting a respective bit of said plurality of data bits to the base of a first transistor of said pair;

c. a third transistor switchably connecting said common emitters to said current source;

3. a reference voltage potential terminal connected to the base of each of said second transistors;

4. a voltage potential terminal connected to the collector of each of said first transistors;

5. an output terminal connected to the collector of each of said second transistors;

6. resistive means connecting said voltage terminal to said output terminal;

7. means for connecting the base of the first transistor of each of said pairs to the base of the first transistor of said pairs in the successive cell in the successive data selector circuit;

8. first means for connecting the base of each of said third transistors of each cell to the base of each third transistor of respective cells in successive data selector circuits;

B. actuation means connected to said first means for enabling only one of said cells of each of said data selector circuits to transmit selected data bits as a plural bit output;

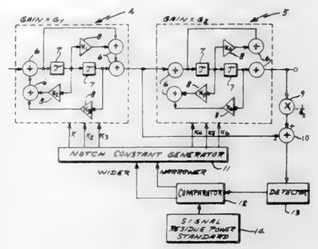
C. control means connected to said actuation means for determining which of said data bits are to be selected as said plural bit output.

3,967,102

SELF-ADJUSTING DIGITAL NOTCH FILTER

Rainer F. McCown, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 25, 1975, Ser. No. 561,962
Int. Cl.² G06F 15/34; H03H 7/10
U.S. Cl. 235—152 **2 Claims**



1. The method of filtering a signal comprising the steps of

filtering said signal with a first digital filter having given bandwidth characteristics,

filtering the output of said first digital filter with a second digital filter having substantially the same bandwidth characteristics as said first digital filter,

normalizing the output of said second digital filter,

subtracting the normalized output of said second digital filter from its input to obtain the filter signal residue power, and

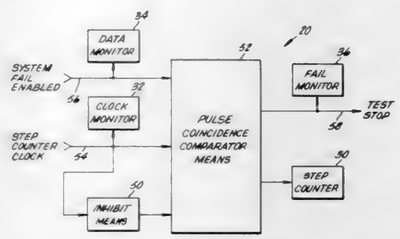
varying the bandwidth control constants of said first and second digital filters in response to deviations between said signal residue power and limits defined by a signal residue power standard.

3,967,103

DECODER/ANALYZER TEST UNIT

Lawrence P. Cachuela, Westminster, and George G. Sanford, Jr., Diamond Bar, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Apr. 14, 1975, Ser. No. 567,747
Int. Cl.² G06F 11/04
U.S. Cl. 235—153 AC **10 Claims**



1. For use with a computer including built in test equipment for subjecting said computer to a sequence of discrete tests, said computer providing a discrete test initiating signal and a corresponding discrete test satisfactory signal when test response of said computer to each discrete test is correct, and said computer being responsive to a test stop signal to halt test sequencing of said computer, a test unit comprising:

means for comparing for coincidence of said discrete test initiating signal and said discrete test satisfactory signal corresponding thereto, said comparing means providing a test stop signal for halting test sequencing of said computer upon a lack of coincidence of said discrete test initiating signal and said discrete test satisfactory signal normally corresponding thereto;

step counter means for counting said discrete tests and indicating the particular discrete test that said computer is undergoing; and

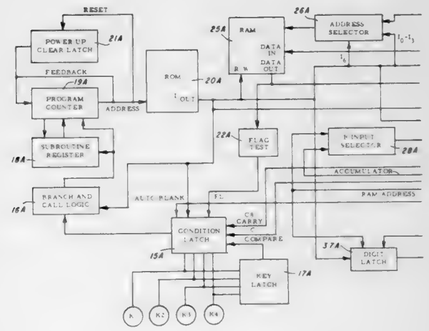
means for processing said discrete test initiating signal and providing a processed signal to step said counter means.

3,967,104

DIRECT AND INDIRECT ADDRESSING IN AN ELECTRONIC DIGITAL CALCULATOR

George L. Brantingham, Richardson, and Louis H. Phillips, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 26, 1974, Ser. No. 527,505
Int. Cl.² G06F 9/20, 15/02
U.S. Cl. 235—156 **8 Claims**



1. In an electronic calculator system having an addressable data storage means, an arithmetic unit for performing arithmetic computations on data and control circuitry including an instruction storage means for providing multi-bit commands at the output thereof which define the operation of the system, a circuit for providing both direct and indirect addresses of said data storage means comprising:

a. means in said arithmetic unit for computing indirect addresses of said data storage means;

b. register means coupled to said arithmetic unit for storing the computed indirect addresses;

c. selector means having first and second data inputs, a control input and a data output, said selector means being coupled at said first input to first selected bits at the output of said instruction storage means at said second input to said register means and at the output thereof to said addressable data storage means for providing either said first selected bits from said instruction storage means as a direct address or the computed indirect address from said register means to address said data storage means; and

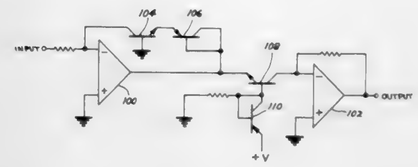
d. means coupling second different selected bits at the output of said instruction storage means to the control input of said selector means, said second selected bits for controlling said selector means to select the direct or the indirect address in accordance with the multi-bit commands provided at the output of said instruction storage means.

3,967,105

TRANSISTOR POWER AND ROOT COMPUTING SYSTEM

Daniel Clayton Harrington, Fridley, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed May 19, 1975, Ser. No. 578,567
Int. Cl.² G06G 7/16, 7/20
U.S. Cl. 235—197 **13 Claims**



1. A non-linear transistor computing element comprising:

an operational amplifier having an output and positive and negative inputs,

a first transistor having its collector connected to the negative input of said amplifier, and

a second transistor having its base connected to the output of said amplifier,

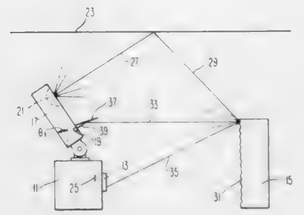
said first and second transistors being operably connected so that the output of said operational amplifier is determined by the feedback loop comprising said first and second transistors and having a non-linear relationship to the input determined by the collector current of at least one of said transistors operating with a near zero collector base voltage.

3,967,106

DEVICE FOR ENABLING A FIXED SENSOR OF AN AUTOMATIC ELECTRONIC FLASH UNIT TO RESPOND TO BOUNCED LIGHT

Tung Chang Chen, 138 Wooded Lane, Villanova, Pa. 19085

Filed May 15, 1975, Ser. No. 577,676
Int. Cl.³ G03B 15/02
U.S. Cl. 240—1.3 **5 Claims**



1. A device to be employed with a camera flash unit arrangement which is composed of a housing means having a flash unit and light sensor means disposed therein in fixed relationship with respect to one another, comprising in combination: light reflecting means; support means disposed in close proximity to said sensor means and secured to said light reflecting means for providing support thereto and formed to permit partial rotation thereof with respect to said housing means, said support means further formed to be movably engaged with said housing means whereby said light reflecting means can be moved and held in a plurality of positions with respect to said light sensor means whereby reflected light from said flash unit can be directed to said light sensor means.

3,967,107
OPERATING THEATER LIGHT

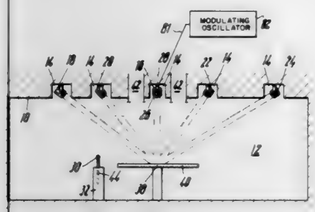
Klaus Junginger, Rodenbach, and Walter Sturm, Hanau, both of Germany, assignors to Original Hanau Quarzlampen GmbH, Hanau, Germany

Filed Oct. 5, 1973, Ser. No. 403,895

Claims priority, application Germany, Oct. 7, 1972, 2249347

Int. Cl.² A61G *13/00*; F21V *33/00*

U.S. Cl. 240—1.4 **1 Claim**



1. An illumination system, comprising, in combination:
a plurality of spotlamps each of which is separately and independently pivotably mounted and separately and independently driven;
said plurality of spotlamps including a pinpointing spotlamp and several individual satellite spotlamps;
said pinpointing spotlamp being adjustable to select a desired area to be illuminated;
said pinpointing spotlamp being disposed substantially perpendicularly above an operating table within the confines of which said area to be illuminated is disposed;
said individual satellite spotlamps being suspended at different and varying distances from said operating table;
each said satellite spotlamp being provided with a photoelectric servomechanism including a follow-up control system which operates in response to light from said area illuminated by said pinpointing spotlamp to adjust the associated satellite spotlamp;
said illumination system including means for switching off the satellite spotlights and switching on the follow-up system to avoid unwanted optical disturbance of the photoelectric mechanism.

3,967,108
AUTOMATIC FOCUSING SYSTEM

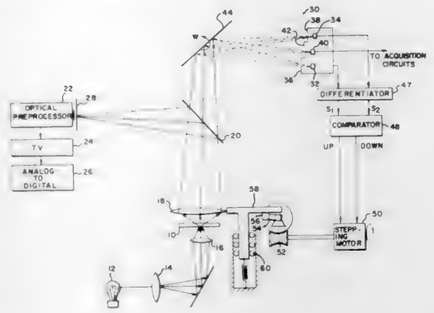
David L. Hollis, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 399,619, Sept. 21, 1973, abandoned. This application Jan. 23, 1975, Ser. No. 543,514

Int. Cl.² G01J *1/20*

U.S. Cl. 250—201 **9 Claims**

9. An automatic focusing system for optical apparatus comprising:
an adjustable objective lens producing an object image,
a first beam splitter for projecting said image to an actual image plane,
utilization means positioned at a desired image plane which is coincident with said actual image plane when said object image is in focus for producing an electrical output representing selected optical characteristics of said image,
a second beam splitter receiving the image projected from said first beam splitter, said second beam splitter projecting said image to first and second parfocal image planes,
first and second light sensing devices for receiving light from in front of said first parfocal image plane and behind said second parfocal image plane respectively, said light sensing devices respectively producing first and second electrical signals representing the position of said actual image plane with respect to said desired image plane,
means responsive to said first and second electrical signals for automatically positioning said adjustable objective lens to bring said object image into focus at said desired image plane,
a differentiator, said electrical signals from said light sensing devices being applied to said differentiator to produce differentiated electrical signals,
a comparator for comparing said differentiated electrical signals, the output of said comparator being applied to said means for automatically positioning said adjustable objective lens, and



a stepping motor for moving said objective lens in either direction along the optical axis of said lens, said comparator being connected to drive said stepping motor in a first direction when said first electrical signal is greater than said second electrical signal and in the opposite direction when said second electrical signal is greater than said first electrical signal, and further including first and second apertured means associated with the first and second light sensing devices, and means for adjusting the relative positions between said apertured means so that the same portion of an image is projected out to said first and second light sensing devices.

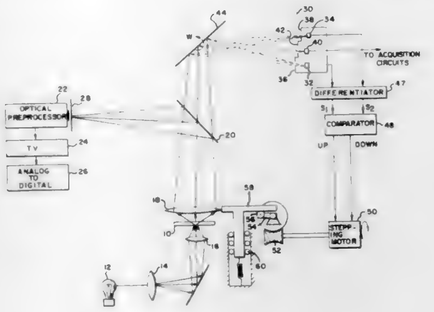
3,967,109
AUTOMATIC FOCUSING SYSTEM

Lynn G. Amos, Raleigh, and Jerry S. Boone, Garner, both of N.C., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 399,619, Sept. 21, 1973, abandoned. This application Jan. 23, 1975, Ser. No. 543,515

Int. Cl.² G01J *1/20*

U.S. Cl. 250—201 **10 Claims**



5. A system producing an electrical output representing the optical characteristics of an analytical slide comprising:

an adjustable objective lens producing an image of said slide,
means for projecting the slide image to an actual image plane and to a parfocal image plane,
conversion means positioned at a desired image plane which is coincident with said actual image plane when said slide image is in focus, said conversion means producing said electrical output representing the optical characteristics of said slide,
first and second light sensing devices respectively receiving light from in front of said parfocal image plane, and behind said parfocal image plane, said light sensing devices respectively producing first and second electrical signals representing the position of said actual image plane with respect to said desired image plane,
a stepping motor for moving said objective lens in either direction along the optical axis of said lens,
a comparator for comparing the signals from said first and second light sensing devices, said comparator being connected to drive said stepping motor in a first direction when said first electrical signal is greater than said second electrical signal and in the opposite direction when said second electrical signal is greater than said first electrical signal,
an eccentric member,
said stepping motor being connected to rotate said eccentric member, and
a holder for said objective lens constrained for movement in a linear direction, said eccentric member bearing against a protrusion on said holder to move said holder linearly as said stepping motor rotates.

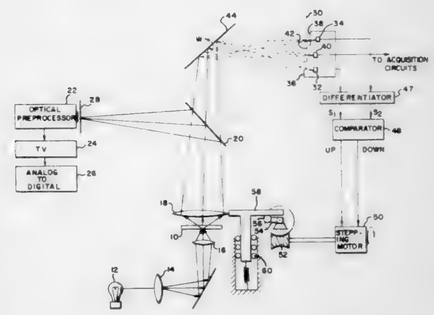
3,967,110
AUTOMATIC FOCUSING SYSTEM

Charles H. Rogers, and Burton H. Sage, Jr., both of Raleigh, N.C., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 399,619, Sept. 21, 1973, abandoned. This application Jan. 23, 1975, Ser. No. 543,516

Int. Cl.² G01J *1/20*

U.S. Cl. 250—201 **5 Claims**



5. An automatic focusing system for optical apparatus comprising:
an adjustable objective lens producing an object image,
a beam splitter for projecting said image to an actual image plane and to a parfocal image plane,
utilization means positioned at a desired image plane which is coincident with said actual image plane when said object image is in focus for producing an electrical output representing selected optical characteristics of said image,
first and second light sensing devices for receiving light from in front of said parfocal image plane and behind said parfocal image plane, respectively, said light sensing devices respectively producing first and second electrical signals, the frequency distribution of which represent the position of the actual image plane with respect to said desired image plane,
a rotating mirror comprising at least one planar surface for scanning said slide image across both of said light sensing devices, and
means responsive to the higher frequency components of said first and second electrical signals for automatically positioning said adjustable objective lens to bring said object image into focus at said desired image plane.

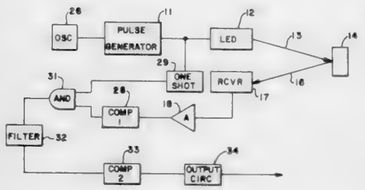
3,967,111
PULSED LIGHT SOURCE DISCRIMINATOR SYSTEM

Roger M. Brown, Mountain View, Calif., assignor to Scientific Technology Incorporated, Mountain View, Calif.

Filed Dec. 20, 1974, Ser. No. 534,728

Int. Cl.² H01J *39/12*

U.S. Cl. 250—206 **10 Claims**



7. A discriminator system for receiving pulsed light comprising
a pulse generator for producing output pulses,
an oscillator connected to said pulse generator for frequency modulation of said output pulses over a predetermined frequency range,
a light source producing light pulses excited by said output pulses,
a light sensitive receiver for receiving said light pulses and producing an electrical output related thereto,
means for receiving said electrical output and producing a first gating signal in predetermined time phase therewith,
means for receiving said pulses and producing a second gating signal in predetermined time phase therewith,
and means for receiving said first and second gating signals for producing a gated signal when said first and second gating signals are in time phase,
whereby the system is insensitive to spurious light energy signals at frequencies other than the instantaneous frequency of said light source.

3,967,112
PHOTO-IMAGE MEMORY PANEL AND ACTIVATING METHOD THEREOF

Yoshiharu Kanatani; Masahiro Ise, and Etsuo Mizukami, all of Tenri, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed June 12, 1974, Ser. No. 478,614

Claims priority, application Japan, June 15, 1973, 48-68118; June 15, 1973, 48-68119

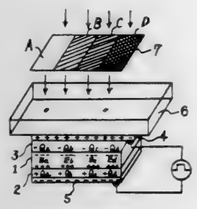
Int. Cl.² H01J *31/50*

U.S. Cl. 250—213 R **9 Claims**

1. A method for driving an image display panel which comprises an electroluminescent layer having a given threshold level for initiating electroluminescence therein, a pair of dielectric layers for sandwiching said electroluminescent layer therebetween to form a three layer sandwiched structure and a pair of electrodes for supporting said sandwiched structure, said method comprising the steps of:
applying a DC bias voltage having a level which is less than said given threshold level between said electrodes and

thus across the electroluminescent layer and said dielectric layers;

applying a light pattern to said display panel when in the DC biased condition to provide the formation of an electrical polarization charge pattern corresponding to said light pattern about the interfaces between said electroluminescent layer and said dielectric layers due to said application of light, the light excited electrical polarization charge pattern being sustained by the inherent memory effects of said sandwiched structure; and



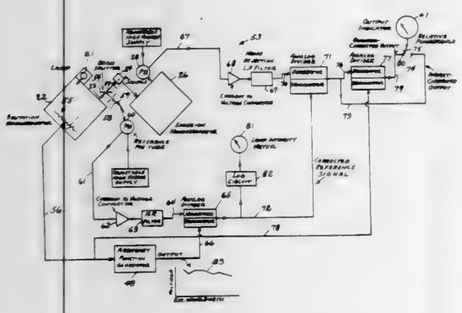
applying at least one voltage pulse across said electrodes which is higher than said given threshold level across said electroluminescent layer for creating luminescent light emission in accordance with said electrical polarization charge pattern in the interfaces between said electroluminescent layer and said dielectric layers and thus reading out the internal charge pattern in the form of light emission.

3,967,113

WAVELENGTH-CORRECTED SPECTROFLUOROMETER

Charles Soodak, Silver Spring, and James H. Macemon, Glen Burnie, both of Md., assignors to Baxter Laboratories, Inc., Deerfield, Ill.

Filed Dec. 5, 1974, Ser. No. 530,053
Int. Cl.² H01J *39/12*
U.S. Cl. 250—214 C **26 Claims**



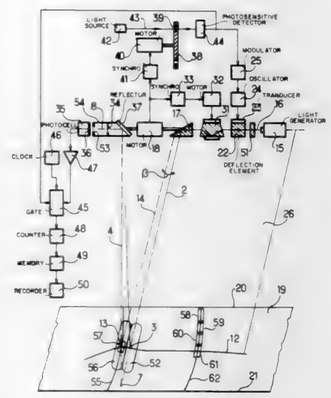
1. A spectrophotometer device including wavelength-scanning monochromator means provided with means to generate a continuous wavelength-proportional linear voltage signal, voltage-responsive circuit means connected to said monochromator means to generate a continuous wavelength-dependent correction signal controlled by and varying in accordance with said linear voltage signal, electrical photosensitive means located to receive radiation from said monochromator means, and circuit means to apply said correction signal to the output of said photosensitive means.

3,967,114

DEVICE FOR DETERMINING THE PROFILE OF A SURFACE

Jean Cornillault, Montlhery, France, assignor to Compagnie Industrielle des Lasers, Marcoussis, France

Filed Dec. 19, 1974, Ser. No. 534,396
Claims priority, application France, Jan. 10, 1974, 74.00766
Int. Cl.² H01J *3/14*
U.S. Cl. 250—236 **4 Claims**



1. In a device for determining the profile of a surface comprising:

a source comprising a light generator providing an optical beam, a controllable deflection element arranged to receive the light emitted from the said generator and a first deflector arranged to receive the light emerging from said deflection element and to reflect back that light according to the beam that forms a light spot on said surface;

a detector system comprising a lens, a photosensitive element arranged in the focal plane of the lens to generate an output signal when said lens forms the image of said spot on the photosensitive element, the detector system defining a detection axis cutting said beam;

means for driving the beam and said detection axis in a rotating movement about a common axis of rotation cutting both the beam and the detection axis, wherein the beam and the detection axis remain in a same plane, the source further comprising means to control said deflection element to scan an angular sector of the same plane, the scanning speed being greater than that of the rotation of the beam and the axis of detection;

means for measuring the angle formed by the beam and the detection axis when said output signal is generated by the said photosensitive element, wherein the improvement comprises:

a Dove prism arranged on the same axis of rotation between said deflection element and the first reflector and means for driving said Dove prism in a rotating movement;

the detection system further comprising a second reflector arranged so that the light which propagates along the axis of detection is reflected back towards said lens along said same axis of rotation, said first and second reflectors being mechanically coupled together, their planes being respectively perpendicular to said same plane; and

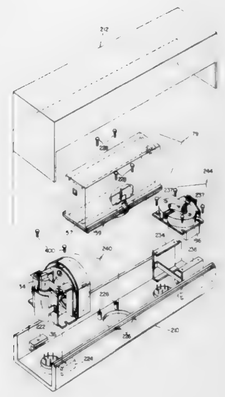
said means for driving the beam and the axis of detection about the same axis of rotation includes means for making said first and second reflectors rotate about the same axis of rotation at a speed synchronized with that of the Dove prism.

3,967,115

ATOMIC BEAM TUBE

Robert H. Kern, Danvers, Mass., assignor to Frequency & Time Systems, Inc., Danvers, Mass.

Filed Oct. 9, 1974, Ser. No. 513,289
Int. Cl.² H01S *1/00*
U.S. Cl. 250—251 **6 Claims**



6. Molecular beam tube apparatus comprising

enclosure means,

a source for providing a beam of molecular particles

a first state selector for selecting a portion of said particles in said beam

a radio frequency transition section downstream from said first state selector for causing resonance transitions of some of said selected beam particles

means for producing a weak generally homogeneous magnetic field in the radio frequency transition section

a second state selector downstream from said radio frequency transition section for selecting a further portion of said beam comprising those beam particles that have undergone said resonance transitions, and

detecting means responsive to said particles in said further portion,

said source and said first state selector together comprising a first subassembly, said radio frequency transition section and said means for producing a weak field together comprising a second subassembly, and said second state selector and said detecting means together comprising a third subassembly,

said enclosure means comprising a rigid frame and a flexible cover, said frame and cover being sealed together to form a vacuum envelope,

said three subassemblies being separately and removably secured to said frame.

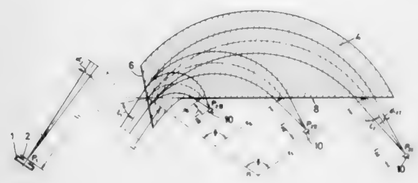
3,967,116

MASS SPECTROMETER

Jens F. Geerk, Schondorf, Germany, assignor to Varian Mat GmbH, Bremen, Germany

Filed Apr. 15, 1975, Ser. No. 568,349
Int. Cl.² B01D *59/44*; G21K *1/08*
U.S. Cl. 250—298 **7 Claims**

1. A mass spectrometer, more particularly for simultaneously measuring beams of a number of species of ions, having a special homogeneous magnetic sector field, the exit boundary of said field forming a straight line which extends through the point of inersection between the central ray of the incident object-ray pencil of ions and the straight entrance boundary of said field, at least one of the emergent image-ray pencils of ions undergoing second-order directional focusing, characterised in that the lateral magnification V lies in the range $0 \leq V \leq 1$, the angle of deflection ϕ in the sector field (4) is between 70.5° and 131.8°, the angle ϵ_1 between the central ray of the incident object-ray pencil (3) and the perpendicular erected at the point of intersection between the central ray and the entrance boundary (6) is between 0° and 90°, the distance l_1 between the object point (P_1) of the ion source (1) and the point of intersection (S_1) between the



central ray of the object-ray pencil (3) and the straight entrance boundary (6) of the sector field (4) is between 0 and infinity and the distance l_2 between the image point (P_{2I}, P_{2II}, P_{2III}) of the ion source and the point of inersection (S_{2I}, S_{2II}, S_{2III}) between the central ray of the second-order directionally-focused image-beam pencil and the straight exit boundary (8) of the sector field (4) is between 0.236 and 0.943, and if one of the freely-selectable pairs of values V, ϕ; V, ϵ_1; V, l_1; V, l_2; ϕ, ϵ_1; ϕ, l_1; ϕ, l_2; ϵ_1, l_1; ϵ_1, l_2; l_1, l_2 is given and if the radius of deflection r is equal to unity, the other defining quantities are obtained from the equations of condition:

$$\tan \epsilon_1 = -\frac{1+\cos\phi}{\sin\phi}\cdot\frac{3\cos\phi - V^2 + 3V - 1}{3\cos\phi + 2V^2 - 3V^2 + 2} \quad 7.$$

$$l_1 = \frac{1}{3}\,\frac{\sin\phi}{1+\cos\phi}\cdot\frac{3\cos\phi + 2V^2 - 3V^2 + 2}{(1-V^2)\,V} \quad 9.$$

$$l_2 = \frac{1}{3}\,\frac{\sin\phi}{1+\cos\phi}\cdot\frac{-2V^2 - 3V^2\cos\phi + 1}{1-V^2} \quad 10.$$

for second-order directional focusing of the special sector field (4).

3,967,117

PHOTOGRAPHIC PROCESS

Lyle Benjamin Borst, 17 Twin Bridge Lane, Williamsville, N.Y. 14221

Filed Apr. 18, 1975, Ser. No. 569,535
Int. Cl.² G03B *41/16*
U.S. Cl. 250—323 **27 Claims**

1. A method for obtaining an image of increased density from a first photographic emulsion having silver grains comprising the steps of:

a. depositing a secondary element at the position of said silver grains in said first photographic emulsion;

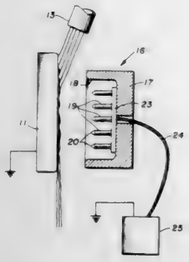
b. transferring the image of said first photographic emulsion to a second photographic emulsion by exposure of said second photographic emulsion two radiations emitted by said secondary element; and

c. developing said second photographic emulsion to obtain an autoradiograph having an image of increased density.

3,967,118
METHOD AND APPARATUS FOR CHARGING A BUNDLE OF FILAMENTS

Ernest M. Sternberg, Chapel Hill, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 29, 1975, Ser. No. 572,800
Int. Cl.² H01T 19/04
U.S. Cl. 250—325 **11 Claims**

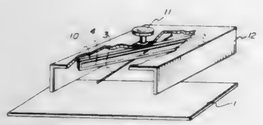


1. The method of forwarding and charging filaments comprising
   a. forwarding the filaments across the face of a target electrode in a stream of air, said stream of air having a velocity sufficient to form an air sheet on the face of the electrode, and
   b. applying an electric field to the filaments in the air sheet to charge said filaments, wherein said electric field is generated from a plurality of locations arranged along a line extending in the direction of filament travel.

3,967,119
CORONA CHARGING DEVICE

Seiji Matsumoto, Asaka, Japan, assignor to Rank Xerox Ltd., London, England

Filed July 16, 1974, Ser. No. 489,011
Claims priority, application Japan, Dec. 30, 1970, 45-122493
Int. Cl.² G03G 15/02
U.S. Cl. 250—326 **6 Claims**

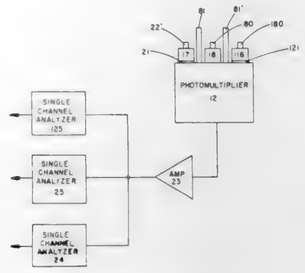


1. A corona charging apparatus for applying electrostatic charge to a charge surface including:
   a corona electrode disposed along a line in spaced relation to said charge surface and operatively connected to a source of voltage for the creation of corona and corona current to accumulate electrostatic charge on said charge surface
   a control wire disposed along a line in spaced relation to said corona electrode and at an oblique angle relative thereto so that successive increments of said control wire along the length thereof are differently spaced from said corona electrode, said control wire being selectively operatively connected to a source of voltage and to ground,
   whereby the presence of said control wire at varying distance from said corona electrode exerts variable effect on the corona current flowing therefrom to correspondingly vary the charge density on said charge surface.

3,967,120
ANALYZING RADIATION FROM A PLURALITY OF SOURCES

John B. Ashe; Peter F. Berry, and James D. Hall, all of Austin, Tex., assignors to G. D. Searle & Co., Skokie, Ill.

Division of Ser. No. 366,488, June 4, 1973, Pat. No. 3,859,525. This application Dec. 5, 1974, Ser. No. 529,858
Int. Cl.² G01T 7/08
U.S. Cl. 250—328 **6 Claims**

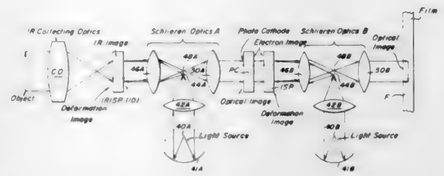


1. In a radiation detection apparatus utilizing a plurality of scintillators for concurrently detecting radiation from a plurality of radioactive samples wherein a single scintillator is associated with each such sample, the improvement comprising a single photodetector in optical communication with all of the scintillators, classes of light filters associated with at least all but one of the scintillators with the filters of each class being positioned between the photodetector and a single scintillator and uniformly attenuating incident light energy within a class by at least 10% and wherein the attenuation of each class of filters differs from the attenuation of each other class of filters by at least 10%, and separate signal analyzers are associated with a single one of the aforesaid scintillators and are connected to said photodetector for contemporaneously accepting electrical pulses in separate predetermined amplitude ranges, a first of the signal analyzers being adjusted to accept electrical pulses in an energy range resulting from scintillations in an associated one of the scintillators, while others of the signal analyzers are adjusted to accept electrical pulses having amplitudes corresponding to the energy range of the first signal analyzer, but varying therefrom to the extent that the attenuation of the associated light filter differs from the attenuation of the light filter associated with the scintillator which is associated with said first signal analyzer.

3,967,121
LOW LEVEL INFRARED CAMERA (LLIR CAMERA)

Charles M. Redman, Las Cruces, N. Mex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 10, 1975, Ser. No. 612,054
Int. Cl.² H01J 31/49; G03B 41/00
U.S. Cl. 250—330 **9 Claims**



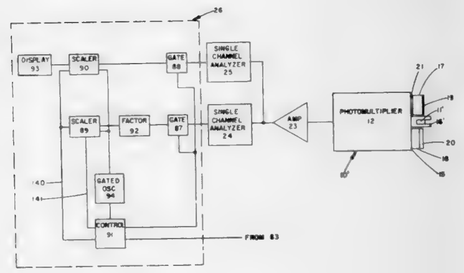
1. A camera for recording low level infrared images comprising:

input optic means for receiving infrared radiation from an object and forming an infrared image of said object;
first storage plate means for receiving said infrared image at an input face thereof and storing said image on a deformographic film on an output face thereof;
first Schlieren optic means for converting said image on the deformographic film of said first storage plate means to a first visible light image;
photocathode means for converting said first visible light image to a corresponding electron image;
second storage plate means for receiving said electron image on an input face thereof and storing an image corresponding to said electron image on a deformographic film on an output face thereof; and
second Schlieren optic means for converting said image on the deformographic film of said second storage plate to a second visible light image and projecting said second visible light image onto a photographic film.

3,967,122
RADIATION ANALYZER UTILIZING SELECTIVE ATTENUATION

John B. Ashe; Peter F. Berry, and James D. Hall, all of Austin, Tex., assignors to G. D. Searle & Co., Skokie, Ill.

Division of Ser. No. 366,488, June 4, 1973, Pat. No. 3,859,525. This application Dec. 5, 1974, Ser. No. 529,857
Int. Cl.² G01T 1/20
U.S. Cl. 250—367 **3 Claims**

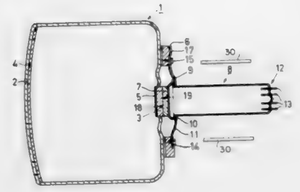


1. In a radiation detection apparatus utilizing a plurality of scintillators, the improvement comprising the arrangement of said scintillators in a radiation detection plane, a single photodetector for generating electrical pulses and having a photosensitive surface parallel to said radiation detection plane in optical communication with the scintillators, a light filter for uniformly attenuating incident light energy by at least 10 percent positioned between the photodetector and at least one and less than all of said scintillators, a first signal analyzer connected to said photodetector for accepting electrical pulses in a predetermined amplitude range generated by radioactive events occurring proximate to said radiation detection plane, and a second signal analyzer connected to said photodetector and set to accept contemporaneous electrical pulses having amplitudes falling with the aforesaid predetermined energy range but diminished by the amount by which the aforesaid light filter attenuates incident light energy and likewise generated by radioactive events occurring proximate to said radiation detection plane.

3,967,123
COUPLING TWO OPTICAL WINDOWS

Hendrik Gerardus Deylius; Jan Frederik Lammers, and Antonius Paulus Notenboom, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 28, 1974, Ser. No. 484,077
Claims priority, application Netherlands, July 5, 1973, 7309383
Int. Cl.² H01J 31/50
U.S. Cl. 250—368 **9 Claims**

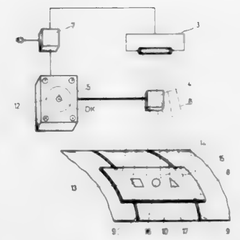


1. An image sensing system in which an image-forming apparatus is coupled with a sensing apparatus, comprising said sensing apparatus having an optical window, said image forming apparatus having an optical window that is optically coupled with said optical window of said sensing apparatus, and a diaphragm member disposed at said windows and so coupling said windows by elastic pressure.

3,967,124
APPARATUS FOR DETERMINING SKIN TOLERANCE TO ULTRA-VIOLET RADIATION

Ernst Strutz, Zurich, Switzerland, assignor to Biviator S.A., Grenchen, Switzerland

Filed Aug. 26, 1975, Ser. No. 607,923
Int. Cl.² G01J 1/42
U.S. Cl. 250—372 **10 Claims**



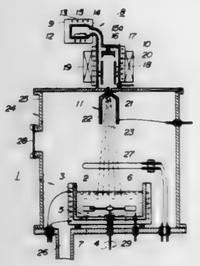
1. An apparatus for determining the tolerances of skin to UV radiation, comprising a UV radiation source and a device for measuring the UV radiation, wherein the UV radiation source and the device for measuring the UV radiation are adapted to be switched on for a predetermined period, so that radiation from the UV source acts on the skin of a test person, a mask being provided between the UV source and the skin, said mask defining at least three apertues and means for the control of the radiation flux through each of said apertures.

3,967,125

METHOD AND APPARATUS FOR MAKING PHOSPHORS

Kiyoshi Morimoto; Yukihiko Utamura, both of Mobara, and Toshinori Takagi, Nagaokakyo, all of Japan, assignors to Futaba Denshi Kogyo K.K., Japan

Filed Feb. 24, 1975, Ser. No. 552,607
Claims priority, application Japan, Feb. 22, 1974, 49-20457
Int. Cl.² H01J *37/00*
U.S. Cl. 250—432 R **5 Claims**



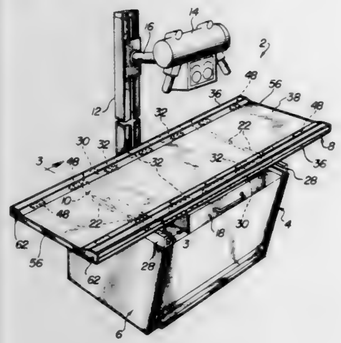
1. An apparatus for preparing phosphor comprising:
an activator ion source section having means for generating activator ions;
an ion accelerating electrode section for accelerating and irradiating activator ions generated by said activator ion source section into base material of said phosphor;
a base activating vessel section having an agitating means for containing the base material of said phosphor and for continuously circulating said base material therein in order to uniformly irradiate accelerated activator ions into said base material of said phosphor; and
a vacuum system for providing a low-pressure atmosphere for at least said activator ion source section and said base activating vessel section.

3,967,126

X-RAY APPARATUS HAVING TABLE WITH IMPROVED TOP

George W. Otto, Jr., Elmhurst, Ill., assignor to American Radiologic Systems Inc., Melrose Park, Ill.

Filed Feb. 20, 1975, Ser. No. 551,370
Int. Cl.² G01N *21/00*
U.S. Cl. 250—439 **7 Claims**



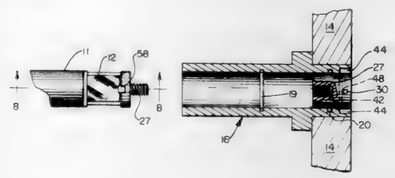
5. In an X-ray apparatus having table with a table top and wherein there is an X-ray film carrier below the table top and an X-ray source above the table top, an improvement in the table top comprising an elongated panel parallel to the film plane of the film carrier and having transverse margins, and means imposing continuous transverse tension on said panel, said means comprising end frame structure at said transverse margins that apply forces in opposite directions on said panel transversely thereof.

3,967,127

SAMPLE INTRODUCER

John F. Rendina, Boxborough, and Paul E. Larson, Acton, both of Mass., assignors to GCA Corporation, Bedford, Mass.

Filed July 3, 1975, Ser. No. 592,807
Int. Cl.² H01J *37/20*
U.S. Cl. 250—441 **6 Claims**



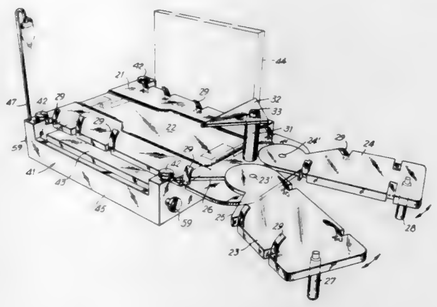
1. Apparatus for introducing a sample into an evacuated chamber through a port in said chamber, said apparatus comprising:
a plug adapted to releasably engage and seal said port at its inner end;
a sample-carrying probe adapted to extend through said port, there being sealing means for maintaining a seal to said port around said probe upon introduction of the probe into said port; and
coupling means at the distal end of said probe for selectively engaging and carrying said plug, said plug being releasable from said port and re-engagable with said port by said probe,
whereby a sample may be introduced into said chamber by said probe which, after introduction into said port, engages and releases said plug from the port and carries said plug into said chamber.

3,967,128

INFANT IMMOBILIZING DEVICE

Jan J. Smulewicz, New York, N.Y., assignor to Nuclear Associates, Inc., Westbury, N.Y.

Filed Aug. 20, 1974, Ser. No. 499,100
Int. Cl.² G01N *21/34*
U.S. Cl. 250—444 **4 Claims**



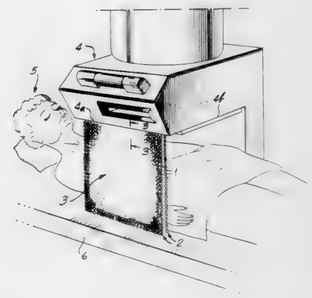
1. An infant immobilizing device comprising a frame for support by a horizontal surface, a body panel, restraining means for releasably restraining an infant on said body panel, means cooperating between said body panel and said frame for removably and adjustably securing said body panel to said frame with the infant oriented substantially horizontally and with the infant oriented substantially vertically, and cassette support means carried by said body panel for vertically supporting an X-ray film cassette in relation to the infant when the infant is oriented substantially vertically.

3,967,129

RADIATION SHIELDING CURTAIN

Norlin T. Winkler, Rochester, Minn., assignor to Research Corporation, New York, N.Y.

Filed Apr. 28, 1075, Ser. No. 571,931
Int. Cl.² G21B *3/02, 3/04*
U.S. Cl. 250—517 **12 Claims**



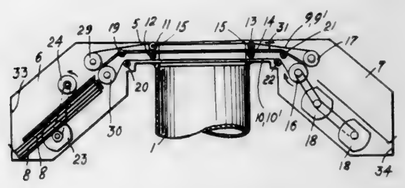
1. A method of constructing a radiation shield comprising the steps of:
assembling a plurality of radiation-shielding elements;
connecting said elements in sets to form a plurality of elongated strings of said elements;
disposing the upper ends of said strings adjacent to each other to form a stranded curtain; and
selecting the material and geometry of said elements such that said curtain has a cross-section density which is the equivalent of a predetermined thickness of lead.

3,967,130

FILM CHANGING EQUIPMENT FOR RAPIDLY CHANGING FILMS CONTAINED IN FLEXIBLE SHEATHS IN RADIOLOGICAL X-RAY EQUIPMENT

Kurt Decker, 17, Pohlmannstrasse, 8 Munich 42, Germany

Filed Nov. 18, 1974, Ser. No. 525,044
Claims priority, application Germany, Dec. 6, 1973, 2360898
Int. Cl.² G03B *41/16*
U.S. Cl. 250—468 **8 Claims**



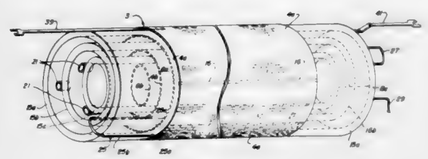
1. A device for rapidly changing a plurality of film sheaths in radiological x-ray equipment, each sheath comprising a length of flat plastic tubing closed at opposite ends and containing a film and a reinforcing foil sufficiently stiff to maintain the film flat during exposure, said device comprising
a. an exposure section and magazine and delivery sections in communication with said exposure section at opposite sides respectively of said exposure section;
b. conveyor means including at least two rollers adjacent each of said opposite sides of said exposure section, the peripheral surfaces of said rollers on each of said sides being adjacent each other, at least one pair of endless conveyor belts transparent to x-rays extending across said exposure section between a pair of said rollers at opposite sides respectively of said exposure section such that a run of one of said belts is in confronting relationship with a run of the other of said belts for retaining and transporting said film sheaths in succession therebetween, and drive means for said conveyor means;
c. means in said magazine section for supporting a stack of said film sheaths and means for feeding said film sheaths in succession to the nip between said rollers at one side of said exposure section said means for supporting a stack of said film sheaths in said magazine section comprising a pivotally mounted table for supporting said stack of film sheaths, a pickup roller positioned for contact with the top surface of the top film sheath of said stack, means for pivoting said table toward said pickup roller to press said top film sheath against the surface of said pickup roller and means to drive said pickup roller to feed successive top film sheaths into the nip between said rollers at one side of said exposure section to transport said film sheaths to said exposure section; and
d. means in said delivery section for receiving said film sections in succession from said conveyor means and storing film sheaths in a stack.

3,967,131

CORONA DISCHARGE OZONE GENERATING UNIT

Romuald E. Slipiec, Northbrook, and Ronald A. Schultz, Berkeley, both of Ill., assignors to Ozone Incorporated, Deerfield, Ill.

Filed June 4, 1974, Ser. No. 476,333
Int. Cl.² C01B *13/11*
U.S. Cl. 250—539 **11 Claims**



1. In an ozone generating unit including an enclosure forming a passageway for the flow of an oxygen containing gas to be ozonized, a first dielectric tube in said passageway which first tube has an electrode receiving portion with a substantially even thickness and a cylindrical inner surface, an outer cylindrical conductive electrode concentrically mounted on the ouside of and spaced from said electrode receiving portion of said dielectric tube to provide an air gap therebetween, an inner cylindrical electrode on the inside of the electrode receiving portion of said dielectric tube, and a pair of high voltage connecting terminals electrically connected respectively to said electrodes, there being provided between said outer and inner electrodes an air gap where an ozone producing corona is produced upon connection of a high voltage to said terminals, the improvement wherein said inner electrode is made of a sheet of resilient flexible conductive material of a width of about but no greater than the inside circumference of the interior surface of said electrode receiving portion of said dielectric tube and expanding into even continuous contact with the cylindrical inner surface of said dielectric tube so the ends of said resilient flexible sheet of conductive material forming said inner electrode are in even contiguous confronting relation, to provide an even spacing between said electrodes.

6. An ozone generating unit comprising: an enclosure forming a passageway for the flow of an oxygen containing gas to be ozonized, an assembly of concentric dielectric tubes in said passageway spaced from one another to provide for gas flow through the spaces between the dielectric tubes, the end of said dielectric tube assembly into which the gas to be ozonized

flows terminating at different points located progressively axially inwardly of the dielectric tube assembly proceeding from the outermost to the innermost dielectric tubes, so the oxygen containing gas can progressively strike only one tube edge at a time to minimize resistance to gas flow into the dielectric tube assembly, a pair of metal electrodes on opposite sides of each dielectric tube, and a pair of high voltage connecting terminals respectively electrically connected to said pairs of electrodes.

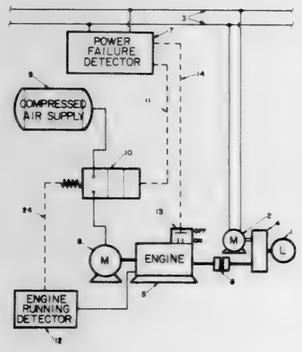
9. In an ozone generating unit including an enclosure forming a pssageway for the flow of an oxygen containing gas to be ozonized, an assembly of concentric dielectric tubes in said passageway spaced from one another to provide for gas flow through the spaces between the dielectric tubes, which spaces include at least one gap in which ozone producing corona discharge is to be produced between electrode receiving portions of adjacent dielectric tubes, and cylindrical electrodes concentrically disposed on opposite sides of said dielectric tubes, the improvement wherein said dielectric tubes are held in centered spaced relation by circumferentially spaced open-ended tubular flexible resilient members sandwiched in partial compression between the dielectric tubes at the opposite ends of the dielectric tube assembly so gas can flow therethrough.

3,967,132

AIR OPERATED POWER TRANSFER APPARATUS

Bruce N. Takamine, 685 Iwalani St., Hilo, Hawaii 96720

Filed Nov. 26, 1974, Ser. No. 527,489
Int. Cl.² F02D *25/00*; **F02N** *11/08*
U.S. Cl. 290—4 R **23 Claims**



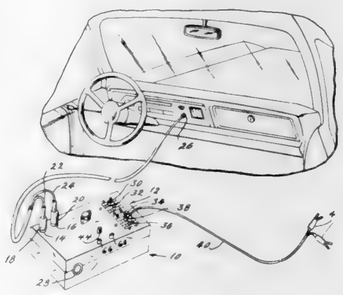
1. In a power transfer apparatus having a stand-by engine to meet a demand for power during a failure in the normal electrical power supply to a load, an engine starting and control means to start the engine upon failure of the normal power supply, run the stand-by engine during the power failure with the engine coupled to the load, and stop th stand by engine when the normal power supply is restored comprising:
   a. a compressed air supply;
   b. a compressed air starter motor operatively connected to the stand-by engine to drive the engine for starting;
   c. a starter valve means operatively connecting the compressed air supply with the compressed air starter motor so that when the valve means is open air can flow from the air supply to the starter motor;
   d. a power failure detector operatively connected to the normal electrical power supply;
   e. means connecting the power failure detector to the starter valve means for opening the starter valve means upon failure of the normal power supply;
   f. an engine running detector operatively connected to the stand-by engine for determining whether the engine is running;
   g. means connecting the engine running detector to the startr valve means for closing the valve when the engine is running;
   h. a two position engine operation switch operatively connected to the stand-by engine having an "on" position for allowing the engine to run and an "off" position for preventing the engine from running; and
   i. means operatively connecting the power failure detector to the engine operation switch so that the switch will be "on" during power failure and "off" when normal power is available so that the engine may be started and run when power fails and will be shut off when normal power returns.

3,967,133

POWER SUPPLY MEANS

James F. Bokern, 828 Mason Wood Drive, St. Louis, Mo. 63141

Filed Feb. 14, 1974, Ser. No. 442,674
Int. Cl.² H02J *1/00*
U.S. Cl. 307—10 R **14 Claims**



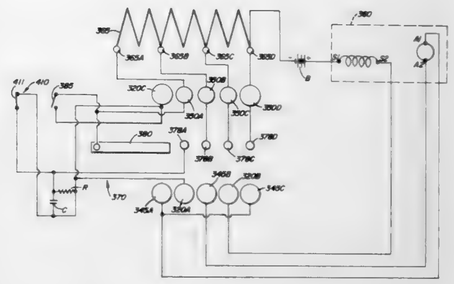
1. Means for providing power at different preselected voltages from a D. C. source such as from a storage battery of the type used with internal combustion engines comprising a battery source having output terminals at which the battery voltage is available, a housing having first, second and third female receptacle connection means thereon and circuit means in the housing, means including said female connection means connecting the circuit means to the battery output terminals, said circuit means including a current controlled device having emitter and collector elements for connection across the battery terminals, a voltage divider circuit formed by a plurality of series connected resistor elements in series with the current controlled device across the battery terminals, output connection means connected to selected ones of the connection locations between pairs of adjacent resistors in the voltage divider circuit, said output connection means including the second female receptacle means on the housing and means for making connection between selected ones of said second receptacle means and the connection locations depending upon the desired voltage, and other means operatively connected in the circuit means including means operative in response to the battery voltage falling below a predetermined voltage to simultaneously discontinue the supply of power from the battery to the voltage divider circuit and to a load connected across a portion thereof, said last named means also including means which are deenergized when the voltage falls below the predetermined level to indicate the occurrence of this condition, said indicating means being mounted on said housing means, said third female receptacle means including means for making another output voltage available.

3,967,134

ELECTRICAL CONTROL APPARATUS

James Whitman Gibbs, Hialeah, Fla., assignor to Flo-Start, Inc., Akron, Ohio

Filed Jan. 15, 1975, Ser. No. 540,430
The portion of the term of this patent subsequent to Apr. 15, 1992, has been disclaimed.
Int. Cl.² H01H *19/14*
U.S. Cl. 307—115 **42 Claims**



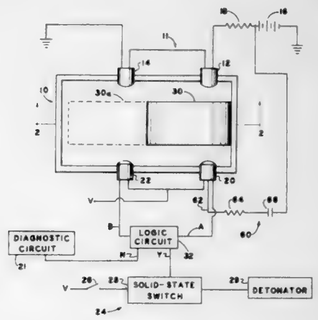
1. An electrical control unit operative with circuit means comprising, slide surface means composed in part of electrically non-conductive material, a plurality of conductive discrete contact means arranged in said slide surface means, first conductive liquid contact means progressively and successively engaging some of said discrete contact means and connected to said circuit means to provide a variable magnitude electrical output and second conductive liquid contact means engaging other of said discrete contact means and connected to said circuit means to effect a switching operation with respect to the electrical output of said first liquid contact means.

3,967,135

ACCELERATION CHANGE SENSOR

Morton S. Balban, and Doublas A. Larson, both of Oak Park, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 11, 1974, Ser. No. 460,009
Int. Cl.² B60Q *1/00*
U.S. Cl. 307—121 **20 Claims**



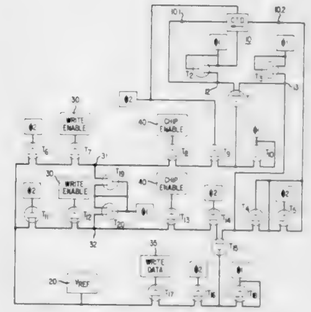
1. A device for indicating the occurrence of rates of change of velocity of a body, equal to and greater than a predetermined minimum, comprising:
   a. a base fixed to the body;
   b. an inertial mass movable with respect to said base and having a reference position, and means biasing said mass to said reference position, said mass being movable to overcome the biasing force and move to a second position when the body is subjected to rates of change of velocity equal to and greater than the predetermined minimum;
   c. a light source attached to said base;
   d. a first light responsive means attached to said base and disposed to be out of light communication with said light source when said mass is in said reference position and to receive light from said light source when said mass is in said second position;
   e. a second light responsive means attached to said base disposed to be out of light communication with said light source when said mass is in said second position and to receive light from said light source when said mass is in said reference position; and
   f. electric circuit means connected to said first and second light responsive means operative to indicate the status of both said first and second light responsive means.

3,967,136

INPUT CIRCUIT FOR SEMICONDUCTOR CHARGE TRANSFER DEVICE CIRCULATING MEMORY APPARATUS

Robert Harold Krambeck, South Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 7, 1974, Ser. No. 477,193
Int. Cl.² H01L *27/10*, *29/78*; **G11C** *11/40*
U.S. Cl. 307—221 D **8 Claims**



1. A circulating memory semiconductor apparatus which comprises:
   a. a semiconductor charge transfer device having an input terminal and an output terminal, said charge transfer device for shifting charges representing information in response to at least first and second clock pulse voltages of different relative phases;
   b. a write-enable network for modifying information circulating in said charge transfer device, said write-enable network including a plurality of transistor switching means, each said transistor switching means having first and second high current carrying terminals and a control terminal, current flow between said first and second high current carrying terminals being controlled by signals applied to the respective control terminals, said plurality of transistor switching means including
   a first transistor switching means having its first and second high current carrying terminals connected in series between the input terminal and the output terminal of said charge transfer device, such that during operation information signals from said output terminal are decoupled from said input terminal upon application of a suitable first control signal applied to the control terminal of said first transistor switching means and that said information signals from said output terminal are coupled to said input terminal only upon absence of said first control signal to the control terminal of said first transistor switching means, said write-enable network further including second and third transistor switching

means for supplying said first control signal to the control terminal of said first transistor switching means only during application of said second clock pulse voltage, the first and second high current carrying terminals of said second and third transistor switching means being connected in series between said control terminal of said first transistor switching means and a reference terminal for connection to a voltage source, such that said second and third transistor switching means supply said first signal to the control terminal of said first transistor switching means only upon simultaneous application of suitable second and third control signals to the control terminals respectively of said second and third transistor switching means; and

c. fourth transistor switching means, having first and second high current carrying terminals and a control terminal, for preventing application of said first control signal to the control terminal of said first transistor switching means upon sequential, rather than simultaneous, application of said second and third signals to the control terminals of said second and third transistor switching means, the first and second high current carrying terminals of said fourth transistor switching means being coupled in series between a first clock pulse voltage terminal connected to a source of said first clock pulse voltage and a first node along the series path between said reference terminal and said control terminal of said first transistor switching means, said first node being located between said second and third transistor switching means, the control terminal of said fourth transistor switching means being connected to said first clock pulse voltage terminal in order that during operation said fourth transistor switching means couple said first node to said first clock pulse voltage terminal only during application of said first clock pulse voltage.

3,967,137

CIRCUIT ARRANGEMENT FOR WEIGHTING A CURRENT ACCORDING TO MAGNITUDE AND DIRECTION

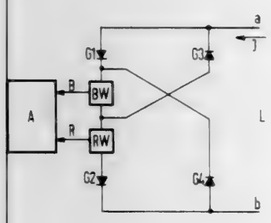
Herbert Reiter, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 4, 1974, Ser. No. 529,492

Claims priority, application Germany, Dec. 4, 1973, 2360375

Int. Cl.² H03K *5/153, 5/20;* **H04M** *3/30*

U.S. Cl. 307—235 R **2 Claims**



1. A circuit for providing a code defining the magnitude and direction of a current on a line, comprising

first and second current responsive devices connected in series, each of said devices providing a predetermined binary signal in response to the current on said line,

said first current responsive device comprising means for establishing a threshold, whereby the binary output signal of said first device comprises information defining the relative magnitude of the current through said device as compared to said threshold,

said second current responsive device providing the binary signal indication of the direction of current on said line,

first rectifier means connecting said current responsive devices between the wires of said line, said rectifier means being poled to pass only the current of a first predetermined direction on said line to said current responsive devices,

and second rectifier means oppositely poled with respect to said first rectifier means and connected to pass current to said first current responsive device while bridging said second current responsive device, whereby only said first device is responsive to the current in the second direction opposite to said first direction, whereby the binary output signals of said first and second devices indicate the magnitude and polarity of said current in said first or said second direction.

3,967,138

DEVICE FOR FIRING THYRISTOR

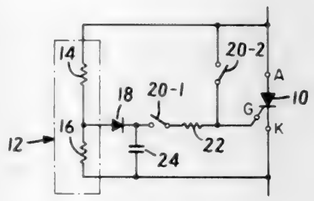
Hiroshi Mitsuoka, and Masayoshi Kumano, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 12, 1974, Ser. No. 531,984

Claims priority, application Japan, Dec. 15, 1973, 48-141091

Int. Cl.² H03K *17/72*

U.S. Cl. 307—252 J **11 Claims**



1. A device for firing a thyristor, comprising; a thyristor to be fired including an anode terminal, a cathode terminal and a gate terminal, a gate capacitor capable of charging with a voltage applied across said anode terminal and said cathode terminal of said thyristor, means for charging said gate capacitor with said voltage, means operable for connecting said gate capacitor across said gate terminal and said cathode terminal of said thyristor, and means for effecting substantially a short-circuit from said anode terminal to said gate terminal of said thyristor upon the operation of said means operable for connecting said gate capacitor.

3,967,139

APPARATUS FOR ENHANCING OUTPUT CHARACTERISTICS OF VOLTAGE DRIVER CIRCUITS

Robert B. Johnson, Billerica; Paul S. Feldman, Waltham, and Edwin P. Fisher, North Abington, all of Mass., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Dec. 2, 1974, Ser. No. 528,599

Int. Cl.² H03K *17/00*

U.S. Cl. 307—270 **3 Claims**

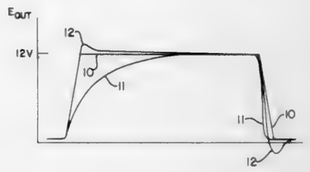
1. Driver circuit comprising:

first means for receiving a high-level drive voltage signal;

gating means for receiving a plurality of low-level input signals and for generating a logic signal corresponding to a logical function of said plurality input signals; and

second means coupled to said gating means and responsive to a change in said logic signal for generating a high-level output signal, said second means including a phase splitting transistor with its base connected to receive said logic signal and inductive means coupled between said first means and the collector of said phase splitting transistor for converting said high-level drive voltage signal to

an internal signal which includes higher level voltage segments which appear substantially time coincidentally



with a change in said logic signal and are at least 3 volts different than said high-level drive voltage signal.

3,967,140

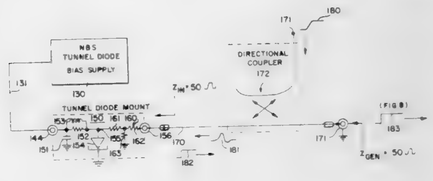
TUNNEL DIODE PULSE GENERATOR

James R. Andrews, Lafayette, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Jan. 13, 1975, Ser. No. 540,471

Int. Cl.² H03K *3/315*

U.S. Cl. 307—286 **7 Claims**



1. A tunnel diode pulse generator, comprising:

a transmission line;

a tunnel diode;

bias means biasing said tunnel diode;

means connecting said tunnel diode across said transmission line, said means including an impedance matching network matching the characteristic impedance of said transmission line;

means supplying triggering signals; and

directional coupler means for coupling said triggering signals to said transmission line for transmission towards said tunnel diode, said triggering signal being received by said means connecting said tunnel diode without reflection and said triggering signal triggering said tunnel diode to generate an output signal which propagates down said transmission line from said tunnel diode.

3,967,141

PIEZOELECTRIC ENERGY SOURCE

Heinz Gawlick, Furth; Uwe Brede, Schwaig, and Hellmut Bendler, Erlangen-Spardorf, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

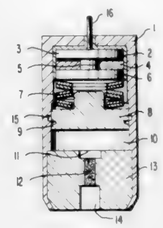
Filed Nov. 3, 1971, Ser. No. 195,431

Claims priority, application Germany, Dec. 1, 1970, 2058968

Int. Cl.² H01L *41/08*

U.S. Cl. 310—8.7 **16 Claims**

1. A piezoelectric energy source comprising a housing, a piezoelectric transducer arranged within said housing, piston means mounted for movement within said housing for exerting pressue on said piezoelectric transducer in accordance with the extent of the path of movement thereof from an initial rest position, and means for nondisengagingly locking said piston means in a predetermined position along the path of movement of said piston means corresponding to a predetermined pressure on said piezoelectric transducer, said piezoelectric transducer providing an output in accordance with the pressure exerted thereon, and said housing forms a portion of a



capacitor for storing the output of said piezoelectric transducer.

3,967,142

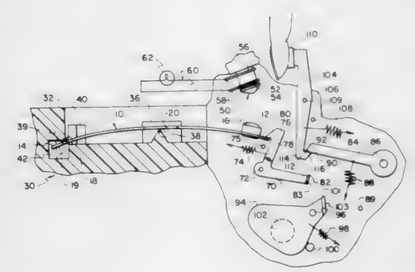
PIEZOELECTRIC CRYSTAL FIRING SPRING AND MOUNT

David Easton Beach, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 6, 1975, Ser. No. 538,673

Int. Cl.² H01L *41/04*

U.S. Cl. 310—8.3 **6 Claims**



1. A piezoelectric crystal striking mechanism comprising:

means, including a member movable between a latched position and a striking position, for striking a piezoelectric crystal;

means for mounting said striking means, said mounting means including a pair of fulcrum edges that are engageable with said striking means to support said member for movement between said latched and striking positions; and

means for releasably retaining said member in said latched position.

3,967,143

ULTRASONIC WAVE GENERATOR

Akinori Watanabe; Katsuhide Tanoshima; Takao Ando; Akira Tohama, and Akio Nagano, all of Tokyo, Japan, assignors to Oki Electric Industry Company, Ltd., Tokyo, Japan

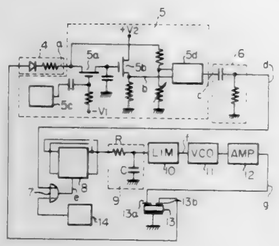
Filed Oct. 10, 1974, Ser. No. 513,752

Int. Cl.² H01L *41/04*

U.S. Cl. 310—8.1 **4 Claims**

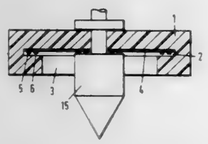
1. An ultrasonic wave generator comprising at least a transducer for generating an ultrasonic wave having at least a driving electrode and a detection electrode, a variable frequency oscillator whose output signal is applied to said driving electrode, and a slope detection circuit which detects the

amplitude of the output signal of said detection electrode and controls the output frequency of said variable frequency oscil-



lator for obtaining the maximum amplitude of output signal in said detection electrode.

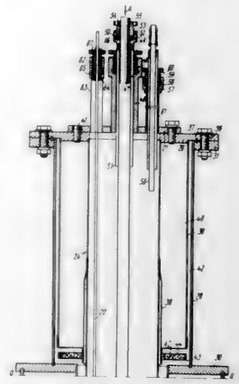
3,967,144
HALL-VOLTAGE DEVICE
Ferdinand Hubert Franciscus Gerardus Spierings, Asserpark 11, Wageningen, Netherlands
Filed May 19, 1975, Ser. No. 579,084
Int. Cl.² G21D 7/02
U.S. Cl. 310—10 **5 Claims**



1. A Hall-voltage device comprising means included in a magnetic circuit for generating a magnetic field, in the air gap of which magnetic circuit a cylindrical box is disposed substantially parallel to the planar boundaries of the air gap, which box is arranged to receive a fluid having charged particles distributed therein and which box includes electrodes adapted to cooperate with the fluid, and means for imparting to the box a rotational movement about its axis, which axis substantially coincides with the central axis of the magnetic circuit, one end face of the box being provided with a central aperture, characterized by an electrode support consisting of a thin, flexible disc of plastic foil of a diameter slightly less than the inside diameter of the box, on which disc both the electrodes and their discharge conductors are disposed and which disc includes a raidal cut so as to permit insertion of the disc into the box through the central aperture, the disc being kept in its proper position within the box by means of a pivot extending through the aperture and having terminals to which the discharge conductors extend.

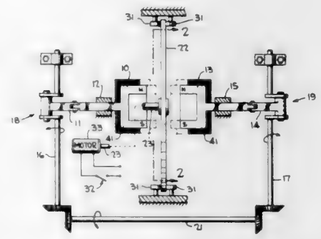
3,967,145
CONTACTLESS SYNCHRONOUS ELECTRIC MACHINE
Voldemar Voldemarovich Apsit, ulitsa V. Latsisa, 2a, kv. 21; Zigurd Karlovich Sika, Vaidavas, 27, kv. 40, and Daniel Petrovich Kikust, ulitsa Bikernieku, 81, kv. 34, all of Riga, U.S.S.R.
Filed June 24, 1974, Ser. No. 482,598
Int. Cl.² H02K 9/00
U.S. Cl. 310—52 **5 Claims**

1. A contactless synchronous electric machine comprising: a stator carrying an armature winding made of a superconducting material; a rotor provided with claw-shaped pole systems coaxially encasing the stator; said rotor being attached with one of its ends to a shaft transmitting rotary motion thereto; a field winding made from a superconducting material being connected to said stator; a cryostat immovably disposed



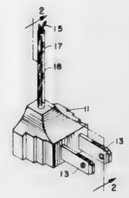
within the rotor pole systems and coaxially encircling the stator; said armature winding and field winding being secured inside the cryostat.

3,967,146
MAGNETIC MOTION CONVERSION DEVICE
Gerald T. Howard, Rte. 6 Box 606, Augusta, Ga. 30906
Continuation-in-part of Ser. No. 463,685, April 24, 1974, abandoned. This application May 5, 1975, Ser. No. 574,457
Int. Cl.² H02K 7/06
U.S. Cl. 310—80 **7 Claims**



1. A motor comprising at least one first magnet and at least one second magnet disposed with like poles facing one another, at least one of said first and second magnets being shiftable in a reciprocating motion relative to the other of said magnets, a magnetic flux field suppressor moveably mounted between said magnets, said suppressor comprising at least one disc having a first portion of non-magnetic material and a magnetically permeable second portion comprising a plurality of magnetic conducting sheets interleaved with thin layers of a non-magnetic material, first means including a crankshaft connecting said one magnet to a drive shaft, second means connecting said disc to a power source to effect driving movement of said disc, whereby repeated movement of said first and second portions of said disc into alignment between like poles of said magnets causes them to be repeatedly repulsed from each other and attracted to the disc to thereby shift said one magnet relative to said other magnet, the magnetic flux lines of said magnets being focused during the attracting action by said sheets as they are directed therethrough between the poles of each said magnet so that said magnets are attracted to the disc and not to each other.

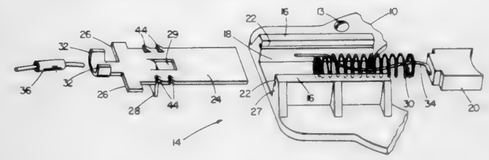
3,967,147
LOW POWER SYNCHRONOUS MOTOR AND LINE CORD THEREFOR
Ralph H. Preiser, LaSalle, Ill.; Frank W. Stellwagen, Stamford, Conn., and Anthony W. Rigazio, Oglesby, Ill., assignors to General Time Corporation, Thomaston, Conn.
Division of Ser. No. 405,550, Oct. 11, 1973, Pat. No. 3,873,865, which is a continuation of Ser. No. 261,485, June 9, 1972, abandoned. This application Jan. 10, 1975, Ser. No. 540,177
Int. Cl.² H02K 21/14
U.S. Cl. 310—162 **5 Claims**



1. In combination with a timepiece, a synchronous motor comprising:
a. a rotor including
1. a permanent magnet having a pair of spaced apart surfaces, and
2. a pair of discs, each disc being notched around its periphery to provide a plurality of equally spaced teeth, each disc being mounted on a respective surface of said magnet in a position such that the notches in one disc are axially opposite the teeth in the other disc and said magnet being axially polarized so that one disc is a north pole and the other disc a south pole;
b. a stator including
1. an energizing winding,
2. a core passing through said winding and,
3. a pair of plates of like configuration having first and second portions, each said second portion extending longitudinally and on one side of center line through said first portion, each said second portion having a notched substantially semi-circular cut-out located towards said center line, said plates secured by said first portions to said core at opposite ends of said winding such that said second portions are located on opposite sides of said center line, said second portions being bent oppositely about two substantially right angle bends so that a major length of said second portion is disposed in a common plane between and parallel to the planes of said first portions whereby said notched cut-outs define a plurality of pole pieces;
c. means rotatably supporting said rotor within said pole pieces for rotation under influence of said energizing winding, said rotor support means providing mechanical connection to a movement of said timepiece to drive said movement under control of said energizing winding; and
d. means for conveying electrical energy from a source to said energizing winding, said conveying means including means for limiting continuously the flow of current under fault conditions to a non-hazardous level.

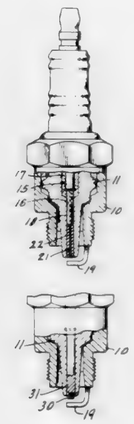
3,967,148
BRUSH HOLDER ASSEMBLY
Richard S. Walsh, Foxboro, Miss., assignor to Ark-Les Switch Corporation, Watertown, Mass.
Filed Jan. 30, 1975, Ser. No. 545,760
Int. Cl.² H02K 13/00
U.S. Cl. 310—239 **11 Claims**

1. A brush holder for use with an electrical motor having a commutator comprising:
a brush supporting and guiding element for supporting and guiding a motor brush for radial movement relative to said commutator;
said element comprising a base and wall means together defining an elongated brush supporting and guiding channel extending radially with respect to said commutator with opposed slots in opposite walls thereof;



a brush stop surface disposed within said channel adjacent its end remote from said commutator, and;
a metal plate member mounted in said slots and extending therebetween, said plate member defining a wall of said brush guiding channel and having integral wire connection means and retaining means for securing said plate member in said slots.

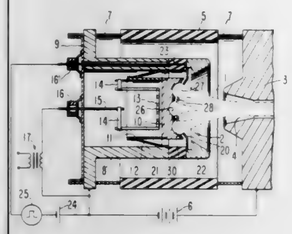
3,967,149
SPARK PLUG
Carl J. Eaton, Toledo, and Richard S. Podiak, Maumee, both of Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio
Division of Ser. No. 376,524, July 5, 1973, Pat. No. 3,868,530. This application Nov. 6, 1974, Ser. No. 521,182
Int. Cl.² H01T 13/20
U.S. Cl. 313—141 **3 Claims**



1. The method of manufacturing a spark plug center electrode which comprises flaring the end of a cylindrical wire of non-precious metal, forming a recess in said flared end, inserting a small body of precious metal into said recess, and swaging the parts together to return said flared end to a cylindrical configuration whereby the non-precious metal bites into and undercuts the side walls of said insert intermediate the ends of the insert.

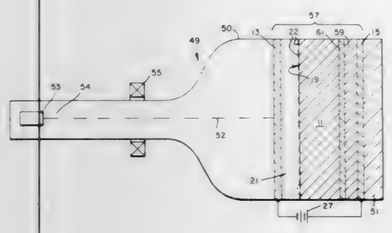
2. The method of manufacturing a spark plug center electrode which comprises forming an axial hole in a wire of non-precious metal and of uniform diameter, filling at least a portion of said hole with an insert of precious metal wire, and swaging the wire parts together to uniformly reduce the diameter of said non-precious metal wire and grip said precious metal wire insert mechanically at its side walls only.

3,967,150
GRID CONTROLLED ELECTRON SOURCE AND METHOD OF MAKING SAME
Erling L. Lien, Los Altos; George V. Miram, Atherton, and Richard B. Nelson, Los Altos Hills, all of Calif., assignors to Varian Associates, Palo Alto, Calif.
Filed Jan. 31, 1975, Ser. No. 545,867
Int. Cl.² H01J 1/20, 19/14
U.S. Cl. 313—338 21 Claims



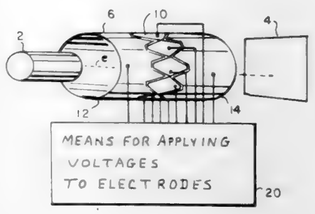
1. A grid-controlled electron source comprising, a thermionic cathode and a control grid spaced adjacent said cathode, said grid comprising multiple apertures separated by conductive members, said cathode having a surface facing said control grid, said surface comprising, electron emissive areas facing said multiple apertures, and non-emissive areas facing said conductive members, said non-emissive areas comprising deposited portions of a layer of non-emissive material on said surface facing said control grid.

3,967,151
SUSTAINED CONDUCTIVITY DEVICE COMPRISING A PLURALITY OF SCHOTTKY BARRIERS
Paul F. Robusto, Huntington Beach, and Craig P. Stephens, Oceanside, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Division of Ser. No. 415,049, Nov. 12, 1973, Pat. No. 3,928,671. This application May 30, 1975, Ser. No. 582,543
Int. Cl.² H01J 29/10, 31/08; H01L 29/48
U.S. Cl. 313—398 8 Claims



1. An electrical field sustained conductivity device comprising:
a. a pair of spaced-apart electrodes and a layer of heat-treated cadmium sulfide between said electrodes;
b. a discontinuous metal layer on one surface of said cadmium sulfide, operative to create Schottky barriers in said surface of the cadmium sulfide; and
c. an ionizable composite film on said discontinuous metal layer, said composite film having conductive particles dispersed in an oxygen-containing insulating medium.

3,967,152
SIMULTANEOUS ELECTROSTATIC FOCUSING AND DEFLECTION SYSTEM
Rudolf G. E. Hutter, New York, N.Y., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Division of Ser. No. 473,591, May 28, 1974, Pat. No. 3,922,580. This application July 17, 1975, Ser. No. 596,323
Int. Cl.² H01J 29/74, 29/62
U.S. Cl. 313—435 1 Claim

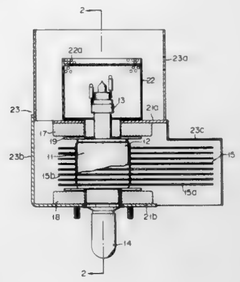


1. An electrostatic electrode system for controlling an electron beam comprising:
A. eight mutually separated electrode segments arranged as cylindrical segments around the surface of an imaginary cylinder of radius R at angular intervals of π/r, opposite segments being diametrically symmetrical with respect to an axis of the imaginary cylinder,
B. a first cylindrical electrode section of a radius of substantially R having an axis coincident with the axis of the imaginary cylinder, the first section having first extensions at one end thereof at angular intervals of $\pi/4$, the first extensions being interleaved with and insulated from the eight electrode segments, and the first section extending axially away from the first extensions at the one end thereof to a smooth end of the first section at an axially opposite end thereof,
C. a second cylindrical electrode section of a radius of substantially R having an axis coincident with the axis of the imaginary cylinder, the second section having second extensions at one end thereof at angular intervals of $\pi/4$, the second extensions being interleaved with and insulated from the eight electrode segments, and the second section extending axially away from the second extensions at the one end thereof to a smooth end of the second section at an axially opposite end thereof, and
D. means for applying voltages for electrostatic control to the segments and sections of the electrode.

3,967,153
FLUORESCENT LAMP HAVING ELECTRICALLY CONDUCTIVE COATING AND A PROTECTIVE COATING THEREFOR
Howard W. Milke, Danvers, and Tadius T. Sadoski, Salem, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.
Filed Nov. 25, 1974, Ser. No. 526,488
Int. Cl.² H01J 61/30, 61/42, 61/54
U.S. Cl. 313—489 3 Claims

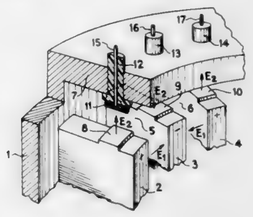
1. A fluorescent lamp comprising a glass envelope having electrodes at each end thereof, a transparent electrically conductive layer coated on the inner surface of the glass envelope, a transparent layer of finely powdered aluminum oxide coated on the electrically conductive coating and a layer of luminescent material coated on the aluminum oxide layer.

3,967,154
MAGNETRON HAVING HORIZONTALLY BLOWN TYPE RADIATOR
Norio Tashiro, Yokohama, and Hiroshi Miura, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan
Filed Jan. 2, 1975, Ser. No. 538,113
Claims priority, application Japan, Jan. 11, 1974, 49-6787[U]
Int. Cl.² H01J 25/50
U.S. Cl. 315—39.51 7 Claims



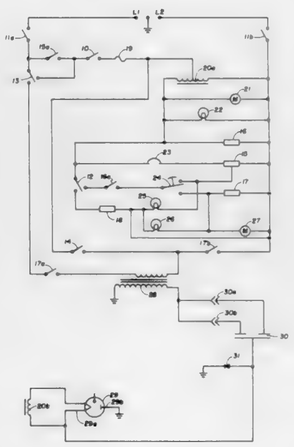
1. A magnetron comprising a magnetron body having an anode member, a cathode stem projecting from one end of the anode member, and an antenna section projecting from the other end of the anode member; a pair of permanent magnets oppositely disposed to impart a magnetic field to the magnetron body; a yoke for magnetically coupling the permanent magnets to each other; a radiator mounted on the outer periphery of the anode member of the magnetron body and having a plurality of cooling plates superposed in a direction to intersect the axis of the anode member; and a cooling wind guide having a wind inlet guide receiving a cooling wind blown in an axial direction of the magnetron body from the side of the cathode stem and surrounding the cathode stem and a cooling wind passage disposed in communication with the wind inlet guide in the axial direction of the magnetron body for guiding the cooling wind toward the radiator and an outlet from which the cooling wind passed through the radiator is discharged crosswise of the axis of the magnetron body.

3,967,155
ELECTRONIC FREQUENCY TUNING MAGNETRON
Paul Chavanat; Bernard Epsztein, and Georges Mourier, all of Paris, France, assignors to Thomson-CSF, Paris, France
Filed Dec. 23, 1974, Ser. No. 535,715
Claims priority, application France, Dec. 28, 1973, 73.46957
Int. Cl.² H01J 25/50
U.S. Cl. 315—39.55 12 Claims



1. In a magnetron having the anode cavities of a magnetron oscillator, at least a multipactor element disposed in the resonant space of one at least of said cavities, said multipactor element comprising two parallel electrodes facing each other and capable of emitting secondary electrons with a secondary emission coefficient δ greater than unity, said multipactor element being so dimensioned and positioned in said resonant space that the high frequency electric wave developed in said anode when operating provides between said electrodes of said multipactor element, a high frequency electric field perpendicular to said electrodes and gives reside to the occurrence there of a variable multipactor discharge modifying the resonant frequency of said resonant space.

3,967,156
POWER SUPPLY CIRCUIT FOR A MICROWAVE OVEN
Stephen A. Levie, Minneapolis, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Oct. 24, 1974, Ser. No. 517,739
Int. Cl.² H05B 9/00
U.S. Cl. 315—101 3 Claims



1. A power supply circuit for a microwave oven adapted to provide constant magnetron output power at either 50Hz or 60Hz input power frequency, said circuit including a magnetron for generating microwave frequency energy; a transformer having a primary winding connected to a source of alternating current electrical power and a secondary winding serially connected to said magnetron; a capacitor serially connected between said transformer secondary winding and said magnetron, said capacitor having first and second selectable capacitive values, said first capacitive value adapted to provide a predetermined energy level to said magnetron during 50Hz operation of said circuit, said second capacitive value adapted to provide said predetermined energy level to said magnetron during 60Hz operation of said circuit; means for selecting either of said first or second capacitive values; and current rectifying means electrically connected in series with said capacitor and in parallel with said mangetron to provide a current path during alternate half-cycles of said alternating current.

3,967,157
DRIVING CIRCUIT FOR A GAS DISCHARGE DISPLAY PANEL
Hiroshi Hada; Tsutomu Hirayama, and Kazunori Nishida, all of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan
Filed Jan. 20, 1975, Ser. No. 542,559
Claims priority, application Japan, Feb. 7, 1974, 49-15744
Int. Cl.² H01J 1/53, 11/04; H05B 37/00
U.S. Cl. 315—169 TV 9 Claims

1. A circuit for driving a first electrode group of a gas discharge display panel having a first and a second electrode

group arranged on either side of a gas discharge space including:

a first plurality of PNP transistors, each having an emitter and a collector electrode;

a second plurality of NPN transistors, each having an emitter and a collector electrode;

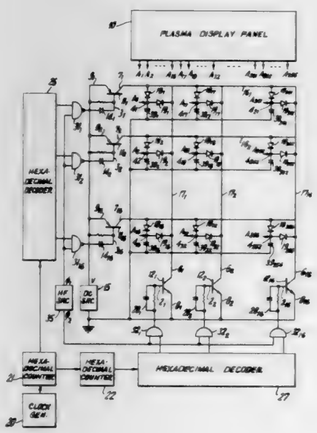
first means for applying a positive voltage to the emitter electrodes of said PNP transistors;

second means for applying a reference potential to the emitter electrodes of said NPN transistors;

a first plurality of conductors, connected to the collector electrodes of said PNP transistors;

a second plurality of conductors, connected to the collector electrodes of said NPN transistors, each of said second conductors intersecting all of said first plurality of conductors to form a plurality of matrix points;

a plurality of forwardly directed diode means one of which is connected between said first and second conductors across each of said matrix points;



connecting means for connecting individual ones of said diode means to the respective electrodes of said one electrode group; and

a capacitor means connected between individual ones of said diode means at each of said matrix points and a point of a substantially constant voltage.

8. A gas discharge display panel including

first and second substantially parallel opposed base plates;

a first group of electrodes formed on said first base plate;

a second group of electrodes formed on said second base plate, in a direction substantially transversely to said first group of electrodes;

an additional electrode formed on said second base plate in a direction substantially transverse to said first group of electrodes;

first dielectric means disposed between said first and second group of electrodes; and

second dielectric means including a block of dielectric material extending along said additional electrode and extending outwardly from said additional electrode to said first group of electrodes.

3,967,158

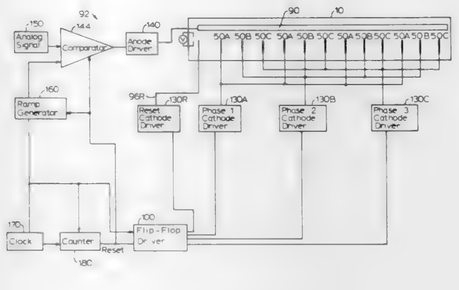
CIRCUIT FOR OPERATING A BAR GRAPH DISPLAY PANEL

Richard A. Saxon, Basking Ridge, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 24, 1975, Ser. No. 543,882

Int. Cl.² H05B 37/00

U.S. Cl. 315—169 TV **1 Claim**



1. A bar graph display system comprising

a display panel comprising a gas-filled envelope including a base plate and a viewing face plate hermetically sealed together,

a plurality of thin, parallel, linear cathodes disposed in a series along the surface of said base plate and positioned sufficiently close together so that, as the series of cathodes is energized and selected cathodes are caused to exhibit cathode glow, the glow of adjacent cathodes appears to blend to form a bar of light, said series of cathodes including a first cathode, a last cathode, and intermediate cathodes,

a reset cathode positioned adjacent to and ahead of the first cathode in said series for use in starting a scanning cycle for said series of cathodes,

an anode electrode disposed on said face plate overlying said series of cathodes,

conductors connected to said cathodes and connecting said cathodes in groups with a single common conductor connected to each such group,

a separate cathode driver connected to each common conductor for energizing each cathode in turn along said series of cathodes,

a reset cathode driver connected to said reset cathode and adapted to be energized first before said separate cathode drivers in a cathode scanning cycle,

an anode driver connected to said anode electrode for applying operating potential thereto, and

a circuit coupled to said anode driver including a signal comparator circuit having a single output connected to said anode driver, said comparator circuit having two inputs, one input comprising a source of a sawtooth voltage, and the second input comprising a source of an analog signal to be represented in said panel by a bar of light made up of a group of energized cathodes, said cathode drivers continually energizing said cathodes in said series and causing said cathodes to exhibit cathode glow as long as there is an output from said comparator and said anode driver is energized thereby and energizes said anode.

3,967,159

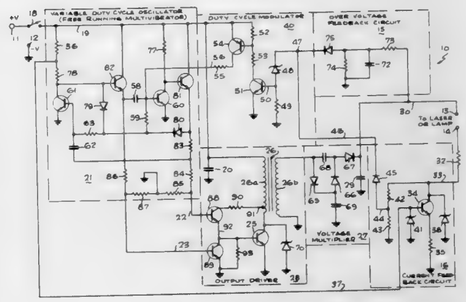
POWER SUPPLY FOR A LASER OR GAS DISCHARGE LAMP

King Hubert Dendy, Panorama City, and Morton B. Leskin, Sherman Oaks, both of Calif., assignors to Morton B. Leskin, Sherman Oaks, Calif.

Filed Feb. 3, 1975, Ser. No. 546,331

Int. Cl.² G05F 1/44; H05B 41/29

U.S. Cl. 315—247 **19 Claims**



1. In a power supply of the type including a feedback loop to maintain the output current at a substantially constant level, the improvement for providing a first feedback signal that is indicative of the output current drawn from said supply, comprising;

a voltage regulator connected in series with the current return path from the power supply load, and

a resistive network across said voltage regulator, a change in output current drawn from said power supply causing a concomitant change in voltage across said resistive network, said first feedback signal being proportional to said voltage.

10. In a power supply of the type wherein an output voltage is developed across a transformer having a primary winding that is intermittently switched into connection with a source of voltage, said power supply being capable of developing an output voltage level sufficiently high to ignite a load of the type requiring a high ignition voltage and thereafter requiring a much lower operating voltage as current is drawn by the load after ignition, the improvement comprising:

an oscillator having a variable duty cycle, said oscillator controlling the switching of said transformer primary so that said primary is connected to said voltage source for a duty cycle established by the oscillator duty cycle,

duty cycle modulator means for modulating the duty cycle of said oscillator in response to a control voltage,

a first feedback circuit, operative only prior to ignition of said load, for providing to said modulator means a first control voltage, which results in a decrease in duty cycle of said oscillator, in delayed response to occurrence of an output voltage from said supply that is above a certain level sufficiently high to ignite said load, said delay being of sufficient time so as to permit said load to be ignited, and

a second feedback circuit, responsive to the output current from said power supply, for providing to said modulator means a second control voltage which causes the oscillator duty cycle to change in inverse proportion to the power supply output current, said duty cycle and hence said output voltage initially being maximum as minimal current is drawn prior to turn-on of said load.

3,967,160

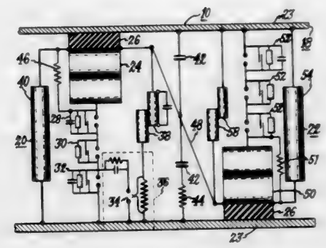
ELECTRICAL OVERVOLTAGE SURGE ARRESTER WITH A LONG TIME CONSTANT VALVE SECTION AND SERIES GAP SECTION

James S. Kresge, Pittsfield, and Harvey E. Fiegel, Richmond, both of Mass., assignors to General Electric Company

Filed May 1, 1975, Ser. No. 573,566

Int. Cl.² H02H 9/06

U.S. Cl. 317—68 **9 Claims**



1. An electrical overvoltage surge arrester, comprising a non-linear resistance valve section connected in series with an electrode gap section between two terminals, said valve section having a resistance-capacitance time constant of at least several hundred microseconds and less than about 10 milliseconds.

3,967,161

MULTI-FREQUENCY RESONANT TAG CIRCUIT FOR USE WITH AN ELECTRONIC SECURITY SYSTEM HAVING IMPROVED NOISE DISCRIMINATION

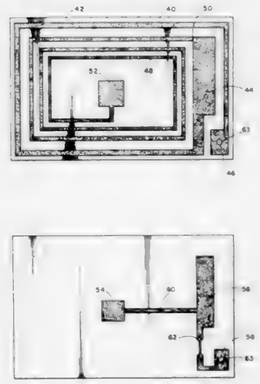
George Jay Lichtblau, 425 E. 63rd St. Suite E - 12-D, New York, N.Y. 10021

Continuation of Ser. No. 262,465, June 14, 1972, Pat. No. 3,863,244. This application July 19, 1974, Ser. No. 490,011

The portion of the term of this patent subsequent to May 7, 1991, has been disclaimed.

Int. Cl.² H02B 1/04, 9/00; G08B 21/00

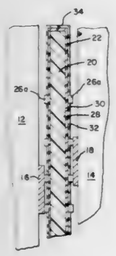
U.S. Cl. 317—101 R **6 Claims**



1. For use in an electronic security system which includes means for providing an electromagnetic field of a frequency which is swept within a predetermined range, means for detecting a first frequency within said range, and means for providing an electromagnetic field at a second frequency outside of said range, a multi-frequency resonant tag circuit containing at least first and second tuned circuits respectively resonant at said first and second frequencies comprising:

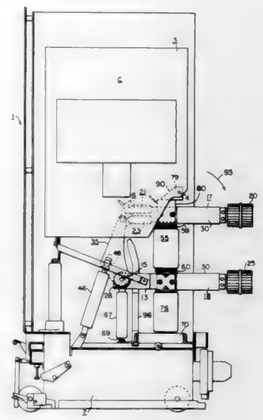
a planar substrate of electrically insulative material;
a first conductive path formed on a surface of said substrate in a configuration to define a first inductor;
a second conductive path formed on said substrate in a configuration to define a second inductor;
first and second pairs of conductive areas formed on said substrate, each pair having conductive areas in alignment on respective opposite surfaces of said substrate to define a capacitor, the conductive areas on the substrate surface containing said first and second conductive paths being electrically connected to said paths at selected points to define said first and second tuned circuits;
a conductive path of predetermined size provided in circuit with said tag circuit on a surface of said substrate and operative to fuse upon application of electromagnetic energy at said second resonant frequency to thereby destroy the resonant properties of said tag circuit at said first frequency; and
a conductive path provided through said substrate and completing at least one of said tuned circuits by interconnection of said first or second conductive path and one of said conductive areas.

3,967,162
INTERCONNECTION OF OPPOSITELY DISPOSED CIRCUIT DEVICES
Myron Ceresa, Advance, N.C., and Richard Henry Zimmerman, Palmyra, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 491,575, July 24, 1974, abandoned. This application July 23, 1975, Ser. No. 598,452
Int. Cl.² H05K *1/12*
U.S. Cl. 317—101 CM **9 Claims**



1. A non-registered interconnection module conductively interconnecting substantially opposed and aligned conductive terminals of a pair of spaced circuit devices which comprises:
a wiring support body formed of a resilient material; and
a sheet of flexible insulation material secured to and extending over opposed outer surfaces of said resilient support body, a plurality of paired conductive contacts formed on said flexible sheet with each contact of a pair of contacts being disposed on opposite outer surfaces of said support body, a like plurality of conductive strips on said flexible sheet with each strip interconnecting a pair of oppositely disposed contacts, said contacts being exposed at an outer surface of said sheet and in engagement with the conductive terminals of said circuit devices, said contacts being small and closely spaced, each terminal of said circuit devices engaging at least two of said contacts.

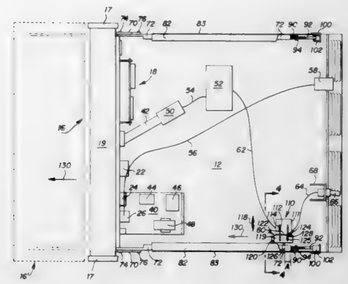
3,967,163
SUPPORTING MEANS FOR THE POWER CONDUCTORS IN CIRCUIT BREAKERS
Charles M. Cleaveland, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 308,370, Nov. 21, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,169
Int. Cl.² H02B *1/04*; H01B *17/00*
U.S. Cl. 317—112 **12 Claims**



1. The combination in a circuit-breaker structure of a pair of longitudinally-extending spaced power-conductor assemblies, each of said spaced power-conductor assemblies having a stationary contact means disposed adjacent an end thereof, movable contact means for electrically interconnecting said two stationary contact means, one or more pairs of side-by-side post-insulator supports disposed between said spaced power-conductor assemblies for supporting said power-conductor assemblies apart, said one or more pairs of side-by-side post-insulator supports being generally parallel to one another and extending in the same general direction, said one or more pairs of side-by-side post-insulator supports additionally being closely spaced next to each other and mechanically rigidly interconnected at at least one end thereof for combined strength and rigidity of support.

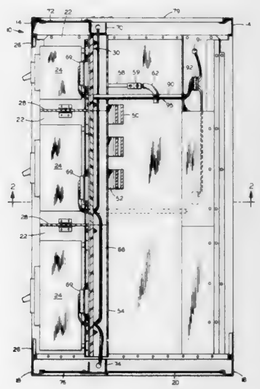
3,967,164
SERVICE ACCESS CONTROL PANEL HAVING ELECTRICAL COMPONENT ARRAY, INTERLOCK SWITCH AND FUSE BLOCK
Michael A. Valle, Oxford, Miss., assignor to Chambers Corporation, Cleburne, Tex.
Filed May 10, 1974, Ser. No. 468,897
Int. Cl.² H02B *1/04*; H01H *3/16*; F24C *7/08*
U.S. Cl. 317—114 **8 Claims**

1. A control panel for an oven comprising in combination:
a rectangular panel supported from said oven housing in a position flush with the front of said oven;
controls mounted on and extending through said panel for operating said oven from the front thereof, electrical components wired to said controls and mounted on the rear of said panel;
a pivot plate attached adjacent each side edge of said panel, said plates mounted to extend in a vertical direction;
a slide member pivotally attached to each of said pivot plates;
means on said plate and slide for selectively preventing rotation between said panel and said slides;
channel members mounted on the sides of the oven forming horizontally extending tracks for each of said slides to allow movement of said panel from a normal position to a service position;
means on said slides and said channel members for limiting horizontal movement of said panel;
conductor means electrically connecting said controls and components on said panel to said oven, said conductor



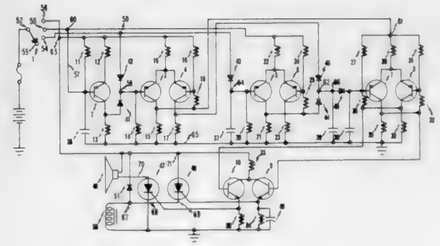
means having sufficient length to permit movement of said panel; and
power control means for disconnecting power to said controls and components when said panel is horizontally moved, said power control means comprising a switch mounted to selectively engage and be operated by the movement of said slide members.

3,967,165
SWITCHBOARD APPARATUS HAVING CONTROL WIRING PASSAGEWAYS
William Francis Olashaw, Plainville, and Roger Thomas Wilbur, Bristol, both of Conn., assignors to General Electric Company, New York, N.Y.
Filed Mar. 25, 1975, Ser. No. 561,866
Int. Cl.² H02B *1/20*
U.S. Cl. 317—120 **8 Claims**



1. Electrical switchboard apparatus comprising, in combination:
A. a cabinet;
B. a cabinet frame
C. a plurality of modular, insulative mounting panels arranged in end-to-end vertical relation throughout the height of said cabinet, each said panel including:
1. a base plate having lateral marginal portions affixed to said frame,
2. a plurality of spaced, parallel ribs outstanding from the rearward side of said base plate to define a plurality of vertically elongated channels, and
3. an additional rib outstanding from each lateral edge portion of said base plate, each said additional rib cooperating with its adjacent channel defining rib to provide a vertical passageway,
4. with said panels in end-to-end vertical relation, said channels and passageways extending substantially the full height of said cabinet;
D. a vertical array of compartments in said cabinet located forwardly of said panels, each said compartment accommodating an electrical device;
E. an elongated vertical busbar located in each said channel and mounted to said panels; and
F. control wiring for the electrical devices running from said compartments through apertures in said base plate into said passageways.

3,967,166
ELECTRONIC LOCK
Ching-Yeu Wei, 502 Dryden Road, Ithaca, N.Y. 14850
Filed Apr. 25, 1973, Ser. No. 354,248
Int. Cl.² H01H *47/18*
U.S. Cl. 317—141 S **9 Claims**

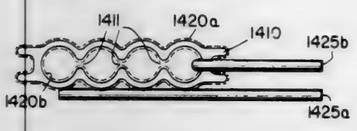


1. An antitheft device comprising, in combination:
a switching device including at least two switching actions; and
a timing device which is activated only when a first and a second predetermined one of said switching actions are conducted in sequence and said second predetermined switching action is conducted neither earlier than a first predetermined time nor later than a second predetermined time after the moment when said first predetermined switching action is conducted including:
a. a first circuit connected to said switching device for sensing said first predetermined switching action will be activated when said first predetermined switching action is conducted and will be later de-activated unless said second predetermined switching action is followed not later than said second predetermined time after said first predetermined switching action is conducted;
b. a second circuit connected to said switching device for sensing said second predetermined switching action will not be activated unless said second predetermined switching action is conducted not earlier than said first predetermined time after said first predetermined switching action is conducted;
c. a gating circuit connected to said first and second circuits will be activated only when both said first and second circuits are activated, and whereby said timing device is activated when said gating circuit is activated.

3,967,167
MULTIPLE MINIATURE CAPACITOR

Werner Scharrer, Reichenschwand, and Fritz Beyer, Lauf, both of Germany, assignors to Stettner & Co., Lauf, Pegnitz, Germany

Filed Mar. 14, 1974, Ser. No. 451,169
Claims priority, application Germany, Mar. 22, 1973, 2314208
Int. Cl.² H01G 4/12, 4/38
U.S. Cl. 317—242 11 Claims



1. Monolithic, single structure integral miniature capacitor structure comprising

a ceramic extruded multi-tubular structural body formed of at least three adjacently located elongated ceramic thin-walled tubes each having a diameter in the order of 1-1/2 to 4 mm. and being of essentially circular cross section, extending parallel, and located next to each other and having common contiguous tangential side wall portions to form an essentially aligned, integrally connected multi-tubular structure;

a first metallization layer located on the outer surfaces of said connected tubes to form a first continuous electrode;

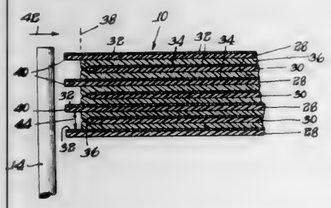
further metallization layers formed on the inner surfaces of said tubes, the metallization of the inner metallized surfaces of said tubes being electrically continuous so that the interior of the tubes are connected electrically by said metallization, to form a second continuous electrode;

and connection means connected, respectively, to the first metallization layer on the outer surface of the tubes and to the further metallization layer on the inner surfaces of said tubes.

3,967,168
ELECTRICAL CAPACITOR HAVING ALTERNATING METALLIZED NONHEAT-SHRINKABLE DIELECTRIC LAYERS AND HEAT-SHRINKABLE DIELECTRIC LAYERS

Kenneth Christensen, Alexandria, Va., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed June 26, 1975, Ser. No. 590,641
Int. Cl.² H01G 1/13, 4/20
U.S. Cl. 317—258 2 Claims

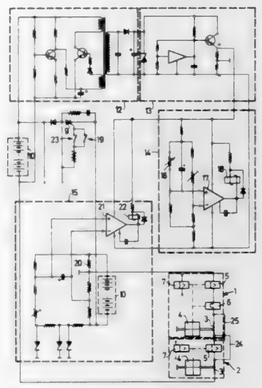


1. A convolutely wound capacitor having a first and a second edge comprising a first dielectric layer with a first conductive electrode layer thereon which extends outwardly from said first edge from said wound capacitor, a second dielectric layer which has a second metallized electrode layer thereon which extends outwardly from said second opposite edge of said capacitor, said first and second dielectric layers being comprisedd of a nonheat-shrinkable dielectric material, a third dielectric layer of a heat-shrinkable material disposed between said first and second dielectric layers, a fourth layer of heat-shrinkable dielectric material substantially aligned with said third heat-shrinkable layer material and positioned so that said second dielectric layer is positioned intermediate said third or fourth dielectric layers, said third and fourth dielectric layers being heat-treated so that they seal off one end of said second conductive layers from the same end of said first conductive layers and so that they also seal off the opposite end of said first conductive layers from the same end of said second conductive layers, and first and second electrical leads each of which is forced into one edge of said capacitor so that each of said leads are held in firm electrical contact with one of said first or said second electrode layers by melted portions of said dielectric layers.

3,967,169
SWITCHING DEVICE FOR THE PROTECTION OF DIRECT CURRENT DEVICES

Jakob Ellenberger, Altdorf near Nuremberg, Germany, assignor to Ellenberger & Poensgen GmbH, Altdorf near Nuremberg, Germany

Filed Jan. 3, 1975, Ser. No. 538,247
Claims priority, application Germany, Jan. 5, 1974, 2400396
Int. Cl.² H02H 7/18
U.S. Cl. 317—33 SC 12 Claims



5. A switching device for the protection of a direct current circuit against excess current, excess temperature and undervoltage comprising, in combination:

a. a first excess current switch having
  i. a first break point, and
  ii. at least one tripping device effective to trip said first break point on the occurrence of an excess current,

b. a second excess current switch having
  i. a second break point connected in series with said first break point, and
  ii. an electromagnetic tripping device effective to trip said second break point immediately after said first break point has been tripped, said electromagnetic tripping device having a coil of high ohmic design, said coil being connected in parallel with said first break point for reducing the excess current after said first break point has been tripped,

c. i. an electrical resistance thermometer for measuring such excess temperature,
  ii. a bridge circuit having said thermometer connected in one leg thereof,
  iii. a thyristor connected to said bridge circuit to become conductive when such excess temperature is reached,

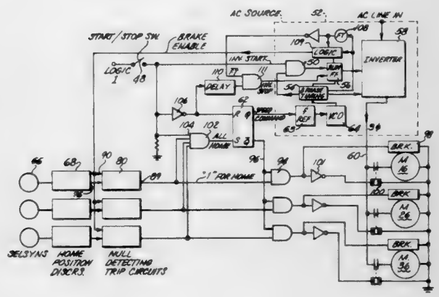
  iv. actuating means connected between said break points and said thyristor for tripping said break points when said thyristor becomes conductive,

d. i. a shunt connected in series in the direct current circuit and having means to tap the voltage across said shunt,
  ii. means for deriving a proportional part of a working voltage across the direct current circuit,
  iii. summing means connected for summing the proportional part of the working voltage and the voltage across said shunt to form an actual voltage signal,
  iv. means for deriving a nominal voltage signal, and
  v. an operational difference amplifier having an inverting input connected to receive said actual voltage signal, a non-inverting input connected to receive said nominal voltage signal, and an output coupled to said thyristor, said amplifier apply to said output a voltage which renders said thyristor conductive when said actual voltage signal falls below said nominal voltage signal.

3,967,170
POSITION SYNCHRONIZATION OF MACHINES

Ian M. MacDonald, Kenosha, and Charles J. Cowie, Racine, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 25, 1974, Ser. No. 517,876
Int. Cl.² H02P 7/74
U.S. Cl. 318—85 16 Claims

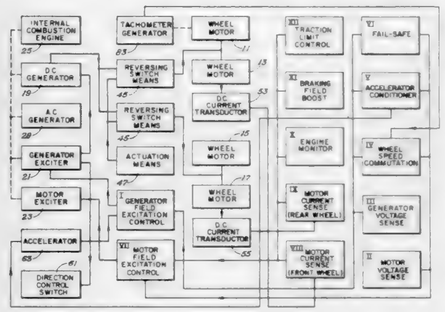


1. In a system having a plurality of machines each including a synchronous motor with an armature winding for producing a magnetic field and a rotor non-slippably coupled with a respective movable machine member, apparatus for synchronizing the relative positions of the plurality of machines comprising means for detecting when the rotor of each of said motors is in a predetermined angular position relative to its respective armature winding and producing a first signal thereupon and stopping means responsive to occurrence of said first signal of the machine to stop rotation of said rotor proximate said predetermined angular position, said rotor position relative to said respective armature winding being substantially the same for all of said motors, and means for subsequently starting and accelerating all of said machines simultaneously from their predetermined angular positions while maintaining position synchronization of said machines, said starting and accelerating means including means for energizing the armature windings of all of said motors simultaneously all with the same phase of A.C. voltage to maintain an instantaneous angular position of armature magnetic field with respect to said predetermined angular position of the respective rotor that is substantially the same for all of said motors.

3,967,171
PROPULSION CONTROL SYSTEM FOR ELECTRICALLY POWERED VEHICLES

Aaron D. Friend, and Hilmer C. Lindahl, both of Longview, Tex., assignors to R. G. LeTourneau, Inc., Longview, Tex.

Division of Ser. No. 344,080, March 23, 1973. This application May 1, 1974, Ser. No. 465,747
Int. Cl.² H02P 5/20
U.S. Cl. 318—158 5 Claims

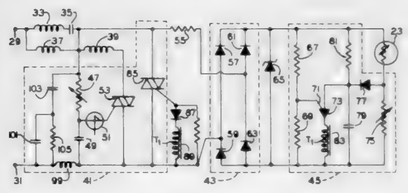


4. In a propulsion control system for an electrically powered vehicle wherein a direct current drive motor having a shunt field is supplied power from a direct current generator having a shunt field and means are provided to accomplish automatic variations in motor field excitation responsive to signals which are a function of selected vehicle operating conditions, and wherein means are provided to accomplish automatic variations in generator field excitation responsive to signals which are a function of selected vehicle operating conditions, the improvement wherein one of said signals for varying said generator field excitation is a signal responsive to a vehicle traction or driving condition requiring quick reduction or reversal of generator field excitation.

3,967,172
CONTROL CIRCUIT, REFRIGERATION SYSTEM, AND METHOD OF CONTROLLING SPEED OF AN ALTERNATING CURRENT MOTOR

Dann W. Denny, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 10, 1975, Ser. No. 548,765
Int. Cl.² H02P 5/40
U.S. Cl. 318—227 14 Claims



1. A control circuit for controlling the speed of an alternating current motor having a plurality of windings adapted to be energized in different combinations comprising:

a first gate controlled full wave alternating current switch coupled in series relations with a pair of the windings and adapted when conductive to effect energization of the motor in one operating speed mode thereof; and

a second gate controlled full wave alternating current switch coupled in parallel relation with said first switch and one winding of the winding pair and in series relation with the other winding of the winding pair, said second

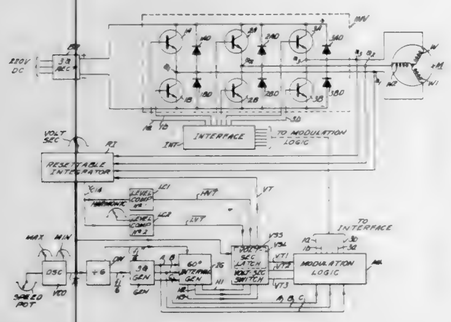
switch being conductive upon the occurrence of preselected conditions for shorting said first switch and the one winding of the winding pair thereby to effect energization of the motor in another operating speed mode thereof.

3,967,173

TRANSISTOR BRIDGE INVERTER MOTOR DRIVE HAVING REDUCED HARMONICS

Frederick A. Stich, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 14, 1975, Ser. No. 558,497
Int. Cl.² H02P *5/40*
U.S. Cl. 318—227 **29 Claims**



1. A harmonic-reduced variable frequency and variable voltage power supply for a three phase a.c. motor (M) comprising, in combination,

a d.c. source (BR),

a three phase inverter bridge (INV) including a plurality of power transistors (**1A, 1B, 1C, 2A, 2B, 2C**) between said d.c. source and said motor,

means (SPEED POT) for deriving an analog speed signal indicative of desired speed of said motor,

oscillator means (VCO) for providing a train of clock pulses (**f1**) whose frequency is a function of the magnitude of said analog speed signal,

resettable volt/hertz integrator means (RI) receiving as an input the output voltage from said inverter bridge for integrating said output voltage with respect to time and for deriving a train of ramp pulses (v_{ct4}) which are synchronized to said clock pulses and whose instantaneous magnitude varies with time as a function of the volt/hertz integral,

a first comparator (LC1) for comparing said volt/hertz integral to a first reference voltage and for deriving a first control pulse (HVT) when the voltage of each said ramp pulse becomes equal to said first reference voltage,

a second comparator (LC2) for comparing said volt/hertz integral to a second reference voltage which is of lower magnitude than said first reference voltage and for deriving a second control pulse (LVT) when the voltage of each said ramp pulse becomes equal to said second reference voltage,

OR-circuit means (**D27, D28, Q13**) for disabling said integrator means when said first control pulse (HVT) is generated and for holding said integrator means disabled until the succeeding clock pulse (**f1**) is generated or for disabling said integrator means when the succeeding clock pulse is generated,

a three phase generator (GEN) for deriving three phase reference waves (A, B, C) displaced 120 electrical degrees apart having a **360** electrical degree period equal to the time interval required to generate a predetermined number of said clock pulses with positive and negative half cycles, each of said reference waves being associated with one phase of said bridge,

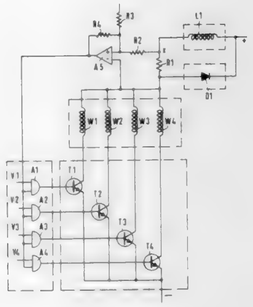
modulation means for controlling the fundamental output voltages of individual phases of said three phase inverter bridge in accordance with said three phase reference waves (A, B, C) and including means for pulse width modulating the output power of said individual phases of said bridge by variable width PWM pulses whose leading edges are established by said clock pulses, said pulse width modulation means regulating the termination of PWM pulses which occur during the first **30** degrees and during the last **30** degrees of the positive half cycles of the associated reference waves as a function of said second control pulses (LVT) and regulating the termination of other PWM pulses in said positive half cycle as a function of said first control pulses (HVT), whereby the magnetic flux in said motor is constant regardless of speed and harmonics are reduced in the inverter bridge output voltages.

3,967,174

ELECTRONIC COMMUTATION APPARATUS FOR A BRUSHLESS D.C. MOTOR

Georg Kögler, Schwabach; Hans Kühnlein, Nurnberg-Grossgrundlach, and Manfred Liska, Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 26, 1974, Ser. No. 509,680
Claims priority, application Germany, Oct. 3, 1973, 2349770
Int. Cl.² H02K *29/00*
U.S. Cl. 318—254 **3 Claims**



1. In combination with a D.C. motor with Y-connected stator windings wherein each stator winding is connected in series with an electronic commutation device, a current control circuit comprising,

a series connected smoothing choke and current measuring resistor wherein said resistor is connected to the commons connection of the windings,

a by-pass diode connected in parallel across said series connected choke and resistor,

a current regulator comprising,

means for generating a signal proportional to the voltage across said current measuring resistor, and

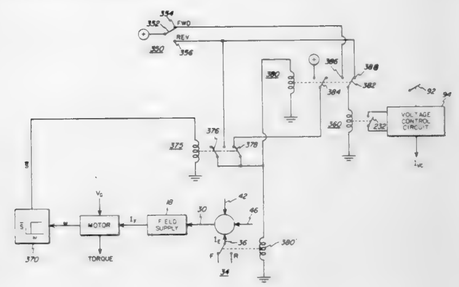
means for cyclically connecting the output of said current regulator to the electronic commutation devices connected to the windings.

3,967,175

AUTOMATIC SEQUENCING SCHEME FOR REVERSING DIRECTIONS OF ELECTRIC TRACTION MOTORS

Barry Jay Turley, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Feb. 27, 1975, Ser. No. 553,863
Int. Cl.² H02P *3/12*
U.S. Cl. 318—258 **6 Claims**



1. An improved electric drive system for a self-propelled vehicle comprising a reversible, variable speed traction motor, a speed controller, means for energizing said motor under the control of said speed controller so that the motor runs at variable speeds depending on the setting of said controller, said motor being adapted to be connected to operate in a dynamic retardation mode when said speed controller calls for deceleration thereof, and selector means having alternative forward and reverse states and being manually changeable from either one of said states to the other regardless of the motor speed, wherein the improvement comprises means adapted to reverse the motor energization under the control of said selector means so that the motor can run in a forward direction when the selector means is in its forward state or in a reverse direction when the selector means is in its reverse state, said reversing means comprising:

a. normally inactive first means operable in response to a change in the state of said selector means while the motor is running faster than a predetermined relatively slow speed in either direction for overriding said speed controller and for initiating said dynamic retardation mode of operation so as automatically to decrease the motor speed;

b. second means for reversing motor energization and for inactivating said first means in response to the motor decelerating to said predetermined relatively slow speed as a consequence of operation of said first means; and

c. third means effective after said second means reverses motor energization for preventing another reversal of motor energization by said second means as the motor subsequently accelerates in the opposite direction to a speed higher than said predetermined relatively slow speed in the absence of any further change in the state of said selector means.

3,967,176

PROCESS CONTROL APPARATUS

Paul W. Wagener, Depew, and Francis A. Fluet, Clarence, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

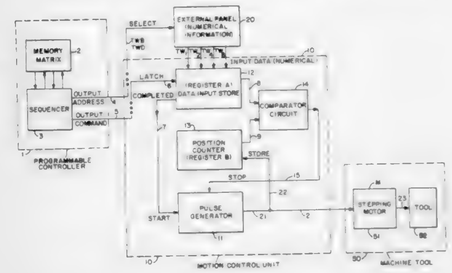
Filed Oct. 15, 1974, Ser. No. 514,873
Int. Cl.² G05B *19/28*
U.S. Cl. 318—603 **7 Claims**

1. A machine tool control system comprising: programmable sequence control means for providing programmed sequential operation instructions for motion control;

at least one motion control means responsive to said sequential operation instructions for generating motion control signals to an associated machine tool;

means associated with said one motion control means for providing predetermined numerical control instructions;

translator means associated with said one motion control means for converting said sequential operation instructions into compatible translated signals, said motion control signals being generated in accordance with said translated signals and in relation to said numerical control instructions.

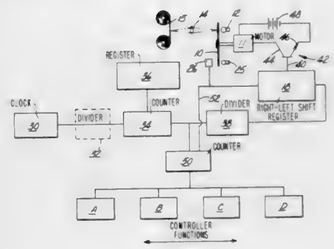


3,967,177

PHOTOCOMPOSITION MACHINE

Frank L. Scholten, Katonah, N.Y., and Ronald A. Kubinak, Edison, N.J., assignors to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Nov. 14, 1974, Ser. No. 523,630
Int. Cl.² G05B *19/18, 1/02*; **G03B** *17/06*
U.S. Cl. 318—603 **4 Claims**



1. A photocomposition machine having a variable speed character matrix for coordinating exposure time of a character to print size requirements, comprising:

a master clock of regular pulse frequency;

a strobe track on said matrix divided into a series of sectors, one for each character on said matrix and, each sector subdivided into a series of alternate sensable areas;

a sensor means for detecting said areas and producing a series of pulses representing the type and extent of each sensable area, the rapidity representing motor speed and the duration of each pulse representing the unit space of said areas;

a left shift--right shift register;

an input from said clock connected to drive said shift register to count in a first mode;

an input from said sensor means connected to drive said shift register to count in a second mode opposed to said first mode;

an output from said shift register responsive to the toggled condition within said shift register for producing either a high or low signal;

a power supply responsive to said output of the shift register for applying power to said motor only when said output is at one of said two possible levels, whereby the motor speed is controlled by power pulses;

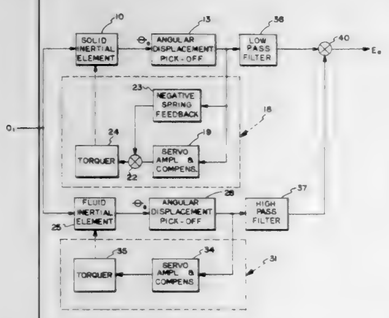
at least one data track on said matrix divided into a series of sectors, one for each character on said matrix, each sector having a pattern of sensable areas representing digital information pertaining to the character;
a counting register;
an input circuit from said clock to said counting register;
a reset circuit from said strobe sensor to said counting register;
said strobe track sectors each having one said subdivision of greater extent than the others to produce a long time period of no pulse from said sensor and thereby a delayed reset signal;
said clock input circuit and reset circuit balanced to allow said counting register to fill and produce an output pulse only during the time period of said delayed reset signal; and
controller means for acting according to a program to relate the position of said output pulse to the character data track and thereby select data representative of a chosen character for performing photocomposition functions responsive to said output signal.

3,967,178

WIDE BAND ANGULAR DISPLACEMENT AND VELOCITY SENSOR AND METHOD

Harold D. Morris, Orinda, Calif., assignor to Systron Donner Corporation, Concord, Calif.

Continuation-in-part of Ser. No. 352,889, April 20, 1973, abandoned. This application July 15, 1974, Ser. No. 488,784
Int. Cl.² G01P *15/00*; **B64C** *17/02*
U.S. Cl. 318—648 **30 Claims**



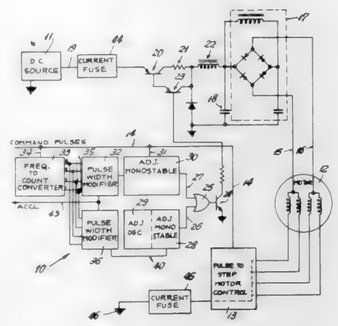
1. In a transducer for detecting angular displacement about a sensitive axis having a support base and an external reference indicating orientation of the sensitive axis, a solid inertial element movable relative to said support base about the sensitive axis, means for supporting said solid inertial element on said base allowing motion about the sensitive axis, a first pickoff disposed between said solid inertial element and said base for providing a first output signal, first pickoff centering feedback means receiving said first output signal for urging said solid inertial element toward a substantially neutral position relative to said base, a fluid inertial element movable relative to said base about the sensitive axis, a second pickoff having a moving member in communication with said fluid inertial element and a stationary member mounted on said support base for providing a second output signal, second pickoff centering feedback means receiving said second output signal for urging said moving member toward a substantially neutral position relative to said base, a low pass filter for receiving said first output signal and producing output related to low frequency angular displacements, a high pass filter for receiving said second output signal and producing output related to high frequency angular displacements, and summing means for combining the outputs of said low and high pass filters and producing output related to angular displacement through the low and the high frequency spectrum.

3,967,179

POWER SUPPLY FOR A STEPPING MOTOR

Robert J. Loyzim, Coventry, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed May 30, 1974, Ser. No. 474,671
Int. Cl.² H02K *37/00*
U.S. Cl. 318—696 **9 Claims**



1. A power supply for use with a stepping motor that produces an incremental movement for each change of energization applied thereto and a motor control circuit connected to receive input command pulses and change the energization of the motor for each pulse received with energy from the power supply, said power supply including input means connectible to a source of direct current, output means connected to supply the energy to the motor under the control of the motor control means and means for varying the ratio of the duration of the state of conduction to the duration of the state of non-conduction between the input means and the output terminals in accordance with the rate of the command pulses to thereby control the power transmitted to the motor and in which a duration of a state of conduction alternates with a duration of a state of non-conduction with there normally being at least one duration of each state for each input command pulse and in which the varying means includes a running circuit that includes means for receiving command pulses to sense the rate thereof and for increasing the duration of the state of conduction as the rate of the command pulses increases.

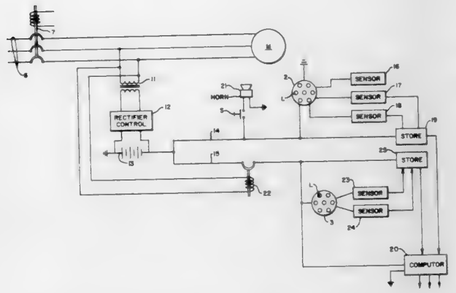
3,967,180

POWER SUPPLY SYSTEM FOR EXTRACTION MACHINE, ESPECIALLY A DRUM-CUTTING MACHINE

Karl-Heinz Weber, Witten-Heven, and Hans Nohendorf, Dorsten, both of Germany, assignors to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed Dec. 9, 1974, Ser. No. 530,820
Claims priority, application Germany, Dec. 11, 1973, 2362107
Int. Cl.² H02J *7/00*; **H02H** *1/02*
U.S. Cl. 320—13 **6 Claims**

1. In a mining machine including a drum-cutting mining machine of the type in which at least one drive motor is supplied with high voltage current via an external power cable essentially only during times of required powered movement by the machine and wherein the mining machine includes an intrinsically-safe enclosure containing at least a chargeable battery which is coupled to charging means powered by the intermittent supply of high voltage current to the mining machine, said chargeable battery supplying low voltage current for two separate groups of control, monitoring and/or indicating devices with one group consisting of devices performing non-essential functions to the mining machine when it is non-functional, the improvement which comprises:
first means for passing the low voltage current from said chargeable battery to said one group of devices which is operatively essential only when the mining machine is functional as defined by the time when the machine is supplied with high voltage current,



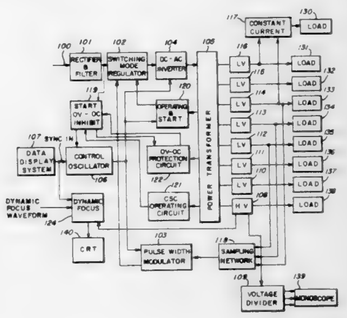
second means independent of said first means for continuously powering the second and separate group of said devices with low voltage current from said chargeable battery for continuous operation of such devices which is essential to the mining machine and independent of the operative status thereof, and
means responsive to the absence of a supply of high voltage current to the mining machine for disabling the operation of said first means.

3,967,181

CONVERTER WHEREIN SWITCHING FREQUENCY IS INDEPENDENT OF OUTPUT VOLTAGE AND IS SYNCHRONIZED TO AN EXTERNAL SYSTEM

Derek Chambers, Framingham, Mass., and A. Leonard Harley, Norwalk, Conn., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 34,932, May 6, 1970, Pat. No. 3,818,128. This application Jan. 24, 1974, Ser. No. 436,307
Int. Cl.² H02M *5/456*
U.S. Cl. 321—2 **2 Claims**



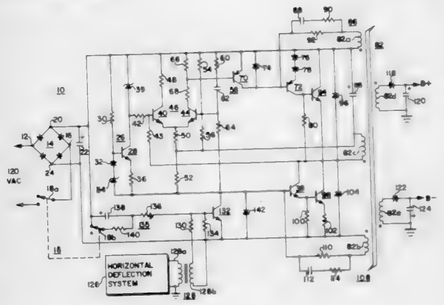
1. In combination:
rectifier means for receiving line voltage;
switching regulator means for converting said line voltage into a chopped dc voltage;
first control means for synchronizing the output of said switching regulator with an external system;
a power transformer for conversion of said controlled output of said switching regulator into a plurality of high voltage and low voltage outputs; and
second control means including a pulse width modulator for sensing the outputs of said power transformer and modifying the pulse width of said switching regulator in accordance with with said sensed output, the switching frequency of said regulator being independent of an output of said transformer to permit the synchronization of said switching frequency with said external system.

3,967,182

REGULATED SWITCHED MODE MULTIPLE OUTPUT POWER SUPPLY

Howard Mulder Scott, Moorestown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 20, 1975, Ser. No. 588,912
Int. Cl.² H02M *3/335*
U.S. Cl. 321—18 **9 Claims**



1. A regulated power supply comprising:
first and second terminals adapted to be coupled to a first source of direct current potential;
oscillator means coupled to said first and second terminals for developing a first alternating current potential having a first polarity pulse width which is responsive to a correction signal and a second polarity pulse width;
charge storage means coupled to said first terminal for storing a second direct current potential the magnitude of which, relative to said first terminal, is a function of said second polarity pulse width and said first direct current potential;
potential reference means coupled to said first and second terminals for developing a third direct current potential which is of a fixed magnitude and polarity with respect to said first terminal; and
potential comparator means coupled to said potential reference means and said charge storage means for developing a correction signal when said second direct current potential is different from third direct current potential, thereby altering said first polarity pulse width.

3,967,183

SELF-COMMUTATING INVERTER WITH CONTROLLED MAIN VALVES IN A CENTER-TAP CIRCUIT

Harald Heinicke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 29, 1974, Ser. No. 528,487
Claims priority, application Germany, Dec. 4, 1973, 2360426
Int. Cl.² H02M *7/515*
U.S. Cl. 321—45 C **2 Claims**

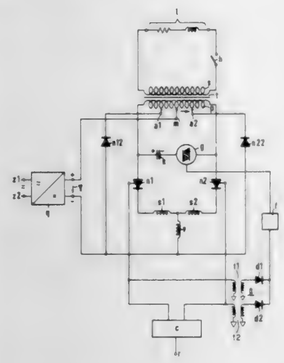
1. In a self commutating inverter circuit comprising,
an output transformer, the primary windings of which have a center tap connected to the positive terminal of a source of d-c voltage, the output windings of which are connected to a variable load,
two main valves, the anode of each one connected respectively to the ends of said primary winding, the cathode of

each connected to the negative terminal of said source of d-c voltage through a series choke inductor,

two recovery diodes, the cathode of each one connected respectively to taps on either side of said center tap between said center tap and said ends of said primary winding, the anode of each one connected to said negative terminal of said source of d-c voltage,

a series connected commutation capacitor and bidirectional electronic switching member, having a control electrode connected between the anodes of said main valves, and

means for generating firing impulses for said main valves, the improvement comprising:



first and second potential separating transformers each having a primary winding and a secondary winding, the primaries of said first and second transformers coupled respectively to the outputs of said means generating firing impulses for said two main valves;

differentiating means having its output coupled to said control electrode of said bidirectional electronic switching means,

an OR gate made up of two blocking diode having its two inputs coupled respectively to the secondaries of said first and second transformers and its output coupled as an input to said differentiating means.

3,967,184

ELECTRICAL INVERTER CIRCUIT

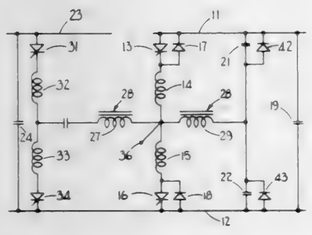
Brian John Chalmers, Bramhall, and John Philip Gibson, Longsight, both of England, assignors to C.A.V. Limited, Birmingham, England

Filed Dec. 24, 1974, Ser. No. 536,157

Claims priority, application United Kingdom, Dec. 22, 1973, 3370/73

Int. Cl.² H02M *7/515*

U.S. Cl. 321—45 C **5 Claims**



1. An electrical inverter comprising in combination positive and negative supply lines, a first series circuit bridging the positive and negative supply lines and including the anode-cathode path of a first thyristor and the anode-cathode path of a second thyristor, a second series circuit bridging the first and second supply lines and including a pair of capacitors, and a commutating circuit for the first and second thyristors, said commutating circuit including a transformer having its secondary winding included in a connection between a point in the first series circuit intermediate the first and second thyristors, and a point in the second series circuit intermediate the pair of capacitors, the primary winding of the transformer being connected in a series circuit one end of which is connected to said point in the first series circuit whereby when said commutating circuit is operated, current flow in the primary and secondary windings acts to reduce the current flowing in the conducting thyristor to zero.

3,967,185

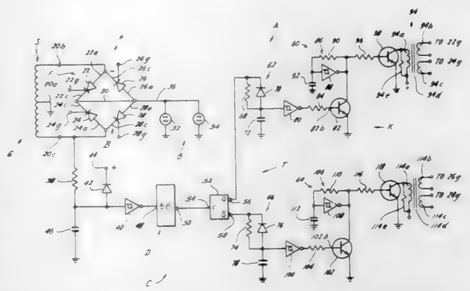
GENERATOR FREQUENCY CONVERTER

William E. Brooks, Houston, Tex., assignor to Pravel & Wilson, Houston, Tex.

Filed Apr. 29, 1974, Ser. No. 464,772

Int. Cl.² H02M *5/27*

U.S. Cl. 321—61 **4 Claims**



1. An apparatus for converting the output frequency of electrical power from an electrical generator, comprising:

a. power switching means for switching the power output of the generator to a load, said power switching means comprising:

1. first switching means for switching output pulses of a first electrical polarity to the load;
2. second switching means for switching output pulses of a second electrical polarity to the load;
3. said first and second switching means being electrically connected to a stator winding of the generator;
4. said first switching means comprises a first switch element and a second switch element, each having a control electrode, said first switch element and said second switch element permitting current to flow therethrough from the stator winding of the generator to the load in response to a first control signal;
5. said first switch element and said second switch element each having an anode, connected to the stator winding, and a cathode connected to the cathode of the other;
6. said second switching means comprises a third switch element and a fourth switch element, each having a control electrode, said third switch element and said fourth switch element permitting current to flow therethrough from the stator winding of the generator to the load in response to a second control signal;
7. said third switch element and said fourth switch element each having an anode, the cathode of the third switch element being directly connected to the anode of the first element and the stator winding, the cathode of the fourth switch element being directly connected to the anode of the second switch element and the stator winding; and
8. said third switch element and said fourth switch element each further having an anode connected to the anode of the other, wherein said switch elements form a voltage responsive switching bridge directly connected to the stator winding; and

b. control means for controlling the operating frequency of said power switching means, said control means comprising:

1. frequency divider means forming output pulses at a fraction of the output frequency of the generator;
2. control signal generator means for alternately energizing said first switching means and said second switching means to provide power to the load in response to output pulses from said frequency divider means, said control signal generator means having pulse transformer means for directly coupling the first control signal to said control electrodes of said switch elements of said first switching means and the second control signal to said control electrodes of said switch elements of said second switching means; and
3. timing control means for introducing a fixed duration time delay between each of the output pulses of said frequency divider means before such pulses are furnished to said control signal generator means wherein simultaneous energization of said first switching means and said second switching means is prevented.

3,967,186

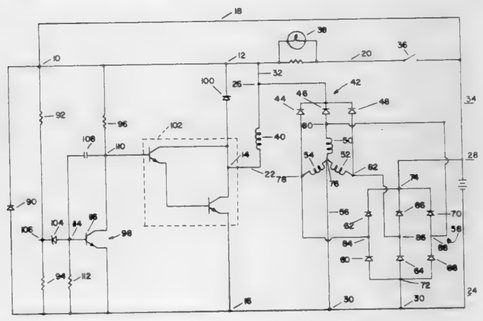
SOLID STATE VOLTAGE REGULATOR

Guy Adams, Monroe, N.Y., assignor to Solitron Devices, Inc., Tappan, N.Y.

Filed Feb. 3, 1975, Ser. No. 546,550

Int. Cl.³ H02J *7/14*

U.S. Cl. 322—28 **1 Claim**



1. A solid state voltage regulator comprising in combination:

source input and output terminals;

a charging means terminal;

a measuring circuit of series connected resistances between said source input and output terminals;

a first transistor between said source input and output terminals, said first transistor having a base emitter diode point providing a positive temperature coefficient;

a resistor circuit between a base of said first transistor and the said source output terminal to provide source stability for said first transistor;

a Miller effect circuit between said source input terminal and said base of said first transistor to provide high frequency stability;

a second transistor means including two transistors in a Darlington circuit in a single chip of semiconductor material to avoid mismatching of base emitter diode operating points of discrete transistors while providing consistancy with said first transistor, said second transistor means being between said source input and output terminals and being operatively connected to said first transistor, said second transistor means having its common collector output connected to said charging means terminal;

a diode means between said charging means terminal and said input terminal to provide a return path for decay in field from said charging means terminal;

a voltage reference zener diode connected between said first transistor and said measuring circuit between said series connected resistances, said zener diode having a base emitter diode point such as to provide a negative temperature coefficient to in combination with said first transistor positive temperature coefficient and the consistant base emitter diode operating point of said second transistor means provide a means to predetermine temperature compensation and provide the required voltage per °C for any known temperature excursion; and

a diode connected between said source output terminal and said source input terminal to provide reverse transient protection for said voltage regulator.

3,967,187

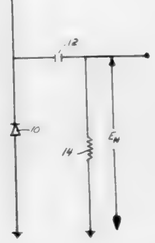
CURRENT LIMITING OF NOISE DIODES

Lon E. Edwards, Danbury, Conn., assignor to Solitron Devices, Inc., Tappan, N.Y.

Filed Aug. 9, 1974, Ser. No. 496,140

Int. Cl.² H03B *29/00*

U.S. Cl. 323—4 **2 Claims**



1. A random noise generator comprising:

a semiconductor noise generating element;

a time delay circuit for delivery of the output of said element at a desired frequency, impedance match; and

a FET connected to a power source via its drain terminal and to said element via its source terminal for controlling current to said element, said FET having a single resistor tapped between said source terminal and a gate terminal thereof to control variations in drain current over a temperature range.

3,967,188

TEMPERATURE COMPENSATION CIRCUIT FOR SENSOR OF PHYSICAL VARIABLES SUCH AS TEMPERATURE AND PRESSURE

William H. Spencer, Monrovia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 363,381, May 24, 1973, which is a continuation of Ser. No. 152,199, June 11, 1971. This application Aug. 14, 1975, Ser. No. 604,620

Int. Cl.² G01L *9/02, 19/04*

U.S. Cl. 323—75 B **27 Claims**

1. In combination:

four pressure sensitive strain gages and two resistors connected in a Wheatstone bridge configuration having first and second input nodes and first and second output nodes, the bridge having an overall positive temperature coefficient so that the output voltage of the bridge when in use will increase wit an increase in the gage temperature;

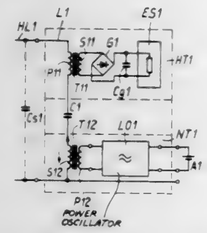
a first resistor connected in series with one of the gages between the first input node and the first output node;
a second resistor connected in series with another of the gages between the first input node and the second output node.
the first and second resistors being connected in common to the first input node;
first circuit means connected between a first junction common to the first resistor and its associated gage in one leg of the bridge and the second input node for varying the excitation current to the gage connected to the first junction and the gage connected to that gage by causing less current to flow through the two gages when connected to a current source as the temperature of the gages increases above a selected point and by causing more current to flow through the two gages when connected to the current source as the temperature of the gages decreases below the selected point;
the circuit means including an element in thermal proximity to the gages;
second circuit means connected between a second junction common to the second resistor and its associate gage in another leg of the bridge circuit and the second input node for varying the excitation current to the gage connected to the second junction and the gage connected to that gage by causing less current to flow through the two gages when connected to the current source as the temperature of the gages increases above a selected point and by causing more current to flow between the two gages when connected to the current source as the temperature of the gages decreases below the selected point; and
the second circuit means including an element in thermal proximity to the gages.

3,967,189

POWER SUPPLY FOR ELECTRONIC CIRCUITS AT HIGH-VOLTAGE POTENTIAL

Eckart Maenicke, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 15, 1972, Ser. No. 289,622
Claims priority, application Germany, Sept. 16, 1971, 2146772
Int. Cl.² H02J *13/00*
U.S. Cl. 323—76 **14 Claims**



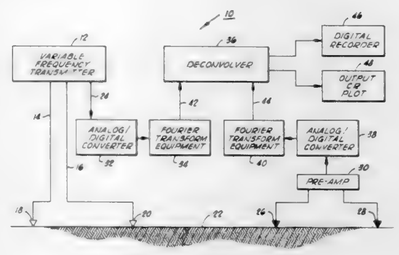
1. Power supply apparatus for supplying power from a low-voltage reference potential to an electronic circuit operable with respect to a high-voltage potential such as an electronic circuit for detecting the current in a high-voltage conductor and the like, the electronic circuit being connected to an associated transformer for receiving electric energy, the apparatus comprising a power oscillator operable with respect to the low-voltage potential and having an output transformer, current path means for conducting electric power from said output transformer of said oscillator at low-voltage potential to the associated transformer connected to the electronic circuit, and power source means for supplying electric power to said power oscillator independently of the value of the electrical energy at the high-voltage potential.

3,967,190

METHOD USING INDUCED POLARIZATION FOR ORE DISCRIMINATION IN DISSEMINATED EARTH DEPOSITS

Kenneth L. Zonge, 5634 E. Pima, Tucson, Ariz.

Filed Dec. 23, 1974, Ser. No. 535,999
Int. Cl.² G01V *3/06*
U.S. Cl. 324—1 **8 Claims**



1. A method for induced polarization at a selected earth site utilizing spaced current input electrodes in combination with spaced potential sensing electrodes in conductive contact therewith, comprising the steps of:
energizing said current electrodes with a variable amplitude current input at predetermined time variable frequency over a selected duration;
sensing said input current with said potential electrodes to derive a potential output signal;
generating a Fourier transform of said current input signal over said duration;
generating a Fourier transform of said sensed potential output signal over said duration;
deconvolving the Fourier transform of said current input signal with the Fourier transform of said sensed potential signal to generate a deconvolution output over said duration, which deconvolution output indicates the complex resistivity in terms of potential magnitude and phase difference; and
constructing an output plot of said deconvolution output signal to determine magnitude and phase at selected frequencies over said selected duration to generate a complex resistivity curve.

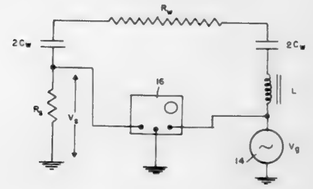
3,967,191

METHOD AND APPARATUS FOR NON-DESTRUCTIVELY MEASURING INTERNAL FILM RESISTANCE IN A FLUORESCENT LAMP

William J. Roche, Merrimac, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Feb. 28, 1975, Ser. No. 554,035
Int. Cl.² G01R *31/24*
U.S. Cl. 324—20 R **29 Claims**

1. A method for non-destructively measuring the resistance, R_w, of a conductive film coating on the interior bulb wall of a fluorescent lamp, said method comprising:
disposing first and second spaced apart capacitive coupling means on the exterior bulb wall of said fluorescent lamp, said first capacitive coupling means being connected through a sensing resistance means to a source of reference potential, and said second capacitive coupling means being connected through circuit means to a first output terminal of a variable frequency AC voltage supply, a second terminal of said AC voltage supply being connected to said source of reference potential, said AC supply being at a selected fixed frequency, and the circuit including said first and second capacitive coupling means and said circuit means being in resonance at the selected frequency of said AC voltage supply;



and measuring at least the voltage, V_s, across said sensing resistance means, said internal film resistance R_w being determinable from the equation

$$R_w = R_s (V_g \cos \theta - V_s)/V_s$$

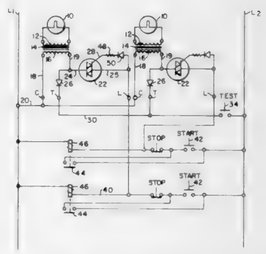
where R_s is the value of said sensing resistance, V_g is the output voltage of said AC supply, and the angle θ is the phase relationship between the voltage waveforms V_g and V_s.

3,967,192

INDICATOR LAMP TEST CIRCUIT UTILIZING BIDIRECTIONAL THYRISTOR SWITCHING

Walter J. Kellogg, Beaver, and Chester W. Calvin, Beaver Falls, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 8, 1974, Ser. No. 495,756
Int. Cl.² G01R *31/22;* **H05B** *37/03*
U.S. Cl. 324—21 **11 Claims**



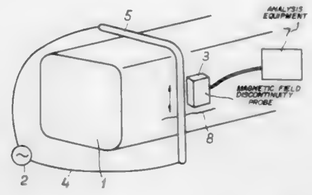
1. An indicator light circuit operable from an alternating current supply for indicating the operation of a plurality of external devices, comprising:
a plurality of indicator lights;
test circuit means connected to all of said plurality of indicator lights for simultaneously energizing all of said plurality of indicator lights when said test circuit means is activated, thereby simultaneously testing the operability of all of said plurality of indicator lights;
a plurality of indicator circuit means, each connected to an associated indicator light and coupled to an associated external device, for permitting energization of the associated indicator light when activated in response to operation of the associated external device; and
a bidirectional switchable device disposed between each of said plurality of indicator circuit means and the associated indicator light, said bidirectional switchable device permitting bidirectional current flow through said indicator circuit means when activated in response to operation of an external device and isolating said indicator circuit means from said indicator light when deactivated in response to operation of an external device.

3,967,193

APPARATUS FOR ELECTROINDUCTIVELY DETECTING DISCONTINUITIES BELOW THE SURFACE OF A METAL OBJECT

Carl Gunnar Bergstrand, Skultuna, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed July 14, 1972, Ser. No. 272,020
Claims priority, application Sweden, July 15, 1971, 9188/71
Int. Cl.² G01R *33/12*
U.S. Cl. 324—37 **4 Claims**



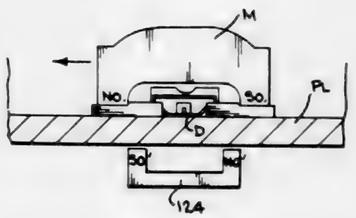
1. Apparatus for electroinductively detecting discontinuities in a metal object beneath its surface and including means for generating a magnetic field in the object through its surface and a magnetic field discontinuity probe that is movable over the object's surface adjacent to said field; wherein the improvement comprises said means being formed by at least one conductor having terminal ends between which the conductor extends directly, said conductor being positioned substantially parallel to said surface and having means for connecting its terminal ends with an AC current source without substantially affecting the magnetic field generated in the object only by said conductor, said conductor forming a guide rail for the probe during its movement along the object.

3,967,194

METHOD FOR FLAW LOCATION IN A MAGNETIZABLE PIPELINE BY USE OF MAGNETIC MARKERS POSITIONED OUTSIDE OF SAID PIPELINE

Ruby C. Beaver, Houston, Tex.; Theodor Clasen, Wienhausen; Wolfgang Henning, Celle, both of Germany, and Emil S. Johnson, Houston, Tex., assignors to Vetco Offshore Industries, Ventura, Calif.

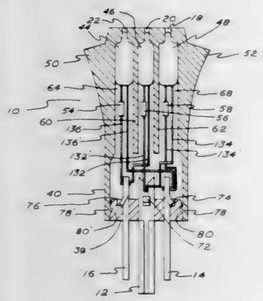
Division of Ser. No. 451,505, March 15, 1974, Pat. No. 3,899,734, which is a continuation-in-part of Ser. No. 360,161, May 14, 1973, abandoned. This application Jan. 8, 1975, Ser. No. 539,398
Int. Cl.² G01R *33/12*
U.S. Cl. 324—37 **8 Claims**



1. A method of determining the location of flaws in a magnetizable pipeline, said method including the steps of:

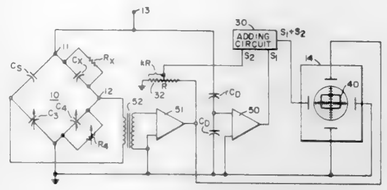
causing a magnetizing means to traverse the interior of the pipeline in sufficiently close proximity to the pipeline to induce magnetic flux flow in the pipeline and in the interior of the pipeline;
placing a magnetic marker at a selected location along the pipeline and exterior to the pipeline and oriented in opposed relationship with respect to said magnetizing means, so that said marker causes first an increase, then a decrease, then an increase in said flux flow in the interior of the pipeline as said magnetizing means passes by said marker;
detecting said decrease;
recording said decrease;
detecting variations in said magnetic flux flow in the interior of the pipeline, which variations are caused by flux leakage resulting from flaws in the pipeline;
recording said variations; and
correlating said decrease with said variations to determine the positions of detected flaws with respect to said selected location.

3,967,195
CIRCUIT TESTER FOR THREE WIRE ELECTRICAL OUTLETS
Marnie Carlton Averitt, Timonium, Md., and Edward Denman Bunnell, Palm Harbor, Fla., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 21, 1974, Ser. No. 516,709
Int. Cl.² G01R *31/02*
U.S. Cl. 324—51 **6 Claims**



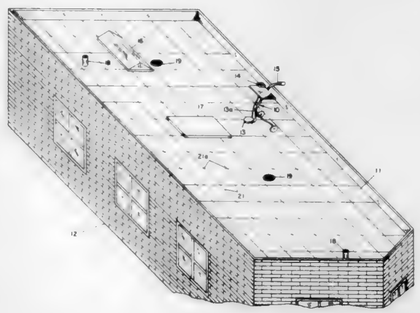
6. A circuit tester for checking a standard grounded three-wire electrical outlet to determine if said outlet is properly wired, said circuit tester comprising:
a hollow insulating housing comprising two opposed sidewalls, two opposed endwalls extending therebetween, and a top wall and an opposed base,
at least two inner walls spaced from said base, said inner walls, said sidewalls and said endwalls defining three internal cavities,
three electrical indicator lights, one of said lights being located in each of said internal cavities, an aperture in said housing aligned with each of said indicator lights,
three electrical prongs, said prongs extending through said base, each of said prongs having one end located within said housing and the other end external to said housing, said prongs being oriented for insertion of said external ends into a standard three-wire electrical outlet,
a slot extending from said one internal end of each of said prongs, and
two wires extending from each of said indicator lights, said wires emerging from said cavities with the two wires attached to each of said indicator lights being attached to different prongs, said wires inserted laterally of their axis into said slots to establish electrical contact with said prongs, whereby a properly wired electrical outlet will energize prescribed indicator lights and occurs an improperly wired outlet will result in some other lighting display.

3,967,196
METHOD AND APPARATUS FOR MEASURING THE VOID CONTENT OF A SOLID DIELECTRIC
Allan Igo Bennett, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 17, 1974, Ser. No. 515,745
Int. Cl.² G01R *31/14*
U.S. Cl. 324—54 **10 Claims**



10. Apparatus for determining the void content of a solid dielectric sample comprising:
bridge means adapted to receive the solid dielectric sample as the dielectric of a capacitor disposed therein;
input means for supplying an alternating current potential to the bridge means;
measuring means for measuring the output of the bridge means;
first adjusting means for making $dS_2/dt = 0$ just after peaks of S_1;
second adjusting means for making $d(S_1 + S_2)/dt = 0$ just before peaks of S_1; wherein,
S_1 is a signal proportional to the input to said bridge means; and,
S_2 is a signal proportional to the output of said bridge means.

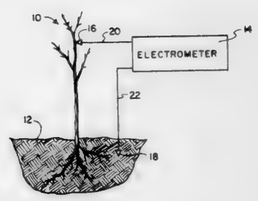
3,967,197
METHOD FOR DETECTING MOISTURE IN MULTIPLE LAYER ROOFS
Richard G. Anderson, Appleton, Wis., assignor to A-Tech, Inc., Appleton, Wis.
Filed Oct. 4, 1974, Ser. No. 512,362
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **6 Claims**



1. A method of detecting the presence and location of moisture in a multiple layer roof with less than a chosen probability P of designating a point at a dry portion of the roof as a point at a wet portion of the roof, comprising the steps of:

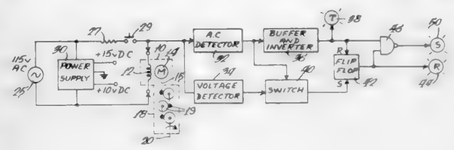
a. locating a plurality of spaced points over the area of the roof,
b. measuring the relative dielectric constant of the roof at each of said spaced points,
c. recording the relative dielectric constant measurements obtained at each of said spaced points and associating each measurement with the location of the point at which it was taken,
d. locating a plurality of said spaced points which are at wet portions of the roof,
e. calculating the sample mean M of all of said relative dielectric constant measurements which are less than any measurement obtained from said plurality of points which are located at wet portions of the roof,
f. calculating the sample standard deviation S of all of said relative dielectric constant measurements which are less than any measurement obtained from said plurality of points which are located at wet portions of the roof;
g. calculating a number K such that for a random variable having a normal probability distribution of mean M and variance S^2, there is less than a probability P that the random variable will be greater than or equal to K, and
h. designating as points at wet portions of the roof those points on the roof having relative dielectric constant measurements that are greater than K.

3,967,198
METHOD AND APPARATUS FOR ELECTRICALLY DETERMINING PLANT WATER STATUS
William G. Gensler, 4020 Coronodo Drive, Tucson, Ariz. 85718
Filed Sept. 20, 1974, Ser. No. 507,789
Int. Cl.² G01R *19/00, 27/22, 15/00*
U.S. Cl. 324—72 **14 Claims**



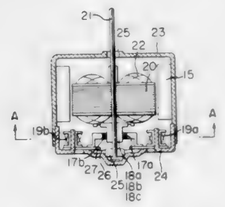
1. A method for measuring the water status of a plant comprising the steps of:
placing a first electrical probe in contact with the root environment of the plant;
placing a second electrical probe in contact with the body of the plant;
measuring the long term variations in electrical potential generated by the plant between the first and second probes, said step of measuring the long term variations in electrical potential including the steps of sensing the electrical potential generated by the plant, filtering out the short term variations of the sensed potential, and recording the long term variations of the sensed potential; and
relating the long term variations in electrical potential to the water status of the plant.

3,967,199
METHOD AND APPARATUS FOR TESTING ELECTRIC MOTORS
Donald E. Knoop, Benton Harbor, and Rodney F. Seeland, St. Joseph, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Nov. 18, 1974, Ser. No. 524,494
Int. Cl.² G01R *31/02*
U.S. Cl. 324—158 MG **10 Claims**



1. A circuit for testing an electric motor, comprising:
switch means for connecting the electric motor to a source of voltage;
a residual voltage detector responsive after the switch means has disconnected the electric motor from the voltage source for detecting the presence of a residual voltage generated if the motor had been rotated and is decelerating to a stop;
a memory having a first input coupled to the residual voltage detector for changing the memory to a first state in response to detection of the residual voltage, the first state existing for a substantially longer time period than the time duration of the residual voltage, the memory further having a reset input responsive to a reset signal for clearing the memory from the first state to a clear state;
an indicator actuated in response to the first state of the memory for indicating that the electric motor was operative; and
reset means coupled to the reset input for generating the reset signal when the switch means connects the voltage source to the electric power.

3,967,200
SPEED DETECTOR FOR USE WITH MINIATURE DC MOTOR
Yoshio Tetsugu, Katano; Tsunemi Mitsui, Osaka, and Hiroshi Minakuchi, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Oct. 15, 1974, Ser. No. 514,841
Claims priority, application Japan, Oct. 26, 1973, 48-120881; May 17, 1974, 49-55875
Int. Cl.² G01P *3/48*; **H02K** *47/14*
U.S. Cl. 324—173 **4 Claims**



1. A speed detector for use with a miniature DC motor comprising
a. a field pole assembly made of permanent magnet material,
b. an armature having said field pole assembly and having slots,
c. detecting means for detecting the magnitudes and directions of the leakage fluxes from said field pole assembly, said detecting means being placed at least two positions

in opposed relation with the N- and S-poles of said field pole assembly and remote from the area between the field pole assembly and the armature,

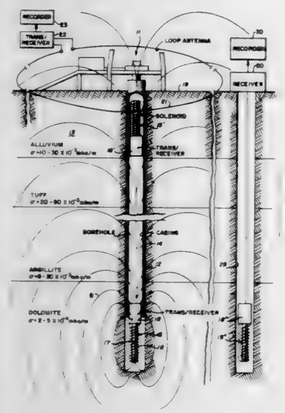
thereby deriving a speed signal from the output terminals of said detecting means.

3,967,201

WIRELESS SUBTERRANEAN SIGNALING METHOD

Louis H. Rorden, Menlo Park, Calif., assignor to Develco, Inc., Sunnyvale, Calif.

Filed Jan. 25, 1974, Ser. No. 436,540
Int. Cl.² H04B *13/02*
U.S. Cl. 325—28 **28 Claims**



1. In a method for establishing a wireless communication link through a subterranean region of earth or water the steps of:

disposing a first magnetic dipole antenna vertically in a subterranean location so as to have the magnetic dipole thereof oriented vertically;

disposing a second magnetic antenna in spaced apart relation from said first magnetic antenna, said first and second antennas being spaced apart by an intervening subterranean region of earth or water;

exciting one of said magnetic antennas with time varying excitation so as to set up at said excited antenna a vertically polarized time varying magnetic field and passing said time varying magnetic field through the intervening subterranean region of earth or water between said first and second magnetic antennas; and

receiving and detecting the time varying magnetic field as passed between said first and second antennas.

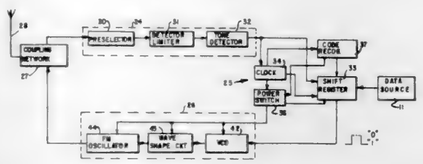
3,967,202

DATA TRANSMISSION SYSTEM INCLUDING AN RF TRANSPONDER FOR GENERATING A BROAD SPECTRUM OF INTELLIGENCE BEARING SIDEBANDS

James E. Batz, Northbrook, Ill., assignor to Northern Illinois Gas Company, Aurora, Ill.

Filed July 25, 1974, Ser. No. 491,829
Int. Cl.² H04B *1/59*; **G01S** *9/56*
U.S. Cl. 325—31 **22 Claims**

17. In a data transmission system, transmitter means at a first location for transmitting information provided by a data source means at said first location to a receiver means at a second location, said transmitter means comprising first oscillator means operable to generate a carrier signal, second oscillator means connected to said data source means and controlled by data signals representing said information provided by said data source means to provide sinusoidal output signals at predetermined frequencies, and wave shaping means responsive to said sinusoidal output signals to provide linearly varying drive signals having unequal rise and fall times for said



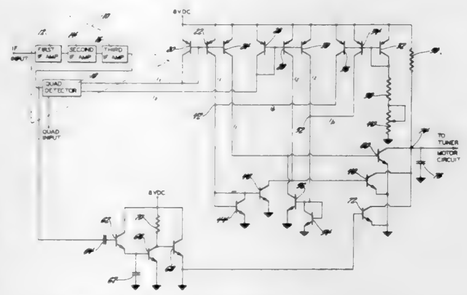
first oscillator means to effect the generation of sets of sidebands of said carrier signal representing said information for transmission to said receiver means.

3,967,203

SIGNAL SEEKING RECEIVER STOPPING CIRCUIT

Larry D. Lucas; Burtron D. Schertz, and Lester Wilkinson, all of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 3, 1975, Ser. No. 554,982
Int. Cl.² H04B *1/32*
U.S. Cl. 325—349 **2 Claims**



1. In an FM receiver having IF amplifier means, and quadrature detector means responsive to the output of said IF amplifier and which produce first and second output currents which are equal when said receiver is center tuned, the improvement comprising means for generating a bias current, means responsive to said first and second output currents and to said bias current for generating an output voltage when the difference between said first and second output currents is less than said bias current, and means responsive to the output of said IF amplifier for inhibiting the generation of said output voltage unless a 10.7 mHz. signal is present in said IF amplifier and capacitance means adapted to be charged from said output voltage.

3,967,204

CIRCUIT FOR STORING THE AMPLITUDE OF THE LOWER-FREQUENCY PORTION OF A COMPOSITE SIGNAL

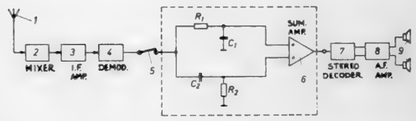
Jens Hansen, Hildesheim, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed June 23, 1975, Ser. No. 589,184
Claims priority, application Germany, June 10, 1974, 2427878
Int. Cl.² H04B *1/10*
U.S. Cl. 325—473 **5 Claims**

1. Circuit for storing the amplitude value of the lower-frequency portion of a composite electrical signal during intervals in which the provision of the signal from a source supplying the signal is temporarily interrupted by a switch, and a stored signal is therefore needed for signal continuity, said circuit comprising, in combination:

a low-pass filter (R_1, C_1) and a high-pass filter (C_2, R_2) both arranged to be supplied with a signal from a signal source

through interrupting switch means, said low-pass filter including a connection to a storage capacitor, and



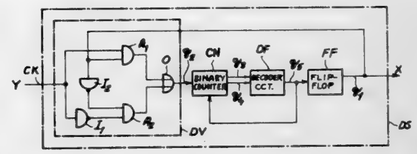
means for adding the outputs of said low-pass filter and of said high-pass filter.

3,967,205

FREQUENCY DIVIDING NETWORK WITH ODD INTEGRAL STEP-DOWN RATIO

Umberto Rossi, Milan, and Pietro Basili, Pedaso, both of Italy, assignors to Societa Italiana Telecommunicazioni Siemens S.p.A., Milan, Italy

Filed June 5, 1975, Ser. No. 583,903
Claims priority, application Italy, June 6, 1974, 23674/74
Int. Cl.² H03K *21/06*, *21/36*
U.S. Cl. 328—46 **5 Claims**



1. A frequency-dividing network with a step-down ratio of 1:K where K is an odd integer, comprising:

an input circuit connected to receive an incoming square wave of a basic frequency to be divided, said input circuit being provided with polarity-inverting means;

a binary counter connected to said input circuit for receiving said incoming square wave therefrom;

decoding means connected to said binary counter for generating a control pulse upon the occurrence of a predetermined number of half-cycles of said incoming square wave;

resetting means for said binary counter connected to said decoding means and responsive to said control pulse;

bistable means connected to said decoding means for alternate switchover between a first and a second operating condition by said control pulse, thereby producing an outgoing square wave of reduced frequency; and

feedback means extending from said bistable means to said polarity-inverting means for activating and deactivating same in dependence upon the operating condition of said bistable means to provide a polarity reversal after every K half-cycles of said incoming square wave.

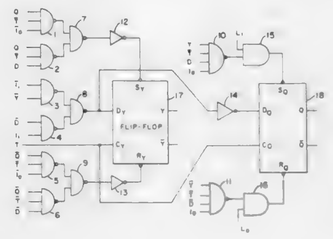
3,967,206

DUAL EDGE AND LEVEL (DEL) FLIP-FLOP

Donald L. Roberson, and Donald K. Fronek, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 19, 1975, Ser. No. 559,953
Int. Cl.² H03K *3/12*, *3/286*
U.S. Cl. 328—206 **4 Claims**

1. A dual edge flip-flop means having first through fourth input terminals and first and second flip-flop output terminals; first signal means having waveforms which have both positive and negative edges being connected to supply said first input terminal; second and third signals being connected to said second and third input terminals so as to determine that the flip-flop means is sensitive to positive edges, negative edges, or both positive and negative edges of said first signal or is insensitive to said first signal; and a binary signal being fed to said fourth input terminal such that the outputs on the first and second flip-flop output terminals will assume one binary



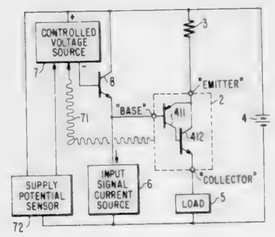
state when the binary signal is a "0" and the opposite state when the binary signal is a "1" when said first signal is fed into said first input terminal to which said second and third signals make the flip-flop sensitive.

3,967,207

AMPLIFIER WITH OVER-CURRENT PROTECTION

Carl Franklin Wheatley, Jr., Somerset, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 363,600, May 24, 1973, abandoned. This application Feb. 27, 1975, Ser. No. 553,636
Int. Cl.² H03F *3/04*
U.S. Cl. 330—23 **15 Claims**



4. An amplifier with over-current protection comprising:

an input terminal for receiving an input signal current;

an output terminal for connection to a load;

a common terminal for connection to an operating potential;

transistor means having a base electrode connected to said input terminal, having a collector electrode connected to said output terminal, and having an emitter electrode;

a resistive element with substantially constant resistance connecting the emitter electrode of said transistor means to said common terminal and responsive to the emitter current of said transistor means to develop a potential proportional to that current between said common terminal and said emitter electrode;

a source providing a potential with reference to said common terminal, which potential is responsive to said operating potential so as to decrease as said operating potential decreases below a threshold potential; and

a unilaterally conductive device connecting said source to the base electrode of said transistor means, the direction of relatively easy conduction through said device being such as to limit the excursion of signal potential appearing responsive to said input signal current between the base electrode of said transistor means and said common terminal.

3,967,208
AMPLIFYING INTEGRATED CIRCUIT IN THE MOS TECHNOLOGY

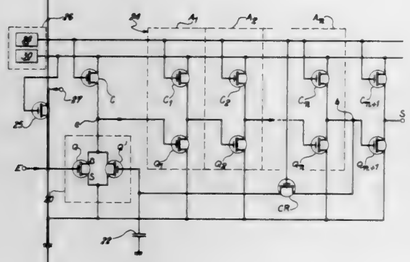
Bernard Baylac; Gérard Merckel, both of Sassenage, and Pierre Meunier, Puteaux, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 16, 1975, Ser. No. 541,568

Claims priority, application France, Jan. 25, 1974, 74.02589

Int. Cl.² H03F 3/16

U.S. Cl. 330—35 **2 Claims**



1. A negative-feedback band-pass amplifier constructed in accordance with the MOS technology, wherein said amplifier comprises:

an input stage of the summing amplifier type constituted by two MOS transistors each having a doped drain region, a doped source region and a gate, wherein said two MOS transistors have the same geometries and have the same doped drain region, the doped source regions of said transistors being connected together and to ground and their gates being identical but separated from each other, the gate of one of said two transistors being such as to constitute the amplifier input while the gate of the other transistor is connected to the amplifier output,

a negative feedback resistance connected between said amplifier output and said gate of said other transistor,

an amplifying chain whose input is connected to said same doped drain region of the input stage and whose output constitutes the amplifier output, said chain being such as to comprise n identical stages in series where n is even-numbered, each stage being of the inverting amplifier type constituted by a MOS transistor mounted with a common source connected to ground and a MOS transistor mounted as a load resistance, wherein all the MOS transistors of said chain are interdigitized and constituted by two MOS transistors having identical geometries mounted in parallel and having the same drain, the doped source regions being connected to each other and the gates of said transistors being connected to each other.

3,967,209
DISCRIMINATING SONIC DETECTION SYSTEM

Alexander E. Skoures, Philadelphia, Pa., and Joseph N. Farace, Maple Shade, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 75,662, Sept. 25, 1970, Pat. No. 3,955,171, This application Apr. 27, 1973, Ser. No. 355,996

Int. Cl.² H03F 1/36; H03K 5/20

U.S. Cl. 330—86 **5 Claims**

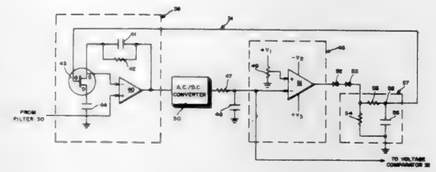
1. A voltage compensator comprising:

an amplifier system adapted to receive at a first terminal an input signal and at a second terminal a feedback signal for providing an output signal of an amplitude indicative of said received signals;

an a.c./d.c. converter connected to receive the output of said amplifier system for providing a d.c. output level;

a first integrator circuit connected to the output of said a.c./d.c. converter for providing a time varying voltage level;

comparator means adapted to receive an input from said integrator circuit for comparing said input to a predetermined voltage level for providing an output of a polarity indicative of which of said voltage levels has a larger magnitude;



a diode connected to the output of said voltage comparator for passing signals of only one polarity; and

a second integrator circuit adapted to receive the output of said diode for providing a time varying output feedback signal to be connected to said second terminal of said amplifier system.

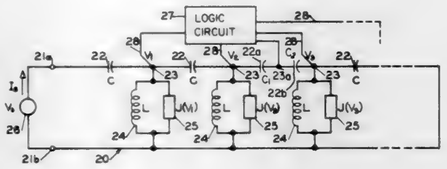
3,967,210
MULTIMODE AND MULTISTATE LADDER OSCILLATOR AND FREQUENCY RECOGNITION DEVICE

Herbert M. Aumann, Acton, Mass., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Nov. 12, 1974, Ser. No. 523,054

Int. Cl.² H03B 7/00, 25/00; G01R 23/18

U.S. Cl. 331—56 **12 Claims**



1. A ladder oscillator frequency recognition device capable of recognizing a chosen positive integer number N selected input signal frequencies impressed thereon, comprising:

a. at least $n-1$ serially connected capacitive impedances;

b. N inductive impedances connected in shunt with said series capacitive impedances to form a ladder network with a node of the ladder network at each connection between said capacitive and inductive impedances;

c. said inductive and capacitive impedances being adapted to produce N oscillation modes in response to an input signal impressed on the ladder network, each oscillation mode being at a different frequency and having a unique maximum amplitude standing wave pattern at said nodes of the ladder network, the frequency of the input signal being determinable from the amplitude and phase of the standing wave pattern at said nodes of the ladder network if the frequency of the input signal is substantially equal to one of the N mode frequencies of the ladder network; and

d. means for comparing the signs of the voltages at said nodes of the ladder network to determine which mode the ladder network is oscillating in.

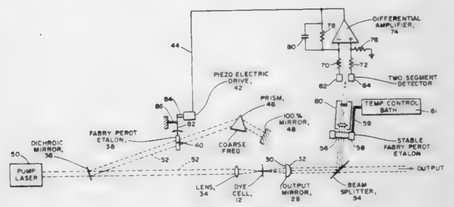
3,967,211
LASER WAVELENGTH STABILIZATION

Irving Itzkan, Boston, and Charles T. Pike, Lexington, both of Mass., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Jan. 17, 1974, Ser. No. 434,078

Int. Cl.² H01S 3/13

U.S. Cl. 331—94.5 S **16 Claims**



1. A wavelength stabilization system for use in a laser comprising:

a lasing medium;

means for defining the frequency of laser radiation from said medium;

means for diverting a portion of laser radiation from said medium;

means for developing an interference pattern from the diverted laser radiation;

said developing means causing said interference pattern to vary in position with frequency in said laser radiation;

means responsive to the position of said interference pattern for developing an electrical signal representative thereof;

means operative in association with said frequency defining means and responsive to said electrical signal for adjusting the frequency of laser radiation from said lasing medium.

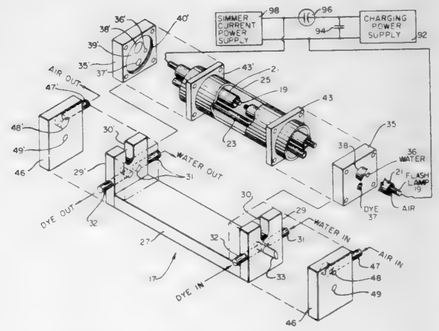
3,967,212
FLASH LAMP PUMPED DYE LASER

Daniel J. Dere, Palo Alto, and Richard W. Wallace, Los Altos, both of Calif., assignors to Chromatix, Inc., Mountain View, Calif.

Filed Aug. 19, 1974, Ser. No. 498,572

Int. Cl.² H01S 3/093, 3/10, 3/02

U.S. Cl. 331—94.5 P **3 Claims**



1. Apparatus for optically stimulating a dye laser with a flash lamp, comprising:

means for rigidly supporting a pumping cavity;

first and second optical refracting end walls co-axially mounted on the supporting means for transmitting laser light along an optical light path through the pumping cavity between said end walls;

a flash lamp mounted on the supporting means;

a dye tube removably mounted on the supporting means between the end walls, parallel with the flash lamp and proximate thereto for carrying liquid dye, said optical light path passing longitudinally through the dye tube;

means for removably mounting said dye tube on the supporting means so that said dye tube can be removed or interchanged without disturbing the first and second optical end walls; and

a reflecting pumping cavity wall for focusing the light from the flash lamp onto the dye tube.

3,967,213
X-RAY LASER WITH A SINGLE CRYSTAL WAVEGUIDE STRUCTURE

Amnon Yariv, San Marino, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Mar. 5, 1975, Ser. No. 555,695

Int. Cl.² H01S 3/16

U.S. Cl. 331—94.5 C **10 Claims**



1. A laser comprising:

a thin elongated crystal of thickness t between top and bottom sides thereof, said crystal being characterized by a set of prominent atomic planes which are substantially normal to said top side and are spaced from one another by a spacing definable as d, along the crystal length, said crystal having an index of reflection definable as n_c and atoms excitable to emit photons at a wavelength λ;

a substrate in contact with and supporting said crystal at the bottom side thereof, said substrate having an index of refraction definable as n_s, where $n_c > n_s$;

pumping means for pumping energy into said crystal through the top side thereof to excite said excitable atoms to emit said photons, said atomic planes providing Bragg scattering for at least some of said photons to produce a laser beam at wavelength λ which exits said crystal, d and λ being related by the relationship $d \cos \theta = m(\lambda/2)$ where m is an integer and θ is the angle at which said beam exits said crystal with respect to the direction along which said atomic planes are spaced.

3,967,214
STABILIZING ELECTRODE FOR COLD CATHODE GAS-ION LASER

John B. Thatcher, Cupertino, Calif., assignor to Holosonics, Inc., Richland, Wash.

Filed Jan. 29, 1975, Ser. No. 545,177

Int. Cl.² H01S 3/09

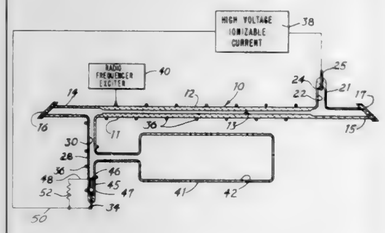
U.S. Cl. 331—94.5 PE **7 Claims**

1. In a cold cathode gas-ion laser having an envelope containing a laserable gas with spaced primary discharge electrodes in communication with the laserable gas consisting of an anode and a cathode and having an exciter electrode to initiate the gaseous discharge of the laser:

a stabilizing electrode contacting the laserable gas adjacent the cathode;

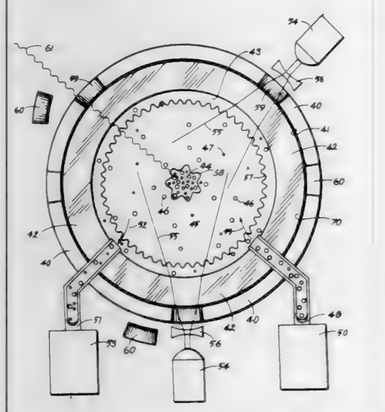
said stabilizing electrode being operatively electrically con-

nected to one of the primary discharge electrodes through a load to increase the electrical field strength of



the laser adjacent the cathode during the gas discharge of the laser.

3,967,215
LASER REACTOR
Johannes G. Bellak, Crease Road, Budd Lake, N.J. 07828
Continuation-in-part of Ser. No. 546,375, April 29, 1966, abandoned. This application Aug. 14, 1969, Ser. No. 859,231
Int. Cl.³ H03F *1/36*
U.S. Cl. 331—94.5 R **2 Claims**



1. A lasing reactor for producing and controlling a thermonuclear reactor process thermofusion endo-, equi-, exo-fusion or combinations thereof reactions said lasing reactor comprising:

a. a closed or substantially closed hollow lasing element constructed so as to have focusing properties, said lasing element being in virtue of its lasing material properties and focusing properties a generator of closed or substantially closed respectively coherent electromagnetic waves convergent upon the inherent focal region or focal regions of said lasing element, the outer boundary of said lasing material being substantially reflective to said waves and the inner boundary of said lasing material being substantially emissive to said waves,

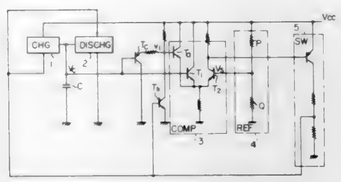
b. the hollow portion of said lasing element being and defining a reaction chamber within which said reactions are produced by the convergent impingent closure of said waves upon reactants within said chamber,

c. a speculum and outer shell surrounding said lasing element, said outer shell being a foundation for said lasing reactor and accoutrements, said speculum and outer shell having one or more sets of cooperating closeable orifices beneath which said closeable orifices the said lasing element outer boundary can be reflective where required to the lasing frequency of said lasing element and can be non-reflective to said lasing frequency where required, said closeable orifices being a means of regulation of influx and efflux of electromagnetic energy into and out of said chamber, said influx of electromagnetic energy into said chamber being a means of initially exciting said lasing element, subsequent to and as a result of which excitation influx said lasing element generates a closed or substantially closed respectively convergent coherent electromagnetic wave in conformity with said lasing element focusing and lasing properties, said efflux from said chamber being a means of obtaining for external use energy produced released within said chamber and also a means of regulation anc control of said thermofusion reactions, said speculum means being an accessory means of reflecting incident electromagnetic radiation from within said chamber,

d. the combination of said lasing element, speculum and outer shell, having correspondingly penetrating holes said holes being used for introduction of reactants into and removal of byproduct reactants from, said chamber, said introduction of reactant being from a reactants source means and said removal of byproduct reactants being into a sink means, the cooperation of said source means with said sink means being also a means of regulation and control of said reactions,

and enclosing within said closed or substantially closed hollow lasing element energy released from said reaction produced by said convergent impingence of said closed waves upon reactants within said reaction chamber, said released energy emitted divergently from said reaction impinging therefrom into said lasing element thus reexciting the lasing energy states of said lasing element, said released and emitted energy being feedback energy propagating from said reaction to said lasing element, said feedback energy thereby establishing cooperation between said reaction and said lasing element, said cooperation being a means for sustaining steady-state operation of said lasing reactor.

3,967,216
PULSE GENERATOR STABILIZED FOR CHANGE OF AMBIENT TEMPERATURE AND SOURCE VOLTAGE
Jyunji Sakamoto; Etsuke Shiratani, and Norio Imaizumi, all of Gunma, Japan, assignors to Tokyo Sanyo Electric Company, Ltd. and Sanyo Electric Co., Ltd., Osaka, both of, Japan
Filed Apr. 2, 1975, Ser. No. 564,635
Claims priority, application Japan, Apr. 3, 1974, 49-38105
Int. Cl.³ H03K *4/50*
U.S. Cl. 331—111 **5 Claims**



1. A pulse generator comprising:

a. a capacitor, one end of which is grounded;

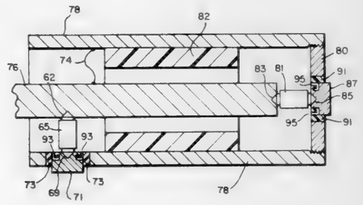
b. a charge circuit connected between the other end of said capacitor and a power source;

c. a discharge circuit connected between said other end of said capacitor and ground;

d. a comparator having first, second and third transistors, the emitters of these transistors being commonly connected and grounded through a first resistor, the base of the first transistor being connected to said other end of said capacitor, the base of the second transistor being connected to a constant reference voltage source, the base of the third transistor being connected to said other end of said capacitor through a second resistor and an additional transistor, and said base of the third transistor being further connected to the voltage source through a third resistor under the control of a switching transistor; and

e. a switching circuit coupled to an output of said comparator for switching said charge circuit, said discharge circuit and said switching transistor according to the output of said comparator.

3,967,217
MODULATOR FOR DIGITAL MICROWAVE TRANSMITTER
Arthur H. Solomon, Winchester, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.
Filed Jan. 31, 1975, Ser. No. 545,788
Int. Cl.³ H03C *3/00*
U.S. Cl. 332—9 R **9 Claims**



1. A phase modulator for a digital communication transmitter having as a modulation signal a multiple level signal with a time average of substantially zero amplitude, said phase modulator comprising:

means for receiving a carrier signal of predetermined frequency;

a transmission line coupled to said receiving means for propagation of said carrier signal;

a plurality of bias responsive variable impedance means coupled to said transmission line at predetermined spaced positions;

phase-shifting means disposed in the propagation path of said transmission line between said variable impedance means and having a dielectric core at least partially filling the space beween the transmission line conductors, the material and geometry of said dielectric core being such to result in a predetermined electrical separation between said variable impedance means and a predetermined impedance level of the transmission line as seen by the variable impedance means;

digital encoder means operative in response to said modulation signal to provide respective bias signals to said variable impedance means; and

means coupled to said transmission line for providing a phase-modulated output signal having phase states directly corresponding to the amplitude states of said multiple level modulation signal.

3,967,218
EDGE-GUIDED WAVE DIRECTIONAL COMBINER
Joseph W. McGowan, Spring Lake Heights, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Sept. 26, 1975, Ser. No. 617,210
Int. Cl.³ H01P *1/34*
U.S. Cl. 333—1.1 **11 Claims**

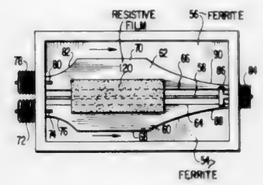
1. An edge-guided mode microwave transmission device, comprising in combination:

a ground plane;

ferromagnetic substrate means of a predetermined thickness located on said ground plane;

at least two mutually separated stripline conductors of substantially like conductor patterns formed on said substrate means, each pattern having a pair of conductive edges, one edge of which includes at least one tapered edge segment adapted to effect energy transfer therealong for a predetermined biasing magnetic field;

means providing a biasing magnetic field of a predetermined magnitude and which is applied transverse to said ground plane;



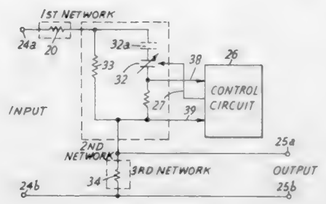
resistive load means commonly applied over a predetermined length of the other conductive edge of said at least two conductors;

a first signal port coupled to one end of one of said two conductors;

a second signal port coupled to a like end of the other of said two conductors; and

a third signal port commonly coupled to the opposite end of said two conductors.

3,967,219
SIGNAL COMPRESSORS AND EXPANDERS
Ray Milton Dolby, San Francisco, Calif., assignor to Dolby Laboratories, Inc., San Francisco, Calif.
Continuation of Ser. No. 432,171, Jan. 10, 1974, abandoned, which is a continuation of Ser. No. 232,113, March 6, 1972, abandoned. This application Sept. 25, 1974, Ser. No. 509,076
Claims priority, application United Kingdom, Mar. 12, 1971, 6747/71
Int. Cl.³ H04B *1/64*; **H03H** *7/10, 7/16*; **H03G** *11/04*
U.S. Cl. 333—14 **26 Claims**



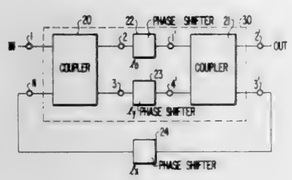
1. A circuit for modifying the dynamic range of an input signal, comprising input terminals and two terminal impedance means connected in series between the input terminals to provide an output signal derived from at least part of the impedance means, the impedance means including a frequency selective means determining a frequency band in which no modification of dynamic range takes place, and a restricted frequency band within which the modification of dynamic range takes place and including variable circuit means responsive to the level of signal components in the restricted band to reduce the degree of dynamic range modification as the level of such components increases, the variable circuit means being constructed and arranged to narrow the restricted band as the level of signal components within the restricted band increases above a level predetermined at −20dB or less, thereby to broaden the band in which no modi-

fication of dynamic range takes place and to exclude such signal components from dynamic range modification.

3,967,220
VARIABLE DELAY EQUALIZER

Yoshimi Tagashira; Masaaki Atobe, and Kazuhiro Yamamoto, all of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed July 31, 1975, Ser. No. 600,682
Claims priority, application Japan, Aug. 19, 1974, 49-94716
Int. Cl.² H03H 7/14; H01P 1/20
U.S. Cl. 333—28 R **1 Claim**

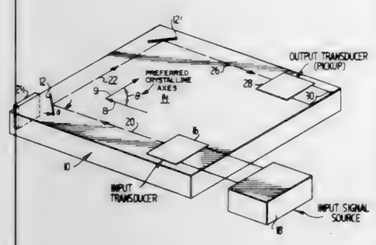


1. A variable delay equalizer comprising:
first and second directional couplers each having a pair of input terminals and a pair of output terminals;
first and second variable phase shifters inserted respectively between the first output terminal of said first directional coupler and the first input terminal of said second directional coupler and between the second output terminal of said first directional coupler and the second input terminal of said second directional coupler, and;
a third variable phase shifter inserted between the second output terminal of said second directional coupler and the second input terminal of said first directional coupler.

3,967,221
SURFACE ACOUSTIC WAVE DELAY LINE WITH BULK WAVE DISCRIMINATION

Herbert Warren Cooper, Hyattsville; John Acevedo, Linthicum, both of Md., and John deKlerk, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 24, 1974, Ser. No. 436,281
Int. Cl.² H03H 9/30, 9/26; H01L 41/18, 41/10
U.S. Cl. 333—30 R **10 Claims**

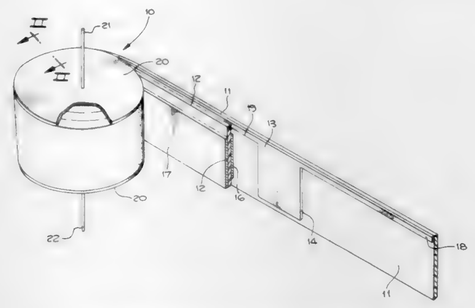


8. A surface wave device comprising:
an acoustic substrate having an acoustic discontinuity in one surface thereof, said acoustic discontinuity defining a single surface wave reflecting surface extending beneath said one surface of said substrate sufficiently to reflect a substantial amount of incident surface wave energy propagated along said surface of said substrate without reflecting a substantial amount of bulk wave energy propagated through said substrate; and,
means for launching acoustic surface waves along said one surface of said substrate in a propagation path intersecting said reflecting surface defined by said discontinuity.

3,967,222
DISTRIBUTED RESISTANCE-CAPACITANCE COMPONENT

Joseph A. Toro, Ogallala, Nebr., assignor to TRW Inc., Los Angeles, Calif.

Filed May 27, 1975, Ser. No. 581,156
Int. Cl.² H03H 7/06; H01G 4/40
U.S. Cl. 333—70 CR **15 Claims**

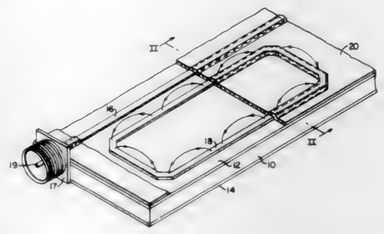


1. A convoluted distributed resistance-capacitance component comprising:
a plurality of wound dielectric films juxtaposed against each other including at least one duplex film having metallized layers on surfaces of both sides and at least one simplex film having a metallized layer on only one surface with said metallized layer on said simplex film being in direct contact with one of said metallized layers on said duplex film, said metallized layers. being geometrically shaped with margins to provide distributed resistance along each of said metallized layers and capacitance between each of said metallized layers, and
lead means coupled to each of said metallized layers to provide electrical input and output terminals to thereby provide a component having resistance provided by said distributed resistance along each of said metallized layers and capacitance provided between each of said metallized layers.

3,967,223
RESONANT RING TRANSMISSION LINE HAVING A HIGH Q MODE

Bruce R. McAvoy, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 443,887, Feb. 19, 1974, abandoned. This application Feb. 18, 1975, Ser. No. 550,786
Int. Cl.² H01P 3/08, 7/00
U.S. Cl. 333—82 B **13 Claims**



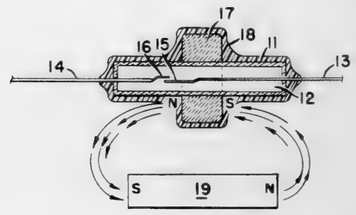
10. A surface wave resonant ring transmission line comprising:

a substrate of dielectric material,
a resonant ring of electrically conductive material deposited on said substrate,
a layer of dielectric material deposited on and covering said resonant ring, and
means for coupling the E field of an electromagnetic wave to said ring causing a surface wave to be created and propagated on said ring.

3,967,224
COATED MAGNETICALLY BIASED REED SWITCH

Robert L. Seeley, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1975, Ser. No. 571,658
Int. Cl.² H01H 1/66
U.S. Cl. 335—151 **1 Claim**



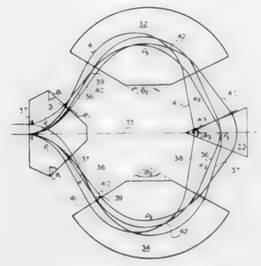
1. In a switch magnetically actuated by an external magnetic field having a tubular glass envelope containing a pair of longitudinally extending reed contacts, an improvement therefor is provided comprising:
a donut-shaped piece of rubber-bonded barium-ferrite magnetic material having a lateral hole sized to snugly fit about the tubular glass envelope to easily facilitate its positioning and mounting on the envelope mounted to encompass the circumference of the tubular glass envelope for magnetically biasing the reed contacts radially to a predetermined position, the circumferential mounting being mandatory to ensure reliable actuation of the switch by an omniradially disposed external magnetic field and
a cured epoxy coating completely covering said switch and donut-shaped piece of rubber bonded barium-ferrite material to further insure greater reliability.

3,967,225
MAGNETIC BEAM DEFLECTOR SYSTEM

Edward A. Heighway, Deep River, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Mar. 3, 1975, Ser. No. 554,563
Claims priority, application Canada, Aug. 15, 1974, 207147
Int. Cl.² H01F 7/00
U.S. Cl. 335—210 **6 Claims**

1. A magnetic deflector system for deflecting a particle beam through 180° and having coincident beam entry and axis comprising:
first dipole magnet means having an edge perpendicular to said entry axis to receive said beam and positioned symmetrically about a symmetry plane through said entry axis, said first magnet means adapted to deflect said beam away from said symmetry plane through an angle θ_1 with a bending radius ρ_1;
second dipole magnet means positioned to one side of said symmetry plane at a distance d_1 from said first magnet means and adapted to deflect said beam toward said symmetry plane through an angle θ_2 with a bending radius ρ_2;
third dipole magnet means positioned symmetrically about said symmetry plane at a distance d_2 from said second magnet means and adapted to deflect said beam through said symmetry plane through an angle θ_3 with a bending radius ρ_3;
fourth dipole magnet means positioned to the other side of said symmetry plane symmetrically with said second magnet means at a distance d_1 and d_2 from said third magnet means and said first magnet means respectively and adapted to deflect the beam through an angle θ_2 with a bending radius ρ_2 to said first magnet means;



said first magnet further adapted to deflect the beam received from said fourth magnet means through an angle θ_1 with a bending radius ρ_1 to eject the beam along the exit axis;
the zeroth order beam path through said magnet means being defined by:

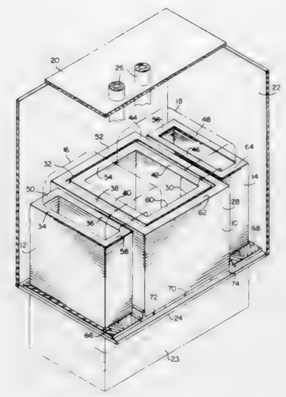
$$\theta_2 = \theta_1 + \theta_3 + 90° \text{ and}$$

$$d_3 = \left\{ \frac{d_1 \sin\theta_1 + \rho_1 (1-\cos\theta_1) - \rho_3 \left|\sin\theta_3\right| - \rho_3(\cos\theta_1 + \sin\theta_3)}{\cos\theta_3} \right\}$$

3,967,226
ELECTRICAL INDUCTIVE APPARATUS HAVING MAGNETIC SHIELDING CORES AND A GAPPED MAIN CORE STRUCTURE

Saul Bennon, and William D. Albright, both of Muncie, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

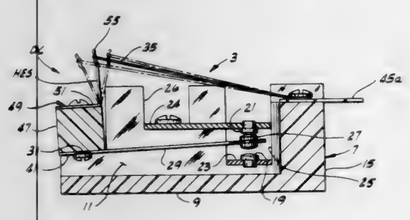
Filed June 10, 1975, Ser. No. 585,730
Int. Cl.² H01F 15/04
U.S. Cl. 336—84 **2 Claims**



1. Electrical inductive apparatus comprising:

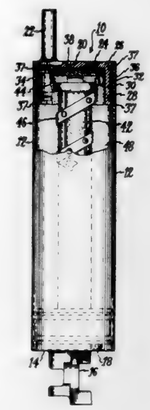
first, second, third and fourth rectangular magnetic structures each having first and second leg portions and first and second yoke portions constructed of stacked metallic laminations;
a winding structure inductively coupled to said magnetic structures;
said first magnetic structure being surrounded by said second magnetic structure, with said first and second magnetic structures being spaced from each other to form first and second gaps between their adjacent yoke portions and third and fourth gaps between their adjacent leg portions, with the second leg portion of the third magnetic structure located adjacent to the first leg portion of the second magnetic structure, and with the first leg portion of the fourth magnetic structure located adjacent to the second leg portion of the second magnetic structure;
an apparatus enclosure having vertical side walls which join a horizontal supporting surface;
said metallic laminations being stacked with their faces oriented perpendicular to said vertical side walls; and
at least one structural member supported by the horizontal supporting surface, said structural member including a beam having a flange and two parallel web portions, with one of said web portions projecting into said third gap, and with the other of said web portions located between the first leg portion of the second magnetic structure and the second leg portion of the third magnetic structure.

3,967,227
ACTUATOR SYSTEM WITH AMBIENT TEMPERATURE COMPENSATION
David E. Clarke, Attleboro; Robert P. Lackey, North Attleboro, and Joel P. Clark, Plainville, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 10, 1975, Ser. No. 535,940
Int. Cl.² H01H *71/22*
U.S. Cl. 337—124 **21 Claims**



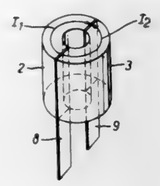
1. An actuator system comprising a frame, an actuator member carried by said frame movable between a first position and a second position, means biasing said actuator member toward its first position, a wire coupling said frame and said actuator member, said wire being tensioned by said biasing means so as to be stretched from an original length to a second length when the actuator member is in its first position, said wire being of a selected metal alloy which upon being heated shortens its length and increases tension in the wire to overcome the bias of the biasing means to move the actuator member from its first to its second position, means for selectively heating the wire to effect said increase in wire tension, and ambient temperature compensation means comprising a bimetallic member secured to said actuator member, said bimetallic member being adapted to flex in response to changes in ambient temperature thereby to maintain the wire under substantially uniform tension during changes in ambient temperature, whereby upon selective heating of said wire to effect said increase in wire tension to move the actuator member to its second position, it is sufficiently heated to effect movement of said actuator member from its first to its second position without overstressing the wire.

3,967,228
ELECTRIC CURRENT LIMITING FUSE HAVING A FILTER DISPOSED IN ONE END CAP
Robert E. Koch, Pittsfield, and James H. Ceder, Lenox, both of Mass., assignors to General Electric Company
Filed Oct. 9, 1975, Ser. No. 621,053
Int. Cl.² H01H *85/14*
U.S. Cl. 337—248 **5 Claims**



1. A current limiting fuse of the type including an electrically insulating cartridge;
a pair of electrically conductive terminal caps at opposite ends of said cartridge;
a fusible element within said cartridge in electrical contact with said terminals; and
a filling of packed particulate matter of high electrical resistivity and high dielectric strength within said cartridge surrounding and providing a porous enclosure for said fusible element, at least that portion of said packed particulate matter immediately surrounding said fusible element being bound into a rigid self-supporting adhering body by an inorganic binder added thereto, wherein the improvement comprises that one of said terminal end caps has a filter disposed on its inside surface overlapping a drain port.

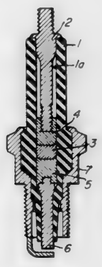
3,967,229
HIGH-DUTY PTC-RESISTOR AND METHOD FOR ITS MANUFACTURE
Holger Wilhelm Vind, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Nov. 6, 1974, Ser. No. 521,244
Claims priority, application Germany, Nov. 14, 1973, 2356765
Int. Cl.² H01C *7/00*
U.S. Cl. 338—13 **3 Claims**



1. A heavy duty PTC resistor comprising two pressed and sintered bodies of a ceramic composition, each of said bodies

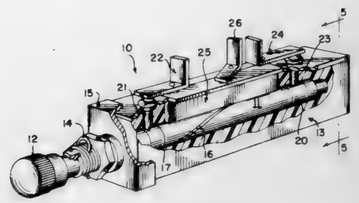
having two end faces each carrying a connection contact, said end faces extending parallel to the direction of the force with which the associated one of said bodies was loaded during pressing, said resistor having the form of two halves of a hollow cylinder, said end faces being in radial planes of said cylinder.

3,967,230
RESISTOR BUILT-IN SPARK PLUG
Osami Kamigaito; Haruo Doi; Hideyuki Masaki; Toshio Kandori; Masami Oki, and Yasuo Nakamura, all of Nagoya, Japan, assignors to Nippondenso Co., Ltd. and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of, Japan
Filed Oct. 22, 1974, Ser. No. 517,053
Claims priority, application Japan, Nov. 12, 1973, 48-127032
Int. Cl.² H01C *1/06, 7/06*
U.S. Cl. 338—66 **12 Claims**



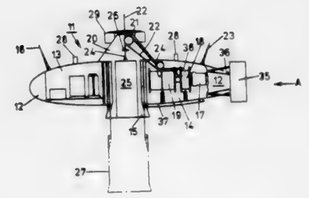
1. A resistor built-in spark plug comprising an insulator formed with an axially extending inner hole, a stem fitted in the upper part of said hole in said insulator, a center electrode fitted in the lower part of said hole, a resistor disposed in the central part of said hole, and copper-glass electrode layers disposed between said resistor and said stem and between said resistor and said center electrode, said resistor being made by firing and solidifying powder of resistor mixture consisting of 75 to 38 volume percent of main resistor component containing tin oxide and 25 to 62 volume percent of glass powder with softening temperature of 300° to 600°C, and said copper-glass electrode layers being made by firing and solidifying a mixture of copper powder and glass powder with the softening temperature of above 530°C and more than 30°C higher than the softening point of glass in the resistor portion.

3,967,231
VARIABLE RESISTOR WITH PLUG-IN RESISTANCE ELEMENT
Chester L. Hout, Box 235, Atlanta, Ill. 61723
Filed Mar. 31, 1975, Ser. No. 563,805
Int. Cl.² H01C *10/26*
U.S. Cl. 338—117 **8 Claims**



1. In a variable resistor including
means providing a resistance element,
a body housing said resistance element,
first contact means in said body for providing an electrically conductive contact with said resistance element at a constant position along its length,
second contact means in said body for providing an electrically conductive contact with said resistance element at a variable position of contact along its length,
a shaft means journaled in said body with one end being accessible from the exterior thereof and which is rotatable from said accessible end for varying the relative position of contact of said second contact means along said resistance element,
the improvement wherein;
said resistance element is mounted on said shaft means, and
said shaft means including said resistance element is readily removable from said body without dismantling same.

-3,967,232
METHODS OF DETECTING UNDERWATER OBJECTS AND APPARATUS THEREFOR
Noel Mills, and Geoffrey Peter Warley, both of Yeovil, England, assignors to Westland Aircraft Limited, Yeovil, England
Filed June 28, 1973, Ser. No. 373,480
Claims priority, application United Kingdom, June 29, 1972, 30584/72
Int. Cl.² G08B *13/00*
U.S. Cl. 340—2 **7 Claims**

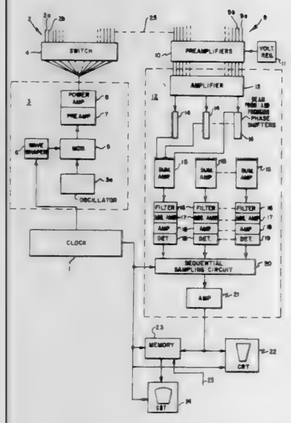


2. Underwater detection apparatus comprising in combination, a buoyant structure, a sonar body housed in a generally vertical aperture within the buoyant structure, first and second cable drums located in the buoyant structure and being operable by a motor and clutch means located in the structure, a cable wound on the first cable drum and routed upwardly for releasable attachment to a helicopter so that rotation of the first drum is effective to raise and lower the buoyant structure relative the helicopter, the cable being constructed and arranged to carry electrical power and control signals when attached to the helicopter, a cable wound on the second cable drum and routed downwardly to support the sonar body so that rotation of the second cable drum is effective to raise and lower the sonar body relative the buoyant structure, the cable being constructed and arranged to carry electrical power to operate the sonar body, an electrical power supply carried by the buoyant structure for operating the sonar body and a transmitting means when the cable from the first drum is detached from the helicopter, and flotation means on the cable from the first drum and located adjacent the end arranged for releasable attachment to the helicopter.

3,967,233
SONAR SYSTEM FOR CLASSIFYING SUBMERGED OBJECTS

Pierre Maguer, Le-Relecq-Kerhuon, and Paul Gourlay, Vanves, both of France, assignors to Etat Francais, France

Filed Aug. 8, 1974, Ser. No. 495,905
Claims priority, application France, Aug. 16, 1973, 73.29806
Int. Cl.² G01S 9/66, 7/62
U.S. Cl. 340—3 R **7 Claims**



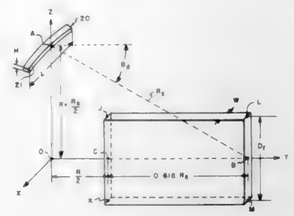
1. A sonar system comprising means for generating very short acoustic pulses comprising very short ultrasonic waves; a transmitting transducer connected to said pulse generating means for transmitting said pulses; a receiving transducer mounted on a common support with said transmitting transducer for pivoting movement therewith, said receiving transducer receiving echoes of the pulses transmitted by said transmitting transducer and producing electrical signals in accordance therewith; phase shifting means for providing predetermined phase shifting of the electrical signals produced by said receiving transducer; means forming a plurality of monitoring channels for combining the outputs of said phase shifting means; means for sequentially sampling the outputs of said mointoring channels; at least one display means for displaying the output of said sampling means so as to provide a visual representation of the echoes received by said receiving transducer; means for focusing said receiving transducer inside the Fresnel region of said receiving transducer; and, timing means for synchronizing the acoustic transmission of said transmitting transducer, the operation of said sampling means and the operation of said display means.

3,967,234
DEPTH-OF-FIELD ARC-TRANSDUCER AND SONAR SYSTEM

Charles H. Jones, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1974, Ser. No. 448,596
Int. Cl.² H04B 13/00
U.S. Cl. 340—8 R **7 Claims**

1. A large depth-of-field transducer for use in sonar systems, said transducer comprising at least one transducer element positioned along an arc of a circle having a radius R and having an arc length L, said transducer element having an active face along its length including a midpoint, said face being directed toward a point lying on a line normal to the plane defined by the arc and passing through the center of said

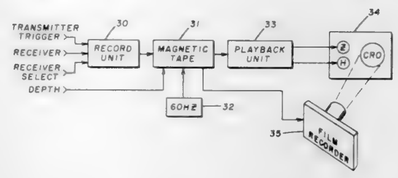


arc, said point being spaced from said midpoint by a distance R_s, and said radius R being equal to about 0.3 to 0.6 R_s.

3,967,235
ACOUSTIC VELOCITY LOGGING SYSTEM

Charles L. Dennis, De Soto, and Joseph Zemanek, Jr., Dallas, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 17, 1974, Ser. No. 489,214
Int. Cl.² G01V 1/40
U.S. Cl. 340—15.5 DS **10 Claims**



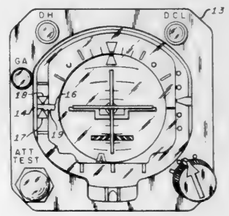
1. An acoustic velocity logging system comprising:
a. a transducer assembly adapted for movement through a borehole, including:
i. a transmitter of acoustic pulses,
ii. a pulse generator for energizing said transmitter and for producing a transmitter trigger pulse each time said transmitter is energized,
iii. first and second receivers located at different, spaced-apart, axial distances from said transmitter, each receiver producing an output signal representative of the acoustic pulses traveling through the formation surrounding the borehole from the transmitter to the receiver,
iv. means for selectively providing one of said receiver signals along with each of said transmitter trigger pulses and for providing a receiver select signal of a first state when the output from said first receiver is being provided and of a second state when the output from said second receiver is being provided,
b. means located uphole from the transducer assembly for recording said transmitter trigger pulses, said receiver signals, and said receiver select signal,
c. means for gating said recorded transmitter trigger pulses and said recorded receiver select signal to provide first and second trigger pulses in response to recorded transmitter trigger pulses occurring during the time periods that said recorded receiver select signal is in said first and second states, respectively,
d. a cathode-ray oscilloscope,
e. means for applying said recorded receiver signals to the intensity modulation input of said cathode-ray oscilloscope, and
f. means for selectively applying either said first or second trigger pulses to the horizontal sweep input of said cathode-ray oscilloscope to trigger the sweep of the electron beam of the cathode-ray oscilloscope whereby each sweep of the electron beam is modulated to produce a variable-density display of the recorded receiver outputs from either said first or second receiver.

10. In a borehole logging system having a transducer assembly including a transmitter for producing bursts of acoustic energy pulses and a plurality of receivers for producing signals representative of said acoustic pulses traveling from said transmitting means to each of said plurality of receiving means through the formation adjacent the borehole as the assembly is moved through the borehole, a method for recording and displaying said signals, comprising:
a. producing a source of first reference pulses,
b. recording said signals on magnetic tape at the rate of said first reference pulses,
c. recording a control signal on said magnetic tape, the rate of said control signal being representative of the rate of said first reference pulses,
d. recording receiver select signals to indicate the receiver whose signal is being recorded at any given time,
e. applying successively recorded receiver signals to the intensity modulation input of a cathode-ray oscilloscope, and
f. triggering the electron beam sweep of the cathode-ray oscilloscope in response to those recorded receiver select signals that identify the time periods on said recording during which signals from a common receiver have been recorded whereby successive electron beam sweeps are intensity modulated with successive receiver signals from a common receiver.

3,967,236
COMMAND CUE FOR A FLIGHT DIRECTOR INSTRUMENT

John Peter Dietrich, Glendale, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 29, 1974, Ser. No. 456,322
Int. Cl.² G08G 5/00
U.S. Cl. 340—27 AT **4 Claims**

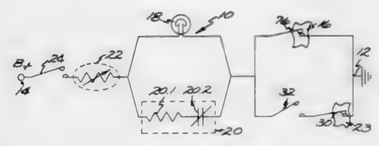


1. An indicator in a flight director instrument for use in rotary wing aircraft having a collective pitch control stick which is normally disposed for generally vertical control motions with respect to said aircraft for controlling collective pitch by generally vertical manual movement of said stick, said indicator comprising
an elongated bar shaped cue generally resembling the shape of said collective pitch control stick,
said cue being mounted in said flight director instrument which when in use in said aircraft is part of a flight director system having means for moving said cue in accordance with a collective pitch command,
said cue being mounted in said flight director instrument normally horizontally disposed with respect to said aircraft for generally vertical motion with respect thereto, and
two pointing symbols disposed one above the other and associated with said cue to define a central position therefor, the upper of said two symbols pointing downwardly and the lower of said two symbols pointing upwardly, the region between said two symbols defining said central position for said cue, said symbols pointing in the respective directions to move said collective pitch control stick so as to center said cue at said central position when said cue in deviating from said central position becomes associated with one of said symbols, thereby satisfying said collective pitch command, said cue exhibiting vertical deviations above and below said central position in accordance with said collective pitch command,
said control stick shaped cue, said vertical deviations thereof and said pointing symbols tending to engender an instinctive reaction associating said cue with said control stick and said deviations and pointing symbols with the direction to move said control stick to satisfy said collective pitch command, thereby engendering an instinctive reaction to position said control stick in the proper direction to satisfy said collective pitch command.

3,967,237
AUTOMOTIVE SEAT BELT MONITORING SYSTEM

Richard L. Jenne, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 1, 1974, Ser. No. 520,188
Int. Cl.² B60R 21/10
U.S. Cl. 340—52 E **13 Claims**



1. A seat belt monitoring system for a motor vehicle having seat belt means and electrical power supply means comprising electrically operable audible signaling means, electrically operable visual signaling means, first switch means operable in response to initiation of motor vehicle operation for electrically connecting said signaling means to said power supply means to permit operation of said signaling means, additional switch means operable in response to fastening of said seat belt means to prevent operation of at least one of said signaling means when said seat belt means is fastened, and electrical resistor means adapted to display selected change in resistivity with a selected temperature change arranged to be subjected to said selected temperature change within a selected time in response to initiation of said motor vehicle operation for preventing operation of at least a selected signaling means of said system after said selected time.

3,967,238
LOW-BRAKE FLUID SENSOR

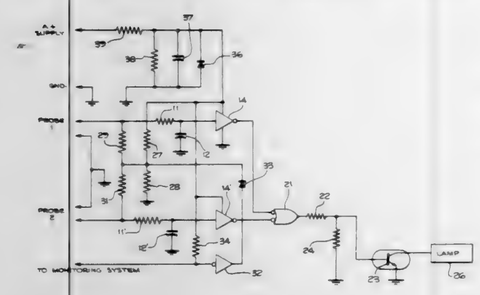
Robert R. Ridpath, Rosemont, Pa.; Louis R. Clifford, Woodbury, and Hendrik Groot, Cherry Hill, both of N.J., assignors to TRW Inc., Los Angeles, Calif.

Filed Dec. 16, 1974, Ser. No. 532,882
Int. Cl.² G08B 21/00
U.S. Cl. 340—59 **16 Claims**

1. A fluid sensor system for sensing the level of fluid in a container comprising:
electrical supply means for supplying an electrical potential,
electrical probe means coupled to said electrical supply means and inserted into the fluid for providing an electrical signal in proportion to the level of fluid in the container,
detector circuit means coupled to said probe means for detecting said electrical signals, said detector circuit means including an integrator circuit coupled to said probe means for integrating said electrical signal with respect to time, said detector circuit further including an amplifier having an input coupled to the output of said

integrating circuit for amplifying said integrated electrical signal, and

switching means operatively coupled to said detector circuit means and responsive to said amplifier, said switching means being operable to be switched from one stable state to a second stable state in response to a predetermined signal from said detector circuit to provide an accurate alarm signal in response to a reduced level of said fluid.

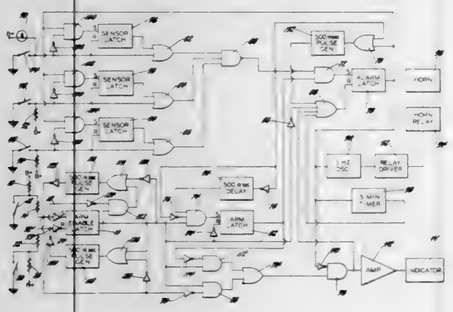


3,967,239

VEHICLE ANTI-THEFT ALARM CIRCUIT

Robert E. Steele, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1974, Ser. No. 523,977
Int. Cl.² B60R 25/10
U.S. Cl. 340—63 5 Claims



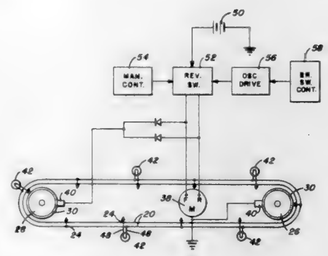
1. An anti-theft alarm circuit for a motor vehicle comprising sensor switch means for assuming first and second states in response to the opening and closing respectively of a vehicle compartment, signaling means, key operated switch means movable from a neutral position to an ARM position or a DISARM position, ARM ENABLE latch means connected with said key operated switch means and triggerable to an ARM ENABLE state upon movement of said key operated switch means to said ARM position and triggerable to a DISARM ENABLE state upon movement of said key operated switch means to said DISARM position, ARM latch means for establishing a circuit arming condition if said sensor switch means is in said second state and said ARM ENABLE latch means is in said ARM ENABLE state, ALARM latch means responsive to said sensor switch means assuming said first state after said arming condition has been established for energizing said signaling means, indicator means, logic means responsive to the state of said ARM ENABLE latch means and said ARM latch means and to the position of said key operated switch means for energizing said indicator means while said key operated switch means is in said ARM position if said ARM ENABLE latch means is triggered to said ARM ENABLE state and for deenergizing said indicator means when said key operated switch is returned to said neutral position unless said ARM latch means does not establish said circuit arming condition.

3,967,240

DIRECTIONAL SIGNAL

J. Ridgely Young, Edmonton, Canada, assignor to Kay Melinda Brownlee, Edmonton, Canada

Filed July 15, 1975, Ser. No. 596,152
Int. Cl.² B60Q 1/26, 1/34; G08B 5/00
U.S. Cl. 340—73 8 Claims



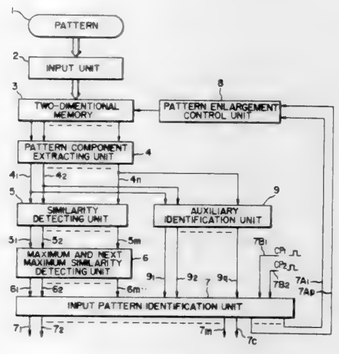
6. In a signal system for vehicles or the like incorporating a source of electrical energy, a pair of spaced pulleys, an endless belt mounted on said pulleys for travel thereabout, said endless belt incorporating electrical conductor means, a series of lamps mounted at spaced points along said belt and in current receiving communication with the conductor means, cooperative current transferring means for effecting current transfer from said source to said pulleys and from said pulleys to the conductor means of the belt, reversible electric motor means drivingly engaged with one of said pulleys for a selective driving thereof in either direction, switch means for controlling the direction of operation of said motor, and turn signal means for operating said switch means in accordance with the desired direction of movement of the belt.

3,967,241

PATTERN RECOGNITION SYSTEM

Ryuichi Kawa, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1973, Ser. No. 429,342
Claims priority, application Japan, Dec. 31, 1972, 48-310
Int. Cl.² G06K 9/12
U.S. Cl. 340—146.3 H 5 Claims



1. A pattern recognition system comprising

a. pattern input means adapted to read an input pattern and to convert it into quantized electrical video signals;

b. a two-dimensional memory adapted to store therein said electrical video signals as an input pattern information;

c. similarity detecting means adapted to detect the degree of similarity of said input pattern information with stored standard patterns of different categories;

d. input pattern identification means adapted to establish one-to-one correspondence between said input pattern information and one of said standard patterns when the degree of similarity of said input pattern information to only one standard pattern is high, and also adapted to provide an input pattern enlargement signal when the degree of similarity of said input pattern information with at least two of said standard patterns is high;

e. an input pattern information enlargement control means adapted to enlarge a selected part of said input pattern information stored in said two-dimensional memory in response to said input pattern enlargement signal from said identification means; and

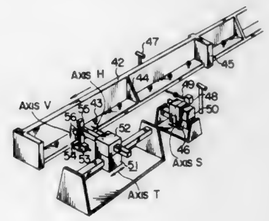
f. an auxiliary input pattern identification means adapted to extract selected features of said enlarged input pattern information so as to identify and establish a one-to-one correspondence between said enlarged input pattern information and only one of said plurality of standard patterns.

3,967,242

AUTOMATIC WORKING MACHINE

Osamu Isoo; Shinji Matsuoka; Shigeru Matsuoka, all of Hitachi; Takeshi Uno, Sayama; Sadahiro Ikeda, Tokyo; Ikuro Masuda, and Koji Kurokawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed June 13, 1974, Ser. No. 479,080
Claims priority, application Japan, June 15, 1973, 48-66918
Int. Cl.² G06K 9/00
U.S. Cl. 340—146.3 H 5 Claims



1. An automatic working machine comprising:

a television image input device for obtaining an optical image of a moving object to be worked and for converting the optical image into electrical signals;

means for detecting the kind of object to be worked including means providing at least one predetermined range of level of electrical signals assumed for the shape of predetermined objects to be worked in an image plane of said television input device, means for measuring the area of the object to be worked in accordance with the electrical signals provided by said television input device obtaining an optical image of the moving object to be worked, and means for comparing the electrical signals of the measured area with the at least one predetermined range of electrical signals to detect the kind of object to be worked; and

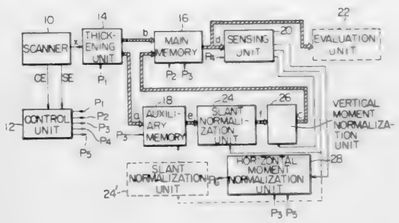
a working unit for effecting a predetermined work on the object to be worked in response to the result of detection of said detecting means.

3,967,243

CHARACTER PATTERN NORMALIZATION METHOD AND APPARATUS FOR OPTICAL CHARACTER RECOGNITION SYSTEM

Ryuichi Kawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed July 5, 1974, Ser. No. 486,246
Claims priority, application Japan, July 9, 1973, 48-77304; Nov. 6, 1973, 48-128208[U]
Int. Cl.² G06K 9/12
U.S. Cl. 340—146.3 H 17 Claims



1. A method of normalizing a character pattern in the form of electrical signals constituting a quantized representation of a character, comprising the steps of:

a. storing the character pattern in both a main memory and an auxiliary memory;

b. sensing the value of at least one spatial parameter of the character pattern in the main memory; and

c. normalizing the at least one spatial parameter while transferring the character pattern from the auxiliary memory to the main memory in accordance with the sensed value;

the at least one spatial parameter including the slant of the character pattern, said main and auxiliary memories comprising rectangular arrays of memory elements corresponding to respective points of the character pattern;

step (c) comprising, for each respective column of memory elements of the main and auxiliary memories:

gating electrical signals from memory elements of the auxiliary memory to memory elements of the main memory, said memory elements of the main memory to which the electrical signals are gated being said respective column of memory elements, said memory elements of said auxiliary memory from which the electrical signals are gated being spaced to the left of said respective column of memory elements to normalize leftward slant and being spaced to the right of said respective column of memory elements to normalize rightward slant, a spacing of said memory elements of said auxiliary memory from which the electrical signals are gated progressively increasing from a bottom of said auxiliary memory relative to a top of said auxiliary memory.

3,967,244

APPARATUS FOR THE WIRELESS TRANSMISSION OF A CONTROL SIGNAL TO THE CONTROL PATH OF A CONTROLLED SEMICONDUCTOR VALVE

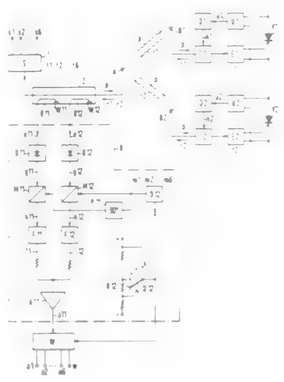
Stefan Frese, Vienna, Austria, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed June 5, 1975, Ser. No. 584,009
Claims priority, application Germany, June 10, 1974, 2427951
Int. Cl.² H04B 1/00
U.S. Cl. 340—171 PF 2 Claims

1. Apparatus for the wireless transmission of a control signal to the control path of a controllable semiconductor valve comprising:

a receiving location including:

a receiving antenna for receiving a first modulated carrier signal and for transmitting a back-reporting indication signal;
a first demodulator responsive to said first carrier signal and having an output connected to said control path;
and means responsive to the state of said valve for developing an amplitude modulated signal which comprises said back reporting indication signal; and a transmitting location including:
means for generating a carrier signal;
a first modulator responsive to said carrier signal and to said control signal for generating said first modulated carrier signal;
a transmitting antenna for transmitting said first carrier signal and for receiving said back-reporting indication signal;
first and second directional couplers which are separated by one-eighth of the wavelength of the carrier frequency of said carrier signal, each of said directional



couplers having a branch line and main line, the main line of said first coupler being connected at one end of said first modulator and at the other end to one end of said main line of said second coupler, the other end of the main line of said second coupler being connected to said antenna;
first and second AM demodulators connected to the branch lines of said first and second couplers, respectively;
means for generating sinusoidal and cosinusoidal signals of a predetermined local frequency;
a first mixer responsive to the output of said first AM demodulator and to said cosinusoidal signal;
a second mixer responsive to the output of said second AM demodulator and to said sinusoidal signal;
first and second lowpass filters connected to the outputs of said first and second mixers, respectively;
and means for adding the outputs of said first and second filters.

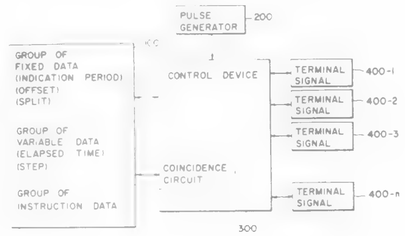
3,967,245

TRAFFIC SIGNAL CONTROL DEVICE WITH CORE MEMORY

Akira Muramatu, Kyoto, and Kiyoshi Kawata, Kameoka, both of Japan, assignors to Omron Tateisi Electronics Co., Japan

Continuation-in-part of Ser. No. 121,891, March 8, 1971, abandoned. This application Sept. 14, 1973, Ser. No. 397,592
Claims priority, application Japan, Mar. 6, 1970, 45-19503
Int. Cl.² G06F *15/06, 15/48*
U.S. Cl. 340—172.5 **11 Claims**

1. A traffic signal control device comprising:
a core memory having memory areas for storing digital data in the form of variable data representative of information corresponding to traffic phases and elapsed times, fixed data representative of information corresponding to interval sequences, and instruction data, for controlling traffic signals;
first means, coupled with said core memory, for writing into and reading out from said core memory said digital data;
control means, responsive to said digital data within said memory, for comparing variable data with fixed data and for incrementing the variable data from said memory by a predetermined number upon coincidence of the compared data and for generating first control signals as a result of the coincidence for controlling the traffic sig-



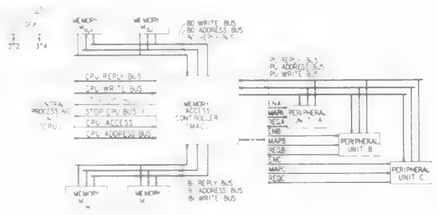
nals, said control means including clock pulse generator means for generating clock pulses and command register means, said first means and said command register means being responsive to said clock pulse generating means for reading out instruction data from said core memory and for storing the read out instruction data in the command register means in accordance with the generation of clock pulses; and
a program control circuit, coupled with said control means including said command register means, for controlling time occurrence of the operation of said control means in accordance with the instruction data stored in said command register means.

3,967,246

DIGITAL COMPUTER ARRANGEMENT FOR COMMUNICATING DATA VIA DATA BUSES

Frederick Glenn House, Downers Grove, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 5, 1974, Ser. No. 476,436
Int. Cl.² G06F *9/18*
U.S. Cl. 340—172.5 **3 Claims**



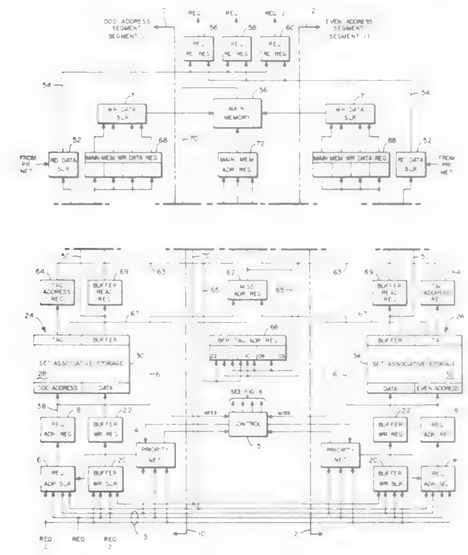
1. In a memory access controller for use in a data processing system having a plurality of memories, a processor, and a plurality of peripheral units competing with said processor for access to said memories, said memory access controller having means for repetitively receiving sets of memory access requests from said units, the improvement comprising:
a first priority circuit responsive to the receipt of a set of access requests from said units for producing an output identifying a first one of said units having the highest priority request in said request set;
a second priority circuit responsive to the receipt of said request set for producing an output identifying a second one of said units having the highest priority requests in said request set;
means responsive to the outputs produced by said first priority circuit and said second priority circuit for comparing said outputs to determine if said first priority circuit and said second priority circuit identify the same one of said units;
means cooperating with said comparing means for storing the output of said second priority circuit when said first and said second priority circuits identify the same one of said units;
means controlled by said storing means for blocking subsequent access requests generated by the unit identified by an output stored in said storing means from reaching said second priority circuit; and
means cooperating with said comparing means for enabling the unit identified by said second priority circuit to generate an address code if said first and second priority circuits identify the same one of said units.

3,967,247

STORAGE INTERFACE UNIT

Vernon K. Andersen, New Brighton, and Michael W. Goddard, Roseville, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 11, 1974, Ser. No. 522,553
Int. Cl.² G06F *13/00*; **G11C** *9/06*
U.S. Cl. 340—172.5 **2 Claims**



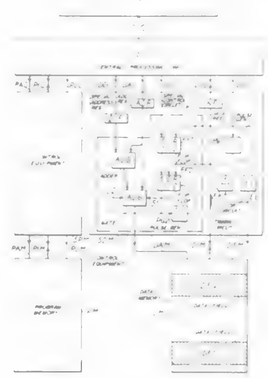
1. In a digital computing system of the type including a relatively large capacity, high cycle time main memory for storing plural blocks of information, a small capacity, high speed buffer memory for storing subsets of said blocks of information contained in said main memory at addressable locations therein, a plurality of requestor units for addressing information stored in said buffer memory, a tag storage device for storing the addresses of those blocks of information stored in said main memory which are currently contained in said high speed buffer memory as well as age bits indicative of the relative order in which said blocks of information contained in said high speed buffer memory had been addressed by said requestor units, the combination comprising:
a. a plurality of comparator networks having first and second inputs and an output said comparators indicating whether the number represented by the binary digits applied to said first input are greater than, equal to or less than the number represented by the binary digits applied to said second input;
b. means for applying the age bits associated with predetermined blocks of information in said buffer memory individually to said first inputs of said plurality of comparator networks;
c. means for applying the age bits associated with the block of information in said buffer memory currently being addressed by one of said requestor units to said second inputs of all of said comparator networks; and
d. adder means connected to the outputs of said comparator networks for adding 0, clearing or adding 1, to the age bits of the predetermined blocks which were applied to said first inputs of said comparator networks when the number represented by the age bits applied to said first inputs are greater than, equal to or less than the number represented by the age bits applied to said second inputs, respectively whereby, in dependence upon the new age bits of the blocks, a decision may be made as to replacement of a block based on relative usage of the block.

3,967,248

ARRANGEMENT FOR DOUBLE-WRITING INTO A MEMORY DURING DATA FIELD RELOCATION

Hans Ole Kjöller, Vasterhaninge, and Erik Ivar Sjöquist, Farsta, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Nov. 29, 1974, Ser. No. 528,137
Claims priority, application Sweden, Dec. 13, 1973, 7316837
Int. Cl.² G06F *13/00*
U.S. Cl. 340—172.5 **3 Claims**



1. In a real-time computer, which, while in operation, performs the relocation of data in a memory from a first to a second memory field wherein the memory has means activated by a write pulse for writing data into a memory position defined by received address information, apparatus for writing identical data, stored in a data register, into both of said first and second memory fields during said relocation, said apparatus comprising: a first address register for storing a primary address belonging to said first memory field; a second address register for storing the address separation between said first and second memory fields; and a control circuit comprising an adder means provided with a first input connected to said first address register and a second input connected to said second address register, said adder means having means for producing a result address by adding said address separation to said primary address, a gate device having a first input for receiv-

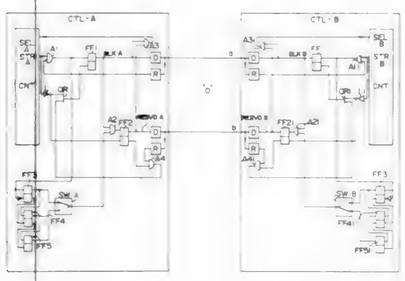
ing said result address, a second input connected to said first address register and an output connected to said memory, a recording means for storing a relocation indication, and control means for controlling the transfer in a determined order of said primary address and said result address from said gate device to said memory, said control means including means for supplying to the memory an additional write pulse when said indication is present.

3,967,249

PRIORITY SELECTION SYSTEM IN ACCESS CONTROL

Yukio Taniyama; Tetsuo Isaka, both of Yokohama; Tetsuo Nagahori, Kawasaki, and Kaoru Kanda, Yokohama, all of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Dec. 30, 1974, Ser. No. 537,450
Claims priority, application Japan, Dec. 28, 1973, 49-317
Int. Cl.² G06F *3/04*
U.S. Cl. 340—172.5 **6 Claims**



1. A selection system for an information processing system comprising in combination:

a shared unit;

a plurality of control units connected to said shared unit, for accessing said shared unit, wherein each of said plurality of control units includes means for generating a block signal when that corresponding control unit starts its operation, means for generating a reserved signal when said corresponding started control unit completes its operation and commences accessing said shared unit, and a time delay means connected to said block signal generating means for defining an operation time of said corresponding control unit from said start to said completion and controlling said reserved signal generating means, the respective time delay means of said plurality of control units defining respectively different operations times for each of said plurality of said control units;

a first signal line connected in common to each of said plurality of control units for conveying said block signals;

a second signal line connected in common to each of said plurality of control units for conveying said reserved signals;

each control unit, further including first transmitting means for transmitting a block signal generated by its corresponding block signal generating means, when said control unit has started its operation, over said first signal line to all other said control units, and first receiving means for receiving said transmitted block signals conveyed on said first signal line and preventing said corresponding control unit from subsequently starting its respective operation;

each control unit also includes second transmitting means for transmitting a reserved signal generated by its corresponding reserved signal generating means, when said control unit has completed its operation, over said second signal line to all other said control units, and second receiver means for receiving said transmitted reserved signals conveyed on said second signal line and preventing said corresponding control unit from completing its operation;

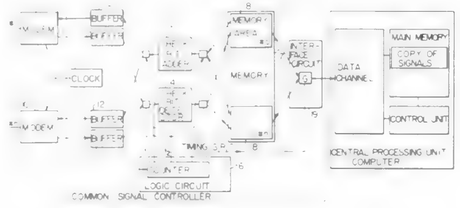
said selection system is characterized by the control unit having the shortest said operation time, of said plurality of control units which have been started, being the first to transmit a reserved signal, thereby preventing all others of said plurality of control units from completing their corresponding operations.

3,967,250

CONTROL SYSTEM OF AN ELECTRONIC EXCHANGE

Yasuhiro Senda, Machida, and Sumitoshi Ando, Tokyo, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 368,830, May 16, 1973, abandoned. This application Feb. 6, 1975, Ser. No. 547,580
Claims priority, application Japan, May 22, 1972, 47-50523
Int. Cl.² G06F *3/00;* **H04M** *3/00*
U.S. Cl. 340—172.5 **3 Claims**



1. A stored program controlled electronic switching system for common channel signalling system through separate data links comprising:

a. a common signal controller having at least a plurality of modulator-demodulator units each of which is connected to each data link, a plurality of pairs of first buffer memories each pair of which is connected to each modulator-demodulator unit for the conversion of the signal code on each data link from serial mode to parallel mode and from parallel mode to serial mode, means including a check bit detector and a check bit adder connected to said first buffer memories for the transmission error control, a second buffer memory connected between said means and an interface circuit, a clock generator commonly connected to said modulator-demodulator units for driving the same clock and sending signals in each data link in the same phase;

b. said control of sending signal being in relatively high priority and said control of receiving signal being in relatively low priority;

c. a stored program type computer connected to said interface for sending and receiving signals to and from said data links through said second buffer memory, processing the jobs including storing of the copy of the transmitted signals and re-transmitting it on request.

3,967,251

USER VARIABLE COMPUTER MEMORY MODULE

Leonard Levine, Rancho Palos Verdes, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 17, 1975, Ser. No. 569,050
Int. Cl.² G06F *13/08*
U.S. Cl. 340—172.5 **9 Claims**

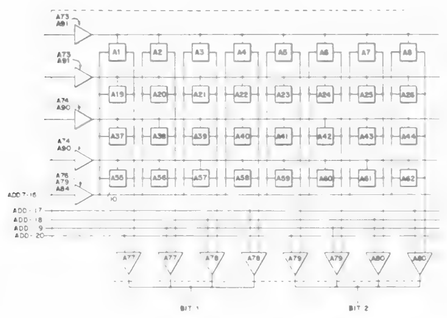
1. In a digital computer comprising a central processing unit (CPU) and memory connected by backplane wiring, a memory module which can be reconfigured for various memory size and word length applications by rewiring said backplane, comprising:

addressable memory devices arranged in rows and columns,

address line amplifiers for receiving addressing information from said CPU and for driving the address input lines of said memory devices,

a pulse driver coupled to said CPU for each row of memory devices for enabling said row of memory devices to store or output signal information bits,

a read/write amplifier for each column of memory devices for coupling one bit of information between said CPU and said memory devices in each column,



a printed circuit board for mounting said memory devices, said address line amplifiers, said pulse drivers and said read/write amplifiers, and

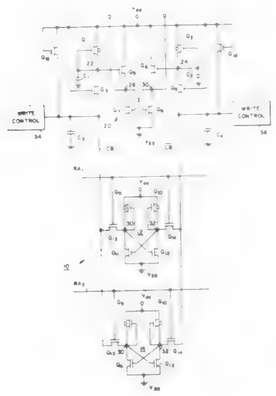
wherein said backplane wiring is individually coupled to each of said read/write amplifiers for ORing the input-/output lines of said read/write amplifiers and for selectively enabling all of said read/write amplifiers or any subset thereof, to configure said memory module to a particular memory size and word length.

3,967,252

SENSE AMP FOR RANDOM ACCESS MEMORY

Robert Murray Donnelly, Carrollton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Oct. 3, 1974, Ser. No. 511,572
Int. Cl.² G11C *7/06, 11/24, 11/40*
U.S. Cl. 340—173 R **15 Claims**



14. The method for reading data from a static memory cell of an integrated circuit memory having a d.c. current path from a sense bus to a source supply voltage means when addressed representing one logic state which comprises

precharging the sense bus to a predetermined voltage level, then

addressing the memory cell to initiate the d.c. current path, and

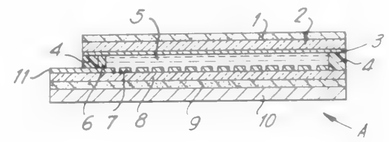
detecting the current flow through the sense bus before the voltage of the sense bus has been substantially reduced and supplying additional current to the sense bus to prevent excessive discharge of the bus.

3,967,253

DISPLAY DEVICE

Yuki Tsuruishi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Oct. 29, 1974, Ser. No. 518,906
Claims priority, application Japan, Oct. 29, 1973, 48-121517
Int. Cl.² G11C *11/42*
U.S. Cl. 340—173 LM **20 Claims**



1. A display device comprising a first substrate; a second substrate positioned in spaced relation to said first substrate; a first electrode mounted on said first substrate facing said second substrate; at least one second electrode mounted on said second substrate facing said first electrode; a display material disposed between said substrates and electrodes and adapted so that the region thereof in registration with at least the second electrode is rendered visually distinguishable from the adjoining regions of said material upon the selective energization of said electrodes; and at least one display cell driving circuit means mounted on said second substrate in the region of each of said second electrodes, each of said display cell driving circuit means including at least one radiation detecting means for detecting selectively applied radiation from outside of said display device and at least one shift register stage means coupled to said radiation detecting means for storing a data state representative of the detection of radiation by said radiation detecting means and coupled to the associated second electrode for energizing said electrodes in response to said detection of radiation by said radiation detecting means.

3,967,254

CHARGE TRANSFER MEMORY

Walter Frank Kosonocky, Skillman, and Donald Jon Sauer, Plainsboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 18, 1974, Ser. No. 524,830
Int. Cl.² G11C *11/40*
U.S. Cl. 340—173 R **5 Claims**

1. A charge-coupled device structure comprising in combination:

a semiconductor substrate formed with a plurality of channels along which charge may be propagated, said channels extending in the column direction;

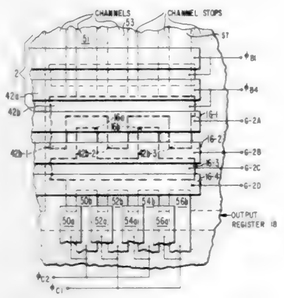
a storage electrode extending in the row direction with fingers over alternate of said channels extending in the column direction;

a first gate electrode extending in the row direction adjacent to said storage electrode and lying over said fingers;

a second gate electrode extending in the row direction, adjacent to said first gate electrode and lying over the ends of said fingers;

a third gate electrode extending in the row direction, adjacent to said second gate electrode, said third gate electrode formed with fingers extending in the column direction over the remaining alternate channels, interleaving

with the fingers of the storage electrode, passing beneath said second gate electrode and with the ends of said fingers extending to beneath said first electrode; and

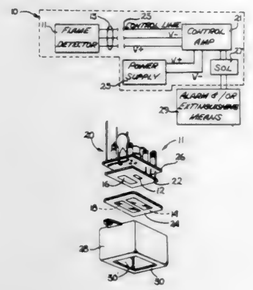


a fourth gate electrode adjacent to said third gate electrode, all of said electrodes being insulated from and electrically coupled to said substrate and each such electrode being insulated from but closely spaced to the next adjacent electrode.

3,967,255
FLAME DETECTION SYSTEM

Stuart M. Oliver, Los Angeles; Ralph A. Proud, Jr., Pasadena, and Sanford J. Parsons, Richmond, all of Calif., assignors to The Delphian Foundation, Sheridan, Oreg. and Q² Corporation, Los Angeles, Calif., a part interest to each

Filed June 28, 1974, Ser. No. 484,283
Int. Cl.² G08B *21/00*
U.S. Cl. 340—227 R **20 Claims**



18. In an electrically-powered flame detection system, a flame detector comprising:

a. a first combination of a first photocell and a first light filter mounted in planar juxtaposition within a housing, said first combination having a spectral response in a first region of the light spectrum, said first region being that portion of the spectrum wherein the spectral energy from a hydrocarbon flame is relatively sparse;

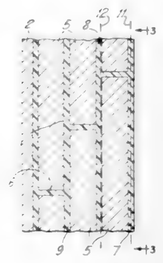
b. a second combination of a second photocell and a second light filter mounted in a planar juxtaposition within said housing, said second combination having a spectral response in a second region of the light spectrum, said second region being that portion of the spectrum wherein the spectral energy from a hydrocarbon flame is relatively abundant;

c. a binary high-speed switching circuit having an input and an output, said first and second photocells being electrically coupled to said input in opposing direction, said sensing amplifier being arranged and configured to provide a control signal at its output only when said second photocell generates an electrical signal which is substantially greater than that generated by said first photocell, whereby, said flame detector discriminates a hydrocarbon flame within the range and field view of said photocells from other common sources of illumination and said sensing amplifier provides said control signal in response thereto, said switching circuit being comprised of (i) an operational amplifier having first and second input legs, said operational amplifier being arranged and configured to provide said control signal at said output when the voltage at said second input leg is greater than that at said first input leg; (ii) a voltage divider providing a substantially constant voltage at said first input leg; (iii) a feedback circuit coupled between the output of said operational amplifier and said second input leg; and (iv) a bias resistor coupled to said second input leg, said bias resistor providing a bias current in a direction which tends to suppress the appearance of said control signal, said first and second photocells being serially connected in opposition between said first and second input legs.

3,967,256
INTEGRITY MONITORING SYSTEM FOR STORAGE TANK INSULATION

Telemachus Nicolas Galatis, London, England, assignor to Marine and Industrial Developments Limited, Piraeus, Greece

Filed Apr. 24, 1974, Ser. No. 463,783
Claims priority, application United Kingdom, Apr. 26, 1973, 19951/73
Int. Cl.² G08B *21/00*
U.S. Cl. 340—242 **7 Claims**

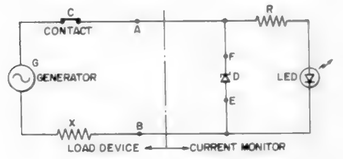


1. A detection system for detecting integrity impairment of a thermally insulating barrier for use in the containment of fluid material at cryogenic temperature, in which system there is provided, in each of a plurality of notional zones within the area of the said barrier, at least one detector in the form of an electrical conductor which is distributed over said zone and which has a temperature-dependent coefficient of electrical resistance; said conductor is disposed within the thickness of said barrier so as to be subjected to cooling in the event of leakage of cryogenic fluid into the barrier within the zone to which that conductor pertains, when the barrier is in use; and the said conductors distributed over the different notional zones are electrically connected to a voltage source and to different warning devices each actuatable in dependence on a lowering of the temperature and consequent change in the electrical conductivity of the associated one of said conductors.

3,967,257
CURRENT MONITOR CIRCUITS

Robert E. Hager, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 322,238, Jan. 9, 1973, abandoned. This application Jan. 7, 1975, Ser. No. 539,145
Int. Cl.² G08B *21/00*
U.S. Cl. 340—253 R **7 Claims**



1. A current monitoring circuit for monitoring the continuity of current through a load device comprising:

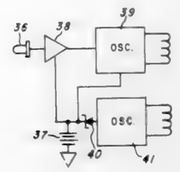
a zener diode in series with the load; and

means in parallel with the zener diode for indicating the presence of a reverse bias voltage across said zener diode which is greater or equal to the minimum voltage across said means when said means is conducting current, the minimum voltage across the means being less than the breakdown voltage of said zener diode.

3,967,258
ALARM SYSTEM

J. Fred Bucy, Jr., Dallas, Tex., assignor to Texas Instruments, Dallas, Tex.

Filed Aug. 6, 1973, Ser. No. 386,134
Int. Cl.² G08B *13/18*
U.S. Cl. 340—258 B **8 Claims**

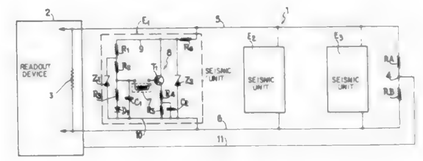


1. A surveillance system comprising a plurality of pairs of emitters and detectors with each pair being effective to detect breaking of a beam between the emitter and detectors, each emitter being a small self-powered unit which may be installed on site without wiring connections, each emitter consisting essentially of a battery and a semiconductor GaAs radiant diode device producing infrared light, each detector including a solid state radiation-responsive device and a battery and transmitting a continuous wireless radio frequency signal which is altered in a first manner to a set frequency upon interruption of the beam, each detector including means for producing a radio frequency signal different from said set frequency when the voltage of its battery is low, a central control console including a receiver responsive to change in any of said signals from the detectors and adapted to produce an alarm or indication when any of said signals is altered.

3,967,259
SECURITY SYSTEM WITH PLURAL SENSORS CONNECTED IN PARALLEL ACROSS THE TRANSMISSION LINE

Daniel Marie Pierre Lecuyer, Le Pecq, France, assignor to La Detection Electronique Francaise Protechat, Vanves, France

Continuation of Ser. No. 240,720, April 3, 1972, abandoned. This application Dec. 17, 1973, Ser. No. 425,659
Claims priority, application France, Apr. 7, 1971, 71.12290
Int. Cl.² G08B *13/00*
U.S. Cl. 340—258 D **5 Claims**



1. In a security system for seismically detecting intrusions into a physically defined enclosure and including a plurality of seismic sensors arranged in a spaced distribution throughout the enclosure, a two wire electrical transmission line, means individually connecting each sensor in parallel across the two wires of the transmission line, and a readout device connected to one end of the transmission line, the improvements characterized by:

a. the connecting means each including an amplifier having its input connected to a sensor and its output connected to the transmission line, whereby each sensor is always active and on-line, each amplifier having a high output impedance with respect to the impedance of the transmission line whereby each sensor and amplifier combination has a negligible influence on the impedance of the transmission line and does not provide any substantial attenuating shunt path for the signals from the other sensor and amplifier combinations,

b. readout impedance means connected across said one end of the transmission line, the value of said impedance means being equal to the characteristic impedance of the transmission line at the seismic frequency range within which the system operates to thereby avoid any signal reflections,

c. two resistors connected in series across the other end of the transmission line, the value of the resistors being high relative to the characteristic impedance of the transmission line whereby the resistors do not provide any substantial attenuating shunt path for the signals from the sensor and amplifier combinations, and

d. means connecting a junction point between the resistors to the readout device to thereby implement the monitoring of the transmission line for grounding, shorting and cutting.

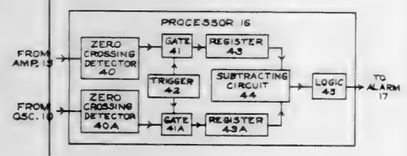
3,967,260
INTRUSION ALARM SYSTEM WITH IMPROVED AIR TURBULENCE COMPENSATION

Donald P. Massa, Cohasset, Mass., assignor to Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees of the Stoneleigh Trust u/d/t Dec. 4, 1973, Cohasset, Mass.

Filed July 8, 1974, Ser. No. 486,673
Int. Cl.² G08B *13/16*
U.S. Cl. 340—258 A **10 Claims**

1. In an intrusion alarm system, means for radiating a signal at a predetermined frequency into a space, means for receiving the signal as it is reflected from objects within the space, the received signal having a frequency differing from that of the radiated signal by amounts corresponding to the rates of movement of said objects, the received signal also having amplitude modulations caused by phenomena other than

moving objects, signal processing means for processing said received signal, said signal processing means including means for first effectively eliminating amplitude modulations in the received signal, said means for eliminating amplitude modulations in the received signal includes a zero crossing detector, said signal processing means also including additional means



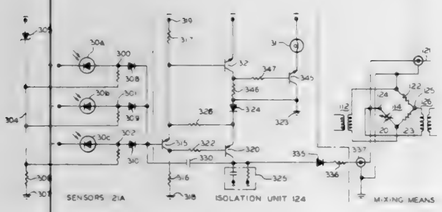
for recognizing frequency shifts between said radiated signal and said received signal, said signal processing means also including means for separating said frequency shifts in said received signal into a low-frequency region and a high-frequency region, and signal detection means for recognizing the presence of a signal when it appears in said high-frequency region.

3,967,261

PROXIMITY SENSOR WITH SIMULTANEOUSLY ACTIVE INTERMIXED SENSOR TYPES

Solly L. Fudaley, 12437 S. 80th Ave., Palos Park, Ill. 60604

Filed Oct. 10, 1974, Ser. No. 513,521
Int. Cl.² G08B *13/18*
U.S. Cl. 340—258 C **10 Claims**



1. A proximity sensor comprising an intermixed plurality of different types of simultaneously operating sensing devices including at least an RF antenna and connected in parallel with at least one off/on switching sensors means for simultaneously mixing the outputs from each of the various types of said parallel connected sensing devices, and detector means including a common circuit operated responsive to the output of said mixing means for giving an alarm signal responsive to a change in an output signal from any one of said sensing devices.

3,967,262

LINE INTEGRATED COMBINATION MAGNETIC AND STRAIN LINE SENSOR

Herbert A. Reich, Alexandria, and Jack K. Maier, Fairfax Station, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

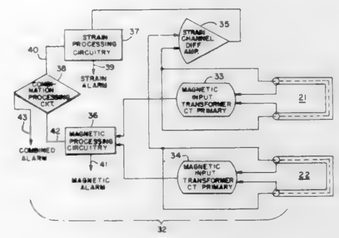
Filed Apr. 30, 1975, Ser. No. 573,286
Int. Cl.² G08B *13/22, 13/02*
U.S. Cl. 340—258 R **4 Claims**

1. A line integrated combination magnetic and strain line sensor for indicating an intrusion into the area being monitored by said sensor comprising:

first and second U shaped sensors, each of said sensors having two elongated leg sections and a bottom section with said leg sections of each sensor disposed in substantially the same plane, said sensors being juxtaposed such that one leg section of said first sensor is disposed in close proximity to one leg section of said second sensor, each of said first and second sensors consisting of a coaxial cable with center and outer conductors and a selected dielectric therebetween, each of said sensors being electrically open ended at both ends;

first and second inductive coupling means each including input means and output means, each of said input means of said first and second coupling means electrically connected across the outer conductors of the ends of its respective coaxial sensor such that any current flow in the outer conductor loop formed by such electrical connection is inductively coupled to its respective output means as an electrical output signal representative of a respective earth's magnetic field relation disturbance;

first signal comparator means having first and second inputs thereof electrically connected to said output means of said first and second inductive coupling means, respectively, and adapted to produce an output signal in response to input signal differences;



first and second electrical shunt means electrically connected across the inner conductors of the ends of its respective coaxial sensor such that said inner conductors of said first and second sensors form first and second loop sections adapted to produce an electrical signal representative of ambient strain disturbances;

second signal comparator means having first and second inputs thereof electrically connected to said first and second loop sections, respectively, and adapted to produce and output signal in response to input signal differences; and

alarm means electrically connected to said first and second signal comparator means and adapted to provide an area intrusion alarm in response to an output signal from at least one of said first and second signal comparator means.

3,967,263

TEXT EDITING SYSTEM

Hsu Chang, Yorktown Heights, and Share-Young Lee, Lake Mohegan, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

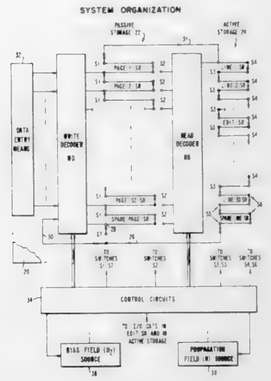
Filed May 14, 1974, Ser. No. 469,927
Int. Cl.² G06F *15/40*; G11C *19/08*
U.S. Cl. 340—172.5 **26 Claims**

1. An apparatus for data manipulation, comprising:

a plurality of dynamic shift registers in which said data can be stored,

switch means for controllably connecting said shift registers in series for sequential access of data in said shift registers, said series connected registers having no bit position through which said data passes twice as it moves entirely through said series connection of registers, and

switch means for controllably disconnecting said shift registers from one another and for making said shift registers closed loop shift registers having no common bit positions.

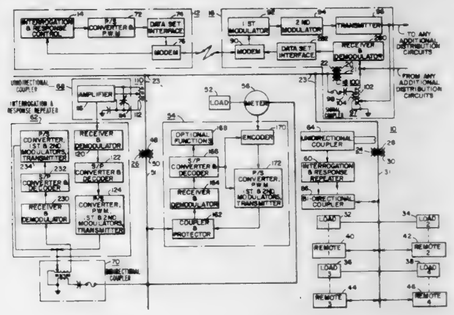


3,967,264

DISTRIBUTION NETWORK POWER LINE COMMUNICATION SYSTEM INCLUDING ADDRESSABLE INTERROGATION AND RESPONSE REPEATER

Ian A. Whyte, Pittsburgh; Louis G. Ottobre, Murrysville, and James P. McGivern, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 31, 1975, Ser. No. 546,069
Int. Cl.² H04M *11/04*
U.S. Cl. 340—310 A **63 Claims**



25. A power line communication system comprising:

first power line conductor means,

second power line conductor means,

distribution transformer means interconnecting said first and second power line conductor means,

electrical loads connected to said second power line conductor means,

uniquely addressable repeater means associated with certain of said distribution transformer means,

uniquely addressable remote communication terminals associated with certain of said electrical loads,

a source of interrogation signals which provides an interrogation signal having an address of a selected repeater means and the address of a selected remote communication terminal,

response receiving means,

means providing an interrogation communication link between said source of interrogation signals and said remote communication terminals, including said first power line conductor means, unidirectional coupling means coupling said first power line conductor means to said repeater means, bidirectional coupling means coupling said repeater means to said second power line conductor means, and means coupling each remote communication terminal to said second power line conductor means,

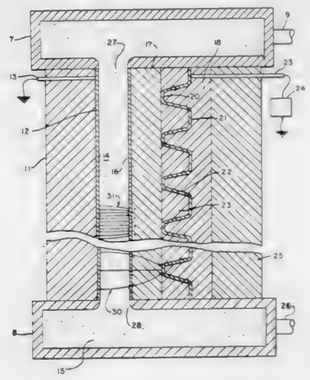
means providing a response communication link between said remote communication terminal and said response receiving means, including said second power line conductor means, said bidirectional coupling means, said repeater means, said bidirectional coupling means, said second power line conductor means, said distribution transformer means, said first power line conductor means, and means coupling said response receiving means to said first power line conductor means, whereby each remote communication terminal provides a response signal for said response receiving means when it is addressed by an addressed repeater means, with the interrogation communication link by-passing said distribution transformer means while the response communication link utilizes said distribution transformer means.

3,967,265

LIGHT GATING DISPLAY

Carlyle W. Jacob, 118 President Lane, Quincy, Mass. 02169

Continuation-in-part of Ser. No. 168,048, Aug. 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 724,661, March 18, 1968, abandoned, which is a continuation-in-part of Ser. No. 383,471, July 17, 1964. This application Dec. 26, 1973, Ser. No. 428,425
Int. Cl.² G08B *5/36*
U.S. Cl. 340—324 R **66 Claims**



1. A light reflective display system comprising:

a liquid suspension of fine, electric field responsive, light gating particles;

a panel adapted to having its front viewing surface illuminated, the panel including a suspension chamber formed between a transparent front wall and a rear wall that is closely spaced from the front wall, the front wall including a transparent, electrically conductive layer, the suspension chamber having an inlet duct supply means and an outlet duct exhaust means arranged to permit the suspension of light gating particles to flow through the chamber as a thin, broad, smooth ribbon;

means for applying a pattern of electric potentials to the rear wall of the suspension chamber to thereby produce an electric field pattern within the suspension chamber;

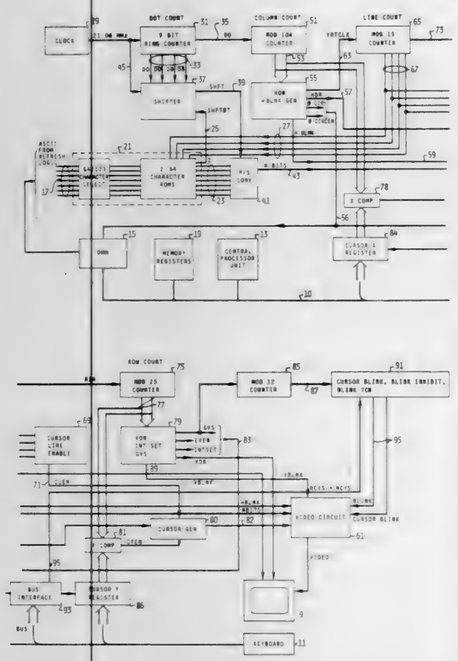
and means to cause the suspension of fine particles to flow through the suspension chamber as a thin broad smooth ribbon.

3,967,266

DISPLAY APPARATUS HAVING IMPROVED CURSOR ENHANCEMENT

Jean Claude Roy, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 16, 1974, Ser. No. 506,389
Int. Cl.² G06F 3/14
U.S. Cl. 340—324 AD **5 Claims**



1. Apparatus for displaying character patterns on a display device as recurring signals within character spaces, and comprising:

character pattern generating means for producing recurring signals for application to a display device to provide indications thereon of selected character patterns;

circuit means for applying signals to a display device to produce a cursor which is selectably positionable with respect to the character spaces including means for visibly blinking said cursor; and

means coupled to the circuit means and responsive to variations in time in the position of the cursor for disabling said blinking means to display a non-blinking cursor during movement of the cursor through a displayed character pattern.

3,967,267

LIGHT PEN DETECTION FOR PLASMA PANELS USING SPECIALLY TIMED SCANNING ADDRESS PULSES

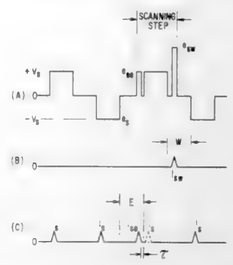
Peter Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 9, 1974, Ser. No. 513,475
Int. Cl.² G06F 3/14
U.S. Cl. 340—324 M **17 Claims**

1. A display system comprising

an array of plasma discharge display cells having inherent memory,

means for applying alternating polarity sustain signals to all of said cells in said array, said sustain signals adding to memory signals having at least a characteristic level stored in on cells in said array to cause a glow discharge and an accompanying light signal and to maintain said on cells in an on state, and



means operative after the initiation of ones of said sustain signals for applying first flashing signals to selected cells in said array,

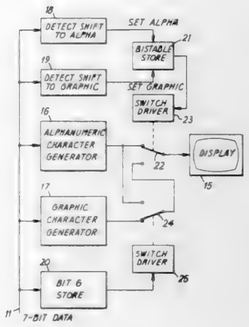
said means for applying first flashing signals comprising means for generating signals each having a magnitude sufficient to cause a glow discharge at an off cell but having an insufficient duration with respect to its initiation point to store a signal in said selected off cells corresponding to said characteristic level, each of said first flashing signals having the same polarity as the sustain signal initiated immediately before it.

3,967,268

DATA DISPLAY SYSTEMS

Allan Roberts, Sutton, England, assignor to British Broadcasting Corporation, London, England

Filed June 30, 1975, Ser. No. 591,876
Claims priority, application United Kingdom, July 11, 1974, 30817/74
Int. Cl.² G06F 3/14
U.S. Cl. 340—324 AD **4 Claims**



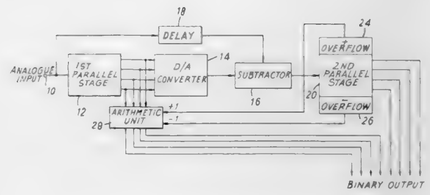
1. A data display system comprising a display device arranged to display characters as selected dots of dot matrices, decoding means responsive to character codes to control the display device to display alphanumeric characters in selected cells of an array of character cells and graphic characters in other selected cells, the decoding means being responsive to the alphanumeric character codes, including control codes, to switch between alphanumeric and graphic modes in dependence upon the control codes and, in the alphanumeric mode, to control the display of the alphanumeric characters in accordance with the alphanumeric codes other than the control codes, the decoding means being further responsive in the graphic mode to a first restricted set of the codes to control the display of the graphic characters and to a second restricted set of the codes to control the display of a restricted set of the alphanumerical characters.

3,967,269

ANALOGUE TO DIGITAL CONVERTERS

Russell Edward Fletcher, Bracknell, England, assignor to British Broadcasting Corporation, London, England

Filed Apr. 29, 1974, Ser. No. 464,975
Int. Cl.² H03K 13/175
U.S. Cl. 340—347 AD **3 Claims**



1. An analogue-to-digital converter comprising:

first digitising means for relating an analogue input signal to one of a plurality of coarse amplitude ranges and providing a digital output indicative of the coarse range into which said input signal falls;

subtractive means for determining the difference between said analogue input signal and the coarse level corresponding to said coarse range into which said input signal falls and providing an output in response thereto;

second digitising means for providing a digital output indicative of said difference;

means for detecting whenever said output of said subtractive means exceeds a range defined by said coarse range and for generating a digital correction signal in response thereto; and

means for digitally adding said digital correction signal to said output of said first digitising means, and for modifying said output of said second digitising means to provide a digital output indicative of the difference between said analogue input signal and a coarse level adjacent to that indicated by said first digitising means.

3,967,270

ANALOG-TO-DIGITAL CONVERTER

Robert L. Anderson, Jr., Pittsburgh, and James B. Russell, Glenshaw, both of Pa., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed July 8, 1974, Ser. No. 486,446
Int. Cl.² H03K 13/20
U.S. Cl. 340—347 NT **6 Claims**

1. A system for converting the magnitude of a DC voltage having predetermined polarity into a plurality of signals representing a corresponding digital number comprising:

an input terminal for receiving the DC voltage;

a current sink having neutral polarity and neutral voltage;

a source of a reference voltage having the predetermined polarity;

an integrating circuit having an inverting input, a non-inverting input, and an output for producing an output signal;

comparator means for producing an indicating signal in response to a predetermined relationship between the output signal and the reference voltage;

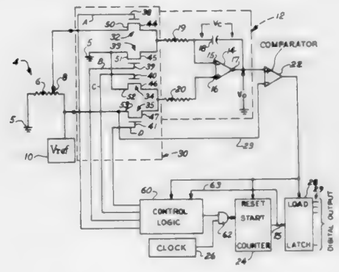
a digital counter resettable in response to the indicating signal;

clock means for generating clock pulses;

first switch means for operatively connecting the DC voltage to the inverting input during a first operating state, for operatively connecting the current sink to the inverting input during a second operating state and for disconnecting the DC voltage and the current sink from the inverting input during a third operating state;

second switch means for operatively connecting the non-inverting input to the current sink during a first operating state and for operatively connecting the reference voltage to the non-inverting input during a second operating state; and

control means operable in the first mode for simultaneously operating the first and the second switch means in their first operating states and for transmitting clock pulses to the counter until the counter achieves a predetermined



count so that the output signal attains a first voltage, operable in a second mode in response to the predetermined count for simultaneously operating the first switch means in its third operating state and the second switch means in its second operating state so that the output signal attains a second voltage different from the first voltage by a value proportional to the reference voltage, operable in a third mode for simultaneously operating the first and second switch means in their second operating states and for transmitting clock pulses to the counter until an indicating signal is produced so that the count registered in the counter is proportional to the magnitude of the DC voltage, and operable in a fourth mode for resetting the counter, operating the first switch means in its third operating state and operating the second switch means in its first operating state so that the output signal returns toward the neutral voltage.

3,967,271

DIGITAL SHAFT ENCODER CIRCUIT FOR SCALES

Earl G. Day, Aurora, Ill., assignor to Barber-Greene Company, Aurora, Ill.

Filed July 23, 1974, Ser. No. 491,101
Int. Cl.² H03K 13/00
U.S. Cl. 340—347 P **16 Claims**

1. A circuit for converting angular rotation of a mechanical shaft to which an optical shaft encoder is coupled into an electronic signal representative of the amount and direction of said rotation comprising:

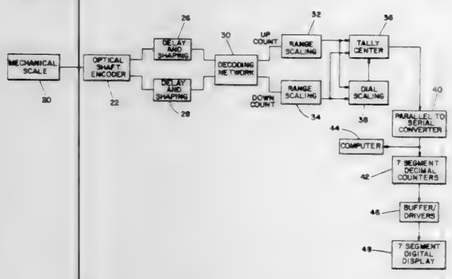
a. delay means receiving electrical pulses from said encoder for generating timing pulses on the transitions of said encoder pulses, said delay means including:

i. circuit means for generating a spike waveform on the leading and trailing edges of said encoder pulses; and

ii. logic means for shaping said spike waveforms and providing a selected delay to thereby produce said timing pulses;

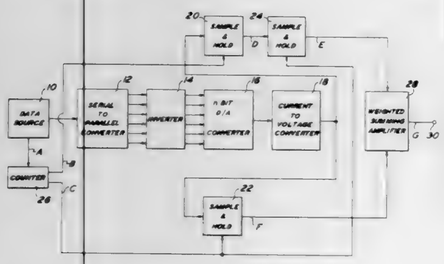
b. decoding means receiving said timing pulses and the encoder pulses for producing an up count representative of rotation in a first direction and a down count representative of shaft rotation in the opposite direction;

c. range scaling means for scaling the up and down counts from said decoding means to accommodate a selected maximum value;
d. a tally counter for counting the scaled up and down counts;



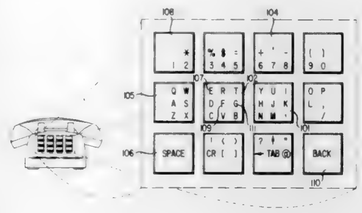
e. dial scaling means for producing a predetermined number of extra up and down counts, said extra counts being supplied to said tally counter thereby to adjust the output from said tally counter for a preselected maximum angular rotation of said shaft; and
f. output means receiving the output from said tally counter for producing said electronic signal.

3,967,272
DIGITAL TO ANALOG CONVERTER
Wayne H. Sandford, Jr., Warrington, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 25, 1975, Ser. No. 572,472
Int. Cl.² H03K *13/02*
U.S. Cl. 340—347 DA **6 Claims**



1. A digital to analog converter having a digital data source for producing a series of 2n-bit serial words at a first output and a bit synchronized pulse train at a second output, comprising, in combination:
conversion means adapted to receive the data source first output for sequentially converting the 2n-bit serial words into first and second parallel n-bit outputs;
an n-bit digital to analog converter operatively connected to receive said conversion means outputs for converting respective ones of said outputs to corresponding analog signals;
counting means adapted to receive the data source second output for periodically producing a first output signal during the nth bit interval of each of said 2n-bit words and a second output signal during the 2nth bit interval of each of said 2n-bit words;
first sample and hold means operatively connected to receive said converter output signals and said counting means first output signal for sampling said analog signals during the nth bit interval of each of said 2n-bit words and for storing an analog output representative thereof;
second sample and hold means operatively connected to receive said converter output signals and said counting means second output signal for sampling said analog signals during the 2nth bit interval of each of said 2n-bit words and for storing an analog output representative thereof;
third sample and hold means connected to receive said first sample and hold means output and said counting means second output signal for sampling said first sample and hold means output during the 2nth bit interval of each of said 2n-bit words and for storing an analog output representative thereof; and
summing means connected to receive said second and third sample and hold means analog outputs for summing said analog outputs according to a predetermined weighted ratio and for producing an analog output signal indicative of the binary value of each of the serial words.

3,967,273
METHOD AND APPARATUS FOR USING PUSHBUTTON TELEPHONE KEYS FOR GENERATION OF ALPHA-NUMERIC INFORMATION
Kenneth Charles Knowlton, Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 29, 1974, Ser. No. 456,029
Int. Cl.² H04L *15/04*
U.S. Cl. 340—365 S **7 Claims**

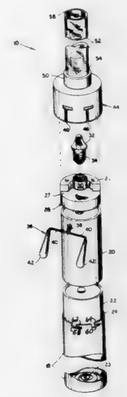


5. The method of using an input signaling device containing a plurality of buttons arranged in rows and columns each of said buttons labeled with at most nine alpha-numeric characters in a three by three array, comprising the following steps:
pushing a first button containing a desired character in its three by three labeling array; and
thereafter pushing a second button closest to said first button along a vector which originates in the center of said first button along an imaginary line through said character, the second button being identical to the first button if the character lies in the center of the three by three labeling array.

3,967,274
SIGNAL LIGHT
Colvard W. Howell, 829 E. McIntosh, Griffin, Ga. 30223
Filed Oct. 21, 1974, Ser. No. 516,442
Int. Cl.² G08B *5/00*
U.S. Cl. 340—380 **4 Claims**

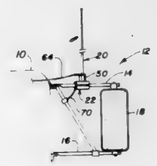
1. In a signal light device for signaling cocktail waitress, bartender or other person comprising:
a base to be supported on a surface such as a table; a light housing extending upwardly from said base and having electrical battery means therein; an elongated light conducting member mounted on and extending upwardly from said housing for conducting light upwardly therethrough; switch means on said housing comprising a flipswitch operating member movably mounted to be easily shifted, said operating member having a projecting center contact portion and arms extending therefrom on both sides; said housing having a notched out portion in

which said operating member is mounted for partial confinement, a light bulb is in said housing, a conducting collar on said housing in which said light bulb is mounted, said switch contact portion being adjacent said collar for contacting same in one position and for non-contact



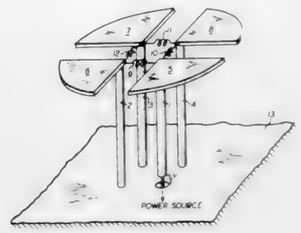
therewith in another position, whereby said switch may be moved from a contact position to a non-contact position, and a cap covering said conducting collar, said cap having elongated slots extending upwardly therein in which said switch contact arms are confined for operation therein.

3,967,275
ANTENNA MOUNT FOR VEHICLES
Harold H. Wagman, 370 Lakeview Drive, York, Pa. 17402
Filed Oct. 28, 1975, Ser. No. 626,345
Int. Cl.² H01Q *1/32*
U.S. Cl. 343—713 **8 Claims**



1. A clamp-type mount for supporting the base end of an elongated antenna upon a projecting rod-like member on a vehicle and adapted to support said antenna substantially vertically upon said projecting rod-like member, said mount comprising in combination, a pair of complementary clamping members each having similar clamping surfaces opposing each other, said surfaces each having a groove therein extending between opposite ends thereof and V-shaped in cross-section and adapted to engage respectively opposite surfaces of a rod-like structional member for support thereby, said clamping members having a plurality of aligned holes therein, a plurality of clamping bolts extending through said aligned holes between said clamping members to tightly clamp said members to said rod-like structural member, one of said clamping members also having a seat formed on a surface thereof opposite said groove therein, an antenna coupling member formed from electrical insulating material and having one end in abutment with said seat on said one clamping member, said coupling member having an axial bore therethrough and at least the opposite ends of said bore being threaded, said one clamping member also having a bore extending therethrough between said seat and groove perpendicularly to the axis of said groove, a threaded connector having one end secured within said bore in said one clamping member and projecting beyond said seat and firmly threadably engaging the threads in one end portion only of said coupling member to secure it firmly against said seat, means to connect a ground wire to said one clamping member, and an apertured metallic connector adapted to receive a threaded end of an aerial rod to firmly clamp said metallic connector to said insulating antenna coupling member in spaced relation to the end of said threaded connector therein and securely clamp said apertured metallic connector against the outer end of said insulating antenna coupling member for insulated support thereby upon said one clamping member.

3,967,276
ANTENNA STRUCTURES HAVING REACTANCE AT FREE END
George E. J. Goubau, Eatontown, N.J., assignor to Beam Guidance Inc., New York, N.Y.
Filed Jan. 9, 1975, Ser. No. 539,703
Int. Cl.² H01Q *9/36*
U.S. Cl. 343—752 **18 Claims**



1. In an antenna structure, means serving as a ground plane, a number of elongated conductors having mutual spacings which are small against operating wave length, and positioned substantially perpendicular to said ground plane; some of said conductors at their lower ends being connected to said ground plane while at least one of said conductors is connected to the input terminal of the antenna structure, inductive elements, and separate conductive segments terminating each of said elongated conductors at its upper end, to act as top capacitors against said ground plane, and interconnected by said inductive elements.

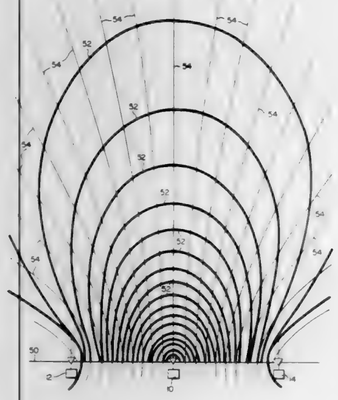
3,967,277
RADIO NAVIGATION SYSTEM
Charles E. Hastings, Newport News, and William A. Runion Tabb, both of Va., assignors to Teledyne, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 764,503, Oct. 2, 1968, abandoned, which is a continuation-in-part of Ser. Nos. 713,202, March 14, 1968, abandoned, and Ser. No. 713,442, March 15, 1968, abandoned. This application Dec. 10, 1970, Ser. No. 96,767
Int. Cl.² G01S *1/30*
U.S. Cl. 343—105 R **21 Claims**

1. A radio navigation system for determining the position of a mobile station relative to a plurality of fixed stations, comprising:
a first pair of fixed transmitting stations comprising a base station and a first relay station,
a second pair of fixed transmitting stations comprising said base station and a second relay station,

said base station comprising means for transmitting a continuous wave signal having a first predetermined frequency,

said first relay station comprising a receiver for receiving signals broadcast by said base station, a modulatable transmitter for generating a first carrier signal having a frequency differing from one-half of said first predetermined frequency by an amount equal to one-half of a second predetermined frequency, means for doubling the frequency of said first carrier signal, means for mixing said doubled first carrier signal with the output of said receiver to derive a first modulating signal whose frequency is equal to said second predetermined frequency, and means for applying said first modulating signal to said transmitter, whereby said first relay station transmits said first carrier signal modulated by said first modulating signal,

said second relay station comprising a receiver for receiving signals broadcast by said base station, a modulation transmitter for generating a second carrier signal having a frequency differing from one-half of said first predetermined frequency by an amount equal to one-half of a third predetermined frequency, means for doubling the frequency of said second carrier signal, means for mixing said doubled second carrier signal with the output of said receiver to derive a second modulating signal whose



frequency is equal to said third predetermined frequency, and means for applying said second modulating signal to said transmitter, whereby said second relay station transmits said second carrier signal modulated by said second modulating signal,

a mobile station,

first means located at said mobile station for deriving a first position indicating signal indicative of the difference in the distances between said mobile station and each of said first pair of fixed transmitting stations,

second means located at said mobile station for deriving a second position indicating signal indicative of the difference in the distances between said mobile station and each of said second pair of fixed transmitting stations,

said mobile station including receiving means for receiving the signals transmitted by said transmitting stations and for deriving control signals from the signals so received to control said first means and said second means,

summing means for adding said first and second position indicating signal indicative of a first line of position on which said mobile station is located, and

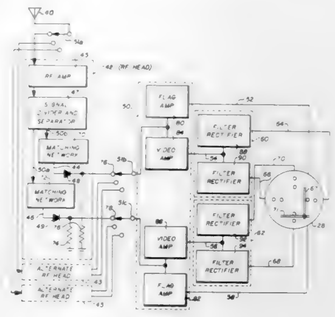
difference means for subtracting one of said first and second position indicating signals from the other of said first and second position indicating signals to obtain a fourth position indicating signal indicative of a second line of position on which said mobile station is located.

3,967,278

LOW COST MICROWAVE RECEIVER FOR ILS

Walter E. Buehler, Issaquah, and George W. Fitzsimmons, Lynwood, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 23, 1974, Ser. No. 517,193
Int. Cl.² G01S 1/16, 1/18
U.S. Cl. 343—108 R **9 Claims**



1. Signal processing apparatus, for use in a microwave-frequency instrument landing system for aircraft or similar maneuverable apparatus, in which system two orthogonal pairs or modulated overlapping beams are projected into space, wherein equal modulation signal levels in the pairs of overlapping beams define a directional axis which is the desired navigational path of the aircraft, one pair of beams having a first carrier signal and so oriented in space as to provide glide slope information of the aircraft relative to the desired navigation path, and the other pair of beams having a second carrier signal and so oriented in space as to provide localizer information of the aircraft relative to the desired navigation path, each carrier signal being modulated by first and second modulating signals of different frequency, the signal processing apparatus comprising:

antenna means mounted on the aircraft for receiving said two orthogonal pairs of projected beams and providing at a common output thereof a composite signal which comprises modulated carrier signals from each of said received beams;

signal splitting means including a strip line circuit having a dielectric substrate on which an input strip line is disposed, said input line dividing into two separate, spaced apart, output strip lines also disposed on said substrate, said input line connected to said common output of said antenna means for receiving said composite signal and said output lines each conducting a separate portion of said composite signal;

a first series of filter means arranged adjacent a first of said output lines for filtering out at least a substantial portion of said first carrier signals from said portion of said composite signal conducted thereby to yield first channel signals on such first output line that are derived substantially from said second carrier signals;

a second series of filter means arranged adjacent a second of said output lines for removing said second carrier signals from said portion of said composite signal conducted thereby to yield second channel signals on such second output line that are derived substantially from said first carrier signals;

means for detecting said first and second channel signals;

first means for discriminating between modulating frequencies of said detected first channel signals and applying the discriminated signals to a glide slope indicator, any difference in magnitude between said discriminated signals of said detected first channel signals being indicative of a glide slope offset from the desired navigation path; and,

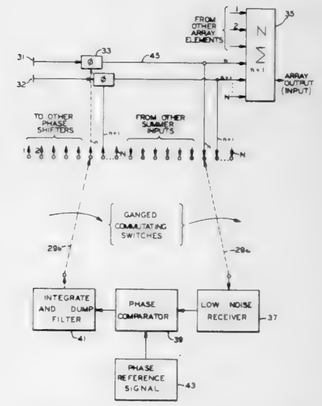
second means for discriminating between modulating frequencies of said detected second channel signals and applying the discriminated signals to a localizer indicator, any difference in magnitude between said discriminated signals of said detected second channel signals being indicative of a localizer offset from the desired navigation path.

3,967,279

SELF-PHASING ARRAY WITH A TIME-SHARED PROCESSOR

Andrew E. Zeger, Wyndmoor, Pa., assignor to The Magnavox Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 95,782, Dec. 7, 1970, abandoned. This application Oct. 30, 1973, Ser. No. 411,103
Int. Cl.² G01S 3/44; H01Q 3/26
U.S. Cl. 343—117 A **12 Claims**



4. The method of phase aligning a distributed receiving antenna array comprising the steps of:

summing the individual antenna signals;

comparing the phase of a signal from a selected one of the antennas to the phase of the sum signal;

adjusting, in response to the said comparison, the phase at which the signal from the said selected antenna is added to the remaining antenna signals; electronically stepping a commutator control; and

sequentially repeating the steps of comparing and adjusting for different selected antennas.

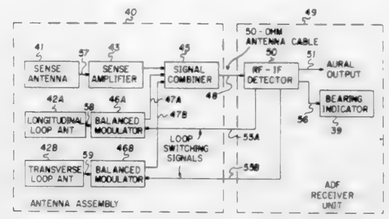
3,967,280

DIRECTION FINDING SYSTEM WITH INTEGRATED LOOP AND SENSE ANTENNA ASSEMBLY

Abbott F. Mayer, Marion, and David J. Morgan, Cedar Rapids, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 27, 1975, Ser. No. 544,440
Int. Cl.² G01S 3/16
U.S. Cl. 343—121 **9 Claims**

1. In an automatic direction finding receiver system; an antenna unit integrally including a sense antenna means, a loop antenna means, modulating means to which the output of one of said antenna means is applied, and signal combining means receiving the output of said modulating means and the output of the other of said antenna means; a modulating signal source; a remote receiver unit including signal demodulating means responsive to the output of said signal combining means and the output of said modulating signal source to develop an output signal definitive of the bearing of a received signal; RF cable interconnect means between the output of said signal combining means and said receiver demodulating means with the output impedance of said signal combining



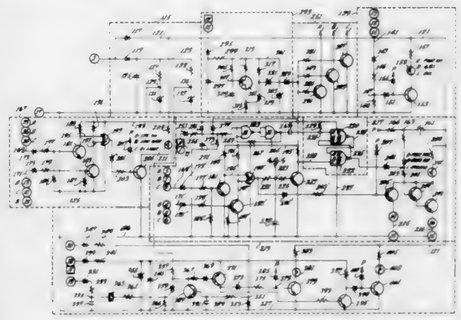
means and the input impedance of said receiver demodulating means equalling the characteristic impedance of said cable interconnect means; and means connecting the output of said modulating signal source to said antenna assembly modulating means.

3,967,281

DIAGNOSTIC ANNUNCIATOR

Ernest C. Dageford, Irvine, Calif., assignor to BEC Products, Inc., Irvine, Calif.

Filed Jan. 20, 1976, Ser. No. 543,017
Int. Cl.² G08B 19/00
U.S. Cl. 340—415 **17 Claims**



1. An annunciator adapted for use with a boiler having a flame safeguard programmer providing first and second signals each representative of an associated first and second fault in the boiler and with the second fault occurring subsequent to the first fault, the programmer also providing an alarm signal when the flame of the boiler goes out in response to the first fault, the annunciator comprising:

first means responsive to the first signal to provide a third signal representative of the first fault;

second means responsive to the second signal to provide a fourth signal representative of the second fault;

third means responsive to the third signal to provide a first visual indication of the first fault and responsive to the fourth signal for providing a second visual indication of the second fault, the third means having memory characteristics for maintaining the first visual indication even if the third signal ceases; and

fourth means coupled to the first means and the second means and responsive to the alarm signal for inhibiting the third signal and the fourth signal; whereby

only the first indication is provided by the third means during the continuance of the alarm signal.

3,967,282

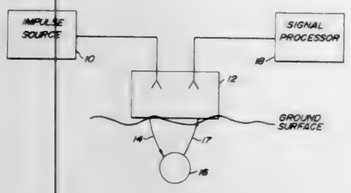
UNDERGROUND PIPE DETECTOR

Jonathan D. Young, Worthington, and Ross Caldecott, Columbus, both of Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Jan. 30, 1974, Ser. No. 437,927

Int. Cl.² G01S 9/02; G01V 3/12

U.S. Cl. 343—5 NA **6 Claims**



1. A portable apparatus for use as an aid in detecting and identifying underground targets and comprising:
   a. means for generating a periodic electrical pulse having a duration substantially less than its period;
   b. antenna means connected to the generating means for radiating an electromagnetic pulse toward a target and for receiving reflected electromagnetic radiation to provide an analog echo signal;
   c. sampling and analog to digital converting means connected to said antenna means for converting the analog echo signal to digital data representing a plurality of samples of said echo signal;
   d. processing means connected to the output of said sampling and converting means for storing and operating on said digital echo sample data; said processing means comprising:
      1. arithmetic means having at least two sets of data inputs for performing arithmetic operations on its input digital data, a first one of said data inputs being connected to the output of said sampling and converting means;
      2. main storage means connected to the output of said arithmetic means for storing digital data from said arithmetic means and having a data output connected to a decoding and display means;
      3. memory storage means for at times storing data from said main storage means;
      4. data gating means having data outputs connected to data inputs of said memory storage means and the second set of data inputs of said arithmetic means and having data inputs connected to data outputs of said main storage means and said memory storage means for steering data from a selected one of its inputs to a selected one of its outputs; and
      5. control means including a mode selector for selecting and controlling the arithmetic operations.
   e. said decoding and display means being connected to the output of said processing means for displaying in analog form the processed echo sample data,

wherein an operator may reposition said apparatus in response to displayed data and obtain further data.

3,967,283

LARGE AREA MOTION SENSOR

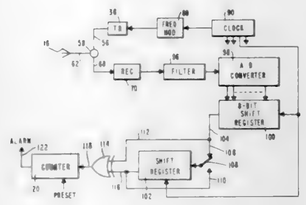
Robert V. Clark, Washington, D.C.; Francis X. Linder, Landover, Md.; Terrance J. McCreary, Gaithersburg, Md., and William R. Taylor, Olney, Md., assignors to Automation Industries, Inc., Silver Spring, Md.

Continuation-in-part of Ser. No. 442,025, Feb. 13, 1974, abandoned. This application Sept. 26, 1974, Ser. No. 509,571

Int. Cl.² G01S 9/42

U.S. Cl. 343—7.7 **22 Claims**

1. A motion sensor for detecting intruder motion within a protected area and for discriminating against motion outside the protected area, comprising:
   transceiver means including means for transmitting frequency modulated continuous wave signals in a pattern to cover said protected area, said transmitted signals having a selected, repetitive frequency sweep, and means for receiving signals reflected by target scatterers;
   means for demodulating said received signals to produce an ensemble of audio tones, each tone representing the range of a target scatterer;
   noise filter means for said tones, said filter means discriminating against tones produced by noise and clutter;



   range filter means for discriminating against tones received from target scatterers outside a predetermined zone;
   means for storing values representing said audio tones for a first frequency sweep of said transmitter;
   means for comparing said stored values with corresponding values derived from a second frequency sweep of said transmitter and for producing error signals corresponding to differences between the values corresponding to said first and second frequency sweeps, said differences representing motion of a target scatterer within said protected area; and
   alarm means responsive to a predetermined number of error signals.

3,967,284

RADAR APPARATUS FOR DETECTING A COHERENT DOPPLER SIGNAL IN CLUTTERED ENVIRONMENTS

Eric Lawrence Casling White, Iver, England, assignor to EMI Limited, Hayes, England

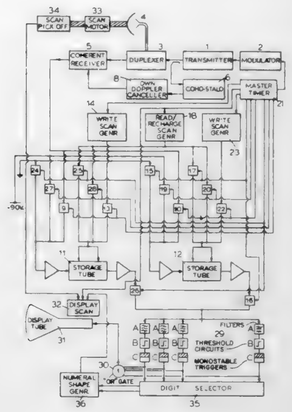
Filed Jan. 22, 1965, Ser. No. 428,286

Claims priority, application United Kingdom, Jan. 22, 1964, 2864/64

Int. Cl.² G01S 9/42, 9/46

U.S. Cl. 343—9 **11 Claims**

1. Radar apparatus comprising means for generating a series of pulses of oscillation, scanning aerial means for transmitting said pulses as a beam narrow in azimuth in different directions sequentially, the repetition frequency of said pulses being sufficiently high in relation to the angular velocity of the aerial means and the angle of the beam that a plurality of successive transmitted pulses impinge on a point target, a coherent receiver for reflected energy, means for storing returns derived from said receiver in response to a plurality of successive pulses of oscillation from said transmitting means, means for selecting returns corresponding to a predetermined range stored in said storing means, and means for examining selected returns to detect a cyclic component of substantially constant periodicity indicating the presence of a target at said predetermined range having a radial velocity relative to the apparatus represented by said periodicity.



3,967,285

METHOD FOR FORMING IMAGES BY DIFFERENTIAL OXIDATION

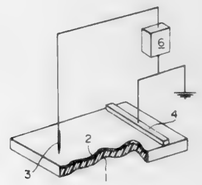
Shigenobu Sobajima, Hachioji; Hiroshi Okaniwa; Kiyoshi Chiba, both of Hino, and Norio Takagi, Ogaki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 378,241, July 11, 1973, Pat. No. 3,902,180. This application Jan. 17, 1975, Ser. No. 542,042

Claims priority, application Japan, July 12, 1972, 48-69039; July 17, 1972, 47-70726; Sept. 4, 1972, 47-87902; Dec. 25, 1972, 48-368; Dec. 27, 1972, 48-2232; May 4, 1973, 48-49014

Int. Cl. G01d 15/34; C23c 13/00

U.S. Cl. 346—74 E **7 Claims**



1. A method for forming images in which an electrically conductive coating, formed on a base material, which coating comprises at least one of the group of indium, tin, titanium, and zirconium, and is substantially opaque and lowly oxidized, is successively oxidized by directly contacting a recording electrode with the coating, applying an electrical signal across the recording electrode and the coating, having the electrode scan relative to the coating so that the coating is selectively heated and oxidized by the electric current which flows in response to the electrical signal to form images composed of substantially transparent parts in the base material.

3,967,286

INK SUPPLY ARRANGEMENT FOR INK JET PRINTERS

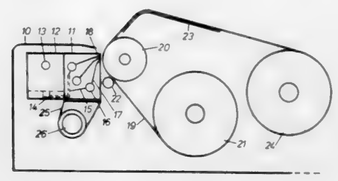
Roger Ingemar Andersson, Angered, and Stig Bertil Sultan, Floda, both of Sweden, assignors to Facit Aktiebolag, Atvidaberg, Sweden

Filed Dec. 26, 1974, Ser. No. 536,607

Claims priority, application Sweden, Dec. 28, 1973, 7317525

Int. Cl.² G01D 15/16

U.S. Cl. 346—140 R **10 Claims**



1. An ink jet printing device for recording medium comprising a printing head adapted to move back and forth along said recording medium and provided with a plurality of output nozzles through which ink droplets are propelled onto the recording medium to selectively form indicia thereon, a pumping chamber for each nozzle being in communication therewith, an ink reservoir, at least one channel connecting said ink reservoir with said pumping chambers, means mounting said ink reservoir for movement which follows the movement of said printing head, said reservoir continuously feeding the pump chambers with ink through said channel, and a fixed liquid supply device arranged to co-act with said reservoir in one or both end positions of said printing head in order to automatically refill said reservoir.

3,967,287

LIGHT RECEIVING DEVICE FOR USE IN A SINGLE LENS REFLEX CAMERA

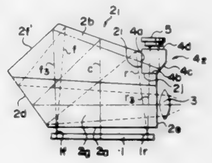
Kazuo Kimura, Sakai, and Yasuo Yamazaki, Kawachinagano, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Japan

Filed Sept. 19, 1974, Ser. No. 507,522

Claims priority, application Japan, Sept. 20, 1973, 48-109278

Int. Cl.² G03B 17/20

U.S. Cl. 354—56 **21 Claims**



1. A light receiving apparatus for use in a system for measuring light beams which have passed through an objective lens of a single lens reflex camera, the apparatus comprising:
   a focussing plate disposed in a path of the light beams passing through the objective lens and for scattering such light beams as they pass therethrough, said focussing plate having a forward portion and a rear portion with respect to the objective lens;
   an ocular lens through which an image on said focussing plate can be viewed;
   a pentagonal prism for transmitting a substantial portion of the scattered light beams to said ocular lens, said pentag-

onal prism having a bottom surface located above said focussing plate, a pair of roof reflecting surfaces, a lower front reflecting surface, and a rear emission surface located adjacent to said ocular lens, so that said substantial portion of said scattered light beams is introduced through said bottom surface, reflected on said pair of roof reflecting surfaces, reflected on said lower front reflecting surface, and emitted from said rear emission surface towards said ocular lens;

light reflecting means located at a front and upward portion of said pentagonal prism, such portion being adjacent to both said pair of roof reflecting surfaces and said lower front reflecting surfaces;

light emitting means located at a rear and upward portion of said pentagonal prism, such portion being adjacent to both said pair of roof reflecting surfaces of said rear emission surface, said light emitting means receiving light beams of a first luminous flux scattered mainly from said forward portion of said focussing plate and light beams of a second luminous flux scattered mainly from said rear portion of said focussing plate, such that said first luminous flux is introduced through said bottom surface of said pentagonal prism, reflected by said light reflecting means and received by said light emitting means, whereas said second luminous flux is introduced through said bottom surface of said pentagonal prism and directly received by said light emitting means;

a transparent block mounted on said light emitting means, said transparent block having a joint surface with said light emitting means, such that both said first and second luminous fluxes pass through said joint surface, a reflecting surface for reflecting one of said first and second luminous fluxes and an emission surface for emitting both of said first and second luminous fluxes after one has been reflected on said reflecting surface of said transparent block and after the other has passed directly through said transparent block; and,

light responsive means located adjacent to said emission surface of said transparent block for receiving said first and second luminous fluxes.

3,967,288

ELECTRIC SHUTTER OPERATING CIRCUITS

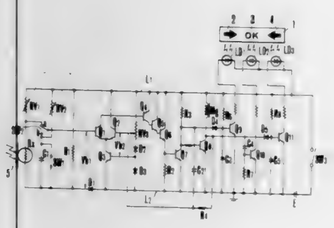
Masaru Yamamoto, Machida, Japan, assignor to Yashica Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1974, Ser. No. 501,505

Claims priority, application Japan, Sept. 6, 1973, 48-103918[U]

Int. Cl.² G03B *7/00*

U.S. Cl. 354—60 L **5 Claims**



1. An electric exposure circuit for use in a photographic camera having a shutter and an over and under exposure display means, comprising means responsive to the brightness of an object to be photographed for producing a first signal representing said brightness, a first transistor normally connected to respond to said first signal of said brightness responsive means, an adjustable resistor settable in accordance with the photosensitivity of the photographic film used, a voltage divider circuit including said adjustable resistor and a second transistor connected to respond to the output voltage of said adjustable resistor, circuit means connecting said first and second transistors as a differential amplifier for comparing the relative magnitude of said voltage and said first signal, means responsive to the comparison output signal of said differential amplifier which is produced when said differential amplifier is unbalanced in opposite directions for operating said over and under exposure display means to display respectively an over exposure or an under exposure condition, a positive feedback circuit connected to said differential amplifier, means responsive to the balanced condition of said differential amplifier for actuating said positive feedback circuit to cause said differential amplifier to oscillate, and means responsive to the oscillation of said differential amplifier for displaying a correct exposure condition.

3,967,289

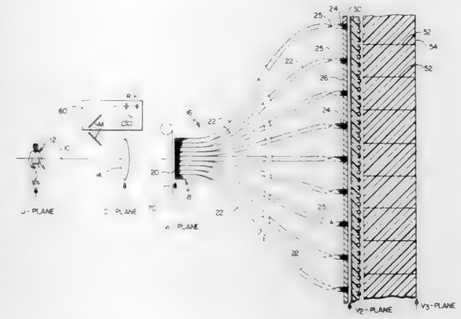
MULTIPLE FUNCTION MICROFICHE AND FILM RECORDING AND VIEWING SYSTEM

George J. Yevick, 536 Nordhoff Drive, Leonia, N.J. 07605

Filed May 30, 1974, Ser. No. 474,790

Int. Cl.² G03B *1/00, 27/00*

U.S. Cl. 354—125 **12 Claims**



1. A multiple function optical apparatus including,

a. an objective lens,

b. a bundle of internally reflecting coherent optic fibers, said bundle having a main, bunched end and being divided along the remainder of its length into sub-bundles, each sub-bundle itself also being coherent throughout its length, the termini of the sub-bundles diverging from and spaced from each other and defining a surface, each sub-bundle being twisted 180° along its length,

c. a screen spaced from said sub-bundle termini, said screen being parallel to the termini surface,

d. a transparent plate having a plurality of integral lensettes,

e. said transparent plate positioned between the termini of said sub-bundles and said screen,

f. each terminal of a sub-bundle being optically aligned with at least one of said lensettes.

3,967,290

MINIATURE MIRROR REFLEX CAMERA

Heinz Waaske, Mascherode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Oct. 2, 1974, Ser. No. 511,191

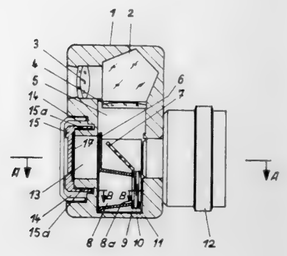
Claims priority, application Germany, Oct. 5, 1973, 2350438

Int. Cl.² G03B *19/12, 15/00*

U.S. Cl. 354—154 **2 Claims**

1. A reflex camera including lens means establishing an optical axis, said camera being adapted to contain a conventional miniature film cassette of the type having enlarged rounded film-containing portions at both ends of the cassette and a straight portion between the enlarged rounded portions and flanges extending longitudinally along the lateral edges of said straight portion and projecting therefrom in a forward direction perpendicularly to film in said straight portion, film being advanced through said straight portion in a direction perpendicular to said optical axis, said camera also including means forming an image gate aligned with said optical axis and lying in front of film in said straight portion of said cassette, said camera further comprising:

a. a slidable carriage shiftable back and forth between two limit positions, said carriage having a light deviating device aligned with said optical axis when said carriage is in a first one of its said limit positions and having a light passage shaft aligned with said optical axis and with said image gate when said carriage is in the second one of its said limit positions;



b. means guiding said slidable carriage for movement from one limit position to the other limit position in a direction substantially perpendicular to said optical axis and also substantially perpendicular to said direction in which the film is advanced and through said straight portion of said cassette;

c. a central shutter permanently mounted in said light passage shaft of said slidable carriage and movable bodily with said carriage; and

d. means on said carriage blocking passage of light along said optical axis to said image gate except only through said light passage shaft.

3,967,291

SHUTTER CONTROLLED FILM ADVANCING APPARATUS

Motoi Nagashima, Tokyo, Japan, assignor to Cima Kogaku Company Limited, Tokyo, Japan

Filed Nov. 12, 1974, Ser. No. 523,060

Claims priority, application Japan, Nov. 13, 1973, 48-126795; Nov. 22, 1973, 48-131920

Int. Cl.² G03B *1/18*

U.S. Cl. 354—171 **5 Claims**

1. A photographic camera having a film take-up mechanism for either manually or automatically taking up the film, which comprises:

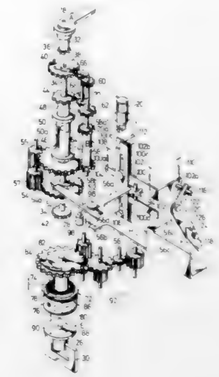
a film take-up shaft;

a first directional clutch means;

a manual actuating means having a shaft which is connected to one end of the film take-up shaft through the first directional clutch means;

a second directional clutch means having an operational direction opposite to that of the first directional clutch means; and

a spring motor having a rotary drive shaft which is connected to the other end of the film take-up shaft through the second directional clutch means; each axis of said film take-up shaft, said shaft of the manual actuating means and said rotary drive shaft being aligned with each other.



3,967,292

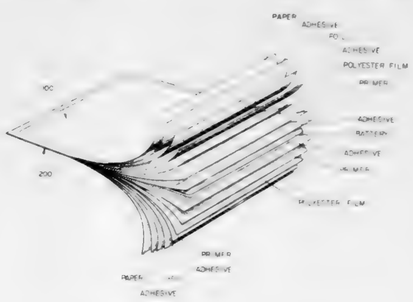
FILM ASSEMBLY INCLUDING A HERMETICALLY SEALED BATTERY

Robert M. Delahunt, Norwell, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 23, 1974, Ser. No. 535,206

Int. Cl.² G03B *17/26;* **H01M** *2/02*

U.S. Cl. 354—174 **10 Claims**



1. In a photographic film assembly which comprises, in combination:

a. a photographic film cassette including a withdrawal orifice positioned in a wall of the cassette through which a supply of photographic film is adapted to be selectively withdrawn;

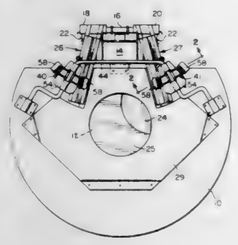
b. a supply of photographic film positioned in the cassette for selective withdrawal from the cassette through the orifice;

c. a flat, planar, primary battery positioned in the cassette and including, in combination; anode materials, sheet type separator elements, cathode materials and electrolyte combined with sheet type current collectors all combined to form a multicell structure providing contacts for external connection of said battery;

the improvement wherein said battery positioned in said cassette is hermetically sealed in sealing means to prevent evolution of gaseous materials from said battery, said sealing means comprising first and second laminar struc-

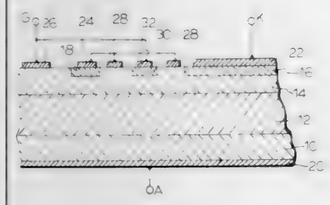
tures each of which comprise a thin fiberous sheet material bonded to a foil sheet material which is bonded to a non-conductive plastomeric sheet material having a heat activatable adhesive capability for providing effective sealing of said laminar assemblies about peripheral portions thereof and about said contacts of said battery.

3,967,293
DETENT FOR LOW MASS OBJECT
Andrew W. Vincent, 65 Aberdeen St., Rochester, N.Y. 14611
Filed May 9, 1975, Ser. No. 576,032
Int. Cl.² G03B *9/02*
U.S. Cl. 354—252 **3 Claims**



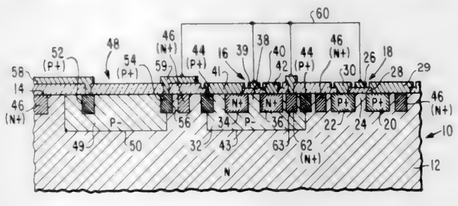
1. A detent for arresting the motion of a body of relatively small mass comprising a single piece of spring wire having a portion arranged as a torsion spring, an arm portion extending outwardly from said spring portion and shaped for abutting engagement by the body to be stopped and to be driven by that engagement in a direction to torque said spring portion, said arm portion being generally U-shaped and including a tip at the end of its leg opposite from said spring portion bent into axial alignment with said spring portion, and means for mounting said detent adjacent to the path of travel of the body to be arrested and for pre-loading said spring portion.

3,967,294
PNPN SEMICONDUCTOR DEVICE
Yahei Takase, and Akira Kawakami, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Dec. 30, 1974, Ser. No. 537,423
Claims priority, application Japan, Jan. 7, 1974, 49-5475
Int. Cl.² H01L *29/74*
U.S. Cl. 357—38 **8 Claims**



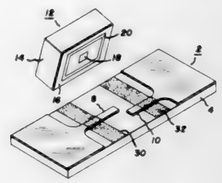
1. A PNPN semiconductor device comprising a PNPN semiconductor substrate having a pair of opposite main faces and including a cathode emitter layer and an auxiliary emitter layer identical in conductivity to each other, and disposed on one of said main faces and spaced away from each other, a cathode base layer disposed adjacent said cathode emitter layer on the one main face, and an anode emitter layer disposed on the other main face; an anode electrode disposed in ohmic contact with said anode emitter layer; a cathode electrode disposed in ohmic contact with said cathode emitter layer; an auxiliary emitter electrode disposed in ohmic contact with said auxiliary emitter layer; a gate electrode disposed in ohmic contact with that portion of said cathode base layer disposed on that side of said auxiliary emitter layer remote from said cathode emitter layer; at least one auxiliary electrode disposed in ohmic contact with said cathode base layer and spaced away from said cathode electrode; a semiconductor diode including one semiconductor layer disposed on that portion of said cathode base layer located between said cathode emitter layer and said auxiliary emitter layer and spaced away from said at least one auxiliary electrode; said one semiconductor layer being opposite in conductivity to said cathode base layer to form a PN junction therebetween; another electrode disposed in ohmic contact with said semiconductor layer; and means for electrically connecting said another electrode to said gate electrode.

3,967,295
INPUT TRANSIENT PROTECTION FOR INTEGRATED CIRCUIT ELEMENT
Roger Green Stewart, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Apr. 3, 1975, Ser. No. 564,911
Int. Cl.² H01L *27/02, 29/78;* **H02H** *7/20;* **H03K** *3/353*
U.S. Cl. 357—51 **3 Claims**



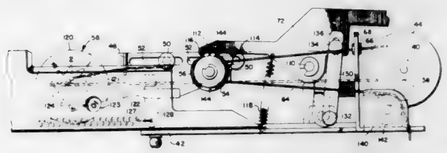
1. A semiconductor device comprising:
a. a body of semiconductor material of one conductivity type, said body having a surface;
b. a first region extending into said body from said surface and forming a first PN junction with the surrounding portions of said body;
c. a first zone of the same type as and of higher degree of conductivity than the remainder of said first region extending into said surface at one end of said first region and forming a second PN junction with the portions of said body adjacent said first zone;
d. a second zone of the same type as and of higher degree of conductivity than the remainder of said first region extending into said surface within said first region, said second zone being spaced from said first zone, all parts of said second zone being surrounded on said surface by material of said first region over at least a first predetermined distance along said surface from said first PN junction, whereby there is a first resistance between said first zone and said second zone and a first distributed ballasting resistance between said second zone and said first PN junction;
e. a second region extending into the surface of said body of the same conductivity type as said body and of higher conductivity than said body, all parts of said second region being at least a second predetermined distance along said surface from said second zone, whereby there will be a second distributed ballasting resistance between those parts of said first PN junction which surround said second zone and said second region;
f. first contact means making ohmic contact to said first zone; and
g. second contact means making ohmic contact to said second zone, whereby said first resistance is between said first contact means and said second contact means, said first ballasting resistance is between said second contact means and one side of said first PN junction, said second ballasting resistance is between the other side of said first PN junction and said second region, and said second PN junction is between said first contact means and said second region.

3,967,296
SEMICONDUCTOR DEVICES
Alexander M. Intrator, Dewitt, N.Y., assignor to General Electric Company, Syracuse, N.Y.
Filed Oct. 12, 1972, Ser. No. 296,792
Int. Cl.² H01L *39/02, 23/48, 29/46;* **H02B** *1/04*
U.S. Cl. 357—80 **5 Claims**



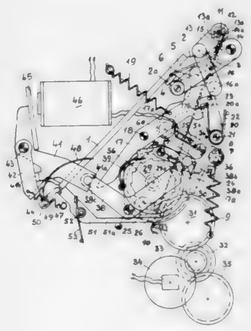
1. In a semiconductor device, a semiconductor body having at least one metallic contact situated on a major face thereof, a glass support member having a sealing surface, a layer of metal on at least a portion of said sealing surface adapted to constitute at least one electrical lead for the semiconductor body, said semiconductor body and said sealing surface being disposed in confronting contacting relation with said metallic contact in registry with said lead, means forming a permanent thermo-electrostatic bond uniting said support member to said semiconductor body, and an insulative layer on said support member covering at least the portion of said lead nearest the side wall of said semiconductor body, said insulative layer having a thickness of about 1000 to 20000 Angstroms and being sandwiched between direct contact with said lead and direct contact with the outer marginal edge portion of the major face of said semiconductor body to prevent shortcircuiting of said lead to said semiconductor body sidewall during or subsequent to the formation of said bond.

3,967,297
INTERLOCK MECHANISM FOR PHOTOGRAPHIC PROCESSNG SYSTEM
Vaito K. Eloranta, Needham, and Benjamin C. Ruggles, Gloucester, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 23, 1974, Ser. No. 535,378
Int. Cl.² G03B *17/50*
U.S. Cl. 354—83 **21 Claims**



1. Photographic apparatus comprising:
means for locating a plurality of film units in position for sequential exposure;
means for initiating an exposure of a film unit;
film transport and processing means mounted in position to receive an exposed film unit as it is moved away from said exposure position;
film advancing means mounted for movement between a first position wherein it is in position to engage the exposed film unit and advance it toward said film transport and processing means and a second position wherein a portion of the exposed film unit is in engagement with said film transport and processing means;
drive means for moving said film advancing means between said first and second positions and for driving said film transport and processing means;
means for biasing said film advancing means toward said first position;
means engageable by said film advancing means during movement of said film advancing means from said first position for preventing said film advancing means from returning to said first position under the force of said biasing means; and
means responsive to actuation of said initiating means for moving said engageable means out of engagement with said film advancing means thereby allowing said film advancing means to return to said first position under the influence of said biasing means.

3,967,298
ELECTRICALLY CONTROLLED PHOTOGRAPHIC CAMERA
Günter Adamski, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany
Continuation-in-part of Ser. No. 417,411, Nov. 19, 1973, Pat. No. 3,878,546. This application Feb. 11, 1974, Ser. No. 441,501
Claims priority, application Germany, Nov. 20, 1972, 2256795; Oct. 10, 1973, 2350733; Nov. 6, 1973, 2355295
Int. Cl.² G03B *19/12, 1/18*
U.S. Cl. 354—153 **17 Claims**



1. A photographic camera having a plurality of functions to be performed during one complete cycle of operations to take one photograph, a step-by-step switch advancing through successive steps to initiate performance of said functions, an electric motor for performing at least one of said functions, means operated by said step-by-step switch for closing a circuit to said motor to start the running of the motor when said switch reaches a predetermined one of its steps, means responsive to the running of said motor for keeping said circuit closed independently of said step-by-step switch so that said motor may continue to run for an interval after said step-by-step switch has advanced to a subsequent step and is no longer effective to close said circuit, and means also responsive to the running of said motor for opening said circuit to stop the running of said motor when said motor has run for an interval sufficient to accomplish its function.

3,967,299

SINGLE LENS REFLEX CAMERA WITH INTERCHANGEABLE VIEW FINDER HAVING ELECTRICAL COUPLING

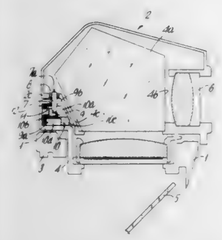
Tetsuji Shono, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 13, 1974, Ser. No. 505,713

Claims priority, application Japan, Sept. 20, 1973, 48-106259

Int. Cl.² G03B *13/02*

U.S. Cl. 354—219 **6 Claims**



1. A single lens reflex camera comprising a camera body having a lens carrying front face and a rear face and housing a first electrical circuit, a view finder interchangeably mounted on said camera body and forwardly and rearwardly slidable between coupled and uncoupled positions on said camera body and including a pentaprism having a lower front upwardly, forwardly inclined third surface and a casing housing said pentaprism and a second electrical circuit, a first electrical connector connected to said first circuit and mounted on said camera body and disposed in the area proximate and forward of said pentaprism third surface, a second electrical connector connected to said second circuit and mounted on said casing proximate said pentaprism third surface and releasably coupled to said first connector and moveable with the separation of said view finder from said camera body out of coupling engagement with said first connector and a cover member resiliently biased to overlie said first connector and retractable to a position exposing said first connector in response to the application of said view finder to said camera body.

3,967,300

MINIATURE CAMERA FOR ROLL FILM

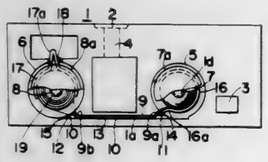
Shigeru Oshima, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 14, 1974, Ser. No. 497,447

Claims priority, application Japan, Aug. 17, 1973, 48-92150

Int. Cl.² G03B *17/02*

U.S. Cl. 354—288 **3 Claims**



1. In a miniature camera for a roll film and including a lens and a body having therein a chamber for accommodation of a feed spool carrying unexposed film, a chamber for accommodation of a take-up spool for wind-up of exposed film, and a passageway which provided communication between said chambers, said passageway being defined by an inner wall, a rear wall and a bottom floor of said camera body, said inner wall having formed therein an opening permitting exposure of successive film frames to light directed to the lens of said camera, whereby, successive rolls of film on successive feed and take-up spools are loaded into or unloaded from said camera and successive frames of a loaded film are carried from a feed spool to a position for exposure and thence onto said take-up spool, upon rotation of said spools, the improvement comprising: a first body eave portion projecting over an open chamber portion adjacent to the entrance of said passageway and intermediate said passageway entrance and the mounting axis of a feed spool within the feed spool chamber, to prevent vertical displacement of a film passing through said passageway, and a press member made of a material having elastic properties, said press member comprising an arcuate main portion expandable to form an approximate semi-circle and fitting on the film carried on the feed spool, and a radial extension portion contacting the film passing from said feed spool to said passageway entrance, said press member being moved due to frictional contact with said film upon rotation of said feed spool to press said extension portion against said film and cause said film to pass beneath said first eave portion.

3,967,301

PHOTOGRAPHER'S COPY STAND

Lee M. Corning, c/o Corning Photography 1012 Washington St., San Carlos, Calif. 94070

Filed Nov. 4, 1974, Ser. No. 520,276

Int. Cl.² G03B *15/00*

U.S. Cl. 354—292 **4 Claims**



1. A photographer's stand comprising a base, a lower member extending vertically upward from said base, a slide vertically adjustably positioned on said lower member, a horizontal first socket and a vertical second socket on said slide, a lower horizontal rod horizontally adjustably positioned in said first socket, a pedestal for an object to be photographed on the outer end of said lower rod, a sheet apertured for projection of said lower horizontal rod, a vertical rod in said second socket, a third socket on the upper end of said vertical rod, an upper horizontal rod horizontally adjustably positioned in said third socket, and a horizontal support rod on the outer end of and disposed transverse to said upper horizontal rod, and support means on said support rod for supporting the upper edge of said sheet.

3,967,302

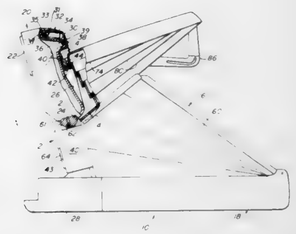
ACCESSORY ATTACHMENT FOR PHOTOGRAPHIC APPARATUS

Gerald J. Cote, Plymouth; John A. Lewis, Jr., Stoneham, and James K. Skurski, Beverly, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1974, Ser. No. 533,326

Int. Cl.² G03B *17/56*

U.S. Cl. 354—295 **4 Claims**



1. An accessory attachment for use with a camera having a front wall mounting a lens, and wall-forming means extending rearwardly from said front wall, said camera being formed with a socket and provided with recess-forming means, said accessory attachment comprising:

a camera accessory device and a housing mounting said accessory device therein, said housing including an accessory-mounting front portion and being formed with a lower surface receivable on said wall-forming means of said camera, said housing further comprising means forming a rear wall generally perpendicular to said surface, latch means movably mounted on said rear wall in substantially spaced relation to said surface and releasably engageable with said recess-forming means, and plug means attached to and extending from said housing, said plug means being receivable in said socket to cooperate with said latch means in securing said accessory device on said camera.

3,967,303

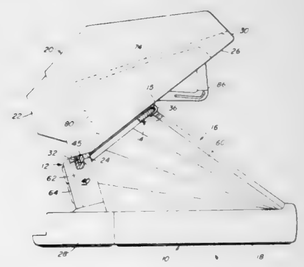
ACCESSORY ATTACHMENT FOR CAMERAS

Richard V. Fischer, West Warwick, R.I., and Richard C. Kee, Chestnut Hill, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1974, Ser. No. 533,329

Int. Cl.² G03B *17/56*

U.S. Cl. 354—295 **2 Claims**



1. An electronic flash attachment for a camera having a lens-shutter housing formed with a front wall mounting a lens and a top wall extending rearwardly from the front wall and formed with a downwardly extending socket, and further including an upper housing wall extending rearwardly and upwardly from the top wall of the lens-shutter housing and formed with a rear edge portion, and a viewfinder mounted on the upper housing wall, said electronic flash attachment comprising an electronic flash unit, a housing mounting said flash unit therein, and means for detachably connecting said housing to the camera, said housing comprising first housing wall means forming a lower surface adapted to engage and be supported on the top wall of the lens-shutter housing of the camera, second housing wall means inclined rearwardly and upwardly from and formed integral with said first housing wall means and adapted to engage and be supported on the upper housing wall of the camera, third housing wall means formed integral with said second housing wall means and forming a recess shaped to receive the viewfinder of the camera, and fourth housing wall means formed integral with said first, second and third housing wall means and completing an enclosure about said electronic flash unit including housing regions on four sides of said third housing wall means, said means for detachably connecting said housing to the camera comprising a plug mounted on said first housing wall means, protruding therefrom, and formed to engage the socket of the camera, and first and second hook means attached to said second housing wall means on either side of said third housing wall means and adapted to engage the rear edge portion of the upper housing wall of the camera.

3,967,304

MODULAR CONSTRUCTED SEQUENCING SYSTEM FOR PHOTOGRAPHIC APPARATUS

Bruce K. Johnson, Andover, and David E. Van Allen, Malden, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 3, 1975, Ser. No. 554,778

Int. Cl.² G03B *1/00, 17/00, 19/02*

U.S. Cl. 354—83 **18 Claims**

1. A modular subassembly for use in a self-developing camera of the type having an operating cycle during which a film unit is exposed at an exposure position and is then advanced between a pair of pressure applying rollers for distributing a fluid processing composition within the film unit, said subassembly comprising:

a base section;

film advance means movable relative to said base for engaging a film unit at the exposure position and advancing the film unit to the pressure applying rollers of the camera;

means on said base section for mounting and guiding said film advance means thereon for movement along a predetermined path of travel relative to said base section;

film counting means having indicia thereon for counting and visually displaying the number of cycles of camera operation said counter means being adapted to be rotatably mounted on said base section such that it may be indexed one indica for each cycle of camera operation;

means on said base section for rotatably mounting said film counter means;

sequencing means, including a rotatable sequencing gear, for controlling the sequence of certain events in a cycle of camera operation including moving and positioning said film advance means along said predetermined path of travel and indexing said film counting means, said sequencing gear being configured to rotate through a single 360° revolution during the course of a cycle of camera operation such that said film advance and counting means are operated thereby in a relationship that is dependent upon the angular disposition of said sequencing gear relative to a predetermined starting position;

means on said base section for rotatably mounting said sequencing gear thereon in operative relation with said film advance and counting means;

a motor including a drive shaft having a drive gear thereon for providing power for rotating said sequencing gear and at least one of the pair of camera rollers having a drive gear thereon to cause a film unit to be advanced between the rollers;

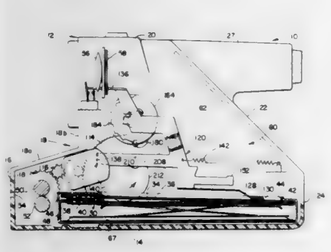
means on said base section for receiving and supporting said motor thereon;

a gear train including a plurality of gears adapted to be interconnected for coupling said motor drive gear in a driving relation to said sequencing gear and the drive gear on the one roller;

means on said base section for rotatably mounting said plurality of gears in operative relation with each other, said sequencing gear, said motor drive gear and the roller drive gear;

a retaining section adapted to be connected to said base section for retaining said film advance means, said film counting means, said sequencing gear, and said gear train in proper operative relation with one another intermediate said base and retaining sections; and

connecting means, for connecting said base and said retaining section, said connecting means including at least one two-part connector of the snap-together type, one of said two parts being on said base section and the other of said two parts being on said retaining section such that said base section and retaining section may be snapped together after said film advance means, film counting means, sequencing gear and gear train have been mounted on said base section.



14. A modular subassembly for use in a camera of the self-developing type including a pair of fluid spreading rollers and means for locating a film unit in position for exposure and having a cycle of operation including the exposure and processing of the film unit, said subassembly comprising the following components in combination:

a first mounting member;

second mounting member;

a motor;

film advance means for displacing the film unit from its exposure position into another position wherein a leading edge of the film unit is disposed between the rollers;

a gear adapted to be coupled in driving relationship with at least one of the rollers when said modular assembly is operably positioned within the camera;

means on one of said mounting members for mounting said motor;

means on at least one of said mounting members for displaceably mounting said film advance means;

means on one of said mounting members for rotatably mounting said gear;

means mounted on one of said mounting members for driving said gear and said film advance means from said motor; and

means for connecting said mounting members together, said mounting members serving to mount said recited components comprising said subassembly as a self--supporting integral module when so connected together.

3,967,305

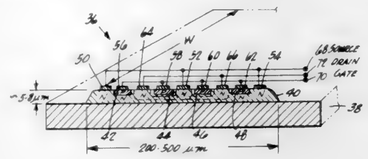
MULTICHANNEL JUNCTION FIELD-EFFECT TRANSISTOR AND PROCESS

Rainer Zuleeg, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Mar. 27, 1969, Ser. No. 811,154

Int. Cl.² H01L *21/78, 27/26*

U.S. Cl. 357—3 **4 Claims**



1. A one-sided geometry, high power multichannel, unipolar junction field-effect transistor comprising:

a substrate structure fabricated of semi-insulating GaAs material having a resistivity greater than 10^4 ohm-cm;

an isolating mesa structure formed from a thin epitaxial layer of N-type GaAs semiconductor material with a donor concentration between 5×10^{14} and 5×10^{15} cm^{-3}, electron mobilities between 6,000 and 8,000 cm^2/volt-sec provided on a top surface of said substrate structure and susceptible of bulk negative resistance instabilities during operation of said field-effect transistor above a critical electric field strength, said substrate structure surface being larger than the supported surface of said mesa structure to provide a one-sided geometry with reduced gate capacitance;

a plurality of source, gate and drain structures provided in a coplanar arrangement directly on said mesa structure in respectively separate transverse coplanar regions thereof and having electrical source, gate and drain leads connected correspondingly thereto, each of said gate structures including a PN-junction having a length and width equal to that of its gate region and largely located in a plane positioned at a predetermined depth from the surface of its corresponding gate region and separating P-type material from the N-type material of said mesa structure, said gate regions being of predetermined length and width and extending equally spaced in parallel over the full width of said mesa structure and being positioned respectively between alternating and equally spaced source and drain regions of predetermined width and similar length to said gate regions to control a plurality of respective channels in an interdigitated structure which functions as a highly reliable, stable and very low leakage current small signal amplifier below said critical electric field strength, and as an easily varied, high frequency and multiple gate controlled oscillator above said critical electric field strength, said gate regions as positioned respectively between said alternating and equally spaced source and drain regions in said coplanar arrangement and of said predetermined length and width being capable to control said bulk negative resistance instabilities and the high frequency oscillations of said oscillator above said critical electric field strength; and

means for providing a variable gate voltage on said gate lead to produce said electric field in said transistor.

3,967,306

ASYMMETRICAL WELL CHARGE COUPLED DEVICE

Robert W. Bower, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 384,601, Aug. 1, 1973, abandoned. This application Nov. 27, 1974, Ser. No. 527,680

Int. Cl.² H01L *27/10, 29/78*

U.S. Cl. 357—24 **12 Claims**

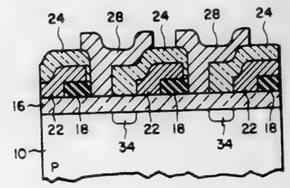
1. A charge coupled device designed to have a minimum component line width of predetermined size, comprising:

a. a semiconductor substrate;

b. a first set of gate electrodes insulatingly spaced from a surface of said substrate and laterally spaced from each other over said surface by a distance equal to their width and equal to said predetermined minimum component line width;

c. means insulatingly spacing a respective half-width portion of each one of said gate electrodes a greater amount from said substrate surface than the other half-width portion thereof, whereby to establish an asymmetrical potential well of the same directionality under each one of said electrodes when they are subjected to a first phase clocking voltage;

d. means forming a second set of gate electrodes insulatingly spaced from said first set and interleaved therewith so as to overlie the spaces therebetween;



e. means disposed between said second electrode set and said substrate for causing an asymmetrical potential well to be established under each one of the electrodes thereof upon the application thereto of a second phase clocking voltage, which potential wells have the same directionality as those established under said first electrode set, thereby to produce a bit width spanning the distance between corresponding portions of any two adjacent gate electrodes of the same phase that is twice said minimum component line width; and

f. means for confining charge carriers within a channel region in said semiconductor substrate, said channel region extending under said first and second sets of gate electrodes in the direction of the directionality of said asymmetrical potential wells, said channel region having a width equal to said predetermined line width perpendicular to the direction of said directionality.

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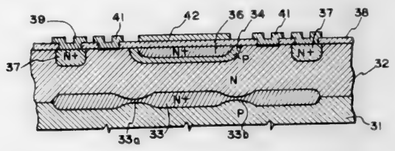
LATERAL BIPOLAR TRANSISTOR FOR INTEGRATED CIRCUITS AND METHOD FOR FORMING THE SAME

Richard S. Muller, Kensington, and Lewis K. Russell, San Jose, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 383,810, July 30, 1973, abandoned. This application July 10, 1975, Ser. No. 594,700

Int. Cl.² H01L *29/72, 29/48, 29/56, 29/64*

U.S. Cl. 357—35 **4 Claims**



1. In an integrated circuit a lateral bipolar transistor having increased current gain comprising a semiconductor substrate of a first conductivity type having an epitaxial semiconductor layer of a second conductivity type formed thereon, a buried layer of said second conductivity type formed between said epitaxial layer and substrate, an emitter region of said first conductivity type formed in said epitaxial layer overlying the buried layer and extending to the surface of said epitaxial layer with a PN emitter base junction being defined between the emitter region and the epitaxial layer, means for enhancing lateral current from said emitter region to said collector region and for retarding current flow in a vertical sense perpendicular to the lateral direction said enhancing means including at least one island of second conductivity type formed in said emitter region and further including a collector region formed in said epitaxial layer spaced from and adjacent to said emitter region.

3,967,308

SEMICONDUCTOR CONTROLLED RECTIFIER

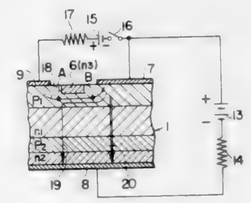
Tsutomu Yatsuo; Tatsuya Kamei; Takuzo Ogawa, and Tomoyuki Tanaka, all of Hitachi, Japan, assignors to Hitachi, Ltd., Hitachi, Japan

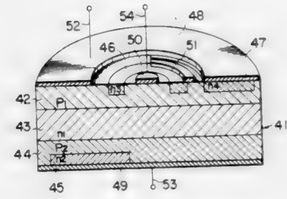
Continuation of Ser. No. 293,097, Sept. 28, 1972, abandoned. This application Mar. 15, 1974, Ser. No. 451,679

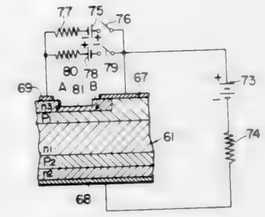
Claims priority, application Japan, Oct. 1, 1971, 46-76343; Oct. 4, 1971, 46-77098

Int. Cl.² H01L *29/74*

U.S. Cl. 357—38 **8 Claims**







5. A semiconductor controlled rectifier comprising:

a first layer of semiconductor material having a first principal surface and including a first region of p-type conductivity;

a second layer of semiconductor material of n-type conductivity disposed in contact with and forming a first pn junction with said first layer at the first region thereof;

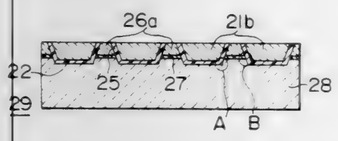
a third layer of semiconductor material of said p-type conductivity disposed in contact with and forming a second pn junction with said second layer;

a fourth layer of semiconductor material of said n-conductivity type disposed in contact with and forming a third pn junction with a first prescribed surface area portion of said third layer and having a second principal surface;
an anode electrode, disposed in ohmic contact with a relatively large selected surface area portion of said first principal surface of said first layer including a surface portion of said first region thereof, for coupling a relatively positive potential to said first region;
a cathode electrode, disposed in ohmic contact with said second principal surface of said fourth layer, for coupling a relatively negative potential to said fourth layer;
an auxiliary electrode, disposed in ohmic contact with said first layer of semiconductor material at a portion of said first principal surface thereof, spaced apart from said anode electrode, for coupling a potential, which is relatively negative from said relatively positive potential, to the spaced apart portion of said first layer; and wherein
said first layer further includes a second region of semiconductor material of said n-conductivity type, extending from said first principal surface into said first region of said first layer, so as to form a fourth pn junction with said first region, said second region being disposed at least between a path extending from said anode electrode through said first region to said auxiliary electrode, and wherein said anode electrode is separated from said second region by the surface portion of said first region therebetween and is disposed exclusively in ohmic contact with said first region of said first layer;
and further including a gate electrode, for coupling a gate potential to said second region relatively negative with respect to the potential coupled to said anode electrode and relatively different from the potential coupled to said auxiliary electrode, disposed in ohmic contact with said first principal surface of said first layer, so that said gate electrode is disposed between said anode electrode and said auxiliary electrode.

3,967,309
SEMICONDUCTOR DEVICE WITH A SEMICONDUCTOR SUBSTRATE HAVING DIELECTRICALLY ISOLATED FUNCTIONAL REGIONS

Kenzi Miyata, Hitachi, Japan, assignor to Hitachi, Ltd., Japan

Filed Feb. 5, 1974, Ser. No. 439,702
Claims priority, application Japan, Feb. 7, 1973, 48-14642
Int. Cl.² H01L *27/04, 27/12, 29/06*
U.S. Cl. 357—49 **14 Claims**

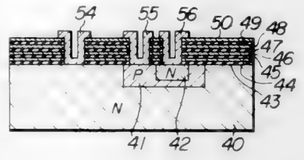


1. A semiconductor device comprising, in combination:
a polycrystalline semiconductor substrate; and
a first dielectric insulating layer selectively disposed on a plurality of portions of a first surface of said substrate;
a plurality of functional monocrystalline semiconductor regions respectively disposed on said selectively disposed first dielectric insulating layer so as to be insulated from the respective portions of said first surface of said substrate; and wherein
each monocrystalline semiconductor region is electrically isolated from adjacent monocrystalline semiconductor regions by a polycrystalline semiconductor region therebetween, which polycrystalline semiconductor region is electrically isolated from both said monocrystalline regions and said substrate; and wherein the angle formed by the side portions of a monocrystalline region and the first dielectric insulating layer on which said monocrystalline region is disposed is an obtuse angle.

3,967,310
SEMICONDUCTOR DEVICE HAVING CONTROLLED SURFACE CHARGES BY PASSIVATION FILMS FORMED THEREON

Masatada Horiuchi, Koganei; Takashi Tokuyama, Hoya, and Takao Miyazaki, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 224,453, Feb. 8, 1972, abandoned, which is a continuation of Ser. No. 864,700, Oct. 8, 1969, abandoned. This application Nov. 30, 1973, Ser. No. 420,590
Claims priority, application Japan, Oct. 9, 1968, 43-73134; July 7, 1969, 44-53035
Int. Cl.² H01L *27/04, 29/78, 29/94*
U.S. Cl. 357—54 **11 Claims**



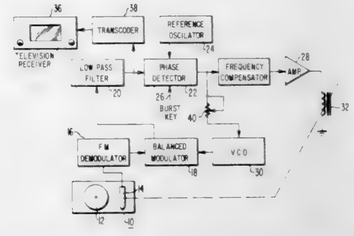
1. A semiconductor device having controlled surface charges at the surface of a semiconductor substrate comprising:
a. a semiconductor substrate having a pn junction extending to one surface thereof;
b. a silicon dioxide film of about 300 to 1500 angstroms in thickness disposed upon the surface of said semiconductor substrate so that negative charges are induced by the film at the surface of the substrate;
c. a first glass film having about 300 to 1500 angstroms in thickness and selected from one material of boro-silicate glass and phospho-silicate glass, said first glass film covering the passivation film so that negative charges are piled up at the interface of the passivation film and the first glass film, the density of the corresponding one material of boron and phosphorus in the first glass film being substantially uniform; and
d. a second glass film having abut 300 to 1500 angstroms in thickness and selected from the other material of borosilicate glass and phospho-silicate glass, said second glass film covering the first glass film so that negative charges are piled up at the interface of the first glass and the second glass films, with the density of the corresponding other material of boron and phosphorus in the second glass film being substantially uniform, whereby the density of the charges induced by the passivation film at the surface of the semiconductor substrate is controlled by the charges induced at the respective interfaces, and
further comprising a third glass film of said one material with a thickness of 300 to 1500 angstroms and covering the second glass so that the negative charges are piled up at the interface between the second glass film and the third glass film, the density of said one material in the third glass film being substantially uniform.

3,967,311
VELOCITY CORRECTION FOR VIDEO DISCS

Jack Selig Fuhrer, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 12, 1974, Ser. No. 522,819
Int. Cl.² H04N *5/76, 5/80*
U.S. Cl. 358—8 **9 Claims**

1. In a video disc player in which a signal pickup stylus cooperates with a signal information storing groove of a video disc, said information storing groove including recorded luminance, chrominance and color synchronization signal components, and said signal components as recovered by said pickup stylus being subject to recurring frequency and phase errors as a consequence of errors in velocity of relative motion between said disc groove and said pickup stylus, apparatus for providing correction of said signal component errors comprising:
means coupled to said signal pickup stylus for decoding signals provided from said video disc;
a voltage controlled oscillator;
heterodyning means receptive to signals from said decoding means and said voltage controlled oscillator for frequency translating the constituent components of said decoded signal;
a reference oscillator for providing signals at a reference frequency;

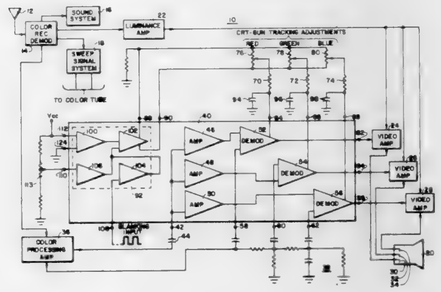


means receptive to signals from said heterodyning means and said reference oscillator for providing an error signal indicative of departures, if any, of a color synchronization component in the frequency translated output of said heterodyning means from correspondence in frequency with said reference frequency;
means for rendering said voltage controlled oscillator responsive to said error signal to control the frequency thereof in a manner opposing said departures from said frequency correspondence; and
transducer means coupled to said pickup stylus for repositioning said stylus along the groove of said video disc records in response to said error signal in a manner opposing said errors in velocity of relative motion.

3,967,312
COLOR TELEVISION CHROMA DEMODULATOR CIRCUIT

Lawrence Ray Sample, Huntington Beach, Calif., assignor to Motorola, Inc., Chicago, Ill.

Filed Nov. 18, 1974, Ser. No. 524,425
Int. Cl.² H04N *9/50*
U.S. Cl. 358—23 **14 Claims**

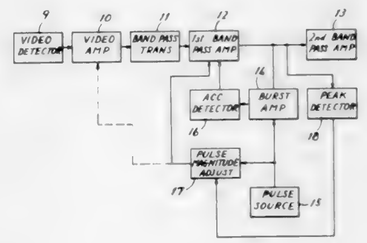


1. A direct current (DC) biasing circuit for a chroma demodulator circuit which includes a plurality of demodulators for demodulating a chrominance input signal to supply color signals in a televesion receiver, the DC biasing circuit comprising:
means adapted to receive a power supply voltage for providing a regulated voltage which is independent of variations in the magnitude of said power supply voltage, said regulated voltage having a zero temperature coefficient, said means for providing a regulating voltage including turn-around circuit means having an output terminal;
amplifier means coupled between an output of said means for providing a regulated voltage and said output terminal of said turn-around circuit means for providing an output signal between first and second output terminals thereof, said output signal having a zero differential temperature coefficient; and
first circuit means coupled to said first and second output terminals of said amplifier means for providing a plurality of output control signals at respective output terminals, said output control signals having amplitudes which are independently adjustable, said output control signals being independent of temperature variations and being coupled to respective ones of the plurality of demodulators so that the direct current (DC) output level of the demodulators can be varied as said amplitudes of said output control signals from said circuit means are varied to adjust the background of the television color image without effecting the gain of the demodulators.

3,967,313
CHROMINANCE SIGNAL GAIN CONTROL CIRCUIT

Seiji Miyamoto, Yao, Japan, assignor to Sanyo Electric Co., Ltd., Japan

Filed Mar. 19, 1974, Ser. No. 452,557
Claims priority, application Japan, Mar. 20, 1973, 48-33933
Int. Cl.² H04N *9/535*
U.S. Cl. 358—27 **8 Claims**



1. A chrominance signal control circuit in a color television apparatus, comprising:
amplifying means of a gain control type for selectively amplifying a composite signal including a burst signal and a chrominance signal, the gain thereof being controllable as a function of a control voltage input,
means for providing a pulse signal having a pulse width and a phase time encompassing the burst signal of said composite signal,
means receiving the selectively amplified composite signal output of said amplifying means and responsive to the pulse signal from said pulse signal providing means for extracting the burst signal from the selectively amplified composite signal,
means for receiving and peak detecting the extracted burst signal and supplying the peak detected burst signal output thereof to said amplifying means as the control voltage input,
means receiving the selectively amplified composite signal output of said amplifying means and providing a peak detected output of the chrominance signal only, of said

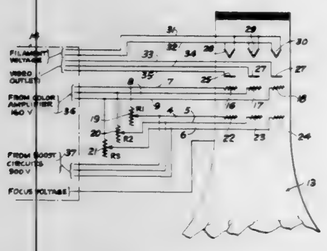
composite signal, when the peak detected chrominance signal output exceeds a predetermined value, and

means responsive to the burst extracting pulse signal for producing a control pulse output, said means receiving the peak detected chrominance signal output for automatically adjusting the magnitude of the control pulse and supplying the control pulse to said amplifying means for selectively controlling the gain thereof for amplification of the burst signal, thereby to afford peak color control of the selectively amplified, composite signal output of said first amplifying means.

3,967,314
COLOR BRIGHTNESS CONTROL

Russell E. Anglin, San Jose, Calif., assignor to Oneida Electronics, Meadville, Pa.

Filed Sept. 19, 1975, Ser. No. 614,978
Int. Cl.² H04N 9/18
U.S. Cl. 358—29 **5 Claims**



1. A television color brightness control for a color television tube having screen grids and control grids comprising,

a first control grid, a second control grid and a third control grid,

a first screen grid, a second screen grid and a third screen grid,

a first potentiometer, a second potentiometer and a third potentiometer,

means connecting said first potentiometer between said first control grid and said first screen grid,

means connecting said second potentiometer between said second control grid and said second screen grid,

means connecting said third potentiometer between said third control grid and said third screen grid whereby the resistance between said screen grids and said control grids can be adjusted thereby adjusting the positive voltage on said control grids.

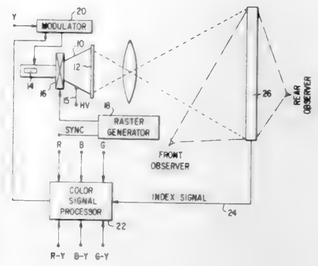
3,967,315
BEAM-INDEX COLOR TELEVISION DISPLAYS

David M. Goodman, 14272 Half Moon Bay Drive, Del Mar, Calif. 92014

Continuation-in-part of Ser. No. 345,197, Feb. 17, 1964, Pat. No. 3,826,867. This application May 22, 1974, Ser. No. 472,154
Int. Cl.² H04N 9/31, 9/24
U.S. Cl. 358—60 **34 Claims**

4. For a beam-index line-screen multi-color projection television display apparatus, a display screen mountable against a wall for scanning by an optical beam of energy comprising: a plurality of optically sensitive strip-like regions of different color producing elements; and beam-index means comprising a plurality of optically sensitive spaced apart strip-like regions, in register with the color producing elements, which produce optical index signals in response to excitation by the optical scanning beam, light pipe means for transmitting these optical index signals transversely of the display screen to the periphery thereof, and means for combining the thus transmitted signals.

11. In a beam-index line-screen color cathode ray tube having an envelope with an electron gun section for providing a scannable electron beam and faceplate section with a target screen having a repeating array of different color producing strips for generating a viewable image, said target screen also having index-signal generating means which provide optical

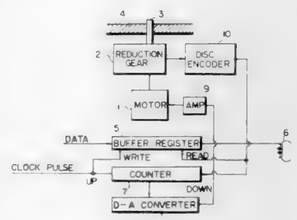


index signals indicative of the position of impact of the electron beam on the target screen; the improvement wherein said optical index signals are transmitted transversely of the target screen by a plurality of spaced apart optical light pipes disposed inside said envelope, adjacent said target screen, in register with said color producing strips.

3,967,316
DATA RECORDER

Satoshi Suyama, and Kazuhiko Endow, both of Yokohama, Japan, assignors to The Tsurumi-Seiki Co., Ltd., Yokohama, Japan

Filed Dec. 17, 1974, Ser. No. 533,622
Claims priority, application Japan, Dec. 22, 1973, 48-303174
Int. Cl.² G11B 5/09
U.S. Cl. 360—51 **6 Claims**

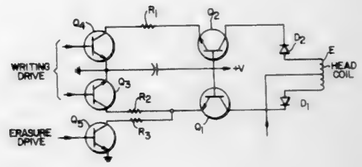


1. A data recorder for recording data onto a recording medium comprising: a memory device for temporarily storing therein data produced irregularly; a first means for generating an output signal the level of which is varied correspondingly to an amount of data stored in the memory device; a driving means connected to the first means to vary its driving speed in accordance with the variation in the output signal level of said first means and drive the recording medium at the traveling speed varied correspondingly to the driving speed of the driving means; a second means connected to the driving means to generate a pulse signal which has a pulse interval varied correspondingly to the driving speed of the driving means and which is supplied to the memory device to read out the data from the memory device in response to the pulse signal; and a transducer connected to the read out terminal of the memory device to record the data onto the recording medium.

3,967,317
PREDISTORTION OF NRZ RECORDING CURRENT FOR VIDEO RECORDINGS

George F. Newell, Sutton, England, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 24, 1974, Ser. No. 536,056
Int. Cl.² G11B 5/02
U.S. Cl. 360—55 **2 Claims**



1. A method of minimizing harmonic distortion in the replayed output signals from a magnetic record/reproduction system wherein a remanent magnetic field exists in the magnetic recording medium as a result of erasure of the medium, comprising the steps of:

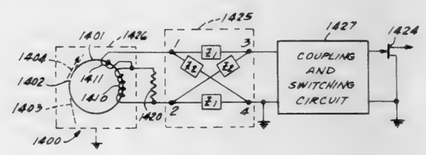
supplying alternate half cycles of writing current to the recording head of said system, and

adjusting the amplitude of said writing current in synchronism with the polarity reversal of the alternate half cycles of said writing current to establish a current ratio between alternate half cycles of said writing current to produce uniform spacing between the replayed output signals from said magnetic record/reproduction system.

3,967,318
VIDEO MAGNETIC TRANSDUCER SYSTEM WITH PHASE CORRECTING NETWORK

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation of Ser. No. 312,514, Dec. 6, 1972, abandoned, and a continuation-in-part of Ser. No. 34,504, May 4, 1970, Pat. No. 3,705,954, which is a division of Ser. No. 649,256, June 27, 1967, Pat. No. 3,596,008. This application Aug. 9, 1974, Ser. No. 496,293
Int. Cl.² G11B 5/45
U.S. Cl. 360—65 **2 Claims**



1. A video magnetic transducing system having a wideband video playback channel including a grounded input video amplifier, said playback channel further comprising:

a. a video magnetic transducer head having a magnetic core with a gap for coupling of the magnetic core with a magnetic record medium and having electric winding means on the magnetic core for supplying a video playback signal having a time sequence and a frequency spectrum in accordance with a television signal, said electric winding means having winding output terminals floating relative to ground potential,

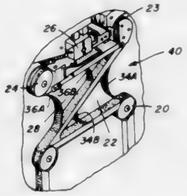
b. a passive four terminal network having first and second input terminals, and having first and second output terminals one of which is at ground potential, said passive four terminal network comprising first impedances connected respectively directly between said first input terminal and said first output terminal, and directly between said second input terminal and said second output terminal, and comprising second impedances connected respectively directly between said first input terminal and said second output terminal, and directly between said second input terminal and said first output terminal, and

c. completely passive conductor means floating relative to ground potential and providing direct conductive connections between the winding output terminals and the first and second input terminals of said four terminal network, without the interposition of any transformer between the electric winding means on the magnetic core of the transducer head and the output terminals of said four terminal network, whereby the first and second impedances of said passive four terminal network are all effective for correcting the video playback signal as supplied from the head.

3,967,319
TAPE EXCURSION CONTROL MEANS USING TAPERED-WALL VACUUM COLUMN

Robert F. McCollum, Oklahoma City, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed July 1, 1974, Ser. No. 484,606
Int. Cl.² G11B 15/58, 15/48
U.S. Cl. 360—90 **7 Claims**



1. In a magentic tape system having at least one tapered-wall vacuum column for control of the tape movement, the improvement in means to minimize the excursion of the tape in the tapered-wall vacuum column under increasing tension in the tape, comprising:

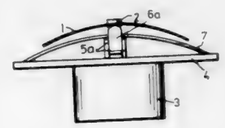
a. wall means between said tapered-wall vacuum column and a vacuum plenum and an opening in said wall means; and

b. check valve means across said opening adapted to permit free flow of air from said column to said plenum, but not in the reverse direction.

3,967,320
ARRANGEMENT FOR GUIDING A RAPIDLY ROTATING RECORD CARRIER FOIL

Wolfgang Fell, Konstanz, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed July 30, 1974, Ser. No. 493,345
Claims priority, application Germany, Aug. 2, 1973, 2339131
Int. Cl.² G11B 15/64, 5/012, 21/04, 21/18
U.S. Cl. 360—102 **8 Claims**



1. In a system for guiding a rapidly rotating record carrier foil to give the foil a curvature which is stationary in space and which has a crest line disposed along a diameter of the foil, the

foil being guided, to have such curvature, with the aid of a flow of air between the foil and guide surfaces, and the foil being not guided in regions angularly spaced from the guide surfaces and extending to the edge of the foil, wherein said guide surfaces comprise:

a bar located at that side of the foil location at which the foil presents a concave curvature, said bar presenting a surface adjacent the foil location which constitutes a guide surface, said bar being oriented with its length perpendicular to the orientation of the foil crest line and having a length greater than the diameter of the foil and a width less than the diameter of the foil; and

two guide elements located entirely at that side of the foil location at which the foil presents a concave curvature, said elements being located at respectively opposite sides of said bar and of the axis of foil rotation and spaced from said bar, said guide elements each presenting a surface adjacent said foil location which constitutes a guide surface, at least one of said elements including a scanning head for information recorded on the foil.

DESIGN PATENTS

GRANTED JUNE 29, 1976

ERRATA

For CLASS	See PATENT NO.
008-216	240,347
023-139	240,357
025-078	240,362

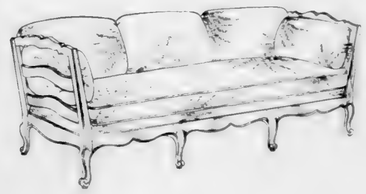
240,340
SHOE SOLE AND HEEL UNIT
Aubrey Askew, Southport, England, assignor to Dunlop Limited, London, England
Filed Aug. 12, 1974, Ser. No. 496,839
Claims priority, application Great Britain Feb. 23, 1974
Term of patent 14 years
The term of this patent subsequent to Oct. 1, 1988, has been disclaimed
Int. Cl. D2—*04*
U.S. Cl. D2—320



240,341
COMBINED TOOTHBRUSH AND DENTAL FLOSS HOLDER
William K. Najjar, 2875 Taft SW., Wyoming, Mich. 49509
Filed Mar. 22, 1974, Ser. No. 453,727
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—18



240,342
SOFA OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Apr. 23, 1974, Ser. No. 463,286
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



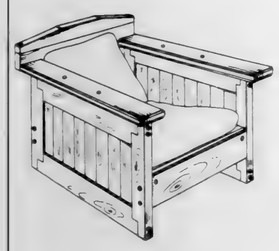
240,343
TABLE FOR FOOD PRODUCTS DISPLAY
Franklin Moore, Jr., 902 McBurney Drive, Lebanon, Ohio 45036
Filed Apr. 30, 1974, Ser. No. 465,537
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—20



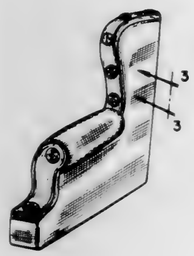
240,344
SOFA OR THE LIKE
Joseph E. Adkinson, 3807 Leland St., Chevy Chase, Md. 20015
Filed Apr. 23, 1974, Ser. No. 463,287
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



240,345
SEAT OR SIMILAR ARTICLE
Matthew F. Callahan III, Corte Madera, Calif., assignor to Monastery Furniture Manufactory, Rohnert Park, Calif.
Filed Apr. 29, 1975, Ser. No. 572,779
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



240,346
FURNITURE ARM OR SIMILAR ARTICLE
Burton H. Kaplan, Potomac, Md., assignor to Rowe Furniture Corporation
Filed Sept. 30, 1974, Ser. No. 510,584
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



240,347
SNATCH BLOCK
Edward L. Vick, 4861 Seven Hills Road, Castro Valley, Calif. 94546, and Arlie E. Smith, 3791 Mosswood Drive, Lafayette, Calif. 94549
Filed May 19, 1975, Ser. No. 578,394
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D8—216



240,348
CHAIR
Svante Schoblom, Pipplarp, S–573 00, Tranas, Sweden
Filed July 16, 1974, Ser. No. 488,978
Claims priority, application Sweden Jan. 18, 1974
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



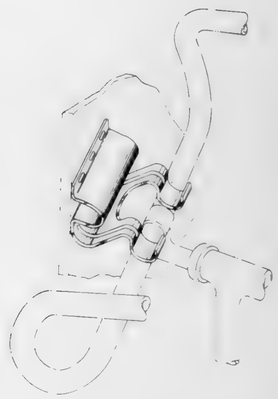
240,349
MICROWAVE OVEN
Jozef Joan Waagen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 27, 1974, Ser. No. 455,239
Claims priority, application Sweden Oct. 1, 1973
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



240,350
ARTICLE OF FLATWARE
Richard O. Cragin, Warwick, R.I., assignor to Gorham, a Division of Textron Inc., Providence, R.I.
Filed Jan. 29, 1975, Ser. No. 545,313
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



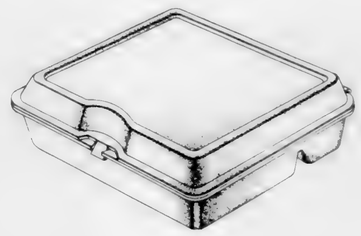
240,351
BICYCLE HANGER
Alexander L. Generalis, Michael C. Roberto, and David A. White, all of 249 S. 10th St., Philadelphia, Pa. 19107, and Dann S. Sheftelman, 4405 Pine St., Philadelphia, Pa. 19104
Filed Dec. 19, 1974, Ser. No. 534,633
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—235



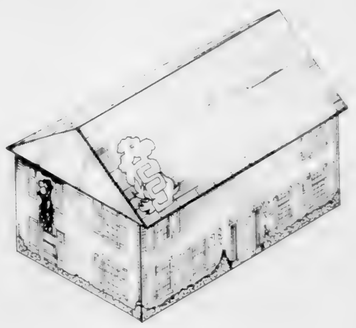
240,352
COMBINED BOTTLE AND STOPPER
Marie Joseph Coffy, Paris, France, assignor to Saint-Gobain-Desjonqueres, Levallois-Perret, France
Filed Jan. 30, 1975, Ser. No. 545,701
Claims priority, application France Sept. 24, 1974
Term of patent 3½ years
Int. Cl. D9—*01*
U.S. Cl. D9—118



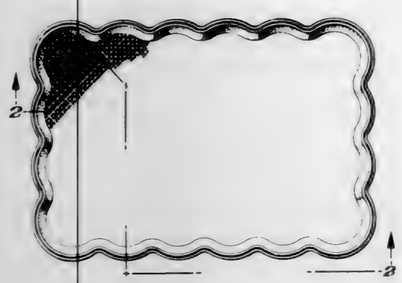
240,353
COMPARTMENTED FOOD CONTAINER
Richard Thomas Edwards, 13 Howard Drive, Middletown, N.Y. 10940
Filed Feb. 26, 1974, Ser. No. 445,944
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—183



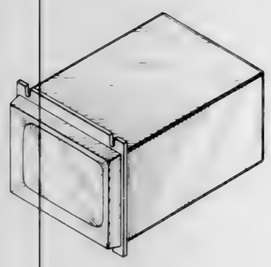
240,354
BOX FOR SMOKE DETECTORS
William Finkelstein, Baltimore, Md., assignor to Universal Security Instruments, Inc., Baltimore, Md.
Filed Apr. 2, 1974, Ser. No. 457,162
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—197



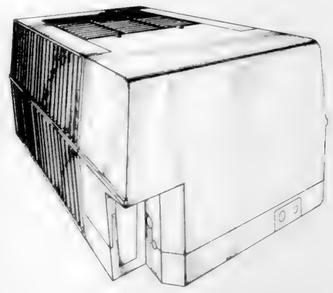
240,355
PACKAGING TRAY FOR CANS OR THE LIKE
Gilbert R. Chadbourne, Oakland, Maine, assignor to Keyes Fibre Company
Filed Jan. 13, 1975, Ser. No. 540,690
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



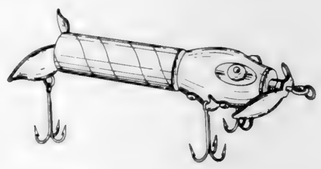
240,356
CATHODE RAY OSCILLOSCOPE OR THE LIKE
Richard A. Johnson, 124 W. Washington St., and Douglas E. Scott, 1225 Idlewild Drive, both of Round Lake, Ill. 60073
Filed Jan. 16, 1975, Ser. No. 541,550
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—76



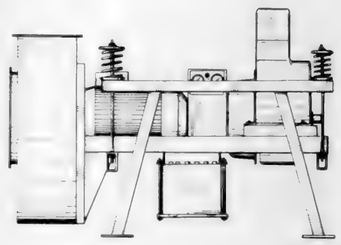
240,357
CASING FOR REFRIGERATION SYSTEM CONDENSING UNITS OR THE LIKE
Walter W. Hoyle and Richmond S. Hayes, Jr., Fayetteville, and Curtis L. Tobin, Chittenango, N.N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Jan. 4, 1974, Ser. No. 430,806
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139



240,358
FISHING LURE
Nay E. Cruise, Box 324, Cassville, Mo. 65625
Filed Oct. 20, 1975, Ser. No. 623,668
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



240,359
FAN UNIT FOR PUBLIC SHELTERS
Matti Purhonen and Launo Laakkonen, Helsinki, Finland, assignors to Temet Oy, Helsinki, Finland
Filed Aug. 14, 1973, Ser. No. 388,167
Claims priority, application Finland Feb. 16, 1973
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—162



240,360
ACOUSTIC COUPLED REMOTE DATA ENTRY TERMINAL OR SIMILAR ARTICLE
George E. Chadima, Jr., Cedar Rapids, and Robert A. Bruce, Marion, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa
Filed Aug. 21, 1974, Ser. No. 499,210
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



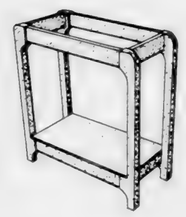
240,361
DICTATING MACHINE
Rebertus van de Poel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation-in-part of abandoned design application Ser. No. 317,951, Dec. 26, 1972. This application July 22, 1974, Ser. No. 490,726
Claims priority, application Switzerland June 30, 1972
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



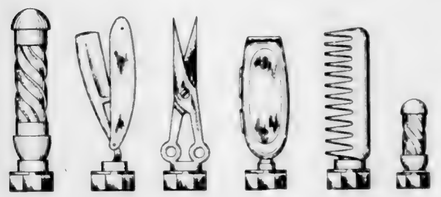
240,362
LINK CHAIN SUPPORT POST
Michael T. Russo, Bloomfield Hills, Mich. (1805 Larchwood St., Troy, Mich. 48084)
Filed May 20, 1974, Ser. No. 471,404
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—78



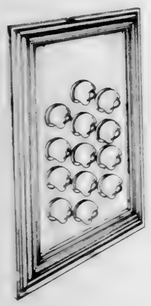
240,363
AQUARIUM STAND
Leslie J. Weigel, Cincinnati, Ohio, and Elmer A. Wolfzorn, Fort Thomas, Ky., assignors to Manual Arts Furniture Company, Cincinnati, Ohio
Filed Apr. 4, 1975, Ser. No. 565,268
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D30—12



240,364
SET OF CHESSMEN
Amleto Ghelli, Montclair, N.J. (6 Magnolia St., Belleville, N.J. 07019)
Filed Feb. 25, 1974, Ser. No. 445,354
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CH



240,365
TEAM STANDING DISPLAY
Eva J. Bennett, 3843 Treeline Drive, Dallas, Tex. 75224
Filed Mar. 7, 1974, Ser. No. 448,831
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D34—5 MM



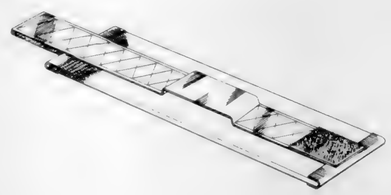
240,366
GOLF PUTTER HEAD
Raymon W. Cook, San Antonio, Tex., assignor to Ray Cook Golf Putters, Inc.
Continuation of design applications Ser. No. 293,529 and Ser. No. 293,530, both Sept. 29, 1972, and Ser. No. 343,390, Mar. 21, 1973. This application June 14, 1974, Ser. No. 479,458
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



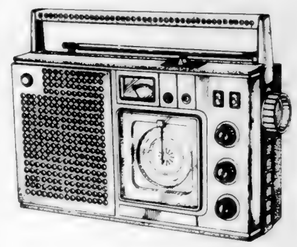
240,367
HANDLE GRIPPING SLEEVE FOR A TENNIS RACKET OR THE LIKE
James R. Cope, 10500 Cherokee Lane, Leawood, Kans. 66108
Filed Sept. 4, 1974, Ser. No. 503,174
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST



240,368
WRISTWATCH STRAP
Dennis K. Button, 143 W. Powers Circle, 205, Littleton, Colo. 80120
Filed Nov. 7, 1974, Ser. No. 521,563
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D45—4 E



240,369
RADIO RECEIVER
Ken Kawamura, Ibaragi, Osaka, and Kunio Hoshino, Kadoma, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Oct. 17, 1974, Ser. No. 515,634
Claims priority, application Japan May 11, 1974
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF JUNE, 1976

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See*—
Cremer, Charles W.; Eastman, James E.; and Schanefelt, Robert V., 3,966,990.
A.G.S. Food System Inc.: *See*—
McGuckian, Ambrose T., 3,966,980.
A. H. Robins Company, Incorporated: *See*—
Cale, Albert Duncan, Jr.; and Leonard, Charles Arthur, 3,966,957.
Lerner, Irwin S., 3,965,891.
A. Nattermann & Cie GmbH: *See*—
Baganz, Horst; and May, Hans-Joachim, 3,966,757.
A-Tech, Inc.: *See*—
Anderson, Richard G., 3,967,197.
Abbe, Gunter; Eppe, Rudolf; Ettelbruck, Rudiger; Pfeifer, Josef; and Schnall, Gunther, to AGFA-Gevaert, A.G. Apparatus for manipulating finished reproductions in copying machines. 3,966,194, Cl. 271-186.000.
Abbott Laboratories: *See*—
Carter, George W., 3,966,944.
D'Alo, Herbert Fred, 3,965,946.
Prasad, Raj Nandan; and Stein, Herman Hal, 3,966,917.
Redmer, Wilbert; Rolin, Kenneth; and Nittel, Herman, 3,966,038.
Abe, Hidetoshi: *See*—
Toriyama, Kazuhisa; Abe, Hidetoshi; Nakano, Fumio; Murao, Kenji; and Sato, Mikio, 3,966,631.
Abel, Heinz; Dobinson, Bryan; Green, George Edward; Harris, Melvin; Stark, Bernard Peter; and Winterbottom, Kenneth, to Ciba-Geigy Corporation. Modifying textiles and fibers. 3,967,041, Cl. 428-419.000.
Abex Corporation: *See*—
Thurston, David L., 3,965,921.
Abrams, Ellis; and Barber, Sidney, to E. F. Houghton and Company. Aqueous base post pickling and cold rolling fluid. 3,965,712, Cl. 72-42.000.
Abrams, Hyman. Holder for containers and napkins. 3,966,103, Cl. 224-48.00R.
Abramson, Daniel J. Multi-digital surgical scrub brush. 3,966,335, Cl. 401-10.000.
Abularach, Antonio Dabura. Envelope sealing apparatus for cold process tire retreading. 3,966,535, Cl. 156-394.000.
Acevedo, John: *See*—
Cooper, Herbert Warren; Acevedo, John; and deKlerk, John, 3,967,221.
Acher, Aureliu J.: *See*—
Mazur, Yehuda; Freeman, Dalia; and Acher, Aureliu J., 3,966,777.
Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED: *See*—
Glaesener, Ernest, 3,966,173.
Adachi, Takeshi: *See*—
Suzuki, Shigeru; and Adachi, Takeshi, 3,965,790.
Adachi, Tomio: *See*—
Tanabe, Takashi; and Adachi, Tomio, 3,967,025.
Adams, Clyde C. Freeze refining method. 3,966,445, Cl. 62-58.000.
Adams, Guy, to Solitron Devices, Inc. Solid state voltage regulator. 3,967,186, Cl. 322-28.000.
Adams, Herbert J. F.; and Takman, Bertil H., to Astra Pharmaceutical Products, Inc. Synergistic local anesthetic compositions. 3,966,934, Cl. 424-251.000.
Adamski, Gunter, to Rollei-Werke Franke & Heidecke. Electrically controlled photographic camera. 3,967,298, Cl. 354-153.000.
Addor, Roger Williams, to American Cyanamid Company. Insecticidal and acaricidal, pyrethroid compounds. 3,966,959, Cl. 424-304.000.
Addressograph Multigraph Corporation: *See*—
Patzke, Robert C., 3,966,321.
Scholten, Frank L.; and Kubinak, Ronald A., 3,967,177.
Adey, Anthony John, to C.A.V. Limited. Frequency to voltage converters. 3,965,877, Cl. 123-139.00E.
Advance Manufacturing Corporation: *See*—
LaBoda, John Albert, 3,966,131.
AEG-Elotherm G.m.b.H.: *See*—
Seulen, Gerhard; Reinke, Friedhelm; and Stengel, Edgar, 3,967,089.
Aeroquip Corporation: *See*—
Easton, Richard L.; and Buseth, Richard A., 3,965,947.
Thiessen, Leo K., 3,966,237.
AGA Aktiebolag: *See*—
Wiklund, Klas Rudolf, 3,966,328.
Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Weber, Philippe, 3,965,725.
Agency of Industrial Science & Technology: *See*—
Hamasaki, Masanobu; and Tateiwa, Fumikazu, 3,967,090.
Mukushi, Toshimi; Izumi, Kenkichi; Takahashi, Sankichi; Okazima, Yoshiaki; Sawa, Toshio; and Komai, Mithumasa, 3,966,562.
AGFA-Gevaert, A.G.: *See*—
Abbe, Gunter; Eppe, Rudolf; Ettelbruck, Rudiger; Pfeifer, Josef; and Schnall, Gunther, 3,966,194.
Becker, Manfred, 3,966,476.
Pfeifer, Josef; and Schnall, Gunther, 3,966,316.
Wagensonner, Eduard; and Stenzenberger, Volkmar, 3,966,312.
AGFA-GEVAERT N.V.: *See*—
Van Poucke, Raphael Karel; and Baeyens, Freddy Carolus, 3,966,475.
Ahmad, Mohammad, to Fisons Limited. Filter in sample drawing device. 3,966,606, Cl. 210-136.000.
Ahrweiler, Karl-Heinz; Appenzeller, Valentin; Quoos, Kurt; and Kusters, Eduard, to Eduard Kuesters Maschinenfabrik. Roller chains for a continuous press. 3,965,769, Cl. 74-245.00R.
Aichinger, Gerd: *See*—
Reisdorff, Josef Helmut; Aichinger, Gerd; Haberkorn, Axel; Kolling, Heinrich; and Kranz, Eckart, 3,966,725.
Ainsworth, Phillis. Bedding assembly. 3,965,504, Cl. 5-334.00C.
Airco, Inc.: *See*—
Linhardt, Hans D., 3,966,362.
Airway Industries Inc.: *See*—
Davis, Michael, 3,965,706.
Airwick Industries, Inc.: *See*—
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Albright, Jack W., to Carpenter Chemical Company. Method of formulating solution containing dispersed nitrocellulose. 3,966,483, Cl. 106-171.000.
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Allen, Arthur A. Fish hook tier. 3,965,605, Cl. 43-1.000.
Allen, Clifford Edwin, to ISCA Electronics Limited. Weighing apparatus. 3,966,000, Cl. 177-1.000.
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Almaula, Bipin C.; and Reif, Philip G., to United States of America, Army. Process of preparing a secondary electron emissive coating on the interior walls of a microchannel plate. 3,967,001, Cl. 427-78.000.
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Andre, Jacques Maurice Jules; van Thillo, Hugo Johannes; Lammers, Rene Odon; Debus, Henri Robert; and Cahen, Raymond Marc, to Labofina S.A. Process for preparing spheroidal alumina particles. 3,966,996, Cl. 423-626.000.
Andree, Hans; Koppensteiner, Gunther; and Stracke, Heinz-Ulrich, to Henkel & Cie G.m.b.H. N,N'-disubstituted thioureas, their process of production and use as antimicrobial agents. 3,966,968, Cl. 424-322.000.
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Aspers, Arthur J.; and Finkelston, Robert J., to Standard Pressed Steel Co. Multi-stage tightening system. 3,965,778, Cl. 81-52.40R.
Aston, Jack Ralph; and Whitehouse, Ronald, to Joseph Gillott & Sons Limited. Pencil sharpeners. 3,965,949, Cl. 144-28.710.
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Baganz, Horst; and May, Hans-Joachim, to A. Nattermann & Cie GmbH. Imidazoline derivatives and processes for the production thereof. 3,966,757, Cl. 260-309.600.

Bagg, Greville Euan Gordon; and Cracknell, Robert Ian, to National Research Development Corporation. Apparatus for the measurement of viscosity. 3,965,722, Cl. 73-59.000.

Baile, Clifton A.; Gallagher, Gregory; McLaughlin, Carol Lynn; and Webb, Robert Lee, to SmithKline Corporation. Methods and compositions for increasing feed intake of animals. 3,966,958, Cl. 424-300.000.

Bailey, Donald Leroy: *See—*
Johnson, Gordon Carlton; Metzler, Richard Bruce; and Bailey, Donald Leroy, 3,967,030.

Bailey, Edward A.; and Ordway, James F., to Joy Manufacturing Company. Drill steel. 3,966,341, Cl. 403-343.000.

Bailey Meters & Controls Ltd.: *See—*
deVial, Raymond Michael, 3,965,920.

Baker, Bill; and Patterson, Frank. Newsprint rewinder. 3,966,135, Cl. 242-58.100.

Baker, Don R.; Walker, Francis H.; and Letchworth, Peter E., to Stauffer Chemical Company. Insect repellent compounds. 3,966,806, Cl. 260-558.00R.

Baker, Don R.; Walker, Francis H.; and Letchworth, Peter E., to Stauffer Chemical Company. Insect repellent compounds. 3,966,809, Cl. 260-559.00R.

Baker, Edward D., to N.P.I. Corporation. Sliding patty griller. 3,965,807, Cl. 99-375.000.

Baker, Larry K. Reduced liquid consumption cleaning apparatus. 3,965,494, Cl. 4-145.000.

Bakker, Lubertus, to Meyers, Joseph P., a part interest. Method of preparing and isolating metal hydrocarbonyls and recovery of pure metals therefrom. 3,966,886, Cl. 423-417.000.

Balassa, Leslie L., to Lescarden Ltd. Method of treating degenerative joint afflictions. 3,966,908, Cl. 424-95.000.

Balban, Morton S.; and Larson, Doublas A., to Eaton Corporation. Acceleration change sensor. 3,967,135, Cl. 307-121.000.

Ball Corporation: *See—*
Dollar, David L., 3,966,505.

Ballman, Richard L.; Lea, Kenneth R.; Nunning, Walter J.; and Southern, John H., to Monsanto Company. Polyurethane fiber uniformity. 3,966,866, Cl. 264-171.000.

Ballu, Vincent Pierre Marie, to Tecnoma. Manually operated manportable sprayer. 3,966,092, Cl. 222-175.000.

Balzer, Gerry Christian, to Bell Telephone Laboratories, Incorporated. Call denial circuit for key telephone systems. 3,967,076, Cl. 179-99.000.

Bane, John D.: *See—*
Beam, John A.; and Bane, John D., 3,966,221.

Banks, Geoffrey Talbot: *See—*
Chain, Ernst Boris; Buck, Kenneth William; Darbyshire, Joan Elizabeth; Banks, Geoffrey Talbot; Himmelweit, Fred; and Ratti, Giulio, 3,966,707.

Banks, Philip George; and Pringle, William, to British Arkady Company Limited, The. Treatment of soya. 3,966,992, Cl. 426-583.000.

Banner, Kurt A., to Mekantransport AB. Device for the removal of maculature or similar. 3,966,545, Cl. 162-264.000.

Barber-Greene Company: *See—*
Day, Earl G., 3,967,271.

Barber, Sidney: *See—*
Abrams, Ellis; and Barber, Sidney, 3,965,712.

Barber, Theodore C. Leaf cutter bee larvae extracting device. 3,965,509, Cl. 6-12.00A.

Bardot, Pierre, to Sucmanu. Conveyors. 3,965,823, Cl. 104-91.000.

Bargain, Michel, to Rhone-Poulenc Industries. Compositions containing silanes possessing imide groups. 3,966,531, Cl. 156-329.000.

Barger, Frank L.: *See—*
Harrison, Charles W.; Mead, Theodore C.; Moreland, Howard R.; and Barger, Frank L., 3,965,723.

Barnes-Hind Pharmaceuticals, Inc.: *See—*
Nite, Rebecca F., 3,966,905.

Barnhardt, J. David, to Southern Webbing Mills. Warp knitted compression bandage fabric. 3,965,703, Cl. 66-193.000.

Barracudaverken Aktiebolag: *See—*
Dalblom, Gunnar, 3,967,026.

Barrett, James Henry; and Clemens, David Henry, to Rohm and Haas Company. Method of decolorizing sugar solutions with hybrid ion exchange resins. 3,966,489, Cl. 127-46.00A.

Barrus, Donald Martin, to Combustion Engineering, Inc. Scram release for a control rod. 3,965,757, Cl. 74-30.000.

Barry, Gerald E.: *See—*
Kanengieter, Glenn G.; and Barry, Gerald E., 3,965,660.

Barth, John W., to Allis-Chalmers Corporation. Mechanism for loader bucket or forklift mast on a material handling vehicle. 3,966,070, Cl. 214-776.000.

Barth, Wayne E., to Pfizer Inc. 4-(Tetrazol-5-yl)-Δ^3-cephem compounds. 3,966,719, Cl. 260-243.00C.

Bartlett, James E.: *See—*
Gelin, Robert J.; and Bartlett, James E., 3,966,132.

Barton, David W., to Ford Motor Company. Heater tube arrangements. 3,965,976, Cl. 165-175.000.

Basa, Kenneth B.: *See—*
Levinson, Arthur A.; and Basa, Kenneth B., 3,966,977.

BASF Aktiengesellschaft: *See—*
Aquila, Werner; Himmele, Walter; Fliege, Werner; and Siegel, Hardo, 3,966,827.
Diem, Hans; Dudeck, Christian; and Lehmenn, Gunter, 3,966,727.
Fischer, Adolf, deceased, 3,966,451.
Fischer, Adolf, deceased, 3,966,452.
Kovacs, Jenoe; Jung, Hans; Marx, Matthias; Spoor, Herbert; and Roschke, Wilfried, 3,966,655.
Langenfelder, Hans; Daubach, Ewald; and Belde, Horst, 3,966,488.
Mangold, Dietrich; Zeeh, Bernd; and Pommer, Ernst-Heinrich, 3,966,750.
Nebel, Hans-Joachim, 3,966,402.

BASF Wyandotte Corporation: *See—*
Patton, John T., Jr.; Pizzini, Louis C.; Demou, John G.; and Ramlow, Gerhard G., 3,966,521.

Basili, Pietro: *See—*
Rossi, Umberto; and Basili, Pietro, 3,967,205.

Bathellier, Andre; and Germain, Michel, to Commissariat a l'Energie Atomique. Method of preparation of hydroxylamine formiate. 3,966,804, Cl. 260-542.000.

Batz, James E., to Northern Illinois Gas Company. Data transmission system including an RF transponder for generating a broad spectrum of intelligence bearing sidebands. 3,967,202, Cl. 325-31.000.

Bauer, Benjamin B., to CBS Inc. Logic for matrix systems for reproducing quadraphonic sound. 3,967,063, Cl. 179-1.0GQ.

Bauer, Fritz: *See—*
Stadelmann, Ludwig; and Bauer, Fritz, 3,966,182.

Bauer, Ronald S.: *See—*
Jenkins, John W.; Bauer, Ronald S.; and De La Mare, Harold E., 3,966,636.

Bauer, Werner R., to Robertshaw Controls Company. Electrical switch construction. 3,967,086, Cl. 200-328.000.

Bauerle, Richard D.; Pitt, William A.; and White, Mervyn A., to General Electric Company. Pipe restraint device. 3,965,938, Cl. 138-107.000.

Baxter Laboratories, Inc.: *See—*
Cayle, Theodore; and Moskowitz, Gerard J., 3,966,543.
Marcus, Byron E., 3,966,333.
Osiadacz, William J.; and Nagy, Alexander J., 3,965,536.
Soodak, Charles; and Macemon, James H., 3,967,113.

Baxter, Lawson J., to Armco Steel Corporation. Apparatus for producing a uniform metallic coating on wire. 3,965,857, Cl. 118-405.000.

Bayer Aktiengesellschaft: *See—*
Beck, Gunther, 3,966,812.
Bleck, Wolf-Eckhard; Nickel, Horst; and Schundehutte, Karl-Heinz, 3,966,703.
Bossert, Friedrich; and Vater, Wulf, 3,966,948.
Christoph, Geert; Radlmann, Eduard; Nischk, Gunther; Bruns, Ludwig; and Schnuchel, Gunther, 3,966,835.
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; and Kreuder, Hans Joachim, 3,966,836.
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lother; Behrenz, Wolfgang; Hammann, Ingeborg; Stendel, Wilhelm; and Homeyer, Bernhard, 3,966,730.
Immel, Otto; and Schwarz, Hans-Helmut, 3,966,712.
Kleiner, Frank Gerald; and Muller, Karl Heinz, 3,966,651.
Konig, Hans-Bodo; Metzger, Karl Georg; and Schrock, Wilfried, 3,966,709.
Krimm, Heinrich; Schnell, Hermann; and Schwarz, Hans-Helmut, 3,966,785.
Kurz, Jurgen; Kolling, Heinrich; and Federmann, Manfred, 3,966,964.
Merten, Rudolf; Lewalter, Jurgen; and Zecher, Wilfried, 3,966,683.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,966,767.
Reisdorff, Josef Helmut; Aichinger, Gerd; Haberkorn, Axel; Kolling, Heinrich; and Kranz, Eckart, 3,966,725.
Riebel, Hans-Jochem; and Hammann, Ingeborg, 3,966,850.
Riebel, Hans-Jochem; Hammann, Ingeborg; and Stendel, Wilhelm, 3,966,920.
Westphal, Kurt; Meiser, Werner; Eue, Ludwig; and Hack, Helmuth, 3,966,715.
Witte, Josef; and Lehnert, Gunther, 3,966,637.

Baylac, Bernard; Merckel, Gerard; and Meunier, Pierre, to Commissariat a l'Energie Atomique. Amplifying integrated circuit in the MOS technology. 3,967,208, Cl. 330-35.000.

BBC Brown Boveri & Company Limited: *See—*
Iten, Paul D., 3,966,324.
Zboril, Josef, 3,966,511.

Beach, David Easton, to Eastman Kodak Company. Piezoelectric crystal firing spring and mount. 3,967,142, Cl. 310-8.300.

Beam Guidance Inc.: *See—*
Goubau, George E. J., 3,967,276.

Beam, John A.; and Bane, John D., to Hoechst Fibers Incorporated. Yarn shipping rack assembly. 3,966,221, Cl. 280-79.300.

Bean, Anthony J., to Sun Chemical Corporation. Photopolymerization co-initiator systems. 3,966,573, Cl. 204-159.230.

Bean, Lloyd F., to Xerox Corporation. Multiple layer migration imaging system. 3,966,465, Cl. 96-1.0PS.

Bear Co. Ltd: *See—*
Kodera, Yoshinobu, 3,965,671.

Beard, Franklin. Golf club bending machine for setting the loft and lie angles of the club head. 3,965,714, Cl. 72-32.000.

Beath, Laurence R.; and Vessie, Alexander M., to Price Company Limited, The. Frozen fish package. 3,967,024, Cl. 428-155.000.

Beaty, William Ralph, Jr., to Continental Oil Company. Catalytic hydrodesulfurization. 3,966,588, Cl. 208-216.000.

Beaudin, Patrick L. Air duct made from sheet metal stamping. 3,965,933, Cl. 137-610.000.

Beaulieu, Maurice. Footwear and attachment assembly for snowshoeing. 3,965,584, Cl. 36-122.000.

Beaver, Ruby C.; Clasen, Theodor; Henning, Wolfgang; and Johnson, Emil S., to Vetco Offshore Industries. Method for flaw location in a magnetizable pipeline by use of magnetic markers positioned outside of said pipeline. 3,967,194, Cl. 324-37.000.

BEC Products, Inc.: *See—*
Dageford, Ernest C., 3,967,281.

Beck, Gary R.: *See—*
Intille, George M.; and Beck, Gary R., 3,966,798.

Beck, Gunther, to Bayer Aktiengesellschaft. Trichloroethylidene-bis-(isocyanide-dichloride) and process for making same. 3,966,812, Cl. 260-566.00D.

Becker, Kenneth W.; Baczewski, Klemens C.; and Klein, Donald J., to Dravo Corporation. Process and apparatus for treating oleaginous seed material. 3,966,982, Cl. 426-430.000.

Becker, Manfred, to AGFA-Gevaert, A.G. Spectrally sensitized silver halide emulsion containing more than 50% of the grains with ripening nuclei in cavities. 3,966,476, Cl. 96-107.000.

Becker, Theo; Hilscher, Eduard; and Ott, Karl-Heinz, to Hoechst Aktiengesellschaft. Flexible container for wine and fruit-juice. 3,965,953, Cl. 150-3.000.

Becton, Dickinson and Company: *See—*
Shotkin, Robert, 3,965,848.

Beduchaud, Michel; and Ramadier, Andre, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Device for loading and unloading a sheet on a rotating drum. 3,966,187, Cl. 271-3.000.

Beecham Group Limited: *See—*
Brain, Edward George; and Osborne, Neal Frederick, 3,966,718.
Chain, Ernst Boris; Buck, Kenneth William; Darbyshire, Joan Elizabeth; Banks, Geoffrey Talbot; Himmelweit, Fred; and Ratti, Giulio, 3,966,707.
Forward, Geoffrey Charles; Duke, Susan Ann; and Bell, Melissa Anne, 3,966,863.

Beeferman, Dennis: *See—*
Esemplare, Pascal E.; and Beeferman, Dennis, 3,967,014.

Beerwerth, Wolfgang; Geppert, Albrecht; Gesing, Horst; and Schimmer, Rigobert, to Licentia Patent-Verwaltungs-G.m.b.H. Method for producing diffused contacted and surface passivated semiconductor chips for semiconductor devices. 3,965,567, Cl. 29-574.000.

Begany, Albert J.: *See—*
Sellstedt, John H.; Guinosso, Charles J.; and Begany, Albert J., 3,966,965.

Behn, Robert M.: *See—*
Weir, Henry John, 3,965,831.

Behn, Sheldon P.: *See—*
Weir, Henry John, 3,965,831.

Behrenz, Wolfgang: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lother; Behrenz, Wolfgang; Hammann, Ingeborg; Stendel, Wilhelm; and Homeyer, Bernhard, 3,966,730.

Behringwerke Aktiengesellschaft: *See—*
Beltz, Heinrich, 3,965,864.
Schultze, Hermann E.; and Schwick, Hans Gerhard, 3,966,906.

Beiersdorf Aktiengesellschaft: *See—*
Muller, Heinz; Szonn, Bodo; Jauchen, Peter; and Schulze, Rolf, 3,967,028.

Beierwaltes, Richard R. Compressor and air cooling system employing same. 3,965,697, Cl. 62-402.000.

Bekker, Gijsbertus A.: *See—*
Groenendaal, Willem; Taubert, Friedrich C.; Naber, Jaap E.; and Bekker, Gijsbertus A., 3,966,879.

Belde, Horst: *See—*
Langenfelder, Hans; Daubach, Ewald; and Belde, Horst, 3,966,488.

Belisle, Adelard J., to Dual Manufacturing and Engineering Incorporated. Rocker spring unit. 3,966,251, Cl. 297-267.000.

Belke, Carl F., to Belke, David P., a part interest. Bicycle lock. 3,965,709, Cl. 70-227.000.

Belke, David P.: *See—*
Belke, Carl F., 3,965,709.

Bell, Arthur Milton. Lubricant for fitting and trial mounting of prosthodontic appliances. 3,966,925, Cl. 424-240.000.

Bell & Howell Company: *See—*
Grant, Frederic F., 3,966,190.
Hadzimahalis, Theodore M., 3,965,529.
Spencer, William H., 3,967,188.
Stocker, Lester H., 3,965,644.
Woodier, James G., 3,966,313.

Bell, Melissa Anne: *See—*
Forward, Geoffrey Charles; Duke, Susan Ann; and Bell, Melissa Anne, 3,966,863.

Bell Telephone Laboratories, Incorporated: *See—*
Anderson, Harold Peter; Lesser, George Albert; Lukas, Fredric; Maxon, Rodney Robert; and Viamour, James Hall, 3,967,073.
Balzer, Gerry Christian, 3,967,076.
Dimmick, James Owen; Lewis, Theras Gordon; O'Neill, John Francis; and Fabiano, Lucian Philip, Jr., 3,967,072.
House, Frederick Glenn, 3,967,246.
Judice, Charles Norris, 3,967,052.
Knowlton, Kenneth Charles, 3,967,273.
Krambeck, Robert Harold, 3,967,136.
Mathes, Robert C., 3,967,066.
Miller, Stewart Edward, 3,966,446.
Ngo, Peter Dinh-Tuan, 3,967,267.
O'Sullivan, Thomas Denis, 3,966,494.
Potter, Ralph K., 3,967,067.
Schillo, Robert Frederick, 3,967,074.
Subramanian, Mahadevan, 3,967,060.

Bellak, Johannes G. Laser reactor. 3,967,215, Cl. 331-94.50R.

Bellarbre, Raymond; and Legavre, Marcel, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Automatic play take-up journal bushings. 3,966,276, Cl. 308-238.000.

Beltz, Heinrich, to Behringwerke Aktiengesellschaft. Automatic device for the maintenance of small animals. 3,965,864, Cl. 119-18.000.

Bemis Manufacturing Company: *See—*
Bemis, Richard A., 3,965,493.

Bemis, Richard A., to Bemis Manufacturing Company. Water closet tank. 3,965,493, Cl. 4-18.00R.

Bencic, Robert S., to Eaton Corporation. Carbonated beverage dispenser having diffuser assembly. 3,966,091, Cl. 222-129.100.

Bender, Louis, to Brenner and Bender, Inc. Specimen collector and holder. 3,965,888, Cl. 128-2.00W.

Bendler, Hellmut: *See—*
Gawlick, Heinz; Brede, Uwe; and Bendler, Hellmut, 3,967,141.

Benjamin, Milton L., to Erickson Tool Company. Spade drill. 3,966,350, Cl. 408-233.000.

Bennett, Allan Igo, to Westinghouse Electric Corporation. Method and apparatus for measuring the void content of a solid dielectric. 3,967,196, Cl. 324-54.000.

Bennett, Derek J.; and Bullen, Leslie G., to Bunker Ramo Corporation. Precise navigation buoy. 3,965,512, Cl. 9-8.00R.

Bennett, Duane C.: *See—*
Schneller, Joseph W.; Bennett, Duane C.; and Matiacio, George P., 3,967,016.

Bennett, John D., to Sun Oil Company. Arctic transport and marine operation system. 3,965,835, Cl. 114-42.000.

Bennon, Saul; and Albright, William D., to Westinghouse Electric Corporation. Electrical inductive apparatus having magnetic shielding cores and a gapped main core structure. 3,967,226, Cl. 336-84.000.

Benson Mfg. Corporation: *See—*
Littman, Bruce A., 3,966,121.

Benton, Ronald E., to Westinghouse Electric Corporation. Adaptor for transformer bushing terminals. 3,966,294, Cl. 339-153.000.

Berger, Herbert; Rhomberg, Alfred; Stach, Kurt; Vomel, Wolfgang; and Sauer, Winfriede, to Boehringer Mannheim G.m.b.H. Ortho fused cycloalkano-4-quinolone-3-carboxylic acid derivatives. 3,966,743, Cl. 260-287.0CF.

Berghof, Hans-Joachim; Hacklander, Hans-Gerd; and Klingelhofer, Gerd, to Keiper KG. Vehicle seat with tiltable backrest. 3,966,253, Cl. 297-367.000.

Bergstrand, Carl Gunnar, to Allmanna Svenska Elektriska Aktiebolaget. Apparatus for electroinductively detecting discontinuities below the surface of a metal object. 3,967,193, Cl. 324-37.000.

Beriger, Ernst; Kristiansen, Odd; Rufenacht, Kurt; and Bader, Jorg, deceased (by Bader-Ludwig, Dagmar, legal representative), to Ciba-Geigy Corporation. Certain pesticidal phosphorus containing amidines. 3,966,921, Cl. 424-211.000.

Berman, Paul A.: *See—*
Yasui, Robert K.; and Berman, Paul A., 3,966,499.

Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, to American Cyanamid Company. 2-Substituted-3,4-epoxycyclopentan-1-ones, and 2-substituted-3,4-epoxycyclopentan-1-ols. 3,966,773, Cl. 260-348.00C.

Bernardi, Luigi; Bosisio, Germano; and Fregnan, Gian Carlo, to Societa' Farmaceutici Italia S.p.A. Pyrrole-carboxylic acids lumilysergol esters. 3,966,739, Cl. 260-285.500.

Bernardis, Francesco; and Bisone, Dario, to Ing. C. Olivetti & C., S.p.A. Inked ribbon feed arrangement. 3,966,036, Cl. 197-82.000.

Bernsee, Gerhard, to Jenaer Glaswerk Schott & Gen. Light conducting fibers of quartz glass. 3,966,300, Cl. 350-96.00B.

Berrange, Aubrey Ralph, to South African Inventions Development Corporation. Compactor. 3,966,346, Cl. 404-124.000.

Berry, Peter F.: *See—*
Ashe, John B.; Berry, Peter F.; and Hall, James D., 3,967,120.
Ashe, John B.; Berry, Peter F.; and Hall, James D., 3,967,122.

Berry, Thomas: *See—*
Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, 3,965,547.

Berryhill, Robert A., to Austin-Berryhill, Inc. Air washer piping. 3,965,690, Cl. 62-121.000.

Bert, George J.; Stehle, Edward J.; and Groth, Herbert D. Power transmission unit. 3,965,773, Cl. 74-804.000.

Bertram, Wallace H., to Goode Products, Inc. Folding cot. 3,965,502, Cl. 5-111.000.

Berzanske, Lawrence W. Rotary, positive displacement progressing cavity device. 3,966,371, Cl. 418-197.000.

Beson, John, to McEvoy Oilfield Equipment Co. Control line exiting coupling. 3,965,977, Cl. 166-88.000.

Besser, Roy: *See—*
Norton, Dale H., 3,966,085.

Bethlehem Steel Corporation: *See—*
Townsend, Herbert E., Jr.; Horton, James B.; and Woodyatt, Louis R., 3,966,421.

Beton, Roy Victor: *See—*
Andrews, John Frederick Collett; Beton, Roy Victor; Leavens, Kenneth David; and Scott, Gordon John, 3,966,060.

Beyer, Fritz: *See—*
Scharrer, Werner; and Beyer, Fritz, 3,967,167.

Beyer-Olsen, Knut; and Steffenssen, Otto. Machines for rotational moulding of plastic articles with article removal means. 3,966,386, Cl. 425-436.00R.

Beyl, Jean Joseph Alfred. Ski binding with incorporated boot supporting pivoting plate. 3,966,218, Cl. 280-618.000.

Bharucha, Kekhusroo R.; Cross, Charles K.; and Rubin, Leon J., to Canada Packers Limited. Curing of meat using organic nitrites. 3,966,974, Cl. 426-265.000.

Bickford, Richard A. Resistance type golf swing practice and exercise device. 3,966,203, Cl. 272-118.000.

Bier, Gerhard: *See—*
Frick, Siegmund; Gresser, Wilhelm; Meyer, Gunther; and Bier, Gerhard, 3,966,673.

Biffle, Morris S., to Dresser Industries, Inc. Method of sealing the annulus between a toolstring and casing head. 3,965,987, Cl. 166-315.000.

Big Dutchman (International) A.G.: *See—*
van den Berg, Christiaan, 3,966,049.

Bigelow-Sanford, Inc.: *See—*
Stunger, Edward R., 3,965,575.

Bindrum, Irmgard: *See—*
Brandt, Wilhelm; and Bindrum, Irmgard, 3,967,044.

Binger, Bernhard, to Zahnradfabrik Friedrichshafen AG. Compound steering system for endless-track vehicles. 3,966,005, Cl. 180-6.440.

Bingler, Donald J. Fishing lure. 3,965,606, Cl. 43-42.160.

Binninger, Clarence E. Methods for inducing parturition in cattle with certain intravenously-injected synthetic glucocorticoids. 3,966,927, Cl. 424-243.000.

Binns, Robert Eric, to Amchem Products, Inc. Zirconium rinse for phosphate coated metal surfaces. 3,966,502, Cl. 148-6.000.

Bio-Logics Products, Inc.: *See—*
McDermott, Clifton Eugene, 3,965,589.

Bio-Medical Sciences, Inc.: *See—*
Khattab, Ghazi; and Witonsky, Robert J., 3,966,414.

Bird, Arnett L.: *See—*
Ludwig, Peter J.; and Bird, Arnett L., 3,966,842.

Bird Machine Company, Inc.: *See—*
Gibbs, Orville J., 3,966,610.
Gibbs, Orville J.; and Roos, John T., 3,966,611.

Birke, Walter; von der Eltz, Hans-Ulrich; and Schon, Franz, to Hoechst Aktiengesellschaft. Process and device for the irregular dyeing of textiles. 3,966,400, Cl. 8-82.000.

Bisone, Dario: *See—*
Bernardis, Francesco; and Bisone, Dario, 3,966,036.

Bittel, Patricia A., to Weatherchem Corporation. End closure with resealable tab. 3,966,080, Cl. 220-269.000.

Bittensky, Joel S.; Dillingham, Edward W.; Menzies, William R., III; and Pratt, Roy E., to Texaco Inc. Method for controlling regenerator temperature in a fluidized cracking process. 3,966,587, Cl. 208-164.000.

Biviator S.A.: *See—*
Strutz, Ernst, 3,967,124.

Bizerba-Werke Wilhelm Kraut K.G.: *See—*
Muller, Ernst; and Maurer, Albrecht, 3,965,783.

BJ-Hughes Inc.: *See—*
Kelly, Robert R., 3,966,054.

Black, Edgar R.; Montagna, Angelo A.; and Swift, Harold E., to Gulf Research & Development Company. Hydrocarbon conversion catalyst. 3,966,642, Cl. 252-455.00R.

Blair, Bryce Wilson: *See—*
Lockard, Joseph Larue; and Blair, Bryce Wilson, 3,967,085.

Blake, Charles William, to McCorquodale Colour Display Limited. Method for applying liquid to a substrate. 3,967,009, Cl. 427-256.000.

Blaupunkt-Werke GmbH: *See—*
Hansen, Jens, 3,967,204.

Bleck, Wolf-Eckhard; Nickel, Horst; and Schundehutte, Karl-Heinz, to Bayer Aktiengesellschaft. Asymmetrical frisazo dyestuffs derived from diazotized 2,7-diamino-carbazole. 3,966,703, Cl. 260-146.00R.

Bleiberg, Melvin L.: *See—*
Foulds, Ronald B.; Kasberg, Alvin H.; Puechl, Karl H.; and Bleiberg, Melvin L., 3,966,550.

Bloomfield, Rodger E., to General Motors Corporation. Catalytic converter having monolith with mica support means therefor. 3,966,419, Cl. 23-288.00F.

Blue, James W., to United States of America, National Aeronautics and Space Administration. Method of producing ^{123}I. 3,966,547, Cl. 176-11.000.

Blue Wing Corporation: *See—*
Rawlings, Robert M.; and Maher, Anthony Ambrose, 3,966,998.

Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Mages, Bernhard, 3,965,530.

Blumberg, Jonathan Mark, to Gec-Elliott Automation Limited. Methods and apparatus for controlling the propulsion of aquatic vessels incorporating such apparatus. 3,965,840, Cl. 114-144.00B.

Blunt, Geoffrey Vincent Dallow; and Hodges, Newton John, to Coal Industry (Patents) Limited. Cellular material. 3,966,653, Cl. 260-2.5EP.

Boarini, Edward J., to United States Gypsum Company. Beam-reinforced ceiling panels. 3,965,639, Cl. 52-629.000.

Boden, Ogden W. Locking device with combined wedging and spring action. 3,965,544, Cl. 24-136.00R.

Bodor, Nicolae S.; and Yuan, Sun-Shine, to Interx Research Corporation. Novel synthesis of optically active m-acyloxy-α-[(methylamino)methyl]benzyl alcohols, the pharmaceutically acceptable acid addition salts thereof and intermediate useful in the preparation thereof. 3,966,749, Cl. 260-295.00R.

Bodor, Nicolae S.: *See—*
Kaminski, James J.; and Bodor, Nicolae S., 3,966,796.

Boedecker, Steven M., to Kendall Company, The. Anti-reflux device. 3,965,900, Cl. 128-275.000.

Boehringer Ingelheim GmbH: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Traunecker, Werner, 3,966,814.

Boehringer Mannheim G.m.b.H.: *See—*
Berger, Herbert; Rhomberg, Alfred; Stach, Kurt; Vomel, Wolfgang; and Sauer, Winfriede, 3,966,743.
Kampe, Wolfgang; Fauland, Erich; Stach, Kurt; Stork, Harald; and Schmidt, Felix Helmut, 3,966,916.

Boeing Company, The: *See—*
Buehler, Walter E.; and Fitzsimmons, George W., 3,967,278.
Wiesner, Robert, 3,966,145.
Wittko, Joseph N.; Harding, David G.; Schneider, John J.; and Gonsalves, Joseph E., 3,966,147.

Bogart, James S.; and Wilcox, John M., to Federal-Mogul Corporation. Device for determining the size dash number of standard O-rings. 3,965,580, Cl. 33-143.00M.

Bohm, Bernhard: *See—*
Muller, Klaus; and Bohm, Bernhard, 3,966,548.

Bohner, Beat; Dawes, Dag; Meyer, Willy; Kristinsson, Haukur; and Rufenacht, Kurt, to Ciba-Geigy Corporation. Certain sulfonic acid esters. 3,966,754, Cl. 260-308.00R.

Boigk, Dieter G.: *See—*
Shelton, Lawrence S.; Golsch, Rudolf A. M.; and Boigk, Dieter G., 3,966,042.

Bokern, James F. Power supply means. 3,967,133, Cl. 307-10.00R.

Bolduc, Lee R. Cutting apparatus. 3,965,569, Cl. 30-29.500.

Boler, Leonard J., to Cherne Industrial, Inc. Multiple stage liquid cooling assembly. 3,966,859, Cl. 261-92.000.

Boltze, Karl-Heinz; Brendler, Otfried; Dell, Hans-Dieter; and Jacobi, Haireddin, to Troponwerke Dinklage & Company. [1-(p-Chlorobenzoyl)-5-methoxy-2-methyl-3-indole]acetoxyacetic acid and salts in treating inflammation. 3,966,956, Cl. 424-274.000.

Bombardier Limited: *See—*
Gowing, George A., 3,966,014.
Lessard, Normand, 3,966,181.

Bommer Spring Hinge Co. Inc.: *See—*
Frohlich, Peter E., 3,965,533.

Bonavent, Gerard; and Huvey, Michel, to Institut Francais du Petrole. Device for continuously manufacturing curved profiled members of plastic material reinforced with filaments. 3,966,388, Cl. 425-505.

Boni, Miklos. Folding bed assembly. 3,965,498, Cl. 5-6.000.

Booher, Claude R., Jr.; and Rahaim, Thomas J., to Westinghouse Electric Corporation. Ceramic-to-metal (or ceramic) cushion/seal for use with three piece ceramic stationary vane assembly. 3,966,353, Cl. 415-115.000.

Boom, Roger W.; Eyssa, Yehia M.; and Sutton, John, to United States of America, Interior. Magnetic ore separator. 3,966,590, Cl. 209-39.000.

Boone, Jerry S.: *See—*
Amos, Lynn G.; and Boone, Jerry S., 3,967,109.

Borden, Inc.: *See—*
Williams, Murray John, 3,966,970.

Borowiec, Richard A.: *See—*
Thomas, Howard M.; and Borowiec, Richard A., 3,965,791.

Borst, Lyle Benjamin. Photographic process. 3,967,117, Cl. 250-323.000.

Boser, Ernst: *See—*
Schneider, Heinrich; and Boser, Ernst, 3,966,395.

Bosisio, Germano: *See—*
Bernardi, Luigi; Bosisio, Germano; and Fregnan, Gian Carlo, 3,966,739.

Bossert, Friedrich; and Vater, Wulf, to Bayer Aktiengesellschaft. Spasmolytic, vaso-dilating and anti-hypertensive compositions and methods. 3,966,948, Cl. 424-266.000.

Bossert, Friedrich: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,966,767.

Boubel, Richard W.; Babler, David C.; and Peter, Donald W., to Rader Companies, Inc. Apparatus for automatically measuring particulate emissions in gas flow. 3,965,748, Cl. 73-421.50A.

Bouguyon, Gerard: *See—*
Lavigne, Jean; Chesnel, Pierre; and Bouguyon, Gerard, 3,965,993.

Bould, Fred; and Davies, Norman, to Westinghouse Electric Corporation. Method and apparatus for aligning and affixing portions of circuit breaker apparatus. 3,967,083, Cl. 200-237.000.

Boundy, Bruce K., to Westinghouse Electric Corporation. Cantilever lock. 3,966,158, Cl. 248-243.000.

Bowcott, Roy Price, to Lucas Electrical Company Limited, The. Roller clutch assembly. 3,965,754, Cl. 74-6.000.

Bower, Robert W., to TRW Inc. Asymmetrical well charge coupled device. 3,967,306, Cl. 357-24.000.

Bowman, Henry Torrens A.: *See—*
Webster, John David; and Bowman, Henry Torrens A., 3,965,555.

Box, Theodor. Latch for a poultry transport cage. 3,966,084, Cl. 220-326.000.

Boyd, Alfred Kent, to Texas Instruments Incorporated. Inertia isolator. 3,966,108, Cl. 226-114.000.

Boynton, Kenneth G., to Hollis Engineering, Inc. Stabilizer system with ultrasonic soldering. 3,966,110, Cl. 228-175.000.

Braaten, Terje, to Engell, Renee. Apparatus for manufacturing sleeves from fiber pulp. 3,966,546, Cl. 162-293.000.

Brabo Corporation Naamloze Vennootschap: *See—*
Den Ouden, Alfons Adriaan, 3,965,610.

Bracken, Joseph W., Jr., to Eaton Corporation. Spring compensated radially flexible power takeoff shaft. 3,965,699, Cl. 64-1.00V.

Bradley, John G. Golf tee device. 3,966,213, Cl. 273-201.000.

Bradshaw, Janice: *See—*
Cook, Martin Christopher; Gregory, Gordon Ian; and Bradshaw, Janice, 3,966,717.

Brain, Edward George; and Osborne, Neal Frederick, to Beecham Group Limited. 7-β-Acylamino-ceph-3-ems and salts and esters therefor. 3,966,718, Cl. 260-243.00C.

Braithwaite, David G.; and Allain, Ronald J., to Nalco Chemical Company. Anhydrous magnesium chloride using ethylene glycol and ammonia. 3,966,888, Cl. 423-498.000.

Brancaccio, Aldo: *See—*
Arrighetti, Sergio; Brancaccio, Aldo; Cesca, Sebastiano; and Giuliani, Gianpaolo, 3,966,844.

Brandt, Burkhard A., to Sola Basic Industries, Inc. Mounting strap. 3,967,049, Cl. 174-53.000.

Brandt, Wilhelm; and Bindrum, Irmgard, to Hoechst Aktiengesellschaft. Copper coatings on shaped plastic supports. 3,967,044, Cl. 428-457.000.

Branson Ultrasonics Corporation: *See—*
Fallenbeck, Eberhardt G.; and Upright, Wayne N., 3,966,520.

Brantingham, George L.; and Phillips, Louis H., to Texas Instruments Incorporated. Direct and indirect addressing in an electronic digital calculator. 3,967,104, Cl. 235-156.000.

Bratzler, Karl; and Doerges, Alexander, to Metallgesellschaft Aktiengesellschaft. Process for the desulfurization of gases. 3,966,875, Cl. 423-220.000.

Braun, Eugene R., to Eaton Corporation. Prestressed axle beam. 3,966,260, Cl. 301-127.000.

Braun, Oskar J., to Xerox Corporation. Plural cleaning rolls assembly. 3,966,394, Cl. 432-75.000.

Bray, Donald T., to Desalination Systems, Inc. Membrane cartridge. 3,966,616, Cl. 210-433.00M.

Breakthrough Research & Development Corporation: *See—*
Schneider, Henry Allen, 3,966,002.

Brede, Uwe: *See—*
Gawlick, Heinz; Brede, Uwe; and Bendler, Hellmut, 3,967,141.

Brendler, Otfried: *See—*
Boltze, Karl-Heinz; Brendler, Otfried; Dell, Hans-Dieter; and Jacobi, Haireddin, 3,966,956.

Brenner and Bender, Inc.: *See—*
Bender, Louis, 3,965,888.

Brenner, L. Martin: *See—*
Van Hoeven, Helene E. Bowman; Brenner, L. Martin; and Loev, Bernard, 3,966,945.

Bresan, Lawrence A.: *See—*
Pearson, James R., 3,965,629.

Breschar, Klaus: *See—*
Plotz, Kurt; Breschar, Klaus; and Klein, Albert, 3,967,032.

Brescia, Riccardo: *See—*
Conta, Renato; Montanari, Lucio; and Brescia, Riccardo, 3,967,092.

Brewer, John C., to Garbalizer Corporation of America. Refuse processing equipment. 3,966,129, Cl. 241-79.100.

Briar, Thomas J.: *See—*
Schaefer, William L.; and Briar, Thomas J., 3,965,563.

Bridger, Robert F.; and Williams, Albert L., to Mobil Oil Corporation. Lubricant compositions. 3,966,620, Cl. 252-33.400.

Brinza, Joseph E.: *See—*
Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,966,175.

Brissette, Edward C.; and Smith, Edwin W., Jr. Shag rake attachment for upright vacuum cleaner. 3,965,525, Cl. 15-373.000.

Bristol-Myers Company: *See—*
Monkovic, Ivo; Saucier, Michel; Lambert, Yvon; and Montzka, Thomas Alfred, 3,966,747.
Pachter, Irwin J.; and Gordon, Maxwell, 3,966,940.

British Arkady Company Limited, The: *See—*
Banks, Philip George; and Pringle, William, 3,966,992.

British Broadcasting Corporation: *See—*
Fletcher, Russell Edward, 3,967,269.
Roberts, Allan, 3,967,268.

British Hovercraft Corporation Limited: *See—*
Crewe, Peter Rowland, 3,966,012.

British Petroleum Company Limited, The: *See—*
Lees, Byrom, 3,965,829.

Brixy, Heinz, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Temperature-measuring device. 3,966,500, Cl. 136-232.000.

Brock, John O.; Davis, Marmion Dean; and Wray, James Robert, to Interstate Industries, Inc. Apparatus for pivotally mounting a fishing motor. 3,965,844, Cl. 115-41.00R.

Bromberg, Menashe, to Thomas & Betts Corporation. Electrical receptacle. 3,966,152, Cl. 248-27.00R.

Brooks, William E., to Pravel & Wilson. Generator frequency converter. 3,967,185, Cl. 321-61.000.

Brotherton, Thomas Kemper: *See—*
Colomb, Henry Octave, Jr.; Trecker, David John; and Brotherton, Thomas Kemper, 3,966,797.

Brown, Eugene B., to Lawrence Peska Associates, Inc., a part interest. Traffic court board game. 3,966,211, Cl. 273-134.0GM.

Brown, George T., Jr., to NCR Corporation. Microform card including surface locating structure for elimination of Newton ring color banding and card utilization apparatus therefor. 3,966,314, Cl. 353-27.00R.

Brown, James L.: *See—*
Glovsky, Joel; and Brown, James L., 3,966,896.

Brown, John W., to Qantix Corporation. Transparent screen having intermittent portions for reducing reflection from ambient light. 3,966,301, Cl. 350-128.000.

Brown, Joseph F., to Raymond Lee Organization, Inc., The, a part interest. Paint applicator. 3,966,098, Cl. 222-413.000.

Brown, Lester E.; and West, Harry H., to University Engineers, Inc. Venting of cryogenic storage tanks. 3,965,689, Cl. 62-50.000.

Brown, Lester E.: *See—*
Wesson, Harold R.; Brown, Lester E.; and Puckett, Gregory L., 3,965,988.

Brown-Minneapolis Tank & Fabricating Co.: *See—*
Johnson, Leland L.; and Parkinson, Lindley A., 3,966,078.

Brown, Peter. Safety latch for trays. 3,966,159, Cl. 248-250.000.

Brown, Roger M., to Scientific Technology Incorporated. Pulsed light source discriminator system. 3,967,111, Cl. 250-206.000.

Brown & Root, Inc.: *See—*
Michael, Farid Y., 3,965,837.

Browning, Alva LaRoy, Jr. Electrostatic accelerometer and/or gyroscope radioisotope field support device. 3,965,753, Cl. 73-504.000.

Browning, Vernon D.: *See—*
Holden, Homer N.; Hunt, James P.; Browning, Vernon D.; Hoglen, Edward L.; and Kleykamp, Donald L., 3,966,104.

Brownlee, Kay Melinda: *See—*
Young, J. Ridgely, 3,967,240.

Brull, Maurice A.; and Arcan, Mircea, to Ramot University Authority for Applied Research & Industrial Development Ltd. Method and apparatus for indicating or measuring contact distribution over a surface. 3,966,326, Cl. 356-114.000.

Brunner, Manfred; and Knochenhauer, Horst, to H. Wolff Apparatebau K.G. Apparatus for boiling, cooking, steaming and sterilizing liquid, porridge-like or lumpy food. 3,965,806, Cl. 99-331.000.

Bruns, Ludwig: *See—*
Christoph, Geert; Radlmann, Eduard; Nischk, Gunther; Bruns, Ludwig; and Schnuchel, Gunther, 3,966,835.

Brunswick Corporation: *See—*
Fitzner, Arthur O., 3,965,879.

Brusa, Ugo. Composite block for refractory linings of furnaces. 3,965,637, Cl. 52-596.000.

Bryzinsky, Frank M.: *See—*
Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,966,670.

Bucher, Rene. Bed intended for use by sick and invalid persons. 3,965,501, Cl. 5-90.000.

Buck, Kenneth William: *See—*
Chain, Ernst Boris; Buck, Kenneth William; Darbyshire, Joan Elizabeth; Banks, Geoffrey Talbot; Himmelweit, Fred; and Ratti, Giulio, 3,966,707.

Buckner, Spencer P., to TRW Inc. Flapper valve with independent plate suspension. 3,965,926, Cl. 137-512.100.

Bucy, J. Fred, Jr., to Texas Instruments. Alarm system. 3,967,258, Cl. 340-258.00B.

Budd, Michael Keith: *See—*
Smith, Gordon Frederick; and Budd, Michael Keith, 3,966,619.

Buehler, Walter E.; and Fitzsimmons, George W., to Boeing Company, The. Low cost microwave receiver for ILS. 3,967,278, Cl. 343-108.00R.

Buelow, William H.: *See—*
Haker, Edwin J.; Buelow, William H.; and Riddle, Charles F., 3,966,344.

Bugaut, Andree: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,966,722.

Buike, Melvin L.: *See—*
Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,966,670.

Buker, Donald O., to Amax Inc. Process for thermal dissociation of molybdenum disulfide. 3,966,459, Cl. 75-84.000.

Bullen, Leslie G.: *See—*
Bennett, Derek J.; and Bullen, Leslie G., 3,965,512.

Bunce, Roger Abraham: *See—*
Greaves, Geoffrey Stuart; Deverill, Ian; and Bunce, Roger Abraham, 3,966,322.

Bunda, Tsuchio: *See—*
Okano, Ryoichi; Bunda, Tsuchio; Mizusawa, Shinichiro; and Morita, Akiyoshi, 3,966,443.

Bunel, Jacques Charles Louis: *See—*
Tranchart, Jean-Claude; and Bunel, Jacques Charles Louis, 3,966,416.

Bunker Ramo Corporation: *See—*
Bennett, Derek J.; and Bullen, Leslie G., 3,965,512.
Mathe, Istvan; and Maros, Ronald Richard, 3,966,293.

Bunnell, Edward Dennman: *See—*
Averitt, Marnie Carlton; and Bunnell, Edward Dennman, 3,967,195.

Burdin, Jacques Antoine, to Societe Anonyme dite ATO CHIMIE. Apparatus for applying plastic coatings to small bodies. 3,965,858, Cl. 118-417.000.

Bureau de Recherches Geologiques et Minieres: *See—*
Jacob, Claude J., 3,966,884.

Burger, Charles Frederic, to Du Pont de Nemours, E. I., and Company. Process and apparatus for reclaiming and regenerating spent solvent. 3,966,602, Cl. 210-83.000.

Burgess, John; and Byrd, Don. Safety matchbook. 3,966,041, Cl. 206-108.000.

Burgsmuller, Karl. Device for tapping bores. 3,966,348, Cl. 408-180.000.

Burkhead, Carl E., to Ecodyne Corporation. Method and apparatus. 3,966,599, Cl. 210-14.000.

Burlakova, Lidia Ivanovna: *See—*
Kalach, Vladimir Sergeevich; and Burlakova, Lidia Ivanovna, 3,966,877.

Burroughs Corporation: *See—*
Saxon, Richard A., 3,967,158.

Burton, Frederick J., Jr.: *See—*
Katz, Sheldon B.; Burton, Frederick J., Jr.; and Cullo, Leonard A., 3,966,640.

Busdiecker, Wayne S.: *See—*
Washkewicz, Donald E.; and Busdiecker, Wayne S., 3,966,238.

Buseth, Richard A.: *See—*
Easton, Richard L.; and Buseth, Richard A., 3,965,947.

Bush, David Anthony: *See—*
Arnaud, Nichole; and Bush, David Anthony, 3,966,555.

Bussey, Francis H., Jr.; and Rutherfoord, James K., to Ethyl Corporation. Apparatus for embossing film. 3,966,383, Cl. 425-388.000.

Buus, Jorn Lasse Martin; and Lassen, Niels, to Kefalas A/S. Phenothiazine derivatives, compositions thereof and methods of preparation thereof. 3,966,930, Cl. 424-247.000.

Buus, Jorn Lasse Martin, to Kefalas A/S. Alpha-isomer of the palmitic acid ester of 10-[3-(4-hydroxy-ethyl-1-piperazinyl)propylidene]-2-trifluoromethyl thiaxanthene, compositions thereof and a method of preparaton thereof and use thereof. 3,966,952, Cl. 424-250.000.

Byars, Gordon F.; and Fairbanks, Arthur L., to Security Storage Rentals, Inc. Locking structure. 3,965,707, Cl. 70-120.000.

Bychinsky, Wilfred A., to General Motors Corporation. Silencer element. 3,966,015, Cl. 181-56.000.

Byrd, Don: *See—*
Burgess, John; and Byrd, Don, 3,966,041.

C.A.V. Limited: *See—*
Adey, Anthony John, 3,965,877.
Chalmers, Brian John; and Gibson, John Philip, 3,967,184.

C. G. Doris: *See—*
Jensen, Peter, 3,965,688.

C. M. Systems, Incorporated: *See—*
Heffron, Allan J.; Estry, Arthur L.; and Chalmers, William F., 3,966,058.

Cabot Corporation: *See—*
Kelley, Eugene W., 3,966,422.

Cachuela, Lawrence P.; and Sanford, George G., Jr., to McDonnell Douglas Corporation. Decoder/analyzer test unit. 3,967,103, Cl. 235-153.0AC.

Caesar, Wilfred George: *See—*
Noakes, Michael Lesney; Caesar, Wilfred George; Holland, William Henry; and Hancock, Norman Herbert, 3,966,646.

Cahen, Raymond Marc: *See—*
Andre, Jacques Maurice Jules; van Thillo, Hugo Johannes; Lammers, Rene Odon; Debus, Henri Robert; and Cahen, Raymond Marc, 3,966,996.

Cailloux, Jean Guy, to Etat Francais. Gripping device for a suspended load. 3,965,842, Cl. 114-235.00R.

Cain, Alfred R., to Firestone Tire & Rubber Company, The. Carbon black dispersions and method of making same. 3,966,668, Cl. 260-37.00N.

Cain, Earl S.; Carlson, Jerome A.; and Goodrich, George E., to Tribotech. Bearing mount. 3,966,275, Cl. 308-15.000.

Cairns, James Anthony; and Pugh, Stanley Frederick, to United Kingdom Atomic Energy Authority. Catalyst. 3,966,645, Cl. 252-465.000.

Caldecott, Ross: *See—*
Young, Jonathan D.; and Caldecott, Ross, 3,967,282.

Cale, Albert Duncan, Jr.; and Leonard, Charles Arthur, to A. H. Robins Company, Incorporated. Method for controlling emesis with N-(1-substituted-3-pyrrolidinyl)benzamides and thiobenzamides. 3,966,957, Cl. 424-274.000.

California Institute of Technology: *See—*
Jahnsen, Vilhelm J., 3,966,410.
Yariv, Amnon, 3,967,213.

Callahan, James L.; Miller, Arthur F.; and Shaw, Wilfrid G., to Standard Oil Company. Amphora aggregates. 3,966,639, Cl. 252-439.000.

Calva-Pellicer, Cesar. Device for collection of samples for microbiological studies. 3,966,558, Cl. 195-139.000.

Calvin, Chester W.: *See—*
Kellogg, Walter J.; and Calvin, Chester W., 3,967,192.

Cameron, Donald K., to General Motors Corporation. Cover assembly for an occupant restraint system. 3,966,227, Cl. 280-752.000.

Campbell, David D.; and Klove, Edwin H., Jr., to General Motors Corporation. Multiple inflation rate occupant restraint system. 3,966,224, Cl. 280-735.000.

Campbell, Robert W., to Phillips Petroleum Company. Arylene sulfide copolymer production. 3,966,688, Cl. 260-79.000.

Campbell Soup Company: *See—*
Wachtell, George Peter; and Jones, Edward Wilred, 3,965,741.

Campbell, Sterrett Paxton: *See—*
Reubens, Clarence Edmond; Campbell, Sterrett Paxton; and Marston, Lloyd Everett, 3,965,654.

Campbell, Willis R.; Waldrop, Thomas W.; and Seymour, Shaun A., to Sperry Rand Corporation. Large round bale handling apparatus. 3,966,063, Cl. 214-83.360.

Camras, Marvin, to IIT Research Institute. Video magnetic transducer system with phase correcting network. 3,967,318, Cl. 360-65.000.

Canada Packers Limited: *See—*
Bharucha, Kekhusroo R.; Cross, Charles K.; and Rubin, Leon J., 3,966,974.

Canadian Patents and Development Limited: *See—*
Meadus, Frederick Weldon; Sparks, Bryan David; and Puddington, Ira Edwin, 3,967,034.

Candor, James T. Liquid removing method and apparatus. 3,965,581, Cl. 34-1.000.

Candor, James T. Frame construction for a plural page document. 3,965,594, Cl. 40-104.020.

Candor, James T. Method for removing liquid from bearing material. 3,966,575, Cl. 204-180.00R.

Canron, Inc.: *See—*
Stewart, John Kenneth, 3,965,822.

Cappel, Marie-Luise: *See—*
Frohlich, Alfons; and Cappel, Marie-Luise, 3,965,833.

Caprino, Luciano, to Istituto Farmacologico Serono S.p.A. Treatment of heart diseases. 3,966,915, Cl. 424-177.000.

Carder, Charles H., to Union Carbide Corporation. Photocurable low gloss coatings containing silica and acrylic acid. 3,966,572, Cl. 204-159.160.

Carey, Paul L., to Ralston Purina Company. Process for the production of oilseed isolates. 3,966,702, Cl. 260-123.500.

Carey, Thomas H., to Columbia Research Laboratories, Inc. Externally mounted transducer for detecting changes of fluid pressure in a pipe. 3,965,745, Cl. 73-398.0AR.

Carl Zeiss-Stiftung: *See—*
Grosskopf, Rudolf, 3,967,053.
Korn, Siegfried; Kratzer, Bernd; and Muckenhaupt, Otto, 3,966,311.

Carlin, William W., to PPG Industries, Inc. Electrophoretic deposition of asbestos diaphragms. 3,966,576, Cl. 204-181.000.

Carlson, Jerome A.: *See—*
Cain, Earl S.; Carlson, Jerome A.; and Goodrich, George E., 3,966,275.

Carpenter Chemical Company: *See—*
Albright, Jack W., 3,966,483.

Carpenter, Robert E., to Ashland Oil, Inc. Fire-retardant panel construction. 3,967,033, Cl. 428-307.000.

Carr, James P. Vehicle suspension. 3,966,223, Cl. 280-712.000.

Carroll, Frank E., to Decks, Incorporated. Insulated roofing structure and method. 3,965,633, Cl. 52-309.000.

Carroll, Frank E., to Decks, Incorporated. Sheet metal structural shape and use in insulated decking structure and method. 3,965,641, Cl. 52-738.000.

Carter, George W., to Abbott Laboratories. 10 (N-methyl-4-piperidylidene)-10H[1]-benzopyrano[3,2-b]-pyridine as an analgesic, anti-inflammatory and agent against type III hypersensitivity disease. 3,966,944, Cl. 424-263.000.

Cary Metal Products, Inc.: *See—*
Curran, Thomas F., 3,966,105.

Casebier, Ronald Leroy; and Sears, Karl David, to International Telephone and Telegraph Corporation. Aminated sulfite derivatives of coniferous barks. 3,966,708, Cl. 260-236.500.

Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Piesch, Steffen; and Engelhardt, Friedrich, 3,966,769.
Ribka, Joachim; Engelhardt, Friedrich; and Piesch, Steffen, 3,966,689.

Cassidy, John Edward; and Millar, Philip Glenn, to Imperial Chemical Industries Limited. Refractory binder. 3,966,482, Cl. 106-64.000.

Cassou, Maurice Jean-Pierre. Apparatus for grouping artificial insemination straws. 3,965,649, Cl. 53-127.000.

Catalyst Research Corporation: *See—*
Roberts, Charles Clifton, 3,966,440.

Caterpillar Tractor Co.: *See—*
Goloff, Alexander, 3,966,366.
Goloff, Alexander, 3,966,368.
Guhl, Richard E.; and Renfro, Kenneth W., 3,966,254.
Schexnayder, Lawrence F., 3,966,066.

Cattaneo, Mario. Method for enveloping pellets of foamed polystyrene suitable for producing lightened manufactured articles of cement. 3,967,005, Cl. 427-202.000.

Cavalier Packaging Company, Inc.: *See—*
Tipton, William G., 3,966,113.

Caveney, Jack E.; and Moody, Roy A., to Panduit Corporation. Integral cable tie. 3,965,538, Cl. 24-16.0PB.

Cayle, Theodore; and Moskowitz, Gerard J., to Baxter Laboratories, Inc. Enzyme-treated paper. 3,966,543, Cl. 162-158.000.

CBS Inc.: *See—*
Bauer, Benjamin B., 3,967,063.

CCL Systems Limited: *See—*
Davison, John, 3,965,541.

Ceder, James H.: *See—*
Koch, Robert E.; and Ceder, James H., 3,967,228.

Celanese Coatings & Specialties Company: *See—*
Wolfe, Norman Gilbert, 3,966,669.

Centro-Maskin i Goteborg AB: *See—*
Sipek, Ladislav; and Smars, Erik, 3,966,504.

Ceramic Magnetics, Inc.: *See—*
Sommer, Alfred, 3,966,578.

Ceres Ecology Corporation: *See—*
Gaynor, William Wayne; and Voigt, Gene Ray, 3,966,607.

Ceresa, Myron; and Zimmerman, Richard Henry, to AMP Incorporated. Interconnection of oppositely disposed circuit devices. 3,967,162, Cl. 317-101.0CM.

Cesca, Sebastiano: *See—*
Arrighetti, Sergio; Brancaccio, Aldo; Cesca, Sebastiano; and Giuliani, Gianpaolo, 3,966,844.

Ceskoslovenska akademie ved: *See—*
Jansta, Jiri; and Dousek, Frantisek, 3,967,018.

Chafetz, Harry: *See—*
Hellmuth, Walter W.; Chafetz, Harry; and Cullen, William P., 3,966,622.

Chain, Ernst Boris; Buck, Kenneth William; Darbyshire, Joan Elizabeth; Banks, Geoffrey Talbot; Himmelweit, Fred; and Ratti, Giulio, to Beecham Group Limited. Process for preparing double stranded RNA. 3,966,707, Cl. 260-211.50R.

Challenge-Cook Bros., Incorporated: *See—*
Freze, Benjamin H., 3,966,441.

Chalmers, Brian John; and Gibson, John Philip, to C.A.V. Limited. Electrical inverter circuit. 3,967,184, Cl. 321-45.00C.

Chalmers, William F.: *See—*
Heffron, Allan J.; Estry, Arthur L.; and Chalmers, William F., 3,966,058.

Chambers Corporation: *See—*
Valle, Michael A., 3,967,164.

Chambers, Derek; and Harley, A. Leonard, to Raytheon Company. Converter wherein switching frequency is independent of output voltage and is synchronized to an external system. 3,967,181, Cl. 321-2.000.

Chambers, James Q.: *See—*
Mamantov, Gleb; Marassi, Roberto; and Chambers, James Q., 3,966,491.

Champion International Corporation: *See—*
Cohn, Robert, 3,965,851.
Lee, Hong Man, 3,967,007.

Champion Spark Plug Company: *See—*
Eaton, Carl J.; and Podiak, Richard S., 3,967,149.

Chang, Hsu; and Lee, Share-Young, to International Business Machines Corporation. Text editing system. 3,967,263, Cl. 340-172.500.

Chang, Kuo Wei; and Aisenberg, Sol. Apparatus for measuring alcohol concentrations. 3,966,579, Cl. 204-195.00R.

Chapman, Arthur S., to Hughes Aircraft Company. Image derotation device for relaying optical paths off or across gimbals. 3,966,298, Cl. 350-23.000.

Chapman, Charles C., to Phillips Petroleum Company. Apparatus for contacting alkylate containing alkyl fluoride with hydrogen fluoride. 3,966,417, Cl. 23-283.000.

Chappelie, Norman Andrew: *See—*
Robitschek, Paul; Chappelie, Norman Andrew; and Lorimer, John Wallace, 3,966,658.

Chappell, Albert R., to Metalife Company, The. Horizontally-operated pump-type dispenser. 3,966,095, Cl. 222-384.000.

Chapuis, Henri: *See—*
Vignal, Maurice; and Chapuis, Henri, 3,965,694.

Charbonnages de France: *See—*
Chiche, Pierre, 3,966,887.

Charles O. Larson Co.: *See—*
Larson, Charles O., 3,966,056.

Charlton, Ralph W.; and Varadhachary, Seevaram N., to Congoleum Industries, Inc. Lubrication of extruded materials. 3,966,857, Cl. 264-75.000.

Charpentier, Jean-Max; Glikmans, Georges; and Maldonado, Paul, to Institut Francais du Petrole, des Carburants et Lubrifiants et Entreprise de Recherches et d'Activities Petrolieres Elf. Process for producing citric acid by fermentation. 3,966,553, Cl. 195-28.00R.

Chavanat, Paul; Epsztein, Bernard; and Mourier, Georges, to Thomson-CSF. Electronic frequency tuning magnetron. 3,967,155, Cl. 315-39.550.

Chembond Corporation: *See—*
Robitschek, Paul; Chappelie, Norman Andrew; and Lorimer, John Wallace, 3,966,658.

Chemetron Corporation: *See—*
Cranage, Bidwell Chapman, 3,965,903.

Chemische Werke Huls Aktiengesellschaft: *See—*
Feldmann, Rainer; Kriesten, Wolfgang; Muller, Karl Adolf; Panoch, Hans Joachim; and Scholten, Heinz, 3,966,838.
Flatau, Karsten; and Terwiesch, Bernd, 3,966,695.
Kampf, Wolfgang; and Nordsiek, Karl-Heinz, 3,966,697.

Chen, Tung Chang. Device for enabling a fixed sensor of an automatic electronic flash unit to respond to bounced light. 3,967,106, Cl. 240-1.300.

Cheney, Robert W. Wheelchair lift assembly. 3,966,022, Cl. 187-12.000.

Cheng, Bao-Ding, to Colgate-Palmolive Company. Liquid detergents containing chelidamic acids and salts thereof. 3,966,649, Cl. 252-542.000.

Cheng, Roberta C.: *See—*
Dorman, Linneaus C.; and Cheng, Roberta C., 3,966,701.

Cherne Industrial, Inc.: *See—*
Boler, Leonard J., 3,966,859.

Chesnel, Pierre: *See—*
Lavigne, Jean; Chesnel, Pierre; and Bouguyon, Gerard, 3,965,993.

Chester, Francis B. Aerobic/anaerobic composting device. 3,966,415, Cl. 23-259.100.

Chevron Research Company: *See—*
Karas, Gus, 3,965,916.

Chiba, Kiyoshi: *See—*
Sobajima, Shigenobu; Okaniwa, Hiroshi; Chiba, Kiyoshi; and Takagi, Norio, 3,967,285.

Chiche, Pierre, to Charbonnages de France. Process for production of carbon fibers and the resultant fibers. 3,966,887, Cl. 423-447.000.

Chihara, Shiro: *See—*
Ito, Akiro; Ichikawa, Yasushi; Horiguchi, Sadayuki; Shirota, Shyoji; Kayama, Yasuo; Chihara, Shiro; Haneda, Isoko; Hasuda, Katsumi; and Takano, Shyoichi, 3,966,913.

Chisholm, Duncan, to Secretary of State for Industry in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Nothern Ireland, The. Control of two-phase thermosyphons. 3,965,970, Cl. 165-32.000.

Chisso Corporation: *See—*
Fukui, Masahiro; Hayashi, Shigeru; Okamoto, Takehiko; Koga, Isao; and Inoi, Takeshi, 3,966,822.

Chodnekar, Madhukar Subraya; Loeliger, Peter; Pfiffner, Albert; Schwieter, Ulrich; Suchy, Milos; and Zurfluh, Rene, to Hoffmann-La Roche Inc. Propargyl esters of 7,11-substituted dodecadienoic acids. 3,966,780, Cl. 260-410.90N.

Chomette, Albert Etienne, to Fajella, Francis J., a part interest. Internal bun toaster. 3,965,808, Cl. 99-419.000.

Christensen, Kenneth, to Illinois Tool Works Inc. Electrical capacitor having alternating metallized nonheat-shrinkable dielectric layers and heat-shrinkable dielectric layers. 3,967,168, Cl. 317-258.000.

Christie, Joe William. Apparatus and method for joining a branching fitting to a pipe. 3,966,528, Cl. 156-293.000.

Christofer, Donald E.: *See—*
Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,966,175.

Christoph, Geert; Radlmann, Eduard; Nischk, Gunther; Bruns, Ludwig; and Schnuchel, Gunther, to Bayer Aktiengesellschaft. Permanently antistatic polyamide compositions. 3,966,835, Cl. 260-830.00P.

Christopher, Charles A., to Texaco Inc. Method for oil recovery improvement. 3,965,986, Cl. 166-292.000.

Chromalloy-Alcon Inc.: *See—*
Schultz, Ronald L., 3,966,292.

Chromatix, Inc.: *See—*
Dere, Daniel J.; and Wallace, Richard W., 3,967,212.

Chromecek, Richard C., to Airwick Industries, Inc. Polymer complex carriers for an active ingredient. 3,966,902, Cl. 424-59.000.

Chudnovsky, Vladimir Sergeevich: *See—*
Novikov, Sergei Sergeevich; Khmelnitsky, Lenor Ivanovich; Lebedev, Oleg Vasilievich; Epishina, Lia Vladimirovna; Suvorova, Ljudmila Ivanovna; Lapshina, Lidia Vasilievna; Krylov, Valery Dmitrievich; Zaikonnikova, Irina Vitalievna; Zimakova, Irina Evgenievna; Chudnovsky, Vladimir Sergeevich; Babichev, Viktor Andreevich; and Avdonina, Nina Alexandrovna, 3,966,742.

Ciba-Geigy AG: *See—*
Ramanathan, Visvanathan, 3,966,706.

Ciba-Geigy Corporation: *See—*
Abel, Heinz; Dobinson, Bryan; Green, George Edward; Harris, Melvin; Stark, Bernard Peter; and Winterbottom, Kenneth, 3,967,041.
Beriger, Ernst; Kristiansen, Odd; Rufenacht, Kurt; and Bader, Jorg, deceased, 3,966,921.
Bohner, Beat; Dawes, Dag; Meyer, Willy; Kristinsson, Haukur; and Rufenacht, Kurt, 3,966,754.
Huff, Roger K., 3,966,721.
Oesterlein, Fritz; and Riat, Henri, 3,966,705.
Oxe, Josef; and Keller, Rudolf, 3,966,659.
Rasberger, Michael, 3,966,711.
Schlapfer, Hans, 3,966,755.
Varsanyi, Denis; Rathgeb, Paul; and Gass, Karl, 3,966,961.

Ciesco, Richard: *See—*
Ellenbaum, Frank H.; and Ciesco, Richard, 3,966,456.

Cima Kogaku Company Limited: *See—*
Nagashima, Motoi, 3,967,291.

Cimins, John B., to J & H Co. Machine for covering a pallet load with shrinkable plastic film. 3,965,652, Cl. 53-183.000.

Cincinnati Butchers' Supply Co., The: *See—*
Zaenkert, Fred A., 3,966,617.

Cincinnati Milacron-Heald Corporation: *See—*
Vaillette, Bernard D.; and Zastawny, William E., 3,965,765.

Cipriani, Gioacchino; and Perrotti, Emilio, to Snam Progetti S.p.A. Copper base metalorganic compounds and process for the preparation thereof. 3,966,782, Cl. 260-438.100.

Circon Corporation: *See—*
Walton, Joe W., 3,967,054.

Cities Service Company: *See—*
Driscoll, Richard E.; and Milligan, Hugh E., 3,966,692.

Claes, Hendrik Armand Denis; and Gelling, Wolter Geppienus, to U.S. Philips Corporation. Manufacturing semiconductor devices in which silicon slices or germanium slices are etched and semiconductor devices thus manufactured. 3,966,517, Cl. 156-7.000.

Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Krehbiel, Delmar D.; and Kennedy, Carl D., to Continental Oil Company. Waterflood method using overbased normal alkylaromatic sulfonates. 3,965,984, Cl. 166-270.000.

Clark Equipment Company: *See—*
Johns, Robert C., Jr., 3,965,587.

Clark, Joel P.: *See—*
Clarke, David E.; Lackey, Robert P.; and Clark, Joel P., 3,967,227.

Clark, Robert T., to Standard Oil Company. Single unit carrier for drinkware. 3,966,102, Cl. 224-45.00A.

Clark, Robert V.; Linder, Francis X.; McCreary, Terrance J.; and Taylor, William R., to Automation Industries, Inc. Large area motion sensor. 3,967,283, Cl. 343-7.700.

Clark, Wallace. Method of operating an internal combustion engine with solvent refined coal as a fuel. 3,965,870, Cl. 123-23.000.

Clarke, David E.; Lackey, Robert P.; and Clark, Joel P., to Texas Instruments Incorporated. Actuator system with ambient temperature compensation. 3,967,227, Cl. 337-124.000.

Clasen, Theodor: *See—*
Beaver, Ruby C.; Clasen, Theodor; Henning, Wolfgang; and Johnson, Emil S., 3,967,194.

Clayton Manufacturing Company: *See—*
Asmus, Carl Junior, 3,965,731.
Cline, Edwin Lee, 3,965,732.

Clean Energy Corporation: *See—*
Cramer, Frank B., 3,966,582.
Cramer, Frank B., 3,966,583.

Cleaveland, Charles M., to Westinghouse Electric Corporation. Supporting means for the power conductors in circuit breakers. 3,967,163, Cl. 317-112.000.

Clemence, Francois: *See—*
Martret, Odile Le; and Clemence, Francois, 3,966,950.

Clemens, David Henry: *See—*
Barrett, James Henry; and Clemens, David Henry, 3,966,489.

Cleveland Hardware & Forging Co.: *See—*
Slovensky, Mike J., Jr., 3,965,564.

Clifford, Louis R.: *See—*
Ridpath, Robert R.; Clifford, Louis R.; and Groot, Hendrik, 3,967,238.

Clin Midy: *See—*
Schmitt, Josef, deceased, 3,966,793.

Cline, Edwin Lee, to Clayton Manufacturing Company. Computer type brake analyzer. 3,965,732, Cl. 73-126.000.

Clowers, Earl R.; and Azelkas, Walter G., to Singer Company, The. Vacuum cleaner filter assembly. 3,966,444, Cl. 55-356.000.

Cloyd, Harold S., to Nosco Plastics, Inc. Syringe. 3,965,898, Cl. 128-220.000.

Coal Industry (Patents) Limited: *See—*
Andrews, John Frederick Collett; Beton, Roy Victor; Leavens, Kenneth David; and Scott, Gordon John, 3,966,060.
Blunt, Geoffrey Vincent Dallow; and Hodges, Newton John, 3,966,653.
Gray, Michael David; and Kimber, Geoffrey Michael, 3,966,584.
Gray, Michael David; Kimber, Geoffrey Michael; and Shipley, David Ernest, 3,966,585.

Coats & Clark, Inc.: *See—*
Hannes, Karl; and Rossi, Paul C., 3,965,779.

Cocke, Emory L.; Muncie, Fred W., deceased; and by Muncie, John W., executor, to Cocke, Emory L. Method of reducing air pollution by recovering d-limonene from citrus pulp processing operation. 3,966,984, Cl. 426-472.000.

Cogas Development Company: *See—*
Friedman, Louis D., 3,966,633.
Sacks, Martin E., 3,966,634.

Cohen, Bernard: *See—*
Rivman, Samuel J.; Cohen, Bernard; and Da Costa, Alvaro, 3,965,952.

Cohen, Camel: *See—*
Mayer, Salvador Escobar, Sr., 3,966,183.

Cohen, Ella: *See—*
Levy, Moshe; Vofsi, David; Daren, Stephen; and Cohen, Ella, 3,966,831.

Cohen, Robert: *See—*
Mayer, Salvador Escobar, Sr., 3,966,183.

Cohn, Robert, to Champion International Corporation. Apparatus for applying sealing material to envelopes. 3,965,851, Cl. 118-1.000.

Colegrove, George T., to Merck & Co., Inc. Clarification of xanthan gum. 3,966,618, Cl. 252-8.55D.

Colgate-Palmolive Company: *See—*
Cheng, Bao-Ding, 3,966,649.
Cullum, Douglas Charles; and Collinge, Joan, 3,966,901.
Douglass, Miriam L., 3,966,928.
Gray, Frederick W., 3,966,627.
Karami, Hamzeh, 3,965,906.
Klingaman, Richard James, 3,966,089.
Price, Edward John, 3,965,955.
Rayner, George Geoffrey, 3,966,432.

Collinge, Joan: *See—*
Cullum, Douglas Charles; and Collinge, Joan, 3,966,901.

Collins, Arthur. Breech cartridge remover. 3,965,795, Cl. 89-1.50F.

Collins, Dalford D. Tilt top golf tee. 3,966,214, Cl. 273-207.000.

Collins, Daniel E.: *See—*
Jackson, Larry L.; Seifert, Walter F.; and Collins, Daniel E., 3,966,626.

Colliopoulos, John A.; and Yanick, Nicholas S., to G. D. Searle & Co. Vegetable oil emulsion. 3,966,632, Cl. 252-309.000.

Colomb, Henry Octave, Jr.; Trecker, David John; and Brotherton, Thomas Kemper, to Union Carbide Corporation. Dinorbornenes. 3,966,797, Cl. 260-484.00A.

Colston, John R.; and O'Neill, Wilbur J., to Westinghouse Electric Corporation. Underwater breathing apparatus. 3,965,892, Cl. 128-142.300.

Columbia Research Laboratories, Inc.: *See—*
Carey, Thomas H., 3,965,745.

Columbus Auto Parts Company, The: *See—*
Amos, James J., 3,965,554.

Combs, Robert L., to Eastman Kodak Company. Mixtures of polyesters and DAC-B resin. 3,966,841, Cl. 260-873.000.

Combustion Engineering, Inc.: *See—*
Barrus, Donald Martin, 3,965,757.
Deve, Vagn, 3,966,174.

Cominco Ltd.: *See—*
Crossley, Cecil L.; Hirsch, Horst E.; and Liang, Shou C., 3,966,568.

Commercial Solvents Corporation: *See—*
Hunsucker, Jerry H., 3,967,015.
Shipchandler, Mohammed T., 3,966,699.

Commissariat a l'Energie Atomique: *See—*
Bathellier, Andre; and Germain, Michel, 3,966,804.
Baylac, Bernard; Merckel, Gerard; and Meunier, Pierre, 3,967,208.
Sachs, Charles E., 3,965,889.

Compagnie Industrielle des Lasers: *See—*
Cornillault, Jean, 3,967,114.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Beduchaud, Michel; and Ramadier, Andre, 3,966,187.

Compoflex Company Limited: *See—*
O'Brien, Patrick William, 3,966,379.

Compton, Ralph M.; and Jenkins, Johnny W., Jr. Shuttle spring. 3,965,941, Cl. 139-207.000.

Cone, Charles N.; and Steinberg, Julius M., to Pacific Adhesives, Inc. Plywood manufacture using foamed glues. 3,965,860, Cl. 118-612.000.

Congoleum Industries, Inc.: *See—*
Charlton, Ralph W.; and Varadhachary, Seevaram N., 3,966,857.

Conley, Dell; Ferrell, Howard H.; and Lescarboura, Jaime A., to Continental Oil Company. Subsurface transient pressure testing apparatus and method of use thereof. 3,965,978, Cl. 166-113.000.

Connell, Robert I. Security bar assembly for double doors. 3,966,243, Cl. 292-40.000.

Connors, Frank T., to Symons Corporation. She-bolt type gripper device for concrete wall form tie rods of indeterminate length. 3,965,543, Cl. 24-136.00R.

Consolcase, Inc.: *See—*
Kroger, Douglas J.; Kroger, Donald J.; Jensen, Winton D.; and Rohrs, Donald L., 3,966,076.

Conta, Renato; Montanari, Lucio; and Brescia, Riccardo, to Ing. C. Olivetti & C., S.p.A. Electrothermal print head. 3,967,092, Cl. 219-216.000.

Continental Oil Company: *See—*
Beaty, William Ralph, Jr., 3,966,588.
Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,965,984.
Conley, Dell; Ferrell, Howard H.; and Lescarboura, Jaime A., 3,965,978.
Doerr, Richard E.; McCain, David L.; and Davis, David H., 3,966,261.
Pace, Gerald F.; Stauter, John C.; Armstrong, Calvin N.; and Harris, Gary R., 3,966,567.
Reynolds, David E., 3,966,088.

Contois, Lawrence E.; and Rule, Norman G., to Eastman Kodak Company. Organic photoconductors with triamino benzene additives. 3,966,468, Cl. 96-1.500.

Control Data Corporation: *See—*
Harrington, Daniel Clayton, 3,967,105.

Cook, Martin Christopher; Gregory, Gordon Ian; and Bradshaw, Janice, to Glaxo Laboratories Limited. 7-β-Acylamido-3-carbamoyloxymethylceph-3-em-4-carboxylic acids and salts thereof. 3,966,717, Cl. 260-243.00C.

Cooper, Herbert Warren; Acevedo, John; and deKlerk, John, to Westinghouse Electric Corporation. Surface acoustic wave delay line with bulk wave discrimination. 3,967,221, Cl. 333-30.00R.

Copal Company Limited: *See—*
Matsuda, Yasuhisa, 3,966,134.
Yaguinuma, Jyusuke, 3,967,078.

Coquelet, Andre; and Nepote, Alain, to Mitchell S.A. Fishing reel. 3,966,140, Cl. 242-217.000.

Corbett, Marshall J.; and Kress, Robert W., to Grumman Aerospace Corporation. Vertical takeoff and landing aircraft. 3,966,142, Cl. 244-12.00A.

Cornett, Walter Goza, III: *See—*
Reilly, Richard J.; Cornett, Walter Goza, III; Riddle, James H.; and Wharmby, David, 3,965,902.

Cornillault, Jean, to Compagnie Industrielle des Lasers. Device for determining the profile of a surface. 3,967,114, Cl. 250-236.000.

Corning Glass Works: *See—*
Amos, Lynn G.; and Boone, Jerry S., 3,967,109.
Hollis, David L., 3,967,108.
Rogers, Charles H.; and Sage, Burton H., Jr., 3,967,110.

Corning, Lee M. Photographer's copy stand. 3,967,301, Cl. 354-292.000.

Corral, Jose; and Spector, George. Heavy weight hanger. 3,966,157, Cl. 248-217.000.

Corsette, Douglas F. Toilet chemical dispenser. 3,965,497, Cl. 4-227.000.

Corsmeier, Robert J., to General Electric Company. Blade baffle damper. 3,966,357, Cl. 416-97.00R.

Cosgrove, James F.: *See—*
McCain, William B.; Cosgrove, James F.; and Zagorski, Edward J., 3,966,185.

Costantini, Joseph A.; Flint, Glen E.; and Lanier, Richard J., to Standard Electric Time Corporation. Tape cassette. 3,966,107, Cl. 226-59.000.

Cosyns, Jean; Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, to Institut Francaise du Petrole, de Carburants et Lubrifiants. Process for hydrodealkylating alkylaromatic hydrocarbons. 3,966,833, Cl. 260-672.00R.

Cote, Gerald J.; Lewis, John A., Jr.; and Skurski, James K., to Polaroid Corporation. Accessory attachment for photographic apparatus. 3,967,302, Cl. 354-295.000.

Cottrell, Harold L.; and Mamo, Anthony C., to Power Control, Inc. Hydrokinetic device. 3,965,680, Cl. 60-357.000.

Cowie, Charles J.: *See—*
MacDonald, Ian M.; and Cowie, Charles J., 3,967,170.

Cracknell, Robert Ian: *See—*
Bagg, Greville Euan Gordon; and Cracknell, Robert Ian, 3,965,722.

Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., to Merck & Co., Inc. Pharmaceutical compositions and method of treatment employing 1,3-dioxo-2,2-disubstituted indanyloxy alkanoic acids. 3,966,966, Cl. 424-317.000.

Craig, John W. T.; O'Neill, Eoin P.; and Keairns, Dale L., to United States of America, Environmental Protection Agency. Waste stone oxidation and recarbonization. 3,966,431, Cl. 48-197.00R.

Cramer, Frank B., to Clean Energy Corporation. Solubilization and reaction of coal and like carbonaceous feedstocks to hydrocarbons and apparatus therefor. 3,966,582, Cl. 208-8.000.

Cramer, Frank B., to Clean Energy Corporation. Coal treatment process and apparatus. 3,966,583, Cl. 208-8.000.

Cranage, Bidwell Chapman, to Chemetron Corporation. Suction bottle assembly. 3,965,903, Cl. 128-276.000.

Crane, Grant; and Kay, Edward Leo, to Firestone Tire & Rubber Company, The. Pyrolization. 3,966,487, Cl. 106-307.000.

Crane, Robert L.: *See—*
Hollenberg, Glenn W.; and Crane, Robert L., 3,966,855.

Crankshaft Machine: *See—*
Heffron, Allan J.; Estry, Arthur L.; and Chalmers, William F., 3,966,058.

Crawford, Elsie. Modular post and beam joint. 3,966,337, Cl. 403-170.000.

Crawley, Lantz Stephen; and Safir, Sidney Robert, to American Cyanamid Company. Substituted dibenzo[b,f]tetrazolo[1,5-d][1,4]-oxazepines. 3,966,756, Cl. 260-308.00D.

Cremer, Charles W.; Eastman, James E.; and Schanefelt, Robert V., to A. E. Staley Manufacturing Company. Granular modified starch binder for dough forming of puffable food products. 3,966,990, Cl. 426-550.000.

Creusot-Loire: *See—*
Honnorat, Yves C.; Raisson, Gerard D.; and Morlet, Jean G., 3,966,374.

Crewe, Peter Rowland, to British Hovercraft Corporation Limited. Air cushion vehicles. 3,966,012, Cl. 180-127.000.

Croese, Hendrik Magchiel Willem. Method for hauling a vessel alongside a mooring platform. 3,965,841, Cl. 114-230.000.

Crompton, Nettlefold Stenman Limited: *See—*
Wigfall, Douglas Mervyn, 3,965,532.

Cronin, Timothy H.; and Hess, Hans-Jurgen E., to Pfizer Inc. Piperazino quinazoline bronchodilators. 3,966,936, Cl. 424-251.000.

Cross, Charles K.: *See—*
Bharucha, Kekhusroo R.; Cross, Charles K.; and Rubin, Leon J., 3,966,974.

Crossley, Cecil L.; Hirsch, Horst E.; and Liang, Shou C., to Cominco Ltd. Electrowinning of gallium. 3,966,568, Cl. 204-105.00R.

Crossley, Wade William: *See—*
Hyland, Anthony Joseph; and Crossley, Wade William, 3,966,295.

Crounse, Nathan N.; and Ambrosiano, Nicholas A., to Sterling Drug Inc. Thiazolidinylidene isoindoline pigments. 3,966,753, Cl. 260-306.70R.

Crowley, Thomas N.; and Urbanski, David M., to Amchem Products, Inc. Process for the treatment of waste water from a fiberglass manufacturing process. 3,966,600, Cl. 210-46.000.

Crown, Marlyn Dale; and Finley, Carl Eugene, to Olin Corporation. Fluid metering valve. 3,966,097, Cl. 222-402.200.

Csatar, Kalman; and Soha, Istvan, to Orszagos Erc- es Asvanybanyak. Sorpitional carrier materials and a process for the preparation thereof. 3,966,641, Cl. 252-449.000.

Cuer, Jean-Pierre; and Texier, Nicole, to Produits Chimiques Ugine Kuhlmann. Method of preparing barium hydroxide. 3,966,894, Cl. 423-638.000.

Cullen, William P.: *See—*
Hellmuth, Walter W.; Chafetz, Harry; and Cullen, William P., 3,966,622.

Cullinan, John R. Dual spring rear suspension for motorcycles. 3,966,006, Cl. 180-32.000.

Cullo, Leonard A.: *See—*
Katz, Sheldon B.; Burton, Frederick J., Jr.; and Cullo, Leonard A., 3,966,640.

Cullum, Douglas Charles; and Collinge, Joan, to Colgate-Palmolive Company. Dentifrice preparation. 3,966,901, Cl. 424-52.000.

Cummins Engine Company, Inc.: *See—*
Perr, Julius P., 3,965,875.

Cunningham, Ernest Ray, to Grip-Pak, Inc. Scrapless plastic sheet multi-packaging device. 3,966,044, Cl. 206-427.000.

Cupler, John A., II. Vee bearing having adjustable V journal profile. 3,966,277, Cl. 308-36.000.

Curran, James B.: *See—*
Winkler, Robert J.; and Curran, James B., 3,965,824.

Curran, Thomas F., to Cary Metal Products, Inc. Web aligning apparatus. 3,966,105, Cl. 226-21.000.

Curry, Kenneth Vasey; Gamadia, Rustom Kooverji; and Pike, Barry Graham, to Lever Brothers Company. Aerosol dispensing device containing a hairsetting preparation having a low propellant content. 3,966,087, Cl. 222-192.000.

Cutter Laboratories, Inc.: *See—*
Dabney, William C., 3,965,895.

Cutts, Ernest; and Knight, Geoffrey Thomas, to Malaysian Rubber Producers' Research Association, The. Surface treatment of polymers. 3,966,530, Cl. 156-308.000.

Cynamon, Sam. Swimming apparatus. 3,966,202, Cl. 272-71.000.

Dabney, William C., to Cutter Laboratories, Inc. Apparatus for controlled volume and rate administration of liquids. 3,965,895, Cl. 128-214.00C.

Da Costa, Alvaro: *See—*
Rivman, Samuel J.; Cohen, Bernard; and Da Costa, Alvaro, 3,965,952.

Dageford, Ernest C., to BEC Products, Inc. Diagnostic annunciator. 3,967,281, Cl. 340-415.000.

Dahl, Robert M. Index file. 3,966,050, Cl. 211-10.000.

Daicel Ltd.: *See—*
Sonoyama, Yuzo; Ohi, Akira; and Hozumi, Yukio, 3,966,677.

Daimler-Benz Aktiengesellschaft: *See—*
Kleisser, Werner; and Motting, Gotz, 3,966,244.
Wiegard, Klaus, 3,966,281.

Dainippon Ink and Chemicals, Incorporated: *See—*
Maeda, Hiroshi; Ariga, Nagao; and Matuo, Takeo, 3,966,681.

Daiwa Boseki Kabushiki Kaisha: *See—*
Yoshida, Yoshiaki, 3,965,661.

Dalblom, Gunnar, to Barracudaverken Aktiebolag. Camouflage sheet and method for manufacturing the same. 3,967,026, Cl. 428-195.000.

D'Alo, Herbert Fred, to Abbott Laboratories. Vacuum device for an expandable container. 3,965,946, Cl. 141-51.000.

Dames & Moore: *See—*
Garbe, Carl W., 3,966,539.

D'Amiano, Anthony J. Method for lowering ground water. 3,965,685, Cl. 61-11.000.

D'Amiano, Anthony J. Pre-packed well points. 3,965,981, Cl. 166-228.000.

D'Andrea, Corrado: *See—*
Selander, Stig Daniel; Marechal, Bernard; and D'Andrea, Corrado, 3,966,540.

Danfoss A/S: *See—*
Vind, Holger Wilhelm, 3,967,229.

Danis, Louis J., to Eaton Corporation. Method of making a composite article for rapid heating. 3,967,013, Cl. 427-383.000.

Dansk Industri Syndikat A/S: *See—*
Gunnergaard, Marius, 3,965,961.
Gunnergaard, Marius, 3,965,966.

Darbyshire, Joan Elizabeth: *See—*
Chain, Ernst Boris; Buck, Kenneth William; Darbyshire, Joan Elizabeth; Banks, Geoffrey Talbot; Himmelweit, Fred; and Ratti, Giulio, 3,966,707.

Daren, Stephen: *See—*
Levy, Moshe; Vofsi, David; Daren, Stephen; and Cohen, Ella, 3,966,831.

Darsie, Burns: *See—*
Kulczycki, Karol; Darsie, Burns; and Dow, Norris F., 3,965,939.

Dart Industries Inc.: *See—*
Hardy, Donald F., 3,965,852.
Prussin, Samuel B.; and Lozano, Davis S., 3,966,090.

Das, Suryya K.: *See—*
Sullivan, Thomas R.; Du, John W.; Pelegrinelli, Raymond L.; and Das, Suryya K., 3,966,667.

Dashew, Stephen S., to Interform, Inc. Adjustable truss support and form for concrete construction. 3,966,164, Cl. 249-18.000.

Daubach, Ewald: *See—*
Langenfelder, Hans; Daubach, Ewald; and Belde, Horst, 3,966,488.

Davies, Norman: *See—*
Bould, Fred; and Davies, Norman, 3,967,083.

Davies, Terrence Ardern, to Square D Company. Electrical contact materials and methods of making the same. 3,966,464, Cl. 75-173.00R.

Davis, Bryan Terence: *See—*
Elliott, John Scotchford; Davis, Bryan Terence; and Howlett, Richard Martin, 3,966,807.

Davis, Charles S.: *See—*
Schwan, Thomas J.; Davis, Charles S.; and Honkomp, Leroy J., 3,966,760.

Davis, Commodore. Balancing device for vehicle wheels. 3,965,752, Cl. 73-457.000.

Davis, David H.: *See—*
Doerr, Richard E.; McCain, David L.; and Davis, David H., 3,966,261.

Davis, Marmion Dean: *See—*
Brock, John O.; Davis, Marmion Dean; and Wray, James Robert, 3,965,844.

Davis, Michael, to Airway Industries Inc. Locking device for luggage. 3,965,706, Cl. 70-68.000.

Davison, John, to CCL Systems Limited. Reinforcing strand anchorage assembly. 3,965,541, Cl. 24-122.600.

Dawes, Dag: *See—*
Bohner, Beat; Dawes, Dag; Meyer, Willy; Kristinsson, Haukur; and Rufenacht, Kurt, 3,966,754.

Day, Earl G., to Barber-Greene Company. Digital shaft encoder circuit for scales. 3,967,271, Cl. 340-347.00P.

Dayco Corporation: *See—*
Holden, Homer N.; Hunt, James P.; Browning, Vernon D.; Hoglen, Edward L.; and Kleykamp, Donald L., 3,966,104.

Dazey Products Company: *See—*
McNair, Samuel L., 3,965,495.

De La Mare, Harold E.: *See—*
Jenkins, John W.; Bauer, Ronald S.; and De La Mare, Harold E., 3,966,636.

Debus, Henri Robert: *See—*
Andre, Jacques Maurice Jules; van Thillo, Hugo Johannes; Lammers, Rene Odon; Debus, Henri Robert; and Cahen, Raymond Marc, 3,966,996.

Decker, Kurt. Film changing equipment for rapidly changing films contained in flexible sheaths in radiological X-ray equipment. 3,967,130, Cl. 250-468.000.

Decks, Incorporated: *See—*
Carroll, Frank E., 3,965,633.
Carroll, Frank E., 3,965,641.

de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; and Kreuder, Hans Joachim, to Bayer Aktiengesellschaft. Pulverulent coating materials. 3,966,836, Cl. 260-835.000.

Deep Oil Technology, Inc.: *See—*
Horton, Edward E., 3,965,713.

Deering Milliken Research Corporation: *See—*
Richards, Ernest Levon, 3,966,259.

de Jager, Johannes; and Hansma, Hendrik, to Akzo N.V. Process for the preparation of granular or pulverulent organic peroxides. 3,966,787, Cl. 260-463.000.

deKlerk, John: *See—*
Cooper, Herbert Warren; Acevedo, John; and deKlerk, John, 3,967,221.

Delahunt, Robert M., to Polaroid Corporation. Film assembly including a hermetically sealed battery. 3,967,292, Cl. 354-174.000.

Dell, Hans-Dieter: *See—*
Boltze, Karl-Heinz; Brendler, Otfried; Dell, Hans-Dieter; and Jacobi, Haireddin, 3,966,956.

Delle-Alsthom: *See—*
Vigreux, Jacques; and Gromier, Andre, 3,966,297.

Delmar Chemicals Limited: *See—*
Podesva, Ctirad; and Scott, William T., 3,966,761.

Delphian Foundation, The: *See—*
Oliver, Stuart M.; Proud, Ralph A., Jr.; and Parsons, Sanford J., 3,967,255.

Deming, Kenneth R., to General Motors Corporation. Service minder odometer. 3,965,847, Cl. 116-114.00W.

Demou, John G.: *See—*
Patton, John T., Jr.; Pizzini, Louis C.; Demou, John G.; and Ramlow, Gerhard G., 3,966,521.

Den Bleyker, John R.: *See—*
Egtvedt, Robert B.; Zwiep, Theodore C.; and Den Bleyker, John R., 3,965,832.

Dendy, King Hubert; and Leskin, Morton B., to Leskin, Morton B. Power supply for a laser or gas discharge lamp. 3,967,159, Cl. 315-247.000.

Dennis, Charles L.; and Zemanek, Joseph, Jr., to Mobil Oil Corporation. Acoustic velocity logging system. 3,967,235, Cl. 340-15.5DS.

Denny, Dann W., to General Electric Company. Control circuit, refrigeration system, and method of controlling speed of an alternating current motor. 3,967,172, Cl. 318-227.000.

Den Ouden, Alfons Adriaan, to Brabo Corporation Naamloze Vennootschap. Construction units, some with corresponding pinion wheels mounted in meshed relation. 3,965,610, Cl. 46-17.000.

Dentsply Research & Development Corporation: *See—*
Koblitz, Francis Frederick, 3,966,479.

Denzel, Theodor: *See—*
Hoehn, Hans; and Denzel, Theodor, 3,966,746.

Dere, Daniel J.; and Wallace, Richard W., to Chromatix, Inc. Flash lamp pumped dye laser. 3,967,212, Cl. 331-94.50P.

Derolf, M. Robert; and Hertzenberg, Elliot P., to Philadelphia Quartz Company. Precipitating α alumina monohydrate. 3,966,893, Cl. 423-628.000.

DeRosa, John A.: *See—*
Fraioli, Anthony V.; and DeRosa, John A., 3,966,463.

Desalination Systems, Inc.: *See—*
Bray, Donald T., 3,966,616.

Deschamps, Andre: *See—*
Renault, Philippe; Deschamps, Andre; and Dezael, Claude, 3,966,891.

Design and Manufacturing Corporation: *See—*
Yake, William H., 3,966,246.

Detroit Gasket & Manufacturing Company: *See—*
Doerfling, Ralph G., 3,966,526.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Asinger, Friedrich; Offermanns, Heribert; Gluzek, Karl-Heinz; and vonBebenburg, Walter, 3,966,752.

Deutsche Texaco Aktiengesellschaft: *See—*
Engelhardt, Friedrich; Erhard, Karl; and Fuchs, Gundolf, 3,966,829.

Deutschlander, Gert, to SIG Schweizerische Industrie-Gesellschaft. Wrapper assembly including an article carrier element. 3,966,046, Cl. 206-445.000.

Deve, Vagn, to Combustion Engineering, Inc. Premix nozzle for kold box process. 3,966,174, Cl. 259-4.00R.

Develco, Inc.: *See—*
Rorden, Louis H., 3,967,201.

Deverill, Ian: *See—*
Greaves, Geoffrey Stuart; Deverill, Ian; and Bunce, Roger Abraham, 3,966,322.

deVial, Raymond Michael, to Bailey Meters & Controls Ltd. Installations for monitoring oil content. 3,965,920, Cl. 137-115.000.

deVries, Egbert, to Quad Corporation. Refrigerated structure. 3,965,698, Cl. 62-454.000.

Devroe, Leo Guillaume, to Antwerp Plastic Merchandising. Package for floral art pieces. 3,966,043, Cl. 206-423.000.

Deweerdt, Julien C.: *See—*
Senet, Jean-Pierre G.; and Deweerdt, Julien C., 3,966,788.

DeWolf, Charles F.; and Gault, William S., to Rix Industries. High pressure gas-liquid separator. 3,966,437, Cl. 55-219.000.

Dexter, Edward; and Otley, Stephen Reverdy, to United Biscuits Limited. Method and apparatus for treating food pieces. 3,966,983, Cl. 426-439.000.

Deylius, Hendrik Gerardus; Lammers, Jan Frederik; and Notenboom, Antonius Paulus, to U.S. Philips Corporation. Coupling two optical windows. 3,967,123, Cl. 250-368.000.

Dezael, Claude: *See—*
Renault, Philippe; Deschamps, Andre; and Dezael, Claude, 3,966,891.

Dhein, Rolf: *See—*
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; and Kreuder, Hans Joachim, 3,966,836.

Diamond, Julius, to William H. Rorer, Inc. Phenyl butyric acids and derivatives thereof. 3,966,801, Cl. 260-515.00A.

Dick, Perry J.; and Dick, Perry J., Jr., to Trumbull Corporation. Strip paving machine. 3,966,343, Cl. 404-101.000.

Dick, Perry J., Jr.: *See—*
Dick, Perry J.; and Dick, Perry J., Jr., 3,966,343.

Dickey, Baron Christian, to Ampex Corporation. Precision optical beam divider and position detector. 3,966,329, Cl. 356-152.000.

Diem, Hans; Dudeck, Christian; and Lehmenn, Gunter, to BASF Aktiengesellschaft. Manufacture of phthalo-bis-guanamines. 3,966,727, Cl. 260-249.900.

Dietrich, John Peter, to Sperry Rand Corporation. Command cue for a flight director instrument. 3,967,236, Cl. 340-27.0AT.

Dietsche, Robert J.: *See—*
Petersen, Robert E.; and Dietsche, Robert J., 3,967,094.

Dietz, George, Jr.; Skomoroski, Robert M.; and Zobbi, Robert G., to American Chemical & Refining Company Inc. Method for producing alkali metal gold sulfite. 3,966,880, Cl. 423-265.000.

Diggs, Richard E. Irrigation apparatus. 3,966,233, Cl. 61-13.000.

Diggs, Richard E. Apparatus for aerobic decomposition of sewage. 3,966,604, Cl. 210-104.000.

Dillingham, Edward W.: *See—*
Bittensky, Joel S.; Dillingham, Edward W.; Menzies, William R., III; and Pratt, Roy E., 3,966,587.

Dillon-Beck Manufacturing Company: *See—*
Hoffman, Louis S.; and Lutz, Michael, 3,966,083.

Dimmick, James Owen; Lewis, Theras Gordon; O'Neill, John Francis; and Fabiano, Lucian Philip, Jr., to Bell Telephone Laboratories, Incorporated. Time division network connection auditing arrangement. 3,967,072, Cl. 179-18.00J.

Dix, Sydney. Solar electrical generating system. 3,965,683, Cl. 60-641.000.

D'Luhy, Emil, to Moore Business Forms, Inc. Rotary die cutter. 3,965,786, Cl. 83-346.000.

Dobias, Joseph J., to NCR Corporation. Method and apparatus for recovering data and clock information in a self-clocking data stream. 3,967,061, Cl. 178-69.50R.

Dobias, Joseph J., to NCR Corporation. Method and apparatus for encoding data and clock information in a self-clocking data stream. 3,967,062, Cl. 178-69.50R.

Dobinson, Bryan: *See—*
Abel, Heinz; Dobinson, Bryan; Green, George Edward; Harris, Melvin; Stark, Bernard Peter; and Winterbottom, Kenneth, 3,967,041.

Dockery, Calvin D.: *See—*
Hudson, Jimmie E.; and Dockery, Calvin D., 3,966,860.

Dr.-Ing. Manfrid Dreher KG apparatebau und chemisch Verfahrenstechnik fur Oberflachenbehandlung von Metallen: *See—*
Dreher, Manfrid, 3,965,620.

Doerfling, Ralph G., to Detroit Gasket & Manufacturing Company. Process for making resilient laminar panel. 3,966,526, Cl. 156-224.000.

Doerges, Alexander: *See—*
Bratzler, Karl; and Doerges, Alexander, 3,966,875.

Doerr, Richard E.; McCain, David L.; and Davis, David H., to Continental Oil Company. Coal slurry recovery systems. 3,966,261, Cl. 302-14.000.

Doi, Haruo: *See—*
Kamigaito, Osami; Doi, Haruo; Masaki, Hideyuki; Kandori, Toshio; Oki, Masami; and Nakamura, Yasuo, 3,967,230.

Dolby Laboratories, Inc.: *See—*
Dolby, Ray Milton, 3,967,219.

Dolby, Ray Milton, to Dolby Laboratories, Inc. Signal compressors and expanders. 3,967,219, Cl. 333-14.000.

Dolecki, Matthew J., to Joy Manufacturing Company. Mining boom linkage for separate sump and swing cutting. 3,966,258, Cl. 299-76.000.

Dollar, David L., to Ball Corporation. High strength wrought zinc alloy. 3,966,505, Cl. 148-11.50R.

Dolveck, Gilbert, to Aluminium Suisse S.A. Process for the production of aerosol dispensing and similar metal cans. 3,965,834, Cl. 113-120.00Y.

Dominick, George G.; Lugowski, Ronald J.; Goodrich, Phillip D.; and Erickson, Kenneth, to Qonaar Corporation. Security box and receptacle housing for valuables. 3,966,116, Cl. 232-7.000.

Dominion Engineering Works, Limited: *See—*
Randpalu, Adu, 3,966,106.

Dominion Road Machinery Co. Limited: *See—*
MacDonald, John Graham, 3,965,771.

Donnelly, Robert Murray, to Mostek Corporation. Sense AMP for random access memory. 3,967,252, Cl. 340-173.00R.

Doo, Duncan. Coin-check operated article lock. 3,966,033, Cl. 194-1.00R.

Dorgnon, Roger. Expandable plug. 3,965,794, Cl. 85-77.000.

Doria, Giorgio: *See—*
Melacini, Paolo; Patron, Luigi; Doria, Giorgio; and Tedesco, Raffaele, 3,966,666.

Doriel, Joseph, to P.I.D. Patents and Inventions Development Limited. Parking cards. 3,966,232, Cl. 283-23.000.

Dorman, Linneaus C.; and Cheng, Roberta C., to Dow Chemical Company, The. Fibrinogen peptide derivatives. 3,966,701, Cl. 260-112.50R.

Dornier System GmbH: *See—*
Herbert, Werner, 3,966,507.
Huf, Franz, 3,966,370.

Dorosz, Adolph Stephen, to USM Corporation. Assembly for automatic bar tacking. 3,965,830, Cl. 112-121.110.

Dorren, Louis, to Matsushita Electric Corporation of America. Compatible four channel FM system. 3,967,069, Cl. 179-15.0BT.

Doty, Floyd F., to Iowa Manufacturing Company. Frame for cone crusher. 3,966,130, Cl. 241-285.00R.

Doubleday, Eric G. Suction hose with conductor means for electrical current. 3,965,526, Cl. 15-377.000.

Douglass, Miriam L., to Colgate-Palmolive Company. Novel derivatives of pyridazine-2-oxide. 3,966,928, Cl. 424-245.000.

Dousek, Frantisek: *See—*
Jansta, Jiri; and Dousek, Frantisek, 3,967,018.

Dow Chemical Company, The: *See—*
Dorman, Linneaus C.; and Cheng, Roberta C., 3,966,701.
Dunn, James L., Jr.; and Liddell, Harold G., 3,967,011.
Edamura, Fred Y.; and Sbragia, Ronald J., 3,966,937.
Frevel, Ludo K.; and Kressley, Leonard J., 3,966,418.
Gross, James R., 3,966,679.
Jackson, Larry L.; Seifert, Walter F.; and Collins, Daniel E., 3,966,626.
Ludwig, Peter J.; and Bird, Arnett L., 3,966,842.
Mathews, Glenn William; and Wing, Milton Silas, 3,966,690.
Olstowski, Franciszek, 3,966,662.
Olstowski, Franciszek, 3,966,664.
Pawloski, Chester E., 3,966,768.
Stevens, Timothy S.; and Small, Hamish, 3,966,596.
Suh, Kyung W., 3,966,381.

Dow, Norris F.: *See—*
Kulczycki, Karol; Darsie, Burns; and Dow, Norris F., 3,965,939.

Dravo Corporation: *See—*
Becker, Kenneth W.; Baczewski, Klemens C.; and Klein, Donald J., 3,966,982.

Dreher, Manfrid, to Dr.-Ing. Manfrid Dreher KG apparatebau und chemisch Verfahrenstechnik fur Oberflachenbehandlung von Metallen. Drum polishing apparatus. 3,965,620, Cl. 51-164.000.

Drennen, Richard E.; and Stutzman, Keith L. Sterilant immersion container with cover actuated tray. 3,966,408, Cl. 21-87.000.

Dresser Industries, Inc.: *See—*
Biffle, Morris S., 3,965,987.
Penny, Samuel Lee, 3,966,274.

Driscoll, Richard E.; and Milligan, Hugh E., to Cities Service Company. Process for halogenating rubber. 3,966,692, Cl. 526-20.000.

Drori, Mordeki. Non-side-splash water sprinklers. 3,966,122, Cl. 239-233.000.

D'Silva, Themistocles D. J., to Union Carbide Corporation. 2-(Carbamoyloximino)-4-thiazolidinone compounds as insecticidal, miticidal or nematocidal agents. 3,966,953, Cl. 424-270.000.

Du, John W.: *See—*
Sullivan, Thomas R.; Du, John W.; Pelegrinelli, Raymond L.; and Das, Suryya K., 3,966,667.

Dual Manufacturing and Engineering Incorporated: *See—*
Belisle, Adelard J., 3,966,251.

Dubach, Werner. Elastic type exercising apparatus. 3,966,204, Cl. 272-135.000.

Dudeck, Christian: *See—*
Diem, Hans; Dudeck, Christian; and Lehmenn, Gunter, 3,966,727.

Duke, Susan Ann: *See—*
Forward, Geoffrey Charles; Duke, Susan Ann; and Bell, Melissa Anne, 3,966,863.

Duling, Irl N.; Gates, David S.; Glazier, Frederick P.; Moore, Robert E.; and Newingham, Thomas D., to Sun Oil Company of Pennsylvania. Blended traction fluid containing hydrogenated polyolefin and an adamantane ether. 3,966,624, Cl. 252-52.00R.

Dumbrell, Richard John, to Procter & Gamble Company, The. Textile softening detergent compositions. 3,966,629, Cl. 252-140.000.

Dunakey, Harry F.: *See—*
Havener, Ralph L.; and Dunakey, Harry F., 3,966,007.

Dunlop Limited: *See—*
Schmitt, Otto, 3,966,536.

Dunn, James L., Jr.; and Liddell, Harold G., to Dow Chemical Company, The. Process for impregnating wood. 3,967,011, Cl. 427-345.000.

Dunning, John M., III, to Dunning Ltd. Convertible sofa. 3,965,499, Cl. 5-13.000.

Dunning Ltd.: *See—*
Dunning, John M., III, 3,965,499.

Du Pont de Nemours, E. I., and Company: *See—*
Burger, Charles Frederic, 3,966,602.
Gosser, Lawrence W., 3,966,595.
Hartzler, Jon David, 3,966,656.
James, Edward William, II; and Kenney, Warren Eugene, 3,965,548.

Duquette, Francis H.; and Merker, Walter H., Jr., to Miner Enterprises, Inc. Draft gear mechanism and method of assembling same. 3,966,057, Cl. 213-22.000.

Duvia, Orazio. Powered vehicle with controls for loading, unloading and discharge tilting of a separable container. 3,966,068, Cl. 214-317.000.

Dweck, David: *See—*
Mayer, Salvador Escobar, Sr., 3,966,183.

Dwyer, Daniel E., Jr.: *See—*
Katz, Saul N.; and Dwyer, Daniel E., Jr., 3,966,979.

Dynamit Nobel Aktiengesellschaft: *See—*
Frick, Siegmund; Gresser, Wilhelm; Meyer, Gunther; and Bier, Gerhard, 3,966,673.
Gawlick, Heinz; Brede, Uwe; and Bendler, Hellmut, 3,967,141.

E. F. Houghton and Company: *See—*
Abrams, Ellis; and Barber, Sidney, 3,965,712.

E. R. Squibb & Sons, Inc.: *See—*
Hoehn, Hans; and Denzel, Theodor, 3,966,746.
Yale, Harry Louis; and Petigara, Ramesh B., 3,966,733.

Eads, Harold O.; and Robison, James W., to McDonough Co. Manual cultivating tool. 3,965,991, Cl. 172-376.000.

Eastern Poly Packaging Company: *See—*
Rivman, Samuel J.; Cohen, Bernard; and Da Costa, Alvaro, 3,965,952.

Eastman, James E.: *See—*
Cremer, Charles W.; Eastman, James E.; and Schanefelt, Robert V., 3,966,990.

Eastman Kodak Company: *See—*
Beach, David Easton, 3,967,142.
Combs, Robert L., 3,966,841.
Contois, Lawrence E.; and Rule, Norman G., 3,966,468.
Johannes, Walter, 3,966,117.

Easton, Richard L.; and Buseth, Richard A., to Aeroquip Corporation. Tank filling system employing emergency shut-off valve. 3,965,947, Cl. 141-207.000.

Eaton, Carl J.; and Podiak, Richard S., to Champion Spark Plug Company. Spark plug. 3,967,149, Cl. 313-141.000.

Eaton Corporation: *See—*
Balban, Morton S.; and Larson, Doublas A., 3,967,135.
Bencic, Robert S., 3,966,091.
Bracken, Joseph W., Jr., 3,965,699.
Braun, Eugene R., 3,966,260.
Danis, Louis J., 3,967,013.
Larson, Gerald L.; and Kuether, Roger F., 3,965,669.
MacDonald, Ian M.; and Cowie, Charles J., 3,967,170.
McNinch, Joseph H., Jr.; Urban, John A.; and Hopkins, Gary L., 3,966,267.
Neuman, Richard F., 3,966,228.
Roggenkamp, George H., 3,965,971.
Roth, Helmut, 3,966,226.

Ebarches S.A.: *See—*
Scherrer, Igor; and Hersberger, Pierre, 3,965,667.

Ebner, Emanuel C., to Foto-Cube, Inc. Display system for interchangeable presentation and storage of pictures. 3,965,599, Cl. 40-152.000.

Ebner, Jakob, to Gundermann GmbH & Co. KG. Method of making a sealing and insulating coating. 3,967,012, Cl. 427-380.000.

Echida, Nobuhiro: *See—*
Uemura, Masaru; Kuroki, Hitoshi; Echida, Nobuhiro; Kosaka, Yujiro; and Otomo, Kanji, 3,967,020.

Ecodyne Corporation: *See—*
Burkhead, Carl E., 3,966,599.
Mason, Donald G.; and Higgins, Robert B., 3,966,608.

Economics Laboratory, Inc.: *See—*
Mizuno, William G.; and Henderson, Iris N., 3,967,008.

Edamura, Fred Y.; and Sbragia, Ronald J., to Dow Chemical Company, The. Method for protecting plants from soil-borne plant disease organisms using methyl-(4-methylphenyl)-substituted-tetrazolo (1,5-a)-pyrimidines. 3,966,937, Cl. 424-251.000.

Edl, Wolfgang; Meister, Werner; and Seidl, Hans, to Peroxid-Chemie GmbH. Free radical polymerization of olefinically unsaturated monomers, using pinanyl-peroxyesters. 3,966,840, Cl. 260-860.000.

Edmundson, Charles W., to Stratford Engineering Corporation. Baffling arrangements for contactors. 3,965,975, Cl. 165-108.000.

Eduard Kuesters Maschinenfabrik: *See—*
Ahrweiler, Karl-Heinz; Appenzeller, Valentin; Quoos, Kurt; and Kusters, Eduard, 3,965,769.

Edwards, Bryant, to Illinois Tool Works Inc. Apparatus for forming thin-walled plastic articles. 3,966,382, Cl. 425-387.00B.

Edwards, Grant Campbell: *See—*
Vaughan, David Evan William; and Edwards, Grant Campbell, 3,966,883.

Edwards, Lon E., to Solitron Devices, Inc. Current limiting of noise diodes. 3,967,187, Cl. 323-4.000.

Edwin Cooper & Company Limited: *See—*
Elliott, John Scotchford; Davis, Bryan Terence; and Howlett, Richard Martin, 3,966,807.

Egtvedt, Robert B.; Zwiep, Theodore C.; and Den Bleyker, John R., to Wolverine World Wide, Inc. Method of contour sewing. 3,965,832, Cl. 112-262.000.

Ehrens, Henry; and Nonnenmacher, Frank, to Allenwood Sports, Inc. Self-projecting elastic type projecting device. 3,965,882, Cl. 124-18.000.

Ehret, Gordon F.: *See—*
Rowley, William N.; and Ehret, Gordon F., 3,966,363.

Eilers, Kenneth L.: *See—*
Toy, Arthur D. F.; and Eilers, Kenneth L., 3,966,478.

Elco Corporation: *See—*
Hyland, Anthony Joseph; and Crossley, Wade William, 3,966,295.

Elford, Peter Ellice. Container erection apparatus. 3,965,804, Cl. 93-51.0HW.

El-Ghatta, Hussain; and Forrer, Johann Karl, to Inventa AG fur Forschung und Patentverwertung. Process for reactivating platinum catalysts used in production of hydroxylammonium salts. 3,966,635, Cl. 252-413.000.

Elikan, Leonard; Lyon, Ward L.; and Sundar, Parameshwaran S., to Westinghouse Electric Corporation. Uranium complex recycling method of purifying uranium liquors. 3,966,873, Cl. 423-10.000.

Elikan, Leonard: *See—*
Sundar, Parameshwaran; Elikan, Leonard; and Lyon, Ward L., 3,966,872.

Ellenbaum, Frank H.; and Ciesco, Richard, to Molten Metal Engineering Co. Process of using olivine in a blast furnace. 3,966,456, Cl. 75-41.000.

Ellenberger, Jakob, to Ellenberger & Poensgen GmbH. Switching device for the protection of direct current devices. 3,967,169, Cl. 317-33.0SC.

Ellenberger & Poensgen GmbH: *See—*
Ellenberger, Jakob, 3,967,169.

Ellenbogen, Leon; and Kohler, Constance Anne, to American Cyanamid Company. 3-(4-Biphenylcarbonyl)propionic acid as an inhibitor of platelet aggregation. 3,966,960, Cl. 424-317.000.

Ellenbogen, Leon; and Kohler, Constance Anne, to American Cyanamid Company. 4-Biphenylacetic acid as an inhibitor of platelet aggregation. 3,966,978, Cl. 424-317.000.

Elliott, Jack P., to J. P. Elliott Associates, Inc. Bearing washer. 3,965,523, Cl. 15-302.000.

Elliott, James B., to Poly-Optics, Inc. Sculpture mold. 3,966,166, Cl. 249-134.000.

Elliott, John Scotchford; Davis, Bryan Terence; and Howlett, Richard Martin, to Edwin Cooper & Company Limited. Lubricant additives, their preparation and compositions containing them. 3,966,807, Cl. 260-559.00D.

Eloranta, Vaito K.; and Ruggles, Benjamin C., to Polaroid Corporation. Interlock mechanism for photographic processng system. 3,967,297, Cl. 354-83.000.

Em. D'Hooge N.V.: *See—*
Vanderheyden, Herman E-C, 3,965,704.

Emblem, Harold Garton; and Sargeant, Graham Kenwood, to Zirconal Processes Limited. Hardening of coating containing aluminum hydroxyhalides using a mist of acetate or lactate. 3,967,003, Cl. 427-133.000.

Emerson Electric Co.: *See—*
Lewis, John G., 3,966,278.
Luenberger, Frederick O., 3,965,766.
Maguire, D. Bruce, 3,966,188.

EMI Limited: *See—*
White, Eric Lawrence Casling, 3,967,284.

Emo, Jean Claude: *See—*
Herment, Robert; Lafage, Yves; Emo, Jean Claude; and Yurcek, Jean Marie, 3,966,427.

Empire Automotive, Inc.: *See—*
Green, Hal, 3,965,566.

Empire Oil Tool Company: *See—*
Garrison, Marion A., 3,966,369.

Endo, Hirofumi: *See—*
Hayashi, Masaki; Kori, Seiji; Ohyama, Isao; and Endo, Hirofumi, 3,966,792.

Endo, Takeshi: *See—*
Tokura, Katsuyuki; Maeda, Shuichi; Endo, Takeshi; Yoichizono, Kenji; and Asami, Hiroshi, 3,965,913.

Endow, Kazuhiko: *See—*
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Energy Conversion Devices, Inc.: *See—*
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Energy Systems, Inc.: *See—*
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Engel, Stephen August, to Union Carbide Corporation. Method for making instantaneous scarfing starts. 3,966,503, Cl. 148-9.500.

Engelhard Minerals & Chemicals Corporation: *See—*
Hindin, Saul G.; and Pond, George R., 3,966,391.
Hindin, Saul G.; and Pond, George R., 3,966,790.

Engelhardt, Friedrich; Erhard, Karl; and Fuchs, Gundolf, to Deutsche Texaco Aktiengesellschaft. Method of purifying monoalcohols. 3,966,829, Cl. 260-643.00B.

Engelhardt, Friedrich: *See—*
Piesch, Steffen; and Engelhardt, Friedrich, 3,966,769.
Ribka, Joachim; Engelhardt, Friedrich; and Piesch, Steffen, 3,966,689.

Engell, Renee: *See—*
Braaten, Terje, 3,966,546.

Engle, Robert C., to Ex-Cell-O Corporation. Quick change feed mechanism and abrasive replacement. 3,965,619, Cl. 51-58.000.

English Clays Lovering Pochin & Company Limited: *See—*
Webster, John David; and Bowman, Henry Torrens A., 3,965,555.

Enomoto, Michitoshi, to Nakamura Kinzoku Kogyosho, Inc. Quick-action pipe joint. 3,966,240, Cl. 285-367.000.

Environmental Control Products, Inc.: *See—*
McRee, Robert E., Jr., 3,965,828.

Epishina, Lia Vladimirovna: *See—*
Novikov, Sergei Sergeevich; Khmelnitsky, Lenor Ivanovich; Lebedev, Oleg Vasilievich; Epishina, Lia Vladimirovna; Suvorova, Ljudmila Ivanovna; Lapshina, Lidia Vasilievna; Krylov, Valery Dmitrievich; Zaikonnikova, Irina Vitalievna; Zimakova, Irina Evgenievna; Chudnovsky, Vladimir Sergeevich; Babichev, Viktor Andreevich; and Avdonina, Nina Alexandrovna, 3,966,742.

Eppe, Rudolf: *See—*
Abbe, Gunter; Eppe, Rudolf; Ettelbruck, Rudiger; Pfeifer, Josef; and Schnall, Gunther, 3,966,194.

Epsztein, Bernard: *See—*
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Erhard, Karl: *See—*
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Erickson, Kenneth: *See—*
Dominick, George G.; Lugowski, Ronald J.; Goodrich, Phillip D.; and Erickson, Kenneth, 3,966,116.

Erickson, Lewis C. Hydraulic motor or pump with movable wedge. 3,966,367, Cl. 418-58.000.

Erickson, Robert L. Printer. 3,966,035, Cl. 197-1.00R.

Erickson Tool Company: *See—*
Benjamin, Milton L., 3,966,350.

Ericson, Eric A., to General Electric Company. Anti-turn clip for incorporation in bolted electrical joints. 3,966,296, Cl. 339-263.00R.

Eriksson, Tore, to Aktiebolaget Tudor. Method for the production of lead storage battery electrodes. 3,966,495, Cl. 136-27.000.

Ernst, Richard John, to Illinois Tool Works Inc. Combination drilling and wrenching tool. 3,965,510, Cl. 20-7.000.

Errani, Deo. Switch device for indicating the undue opening of doors and closing-wings. 3,967,080, Cl. 200-61.640.

ESB Incorporated: *See—*
Honer, Harold Nickolas, 3,966,497.

Esemplare, Pascal E.; and Beeferman, Dennis, to Sutures, Inc. Rubber articles having improved slip coating. 3,967,014, Cl. 427-385.000.

Espy, Herbert H.; and Putnam, Stearns T., to Hercules Incorporated. Cationic water soluble polymeric reaction product of polyaminopolyureylene-epichlorohydrin and nitrogen compound. 3,966,684, Cl. 260-77.50C.

Espy, Herbert H.; and Putnam, Stearns T., to Hercules Incorporated. Cationic water soluble polymeric reaction product of poly(diallylamine)-epihalohydrin and nitrogen compound. 3,966,694, Cl. 526-11.200.

Essex International, Inc.: *See—*
Anderson, Robert L., Jr.; and Russell, James B., 3,967,270.

Estlick, Raymond J., to Raytheon Company. Adaptive actuator system. 3,965,798, Cl. 91-172.000.

Estradier, Francoise: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,966,722.

Estry, Arthur L.: *See—*
Heffron, Allan J.; Estry, Arthur L.; and Chalmers, William F., 3,966,058.

Eszakmagyarorszagi Vegyimuvek: *See—*
Rozsa, Laszlo; Meszaros, Lajos; and Mogyorodi, Ferenc, 3,966,786.

Etat Francais: *See—*
Cailloux, Jean Guy, 3,965,842.
Maguer, Pierre; and Gourlay, Paul, 3,967,233.

Etheredge, Cortez, Jr., to Olin Corporation. Operating apparatus for sliding closures for railway car. 3,965,760, Cl. 74-89.140.

Ethyl Corporation: *See—*
Bussey, Francis H., Jr.; and Rutherfoord, James K., 3,966,383.

Ettelbruck, Rudiger: *See—*
Abbe, Gunter; Eppe, Rudolf; Ettelbruck, Rudiger; Pfeifer, Josef; and Schnall, Gunther, 3,966,194.

Ettelt, Gregory A., to Tenco Hydro/Aerosciences, Inc. Circular dissolved gas flotation system. 3,966,598, Cl. 210-44.000.

Eue, Ludwig: *See—*
Westphal, Kurt; Meiser, Werner; Eue, Ludwig; and Hack, Helmuth, 3,966,715.

Evans, James D., to Swank Refractories Company, Inc. Low density sleeve. 3,966,480, Cl. 106-40.00R.

Evans Products Company: *See—*
Long, James Michael; and Osterlund, Paul Alan, 3,967,047.

Eveland, Melborne D. Dental apparatus and method. 3,965,576, Cl. 32-32.000.

Everett/Charles, Inc.: *See—*
Wysocki, Lawrence E.; and Muench, Elmer W., 3,965,932.

Ewing, Joan R.: *See—*
Page, Geoffrey A.; Grammatica, Steven J.; and Ewing, Joan R., 3,966,466.

Ex-Cell-O Corporation: *See—*
Engle, Robert C., 3,965,619.

Exothermic Company of Canada Limited: *See—*
Vayda, Pierre A., 3,966,167.

Extraction de Smet: *See—*
Athanassiadis, Anthony, 3,966,559.

Exxon Research and Engineering Company: *See—*
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Van Brederode, Robert A.; and Steinkamp, Robert A., 3,966,845.
Watkins, Robert Charles; Kinghan, Derek Alfred; and Humphrey, Robert Walter, 3,966,621.

Eysn, Manfred: *See—*
Patuzzi, Alexander; Eysn, Manfred; and Moser, Peter, 3,966,180.

Eyssa, Yehia M.: *See—*
Boom, Roger W.; Eyssa, Yehia M.; and Sutton, John, 3,966,590.

F. L. Smithe Machine Company, Inc.: *See—*
Helm, Herbert W., 3,966,186.

F. P. Licensing Co., Inc: *See—*
Howes, Bruce; and Holland, Thomas K., 3,966,396.

Faber, Kurt Heinrich Albert Erich, to Sandvik Aktiebolag. Toolholder. 3,965,553, Cl. 29-96.000.

Fabiano, Lucian Philip, Jr.: *See—*
Dimmick, James Owen; Lewis, Theras Gordon; O'Neill, John Francis; and Fabiano, Lucian Philip, Jr., 3,967,072.

Facit Aktiebolag: *See—*
Andersson, Roger Ingemar; and Sultan, Stig Bertil, 3,967,286.

Fair, Graeme David; Hasmall, Derek Lesley Arthur; Ryan, William Patrick; and Sellman, Edwin John, to Rothmans of Pall Mall (Australia) Limited; and Lantor of Australia Pty. Ltd. Method of preparing tobacco smoke filter. 3,966,912, Cl. 264-118.000.

Fairbanks, Arthur L.: *See—*
Byars, Gordon F.; and Fairbanks, Arthur L., 3,965,707.

Fairchild Industries Inc.: *See—*
Gonzales, Joseph M.; and Page, Armond J., 3,966,072.

Fajella, Francis J.: *See—*
Chomette, Albert Etienne, 3,965,808.

Fallenbeck, Eberhardt G.; and Upright, Wayne N., to Branson Ultrasonics Corporation. Method of ultrasonically welding a circumferential telescoping joint. 3,966,520, Cl. 156-73.100.

Fanti, Roy: *See—*
Veltri, Richard D.; Fanti, Roy; and Galasso, Francis Salvatore, 3,967,029.

Farace, Joseph N.: *See—*
Skoures, Alexander E.; and Farace, Joseph N., 3,967,209.

Farago, Frank John; Sood, Raman Radha; and Stokes, David Michael, to Alcan Research and Development Limited. Method of calcining coke in a rotary kiln. 3,966,560, Cl. 201-32.000.

Farnam, Franklin C. Method of reconstituting mica. 3,966,862, Cl. 264-110.000.

Fastner, Thorwald; and Pammer, Manfred, to Vereingte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Method of continuously casting steel strands, in particular slabs. 3,965,964, Cl. 164-83.000.

Fathauer, Jack E., to RPC Corporation. Spreader for lifting containers. 3,966,069, Cl. 214-620.000.

Fathom Oceanology Limited: *See—*
Hale, Neville E., 3,966,171.

Fauland, Erich: *See—*
Kampe, Wolfgang; Fauland, Erich; Stach, Kurt; Stork, Harald; and Schmidt, Felix Helmut, 3,966,916.

Feasey, Ronald George; and Rose, John Brewster, to Imperial Chemical Industries Limited. Phenol precursors. 3,966,851, Cl. 260-949.000.

Feast, Alan Arthur John; and Scott, Charles Mack, to International Synthetic Rubber Company, Limited, The. Preparation of latices. 3,966,661, Cl. 260-29.70H.

Featherston, Richard H.; Fischer, Joseph P.; Garing, Meriwether L.; and Wright, James R., to Reynolds Metals Company. Extraction of alumina from bauxite ores. 3,966,874, Cl. 423-121.000.

Federal-Mogul Corporation: *See—*
Bogart, James S.; and Wilcox, John M., 3,965,580.

Federmann, Manfred: *See—*
Kurz, Jurgen; Kolling, Heinrich; and Federmann, Manfred, 3,966,964.

Fehn, Berthold; and Simon, Oskar, to Gesellschaft fur Systemtechnik mbH. Apparatus for installing and removing the drive assembly in chain driven-vehicles. 3,966,061, Cl. 214-38.00D.

Felburn, J. Phil. Vehicle suspensions. 3,966,222, Cl. 280-685.000.

Felburn, John Phil. Multi-purpose vehicle. 3,966,064, Cl. 214-131.00R.

Feldman, Daniel W.: *See—*
Sprague, James W.; Feldman, Daniel W.; and Veatch, Frank, 3,966,429.

Feldman, Paul S.: *See—*
Johnson, Robert B.; Feldman, Paul S.; and Fisher, Edwin P., 3,967,139.

Feldmann, Rainer; Kriesten, Wolfgang; Muller, Karl Adolf; Panoch, Hans Joachim; and Scholten, Heinz, to Chemische Werke Huls Aktiengesellschaft. Polyamide base powder coating material. 3,966,838, Cl. 260-857.00R.

Fell, Wolfgang, to Licentia Patent-Verwaltungs-G.m.b.H. Arrangement for guiding a rapidly rotating record carrier foil. 3,967,320, Cl. 360-102.000.

Feltz, Adalbert; Opfermann, Johannes; Voigt, Bernd; and Seliger, Walter, to VEB Pentacon Dresden. Photo-conductive coating containing Ge, S, and Pb or Sn. 3,966,470, Cl. 96-1.500.

Fencl, Miroslav. Interconnection of modular structures. 3,965,627, Cl. 52-79.000.

Feng, Bal-Cwo; and Feng, George Cheng-Cwo, to International Business Machines Corporation. Method for forming dielectric isolation combining dielectric deposition and thermal oxidation. 3,966,514, Cl. 148-187.000.

Feng, George Cheng-Cwo: *See—*
Feng, Bal-Cwo; and Feng, George Cheng-Cwo, 3,966,514.

Ferara, James T.; and Massey, William A., to Molins Machine Company, Inc. Paperboard corrugator. 3,966,518, Cl. 156-64.000.

Ferguson, Richard: *See—*
Hinton, Charles V.; Troutman, Kenneth W.; and Ferguson, Richard, 3,966,591.

Ferrell, Howard H.: *See—*
Conley, Dell; Ferrell, Howard H.; and Lescarboura, Jaime A., 3,965,978.

Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, to John Heathcoat & Co. Ltd. Apparatus for producing bulked yarns. 3,965,547, Cl. 28-1.300.

Ferro Manufacturing Corporation: *See—*
Pickles, Joseph, 3,965,618.

Fett, Darrell L., to Honeywell Information Systems, Inc. Data alignment circuit. 3,967,101, Cl. 235-152.000.

Fettweis, Alfred, to Siemens Aktiengesellschaft. Filter having frequency-dependent transmission properties for electric analog signals. 3,967,099, Cl. 235-152.000.

Fiber Industries, Inc.: *See—*
Jones, Charles Alonzo; Lawson, Jerry Joe; and Mayrose, William Carl, 3,966,241.

Fiegel, Harvey E.: *See—*
Kresge, James S.; and Fiegel, Harvey E., 3,967,160.

Fikse, Tyman H., to Robbins Company, The. Tunneling equipment. 3,966,256, Cl. 299-33.000.

Filipiev, Oleg Vladimirovich: *See—*
Andoniev, Sergei Mikhailovich; Zilberman, Leonid Borisovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Filipiev, Oleg Vladimirovich; Kasyanov, Grigory Ivanovich; Zalmanovich, Grigory Borisovich; and Raikovsky, Jury Borisovich, 3,966,179.

Fillderman, Rene Gabriel, to Societe Anonyme Francaise du Ferodo. Noise-reducing support for friction linings of braking devices. 3,966,026, Cl. 188-73.500.

Finberg, Arne O., to Mobil Oil Corporation. Nonflammable polystyrene thermoplastic compositions containing a brominated ester polymer. 3,966,843, Cl. 260-874.000.

Finch, William A.; Loughridge, Frederick A.; and Marcucci, Rudolf, to GTE Sylvania Incorporated. Method for making high intensity discharge arc tube. 3,966,288, Cl. 316-19.000.

Findeisen Brothers: *See—*
Findeisen, Kurt Ernst, 3,965,702.

Findeisen, Kurt Ernst, to Findeisen Brothers. Hosiery support. 3,965,702, Cl. 66-173.000.

Fine, Ira W.: *See—*
Newman, Irvin, 3,965,638.

Finkbeiner, Hanspeter, to Gezolan Engineering AG. Method and facility for the production of rubber flours and/or rubber granules from vehicle ties. 3,966,125, Cl. 241-14.000.

Finkbeiner, Ludwig; Jurinke, Rudolf; Leutner, Volkmar; and Romes, Roman, to Robert Bosch G.m.b.H. Electro-fluidic signal converter. 3,965,918, Cl. 137-83.000.

Finkelston, Robert J.: *See—*
Aspers, Arthur J.; and Finkelston, Robert J., 3,965,778.

Finley, Carl Eugene: *See—*
Crown, Marlyn Dale; and Finley, Carl Eugene, 3,966,097.

Firestone Tire & Rubber Company, The: *See—*
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Crane, Grant; and Kay, Edward Leo, 3,966,487.
Halasa, Adel Farhan, 3,966,691.

Firmenich S.A.: *See—*
Schulte-Elte, Karl-Heinrich; Joyeux, Michel; and Ohloff, Gunther, 3,966,819.

Fischer, Adolf, deceased (by Fischer, Caecilia Emma, legal representative), to BASF Aktiengesellschaft. Herbicidal mixtures of 3-lower alkyl-2,1-3-benzothiadiazinone-(4)-2,2-dioxides or salts thereof and 1,1'-di-(3,5-dimethylmorpholine-carbonylmethyl)-4,4'-dipyridylium salt. 3,966,451, Cl. 71-91.000.

Fischer, Adolf, deceased (by Fischer, Caecilia Emma, legal representative), to BASF Aktiengesellschaft. Herbicide mixtures of 3-lower alkyl-2,1,3-benzothiadiazinone-(4)-2,2-dioxides or salts thereof and lower alkyl N-(4-aminobenzenesulfonyl)-carbamates. 3,966,452, Cl. 71-91.000.

Fischer, Caecilia Emma, legal representative: *See—*
Fischer, Adolf, deceased, 3,966,451.
Fischer, Adolf, deceased, 3,966,452.

Fischer, Edgar: *See—*
Noetzel, Siegfried; Jastrow, Horst; and Fischer, Edgar, 3,966,849.

Fischer, Ernest J. Moisture trap for medical oxygen supply apparatus. 3,965,894, Cl. 128-194.000.

Fischer, Joseph P.: *See—*
Featherston, Richard H.; Fischer, Joseph P.; Garing, Meriwether L.; and Wright, James R., 3,966,874.

Fischer, Michael, to Walpak Company. Urinary irrigation valve. 3,965,910, Cl. 128-349.00R.

Fischer, Richard V.; and Kee, Richard C., to Polaroid Corporation. Accessory attachment for cameras. 3,967,303, Cl. 354-295.000.

Fisher, Edwin P.: *See—*
Johnson, Robert B.; Feldman, Paul S.; and Fisher, Edwin P., 3,967,139.

Fisons Limited: *See—*
Ahmad, Mohammad, 3,966,606.
Suschitzky, John Louis; and Rutherford, David, 3,966,783.

Fitzner, Arthur O., to Brunswick Corporation. Radio frequency interference suppression apparatus. 3,965,879, Cl. 123-148.00P.

Fitzsimmons, George W.: *See—*
Buehler, Walter E.; and Fitzsimmons, George W., 3,967,278.

Flatau, Karsten; and Terwiesch, Bernd, to Chemische Werke Huls Aktiengesellschaft. Prevention of wall deposits during polyvinyl chloride polymerizations. 3,966,695, Cl. 526-62.000.

Fleck, Jack William. Christmas tree stand. 3,966,153, Cl. 248-512.000.

Fleissner, Heinz, to Vepa AG. Process for continuous heat-setting and shrinking of synthetic fibers. 3,965,511, Cl. 8-149.100.

Fletcher, Russell Edward, to British Broadcasting Corporation. Analogue to digital converters. 3,967,269, Cl. 340-347.0AD.

Fliege, Werner: *See—*
Aquila, Werner; Himmele, Walter; Fliege, Werner; and Siegel, Hardo, 3,966,827.

Flint, Glen E.: *See—*
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Flo-Start, Inc.: *See—*
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Floyd, Middleton Brawner, Jr.: *See—*
Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,966,773.

Fluet, Francis A.: *See—*
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FMC Corporation: *See—*
Avramidis, Stellios Anthony, 3,965,764.
O'Neill, Eugene T.; and Kibbel, William H., Jr., 3,966,450.

Fogarty, Thomas J.: *See—*
Hancock, Warren D.; and Fogarty, Thomas J., 3,966,401.

Ford Motor Company: *See—*
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Innes, Gary L., 3,965,730.
Ludwig, Frank A., 3,966,492.

Forrer, Hermann: *See—*
Goetti, Hans; Mittler, Anton; and Forrer, Hermann, 3,965,663.
Goetti, Hans; Mittler, Anton; and Forrer, Hermann, 3,965,664.

Forrer, Johann Karl: *See—*
El-Ghatta, Hussain; and Forrer, Johann Karl, 3,966,635.

Forsberg, Charles W., to Indian Head Inc. Adhesive applicator device and method. 3,966,334, Cl. 401-9.000.

Forster, Karl-Heinz: *See—*
Riedl, Rudi; Jungnickel, Regina; Nitsch, Rainer; Lein, Werner; Vetter, Lothar; Schone, Helmut; Weisbach, Gunter; Johne, Hans; Schott, Alfred; Forster, Karl-Heinz; and Johne, Albrecht, 3,966,197.

Forsyth, John P.: *See—*
Forsyth, Robert W.; and Forsyth, John P., 3,966,220.

Forsyth, Robert W.; and Forsyth, John P. Variable length vehicle. 3,966,220, Cl. 280-638.000.

Forte, Mark R.: *See—*
Murray, Ian P.; and Forte, Mark R., 3,965,490.

Forward, Geoffrey Charles; Duke, Susan Ann; and Bell, Melissa Anne, to Beecham Group Limited. Oral hygiene compositions. 3,966,863, Cl. 424-52.000.

Foster, Betty Jane; and Tummala, Rao Ramamohana, to International Business Machines Corporation. Sealing glass composition and process. 3,966,449, Cl. 65-43.000.

Foster, Edwin E. Pedal actuated bicycle brake. 3,966,229, Cl. 280-261.000.

Foster Grant Co., Inc.: *See—*
Sims, Willard M., 3,966,839.

Foster, James R., to Franklin Manufacturing Company. Slipping belt clutch. 3,965,768, Cl. 74-242.11R.

Foto-Cube, Inc.: *See—*
Ebner, Emanuel C., 3,965,599.

Foulds, Ronald B.; Kasberg, Alvin H.; Puechl, Karl H.; and Bleiberg, Melvin L., to Atlantic Richfield Company. Reactor fuel assemblies. 3,966,550, Cl. 176-78.000.

Fox, Robert M.; and Wize, Gary A., to General Motors Corporation. Infinite position door hold open. 3,965,531, Cl. 16-140.000.

Frahm, Carl E.; and Frahm, Shirley E. Valved water container with seal. 3,966,093, Cl. 222-185.000.

Frahm, Shirley E.: *See—*
Frahm, Carl E.; and Frahm, Shirley E., 3,966,093.

Fraioli, Anthony V.; and DeRosa, John A., to Plessey Incorporated. Oxidation and sinter-resistant metal powders and pastes. 3,966,463, Cl. 75-108.000.

Francavilla, Vincent J. Display holder for dental materials. 3,966,055, Cl. 211-65.000.

Franklin Manufacturing Company: *See—*
Foster, James R., 3,965,768.
Puterbaugh, Richard L., 3,966,283.

Frazier, Arthur E., to Phillips Petroleum Company. Method for filtering gas and cleaning of filter bags. 3,966,434, Cl. 55-96.000.

Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees of the Stoneleigh Trust u/d/t Dec. 4, 1973: *See—*
Massa, Donald P., 3,967,260.

Fredriksson, Torsten, to Allergan Pharmaceuticals. Composition and method for treating psoriasis. 3,966,924, Cl. 424-240.000.

Freed, Meier E.; and Potoski, John R., to American Home Products Corporation. Preparation of 5,8-methano-5H-benzocyclohepten-10-amines. 3,966,815, Cl. 260-570.80R.

Freeman, Dalia: *See—*
Mazur, Yehuda; Freeman, Dalia; and Acher, Aureliu J., 3,966,777.

Freeman, Michael Alexander Reykers; Kempson, Geoffrey Edward; and Tuke, Michael Anthony, to National Research Development Corporation. Endoprosthetic bone joint device for the talo-navicular joint. 3,965,489, Cl. 3-1.910.

Fregnan, Gian Carlo: *See—*
Bernardi, Luigi; Bosisio, Germano; and Fregnan, Gian Carlo, 3,966,739.

French Oil Mill Machinery Company, The: *See—*
Manko, Nicholas L., 3,965,814.

Frenzel, William K. Prosthetic device for holding golf clubs. 3,965,491, Cl. 3-12.800.

Frequency & Time Systems, Inc.: *See—*
Kern, Robert H., 3,967,115.

Frese, Stefan, to Siemens Aktiengesellschaft. Apparatus for the wireless transmission of a control signal to the control path of a controlled semiconductor valve. 3,967,244, Cl. 340-171.0PF.

Frevel, Ludo K.; and Kressley, Leonard J., to Dow Chemical Company, The. Gas treatment apparatus. 3,966,418, Cl. 23-284.000.

Freze, Benjamin H., to Challenge-Cook Bros., Incorporated. Lint disposal apparatus. 3,966,441, Cl. 55-290.000.

Frick, Siegmund; Gresser, Wilhelm; Meyer, Gunther; and Bier, Gerhard, to Dynamit Nobel Aktiengesellschaft. Polyvinylchloride polymer inhibited against release of hydrogen chloride at elevated temperature. 3,966,673, Cl. 260-42.490.

Friedman, Louis D., to Cogas Development Company. Waste water processing. 3,966,633, Cl. 252-373.000.

Friedrich, Helmut, to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung. Apparatus for starting aircraft engines and for operating auxiliary on-board power generating equipment. 3,965,673, Cl. 60-39.140.

Friedrich Kocks GmbH: *See—*
Herchenroder, Hans, 3,965,682.

Friedrich Refrigerators Inc.: *See—*
Ansted, Roger C.; and Rodgers, Gerald L., 3,965,692.

Friend, Aaron D.; and Lindahl, Hilmer C., to R. G. LeTourneau, Inc. Propulsion control system for electrically powered vehicles. 3,967,171, Cl. 318-158.000.

Frischmann, Albert; Mermi, Kurt; Hermeneit, Rainer; and Koniger, Rudolf, to Upat-Max Langensiepen KG. Set of fixing elements for mounting radiators or like bodies on walls. 3,966,156, Cl. 248-201.000.

Froberg, Magnus L.; and Maddux, John F., to Owens-Corning Fiberglas Corporation. Apparatus and method for increasing furnace life in an electric furnace for thermoplastic materials. 3,967,046, Cl. 13-6.000.

Frodsham, E. Dale: *See—*
Reese, Raymond E., 3,966,067.

Frohlich, Alfons; and Cappel, Marie-Luise, to Opti-Holding AG. Slide-fastener stringer with warp-knit support tapes. 3,965,833, Cl. 112-265.000.

Frohlich, Peter E., to Bommer Spring Hinge Co. Inc. Adjustable door spring hinge with fixed minimum tension. 3,965,533, Cl. 16-189.000.

Fronek, Donald K.: *See—*
Roberson, Donald L.; and Fronek, Donald K., 3,967,206.

Fuchs, Gundolf: *See—*
Engelhardt, Friedrich; Erhard, Karl; and Fuchs, Gundolf, 3,966,829.

Fudaley, Solly L. Proximity sensor with simultaneously active intermixed sensor types. 3,967,261, Cl. 340-258.00C.

Fuhrer, Jack Selig, to RCA Corporation. Velocity correction for video discs. 3,967,311, Cl. 358-8.000.

Fuji Photo Film Co., Ltd.: *See—*
Aonuma, Masashi; Tamai, Yasuo; and Akashi, Goro, 3,966,510.
Hinata, Masanao; Takei, Haruo; Ikeda, Tadashi; Ogawa, Akira; Sato, Akira; and Iwamoto, Atsuo, 3,966,477.
Inuiya, Masafumi, 3,966,331.
Kubotera, Kikuo; and Mizuki, Eiichi, 3,966,472.
Oshima, Shigeru, 3,967,300.
Sato, Masamichi, 3,966,473.

Fujie, Kuniyoshi: *See—*
Okamoto, Taneji; Fujie, Kuniyoshi; and Kondo, Sadao, 3,966,922.

Fujii, Kaneharu. Method of and apparatus for tightening high-strength steel bolts. 3,965,565, Cl. 29-446.000.

Fujikawa, Kanichi: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Toki, Tadaaki; and Someya, Shinzo, 3,966,453.

Fujikawa, Syunji: *See—*
Moriya, Takao; Murano, Kazuo; and Fujikawa, Syunji, 3,967,058.

Fujinami, Akira: *See—*
Oishi, Tadashi; Kameda, Nobuyuki; Kato, Toshiro; Fujinami, Akira; Ozaki, Toshiaki; and Itooka, Eiyashi, 3,966,789.

Fujitsu Ltd.: *See—*
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Taniyama, Yukio; Isaka, Tetsuo; Nagahori, Tetsuo; and Kanda, Kaoru, 3,967,249.
Tokura, Katsuyuki; Maeda, Shuichi; Endo, Takeshi; Yoichizono, Kenji; and Asami, Hiroshi, 3,965,913.

Fujiwara, Takao: *See—*
Kurita, Takaji; and Fujiwara, Takao, 3,965,524.

Fukuda, Rikiya: *See—*
Aoki, Atsushi; Fukuda, Rikiya; Nakayabu, Toshio; Ishibashi, Keijiro; Takeichi, Chiyoko; and Ishida, Mitsuo, 3,966,914.

Fukui, Akio; Koike, Hiroshi; Tanaka, Takehiko; and Ito, Yuji, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Process for the preparation of 1-substituted anthraquinones. 3,966,775, Cl. 260-378.000.

Fukui, Masahiro; Hayashi, Shigeru; Okamoto, Takehiko; Koga, Isao; and Inoi, Takeshi, to Chisso Corporation. Catalytic preparation of ketones from aldehydes. 3,966,822, Cl. 260-593.00R.

Fukumaru, Toshitsugu: *See—*
Kobayashi, Kenji; Fukumaru, Toshitsugu; Mizote, Hiroyuki; Inaba, Shigeho; and Yamamoto, Hisao, 3,966,939.

Fukunaga, Akio. Conduit valve. 3,965,929, Cl. 137-503.000.

Fukushima, Osamu; Matsumoto, Seiji; and Sato, Masamichi, to Rank Xerox Ltd. Separated roller liquid development. 3,965,861, Cl. 118-637.000.

Fukushima, Yoshikiyo; Momota, Kenzo; Shirahata, Hideaki; and Sakanai, Noriyuki, to Nippon Concrete Industries, Co., Ltd. Rail mounted apparatus for manufacturing concrete poles. 3,966,375, Cl. 425-62.000.

Furgalus, Keith A.; and Simmons, Harold C., to Parker-Hannifin Corporation. Ultrasonic spraying device. 3,966,120, Cl. 239-102.000.

Futaba Denshi Kogyo K.K.: *See—*
Morimoto, Kiyoshi; Utamura, Yukihiko; and Takagi, Toshinori, 3,967,125.

G. D. Searle & Co.: *See—*
Ashe, John B.; Berry, Peter F.; and Hall, James D., 3,967,120.
Ashe, John B.; Berry, Peter F.; and Hall, James D., 3,967,122.
Colliopoulos, John A.; and Yanick, Nicholas S., 3,966,632.

Gabriel, Edwin Zenith. Duct system for wind gust alleviation of aircraft and suspended containerized loads. 3,966,144, Cl. 244-17.110.

Gagliani, John; and Long, John V., to International Harvester Company. Method of making foamed copolyimides and product obtained therefrom. 3,966,652, Cl. 260-2.50N.

Gagnon, Eugene G.; and Mao, Kao-Wen, to General Motors Corporation. Method of operating a dynamically packed bed electrode electrochemical cell system. 3,966,571, Cl. 204-149.000.

Gainesville Machine Company, Inc.: *See—*
Harben, Grover S., Jr., 3,965,534.

Galasso, Francis Salvatore: *See—*
Veltri, Richard D.; Fanti, Roy; and Galasso, Francis Salvatore, 3,967,029.

Galatis, Telemachus Nicolas, to Marine and Industrial Developments Limited. Integrity monitoring system for storage tank insulation. 3,967,256, Cl. 340-242.000.

Gallagher, Gregory: *See—*
Baile, Clifton A.; Gallagher, Gregory; McLaughlin, Carol Lynn; and Webb, Robert Lee, 3,966,958.

Gamadia, Rustom Kooverji: *See—*
Curry, Kenneth Vasey; Gamadia, Rustom Kooverji; and Pike, Barry Graham, 3,966,087.

Gambardella, Anne, to Lawrence Peska Associates, Inc., a part interest. Numbers game. 3,966,209, Cl. 273-130.00R.

Ganz, Robert H. Package tightener and method. 3,965,645, Cl. 53-32.000.

Garbalizer Corporation of America: *See—*
Brewer, John C., 3,966,129.

Garbe, Carl W., to Dames & Moore. Process for extracting dissolved salts from water. 3,966,539, Cl. 159-47.00R.

Gardiner, Frances R.: *See—*
Murray, Jerome L.; and Gardiner, Frances R., 3,965,899.

Garing, Meriwether L.: *See—*
Featherston, Richard H.; Fischer, Joseph P.; Garing, Meriwether L.; and Wright, James R., 3,966,874.

Garrett, David W.: *See—*
Marzocchi, Alfred; Jannarelli, Albert E.; and Garrett, David W., 3,967,037.

Garrett, Herbert V. Lightweight fence for protection against airborne snow, sand or the like. 3,966,172, Cl. 256-12.500.

Garrison, Marion A., to Empire Oil Tool Company. Inlet and outlet ports and sealing means for a fluid driven motor. 3,966,369, Cl. 418-149.000.

Gas Developments Corporation: *See—*
Rush, William F.; Macriss, Robert A.; and Weil, Sanford A., 3,965,695.

Gass, Karl: *See—*
Varsanyi, Denis; Rathgeb, Paul; and Gass, Karl, 3,966,961.

Gates, David S.: *See—*
Duling, Irl N.; Gates, David S.; Glazier, Frederick P.; Moore, Robert E.; and Newingham, Thomas D., 3,966,624.

Gates, Walter C., Jr.: *See—*
Suggitt, Robert M.; Gates, Walter C., Jr.; and Hudson, Ralph B., Jr., 3,966,828.

Gault, William S.: *See—*
DeWolf, Charles F.; and Gault, William S., 3,966,437.

Gauthier, William Kohlmann. Surgical retractor. 3,965,890, Cl. 128-20.000.

Gawlick, Heinz; Brede, Uwe; and Bendler, Hellmut, to Dynamit Nobel Aktiengesellschaft. Piezoelectric energy source. 3,967,141, Cl. 310-8.700.

Gay, Derek John: *See—*
Rhodes, Tony; and Gay, Derek John, 3,965,561.

Gaylord, Norman G., to Atlantic Richfield Company. Preparation of carboxyl-containing polymers and composites thereof with hydroxyl-containing materials. 3,966,672, Cl. 260-42.140.

Gaynor, William Wayne; and Voigt, Gene Ray, to Ceres Ecology Corporation. Solid-liquid separator. 3,966,607, Cl. 210-137.000.

GCA Corporation: *See—*
Rendina, John F.; and Larson, Paul E., 3,967,127.

Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Weber, Karl-Heinz; and Nohendorf, Hans, 3,967,180.

Gebrueder Heller: *See—*
Osman, Mohamed; and Greuner, Bernd, 3,966,349.

Gec-Elliott Automation Limited: *See—*
Blumberg, Jonathan Mark, 3,965,840.

Gee, Glen R., to Minnesota Mining and Manufacturing Company. Coiled edge guide for rod-tube signal device and method. 3,965,849, Cl. 116-114.500.

Geerk, Jens F., to Varian Mat GmbH. Mass spectrometer. 3,967,116, Cl. 250-298.000.

Geisel, Dennis M., to Mid America Sales Co., Inc. Electric cord hatch. 3,966,073, Cl. 220-3.800.

Gelardi, August P., to Raymond Lee Organization, Inc., The, a part interest. Casting fishing reel. 3,966,138, Cl. 242-84.20B.

Gelin, Robert J.; and Bartlett, James E., to Owens-Corning Fiberglas Corporation. Apparatus for and method of handling linear elements. 3,966,132, Cl. 242-36.000.

Gelin, Robert J., to Owens-Corning Fiberglas Corporation. Tension controlling apparatus. 3,966,133, Cl. 242-42.000.

Gelling, Wolter Geppienus: *See—*
Claes, Hendrik Armand Denis; and Gelling, Wolter Geppienus, 3,966,517.

General Electric Company: *See—*
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Koch, Robert E.; and Ceder, James H., 3,967,228.
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General Foods Corporation: *See—*
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General Indicator Corporation: *See—*
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General Motors Corporation: *See—*
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General Resource Corporation: *See—*
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General Signal Corporation: *See—*
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General Sports Manufacturing Limited: *See—*
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General Time Corporation: *See—*
Preiser, Ralph H.; Stellwagen, Frank W.; and Rigazio, Anthony W., 3,967,147.

Gensler, William G. Method and apparatus for electrically determining plant water status. 3,967,198, Cl. 324-72.000.

George, Ivor Prosser. Vacuum grooming brush. 3,965,527, Cl. 15-396.000.

George Koch Sons, Inc.: *See—*
Muehlbauer, James H., 3,965,805.

Geppert, Albrecht: *See—*
Beerwerth, Wolfgang; Geppert, Albrecht; Gesing, Horst; and Schimmer, Rigobert, 3,965,567.

Gerben, Ralph D., to Solo Cup Company. Cup filling and capping apparatus. 3,965,656, Cl. 53-282.000.

Gerecke, Max; Kaplan, Jean-Pierre; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Fluoro-substituted dibenso[b,f] thiepins. 3,966,737, Cl. 260-268.0TR.

Germain, Michel: *See—*
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Gesellschaft fur Systemtechnik mbH: *See—*
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Gesing, Horst: *See—*
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Getzin, Allan R., to American Air Filter Company, Inc. Filter retaining latch. 3,966,163, Cl. 248-500.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
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Gezolan Engineering AG: *See—*
Finkbeiner, Hanspeter, 3,966,125.

Ghyczy, Peter, Coupling piece. 3,966,338, Cl. 403-192.000.

Gibbs, James Whitman, to Flo-Start, Inc. Electrical control apparatus. 3,967,134, Cl. 307-115.000.

Gibbs, Orville J., to Bird Machine Company, Inc. Filter. 3,966,610, Cl. 210-203.000.

Gibbs, Orville J.; and Roos, John T., to Bird Machine Company, Inc. Filter. 3,966,611, Cl. 210-203.000.

Gibson, John Philip: *See—*
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Gillette Company, The: *See—*
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Girling Limited: *See—*
Newstead, Charles, 3,966,025.

Giros, Marcel A., to Societe Meusienne de Constructions Mecaniques. Devices for continuously displacing a filamentary material in a treatment installation. 3,965,711, Cl. 72-39.000.

Gist-Brocades N.V.: *See—*
Verwey, Jan; and Tan, Hong Sheng, 3,966,738.

Gitthens, Donald L.: *See—*
McGarvey, Robert E.; and Gitthens, Donald L., 3,965,919.

Giudicelli, Don Pierre Rene Lucien; Najer, Henry; Iliesco-Branceni, Bogdan; and Pascal, Yves Robert Alain, to Synthelabo. Vinvamine series cycloalkyl-alkyl esters. 3,966,745, Cl. 260-293.530.

Giuliani, Gianpaolo: *See—*
Arrighetti, Sergio; Brancaccio, Aldo; Cesca, Sebastiano; and Giuliani, Gianpaolo, 3,966,844.

Glaesener, Ernest, to Acieries Reunies de Burbach-Eich-Dudelange S.A. ARBED. Median barrier for highways and the like. 3,966,173, Cl. 256-13.100.

Glaverbel-Mecaniver: *See—*
Plumat, Emile; Schottey, Jean; and Toussaint, Francois, 3,967,040.

Glaxo Laboratories Limited: *See—*
Cook, Martin Christopher; Gregory, Gordon Ian; and Bradshaw, Janice, 3,966,717.

Glazier, Frederick P.: *See—*
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Glikmans, Georges: *See—*
Charpentier, Jean-Max; Glikmans, Georges; and Maldonado, Paul, 3,966,553.

Glovsky, Joel; and Brown, James L., to Mallinckrodt, Inc. Radioimmunoassay for plasma renin activity. 3,966,896, Cl. 195-103.700.

Gluckman, Melvyn I.: *See—*
Shriver, David A.; and Gluckman, Melvyn I., 3,966,955.

Gluzek, Karl-Heinz: *See—*
Asinger, Friedrich; Offermanns, Heribert; Gluzek, Karl-Heinz; and vonBebenburg, Walter, 3,966,752.

Godai, Tomokazu; Sugiyama, Toboru; and Nishimura, Katushi, to Kobe Steel Ltd. Welding material for super low temperature steels. 3,966,424, Cl. 29-191.200.

Godbille, Etienne; and Tondu, Lucette, to Roussel-UCLAF. Chromatographic device. 3,966,609, Cl. 210-198.00C.

Goddard, Michael W.: *See—*
Andersen, Vernon K.; and Goddard, Michael W., 3,967,247.

Goetti, Hans; Mittler, Anton; and Forrer, Hermann, to Kammgarnspinnerei Burglen. Spun yarn. 3,965,663, Cl. 57-140.0BY.

Goetti, Hans; Mittler, Anton; and Forrer, Hermann, to Kammgarnspinnerei Buerglen. Method of making spun yarn. 3,965,664, Cl. 57-157.00R.

Goff, Richard E., Jr.; and Guay, Normand D., to Johnson & Johnson. Narrow elastic fabric for use as waistband in articles of apparel. 3,965,943, Cl. 139-421.000.

Goff, Richard E., Jr.; and Guay, Normand D., to Johnson & Johnson. Lightweight narrow elastic fabric. 3,965,944, Cl. 139-421.000.

Gohsler, Robert Edward. Tethered ball goal scoring game. 3,966,208, Cl. 273-101.000.

Goldberg, Arthur, to Howe Richardson Scale Company. Platform weighing scale. 3,966,001, Cl. 177-128.000.

Golden, Steven T. Portable, releasable tie-down device and method. 3,965,539, Cl. 24-71.300.

Goldstein, Avram; Leute, Richard K.; and Ullman, Edwin F., to Syva Company. Spin labeled compounds. 3,966,744, Cl. 260-292.000.

Goldstein, Avram; Leute, Richard K.; and Ullman, Edwin F., to Syva Company. Ligand determination of spin labeled compounds by receptor displacement-amphetamine analogs. 3,966,764, Cl. 260-326.850.

Goldsworthy Engineering, Inc.: *See—*
Goldsworthy, William Brandt; and Hardesty, Ethridge E., 3,966,533.

Goldsworthy, William Brandt; and Hardesty, Ethridge E., to Goldsworthy Engineering, Inc. On-site wall structure formation. 3,966,533, Cl. 156-380.000.

Goloff, Alexander, to Caterpillar Tractor Co. Deflection compensation for slant axis rotary mechanisms. 3,966,366, Cl. 418-53.000.

Goloff, Alexander, to Caterpillar Tractor Co. Insulated seal for engines. 3,966,368, Cl. 418-83.000.

Golsch, Rudolf A. M.: *See—*
Shelton, Lawrence S.; Golsch, Rudolf A. M.; and Boigk, Dieter G., 3,966,042.

Gonsalves, Joseph E.: *See—*
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Gonzales, Joseph M.; and Page, Armond J., to Fairchild Industries Inc. Collapsible container. 3,966,072, Cl. 220-7.000.

Gooch, John Henry, to J. H. Gooch & Company Limited. Pinch valve. 3,965,925, Cl. 137-451.000.

Gooch, Roland W., to Texas Instruments Incorporated. Process for fabrication and assembly of semiconductor devices. 3,965,568, Cl. 29-583.000.

Goode Products, Inc.: *See—*
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Goodman, David M. Beam-index color television displays. 3,967,315, Cl. 358-60.000.

Goodrich, George E.: *See—*
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Goodrich, Phillip D.: *See—*
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Goodwin, Henderson R.; and Wall, Edwin G., to Westinghouse Electric Corporation. Hinge adjustment tool. 3,965,720, Cl. 72-458.000.

Gordon, Harry W.; and Schaffner, Carl P., to Schmid Laboratories, Inc. Method for treating hypercholesterolemia with N-acetyl candicidin. 3,966,911, Cl. 424-117.000.

Gordon, Harry W.: *See—*
Schaffner, Carl P.; and Gordon, Harry W., 3,966,910.

Gordon, Maxwell: *See—*
Pachter, Irwin J.; and Gordon, Maxwell, 3,966,940.

Gordon, Robert Louis, to International Paper Company. Two-piece, polygonal container. 3,966,112, Cl. 229-23.0BT.

Gorman, Roger A.: *See—*
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Gosden, Derek Vernon: *See—*
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Gosling, Alexander Bennett: *See—*
Ridler, Keith Douglas; and Gosling, Alexander Bennett, 3,966,215.

Gossage, Robert V., to Nalco Chemical Company. Recovery of tall oil soaps. 3,966,698, Cl. 260-97.500.

Gosser, Lawrence W., to Du Pont de Nemours, E. I., and Company. Method of making group VIII metal complex compounds. 3,966,595, Cl. 260-429.00R.

Goto, Kenji; Shibata, Norio; and Hashiguchi, Yukihide, to Toyota Jidosha Kogyo Kabushiki Kaisha. Misfire detecting apparatus for an internal combustion engine. 3,965,677, Cl. 60-277.000.

Goubau, George E. J., to Beam Guidance Inc. Antenna structures having reactance at free end. 3,967,276, Cl. 343-752.000.

Gould Inc.: *See—*
Kelm, Roger W., 3,966,496.
Parkinson, David B., 3,965,550.

Gourlay, Paul: *See—*
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Gowing, George A., to Bombardier Limited. Air intake silencer. 3,966,014, Cl. 181-35.00A.

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Grain Processing Corporation: *See—*
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Gramer, Eben J.; and Johnson, Melvin O. Method of heating a liquid and solar heating panel therefor. 3,965,887, Cl. 126-271.000.

Grammatica, Steven J.: *See—*
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Granberg, Elof. Lumber making attachment. 3,965,788, Cl. 83-745.000.

Grant, Frederic F., to Bell & Howell Company. Sheet advancing methods and apparatus. 3,966,190, Cl. 271-42.000.

Grant, Michael G. Oil-in-water monitor. 3,966,603, Cl. 210-86.000.

Graves, Harry Edwin. Apparatus for forming a jack-o-lantern. 3,965,574, Cl. 30-124.000.

Gray, Frederick W., to Colgate-Palmolive Company. Dishwashing compositions. 3,966,627, Cl. 252-99.000.

Gray, Michael David; and Kimber, Geoffrey Michael, to Coal Industry (Patents) Limited. Improvements in and relating to the production of coke. 3,966,584, Cl. 208-8.000.

Gray, Michael David; Kimber, Geoffrey Michael; and Shipley, David Ernest, to Coal Industry (Patents) Limited. Manufacture of coke from a coal extract. 3,966,585, Cl. 208-8.000.

Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., to Hooker Chemicals & Plastics Corporation. Friction particle for brake lining. 3,966,670, Cl. 260-38.000.

Greaves, Geoffrey Stuart; Deverill, Ian; and Bunce, Roger Abraham, to Vickers Limited. Device for use in producing a scanning beam of radiation and apparatus for use in investigating specimens. 3,966,322, Cl. 356-39.000.

Green, George Edward: *See—*
Abel, Heinz; Dobinson, Bryan; Green, George Edward; Harris, Melvin; Stark, Bernard Peter; and Winterbottom, Kenneth, 3,967,041.

Green, Hal, to Empire Automotive, Inc. Method of installing detachable sun roof panel for automobiles. 3,965,566, Cl. 29-451.000.

Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., to Millmaster Onyx Corporation. Quaternary ammonium co-polymers for controlling the proliferation of bacteria. 3,966,904, Cl. 424-78.000.

Greene, James L. Continuous-flow fluid pump. 3,966,360, Cl. 417-53.000.

Greene, Janice L., to Standard Oil Company. Process for producing 2-pyrrolidone. 3,966,763, Cl. 260-326.5FN.

Gregory, Gordon Ian: *See—*
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Gregory, M. Duane: *See—*
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Gregory, R. Kirk, to Symons Corporation. Latch-equipped, she-bolt gripper device for a concrete wall from tie rod. 3,965,542, Cl. 24-136.00R.

Grelle, Georgia I. Portable baby bathing and shampooing tray. 3,965,496, Cl. 4-185.00B.

Gresser, Wilhelm: *See—*
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Greuner, Bernd: *See—*
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Gridel, Joseph Y. Method of producing an absorbent, washable, protective mattress sheet and a sheet produced thereby. 3,965,503, Cl. 5-334.00R.

Grieb, Paul E.; and Sieradzki, Richard, to Textron, Inc. Control system for grinding machine. 3,965,621, Cl. 51-165.710.

Grimes Box Company, Inc.: *See—*
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Grimes, Brian A., to Grimes Box Company, Inc. Container partitioning. 3,966,111, Cl. 229-15.000.

Grip-Pak, Inc.: *See—*
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Grisebach, Hans Theodor, to Gewerkschaft Eisenhutte Westfalia. Control systems and arrangements for use in mineral mining installations. 3,965,797, Cl. 91-32.000.

Groenendaal, Willem; Taubert, Friedrich C.; Naber, Jaap E.; and Bekker, Gijsbertus A., to Shell Oil Company. Removal of sulfur oxides and particulate matter from waste gas streams. 3,966,879, Cl. 423-244.000.

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Papantoniou, Christos; and Grognet, Jean-Claude, 3,966,404.

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Groot, Hendrik: *See—*
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Gros, Eugene. Manufacture of articles of a substantially sack-like or tubular structure. 3,966,527, Cl. 156-250.000.

Groseclose, Pauline Inez. Blood-specimen procurement cart. 3,966,286, Cl. 312-258.000.

Gross, Bernard K. Means and method of drilling wells. 3,965,996, Cl. 175-57.000.

Gross, Erwin, to Standardwerk Eugen Reis GmbH. Coin storing and transferring apparatus. 3,965,912, Cl. 133-1.00R.

Gross, James R., to Dow Chemical Company, The. Absorbent articles and methods for their preparation. 3,966,679, Cl. 260-47.0EA.

Grosskopf, Rudolf, to Carl Zeiss-Stiftung. Method and means for electronic image analysis within a raster-scanned field. 3,967,053, Cl. 178-6.800.

Groth, Herbert D.: *See—*
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Gruffaz, Max; and Rollet, Bernard, to Rhone-Poulenc S.A. Maleic anhydride-polyaldimine prepolymers. 3,966,678, Cl. 260-47.0UA.

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GTE Automatic Electric Laboratories Incorporated: *See—*
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Guilbaud, Jean-Pierre, to Ateliers Roannais de Constructions Textiles. Apparatus for treatment of tows for fibers by immersion in a liquid. 3,965,859, Cl. 118-428.000.

Guinosso, Charles J.: *See—*
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Gunnergaard, Marius, to Dansk Industri Syndikat A/S. Apparatus for the production of castings. 3,965,966, Cl. 164-213.000.

Gustafson, William Roy, to American Cyanamid Company. Shaped catalyst particles. 3,966,644, Cl. 252-455.00R.

Guthrie, Robert William; Hamilton, James Guthrie; Kierstead, Richard Wightman; Miller, O. Neal; and Sullivan, Ann Clare, to Hoffmann-La Roche Inc. Citric acid derivatives. 3,966,772, Cl. 260-348.00A.

Guthrie, Samuel Josepheus, to Teledyne, Inc. Method for manufacturing high voltage field-effect transistors. 3,966,515, Cl. 148-188.000.

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Gutjahr, Lothar, to Klockner-Werke AG. Equipment for compensating for sensor variations. 3,965,744, Cl. 73-393.000.

Gutmann, Walter; and Nicolet, Rene, to Lonza Ltd. Process for the preparation of transparent high impact strength vinyl chloride polymers. 3,966,846, Cl. 260-884.000.

Gyongyosi, Laszlo; and Lincoln, Paul A., to Ingersoll-Rand Company. Dust control hood and dust control system. 3,965,998, Cl. 175-209.000.

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Hada, Hiroshi; Hirayama, Tsutomu; and Nishida, Kazunori, to Nippon Electric Company, Ltd. Driving circuit for a gas discharge display panel. 3,967,157, Cl. 315-169.0TV.

Hadden, Stephen C.; and Hulls, Leonard R., to United States of America, Army. Sampling and dilution method. 3,965,749, Cl. 73-421.50R.

Hadley, Richard Marshall, to Harman International Industries, Inc. Remote control rearview mirror. 3,966,162, Cl. 248-487.000.

Hadzimahalis, Theodore M., to Bell & Howell Company. Molded control knob. 3,965,529, Cl. 16-121.000.

Haentjens, Walter D. Sump and pump construction for conveying solids in the form of a slurry. 3,966,262, Cl. 302-15.000.

Hagberg, Carl G., to Monsanto Company. Falling strand devolatilization apparatus. 3,966,538, Cl. 159-2.00R.

Hagen, Magnus F.; and Jordan, Fred A. Synchronized and precision sequencing of ball retainer relationship to the inner and outer slide members. 3,966,273, Cl. 308-3.800.

Hager, Robert E., to Westinghouse Electric Corporation. Current monitor circuits. 3,967,257, Cl. 340-253.00R.

Hahnke, Manfred: *See—*
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Haker, Edwin J.; Buelow, William H.; and Riddle, Charles F., to Rexnord Inc. Adjustable vibratory roller. 3,966,344, Cl. 404-117.000.

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Halasa, Adel Farhan, to Firestone Tire & Rubber Company, The. Polymerization of conjugated dienes with starved lithium, potassium or sodium catalyst. 3,966,691, Cl. 526-78.000.

Hale, Neville E., to Fathom Oceanology Limited. Apparatus for launching towing and recovering a submersible body from a vessel. 3,966,171, Cl. 254-190.00R.

Hale, Thomas Eugene, to General Electric Company. Coated cemented carbide product. 3,967,035, Cl. 428-336.000.

Hall, James D.: *See—*
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Ashe, John B.; Berry, Peter F.; and Hall, James D., 3,967,122.

Hall, John B.; Tseng, Ching Y.; Vock, Manfred Hugo; Vinals, Joaquin; and Shuster, Edward J., to International Flavors & Fragrances Inc. Alkyl esters of 2-methyl-4-pentenoic acid. 3,966,799, Cl. 260-486.00R.

Hall, Robert Arthur: *See—*
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Hallais, Jean Philippe; Humbert, Alain; and Schemali, Claude, to U.S. Philips Corporation. Method of growing by epitaxy from the vapor phase a material on substrate of a material which is not stable in air. 3,966,513, Cl. 148-175.000.

Hallman, Robert W.: *See—*
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Hamasaki, Masanobu; and Tateiwa, Fumikazu, to Agency of Industrial Science & Technology. Process for consumable-electrode type arc cutting and apparatus therefor. 3,967,090, Cl. 219-70.000.

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Haneda, Isoko: *See—*
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Hannes, Karl; and Rossi, Paul C., to Coats & Clark, Inc. Cast articulated tool, 3,965,779, Cl. 81-416.000.

Hansen, Jens, to Blaupunkt-Werke GmbH. Circuit for storing the amplitude of the lower-frequency portion of a composite signal. 3,967,204, Cl. 325-473.000.

Hansen, Karl Erik; and Hansen, Ove, to Aktieselskabet Niro Atomizer. Method for producing agglomerated powders and apparatus for performing the method. 3,966,975, Cl. 426-285.000.

Hansen, Ove: *See—*
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Hansma, Hendrik: *See—*
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Harasta, Ruth P. Method of making water color pictures ready for framing. 3,966,532, Cl. 156-344.000.

Harben, Grover S., Jr., to Gainesville Machine Company, Inc. Poultry neck breaking machine. 3,965,534, Cl. 17-11.000.

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Hardy, David R.; and Weatherford, Richard C., to Kendall Company, The. Surgical sponge. 3,965,907, Cl. 128-296.000.

Hardy, Donald F., to Dart Industries Inc. Coating apparatus. 3,965,852, Cl. 118-8.000.

Hargis, Ivan Glen; and Livigni, Russell Anthony. Alkaline earth metal organometallic compounds, their preparation by metallation and catalysts comprising same. 3,966,638, Cl. 252-431.00R.

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Harper, Stanley Arthur, to RCA Corporation. Method for improving adherence of phosphor-photobinder layer during luminescent-screen making. 3,966,474, Cl. 96-36.100.

Harrington, Daniel Clayton, to Control Data Corporation. Transistor power and root computing system. 3,967,105, Cl. 235-197.000.

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Harrison, Charles W.; Mead, Theodore C.; Moreland, Howard R.; and Barger, Frank L., to Texaco Inc. Wax content measuring means. 3,965,723, Cl. 73-53.000.

Harruff, Robert J., to General Indicator Corporation. Numeric display using three endless belts. 3,965,593, Cl. 40-32.000.

Harshaw Chemical Company, The: *See—*
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Harter, Patricia, executrix: *See—*
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Harter, Robert M., deceased (by Harter, Patricia, executrix); and Russo, Gary L., to AVM Corporation. Valve assembly with plural flow path control. 3,966,119, Cl. 237-12.30B.

Hartung, Winfried, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Device for measuring pressure between cylinders of a printing press. 3,965,735, Cl. 73-141.00A.

Hartzler, Jon David, to Du Pont de Nemours, E. I., and Company. Aqueous organic base solution of polyhydrazides. 3,966,656, Cl. 260-29.20N.

Harvalik, Zaboj V. Integrated magneto-seismic sensor. 3,965,751, Cl. 73-432.00R.

Hasegawa, Haruo; Taniguchi, Hiroyoshi; Yamane, Shiro; Igawa, Takao; and Nagayama, Tomoshi, to Ricoh Co., Ltd. Electro photosensitive materials with a protective layer. 3,966,471, Cl. 96-1.500.

Hasei, Taeko. Adhesive label. 3,967,022, Cl. 428-40.000.

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Hatch, Donald M., to Hitco. Multi-ply woven article having stiffening elements between double plies. 3,965,942, Cl. 139-384.00R.

Hatch, Donald M.; and Lee, George D., to Hitco. Multi-ply woven article having acoustical elements between double plies. 3,966,013, Cl. 181-33.00G.

Hatch, Donald M.; and Lee, George D., to Hitco. Method of making woven acoustical panel. 3,966,522, Cl. 156-148.000.

Havener, Ralph L.; and Dunakey, Harry F., to Lectra Bike Corporation. Electricbike. 3,966,007, Cl. 180-34.000.

Hawkins, Carl V., III. Bottom fishing device. 3,966,151, Cl. 43-21.200.

Hawkins, Robert Stanley, to W. R. Grace & Co. Adjustable sealing device. 3,965,646, Cl. 53-112.00B.

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Hayakawa, Takeshi: *See—*
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Hayashi, Masaki; Kori, Seiji; Ohyama, Isao; and Endo, Hirofumi, to Ono Pharmaceutical Co., Ltd. Prostaglandin compounds. 3,966,792, Cl. 260-468.00D.

Hayashi, Shigeru: *See—*
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Haybuster Manufacturing Inc.: *See—*
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Hays, Kenneth Scott, to AMP Incorporated. Cutting attachment for crimping tool. 3,965,719, Cl. 72-410.000.

Hazelwood, John E. Combined vibratory feeder drive unit, vibratory feeder bowl, and parts separator. 3,966,040, Cl. 198-288.000.

Heat Research Corporation: *See—*
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Hecht, Victor. Muffler converter. 3,966,016, Cl. 181-57.000.

Heckenkamp, Edward B., to Allis-Chalmers Corporation. Release for breakaway coupling. 3,966,239, Cl. 285-316.000.

Heffron, Allan J.; Estry, Arthur L.; and Chalmers, William F., to C. M. Systems, Incorporated; and Crankshaft Machine. Crankshaft transfer mechanism. 3,966,058, Cl. 214-1.0BB.

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Heighway, Edward A., to Atomic Energy of Canada Limited. Magnetic beam deflector system. 3,967,225, Cl. 335-210.000.

Heikkila, Viekko; Hakkinen, Leo; Strom, Rolf; Uusitalo, Leo; and Mellin, Juha, to OY Tampella AB Mechanical Workshops. Lubricating system of pressure fluid operated rock drill machines. 3,966,019, Cl. 184-7.00D.

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Heiman, Fred P.; and Schwippert, Guustaaf Arthur, to Mars, Inc. Phase sensitive coin discrimination method and apparatus. 3,966,034, Cl. 194-100.00A.

Heimes, Horst Peter; and Reul, Helmut, to Medac Gesellschaft fur Klinische Spezialpraparate mbH. Pump assembly. 3,966,358, Cl. 417-12.000.

Heinicke, Harald, to Siemens Aktiengesellschaft. Self-commutating inverter with controlled main valves in a center-tap circuit. 3,967,183, Cl. 321-45.00C.

Heinze, George E.: *See—*
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Heinzle, Otto. Slip form arrangement for constructing annular structures. 3,966,376, Cl. 425-63.000.

Hellmuth, Walter W.; Chafetz, Harry; and Cullen, William P., to Texaco Inc. Lube oil dispersant of improved odor and antioxidant properties. 3,966,622, Cl. 252-46.600.

Helm, Herbert W., to F. L. Smithe Machine Company, Inc. Method and apparatus for feeding inserts selectively. 3,966,186, Cl. 270-58.000.

Helmer, Karin Ulla Elisabet; and Reuterhall, Alf Ragnar, to Kemanord Aktiebolag. Composition for sizing cellulose fibers. 3,966,484, Cl. 106-287.00R.

Hendel, Robert J.: *See—*
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Henderson, Iris N.: *See—*
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Hendricks, Victor P. Electric flushing toilet bowl. 3,965,492, Cl. 4-79.000.

Hendrickx, Andreas J. J.; and van Duyl, Willem H., to Oce-Andeno B.V. Process for the preparation of substituted or unsubstituted 4-pyridylthioacetic acid. 3,966,741, Cl. 260-294.80G.

Henkel & Cie G.m.b.H.: *See—*
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Hennart, Claude; Rabussier, Bernard; and Mandon, Jean-Pierre, to Airwick Industries, Inc. Evaporator system comprising a stabilized pesticidal phosphoric acid ester and method for stabilizing such ester enclosed in an evaporator. 3,966,900, Cl. 424-27.000.

Henning, Wolfgang: *See—*
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Henrick, Clive A.: *See—*
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Henry, Clemence J.: *See—*
Krug, Robert H.; and Henry, Clemence J., 3,966,623.

Henry, William F.; Templeman, Gareth J.; Gorman, Roger A.; and Pinaire, Lawrence, to Pillsbury Company, The. Process for determining and controlling the moisture of food products. 3,966,973, Cl. 426-231.000.

Herbert, Daniel H. Dewatering and classifying apparatus. 3,966,592, Cl. 209-462.000.

Herbert, Werner, to Dornier System GmbH. Process for manufacturing hollow-cylindrical rotors. 3,966,507, Cl. 148-12.00R.

Herchenroder, Hans, to Friedrich Kocks GmbH. Hydraulic installation, more particularly for driving warping retaining winches on bulk cargo ships. 3,965,682, Cl. 60-420.000.

Hercules Incorporated: *See—*
Aldrich, Paul H., 3,966,654.
Espy, Herbert H.; and Putnam, Stearns T., 3,966,684.
Espy, Herbert H.; and Putnam, Stearns T., 3,966,694.

Hermann, James F., to S. C. Johnson & Son, Inc. Disposable floor polishing wipe. 3,965,519, Cl. 15-104.930.

Hermeneit, Rainer: *See—*
Frischmann, Albert; Mermi, Kurt; Hermeneit, Rainer; and Koniger, Rudolf, 3,966,156.

Herment, Robert; Lafage, Yves; Emo, Jean Claude; and Yurcek, Jean Marie, to Shell Oil Company. Production of briquettes. 3,966,427, Cl. 44-10.00H.

Herring, William M.; and Walling, Dennis B., to Standard Oil Company. Multi-counter register. 3,967,095, Cl. 235-92.0EA.

Herrmann, Manfred Franz: *See—*
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Herrmann, Wolfgang Dieter: *See—*
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Hersberger, Pierre: *See—*
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Hertzenberg, Elliot P.: *See—*
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Hess, Hans-Jurgen E.: *See—*
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Hesston Corporation: *See—*
Jones, Joel Flynn, 3,966,065.

Hester, Jackson B., Jr., to Upjohn Company, The. 6-Pyridyl benzodiazepines antidepressants. 3,966,943, Cl. 424-263.000.

Hewlett-Packard Company: *See—*
Roy, Jean Claude, 3,967,266.

Hiab-Foco Aktiebolag: *See—*
Lindqvist, Jonas Herman, 3,966,249.

Hickle, Jerry J., to R. L. Kuss & Co., Inc. Plastic film connector for inflatable structures. 3,965,546, Cl. 24-243.00K.

Higgins, Robert B.: *See—*
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Hild, Henry F.: *See—*
Rosenberg, David M.; Hild, Henry F.; and Stearley, John W., 3,965,755.

Hilding, Jonas Olof Anders, to Atlas Copco Aktiebolag. Magazine for storing drill string elements. 3,965,994, Cl. 175-52.000.

Hilding, Jonas Olof Anders; and Persson, Jan Edvard, to Atlas Copco Aktiebolag. Method and apparatus for guiding and sealing a drill string. 3,965,997, Cl. 175-65.000.

Hill-Rom Company, Inc.: *See—*
Stein, William H., Jr., 3,965,500.

Hills Research & Development, Inc.: *See—*
Hills, William H.; and Hills, Shirley M., 3,965,642.

Hills, Shirley M.: *See—*
Hills, William H.; and Hills, Shirley M., 3,965,642.

Hills, William H.; and Hills, Shirley M., to Hills Research & Development, Inc. Method and apparatus for filling plastic bags with liquid or particulate material. 3,965,642, Cl. 53-28.000.

Hilscher, Eduard: *See—*
Becker, Theo; Hilscher, Eduard; and Ott, Karl-Heinz, 3,965,953.

Himmele, Walter: *See—*
Aquila, Werner; Himmele, Walter; Fliege, Werner; and Siegel, Hardo, 3,966,827.

Himmelweit, Fred: *See—*
Chain, Ernst Boris; Buck, Kenneth William; Darbyshire, Joan Elizabeth; Banks, Geoffrey Talbot; Himmelweit, Fred; and Ratti, Giulio, 3,966,707.

Hinata, Masanao; Takei, Haruo; Ikeda, Tadashi; Ogawa, Akira; Sato, Akira; and Iwamoto, Atsuo, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsion. 3,966,477, Cl 96-124.000.

Hindin, Saul G.; and Pond, George R., to Engelhard Minerals & Chemicals Corporation. Method of combustion using high temperature stable catalysts. 3,966,391, Cl. 431-7.000.

Hindin, Saul G.; and Pond, George R., to Engelhard Minerals & Chemicals Corporation. Compositions and methods for high temperature stable catalysts. 3,966,790, Cl. 252-465.000.

Hinkley, David William, to International Oils Exploration N.L. Apparatus for the carbonization of coal. 3,966,561, Cl. 202-117.000.

Hinton, Charles V.; Troutman, Kenneth W.; and Ferguson, Richard, to Terrell Machine Company, The. Filling bobbin inspection device. 3,966,591, Cl. 209-73.000.

Hirakawa, Michio: *See—*
Yamaguchi, Tadashi; Ono, Takayuki; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, 3,967,006.

Hirayama, Tsutomu: *See—*
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Hirose, Yoshihiko: *See—*
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Hirwe, Asha: *See—*
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Hitachi Chemical Company, Ltd.: *See—*
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Hatch, Donald M.; and Lee, George D., 3,966,013.
Hatch, Donald M.; and Lee, George D., 3,966,522.

Hitzman, Donald O., to Phillips Petroleum Company. Microbial synthesis from aldehyde containing hydrocarbon derived products. 3,965,985, Cl. 166-275.000.

Hobbs, Milton M.; and Kiscaden, Roy, to Westinghouse Electric Corporation. Combined cycle electric power plant and a gas turbine having a backup control system with an improved feedforward analog speed/load control. 3,965,674, Cl. 60-39.18B.

Hochberg, Arthur K., to TRW Inc. Dielectrically isolated semiconductor devices. 3,966,577, Cl. 204-192.000.

Hochstrasser, Jurgen: *See—*
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Hochstrasser nee Wack, Elisabeth: *See—*
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Hoehn, Hans; and Denzel, Theodor, to E. R. Squibb & Sons, Inc. Amino derivatives of pyrazolopyridine carboxamides. 3,966,746, Cl. 260-293.600.

Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lother; Behrenz, Wolfgang; Hammann, Ingeborg; Stendel, Wilhelm; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. Pyrimidin(4)-yl-(thiono)-(thiol)-phosphoric-(phosphonic)-acid esters. 3,966,730, Cl. 260-251.00P.

Hoffman, Louis S.; and Lutz, Michael, to Dillon-Beck Manufacturing Company. Containers for the bulk packaging of articles. 3,966,083, Cl. 220-306.000.

Hoffmann-La Roche Inc.: *See—*
Chodnekar, Madhukar Subraya; Loeliger, Peter; Pfiffner, Albert; Schwieter, Ulrich; Suchy, Milos; and Zurfluh, Rene, 3,966,780.
Gerecke, Max; Kaplan, Jean-Pierre; and Kyburz, Emilio, 3,966,737.
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Leimgruber, Willy; and Weigele, Manfred, 3,966,791.
Surmatis, Joseph Donald, 3,966,734.

Hofmann, Corris Mabelle; and Safir, Sidney Robert, to American Cyanamid Company. Para-fluorophenyl-N-heterocyclic substituted butanes. 3,966,748, Cl. 260-294.80D.

Hofmeister, Helmut; Laurent, Henry; Wiechert, Rudolf; Annen, Klaus; and Steinbeck, Hermann, to Schering Aktiengesellschaft. 11β-fluoroandrostenes. 3,966,713, Cl. 260-239.55R.

Hogan, James Edward. Soldering aid. 3,966,109, Cl. 228-52.000.

Hoglen, Edward L.: *See—*
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Hokushin Electric Works, Ltd.: *See—*
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Holden, Homer N.; Hunt, James P.; Browning, Vernon D.; Hoglen, Edward L.; and Kleykamp, Donald L., to Dayco Corporation. Apparatus for severing reinforced elastomeric conduit. 3,966,104, Cl. 225-96.000.

Holland, Thomas K.: *See—*
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Holland, William Henry: *See—*
Noakes, Michael Lesney; Caesar, Wilfred George; Holland, William Henry; and Hancock, Norman Herbert, 3,966,646.

Hollenberg, Glenn W.; and Crane, Robert L., to United States of America, Air Force. Method of fabricating silicon carbide articles. 3,966,855, Cl. 264-65.000.

Hollis, Clinton R., to International Paper Company. Stepped and angle-cut, pinch closure. 3,966,115, Cl. 229-55.000.

Hollis, David L., to Corning Glass Works. Automatic focusing system. 3,967,108, Cl. 250-201.000.

Hollis Engineering, Inc.: *See—*
Boynton, Kenneth G., 3,966,110.

Hollister, Ralph O.; and Sanders, Ernest E. Free-standing golf club and golf ball carrier. 3,966,051, Cl. 211-14.000.

Holmes, Alton B.: *See—*
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Holosonics, Inc.: *See—*
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Holte, Paul C., to Auric Corporation. Selective plating apparatus. 3,966,581, Cl. 204-202.000.

Homeyer, Bernhard: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lother; Behrenz, Wolfgang; Hammann, Ingeborg; Stendel, Wilhelm; and Homeyer, Bernhard, 3,966,730.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
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Honer, Harold Nickolas, to ESB Incorporated. Seawater battery. 3,966,497, Cl. 136-90.000.

Honeywell Information Systems, Inc.: *See—*
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Honkomp, Leroy J.: *See—*
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Honnorat, Yves C.; Raisson, Gerard D.; and Morlet, Jean G., to Creusot-Loire. Apparatus for the manufacture of spherical metallic powder non-contaminated by ambient atmosphere. 3,966,374, Cl. 425-7.000.

Hooker Chemicals & Plastics Corporation: *See—*
Grazen, Frank S.; Buike, Melvin L.; and Bryzinsky, Frank M., 3,966,670.

Hope, Henry F.; and Hope, Stephen F. Controllable pumps. 3,965,758, Cl. 74-41.000.

Hope, Henry F.; and Hope, Stephen F. Strip straightening apparatus, product and method. 3,966,868, Cl. 264-238.000.

Hope, Stephen F.: *See—*
Hope, Henry F.; and Hope, Stephen F., 3,965,758.
Hope, Henry F.; and Hope, Stephen F., 3,966,868.

Hopkins, Brian D., to Mead Johnson & Company. Annular collar safety closure. 3,966,082, Cl. 220-306.000.

Hopkins, Gary L.: *See—*
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Horiguchi, Kazuo, to Susmu Industrial Co., Ltd. Method of processing an organic high molecular weight film. 3,966,999, Cl. 427-41.000.

Horiguchi, Sadayuki: *See—*
Ito, Akiro; Ichikawa, Yasushi; Horiguchi, Sadayuki; Shirota, Shyoji; Kayama, Yasuo; Chihara, Shiro; Haneda, Isoko; Hasuda, Katsumi; and Takano, Shyoichi, 3,966,913.

Horikawa, Hiroumi: *See—*
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Horiuchi, Kotaro, to Yamaha, Hatsudoki Kabushiki Kaisha. Sectional boat structures. 3,965,513, Cl. 9-25.000.

Horiuchi, Masao, to Matsushita Electric Industrial Co., Ltd. Gap detector for microwave oven. 3,967,088, Cl. 219-10.55C.

Horiuchi, Masatada; Tokuyama, Takashi; and Miyazaki, Takao, to Hitachi, Ltd. Semiconductor device having controlled surface charges by passivation films formed thereon. 3,967,310, Cl. 357-54.000.

Horton, Edward E., to Deep Oil Technology, Inc. Method and apparatus for laying continuous pipe. 3,965,713, Cl. 72-146.000.

Horton, James B.: *See—*
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Hoshi, Hiroshi: *See—*
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Hoshide, Yasuo: *See—*
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Hotchkiss, Kenneth W.; and Kopp, George A., Sr., to Proto Production Plastics, Inc. Terminal box and cover. 3,966,074, Cl. 220-3.800.

House, Bennie L. Tractor mountable adjustable high volume water pump. 3,966,361, Cl. 417-231.000.

House, Frederick Glenn, to Bell Telephone Laboratories, Incorporated. Digital computer arrangement for communicating data via data buses. 3,967,246, Cl. 340-172.500.

Hout, Chester L. Variable resistor with plug-in resistance element. 3,967,231, Cl. 338-117.000.

Howard, Gerald T. Magnetic motion conversion device. 3,967,146, Cl. 310-80.000.

Howe Richardson Scale Company: *See—*
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Howell, Colvard W. Signal light. 3,967,274, Cl. 340-380.000.

Howes, Bruce; and Holland, Thomas K., to F. P. Licensing Co., Inc. Textile printing process and transfer medium. 3,966,396, Cl. 8-2.50A.

Howlett, Richard Martin: *See—*
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Howmedica, Inc.: *See—*
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Hoya Glass Works, Ltd.: *See—*
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Hruza, Denis E.: *See—*
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Hrvoic, Ivan; and Humski, Kresimir. Nuclear magnetometers for earth's field measurements based on dynamic polarization of nuclei and free radical substance for use therein. 3,966,409, Cl. 23-230.00R.

Huang, Kuo P.; and Walsh, John J., III, to Westinghouse Electric Corporation. Nozzle chamber friction damper. 3,966,023, Cl. 188-1.00B.

Hubbard, Robert William: *See—*
Hutchings, Bernard David Francis; and Hubbard, Robert William, 3,965,733.

Huber, Eugen. Paneling for walls or the like. 3,965,636, Cl. 52-496.000.

Huber, Ludwig Konrad, to Pennwalt Corporation. Process for controlling bacteria with tetrahydro-1,3-thiazinium salts. 3,966,929, Cl. 424-246.000.

Hudson, Jimmie E.; and Dockery, Calvin D., to Phillips Petroleum Company. Process for using a contoured assist plug for thermoforming oriented articles. 3,966,860, Cl. 264-94.000.

Hudson, Ralph B., Jr.: *See—*
Suggitt, Robert M.; Gates, Walter C., Jr.; and Hudson, Ralph B., Jr., 3,966,828.

Huf, Franz, to Dornier System GmbH. Rotary piston machine for transporting liquid or gaseous media. 3,966,370, Cl. 418-183.000.

Huff, Roger K., to Ciba-Geigy Corporation. Oxa- and thia-diazin-2-ones. 3,966,721, Cl. 260-243.00R.

Hug, Alfred Jean Theodore, to ARFINA Anstalt fur Continentale und Vebersee-Finansinteressen. Electrical connector mounted on a support plate. 3,966,291, Cl. 339-64.00R.

Hughes Aircraft Company: *See—*
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Hughes, John Lawrence; Seyler, Jay Kenneth; and Smith, Carroll M., to Armour Pharmaceutical Company. 1-(α-Aminomethylbenzyl-)isoquinoline compounds. 3,966,724, Cl. 260-247.5GP.

Hulls, Leonard R.: *See—*
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Hunger, Klaus: *See—*
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Hunsucker, Jerry H., to Commercial Solvents Corporation. Process for dyeing glass textiles. 3,967,015, Cl. 427-386.000.

Hunt, James P.: *See—*
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Hunter, Don L.: *See—*
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Hunter, Edwin J., to Toro Company, The. Water powered drive for automatic controllers. 3,965,800, Cl. 91-336.000.

Hunter, George L. K.; Krampl, Victor; Malone, Charles Thomas; and Usher, Gerald Edward, to Tenco Brooke Bond Limited. Method for enhancing tea flavor and product thereof. 3,966,986, Cl. 426-534.000.

Hunter, Ronald Bruce. Seating cushion. 3,965,508, Cl. 5-368.0WB.

Hunziker, John, Jr., to United States of America, Health, Education and Welfare. Laboratory mouse feeder. 3,965,868, Cl. 119-52.00R.

Hurco Manufacturing Company, Inc.: *See—*
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Hutchings, Bernard David Francis; and Hubbard, Robert William, to Pye Limited. Crane load inidicating arrangement. 3,965,733, Cl. 73-133.00R.

Hutchins, Alma A. Straight line abrading tool. 3,965,801, Cl. 91-351.000.

Hutter Rudolf G. E., to GTE Laboratories Incorporated. Simultaneous electrostatic focusing and deflection system. 3,967,152, Cl. 313-435.000.

Huvey, Michel: *See—*
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Hyland, Anthony Joseph; and Crossley, Wade William, to Elco Corporation. Terminating apparatus for flat conductor cables. 3,966,295, Cl. 339-176.0MF.

Hyner, Jacob; and Michelson, Robert A., to Whyco Chromium Company Inc. Method of electrodepositing an alloy of tin, cobalt and a third metal and electrolyte therefor. 3,966,564, Cl. 204-43.00S.

Hyslop, Ian Willoughby, to West Rand Engineering Works (Proprietary) Ltd. Air line lubricators and the like. 3,966,021, Cl. 184-56.00R.

Ichikawa, Yasushi: *See—*
Ito, Akiro; Ichikawa, Yasushi; Horiguchi, Sadayuki; Shirota, Shyoji; Kayama, Yasuo; Chihara, Shiro; Haneda, Isoko; Hasuda, Katsumi; and Takano, Shyoichi, 3,966,913.

Ichikawa, Yataro; Yamanaka, Yoshiyuki; and Tsuruta, Hideki, to Teijin Limited. Novel process for preparation of 4-hydroxy-2,4,6-trimethyl-2,5-cyclohexadiene-1-one. 3,966,818, Cl. 260-586.00P.

Igarashi, Yuriko; and Kakutani, Haruko, to Kureha Kagaku Kogyo Kabushiki Kaisha. Stable electret retaining a high surface potential and method of making the same. 3,967,027, Cl. 428-212.000.

Igarashi, Yuriko: *See—*
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Igawa, Takao: *See—*
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Ihringer, Gerhard, to Rodi & Wienenberger, Aktiengesellschaft. Expansion bracelet. 3,965,670, Cl. 59-79.00R.

IIT Research Institute: *See—*
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Ikeda, Sadahiro: *See—*
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Inamoto, Yoshiaki; Kadono, Takeji; and Takaishi, Naotake, to Kao Soap Co., Ltd. 1-Carboxymethyl-3-chloroadamantane. 3,966,800, Cl. 260-514.00G.

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Intrator, Alexander M., to General Electric Company. Semiconductor devices. 3,967,296, Cl. 357-80.000.
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Jackson, James Carson, to Jackson, James Carson. Corner key machine. 3,965,560, Cl. 29-208.00R.
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Jacob, Carlyle W. Light gating display. 3,967,265, Cl. 340-324.00R.
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Jahnsen, Vilhelm J., to California Institute of Technology. Group extraction of organic compounds present in liquid samples. 3,966,410, Cl. 23-230.00B.
Jakobsen, Karl Severin; and McLaughlin, David Benjamin, to United Technologies Corporation. Method of making filament reinforced composite rings from plural flat filamentary spiral layers. 3,966,523, Cl. 156-169.000.
James, Edward William, II; and Kenney, Warren Eugene, to Du Pont de Nemours, E. I., and Company. Crimper startup method and system. 3,965,548, Cl. 28-1.700.

James, Loyal W. Safety door lock. 3,966,248, Cl. 292-340.000.
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Jenkins, John W.; Bauer, Ronald S.; and De La Mare, Harold E., to Shell Oil Company. Sequential hydrogenation-oxidation-hydrogenation of rhodium and ruthenium catalysts. 3,966,636, Cl. 252-419.000.
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Johansson, Paul-Johny. Dialysis apparatus for purification of a medium, preferably blood. 3,966,612, Cl. 210-238.000.
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Johnson, Bruce K.; and Van Allen, David E., to Polaroid Corporation. Modular constructed sequencing system for photographic apparatus. 3,967,304, Cl. 354-83.000.
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Johnson, Keith G., to ARCO Polymers, Inc. Apparatus for the continuous extrusion of small cross-section thermoplastic foam profiles. 3,966,373, Cl. 425-4.00C.
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Schain, David B.; and Kagan, Morton R., 3,966,205.

Kaiser, Carl; and Ross, Stephen T., to SmithKline Corporation. 4-Hydroxy-α-[(3,4-methylenedioxyphenyl)isopropylaminoethyl]-3-(methylsulfonylmethyl)benzyl alcohol. 3,966,770, Cl. 260-340.500.

Kajinaga, Yoshihiro: *See—*
Ito, Shunji; Morioka, Yasuaki; Kajinaga, Yoshihiro; Nitta, Minoru; and Sakurada, Ichio, 3,966,454.

Kakeda, Teruyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Liquid crystal display device. 3,966,304, Cl. 350-160.0LC.

Kakuta, Hisashi; Matoba, Shigetada; Shimizu, Kenichi; and Yamashita, Satoshi, to Asahi Glass Co., Ltd. Process for the recovery of selenium from waste gas. 3,966,889, Cl. 423-510.000.

Kakutani, Haruko: *See—*
Igarashi, Yuriko; and Kakutani, Haruko, 3,967,027.

Kalach, Vladimir Sergeevich; and Burlakova, Lidia Ivanovna. Method of processing of waste gases. 3,966,877, Cl. 423-240.000.

Kali-Chemie Aktiengesellschaft: *See—*
Milkowski, Wolfgang; Zeugner, Horst; von Eickstedt, Klaus-Wolf; and Stohmer, Werner, 3,966,735.

Kallianidis, Milton: *See—*
Klein, Gerhart P.; and Kallianidis, Milton, 3,967,000.

Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to L'Oreal. Indamines for dyeing keratinous fibers. 3,966,722, Cl. 260-244.00R.

Kameda, Nobuyuki: *See—*
Oishi, Tadashi; Kameda, Nobuyuki; Kato, Toshiro; Fujinami, Akira; Ozaki, Toshiaki; and Itooka, Eiyashi, 3,966,789.

Kamei, Tatsuya: *See—*
Yatsuo, Tsutomu; Kamei, Tatsuya; Ogawa, Takuzo; and Tanaka, Tomoyuki, 3,967,308.

Kamigaito, Osami; Doi, Haruo; Masaki, Hideyuki; Kandori, Toshio; Oki, Masami; and Nakamura, Yasuo, to Nippondenso Co., Ltd.; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Resistor built-in spark plug. 3,967,230, Cl. 338-66.000.

Kaminski, James J.; and Bodor, Nicolae S., to Interx Research Corporation. N-chloro-amino acid derivatives activity. 3,966,796, Cl. 260-482.00R.

Kaminsky, Daniel, to Warner-Lambert Company. 2H-1,3,2-dioxaborino-[5,4-c]-1,2-benzo-thiazine 6,6-dioxides. 3,966,716, Cl. 260-243.00R.

Kammgarnspinnerei Buerglen: *See—*
Goetti, Hans; Mittler, Anton; and Forrer, Hermann, 3,965,664.

Kammgarnspinnerei Burglen: *See—*
Goetti, Hans; Mittler, Anton; and Forrer, Hermann, 3,965,663.

Kamp, Ewald Albert: *See—*
Troy, Marion Frank; and Kamp, Ewald Albert, 3,966,858.

Kampe, Wolfgang; Fauland, Erich; Stach, Kurt; Stork, Harald; and Schmidt, Felix Helmut, to Boehringer Mannheim G.m.b.H. N(6)-disubstituted adenoisine compounds and therapeutic compositions. 3,966,916, Cl. 424-180.000.

Kampf, Wolfgang; and Nordsiek, Karl-Heinz, to Chemische Werke Huls Aktiengesellschaft. Production of high-vinyl group, high-molecular weight unsaturated hydrocarbon polymers. 3,966,697, Cl. 526-93.000

Kanatani, Yoshiharu; Ise, Masahiro; and Mizukami, Etsuo, to Sharp Kabushiki Kaisha. Photo-image memory panel and activating method thereof. 3,967,112, Cl. 250-213.00R.

Kanda, Kaoru: *See—*
Taniyama, Yukio; Isaka, Tetsuo; Nagahori, Tetsuo; and Kanda, Kaoru, 3,967,249.

Kandori, Toshio: *See—*
Kamigaito, Osami; Doi, Haruo; Masaki, Hideyuki; Kandori, Toshio; Oki, Masami; and Nakamura, Yasuo, 3,967,230.

Kanebo, Ltd.: *See—*
Nishida, Takeshi; Shiromaru, Isao; and Teshima, Tsutomu, 3,966,865.

Kanengieter, Glenn G.; and Barry, Gerald E., to Owatonna Manufacturing Company, Inc. Stack forming apparatus. 3,965,660, Cl. 56-344.000.

Kanuma, Yoji, to Hitachi, Ltd. Sealing structures for the output portions of magnetrons. 3,967,087, Cl. 219-10.55B.

Kao Soap Co., Ltd.: *See—*
inamoto, Yoshiaki; Kadono, Takeji; and Takaishi, Naotake, 3,966,800.

Kaplan, Jean-Pierre: *See—*
Gerecke, Max; Kaplan, Jean-Pierre; and Kyburz, Emilio, 3,966,737.

Kaplan, John J.; Richert, Wilhelm H.; and Trumblee, John W., to Jo-Bi Farms, Inc. Poultry leg boning machine. 3,965,535, Cl. 17-1.00G.

Kapoor, Inder: *See—*
Metcalf, Robert L.; Kapoor, Inder; and Hirwe, Asha, 3,966,824.

Karami, Hamzeh, to Colgate-Palmolive Company. Absorbent article with pattern and method. 3,965,906, Cl. 128-287.000.

Karas, Gus, to Chevron Research Company. Apparatus and method for gagging a relief valve within a flue secured to a tank. 3,965,916, Cl. 137-15.000.

Kardos, Otto; Arcilesi, Donald A.; and Valayil, Silvester P., to M & T Chemicals Inc. Electrodeposition of copper. 3,966,565, Cl. 204-52.00R.

Kariya, Noboru: *See—*
Ariyoshi, Junji; and Kariya, Noboru, 3,966,485.

Karpati, Gyorgy: *See—*
Vass, Karoly; Karpati, Gyorgy; Szechenyi-Marton, Eva; and Simek, Ferenc, 3,966,554.

Karpf, Ferdinand. Automatic regulating equipment for a heating device having a vaporizing burner. 3,966,118, Cl. 237-2.00A.

Kasberg, Alvin H.: *See—*
Foulds, Ronald B.; Kasberg, Alvin H.; Puechl, Karl H.; and Bleiberg, Melvin L., 3,966,550.

Kashio, Hidetora: *See—*
Kidoh, Kunizoh; Kashio, Hidetora; Hosokawa, Toshio; and Kusida, Kazuo, 3,966,696.

Kashiyama, Yoshitaka: *See—*
Yamagishi, Hidehisa; Takano, Hiroshi; and Kashiyama, Yoshitaka, 3,966,570.

Kasyanov, Grigory Ivanovich: *See—*
Andoniev, Sergei Mikhailovich; Zilberman, Leonid Borisovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Filipiev, Oleg Vladimirovich; Kasyanov, Grigory Ivanovich; Zalmanovich, Grigory Borisovich; and Raikovsky, Jury Borisovich, 3,966,179.

Katagi, Fusao, to Katagi Goseikagaku Kabushiki Kaisha. Untwisted synthetic resin string and apparatus for manufacturing the string. 3,967,038, Cl. 428-397.000.

Katagi Goseikagaku Kabushiki Kaisha: *See—*
Katagi, Fusao, 3,967,038.

Kato, Takashi; Yamanaka, Toru; and Komatsu, Akira, to Takasago Perfumery Co., Ltd. Process for preparing parabenzoquinones. 3,966,776, Cl. 260-396.00R.

Kato, Tetsuji, to Mitsubishi Rayon Co., Ltd. Method of and apparatus for continuously preparing a syrup of a monomer-polymer mixture. 3,966,693, Cl. 526-75.000.

Kato, Toshiro: *See—*
Oishi, Tadashi; Kameda, Nobuyuki; Kato, Toshiro; Fujinami, Akira; Ozaki, Toshiaki; and Itooka, Eiyashi, 3,966,789.

Kato, Yozo: *See—*
Kurata, Tokuzo; Okano, Takeshi; Tamaru, Akio; Kato, Yozo; and Nagashima, Saburo, 3,966,810.

Katoh, Takayuki: *See—*
Omori, Akira; Okamura, Isao; Imoto, Tadasi; and Katoh, Takayuki, 3,966,597.

Katuharu, Doma: *See—*
Tomokazu, Suzuki; and Katuharu, Doma, 3,965,668.

Katz, Ira: *See—*
Wilson, Richard Arnold; Katz, Ira; Vock, Manfred H.; and Shuster, Edward J., 3,966,988.

Katz, Saul N.; and Dwyer, Daniel E., Jr., to General Foods Corporation. Process for freezing coffee extract. 3,966,979, Cl. 426-385.000.

Katz, Sheldon B.; Burton, Frederick J., Jr.; and Cullo, Leonard A., to Harshaw Chemical Company, The. Supported cobalt sulfate desulfurization catalyst. 3,966,640, Cl. 252-440.000.

Kawa, Ryuichi, to Ricoh Co., Ltd. Pattern recognition system. 3,967,241, Cl. 340-146.30H.

Kawa, Ryuichi, to Kabushiki Kaisha Ricoh. Character pattern normalization method and apparatus for optical character recognition system. 3,967,243, Cl. 340-146.30H.

Kawaguchi, Hiroshi: *See—*
Tanizaki, Yoshiharu; Kawaguchi, Hiroshi; and Minagawa, Kenichiro, 3,966,625.

Kawai, Noriaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Ignition timing control apparatus. 3,965,874, Cl. 123-117.00A.

Kawakami, Akira: *See—*
Takase, Yahei; and Kawakami, Akira, 3,967,294.

Kawamata, Kiyoshi, to Nihon Seikan Kabushiki Kaisha. Seal for can or like container. 3,966,079, Cl. 220-266.000.

Kawamata, Kiyoshi, to Nihon Seikan Kabushiki Kaisha. Seal for can or like container. 3,966,081, Cl. 220-270.000.

Kawamata, Masanobu; Ushimaru, Hirokazu; Sano, Akira; and Takahashi, Yutaka, to Nippon Shinyaku Co., Ltd. Method of preparing aqueous solutions of sterol glycosides and their ester derivatives. 3,966,918, Cl. 424-182.000.

Kawasaki Steel Corporation: *See—*
Ito, Shunji; Morioka, Yasuaki; Kajinaga, Yoshihiro; Nitta, Minoru; and Sakurada, Ichio, 3,966,454.

Kawase, Makoto. Method of potting trees and shrubs. 3,965,617, Cl. 47-58.000.

Kawata, Kiyoshi: *See—*
Muramatu, Akira; and Kawata, Kiyoshi, 3,967,245.

Kawazu, Satoru: *See—*
Nomura, Kousi; Kawazu, Satoru; Hirose, Yoshihiko; Inoue, Isao; Watari, Yoshihiko; and Kijima, Koichi, 3,966,501.

Kay, Edward Leo: *See—*
Crane, Grant; and Kay, Edward Leo, 3,966,487.

Kayaku Antibiotic Research Co., Ltd.: *See—*
Ito, Akiro; Ichikawa, Yasushi; Horiguchi, Sadayuki; Shirota, Shyoji; Kayama, Yasuo; Chihara, Shiro; Haneda, Isoko; Hasuda, Katsumi; and Takano, Shyoichi, 3,966,913.

Kayama, Yasuo: *See—*
Ito, Akiro; Ichikawa, Yasushi; Horiguchi, Sadayuki; Shirota, Shyoji; Kayama, Yasuo; Chihara, Shiro; Haneda, Isoko; Hasuda, Katsumi; and Takano, Shyoichi, 3,966,913.

KB-Denver, Inc.: *See—*
Pounds, Walter R., 3,967,084.

Keairns, Dale L.: *See—*
Craig, John W. T.; O'Neill, Eoin P.; and Keairns, Dale L., 3,966,431.

Kee, Richard C.: *See—*
Fischer, Richard V.; and Kee, Richard C., 3,967,303.

Keefe, George E.: *See—*
Almasi, George S.; Hendel, Robert J.; Keefe, George E.; Lin, Yeong S.; and McGouey, Richard P., 3,967,002.

Kefalas A/S: *See—*
Buus, Jorn Lasse Martin; and Lassen, Niels, 3,966,930.
Buus, Jorn Lasse Martin, 3,966,952.

Kegelart, Willy: *See—*
Ninane, Leon; and Kegelart, Willy, 3,967,039.

Keiper KG: *See—*
Berghof, Hans-Joachim; Hacklander, Hans-Gerd; and Klingelhofer, Gerd, 3,966,253.

Keller, Rudolf: *See—*
Oxe, Josef; and Keller, Rudolf, 3,966,659.

Kelley, Eugene W., to Cabot Corporation. Powder metallurgically produced alloy sheet. 3,966,422, Cl. 29-182.700.

Kellogg, Walter J.; and Calvin, Chester W., to Westinghouse Electric Corporation. Indicator lamp test circuit utilizing bidirectional thyristor switching. 3,967,192, Cl. 324-21.000.

Kelly, Robert C., to Upjohn Company, The. Oxazolidines of 4-oxotricyclo[5.1.0^{2,5}]octan-8-endo-carboxaldehyde, neopentyl glycol acetal. 3,966,751, Cl. 260-307.0FA.

Kelly, Robert R., to BJ-Hughes Inc. Shock absorber for tubular storage or drill stands on a drilling ship. 3,966,054, Cl. 211-60.00S.

Kelm, Roger W., to Gould Inc. Electrode assembly for air depolarized cells. 3,966,496, Cl. 136-86.00A.

Kelsey-Hayes Company: *See—*
Atkins, Thomas M., 3,966,266.

Kelso, Gordon W. Dispenser. 3,966,086, Cl. 221-234.000.

Kemanord Aktiebolag: *See—*
Helmer, Karin Ulla Elisabet; and Reuterhall, Alf Ragnar, 3,966,484.

Kempson, Geoffrey Edward: *See—*
Freeman, Michael Alexander Reykers; Kempson, Geoffrey Edward; and Tuke, Michael Anthony, 3,965,489.

Kendall Company, The: *See—*
Boedecker, Steven M., 3,965,900.
Hardy, David R.; and Weatherford, Richard C., 3,965,907.

Kennedy, Carl D.: *See—*
Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,965,984.

Kennedy, James M. Brake means for a center pivot irrigation system. 3,965,924, Cl. 137-344.000.

Kennedy, Timothy James, to Procter & Gamble Company, The. Dry stable instant beverage mix. 3,966,994, Cl. 426-590.000.

Kenney, Warren Eugene: *See—*
James, Edward William, II; and Kenney, Warren Eugene, 3,965,548.

Kerfoot, Oliver C.: *See—*
Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,965,984.

Kern, Robert H., to Frequency & Time Systems, Inc. Atomic beam tube. 3,967,115, Cl. 250-251.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Brixy, Heinz, 3,966,500.

Kessler, Hans-Joachim: *See—*
Rufer, Clemens; Schroder, Eberhard; and Kessler, Hans-Joachim, 3,966,732.

Keystone Consolidated Industries, Inc.: *See—*
Roser, Kenneth L., 3,965,793.

Khaidurov, Efim Leontievich; and Razorenov, Vladimir Alexandrovich. Firing and trigger mechanism for self-loading match pistol. 3,965,604, Cl. 42-69.00B.

Khattab, Ghazi; and Witonsky, Robert J., to Bio-Medical Sciences, Inc. Time temperature indicators. 3,966,414, Cl. 23-253.0TP.

Khmelnitsky, Lenor Ivanovich: *See—*
Novikov, Sergei Sergeevich; Khmelnitsky, Lenor Ivanovich; Lebedev, Oleg Vasilievich; Epishina, Lia Vladimirovna; Suvorova, Ljudmila Ivanovna; Lapshina, Lidia Vasilievna; Krylov, Valery Dmitrievich; Zaikonnikova, Irina Vitalievna; Zimakova, Irina Evgenievna; Chudnovsky, Vladimir Sergeevich; Babichev, Viktor Andreevich; and Avdonina, Nina Alexandrovna, 3,966,742.

Kibbel, William H., Jr.: *See—*
O'Neill, Eugene T.; and Kibbel, William H., Jr., 3,966,450.

Kidoh, Kunizoh; Kashio, Hidetora; Hosokawa, Toshio; and Kusida, Kazuo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing vinylchloride resin having a highly porous uniform granular structure. 3,966,696, Cl. 526-199.000.

Kieldsen, William E.; and Mieras, Raymond J. Fruit pitting apparatus. 3,965,809, Cl. 99-492.000.

Kienholz, Karl E. Apparatus for sprouting seeds. 3,965,614, Cl. 47-14.000.

Kierstead, Richard Wightman: *See—*
Guthrie, Robert William; Hamilton, James Guthrie; Kierstead, Richard Wightman; Miller, O. Neal; and Sullivan, Ann Clare, 3,966,772.

Kijima, Koichi: *See—*
Nomura, Kousi; Kawazu, Satoru; Hirose, Yoshihiko; Inoue, Isao; Watari, Yoshihiko; and Kijima, Koichi, 3,966,501.

Kikust, Daniel Petrovich: *See—*
Apsit, Voldemar Voldemarovich; Sika, Zigurd Karlovich; and Kikust, Daniel Petrovich, 3,967,145.

Kilbourn, Edward E.; and Weiler, Ernest D., to Rohm and Haas Company. Pyridyl phenyl-carbamate rodenticide. 3,966,947, Cl. 424-263.000.

Killian, Gerald I. Triggerless archery bow string release. 3,965,884, Cl. 124-35.00A.

Kimber, Geoffrey Michael: *See—*
Gray, Michael David; and Kimber, Geoffrey Michael, 3,966,584.
Gray, Michael David; Kimber, Geoffrey Michael; and Shipley, David Ernest, 3,966,585.

Kimberly-Clark Corporation: *See—*
Mitchell, Kenneth J.; and Ostermeier, Kurt W., 3,966,519.
Werner, Edward E., 3,966,126.

Kimura, Kaoru: *See—*
Saito, Jiro; Kimura, Kaoru; Kusuhara, Hiroshi; and Nakaguma, Kazuyoshi, 3,965,686.

Kimura, Kazumi: *See—*
Osako, Naoto; Kozima, Katsumi; Shimizu, Hiroshi; and Kimura, Kazumi, 3,966,853.

Kimura, Kazuo; and Yamazaki, Yasuo, to Minolta Camera Kabushiki Kaisha. Light receiving device for use in a single lens reflex camera. 3,967,287, Cl. 354-56.000.

Kimura, Takeo: *See—*
Namiki, Hiroshi; Minemura, Norihiro; Kimura, Takeo; and Takahashi, Shigeru, 3,966,406.

King, James Ping; Simkin, Joseph; and Radice, Peter F., to Pennwalt Corporation. High temperature pigmented coatings based on zirconium phosphinate polymer binders crosslinked with phosphinic acids. 3,966,486, Cl. 106-287.00R.

King, John O., Jr. Split pintail fastener assembly. 3,965,792, Cl. 85-7.000.

King, William E., Jr., to United States of America, Navy. Load crack testing device. 3,965,729, Cl. 73-90.000.

Kinghan, Derek Alfred: *See—*
Watkins, Robert Charles; Kinghan, Derek Alfred; and Humphrey, Robert Walter, 3,966,621.

Kirk, Norman. Stretching exercising device. 3,966,200, Cl. 272-109.000.

Kirk, William P.; and Reynolds, Dwight W. Apparatus for spilling retrieval. 3,966,613, Cl. 210-242.000.

Kirkham, Arthur J. Tent structure. 3,965,915, Cl. 135-1.00R.

Kiscaden, Roy: *See—*
Hobbs, Milton M.; and Kiscaden, Roy, 3,965,674.

Kissler & Co., Inc.: *See—*
Kissler, Gerald, 3,965,528.

Kissler, Gerald, to Kissler & Co., Inc. Universal elbow action lever handle. 3,965,528, Cl. 16-110.00R.

Kitano, Masahiko: *See—*
Murai, Hiromu; Ohata, Katsuya; Aoyagi, Yoshiaki; Ueda, Fusao; Kitano, Masahiko; Takata, Satoshi; and Tada, Shinichi, 3,966,728.

Kjellqvist, Erik, to Almqvist & Wiksell Forlag AB. Mounting device or book for storing, displaying and handling transparent pictures. 3,965,595, Cl. 40-104.180.

Kjoller, Hans Ole; and Sjoquist, Erik Ivar, to Telefonaktiebolaget L M Ericsson. Arrangement for double-writing into a memory during data field relocation. 3,967,248, Cl. 340-172.500.

Klatt, Kenneth G.; Walling, Ronald L.; and Hallstrom, James R., to Rexnord Inc. Ambient temperature compensated resin-hardener fillers. 3,966,657, Cl. 260-29.2EP.

Klaue, Hermann. Brake system for vehicles. 3,966,008, Cl. 180-75.000.

Klein, Albert: *See—*
Plotz, Kurt; Breschar, Klaus; and Klein, Albert, 3,967,032.

Klein, Donald J.: *See—*
Becker, Kenneth W.; Baczewski, Klemens C.; and Klein, Donald J., 3,966,982.

Klein, Gerhart P.; and Kallianidis, Milton, to P. R. Mallory & Co., Inc. Riser protection for anodes. 3,967,000, Cl. 427-58.000.

Kleiner, Frank Gerald; and Muller, Karl Heinz, to Bayer Aktiengesellschaft. Process for the production of fine-cell polyolefin foams. 3,966,651, Cl. 260-2.5HA.

Kleisser, Werner; and Motting, Gotz, to Daimler-Benz Aktiengesellschaft. Installation for securing of pivotal hoods or flaps, especially engine hoods. 3,966,244, Cl. 292-127.000.

Kleykamp, Donald L.: *See—*
Holden, Homer N.; Hunt, James P.; Browning, Vernon D.; Hoglen, Edward L.; and Kleykamp, Donald L., 3,966,104.

Kline, Gaylen O., to National Machinery Company, The. Transfer mechanism. 3,965,718, Cl. 72-405.000.

Klingaman, Richard James, to Colgate-Palmolive Company. Diluting and dispensing container. 3,966,089, Cl. 222-88.000.

Klingelhofer, Gerd: *See—*
Berghof, Hans-Joachim; Hacklander, Hans-Gerd; and Klingelhofer, Gerd, 3,966,253.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
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Klockner-Werke AG: *See—*
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Klose, Peter H.: *See—*
Wacks, Harvey H.; Klose, Peter H.; Ovshinsky, Stanford R.; and Hallman, Robert W., 3,966,317.

Klove, Edwin H., Jr.: *See—*
Campbell, David D.; and Klove, Edwin H., Jr., 3,966,224.

Knapp, Julius Z.; and Zeiss, John C., to Schering Corporation. Method and apparatus for inspecting liquids in transparent containers. 3,966,332, Cl. 356-197.000.

Knaus, Reto. Arrangement for keeping tools of the drilling, milling, boring type etc. in readiness for use on machine tools. 3,966,052, Cl. 211-60.00T.

Knight, Geoffrey Thomas: *See*—
Cutts, Ernest; and Knight, Geoffrey Thomas, 3,966,530.

Knochenhauer, Horst: *See*—
Brunner, Manfred; and Knochenhauer, Horst, 3,965,806.

Knoop, Donald E.; and Seeland, Rodney F., to Whirlpool Corporation. Method and apparatus for testing electric motors. 3,967,199, Cl. 324-158.0MG.

Knowlton, Kenneth Charles, to Bell Telephone Laboratories, Incorporated. Method and apparatus for using pushbutton telephone keys for generation of alpha-numeric information. 3,967,273, Cl. 340-365.00S.

Kobayashi, Akihiro: *See*—
Sasaya, Hideaki; and Kobayashi, Akihiro, 3,967,079.

Kobayashi, Kenji; Fukumaru, Toshitsugu; Mizote, Hiroyuki; Inaba, Shigeho; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Novel 2-substituted 6,7-benzomorphan derivatives and salts thereof in analgesic compositions. 3,966,939, Cl. 424-260.000.

Kobe Steel Ltd.: *See*—
Godai, Tomokazu; Sugiyama, Toboru; and Nishimura, Katushi, 3,966,424.

Koblitz, Francis Frederick, to Dentsply Research & Development Corporation. Dental investment material. 3,966,479, Cl. 106-38.50R.

Koch, Robert E.; and Ceder, James H., to General Electric Company. Electric current limiting fuse having a filter disposed in one end cap. 3,967,228, Cl. 337-248.000.

Kodera, Yoshinobu, to Bear Co. Ltd. Strap for wrist watch. 3,965,671, Cl. 59-80.000.

Koehring GmbH — Bomag Division: *See*—
Kofel, Ferdinand, 3,966,345.

Kofel, Ferdinand, to Koehring GmbH — Bomag Division. Tandem road roller. 3,966,345, Cl. 404-126.000.

Koga, Isao: *See*—
Fukui, Masahiro; Hayashi, Shigeru; Okamoto, Takehiko; Koga, Isao; and Inoi, Takeshi, 3,966,822.

Kogler, Georg; Kuhnlein, Hans; and Liska, Manfred, to Siemens Aktiengesellschaft. Electronic commutation apparatus for a brushless D.C. motor. 3,967,174, Cl. 318-254.000.

Kohl, Gerald C. Forming a removable closure member in situ. 3,966,869, Cl. 264-242.000.

Kohler, Constance Anne: *See*—
Ellenbogen, Leon; and Kohler, Constance Anne, 3,966,960.
Ellenbogen, Leon; and Kohler, Constance Anne, 3,966,978.

Koike, Hiroshi: *See*—
Fukui, Akio; Koike, Hiroshi; Tanaka, Takehiko; and Ito, Yuji, 3,966,775.

Koivunen, Erkki A., to General Motors Corporation. Hydrodynamic drive and slipping clutch. 3,966,032, Cl. 192-3.300.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Senda, Yasuhiro; and Ando, Sumitoshi, 3,967,250.

Kolling, Heinrich: *See*—
Kurz, Jurgen; Kolling, Heinrich; and Federmann, Manfred, 3,966,964.
Reisdorff, Josef Helmut; Aichinger, Gerd; Haberkorn, Axel; Kolling, Heinrich; and Kranz, Eckart, 3,966,725.

Komada, Kenya; and Kondo, Yoshiaki, to Ricoh Co., Ltd. Sheet conveying device. 3,966,198, Cl. 271-265.000.

Komai, Mithumasa: *See*—
Mukushi, Toshimi; Izumi, Kenkichi; Takahashi, Sankichi; Okazima, Yoshiaki; Sawa, Toshio; and Komai, Mithumasa, 3,966,562.

Komatsu, Akira: *See*—
Kato, Takashi; Yamanaka, Toru; and Komatsu, Akira, 3,966,776.

Kondo, Sadao: *See*—
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Kondo, Yoshiaki: *See*—
Komada, Kenya; and Kondo, Yoshiaki, 3,966,198.

Konig, Hans-Bodo; Metzger, Karl Georg; and Schrock, Wilfried, to Bayer Aktiengesellschaft. Penicillins and cephalosporins and their production. 3,966,709, Cl. 260-239.100.

Koniger, Rudolf: *See*—
Frischmann, Albert; Mermi, Kurt; Hermeneit, Rainer; and Koniger, Rudolf, 3,966,156.

Konomi, Tsohiaki; Nurita, Joji; and Tanazawa, Yasushi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Flow equalizing means. 3,965,873, Cl. 123-52.00M.

Kopecky, Ivyl: *See*—
Anderson, Joseph A.; Neukom, Chester G.; and Kopecky, Ivyl, 3,966,128.

Kopp, George A., Sr.: *See*—
Hotchkiss, Kenneth W.; and Kopp, George A., Sr., 3,966,074.

Koppensteiner, Gunther: *See*—
Andree, Hans; Koppensteiner, Gunther; and Stracke, Heinz-Ulrich, 3,966,968.

Koppers Company, Inc.: *See*—
Williams, Charles H., 3,966,856.

Kori, Seiji: *See*—
Hayashi, Masaki; Kori, Seiji; Ohyama, Isao; and Endo, Hirofumi, 3,966,792.

Korn, Siegfried; Kratzer, Bernd; and Muckenhaupt, Otto, to Carl Zeiss-Stiftung. Method of producing photochromic multifocal spectacle lenses. 3,966,311, Cl. 351-164.000.

Kosaka, Yujiro: *See*—
Uemura, Masaru; Kuroki, Hitoshi; Echida, Nobuhiro; Kosaka, Yujiro; and Otomo, Kanji, 3,967,020.

Kosik, Samuel J., Jr. Apparatus for loading and unloading presses. 3,966,380, Cl. 425-338.000.

Kosonocky, Walter Frank; and Sauer, Donald Jon, to RCA Corporation. Charge transfer memory. 3,967,254, Cl. 340-173.00R.

Kovacs, Jenoe; Jung, Hans; Marx, Matthias; Spoor, Herbert; and Roschke, Wilfried, to BASF Aktiengesellschaft. Manufacture of polyester imide dispersions. 3,966,655, Cl. 260-29.20N.

Kovar, Robert F.; and Arnold, Fred E., to United States of America, Air Force. Addition curable phenyl-quinoxaline compositions and their synthesis. 3,966,729, Cl. 260-250.00Q.

Koyama, Takeshi: *See*—
Nakano, Mineo; Koyama, Takeshi; Matsumoto, Yoshiro; and Maruoka, Akira, 3,966,390.

Kozai, Tetsuo; and Shiraki, Shomitsu, to Morita Pump Kabushiki Kaisha. Working platform lifting apparatus for aerial ladder truck. 3,966,018, Cl. 182-103.000.

Kozima, Katsumi: *See*—
Osako, Naoto; Kozima, Katsumi; Shimizu, Hiroshi; and Kimura, Kazumi, 3,966,853.

Kozulla, Robert E., to Weatherhead Company, The. Hose skiving tool. 3,965,570, Cl. 30-90.100.

Kraftwerk Union Aktiengesellschaft: *See*—
Schroder, Peter, 3,966,871.

Krambeck, Robert Harold, to Bell Telephone Laboratories, Incorporated. Input circuit for semiconductor charge transfer device circulating memory apparatus. 3,967,136, Cl. 307-221.00D.

Krampl, Victor: *See*—
Hunter, George L. K.; Krampl, Victor; Malone, Charles Thomas; and Usher, Gerald Edward, 3,966,986.

Kranz, Eckart: *See*—
Reisdorff, Josef Helmut; Aichinger, Gerd; Haberkorn, Axel; Kolling, Heinrich; and Kranz, Eckart, 3,966,725.

Krapukhin, Viktor Mikhailovich: *See*—
Alexandrov, Nikolai Nikitievich; Zorev, Nikolai Nikolaevich; Krapukhin, Viktor Mikhailovich; Krotov, Viktor Vasilievich; Kryanin, Ivan Romanovich; Milman, Boris Samoilovich; Semenov, Pavel Vladimirovich; Sokolov, Nikolai Anatolievich; and Tinyakov, Viktor Gurievich, 3,965,968.

Kratzer, Bernd: *See*—
Korn, Siegfried; Kratzer, Bernd; and Muckenhaupt, Otto, 3,966,311.

Krauss-Maffei Aktiengesellschaft: *See*—
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Krehbiel, Delmar D.: *See*—
Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,965,984.

Krenzer, John, to Velsicol Chemical Corporation. Dialkyl acetals of anilinoacetaldehydes. 3,966,811, Cl. 260-562.00B.

Kresge, James S.; and Fiegel, Harvey E., to General Electric Company. Electrical overvoltage surge arrester with a long time constant valve section and series gap section. 3,967,160, Cl. 317-68.000.

Kress, Robert W.: *See*—
Corbett, Marshall J.; and Kress, Robert W., 3,966,142.

Kressley, Leonard J.: *See*—
Frevel, Ludo K.; and Kressley, Leonard J., 3,966,418.

Kreuder, Hans Joachim: *See*—
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; and Kreuder, Hans Joachim, 3,966,836.

Kriesten, Wolfgang: *See*—
Feldmann, Rainer; Kriesten, Wolfgang; Muller, Karl Adolf; Panoch, Hans Joachim; and Scholten, Heinz, 3,966,838.

Krimm, Heinrich; Schnell, Hermann; and Schwarz, Hans-Helmut, to Bayer Aktiengesellschaft. Process for the preparation of bisphenol bischlorocarbonic acid esters. 3,966,785, Cl. 260-463.000.

Kristiansen, Odd: *See*—
Beriger, Ernst; Kristiansen, Odd; Rufenacht, Kurt; and Bader, Jorg, deceased, 3,966,921.

Kristinsson, Haukur: *See*—
Bohner, Beat; Dawes, Dag; Meyer, Willy; Kristinsson, Haukur; and Rufenacht, Kurt, 3,966,754.

Kroger, Donald J.: *See*—
Kroger, Douglas J.; Kroger, Donald J.; Jensen, Winton D.; and Rohrs, Donald L., 3,966,076.

Kroger, Douglas J.; Kroger, Donald J.; Jensen, Winton D.; and Rohrs, Donald L., to Consolcase, Inc. Contact lens accessory case. 3,966,076, Cl. 220-20.000.

Krotov, Viktor Vasilievich: *See*—
Alexandrov, Nikolai Nikitievich; Zorev, Nikolai Nikolaevich; Krapukhin, Viktor Mikhailovich; Krotov, Viktor Vasilievich; Kryanin, Ivan Romanovich; Milman, Boris Samoilovich; Semenov, Pavel Vladimirovich; Sokolov, Nikolai Anatolievich; and Tinyakov, Viktor Gurievich, 3,965,968.

Krug, Robert H.; and Henry, Clemence J., to Texaco Inc. Corrosion inhibited lube oil compositions. 3,966,623, Cl. 252-47.000.

Kryanin, Ivan Romanovich: *See*—
Alexandrov, Nikolai Nikitievich; Zorev, Nikolai Nikolaevich; Krapukhin, Viktor Mikhailovich; Krotov, Viktor Vasilievich; Kryanin, Ivan Romanovich; Milman, Boris Samoilovich; Semenov, Pavel Vladimirovich; Sokolov, Nikolai Anatolievich; and Tinyakov, Viktor Gurievich, 3,965,968.

Krylov, Valery Dmitrievich: *See*—
Novikov, Sergei Sergeevich; Khmelnitsky, Lenor Ivanovich; Lebedev, Oleg Vasilievich; Epishina, Lia Vladimirovna; Suvorova, Ljudmila Ivanovna; Lapshina, Lidia Vasilievna; Krylov, Valery Dmitrievich; Zaikonnikova, Irina Vitalievna; Zimakova, Irina Evgenievna; Chudnovsky, Vladimir Sergeevich; Babichev, Viktor Andreevich; and Avdonina, Nina Alexandrovna, 3,966,742.

Kubinak, Ronald A.: *See*—
Scholten, Frank L.; and Kubinak, Ronald A., 3,967,177.

Kubotera, Kikuo; and Mizuki, Eiichi, to Fuji Photo Film Co., Ltd. Process for producing printing plates. 3,966,472, Cl. 96-33.000.

Kudinov, Gennady Alexandrovich: *See*—
Andoniev, Sergei Mikhailovich; Zilberman, Leonid Borisovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Filipiev, Oleg Vladimirovich; Kasyanov, Grigory Ivanovich; Zalmanovich, Grigory Borisovich; and Raikovsky, Jury Borisovich, 3,966,179.

Kudo, Ken-Ichi; Ohmae, Tadayuki; Toyoshima, Yoshiki; and Hara, Sumio, to Sumitomo Chemical Company, Limited. Process for preparing 1-tetrahydronaphthalone. 3,966,821, Cl. 260-590.00R.

Kuether, Roger F.: *See*—
Larson, Gerald L.; and Kuether, Roger F., 3,965,669.

Kuhnlein, Hans: *See*—
Kogler, Georg; Kuhnlein, Hans; and Liska, Manfred, 3,967,174.

Kukers, William: *See*—
Zuckerberg, Harry; and Kukers, William, 3,966,407.

Kulczycki, Karol; Darsie, Burns; and Dow, Norris F. Heddle with guide means thereon for use in a weaving machine for making triaxial fabrics. 3,965,939, Cl. 139-48.000.

Kumano, Masayoshi: *See*—
Mitsuoka, Hiroshi; and Kumano, Masayoshi, 3,967,138.

Kump, Ernest Joseph. Joint assembly and fastener therefor. 3,965,958, Cl. 52-753.00K.

Kundikoff, Peter. Poultry carrier incorporating disposable feed trays. 3,965,865, Cl. 119-19.000.

Kuraray Co., Ltd.: *See*—
Maekawa, Minoru, 3,967,010.

Kurata, Tokuzo; Okano, Takeshi; Tamaru, Akio; Kato, Yozo; and Nagashima, Saburo. Process for hydrating a nitrile to the corresponding amide. 3,966,810, Cl. 260-561.00N.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
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Kidoh, Kunizoh; Kashio, Hidetora; Hosokawa, Toshio; and Kusida, Kazuo, 3,966,696.
Takahashi, Masaaki; Ito, Akira; and Igarashi, Yuriko, 3,966,674.

Kurita, Takaji; and Fujiwara, Takao, to Minolta Camera Kabushiki Kaisha. Residual toner removing apparatus. 3,965,524, Cl. 15-308.000.

Kurobe, Moriji; Araga, Toshimi; Ito, Nobuhiro; Sato, Shigeyuki; and Takahashi, Hidero, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Pre-coated metal sheet. 3,967,045, Cl. 428-463.000.

Kuroda, Makoto; Morimoto, Kazuhisa; and Minobe, Akira, to Matsushita Electric Industrial Co., Ltd. Electrophotographic photosensitive composition employing a prepolymer of diallylphthalate. 3,966,469, Cl. 96-1.500.

Kuroda, Shigeharu. Method of making a pallet. 3,966,529, Cl. 156-300.000.

Kurokawa, Koji: *See*—
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Kuromitsu, Hiromu; and Ohara, Naoki, to Aisin Seiki Kabushiki Kaisha. Reservoir. 3,966,605, Cl. 210-130.000.

Kurz, Jurgen; Kolling, Heinrich; and Federmann, Manfred, to Bayer Aktiengesellschaft. Veterinary composition containing thionosalicylic acid anilides or salts thereof and methods of using the same. 3,966,964, Cl. 424-308.000.

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Kusida, Kazuo: *See*—
Kidoh, Kunizoh; Kashio, Hidetora; Hosokawa, Toshio; and Kusida, Kazuo, 3,966,696.

Kusters, Eduard: *See*—
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Kusuhara, Hiroshi: *See*—
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Kutsykovich, Dorina Borisovna: *See*—
Andoniev, Sergei Mikhailovich; Zilberman, Leonid Borisovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Filipiev, Oleg Vladimirovich; Kasyanov, Grigory Ivanovich; Zalmanovich, Grigory Borisovich; and Raikovsky, Jury Borisovich, 3,966,179.

Kuwabara, Motosuke: *See*—
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Kyburz, Emilio: *See*—
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Kyker, Glendon D.: *See*—
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La Detection Electronique Francaise Protecbat: *See*—
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LaBash, John David; and McGinniss, Vincent D., to SCM Corporation. Ultraviolet polymerization coatings suitable for food packaging using FDA approved dyes as photosensitizers. 3,966,574, Cl. 204-159.240.

LaBoda, John Albert, to Advance Manufacturing Corporation. Method and machine for making twisted wire beads for tires. 3,966,131, Cl. 242-4.0BE.

Labofina S.A.: *See*—
Andre, Jacques Maurice Jules; van Thillo, Hugo Johannes; Lammers, Rene Odon; Debus, Henri Robert; and Cahen, Raymond Marc, 3,966,996.

Lackey, Robert P.: *See*—
Clarke, David E.; Lackey, Robert P.; and Clark, Joel P., 3,967,227.

Lademann, Rudolf; Lindner, Helmut; Martini, Thomas; and Rammelt, Peter Paul, to Hoechst Aktiengesellschaft. Continuous process for preparing derivatives of benzene with fluorinated side chains from the corresponding chlorine compounds. 3,966,832, Cl 260-651.00F.

Lafage, Yves: *See*—
Herment, Robert; Lafage, Yves; Emo, Jean Claude; and Yurcek, Jean Marie, 3,966,427.

Lagoutte, Serge; and Lanciaux, Andre, to Societe d'Etudes Verrieres. Feed device for plastics processing machines. 3,966,177, Cl. 259-185.000.

Lamb, C. Paul, to Teledyne, Inc. Orienting system for a kickover tool. 3,965,979, Cl. 166-117.500.

Lambert, Richard J., to Minnesota Mining and Manufacturing Company. Printable pressure-sensitive adhesive tape. 3,967,031, Cl. 428-294.000.

Lambert, Yvon: *See*—
Monkovic, Ivo; Saucier, Michel; Lambert, Yvon; and Montzka, Thomas Alfred, 3,966,747.

Lamberti, Vincent; and Gutierrez, Eddie N., to Lever Brothers Company. Perfume compositions containing monoalkyl-para-dioxanes. 3,966,647, Cl. 252-522.000.

Lamel, Jerome E.: *See*—
Yang, Frank; and Lamel, Jerome E., 3,965,862.

Lammers, Jan Frederik: *See*—
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Lammers, Rene Odon: *See*—
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Lanciaux, Andre: *See*—
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Lang, John M., to Xerox Corporation. Flat field scanning mirror. 3,966,319, Cl. 355-66.000.

Langdon Corporation, The: *See*—
Reiland, Harold P., 3,965,507.

Langenfelder, Hans; Daubach, Ewald; and Belde, Horst, to BASF Aktiengesellschaft. Flowable aqueous pigment formulations containing dipropylene glycol. 3,966,488, Cl. 106-308.00Q.

Lanier, Richard J.: *See*—
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Lantor of Australia Pty. Ltd.: *See*—
Fair, Graeme David; Hasmall, Derek Lesley Arthur; Ryan, William Patrick; and Sellman, Edwin John, 3,966,912.

Lapshina, Lidia Vasilievna: *See*—
Novikov, Sergei Sergeevich; Khmelnitsky, Lenor Ivanovich; Lebedev, Oleg Vasilievich; Epishina, Lia Vladimirovna; Suvorova, Ljudmila Ivanovna; Lapshina, Lidia Vasilievna; Krylov, Valery Dmitrievich; Zaikonnikova, Irina Vitalievna; Zimakova, Irina Evgenievna; Chudnovsky, Vladimir Sergeevich; Babichev, Viktor Andreevich; and Avdonina, Nina Alexandrovna, 3,966,742.

Larsen, Donald W., to W. R. Grace & Co. Curable polyene-polythiol compounds. 3,966,794, Cl. 260-471.00C.

Larson, Charles O., to Charles O. Larson Co. Article support device. 3,966,056, Cl. 211-134.000.

Larson, Doublas A.: *See*—
Balban, Morton S.; and Larson, Doublas A., 3,967,135.

Larson, Gerald L.; and Kuether, Roger F., to Eaton Corporation. Engine running time indicator. 3,965,669, Cl. 58-146.000.

Larson, Merlin D. Pupillometer and method of use thereof. 3,966,310, Cl. 351-16.000.

Larson, Paul E.: *See*—
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Larsson, John, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Process and an apparatus for purifying a stream of mechanically comminuted material as well as for enriching fine ores and other minerals by mechanical sorting 3,966,593, Cl. 209-479.000.

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Lassen, Niels: *See*—
Buus, Jorn Lasse Martin; and Lassen, Niels, 3,966,930.

Laurent, Henry: *See*—
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Lavigne, Jean; Chesnel, Pierre; and Bouguyon, Gerard, to Schlumberger Technology Corporation. Well bore perforating apparatus. 3,965,993, Cl. 175-4.600.

Lawrence Peska Associates, Inc.: *See*—
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Lawson, Jerry Joe: *See*—
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Lea, Kenneth R.: *See*—
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Leavens, Kenneth David: *See*—
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Lebedev, Oleg Vasilievich: *See*—
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Lectra Bike Corporation: *See*—
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Lectrofood, Inc.: *See*—
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Lecuyer, Daniel Marie Pierre, to La Detection Electronique Francaise Protechat. Security system with plural sensors connected in parallel across the transmission line. 3,967,259, Cl. 340-258.00D.

Lee, David Q.: *See*—
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Lee, Donald R. Animal trap. 3,965,607, Cl. 43-87.000.

Lee, George D.: *See*—
Hatch, Donald M.; and Lee, George D., 3,966,013.
Hatch, Donald M.; and Lee, George D., 3,966,522.

Lee, Hong Man, to Champion International Corporation. Method for producing distressed wood. 3,967,007, Cl. 427-223.000.

Lee, Kwan-Hua, to University of California, The Regents of the. Compositions and methods of treating psoriasis with vinyligs of desmethyl retinoic acid. 3,966,967, Cl. 424-318.000.

Lee-Norse, Company: *See*—
Shah, Arvind K., 3,966,257.

Lee, Share-Young: *See*—
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Lees, Byrom, to British Petroleum Company Limited, The. Boiler. 3,965,829, Cl. 110-22.00R.

Legavre, Marcel: *See*—
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Leger, Andre: *See*—
Jeanmart, Claude; Leger, Andre; and Messer, Mayer Naoum, 3,966,931.

Lehmacher, Hans. Method and apparatus for manufacture of pad-stacked bags. 3,966,524, Cl. 156-182.000.

Lehmenn, Gunter: *See*—
Diem, Hans; Dudeck, Christian; and Lehmenn, Gunter, 3,966,727.

Lehn, Jean-Marie, to Schering Corporation. Monocyclic macrocyclic compounds and complexes thereof. 3,966,766, Cl. 260-327.00R.

Lehnert, Gunther: *See*—
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Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. Preparation of dialkyl amino acrylonitrile. 3,966,791, Cl. 260-465.50R.

Lein, Werner: *See*—
Riedl, Rudi; Jungnickel, Regina; Nitsch, Rainer; Lein, Werner; Vetter, Lothar; Schone, Helmut; Weisbach, Gunter; Johne, Hans; Schott, Alfred; Forster, Karl-Heinz; and Johne, Albrecht, 3,966,197.

Leloux, Arnoldus Willem Jan, to Wavin B.V. Manufacturing corrugated perforated plastic tube. 3,965,782, Cl. 83-15.000.

Lenz, George L. Trolling brake. 3,965,839, Cl. 114-145.00A.

Leon, Nicholas Hay; and Swift, John Alan, to Lever Brothers Company. Dyeing keratinous fibers. 3,966,397, Cl. 8-10.000.

Leonard, Charles Arthur: *See*—
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Leopold, Howard S.: *See*—
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Le Page, Jean-Francois: *See*—
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Lerner, Bernard. Packaging apparatus. 3,965,653, Cl. 53-187.000.

Lerner, Irwin S., to A. H. Robins Company, Incorporated. IUD prepackaged in a tubular inserter. 3,965,891, Cl. 128-130.000.

Les Produits Associes, SA: *See*—
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Lescarboura, Jaime A.: *See*—
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Lescarden Ltd.: *See*—
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Leskin, Morton B.: *See*—
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Lessard, Normand, to Bombardier Limited. Suspension spring adjuster. 3,966,181, Cl. 267-58.000.

Lesser, George Albert: *See*—
Anderson, Harold Peter; Lesser, George Albert; Lukas, Fredric; Maxon, Rodney Robert; and Viamour, James Hall, 3,967,073.

Lester, J. Harvey, Jr.; and Stewart, James S., to Monsanto Company. Electrolytic hydrodimerization process improvement. 3,966,566, Cl. 204-73.00R.

Le Sueur, Alice E. J., to Raymond Lee Organization, The, a part interest. Napkin ring. 3,965,591, Cl. 40-21.00R.

Les Veaux, John C.: *See*—
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Letchworth, Peter E.: *See*—
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Leutner, Volkmar: *See*—
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Lever Brothers Company: *See*—
Curry, Kenneth Vasey; Gamadia, Rustom Kooverji; and Pike, Barry Graham, 3,966,087.
Lamberti, Vincent; and Gutierrez, Eddie N., 3,966,647.
Leon, Nicholas Hay; and Swift, John Alan, 3,966,397.

Levie, Stephen A., to Litton Systems, Inc. Power supply circuit for a microwave oven. 3,967,156, Cl. 315-101.000.

Levine, Leonard, to Xerox Corporation. User variable computer memory module. 3,967,251, Cl. 340-172.500.

Levinson, Arthur A.; and Basa, Kenneth B., to National Can Corporation. Vegetable protein product and process. 3,966,977, Cl. 426-331.000.

Levy, Moshe; Vofsi, David; Daren, Stephen; and Cohen, Ella, to Yeda Research & Development Co. Ltd. Production of bromostyrenes. 3,966,831, Cl. 260-650.00R.

Levy, Stephen David; Poeschel, Gordon Paul; and Schrider, Michael Stanley, to American Cyanamid Company. O,O,O',O'-Tetraalkyl, O,O'-vinylenedi-p-phenylene phosphorothioates and compositions containing the same for the control of siphonaptera infestations. 3,966,919, Cl. 424-206.000.

Levy, Stephen David: *See*—
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Lewalter, Jurgen: *See*—
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Lewis, Eugene W.: *See*—
Warden, Fuller; and Lewis, Eugene W., 3,965,578.

Lewis, George E., to Hydril Company. Underwater sealing of exposed ports in relatively closable members. 3,966,235, Cl. 285-25.000.

Lewis, John A., Jr.: *See*—
Cote, Gerald J.; Lewis, John A., Jr.; and Skurski, James K., 3,967,302.

Lewis, John G., to Emerson Electric Co. Lubricated self-aligning bearing assembly. 3,966,278, Cl. 308-72.000.

Lewis, Theras Gordon: *See*—
Dimmick, James Owen; Lewis, Theras Gordon; O'Neill, John Francis; and Fabiano, Lucian Philip, Jr., 3,967,072.

Lexel Corporation: *See*—
Mohler, Galen E., 3,966,309.
Mohler, Galen E., 3,966,325.

Liang, Shou C.: *See*—
Crossley, Cecil L.; Hirsch, Horst E.; and Liang, Shou C., 3,966,568.

Licari, Vincent, to Mack Trucks, Inc. Bottom dump vehicle. 3,966,255, Cl. 298-35.00M.

Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Beerwerth, Wolfgang; Geppert, Albrecht; Gesing, Horst; and Schimmer, Rigobert, 3,965,567.
Fell, Wolfgang, 3,967,320.

Lichtblau, George Jay. A multi-frequency resonant tag circuit for use with an electronic security system having improved noise discrimination. 3,967,161, Cl. 317-101.00R.

Liddell, Harold G.: *See*—
Dunn, James L., Jr.; and Liddell, Harold G., 3,967,011.

Liebscher, Anton: *See*—
Auberry, Horace Ray; and Liebscher, Anton, 3,965,517.

Lien, Erling L.; Miram, George V.; and Nelson, Richard B., to Varian Associates. Grid controlled electron source and method of making same. 3,967,150, Cl. 313-338.000.

Lightbody, Charles S. Pneumatic knee pad. 3,965,486, Cl. 2-24.000.

Liller, Paul Richard, to RCA Corporation. Low-voltage aging of cathode-ray tubes. 3,966,287, Cl. 316-1.000.

Limpach, Raymond; and Lorang, Lucien, to ARBED Acieries Reunies de Burbach-Eich-Dudelange S.A. Method of operating a blast furnace using coal auxiliary combustible. 3,966,457, Cl. 75-42.000.

Lin, Yeong S.: *See*—
Almasi, George S.; Hendel, Robert J.; Keefe, George E.; Lin, Yeong S.; and McGouey, Richard P., 3,967,002.

Lincoln, Paul A.: *See*—
Gyongyosi, Laszlo; and Lincoln, Paul A., 3,965,998.

Lindahl, Hilmer C.: *See*—
Friend, Aaron D.; and Lindahl, Hilmer C., 3,967,171.

Linder, Francis X.: *See*—
Clark, Robert V.; Linder, Francis X.; McCreary, Terrance J.; and Taylor, William R., 3,967,283.

Lindner, Helmut: *See*—
Lademann, Rudolf; Lindner, Helmut; Martini, Thomas; and Rammelt, Peter Paul, 3,966,832.

Lindqvist, Jonas Herman, to Hiab-Foco Aktiebolag. Rotator. 3,966,249, Cl. 294-88.000.

Linhardt, Hans D., to Airco, Inc. Process air compression system. 3,966,362, Cl. 417-374.000.

Lion Yushi Kabushiki Kaisha (Lion Fat & Oil Co., Ltd.): *See*—
Yamaguchi, Tadashi; Ono, Takayuki; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, 3,967,006.

Lipman, Jean M.: *See*—
Nemecek, Borivoj; and Lipman, Jean M., 3,966,339.

Liska, Manfred: *See*—
Kogler, Georg; Kuhnlein, Hans; and Liska, Manfred, 3,967,174.

Little, David Murray; and Zimmerman, Gary Lee, to AMP Incorporated. Polarized connector. 3,966,290, Cl. 339-17.0LC.

Littman, Bruce A., to Benson Mfg. Corporation. Downspout extension. 3,966,121, Cl. 239-197.000.

Litton Systems, Inc.: *See*—
Levie, Stephen A., 3,967,156.

Livigni, Russell Anthony: *See*—
Hargis, Ivan Glen; and Livigni, Russell Anthony, 3,966,638

Lockard, Joseph Larue; and Blair, Bryce Wilson, to AMP Incorporated. Single pole momentary switch. 3,967,085, Cl. 200-302.000.

Lockwood, John C., to Scripto, Inc. Cigarette lighter having improved valve means. 3,966,392, Cl. 431-344.000.

Loeliger, Peter: *See*—
Chodnekar, Madhukar Subraya; Loeliger, Peter; Pfiffner, Albert; Schwieter, Ulrich; Suchy, Milos; and Zurfluh, Rene, 3,966,780.

Loev, Bernard: *See*—
Roe, Anthony Maitland; Slater, Robert Antony; and Loev, Bernard, 3,966,946.
Van Hoeven, Helene E. Bowman; Brenner, L. Martin; and Loev, Bernard, 3,966,945.

Lofredo, Raymond A., to Industrial Innovations, Inc. Anti-rotational device for bolts and nuts. 3,965,954, Cl. 151-5.000.

Loftis, James B., to Joy Manufacturing Company. Drill mast support assembly. 3,965,628, Cl. 52-115.000.

Loftis, James B., to Joy Manufacturing Company. Drilling apparatus. 3,966,053, Cl. 211-60.00S.

Long, Harry L. Ironing boards. 3,965,588, Cl. 38-103.000.

Long, James Michael; and Osterlund, Paul Alan, to Evans Products Company. Electrode cooling apparatus. 3,967,047, Cl. 13-6.000.

Long, John V.: *See*—
Gagliani, John; and Long, John V., 3,966,652.

Longenecker, Levi S. Dual ring supported roof for electric arc furnace. 3,967,048, Cl. 13-35.000.

Longo, Robert T.: *See*—
Harnagel, Gary L.; and Longo, Robert T., 3,967,098.

Lonza Ltd.: *See*—
Gutmann, Walter; and Nicolet, Rene, 3,966,846.

Look, Robert A. Ski lock. 3,966,219, Cl. 280-611.000.

Lorang, Lucien: *See*—
Limpach, Raymond; and Lorang, Lucien, 3,966,457.

Lord Corporation: *See*—
Sherrick, James W., 3,965,825.

L'Oreal: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,966,722.
Papantoniou, Christos; and Grognet, Jean-Claude, 3,966,403.
Papantoniou, Christos; and Grognet, Jean-Claude, 3,966,404.
Vanlerberghe, Guy; and Sebag, Henri, 3,966,398.

Lorentz, Merle J.; and Salzman, Donald F. Animal exerciser. 3,965,866, Cl. 119-29.000.

Lorimer, John Wallace: *See*—
Robitschek, Paul; Chappelie, Norman Andrew; and Lorimer, John Wallace, 3,966,658.

Losenno, Luigi G. Multioperational latch. 3,966,245, Cl. 292-202.000.

Lotfallah, Lotfi H., to Gillette Company, The. Ball type marker construction which eliminates stick-slip phenomena. 3,966,336, Cl. 401-209.000.

Loughridge, Frederick A.: *See*—
Finch, William A.; Loughridge, Frederick A.; and Marcucci, Rudolf, 3,966,288.

Loyzim, Robert J., to Superior Electric Company, The. Power supply for a stepping motor. 3,967,179, Cl. 318-696.000.

Lozano, Davis S.: *See*—
Prussin, Samuel B.; and Lozano, Davis S., 3,966,090.

Lubov, Michael T. Boat propeller protective structure. 3,965,845, Cl. 115-42.000.

Lucas Electrical Company Limited, The: *See*—
Bowcott, Roy Price, 3,965,754.
Salway, Peter Hugh, 3,965,878.

Lucas, Larry D.; Schertz, Burtron D.; and Wilkinson, Lester, to General Motors Corporation. Signal seeking receiver stopping circuit. 3,967,203, Cl. 325-349.000.

Luciano, Franco Paolo, to Rachelle Laboratories Italia, S.p.A. Manufacture of 6-methylenetetracyclines. 3,966,808, Cl. 260-559.0AT.

Luck, John V., to SCM Corporation. Process for making solid sauce bar. 3,966,993, Cl. 426-589.000.

Ludwig, Frank A., to Ford Motor Company. Sodium sulfur battery or cell with improved ampere-hour capacity. 3,966,492, Cl. 136-6.0FS.

Ludwig, Peter J.; and Bird, Arnett L., to Dow Chemical Company, The. Thermoplastic molding compositions of rubber-reinforced styrene/-maleic anhydride resins and polycarbonate resins. 3,966,842, Cl. 260-873.000.

Luenberger, Frederick O., to Emerson Electric Co. Variable drive pulley construction. 3,965,766, Cl. 74-230.17A.

Lugowski, Ronald J.: *See*—
Dominick, George G.; Lugowski, Ronald J.; Goodrich, Phillip D.; and Erickson, Kenneth, 3,966,116.

Lukas, Fredric: *See*—
Anderson, Harold Peter; Lesser, George Albert; Lukas, Fredric; Maxon, Rodney Robert; and Viamour, James Hall, 3,967,073.

Luke, Michael O.: *See*—
Atkinson, Joseph G.; and Luke, Michael O., 3,966,781.

Lundin, Torgny Folke Vilhelm, to Jonsereds Fabrikers Aktiebolag. Planing machine. 3,965,948, Cl. 144-3.00R.

Lundquist, Ingemar H., to Origo, Incorporated. Measured volume drug administration device for use with intravenous feeding pump. 3,965,897, Cl. 128-214.00R.

Lupkas, Raymond R.; and Schubert, Keith E., to Pitney-Bowes, Inc. Setting mechanism for a postage printing device. 3,965,815, Cl. 101-91.000.

Lutz, Michael: *See*—
Hoffman, Louis S.; and Lutz, Michael, 3,966,083.

Lux, Ivan E. Method and apparatus for producing filled resins. 3,966,176, Cl. 259-108.000.

Lyman, Richard G. Flexible spirally wound conduit cutting device. 3,965,571, Cl. 30-90.200.

Lyon, Jack K., to Price Pfister Brass Mfg. Co. Single handled mixing valve. 3,965,936, Cl. 137-625.170.

Lyon, Ward L.: *See*—
Elikan, Leonard; Lyon, Ward L.; and Sundar, Parameshwaran S., 3,966,873.
Sundar, Parameshwaran; Elikan, Leonard; and Lyon, Ward L., 3,966,872.

Lysek, Franz, to Moeller-Werke GmbH. Accordion-pleated article of manufacture. 3,967,023, Cl. 428-102.000.

M & T Chemicals Inc.: *See*—
Kardos, Otto; Arcilesi, Donald A.; and Valayil, Silvester P., 3,966,565.

M. W. Carr & Co., Inc.: *See*—
Paskerian, Wayne H., 3,965,600.

MacDonald, Ian M.; and Cowie, Charles J., to Eaton Corporation. Position synchronization of machines. 3,967,170, Cl. 318-85.000.

MacDonald, John Graham, to Dominion Road Machinery Co. Limited. Adjustable hydraulic control system for a motor grader. 3,965,771, Cl. 74-479.000.

MacDonald, Murdo A. Fastener driver and fastener holding nosepiece. 3,965,950, Cl. 145-52.000.

Macemon, James H.: *See*—
Soodak, Charles; and Macemon, James H., 3,967,113.

Mack Trucks, Inc.: *See*—
Licari, Vincent, 3,966,255.
Meacock, Leslie A., II; Schumaker, Donald R.; and Zalokar, Robert F., 3,966,009.

Mackey, Lindsay Joan: *See*—
Jarrett, William Fleming Hoggan; Jarrett, James Oswald; and Mackey, Lindsay Joan, 3,966,907.

Macriss, Robert A.: *See*—
Rush, William F.; Macriss, Robert A.; and Weil, Sanford A., 3,965,695.

Maddux, John F.: *See*—
Froberg, Magnus L.; and Maddux, John F., 3,967,046.

Madge Canter Associates, Inc.: *See*—
Muller, Fred, Jr.; Wolniak, Stanley; Johnson, Marshall; and Spencer, Elbert, 3,966,247.

Madonna Corporation: *See*—
Madonna, Thomas P., 3,965,624.

Madonna, Thomas P., to Madonna Corporation. Room ceiling construction with recessed dome mounted therein and the method of mounting the same. 3,965,624, Cl. 52-28.000.

Mae, Shinroku, to Motosuke Umezu. Apparatus for supplying objects to be bound to an automatic band-binding means. 3,965,811, Cl. 100-4.000.

Maeda, Hiroshi; Ariga, Nagao; and Matuo, Takeo, to Dainippon Ink and Chemicals, Incorporated. Process for the preparation of unsaturated polyurethane resins. 3,966,681, Cl. 260-75.0NH.

Maeda, Kikuo; and Tomimoto, Takashi, to Morita Pump Kabushiki Kaisha. Working range indicating device for aerial ladder truck. 3,966,017, Cl. 182-18.000.

Maeda, Shuichi: *See*—
Tokura, Katsuyuki; Maeda, Shuichi; Endo, Takeshi; Yoichizono, Kenji; and Asami, Hiroshi, 3,965,913.

Maekawa, Minoru, to Kuraray Co., Ltd. Process for the production of metal-plated staple fibers. 3,967,010, Cl. 427-306.000.

Maenicke, Eckart, to Siemens Aktiengesellschaft. Power supply for electronic circuits at high-voltage potential. 3,967,189, Cl. 323-76.000.

Magee, Audra Fay. Ornamental artificial tree. 3,967,019, Cl. 428-7.000.

Mages, Bernhard: *See*—
Rock, Erich; and Mages, Bernhard, 3,965,530.

Magherini, Dino. Die-testing press. 3,966,184, Cl. 269-37.000.

Magnani, Arthur, to SmithKline Corporation. 3-Substituted-5-hydroxy(mercapto)alkylidene-rhodanine derivatives. 3,966,942, Cl. 424-263.000.

Magnavox Company, The: *See—*
Zeger, Andrew E., 3,967,279.

Maguer, Pierre; and Gourlay, Paul, to Etat Francais. Sonar system for classifying submerged objects. 3,967,233, Cl. 340-3.00R.

Maguire, D. Bruce, to Emerson Electric Co. Label transport. 3,966,188, Cl. 271-9.000.

Maher, Anthony Ambrose: *See—*
Rawlings, Robert M.; and Maher, Anthony Ambrose, 3,966,998.

Maher, Philip K.: *See—*
Scherzer, Julius; and Maher, Philip K., 3,966,643.

Maher, Philip Kenerick; and McDaniel, Carl Vance, to W. R. Grace & Co. Thermal stable synthetic zeolite. 3,966,882, Cl. 423-328.000.

Maier, Bruce R. Brush and cleaning composition for phonograph records. 3,965,520, Cl. 15-104.940.

Maier, Jack K.: *See—*
Reich, Herbert A.; and Maier, Jack K., 3,967,262.

Maier, Johann H. Machine for the thermal expansion of rigid plastic tubing. 3,966,384, Cl. 425-392.000.

Maillard, Gilbert Albert Rene, to Manufacture de Machines du Haut-Rhin S.A. Double action revolver. 3,965,603, Cl. 42-65.000.

Makihara, Chiharu; and Yoda, Tohru, to Mitsubishi Electric Co.; and Nifco Inc. Strain grommet. 3,967,050, Cl. 174-135.000.

Mal, M. Kumar; and Tarkan, Stuart E. Grain refinement of titanium carbide tool steel. 3,966,423, Cl. 29-182.700.

Malaysian Rubber Producers' Research Association, The: *See—*
Cutts, Ernest; and Knight, Geoffrey Thomas, 3,966,530.

Maldonado, Paul: *See—*
Charpentier, Jean-Max; Glikmans, Georges; and Maldonado, Paul, 3,966,553.

Mallinckrodt, Inc.: *See—*
Glovsky, Joel; and Brown, James L., 3,966,896.

Malone, Charles Thomas: *See—*
Hunter, George L. K.; Krampl, Victor; Malone, Charles Thomas; and Usher, Gerald Edward, 3,966,986.

Malvestuto, Frank S., Jr. High speed water vessel. 3,965,836, Cl. 114-66.50R.

Malzahn, Ronald C.: *See—*
Morehouse, Alpha L.; and Malzahn, Ronald C., 3,966,971.

Mamantov, Gleb; Marassi, Roberto; and Chambers, James Q., to United States of America, Army. Molten salt electrochemical systems for battery applications. 3,966,491, Cl. 136-6.0LF.

Mamo, Anthony C.: *See—*
Cottrell, Harold L.; and Mamo, Anthony C., 3,965,680.

Mancy, Denise; Ninet, Leon; and Preud'homme, Jean, to Rhone-Poulenc S.A. Antibiotic 19,402 RP. 3,966,557, Cl. 195-80.00R.

Mandigo, Frank N.; and Sperry, Philip R., to Swiss Aluminium Ltd. Aluminum alloy sheet and process therefor. 3,966,506, Cl. 148-11.50A.

Mandon, Jean-Pierre: *See—*
Hennart, Claude; Rabussier, Bernard; and Mandon, Jean-Pierre, 3,966,900.

Mangold, Dietrich; Zeeh, Bernd; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. N-3,5-dichlorophenyloxazalidines. 3,966,750, Cl. 260-307.00B.

Manko, Nicholas L., to French Oil Mill Machinery Company, The. Replaceable wear strips and liner for baling press. 3,965,814, Cl. 100-245.000.

Manktelow, Paul W.: *See—*
Porch, Don E.; Manktelow, Paul W.; and Utz, James E., 3,966,285.

Manufacture de Machines du Haut-Rhin S.A.: *See—*
Maillard, Gilbert Albert Rene, 3,965,603.

Manufacture de Produits Chimiques Protex: *See—*
Ribba, Alain, 3,966,687.

Mao, Kao-Wen: *See—*
Gagnon, Eugene G.; and Mao, Kao-Wen, 3,966,571.

Marassi, Roberto: *See—*
Mamantov, Gleb; Marassi, Roberto; and Chambers, James Q., 3,966,491.

Marconi, Joseph. Blanking die and holder construction for punch presses. 3,965,784, Cl. 83-157.000.

Marcucci, Rudolf: *See—*
Finch, William A.; Loughridge, Frederick A.; and Marcucci, Rudolf, 3,966,288.

Marcus, Byron E., to Baxter Laboratories, Inc. Magnetic stirrer noise cancellation system. 3,966,333, Cl. 356-229.000.

Marechal, Bernard: *See—*
Selander, Stig Daniel; Marechal, Bernard; and D'Andrea, Corrado, 3,966,540.

Marine Colloids, Inc.: *See—*
Renn, Donald W.; and Saravis, Calvin A., 3,966,897.

Marine and Industrial Developments Limited: *See—*
Galatis, Telemachus Nicolas, 3,967,256.

Marinenko, George, to United States of America, Commerce. Electrochemical chlorine flux monitor. 3,966,413, Cl. 23-253.00R.

Markham, Robert D., to H C Products Co. Shelving structure. 3,965,826, Cl. 108-152.000.

Marks, Robert J. Furniture construction. 3,965,506, Cl. 5-345.00R.

Marlow, Darrell W., to Olin Corporation. Inflating device with self-contained propellant gas generating cartridge. 3,966,225, Cl. 280-737.000.

Maros, Ronald Richard: *See—*
Mathe, Istvan; and Maros, Ronald Richard, 3,966,293.

Mars, Inc.: *See—*
Heiman, Fred P.; and Schwippert, Guustaaf Arthur, 3,966,034.

Marston, Lloyd Everett: *See—*
Reubens, Clarence Edmond; Campbell, Sterrett Paxton; and Marston, Lloyd Everett, 3,965,654.

Marten, John Anthony. Method of coating a vehicle test bed rollers. 3,967,017, Cl. 427-405.000.

Martig, Kenneth W., Jr. Method and portable apparatus for continually monitoring the flow of fluid in an open channel. 3,965,740, Cl. 73-194.00R.

Martin, Jacques Lucien Joseph, to R.K.S. Societe Anonyme. Snappable open separators for the cage of rolling thrust bearing elements. 3,966,284, Cl. 308-235.000.

Martincic, Paul W.: *See—*
Moore, Curtis L.; and Martincic, Paul W., 3,967,051.

Martini, Thomas: *See—*
Lademann, Rudolf; Lindner, Helmut; Martini, Thomas; and Rammelt, Peter Paul, 3,966,832.

Martret, Odile Le; and Clemence, Francois, to Roussel-UCLAF. Novel therapeutic compositions and method involving thiazolcarboxamides. 3,966,950, Cl. 424-250.000.

Marty, Emil. Rigid and flexible mounting for reed-dent in a profiled stave. 3,965,940, Cl. 139-192.000.

Martz, Lyle F.; and Plotnick, Richard J., to Westinghouse Electric Corporation. Combined cycle electric power plant and a heat recovery steam generator having improved boiler feed pump flow control. 3,965,675, Cl. 60-39.18B.

Maruoka, Akira: *See—*
Nakano, Mineo; Koyama, Takeshi; Matsumoto, Yoshiro; and Maruoka, Akira, 3,966,390.

Maruska, William O., to United States of America, Air Force. Low spin-deceleration safing and arming mechanism. 3,965,821, Cl. 102-79.000.

Marx, Matthias: *See—*
Kovacs, Jenoe; Jung, Hans; Marx, Matthias; Spoor, Herbert; and Roschke, Wilfried, 3,966,655.

Marx, Michael, to Syntex (U.S.A.) Inc. Process for preparing β-nitroethanethiol. 3,966,825, Cl. 260-609.00R.

Marzocchi, Alfred; Jannarelli, Albert E.; and Garrett, David W., to Owens-Corning Fiberglas Corporation. Friction material for brake linings and the like. 3,967,037, Cl. 428-392.000.

Masaki, Hideyuki: *See—*
Kamigaito, Osami; Doi, Haruo; Masaki, Hideyuki; Kandori, Toshio; Oki, Masami; and Nakamura, Yasuo, 3,967,230.

Mason, Donald G.; and Higgins, Robert B., to Ecodyne Corporation. Liquid treatment apparatus. 3,966,608, Cl. 210-151.000.

Mason, Richard. Simulated golf green. 3,966,212, Cl. 273-181.00A.

Massa, Donald P., to Fred M. Dellorfano, Jr. and Donald P. Massa, Trustees of the Stoneleigh Trust u/d/t Dec. 4, 1973. Intrusion alarm system with improved air turbulence compensation. 3,967,260, Cl. 340-258.00A.

Massey, Peyton L. Retractable shower shade with adjustable extensibility. 3,965,960, Cl. 160-295.000.

Massey, William A.: *See—*
Ferara, James T.; and Massey, William A., 3,966,518.

Masuda, Ikuro: *See—*
Isoo, Osamu; Matsuoka, Shinji; Matsuoka, Shigeru; Uno, Takeshi; Ikeda, Sadahiro; Masuda, Ikuro; and Kurokawa, Koji, 3,967,242.

Masuya, Hirotomo; and Miki, Takuichi, to Takeda Chemical Industries, Ltd. Production of 21-phosphate corticords having unprotected hydroxyl radicals at least at the 17α- and 21-position. 3,966,778, Cl. 260-397.450.

Mathe, Istvan; and Maros, Ronald Richard, to Bunker Ramo Corporation. Hood assembly for an electrical connector. 3,966,293, Cl. 339-103.00R.

Mathes, Robert C., to Bell Telephone Laboratories, Incorporated. Secret telephony. 3,967,066, Cl. 179-1.50R.

Mathews, Glenn William; and Wing, Milton Silas, to Dow Chemical Company, The. Modified hydrocarbon resins. 3,966,690, Cl. 526-283.000.

Mathieu, Hans; and Hochstrasser, Jurgen, to Hochstrasser nee Wack, Elisabeth; and Hochstrasser, Jurgen. Drilling grab for pile foundations and well boreholes. 3,965,999, Cl. 175-238.000.

Matiacio, George P.: *See—*
Schneller, Joseph W.; Bennett, Duane C.; and Matiacio, George P., 3,967,016.

Matoba, Shigetada: *See—*
Kakuta, Hisashi; Matoba, Shigetada; Shimizu, Kenichi; and Yamashita, Satoshi, 3,966,889.

Matsuda, Yasuhisa, to Copal Company Limited. Cassette for an endless type cinefilm. 3,966,134, Cl. 242-55.19A.

Matsumoto, Seiji, to Rank Xerox Ltd. Corona charging device. 3,967,119, Cl. 250-326.000.

Matsumoto, Seiji: *See—*
Fukushima, Osamu; Matsumoto, Seiji; and Sato, Masamichi, 3,965,861.

Matsumoto, Yoshiro: *See—*
Nakano, Mineo; Koyama, Takeshi; Matsumoto, Yoshiro; and Maruoka, Akira, 3,966,390.

Matsuoka, Shigeru: *See—*
Isoo, Osamu; Matsuoka, Shinji; Matsuoka, Shigeru; Uno, Takeshi; Ikeda, Sadahiro; Masuda, Ikuro; and Kurokawa, Koji, 3,967,242.

Matsuoka, Shinji: *See—*
Isoo, Osamu; Matsuoka, Shinji; Matsuoka, Shigeru; Uno, Takeshi; Ikeda, Sadahiro; Masuda, Ikuro; and Kurokawa, Koji, 3,967,242.

Matsuoka, Yoshio; Inomata, Hiroshi; Shimazaki, Tsuneo; and Takahata, Fujiya, to Hitachi, Ltd. Apparatus for producing timing signal for photometric measurement. 3,966,323, Cl. 356-96.000.

Matsushita Electric Corporation of America: *See—*
Dorren, Louis, 3,967,069.

Matsushita Electric Industrial Co., Ltd.: *See—*
Horiuchi, Masao, 3,967,088.
Kuroda, Makoto; Morimoto, Kazuhisa; and Minobe, Akira, 3,966,469.
Mikoda, Masanari; Akatani, Hisashi; and Hayakawa, Shigeru, 3,966,302.
Shinohara, Isao, 3,967,068.
Tada, Siro, 3,965,850.
Tetsugu, Yoshio; Mitsui, Tsunemi; and Minakuchi, Hiroshi, 3,967,200.

Mattalia, Gabriele, to Istituto Farmacologico Serono, S.P.A. Process for preparing synthetic L-pyroglutamyl-L-histidyl-L-prolinamide. 3,966,700, Cl. 260-112.5TR.

Mattel, Inc.: *See—*
Rhodes, Tony; and Gay, Derek John, 3,965,561.

Matthews, Hubert B. Method and apparatus for indicating the amount of torque in a yarn. 3,965,737, Cl. 73-160.000.

Mattori, Hiroaki; Mizuta, Takemi; and Okamoto, Shinzi, to Sharp Kabushiki Kaisha. Compensation for anti-skid brake control system. 3,966,264, Cl. 303-21.0BE.

Matty, Thomas C.; and Sahasrabudhe, Arun P., to Westinghouse Electric Corporation. Quad state receiver. 3,966,149, Cl. 246-34.00R.

Matuo, Takeo: *See—*
Maeda, Hiroshi; Ariga, Nagao; and Matuo, Takeo, 3,966,681.

Maurer, Albrecht: *See—*
Muller, Ernst; and Maurer, Albrecht, 3,965,783.

Maurer, Fritz: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lother; Behrenz, Wolfgang; Hammann, Ingeborg; Stendel, Wilhelm; and Homeyer, Bernhard, 3,966,730.

Max Sandherr AG: *See—*
Schellenberg, Walter, 3,966,114.

Maxon, Rodney Robert: *See—*
Anderson, Harold Peter; Lesser, George Albert; Lukas, Fredric; Maxon, Rodney Robert; and Viamour, James Hall, 3,967,073.

May, Edwin Richard Wells, to National Research Development Corporation. Methods and materials for joining silicon powder structures. 3,966,885, Cl. 423-344.000.

May, Hans-Joachim: *See—*
Baganz, Horst; and May, Hans-Joachim, 3,966,757.

Mayer, Abbott F.; and Morgan, David J., to Rockwell International Corporation. Direction finding system with integrated loop and sense antenna assembly. 3,967,280, Cl. 343-121.000.

Mayer, Salvador Escobar, Sr., to Dweck, David; Zalta, Maurice; Cohen, Camel; and Cohen, Robert, a part interest to each. Article including an endless coil spring. 3,966,183, Cl. 267-167.000.

Mayrose, William Carl: *See—*
Jones, Charles Alonzo; Lawson, Jerry Joe; and Mayrose, William Carl, 3,966,241.

Mazur, Adella. Multi-use infant garment. 3,965,487, Cl. 2-69.500.

Mazur, Yehuda; Freeman, Dalia; and Acher, Aureliu J., to Yeda Research & Development Co. Ltd. Process for the production of 1α-hydroxy provitamin D_3 and 1α-hydroxy vitamin D_3. 3,966,777, Cl. 260-397.200.

Mazzola, Ralph, to Ark-Les Switch Corporation. Flag terminal applying machine. 3,965,559, Cl. 29-203.0DT.

McAvoy, Bruce R., to Westinghouse Electric Corporation. Resonant ring transmission line having a high Q mode. 3,967,223, Cl. 333-82.00B.

McCain, David L.: *See—*
Doerr, Richard E.; McCain, David L.; and Davis, David H., 3,966,261.

McCain Manufacturing Corporation: *See—*
McCain, William B.; Cosgrove, James F.; and Zagorski, Edward J., 3,966,185.

McCain, William B.; Cosgrove, James F.; and Zagorski, Edward J., to McCain Manufacturing Corporation. Book making. 3,966,185, Cl. 270-37.000.

McCollum, Robert F., to Telex Computer Products, Inc. Tape excursion control means using tapered-wall vacuum column. 3,967,319, Cl. 360-90.000.

McCorkle, Richard E., to Joy Manufacturing Company. Gas sampling system and method. 3,965,747, Cl. 73-421.50R.

McCornack, Robert R. Anti-siphon flush valve construction. 3,965,922, Cl. 137-218.000.

McCorquodale Colour Display Limited: *See—*
Blake, Charles William, 3,967,009.

McCown, Rainer F., to United States of America, Air Force. Self-adjusting digital notch filter. 3,967,102, Cl. 235-152.000.

McCoy, Robert A.; and Moreland, William C., II, to White-Westinghouse Corporation. Cooking vessel for use with induction heating cooking unit. 3,966,426, Cl. 29-196.200.

McCreary, Terrance J.: *See—*
Clark, Robert V.; Linder, Francis X.; McCreary, Terrance J.; and Taylor, William R., 3,967,283.

McCullough, John R.: *See—*
Schramm, Harold J., deceased; McCullough, John R.; and Yarnall, Joseph P., 3,966,854.

McCurdy, Donald L., to Amerock Corporation. Door lock with decorative escutcheon. 3,965,710, Cl. 70-452.000.

McDaniel, Carl Vance: *See—*
Maher, Philip Kenerick; and McDaniel, Carl Vance, 3,966,882.

McDermott, Clifton Eugene, to Bio-Logics Products, Inc. Identification means. 3,965,589, Cl. 40-21.00C.

McDonnell Douglas Corporation: *See—*
Cachuela, Lawrence P.; and Sanford, George G., Jr., 3,967,103.
Zuleeg, Rainer, 3,967,305.

McDonough Co.: *See—*
Eads, Harold O.; and Robison, James W., 3,965,991.

McEathron, Eugene Douglas, to General Signal Corporation. Fluid brake control system. 3,966,269, Cl. 303-37.000.

McEathron, Eugene Douglas, to General Signal Corporation. Fluid brake control system. 3,966,270, Cl. 303-69.000.

McEathron, Eugene Douglas, to General Signal Corporation. Fluid brake control system. 3,966,271, Cl. 303-69.000.

McEvoy Oilfield Equipment Co.: *See—*
Beson, John, 3,965,977.

McFarland, James W.; and Thomson, Colin, to Pfizer Inc. Aminomethylarylmethylpenicillin derivatives. 3,966,710, Cl. 260-239.100.

McGarvey, Robert E.; and Gitthens, Donald L. Hydraulic safety valve base. 3,965,919, Cl. 137-107.000.

McGee, Richard R.: *See—*
Moore, Harry W., III; and McGee, Richard R., 3,967,059.

McGinniss, Vincent D.: *See—*
LaBash, John David; and McGinniss, Vincent D., 3,966,574.

McGivern, James P.: *See—*
Whyte, Ian A.; Ottobre, Louis G.; and McGivern, James P., 3,967,264.

McGouey, Richard P.: *See—*
Almasi, George S.; Hendel, Robert J.; Keefe, George E.; Lin, Yeong S.; and McGouey, Richard P., 3,967,002.

McGowan, Joseph W., to United States of America, Army. Edge-guided wave directional combiner. 3,967,218, Cl. 333-1.100.

McGuckian, Ambrose T., to A.G.S. Food System Inc. Method of cooking and storing food in flexible bags. 3,966,980, Cl. 426-393.000.

McKee, William H., to TRW Inc. Wire termination apparatus. 3,965,558, Cl. 29-203.0MW.

McKenna, Henry Alvin, to Ocean Systems, Inc. Traction winch. 3,966,170, Cl. 254-175.700.

McLaughlin, Carol Lynn: *See—*
Baile, Clifton A.; Gallagher, Gregory; McLaughlin, Carol Lynn; and Webb, Robert Lee, 3,966,958.

McLaughlin, David Benjamin: *See—*
Jakobsen, Karl Severin; and McLaughlin, David Benjamin, 3,966,523.

McMillan, Charles G. Broken needle removal tool for knitting machines. 3,965,777, Cl. 81-5.10R.

McNair, Samuel L., to Dazey Products Company. Hydrotherapy foot tub having heating and massaging means. 3,965,495, Cl. 4-182.000.

McNeil Laboratories, Incorporated: *See—*
Paragamian, Vasken; and Taylor, Russell J., Jr., 3,966,935.

McNinch, Joseph H., Jr.; Urban, John A.; and Hopkins, Gary L., to Eaton Corporation. Skid control system. 3,966,267, Cl. 303-21.0BE.

McRee, Robert E., Jr., to Environmental Control Products, Inc. Waste feeding apparatus for incinerator. 3,965,828, Cl. 110-8.00R.

Meacock, Leslie A., II; Schumaker, Donald R.; and Zalokar, Robert F., to Mack Trucks, Inc. Vehicle cab mounting arrangement. 3,966,009, Cl. 180-89.00A.

Mead Johnson & Company: *See—*
Hopkins, Brian D., 3,966,082.

Mead, Theodore C.: *See—*
Harrison, Charles W.; Mead, Theodore C.; Moreland, Howard R.; and Barger, Frank L., 3,965,723.

Meadus, Frederick Weldon; Sparks, Bryan David; and Puddington, Ira Edwin, to Canadian Patents and Development Limited. Pressure sensitive coatings. 3,967,034, Cl. 428-323.000.

Medac Gesellschaft fur Klinische Spezialpraparate mbH: *See—*
Heimes, Horst Peter; and Reul, Helmut, 3,966,358.

Medical Specialties, Inc.: *See—*
Johns, Herman S., 3,965,785.

Medlin, William L., to Mobil Oil Corporation. Hydraulic fracturing method for creating horizontal fractures. 3,965,982, Cl. 166-249.000.

Medrad, Inc.: *See—*
Waddell, Seid W.; and Heilman, Marlin S., 3,965,909.

Meininger, Fritz; Hunger, Klaus; and Springer, Hartmut, to Hocchst Aktiengesellschaft. Naphthylazo naphthyl copper complex dyestuffs. 3,966,704, Cl. 260-150.000.

Meiser, Werner: *See—*
Westphal, Kurt; Meiser, Werner; Eue, Ludwig; and Hack, Helmuth, 3,966,715.

Meister, Werner: *See—*
Edl, Wolfgang; Meister, Werner; and Seidl, Hans, 3,966,840.

Mekantransport AB: *See—*
Banner, Kurt A., 3,966,545.

Melacini, Paolo; Patron, Luigi; Doria, Giorgio; and Tedesco, Raffaele, to Montefibre S.p.A. Continuous process for preparing a spinning solution of acrylic polymers. 3,966,666, Cl. 260-32.60N.

Mellin, Juha: *See—*
Heikkila, Viekko; Hakkinen, Leo; Strom, Rolf; Uusitalo, Leo; and Mellin, Juha, 3,966,019.

Melville, William, to Imperial Metal Industries (Kynoch) Limited. Manufacture of solid metal spherical articles. 3,965,549, Cl. 29-1.220.

Mentrup, Anton: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Traunecker, Werner, 3,966,814.

Menzies, William R., III: *See—*
Bittensky, Joel S.; Dillingham, Edward W.; Menzies, William R., III; and Pratt, Roy E., 3,966,587.

Merck & Co., Inc.: *See—*
Colegrove, George T., 3,966,618.
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 3,966,966.
Schuppner, Harry R., Jr.; and Randel, John H., 3,966,976.

Merck Sharp & Dohme (I.A.) Corporation: *See—*
Atkinson, Joseph G.; and Luke, Michael O., 3,966,781.

Merckel, Gerard: *See—*
Baylac, Bernard; Merckel, Gerard; and Meunier, Pierre, 3,967,208.

Merianos, John J.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,966,904.

Merker, Walter H., Jr.: *See—*
Duquette, Francis H.; and Merker, Walter H., Jr., 3,966,057.

Mermi, Kurt: *See—*
Frischmann, Albert; Mermi, Kurt; Hermeneit, Rainer; and Koniger, Rudolf, 3,966,156.

Merten, Rudolf; Lewalter, Jurgen; and Zecher, Wilfried, to Bayer Aktiengesellschaft. Process for the preparation of compounds which contain hydantoin groups. 3,966,683, Cl. 260-77.5AC.

Mesek, Frederick K.; and Repke, Virginia L., to Johnson & Johnson. Disposable diaper. 3,965,904, Cl. 128-284.000.

Messer, Mayer Naoum: *See—*
Jeanmart, Claude; Leger, Andre; and Messer, Mayer Naoum, 3,966,931.

Mester, Joseph H. Exercising machine. 3,966,201, Cl. 272-72.000.

Meszaros, Lajos: *See—*
Rozsa, Laszlo; Meszaros, Lajos; and Mogyorodi, Ferenc, 3,966,786.

Metalife Company, The: *See—*
Chappell, Albert R., 3,966,095.

Metallgesellschaft Aktiengesellschaft: *See—*
Bratzler, Karl; and Doerges, Alexander, 3,966,875.
Scheiber, Werner, 3,965,854.

Metcalf, Robert L.; Kapoor, Inder; and Hirwe, Asha, to University of Illinois Foundation. p,p'-Disubstituted α-trichloromethylbenzylphenyl ethers. 3,966,824, Cl. 260-612.00R.

Metropolitan Industries, Inc.: *See—*
Renkert, John S., 3,965,635.

Mettoy Company Limited, The: *See—*
Nicholls, Bryan Frederick, 3,965,930.

Metzger, Karl Georg: *See—*
Konig, Hans-Bodo; Metzger, Karl Georg; and Schrock, Wilfried, 3,966,709.

Metzler, Richard Bruce: *See—*
Johnson, Gordon Carlton; Metzler, Richard Bruce; and Bailey, Donald Leroy, 3,967,030.

Metzler, Robert P., to RPM Marketing Enterprises, Inc. Trailer aligner. 3,966,231, Cl. 280-477.000.

Meunier, Pierre: *See—*
Baylac, Bernard; Merckel, Gerard; and Meunier, Pierre, 3,967,208.

Meyer, Engel A., to USM Corporation. Clip for remote control rod. 3,966,155, Cl. 248-73.000.

Meyer, Gerhard: *See—*
Toth, Anton; and Meyer, Gerhard, 3,966,726.

Meyer, Gunther: *See—*
Frick, Siegmund; Gresser, Wilhelm; Meyer, Gunther; and Bier, Gerhard, 3,966,673.

Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Bayer Aktiengesellschaft. 2-Amino-4 H-pyrane. 3,966,767, Cl. 260-332.20A.

Meyer, Leonard S. Archery bow. 3,965,883, Cl. 124-24.00R.

Meyer, Willy: *See—*
Bohner, Beat; Dawes, Dag; Meyer, Willy; Kristinsson, Haukur; and Rufenacht, Kurt, 3,966,754.

Meyers, Joseph P.: *See—*
Bakker, Lubertus, 3,966,886.

Michael, Farid Y., to Brown & Root, Inc. Vessel having improved wave response characteristics. 3,965,837, Cl. 114-125.000.

Michael, Ronnie L. Automotive rear main bearings. 3,965,880, Cl. 123-196.00R.

Michel, Eberhard, to Siemens Aktiengesellschaft. Pressurized-water coolant reactor installation. 3,966,549, Cl. 176-65.000.

Michelson, Robert A.: *See—*
Hyner, Jacob; and Michelson, Robert A., 3,966,564.

Mid America Sales Co., Inc: *See—*
Geisel, Dennis M., 3,966,073.

Mieras, Raymond J.: *See—*
Kieldsen, William E.; and Mieras, Raymond J., 3,965,809.

Mihara, Osamu, to Asahi Kasei Kogyo Kabushiki Kaisha. Endless belt propulsion device for a high speed boat. 3,965,846, Cl. 115-64.000.

Miki, Hidefumi: *See—*
Oda, Kouzou; and Miki, Hidefumi, 3,967,004.

Miki, Takuichi: *See—*
Masuya, Hirotomo; and Miki, Takuichi, 3,966,778.

Mikoda, Masanari; Akatani, Hisashi; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Panel for liquid crystal display and method of making. 3,966,302, Cl. 350-160.0LC.

Miles, Nelson J.: *See—*
Schwan, Thomas J.; and Miles, Nelson J., 3,966,758.

Milke, Howard W.; and Sadoski, Tadius T., to GTE Sylvania Incorporated. Fluorescent lamp having electrically conductive coating and a protective coating therefor. 3,967,153, Cl. 313-489.000.

Milkowski, Wolfgang; Zeugner, Horst; von Eickstedt, Klaus-Wolf; and Stuhmer, Werner, to Kali-Chemie Aktiengesellschaft. 1-3-(4-Fluorobenzoyl)propyl-4-substituted phenoxy ethyl piperazine. 3,966,735, Cl. 260-268.00R.

Mill & Mix Company, Inc.: *See—*
Stevens, Harold E., deceased, 3,966,178.

Millar, Philip Glenn: *See—*
Cassidy, John Edward; and Millar, Philip Glenn, 3,966,482.

Miller, Arthur F.: *See—*
Callahan, James L.; Miller, Arthur F.; and Shaw, Wilfrid G., 3,966,639.

Miller, Henry F., to Uniroyal Inc. Weighing apparatus. 3,966,003, Cl. 177-211.000.

Miller Hydro Company: *See—*
Nussbaum, Herbert H., 3,965,650.

Miller, Jan D.; and Jimenez, Juan Luis Sepulveda, to University of Utah, The. Selective removal of bismuth from oxidized particulate materials. 3,966,461, Cl. 75-101.00R.

Miller, Jess. Nut cracker. 3,965,810, Cl. 99-581.000.

Miller, Lloyd Edward, Jr. Asymmetrical divider block for a rotary displacement engine. 3,965,869, Cl. 123-8.450.

Miller, O. Neal: *See—*
Guthrie, Robert William; Hamilton, James Guthrie; Kierstead, Richard Wightman; Miller, O. Neal; and Sullivan, Ann Clare, 3,966,772.

Miller, Stewart Edward, to Bell Telephone Laboratories, Incorporated. Axial fabrication of optical fibers. 3,966,446, Cl. 65-2.000.

Milligan, Hugh E.: *See—*
Driscoll, Richard E.; and Milligan, Hugh E., 3,966,692.

Millmaster Onyx Corporation: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,966,904.

Mills, Noel; and Warley, Geoffrey Peter, to Westland Aircraft Limited. Methods of detecting underwater objects and apparatus therefor. 3,967,232, Cl. 340-2.000.

Milman, Boris Samoilovich: *See—*
Alexandrov, Nikolai Nikitievich; Zorev, Nikolai Nikolaevich; Krapukhin, Viktor Mikhailovich; Krotov, Viktor Vasilievich; Kryanin, Ivan Romanovich; Milman, Boris Samoilovich; Semenov, Pavel Vladimirovich; Sokolov, Nikolai Anatolievich; and Tinyakov, Viktor Gurievich, 3,965,968.

Mims, George P., to Vorus, Sandra J. Autopsy apparatus for assisting the cutting of brain tissue. 3,965,573, Cl. 30-124.000.

Minagawa, Kenichiro: *See—*
Tanizaki, Yoshiharu; Kawaguchi, Hiroshi; and Minagawa, Kenichiro, 3,966,625.

Minakuchi, Hiroshi: *See—*
Tetsugu, Yoshio; Mitsui, Tsunemi; and Minakuchi, Hiroshi, 3,967,200.

Minami, Teruo; and Uenoyama, Masaru, to Kabushiki Kaisha Komatsu Seisakusho. Retarder control device. 3,966,011, Cl. 180-105.00E.

Minemura, Norihiro: *See—*
Namiki, Hiroshi; Minemura, Norihiro; Kimura, Takeo; and Takahashi, Shigeru, 3,966,406.

Miner Enterprises, Inc.: *See—*
Duquette, Francis H.; and Merker, Walter H., Jr., 3,966,057.

Minnesota Mining and Manufacturing Company: *See—*
Gee, Glen R., 3,965,849.
Lambert, Richard J., 3,967,031.
Laskin, Harold B.; and Valentine, Robert H., 3,967,042.
Wear, Robert L., 3,966,680.

Minobe, Akira: *See—*
Kuroda, Makoto; Morimoto, Kazuhisa; and Minobe, Akira, 3,966,469.

Minolta Camera Kabushiki Kaisha: *See—*
Kimura, Kazuo; and Yamazaki, Yasuo, 3,967,287.
Kurita, Takaji; and Fujiwara, Takao, 3,965,524.
Yata, Kotaro; and Yamada, Seiji, 3,967,056.

Miquel, Jean: *See—*
Cosyns, Jean; Juguin, Bernard; Le Page, Jean-Francois; and Miquel, Jean, 3,966,833.

Miram, George V.: *See—*
Lien, Erling L.; Miram, George V.; and Nelson, Richard B., 3,967,150.

Mitchell, Kenneth J.; and Ostermeier, Kurt W., to Kimberly-Clark Corporation. Method of bonding fibrous webs and resulting products. 3,966,519, Cl. 156-73.100.

Mitchell S.A.: *See—*
Coquelet, Andre; and Nepote, Alain, 3,966,140.

Mitsubishi Chemical Industries Ltd.: *See—*
Osako, Naoto; Kozima, Katsumi; Shimizu, Hiroshi; and Kimura, Kazumi, 3,966,853.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Mitsuoka, Hiroshi; and Kumano, Masayoshi, 3,967,138.
Nomura, Kousi; Kawazu, Satoru; Hirose, Yoshihiko; Inoue, Isao; Watari, Yoshihiko; and Kijima, Koichi, 3,966,501.
Takase, Yahei; and Kawakami, Akira, 3,967,294.

Mitsubishi Electric Co.: *See—*
Makihara, Chiharu; and Yoda, Tohru, 3,967,050.

Mitsubishi Rayon Co., Ltd.: *See—*
Kato, Tetsuji, 3,966,693.

Mitsui, Tsunemi: *See—*
Tetsugu, Yoshio; Mitsui, Tsunemi; and Minakuchi, Hiroshi, 3,967,200.

Mitsuoka, Hiroshi; and Kumano, Masayoshi, to Mitsubishi Denki Kabushiki Kaisha. Device for firing thyristor. 3,967,138, Cl. 307-252.00J.

Mitter & Co.: *See—*
Mitter, Mathias, 3,965,816.

Mitter, Mathias, to Mitter & Co. Drive for rotary screen printer utilizing the roller squeegee. 3,965,816, Cl. 101-115.000.

Mittler, Anton: *See—*
Goetti, Hans; Mittler, Anton; and Forrer, Hermann, 3,965,663.
Goetti, Hans; Mittler, Anton; and Forrer, Hermann, 3,965,664.

Miura, Hiroshi: *See—*
Tashiro, Norio; and Miura, Hiroshi, 3,967,154.

Miyamoto, Seiji, to Sanyo Electric Co., Ltd. Chrominance signal gain control circuit. 3,967,313, Cl. 358-27.000.

Miyata, Kenzi, to Hitachi, Ltd. Semiconductor device with a semiconductor substrate having dielectrically isolated functional regions. 3,967,309, Cl. 357-49.000.

Miyazaki, Takao: *See—*
Horiuchi, Masatada; Tokuyama, Takashi; and Miyazaki, Takao, 3,967,310.

Mizoguchi, Katsuhiro: *See—*
Suzuki, Tetsuo; Mizoguchi, Katsuhiro; and Togo, Fumio, 3,966,987.

Mizote, Hiroyuki: *See—*
Kobayashi, Kenji; Fukumaru, Toshitsugu; Mizote, Hiroyuki; Inaba, Shigeho; and Yamamoto, Hisao, 3,966,939.

Mizukami, Etsuo: *See—*
Kanatani, Yoshiharu; Ise, Masahiro; and Mizukami, Etsuo, 3,967,112.

Mizuki, Eiichi: *See—*
Kubotera, Kikuo; and Mizuki, Eiichi, 3,966,472.

Mizuno, William G.; and Henderson, Iris N., to Economics Laboratory, Inc. Treatment of fabrics in machine dryers. 3,967,008, Cl. 427-242.000.

Mizusawa, Shinichiro: *See—*
Okano, Ryoichi; Bunda, Tsuchio; Mizusawa, Shinichiro; and Morita, Akiyoshi, 3,966,443.

Mizuta, Takemi: *See—*
Mattori, Hiroaki; Mizuta, Takemi; and Okamoto, Shinzi, 3,966,264.

Mizutani, Toshio: *See—*
Okuno, Yoshitoshi; Itaya, Nobushige; and Mizutani, Toshio, 3,966,963.

Moberly Company, The: *See—*
Moberly, George H., 3,965,515.

Moberly, George H., to Moberly Company, The. Boot stretcher. 3,965,515, Cl. 12-114.600.

Mobil Oil Corporation: *See—*
Bridger, Robert F.; and Williams, Albert L., 3,966,620.
Dennis, Charles L.; and Zemanek, Joseph, Jr., 3,967,235.
Finberg, Arne O., 3,966,843.
Medlin, William L., 3,965,982.
Owen, Hartley; and Venuto, Paul B., 3,966,586.

Moeller-Werke GmbH: *See—*
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Mogyorodi, Ferenc: *See—*
Rozsa, Laszlo; Meszaros, Lajos; and Mogyorodi, Ferenc, 3,966,786.

Mohler, Galen E., to Lexel Corporation. Adjustable mounting structure for optical device. 3,966,309, Cl. 350-310.000.

Mohler, Galen E., to Lexel Corporation. Laser power meter. 3,966,325, Cl. 356-218.000.

Mohr, Ekkehard. Treating waste discharge liquids from metal hardening baths, particularly containing nitrite and nitrate compounds. 3,966,508, Cl. 148-15.000.

Mohr, Reinhard; and Hahnke, Manfred, to Hoechst Aktiengesellschaft. N-Alkyl nitro phenyl diethylene triamine dyeing of acid modified synthetic fibers. 3,966,405, Cl. 8-168.00A.

Molins Machine Company, Inc.: *See—*
Ferara, James T.; and Massey, William A., 3,966,518.

Molitor, Victor D. Purifier. 3,966,433, Cl. 55-66.000.

Molten Metal Engineering Co.: *See—*
Ellenbaum, Frank H.; and Ciesco, Richard, 3,966,456.

Momota, Kenzo: *See—*
Fukushima, Yoshikiyo; Momota, Kenzo; Shirahata, Hideaki; and Sakanai, Noriyuki, 3,966,375.

Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Sr., 3,965,772.
Newberry, John T., 3,966,136.

Monkovic, Ivo; Saucier, Michel; Lambert, Yvon; and Montzka, Thomas Alfred, to Bristol-Myers Company. 9-Hydroxy-6,7-benzomorphans. 3,966,747, Cl. 260-293.540.

Monsanto Company: *See—*
Ballman, Richard L.; Lea, Kenneth R.; Nunning, Walter J.; and Southern, John H., 3,966,866.
Hagberg, Carl G., 3,966,538.
Intille, George M.; and Beck, Gary R., 3,966,798.
Lester, J. Harvey, Jr.; and Stewart, James S., 3,966,566.
Perry, Eli; and Strazik, William F., 3,966,834.
Schlepphik, Alfred A., 3,966,648.
Sternberg, Ernest M., 3,967,118.

Monsheimer, Rolf; and Pfleiderer, Ernst, to Rohm GmbH. Method for preparing tannable pelts from animal skins and hides. 3,966,551, Cl. 195-6.000.

Montagna, Angelo A.: *See—*
Black, Edgar R.; Montagna, Angelo A.; and Swift, Harold E., 3,966,642.

Montanari, Lucio: *See—*
Conta, Renato; Montanari, Lucio; and Brescia, Riccardo, 3,967,092.

Montefibre S.p.A.: *See—*
Melacini, Paolo; Patron, Luigi; Doria, Giorgio; and Tedesco, Raffaele, 3,966,666.

Montzka, Thomas Alfred: *See—*
Monkovic, Ivo; Saucier, Michel; Lambert, Yvon; and Montzka, Thomas Alfred, 3,966,747.

Moody, Roy A.: *See—*
Caveney, Jack E.; and Moody, Roy A., 3,965,538.

Moore Business Forms, Inc.: *See—*
D'Luhy, Emil, 3,965,786.

Moore, Curtis L.; and Martincic, Paul W., to Westinghouse Electric Corporation. Cast resin capacitor bushing having spacer members between the capacitor sections and method of making same. 3,967,051, Cl. 174-143.000.

Moore, David M., to Armstrong Store Fixture Corporation. Clip for mounting a crossbar to a bracket. 3,965,540, Cl. 24-84.00R.

Moore, Harry W., III; and McGee, Richard R., to Sperry Rand Corporation. Bi-directional logic system. 3,967,059, Cl. 178-58.00A.

Moore, Robert E.: *See—*
Duling, Irl N.; Gates, David S.; Glazier, Frederick P.; Moore, Robert E.; and Newingham, Thomas D., 3,966,624.

Morehouse, Alpha L.; and Malzahn, Ronald C., to Grain Processing Corporation. Separation of protein from vegetable sources. 3,966,971, Cl. 426-44.000.

Moreland, Howard R.: *See—*
Harrison, Charles W.; Mead, Theodore C.; Moreland, Howard R.; and Barger, Frank L., 3,965,723.

Moreland, William C., II: *See—*
McCoy, Robert A.; and Moreland, William C., II, 3,966,426.

Moretti, John A., to General Motors Corporation. Vehicle fuel economy calculator and indicator. 3,967,097, Cl. 235-150.210.

Morgan, David J.: *See—*
Mayer, Abbott F.; and Morgan, David J., 3,967,280.

Morimoto, Kazuhisa: *See—*
Kuroda, Makoto; Morimoto, Kazuhisa; and Minobe, Akira, 3,966,469.

Morimoto, Kiyoshi; Utamura, Yukihiko; and Takagi, Toshinori, to Futaba Denshi Kogyo K.K. Method and apparatus for making phosphors. 3,967,125, Cl. 250-432.00R.

Morioka, Yasuaki: *See—*
Ito, Shunji; Morioka, Yasuaki; Kajinaga, Yoshihiro; Nitta, Minoru; and Sakurada, Ichio, 3,966,454.

Morisseau, Bernard Jean Harry. Mixer tap. 3,965,935, Cl. 137-625.400.

Morita, Akiyoshi: *See—*
Okano, Ryoichi; Bunda, Tsuchio; Mizusawa, Shinichiro; and Morita, Akiyoshi, 3,966,443.

Morita Pump Kabushiki Kaisha: *See—*
Kozai, Tetsuo; and Shiraki, Shomitsu, 3,966,018.
Maeda, Kikuo; and Tomimoto, Takashi, 3,966,017.

Moriya, Mamoru, to Seiki Hanbai Co., Ltd. Interior structure frame assembly. 3,966,342, Cl. 403-405.000.

Moriya, Takao; Murano, Kazuo; and Fujikawa, Syunji, to Fujitsu Ltd. Two wires time sharing two way full duplex communication system. 3,967,058, Cl. 178-58.00R.

Moriyama, Hiromi; and Kuwabara, Motosuke, to Hitachi, Ltd. Attendant board system in a telephone exchange. 3,967,075, Cl. 179-98.000.

Morlet, Jean G.: *See—*
Honnorat, Yves C.; Raisson, Gerard D.; and Morlet, Jean G., 3,966,374.

Morris, Harold D., to Systron Donner Corporation. Wide band angular displacement and velocity sensor and method. 3,967,178, Cl. 318-648.000.

Morris, Max O. Twist lock connector. 3,966,340, Cl. 403-353.000.

Morton, Clyde M. Converter vaporizer. 3,965,871, Cl. 123-25.00B.

Morton-Norwich Products, Inc.: *See—*
Pelosi, Stanford S., Jr., 3,966,771.
Schwan, Thomas J., 3,966,740.
Schwan, Thomas J.; and Miles, Nelson J., 3,966,758.
Schwan, Thomas J., 3,966,759.
Schwan, Thomas J.; Davis, Charles S.; and Honkomp, Leroy J., 3,966,760.

Moser, Peter: *See—*
Patuzzi, Alexander; Eyan, Manfred; and Moser, Peter, 3,966,180.

Moser, Rabin, to Xerox Corporation. Contact fuser assembly. 3,965,853, Cl. 118-60.000.

Moskowitz, Gerard J.: *See—*
Cayle, Theodore; and Moskowitz, Gerard J., 3,966,543.

Mostek Corporation: *See—*
Donnelly, Robert Murray, 3,967,252.

Motoda, Kenro. Arm mechanism for moving heavy materials in a two-dimensional plane. 3,965,770, Cl. 74-471.0XY.

Motorola, Inc.: *See—*
Sample, Lawrence Ray, 3,967,312.

Motosuke Umezu: *See—*
Mae, Shinroku, 3,965,811.

Motting, Gotz: *See—*
Klesser, Werner; and Motting, Gotz, 3,966,244.

Mourier, Georges: *See—*
Chavanat, Paul; Epsztein, Bernard; and Mourier, Georges, 3,967,155.

Muckenhaupt, Otto: *See—*
Korn, Siegfried; Kratzer, Bernd; and Muckenhaupt, Otto, 3,966,311.

Muehlbauer, James H., to George Koch Sons, Inc. Spray finishing tunnel. 3,965,805, Cl. 98-115.0SB.

Muench, Elmer W.: *See—*
Wysocki, Lawrence E.; and Muench, Elmer W., 3,965,932.

Muir, David Michael: *See—*
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 3,966,890.

Mukushi, Toshimi; Izumi, Kenkichi; Takahashi, Sankichi; Okazima, Yoshiaki; Sawa, Toshio; and Komai, Mithumasa, to Agency of Industrial Science & Technology. Multi-stage flash distillation plant. 3,966,562, Cl. 202-173.000.

Muller, Ernst; and Maurer, Albrecht, to Bizerba-Werke Wilhelm Kraut K.G. Automatic slicing machine for food stuffs. 3,965,783, Cl. 83-88.000.

Muller, Fred, Jr.; Wolniak, Stanley; Johnson, Marshall; and Spencer, Elbert, to Madge Canter Associates, Inc. Keyless padlock. 3,966,247, Cl. 292-318.000.

Muller, Fritz: *See—*
Pfost, Karl, 3,965,813.

Muller, Heinz; Szonn, Bodo; Jauchen, Peter; and Schulze, Rolf, to Beiersdorf Aktiengesellschaft. Sealed foam web. 3,967,028, Cl. 428-214.000.

Muller, Karl Adolf: *See—*
Feldmann, Rainer; Kriesten, Wolfgang; Muller, Karl Adolf; Panoch, Hans Joachim; and Scholten, Heinz, 3,966,838.

Muller, Karl Heinz: *See—*
Kleiner, Frank Gerald; and Muller, Karl Heinz, 3,966,651.

Muller, Klaus; and Bohm, Bernhard, to Siemens Aktiengesellschaft. Cooling system for a nuclear reactor. 3,966,548, Cl. 176-37.000.

Muller, Richard S.; and Russell, Lewis K., to Signetics Corporation. Lateral bipolar transistor for integrated circuits and method for forming the same. 3,967,307, Cl. 357-35.000.

Muncie, Fred W., deceased: *See—*
Cocke, Emory L.; Muncie, Fred W., deceased; and Muncie, John W., executor, 3,966,984.

Muncie, John W., executor: *See—*
Cocke, Emory L.; Muncie, Fred W., deceased; and Muncie, John W., executor, 3,966,984.

Munting, Johannes Pieter, to Akzona Incorporated. Manufacture of unique polyethylene terephthalate fiber. 3,966,867, Cl. 264-210.00F.

Muoio, Erland L., to S. C. Johnson & Son, Inc. Impregnated wiper. 3,965,518, Cl. 15-104.930.

Murai, Hiromu; Ohata, Katsuya; Aoyagi, Yoshiaki; Ueda, Fusao; Kitano, Masahiko; Takata, Satoshi; and Tada, Shinichi, to Nippon Shinyaku Co., Ltd. Benzoguanamine derivatives. 3,966,728, Cl. 260-249.900.

Muramatu, Akira; and Kawata, Kiyoshi, to Omron Tateisi Electronics Co. Traffic signal control device with core memory. 3,967,245, Cl. 340-172.500.

Murano, Kazuo: *See—*
Moriya, Takao; Murano, Kazuo; and Fujikawa, Syunji, 3,967,058.

Murao, Kenji: *See—*
Toriyama, Kazuhisa; Abe, Hidetoshi; Nakano, Fumio; Murao, Kenji; and Sato, Mikio, 3,966,631.

Murenbeeld, Karel: *See—*
Ferrier, Duncan Cameron; Berry, Thomas; and Murenbeeld, Karel, 3,965,547.

Murphy, Wesley T., to Vercon Products, Inc. Modular building. 3,965,634, Cl. 52-403.000.

Murray, Ian P.; and Forte, Mark R., to Howmedica, Inc. Femoral insert for hip joint prosthesis. 3,965,490, Cl. 3-1.913.

Murray, Jerome L.; and Gardiner, Frances R. Hygienic douche system. 3,965,899, Cl. 128-225.000.

Music Circuit Productions, Inc.: *See—*
White, Stevan C., 3,965,625.

MX Processor Reinhardt & Co. AB: *See—*
Reinhardt, Hans; and Ottertun, Harald Daniel, 3,966,569.

Mylari, Banavara L., to Pfizer Inc. Esters of quinoxaline-1,4-dioxides. 3,966,951, Cl. 424-250.000.

N L Industries, Inc.: *See—*
Rott, Truman C., 3,965,552.

N.P.I. Corporation: *See—*
Baker, Edward D., 3,965,807.

Naber, Jaap E.: *See—*
Groenendaal, Willem; Taubert, Friedrich C.; Naber, Jaap E.; and Bekker, Gijsbertus A., 3,966,879.

Nadler, Marshall. Method and apparatus for attaching and locking an article to a mounting structure. 3,965,705, Cl. 70-58.000.

Nagahama, Shizuo: *See—*
Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; and Nagahama, Shizuo, 3,966,830.

Nagahori, Tetsuo: *See—*
Taniyama, Yukio; Isaka, Tetsuo; Nagahori, Tetsuo; and Kanda, Kaoru, 3,967,249.

Nagano, Akio: *See—*
Watanabe, Akinori; Tanoshima, Katsuhide; Ando, Takao; Tohama, Akira; and Nagano, Akio, 3,967,143.

Nagashima, Motoi, to Cima Kogaku Company Limited. Shutter controlled film advancing apparatus. 3,967,291, Cl. 354-171.000.

Nagashima, Saburo: *See—*
Kurata, Tokuzo; Okano, Takeshi; Tamaru, Akio; Kato, Yozo; and Nagashima, Saburo, 3,966,810.

Nagayama, Tomoshi: *See—*
Hasegawa, Haruo; Taniguchi, Hiroyoshi; Yamane, Shiro; Igawa, Takao; and Nagayama, Tomoshi, 3,966,471.

Nagy, Alexander J.: *See—*
Osiadacz, William J.; and Nagy, Alexander J., 3,965,536.

Najer, Henry: *See—*
Giudicelli, Don Pierre Rene Lucien; Najer, Henry; Iliesco-Branceni, Bogdan; and Pascal, Yves Robert Alain, 3,966,745.

Nakagawa, Kenji: *See—*
Asahara, Yoshiyuki; Izumitani, Tetsuro; and Nakagawa, Kenji, 3,966,448.

Nakaguma, Kazuyoshi: *See—*
Saito, Jiro; Kimura, Kaoru; Kusuhara, Hiroshi; and Nakaguma, Kazuyoshi, 3,965,686.

Nakai, Yoshinobu; Yamamoto, Keiji; and Nakano, Masahiro. Method of treatment of medicines. 3,966,899, Cl. 424-19.000.

Nakamura Kinzoku Kogyosho, Inc.: *See—*
Enomoto, Michitoshi, 3,966,240.

Nakamura, Michio: *See—*
Otouma, Takashi; and Nakamura, Michio, 3,967,043.

Nakamura, Yasuo: *See—*
Kamigaito, Osami; Doi, Haruo; Masaki, Hideyuki; Kandori, Toshio; Oki, Masami; and Nakamura, Yasuo, 3,967,230.

Nakano, Fumio: *See—*
Toriyama, Kazuhisa; Abe, Hidetoshi; Nakano, Fumio; Murao, Kenji; and Sato, Mikio, 3,966,631.

Nakano, Masahiro: *See—*
Nakai, Yoshinobu; Yamamoto, Keiji; and Nakano, Masahiro, 3,966,899.

Nakano, Mineo; Koyama, Takeshi; Matsumoto, Yoshiro; and Maruoka, Akira, to Hitachi Chemical Company, Ltd. Mold for polyimide, polyamide, or polyamide-imide resin which has noble metal layer on its surface to be in contact with resin. 3,966,390, Cl. 425-470.000.

Nakasaki, Eiji, to Sumitomo Rubber Industries, Ltd. Vehicle wheel structure. 3,965,957, Cl. 152-400.000.

Nakayabu, Toshio: *See—*
Aoki, Atsushi; Fukuda, Rikiya; Nakayabu, Toshio; Ishibashi, Keijiro; Takeichi, Chiyoko; and Ishida, Mitsuo, 3,966,914.

Nalco Chemical Company: *See—*
Braithwaite, David G.; and Allain, Ronald J., 3,966,888.
Gossage, Robert V., 3,966,698.

Namiki, Hiroshi; Minemura, Norihiro; Kimura, Takeo; and Takahashi, Shigeru, to Teijin Limited. Process for jet dyeing fibrous articles containing polyester-type synthetic fibers. 3,966,406, Cl. 8-179.000.

Nard Institute: *See—*
Ariyoshi, Junji; and Kariya, Noboru, 3,966,485.

National Can Corporation: *See—*
Levinson, Arthur A.; and Basa, Kenneth B., 3,966,977.

National Gypsum Company: *See—*
Schneller, Joseph W.; Bennett, Duane C.; and Matiacio, George P., 3,967,016.

National Machinery Company, The: *See—*
Kline, Gaylen O., 3,965,718.

National Research Development Corporation: *See—*
Bagg, Greville Euan Gordon; and Cracknell, Robert Ian, 3,965,722.
Freeman, Michael Alexander Reykers; Kempson, Geoffrey Edward; and Tuke, Michael Anthony, 3,965,489.
May, Edwin Richard Wells, 3,966,885.

NcNeil Laboratories, Incorporated: *See—*
Paragamian, Vasken; and Taylor, Russell J., Jr., 3,966,933.

NCR Corporation: *See—*
Brown, George T., Jr., 3,966,314.
Dobias, Joseph J., 3,967,061.
Dobias, Joseph J., 3,967,062.

Nebel, Hans-Joachim, to BASF Aktiengesellschaft. Process for the manufacture of basic chrome tanning agents soluble in coldwater. 3,966,402, Cl. 8-94.270.

Neeb, Karl-Heinz; Schweighofer, Werner; and Weisse, Hans-Jorg, to Siemens Aktiengesellschaft. Method for preparing test specimens for analysis. 3,966,852, Cl. 264-.500.

Nelson, Clifford H. Home fireplace heating. 3,965,886, Cl. 126-121.000.

Nelson, Daryl A., to Raymond Lee Organization, Inc., The, a part interest. Lock for coats and other sleeved garments. 3,966,100, Cl. 223-92.000.

Nelson, James P.; and Steitz, Alfred, Jr., deceased (by Steitz, Margaret Marie, executrix), to Standard Oil Company. Poly(tetramethylene dibro moterephthalate). 3,966,682, Cl. 260-75.00H.

Nelson, Norman A., to Upjohn Company, The. 5-Oxa-11-deoxyphenyl- and phenoxy-substituted prostaglandin F_1 analogs. 3,966,795, Cl. 260-473.00A.

Nelson, Peter H.; and Untch, Karl G., to Syntex (U.S.A.) Inc. 2-Substituted-5-oxo-5H-dibenzo-[A,D]cycloheptenes, the esters and ethers thereof, having pharmaceutical activity, and methods and compositions for the use thereof. 3,966,820, Cl. 260-590.0FB.

Nelson, Richard B.: *See—*
Lien, Erling L.; Miram, George V.; and Nelson, Richard B., 3,967,150.

Nemecek, Borivoj; and Lipman, Jean M. Fasteners. 3,966,339, Cl. 403-292.000.

Nepote, Alain: *See—*
Coquelet, Andre; and Nepote, Alain, 3,966,140.

Nessel, Jiri M., to Richards, Victor. Single speed frictional drive unit with magnetic biasing means. 3,965,762, Cl. 74-206.000.

Neukom, Chester G.: *See—*
Anderson, Joseph A.; Neukom, Chester G.; and Kopecky, Ivyl, 3,966,128.

Neumaier, Hubert: *See—*
Vogt, Wilhelm; Neumaier, Hubert; Schallus, Erich; and Peantek, Gunter, 3,966,803.

Neuman, Richard F., to Eaton Corporation. Sequenced orifice fluid supply for occupant restraint system. 3,966,228, Cl. 280-737.000.

Newberry, John T., to Monarch Marking Systems, Inc. Rewind apparatus. 3,966,136, Cl. 242-67.10R.

Newell, George F., to Westinghouse Electric Corporation. Predistortion of NRZ recording current for video recordings. 3,967,317, Cl. 360-55.000.

Newingham, Thomas D.: *See—*
Duling, Irl N.; Gates, David S.; Glazier, Frederick P.; Moore, Robert E.; and Newingham, Thomas D., 3,966,624.

Newman, Irvin, to Fine, Ira W. Insulated glass panel. 3,965,638, Cl. 52-616.000.

Newstead, Charles, to Girling Limited. Hydraulically operated disc brakes for vehicles. 3,966,025, Cl. 188-72.500.

Ngo, Peter Dinh-Tuan, to Bell Telephone Laboratories, Incorporated. Light pen detection for plasma panels using specially timed scanning address pulses. 3,967,267, Cl. 340-324.00M.

Nicholls, Bryan Frederick, to Mettoy Company Limited, The. Check valve assembly. 3,965,930, Cl. 137-525.000.

Nichols, Gordon E., to Winthrop-Atkins Co., Inc. Desk calendar with easel. 3,966,161, Cl. 248-459.000.

Nicholson, Jerry W. Apparatus for washing stack gases. 3,966,438, Cl. 55-238.000.

Nickel, Horst: *See—*
Bleck, Wolf-Eckhard; Nickel, Horst; and Schundehutte, Karl-Heinz, 3,966,703.

Nicol, John, to Teledyne, Inc. Bicycle frame. 3,966,230, Cl. 280-281.00R.

Nicolet, Rene: *See—*
Gutmann, Walter; and Nicolet, Rene, 3,966,846.

Nicoletti, Emilio. Drive line coupling device with substantially homokinetic features. 3,965,700, Cl. 64-18.000.

Nielsen, Helmar. Picture frame. 3,965,601, Cl. 40-155.000.

Nifco Inc.: *See—*
Makihara, Chiharu; and Yoda, Tohru, 3,967,050.

Nihon Seikan Kabushiki Kaisha: *See—*
Kawamata, Kiyoshi, 3,966,079.
Kawamata, Kiyoshi, 3,966,081.

Nihon Spindle Seizo Kabushiki Kaisha: *See—*
Nishiyama, Shigeyuki; Tsurumi, Kotaro; and Yoshimura, Katsuaki, 3,966,141.

Nikken Chemicals Co., Ltd.: *See—*
Tomioka, Tatsuo; Hoshide, Yasuo; Ogawa, Hirosi; and Suzuki, Kenichi, 3,966,720.

Nilsen, David N.: *See—*
Posel, John G.; Williams, Gregory P.; and Nilsen, David N., 3,966,462.

Nilson, Hans Erik, to Infrarodteknik AB. Device for reflecting radiant energy. 3,966,308, Cl. 350-293.000.

Ninane, Leon; and Kegelart, Willy, to Solvay & Cie. Coated alkali metal chlorite particles. 3,967,039, Cl. 428-403.000.

Ninet, Leon: *See—*
Mancy, Denise; Ninet, Leon; and Preud'homme, Jean, 3,966,557.

Nippon Asbestos Company, Ltd.: *See—*
Otouma, Takashi; and Nakamura, Michio, 3,967,043.

Nippon Concrete Industries, Co., Ltd.: *See—*
Fukushima, Yoshikiyo; Momota, Kenzo; Shirahata, Hideaki; and Sakanai, Noriyuki, 3,966,375.

Nippon Electric Company, Ltd.: *See—*
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Tagashira, Yoshimi; Atobe, Masaaki; and Yamamoto, Kazuhiro, 3,967,220.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Suzuki, Shigeru; and Adachi, Takeshi, 3,965,790.

Nippon Kayaku Kabushiki Kaisha: *See—*
Takenaka, Shigeo; Shimizu, Hitoshi; and Ogawa, Masanobu, 3,966,802.
Takenaka, Shigeo; Shimizu, Hitoshi; and Yamamoto, Kenichiro, 3,966,823.

Nippon Kokan Kabushiki Kaisha: *See—*
Yamagishi, Hidehisa; Takano, Hiroshi; and Kashiyama, Yoshitaka, 3,966,570.

Nippon Mining Co., Ltd.: *See—*
Okudaira, Shigenori; Iwakami, Michiaki; and Iriye, Takefumi, 3,966,892.

Nippon Oils and Fats Company Limited: *See—*
Sakai, Hiroshi; Takeuchi, Fumio; and Hanake, Tsutomu, 3,966,516.
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Nippon Pelnox Corporation: *See—*
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Nippon Sheet Glass Co., Ltd: *See—*
Sakata, Nobuhiro; and Suzuki, Toshihiro, 3,966,665.

Nippon Shinyaku Co., Ltd.: *See—*
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Murai, Hiromu; Ohata, Katsuya; Aoyagi, Yoshiaki; Ueda, Fusao; Kitano, Masahiko; Takata, Satoshi; and Tada, Shinichi, 3,966,728.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
Fukui, Akio; Koike, Hiroshi; Tanaka, Takehiko; and Ito, Yuji, 3,966,775.

Nippon Soken, Inc.: *See—*
Sasaya, Hideaki; and Kobayashi, Akihiro, 3,967,079.

Nippondenso Co., Ltd.: *See—*
Kamigaito, Osami; Doi, Haruo; Masaki, Hideyuki; Kandori, Toshio; Oki, Masami; and Nakamura, Yasuo, 3,967,230.

Nischk, Gunther: *See—*
Christoph, Geert; Radlmann, Eduard; Nischk, Gunther; Bruns, Ludwig; and Schnuchel, Gunther, 3,966,835.

Nishida, Kazunori: *See—*
Hada, Hiroshi; Hirayama, Tsutomu; and Nishida, Kazunori, 3,967,157.

Nishida, Takeshi; Shiromaru, Isao; and Teshima, Tsutomu, to Kanebo, Ltd. Method for producing fibril fibrous structures. 3,966,865, Cl. 264-147.000.

Nishikawa, Takeo: *See—*
Shimada, Keizo; Nishikawa, Takeo; Harada, Toshiaki; and Nagahama, Shizuo, 3,966,830.

Nishimura, Katushi: *See—*
Godai, Tomokazu; Sugiyama, Toboru; and Nishimura, Katushi, 3,966,424.

Nishiyama, Shigeyuki; Tsurumi, Kotaro; and Yoshimura, Katsuaki, to Nihon Spindle Seizo Kabushiki Kaisha. Apparatus for processing yarn end of cops supplied to the winder. 3,966,141, Cl. 242-35.50A.

Nite, Rebecca F., to Barnes-Hind Pharmaceuticals, Inc. Stabilized catechol amine solutions. 3,966,905, Cl. 424-80.000.

Nitsch, Rainer: *See—*
Riedl, Rudi; Jungnickel, Regina; Nitsch, Rainer; Lein, Werner; Vetter, Lothar; Schone, Helmut; Weisbach, Gunter; Johne, Hans; Schott, Alfred; Forster, Karl-Heinz; and Johne, Albrecht, 3,966,197.

Nitta, Minoru: *See—*
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Nittel, Herman: *See—*
Redmer, Wilbert; Rolin, Kenneth; and Nittel, Herman, 3,966,038.

Noakes, Michael Lesney; Caesar, Wilfred George; Holland, William Henry; and Hancock, Norman Herbert, to United Kingdom Atomic Energy Authority. Fabricating bodies. 3,966,646, Cl. 252-477.00R.

Noellert, Larry L., to Willey Sign Company. Advertising sign structure. 3,965,597, Cl. 40-130.00D.

Noetzel, Siegfried; Jastrow, Horst; and Fischer, Edgar, to Hoechst Aktiengesellschaft. Bromine-containing cyclic phosphonic acid esters. 3,966,849, Cl. 260-937.000.

Nohendorf, Hans: *See—*
Weber, Karl-Heinz; and Nohendorf, Hans, 3,967,180.

Nomura, Kousi; Kawazu, Satoru; Hirose, Yoshihiko; Inoue, Isao; Watari, Yoshihiko; and Kijima, Koichi, to Mitsubishi Denki Kabushiki Kaisha. Process of producing semiconductor devices. 3,966,501, Cl. 148-1.500.

Nomura, Masahide, to Hitachi, Ltd. Device for controlling speed of turbine. 3,965,684, Cl. 60-660.000.

Nonaka, Yasuhiko, to Hitachi, Ltd. Method of manufacturing targets of pickup tubes. 3,966,512, Cl. 148-174.000.

Nonnenmacher, Frank: *See—*
Ehrens, Henry; and Nonnenmacher, Frank, 3,965,882.

Nordsiek, Karl-Heinz: *See—*
Kampf, Wolfgang; and Nordsiek, Karl-Heinz, 3,966,697.

Nordson Corporation: *See—*
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Northern Illinois Gas Company: *See—*
Batz, James E., 3,967,202.

Northup, John D. Venting bottle closure. 3,966,071, Cl. 215-260.000.

Norton, Dale H., to Besser, Roy. Locking top and bottom container. 3,966,085, Cl. 220-327.000.

Nosco Plastics, Inc.: *See—*
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Notenboom, Antonius Paulus: *See—*
Deylius, Hendrik Gerardus; Lammers, Jan Frederik; and Notenboom, Antonius Paulus, 3,967,123.

Novex RT: *See—*
Vass, Karoly; Karpati, Gyorgy; Szechenyi-Marton, Eva; and Simek, Ferenc, 3,966,554.

Novikov, Sergei Sergeevich; Khmelnitsky, Lenor Ivanovich; Lebedev, Oleg Vasilievich; Epishina, Lia Vladimirovna; Suvorova, Ljudmila Ivanovna; Lapshina, Lidia Vasilievna; Krylov, Valery Dmitrievich; Zaikonnikova, Irina Vitalievna; Zimakova, Irina Evgenievna; Chudnovsky, Vladimir Sergeevich; Babichev, Viktor Andreevich; and Avdonina, Nina Alexandrovna. Tetra-N-alkyl derivatives of bicyclic ureas and method of their production. 3,966,742, Cl. 260-256.40F.

Nuclear Associates, Inc.: *See—*
Smulewicz, Jan J., 3,967,128.

Nunes, Emmanuel; and Vervin, Jacques, to Saint-Gobain Industries. Inspection of glass articles. 3,966,048, Cl. 209-82.000.

Nunning, Walter J.: *See—*
Ballman, Richard L.; Lea, Kenneth R.; Nunning, Walter J.; and Southern, John H., 3,966,866.

Nurita, Joji: *See—*
Konomi, Tsohiaki; Nurita, Joji; and Tanazawa, Yasushi, 3,965,873.

Nussbaum, Herbert H., to Miller Hydro Company. High speed case packing machine. 3,965,650, Cl. 53-166.000.

Oberg, Gordon D. Method of compressing scrap metal. 3,965,812, Cl. 100-39.000.

Oborn, Robert Edward, to Procter & Gamble Company, The. Angel food cake mix. 3,966,991, Cl. 426-555.000.

O'Brien, Patrick William, to Compoflex Company Limited. Apparatus for making corrugated flexible tubing. 3,966,379, Cl. 425-327.000.

Oce-Andeno B.V.: *See—*
Hendrickx, Andreas J. J.; and van Duyl, Willem H., 3,966,741.

Ocean Systems, Inc.: *See—*
McKenna, Henry Alvin, 3,966,170.

Ochiai, Takashi: *See—*
Inoue, Ichizo; Oine, Toyonari; Yamada, Yoshihisa; Tani, Junichi; Ishida, Ryuichi; and Ochiai, Takashi, 3,966,731.

Oda, Kouzou; and Miki, Hidefumi. Method for the production of fiber-reinforced resin compounds. 3,967,004, Cl. 427-196.000.

Oddy, Keith Mason. Letterpress printing machine. 3,966,534, Cl. 156-384.000.

Oesterlein, Fritz; and Riat, Henri, to Ciba-Geigy Corporation. Disulfo naphthalene containing fiber-reactive tetrazo dyes. 3,966,705, Cl. 260-153.000.

Offermanns, Heribert: *See—*
Asinger, Friedrich; Offermanns, Heribert; Gluzek, Karl-Heinz; and vonBebenburg, Walter, 3,966,752.

Ogawa, Akira: *See—*
Hinata, Masanao; Takei, Haruo; Ikeda, Tadashi; Ogawa, Akira; Sato, Akira; and Iwamoto, Atsuo, 3,966,477.

Ogawa, Hirosi: *See—*
Tomioka, Tatsuo; Hoshide, Yasuo; Ogawa, Hirosi; and Suzuki, Kenichi, 3,966,720.

Ogawa, Masanobu: *See—*
Takenaka, Shigeo; Shimizu, Hitoshi; and Ogawa, Masanobu, 3,966,802.

Ogawa, Takuzo: *See—*
Yatsuo, Tsutomu; Kamei, Tatsuya; Ogawa, Takuzo; and Tanaka, Tomoyuki, 3,967,308.

Ohara, Naoki: *See—*
Kuromitsu, Hiromu; and Ohara, Naoki, 3,966,605.

Ohata, Katsuya: *See—*
Murai, Hiromu; Ohata, Katsuya; Aoyagi, Yoshiaki; Ueda, Fusao; Kitano, Masahiko; Takata, Satoshi; and Tada, Shinichi, 3,966,728.

Ohbayashi-Gumi, Ltd.: *See—*
Saito, Jiro; Kimura, Kaoru; Kusuhara, Hiroshi; and Nakaguma, Kazuyoshi, 3,965,686.

Ohi, Akira: *See—*
Sonoyama, Yuzo; Ohi, Akira; and Hozumi, Yukio, 3,966,677.

Ohio State University, The: *See—*
Young, Jonathan D.; and Caldecott, Ross, 3,967,282.

Ohkawa, Masaaki; and Sawaguri, Yasuyoshi, to Sumitomo Chemical Company, Limited. Treatment of aqueous waste solution. 3,966,594, Cl. 210-22.00R.

Ohloff, Gunther: *See—*
Schulte-Elte, Karl-Heinrich; Joyeux, Michel; and Ohloff, Gunther, 3,966,819.

Ohmae, Tadayuki: *See—*
Kudo, Ken-Ichi; Ohmae, Tadayuki; Toyoshima, Yoshiki; and Hara, Sumio, 3,966,821.

Ohminato, Mitsuru: *See—*
Sanchez, Fred M.; Shirai, Yukio; Sakakibara, Toshiyuki; and Ohminato, Mitsuru, 3,965,556.

Ohtake, Katsumasa: *See—*
Sato, Katsunobu; Sueda, Yoshihisa; Izutsutani, Yoshiro; Imada, Kunihiko; and Ohtake, Katsumasa, 3,966,399.

Ohyama, Isao: *See—*
Hayashi, Masaki; Kori, Seiji; Ohyama, Isao; and Endo, Hirofumi, 3,966,792.

Oi, Shigeo. Heating apparatus with heat medium vapor. 3,967,093, Cl. 219-388.000.

Oine, Toyonari: *See—*
Inoue, Ichizo; Oine, Toyonari; Yamada, Yoshihisa; Tani, Junichi; Ishida, Ryuichi; and Ochiai, Takashi, 3,966,731.

Oishi, Tadashi; Kameda, Nobuyuki; Kato, Toshiro; Fujinami, Akira; Ozaki, Toshiaki; and Itooka, Eiyashi, to Sumitomo Chemical Company, Limited. N-substituted aminonitrile derivatives. 3,966,789, Cl. 260-465.400.

Okamoto, Shinzi: *See—*
Mattori, Hiroaki; Mizuta, Takemi; and Okamoto, Shinzi, 3,966,264.

Okamoto, Takehiko: *See—*
Fukui, Masahiro; Hayashi, Shigeru; Okamoto, Takehiko; Koga, Isao; and Inoi, Takeshi, 3,966,822.

Okamoto, Taneji; Fujie, Kuniyoshi; and Kondo, Sadao, to Takeda Chemical Industries, Ltd. Composition for poultry and livestock. 3,966,922, Cl. 424-227.000.

Okamura, Isao: *See—*
Omori, Akira; Okamura, Isao; Imoto, Tadasi; and Katoh, Takayuki, 3,966,597.

Okaniwa, Hiroshi: *See—*
Sobajima, Shigenobu; Okaniwa, Hiroshi; Chiba, Kiyoshi; and Takagi, Norio, 3,967,285.

Okano, Ryoichi; Bunda, Tsuchio; Mizusawa, Shinichiro; and Morita, Akiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tsuchiya. Exhaust gas purifier for internal combustion engine. 3,966,443, Cl. 55-337.000.

Okano, Takeshi: *See—*
Kurata, Tokuzo; Okano, Takeshi; Tamaru, Akio; Kato, Yozo; and Nagashima, Saburo, 3,966,810.

Okazima, Yoshiaki: *See—*
Mukushi, Toshimi; Izumi, Kenkichi; Takahashi, Sankichi; Okazima, Yoshiaki; Sawa, Toshio; and Komai, Mithumasa, 3,966,562.

Oki Electric Industry Company, Ltd.: *See—*
Watanabe, Akinori; Tanoshima, Katsuhide; Ando, Takao; Tohama, Akira; and Nagano, Akio, 3,967,143.

Oki, Masami: *See—*
Kamigaito, Osami; Doi, Haruo; Masaki, Hideyuki; Kandori, Toshio; Oki, Masami; and Nakamura, Yasuo, 3,967,230.

Okudaira, Sadao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Large aperture super wide angle lens. 3,966,306, Cl. 350-214.000.

Okudaira, Shigenori; Iwakami, Michiaki; and Iriye, Takefumi, to Nippon Mining Co., Ltd. Process for producing titanium dioxide. 3,966,892, Cl. 423-613.000.

Okuno, Yoshitoshi; Itaya, Nobushige; and Mizutani, Toshio, to Sumitomo Chemical Company, Limited. Insecticidal composition containing cyclopropane-carboxylate. 3,966,963, Cl. 424-305.000.

Okura, Takao: *See—*
Sakurai, Yoshitoshi; Okura, Takao; and Tanaka, Miniru, 3,965,881.

Olashaw, William Francis; and Wilbur, Roger Thomas, to General Electric Company. Switchboard apparatus having control wiring passageways. 3,967,165, Cl. 317-120.000.

Oldshue, James Y., to General Signal Corporation. Multi-stage bleaching of pulp using successively lower power levels. 3,966,542, Cl. 162-57.000.

Olin Corporation: *See—*
Crown, Marlyn Dale; and Finley, Carl Eugene, 3,966,097.
Etheredge, Cortez, Jr., 3,965,760.
Marlow, Darrell W., 3,966,225.
Schaffling, Otto G., 3,965,676.

Olinkraft, Inc.: *See—*
Sherman, Earle Conrad, 3,965,643.

Oliver, Stuart M.; Proud, Ralph A., Jr.; and Parsons, Sanford J., to Delphian Foundation, The; and Q[4] Corporation, a part interest to each. Flame detection system. 3,967,255, Cl. 340-227.00R.

Olrik, Henrik Gerner. Device for converting rotary motion to axial motion and a method of applying the device for truing, polishing or calibrating a body of rotation. 3,966,280, Cl. 308-176.000.

Olsen, Lee J.: *See—*
Jentzsch, David P.; Anderson, Hyrum T.; and Olsen, Lee J., 3,965,967.

Olsson, Carl Anders, to Alfa-Laval AB. Device for delivering feed portions to different places. 3,965,867, Cl. 119-52.0AF.

Olstowski, Franciszek, to Dow Chemical Company, The. Solid, rapid-setting, rigid polyurethanes. 3,966,662, Cl. 260-30.60R.

Olstowski, Franciszek, to Dow Chemical Company, The. Solid, rapid-setting, rigid polyurethanes. 3,966,664, Cl. 260-31.40R.

Olympus Optical Co., Ltd.: *See—*
Tojyo, Tsutomu, 3,966,307.

Omi Industrial Company, Limited: *See—*
Omi, Toshimitsu; and Omi, Takashi, 3,965,774.

Omi, Takashi: *See—*
Omi, Toshimitsu; and Omi, Takashi, 3,965,774.

Omi, Toshimitsu; and Omi, Takashi, to Omi Industrial Company, Limited. Reduction gear apparatus. 3,965,774, Cl. 74-805.000.

Omori, Akira; Okamura, Isao; Imoto, Tadasi; and Katoh, Takayuki, to Teijin Limited. Oil or organic solvent-absorbent. 3,966,597, Cl. 210-39.000.

Omron Tateisi Electronics Co.: *See—*
Muramatu, Akira; and Kawata, Kiyoshi, 3,967,245.
Yamamoto, Mititaka, 3,966,303.

Oneida Electronics: *See—*
Anglin, Russell E., 3,967,314.

O'Neill, Eoin P.: *See—*
Craig, John W. T.; O'Neill, Eoin P.; and Keairns, Dale L., 3,966,431.

O'Neill, Eugene T.; and Kibbel, William H., Jr., to FMC Corporation. Animal waste odor treatment. 3,966,450, Cl. 71-15.000.

O'Neill, John Francis: *See—*
Dimmick, James Owen; Lewis, Theras Gordon; O'Neill, John Francis; and Fabiano, Lucian Philip, Jr., 3,967,072.

O'Neill, Wilbur J.: *See—*
Colston, John R.; and O'Neill, Wilbur J., 3,965,892.

Ono, Kimio: *See—*
Torii, Kenji; Ozawa, Tatsuya; Ono, Kimio; Iwabe, Koichi; and Horikawa, Hiroumi, 3,966,903.

Ono Pharmaceutical Co., Ltd.: *See—*
Hayashi, Masaki; Kori, Seiji; Ohyama, Isao; and Endo, Hirofumi, 3,966,792.

Ono, Takayuki: *See—*
Yamaguchi, Tadashi; Ono, Takayuki; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, 3,967,006.

Opfermann, Johannes: *See—*
Feltz, Adalbert; Opfermann, Johannes; Voigt, Bernd; and Seliger, Walter, 3,966,470.

Opti-Holding AG: *See—*
Frohlich, Alfons; and Cappel, Marie-Luise, 3,965,833.

Orain, Michel, to Societe Anonyme: Glaenzer Spicer. Constant velocity universal joints. 3,965,701, Cl. 64-21.000.

Ordway, James F.: *See—*
Bailey, Edward A.; and Ordway, James F., 3,966,341.

Original Hanau Quarzlampen GmbH: *See—*
Junginger, Klaus; and Sturm, Walter, 3,967,107.

Origo, Incorporated: *See—*
Lundquist, Ingemar H., 3,965,897.

Orszagos Erc- es Asvanybanyak: *See—*
Csatar, Kalman; and Soha, Istvan, 3,966,641.

Orzel, Edward S.; and Thrush, Richard G., to Weatherhead Company, The. Inertia load sensing brake valve. 3,966,268, Cl. 303-24.00F.

Osako, Naoto; Kozima, Katsumi; Shimizu, Hiroshi; and Kimura, Kazumi, to Mitsubishi Chemical Industries Ltd. Process for preparing prilled porous ammonium nitrate. 3,966,853, Cl. 264-13.000.

Osborne, Neal Frederick: *See—*
Brain, Edward George; and Osborne, Neal Frederick, 3,966,718.

Oshima, Shigeru, to Fuji Photo Film Co., Ltd. Miniature camera for roll film. 3,967,300, Cl. 354-288.000.

Osiadacz, William J.; and Nagy, Alexander J., to Baxter Laboratories, Inc. Automated meat tenderization system. 3,965,536, Cl. 17-25.000.

Osman, Mohamed; and Greuner, Bernd, to Gebrueder Heller. Rotating cutter tool. 3,966,349, Cl. 408-204.000.

Osterfield, John Richard; and Pragnell, Robert George, to Pirelli General Cable Works Limited. Communication cables. 3,966,299, Cl. 350-96.00C.

Osterlund, Paul Alan: *See—*
Long, James Michael; and Osterlund, Paul Alan, 3,967,047.

Ostermeier, Kurt W.: *See—*
Mitchell, Kenneth J.; and Ostermeier, Kurt W., 3,966,519.

Ostrowski, Arthur E., to Allied Tube & Conduit Corporation. Production of polymer-coated steel tubing. 3,965,551, Cl. 29-33.00D.

O'Sullivan, Thomas Denis, to Bell Telephone Laboratories, Incorporated. Impregnation of electrodes for nickel cadmium batteries. 3,966,494, Cl. 136-24.000.

Otley, Stephen Reverdy: *See—*
Dexter, Edward; and Otley, Stephen Reverdy, 3,966,983.

Otomo, Kanji: *See—*
Uemura, Masaru; Kuroki, Hitoshi; Echida, Nobuhiro; Kosaka, Yujiro; and Otomo, Kanji, 3,967,020.

Otouma, Takashi; and Nakamura, Michio, to Nippon Asbestos Company, Ltd. Asbestos articles having dustproof properties. 3,967,043, Cl. 428-443.000.

Ott, Hans; and Suess, Rudolf, to Sandoz Ltd. Treatment of thrombosis and the inhibition of blood platelet aggregation. 3,966,938, Cl. 424-258.000.

Ott, Karl-Heinz: *See—*
Becker, Theo; Hilscher, Eduard; and Ott, Karl-Heinz, 3,965,953.

Ottertun, Harald Daniel: *See—*
Reinhardt, Hans; and Ottertun, Harald Daniel, 3,966,569.

Otto, George W., Jr., to American Radiologic Systems Inc. X-ray apparatus having table with improved top. 3,967,126, Cl. 250-439.000.

Otto Sick K.G., Firma: *See—*
Kurzweil, Lubor, 3,966,039.

Ottobre, Louis G.: *See—*
Whyte, Ian A.; Ottobre, Louis G.; and McGivern, James P., 3,967,264.

Outboard Marine Corporation: *See—*
Jespersen, Herbert A., 3,965,657.
Rose, Edgar, 3,966,004.

Overton, Harold C., to Republic Steel Corporation. Bearing chocking assembly for mill rolls. 3,966,282, Cl. 308-207.00R.

Ovshinsky, Stanford R.: *See—*
Wacks, Harvey H.; Klose, Peter H.; Ovshinsky, Stanford R.; and Hallman, Robert W., 3,966,317.

Owatonna Manufacturing Company, Inc.: *See—*
Kanengieter, Glenn G.; and Barry, Gerald E., 3,965,660.

Owen, Hartley; and Venuto, Paul B., to Mobil Oil Corporation. Method for upgrading heavy petroleum type stocks. 3,966,586, Cl. 208-120.000.

Owens-Corning Fiberglas Corporation: *See—*
Froberg, Magnus L.; and Maddux, John F., 3,967,046.
Gelin, Robert J.; and Bartlett, James E., 3,966,132.
Gelin, Robert J., 3,966,133.
Marzocchi, Alfred; Jannarelli, Albert E.; and Garrett, David W., 3,967,037.
Terpak, Anthony, 3,966,139.

Oxe, Josef; and Keller, Rudolf, to Ciba-Geigy Corporation. Process for the permanent finishing of fiber materials. 3,966,659, Cl. 260-29.6MN.

Oxy Metal Industries (Intra) Inc.: *See—*
Bachle, Wilfred H.; Peck, John V.; Stantial, Thomas D.; and Williams, Richard H., 3,966,364.

OY Tampella AB Mechanical Workshops: *See—*
Heikkila, Viekko; Hakkinen, Leo; Strom, Rolf; Uusitalo, Leo; and Mellin, Juha, 3,966,019.

Ozaki, Toshiaki: *See—*
Oishi, Tadashi; Kameda, Nobuyuki; Kato, Toshiro; Fujinami, Akira; Ozaki, Toshiaki; and Itooka, Eiyashi, 3,966,789.

Ozawa, Tatsuya: *See—*
Torii, Kenji; Ozawa, Tatsuya; Ono, Kimio; Iwabe, Koichi; and Horikawa, Hiroumi, 3,966,903.

Ozone Incorporated: *See—*
Slipiec, Romuald E.; and Schultz, Ronald A., 3,967,131.

P.I.D. Patents and Inventions Development Limited: *See—*
Doriel, Joseph, 3,966,232.

P. R. Mallory & Co., Inc.: *See—*
Klein, Gerhart P.; and Kallianidis, Milton, 3,967,000.

Pace, Gerald F.; Stauter, John C.; Armstrong, Calvin N.; and Harris, Gary R., to Continental Oil Company. Electrolysis process and apparatus. 3,966,567, Cl. 204-105.00R.

Pachter, Irwin J.; and Gordon, Maxwell, to Bristol-Myers Company. Analgetic compositions. 3,966,940, Cl. 424-260.000.

Pacific Adhesives, Inc.: *See—*
Cone, Charles N.; and Steinberg, Julius M., 3,965,860.

Packer, Mervyn Brian: *See—*
Taylor, Robert Ernest; Packer, Mervyn Brian; and Parsons, David, 3,966,265.

Pagano, Joseph F.; and Schoengold, Ronald J., to SmithKline Corporation. Device for making a culture of micro-organisms. 3,966,552, Cl. 195-139.000.

Page, Armond J.: *See—*
Gonzales, Joseph M.; and Page, Armond J., 3,966,072.

Page, Geoffrey A.; Grammatica, Steven J.; and Ewing, Joan R., to Xerox Corporation. Photoelectrophoretic imaging process using dark charge injecting agent on blocking electrode. 3,966,466, Cl. 96-1.200.

Pammer, Manfred: *See—*
Fastner, Thorwald; and Pammer, Manfred, 3,965,964.

Panduit Corporation: *See—*
Caveney, Jack E.; and Moody, Roy A., 3,965,538.

Panoch, Hans Joachim: *See—*
Feldmann, Rainer; Kriesten, Wolfgang; Muller, Karl Adolf; Panoch, Hans Joachim; and Scholten, Heinz, 3,966,838.

Papantoniou, Christos; and Grognet, Jean-Claude, to L'Oreal. Hair lacquer or hair setting composition containing a tetrapolymer. 3,966,403, Cl. 8-127.510.

Papantoniou, Christos; and Grognet, Jean-Claude, to L'Oreal. Hair laquer or hair setting composition containing a terpolymer. 3,966,404, Cl. 8-127.510.

Papaux, Jean-Claude: *See—*
Portmann, Albert; and Papaux, Jean-Claude, 3,967,081.

Papesh, Edward F.: *See—*
Papesh, Edward G.; and Papesh, Edward F., 3,966,861.

Papesh, Edward G.; and Papesh, Edward F., to Pierson Industries, Inc. Composite tubular film process and apparatus. 3,966,861, Cl. 264-95.000.

Paradiso, Erasmus J. Wave energy machine. 3,965,679, Cl. 60-398.000.

Paragamian, Vasken; and Taylor, Russell J., Jr., to NcNeil Laboratories, Incorporated. Inhibition of gastric acid secretion with 1-alkyl-2-R-perimidines. 3,966,933, Cl. 424-251.000.

Paragamian, Vasken; and Taylor, Russell J., Jr., to McNeil Laboratories, Incorporated. Inhibition of ulcers with 2(3H)-perimidylidene-2-propanone. 3,966,935, Cl. 424-251.000.

Paramount Packaging Corporation: *See—*
Reubens, Clarence Edmond; Campbell, Sterrett Paxton; and Marston, Lloyd Everett, 3,965,654.

Parent, Richard A., to Xerox Corporation. Transferring toner to an hydrocarbon sheet. 3,966,467, Cl. 96-1.400.

Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, to Anumin Pty. Limited. Method of producing solutions containing cuprous ions. 3,966,890, Cl. 423-512.00A.

Parker-Hannifin Corporation: *See—*
Furgalus, Keith A.; and Simmons, Harold C., 3,966,120.
Washkewicz, Donald E.; and Busdiecker, Wayne S., 3,966,238.

Parker, Robert, to RPR, Inc. Digital thermometer and method of manufacture. 3,965,742, Cl. 73-356.000.

Parkinson, David B., to Gould Inc. Machine for making expanded metal. 3,965,550, Cl. 29-6.200.

Parkinson, Lindley A.: *See—*
Johnson, Leland L.; and Parkinson, Lindley A., 3,966,078.

Parmann, Gunnar, to Rieber & Son A/S. Method and apparatus for bending thermoplastic pipes. 3,965,715, Cl. 72-342.000.

Parsons, David: *See—*
Taylor, Robert Ernest; Packer, Mervyn Brian; and Parsons, David, 3,966,265.

Parsons, Sanford J.: *See—*
Oliver, Stuart M.; Proud, Ralph A., Jr.; and Parsons, Sanford J., 3,967,255.

Pascal, Yves Robert Alain: *See—*
Giudicelli, Don Pierre Rene Lucien; Najer, Henry; Iliesco-Branceni, Bogdan; and Pascal, Yves Robert Alain, 3,966,745.

Pascale, John V.: *See—*
Pittet, Alan O.; Pascale, John V.; and Hruza, Denis E., 3,966,989.

Paskerian, Wayne H., to M. W. Carr & Co., Inc. Frame hanger. 3,965,600, Cl. 40-152.100.

Pass, Roger D. String system for a game racket. 3,966,207, Cl. 273-73.00D.

Patentverwertungs - und Finanzierungagesellschaft, SERANIA: *See—*
Schmid, August, 3,966,206.

Patron, Luigi: *See—*
Melacini, Paolo; Patron, Luigi; Doria, Giorgio; and Tedesco, Raffaele, 3,966,666.

Patterson, Frank: *See—*
Baker, Bill; and Patterson, Frank, 3,966,135.
Patterson, William R., to General Electric Company. Thermal actuated valve for clearance control. 3,966,354, Cl. 415-116.000.
Patton, John T., Jr.; Pizzini, Louis C.; Demou, John G.; and Ramlow, Gerhard G., to BASF Wyandotte Corporation. Polyurethane foam composite. 3,966,521, Cl. 156-78.000.
Patuzzi, Alexander; Eysn, Manfred; and Moser, Peter, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Converter with a converter hood. 3,966,180, Cl. 266-158.000.
Patzke, Robert C., to Addressograph Multigraph Corporation. Duplicating machine exposure system. 3,966,321, Cl. 355-121.000.
Paulucci, Jeno F. Golf aid. 3,965,488, Cl. 2-161.00A.
Pausch, Josef; and Kwon, Sung Lim, to General Resource Corporation. Method for removing pollutants from a gaseous mixture. 3,966,878, Cl. 423-242.000.
Pavey, John S., to General Motors Corporation. Headlamp washer system. 3,965,522, Cl. 15-250.040.
Pawloski, Chester E., to Dow Chemical Company, The. Substituted 1,3-dioxepins. 3,966,768, Cl. 260-338.000.
Peantek, Gunter: *See—*
Vogt, Wilhelm; Neumaier, Hubert; Schallus, Erich; and Peantek, Gunter, 3,966,803.
Pearlman, Alan R., to ARP Instruments, Inc. Electronic musical instrument effects control. 3,965,789, Cl. 84-1.240.
Pearson, James R., to Bresan, Lawrence A.; and Pearson, James R., a part interest to each. Conduit apparatus. 3,965,629, Cl. 52-221.000.
Peck, John V.: *See—*
Bachle, Wilfred H.; Peck, John V.; Stantial, Thomas D.; and Williams, Richard H., 3,966,364.
Pegels, Abraham A.; and Wijffels, Joannes B., to Shell Oil Company. Apparatus and process for the catalytic treatment of hydrocarbons. 3,966,420, Cl. 23-288.00R.
Pelegrinelli, Raymond L.: *See—*
Sullivan, Thomas R.; Du, John W.; Pelegrinelli, Raymond L.; and Das, Suryya K., 3,966,667.
Pelosi, Stanford S., Jr., to Morton-Norwich Products, Inc. 5-(4-Chlorophenyl)-2-furyl ketones. 3,966,771, Cl. 260-347.800.
Penney, Gaylord W. Electrostatic dust filter. 3,966,435, Cl. 55-131.000.
Pennwalt Corporation: *See—*
Huber, Ludwig Konrad, 3,966,929.
King, James Ping; Simkin, Joseph; and Radice, Peter F., 3,966,486.
Penny, Samuel Lee, to Dresser Industries, Inc. Roller separator for bit bearings. 3,966,274, Cl. 308-8.200.
Penny, William Henry; and Spaeth, Edmund E., to American Hospital Supply Corporation. Suction catheter. 3,965,901, Cl. 128-276.000.
Perdue, Richard R., to W. R. Grace & Co. Skin package. 3,966,045, Cl. 206-443.000.
Peroxid-Chemie GmbH: *See—*
Edl, Wolfgang; Meister, Werner; and Seidl, Hans, 3,966,840.
Perr, Julius P., to Cummins Engine Company, Inc. Fuel injection system for diesel engines. 3,965,875, Cl. 123-139.0AY.
Perrault, Frederick; and Perrault, Raymond E. Cable hanger. 3,966,154, Cl. 248-62.000.
Perrault, Raymond E.: *See—*
Perrault, Frederick; and Perrault, Raymond E., 3,966,154.
Perrotti, Emilio: *See—*
Cipriani, Gioacchino; and Perrotti, Emilio, 3,966,782.
Perry, Eli; and Strazik, William F., to Monsanto Company. Process for the separation of diene from organic mixtures. 3,966,834, Cl. 260-681.50R.
Persson, Jan Edvard: *See—*
Hilding, Jonas Olof Anders; and Persson, Jan Edvard, 3,965,997.
Petchul, Richard K.: *See—*
Petchul, Sigvald L.; and Petchul, Richard K., 3,966,615.
Petchul, Sigvald L.; and Petchul, Richard K. Oil collection barge. 3,966,615, Cl. 210-242.00R.
Peter, Donald W.: *See—*
Boubel, Richard W.; Babler, David C.; and Peter, Donald W., 3,965,748.
Peter Paul Electronics Co., Inc.: *See—*
Allen, Walter E., 3,965,923.
Petersen, Robert E.; and Dietsche, Robert J., to Westinghouse Electric Corporation. Electric heating unit support assembly. 3,967,094, Cl. 219-532.000.
Petersen, Ross K. Heating and cooling system. 3,965,972, Cl. 165-45.000.
Peterson, Raymond T., Jr.; and Stevenson, Paul D., to General Motors Corporation. Torque converter and slipping clutch. 3,966,031, Cl. 192-3.300.
Peterson, William H., to Pullman Incorporated. Vehicle speed control device. 3,966,150, Cl. 246-182.00B.
Petigara, Ramesh B.: *See—*
Yale, Harry Louis; and Petigara, Ramesh B., 3,966,733.
Petrocci, Alfonso N.: *See—*
Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., 3,966,904.
Petrolite Corporation: *See—*
Quinlan, Patrick M., 3,966,630.
Pfeifer, Josef; and Schnall, Gunther, to AGFA-Gevaert, A.G. Electrostatic copying machine with removable copying drum. 3,966,316, Cl. 355-3.00R.
Pfeifer, Josef: *See—*
Abbe, Gunter; Eppe, Rudolf; Ettelbruck, Rudiger; Pfeifer, Josef; and Schnall, Gunther, 3,966,194.
Pfiffner, Albert: *See—*
Chodnekar, Madhukar Subraya; Loeliger, Peter; Pfiffner, Albert; Schwieter, Ulrich; Suchy, Milos; and Zurfluh, Rene, 3,966,780.
Pfizer Inc.: *See—*
Barth, Wayne E., 3,966,719.
Cronin, Timothy H.; and Hess, Hans-Jurgen E., 3,966,936.
Jonas, David Andrew, 3,966,985.
McFarland, James W.; and Thomson, Colin, 3,966,710.
Mylari, Banavara L., 3,966,951.
Pfleiderer, Ernst: *See—*
Monsheimer, Rolf; and Pfleiderer, Ernst, 3,966,551.
Pfost, Karl, to Muller, Fritz. Arrangement for the attachment of a body to a support. 3,965,813, Cl. 100-99.000.
Pharmacia Diagnostics AB: *See—*
Sjoquist, John A.; and Sjodin, Arne V., 3,966,898.
Philadelphia Quartz Company: *See—*
Derolf, M. Robert; and Hertzenberg, Elliot P., 3,966,893.
Philippson, Rainer, to Schering Aktiengesellschaft. Process for the preparation of a Δ^4-3-keto steroid 17-propiolactone. 3,966,714, Cl. 260-239.570.
Phillips, Louis H.: *See—*
Brantingham, George L.; and Phillips, Louis H., 3,967,104.
Phillips Petroleum Company: *See—*
Campbell, Robert W., 3,966,688.
Chapman, Charles C., 3,966,417.
Frazier, Arthur E., 3,966,434.
Hitzman, Donald O., 3,965,985.
Hudson, Jimmie E.; and Dockery, Calvin D., 3,966,860.
Phipps, Charles M.; and Hayes, Douglas R., to United Technologies Corporation. Mold and process for casting high temperature alloys. 3,965,963, Cl. 164-60.000.
Pickles, Joseph, to Ferro Manufacturing Corporation. Programmed sequential operator. 3,965,618, Cl. 49-103.000.
Pictorial Productions, Inc.: *See—*
Weingrad, Saul W., 3,967,021.
Pierpoline, Mario F., to Westinghouse Electric Corporation. Steam turbine extraction system. 3,966,355, Cl. 415-144.000.
Pierre Fabre S.A.: *See—*
Serre, Hubert, 3,966,923.
Pierson Industries, Inc.: *See—*
Papesh, Edward G.; and Papesh, Edward F., 3,966,861.
Piesch, Steffen; and Engelhardt, Friedrich, to Cassella Farbwerke Mainkur Aktiengesellschaft. Sulfonyl compounds. 3,966,769, Cl. 260-340.500.
Piesch, Steffen: *See—*
Ribka, Joachim; Engelhardt, Friedrich; and Piesch, Steffen, 3,966,689.
Pike, Barry Graham: *See—*
Curry, Kenneth Vasey; Gamadia, Rustom Kooverji; and Pike, Barry Graham, 3,966,087.
Pike, Charles T.: *See—*
Itzkan, Irving; and Pike, Charles T., 3,967,211.
Pilgram, Kurt H. G., to Shell Oil Company. Herbicidal orthonitroanilines. 3,966,817, Cl. 260-578.000.
Pillsbury Company, The: *See—*
Henry, William F.; Templeman, Gareth J.; Gorman, Roger A.; and Pinaire, Lawrence, 3,966,973.
Pinaire, Lawrence: *See—*
Henry, William F.; Templeman, Gareth J.; Gorman, Roger A.; and Pinaire, Lawrence, 3,966,973.
Pinkesfeld, Mordehay. Indexing device. 3,965,775, Cl. 74-827.000.
Pinto, Martin: *See—*
Portas, Abelardo Antonio; and Pinto, Martin, 3,965,615.
Pippin, Reginald F., Jr. Directionally stable reaction-fluid-propelled carrier missile with fluid-sealed movable retention and release wall. 3,965,611, Cl. 46-74.00B.
Pirelli General Cable Works Limited: *See—*
Osterfield, John Richard; and Pragnell, Robert George, 3,966,299.
Pitney-Bowes, Inc.: *See—*
Lupkas, Raymond R.; and Schubert, Keith E., 3,965,815.
Storace, Anthony; and Sette, Paul R., 3,966,193.
Strobel, Harry, 3,966,191.
Pitt, William A.: *See—*
Bauerle, Richard D.; Pitt, William A.; and White, Mervyn A., 3,965,938.
Pittet, Alan O.; Pascale, John V.; and Hruza, Denis E., to International Flavors & Fragrances Inc. Flavoring methods and compositions. 3,966,989, Cl. 426-535.000.
Pittman, Gloucester R. Hand held garden implement. 3,965,990, Cl. 172-375.000.
Pizzini, Louis C.: *See—*
Patton, John T., Jr.; Pizzini, Louis C.; Demou, John G.; and Ramlow, Gerhard G., 3,966,521.
Plessey Incorporated: *See—*
Fraioli, Anthony V.; and DeRosa, John A., 3,966,463.
Plischke, Eugene W. Retractable blade guard. 3,965,787, Cl. 83-478.000.
Plitzkow, Howard G., to Humphrey Elevator and Truck Company. Braking apparatus for stopping a rotating shaft. 3,966,027, Cl. 188-182.000.
Plotnick, Richard J.: *See—*
Martz, Lyle F.; and Plotnick, Richard J., 3,965,675.

Plotnikov, Andrei Dmitrievich; Soloviev, Viktor Andreevich; Ter-Mateosiants, Tigran Ovanesovich; and Shpakov, Oleg Nikolaevich. Safety device for the drive of a closing member. 3,965,759, Cl. 74-89.140.
Plotz, Kurt; Breschar, Klaus; and Klein, Albert, to Hoechst Aktiengesellschaft. Bituminized roof sheet. 3,967,032, Cl. 428-300.000.
Plumat, Emile; Schottey, Jean; and Toussaint, Francois, to Glaverbel-Mecaniver. Production of colored glass bodies. 3,967,040, Cl. 428-410.000.
Podesva, Ctirad; and Scott, William T., to Delmar Chemicals Limited. Novel amino-indazole compounds. 3,966,761, Cl. 260-310.00C.
Podgurski, Harry H., to United States Steel Corporation. Method for reducing carbon deposits during box annealing. 3,966,509, Cl. 148-16.000.
Podiak, Richard S.: *See—*
Eaton, Carl J.; and Podiak, Richard S., 3,967,149.
Poeschel, Gordon Paul: *See—*
Levy, Stephen David; Poeschel, Gordon Paul; and Schrider, Michael Stanley, 3,966,919.
Polaroid Corporation: *See—*
Cote, Gerald J.; Lewis, John A., Jr.; and Skurski, James K., 3,967,302.
Delahunt, Robert M., 3,967,292.
Eloranta, Vaito K.; and Ruggles, Benjamin C., 3,967,297.
Fischer, Richard V.; and Kee, Richard C., 3,967,303.
Johnson, Bruce K.; and Van Allen, David E., 3,967,304.
Poletto, John Frank: *See—*
Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,966,773.
Poly-Optics, Inc.: *See—*
Elliott, James B., 3,966,166.
Pommer, Ernst-Heinrich: *See—*
Mangold, Dietrich; Zeeh, Bernd; and Pommer, Ernst-Heinrich, 3,966,750.
Pond, George R.: *See—*
Hindin, Saul G.; and Pond, George R., 3,966,391.
Hindin, Saul G.; and Pond, George R., 3,966,790.
Porch, Don E.; Manktelow, Paul W.; and Utz, James E. Collapsible shipping container. 3,966,285, Cl. 312-257.00R.
Portas, Abelardo Antonio; and Pinto, Martin. Method of preventing the formation of frost. 3,965,615, Cl. 47-2.000.
Portmann, Albert; and Papaux, Jean-Claude, to Sodeco-Saia S.A. Snap switch. 3,967,081, Cl. 200-67.0PK.
Posel, John G.; Williams, Gregory P.; and Nilsen, David N., to International Ore Technology, Inc. Recovery of nitric acid soluble transition metals from sulfur and iron containing ores of the same. 3,966,462, Cl. 75-101.0BE.
Posthuma, Albert E.; and Woodhouse, Robert C. Synthetic physiological mucus. 3,965,908, Cl. 128-303.00R.
Potoski, John R.: *See—*
Freed, Meier E.; and Potoski, John R., 3,966,815.
Potter, Ralph K., to Bell Telephone Laboratories, Incorporated. Secret telephony. 3,967,067, Cl. 179-1.50R.
Potts, Gordon O., to Sterling Drug Inc. Composition of a steroidal[2,3-d]-isoxazole and method of use thereof. 3,966,926, Cl. 424-241.000.
Pounds, Walter R., to KB-Denver, Inc. Keyboard switch assemblies having two foot support legs on dome-shaped contact member. 3,967,084, Cl. 200-275.000.
Power Control, Inc.: *See—*
Cottrell, Harold L.; and Mamo, Anthony C., 3,965,680.
PPG Industries, Inc.: *See—*
Carlin, William W., 3,966,576.
Schaefer, William L.; and Briar, Thomas J., 3,965,563.
Sullivan, Thomas R.; Du, John W.; Pelegrinelli, Raymond L.; and Das, Suryya K., 3,966,667.
Pragnell, Robert George: *See—*
Osterfield, John Richard; and Pragnell, Robert George, 3,966,299.
Prasad, Raj Nandan; and Stein, Herman Hal, to Abbott Laboratories. Platelet aggregation inhibitors. 3,966,917, Cl. 424-180.000.
Pratt, Roy E.: *See—*
Bittensky, Joel S.; Dillingham, Edward W.; Menzies, William R., III; and Pratt, Roy E., 3,966,587.
Pravel & Wilson: *See—*
Brooks, William E., 3,967,185.
Preiser, Ralph H.; Stellwagen, Frank W.; and Rigazio, Anthony W., to General Time Corporation. Low power synchronous motor and line cord therefor. 3,967,147, Cl. 310-162.000.
Preud'homme, Jean: *See—*
Mancy, Denise; Ninet, Leon; and Preud'homme, Jean, 3,966,557.
Price Company Limited, The: *See—*
Beath, Laurence R.; and Vessie, Alexander M., 3,967,024.
Price, Edward John, to Colgate-Palmolive Company. Golf club head covers. 3,965,955, Cl. 150-52.00G.
Price Pfister Brass Mfg. Co.: *See—*
Lyon, Jack K., 3,965,936.
Price, Raymond C. Display rack for carpet samples. 3,965,583, Cl. 35-55.000.
Pringle, William: *See—*
Banks, Philip George; and Pringle, William, 3,966,992.
Procter & Gamble Company, The: *See—*
Dumbrell, Richard John, 3,966,629.
Kennedy, Timothy James, 3,966,994.
Oborn, Robert Edward, 3,966,991.
Produits Chimiques Ugine Kuhlmann: *See—*
Cuer, Jean-Pierre; and Texier, Nicole, 3,966,894.
Prokai, Bela, to Union Carbide Corporation. Polyether urethane foam. 3,966,650, Cl. 260-2.5AH.
Prokai, Bela, to Union Carbide Corporation. Polyether urethane foam. 3,966,784, Cl. 260-448.20N.
Proto Production Plastics, Inc.: *See—*
Hotchkiss, Kenneth W.; and Kopp, George A., Sr., 3,966,074.
Proud, Ralph A., Jr.: *See—*
Oliver, Stuart M.; Proud, Ralph A., Jr.; and Parsons, Sanford J., 3,967,255.
Pruitt, Robert L., Jr. Apparatus for affixing prealigned corner posts to box-like structures before assembling same. 3,965,557, Cl. 29-200.00J.
Prussin, Samuel B.; and Lozano, Davis S., to Dart Industries Inc. Package for dispensing an antiseptic composition. 3,966,090, Cl. 222-94.000.
Psensky, Miroslav, to Quaker Oats Company, The. Composite flexible mold. 3,966,165, Cl. 249-120.000.
Puckett, Gregory L.: *See—*
Wesson, Harold R.; Brown, Lester E.; and Puckett, Gregory L., 3,965,988.
Puddington, Ira Edwin: *See—*
Meadus, Frederick Weldon; Sparks, Bryan David; and Puddington, Ira Edwin, 3,967,034.
Puechl, Karl H.: *See—*
Foulds, Ronald B.; Kasberg, Alvin H.; Puechl, Karl H.; and Bleiberg, Melvin L., 3,966,550.
Pugh, Stanley Frederick: *See—*
Cairns, James Anthony; and Pugh, Stanley Frederick, 3,966,645.
Puhringer, Othmar: *See—*
Sernetz, Heinz; Puhringer, Othmar; and Hoscher, Rudolf, 3,965,974.
Pullman Incorporated: *See—*
Peterson, William H., 3,966,150.
Punater, Dinesh G., to Harris Corporation. Ink ductor system. 3,965,819, Cl. 101-350.000.
Puterbaugh, Richard L., to Franklin Manufacturing Company. Refrigeration apparatus and method for making same. 3,966,283, Cl. 312-214.000.
Putnam, Cecil J., Jr., to Putnam Pattern & Engineering Co. Machine tool tracer control system. 3,965,796, Cl. 90-13.00R.
Putnam Pattern & Engineering Co.: *See—*
Putnam, Cecil J., Jr., 3,965,796.
Putnam, Stearns T.: *See—*
Espy, Herbert H.; and Putnam, Stearns T., 3,966,684.
Espy, Herbert H.; and Putnam, Stearns T., 3,966,694.
Pye Limited: *See—*
Hutchings, Bernard David Francis; and Hubbard, Robert William, 3,965,733.
Pytlewski, Raymond: *See—*
Pytlewski, Steve, 3,966,127.
Pytlewski, Steve, to Pytlewski, Raymond; and Pytlewski, Theodore, part interest to each. Centrifugal device and process for concurrently rupturing and pulverizing granular material, particularly cereal grain. 3,966,127, Cl. 241-73.000.
Pytlewski, Theodore: *See—*
Pytlewski, Steve, 3,966,127.
Qantix Corporation: *See—*
Brown, John W., 3,966,301.
Qonaar Corporation: *See—*
Dominick, George G.; Lugowski, Ronald J.; Goodrich, Phillip D.; and Erickson, Kenneth, 3,966,116.
Q^2 Corporation: *See—*
Oliver, Stuart M.; Proud, Ralph A., Jr.; and Parsons, Sanford J., 3,967,255.
Quad Corporation: *See—*
deVries, Egbert, 3,965,698.
Quaker Oats Company, The: *See—*
Psensky, Miroslav, 3,966,165.
Questor Corporation: *See—*
Rousey, Donald L., 3,965,632.
Quick, David C., to Allis-Chalmers Corporation. Differential lubrication system. 3,966,020, Cl. 184-11.00R.
Quinlan, Patrick M., to Petrolite Corporation. Use of polyquaternary ammonium methylene phosphonates in chelating or scale inhibition. 3,966,630, Cl. 252-180.000.
Quoos, Kurt: *See—*
Ahrweiler, Karl-Heinz; Appenzeller, Valentin; Quoos, Kurt; and Kusters, Eduard, 3,965,769.
R. G. LeTourneau, Inc.: *See—*
Friend, Aaron D.; and Lindahl, Hilmer C., 3,967,171.
R.K.S. Societe Anonyme: *See—*
Martin, Jacques Lucien Joseph, 3,966,284.
R. L. Kuss & Co., Inc.: *See—*
Hickle, Jerry J., 3,965,546.
Rabek, Jan W., to Teledyne Industries, Inc. Pressure transducer. 3,965,746, Cl. 73-398.00C.
Rabussier, Bernard: *See—*
Hennart, Claude; Rabussier, Bernard; and Mandon, Jean-Pierre, 3,966,900.
Rachelle Laboratories Italia, S.p.A.: *See—*
Luciano, Franco Paolo, 3,966,808.
Rader Companies, Inc.: *See—*
Boubel, Richard W.; Babler, David C.; and Peter, Donald W., 3,965,748.
Radice, Peter F.: *See—*
King, James Ping; Simkin, Joseph; and Radice, Peter F., 3,966,486.

Radlmann, Eduard: *See—*
Christoph, Geert; Radlmann, Eduard; Nischk, Gunther; Bruns, Ludwig; and Schnuchel, Gunther, 3,966,835.

Ragailler, Franz. Artificial respiration appliance. 3,965,893, Cl. 128-145.800.

Rahaim, Thomas J.: *See—*
Booher, Claude R., Jr.; and Rahaim, Thomas J., 3,966,353.

Raikovsky, Jury Borisovich: *See—*
Andoniev, Sergei Mikhailovich; Zilberman, Leonid Borisovich; Kudinov, Gennady Alexandrovich; Kutsykovich, Dorina Borisovna; Filipiev, Oleg Vladimirovich; Kasyanov, Grigory Ivanovich; Zalmanovich, Grigory Borisovich; and Raikovsky, Jury Borisovich, 3,966,179.

Raimondi, Albert A., to Westinghouse Electric Corporation. High-load capacity, non-tilting thrust bearing. 3,966,279, Cl. 308-160.000.

Raisson, Gerard D.: *See—*
Honnorat, Yves C.; Raisson, Gerard D.; and Morlet, Jean G., 3,966,374.

Ralston Purina Company: *See—*
Carey, Paul L., 3,966,702.

Ramadier, Andre: *See—*
Beduchaud, Michel; and Ramadier, Andre, 3,966,187.

Ramanathan, Visvanathan, to Ciba-Geigy AG. 2,6-Dihydroxy-3-cyano-4-methylpyridine containing azo dyes which contain a functional amino group. 3,966,706, Cl. 260-156.000.

Ramlow, Gerhard G.: *See—*
Patton, John T., Jr.; Pizzini, Louis C.; Demou, John G.; and Ramlow, Gerhard G., 3,966,521.

Rammelt, Peter Paul: *See—*
Lademann, Rudolf; Lindner, Helmut; Martini, Thomas; and Rammelt, Peter Paul, 3,966,832.

Ramot University Authority for Applied Research & Industrial Development Ltd.: *See—*
Brull, Maurice A.; and Arcan, Mircea, 3,966,326.

Randel, John H.: *See—*
Schuppner, Harry R., Jr.; and Randel, John H., 3,966,976.

Randpalu, Adu, to Dominion Engineering Works, Limited. Follower roll suspension system. 3,966,106, Cl. 226-42.000.

Rank Xerox Ltd.: *See—*
Fukushima, Osamu; Matsumoto, Seiji; and Sato, Masamichi, 3,965,861.
Matsumoto, Seiji, 3,967,119.

Rasberger, Michael, to Ciba-Geigy Corporation. 4-Alkyl-1,4-diaza-5-oxo-cycloheptanes and their 1-oxyls. 3,966,711, Cl. 260-239.30R.

Rathgeb, Paul: *See—*
Varsanyi, Denis; Rathgeb, Paul; and Gass, Karl, 3,966,961.

Ratti, Giulio: *See—*
Chain, Ernst Boris; Buck, Kenneth William; Darbyshire, Joan Elizabeth; Banks, Geoffrey Talbot; Himmelweit, Fred; and Ratti, Giulio, 3,966,707.

Rawlings, Robert M.; and Maher, Anthony Ambrose, to Blue Wing Corporation. Feed supplements for ruminants. 3,966,998, Cl. 426-630.000.

Raymond Lee Organization, The: *See—*
Le Sueur, Alice E. J., 3,965,591.

Raymond Lee Organization, Inc., The: *See—*
Brown, Joseph F., 3,966,098.
Gelardi, August P., 3,966,138.
Nelson, Daryl A., 3,966,100.
Tummel, Harold, 3,966,217.

Rayner, George Geoffrey, to Colgate-Palmolive Company. Liquid abrasive compositions containing a silicate suspending agent. 3,966,432, Cl. 51-308.000.

Raytheon Company: *See—*
Chambers, Derek; and Harley, A. Leonard, 3,967,181.
Estlick, Raymond J., 3,965,798.

Razorenov, Vladimir Alexandrovich: *See—*
Khaidurov, Efim Leontievich; and Razorenov, Vladimir Alexandrovich, 3,965,604.

RCA Corporation: *See—*
Fuhrer, Jack Selig, 3,967,311.
Harper, Stanley Arthur, 3,966,474.
Kosonocky, Walter Frank; and Sauer, Donald Jon, 3,967,254.
Liller, Paul Richard, 3,966,287.
Scott, Howard Mulder, 3,967,182.
Stewart, Roger Green, 3,967,295.
Wheatley, Carl Franklin, Jr., 3,967,207.

Reber, Martin. Washbasin faucet installation with auxiliary fitting for mouth spray or similar apparatus. 3,965,937, Cl. 137-625.470.

Redman, Charles M., to United States of America, Army. Low level infrared camera (LLIR Camera). 3,967,121, Cl. 250-330.000.

Redmer, Wilbert; Rolin, Kenneth; and Nittel, Herman, to Abbott Laboratories. Continuous automated plastic molding apparatus. 3,966,038, Cl. 198-20.00R.

Reese, Raymond E., to Frodsham, E. Dale. Disposal vehicle. 3,966,067, Cl. 214-302.000.

Reeves, Tom. Criminal trap. 3,965,827, Cl. 109-3.000.

Regie Nationale des Usines Renault: *See—*
Bellarbre, Raymond; and Legavre, Marcel, 3,966,276.
Remy, Patrick, 3,967,082.
Vitalis, Raymond, 3,966,242.

Reich, Herbert A.; and Maier, Jack K., to United States of America, Army. Line integrated combination magnetic and strain line sensor. 3,967,262, Cl. 340-258.00R.

Reichlin, Erwin. Device for the manufacture and filling of packages. 3,965,651, Cl. 53-183.000.

Reif, Philip G.: *See—*
Almaula, Bipin C.; and Reif, Philip G., 3,967,001.

Reighard, Alan B.: *See—*
Scholl, Charles H.; and Reighard, Alan B., 3,965,856.

Reiland, Harold P., to Langdon Corporation, The. Athlete's landing pit cushion. 3,965,507, Cl. 272-104.000.

Reilly, Richard J.; Cornett, Walter Goza, III; Riddle, James H.; and Wharmby, David, to Respiratory Care, Inc. Disposable fluid collection container. 3,965,902, Cl. 128-276.000.

Reinhardt, Hans; and Ottertun, Harald Daniel, to MX Processor Reinhardt & Co. AB. Method of recovering metal from metalliferous waste. 3,966,569, Cl. 204-108.000.

Reinke, Friedhelm: *See—*
Seulen, Gerhard; Reinke, Friedhelm; and Stengel, Edgar, 3,967,089.

Reisdorff, Josef Helmut; Aichinger, Gerd; Haberkorn, Axel; Kolling, Heinrich; and Kranz, Eckart, to Bayer Aktiengesellschaft. 1-(4-Phenoxy-phenyl)-1,3,5-triazines. 3,966,725, Cl. 260-248.0NS.

Reisser, Fritz: *See—*
Seckinger, Karl; and Reisser, Fritz, 3,966,805.

Reiter, Herbert, to Siemens Aktiengesellschaft. Circuit arrangement for weighting a current according to magnitude and direction. 3,967,137, Cl. 307-235.00R.

Remy, Patrick, to Regie Nationale des Usines Renault; and Automobiles Peugeot. Fluid pressure drop indicator for the hydraulic braking system of a vehicle. 3,967,082, Cl. 200-82.00D.

Renault, Philippe; Deschamps, Andre; and Dezael, Claude, to Institut Francaise du Petrole, des Carburants et Lubrifiants. Process for manufacturing sulfur from a solution of sodium sulfite. 3,966,891, Cl. 423-574.00R.

Rendina, John F.; and Larson, Paul E., to GCA Corporation. Sample introducer. 3,967,127, Cl. 250-441.000.

Renfro, Kenneth W.: *See—*
Guhl, Richard E.; and Renfro, Kenneth W., 3,966,254.

Renkert, John S., to Metropolitan Industries, Inc. Prefabricated building panel and method of making. 3,965,635, Cl. 52-434.000.

Renn, Donald W.; and Saravis, Calvin A., to Marine Colloids, Inc. Medium for use in bioassay and method of using same. 3,966,897, Cl. 424-1.500.

Renth, Ernst-Otto: *See—*
Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Traunecker, Werner, 3,966,814.

Repke, Virginia L.: *See—*
Mesek, Frederick K.; and Repke, Virginia L., 3,965,904.

Republic Steel Corporation: *See—*
Overton, Harold C., 3,966,282.

Research Corporation: *See—*
Winkler, Norlin T., 3,967,129.

Respiratory Care, Inc.: *See—*
Reilly, Richard J.; Cornett, Walter Goza, III; Riddle, James H.; and Wharmby, David, 3,965,902.

Reubens, Clarence Edmond; Campbell, Sterrett Paxton; and Marston, Lloyd Everett, to Paramount Packaging Corporation. Bagging apparatus. 3,965,654, Cl. 53-189.000.

Reul, Helmut: *See—*
Heimes, Horst Peter; and Reul, Helmut, 3,966,358.

Reuterhall, Alf Ragnar: *See—*
Helmer, Karin Ulla Elisabet; and Reuterhall, Alf Ragnar, 3,966,484.

Rexnord Inc.: *See—*
Haker, Edwin J.; Buelow, William H.; and Riddle, Charles F., 3,966,344.
Klatt, Kenneth G.; Walling, Ronald L.; and Hallstrom, James R., 3,966,657.

Reynolds, David E., to Continental Oil Company. Leak detection apparatus. 3,966,088, Cl. 222-63.000.

Reynolds, Dwight W.: *See—*
Kirk, William P.; and Reynolds, Dwight W., 3,966,613.

Reynolds Metals Company: *See—*
Featherston, Richard H.; Fischer, Joseph P.; Garing, Meriwether L.; and Wright, James R., 3,966,874.

Rezabek, Karel: *See—*
Semonsky, Miroslav; Rezabek, Karel; and Seda, Miroslav, 3,966,941.

Rhodes, Tony; and Gay, Derek John, to Mattel, Inc. Machine for placing substantially flat, open-throated elements on rods. 3,965,561, Cl. 29-211.00R.

Rhomberg, Alfred: *See—*
Berger, Herbert; Rhomberg, Alfred; Stach, Kurt; Vomel, Wolfgang; and Sauer, Winfriede, 3,966,743.

Rhone-Poulenc Industries: *See—*
Bargain, Michel, 3,966,531.

Rhone-Poulenc S.A.: *See—*
Gruffaz, Max; and Rollet, Bernard, 3,966,678.
Jeanmart, Claude; Leger, Andre; and Messer, Mayer Naoum, 3,966,931.
Mancy, Denise; Ninet, Leon; and Preud'homme, Jean, 3,966,557.

Rhone-Poulenc-Textile: *See—*
Allard, Pierre, 3,966,685.

Riat, Henri: *See—*
Oesterlein, Fritz; and Riat, Henri, 3,966,705.

Ribba, Alain, to Manufacture de Produits Chimiques Protex. Acrylic copolymers. 3,966,687, Cl. 526-317.000.

Ribka, Joachim; Engelhardt, Friedrich; and Piesch, Steffen, to Cassella Farbwerke Mainkur Aktiengesellschaft. Polymers based on N-formyl-N'-acryloyl-methylenediamines. 3,966,689, Cl. 526-306.000.

Rich Cue of Valley Stream Corporation: *See—*
Algaze, Isaac, 3,965,590.

Richards, Ernest Levon, to Deering Milliken Research Corporation. Wet mop head construction. 3,966,259, Cl. 300-21.000.

Richards, Victor: *See—*
Nessel, Jiri M., 3,965,762.

Richardson, James E.: *See—*
Shafer, Arthur B.; Richardson, James E.; and Shuirman, Jay L., 3,965,514.

Richardson-Merrell Inc.: *See—*
Webb, Norval Ellsworth, Jr., 3,966,949.

Richert, Wilhelm H.: *See—*
Kaplan, John J.; Richert, Wilhelm H.; and Trumblee, John W., 3,965,535.

Richter, Sidney B.; and Kyker, Glendon D., to Velsicol Chemical Corporation. Bis-(halophenyl) 2,3,5,6-tetrachloro-terephthalate and fire retardant compositions prepared therefrom. 3,966,676, Cl. 260-45.75B.

Ricoh Co., Ltd.: *See—*
Hasegawa, Haruo; Taniguchi, Hiroyoshi; Yamane, Shiro; Igawa, Takao; and Nagayama, Tomoshi, 3,966,471.
Kawa, Ryuichi, 3,967,241.
Komada, Kenya; and Kondo, Yoshiaki, 3,966,198.
Sanchez, Fred M.; Shirai, Yukio; Sakakibara, Toshiyuki; and Ohminato, Mitsuru, 3,965,556.

Riddle, Charles F.: *See—*
Haker, Edwin J.; Buelow, William H.; and Riddle, Charles F., 3,966,344.

Riddle, James H.: *See—*
Reilly, Richard J.; Cornett, Walter Goza, III; Riddle, James H.; and Wharmby, David, 3,965,902.

Ridgeway, John C. Lockable vegetation pot and saucer. 3,965,616, Cl. 47-34.00R.

Ridler, Keith Douglas; and Gosling, Alexander Bennett, to Strathearm Audio Limited. Phonograph auto-changer center spindle. 3,966,215, Cl. 274-10.00S.

Ridler, Keith Douglas; and Stanwell-Smith, Colin Howard, to Strathearn Audio Limited. Phonograph record detecting arrangement. 3,966,330, Cl. 356-156.000.

Ridpath, Robert R.; Clifford, Louis R.; and Groot, Hendrik, to TRW Inc. Low-brake fluid sensor. 3,967,238, Cl. 340-59.000.

Riebel, Hans-Jochem; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. O-ethyl-S-n-propyl-O-(2-bromo-4-cyanophenyl)-thionothiolphosphoric acid ester. 3,966,850, Cl. 260-940.000.

Riebel, Hans-Jochem; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. O,S-Dialkyl-O-(2-cyanophenyl)-thionothiolphosphoric acid esters and insecticidal and acaricidal compositions and method. 3,966,920, Cl. 424-210.000.

Riebel, Hans-Jochem: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lother; Behrenz, Wolfgang; Hammann, Ingeborg; Stendel, Wilhelm; and Homeyer, Bernhard, 3,966,730.

Rieber & Son A/S: *See—*
Parmann, Gunnar, 3,965,715.

Riedl, Rudi; Jungnickel, Regina; Nitsch, Rainer; Lein, Werner; Vetter, Lothar; Schone, Helmut; Weisbach, Gunter; Johne, Hans; Schott, Alfred; Forster, Karl-Heinz; and Johne, Albrecht, to VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen. Method and apparatus for controlled feeding of sheets to printing machines or the like. 3,966,197, Cl. 271-260.000.

Riew, Changkiu K.; Siebert, Alan R.; and Rowe, Eugene H., to B. F. Goodrich Company, The. Compositions containing epoxy resin, chain extender, functionally terminated elastomer and curing agent. 3,966,837, Cl. 260-837.00R.

Rigazio, Anthony W.: *See—*
Preiser, Ralph H.; Stellwagen, Frank W.; and Rigazio, Anthony W., 3,967,147.

Rinio, Johannes Augustus. Driving pulley mechanism. 3,965,767, Cl. 74-230.240.

Rivman, Samuel J.; Cohen, Bernard; and Da Costa, Alvaro, to Eastern Poly Packaging Company. Plastic snap fastener. 3,965,952, Cl. 150-3.000.

Rix Industries: *See—*
DeWolf, Charles F.; and Gault, William S., 3,966,437.

Ro-Search, Inc.: *See—*
Auberry, Horace Ray; and Liebscher, Anton, 3,965,517.

Robbins Company, The: *See—*
Fikse, Tyman H., 3,966,256.
Sugden, David B., 3,965,995.

Roberson, Donald L.; and Fronek, Donald K., to United States of America, Army. Dual edge and level (DEL) flip-flop. 3,967,206, Cl. 328-206.000.

Robert Bosch G.m.b.H.: *See—*
Finkbeiner, Ludwig; Jurinke, Rudolf; Leutner, Volkmar; and Romes, Roman, 3,965,918.

Roberts, Allan, to British Broadcasting Corporation. Data display systems. 3,967,268, Cl. 340-324.0AD.

Roberts, Anthony Charles, to Taylor Woodrow Construction, Limited. Prestressed concrete boiler closure. 3,965,630, Cl. 52-224.000.

Roberts, Charles Clifton, to Catalyst Research Corporation. Colorimetric vinyl chloride indicator. 3,966,440, Cl. 55-274.000.

Roberts, Edward O., to United States of America, Air Force. Air bladder seat cushion for high acceleration cockpit. 3,966,146, Cl. 244-122.00A.

Robertshaw Controls Company: *See—*
Bauer, Werner R., 3,967,086.
Rosenberg, David M.; Hild, Henry F.; and Stearley, John W., 3,965,755.

Robinson Brothers Ltd.: *See—*
Stevenson, Arthur; and Harkness, Neil, 3,966,601.

Robison, James W.: *See—*
Eads, Harold O.; and Robison, James W., 3,965,991.

Robitschek, Paul; Chappelie, Norman Andrew; and Lorimer, John Wallace, to Chembond Corporation. Liquid phenol-aldehyde adhesive for use in curtain-coating adhesive applicators. 3,966,658, Cl. 260-29.300.

Roblin Hope's Industries, Inc.: *See—*
Sauer, Gale E., 3,965,631.

Robusto, Paul F.; and Stephens, Craig P., to Hughes Aircraft Company. Sustained conductivity device comprising a plurality of Schottky barriers. 3,967,151, Cl. 313-398.000.

Roch, Gerald V., to Hurco Manufacturing Company, Inc. Adjustable die holder. 3,965,721, Cl. 72-462.000.

Roche, William J., to GTE Sylvania Incorporated. Method and apparatus for non-destructively measuring internal film resistance in a fluorescent lamp. 3,967,191, Cl. 324-20.00R.

Rochling, Hans; and Hartel, Kurt, to Hoechst Aktiengesellschaft. Triazino-bezimidazole fungicides. 3,966,932, Cl. 424-249.000.

Rock, Erich; and Mages, Bernhard, to Blum Gesellschaft m.b.H. Hinge device. 3,965,530, Cl. 16-130.000.

Rockwell International Corporation: *See—*
Anderson, Bruce D.; and Holmes, Alton B., 3,966,028.
Mayer, Abbott F.; and Morgan, David J., 3,967,280.

Rodgers, Gerald L.: *See—*
Ansted, Roger C.; and Rodgers, Gerald L., 3,965,692.

Rodi & Wienenberger, Aktiengesellschaft: *See—*
Ihringer, Gerhard, 3,965,670.

Roe, Anthony Maitland; Slater, Robert Antony; and Loev, Bernard, to Smith Kline & French Laboratories Limited. 1,4-Dihydropyridine compounds in treating hypertension. 3,966,946, Cl. 424-263.000.

Rogers, Charles H.; and Sage, Burton H., Jr., to Corning Glass Works. Automatic focusing system. 3,967,110, Cl. 250-201.000.

Roggenkamp, George H., to Eaton Corporation. Cooling system for semiconductors. 3,965,971, Cl. 165-39.000.

Rohe, Lother: *See—*
Hofer, Wolfgang; Maurer, Fritz; Riebel, Hans-Jochem; Rohe, Lother; Behrenz, Wolfgang; Hammann, Ingeborg; Stendel, Wilhelm; and Homeyer, Bernhard, 3,966,730.

Rohm GmbH: *See—*
Monsheimer, Rolf; and Pfleiderer, Ernst, 3,966,551.

Rohm and Haas Company: *See—*
Barrett, James Henry; and Clemens, David Henry, 3,966,489.
Kilbourn, Edward E.; and Weiler, Ernest D., 3,966,947.

Rohrs, Donald L.: *See—*
Kroger, Douglas J.; Kroger, Donald J.; Jensen, Winton D.; and Rohrs, Donald L., 3,966,076.

Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See—*
Hartung, Winfried, 3,965,735.
Simeth, Claus, 3,966,195.
Simeth, Claus, 3,966,196.

Rolin, Kenneth: *See—*
Redmer, Wilbert; Rolin, Kenneth; and Nittel, Herman, 3,966,038.

Rollei-Werke Franke & Heidecke: *See—*
Adamski, Gunter, 3,967,298.
Waaske, Heinz, 3,967,290.

Rollet, Bernard: *See—*
Gruffaz, Max; and Rollet, Bernard, 3,966,678.

Romero, Juan Alvarez. Footwear fabrication process. 3,965,516, Cl. 12-142.00V.

Romes, Roman: *See—*
Finkbeiner, Ludwig; Jurinke, Rudolf; Leutner, Volkmar; and Romes, Roman, 3,965,918.

Roos, John T.: *See—*
Gibbs, Orville J.; and Roos, John T., 3,966,611.

Roosli, Friedrich. Ski boot cover. 3,965,586, Cl. 36-7.300.

Rorden, Louis H., to Develco, Inc. Wireless subterranean signaling method. 3,967,201, Cl. 325-28.000.

Roschke, Wilfried: *See—*
Kovacs, Jenoe; Jung, Hans; Marx, Matthias; Spoor, Herbert; and Roschke, Wilfried, 3,966,655.

Rose, Edgar, to Outboard Marine Corporation. Single link slide rail suspension system. 3,966,004, Cl. 180-5.00R.

Rose, John Brewster: *See—*
Feasey, Ronald George; and Rose, John Brewster, 3,966,851.

Rosenberg, David M.; Hild, Henry F.; and Stearley, John W., to Robertshaw Controls Company. Control device having locking selector means. 3,965,755, Cl. 74-10.00R.

Rosenberg, Peretz. Fluid regulating devices. 3,965,934, Cl. 137-624.140.

Roser, Kenneth L., to Keystone Consolidated Industries, Inc. Particleboard screw. 3,965,793, Cl. 85-41.000.

Ross, Camilla B.; and Vos, Jerry A., to Union Carbide Corporation. Shirred collagen casing stick having an end closure and method of making the same. 3,965,537, Cl. 17-42.000.

Ross, John D. Filling aid for medicant syringe. 3,965,945, Cl. 141-27.000.

Ross, Stephen T.: *See—*
Kaiser, Carl; and Ross, Stephen T., 3,966,770.

Ross, William D.; and Sievers, Robert E. Analysis for nitrogen compounds by gas chromatography. 3,966,411, Cl. 23-230.00R.

Rossi, Albert, to Exxon Research and Engineering Company. Ethylene backbone polymers in combination with ester polymers having long alkyl side chains are low viscosity distillate fuel cold flow improvers. 3,966,428, Cl. 44-62.000.
Rossi, Paul C.: *See—*
Hannes, Karl; and Rossi, Paul C., 3,965,779.
Rossi, Umberto; and Basili, Pietro, to Societa Italiana Telecommunicazioni Siemens S.p.A. Frequency dividing network with odd integral step-down ratio. 3,967,205, Cl. 328-46.000.
Roth, Helmut, to Eaton Corporation. Fluid supply for occupant restraint system. 3,966,226, Cl. 280-737.000.
Rothmans of Pall Mall (Australia) Limited: *See—*
Fair, Graeme David; Hasmall, Derek Lesley Arthur; Ryan, William Patrick; and Sellman, Edwin John, 3,966,912.
Rousey, Donald L., to Questor Corporation. Fire rated grid. 3,965,632, Cl. 52-232.000.
Roussel-UCLAF: *See—*
Godbille, Etienne; and Tondu, Lucette, 3,966,609.
Martret, Odile Le; and Clemence, Francois, 3,966,950.
Rowe, Eugene H.: *See—*
Riew, Changkiu K.; Siebert, Alan R.; and Rowe, Eugene H., 3,966,837.
Rowe International Inc.: *See—*
Steiner, Larry E., 3,966,047.
Rowley, William N.; and Ehret, Gordon F., to Weil-McLain Co., Inc. Pumping assembly. 3,966,363, Cl. 417-423.00R.
Roxon Oy: *See—*
Juvonen, Esko; and Virtanen, Pentti, 3,965,799.
Roy, Jean Claude, to Hewlett-Packard Company. Display apparatus having improved cursor enhancement. 3,967,266, Cl. 340-324.0AD.
Rozmus, John J. Golf club. 3,966,210, Cl. 273-169.000.
Rozsa, Laszlo; Meszaros, Lajos; and Mogyorodi, Ferenc, to Eszakmagyarorszagi Vegyimuvek. Method for producing chloroformates. 3,966,786, Cl. 260-463.000.
RPC Corporation: *See—*
Fathauer, Jack E., 3,966,069.
RPM Marketing Enterprises, Inc.: *See—*
Metzler, Robert P., 3,966,231.
RPR, Inc.: *See—*
Parker, Robert, 3,965,742.
Rubber Engineering, Inc.: *See—*
Jentzsch, David P.; Anderson, Hyrum T.; and Olsen, Lee J., 3,965,967.
Rubenstein, Kenneth E.; and Ullman, Edwin F., to Syva Company. Compounds for enzyme amplification assay methadone analogs. 3,966,556, Cl. 195-63.000.
Rubin, Leon J.: *See—*
Bharucha, Kekhusroo R.; Cross, Charles K.; and Rubin, Leon J., 3,966,974.
Rudolph, Hans: *See—*
de Cleur, Eckhard; Dhein, Rolf; Rudolph, Hans; and Kreuder, Hans Joachim, 3,966,836.
Rufenacht, Kurt: *See—*
Beriger, Ernst; Kristiansen, Odd; Rufenacht, Kurt; and Bader, Jorg, deceased, 3,966,921.
Bohner, Beat; Dawes, Dag; Meyer, Willy; Kristinsson, Haukur; and Rufenacht, Kurt, 3,966,754.
Rufer, Clemens; Schroder, Eberhard; and Kessler, Hans-Joachim, to Schering Aktiengesellschaft. Nitroimidazolyl pyrimidines. 3,966,732, Cl. 260-256.40C.
Ruggles, Benjamin C.: *See—*
Eloranta, Vaito K.; and Ruggles, Benjamin C., 3,967,297.
Rule, Norman G.: *See—*
Contois, Lawrence E.; and Rule, Norman G., 3,966,468.
Runion, William A.: *See—*
Hastings, Charles E.; and Runion, William A., 3,967,277.
Rupp, Peter R. R.: *See—*
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Rush, William F.; Macriss, Robert A.; and Weil, Sanford A., to Gas Developments Corporation. Metallic sensible heat exchanger. 3,965,695, Cl. 62-271.000.
Russell, James B.: *See—*
Anderson, Robert L., Jr.; and Russell, James B., 3,967,270.
Russell, Lewis K.: *See—*
Muller, Richard S.; and Russell, Lewis K., 3,967,307.
Russo, Gary L.: *See—*
Hartey, Robert M., deceased; and Russo, Gary L., 3,966,119.
Rutherfoord, James K.: *See—*
Bussey, Francis H., Jr.; and Rutherfoord, James K., 3,966,383.
Rutherford, David: *See—*
Suschitzky, John Louis; and Rutherford, David, 3,966,783.
Rutt, Truman C., to N L Industries, Inc. Process for forming internal conductors and electrodes. 3,965,552, Cl. 29-25.420.
Ryan, William Patrick: *See—*
Fair, Graeme David; Hasmall, Derek Lesley Arthur; Ryan, William Patrick; and Sellman, Edwin John, 3,966,912.
Ryobi, Ltd.: *See—*
Ishii, Koji, 3,965,818.
S. C. Johnson & Son, Inc.: *See—*
Hermann, James F., 3,965,519.
Muoio, Erland L., 3,965,518.
Sabo, Stephen C: *See—*
Babbin, William R.; and Sabo, Stephen C., 3,966,387.
Sachs, Charles E., to Commissariat a l'Energie Atomique. Apparatus for the sampling of blood and the separation of plasma under anaerobic conditions. 3,965,889, Cl. 128-2.00F.
Sacks, Martin E., to Cogas Development Company. Gasification method. 3,966,634, Cl. 252-373.000.
Sadan, Abraham. Concentration of underground brines in situ by solar evaporation. 3,966,541, Cl. 159-47.00R.
Sadoski, Tadius T.: *See—*
Milke, Howard W.; and Sadoski, Tadius T., 3,967,153.
Sadowski, Edward Peter, to International Nickel Company, Inc., The. Flux-coated arc welding electrode. 3,967,036, Cl. 428-386.000.
Safir, Sidney Robert: *See—*
Crawley, Lantz Stephen; and Safir, Sidney Robert, 3,966,756.
Hofmann, Corris Mabelle; and Safir, Sidney Robert, 3,966,748.
Sage, Burton H., Jr.: *See—*
Rogers, Charles H.; and Sage, Burton H., Jr., 3,967,110.
Sahasrabudhe, Arun P., to Westinghouse Electric Corporation. Signal threshold responsive apparatus. 3,966,148, Cl. 246-34.00R.
Sahasrabudhe, Arun P.: *See—*
Matty, Thomas C.; and Sahasrabudhe, Arun P., 3,966,149.
Saint-Gobain Industries: *See—*
Nunes, Emmanuel; and Vervin, Jacques, 3,966,048.
Saito, Jiro; Kimura, Kaoru; Kusuhara, Hiroshi; and Nakaguma, Kazuyoshi, to Ohbayashi-Gumi, Ltd.; and Japan Vilene Company, Ltd. Drain sheet material. 3,965,686, Cl. 61-11.000.
Saito, Yukio: *See—*
Tsukamoto, Kazuyoshi; Sakauchi, Yoshiaki; Saito, Yukio; and Ushijima, Kazufumi, 3,967,057.
Sakai, Hiroshi; Takeuchi, Fumio; and Hanake, Tsutomu, to Nippon Oils and Fats Company Limited. Slurry explosive composition containing a nitroparaffin and an amide. 3,966,516, Cl. 149-60.000.
Sakai, Kiyotoshi. Apparatus for charging raw materials into blast furnaces. 3,966,062, Cl. 214-35.00R.
Sakakibara, Toshiyuki: *See—*
Sanchez, Fred M.; Shirai, Yukio; Sakakibara, Toshiyuki; and Ohminato, Mitsuru, 3,965,556.
Sakamoto, Jyunji; Shiratani, Eisuke; and Imaizumi, Norio, to Tokyo Sanyo Electric Company, Ltd.; and Sanyo Electric Co., Ltd. Pulse generator stabilized for change of ambient temperature and source voltage. 3,967,216, Cl. 331-111.000.
Sakanai, Noriyuki: *See—*
Fukushima, Yoshikiyo; Momota, Kenzo; Shirahata, Hideaki; and Sakanai, Noriyuki, 3,966,375.
Sakata, Nobuhiro; and Suzuki, Toshihiro, to Nippon Pelnox Corporation; and Nippon Sheet Glass Co., Ltd. Coating composition for hardening the surface of cellulosic plastics and shaped articles of cellulosic plastics using said coating composition. 3,966,665, Cl. 260-32.80R.
Sakauchi, Yoshiaki: *See—*
Tsukamoto, Kazuyoshi; Sakauchi, Yoshiaki; Saito, Yukio; and Ushijima, Kazufumi, 3,967,057.
Sakurada, Ichio: *See—*
Ito, Shunji; Morioka, Yasuaki; Kajinaga, Yoshihiro; Nitta, Minoru; and Sakurada, Ichio, 3,966,454.
Sakurai, Yoshitoshi; Okura, Takao; and Tanaka, Miniru, to Honda Giken Kogyo Kabushiki Kaisha. Internal combustion engine. 3,965,881, Cl. 123-32.0SP.
Salway, Peter Hugh, to Lucas Electrical Company Limited, The. Spark ignition systems for internal combustion engines. 3,965,878, Cl. 123-148.00E.
Salzman, Donald F.: *See—*
Lorentz, Merle J.; and Salzman, Donald F., 3,965,866.
Sample, Lawrence Ray, to Motorola, Inc. Color television chroma demodulator circuit. 3,967,312, Cl. 358-23.000.
Sanchez, Fred M.; Shirai, Yukio; Sakakibara, Toshiyuki; and Ohminato, Mitsuru, to Ricoh Co., Ltd. Jacket holder. 3,965,556, Cl. 29-200.00J.
Sanders, Ernest E.: *See—*
Hollister, Ralph O.; and Sanders, Ernest E., 3,966,051.
Sandford, Wayne H., Jr., to United States of America, Navy. Digital to analog converter. 3,967,272, Cl. 340-347.0DA.
Sandoval, Secundino Rodriquez, to Investigaciones Tecnologicas Electromecanicas y Electronicas, S.A. Cartridge assembly for record player tone arm. 3,966,216, Cl. 274-25.000.
Sandoz Ltd.: *See—*
Ott, Hans; and Suess, Rudolf, 3,966,938.
Seckinger, Karl; and Reisser, Fritz, 3,966,805.
Stoll, Paul; and Toth, Istvan, 3,966,774.
Sandvik Aktiebolag: *See—*
Faber, Kurt Heinrich Albert Erich, 3,965,553.
Sanford, George G., Jr.: *See—*
Cachuela, Lawrence P.; and Sanford, George G., Jr., 3,967,103.
Sanford, Walter E., Jr.; and Rupp, Peter R. R., to Aladdin International, Inc. Two member pouring device having vent. 3,966,099, Cl. 222-478.000.
Sangster, Frederik Leonard Johan: *See—*
Teer, Kees; and Sangster, Frederik Leonard Johan, 3,967,055.
Sankyo Company Limited: *See—*
Aoki, Atsushi; Fukuda, Rikiya; Nakayabu, Toshio; Ishibashi, Keijiro; Takeichi, Chiyoko; and Ishida, Mitsuo, 3,966,914.
Sano, Akira: *See—*
Kawamata, Masanobu; Ushimaru, Hirokazu; Sano, Akira; and Takahashi, Yutaka, 3,966,918.
Sanyo Electric Co.: *See—*
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Sanyo Electric Co., Ltd.: *See—*
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Sakamoto, Jyunji; Shiratani, Eisuke; and Imaizumi, Norio, 3,967,216.
Saravis, Calvin A.: *See—*
Renn, Donald W.; and Saravis, Calvin A., 3,966,897.
Sargeant, Graham Kenwood: *See—*
Emblem, Harold Garton; and Sargeant, Graham Kenwood, 3,967,003.
Saroy Engineering: *See—*
Shiber, Samuel, 3,966,010.
Sasaya, Hideaki; and Kobayashi, Akihiro, to Nippon Soken, Inc. Collision detection device. 3,967,079, Cl. 200-61.45R.
Sase, Eizo. Paper feeding apparatus for an automatic plane type paper punching machine. 3,966,059, Cl. 214-8.5SS.
Sato, Akira: *See—*
Hinata, Masanao; Takei, Haruo; Ikeda, Tadashi; Ogawa, Akira; Sato, Akira; and Iwamoto, Atsuo, 3,966,477.
Sato, Chosei; Yamada, Yasutoku; and Takenaka, Yoshiyuki, to Showa Denko Kabushiki Kaisha. Device for waste heat recovery and sand removal in the Bayer process. 3,966,537, Cl. 159-2.00R.
Sato, Katsunobu; Sueda, Yoshihisa; Izutsutani, Yoshiro; Imada, Kunihiko; and Ohtake, Katsumasa, to Sumitomo Chemical Company, Limited. Azo disperse dye mixtures. 3,966,399, Cl. 8-26.000.
Sato, Masamichi, to Fuji Photo Film Co., Ltd. Method for producing a photomask. 3,966,473, Cl. 96-36.000.
Sato, Masamichi: *See—*
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Sato, Mikio: *See—*
Toriyama, Kazuhisa; Abe, Hidetoshi; Nakano, Fumio; Murao, Kenji; and Sato, Mikio, 3,966,631.
Sato, Shigeyuki: *See—*
Kuroiwa, Moriji; Araga, Toshimi; Ito, Nobuhiro; Sato, Shigeyuki; and Takahashi, Hidero, 3,967,045.
Satzinger, Gerhard; and Herrmann, Manfred Franz, to Warner-Lambert Company. Thymol derivatives and a process for their preparation. 3,966,779, Cl. 260-404.000.
Satzinger, Gerhard; and Herrmann, Wolfgang Dieter, to Warner-Lambert Company. Process for the preparation of 1-(m- and p-hydroxyphenyl)-2-aminoethanol. 3,966,813, Cl. 260-570.600.
Saucier, Michel: *See—*
Monkovic, Ivo; Saucier, Michel; Lambert, Yvon; and Montzka, Thomas Alfred, 3,966,747.
Sauer, Donald Jon: *See—*
Kosonocky, Walter Frank; and Sauer, Donald Jon, 3,967,254.
Sauer, Gale E., to Roblin Hope's Industries, Inc. Fire rated grid-member with controlled expansion means. 3,965,631, Cl. 52-232.000.
Sauer, Winfriede: *See—*
Berger, Herbert; Rhomberg, Alfred; Stach, Kurt; Vomel, Wolfgang; and Sauer, Winfriede, 3,966,743.
Saunders, Jack L. Magnetic toy. 3,965,613, Cl. 46-238.000.
Savides, Christos: *See—*
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Sawa, Toshio: *See—*
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Saxon, Richard A., to Burroughs Corporation. Circuit for operating a bar graph display panel. 3,967,158, Cl. 315-169.0TV.
Sayles, David C., to United States of America, Army. Fire-retardant insulation for rocket motors. 3,966,663, Cl. 260-31.40R.
Sbragia, Ronald J.: *See—*
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Schaefer, William L.; and Briar, Thomas J., to PPG Industries, Inc. Method and apparatus for removing cutting blades from an annular cutting head. 3,965,563, Cl. 29-427.000.
Schaffling, Otto G., to Olin Corporation. Solid rocket motor. 3,965,676, Cl. 60-255.000.
Schaffner, Carl P.; and Gordon, Harry W., to Schmid Laboratories, Inc. Method for treating hypercholesterolemia with mediocidin. 3,966,910, Cl. 424-115.000.
Schaffner, Carl P.: *See—*
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Schain, David B.; and Kagan, Morton R. Tennis serve practice device and method of using same. 3,966,205, Cl. 273-29.00A.
Schallus, Erich: *See—*
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Scharrer, Werner; and Beyer, Fritz, to Stettner & Co. Multiple miniature capacitor. 3,967,167, Cl. 317-242.000.
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Scheiber, Werner, to Metallgesellschaft Aktiengesellschaft. Apparatus for coating of hollow bodies. 3,965,854, Cl. 118-66.000.
Schellenberg, Walter, to Max Sandherr AG. Box with a membrane which seals the box. 3,966,114, Cl. 229-51.0CE.
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Scherrer, Igor; and Hersberger, Pierre, to Ebarches S.A. Device for the maintenance and control of the oscillations of the balance wheel of a timepiece. 3,965,667, Cl. 58-28.00A.
Schertz, Burtron D.: *See—*
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Scherzer, Julius; and Maher, Philip K., to W. R. Grace & Co. Rare earth transition metal exchanged faujasites and catalysts prepared therefrom. 3,966,643, Cl. 252-455.00Z.
Schexnayder, Lawrence F., to Caterpillar Tractor Co. Hydraulic circuit. 3,966,066, Cl. 214-146.00R.
Schillo, Robert Frederick, to Bell Telephone Laboratories, Incorporated. Telephone station identification system. 3,967,074, Cl. 179-18.0FH.
Schimmer, Rigobert: *See—*
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Schlage, Ernest L. Electric power coupler. 3,966,289, Cl. 339-4.000.
Schlapfer, Hans, to Ciba-Geigy Corporation. Coumarin derivatives. 3,966,755, Cl. 260-308.00A.
Schleppnik, Alfred A., to Monsanto Company. 2-Alkyl-oct-5-en-2-ols in fragrance compositions. 3,966,648, Cl. 252-522.000.
Schlumberger Technology Corporation: *See—*
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Schmid, August, to Patentverwertungs - und Finanzierungsgesellschaft, SERANIA. Bowling pin alignment apparatus to uniformly align bowling pins end-for-end. 3,966,206, Cl. 273-43.00E.
Schmid Laboratories, Inc.: *See—*
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Schmidt, Felix Helmut: *See—*
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Schmitt, Josef, deceased (by Schmitt, Marcelle Armande Georgette, administratrix), to Clin Midy. Intermediates for preparing 1,4-benzodiazepine-2-ones having a carboxylic acid ester or amide group in the 3-position. 3,966,793, Cl. 260-471.00A.
Schmitt, Marcelle Armande Georgette, administratrix: *See—*
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Schmitt, Otto, to Dunlop Limited. Tire building machinery. 3,966,536, Cl. 156-401.000.
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Schneider, Heinrich; and Boser, Ernst, to Klockner-Humboldt-Deutz Aktiengesellschaft. Pressure roller stand for forcible longitudinal displacement of large rotating drums. 3,966,395, Cl. 432-103.000.
Schneider, Henry Allen, to Breakthrough Research & Development Corporation. Portable vehicle scales. 3,966,002, Cl. 177-136.000.
Schneider, John J.: *See—*
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Scholl, Charles H.; and Reighard, Alan B., to Nordson Corporation. Adhesive wheel applicator device. 3,965,856, Cl. 118-202.000.
Scholten, Frank L.; and Kubinak, Ronald A., to Addressograph Multigraph Corporation. Photocomposition machine. 3,967,177, Cl. 318-603.000.
Scholten, Heinz: *See—*
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Riedl, Rudi; Jungnickel, Regina; Nitsch, Rainer; Lein, Werner; Vetter, Lothar; Schone, Helmut; Weisbach, Gunter; Johne, Hans; Schott, Alfred; Forster, Karl-Heinz; and Johne, Albrecht, 3,966,197.
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Schrider, Michael Stanley: *See—*
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Schromm, Kurt; Mentrup, Anton; Renth, Ernst-Otto; and Traunecker, Werner, to Boehringer Ingelheim GmbH. 1-Phenyl-2-(Naphthylalkyl-amino)-ethanols and salts thereof. 3,966,814, Cl. 260-570.600.
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Schulte-Elte, Karl-Heinrich; Joyeux, Michel; and Ohloff, Gunther, to Firmenich S.A. Sesquiterpenic derivatives as odor- and taste modifying agents. 3,966,819, Cl. 260-586.00F.
Schultz, Gerhard L. Cargo container. 3,966,075, Cl. 220-1.500.
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Schultz, Ronald L., to Chromalloy-Alcon Inc. Phonojack with grounding tab clamping means. 3,966,292, Cl. 339-91.00P.
Schultz, William G., to United States of America, Agriculture. Process for removing residual solvents. 3,966,981, Cl. 426-425.000.
Schultze, Hermann E.; and Schwick, Hans Gerhard, to Behringwerke Aktiengesellschaft. Disaggregated gamma globulin and process for preparing it. 3,966,906, Cl. 424-85.000.
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Schumacher, Gustav, II; and Schumacher, Guenter. Grain lifter for a corn reaping machine. 3,965,659, Cl. 56-313.000.
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Schuman, Mark. Manually operated suction device for capturing small objects. 3,965,608, Cl. 43-110.000.
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Schuppner, Harry R., Jr.; and Randel, John H., to Merck & Co., Inc. Foam stable malt beverage. 3,966,976, Cl. 426-329.000.
Schurdak, Edward Joseph; and Savides, Christos, to American Cyanamid Company. Thermal stabilizers for polypropylene. 3,966,675, Cl. 260-45.8NT.
Schwan, Thomas J., to Morton-Norwich Products, Inc. 2-Methyl-3-phenyl-1,2,3,7,8,8a-hexahydro-1H-cyclopent[i,j]-isoquinoline hydrobromide. 3,966,740, Cl. 260-286.00R.
Schwan, Thomas J.; and Miles, Nelson J., to Morton-Norwich Products, Inc. Anti-inflammatory 1-(substituted benzyl)-2-imidazolidinones. 3,966,758, Cl. 260-309.700.
Schwan, Thomas J., to Morton-Norwich Products, Inc. 1-(3,4-Dichlorobenzyl)-3-indazolinone. 3,966,759, Cl. 260-310.00A.
Schwan, Thomas J.; Davis, Charles S.; and Honkomp, Leroy J., to Morton-Norwich Products, Inc. 2-Substituted-5,6-dimethoxyindazoles. 3,966,760, Cl. 260-310.00C.
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Senda, Yasuhiro; and Ando, Sumitoshi, to Kokusai Denshin Denwa Kabushiki Kaisha. Control system of an electronic exchange. 3,967,250, Cl. 340-172.500.
Senet, Jean-Pierre G.; and Deweerdt, Julien C., to Societe Nationale des Poudres et Explosifs. Process for the preparation of aliphatic diol polycarbonates. 3,966,788, Cl. 260-463.000.
Sernetz, Heinz; Puhringer, Othmar; and Hoscher, Rudolf, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Continuous casting plant. 3,965,974, Cl. 165-89.000.
Serre, Hubert, to Pierre Fabre S.A. Medicaments intended for the prevention and treatment of ischemic disturbances. 3,966,923, Cl. 424-232.000.
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Sheppard, M. Egan. Mixing support for castable material. 3,966,094, Cl. 222-187.000.
Sherman, Earle Conrad, to Olinkraft, Inc. Topper unit, machine and method. 3,965,643, Cl. 53-29.000.
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Shriver, David A.; and Gluckman, Melvyn I., to American Home Products Corporation. Anti-ulcer therapy. 3,966,955, Cl. 424-273.000.
Shubert, Albert, to Ameron, Inc. Apparatus for troweling pipe lining material. 3,966,389, Cl. 425-460.000.
Shuirman, Jay L.: *See—*
Shafer, Arthur B.; Richardson, James E.; and Shuirman, Jay L., 3,965,514.
Shuster, Edward J.: *See—*
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Siczek, Bernard W., to Graco Inc. Overrun valve for air pumps. 3,965,927, Cl. 137-460.000.
Siebert, Alan R.: *See—*
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Aquila, Werner; Himmele, Walter; Fliege, Werner; and Siegel, Hardo, 3,966,827.
Siegwart, Emil. Flow regulator for ducts. 3,965,928, Cl. 137-499.000.
Siemens Aktiengesellschaft: *See—*
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Muller, Klaus; and Bohm, Bernhard, 3,966,548.
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Sigworth, Frederick J., to Systron Donner Corporation. Low noise electronic circuit, transducer using the same, and method. 3,967,064, Cl. 179-1.00P.
Sika, Zigurd Karlovich: *See—*
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Silverberg, Morton, to Xerox Corporation. Belt transfer loading system. 3,966,199, Cl. 271-275.000.
Simek, Ferenc: *See—*
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Simeth, Claus, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Sheet delivery mechanism. 3,966,195, Cl. 271-189.000.
Simeth, Claus, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Sheet delivery mechanism. 3,966,196, Cl. 271-218.000.
Simkin, Joseph: *See—*
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Furgalus, Keith A.; and Simmons, Harold C., 3,966,120.
Simon, Oskar: *See—*
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Simowaki, Kazuharu: *See—*
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Sims, Willard M., to Foster Grant Co., Inc. Homogeneous blends of polyamides with vinyl aromatic resins. 3,966,839, Cl. 260-857.0UN.

Singer Company, The: *See—*
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Singleton, Frank Henry; Gosden, Derek Vernon; and Woodhouse, Graham, to Woodall-Duckham, Limited. Gas purification. 3,966,876, Cl. 423-233.000.

Sipek, Ladislav; and Smars, Erik, to Centro-Maskin i Goteborg AB. Method and apparatus for thermochemical gas scarfing. 3,966,504, Cl. 148-9.500.

Sipple, Douglas E.: *See—*
Woltenholme, Charles T.; and Sipple, Douglas E., 3,965,776.

Sircar, Jagadish C.; Zinnes, Harold; and Shavel, John, Jr., to Warner-Lambert Company. Process for producing benzothiopyrans. 3,966,765, Cl. 260-327.0TH.

Sirven, Jacques. Hydraulic shock absorber for vehicle suspension. 3,966,030, Cl. 188-318.000.

Sjodin, Arne V.: *See—*
Sjoquist, John A.; and Sjodin, Arne V., 3,966,898.

Sjoman, Carl F., to Team Industries. Brief folding and packaging apparatus. 3,965,647, Cl. 53-117.000.

Sjoquist, Erik Ivar: *See—*
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Sjoquist, John A.; and Sjodin, Arne V., to Pharmacia Diagnostics AB. Method and reagent for determining immunologic materials. 3,966,898, Cl. 424-12.000.

Skobel, Max. Balanced flow cross-head. 3,965,931, Cl. 137-561.00A.

Skomoroski, Robert M.: *See—*
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Skoures, Alexander E.; and Farace, Joseph N., to United States of America, Navy. Discriminating sonic detection system. 3,967,209, Cl. 330-86.000.

Skurski, James K.: *See—*
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Slater, Robert Antony: *See—*
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Slipiec, Romuald E.; and Schultz, Ronald A., to Ozone Incorporated. Corona discharge ozone generating unit. 3,967,131, Cl. 250-539.000.

Slovensky, Mike J., Jr., to Cleveland Hardware & Forging Co. Method of making a latching assembly. 3,965,564, Cl. 29-434.000.

Small, Hamish: *See—*
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Sipek, Ladislav; and Smars, Erik, 3,966,504.

Smiley, Don A. Hub cap locking device. 3,965,708, Cl. 70-166.000.

Smith, Carroll M.: *See—*
Hughes, John Lawrence; Seyler, Jay Kenneth; and Smith, Carroll M., 3,966,724.

Smith, Charles E. Transporting apparatus. 3,965,843, Cl. 115-19.000.

Smith, Clive Percy, to Imperial Chemical Industries Limited. Polyester composition. 3,966,671, Cl. 260-40.00R.

Smith, Edwin W., Jr.: *See—*
Brissette, Edward C.; and Smith, Edwin W., Jr., 3,965,525.

Smith, Gordon Frederick; and Budd, Michael Keith, to Alcan Research and Development Limited. Lubricants for cold working of aluminium. 3,966,619, Cl. 252-32.500.

Smith, Gordon R. Self-launching glider. 3,966,143, Cl. 244-16.000.

Smith, Howard S., to Westinghouse Electric Corporation. Method for forming wound circular magnetic cores into rectangular cores. 3,965,717, Cl. 72-364.000.

Smith International, Inc.: *See—*
Williamson, Joseph Stephen, 3,965,980.

Smith Kline & French Laboratories Limited: *See—*
Roe, Anthony Maitland; Slater, Robert Antony; and Loev, Bernard, 3,966,946.

Smith, Ora M.: *See—*
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Van Hoeven, Helene E. Bowman; Brenner, L. Martin; and Loev, Bernard, 3,966,945.

Smulewicz, Jan J., to Nuclear Associates, Inc. Infant immobilizing device. 3,967,128, Cl. 250-444.000.

Snam Progetti S.p.A.: *See—*
Arrighetti, Sergio; Brancaccio, Aldo; Cesca, Sebastiano; and Giuliani, Gianpaolo, 3,966,844.
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Sobajima, Shigenobu; Okaniwa, Hiroshi; Chiba, Kiyoshi; and Takagi, Norio, to Teijin Limited. Method for forming images by differential oxidation. 3,967,285, Cl. 346-74.00E.

Societa' Farmaceutici Italia S.p.A.: *See—*
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Societa Italiana Telecommunicazioni Siemens S.p.A.: *See—*
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Societe Anonyme dite ATO CHIMIE: *See—*
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Societe Anonyme Francaise du Ferodo: *See—*
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Societe Anonyme: Glaenzer Spicer: *See—*
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Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
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Societe d'Etudes Verrieres: *See—*
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Societe Meusienne de Constructions Mecaniques: *See—*
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Societe Nationale des Poudres et Explosifs: *See—*
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Sokolov, Nikolai Anatolievich: *See—*
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Sola Basic Industries, Inc.: *See—*
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Solitron Devices, Inc.: *See—*
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Solomon, Arthur H., to Arthur D. Little, Inc. Modulator for digital microwave transmitter. 3,967,217, Cl. 332-9.00R.

Soloviev, Viktor Andreevich: *See—*
Plotnikov, Andrei Dmitrievich; Soloviev, Viktor Andreevich; Ter-Mateosiants, Tigran Ovanesovich; and Shpakov, Oleg Nikolaevich, 3,965,759.

Solvay & Cie: *See—*
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Somekh, George Solomon, to Union Carbide Corporation. Process for the separation of aromatic hydrocarbons from a mixed hydrocarbon feedstock. 3,966,589, Cl. 208-321.000.

Someya, Shinzo: *See—*
Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Toki, Tadaaki; and Someya, Shinzo, 3,966,453.

Sommer, Alfred, to Ceramic Magnetics, Inc. Method of making thin film thermistor. 3,966,578, Cl. 204-192.000.

Somogyi, Bela, to Hughes Aircraft Company. Electronic watch construction. 3,965,665, Cl. 58-23.0BA.

Sonoyama, Yuzo; Ohi, Akira; and Hozumi, Yukio, to Daicel Ltd. Self-extinguishing polystyrene resin composition. 3,966,677, Cl. 260-45.85T.

Sony Corporation: *See—*
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Sood, Raman Radha: *See—*
Farago, Frank John; Sood, Raman Radha; and Stokes, David Michael, 3,966,560.

Soodak, Charles; and Macemon, James H., to Baxter Laboratories, Inc. Wavelength-corrected spectrofluorometer. 3,967,113, Cl. 250-214.00C.

South African Inventions Development Corporation: *See—*
Berrange, Aubrey Ralph, 3,966,346.

Southern, John H.: *See—*
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Southern Webbing Mills: *See—*
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Spaeth, Edmund E.: *See—*
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Spain, Raymond G. Two piece brake disc. 3,966,029, Cl. 188-218.0XL.

Sparks, Bryan David: *See—*
Meadus, Frederick Weldon; Sparks, Bryan David; and Puddington, Ira Edwin, 3,967,034.

Spears, Wayne. Apparatus for forming a groove in a tube. 3,966,385, Cl. 425-393.000.

Speck, Ronald M. Earthquake valve. 3,965,917, Cl. 137-38.000.

Spector, George: *See—*
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Spencer, Elbert: *See—*
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Spencer, William H., to Bell & Howell Company. Temperature compensation circuit for sensor of physical variables such as temperature and pressure. 3,967,188, Cl. 323-75.00B.

Sperry, Philip R.: *See—*
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Sperry Rand Corporation: *See—*
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Dietrich, John Peter, 3,967,236.
Moore, Harry W., III; and McGee, Richard R., 3,967,059.

Spierings, Ferdinand Hubert Franciscus Gerardus. Hall-voltage device. 3,967,144, Cl. 310-10.000.

Spink, Donald R., to Amax Speciality Metal Corporation. Separation of zirconium and hafnium. 3,966,458, Cl. 75-84.500.

Spink, Donald R., to Amax Specialty Metal Corporation. Reduction of metal halides. 3,966,460, Cl. 75-84.400.

Spofa United Pharmaceutical Works: *See—*
Semonsky, Miroslav; Rezabek, Karel; and Seda, Miroslav, 3,966,941.

Spoor, Herbert: *See—*
Kovacs, Jenoe; Jung, Hans; Marx, Matthias; Spoor, Herbert; and Roschke, Wilfried, 3,966,655.

Spradlin, Erdman O. Method for high density recording of source credit transaction data. 3,965,820, Cl. 101-426.000.

Sprague, James W.; Feldman, Daniel W.; and Veatch, Frank, to Standard Oil Company. Manganese containing fuels. 3,966,429, Cl. 44-68.000.

Springer, Hartmut: *See—*
Meininger, Fritz; Hunger, Klaus; and Springer, Hartmut, 3,966,704.

Sproule, Robert Stanley. Drag reduction system in shrouded turbo machine. 3,966,351, Cl. 415-110.000.

Spurgeon, Richard C. False twisting device. 3,965,662, Cl. 57-77.330.

Square D Company: *See—*
Davies, Terrence Ardern, 3,966,464.

Srivastava, Dinesh K.; and Lee, David Q., to GTE Automatic Electric Laboratories Incorporated. Memory operation for 3-way communications. 3,967,070, Cl. 179-15.0AT.

Stach, Kurt: *See—*
Berger, Herbert; Rhomberg, Alfred; Stach, Kurt; Vomel, Wolfgang; and Sauer, Winfriede, 3,966,743.
Kampe, Wolfgang; Fauland, Erich; Stach, Kurt; Stork, Harald; and Schmidt, Felix Helmut, 3,966,916.

Stadelmann, Ludwig; and Bauer, Fritz, to Suspa Federungstechnik Fritz Bauer & Sohne oHG. Lengthwise-adjustable gas spring. 3,966,182, Cl. 267-124.000.

Standard Electric Time Corporation: *See—*
Costantini, Joseph A.; Flint, Glen E.; and Lanier, Richard J., 3,966,107.

Standard Oil Company: *See—*
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Standard Pressed Steel Co.: *See—*
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Standardwerk Eugen Reis GmbH: *See—*
Gross, Erwin, 3,965,912.

Stanley, Richard B. Linear actuator. 3,965,761, Cl. 74-89.150.

Stantial, Thomas D.: *See—*
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Stanwell-Smith, Colin Howard: *See—*
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Stark, Bernard Peter: *See—*
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Stauffer Chemical Company: *See—*
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Baker, Don R.; Walker, Francis H.; and Letchworth, Peter E., 3,966,809.
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Stauter, John C.: *See—*
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Stearley, John W.: *See—*
Rosenberg, David M.; Hild, Henry F.; and Stearley, John W., 3,965,755.

Steele, Robert E., to General Motors Corporation. Vehicle anti-theft alarm circuit. 3,967,239, Cl. 340-63.000.

Steffenssen, Otto: *See—*
Beyer-Olsen, Knut; and Steffenssen, Otto, 3,966,386.

Stehle, Edward J.: *See—*
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Stein, Herman Hal: *See—*
Prasad, Raj Nandan; and Stein, Herman Hal, 3,966,917.

Stein, William H., Jr., to Hill-Rom Company, Inc. Adjustable bed with automatic knee break. 3,965,500, Cl. 5-68.000.

Steinbeck, Hermann: *See—*
Hofmeister, Helmut; Laurent, Henry; Wiechert, Rudolf; Annen, Klaus; and Steinbeck, Hermann, 3,966,713.

Steinberg, Julius M.: *See—*
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Steiner, Larry E., to Rowe International Inc. Paper currency acceptor. 3,966,047, Cl. 209-75.000.

Steinkamp, Robert A.: *See—*
Van Brederode, Robert A.; and Steinkamp, Robert A., 3,966,845.

Steitz, Alfred, Jr., deceased: *See—*
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Steitz, Margaret Marie, executrix: *See—*
Nelson, James P.; and Steitz, Alfred, Jr., deceased, 3,966,682.

Stellwagen, Frank W.: *See—*
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Stendel, Wilhelm: *See—*
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Riebel, Hans-Jochem; Hammann, Ingeborg; and Stendel, Wilhelm, 3,966,920.

Stengel, Edgar: *See—*
Seulen, Gerhard; Reinke, Friedhelm; and Stengel, Edgar, 3,967,089.

Stenzenberger, Horst, to Technochemie GmbH Verfahrenstechnik of Heidelberg. Filament-wound reinforced plastic articles and process of making and using same. 3,966,864, Cl. 264-137.000.

Stenzenberger, Volkmar: *See—*
Wagensonner, Eduard; and Stenzenberger, Volkmar, 3,966,312.

Stepanek, Karel, to Vyzkumny ustav obrabecich stroju a obrabeni. Device for indicating the touching of a grinding wheel and a workpiece. 3,965,622, Cl. 51-165.00R.

Stephens, Craig P.: *See—*
Robusto, Paul F.; and Stephens, Craig P., 3,967,151.

Stephens, James O., to Westinghouse Electric Corporation. Wet cooling tower with plume eliminator. 3,965,672, Cl. 60-39.500.

Stephens, Woodrow W. Carburetor adapter. 3,966,430, Cl. 48-180.00R.

Sterling Drug Inc.: *See—*
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Sternberg, Ernest M., to Monsanto Company. Method and apparatus for charging a bundle of filaments. 3,967,118, Cl. 250-325.000.

Stettner & Co.: *See—*
Scharrer, Werner; and Beyer, Fritz, 3,967,167.

Stevens, Harold E., deceased (by Stevens, Joan, heir), to Mill & Mix Company, Inc. Combination grain mill and dough mixer. 3,966,178, Cl. 259-185.000.

Stevens, Joan, heir: *See—*
Stevens, Harold E., deceased, 3,966,178.

Stevens, Timothy S.; and Small, Hamish, to Dow Chemical Company, The. High performance, cation-exchange chromatography on surface-sulfonated compositions. 3,966,596, Cl. 210-24.000.

Stevenson, Arthur; and Harkness, Neil, to Robinson Brothers Ltd. Effluent treatment. 3,966,601, Cl. 210-53.000.

Stevenson, Paul D.: *See—*
Peterson, Raymond T., Jr.; and Stevenson, Paul D., 3,966,031.

Steward Plastics, Inc.: *See—*
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Steward, William L., to Steward Plastics, Inc. Method of making helically wound plastic tubing. 3,966,525, Cl. 156-195.000.

Stewart, James S.: *See—*
Lester, J. Harvey, Jr.; and Stewart, James S., 3,966,566.

Stewart, John Kenneth, to Canron, Inc. Shoulder tamping lifting jack. 3,965,822, Cl. 104-7.00B.

Stewart, Roger Green, to RCA Corporation. Input transient protection for integrated circuit element. 3,967,295, Cl. 357-51.000.

Stewart, Sherwin R. Shoe attachment for sports. 3,965,585, Cl. 36-125.000.

Stich, Frederick A., to Allis-Chalmers Corporation. Transistor bridge inverter motor drive having reduced harmonics. 3,967,173, Cl. 318-227.000.

Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., to Stock Equipment Company. Apparatus for introducing particulate material into a container. 3,966,175, Cl. 259-8.000.

Stock Equipment Company: *See—*
Stock, Arthur J.; Christofer, Donald E.; and Brinza, Joseph E., 3,966,175.

Stocker, Lester H., to Bell & Howell Company. Apparatus and method for mail preparation. 3,965,644, Cl. 53-29.000.

Stoepel, Kurt: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,966,767.

Stokes, David Michael: *See—*
Farago, Frank John; Sood, Raman Radha; and Stokes, David Michael, 3,966,560.

Stoll, Paul; and Toth, Istvan, to Sandoz Ltd. Process for the production of amino-anthraquinone. 3,966,774, Cl. 260-378.000.

Stone, Orison W. Method of forming reinforced carton. 3,965,803, Cl. 93-36.00M.

Storace, Anthony; and Sette, Paul R., to Pitney-Bowes, Inc. Mail handling stacking and feeding apparatus. 3,966,193, Cl. 271-150.000.

Stork, Harald: *See—*
Kampe, Wolfgang; Fauland, Erich; Stach, Kurt; Stork, Harald; and Schmidt, Felix Helmut, 3,966,916.

Stracke, Heinz-Ulrich: *See—*
Andree, Hans; Koppensteiner, Gunther; and Stracke, Heinz-Ulrich, 3,966,968.

Stratford Engineering Corporation: *See—*
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Strathearm Audio Limited: *See—*
Ridler, Keith Douglas; and Gosling, Alexander Bennett, 3,966,215.

Strathearn Audio Limited: *See—*
Ridler, Keith Douglas; and Stanwell-Smith, Colin Howard, 3,966,330.

Strazik, William F.: *See—*
Perry, Eli; and Strazik, William F., 3,966,834.

Strobel, Harry, to Pitney-Bowes, Inc. Sheet separating device. 3,966,191, Cl. 271-125.000.

Strom, Rolf: *See—*
Heikkila, Viekko; Hakkinen, Leo; Strom, Rolf; Uusitalo, Leo; and Mellin, Juha, 3,966,019.

Stroterhoff, Howard L., to United States of America, Army. Lewisite detection sampler and method. 3,966,412, Cl. 23-232.00R.

Stroud, Edward John: *See—*
Stroud, William Felix, deceased; and Stroud, Edward John, 3,965,781.

Stroud Graphic Equipment Limited: *See—*
Stroud, William Felix, deceased; and Stroud, Edward John, 3,965,781.

Stroud, Lois Evelyn, executrix: *See—*
Stroud, William Felix, deceased; and Stroud, Edward John, 3,965,781.

Stroud, William Felix, deceased (by Stroud, Lois Evelyn, executrix); and Stroud, Edward John, to Stroud Graphic Equipment Limited. Bandsaw book trimmer. 3,965,781, Cl. 83-13.000.

Strutz, Ernst, to Biviator S.A. Apparatus for determining skin tolerance to ultra-violet radiation. 3,967,124, Cl. 250-372.000.

Strybel, Richard V., to Imperial-Eastman Corporation. Tube cutter. 3,965,572, Cl. 30-102.000.

Stuhmer, Werner: *See—*
Milkowski, Wolfgang; Zeugner, Horst; von Eickstedt, Klaus-Wolf; and Stuhmer, Werner, 3,966,735.

Stunger, Edward R., to Bigelow-Sanford, Inc. Knife blade support unit. 3,965,575, Cl. 30-294.000.

Sturm, Walter: *See—*
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Stutzman, Keith L.: *See—*
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Styles, Robert E.; and Les Veaux, John C., to Hanimex Pty. Ltd. Lens focusing means for slide projectors. 3,966,315, Cl. 353-101.000.

Subramanian, Mahadevan, to Bell Telephone Laboratories, Incorporated. Fast reframing arrangement for digital transmission systems. 3,967,060, Cl. 178-69.50R.

Suchy, Milos: *See—*
Chodnekar, Madhukar Subraya; Loeliger, Peter; Pfiffner, Albert; Schwieter, Ulrich; Suchy, Milos; and Zurfluh, Rene, 3,966,780.

Sucmanu: *See—*
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Sueda, Yoshihisa: *See—*
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Suess, Rudolf: *See—*
Ott, Hans; and Suess, Rudolf, 3,966,938.

Sugden, David B., to Robbins Company, The. Machine for boring a large diameter blind hole. 3,965,995, Cl. 175-57.000.

Suggitt, Robert M.; Gates, Walter C., Jr.; and Hudson, Ralph B., Jr., to Texaco Inc. Secondary alcohol process. 3,966,828, Cl. 260-639.00B.

Sugiyama, Toboru: *See—*
Goda, Tomokazu; Sugiyama, Toboru; and Nishimura, Katushi, 3,966,424.

Suh, Kyung W., to Dow Chemical Company, The. Extrusion of thermoplastic foam. 3,966,381, Cl. 425-376.000.

Sukup, Eugene G. Spreader for grain and like material. 3,966,124, Cl. 239-666.000.

Sullivan, Ann Clare: *See—*
Guthrie, Robert William; Hamilton, James Guthrie; Kierstead, Richard Wightman; Miller, O. Neal; and Sullivan, Ann Clare, 3,966,772.

Sullivan, Thomas R.; Du, John W.; Pelegrinelli, Raymond L.; and Das, Suryya K., to PPG Industries, Inc. Preparation of non-aqueous thermosetting acrylic polymer dispersions. 3,966,667, Cl. 260-33.6UA.

Sultan, Stig Bertil: *See—*
Andersson, Roger Ingemar; and Sultan, Stig Bertil, 3,967,286.

Sumitomo Chemical Company, Limited: *See—*
Kobayashi, Kenji; Fukumaru, Toshitsugu; Mizote, Hiroyuki; Inaba, Shigeho; and Yamamoto, Hisao, 3,966,939.
Kudo, Ken-Ichi; Ohmae, Tadayuki; Toyoshima, Yoshiki; and Hara, Sumio, 3,966,821.
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Oishi, Tadashi; Kameda, Nobuyuki; Kato, Toshiro; Fujinami, Akira; Ozaki, Toshiaki; and Itooka, Eiyashi, 3,966,789.
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Sumitomo Rubber Industries, Ltd.: *See—*
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Sun Chemical Corporation: *See—*
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Sun Oil Company: *See—*
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Sun Oil Company of Pennsylvania: *See—*
Duling, Irl N.; Gates, David S.; Glazier, Frederick P.; Moore, Robert E.; and Newingham, Thomas D., 3,966,624.

Sundar, Parameshwaran; Elikan, Leonard; and Lyon, Ward L., to Westinghouse Electric Corporation. Coupled cationic and anionic method of separating uranium. 3,966,872, Cl. 423-9.000.

Sundar, Parameshwaran S.: *See—*
Elikan, Leonard; Lyon, Ward L.; and Sundar, Parameshwaran S., 3,966,873.

Sundholm, Goran Vilhelm. Flange joint. 3,966,234, Cl. 285-24.000.

Superior Electric Company, The: *See—*
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Surmatis, Joseph Donald, to Hoffmann-La Roche Inc. Method for the purification of 6-methoxy-1-phenazinol 5,10-dioxide. 3,966,734, Cl. 260-267.000.

Sury, Francis P. Pressure responsive valve. 3,966,168, Cl. 251-58.000.

Suschitzky, John Louis; and Rutherford, David, to Fisons Limited. Compounds. 3,966,783, Cl. 260-439.0CY.

Susmu Industrial Co., Ltd.: *See—*
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Suspa Federungstechnik Fritz Bauer & Sohne oHG: *See—*
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Sutton, John: *See—*
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Sutures, Inc.: *See—*
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Suvorova, Ljudmila Ivanovna: *See—*
Novikov, Sergei Sergeevich; Khmelnitsky, Lenor Ivanovich; Lebedev, Oleg Vasilievich; Epishina, Lia Vladimirovna; Suvorova, Ljudmila Ivanovna; Lapshina, Lidia Vasilievna; Krylov, Valery Dmitrievich; Zaikonnikova, Irina Vitalievna; Zimakova, Irina Evgenievna; Chudnovsky, Vladimir Sergeevich; Babichev, Viktor Andreevich; and Avdonina, Nina Alexandrovna, 3,966,742.

Suyama, Satoshi; and Endow, Kazuhiko, to Tsurumi-Seiki Co., Ltd., The. Data recorder. 3,967,316, Cl. 360-51.000.

Suzuki, Kenichi: *See—*
Tomioka, Tatsuo; Hoshide, Yasuo; Ogawa, Hirosi; and Suzuki, Kenichi, 3,966,720.

Suzuki, Shigeru; and Adachi, Takeshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument having dynamic range variable expression control. 3,965,790, Cl. 84-1.270.

Suzuki, Tetsuo; Mizoguchi, Katsuhiro; and Togo, Fumio, to International Flavors & Fragrances Inc. Electroconductive high polymer composition. 3,966,987, Cl. 252-500.000.

Suzuki, Toshihiro: *See—*
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Suzuki, Yoshikazu; Azuma, Katsumi; and Ishimura, Kiyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for swage-forging shafts. 3,965,716, Cl. 72-356.000.

Swank Refractories Company, Inc.: *See—*
Evans, James D., 3,966,480.

Swank, Roy L. Blood autotransfusion method and apparatus. 3,965,896, Cl. 128-214.00R.

Swift, Harold E.: *See—*
Black, Edgar R.; Montagna, Angelo A.; and Swift, Harold E., 3,966,642.

Swift, John Alan: *See—*
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Swisher, James A. Internally silenced impact driven tools and impacting means therefor. 3,965,992, Cl. 173-127.000.

Swiss Aluminium Ltd.: *See—*
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Symons Corporation: *See—*
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Syntex (U.S.A.) Inc.: *See—*
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Synthelabo: *See—*
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Syva Company: *See—*
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Vasa, Karoly; Karpati, Gyorgy; Szechenyi-Marton, Eva; and Simek, Ferenc, 3,966,554.

Szmuszkovicz, Jacob, to Upjohn Company, The. 2,9-Dihydro-3H-pyrido[3,2-c]-s-triazolo[4,3-a][1,5]-benzodiazepin-3-ones. 3,966,736, Cl. 260-268.0PC.

Szonn, Bodo: *See—*
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Tada, Shinichi: *See—*
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Tada, Siro, to Matsushita Electric Industrial Co., Ltd. Channel indicator device. 3,965,850, Cl. 116-124.20R.

Tagashira, Yoshimi; Atobe, Masaaki; and Yamamoto, Kazuhiro, to Nippon Electric Company, Ltd. Variable delay equalizer. 3,967,220, Cl. 333-28.00R.

Taira, Kaoru; and Inoue, Hirotoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Main combustion chamber of swirl chamber type diesel engine. 3,965,872, Cl. 123-32.00C.

Takagi, Norio: *See—*
Sobajima, Shigenobu; Okaniwa, Hiroshi; Chiba, Kiyoshi; and Takagi, Norio, 3,967,285.

Takagi, Toshinori: *See—*
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Takahashi, Hidero: *See—*
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Takahashi, Masaaki; Ito, Akira; and Igarashi, Yuriko, to Kureha Kagaku Kogyo Kabushiki Kaisha. Epoxy resin composition. 3,966,674, Cl. 260-45.70R.

Takahashi, Ryohei; Fujikawa, Kanichi; Yokomichi, Isao; Toki, Tadaaki; and Someya, Shinzo, to Ishihara Sangyo Kaisha Ltd. Herbicidal 2-halo-4-trifluoromethyl-4'-cyanophenyl-ethers. 3,966,453, Cl. 71-105.000.

Takahashi, Sankichi: *See—*
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Takahashi, Shigeru: *See—*
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Takahashi, Yutaka: *See—*
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Takaishi, Naotake: *See—*
Inamoto, Yoshiaki; Kadono, Takeji; and Takaishi, Naotake, 3,966,800.

Takamine, Bruce N. Air operated power transfer apparatus. 3,967,132, Cl. 290-4.00R.

Takano, Hiroshi: *See—*
Yamagishi, Hidehisa; Takano, Hiroshi; and Kashiyama, Yoshitaka, 3,966,570.

Takano, Shyoichi: *See—*
Ito, Akiro; Ichikawa, Yasushi; Horiguchi, Sadayuki; Shirota, Shyoji; Kayama, Yasuo; Chihara, Shiro; Haneda, Isoko; Hasuda, Katsumi; and Takano, Shyoichi, 3,966,913.

Takasago Perfumery Co., Ltd.: *See—*
Kato, Takashi; Yamanaka, Toru; and Komatsu, Akira, 3,966,776.

Takase, Yahei; and Kawakami, Akira, to Mitsubishi Denki Kabushiki Kaisha. PNPN semiconductor device. 3,967,294, Cl. 357-38.000.

Takata, Satoshi: *See—*
Murai, Hiromu; Ohata, Katsuya; Aoyagi, Yoshiaki; Ueda, Fusao; Kitano, Masahiko; Takata, Satoshi; and Tada, Shinichi, 3,966,728.

Takeda Chemical Industries, Ltd.: *See—*
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Takei, Haruo: *See—*
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Takeichi, Chiyoko: *See—*
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Takenaka, Shigeo; Shimizu, Hitoshi; and Ogawa, Masanobu, to Nippon Kayaku Kabushiki Kaisha. Process for preparing acrylic acid and oxidation catalyst. 3,966,802, Cl. 260-530.00N.

Takenaka, Shigeo; Shimizu, Hitoshi; and Yamamoto, Kenichiro, to Nippon Kayaku Kabushiki Kaisha. Process for preparing 1,3-butadiene and methacrolein simultaneously. 3,966,823, Cl. 260-604.00R.

Takenaka, Yoshiyuki: *See—*
Sato, Chosei; Yamada, Yasutoku; and Takenaka, Yoshiyuki, 3,966,537.

Takeo, Keinosuke, to Sumitomo Electric Industries, Ltd. Stainless steel wire having nickel plated layer. 3,966,425, Cl. 29-191.600.

Takeuchi, Fumio: *See—*
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Takeuchi, Kikuo. Hot blast stove apparatus. 3,966,393, Cl. 432-40.000.

Takman, Bertil H.: *See—*
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Tamai, Yasuo: *See—*
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Tamaru, Akio: *See—*
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Tamura Electric Works, Ltd.: *See—*
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Tamura, Yorikazu; and Shishido, Yasuhisa, to Teijin Limited. Method for preparing vinyl fluoride-hexafluoro-propylene resin and method for producing a coating therefrom. 3,966,660, Cl. 260-29.60F.

Tan, Hong Sheng: *See—*
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Tanabe Seiyaku Co., Ltd.: *See—*
Inoue, Ichizo; Oine, Toyonari; Yamada, Yoshihisa; Tani, Junichi; Ishida, Ryuichi; and Ochiai, Takashi, 3,966,731.

Tanabe, Takashi; and Adachi, Tomio, to Teijin Limited. Magnetic recording material. 3,967,025, Cl. 428-155.000.

Tanaka, Miniru: *See—*
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Tanaka, Takehiko: *See—*
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Tanaka, Tomoyuki: *See—*
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Tanaka, Toshiaki; Yamaguchi, Shunsuke; and Simowaki, Kazuharu, to Toyo Kogyo Co., Ltd. Process for producing ductile iron casting. 3,965,962, Cl. 164-55.000.

Tanazawa, Yasushi: *See—*
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Tani, Junichi: *See—*
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Taniyama, Yukio; Isaka, Tetsuo; Nagahori, Tetsuo; and Kanda, Kaoru, to Fujitsu Ltd. Priority selection system in access control. 3,967,249, Cl. 340-172.500.

Tanizaki, Yoshiharu; Kawaguchi, Hiroshi; and Minagawa, Kenichiro, to Nippon Oils and Fats Company Limited. Lubricating oil composition containing polyoxyalkylene glycol diether viscosity-index improvers. 3,966,625, Cl. 252-52.00A.

Tanoshima, Katsuhide: *See—*
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Tashiro, Norio; and Miura, Hiroshi, to Tokyo Shibaura Electric Co., Ltd. Magnetron having horizontally blown type radiator. 3,967,154, Cl. 315-39.510.

Tateiwa, Fumikazu: *See—*
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Taubert, Friedrich C.: *See—*
Groenendaal, Willem; Taubert, Friedrich C.; Naber, Jaap E.; and Bekker, Gijsbertus A., 3,966,879.

Taylor, Paul Franklin. Process for ilmenite ore reduction. 3,966,455, Cl. 75-21.000.

Taylor, Robert Ernest; Packer, Mervyn Brian; and Parsons, David, to Automotive Products Ltd. Fault detecting system for vehicle anti-skid control systems. 3,966,265, Cl. 303-21.0AF.

Taylor, Russell J., Jr.: *See—*
Paragamian, Vasken; and Taylor, Russell J., Jr., 3,966,933.
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Taylor, Thomas N.; and Schoppe, Wayne F., to Xerox Corporation. Toggling retard pad. 3,966,189, Cl. 271-34.000.

Taylor, William P., III. Camera support. 3,966,101, Cl. 224-28.00R.

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Taylor Woodrow Construction, Limited: *See—*
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Tedesco, Raffaele: *See—*
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Tedesco, Robert J., to Westinghouse Electric Corporation. Apparatus for loading fuel pellets in fuel rods. 3,965,648, Cl. 53-126.000.

Teer, Kees; and Sangster, Frederik Leonard Johan, to U.S. Philips Corporation. Charge transfer imaging device. 3,967,055, Cl. 178-7.100.

Teijin Limited: *See—*
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Tenco Hydro/Aerosciences, Inc.: *See—*
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Theimer, Ernst Theodore; and Heinze, George E., to Lectrofood, Inc. Packaged coated food product capable of being cooked using electrodes. 3,966,972, Cl. 426-90.000.
Thettu, Raghulinga R.; and Xerox Corporation, to Xerox Corporation. Temperature sensing device. 3,965,973, Cl. 165-86.000.
Thiessen, Leo K., to Aeroquip Corporation. Pipe coupling for large diameter pipe. 3,966,237, Cl. 285-112.000.
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Thomason, Harry Emmitte. Crop drying (food preserving) apparatus. 3,965,696, Cl. 62-324.000.
Thomson, Colin: *See—*
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Thorowgood, Sydney William, to General Sports Manufacturing Limited. Sleeping bags. 3,965,505, Cl. 5-343.000.
Thrush, Richard G., to Weatherhead Company, The. Blend back proportioning valve for brake system. 3,966,263, Cl. 303-6.00C.
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Townsend, Herbert E., Jr.; Horton, James B.; and Woodyatt, Louis R., to Bethlehem Steel Corporation. Ultra-high strength steel containing CaO, MgO, BaO or SrO having improved resistance to environmental stress corrosion cracking. 3,966,421, Cl. 29-182.500.
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Troy, Marion Frank; and Kamp, Ewald Albert, to Union Carbide Corporation. Linear apparatus and method for high speed production of air-laid non-woven webs. 3,966,858, Cl. 264-91.000.
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Tsuruishi, Yuki, to Kabushiki Kaisha Suwa Seikosha. Display device. 3,967,253, Cl. 340-173.0LM.
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Turley, Barry Jay, to General Electric Company. Automatic sequencing scheme for reversing directions of electric traction motors. 3,967,175, Cl. 318-258.000.
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Vahaviolos, Sotirios John, to Western Electric Company, Inc. Method and apparatus for the real-time evaluation of welds by emitted stress waves. 3,965,726, Cl. 73-71.400.

Vaillette, Bernard D.; and Zastawny, William E., to Cincinnati Milacron-Heald Corporation. Pulley. 3,965,765, Cl. 74-230.500.

Valayil, Silvester P.: *See—*
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Valle, Michael A., to Chambers Corporation. Service access control panel having electrical component array, interlock switch and fuse block. 3,967,164, Cl. 317-114.000.

Valles, Alfredo E. Multi-speed and leverage motor. 3,965,756, Cl. 74-22.00R.

Valyi, Emery I. Apparatus for making oriented hollow plastic articles. 3,966,378, Cl. 425-242.00B.

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Van Brederode, Robert A.; and Steinkamp, Robert A., to Exxon Research & Engineering Co. Acrylic acid grafted polyolefins as nucleating agents for ungrafted polyolefins. 3,966,845, Cl. 260-876.00R.

Van Den Berg, Arie Pieter, to Ingenieursbureau A.P. van den Berg B.V. Apparatus for compensating movements of an apparatus for measuring or recording displacements in respect of a fixed reference surface. 3,965,728, Cl. 73-84.000.

van den Berg, Christiaan, to Big Dutchman (International) A.G. Apparatus for sorting eggs as to weight. 3,966,049, Cl. 209-121.000.

van der Burg, Willem Jacob, to Akzona Incorporated. 1,2,3,4,10,14b-Hexahydro-pyridino[1,2-a]-dibenzo[c,f]-azepine. 3,966,723, Cl. 260-247.10L.

Vanderheyden, Herman E-C, to Em. D'Hooge N.V. Drum for washer-extractor machines. 3,965,704, Cl. 68-210.000.

van der Lely, Cornelis. Mowing machines. 3,965,658, Cl. 56-192.000.

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Van Hoeven, Helene E. Bowman; Brenner, L. Martin; and Loev, Bernard, to SmithKline Corporation. 2-Alkoxy(and 2-alkoxyalkyl)-2-heterocyclic-thioacetamides for inhibiting gastric acid secretion. 3,966,945, Cl. 424-263.000.

Van Huis, Robert L., to U.S. Industries, Inc. Cooling system for poultry houses. 3,965,691, Cl. 62-157.000.

Vanlerberghe, Guy; and Sebag, Henri, to L'Oreal. Hair dyeing composition containing a non-ionic surfactant. 3,966,398, Cl. 8-11.000.

Vann, Roy R. Releasable coupling. 3,966,236, Cl. 285-39.000.

Van Poucke, Raphael Karel; and Baeyens, Freddy Carolus, to AGFA-GEVAERT N.V. Photographic silver halide emulsions containing acylacetanilide color couplers. 3,966,475, Cl. 96-55.000.

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Vaughan, Robert W.; and Jones, Robert J., to United States of America, National Aeronautics and Space Administration. Capillary flow weld-bonding. 3,967,091, Cl. 219-92.000.

Vayda, Pierre A., to Exothermic Company of Canada Limited. Sideboard construction. 3,966,167, Cl. 249-198.000.

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Vennos, Spyros-Lysander N. Fluid sampling device. 3,966,439, Cl. 55-270.000.

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Vignal, Maurice; and Chapuis, Henri. Method and device for thermally air-conditioning a room, a vat or the like. 3,965,694, Cl. 62-260.000.

Vigreux, Jacques; and Gromier, Andre, to Delle-Alsthom. Device for observing an equipment under tension. 3,966,297, Cl. 350-52.000.

Vinals, Joaquin: *See—*
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Vitalis, Raymond, to Automobiles Peugeot; and Regie Nationale des Usines Renault. Locking mechanism in particular for a vehicle bonnet. 3,966,242, Cl. 292-19.000.

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von Bennigsen, Gerd, to Krauss-Maffei Aktiengesellschaft. Gunnery practice method and apparatus. 3,965,582, Cl. 35-25.000.

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von Eickstedt, Klaus-Wolf: *See—*
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von Wiesenthal, Peter, to Heat Research Corporation. Heater for large flows at low pressure losses. 3,965,885, Cl. 126-110.00R.

Voorheis, James T. Burner gun. 3,966,123, Cl. 239-401.000.

Vorus, Sandra J.: *See—*
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Wachtell, George Peter; and Jones, Edward Wilred, to Campbell Soup Company. Time temperature indicator device and method. 3,965,741, Cl. 73-344.000.

Wacks, Harvey H.; Klose, Peter H.; Ovshinsky, Stanford R.; and Hallman, Robert W., to Energy Conversion Devices, Inc. Dry process production of archival microform records from hard copy. 3,966,317, Cl. 355-19.000.

Waddell, Seid W.; and Heilman, Marlin S., to Medrad, Inc. Angiographic catheter and method of manufacture. 3,965,909, Cl. 128-348.000.

Wagener, Paul W.; and Fluet, Francis A., to Westinghouse Electric Corporation. Process control apparatus. 3,967,176, Cl. 318-603.000.

Wagensonner, Eduard; and Stenzenberger, Volkmar, to AGFA-Gevaert, A.G. Fade-over arrangement for a motion picture camera. 3,966,312, Cl. 352-91.00C.

Waghorne, Winfield Earle: *See—*
Parker, Alan James; Waghorne, Winfield Earle; Giles, Dion Ewing; Sharp, John Howard; Alexander, Robert; and Muir, David Michael, 3,966,890.

Wagman, Harold H. Antenna mount for vehicles. 3,967,275, Cl. 343-713.000.

Wahlco, Inc.: *See—*
Archer, William E., 3,966,436.

Waldrop, Thomas W.: *See—*
Campbell, Willis R.; Waldrop, Thomas W.; and Seymour, Shaun A., 3,966,063.

Walker, Francis H.: *See—*
Baker, Don R.; Walker, Francis H.; and Letchworth, Peter E., 3,966,806.
Baker, Don R.; Walker, Francis H.; and Letchworth, Peter E., 3,966,809.

Walker, James H., Jr. Commercial dishwasher pre-wash station. 3,965,914, Cl. 134-104.000.

Wall, Edwin G.: *See—*
Goodwin, Henderson R.; and Wall, Edwin G., 3,965,720.

Wallace, Richard W.: *See—*
Dere, Daniel J.; and Wallace, Richard W., 3,967,212.

Walling, Dennis B.: *See—*
Herring, William M.; and Walling, Dennis B., 3,967,095.

Walling, Ronald L.: *See—*
Klatt, Kenneth G.; Walling, Ronald L.; and Hallstrom, James R., 3,966,657.

Walpak Company: *See—*
Fischer, Michael, 3,965,910.

Walsh, John J., III: *See—*
Huang, Kuo P.; and Walsh, John J., III, 3,966,023.

Walsh, Richard S., to Ark-Les Switch Corporation. Brush holder assembly. 3,967,148, Cl. 310-239.000.

Walton, Joe W., to Circon Corporation. Television measuring system and method. 3,967,054, Cl. 178-6.800.

Walworth, Bryant Leonidas, to American Cyanamid Company. 3,5-Cycloalkyl pyrazolium salts as fungicides. 3,966,954, Cl. 424-273.000.

Ward, Gerald G., to International Harvester Company. Flexible plow. 3,965,989, Cl. 172-310.000.

Ward, Howard E.; and Wolf, Mari A., to Joy Manufacturing Company. Pressure equalizing load cell system. 3,965,734, Cl. 73-141.00A.

Ward, James M., deceased (Ward, Sandra, surviving spouse), to Ward, Sandra. Plexiglas speakers. 3,967,065, Cl. 179-1.00E.

Ward, Sandra: *See—*
Ward, James M., deceased, 3,967,065.

Ward, Sandra, surviving spouse: *See—*
Ward, James M., deceased, 3,967,065.

Wardell, Winnifred A. Convertible multi-purpose brush assembly. 3,965,521, Cl. 15-114.000.

Warden, Fuller; and Lewis, Eugene W., to Grace Development Company. Combined amalgam carrier and dental handpiece. 3,965,578, Cl. 32-60.000.

Warkentin, Brian T., to Shade Foods, Inc. Chocolate solid wafer and method of manufacture. 3,966,997, Cl. 426-631.000.

Warley, Geoffrey Peter: *See—*
Mills, Noel; and Warley, Geoffrey Peter, 3,967,232.

Warner Electric Brake & Clutch Company: *See—*
Baer, John S., 3,966,024.

Warner-Lambert Company: *See—*
Kaminsky, Daniel, 3,966,716.
Satzinger, Gerhard; and Herrmann, Manfred Franz, 3,966,779.
Satzinger, Gerhard; and Herrmann, Wolfgang Dieter, 3,966,813.
Schoenholz, Daniel; and Weinberg, Myron S., 3,965,905.
Sircar, Jagadish C.; Zinnes, Harold; and Shavel, John, Jr., 3,966,765.

Washkewicz, Donald E.; and Busdiecker, Wayne S., to Parker-Hannifin Corporation. Hose construction and hose coupling joint. 3,966,238, Cl. 285-239.000.

Watanabe, Akinori; Tanoshima, Katsuhide; Ando, Takao; Tohama, Akira; and Nagano, Akio, to Oki Electric Industry Company, Ltd. Ultrasonic wave generator. 3,967,143, Cl. 310-8.100.

Watanabe, Isao: *See—*
Yamaguchi, Tadashi; Ono, Takayuki; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, 3,967,006.

Watanabe, Masayasu, to Hokushin Electric Works, Ltd. Magnetic flowmeter. 3,965,738, Cl. 73-194.0EM.

Watari, Yoshihiko: *See—*
Nomura, Kousi; Kawazu, Satoru; Hirose, Yoshihiko; Inoue, Isao; Watari, Yoshihiko; and Kijima, Koichi, 3,966,501.

Waters, Bruce M., to Aladdin Industries, Incorporated. Odor masking and filtering ashtray. 3,966,442, Cl. 55-316.000.

Watkins, Robert Charles; Kinghan, Derek Alfred; and Humphrey, Robert Walter, to Exxon Research and Engineering Company. Lubricating oil compositions. 3,966,621, Cl. 252-42.700.

Watson, Billy Ray. Sonic fluid level control apparatus. 3,965,983, Cl. 166-250.000.

Watson, Sanders Chapman. Hydraulically actuated cutting tool. 3,966,347, Cl. 408-180.000.

Watts, Leonard, to Technicon Instruments Corporation. Method and apparatus for continuous casting of metal tubing. 3,965,965, Cl. 164-83.000.

Wavin B.V.: *See—*
Leloux, Arnoldus Willem Jan, 3,965,782.

Wayne Engineering Corporation: *See—*
Worthington, Stanley W., 3,966,096.

Wear, Robert L., to Minnesota Mining and Manufacturing Company. Phenoxy-s-triazine chain coupler for polyesterification and novel polyesters. 3,966,680, Cl. 260-47.00C.

Weatherchem Corporation: *See—*
Bittel, Patricia A., 3,966,080.

Weatherford, Richard C.: *See—*
Hardy, David R.; and Weatherford, Richard C., 3,965,907.

Weatherhead Company, The: *See—*
Kozulla, Robert E., 3,965,570.
Orzel, Edward S.; and Thrush, Richard G., 3,966,268.
Thrush, Richard G., 3,966,263.

Webb, Norval Ellsworth, Jr., to Richardson-Merrell Inc. Pharmaceutical compositions and preparing same. 3,966,949, Cl. 424-250.000.

Webb, Robert Lee: *See—*
Baile, Clifton A.; Gallagher, Gregory; McLaughlin, Carol Lynn; and Webb, Robert Lee, 3,966,958.

Weber, Karl-Heinz; and Nohendorf, Hans, to Gebr. Eickhoff, Maschinenfabrik und Eisengiesserei m.b.H. Power supply system for extraction machine, especially a drum-cutting machine. 3,967,180, Cl. 320-13.000.

Weber, Philippe, to Agence Nationale de Valorisation de la Recherche (ANVAR). Sounding vibrometer. 3,965,725, Cl. 73-71.400.

Webster, John David; and Bowman, Henry Torrens A., to English Clays Lovering Pochin & Company Limited. Method of forming joints for protectively lined or coated metal. 3,965,555, Cl. 29-157.00R.

Wechsler, Joseph W. Bicycle gear shift. 3,965,763, Cl. 74-217.00B.

Wegner, Gunther, to Hoechst Aktiengesellschaft. Pellets. 3,965,577, Cl. 32-40.00R.

Wei, Ching-Yeu. Electronic lock. 3,967,166, Cl. 317-141.00S.

Weigele, Manfred: *See—*
Leimgruber, Willy; and Weigele, Manfred, 3,966,791.

Weil-McLain Co., Inc.: *See—*
Rowley, William N.; and Ehret, Gordon F., 3,966,363.

Weil, Sanford A.: *See—*
Rush, William F.; Macriss, Robert A.; and Weil, Sanford A., 3,965,695.

Weiler, Ernest A., to Xerox Corporation. Immersion fusing. 3,965,855, Cl. 118-68.000.

Weiler, Ernest D.: *See—*
Kilbourn, Edward E.; and Weiler, Ernest D., 3,966,947.

Weinberg, Myron S.: *See—*
Schoenholz, Daniel; and Weinberg, Myron S., 3,965,905.

Weingrad, Saul W., to Pictorial Productions, Inc. Decalcomanias employed in offset transfer process. 3,967,021, Cl. 428-40.000.

Weir, Henry John, to Behn, Sheldon P.; and Behn, Robert M., Part interest to each. Apparatus for cutting, selvaging and/or folding sheet material. 3,965,831, Cl. 112-121.150.

Weir, James D. Tire buffer. 3,965,959, Cl. 157-13.000.

Weisbach, Gunter: *See—*
Riedl, Rudi; Jungnickel, Regina; Nitsch, Rainer; Lein, Werner; Vetter, Lothar; Schone, Helmut; Weisbach, Gunter; Johne, Hans; Schott, Alfred; Forster, Karl-Heinz; and Johne, Albrecht, 3,966,197.

Weiss, Martin Joseph: *See—*
Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,966,773.

Weisse, Hans-Jorg: *See—*
Neeb, Karl-Heinz; Schweighofer, Werner; and Weisse, Hans-Jorg, 3,966,852.

Welton, Barry S.; and Westerman, G. Wayne, to Energy Systems, Inc. Clamp-on transducer for well unit. 3,965,736, Cl. 73-151.000.

Werner, Edward E., to Kimberly-Clark Corporation. Classifying hammermill system and method of operation. 3,966,126, Cl. 241-18.000.

Wesson, Harold R.; Brown, Lester E.; and Puckett, Gregory L., to University Engineers, Inc. Fire extinguishing method and apparatus. 3,965,988, Cl. 169-9.000.

West, Harry H.: *See—*
Brown, Lester E.; and West, Harry H., 3,965,689.

West Rand Engineering Works (Proprietary) Ltd.: *See—*
Hyslop, Ian Willoughby, 3,966,021.

Westerman, G. Wayne: *See—*
Welton, Barry S.; and Westerman, G. Wayne, 3,965,736.

Western Electric Company, Inc.: *See—*
Vahaviolos, Sotirios John, 3,965,726.

Westinghouse Brake & Signal Company Limited: *See—*
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Westinghouse Electric Corporation: *See—*
Albinson, Don C., 3,966,252.
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Bennon, Saul; and Albright, William D., 3,967,226.
Benton, Ronald E., 3,966,294.
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Bould, Fred; and Davies, Norman, 3,967,083.
Boundy, Bruce K., 3,966,158.
Cleaveland, Charles M., 3,967,163.
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Elikan, Leonard; Lyon, Ward L.; and Sundar, Parameshwaran S., 3,966,873.
Goodwin, Henderson R.; and Wall, Edwin G., 3,965,720.
Hager, Robert E., 3,967,257.
Hobbs, Milton M.; and Kiscaden, Roy, 3,965,674.
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Petersen, Robert E.; and Dietsche, Robert J., 3,967,094.
Pierpoline, Mario F., 3,966,355.
Raimondi, Albert A., 3,966,279.
Sahasrabudhe, Arun P., 3,966,148.
Smith, Howard S., 3,965,717.
Stephens, James O., 3,965,672.
Sundar, Parameshwaran; Elikan, Leonard; and Lyon, Ward L., 3,966,872.
Tedesco, Robert J., 3,965,648.
Wagener, Paul W.; and Fluet, Francis A., 3,967,176.
Whyte, Ian A.; Ottobre, Louis G.; and McGivern, James P., 3,967,264.
Willis, Thomas G., 3,967,077.

Westland Aircraft Limited: *See—*
Mills, Noel; and Warley, Geoffrey Peter, 3,967,232.

Westphal, Kurt; Meiser, Werner; Eue, Ludwig; and Hack, Helmuth, to Bayer Aktiengesellschaft. Herbicidal agents. 3,966,715, Cl. 260-240.00A.

Westvaco Corporation: *See—*
Woodward, Fred E., 3,966,628.

Wharmby, David: *See—*
Reilly, Richard J.; Cornett, Walter Goza, III; Riddle, James H.; and Wharmby, David, 3,965,902.

Whatley, Norman, Jr., to Lawrence Peska Associates, Inc., a part interest. Bumper mounted spring driven tire installer and remover. 3,965,956, Cl. 152-214.000.

Wheatley, Carl Franklin, Jr., to RCA Corporation. Amplifier with over-current protection. 3,967,207, Cl. 330-23.000.

Whirlpool Corporation: *See—*
Knoop, Donald E.; and Seeland, Rodney F., 3,967,199.

White, Eric Lawrence Casling, to EMI Limited. Radar apparatus for detecting a coherent Doppler signal in cluttered environments. 3,967,284, Cl. 343-9.000.

White, Loren Hawdon; and Young, John Herman, to United Technologies Corporation. Variable area turbine. 3,966,352, Cl. 415-115.000.

White, Mervyn A.: *See—*
Bauerle, Richard D.; Pitt, William A.; and White, Mervyn A., 3,965,938.

White, Stevan C., to Music Circuit Productions, Inc. Canopy support towers with adjustable canopy. 3,965,625, Cl. 52-29.000.

White-Westinghouse Corporation: *See—*
McCoy, Robert A.; and Moreland, William C., II, 3,966,426.

Whitehouse, Ronald: *See—*
Aston, Jack Ralph; and Whitehouse, Ronald, 3,965,949.

Whitney, Maurice Aaron, to Y-TEX Corporation. Animal identification tag. 3,965,602, Cl. 40-301.000.

Whyco Chromium Company Inc.: *See—*
Hyner, Jacob; and Michelson, Robert A., 3,966,564.

Whyte, Ian A.; Ottobre, Louis G.; and McGivern, James P., to Westinghouse Electric Corporation. Distribution network power line communication system including addressable interrogation and response repeater. 3,967,264, Cl. 340-310.00A.

Wickham, David John, to Westinghouse Brake & Signal Company Limited. Rail vehicle braking system with improved brake signal propagation. 3,966,272, Cl. 303-81.000.

Widdowson, Richard E., to General Motors Corporation. Modulated throttling valve. 3,965,693, Cl. 62-217.000.

Wiechert, Rudolf: *See—*
Hofmeister, Helmut; Laurent, Henry; Wiechert, Rudolf; Annen, Klaus; and Steinbeck, Hermann, 3,966,713.

Wiegard, Klaus, to Daimler-Benz Aktiengesellschaft. Bearing support for a rotatable regenerative heat exchanger. 3,966,281, Cl. 308-202.000.

Wiesner, Robert, to Boeing Company, The. Structure for cooling helicopter tail rotor gearbox. 3,966,145, Cl. 244-17.110.

Wiessner, Manfred, to VEB Pentacon Dresden. Microfilm camera. 3,966,320, Cl. 355-73.000.

Wigfall, Douglas Mervyn, to Crompton, Nettlefold Stenman Limited. Hinges. 3,965,532, Cl. 16-149.000.

Wijffels, Joannes B.: *See—*
Pegels, Abraham A.; and Wijffels, Joannes B., 3,966,420.

Wiklund, Klas Rudolf, to AGA Aktiebolag. Device for generating a spatial reference plane. 3,966,328, Cl. 356-138.000.

Wilbur, Roger Thomas: *See—*
Olashaw, William Francis; and Wilbur, Roger Thomas, 3,967,165.

Wilcox, John M.: *See—*
Bogart, James S.; and Wilcox, John M., 3,965,580.

Wilhelm, Frederick C., to Universal Oil Products Company. Dehydrogenation with a nonacidic multimetallic catalyst. 3,966,895, Cl. 260-668.00D.

Wilkinson, Lester: *See—*
Lucas, Larry D.; Schertz, Burtron D.; and Wilkinson, Lester, 3,967,203.

Willey Sign Company: *See—*
Noellert, Larry L., 3,965,597.

William H. Rorer, Inc.: *See—*
Diamond, Julius, 3,966,801.

Williams, Albert L.: *See—*
Bridger, Robert F.; and Williams, Albert L., 3,966,620.

Williams, Charles H., to Koppers Company, Inc. Method for the production of pearlescent button blanks. 3,966,856, Cl. 264-71.000.

Williams, Clark R., to Texas Instruments Incorporated. Injection logic electronic watch having a current regulated oscillator. 3,965,666, Cl. 58-23.0BA.

Williams, Gregory P.: *See—*
Posel, John G.; Williams, Gregory P.; and Nilsen, David N., 3,966,462.

Williams, Murray John, to Borden, Inc. Method for packaging a unique cheese item. 3,966,970, Cl. 426-393.000.

Williams, Richard H.: *See—*
Bachle, Wilfred H.; Peck, John V.; Stantial, Thomas D.; and Williams, Richard H., 3,966,364.

Williamson, Joseph R. Convertible food service cart. 3,965,969, Cl. 165-12.000.

Williamson, Joseph Stephen, to Smith International, Inc. Mud saver valve. 3,965,980, Cl. 166-224.00R.

Willis, Thomas G., to Westinghouse Electric Corporation. Appliance timer switch assembly. 3,967,077, Cl. 200-38.0FA.

Willy, William E.; and Henrick, Clive A., to Zoecon Corporation. Spider mite control. 3,966,969, Cl. 424-343.000.

Wilson, Myrl E., to United States of America, Air Force. Inflight intravenous bottle holder. 3,966,160, Cl. 248-311.300.

Wilson, Richard Arnold; Katz, Ira; Vock, Manfred H.; and Shuster, Edward J., to International Flavors & Fragrances Inc. Flavoring compositions and processes utilizing dithiazine compounds. 3,966,988, Cl. 426-535.000.

Windmoller & Holscher: *See—*
Upmeier, Hartmut; and Zimmermann, Werner-Josef, 3,966,377.

Wing, Milton Silas: *See—*
Mathews, Glenn William; and Wing, Milton Silas, 3,966,690.

Winkler, Norlin T., to Research Corporation. Radiation shielding curtain. 3,967,129, Cl. 250-517.000.

Winkler, Robert J.; and Curran, James B. Ball drive mechanism for load supporting hanger. 3,965,824, Cl. 104-165.000.

Winskas, Andrew B. Enclosing structure for the load bed of a pickup truck. 3,966,250, Cl. 296-1.00R.

Winterbottom, Kenneth: *See—*
Abel, Heinz; Dobinson, Bryan; Green, George Edward; Harris, Melvin; Stark, Bernard Peter; and Winterbottom, Kenneth, 3,967,041.

Winters, Robert P.: *See—*
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Winthrop-Atkins Co., Inc.: *See—*
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Wisconsin Alumni Research Foundation: *See—*
Aumann, Herbert M., 3,967,210.

Witonsky, Robert J.: *See—*
Khattab, Ghazi; and Witonsky, Robert J., 3,966,414.

Witte, Josef; and Lehnert, Gunther, to Bayer Aktiengesellschaft. Catalysts. 3,966,637, Cl. 252-429.00B.

Wittko, Joseph N.; Harding, David G.; Schneider, John J.; and Gonsalves, Joseph E., to Grumman Aerospace Corporation; and Boeing Company, The. Hammock supported fuel tank. 3,966,147, Cl. 244-135.00B.

Wize, Gary A.: *See—*
Fox, Robert M.; and Wize, Gary A., 3,965,531.

Wolf, Mari A.: *See—*
Ward, Howard E.; and Wolf, Mari A., 3,965,734.

Wolfe, Norman Gilbert, to Celanese Coatings & Specialties Company. Powder coatings having a variegated, speckled appearance. 3,966,669, Cl. 260-37.0EP.

Wolniak, Stanley: *See—*
Muller, Fred, Jr.; Wolniak, Stanley; Johnson, Marshall; and Spencer, Elbert, 3,966,247.

Wolstenholme, Charles T.; and Sipple, Douglas E. Tool for applying retainer clips. 3,965,776, Cl. 81-3.00R.

Woltersdorf, Otto W., Jr.: *See—*
Cragoe, Edward J., Jr.; and Woltersdorf, Otto W., Jr., 3,966,966.

Wolverine World Wide, Inc.: *See—*
Egtvedt, Robert B.; Zwiep, Theodore C.; and Den Bleyker, John R., 3,965,832.

Woodall-Duckham, Limited: *See—*
Singleton, Frank Henry; Gosden, Derek Vernon; and Woodhouse, Graham, 3,966,876.

Woodhouse, Graham: *See—*
Singleton, Frank Henry; Gosden, Derek Vernon; and Woodhouse, Graham, 3,966,876.

Woodhouse, Robert C.: *See—*
Posthuma, Albert E.; and Woodhouse, Robert C., 3,965,908.

Woodier, James G., to Bell & Howell Company. Forward-reverse projector mechanism. 3,966,313, Cl. 352-173.000.

Woods, Lee W. Measuring tape anchor. 3,965,579, Cl. 33-137.00R.

Woods, William G.; and Hunter, Don L., to United States Borax & Chemical Corporation. 3-Halo-2,6-dinitro-4-trifluoromethylaniline. 3,966,816, Cl. 260-573.000.

Woodward, Fred E., to Westvaco Corporation. Solid cleaning compositions containing C_{21} dicarboxylic acid. 3,966,628, Cl. 252-135.000.

Woodyatt, Louis R.: *See—*
Townsend, Herbert E., Jr.; Horton, James B.; and Woodyatt, Louis R., 3,966,421.

Woog, Philippe-Guy, to Les Produits Associes, SA. Apparatus for body hygiene. 3,966,359, Cl. 417-38.000.

Workman, Ruth A. Coffee substitute. 3,966,995, Cl. 426-596.000.

Worthington, Stanley W., to Wayne Engineering Corporation. Satellite refuse packer. 3,966,096, Cl. 222-389.000.

Wray, James Robert: *See—*
Brock, John O.; Davis, Marmion Dean; and Wray, James Robert, 3,965,844.

Wright, James R.: *See—*
Featherston, Richard H.; Fischer, Joseph P.; Garing, Meriwether L.; and Wright, James R., 3,966,874.

Wurlitzer Company, The: *See—*
Thomas, Howard M.; and Borowiec, Richard A., 3,965,791.

Wuthrich, Paul, to Timex Corporation. Energy cell configuration for a timepiece. 3,966,498, Cl. 136-166.000.

Wyczalek, Floyd A.; Harned, John L.; and Smith, Ora M., to General Motors Corporation. Internal combustion engine and turbosupercharger therefor with heat pipe for intake mixture heating. 3,965,681, Cl. 60-599.000.

Wysocki, Lawrence E.; and Muench, Elmer W., to Everett/Charles, Inc. Vacuum valve. 3,965,932, Cl. 137-607.000.

Xerox Corporation: *See—*
Amort, Andrew L., 3,966,318.
Bean, Lloyd F., 3,966,465.
Braun, Oskar J., 3,966,394.
Lang, John M., 3,966,319.
Levine, Leonard, 3,967,251.
Moser, Rabin, 3,965,853.
Page, Geoffrey A.; Grammatica, Steven J.; and Ewing, Joan R., 3,966,466.
Parent, Richard A., 3,966,467.
Silverberg, Morton, 3,966,199.
Taylor, Thomas N.; and Schoppe, Wayne F., 3,966,189.
Thettu, Raghulinga R.; and Xerox Corporation, 3,965,973.
Weiler, Ernest A., 3,965,855.
Yang, Frank; and Lamel, Jerome E., 3,965,862.

Y-TEX Corporation: *See—*
Whitney, Maurice Aaron, 3,965,602.

Yaguinuma, Jyusuke, to Copal Company Limited. Time switch mechanism. 3,967,078, Cl. 200-38.00R.

Yake, William H., to Design and Manufacturing Corporation. Door latch for appliances and the like. 3,966,246, Cl. 292-241.000.

Yale, Harry Louis; and Petigara, Ramesh B., to E. R. Squibb & Sons, Inc. Intermediates for certain benzothiadiazepine and benzothiadiazocine compounds. 3,966,733, Cl. 260-256.50R.

Yalkowsky, Samuel H., to Upjohn Company, The. Triacetin solutions of PGE-type compounds. 3,966,962, Cl. 424-305.000.

Yamada, Seiji: *See—*
Yata, Kotaro; and Yamada, Seiji, 3,967,056.

Yamada, Shingo, to Kabushiki Kaisha Komatsu Seisakusho. Work rest device for use in a crank pin miller. 3,965,780, Cl. 82-9.000.

Yamada, Yasutoku: *See—*
Sato, Chosei; Yamada, Yasutoku; and Takenaka, Yoshiyuki, 3,966,537.

Yamada, Yoshihisa: *See—*
Inoue, Ichizo; Oine, Toyonari; Yamada, Yoshihisa; Tani, Junichi; Ishida, Ryuichi; and Ochiai, Takashi, 3,966,731.

Yamagishi, Hidehisa; Takano, Hiroshi; and Kashiyama, Yoshitaka, to Nippon Kokan Kabushiki Kaisha. Electrolytic post-treating method of electrolytically chromate treated or metallic chromium plated steel sheet. 3,966,570, Cl. 204-140.000.

Yamaguchi, Shunsuke: *See—*
Tanaka, Toshiaki; Yamaguchi, Shunsuke; and Simowaki, Kazuharu, 3,965,962.

Yamaguchi, Tadashi; Ono, Takayuki; Hoshi, Hiroshi; Hirakawa, Michio; and Watanabe, Isao, to Lion Yushi Kabushiki Kaisha (Lion Fat & Oil Co., Ltd.). Dry process for the production of plastic-coated inorganic substances. 3,967,006, Cl. 427-221.000.

Yamaha, Hatsudoki Kabushiki Kaisha: *See—*
Horiuchi, Kotaro, 3,965,513.

Yamamoto, Hisao: *See—*
Kobayashi, Kenji; Fukumaru, Toshitsugu; Mizote, Hiroyuki; Inaba, Shigeho; and Yamamoto, Hisao, 3,966,939.

Yamamoto, Kazuhiro: *See—*
Tagashira, Yoshimi; Atobe, Masaaki; and Yamamoto, Kazuhiro, 3,967,220.

Yamamoto, Keiji: *See—*
Nakai, Yoshinobu; Yamamoto, Keiji; and Nakano, Masahiro, 3,966,899.

Yamamoto, Kenichiro: *See—*
Takenaka, Shigeo; Shimizu, Hitoshi; and Yamamoto, Kenichiro, 3,966,823.

Yamamoto, Masaru, to Yashica Co., Ltd. Electric shutter operating circuits. 3,967,288, Cl. 354-60.00L.

Yamamoto, Mititaka, to Omron Tateisi Electronics Co. Liquid crystal display utilizing transmitted light. 3,966,303, Cl. 350-160.0LC.

Yamanaka, Toru: *See—*
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Yata, Kotaro; and Yamada, Seiji, to Minolta Camera Kabushiki Kaisha. Automatic focusing apparatus. 3,967,056, Cl. 178-7.200.

Yatsuo, Tsutomu; Kamei, Tatsuya; Ogawa, Takuzo; and Tanaka, Tomoyuki, to Hitachi, Ltd. Semiconductor controlled rectifier. 3,967,308, Cl. 357-38.000.

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Zuleeg, Rainer, to McDonnell Douglas Corporation. Multichannel junction field-effect transistor and process. 3,967,305, Cl. 357-3.000.
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Jack, Walter Q.; and Johnson, Loyd V., Re. 28,887.
Jack, Walter Q.; and Johnson, Loyd V., to Hooker Chemicals & Plastics Corporation. Woodpulp bleaching process. Re. 28,884, Cl. 162-66.000.
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Matsushita Electric Industrial Co., Ltd.: *See—*
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Mori, Fumiko, to Matsushita Electric Industrial Co., Ltd. Cooking time adjusting arrangement for use in electronic oven. Re. 28,888, Cl. 219-10.55B.
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Nakayama, Kiyoshi; and Hagino, Hiroshi, to Kyowa Hakko Kogyo Co., Ltd. Method for preparing cytidine diphosphate choline. Re. 28,886, Cl. 195-28.00N.
Standard Brands Incorporated: *See—*
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Verest, Ralph W. Tractor trailer fifth-wheel release tool. Re. 28,879, Cl. 7-1.00G.
Willdorf, Michael E., to Material Distributors Corporation. Process for producing solar control window. Re. 28,883, Cl. 156-71.000.

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62 3,966,428
68 3,966,429

CLASS 46
17 3,965,610
74B 3,965,611
211 3,965,612
238 3,965,613

CLASS 47
2 3,965,615
14 3,965,614
34R 3,965,616
58 3,965,617

CLASS 48
180R 3,966,430
197R 3,966,431

CLASS 49
103 3,965,618

CLASS 51
58 3,965,619
164 3,965,620
165R 3,965,622
165.71 3,965,621
281R 3,965,623
308 3,966,432

CLASS 52
28 3,965,624
29 3,965,625
79 3,965,626
3,965,627
115 3,965,628
221 3,965,629
224 3,965,630
232 3,965,631
3,965,632
309 3,965,633
403 3,965,634
434 3,965,635
496 3,965,636
596 3,965,637
616 3,965,638
629 3,965,639
704 3,965,640
738 3,965,641
753K 3,965,958

CLASS 53
28 3,965,642
29 3,965,643
3,965,644
32 3,965,645
112B 3,965,646
117 3,965,647
126 3,965,648
127 3,965,649
166 3,965,650
183 3,965,651
3,965,652
187 3,965,653
189 3,965,654
225 3,965,655
282 3,965,656

CLASS 55
66 3,966,433
96 3,966,434
131 3,966,435
147 3,966,436
219 3,966,437
238 3,966,438
270 3,966,439
274 3,966,440
290 3,966,441
316 3,966,442
337 3,966,443
356 3,966,444

CLASS 56
10.2 3,965,657
192 3,965,658
313 3,965,659
344 3,965,660

CLASS 57
58.89 3,965,661
77.33 3,965,662
140BY 3,965,663
157R 3,965,664

CLASS 58
23BA 3,965,665
3,965,666
28A 3,965,667
126E 3,965,668
146 3,965,669

CLASS 59
79R 3,965,670
80 3,965,671

CLASS 60
39.14 3,965,673
39.18B 3,965,674
3,965,675
39.5 3,965,672
255 3,965,676
277 3,965,677
305 3,965,678
357 3,965,680
398 3,965,679
420 3,965,682
599 3,965,681
641 3,965,683
660 3,965,684

CLASS 61
11 3,965,685
3,965,686
13 3,966,233
46 3,965,687
50 3,965,688

CLASS 62
3,965,689
58 3,966,445
121 3,965,690
157 3,965,691
193 3,965,692
217 3,965,693
260 3,965,694
271 3,965,695
324 3,965,696
402 3,965,697
454 3,965,698

CLASS 64
1V 3,965,699
18 3,965,700
21 3,965,701

CLASS 65
2 3,966,446
40 3,966,447
43 3,966,448
3,966,449

CLASS 66
173 3,965,702
193 3,965,703

CLASS 68
210 3,965,704

CLASS 70
58 3,965,705
68 3,965,706
120 3,965,707
166 3,965,708
227 3,965,709
452 3,965,710

CLASS 71
15 3,966,450
91 3,966,451
3,966,452
105 3,966,453

CLASS 72
32 3,965,714
39 3,965,711
42 3,965,712
146 3,965,713
342 3,965,715
356 3,965,716
364 3,965,717
405 3,965,718
410 3,965,719
458 3,965,720
462 3,965,721

CLASS 73
53 3,965,723
59 3,965,722
64.2 3,965,724
71.4 3,965,725
3,965,726
81 3,965,727
84 3,965,728
90 3,965,729
118 3,965,730
126 3,965,731
3,965,732
133R 3,965,733
141A 3,965,734
3,965,735
151 3,965,736
160 3,965,737
194EM 3,965,738
194E 3,965,739
194R 3,965,740
344 3,965,741
356 3,965,742
362AR 3,965,743
393 3,965,744
398AR 3,965,745
398C 3,965,746
421.5A 3,965,748
421.5R 3,965,747
3,965,749
425.4R 3,965,750
432R 3,965,751
457 3,965,752
504 3,965,753

CLASS 74
6 3,965,754
10R 3,965,755
22R 3,965,756
30 3,965,757
41 3,965,758
89.14 3,965,759
3,965,760
89.15 3,965,761
206 3,965,762
217B 3,965,763
221 3,965,764
230.17A 3,965,766
230.24 3,965,767
230.5 3,965,765
242.11R 3,965,768
245R 3,965,769
471XY 3,965,770
479 3,965,771
586 3,965,772
804 3,965,773
805 3,965,774
827 3,965,775

CLASS 75
.5BA 3,966,454
21 3,966,455
41 3,966,456
42 3,966,457
84 3,966,459
84.4 3,966,460
84.5 3,966,458
101BE 3,966,462
101R 3,966,461
108 3,966,463
173R 3,966,464

CLASS 81
3R 3,965,776
5.1R 3,965,777
52.4R 3,965,778
416 3,965,779

CLASS 82
9 3,965,780

CLASS 83
13 3,965,781
15 3,965,782
88 3,965,783
157 3,965,784
316 3,965,785
346 3,965,786
478 3,965,787
745 3,965,788

CLASS 84
1.24 3,965,789
1.27 3,965,790
343 3,965,791

CLASS 85
7 3,965,792
41 3,965,793
77 3,965,794

CLASS 89
1.5F 3,965,795

CLASS 90
13R 3,965,796

CLASS 91
32 3,965,797
172 3,965,798
220 3,965,799
336 3,965,800
351 3,965,801

CLASS 92
84 3,965,802

CLASS 93
36M 3,965,803
51HW 3,965,804

CLASS 96
1PS 3,966,465
1.2 3,966,466
1.4 3,966,467
1.5 3,966,468
3,966,469
3,966,470
3,966,471
33 3,966,472
36 3,966,473
36.1 3,966,474
55 3,966,475
107 3,966,476
124 3,966,477

CLASS 98
115SB 3,965,805

CLASS 99
331 3,965,806
375 3,965,807
419 3,965,808
492 3,965,809
581 3,965,810

CLASS 100
4 3,965,811
39 3,965,812
99 3,965,813
245 3,965,814

CLASS 101
91 3,965,815
115 3,965,816
120 3,965,817
218 3,965,818
350 3,965,819
366 Re.28,880
426 3,965,820

CLASS 102
79 3,965,821

CLASS 104
7B 3,965,822
91 3,965,823
165 3,965,824
275 3,965,967

CLASS 105
224.1 3,965,825

CLASS 106
15FP 3,966,478
38.5R 3,966,479
40R 3,966,480
54 3,966,481
64 3,966,482
171 3,966,483
287R 3,966,484

3,966,485
3,966,486
307 3,966,487
308Q 3,966,488

CLASS 108
152 3,965,826

CLASS 109
3 3,965,827

CLASS 110
8R 3,965,828
22R 3,965,829

CLASS 112
121.11 3,965,830
121.15 3,965,831
262 3,965,832
265 3,965,833

CLASS 113
120Y 3,965,834

CLASS 114
42 3,965,835
66.5R 3,965,836
125 3,965,837
144B 3,965,840
145A 3,965,838
3,965,839
230 3,965,841
235R 3,965,842

CLASS 115
19 3,965,843
41R 3,965,844
42 3,965,845
64 3,965,846

CLASS 116
114W 3,965,847
114.5 3,965,848
3,965,849
124.2R 3,965,850

CLASS 118
1 3,965,851
8 3,965,852
60 3,965,853
66 3,965,854
68 3,965,855
202 3,965,856
405 3,965,857
417 3,965,858
428 3,965,859
612 3,965,860
637 3,965,861
3,965,862

CLASS 119
1 3,965,863
18 3,965,864
19 3,965,865
29 3,965,866
52AF 3,965,867
52R 3,965,868

CLASS 123
8.45 3,965,869
23 3,965,870
25B 3,965,871
32SP 3,965,881
32C 3,965,872
52M 3,965,873
117A 3,965,874
139AY 3,965,875
139E 3,965,877
139 3,965,876
148E 3,965,878
148P 3,965,879
196R 3,965,880

CLASS 124
18 3,965,882
24R 3,965,883
35A 3,965,884

CLASS 126
110R 3,965,885
121 3,965,886
271 3,965,887

CLASS 127
46A 3,966,489

CLASS 128
2F 3,965,889
2W 3,965,888
20 3,965,890
130 3,965,891
142.3 3,965,892
145.8 3,965,893
194 3,965,894
214C 3,965,895
214R 3,965,896
3,965,897
220 3,965,898
225 3,965,899
275 3,965,900
276 3,965,901
3,965,902
3,965,903
284 3,965,904
285 3,965,905
287 3,965,906

296 3,965,907
303R 3,965,908
348 3,965,909
349R 3,965,910

CLASS 131
2 3,965,911

CLASS 133
1R 3,965,912
8R 3,965,913

CLASS 134
104 3,965,914

CLASS 135
1R 3,965,915

CLASS 136
6FS 3,966,492
6LF 3,966,491
6LN 3,966,490
20 3,966,493
24 3,966,494
27 3,966,495
86A 3,966,496
90 3,966,497
166 3,966,498
206 3,966,499
232 3,966,500

CLASS 137
15 3,965,916
38 3,965,917
83 3,965,918
107 3,965,919
115 3,965,920
117 3,965,921
218 3,965,922
315 3,965,923
344 3,965,924
451 3,965,925
460 3,965,927
499 3,965,928
503 3,965,929
512.1 3,965,926
525 3,965,930
561A 3,965,931
607 3,965,932
610 3,965,933
624.14 3,965,934
625.17 3,965,936
625.4 3,965,935
625.47 3,965,937

CLASS 138
107 3,965,938

CLASS 139
48 3,965,939
192 3,965,940
207 3,965,941
384R 3,965,942
421 3,965,943
3,965,944

CLASS 141
27 3,965,945
51 3,965,946
207 3,965,947

CLASS 144
3R 3,965,948
28.71 3,965,949

CLASS 145
52 3,965,950

CLASS 148
1.5 3,966,501
6 3,966,502
9.5 3,966,503
3,966,504
11.5A 3,966,506
11.5R 3,966,505
12R 3,966,507
15 3,966,508
16 3,966,509
105 3,966,510
127 3,966,511
174 3,966,512
175 3,966,513
187 3,966,514
188 3,966,515

CLASS 149
23 3,965,951
60 3,966,516

CLASS 150
3 3,965,952
3,965,953
52G 3,965,955

CLASS 151
5 3,965,954

CLASS 152
214 3,965,956
400 3,965,957

CLASS 156
7 3,966,517
64 3,966,518
71 Re.28,883
73.1 3,966,519
3,966,520
78 3,966,521

148 3,966,522
169 3,966,523
182 3,966,524
195 3,966,525
224 3,966,526
250 3,966,527
293 3,966,528
300 3,966,529
308 3,966,530
329 3,966,531
344 3,966,532
380 3,966,533
384 3,966,534
394 3,966,535
401 3,966,536

CLASS 157
13 3,965,959

CLASS 159
2R 3,966,537
3,966,538
47R 3,966,539
3,966,541

CLASS 160
295 3,965,960

CLASS 162
13 3,966,540
57 3,966,542
66 Re.28,884
Re.28,887
158 3,966,543
199 3,966,544
264 3,966,545
293 3,966,546

CLASS 164
40 3,965,961
55 3,965,962
60 3,965,963
83 3,965,964
3,965,965
213 3,965,966
287 3,965,968

CLASS 165
12 3,965,969
32 3,965,970
39 3,965,971
45 3,965,972
86 3,965,973
89 3,965,974
108 3,965,975
175 3,965,976

CLASS 166
88 3,965,977
113 3,965,978
117.5 3,965,979
224R 3,965,980
228 3,965,981
249 3,965,982
250 3,965,983
270 3,965,984
275 3,965,985
292 3,965,986
315 3,965,987

CLASS 169
9 3,965,988

CLASS 172
310 3,965,989
375 3,965,990
376 3,965,991
3,965,992

CLASS 173
127 3,965,992

CLASS 174
53 3,967,049
135 3,967,050
143 3,967,051

CLASS 175
4.6 3,965,993
52 3,965,994
57 3,965,995
3,965,996
65 3,965,997
209 3,965,998
238 3,965,999

CLASS 176
11 3,966,547
37 3,966,548
65 3,966,549
78 3,966,550

CLASS 177
1 3,966,000
128 3,966,001
136 3,966,002
211 3,966,003

CLASS 178
5.8A 3,967,057
6 3,967,052
6.8 3,967,053
3,967,054
7.1 3,967,055
7.2 3,967,056
58A 3,967,059
58R 3,967,058

69.5R 3,967,060
3,967,061
3,967,062

CLASS 179
1GQ 3,967,063
1E 3,967,065
1P 3,967,064
1.5R 3,967,066
3,967,067
6R 3,967,068
15AT 3,967,070
15BT 3,967,069
18ES 3,967,071
18FH 3,967,073
3,967,074
18J 3,967,072
98 3,967,075
99 3,967,076

CLASS 180
5R 3,966,004
6.44 3,966,005
32 3,966,006
34 3,966,007
75 3,966,008
89A 3,966,009
103BF 3,966,010
105E 3,966,011
127 3,966,012

CLASS 181
33G 3,966,013
35A 3,966,014
56 3,966,015
57 3,966,016

CLASS 182
18 3,966,017
103 3,966,018

CLASS 184
7D 3,966,019
11R 3,966,020
56R 3,966,021

CLASS 187
12 3,966,022

CLASS 188
1B 3,966,023
71.2 3,966,024
72.5 3,966,025
73.5 3,966,026
182 3,966,027
196BA 3,966,028
196D Re.28,881
218XL 3,966,029
318 3,966,030

CLASS 192
3.3 3,966,031
3,966,032

CLASS 194
1R 3,966,033
100A 3,966,034

CLASS 195
6 3,966,551
28N Re.28,886
28R 3,966,553
30 3,966,554
31F Re.28,885
63 3,966,556
66R 3,966,555
80R 3,966,557
103.7 3,966,896
139 3,966,552
3,966,558

CLASS 196
111 3,966,559

CLASS 197
1R 3,966,035
82 3,966,036
133R 3,966,037

CLASS 198
20R 3,966,038
21 3,966,039
288 3,966,040

CLASS 200
38FA 3,967,077
38R 3,967,078
61.45R 3,967,079
61.64 3,967,080
67PK 3,967,081
82D 3,967,082
237 3,967,083
275 3,967,084
302 3,967,085
328 3,967,086

CLASS 201
32 3,966,560

CLASS 202
117 3,966,561
173 3,966,562
228 3,966,563

CLASS 204
43S 3,966,564
52R 3,966,565
73R 3,966,566

105R 3,966,567
3,966,568
108 3,966,569
140 3,966,570
149 3,966,571
159.16 3,966,572
159.23 3,966,573
159.24 3,966,574
180R 3,966,575
181 3,966,576
192 3,966,577
3,966,578
195B 3,966,580
195R 3,966,579
202 3,966,581

CLASS 206
108 3,966,041
344 3,966,042
423 3,966,043
427 3,966,044
443 3,966,045
445 3,966,046

CLASS 208
8 3,966,582
3,966,583
3,966,584
3,966,585
120 3,966,586
164 3,966,587
216 3,966,588
321 3,966,589

CLASS 209
39 3,966,590
73 3,966,591
75 3,966,047
82 3,966,048
121 3,966,049
462 3,966,592
479 3,966,593

CLASS 210
14 3,966,599
22R 3,966,594
24 3,966,596
39 3,966,597
44 3,966,598
46 3,966,600
53 3,966,601
83 3,966,602
86 3,966,603
104 3,966,604
130 3,966,605
136 3,966,606
137 3,966,607
151 3,966,608
198C 3,966,609
203 3,966,610
3,966,611
238 3,966,612
242R 3,966,614
3,966,615
242 3,966,613
433M 3,966,616
519 3,966,617

CLASS 211
10 3,966,050
14 3,966,051
60S 3,966,053
3,966,054
60T 3,966,052
65 3,966,055
134 3,966,056

CLASS 213
22 3,966,057

CLASS 214
1BB 3,966,058
8.5SS 3,966,059
35R 3,966,060
3,966,062
38D 3,966,061
83.36 3,966,063
131R 3,966,064
138R 3,966,065
146R 3,966,066
302 3,966,067
317 3,966,068
620 3,966,069
776 3,966,070

CLASS 215
260 3,966,071

CLASS 219
10.55B Re.28,888
3,967,087
10.55C 3,967,088
10.67 3,967,089
70 3,967,090
92 3,967,091
216 3,967,092
388 3,967,093
532 3,967,094

CLASS 220
1.5 3,966,075
3.8 3,966,073
3,966,074

7 3,966,072
20 3,966,076
70 3,966,077
85R 3,966,078
266 3,966,079
269 3,966,080
270 3,966,081
306 3,966,082
3,966,083
326 3,966,084
327 3,966,085

CLASS 221
234 3,966,086

CLASS 222
63 3,966,088
88 3,966,089
94 3,966,090
129.1 3,966,091
175 3,966,092
185 3,966,093
187 3,966,094
192 3,966,087
384 3,966,095
389 3,966,096
402.2 3,966,097
413 3,966,098
478 3,966,099

CLASS 223
92 3,966,100

CLASS 224
28R 3,966,101
45A 3,966,102
48R 3,966,103

CLASS 225
96 3,966,104

CLASS 226
21 3,966,105
42 3,966,106
59 3,966,107
114 3,966,108

CLASS 228
52 3,966,109
175 3,966,110

CLASS 229
15 3,966,111
23BT 3,966,112
40 3,966,113
44CB Re.28,882
51CE 3,966,114
55 3,966,115

CLASS 232
7 3,966,116

CLASS 233
19A 3,966,117

CLASS 235
92EA 3,967,095
92C 3,967,096
150.21 3,967,097
150.22 3,967,098
152 3,967,099
3,967,100
3,967,101
3,967,102
153AC 3,967,103
156 3,967,104
197 3,967,105

CLASS 237
2A 3,966,118
12.3B 3,966,119

CLASS 239
102 3,966,120
197 3,966,121
233 3,966,122
401 3,966,123
666 3,966,124

CLASS 240
1.3 3,967,106
1.4 3,967,107

CLASS 241
14 3,966,125
18 3,966,126
73 3,966,127
3,966,128
79.1 3,966,129
285R 3,966,130

CLASS 242
4BE 3,966,131
35.5A 3,966,141
36 3,966,132
42 3,966,133
55.19A 3,966,134
58.1 3,966,135
67.1R 3,966,136
75.43 3,966,137
84.2B 3,966,138
118.7 3,966,139
217 3,966,140

CLASS 244
12A 3,966,142
16 3,966,143
17.11 3,966,144

3,966,145
122A 3,966,146
135B 3,966,147

CLASS 246
34R 3,966,148
3,966,149
182B 3,966,150

CLASS 248
27R 3,966,152
62 3,966,154
73 3,966,155
201 3,966,156
217 3,966,157
243 3,966,158
250 3,966,159
311.3 3,966,160
459 3,966,161
487 3,966,162
500 3,966,163
512 3,966,153

CLASS 249
18 3,966,164
120 3,966,165
134 3,966,166
198 3,966,167

CLASS 250
201 3,967,108
3,967,109
3,967,110
206 3,967,111
213R 3,967,112
214C 3,967,113
236 3,967,114
251 3,967,115
298 3,967,116
323 3,967,117
325 3,967,118
326 3,967,119
328 3,967,120
330 3,967,121
367 3,967,122
368 3,967,123
372 3,967,124
432R 3,967,125
439 3,967,126
441 3,967,127
444 3,967,128
468 3,967,130
517 3,967,129
539 3,967,131

CLASS 251
58 3,966,168

CLASS 252
8.55D 3,966,618
32.5 3,966,619
33.4 3,966,620
42.7 3,966,621
46.6 3,966,622
47 3,966,623
52A 3,966,625
52R 3,966,624
73 3,966,626
99 3,966,627
135 3,966,628
140 3,966,629
180 3,966,630
299 3,966,631
309 3,966,632
373 3,966,633
3,966,634
413 3,966,635
419 3,966,636
429B 3,966,637
431R 3,966,638
439 3,966,639
440 3,966,640
449 3,966,641
455R 3,966,642
3,966,644
455Z 3,966,643
465 3,966,645
3,966,790
477R 3,966,646
500 3,966,987
522 3,966,647
3,966,648
542 3,966,649

CLASS 254
29R 3,966,169
175.7 3,966,170
190R 3,966,171

CLASS 256
12.5 3,966,172
13.1 3,966,173

CLASS 259
4R 3,966,174
8 3,966,175
108 3,966,176
185 3,966,177
3,966,178

CLASS 260
2.5AH 3,966,650
2.5EP 3,966,653
2.5HA 3,966,651
2.5N 3,966,652
24 3,966,654
29.2EP 3,966,657
29.2N 3,966,655
3,966,656
29.3 3,966,658
29.6MN 3,966,659
29.6F 3,966,660
29.7H 3,966,661
30.6R 3,966,662
31.4R 3,966,663
3,966,664
32.6N 3,966,666
32.8R 3,966,665
33.6UA 3,966,667
37EP 3,966,669
37N 3,966,668
38 3,966,670
40R 3,966,671
42.14 3,966,672
42.49 3,966,673
45.7R 3,966,674
45.75B 3,966,676
45.8NT 3,966,675
45.85T 3,966,677
47EA 3,966,679
47UA 3,966,678
47C 3,966,680
75NH 3,966,681
75H 3,966,682
77.5AC 3,966,683
77.5C 3,966,684
78A 3,966,686
78R 3,966,685
79 3,966,688
97.5 3,966,698
112.5TR 3,966,700
112.5R 3,966,699
3,966,701
123.5 3,966,702
146R 3,966,703
150 3,966,704
153 3,966,705
156 3,966,706
211.5R 3,966,707
236.5 3,966,708
239.1 3,966,709
3,966,710
239.3A 3,966,712
239.3R 3,966,711
239.55R 3,966,713
239.57 3,966,714
240A 3,966,715
243C 3,966,717
3,966,718
3,966,719
3,966,720
243R 3,966,716
3,966,721
244R 3,966,722
247.1L 3,966,723
247.5GP 3,966,724
248NS 3,966,725
249.8 3,966,726
249.9 3,966,727
3,966,728
250Q 3,966,729
251P 3,966,730
256.4C 3,966,732
256.4F 3,966,742
256.4Q 3,966,731
256.5R 3,966,733
267 3,966,734
268PC 3,966,736
268TR 3,966,737
268R 3,966,735
281GP 3,966,738
285.5 3,966,739
286R 3,966,740
287CF 3,966,743
292 3,966,744
293.53 3,966,745
293.54 3,966,747
293.6 3,966,746
294.8D 3,966,748
294.8G 3,966,741
295R 3,966,749
306.7C 3,966,752
306.7R 3,966,753
307FA 3,966,751
307B 3,966,750
308A 3,966,755
308D 3,966,756
308R 3,966,754
309.6 3,966,757
309.7 3,966,758
310A 3,966,759
310C 3,966,760
3,966,761
326D 3,966,762
326.5FN 3,966,763
326.85 3,966,764
327TH 3,966,765
327R 3,966,766
332.2A 3,966,767
338 3,966,768
340.5 3,966,769
3,966,770
347.8 3,966,771
348A 3,966,772
348C 3,966,773
378 3,966,774
3,966,775
396R 3,966,776
397.2 3,966,777
397.45 3,966,778
404 3,966,779
410.9N 3,966,780
410.9R 3,966,781
429R 3,966,595
438.1 3,966,782
439CY 3,966,783
448.2N 3,966,784
463 3,966,785
3,966,786
3,966,787
3,966,788
465.4 3,966,789
465.5R 3,966,791
468D 3,966,792
471A 3,966,793
471C 3,966,794
473A 3,966,795
482R 3,966,796
484A 3,966,797
486R 3,966,798
3,966,799
514G 3,966,800
515A 3,966,801
530N 3,966,802
534E 3,966,803
542 3,966,804
553A 3,966,805
558R 3,966,806
559AT 3,966,808
559D 3,966,807
559R 3,966,809
561N 3,966,810
562B 3,966,811
566D 3,966,812
570.6 3,966,813
3,966,814
570.8R 3,966,815
573 3,966,816
578 3,966,817
586F 3,966,819
586P 3,966,818
590FB 3,966,820
590R 3,966,821
593R 3,966,822
604R 3,966,823
609R 3,966,825
612R 3,966,824
613R 3,966,826
635E 3,966,827
639B 3,966,828
643B 3,966,829
646 3,966,830
650R 3,966,831
651F 3,966,832
668D 3,966,895
672R 3,966,833
681.5R 3,966,834
830P 3,966,835
835 3,966,836
837R 3,966,837
857UN 3,966,839
857R 3,966,838
860 3,966,840
873 3,966,841
3,966,842
874 3,966,843
876R 3,966,845
878R 3,966,844
884 3,966,846
885 3,966,847
930 3,966,848
937 3,966,849
940 3,966,850
949 3,966,851

CLASS 261
64R 3,966,854
92 3,966,859

CLASS 264
3 3,966,852
13 3,966,853
65 3,966,855
71 3,966,856
75 3,966,857
91 3,966,858
94 3,966,860
95 3,966,861
110 3,966,862
118 3,966,912
137 3,966,864
147 3,966,865
171 3,966,866
210F 3,966,867
238 3,966,868
242 3,966,869
255 3,966,870

318 3,966,871

CLASS 266
158 3,966,180
193 3,966,179

CLASS 267
58 3,966,181
124 3,966,182
167 3,966,183

CLASS 269
37 3,966,184

CLASS 270
3,966,185
58 3,966,186

CLASS 271
3 3,966,187
9 3,966,188
34 3,966,189
42 3,966,190
125 3,966,191
147 3,966,192
150 3,966,193
186 3,966,194
189 3,966,195
218 3,966,196
260 3,966,197
265 3,966,198
275 3,966,199

CLASS 272
71 3,966,202
72 3,966,201
104 3,965,507
109 3,966,200
118 3,966,203
135 3,966,204

CLASS 273
29A 3,966,205
43E 3,966,206
73D 3,966,207
101 3,966,208
130R 3,966,209
134GM 3,966,211
169 3,966,210
181A 3,966,212
201 3,966,213
207 3,966,214

CLASS 274
10S 3,966,215
25 3,966,216

CLASS 279
59 3,966,217

CLASS 280
79.3 3,966,221
261 3,966,229
281R 3,966,230
477 3,966,231
611 3,966,219
618 3,966,218
638 3,966,220
685 3,966,222
712 3,966,223
735 3,966,224
737 3,966,225
3,966,226
3,966,228
752 3,966,227

CLASS 283
23 3,966,232

CLASS 285
24 3,966,234
25 3,966,235
39 3,966,236
112 3,966,237
239 3,966,238
316 3,966,239
367 3,966,240

CLASS 289
1.2 3,966,241

CLASS 290
4R 3,967,132

CLASS 292
19 3,966,242
40 3,966,243
127 3,966,244
202 3,966,245
241 3,966,246
318 3,966,247
340 3,966,248

CLASS 294
88 3,966,249

CLASS 296
1R 3,966,250

CLASS 297
267 3,966,251
306 3,966,252
367 3,966,253

CLASS 298
22C 3,966,254
35M 3,966,255

CLASS 299
33 3,966,256

76 3,966,257
3,966,258

CLASS 300
21 3,966,259

CLASS 301
127 3,966,260

CLASS 302
14 3,966,261
15 3,966,262

CLASS 303
6C 3,966,263
21AF 3,966,265
21BE 3,966,264
3,966,267
21P 3,966,266
24F 3,966,268
37 3,966,269
69 3,966,270
3,966,271
81 3,966,272

CLASS 307
10R 3,967,133
115 3,967,134
121 3,967,135
221D 3,967,136
235R 3,967,137
252J 3,967,138
270 3,967,139
286 3,967,140

CLASS 308
3.8 3,966,273
8.2 3,966,274
15 3,966,275
36 3,966,277
72 3,966,278
160 3,966,279
176 3,966,280
202 3,966,281
207R 3,966,282
235 3,966,284
238 3,966,276

CLASS 310
8.1 3,967,143
8.3 3,967,142
8.7 3,967,141
10 3,967,144
52 3,967,145
80 3,967,146
162 3,967,147
239 3,967,148

CLASS 312
214 3,966,283
257R 3,966,285
258 3,966,286

CLASS 313
141 3,967,149
338 3,967,150
398 3,967,151
435 3,967,152
489 3,967,153

CLASS 315
39.51 3,967,154
39.55 3,967,155
101 3,967,156
169TV 3,967,157
3,967,158
247 3,967,159

CLASS 316
1 3,966,287
19 3,966,288

CLASS 317
33SC 3,967,169
68 3,967,160
101CM 3,967,162
101R 3,967,161
112 3,967,163
114 3,967,164
120 3,967,165
141S 3,967,166
242 3,967,167
258 3,967,168

CLASS 318
85 3,967,170
158 3,967,171
227 3,967,172
3,967,173
254 3,967,174
258 3,967,175
603 3,967,176
3,967,177
648 3,967,178
696 3,967,179

CLASS 320
13 3,967,180

CLASS 321
2 3,967,181
18 3,967,182
45C 3,967,183
3,967,184
61 3,967,185

CLASS 322
28 3,967,186

CLASS 323
4 3,967,187
75B 3,967,188
76 3,967,189

CLASS 324
1 3,967,190
20R 3,967,191
21 3,967,192
37 3,967,193
3,967,194
51 3,967,195
54 3,967,196
61R 3,967,197
72 3,967,198
158MG 3,967,199
173 3,967,200

CLASS 325
28 3,967,201
31 3,967,202
349 3,967,203
473 3,967,204

CLASS 328
46 3,967,205
206 3,967,206

CLASS 330
23 3,967,207
35 3,967,208
86 3,967,209

CLASS 331
56 3,967,210
94.5PE 3,967,214
94.5C 3,967,213
94.5P 3,967,212
94.5R 3,967,215
94.5S 3,967,211
111 3,967,216

CLASS 332
9R 3,967,217

CLASS 333
1.1 3,967,218
14 3,967,219
28R 3,967,220
30R 3,967,221
70CR 3,967,222
82B 3,967,223

CLASS 335
151 3,967,224
210 3,967,225

CLASS 336
84 3,967,226

CLASS 337
124 3,967,227
248 3,967,228

CLASS 338
13 3,967,229
66 3,967,230
117 3,967,231

CLASS 339
4 3,966,289
17LC 3,966,290
64R 3,966,291
91P 3,966,292
103R 3,966,293
153 3,966,294
176MF 3,966,295
263R 3,966,296

CLASS 340
2 3,967,232
3R 3,967,233
8R 3,967,234
15.5DS 3,967,235
27AT 3,967,236
52E 3,967,237
59 3,967,238
63 3,967,239
73 3,967,240
146.3H 3,967,241
3,967,242
3,967,243
171PF 3,967,244
172.5 3,967,245
3,967,246
3,967,247
3,967,248
3,967,249
3,967,250
3,967,251
3,967,263
173LM 3,967,253
173R 3,967,252
3,967,254
227R 3,967,255
242 3,967,256
253R 3,967,257
258A 3,967,260
258B 3,967,258
258C 3,967,261
258D 3,967,259
258R 3,967,262
310A 3,967,264

324AD	3,967,266	292	3,967,301	126	3,966,345	19	3,966,899	308	3,966,964	196	3,967,004
	3,967,268	295	3,967,302	**CLASS 408**		27	3,966,900	309	3,966,965	202	3,967,005
324M	3,967,267		3,967,303	180	3,966,347	52	3,966,863	317	3,966,960	221	3,967,006
324R	3,967,265	**CLASS 355**			3,966,348		3,966,901		3,966,966	223	3,967,007
347AD	3,967,269	3R	3,966,316	204	3,966,349	59	3,966,902		3,966,978	242	3,967,008
347DA	3,967,272	19	3,966,317	233	3,966,350	71	3,966,903	318	3,966,967	256	3,967,009
347NT	3,967,270	64	3,966,318	**CLASS 415**		78	3,966,904	322	3,966,968	306	3,967,010
347P	3,967,271	66	3,966,319	110	3,966,351	80	3,966,905	343	3,966,969	345	3,967,011
365S	3,967,273	73	3,966,320	115	3,966,352	85	3,966,906	**CLASS 425**		380	3,967,012
380	3,967,274	121	3,966,321		3,966,353	89	3,966,907	4C	3,966,373	383	3,967,013
415	3,967,281	**CLASS 356**		116	3,966,354	95	3,966,908	4R	3,966,372	385	3,967,014
CLASS 343		39	3,966,322	144	3,966,355	115	3,966,910	7	3,966,374	386	3,967,015
5NA	3,967,282	96	3,966,323	217	3,966,356	117	3,966,911	62	3,966,375	393	3,967,016
7.7	3,967,283	106R	3,966,324	**CLASS 416**		119	3,966,913	63	3,966,376	405	3,967,017
9	3,967,284	114	3,966,326	97R	3,966,357	122	3,966,914	72R	3,966,377	430	3,967,018
105R	3,967,277	138	3,966,327	**CLASS 417**		177	3,966,915	242B	3,966,378	**CLASS 428**	
108R	3,967,278		3,966,328	12	3,966,358	180	3,966,916	327	3,966,379	7	3,967,019
117A	3,967,279	152	3,966,329	38	3,966,359	182	3,966,917	338	3,966,380	36	3,967,020
121	3,967,280	156	3,966,330	53	3,966,360	206	3,966,918	376	3,966,381	40	3,967,021
713	3,967,275	164	3,966,331	231	3,966,361	210	3,966,919	387B	3,966,382		3,967,022
752	3,967,276	197	3,966,332	374	3,966,362	211	3,966,920	388	3,966,383	102	3,967,023
CLASS 346		218	3,966,325	423R	3,966,363	227	3,966,921	392	3,966,384	155	3,967,024
74E	3,967,285	229	3,966,333	539	3,966,364	232	3,966,922	393	3,966,385		3,967,025
140R	3,967,286	**CLASS 357**		**CLASS 418**		240	3,966,923	436R	3,966,386	195	3,967,026
CLASS 350		3	3,967,305	29	3,966,365	241	3,966,924	445	3,966,387	212	3,967,027
23	3,966,298	24	3,967,306	53	3,966,366	243	3,966,925	450.1	3,966,388	214	3,967,028
52	3,966,297	35	3,967,307	58	3,966,367	245	3,966,926	460	3,966,389	216	3,967,029
96B	3,966,300	38	3,967,294	83	3,966,368	246	3,966,927	470	3,966,390	266	3,967,030
96C	3,966,299		3,967,308	149	3,966,369	247	3,966,928	**CLASS 426**		294	3,967,031
128	3,966,301	49	3,967,309	183	3,966,370	249	3,966,929	44	3,966,971	300	3,967,032
160LC	3,966,302	51	3,967,295	197	3,966,371	250	3,966,930	90	3,966,972	307	3,967,033
	3,966,303	54	3,967,310	**CLASS 423**			3,966,931	231	3,966,973	323	3,967,034
	3,966,304	80	3,967,296	9	3,966,872		3,966,932	265	3,966,974	336	3,967,035
	3,966,305	**CLASS 358**		10	3,966,873		3,966,933	285	3,966,975	386	3,967,036
214	3,966,306	8	3,967,311	112	3,966,909	251	3,966,934	329	3,966,976	392	3,967,037
216	3,966,307	23	3,967,312	121	3,966,874		3,966,935	331	3,966,977	397	3,967,038
293	3,966,308	27	3,967,313	220	3,966,875		3,966,936	385	3,966,979	403	3,967,039
310	3,966,309	29	3,967,314	233	3,966,876		3,966,937	393	3,966,970	410	3,967,040
CLASS 351		60	3,967,315	240	3,966,877	258	3,966,938		3,966,980	419	3,967,041
16	3,966,310	**CLASS 360**		242	3,966,878	260	3,966,939	425	3,966,981	422	3,967,042
164	3,966,311	51	3,967,316	244	3,966,879		3,966,940	430	3,966,982	443	3,967,043
CLASS 352		55	3,967,317	265	3,966,880	261	3,966,941	439	3,966,983	457	3,967,044
91C	3,966,312	65	3,967,318	299	3,966,881	263	3,966,942	472	3,966,984	463	3,967,045
173	3,966,313	90	3,967,319	328	3,966,882		3,966,943	533	3,966,985	**CLASS 431**	
CLASS 353		102	3,967,320	329	3,966,883		3,966,944	534	3,966,986	7	3,966,391
27R	3,966,314	**CLASS 401**		331	3,966,884		3,966,945	535	3,966,988	344	3,966,392
101	3,966,315	9	3,966,334	344	3,966,885		3,966,946		3,966,989	**CLASS 432**	
CLASS 354		10	3,966,335	417	3,966,886	266	3,966,947	550	3,966,990	40	3,966,393
56	3,967,287	209	3,966,336	447	3,966,887	270	3,966,948	555	3,966,991	75	3,966,394
60L	3,967,288	**CLASS 403**		498	3,966,888	273	3,966,953	583	3,966,992	103	3,966,395
83	3,967,297	170	3,966,337	510	3,966,889		3,966,954	589	3,966,993	**CLASS 526**	
	3,967,304	192	3,966,338	512A	3,966,890		3,966,955	590	3,966,994	11.2	3,966,694
125	3,967,289	292	3,966,339	574R	3,966,891	274	3,966,956	596	3,966,995	20	3,966,692
153	3,967,298	343	3,966,341	613	3,966,892		3,966,957	630	3,966,998	62	3,966,695
154	3,967,290	353	3,966,340	626	3,966,896	300	3,966,958	631	3,966,997	75	3,966,693
171	3,967,291	405	3,966,342	628	3,966,893	303	3,966,961	**CLASS 427**		78	3,966,691
174	3,967,292	**CLASS 404**		638	3,966,894	304	3,966,959	41	3,966,999	93	3,966,697
219	3,967,299	101	3,966,343	**CLASS 424**		305	3,966,962	58	3,967,000	199	3,966,696
252	3,967,293	117	3,966,344	1.5	3,966,897		3,966,963	78	3,967,001	283	3,966,690
288	3,967,300	124	3,966,346	12	3,966,898			132	3,967,002	306	3,966,689
								133	3,967,003	317	3,966,687

Classification of Designs

D4—	18 240,341		71 240,345	D8—	216 240,347		219 240,355	D25—	78 240,362		GH 240,366
D6—	20 240,343		194 240,346		235 240,351	D10—	76 240,356	D26—	5C 240,360		MM 240,365
	31 240,348		320 240,340	D9—	118 240,352	D22—	27 240,358		14B 240,361		ST 240,367
	63 240,342	D7—	128 240,349		183 240,353	D23—	139 240,357	D30—	12 240,363	D45—	4E 240,368
	240,344		137 240,350		197 240,354		162 240,359	D34—	5CH 240,364	D56—	B 240,369

Classification of Plants

P. —	36 3,928	P. —	39 3,927	P. —	47 3,929	P. —	68 3,930	P. —	220 3,926

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
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Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

Patents

1 :	3,965,628		3,965,762		3,966,273		3,966,981		3,967,084		3,966,615
	3,966,053		3,965,763		3,966,275		3,966,995		3,967,140		3,966,628
	3,966,282		3,965,788		3,966,286		3,966,997	9 :	3,965,621		3,966,866
	3,966,663		3,965,800		3,966,289		3,967,049		3,965,676		3,967,134
	3,967,206		3,965,801		3,966,298		3,967,054		3,965,757	13 :	3,965,506
4 :	3,965,709		3,965,807		3,966,303		3,967,061		3,965,766		3,965,534
	3,965,880		3,965,824		3,966,305		3,967,062		3,965,815		3,965,650
	3,966,091		3,965,849		3,966,309		3,967,064		3,965,891		3,965,654
	3,966,285		3,965,851		3,966,310		3,967,069		3,965,923		3,965,760
	3,966,347		3,965,862		3,966,325		3,967,091		3,965,992		3,965,792
	3,966,567		3,965,863		3,966,327		3,967,098		3,966,089		3,965,907
	3,966,909		3,965,865		3,966,329		3,967,103		3,966,296		3,965,990
	3,967,101		3,965,871		3,966,336		3,967,111		3,966,352		3,966,094
	3,967,190		3,965,894		3,966,337		3,967,150		3,966,478		3,966,259
	3,967,198		3,965,895		3,966,362		3,967,151		3,966,498		3,966,294
	3,967,236		3,965,897		3,966,363		3,967,159		3,966,506		3,966,392
5 :	3,965,868		3,965,901		3,966,364		3,967,178		3,966,523		3,966,984
	3,966,115		3,965,916		3,966,385		3,967,188		3,966,564		3,966,986
	3,966,361		3,965,917		3,966,389		3,967,201		3,966,644		3,967,146
6 :	3,965,492		3,965,929		3,966,401		3,967,212		3,966,710		3,967,274
	3,965,494		3,965,932		3,966,410		3,967,213		3,966,719	15 :	3,965,787
	3,965,497		3,965,936		3,966,436		3,967,214		3,966,880		3,967,132
	3,965,498		3,965,938		3,966,437		3,967,219		3,966,902	16 :	3,966,257
	3,965,502		3,965,942		3,966,441		3,967,224		3,966,936		3,966,927
	3,965,504		3,965,958		3,966,499		3,967,251		3,966,951		3,966,998
	3,965,512		3,965,959		3,966,522		3,967,255		3,967,029	17 :	Re.28,879
	3,965,514		3,965,960		3,966,525		3,967,266		3,967,063		3,965,510
	3,965,525		3,965,996		3,966,533		3,967,281		3,967,165		3,965,529
	3,965,539		3,966,006		3,966,539		3,967,301		3,967,179		3,965,536
	3,965,544		3,966,013		3,966,556		3,967,305		3,967,187		3,965,537
	3,965,556		3,966,029		3,966,577		3,967,306	10 :	3,965,776		3,965,538
	3,965,558		3,966,035		3,966,582		3,967,307		3,966,654		3,965,542
	3,965,561		3,966,041		3,966,583		3,967,312		3,966,656		3,965,543
	3,965,571		3,966,067		3,966,616		3,967,314		3,966,684		3,965,551
	3,965,585		3,966,075		3,966,618	8 :	3,965,515		3,966,694		3,965,572
	3,965,626		3,966,085		3,966,652		3,965,583	11 :	3,965,608		3,965,623
	3,965,647		3,966,090		3,966,744		3,965,598		3,965,696		3,965,632
	3,965,655		3,966,093		3,966,764		3,965,605		3,965,951		3,965,633
	3,965,665		3,966,102		3,966,806		3,965,836		3,967,283		3,965,639
	3,965,683		3,966,137		3,966,809		3,965,887	12 :	3,965,642		3,965,641
	3,965,707		3,966,138		3,966,816		3,965,919		3,965,685		3,965,657
	3,965,713		3,966,151		3,966,817		3,965,956		3,965,752		3,965,695
	3,965,727		3,966,154		3,966,820		3,966,051		3,965,869		3,965,697
	3,965,731		3,966,159		3,966,825		3,966,074		3,965,981		3,965,708
	3,965,732		3,966,164		3,966,842		3,966,088		3,966,038		3,965,710
	3,965,734		3,966,166		3,966,847		3,966,369		3,966,139		3,965,761
	3,965,739		3,966,190		3,966,905		3,966,433		3,966,169		3,965,793
	3,965,742		3,966,208		3,966,937		3,966,459		3,966,203		3,965,820
	3,965,746		3,966,220		3,966,967		3,966,607		3,966,384		3,965,826
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53 : Re.28,884
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19 : 240,360
20 : 240,367
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26 : 240,341
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29 : 240,358
34 : 240,364

36 : 240,353
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37 : 240,343
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